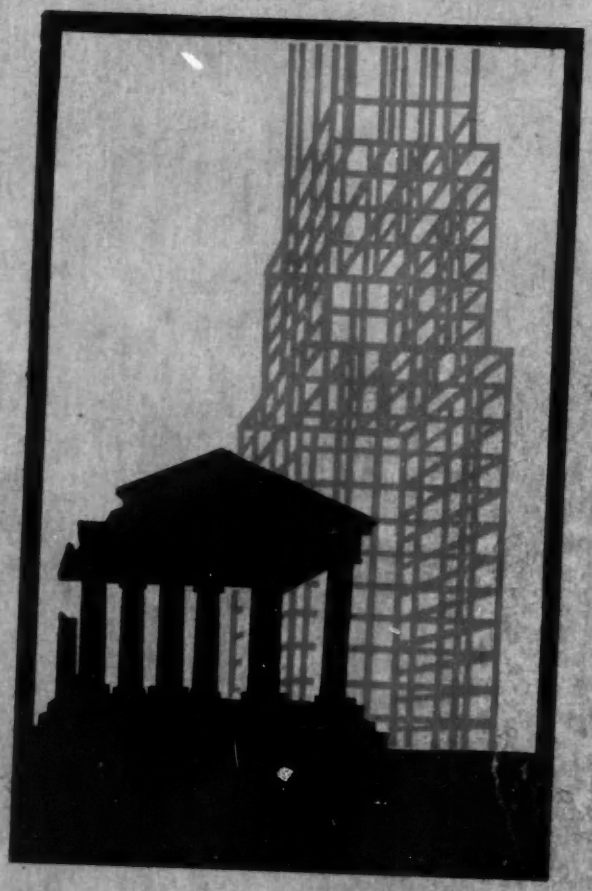
THE ARCHITECTURAL RECORD



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THE ARCHITECTURAL RECORD

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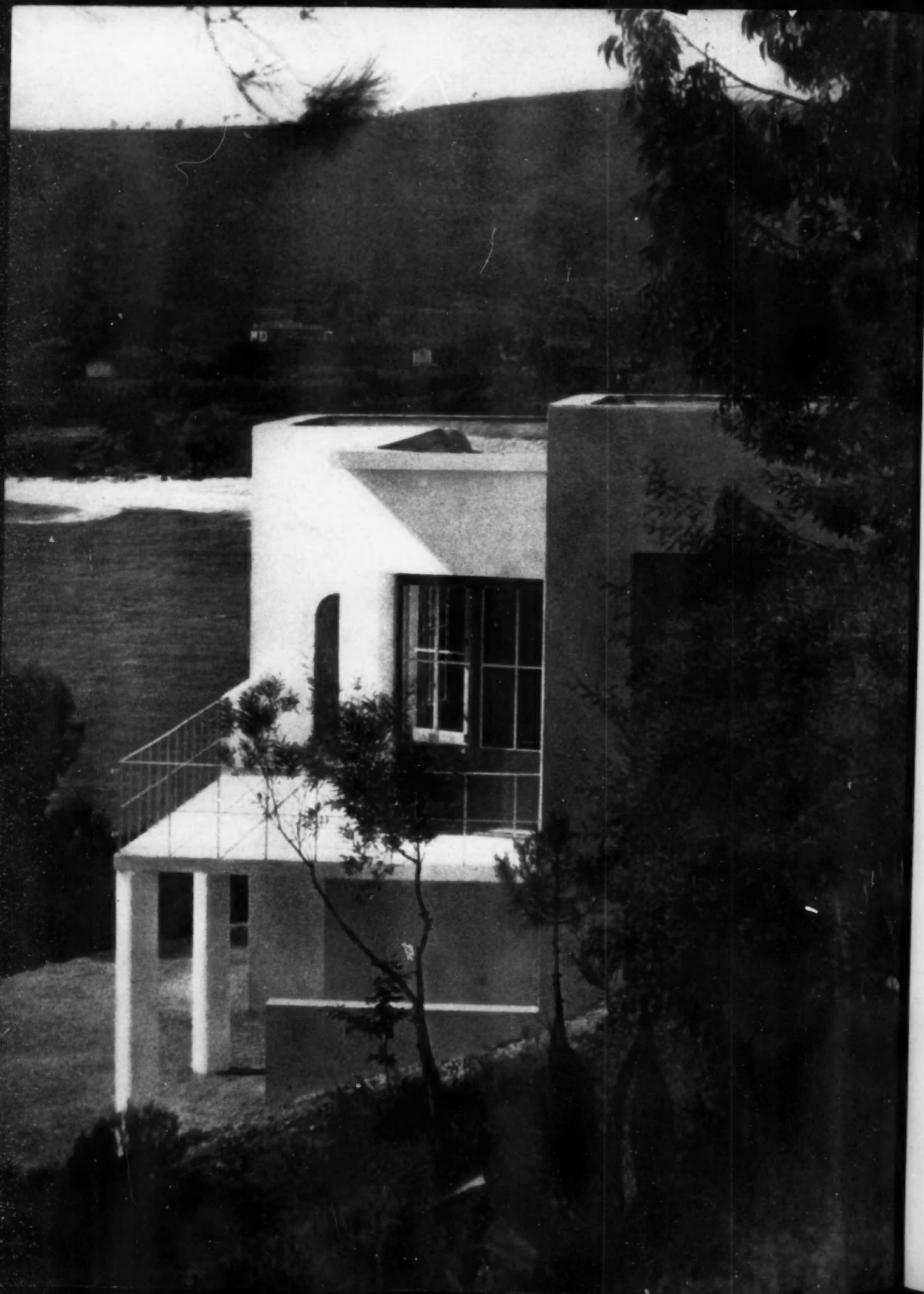


THE ARCHITECTURAL RECORD

AN ILLUSTRATED MONTHLY MAGAZINE OF
ARCHITECTURE & THE ALLIED
ARTS & CRAFTS

VOLUME 66 NOVEMBER·1929 NUMBER 5

NEW ELEMENTS IN HOUSE DESIGN

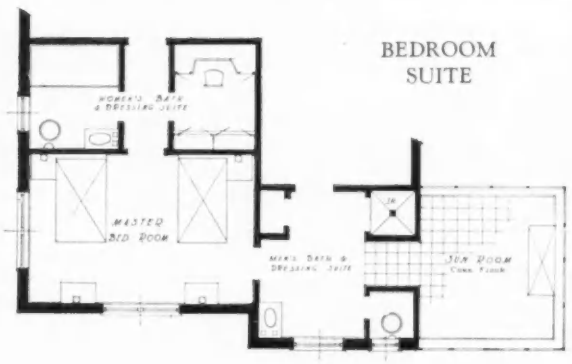
BY HOWARD T. FISHER

THE HOUSE, among all the important tools of the twentieth century, is unique in the inefficiency and clumsiness of its design. The age that has produced the ocean liner, the skyscraper and the zeppelin has as yet done but little towards solving one of the most important and basic needs of mankind. To be sure, in certain individual details of layout and equipment much has been accomplished, but on the whole we are little better off today than were our ancestors in the middle ages. This is no exaggeration; in some ways we are positively worse off. Take for example the question of central heating—a tremendous convenience and commonly looked upon as one of the greater blessings of modern times. Yet, as usually employed in our dwellings, this is a constant source of ill-health and discomfort. The vast majority of the inhabitants of civilized communities today live, while in their homes, in the overheated atmosphere of a drying kiln. The effect of this on our health, as well as on our furniture, is now common knowledge, but not one house in a hundred that is being built today has adequate provision for proper humidification. The thirteenth century castle with its open fireplaces was in many ways a far healthier place. In our bakeries, our spinning rooms and our candy factories we have sunlight, cleanliness and ideal conditioning of the air, but in our dwellings we have none of these beyond the most limited extent. The time has come to design our houses at least as well as we design our factories. Of all the productions of our present day, the house alone is considered in terms of the past. We do not ride in Louis XIV stage coaches, or wear Elizabethan ruffles—why then should we live in imitations of Cotswold cottages or French eighteenth century chateaux?

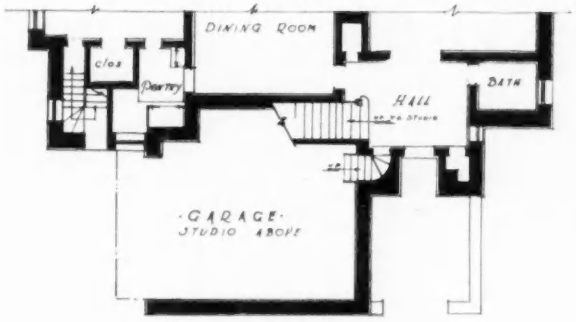
The next few years will see a vast change. Not only will the mechanical equipment of our houses be brought up to date, but there will be as well an even more complete alteration in the plan and structure. With this change there will also go a modernization of construction methods and management, accompanied by reduced costs. Much in the way of equipment and construction that now appears extravagant and out of the reach of all except the very wealthy will become standard practice. There is no need to fear that what is discussed here will be so prohibitive in cost as to prevent common adoption. The same was thought of many of the most universal of our present-day utilities—automobiles, electric lights and

telephones. Yet today these are considered bare necessities.

The vast improvement in construction methods which has made the skyscraper possible has hardly begun to be felt in house building. About the most that can be said is that brick is replacing wood, but whether this can be considered as constituting an improvement is more than doubtful. Concrete, though but little employed in domestic work, is almost the only material used today which appears to have any future, and there is some reason to believe that even this may be made obsolete by the more extended use of glass in connection with welded steel construction. The cement gun will perhaps prove of value, and new materials, such as asbestos, casein and duralumin, will in all probability be used more and more. Speed of erection and complete fireproofness will be primary considerations in the choice of materials. Before many years the structural designing of our houses may be more closely allied with that of ocean liners, sleeping cars, automobiles and airplanes than with any work of the past. Insulation will be further developed, perhaps not so much to save coal in winter as to keep houses cool in summer. As electricity is used more and more for the heating and cooling of houses, the question of insulation will become of especial importance. Already in a few cases we have gone so far as to insulate the basement. Vacuumized window panes and possibly walls, similar in theory to the thermos bottle, may be the final solution. Closely allied with insulation is the question of sound deadening, at present almost universally ignored in private house construction. The introduction of oil burners has called some attention to the problem, but in the present age of radio jazz it would not seem unreasonable to go the limit in this direction. Soundproof doors would help. Another problem, that of flooring, is one of the most difficult the architect has to face. The ideal floor covering should be quiet, soft, warm, clean, durable and easy to repair if damaged. Cork, properly treated, and rubber tile are probably the best available materials today, but in the future we may look for many improvements in this field. With the development of a really good flooring, rugs will become entirely superfluous, except where desirable for their decorative value.



In the layout of our houses, far more emphasis will be given to good light and air. No longer will porches be so placed as to shut off the sunlight from the living rooms during the winter months. The roof, now a total loss, should be utilized. No place is as valuable for porch or terrace purposes, for in spite of shrubbery, trees and surrounding buildings the slightest breeze is always felt on the roof. Also, the roof will still be free from mosquitoes and flies long after they have made it impossible to sit with any comfort on an open terrace at the ground level. Sloping roofs may soon become as out of date as bustles and crinolines and appear just as foolish. Not only will houses open up more, permitting easy access to porches and terraces from each floor level, but in the rooms themselves more emphasis will be placed on larger windows and cross-ventilation. As the windows tend more and more to fill the outside wall area, the interior, instead of being in a perpetual semi-twilight, can more nearly share outside light conditions. With the elimination of contrast no longer will it be so disagreeable to look towards the win-

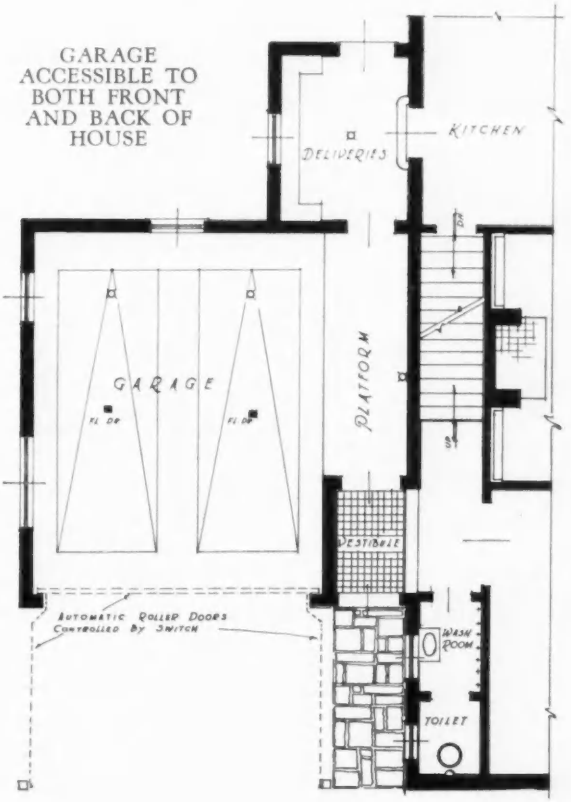


GARAGE ACCESSIBLE TO HALL
MRS. JULIUS GREGORY HOUSE AT SCARSDALE, N. Y.
JULIUS GREGORY, ARCHITECT

dows that they will have to be shaded and curtained. Roller shades, which today are a source of annoyance, will probably become obsolete, adjustable curtains being used in their place. Double-hung windows in spite of various advantages are already disappearing. They afford only fifty per cent ventilation and their ugly crossbar calls for the curtaining of the entire upper half of the window. Casement windows permit full ventilation, and if built flush with the outside of the building can be set to catch a breeze from any direction. They are difficult, however, to screen, but now that the manufacturers of steel casements are designing screens to go with their own windows this difficulty will probably be eliminated. A steel window that would come complete with a frame permitting it to slide up or down in the wall in one piece would seem to share the greatest advantages with the fewest disadvantages. The future use of ultra-violet glass will depend on the production of a high grade product at a reasonable price. Most of such glass available to architects has a transmission to begin with of only about 50%, and solarization produces a considerable further reduction in this figure.

The careful study of the grouping and arrangement of rooms, which is so noticeable in the best apartment house design of today, will result in a more compact layout and the more efficient utilization of space. Yet at the same time the living room may be made even larger and more space will be devoted to bathrooms, dressing rooms and better rooms for servants. In the smaller house the separate dining room is already beginning to disappear, but in the future instead of having a permanent dining table in the living room a removable one on wheels may be used; or folding partitions may be used between dining room and living room, permitting the two to be thrown into one room when desired.

An interesting problem of arrangement is offered by the garage. Where no chauffeur is employed its location is of great importance. In the past the garage has been built separate from the house, or where it is attached to the house has been placed as far as possible from the front door and connected through the kitchen or back hall. This was done on the theory that the garage was a dirty and perhaps even a noisy place. But it need not be, and where mem-



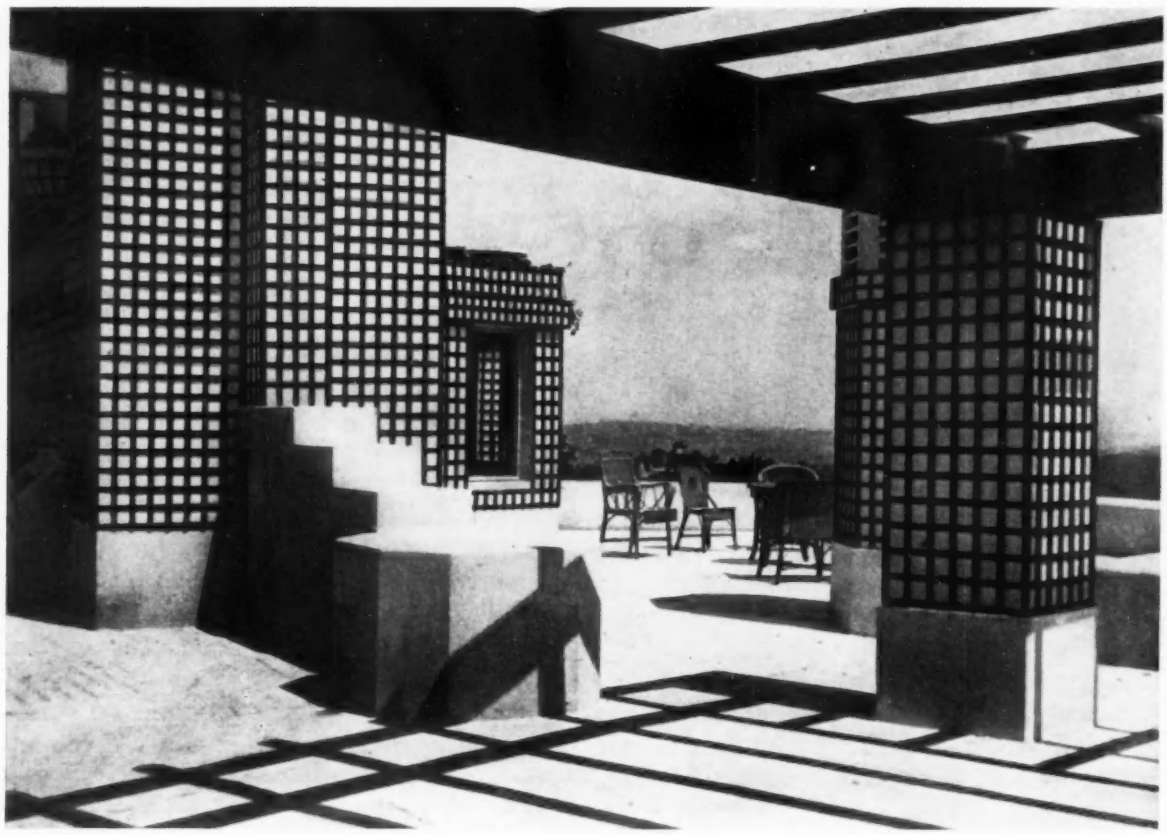


Photo. Bonney

ROOF DECK USED AS SUN PORCH
HOUSE FOR JANE RENOUARDT, PARIS
SUE ET MARE, ARCHITECTS

bers of the family drive the car there seems to be no reason to make them go through the kitchen every time they want to go in or out. For the greatest convenience the garage should be located either near the front door or in such a way as to connect directly with the front hall. To avoid the necessity of having to get in and out of an automobile to operate garage doors they should be controlled by means of a switch placed on a post which the driver can reach without getting out of the car. Doors which roll up take the least space and are least affected by snow. There is no way of predicting what the future requirements for privately owned airplanes will be, but for automobiles it will seldom be advisable to build a garage that will hold less than two cars and most larger houses will require space for three or more.

The layout of the ordinary private house kitchen offers an opportunity for much improvement. The problem seldom receives the careful study that has gone to make hotel kitchens and grills such marvels of efficiency, yet a first rate kitchen cannot result from the casual grouping of pots and pans, sink, stove and refrigerator. The problem in some ways is even more difficult than that of hotel kitchens, for in the private house one person must usually perform all the necessary operations. The refrigerator should be placed near the center of things regardless of the fact that it may cost less to keep cool if placed in the back entry. The sink should be equipped with a pop-up waste fixture so as to avoid the necessity of using a dish pan. For washing china there should be a soft metal sink with a counter

Klettephoto

ROOF USED AS SUN TERRACE
EXHIBITION HOUSE AT BRESLAU, GERMANY
HEINRICH LAUTERBACH, ARCHITECT

either of the same material or rubber. A ventilating fan is now considered a necessity and it might be well to place one in the laundry also. Where a large number of servants are employed and considerable entertaining is done it may be worth while to consider the acoustical treatment of the pantry and kitchen ceilings.

The question of the bedroom raises some interesting points. Certainly every bedroom should have a bath. This is no extravagant luxury but an absolute basic minimum. It is even a question whether double bedrooms should not have two baths. This has already been done in a few cases where the client could afford it and is especially desirable for the owner's room. With modern dressing rooms containing drawers and cases for all one's belongings, and sleeping porches which can be either completely opened or closed, the bedroom of the past is changed into a private sitting room. The dressing room is the place for many conveniences. It should be equipped with its own cedar cupboard, and if possible with space for the storage of suitcases and even a trunk. Each dressing room should have a full length mirror, a built-in ventilated soiled clothes container, and a built-in shoe polishing cabinet. Here also is the place for the latest fad in health and athletic equipment—the Indian clubs, the ultra-violet lamp, the electric vibrator, or whatever it will be in the future.

The bathroom, now the best developed feature of our dwellings, will also see various improvements, though the recent advertisements of period fixtures published by

the plumbing manufacturers are a bit disconcerting. Thirty-six inch width tubs will be installed except where very strict space limitations prevent. Tubs of this width are already available but have been little used, although with their flat wide bottoms they are especially desirable where showers are provided. Except in the very cheapest construction showers, either separate or over tubs, will be equipped with anti-scalding valves. The custom of furnishing the lavatories in public washrooms with hospital-type faucets, which we hope will soon become universal, may be extended to private bathrooms. At present we are solicited to buy electric self-ventilating water closets, coyly camouflaged with imitation chairs. What the future will hold in this direction we can only guess; perhaps something may be learned from the Orient. There is also the question whether the bidet, so universally seen throughout Europe, will ever become common in this country. Some physicians believe this fixture, as designed at present, more apt to be a source of infection than a benefit. In houses where a special nursery is provided children's size fixtures are desirable. Razor blade slots which for years have been used in sleeping cars should be in every bathroom. The most interesting prophecy for the bathroom of the future is that of Buckminster Fuller. His design calls for the entire room to be formed in one piece with all the fixtures made integral. This would be delivered by truck to the job completely piped and ready to install.

The biggest technical problem is that of air conditioning. Except for the heating of the air this subject has been almost completely disregarded in domestic work, but there is little doubt whatever that the house of the future, or at least portions of it, will be cooled in summer as well as warmed in winter. This has been common practice for a considerable time in certain other types of buildings and it is merely a matter of applying the same principles to a slightly different set of conditions. The rooms to be cooled will have to be thoroughly insulated and the windows sealed, at least during the cooling season. It may be that eventually these windows will be sealed permanently the year round, thus greatly simplifying construction and making it possible to abolish screens entirely.

In heating, forced draught warm air or some similar centralized duct arrangement seems already to be coming into favor. In spite of certain objections this system offers the easiest and fullest solution of the humidifying problem, and in the future no heating layout will even be considered which does not contain adequate provision for moistening the air.

The important question is at what humidity the majority of persons are most comfortable, and the answer seems to be, between sixty and sixty-five per cent. With a warm air furnace or central duct system this humidity can easily be maintained throughout a house by one of several methods. The usual pans furnished with most warm air furnaces are of almost no value. If the pan method is used not only must the water be heated somehow to the steaming point but a considerable surface area must be exposed. Sprays, with or without compressed air, may be used. The simplest method of all is merely dripping water on top of the cast iron dome of the furnace. Whatever system used can be controlled by a humidistat and the humidity accurately maintained through the heating season. With the development of cooling apparatus, de-humidifying in the summer will become as important as humidifying in the winter. One of the objections to the proper humidifying of houses has been that in severe weather there is apt to be an excessive amount of condensation on the windows. However, this problem has already been largely solved in the industrial field by the use of condensation gutters, or by double glazing. The latter has the advantage of greatly reducing heat losses at the same time. One solution is to substitute storm windows for

screens during the winter. Vacuumized window panes, of course, would completely solve this problem.

Warm air heating however has other advantages. The air is in constant motion, producing a healthier and more comfortable atmosphere. There are no objectionable radiators. The air can be filtered as it is recirculated and, if desired, ozonized. The same system of ducts can be used for cooling as is used for heating. It also has the advantage that in cases where the owner or his family suffers from hay-fever the system can be employed in the summer in such a way that the air enters the house through a special bag guaranteed to remove even the finest pollen.

No matter what type of heat is installed, full automatic controls will certainly be provided. Whatever advantages oil and gas may have from the point of view of cleanliness and convenience, the one thing which distinguishes them most is the uniformity of the heat produced throughout the fall, winter and spring, regardless of the greatest weather fluctuations. The best of the coal stokers, while not fully automatic, operate on the same principle. Gas has the great advantage over oil in that it is quiet and there is no necessity of ordering fuel. Already electric heating is being used in America in certain places favored with low rates, especially for the heating of the domestic hot water supply. In Switzerland it has been the habit for some time to take advantage of the low night rates prevailing after midnight by storing up heat in hot water and then circulating it during the daytime. This system is now being introduced into the United States and may become common practice in industrial cities where there is a large consumption of electricity for power during the daytime, and but little use for it at night except for illuminating purposes.

In electrical equipment also the future will see much progress. The days of the single telephone are already disappearing. In the future instruments which can be used for intercommunication as well as for outside calls will be installed in all the more important locations in the house, and more outlets will be furnished into which portable instruments can be plugged. The radio also will probably require antennae outlets in each room. The whole problem of illumination will be studied with the same care now given to stage lighting and no longer will wall brackets be placed at just the height where they will be the greatest strain on the eyes. More equipment such as automatic water softeners and electric dishwashers will come into use. However, in our enthusiasm for the latest contraptions we should not forget to take into account the human elements of the servant problem, and no device should be installed which requires more intelligence to operate than is apt to be possessed by the average person who may be called upon to use it. Many appliances are lying idle today not on account of any defects but simply because servants will not use them.

As we look around us at the houses of today and compare them with the other products of our age, it is only too obvious how little we really have accomplished. If so far we have hardly begun to consider the problem of house design in terms of modern scientific data, at least we have the possibility of a brilliant future. The technical knowledge has already been largely developed and it is merely a matter of applicating it to the problem at hand. The house of the future will bear the same relation to the work of the past as the modern automobile does to the horseless buggy. No longer will our houses be copies of Tudor and Spanish architecture, no longer will we worship imitation thatch roofs and faked half timber. We shall achieve an architecture as logical as the airplane, and as fine an expression of our age as the modern automobile.

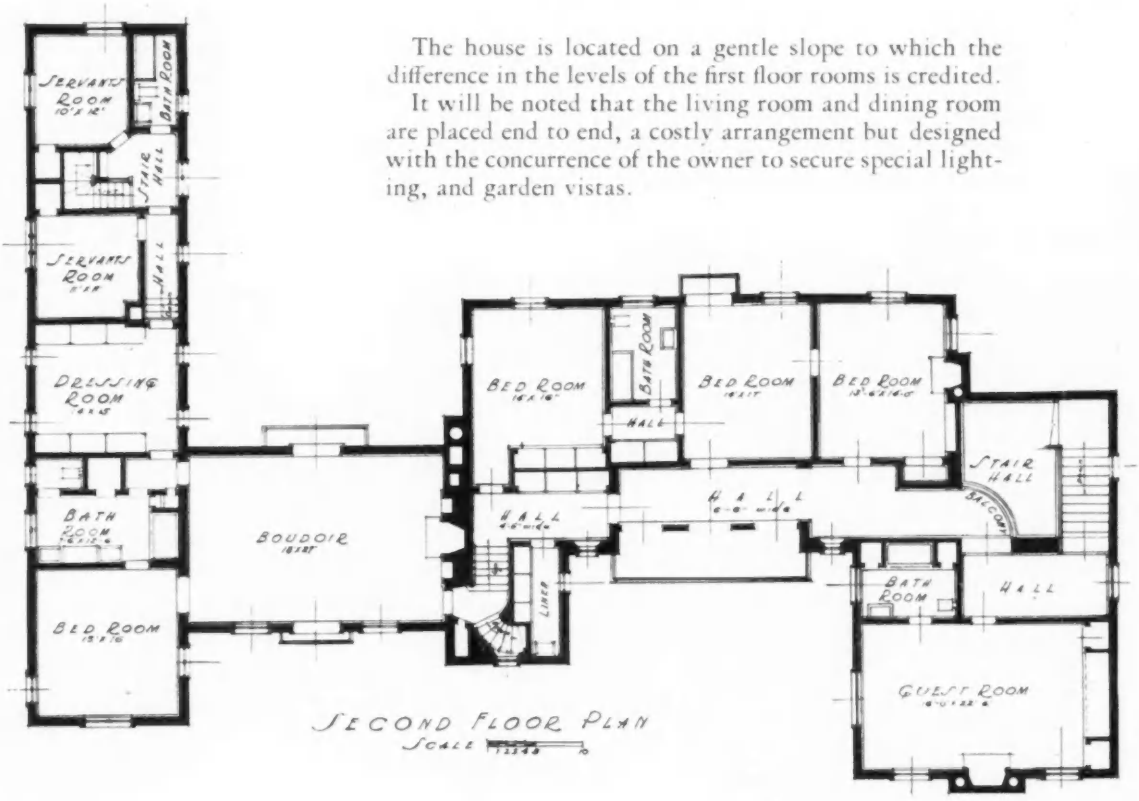
Photo. Ellison

HOUSE FOR CHARLES A. DEAN, JR., GROSSE POINTE FARMS, MICHIGAN

HUGH T. KEYES, ARCHITECT

The house is located on a gentle slope to which the difference in the levels of the first floor rooms is credited.

It will be noted that the living room and dining room are placed end to end, a costly arrangement but designed with the concurrence of the owner to secure special lighting, and garden vistas.



SECOND FLOOR PLAN

SCALE

Photo., Ellison

HOUSE FOR CHARLES A. DEAN, JR., GROSSE POINTE FARMS, MICHIGAN

HUGH T. KEYES, ARCHITECT

The auxiliary stairway in the master portion of the house becomes necessary in this plan.

The materials used in construction were old brick with a clay tile roof.

The total cost of the house, garage, walls, terraces, etc., was $125,000.00 at seventy cents per cubic foot.

Cubic content 179,000 feet.

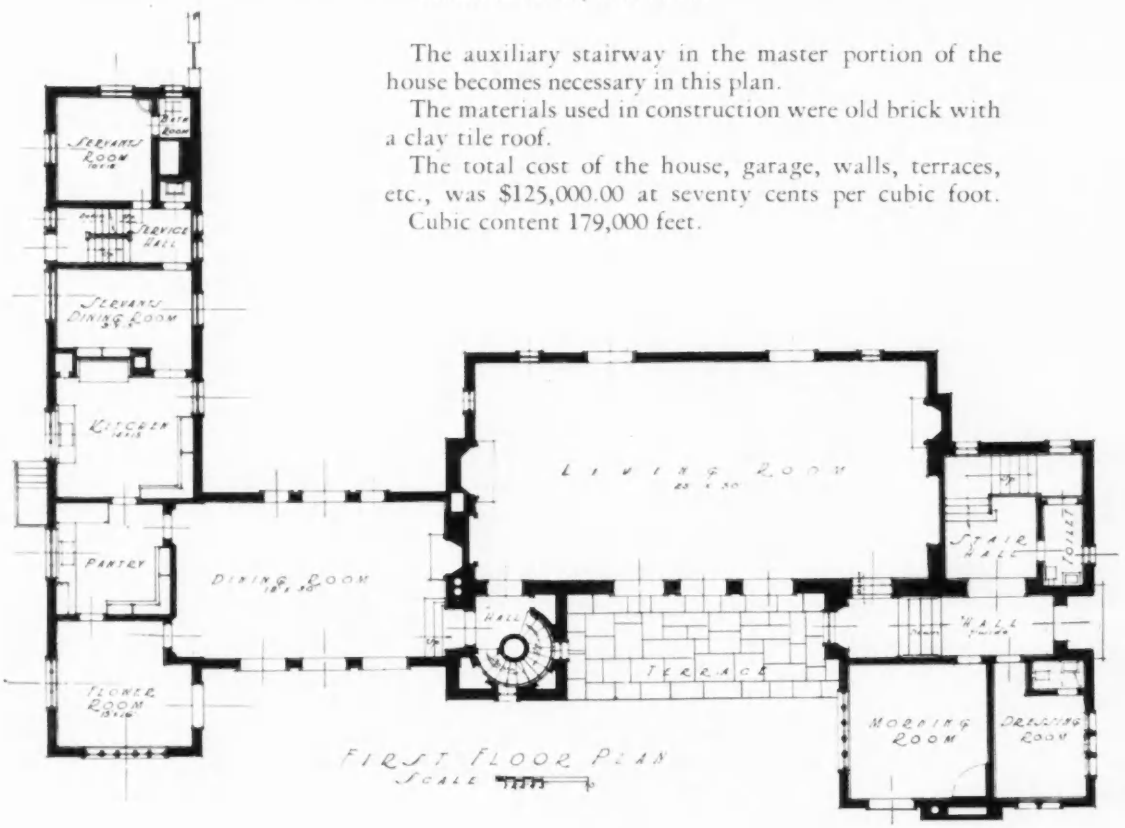
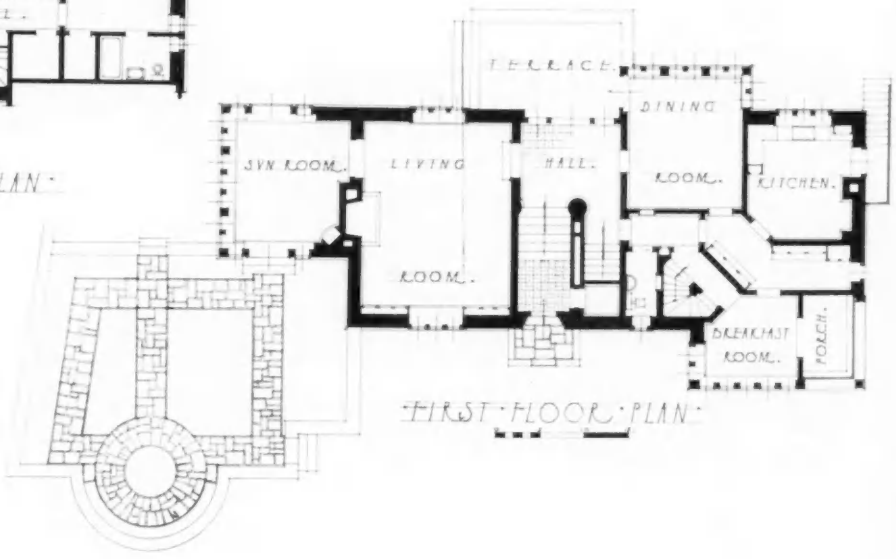


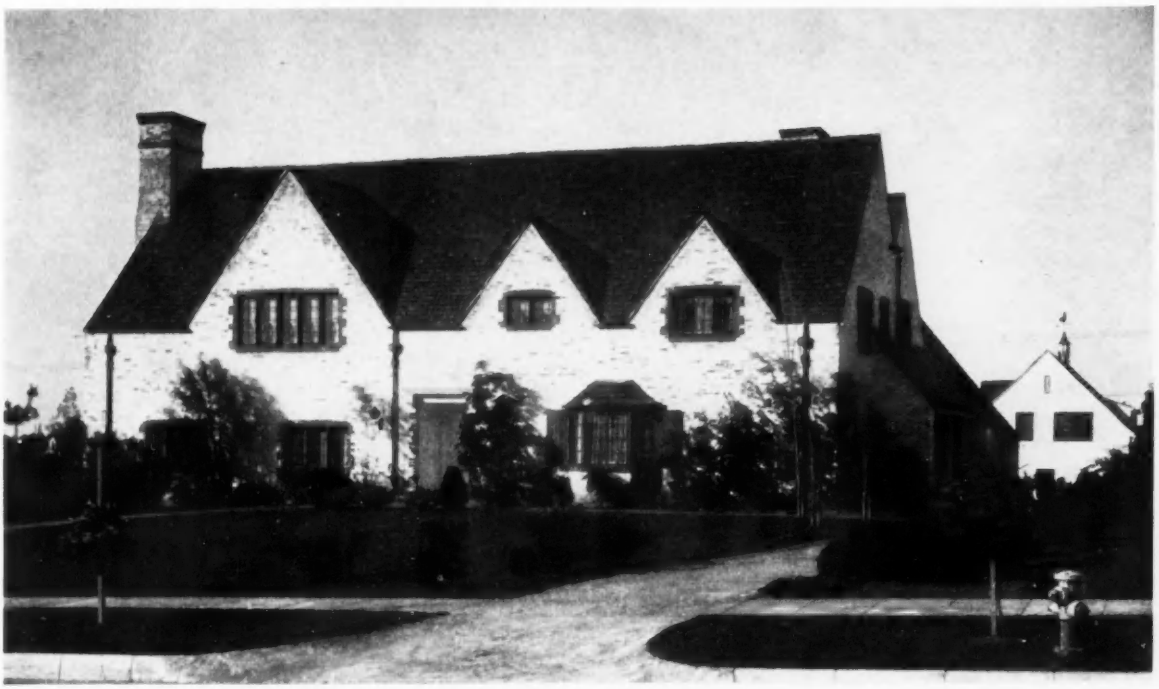
Photo. Tebbs and Knell

HOUSE FOR DR. J. V. HENDERSON, KNOXVILLE, TENN.
BARBER AND McMURRAY, ARCHITECTS

SECOND FLOOR PLAN



FIRST FLOOR PLAN

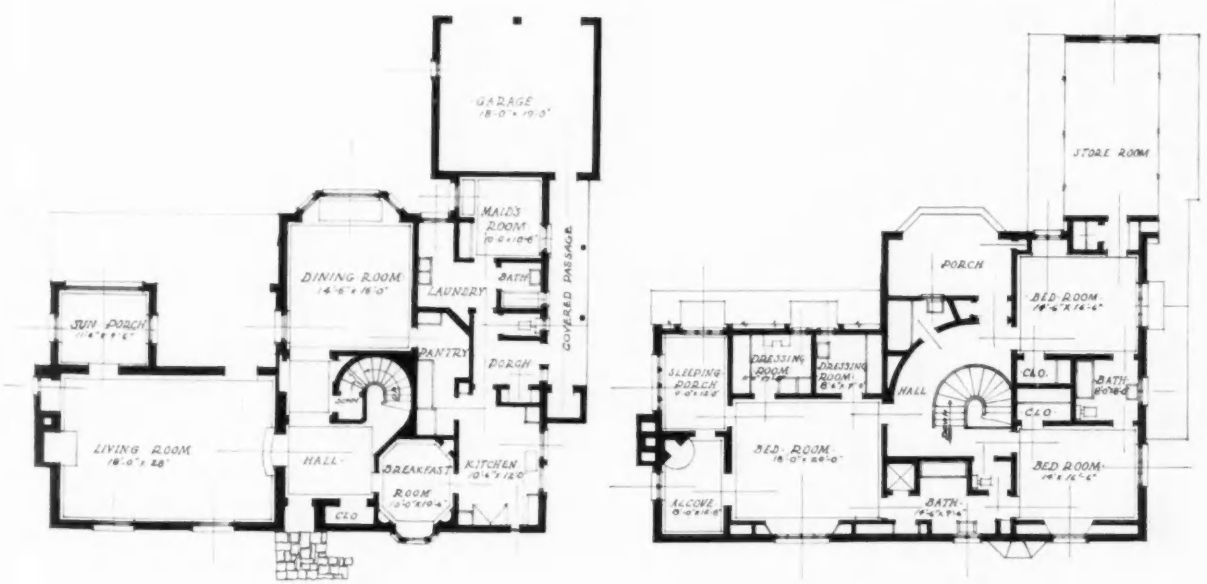


HOUSE FOR MR. AND MRS. HARRY F. HALDEMAN, LOS ANGELES
MARSTON, VAN PELT AND MAYBURY, ARCHITECTS

The unit cost of this house was computed at 47c per cubic foot and $5.05 per square foot.

The exterior walls are laid up of common brick veneer. The brick is then painted with white paint to resemble white-wash, some of the paint being rubbed down to the brick to give effect of a weathered wall.

The roof of the house is 5/8 x 24″ shingles with one face hand split.



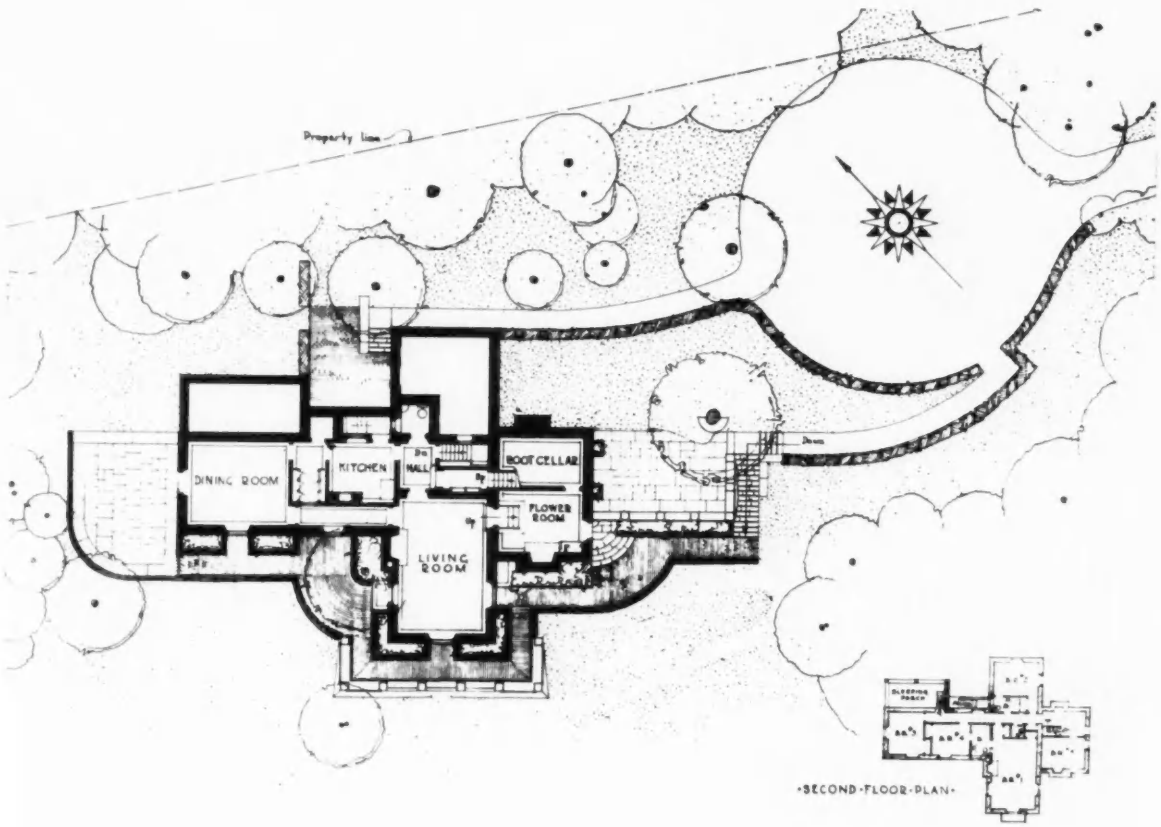
HOUSE FOR MRS. SAMUEL A. KING, BRYN MAWR, PENNSYLVANIA
MELLOR AND MEIGS, ARCHITECTS

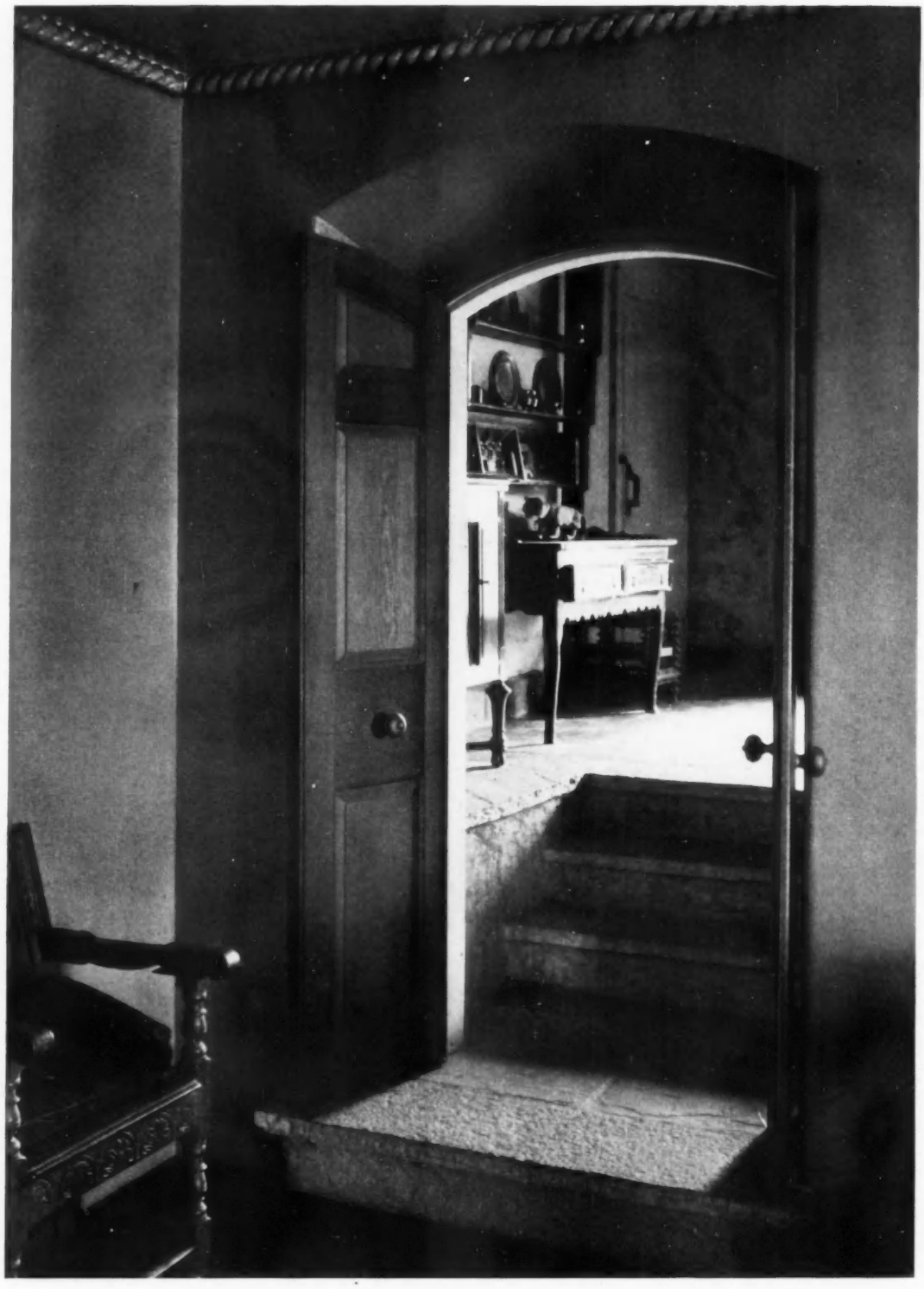
The site overlooks a valley with a pleasant village in the middle of the foreground, and is reached by quite a long drive which descends from a public road and affords a glimpse of this view as one enters. The house looks down upon a public road at a distance of about half a mile, but there is no public road up to the site without going around two or three miles, which gives the situation a feeling of protection.

The present house is an alteration of, and an addition to an excessively small primitive farmer's cottage built about the middle of the eighteenth century, but does not adhere to the style of this minute original.

The roof is of shingle, the walls are of field stone with wide mortar joints, the windows are of wood — not metal, and are mostly large French casements opening in. The color scheme of the house is a drab grayish brown, the color of the masonry together with the frames and surfaces of putty color. The shutters are of a dull brownish red.

HOUSE FOR MRS. SAMUEL A. KING, BRYN MAWR, PENNSYLVANIA
MELLOR AND MEIGS, ARCHITECTS

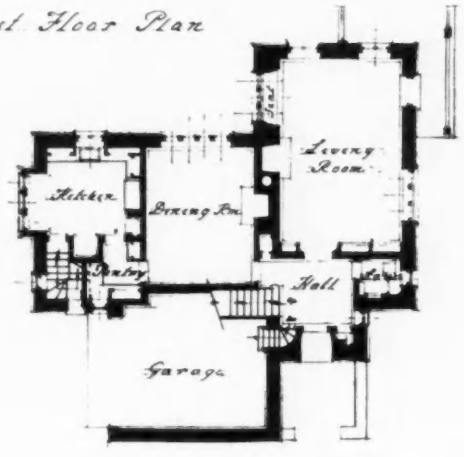




DETAIL OF DOORS, ENTRANCE TO LIVING ROOM
HOUSE FOR MRS. SAMUEL A. KING, BRYN MAWR, PENNSYLVANIA
MELLOR AND MEIGS, ARCHITECTS

Photo. Gottscho

First Floor Plan



Second Floor Plan

HOUSE FOR MRS. JULIUS GREGORY, SCARSDALE, NEW YORK

JULIUS GREGORY, ARCHITECT

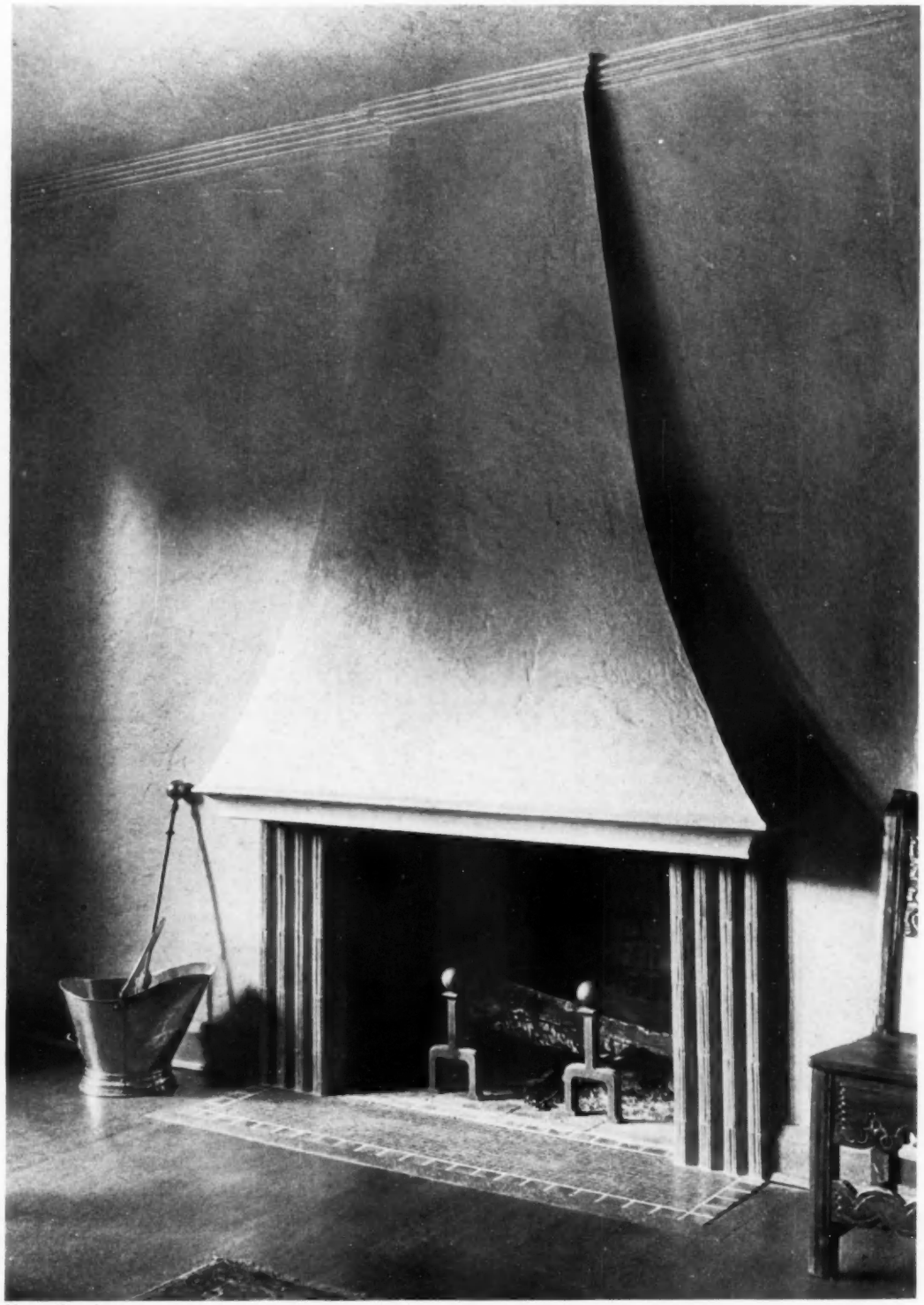


Photo. Gottscho

HOUSE FOR MRS. JULIUS GREGORY, SCARSDALE, NEW YORK
JULIUS GREGORY, ARCHITECT

Photo. Rittase

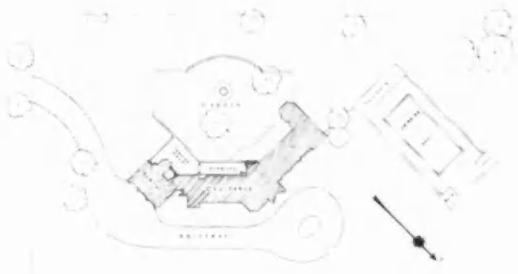
House for Mrs. Mary H. Morice, Flourtown, Pennsylvania
HARRY STERNFELD, ARCHITECT

The house faces a golf links and was orientated to obtain as much sunlight as possible, taking advantage of the view across the golf links. There were two fine apple trees on the site, and the residence was so planned that the trees form part of the composition from the exterior. All main rooms and bedrooms have favored exposure. The north side is used for the entrance approach and corridors.

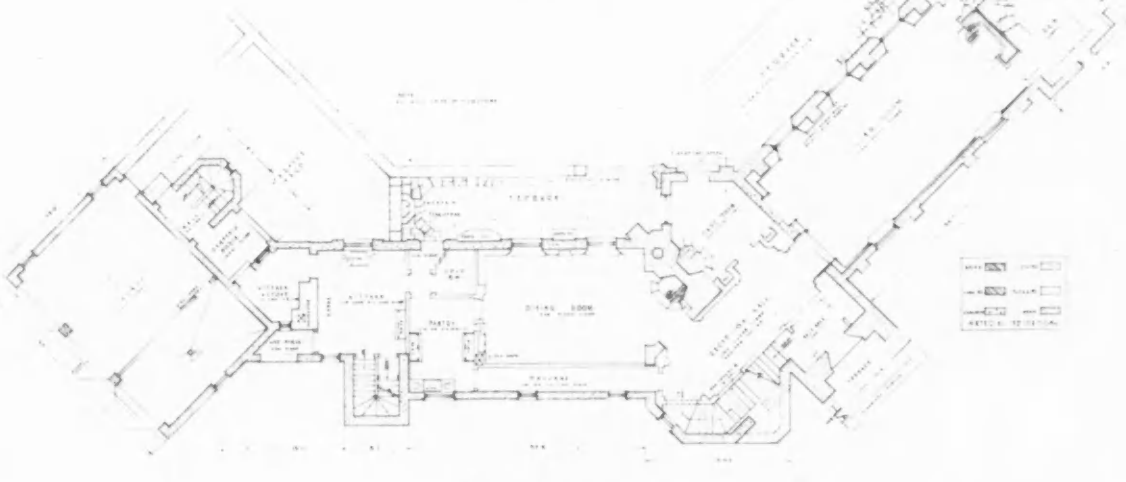
The walls have rough dressed Chestnut Hill stone with stucco over certain portions. In the service portion of the house cinder concrete block has been used with stucco. The roof is of heavy black slate.

The color of the stone ranges from tawny buffs to warm grays and browns. The color of the exterior is a pearly gray green. The interior walls are all sand float finish plaster with the lower story a warm tinted sand and the bedrooms a cooler tone. The main downstairs rooms are stained a level brownish tone. The ceilings have been decorated by Carlo Ciampaglia, mural painter. The woodwork throughout all other rooms of the house is painted in distinctive colors to match the color scheme of the furniture and hangings.

The cost of the building was roughly between sixty and seventy cents a cubic foot.



Plot Plan



Ground Floor Plan

House for Mrs. Mary H. Morice, Flourtown, Pennsylvania
HARRY STERNFELD, ARCHITECT

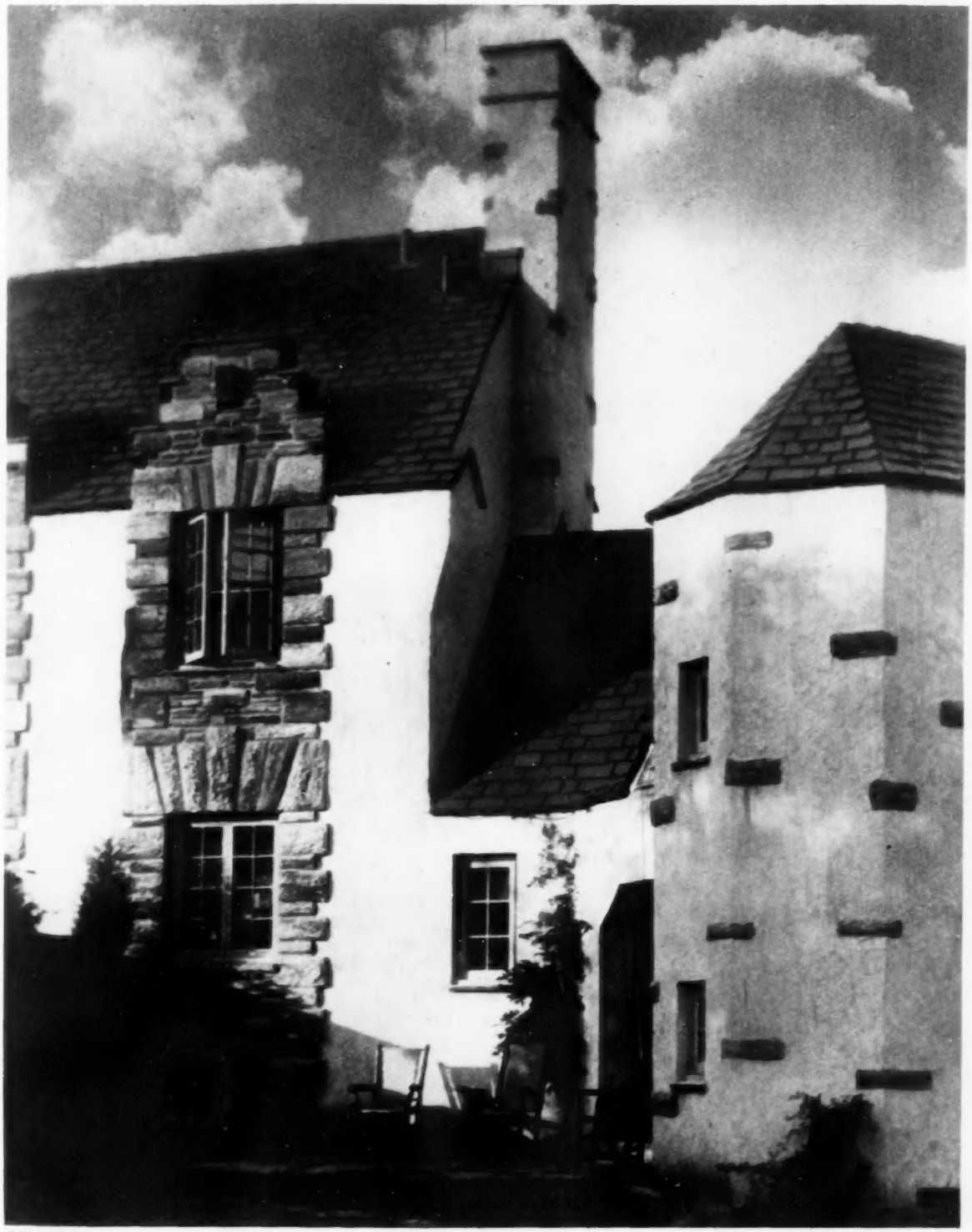


Photo. Rittase

House for Mrs. Mary H. Morice, Flourtown, Pennsylvania
HARRY STERNFELD, ARCHITECT

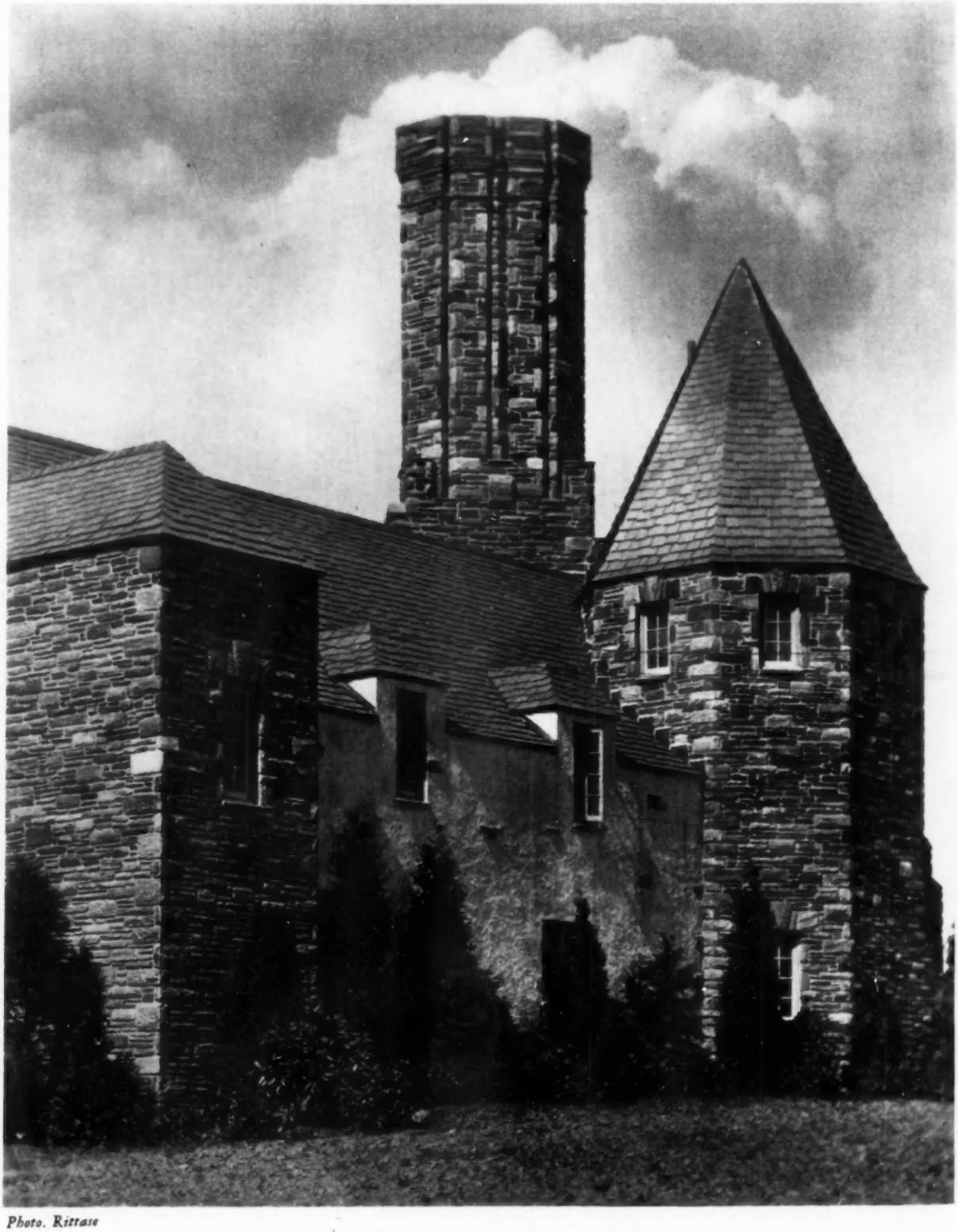


Photo. Rittase

House for Mrs. Mary H. Morice, Flourtown, Pennsylvania
HARRY STERNFELD, ARCHITECT

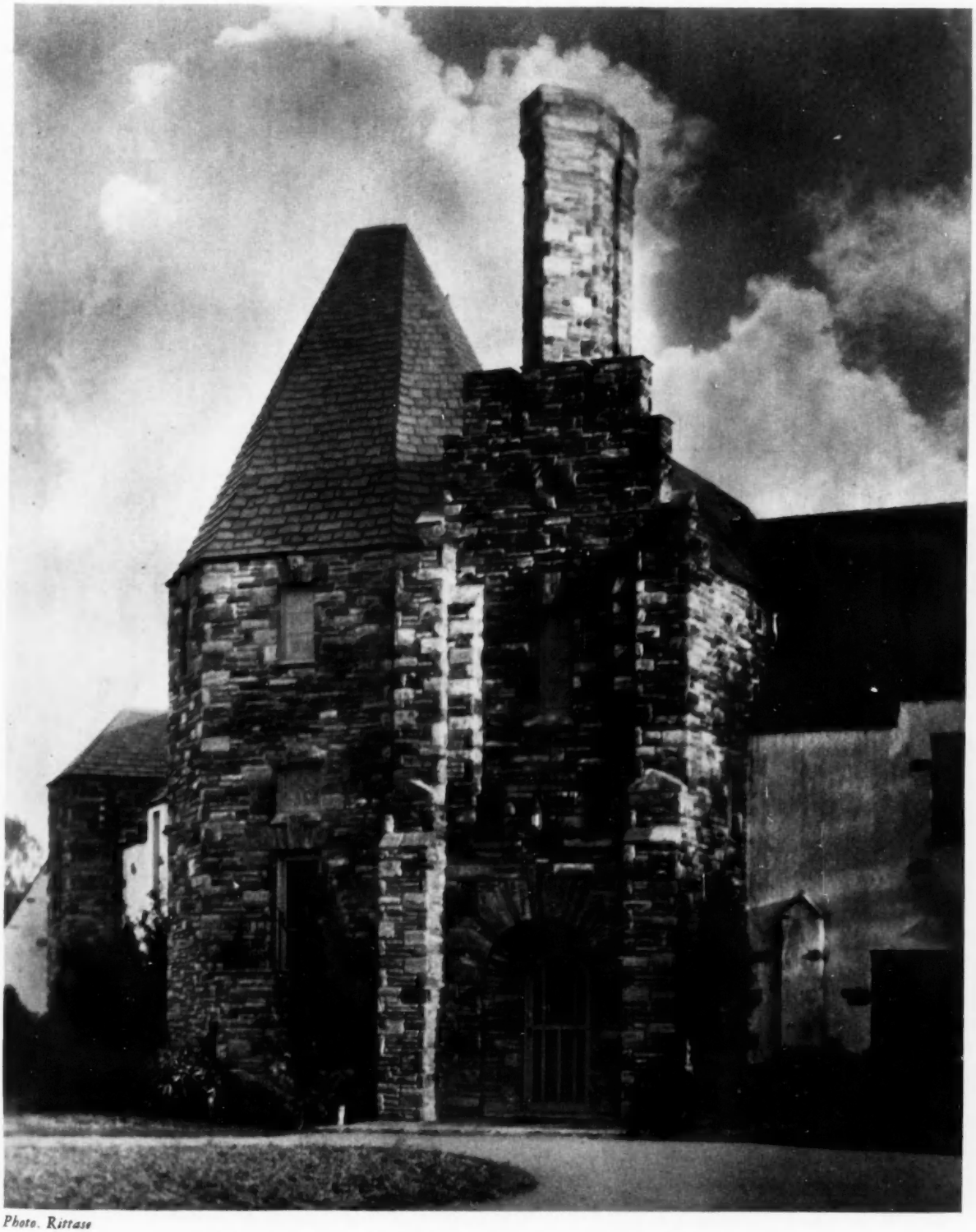


Photo. Rittase

House for Mrs. Mary H. Morice, Flourtown, Pennsylvania
HARRY STERNFELD, ARCHITECT

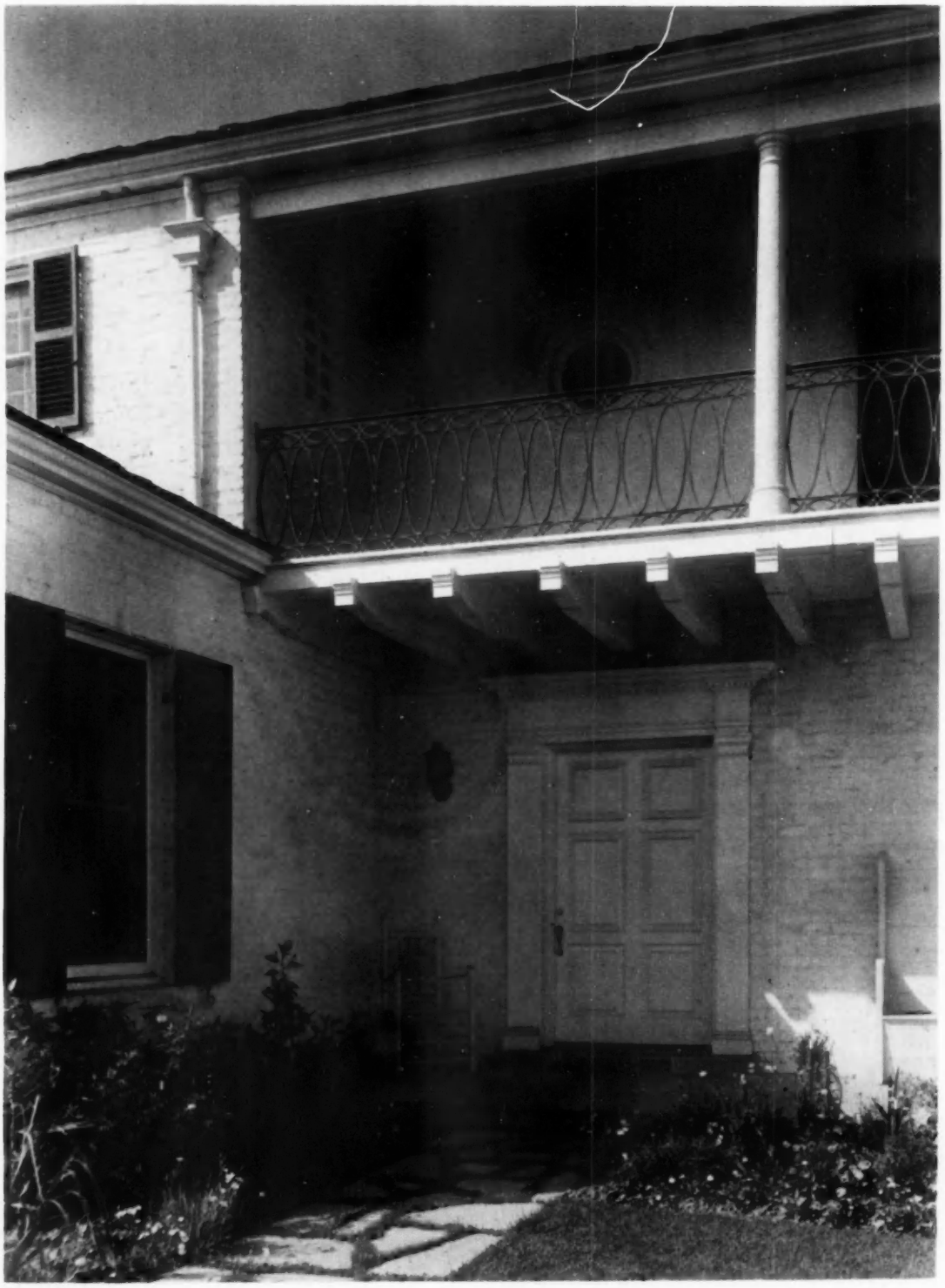


Photo. Haight

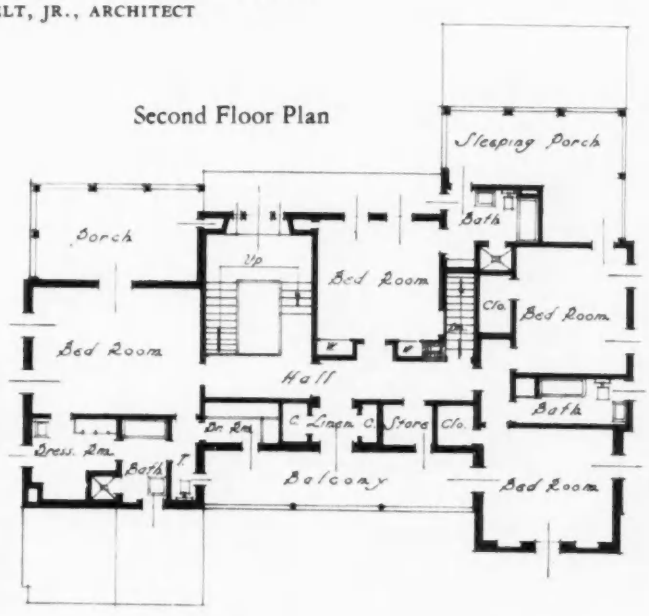
House for McClarty Harbison, San Marino, California
GARRETT VAN PELT, JR., ARCHITECT

Photo. Haight

House for McClarty Harbison, San Marino, California
GARRETT VAN PELT, JR., ARCHITECT

The house is of frame and whitewashed brick veneer with a roof of hand-split cedar shakes, giving a very rough appearance. The view of the mountains being to the rear, the living room and library with a connecting porch were placed on this side, overlooking a formal garden walled with brick. The porch floors are of desert flagstone; likewise the floor of the library, which is a warm buff color. The walls of the library are paneled in California pine, natural finish. The cost was approximately forty-seven cents a cubic foot.

Second Floor Plan



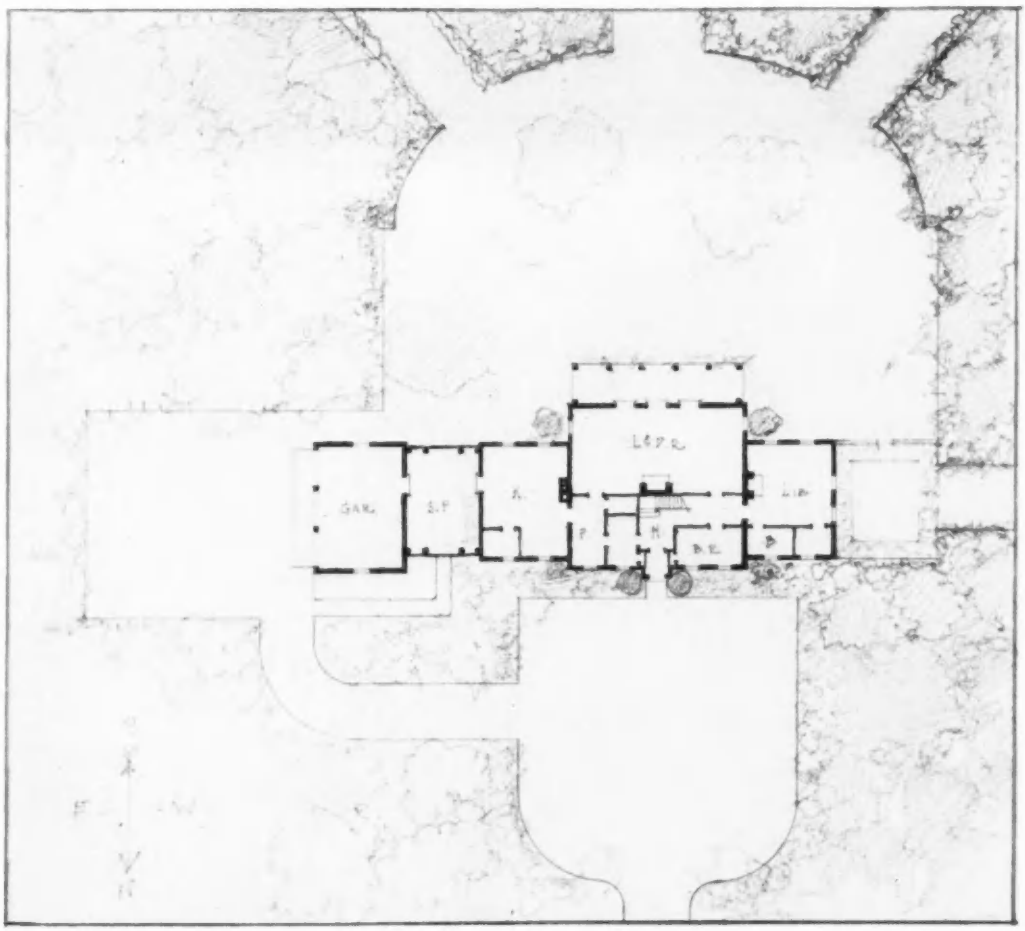
Ground Floor Plan

Photos. Hewitt

House for
Mrs. Arthur
Swann,
East Norwich,
Long Island
DELANO AND
ALDRICH,
ARCHITECTS

Photos. Hewitt

House for Mrs. Arthur Swann, East Norwich, Long Island
DELANO AND ALDRICH, ARCHITECTS



House for Mrs. Arthur Swann, East Norwich, Long Island
DELANO AND ALDRICH, ARCHITECTS

A feature of the house is the combined living and dining room. The living room was laid out in relation to the points of the compass to obtain maximum sunlight. To insure privacy, the house is set about 500 feet from the road. The cost was approximately 65 cents a cubic foot.

Photo. Hewitt

House for Mrs. Arthur Swann, East Norwich, Long Island
DELANO AND ALDRICH, ARCHITECTS

Photo, Tebbs and Knell

House for Julius Fleischmann, Cincinnati
MATTHEWS AND SHORT, ARCHITECTS

Photo, Tebbs and Knell

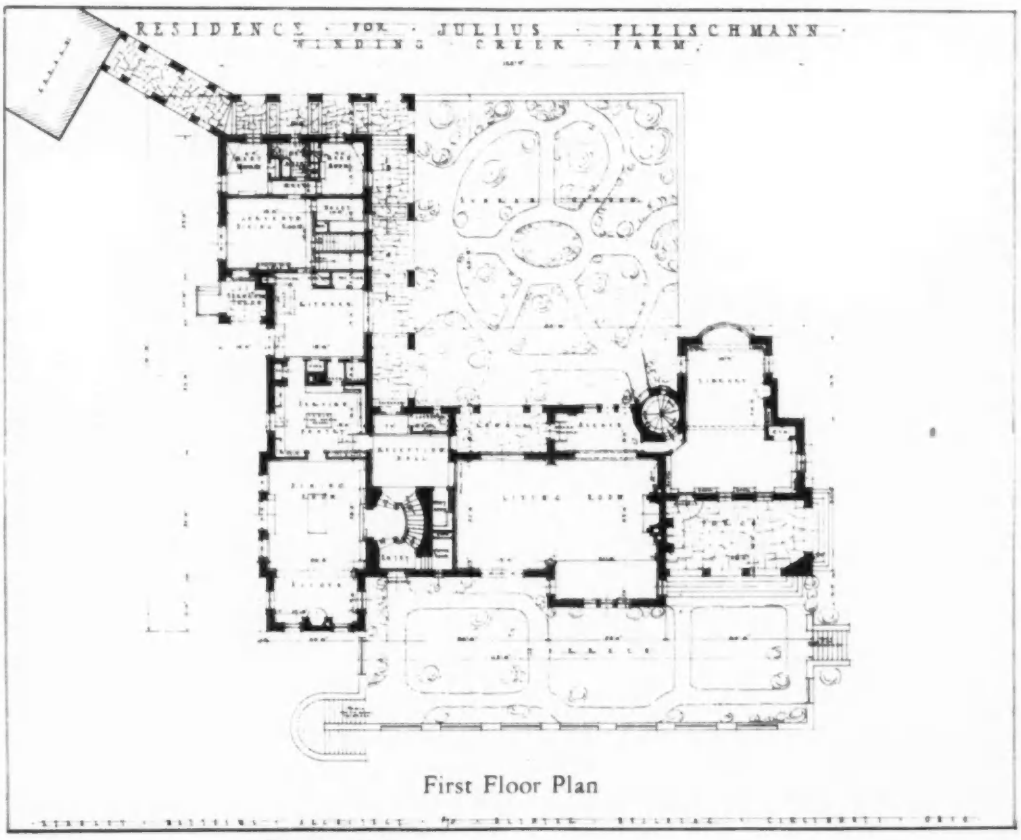
House for Julius Fleischmann, Cincinnati
MATTHEWS AND SHORT, ARCHITECTS

Photo. Tebbs and Knell

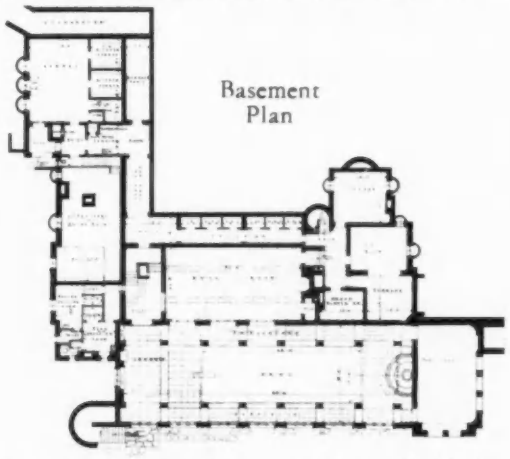
House for Julius Fleischmann, Cincinnati
MATTHEWS AND SHORT, ARCHITECTS

Photo. Tebbs and Knell

House for Julius Fleischmann, Cincinnati
MATTHEWS AND SHORT, ARCHITECTS



First Floor Plan



Basement Plan

The house is situated about 1700 feet from the main road and so placed that the east side of the house commands a view of several miles over the Little Miami River valley.

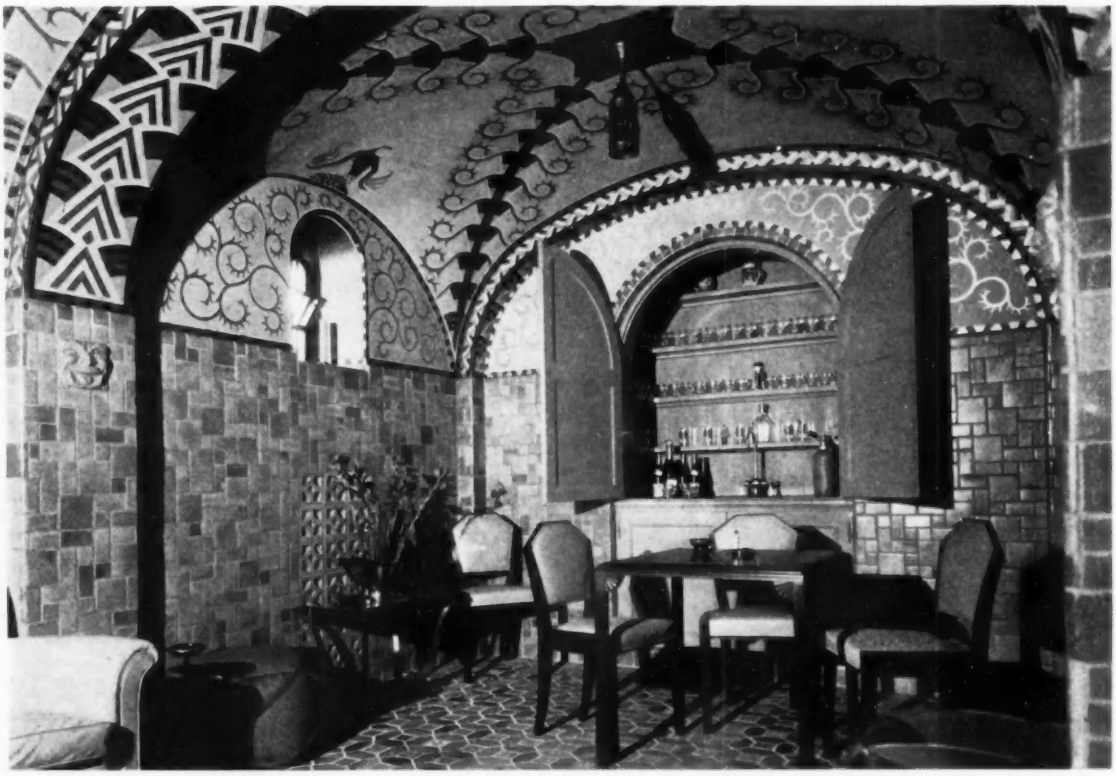
Ground conditions permit the swimming pool in the basement to be lighted by large door openings giving access to a lower terrace. The terrace forming the roof over the swimming pool is grass sodded with two feet of earth over a waterproofed concrete slab. The exterior walls are constructed of waterworn creek stone obtained from a nearby stream. The chimneys are of hand-made Belgian brick. All exposed timber work was obtained from old buildings in this section. The roof is covered with variegated slate ranging from 3/16 in. to 7/8 in. in thickness. The floors throughout are on trussed steel joists with concrete structural slab; the main entrance hall floor and treads of the main stair are of travertine.

A vacuum heating system is used throughout except in swimming pool which is heated with a blower system.

The cost was approximately $1.50 a cubic foot.

Photo. Hughes

HOUSE FOR GORDON MENDELSSOHN, BLOOMFIELD HILLS, MICHIGAN
J. ROBERT F. SWANSON, ARCHITECT



Photos. Hughes

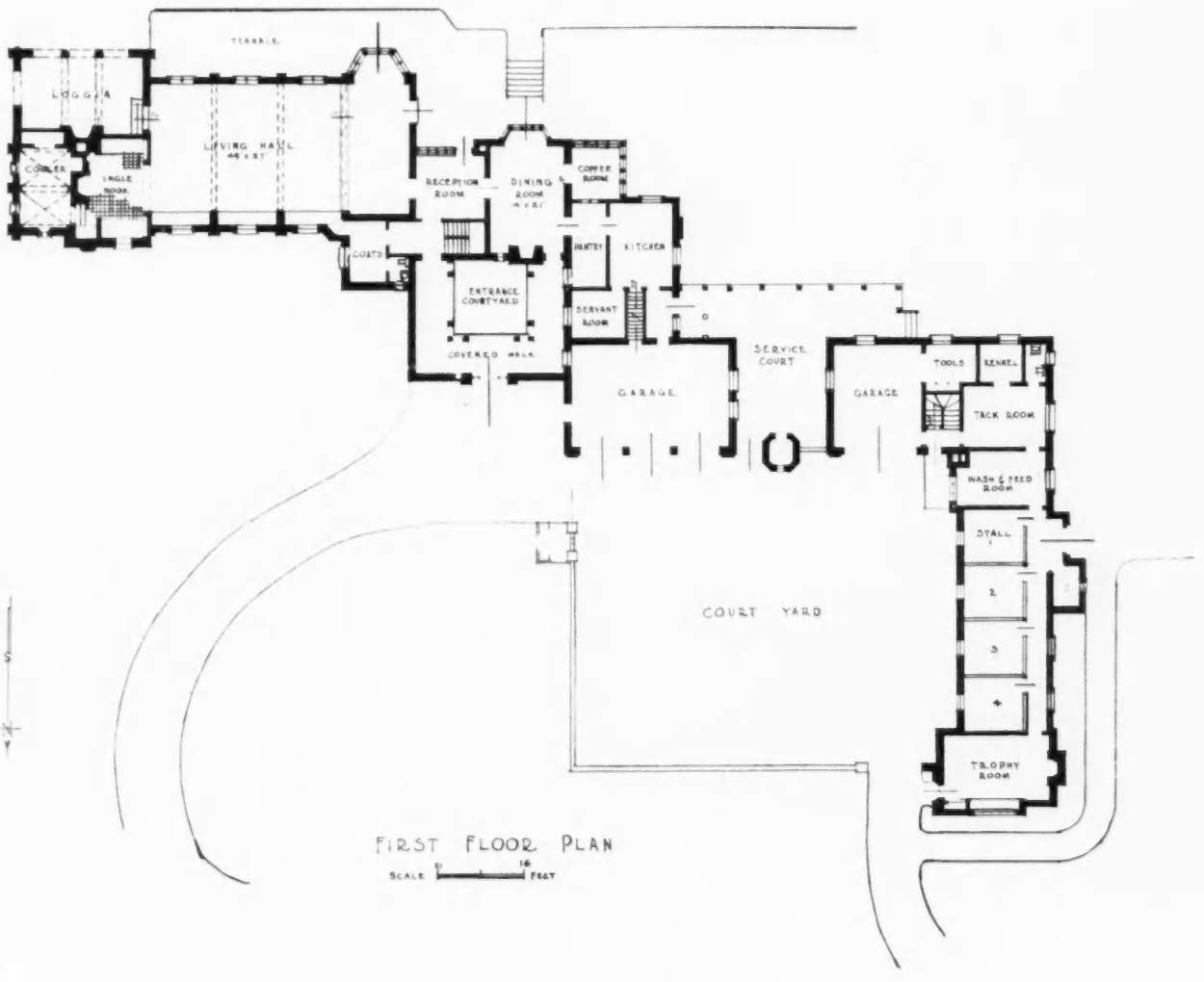
HOUSE FOR GORDON MENDELSSOHN, BLOOMFIELD HILLS, MICHIGAN

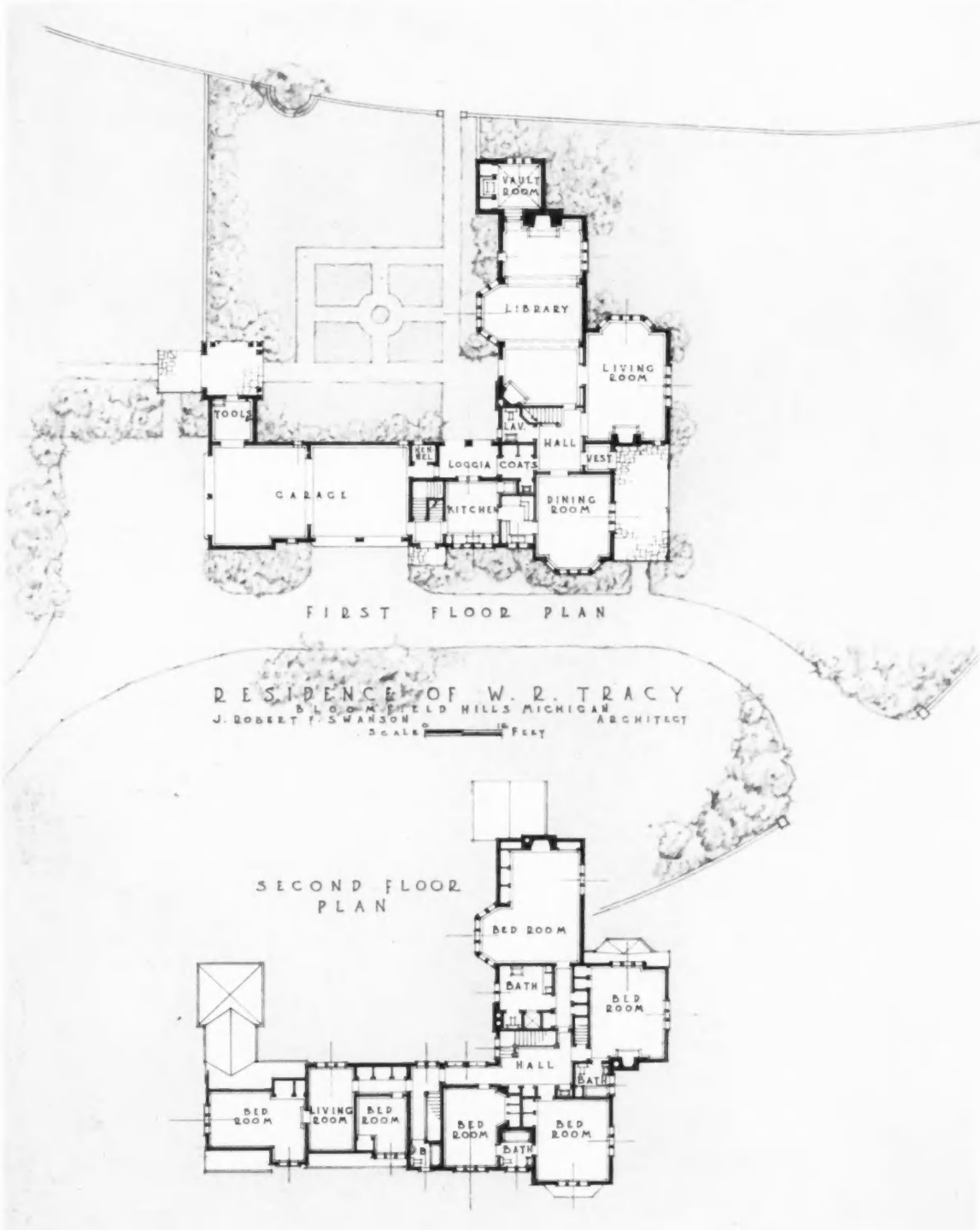
J. ROBERT F. SWANSON, ARCHITECT

Photo. Hughes

HOUSE GROUP FOR GORDON MENDELSSOHN, BLOOMFIELD HILLS, MICHIGAN

J. ROBERT F. SWANSON, ARCHITECT





HOUSE FOR WILLIAM R. TRACY, BLOOMFIELD HILLS, MICHIGAN
J. ROBERT F. SWANSON, ARCHITECT

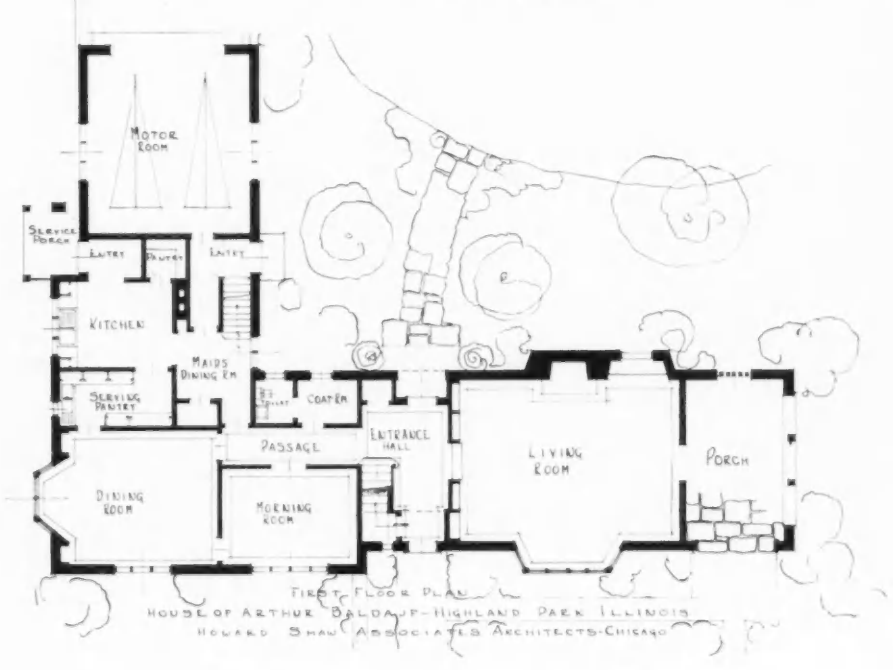
Photo. Hughes

HOUSE FOR WILLIAM R. TRACY, BLOOMFIELD HILLS, MICHIGAN
J. ROBERT F. SWANSON, ARCHITECT

VIEW FROM LAKE

HOUSE FOR ARTHUR BALDAUF AT HIGHLAND PARK, ILLINOIS

HOWARD SHAW ASSOCIATES, ARCHITECTS



WEST ENTRANCE
HOUSE FOR ARTHUR BALDAUF AT HIGHLAND PARK, ILLINOIS
HOWARD SHAW ASSOCIATES, ARCHITECTS

LIVING ROOM

HOUSE FOR ARTHUR BALDAUF AT HIGHLAND PARK, ILLINOIS

HOWARD SHAW ASSOCIATES, ARCHITECTS

The property is a wedge shaped piece of heavily wooded property with a bluff along the east side, perhaps fifty feet high, and a ravine along the south side. Beyond the bluff to the east and parallel with the property is lake Michigan. The property slopes from the west toward the top of the bluff. The house was designed for a maximum north and south length; and the south end, containing the dining room, was placed near the edge of the bluff and the slope of the ravine so that the view of the ravine and the lake would be equally good. The entire east side of the house of course gets an excellent view of the lake, through the trees.

The east side of the house is set perhaps fifty feet back from the edge of the bluff, to improve the view of the lake.

The common brick was given one heavy even coat of Cabot's old Virginia white for common brick. The shingles on the roof are stained wood, with four or five different shades or tones of brown.

The windows are all wood casement sash and French doors that swing in.

GUEST HOUSE

PHOTOGRAPH OF MODEL

ESTATE OF C. H. WHITE, BENNINGTON, VERMONT

BOGNER AND BILLINGS, ARCHITECTS

COUNTRY RESIDENCE FOR CARL H. WHITE, BENNINGTON, VERMONT

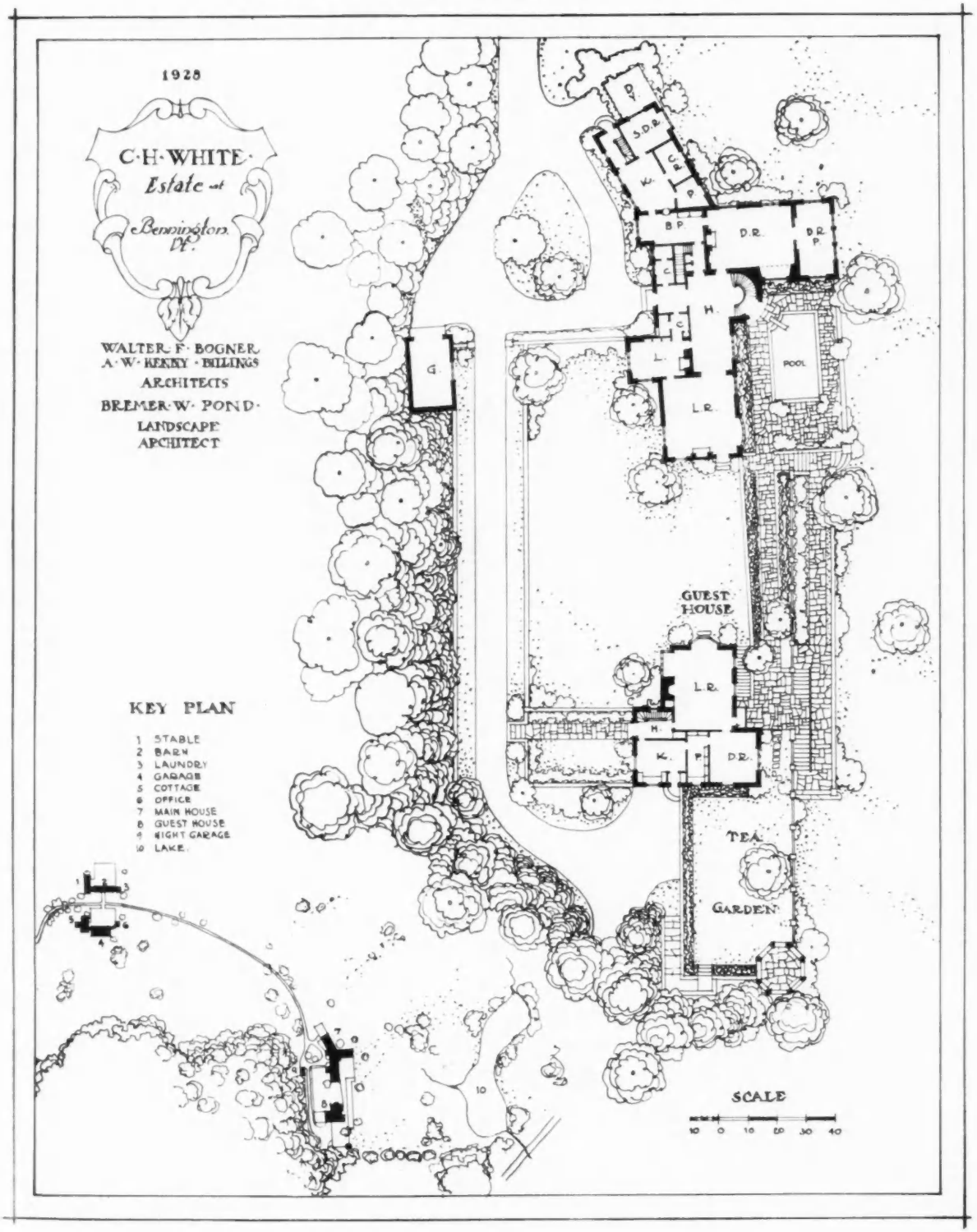
BOGNER AND BILLINGS, ARCHITECTS

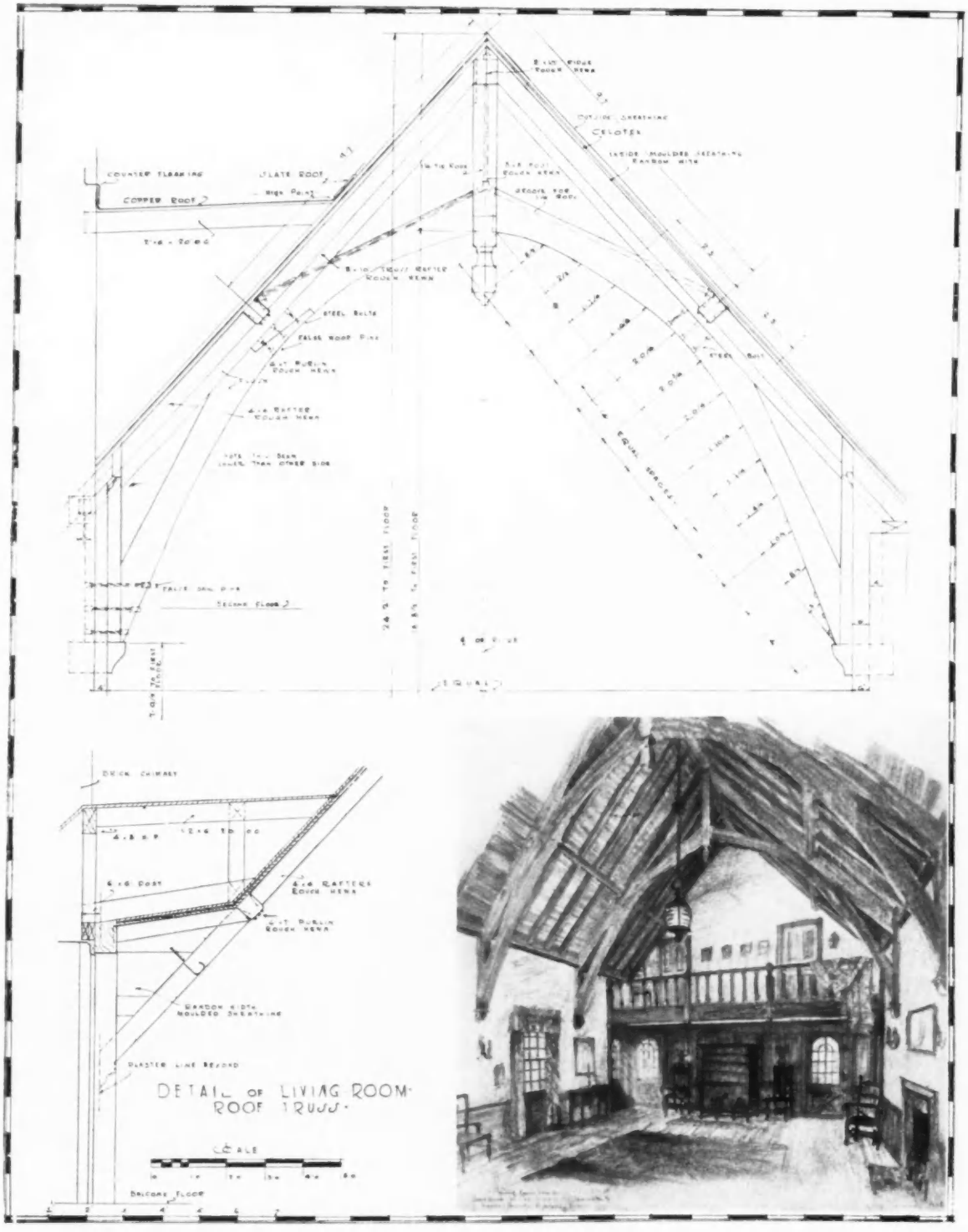
On a 67-acre estate of hilly New England farm land, the site for the house was chosen for its protected location and its view. All principal rooms had to be designed for two exposures; one for this view which is to the north, the other to the south for the sun.

The guest house contains an unusual roof-truss in the living room (see details on page 440) and an interesting stairway (see plan opposite). Both are built of old lumber, eastern pine.

In the stairway the effect of a steep stringer is secured by using winders for the entire length of the straight stairway.

All wood finish on the exterior is painted pine. The walls are creamish white, with slightly darker window frames and wood trim, and shutters in a dark green blue. The roof is of rustic or antique slates of varying thickness in gray, gold and greenish shades.


1928
C·H·WHITE
Estate at
Bennington
Vt.
WALTER·F·BOGNER
A·W·KENNY·BILLINGS
ARCHITECTS
BREMER·W·POND·
LANDSCAPE
ARCHITECT
KEY PLAN
1 STABLE
2 BARN
3 LAUNDRY
4 GARAGE
5 COTTAGE
6 OFFICE
7 MAIN HOUSE
8 GUEST HOUSE
9 EIGHT GARAGE
10 LAKE
GUEST HOUSE
L.R.
K.
D.R.
TEA GARDEN
POOL
SCALE
10 0 10 20 30 40



DETAIL OF LIVING ROOM ROOF TRUSS.

GUEST HOUSE
ESTATE OF C. H. WHITE, BENNINGTON, VERMONT
BOGNER AND BILLINGS, ARCHITECTS

HOUSE FOR JAMES H. CLEAVES, WINCHESTER, MASSACHUSETTS
FROST AND RAYMOND, ARCHITECTS

Photo. Weber

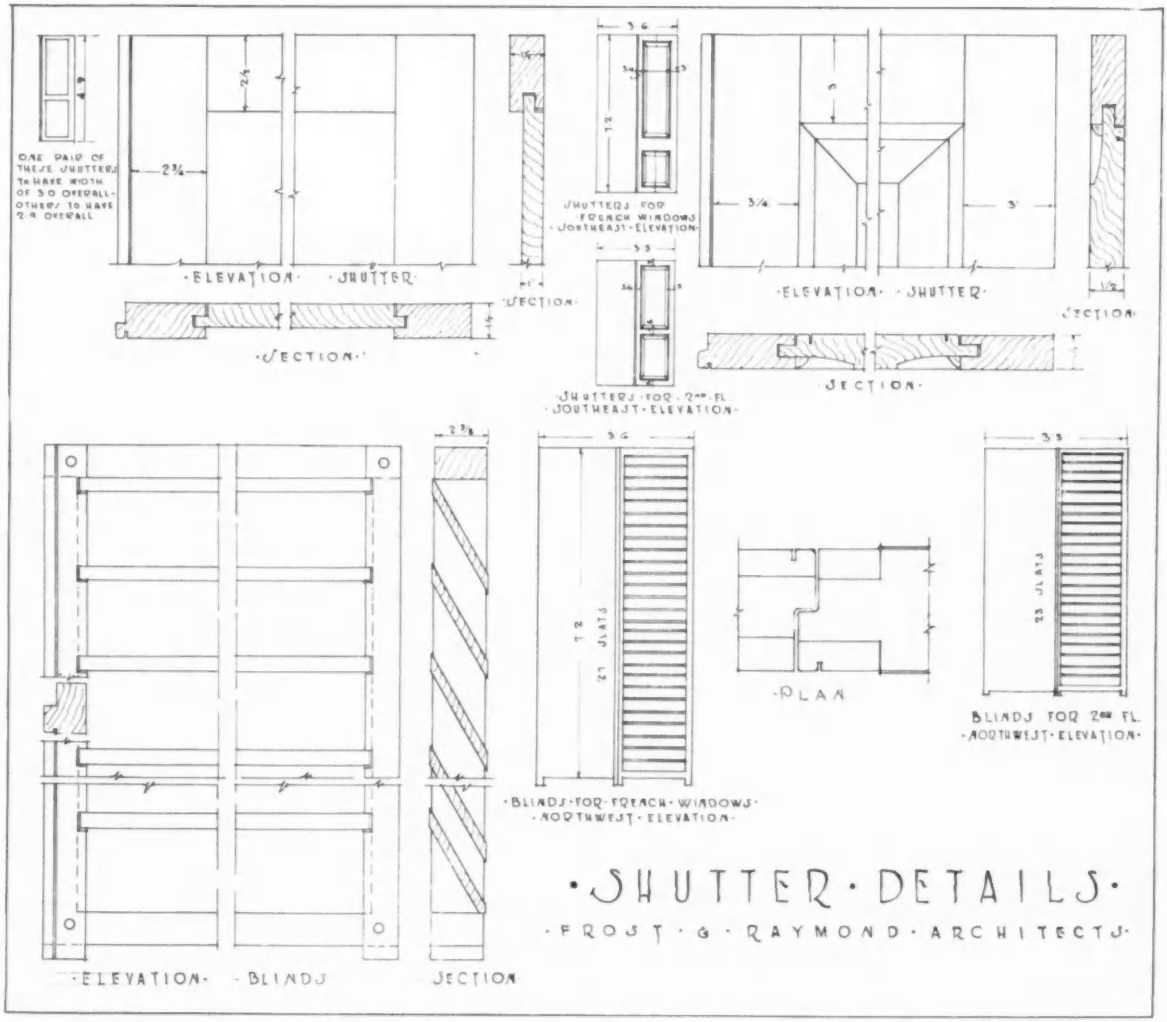
HOUSE FOR JAMES H. CLEAVES, WINCHESTER, MASSACHUSETTS
FROST AND RAYMOND, ARCHITECTS

The lot faces north so that the dining room and study were planned to open out on a paved terrace on the south and back side of the house. This terrace is arranged so that an awning with screens is put up in the summer and the breakfast room table is moved out onto this terrace. The terrace and dining room are equally accessible to the kitchen. The awning frame is removed in winter allowing the sun to come into the dining room. Since the owner of the house does her own house work including the laundry work, the laundry was put on the first floor next to the kitchen. It is arranged so that this room at some future time could be turned into a maid's room which would have the use of the lavatory, and the laundry would be dropped downstairs immediately below.

The style of house was chosen as particularly suitable to a four-square suburban lot of restricted frontage. The dooryard garden was added to frame the house and give it its own setting within a limited area, the effort being to make the development of this owner's property self-contained though harmonizing with its neighbors.

The roof is of cedar shingles, the walls of pine matched boarding in random widths laid up in white lead. Windows are of wood.

The color scheme of the exterior is light gray for the body of the house, white for trim and shutters, with a Mitis green (dark) front door. The cost per cubic foot was 53 cents including architect's fee and everything but the planting.



HOUSE FOR JAMES H. CLEAVES, WINCHESTER, MASSACHUSETTS
FROST AND RAYMOND, ARCHITECTS

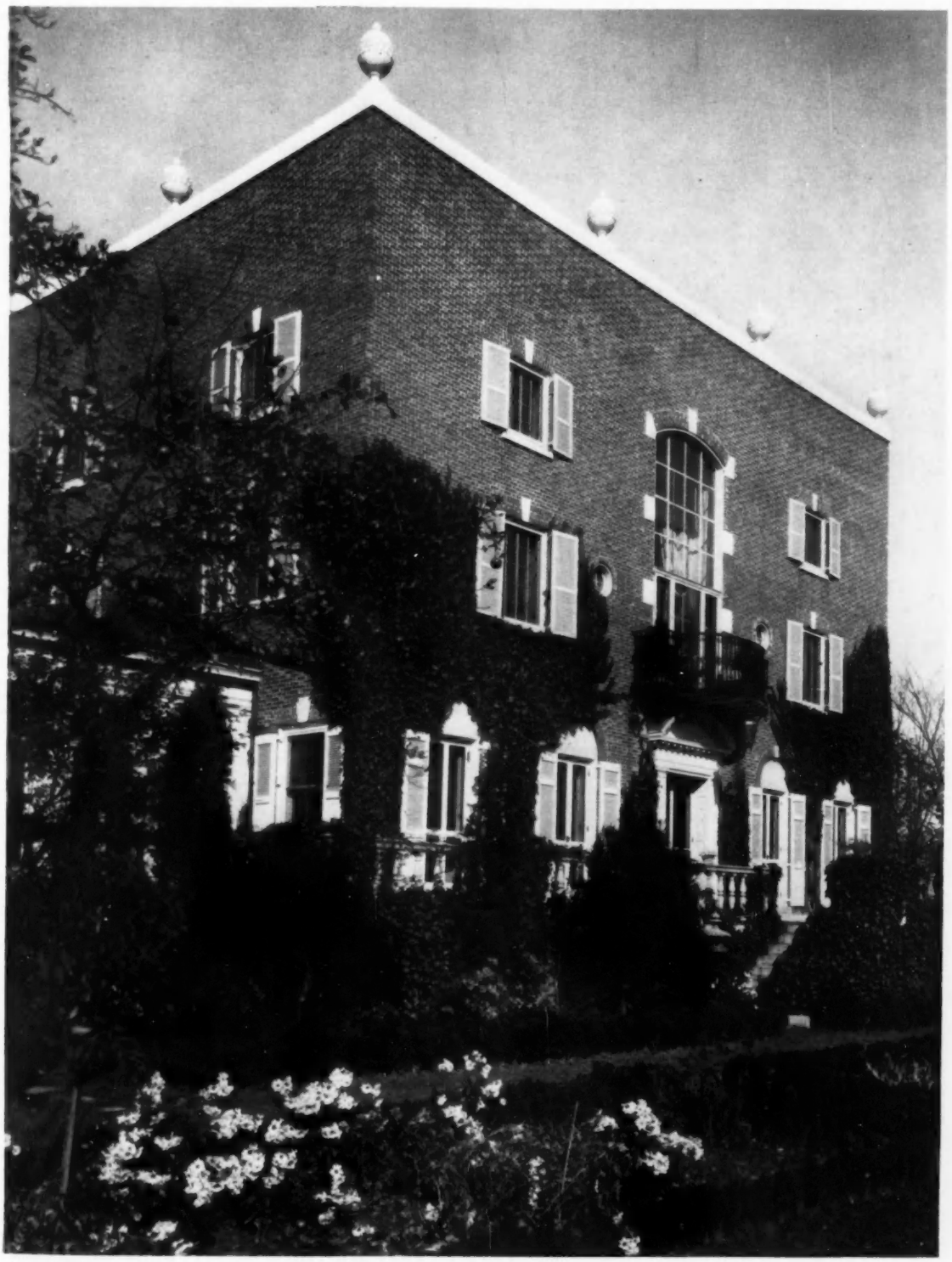


Photo. Wallace

George Tyler House, Elkins Park, Pennsylvania
GEORGE HOWE, ARCHITECT

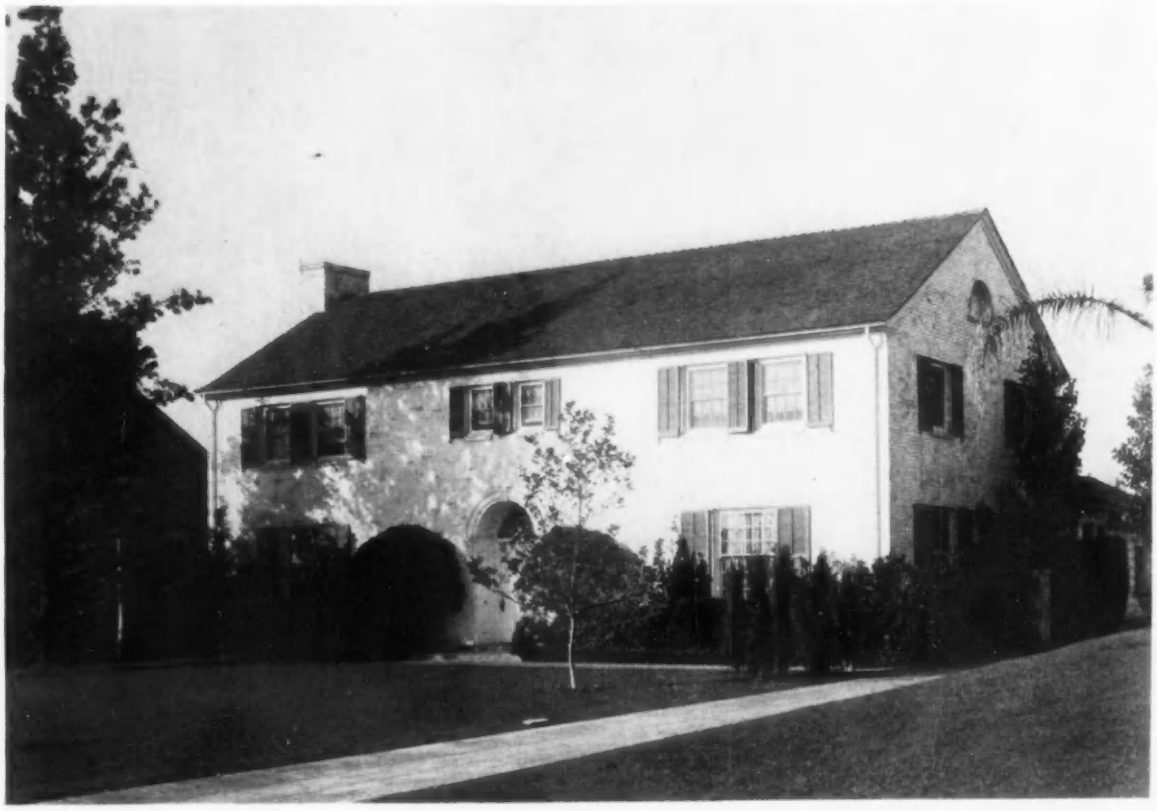
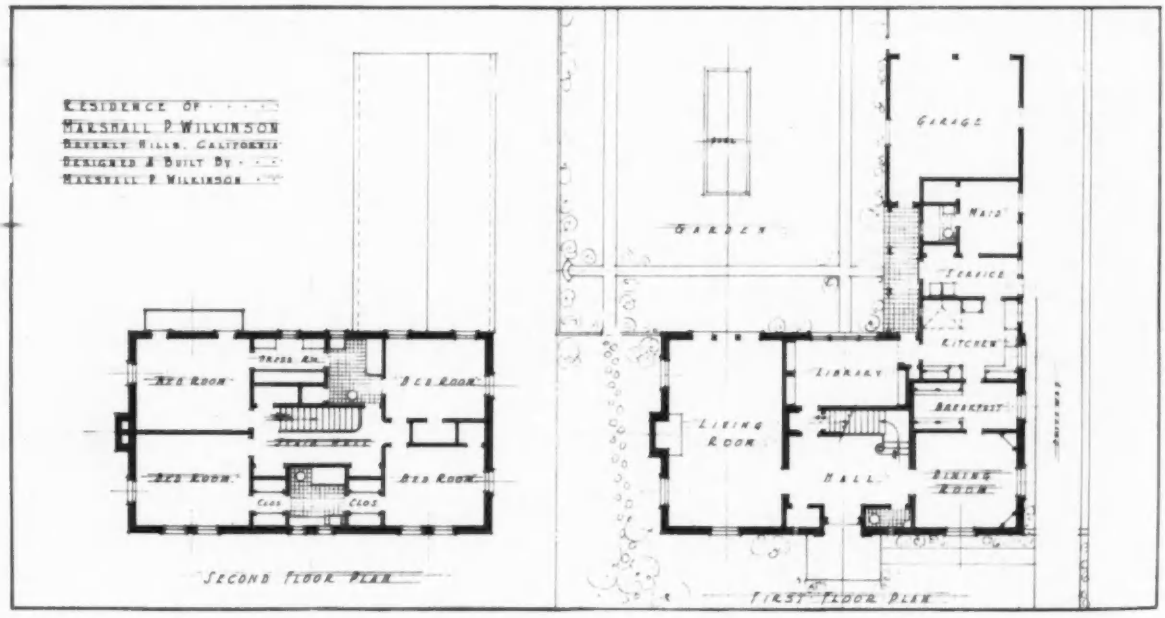


Photo. Mott



Architect's House, Beverly Hills, California
MARSHALL P. WILKINSON, ARCHITECT

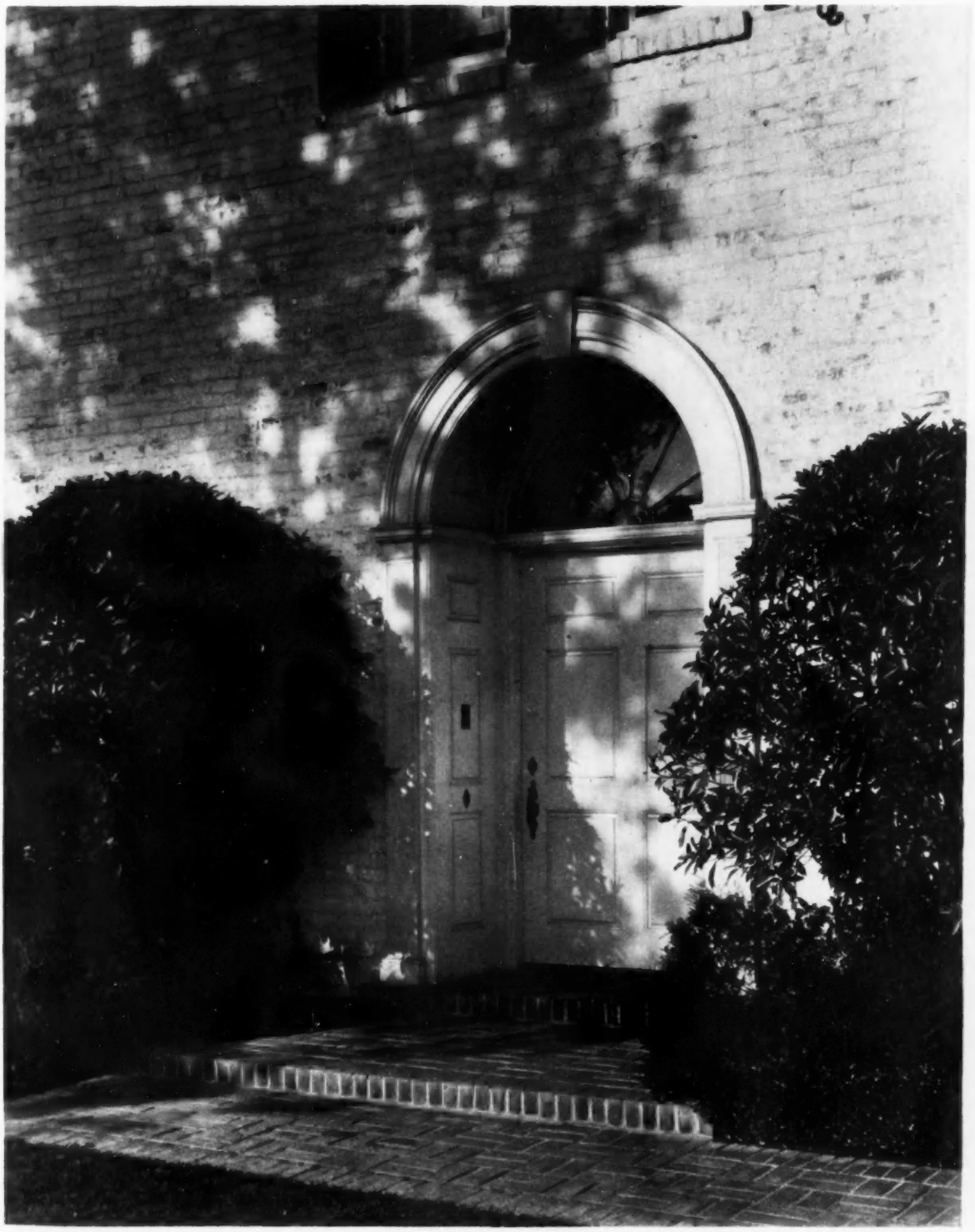


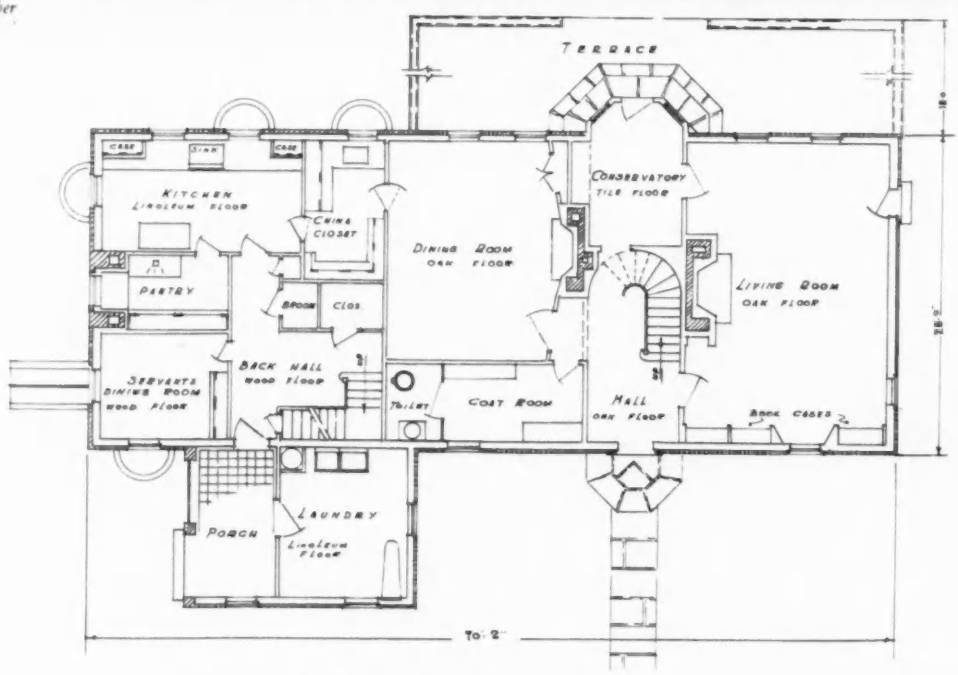
Photo. Mott

Architect's House, Beverly Hills, California
MARSHALL P. WILKINSON, ARCHITECT

Photo, Weber

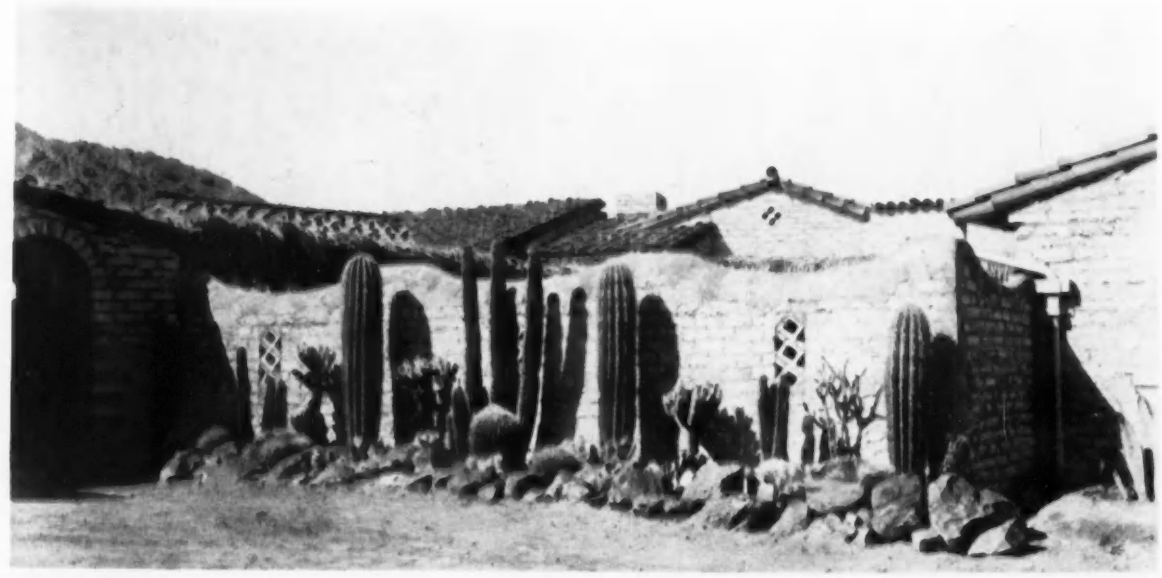
George T. Rice House at Westwood, Massachusetts
PERRY, SHAW AND HEPBURN, ARCHITECTS

Photo. Weber



George T. Rice House at Westwood, Massachusetts

PERRY, SHAW AND HEPBURN, ARCHITECTS



Photos, Mott

Desert House of Louis R. Davidson, Palm Springs, California
ALFRED HEINEMAN, ARCHITECT

Photos. Mott

Desert House of Louis R. Davidson, Palm Springs, California
ALFRED HEINEMAN, ARCHITECT

Photo. Tebbs and Knell

House for N. Abrahms, Dallas, Texas
H. B. THOMSON, ARCHITECT

In 1914 a small rambling French house was built on this site. A year later the house burned. The concrete foundations, terraces and walls had to be worked into the new scheme. All principal rooms, the bedrooms in particular, have windows and doors arranged so that the south breeze is enjoyed. The view from the living room, solarium and library is over a broad lawn toward a large lake to the east and south. The north front overlooks a flower garden.

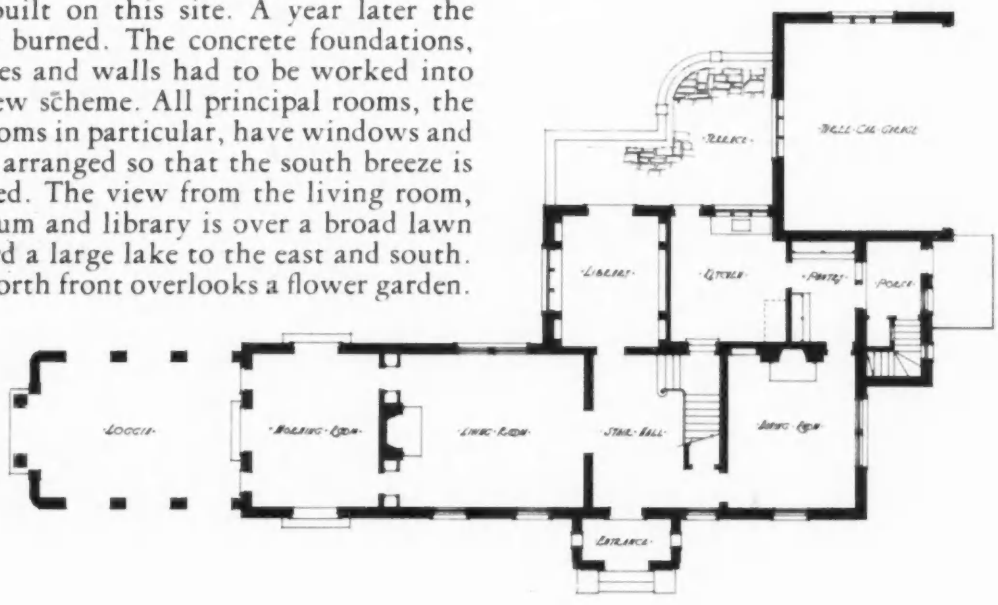


Photo. Tebbs and Knell

Farm Group for N. Abrahms, Dallas, Texas
H. B. THOMSON, ARCHITECT

All exterior walls are of hollow tile, with reinforced concrete lintels. Stucco with stone trim was used outside. The roof is of mottled green and purple slate, graduated with heavy wide courses near the eaves and thinner, smaller courses near the ridge. With the exception of the attic the whole interior of the house is plastered on heavy metal lath or directly on the hollow tile. All plaster is smooth acme finish and painted in color. The house cost $35,000 or 42½ cents a cubic foot.

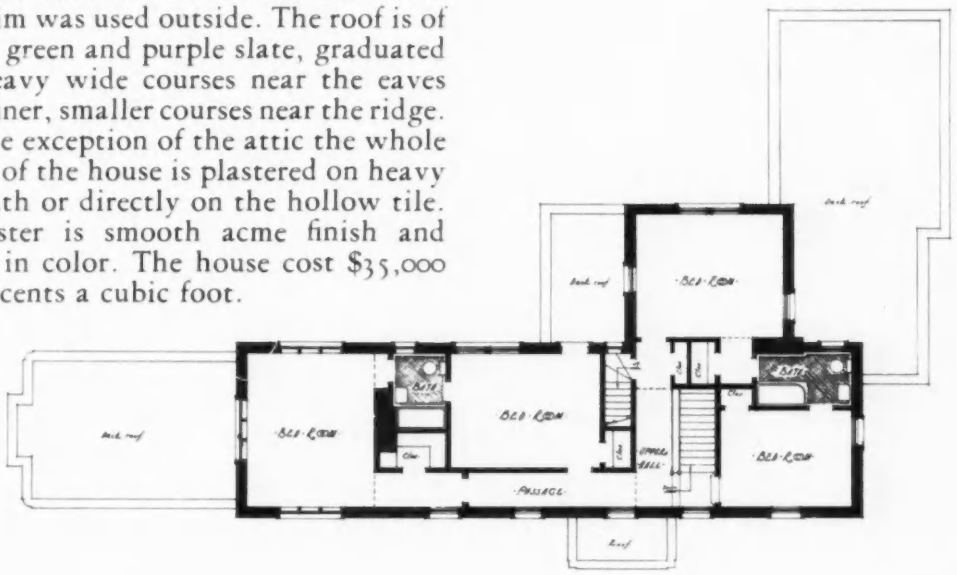


Photo. Tebbs and Knell

Farm Group for N. Abrahms, Dallas, Texas
H. B. THOMSON, ARCHITECT

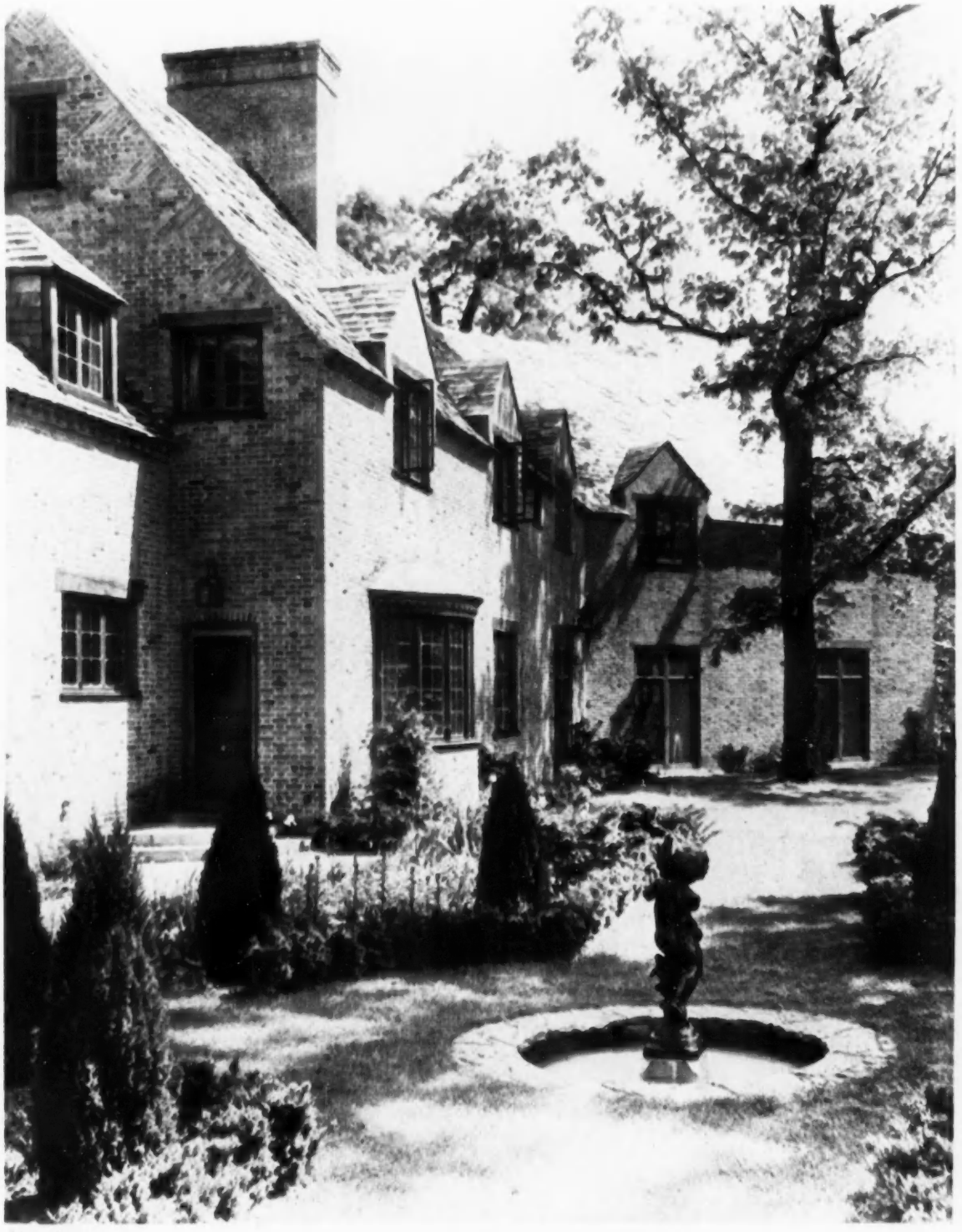


Photo. Gottscho

House for E. T. Gardner, Dayton, Ohio
PEABODY, WILSON AND BROWN, ARCHITECTS

Photo. Gottscho

Detail of Chimney and Gable
House for E. T. Gardner, Dayton, Ohio
PEABODY, WILSON AND BROWN

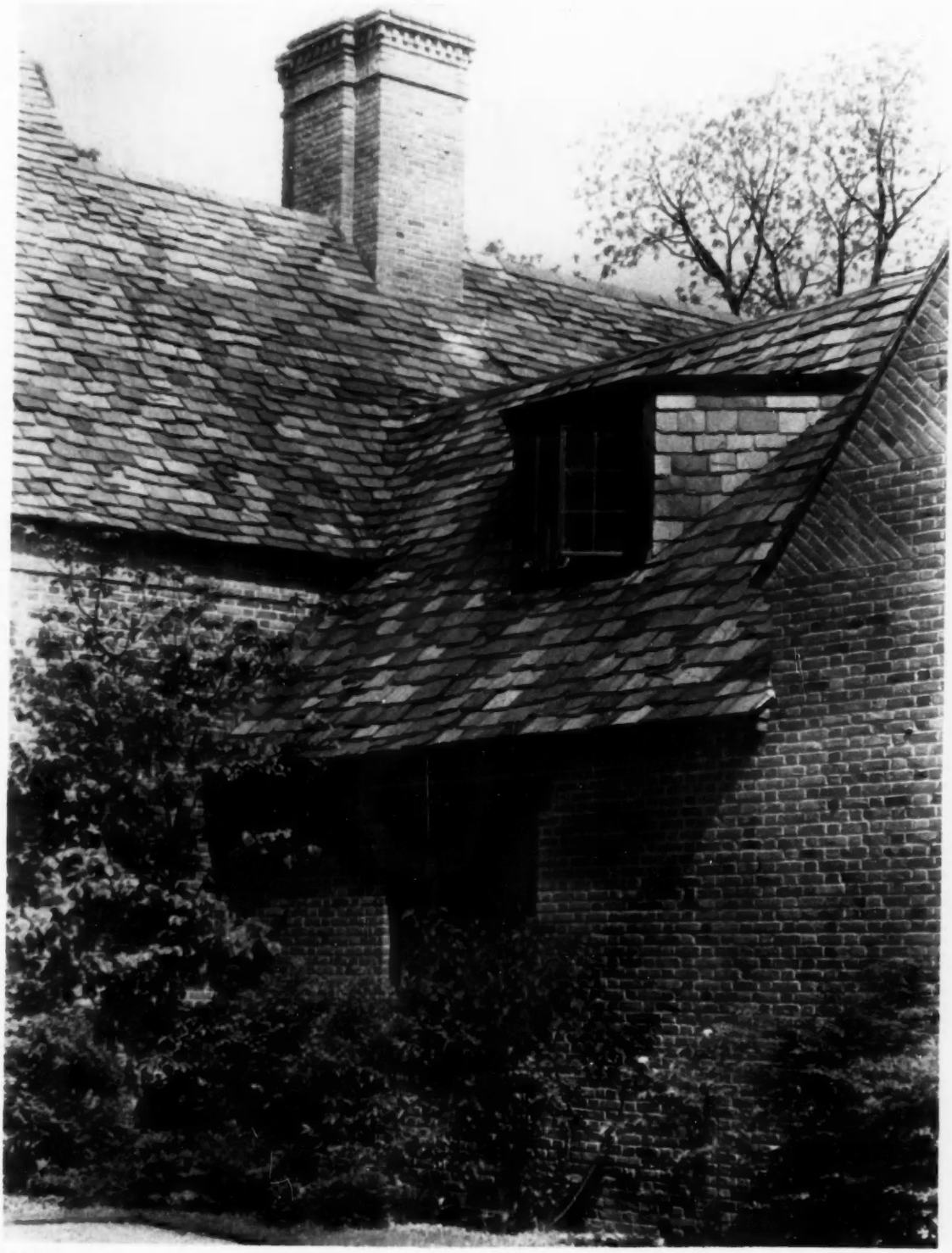
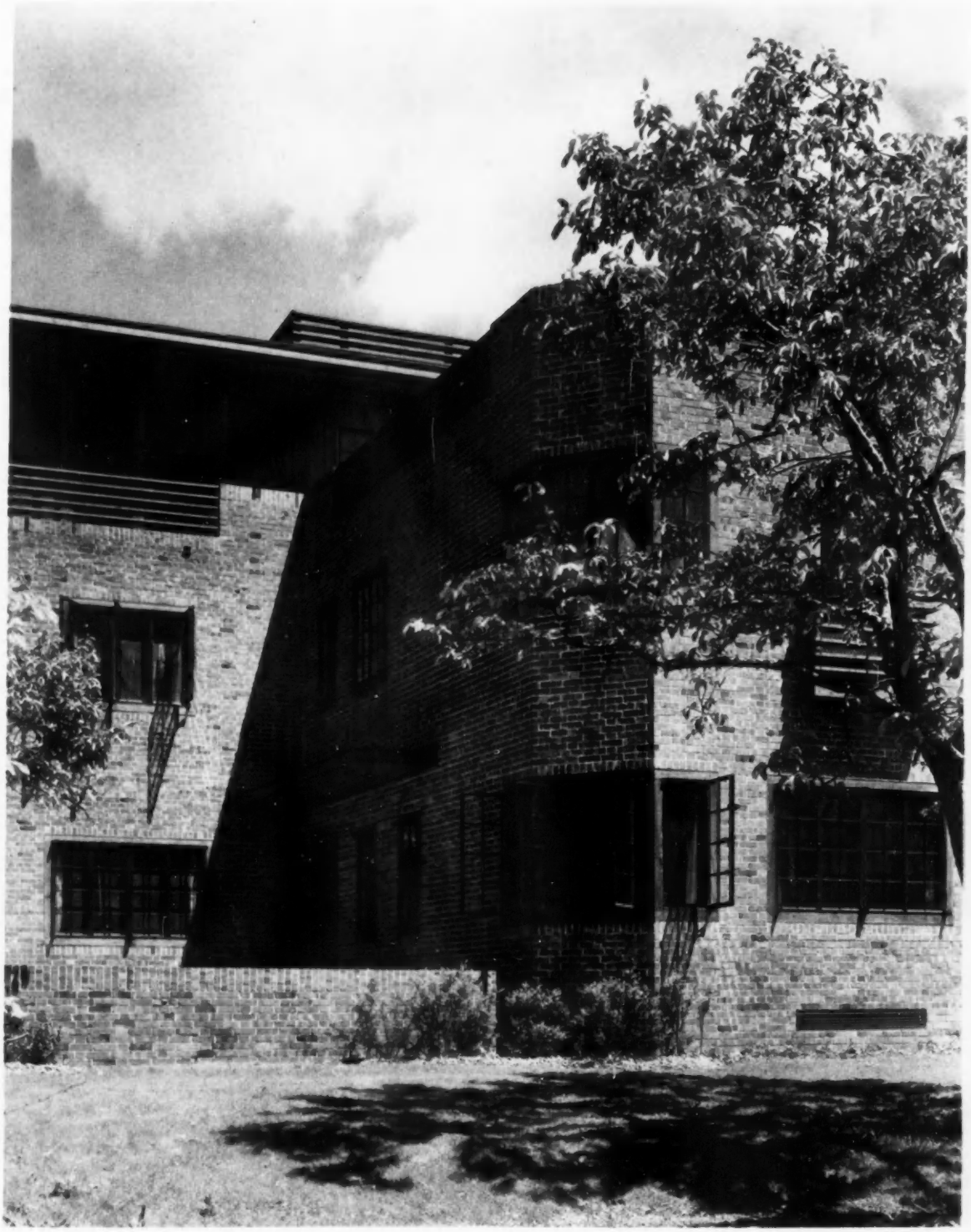


Photo. Gottscho

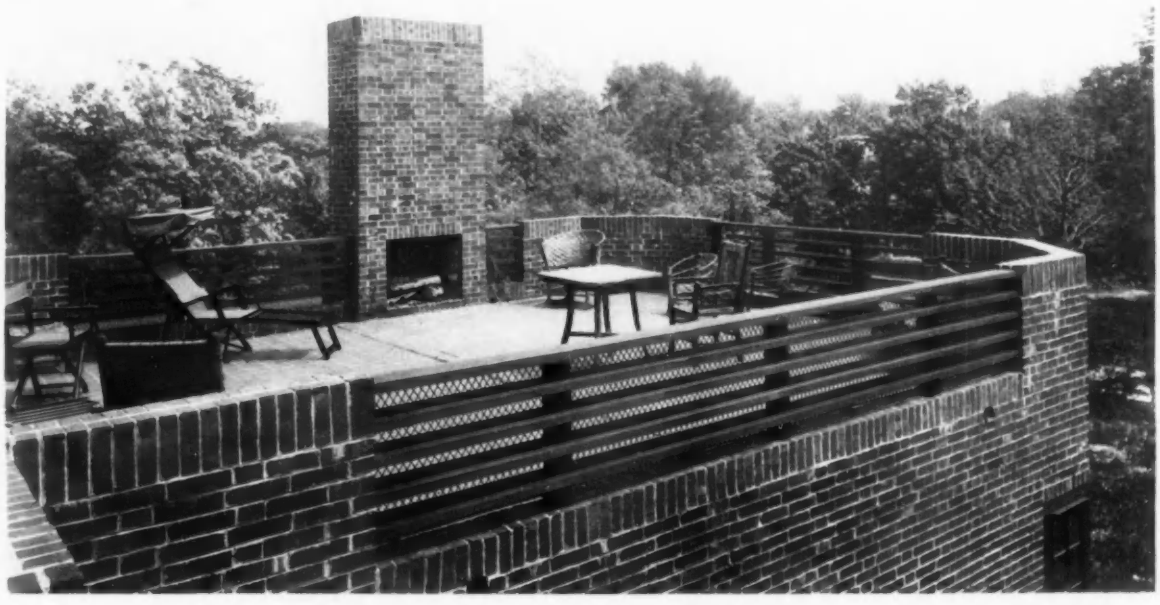
Detail of Service Wing Corner
House for E. T. Gardner, Dayton, Ohio
PEABODY, WILSON AND BROWN, ARCHITECTS

Photo. Gottscho

Stair Hall from Basement
House for E. T. Gardner, Dayton, Ohio
PEABODY, WILSON AND BROWN, ARCHITECTS



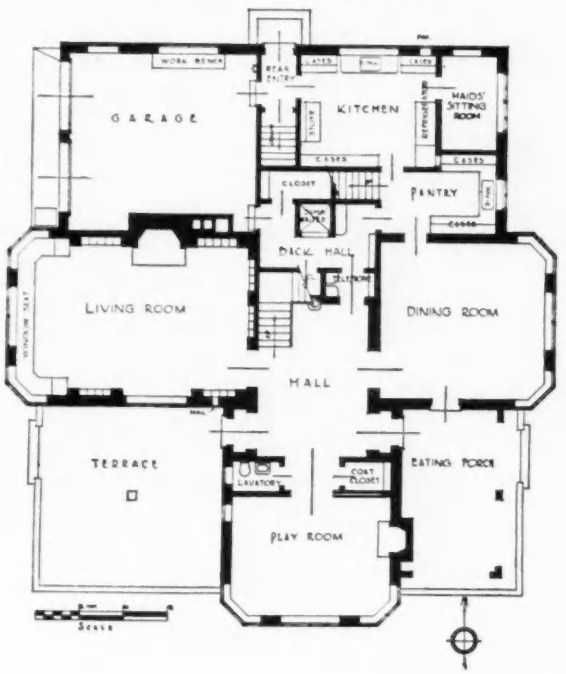
View from Southwest
House for Mr. and Mrs. Walter T. Fisher, Winnetka, Illinois
HOWARD T. FISHER, DESIGNER



Detail of Roof Fireplace

Sun Terrace on Roof
House for Mr. and Mrs. Walter T. Fisher, Winnetka, Illinois
HOWARD T. FISHER, DESIGNER

HOUSE FOR MR. AND MRS. WALTER T. FISHER, WINNETKA, ILLINOIS
HOWARD T. FISHER, DESIGNER



MAGAZINE RACK

HOUSE FOR MR. AND MRS. WALTER T. FISHER, WINNETKA, ILLINOIS

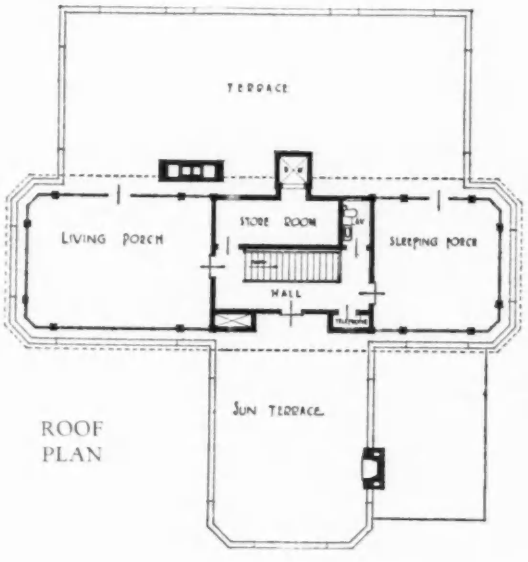
HOWARD T. FISHER, DESIGNER

CELLAR PLAN

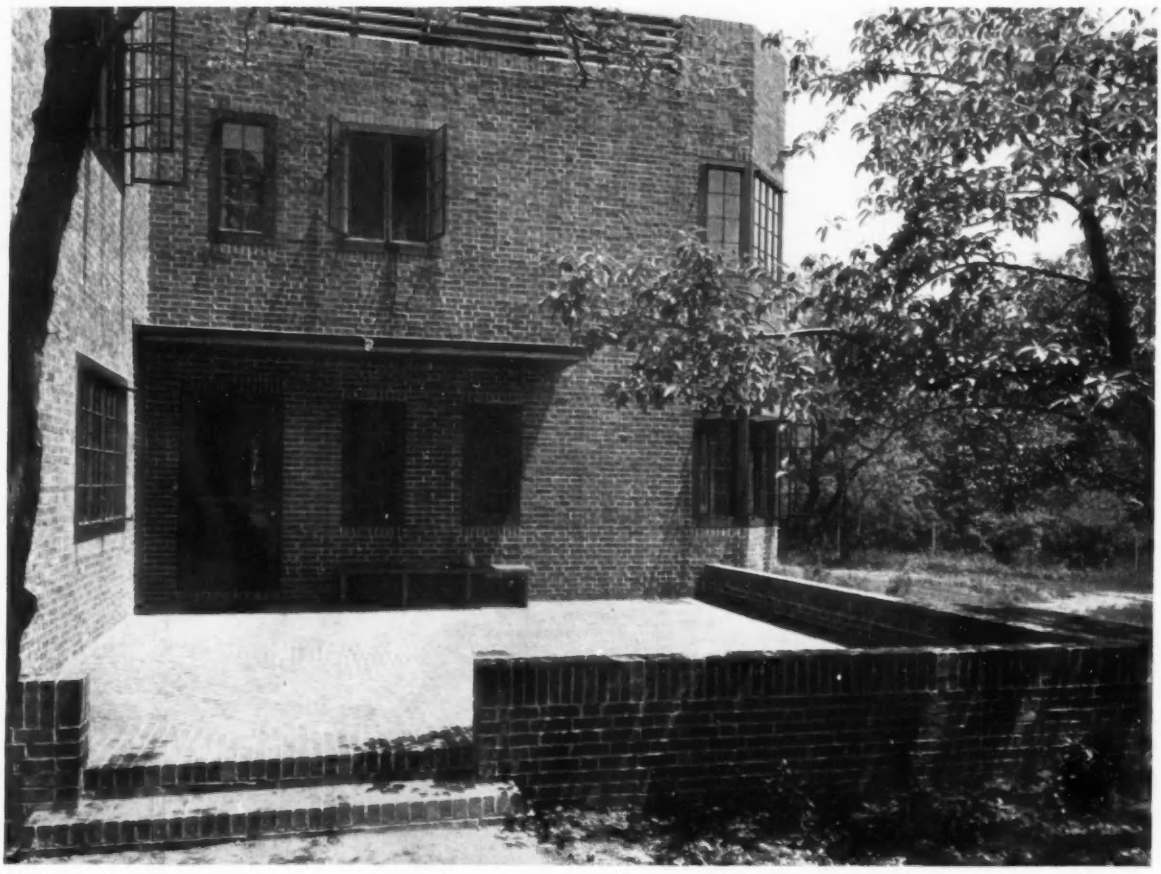
LIVING ROOM

HOUSE FOR MR. AND MRS. WALTER T. FISHER, WINNETKA, ILLINOIS

HOWARD T. FISHER, DESIGNER



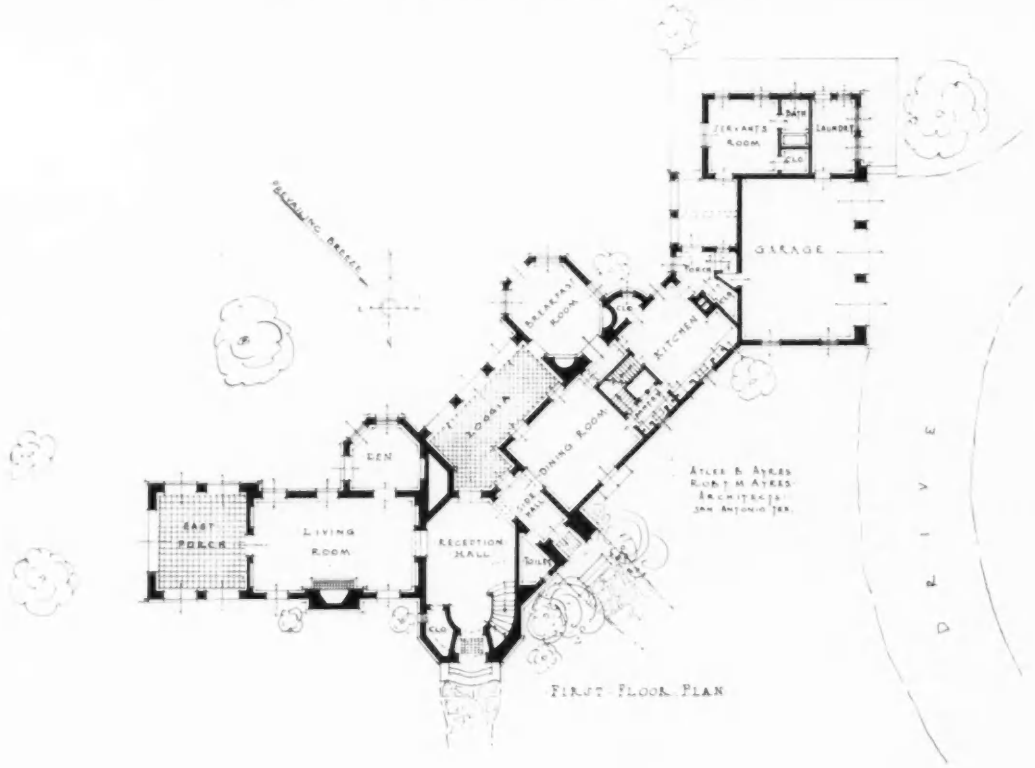
ROOF PLAN



HOUSE FOR MR. AND MRS. WALTER T. FISHER, WINNETKA, ILLINOIS
HOWARD T. FISHER, DESIGNER

HOUSE FOR CARL A. NEWTON, SAN ANTONIO, TEXAS

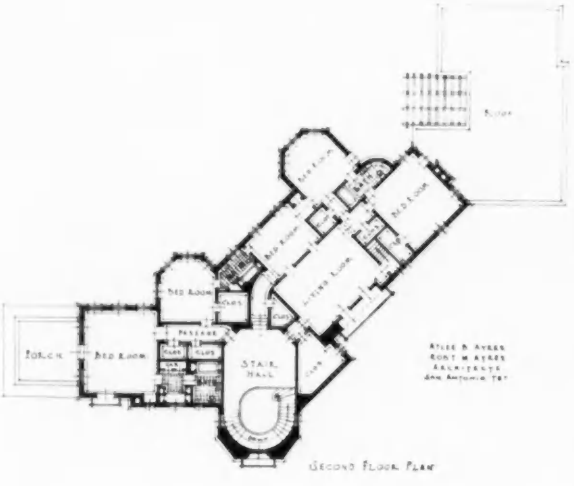
ATLEE B. AYRES, ROBERT M. AYRES, ARCHITECTS



FIRST FLOOR PLAN

HOUSE FOR CARL A. NEWTON, SAN ANTONIO, TEXAS
ATLEE B. AYRES, ROBERT M. AYRES, ARCHITECTS

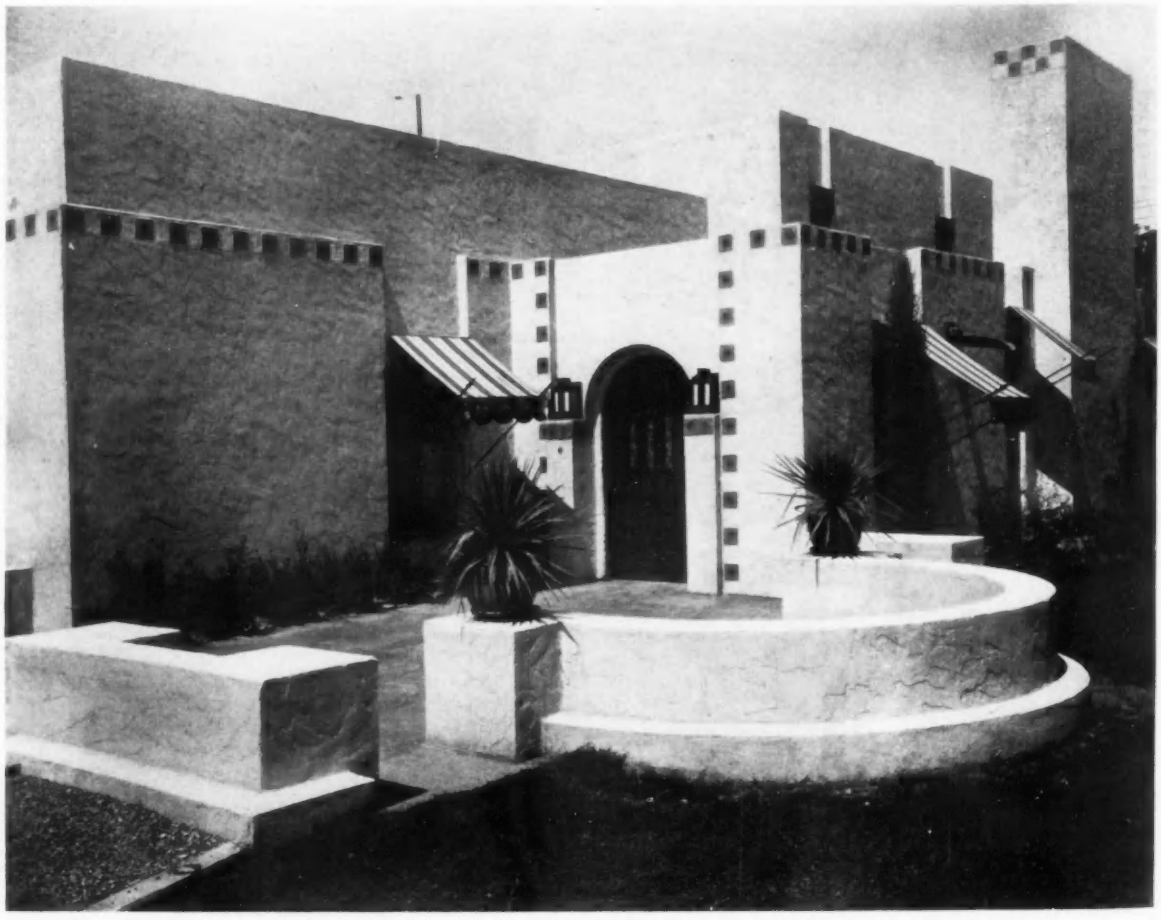
HOUSE FOR CARL A. NEWTON, SAN ANTONIO, TEXAS
ATLEE B. AYRES, ROBERT M. AYRES, ARCHITECTS



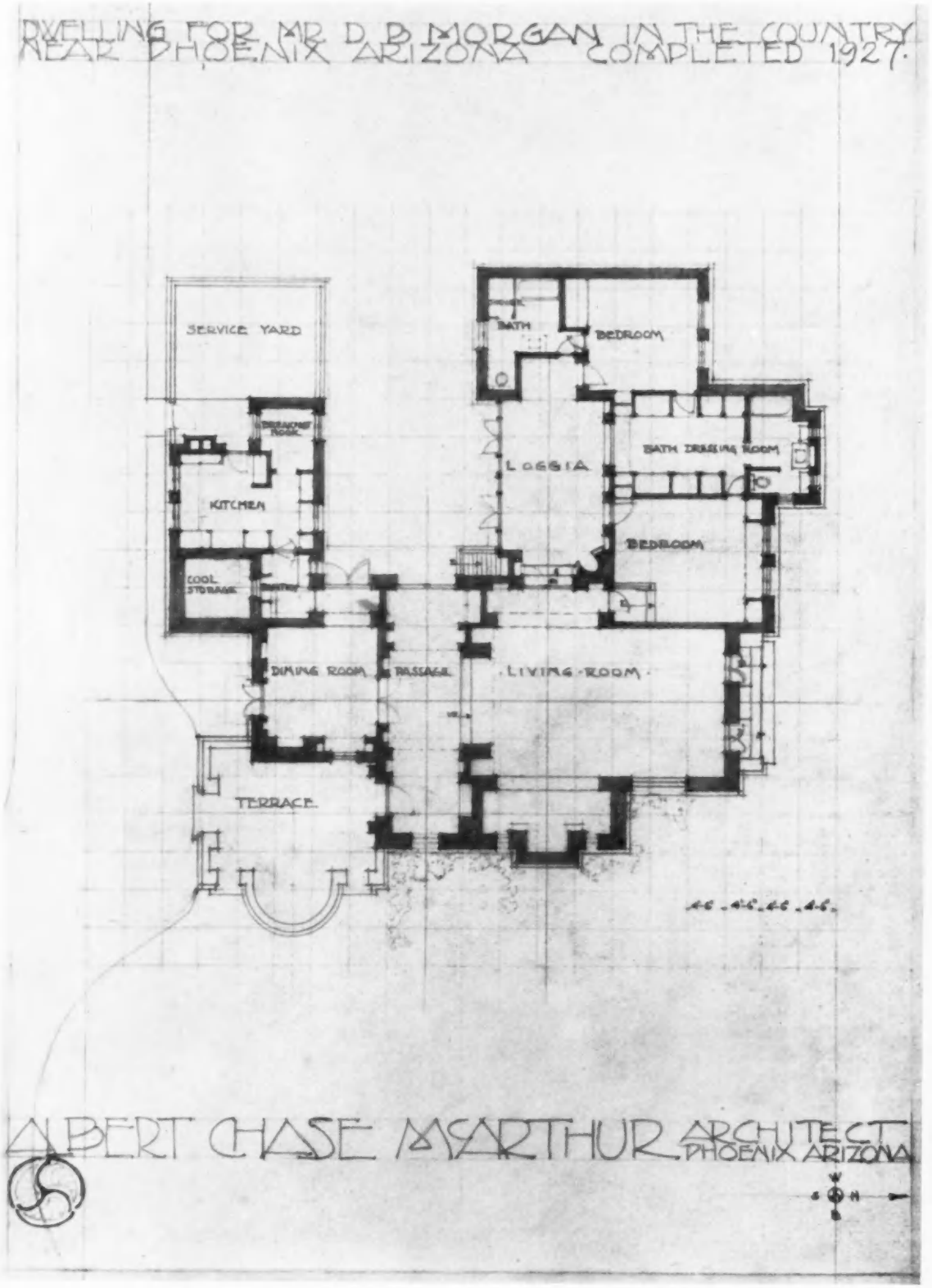
The first problem in this locality is to utilize the coolness of the prevailing southeast breeze, toward which all important rooms of the house must face.

The lot is an irregularly shaped corner with considerable slope towards both streets. The street to the rear of the house is a winding one, parallel to the garage at the end of the house, and swinging around to parallel the living room and east loggia, which are faced on the other side by the street to the front of the house. There were also some old oak trees to consider (See plan on page 465).

This family consists of a man and wife and four children, three girls and a boy. The upstairs living room was really planned to be a study room for the children. The balcony off of this study or living room affords a view of rolling hill country.



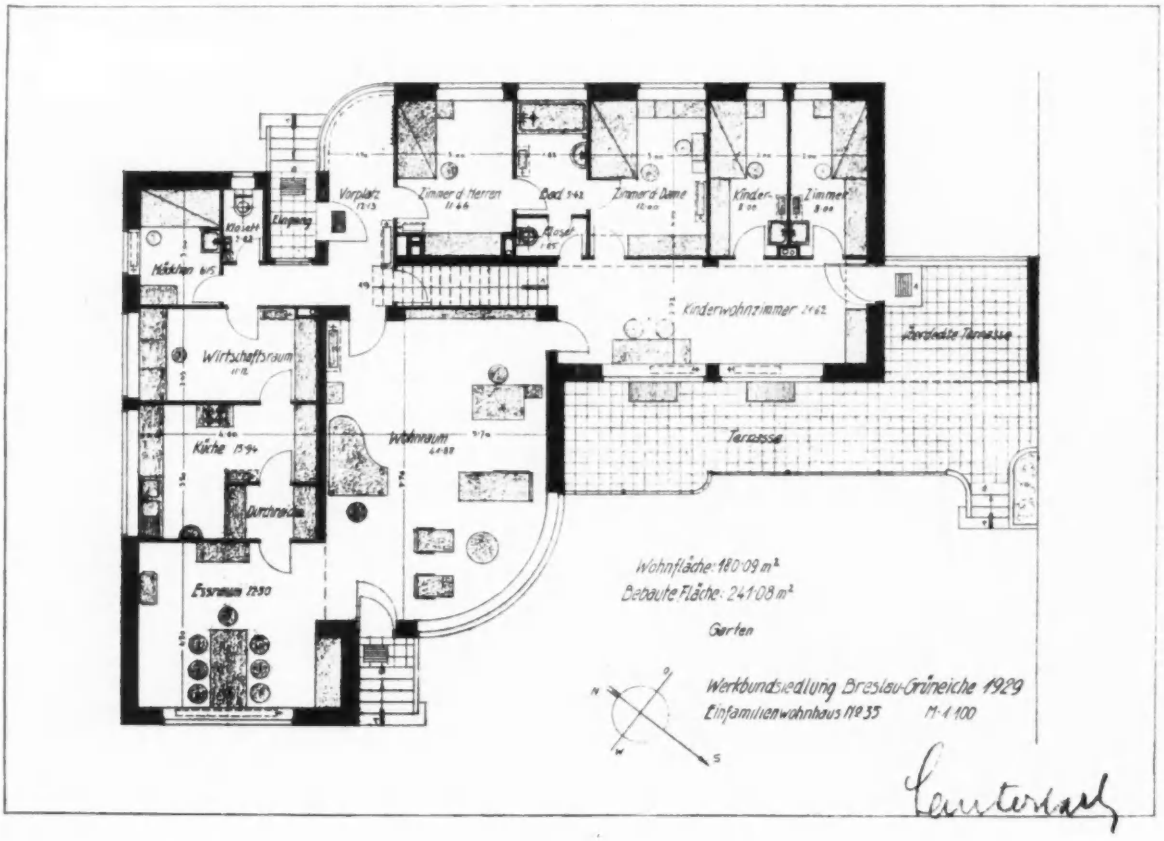
COUNTRY HOUSE FOR D. B. MORGAN NEAR PHOENIX, ARIZONA
ALBERT CHASE McARTHUR, ARCHITECT


DWELLING FOR MR D B MORGAN IN THE COUNTRY
NEAR PHOENIX ARIZONA COMPLETED 1927.
SERVICE YARD
BREAKFAST ROOM
KITCHEN
COOL STORAGE
BATH
BEDROOM
LOGGIA
BATH DRESSING ROOM
BEDROOM
DINING ROOM
PASSAGE
LIVING ROOM
TERRACE
ALBERT CHASE McARTHUR ARCHITECT
PHOENIX ARIZONA

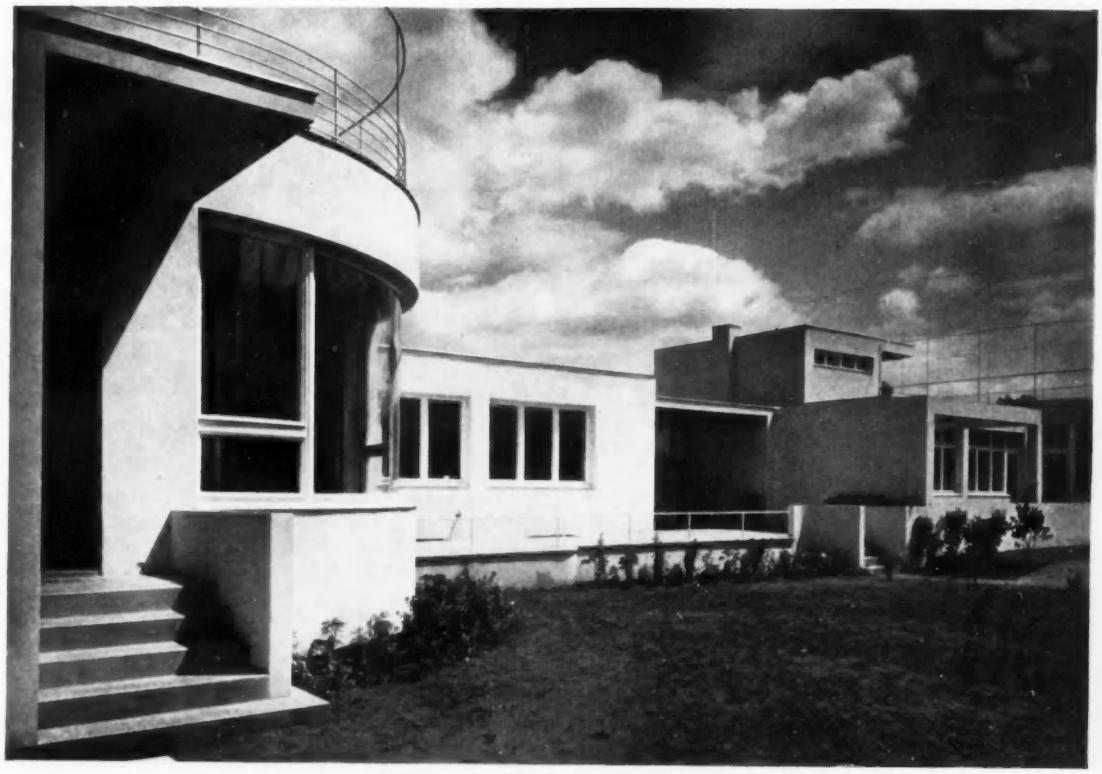
Klettephoto

HOUSE AT BRESLAU, GERMANY

HEINRICH LAUTERBACH, ARCHITECT

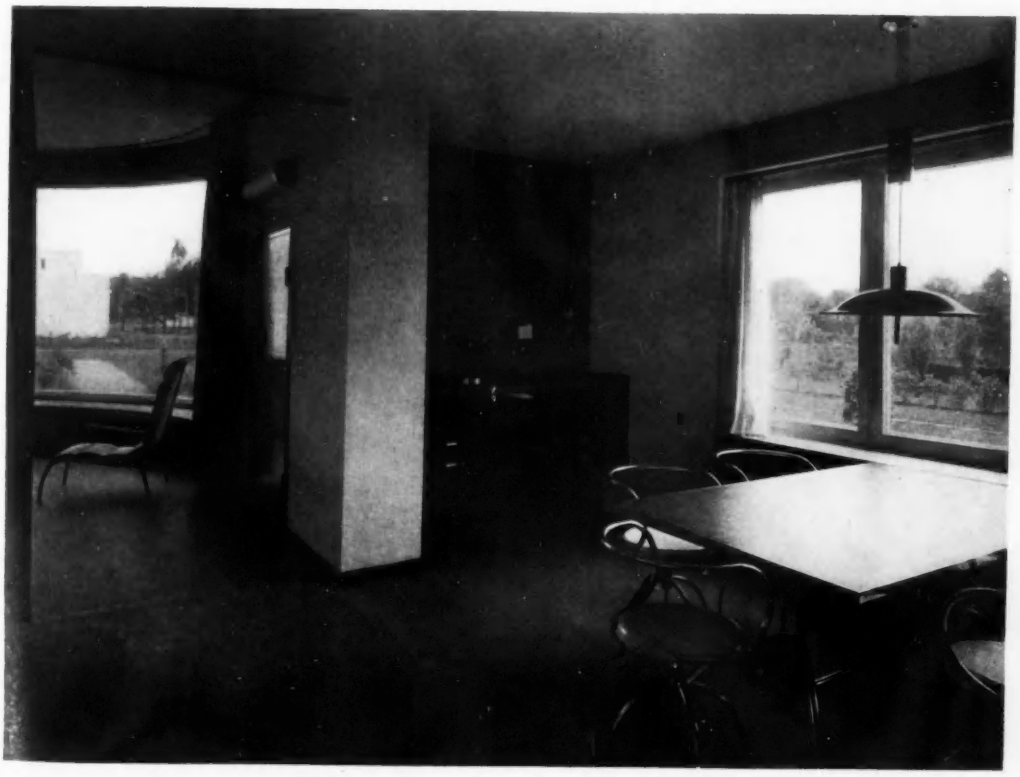


HOUSE AT BRESLAU, GERMANY



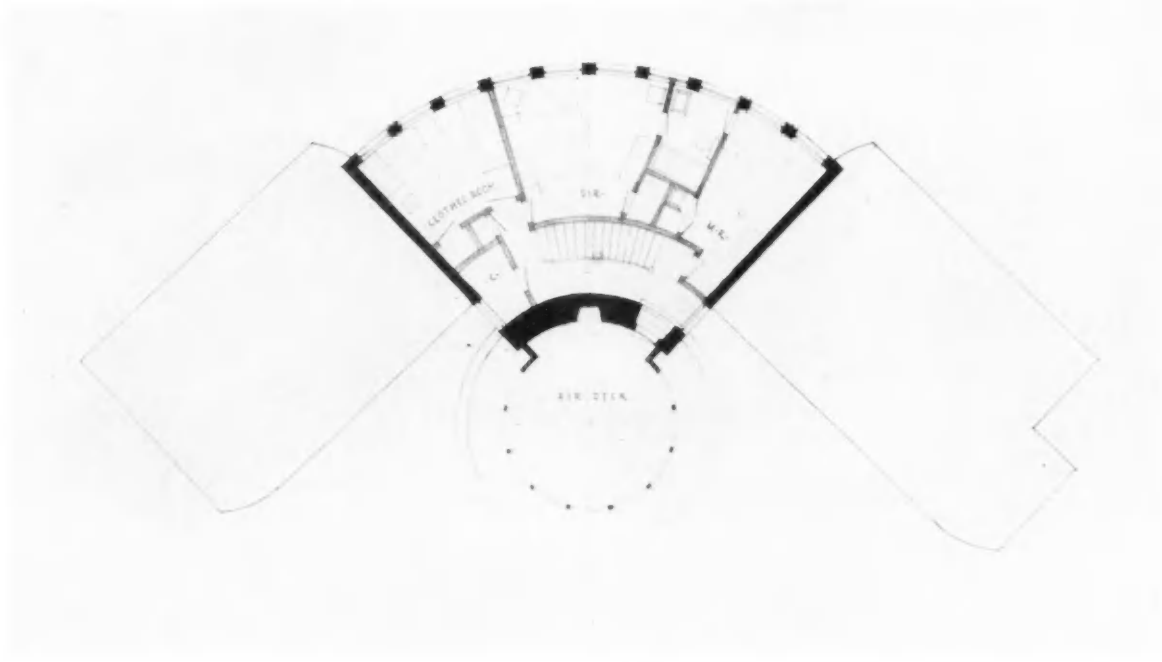
HEINRICH LAUTERBACH, ARCHITECT

Klettephotos

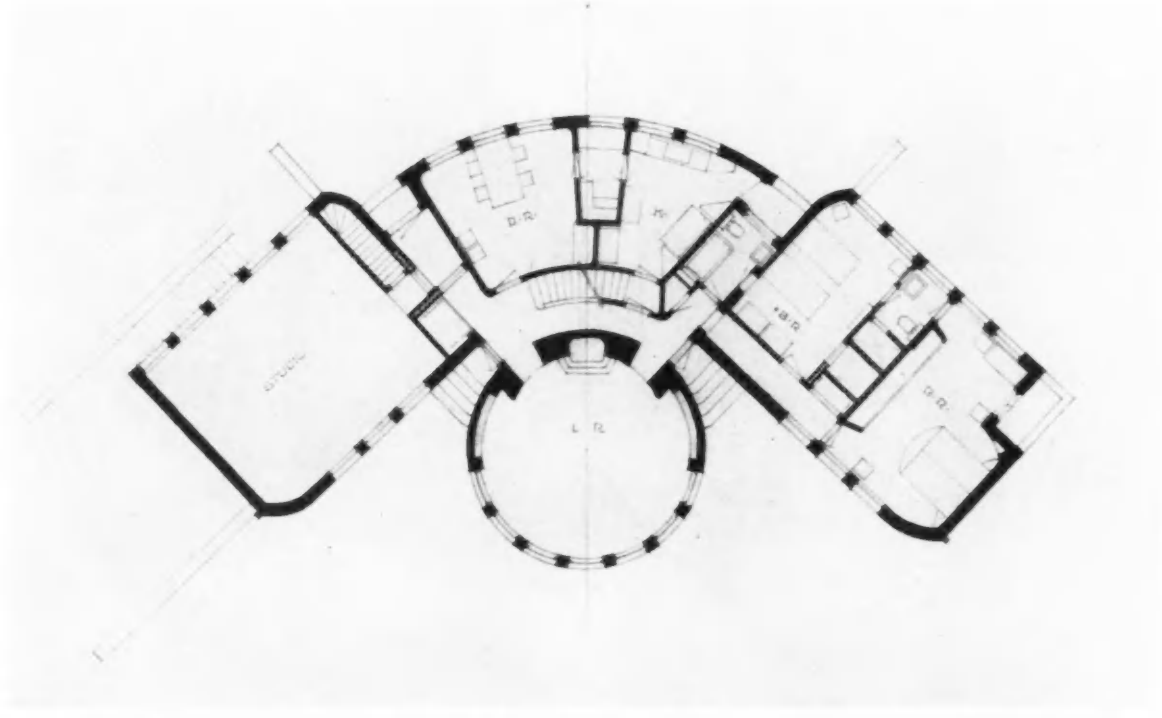


DETAIL OF LIVING ROOM WINDOW

VIEW OF DINING ROOM WITH LIVING ROOM ADJOINING

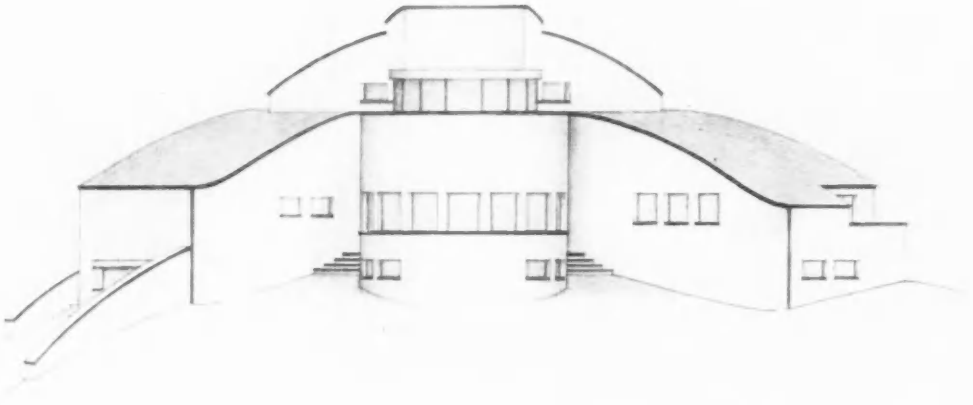


UPPER FLOOR PLAN



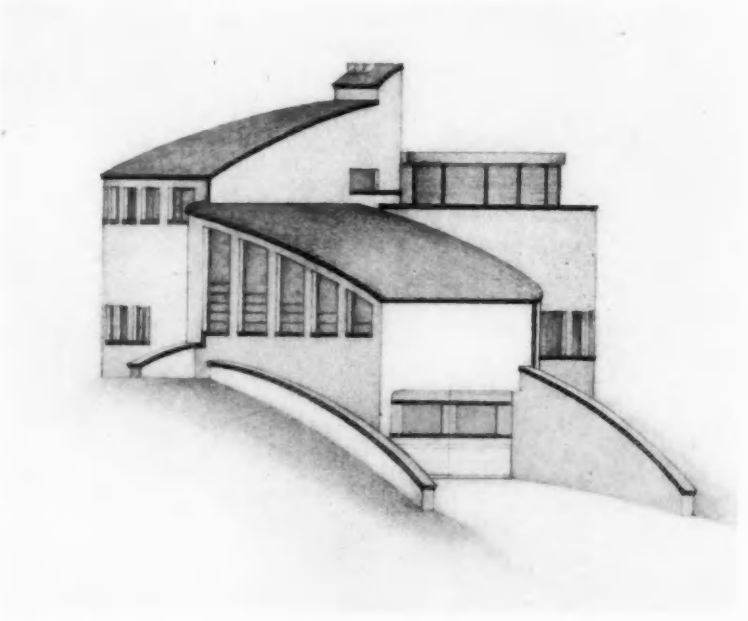
GROUND FLOOR PLAN

HOUSE FOR MRS. BARRY BYRNE, HIGHLAND PARK, ILLINOIS
BARRY BYRNE, ARCHITECT



The structure of this home is of Hadite block with exterior surfaces of white stucco. Window sills, gutters, copings and air deck enclosure supports are of cast aluminum, de-plated treatment in jet black. The window sash and frames are of aluminum.

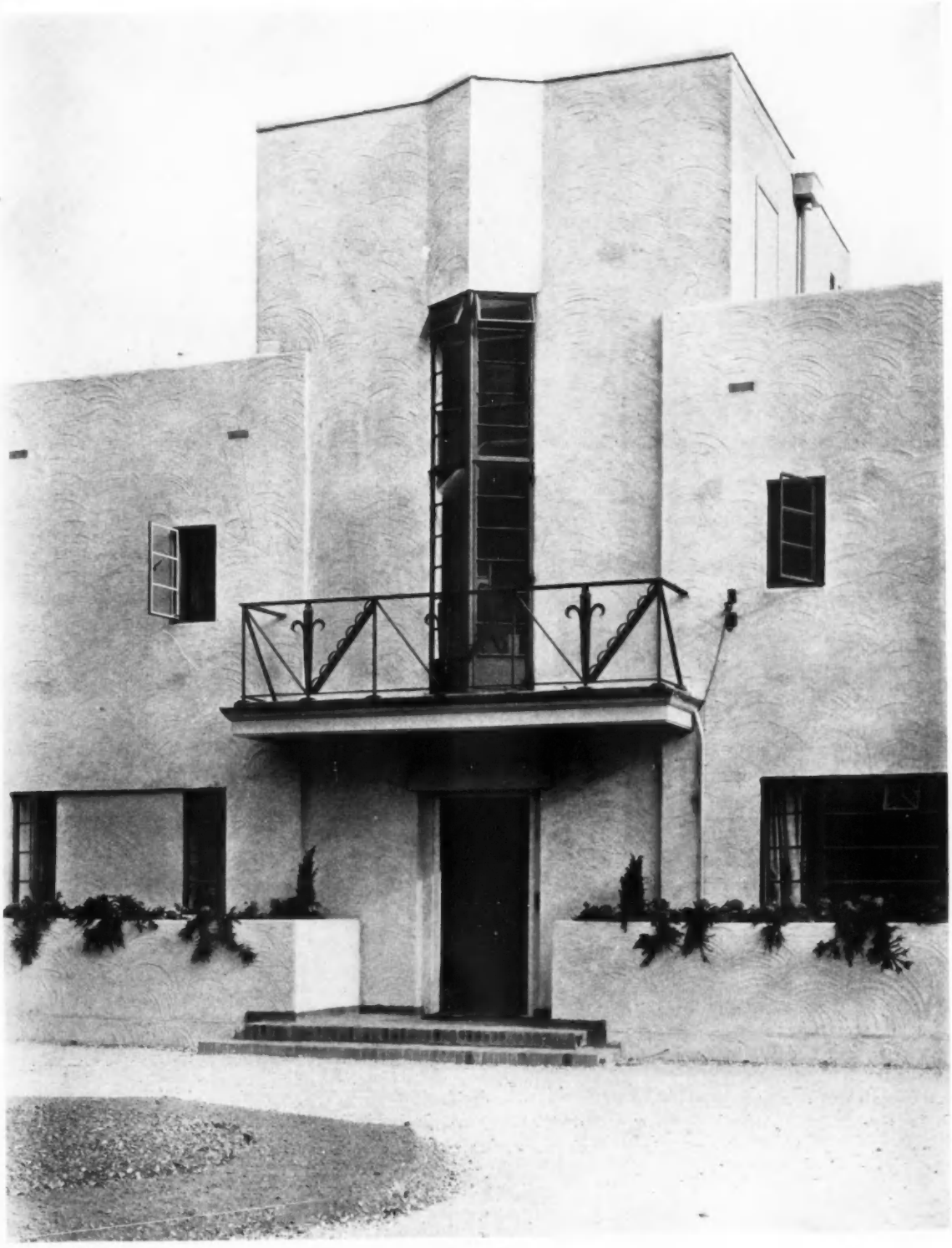
Those in the living room slide up into wall pockets. Elsewhere they are a modification of casement types. The roof is of aluminum shingles, in the material color. Window and air deck screening of aluminum. The floor of the house is of rubber tile. Interior partition and wall plastering finish to a narrow edge of polished metal, at door and window jambs. The doors are flush panel white birch, natural finish, with inlays of polished metal.



GARDEN AND SIDE ELEVATIONS

HOUSE FOR MRS. BARRY BYRNE, HIGHLAND PARK, ILLINOIS

BARRY BYRNE, ARCHITECT



Courtesy, The Architect, London

HOUSE AT NEWBURY, BERKSHIRE, ENGLAND

THOMAS S. TAIT, ARCHITECT, OF SIR JOHN BURNET AND PARTNERS

Photo. Bedford, Lemere & Company, London

HOUSE AT NEWBURY, BERKSHIRE, ENGLAND

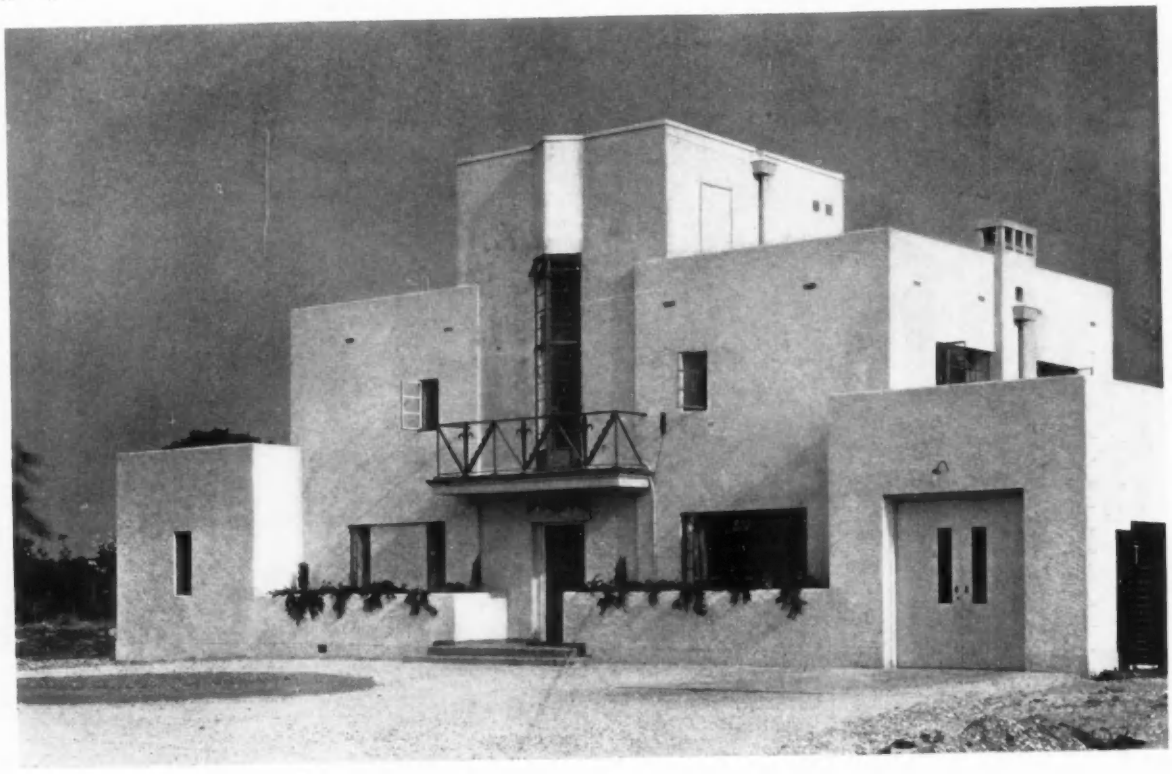
THOMAS S. TAIT, ARCHITECT, OF SIR JOHN BURNET AND PARTNERS

Walls of common brick rendered externally with white Portland cement with a wood float finish. Flat roofs of asphalt laid on boards and roofing felt. Standard type metal casement windows with the vertical glazing bars omitted were made up by the Crittall Manufacturing Co., Ltd. (in the U.S. the Crittall Casement Window Co.).

Color, Externally: Walls, cream color. Metal casements, entrance door and iron balustrade painted bright emerald green. Garage doors, rainwater pipes, etc., and all other woodwork painted to tone in with the color of the walls.

Internally: All woodwork painted cream color. Handrail to stairs painted Chinese red.

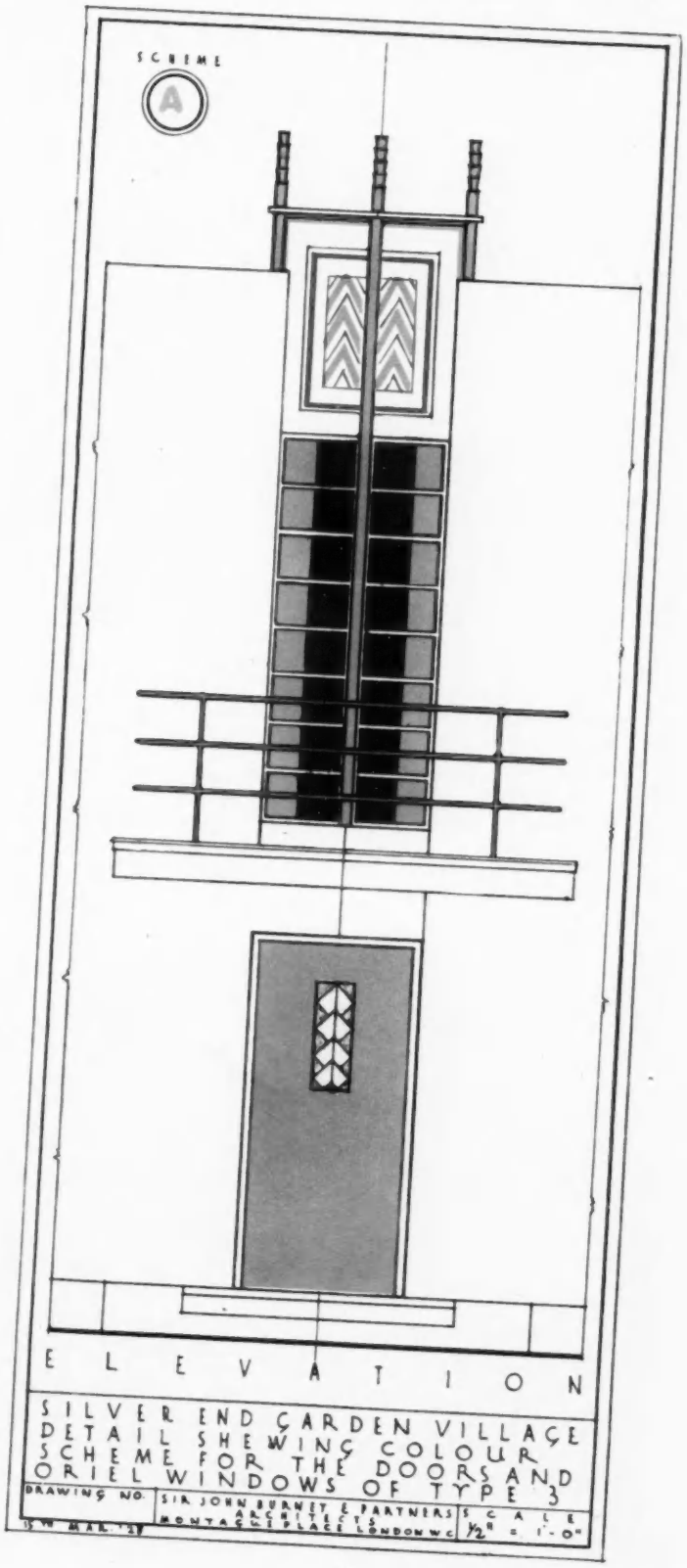
Cost: One shilling and eightpence per cubic foot. This cost excludes the garden pool, pavings, driveway, and landscaping.

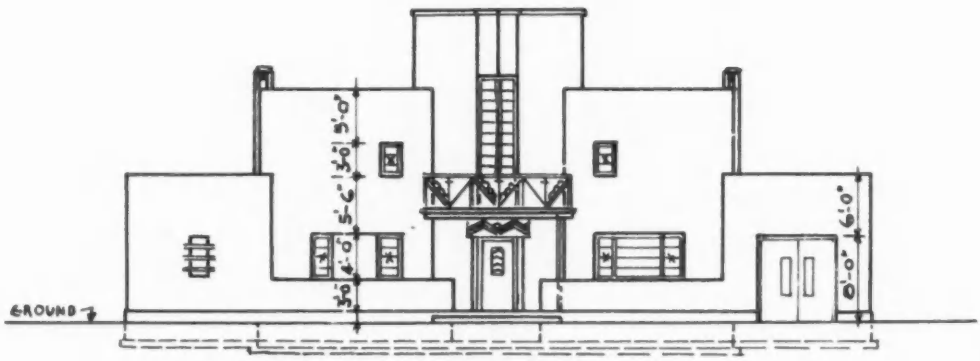


Courtesy, The Architect, London

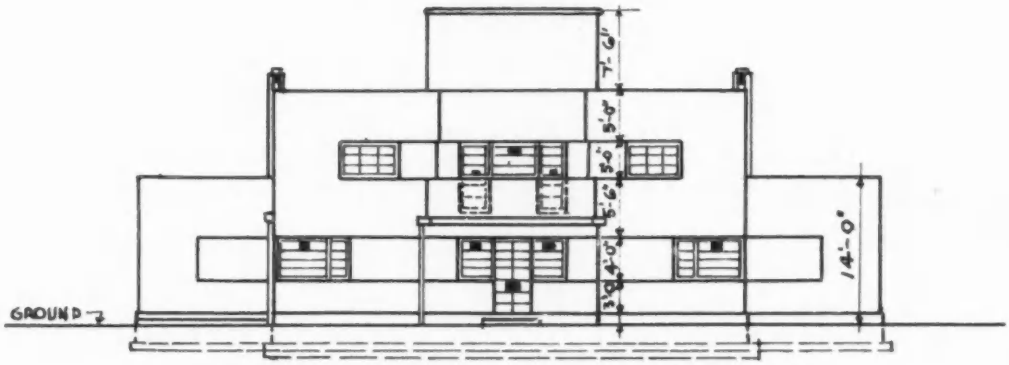
HOUSE AT NEWBURY, BERKSHIRE, ENGLAND

THOMAS S. TAIT, ARCHITECT, OF SIR JOHN BURNET AND PARTNERS

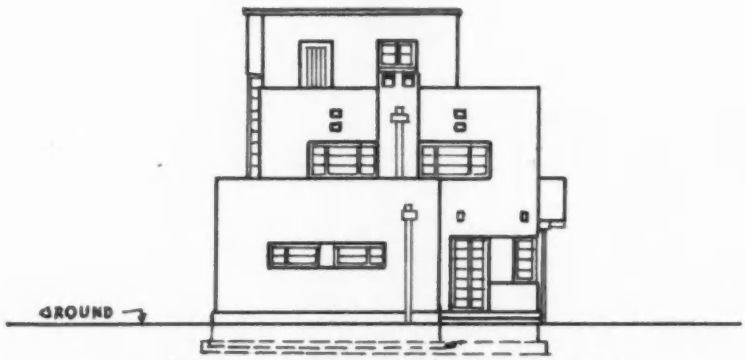

SCHEME
A
ELEVATION
SILVER END GARDEN VILLAGE
DETAIL SHEWING COLOUR
SCHEME FOR THE DOORS AND
ORIEL WINDOWS OF TYPE 3
DRAWING NO.
SIR JOHN BURNET & PARTNERS
ARCHITECTS
MONTAGUE PLACE LONDON W.C.
SCALE
½" = 1'-0"
15TH MAR. '27



FRONT ELEVATION
NORTH



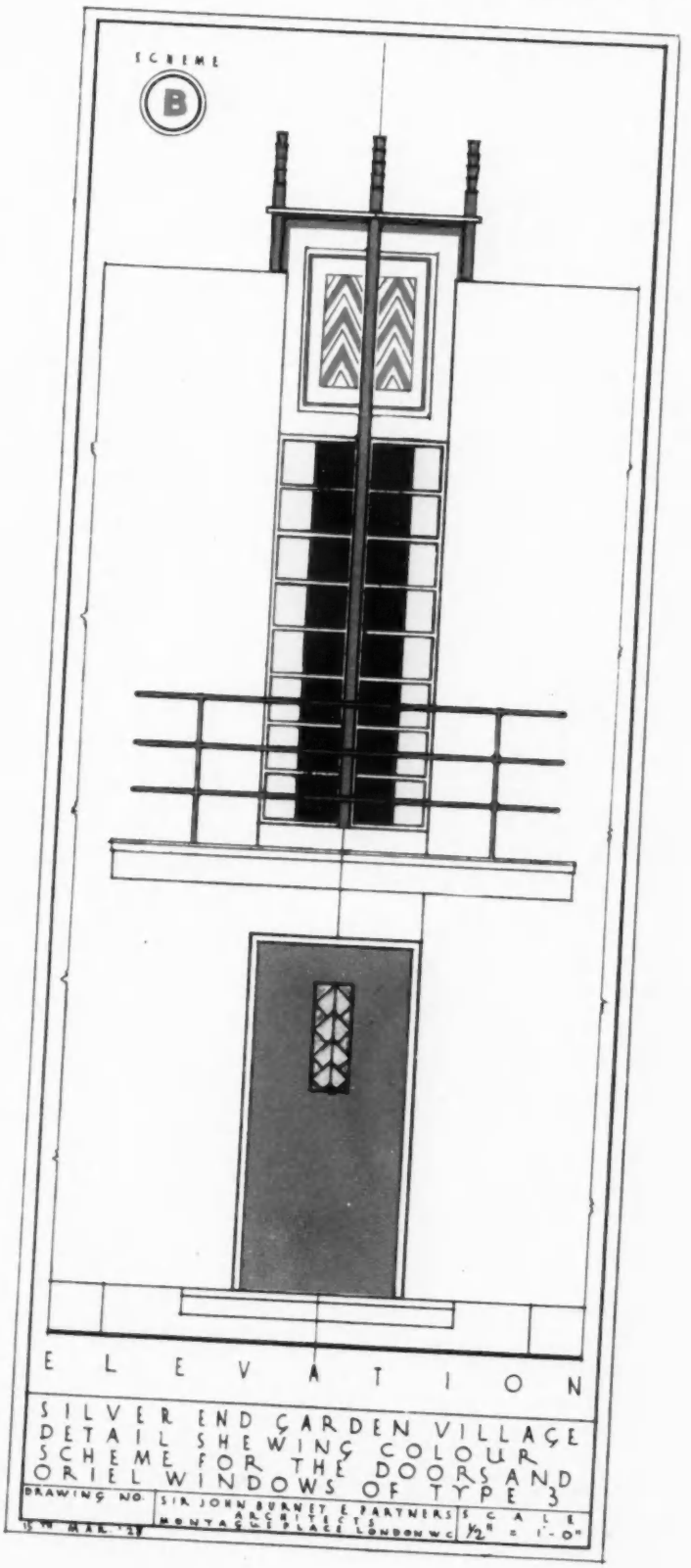
GARDEN ELEVATION
SOUTH



SIDE ELEVATION
WEST

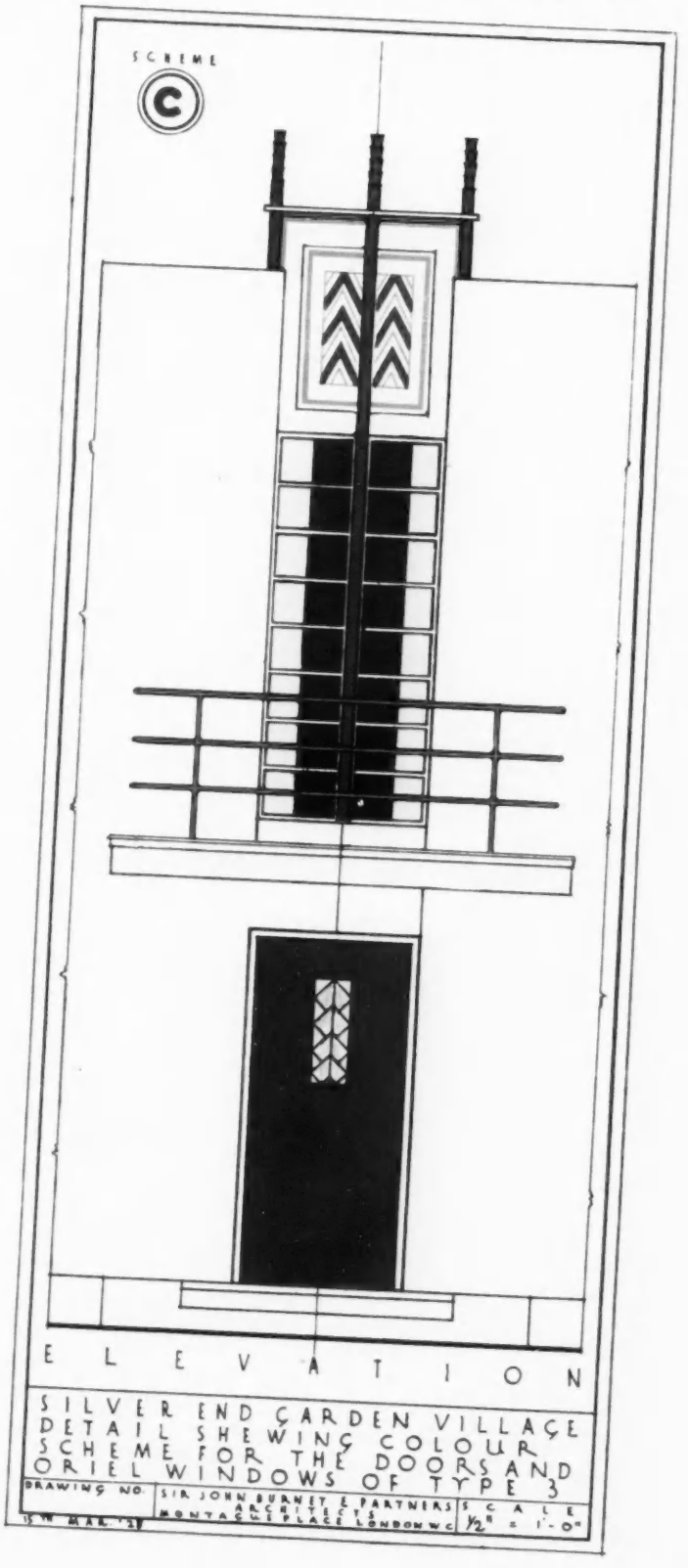
PROPOSED NEW HOUSE
AT NEWBURY BERKS

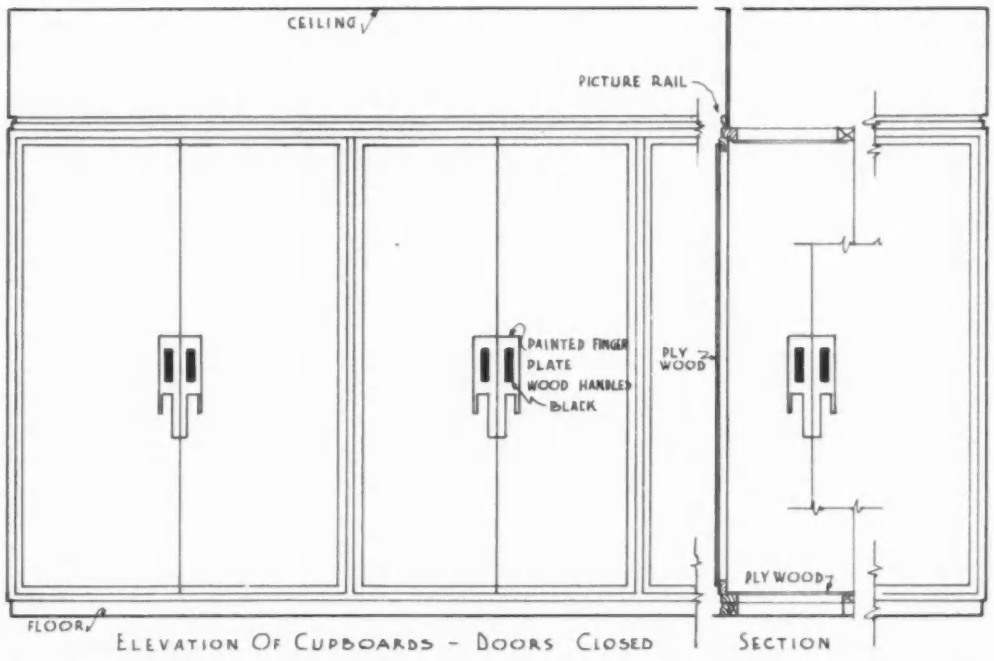
SIR JOHN BURNETT & PARTNERS
ARCHITECTS LONDON

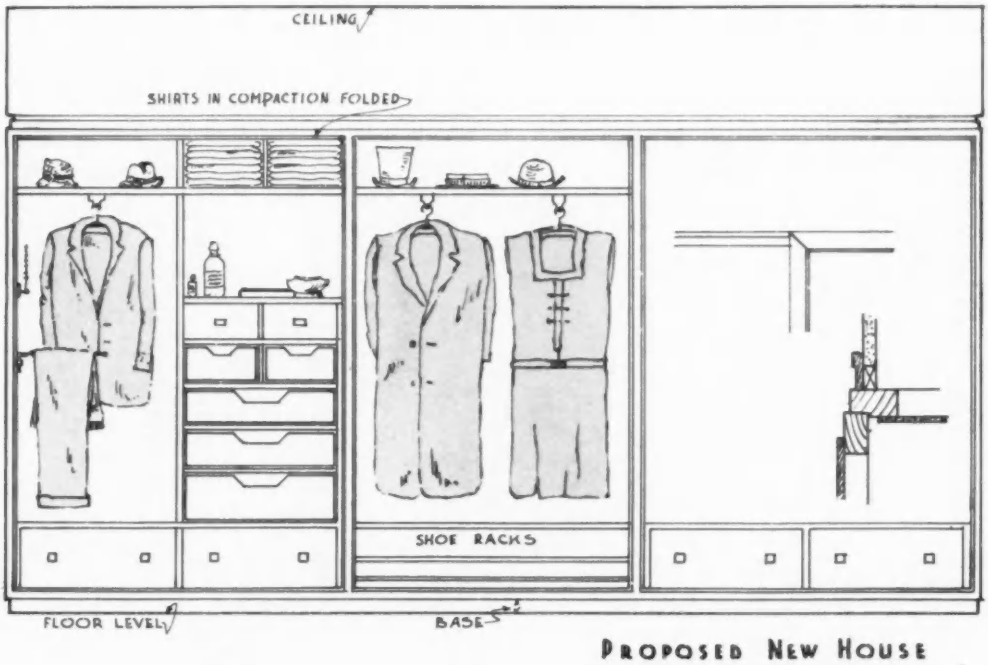

SCHEME
B
E L E V A T I O N
SILVER END GARDEN VILLAGE
DETAIL SHEWING COLOUR
SCHEME FOR THE DOORS AND
ORIEL WINDOWS OF TYPE 3
DRAWING NO.
SIR JOHN BURNET & PARTNERS
ARCHITECTS
MONTAGUE PLACE LONDON W.C.
SCALE
½" = 1'-0"

PROPOSED NEW HOUSE
AT NEWBURY BERKS.

SIR JOHN BURNETT & PARTNERS
ARCHITECTS LONDON

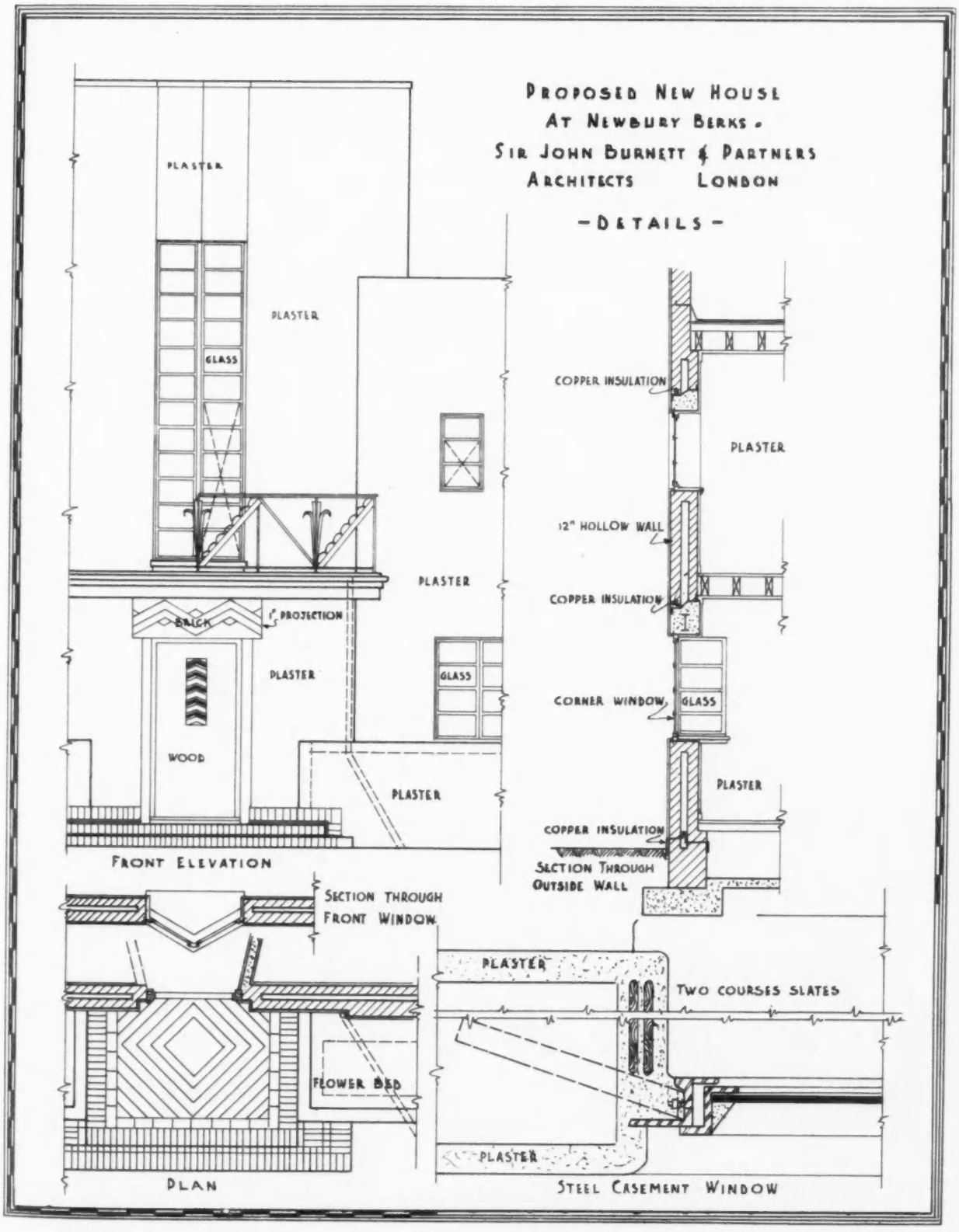

SCHEME
C
ELEVATION
SILVER END GARDEN VILLAGE
DETAIL SHEWING COLOUR
SCHEME FOR THE DOORS AND
ORIEL WINDOWS OF TYPE 3
DRAWING NO.
SIR JOHN BURNET & PARTNERS
ARCHITECTS
MONTAGUE PLACE LONDON W.C.
SCALE
½" = 1'-0"
15TH MAR. '28

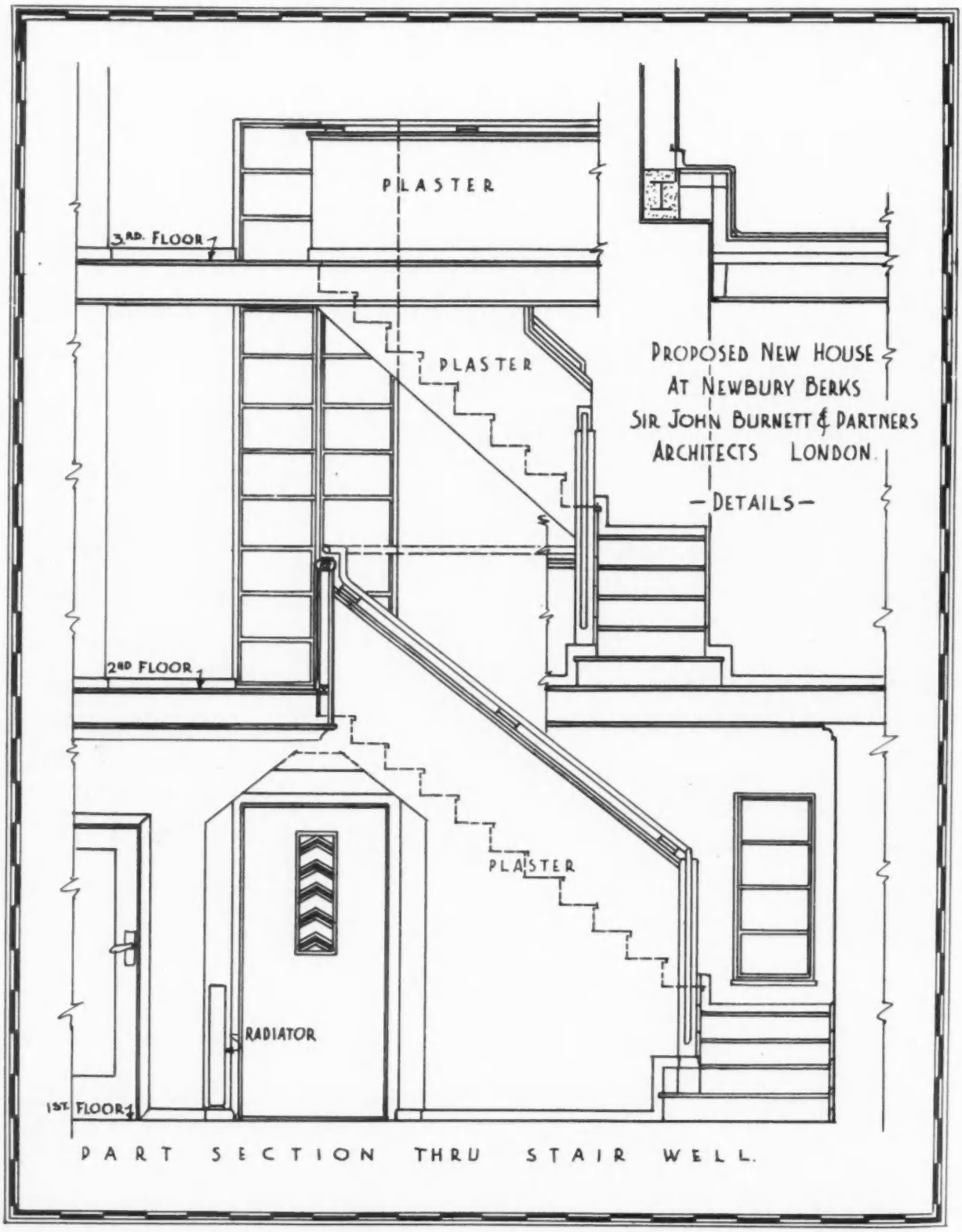




CUPBOARDS IN BEDROOM.

PROPOSED NEW HOUSE
AT NEWBURY BERKS.
SIR JOHN BURNETT & PARTNERS
ARCHITECTS LONDON


PROPOSED NEW HOUSE
AT NEWBURY BERKS.
SIR JOHN BURNETT & PARTNERS
ARCHITECTS LONDON
-DETAILS-
PLASTER
GLASS
PLASTER
PLASTER
BRICK
1" PROJECTION
PLASTER
GLASS
WOOD
PLASTER
FRONT ELEVATION
COPPER INSULATION
PLASTER
12" HOLLOW WALL
COPPER INSULATION
CORNER WINDOW
GLASS
PLASTER
COPPER INSULATION
SECTION THROUGH OUTSIDE WALL
SECTION THROUGH FRONT WINDOW
FLOWER BED
PLAN
PLASTER
TWO COURSES SLATES
PLASTER
STEEL CASEMENT WINDOW


PLASTER
3RD. FLOOR
PLASTER
PROPOSED NEW HOUSE
AT NEWBURY BERKS
SIR JOHN BURNETT & PARTNERS
ARCHITECTS LONDON.
-DETAILS-
2ND FLOOR
PLASTER
RADIATOR
1ST. FLOOR
PART SECTION THRU STAIR WELL.

TECHNICAL NEWS AND RESEARCH

GARDEN CASCADE
COUNTRY ESTATE OF JULIUS FLEISCHMANN, CINCINNATI
MATTHEWS AND SHORT, ARCHITECTS

METHODS AND PROBLEMS OF COUNTRY HOUSE DESIGN AND CONSTRUCTION

PROBLEMS OF COUNTRY HOUSE DESIGN AND CONSTRUCTION

ROBERT L. DAVISON*

I. Developing Clients' Ideas

In country house design the client's ideas receive first consideration. When building a commercial structure the client really desires a building which will give the greatest economic return on the money invested either directly or through the advertising value of the design; he thinks he knows how this may be accomplished, but it is up to the architect to develop an efficient plan and its best architectural expression. With the country house generally quite the reverse is true—the client should be encouraged to express himself. Strict economy, except for clients of limited means, should be relegated to second or third place. But here again the architect will be faced by the fact that the client, although often having rather definite ideas, does not know how to express himself and does not take into consideration the proper orientation and interrelation of the various parts.

(A) EDUCATING THE CLIENT.

It is a rather surprising fact that the client who builds a house costing about $25,000 generally has more definite ideas as to his wants and takes a greater interest in the development of these ideas than the client building a more expensive home. The client who spends $50,000 or more will often specify in a general way the approximate size of the living and dining rooms and the number of guest rooms, leaving the working out of the plan, with the possible exception of the library or some other special room, to the architect.

While it is easier not to try to bring out all the owner's individuality, the most successful architects in country house work are those who best develop the latent desires of their clients. To do this it is necessary to educate the client, arouse his enthusiasm, and gain his confidence and cooperation. The client's education may be fostered by encouraging him to observe in a systematic way details in homes of his friends. A study of various magazines illustrating country houses will also stimulate his imagination and enable him better to express what he wishes.

A great variety of materials and processes go into the finished building and the architect is struggling always to keep "up to time" with the latest developments and inventions. However, unless he has help from his client in the selection of these, the solution of the particular building problem will not be satisfactory. For instance, sooner or later the client will become familiar with several types of electric switches and in all probability will prefer a type which his architect for some good reason did not give him. The result will be a lasting dissatisfaction with the architect's solution, whereas, if he had been consulted in the first place and had spent a little thought on the subject, his favorite type and color of switch in all probability could have been used, or he could have been shown wherein the other type was superior.

While sketches are being converted into working drawings and specifications, if the various questions can be discussed and settled promptly, the whole work progresses uniformly and without delay. Such a procedure minimizes the chance of "extras" or changes during construction, and the owner will not be required to revise his budget. If the architect waits until the specifications and drawings are ready for final printing, the client is suddenly confronted with an astonishing number of decisions that must be made instanter, and without recourse to anything except his own limited experience.

The client should be trained to discover his own taste and wants prior to the ultimate time for such decisions. In order to give the client a few items to think about, an architect might hand him such a list as this to start him on his round of discovery:

Floors—Service: linoleum, cork, tile, wood.
Main rooms: oak, teak, maple.
Bedrooms: maple, pine edge grain.
Baths: cork, tile (type, color), linoleum (type, color).
Porch: cement, colored, colored flags, brick, tile, slate.

Walls—Service: Keene cement, hard white, painted.
Main rooms: hard white, Craftex, sand finish, paneling, wall paper.
Baths: tile, cement, Keene cement.

Kitchen Equipment—
Wood dressers (color).
Steel dressers (color).
Flour bin or barrel space.
Marble bread board or wood.

*We wish to acknowledge the assistance of Mr. Frederick L. Ackerman, architect, for data on plan and budget problems. The information on farm buildings was obtained from *Modern Farm Buildings* by Alfred Hopkins, published by McBride (out of print).

For data on special problems of country estate planning we are indebted to the office of Delano & Aldrich. Information on lightning protection was obtained from the National Board of Fire Underwriters, Boston Lightning Rod Company and Copperweld Steel Company. For data on tennis court lighting we are especially grateful for the cooperation of Herbert Hoffman, illuminating engineer, Erikson Electric Company. In addition we wish to acknowledge the courtesy of several architectural offices in the preparation of this data.

Glass cupboard doors or wood.
Plate warmer (gas or electric).
Electric fireless cooker.
Refrigerator (ice, electric, what manufacture, size, one or two).
Kitchen sink (height, porcelain or enameled iron, size, style, wood drainboards or enameled iron).
Pantry sink (Monel metal, copper or enameled iron).
Wood drainboard or enameled iron.

This scheme might be continued through all the trades. When dining at his new country club the client could discover that the floors are attractive, and that they are made of several widths of boards laid at random; he may not recognize the material, but his friends who were on the building committee will welcome an occasion to not only tell him that the floor is teak but to take him over the building on a tour of inspection. Similar opportunities will present themselves and allow him to slowly build up a foundation for a definite taste and knowledge.

After such observations he will profit by a visit to the architects' sample rooms which exist in several of the large cities. Here he will be overwhelmed by materials, machines and fixtures. Several trips should be arranged, possibly with his architect as guide, so that only a few subjects will be reviewed at a time.

(B) STUDYING CLIENT'S HABITS AND SPECIAL INTERESTS.

It is well for the architect to become thoroughly acquainted with the habits of his client, as the successful house will be largely determined by the degree to which these habits are catered. For example, if members of the family drive their own cars at times, it is desirable to have a private garage adjacent to the main house although the main garage may be at some distance. If the client belongs to a riding group, greater prominence may be given to the stables than would otherwise be desirable. Other interests of the client should similarly affect the design of the house.

(C) BUDGET.

The owner must definitely determine the total expenditure he wishes to make and roughly indicate to his architect what his desires are in regard to fur-

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BUDGET OUTLINE FOR COUNTRY ESTATE

(1) LAND:
Cost of land. Deed and Title search. Lawyer, Survey. Easements. *The land costs are so established that they can be set down with finality in most cases, so do not need to be discussed here.*

(2) WORK PRELIMINARY TO CONSTRUCTION:
Clearing. Moving. Demolition. Walls. Fences. Boundary monuments. *This may be a very important item in a large estate or amount to nothing at all on a small suburban lot.*

(3) SECONDARY BUILDINGS:
Garage. Stable. Sheds. Barn. Greenhouse. Bathhouse. Pumphouse. Pavilion. Toolhouse, etc. Gatehouse. *Must be analyzed in same manner as though main house.*

(4) SERVICES:
Water. Gas. Electricity. Municipal assessments for miscellaneous municipal services.

(5) LANDSCAPE WORK:
Roads. Walks. Drainage. Sewage disposal. Exterior lights. Private electric plant.

PLANTING:
Grass. Shrubs. Hedges. Edging. Trees. Flowers. Vegetables.

CONSTRUCTION:
Grading. Walls. Terraces. Steps. Balustrades. Pools. Tennis courts. Sun dials. Pergolas. Birdbaths. Flag poles.

(6) EXTERIOR EQUIPMENT:
Laundry yard. Garbage screen, etc. Gate signs. Numbers. Gasoline pump. Lawn mowers. Garden tools and equipment. Sprinkling equipment. Ash removal.

(7) HOUSE

BUDGET PERCENTAGE REPRESENTED BY ITEMS 4, 5, 6, AND 7

For houses costing		$25,000	$30,000	$40,000	$50,000	$75,000	$100,000
Services:	Public	1	1	1	2	2	2
	Private	1	2	3	4	4	4
Landscape Work, Planting, Construction:	Minimum	5	6	7	8	9	10
	Maximum	8	10	12	14	18	22
Exterior Equipment:	Average	1	1	2	3	4	4
House:	Minimum	89	86	82	77	73	68
	Maximum	92	90	87	83	82	90
	Total	100	100	100	100	100	100

The assumptions are a normally level lot with the usual average growth present, with public service lines available. No attempt has been made in the table to include items classified as "Preliminary to Construction." They must be set up independently.

nishing, landscape work and special equipment. When due allowances are made for these the remainder can be charged to the actual building construction. From here, *working backwards*, the approximate size of the house available for this amount can be calculated by the cubic foot price method. If the house allowable under this scheme is too large or too small, then the budget must be rearranged until it results in an acceptable house.

A client who had built several houses and was preparing to build again expressed surprise at the suggestion that his project was sufficiently involved to need a budget. "The budget," he asked, "for what? I know that I can spend a maximum of $75,000, isn't that the sum total of my budget?" Also, he added, "I've never yet been able to complete any job within 35% of initial allowance, so I'm expecting the worst. At least I won't be fooled again, as I believe my house should cost only $50,000."

This is the usual story, and architects will fail badly in their services until they can develop a technique which will minimize the hazard of guesses. Given a client who will stand his ground and remember his decisions, a budget can be built up so as to function as a financial thermometer throughout the job. Revisions of course can be made and the budget may grow, but always it stands as a working comparison between expected expenditures and actual cash outlays.

A frank architect may risk stopping the job at the outset by insisting on the inclusion of items that are generally not considered until the actual time for their purchase. These are generally small items that must be secured to make the home livable but of which a client in his enthusiasm for the long-dreamed-of house remains blissfully unconscious. No one can really blame the architect for the sin itself of omission in this case; to tell the truth is often to lose the job.

Few clients realize the multitude of incidental costs pertaining to a project, and painful as it is to view such in advance, much real worry and even disaster can be avoided if facts are faced and the budget set up in full.

To set up any sort of guide as to the proportionate cost of the various phases of outside work is an impossible task. However, a table that may have a slight value in preparing the embryo budget, before any of the details have been settled, is given here:

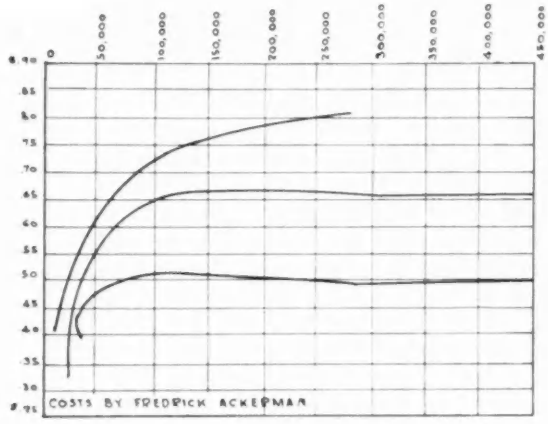
The cubic foot costs of the house itself will vary greatly on different jobs but it is rather interesting to note that the cost increases with volume rather than decreases as is the case in commercial work. The reason for this is quite evident. The client who can afford the larger house can also afford more expensive equipment and decoration. The graph on the opposite page, showing cubic foot costs as computed by the office of Frederick Ackerman, illustrates this point.

The cost of items for country houses differ widely as indicated in the table below.

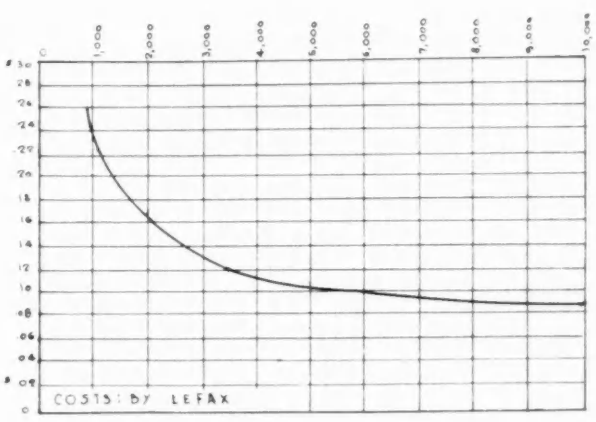
To provide for a proper discrepancy the budget should be carried out with minimum and maximum columns, and as the contracts are let the exact amounts can be set down in the last column. Also allow three or four blank columns for changes that

BUDGET OUTLINE FOR COUNTRY HOUSE

	(1) Brick	(2) Brick Veneer	(3) Tile	(4) Frame	(5) Brick (Fireproof)
Volume	150,000	280,500	273,719	183,516	146,775
Cost	78,369	144,330	222,210	110,000	102,361 15
Cubic ft. cost	52c	50c	81c	59c	69c
Electricity	2.6%	1.4%	2.1%	3%	1.5%
Hardware	2.8	2.1	2.1	3.4	....
Heating	7	7.8	7.1	5.4	8
Lath and plaster	5	6.3	4.6	7	4.6
Carpentry	22	24	19	40.5	2.4
Paint	....	1.45	2.4	4.3	2.5
Plumbing	6.4	7.5	7.6	11.7	1.5
Roof	7.1	4.4	4.9	1.7	6.8
Electric Fixtures	6	3.6	2.6	1.2	....
Screens	1.5	1.1	1.2	1	....
Masonry	34	19	....	13	32
Excavation	....	....	....	3	2.9
Steel	....	....	....	....	7.8
Miscellaneous	5.6	21.35	46.4	4.8	30
Total	100	100	100	100	100



INCREASE IN CUBIC FOOT COST
WITH INCREASE IN VOLUME
IN COUNTRY HOUSES



DECREASE IN CUBIC FOOT COST
WITH INCREASE IN VOLUME
IN COMMERCIAL BUILDINGS (Structure Only)

GRAPH INDICATING COST TREND IN COUNTRY HOUSES

may be made in the scope of the work which may revise the budget. Plus and minus columns can be used for indicating whether the item has exceeded the budget or otherwise. If savings have been made in some items others that are settled later can be increased accordingly and the budget total not be affected.

The question of services is of the utmost importance; they represent the link between the house and the outside world, and, even in remote parts, provide all modern household facilities. A proper allowance for them must be made or the success of the home will be jeopardized. It is important that the architect consult with engineers if the utilities are of any magnitude.

Such services are surprisingly expensive, especially if concealed underground, and although this method more than doubles the cost, it is nearly always done now in the larger houses. The question whether these are to be public or private services usually is dependent on cost, and engineering advice is necessary to reach any sound decision. Location, rates, type of usage, time used and quality of service available are all matters to be considered.

Although public services are extending to the most remote places, excellent equipment is now available for private plants. Private standby electric systems may be installed to serve when the public service fails. A local gas plant may be installed that will make gas at a lower rate than it can be supplied by the gas company, and a private sewage disposal system may be more economical than running the sewer to the town sewer. Such are a few of the many problems that have to be settled in setting up any budget, and early decisions are necessary on many items that might otherwise be allowed to drift along.

Road and walk prices can be secured from local contractors as they remain fairly constant; they are based on the square foot or yard basis. Once you know the approximate unit price the calculation for any given piece of road or walk is simple. The site will often determine whether to use gravel, tar-bound macadam or concrete. Ground and road drainage even when planned by an engineer are subject during the actual building to many changes, as it is difficult to foresee just what will be needed after the grass and plants have been set. Other places that appeared very dry will need draining. In terraces that have much pitch, special attention to draining must be given in the case of roads and walks or else they may suffer badly from washing. Always allow enough in the budget to provide catch basins under every drain so that the accumulation of silt will not clog the drains in six months.

The decision as to what allowance to make for the landscape work is without doubt the most difficult of all, and should be considered from all angles. If the client can wait for six or eight years for the project to mature the cost of this work may be small at the outset. But it is usual to plan for some sort of finished picture within three or four years and occasionally results are expected in two years. Of course, such a procedure is extremely expensive as full-size plants must be brought in to the site. Hardly ever is there sufficient cash available to do a reasonable amount of landscape work when the house is finished, and scarcely ever is any thought given to the problem before this time. As a result a few scraggy shrubs are bought from the nearest nursery and an attempt made to spread them over the whole lot—the result can be seen anywhere. By careful buying, often for the same amount, much better and much more

material can be obtained, but some definite plan must be available for such a procedure.

The items of exterior equipment and secondary buildings need not be discussed here. The first one can be readily set up and the other is as complicated as the house.

For houses costing under $50,000 it is well to maintain a proper balance between the various elements of the estate, but quite the reverse is generally true of houses costing over $50,000. For example, it might be perfectly logical to build a $50,000 or $100,000 house and then spend $125,000 or more on a sports house containing tennis court, swimming pool and ballroom. If the $100,000 is all the owner needs for the house itself, it is better to spend the balance of the money in special buildings which will give him pleasure.

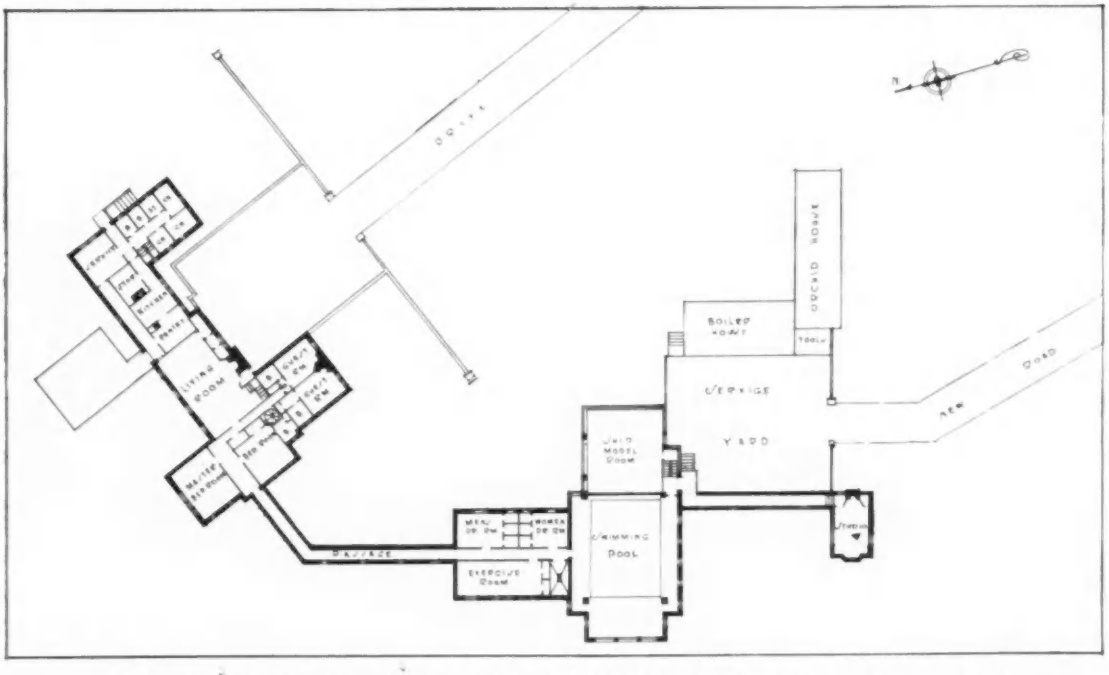
The experience of numerous jobs, if made available by a cost record, helps greatly in setting up budgets and if the price index of the month is considered, surprisingly accurate results are obtainable. All local conditions of the site, cost of labor and time of year must be balanced and tempered to formula unit cost for such use.

In addition to a budget and estimate based on experience it is well to get a cost estimate from reliable contractors at an early stage in the preparation of the plans as site conditions, labor conditions and other factors vary so greatly in different localities.

II. Site Planning

In no class of architecture is site planning and the adaptation of the design to site so important as in the country house work. It is good practice to prepare a brown line contour map showing the principal views, trees, various buildings, gardens, points of entry and service. All preliminary studies of the house should be made on this layout sheet so as to insure proper coordination of the various natural features. It will also be well to indicate the angle of the sun for the months when the house will have its greatest use. If the house is to be used only in the summer months, shade from the afternoon sun may be of prime importance for terraces and living rooms, this condition being the reverse of a house which is to be used in the winter time. Some German architects place an analysis of the sun's angles on the border of all their plans so that they may be sure to take full advantage of proper orientation.

Needless to say the proper relation of the house to the site is often the major factor in arriving at a successful country house. Rather than avoiding the placing of house floors on different levels the architect should develop this feature when it is a natural result of the site requirements and efficiency from the interior standpoint.



HUNTING BOX AND SWIMMING POOL GROUP FOR COL. H. H. ROGERS, SOUTHAMPTON, L. I.
JOHN RUSSELL POPE, ARCHITECT

III. Group Planning

Country estates generally have two major groups of buildings: one composed of the service buildings such as servants' cottages, garages and stables, and the other the master's house. In the last few years there has been a tendency to split up the owner's house into several units, the main house containing the private living quarters of the owner and possibly a few guest rooms, and a separate building, the general sports house, providing tennis court, swimming pool, dressing room, bar and servants' quarters. This building sometimes contains the ballroom and other sport rooms such as shooting galleries and billiard rooms. On some estates separate guest houses are also provided.

IV. Special Requirements for Country Houses

(A) SERVANTS' QUARTERS.

In the city small bedrooms for servants are not a serious drawback as the servants may spend their leisure time at movies or other places of amusement, but in the country it is an entirely different problem. It is difficult enough at best to keep servants in the country and when their rooms are small and hot in summer under the low ceilings the difficulty is greatly increased. Some architects who specialize in country house work not only provide large airy rooms for the servants but also a pleasant living room and porch. It goes without saying that when possible the provision of cottages for married help is desirable but there will always be some unmarried help to be cared for in the main house.

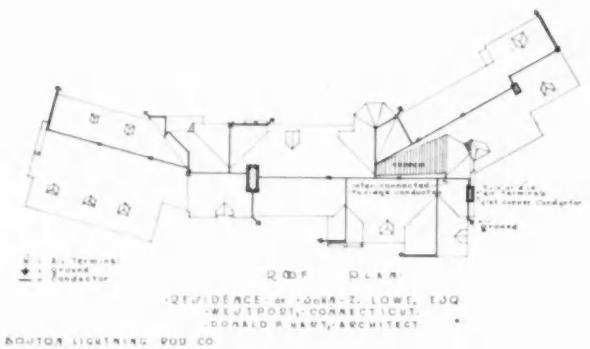
(B) FIRE PROTECTION AND INSURANCE.

At an early stage in the building design it would be well for the architect to obtain from the local fire insurance agent the underwriters' rules which apply to that particular locality.

In some cases insurance rates are affected by rather arbitrary rulings; for example, the rating may be affected not by a fire hydrant on the property itself but by the distance from the nearest public hydrant on a public highway. In a case of this sort it would be well to arrange for a public hydrant on the public highway as near the house as possible.

For maximum fire protection and best insurance rating on large estates it is generally necessary to provide a gravity water storage tank although in other respects the underground tank may be preferable. It is often advisable to have a fireproof first floor, and it is also well when possible to isolate the kitchen and service portion by fireproof walls and fire doors. To obtain the maximum reduction in insurance the openings in this fire wall should be protected by double fire doors.

"The chance of an unprotected farm building being destroyed by lightning appears to be 57 times as great as that of a protected building. In making reports a building is considered protected regardless of the condition of the installation. There are many defective installations, and fire marshals are unanimous in their opinion that these contribute in large measure to the losses in 'rodded' buildings."—National Board of Fire Underwriters. Laboratories Data. Vol. X, No. 8. Aug., 1929, page 172.

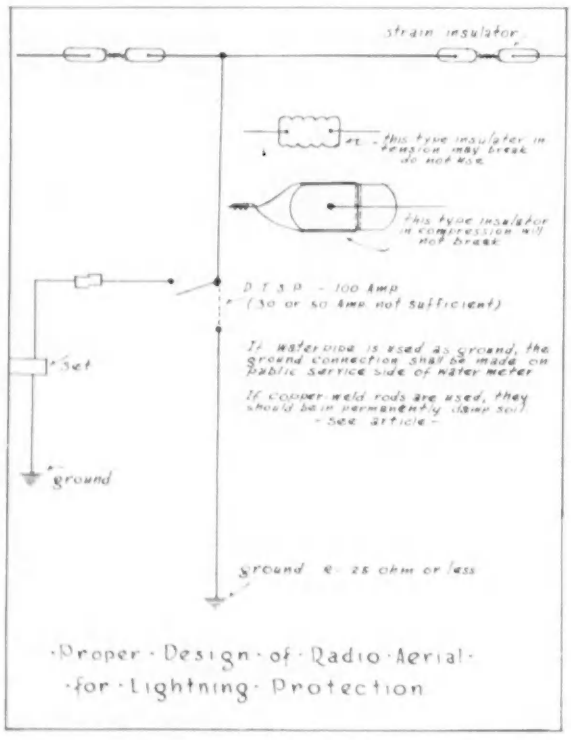


LAYOUT OF LIGHTNING INSULATION

In many localities there is considerable danger of a house being damaged by lightning unless properly protected. Lightning rods will not only give the needed protection but effect a saving of 5% to 50% in insurance rates depending on the location. The lightning rod need not be the eyesore of the Victorian period but can be installed so that it will not be noticeable.

Lightning conductors are installed primarily to conduct the negative charge of electricity, which is always present on unprotected buildings, into the atmosphere for the purpose of maintaining an equal potential between the cloud and the building. Secondarily, should the potential build up too rapidly, the rod will carry off a direct hit without damage to the building or its contents.

A system consists of a copper tape conductor which is carried along all ridges connecting air terminals. These are erected at gables, chimneys and along the ridges at intervals of not over 20 feet. All chimneys should be banded on the top with flat copper strips having an air terminal at each corner. Bands on chimney tops are connected to the ridge conductor by solid copper rods carried inside the flue to a point just above the chimney flashing where they are brought through and connected to the ridge conductor, or carried down the outside face of the chimney in such a way that they are not visible from the ground. Ground leads of copper tape, 1/8" thick, which can be laid under shingles, are connected to the ridge conductors in at least two places (according to the design and size of the building) and carried to the eaves where they are attached to solid copper



conductors and carried to ground inside or beside leader pipes and grounded outside and away from the buildings on water pipes (for one ground) and rods or copper ground plates, sunk to a low resistance level. Grounds may be economically installed at low points in excavation, before building foundation walls. Flat roof should be banded with ground conductors leading from four corners, and points erected at approximate intervals of the perimeter. All exterior masses of metal should be interconnected and grounded. In order to conceal conductors, provision should be made for installing the system prior to applying roofing.

The costs of these systems all installed are variable according to design and size of the protected building, but usually amount to from one-half to one per cent of the cost of the building. To protect trees with similar equipment costs from $40 to $80 a tree depending entirely on the size of the tree. Steel frame buildings such as tennis courts or conservatories should have their frame properly grounded.

It is now customary to specify that the electrol system shall comply with the rules of the National Board of Fire Underwriters. Likewise, it is advisable if lightning rods are installed on a country estate to specify that the system shall be installed in accordance with "The materials and workmanship employed in the installation of lightning rod equipment on the premises shall satisfy the requirements of the code for protection against lightning, an approved American standard, and the manufacturer of the material used shall be listed by the Underwriters' Laboratories, Inc., as a maker of standard products and shall arrange for a master label to be furnished in accordance with the program of the Underwriters' Laboratories' factory and Filed Inspection Service for lightning rods," and also a certificate from the Underwriters' Laboratory or the local light or telephone company (who are equipped for testing their own lightning protection) that the protection *system* has a resistance of less than 25 ohms.

(C) HEATING.

The country house differs in several respects from the city house in the heating problem. In considering whether to use an oil burner or coal heat it is well to investigate the reliability of the electrical current which will be required to operate the oil burner. If the current is subject to interruption in the winter due to sleet storms breaking overhead wires it is well to provide an auxiliary gas-driven dynamo for emergency use for house lighting and operation of the oil burners. In designing the layout of the heating system it is well to make provision for heating the servants' portion of the house independent of the main house as it often happens that the servant quarters will be occupied at times when the main house will not be used.

Unit heaters are especially satisfactory for tennis court and swimming pool rooms. In tennis court rooms they obviate the necessity of steam coils under the skylights. Coil would be objectionable here as they would cast shadows on the court. In addition to providing heat and ventilation in the winter they may be used for cooling and ventilating in the summer by running cold water through the radiators.

(D) WATER SUPPLY.

Naturally the question of water supply will be gone into in detail. The underground pressure tank has been found to be very satisfactory although at times the water is milky unless an open tank is provided in the attic where the air may escape. The underground tank should be buried in an unimportant location as in very dry weather the grass above the tank may wither. The large gravity type tank is sometimes used on large estates on account of the greater fire protection and better insurance rating.

(E) SEWAGE DISPOSAL.

With a sewage disposal plant special attention should be given to subsoil drainage and ample outflow tile provided.

(F) MASTER ELECTRIC SWITCH.

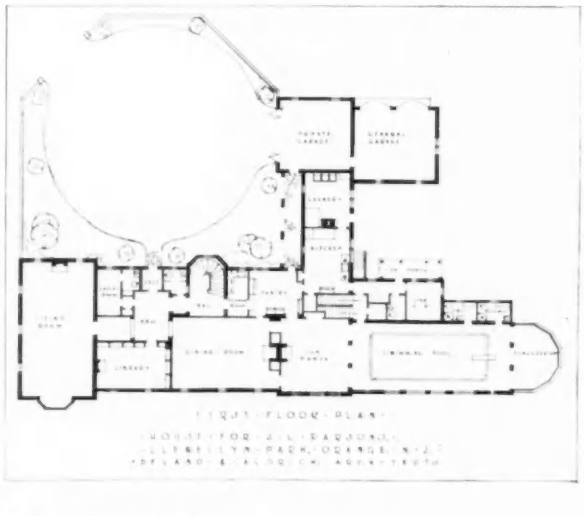
Many country homes are supplied with a master emergency circuit and switch. This enables the owner, in case of burglars or fire, to light the entire house

or certain key lights by turning a switch generally located near his bed.

V. Subsidiary Buildings

(A) GARAGES.

There is a tendency to attach a private garage to the main house. It generally happens, even on the most expensive estates, that members of the family will drive their own cars at least part of the time. The main garage for chauffeur-driven cars may be located at some distance from the main house or may adjoin the house but have a segregated entrance which gives privacy and accessibility to the main house, as in the plan by Delano and Aldrich.



(B) DAIRY BARNS.

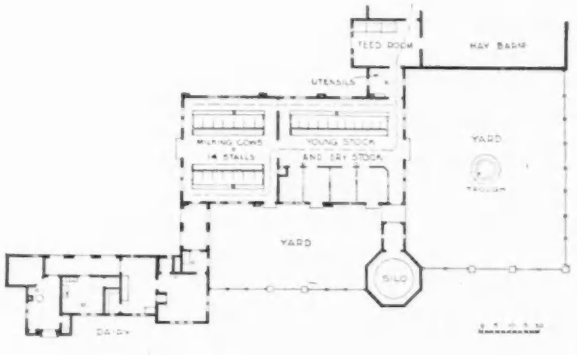
Location. The best exposure for the cow barn is undoubtedly with its long axis northwest and southeast; this places the building so that it will receive winter sun. The windows should be large and numerous. A separate wing for the cows which gives air on three, if not four, sides is a much better plan than to quarter them within a building which limits their exposure to only one or two sides.

Construction. Material for the interior surface of the cow barn is selected with a view toward the elimination of all wood. Even in a wooden structure the interior walls can be entirely covered with non-absorbent materials, which render it possible to make a wooden building just as sanitary as one of masonry. To get this result it is necessary that the walls to the height of 3 ft. 8 in. or 4 ft. above the floor (or to the under side of the window sills) be plastered in Portland cement, using the same mixture as for the top coating of the concrete floor, and forming a cement dado all around the building. This cement dado, as well as the plastering above, is best put on galvanized iron lath. Above this point the walls and ceilings are plastered in the usual manner but finished with some hard substance, such as Keene's cement. To reduce cost slightly the ordinary hard-finish plastering on wooden lath above the cement dado gives fairly satisfactory results. Plastering of the simplest kind is very much better than the old-fashioned method of sheathing with wood and varnishing the interior of stables, to which there is every objection—the woodwork is absorbent in spite of the varnish, the varnish deteriorates in a very short time, it makes a dark stable and is more expensive than the plastering. Offsets in the plastering should be carefully placed and 3 inch coves run at all interior angles with all exterior angles rounded. Where the cement dado and the white plastering on the side walls come together it is never desirable to make a joint; let the mason finish the two materials as smoothly together as possible. At the connection a 4 inch stripe may be painted, which, however, must be done in some damp-resisting paint, as the ordinary oil paint would be discolored by the action of the cement.

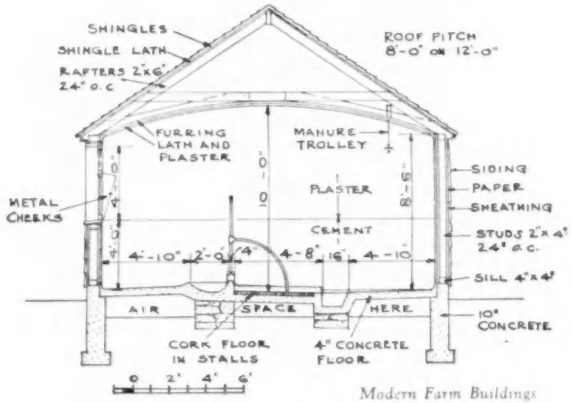
The idea of doing away with all dust-catching projections should be carried out even to the very smallest detail. It is astonishing how the dust from the hay will collect wherever it can find lodgment; for this reason even the muntins in the window sash are designed without moldings, while all horizontal muntins are best omitted entirely.

Sizes. The various State legislatures in the United States require that cow stables shall allow a volume of from five hundred to eight hundred cubic feet of air for each cow, but an average between these will be sufficient.

It is always advisable in a long row of stalls to have them 4 ft. 6 in. in length at one end of the row and 4 ft. 8 in. or 4 ft. 9 in. at the other, slanting the gutter and giving stalls of varying lengths where



DAIRY BARNS ON MARSHALL FIELD ESTATE
JOHN RUSSELL POPE, ARCHITECT



GUTTER AND TROUGH FOUNDATIONS

animals of different sizes or of individual habits may be accommodated.

Floors. The stall floors must be of some sanitary material, and concrete has been generally used, but this has the objection of being cold in winter. It is possible to cover the concrete stall floors with temporary wooden ones which can be removed in summer; though the wooden floors need attention and become foul without it. Creosoted wood blocks are fairly good; while these are much warmer than concrete, they are not so sanitary, as they become absorbent in time. In the stall the insulation of the concrete floor against cold is absolutely essential for the comfort of the animal, but this insulation should be had *above* the concrete floor and *not below*. Much better than to waterproof underneath the stall is to reinforce the floor slab at this point and excavate a foot or so of the earth beneath it. This keeps the floor entirely above the ground and is infinitely better in assuring dryness than any waterproofing. In fact, by extending the foundations of the gutters and troughs as shown above, and reinforcing the concrete, the entire floor throughout the stable may be raised above ground. This construction costs very little more than the usual method of laying the floor directly upon the earth and is greatly to be desired.

An important matter in the comfort of the stable is the floor drainage, always devised with as few bell traps as possible, and all floors draining so that the water after hosing down will run away and leave the floor to dry quickly. In order to do this a pitch of at least 3-16 in. to the foot is necessary, and this is a minimum grade; ¼-in. to the foot is frequently better. A drainage plan of the floors should always be provided, from which the mason and the plumber both can work. As the bell traps are put in before the floors, it is very necessary that these should be located at exactly the proper levels. It is astonishing how frequently the mason and plumber, when left to themselves, will place a bell trap at what seems the very highest spot in the floor. To overcome the combined tendencies of these two associates, it is well to indicate the bell trap on the plan, located ½ in. or ¾ in. *below the grade* of the concrete floor, though even this precaution frequently fails.

The gutter should be as high on the side toward the passageway as it is on the side next to the stall. A low gutter at the passageway will allow the manure in dropping to splash more against the outside walls; while a higher gutter here very largely prevents this.

Ventilation. The subject of ventilation is a trying one, for no matter how carefully the architect may plan his ventilating system, it is almost impossible to find cattlemen who will take the trouble to acquire sufficient knowledge to use it intelligently.

The theory of all exhaust systems of ventilation is to take the air out at the bottom of the room and let it in at the top. This management of the air currents creates a *circulation* absolutely necessary for ventilation. Foul and vitiated air falls and remains near the floor, and from here it should be removed. The fresh air is let in at the top of the room, where the air is the warmest and where the cold outside air may be warmed somewhat before it comes into the range of the individual.

Hay Loft. The great objection to hay above the milking cows is that at haying time so much dust is caused in filling the lofts that the making of good milk during that period is impossible, even with all the windows of the milking barn closed. For that reason the hay is best put into the barn at the rear of the building, and as far removed from the quarters of the milking cow as possible.

Feed Room. From a scientific as well as a practical point of view, the feed room is just as necessary for the care of the animal as the pantry is to the service in the human household. It is located between the hay barn and the cows, and is the place into which the feed is drawn, and there cut and mixed. Feed bins are invariably lined with metal, the four sides as well as the covers; and if projected down into the room below, the feed will not clog and cake in the bottom of the bins, but will run freely through the chutes. Four compartments are desirable, though three are usually sufficient—two small ones and one or two larger ones, as the young stock, dry stock and milking cows all require different rations.

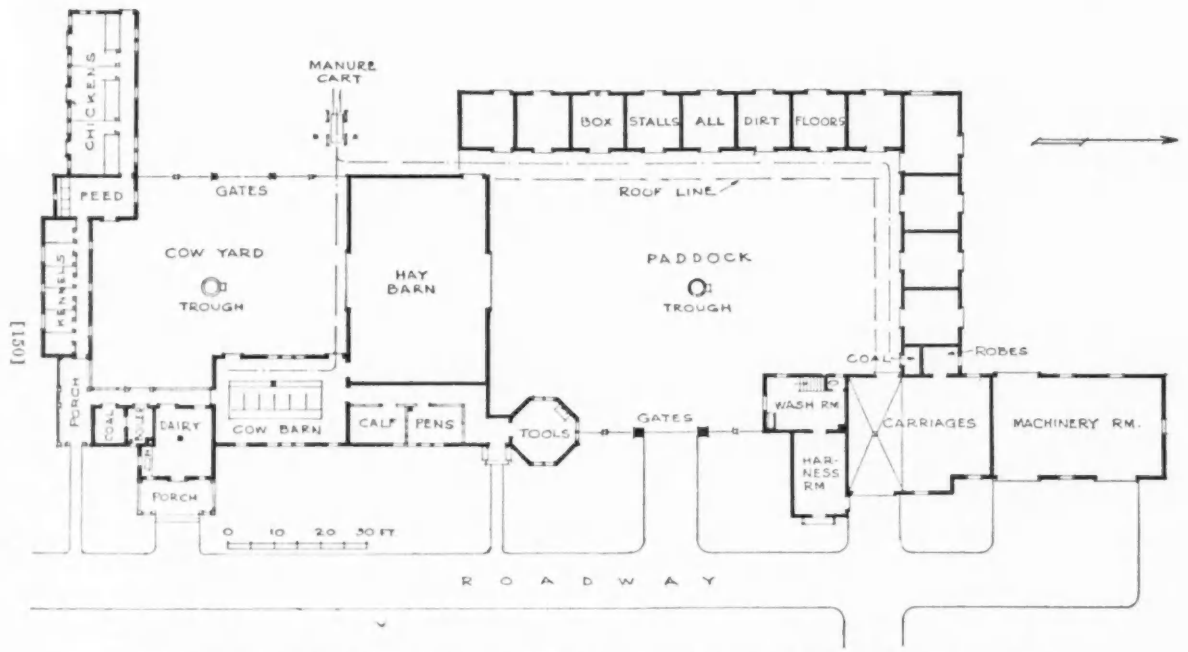
It is desirable, especially in large plans, that the feed room should have an outside door, so located that a loaded wagon may be driven through it easily without backing. There is no objection to backing out empty; but all places of storage should certainly be located where they can be reached without it being necessary to back when loaded.

Milk Room. A milk room may be placed at the end of a passageway and adjoin the dairy. The real reason

for this room is to provide a place that may be kept free from flies, odors and dust. If the cow barn is such a place (and it should be), then the necessity for a milk room diminishes and it has occasionally been omitted in the hope that ideal conditions at the cow barn may prevail and that the milk room may not be required.

OTHER BUILDINGS OF THE FARM GROUP

In the farm barn group the next largest building is the hay barn, a very interesting structure for the



PLAN OF FARM BUILDINGS AT BROOKVILLE, L. I., FOR J. E. DAVIS, ESQ.
ALFRED HOPKINS, ARCHITECT

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architect, as it is the one which affords him the greatest opportunity to secure original and interesting architectural effects.

The Hay Barn. The construction which allows the handling of the hay by fork should be done in the simplest possible manner. In the old type of farmer's barn the framing was carried out with post and tie; this method, while satisfactory structurally, fills the entire interior of the barn with beams running in various directions, and makes the use of the hay fork difficult if not impossible.

If hay is bought, it is best purchased in bales. Baled hay takes up approximately one-third the room which loose hay does (150 cu. ft. per ton for baled hay as compared with 500 cu. ft.), and it is frequently better to build a smaller hay barn and pay for baling the hay, even when hay is raised on the farm. Hay can be baled at the farm for $1.15 a ton. Hay is more manageable in bales and it has the immense advantage of greatly reducing the fire risk. Baled hay will not burn while there is scarcely anything more inflammable than hay in bulk. The use of baled hay in preference to loose hay is a matter which has not received the attention it most certainly deserves.

The hay barn is most advantageously placed at the north. The natural disposition of the other buildings is to the south of the hay barn, the cow barn at one end with the horse stable and sheds at the other. This strict division between the work of the herdsman and the horseman must be enforced by the architect at every point, for the work of the one should go on quite apart and without interference from the work of the other.

Horse Stable. In the horse stable, as in the cow barn, all moldings or projections of any kind should be avoided. Horses may be arranged in double or single rows. The single row of stalls is very much better, as it enables one side of the stable to be thrown open to the sun and air. The great trouble with the double row of stalls is that it makes a dark stable and a very warm one in summertime, because it is necessary to keep the windows in front of the horses so high and so small that little light or ventilation can be had through them. The type of stable which has a passage in front of the stalls, though requiring a larger building, is an excellent idea, giving more ventilation and comfort for the animal than any other method. It keeps the horses

away from the light which frequently blinds them. A man with sensitive eyes can easily imagine the effect upon them were he tied in a stall before a window and in such a manner that he could not readily look away from it. This is precisely what happens to the horse in the average stall. The windows should therefore never be lower than 6 ft. 6 in. from the floor, and it is frequently desirable to paint the glass, or shade it by overhanging eaves. For the summer nothing is better than blinds similar to those described for the cow barn. This is the best possible method of keeping out the sun and letting in the air.

Stalls. The simplest possible stall partition is merely a pole. This type of stall is very generally used throughout England, but it seems impossible to introduce it in this country. It is the best solution of the stall partition, as it allows the stalls to be made up easily and permits of almost unobstructed air circulation. Where the rigid stall division is put in there is nothing to equal the ventilating type of stall which has the partition planks separated by iron spools so that air can pass between them.

Country houses of the larger sort will often have stables for riding horses or polo ponies. In stable design it will generally be advisable to consult with an expert on this type of work.

VI. Sports Building

As a result of the great increase in wealth in the last few years the leisure class has been looking for new forms of enjoyment. One of the outstanding results of this surplus wealth has been the development of the sports house. Although this type of building is not new, having been built for a few very wealthy people long before the war, the last few years have seen a decided increase in the number and luxury of buildings of this character. It is probably one of the most satisfactory ways of spending surplus money.

The sports building contains different elements for amusement, depending on the tastes of the owner. Generally it contains a tennis court, swimming pool and locker rooms. A bar is sometimes adjacent to the locker rooms. Another feature is a ballroom which may contain an organ for musicals and equipment for movies. In some instances where funds are limited, the tennis court is at times used for dancing or movies. Where this dual use is desired, the floor is covered with cork or hard wood.

(A) TENNIS COURT.

There are several special problems connected with tennis court design. The court proper is 36 ft. by 78 ft. but it is generally customary to make the room 60 ft. by 120 ft. which allows for playing space and planting. The height varies from 40 to 50 feet at the net.

It is interesting to note that "in the case of International Lawn Tennis Championship or other official championships of the International Federation, there shall be a space behind each base line of not less than 21 feet, and at the sides of not less than 12 feet." (Spalding's Tennis Annual). This is exclusive of any space which may be allotted to planting.

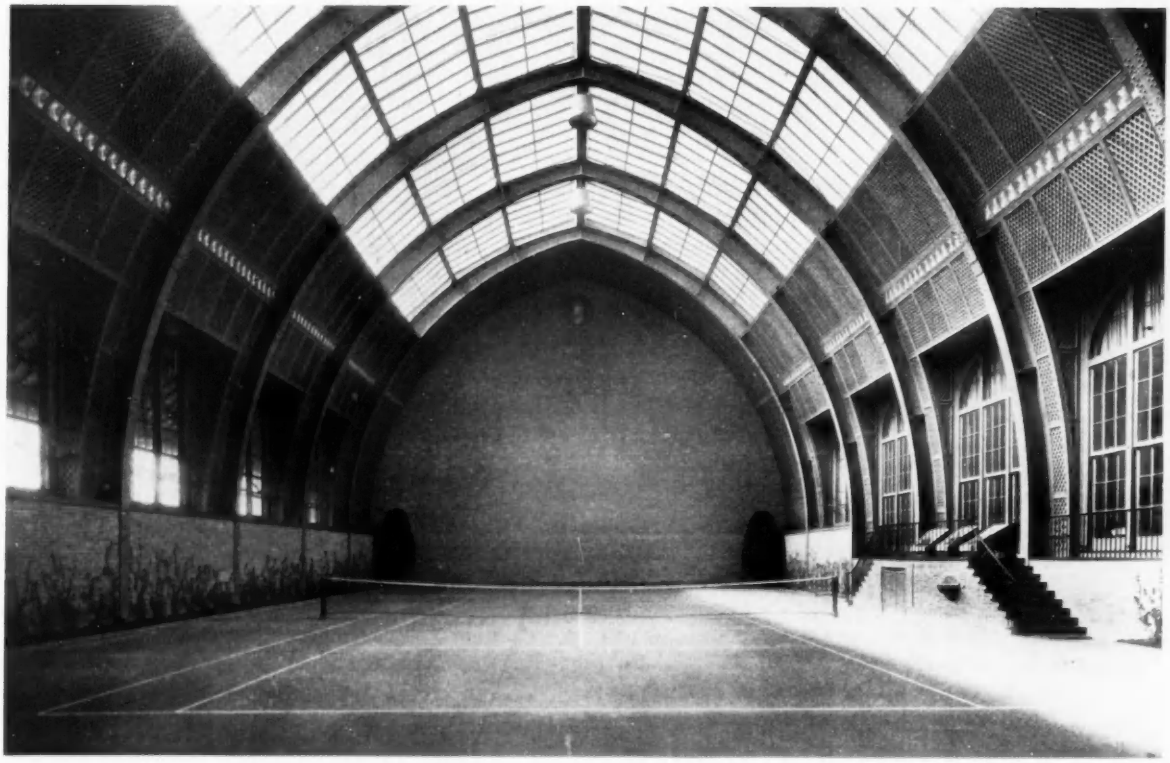
Floor. The court floor, if not to be used for other purposes, should be of clay and sand. It is impossible to specify the mixture of clay, sand and water which will obtain the best results since clay varies in every district. The architect will have to select a tennis court maker who knows his business, and trust to his judgment. This clay surface should extend at least 16 feet to front and rear and 8 feet on each side. It is customary to plant vines around the border of the court proper to add to the appearance of the building and take care of the rebound of balls. In some cases this planting is protected by netting but the better policy is to use hardy vines which if planted sufficiently thick to deaden the rebound of the balls will not be injured by the balls which hit it. The ground surface in front of the planting should be sandy to prevent the balls rolling on the court.

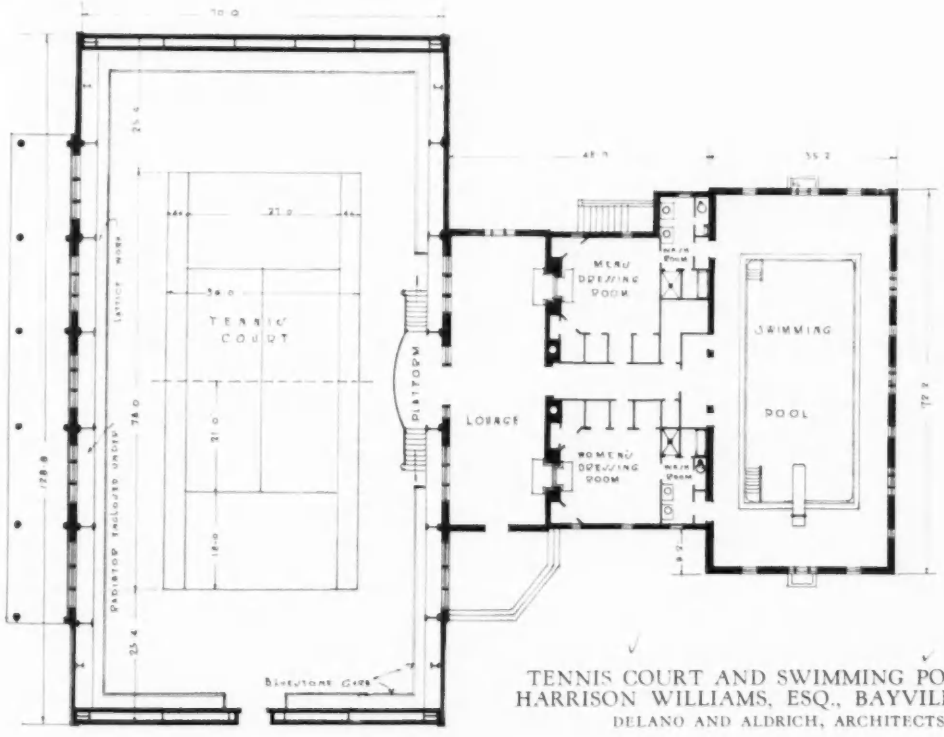
From the standpoint of appearance, head room and cost, probably the most satisfactory type of roof truss for use over tennis courts is the *Lamella* trussless vault construction. The building may be designed with the arch running longitudinally (which gives the maximum height at the net line) and carried down to a low buttressed wall at either end. With this form of construction no tie rods are needed. The cost of truss in wood with sheathing is approximately 50c a square foot. The cost of the steel without sheathing in place will be approximately 75c a square foot. The roof may be covered with glass as shown in the illustration, page 365, of the October number of The Architectural Record.

Skylights. Special care must be taken to insure proper lighting of the court. When possible, the court should be located on an east and west axis. Some architects maintain that the skylight should be on the north half of the roof only, while other architects have the skylight on both sides of the roof. The local weather conditions, time of day and season of greatest use will affect the choice of method.

The glass should have a finish that will diffuse the light. Poor skylight construction and the use of glass not suited for the purpose will ruin an otherwise practical and attractive tennis court building. Flat types of skylights must be avoided. The steeper the pitch the more satisfactory. No glass should be over 20″ by 60″ and even 16″ by 48″ would be better. A standard make of flat glass which is easily and economically replaced should be adopted. It must be wire glass for the protection of those beneath. The specification should call for the definite make of skylight.

It is impossible to eliminate glare entirely without





TENNIS COURT AND SWIMMING POOL FOR HARRISON WILLIAMS, ESQ., BAYVILLE, N. Y.
DELANO AND ALDRICH, ARCHITECTS

materially reducing daylight illumination, but by complete diffusion of the direct rays of the sun, strong contrasts of light are reduced to a more uniform intensity of illumination, which is not objectionable to those with normal eyes. One must bear in mind that there is no specific intensity of illumination which is considered the glare point; what might be glaring to weak eyes would not be objectionable to strong ones.

Sufficient study of the problem results in a selection of one of three distinct types of installation: grid, ribbed or sand finish. Where daylight illumination only is in question, a grid-surfaced wire glass such as *Factrolite*, which is designed to completely break up the direct rays of the sun by diffusing them equally in all directions, should be used. Sand or grid-finished glass will conduct condensation if the pitch of a skylight is sufficient, but where the pitch is low or condensation apt to be heavy, a ribbed glass, such as *Pentecor*, will form channels for conducting condensation without sacrificing light by total reflection.

The quality of illumination through ribbed glass is decidedly different from that through grid glass in that grid glass thoroughly diffuses in all directions, thus reducing the light intensity but making it uniform, while ribbed glass deflects the light largely in one plane, more than doubling the intensity at a point fifty feet from the light source, as compared with clear glass. This of course means more glare at those points which depend upon the directional installation of the skylight.

A double glazed skylight may be used if the skylight covers practically the entire roof, the outside glass to be a grid surface, glazed with the smooth surface to the weather, and the inside glass to be $\frac{1}{4}$" ribbed, glazed with the ribs on the lower side, to conduct condensation.

It sometimes happens that the under side of the skylight is whitewashed a year or two after the building is finished in order to cut down the brilliance of the light. If the skylight is placed on the north half only or a double skylight provided, this will not be necessary.

Next to selection of glass comes the problem of preventing shadows of steel truss being cast on the court. Some hold that this is a real problem to be overcome by eliminating the trusses as far as possible while others say that with proper diffusion of light by glass at the height it is above the floor, there is no danger of shadows being cast.

Night Lighting. The requirements for the correct artificial illumination of Indoor Tennis Courts may be classified as follows:

1. High Intensity
2. Uniform Distribution
3. Avoidance of Glare

These three points are of vital importance if the game is to be played as effectively at night as during the day. Of course, there are minor considerations such as the color of the walls and the like. However, if in the planning of the artificial lighting these factors are given their due weight, a well-lighted court will result.

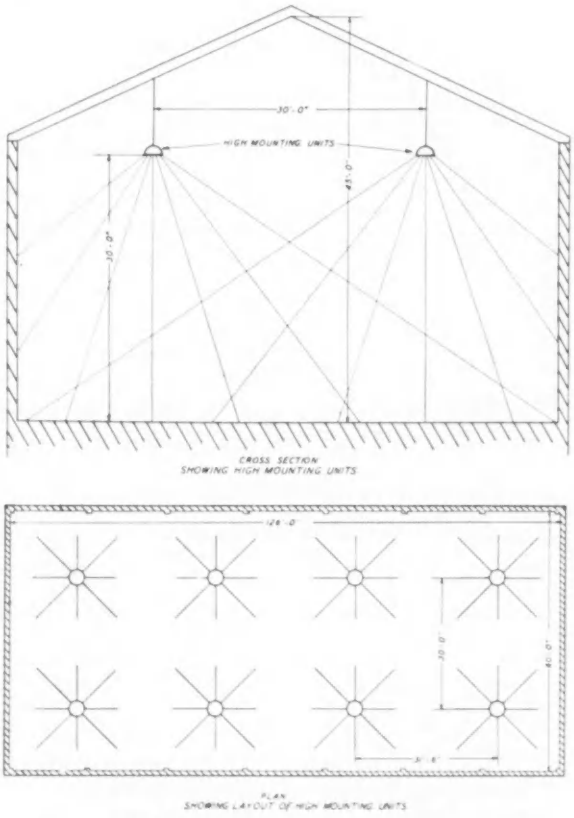


Fig. 1. WRONG WAY OF LIGHTING TENNIS COURT BUILDING

Experience shows that an illumination intensity of the order of 20 to 45 foot candles is essential. The figure, 20-foot candles, is an absolute minimum to work to. On the other hand, 45-foot candle intensity is not the maximum by any means when we consider that speed of vision increases very rapidly with increase of illumination, and also that on a bright sunny day the usual intensity outdoors is approximately 10,000-foot candles. The eye takes pictures at the rate of from 3 to 12 per second depending entirely on the amount of illumination present. In a game such as tennis where movements are rapid, it is essential that the eye operate quickly. This it can only do under high intensity illumination.

The second requirement listed states that the light must be distributed evenly over the entire court, and to a point approximately 20 feet above it, which is

considered the maximum playing height. An even distribution of light is very necessary, because any great variation in intensity will tend to camouflage the speed of the ball and thus render the player unable to properly gauge his return stroke. A ball traveling from a relatively light area to a darker one will appear to the player to slow down. And conversely,

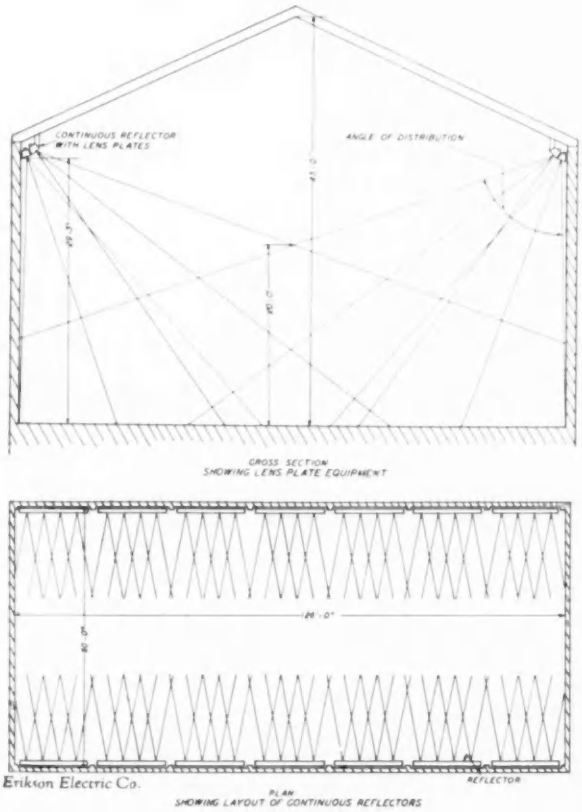


FIG. 2. CORRECT WAY OF LIGHTING TENNIS COURT BUILDING

going from a darker area to a lighter one, the ball will appear to speed up. Obviously this would defeat the purpose of the lighting installation, and render playing impossible.

Glare is naturally to be avoided. Glare has two effects: depression of vision and discomfort. If the lighting is carefully planned, these factors will not exist and the player will be able to follow the ball in the air with comfort.

Let us now examine the right and wrong ways of lighting an indoor tennis court. In the past the general architectural procedure was to provide the standard length and width for the building and a ceiling height of such dimensions to include the same relative playing area as would be provided by an outdoor court. This height varied from 40 to 60 feet. Obviously to illuminate such a court some method of direct lighting must be employed. The usual practice has been to install what is known as "High Bay" units. These units, as their name implies, were designed for high ceilings and are of the direct lighting type. The fixture employed high wattage lamps; was open at the bottom exposing the lamp; and directed all the light downward and outward symmetrically, as is shown in Figure 1. Light is given off at high angles and even though the head is held in a normal position, the high light enters the eye and causes optical discomfort. Also when the head is raised to follow the movement of the ball, the high candlepower rays from the exposed bare lamps cause further discomfort. Although it is possible to provide high intensity, even illumination by such a system, the unavoidable glare factor is of sufficient importance to call it unsatisfactory.

A system which is very satisfactory and which has met with much success employs prismatic control lenses. These lenses are constructed to collect the rays of light and send them in the direction where they will be most useful. These lenses which are 12 inches square are placed side by side in a continuous trough, running along both sides of the court, each foot of the trough covering a very definite area of the court. In this system the rays from the bare lamp, instead of being scattered over the entire area, are concentrated into a narrow zone. It is natural therefore that the intensity in that zone will be very high. Because of the high candlepower values provided by each foot of this system, the resultant general illumination is also going to be high. Figure 2 shows the narrow cones of light being emitted by this system, and with the close overlapping of these cones uniform illumination is obtained.

Because of the high concentration of light within the given zones and the correct placing of these zones with respect to the playing area, glare is avoided. The light is projected downward from each side of the court. A player looking across the court at the opposing player is not looking into a light source, but rather into a uniformly lighted field. The crossing of the beams from each side takes place at 20 feet above the floor so that uniform illumination is provided throughout the playing area. Figure 2 shows the exact arrangement of the lenses. The inner rows of lenses are continuous, whereas the outside rows are not. The inner rows illuminate the entire playing area, while the outside rows build up the intensity right at the edge of the court, the area outside the court and also the side walls. The outside rows reduce the contrast of illumination which would ordinarily exist, and are therefore very essential.

A cross section through an Erikson trough lens system is shown in Figure 3. This shows the relation of the optical system which is necessary to make this uniform high intensity illumination free from

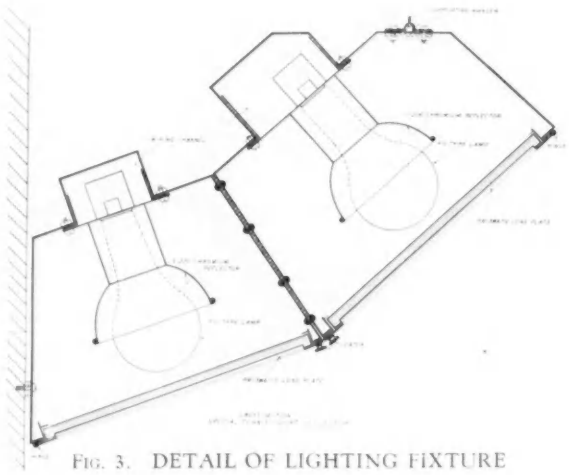


FIG. 3. DETAIL OF LIGHTING FIXTURE

glare. The trough itself, including all wiring pockets, and hinged frames, is made of heavy gauge steel. Chromium reflectors are provided to reflect the upward light down into the useful zones of the lens. One side of the system is attached to the side walls and the other suspended on a chain hanger from the ceiling. Instead of a chain suspension, a rigid suspension can be supplied and then a false wall plastered from the side of the reflector up to the finished ceiling.

ACOUSTICS. Attention must be given to the problem of sound absorption in an indoor tennis court. Cinder blocks left exposed would damage the balls, but dense planting of vines will eliminate this trouble and aid in acoustical correction. Cork or one of the insulating boards would give a satisfactory finish and would also have the additional advantage of insulating the wall and permitting the rapid heating of the room.

INSULATION AND HEATING. If the interior of the wall is covered with an insulating material such as cork or a wall board, the room can be heated much more rapidly and cheaply than if the wall were finished with cement or plaster on the masonry. As the room in winter will probably only be kept at a temperature slightly above freezing when not in use, it is quite important that it be rapidly heated from the standpoint not only of cost but of comfort. Lined with cork or wall board the wall can be brought to room temperature in ten minutes, whereas, if plastered, six hours will be needed to bring the wall to room temperature, utilizing twice the heat that is required to keep the room warm once the walls are heated. The room itself will be warmed much sooner than the walls but it will have a chilly and damp feel from the absorption of radiant heat by the walls.*

*Report of the Building Research Board for the year 1927. Department of Scientific and Industrial Research, London. Published under the Authority of His Majesty's Stationery Office, Page 101.

(B) SWIMMING POOLS.

Most sport houses have swimming pools. The problems of design and equipment are covered in an article which appeared in the January, 1929, issue of The Architectural Record.

(C) SQUASH RACQUETS. (See basement of Fisher House.)

This is a game which is gaining very rapidly in popularity in the United States. It should not be confused with squash tennis which requires a larger court and uses a regular tennis ball. Squash tennis had temporary popularity in parts of America but is now giving way to squash racquets. This game is much more suitable for those of limited means than indoor tennis as a single court (18½ ft. wide by 32 ft. long with a 16 ft. ceiling) can be placed in the basement of the house. The double court is 25 ft. wide by 45 ft. long. The court may also be arranged so as to be available for basketball or for use as a play court for children.

The walls may be of three coats of Keene cement, troweled smooth. The walls should come to the floor as indicated in the sketch and should not have base board or cove as one of the trick shots in squash is to place the ball in a corner. The door should be of the same material as the wall; that is, if the wall is plaster, the door should have plaster surface. Some recent courts have cement walls although a wood wall is called for in the rules on the grounds that it has more resilience and increases the liveliness of the game. This, however, is not needed as the whole trend in squash in recent years has been to decrease the liveliness of the ball so as to increase the foot work of the player and to shorten the time consumed in playing the point.

The ceiling may be plaster or insulating board. The latter is preferable because of the sound absorption for the court and heat insulating value for the floor above. It is generally customary to keep the squash court quite cool and it is possible to enjoy the game with the temperature below freezing.

Electric lights should be recessed in ceiling and the floor lights should be placed in the ceiling so as to illuminate the front wall.

Unit heaters may be provided for heating and ventilating. These may be located in rear of the telltale attached to the front wall which may be slotted to permit warmed air to come through. This unit heater may be used for venting and cooling in the summer time.

The floor may be constructed either of maple or of blox-on-end.

If a balcony is provided the front wall must be at least 6 ft. 6 in. above the floor of the court. The bleachers should be arranged at an angle of approximately 60°.

EDITORIAL

EXPANSION OF THE ARCHITECTURAL RECORD FOR 1930

The architect, though primarily an artist, must still be the master, either in himself or through others, of all the applied sciences necessary to sound and economic building.

A. I. A. Handbook of Architectural Practice.

A work of art is necessarily the conception of a single brain. Other minds may contribute towards the perfection of details of the design and towards the translation of the design into execution. The executed work is artistically authentic to the extent that the author organized his conception with prevision of the collaboration desired.

Long before structures had reached their modern complexity, the cooperation of many minds in the design and execution of works of importance was well established. But modern complexity threatens to overwhelm the architect's capacity to foresee the collaboration necessary to organize his design.

The applied sciences are in an evolution which in scope and swiftness is one of the marvels of all time. Yet in architecture the first result of this development seems to have been an excessive obsolescence of buildings that represents the biggest waste of capital of the present generation.

Prior to the war, which accelerated mass production and standardization, real estate appraisers estimated the average economic life of new steel frame office buildings at fifty years. This was before the introduction of zoning laws, which tend to slow down those factors of obsolescence that originate in shifting business centers within the city. Today despite the mitigation of the zoning laws, the average economic life—the period during which the building is profitable as an investment—is estimated at only forty years.

When one admires the skyline of the modern city, it is rather startling to reflect that this impressive scene economically is little better than a glittering stage setting. To reduce this evanescence is an architectural problem, to be stated in this way: How can the architect, under modern conditions, recapture the mastery, either in himself or through others, of all the applied sciences necessary to sound and economic building?

That economic waste is an incidence of progress in the applied sciences is well known. But if a building typical of such progress becomes profitless in so short a time as forty years, it is hard to escape the conclusion that the design was obsolete in essential particulars when the building was constructed. This at any rate is the contention of building managers, efficiency engineers and other specialists who argue that their advice is necessary when the design is being organized.

Urgent financial considerations, however, demand a haste which precludes comprehensive investigation. The carrying charge in taxes and interest of an untenanted property is a menacing loss which the architect and the owner are obliged to balance against possible deficiencies of hurried design. The conditions of architectural practice predicate time for investigation, yet withhold the time.

In the case of any new building proposed, there are two groups of technical, economic and functional considerations governed by applied sciences that require study, namely, those common to the type of building and those peculiar to the individual building. The first group it seems clearly the duty of the architectural press to investigate searchingly and continuously for the benefit of the majority of architects who are not in a position to specialize.

Original Research

Acting upon this belief, The Record last January inaugurated a department of Technical News and Research, the aim of which is to systematize the latest accredited technical, economic and functional building-type information bearing on the practical aspect of design. The information is related to specific types of buildings and is presented ready for immediate use.

A typical study comprises (1) a combined checking and specification list, (2) a compilation of functional data originating in varied fields—e.g., medicine, athletics, education, (3) a study of current practice in structural and other branches of engineering, (4) an analysis of materials and equipment, (5) an analy-

sis of costs and (6) a selected bibliography. It not only states what is the best practice with respect to details of plan, construction and equipment, but points out what special problems have not yet been satisfactorily solved. These studies do not of course exhaust the problems of the building as a work of art, but they are integral to any artistic conception in which the "art" is not merely applied decoration.

The reception accorded the department by subscribers and the number of requests received for information on untreated topics have not only confirmed the judgment of The Record as to the usefulness of the service, but have also demonstrated the existence of a demand for its expansion.

Emphasis is placed upon the Technical News and Research department, because we want the widest possible use to be made of it. But it is, after all, merely a particular aspect of the general purpose of The Record. This is to record and interpret the facts of American architectural development.

A Time of Transition

In every department—industry, domestic and social life, politics, art, education and religion—American life is in active and significant transition. Architects are consequently obliged to accommodate plans and designs to novel conditions and purposes. They are satisfying the obligation with varying degrees of inventive ingenuity and of interpretive imagination.

The Record by means of photographs and drawings records what architects are doing to meet the demands which American life makes upon them. By means of its text it pulls this news together, points out the direction in which architecture is traveling, and places a comparative valuation on its diversified achievements.

The New Keynote of Design

Today's transition in design is not merely the customary rejection by a new generation of the authority of the old. It is a radical departure, occasioned by profound industrial and social readjustments.

A new style of expression must, of course, go through a period of seemingly confused experiments before it finds itself. Not a partizan of any single school of experimenters, The Record nevertheless assumes that the keynote of modern design is to be found in all those experiments which frankly employ the artistic qualities inherent in machine-made units, and achieve their effect through an economy of line, form and color. An interest in modern design thus soundly based is not incompatible with continued respect for principles of composition established and embodied in the past.

Color Experiments

The tendency towards simplicity of line and form impels designers to seek richness through texture and color. Large building masses and expansive floor, ceiling and wall surfaces, unbroken by hand tool decoration, demand a new color technique; hence current experiments in architectural polychromy are of outstanding interest. The Record is generous in the use of color plates reproducing successful examples of decoration by texture and color.

Working Drawings

The new vocabulary of architectural forms has not yet been recorded to any measurable degree in the medium of working drawings. Splendid details and descriptive data of the older styles are easily available, but nowhere can the draftsman find working documents dealing with contemporary design. To meet this need The Record features line drawings and details of the most recent work. Details of shops, store fronts, theaters, office buildings, apartment houses and so forth, illustrating successful innovations in design and construction, are selected for publication.

Change in Subscription Price

The subscription price of The Record has almost from its beginning, in 1891, been the same: three dollars. The magazine would like to continue indefinitely at this price, now so familiar and comfortable to its many constant friends. Unfortunately since 1917 printing and paper costs, postage rates, and all other expenses have risen sharply. And the enlargement of the page size in 1928, the adoption of gravure, offset and even water-color printing, the addition of the new department of Technical News and Research, the enlargement of the editorial staff—all these have added tremendously to the cost of publishing a professional journal such as The Architectural Record.

A more equitable basis of serving our subscribers has therefore become necessary. On January 1, 1930, the subscription price will be raised to five dollars (Foreign, $6.50), a rate which we believe readers will agree is more in keeping with the high character of the editorial contents, particularly in view of the considerable expansion in such important sections as that of Technical News and Research. Present subscribers all have the privilege of renewing for one year at the old rate of three dollars provided this is done before January 1, 1930.

Michael A. Mikkelsen.

Photo. Hughes

HOUSE FOR WILLIAM R. TRACY, BLOOMFIELD HILLS, MICHIGAN

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BOOK REVIEWS

CARL MILLES: SWEDISH SCULPTOR

VERNEUIL, M. P.

Carl Milles, Sculpteur Suedois, suivi de deux etudes: Bildhauer Carl Milles par Walther Unus. The Art of Carl Milles par Charles Marriott. 2 vols. Paris & Brussels. G. Van Oest. 4to. 176 pp., with 54 illustrations in text, and 128 plates and 16 pp. index. Sewn, 500 francs.

These two volumes are a fitting tribute to the genius of Carl Milles. When one has been to Lidingö overlooking the waters around Stockholm and has wandered about the terraces of the artist's estate, one realizes that at last the twentieth century has produced something comparable to the Renaissance.

M. Verneuil spent three months there, writing his text, while Carl Milles was working at his sculpture and directing his assistants. This intimacy is revealed in the first volume by Verneuil, a sympathetic historian and an adequate critic. He makes no impossible claims; he moderates his Gallic heat to the temperature of the North. He says that Carl Milles is enamoured of form and material, and that he is a consummate virtuoso in his craft. These are things that go to make great artists. Carl Milles has the monumental sense; he has the architectonic sense, and these are things that made the greatness of the Renaissance sculptors. He has form; he has also idea. Form and idea enable a man to use material things with spiritual things and make them one. Milles accomplishes this fusion. To say he is nationalistic is good; he is indeed a great Scandinavian artist but he is more. He uses the spirit of the Swedish legends as Wagner exploited those of the German to ends which become more than Swedish and German—to universal ends. Once you have become accustomed to the strange new form-structure of Carl Milles you know you are in a world of fresh creation. Charles Marriott, who contributes the supplementary essay in English, refers to the intensity of feeling and the emotional range of Carl Milles. These two elements are conveyed by every piece of sculpture which issues from the ateliers of Lidingö. Marriott perceives that Carl Milles has reached balance in his various powers—"his grasp of a composition as a whole, his northern imagination and sense of character, his felicity in illustration, his command of form in the abstract, his decorative ability and his remarkably sympathetic use of materials." The German authority, Walter Unus, also endorses these views.

The book has illustrations produced in the finest style of photogravure: monuments, statues, fountains, architectural decorations—an extended display of artistic ability which has enriched the world.

KINETON PARKES.

CITY PLANNING

GANTNER, JOSEPH

Grundformen der Europaischen Stadt. Schroll & Co., Vienna, 1928

MR. GANTNER, well known publicist, art historian and editor of the progressive monthly "Das Neue Frankfurt," has made this study of the genetical principles of the European city. As a historical account it proves to have its bearing also on the origin of that type of city plan which developed in the United States. The layout of geometrical regularity, first ascribed to Hippodamos of Milet twenty-five centuries ago and still with great clearness represented by the excavated ruins of Knidos, Priene or Selinunt, undergoes an interesting evolution in the Roman colonial town.

It is by no means lost in mediaeval times and makes its American debut in William Penn's plan for Philadelphia. The street layout of the ancient seaport Milet on its peninsular site has its resemblance to Manhattan. L'Enfant's plan for the federal capital also finds its instructive precedents in the Italian, French and German Baroque.

The little town of Montpazier, founded in southern France by the English some 600 years ago, shows long and narrow city blocks, obviously by experimenting with sun exposure. While another orientation was tried here, it is evidently done in a similar spirit, as in the proposed layout of a modern downtown section, with long and excessively narrow city blocks and without inner courts, which the writer published some years ago, not knowing this interesting gothic precedent.

Mr. Gantner has assembled attractive illustrative material, including many air-photographs valuable to all who like to trace certain basic qualities of the modern city back into foregoing stages. He abandons the classification of the "naturally grown town" and the "artificially grown town." Following him, the two elementary types are the "irregularly" and the "regularly" created town. In all cases he assumes consciousness of human decision whether the layout follows grades and configurations of its natural setting or is prejudiced by a planimetrical scheme based on the regular city block as element. It might be wished that a more definite distinction had been made between the geometrically irregular and the irrational layout, which should not be confused by the reader. *Traffic conditions*, for instance, innate to a certain locality, lead often to solutions, which are very rational and still far from being geometrically simple and regular.

RICHARD J. NEUTRA.

(Continued on page 170, ad section.)

Above, Union Metal Bracket No. 2067.
Below, Union Metal Newel No. 1668.

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ARCHITECTURE

CRAM, RALPH ADAMS.

American Church Building of Today; a selection of photographs of exteriors, interiors, details and plans of churches recently erected. New York: Architectural Book Pub. Co., Inc., 1929. ix, 283p. front., plans, plates. f°. $7.50 726

The author outlines the evolution of church building and discusses the most desirable types of ecclesiastical architecture for present day use. The plates illustrate the work of about fifty contemporary architects.

EFFMAN, WILHELM.

Die Kirche der Abtei Corvey; mit Unterstützung der Provinz Westfalen aus dem Nachlass des Verfassers herausgegeben von Alois Fuchs. Paderborn: Bonifacius-Druckerei, 1929. xv, 159 p. front (port.), illus. (incl. plans), 48 plates on 24 l. f°. 20 marks. 726.7

A history, in detail, of the famous Benedictine abbey of Corvey, from its foundation in the ninth century through its later reconstruction.

HERFURT, MAX.

Max Herfurt, Architekt B.D.A. Dresden; mit einer Einleitung von Prof. Dr. Jean Louis Sponsel. Herausgegeben von Gustav Ewald Konrad. Berlin: Aida-Verlag, 1928. 4 l. 32 plates. f°. (Neue Architektur.) 15 marks. 724.931

One volume of a German series dealing with present day architecture and illustrating the work, mainly in Dresden, of Max Herfurt, 1913–1927.

HUTH, HANS.

Schloss Homburg. Berlin: Deutscher Kunstverlag, 1928. 20 p. plan, plates, (incl. ports.). 8° 2.50 marks. 728.81

At head of title: Verwaltung der Staatlichen Schlösser und Gärten. Hans Huth.

A small historical and descriptive guide to the castle at Hamburg.

JEANNERET-GRIS, CHARLES EDOUARD.

Une maison en palais. "A la recherche d'une unité architecturale." Paris: G. Crès et cie, 1928. 228 p. illus. (incl. plans.) 8°. (Collection de "L'esprit nouveau.") 45 fr. 720.1

Author's pseud., Le Corbusier, at head of title.

A notable exponent of the modernist movement philosophizes about the forms and the tendencies of contemporary architecture.

LAMBORN, EDMUND ARNOLD GREENING.

The Paris Church, its architecture and antiquities. Oxford: Clarendon Press, 1929. 160 p. front., illus. (incl. plan). 16°. 3s. 6d. 726.5

American price, $1.50.

A small handbook which discusses and illustrates by line drawings various architectural features of the English parish church. Well indexed.

MARKHAM, VIOLET R.

Romanesque France: studies in the archaeology and history of the 12th century. London: John Murray, 1929. xvii, 521 p. front., 32 plates, map. 4°. 18s. 726

Bibliography, p. 501–503.

Based upon research of French archaeologists and upon personal study of the churches and sculpture described, this volume serves as an admirable introduction to Romanesque architecture in the various French provinces. It is well indexed and has several useful appendices.

NOAKOWSKI, STANISLAS.

Chateaux et palais polonais: fantaisies architectoniques. Warsaw: Institut Mianowski, 1928. 20 p. 11 plates (col'd). f°. 60 fr. 747

These water color drawings constitute a reconstruction of typical Polish chateaux and palaces interiors from the 14th to the early 19th century. The artist is a Polish architect now professor at the Polytechnic, in Warsaw.

SEXTON, RANDOLPH WILLIAMS.

American apartment houses, hotels and apartment hotels of today, exterior and interior photographs and plans; foreword by Raymond M. Hood, A.I.A. New York: Architectural Book Publishing Company, Inc., 1929. v, 332 p. front., plates, plans. f°. $18.00. 728

A large collection of recent examples illustrated by architects' drawings, photographs and plans, with an index of the architects whose work is represented.

ALLIED ARTS

BARLACH, ERNST.

Ernst Barlach; ein selbsterzähltes Leben. Berlin: P. Cassirer, 1928. 73 p. front., (port.), illus., 83 plates. f°. 20 marks. 735

The autobiographical sketch by this living German sculptor is illustrated by drawings and there is a chronological list of Barlach's work. The plates show his sculpture in wood, his most characteristic medium, and in porcelain and bronze.

BONNEY, THERESE & L. BONNEY.

Buying antique and modern furniture in Paris. New York: Robert M. McBride & Co., 1929. 69 p. plates. 12°. $1.00. 740

The author writes of typical antique shops in Paris and of their specialties. The second part of the book describes the work of contemporary French designers; and each section concludes with a formal list of names and addresses.

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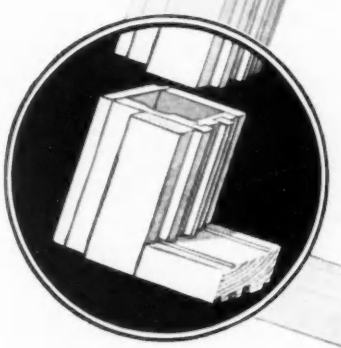


To start with, only the best and most suitable materials are used for each part of Andersen Frames. The selection of materials is based on specifications of the most exacting architects and builders.

The designs of Andersen Frames are being improved constantly to keep in step with modern ideas of good design and sound construction. Each proposed improvement is submitted to our consultant architects, as well as to reputable builders for their criticism or approval.

These frames are detailed and constructed to meet architects' requirements. That is why these stock frames are being hailed by architects the country over as a solution of their frame problems. Save yourself endless trouble and know what you are getting—instruct your draftsmen and specification writers to follow Andersen details and specifications. See Sweet's Catalog, pages B1413 to B1435.

Why....

ARCHITECTS SPECIFY *Andersen* FRAMES

(1) Detailed and constructed to *merit architects' critical approval.*
(2) Genuine, clear *White Pine sills and casings.*
(3) Exclusive, patented *weather-tight features.*
(4) Perfect mill workmanship—absolute *accuracy and uniformity.*
(5) A window or door frame *type and size for every architectural need.*
(6) The only standardized frame *adequately designed for wide blind-stop extensions,* permitting the use of narrow outside casings.
(7) Nationally distributed.
(8) Dependable because *guaranteed* by a reliable manufacturer.
(9) Equipped exclusively with the new *patented, noiseless, friction-reducing Andersen pulleys.*

See SWEET'S Catalog Page B-1413

Andersen FRAME CORPORATION., Bayport, Minn.

DOBLER, H.

Le cadre de la vie mondaine a Aix-en-Provence aux xvii et xviii siecles. Boudoirs et jardins. Marseille: F. Detaille, 1928. 188 p. illus., plates (part col'd). f°. 150 fr. 747

Both text and pictures serve to make vivid the gardens and the interior setting of Provençal social life of earlier centuries. The photographs and watercolors illustrate details of interior architecture, plaster work and painted decoration; and show interesting examples of Chinese boudoirs and of oval and octagonal rooms.

FOLCH Y TORRES, JOAQUIN.

La escultura policroma. Barcelona: Editorial David, 1928. 27 l. plates (1 col'd). 8°. (El tesoro artistica de España.) 5 pesetas. 735

May be had from Batsford in London, price 4s.
Text in Spanish, English and French.
Bibliography at end.
In addition to the plates there is a running biographical and critical comment on the Spanish sculptors who worked in Castile and Andalusia in the 16th and 17th centuries. Other volumes of the same series cover iron work, ceramics, furniture and gardens.

GREAT BRITAIN. LONDON SQUARES, ROYAL COMMISSION ON.

Report of the Royal Commission on London Squares. London: H. M. Stationery Off., 1928. 188 p. forms. 8°. (Cmd. 3196). 3s. 6d. 710

This report contains a history of the London Square, digests of the regulations concerning it and recommendations for its future treatment. There is also an alphabetical list of every square, its owner, its status and history. The volume has no illustrations.

LAWRENCE, ARNOLD WALTER.

Classical sculpture. London: J. Cape, 1929. 419 p. illus., 80 pl. 8°. 15s. 733

Bibliography, p. 401–405.
A study of Greek and Roman sculpture both from the chronological standpoint and from the angle of certain special phases, such as, material and methods, copies, deities and attributes and Greek and Roman dress.

LUKOMSKI, GEORGII KRESKENTOVICH.

Les fresques de Paul Véronèse et de ses disciples. Préface de Paul Valéry. Paris: M. Seheur, 1928. 283 p. incl. front., plates, ports. illus. 4°. (L'art et la vie.) 85 fr. 759.5

Bibliography, p. 271–274.
A study and appreciation of Veronese as a mural painter and a chronicle of his individual villa, palace, and church frescoes. There is also a record of his work and a list of his pupils and imitators.

MARANGONI, GUIDO.

Le stoffe d'arte e l'arredamento della casa. Milano: Casa editrice Ceschina, 1928. 103 p. illus., 104 pl. 4°. (Enciclopedia delle moderne arti decorative italiane. v. 5.) 125 lire. 745

The plates illustrate modern textile fabrics some of which are direct reproductions of period designs. The text deals with historical examples and comments as well upon recent production in this field.

MCALLISTER, ISABEL G.

Alfred Gilbert. London: A. & C. Black, Ltd., 1929. xii, 236 p. front., plates, ports. 4°. 42s. 735

An intimate biography of this important figure in contemporary English sculpture. Illustrated by excellent photogravures.

THORNE, EDWARD

Decorative draperies & upholstery; descriptive text by Henry W. Frohne. Grand Rapids, Mich., The Dean-Hicks Company, Decorative arts press, 1929. xv, 277 p. illus., col'd plates. f°. $15.00. 745

Seventy-four colored plates with suggestions of drapery schemes for house, shop and theatre. Each plate is carefully described and the preface furnishes a short history of draperies.

TINTI, MARIO.

Il mobilio fiorentino. Milano: Bestetti e Tumminelli, 1929. 78 p. 160 plates. f°. 300 lire. 749

Bibliography, p. 70.
A history of Florentine furniture which emphasizes the evolution of period styles, the development of technique and of various furniture forms, and the contribution of important cabinet makers. The large scale plates illustrate the furniture from actual examples and from contemporary paintings where furniture is depicted.

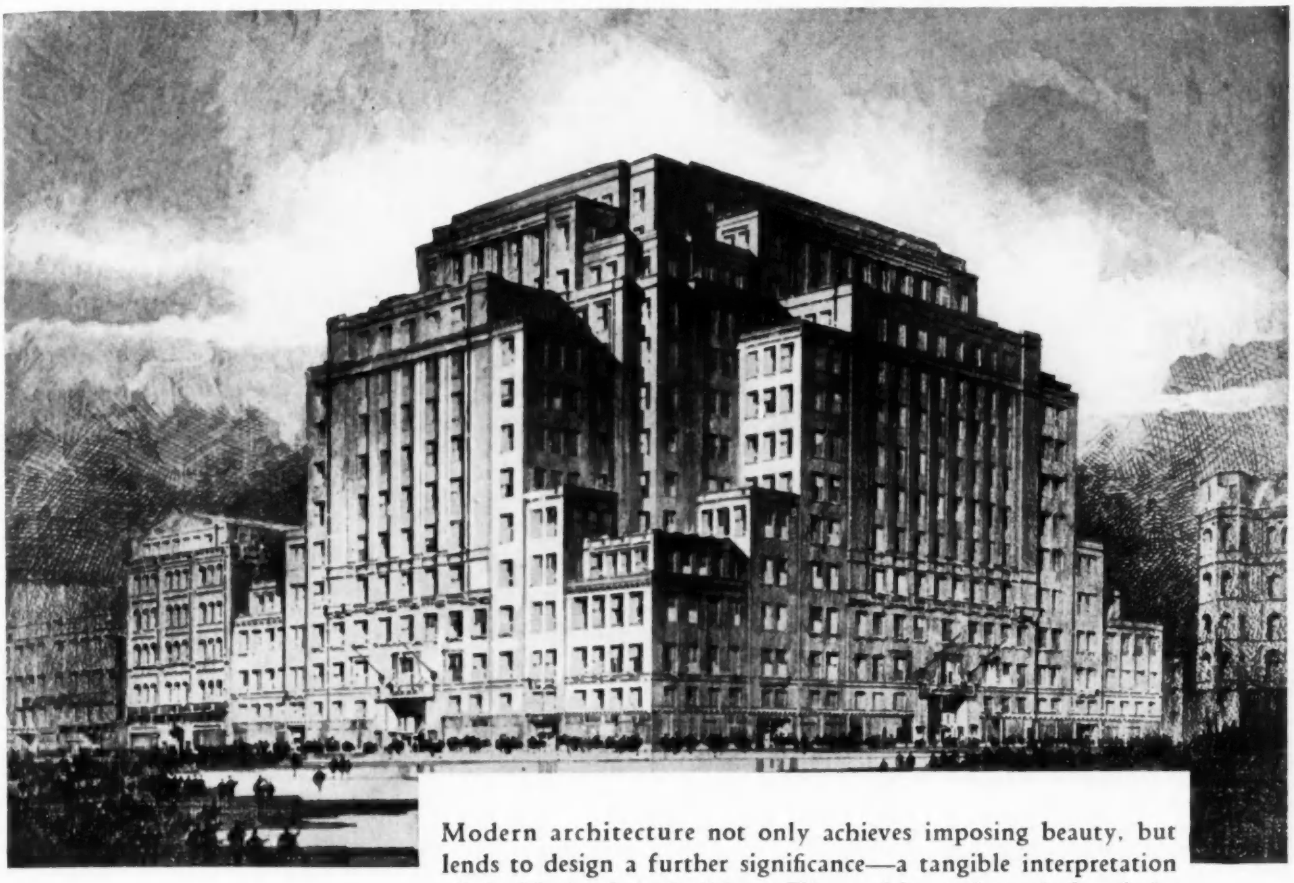
WOOLLEY, CHARLES LEONARD.

The Sumerians. New York: Oxford Press, 1928. xi, 198 p. front., plates. 12°. $2.50. 709.3

An excellent summary of Sumerian art and culture written for the lay public by an authority on the subject.

CALENDAR OF EVENTS

1929	GENERAL ANNOUNCEMENTS
Until Nov. 27	World Engineering Congress at Tokio, Japan. Excursion and inspection tours, Nov. 7-22.
Nov. 1-15	The 32nd annual Architectural Exhibition of the American Institute of Architects, Philadelphia Chapter, and the T-Square Club in the galleries of John Wanamaker, Phila.
Nov. 9-16	Southern Architectural and Industrial Arts Exposition, Municipal Auditorium, Memphis, Tenn.
1930	
Jan. 8-30	The second International Exhibition of Building Trades and Allied Industries at Brussels.
Jan. 27-31	International Heating and Ventilation Exposition at the Commercial Museum, Philadelphia, under the auspices of the American Society of Heating and Ventilating Engineers.
March-April	Fifth International Exhibition of Housing and Modern Industrial Applied Arts at Nice, France.
May 20-Oct. 1	Exhibition of Modern Architecture and Industrial Arts at Stockholm, Sweden.
May 26-30	Fifth International Congress of Building and Public Works, London.
June 19-30	The fourth Pan-American Congress of Architects and Architectural Exhibition at Rio de Janeiro.
September	International Congress of Architects at Budapest.
	COMPETITIONS
Nov. 5	Closing date of the second competition for School Buildings with exteriors constructed of common brick. Prizes of $500 are offered for photographs and floor plans. Programs may be obtained from the Common Brick Manufacturers Association, Guarantee Title Bldg., Cleveland, Ohio.
Nov. 15	The second annual church building competition for Protestant churches, already built and having a seating of 150 to 600 persons, announced by The Christian Herald, 410 Fourth Ave., New York City. Prizes are $1,000, $300, and $200, the awards to be divided equally between architect and church.
Nov. 18	Closing date of the Lehigh Airports Competition.
December	A nation-wide competition will be held for a War Memorial for Chicago. Programs may be obtained by qualified applicants until Oct. 1 from Earl H. Reed, Jr., Professional Adviser, War Memorial Competition, 435 North Michigan Ave., Chicago, Illinois. Judgment will be announced early in December.



STRAWBRIDGE & CLOTHIER
DEPARTMENT STORE
PHILADELPHIA

Simon & Simon, Architects
Turner Construction Company, General Contractors
American Bridge Company, Fabricators

Modern architecture not only achieves imposing beauty, but lends to design a further significance—a tangible interpretation of the ideals of the builders. The architects have imbued the mammoth structure pictured above with an impression of permanence and stability—a true reflection of the character of the institution which will occupy these spacious quarters.

The impression created by the design is substantiated in the actual construction of this magnificent department store. The framework embodies the latest improvements in steel construction, and employs the most modern sections—Carnegie Beams.

In every type of construction—industrial buildings, bridges, subways, schools, apartments, hotels, stores and great towering skyscrapers, Carnegie Beams are imparting to structural steel a new efficiency. Their parallel flanges simplify fabrication and erection. The distribution of metal gives maximum strength in proportion to weight. Constant-depth columns, unique with Carnegie Beams, present opportunities for standardization, both in design and erection.

A handbook, "CARNEGIE BEAM SECTIONS"
will be sent at your request

CARNEGIE STEEL COMPANY

Subsidiary of United States Steel Corporation
PITTSBURGH, PA.

34

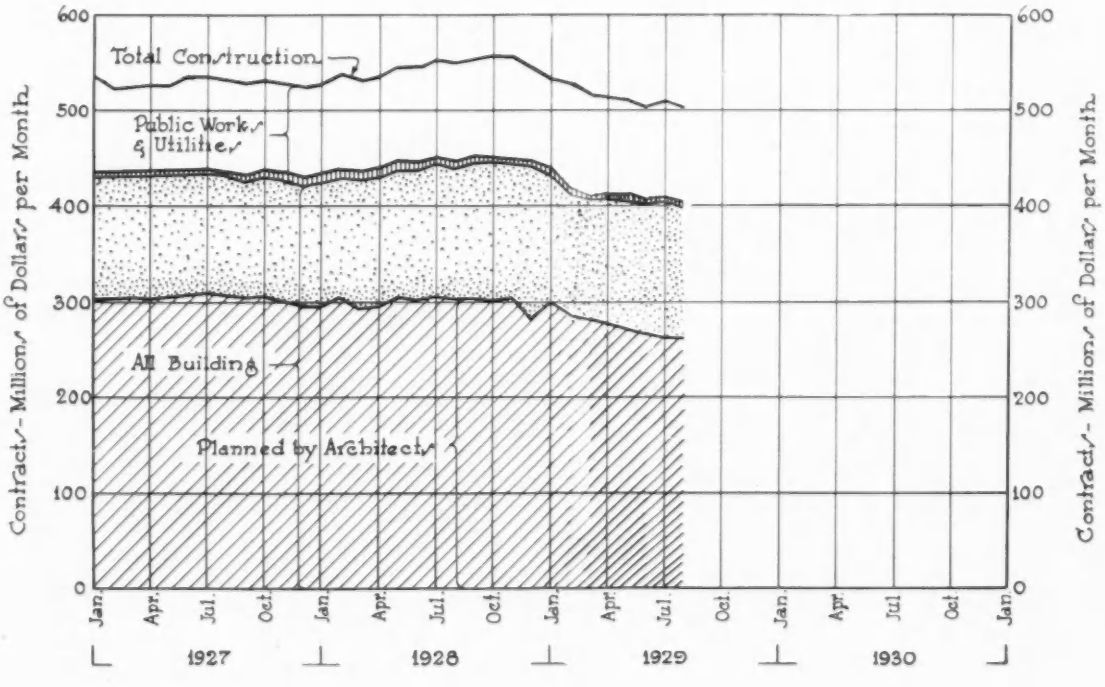
CARNEGIE BEAMS

CONSTRUCTION STATISTICS

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

First Eight Months, 1929

	TOTAL CONTRACTS		WORK PLANNED BY ARCHITECTS		
	Number of Projects	Valuation	Number of Projects	Valuation	Per Cent of Total
Commercial Buildings	16,730	$ 652,873,900	7,165	$ 499,418,300	76
Industrial Buildings	4,525	535,942,000	1,637	142,212,400	27
Educational Buildings	3,400	269,645,900	2,748	257,511,200	95
Hospitals and Institutions	783	88,588,000	573	76,453,300	86
Public Buildings	947	78,341,700	544	71,989,500	92
Religious and Memorial	1,615	77,447,100	1,165	69,063,600	89
Social and Recreational	1,814	99,129,100	1,097	79,590,200	80
Residential Buildings	81,891	1,449,083,700	21,144	888,364,000	61
Total Building	111,705	$3,251,051,400	36,073	$2,084,602,500	64
Public Works and Utilities	13,345	921,813,900	230	27,975,600	3
Total Construction	125,050	$4,172,865,300	36,303	$2,112,578,100	51
Total construction, first eight months, 1928	140,398	$4,545,270,100	42,714	$2,525,834,600	56



PENBERTHY NOW OFFERS

Builders of Penberthy Automatic Cellar Drainers

BETTER electric sump pumps at GREATLY REDUCED PRICES

№ 2E
$70
LIST
FORMERLY
$100.

№ 1E
$50
LIST
FORMERLY
$65.

MASS production methods have been applied to the manufacture of Penberthy Automatic Electric Sump Pumps—the great increase in demand during the last 12 months has made this possible. Added economies result from material purchases in large quantities. These cost reductions are being passed on to the trade and the consumer.

Although the persistent rise of the sales curve indicates the soundness of Penberthy Sump Pump design and construction, certain details have been improved to produce even better pumps.

No. 1E is intended primarily for light, intermittent service. Where heavy duty or continuous operation is required, No. 2E is recommended. Nos. 3E and 4E are available for greater sump depths.

Sump covers for both electric and water operated units can now be supplied at slightly additional cost. Penberthy Pumps are carried in stock by all leading jobbers.

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

PENBERTHY PRODUCTS

COPPER AND BRONZE THROUGHOUT

NEWS OF THE FIELD

THE NATIONAL ELECTRICAL EXPOSITION, was held in Grand Central Palace, New York, October 7th to 12th, under the auspices of the Electrical Board of Trade of New York and the New York Electrical League.

SKYSCRAPERS 2,000 feet or $^2/_5$ of a mile in height are structurally possible, although the economic height is much less, according to a study just completed for the American Institute of Steel Construction. This study of building height has been in progress for the past two years under the direction of W. C. Clark, Chief Economist and Vice-President of S. W. Straus Co. The report found that buildings of 75 stories in height are not only economical but under certain conditions will return more on the investment than a building of 50 stories or 30 stories in height. The Report notes:

"The maximum *economic* height is of course much below what might be called the maximum *physical* or *engineering* height. For all practical purposes, this physical or engineering limitation upon possible building heights has been removed by the flexibility of structural steel, terra cotta and other modern building materials and by the astounding developments in elevator and foundation engineering. Competent students of the problem estimate that if it were not for economic factors, it would be possible to erect, and operate successfully, an office building approximating two thousand feet in height. The adequate elevator servicing of such a structure would require an elevator speed beyond the present legal limits as well as new safety devices and ingenious traffic arrangements (such for instance, as doubledeck cabs and new combinations of express and local cars) which have not yet been subjected to the test of actual public trial but which, on the basis of prolonged experiment, the foremost elevator engineers believe to be entirely practicable. The two limiting factors which make it impracticable to go beyond the approximate height of 2,000 feet are (1) the enormous weight of the elevator cables required, and (2) the capacity of the *average* human ear drum to withstand the vibration in an elevator cab traveling at a speed exceeding approximately 1,500 feet per minute."

A study of the economic possibilities requires the careful consideration of various factors which enter into the physical construction, the rental outlook and the restriction laws surrounding skyscrapers. Among the important factors noted in the investigation were the following:

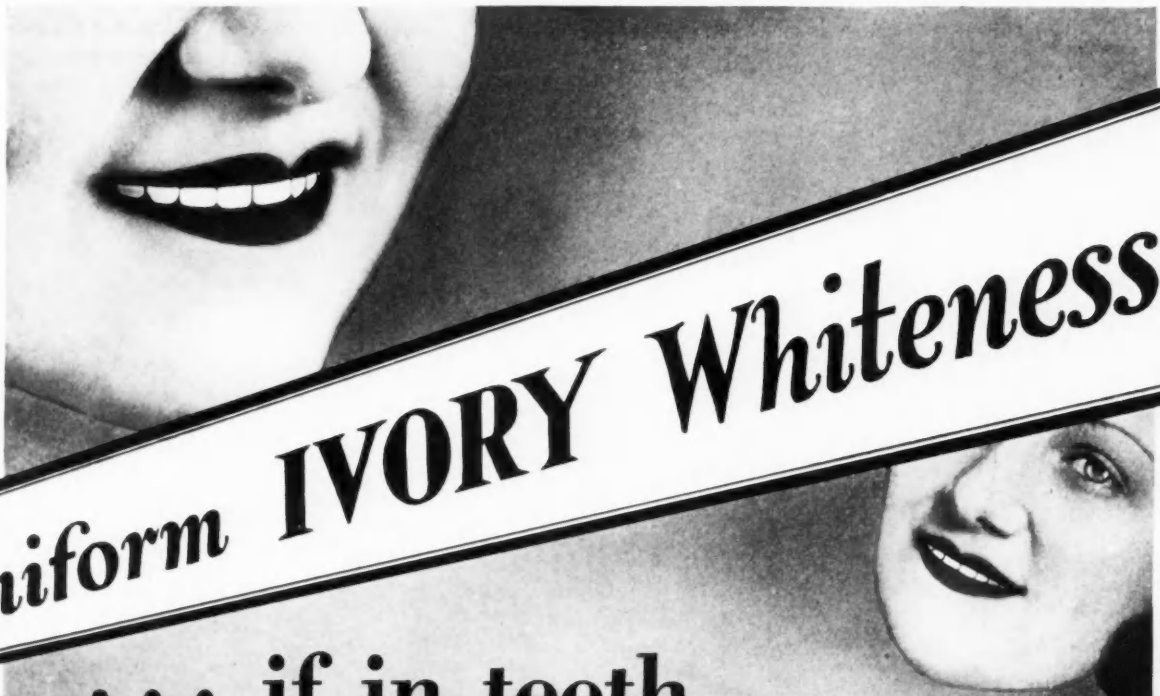
1. Value of the land
2. Size and shape of plot
3. Legal restrictions
4. Efficiency of architectural design and layout
5. Building factors showing tendency to increase in cost as height is increased
   - (1) Structural steel
   - (2) Elevators
   - (3) Brickwork
   - (4) Plumbing and water supply
   - (5) Heating and ventilating
   - (6) Electric light and power wiring
   - (7) Total mechanical equipment
   - (8) Permanent interior partitions
   - (9) Windows and glazing
6. Building factors showing tendency to decrease in cost as height is increased
   - (1) Roofing
   - (2) Excavations and foundations
   - (3) Miscellaneous
7. Building factors showing tendency to constant cost at all heights
   - (1) Interior finish
   - (2) Concrete floors
   - (3) Exterior finish
8. Absorption of rentable area by elevators and other service facilities
9. Level of construction costs
10. Variations in rental value of floors at various heights
11. Variations in operating costs at various heights.

THE CENTRAL ALLOY STEEL CORPORATION has been notified that its new Enduro Nirosta steel is specified for the kitchen equipment of the $18,000,000 Eastern Pennsylvania prison to be erected near Philadelphia. The steel is being produced by the company under Krupp patents. Central Alloy will also supply its rust-resisting product, Toncan Iron, for all sheet and light plate metal work at the prison. The institution has been designed by Zimmerman, Saxe and Zimmerman, Chicago.

REFRIGERATORS. The establishment of national specifications for domestic refrigerators to permit their purchase on the basis of quality and performance is to be undertaken shortly by a technical committee representing manufacturers, dealers, purchasers, government departments and all other interests concerned, it is announced by the American Engineering Standards Committee, under whose auspices the work will be conducted. A general conference of all interests concerned with domestic refrigerators, called on March 30 at the request of the American Home Economics Institute and the American Institute of Architects, voted unanimously in favor of standardization work under the procedure of the Standards Committee.

The general conference decided that standardization activities, for the present at least, would be devoted chiefly to ice boxes and other refrigerators which may contain units operated by gas or electricity. Indicating the great economic importance of specifications which will permit the purchase of refrigerators operating at the lowest ultimate cost, the Committee's announcement points out that twelve million domestic refrigerators, representing an annual cost for ice or its equivalent of $26 to $28 for each refrigerator, are now in use.

THE MANUFACTURERS of asphalt tile in the United States have organized a trade organization to be known as The Asphalt Tile Manufacturers' Association. The offices of this Association are: George C. Hannam, Rubberstone Corporation, New York City, President; H. L. Davison, Tile-Tex Company, Chicago Heights, Ill., Vice-President; Paul Coste, U. S. Rubber Company, Providence, R. I., Secretary Treasurer. W. J. Parker, 7 East 44th Street, New York City, was elected Commissioner of the Association.



Uniform IVORY Whiteness!

. . . if in teeth — why not in buildings?

A SPOTTY, checker-board effect is no more desirable in a building than it is in your own display of natural ivory. Yet how many architects make beautiful, gleaming white stucco models of their buildings and then carry them out in a stone whose tint is not uniform? Variation in tint camouflages structural lines and offsets, kills carving details, and reduces the effectiveness of clever design—and especially that of modern design with its characteristic sweeping vertical lines. And yet there is no need to sacrifice any of these—for there is in our quarries a virtually limitless supply of Select and Standard Buff Limestone whose warm, creamy whiteness is ABSOLUTELY uniform and admirably adapted to the architectural style of the day.

VICTOR OOLITIC STONE CO.

BLOOMINGTON, INDIANA

RECENT TRADE PUBLICATIONS

ISSUED BY MANUFACTURERS OF CONSTRUCTION MATERIALS AND EQUIPMENT

[These may be secured by architects on request direct from the firms that issue them, free of charge unless otherwise noted.]

LOCKSTRIPS

T. M. C. Lockstrip Products for the building field. For use in terrazzo floors. For cement floors to supplant scoring, form an expansion joint and flush finish surface. For linoleum or rubber tile floors. Lockstrip Manufacturing Corporation, 36-09 Vernon Boulevard, Long Island City, N. Y. Ill.

FIRE DOORS

"Security Freight Elevator Doors." Counterbalanced "Seco" doors. Safety features. Trucking features. Details. Data-door clearances. Equipment for Security doors. Types of "Seco" door panels. Vertical telescoping doors. Installations. Dumbwaiter doors. Security Fire Door Co., St. Louis, Mo. 8½ x 11 in. 44 pp. Ill.

FIREPROOF DOORS

"Richmond Fyrgard Products." Kalamein doors, frames. Trim and mold. Smoke screens. Rolled steel buck and trim. Installations. Details. Specifications. The Richmond Fireproof Door Company, Richmond, Ind. 8⅜ x 10¾ in. 32 pp. Ill.

STEAM

"Condensate." Connor pumping traps; advantages. Steam tables. Classes of steam traps. Non-return steam traps; principle of operation, construction, uses. Direct return pumping traps. Table of sizes and capacities. General rules for installing pumping steam traps. The W. B. Connor Co., Inc., 369 Lexington Avenue, New York, N. Y. 8½ x 11 in. 38 pp. Ill.

FAN SYSTEM HEATING

"Low Pressure Aerofin." Principles and construction. Engineering data. Temperature and condensation tables. Physical data. Example showing use of temperature effects chart. Example showing use of Low Pressure Aerofin cooler transmission curves. Temperature regulation. Typical specification for heater. Piping diagrams. Aerofin Corporation, Newark, N. J. 8 x 11 in. 63 pp. Ill.

RADIATORS

" 'Richmond' Floorline Radiator." Adaptability. Methods of Installation. Construction. Advantages. Installation drawings. Richmond Radiator Company, New York, N. Y. 8½ x 10⅝ in. 16 pp. Ill.

VENTILATION

"The Window Wall Sleeping Porch." Ventilation with protection and privacy every night regardless of the weather.

"Airolite Door Panels and Transoms." Various types of doors and transoms. Specifications.

"Reduce Building Costs by Using Airolite Louvers." Advantages. Specifications.

"Adjustable Window Ventilators for Steel Sash." Actual Installations. Advantages. The Airolite Company, Marietta, Ohio. 4 catalogue folders 8½ x 11 in.

The Invisible Superintendent *at the* Mortar Box *Puts the Required Strength in the Mortar*

WHEN the architect specifies one part BRIXMENT, three parts sand (no lime, no portland), the strength of the mortar is certain. If oversanded, BRIXMENT mortar works short and, since there is no lime in the mix, the necessary plasticity can be secured only by using the proper amount of BRIXMENT.

BRIXMENT mortar has greater strength than that required by the building code of any city for the heaviest load-bearing walls. Its strength increases with age, becoming greater than that of the brick itself. When tested in piers it approaches that of straight 3-to-1 portland-cement mortar. This makes it suitable for foundation, load-bearing or parapet walls and even for tall, free-standing stacks.

BRIXMENT makes a stronger, tighter bond between the brick and the mortar. It is ground finer and hardens more slowly than portland, thus permitting deeper penetration and a more thorough keying into the pores of the brick. Louisville Cement Company, *Incorporated*, Louisville, Kentucky.

District Sales Offices: 1610 Builders Bldg., *Chicago*; 301 Rose Bldg., *Cleveland*; 602 Murphy Bldg., *Detroit*; 101 Park Ave., *New York*

BRIXMENT
for Mortar and Stucco

Among the many BRIXMENT *stacks is the 250-foot radial-tile smoke-stack at the power plant of Purdue University.*

RECENT TRADE PUBLICATIONS—(Continued)

WINDOW EQUIPMENT

"Burlington Venetian Blinds." For homes, schools, churches, colleges, hospitals, clubs, offices and factories. Examples of installations in each. Advantages. To measure for Burlington Venetian blinds. Burlington Venetian Blind Co., Burlington, Vt. 7 x 10 pp. 22 pp. Ill.

CASEMENTS

"International Cotswold Casements." Types and sizes with muntins. Composite Windows. Leaded glazing. Full size details. Details of hardware. Features of construction. Cotswold doors. Details. Actual installations. Instructions for ordering and setting. International Casement Co., Inc., Jamestown, N. Y. 8½ x 11 in. 43 pp. Ill.

WOOD AND METAL SUBSTITUTES

"Duretta." Wainscots and panelling of Duretta; fireproof, non-warping, non-shrinking substitute for wood or metal. Door panels; various designs. Exterior and half-timber work. Ceilings, columns balustrades. Grilles. Actual installations. Mantels. G. E. Walter, 157 East 44th Street, New York City. 8½ x 11 in. 18 pp. Ill.

LUMBER

"Lumber and Its Utilization." Choosing the industrial building. Considerations affecting choice of construction types. Fire resistance in industrial buildings. Pictures of building after six hours of fire. National Lumber Manufacturers Association, 702 Transportation Building, Washington, D. C. 8½ x 11 in. 20 pp. Ill.

WIRING SYSTEM

"Specification Data for Apartment Houses and Apartment Hotels." Recommendations. Small apartments, and large. Hotel apartments. Maisonettes. Duplex studio apartments. Specification data. Rigid conduit. Flexible steel armored conductors. Outlet boxes and fittings. Code wire. Local cutout cabinets. Heavy duty flush plug receptacles, etc. Some typical General Electric installations. General Electric Company, Bridgeport, Conn. 8 x 10½ in. 19 pp. Ill.

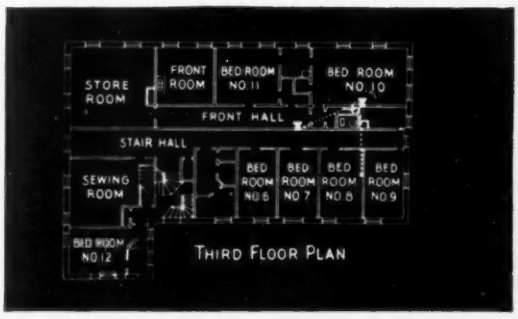
MOSAIC

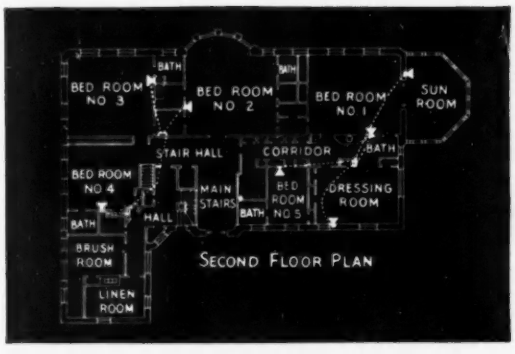
"Increasing the Lure of the Swimming Pool." Advantages of tiles as material for swimming pools. Four examples of effects obtained with Mosaic Tiles. The Mosaic Tile Company, Zanesville, Ohio. 8½ x 11 in. Ill.

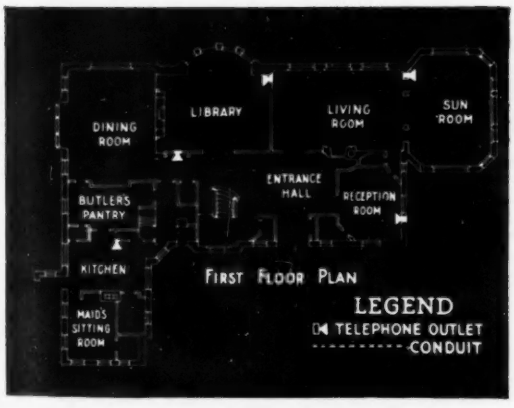
SCHOOL RESTAURANTS AND KITCHENS

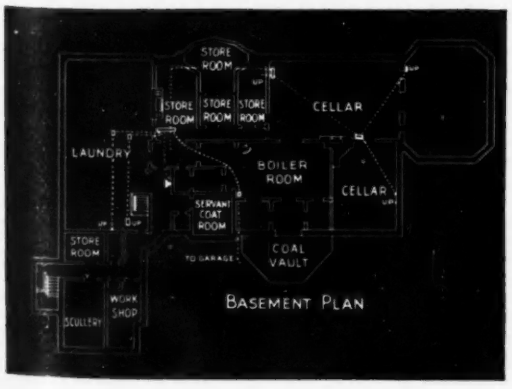
"Practical Planning for School Food Service." Fitting the school cafeteria into the architectural plans. Estimating number of students to be served. Dual use of dining room; photographs. Space requirements. Location in the building plan. Cafeteria kitchen. Cafeteria counter construction. Equipment specifications and purchasing. Food service problems of private schools, colleges and universities. The John Van Range Company (Division of Albert Pick-Barth Company, Inc.), Cincinnati, Ohio. 8½ x 11 in. 30 pp. Ill.

Allow for Future Requirements in Planning Home Telephone Arrangements









Seventeen telephone outlets provide for complete telephone convenience in the residence and garage of Mr. Edward Schmidt, 16960 East Jefferson Avenue, Detroit. The telephone wiring is carried in conduit built into the walls and floors. RAYMOND CAREY, Architect, *Detroit, Michigan.*

MANY ARCHITECTS find it desirable, in providing for telephone service in new and remodeled residences, to plan for possible expansion or rearrangement as well as for immediate needs.

Conduit for the telephone wiring is specified throughout the house. Outlets are thus made available in every place where a telephone may seem suitable. The owner can have telephones just where he wants them, utilizing as many of the provided outlets as may be necessary to furnish him the service arrangements desired. He can easily change or add to the telephone locations in the future, if occasion should arise. And he can enjoy the improved appearance and protection against service interruption that result from concealed wiring.

Telephone convenience has become so important a part of the modern home that architects are including provision for it in smaller residences as well as large. Most architects like to consult with representatives of the local Bell Company before planning the arrangements for specific houses. The telephone company is constantly studying ways to improve its service, and will gladly make helpful suggestions. There is no charge for this consulting service. Just call the Business Office.

RECENT TRADE PUBLICATIONS—(Continued)

LIGHTING EQUIPMENT

"Airport and Airway Lighting Equipment." Landing field floodlights. Revolving beacons. Boundary, obstacle and approach lights. Other equipment for an airport. Types for general illumination. 8 x 10½ in. 12 pp. Ill.

Also Bulletin 2127. Gasoline service station lighting. Color floodlighting. 8 x 10½ in. 4 pp. Ill.

Also "Sunbeams in the Night." Flooding the darkness with light. Service stations. Buildings. Monuments. Construction work. Parks and recreation grounds. Hangars. 8 x 10½ in. 8 pp. Ill. Crouse-Hinds Company, Syracuse, N. Y.

METAL DOORS AND TRIM, ETC.

"Dahlstrom, The Specified Standard." Bulletin No. Adv. 75. Adaptability, Service and Details. Standard designs and types. Details of jambs, casings, cove and scribe mouldings. Uni-Tre frames. Elevator inclosures. Detail drawings. Adjustable metal partitions. Conduobase. Specifications. Classification of finishes. Dahlstrom Metallic Door Company, Jamestown, New York. 8½ x 11 in. 25 pp. Ill.

ROOFS

A.I.A. File No. 10 b 22. Bulletin 25B. "Gypsteel Pre-cast Short-span Roofs." Material and construction. Side-joints. Advantages. Typical details. Tabulations of heat transmission through roofs and saving in fuel consumption through Gypsteel. Engineering service and policies. Representative users. Specifications. Structural Gypsum Corporation, Linden, N. J. 8½ x 11 in. 20 pp. Ill.

THRESHOLDS AND SILLS

"Threshold and Sill Blueprint." A.I.A. File No. 15. Blueprint 25 x 33 in. Full size sections of threshold, sills and nosings. Bronze or brass. The Newman Manufacturing Co., Cleneay & N. & W. Tracks, Cincinnati, Ohio. 8½ x 11¼ in. Ill.

GRILLES, VENT AND REGISTER FACES

"Newmanco Perforated Grilles, Vent and Register Faces." Advantages. Construction. Finishes. Special Designs. Stock numbers. Gauges. The Newman Manufacturing Co., Cleneay & N. & W. Tracks, Cincinnati, Ohio. 8½ x 11 in. 6 pp. folder. Ill.

WINDOW GUARDS

"Steelcrete Frame Bar Window Guards." A.I.A. File No. 14b4. Catalog No. 126. Standard type panels. Guards for curved windows, arched openings, etc. Typical guards. Diamond mesh. Use of guards with skylights and railings. Specifications. The Consolidated Expanded Metal Companies, Steelcrete Building, Wheeling, W. Va. 8½ x 11 in. 14 pp. Ill.

PENCILS

"The Venus Pencil in Mechanical Drafting." By Harry W. Jacobs, Director of Drawing, Public Schools, Buffalo, N. Y. Degrees of the Venus Pencil. Selection of various degrees of pencils for various kinds of work. Use of the pencil for freehand sketching; in detailed drawings; for tracings; topographical drawings. American Pencil Co., 220 Fifth Avenue, New York City. 6⅛ x 9 in. 16 pp. Ill.