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AMERICAN ARCHITECT

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» » Structural glass, heat-insulating glass, glass that can bend without breaking and break without splintering, glass that transmits ultra-violet rays, case-hardened glass, glass that can be rolled, drawn, ground, cut, blown, pressed and etched, glass bricks, mirrors, balustrades . . . all these and a hundred others are the products of a new architectural craft.

» » How are they made? What are their characteristics? How are they used? What new possibilities or limitations do they add to the architect's vocabulary of design?

» » In this issue of American Architect, answers to all these and many other questions about glass are reported in the second of American Architect's series treating of Materials in Design. Set forth in 22 pages of text and illustration is the news of architectural glass—the latest triumph of the industrial fine arts.

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PRESSURE & RELIEF CONTROL

Automatically keeps system filled with water and relieves any excess pressure. Complies with A.S.M.E. Code and has lever for testing relief valve. Both valves have large laminated phosphorous bronze diaphragms that are very sensitive and positive in action. Special composition discs provide perfect seating. Springs are carefully calibrated and have exceptionally high fatigue resistance; spring below seat makes reducing valve more sensitive at lower pressure differentials. Large brass strainers protect seats of both valves.

REDUCING VALVE

Automatically reduces available water pressure and maintains desired working pressure regardless of fluctuations in supply line. Complies with A.S.M.E. Code. Laminated phosphorous bronze diaphragm is resistant to heat and corrosion. Large brass removable strainer protects seat. Springs are carefully calibrated and have high fatigue resistance; spring below seat makes valve more sensitive at low pressure differential. Made in 6 models having ½", ¾" and 1" pipe connections.

RELIEF VALVE

Excess pressure in system is automatically relieved. Complies with A.S.M.E. Code and has lever for testing. Laminated phosphorous bronze diaphragm and carefully calibrated spring assure maximum efficiency. Large brass strainer protects valve seat against injury. Both types made for ½"and ¾" pipe connections.

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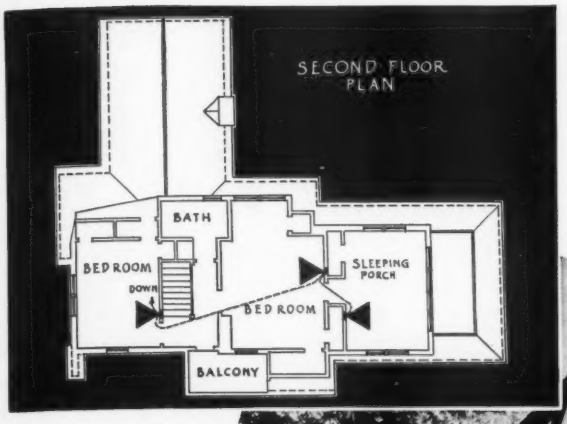
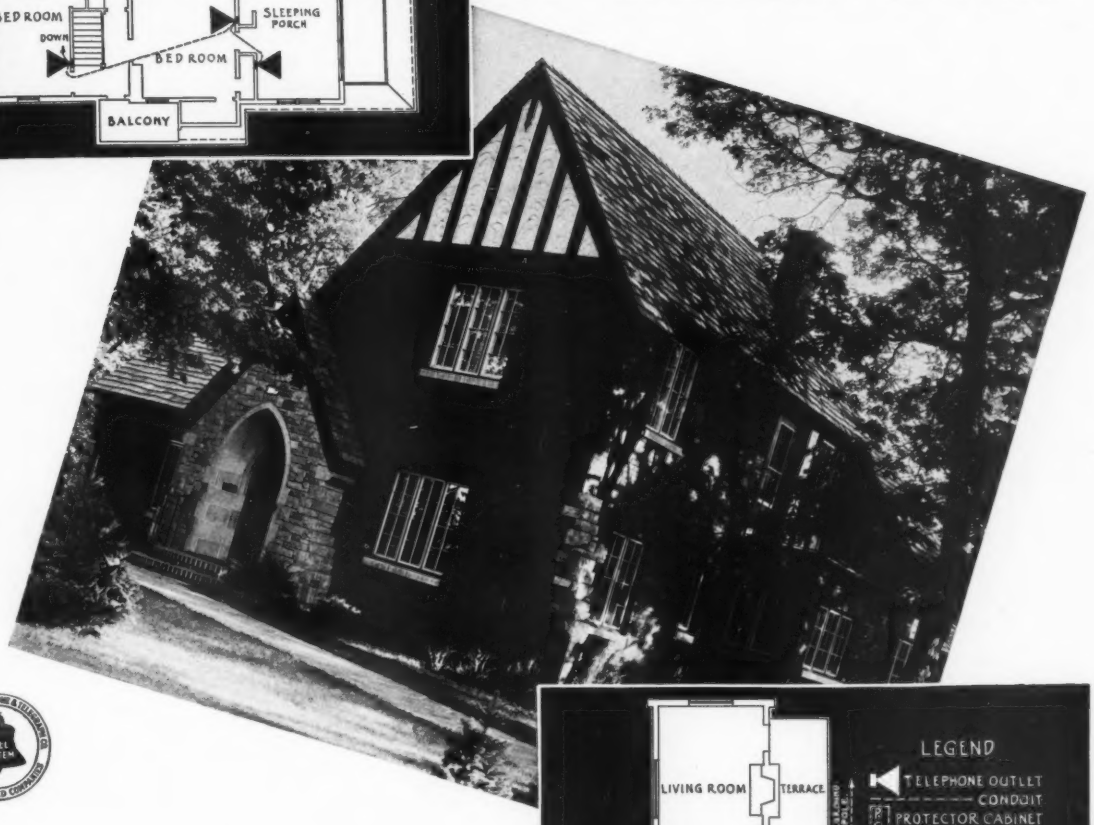
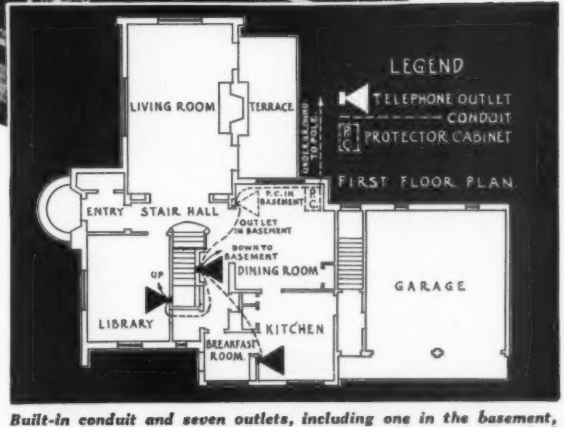
American Architect, published monthly by International Publications, Inc., 572 Madison Avenue, New York, N. Y. $3.00 per year. Canada, $4.00; Foreign, $5.00. Entered as second class matter April 5th, 1926, at the Post Office, at New York, N. Y., under the act of March 3rd, 1879. Issue 2631, dated March, 1935.

Well-planned, built-in telephone arrangements help make this

A MODEL HOME







Built-in conduit and seven outlets, including one in the basement, provide for telephone convenience in the residence of Mr. Carl Mussetter, 1116 Chautauqua Parkway, Des Moines, Iowa. This was the 1933 model home sponsored by the "Des Moines Register & Tribune." Carl V. Johnson, Architect, Des Moines.

The architect of this model home comments: "Certain features must be incorporated in the home of today for the fullest comfort and convenience of the owner. Proper telephone provision is one of them. Too often it is neglected on the excuse, 'We can always get the telephone in.' While this is true, it cannot be done as easily and neatly as when properly planned for.

"Since it *is* so easy and inexpensive to provide adequate telephone arrangements at the time of building, I believe it should be carefully considered — telephone service brought in like electric service in the least conspicuous way — and telephone outlets located where they may be needed for the present and the future."

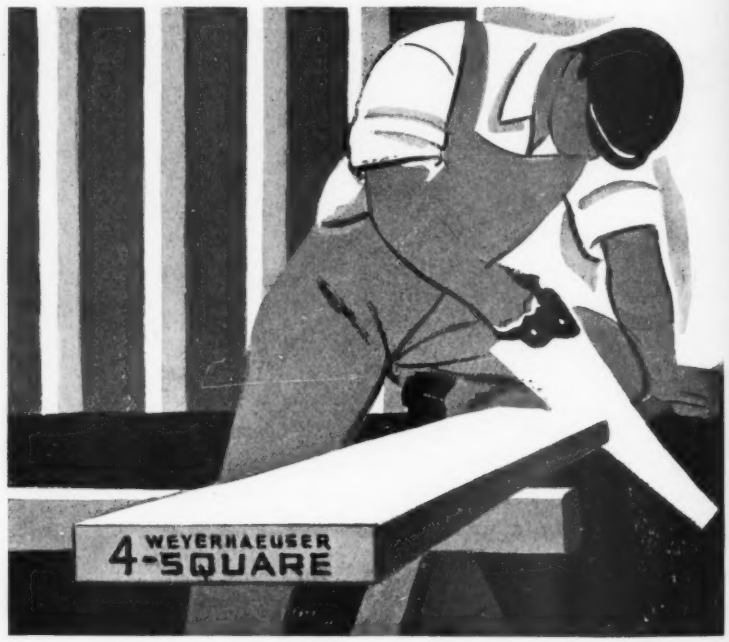
Because of increased activity in home modernization and new home construction, there should be many projects in which the installation of telephone conduit will make grateful clients. Just call your telephone company Business Office for full details.

FOR FURTHER INFORMATION ON BELL SYSTEM TELEPHONE SERVICES AND EQUIPMENT, SEE SWEET'S CATALOGUE

MODERNIZATION MARCHES ON

The wheels are turning. A survey recently concluded among realtors managing residential properties reveals that 17 realtors have drawn up plans for investing $831,000 in modernizing the various buildings in their charge.

Other realtors everywhere are making similar plans — on a tremendous scale. There's profitable business ahead for architects who begin contacting the leading owners of multi-parcel properties in their city.



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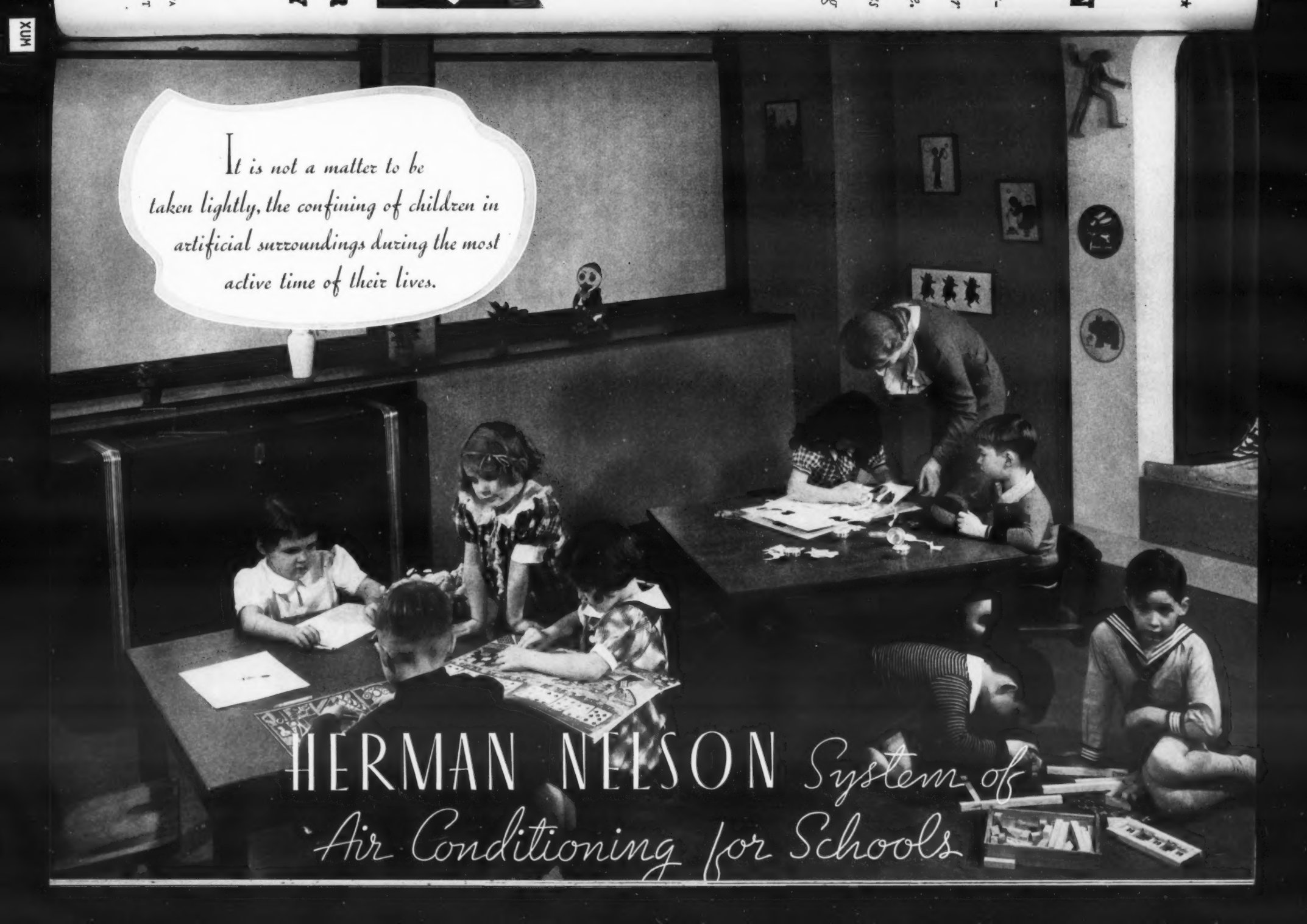
WEYERHAEUSER SALES COMPANY

FIRST NATIONAL BANK BUILDING, SAINT PAUL, MINNESOTA


It is not a matter to be taken lightly, the confining of children in artificial surroundings during the most active time of their lives.
HERMAN NELSON System of Air Conditioning for Schools

WHAT IS MODERN VERTICAL TRANSPORTATION PRACTICE IN DEPARTMENT STORES?

STORES of more than two stories always involve consideration of either elevators or escalators, or both, depending upon the number of floors and the merchandising capacity of the floors above and below the first floor. Because of the inherent advantages of escalators, they are being considered to a very much greater extent than a short time ago. In some cases they are *exclusively* used to serve all merchandising floors. This practice will probably be more generally adopted in the future.

A number of stores have demonstrated the advisability of transporting employees on escalators, not only because it is a cheaper means, but because customers dislike to be herded into elevators with chattering employees. Where this practice is in effect and the elevators are reserved for customer use only, some of them may be shut down during the slack periods of the day.

Escalators serving all merchandising floors are justified in the leading department stores. In other stores, however, the question as to whether they should be recommended to serve all sales floors initially is dependent upon the size and character of the store, the type of merchandise or occupancy of the uppermost floors, and also consideration of employee service. Escalators should always be recommended to serve to at least the topmost intensive sales floor, with provisions in building construction to extend them higher when conditions so justify.

UP and DOWN escalator service is usually recommended, in order to balance the vertical transportation system, which would otherwise put an exceptional DOWN load on the elevators if the escalators operated only in the UP direction. The question as to the number of each type of unit, that is, elevators and escalators, that should be required in any store to render adequate service in both quality and quantity, is determined by the merchandising capacity of the floors, the area, and the relative proportions thereof. Also, due consideration must be given to the number and relative location of street entrances as well as volume of traffic, including its proper distribution and circulation within the store.

In a typical medium-size store of compact proportions, service can usually be most adequately supplied with a single group of escalators and a single group of elevators. The proportion of elevator traffic is thus taken care of with the minimum number of elevators and in a desirable single compact group. Larger stores may require a duplication of this arrangement or of one or the other of the units. In any case, location and arrangement of the system is of vital importance. The number of elevators in the group is governed by the number of floors served by the elevators and escalators, and by the feasible space available for the bank of elevators. The governing factor is that of quality service, indicated by the waiting intervals between cars. Moderate height stores may often have suitable intervals when using less than six elevators.

Passenger elevators of the intensive service type are those which make no useless trips above the uppermost intensive sales floor and no useless stops at any floor. This need is met with Otis Department Store Signal Control elevators, which operate at the highest practical speed, and have platforms of favorable proportions as to width and area. This type of control cuts the round-trip time of elevators and consequently a smaller number are required in a group to secure the advantages of short intervals between cars and provide an improved quality, together with the greater quantity of service. For good service, the groups of elevators should be 50 feet or less in width, and not more than 60 feet, under any circumstances.

The quantity of vertical transportation is determined by the number of persons to be transported above and below the first floor per hour, compared to the number of square feet of transportation area and the density to which the merchandising area must be saturated with shoppers during the peak periods of normal busy days, in order to attain the maximum merchandising capacity of the store.

Complete and detailed information on the subject of Vertical Transportation Systems for all types of stores is available to architects and engineers, without obligation, upon inquiry to the nearest Otis office.

OTIS ELEVATOR COMPANY

OFFICES IN ALL THE PRINCIPAL CITIES

AMERICAN ARCHITECT

Trade-Mark Reg. U. S. Patent Office

VOLUME CXLVI NUMBER 2631

Cover Design by Ernest Born

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Time for Straight Thinking

BY BENJAMIN F. BETTS, A.I.A.

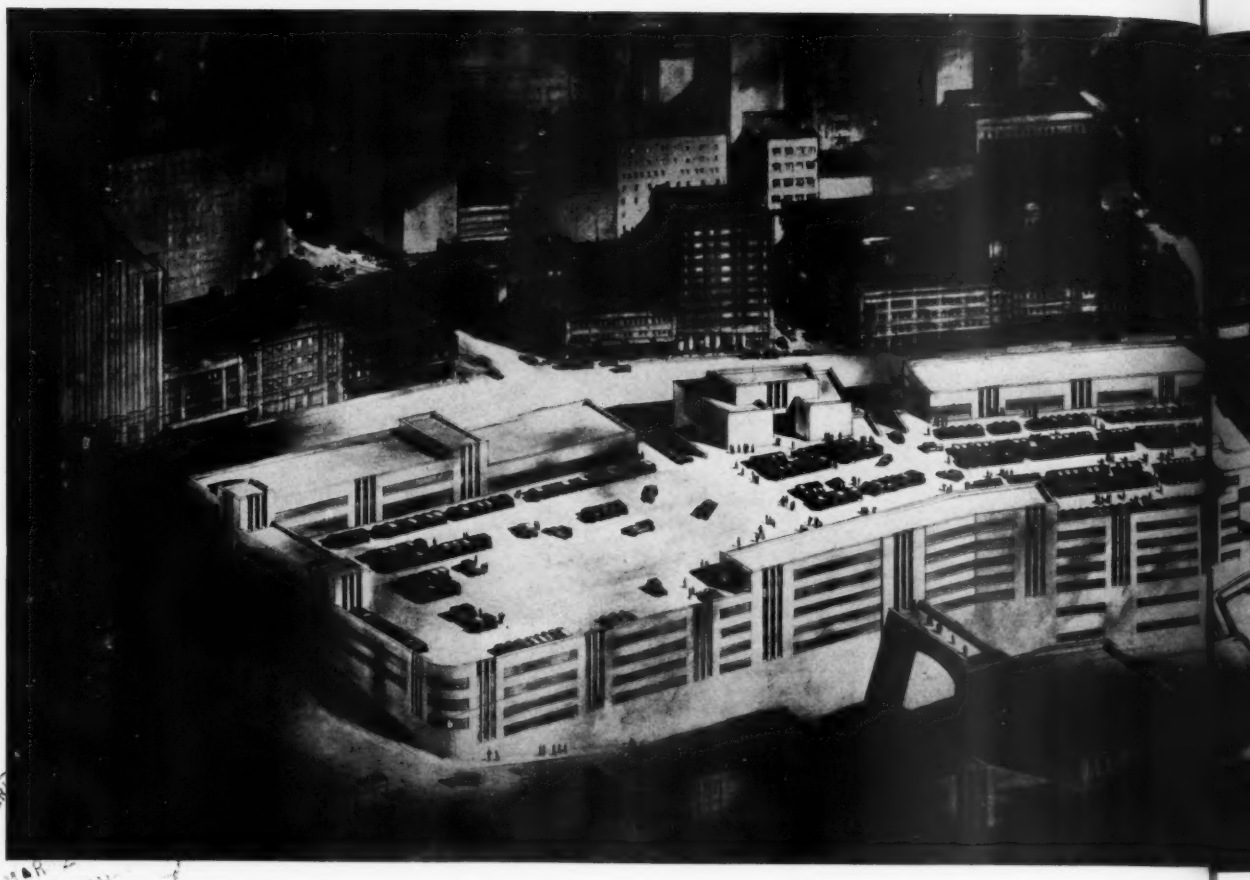
HERE and there one hears the doom of the architectural profession forecasted by the pessimist. With building at low ebb this lament is not surprising. It is, however, an unfortunate point of view, because it is far from the truth.

The practice of architecture is fundamentally a process which brings material and orderly beauty out of a series of disordered desires mingled with essential requirements and the limitations of materials and costs. The basis of practice is today substantially the same as in the times of Ictinus, Wren or Bullfinch. The details of practice have changed with the demands of a changing world. The reasons for the existence of architects have not changed. The objective of architecture—providing shelter for human beings—remains the same. Those who prophesy the doom of the profession fail to recognize these truths.

Too much inaccurate thinking *can* spell the doom of the architect as an independent professional man. Failure to find new solutions for new problems can do likewise. The reactionary who preaches strict adherence to every professional tenet of the past is just as dangerous to present professional welfare as the "croaker" who predicts total elimination of the architect's independence. Both creeds are wrong. They can go far toward robbing the architect of his independence and can result only in servile regimentation.

Straight thinking—not destructive—is needed. Let architects approach today's problem of building a better, more beautiful America without the pet formulae of the reactionary. This country is emerging from a cataclysm. There is work to be done. At no time in history has there been more need for architecture. Never before has the logical thinking and the expert abilities of able architects been so essential.

Courage, faith and persistence, combined with straight thinking at this time, will maintain and strengthen the integrity of the architectural profession.

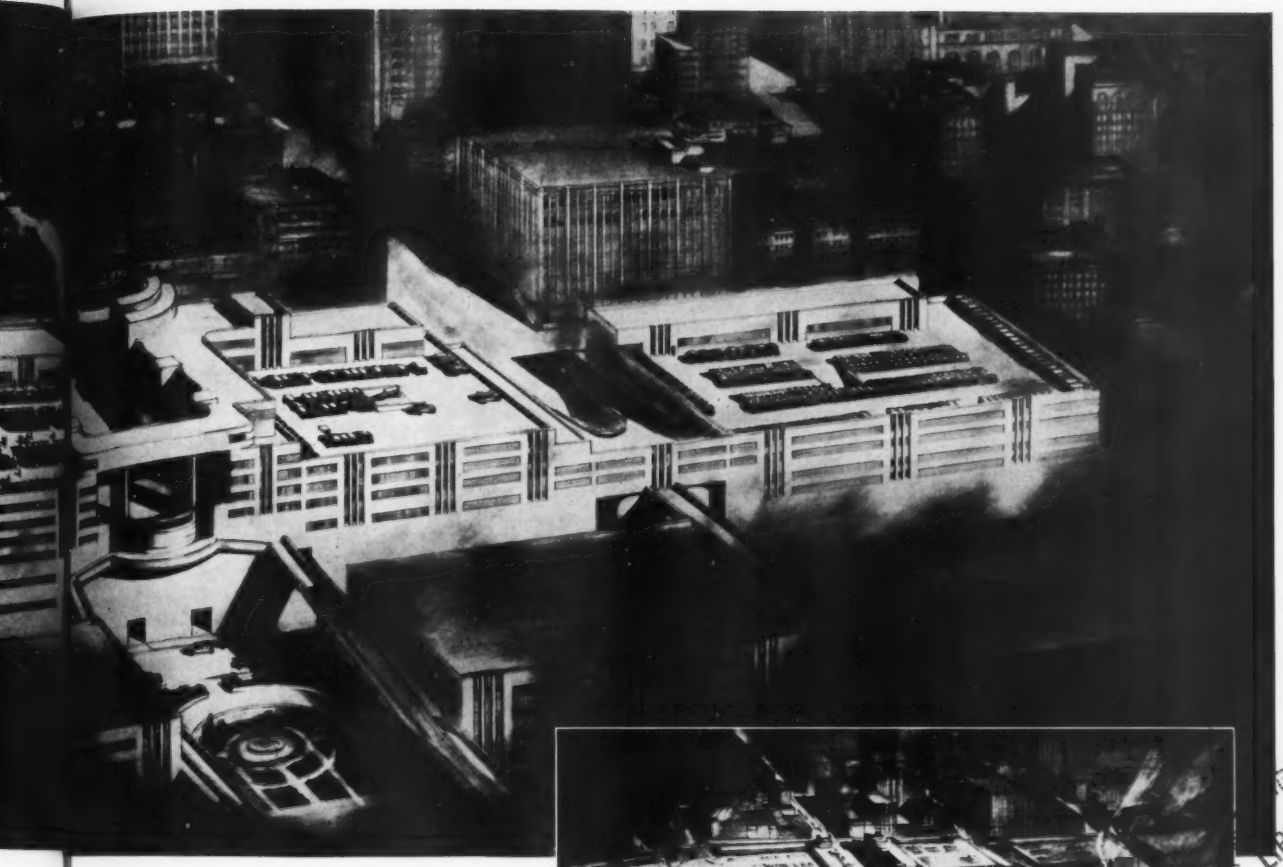


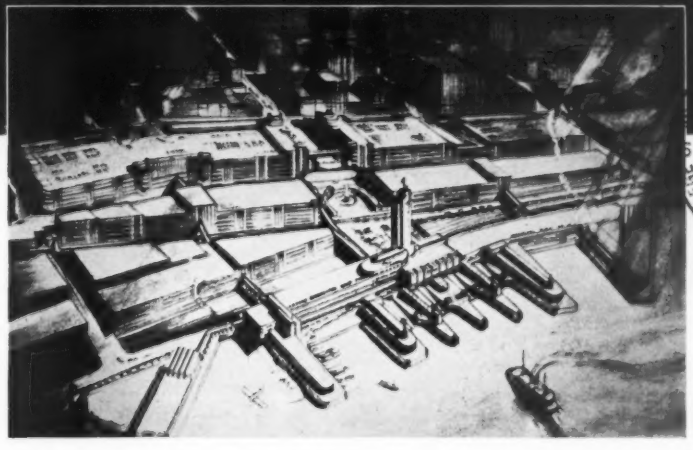
The Architect's Job in Re-planning

BY HENRY V. HUBBARD
Chairman, Harvard School of City Planning

WHAT specifically has the architect to do in city planning? It might be said that there are two functions for him. One is, to know enough generally about city planning to be able to find out from the proper sources, for any given architectural job, what the inarticulate community really wants, and so to make that piece of architecture a part of the accomplishment of a reasoned whole. The other is, to know much more about city planning, taking probably more time than all his architectural training, and to bear a leading part in the whole civic design, defending and balancing the kind of use and beauty which he knows as an architect in its proper place with all the uses and beauties which go to the accomplishment of a comprehensive city plan.

City planning is the official allocation by a community of the various parts of the area under its control, each to its best use and all to the greatest community welfare. That is the *act* of planning, the manifestation, through the established legal channels, of the will of the community. It is to be observed that this planning includes both defining





Studios by architects of Civil Works Administration. Commercial and waterfront districts for Seattle, Washington

a City

the areas and regulating the uses. Further, if it is to be good, obviously it must be comprehensive.

This comprehensive decision, as it stands at any given moment, may be called the city plan. In a restricted sense the record of this decision in written words and in lines on paper—the instrument which is to be administered for the general welfare—is called the city plan.

But what is the community welfare that this plan must serve? Plainly it is built up of a large number of what we call, pseudo-scientifically, "social values" and "individual satisfactions" which are more or less conflicting. Before we can do good planning we must decide, comprehensively, what social values we are to seek. And after we have planned, we must guide and restrain a considerable minority of the community to get them to behave in conformity with the plan. The community welfare is the greatest good of the greatest number, which the plan seeks under the "police power" of the community.

We are accustomed to think of this continuous process in three parts:—the basic facts, physical and human; the plan; the execution and administration of the plan. All this is a social, co-operative process. Many individuals are involved in it and each man can only do his bit, according to what he knows. He may—and should—have a general notion and understanding of the whole, but he is really competent

as to detail only in some narrow corner of the field.

In actual practice an architect has to solve at the same time several problems that not infrequently have conflicting details. He has to apply the city planning objectives which he knows to be desirable to the physical and personal requirements of his client. A building satisfying these requirements is a part of the physical equipment of the whole community. And the community is coming more and more to insist on its right to regulate buildings as to shape, size, location and character.

HOW, then, can the architect best serve his client, and, by doing so from the large viewpoint, also contribute most effectively to the planned development of his community? It is patently impossible to answer the question completely, but some constructive suggestions may be practically useful. Let the architect show his clients that a successful building must be not only right as to shape, size, cost and design, but also that it must be in its proper place in the community.

Suppose a commercial building is proposed. Anyone would check to see that it was in a commercial zone, and would make it conform to the zone requirements. But will the zone really develop as expected? How much will be commercially developed? And where will this favored part be located? There are slowly accumulating some trustworthy data as to the number of running feet of commercial frontage that can be supported by a given tributary population, under different circumstances. The average seems to be about 50 feet per 100 persons; but it is one thing in a village, another in a satellite city, another in a metropolis.

Groups of stores, properly arranged and with the groups properly scattered, are more successful than indeterminate strings and spatterings of stores. The zoning may compel the locations of the groups and fix their ultimate boundaries, but what determines the design of the financially successful group?

Most stores sell primarily to customers who come to them. Therefore, access for customers is a fundamental in the group design. This means much more than the convenient location of the front door. Customers come to the store in one of three or more different ways. (1) They may walk from their homes or places of business. Is the walking uninterrupted and safe? What is the tributary area and its buying population and in which direction from the store group? (2) They may stop off from busses or street cars. Where are the nearest stops and what is the traffic? Few people will change busses or street cars just to make a casual purchase. The valuable stop to the storekeeper is one where people habitually change from one mode of travel to another. (3) Customers may come to the store in automobiles. Plainly more will come if they have several reasons for coming to the immediate neighborhood. But a store near a subway station where people change from their automobiles may be fortunate only if parking facilities are good. The street in front of a store will not accommodate enough cars, even with limited parking time, to furnish customers for a large business. Thus the success of the whole store group may depend on the cooperative provision of off-street parking, or even of a many-storied "motor mart."

Again, suppose that an apartment house is proposed, the success of which—at least from the owner's point of view—can be measured in financial terms. The time was, and still is in some towns, when the apartment house was a sort of pirate. Appearing in a previously open residential district, it appropriated its neighbors' light and air, congested the street and depreciated surrounding property values. The succeeding apartment house naturally did not spring up next to the first. So the blight spread, one apartment per block, over a large area.

Even with zoning, which largely defends the community from this robbery and waste, can any building site be chosen blindly in an area zoned for apartments? The owner wants to be sure that obsolescence will not outrun depreciation in his building. During the term of its life will demand for it continue? Will the extension of transportation presently bring more attractive sites into the market? Will the predictable development of the immediate area according to the zoning produce a competition for light, air, street-space and tenants which will reduce profits to the vanishing point? If the owner has not this information, his architect might well get it from a study of the city plan.

PROPER answers to such questions as these may result in a less intensive occupancy of the ground by the building. A new type of building layout might be indicated with services that include a special garage or an arrangement for off-street outdoor parking. Perhaps complete facts will not be available even from the most careful survey of a city plan. But such a study has proved in many cases to be a far-sighted method of anticipating inevitable change and a means of assuring valid and continuous financial success for the new building venture.

Consider the similar set of problems that relate to the planning and construction of a factory. Presumably the city has land zoned for this purpose. The owner probably has in mind a site which is big enough and satisfactory as to efficient transportation of raw materials and finished products. But has he considered where and how his employees are to live? Can they walk to work or will they use public transportation or their own cars? Recreation, luncheon and parking facilities will depend on these factors. From a long-range viewpoint might it not be better to put the factory further out in the country and thus get permanently better conditions of many kinds, better chance of growth, and less exposure to labor difficulties not originating in the factory itself?

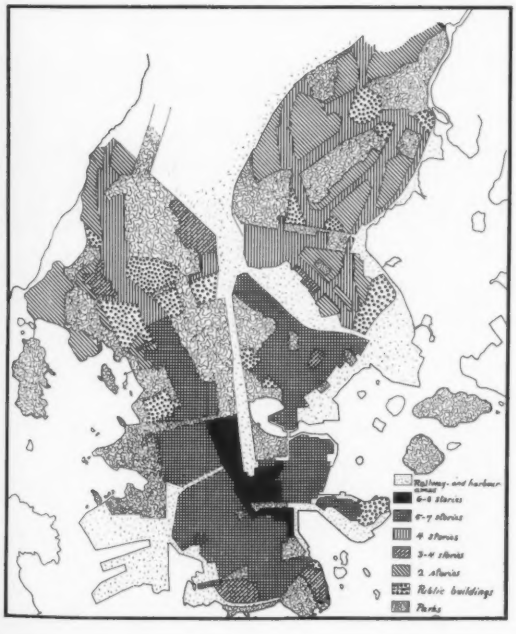
Answers to these questions (*Continued on page* 100)

HELSINGFORS . . . city with a plan

A SCHEME to limit growth, rigidly enforced zoning laws and the control of architectural design are significant highlights of the comprehensive planning program adopted by the capital city of Finland. Since 1908 Helsingfors, then part of the Russian Empire, has had a Municipal Town Planning Office. In 1923, shortly after Finland became an independent republic, the General Plan was developed. This contemplates an eventual population of 650,000 and a metropolitan area of 25,000 acres. Today the city numbers about 250,000 people living within an area of 6,300 acres, excluding a large population in suburbs, 10,000 acres of which are now city-owned. Parks and playgrounds occupy twenty-six per cent of the urban acreage. Use of land for building purposes is zoned by the Town Planning Office which also controls extension of transportation and parkway facilities. The result, as many a traveller has remarked, is well-ordered beauty that comes from co-ordination of all important elements of a modern city plan


HELSINGFORS
GENERALPLAN FÖR
STOR-HELSINGFORS
1923

XUM



ZONING for limitation of building heights is an important part of the program mapped by the Town Planning Office. Business buildings are limited to eight stories except under special license. Adjoining residential districts are made up of apartment buildings, limited in height from five to seven stories, with a maximum of seventy-nine feet. In areas reserved for private residences or small apartments two and four story buildings are permitted. Buildings in outer residential sections may be four and five stories, although a two and three story limitation may be set to maintain suburban character in certain locations. The zoning chart, left, is keyed with the Helsingfors General Plan, developed in 1923 by the Municipal Town Planning Office. In the central part of town a plan for a public building group has been incorporated. This was projected originally by Eliel Saarinen, architect for the Helsingfors Railway Station, above, which was the first building in the group

HELSINGFORS, FINLAND

A City with a Plan

ARCHITECTURAL design is controlled in all cases where adherence to a general scheme is desirable. Facade designs are developed by the Town Planning Office which also dictates exterior materials. Possible monotony is avoided by varying designs and materials in different districts. Individual architects are active in carrying on work based on approved facade treatments. Helsingfors authorities consider the effect of a whole street or district to be more important than that of each separate building. Thus, in new districts at least, each building is related to its neighbor, bizarre results are chiefly absent and a pleasing homogeneity accomplished. Above, a business building in downtown Helsingfors built to the eight-story limit. Center, the Women's Hospital. Below, apartment buildings in a new district where control of architectural design is most evident

HELSINGFORS, FINLAND

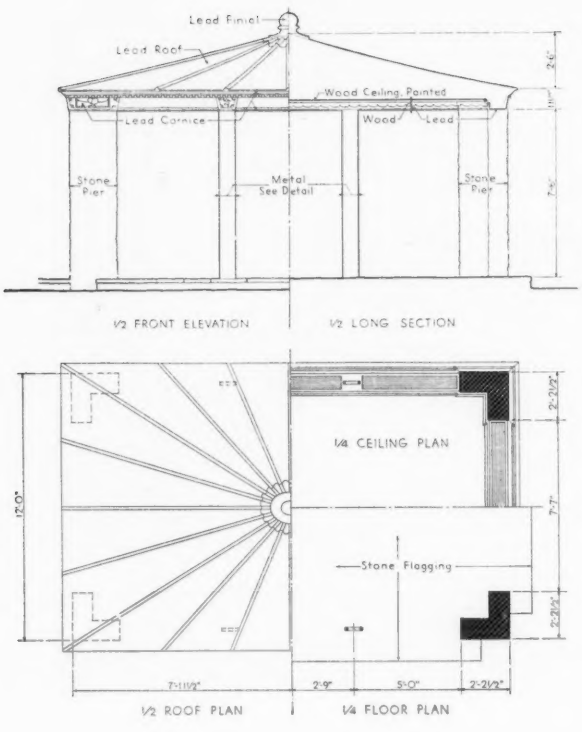
A City with a Plan

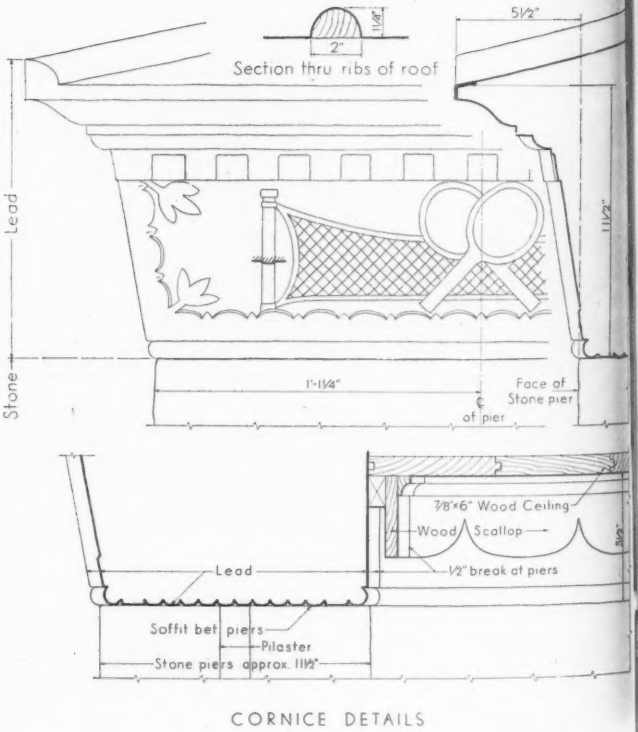
GODWIN, THOMPSON AND PATTERSON, ARCHITECTS

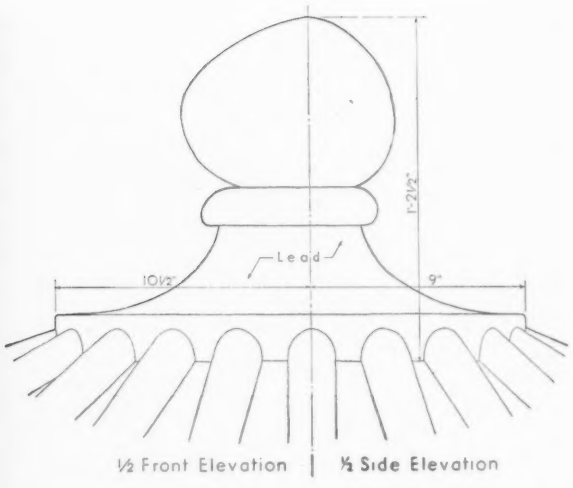
TENNIS SHELTER, ESTATE OF CARLL TUCKER

MT. KISCO, NEW YORK

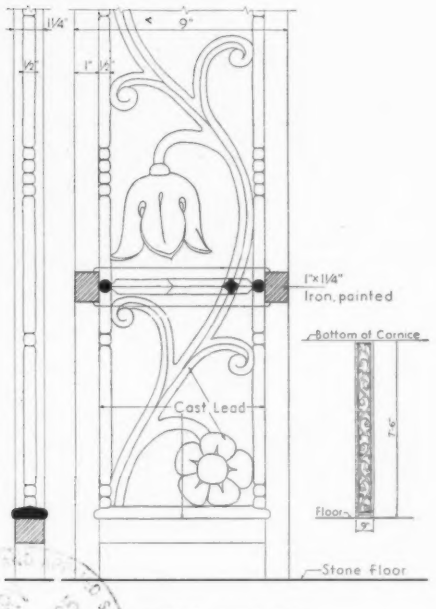
Photographs by Samuel H. Gottscho


Lead Finial
Lead Roof
Wood Ceiling Painted
Lead Cornice
Wood
Lead
Stone Pier
Metal See Detail
Stone Pier
½ FRONT ELEVATION
½ LONG SECTION
¼ CEILING PLAN
Stone Flagging
12'-0"
7'-11½"
2'-9"
5'-0"
2'-2½"
½ ROOF PLAN
¼ FLOOR PLAN


Section thru ribs of roof
2"
5½"
Lead
Stone
1'-1¼"
Face of Stone pier
℄ of pier
7/8"×6" Wood Ceiling
Wood Scallop
½" break at piers
Lead
Soffit bet piers
Pilaster
Stone piers approx. 11½"
CORNICE DETAILS

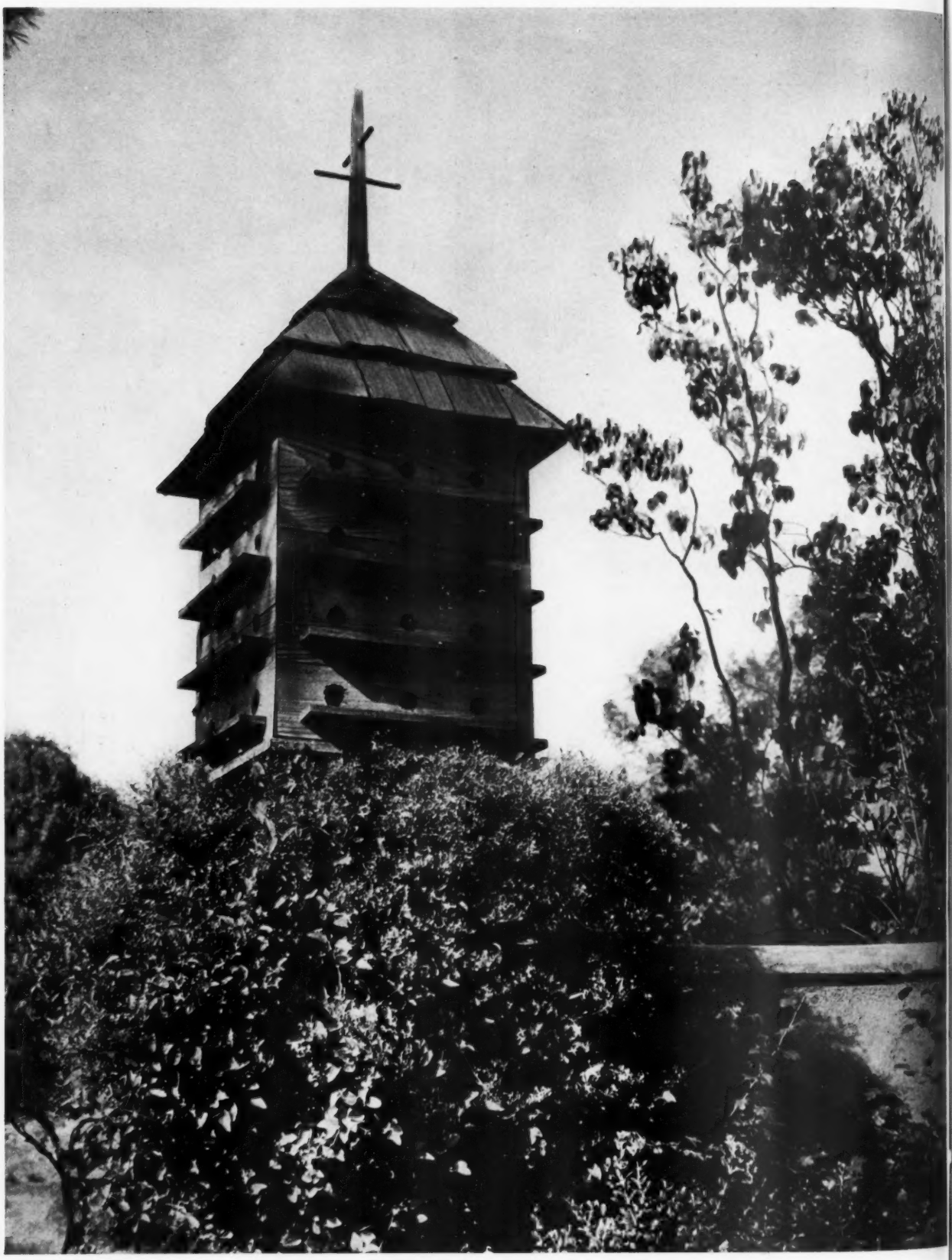


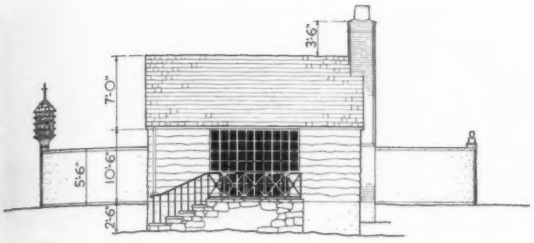
ROOF FINIAL DETAIL

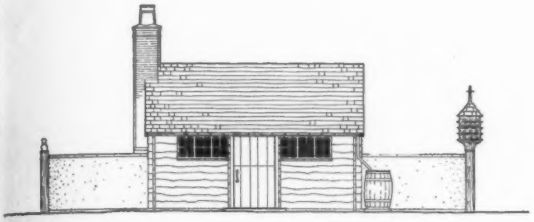


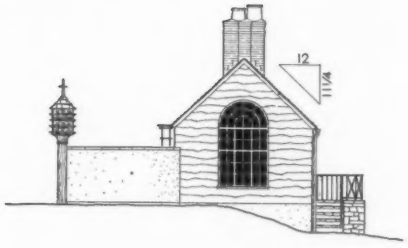
PILASTER DETAILS

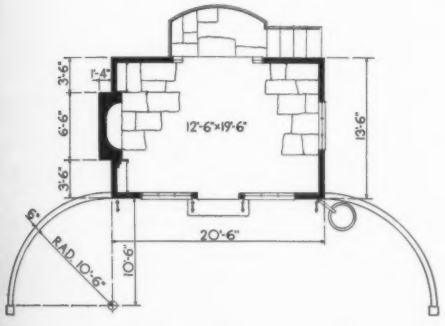
Piers are local stone, laid random courses, parged and painted white. Roof and cornice, natural color lead. Trellis ornaments, cast lead set in white painted iron frames. Tennis Shelter, Estate of Carll Tucker, Mt. Kisco, New York. Godwin, Thompson and Patterson, architects









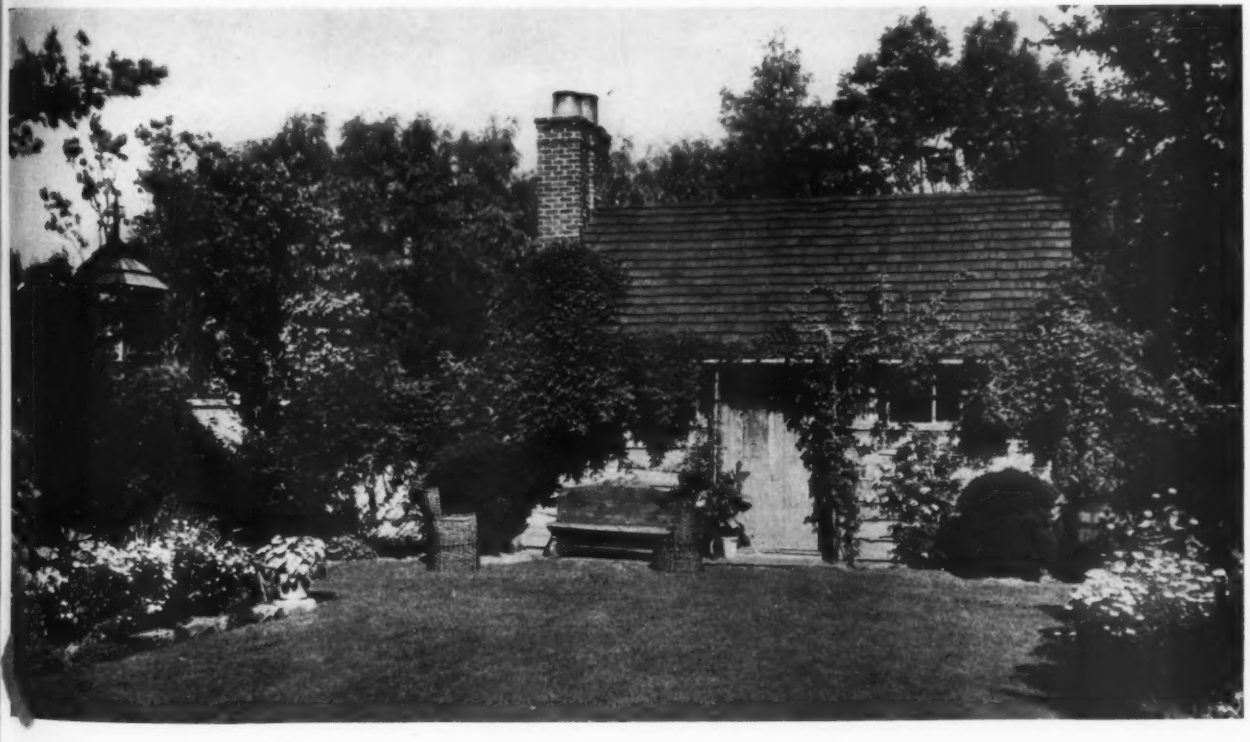


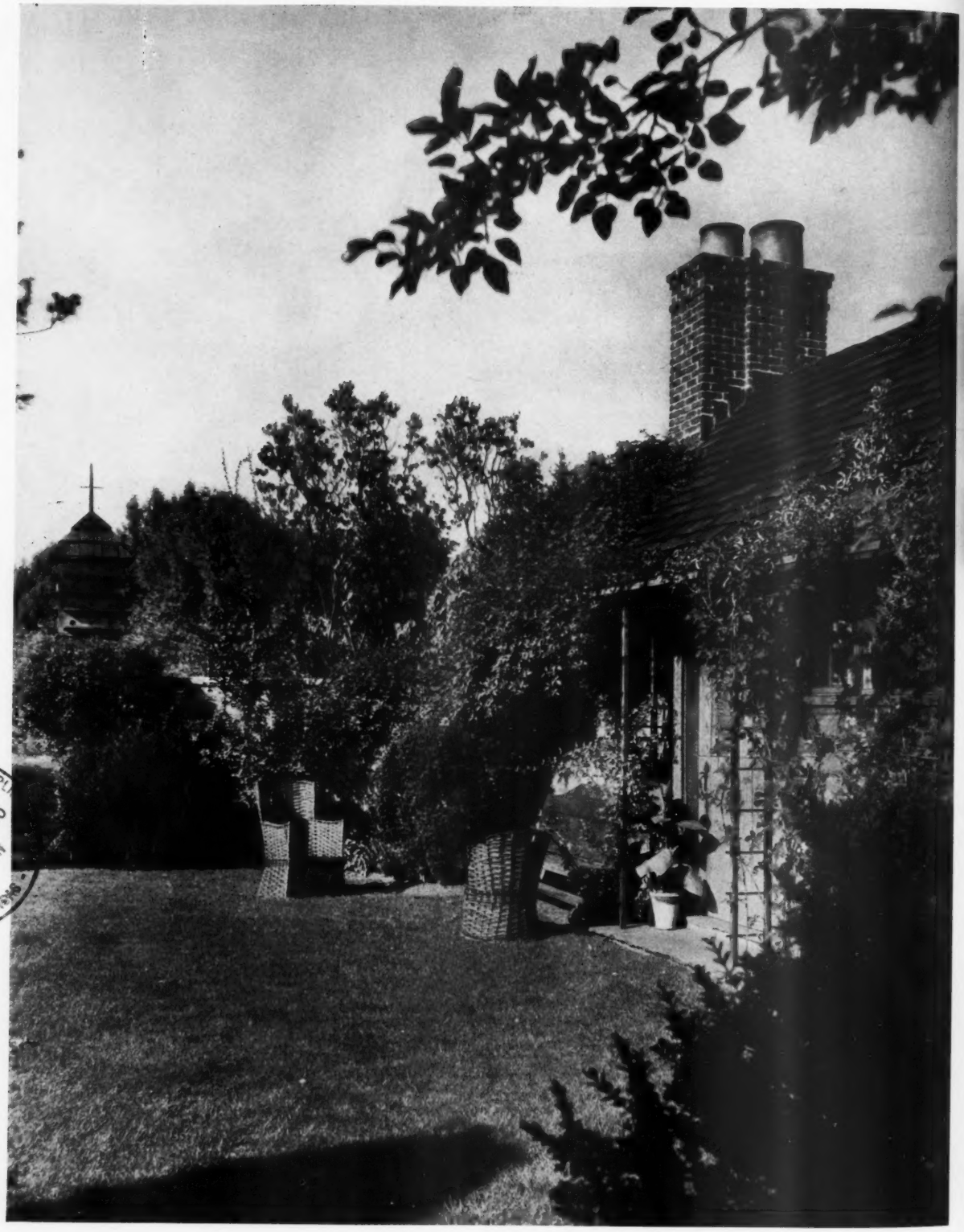
CAMERON CLARK, ARCHITECT

GARDEN HOUSE, ESTATE OF SAMUEL H. WATTS

NEW CANAAN, CONNECTICUT

Photographs by George H. Van Anda



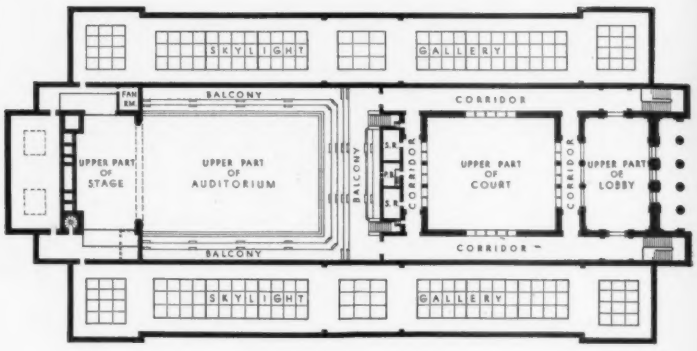


GARDEN HOUSE, ESTATE OF SAMUEL H. WATTS, NEW CANAAN, CONNECTICUT, CAMERON CLARK, ARCHITECT

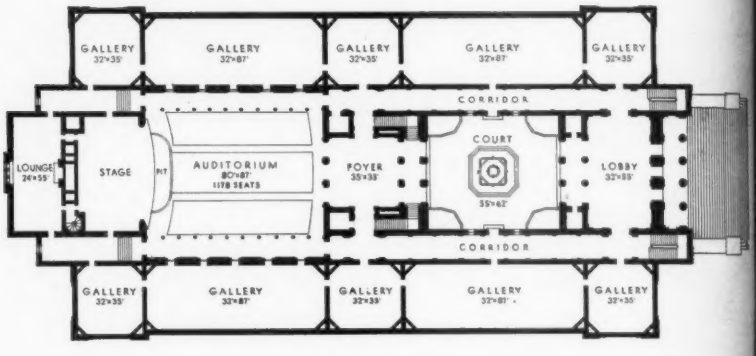
JOHN McDONALD and ALAN McDONALD, ARCHITECTS

JOSLYN MEMORIAL, OMAHA, NEBRASKA

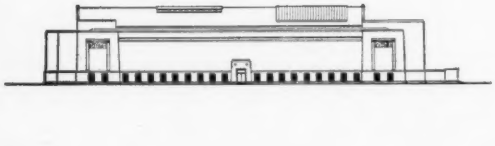
Photographs by Samuel H. Gottscho

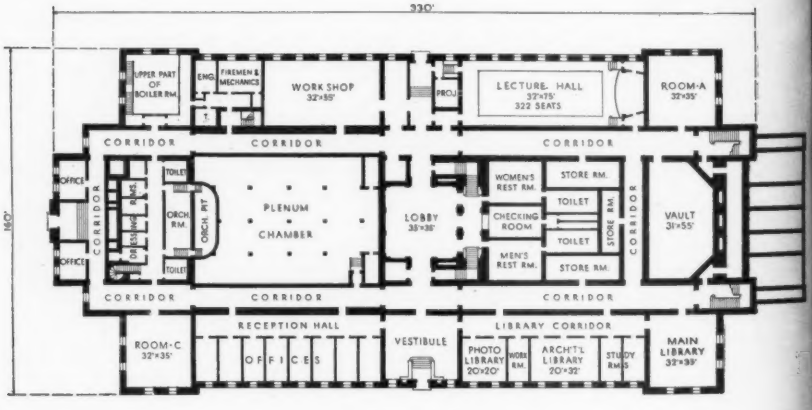


SECOND FLOOR PLAN



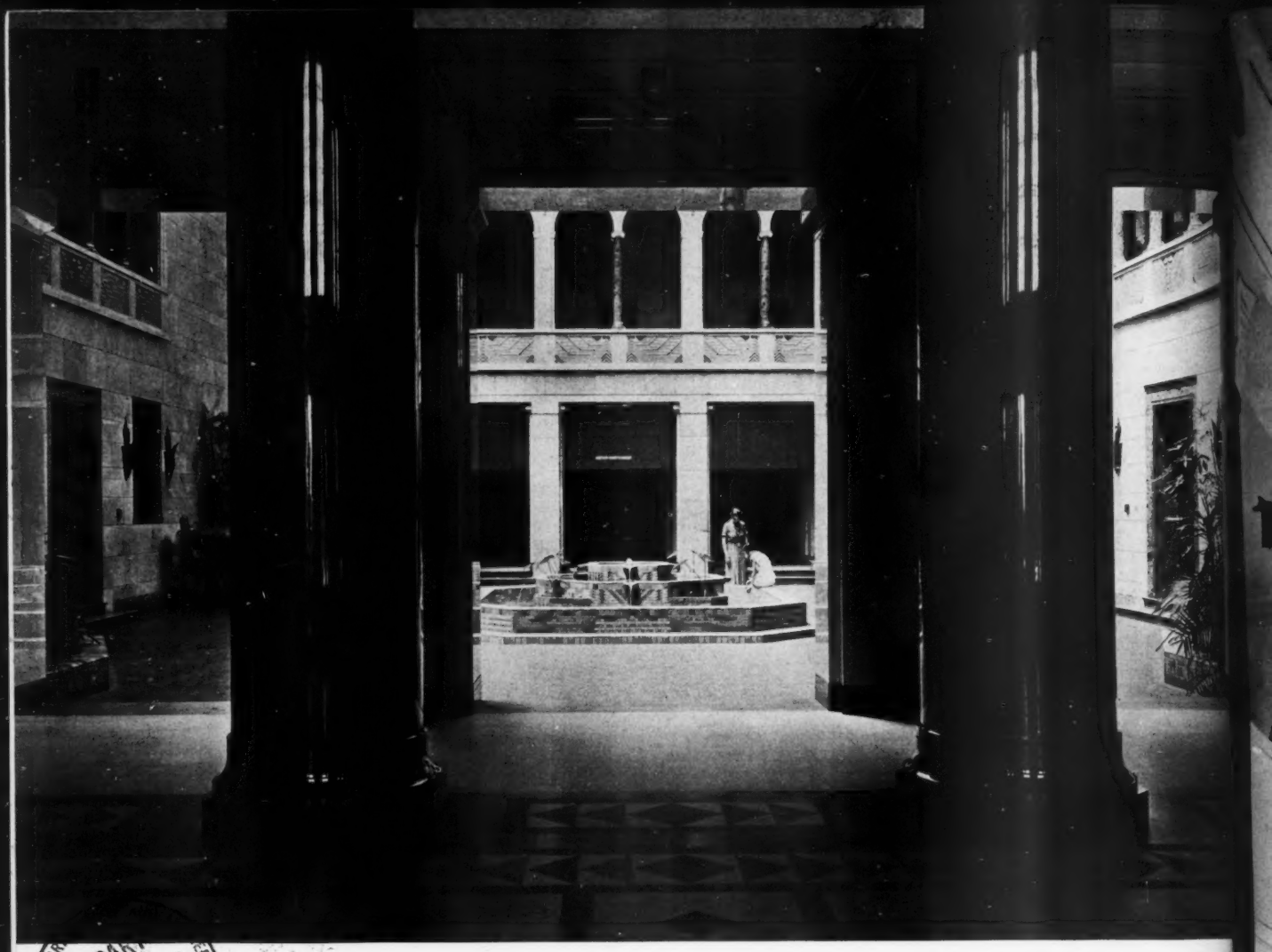
MAIN FLOOR PLAN





GROUND FLOOR PLAN

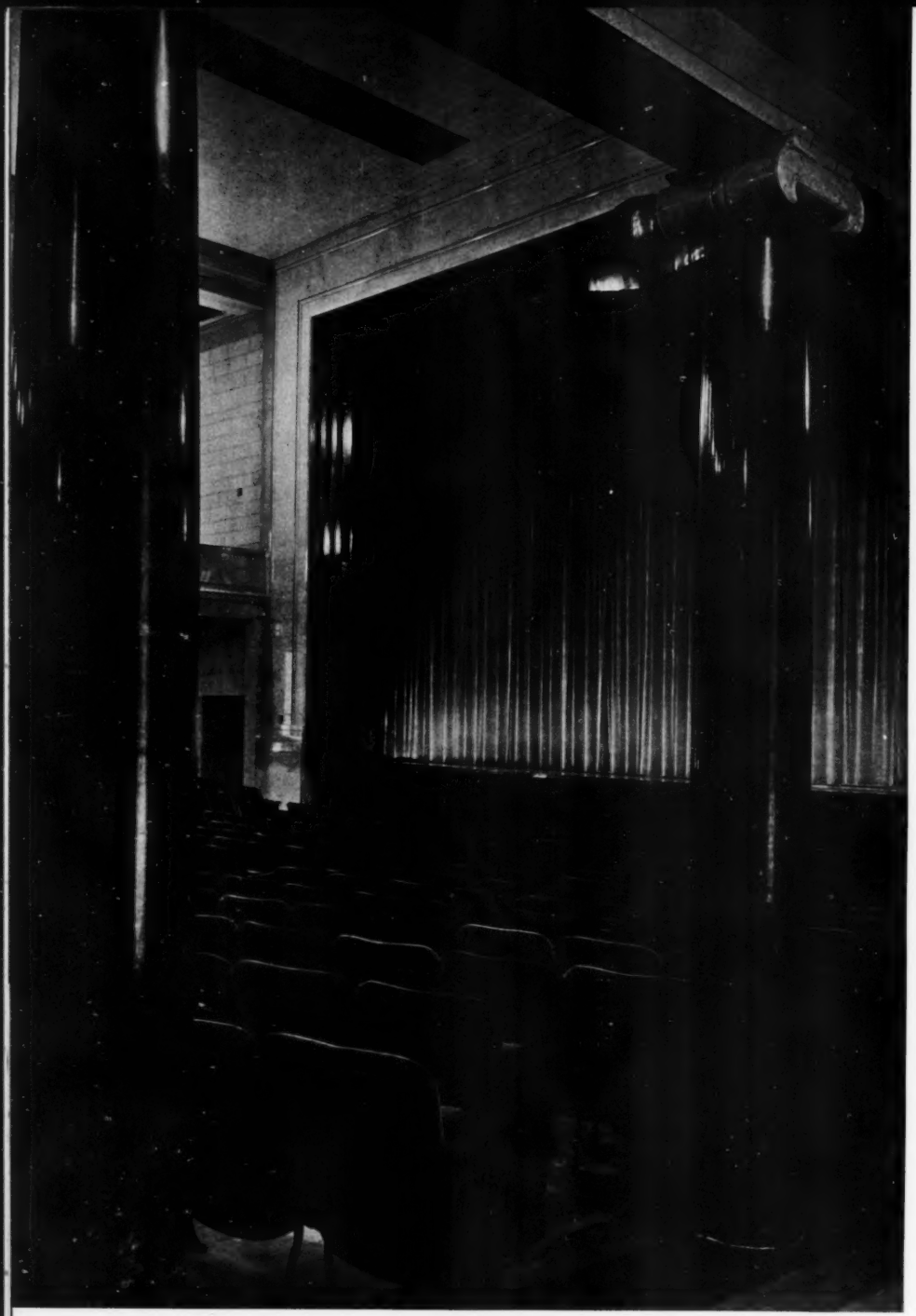
Entrance Portico. Georgia pink marble was used for the exterior facing, the surrounding walls and all approaches to this $2,600,000 center of cultural arts. Entrance doors, modeled in low relief by John David Brcin, are bronze



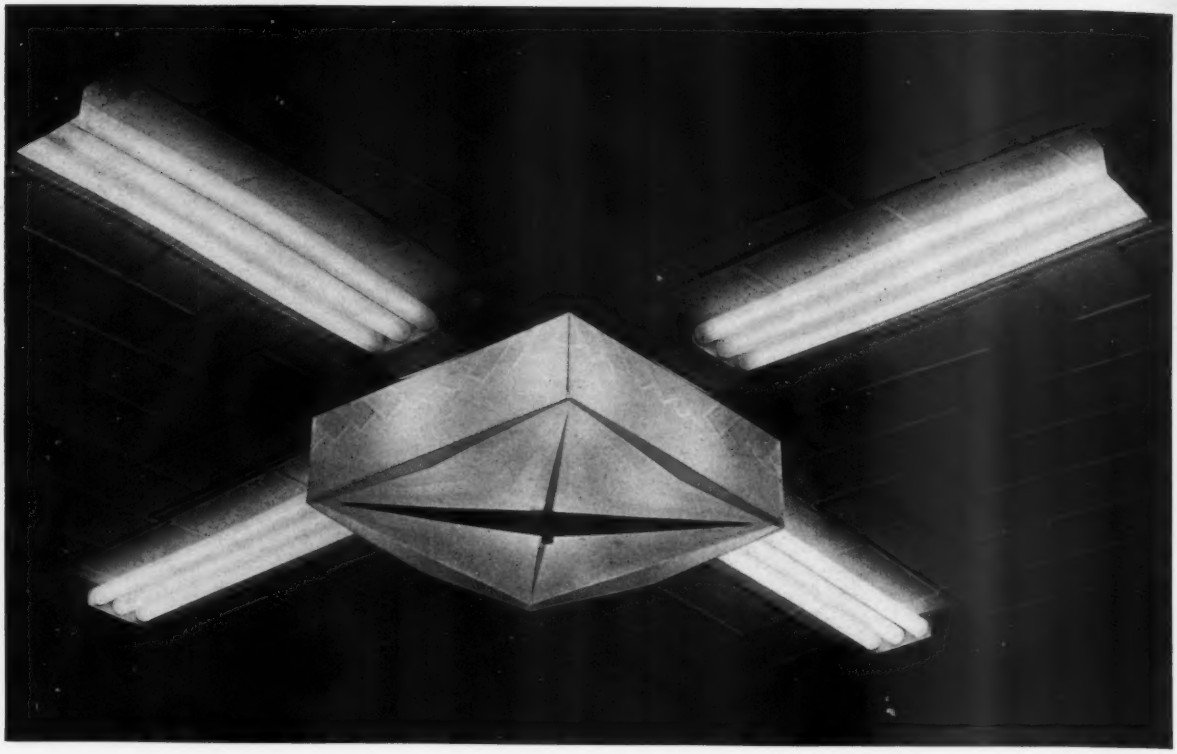
Entrance Lobby. Floor: Badger Pink Tennessee marble banded with green slate. Walls, pilasters and ceiling: Roman travertine. Bases: Belgian Black. Columns are Black and Gold marble, quarried especially for this building. Each weighs fifteen tons. Above, looking from Entrance Lobby into Floral Court. Court walls are faced with Aquia Stone. The floor is Moravian tile. Joslyn Memorial, Omaha, Nebraska. John McDonald and Alan McDonald, architects

XUM

Lounge. Floor, teakwood. Walls, hard plaster covered with silk velvet. Wainscot and ceiling, walnut paneling, inlaid with peroba wood. Marble facing of fireplace is Benou Jaune. On facing page: Detail of Hauteville marble capitals of Entrance Lobby columns. Joslyn Memorial, Omaha, Nebraska. John McDonald and Alan McDonald, architects



Auditorium. Floor: rubber tile. Wainscot: St. Genevieve Rose and Golden Vein marbles. Proscenium arch and columns: Westfield green marble. Ceiling and upper walls: acoustic plaster. Joslyn Memorial, Omaha, Nebraska. John McDonald and Alan McDonald, architects

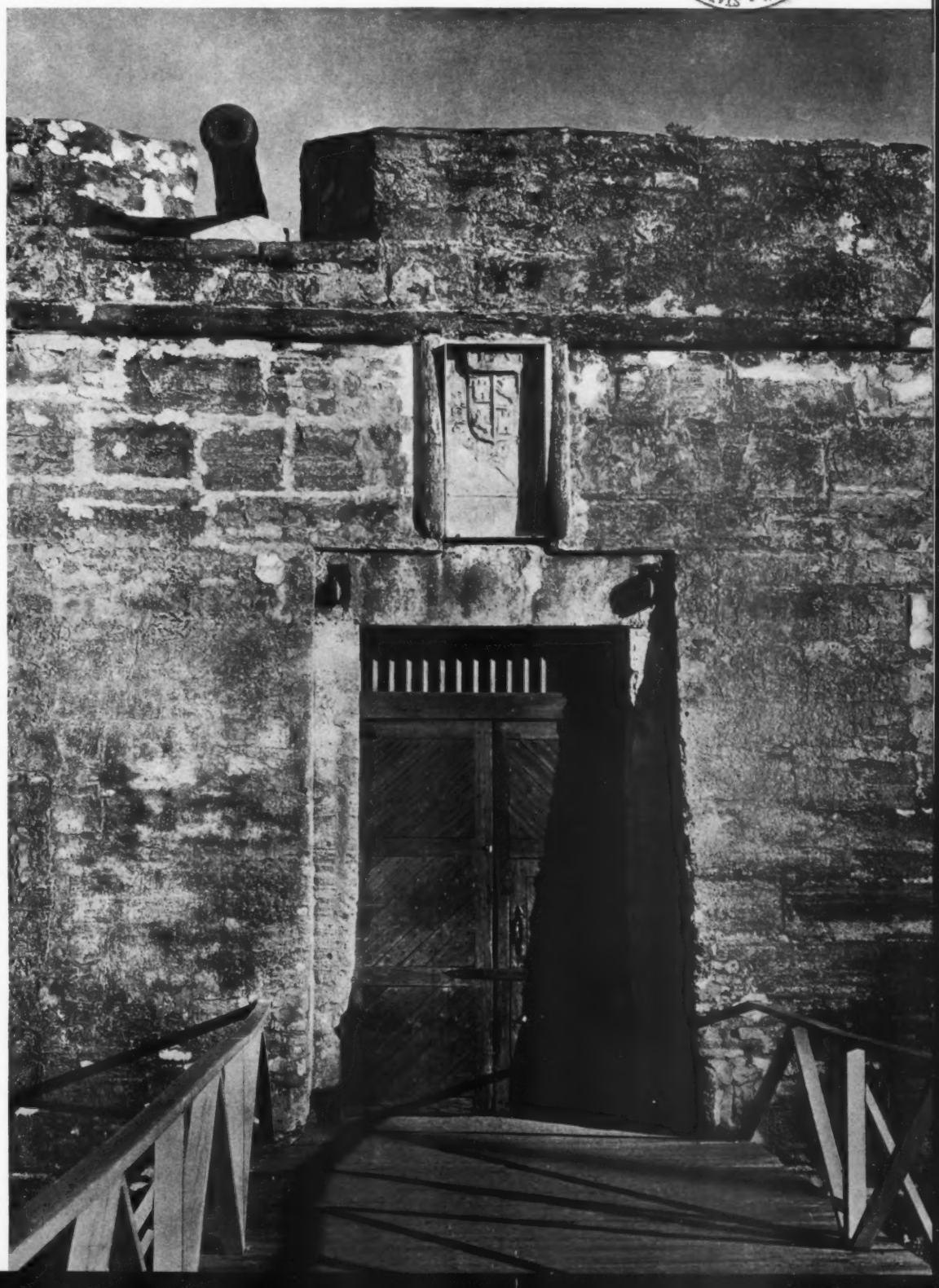


Lighting Fixtures. Above, direct, combination fixture on ceiling of ground floor lobby. Right, semi-indirect, suspended fixture over balconies of auditorium. Joslyn Memorial, Omaha, Nebraska. John McDonald and Alan McDonald, architects

FORT MARION...

ST. AUGUSTINE, FLORIDA

Since 1915 a National Monument in America's oldest city. Before that for nearly two hundred years a military stronghold famous in the annals of three nations. Photographs taken especially for American Architect by Samuel H. Gottscho



IN 1565 Pedro Menendez established for Spain the first permanent settlement on the United States mainland. Immediately a fort was erected. And upon that spot from that day to this a fort has stood. The first, built of logs and earth and called San Juan de Pinos, was sacked by the English buccaneer, Captain John Davis. Spanish workmen in 1665 began its reconstruction of coquina, a shell rock native to eastern Florida. In 1756 it was finished as it now stands; its cost: more than thirty millions of dollars. Walls are solid, about twenty-five feet high, battered from a twelve-foot base to a nine-foot breadth at top. The parapet was pierced for sixty-four guns that commanded all directions over a forty-foot moat » » » »

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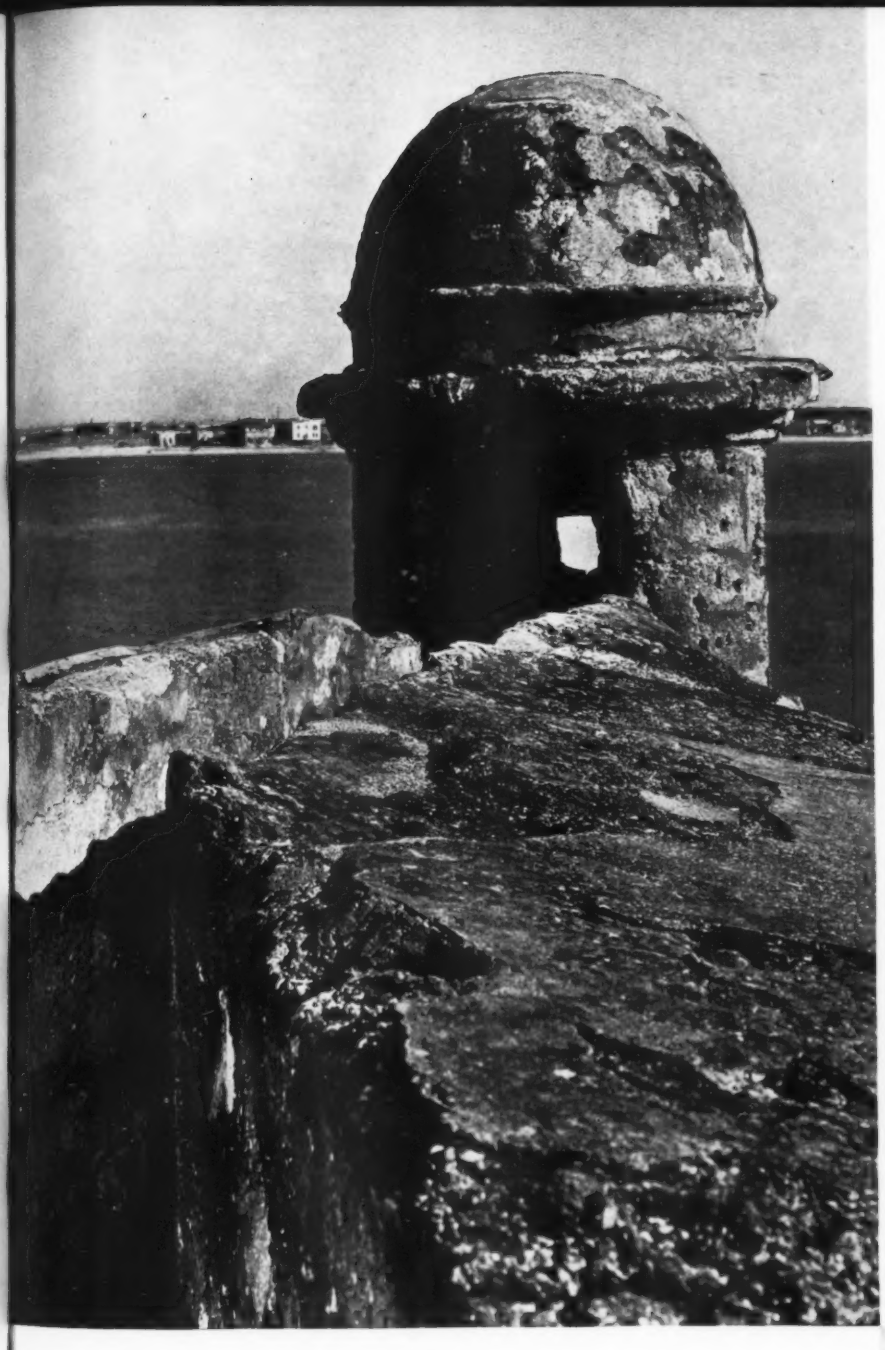
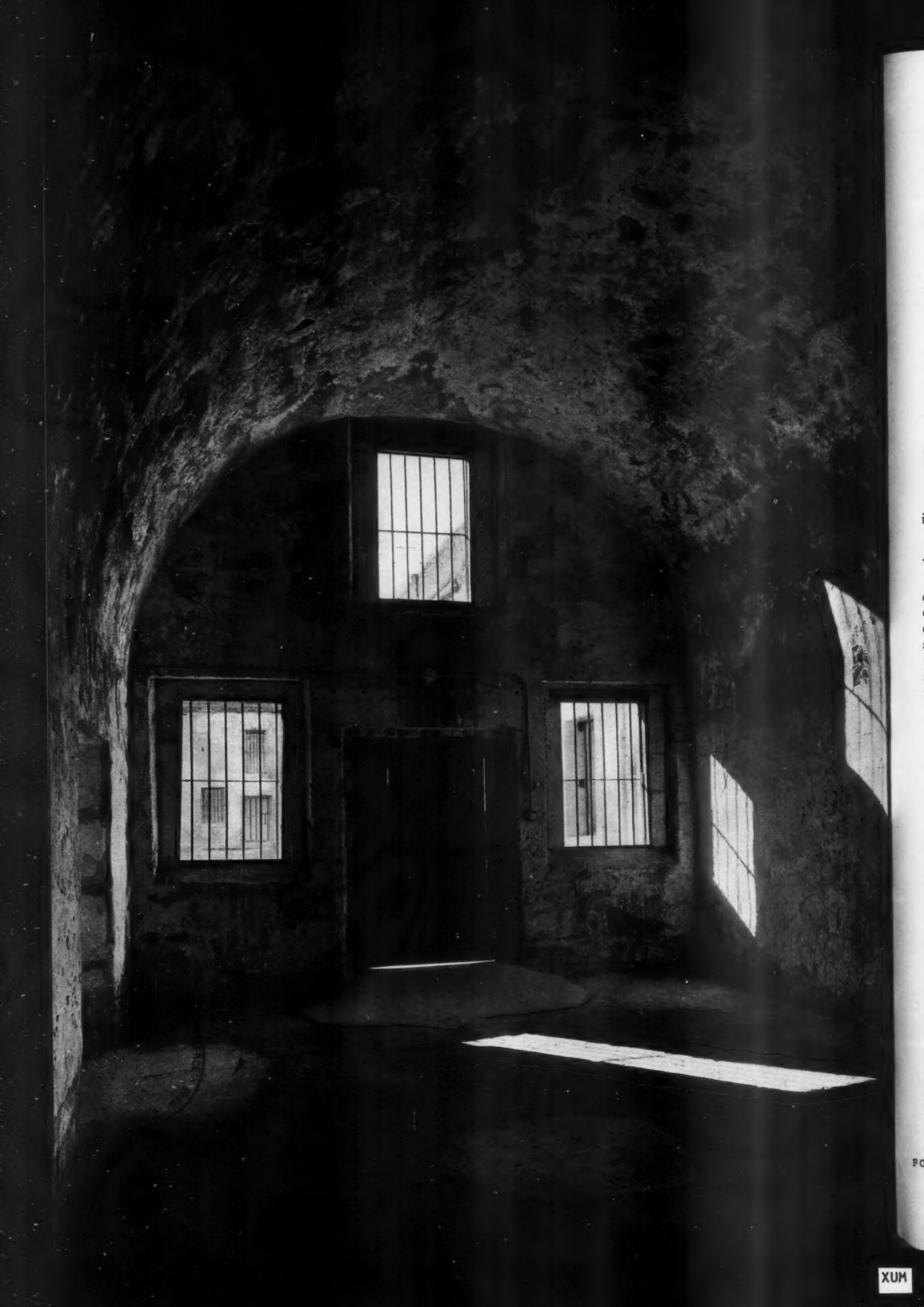


FOUR nearly equal bastions—known as Sts. Peter, Paul, Augustine and Charles —jut in triangular points from the corners of a square enclosure. Three have sentry towers. On the fourth, to the northeast, stands a watch tower commanding a view of both land and water. It is shown on the facing page

THE plaza, or inner courtyard, is one hundred feet square. Most of the casements open onto it. Ascent to the terreplein above them is by a ramp, recently converted to steps. The arch supporting the upper part of the ramp is remarkable for the fact that it has no key-stone. On the following page is an interior of one of the casements



A Quick Way to Make Reliable Cost Estimates

BY ARTHUR C. SHIRE

Chief Engineer, Federal Housing Administration

ESTIMATORS of the Federal Housing Administration are using a quick, simple and reliable method of determining replacement costs. As an accurate, practical method of estimating it can be useful to architects in establishing preliminary costs upon which decisions can be based. In practice it has been found more generally trustworthy than the square or cubic foot systems. The method, published here in detail for the first time, should prove to be an essential tool of the architect's professional work.

THE method uses "In-Place Unit Costs" in such a way that the work of pricing, measurement and calculation is held to a minimum. Short cuts, frequently used by estimators, have been amplified to cover the most ground with the greatest degree of accuracy. The manner of grouping items eliminates repetition in measurement and calculation; and a series of tables and approximations have been used to advantage in this connection.

As opposed to the time-consuming method of quantity survey estimating that includes a breakdown into trades, the In-Place Unit Method divides the building into structural elements. These are grouped into component parts having approximately the same surface areas or quantities of like units. Thus, it is easy to make adjustments for variations in size, specification and circumstances surrounding construction, a tedious process in quantity surveying and a virtual impossibility with any method of estimating based on cubic or square foot costs of construction types.

The component parts are foundations, floors (and ceilings), roof, exterior walls, partitions, doors, and windows. Elements of a partition, for example, may be paint (or wallpaper), plaster, lath and its structural members, such as studs or blocks.

The process of determining a cost estimate with this method is a simple one. In-place unit prices of elements are expressed in terms of square foot of superficial area or other common unit. These are added together to obtain the unit price of a component part. This price is then multiplied by the quantity of that part. Lump sum estimates are used for items which cannot easily be handled in this way. Estimated costs of all the various parts together with allowances for supervision, builder's overhead and profit, etc. are added to obtain the cost of the whole building.

The in-place unit prices to be used are the combined costs of all labor and materials required to put the elements of construction in their place in the building. They should include sub-contractor's profits when sub-contractors are engaged in the work. Prices can be obtained from contractors or sub-contractors, or built up from labor and material costs. This can be done in advance and a file of prices kept for ready reference.

As obtained, unit costs will usually be expressed in terms of common trade measurements such as board feet, cubic feet or cubic yards. For use in the grouping arrangement most of them will need to be expressed in price per square foot of surface. To simplify this conversion and also to provide proper allowances for waste and other miscellaneous items, tables of factors are used.

These conversion factors are of two kinds. Those called "Equivalent Factors" show the quantity of material expressed in terms of common trade measurement behind a square foot of surface, as, for example, the number of cubic feet of concrete in a certain thickness of wall measured by a square foot of wall surface, or the number of board feet of studs in a square foot of partition. "Allowance Factors" are percentages to be allowed for waste and other items entering into that part of the construction. These have been worked out to include many small items such as hardware and—in the case of frame construction—bridging, sills, plates and

even many items of trim. Thus, it is not necessary to determine separately the quantity and cost.

When both factors are to be used, their sum is employed as a multiplier to determine the required unit price. Application of the method to component parts of a building is described under various headings in the following paragraphs. Lists of many factors are also included. Since it is impossible to include all of them, an explanation of the factor make-up of floor and exterior wall components is given so that the estimator can develop additional factors for himself. A one-piece decimal limit for the total factor is sufficiently exact for the purpose.

Since this method of estimating is based on approximations, measurements to the nearest half foot will be accurate enough except in cases involving large areas. Then the nearest quarter foot is preferable. Overall measurements are used and normal openings are not deducted. The same measurements, taken to the outside corners of the building above ground, can usually be used for foundations, all parts of exterior walls, floors and often roofs. Costs of excess quantities so obtained approximately balance the cost of forming openings and of many small items such as lintels, sills, girders, etc. and of cleaning. Therefore, these items can be included in considerations of component parts and need not be separately accounted for.

When a change of material involving an appreciable change of price occurs within the same general surface, or units of the same component part differ materially—such as a change in the surface of an exterior wall from brick to wooden siding—measurements for each must, of course, be taken and each multiplied by the proper unit price. The following directions and factors refer to the usual types of dwelling. Although they may not be directly applicable to every different detail of construction, the same principles can be followed for any type of building.

FIGURING COMPONENT PARTS

Foundations... Include here two items: walls for basement and walls for foundations only. Reason: foundation walls not used for basement enclosure require trench excavation which is more expensive than basement excavation. In either case do not figure excavation or back fill as separate items. These are covered by factor allowances. Consider area walls as additional foundation walls; footings as additional depth of foundations. Disregard additional width of footings.

Determine quantities as the total surface area of each thickness of wall by multiplying the height from bottom of footing to top of wall by the length measured to outside corners of exterior walls above. Do not include as additional items of cost doors, windows or such miscellaneous items as anchor bolts, etc.

Floors and Ceilings... This heading covers all floors and ceilings, including basement, since they are parts or multiples of the ground area of the house. Take measurements from outsides of exterior walls above ground. Make no deductions for thickness of exterior walls or floor openings such as stair wells. Do not account separately for usual supporting sills, girders, lally-columns, posts and bracing, bridging, fire-stopping, paper, cleaning and similar small items.

Cost of basement floor includes excavation and the floor itself. To find it, multiply total area by the sum of square foot costs of each item.

Cost of excavation per square foot of floor area results from multiplying the cubic yard price of excavation by the equivalent basement excavation factor for the proper excavation depth. Excavation for basement walls is included in basic measurements.

Cost of other floors and ceilings is determined by multiplying area by the sum of square foot costs of all construction components having the same area.

The example given shows items to be considered in a frame house. Other construction can be handled similarly. Where tile, linoleum or other special floor finishes occur, add the additional costs of such finishes.

Roofs... Treat items under this heading like those referring to floors. With sloping roofs, measure along rake and include overhang. Dormer roofs and the triangular part of connecting roofs can be considered as balanced by openings which are occasioned by them. Therefore, these areas need not be calculated, nor such openings deducted. Miscellaneous sheet metal is considered under its own heading.

Chimneys... To figure cost of a chimney, determine cubage of chimney to bottom of foundation; figure number of bricks it would contain if solid; multiply this figure by price per brick in place and add cost of mantel. If fireplace hearth and facing are special, add cost of this work in place.

Exterior Walls... Costs per square foot of items from outside surface of wall through to interior finish are to be added together as explained under floors and as noted below. Consider walls as starting at top of foundation walls. Do not deduct areas of normal door and window openings and make no additions for sills, lintels and similar items. Do not add in dormer walls.

Cornices and similar ornamental work occurring

on exterior walls are accounted for under other headings. Cost of simple trim such as rake moulding is offset by overall measurements. It can be disregarded.

Sheet Metal... If sufficient data are available, use unit prices. Otherwise use a lump sum estimate.

Interior Partitions... Items under this heading should be handled similarly to those of exterior walls. Remember that finish usually occurs on both sides and must be included twice. Do not deduct normal openings unless they extend to the ceiling.

Include base and picture mouldings under this heading. No separate measurements for these items are needed. Multiply sum of lineal foot prices for base and picture moulding by one third (⅓ is the factor). This takes into account base and picture moulding on both sides of partition and on opposite exterior wall, distributing them throughout each square foot of partition, considered as nine feet high. The same factor can be used for base alone. Factors for frame partitions are the same as those for frame exterior walls.

Doors... Consider different classes of doors separately. With main entrance door include jamb, trim, hardware, saddle, weather stripping, side lights, transom, glazing and all parts of entrance feature.

For interior doors, add erection price for all its parts to price of door alone (material only). Multiply this by 2 (the factor) which is an average allowance for the material price of jamb, trim, hardware, saddle, paint, etc. This is based on the assumption that price of trim, hardware, etc., will be proportional to price of the door itself. Result is erected price of the entire door unit. Do not include doors occurring in foundation walls. Their cost is about equalled by cost of the wall displaced.

Windows... These are handled in a manner similar to interior doors. Add the price for erection of complete unit to the purchase price of frame and sash and multiply by 1.4 (the factor). This is an average allowance for the material price of trim, hardware, etc. Disregard ordinary glazing, as the cost of this is offset by not deducting for openings. Do not count windows in foundation walls. Include dormer windows.

Stairs... Include all stairs, interior or exterior, together with balustrades on stairs and around wells. These can be figured as a lump sum or by using a per-tread price for stairs and per-foot price for balustrades.

Porches and Exterior Ornamental Work... All porch work can be considered under this heading; or items can be split up and such things as floor, ceiling, roof, stairs, etc., included under their respective headings.

Include here cornices (unless sheet metal) ornamental iron-work, and general exterior trim and ornamental work not already included elsewhere. Much of this work can be figured on a lineal foot basis or on lump sum basis.

Heating.. .Cost of the average steam or hot water system can be closely approximated if the square feet of standing steam or hot water radiation and the cost per square foot of such radiation is known. A good short cut formula for determining the amount of radiation required to properly heat a building is given below. This uses only quantities already determined and fits any part of the country.

Square feet of standing radiation equals:

$$\frac{(G + 0.25\,W + 0.03\,C) \times T}{A}$$

where

G equals square feet of window and exterior door area (*approximate this by taking an average window size and multiplying by number of windows. Do the same for exterior doors*).

W equals square feet of exterior wall area.

C equals cubic feet of heated volume (*use outside dimensions, deduct unheated attics and basements*).

T equals number of degrees of temperature difference between temperature required inside and that outside the house temperature, as usually called for in heating specifications (*for example, if 70 degrees is to be maintained in zero weather, T equals 70 degrees*).

A equals 240 for steam—exposed cast iron or enclosed copper radiation. . . 180 for steam—enclosed cast iron radiation. . . 150 for hot water—exposed radiation. . . 115 for hot water—enclosed radiation.

If air-conditioning is used, add extra cost of such a system. Add cost of oil burner or other type of automatic firing device, thermostatic control or other adjuncts to the heating system.

Electric.. .Estimate cost of this work by multiplying the number of outlets by the cost per outlet. Include as outlets all lighting outlets, switches, convenience receptacles and other connections to any electrical equipment. Add an allowance for fixtures.

Plumbing... A lump sum estimate can be obtained, or when sufficient data are available the cost of plumbing can be estimated by using an in-place price per fixture, or for each of the different kinds of fixtures. Include under this heading medicine cabinets, towel bars, usual bathroom accessories, and hot water tank. Do not include dishwasher, laundry machine or similar equipment. If built in, these should be included under accessories.

Cost of a plumbing system properly proportioned

BASEMENT EXCAVATION FACTORS

Excavation	Factor (Cu. Ft.)	Excavation	Factor (Cu. Ft.)
Depth of 5'0"	.19	Depth of 7'6"	.28
" " 5'6"	.20	" " 8'0"	.30
" " 6'0"	.22	" " 8'6"	.31
" " 6'6"	.24	" " 9'0"	.33
" " 7'0"	.26		

FOUNDATION FACTORS

The Equivalent Factor shows number of cubic feet of concrete in a square foot of wall of varied thickness. Allowance covers back fill for all walls and trench excavation for foundation walls. Use total factor only for concrete and only when concrete price is expressed in cubic foot terms. In other cases use equivalent factors

Basement Walls	Equiv. (Cu. Ft.)	Allow.	Total Factors
Concrete, 12" thick	1.0	0.2	1.2
" 10" "	0.83	0.2	1.0
" 8" "	0.66	0.2	0.9
Foundation Walls			
Concrete, 12" thick	1.0	0.5	1.5
" 10" "	0.83	0.5	1.3
" 8" "	0.66	0.5	1.1

CHIMNEY FACTORS

Factors show number of bricks various chimneys would contain if built solid. They can be used instead of calculating number of brick

Chimney Factors:	Factor M Brick
1 story, no cellar, 1 flue	1.3
1 story, cellar, 1 flue	1.4
1 story, cellar, 2 flues	2.3
1 story, cellar, 1 flue and fireplace	3.6
1 story, cellar, 2 flues and fireplace	4.1
2 stories and cellar, 1 flue	1.8
2 stories and cellar, 2 flues	3.0
2 stories and cellar, 1 flue and fireplace	3.9
2 stories and cellar, 2 flues and fireplace	4.7

Factors of Structural Elements

FLOOR FACTORS

For frame construction. Equivalent factor is number of board feet of lumber in square foot of floor area. Allowance covers waste, bridging, nails and similar items

Floor Framing	Equiv. (Bd. Ft.)	Allow.	Total Factors
Joists 16" on centers			
3" x 12"	2.25	0.6	2.8
3" x 10"	1.8	0.5	2.3
3" x 9"	1.6	0.4	2.0
2" x 12"	1.5	0.5	2.0
2" x 10"	1.25	0.4	1.6
2" x 8"	1.0	0.4	1.4
2" x 6"	0.75	0.25	1.0
2" x 4"	0.5	0.3	0.8
Joists 20" on centers			
3" x 10"	1.5	0.4	1.9
2" x 12"	1.25	0.4	1.6
2" x 10"	1.0	0.3	1.3
2" x 8"	0.8	0.3	1.1
2" x 6"	0.6	0.3	0.9
2" x 4"	0.45	0.25	0.7
Sub-Floor	1.0	0.2	1.2
Finished Floor—Strip	1.0	0.2	1.2
" " —Plank	1.0	0.1	1.1

ROOF FACTORS

Factors and cost estimates are determined in a manner similar to that used in reference to floors and ceilings

	Equiv. (Bd. Ft.)	Allow.	Total Factors
Sheathing	1.0	0.1	1.1
Rafters 16" on centers			
2" x 12"	1.5	0.1	1.6
2" x 10"	1.25	0.1	1.3
2" x 8"	1.0	0.1	1.1
2" x 6"	0.75	0.1	0.8
2" x 4"	0.5	0.1	0.6
20" on centers			
2" x 12"	1.4	0.1	1.5
2" x 10"	1.0	0.1	1.1
2" x 8"	0.8	0.1	0.9
2" x 6"	0.6	0.1	0.7
2" x 4"	0.45	0.1	0.5

EXTERIOR WALL FACTORS

For frame construction. Equivalent factors give number of board feet in items covered by a square foot of wall area. Allowances provide for plates, sills, bracing, waste, nails, etc.

Frame Construction:	Equiv. (Bd. Ft.)	Allow.	Total Factors
Sheathing	1.0	.2	1.2
Studs 16" on centers			
2" x 6"	0.75	0.65	1.4
2" x 4"	0.5	0.6	1.1
20" on centers			
2" x 6"	0.7	0.6	1.3
2" x 4"	0.41	0.4	0.8
12" on centers			
2" x 6"	1.0	0.8	1.8
2" x 4"	0.7	0.6	1.3

to the cost and size of dwelling is between 8 per cent and 10 per cent of the construction cost of a one-family dwelling. It may reach 11 per cent in the case of a multi-family dwelling, where the family unit is small and each has its own hot water tank.

Accessories... Do not include items listed under any other heading. This heading covers equipment such as built-in kitchen cabinets and permanently located laundry or dishwashing machines.

Quality Variation... If unit prices used in estimates are for workmanship of average quality, and the quality of work is above or below this class, some adjustment is necessary. This is best done by adding or deducting a percentage of the total cost at this point in the estimate.

Builders Overhead and Profit... Add to the sum of all items the percentage amount customarily charged in the locality for the type and kind of work or allow for proper superintendence charge.

IF RECORDS are kept as shown in the examples it will be easy to pick out the complete unit cost of major items without repeating for each estimate the work of multiplying the unit price by the factor and adding together the unit costs of the elements making up such item. The lump sum estimates can be used again for similar construction with or without change, as conditions require.

Users of the In-Place Unit Method of cost estimation have found that it gives results remarkably close to those obtained from a complete quantity survey. The knowledge and record of in-place unit prices gained in the use of this system will be valuable in comparing the costs of different materials and methods of construction and in guiding a decision as to their use.

Note: Acknowledgement is due Mr. J. Englebardt of the City Housing Corporation and the Gresham Realty Company of New York for some of the ideas used here, and to Mr. Edward Morris of the Technical Department of the Federal Housing Administration for his assistance in working out factors and other details.

EXAMPLES OF DETERMINING COSTS

FLOORS AND CEILINGS

Basement

Exc. 6'0" deep, sandy soil, $/c. y. x .22 = $/s. f.
Concr. Floor 4" thick..... = $/s. f.

$/s. f. x Area = Cost

First Floor

Oak 13/16" x 2", select...$/s. f. x 1.2 = $/s. f.
Oak Scrape & Finish..... = $/s. f.
Sub Floor 1" x 4" N. C. Pine,
$/Bd. f. x 1.2 = $/s. f.
Joists 2" x 10"–16" on c., $/Bd. f. x 1.6 = $/s. f.

$/s. f. x Area = Cost

Second Floor

Attic Floor 1" x 6" T. G. N. C.,
$/Bd. f. x 1.2 = $/s. f.
Joists 2" x 6"–20" on c., $/Bd. f. x .9 = $/s. f.
Wire lath 3.4 lb..... = $/s. f.
Plaster, 3 coats..... = $/s. f.
Kalsomine ..... = $/s. f.

$/s. f. x Area = Cost

(Note: If 1st and 2nd floor and/or basement areas are equal, square foot cost of each can be added together before multiplying by area.)

Kitchen

Linoleum—Battleship
$/s. y. x 1/9 — $/s. f. — $/s. f. = $/s. f. x Area = Cost

(Note: Cost of scraping and finishing which is not done under linoleum is deducted).

Baths

Tile ¾" Hex..... = $/s. f.
3" concr. Dead $/c. f. x ¼..... = $/s. f.

Deduct for finished oak
(including scrape and finish)..... = $/s. f.

$/s. f. x Area = Cost

Total Floor (and Ceiling) Cost $

EXTERIOR WALLS

Example for Exterior Walls:

Paint (interior) 3c..... $/s. f.
Plaster 3c.....$/s. y. x 1/9 = $/s. f.
Lath—wood ..... $/s. f.
Studs 2" x 4" — 16" c..... $/b. f. x 1.1 = $/s. f.
Sheath 1" x 6" T. & G.....$/b. f. x 1.2 = $/s. f.
Paper—12 lb. felt..... $/s. f.

Sub Total $/s. f.

Brick Veneer $/br. x 7..... = $/s. f.

$/s. f. x Area = Cost

Siding ..... $/s. f.
Paint (outside) 3c..... $/s. f.
Sub Total for Wall (as above)..... $/s. f.

$/s. f. x Area = Cost

Total Exterior Wall Cost = $

Use of Factors in Cost Determination

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"MATERIAL IN DESIGN" SERIES NUMBER 2

BY ARTHUR McK. STIRES

TO think of glass is to think almost instinctively of light—and space. Therein lies the fundamental fascination of this substance. A piece of quartz, a diamond, a crystal globe, a mirror or a window are all alike fascinating in that they transmit, diffuse, deflect or reflect light and vision. No other material available to the architect enables him to use, as an element in design, the brilliance and beauty of light itself, or an unrestricted view. ● Unquestionably this factor has been a compelling and inspiring force in the tremendous development of glass for architectural use during the past two decades. Creative minds have imagined interiors where glass would be used in conjunction with light as a decorative element capable of an unlimited variety of effects. They have imagined tall structures solidly encased in glass which would reflect the changing light by day and lend themselves to marvelous illumination by night. They have imagined new uses for old forms under conditions which had never before been possible. ● These are no longer dreams. Glassmaking—which once was simply an art, subject to all the incalculable lack of uniformity characteristic of an art—has become a science as well, and the dreams of the designer have become material for the intensive research of the technologist. The study of contemporary architectural glass, therefore, resolves itself largely into a study of the various glasses which have resulted from modern scientific methods, together with forms, properties and architectural applications of these glasses.

TYPES OF GLASS

THE following general types of glass are important in architecture, and form the basic materials to be considered in this article:

Lime glass is used in all kinds of "flat glass"—windows, plate, wired, and figured—and represents the largest tonnage of glass melted today. It ranges in color from glass which is practically colorless to glass which has a noticeably green cast. It is the lowest cost type of glass.

Lead glass is colorless and, because of its high index of refraction and high dispersion, has crystal-like brilliance which is often desirable in architectural interiors. Typical applications are: lighting fixtures, ornamental pilasters, band courses, grilles, and placques. Lead glass is relatively expensive.

Borosilicate glass combines low expansion with superior resistance to heat shock, excellent chemical stability and high electrical resistance. Its development has extended the use of glass into once quite foreign fields; it is used with success in such varied forms as cooking utensils, insulators for high tension wires, and pipes for carrying chemicals and food products. Its importance to architects lies in its ability to withstand sudden severe temperature changes, such as would cause failure in other types. It is used chiefly in exterior work for lighting and for large architectural units where limited expansion or high resistance to temperature shock is required. It has a characteristic slight amber cast and is not as clear as the types mentioned above; hence is not usually employed in interiors where the range of temperature is not excessive. The borosilicate glasses are more expensive than lime glass but usually less costly than lead glasses.

Ultra-violet transmitting glasses are of two types: Vitreous silica, frequently though erroneously called "quartz glass," is made by fusing pure silica without fluxes. Its low expansion and high softening point permit its use beyond the temperature range of other glasses. It has maximum transparency to ultra-violet radiation; it is clear and colorless; and it is the most expensive glass having direct architectural applications.

The second type is commercial ultra-violet glass which is a modified composition similar to ordinary window glass, except for the elimination of practically all iron, lead and certain other impurities. It

is considerably less expensive than viterous silica but somewhat higher in cost than equivalent window or plate glass.

There has been much controversy and confusion over the therapeutic value of ultra-violet transmitting glasses but sufficient experience has been gained with glasses of acceptable quality to establish their value for health purposes. All of them are subject to initial solarization or loss of part of their original transmitting properties through the action of the sun. The American Medical Association standards recognize as "ultra-violet transmitting" only such glasses as will pass 25 per cent of these rays at a wave length of 3020 angstrom units after solarization to the point of permanent stability. Improper use of the designation ultra-violet transmitting glass for sub-standard glasses has been the cause of much controversy; it is essential that architects specifying this type of glass require from the manufacturer a certification of its ability to meet the foregoing standard.

Heat resisting, heat absorbing glass is so called because it has much greater resistance to the heat rays of the sun than ordinary window and plate glass. Although commercially available it is still subject to intensive tests in laboratories of the industry to discover and develop its potentialities. It is not entirely colorless, having a slight blue-green tint.

Special glasses having architectural applications include:

(a) Colored clear glass of wide usefulness for illuminating and decorative purposes.

(b) Translucent glasses owe their peculiar optical effects to the presence of minute particles. Of this type are opal glass, certain "alabaster" glasses and so-called "milky" glasses. They are of primary architectural importance as diffusing media in lighting units.

(c) Safety glass, comprising laminated glass and the type known as "case-hardened," which has a high mechanical strength permitting its use under conditions that would break ordinary glass. Laminated glass, when broken, adheres to a transparent plastic. "Case-hardened" glass, when broken, disintegrates into small friable pieces which are comparatively harmless.

(d) Opaque glasses, including black and colored plate glass and vitreous compositions of glass-like character, which are used like marble or tile for exterior and interior surface finishes.

Other special glasses which have limited architectural application include: glasses that absorb the visible but transmit the ultra-violet; glasses that transmit the visible to a great extent, but absorb the ultra-violet; and others which transmit the heat-giving infra-red rays but absorb almost completely the visible portions of the spectrum. Laboratories staffed with competent experts are maintained by the larger glass manufacturer. Architects are encouraged to bring special problems to them.

The technologists employed in these laboratories have rather generally adopted a policy that merits the confidence of architects. A great many types of glass have been perfected by the industry. Some were the subject of research for many years before they successfully passed the rigorous tests to which they were submitted. Until every reasonable doubt as to the value and character of a new product has been removed, it will not be officially sanctioned by the better companies for commercial production. The development and progress of the glass industry is apparently controlled to a large extent by the careful scientific point of view of its research directors.

The foregoing kinds of glass cannot easily be grouped according to the architectural applications since there is an obvious overlapping of functions and properties in many cases. For the purpose of clarity however, the applications of glass in architecture may be broadly grouped into three main sections: Architectural glass, in which the product in any form is used for its esthetic rather than its utilitarian qualities; structural glass, where its strength or other physical properties are utilized as well as its appearance characteristics; and plate and flat glasses used primarily for fenestration.

ARCHITECTURAL GLASS

AS an esthetic element in architectural design, glass has come into real prominence only within the past decade. Recognition of its potentialities by leading designers, coupled with revolutionary technical progress made within the industry, is responsible for its rapid progress.

Within the category of architectural glass are: (1) Moulded glass; in which form and pattern are produced by means of a mould; (2) pressed glass; which may be similar in character to moulded glass, the design being formed by a pressing rather than a casting process, but which ordinarily connote commercial flat glass having a pattern impressed upon one or both surfaces; and (3) plate or other flat glasses to which a design is applied by one or more of several processes after the glass has been produced in its plain form.

The following points should be covered in specifying architectural glass:

1. Type of glass desired.
2. Manner in which design (if any) is to be executed.
3. Finish desired.
4. Grinding and polishing information.

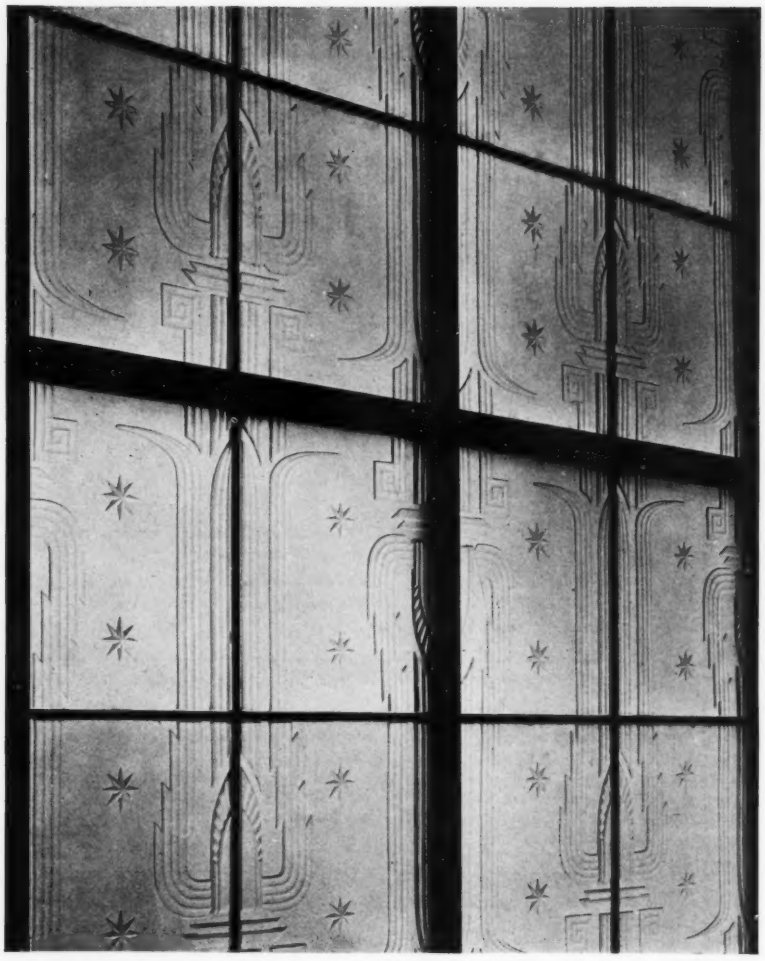
Type of glass should be specified wherever special physical properties and color are important. For exterior use, or wherever the glass will be subjected to severe variations in temperature (as, for example, when it is heated at the back by electric lights while the front surface is exposed to sudden rain, snow

GLASS

PRINCIPAL TYPES & SIZES USED IN ARCHITECTURE

AMERICAN ARCHITECT SERIES "MATERIALS IN DESIGN" No. 2 March 1935

TYPE or FORM	COMPOSITION	PRACTICAL LIMITATIONS on SIZE of UNITS	APPLICATIONS & LIMITATIONS
DECORATIVE			
MOULDED - intaglio - relief	Borosilicate or Lead	Sizes to 18" x 24" - thickness ½" to 2" in borosilicate - 12" x 12" in lead	Used for pilasters, friezes, caps, grilles, lighting fixtures, etc. - borosilicate wherever temperature range is extreme
ETCHED - sand - acid	Lead or Lime	Any plate glass size, but usually handling and replacement costs make units under 10 to 16 sq. ft. advisable.	For flat panels, doors, mirrors, etc.
WHEEL CUT	Lead or Lime	Same as etched	Same as etched, but commonly limited to designs composed of straight lines
TUBING	Lead or Borosilicate	Length up to 4 ft. and diameters to 2 ½ in. in borosilicate. Length in lead 36."	For balusters, railings, light fixtures, etc. Excessive lengths subject to warpage
MIRRORS			
CLEAR or COLORED	Lead or Lime	Obtainable up to 72" x 120". To reduce distortion keep length and width nearly equal - large mirrored areas should be divided into smaller units wherever possible.	To emphasize space and to reflect light, form and color As mural decoration, clear or colored, in conjunction with etched or painted designs Color is in glass, not in backing
OPAQUE	Lime	Standard sizes to 70" x 120" - thickness ¼" to 1 ¼"	Commonly used for shop-fronts, bathrooms, kitchens, wainscotting, etc. - Can be sand-blasted
STRUCTURAL			
HOLLOW	Lime or	Approx. 6" x 6" to 6" x 8" - thickness 1 ¾" to 2 ¾" -	For exterior walls and partitions. Use reinforcing rods every other course. All types support own weight - Hollow for heat insulation but not effective against solar heat - Color can be introduced in mortar joints
SOLID	Borosilicate	Various types from 5" x 5" x 2 ¾" to 4" x 4" x 1 ¼"	
FENESTRATION			
PLATE	Lime or Lead	Size varies according to thickness - Maximum: 210 sq. ft. in ¼" stock Thickness from ⅛" to 1 ½"	For glazing and mirrors. Max. clarity and freedom from distortion
FLAT DRAWN (window)	Lime	Single strength 38" x 56" - double strength: 56" x 76" - heavy sheet 80" x 110"	For glazing. Distortion limited in highest qualities
WIRE	Lime	48" x 144" - thickness: ¼" to 1 ⅜"	For fire protection, safety, etc. Sizes usually limited by fire regulations
PRESSED	Lime	Varies up to 48" x 144" according to make and pattern - ⅛" to ¼"	For light control, obscurity. Some patterns have marked decorative value
SAFETY	Lime	46" x 80" - thickness: ¼" to 1 ¼"	For burglarproofing and safety from impact. Heavier types for bulletproofing
ULTRA-VIOLET	Lime or Vitreous Silicate	Standard window-glass sizes	For solaria, etc., to admit light of healthgiving wave-lengths
HEAT RESISTANT	Special	Not standardized	To afford insulation against solar heat
X-RAY	Lead	40" x 72" - thickness 5 to 7 mm.	For protection against harmful effect of exposure to X-ray - used in hospitals, etc.



GOTTSCHO

Left: Designs moulded in relief on translucent glass. Note that only two patterns and the reverse are used. Below: A pair of panels moulded in relief illustrate how degree of modeling is emphasized by lighting

BONNET

or hail) the material should be of the heat-resisting boro-silicate type. While this material is less brilliant than some other types of glass, its phenomenal resistance to shock permits it to be used where no other commercial glass would survive. For interior use, where no wide variations in temperature exist, the brilliant lead-bearing and the low cost lime glasses may safely be used.

When the designer plans to use commercial pressed glass, to develop special designs on plate glass, or to employ standard types of opaque or translucent glasses, no designation of chemical composition is necessary or desirable.

Colored, or other special glasses, may be specified as desired. But in every instance this should be done only after consultation with a reliable manufacturer, for the reason that the special properties of all types of colored glasses, and hence range of their effectiveness, are not necessarily present in the same degree in all brands.

EXECUTION OF DESIGN

DECORATIVE patterns may be executed in glass in a variety of ways, each of which has characteristic individuality of effect. The architect should take care to select the method which most adequately satisfies the requirements of his particular design problem. Following are the principal forms in which architects' designs may be executed, also such information on manufacturing methods and limitations as may be useful to the designer:

Moulded glass. In the manufacture of moulded glass it is necessary for the architect to submit a model or a drawing from which a model can be made. From this model a mould is built in which the molten glass is pressed or blown into contact with the configurations of the pattern. When glass is thus produced a shrinkage occurs amounting to about 3/8

Right: Decorative potentialities of some types of commercial pressed glass suggest that their use might yield interesting effects at relatively slight cost. The pattern is impressed on one side of the glass, the other being polished

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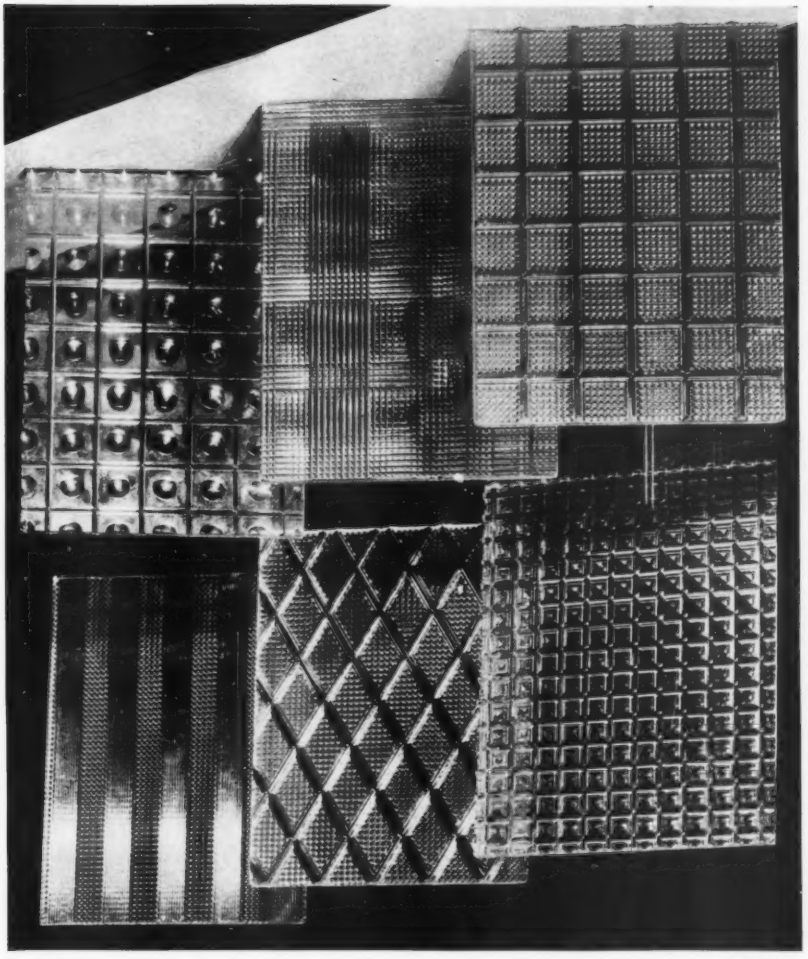


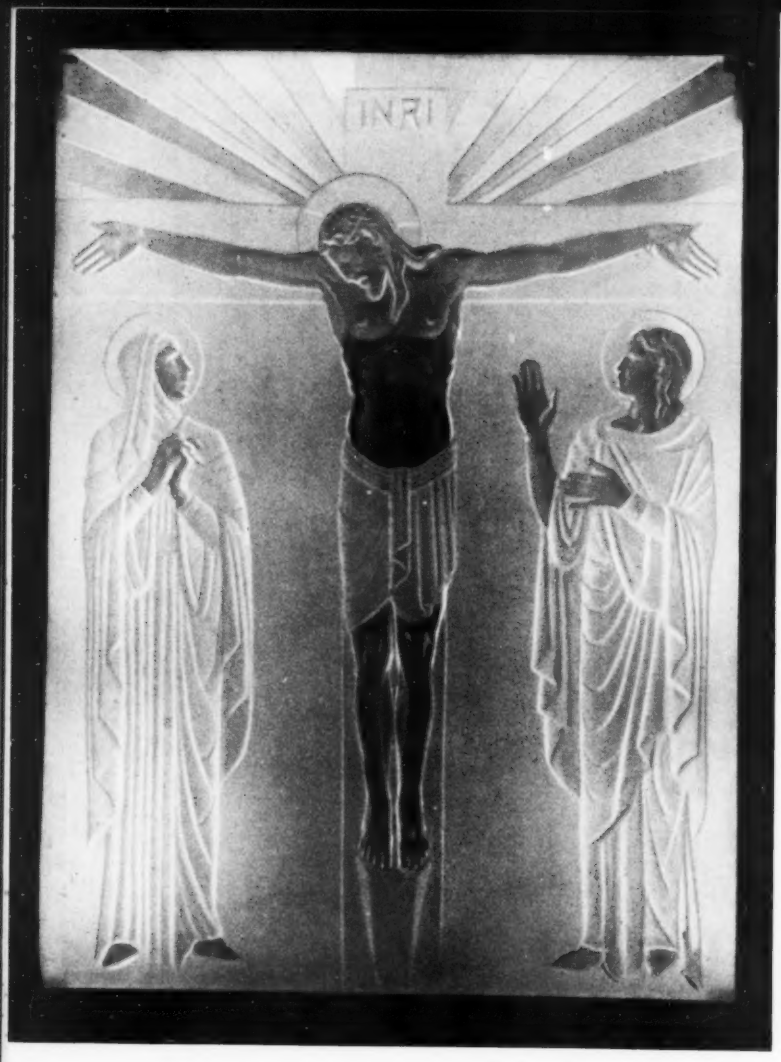
LAZARNICK

inch to the foot. Consequently, when the architect makes his own model he must allow for this shrinkage and increase the size of his model accordingly. If he submits a full-sized drawing to a model-maker, he should indicate that it is "finished full-size" so that the model-maker can make the necessary allowance. The cost of moulded glass is quite high for an individual piece because of the cost of making the mould, but when a large number of identical pieces are to be made this cost factor becomes relatively unimportant.

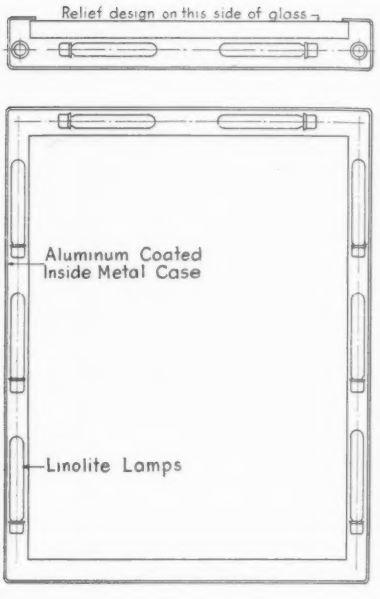
Designs in moulded glass may be executed on either the front or the back surface of the glass; that is, either in "relief" or in "intaglio." The special value of "intaglio" work lies in its ability to produce an effect of apparent relief, under proper illumination, while the front surface is actually smooth and is readily kept clean. This effect is obtained by applying a fine sand-blast finish to the pattern while the "ground" is left clear. Light passing through the edges of glass so treated is refracted from the roughened surfaces only.

In creating designs for execution in moulded intaglio, the architect should in general limit himself to low relief, sharp and crisp in modeling. Depth of modeling in intaglio work should, as a rule, not exceed one-half inch to three-quarters inch. An added half inch of "ground" is usually considered necessary and any excessive depth of modeling naturally increases the weight of the piece.

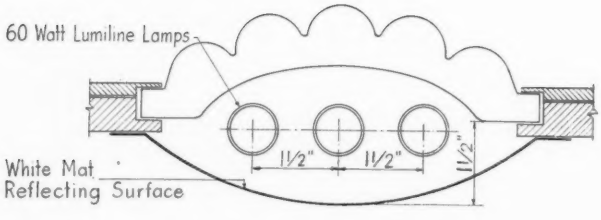
Designs moulded in relief serve a decorative purpose different from that of intaglio. Whereas in intaglio the object is to illuminate the piece by edge lighting in such a manner as to give prominence to the design pattern without apparently affecting the surrounding clear glass, in relief the entire piece may be illuminated in any desired manner. When the source of illumination is to be entirely outside

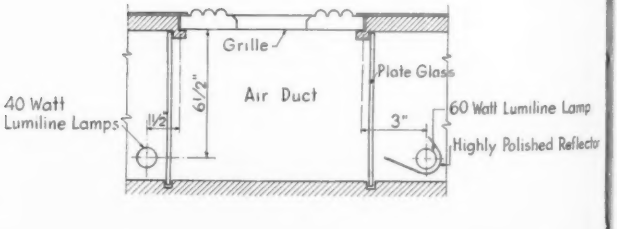


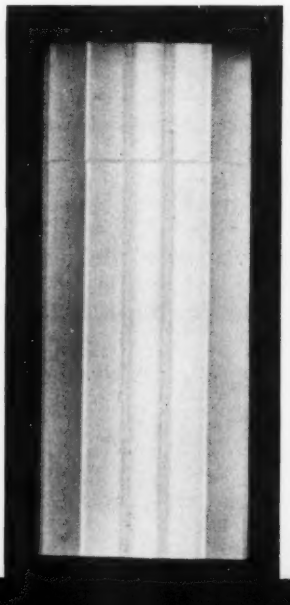
THE EFFECT OF LIGHTING ON MOULDED GLASS



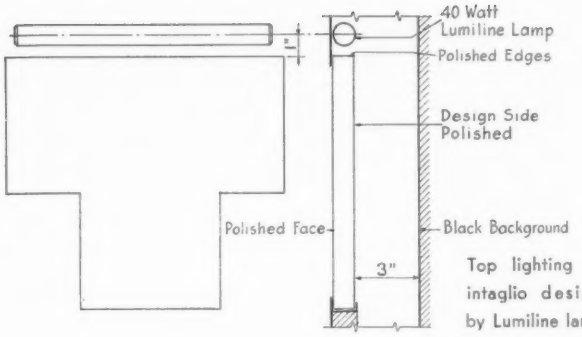
Panel with design moulded in relief, illuminated by lamps at top and sides. Note that lamps are placed behind the plane of the glass rather than in the same plane



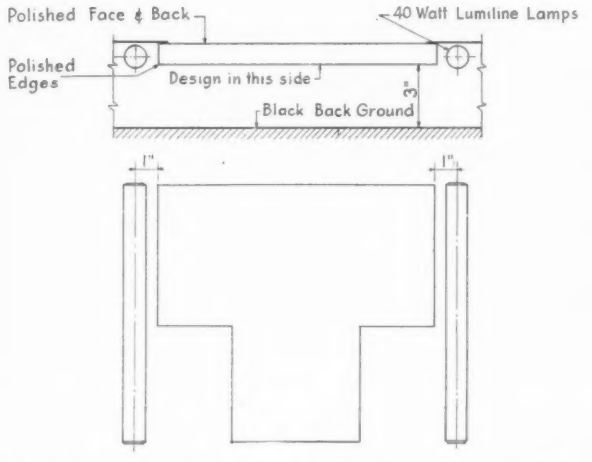




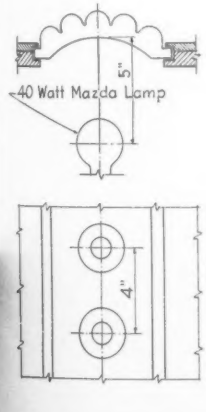
Even distribution of light in a pilaster secured by placing a reflecting surface behind Lumiline lamps. Compare with pilasters on facing page. The grille is illuminated by light sources of unequal intensity controlled to accentuate the modeling. Plate glass protects lamps from accumulation of dust



Top lighting of intaglio design by Lumiline lamp placed on same plane as glass



Edge lighting of intaglio design by Lumiline lamps of equal intensity. Compare with upper panel. Note effect of apparent relief and the manner in which black background causes flat surfaces to be invisible



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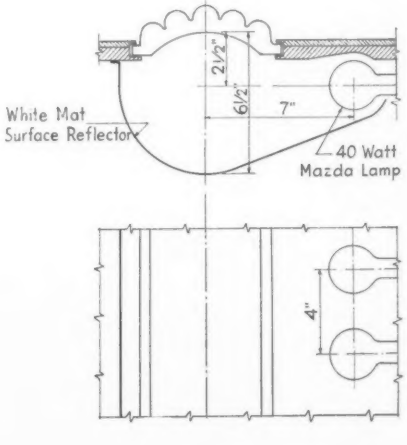

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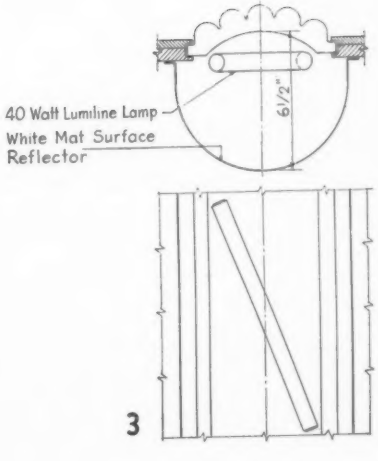

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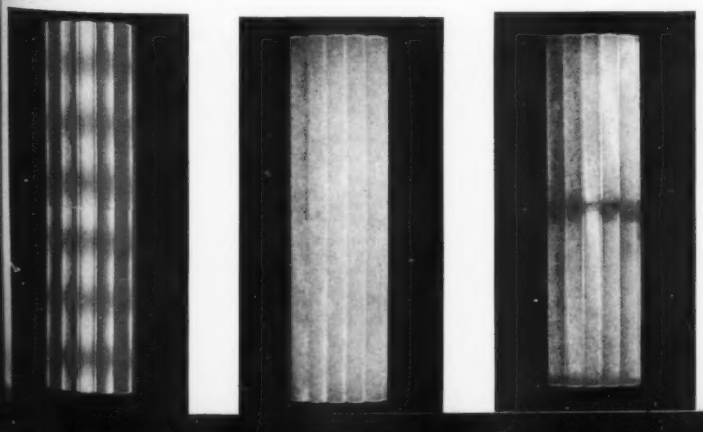


Concealed lighting of pilasters. **1.** Effective treatment where bold decorative effect is desirable. **2.** Even distribution of light through use of curved reflector. **3.** Spiral effect in illumination may be secured by placing a reflector behind a series of Lumiline lamps set at an angle » » » » »

ALL PHOTOS COURTESY CORNING GLASS WORKS

the installation the effectiveness of intaglio is largely lost, whereas a bold pattern executed in relief is sustained by the play of light on its surface.

A characteristic quality of glass moulded in relief is its ability to impart to design not only the fluidity of moulded form but the brilliance and translucence inherent in the material. The maximum size in which individual pieces of moulded glass can be made with safety and economy is 18″ x 28″.

Sand etched glass is frequently used in doors, windows, decorative panels and lighting units, and in mirrors. The architect should furnish full-size drawings, indicating the various depths of cut desired. The etching is done by masking portions of the glass not to be treated and then cutting the pattern to the required depth by the abrasive action of sand under pressure. This method yields an effect similar to that of moulded intaglio and is said to be less expensive. However, it is not possible through etching to render sculptured form with the accuracy and fidelity possible in moulded glass. This is due to the fact that the latter is cast from a model, while the etched glass is cut mechanically in a series of more or less flat planes of varying depth.

On the other hand, since etching is done on plate glass the size of an individual piece may be much larger. Size is restricted primarily by problems of handling during manufacture and installation, and for the practical reason that a panel of moderate size is less costly to replace than a large one. Depth of cut in etched glass is dictated by the thickness of plate to be used, but it is considered advisable to allow a minimum of one-third the original thickness for the ground.

Acid etching is done with acid instead of sand, the masked plate being submerged in an acid bath. In this case the depth of cut depends on the length of time the acid is in contact with the glass. The requirements are substantially the same as in the case of sand-etched patterns.

Wheel cut glass in which the pattern is formed by cutting and polishing on emery wheels, is a method of decorating plate glass panels, such as doors or mirrors, where the pattern is made up principally of straight-lines. It is possible to make deep curved incisions with the emery wheel but difficult to manipulate a large piece of glass during the process. The cut is usually V-shaped or U-shaped in section, following the shape of the emery wheel.

Painted glass has achieved considerable prominence as a form of decoration. While this type of work is sometimes applied to the use of clear glass in such forms as screens and doors, it is more often combined with the use of mirrors as a wall decoration. The design is painted on the back surface of the glass, which is then silvered.

Mirrors, although one of the oldest forms of decorative architectural glass, seem to have lost noth-

Large mirrored areas increase apparent spaciousness, increase illumination, and are effectively decorative. Note division into small units to prevent distortion due to buckling. On facing page: Heavy glass tubing combined with spheres made up of segments of moulded glass are illuminated by concealed lamps within these units

TROWBRIDGE

ing in popularity or effectiveness in the change of other architectural forms and design concepts. On the contrary, it would be difficult to find another decorative element which could be carried over from centuries ago and introduced into a contemporary setting, unchanged, without giving a hint that it was not as freshly modern as its surroundings.

Colored mirrors are frequently used to create or harmonize with a decorative effect, the color being present in the glass itself independent of the silvering. Colored glass is commercially available for mirrors in a variety of shades such as gun-metal, light or dark blue, flesh, light chrome, and amber.

The size of mirrors is limited by the problem of mounting, rather than of manufacture. It would be feasible for a manufacturer to make a mirror as large as the largest piece of plate glass obtainable in the required thickness, but such a piece could not be successfully mounted. Definite limitations are set by the maximum area that can be mounted in place without buckling and consequent distortion of image. As a general rule, where maximum area is desired in a single piece, best results are obtained by letting the area take the form of a square; that is, an area 6′ x 6′ is less subject to distortion than an area 5′ x 7′ or 4′ x 8′.

Opaque glass, available in white, black, and a variety of colors, affords the designer some interesting possibilities in the finishing of wall surfaces. Combinations of different colors, or of slightly different tones of the same color; the use of solid black, for example, as a frame for a shop front; and the execution of sand etched patterns on the surface of opaque glass, are decorative possibilities suggested by this material. It is interesting to note that black opaque glass yields seven or eight different depths, even the deepest of which causes a scarcely discernable depression in the surface.

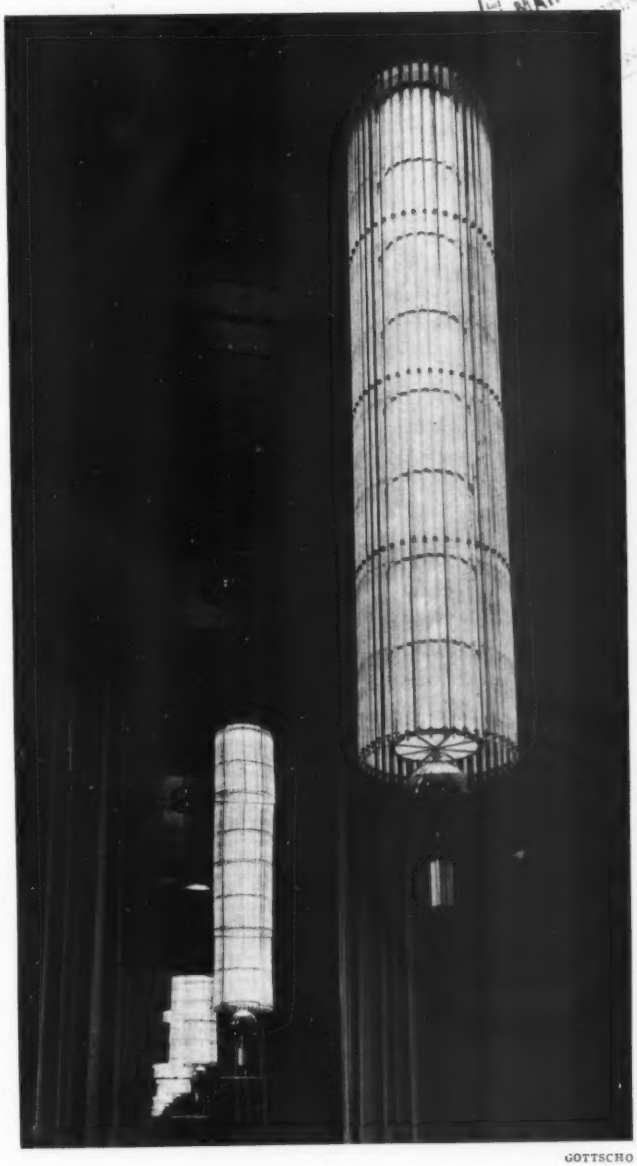
FINISH

THE four principal types of finish applied to moulded glass are: clear glass, mould finish; translucent finish; translucent finish, highlighted; contrasting finish.

Clear glass from the mould possesses the merit of frankness in the use of material. The glass, though quite clear, has a slightly uneven texture, following that of the mould, and yields an effect which is highly desirable in the execution of bold designs with large detail.

Translucent finish, produced by sandblasting with fine sand, is valuable where a soft effect and diffusion of light are desired as well as in the finishing of moulded designs rendered in intaglio. The better examples of this type of finish are so executed as to be comparatively dustproof.

Highlighted translucent finish is applied by working with sand of varying fineness. Portions of a design may by this process be "picked out" and given



GOTTSCHO

a smoother finish which, under illumination, produces the effect of highlighting.

Contrasting effects are procured by using clear and translucent finishes on individual pieces or in adjacent pieces.

Various finishes may also be applied to etched glass, depending on the effect desired. Coarse or fine sand may be used in sandblasting with a resulting difference in apparent texture or brilliance under illumination. Acid is sometimes used as a final step in the finishing of a sandblasted surface.

GRINDING AND POLISHING

INFORMATION on this subject should be clear and complete. Following is a suggested list of finishes under this heading.

Ends or sides ground only. Satisfactory when the appearance of the joint is not important in the design.

Ends or sides ground and polished. Necessary when the joints are to be minimized in the design. Where both ends and sides are to be finished, specify "edges" ground and polished.

Face or back mould finished.

Face or back ground and polished.

In short, specify the exact finish desired on each face or edge according to the appearance and lighting effect desired.

LIGHTING

DESIGNS modeled in glass are as dependent upon the prevailing illumination for their effectiveness as are reliefs executed in stone or other opaque material. Artificial illumination of glass affords opportunities of controlling the effect of the modeling through a wide range, and permits decorative effects not obtainable in opaque materials.

A fundamental characteristic of clear glass is its ability to conduct light from edge to edge, as well as to transmit it with little absorption. A curved glass rod illuminated at one end will conduct the light to its other end with only a moderate loss of intensity. This characteristic of glass is a contributing factor in making edge lighting and top lighting so effective since the rays of light are able to follow curved forms and furnish illumination to the entire piece. Another factor of importance when the design has a sandblasted finish while the surrounding glass remains clear, is that light passes through the clear glass without refraction, causing the pattern of the design to stand out in luminous relief against a dark background.

Especially in moulded designs where the surface is modeled in a variety of rounded forms, the matter of illumination becomes vital. The degree of apparent relief, the highlighting of parts of the design, is subject to manipulations by the use of light sources of different intensities yielding effects varying from low relief and subdued illumination to brilliant illumination and an appearance of very high relief.

Diffusion of light, for the purpose of obtaining uniform illumination of glass, may be obtained by the use of reflectors or by introducing a diffusing medium such as opal glass, between the light source and the piece to be lighted. (For reference data on opal glass and other diffusing material, see AMERICAN ARCHITECT Reference Data No. 15, "Modern Interior Lighting," December, 1934.)

In the case of pilasters and band courses illumination may be accomplished in a variety of ways, as indicated on page 55, depending on the effect desired. Generally speaking, the bulbs should not be placed directly behind the glass, (unless a diffusing medium is interposed) except where the general architectural scheme is broad enough to permit of very bold decorative treatment.

The use of color in the illumination of glass is another feature worthy of study. Since glass derives its color from light, almost any color or combination or colors may be introduced by the use of colored bulbs or filters. A suggested advantage obtained by using colored light instead of colored glass is that the color may be changed at will to create a different decorative effect. Color may also be introduced by coating edges in such a manner that reflection of light from the colored areas transmits color to the panel.

A practical consideration of extreme importance in illumination is that light sources and reflectors should be protected from circulating air, where dust and dirt may rapidly decrease their efficiency, and yet should be made readily accessible for replacement of bulbs. Sufficient provision should also be made for ventilation.

MOUNTING

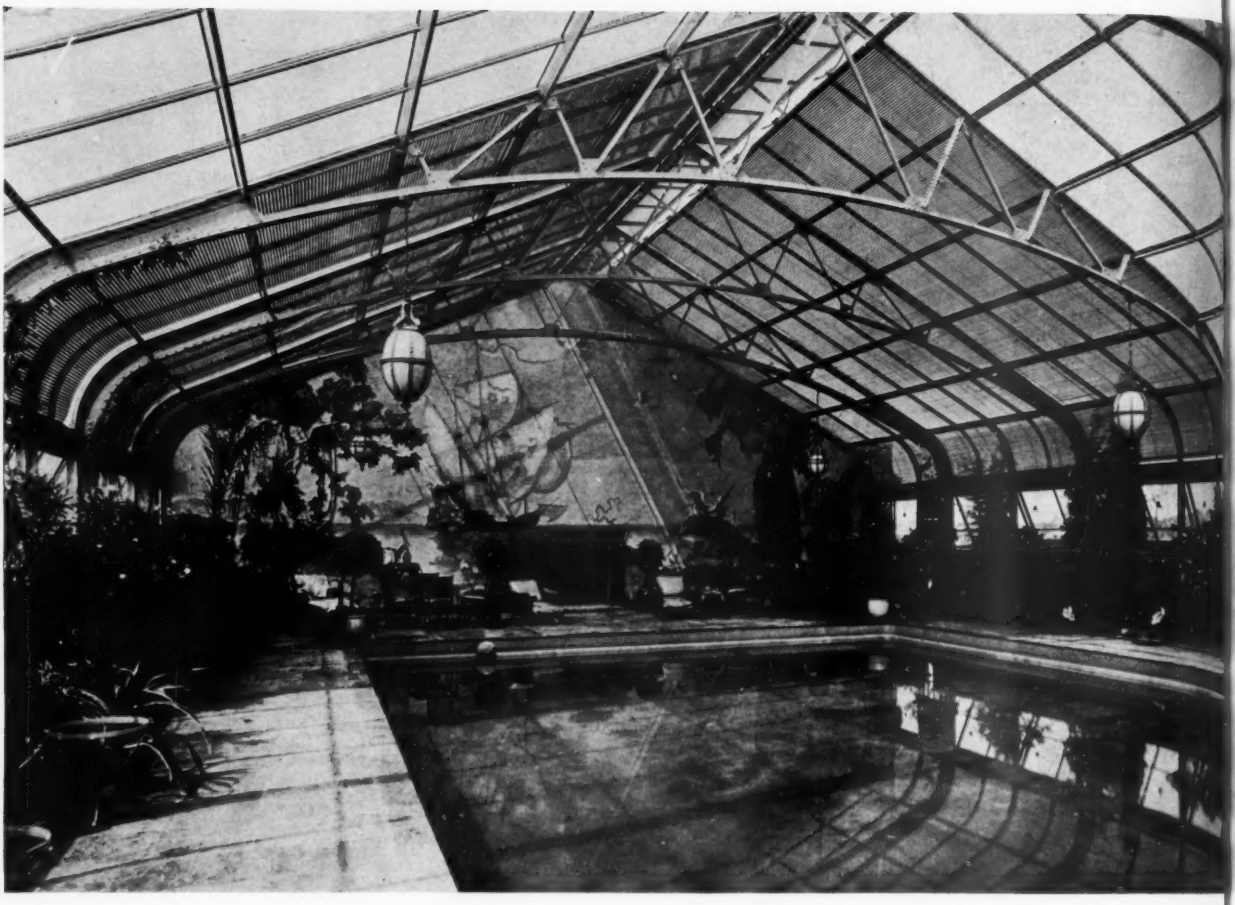
THE fastening of large areas of plate glass to the walls of a structure is usually accomplished by one of three methods. First, a metal frame may be used to hold the edges of the glass and secure it to the structure; second, metal lugs may be employed to grip the edges, or holes may be bored in the glass through which metal "buttons" are made fast to the wall; third, where the structural surface is true and smooth, and the area of glass not too great, a plastic may be used to hold the glass, by adhesion, in a recess or on some supporting projection.

In the mounting of pieces of moulded or other decorative glass, special considerations, such as

THE PICTURE WINDOW, often a featured element in design, obviously invites the use of plate glass for clear and undistorted vision

TREANOR & FATIO, ARCHITECTS

PHOTO BY GOTTSCHO



SWIMMING POOLS, solaria, greenhouses and similar structures where direct sunlight is a factor depend for their efficiency upon the proper selection of drawn, plate, ultra-violet, or perhaps heat-resistant glass

weight, heat from light bulbs—involving possible excessive strain—and the cementing of joints, sometimes requires special treatment based on expert advice. It is therefore considered advisable for architects to consult the manufacturer on such points before final drawings and specifications are made and, where necessary, to request him to submit shop drawings for approval. The following points, however, may assist the architect in his preliminary studies:

Individual pieces should not exceed the maximum sizes recommended for moulded or ornamental plate glass. Sections of plate used to make up a large panel are usually individually supported in mounting. Panels made up of pieces of moulded glass need no lateral supporting members, as a rule, because of the high compressive strength of glass. Where such panels are subject to wind pressure, as when used in exterior openings, however, it may be advisable to furnish a supporting structure of vertical metal bars with interlocking key members set at the corners of each unit.

Manufacturers will gladly suggest cementing materials which they have tested and found satisfactory for use with their product. Or, in most cases, they will check cements suggested by their customers and give definite recommendations for their use.

STRUCTURAL GLASS BRICK

THE practical and design possibilities of structural glass brick are bringing this material rapidly to the fore. Although it is rightly classed as a new glass product, it has been in use in Europe for fifteen years and in this country for about six.

Structural glass brick (silica-lime-alumina) is

manufactured in two types: solid and hollow. It seems logical to suppose that the hollow brick will be used for most structural purposes—except in store fronts or where the particular decorative effect of solid brick is of value—because of its relative lightness. Both types are made in clear and in green glass.

Hollow brick is sometimes termed "vacuum brick" because the process of manufacture causes a partial vacuum within the sealed walls of the brick which safeguards the brick from fracture when the enclosed air becomes superheated by the sun or other agency. Since all moisture is expelled from the remaining air by the heat of the glass during manufacture there is no danger of condensation within the brick.

Walls of vacuum brick are laid in mortar consisting of one part Portland cement and two parts sharp screened sand. Steel reinforcing rods ⅜ inch in diameter are embedded and concealed in grooves in the brick in alternate horizontal joints.

Compressive strength of this glass would permit the erection of walls of unlimited height without support, but allowance for expansion in exterior walls necessitates the introduction of steel, or other members, as follows:

Expansion joints are necessary for every 80 square feet of glass. These are commonly composed of steel channels, expansion compound and caulking. This type of joint is also used in the construction of all head, jamb and sill joints.

The lateral resistance of reinforced vacuum brick is of importance when wind pressure is a consideration. In recent tests, an eight-foot span of 5″ x 5″ brick, reinforced at every other course with ⅜ inch steel rods, was found to be 240 pounds to the square foot.

In common structural use, hollow glass brick is of importance as a chemically stable, colorless, light transmitting and diffusing medium; as a soundproofing element equal in effect to solid wall construction; and because of its lightness. It has insulating properties comparable to double glazing. Like the latter, however, it has no appreciable insulating effect against solar heat.

The light diffusing effect of hollow glass brick construction is due in large part to the manner in which the edge or side surfaces of the brick deflect daylight or direct sunlight, breaking up the direction of the rays and transmitting it to walls and ceiling. This characteristic, incidentally, is sometimes put to very interesting decorative use in the application of color to the side surfaces of the brick, thus imparting to the entire glass area an apparent color while actually the glass remains clear.

Decorative potentialities in this medium are immediately apparent, even when it is used with the utmost frankness. Other applications suggest themselves to the creative designer—the back of structural glass may be silvered to give a mirror effect for interiors, or designs may be rendered by sandblasting on the surface, etc.

An interesting use of this material is found in some banks, libraries, museums, etc. where burglarproofing formerly required the use of steel bars across windows or glass partitions. Hollow glass brick reinforced with ½ inch concealed steel bars at every course have been found an effective substitute.

FENESTRATION

FLAT glass for fenestration is at present the most important single type of glass in architecture. The purposes which it serves, while primarily utilitarian in character, must often be considered from the design angle as well. This is especially the case in structures such as solaria, greenhouses, conservatories, etc. where the properties of glass make the very design itself possible and equally so in the case of "picture windows" where the entire architectural concept of a room may center around the decorative effectiveness of a large window giving visual access to some vista out of doors.

Plate glass, because of its brilliance and freedom from distortion, holds the premier position in its field. Ordinary window glass, however, in addition to being cheaper than plate, is now manufactured in grades which are reasonably free from distortion.

Ultra-violet transmitting glass (also produced in plate and sheet form), and heat-resistant glass have already been mentioned among the special glasses.

Multiple glazing of windows for heat insulation is at present being subjected to exhaustive tests in leading laboratories in the industry.

THE FUTURE OF GLASS IN ARCHITECTURE

WHAT part will glass play in the future of architecture? The answer is in the hands of the technologists and the architects. Modern research in the chemistry and physics of glass has already placed new and potentially revolutionary materials in the architect's hands. And the technologists say that not much more than a beginning has been made! It seems safe to expect developments in the near future as amazing as those of the recent past. If architects apply themselves to a serious consideration of the special qualities of this material, if they not only keep pace with the technologists but challenge them with unsolved problems, it seems inevitable that glass, in all its varied forms, must assume a position of great significance in the future developments of architecture.

The author acknowledges indebtedness to the following firms for technical data and guidance in the preparation of the foregoing article: Corning Glass Works; Libbey-Owens-Ford Glass Co.; Pittsburgh Plate Glass Co.; Structural Glass Co.

ARTHUR VERNAY, DECORATOR

PHOTO BY F. S. LINCOLN

ROBERT SNEDIGAR, DESIGNER

PHOTO BY RICHARD AVERILL SMITH

MURALS IN ETCHED MIRRORS. Designs of this type may be executed on either the front or back surface of mirrors by the use of acid or sand blasting. Colored mirrors are frequently employed, and painted designs are sometimes combined with etching. Above: Silver etched black mirrors in a bathroom. On facing page: Etched and painted mirror in foyer of River House, New York

TREANOR & FATIO, ARCHITECTS

PHOTOS BY GOTTSCHO

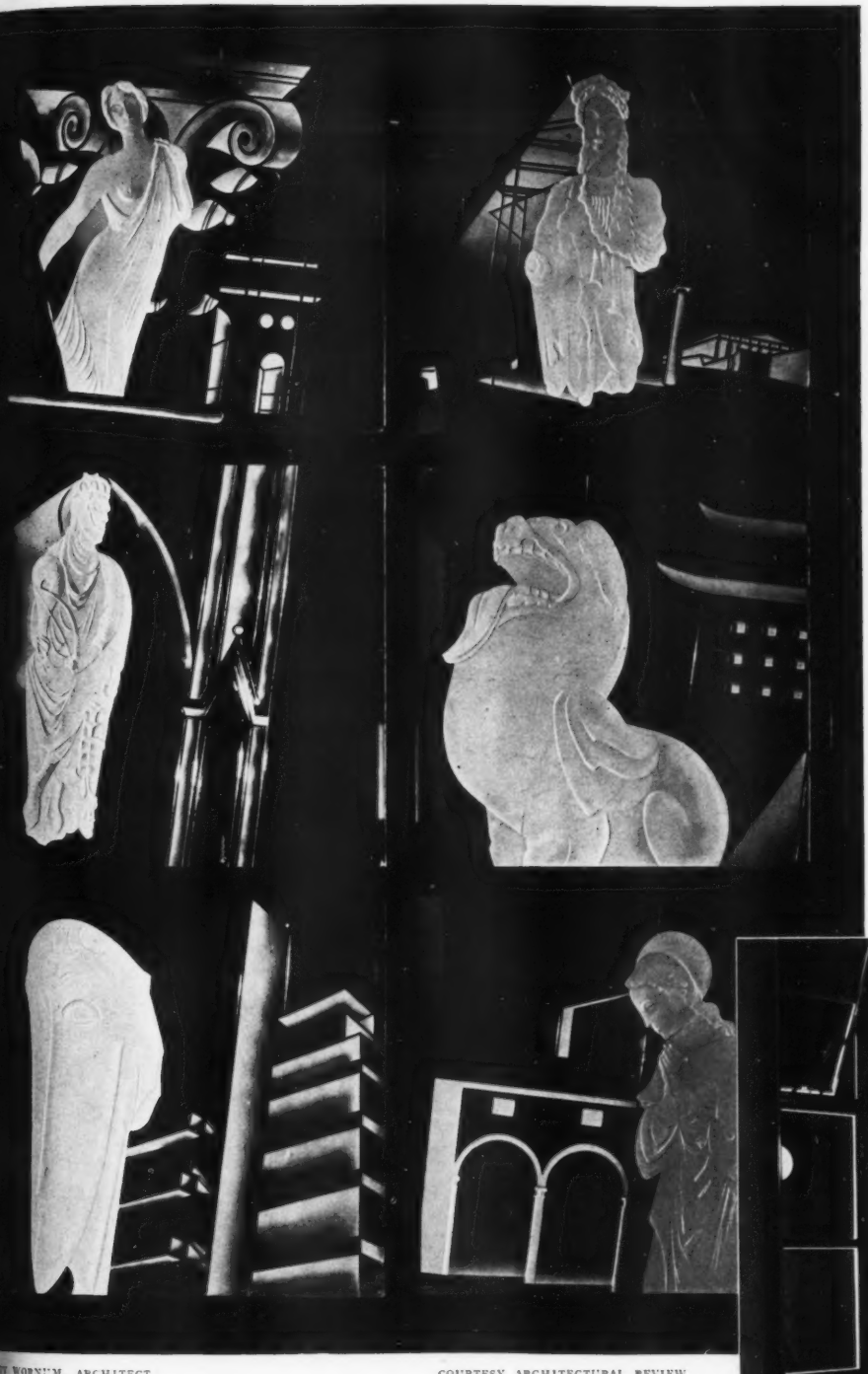
GREY WORNUM, ARCHITECT

COURTESY ARCHITECTURAL REVIEW

FORMAL AND INFORMAL APPLICATIONS. On this page: glass panels framed in the railing are etched with coats-of-arms and a running pattern of classic derivation. R. I. B. A. Building, London. On facing page: the liquid brilliance of glass balusters is a light and graceful feature of a Florida home

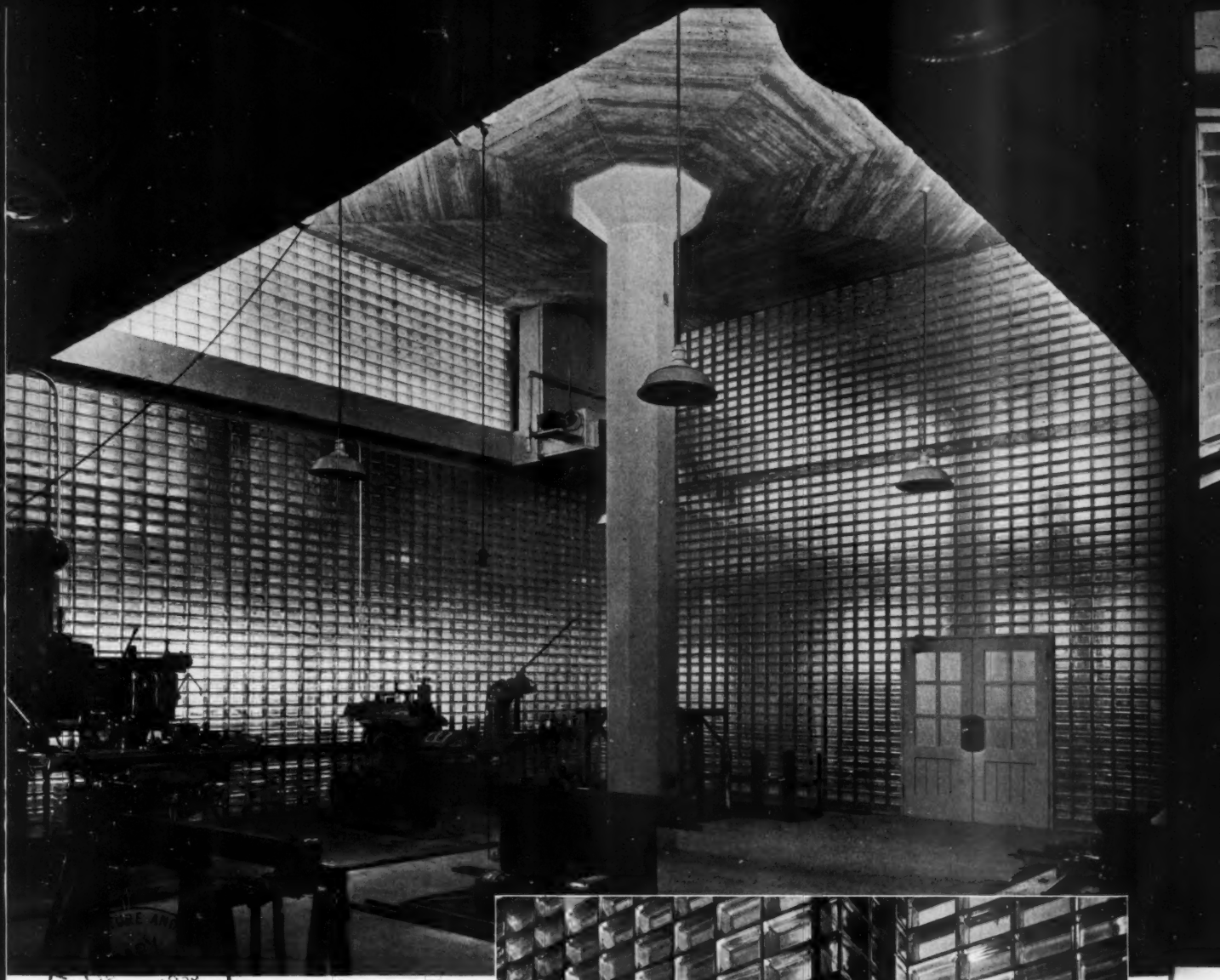
SCHULTZE & WEAVER, ARCHITECTS

PHOTO BY RICHARD AVERILL SMITH

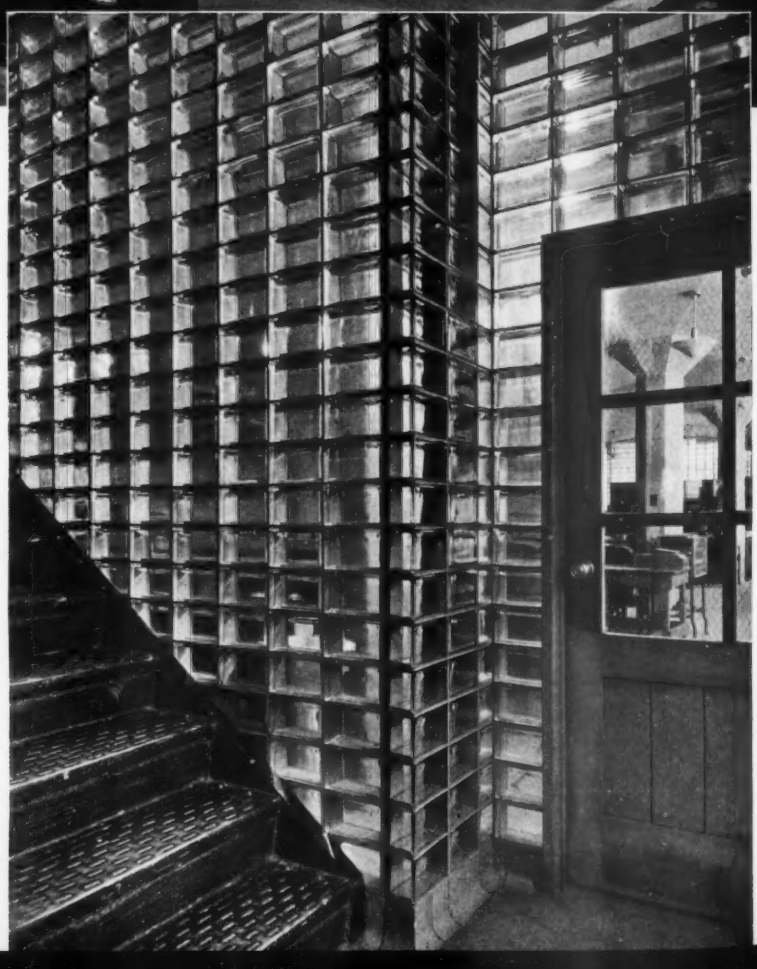


...WORNUM, ARCHITECT — COURTESY ARCHITECTURAL REVIEW

...NGRAVED AND SANDBLASTED PANELS in R. I. B. A. Building, London, ...mbolizing the architecture of various civilizations. Note interesting effect ...ading and relief obtained by controlled application of this technique. ...facing page: The richness of color on the brilliance of glass. Painted ...rror walls in the roof garden of the Waldorf-Astoria Hotel, New York



PHOTOS BY PIAGET



REINHARD & HOFMEISTER; CORBETT, HARRISON & MacMURRAY; HOOD & FOUILHOUX, ARCHITECTS

PHOTO BY WURTS

NATURAL LIGHTING is afforded by both moulded and structural glass used in large areas. Refraction of light from moulded glass panel of R.C.A. Building, New York, adequately illuminates a large foyer. On facing page: design possibilities of structural glass are obvious even where it is used with utmost frankness and lack of refinement of detail. Greatly increased illumination, soundproofing, and lightness of material are practical features of hollow glass brick

As It Looks

A MOVE IN THE RIGHT DIRECTION

FRANCIS P. SULLIVAN, of Washington, D. C., recently appointed as Chairman of the A. I. A. Committee on Public Works, is planning a program of co-operation with Federal Government officials to secure improved layouts and better design for public buildings. This move shows excellent judgment on the part of Mr. Sullivan and the Institute. Much more can usually be accomplished through education in what constitutes good architecture and co-operation on methods by which it can be obtained than by any wrangling fight for "rights." This statement is particularly applicable when the objective involves work with government officials. Eventually Mr. Sullivan's program should accomplish what every architect most wants to happen.

KEEP BUILDING STANDARDS HIGH

INFERIOR materials are a snare and a delusion in every case. Much of the modernization work that is now being done would probably have been unnecessary if proper materials had been used in the first place. Speaking before a recent meeting of the Producer's Council, President J. C. Bebb said, "A delayed recovery, accepting the need for quality materials is to be preferred to a quicker recovery involving the use of inferior products." Most architects would agree. Even poor business conditions should not influence them to lower high standards of building construction. Architects know that a cheap price is not always indicative of low cost. The use of poor quality materials will not help them prove the fact to building owners.

A JUST COMPLAINT

MANY architects who were awarded contracts for the architectural work on Federal buildings complain that profit is absent. As reasons for this they point to the delays and changes demanded by the Government and the time consumed in securing approval of allocated space by the Governmental departments involved. Responsibility for undue delays may be difficult to trace. But much of the time consuming work placed upon the shoulders of individual architects should, apparently, have been done by the Supervising Architect as a part of his duties. It seems evident that the Supervising Architect's office was set up as a designing office and not a supervising office as the name implies. Only a few changes would be necessary in that office to permit it to function as it should. There is no reason why it cannot represent the Government in the same manner and capacity as several architectural firms have represented private owners who have carried on extensive building operations often more complex in nature than any post office ever can be.

OLD GAME WITH VARIATIONS

THE following letter from a subscriber tells its own story. "A speculative builder cannot be cured by calling him an 'operative builder' and making him produce plans in order to secure an insured loan. He still feels that plans are an unnecessary expense. But as long as he has to have them, he is going to get them at the least cost and risk to himself by making ridiculous terms to architects. And the worst of it is they fall head over heels in accepting them.

"One of our most prominent real estate dealers called on three architects and told them he represented a syndicate of seven men (of whom he was one) who wanted to build about eight houses to cost exactly $16,000 each, exclusive of the cost of plans. Each architect was to draw plans for such a house, get bids, and submit plans and bids to the syndicate for approval. The syndicate would select one or more or none at its discretion. Those not selected were not to be paid for. Those selected were to be paid for when the houses were sold or at the latest after one year. At least two architects, members of the A. I. A. accepted the syndicate's terms!"

The case described is the old game with variations —one of the profession's problems of long standing. What do YOU think can be done about it?

TAKE A LEAF FROM LAW AND MEDICINE

IN the profession of law and medicine it is a serious matter for a practitioner to be disbarred for incompetency or non-professional conduct. Over a period of time these professions have succeeded in securing regulatory laws and succeeded in having them enforced to an extent that has generally placed these professions on a high plane with the public. The druggist hesitates to prescribe even for minor ills. People consult lawyers on even minor legal matters. This is an end toward which the architectural profession should work. If we are to have regulatory laws for architects they should mean

to the Editor

something to both the profession and the public. They should be enforceable and enforced. It is a duty of the profession to see that this is done. The public should be made aware of the fact that these laws insure a minimum standard of technical ability, experience and administrative competency in the art of building.

ANECDOTE FOR AVIATORS

DURING the World War the late Penrose V. Stout was a combat flier. On his way to join his squadron five German planes attacked him from a cloud bank. One of the planes—a Fokker—shot him down. Severely wounded, he landed behind his own lines, spent several months in a hospital and later received the Distinguished Service Cross. A few years ago Mr. Stout was commissioned by Anthony Fokker to design a house perched on the Palisades of the Hudson River. Talking with Mr. Fokker, Stout said, "Mr. Fokker, I was a combat flier in France. It was one of your designs that was responsible for my downfall. Now I am going to heap coals of fire on your head. It will be one of my designs on the Palisades that will be responsible for your uplift." The house was never built, but Stout and Fokker became fast friends, often flying around New York in one of Fokker's amphibian planes.

FOR A BETTER UNDERSTANDING

TITLE I of the National Housing Act, concerned with building reconditioning, has developed a large number of repair and remodeling projects. In some localities it has had an unforeseen effect on the architectural profession. Not every locality is fortunate in having among architects an esprit de corps which produces a friendly and harmonious business relationship. In supporting the objectives of the National Housing Act, architects have been obliged to get together, become acquainted and often work together. In many localities the architects for the first time have been brought together on common ground, in a common cause. Perhaps some were happily disappointed when they found that John Doe was not the kind of man they had thought he was. A spirit of co-operation in any profession makes for better understanding and pleasanter business relationship.

IS THIS A TYPICAL CASE?

THE Interior Department, Subsistence Homesteads Division is building a number of Homestead developments in the South. The tiny houses are set up off the ground on wooden posts which rest on concrete foundations. A single wood floor covers the joists. Wall studs are covered on the outside with ship lap siding; on the inside with ship lap sheathing, cheesecloth and wallpaper. Roofs are of wooden shingles. This construction is said to be of a type commonly used in the vicinity for cheap construction. The houses are built with the expectation of selling them, including several acres of land, and the utilities for about $3,000, amortization over a twenty-year period. On the face of it, it does not appear to be a sound business proposition for either buyer or seller.

TELL THE CLIENT QUICK

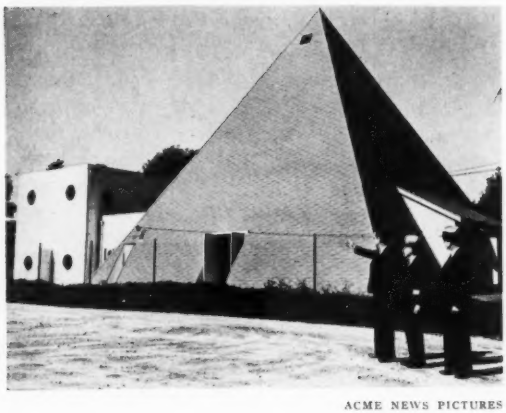
ARCHITECTS can better serve their clients if they will frankly discuss building costs with owners at the beginning of a job. An hour's interview with a client will indicate fairly well the size of the building and a close approximation of its cost. Owners can fix any two of the three cost determining factors—size, quality and cost. They cannot arbitrarily fix all three. Every architect knows this. Where it is evident that they cannot be reconciled to the owner's satisfaction, he should be told this at the beginning. A commission may be lost, but the client will eventually be grateful and needless work and unnecessary difficulties avoided.

ATTENTION MR. FARLEY

THE suggestion has been made that the use of architectural monuments on postage stamps would not only commemorate the structure but also stimulate interest in architecture. Austria has possibly improved on the idea. That country has recently issued a set of six postage stamps each containing a portrait of an Austrian architect. The set begins with Anton Pilgram, a sixteenth century designer, and concludes with Otto Wagner, one of the pioneers of modern building. The importance of the architect in building a nation is often overlooked. To recognize those who have made important contributions to the building of America would be timely and appropriate.

This page: right, Wallace Neff is architect for this "Honeymoon Cottage", built in a factory and trucked to the site. Above, maroon and white plate designed by Frederick Dunn, architect, for Yale University. Below, Naudine Goodheart, co-ed, with results of new method of studying architectural design at Univ. of So. California. Bottom, inside the pyramid is a $100,000 private planetarium built after 50 years of research by Henry C. Wilhelm and his two sons at Alhambra, Calif. Facing page: Soviet's new House of Industry at Karkhov

WIDE WORLD PHOTOS



ACME NEWS PICTURES

Trends and

• As Walter Winchell puts it—an orchid to the American Radiator Company and its Fireside Recitals over the radio! In announcing the Company's publication of a Modernization Budget Book, Graham McNamee said, "... Use a good architect to be certain that these repairs accomplish what you want them to—give you the beauty, service and comfort you require; anticipate your future needs; and do it all without trouble or disappointments or needless expense. The Budget Book cannot take the place of the valuable services of an architect. This book will help you formulate your ideas—show you the things the modern home should have. But if your plans call for any major alterations at all—be sure to consult an architect. The architect's fee may be included in the modernization loan. In the long run his services will cost you nothing, because often he can save more than his modest fee in lower

Topics of the Times . . .

costs, assurance of quality and service and of satisfaction and of peace in a job well done."

• In forty-four states active efforts are being made to change mortgage lending laws so that state institutions may be able to lend money for small house construction up to 80 per cent of the value of house and land, under terms of NHA Title II. Such loans can now be made by all national banks that have been approved by the Federal Housing Administration as mortgagees under the FHA program of mutual mortgage insurance.

• Private enterprise in Great Britain has had a large hand in England's recent building boom. According to the *Federal Home Loan Bank Review* private initiative has lowered interest rates and construction costs in England so that in the year ending March 31, 1934, 210,000 houses were built in England and Wales. With rates at 5 per cent on 20-year amortized home loans and building costs at the lowest since 1914, houses can be privately built to rent cheaply enough for the great mass of working families.

• Christian G. Norman, Chairman of the Board of Governors of the Building Trades Employers' Association gives five reasons for the backward reaction of private building construction to the stimulus of the Government's financial effort toward re-employment. They are: "The not too favorable mortgage situation; the lack of credit, due to the attitude of lending institutions; taxation; menace of Federal competition and the high cost of construction." Mr. Norman's recipe for solving the entire problem, "involves merely the meeting of labor, material manu-

PRESIDENTIAL PLAYHOUSE

Among the trees of Jefferson Island, in Chesapeake Bay, stands this well appointed clubhouse, dedicated to the recreation of President Roosevelt. Henry Powell Hopkins, A.I.A., was the architect. In addition to recreational facilities, the club has an executive wing for business that must be attended to even during vacations. At the right is a view of a "snack bar" at the end of a huge and comfortably equipped lounge

facturers and sources of capital to agree upon wage scales and material costs which would bring the cost of large operations to a point where a satisfactory return on the capital required could be had." His suggestion is obviously a direct one. But it is fraught with nearly insuperable difficulties. One—and a minor one at that—is capital return. What *is* a satisfactory return on capital? And to whom would it be satisfactory?

• A low-rent housing development for Montgomery, Alabama, has been announced by PWA Administrator Harold L. Ickes. The project, twenty-first in the PWA's national $150,000,000 program, will provide 100 living units for white families in single-story row houses. For it, the PWA has allotted $244,000.

• New applications and new methods of air conditioning are developing daily. Now comes another story of well water used to cool a suburban Chicago house at a total installation cost of $1104 (including driven well and all equipment) and at an operating cost of $10.68 for a 600 hour season. This cost is at an electrical rate of 2 cents per kilowatt hour.

• The tendency in several large American cities, notably New York, to attack public utility rates by threatening the construction of municipal generating plants has its counterpart in the development of private power plants for large apartment buildings. Percival R. Moses, engineer, reports in *Heating and Ventilating Magazine* for January, the successful installation of such plants in three apartment houses

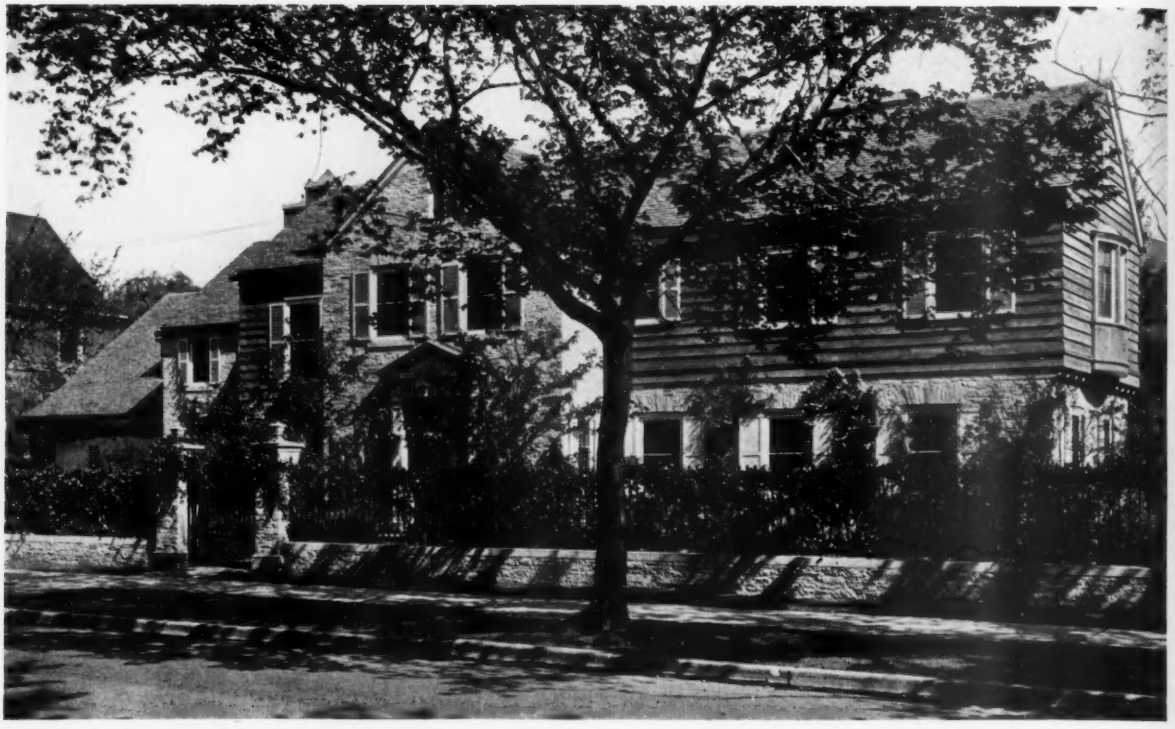
(*Continued on page* 94)

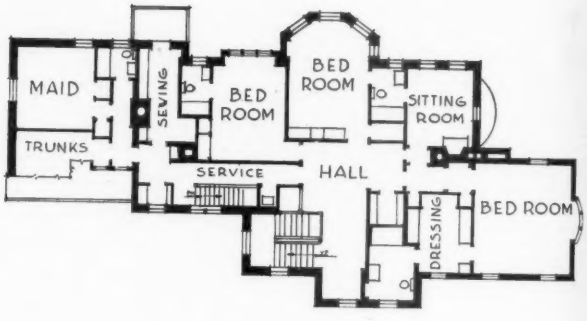
RICHARD PHILIPP, ARCHITECT

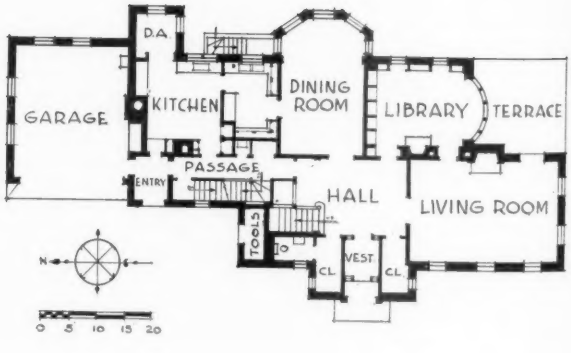
HOUSE OF MRS. A. O. SMITH

MILWAUKEE, WISCONSIN

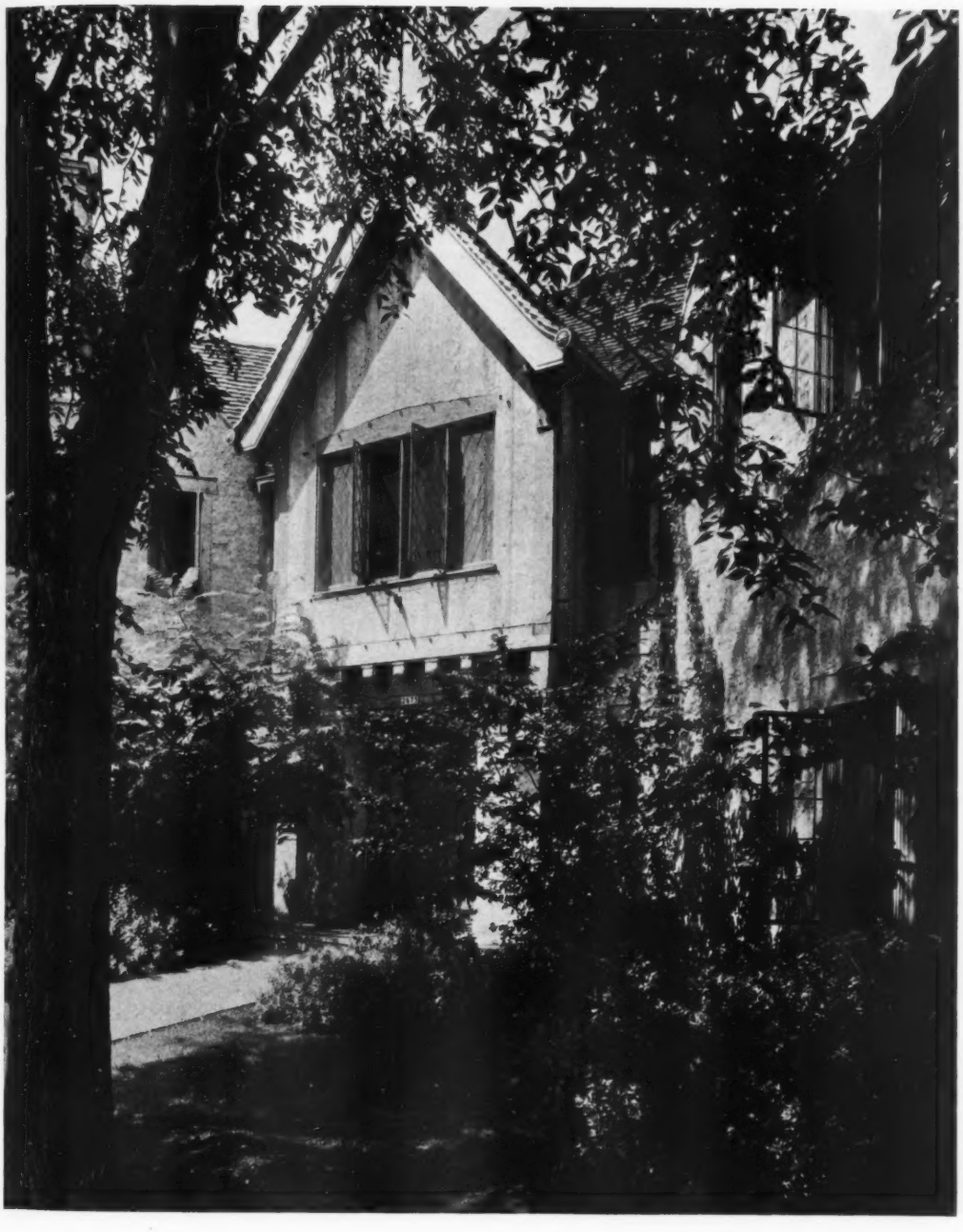
Photographs by G. A. Brackett







Entrance facade, a detail of which is shown on preceding page. House of Mrs. A. O. Smith, Milwaukee, Wisconsin. Richard Philipp, Architect

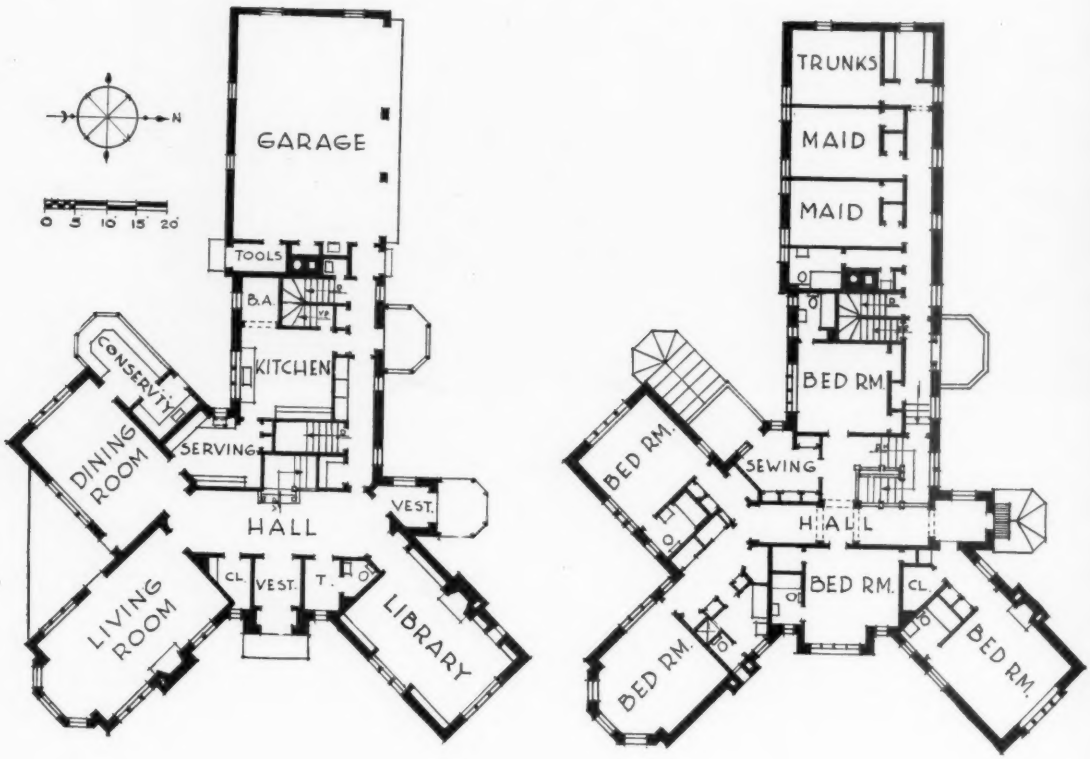


RICHARD PHILIPP, ARCHITECT

HOUSE OF A. LESTER SLOCUM

MILWAUKEE, WISCONSIN

Photographs by G. A. Brackett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0 5 10 15 20
GARAGE
TOOLS
B.A.
KITCHEN
CONSERVTY.
DINING ROOM
SERVING
HALL
VEST.
LIVING ROOM
CL.
VEST.
T.
LIBRARY
TRUNKS
MAID
MAID
BED RM.
BED RM.
SEWING
HALL
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BED RM.

The unusual plan developed from the necessity of facing the house toward the narrow front of an irregular plot. On the north side, the property is mostly garage court. Garden development extends in an irregular triangle to the south and west off dining and living rooms. Timber work was used on the second floor to gain space with an overhang. Timbers are 80 years old, of white ash weathered without stain

Above, southwest bedroom. Right, stairs in first floor hall looking toward side entrance. House of A. Lester Slocum, Milwaukee, Wisconsin. Richard Philipp, Architect

The Legal Side of Architectu[illegible]

BY CLINTON H. BLAKE
Blake & Voorhees, Counselors-at-Law

Authorization for Changes and Extras Should Be Made In Writing

HOW and to what extent are changes of plans or specifications binding upon the owner? What right has the contractor to "extras" and additional compensation for carrying such changes into effect? These are matters which constantly give rise to litigation and to new legal decisions. Recently a number of interesting cases have involved these questions, among them that of Bjerkeseth v. Lysnes, decided by the Supreme Court of Washington (22 Pacific Reporter, 2d Series, 660).

The plaintiff in this case was a building contractor. He had made a contract with the defendant to erect a brick residence for a fixed price according to the plans and specifications, which were made part of the contract. The contract, prepared by the plaintiff's attorney, provided, among other things, that, "No alterations or changes shall be made by the contractor until ordered by the owner in writing and then the price shall be determined."

One month after the work had been started, the parties made a written agreement for finishing an extra bedroom at a stipulated extra cost. As the general work went on, the owner made the progress payments called for under contract. During this time no mention was made of alterations or any claim for extra payment for them. When all but a very small balance of the contract price had been paid and the owner tendered that amount to the contractor, the contractor, for the first time, claimed an additional amount for extras. His demand was rejected by the owner and the suit was instituted.

The extra allowance for finishing the additional bedroom was not involved in the dispute, for this was covered by the supplemental written agreement. But the plaintiff claimed that the defendant had ordered other extras and had thereby waived the contract condition which required extras to be ordered in writing. On the other hand, the defendant denied ordering any other extra work and contended that he had never waived this provision of the contract. The evidence was in direct conflict and the trial court found that whenever the contractor suggested alterations, the defendant had informed him that any changes made must be covered by the original agreed contract price. Accordingly, the trial court found for the defendant. The builder appealed.

The Supreme Court of Washington affirmed the judgment in favor of the defendant. It held that, since the record did not indicate the finding as contrary to a clear preponderance of evidence, the judgment should not be disturbed. In rendering its decision, the Supreme Court laid down the general rules with respect to the waiver of provisions in the contract, the rights of a contractor to recover in the absence of such waiver and the rule as to the evidence required to establish them.

WAIVER OF WRITTEN AUTHORITY POSSIBLE

WELL recognized as principle of law is the fact that either of the parties to a contract may—expressly or impliedly by his conduct—waive a contract provision and so estop himself from insisting upon its performance. Stating this general rule, the court here said: "True, as appellant (the contractor) contends, a stipulation in a building contract requiring written authority from the owner for deviation in the plans, may be waived where the owner orally directs changes made and the contractor makes the changes as directed." (Citing Crowley v. United States Fidelity & Guaranty Co., 29 Washington 268.)

Although validity of this principle was not questioned, the court also recognized another rule. In substance, this states that a contract provision requiring extras to be authorized in writing will be enforced unless it can be shown to have been waived or unless the parties have agreed to modify the contract in this respect.

In this connection the court said, "In the absence of conduct showing a waiver or modification of the stipulation requiring a written order by the owner for alterations or changes, or establishing

an independent contract for the performance of such alterations or extra work, no recovery can be had therefore by the contractor without a writing in compliance with the provision. (citing Wiley v. Hart, 75 Washington 142) The work done and the materials furnished were not extras; they were not so understood and treated at the time they were furnished."

WAIVER MUST BE CLEARLY PROVED

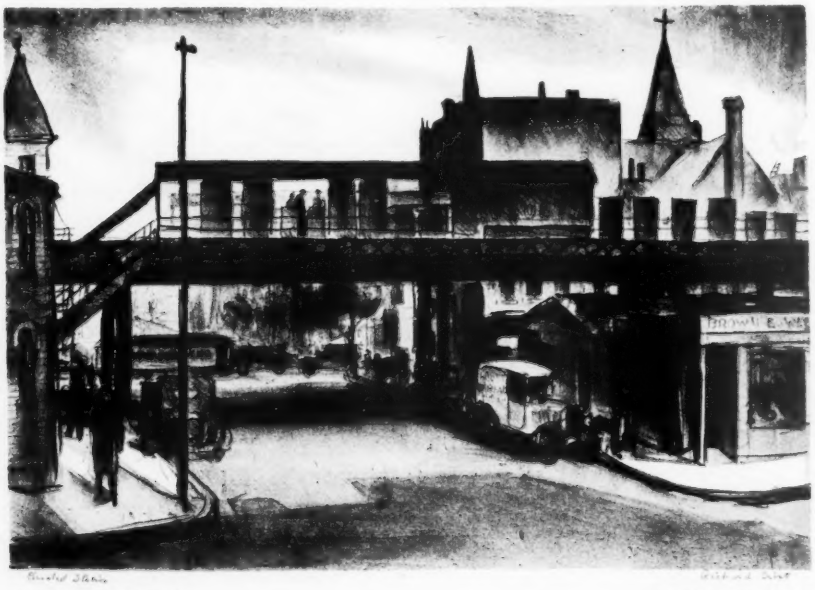
THERE exists also a well-known rule that where a waiver of a written contract provision is relied upon, evidence of the waiver must be clear and convincing. To emphasize this point, the court quoted from a Connecticut decision (O'Keefe v. Corporation etc., 59 Connecticut 551), as follows: "The conditions of the contract we are now considering were inserted for the benefit of the owner. There is certainly no presumption that he has waived them. He, and he alone, can waive them. No act or omission by the plaintiff will be of any avail. If the owner has intentionally relinquished a known right, the plaintiff should be able to show it either in express terms, or by acts and conduct equivalent thereto. Equivocal conduct, or conduct of doubtful import, is not sufficient."

This general question of changes in plans and liability for extras, in the absence of written authority stipulated in the contract, is a most fruitful source of difficulties between architect and owner, architect and contractor and owner and contractor. Consequently, it is best to follow the general rule of avoiding opportunities for misunderstanding.

As a matter of law a contract provision may be waived. But common prudence demands that the written consent to changes as provided for in the contract should be secured in all cases before the changes are made or extras undertaken. Reliance upon waiver alone is dangerous. It is in the interests of the architect, of the owner and of the contractor alike that the ordinary contract provision requiring written authorization be strictly interpreted and applied. A failure to observe it invites trouble, lawsuits, expense and dissatisfied clients.

Often the contract provides that written consent shall be given by the architect instead of the owner, or by both architect and owner. In such cases the architect's responsibility is, perhaps, somewhat increased. But in any case he is under a definite responsibility and should see to it that a proper memorandum authorizing any deviation from the plans or provision of any extra work is secured from the owner. This should be done, irrespective of whether or not the contract contains a provision requiring the written approval of the owner or architect. When such a provision is in the contract the importance of securing the owner's written consent is proportionately greater.

The problem of how best to handle authorization of extras and changes in plans has been treated in former articles appearing in American Architect. Recently there have been rendered a number of legal decisions that have a bearing upon the question. As space permits, Mr. Blake will discuss these so that various aspects of this important matter may be brought fully up to date.—The Editors.



ELEVATED STATION — RICHARD CRIST

Announcing the Plan for

Lipman
AIR CONDITIONING

That Benefits The Architect

How Lipman AIR CONDITIONING Helps the Architect Get Business « « «

The **LIPMAN** Air Conditioner Unit helps the Architect open up a new and larger volume of business because it is—

(1) PRACTICAL for the average size building project.

(2) DOES ALL that is expected from Air Conditioning equipment for stores, restaurants, offices, funeral homes, beauty and barber shops, residences, theatres and schools.

(3) ENGINEERING assistance that the architect and dealer may need to determine the proper size and capacity can be supplied by the Lipman engineering staff.

(4) SIZES of Lipman Air Conditioning Units conform to the needs of comfort cooling jobs which the local heating and ventilating dealer can handle without outside assistance.

(5) COSTS covering Lipman Air Conditioning Units are low enough to enable the local dealer to bid successfully on the average size contracts in his territory.

Proved

Lipman Air Conditioning Units are proving their reliability in numerous railroad train installations, under conditions much more severe than will be met in stationary installations.

The HEART of Practical Air Conditioning Systems

Engineered and designed by the manufacturers of Lipman Full Automatic Refrigerating Machines, pioneers in the mechanical refrigeration industry. Economical and quiet in operation. Dependable in performance.

The Lipman AIR CONDITIONING 5 Step Plan of Installation « «

Consists of these simple operations—

STEP 1. Determine the amount of air to be cooled and circulated.

STEP 2. Select a Lipman Air Conditioner of proper capacity to circulate and cool that amount of air.

STEP 3. Place Lipman Air Conditioner in position and connect water and electric lines.

STEP 4. Install and connect standard type inlet and outlet air ducts between Air Conditioner and rooms to be cooled.

STEP 5. Turn the electric switch and put the Air Conditioner in operation.

The Lipman Air Conditioner is manufactured, shipped and installed as one assembly. All parts used in the refrigerating process are already in place and ready to operate. All duct work, wiring and piping to be provided and installed by the local Heating and Ventilating Dealer.

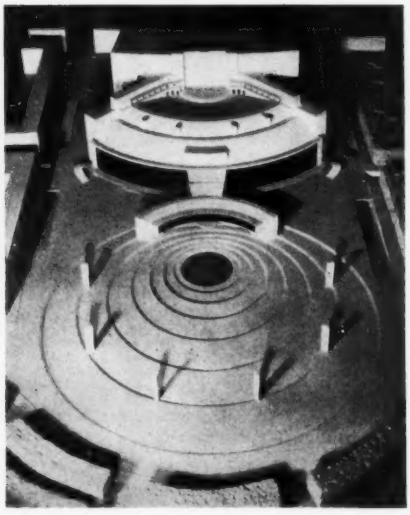
Complete specifications and suggestions for planning Lipman Air Conditioning installations in many different types of average size stores, offices, and auditoriums will be sent to architects, on request to Dept. A-3.

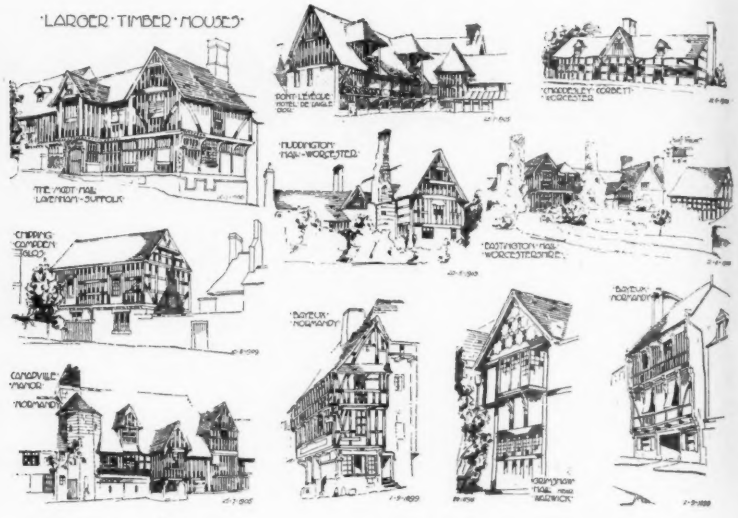
GENERAL REFRIGERATION SALES COMPANY
BELOIT, WISCONSIN, U. S. A.

ARCHITECTURE
ALLIED ARTS

BOOKS

ENGINEERING
BUSINESS





Above, left: theatre project, from "Architecture for the New Theatre". Right, above: a page of sketches from "The Architectural Work of Sir Bannister Fletcher". Right, frontispiece of "Robert Mills, Architect of the Washington Monument"

THE ARCHITECTURAL WORK OF SIR BANNISTER FLETCHER

By W. Hanneford-Smith. Published by B. T. Batsford, Ltd., 15 North Audley St., London, W., England. Illustrated; indexed; 291 pages; size 9 x 11½; price £2 2s.

TO architects everywhere, the author of "A History of Architecture on the Comparative Method" is a well-remembered, somewhat legendary name. But Sir Bannister Fletcher is anything but a legend. Today he is among the foremost practicing architects of England, a Barrister-at-Law, one of London's most substantial public servants and the recipient of almost innumerable honors from many countries and scholarly societies. This volume is a partial record of his life and work. But it serves to delineate the man and to record some of the many diversified results of his abilities.

ROBERT MILLS

By H. M. Pierce Gallagher. Published by Columbia University Press, New York. Illustrated; indexed; 233 pages; size 6½ x 9½; price $4.50

THE sub-title of this book is, "Architect of the Washington Monument, 1781-1855." As such, Robert Mills, our first native-born architect, is chiefly remembered. But Mr. Gallagher has shown him to be much more than that. For more than fifty years Mills maintained as active a practice of his profession as any architect of our own day. His work included many of the important structures of the times and in Carolina, Philadelphia, Baltimore and Washington houses, schools, prisons, hospitals, bridges and government buildings of all sorts testify to the man's ability as a designer and administrator of building activities. The author of this book writes of Robert Mills with understanding and sympathy. His volume is complete as a biography and as a human document that nearly every architect would cherish.

ARCHITECTS' SPECIFICATIONS

By Goldwin Goldsmith, Ph.B., F.A.I.A. Published by John Wiley & Sons, Inc., New York. Indexed; 131 pages; size 8¾ x 11¼; price $2.50

IT is the explanation of specifications as a science that Mr. Goldsmith has attempted in this book. The volume has been published primarily for students and the younger practicing architects. But it is an exceptionally clear, readable and thorough treatment of what is ordinarily regarded as an involved, tedious subject. As such it can be safely recommended to any and all architects as one step toward improvement of office practice technique and a subsequent elimination of many professional annoyances and inefficiencies. Among many other subjects, the book discusses systems for data compilation, references, standardization, indexing, and devotes an entire chapter to the problem of the "or equal" clause.

ROBERT MILLS

ARCHITECTURE FOR THE NEW THEATRE

Edited by Edith J. R. Isaacs. Published by Theatre Arts, Inc., New York. Illustrated; 125 pages; size 9½ x 6⅛; price $2.50

PRIMARILY this little volume was published for the National Theatre Conference as a kind of report on current progress in theatre design and layout. By no means is it a complete treatise on any branch of the subject. But between its covers lies a stimulating compilation of fresh facts and ideas that, applied even in principle to most of our outmoded stages would certainly produce a theatrical revolution. For the book contains many basic data by such realistic experts as Lee Simonson, Norman Bel Geddes, William Lescaze and Frederick Arden Pawley. Included are analyses of many famous theatres.

BEFORE ——— AFTER

Here's a typical area in the Shriners' Hospital, Springfield, Mass., before the old, unsightly mastic floor was modernized with Armstrong's Linotile.

. . . and the NEW FLOOR *was laid right over the old* !

A corridor (above) and section of the nursery in the hospital after modernization. The smooth, lustrous Linotile has put an end to floor troubles.

A hospital offers this suggestion to architects... MODERNIZE WITH LINOTILE

SELDOM will you encounter floors in worse shape than those in the Shriners' Hospital, Springfield, Mass., before it was remodeled. The troweled-on mastic finish was pitted, gouged, and cracked like an old warehouse floor.

Without expensive preparatory conditioning, Armstrong's Linotile was laid right over the old floors. There's not a hump or dip in its surface now . . . just unbroken smoothness that gives no hint of what lies beneath. This hospital has said good-bye to floor troubles.

Remember Linotile on the next remodeling job you get. Use it over wood, concrete, terrazzo, or composition floors in any area where the following qualities are desired: (1) colorful, distinctive appearance; (2) ability to stand hard wear for a long time; (3) quietness and comfort underfoot; (4) a smooth, dirt-resistant surface that is easy and economical to maintain.

Of course, these qualities make Linotile just as desirable for new buildings . . . for schools, stores, offices, fine homes, and other jobs.

Would you like to inspect an actual Linotile floor? We'll gladly direct you to a near-by installation if you'll check and return the coupon below. Samples, literature, and a list of Linotile contractors will also be mailed to you.

SEND THIS COUPON FOR

- ☐ Locations of near-by Linotile jobs.
- ☐ Linotile samples and literature.
- ☐ Names of Linotile contractors.

ARMSTRONG CORK PRODUCTS COMPANY
Tile Floor Department
1201 State Street, Lancaster, Penna.

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Armstrong's LINOTILE FLOORS

Also LINOLEUM ~ RUBBER TILE ~ ACCOTILE ~ CORK TILE ~ LINOWALL

The Readers Have a Word to Say

• SUGGESTIONS

Editor, AMERICAN ARCHITECT:

AMERICAN ARCHITECT, through the advertisement appearing in *House Beautiful* and *Town & Country*, is undoubtedly doing a great work in carrying on a campaign to acquaint the public with the functions and aims of the architect and the architectural profession. It is one of the anomalies of our civilization that the architect is less understood by the general public than the physician and the lawyer, although his profession is one of the oldest in the world, perhaps even antedating that of medicine and the law.

In regard to the booklet, "When You Build," I would like to make some suggestions, if a new edition is put out. To begin with, I think the shortcomings of stock plans should be more fully set forth. About the only thing that can be said in favor of stock plans is cheapness in first cost. It is a question if they are ever cheap in the end. How many sets of stock plans are ever suitable for the location where the new house is to be placed? Such matters as size and shape of lot, how to place the building with regard to abutting streets, general surrounding conditions, compass points, prevailing winds during both summer and winter, and many other general and local conditions all enter into the design of any building, and more particularly a home.

Moreover, it does not make any difference how completely and carefully stock plans have been gotten out, only an expert, such as the architect, can tell whether such plans are suitable for a house in some other location. All or any of the foregoing points might be touched upon more fully in a new edition.

I would also suggest that simpler designs of houses be illustrated. I doubt if houses costing $20,000 or more are ever built without the services of an architect. It is the man planning to build a house costing from $5,000 up to $12,000 or even $15,000 that should be reached in such a campaign. Furthermore, where one house costing $20,000 is built, there will be many homes designed and built at very much lower figures.—*J. Harrington Gandolfo, Consulting Engineer and Architect, Montclair, New Jersey*

• DOUBLE CONGRATULATIONS

Editor, AMERICAN ARCHITECT:

I HAVE just finished reading the article in your January issue entitled "Contemporary Problems in the Architectural World," by Francis Lorne of London, England. I do not know when I have enjoyed an article so much as this one. I believe that Mr. Lorne has analyzed the situation perfectly and also has suggested the best and only remedy.

It pays all of us to occasionally pause and retrospect and then to follow it with introspection, which in turn should be followed by the proper action to make the then self-evident corrections.

I feel that every architect who reads this article will gain something tangible with which to carry on and that he will thus be enabled to see more clearly his brother's need and then supply it.

Not only is Mr. Lorne to be complimented on having put so well on paper these many constructive thoughts, but AMERICAN ARCHITECT is to be congratulated on having published such an outstanding article, and in turn your readers should feel that they have been privileged to enjoy something unusual.—*F. E. Berry, Jr., Boston, Mass.*

• EDUCATOR'S COMMENTS

Editor, AMERICAN ARCHITECT:

I HAVE read with great interest the article dealing with wood in the January issue of AMERICAN ARCHITECT, and I offer you my hearty congratulations upon the excellence of this article. It seems to me that if the series is continued with the same thoroughness and clarity as this first article that you will have rendered a very great service to the architectural designers.

An architect does not need to be himself a craftsman. What is essential is that he should have a direct knowledge of these different processes by which materials are manipulated and assembled and a true understanding of the limitations and possibilities of the materials that he uses. Naturally this is a counsel of perfection. I realize that no education could give a designer a complete knowledge and experience of all of his materials and for this reason the carefully organized presentation of data which you give ought to be of the greatest value.—*Dean Joseph Hudnut, Columbia University, New York City*

• LET ARCHITECTS BE BETTER SALESMEN

Editor, AMERICAN ARCHITECT:

THE splendid analysis by Thomas N. McNiece in your January issue is a most straightforward, honest consideration of the disheartening conditions which confront builders in general, and architects specifically. Minds that can point so directly at weaknesses in a program, contribute to the strength of that program, when a way is open to correct the weaknesses.

Architects should be particularly interested in one of his statements—but would hardly concur in his conclusions. "Instead of directing encouragement," he states, "to owner-builders (who only build 25 per cent of the houses) speculative or contractor-builders (who before the depression built 75 per cent of the houses) should be encouraged." Thus, he intimates, the full strength of building salesmanship would be brought to bear in the program.

What an indictment! The architect—salesman under owner-building—cannot sell the other 75 per cent. Can't he? He must, or building mortgages the Government insures up to 80 per cent of the building cost will fail as did those which the bank insured at 50 per cent of practically the same costs.

The only correction to the old situation which the Government proposes, is that architectural ability must be included in the set-up, if the Government is to insure. That is the only part of the program that can prevent a recurrence of the previous failure. But the Government does not care how this ability comes into the picture. Usually it brings the architect in as an employee; as a hireling instead of as a professional, just as contractor-builders use him in their business.

Before there was a recognized depression in building and long before 1929, architects permitted contractors to run away with much of the professional part of their business. They or their draftsmen furnished plans for a small part of the regular fee to the contractor. These plans made the contractor-builder's project saleable. The buyer would otherwise have engaged the architect at his total fee, his house would have exactly suited his needs, it would have been of good materials and work-

Villa Moderne's floors were planned with a purpose

. . . and executed in Sealex Linoleum

The Villa Moderne, in Chicago, Illinois, provides an interesting example of the way architects are today using Sealex Linoleum to bring the floor into complete harmony with their decorative plans.

Notice in the photograph at the right, how the curved lines of the bar are repeated in the floor design of contrasting colored Sealex Linoleum. While in the adjoining dining room shown above, the curved motive is used in conjunction with line border strips which carry out the straight line effect of the table and walls.

Individualized floor designs for any type interior are readily executed in Sealex. Authorized contractors of Bonded Floors will carry out your specifications faithfully and economically. Such installations are backed by Guaranty Bonds covering the full value of workmanship and materials.

CONGOLEUM-NAIRN INC., KEARNY, NEW JERSEY

Quiet, easy-to-clean and long-wearing, Sealex Floors meet every practical requirement. See our new Catalog in Sweet's (Section 15, Catalog No. 36) for the latest developments in linoleum decorative treatments ideal for new construction or remodeling work.

SEALEX *Linoleum Floors and* **SEALEX** *Wall-Covering*

manship throughout; thus the mortgage would have been protected against high depreciation in value and much of the present "doleful" slump would have been avoided. But the architects as individuals (not so rugged) sold their profession for the Biblical "mess of pottage"—and as organized architects they put plenty of A's in the A. I. A., but none to stand for "administration."

It would seem a simple enough expediency for architects and their draftsmen to save themselves by refusing to work for contractors, or any corporation or government for that matter, except as professional architects on the regular minimum fee basis. Of course, there will still be engineer-draftsmen and others who will attempt architectural drawing available to the contractor-builder. But the resulting building cannot long compete with our artistic building.

Corporations and the Government are mentioned above because an employee-architect represents his employer, and is the employer in a different version of the contractor-builder set-up. Likewise, when an owner retains a contractor-engineer, and a draftsman works for him as an architect, you again have the contractor-builder set-up. In all of these the architect, as a professional man, is destroyed. If he will not work in such a set-up, beautiful buildings will not obtain. There is more demand for beauty now than ever. Without it the contractor-builder, whether he is the Government, a church bureau of architecture, a large rubber company, or bank or contractor cannot sell his building.

The ideal salesman for new construction is the architect; not the realty salesman selling the house the contractor built on a distressed lot, built to sell in the $—— class after plans by ——, who only received part of his fee because no supervision or business administration was required of him. The architect is ideal because the present owner of the lot should (instead of selling at distressed prices) carry out his original intention to build on that lot a home exactly suited to the needs of his family, with money furnished by his own bank for his own consumption, his integrity guaranteed by his own Government, and that guaranty made safe because it is backed up by the beautiful, sound, and honest construction of the building. Such results will obtain if the architect directs the building.

Shall we not organize at once as the salesmen, to sell art, pride of possession and evidence of character (instead of profit of which there will be none), and with these, permanence of mortgage value which must endure if the Government is not ultimately to be the loser in its part of the program? The profit the contractor builder offered ultimately was not there. It was a misrepresentation. The things the architect sold the owner builder he still has. These weathered the depression. Every one of them are still good sales arguments.—*H. W. Maurer, Architect, Cleveland, Ohio*

• USEFUL INFORMATION

Editor, AMERICAN ARCHITECT:

I HAVE carefully read the article on wood in the January issue of AMERICAN ARCHITECT. The material contained in it will find a cordial welcome in the offices of architects. This information supplemented by actual samples of each kind of wood will form an invaluable addition to data on woods and their proper uses now available.

I congratulate you upon the success of this article and wish to state that it will be of interest to our students in the course "Materials and Methods of Construction."—*Dean George Simpson Koyl, University of Pennsylvania, Philadelphia, Pa.*

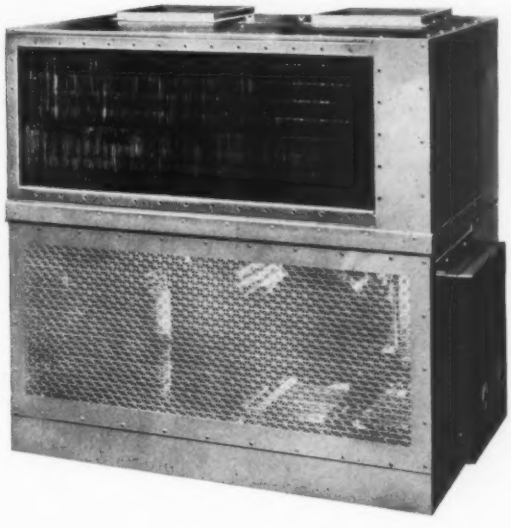
Pages 89-90 adv. removed. 12-14-67

BRIEF REVIEWS OF MANUFACTURERS ANNOUNCEMENTS TO KEEP THE ARCHITECT INFORMED OF NEW PRODUCTS

New Materials and Equipment

X-Ray "Attraction-Zone" Reflectors

415M Two new X-ray reflectors have been introduced by Curtis Lighting, Inc., Chicago, which concentrate their light on the lower middle third—the "attraction zone"—of show windows while still furnishing sufficient illumination for the rest of the window. They use 150 and 200 watt lamps and are said to provide 35 to 50% more light on displays in this section of the window. These units have "dimples" into which standard accessories can be snapped without special fittings or attachments. They use the same sockets, have the same operating cost as regular reflectors, and require no new wiring or irregularly shaped holes for installation.



G-E Electric Ranges

416M A new line of electric ranges, with new styling and lower prices, has been announced by the specialty appliance sales department of General Electric Company, Cleveland. Eight models are included in the line, of which six are table top models and two are of the high oven type. All table top models can be built in flush against the wall and the adjacent cabinets. The "Leader" model illustrated has an overall height of 41½ inches, with the cooking top 36 inches from the floor, and is of table top design. It has radio cabinet concealed hinges on the compartment door, sliding oven shelves, spacious storage compartments, a pilot light with temperature control knob to indicate oven operating conditions, and other features. Finish is all white with porcelain cooking top, splasher and front panels.

Fire Alarm Device

417M G-M Laboratories, Inc., Chicago, has developed a low cost fire alarm unit for use with electrical alarm systems such as bells, buzzers, red lights, etc. This unit, known as the Telafire, has a mercury contact tube mounted on a movable arm which protects the contacts from corrosion, dust and other accumulations. This tube is air tight with two contact wires entering through the upper end and a quantity of mercury in the lower end. Under the action of heat, one end drops as the arm is released. As it drops the mercury flows around the wires, making an electrical connection and completing the alarm circuit. The Telafire alarm is 3 inches in diameter, is adjusted for operation at approximately 135F, and has a red enamel finish.

Blueprint Machine

418M A blueprint machine which utilizes the new incandescent-type Angstrom blueprint lamp, has been developed by Milligan & Wright, Company, Cleveland. Model 100 machine is of the portable table type which will print one 18 x 24 or two 12 x 18, or four 9 x 12 prints at one time. The Angstrom lamp operates from 110-115 DC or AC lighting circuit without the need of transformer, choke coils, etc.

Lipman Air Conditioner

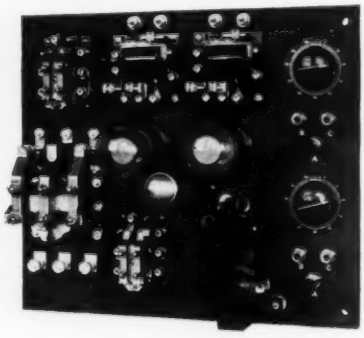
419M General Refrigeration Sales Company, Beloit, Wis., has recently introduced a compact air conditioning unit suitable for retail stores, restaurants, residences and other average size installations. This machine is made in two sizes to provide 2000 and 4000 cubic feet per minute of cool, fresh air of the temperature and degree of humidity desired. It is built as a complete unit ready for attachment to air ducts. It automatically adjusts itself to meet varying temperature and humidity requirements.

Low Water Cutoff and Duplexswitch

420M A Low Water Cutoff and Duplexswitch, which eliminates the hazards caused by low water conditions in steam and vapor systems, has been introduced by Minneapolis-Honeywell Regulator Company, Minneapolis. Installation cost has also been reduced as these units are placed in the boiler gauge glass openings, eliminating the major cost of piping. In operation, the circuit to burner control opens when boiler water level lowers to danger point and closes when normal boiler water level is restored; the circuit to the burner control is automatically re-established and the alarm circuit is opened. Each unit also has a double circuit mercury switch providing for operation of alarm or signal system.

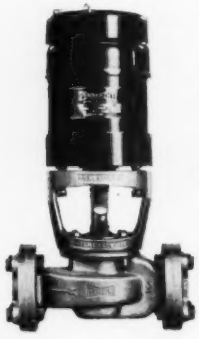
Sherarduct Floor Box

421M The National Electric Products Corporation, Pittsburgh, has introduced a new floor box featuring a Sherardized finish which protects the surfaces, edges, and crevices against corrosion. This convenience receptacle is designed to be placed in the floor, providing outlets for underfloor wiring. It is water- and moisture-proofed by a new metal gasket, the efficiency of which increases every time the box is opened or closed. The adjustments necessary to meet the floor surface are simple. Boxes are leveled in the rough and easily raised or lowered to meet the floor finish without affecting the level adjustment. Parts exposed after installation are of finished brass. Service fittings may be had either in rubber or brass.



Automatic Repeat Process Timer

422M For use in connection with a wide variety of electrically operated devices and machines requiring automatic timing of the "power-on," "power-off" periods such as electric flashing signs, the Electric Controller & Mfg. Company, Cleveland, has developed the new EC&M Automatic Repeat Process Timer. This Timer provides a means for closing an electrical circuit for a definite period, and then opening the circuit for a similar, or different time, and repeating this cycle of operation as long as the control push button is closed. The on-and-off periods are independently adjustable. The unit is built in four standard sizes and for 110, 220, 440 or 550-volt circuits of any standard frequency.



Penberthy Water Circulator

423M The Penberthy Injector Company, Detroit, Mich., has introduced a water circulator for use in modernizing old hot water heating plants as well as for new systems which are automatically fired by gas, oil or coal. The unit forces the heated water from the boiler throughout the system as soon as the motor is started, thus eliminating delay in heat delivery encountered with a gravity system. This forced circulation tends to overcome disadvantages of inadequate pipe sizes and insufficient radiation. It will also circulate water to radiators below boiler room level and to remote radiation on long horizontal runs. The circulator consists of a centrifugal type pump constructed of steam bronze and a condenser type starting motor. It is installed in the return line near the boiler when the motor is in upright position.

"Dialux" Luminescent Paint

424M A new luminescent paint for brush or air gun spray application to practically every type of material, including metal, glass, cloth, paper, wood, rubber, has been introduced by Grobet File Corp. of America, New York. The principal element of this paint is sulphur of calcium, a phosphorescent salt, which after exposure to natural or artificial light, gives off a luminosity which lasts for 12 hours, gradually fading away. The sulphur of calcium acts as an accumulator of light and the luminescence of painted articles is restored by repeating the exposure to light. "Dialux" does not contain radio-active matter, is not inflammable or toxic, and has a covering capacity of 20-30 sq. ft. per pound. Its chief use lies in indicating the position of objects in complete darkness.

Lumiline Lamp Base and Cap

425M A base and cap for use with the new Lumiline lamp have been announced by General Electric Company, Bridgeport, Conn. The new base, made of black or white Textolite, is 45/64" x 1-3/8" x 13/16", overall dimensions, and may be either surface- or flush-mounted. Two of the bases, when placed end to end, require but one-half inch of space measured along the lamp axis. The cap, also made of black or white Textolite, clips over the end of the Lumiline lamp. Its circular connector snaps into the base and, besides serving as a rigid holder for the lamp, provides all electrical contacts. The bases and caps may be used for only a single lamp, or for two or more lamps placed end to end to form a straight line of light.

Benjamin Single Stroke Bells and Chimes

426M Benjamin Electric Mfg. Company, Des Plaines, Ill., has brought out a new line of single stroke bells and chimes. The bells are used for code calling in large offices, factories, schools and other buildings. They are especially adaptable for coded fire alarms and other code warning signal systems. The chimes are for code calling and code warning signal systems in locations where a pleasant yet audible signal is desired. Mechanism of each is of the solenoid type with only one moving part.

Collaboration

IN GLASS DESIGN

A New Service You Will Appreciate

LET'S BE FRANK. Have the arbitrary limits imposed by builders in the design of conservatories and other glass structures, caused a lack of interest on your part? Limits as to roof pitch and various other elements have sometimes made it difficult to harmonize them with your adjacent buildings.

Well, that is all changed now. You will not only find us in full sympathy with your views, but ready to collaborate with you in carrying out the design effects you are striving for.

For some time past, we have been working with Gerald K. Geerlings, architect and designer, so that we now can offer greenhouse ensembles which will harmonize with any type of architecture. Instead of insisting on the stark, ghostly white painting of yore, colors are welcomed.

Sunshine Rooms as an integral part of the house have many uses and while some of your clients might not desire to grow flowers, they would be interested in a healthy play room for the children, or a place to bask in the sun's ultra violet rays.

• • •

Why not let us discuss this problem with you at your convenience?

LORD & BURNHAM COMPANY

Irvington, New York Des Plaines, Illinois Toronto, Canada

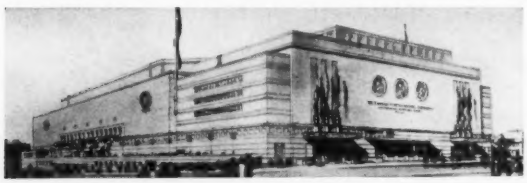
ARCHITECTS SERVICE DIVISION

Glass Gardens

For Four Generations ··· Builders Oi Greenhouses

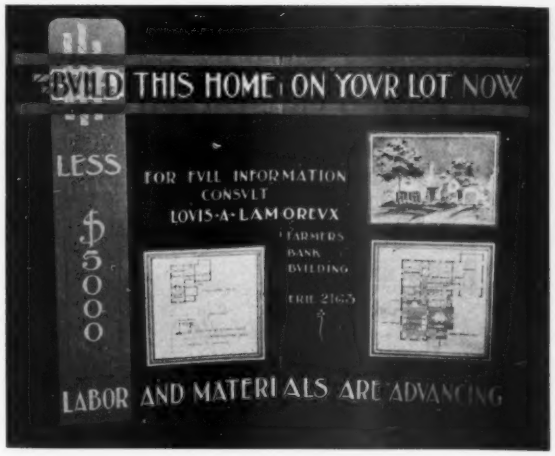
ranging from 224 to 345 families in each. After allowing for all costs, including overhead, depreciation and amortization of the building, cost figures on two of these projects showed a reduction in the cost of electricity of 49 per cent.

• A radio program devoted to the building, and repairing of the modern American home is being sponsored over Station WOSU by the Ohio State University. Talks are by the engineering and architectural faculties of the University, supplemented by others given by practicing architects of Columbus, Ohio. They cover such subjects as, "The Selection and Purchase of the Lot," "The Architect and the Owner," "Home Architecture from an Engineering Point of View" and "Common Mistakes in Building and How to Avoid Them."



• Installment buying is evidently to be an important feature of future housing and home maintenance financing. Impetus given to this trend by the FHA in all three of its titles is now adding momentum to a movement started years ago by commercial producers of materials and equipment. Herbert Abraham, president of the Ruberoid Company, recently stated that business has been steadily developing under the company's financing plan so that in the two months of November and December 1934 they sold more products on the installment basis for home improvement than during the entire preceding six months' period. Normally October is the peak month. December financing volume was 238 per cent in excess of October. Evidence of this character plus the fact that approximately 34 per cent of the work stimulated by the Better Housing Program is financed on time loans, indicates that the buying public is just as willing to invest in home improvement and home construction as in automobiles, pianos and furniture, if payments can be distributed more in accordance with current income than they have been in the past in the field of home ownership.

• "A new, wide field for architecture lies in solving the technical problems of housing, in assuming the responsibility of creating adequate environment for the essential requirements of the greater per cent of our population now improperly housed."—Dean Joseph Hudnut of Columbia University's School of Architecture, before the Second National Conference on Slum Clearance and Rehousing at Washington, D. C.

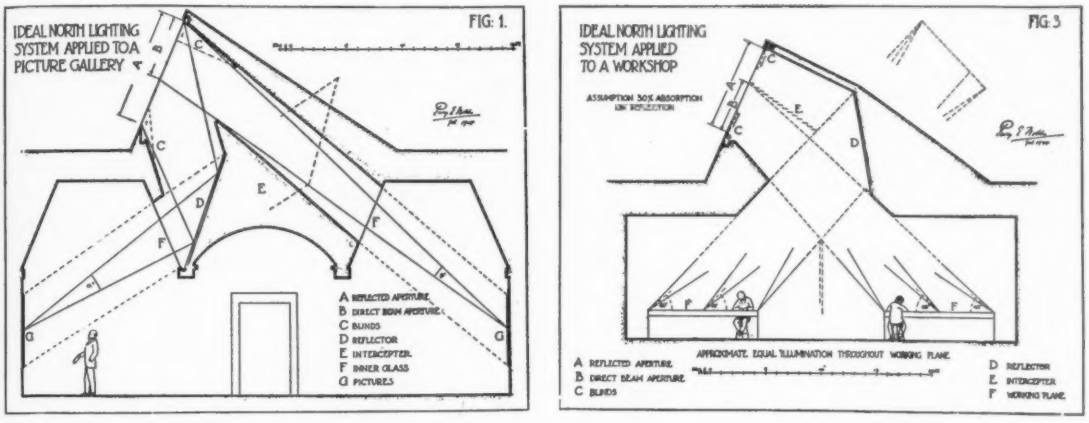


Above: this sign, displayed in the window of a local bank, has convinced Louis A. Lamoreux, architect of Mansfield, Ohio, that it pays to advertise. Executed in blue, black and yellow on a red background, it produced orders for four small houses within two months after it was first displayed. Since then, Mr. Lamoreux has been busy. Commissions obtained as a result of this display—copyright of which has been applied for—have averaged better than one a month. Left: sketch of new Municipal Auditorium in Kansas City, Mo., Alonzo H. Gentry, Voskamp and Neville, architects. (Photo, courtesy York Ice Machinery Co.)

• Recommendations that the PWA Housing Division be converted into a permanent governmental agency, that its program be expanded and decentralized to allow increasing latitude to local authorities were made, among others, by the Second National Conference on Slum Clearance and Rehousing. Approval of the Housing Division's present financial policies and its program of developing basic standards for use by local architects was expressed by the Conference.

• Whether or not the American Institute of Architects or some equivalent body should undertake original research in the field of building materials is a question worthy of much thought within the profession. A report of the Committee on Research of the American Society of Heating & Ventilating Engineers shows that that organization is undertaking to solve such basic problems as heating requirements of buildings, ventilating of garages and bus terminals, sound in relation to heating and ventilating, air conditions and their relation to comfort, and some twelve other practical problems, including an amazingly broad study of air conditioning in the treatment of diseases. Other engineering societies maintain similar research activities which contribute to the advancement of the art of building. The American Chemical Society will shortly hold a symposium on the relation of chemical advances to the

of the Times . . . . . (*Continued from page 74*)



Museum lighting system developed by Percy E. Nobbs, Canadian architect

building industry. There seems to be also opportunities for the architectural profession to aid in finding solutions to common problems through conscious and sustained efforts.

• Elimination of bedbugs as an architectural problem is developed by an unnamed author in an article on low cost housing published by the Building Research Station, England. He recommends in the construction of new buildings that woodwork be reduced to a minimum and wood base boards be eliminated in favor of concrete cove mouldings. Door frames should be of metal, pipes should be carried clear of walls and openings where they pass through floors carefully filled. Hooks should replace picture mouldings. He recommends use of materials on floors, walls and ceilings which will not crack. Any person who has investigated present day slum housing conditions will appreciate the significance of this problem.

• Resources aggregating over *twenty-five billions of dollars* are held by nearly four thousand financial offices which have been approved by the Federal Housing Administration to act as mortgage insurance provisions of Titles II and III of the National Housing Act. Leaders in government and business look confidently to expenditure of a large part of this huge sum for the building of small houses under NRA mortgage insurance terms.

Equally as high are hopes of the government leaders that liberalization of the FHA Modernization Credit Plan from a $2,000 to a $50,000 maximum may become a further effective stimulus in the regeneration of building activity. As an aid to accomplishing this objective the architect is considered by Government officials as a factor of importance in all FHA plans now in progress.

• A new system of natural lighting for museums, studios, workshops, etc., has been evolved by Percy E. Nobbs, Canadian architect, some of whose findings were published recently in the Journal of the Royal Architectural Institute of Canada. The salient feature of this system is the use of a reflector panel in conjunction with a north light, the resultant distribution of light being such that both north and south walls or work areas are equally illuminated.

The approximate absorption of light on reflection is corrected, as a study of the diagrams will show, by permitting the maximum volume of direct light to fall only on the reflector while a proportionately smaller amount is passed to the south wall. To illuminate galleries, the position of the reflecting surface and its substructure provides for a shaded area over the floor of the room. The reflections of persons or objects in glass or varnished surfaces are thus of low illumination and so become unnoticeable.

Furthermore, the light falls on the pictures at angles between 30 and 40 degres to the horizontal, thus eliminating the "speckling" caused by sharp illumination of their textures by sheer top light. In the case of workshops an interceptor of a different type is used, since here the aim is to illuminate the tables or work areas rather than the walls. Blinds control any surplus light and permit illumination to be kept close to required working strength.

• Lower prices prevail today for staple plumbing fixtures and boilers than at any time during the last twenty years, according to the Plumbing and Heating Industries Bureau. Using the 1926 price level as equivalent to 100, the price index in 1934 for a standard built-in bathtub was 55.1; for a roll rim one-piece sink 55.2; for a five-section domestic type hot water boiler 75.8.

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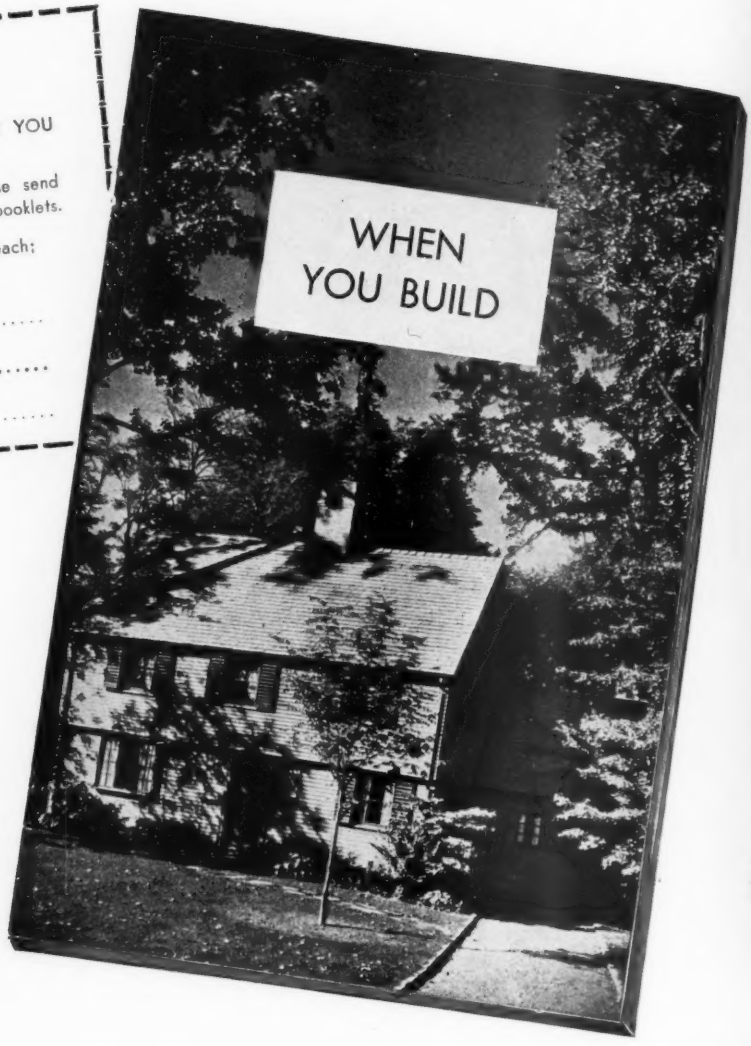

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"Bring Hither the Fatted Calf"

From a print in the collection of the New York Public Library

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ANNOUNCEMENTS

• Under the auspices of the International Housing Association, a Housing Congress will be held in Prague, Czechoslovakia, during the week of June 23-30, 1935. Subjects for special consideration include slum clearance, minimum houses, measures for housing the unemployed, all of which will be illustrated in an exhibition of plans covering twenty American and European cities. Details of the Congress' program can be obtained from General Secretary Franz Schuster, Frankfurt-am-Main, Germany, Hansa-Allee 27.

• Products of industrial art for the average American family of average means will be displayed in the Industrial Arts Exposition to be held under the auspices of the National Alliance of Art and Industry from April 15th to May 15th, 1935 in the Forum of Rockefeller Center, New York City. An important part of the Exposition will deal with the American home and its equipment.

• Preliminary examinations for the Rotch Traveling Scholarship will be held April 8th. The *en loge* sketches are scheduled for April 15th and 17th and the sketch for finals, April 20th. Applicants are expected to register on or before April 1st. For registration and further information apply to C. H. Blackall, Secretary, 31 West Street, Boston, Mass.

• The John Stewardson Memorial Scholarship with a stipend of $1,000 is open to students or architects in the State of Pennsylvania who are over twenty-one and under thirty years of age. Full details and registration blanks may be obtained from the Secretary, Edmund R. Purves, The Architects Building, 17th and Sansom Sts., Philadelphia, Pa.

• The Crane Co. has announced a series of prizes to be given by *The Home Desirable,* a magazine distributed by the company, for the best "before" and "after" photographs of modernization work. Prizes are: first, $100; second, $50; third, $25. In addition there are fifteen prizes of $5 each. Entry blanks and detailed information can be obtained from *The Home Desirable,* 221 North LaSalle Street, Chicago.

• The Sixty-seventh Convention of the American Institute of Architects will be held in Milwaukee, Wisconsin, for four days beginning Tuesday, May 21st and ending Friday, May 24th. Information regarding hotel headquarters, reservations, transportation and the program of events will be announced in the April issue of AMERICAN ARCHITECT and in *The Octagon.*

• Prize-winners in the Annual Collaborative Competition for students of architecture, landscape architecture, painting and sculpture have been announced by the Alumni Association of the American Academy in Rome. First prize of $300 was awarded to the University of Michigan team which included Rudolph A. Matern, architect, Donald B. Gooch, painter, Jane H. Higbie, sculptor, and Richard I. Levin, landscape architect. The Cornell University team won second prize, $150; and third prize, $75, went to a Yale University team. First medals were also awarded to these teams and to three teams from the University of Pennsylvania and one from Cornell University. Second medals were given to a team from George Washington University and one from the University of Pennsylvania. The problem was a museum of natural history and its setting in a park of a large city. Fifty-five teams participated in the competition. Judgment was made by thirteen trustees and alumni of the American Academy in Rome. Prizes were donated by the American Pencil Company.

• On January 9th one more was added to the roster of chapters of the American Institute of Architects when the Maine Chapter was officially organized at Portland. A. I. A. President Ernest J. Russell and Regional Director Hubert J. Ripley attended the meeting at which a charter was presented to the new Chapter which had been formerly included as part of the Boston Chapter. Officers elected were: president, John Calvin Stevens, Portland; vice president, Parker Crowell, Bangor; and Philip S. Wadsworth, Portland, secretary and treasurer.

DEATHS

• Samuel N. Crowen died at his home in Lake Forest, Ill., on January 16th at the age of sixty-three. Mr. Crowen was born in Germany, came to this country as a boy and received his early architectural training and experience in several prominent offices. Since 1897 he was prominent in Chicago architectural circles and was noted as a designer of apartment and industrial buildings. Mr. Crowen was a member of the American Institute of Architects and had held office in the Illinois Society of Architects.

• Frederick Philip Dinkelberg died February 10th at his home in Chicago, Ill. Mr. Dinkelberg, who was 75 years old, studied architecture at the Pennsylvania Academy of Fine Arts in Philadelphia. He became associated with the Chicago architectural firm of D. H. Burnham more than forty years ago and worked with Mr. Burnham on the design of the Flatiron Building in New York and buildings at the 1893 World's Fair.

• Norman G. Nims of Yonkers, New York, died on January 20th. Mr. Nims, formerly an associate of Stanford White, was one of the architects on the Municipal Building in New York and the Commerce Building in Washington, D. C.

• Juan C. Cebrian, 87, died in Madrid, Spain, February 20th. He was well known as designer of many university buildings in California.

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THE ARCHITECT'S JOB IN RE-PLANNING A CITY

(*Continued from page* 12)

may be expected from a study of the city plan. If they prove of decisive weight, the architect's whole job is changed. He no longer must think in terms of a mere factory building. His concern is immediately with the development of an industrial unit that must necessarily be influenced by social and economic factors outside the realm of building construction. He may plan a factory; but to do so properly with an intelligent interpretation of trends in city growth, he may also find himself involved with an industrial residential development.

In the design of the private residence, also,—even in the matter of esthetic effect where individuality would usually be most sought—city planning considerations are not to be escaped.

NO matter how great a work of art the house may be in itself, there will be little joy in its contemplation if it is set cheek by jowl with others varying widely in style, materials, color and degrees of refinement of detail. Or if the house be necessarily very simple and small and set on a lot fifty feet wide, the stupid regularity or perhaps the inchoate variety of the placing of the other houses will surround it with a deadly atmosphere which no individual distinction can overcome. Only some esthetic control over the whole neighborhood can offer any hope of salvation to the designer under these circumstances and such circumstances are very common.

This difficulty can be met by the larger "land-subdivision" under private restrictions, and beauty of arrangement and of consistent scale can be obtained even with simple, architectural forms at little extra cost, by harmony of the houses with one another, or with the landscape, or both. But this means a large initial investment by an individual owner or development company.

Why can not the city regulate this matter of appearance, for the public good, elsewhere than in the cases of municipal building groups, civic centers, and other public projects? The community regulates building activities of the individual under "police power" that sets minimum standards for public health, safety, morals, or general welfare. The appearance of our surroundings, taken alone, is hardly yet legally held to be a matter of general welfare, however much we may be convinced that it is so in fact. In fairness to our courts it must be said that there is a reason for this beyond legal inertia. If appearance were publicly regulated, good appearance would have to be exactly defined in enforceable terms, or some public functionary would have to judge it, and to defend it lovingly against undue "practicality" and the self-seeking. Even if the best minds of each community could be continuously drafted for the task, there would be great danger of a stereotyped or institutional or doctrinaire result. But when we consider what minds

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would in fact be usually charged with the responsibility, most of us would choose rather our present chaos, which often has at least a certain human interest in diversity of self-expression.

City planning can regulate such broad matters of design as the spacing and use of buildings, the sites of public structures and the street pattern. It can thus give the individual a chance to do the best thing, but it cannot compel him to do much more than avoid the worst.

It would seem that any real advance in the efficiency and decency and beauty of our communities would come from arrangement through city planning, and good appearance of the separate units through their owners' conviction that appearance is worth making an effort to obtain. All of which means public education, by example rather than by precept, including among those to be educated most of our noble selves and also emphatically our legislators, and endless hard work on the part of those who, by enthusiasm and by training, are willing and able to help in such a big, adventurous and uncertain job.

ROGER H. BULLARD, 1884-1935

ROGER HARRINGTON BULLARD, architect and designer of many houses and country clubs, died March 2nd at his home at Plandome, Long Island. He was 50 years of age. Although Mr. Bullard's architectural practice was varied and included some commercial projects, he was best known to the public and profession as an architect of large and small country houses. As recently as last winter he came into new prominence as architect of "America's Little House," sponsored by the Better Homes in America movement and located in the heart of New York's skyscraper district. He was a gold medal winner in the 1933 Better Homes in America small house contest.

Mr. Bullard was born in New York. He received his architectural degree from Columbia University in 1907. After a number of years' association with Grosvenor Atterbury, he formed the firm of Goodwin, Butler and Woolsey, later opening an independent office in 1921. In 1908 and 1909 Mr. Bullard was architect for the Auxiliar Obras Publicas of the Cuban Government.

Known to a widening circle of clients as a sympathetic designer and to the profession as an exponent of well-studied and balanced masses, Mr. Bullard was a frequent contributor to the professional press and the architect for many Long Island and Connecticut houses published in several of the better known laymen's building publicatons.

Mr. Bullard was a member of the American Institute of Architects and a member of the executive committee of the New York Chapter and the Architectural League of New York. He also belonged to the New York Society of Architects and for some years had been a member of the Beaux Arts Institute of Design.

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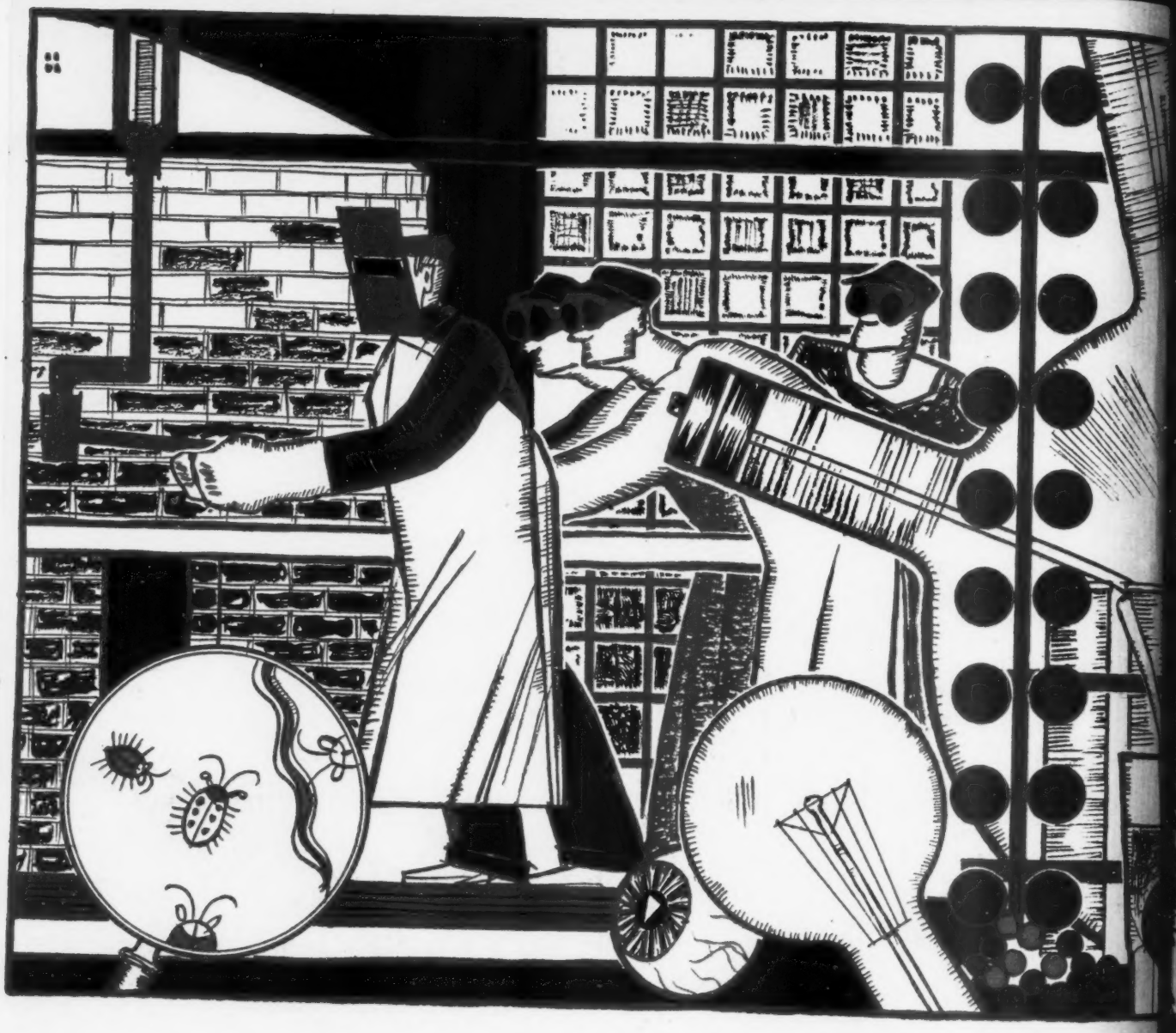

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