Progressive Architecture

9/48

Progressive Architecture

(PENCIL POINTS)

tember 1948

Newsletter

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lexed in Art Index.

A taxpayer's action in N. Y., challenging right of the city to use housing funds for school construction, may have wider implications. Citizens' groups are supporting action, pointing out that precedent might be set for diverting to other uses funds voted for public housing, and that needed schools require their own appropriations.

In addition to the N. Y. State housing competition announced elsewhere in this issue, other competition plans are afoot. John A. Shaw, Ethiopian Consul General in N. Y., will send interested architects details of an international competition for an imperial palace for Ethiopia. A national competition limited to younger architects in the U.S. also will soon be announced.

While argument about government aid for housing goes on, the Federal Aid Airport Program is quietly proceeding. By July 15, 389 grants amounting to $45 millions had been made. These range from improvements to small Class 1 airports to building or development of terminal type ports.

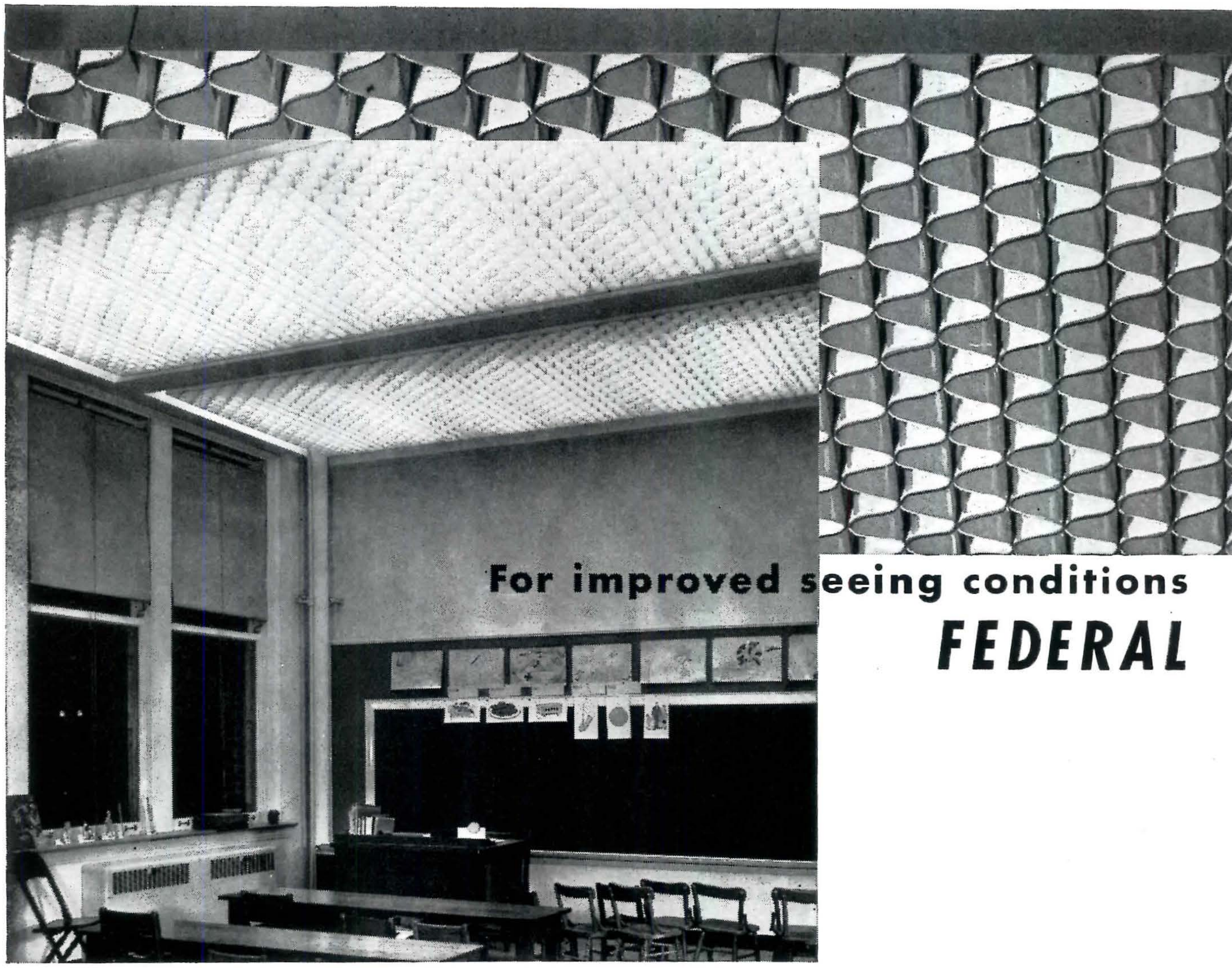
Another government-aid program is authorized by the Water Pollution Control Act, which allows loans to states, municipalities or interstate agencies, to 1/3 of estimated cost or to $250,000 per project for preparation of plans and construction of treatment works to prevent discharge of wastes into interstate waters. These programs mean architectural commissions.

Construction activity continues at a rapid pace, despite acceleration in the price spiral. Construction Industry Information Committee reports $7.7 billions of new construction in the first half of '48, a gain of $2 billions over same period in '47. At the same time building costs continue to rise, and building trade hourly wages as well as materials costs still go up, presaging further rises in finished-construction costs.

While bricklayers in N. Y. top the country with a $3.20 rate for hours they work, U.S. Steel leads the news in materials increases, with a $8.09 or 9.6% rise in base prices for major steel products. Other manufacturers also announce rises. Pittsburgh Plate Glass Co. explains up of 9% (10% for window glass) by statement showing net income for first half of '48 of only $14,200,000 against $14,800,000 for similar period last year despite slightly greater dollar volume of business.

International Union of Architects held its first Congress in Lausanne in June. A.I.A. delegates were Ralph Walker and Julian Levi. Elected officers include Sir Patrick Abercrombie (England) as president and Messrs. Baranov (Soviet Union), Walker (U.S.), and Vischer (Switzerland) as vice-presidents.

Greatest paradox of the housing situation is desire on the part of both government and builders to ease credit for private construction and purchasing, balanced against fear by both government and bankers that "sound and realistic values" might be exceeded. As of June almost $33 billions in mortgage debt was outstanding, of which $10 billions are protected by the government through F.H.A. or V.A. insured loans. Even slight dip in the economy will result in distress among those carrying mortgages based on inflated construction costs. Many architects are worried by this, despite continued good business.



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Cell-Ceil provides the solution for utilization of satisfactorily high levels of illumination without glare. Particularly important in classroom lighting design, this lifting of present limits on lighting levels gives architects and designers a new freedom of approach to lighting problems in a wide variety of applications.

T. M.

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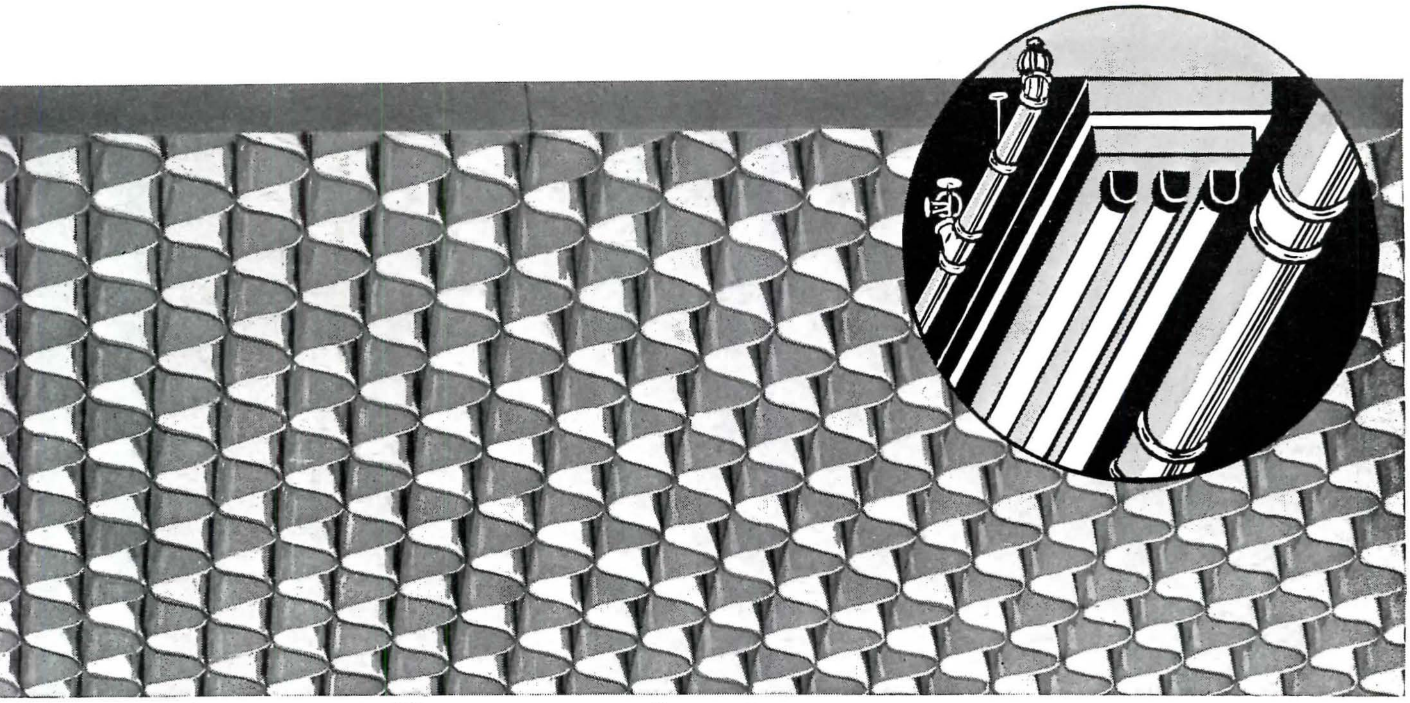

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THE MOST COMPLETE LINE

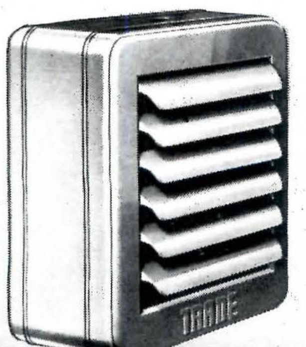
TRANE Announces the Cloverleaf Diffuser . . .

bringing new adjustability to the Projection Heater

Every day more and more uses are found for the efficient Trane Projection Heater. Now, with the announcement of the new Cloverleaf Diffuser, applications for the Projection Heater become almost limitless.

Like the Projection Heater itself, the Cloverleaf Diffuser is a basic Trane development. It gives full adjustability to the air flow from Projection Heaters. Air may be directed in patterns ranging from straight down to almost straight out. The flow may be adjusted to throw heat outward in one direction and downward in another, simultaneously. It is a matter of a moment to set the diffuser for *any* desired air distribution.

The adjustability of the Cloverleaf Diffuser remains an advantage even after installation. When machines are moved, equipment is shifted, or partitions changed, the Cloverleaf can be readjusted immediately to the changed heat requirements. The need for re-installing the Projection Heater will in most cases be entirely eliminated.



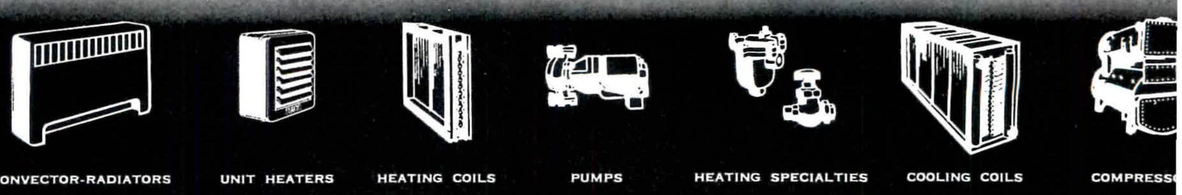
The Great New Trane Model H Unit Heater

Another Engineering Advancement

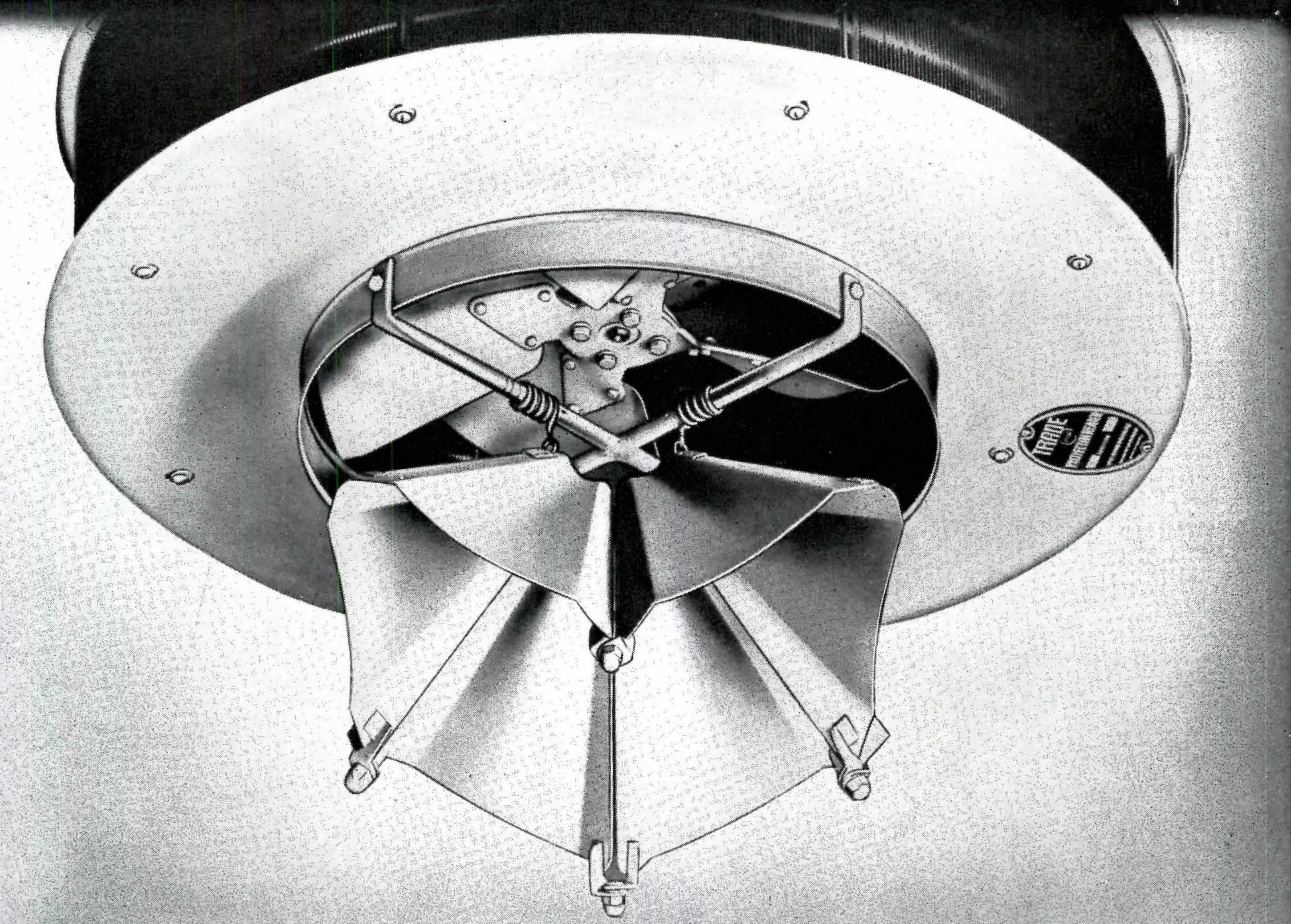
The completely adjustable Cloverleaf Diffuser is the second major innovation in the Trane Unit Heater line within a few months. The recently-announced Trane Model H Unit Heater is being given an enthusiastic reception in every part of the country. Architects, engineers, and contractors are endorsing its new functional casing, its new features that make it outstanding among horizontal unit heaters.

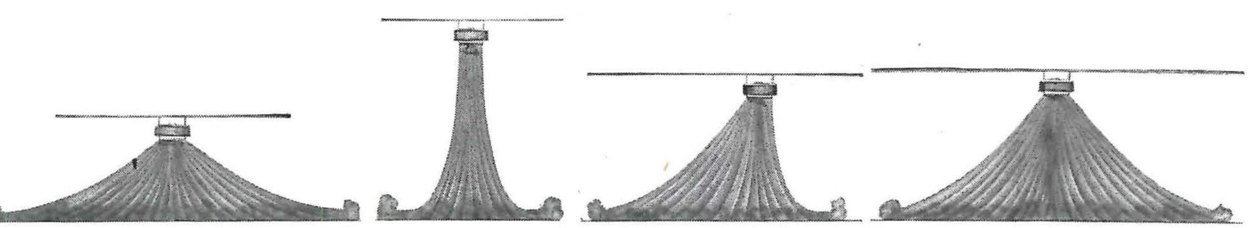
The Trane Model H Unit Heater and the Projection Heater are just a part of the most complete line of heating and air conditioning products in the industry. So complete is this line that architect, engineer, and contractor can select the right combination of Trane Products for any application. Over 200 Trane Sales Engineers in 85 principal cities offer their constant co-operation. THE TRANE COMPANY, LA CROSSE, WISCONSIN. *Also*: TRANE COMPANY OF CANADA, LTD., TORONTO, ONTARIO. *Manufacturing engineers of heating and air conditioning equipment.*

TRANE



THE MOST VERSATILE LINE





More Efficient Air Flow in Any Desired Direction . . .

Where the Projection Heater is used *with a low ceiling,* the Cloverleaf spreads the flow to keep hot air currents away from workers' faces.

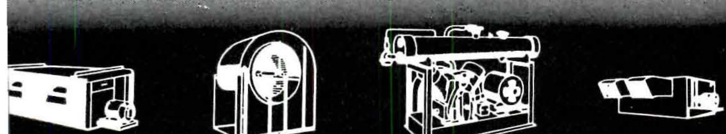
When the Cloverleaf is completely closed for high positions, a straight downward throw projects ceiling heat to the working area.

Where the Projection Heater with Cloverleaf is located near a window, an entrance, or a wall, flow can easily be adjusted to fit the situation.

When the Projection Heater is mounted at medium level, the Cloverleaf Diffuser provides the symmetrical pattern that gives it its name.

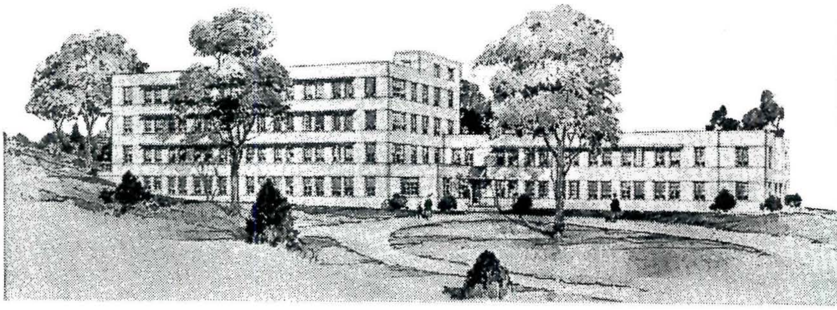
TRANE

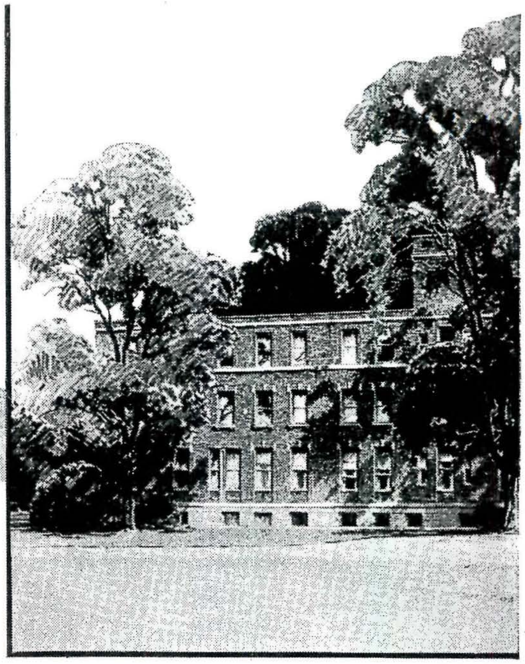
HEATING AND AIR CONDITIONING



R CONDITIONERS FANS REFRIGERATION EQUIPMENT BLOWER UNIT HEATERS

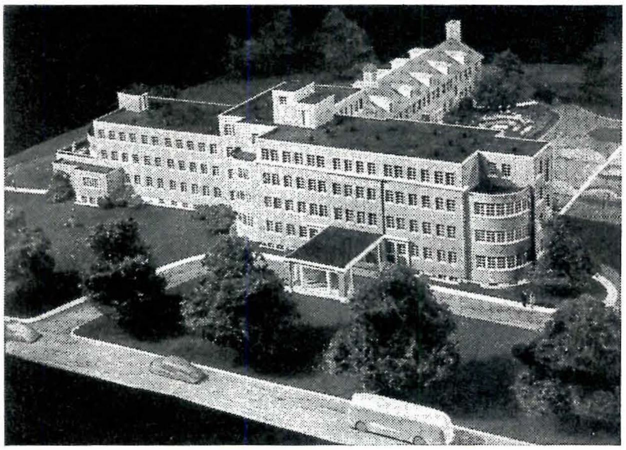
The Kent County Hospital in Warwick, Rhode Island, makes extensive use of asphalt tile in its construction. Howe, Prout and Ekman are the architects. Neergaard & Craig, hospital consultants.



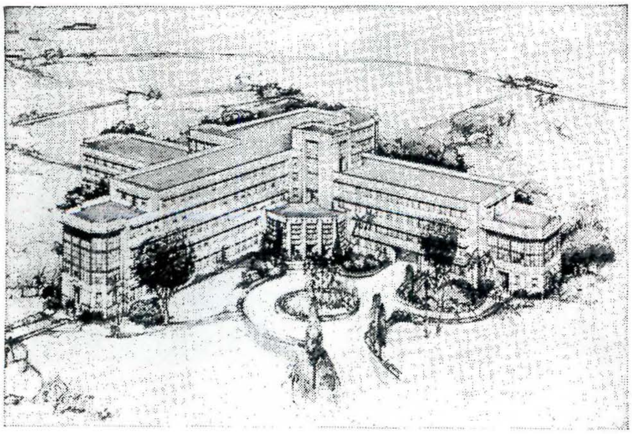


HOSPITAL FLOORING

By Charles F. Neergaard, Hospital Consultant.



Scale model of the Monroe County Memorial Hospital by Rinker & Kiefer, architects. Neergaard & Craig, hospital consultants. Here, too, asphalt tile was widely used.



Latest rendering of Mercy Hospital, Miami, by Stewart & Skinner, architects. Specifications call for asphalt tile in many places. Charles F. Neergaard acted as hospital consultant.

The selection of proper flooring for the modern hospital presents a problem with many aspects. The ideal material has long been sought. Such a material should be resilient enough so that hospital personnel will find it comfortable under foot. It should be reasonably quiet to walk on and not transmit sound easily to the floor below. It should be long wearing and sufficiently rugged to stand up under the heavy traffic in hospital areas—where equipment such as wheel chairs, dressing carriages, food carts, beds and stretchers are in constant use. It should not indent objectionably under the weight of chairs, beds, tables and other furniture which is properly equipped for use on resilient floors. It must have a surface which is easily cleaned and resistant to stains from grease, food and medicine. It should be unit-laid so that replacements can be easily and economically made. Last but not least, in view of the present high building costs, it must be available at relatively low cost.

During the last fifty years, many types of floors have been used in hospitals. Among these are wood floors, marble, terrazzo, cement, magnesite composition, linoleum, cork and rubber tile.

While these materials filled some hospital floor requirements, in other respects they fell short. Either they were hard to maintain, noisy, hard under foot or slippery. Some presented a replacement problem or lacked color, and others were too high in cost.

Asphalt tile, on the market for over twenty years, offers, in my experience, the most practical and economical solution to the hospital flooring problem. It is available in a wide variety of colors and sizes in either plain or marbleized patterns. A wide range of pleasing patterns can be designed. Bright, cheerful, and attractive color patterns can be used in lobbies, corridors, and public areas, while restful tones can be used in bedrooms and wards.

Asphalt tile, which conforms to United States Government specifications, is rugged and long wearing, easy to clean, and does not stain or dent readily. Since it is laid in units, it is easily replaced if damaged.

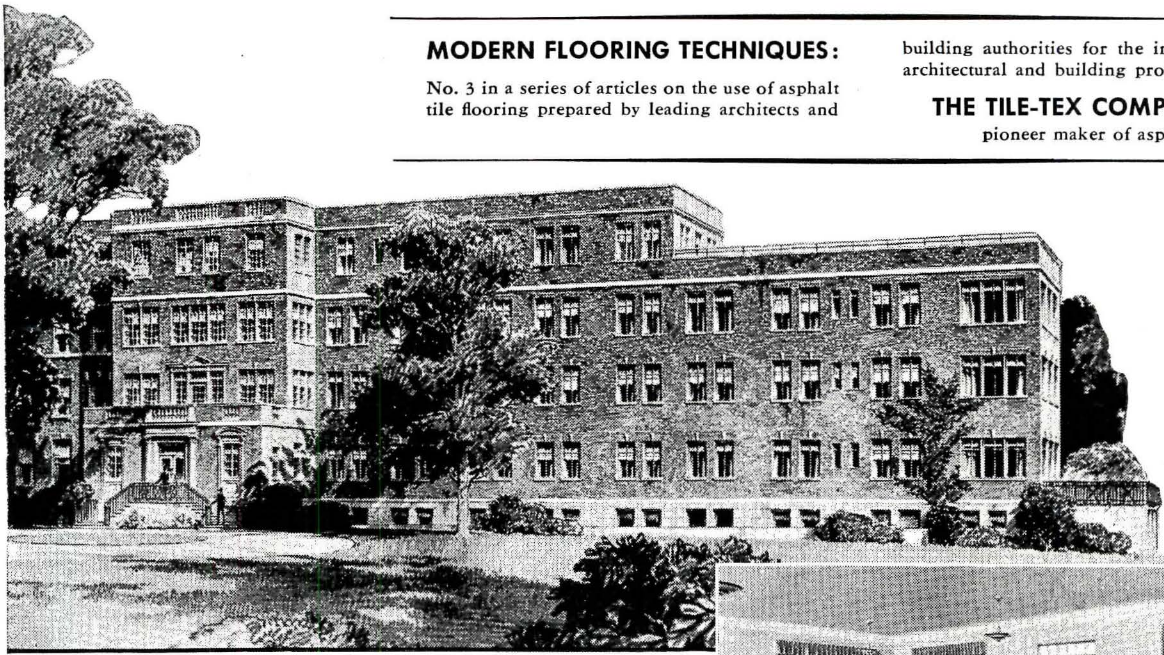
Asphalt tile can be laid directly on a smooth finished concrete slab, on, above, or below grade. It has the virtue of being unaffected by normal dampness found in the concrete slab. The transmission of sound between floors where asphalt tile is used can be materially reduced by the use of asphaltic underlayments applied on the rough concrete slab in place of the usual cement finish. This adds to the resiliency of the finished floor as well.

Asphaltic underlayment costs very little more than ordinary cement finish and in hospitals where it has been in use for seven to ten years shows no perceptible change as far as resilience is concerned. With the advent of light steel construction, the chief argument for which is its low cost, the

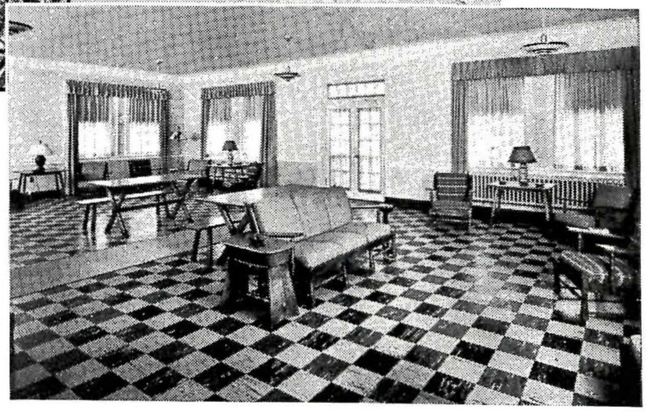
MODERN FLOORING TECHNIQUES:

No. 3 in a series of articles on the use of asphalt tile flooring prepared by leading architects and building authorities for the information of the architectural and building professions.

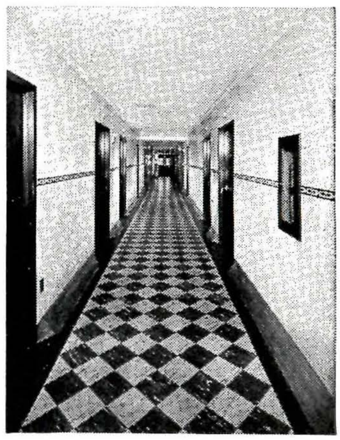
THE TILE-TEX COMPANY, INC.
pioneer maker of asphalt tile.



This rendering shows the Glens Falls Hospital, on which Milton T. Crandell was architect. Charles F. Neergaard, hospital consultant.

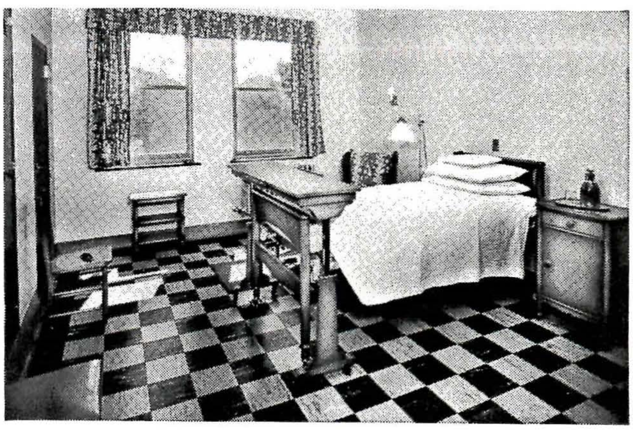


In the finished structure of the Glens Falls project, this lounge shows use of asphalt tile in large areas.



Hall in the Glens Falls structure, using asphalt tile in diamond checkerboard.

Patient's room, below, shows asphalt tile used in restful colors and checkerboard design.



question of sound transmission between floors became much more important than with the conventional arch construction.

In my hospital work, I have found asphalt tile, properly cushioned, the most satisfactory flooring for general use in most sections of the building, with the exception of service areas. Occasionally a building committee will try to cut the budget by using painted cement in kitchens, pantries and particularly in stair treads and landings, not realizing that they are involving the hospital in a semi-annual expense for repainting, if they are to keep it at all presentable.

Asphalt tile is most practical in corridors, stair halls, and stair landings. Asphaltic underlayment under asphalt tile is particularly recommended here to reduce foot-step noises and add resiliency.

In Cafeterias and Dining Rooms, greaseproof asphalt tile flooring is recommended. Color and design of such a floor should be based on functional requirements and can be laid out to show traffic aisles, table areas, etc., if desired.

In Service Areas, Toilets and Bathrooms, ceramic tile floors are preferred. For kitchen and laundry, quarry tile is particularly recommended.

In Operating and Delivery Suites the improved low cost terrazzo conductive flooring, as developed by the U. S. Public Health Service, is recommended to insure protection against explosion caused by a static spark.

To those of us who spend their lives in and about hospitals the floor is always in sight and always under foot. The less we feel it, the less we hear it, the less we spend to keep it neat and clean—if it is also attractive to look at—the nearer it approaches perfection.

* * * *

Tile-Tex Asphalt Tile floors have been in use in many of America's leading hospitals for over twenty years. It has convincingly demonstrated its ability to perform satisfactorily in hospital areas and has justly earned its reputation as a quality asphalt tile. For more information or reprints of this article, write The Tile-Tex Company, Inc. (subsidiary of The Flintkote Company), Chicago Heights, Illinois. Sales offices in Chicago, New York, Los Angeles, New Orleans, Toronto and Montreal.*

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CLASSROOM LIGHTING

Dear Editor: "Classroom Lighting Techniques," in August **P/A**, is certainly the most complete and informative article that I have seen on this much-discussed subject.

During the past year we have made a study of natural lighting suitable for elementary classrooms, and we have been unable to find authoritative data on this subject. I am sure that good results have been obtained but, as far as I know, natural lighting has not been reduced to a scientific basis, and it occurs to me that perhaps PROGRESSIVE ARCHITECTURE could do a good deed in going into this subject.

We have just completed the design of an elementary school which, we believe, will not require artificial lighting during the school day, but we do not have engineering data to guarantee this supposition.

SAM'L G. WIENER
Shreveport, La.

Dear Editor: Mr. Weed (Robert Law Weed) and the electrical engineers in this office were very pleased with the article, which we feel is comprehensive, simple, and extremely well presented as a basis for discussion with clients. We have had quite a bit of recent experience with classroom lighting, and most of that is embodied in the article.

We have been very much interested, at the same time, in methods of controlling daylight in classrooms, and methods of compensating by artificial light the loss of outside lighting on cloudy days. We believe a similar article exploring these methods would be of great benefit to those designing schools.

T. TRIP RUSSELL
Robert Law Weed & Associates
Miami, Fla.

AND THE TECHNIQUES

Dear Editor: In general, "Classroom Lighting Techniques," by my friend Carl Allen, of General Electric, seems to be an excellent and thorough job. It is well organized for reference use in an office such as ours.

It is interesting to note that it parallels, in many respects, independent studies which we have undertaken of our own installations. For these studies, we have drawn plan diagrams of various rooms, noted the type, location, etc., of fixtures, and taken foot-candle readings through the room on a grid pattern. This has been supplemented by color photographs, which show visually the light distribution, appearance of the fixtures, and color scheme.

Obviously, no article of this kind can completely exhaust a very complex subject. There are, however, some questions or matters related to it which might be added to the article or considered at a later date.

All the diagrams assume a classroom with a flat ceiling 12′ high. During the last several years particularly, all our efforts have been directed toward designing classrooms with substantially lower ceilings, generally in the neighborhood of 10′ and frequently 9′, with parts as low as 7′6″. This, obviously, poses a totally different lighting problem not answered by the solutions in the article. Many of our schools also have sloped ceilings to accommodate bilateral, clerestory lighting. Again, another problem is presented. While most illuminating engineers shudder at the thought, we believe that most elementary classrooms are used only in daylight hours, and except in very extreme circumstances, such as a tornado or an eclipse of the sun, a substantial amount of light comes in through the windows and needs only to be supplemented by artificial illumination.

We therefore propose for some schools where the budget is limited that this daylight be taken firmly into account and two or even sometimes only one row of fixtures be installed in locations remote from the glass. At night this may mean, along the window wall, a less than desirable level of illumination, but we believe this to be of little consequence when school starts at 9:00 a.m. and is dismissed at 3:30 in the afternoon.

While Carl Allen would probably foam at the mouth at the thought, I believe that consideration should be given to the studies and conclusions of Professor Tinker, of Minnesota, who has reached a number of interesting conclusions on proper lighting intensities. His studies are supported by work done in connection with the lighting at the Harvard Law Library, where the final installation was 20 foot-candles of incandescent lighting. While this latter probably represents a special condition, Tinker's conclusions are based on rather broad studies, and he is sharply of the opinion that high levels recommended by lamp manufacturers are way beyond the point of diminishing returns. Whether he is right or wrong, the controversy seems to me to deserve full attention.

Further studies on lights presumably should include a discussion of fixtures themselves, particularly with reference to material, as they effect maintenance. We, for instance, avoid wherever possible the use of glass or plastic. Former needs constant cleaning, and the latter tends to warp.

These comments are in no sense a criticism of an excellent piece of work, but are intended to suggest possible future lines of study.

PHILIP WILL, JR.
Perkins & Will
Chicago, Ill.

Author's Reply: *Mr. Tugman has shown me a copy of Phil Will's letter to you. It nostalgically reminds me of some of the interesting tablecloth doodling sessions that Phil and his partner Larry and I have had on the subject of school lighting. I certainly agree with Phil that there is much yet to be said on the subject of school lighting, especially regarding the techniques of handling and controlling natural daylight.*

The article does not overlook daylight. For example, in the cost equation, while a typical classroom has a minimum of 1000 hours of use per year, the lights were assumed to be on only about 750 hours of the year. The article also points out that the fixtures near the windows should be switched separately from those in the inner part of the room and that the window row can be moved a foot or so in to take into account the greater prevalence of light close to the windows. At the present time, I am digging through a wealth of material to try to illustrate in simple form the various daylight techniques which have been developed for classroom lighting. As I can see it now, the biggest problem outside that of the variability of daylight is how to deliver sufficient light where you want it without, at the same time, ending up with excessive brightness in the students' field of view.

Regarding Professor Tinker, may I suggest that you keep your eye out for the September issue of Illuminating Engineering, *in which a paper by Professor Tinker is scheduled to appear. This, to my knowledge, is the first time that Professor Tinker will have laid himself open to rebuttal, and I believe that you will find the comments and discussion on Professor Tinker's paper to be the interesting feature of that issue of* Illuminating Engineering.

C. J. ALLEN
Lamp Dept., General Electric Co.
Nela Park, Cleveland, Ohio

NO WORKS OF ART

Dear Editor: Why not show us more of the fine New England and New York architecture being built instead of so

(Continued on page 10)

(Continued from page 8)

much Western, Californian Modern—which is not very attractive, and restful. I think your Kawneer factory building (July 1948 **P/A**) looks terrible—childish. Let's go back to the good old days when our master architects designed buildings that were beautiful, works of art.

W. STROLL
New York, N. Y.

PLANNING NEEDS ARCHITECTS

Dear Editor: Since my college days at the University of Michigan, when it was the regular habit of the architect, draftsman, or office boy to clip and file the many fine monographs from the pages of old *Pencil Points*, I have been a reader of your magazine. At that time I was enthusiastically studying architecture. Today, after graduate planning study at Harvard, I am employed as the first City Planning Engineer the City of Marquette (c. 16,000 population), Michigan, has had.

During the past few years, particularly since the beginning of the "Postwar Planning" days which began in or about 1943, I have read with considerable misgiving the verbal pot shots which have been fired with increasing velocity between old-line architects and many war-born planners. As a planner I am jumping into the fight, not with the intention of joining sides or mobilizing a third party, but with the desire to clear away some of the debris and to bring in some much needed fresh air.

Some writers have described city planning as architecture which in its highest form strives to reflect our cultural attributes in the third or fourth dimension. Others show planning as a process of untangling and straightening out of social and economic maladjustments caused by the rapid advance of the machine age. Both are commendable aspirations. The former presents the wider perspective with the desire to show the best of our human achievements through city building. The latter would continue to build future environments by rectifying errors resulting from past shortsightedness.

Briefly, one ideal is to attack city planning from an over-all development vantage point and the other to approach the action stage from a piecemeal basis. In actuality, new towns, such as the ones now being created in the overspill areas of London and our war-originated bomber-cities, lend themselves well to complete architectural treatment and unit planning. However, our older cities, suffering from (the planner's coined phrase) hardening of traffic arteries and the like, need replanning which largely falls in the second category. Consequently, both theories are valid and can be properly used.

It is clear then that an architect with a freshly-cut velum can exercise greater imagination in drafting a new series of structures than he can on a remodeling job of an old place with poor framework. The limiting factor in remodeling, of course, is money. If the client can only afford to redo one wing of his house, the remainder will continue to reflect the work of another era. Likewise in city planning, slum clearance and rehousing in new projects changes but one wing of the city. Thus, with new materials and methods flowing faster from factories than tax dollars can be diverted to city rebuilding, we have a resultant maze of styles, sizes, and shapes.

The planner has the tools of zoning, building codes, eminent domain, subdivision ordinances, and architectural control at his disposal. If he knows how to use these tools he can go far toward realizing the two aims mentioned earlier.

These tools are exceedingly important

(Continued on page 12)

DOUBLE DUTY INSULITE

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DESIGNED BY
L. MORGAN YOST, Architect
419 Richmond Road
Kenilworth, Ill.

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Refer to Sweet's File, Architectural Section 10a/9

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(Continued from page 10)

to the architect as well, and in each community, no matter how small, it is the responsibility of the architect to help to forge these tools that the future of his community may inherit the fullness of his architectural expression. So often indifference on the part of architects in these matters has resulted in their work being stifled.

Even in Marquette as building codes and zoning ordinances are being discussed at open planning meetings, local architects are too busy under their Dazor lamps working out sketches, for churches and shops for other neighboring communities, to take part in these important discussions of forging city planning tools. Doubtless, this is not an infrequent occurrence throughout America.

Without getting into the hocus-pocus of planning terminology, for which I have no use, I feel that the strongest plea that an architecturally conscious planner can make is to call architects to rise from their midnight jobs and participate in molding a finer community which presents itself from their office windows by engaging in or inaugurating planning action in their own locality that someday that locality will be a true expression of the highest ideals of all its people.

GEORGE N. SKRUBB
City Planning Engineer
Marquette, Mich.

PLANNERS' SYMPOSIUM

Dear Editor: In your P. S. on the "hocus-pocus" of planning, in the July edition, you maintained that the chief difference of opinion between the Churchillians and the Adamsites revolved about whether "the planning process is an end in itself" or whether "it must culminate in a creative act." If this is the principal issue, and if Professor Adams of M.I.T. believes that paper plans are the sole outcome of the process, then it is news to me.

So that his position could be more fully presented, I suggest that Professor Adams, like another man in American history, be allowed to speak for himself. Perhaps this could be part of a symposium on the bases, goals, and philosophies of planning, with specific and pointed questions. Since much of the confusion occurs as the result of language, there might be a definition of terms.

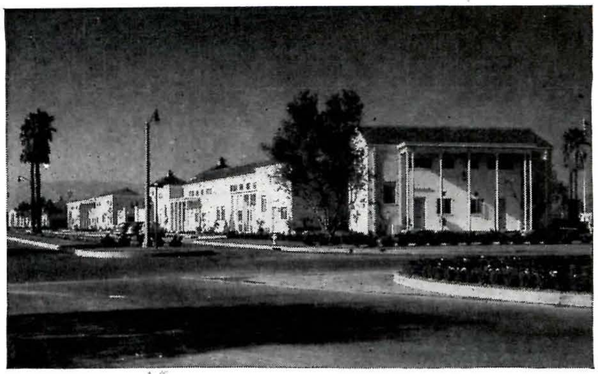
I have the feeling that Professors Adams and Greeley and Mr. Weinberg are not poles apart, as you have implied. At least from their lectures, it seems they do agree on the need for balanced, long-range planning carried out by a continuing staff, with the support of an active public. Neither Adams nor Weinberg puts his faith in statistics without inspiring schemes, or vice versa.

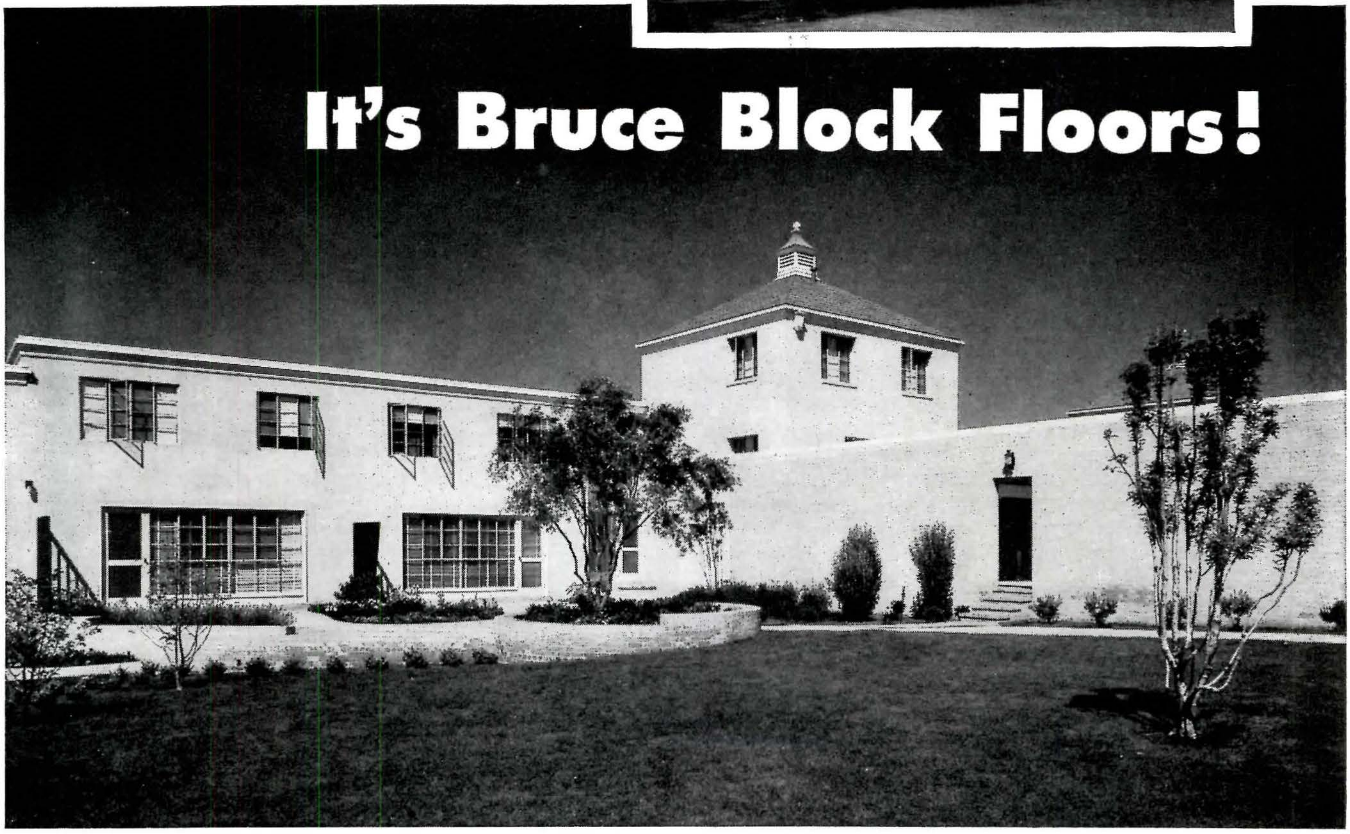
I think that you could easily find examples of down-to-earthness in planning practice and literature. At least one of the aims of a large segment of the planning coterie is to convey the values and aims of coordinated development to the people in a popular fashion.

The planner or architect who works in a vacuum without regard for the economic, social, and political elements is tantamount to the chemist experimenting without the progress in allied fields, such as physics, mathematics, etc. Slums are not physical or esthetic problems alone; large-scale redevelopment entails huge economic questions with serious social implications. I could go on, but would rather leave the discussion to the proposed symposium.

SEYMOUR STILLMAN, Assistant Planner
City Planning Commission
Buffalo, N. Y.

In These Modern West Coast Apartments





Top, PARKLABREA, Los Angeles • *Above,* PARKMERCED, San Francisco

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STORE MODERNIZATION

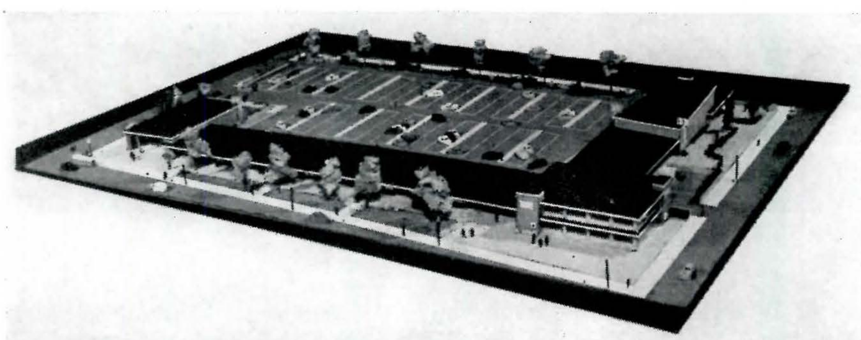
Despite the impressive total of store construction during the past year, a shortage of retail space in 81 percent of American cities and an appreciable rise in rentals are reported by field researchers of National Association of Real Estate Boards. Since the continued demand for well-located stores makes any drop in prices improbable, the renovation and modernization of existing retail establishments appears feasible to an increasing number of owners and merchants.

This heightened interest was evidenced recently by the attendance of more than 22,000 retailers, distributors, owners, chain store executives, planners, builders, contractors, etc., at the Second Annual STORE MODERNIZATION SHOW in New York. New products, new ideas for store interiors and selling aids were shown in some 75 booths of the manufacturers and suppliers of building materials and equipment. Attention was directed to successful modernization jobs completed in the past year through display of winners of a national competition conducted through Chambers of Commerce, which entered the best work in their towns.

In addition to a display of latest improvements in retail merchandise backgrounds, experts in selling, store design, and display were called in by John W. H. Evans, director of the SHOW, to lead discussions and answer questions at a series of clinics. The topics of these sessions were: "Store Layout and Traffic," "Store Lighting and Color," "Store Displays and Fixturing," "Store Fronts," "Budgeting for Modernization." The clinics were well-attended and beyond discussion of immediate problems of store modernization they touched on trends in retail store design. Chairman of the series of clinics was Charles M. Edwards, Dean of the Graduate School of Retailing, New York University, and Prof. Hans E. Krusa of the School acted as moderator.

Store planning means planning for constant motion. Morris Lapidus, architect, New York, pointed out during the "Store Layout and Traffic" clinic. He explained:

"All too often the plan of the store is worked out as a static thing. There are a number of orbits of motion which must be considered before the final plan is achieved. The first . . . is the movement of merchandise from receiving to marking, to stock rooms, to racks and bins, and finally to the customer . . . or back to wrapping and shipping. The second is the movement of the customer from the time he enters the door until he leaves the store. We must consider . . . his contact with the merchandise, his exposure to displays, relationship of customer to salesman, movement of customer to such spots as credit desks, cashiers, wrapping stations, rest rooms, and other conveniences the store might offer. Another orbit of motion is that of the salespeople, whose movements from the time they come into the store in the morning until they leave at night must be carefully considered in relation to selling and personnel problems."



To emphasize planning for the future, a competition for students of architectural schools to design a one-block "Shopping Center of the Future," was conducted in connection with the 1948 Store Modernization Show. First prize, $500, went to E. R. Shackleton, D. G. Crounse, and E. B. Bruce of the senior class at Syracuse University. The team's solution, presented as a scale model, is shown above. Teams from Cooper Union, New York, and University of Illinois won the second and third honors, respectively. They were judged by a jury of store designers, merchants, architectural magazine editors, and educators.

Classify modern lighting as a sales investment rather than as an expense, those attending the "Store Lighting and Color" clinic were advised by Carroll L. O'Shea, illuminating engineer, General Electric Company. Scoffing at those who buy lighting without regard for the function light must perform in their stores, he explained that a lighting system must attract shoppers, must help them to see merchandise quickly and accurately, must create a pleasing atmosphere in the store. He reminded those who expect to modernize their stores:

"Remember the thing you are buying in a lighting installation is the light delivered to the sales or display areas. The fixtures, lamps, wiring, and wattage used are only the means to the end —light of the proper quantity and quality . . . One of the first things to determine is what effect you wish to

(Continued on page 16)

Store modernizations throughout the country were reported at the Show through a competition in which Chambers of Commerce submitted best jobs in their cities and towns. Judged best by a professional jury and awarded a $250 prize was Rifkin & Grannick specialty shop in Trenton, N. J. (before-and-after photos shown at left) by Victor Bohm, architect, New York and Trenton.

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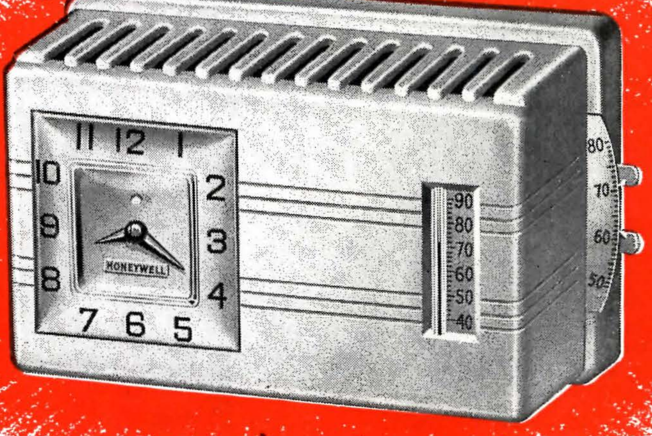

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Progress Report

(Continued from page 14)

create, or what merchandise is being sold or displayed under your lighting system . . . If you are not sure which lamp to use, run a few tests yourself in your own store, or ask someone who knows . . . If you feel that, because of the cost involved, you can't do your store lighting right—leave it alone until you can."

Customers like to see and handle merchandise and to a considerable degree make their own selections, Nelson A. Miller, Chief, Marketing Division, Office of Domestic Commerce, Washington, D. C., observed during the "Store Displays and Fixturing" clinic. He continued:

"This principle, of course, permits the customer to spend much of his own time in the selection of merchandise . . . at the best expenditure of time by store personnel, and hence at less expense to the store. While this principle is well-established and finds high acceptance on the part of customers, the planning of facilities, layout, and equipment for attaining this end requires a good deal of thought by the retailer and perhaps some experiments in certain types of equipment . . .

"The Department of Commerce has prepared a Store Modernization Check List. The purpose of this is not to tell you how to modernize your store but to tell you what the objectives sought should be and to give you a detailed list of facilities that might be improved . . . The over-all modernization plan should be in keeping with a pre-determined set of retail store policies designed to establish a store character or store identity in keeping with the policy of the retailer in serving a specific class of customers . . . The store front should be consistent with the store interior and both should be consistent with the general store policy."

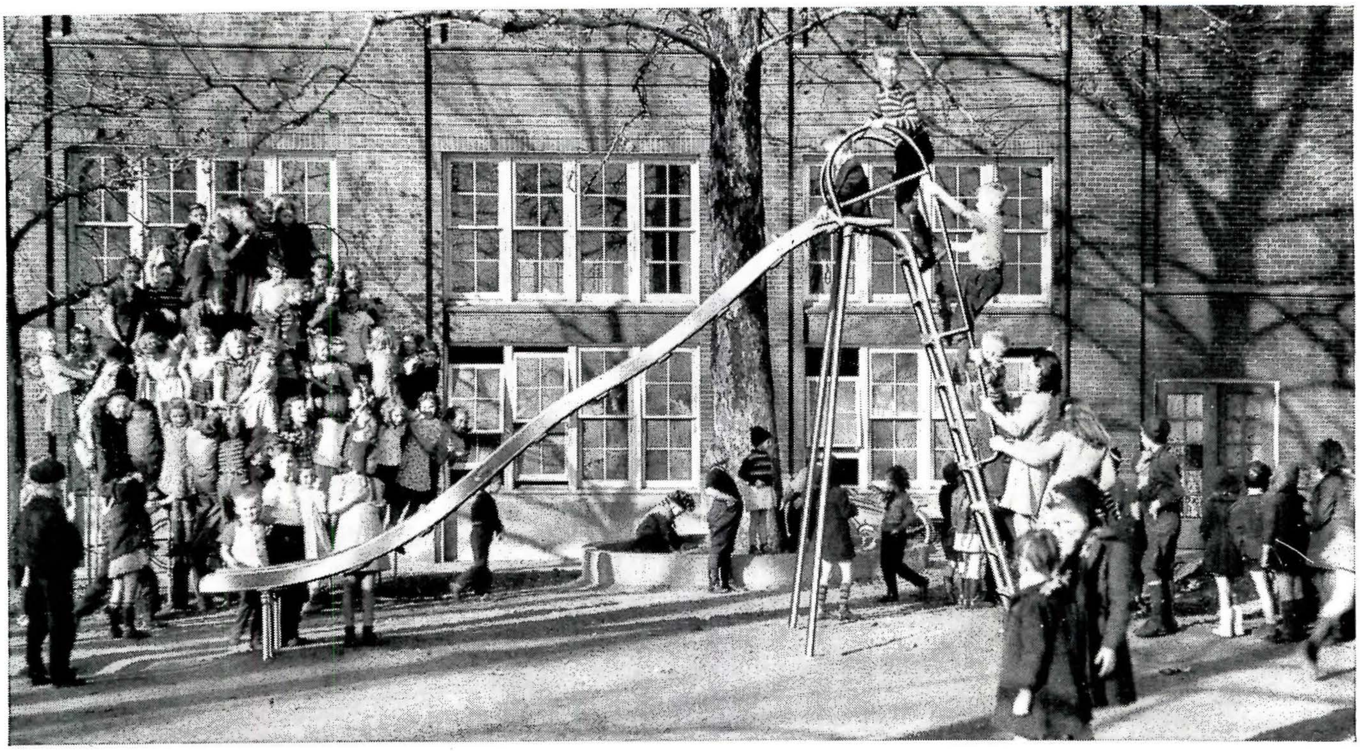
The ideal set-up would be to have a minimum of fixtures, José Fernandez, architect, New York, told the same clinic group. He agreed with Miller that selection of merchandise by the customer, which he noted was accepted during war years when sales clerks were scarce, has become popular. But he urged careful organization of the store and creation of fixtures to display merchandise to best advantage—and accessibility.

"The average present-day designer wants to design fixtures that are unobtrusive, efficient, and inexpensive. There are many materials that may be used, glass being at the head of the list. Today we have non-shatterable, non-scratchable, laminated, heat-resistant glass . . . but I believe this could be improved by minimum thickness, thus reducing weight and cost. Plastics are light, but somehow their cost is too high at present and they lack abrasive resistance.

"There are two common failings: the emphasis given showcases, counters, etc., where the design is too elaborate and the merchandise does not stand out properly; and the improper housing or display of merchandise (inefficient handling, improper sizes of drawers, shelves, cases, etc.)."

Sales fixtures have three jobs to do: to store merchandise, to display all or part of that merchandise, to protect merchandise, Morris Ketchum, Jr., architect, New York, told those discussing "Displays and Fixturing." He added that not all fixtures have to perform all three functions, as in some types of stores shoppers are encouraged to handle merchandise, but

(Continued on page 18)



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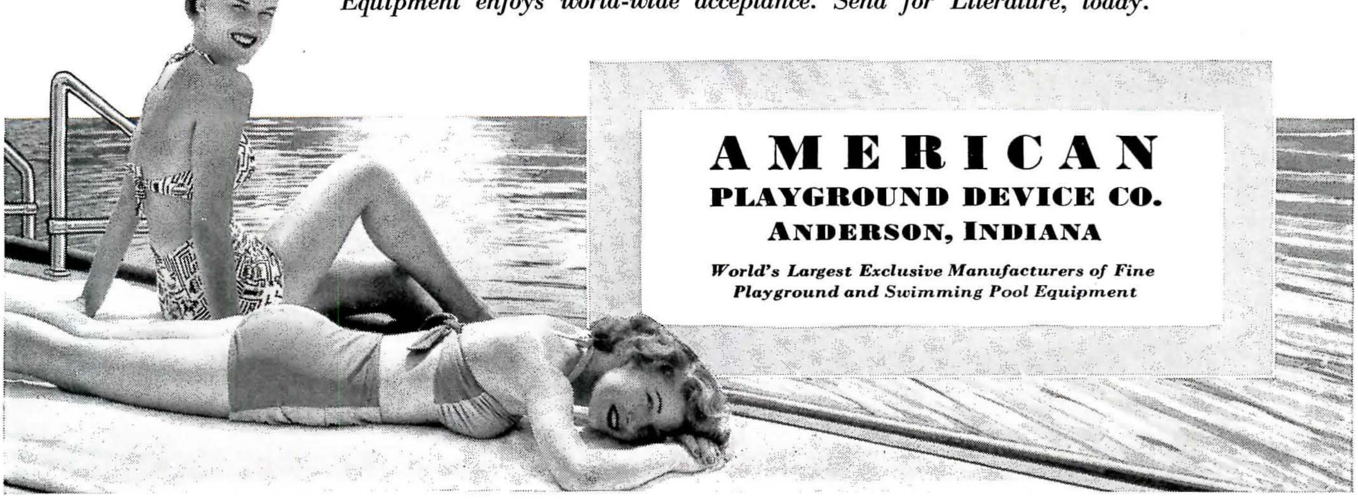

(Continued from page 16)

the average sales fixture in the average store consists of a display layer set on an enclosed storage unit.

"The size, shape, and character of the merchandise will logically determine the shape, size, and function of the sales fixture," Ketchum explained. "Small precious objects need display and protection . . . Folded stock needs organized storage space and a measure of protection . . . Hanging stock needs to be racked . . . Packaged goods are self-protected and need only to be properly shelved or racked, to form an attractive display . . . Many items of merchandise need little or nothing in the way of a sales fixture.

"Displays and display backgrounds have both functional and aesthetic value. First, they act as signposts on the indoor shopping street. A sales department can be easily identified by a glimpse of some dramatic focal display. Second, merchandise always appears more attractive and interesting when shown in realistic fashion . . . Feature displays are a wonderful visual stimulus to impulse buying. They can often be divorced from the particular sales departments they represent and placed at strategic points . . . (to) remind customers of the scope of the store merchandising program."

There has never been a completely successful store modernization project of any size, large or small, that was not preceded by a comprehensive, carefully prepared program of requirements, Daniel Schwartzman, architect, New York, told the clinic group considering "Planning and Budgeting for Modernization." Explaining his statement he added:

"The preparation of a comprehensive program of requirements should be the joint effort of the architect and the store operator. Neither of them can properly prepare this essential basis for a complicated project without the benefit of the other's counsel, and a complete interchange of ideas and information from the very beginning . . .

"It makes no difference who prepares the necessary factual data and analysis . . . as long as it is carefully done and complete . . . At this point it should be made perfectly clear that the only one who can interpret this data in dimensional requirements is the architect and the architect alone—because it is he who has been trained as a space designer . . .

"The essential factual elements of a typical program (in addition to the general statement of store policy and the aptitude and background of the store operators) are as follows: projected net yearly sales volume; percentage of that sales volume to be used as a basis for rental charges (the key to the entire question of how much we can afford to spend on the building project); net dollar volume per square foot of sales area; ratio of sales area to non-selling area (it is here that the architect can perform a most valuable service in increasing the sales area as practicable)."

Agreeing with Schwartzman that a careful Master Plan must precede any modernization effort, Jay D. Runkle, vice president and general manager of Crowley, Milner & Company, Detroit, admonished the same clinic group with:

"The very first question that must always be asked before any considerable expenditure is, "Is this necessary?" Management, he said, also must consider the effect of a considerable expenditure on working capital of the company. He added:

"In our own store we have consistently financed our improvements out of earnings, and we did not permit our capital or expense outlays to become burdensome in any one year."

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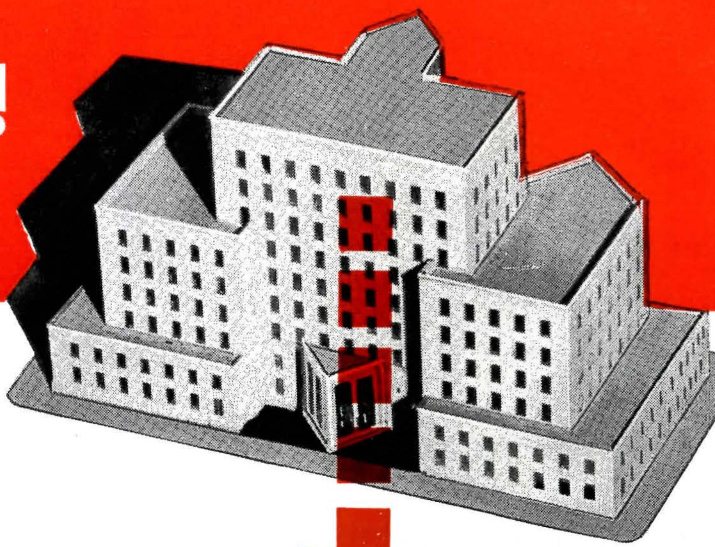

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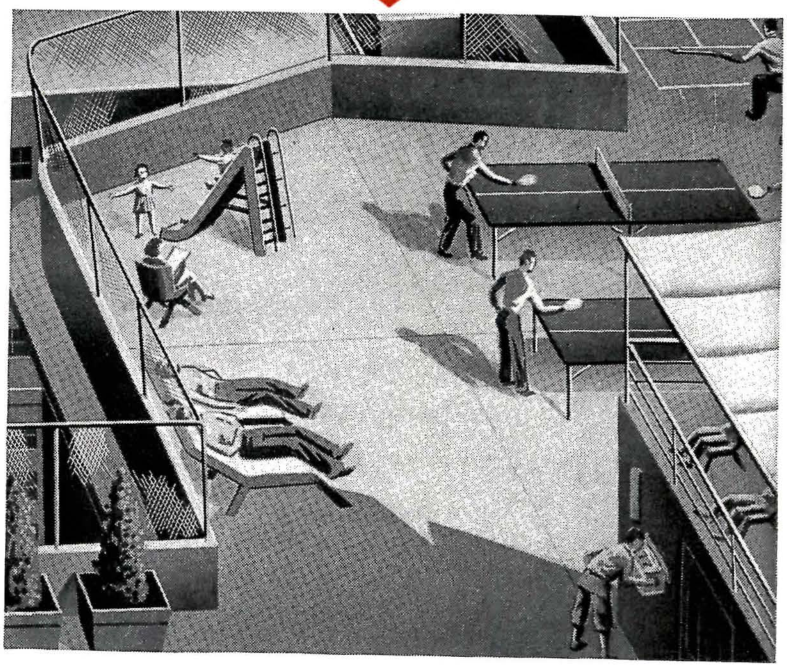

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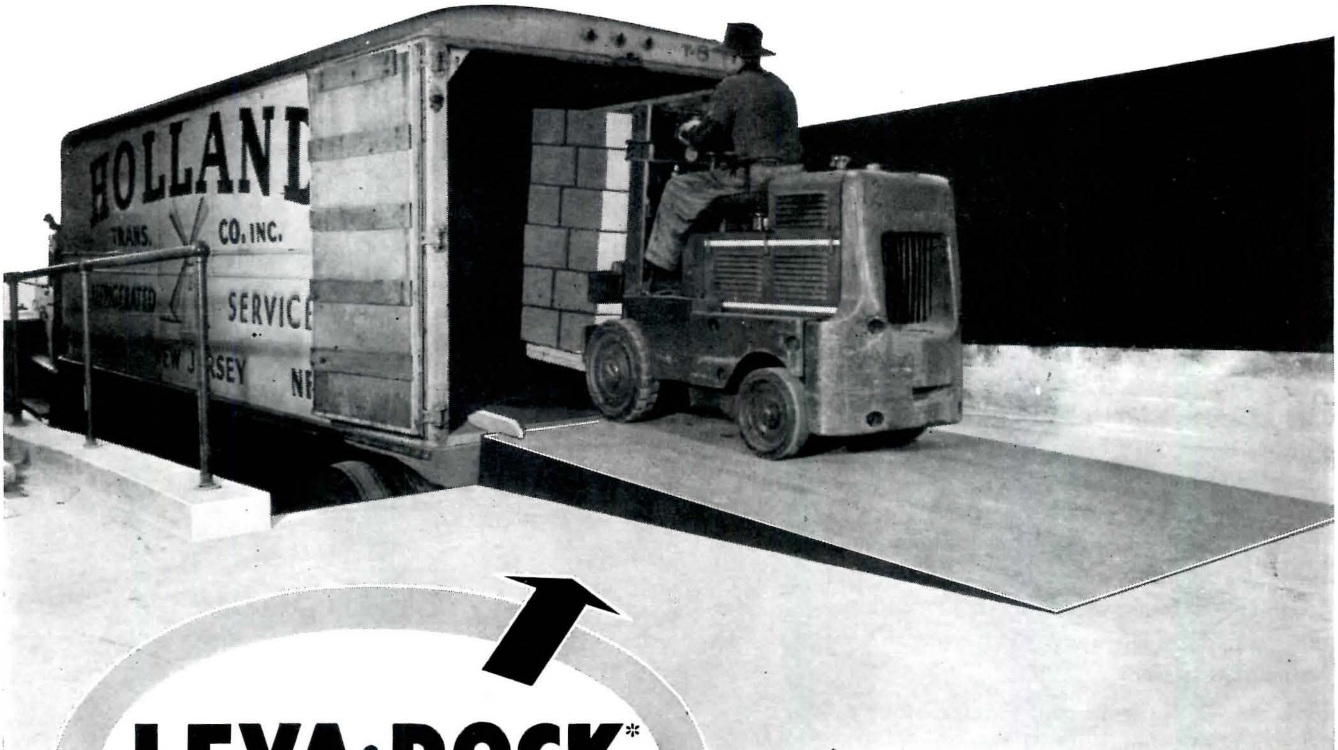
Construction idea for plants and warehouses



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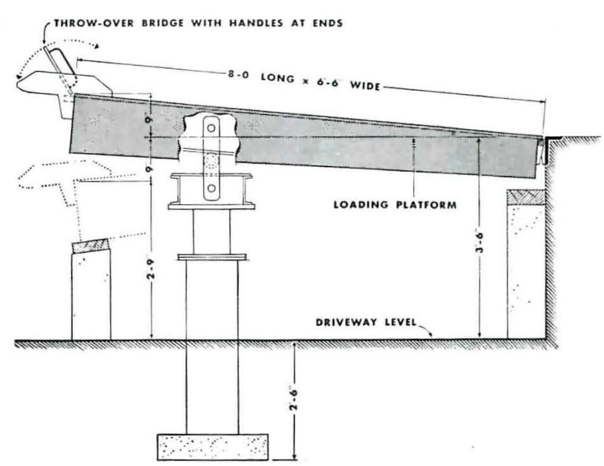

The Leva-Dock moves up and down with varying truck bed levels—permits loading directly into trucks or trailers

Loading and unloading trucks and trailers presents a tough loading dock problem because (1) truck bed heights vary as much as 12 inches, and (2) the truck bed moves down or up as loading and unloading progresses. This problem has been made very serious by the use of power vehicles handling heavy loads.

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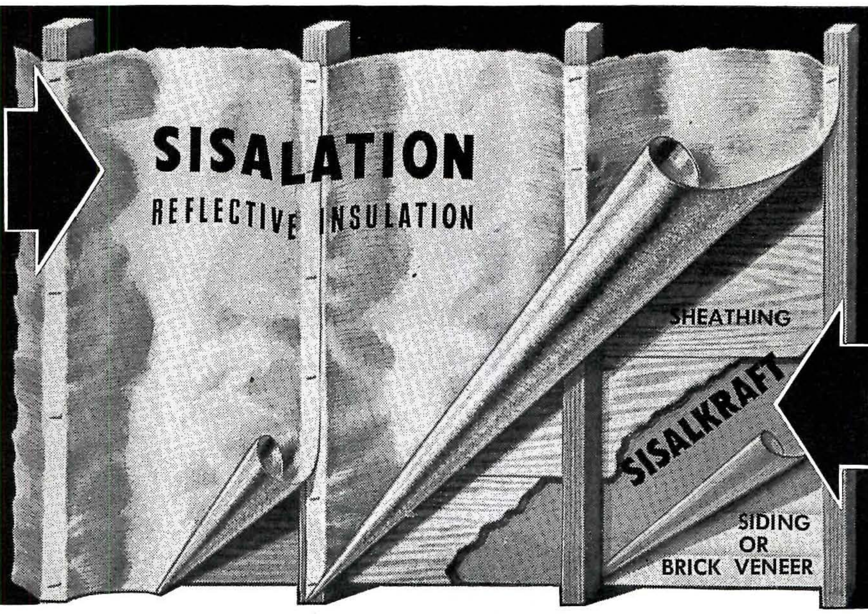

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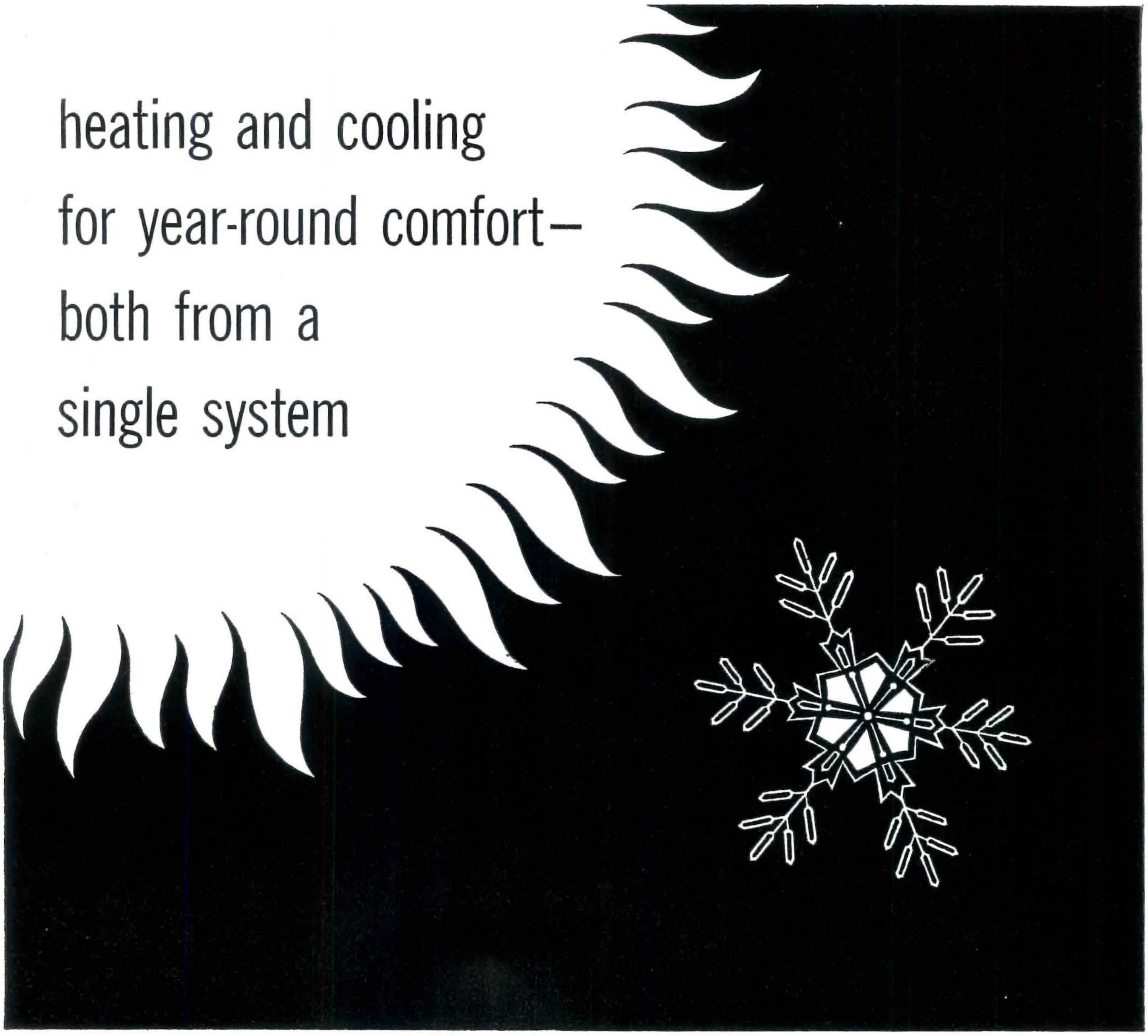

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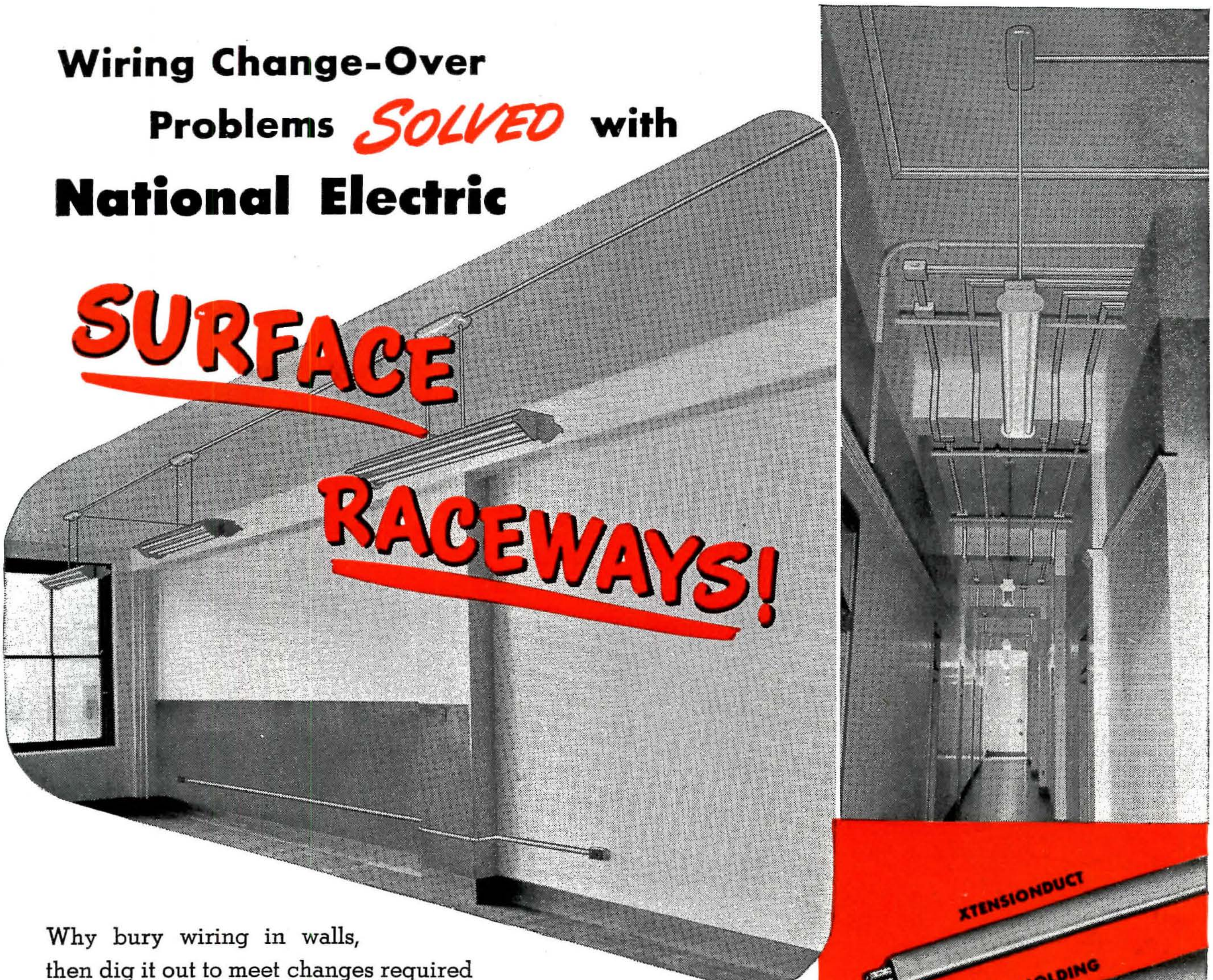

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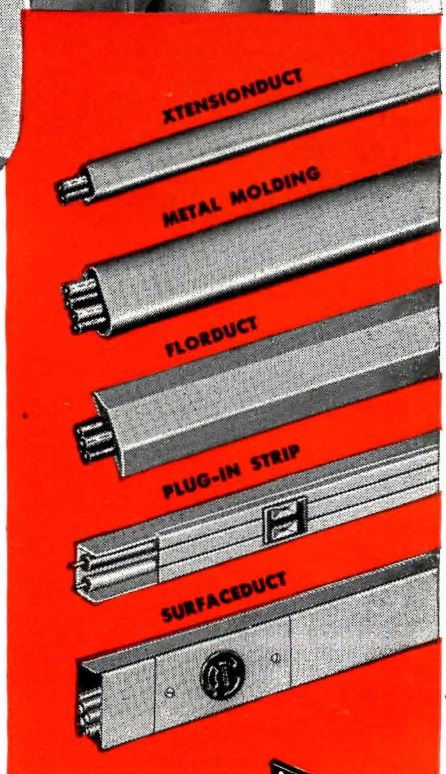

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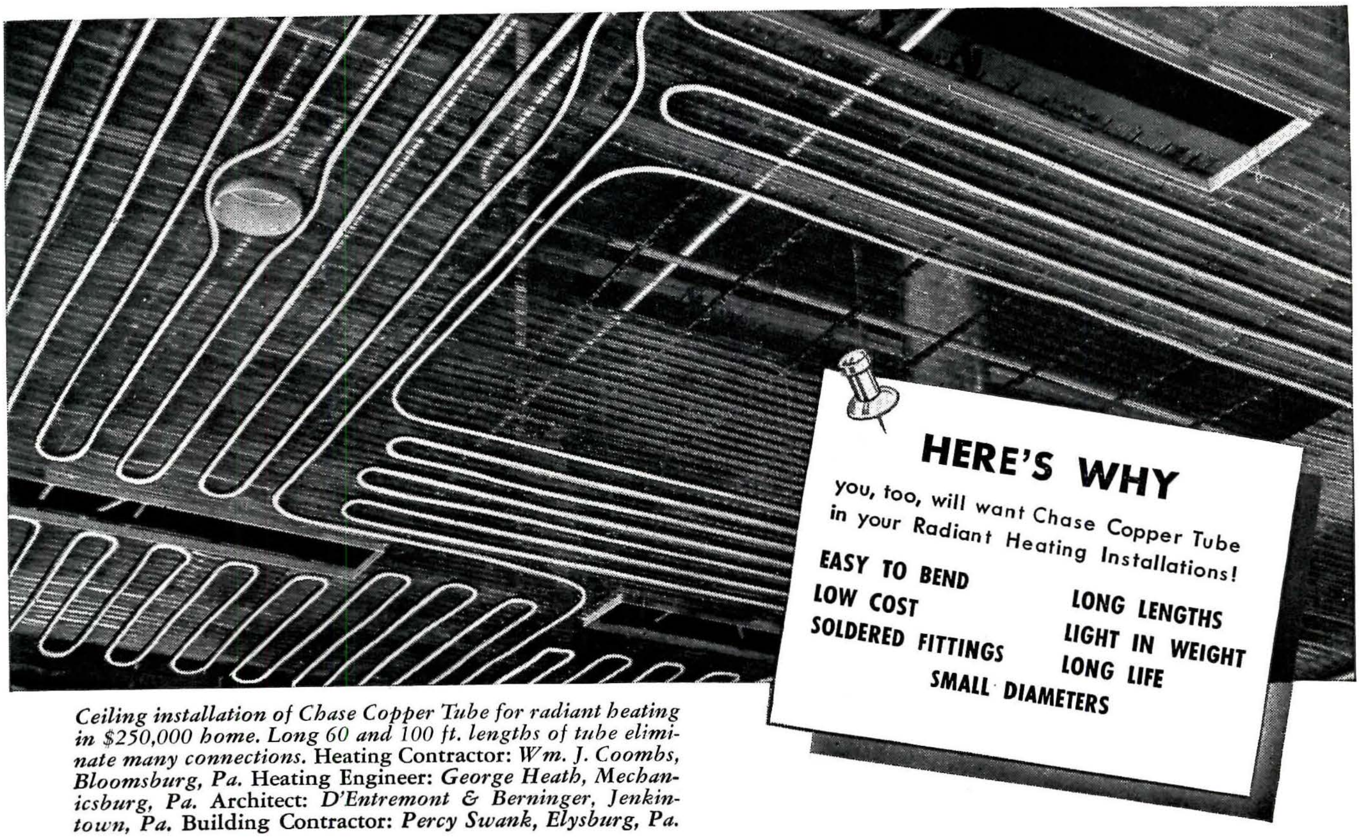

Ceiling installation of Chase Copper Tube for radiant heating in $250,000 home. Long 60 and 100 ft. lengths of tube eliminate many connections. Heating Contractor: *Wm. J. Coombs, Bloomsburg, Pa.* Heating Engineer: *George Heath, Mechanicsburg, Pa.* Architect: *D'Entremont & Berninger, Jenkintown, Pa.* Building Contractor: *Percy Swank, Elysburg, Pa.*

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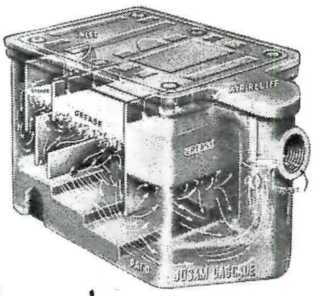

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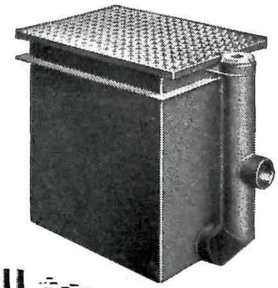
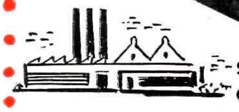
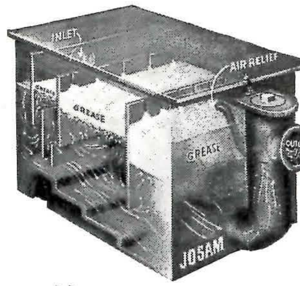




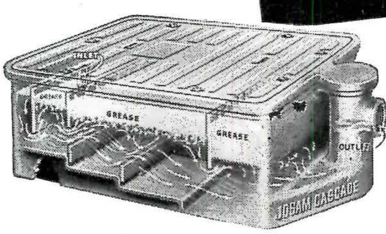
Series "JP" and "JR" Grease Interceptor. All steel for Commercial and Industrial Service, capacity up to 150 GPM; for installation recessed in floor.



Series "JN" Grease Interceptor. All steel for Commercial and Industrial Service, capacity up to 150 GPM; for installation on floor.

WHEN THE PROBLEM IS GREASE

THE ANSWER IS Josam CASCADE GREASE INTERCEPTORS

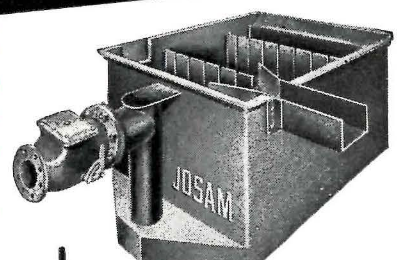


Series "JL" Grease Interceptor. All cast iron for Dishwasher Service, capacities to 30 GPM; for installation on floor or recessed in floor.

Josam

FLOW CONTROL *Guarantees* MAXIMUM GREASE INTERCEPTOR EFFICIENCY

A controlled rate of flow to the interceptor is necessary to assure 90% or more grease interceptor efficiency. For this reason, a Josam Flow Control which governs the rate of flow is furnished with every Josam Interceptor.



Series "PH" Grease Interceptor. All steel with skimming valve and skimming trough for Packing House and Industrial Plant Service, capacity up to 1000 GPM.

The plumbing drainage system of a building is only as good as its pipe lines. And when the pipe lines fail to function properly, every activity in the building can be interrupted. A common cause of pipe line trouble is *GREASE* . . . because *GREASE* in waste water builds up, layer upon layer, on the inside of the drain lines until it eventually clogs the pipes.

In homes, restaurants, hospitals, hotels and schools where GREASE is a by-product of cooking; in industrial plants, rendering plants and packing houses where GREASE and fats are a costly hazard . . . Josam GREASE INTERCEPTORS eliminate this hazard completely. Josam makes a type and size for every purpose, complying with local code regulations everywhere. For complete protection against GREASE clogged waste lines, rely on JOSAM GREASE INTERCEPTORS. Their cost is so little compared to the permanent protection they provide.

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Thanks to a Farsighted Contractor Who Installed "Oversize" Steel Pipe

THINGS are all serene in this happy home. It began with a farsighted contractor, who installed steel water piping of adequate size.

He foresaw that sooner or later there would be extra outlets--a third-floor bathroom, a basement shower, another outside faucet for the hose. He knew how expensive and difficult it would be eventually to repipe the house. He realized too, how annoying it is, when you start to wash your hair, to see the water die down to a drip because somebody downstairs turns it on, too.

So that's why he insisted, when the house was built, that the pipe from the street be amply oversize. He saw to it that the meter was no bottleneck. And he put in pipe to all outlets big enough to insure a free flow of water at all times--big enough to prevent hammering, fading and back siphoning

Proper sizing of steel pipe is the answer to an adequate supply of water--a sign of a carefully designed, well built house.

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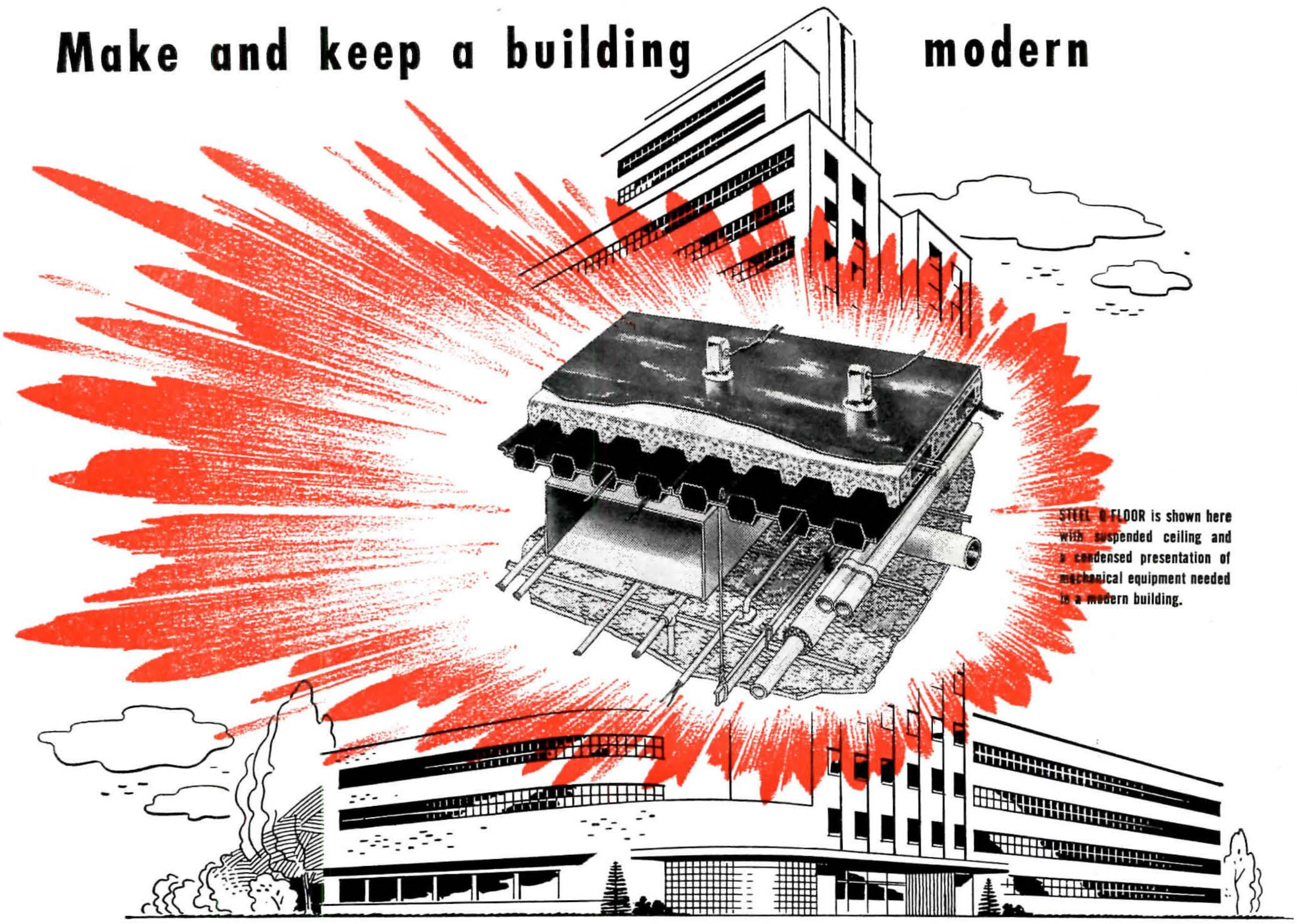
Make and keep a building modern



STEEL Q-FLOOR is shown here with suspended ceiling and a condensed presentation of mechanical equipment needed in a modern building.

The success of a building depends upon how well it meets modern needs and how many decades it can continue to stay modern.

Look at the cross section of this modern floor. The steel channels are **Q-Floor.** This subfloor is right in line so far as cost goes. It costs less than the carpet to cover it. But consider what it does for your building.

First: **Q-Floor** cuts construction time 20 to 30% because it comes pre-cut. Two men can lay 32 sq. ft. in 30 seconds. Construction is dry, noncombustible, clean. **Q-Floor** becomes a platform for all other trades as soon as laid. Therefore, all work moves faster. This time saved results in construction money saved and also in earlier revenue.

Second: **Q-Floor** makes possible an electrical outlet on any six-inch area of the entire exposed floor. The channels are crossed over by raceways carrying wires for every conceivable electrical service. An outlet, anywhere, at any time, takes literally only a few minutes. An electrician drills a small hole, without trenches or fuss, installs the fitting.

This permits you to locate outlets and partitions *after* tenants move in. Such *permanent flexibility* of floor layouts enables a building to keep *permanently modern*—in its facilities.

You can see **Q-Floor** Fittings at any General Electric construction materials distributor's. For data on the suspended ceiling (no pre-set inserts needed); on its light weight (less than forty pounds per sq. ft. including ceiling); on the four-hour fire rating; on the availability of steel (remember—you must allow time for demolition and excavation, so the steel *will* be ready) call a Robertson representative or write:

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Fenestra Fireshield Swing Doors are sturdily made, expertly finished, to make them suitable for many uses . . . entrances, exits, stairwells, communicating doors, etc.—for apartments, stores and other commercial buildings and factories, to mention a few. The door illustrated here can be right or left hand, swing in or swing out, with metal or glass panel, with or without muntin.

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LOW COST—we are able to offer these doors at prices below many now on the market because standardization has streamlined factory production. Add the benefits of installation economies and you can see why these doors effect important savings.

UNDERWRITERS' LABEL. Doors of same design are available with Underwriters' B Label.

For full information on these doors, as well as counterweighted doors, call the nearest Fenestra office, or write to Detroit Steel Products Company, Dept. PA-9, 2253 East Grand Blvd., Detroit 11, Mich.

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Today it is known that noise and poor hearing conditions make people uncomfortable and lower their efficiency. This has made sound conditioning as important as good lighting in the specifications for modern buildings—commercial, school, hospital, or church. *That is why the number of new building installations of Acousti-Celotex sound conditioning has more than doubled in the last two years.*

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A building with Acousti-Celotex sound conditioning is easier to rent because it provides a better working environment – reducing employee fatigue, increasing accuracy and insuring a greater volume of work. *This is one of the reasons why more buildings of all kinds have been sound conditioned with Acousti-Celotex* products than with any other material.*

third: **THAT SOUND CONDITIONING MATERIALS ARE NOT ALL ALIKE...**

Two materials may have identical Noise Reduction Coefficients, yet differ widely in use and application. Celotex acoustical products include materials for every type of noise reduction or acoustical correction problem. *That is where our quarter century experience in sound conditioning may be a real help to you . . . in selecting the right product for a particular specification.*

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YOU ARE INVITED to submit your acoustical problems to a trained sound technician—your nearest distributor of Acousti-Celotex products.

His judgment gives you the benefit of the accumulated skill of a quarter century in sound conditioning. Write us for the name of your nearest distributor in the United States or Canada. In the meantime, you'll find Acousti-Celotex products listed in Sweet's File, Section 11-A3. Sound conditioning is a sound investment.

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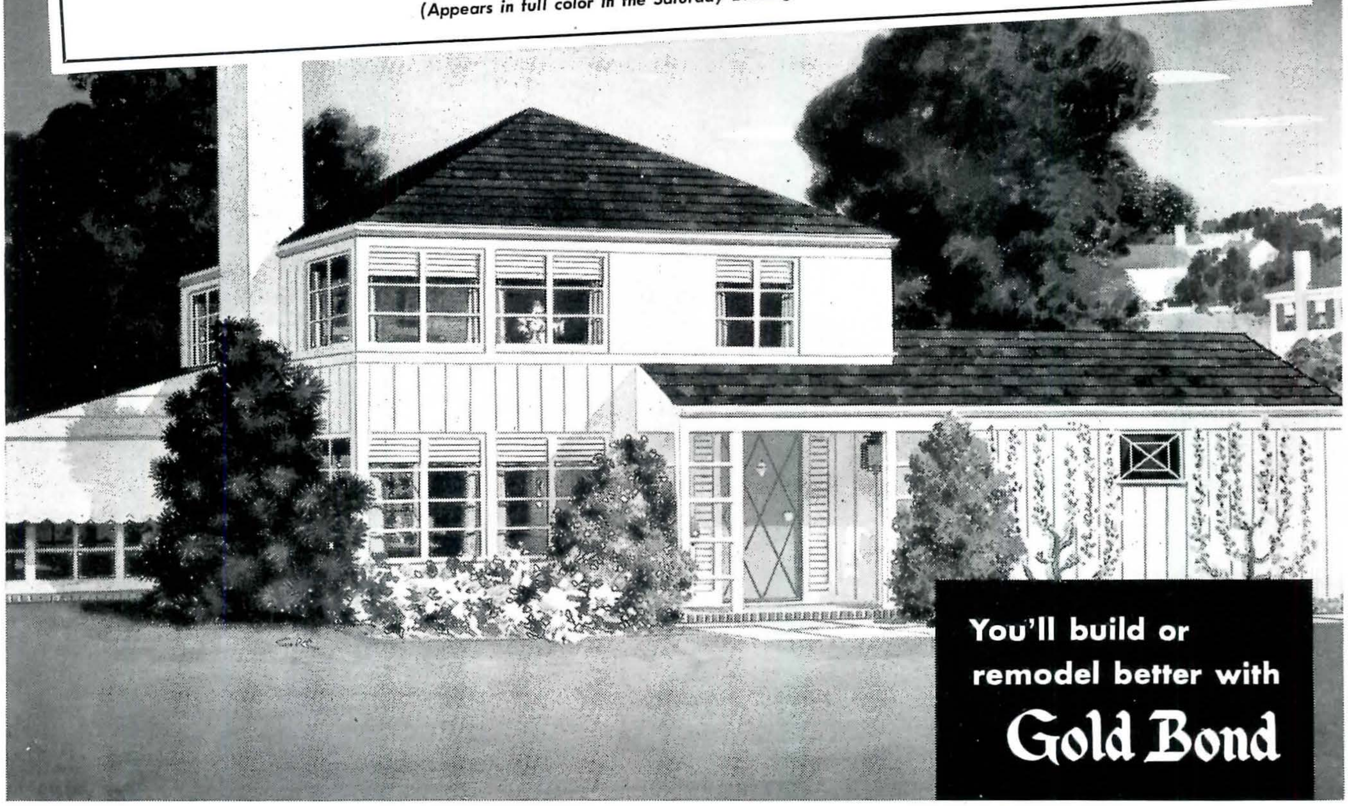
(Appears in full color in the Saturday Evening Post August 21st.)



For the newest in building and remodeling products, see your local Gold Bond Dealer first!

The house that fooled our own best friends

Our friends thought we'd come into a fortune when they first set eyes on our new house. But here's a secret: It isn't quite as big or even as expensive as they thought. And that's thanks to our architect and his clever use of modern building materials.

With expert planning your new house, too, can look like and actually represent a *lot* for your money. Today's building materials are the finest research has developed. They'll give you real beauty, extra long life, and most important—true fire protection.

For example every house uses sheathing under the outside finish. Old style sheathing is inflammable. And it costs *more* than Gold Bond Gypsum Sheathing, made by National Gypsum, which is fireproof and makes an extra-strong, weather-tight wall.

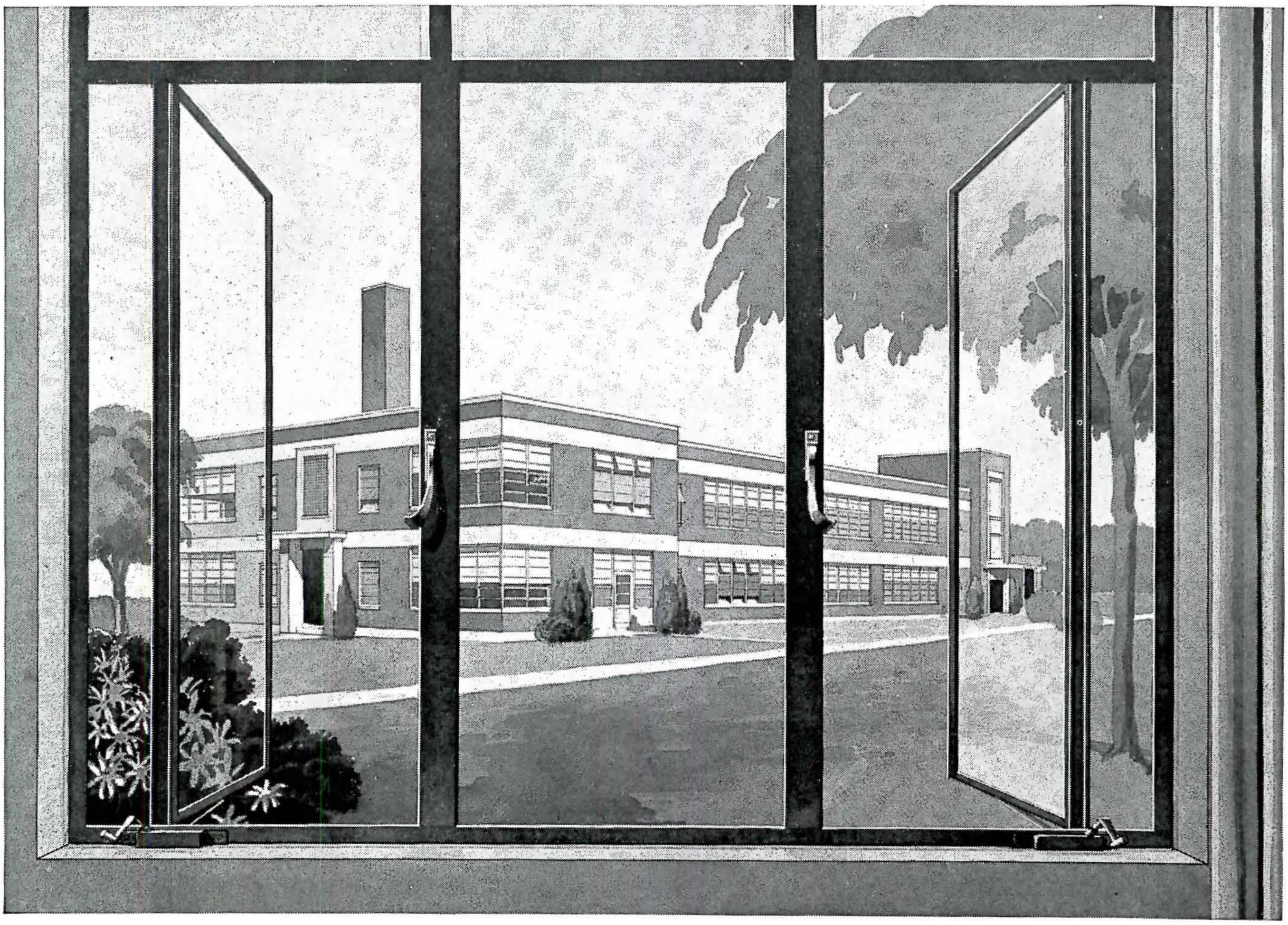
Another way to keep expenses down: You can save up to 40% on fuel costs if you insulate with full-thick Gold Bond Rock Wool. It's fireproof. Keeps furnace heat in. Keeps summer heat out. And acts as a permanent firestop by filling the space between framing members. For existing homes it can quickly be "blown" into outer walls and top floor ceilings. Call your local Gold Bond applicator, listed under "Insulation" in the phone directory.

Inside walls can be beautiful, long lasting, and firesafe with Gold Bond Gypsum lath and plaster. Decoration is easier with Gold Bond Sunflex, the new wall paint that dries in an hour with no "painty" smell.

More than 150 Gold Bond Products are available through your local Gold Bond lumber and building material dealer. Each is engineered to do a specific job better. When you plan to build or remodel, see your Gold Bond Dealer first for helpful advice.

NATIONAL GYPSUM COMPANY
BUFFALO 2, NEW YORK

Gold Bond Building Products add greater fire protection, permanency, and beauty at no extra cost. These include fireproof wallboard, lath, plaster, lime, sheathing, wall paint, insulation, metal lath and sound control products.



George Harris Richardson Elementary School, Washington, D. C. Architect: M. A. Coe, Municipal Architect, District of Columbia. Builder: J. D. Hedin Construction Co., Washington, D. C. Viewed through Lupton Casement Window. School windows are Lupton Architectural Projected-Type.

See what modern metal windows can mean in school building. Bright, cheerful classrooms with large window areas . . . abundant, non-glare daylighting with clear, effortless vision in every part of the room . . . all of these advantages are available with Lupton Windows. Lupton Metal Windows provide controlled, natural ventilation. Beautifully designed operating hardware adds the modern look to classroom interiors. Economy, a vital feature of large scale building, is effected by the long life of Lupton Metal Windows. Bronze wire screens with neat, narrow metal frames can be furnished with open-in or open-out ventilators. There is a Lupton Metal Window for every type of building. Write for our catalog or see it in Sweet's.

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METAL WINDOWS

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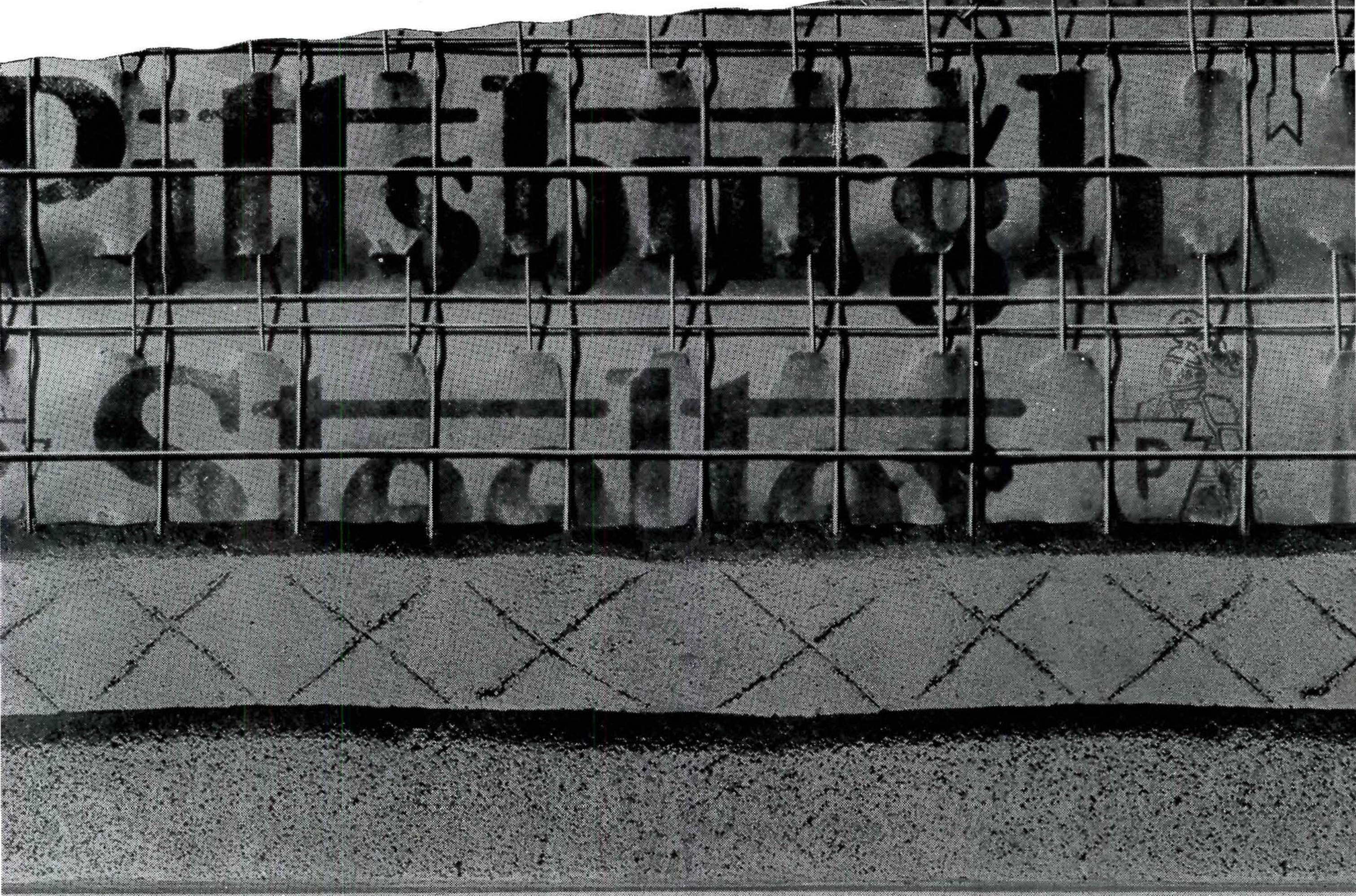
Gives you
All Enduring, Economy and Safety



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STEELTEX for Plaster, Floor Lath, Stucco, Masonry Veneer Available Now at your local dealer

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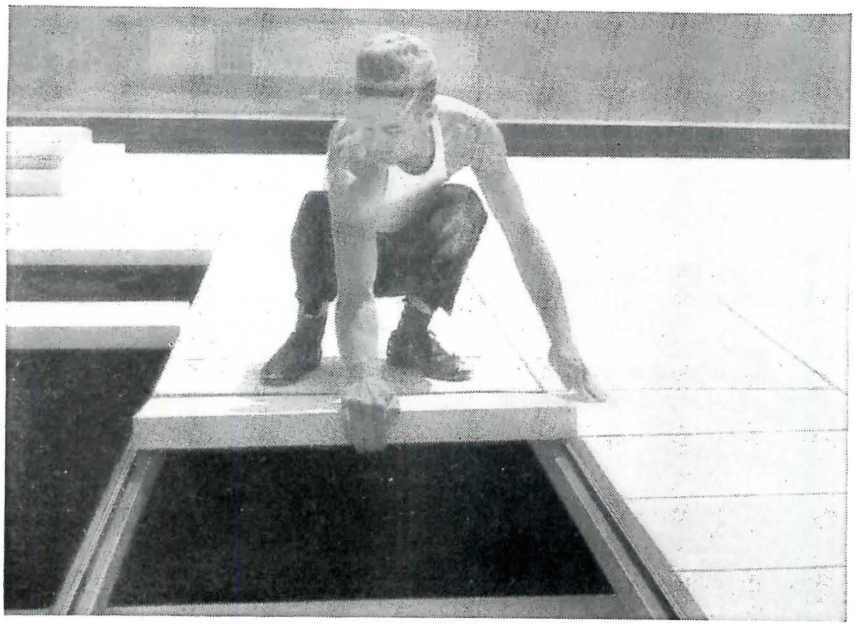
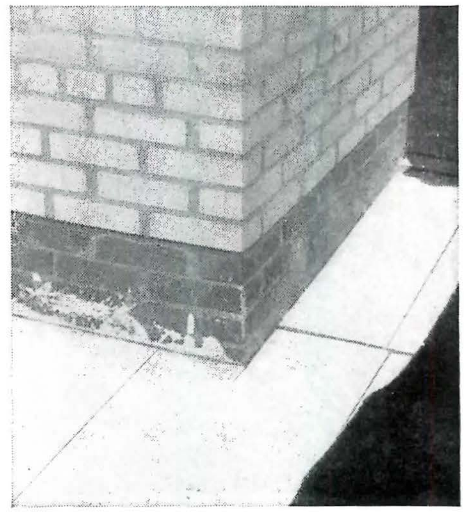


LIGHTWEIGHT. Kaylo Insulating Roof Tile is strong, yet lightweight and easy to handle, as shown above. Each tile is 2⅝ x 18 x 36 inches in size, weighs about 21 pounds.



EASY TO FIT. Kaylo Insulating Roof Tile can be cut and fitted with ordinary hand or power tools. Picture above shows example of re-entrant cut made to fit around stack.

Make your roof deck fireproof ... lightweight and strong

With Kaylo Insulating Roof Tile

STRUCTURAL strength, extreme lightness and high insulating qualities—you can get all these in your roof with one material: Kaylo Insulating Roof Tile.

Kaylo Roof Tile is made of inorganic materials only, and is fireproof.

Whether you're an owner, builder, architect or engineer, Kaylo Roof Tile has many advantages for you. It is easy to install, can be cut to fit right on the job. Its insulating properties reduce fuel costs.

Because Kaylo Roof Tile makes a structural deck that is light in weight, less steel is needed for framing. Get all the facts about Kaylo Insulating Roof Tile . . . send coupon (below) for free illustrated booklet.

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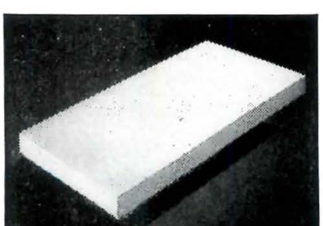

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AMERICAN STRUCTURAL PRODUCTS COMPANY

Subsidiary of

OWENS-ILLINOIS GLASS COMPANY

All pictures on this page are of the new Morton Hosiery Mills plant in Runnemede, N. J., Henry Skierski, Owner; Charles C. Duffin, Berlin, N. J., Contractor; W. D. Faint & Company, Pennsauken, N. J., Engineers.

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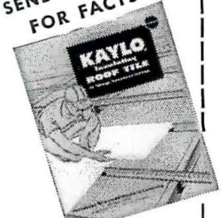

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In heating, too, the Crane line is complete . . . it provides every requirement for any system, any fuel.

In making selections from the Crane line, refer to your copy of "Crane Service for Architects," or ask your Crane branch for one. Not all fixtures are immediately available everywhere—check your plans early with your Crane branch or wholesaler.

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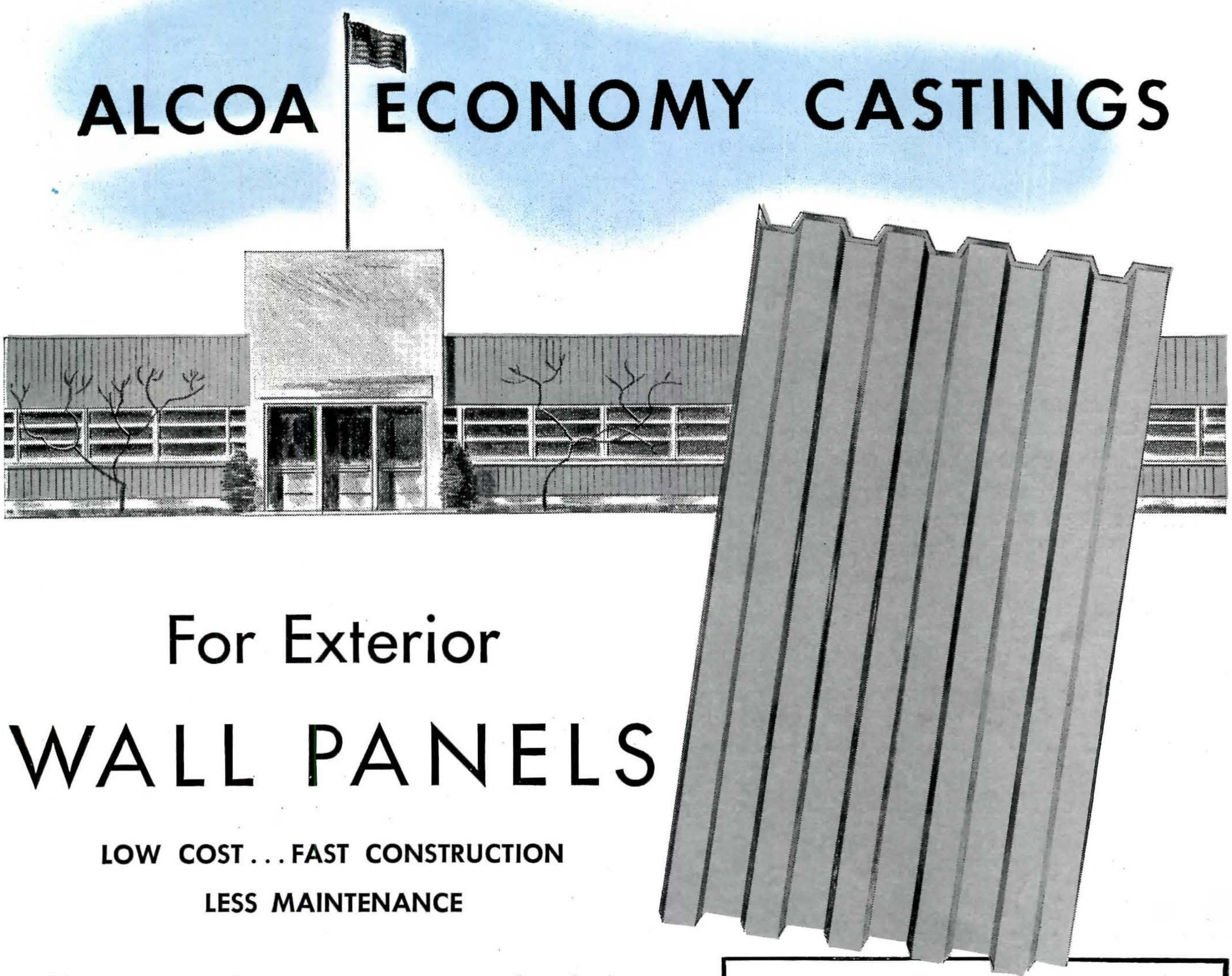

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WALKER & WEEKS
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The ashlar is salmon multichrome in two shades, the narrow bands of the pattern being the lighter.

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The plasticity of form and ease of handling in construction make Enduro-Ashlar Terra Cotta one of the most desirable permanent surfacing materials of all time.

Color range is limitless—the glazed surfaces impermeable. Modern technique of fabrication of Enduro-Ashlar Terra Cotta has earned the full appreciation of the Architect and Building Industry.

When applied to old walls or new masonry, Enduro-Ashlar Terra Cotta becomes an integral part of the structure...and cost of maintenance reverts to the irreducible minimum...a soap-and-water washing will restore original color and lustre after years of exposure to city grime.

This combination of lasting beauty and utility in modern building, from remodeling a service station to the erection of monumental structures, warrants the attention of designer and builder.

Federal Seaboard Terra Cotta Corporation will advise on preliminary sketches, construction detail, furnish color samples and estimates—without cost.

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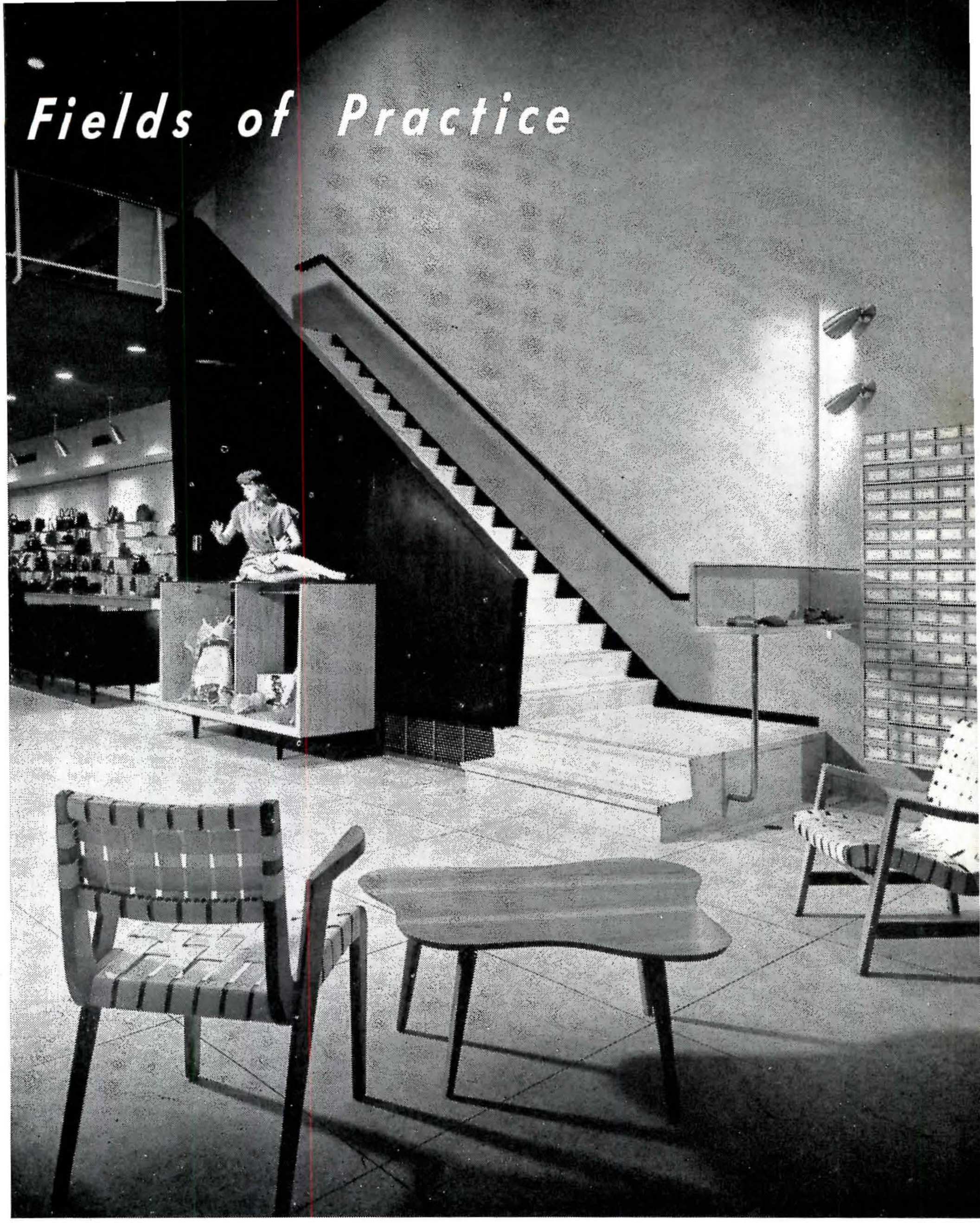
CASE STUDY



DESIGN OF RETAIL STORES

In the Office of KETCHUM, GINA & SHARP, Architects, New York, N. Y.

In this, the first of a series of studies of particular fields of practice in which individual firms have done outstanding work, we present a new means of evaluating architectural progress. Several instances of the firm's completed work constitute an important reference study in the field of retail-store design. But supplementing these and focusing on the methods by which this successful work has been achieved, we have a statement by one of the members of the firm as to how their office operates, the steps involved in developing a project, and an expression of their design philosophy.

A study of work by Ketchum, Giná & Sharp is particularly pertinent at this time, since Reinhold is just publishing a book entitled "Shops and Stores" by Morris Ketchum, Jr., the firm's senior member.

Subsequent studies will highlight other specialized fields of practice.

KETCHUM

IN THE OFFICE OF KETCHUM,

GINA

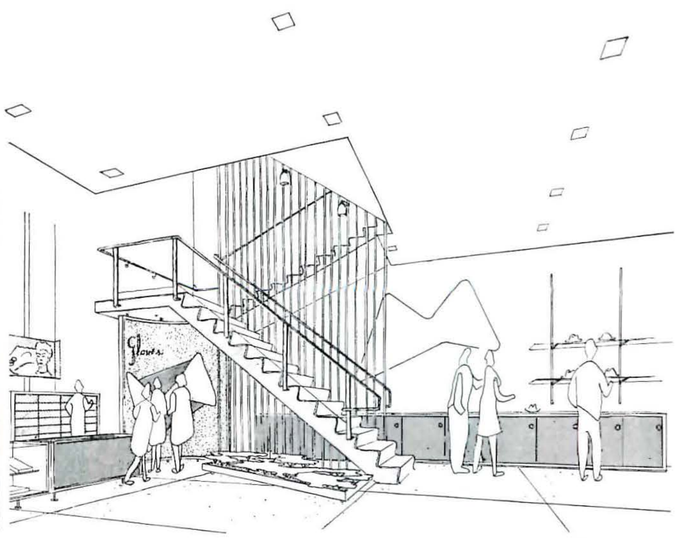
SHARP

ORGANIZATION AND PROCEDURE

The organization of Ketchum, Giná & Sharp consists of three partners, as principals, who initiate among themselves the design of any particular project. The job is then placed under the personal supervision of one of the partners who acts as design critic, with the aid of one of the men in the office as job captain. The job captain, in turn, has other men as assistants. The architectural staff, of about thirty people, is encouraged to assume responsibility and work together for the common good. The job captain's duties, besides the running and organizing of the project, are to meet the clients in question, cull the necessary information, sit in on conferences, supervise the work, and in general operate as an architect in his own office under the guidance and aid of the supervising principal. Each partner keeps constantly abreast of the work being turned out by the others.

A project is started in our office by analyzing the program of the merchant and the budget involved. Departmental case histories, management philosophies, objectives, and sales techniques are compiled. Complete data is collected on details such as display treatment, both inside and out, types and arrangement of sales fixtures, merchandise sizes, areas to be allotted for sales and services, receiving and shipping, etc. All such information is studied and correlated before any actual planning begins.

When the preliminary area plans showing the relationship and size of one department to another have been estab

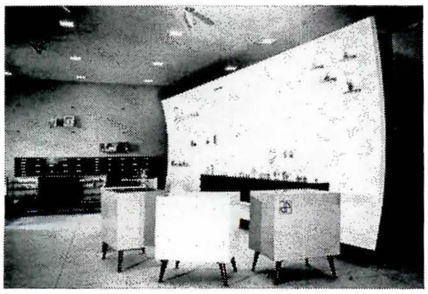


VALDIRI'S, BOGOTA, COLOMBIA. It is remarkable how closely the finished job follows the architects' sketch concept.

GINA & SHARP

ished, the various engineers are called n to furnish supplementary technical nformation. Preliminary working drawngs showing the type and location of each sales fixture in every department are drawn up simultaneously with visualization sketches, thus illustrating each element of the total scheme.

Vertical and horizontal traffic diagrams for both customer and merchandise circulation are planned and checked. Space necessary for the management and operational functions of the store is planned and allotted. Provision is made for entrances and show windows. The decorative features of each department are studied in elementary form. The exterior is then designed to best express the character of the structure and the activities contained.



COSMETICS DEPARTMENT, Valdiri's.

ALDIRI'S was first published in project form in the May 1947 ROGRESSIVE ARCHITECTURE (pages 61-67). Reference to hat issue will demonstrate the care with which the firm of etchum, Giná & Sharp works out all details of a store project the design stage. In the planning of this six-level structure, he Bogotá firm of Henry C. Hudgins & Co. was associated ith the architects.

A SPECIFIC CASE

To illustrate the processes that the client and architect go through to obtain the finished product, the Plymouth store at 187 Broadway, New York City, is taken as an example (pages 52-55). This store is one of a chain of women's specialty shops. The management selected this location because of the large numbers of business women employed in the surrounding neighborhood. A further reason for their choice of location was that this particular chain of stores has other branches within a few blocks' radius of the new site. This factor would help materially in their shipping, receiving, and advertising setups. The public in this area buys between the hours of 8:30 to 9:30 in the morning, 12:00 to 2:00 in the afternoon, and from 4:30 to 6:00 in the evening. These limited shopping hours make for a store where a maximum display of merchandise is of first importance. The merchandising program was planned primarily to take care of the demands for impulse and convenience buying.

A building budget was determined, based on the estimated cost for general construction, mechanical equipment, lighting, and sales fixtures plus the fixed charges for overhead, capitalization, rent, etc. The sizes of the departments and the types of merchandise to be sold were determined on estimated or established sales figures of their other stores. Once the interior sales program was decided upon, store-front space was assigned for the display of all the merchandise to be carried.

DESIGN CONSIDERATIONS

The aim of the design for the exterior was to provide a suitable background for the store's name and for enclosed exhibit area. Materials used were chosen for their permanence and low maintenance costs. Due to the peak crowds on the avenue that shop at specified times, a large arcade was necessary. The show windows were arranged around the arcade to stimulate the interest of the shopper in a further view of those exhibits carried inside. This was made as easy as possible by having the interior visible from the outside, giving assurance to the prospective customers that what was seen in the arcade would be multiplied many times over when they were inside.

The interior continues the exhibits displayed in the store front; walls are given over to uninterrupted and over-all displays. Showcases and wall cases have a

(Continued on page 53)

HANDBAG DEPARTMENT, along right wall, detailed on page 97. Note continuation of arcade ceiling within, under the mezzanine.

Lionel Freedman: Pictorial Services Photos

ARCADE front, leading the eye—and the customer—in.

SPECIALTY SHOP

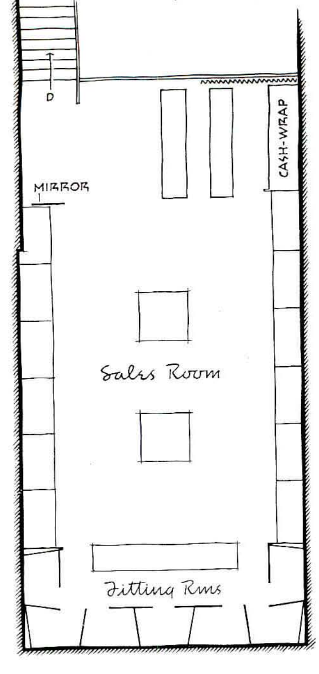
NEW YORK, N. Y.

KETCHUM, GINA & SHARP, Architects

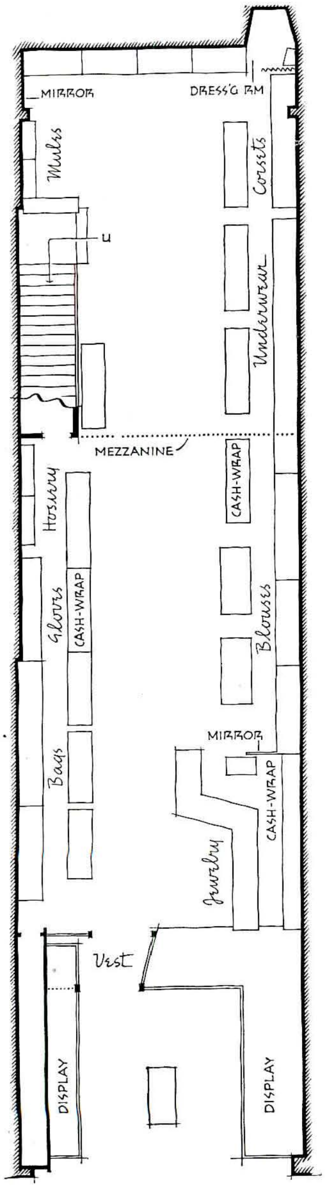
NOTE: The procedure followed in the design of this particular shop is described in detail in the accompanying article by Francis X. Giná.

PROGRAM: A women's specialty shop, planned for speedy selling within limited shopping periods—before work, at the lunch hour, and after office hours. The entire main floor to be treated as an appealing showcase.

SOLUTION: An arcade-type front, with displays continuing in from the outside; impulse merchandise lining both walls; more casual, demand merchandise placed in a mezzanine over the forward part of the store. Ingenious lighting to assist sales efforts.



Mezzanine



First Floor

LANS

aximum merchandise splay governed the yout, walls being ven over to display nd sales space. Large ock rooms were unecessary on this floor, stocking taking place om basement during opping lulls. Cashrap stations liberally otted to expedite les.

(Continued from page 51)

minimum of hidden stock and were mainly designed for display and quick selection of goods. In a store of this type, emphasis is placed on providing the maximum amount of sales fixtures on the sales floor without sacrificing comfort or accessibility to the various departments. Showcases and wall fixtures are easily restocked in shopping lulls from a basement service area. Stockrooms and oversized fitting rooms adjacent to the sales floor are not necessary. Wrap and cash stations conveniently spotted on the sales floor help to make as brief as possible the time consumed by consumer and clerk in a transaction.

While mezzanines are usually placed in the rear of a store, such a plan would have made for an unfortunate architectural effect in this instance, since a narrow well would have been created between mezzanine and arcade. Therefore, the mezzanine was placed in the front section, partially over the store front, continuing the line of the arcade ceiling in one unbroken plane to the rear of the store.

A brightly illuminated curved and slatted wood wall in the rear of the first floor helped to cover some unsightly and awkward existing structural features. It also drew attention to the fact that another sales floor existed.

Demand merchandise, consisting of sportswear, skirts, slacks, and dresses, was simply strung around the side walls of the mezzanine. These articles helped to pull the customers through the store, forcing them to pass every department on their way in or out.

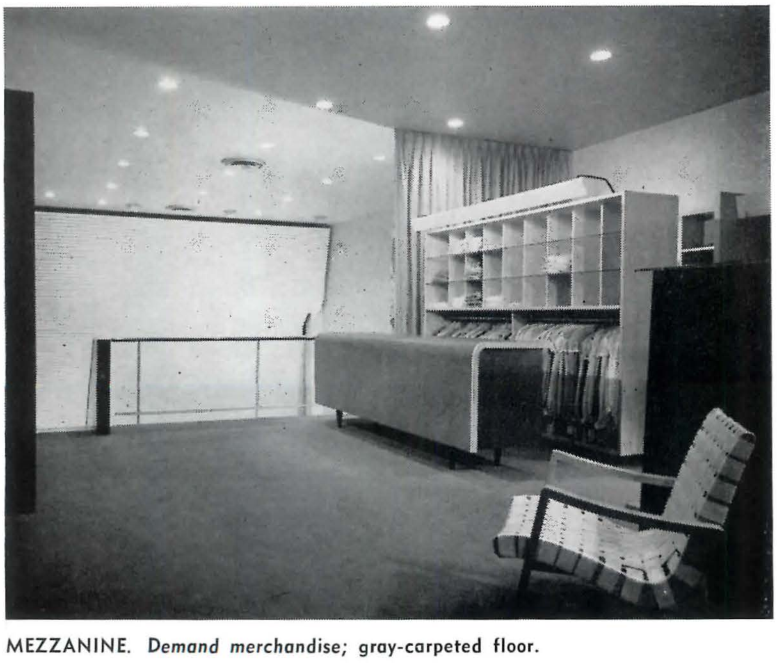
LIGHT AND COLOR

One of the most important elements in good store design is lighting. Insufficient knowledge of lighting and color effects make it impossible to exhibit properly, with the result that looking and buying become a chore rather than a pleasure. In the Plymouth store, a high intensity of incandescent illumination was provided in the show windows to counteract the effects of daylight. The downlighting in the ceiling under the mezzanine was kept at a much lower intensity than that of the show windows; reflection of light from the terrazzo floor uplighted the ceiling. Intense illumination was designed for the rear in order to draw people back. Supplementary display lighting was added to accentuate the drama of the total exhibit.

A white terrazzo floor was employed to give a surface that would reflect light and also act as a durable finish material for customer traffic on the first floor. On the mezzanine, where traffic was lighter and the shopping was at a much more leisurely pace, a gray carpet in harmony with the wall colors was employed. The red color of the ceiling under the *mezzanine* was carried out to the sign, helping to unify the transition from

(Continued on page 55)

MAIN FLOOR. White terrazzo floor; ceiling under mezzanine: red; brightly illuminated slatted wood wall at rear: yellow.

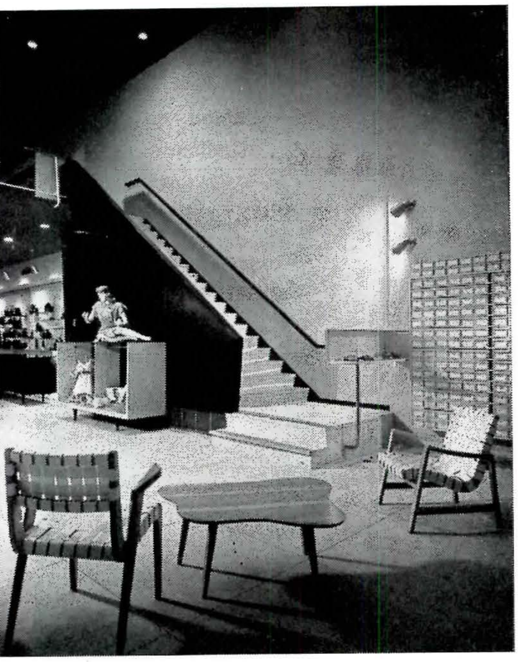


MEZZANINE. *Demand merchandise; gray-carpeted floor.*

SPECIALTY SHOP,

ENGINEERING OUTLINE

CONSTRUCTION: (Existing building.) **New framing:** steel for mezzanine. **Walls:** exterior: limestone and granite; interior: plaster, painted. **Floors:** main floor, terrazzo; mezzanine, carpeted. **Fenestration:** plate glass in aluminum sash. Acoustical plaster on ceilings. **Partitions:** dry built wood frame



TAIR up to mezzanine.

(Continued from page 53)

outside to inside. A warm light gray color on the interior walls was used as a friendly background for the displays and cabinetwork.

It was decided to install an acoustical plaster ceiling on the first floor because of the din expected from the number of customers shopping at one time. Air conditioning was another device used to make shopping comfortable.

DESIGN PHILOSOPHY

We have established certain principles in our retail-store work which summarize our philosophy of store design.

1. **Design as simply and straightforwardly as possible, avoiding the current cliches which soon become dated.**
2. **Subdue one's design in order to provide a framework and a suitable background for the excitement and color provided by the merchandise on display.**
3. **Use materials for the purpose they were intended and employ those materials with an eye to permanence and low maintenance cost.**
4. **Whenever possible, elements in a store should be so designed and detailed that they have great flexibility of use and will continue to offer maximum convenience no matter how the store is changed in the future.**
5. **Good design, in the final analysis, depends on good detailing. One cannot let one's guard down or lose patience. When this happens, the design as a whole usually suffers.**
6. **Last but all-important, thorough architectural supervision and constant follow-through down to the most minor detail create a job that one can be proud of.**

NEW YORK, N. Y.

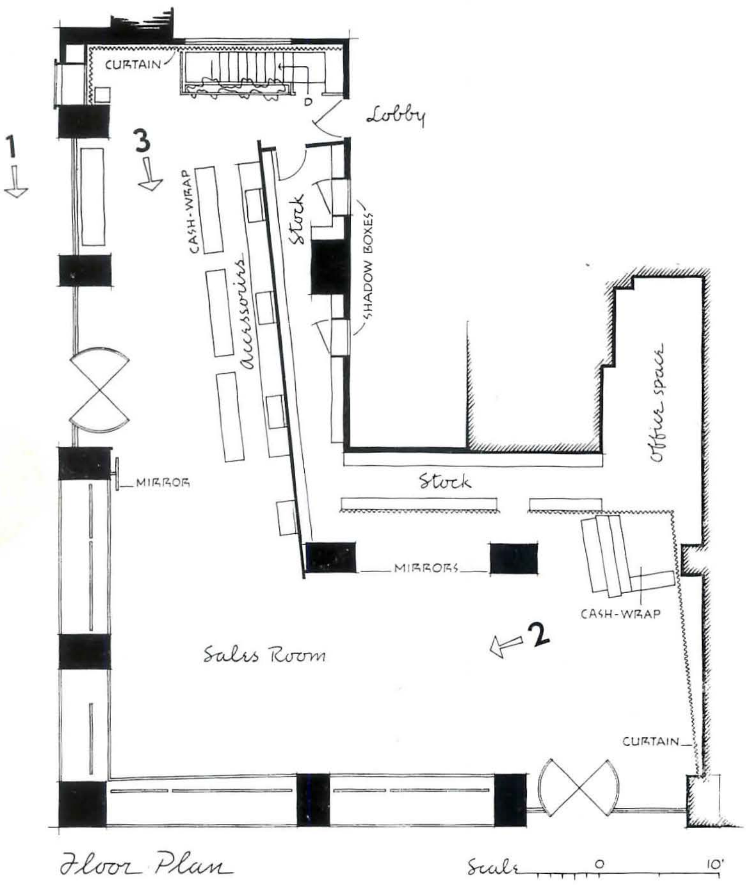
and plywood. **Doors:** flush wood panel, generally; entrance doors: tempered plate glass.

EQUIPMENT: Cooling and ventilating system added to existing plant. **Lighting:** both incandescent and fluorescent.

The unique point of difference between residential and commercial architecture is that in store design the architect is dealing with a field of experts rather than with amateurs. The merchant knows his requirements, and the public knows what it wants. Merchants have learned the value of good store design in their business. The management of the Finlay Straus stores (pages 60-63) has found that good design has helped to increase their business from twice to three times its original volume.

The significant feature of the retail-design field from an architect's point of view is that there are no preconceived ideas to hamper him from turning out a solution that is as satisfactory to himself as a piece of architecture as it is to his client as a merchandising instrument.

FRANCIS X. GINA



SHOE STORE

CHICAGO, ILLINOIS

KETCHUM, GINA & SHARP, Architects

A new shop worked out within an unalterable framework.

PROGRAM: To combine two existing rental spaces into a salon for the sale of women's shoes. Owner requirement forbade any essential change in the elements of the exterior of the building—a fireproof structure in Chicago's Loop; a corner location, with a third "front" opening into the building lobby.

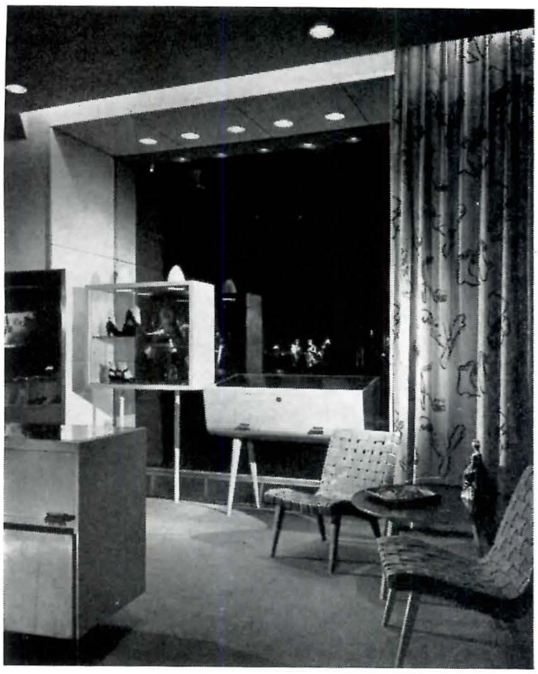
SOLUTION: New display fixtures; a screen wall of hardwood introduced to background an accessories department and screen stock space in back; new lighting, and finishes; minimum change in existing structural and mechanical installations.

Hedrich-Blessing Photo

1. EXTERIOR. Display elements introduced in such a way as not to obscure full view of store interior.

SHOE SALES AREA. New hung ceiling conceals fluorescent lighting around perimeter. Interior columns, mirrored.

3. ACCESSORIES DEPARTMENT. The floor is covered with gray carpeting; screen wall of hardwood reeds.



FREE-STANDING CASES dress a big window.

SHOE STORE, CHICAGO, ILLINOIS

A wide range of architectural, mechanical, and decorative devices have been utilized to transform a matter-of-fact space into a rich, colorful environment for merchandising. The hung ceiling and all-over carpeting join the L-shaped space into a unit; the wood screen wall serves both a functional and decorative purpose. Lighting—fluorescent in the hung ceiling; above egg crates at the top of the smaller windows; incandescent ceiling downlighting and special spotlighting highlight the display and merchandising areas.

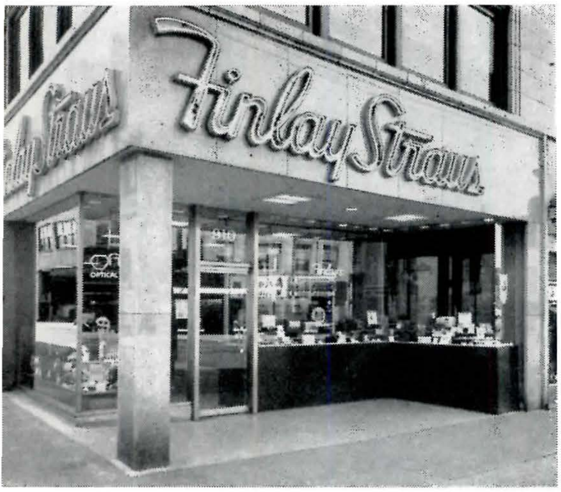
DECORATIVE CORNER leading to the building-lobby entrance.

ENGINEERING OUTLINE

CONSTRUCTION: (Existing space.) **Walls** exterior: polished black granite; interior white porcelain enamel; plaster. **Floors** carpeting, generally; rubber tile. **Ceiling** hung ceiling, plastered. **Fenestration:** bronz sash, plate glass. **Partitions:** plaster or hard wood reeds over plywood panels. **Doors** flush, plywood panel.

EQUIPMENT: All heating and plumbing ex isted. **Lighting:** a combination of incandes cent and fluorescent systems.

TEGRATED DESIGN from a variety of elements—merchandise, casework, wood, fabrics, and lighting.



Ben Schnall Photos

FRONT. Ample, varied display space.

TWO JEWELRY STORES

1. JERSEY CITY, NEW JERSEY

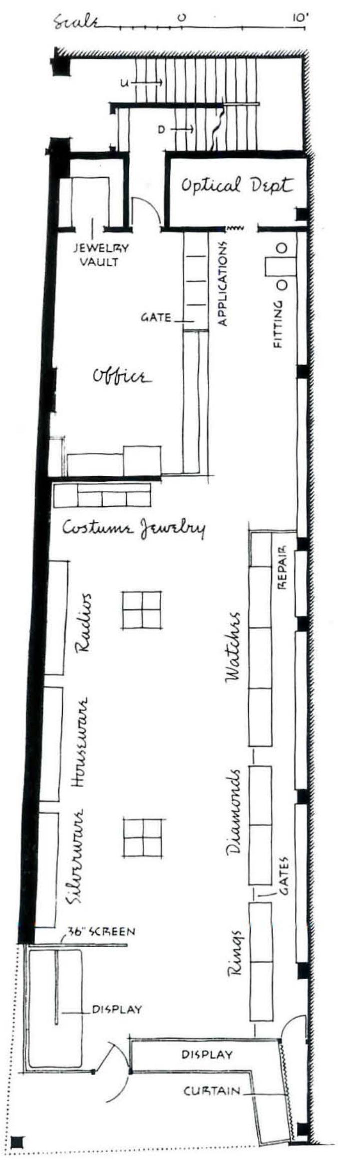
KETCHUM, GINA & SHARP, Architects

Clean, architectural handling of a typical, long, narrow store space.

PROGRAM: Straightforward display of a great variety of small items from watches, rings, and diamonds to radios, toasters, and clocks. To be worked out on a single floor within a long, narrow rental space on a corner (the side street unimportant as regards pedestrian traffic).

SOLUTION: A recessed store front providing a generous amount of display window space of various sizes, widths, depths, and sill heights, to accommodate the varied merchandise. Casework and wall displays are grouped to set apart the numerous departments along the two side walls of the store.

Moderate-priced merchandise constitutes the main business. Hence neat, orderly arrangement and simple wall surfaces take the place of lavish appointments. Smaller items such as jewelry and diamonds are handled in enclosed small-scale display shelving and cases. Larger items such as housewares and radios are displayed on open, flexible shelving on the left-hand wall. Basement storage is reached by a stairway through the door at the rear of the floor.

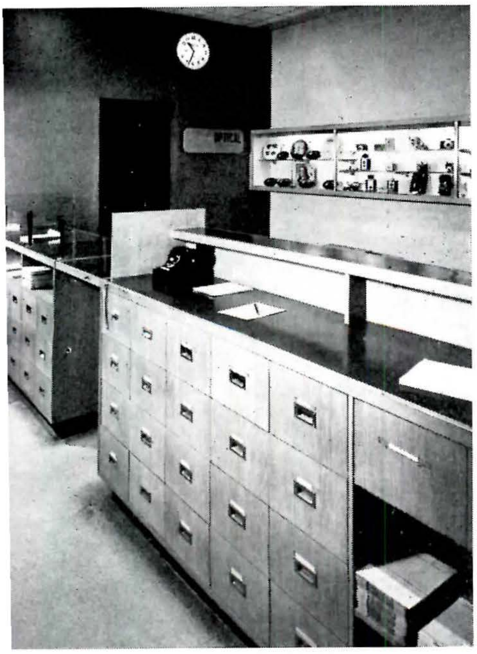


Floor Plan

ISLANDS supplement the main wall displays.

COSTUME JEWELRY occupies a corner of its own

.L SURFACE behind the flexible shelving is simply wood siding, painted. Ceiling finished in acoustical tile.



IIER'S DESK—a ready reference file.

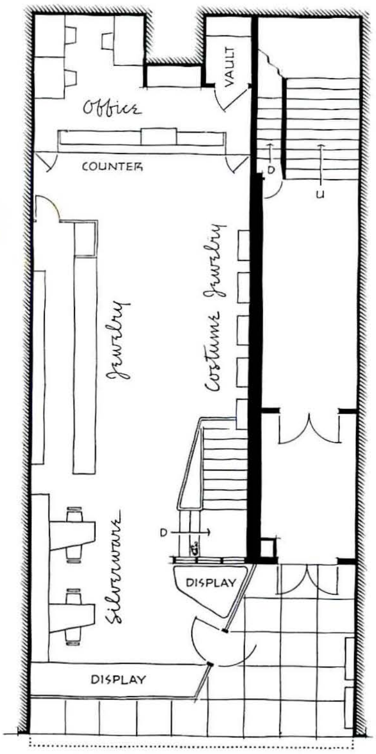
ENGINEERING OUTLINE

CONSTRUCTION: (Existing building.) **Walls:** exterior: gray, polished granite, with base of black artificial stone. Interior: plaster, or wood siding, painted. **Floors:** terrazzo. **Ceiling:** perforated acoustical tile. **Fenestration:** bronze sash; plate glass. **Doors:** flush plywood inside; entrance doors: tempered plate glass.

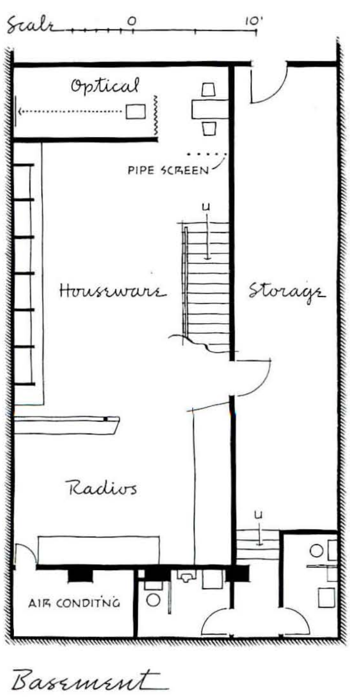
EQUIPMENT: Air conditioning: heating and cooling. **Lighting:** incandescent fixtures generally; fluorescent lamps in casework.

Ben Schnall Photos

SILVERWARE department occupies the corner immediately inside the entrance.



First Floor



Basement

TWO JEWELRY STORES

2. STAMFORD, CONNECTICUT

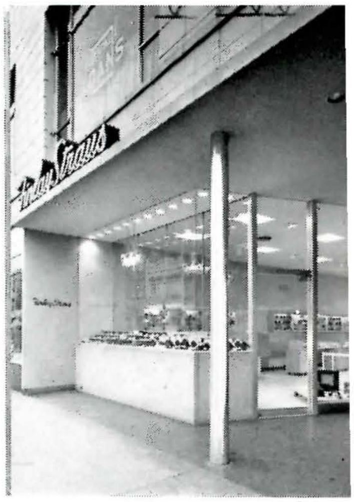
KETCHUM, GINA & SHARP, Architects

A first-floor and basement scheme for the merchandising of a miscellany of steady-value, smale-scale items.

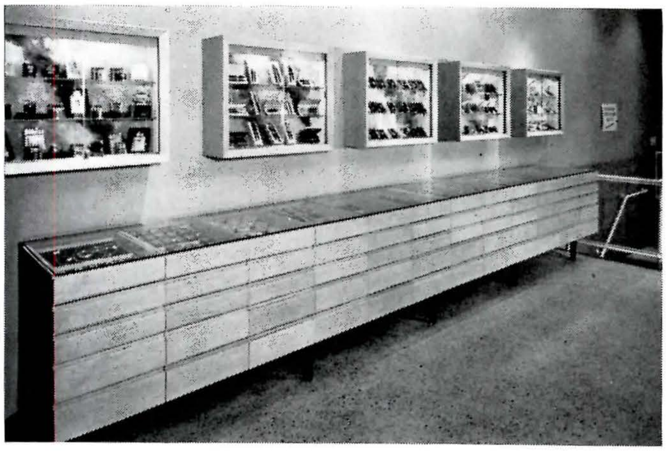
PROGRAM: To provide uncluttered sales floors for the numerous types of silver, jewelry, and houseware items carried by the store. A narrow mid-block rental space, sharing the entrance area with an existing building entrance.

SOLUTION: A recessed store front, arranged with varied height sills providing both window display and view of the store within. Simple alignment of departments along the interior walls of both floors, plus flexible fin display element projecting into the basement sales area.

Another unit in the Finlay Straus chain, this shop carries merchandise very similar to that of the Jersey City store. The design problem was also similar. Simple casework, good standards of lighting and display, ease of circulation, and an inviting atmosphere were more important than show. The various types of both wall and free-standing cases readily define the main sales departments. All smaller merchandise—silver, jewelry, costume jewelry, etc.—is organized on the main floor; the basement floor is given over to radios, toasters, typewriters, alarm clocks, and other related housewares. The shop is air-conditioned.



/ELRY department; business counter, right. Stair rail is detailed on page 95.



COSTUME JEWELRY, etc. Wall cases.

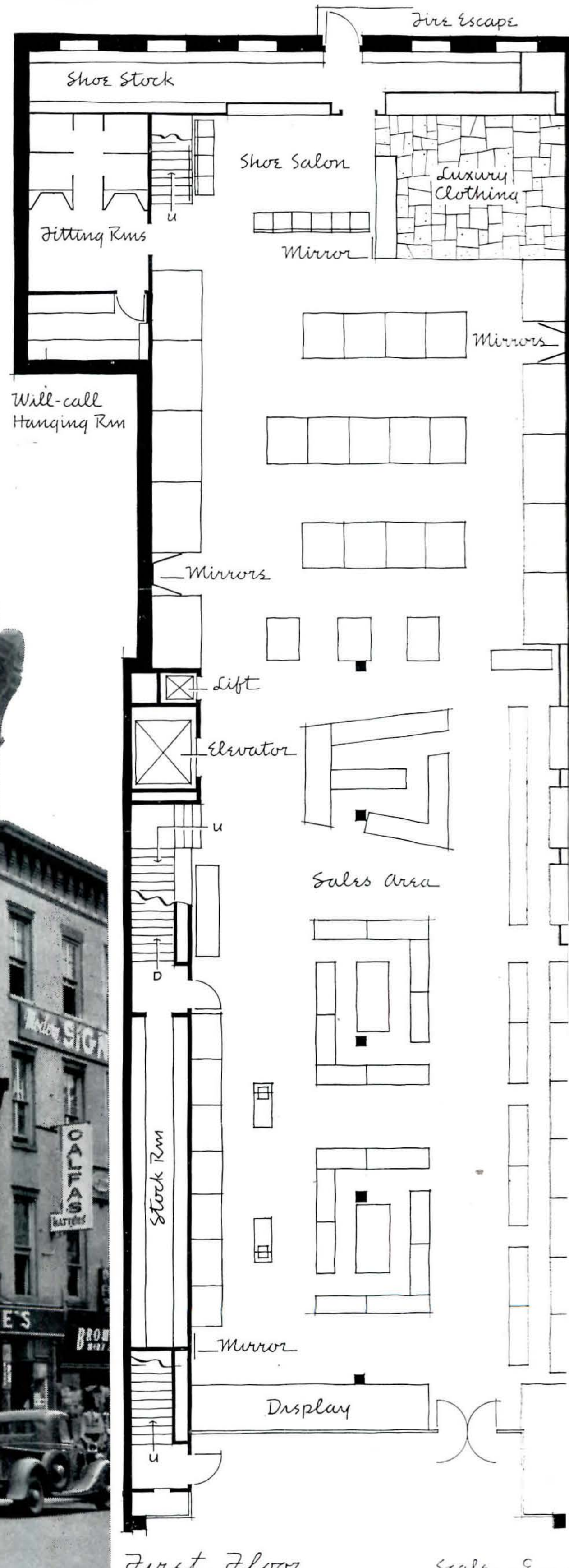
:NGINEERING OUTLINE

:ONSTRUCTION: (Existing building.) **Walls:** exterior: ·olished granite and (adjoining building entrance) wood attens; interior: plaster. **Floors:** terrazzo (main floor) nd magnesium oxychloride tile (basement). **Ceilings:** coustical tile. ***Fenestration:*** *aluminum* sash; plate lass. **Walls:** plaster generally; wood siding, painted. **artitions:** plaster or plywood over wood frame. **Doors:** ush plywood panel; entrance doors: tempered plate lass.

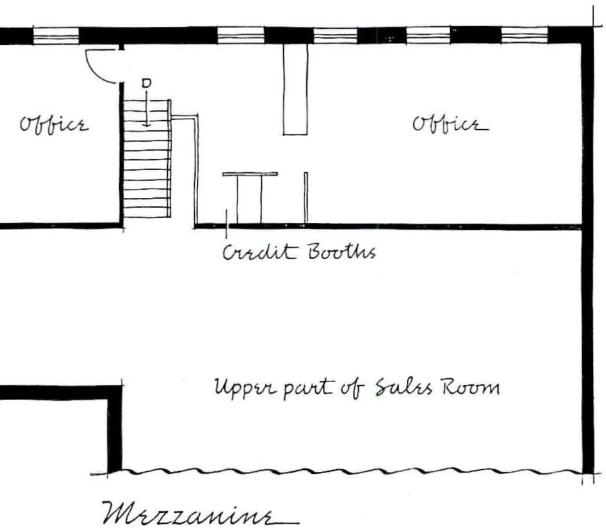
QUIPMENT: Air conditioning: heating and cooling. **ghting:** both incandescent and fluorescent.

BASEMENT. The ceiling is perforated acoustical tile.

MEN'S CLOTHING STORE, HARTFORD, CONNECTICUT

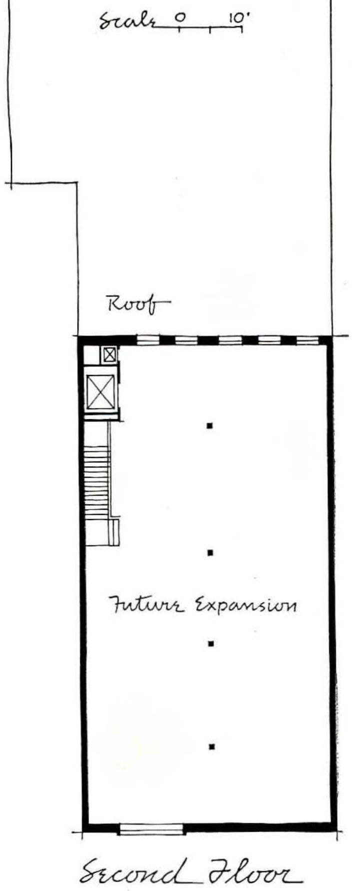


TCHUM, GINA & SHARP, Architects



PLANS

The new, recessed front clearly sets the store apart from its neighbors, provides increased display-front area and offers an inviting view of the entire sales floor. It also offers a separate entrance at the side to upper floors (some space in which is at present rented to others). Both sides of the shop are lined with new, well-lighted cases and full-view sales counters. Interior islands handle small items such as ties, socks, sweaters, etc. Elevator is centrally located to serve upper floors when they are added to the retail-selling space.



A smart, new urban shop replaces a nondescript, old structure.

PROGRAM: To develop a unified, modern shop for the display and sale of men's clothing out of an obsolescent 40-foot-front building, with cast iron and glass facade up to the third floor (somewhat similar to its neighbor on the left). Structural problems included elimination of brick party wall running down the center of the building on all floors.

SOLUTION: Removal of party wall; minimizing of the central structural columns by grouping merchandising units around them; new, recessed display front; entirely new facade; new surfaces, fixtures, and mechanical equipment. Only basement (storage), ground floor, and mezzanine at rear (manager's office) developed into retail shop at this time; other floors arranged for probable future expansion.

SALES FLOOR. Central islands grouped around structural columns handle smaller items such as ties, socks, sweaters, etc. Flooring is asphalt tile; ceiling finished in acoustical tile. Lighting outlets, air diffusers, and sprinkler heads are organized into a neat ceiling pattern.

Ben Schnall Photos

MEN'S CLOTHING STORE

HARTFORD, CONNECTICUT

This store is a good illustration of the design philosophy of the firm of Ketchum, Giná & Sharp. Simple, straightforward approach is reflected in the plain, open-front display cases; everything is subdued to providing a framework and background within which the merchandise itself holds top place. Materials used look like themselves, and fussy, applied decoration is nonexistent. Departments are defined simply—a slight change in the casework line; a departmental grouping against a distinctive background, etc.—yet all are coordinated into a unified design. A complete air-conditioning system keeps the shop comfortable the year around.

A PROJECTING CASE defines and separates adjoining departments.

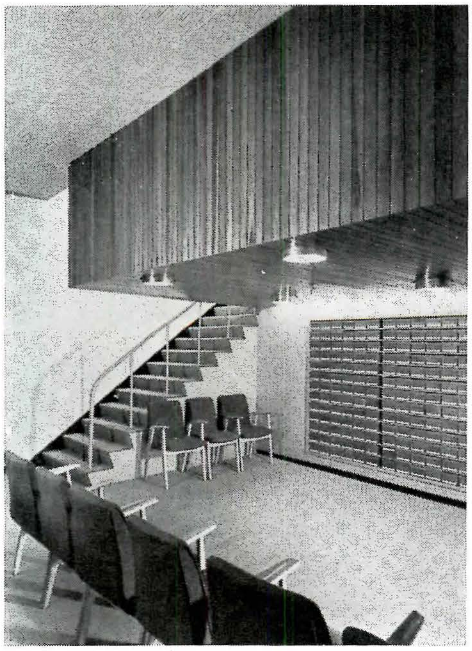
ENGINEERING OUTLINE

CONSTRUCTION: Framing: steel. **Walls:** exterior: brick; interior: plaster or cypress boards. **Floors:** wood; surfaces: asphalt tile, carpeting, red quarry tile or flagstone. **Ceilings:** white perforated acoustical tile. **Fenestration:** aluminum sash; polished plate glass. **Partitions:** dry-built wood stud. **Doors:** standard flush panel wood generally; entrance doors: tempered plate glass.

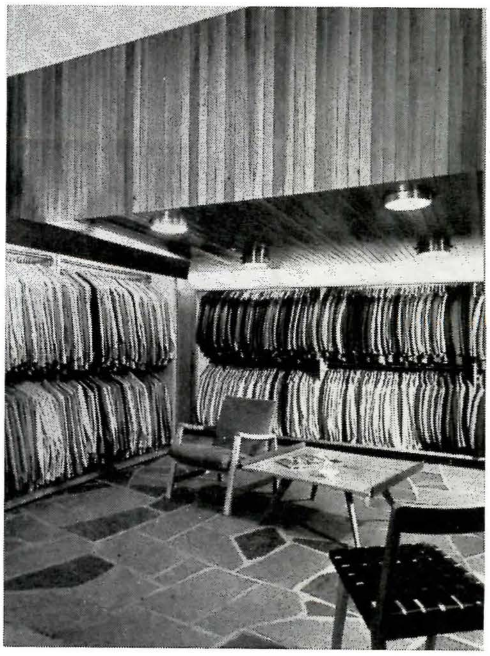
EQUIPMENT: Heating and air conditioning: steam boiler, evaporative condenser; heating and cooling—year-round conditioning; thermostatic controls. **Lighting:** combination of incandescent and fluorescent. **Special equipment:** sprinkler system; fire-stair doors; freight and passenger elevators.

ROBES in a wall-hung case.

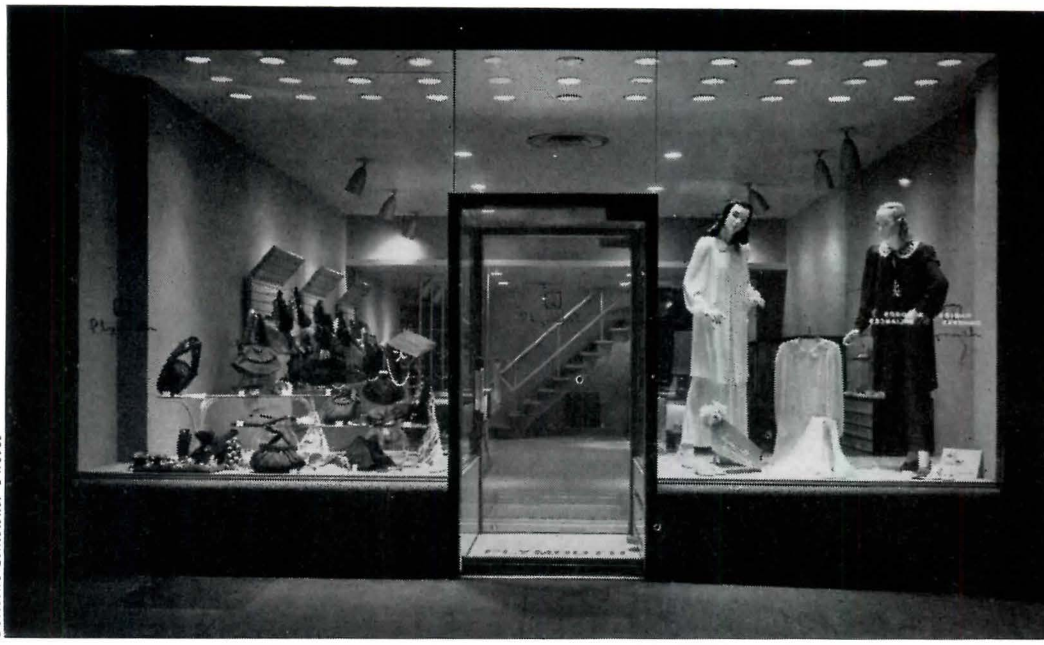
SPORTSWEAR arranged in open cases in front of a simple wall of cypress. Ease of viewing and emphasis on merchandise are apparent.



STAIR at rear to mezzanine.

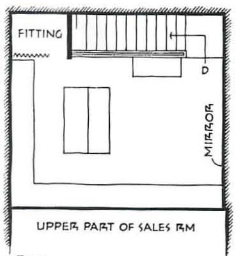


SUITS: open display racks.

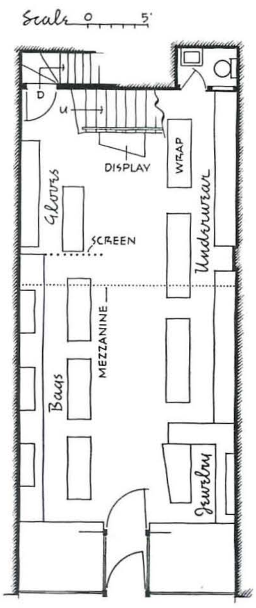


Gottscho-Schleisner Photos

GLASS SHOP FRONT makes the entire main floor into a window display.



Mezzanine



First Floor

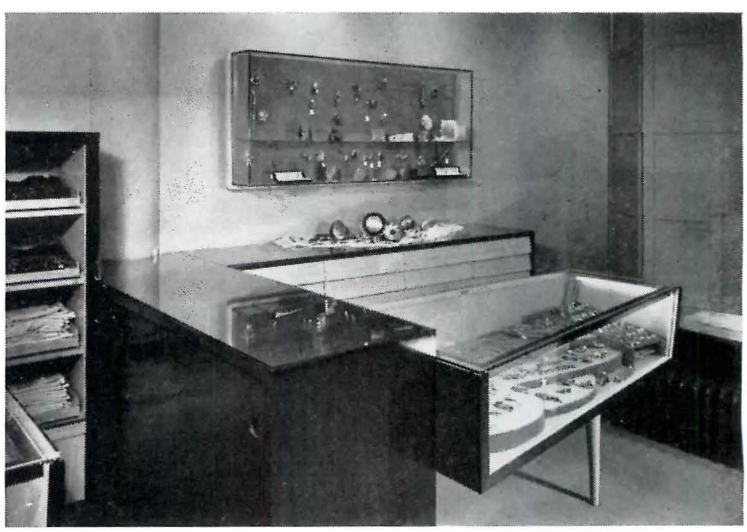
SPECIALTY SHOP, NEW YORK, N. Y.

KETCHUM, GINA & SHARP, Architects

A sense of spaciousness achieved within limited confines.

PROGRAM: To work out an inviting, uncrowded women's specialty shop in an existing building with narrow frontage and modest depth. This store, incidentally, is for the same chain as the first store shown in this group.

SOLUTION: Facade simplified and opened up into a full wall of glass. Interior, including fixtures, organized and simplified to produce a sense of space. Stair to mezzanine placed on center both as a design element and to emphasize the fact that an additional sales floor exists. Departments kept to the two sides of the floor; door on center.



JEWELRY in a special case at the very front of the store.

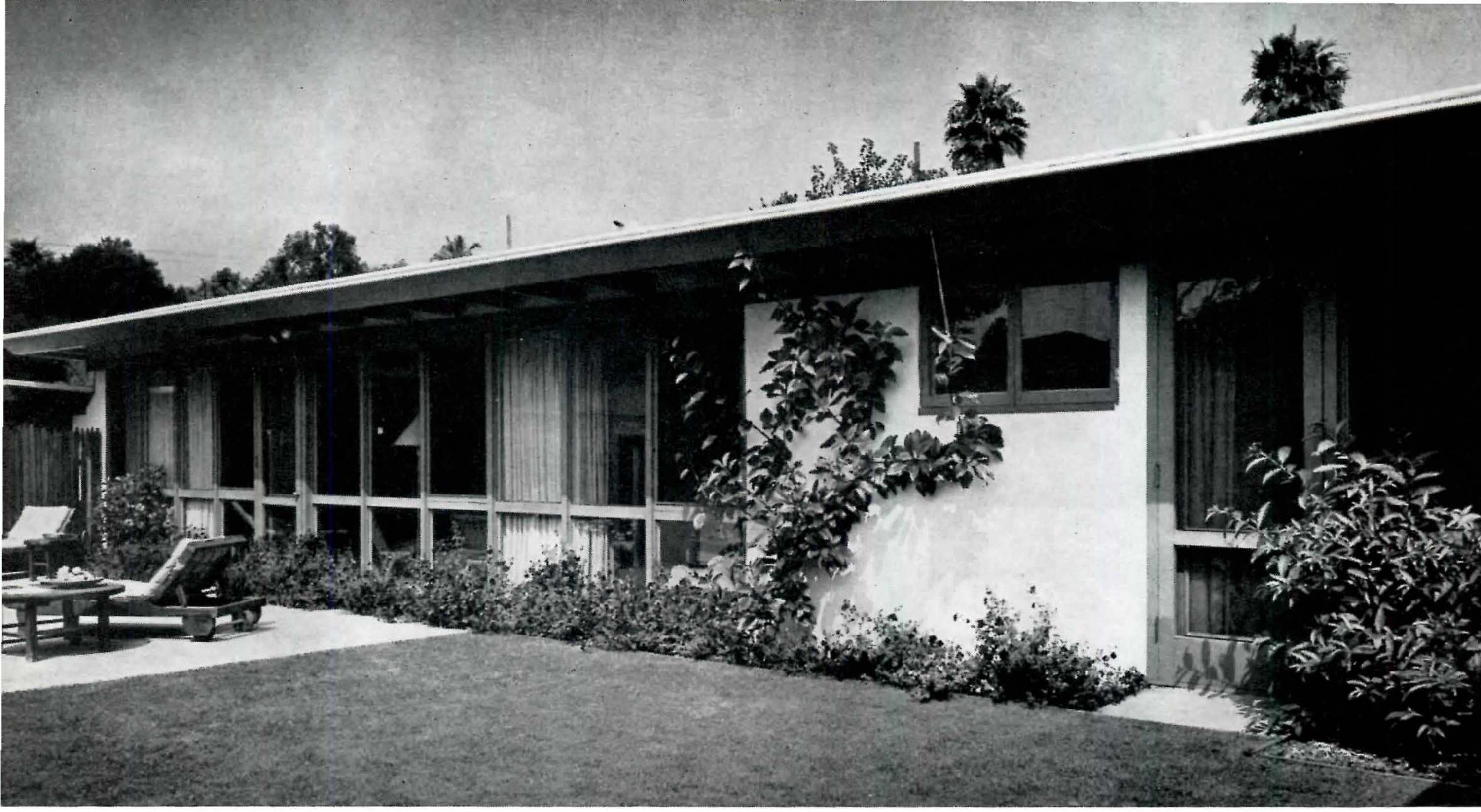
EPARTMENTS arranged along the two side walls, leaving a broad center aisle for easy customer traffic.

GLOVES set off by a partial screen.

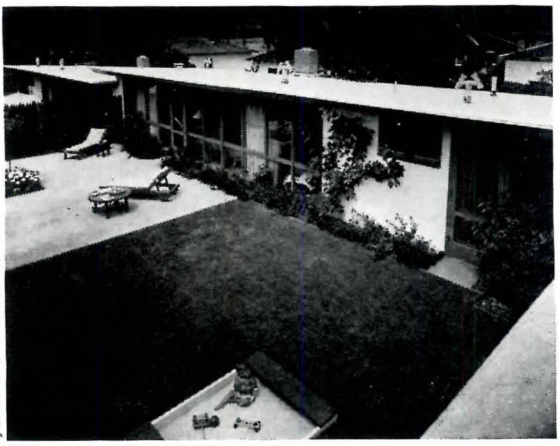
ENGINEERING OUTLINE

CONSTRUCTION: (Existing building.) **Walls:** exterior: window, vith gray mosaic bulkhead; interior: plaster, painted. **Floors:** arpet or rubber tile. **Ceiling:** perforated acoustical tile. **Fenestration:** aluminum sash with plate glass. **Partitions:** wood rame with plywood or gypsum board surfaces. **Doors:** stock, ush panel, wood. **Entrance doors:** plate glass set in a metal rame.

QUIPMENT: **Heating:** existing. **Lighting:** incandescent for eneral illumination; cold cathode in sales fixtures.



TERRACE AND GARDEN FRONT.



Julius Shulman Photos

THIS ROOFTOP VIEW shows the two dwelling units stepping down the sloping lot; also the definition of garden and terrace areas. Exterior plaster is white.

PAIRED HOUSES

LOS ANGELES, CALIFORNIA

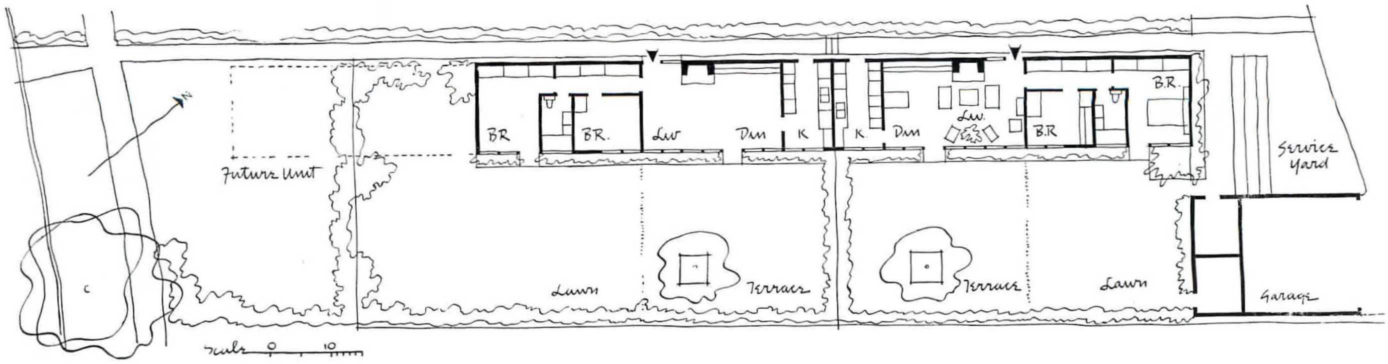
FRANK GRUYS & L. E. McCONVILLE, Architects

Simplified, multiple housing on a 50-foot lot—a Mention in this year's Progressive Architecture Awards program.

PROGRAM: To develop economical multiple housing with each unit having complete privacy, enclosed garden and terrace; to be built within the possibilities of G.I. financing.

SITE: A 50′ x 100′ lot slightly sloping from front to rear.

SOLUTION: The two houses aligned along the northwestern side of the site, leaving the southeasterly portion for terrace-garden areas. A long, simple rectangle utilizing standard 16-foot ceiling joists spanning the width; slab floor; simplified framing system.



THE 3″ x 4″ FRAMING POSTS of the southeastern front are spaced 3′-4″ o.c.

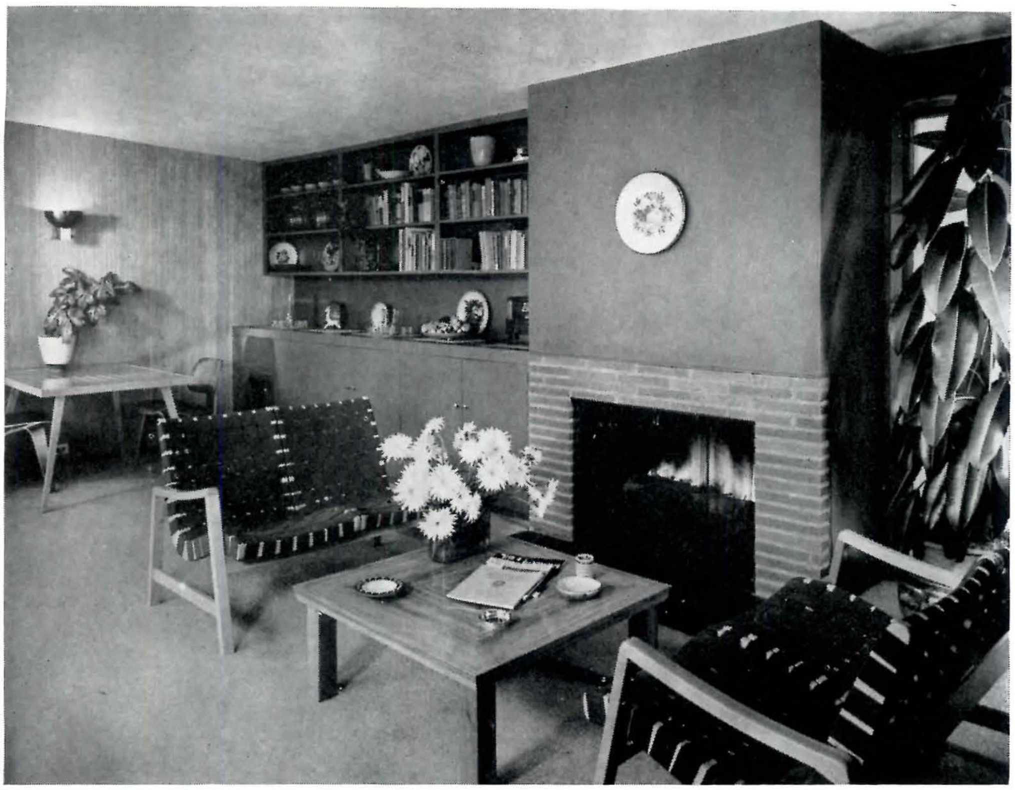
FRONT DOOR; translucent glass panel.

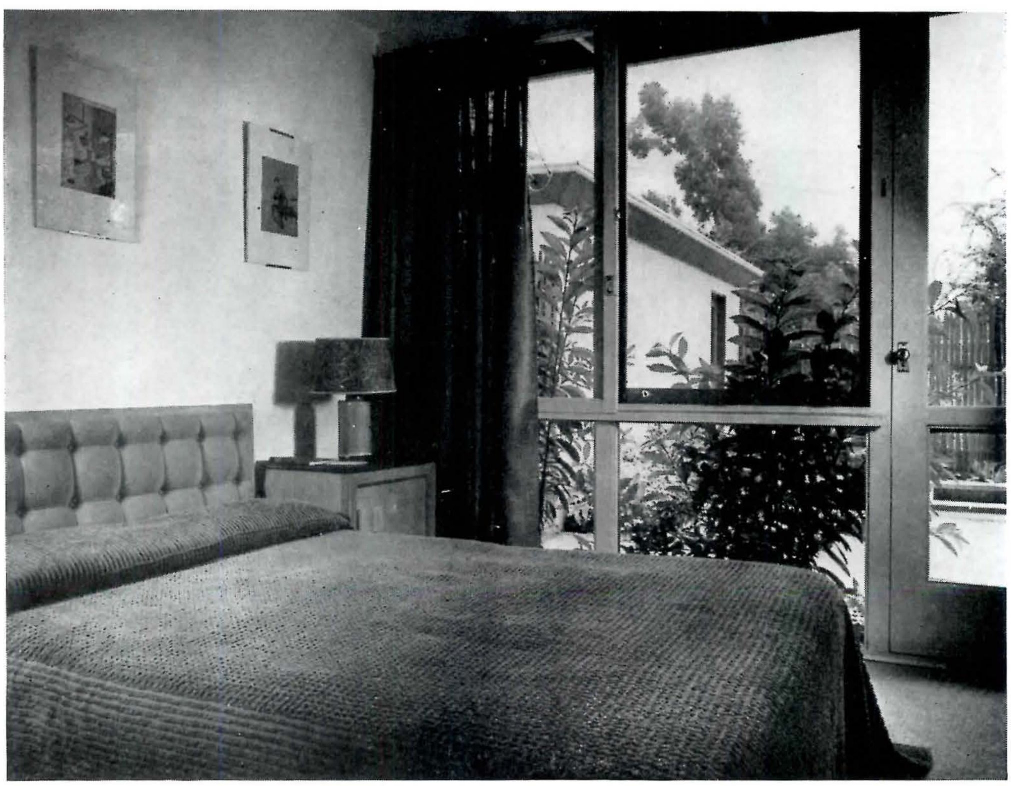
ENGINEERING OUTLINE

CONSTRUCTION: Foundations: concrete, poured integrally with reinforced concrete floor slab. **Framing:** redwood sills; standard fir wood stud, except in windowed wall portion, where white pine or select fir 3" x 4" posts are spaced 3'-4" o.c.; wood roof joists with solid bridging. **Walls:** exterior stucco on wire mesh over wire-reinforced waterproof felt; interior: plaster over gypsum-board plaster base; end walls of living room: striated plywood; linoleum around bathtub and kitchen work areas, and on counter tops. **Floors:** carpeting over the concrete generally; asphalt tile in bath and kitchen. **Roof:** white mineral grits on composition roofing over wood sheathing (4-inch batt-type insulation). **Partitions:** stud frame, plastered walls (insulation in wall between the two units). **Doors:** flush panel wood.

EQUIPMENT: Heating: gas unit heaters in general; electric wall unit in bathroom. **Electrical:** flexible metallic conduit; special lighting fixtures. **Special equipment:** double compartment kitchen sink; gas water heater.

LOOKING OUT from the living room to the private terrace; roof soffits are pale green.



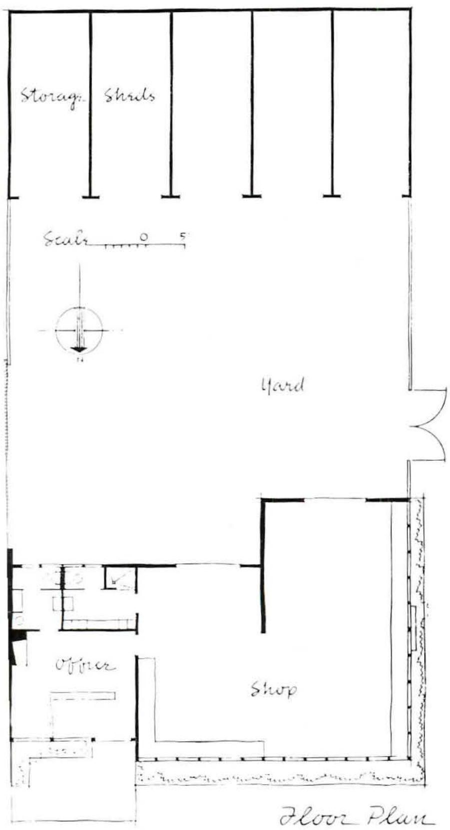


PAIRED HOUSES, LOS ANGELES, CALIFORNIA

At left of the living room fireplace (photo at top) the storage units provide for books, firewood, dining-room accessories, etc. The plywood end wall is shellacked and waxed; other walls are painted. The bedroom view (bottom) shows the ingenious window detail, with fixed bottom panels and a sliding sash above, that allows full-width screened opening. The curtain track is an integral part of the design of the window unit.

Roger Sturtevant Photos

OFFICE ENTRANCE. Brick fire wall at end; front wall of shop surfaced with redwood.



BUILDER'S

OFFICE, SHOP, AND YARD

OAKLAND, CALIFORNIA

FRANCIS JOSEPH McCARTHY, Architect

A. V. SAPH, JR., Structural Engineer

A remarkable instance of a contractor and architect sitting down together to produce a satisfactory architectural environment for the former's business activities.

PROGRAM: A building to serve a building contractor who specializes in remodeling and repair work—an office, space for a draftsman-shop foreman; workshop; equipment sheds for storage of stock, trucks, etc.

SITE: A level corner lot 53′ x 100′.

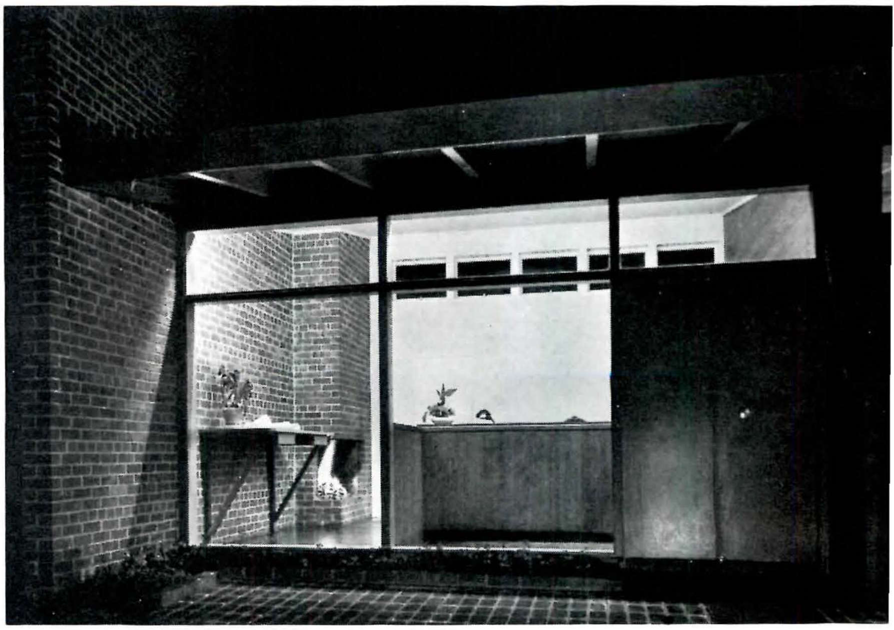
SOLUTION: Light frame structure on the corner, with a fenced yard separating the sheds, the wall of the building being a continuation of the fence; clerestory lighting for maximum use of wall space and screening of litter from view.

SHOP. The high wall serves as a screen; continuous glass provides ample light.

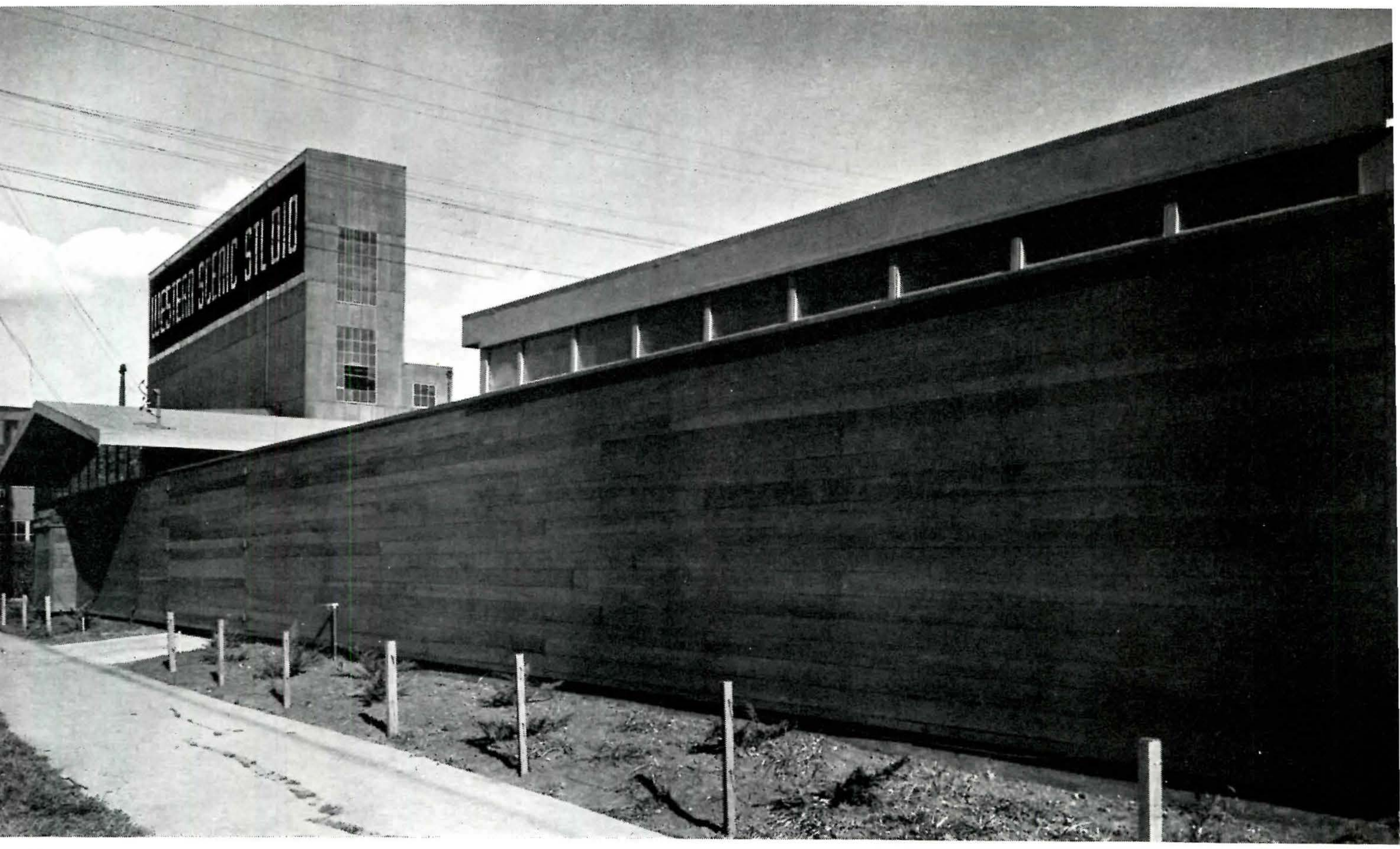
Builder's OFFICE, SHOP, AND YAR

McCARTHY

Francis Joseph McCarthy studied at Leland Stanford Jr. University, completing his architectural training in various architects' offices, including Charles Dean's in Sacramento and William Wilson Wurster's in San Francisco. Own office opened, 1938. With the Rubber Redevelopment Corporation in Brasil in war years. Current work: residences, commercial work, alterations to San Francisco's Palace Hotel, and a few industrial jobs.



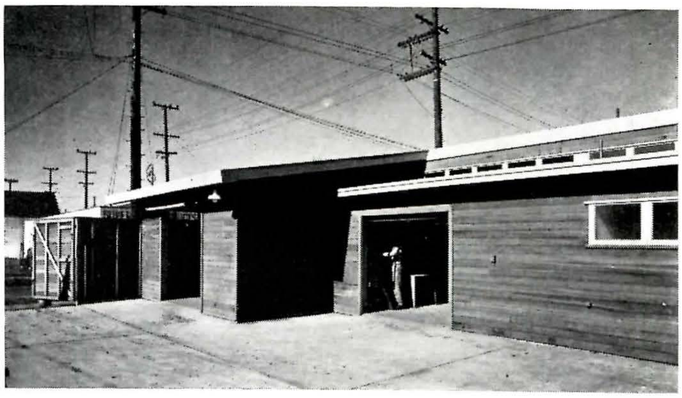
A CLERESTORY brings southern sun into the office area.



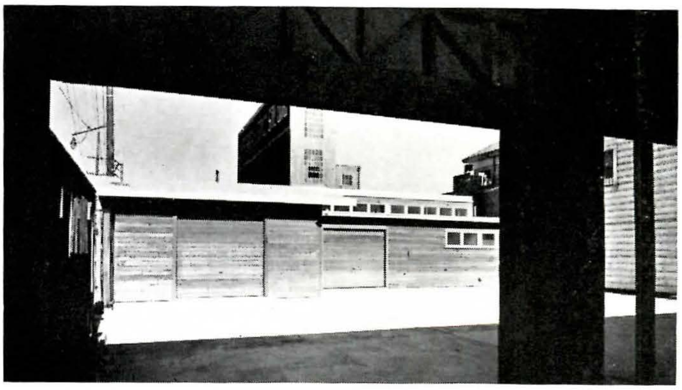
HE ENTIRE EXTERIOR of the project is treated as a fenced enclosure.

AKLAND, CALIFORNIA

The R. S. Silverberg organization handles chiefly remodeling, repair, and fire-damage work. This required a shop for five or six employees in which minor millwork, such as running a limited amount of molding, and repairing and construction of individual casework, could be done. In working out the design with the client, Mr. McCarthy reports an unusually happy experience: "He knew what he wanted and didn't keep changing his mind . . . The planning of the job was handled by the contractor-owner and his shop foreman spending time in the office with me, and we discussed their operations back and forth until the plan emerged out of it." The office-shop structure was placed at the corner of the lot for its advertising value. The fireplace in the brick fire wall of the office is used both for heating and for burning up chips and waste.



REAR OF SHOP. Gate to side street, left.

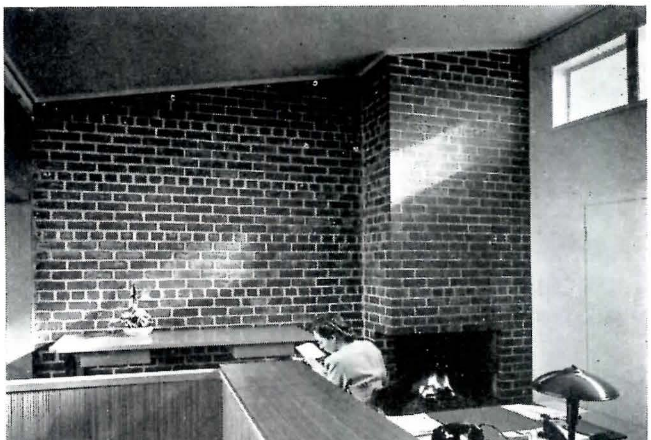


SHOP-OFFICE from one of rear storage sheds.

SHOP. Door at left opens to yard; stud walls spaced 32" on centers.

Builder's
OFFICE, SHOP, AND YARD

OAKLAND, CALIFORNIA



OFFICE. Brick fire wall; southern clerestory.

ENGINEERING OUTLINE

CONSTRUCTION: Concrete slab. **Framing:** #1 and #2 dimension fir; 6" x 6" corner and center posts; 3" x 6" studs 32" o.c.; 10" steel ridge I beam. East wall: brick. **Surfacing:** redwood, exterior; interior (in office portion only): plasterboard and redwood. **Floors:** the concrete slab, generally; asphalt tile in office. **Roof:** 3" x 8" wood joists, sheathing, tar and gravel. **Ceilings:** unfinished, except in office where plasterboard is used. **Fenestration:** wood sash, with double strength B quality glass generally, 3/16" crystal sheet glass in fixed glass areas. **Doors:** flush plywood; overhead doors in shop area.

EQUIPMENT: **Heating:** fireplace in office. **Lighting:** incandescent fixtures in shop; lumiline lamps above windows in office area.

ALUMINUM as a Structural Material

By PAUL WEIDLINGER

P/A presents the first sound technical study of aluminum as an architectural, truly structural, material to be published in the United States. The author, who has explored in previous articles for this magazine the potentialities of reinforced concrete and welded steel design, here digs into the relatively unknown field of structural design in aluminum. Paul Weidlinger has had considerable experience with this relatively new metal; he has, among other activities, been responsible for structural design of a prefabricated house, as yet not on the market, constructed wholly of aluminum.

SCOPE

Aluminum is becoming a full-fledged structural material. Its increasing acceptance is due to three factors: favorable physical characteristics; wide experience gained in its use in recent years: and the increasing current shortage and cost of steel and some other primary building materials. At present the use of aluminum is limited to a great degree to copying or imitating steel construction, which prevents full exploitation of the potential advantages of the newer metal. Such structures are uneconomical and not competitive under normal economic circumstances. However, by applying up-to-date engineering techniques, aluminum structures having distinctive characteristics can be designed; because these take full advantage of the specific characteristics of the material, they result in sound, extremely economical structures at cost equal to or even lower than those fabricated in steel.

I. INTRODUCTION

Aluminum has invaded building construction via the aircraft industry. This alone should be an indication that it could have a beneficial, progressive influence, provided it is not sidetracked into the familiar pattern of imitation of traditional materials. It is time to take stock, to decide into which direction practicing engineers and architects are to be led.

Although it was first produced in 1825, aluminum is still considered a new material. Its numerous applications, characteristics, advantages, and weaknesses are not yet completely explored. This applies especially to its use in buildings.

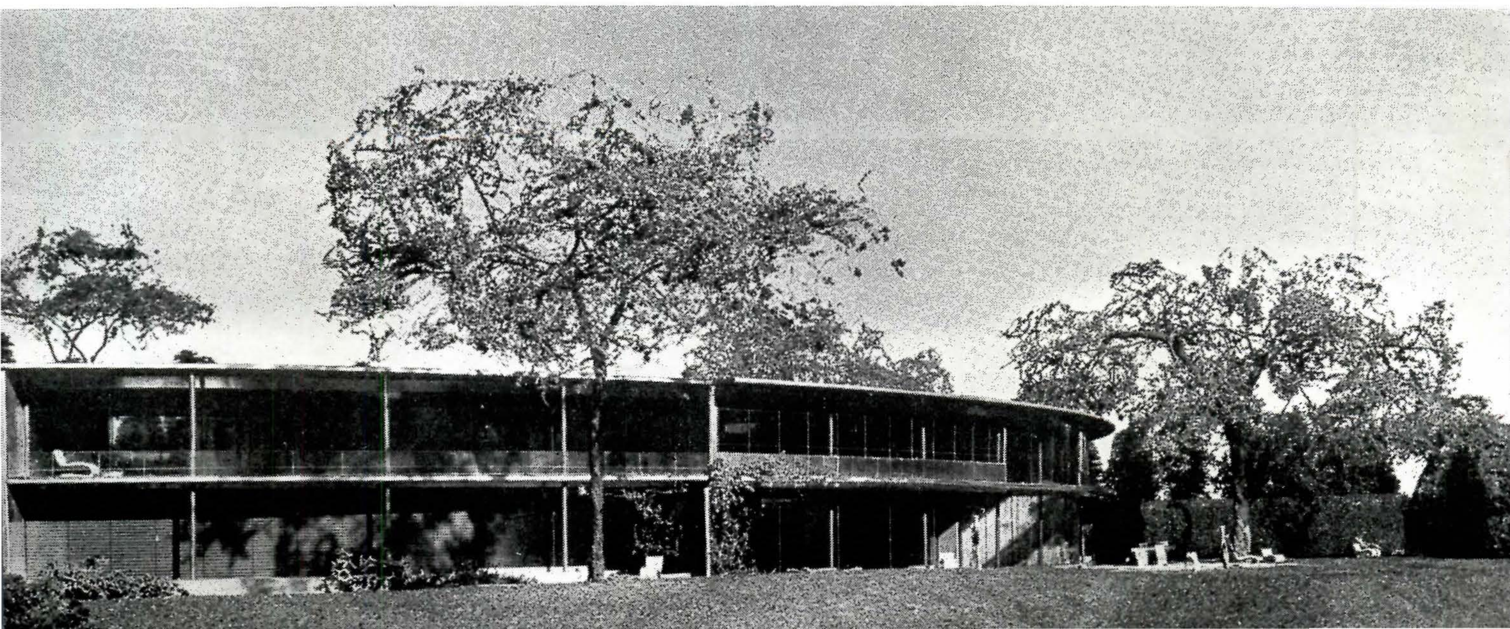
Aluminum differs a great deal from steel — the more widely used metallic structural material — yet it is reasonable to consider the two metals comparatively. An initial comparative study can be especially effective because in it one can point out the essential differences and, possibly, make it easier to avoid a familiar pitfall: use of a new material in ways really suitable only to its more familiar predecessor. Although transposition of design and production methods from an old to a new material seems almost an inevitable pattern of evolution (discussed in previous articles on reinforced concrete and welded structural steel[1]), there is always the possibility of speeding up this period of transition by calling attention to its dangers.

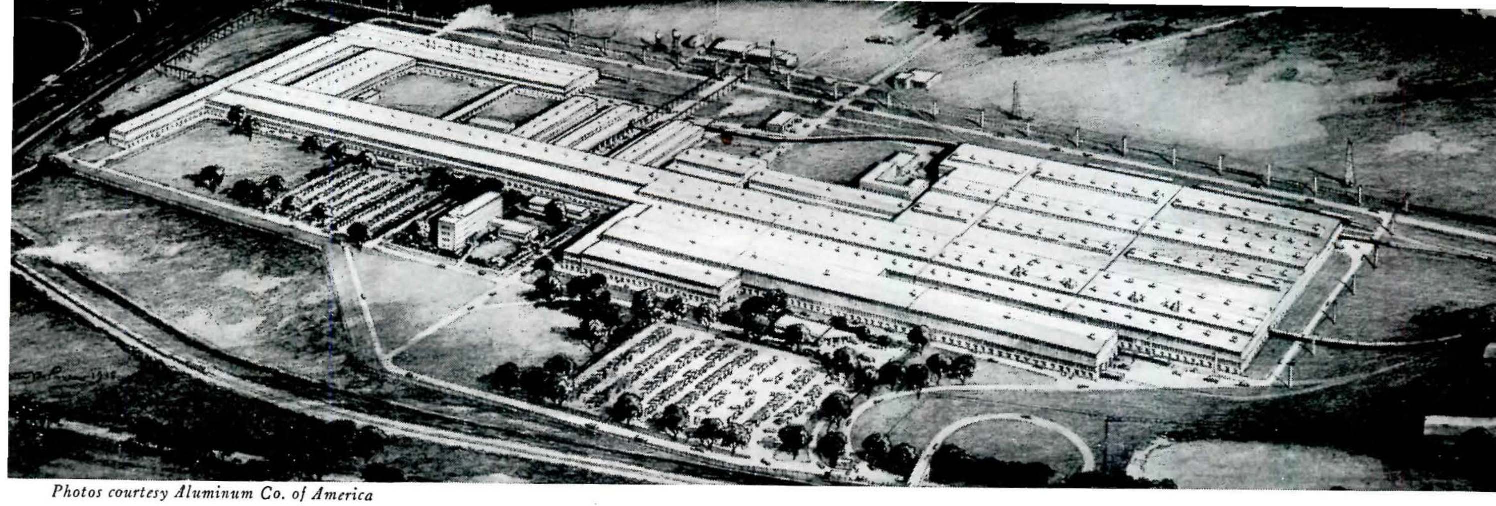
The most immediate, basic differences become apparent in such characteristics as strength, elastic modulus, resistance

[1] Architecture and Reinforced Concrete *(August 1943 P/A) and* Welding: Its Implications and Applications *(June-July 1947 P/A), both by Weidlinger.*

uminum "Q-panels," insulated, were employed for walls in this projected house designed by Antonin Raymond and L. L. Rado.

Louis Checkman





Photos courtesy Aluminum Co. of America

to chemical attack, corrosion, thermal characteristics, specific gravity, etc. As a direct consequence of such factors, there are specific methods of forming and fabricating aluminum, which in a number of instances are quite different from those suitable for steel. The advantages and limitations of these operations emphasize the special characteristics of aluminum.

The final, and equally important, distinction arises from the difference in basic cost of the two materials. Economy and cost are always of primary importance in engineering structures; they are further emphasized through increasing competition and become deciding factors in most building construction, subject always, of course, to availability of materials.

The implications of these essential differences lead to a design approach based in all instances upon the most logical application of aluminum.

II. CHARACTERISTICS OF ALUMINUM ALLOYS

Composition. Aluminum, like steel and other metals, is available in a diversity of alloys of varying strength and fabricating characteristics. They are usually divided into wrought and cast alloys. For structural framing of buildings only **wrought alloys** are important. These are classified in two groups, and **are designated with the letter** S.

The first group contains those in which various tempers are produced by cold working. Tempering changes the metal's strength characteristics and influences its workability. Softer alloys are of lower strength but are easier to fabricate. The temper designation always follows the letter S. **The soft condition is designated by the letter O. Fully hardened material is indicated by the letter H.** Intermediate tempers are indicated by fractions before the letter H (¼H, ½H, ¾H).

The second group contains heat-treatable alloys which usually have higher mechanical properties. Temper designation again follows the letter S and **the annealed condition is designated by the letter O. The letter T indicates that the alloy is in fully heat-treated condition** to develop its maximum strength. Some of these alloys, aged at high temperature, are designated by the letter W.

Alloy composition of both groups is identified by code numbers before the letter S. Aluminum for structural purposes is alloyed with one or more of the following: manganese, magnesium, copper, silicon, chromium. The high strength duraluminum 17S (second group) for instance, contains a total of 5% of alloying elements (copper, manganese, magnesium) while the alloy 3S (first group), which has the lowest strength but is very widely used, contains 1.2% of manganese only. (A new alloy, 24ST, has higher strengths than 17ST.)

In addition, corrosion resistance decreases as the amount of alloying elements is increased. The above-mentioned alloy 3S, for instance, is highly resistant, while 17S is quite susceptible to various types of corrosions. High alloy content usually means higher cost as well. 3S½H and 17ST are the most widely used materials; further discussion will be limited to these types; 17ST because its properties parallel those of steel.

Strength of the material is usually expressed in terms of tensile strength. **Ultimate strength** is the maximum stress (in pounds per square inch, psi) which the material can develop, while **yield strength** is the stress (in psi) at which the material exhibits a specified (standard) limiting, permanent set, or elongation.

Commercial grade structural steel (Carbon Steel for Bridges and Buildings, ASTM No. A7) has an ultimate strength of 60 to 72,000 psi and a yield strength of 33,000 psi. Low alloy, (special) structural steel can be also obtained with considerably higher strength values.

Against this, 3S½H aluminum has an ultimate strength of 21,000 psi and a yield strength of 18,000 psi. The corresponding values of 17ST are 60,000 psi and 37,000 psi, respectively, about equal to those of commercial structural steel.

In addition to tensile strength, compression and shear strength are important, but they usually bear a direct relationship to tensile properties.

There is a considerable cost increase from low- to high-strength alloys, due to the higher percentage of alloying elements. Hence, use of high-strength aluminum alloys cannot always be justified because other characteristics may outweigh strength in importance, as will be pointed out later. The commercial availability of both types of alloys therefore takes on great importance.

Elastic modulus, the exact measure of "elasticity," can be interpreted in its ordinary usage as the stress which, theoretically, would cause an elongation equal to the original length of a bar subjected to tension. For all aluminum alloys and tempers this value is approximately 10,000,000 psi; for steel, 30,000,000 psi. This applies also to compression and to other types of deformations composed of compression and tension, such as transverse deflection in bending. The modulus of elasticity also influences the elastic stability of structural members, which in practical application limits the loading of slender columns. The higher the elastic modulus the higher the critical load, i.e., the load which can be sustained before buckling occurs. (So-called local buckling, or buckling of certain portions or elements of a column, is also influenced by the elastic modulus, but the yield point strength is a more direct measure for this purpose.)

Weight. The most widely known property of aluminum is its light weight. Its specific gravity is about 2.70 as compared to 7.85 for steel. Aluminum alloys used structurally range in weight from 0.096 to 0.101 lbs per cu inch; weight (or rather density) of the metal is not appreciably affected either by the small percentage of alloying elements or by the various tempers. Commercially pure aluminum has a yield strength of 5,000 psi; by alloying and heat treatment this can be increased to 58,000 psi. A 1,000% increase in strength can therefore be obtained with only 4% increase in weight.

Resistance to corrosion and chemical attack. Although aluminum is not entirely immune to atmospheric or other corrosion, it exhibits higher resistance than any other commonly employed structural metal. Corrosion resistance

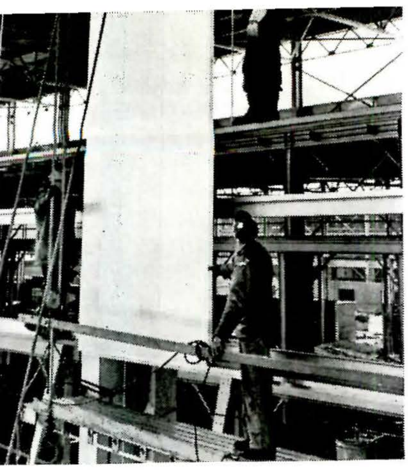


plate rolling mill, Davenport, Iowa, should substantially increase the company's production. Steel framed, the mill buildings contain approximately 3-1/3 miles of 24-in.-wide "Q-panels" 1-⅝ in. thick, constructed of 14-ga fluted aluminum (exterior face) and 16-ga plain aluminum sheet (interior) with glass fiber insulation between. Panels have shiplap joints and are caulked. There are also 47 acres of aluminum roof decking, covered with 1 in. glass fiber insulation and built-up roof, on the buildings.

varies with the various types of alloys. Commercially pure aluminum, designated 2S (and also 3S) have the highest resistance to the atmosphere and salt water. Alloy 52S, however, is more resistant to salt water than 2S or 3S from the point of view of retention of mechanical properties and appearance. These alloys are generally used without special protection. The initial thin oxide surface film is usually sufficient to prevent further deterioration.

Heat-treatable, high-strength alloys, though more susceptible to loss of mechanical properties when exposed to corrosive conditions, are still considered resistant; their resistance is related to the temper. For severe exposure various means of protection are available. One method consists of coating the surface with a thin film of commercially pure aluminum. Metals treated in this manner exhibit a resistance equivalent to the alloys 3S and 2S. Other protective coatings can be produced by anodic oxidation or painting.

On the other hand, aluminum is highly susceptible to electrolytic corrosion. This occurs when dissimilar (electropositive and electronegative) metals are in contact in the presence of moisture. In such instances paint protection or other separation of the contact surfaces is usually sufficient to prevent corrosion.

Aluminum exhibits resistance to the attack of various chemicals, due to surface oxidation. Considering aluminum as a structural material, it is of special importance that gaseous compounds of sulphur, such as are present in the atmosphere of industrial centers, have no harmful action on the metal.

Thermal characteristics. Thermal conductivity of both aluminum and steel is sufficiently high to cause them to be disregarded as bulk insulating materials, although as reflective insulation both have possibilities (see below). The high conductivity of aluminum is important, however, since it makes possible the use of hot-driven rivets in heat-treated alloys without damage to mechanical properties.

The coefficient of thermal expansion of wrought aluminum alloys used for construction varies from 0.0000114 to 0.0000128 of an inch per inch per degree Fahrenheit. This is about twice as much as the coefficient for steel, which means that thermal expansion of large aluminum structures may present some problems. On the other hand, the secondary stresses caused by thermal expansion are lower than in steel structures because of the lower modulus of elasticity of aluminum.

The high reflectivity of aluminum has great importance in reducing heat losses. Aluminum reflects 85 to 95% of radiant heat, and its reflectivity does not diminish seriously with surface oxidation. The reflectivity of rolled sheet steel is 35% and of galvanized steel 72 to 77% only.

The properties of a few aluminum alloys used structurally, compared with those of structural steel, are shown in **Table 1.**

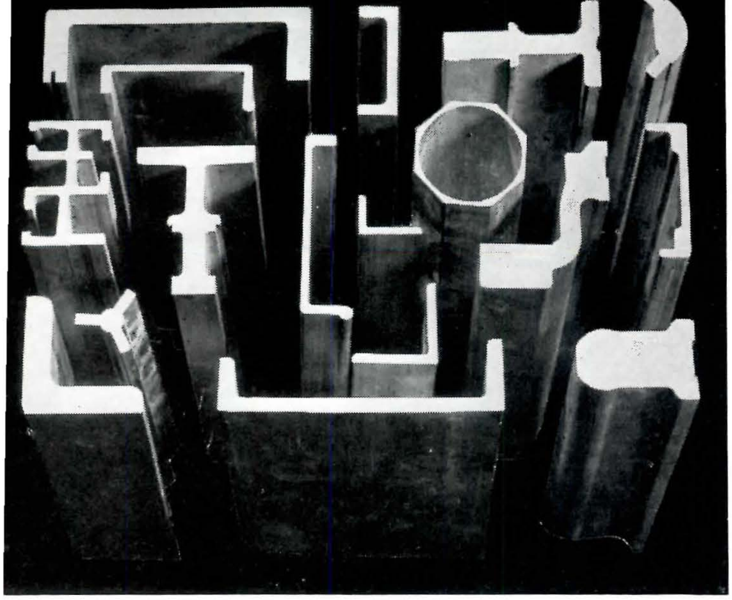
III. FORMING AND FABRICATION

While there exists a fairly accurate general impression of the strength and elasticity of aluminum, its "secrets" of forming and fabrication are much less known. The wide use of aluminum extrusions has been much publicized, resulting in an almost universal impression that everything aluminum is made by extrusion. Although this is far from the truth, extrusion has greater potentialities in aluminum than in steel. Principles of forming and fabrication are basically the same for all metals, but differences in physical properties require modifications in these operations. Aluminum is one of the most workable of common metals. One pound of aluminum can be formed into a foil of 30,000-sq-in. area, or into plates up to three inches thick. It can be drawn into a wire 20,000 miles long, or into a rod eight inches in diameter.

The availability of various types of alloys and tempers usually permits a choice which is satisfactory as to both structural requirements and workability. Non-heat-treatable alloys work-harden as they are formed; for severe working operations it may be necessary to start the operation in softer temper than one would otherwise select. Simple light-gage

TABLE 1. TYPICAL PROPERTIES OF ALUMINUM ALLOYS AND STEEL A7

	Alloy	Temper	Yield Tensile Strength Psi	Ultimate Tensile Strength Psi	Weight Lbs/cu in.	Modulus of Elasticity Psi	Alloying Elements				
							Copper %	Silicon %	Magnesium %	Manganese %	Chromium %
Non-Heat-Treatable Aluminum Alloys	3S	0	6000	16000	0.099	10000000			1.2		
		¼H	15000	18000							
		½H	18000	21000							
		¾H	21000	25000							
	52S	0	14000	29000	0.096	10200000				2.5	0.25
		¼H	26000	34000							
		½H	29000	37000							
		¾H	34000	39000							
Heat-Treatable Aluminum Alloys	14S	T	58000	68000	0.101	10600000	4.4	0.8	0.8	0.4	
	17S	T	37000	60000	0.101	10400000	4.0		0.5	0.5	
	24S	T	46000	68000	0.100	10600000	4.5		0.6	1.5	
Carbon Steel	A 7 ASTM		33000	60/72000	0.284	29000000					



Some of the shapes currently being extruded in aluminum by Reynolds Metals Co.

structural shapes in ½H temper can usually be cold formed without difficulty; some shapes are formed even in ¾H temper.

The sudden change in temperature caused by quenching heat-treatable alloys can cause distortions in fabricated parts which have to be removed by subsequent rolling or stretching. This must be taken into account when solution heat-treatment is used on formed members.

Hot-forming produces castings of various types, by forging and hot-rolling. Of these operations only the latter is important in ordinary structural applications, for heavier structural shapes. Rolled aluminum shapes are today produced with cross-sectional areas up to 30 sq in. and up to 85 ft in length.

Other methods include extrusion and cold-rolling. Extrusion's main merit is the low cost of extrusion dies, which permit forming simple or intricate shapes at high speed. A number of standard structural shapes (I-beams, channels, etc.) are extruded. A great variety of shapes can be extruded in various alloys, but there is a definite limit to weight per foot of length and total weight of the member. In general, shapes of which the largest cross-sectional dimension is over 11 inches cannot ordinarily be extruded.

Equally important is cold-rolling of light-gage sections (usually up to 0.10″ thick). All such sections have in appearance the typical character of light-gage members: stiffened edges, rounded corners, etc. These sections find an increasingly wide application in aluminum construction.

Riveting is practically the same as for structural steel. Both aluminum alloy and steel rivets are used. Squeeze-type riveters are preferred on aluminum rivets, which usually have a cone-point head developed especially for aluminum. Rivets up to ½ inch in diameter are usually cold-driven; larger sizes are hot-driven. Riveted aluminum compression members show a characteristically close rivet spacing in order to avoid buckling of the component parts between the rivets. Spacing between rivets is usually not less than three diameters and the edge distance not less than 1.5 diameters.

Welding. Although aluminum can be torch- or arc-welded, certain inherent characteristics limit the application of all such fusion welds for structural purposes. The most weldable structural alloy is 3S (for higher strength non-heat-treatable 52S is used; but this presents some difficulties). In higher strength, heat-treatable alloys, welding tends to destroy the effects of prior heat-treating, since annealing temperature is exceeded in the metal adjacent to the weld. In addition, because of the relatively high coefficient of thermal expansion, it is difficult to avoid considerable buckling and distortion in the joints. It is generally admitted that at the present time "where the joint is depended on for maximum efficiency, torch-welding and in many cases arc-welding cannot be considered equal to a well designed mechanical joint."[2] On the other hand, a number of satisfactory fusion-welded assemblies were manufactured during the war for the US Army Air Corps and Navy.

Considerably less doubt exists as to the reliability of well designed and executed resistance welds. Of this category, spot and seam welds should find increased use in light-gage aluminum structures. Spot welds very often replace riveting, a practice particularly justifiable in assemblies of thin aluminum sheets in which the reduced bearing area makes rivets inefficient. Furthermore, spot and seam welders can be operated at a speed which makes their use very economical: seam welders operate up to 30 ft per minute. Because of the different physical characteristics of aluminum, the technique and equipment employed differs considerably from that used for steel. Although some skill is necessary to operate spot and seam welding equipment, in selecting and maintaining electrodes, and selecting proper pressure and current, it is a complete mechanical operation as compared to arc or torch welding.

IV. ECONOMIC ASPECTS

The most important cause for the recent expansion in the use of aluminum as a structural material is twofold:
1. A current shortage and increased cost of steel.
2. Expansion of aluminum producing capacity, plus substantial price reductions in recent years.

Since these factors have a substantial influence on the work of designing engineers and architects, they merit close examination. Although the steel industry is producing near capacity, the demand for finished steel in 1948, including both domestic and export needs, is likely to exceed production by 8%, or from three to five million tons. Shortages are particularly acute for light-gage sheets. Automobile production, the oil industry, and railroads are short of steel; export requests are not being met; the shortage of structural and reinforcing steel is quite notorious. Production will undoubtedly be expanded somewhat, but present plans will take about two years to come into full effect.

In contrast to this, since World War II aluminum has been, until recently, quite readily available. In five years aluminum ingot capacity has increased 700%, and fabricating capacity (in some products) 45-fold. Before the war the demand for aluminum, compared to steel, was almost negligible: 350 million lbs per year. After the war, capacity was a staggering 2.3 billion lbs. During the war years the aircraft industry consumed all but 20% of total production, but since V-J Day the effective capacity of the aluminum industry (mainly of Alcoa, Reynolds Metals Co., and Henry Kaiser's Permanente Metals Corp.) has fallen back to 1.3 billion lbs. This is due partly to the uneconomical expansion policy necessary during the war, which cannot be supported at present. In 1948 the three principal aluminum producers are already operating very close to economic capacity. Of this, the building industry demands over one-third of the total, and a critical aluminum shortage is rapidly developing. The situation is aggravated by a number of other factors: there is a shortage of electric power, of which the aluminum industry is one of the largest consumers; imports from Canada are being reduced; the government stock of pig aluminum is gone while scrap aluminum is more and more difficult to get; and rearmament needs are increasing again. The relatively small output of aluminum (650,000 tons) against the much greater steel production (84,000,000 tons in 1947) means that it will not soon supplant steel on a wide scale. But the war and immediate postwar years, when aluminum was still readily available, were used by the aluminum industry to make a serious inroad into the steel market; and a great number of users who switched to aluminum only because of the steel shortage are going to continue to use — or try to use — this material.

As an additional factor, the increasing cost of steel against the lowered cost of aluminum also enters the picture. Aluminum is the only important structural metal of which the price has been reduced in recent years. Aluminum ingot sold at 20.5 cents a pound in 1939 as against 16 cents at present;

[2] *Alcoa Aluminum and its Alloys. Aluminum Company of America. Pittsburgh, 1946.*

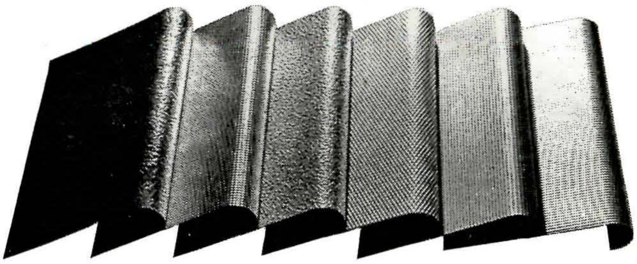
on a volume basis aluminum has become the cheapest non-ferrous metal. Of course, in spite of this, aluminum is still a high-cost metal, whether compared with steel by weight or by volume. Aluminum sheet sells at about 27 cents a pound as compared to 4 to 6 cents for steel. One pound of aluminum sheet will cover nearly three times as large an area as one pound of sheet steel of the same thickness, but even on this basis the cost of aluminum is more than that of steel. This cost margin disappears at the present steel "gray market" price of 14 cents a pound, but under normal conditions the higher cost of aluminum is the most important single factor which affects adversely its widespread structural use. This higher cost can be partially offset by some specific advantages: economically the most important factors are high scrap value (at present scrap is selling for more than virgin metal) and low maintenance cost due to the corrosion-resistive properties of aluminum. On this score aluminum can be compared in some instances with stainless steel sheet, which costs at base price 40 cents a pound; aluminum is of course considerably cheaper. The previously discussed physical properties of aluminum can be more fully exploited technically, as will be shown later, and these together with the economic factors will ultimately permit its fully competitive use. The situation presents a real challenge to designers of aluminum structures.

V. RELATIONSHIPS AND IMPLICATIONS OF PHYSICAL CHARACTERISTICS AND ECONOMIC ASPECTS

The preceding essential discussion has covered the general properties of aluminum and steel; certain conclusions become more revealing if the comparison is carried further. Consideration of the major structural properties such as strength and elasticity becomes really meaningful only if they are related to other characteristics such as specific gravity, corrosion resistance, cost, etc.

Strength. The light weight of aluminum is often used as the basis to which other characteristics are related. Technically this is called the "strength-weight ratio," which in this discussion means the relationship between ultimate tensile strength and weight per cubic inch. **The strength-weight ratio can be visualized by imagining a length of vertically suspended wire, of one square inch cross-section, which will just snap under its own weight.** Since such an aluminum wire (of alloy 17ST) would weigh 1.2 lbs. per linear foot, the length at which it will break by its own weight can be obtained by dividing its ultimate tensile strength, 60,000 psi, by 1.2. This will give a wire 50,000 ft long. A corresponding wire in 3S½H would be only 17,600 ft long due to its lower strength, which would be about the same length as a similar wire made of structural steel (ASTM A7). This means that the strength-weight ratio of aluminum is higher than that of steel for certain high-strength alloys only. **The same relationship is expressed by "specific strength," which is obtained by dividing ultimate tensile strength by specific gravity.** Taking the specific strength of steel as 1.00, corresponding values for 17ST are 2.8 and for 3S½H, again, only 1.00.

On the basis of specific strength, cost of the material can be put into a clearer relationship by establishing price paid per pound per square inch of strength. Taking the cost of sheet steel at four cents a pound, of 17ST at 30 cents, and of 3S½H at 27 cents, the **"cost-strength ratio"** of the three materials is proportionately: 1.0 to 2.6 to 6.7. If strength alone governs, material cost of an aluminum structure of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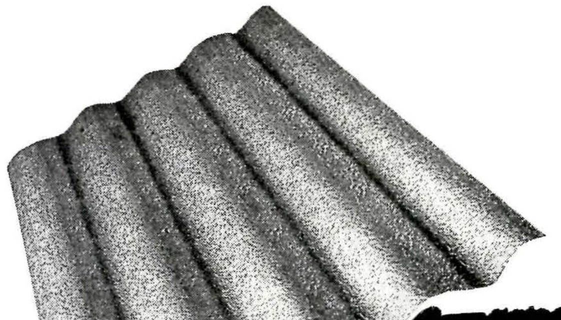
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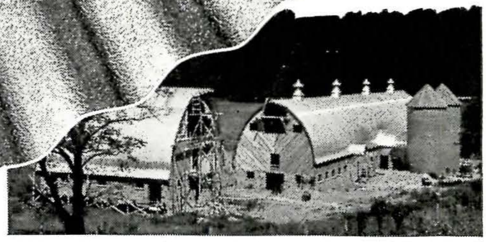
Reynolds Metals Co.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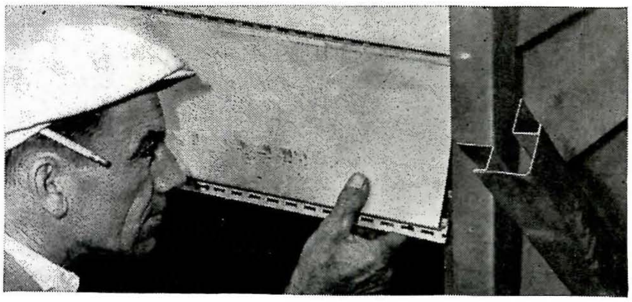
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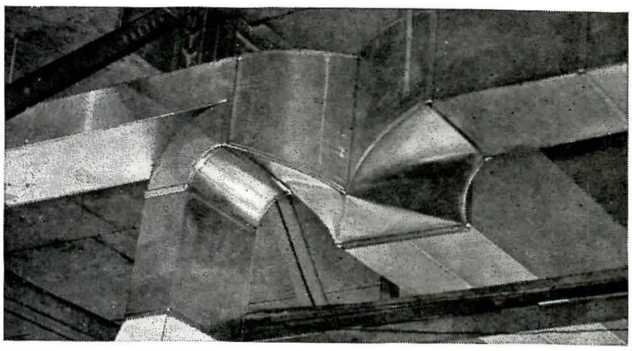
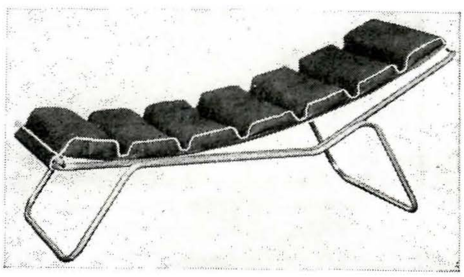
Reynolds Metals Co.


E

Various current uses of aluminum. . . . . *Photo A*, sheet aluminum embossed to increase its rigidity as well as for surface pattern. *B*, embossed corrugated sheet is a direct adaptation from a more familiar material, with the addition of a special surfacing to reduce glare. An "industrial" type of corrugated sheet just introduced exploits aluminum's characteristics more fully and will support greater loads. *C*, farm buildings are an important market for this type of product. *D*, Kaiser aluminum siding has some justification; using small units, sprung into place, reduces the possibility of "waving" and combats thermal expansion; but why negate its reflective insulating value by painting, and why so close an adherence to wood techniques? *E*, air ducts formed of a workable aluminum alloy. *F*, aluminum tubing forms the frame of a lounge designed by Ferdinand C. A. F. Kramer, architect. Of all these uses, duct work and chair seem wholly logical from the author's viewpoint.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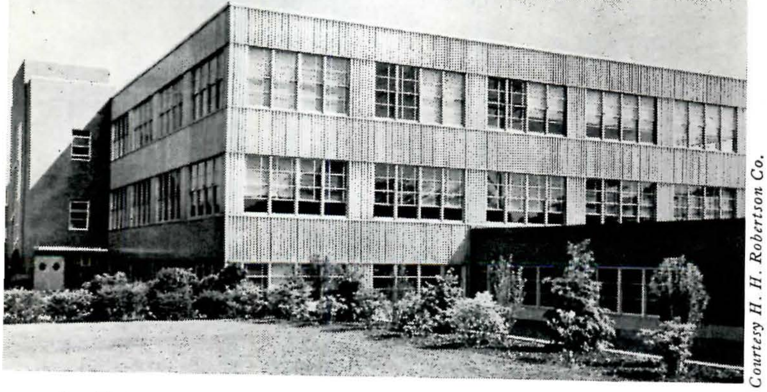
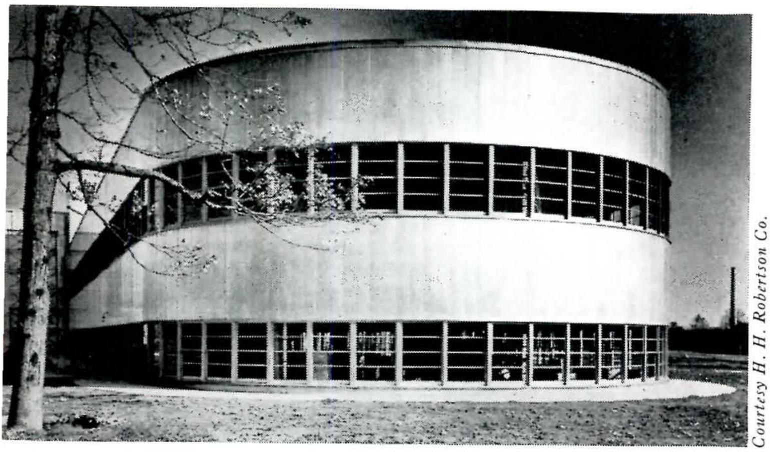
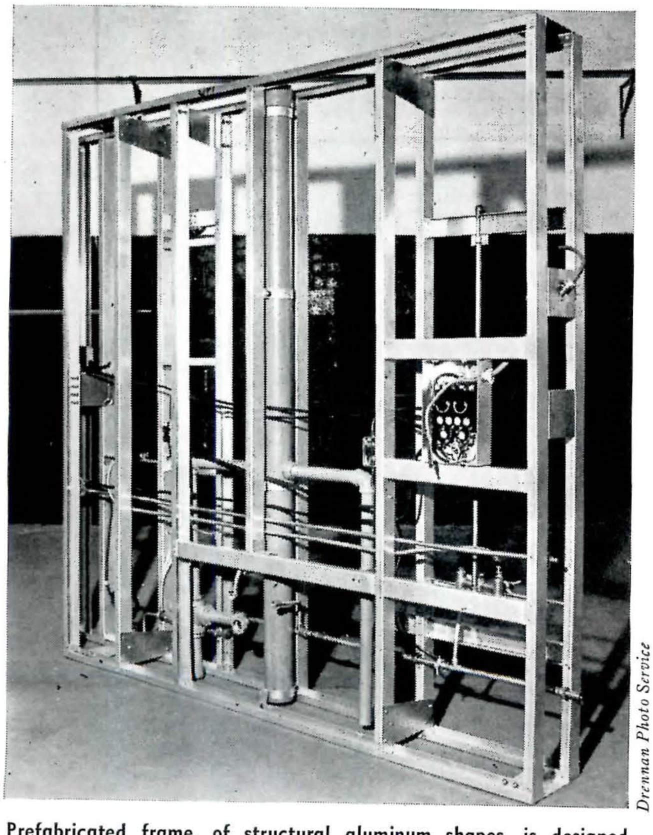


Doubleday Doran's new building at the Garden City Press, Long Island, N. Y., is surfaced with aluminum "Q-panels."



Federal Telecommunication Laboratories, Nutley, N. J., demonstrate the adaptability of "Q-panels," used vertically, to curved as well as flat surfaces.



Prefabricated frame, of structural aluminum shapes, is designed so that heavy preassembled plumbing units, etc., can be installed to form a mechanical and electrical core for a prefabricated house. Structural design by the author. Electrical engineer: Claude Engel; mechanical engineer: Morris Shapiro.

17ST alloy will be 2.6 times as much as steel, of 3S½H, 6.7 times as much. In all suitable aluminum alloys and tempers, the cost will be from two to seven times as much in steel. Another obvious conclusion is that in such instances it is more economical to use the high-cost, but also high-strength, alloys of the heat-treatable group (14ST, 17ST, and 24ST); provided that forming and fabricating, which are more difficult, will not offset the gain.

These conclusions, however, must be modified by additional factors which favor aluminum. Often disregarded, these facts dispel the mistaken notion that aluminum is, and will remain of necessity, a high-cost structural material.

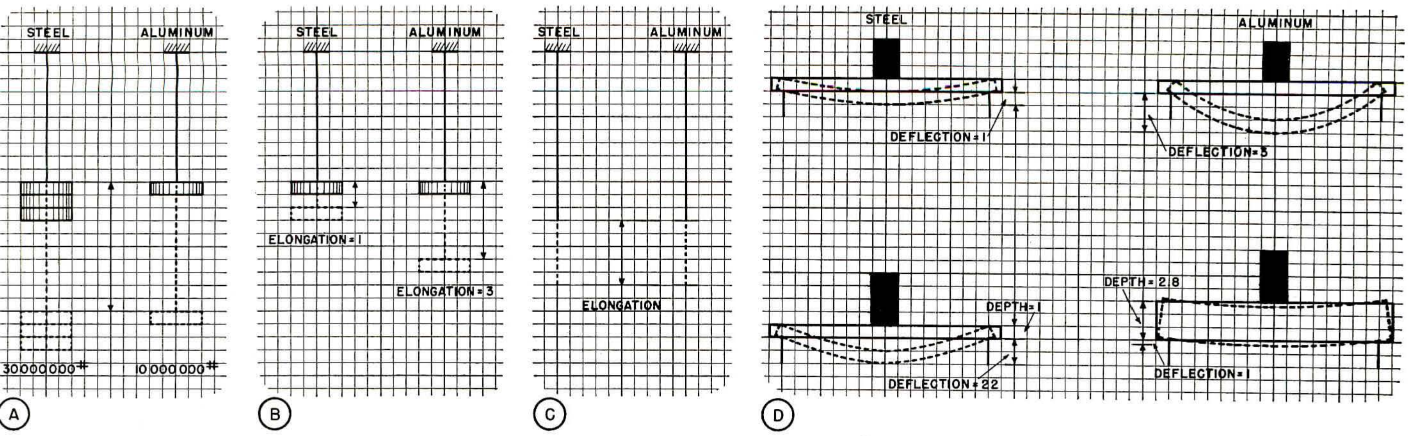
Of two identical structures supporting identical loads, the weight of the steel structure (dead load) will be about 2.8 times that of the aluminum one. **In heavy structures with high dead load-live load ratio this permits a further reduction in quantity of aluminum, since it carries less dead load.** The reduced weight affects other construction factors, permitting lighter and therefore cheaper foundations; it also reduces the cost of erection and transportation of materials. Weight reduction also has an obvious economic effect on transportable structures.

The high strength-weight ratio has an additional advantage in that it makes possible the use of a larger mass of materials of the same weight. This means increased safety, essential in structures subject to heavy vibration, as well as a considerable gain in load-carrying capacity in bending. Of two plates of equal width, span, and weight, an aluminum plate is 2.8 times as thick as a steel plate. If the materials have equal compressive and tensile strengths (structural steel and alloy 17ST) the aluminum plate has 7.8 times as much load-bearing capacity as the steel plate of the same weight. In this case the strength-weight ratio for transverse bending is 7.8 for aluminum against 1.00 for steel. Yet, *since cost per pound of the two materials is in about the same ratio, but in inverse proportion, the cost-strength ratios are equal.* In this instance aluminum is fully competitive with steel on the basis of strength alone, disregarding such other advantages as greater safety and lower maintenance.

Aluminum's corrosion resistance reduces maintenance cost by eliminating the need of repeated painting of exposed members, and increases their safety. It also permits design of structures having parts not accessible for painting (narrow box girders, etc.), which therefore could not be designed in the same shape in steel. **In addition to these obvious advantages, corrosion resistance offers, when related to strength, other favorable possibilities in light-gage construction.** When such structures are built of corrodible metals, the minimum thickness of the material is often determined by corrosion. In a number of structural applications this leads inevitably to "overdesigning." In light-gage steel, for instance, it is usual not to use members made of sheets thinner than 0.06 in. (16 ga), disregarding strength requirements. This limitation does not apply to aluminum, of which it is practical to use sheets half the thickness permissible for steel, or even less. In a number of instances even this reduced thickness would not justify the use of high-strength alloys, but cheaper ones such as 3S can be used. Reduction of thickness from 0.06 to 0.03 in. means a weight ratio of about one to six as between aluminum and steel, which brings first cost of the aluminum structure close to the cost of steel. Additional maintenance and fabrication advantages further reduce the cost difference.

Elasticity. Load-bearing capacity of structures is also limited by the maximum permissible elastic (i.e., not permanent) deformation. The magnitude of elastic deformation is inversely proportional to the elastic modulus of the material, which is constant for most metals up to a certain stress limit. In aluminum it does not vary materially for different types of alloys or tempers. Deformation is also a function of other factors (type and intensity of loading, geometrical shape of the member, and type of supports).

Since the elastic modulus of aluminum is 1/3 that of steel (10,000,000 psi to 30,000,000 psi), of two identically loaded structures which are geometrically and otherwise identical, the aluminum one will deform three times as much as the



MODULUS OF ELASTICITY

This is represented by the load required to stretch a wire of 1 sq in. cross section to twice its original length (*A*). *B*, under the identical loads, an aluminum wire will stretch 3 times as much as a steel wire of the same dimensions. *C*, under their own weight, both steel and aluminum wires of identical dimensions will stretch the same amount. *D*, top, of two girders of *identical dimensions*, the aluminum one deflects 3 times as much under the same load. *D*, lower, of two girders of *equal weight*, the aluminum one can be 2.8 times as deep as the steel girder, and will therefore deflect only 1/22 as much.

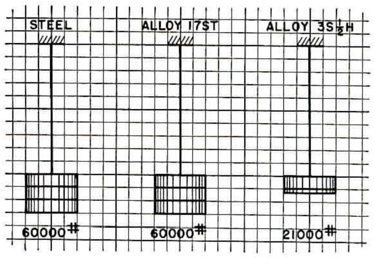
steel. Since the aluminum structure is nearly three times as light as the steel structure, however, they will deform the same amount under their own weight. This concept is similar to the strength-weight ratio or specific strength. **This can be visualized by assuming vertically suspended aluminum and steel wires of the same cross-sectional area and length which will stretch an equal amount under their own weight.** In other words, because the elastic modulus and specific gravity are in the same proportion in both steel and aluminum, both materials have the same **"specific elasticity."**

Due to the equal specific elasticity of the two materials, in structures where elastic deformation is the governing factor, the basic material cost of aluminum will be 6.7 times as high as that of steel if 3S alloy is used, or 7.5 times for 17ST. In such structures nothing is gained by using high-strength alloys. In light structures, where the superimposed loads are large compared to dead load, aluminum will deflect three times as much as identical steel structures.

These drawbacks, however, can be turned into advantages. **The high deformation of aluminum is an advantage in structures subject to sudden impacts,** since the large deflection absorbs the energy of sudden loadings; the aluminum structure acts as its own shock absorber, reducing the increased stress caused by impact. A similar consideration applies to stresses caused by temperature deformations. Although the coefficient of thermal expansion of aluminum is twice that of steel, temperature stresses are 50 percent lower since the elastic modulus is only 1/3 that of steel. This materially affects design of statically indeterminate structures.

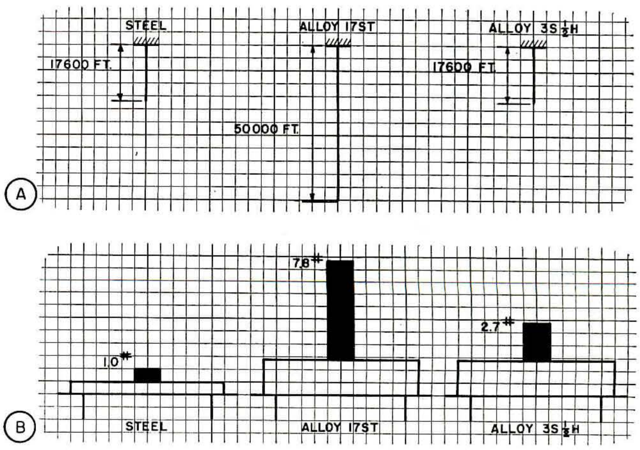
Aluminum's light weight gains special importance in transverse deflection. Of two plates of equal span, width, and weight, the aluminum plate will be 7.3 times as stiff as the steel plate; i.e., deflection under the same load will be 7.3 times as large in the steel plate as in the aluminum one, since the aluminum plate of the same weight is 2.8 times as thick as the steel plate and deformation is proportional to the depth cubed. Under such circumstances aluminum construction can be substantially cheaper than steel.

The low elastic modulus of aluminum is to its disadvantage if the material is used as a slender column and is compared in load-bearing capacity to an identical steel column. Such columns carry loads directly proportional to their elastic moduli; capacity of the aluminum column is 1/3 that of the steel column; **but if the aluminum column's weight is increased its capacity soon exceeds the steel column's,** while substitution of higher strength aluminum alloys does not



ULTIMATE TENSILE STRENGTH

This is the load which can be supported, without breaking, by wires of 1 sq in. cross-sectional area.



STRENGTH-WEIGHT RATIO

***A*, the length of a wire of 1 sq in. cross-sectional area which will snap under its own weight is a measure of strength-weight ratio. *B*, of two girders of *equal weight*, the aluminum one can be 2.8 times as deep as the steel girder and will therefore support greater loads.**

TABLE 2. PROPERTIES OF ALUMINUM ALLOYS AND STEEL COMPARED

Alloy	Specific Gravity	Strength-Weight Ratio	Elasticity-Weight Ratio	Cost per Weight	Cost Strength Ratio
3S½H	0.35	1.00	1.00	6.75	6.70
17ST	0.35	2.80	1.00	7.50	2.60
ASTM A 7*	1.00	1.00	1.00	1.00	1.00

**Values for structural steel assumed as unity for purposes of comparison*

influence its capacity. In **Table 2,** strength, elasticity, weight, and cost values for structural aluminum alloys are compared with those for steel.

Some of aluminum's properties, such as yield and ultimate strength, can be improved by alloying, heat treatment, or cold working; others, such as specific gravity, crystal structure, or modulus of elasticity, cannot be changed radically since they are inherent characteristics of the material. Cost, availability, and similar economic factors are not within the immediate sphere of influence of designers and engineers. Yet all these facts affect structural design and can be summarized as follows:

1. Steel structures "converted" into aluminum by copying steel design are not competitive economically or technically. Cost of aluminum in such structures is two to seven times that of steel.

2. In structures where strength is of primary importance, high-cost-high-strength, heat-treatable alloys give economical results.

3. In structures where deformation governs, and in slender columns, low-cost-low-strength alloys are usually economical.

4. Whether strength or deformation governs, it is economical as well as technically sound to increase mass and dimensions of aluminum members.

5. The low elastic modulus of aluminum is an advantage in structures subject to impacts or to temperature stresses.

6. In light-gage construction the minimum thickness of aluminum members can be determined by strength and rigidity requirements alone, without regard to limitations imposed by corrosion.

7. The high strength-weight ratio of aluminum permits savings by reducing the dead load; this also affects other load-bearing parts of the structure in addition to metallic members.

8. The higher first cost of aluminum is counterbalanced by other economic advantages, such as lower erection, transportation, handling, fabrication, and maintenance costs. The high reflectivity of the material also reduces thermal insulating costs.

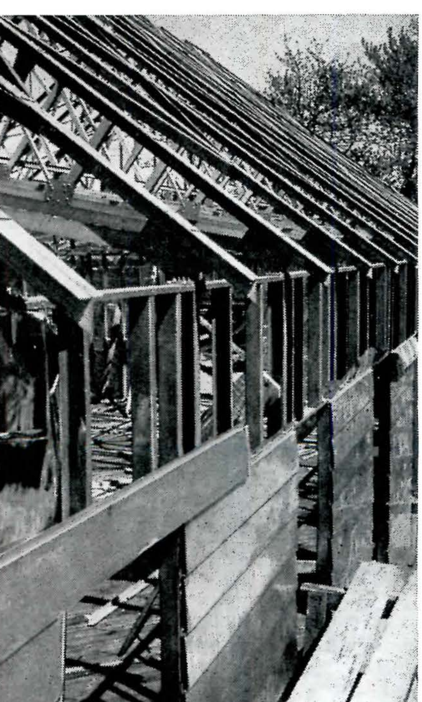
These conclusions point toward two distinct approaches for the use of aluminum in building construction:

One approach is opportunistic and easy to accept. Until now it has usually been preferred. It recognizes the shortcomings, due to both high cost and inherent physical characteristics of the metal, and limits its use strictly to the somewhat narrow field where it can successfully compete with steel on an equal basis, by taking direct advantage of its positive characteristics: corrosion resistance, light weight, high reflectivity.

The other approach, not less obvious, is somewhat more difficult to follow. However, it offers a wider scope; and it is the one which this article suggests.

Close study of the physical characteristics of aluminum has shown that in spite of its high cost, the metal's inherent characteristics can be turned to advantage even though some of them do not compare favorably with those of steel. This approach is not revolutionary; it is rather the logical application of sound, up-to-date engineering principles: full advantage is taken of all favorable characteristics, the weaknesses are turned into virtues. **Instead of adapting the material to the preconceived structure, the structure is adapted to the material.** This approach requires some imagination in conceiving specially suitable structural shapes, specially designed structures, which will perform as satisfactorily as their counterparts in steel. However, one cannot make exaggerated claims; aluminum will not completely displace steel. The second approach does not even necessarily mean sharp competition, but rather **a widening of possibilities in the use of structural materials, permitting a larger selection to obtain the most efficient results.**

Part II, to appear next month, covers specific structural developments peculiarly suited to aluminum.



Left, Apostolic Church, Louisville, Ky., being constructed by members of its congregation. Studding, trusses reflective foil insulation, and siding are aluminum. *Center,* erecting structural aluminum framing (pre fab) for demountable midget auto race track designed by Leon & Lionel Levy, architects. *Right,* aluminun framing and sheet in a structure similar to the more familiar Quonset hut.

Materials and Methods

RESEARCH REPORT 2

INSULATION

for Concrete Floor Slabs on Grade

In March 1945 the U. S. National Bureau of Standards released data[1] on heat losses through concrete slab floors, which has become an accepted construction method although there are still complaints that such floors are "cold." Recently the National Research Council of Canada released its report on radiant-heated concrete floor slabs.[2] Within the last few months Professor A. B. Algren, of the University of Minnesota, has published a paper on the same subject;[3] his findings closely parallel the Canadian Council's. The Vermiculite Association is also sponsoring current research into the question,[4] and although their information is not yet ready for publication, we have received from the Zonolite Corporation considerable data indicating the direction their work is taking. The U. S. Housing and Home Finance Agency has also published material on the subject.[5] The following text and drawings summarize and coordinate findings of all these agencies, in the second of PROGRESSIVE ARCHITECTURE'S RESEARCH REPORTS.

In its pioneer work on the subject the National Bureau of Standards discussed both slabs laid directly on grade and those built over crawl spaces; the Canadian research covered both slabs on grade and wood floors over 6'-6" clear basements. Professor Algren's work and that undertaken for the Vermiculite Association (so far as we are informed) deals with slabs on grade, and this Report is restricted to the same subject.

NBS concluded that loss of heat through the slab directly to the ground was probably unimportant; that loss to exposed edges of the slab was considerable; and therefore that insulation of the slab's exposed edges had greater importance. The construction shown in Fig. 8 was suggested as probably the most practicable method of insulating grade-level floor slabs. However, it should be remembered that, first, temperatures within the slab and in the soil beneath it were not recorded in the NBS procedure (thermocouples were placed on the slab's top surface); and, second, that the NBS test rooms were heated by electric-steam radiators, not by radiant coils in the slabs.

Very recently the U. S. Housing and Home Finance Agency released data on methods of insulating floor slabs[5] which was obviously based on the 1945 NBS report quoted. The methods of insulating construction suggested were all variants of the type shown in Fig. 8; in some cases it was suggested that the insulation be placed in the center of the foundation wall, extending from the level of the top of the floor slab down at least 2" below finished grade, and in some cases as much as 12" below, depending upon type of insulation and construction, and condition of exposure. Chief value of the HHFA report lay in its recommendation of **four types of materials for insulating the slab edges:**

1. **Cellular glass**, which should be coated with pitch or asphalt to prevent surface deterioration when subjected to moisture and freezing;

2. **Glass fiber**, preferably in the form of coated board;

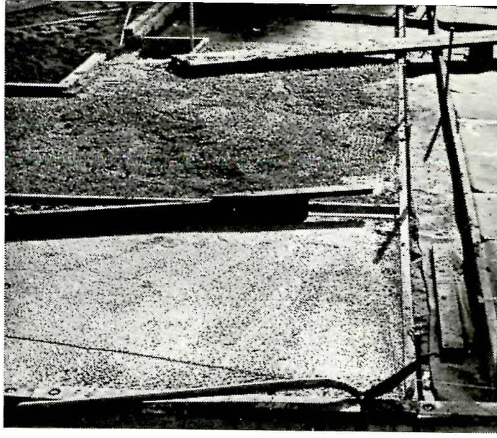
[1] *R. S. Dill, W. C. Robinson, H. E. Robinson,* BMS 103, Measurements of Heat Losses from Slab Floors, National Bureau of Standards. Available from *Supt. of Documents, U. S. Gov't Printing Office, Washington 25, D. C. Price 10 cents. See also P/A September 1945, p. 99*

[2] *C. D. Niven and A. D. Kent,* Report on "Panel" or "Radiant" Heated Test Buildings, *National Research Council of Canada, Ottawa, Canada. December 1947. Price 25 cents*

[3] *A. B. Algren, Assoc. Prof.; Head, Dept. of Heating, Ventilating, and Air Conditioning, University of Minnesota, Minneapolis, Minn.* Ground Temperature Distribution, with a Floor Panel Heating System; Heating, Piping & Air Conditioning, *May 1948, p. 111*

[4] *Research being conducted and evaluated by the University of Illinois, Urbana. Ill.*

[5] *An excellent summary of the HHFA report appears in* Heating and Ventilating, *July 1948, p. 74*



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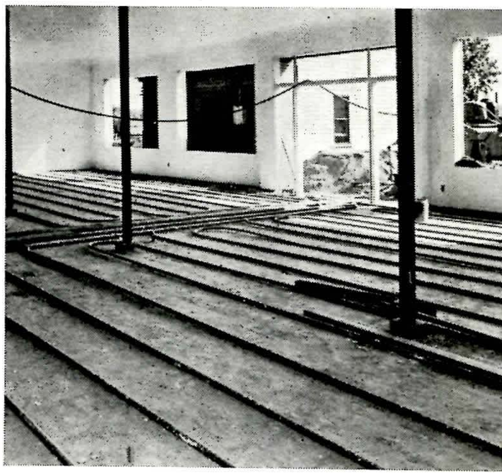

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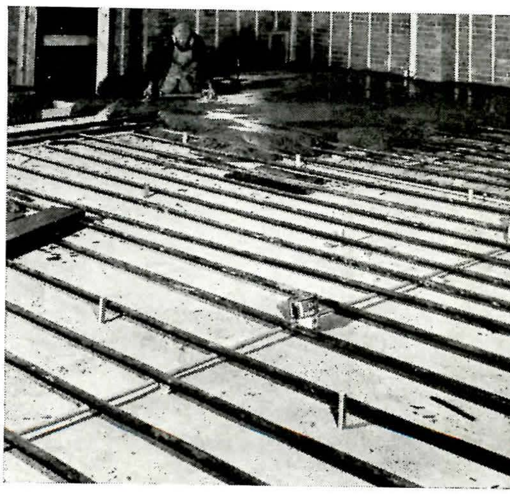


Photos courtesy Zonolite Co.

3

Steps in constructing an insulated, radiant-heated floor slab: *Fig. 1* (top), insulating vermiculite concrete poured on top of moisture barrier, which is visible at right of photo. *Fig. 2*, radiant heating piping placed on top of insulating concrete. *Fig. 3*, hard concrete applied over insulating slab and piping.

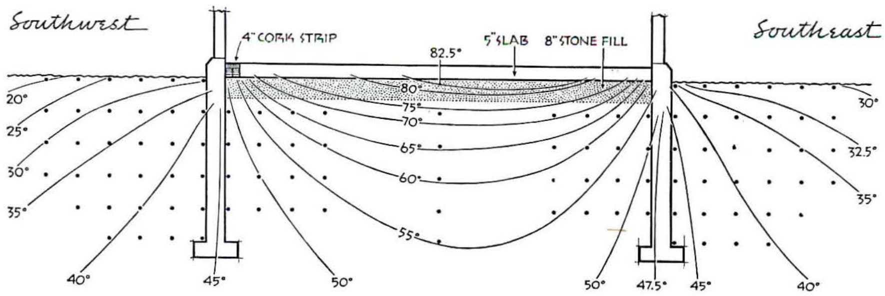


Figure 4

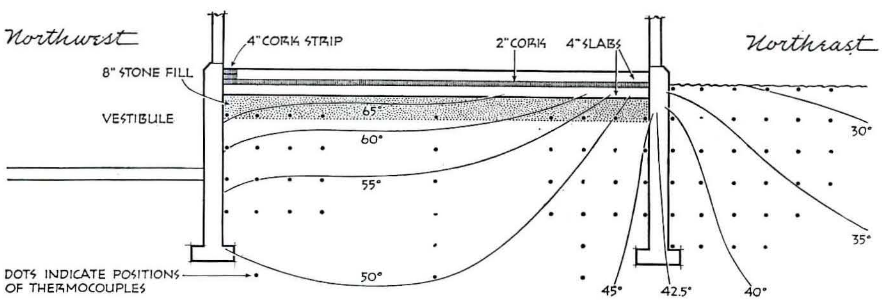


Figure 5

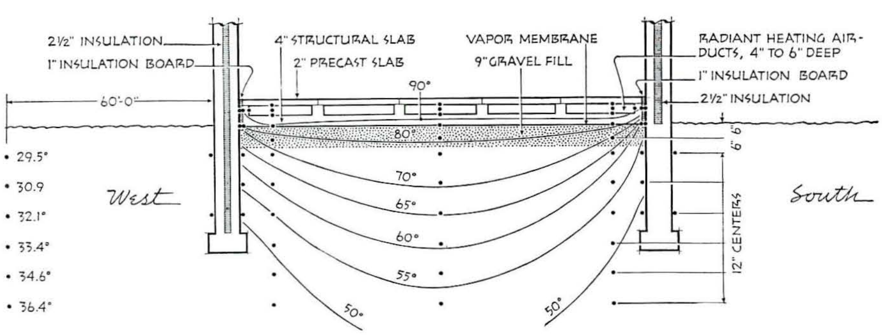


Figure 6

Figs. 4 and 5, **from "Report on Panel or Radiant Heated Test Buildings" (National Research Council of Canada) show subgrade temperatures on Feb. 20, 1947. According to the "Report," insulation is essential at the angle between radiant-heating slab and foundation; and bottom of slab should be insulated where greatest heat loss occurs: for several feet back from its exposed edges. Also, contact between slab and foundation is preferably insulated.** ***Fig. 6*** **shows similar conditions for a hot-air radiant-heated slab tested at University of Minnesota by Prof. A. B. Algren; data are for Mar. 4—Apr. 1, 1947. In addition to substantiating the Canadian Council's findings Algren stresses insulating the slab from the foundation and suggests instead of insulating footing walls, making insulation integral with slab or applying it between slab and fill.** ***Fig. 7*** **shows Canadian Council's suggestion for construction.**

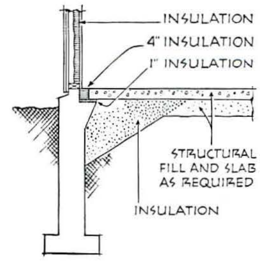


Figure 7

3. Cane or wood fiber board, coated with pitch or asphalt (this material not recommended by HHFA for locations subject to considerable moisture);

4. Hard cellular rubber, coated with pitch or asphalt.

ACTUAL LOSS TO SOIL MEASURED

In contrast to the preceding, recent work at the National Research Council of Canada and the University of Minnesota was based upon radiant-heated slabs, and was conducted with thermocouples placed at regular intervals down to 6'-0" below grade before the slab was constructed. **Figs. 4, 5, and 6,** show the temperatures recorded and **indicate the quantity of heat lost directly through the slab** as well as through exposed slab edges. The isobars in these figures also indicate the combination of edge-loss and vertical loss which make up the total heat loss, even when the slab edges are insulated. **Fig. 5** shows an insulated slab. Note in this case that the temperature immediately beneath the slab is 65F; whereas in **Fig. 4,** which shows an uninsulated construction, temperature at approximately the same point is 82.5F — a difference of 17.5F. This difference represents heat delivered by the radiant-heating system (in these cases, circulating hot water) which was wasted in heating the soil. **Fig. 6** shows a hot-air radiant system in uninsulated construction. Here the heat loss is apparently greater than for the uninsulated hot-water-heated slab, but since conditions of test were not exactly comparable, exact comparisons of results cannot be drawn. However, the results are quite similar.

The shape of the isobars tends to substantiate the earlier findings of NBS in one respect: heat loss at exposed slab edges is evidently much greater than in the center of the slab, or at edges protected by adjacent construction. However, loss through the center of the slab is certainly not negligible.

ADVANTAGES OF INSULATION

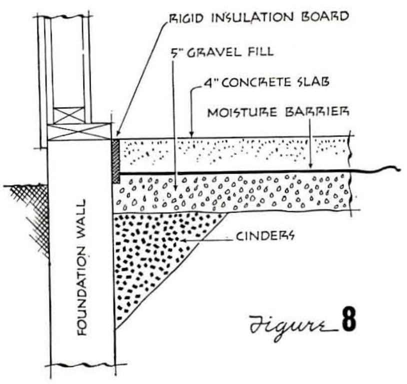
Is soil a good insulator? Possibly, if the ground is perfectly dry for a depth of several feet under a building. Often this is not the case, particularly in certain seasons. Wet, even damp, soil is a good conductor of heat. Of course, heating the soil will tend to offset its gain of water—at the expense of the heating system!

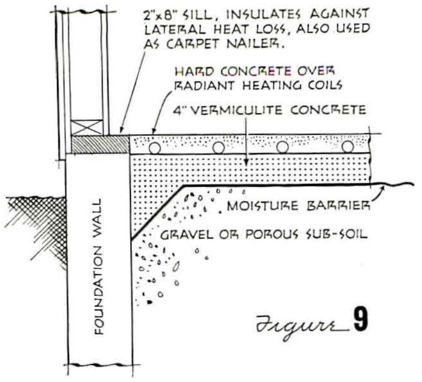
Another factor often overlooked is the effect on heat loss of bedrock or stone under the foundation. "Build your house on rock," but before doing so, consider that rock is a good conductor of heat, and that in such cases the need for insulation under the floor is greatly magnified.

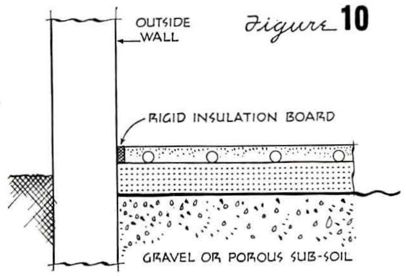
In buildings where it is the practice to heat only on certain days of the week, allowing the temperature to drop for the balance of the period (churches, schools, and offices which are used only on weekdays, etc.) it is desirable to have a floor system with a minimum heat capacity. Otherwise, too much time and too many Btu's are required to bring up the temperature when it is needed; and when the controls no longer call for heat, the Btu's stored up in and beneath the slab continue to heat the structure above. Furthermore, this capacity of floor and ground to absorb large quantities of heat is not conducive to maximum efficiency of the temperature control system. In regions of mild climate (or in spring and fall) where only a few hours of heat are required each day, a high-heat-capacity floor causes an override of temperature into the warmer part of the day when heat is not required. A low-heat-capacity floor—that is, one insulated from the ground, among other things—obviates this and reduces the "time lag."

High-heat-capacity floors have a further undesirable feature in climates having abnormally high humidities, particularly in the summer. The concrete in contact with the ground is relatively cool, and frequently moisture condenses on the floor surface, damaging floor coverings. Dampness on concrete floors is more often due to moisture from the air than from the ground. No amount of waterproofing beneath the slab will prevent this trouble. When the slab is insulated from the ground, its surface tends to follow air temperatures much more closely and is seldom below the temperature at which condensation begins to take place.

Where radiant heating exists in the slab, because of the necessarily higher temperature of the slab, heat losses downward are aggravated. It has been found here again that faster response is obtained with thermostatic controls where the radiant-heating panel is insulated from the ground.







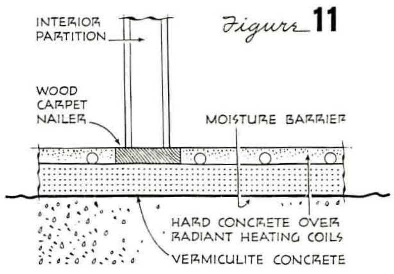


Fig. 8 shows one method of slab-on-grade construction suggested by National Bureau of Standards in BMS 103, published in 1945. *Figs. 9, 10, and 11* show methods of employing an insulating slab with vermiculite aggregate. Moisture barrier is laid over a weak mix of concrete, or, better, a dry mix of cement and sand, wet with a light spray to hydrate and set the cement, to prevent fill beneath from puncturing the membrane. For the insulating slab, a mix of 6 cu ft of vermiculite to one of Portland cement is used. This procedure has been employed at a 110-unit housing project in Dearborn, Mich.; in dormitories at Bowling Green College, Bowling Green, Ohio; and several other installations.

In addition to the methods of insulating with vermiculite concrete and fill shown in Figs. 8 through 12, there are, of course, other materials suitable for floor slab insulation: cellular glass, cork, glass fiber, etc. Some of these may demand the type of precautions noted in the extracts from the report of the Housing and Home Finance Agency contained in the text; and methods of construction will likewise vary. In any case, principles derived from Figs. 4, 5, and 6 are basic.

REQUIREMENTS OF AN INSULATION

An insulating medium used under floors built on the ground must meet certain requirements:

1. **Good insulating value;**
2. **Structural strength or rigidity;**
3. **Permanence against deterioration, vermin, etc.;**
4. **Economy;**
5. **Low heat capacity.**

One material that meets all these requirements is vermiculite insulating concrete. When vermiculite aggregate is mixed with Portland cement, a lightweight concrete is produced which, like ordinary stone concrete, is rot- and vermin-proof; and also of high insulating value. One inch of this insulating concrete is equivalent to more than 16 inches of ordinary concrete in heat transmission. In the proportions of aggregate to cement commonly used, the load-bearing strength is more than adequate.

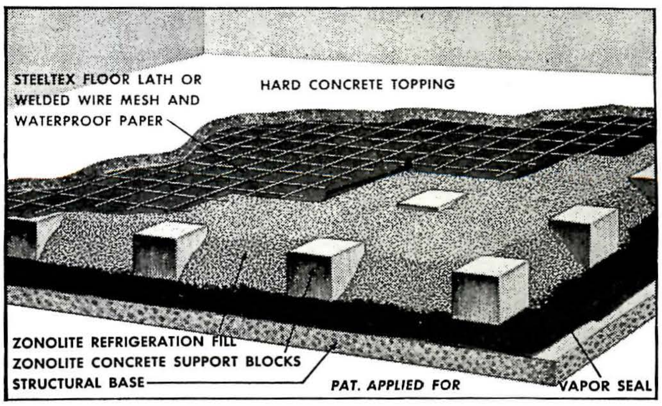
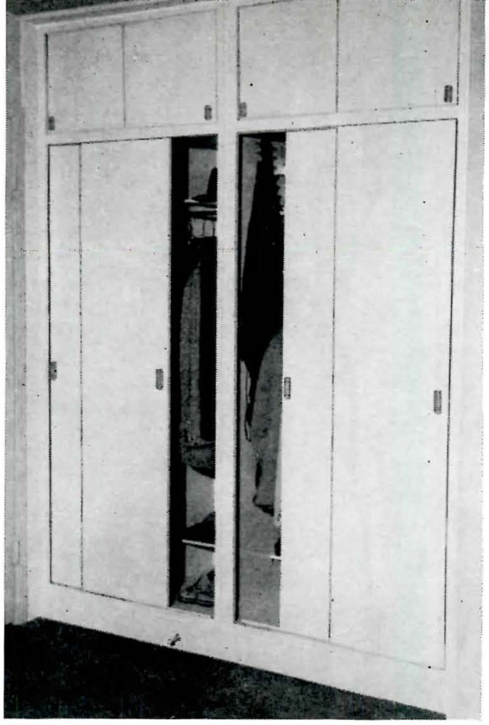


Fig. 12, floor for cold storage buildings patented by Zonolite Co., Chicago, Ill. Precast, 8-in. vermiculite concrete blocks are placed on top of a vapor seal, 24 in. on centers. Space between is filled with vermiculite refrigeration fill. Paper-backed wire mesh is placed, and a load-carrying slab is poured. Subsoil must be well drained, preferably with 12 in. or more of gravel beneath the vapor barrier.



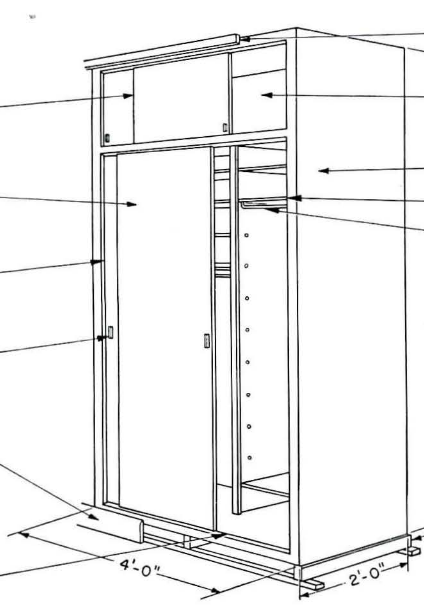
Left, Cabinet-Wall installed in house of Carroll A. Towne, Vienna, Va.; Stanley P. Stewart, designer. *Right,* in house designed by Robert W. Bolwell, White Oak, Md.

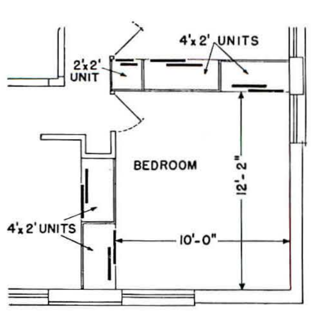
CABINET-WALL **Prefab Closets and Closet Fronts**

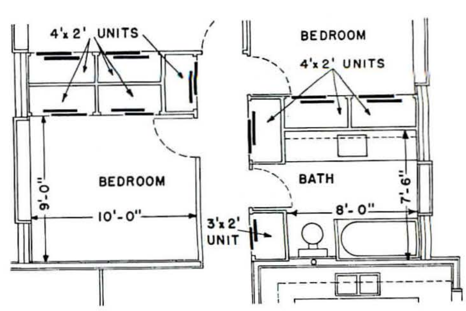
Prefabricated closets and fronts for closets which are used to replace conventional wall and closet construction, or may be installed against walls, have been developed by Milton Lowenthal, Washington architectural designer. Manufactured by Mengel Co., Wood Products Div., Winston-Salem, N. C., and distributed locally by their inventor through Milo Products Co., Washington 6, D. C., *Cabinet-Wall* units are lower in cost than similar prefab units and are easy to install.

The units have wood frames and laminated wood walls, floors, doors, and shelves. Hardware is aluminum and stainless steel. Front frames (also the separate *Closet Fronts)* are mortised and tenoned and shipped assembled. Remainder is shipped knocked-down; assembly for Type A (shown in drawing) is estimated to take a carpenter and helper 45 minutes. All parts are shipped prime-coated, for job painting. When back wall of unit is to be concealed, it may be of hardboard.

Complete closets come 2, 3, and 4 ft wide; closet fronts, 4 ft wide only. For installation, after assembly, closets abutting bearing walls are screwed to studs or battens; successive units are screwed or bolted to each other. Adjoining partitions, door casings, etc., can be screwed or bolted to the cabinets at any point. The closets can provide clothes hanging and storage space equivalent to ordinary stud and plaster construction at savings of 25 to 40 percent in floor area; they save construction time, may be used to form partitions, and may be shifted when household requirements change.







Plans show versatility of units as used in houses in Fairfax Co., Va.; *left,* Alexander Richter, architect; *right,* Charles M. Goodman Associates, architects.

THIS MONTH'S PRODUCTS

AIR AND TEMPERATURE CONTROL

Plug-in Clock Thermostat: 110v motor eliminates need of basement transformer and five-wire cable through walls to thermostat location. Minneapolis-Honeywell Regulator Co., 2753 4th Ave., Minneapolis 8, Minn.

Convector Radiators: new line features curved outlet grille, hand adjusted temperature control damper, removable front panel for easier installation and cleaning. Four standard enclosure styles; three, in heavy duty institutional line. Modine Mfg. Co., De Koven Ave., Racine, Wis.

CONSTRUCTION

Corrugated Aluminum Sheet: for structural use as roofing and siding. Deep corrugation (7/8") strengthens sheet and provides greater load capacity; weighs only 56 lbs per sq 100 ft, a considerable reduction over conventional industrial roofing. Several sheet sizes available. Reynolds Metals Co., 2500 So. 3rd St., Louisville, Ky.

DOORS AND WINDOWS

Combination Storm and Screen Door: all aluminum, weighing 36 lbs. Screen panels interchangeable with glass panels for winter use. Rustproof, non-warping. Kick plate spot welded on lower section. Eagle-Picher Co., American Bldg., Cincinnati, Ohio.

Tutch-Latch: concealed latch eliminates bulky hardware; touch on door panel releases catch to permit button type compression spring to swing open door. Easily installed on doors, cabinets, drawers. Phillips Tutch Latch Co., 40 Exchange Pl., New York, N. Y.

ELECTRICAL EQUIPMENT AND LIGHTING

Luminous Safety Signs: phosphorescent signs and markers to point to exits, fire escapes and equipment, first aid stations; serve as ordinary signs in daylight. New Jersey Zinc Co., 160 Front St., New York, N. Y.

Solarite Panel Luminaire 12,000 Series: shallow fixture body formed from sheet steel finished in baked white enamel. Light transmission approximately 65%. May be installed individually or in continuous rows flush mounted, or suspended. Also exit fixtures with broad light distribution, easily read letters. Solar Light Mfg. Co., 1357 So. Jefferson St., Chicago 7, Ill.

One-Watt Night Light: walnut-sized, for dark hallways, steps, etc. For use on 110-125v a-c. Average life of one year. Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, Pa.

FINISHERS AND PROTECTORS

Tub-Tite: resin-based plastic caulking recommended for sealing cracks between tile walls and bathtubs, washstands, shower stalls, and the like. Applied directly from tube, will adhere to glass, wood, tile, metal, brick, and concrete. American Fluresit Co., Inc., 635 Rockdale, Cincinnati 29, Ohio.

Mirrofilm: new plastic gloss finish protects metal surfaces, linoleum, painted wood. Applied easily, dries quickly. Wype Corp., 2214 Dolman St., St. Louis, Mo.

INSULATION (THERMAL, ACOUSTIC)

Elasto-Rib: laminated rubber-cork material for vibration and noise control. Available in one in. thick sheets up to 24" x 36" in size. Recommended loading between 7 and 21 lbs psi. Korfund Co., Inc., 48-15 32nd Pl., Long Island City 1, N. Y.

Insulation Wool: line of mineral wool blankets and batts, granulated and pouring wool, and loose material for use in building construction and insulation. K. B. S. Mineral Wool Co., 3rd & Pierce Sts., Omaha, Neb.

PLASTICS

Tenite II: cellulose acetate butyrate available in new clear transparency; gives more color accuracy when combined with lacquers. Tennessee Eastman Corp., Kingsport, Tenn.

SANITARY EQUIPMENT, WATER SUPPLY, DRAINAGE

Flagg-Flow: threadless bronze fittings for brazing to copper alloy or brass tubing or pipe. For use in domestic plumbing, also on meter and instrument lines, boiler feed lines, and other industrial applications. Stanley G. Flagg & Co., Inc., 1421 Chestnut St., Philadelphia 2, Pa.

SPECIALIZED EQUIPMENT

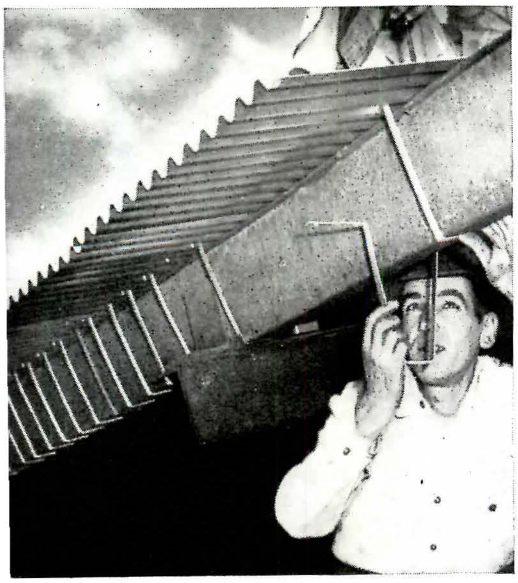
"Ten-Twenty" American Universal Desk: for improved classroom seating. Top adjustable to three positions for different requirements. Swivel chair, designed for correct posture, adjusts to fit any occupant. Desk top, seat, constructed of strong plywood, in natural finish or school brown. American Seating Co., 901 Broadway, N. W., Grand Rapids 2, Mich.

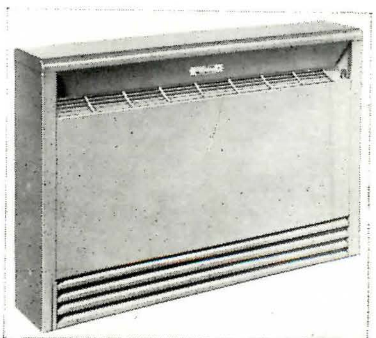
Cambrite House Numbers: black numerals permanently sealed under white glaze on clay tile. Will not fade or tarnish. Black japanned aluminum frames also available in sizes holding from one to five numbers; suitable for numbering building projects, sheds, power lines, etc. Cambridge Tile Mfg. Co., Dept. 14, Cincinnati 15, Ohio.

Quartzoid Ceiling Sprinkler: claimed to give maximum effectiveness in fire protection. Concealed piping; only deflector and Quartzoid bulb show below ceiling level. Temperature has only to reach 135F (30F lower than rating for conventional fusible sprinklers) to burst bulb, release water to extinguish fire. Grinnell Co., Inc., 260 W. Exchange Pl., Providence, R. I.

SURFACING MATERIALS

Amerwood: new pre-finished, low cost paneling. Special manufacturing process removes portion of spring growth and increases surface tension of hard summer growth. Boards are then sanded, pigment and protective coating applied, followed by a wax and buff. Pine, oak, chestnut, and other woods used; available in convenient sizes. Lehwood Corp., 1003 Ironwood Dr., South Bend, Ind.





***Left,* new Industrial Corrugated Aluminum sheet has 7/8" deep corrugations which enable it to support safely 35 lb per sq ft at 6-ft span, 106 lb at 42 in.; conventional corrugated aluminum supports a maximum of 12.5 or 37.5 lb at same spans. Stock size is 33¾ in. by 5 to 12 ft long. Accessories (straps, closures, rivets, bolts, etc.) are available. Reynolds Metals Co., Louisville, Ky. *Center,* "Ten-Twenty" Balanced-Posture Desk for classrooms has top adjustable to 20° slope, 10°, or level. Developed to implement current school lighting theories, desk has natural wood top to reduce glare; reflectivity, 35 to 50%. Other features similar to "Universal" desks. American Seating Co., Grand Rapids 2, Mich. *Right,* new convector-radiator line available in four standard and three heavy duty enclosure models, modularly dimensioned. Temperature control damper, adjustable, completely conceals grille when closed. Front panel is easily removed for installation, cleaning. Modine Mfg. Co., Racine, Wis.**

Manufacturers' Literature

★ *Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

AIR AND TEMPERATURE CONTROL

1-190. How to Make the Yardstick Zone the Comfort Zone (Cat. 12), 23-p. illus. catalog on console oil-burning heaters designed to warm lower areas of rooms by means of radiation, circulation, and direct air movement. Advantages, specifications, special and standard features. Also line of accessories. Coleman Co., Inc.

★ **1-191. Johnson Automatic Temperature and Humidity Control,** AIA 30-F-2, 80-p. manual containing engineering data for design and application of automatic temperature and humidity control for heating, cooling, ventilating, and industrial processing. Covers various types of thermostats, dampers, valve regulators, switches, modulating devices, etc. Johnson Service Co.

1-192. Finned Coils, AIA 30 (Cat. 47A), catalog on coils for every air-conditioning requirement. Capacity ratings, sizes and dimensions, selective information, ordering directions, index. Kennard Corp.

★ **1-193. Advance Technical Data** (Bul. 248-A) (Form 010648M), 16-p. bulletin describing new line of convector radiators for houses, apartments, commercial and industrial buildings. Advantages, dimensions, technical information. Modine Mfg. Co.

1-194. 100 Fireplace Ideas, 31-p. booklet, including catalog sheet, on fireplaces of European, American Colonial, and modern design, constructed to circulate heat throughout the house. Also outdoor grilles, cranes, ash dumps, and other accessories. Advantages, illustrations, ordering specifications. Price Fireplace, Heater & Tank Corp.

1-195. Multi-Vent, AIA 30-J (Bul. 6510), 58-p. bulletin on a panel assembly, installed in ceiling, for air distribution in heating, ventilating, air conditioning. Descriptive and technical data, typical installations. Pyle-National Co.

1-196. Janitrol Heating Guide, AIA 30-B (Form QGP46-5-B KW2711), 7-p. bulletin on gas warm-air winter air-conditioning system. Simultaneously maintains temperature, moisture content, movement and quality of air, within space being heated. Diagrams, installations, specifications; index to other heating equipment. Surface Combustion Corp.

CONSTRUCTION

3-15. Modern Building Materials, AIA 10-C (Bul. 51), 4-p. folder on modular concrete building units and batch mixer. Drawings, sizes and dimensions. Besser Mfg. Co.

3-16. Erect and Strip Concrete Forms, two loose sheets on forms in which to place reinforced concrete. Advantages, application diagrams, comparative costs. Bulldog Concrete Forms, Inc.

3-17. Lith-I-Bar, AIA 4-E-6, 24-p. illus. booklet on a lightweight concrete joist, electrically welded reinforcing. Description, advantages, safe-loading tables, specifications. Lith-I-Bar Co.

3-18. Teco Trussed Rafters, 4-p. folder on application of trussed rafters to FHA section 608 projects. Technical and descriptive data. Timber Engineering Co.

DOORS AND WINDOWS

★ **4-139. Kennatrack,** AIA 27-A, 16-p. illus. bulletin on single, double sliding door tracks employing patented expansion plug door mount, which requires minimum head room. Also door frames, wardrobe units, sliding door cabinet latches and locks. Construction and installation details, advantages. Jay G. McKenna, Inc.

4-140. Whitco Sash Hardware, 4-p. illus. booklet on casement, transom, and awning type hardware. Details, recommendations. Vincent Whitney Co.

4-141. Thorn Windows (Cat. SA 48), 27-p. catalog on aluminum and steel windows, doors, jalousies, hardware. Section and detail drawings, sizes, dimensions, index. J. S. Thorn Co.

ELECTRICAL EQUIPMENT AND LIGHTING

★ **5-134. Bryant Wiring Devices,** AIA 31-C-7 (Cat. 48), 76-p. illus. catalog on complete line of wiring devices, including lampholders, plugs, starters, outlets, switches, breakers, etc. Photos, sizes and dimensions, wiring diagrams, index. Bryant Electric Co.

Two booklets, including four folders, on a wiring system to carry full powered electricity throughout a house, for all electrical needs. Layouts, requirements, general and detailed data. National Adequate Wiring Bureau:

5-135. The Private Life of Your Home.

5-136. Electric Wiring.

★ **5-137. Fluorescent and Incandescent Lighting,** AIA 31-F-2 (Cat. 747), 24-p. illus. catalog on ceiling light fixtures. Descriptions, dimensions, typical installations, cross sections. Neo-Ray Products, Inc.

FINISHERS AND PROTECTORS

6-130. Kay-Tite, loose specifications sheet for control of water seepage in porous masonry structures, by application of membrane coating. Kay-Tite Co

6-131. Mercotone, 8-p. folder on oil paints; seven basic colors, which can be

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Manufacturers' Literature

blended into as many as 5,000 tints. Color chart, formulas for blends, advantages. M. J. Merkin Paint Co., Inc.

INSULATION (THERMAL, ACOUSTIC)

★ **9-99. Simplified Physics of Thermal Insulation,** 16-p. booklet describing reflective aluminum insulation, its thermal factors, and protection against condensation, vapor, vermin, mold, fire. Types, uses, installation directions, comparisons chart, thermal insulation values chart. Infra Insulation, Inc.

SANITARY EQUIPMENT, WATER SUPPLY, DRAINAGE

★ **19-245. Scott Washroom Advisory Service,** AIA 29-i, 40-p. booklet to aid architects in planning of industrial washrooms, including a recreation and game room. Typical layouts, elevations, illustrations of fixtures. Scott Paper Co.

SPECIALIZED EQUIPMENT

19-245A. Presenting the Seeburg (3-48-150M), 8-p. illus. brochure on a new musical system that will play 200 phonograph recordings, or 14 continuous hours of music, without repeating any selection. Radio programs can be arranged for week in advance to be played automatically on predetermined time cycle. Also paging facilities, broadcasting system for speeches, company programs. Descriptions, advantages, photos. J. P. Seeburg Corp.

19-246. Haertel (Cat. 84), 64-p. illus. catalog on storage vaults, cleaning equipment and materials, for garments and furs. General and detailed information, installations, cost analysis chart, cleaning instructions. Walter Haertel Co.

19-247. Automatic Fire Protection for Industry (1-1A 6-48 15M-AMP), 4-p. folder on built-in fire detecting and extinguishing systems using liquid carbon dioxide; planned for total flooding or local application. Description, advantages, typical installation. Walter Kidde & Co., Inc.

19-248. Look What's Cooking in Kitchens, 28-p. booklet on kitchen planning for new or remodeled houses. General, detailed data, from blueprint stage to final decoration. Illustrations, color selector. Midwest Mfg. Co. (25 cents per copy; make check or money order payable to Midwest Mfg. Co.)

SURFACING MATERIALS

19-249. Duracite, leaflet on new abrasive cement, claimed to eliminate slipping and tripping hazards on worn stairways and uneven floors; will form solid bond with slate, marble, concrete, wood, etc. Uses, advantages. Duane Specialties, Ltd.

★ **19-250. What is Kimpreg?** (KGD-3), 8-p. folder on a new wear-resistant plastic sheet impregnated with phenol resin, bonded to exterior grade plywood at time of plywood's manufacture. Unaffected by rain or snow, oils, alcohols, ketones, etc. Advantages, general information. Kimberly-Clark Corp.

19-251. Wallpapers of Lasting Beauty, leaflet containing nine reproductions of wallpaper designs, both domestic and imported. Descriptions. W. H. S. Lloyd Co., Inc.

TRAFFIC EQUIPMENT

20-235. No More Steps (366-10M-7-48), 16-p. booklet on various types and arrangements of residential elevators, electrically and manually operated; also an electrically operated seat for transportation up and down stair flights. General Information, photos, index. Sedgwick Machine Works, Inc.

REVIEWED AUGUST '48

AIR AND TEMPERATURE CONTROL

1-187. Control for Hot Water Heating (F-3157), Barber-Colman Co.

1-188. Merrill Wind Tunnel Tests, C. R. Gelert Co.

1-189. Rempe Engineering Data Book (Form 547-3MO), Rempe Co. ($1.50 per copy. Make check or money order payable to Rempe Co.)

CONSTRUCTION

3-8. Tomorrow's Silhouettes Today (Form DD-136), W. E. Dunn Mfg. Co.

3-9. Zourite (SF-7105), The Kawneer Co.

3-10. An Introduction to Pluswood, Pluswood Inc.

3-11. Precast Gypsum Roof Decks, AIA 4-E-6, U. S. Gypsum Co.

3-12. Metal Lath, AIA 20-B, U. S. Gypsum Co.

3-13. Roof Decks, AIA 4-L, U. S. Gypsum Co.

3-14. Rocklath Plaster Bases & Attachment Systems, AIA 20-B-2, U. S. Gypsum Co.

DOORS AND WINDOWS

4-138. Aetna Steel Door Frames (Form 5-50M-1-48), Aetna Steel Products Corp.

ELECTRICAL EQUIPMENT AND LIGHTING

5-129. Some Ideas, General Lighting Co.

5-130. Commercial Lighting Units (Cat. G-34), General Luminescent Corp.

5-131. Guthlite, Edwin F. Guth Co.

5-132. Design for Electrical Living (B-3979), Westinghouse Electric Corp.

5-133. "Sky-Glo" Luminous Louver System, AIA 31-f-14 (AD 5491), Benjamin Electric Mfg. Co.

FINISHERS AND PROTECTORS

6-127. Hy-Toner, Hy-Toner Div., Roberts Paint Corp.

6-128. Heavy Duty Finishes for Maple Flooring, Maple Flooring Manufacturers Ass'n.

6-129. Floor Facts, Vestal, Inc.

INSULATION (THERMAL, ACOUSTIC)

9-97. Kaylo Roof Tile (KBI-485-5M), American Structural Products Co.

9-98. Armstrong's Insulating Wool (T D-11-546), Armstrong Cork Co.

MATERIALS OF INSTALLATION

13-72. Brune's Gutter Hanger, Holder and Fastner, Louis J. Brune, Sr.

PLASTICS

16-117. Resins and Plastics (J-547a), Bakelite Corp.

SANITARY EQUIPMENT, WATER SUPPLY, DRAINAGE

19-235. Modern Design for Shower Time, The Perfix Co.

19-236. FA-3 Disposall (30-95), General Electric Co.

19-237. Forced Hot Water Circulation (Form FCE 648), H. A. Thrush & Co.

19-238. Pumps, Yeomans Bros. Co.

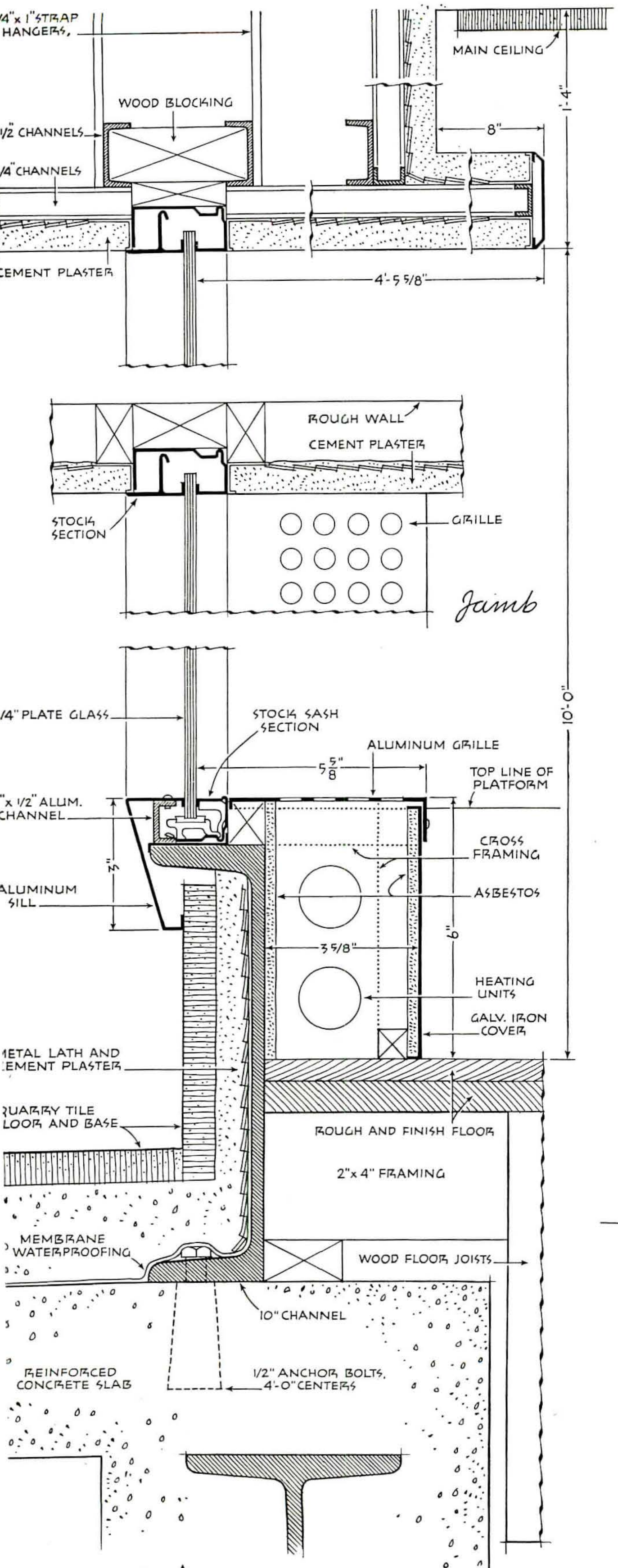
SPECIALIZED EQUIPMENT

19-242. Decorative Uses of Copper and Brass (Feb. 1948), Copper & Brass Research Ass'n.

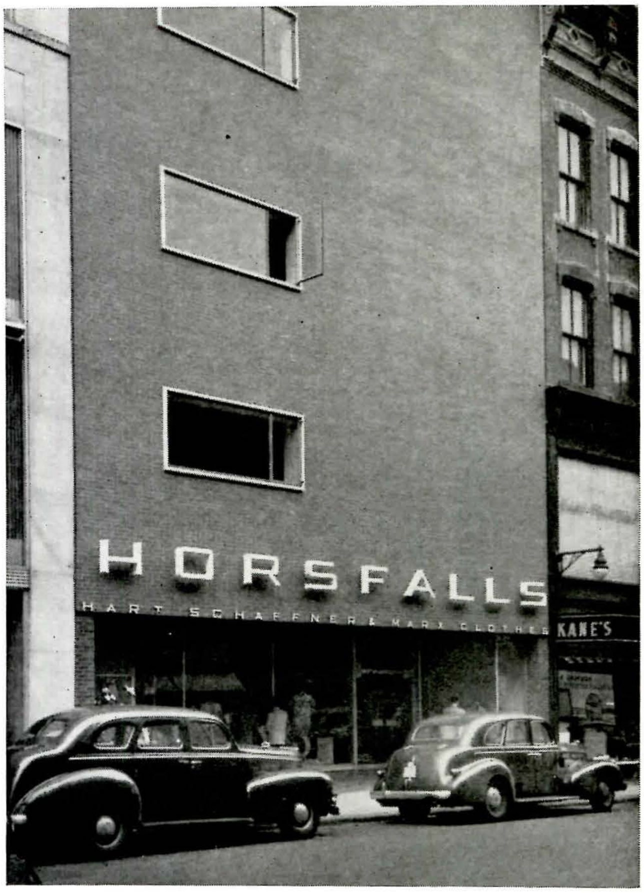
19-243. Parsons Pureaire Kitchen, AIA 23a-15 (Form SA-1027), The Parsons Co.

19-244. Architect's Manual of Engineered Sound Systems, AIA 31-1-7 (Form 1R2134), Engineering Products Dept., Radio Corp. of America. ($5.00 per copy. Make check or money order payable to Radio Corp. of America.)

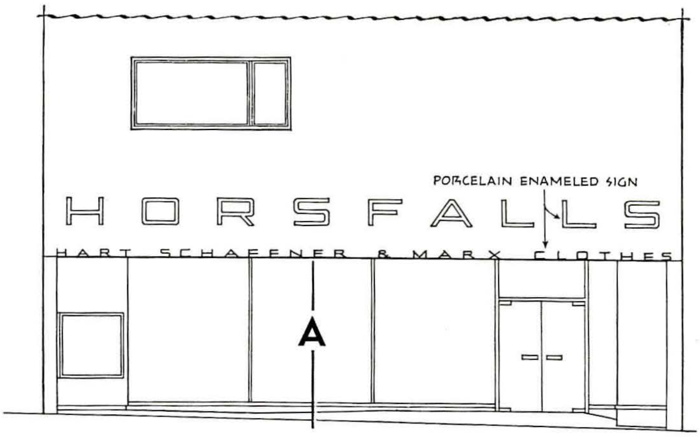
STORE: STORE FRONT



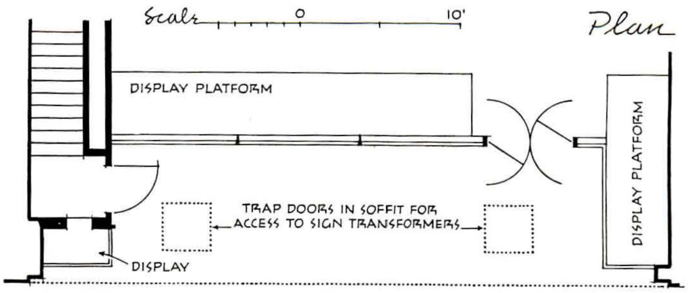
Section at A 3" SCALE



Ben Schnall



Front Elevation



HORSFALL'S

Hartford, Conn.

KETCHUM, GINA & SHARP

Architects

ADD DAYLIGHT-ASSURE COMFORT

in the same specification

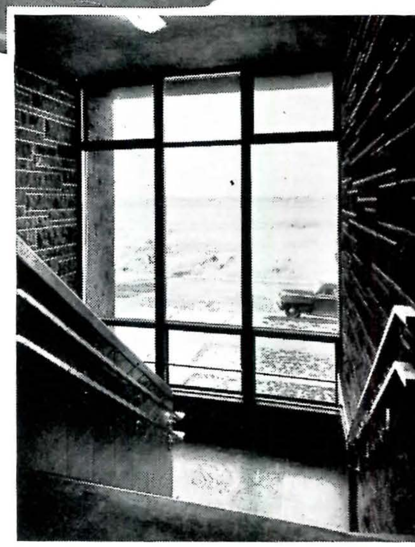
*Thermopane** enlarges your design opportunity—enables you to provide generous daylight-transmitting areas without making concessions on comfort or heating economy. Thus, *Thermopane* fits neatly into today's pattern of more daylight, more comfort.

The *Thermopane* unit consists of two or more panes of glass, with specially-cleaned, dehydrated air between, sealed around the edges by L·O·F's *Bondermetic* (metal-to-glass) *Seal**. This prevents dirt or moisture from entering the insulating air space.

Thermopane's low coefficient of heat transfer (U value of .58 for double *Thermopane* with ½″ air space) reduces heat loss through the glass, saves fuel and reduces downdrafts at windows. With *Thermopane* there's little chance of condensation forming on the glass under average conditions . . . making it easier to maintain proper humidity for health and comfort.

The benefits of *Thermopane* are enjoyed the year 'round, for its insulating qualities also help keep rooms cooler in summer . . . aid efficient operation of air-conditioning equipment.

Thermopane is available for prompt delivery from your L·O·F Distributor in more than 70 standard sizes as well as units of special dimensions. It may be installed in either fixed or opening sash. For complete information, write for our *Thermopane* book and Technical Sheets by Don Graf. Libbey·Owens·Ford Glass Company, 3698 Nicholas Bldg., Toledo 3, Ohio.



● Glazed throughout with *Thermopane*, Drexel School, Cicero, Illinois, provides ample daylight with more comfort in all classrooms. Because *Thermopane* deadens sound, it is practical for partitions. Stairways daylighted with a generous glass area of *Thermopane* are safer, less drafty. Architects and Engineers: Perkins and Will, Chicago.

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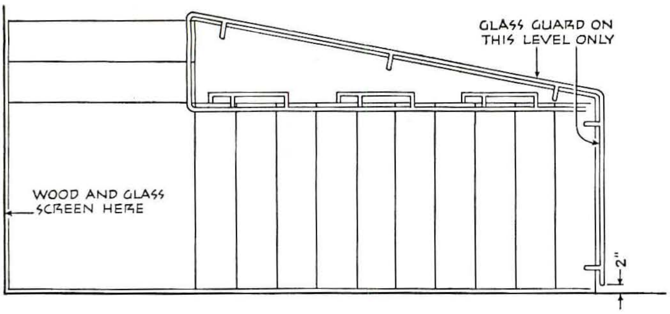
Only Libbey·Owens·Ford makes

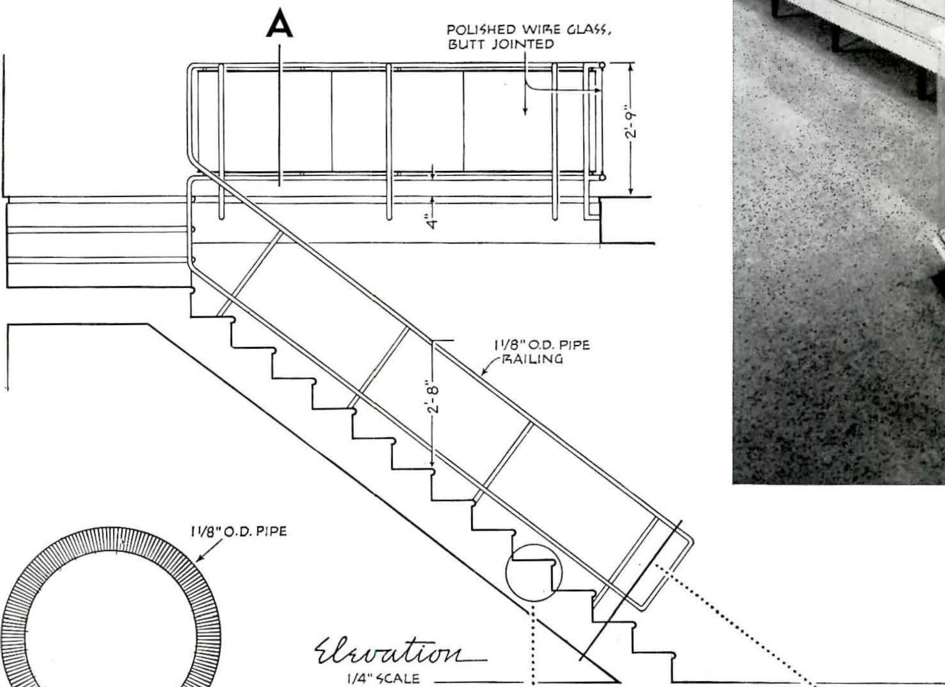
Thermopane

LIBBEY·OWENS·FORD
a Great Name in **GLASS**

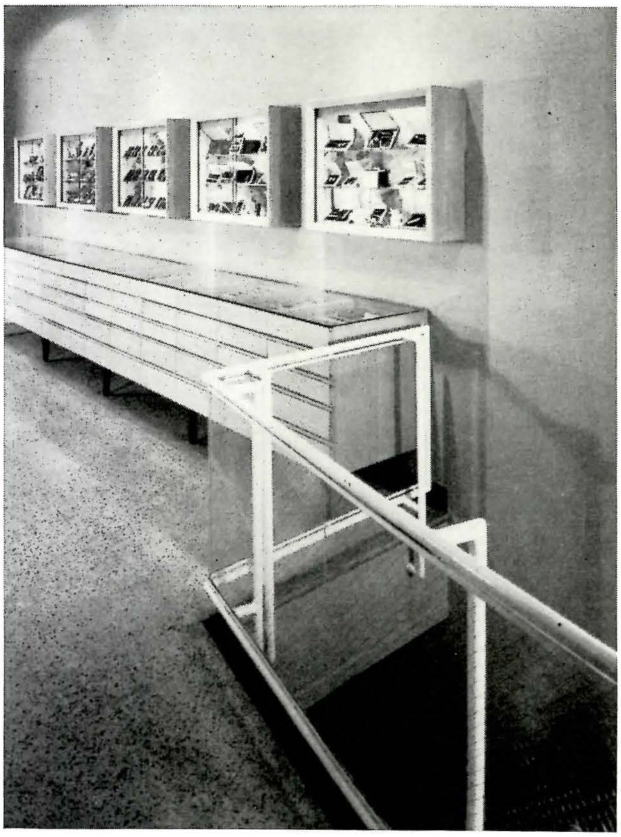
STORE: STAIR RAIL



Plan 1/4" SCALE



Elevation
1/4" SCALE



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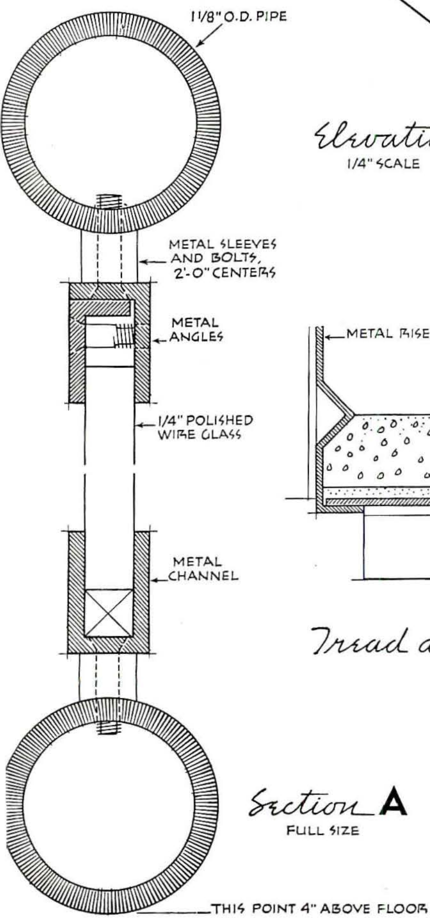
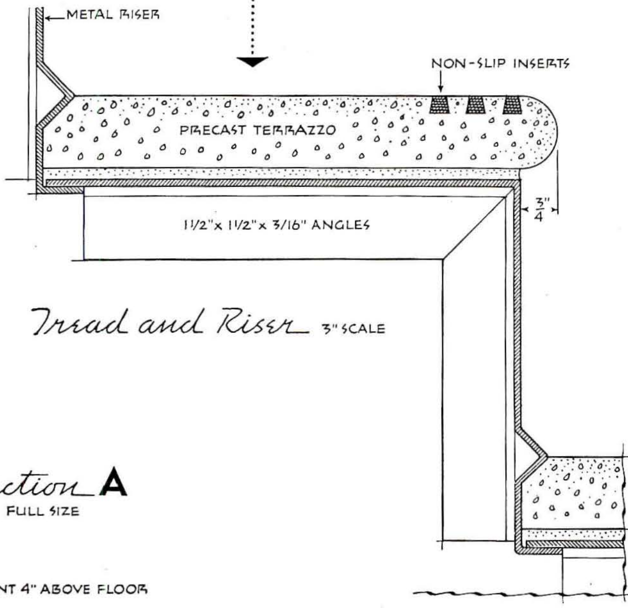
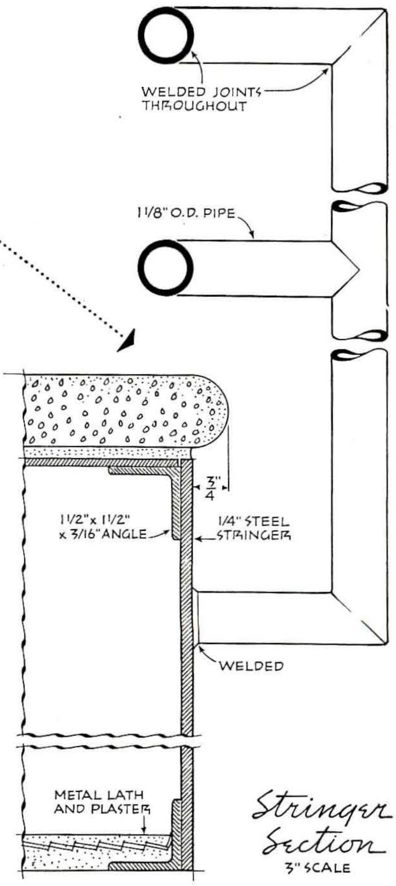


Section A
FULL SIZE



Tread and Riser 3" SCALE



Stringer Section
3" SCALE

FINLAY STRAUS

Stamford, Conn.

KETCHUM, GINA & SHARP

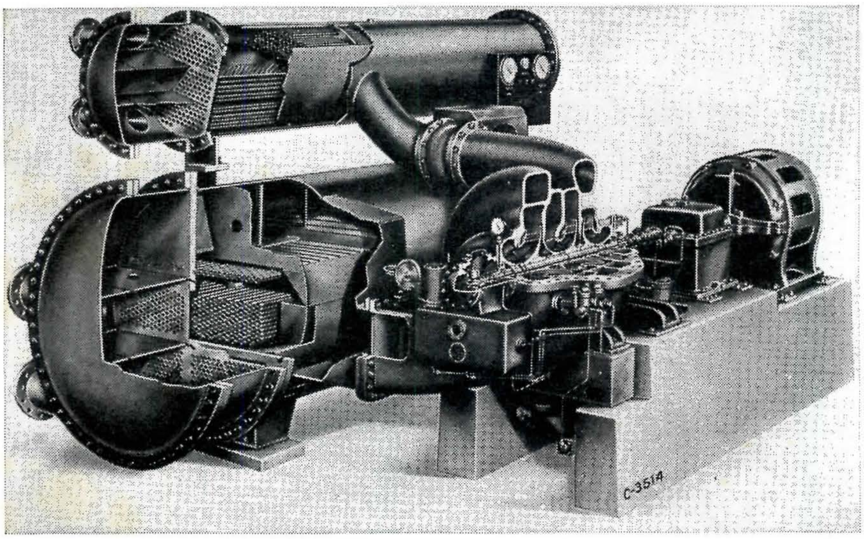
Architects

Air Conditioning and Refrigeration Report

WORTHINGTON

Worthington Pump & Machinery Corporation, Harrison, New Jersey

LESS FRICTION AND TURBULENCE LOSS IN "VOLUTE" COMPRESSOR DESIGN



The use of "volutes" in the design of the centrifugal compressor which forms a part of the Worthington Centrifugal Refrigeration System provides greater efficiency because the smooth, obstruction-free gas passages reduce friction and turbulence loss.

An exclusively "Worthington" arrangement of the volute passages results in virtual elimination of radial thrust. In the first compression stage, a double volute balances any normally-developing radial thrust; in the second and third stages, the volutes are offset 180 deg. to counterbalance the radial thrusts.

Similarly, the arrangement of impellers is such that the axial thrust produced by the third-stage impeller substantially counterbalances that developed by the first- and second-stage impellers.

Other features include:

Auxiliary motor-driven oil pump provides pressure in bearings and shaft seal before starting and stopping.

Wheels are cast, rather than fabricated, for shaping to proper hydraulic design.

Write us for Bulletin C-1100-B14, giving further information. *Worthington Pump and Machinery Corporation, Harrison, N. J. Specialists in air conditioning and refrigeration for more than 50 years.*

Worthington at Firestone

The Research Laboratory in the huge Firestone Tire and Rubber Company at Akron, Ohio, is air-conditioned by Worthington equipment.

Windowless Store—Worthington Air

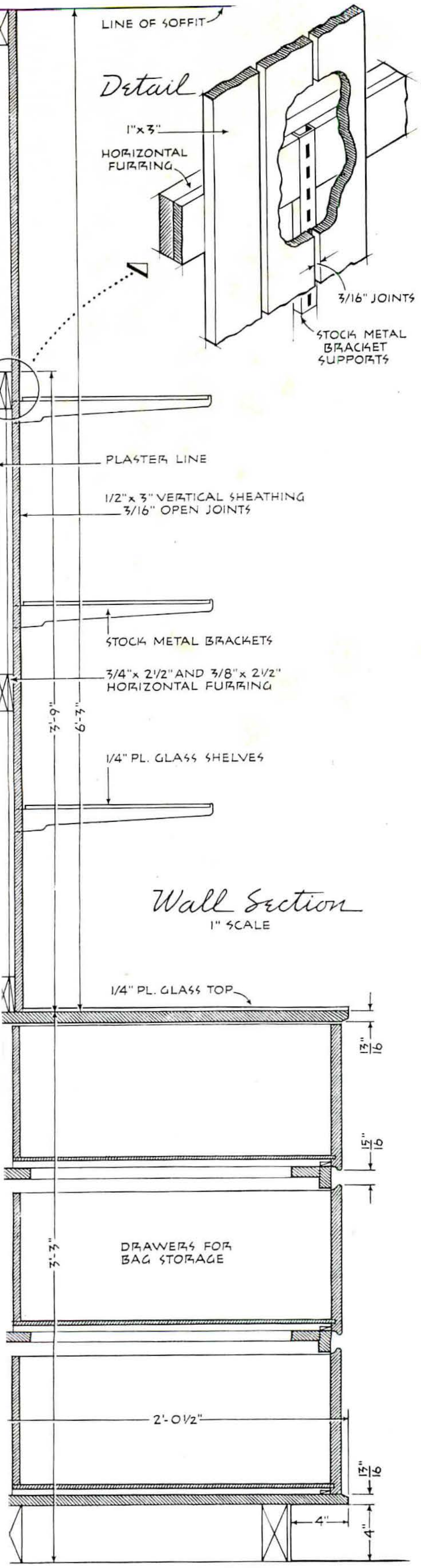
A 540-ton Worthington Centrifugal Refrigeration Machine, mounted on a structural steel base in a rooftop penthouse, provides year-round air conditioning for Burdine's Department Store at Fort Lauderdale, Florida.

Balanced Air—For Small or Large Installation

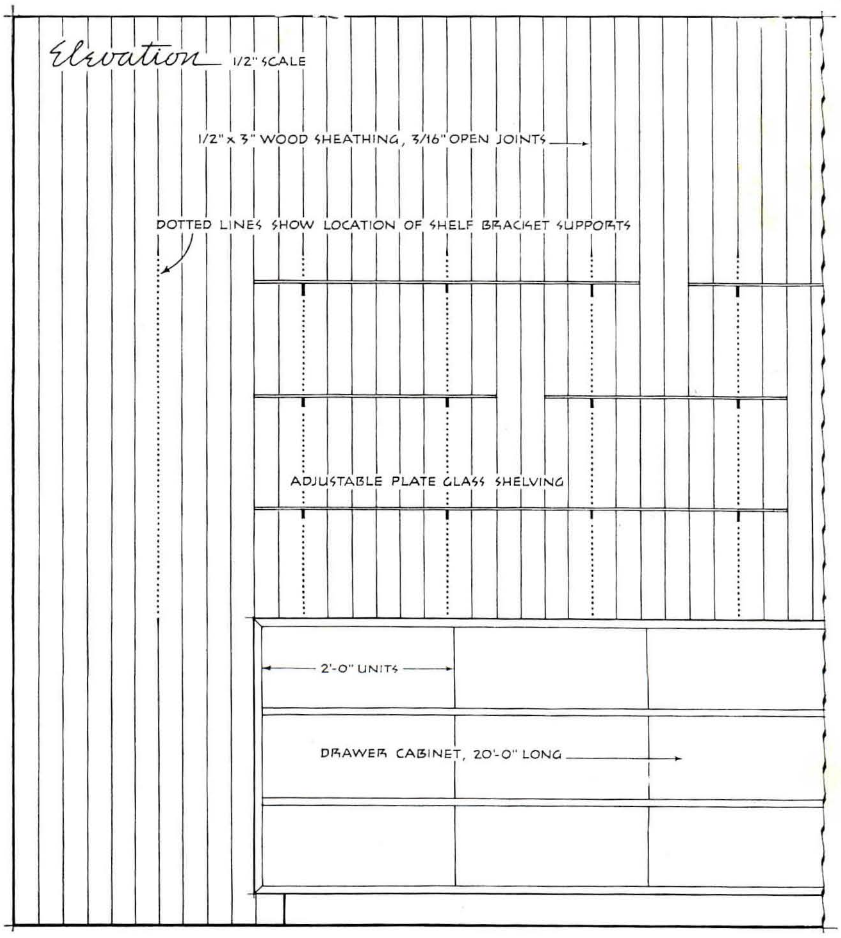
Whether it's a 540-ton centrifugal machine for a big building like Burdine's, or a 3-ton packaged unit for a corner drug store, the same fact holds true. Because Worthington makes *all* the vital "innards" of air conditioning and refrigeration systems, the customer gets a *completely-integrated*—not just *assembled*—system. And that means more efficient, more economical operation—*more worth in Worthington.* See your nearby Worthington distributor (in the Classified Telephone Book) for details. A.8.32

WORTHINGTON

Air Conditioning and Refrigeration



Lionel Freedman: Pictorial Services

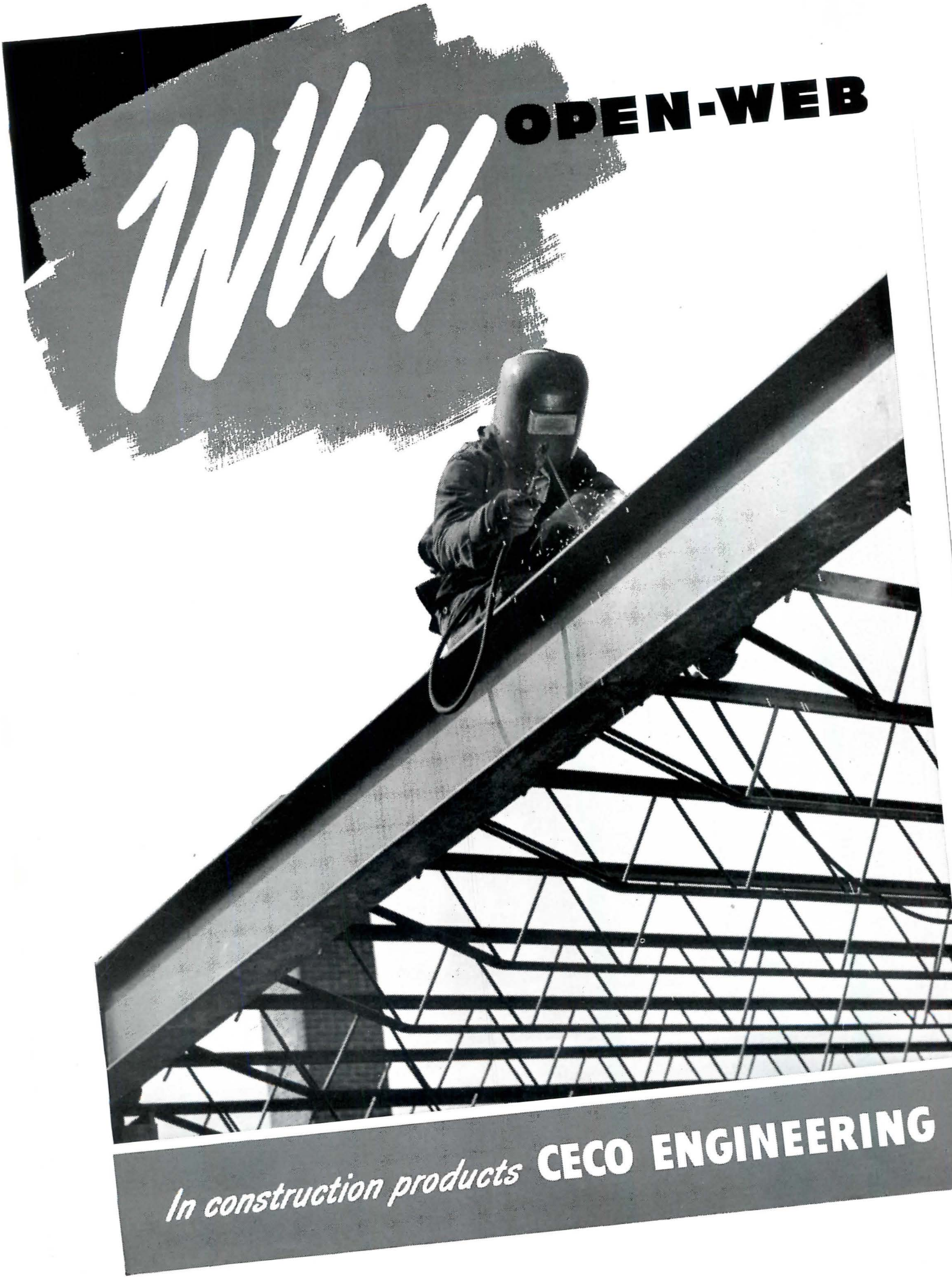


'LYMOUTH SPECIALTY SHOP

[ew York, N. Y.

KETCHUM, GINA & SHARP

Architects


Why
OPEN-WEB
In construction products CECO ENGINEERING

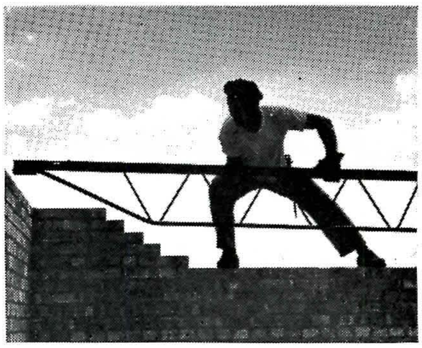
STEEL JOISTS ?

. . . Because for light-occupancy buildings that are fire and sound resistive, Open-Web Steel Joist Construction is the most economical way to build

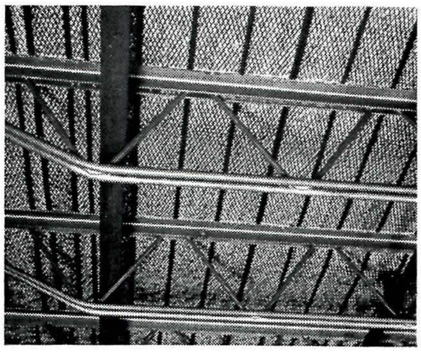
Building men throughout the country are making greater use of Open-Web Steel Joists for construction of light-occupancy buildings such as commercial structures, stores, schools, dormitories, hospitals, apartments and residences. The reasons: The cost is low, the construction is light, and the resulting building is fire and sound resistive, termite proof and non-shrinking. The "dead load" is amazingly low—less than forty pounds per square foot with a two-inch concrete top slab and a plastered ceiling. This light weight reduces the size of footings, columns and beams.

WHY SPECIFY CECO?

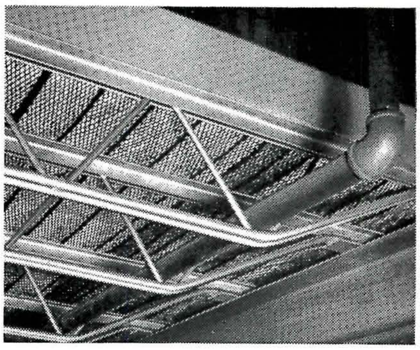
Thirty-six years of construction experience in the field, on the job, has given Ceco a sure grasp of building problems. This fund of knowledge is yours to command from 23 strategically located offices and warehouses coast-to-coast. Ceco Steel Joists are designed and fabricated in accordance with the standard specifications of the Steel Joist Institute and simplified recommendation R94-30 of the United States Department of Commerce. They are fabricated to exact size in the factory, come to the job tagged, ready to install.



FASTER—Ceco Open-Web Steel Joists are light and easy to install. Special equipment and falsework are unnecessary. This results in speedy erection and minimum interference with other building trades on the job.



ECONOMICAL—Ceco's Open-Web Steel Joists are self-centering. The form work for the concrete slab—usually metal rib lath or steeltex—rests directly on the steel joists without other support from the under side.



CONCEALS CONDUITS—Ceco Open-Web Steel Joists provide a ready means of concealing ducts, wiring and piping. Space is saved by direct attachment of ceiling to joists. Time and materials are saved, too.

CECO STEEL PRODUCTS CORPORATION

GENERAL OFFICES: 5601 West 26th Street, Chicago 50, Illinois

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See Ceco catalogs in Sweet's Architectural File or send for free descriptive literature

CECO STEEL®

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...Chosen for New $2,000,000 Office Building in Atlanta, Ga.

● Nearing completion, the new 800 Peachtree Building in Atlanta is the second largest office building in the city. Of steel frame construction, with concrete floors and solid masonry exterior walls, this six-story structure contains 160,000 square feet of floor area.

Among the modern features of the building are complete air conditioning of all office space, almost total absence of excavations and basements, new lightweight construction, *and wiring raceways throughout of Republic ELECTRUNITE E.M.T.*

The builders believe it will be the safest building in Atlanta, since the exit facilities and fire protective features exceed the minimum requirements of the State Building Safety Law which is patterned after the National Exits Code.

Here, again, is convincing evidence of the dependable wiring protection provided by ELECTRUNITE E.M.T.—the *original* lightweight rigid steel wiring raceway. This *modern* conduit is approved by the National Electrical Code for exposed, concealed and concrete installations... Underwriters Laboratories' inspection assures you that it provides adequate electrical and mechanical protection.

For complete information about the many cost-cutting advantages of Republic ELECTRUNITE E.M.T., write *today*.

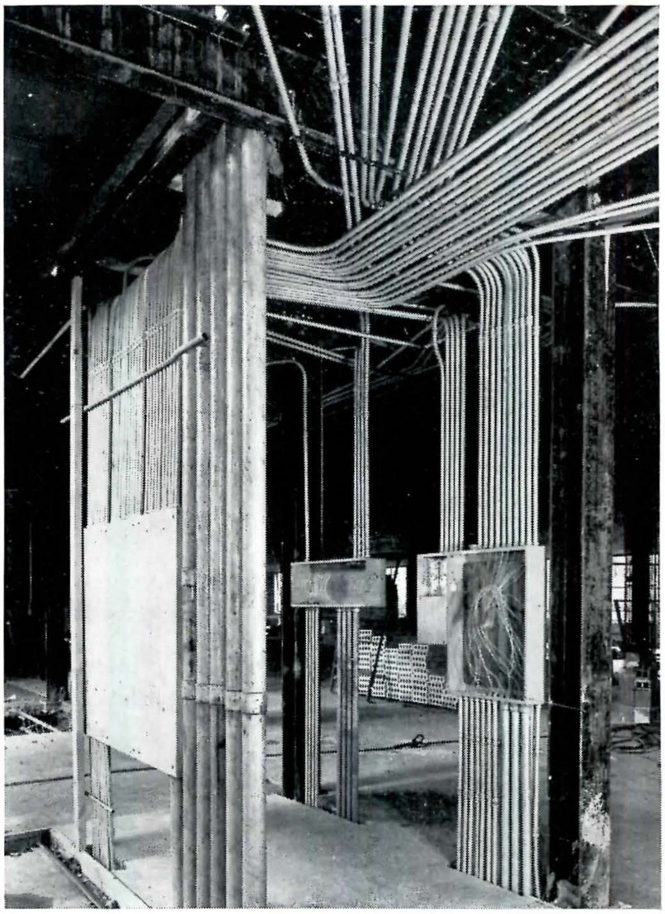

Photo of 800 Peachtree Building during construction, showing mass runs of ELECTRUNITE E.M.T., the modern threadless rigid steel wiring raceway used throughout the entire structure. Architect: Herbert Rawlins, Atlanta. Electrical Contractor: Whitehead Electric Company, Atlanta.

REPUBLIC STEEL CORPORATION

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Republic ELECTRUNITE E.M.T.

REPUBLIC STEEL REG. U. S. PAT. OFF.

REG. U. S. PAT. OFF.

LIGHTWEIGHT THREADLESS RIGID STEEL RACEWAY

P/A P.S.

THOSE WHO CAN'T WAIT TO GET THEIR COPIES OF P/A so that they can turn immediately to the last page for those words of wisdom and pure gossip that roll off the editor's typewriter after he finishes his real work each month will remember the touching appeal in the June issue from a draftsman who wanted to find congenial employment before he started "growing a pair of dormers." I am happy to report he now writes that "because of your help I will soon be working with one of the best outfits in Philadelphia." Good luck to both the man and the "outfit." Having acted as marriage broker, I shall keep my fingers crossed that there is no divorce.

●

A CHARMING LADY WHO HAS STRONG OPINIONS on current architectural trends was holding forth at a party recently about the large glass areas common to much contemporary residential work. "I can't see why people want a lot of glass in the living room," she said. "You have no privacy. I just wouldn't like it in my own house." Then she thought a moment, and added, "I can see how it might be pleasant in a bedroom, though . . ." A prominent designer turned to her sadly and said, "My dear, you don't need an architect —you want a psychiatrist."

●

A NEW ENGLAND CORRESPONDENT TELLS US OF ANOTHER LADY with another aberration. It seems that Mrs. Jones had been born and brought up in the Midwest, but had always had a hankering for New England which was largely induced by pictures she had seen of the sleepy, cool, quiet New England streets lined with white clapboard saltboxes. Finally her husband was transferred to a Connecticut town, and she got her wish. One of her first moves was to retain an architect to design her a New England Colonial house. He did a nice job, and the house was built. It sits there today, the only "colonial" house on a street which is otherwise consistently designed in a contemporary manner.

ARCHITECTS MAY NOT ALWAYS BE ALIVE to their social responsibilities, but when daily bread and butter is involved, they react quickly. The ad run in all of the national architectural magazines in July by the California State Personnel Board, recruiting technical help, including architects, has resulted in a number of responses quite different from what the Board expected. I have before me a letter from Mr. Martin Fuller of Los Angeles, California, who points out that any support for government-bureau-designed architecture is inconsistent with the argument that important design comes from the absorption of the architect in the life of his community, a point of view which P/A has been documenting in its ARCHITECT AND THE COMMUNITY studies. I also have a copy of a letter to the California Board (a copy also went to Governor Warren who I believe is running for some political office) from the Dallas, Texas, Chapter of the A.I.A., which says in part:

"The Dallas Chapter . . . resents your wholesale and glamorized effort to entice (architects and their employed assistants) from their gainful and worthwhile private practice of architecture into a government endeavor which would appear to be inconsistent with obtaining the excellent architecture your state is known for and certainly detrimental to the interests of your own highly capable architects."

●

AS TO THE QUESTIONS, raised in these letters I believe P/A has made itself clear on its editorial position many times. Government design *per se* is not bad. If it were, we would have to scorn TVA, among other work. However, there is darn little building construction which the government should design under an efficient operation of our system. Furthermore, there has been darn little good government-designed work in this country. The tendency of a government bureau seems to be to become stodgy, repetitious, unimaginative. "Standards" are usually repeated endlessly without re-examination and improvement.

On the other hand, there are a number of functions that a government architectural and engineering staff can accomplish without taking work away from private practitioners and without getting involved in design matters where they are not at the present time capable and do not seem to be able to be progressive. Planning a capital budget program for a state or a municipality is one. Programming a hospital, a health, a cultural, even an industrial program of growth is another. Developing minimum standards, collating available information, engaging in research which the private man cannot afford is still another. Much as some architects may object to it, checking to see that standards of decency and public health and safety are met is one more useful and indeed necessary function.

The obvious examples, often pointed to, of an intelligent and of an unfortunate use of the government architectural and engineering function are the U. S. Public Health Service, on the one hand, and the Veterans' Administration on the other. In the first case, there are few architects in the United States designing hospitals who have not profited from the objective design advice and basic research of that agency's technical staff. In the second case, the record of progress in V.A. hospital design under the program given out to private architects, contrasted with the completely unimaginative design done in the agency's own drafting room, constitutes a case history now being built in brick and stone and steel and concrete.

I certainly would not like to see a State Board actually design "public" buildings in California, when there are so many brilliant men engaged in private practice. And I agree with the Dallas architects that it would be a shame for good people to be lured from their offices to work for the State of California when they should rather look forward to professional activity which will help improve the physical surroundings in their own region.

●

THE OFFICES OF KUMP & FALK IN SAN FRANCISCO were justifiably proud of the fact that they won the P/A Award two years running, and the office staff turned out *en masse* for the presentation dinner in June. The photograph below, of the Kump & Falk employees, may be explained in one of two ways.

Perhaps the figure floating in the air is a bit of ectoplasm induced by the subconscious thoughts of a group of people released from day-to-day worries for an evening of relaxation. Or perhaps (and this is the story I got from Mr. Skelton, the photographer) it is a double exposure, with the P/A affair registered on the same plate that was used for a studio pose for totally different purposes. Why didn't I get around to the Skelton Studio while I was out there?

Thomas H Creighton

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(Continued from page 149)

the summer, but as yet the statistics are not conclusive enough to be quoted. However, the production rate began to climb during the early summer. Imports of red cedar shingles continue to run high.

The production of millwork items such as doors, exterior frames, etc., continues to run well ahead of 1947—in fact, well ahead of any year since 1942. Seasonal ups and downs account for monthly changes in production, but stocks on hand are averaging out at a steady figure—a figure that continues to be too low for the huge demand currently being felt.

If you're wondering why doors, frames, sash, etc., are not available whenever needed, it's not the fault of manufacturers. During 1947 door production was 3 million units ahead of 1946, and many million units higher than any year since 1941. Open sash has not kept pace with door production, but 1948 promises to approach 1941 production figures. Exterior frame production is up in the million-unit bracket, with 1947 production the largest since 1941, and 1948 production well ahead of 1947.

The over-all picture for lumber and lumber products probably looks the best since 1941. The bottleneck isn't production, but the enormous demand that was built up during the war years. Manufacturers are reluctant to increase production facilities to take care of the abnormal demand because such facilities would become idle when building activity returned to normal. It all boils down to the simple conclusion that the industry is bound to catch up with demand—but not for quite a while.

Product Report . . . . September, 1948
LUMBER AND LUMBER PRODUCTS

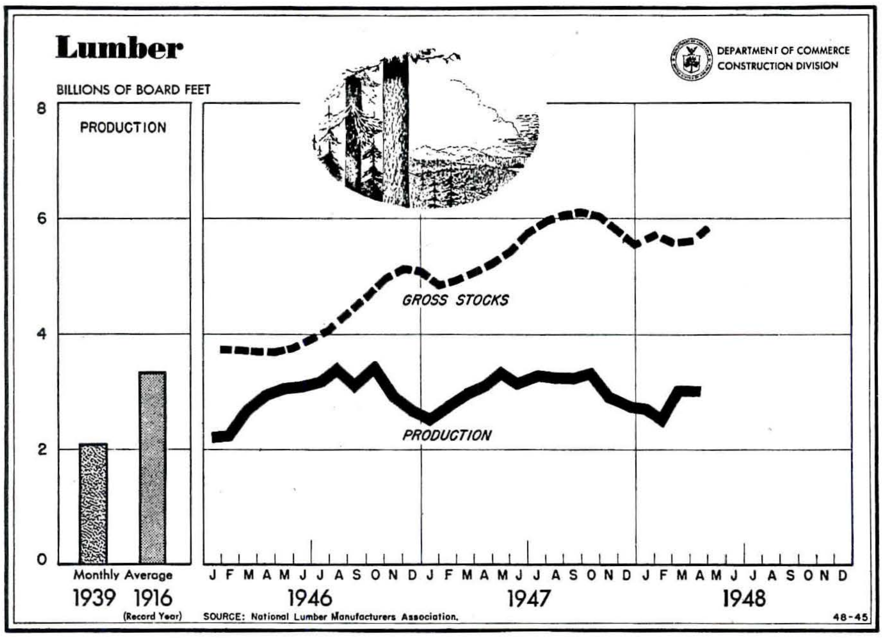
There seems to be an indication that the dearth of lumber, and in some cases, lumber products, is gradually becoming a thing of the past. According to the latest report by the National Lumber Manufacturers Association, production of lumber has dropped slightly from last year, but stocks in lumber yards have increased. To get statistical for a moment—production is running a fraction of a percent lower than last year, but stocks in lumber yards are up more than 11 percent. This is still no cause for shouting, however, because stocks are about 19 percent lower than on December 30, 1940!

As for lumber products, production is high—but so is use. During April for instance, production of hardwood flooring was 43 percent ahead of the same month in 1947. The demand remained heavy, resulting in little or no increase in the stock of hardwood flooring available from local lumber yards.

The production of softwood plywood (3/8 inch equivalent) continues its record-breaking production schedule, with a record of 185.2 million square feet set in March. Seasonal dips are beginning to have their effect, with small drops in production already indicated. Stocks held by plywood producers are just about the highest on record, running about 12-15 percent above 1947.

Red cedar shingles and shakes are suffering from malnutrition, it would seem. No other reasons can be given for the drop in production that finds 1948 running a good 12 to 15 percent behind 1947. There is a seasonal trend during

(Continued on page 150)



ADVERTISING RATES — P/A DIRECTORY

The P/A Product Directory Section appears as a monthly feature. It constitutes (a) an industry report on major classifications of building products, materials & equipment, and (b) space for a series of standard advertising units arranged for position besides editorial material to afford maximum visibility. Standard units, size 2⅛" x 3". Cuts and copy should be sent to Progressive Architecture, Reinhold Publishing Corp., 330 W. 42nd St., N. Y. 18. Copy and layout service is available on request.

RATES

12 times, $50.00 per insertion
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1 to 5 times, $90.00 per insertion

Special rate advantages may be obtained by using the directory in conjunction with display advertising.

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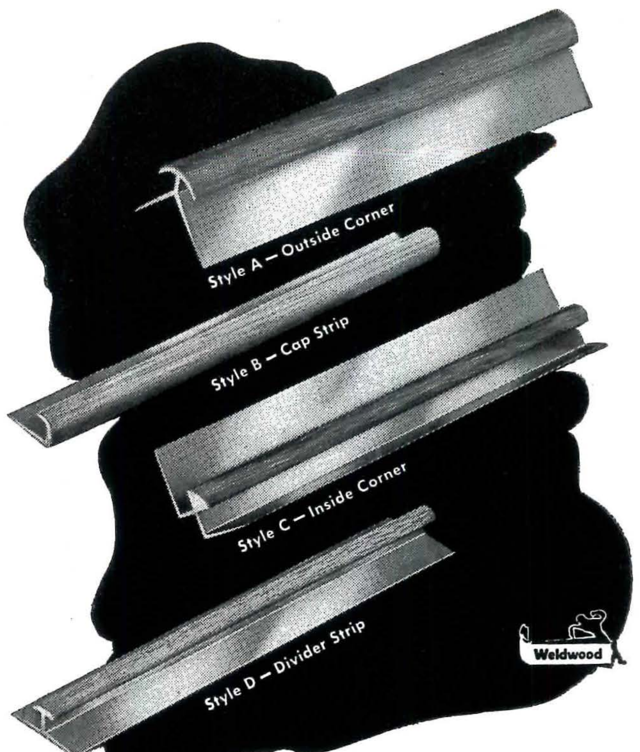
Simplify Installation of Weldwood Paneling with . . .

NEW WELDWOOD MOLDINGS



Weldwood Moldings are manufactured by Keller Products, Inc., Manchester, N. H., and distributed exclusively by United States Plywood Corporation.

Sensational New Weldwood Moldings eliminate practically all face-nailing, counter-sinking and puttying. Matching wood veneer faces blend perfectly with Weldwood-Paneled rooms.

THE minute you see these new moldings you'll recognize their value. For here, at long last, are the ideal moldings for matching Weldwood paneling.

In addition to perfect match and perfect fit, these new moldings eliminate the need for almost all face-nailing, counter-sinking and puttying. All that's necessary is to nail the moldings themselves to the studding. Panels are held firmly and permanently, yet there's ample allowance for contraction and expansion.

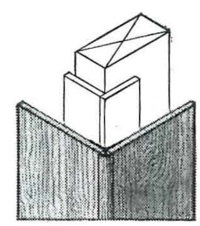
Weldwood Moldings are made of extruded aluminum in 8′ lengths to fit ¼″ panels. Wood facings currently available are: oak, Korina, mahogany, walnut, birch, Prima Vera and maple.

There's a style for every requirement: outside corner, inside corner, cap strip and divider strip.

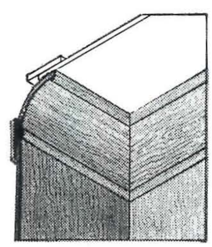
Look into this important new development. See for yourself how Weldwood Moldings cut cost and time required for the installation of Weldwood paneling. You'll get a better finished job at less cost on residential, commercial and fixture work when you specify the speed, ease and economy of Weldwood Moldings.

We'll be glad to send you samples and literature. Just write: United States Plywood Corporation, New York 18, N. Y.

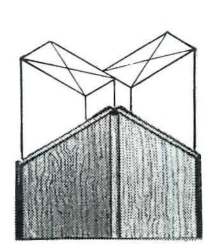
A FEW EXAMPLES OF HOW WELDWOOD MOLDINGS SPEED UP WORK



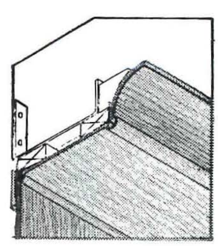
Outside Corner Detail



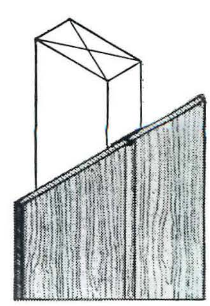
Divider Strip combined with Cove & Cap



Inside Corner Detail



Inside Corner, Outside Corner, combined with Cove — as light trough.



Divider Strip & Detail

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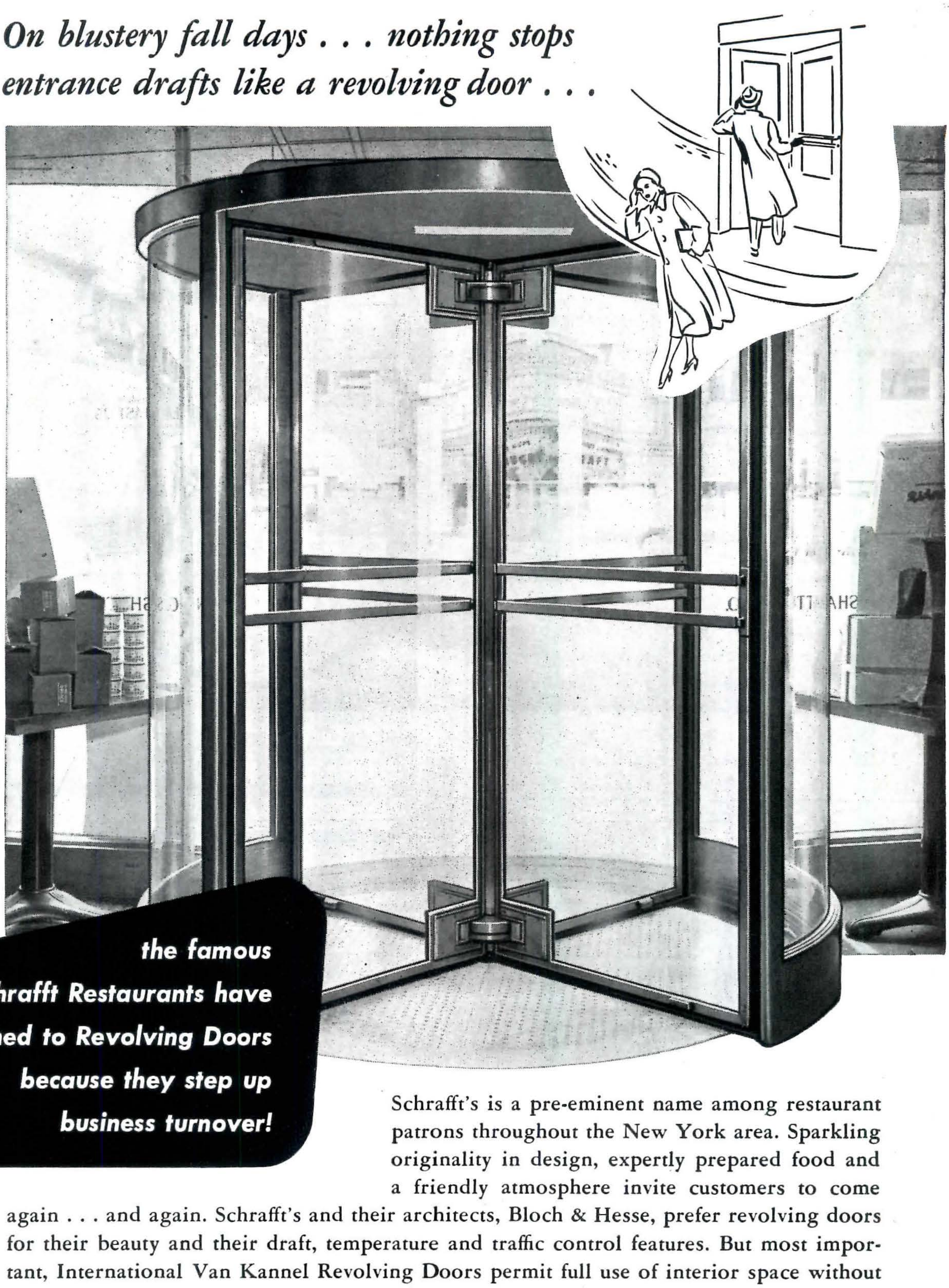

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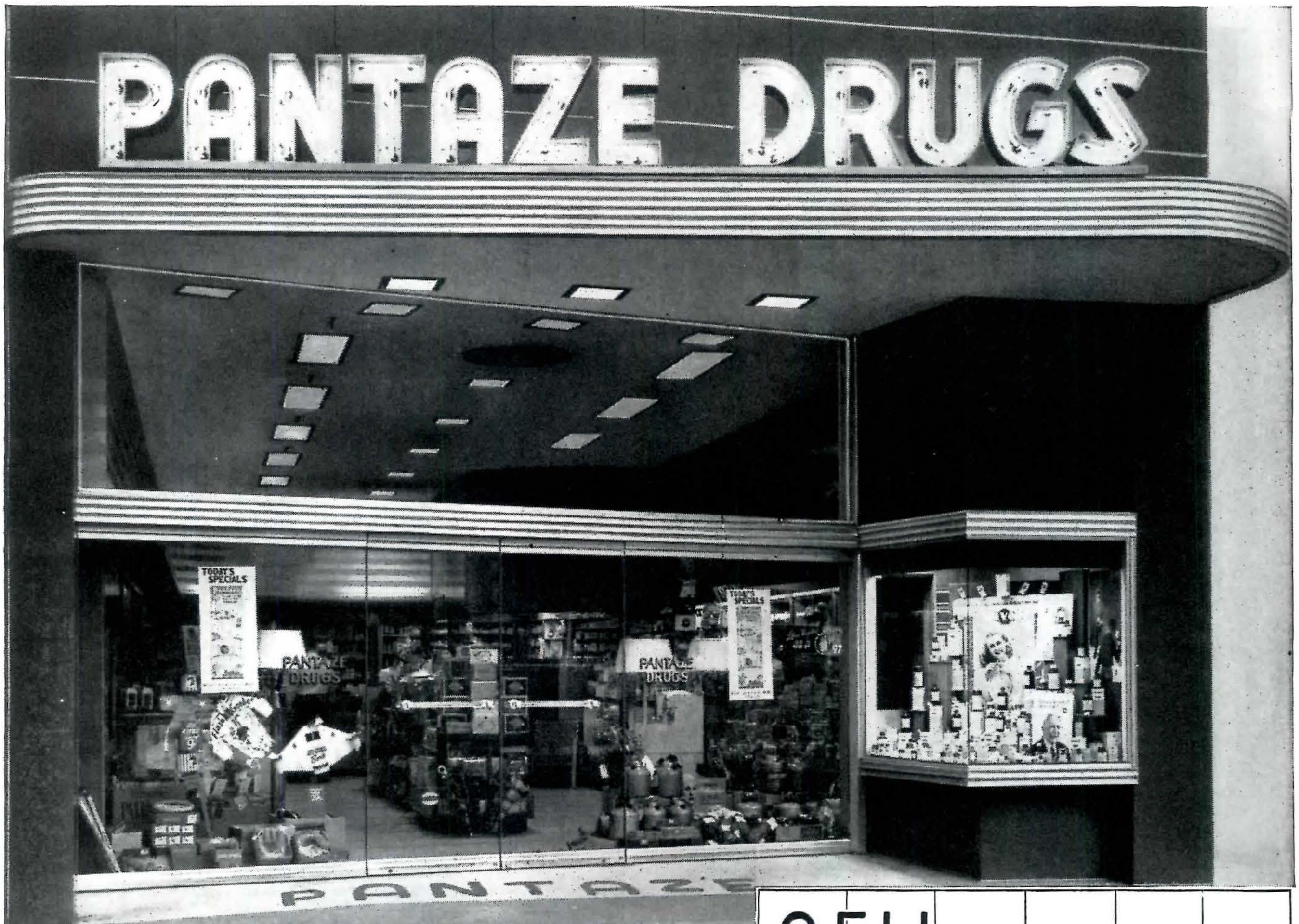
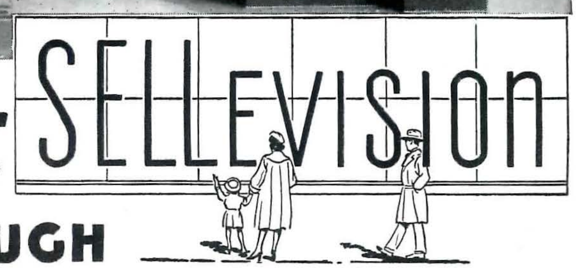


Architect: E. Lee Harrison, Memphis, Tenn.

SIGHTING for SALES – THROUGH



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Selling through a *Sell*evision store front is most effective when maximum visibility is obtained. Brasco's Safety-Set Construction provides the greatest amount of "view room" because its sash is only 25/32" high. Yet Safety-Set sash incorporates Brasco's deeper grip on the glass to hold it firmly, uniformly and safely.

The entire Safety-Set line is expertly fabricated in heavy gauge stainless steel and anodized aluminum. With many attractive sash and sill combinations available, *Sell*evision fronts of distinctive design can be built utilizing standard stock members only. Viewed from any angle, Safety-Set is handsome, durable construction ... your best medium for building store fronts with *Sell*evision.

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SAFETY-SET
STORE FRONTS

BRASCO MANUFACTURING CO.
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Specialists in Metal Store Front Construction for more than 35 Years

Quiet Operation

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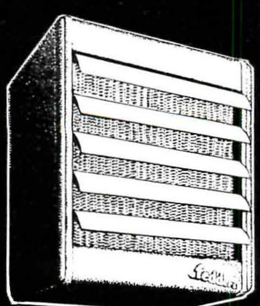
FEDDERS UNIT HEATERS

are Built to Give Service

Write for Data



● Modern broad blade fans and rubber mounted motors contribute to FEDDERS quiet operation. In addition, streamlined tubes in heating element result in quiet, efficient air handling.

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FOR PERFECT FIREPLACES IN MODERN HOMES . . .

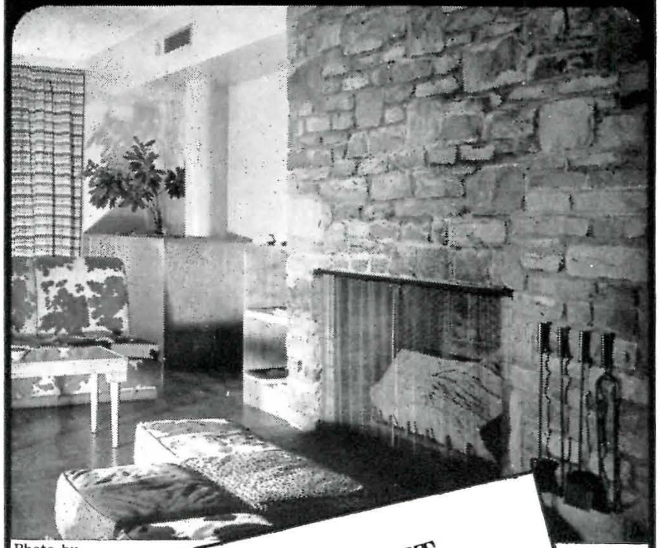

Photo by Ezra Stoller

BENNETT *Fresh-Aire* FIREPLACE UNIT

An ordinary fireplace pumps *200 cubic feet* (2 to 3 large rooms full) of already warmed air *out* of the house *each minute.* In tightly constructed homes, replacement air can't come in from outdoors in sufficient quantity to supply the chimney draft. Result—partial vacuum . . . back-puffs . . . smoke.

The *Fresh-Aire Fireplace Unit* is manufactured to help *you*—in designing Fireplaces for modern, fully weather-stripped homes with central heating. It draws replacement air from outdoors, into the heating chambers, and circulates it, comfortably warm, through the living quarters. No uneven temperatures, no interference with heat controls—and a net *gain* in evenly distributed warmth.

Here are four more reasons why so many *Bennett Fresh-Aire Fireplace Units* are specified:

1. Thoroughly ventilates and "refreshes" the air.
2. Complete freedom to design the mantel . . . normal brick firebox sidewalls . . . no floor grilles.
3. A complete form for *smoke-free* internal proportions of throat, damper, smoke chamber and shelf—assurance that the fireplace will be *built* as you *designed* it.
4. Small first cost is quickly offset by savings in construction and fuel.

Bennett *Warm-Aire* Units—for perfect fireplaces in camps, southern homes, playrooms, etc. Draws cool air from the floor, heats and recirculates it evenly throughout the room, and to adjacent rooms or upstairs.

Write us at 948 Cedar St. for Catalog—or see Sweet's.

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BENNETT-IRELAND INC.
Chartered in 1906
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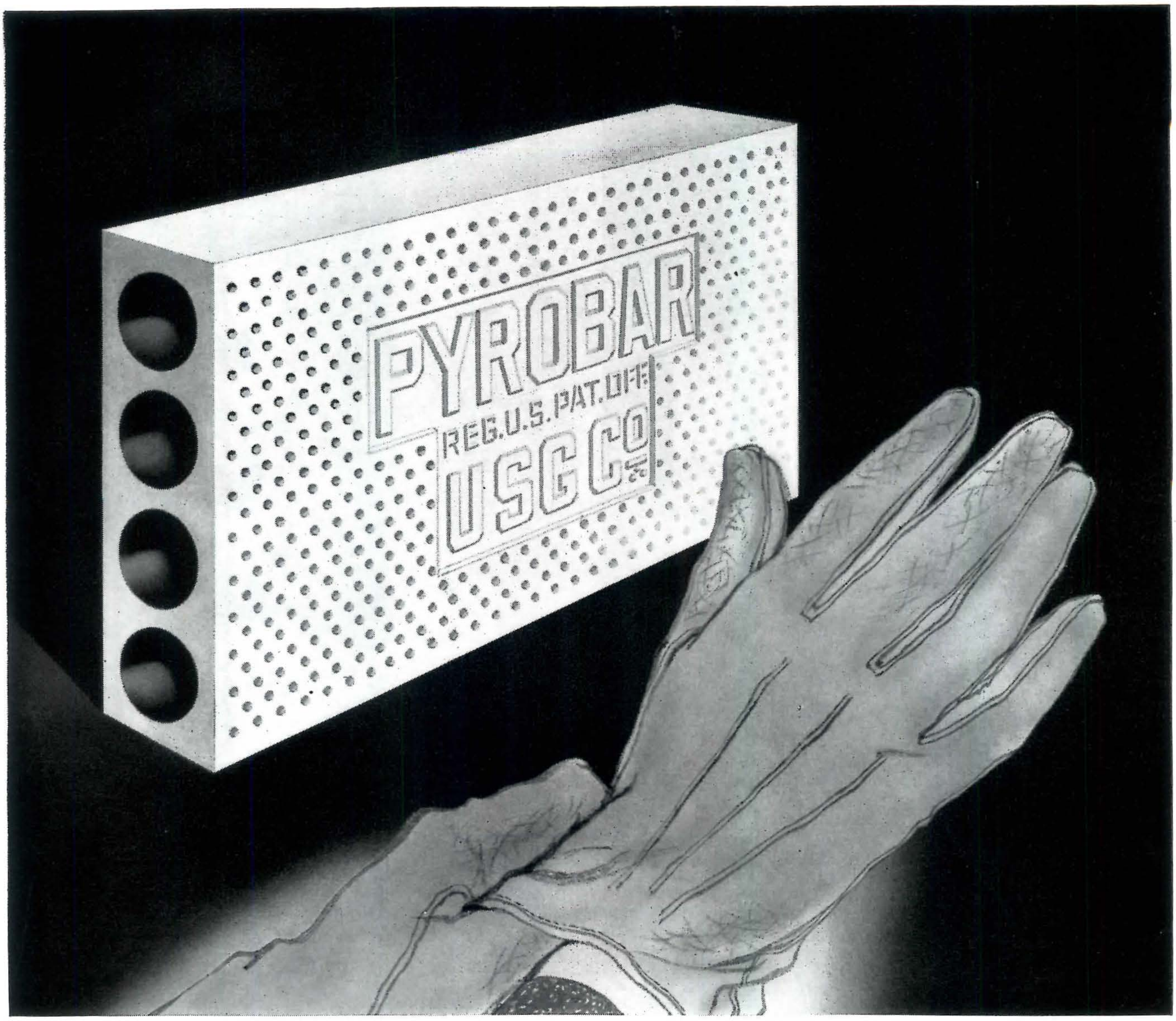

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We suggest that you write or ask for the new U·S·G booklet, "PYROBAR Gypsum Partition Tile," A.I.A. File No. 10-D.

*T. M. Reg. U. S. Pat. Off.

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1st Prize $1,000 – 2nd and 3rd Prizes $500 each

All you have to do is name the new Roddiscraft Door with the accordion type veneer core and follow the directions listed below.

About the Door Here are some facts about the door to guide you in selecting a winning name.

The new Roddiscraft door has a core made up of selected strips of veneer. These strips are spot-glued at intervals and stretched within the rails to form an accordion core design. This is a radical departure from the conventional core. The accordion core creates the strength and rigidity of a solid core with 50% less wood content.

Veneer strips are spaced 2" apart at points of greatest core-strip bending. This provides maximum support to the face panels and protects against puncture from abuse.

Face panels and rails are hardwood throughout. The whole assembly is pressure bonded with the finest glues obtainable and seasoned in specially constructed kilns for permanent straightness.

THERE YOU HAVE ALL THE FACTS YOU NEED TO THINK UP A PRIZE-WINNING NAME. PUT ON YOUR THINKING CAPS AND FOLLOW THESE SIMPLE DIRECTIONS:

1. Select the name you believe most appropriate and fitting. Then, in 25 additional words or less, complete the following statement: "I believe the new Roddiscraft Door with the accordion type veneer core is a superior door because ......" Each name submitted must be accompanied by a statement.

2. Send all entries to the Roddis Lumber and Veneer Company, Marshfield, Wisconsin. All entries must be mailed before midnight, November 20, 1948. Send as many entries as you please.

3. Entries will be judged on the basis of originality and aptness of thought by a panel of expert judges. All entries become the property of the Roddis Lumber and Veneer Company. The judges' decision will be final. In the event of a tie, duplicate prizes will be awarded.

4. The first prize winner will receive $1000; the next two winners will receive $500 each. All winners will be notified by registered mail.

5. This contest is open only to dealers and their employees and the employees of architectural firms, and millwork houses.

Roddiscraft

Roddis Lumber and Veneer Co.
MARSHFIELD, WISCONSIN

NORTON

Broad shouldered? Yes—and with muscles of steel! That's why the NORTON closes doors so firmly yet so gently—*silently as a shadow.* Those broad shoulders house the "muscles," the famous steel-toothed rack and pinion that means positive service for a long life. The new light permanent-mold aluminum shell is a precision pressure chamber that further dramatizes NORTON'S competent performance. *Strong in purpose—easy in action* . . . that's NORTON, velvet gloved doorman to America.

Meets Federal Specifications F.F.-H-121a

NORTON MADE IN U.S.A.

UNDERWRITERS LABORATORIES, INC. RECLAMATION SERVICE UL

NORTON

DOOR CLOSER CO.

Division of The Yale & Towne Mfg. Co.

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YOUNG *Presents...* *a New* CABINET UNIT HEATER

Young Cabinet Unit Heater, Style "A," available from stock.

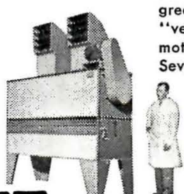
UNIT HEATER PERFORMANCE *Plus* ATTRACTIVE CABINET STYLES

Get the efficiency of forced air circulation and the beauty of modern, floor-level cabinet designs . . . specify the new Young Cabinet Unit Heaters. Large heating capacity and trim appearance make these Units particularly adapted for installations in foyers, hallways, recreation halls, auditoriums and commercial buildings. Here are a few Young features: (1) Streamlined sheet steel cabinets, reinforced for extra stiffness and durability; (2) knockouts for piping from the ends where desired; (3) accessories for floor, wall or ceiling mounting; (4) non-ferrous tubes and fins . . . tubes rolled into gray-iron header casting, assure low pressure drop; (5) coil may be pitched in either direction; (6) air chamber and vent for hot water systems; (7) silent operating, removable blower assembly; (8) three cabinet styles for any application. Write for free Catalog No. 6548.

YOUNG Offers a Complete Line of UNIT HEATERS

◀ **HORIZONTAL TYPE "SH"**
For factories, warehouses, storerooms, garages, basement areas, etc. Fourteen models in wide range of capacities. Non-ferrous cores; heavy sheet metal casings.

VERTICAL TYPE "V" ▶
Provides more heat from greater heights. Special "ventilating" feature cools motor, prevents burn-outs. Seven sizes.



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For extremely large areas. Capacities from 109,000 to 1,047,000 Btu per hr at standard conditions. For horizontal ceiling, floor or vertical wall mounting.

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CEILING OUTLETS

A new approach to air distribution — *line-type* outlets that can be used singly or end-to-end in continuous strips. Keyed to modern architectural concepts, they provide a vital contribution to continuity of design. High diffusion efficiency results in rapid induction of room air into the primary stream, quickly equalizing the temperature differential. Made in Model "LS" (shown) and Model "LL" (designed to receive M21118 DAY-BRITE Lighting Unit).

PERFORMANCE DATA

THROW IN FEET FROM CENTER LINE OF UNIT

A — No. of Outlets Required.
B — Pressure Drop in Inches of Water (Blank indicates negligible pressure drop).
C — Sound Level in Decibels (Blank indicates no perceptible sound).

	12			14			16			18			20			
CFM	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	CFM
350	1	.006	-													350
400	1	.007	-	1	.007	-										400
450	1	.009	-	1	.009	-	1	.009	-							450
500	1	.012	3	1	.012	3	1	.012	3	1	.012	3				500
550	2	.004	-	1	014	7	1	.014	7	1	.014	7	1	014	7	550
600	2	.004	-	1	016	9	1	.016	9	1	.016	9	1	.016	9	600
650	2	.005	-	2	005	-	1	.019	12	1	.019	12	1	.019	12	650
700	2	.006	-	2	.006	-	1	.022	15	1	.022	15	1	.022	15	700
	2	.006	-	2	.006	-	2	.006	-	1	.025	17	1	025	17	750
					.007	-	2	007	-	1	.028	19	1	028	19	800
						-	2	.009	-	2	.009	-	2	009	-	900
								012	6	2	.012	6	2	012	6	1000
										2	.014	10	2	.014	10	1100

A PORTION
OF THE DATA FROM WHICH LINE-O-FLO OUTLETS CAN BE ACCURATELY SELECTED

Knowing the CFM available and the THROW required, the number of standard units needed is quickly obtained from performance data tables such as the one shown in part above.

WRITE FOR COMPLETE DATA...

Ask for Bulletin F-2741 and get full performance data, dimensions, description, principles of operation, typical installation methods, and suggested uses. Write today.

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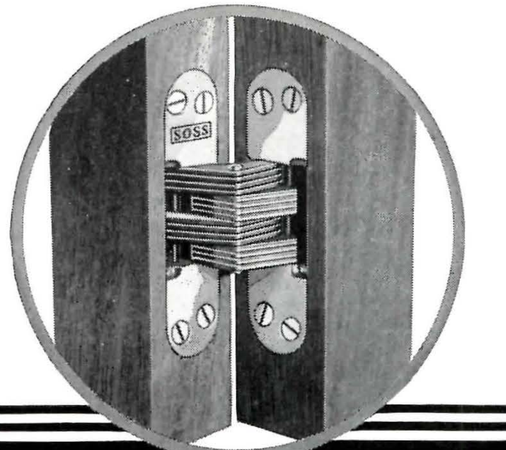
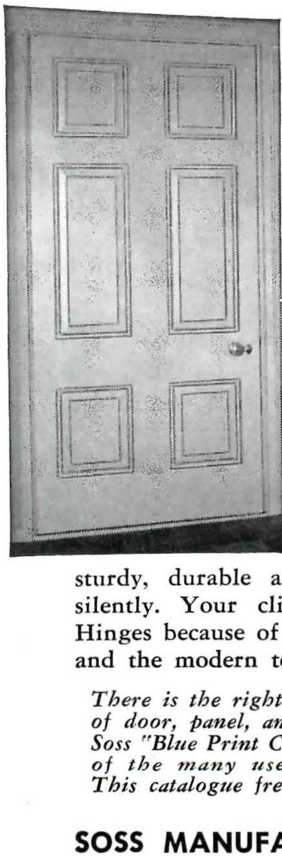


THE HINGE *that hides itself*



● Soss Invisible Hinges do just that. They are actually mortised in the door where a hinge belongs. There are no ugly, protruding hinge butts to mar the streamlined beauty, the graceful lines of modern architecture. Flush, smooth interiors are assured because the Soss Hinge is completely out of sight. No home is really modern without Soss Hinges.

These rugged, precision built hinges are sturdy, durable and operate smoothly and silently. Your clients will appreciate Soss Hinges because of their outstanding qualities and the modern touch they provide.

There is the right Soss Hinge for every kind of door, panel, and cupboard. Write for the Soss "Blue Print Catalogue" giving full details of the many uses of this modern hinge. This catalogue free on request.

SOSS MANUFACTURING COMPANY
21771 HOOVER ROAD • DETROIT 13, MICHIGAN

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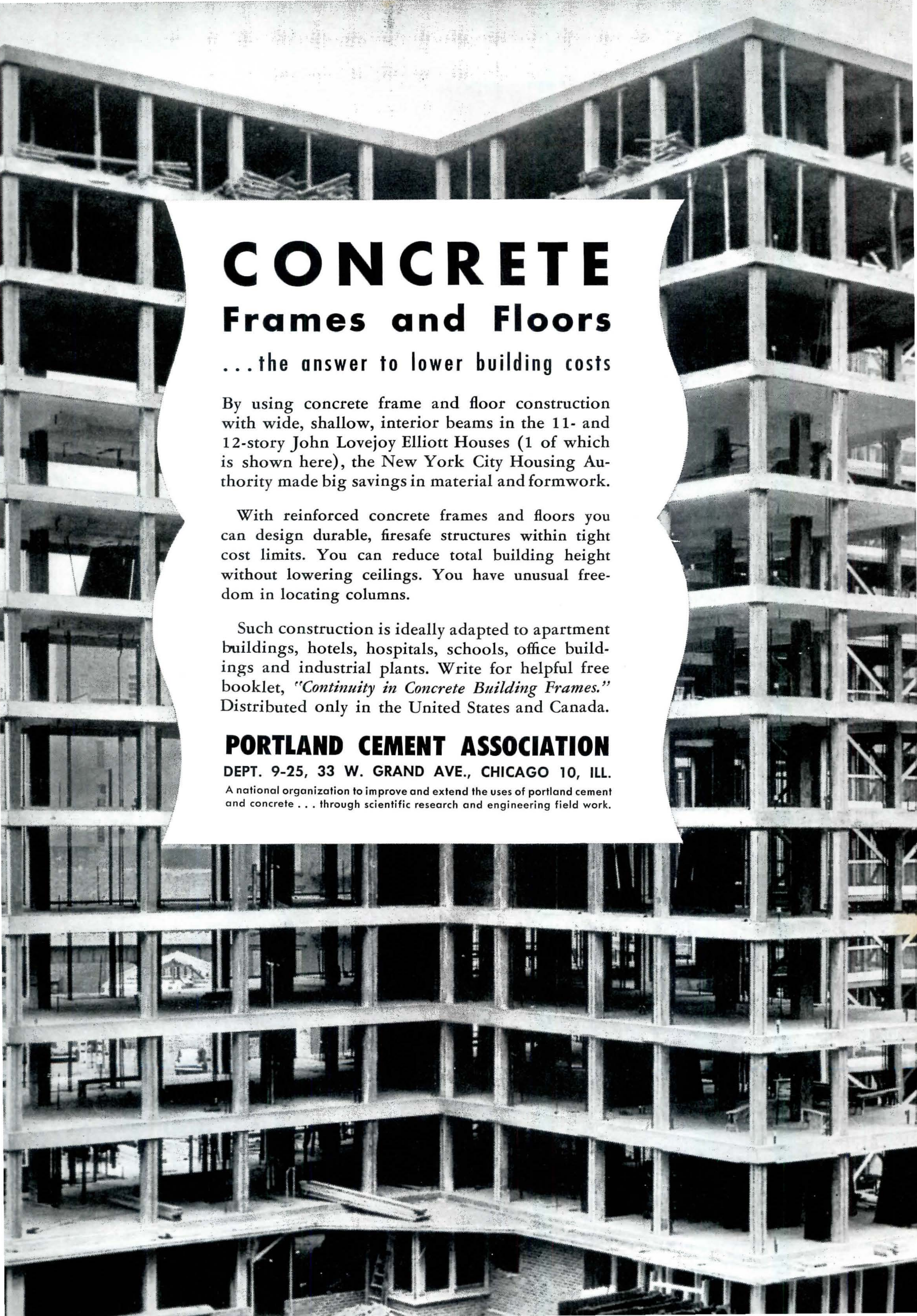
The Hallmark
OF TOMORROW'S HOME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...the answer to lower building costs
By using concrete frame and floor construction with wide, shallow, interior beams in the 11- and 12-story John Lovejoy Elliott Houses (1 of which is shown here), the New York City Housing Authority made big savings in material and formwork.
With reinforced concrete frames and floors you can design durable, firesafe structures within tight cost limits. You can reduce total building height without lowering ceilings. You have unusual freedom in locating columns.
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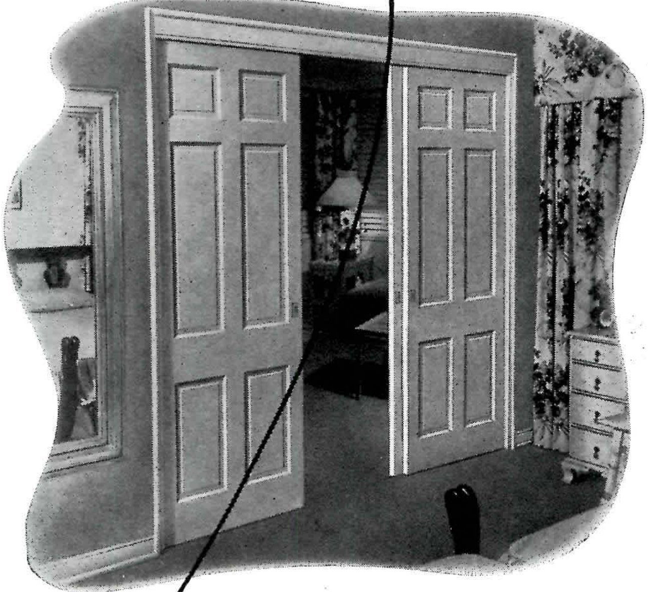

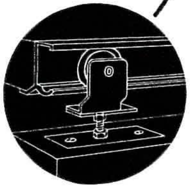

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ROLLING DOOR HARDWARE

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Modern rolling doors save yards of floor space, offer full use of every square inch of every room, and allow complete visibility for closets. The greater demand for small homes increase their need -- and reduced cubic footage makes an appreciable saving in construction & finishing time and costs. Equipped with Har-Vey Hardware, they are simple to install and provide years of trouble-free fingertip action.

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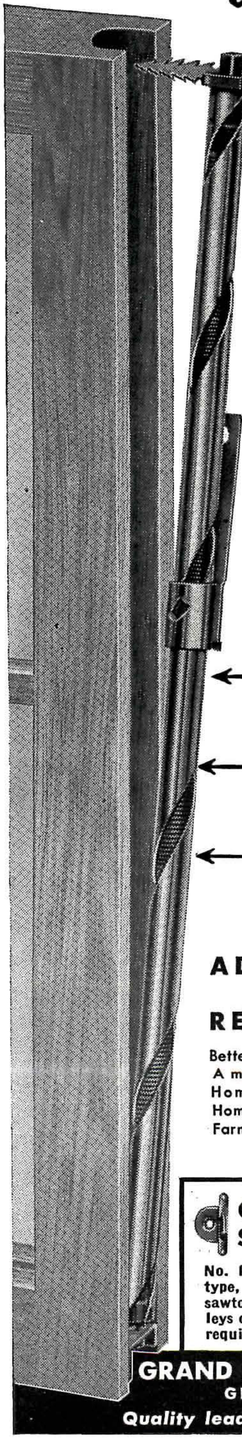

For dealers, builders and architects alike, the new, modern Grand Rapids "Invizible" Sash Balances are real money makers! Most widely advertised and publicized of all sash balances, they are recognized everywhere as the most practical sash balance for double-hung windows of every type. Their exceptionally low complete installation cost makes them ideal for both new and remodeled buildings.

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BALANCE 100%
concealed in the sash . . . no tapes . . . no cables.

EASY TO INSTALL
. . . just drive in two fasteners . . . screw in one screw.

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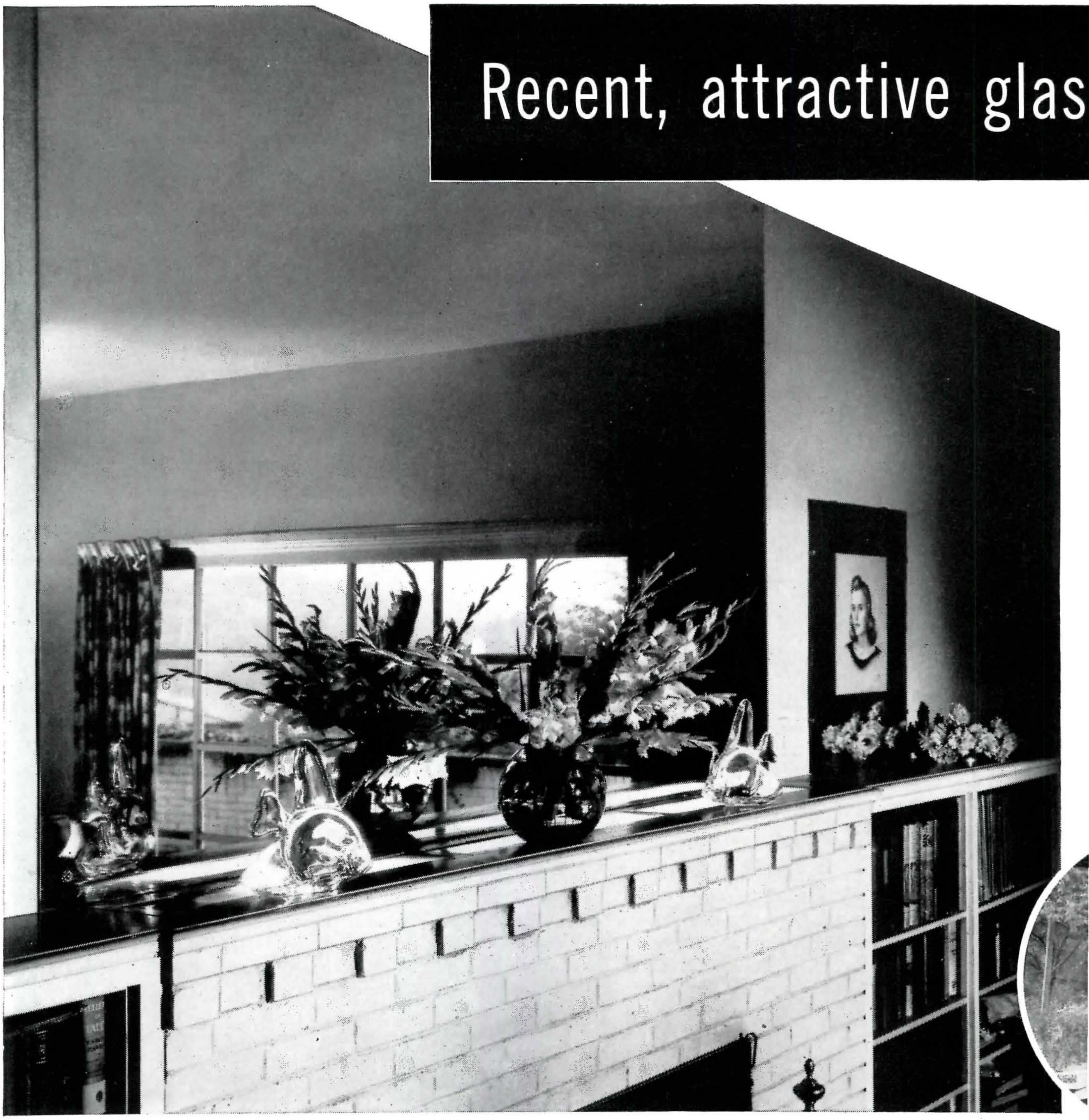
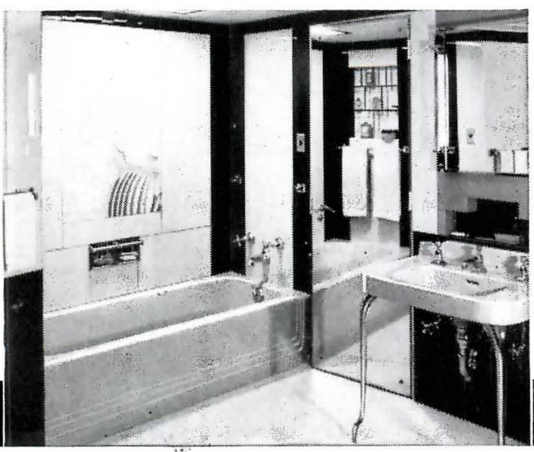




THERE ARE NUMEROUS WAYS that Pittsburgh Mirrors can be used to enhance the attractiveness of interiors. Above, a structural mirror over a fireplace. Other popular applications are over dining room buffets; on bedroom and dressing room doors, over tub recesses in bathrooms. Pittsburgh Mirrors are made from blue, flesh tinted or green Plate Glass, polished Plate Glass and with silver, gold or gunmetal backing. Architect: Harold L. Schwartz, New Kensington, Pa.

• • •

IF CLIENTS WERE ASKED to name the one best material for bathroom or kitchen walls, they'd probably select Carrara Structural Glass. A reflective polished glass, Carrara is easy to clean. And it is impervious to moisture and chemicals. Available in 10 attractive colors. Architect: Paul Lewin, Chicago, Illinois.

owners report:

"mountain coolness in summer!"
"economical to operate!"
"perfect performance!"
"plenty of warmth in winter!"

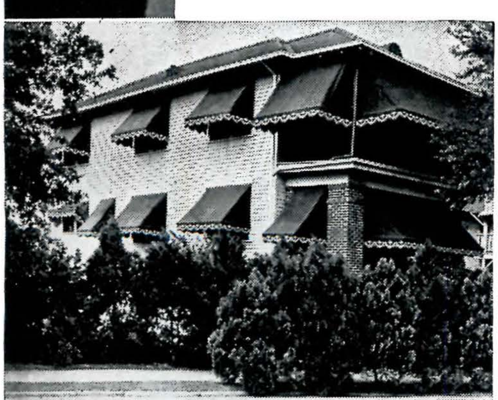
Your clients, too, will welcome the year-round comfort of Servel *All-Year* Air Conditioning

You've got plenty to back up your recommendations when you talk Servel *All-Year* Air Conditioning to your clients. Hundreds of installations are already operating successfully from coast to coast. And, as the representative testimonials on these pages indicate, owners everywhere are delighted with the comfortable temperatures and humidity, the dust- and pollen-free air, that Servel *All-Year* Air Conditioning provides every day in the year.

Servel is completely different from any other air conditioning system. One single unit—operating through scientifically designed ducts and registers—offers complete, *six-phase*, year-round air conditioning. In summer, Servel (1) cools the air to refreshing temperatures, (2) removes sticky, wilting humidity. In winter, the same unit (3) supplies plenty of clean, even warmth in every room, (4) adds just the right amount of moisture to the air for comfort. Throughout every season, Servel (5) filters out dust, dirt, and irritating pollen, and it (6) provides even, draft-free circulation of the conditioned air.

Planning your clients' buildings around Servel permits you greater freedom in design and also materially reduces construction costs. Once installed, Servel is economical to operate. Every unit is backed by a five-year factory warranty against defective parts.

Whatever the job on your desk right now—a home, store, office, bank, clinic, radio station—chances are that we have case histories on parallel applications in our files. We'll be glad to furnish such information and any other data you may need. Just write to your local Gas Company or to Servel, Inc., 4809 Morton Avenue, Evansville 20, Indiana.



"We are very much satisfied with our investment in a Servel *All-Year* Air Conditioner," writes Clay W. Beckner, 5 Newcomb Boulevard, New Orleans, Louisiana.

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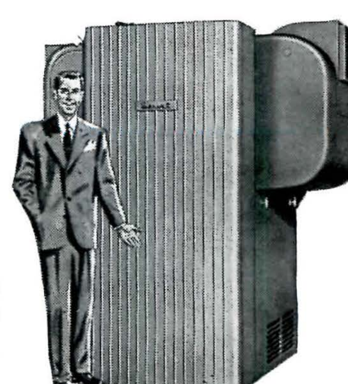
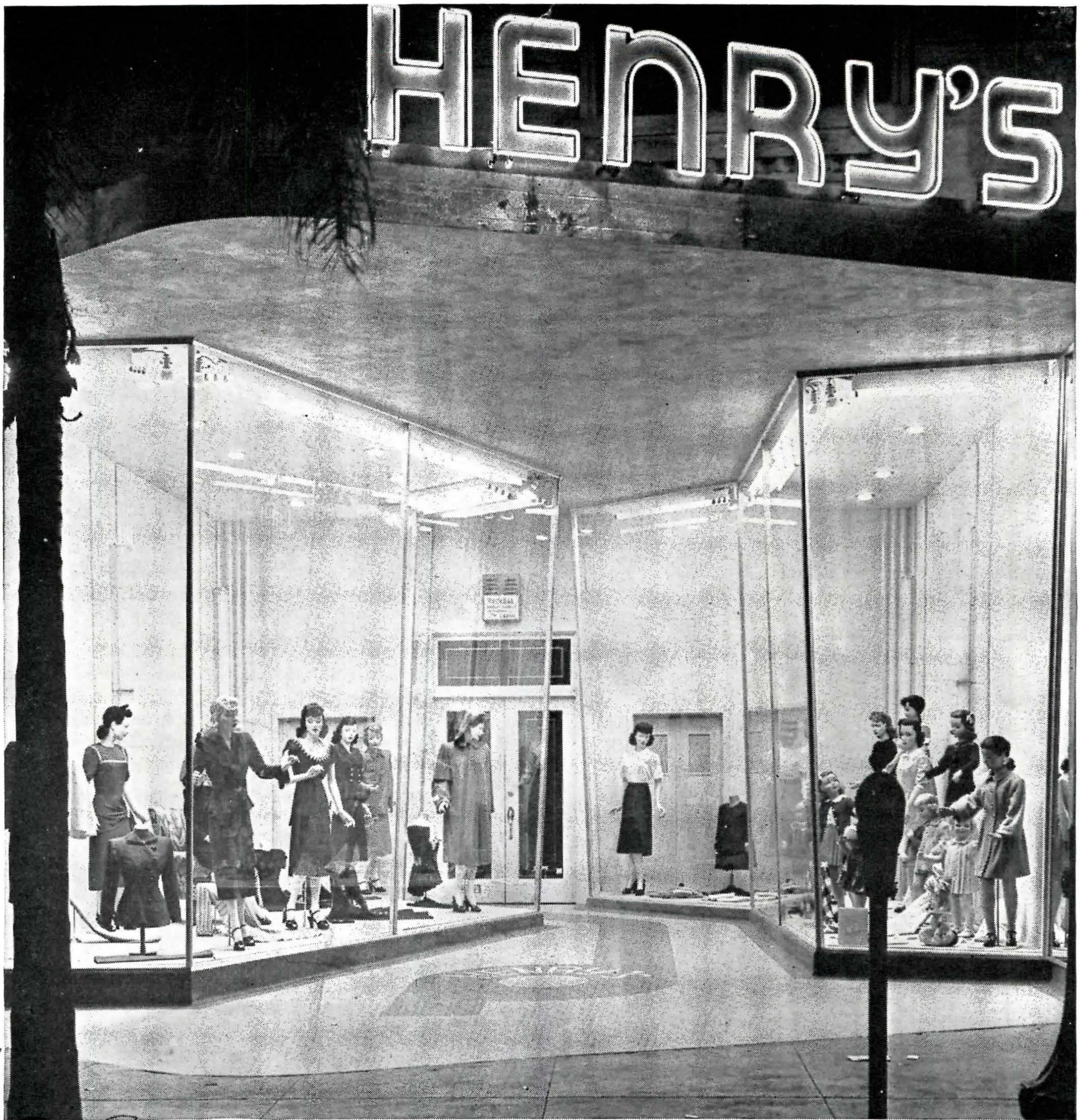
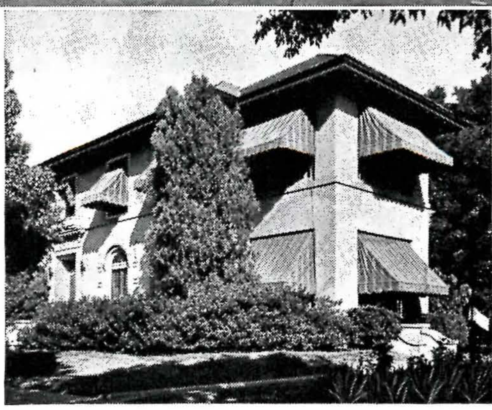
AIR CONDITIONER

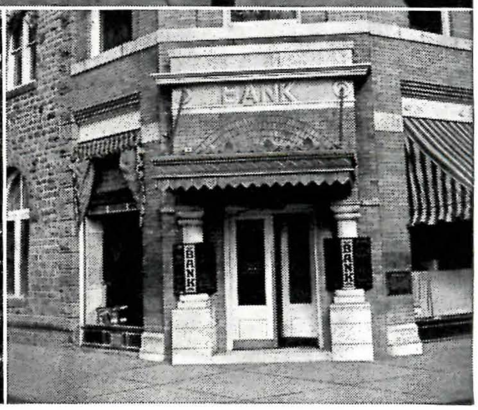




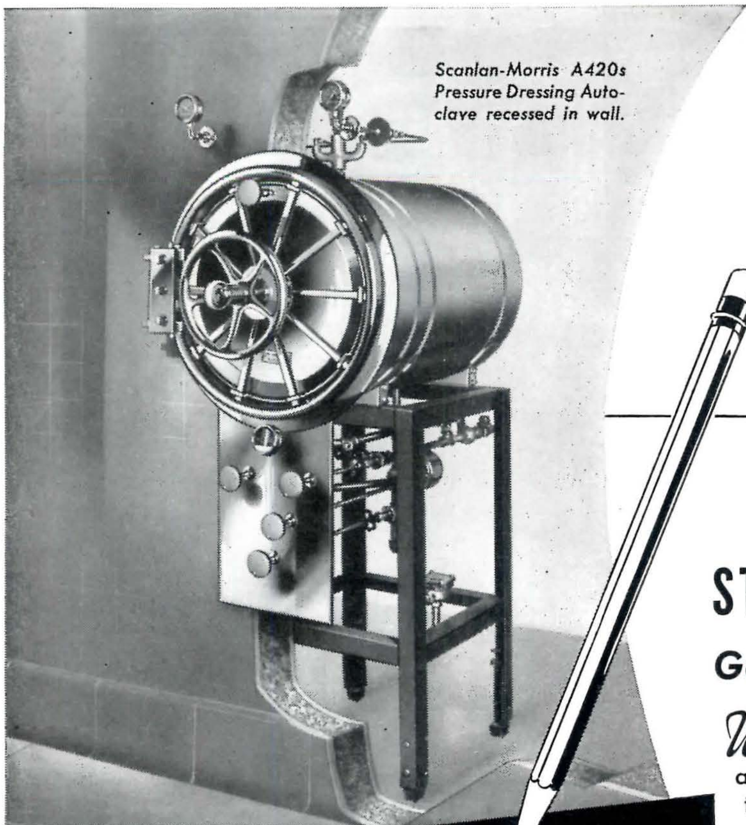
"No other cooling and heating system has given us the comfort, the efficiency, and the perfect performance we are now enjoying from our Servel *All-Year* Air Conditioner," reports Henry Korufel, Ontario, California.



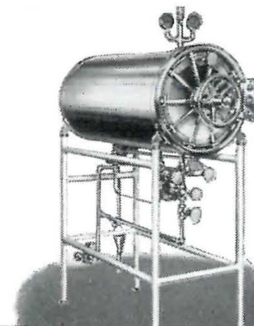
"With Servel *All-Year* Air Conditioning, we had mountain coolness, even temperatures and comfortable humidity all summer long," reports George J. Wetzel, Monroe, Louisiana.



"The Servel units installed for air conditioning our banking quarters have proved very satisfactory and economical," says J. H. McElroy, Citizens National Bank, Okmulgee, Oklahoma.



Scanlan-Morris A420s Pressure Dressing Autoclave recessed in wall.



Scanlan-Morris A420s Pressure Dressing Autoclave

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STERILIZERS FOR HOSPITALS

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Which will serve best—exposed autoclaves, recessed autoclaves, or recessed 2-door autoclaves (from unsterile to sterile room)?

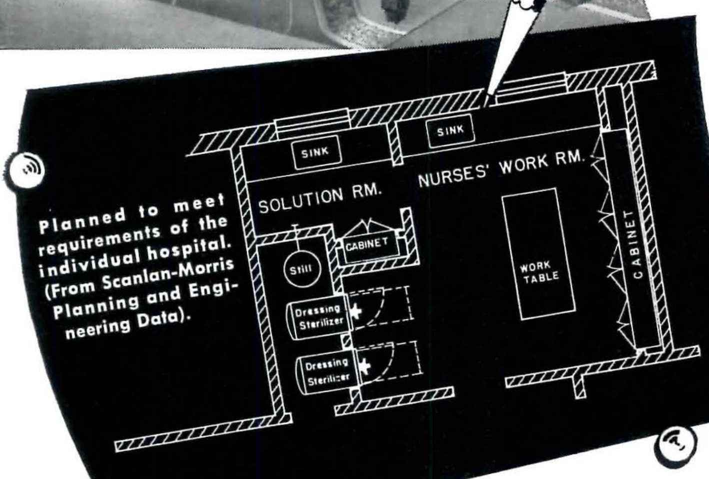
When planning new hospitals, any estimate of the number, sizes and types of sterilizers required should, of course, be based on bed capacity, amount of surgery and obstetrics to be done, and the general layout of the building. Consideration should also be given to possible future additions to the hospital.

You will find much helpful information in the Planning and Engineering Data section of the catalog of Scanlan-Morris Sterilizers.

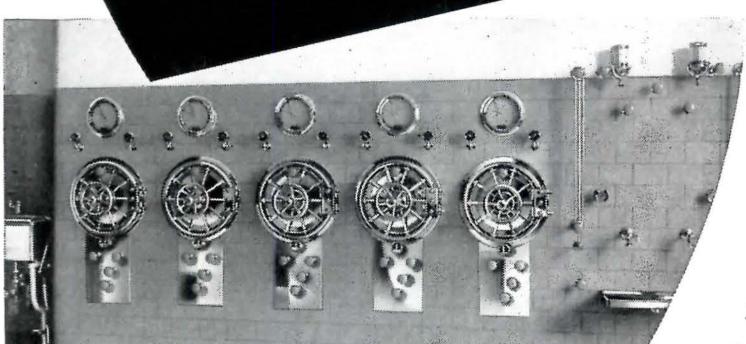
Scanlan-Morris sterilizing equipment is used exclusively not only in some of the largest American hospitals but also in many smaller institutions. More than 40 years' experience in manufacturing and installing sterilizers and other major hospital equipment, and in contacting superintendents, surgeons, hospital engineers and architects, qualify our Technical Sales Service Department to supply valuable data and assistance in proper planning for sterilizers. This department will gladly supply complete engineering data, suggestions and recommendations upon receipt of estimated requirements and a set of floor plans or a sketch of the proposed building. This service is available to architects without obligation.

Similar service is available also on Scanlan-Morris Surgical Lights and Scanlan-Morris Recessed Cabinets.

Mail the coupon for the latest catalogs.



Planned to meet requirements of the individual hospital. (From Scanlan-Morris Planning and Engineering Data).



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Jobs and Men

SITUATIONS OPEN

WANTED—experienced architect or architectural draftsman, college graduate preferred. Permanent position. Give experience, references and salary desired. Box 165, PROGRESSIVE ARCHITECTURE.

WANTED—architectural designer for permanent position in small established office in Houston, Tex., doing commercial, residential and city planning. Please write full details as to education, age, experience, salary expected and date available. Box 166, PROGRESSIVE ARCHITECTURE.

ARCHITECTURAL DRAFTSMEN—capable of developing working drawings in small office doing general practice. Good opportunity. Give full particulars, age, education, experience and salary. Clarence Warren Doll, A.I.A., Donnell Bldg., Mattoon, Ill.

ARCHITECTURAL DRAFTSMAN—wanted by University of Illinois to prepare working drawings, details and shop drawings for new building construction, alterations and maintenance work. Position permanent. Vacation, sick leave, retirement and other benefits. Write Personnel Office, 809 South Wright St., Champaign, Ill.

WANTED—Experienced heating engineer for permanent position who can make heating layouts and write specifications for all types of buildings. Send outline of education, training and experience with samples of work and salary requested. Marr and Holman, Architects, 702 Stahlman Building, Nashville, Tenn.

WANTED—Experienced architectural designer for permanent position. Please submit outline of education, training and experience along with samples of work and annual salary requested. Marr and Holman, Architects, 702 Stahlman Building, Nashville, Tenn.

ADDITIONAL INSTRUCTORS—in architectural design, structural design, and related courses are needed at the schools of architecture for the fall semester. Those interested in a career in the teaching profession should apply to Professor Paul Weigel, chairman of the committee on employment for the Association of Collegiate Schools of Architecture, Kansas State College, Manhattan, Kans.

WANTED—experienced architectural and mechanical draftsmen capable of designing and preparing working drawings for schools, hospitals, churches, and commercial buildings. Permanent positions for right men. Give information as to education, age, experience, and salary expected. Ritterbush Brothers, Architects, 209 N. Seventh Street, Bismarck, North Dakota.

WANTED—by established architectural firm in Southwest, experienced architectural engineer capable of handling steel and concrete design together with ability to carry work from preliminary to final working drawings and specifications; one desirous of interest in firm. Box 170, PROGRESSIVE ARCHITECTURE.

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Standard charge for each unit is Five Dollars, with a maximum of 50 words. In counting words, your complete address (any address) counts as five words, a box number as three words. Two units may be purchased for ten dollars, with a maximum of 100 words. Check or money order should accompany advertisement and be mailed to Jobs and Men, c/o Progressive Architecture, 330 W. 42nd St., New York 18, N. Y. Insertions will be accepted not later than the 1st of the month preceding publication.

ARCHITECTURAL DESIGNER—for the best younger designer in the country, this progressive and substantial Chicago firm offers an exciting opportunity. The right man is versatile, has vision and practical daring, likes people and can beat the obstacles. Such a man, if he has leadership qualities, will be chief designer in six months. If working under pressure appeals to you plus a substantial salary and share in the profits, write in confidence for an application blank as our people all know of this opening. Box 167, PROGRESSIVE ARCHITECTURE.

MECHANICAL ENGINEER — young creative man with sound ideas and a background of experience in responsible charge of mechanical engineering work can make lifetime connection with successful and progressive Chicago architectural firm. We want a vigorous and original thinker who understands and uses modern techniques to develop fresh solutions to mechanical problems. If you like plenty of work, good surroundings and congenial associates who are leaders in their field, write for application blank in confidence. Excellent salary. Our men know of this opening. Box 168, PROGRESSIVE ARCHITECTURE.

WANTED—experienced chief draftsman. Antonin Raymond and L. L. Rado, 101 Park Avenue, New York, N. Y.

INDIA'S 400,000,000 — need Missionary Builders. Challenging opportunity in new architectural-building firm, for young partners with $10,000: architectural engineer experienced construction supervision; landscape architect-city planner; interior designer experienced furniture design and construction. Excellent husband-wife team possibilities. Specifications: courage, ability, enthusiasm, cooperative spirit, sense of humor. Stuart and Rosemary Johnston, 4750 Sheridan Road, Chicago, Ill.

INDUSTRIAL ARCHITECT — permanent position and location as chief, architectural department, large manufacturing company. Prefer national registration; must be registered or able to secure registration in North Carolina, Virginia, and Kentucky. Basic planning and analysis of production space and areas; would prefer experience in design of manufacturing buildings with particular ability for design in steel and reinforced concrete, as well as ability in field of building maintenance, repair and alteration. Box 171, PROGRESSIVE ARCHITECTURE.

WANTED — architectural draftsmen, experienced in industrial, commercial and institutional work by established firm in the most rapidly expanding section of the Southwest. Submit complete record of experience and salary expected. Thomas, Jameson & Merrill, 820 North Harwood, Dallas, Tex.

SITUATIONS WANTED

ARCHITECTURAL DRAFTSMAN — designer, graduate of Georgia Tech. Sixteen months' experience in residential, county school and health center design and drafting; limestone and granite detailing; knowledge of structural concrete design and drafting. Would like position with progressive architectural firm in Houston or Dallas, Tex. Box 1975, Georgia Tech., Atlanta, Ga.

ARCHITECT—practicing England, consultant on large-scale town planning, civic centers, cultural, sports, retail centers, tiring postwar paper work, seeks realization in U.S.A. utilizing plastic and organizational qualities. Work internationally published and exhibited. Extensive experience furniture, interior and exhibition design. Background includes lecturing, writing. Possess immigration permit. Bo.. 169, PROGRESSIVE ARCHITECTURE.

MISCELLANEOUS

COMPETENT ARCHITECTURAL RENDERING —service offered according to the architecture's requirements for all types and styles of structures in any medium. Write to Rendu, PSNA Bldg., 400 North Third Street, Room 200, Harrisburg, Pa.

HORACIO GONZALEZ, ARCHITECT AND GENERAL CONTRACTOR—788 Avenue 39, Bogota, Colombia, would like to secure technical literature and other printed matter for a complete A.I.A. file. He would also like to act as representative in Colombia for American manufacturers of building materials.

ARCHITECT-ARTIST AND DELINEATOR—of long experience, offers services for free-lance architectural renderings and perspectives, bird's-eye views of architectural treatment of engineering structures such as highways and bridges. Theodore A. De Postels, A.I.A., 644 Riverside Drive, New York 31, N. Y. AUdubon 3-1677.

COMPETITIONS

Two state-wide COMPETITIONS FOR DESIGNS FOR SALE AND RENTAL HOUSING FOR WAGE EARNERS, particularly families earning between $46 and $58 per week, have been announced by New York State Housing Commissioner Herman T. Stichman. The competitions are an outgrowth of the Institute of Housing and Planning Studies, held in New York City in June, and a part of a state program to bring about construction of good housing to sell for about $7,500, and to rent for from $50 to $75 per month.

Prizes total $3,000 for the two competitions; a first prize of $1,000, a second of $500, and ten honorable mentions will be awarded for each competition. One competition specifies a design for a single-family home, the other for a multifamily housing development. The competitions have been approved by the American Institute of Architects' Committee on Competitions, and William Lescaze is the professional advisor.

The competitions, which are open to all architects licensed to practice in New York State, except employees of the Division of Housing, close on November 15, 1948. Invitations and programs for the competition are being sent to all registered architects in the state. A jury of architects appointed by the Division of Housing, the Competitions Committee of the A. I. A., and the New York State Association of Architects, will judge the entries.

Details of two other competitions, which will be open to students of New York State architectural schools and to architectural draftsmen residing in the state, will be announced later.

EXHIBITION

PHOTOGRAPHS AND PLANS of the work of six Pacific Coast architectural firms will be exhibited in Australia during September and October. Architects who have been invited to display their work are *Pietro Belluschi*, Portland; *Mario Corbett*, San Francisco; *Gardner A. Dailey*, San Francisco; *Harwell Hamilton Harris*, Los Angeles; *Kump & Falk*, San Francisco; and *Wurster, Bernardi & Emmons*, San Francisco.

Presented jointly by the Australian-American Association and the Royal Victorian Institute of Architects, the exhibit will open at the Melbourne Town Hall September 15. A week later the exhibit will be shown in Sydney, and then may travel to Adelaide and Brisbane.

Similarity of climatic and topographical conditions along the Pacific Coast and in Australia and American-Australian friendship were among considerations which led to the invitation to exhibit. The idea for the exhibition followed last year's visit to the United States by John Buchan, member of the firm of Buchan, Laird & Buchan, and prominent architect in the state of Victoria.

Representing the American group for the opening ceremonies and other events connected with the exhibition, will be Ernest J. Kump, architect and school planning consultant and winner of 1946 and 1947 PROGRESSIVE ARCHITECTURE Awards. While in Australia Kump will address architectural students at the University of Melbourne and the Architectural Institute, and will inspect state housing and development projects and then will travel to New Zealand.

A nation-wide tour of the United States is scheduled for the exhibition upon its return from Australia.

Reviews

(Continued from page 118)

agglomerations of towns, surrounded and connected by strings and patches of building development, which have now become the physical environment of nearly half the population of England. An attempt is made to learn how to deal with the age-grimy problems of this vast established Coketown—seeking a solution for this area and also for younger Coketowns now rapidly approaching the same unhappy state.

C. M.

READER'S GUIDE

Town and Country Planning. *F. J. Osborn. For the National Book League by Cambridge University Press, Bentley House, London, England. 1947. 11 pp. 1 s*

In the preface to this selected list of books and pamphlets on planning, the experienced author comments: ". . . this book is particularly valuable to a reader who wishes to understand the background of the whole subject. The scope is so vast that no one need expect fully to comprehend it. But just for that reason anyone may contribute something to it. Planning is a continuous process; the last word will never be said."

C. M.

PLANES IN PLANNING

Aerial Photography in Urban Planning and Research. *Melville C. Branch, Jr. Harvard City Planning Studies, Vol. XIV. Harvard University Press, Cambridge 38, Mass. 1948. $3.00*

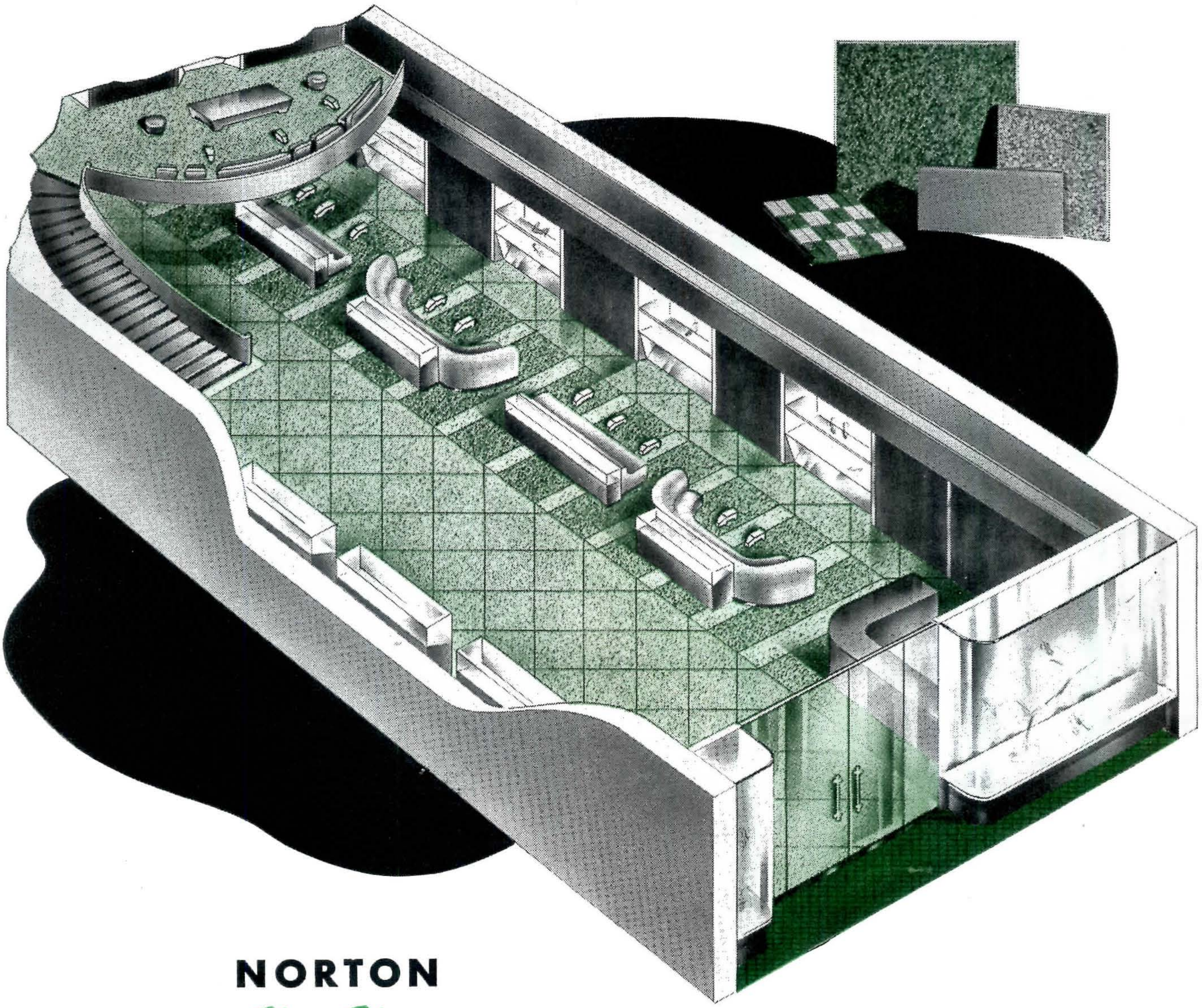
This excellently presented explanation of the nature and use of aerial photographs should be of great value to anyone having to use air views. The book tells what the different kinds of photos are, their relative value and degrees of accuracy for mapping, study, or special uses; what to specify in ordering views, allowable tolerances; describes stereo apparatus and interpretation. It is based on careful technical research, but is written simply and clearly, with helpful tables and illustrations. A welcome addition to the technical library of planners and architects.

HENRY S. CHURCHILL

ERROR IN CREDIT

The store illustrated in the A. C. Horn Co. advertisement last month on page 107 was incorrectly identified as Blum's Vogue in Chicago. The photograph was of M. L. Rothschild & Co. store in Evanston, Ill., and the colored sidewalk shown was installed by Melvin White, Inc., concrete contractors, of Chicago.

Safety in Walking - An Important Feature In a Shoe Store of Distinction



NORTON
Non-Slip
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Safety in walking is an important feature in any building where it is desirable to have a wear-resistant surface that is permanently non-slip even when wet. Non-slip flooring is a "natural" for a shoe store. The shoe store illustrated above has been designed to have ALUNDUM aggregate mixed with marble to make the terrazzo flooring in the entry way, on the main floor and on the stairs and mezzanine safe from slipping hazards. Combine beauty with safety and add years of wear-resistant service by using Norton non-slip ALUNDUM floor products: aggregate, stair tile, ceramic mosaic tile. For free color samples write to:

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NORTON *non slip* **ALUNDUM FLOORS**

See our catalog in Sweet's.

Reviews

(Continued from page 116)

standing design, it seems to reflect but not surpass Paxton's original Crystal Palace. The reactionary winning design is apparently quite unfortunate.

Articles on education present reviews of English and American schools with several illustrations of student work. It is apparent that the same few pioneers in modern architecture still exert a strong influence in some schools in both England and the United States.

Other knowledgeable articles are in the technical and materials field. British appreciation of American wood truss design achievement is noted as well as their interest in thin concrete shell construction on the Continent. Authors of the various articles include Alvar Aalto, Le Corbusier, Maxwell Fry, Russell-Hitchcock, Ernst May, and Alfred Roth. Many good photographs and drawings are included.

While the essays are related as a whole to the work of the architect, their brevity seems to effect a slightly disjointed makeup. Nevertheless, I wish to recommend this volume for its interesting scope and energetic spirit working toward an integration of the parts that make up architecture.

OLINDO GROSSI

A HOUSING PROGRAM

For Now and Later. *Joint Committee of National Association of Housing Officials and National Public Housing Conference, Catherine Bauer, chairman. N.P.H.C., 1015 15th St. N.W., Washington 5, D. C. 60 pp. 25¢*

In an inclusive statement of the principles by which housing proponents are guided in their somewhat related programs, the Joint Committee has sought to evaluate activities in the field to date and also to strike an optimistic note for the outcome of concerted effort. This is a valuable handbook for those who wish to attack the housing shortage efficiently and in tune with present programs.

C. M.

CONURBATION

A Survey of Birmingham and the Black Country. *West Midland Group on Postwar Reconstruction and Planning. The Architectural Press, Ltd., 9-13 Queen Anne's Gate, London, S.W. 1, England. 1948. 288 pp., illus. including survey maps and analyses. 30 s. net*

The title of this comprehensive study of a sprawling semiurban area that has become symbolic of the Birthplace of the Machine Age is taken from the writings of Patrick Geddes, who first used the word to signify those great

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