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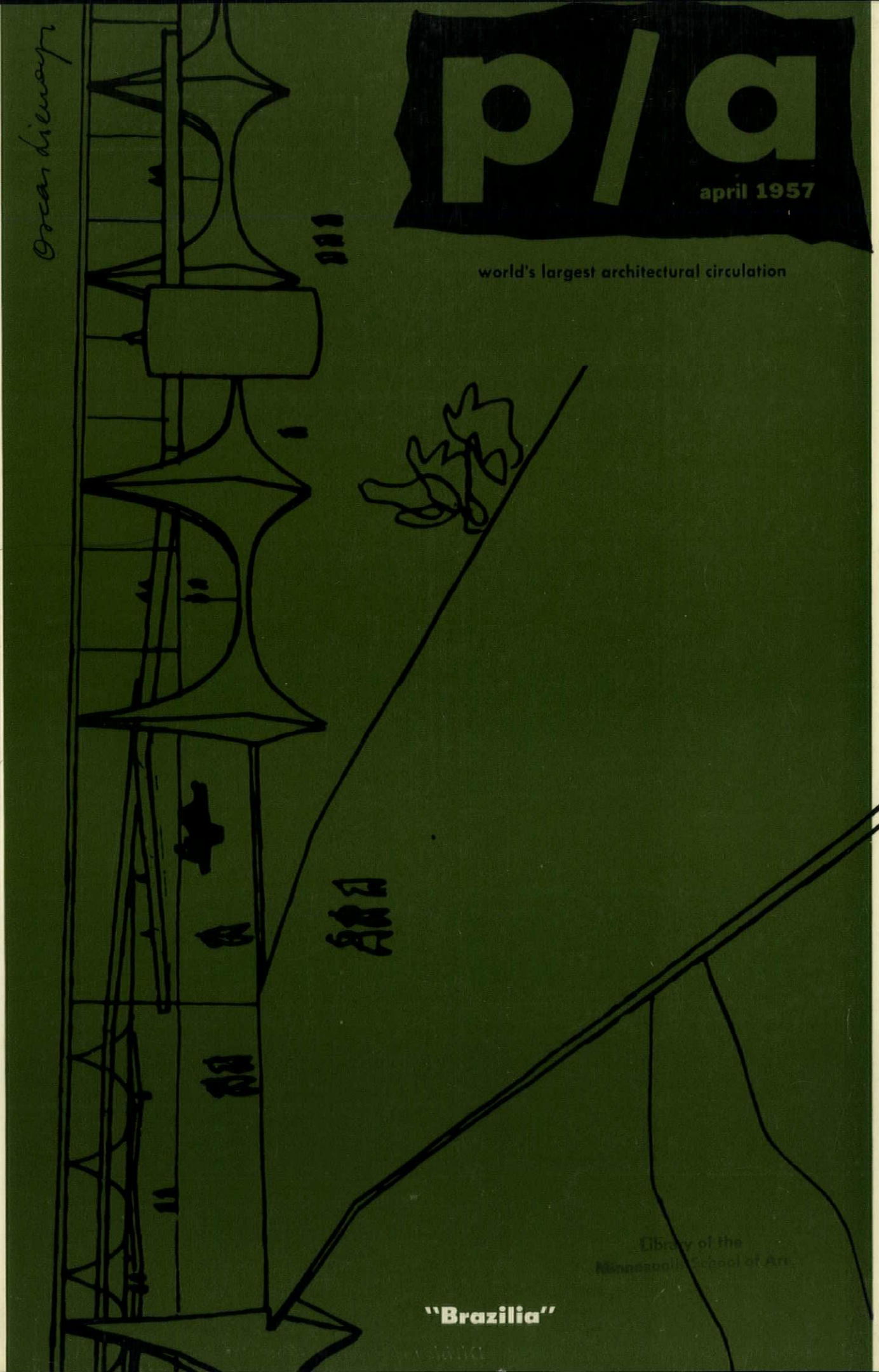
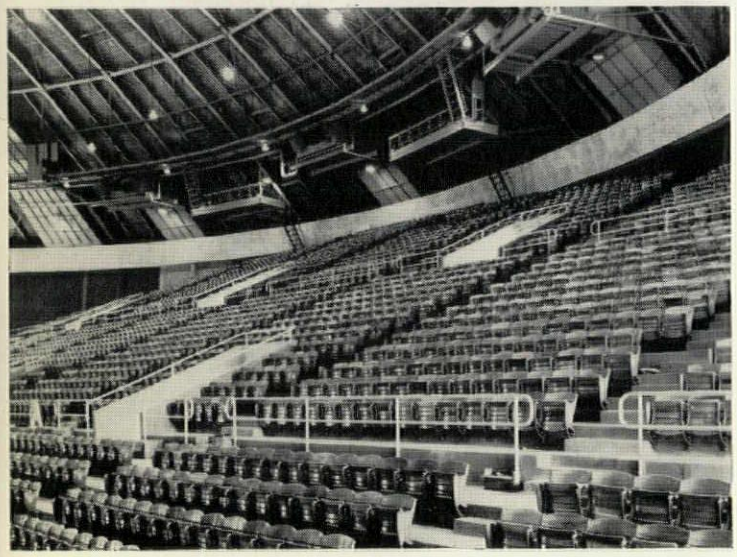


"Brazilia"

Municipal Auditorium and Coliseum, Charlotte, N. C.
Archt. — A. G. O'Dell, Jr. & Associates, Charlotte, N. C.
Struct. Engr. — Severud, Elstad, Krueger, New York, N. Y.
Contr. — Thompson & Street Co., Charlotte, N. C.
Pozzolith ready-mixed concrete — Concrete Supply Co., Charlotte, N. C.

Below — view of 2500-seat auditorium.
Bottom Photo — section of 13,500-seat coliseum.



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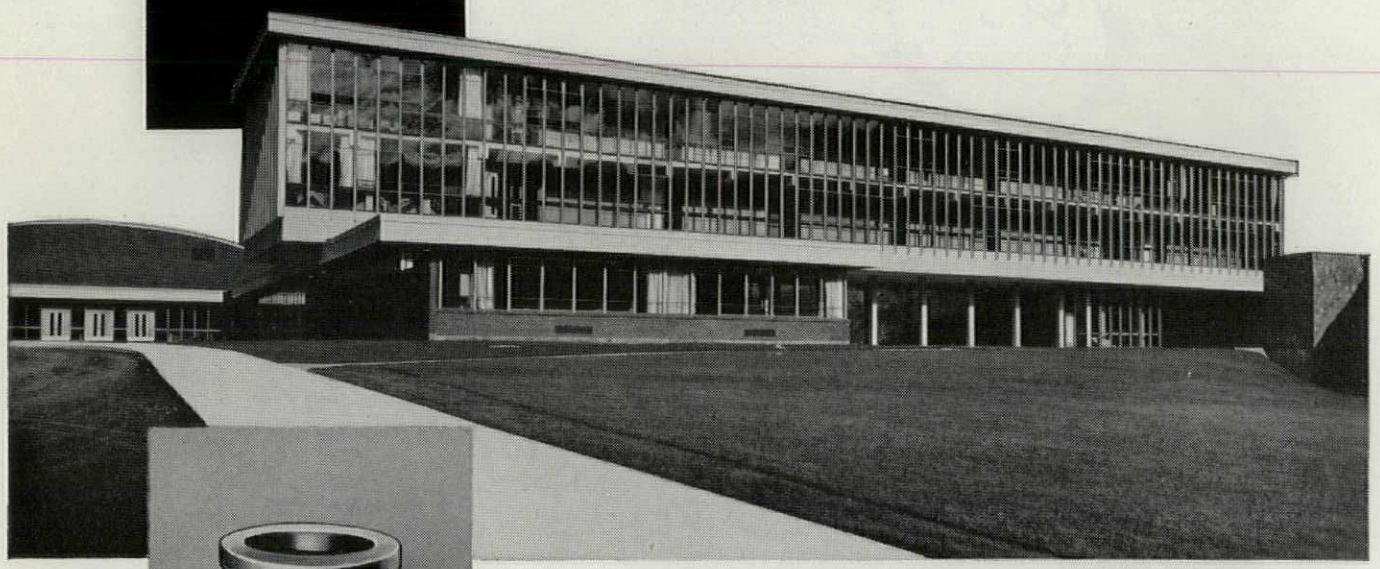
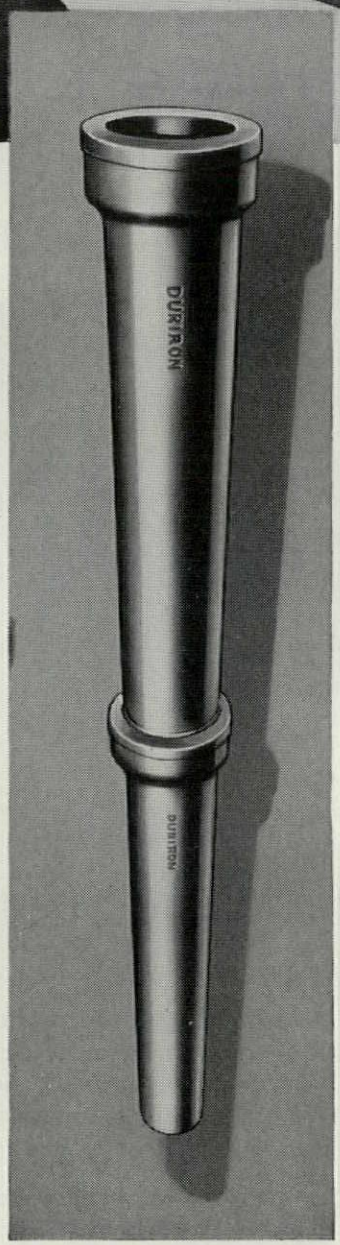


Kellogg High School, Kellogg, Idaho

Architects: Culler, Gale, Martell & Norrie; Spokane, Wash.
Perkins & Will; Chicago and White Plains, N. Y.
General Contractor: Johnson, Busboom & Rauh; Spokane, Wash.
Plumbing Contractor: Detweiler Bros.; Twin Falls, Idaho



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Volume XXXVIII, No. 4

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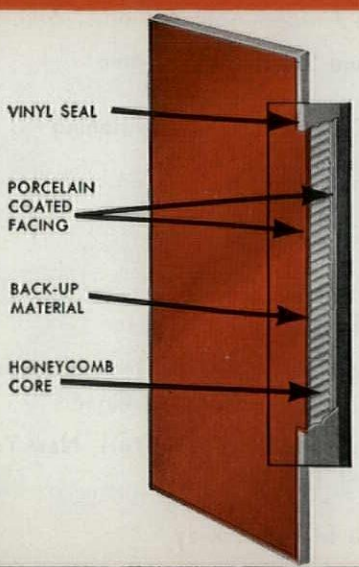

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It's the Law by Bernard Tomson

P/A Office Practice *column on the legal aspects of architecture and engineering. This month's column supplements Tomson's* Architectural & Engineering Law *(Reinhold 1951) by reporting summaries of cases decided since publication of the book.*

Chapter 9—Agreements with Owners

Pennsylvania. *In re Stormer's Estate,* 123 Atl. 2d 627 (1956). In a declaratory judgment proceeding to determine the liability of the executors of a deceased contractor to complete performance of a contract for construction of a municipal sewer system, held that the contract was not of such a personal nature as to be discharged by death of the contractor. Said the Court, building contracts generally do not involve a peculiar skill or ability on the part of the person who is to perform them, and hence do not terminate on the death of the contractor. The formation of the contract in this case was induced by the fact that decedent made the lowest bid and not by any peculiar ability or skill.

•

California. *City of Susanville* v. *Lee C. Hess Co.,* 290 Pac. 2d 520 (1955). Where the City Council had passed a resolution declaring a contractor to be the lowest bidder and awarded to him the contract for the work, under the provisions of a local improvement act requiring the City to let the contract to the lowest responsible bidder, the contract was thereby complete, and, in the absence of fraud, mutual mistake, or some other ground for rescission, the City was without power to rescind its action and award the contract to the second lowest bidder.

•

Chapter 12—When Architect's or Engineer's Decision is Final

U. S.—*United States* v. *United Enterprises,* 226 F. 2d 359 (1955). In an action by the Government for benefit of and on behalf of a painting subcontractor, against the prime Government contractor for monies allegedly due under the subcontract and for extra work, held that under the terms of the subcontractor's agreement with the Government contractor, the subcontractor was bound by the decisions of the Government engineer as to what the prime contract required, and the engineer's interpretation of the contract was conclusive on the subcontractor. Thus, the engineer's determination that certain items of the prime contract did not include interior painting of certain buildings, was conclusively binding on the subcontractor.

•

Chapter 13—When Architect's or Engineer's Decision is not Final

California — *Pacific Coast Builders* v. *Antioch Live Oak Unified School District,* 300 Pac. 2d 309 (1956). A school district architect's opinion that the contractor should bear the cost of inspection was reviewable by the Courts, notwithstanding a contract provision making the architect's determination final, where the architect's decision was based upon an obvious misinterpretation of the contract.

•

Chapter 20—Right to Compensation

Iowa—*S. D. & D. L. Cota Plastering Co.* v. *Moore,* 77 N.W. 2d 475 (1956). In an action for foreclosure of a mechanic's lien, it was held that the evidence sustained a finding that there had been substantial compliance by the plaintiff with the agreement, under which it was to apply siding to the defendant's house, notwithstanding the defendant's contention that the coloring of the siding did not accord with the agreement. The Court stated that the rule of substantial performance is especially applicable to building construction or improvement contracts because the builder's material and labor cannot be returned to him; the Courts are forced to weigh, on the one hand, the harm to be done to the owner if he is forced to accept and pay for a job that is not the job he contracted for and, on the other hand, the injustice to the builder and the unjust enrichment of the owner if trivial deviations from the contract will permit the owner to keep the fruits of the builder's efforts and material without compensation.

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California—*Martin* v. *Karsh,* 298 Pac. 2d 635 (1956). In an action for breach of contract for the construction of a concrete warehouse, held that in the case of building contracts, especially where the owner has taken possession of the building and is enjoying the fruits of the contractor's work, no literal compliance with the contract in all details and no absence of all defects and imperfections is required to entitle the contractor to recovery on the contract, but he can have such recovery after substantial performance in good faith, if the deviations and imperfections do not substantially affect the usefulness of the building for the purposes for which it was intended, subject to an allowance for damages if the owner has suffered any by reason of the failure to perform strictly; and whether, in any case, defects and omissions are substantial or unimportant is generally a question of fact.

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Miscellaneous: Liability of Architect to Surety on Contractor's Bond

Mississippi—*State* v. *Malvaney,* 72 So. 2d 424 (1954). An architect who, by the terms of the contract, was to require of the contractor evidence that payrolls and material bills had been paid before issuing the certificate of substantial completion, was held liable to the contractor's surety for negligence in issuing the certificate without requiring such evidence, with the result that the contractor collected retained payments and then defaulted, throwing the burden of completing the work and satisfying the claims upon the surety.

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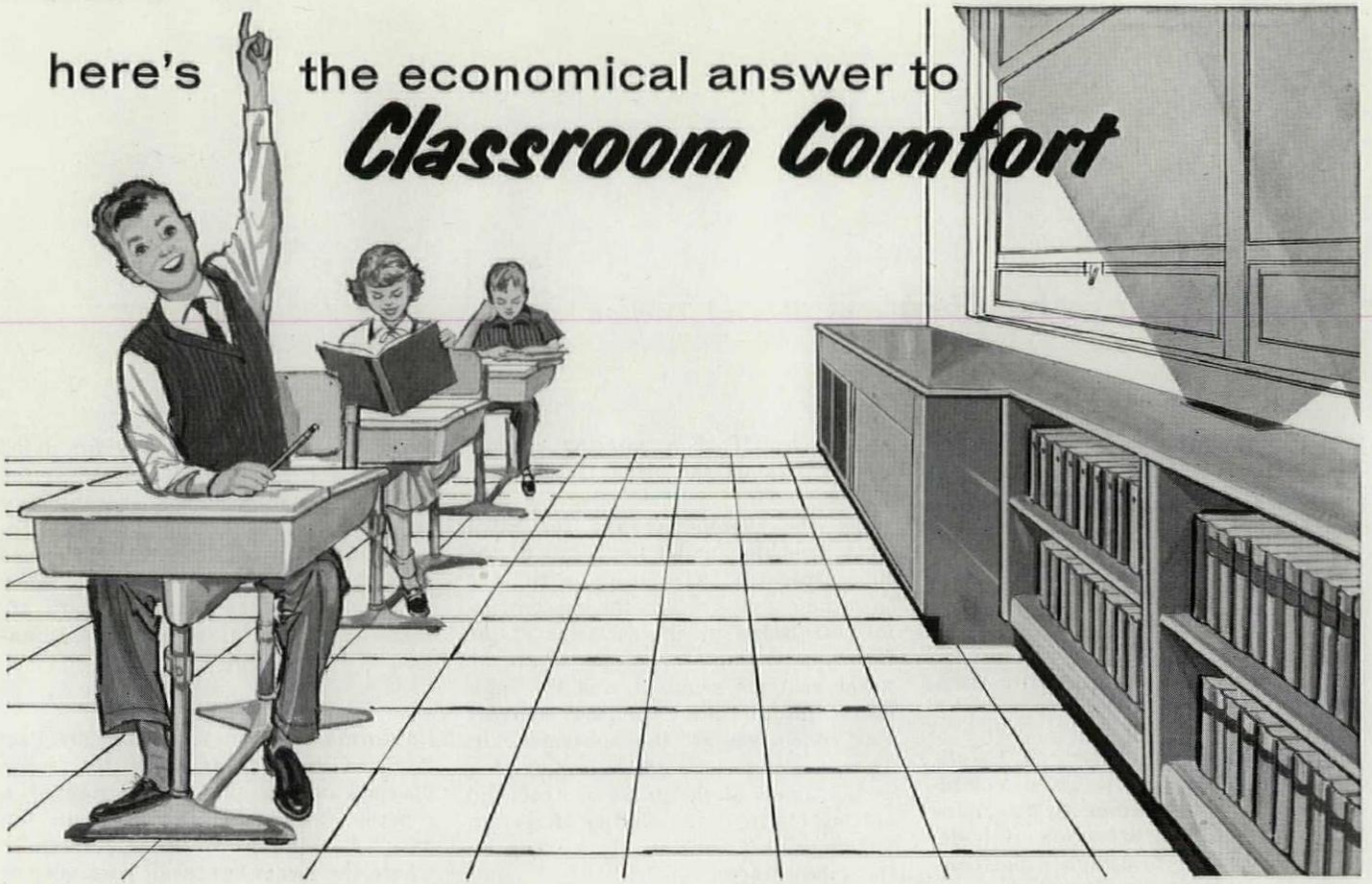

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Mechanical Engineering Critique *by William J. McGuinness*

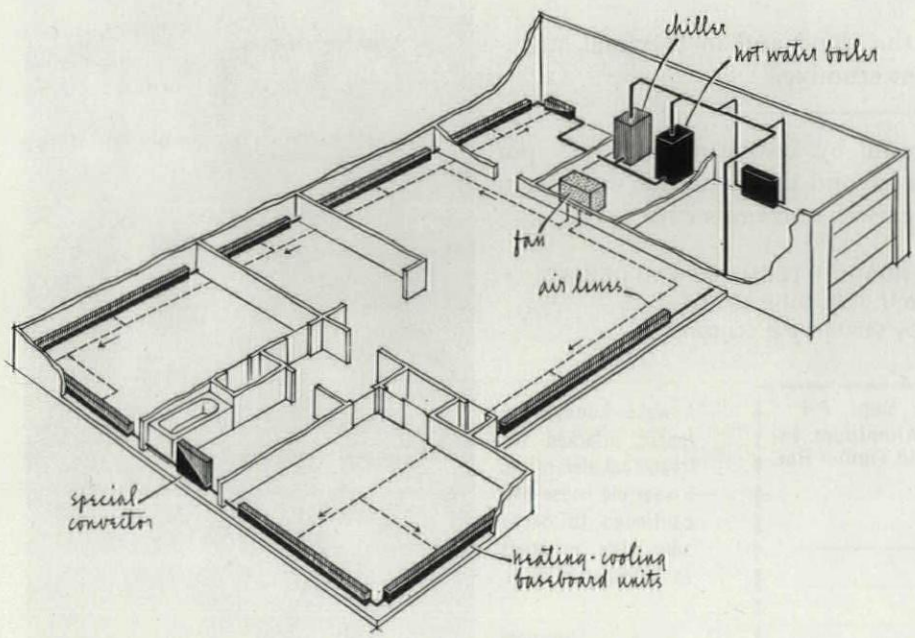
P/A Office Practice *column on mechanical and electrical design and equipment, devoted this month to heating and cooling systems using piped water.*

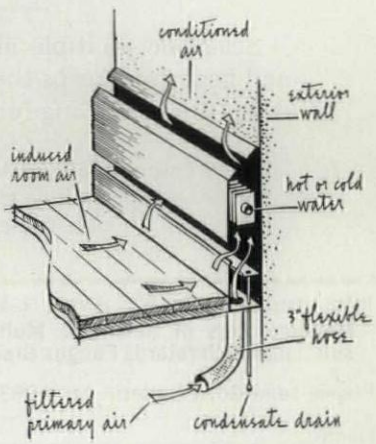
Strangely enough, it is possible for heating and cooling systems to be popular or unpopular, understood or misunderstood. Those who conduct research and endeavor to disseminate technical information find that news about mechanical improvements is very perishable. Frequently, systems are chosen on the basis of local experience or custom and without the advantage of published findings of centralized research, or the results of the experience of others on a national scale.

About a year ago, the Better Heating-Cooling Council was organized in New York to conduct a vigorous job of promoting a greater understanding of the good qualities of piped systems for heating and cooling, especially in residences. Now, fifty organizations that manufacture or install equipment for these systems participate in the work of the Council. For the first time in industry, installation contractors have joined manufacturers in promoting a technical program. The former are represented by The Mechanical Contractors Association of America and The National Association of Plumbing Contractors; both of these organizations being members of the new Council. Their influence will undoubtedly be felt in a more complete program which can include information on methods of installation as well as the selection of manufacturers' equipment. Architects can feel free to consult the Council on questions about the new systems that it promotes. Many architects believe that their professional position is better maintained when information comes from a national association instead of from a specific manufacturer or contractor.

The choice between a piped-water system and one using ducted air will, of course, be determined by the best findings concerning both processes. The Council feels that the architect should give increased consideration to the merits of piped systems and seek information which it is well prepared to give. Some of the advantages claimed are durability, suitability to the adjunct generation of domestic hot water, and a less bulky installation because of the use of pipes instead of ducts. The last-mentioned quality might seem most important in contemporary houses where heating or cooling should be delivered at perimital glass or walls.

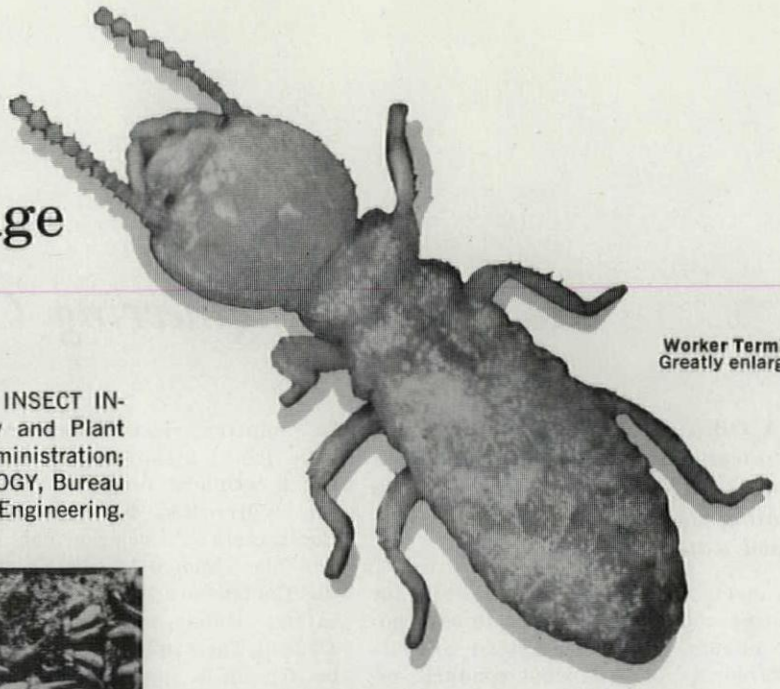
The system illustrated on this page (its equipment made by Vulcan Radiator Company) typifies the kind of heating-cooling that is being endorsed and promoted by the Council. It combines both processes through baseboard units. A central chiller and a central boiler circulate chilled or heated water to the convectors, where there are two additions to the conventional baseboard scheme. A trough and plumbing drain catch and dispose of condensed moisture, and an air chamber below the base cabinet distributes fresh or recirculated air to induce flow of room air over the coil fins. A central fan in the boiler room delivers this air through three-in. flexible hoses. The convector and trough are made of rust resistant materials.





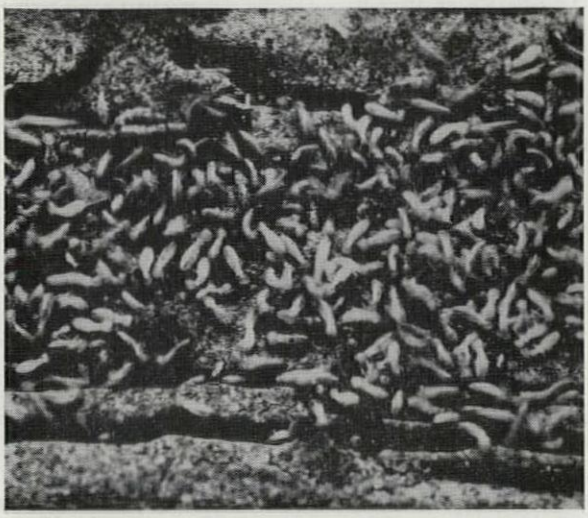
BULLETIN No. 1993

"Decay and Termite Damage in Houses"



Worker Termite
Greatly enlarged

Prepared by the DIVISION OF FOREST INSECT INVESTIGATIONS, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration; and the DIVISION OF FOREST PATHOLOGY, Bureau of Plant Industry, Soils, and Agricultural Engineering.



Worker Termites—Natural size

(Excerpts—Exact Quotation)

"TERMITES are the most destructive of the insects that attack wood in houses. They eat the interior of the wood and may cause much damage before they are detected."

"Wood damaged by termites can be easily distinguished from decayed wood. Termites honeycomb the wood with definite tunnels; these are separated by thin partitions of sound, firm wood."

"Wood decay is caused by fungi, which are plants consisting of microscopic threads . . . the decay fungi weaken or destroy the fiber. These cannot work fast at temperatures below 55 to 60°F., and *not at all in dry wood*. There is no such thing as 'dry rot'; decayed wood is often dry after it has rotted, but not while the decay is taking place."

"The decay fungi soften the wood and in the final stages cause it to shrink and crack or crumble."

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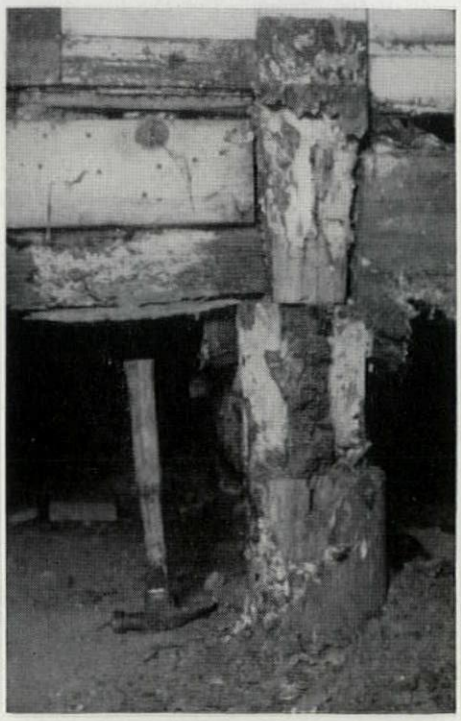


A water-conducting fungus attacked untreated oak piers of this 5 year old house and continued to decay sills, joists, and studs to a height of 6 ft.

USDA Photographs

General Conditions and Types of Specifications by Harry Terry*

P/A Office Practice ***article discussing general conditions for installation of Mechanical and Electrical work in buildings. Problems raised by "Open," "Bidder's Choice," and "Base Bid" specification types are discussed: problems which also arise to some extent in other sections of specifications.***

Members of New York Association of Consulting Engineers, during the past thirty years, have each prepared their own supplementary Mechanical and Electrical General Conditions to be used with American Institute of Architects General Conditions for the Construction of Buildings. During the past two years a committee of NYACE has reviewed these Conditions of its members and compiled a set of Conditions representing the combined experience of its members.

These "Conditions" apply to specifications covering all mechanical trades —such as Heating, Plumbing, Air Conditioning, and Electrical Work— specifications for which can be divided into three general classes:

1. The *"Open" Specification*, in which minimum standards of quality and performance are set forth, and any piece of equipment or material which complies with these minimum standards is acceptable. This type of specification is most commonly found in U. S. Government work.

2. The *"Bidder's Choice" Specification*, in which three or more brands of any given piece of equipment usually are named and described, the choice being left with the bidder. This is the most common of all types of specifications in use today, particularly on public work.

3. The *"Base Bid" Specification*, in which the various items of equipment are concisely described, their performance defined, and the manufacturer's name and catalog designation clearly set forth. In this type of specification the base bid includes only the articles specifically named, and if other brands of equipment are offered, they are included as an alternate proposal.

The Open Specification enables the specifying engineer to maintain complete impartiality between the various manufacturers and suppliers of equipment. This type of specification should present complete and comprehensive detail on each item. Specifications for a heating unit, for example, should include heat exchange, heating surface, entering and leaving air temperatures to establish the capacity characteristics and equally comprehensive details of the materials of the coil, the method of fabrication, the sealing of connections, as well as specific data on fins, tubes, headers, and tappings. Cabinet enclosures are similarly described. Motors required are described as to electrical characteristics, drive, speed, guards, and motor mount. Even greater detail may be set up for control apparatus.

Standard General Condtions must be written to cover all three types of specifications, and since so much choice may be left to a contractor, he must accept corresponding responsibility.

From the bidder's point of view, a loose specification does admit bargaining between various suppliers. However, since basic plans cannot be complete in detail, indeterminate items can be specifically defined only after the selection of equipment is approved by the specifying engineer.

From the craftsman's point of view, such a specification is most undesirable. The basic plans are necessarily lacking in detail. Detailed plans prepared by the manufacturer of the equipment are concerned only with the immediate problems of a particular piece of equipment. The foreman on the job and the clerk-of-works must fit the selected apparatus in the building without conflict between various trades.

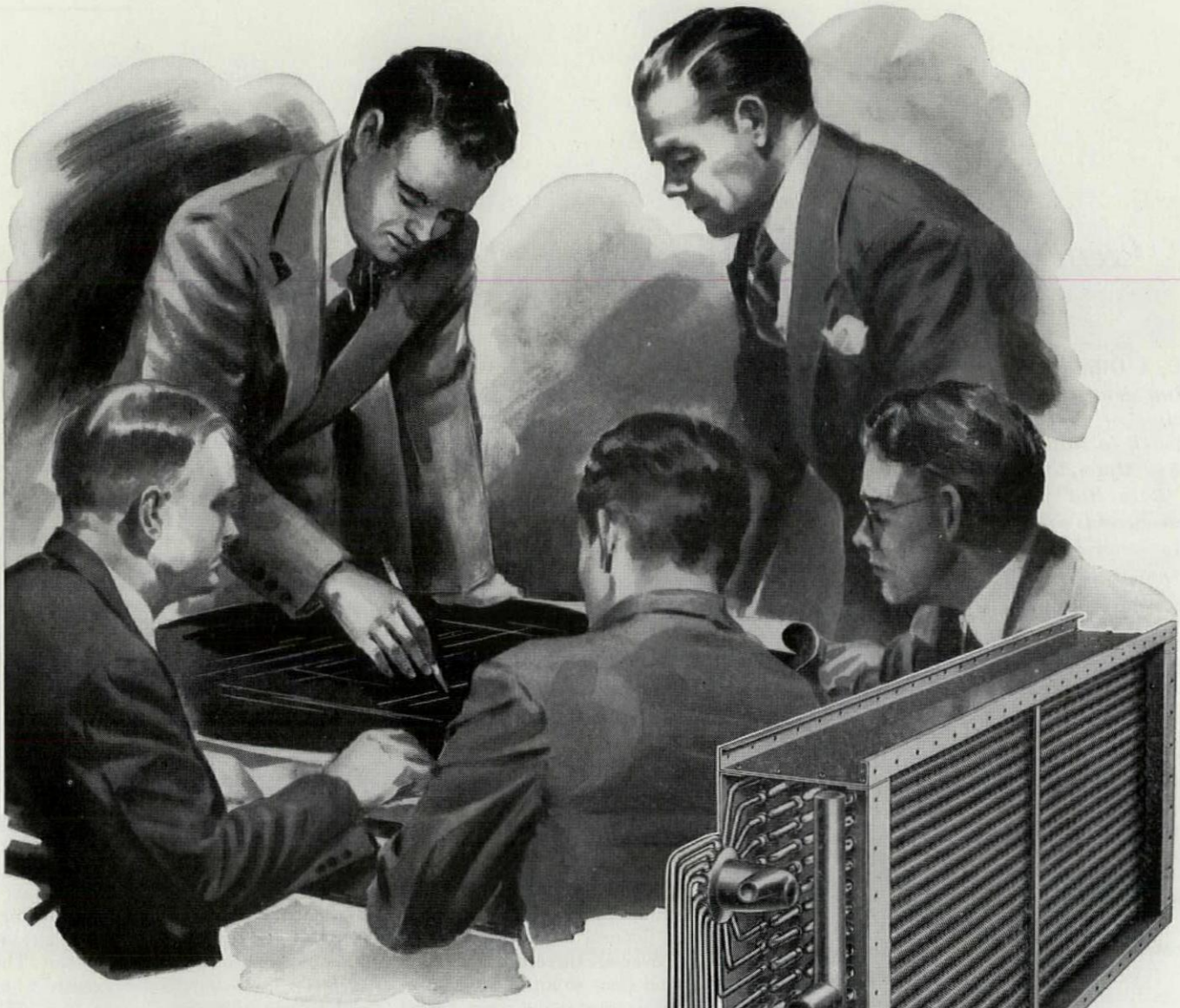
From the owner's point of view, the major objection is that the lack of precise definition in specifications may result in numerous "extras" which often work a severe handicap in the manner of financing.

The Bidder's Choice Specification is an Open Specification which limits the contractor's choice of equipment to two or three brands, predetermined as acceptable to the designer. The objections raised to an Open Specification are present in this type of a specification, but they are more limited in scope and create proportionately less of a problem to all concerned. It is true that less technical detail and description are required than with an Open Specification, but it is also true that architectural plans and layouts must be prepared with enough latitude to allow for variations in equipment.

The Base Bid Specification—where each item of equipment is clearly defined as to quality, capacity, function, and performance, and specifically identified with the manufacturer's name, model number, catalog listing, and size designation—gives the bidder no choice of equipment under his base bid. All contractors bid on the named equipment, the only variable factors involved are quantities of miscellaneous supplies and quantities of labor. The architect and owner know exactly what will be received for a given cost. The kind or brand of equipment that will be used is *not* within the province of the contractor but rests jointly in the hands of the architect, engineers, and owner, where it rightfully belongs. If there are price differentials, the owner receives or pays the difference, as the case may be, if he chooses to accept alternate proposals. If the acceptance of an alternate will require design changes, extra costs on the part of other trades, or additional engineering, the costs of these changes can be established and a true evaluation can be made on the worth of an alternate proposal, prior to its acceptance by the owner.

The mechanical and electrical specifications prepared in New York City are of the three general class commented upon above, and the General Conditions for these specifications must of necessity be broad enough to apply to all three classes. Paragraph 2 of the General Conditions, therefore, frankly demands that "It is the intention of the Specifications and Drawings to call for finished work tested and ready for

*Professional Engineer; Chairman, Public Relations Committee, New York Association of Consulting Engineers.



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General Conditions and Types of Specifications

operation . . . and that the Contractor has included the cost of all required items in his proposal, and that he will be responsible for the approved satisfactory functioning of the entire system without extra compensation."

The most vulgar objection to broad coverage specifications and General Conditions is sometimes expressed in the damning statement that such specifications contain "God Save Us All" clauses. However, any specification must be set up to protect the owner, the legitimate bidder, the supplier, the architect, and the engineer against unfair and unethical practices, including the following:

1. Failure of successful bidder to place orders promptly for the required equipment. One contractor out of twenty, instead of placing his order for equipment promptly, will indulge in shopping between the suppliers of various brands. He will play one against the other until, finally, the supplier who does obtain the order is more unfortunate than any of his competitors. First of all, he has had to cut his price to a point where he no longer has a profit. Second, his selling expense has doubled and sometimes tripled. Third, while all this shopping has been going on, time has been passing and delivery is invariably delayed. (In most cases, a manufacturer will not extend himself too much to expedite a nonprofit order.) This condition then provides a hand-made opportunity for the contractor to attempt a substitution, of course to his own advantage. If a substitution is not accepted, it's the engineer's responsibility to attempt justification of a job delay.

2. Increasing the engineer's cost of doing business. The technical performance and quality of substitute brands must be checked carefully for each unit offered for consideration, in order to determine if the units proposed will meet the minimum requirements of the specifications. This work is time consuming and therefore costly.

There has been nothing constructive accomplished with this byplay—for the engineer, the supplier, or the owner. As far as the contractor is concerned, job delay probably eats up any additional profit obtained through these manipulations of orders and specifications.

Another fallacious objection to tight specifications and General Conditions is that they require the bidder to accept responsibility for work for which the engineer has been paid and for which he should himself take the responsibility. This familiar objection has been advanced most strongly by wartime contractors. Their experience with the Corps of Engineers, which depended upon Renegotiation of Contracts to protect the Government from overcharging, has encouraged the practice of making a low bid and depending on extras to make the work profitable.

The failure of many architects and engineers to recognize the importance of insisting that owners be protected against such practices has resulted in a new clause in the New York City Housing Authority's standard contract with architects. It reads as follows:

"*Responsibility of Architect.* The Architect shall apply to the preparation of the plans and specifications the reasonable and proper skills, judgment, and care which are customary and normal to professional architectural practice, and shall be liable to the Local Authority for damages or losses resulting from failure to apply the above reasonable and proper skills, judgment, and care."

This clause makes it imperative that plans and specifications be such as will leave no opening for a contractor to charge the architect or engineer with accountability for errors and omissions, presumably to be paid for by the owner, without making the architect or engineer actually responsible for the cost to the owner of such errors and omissions.

Years of experience in all branches of construction show conclusively that the best contractors welcome a tight specification, provided it is enforced as rigidly as it is written. Such contractors will not deviate from or attempt to evade a well-written specification. When others do attempt to do so, the architect and engineer should be totally inflexible and insist on compliance with both the letter and intent of the contract specifications or be personally responsible for their failure to do so.

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This fine service garage is 160′ x 40′ x 18′ high and occupies a full half block of frontage.

An important exclusive feature of the Crawford installation is the use of a removable, light-weight, extruded aluminum mullion, or center post, between each pair of doors. With the mullion removed, an unobstructed opening two bays wide is available for easy maneuvering of big trucks and tractors. In a matter of seconds one man can easily remove any of the six mullions, without any mechanical equipment. The mullions lock securely at top and bottom, and when they are removed, doors are automatically locked open . . . can't accidentally descend.

If you have a door problem, we'll welcome your inquiry and it will get quick, intelligent attention. Architects, write for complete file of Crawford literature. Crawford Door Company, 202-20263 Hoover Road, Detroit 5, Michigan.

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Crawford MARVEL-LIFT Doors

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Indexed in Art Index, Architectural Index.

REINHOLD

history of techniques

Dear Editor: I have been reading with great interest the articles by Ada Louise Huxtable. PROGRESSIVE ARCHITECTURE IN AMERICA. I congratulate her on her choice and analysis of material.

The National Trust interests itself in the preservation and maintenance of distinguished architecture of all periods, with no particular emphasis on any decade or century; at our recent annual meeting in Washington, an entire session was devoted to papers on industrial architecture, covering some aspects of the material which Mrs. Huxtable is so ably presenting in her series.

I think it is important that contemporary architects should be informed of the history of building techniques, just as it is important for antiquarians to be informed of the later developments that have taken place since the Colonial and Early Federal periods.

RICHARD H. HOWLAND, President
National Trust for Historic Preservation
Washington, D. C.

•

Dear Editor: At the last meeting of the Board of Directors of the Society of Architectural Historians, I had the pleasure of showing them the several projected articles for the series of historical studies you have added to PROGRESSIVE ARCHITECTURE. I was asked to convey to you the warm congratulations of the Board for instituting this series which will serve to keep alive a realization of the continuing accomplishments of the architectural profession in America.

If I had any suggestion to make, it would be to add at least one page to each article! As I have had the pleasure of observing Mrs. Huxtable in her research work at Avery Library, in preparation for these articles, I have noted how much valuable information she assembled which could not be included in the articles because of space limitation. Increasing their size, I believe, would more than correspondingly augment their significance for architects and historians.

JAMES GROTE VEN DERPOOL, President
Society of Architectural Historians
New York, N. Y.

•

Dear Editor: Mrs. Huxtable's articles, PROGRESSIVE ARCHITECTURE IN AMERICA, are attractive and very informative. I read those in the November and December issues.

I also read the Sullivan & Berlage article in November and I also found interesting the article in the December issue, "Check Lists for Environmental Control of Houses." The opening paragraph on the disregard by architects of air conditioning reminds me of the similar situation with respect to Pullman cars that were built in the 1920's (300 to 500 per year, after the cessation of building during World War I) with no thought of air conditioning, although it was then being introduced in theaters and other public buildings. Then, in the 1930's many millions of dollars were spent on the installation of air conditioning in these cars.

Some of the control items named bring a smile. For example, "Control of Sound" (*par. 7, page 128*), suggests "greatest possible distance from airports and heavily traveled airlanes." My own home is in the South Shore District underneath the eastern and southeastern airlanes from Midway Airport, the largest in the world in traffic volume. I hear airplanes overhead every few minutes. They are a development of the

(Continued on page 14)

p/a views

(Continued from page 13)

era in which we live—and the sound is disregarded. But the constant traffic of automobiles on boulevards is not specifically mentioned as a sound annoyance. Of course, air conditioning will close the windows and quiet will reign—the same improvement that was noticeable in railroad cars.

As a check list of things to consider and to look out for, Conklin's article appears to be very valuable. I note it is an advance chapter in his forthcoming book.

LOWELL M. GREENLAW
Vice-President, General Counsel, Ret.
The Pullman Company
Chicago, Ill.

expansion considered

Dear Editor: I must commend your publication, and in order to take full advantage of the information shown in SELECTED DETAILS I have a query on detail of window wall, page 140, December 1956 issue. This shows a window wall for an Architects' Office Building by John B. Parkin Associates. The steel sash is welded to supporting mullions and columns, but seems there is no provision for expansion in the length of the wall. Surely the glass will loosen and leak?

As I assume this is a *good* detail, am I correct in thinking that this is not such a good detail after all? I would appreciate further information about this.

H. C. GREEN
New York, N. Y.

•

Dear Editor: Actually, we have had no technical problem of expansion in our exterior window wall whatever, and the glass has not had a tendency to loosen. We did not make any provision for an expansion joint, even in the 180-ft length of the building; but I must admit, when you raised the question, that we re-examined both our detail and the perimeter of the building to see whether we had overlooked something. Our only problem has been the usual problem with

(Continued on page 16)

Alodized green globe atop Carnegie Institute symbolizes the world of knowledge below. Crafted by Overly in heavy sheet aluminum.

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(Continued from page 14)

some heat-absorbing glasses; namely, that the glaziers, in setting some panes of glass, did not allow proper tolerance in their bedding and fitting in the metal frame to allow for expansion. The result has been a few isolated cracked pieces of glass on the exterior. This is confined only to the heat-absorbing glass which, of course does expand, but assumes no regular or characteristic pattern. One could, therefore, not attribute this to lack of expansion in the frames and, of the many thousands of pieces of glass, the number in question might be, in one year, some six to ten pieces. The junior I's at 5 ft increments around the building are frequent enough to allow the individual frames, I suspect, a little movement.

We have now used this basic detail on several other buildings with similarly happy results, but I rather think that if we were to have a clear run of 200 ft or more, we would have to detail adequate provision for expansion.

The wall is now going through its second winter, and while this one is relatively mild, last winter was somewhat more severe and we had temperature differentials between inside and out, on many occasions, of 60° or more, which I think is a fairly good test.

JOHN B. PARKIN
Toronto, Canada

schedules in specs

Dear Editor: As a very interested reader of Ben John Small's column and one who has had the opportunity to wrestle with the problems he so informatively and wittily discusses, I am taking the liberty of writing this note.

In SPEC SMALL TALK in November 1956 P/A is mentioned the subject of the finish schedule and its inclusion in the specifications. I find this quite coincidental, as we have been trying to solve the problem of reducing the amount of work on the drawings (draftsman's time vs. a typist's) especially in view of the fact that the office I am connected with (Percival Goodman's) invariably requires quite extensive detailing.

We have gone a step further—namely put all schedules (doors,

(Continued on page 20)

WHEN YOU CHANGE YOUR ADDRESS

Please report both new and old addresses directly to P/A five weeks before you move. The Post Office will not forward your magazine to the new address unless you pay extra postage. Avoid this needless expense by notifying us five weeks in advance.

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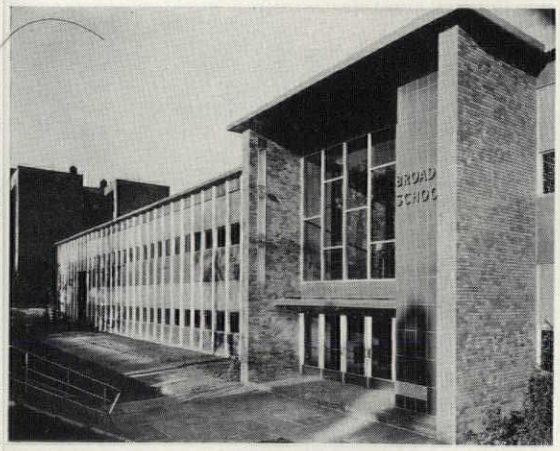

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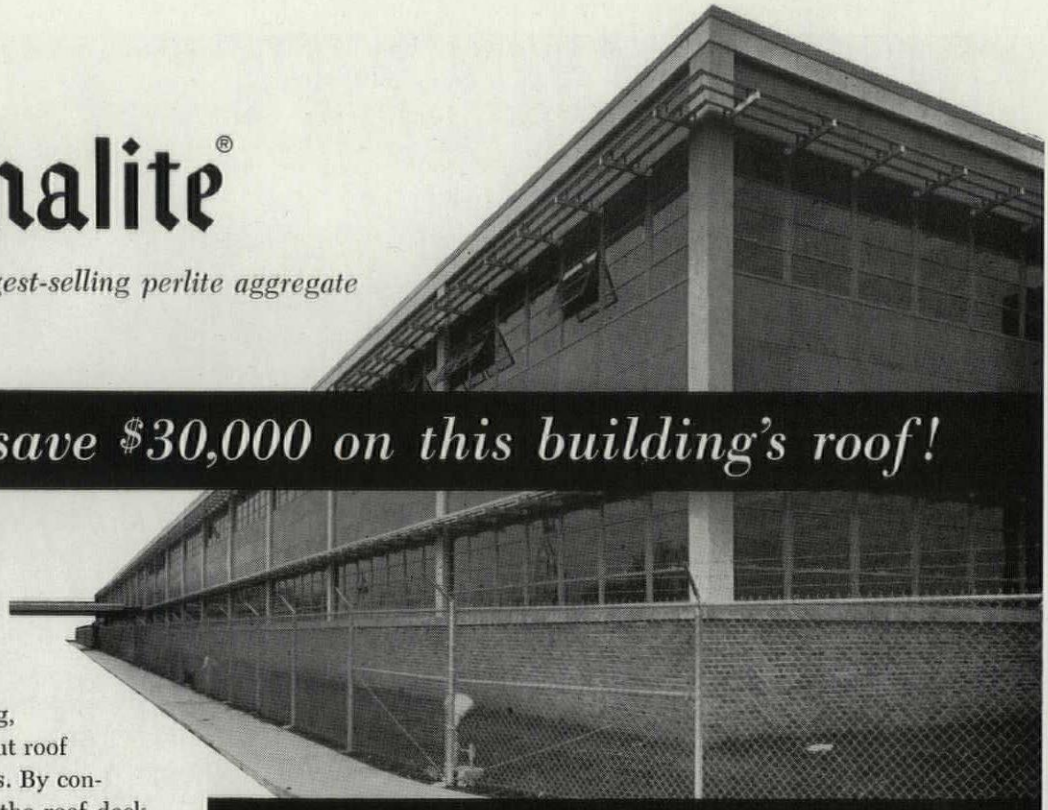

helped save $30,000 on this building's roof!

Selecting an option in the specifications for this 180,000 square foot building, the construction company cut roof costs by thousands of dollars. By constructing 150,000 sq. ft. of the roof deck with precast insulating concrete slabs, or tiles 2′ x 4′ x 3″, laid on bar joists spaced 4′ on centers, they were able to eliminate all other insulation in that area. The "U" factor of the completed roof – a 4-ply, 20-year bonded roof – is .18 without a ceiling. Further cooling during hot weather is gained by flooding the roof with 3″ of water.

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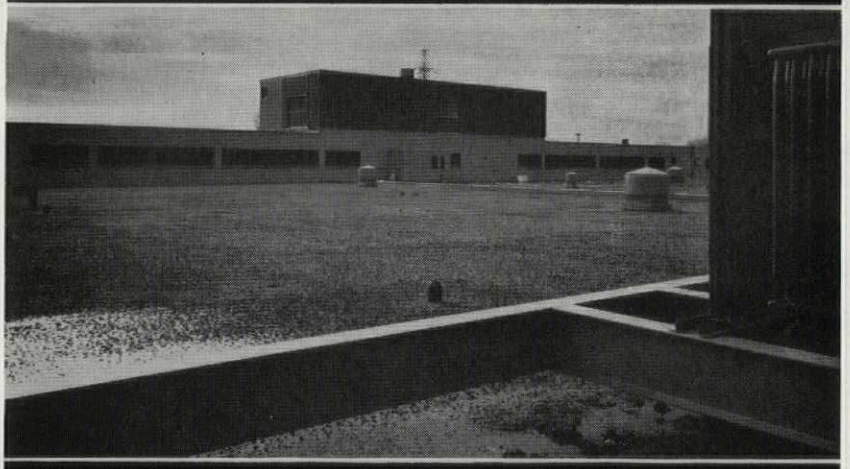
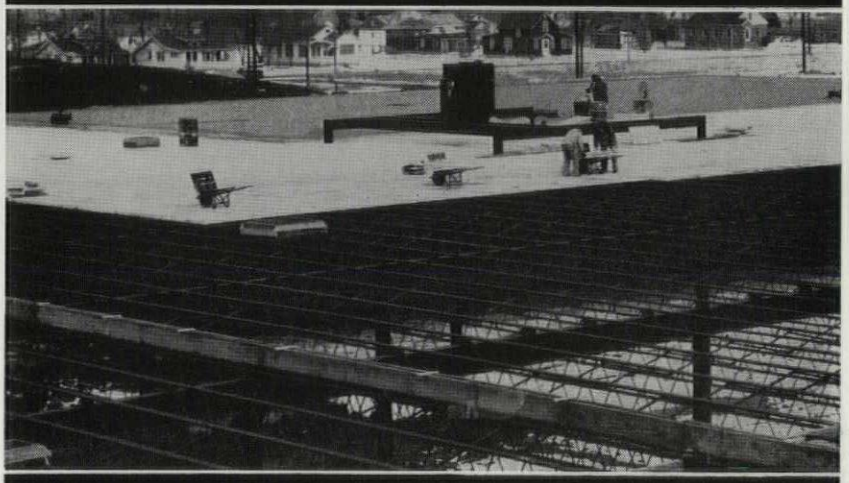


Architect: *Ellerbe & Company, St. Paul, Minnesota* • Construction: *Lovering & Sweitzer, St. Paul, Minnesota* • Insulating Roof Tile: *Minnesota Perlite Corp., Minneapolis, Minnesota*



OFFICE CAFETERIA . .

LASTING BEAUTY

The busy office employees of the Socony Mobil Oil Co don't have to search Manhattan for a comfortable plac to eat. They just ride the elevator down to this spaciou cafeteria in the basement of the new Socony Mobil Build ing. The handsome floor that contributes so much to th relaxing atmosphere is Armstrong Excelon Tile – in th softly shaded "Designers Series." Excelon was specifie here for its wearing qualities, too. Durable and grease proof, it will keep its good looks for years, even aroun the counters where 1,300 people are served every day.

Socony Mobil Oil Company, N.Y.C., Employees' Cafeteria
Architect: J. Gordon Carr & Associates

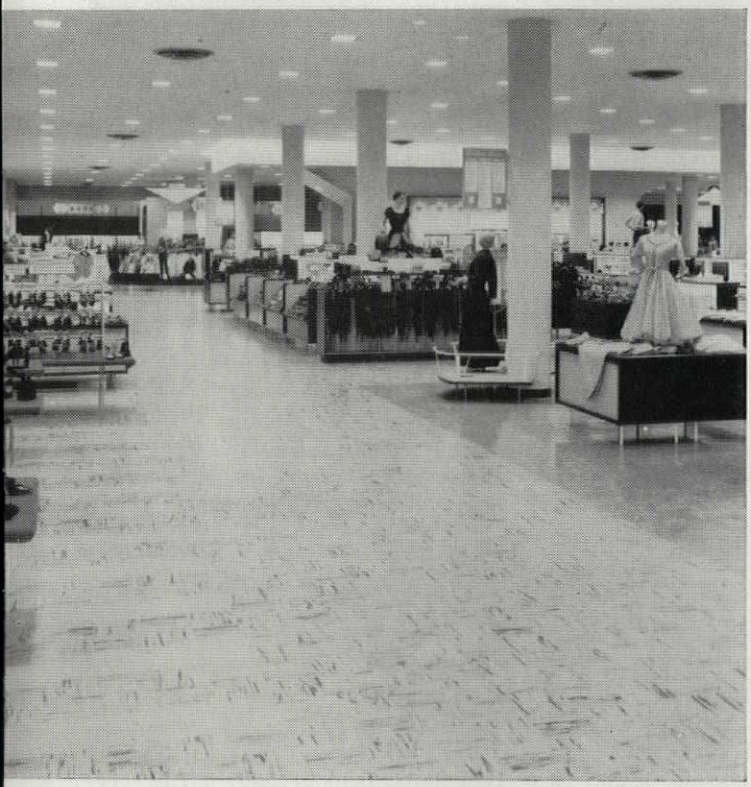
DEPARTMENT STORE . . . CLOTHING STORE

the flooring spec: Armstrong Excelon Tile

EASE OF MAINTENANCE

No matter how much it snows, or how much slush and dirt are tracked in, the smart Excelon Tile floor of Donaldson's new department store unit in the Southdale shopping center outside Minneapolis never looks messy and unattractive. During business hours, an occasional quick mopping wipes mud and water right off the smooth surface of Excelon Tile, without leaving a trace. After hours, regular maintenance is fast and economical.

Donaldson's, Southdale, Edina, Minn.
Architect: John Graham & Co., Seattle, Washington
Interior: Alvin L. Weidt & Assoc., Minneapolis, Minn.



ECONOMY

The Bond Stores are famous for quality clothing at economy prices. Bond management know the value of other kinds of economy, too. For their new Wilshire Blvd. store in Los Angeles, they wanted a fashionable floor as a background for modern merchandising displays. But because the floor area is so large, cost per square foot had to be kept down. Good looks and low cost combined to make this floor the ideal choice for this handsome interior.

Bond Clothing Store, Wilshire Boulevard, Los Angeles
Stiles and Robert Clements, Architects and Engineers
Interior: Burke, Kober and Nicolais

Armstrong Excelon Tile is a vinyl-asbestos floor that costs only a few cents more per sq. ft. than asphalt tile. A wide range of distinctive designs and colors makes Excelon Tile suitable for any interior. Exceptionally durable and dimensionally stable, it can be specified with confidence for heavy-traffic areas. The vinyl content of Excelon Tile makes it highly resistant to greases, oils and alkalis. It can be installed over any subfloor: suspended, on grade, or below grade.

Because Armstrong makes all types of resilient floors, we can offer unbiased recommendations for every flooring need. For information, samples, complete specifications, design and color scheme assistance, call the Architectural-Builder Consultant in your nearest Armstrong District Office or write Armstrong Cork Company, 1504 Watson Street, Lancaster, Pennsylvania.

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Approximate Installed Prices per Sq. Ft. (Over concrete, minimum area 1000 sq. ft.)

20¢ to 35¢	Asphalt Tile, 1/8" (A, B, C, D) Linoleum, light gauge Asphalt Tile, 3/16" (A, B)	35¢ to 45¢	Linoleum, standard gauge Asphalt Tile, 3/16" (C, D) Linoleum, 1/8" ("Battleship") Greaseproof Asphalt Tile	45¢ to 60¢	Corlon (Sheet Vinyl) Linoleum, 1/8" Cork Tile, 1/8" Excelon® Tile (Vinyl-Asbestos) 1/8"	60¢ to 70¢	Rubber Tile, 1/8" Cork Tile, 3/16" Linotile® Corlon (Hydrocord* Back) Linoleum (Cushion-Eze* Back**)	70¢ to 90¢	Custom Corlon Tile (Homogeneous Vinyl) 3/32", 1/8" Cork Tile, 5/16" Rubber Tile, 3/16" Corlon (Cushion-Eze Back)	90¢ to $1.20	Custom Vinyl Cork Tile Imperial Custom Corlon Tile

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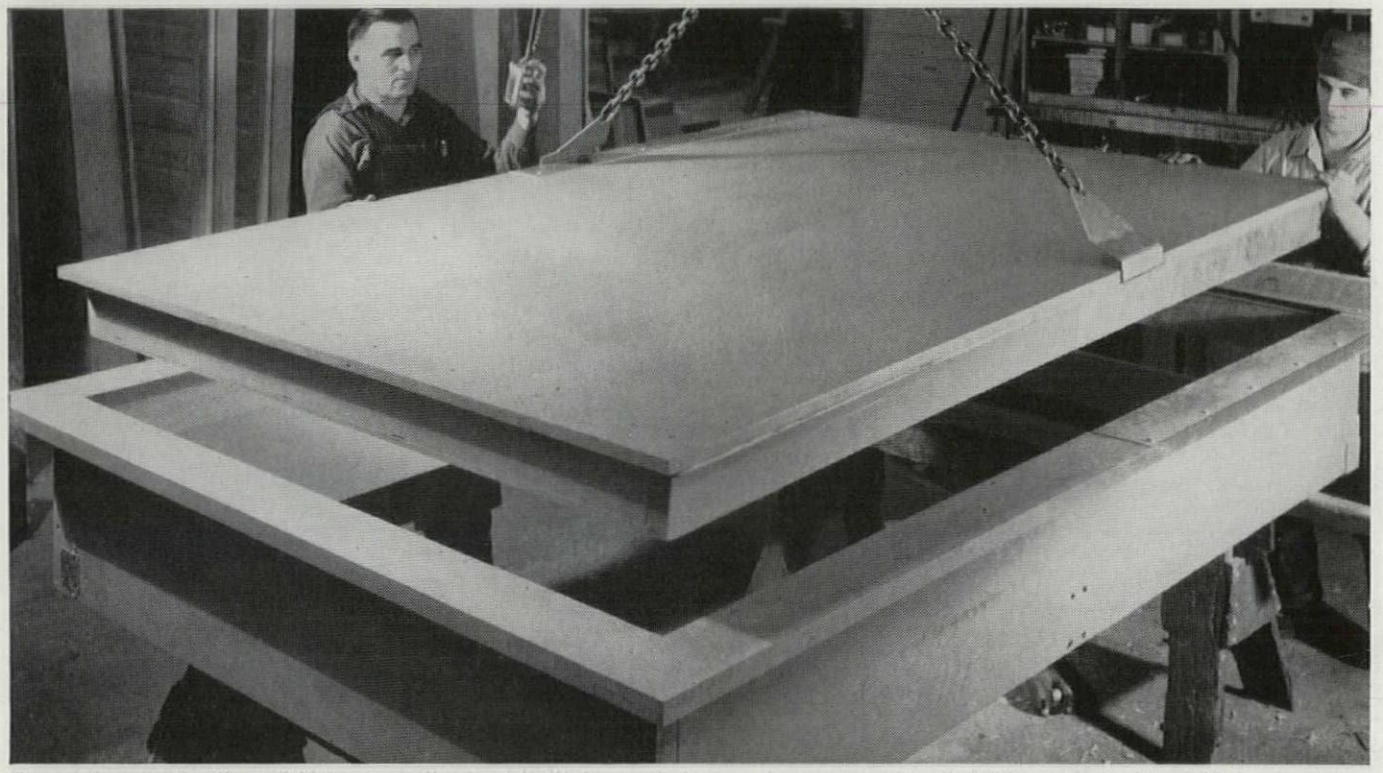
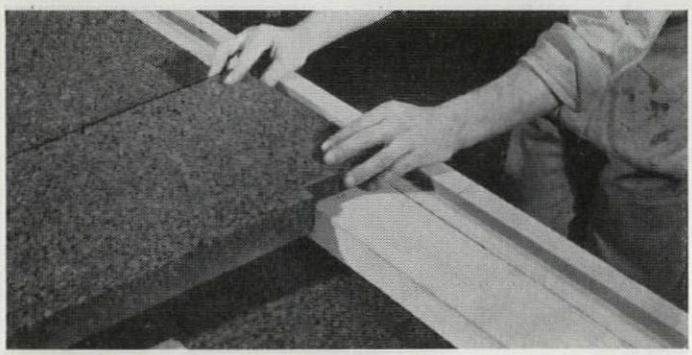
Inside and out...Jamison cold storage doors show *quality* construction



Box girder construction of highest quality boat hull plywood gives maximum strength and rigidity. Large series "50" door is shown as door and frame meet on assembly line.

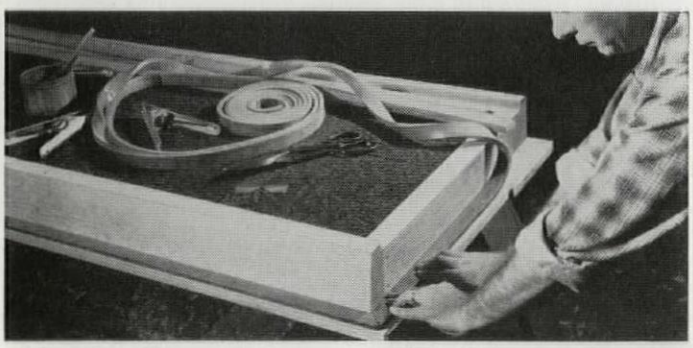


Insulation—Each block of insulation is individually measured and cut to give maximum insulation efficiency.

Materials and workmanship assure top efficiency in rugged service

The reason behind the reputation of the Jamison Series "50" Cold Storage Door is apparent here. Some of the most important parts and components are never seen by customers . . . Yet operational efficiency in all types of installations continues to prove that Jamison quality materials and precision workmanship mean superior protection and overall economy.

If you have plans for modernization or expanding, first get the story on Jamison's Series "50" Door. Write for your copy of Section 3. Jamison Cold Storage Door Co., Hagerstown, Md.



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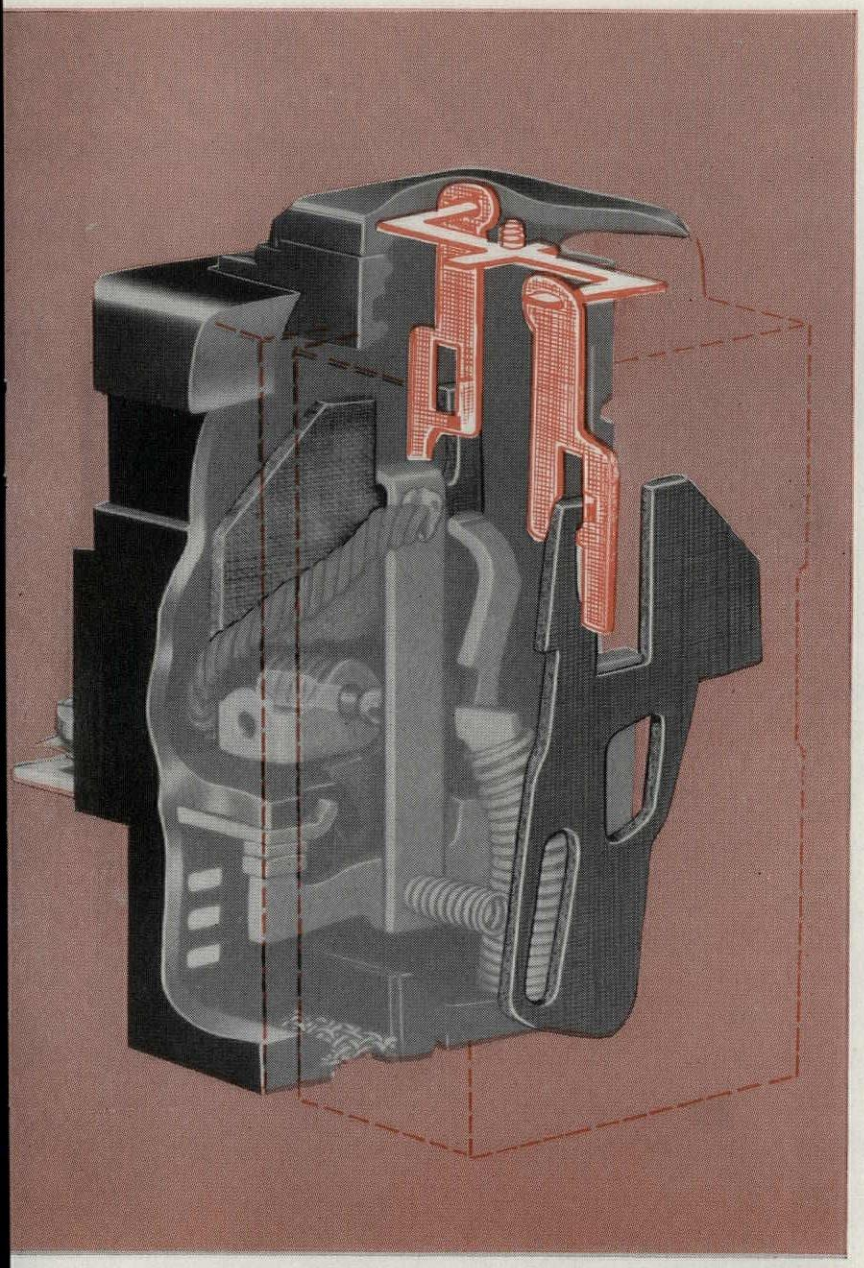
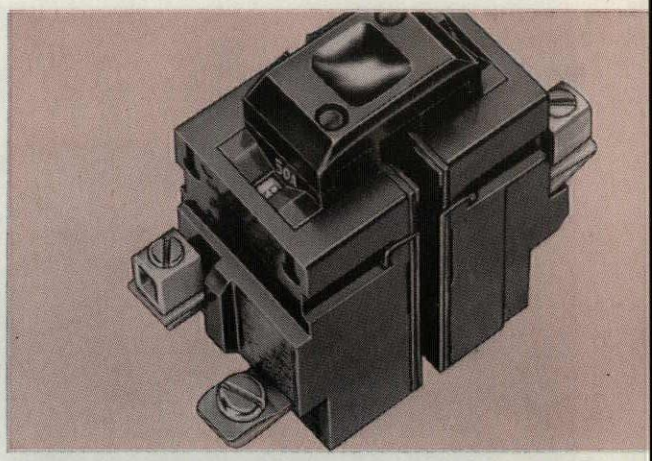
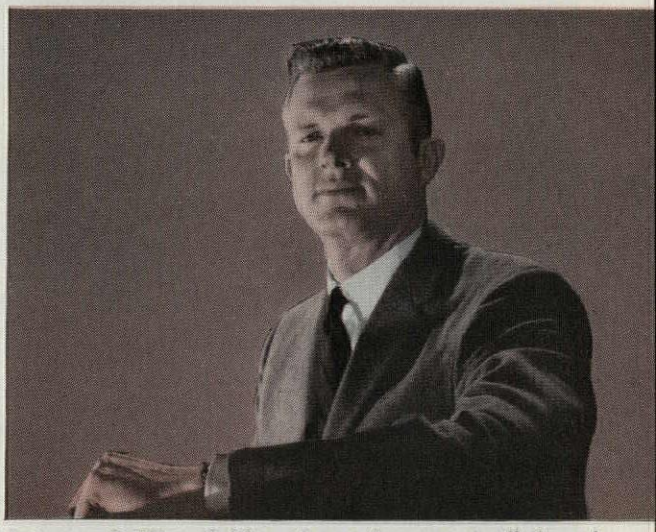




Cutaway view (left) shows interior of 50-amp, 2-pole common trip Duo-Guard Pushmatic. A common push button controls both poles simultaneously. These 2-pole, 120/240V AC units are available in 15-, 20-, 30-, 40- and 50-amp ratings . . . fit any BullDog Electri-Center®.



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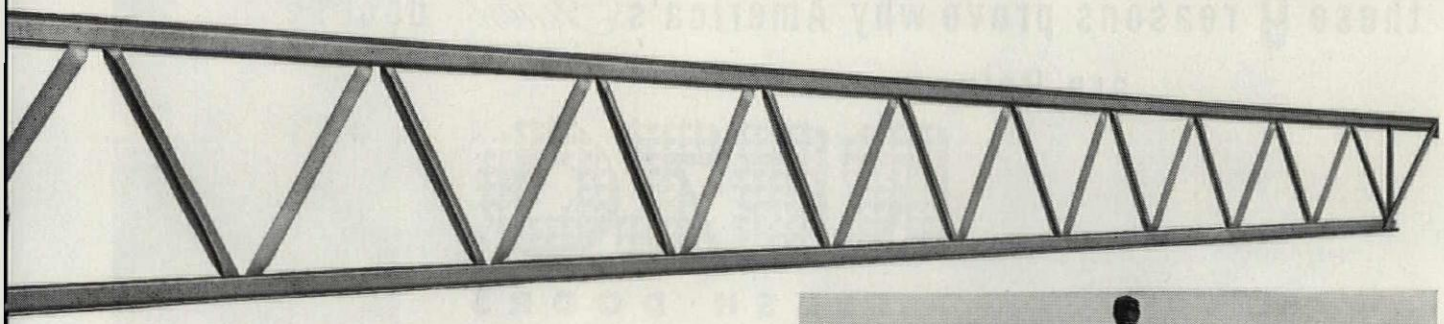

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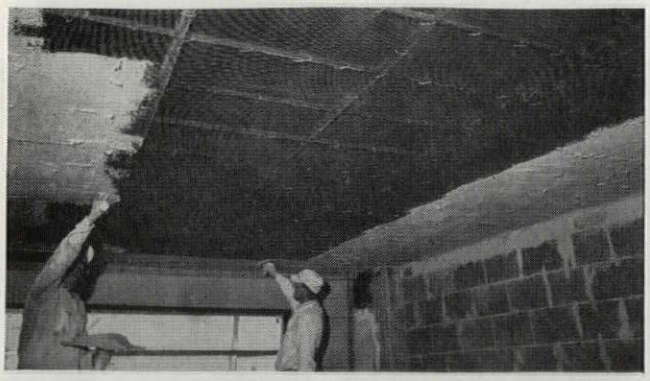

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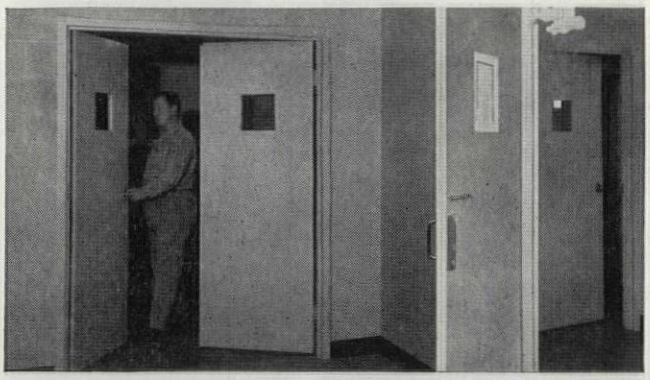

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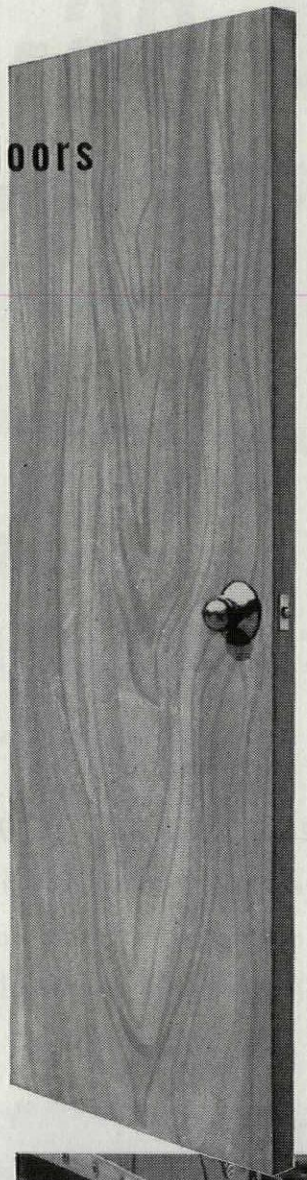

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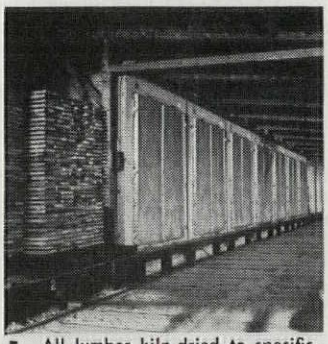
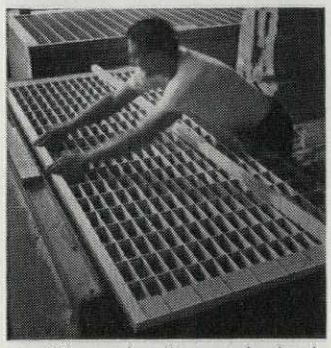
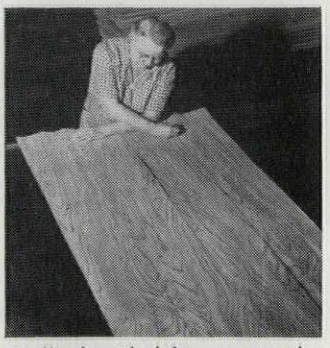


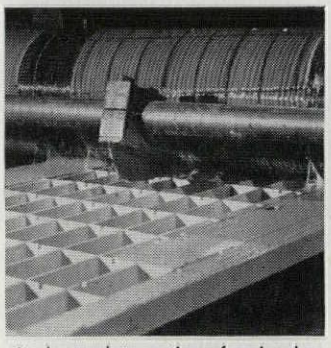
1 All lumber kiln-dried to specific, and uniform moisture content.



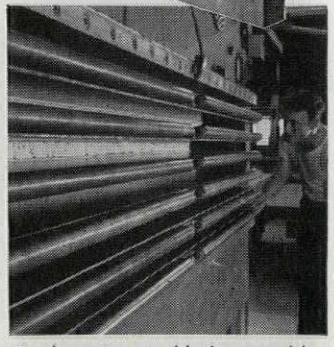
2 Stiles and rails securely fitted. Stiles are 1 7/16" instead of 1⅛".



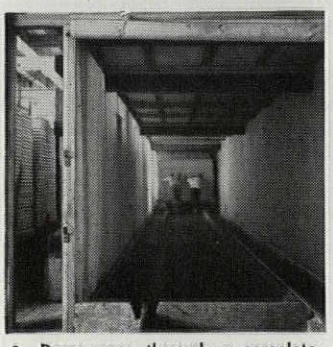
3 Hand-matched face veneers; the panels ⅛" thick—instead of 1/10".



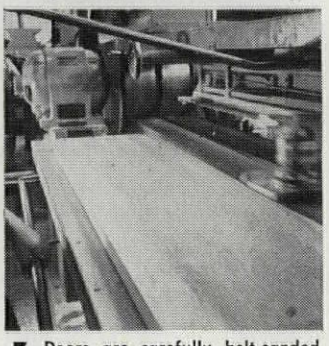
4 A complete coating of resin glue is applied by machine.



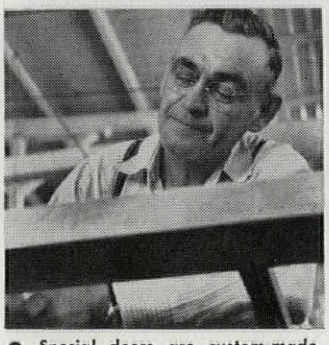
5 Accurate assembly is assured by controlled heat and pressure.



6 Doors pass through a complete conditioning cycle in special kilns.



7 Doors are carefully belt-sanded to a cabinetmakers's finish.



8 Special doors are custom-made by experienced craftsmen.

9 Each door must be painstakingly inspected in oblique light.

Modern in design, Houston's new Bank of the Southwest uses wrought iron pipe for hot and cold water lines, vent piping, all downspouts, and drain piping from air conditioners.

Wrought Iron guards this bank's corrosive piping services

Designers seeking piping permanence for this new bank in Houston, Texas, chose wrought iron pipe.

Service records of wrought iron pipe's performance in these corrosive trouble-spots vouch for the durability of this material. Annually, wrought iron pipe's corrosion resistance results in great savings for building owners. Such savings make wrought iron pipe low in cost, per-year-of-service.

Our booklet, *Piping for Permanence*, reviews a wide range of wrought iron installations which may help you in your planning and design. Write for a copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

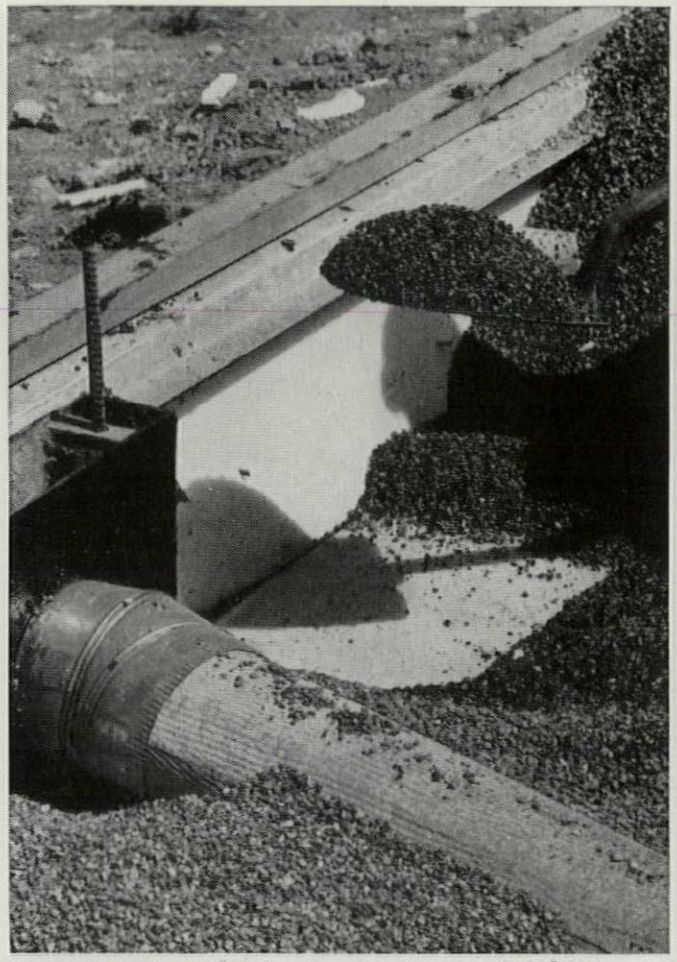
Available in Canada and throughout the world

Bank of the Southwest, Houston
Architect: Kenneth Franzheim
Mechanical Engineers: H. E. Bovay, Jr., Consulting Engineers
Engineering Consultant: Reg. F. Taylor
Mechanical Contractor: Straus-Frank Company
Plumbing Contractor: Barber, Inc.

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

1. National Homes, Lafayette, Indiana, specifies Styrofoam 1" thick placed horizontally around the perimeter 12" from the foundation wall of the house.



2. Styrofoam insulation 1" thick is then placed at an angle 12" high against the poured foundation wall.

National Homes uses Styrofoam

A new concept for construction of all masonry structures:

Styrofoam is used to eliminate dampness and cut building costs. Portland cement mortar bonds Styrofoam to the masonry—permanently, without studs. Plaster keys directly to Styrofoam surface—smoothly, without lathing. No special training or tools are needed. And the warm, dry walls keep their smooth, crack-free appearance year after year. The man who looks ahead will investigate this!

3. Next the slab is poured—and that's it! From experience National Homes finds it has protection from cold and damp for the lifetime of the house.

for lifetime perimeter insulation

There are good reasons why this is so. The same reasons that can help you enhance your reputation.

Styrofoam* (a Dow plastic foam) is a homogeneous insulation with a remarkable combination of properties. This rigid insulation contains millions of noninterconnecting air cells. As a result, it can't absorb water. It provides true protection against dampness and water. Its low thermal conductivity stays low. In addition, it resists rot, mold, deterioration. And having no food value, vermin and rodents won't bother it.

But what makes Styrofoam even more outstanding is its unparalleled performance in such fields as low-temperature and plaster-base construction . . . industrial equipment . . . roofs, cavity walls and wall panels. This clean, odorless, lightweight insulation has many applications that are well worth your investigation. You'll find Styrofoam pays off in lifelong efficiency and economy.

*Styrofoam is a registered trademark of THE DOW CHEMICAL COMPANY

For further information, contact your nearest distributor: CALIFORNIA, Colma: Western Foam Products, Inc. • CALIFORNIA, Los Angeles 13: Pacific Foam Products Company • FLORIDA, Tampa: The Soule Company • GEORGIA, Atlanta 8: Badham Sales Company • ILLINOIS, Chicago 11: The Putnam Organization, Inc. • KANSAS, Kansas City: Styro Products, Inc. • MASSACHUSETTS, Ipswich: Atlantic Foam Products Company • MICHIGAN, Detroit: Par-Foam, Incorporated • MICHIGAN, Midland: Floral Foam Products • MINNESOTA, Minneapolis 8: Edward Sales Corporation • MONTANA, Billings: Madden Construction Supply Company • NEW YORK, Rochester 20: William Summerhays Sons Corp. • NEW YORK, Long Island City 1: Styro Sales Company, Inc. • OHIO, Cincinnati: The Seward Sales Corporation • OHIO, Cleveland 13: Structural Foams, Inc. • PENNSYLVANIA, Plymouth Meeting: G & W H Corson, Incorporated • TEXAS, Houston: The Emerson Company • UTAH, Salt Lake City 10: Utah Lumber Company • WASHINGTON, Seattle 9: Wiley-Bayley, Inc. • WISCONSIN, Milwaukee: S & S Sales Corporation • CANADA, Kitchener, Ontario: Durofoam Insulation, Ltd. Or write THE DOW CHEMICAL COMPANY, Midland, Michigan—Plastics Sales Department PL1740Z.

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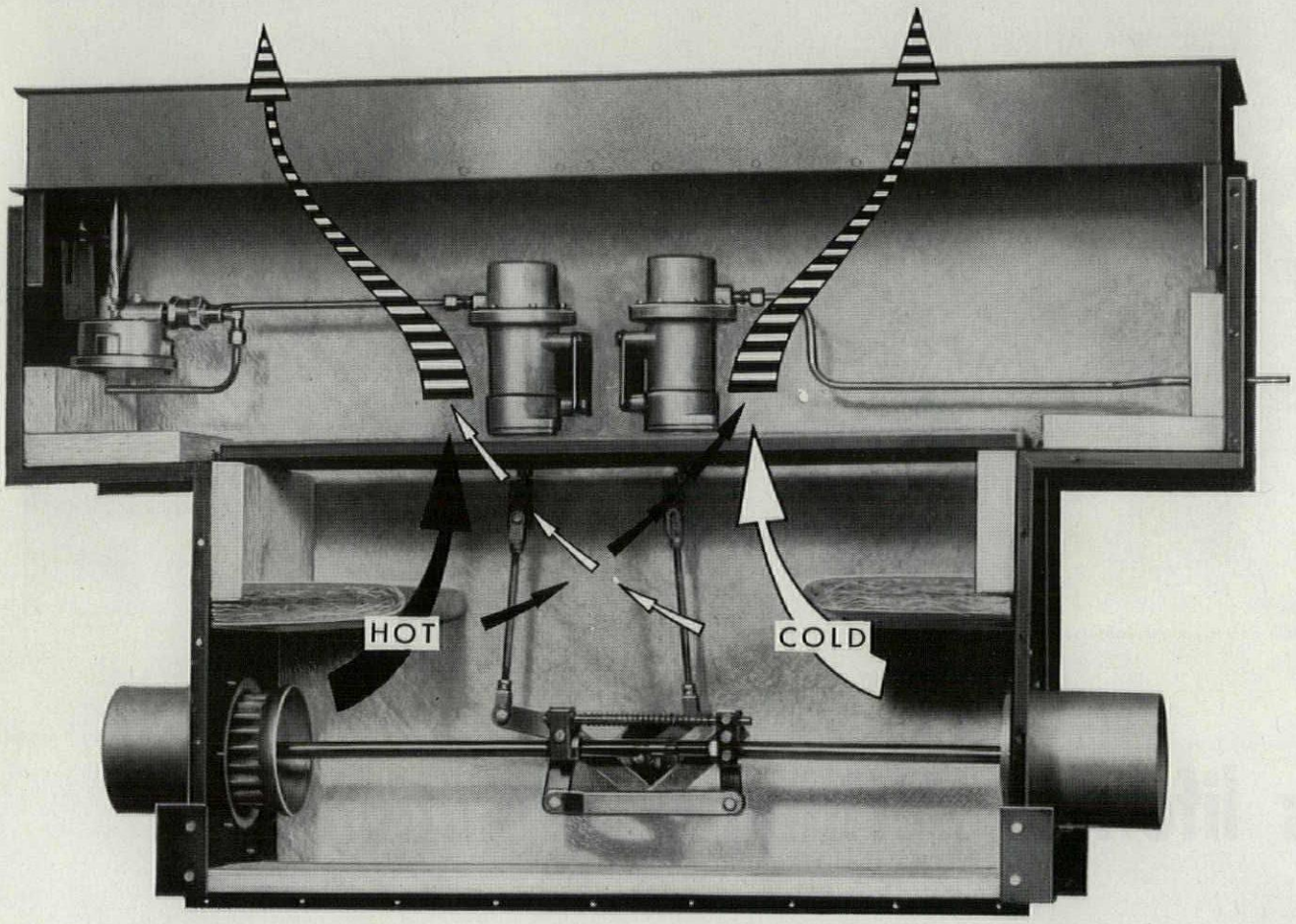
YOU CAN DEPEND ON DOW

How **ANEMOSTAT**®

All-Air Constant Volume

High Velocity units operate



Here is a vitally important advance in the field of air distribution. Anemostat All-Air High Velocity units, *with new simple automatic controls,* deliver constant volume, no matter what the fluctuations from 1:4 or 4:1 on inlet pressures of either the hot or cold valve.

Each unit is a single package including the controls and integral thermostats, if required. There is complete accessibility of all controls through removable diffusers. No access panels are required. Capacities of CONSTANT VOLUME units can be pre-set at the factory.

These Anemostat CONSTANT VOLUME units

- Assure scientific draft-free distribution of air.
- Are available in 100% induction units.
- Include Anemostat die-cast metal rocket-socket valves. More than 50,000 of these valves are in service, and not a single one has needed maintenance.
- Operate on standard 15 lb positive acting compressed air systems.

Each unit contains a micropressure regulator in the box, sensitive to .02 static pressure. This in turn operates a pneumatic motor and independently maintains by adjustment constant volume, while the wall mounted or integral thermostat controls the outlet mixture temperatures.

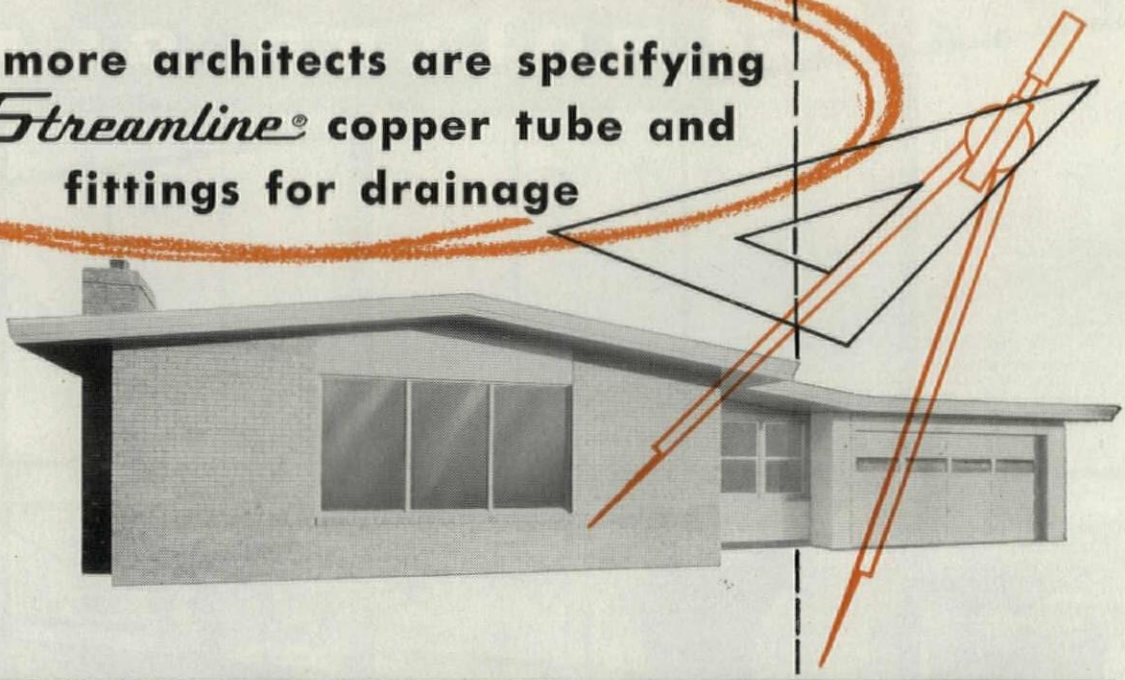
Write on your business letterhead for your copy of

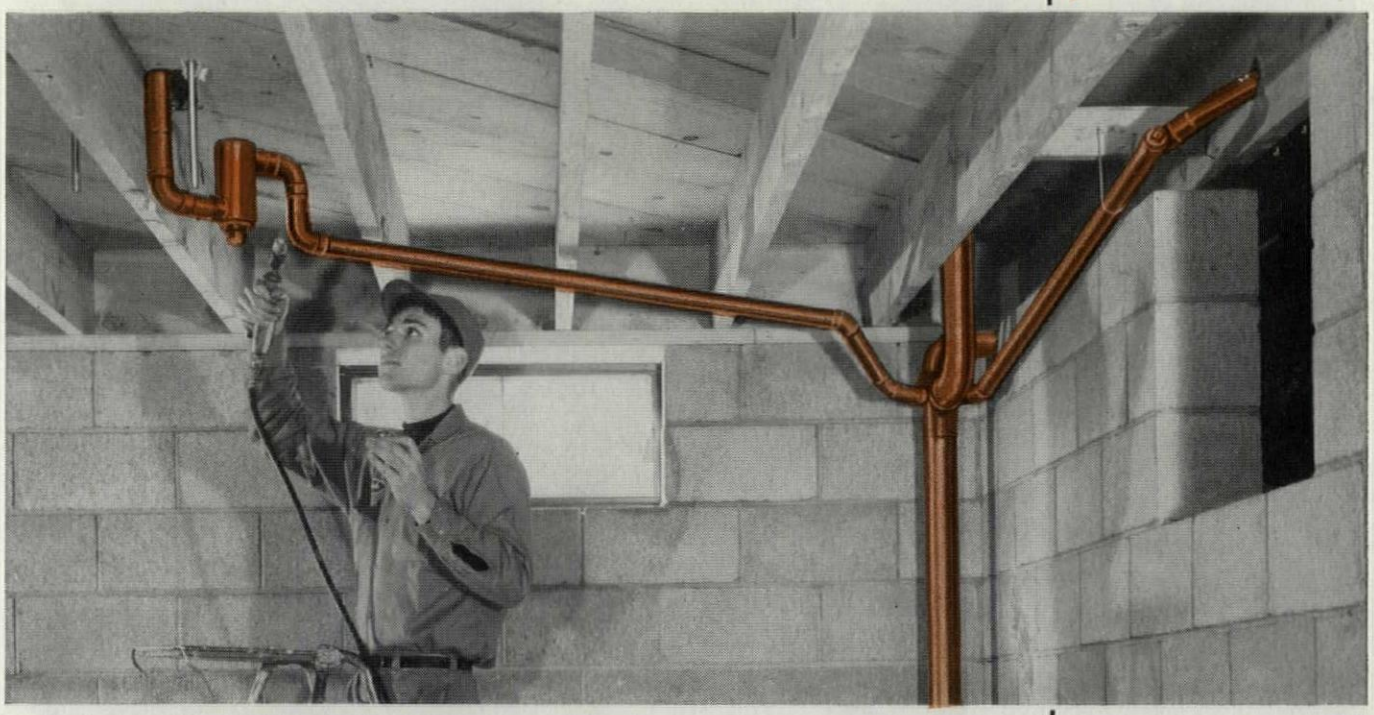
New Anemostat Selection Manual 60

to Anemostat Corporation of America, 10 East 39 Street, New York 16, N. Y.

ANEMOSTAT: The pioneer of All-Air Velocity Systems

why more architects are specifying *Streamline*® copper tube and fittings for drainage





In designing a home, you, as an architect, consider every component with great care. That's why we'd like to point out that by specifying Streamline copper tube and solder-type fittings for drainage, you add still greater merit to your most sound architectural design. With Streamline copper tube and fittings, for example, there are no caulked joints to leak . . . no rust to impair the building's beauty and utility. In addition, compact Streamline stacks fit into standard 2" x 4" partitions . . . increasing useable house space and affording greater flexibility of design. The net result is a modern corrosion-resistant drainage system that will last for the life of the building.

It costs a little more, but the extra cost of a drainage system of copper is negligible when you compute its practical advantages.* When Streamline tube and fittings are used, it means a trouble-free future for your client's home.

Remember—the advantage of an all-copper Streamline drainage system far outweighs the small extra cost. Write today for information Kit No. 15 containing the detailed story of using copper for drainage.

200-A

* Joseph F. Fehrenbach, licensed master plumber of Bridgeport, Michigan, installed the plumbing in the home shown here. He chose Streamline tube and fittings for drainage because it gave him an attractive, trouble-free installation for only $14.23 more than other competitive materials. He was able to do the job much quicker, too.

40 OUR 40TH YEAR MUELLER BRASS CO. 1917-1957

MUELLER BRASS CO. PORT HURON 9, MICHIGAN

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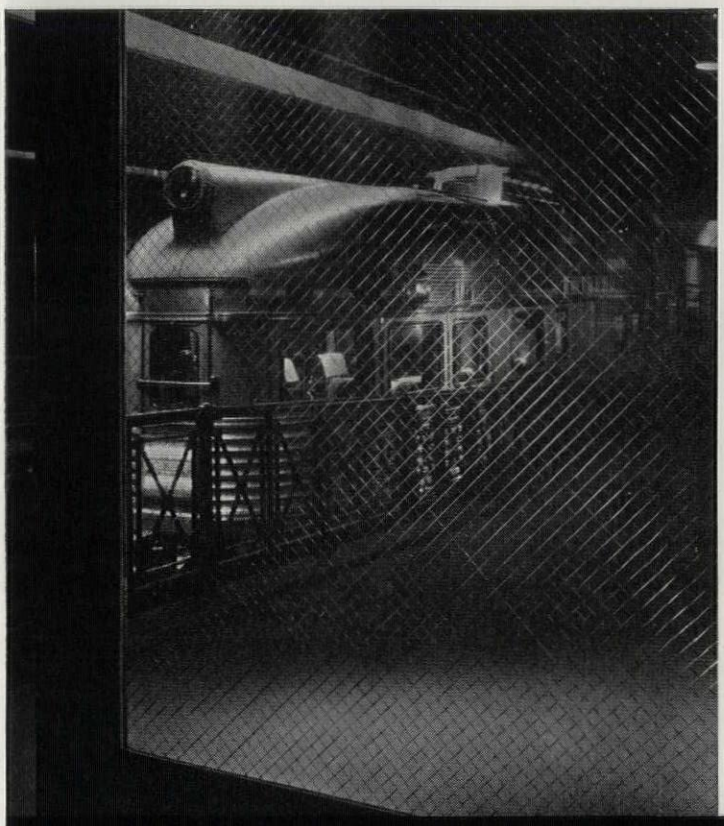
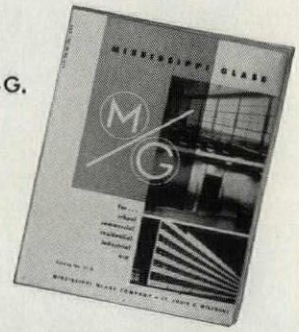


Combining beauty and utility in an exciting variety of residential, commercial and industrial applications, rolled glass by Mississippi offers an extensive selection of patterns with surface finishes and light transmission characteristics that fulfill the requirements of any design or specification.

Send for new free catalog 57-G.
Address Dept. 8.



MODERN VISTAS ARE CREATED WITH GLASS

As advanced in design as the sleek California Zephyr seen through it, Polished Misco (Approved Fire Retardant No. 32) is used extensively in Chicago's Union Station to help protect its thousands of travelers. This rugged glass offers effective but inconspicuous protection at minimum cost in windows, doors, transoms, skylights, partitions . . . wherever fire and breakage protection is required.

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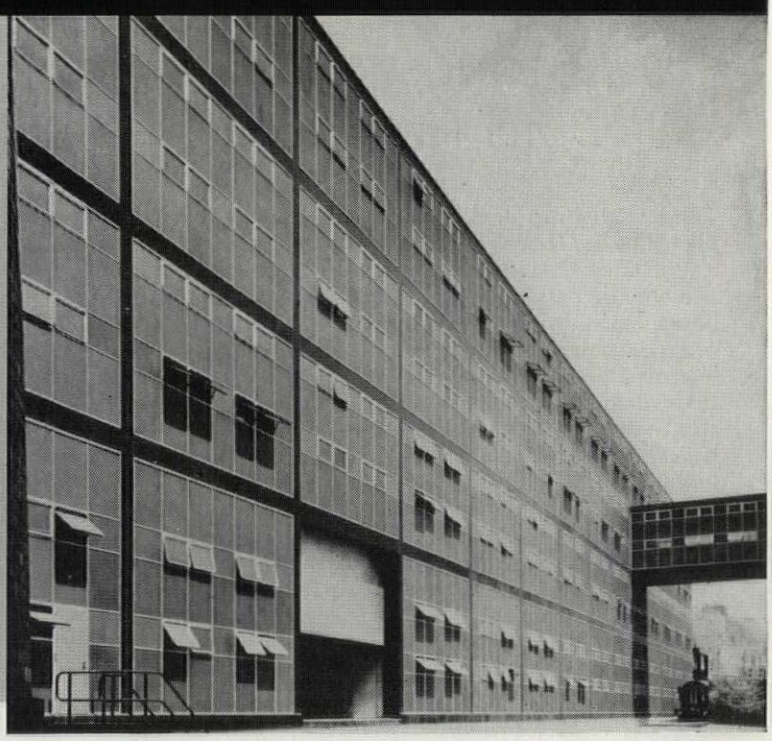
COOLITE GLASS IS RIGHT VARIETY FOR HEINZ

Executed in a shimmering sweep of Coolite, Heat Absorbing, Glare Reducing glass, the Heinz Vinegar Plant, Pittsburgh, has been acclaimed "a brilliantly incisive piece of architecture." Here, employees see better, feel better, work better—for Coolite filters out unwanted factors in "raw" daylight . . . helps keep interiors cooler, more comfortable.

Architects and Engineers: Skidmore, Owings & Merrill
Photo: Ezra Stoller



GLASS COMPANY

88 Angelica St. • St. Louis 7, Mo.

ROLLED, FIGURED AND WIRED GLASS

LONGSPANS GIVE CLEAR SPAN OF 69 FT TO NEW MILWAUKEE BANK BUILDING

This attractive new bank building is the newest Milwaukee branch of the First Wisconsin National Bank. It embodies the latest developments in modern banking facilities —plenty of parking space, drive-in windows and after-hours depositories, among others.

An outstanding feature of the new building is its 69-ft interior clear span, made possible by the use of 70-ft Bethlehem Longspan Steel Joists. The lobby and banking area, uncluttered by columns or supporting walls, is believed to have the largest clear span of any bank building in Milwaukee.

Bethlehem Longspans gave other advantages to the builders. The open webs of these steel joists simplified the installation of pipes and conduits. The joists arrived at the job site clearly marked, ready for immediate placing. And they contribute to the fire-resistant construction of the new bank, for steel joists in combination with poured floor slab and ceilings provide fire-resistance of up to four hours, depending upon the thickness of the slab and the type of plaster used.

Citizens' Office, a branch of the First Wisconsin National Bank, at West Villard Ave. and 38th St., was designed by Edwin J. Krause, architect, of Milwaukee. General contractor: Kroening Engineering Co.; steel fabricator: Wisconsin Bridge & Iron Co.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM LONGSPAN STEEL JOISTS

BETHLEHEM STEEL

VARI-VAC is selected for BIG heating jobs (and small ones too) to provide fuel economy . . . precise central control, even in higher ambients . . . simplicity of operation . . . minimum maintenance cost . . . ultimate in tenant comfort.

For 10 years VARI-VAC has been proved-in-use by the New York City Housing Authority . . . is installed in its earliest, in its most recent projects.

On your jobs, big and small, specify VARI-VAC, the differential vacuum heating system that automatically balances heat medium to balance with varying heat loss of building due to changing outside weather conditions.

*New York City Housing Authority, "Landlord for 312,000 persons—"

VARI-VAC, nerve center for controlling heat, has been selected by the New York City Housing Authority to regulate heat for 927 buildings in 64 of its projects. These projects contain 74,761 apartments housing 283,972 tenants.

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West Hartford 10, Conn.

Rush me Vari-Vac details (Bulletin 2101)

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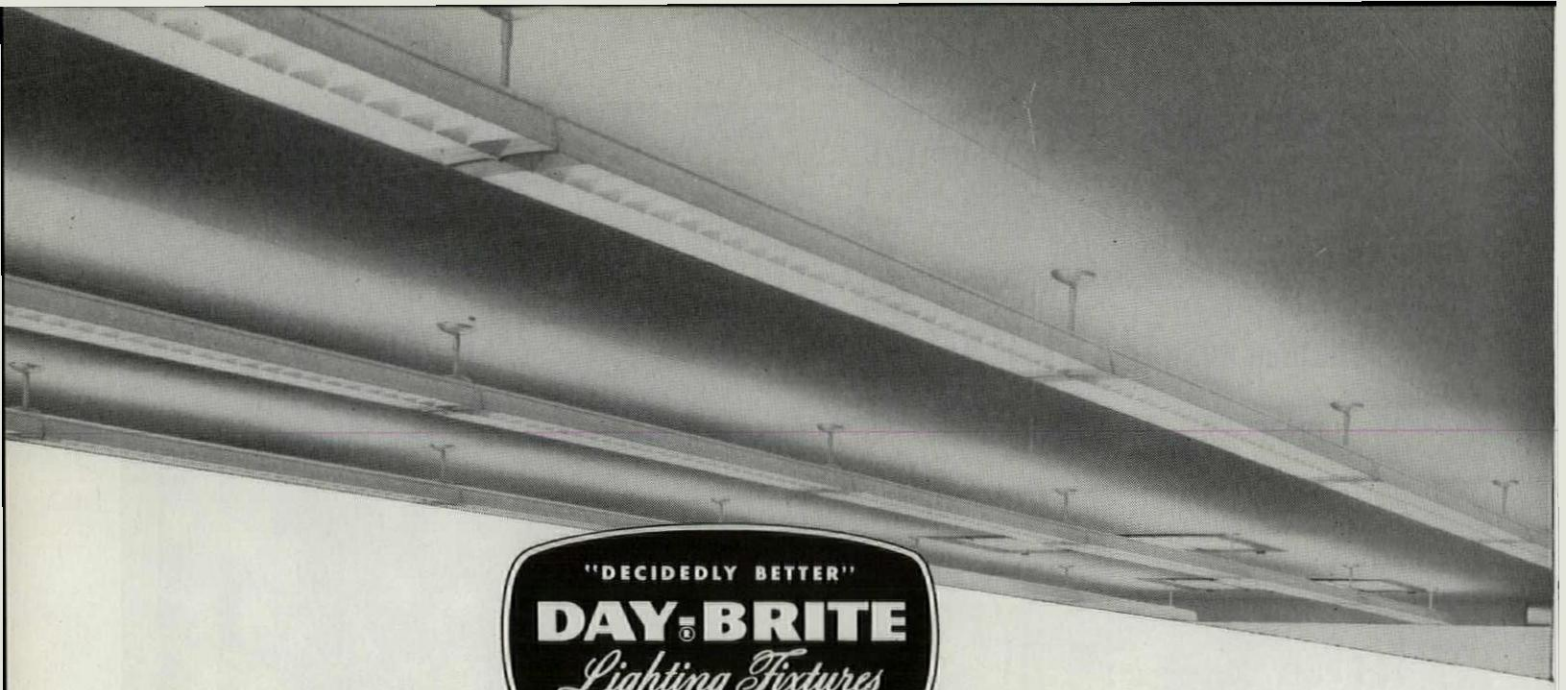
Company.....

Street.....

City..... Zone..... State.....



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Lighting Fixtures

Just HOW equal is "OR EQUAL"?

Because all fluorescent lighting fixtures look good and sound good on paper, the safest way to answer the "or equal" question is to make a point-by-point comparison between the fixture that you specify and those offered as substitutes. This safeguards the architect's reputation as well as the owner's interest.

To save the architect's time and help him in his decision, every Day-Brite representative is prepared to make a table-top demonstration of the features that make Day-Brite the logical choice of architects, designers and engineers throughout the country.

Look at the fixtures, not just the pictures! Ask your Day-Brite representative for actual proof. He's listed in your classified phone directory. Send for new Architectural File material, *just published.*

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Certified Lighting for a Better America

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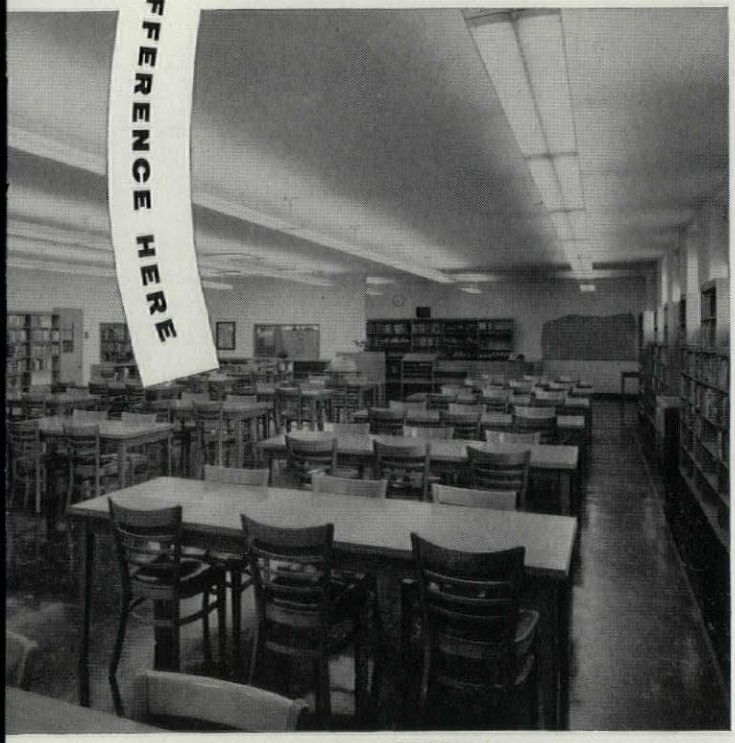
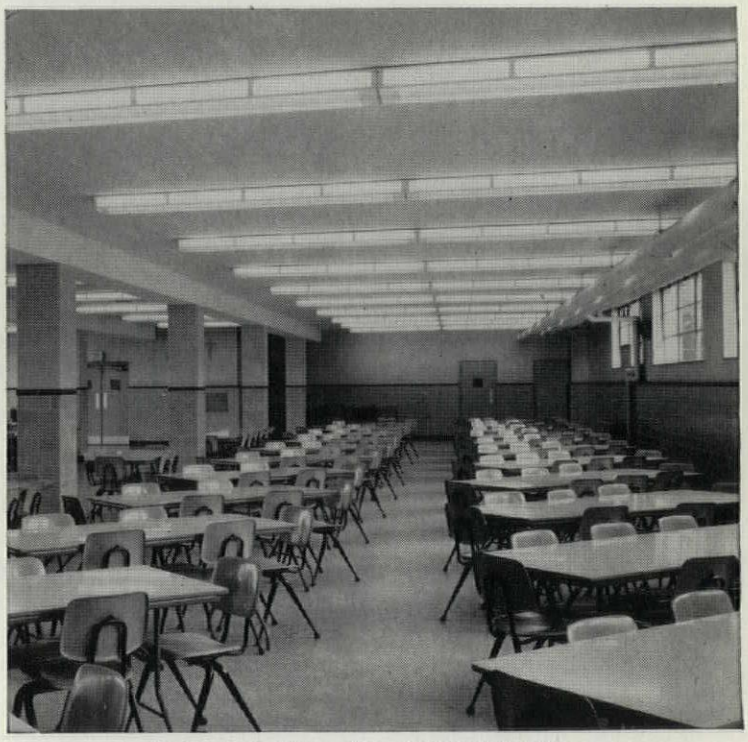
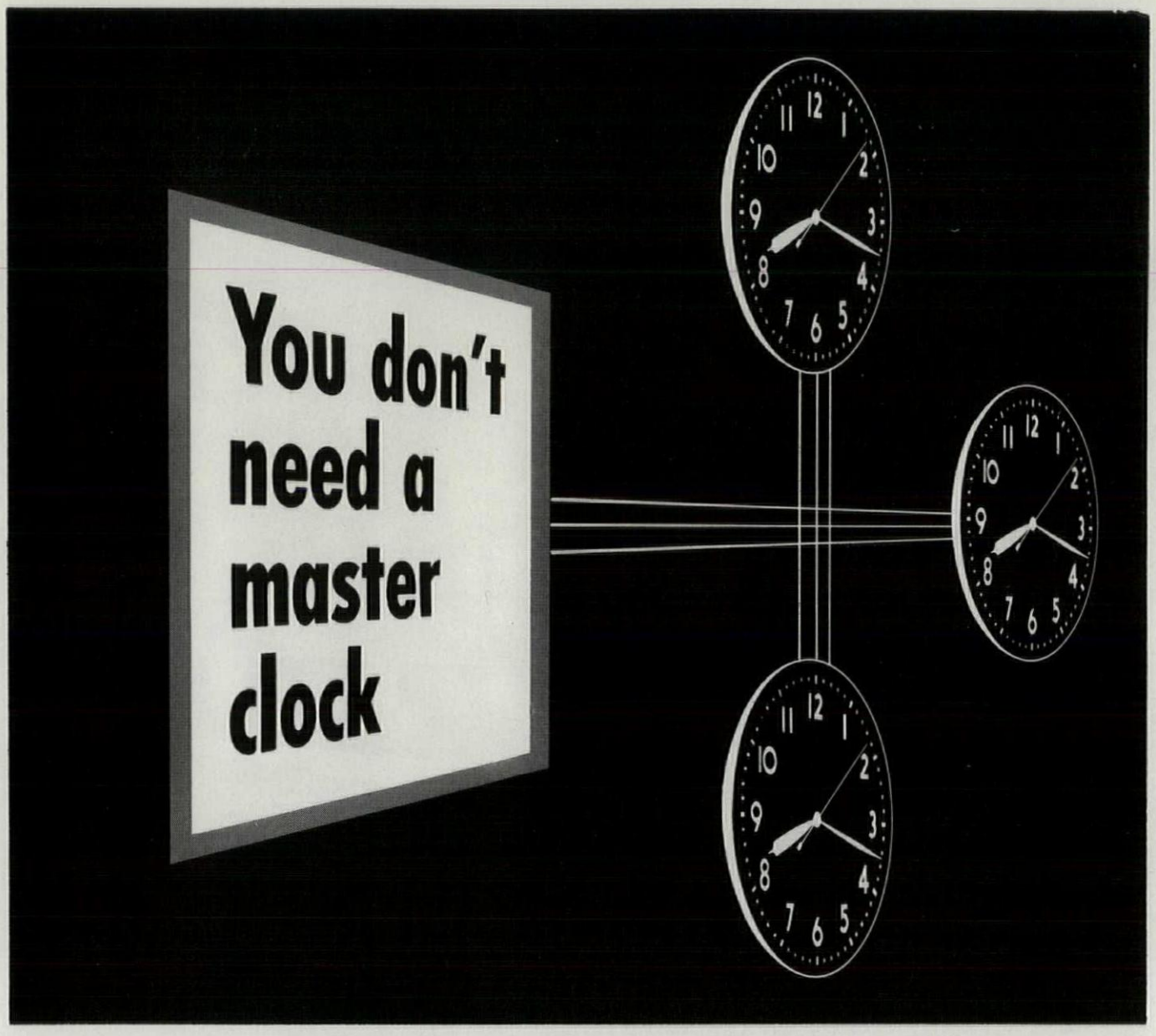


Library, with Day-Brite LUVEX® fixtures



Cafeteria, with Day-Brite PLEXOLINE® fixtures



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For a school, a factory, or a hospital, you're specifying the simplest, most dependable clock system available. Moreover you are doing away with master clocks and hourly resetting. Accuracy has been achieved through the use of the famous Telechron® motors that completely eliminate scattering and coasting. And, in case of power failure, reset action is automatic and immediate—no waiting for resetting to start on the hour as in other systems.

Keeping pace with the clock system is the simple Edwards Program instrument. No longer do you need worry about tapes, chains or other complicated devices.

It will pay you to discover why you should specify the simplest, most functional clock system for schools, hospitals and factories. For information write Dept. PA-4, Edwards Company, Inc., Norwalk, Conn. (In Canada: Edwards of Canada, Ltd., Owen Sound, Ontario.)

EDWARDS *Specialists in Signaling Since 1872*

DESIGN • DEVELOPMENT • MANUFACTURE

NEW MAN-MADE SUCCESSOR TO LUMBER

No grain to warp or twist

Fights paint blistering

Reversible weather drip edges

Primed . . . for quick finish painting

Easy to saw, easy to nail

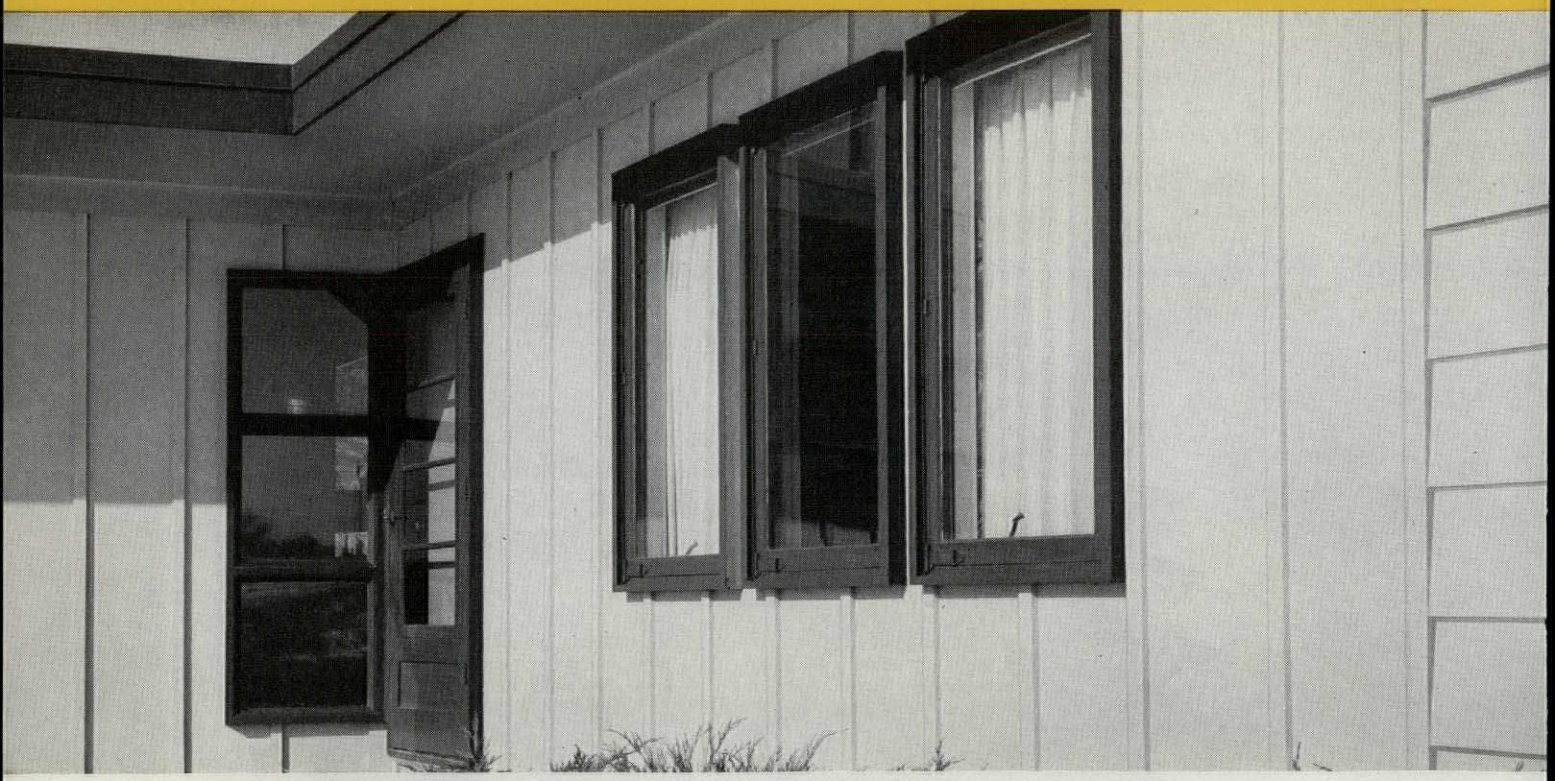
No knots, splits or splinters

INSULITE PRIMED SIDING

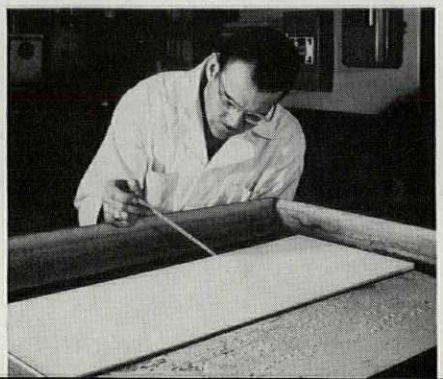
Turn the page . . . read the whole story ☞

Twelve-inch wide Insulite Lap Siding, with 10 ¾″ exposure, goes beautifully with *any* style or design. Half-inch thickness provides deep, beautiful shadow lines that accentuate the "long, low look" so popular in contemporary homes. Long lengths—8′, 12′ and 16′—mean less handling and waste. Vertical grooved panels on gable ends add an attractive touch. Grooved panels have shiplapped edges.

Board-and-batten design treatments made possible by Insulite Primed Siding in plain 4′x8′ panels are trim and handsome. Grooved panels, too, make strikingly distinctive sidewalls. Grooves are 1/16″ wide, spaced 8″ on center, and are fully prime coated for fast finish painting. Many other applications of Insulite Primed Siding include light commercial buildings, porch ceilings, and soffits.



No more paint blisters?



Flotation test apparatus in our research laboratory measures paint-blister-resistance. Sample in foreground is wood, painted two coats. Sample at back is Insulite Primed Siding, painted one coat. Both have been subjected to the same moisture-forcing treatment. Notice how paint on one specimen has blistered and failed while paint on Insulite Primed Siding shows no blistering or damage whatever. In addition, test homes built with Insulite Primed Siding have now weathered three full years in severe northern climate; and today show *no trace of paint blistering.*

Smart, beautiful sidewalls with

New

INSULITE PRIMED SIDING

This is important, stimulating news for architects—a basic building material in a radically improved new form. Man-made siding that looks like wood...works like wood...in ideal architectural sizes... without imperfections!

Physical properties and application features of this new material are, in many respects, spectacular. Insulite Primed Siding is delivered in sturdy cartons... every piece flat, straight and square. It saws and nails beautifully. It is factory primed on face, edges, ends, grooves; and back primed. Finish painting is therefore fast, simple and economical. Most important of all, Insulite Siding shows an amazing resistance to paint blistering.

Lumber dealers and building contractors are now receiving complete information on this product. Retail yard stocks will soon be available everywhere. Want technical data? Write us—Insulite, Minneapolis 2, Minn.

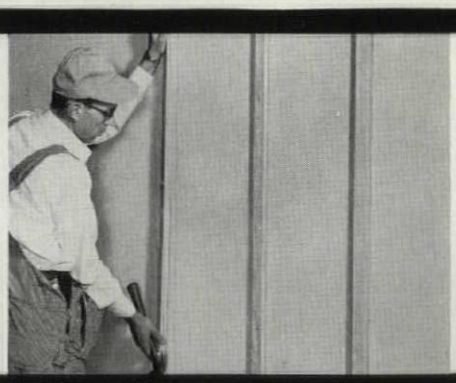
build better and save with

INSULITE

INSULITE, *made of hardy Northern wood.* Insulite Division of Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota

HORIZONTAL SIDING
12″ wide; 8′, 12′, 16′ long

VERTICAL GROOVED PANELS
4′x8′ coverage



PLAIN PANELS
4′x8′

Here's what makes this siding revolutionary:

What it is: Insulite Primed Siding is a machine-made wood fiber board, ½″ thick, with density of 36 lbs. per cu. ft. Has no internal grain to warp or twist; no surface grain to raise.

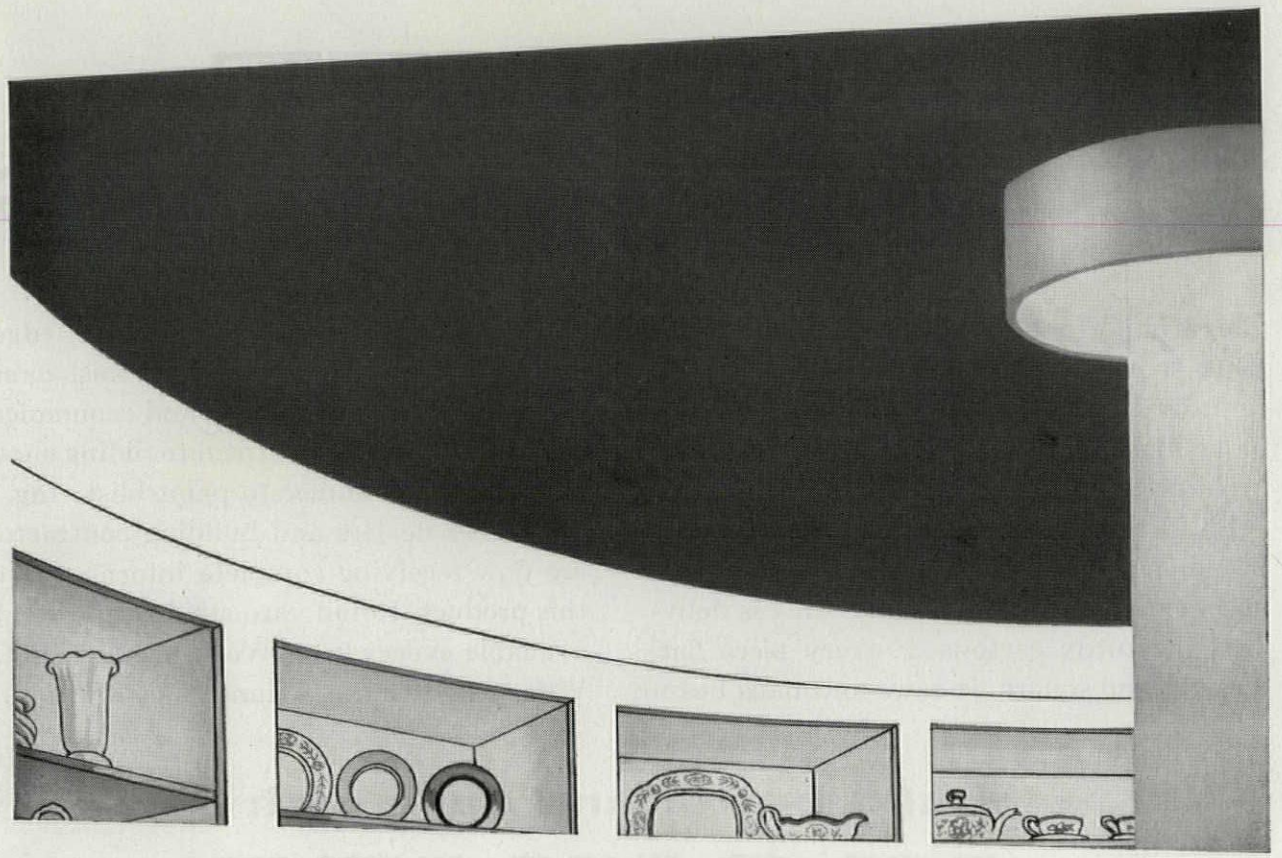
Development: Insulite Primed Siding has been developed by five years of research, pilot plant manufacture, laboratory and field testing. First test homes were built in 1954.

Easy to saw, easy to work. Cuts quick, clean with hand or power saw. Takes nails like wood.

Full coverage . . . no scantage. All dimensions are full and true. Grooved panels are 48¾″ wide, for 4′ coverage with lap joint.

Reversible weather drip edges, on both long edges of Lap Siding, make water drip straight off, instead of flowing inward to wall.

WILSON AIR-FLOAT CEILINGS* — another new application of Homasote



CEILINGS THAT FLOAT

For new construction . . . for modernization of any type of structure . . . here is continuous, crackproof coverage of any ceiling area. It is actually "continuous dry-wall" construction — with no perceptible seams — made possible by weather-proof Homasote in big sheets up to 8′ x 14′.

The whole ceiling, whether one-layer, two-layer or more, literally floats — clear of all walls — free to expand or contract *as a unit* in either dimension.

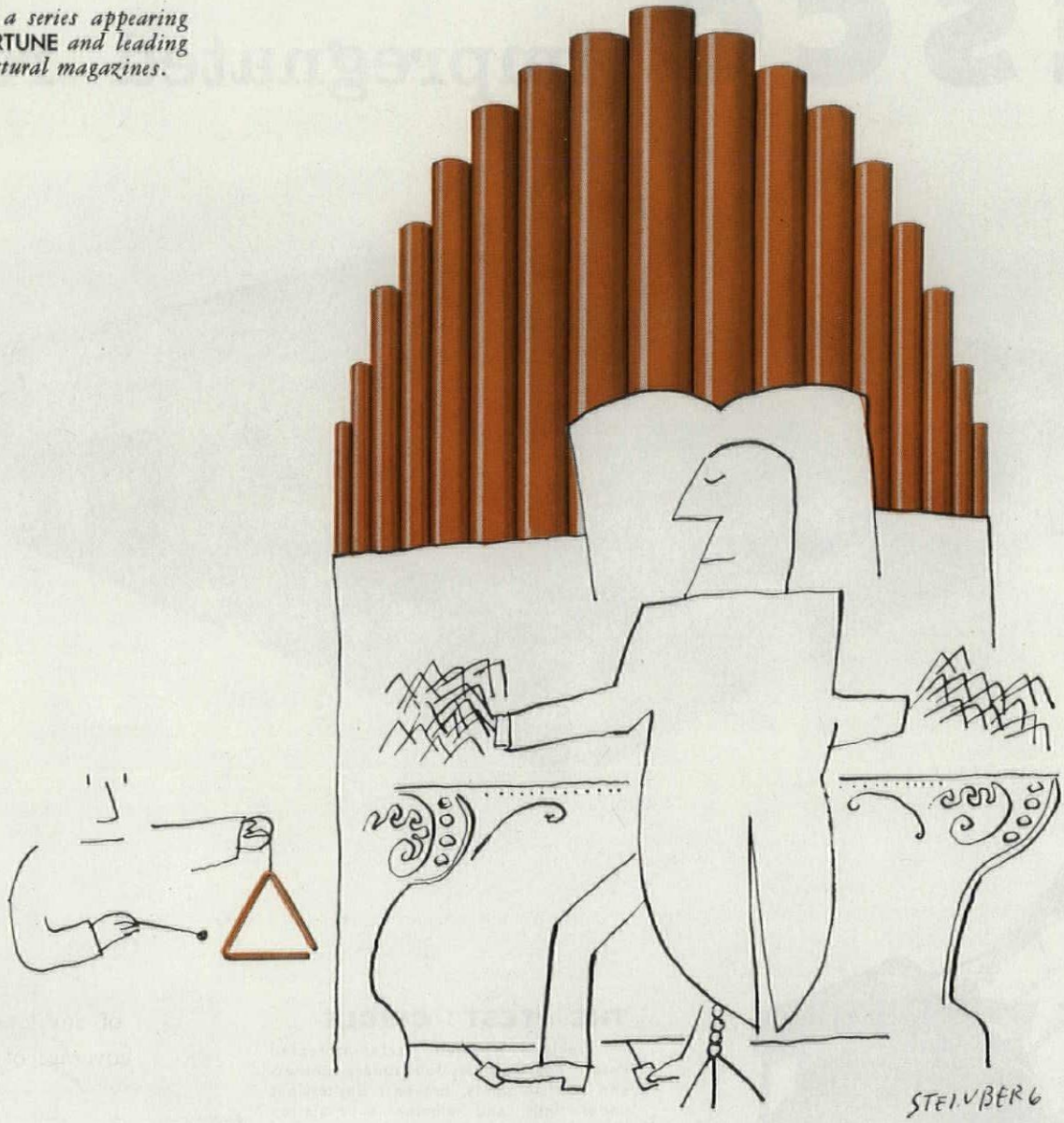
It is hung from ceiling joists or rafters or collar beams. The supporting members need not be uniformly level at the bottom. It can be applied below old plaster ceiling.

Consider this ceiling method in any type of new construction *of any size*. Consider it for modernization — to lower a ceiling, to introduce indirect lighting or air-conditioning. Let us send you complete blueprint details and construction data. Kindly address your inquiry to Department D-16.

*Patent applied for

HOMASOTE COMPANY, TRENTON 3, NEW JERSEY

One of a series appearing in **FORTUNE** *and leading architectural magazines.*



high fidelity

Lewin-Mathes' quality strikes a responsive accord.

Despite the large number of new customers for Lewin-Mathes Copper and Brass tube, pipe and rod in recent years, better than 90 per cent of our business comes from *repeat* customers. High fidelity of a rare order!

So long as we remain faithful to the highest standards of tolerance, temper and uniformity, we can expect our customers to remain loyal to Lewin-Mathes products. And as specialists—with a *completely integrated* plant designed specifically for the manufacture of tube, pipe and rod—it's in our own best interest to be *perfectionists*.

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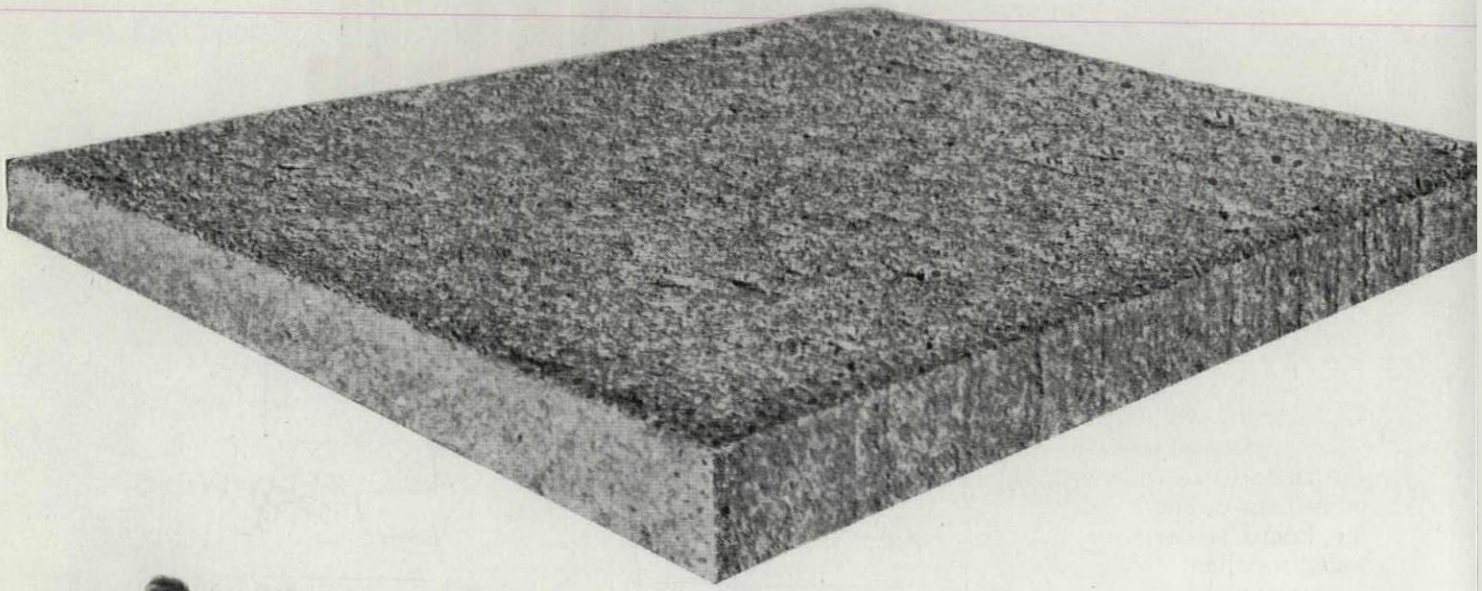
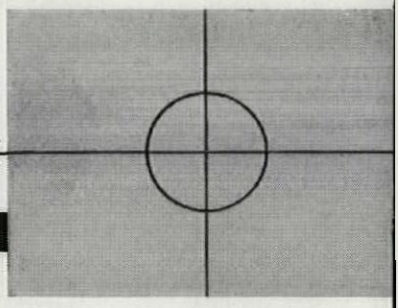
MANUFACTURERS OF
COPPER AND BRASS TUBE, PIPE AND ROD

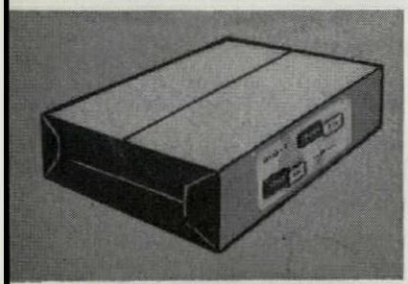
FESCO impregnated roof



THE "TEST" CIRCLE

— Precision trimmed, carton-protected Fesco Board gives four-square corners and hairline joints, prevents depressions under felts and eliminates insulation "heat leaks."





CARTONED — Convenient, 60 board foot cartons provide for ease of handling and storage, job-site protection.

Heat Transmission (U) Values

Construction: Roof Deck Type and Thickness	Without Ceiling Underside of Roof Exposed					With Metal Lath & Gypsum Perlite Plaster Ceiling				
	Insulated with Fesco Board					Insulated with Fesco Board				
Fesco Thickness	2½"	2"	1½"	1"	¾"	¾"	1"	1½"	2"	2½"
4" Concrete	.11	.14	.17	.22	.27	.19	.17	.14	.11	.10
6" Concrete	.11	.13	.16	.22	.26	.19	.16	.13	.11	.10
1" Wood	.10	.12	.15	.19	.22	.16	.15	.12	.10	.09
2" Wood	.09	.11	.12	.15	.17	.14	.12	.11	.09	.08
3" Wood	.08	.09	.11	.13	.14	.12	.11	.09	.08	.07
2½" Gypsum Fiber Concrete over ½" Gypsum Board	.10	.11	.13	.16	.19	.15	.13	.11	.10	.08
2½" Gypsum Fiber Concrete over 1" Rigid Ins. Board	.08	.09	.10	.12	.13	.11	.10	.09	.08	.07
2" Perlite Concrete (1:6) on Steel form	.08	.10	.11	.13	.15	.12	.11	.10	.08	.07
6" Hollow Core Precast Slab	.11	.13	.16	.20	.24	.18	.16	.13	.11	.09
Steel	.12	.14	.18	.24	.29	.21	.18	.14	.12	.10

1. U values are expressed in BTU/SQ. Ft./Hr./Degrees F temperature differential, still air inside and 15 MPH wind velocity outside.

2. Coefficients and procedures used for determining U values are in accordance with current edition of A.S.H.V.E. Guide.

3. For suspended plaster ceiling section, air space between ceiling and deck assumed to be from ¾" to 4".

deck insulation BOARD

compare it with any board, on any count

COMPARE FIRE HAZARDS — Rated Incombustible; Flame spread, only 20.5; smoke contribution, 0. Fesco Board's basic ingredient is Coralux perlite. Expanded and annealed at 1700°F it is incapable of burning.

COMPARE PERMANENCE — No rot, no fungus, no decay. Our basic expanded Coralux perlite ingredient is dielectric and chemically inert. It will not support organic life of any type.

COMPARE MOISTURE RESISTANCE — Only 1.5% absorption by volume @ 24 hours total immersion. Not only is the basic ingredient of Fesco impervious to moisture but the board is completely impregnated with a water repellant binder. Fesco has no capillary or wick-like attraction as do fibrous materials.

COMPARE WEIGHT — Only 9 oz. per board foot. Because expanded Coralux perlite is feather-light, Fesco Board is only half the weight of most boards.

COMPARE DIMENSIONAL STABILITY — Linear change at 100% RH at 10 days + 1/5 of 1%. Due to its low moisture absorption, and mineral composition, Fesco Board will not grow, shrink, curl.

COMPARE DURABILITY — Compression resistance is 174.8 PSI. Fesco Board is not damaged by normal installation and maintenance traffic.

COMPARE LAYING TIME — Convenient 24″ x 36″ size. Smaller, lighter, dimensionally stable sheets lay truer, faster.

COMPARE COST — No other board, at any price, can match Fesco Board's balanced combination of every job-required property.

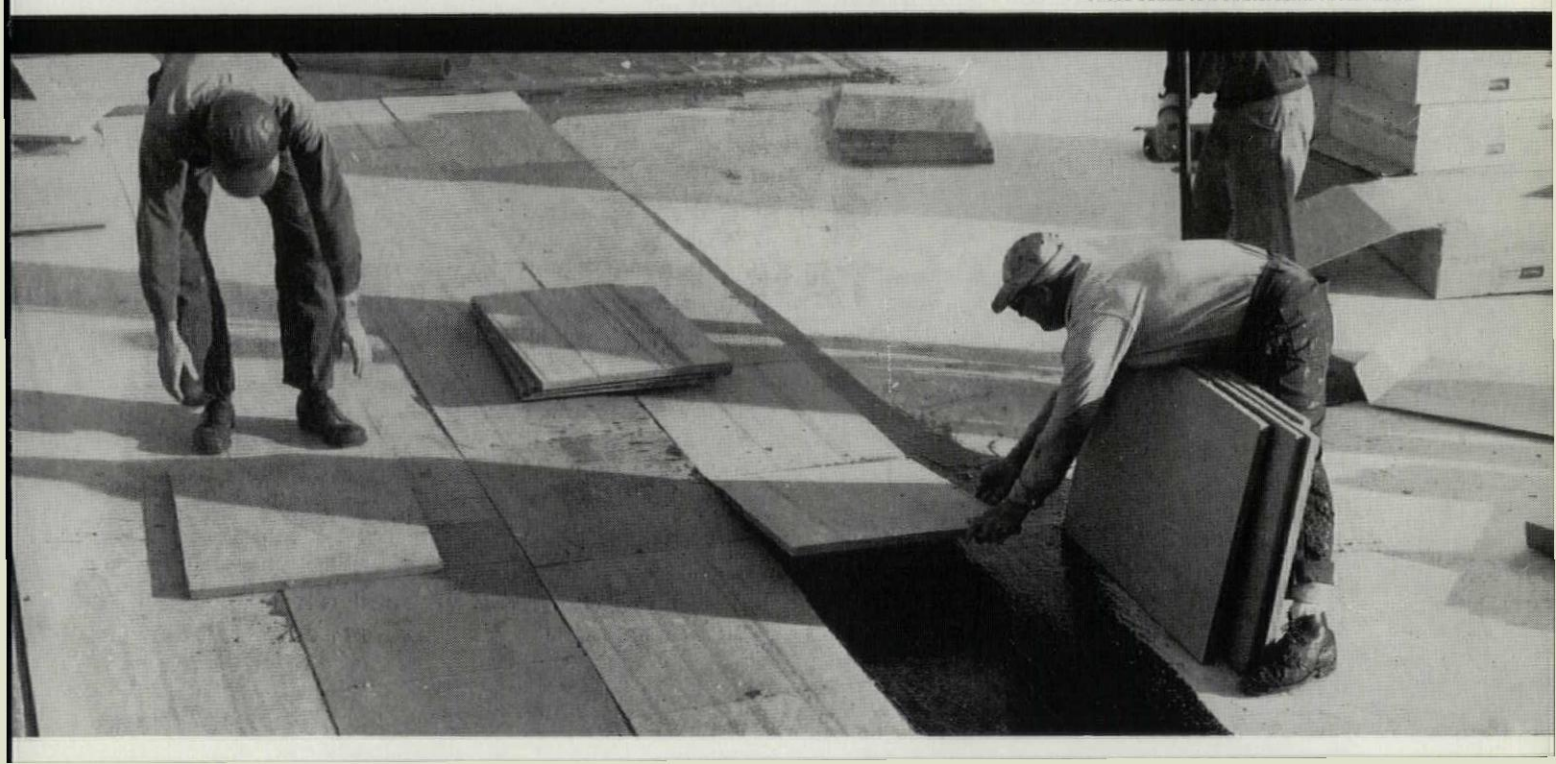
F. E. Schundler & Company, Inc.

504 RAILROAD STREET • JOLIET, ILLINOIS

RATED FIREPROOF MATERIALS, ACOUSTICAL & INSULATING

Developers and producers of incombustible mineral products including Ebbtone Acoustical Tile, Fesco Insulation Board, Coralux Acoustical Plaster, Coralux Perlite Aggregates, Micro Pellet Vermiculite, High Temperature Insulating Blocks and Insulating Cement.

FESCO BOARD IS A REGISTERED TRADE-NAME



bright idea

For enduring beauty that sells in a new car and
re-sells in a used car . . . design it, improve it and protect it
with McLOUTH STAINLESS STEEL.

specify

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HIGH QUALITY SHEET AND STRIP

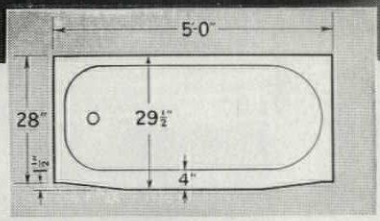
for automobiles

McLOUTH STEEL CORPORATION DETROIT, MICHIGAN

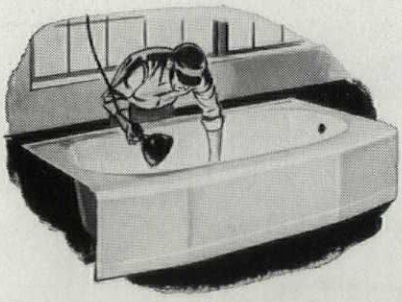
MANUFACTURERS OF STAINLESS AND CARBON STEELS

THE *New* KOHLER MINOCQUA

K-725-E.
With outlet at right,
K-726-E.



Space-saving bench rim bath



First Quality Only

Searching tests and inspections are made throughout every step of manufacture.

The trim, low lines of the Minocqua bath have been given fresh selling appeal with the addition of a 4-inch bench rim.

Space-saving dimensions solve many problems caused by limited space available in today's homes, yet the Minocqua affords the convenience, comfort and safety of the full 5-foot length, slope end, flat bottom.

The sparkling, easy-to-clean enamel of the Minocqua—like that of all Kohler baths—is fused to a base of non-flexing iron, cast for strength and rigidity. The complete line of Kohler baths includes sizes and styles that permit various arrangements in bathrooms of any shape or size.

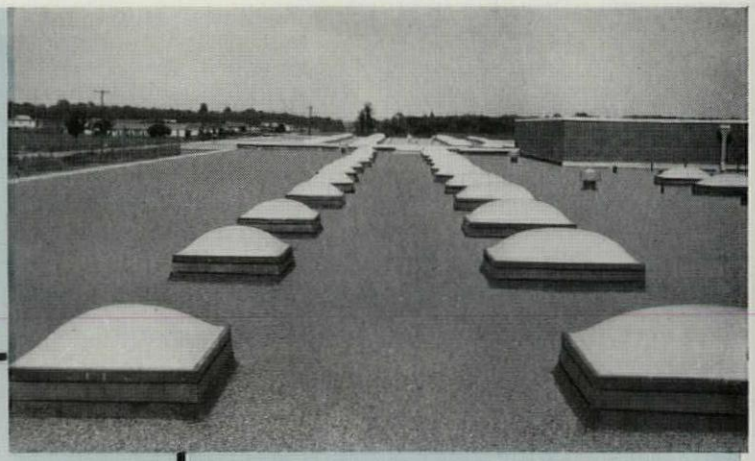
Kohler Co., Kohler, Wisconsin • Established 1873

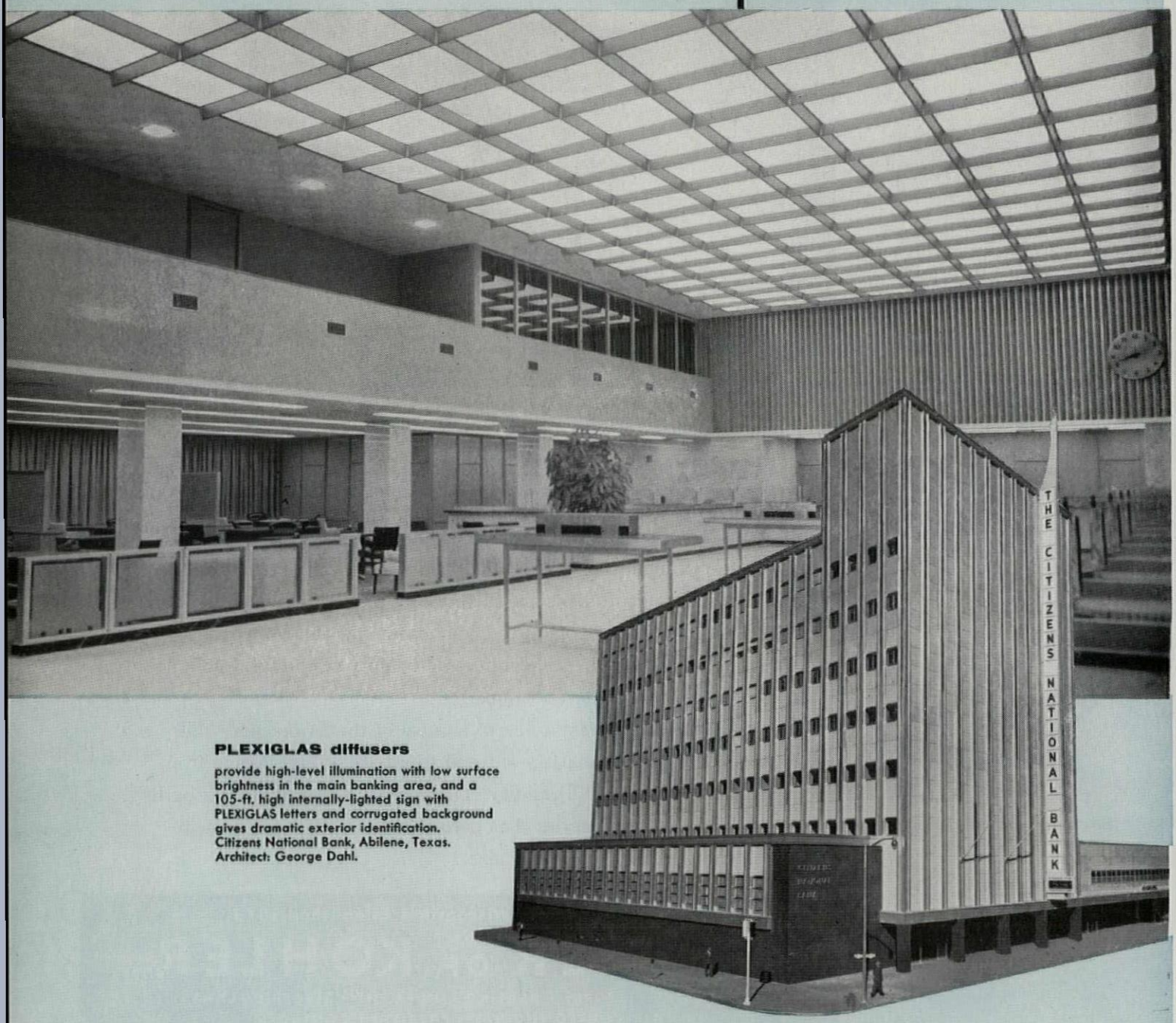
KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

Skylights with domes

formed from PLEXIGLAS provide efficient, balanced daylighting. Covington Elementary School, Laurenburg, N.C. Architect: Leslie Boney.



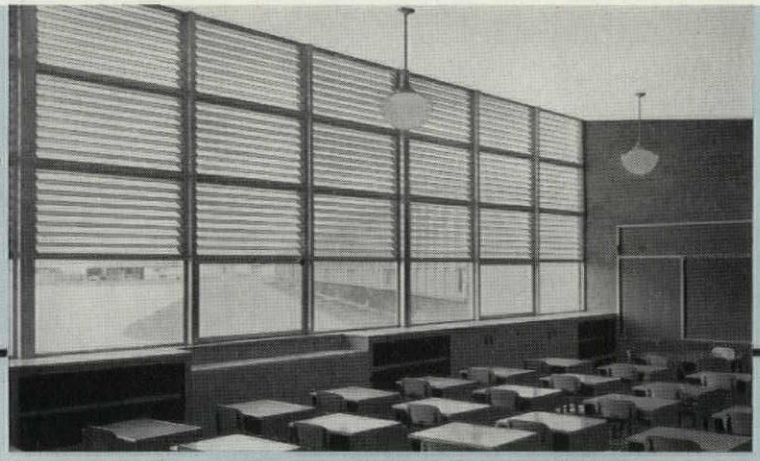


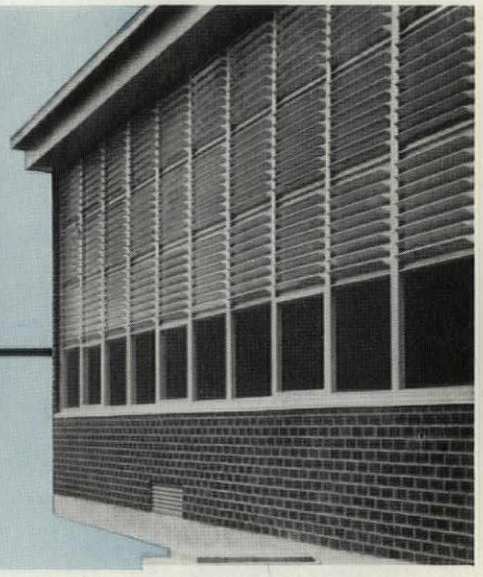
PLEXIGLAS diffusers

provide high-level illumination with low surface brightness in the main banking area, and a 105-ft. high internally-lighted sign with PLEXIGLAS letters and corrugated background gives dramatic exterior identification. Citizens National Bank, Abilene, Texas. Architect: George Dahl.

Daylight Louver Panels

formed from PLEXIGLAS, for light transmission, daylight control, and weather closure in one continuous surface. McKinley School, Boise, Idaho. Architect: Anton E. Dropping.





PLEXIGLAS

The Architectural Plastic

. . . for lighting . . . signs . . . skylights . . . daylight-control glazing

It is the outstanding *combination of properties* obtained with PLEXIGLAS® acrylic plastic that accounts for the specification of this material for so many light-transmitting applications. PLEXIGLAS is—

Formable economically into domes, pans, spandrels, louvered panels, letters, sign faces, and corrugated sections.

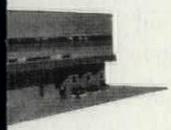
Resistant to age, weather, sun and corrosion.

Strong, yet light in weight.

Efficient in the transmission and diffusion of light.

Clear, in transparent form, as optical glass.

The coupon below will bring you color samples and the names of sources of supply for building products and signs that incorporate PLEXIGLAS.



Chemicals for Industry

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Representatives in principal foreign countries

Canadian Distributor: *Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.*

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Please send PLEXIGLAS color samples and the names of suppliers of:

- ☐ Lighting equipment
- ☐ Dome skylights
- ☐ Daylight Louver Panels
- ☐ Signs and letters

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Firm _____

Address _____

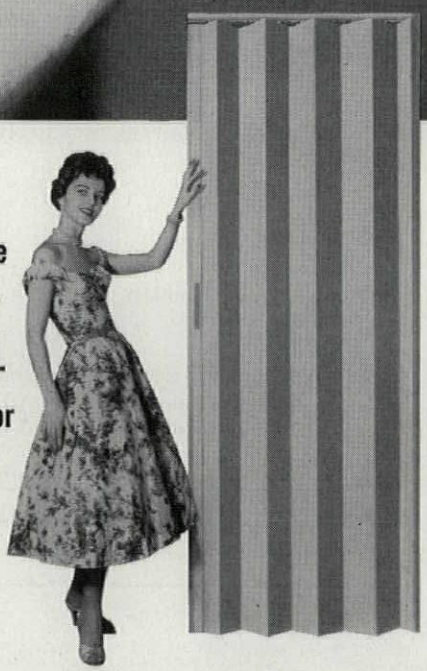
City _____ Zone _____ State _____

(P7-5)

KNOCK ON THE GRANT FOLDING DOOR,

naturally!

The Grant Folding Door *alone* combines the flexibility of fabric with the solidity of a 5/16" core. Designed by Paul McCobb, in cooperation with the nation's leading Sliding Hardware manufacturer, it is the only such door that has captured both the beauty of specially designed fabric and the durability of a natural door.



the only REAL door that folds

- solid, 5/16" core—*you can knock on it.*
- finely textured vinyl fabric, *laminated to core.*
- sound-resistant, light-proof
- nylon carriers, aluminum track
- minimum stacking space—door stays put against jamb, *without* air pockets, puffiness or distortion
- nylon friction catch
- wide range of colors and sizes

Write for your copy of the Grant Reference Catalogue. Important data on Folding Doors and the full Grant line.

Outstanding single source for sliding hardware.

Grant PULLEY & HARDWARE CORPORATION

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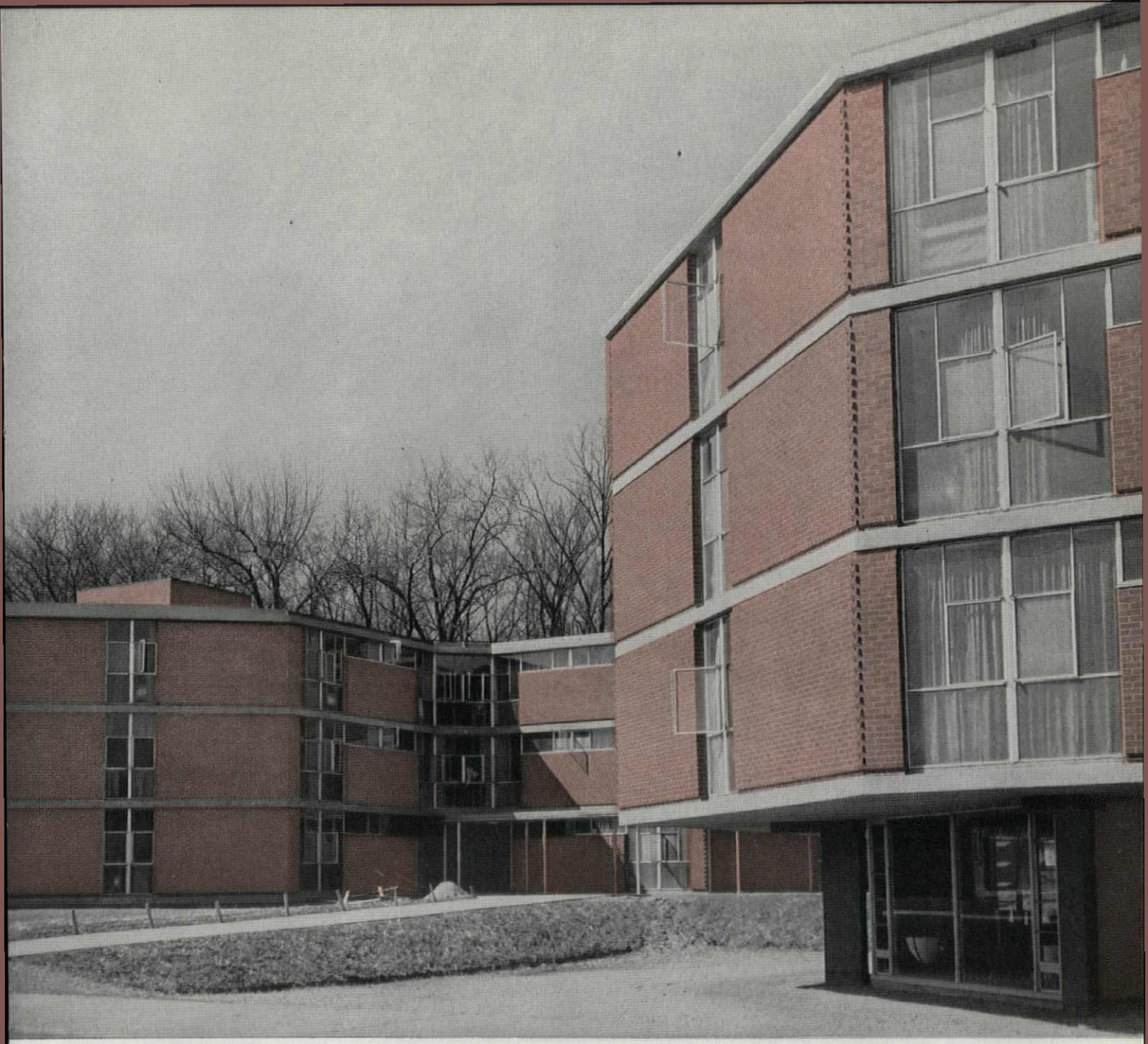
sliding door hardware • folding doors • drawer slides • drapery hardware • sheaves and tracks • tub enclosures • pulls • special sliding devices



BETTER APPEARANCE is achieved with the help of Atlas Mortar Cement in new men's dormitories at Valparaiso University, Valparaiso, Ind. According to Masonry Foreman James S. Sedan, "This is the best mortar I have ever used —has remarkable workability and stays workable." Project architects: Hare & Hatch, New York; Contractor: Hagerman Construction Corp., Fort Wayne, Ind.

Modern masonry for modern design laid with ATLAS® MORTAR Cement

- Better mortar workability characteristics are the basis for better masonry.
- Field reports confirm that Atlas Mortar contributes to excellent workability, high yields, and weather-resistant masonry.
- Quality-controlled manufacture of Atlas Mortar promotes uniformly good performance and appearance. (Complies with ASTM and Federal Specifications.)

For further information, write Universal Atlas, 100 Park Avenue, New York 17, N. Y.

UNIVERSAL ATLAS CEMENTS

USS

M-64

UNIVERSAL ATLAS CEMENT COMPANY—member of the industrial family that serves the nation—**UNITED STATES STEEL**

OFFICES: *Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco*

3 Penn Center, Philadelphia, Pa. Architects: Emery Roth & Sons—Contractor: Caldwell-Wingate Construction Co.

3 Penn Center: Custom Windows without the Premium of Custom Prices. Combination fixed and ventilator windows are adapted from a standard Lupton design. They're good-looking, maintenance-free, and unusually well suited for air conditioned buildings. See Section 17a/FLy in Sweet's for the full story.

LUPTON

METAL WINDOWS AND ALUMINUM CURTAIN WALLS

MICHAEL FLYNN MANUFACTURING COMPANY

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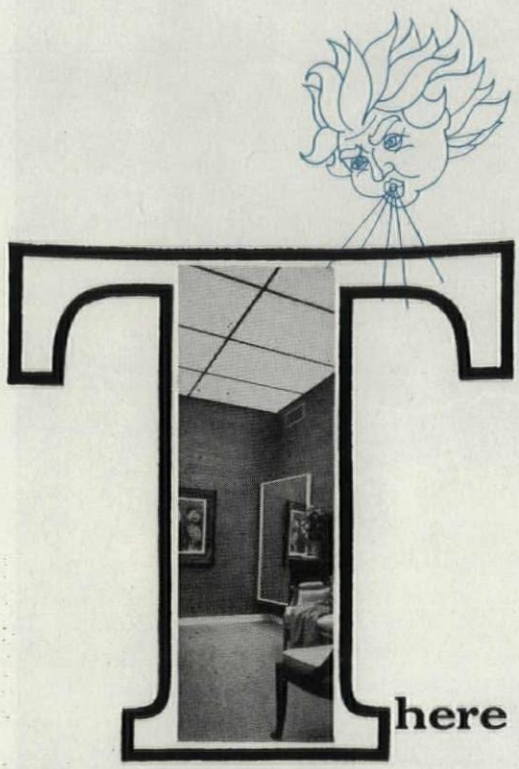
700 E. GODFREY AVENUE, PHILA. 24, PA.



There is only one light diffusing ceiling that actually helps circulate the air from overhead air conditioning and heating systems (it's used solely for this purpose by air cooler manufacturers) yet obscures overhead utility systems (by 45 or 60 degree shielding) while transmitting light with the greatest known efficiency and with the absolute minimum of surface glare....

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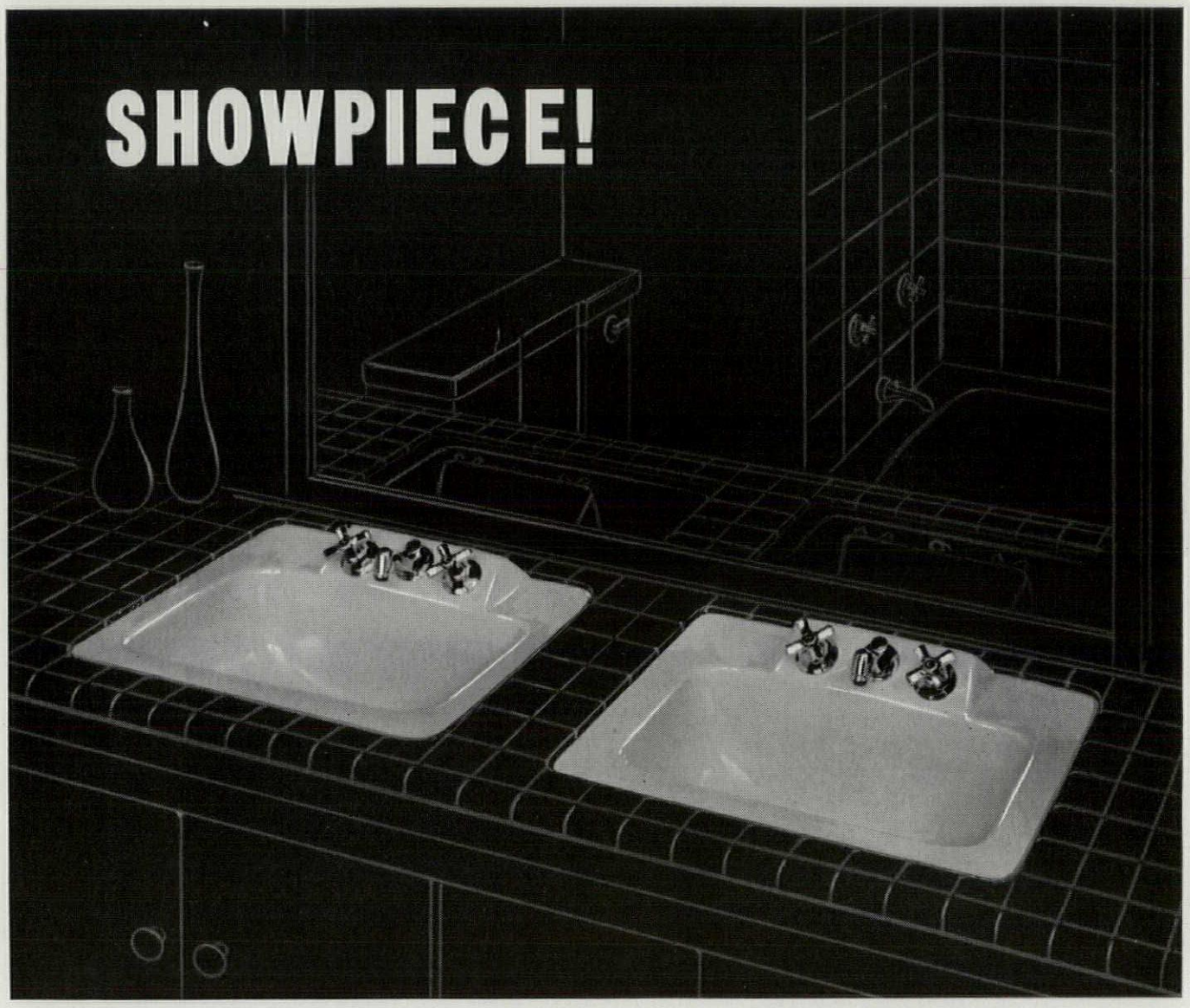


The LOWELL

by ***BRIGGS BEAUTYWARE***

modern slant-back design for "built-in" luxury!

Providing the modern luxury of a built-in lavatory comes easy with the Lowell. This distinctive vitreous china flat-rim model is styled for it. The modern slant-back design is both functional and handsome, lending itself ideally to convenient, attractive twin installations. It blends perfectly, installs easily, with tile as shown above, or with "plastic-covered" counter tops. Available in five Briggs Beautyware compatible colors or white, the Lowell is the "showpiece" of any modern bathroom!

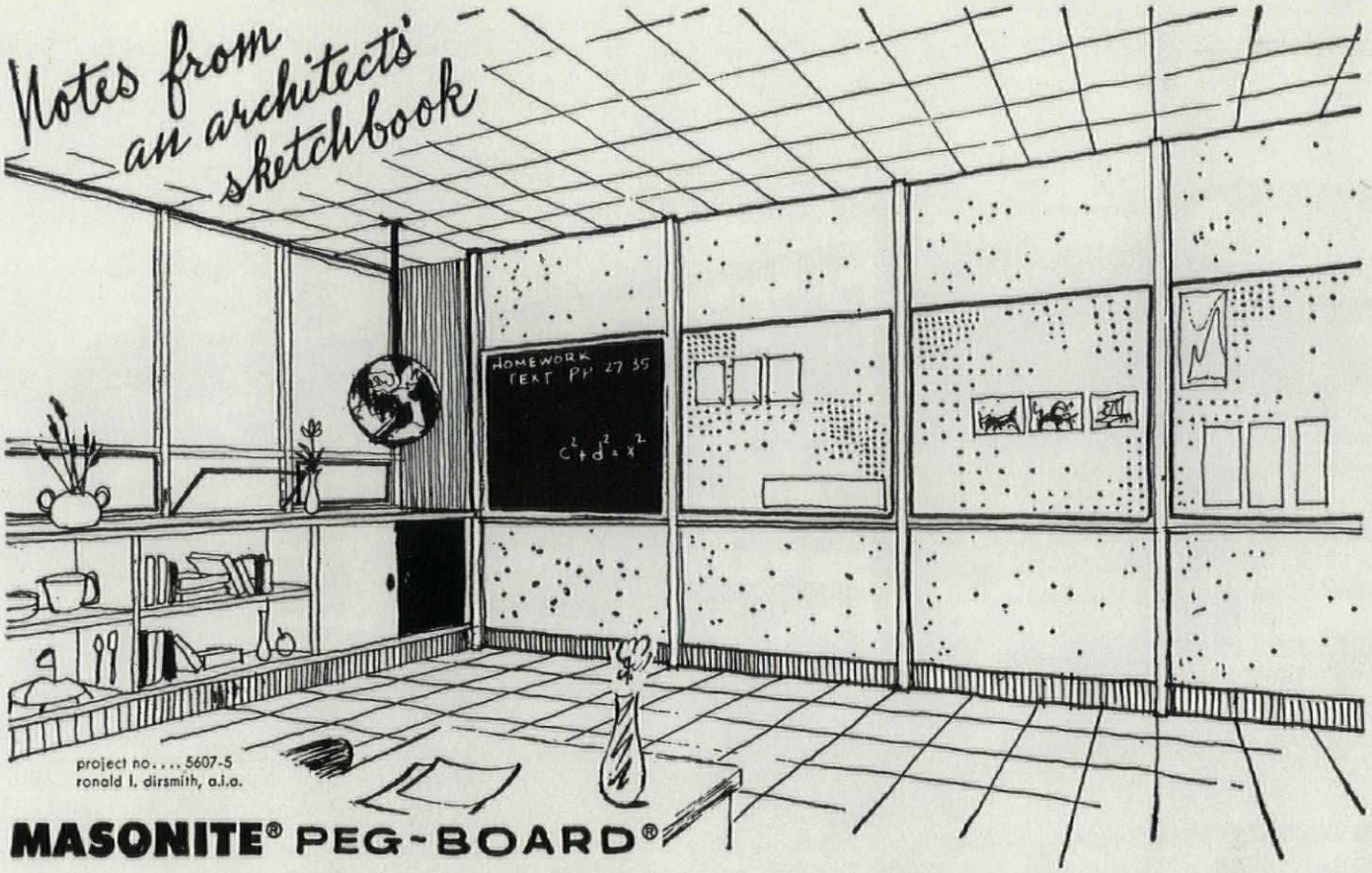
SPECIFICATIONS: • 22" length, 18" width • Model Number B-3500 HS • Deep 17" x 10½" bowl has maximum water capacity, twin concealed front overflows • T-8808-S fitting with aerator mounted • Jiffy Pop-up Drain with removable stopper • One-piece, leakproof, stainless steel molding (B-3085) available when required.

BRIGGS

BEAUTYWARE

BRIGGS MANUFACTURING COMPANY • DETROIT, MICHIGAN

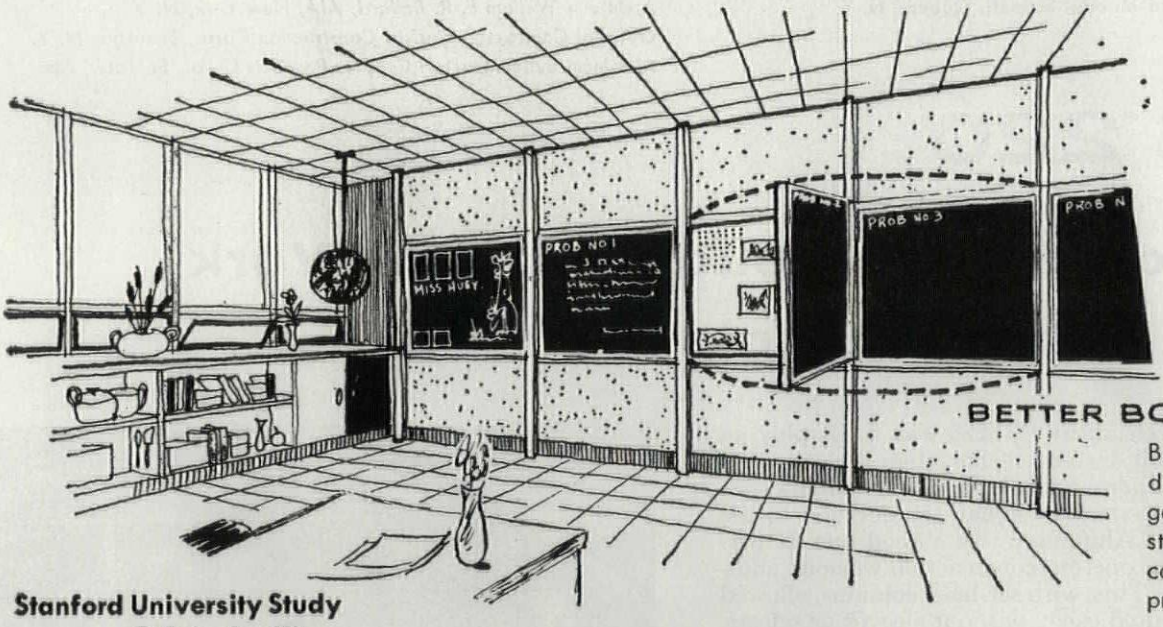
Notes from an architect's sketchbook



MASONITE® PEG-BOARD®

FOR MORE EFFICIENT UTILIZATION OF SPACE

Not only pictures of objects but the objects themselves can be displayed on classroom walls. Learning becomes more vivid, more enjoyable.



BETTER BOARD WORK

Basic concepts are dramatized; pupils gain deeper understanding when they can work out their problems realistically.

Stanford University Study Points the Way

Send for your free, illustrated copy of "Educational Utilization of Masonite Peg-Board Panels and Fixtures," describing the field research recently completed by the School Planning Laboratory of Stanford University. The coupon will bring it.

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Please send, without obligation, a copy of the Stanford University study on Peg-Board uses in the classroom.

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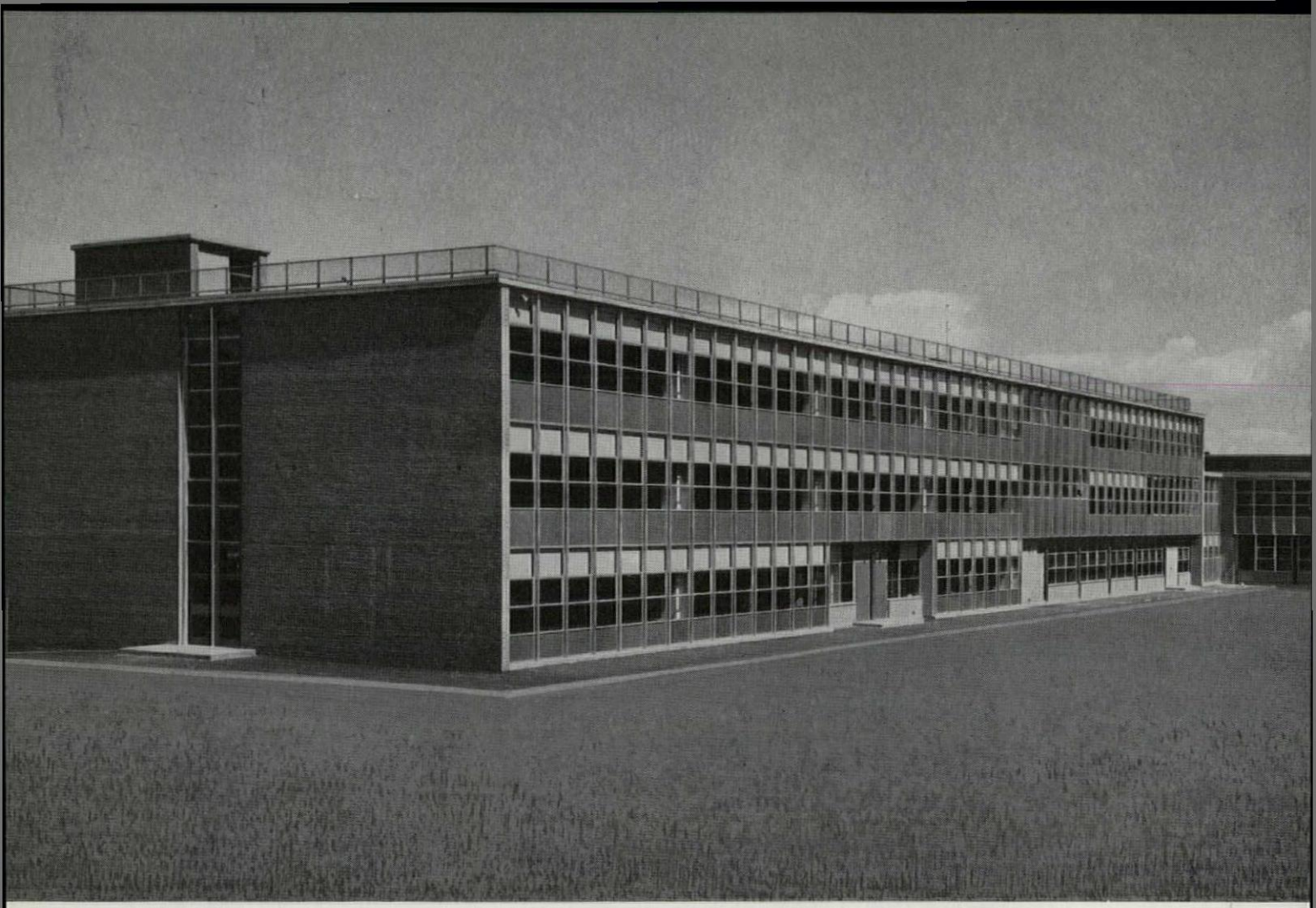


Public School 220 (Edward Mandel School), Queens, N. Y.

Architect: *William F. R. Ballard, AIA, New York, N. Y.*
General Contractor: *Caristo Construction Corp., Brooklyn, N. Y.*
Aluminum Subcontractor: *Cupples Products Corp., St. Louis, Mo.*

PS 220

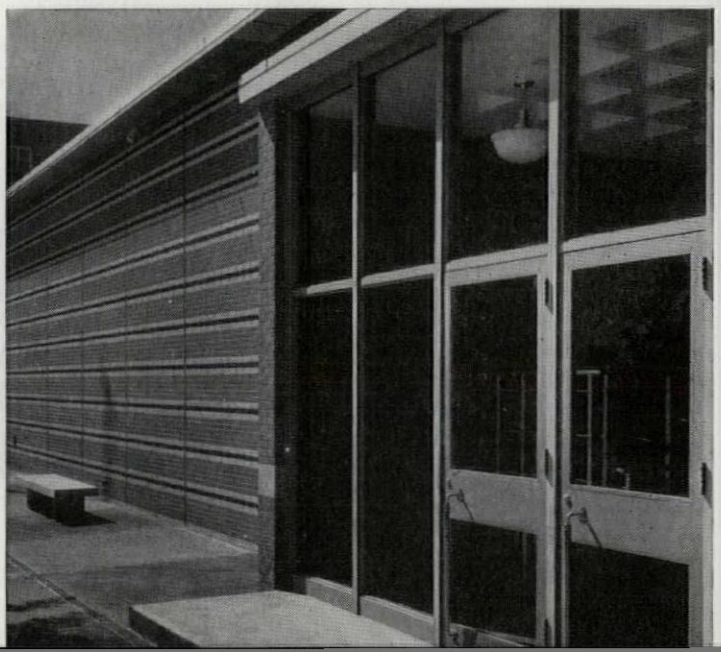
A new design approach for New York City public schools

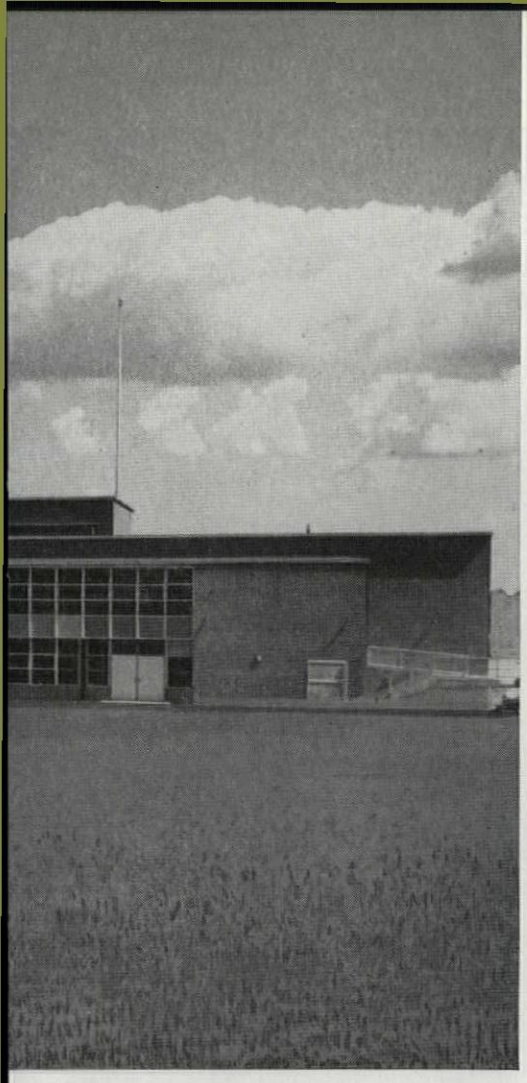
The critical design decision in PS 220 was to employ an aluminum window wall system rather than the conventional 12″ masonry spandrel with double-hung windows.

With first costs approximately equal, the decision to use curtain walls of Alcoa® Aluminum was a good one. It permitted use of flat-slab concrete construction without additional spandrel beams. This, with set-back columns, allowed heating ducts to be routed easily without sleeves or offsets. Wind loads could be transmitted directly to floor slabs through the aluminum mullions. Moreover, entire erection procedure was simplified, with one trade responsible for all exterior skin work, including flashing and calking.

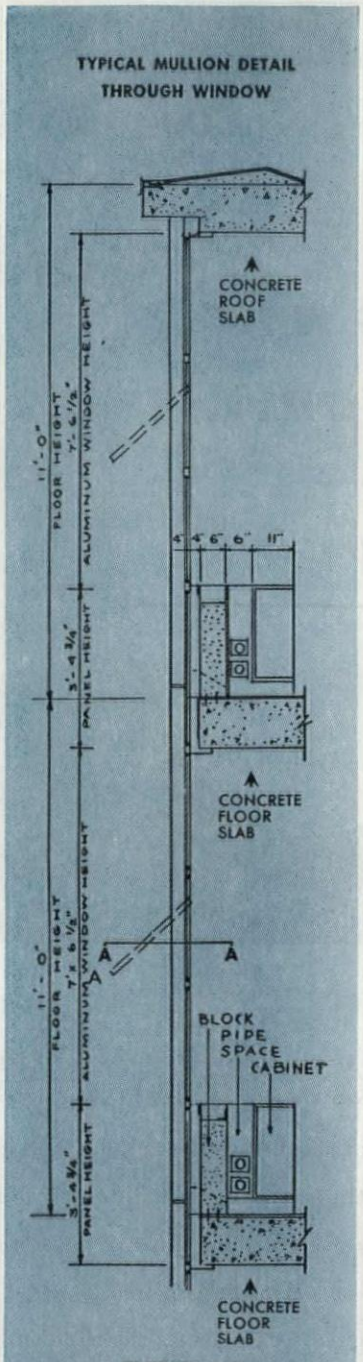
Projecting vents in this window system form a continuous ribbon, conveniently located for hand operation. Vents and fixed lights can be safely cleaned from inside.

Alcoa works closely with qualified fabricators on the engineering and design of wall systems, but does not bid on these jobs. Alcoa architectural specialists are ready to work with you in the use of aluminum in building construction. For this assistance, call your nearest Alcoa sales office. Or write Aluminum Company of America, 1890-D Alcoa Building, Pittsburgh 19, Pennsylvania.

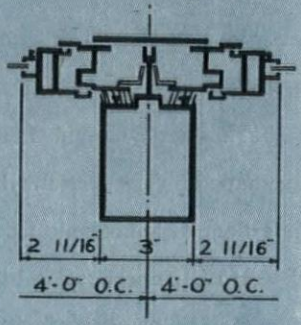




Director of the Bureau of Construction and Michael L. Radoslovich, Chief Architect of the Bureau of Construction.



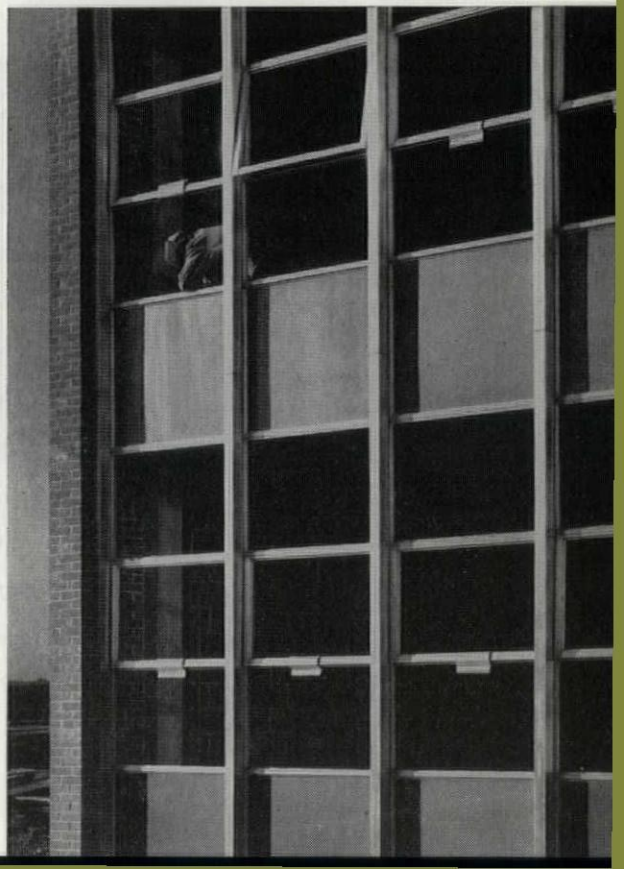
SECTION A-A

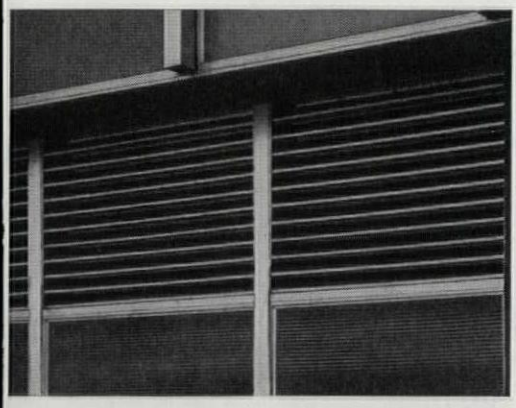


WINDOW WALL DETAIL
Fabricated from standard units of Alcoa Aluminum, these window wall sections go up fast with a minimum of skilled help. Detail shows section through typical wall.

MULLIONS are first clipped to floor slabs. Preassembled sash units and aluminum panels are then inserted quickly from inside of building. Each unit is compact and light for fast, easy shipment, low-cost installation.

HANDSOME APPEARANCE combined with low maintenance, high structural strength and ease of installation make aluminum window walls a good feature for school architects to investigate.

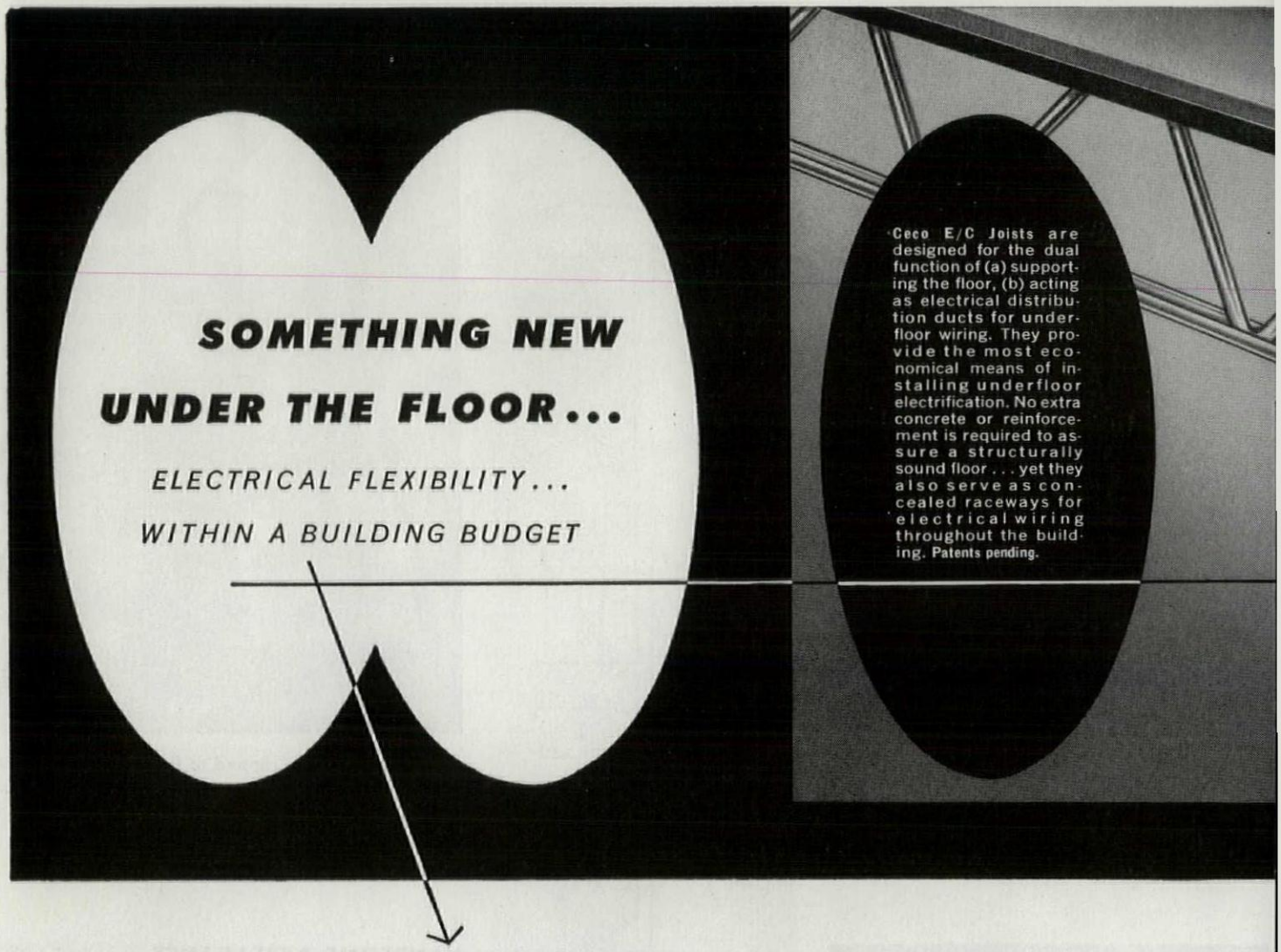




FIXED LOUVERS provide ventilation. Since they are made from aluminum, they will not rust, rot or warp.

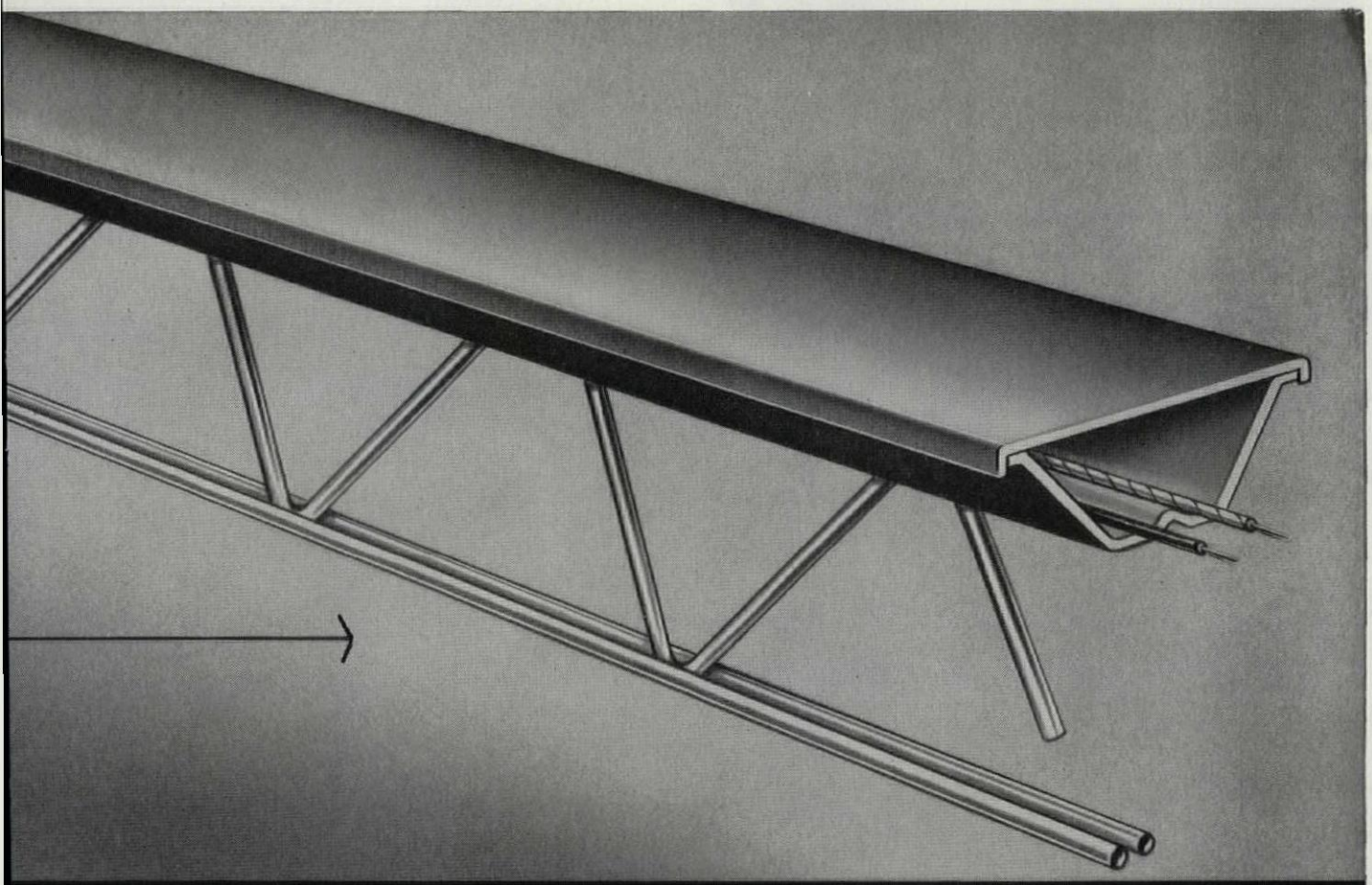
(at left) **DOORS** and panic exits of Alcoa Aluminum are safe, durable, maintenance-free.

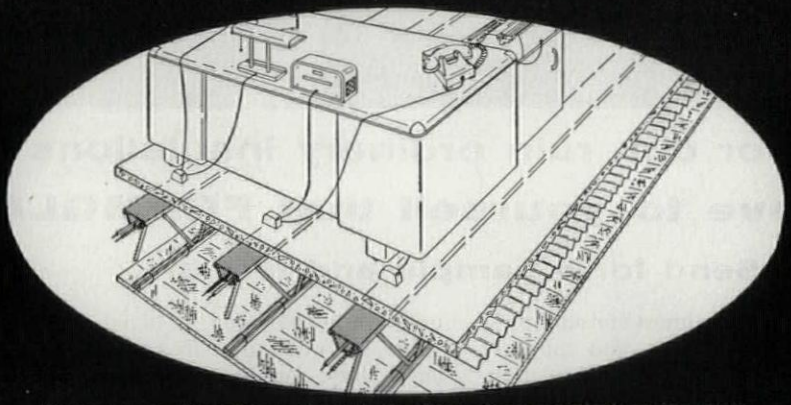
Your Guide to the Best in Aluminum Value



New exclusive CECO Electro-Channel Steel Joist Construction for Underfloor Electrical Systems Saves Time . . . Saves Weight . . . Costs Less, Too

Building planners recognize the basic fact that in this "electrical age" buildings must be wired for the *future*. To provide only for today's requirements is not enough. Use of electrically-operated business machines and communication equipment is constantly increasing. But the question is: How to provide for future electrical flexibility at *lowest cost*? Ceco meets the issue with its new Electro-Channel Open Web Steel Joists. Now, for the first time, steel joist construction can provide an integral underfloor raceway system allowing complete electrical flexibility. These joists have the same structural properties as regular Ceco Shortspan Open-Web Steel Joists. But in the Electro-Channel Joists the conventional top chord is replaced by a specially shaped hollow section which serves both as the top chord of the joist and as an underfloor distribution duct for electrical circuits. For complete information on Ceco Electro-Channel Steel Joist Construction, consult your nearest Ceco office. *Approved by the Underwriters' Laboratories for use with electrical header ducts and accessories as manufactured by General Electric, National Electric Products Corporation and Walker Bros.*





Wiring can be brought up through the floor at any point along the joists.

CECO STEEL

"CREATIVE ENGINEERING" BY CECO—with a variety of building methods and products to meet any design problem. See CECO in the early planning stage for Steel or Concrete Joist Floor Systems—the most economical Underfloor Electrification—the widest line of Steel and Aluminum Windows and Curtainwalls. All will help you accomplish your design objectives. And CECO products and services assure quality construction on a tight budget.

CECO STEEL PRODUCTS CORPORATION

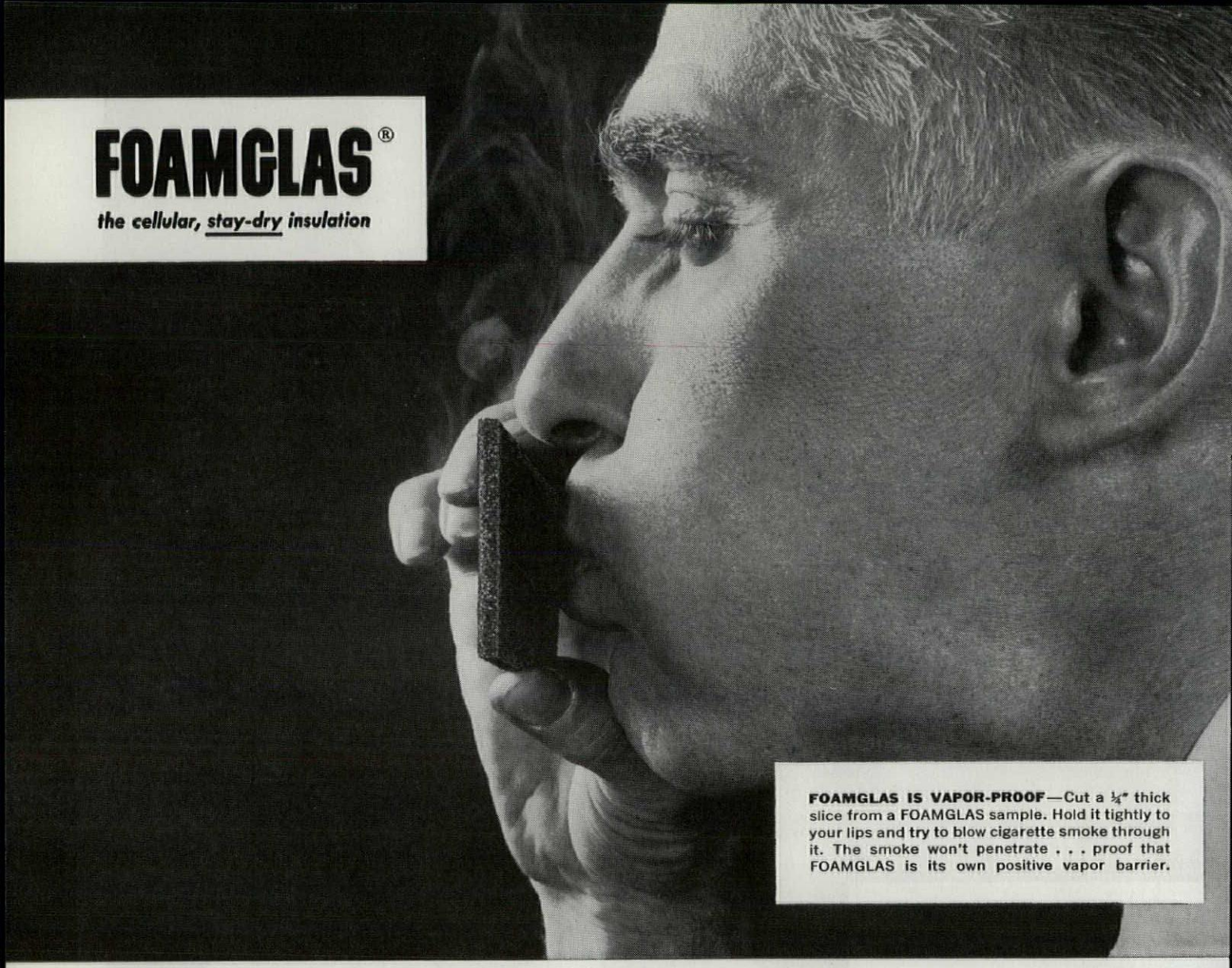
Offices, warehouses and fabricating plants in principal cities
General Offices: 5601 West 26th Street, Chicago 50, Illinois

In construction products Ceco Engineering makes the big difference

. . . Steel Joists / Metal Roof Deck / Ceco-Meyer Steelforms/Concrete Reinforcing/ Windows, Screens and Doors / Metal Lath

FOAMGLAS®

the cellular, stay-dry insulation



FOAMGLAS IS VAPOR-PROOF—Cut a ¼" thick slice from a FOAMGLAS sample. Hold it tightly to your lips and try to blow cigarette smoke through it. The smoke won't penetrate . . . proof that FOAMGLAS is its own positive vapor barrier.

Vapor can ruin ordinary insulations . . .

Prove to yourself that FOAMGLAS is vapor-proof!

Send for a sample and test it!

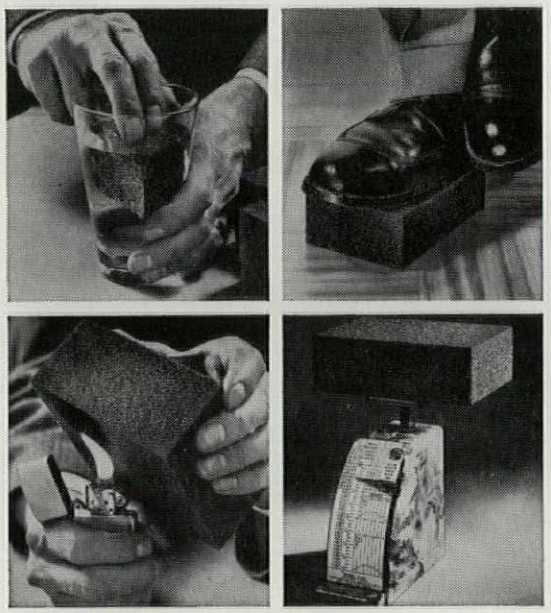
Nature exerts almost constant pressure to force heat and moisture vapor through a thermal insulation. Permeable insulations absorb that vapor. Even expensive vapor barriers cannot always insure absolute protection.

Once vapor enters an insulation —and condenses there—insulating value starts to nosedive . . . because moisture conducts heat. The *real* cost of a permeable insulation may multiply two or three times . . . in terms of lost insulating value and the resulting increase in heating and cooling costs.

That's why it pays to specify FOAMGLAS for true insulating economy. This unique all-glass insulation is naturally immune to vapor attack. Composed of millions of sealed cells, each a separate insulating unit, FOAMGLAS repels moisture in any form . . . liquid or vapor. Its insulating efficiency can never vary, and no costly vapor barrier is needed to protect it. Prove it to yourself with the simple test illustrated above.

In a few minutes, in your own office, you can test the whole combination of properties that makes FOAMGLAS unique among insulating materials. These properties have been proved not only by rigid scientific tests, but by hundreds of actual insulating applications. Send for a free sample and complete testing directions today. Address:

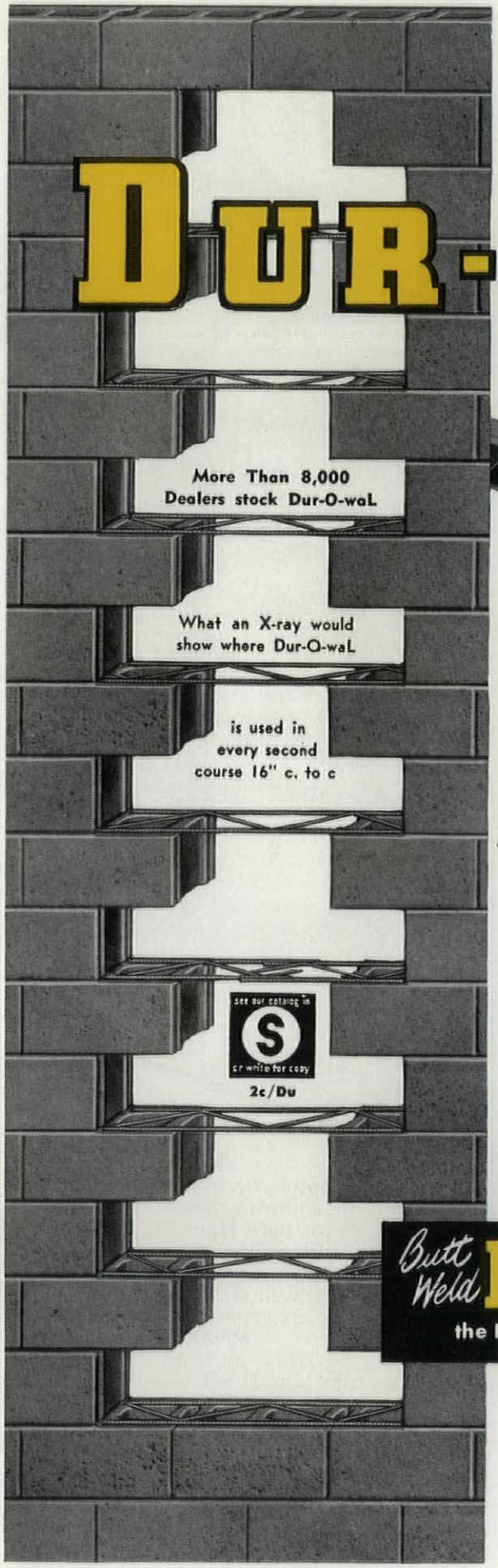
Pittsburgh Corning Corporation
Dept. AB-47, One Gateway Center
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St.W., Toronto. Ont.

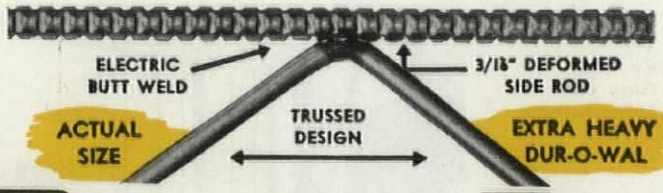


FOAMGLAS is waterproof . . . strong and rigid . . . inorganic and incombustible . . . lightweight

PITTSBURGH PC CORNING ®

Also manufacturers of PC Glass Blocks

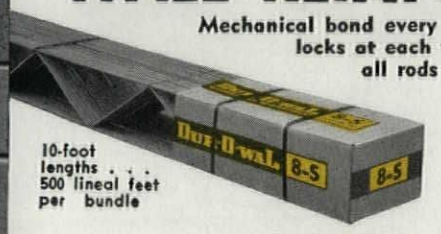




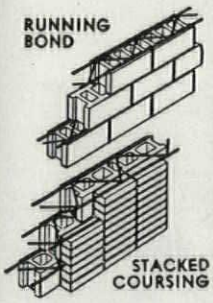
DUR-O-WAL®

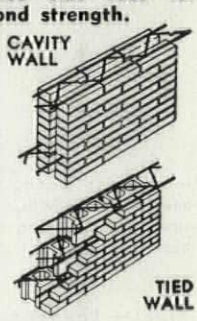
RIGID MASONRY WALL REINFORCEMENT

Mechanical bond every 8 inches of wall . . . Two mortar locks at each weld . . . Electric butt welds place all rods on a single plane; make possible uniform mortar joints . . . Trussed design causes side rods to work together . . . Conforms to ASTM std. A-82-34 for high tensile steel . . . 6-inch lap at splices develops continuity and maintains reinforcing strength . . . Deformed side rods for maximum bond strength.



10-foot lengths . . . 500 lineal feet per bundle





SELECTION TABLE

Wall Thickness	4 in.	6 in.	8 in.	10 in.	12 in.	13 in.
Extra Heavy Dur-O-waL	4-EH	6-EH	8-EH	10-EH	12-EH	13-EH
Wt. per 1000 lin. ft.	247 lb.	250 lb.	257 lb.	266 lb.	276 lb.	282 lb.
Standard Dur-O-waL	4-S	6-S	8-S	10-S	12-S	13-S
Wt. per 1000 lin. ft.	178 lb.	180 lb.	187 lb.	196 lb.	207 lb.	212 lb.

Furnished in either bright basic or galvanized steel. Specify Drip Section Dur-O-waL for Cavity Walls.

NOTE — In determining whether to specify Standard weight or Extra Heavy weight Dur-O-waL, comparisons in following table should be properly evaluated:

	Weight lbs. tensile steel per lin. ft	Surface bond area—sq. in. per lin. ft.	Number of mortar locks per lin. ft.
Standard weight Dur-O-waL	0.19	11.18	3
Extra Heavy Dur-O-waL	0.26	14.14	3

Butt Weld **DUR-O-WAL®** *with* RIGID TRUSSED *Design*

the Backbone of Steel for EVERY masonry wall

Phone, wire or write Dept. 3-Y for additional information about Dur-O-waL

Dur-O-waL Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-waL Prod., Inc., Box 628, **SYRACUSE, N.Y.** Dur-O-waL of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-waL Products of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-waL Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.** Dur-O-waL Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-waL, Inc., 165 Utah St., **TOLEDO, OHIO**

Left—Wiley house, New Canaan, Conn. Philip C. Johnson, Architect. Photo by Ezra Stoller, N. Y.

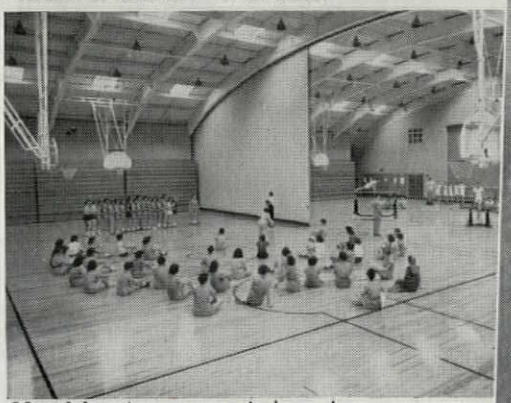
Right—Storage area in a Chicago factory building, floored 90 years ago in Northern Hard Maple.

"Modern as tomorrow" for the home.

"Tougher than traffic" after 90 years!

Left—Multi-purpose gymnasium, Chambersburg, Pa., Senior High School, designed to serve six school districts. Lawrie and Green, Architects.

Right—Lounge room, Country Club, Raleigh, N. C., Maple-floored throughout. Architect, Wm. Henley Deitrick, Inc.



90-to-1 favorite among nation's coaches.

Best of floors for finest of clubs.

Left—Spinning Room, Greenwood Textile Mills, Greenwood, S. C., Floor, Northern Hard Maple.

Right—Langendorf United Bakeries, Inc., Seattle, Wash. Ultra-modern throughout—and maple-floored, naturally!

The "foot-friendly" factory floor.

"Sunshine-bright!" Clean! Comfortable!

for sixty years, for nearly every use, for *every* good reason

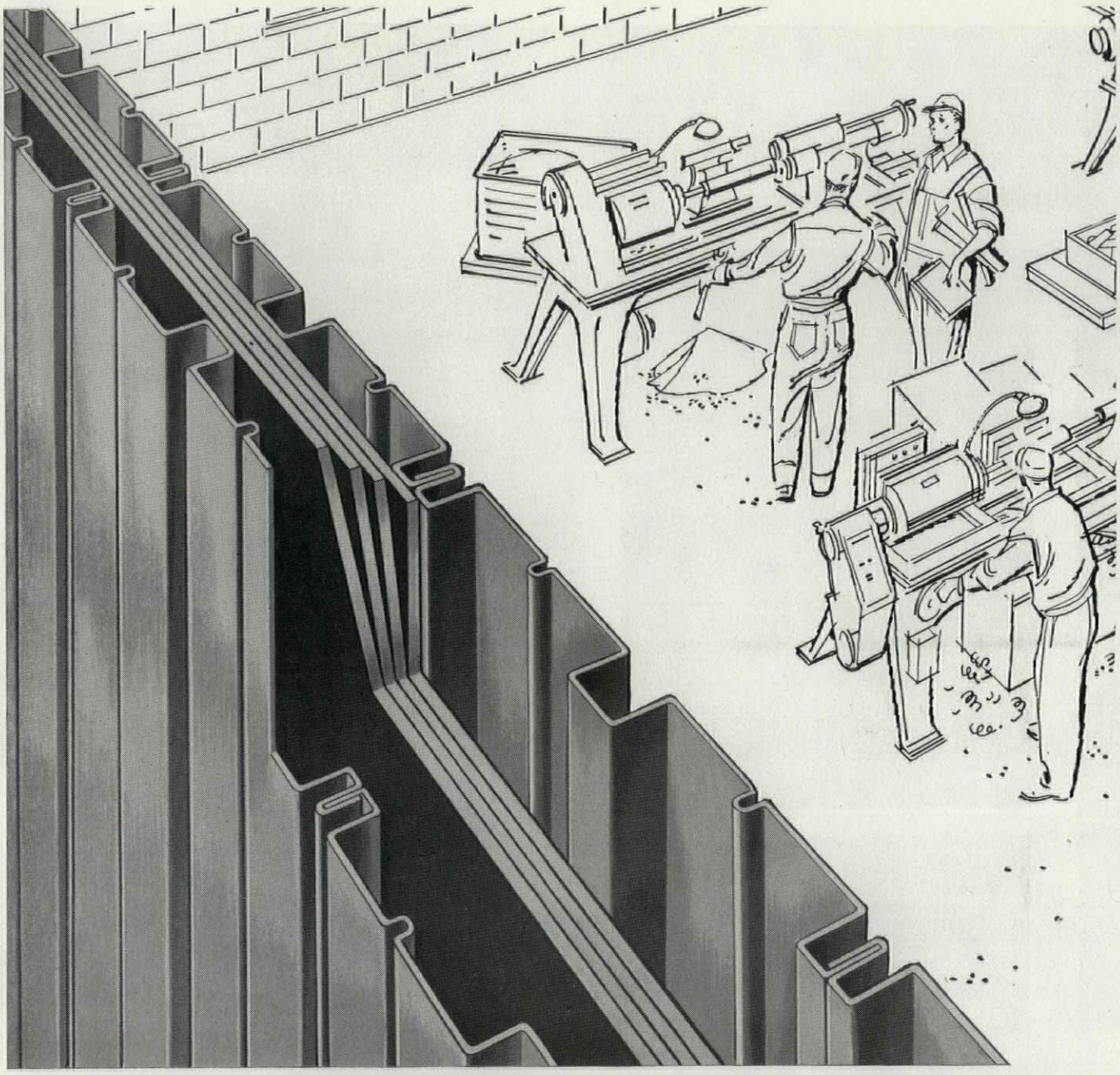
the finest floor that grows

MAPLE FLOORING MANUFACTURERS ASSOCIATION
Suite 583
Pure Oil Building
35 E. Wacker Drive
Chicago 1, Illinois

Today's public preference for cheerful brightness emphasizes anew the tough, enduring, ageless beauty of Northern Hard Maple floors. What other floor, natural or synthetic, serves so many varied needs so well and so long? In the six typical areas pictured, **MFMA** Maple, you'll agree, is an eminently sound specification. It will serve for years with routine maintenance. Easy refinishing will bring out the "new floor" that's always waiting underneath. Available in wide variety of block patterns as well as the familiar strip. See Sweet's (Arch. 13j-MA) for full facts.

NORTHERN HARD MAPLE

BEECH AND BIRCH



New MOVABLE Fenestra Fire Partition

makes plant space safer!

Guard industrial plants against fire hazards with low-cost Fenestra* Fire Partition Panels. Made like a sandwich, with two galvanized 18-gauge steel Fenestra Panels on either side of four ½" layers of fire-resistant materials, this Fenestra Fire Partition is easy to assemble and erect. It can be moved to another location just as easily.

With a 2½-hour fire rating, Fenestra Fire Partition Panels can be used to divide large open areas against fire spread, and to enclose paint rooms, inflammable storage or other hazards.

For existing plants, or for new construction, investigate Fenestra Fire Partition Panels. Your local Fenestra Representative—listed in the Yellow Pages—can give you all the details, including the results of a large-scale fire rating test conducted to ASTM standards at Ohio State University and witnessed by Factory Mutual Laboratories. Call him, today, or mail the coupon.

*Trademark

Fenestra *Incorporated*
PA-4, 3409 Griffin St., Detroit 11, Michigan

Please send me information on
Fenestra Fire Partition Panels for industrial buildings

NAME_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

Now!

Fenestra FENLITE process gives you new window beauty and durability

Distinctive New Fenestra® window finish needs no painting!

Here's what you've been looking for in modern windows . . . distinctive appearance . . . lifetime corrosion resistance without painting . . . *plus* the strength of steel! The Fenestra FENLITE Process gives you all three of these important advantages. And it costs no more than an ordinary steel window with two-coat field painting.

Briefly, this new process protects the steel windows with an alloy-bonded lifetime zinc surface. Then, a special treatment "passivates" and chemically polishes the zinc for longer life and a bright finish.

Standard 20% salt spray tests indicate that this new treatment increases the resistance of the zinc to the start of white corrosion by 3 to 12 times. It also prepares the surface for a tight glazing compound bond and for decorative painting, if desired. *Maintenance protective painting is not required!*

The FENLITE Process requires precision electronic control of every step in the process. *The windows must be completely submerged in one dip in each bath!* Fenestra's specially designed "million-dollar" plant—the only one of its kind in America—has been adapted to produce this exclusive new finish.

FENLITE is available on all types of Fenestra Steel Windows—Architectural, Industrial and Residential. Ask your local Fenestra representative, listed in the Yellow Pages, to show you a sample. Call him, today, or mail the coupon below for complete information!

Fenestra INCORPORATED | FENLITE STEEL WINDOWS

YOUR SINGLE SOURCE OF SUPPLY FOR
WINDOWS • DOORS • BUILDING PANELS

Fenestra Incorporated
PA-4, 3409 Griffin Street
Detroit 11, Michigan

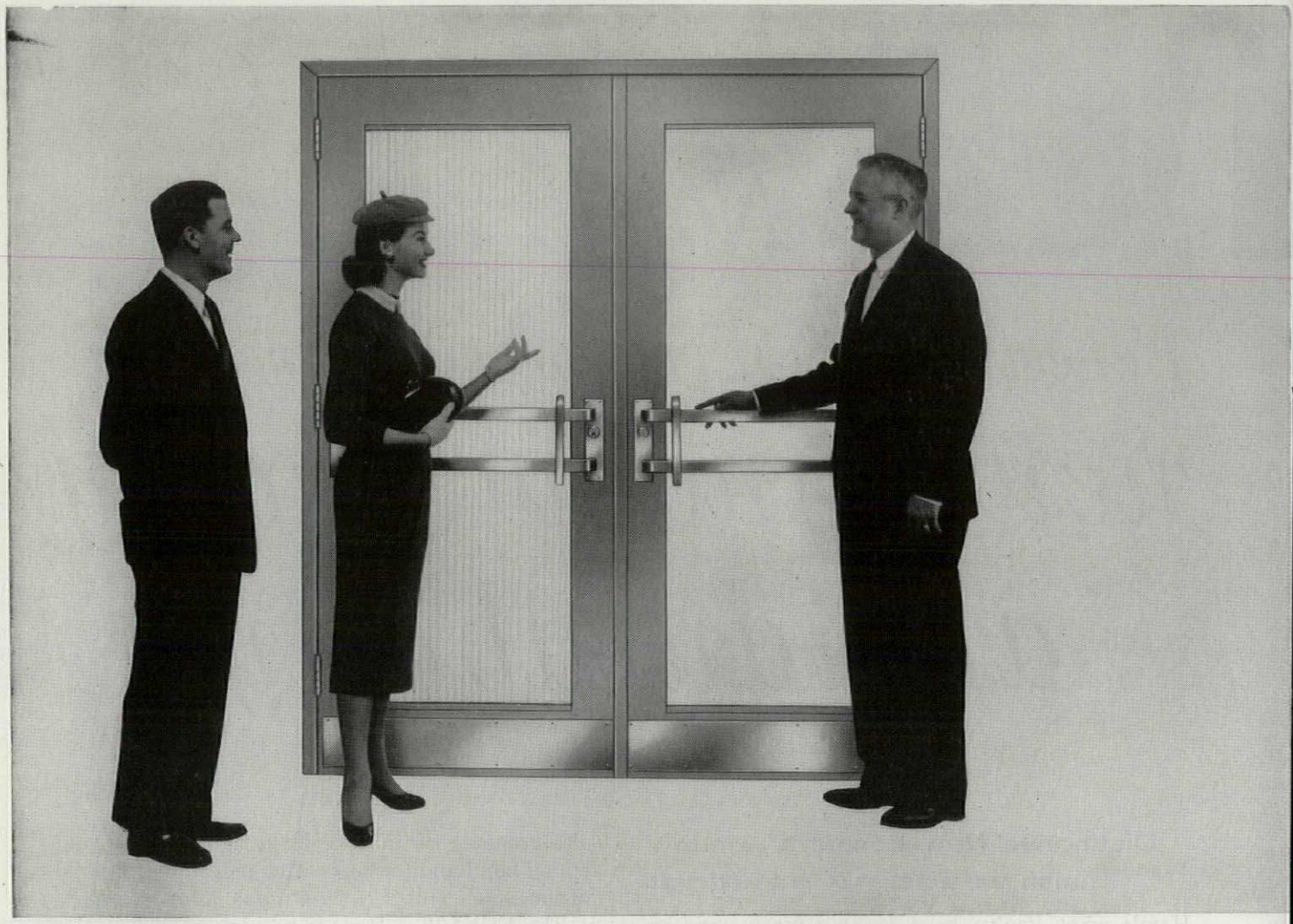
Please send me complete information on the New Fenestra FENLITE Process for Steel Windows!

Name_____

Firm_____

Address_____

City_____ State_____

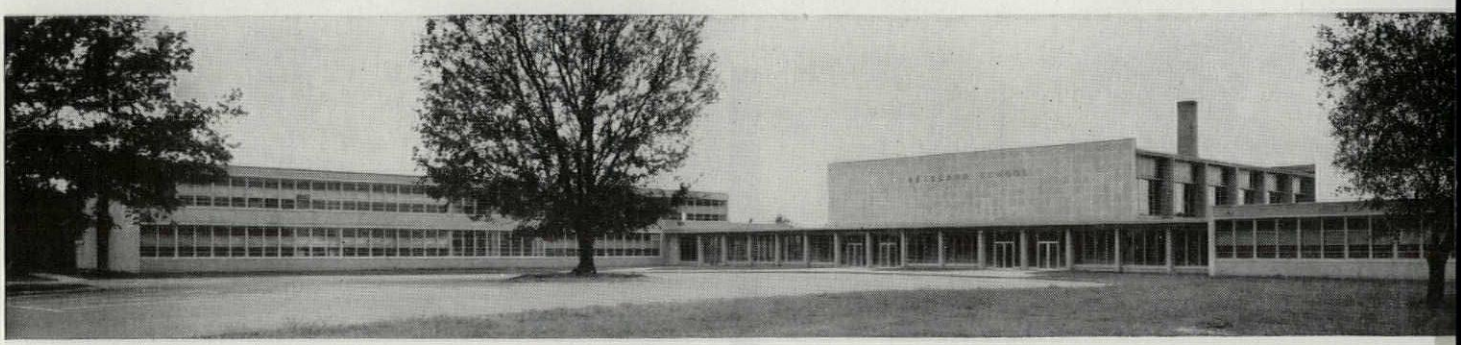


Fenestra packages hollow metal door, frame and hardware units to save you up to $100 per opening with this . . .

NEW IDEA

Look like costly custom-made doors, don't they? They're not. They're stock doors by Fenestra®—with an installed cost about $100 *less* per opening than you'd expect to pay!

Fenestra's new idea for saving you money on school doors is really very simple. We mass produce them on special jigs that save us expensive labor. We pass along this savings to you. We maintain large stocks of standard sizes to give you fast delivery and doors come to your building complete with frames and hardware, ready to install. You don't have to cut, fit, mortise, drill or tap a Fenestra Door. *One*



REIDLAND SCHOOL, Paducah (Reidland), Ky., cost less to build because 134 Fenestra 1¾" Hollow Metal Flush Doors were used. *Architect:* G. Tandy & Lee Potter Smith, Paducah, Ky. *Contractor:* Erhart-Knopf Construction Co., Inc., Louisville, Ky.

FOR SCHOOL DOORS

man with a *screw driver* can install it *in minutes.* Fenestra Hollow Metal Doors swing open smoothly. They close quietly because there's a sound-deadening material inside. You save, year after year, on maintenance because Fenestra Doors can't warp, swell, stick or splinter. They last a lifetime!

Illustrated are Fenestra's 1¾" Entrance Doors, 1¾" Flush Door and the NEW 1¾" *Fen-Air* Louvered Door for air-conditioned buildings—three of the many fine doors in Fenestra's complete line. Call your Fenestra representative for detailed information or mail the coupon below.

Fenestra | HOLLOW METAL DOOR • FRAME • HARDWARE UNITS

Your Single Source of Supply for
DOORS • WINDOWS • BUILDING PANELS

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Detroit 11, Michigan

Please send complete information on Fenestra Hollow Metal Doors

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Firm_____

Address_____

City_____ State_____

keeping exterior stone and brick looking clean and new:

Ford Rotunda, Dearborn, Michigan

WATER ABSORPTION TESTS ON LIMESTONE BLOCKS

Material	Period of Time Exposed to Weather	Percent of Absorption After 3 years, 8 months exposure to weather then totally immersed for 48 hours
Limestone coated with "Super-Por-Seal with Silicone"	3 years, 8 months	.44%
Untreated Limestone	3 years, 8 months	3.18%

WTMJ, Milwaukee, Wisconsin

University of Detroit Memorial Bldg., Detroit, Michigan

Fine architectural structures too soon become begrimed and unsightly unless protection against weathering is provided at the time of construction. The problem, which is mainly the repelling of water, is greatest when the exterior surface is limestone, porous brick, concrete or stucco.

Discoloration of exterior masonry usually reaches such an advanced stage that sand-blasting, or steam-cleaning, is employed to restore a look of newness to the surface. And although this process rids the surface pores of dirt, it also opens up the pores still more, so that subsequent discoloration progresses even faster than before.

The solution to the problem of discoloration lies in attacking the very root of the trouble. Discoloration is caused by rain washing down over exterior surfaces and carrying with it soot, grime and dust, depositing such material in the surface pores. When the water is repelled instead of absorbed, discoloration does not occur. But the problem is greater than would appear at first glance. It is not so much to find a colorless repellent that will repel water as it is to find a repellent that will *keep on* being effective over a period of years.

Truscon "Super-Por-Seal with Silicone" combines the weather resisting and water repellent features necessary to protect the finest types of construction materials. Limestone and other fine structural stones retain their natural appearance and beauty longer.

Spalling and discoloration are the common causes of unsightly appearance. A single coat of "Super-Por-Seal with Silicone" will help to maintain the dignity of appearance of fine structures for years. Absorbent types of surfaces, such as common red brick and mortar, are likewise protected against water and dirt absorption, as the surface pores are actually lined with repellent and chemical resistant "Super-Por-Seal with Silicone."

For details and specifications write Truscon Laboratories, Dept. P-7, Detroit 11, Michigan

NEW General Electric bulletin tells . . .

HOW YOU CAN SOLVE YOUR BALLAST HEATING PROBLEMS

Send for your free copy today

You as a lighting engineer, architect, contractor, fluorescent lamp user or fixture manufacturer and we as ballast manufacturers are concerned with the basic problem of ballast heating.

Overheating drastically reduces lighting efficiency, ballast life, and results in wasted lighting dollars for everyone. G-E ballast engineers have long recognized this problem and are working constantly to design ballasts that give more uniform heat dissipation and longer operating life.

Intensive research by General Electric engineers shows that the solution involves much more than a carefully designed ballast. Surveys of heating problems indicate many other trouble spots.

Some of these are: Improper ballast application . . . misuse of building insulation . . . poor lamp maintenance . . . improper fixture design.

The trend to higher fluorescent lighting levels and higher-output lamp sources in industrial and commercial applications is increasing daily. This means that it is more important to you than ever before to be provided with more dependable and economical ballast operation.

In this new illustrated bulletin, "Lets Talk About Ballast Heating," General Electric engineers have laid the facts on the table. They carefully describe, in simple, easy-to-read language, the causes of ballast overheating, the basic heat problem, and what happens to an overheated ballast. But, most important, they tell what **you** can do to help prevent overheating. To get your free copy just fill out the coupon and send it in. Your copy will be sent to you by return mail.

If you have a specific heating problem right now, why not contact your nearest General Electric ballast sales engineer? He'll be glad to answer your questions and tell you how General Electric longer-life ballasts can help you save lighting dollars.

General Electric Co., Section G 401-37
Schenectady 5, New York

Gentlemen: Please send me a FREE copy of your bulletin, "Let's Talk About Ballast Heating," GED-3328.

NAME.....

COMPANY.....

POSITION.....

STREET.....

CITY..... **STATE**.....

Progress Is Our Most Important Product

GENERAL ELECTRIC

Must a Fire Door

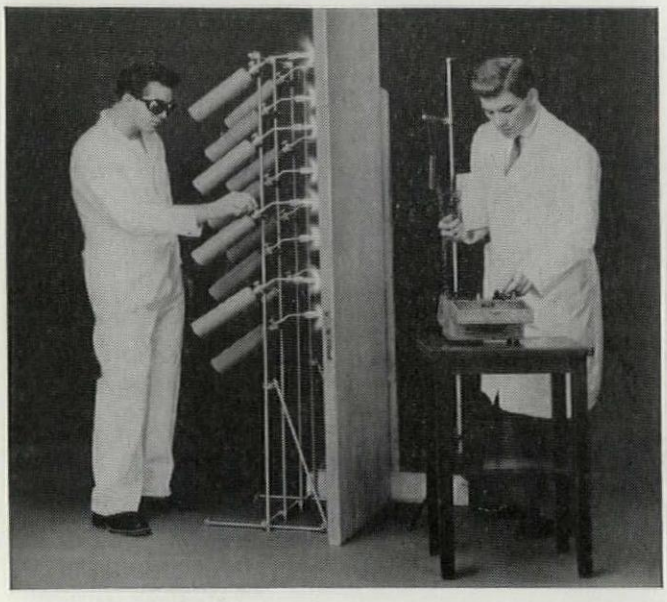
What about heat transmission?

Stopping flames is just one part of a fire door's job. For 500 F. heat will easily ignite many materials and cause fire to break out on the other side of a fire door even if the original flame and fire are stopped. This chart (right) proves the positive protection a Weldwood Fire Door offers against destructive, suffocating heat. This substantial margin of safety is due to Weldrok® – the exclusive incombustible core material of the Weldwood Fire Door (U.S. Pat. No. 2,593,050). Weldrok is a mineral material consisting of hydrous calcium silicates with asbestos fiber binding.

What about proven performance?

Just in the last 10 years, many thousands of Weldwood Fire Doors have been installed in all 48 states. Between them, these doors have lived through every conceivable adverse condition–fire, flood, slamming, storms, violence, and severe use. The Weldwood Fire Door always comes through! And this door is approved by Underwriters' Laboratories for all Class "B" (vertical shaft) *and* Class "C" (room and corridor partitions) openings. The Weldwood Fire Door is also approved by Factory Mutual Laboratories, New York City Board of Standards and Appeals, and Building Official Conference of America.

Blowtorch barrage! In laboratory tests up to 1700°F., the Weldwood Fire Door proved its superiority.



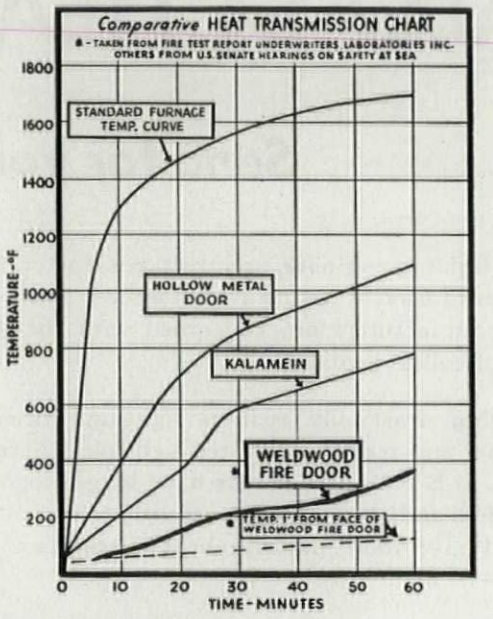


Chart shows *true* UL tests—not "averaged figures."

What about weight?

Weight has no part in stopping flames or heat. The Weldwood Fire Door gives vital protection from fire and heat, yet is *33% lighter* than some other core fire doors. And that lighter weight means no hidden costs from sky-high shipping charges . . . simpler installation because the door is easier to handle and carry. One man can install the Weldwood Fire Door. No undue strain on hinges and door frames, either!

What about day-to-day use?

Even with bad luck, a fire is a once-in-a-lifetime event. Day-to-day performance is almost as vital. The Weldwood Fire Door – because its Weldrok core is completely inert and won't absorb water – will never warp, twist or get out of line. And that's a guarantee! Furthermore, in laboratory tests a Weldwood Fire Door was opened and closed *200,000* times. Then the same door was opened and slammed shut an additional *100,000* times. Even after this torture test, the Weldwood Fire Door still worked like new!

What about appearance?

The Weldwood Fire Door is as beautiful as it is practical. Choice hardwood veneers are a pleasure to look at, easy to maintain. Choose from regular stocks of Birch, Korina®, Mahogany, Rift Oak, Walnut or any other wood, on special order. Veneers may be picked

be only "Fireproof"?

to match wood-paneled walls, if you wish. And doors are available in a *complete range* of sizes (up to 4′ x 7′—two sizes larger than some other doors). UL approved vision panels of 10″ x 10″ or 8″ x 12″ available.

What about construction?

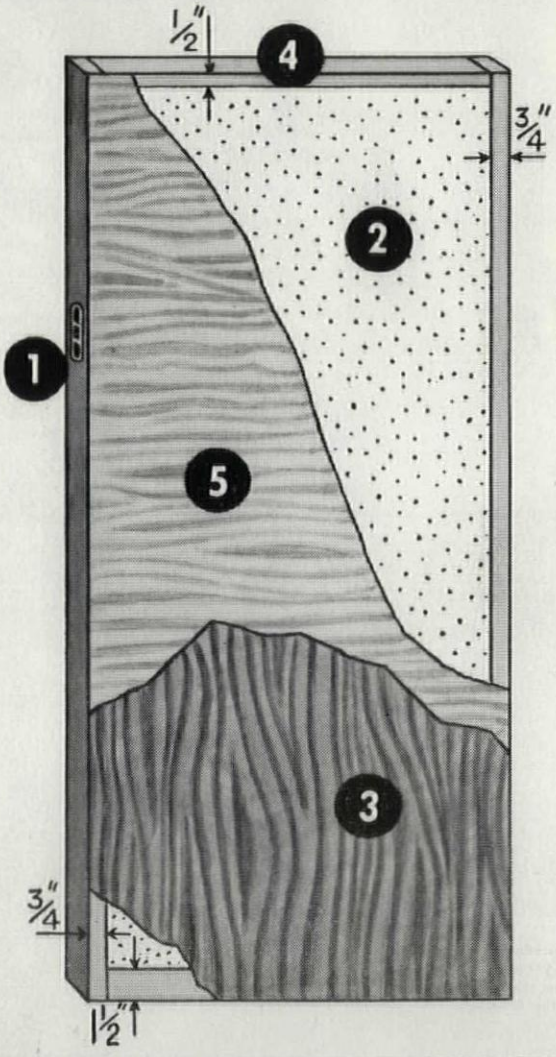
Compare the construction of the Weldwood Fire Door point by point:

1. ¾″ hardwood stiles treated with *Class* "A" fireproofing agent. Note UL label and individually registered guarantee number on the stile for your protection.
2. Incombustible Weldrok core. A material that needs no artificial fireproofing because it is *naturally* unburnable and incombustible. Won't char, deteriorate or "break down" either! This exclusive core material is dimensionally stable, strong, light in weight. Won't warp, shrink or swell.
3. Handsome hardwood face veneer $\frac{1}{28}$″ *thin.* (Send coupon for complete proof why "thin" veneers are better.)
4. Solid hardwood rails, treated with *Class* "A" fireproofing agent. Top rail is ½″, bottom rail 1½″ to permit trimming.
5. Hardwood crossbanding. This $\frac{1}{16}$″ veneer is bonded to the core with a waterproof phenolic resin glue.

All underwriter approved types of hardware are easily installed if simple directions are followed. This has been proved over years of continuous use with complete satisfaction.

What about a guarantee?

This guarantee is given *in writing* with every Weldwood Fire Door installation: "United States Plywood Corporation *unconditionally guarantees,* if properly installed, this Weldwood Fire Door against warping, twisting or manufacturing defects for the LIFE OF THE INSTALLATION. If any Weldwood Fire Door should fail to meet these standards, we will replace said door without charge, *including all labor costs of hanging and refinishing involved*"!



Weldwood®
FIRE DOORS
A product of
UNITED STATES PLYWOOD CORPORATION
Weldwood — The Best Known Name in Plywood

SEND FOR MORE INFORMATION

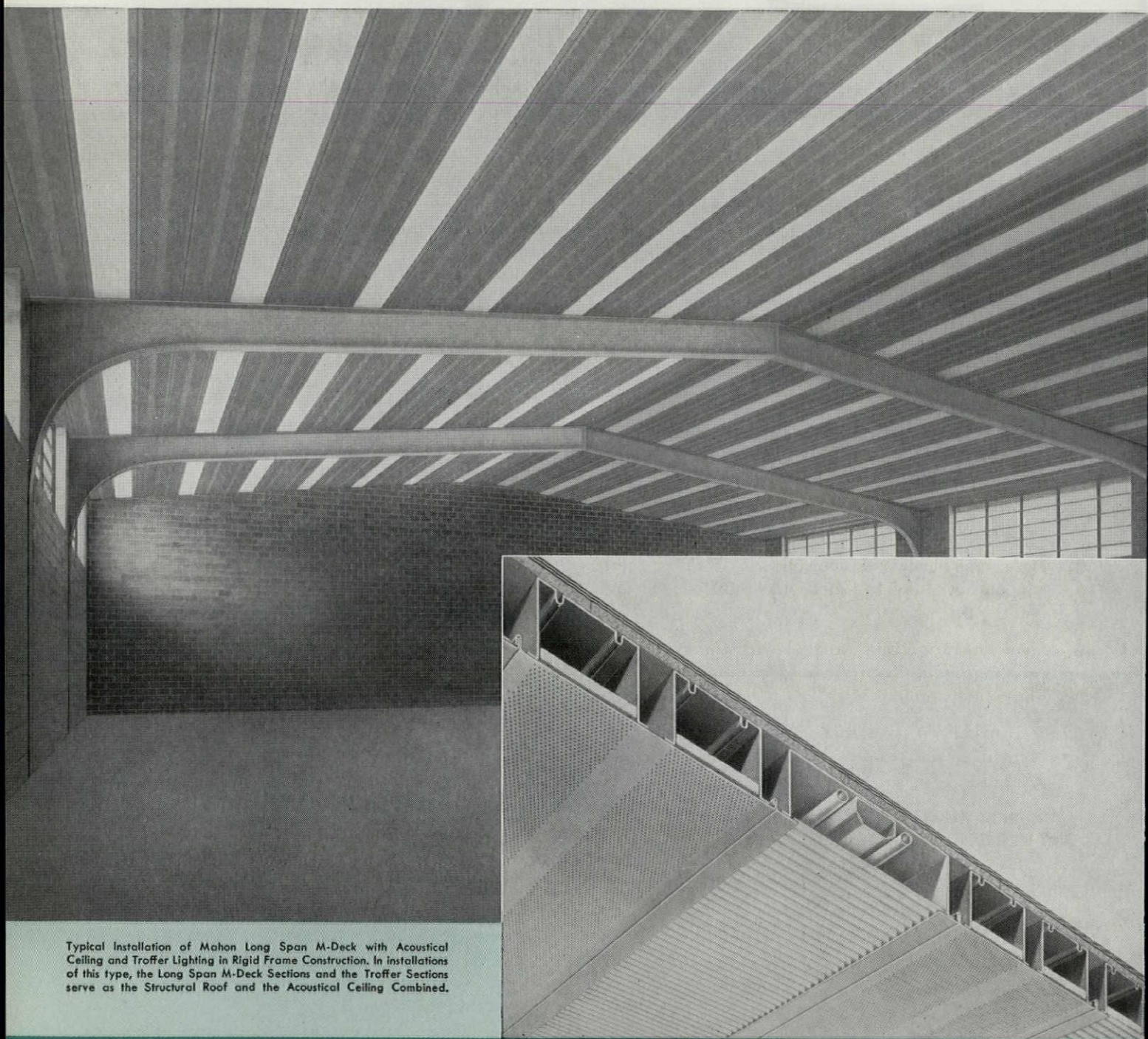
Architects Service Department
United States Plywood Corporation
55 West 44th Street, New York 36, N. Y. PA 4-57

Gentlemen: Please send me the following:

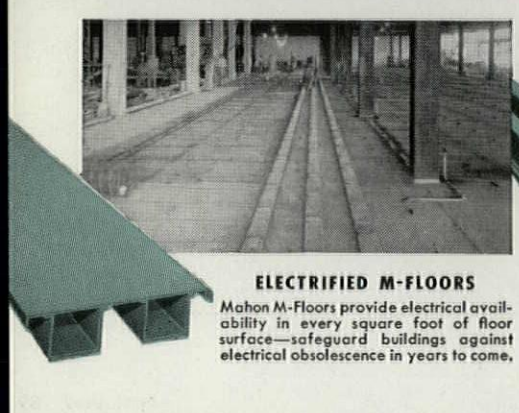
- ☐ Booklet #1663—Weldwood Doors
- ☐ Booklet #1245—Why is a "thin veneer" door better?
- ☐ Please have an Architects Service Representative call on me.

NAME.....
FIRM.....
ADDRESS.....
CITY.....STATE.....

M-DECKS Now Serve



Typical Installation of Mahon Long Span M-Deck with Acoustical Ceiling and Troffer Lighting in Rigid Frame Construction. In installations of this type, the Long Span M-Deck Sections and the Troffer Sections serve as the Structural Roof and the Acoustical Ceiling Combined.



ELECTRIFIED M-FLOORS

Mahon M-Floors provide electrical availability in every square foot of floor surface—safeguard buildings against electrical obsolescence in years to come.

CONCRETE FLOOR FORMS

Mahon Permanent Concrete Floor Forms in various types meet virtually any requirement in concrete floor slab construction over structural steel framing.

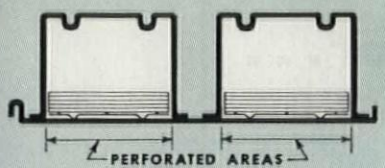
ACOUSTICAL and TROFFER FORMS

Provide an Effective Acoustical Ceiling with Recessed Troffer Lighting—Serve as Permanent Forms in Concrete Joist and Slab Construction of Floors and Roofs

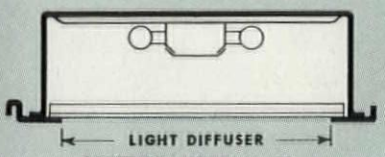
as the Structural Unit, the Roof Deck and Interior Finish Material as Well

. . . Acoustical Treatment can also be Included in the Same Package!

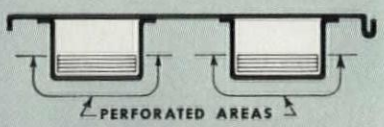
MAHON
ACOUSTI-STRUCTURAL
LONG-SPAN M-DECK SECTIONS



SECTION M2SR (Acoustical)

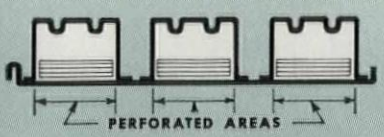


SECTION M1ST (Troffer)



SECTION M2 (Acoustical)

SECTION M3 (Acoustical)



SECTION M3R (Acoustical)

Mahon Long Span M-Decks are ideal for combined roof-ceiling construction in such structures as auditoriums, armories, sports arenas, churches, and other types of buildings where exposed truss or rigid frame construction is employed.

An M-Deck is a structural roof and ceiling combined . . . its structural sections span from wall-to-wall or from truss-to-truss, eliminating the cluttered effect of roof purlins and producing a neat, continuous, flat metal ceiling surface—all of which can be acoustically treated. If recessed lighting is desired, Mahon Troffer Sections can be included in this type of roof-ceiling construction in any ratio to meet specific lighting requirements.

Mahon M-Deck Sections and Mahon Troffer Sections are roll-formed from galvanized, structural quality steel . . . they are permanent and indestructible. Exposed surfaces in roof-ceiling construction can be readily painted to match or harmonize with any interior decor.

All Mahon Long Span M-Deck Sections can be furnished with bottom metal perforated and sound absorbing material inserted to provide a highly effective acoustical ceiling . . . Noise Reduction Coefficients range up to .85 in Mahon Sections recommended for this use.

Some of these Mahon Sections do not appear in the current Sweet's Files. Why not have a Mahon sales engineer call and bring you up to date on new Mahon products now available for Floor, Roof, and Combined Roof-Ceiling Construction.

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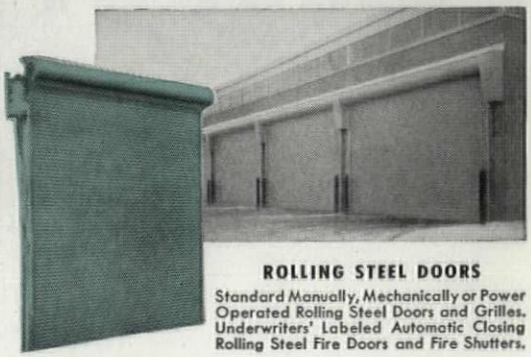

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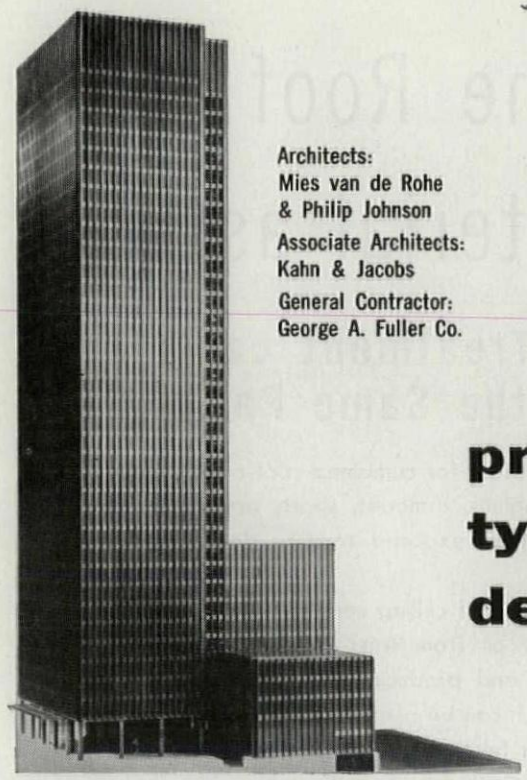
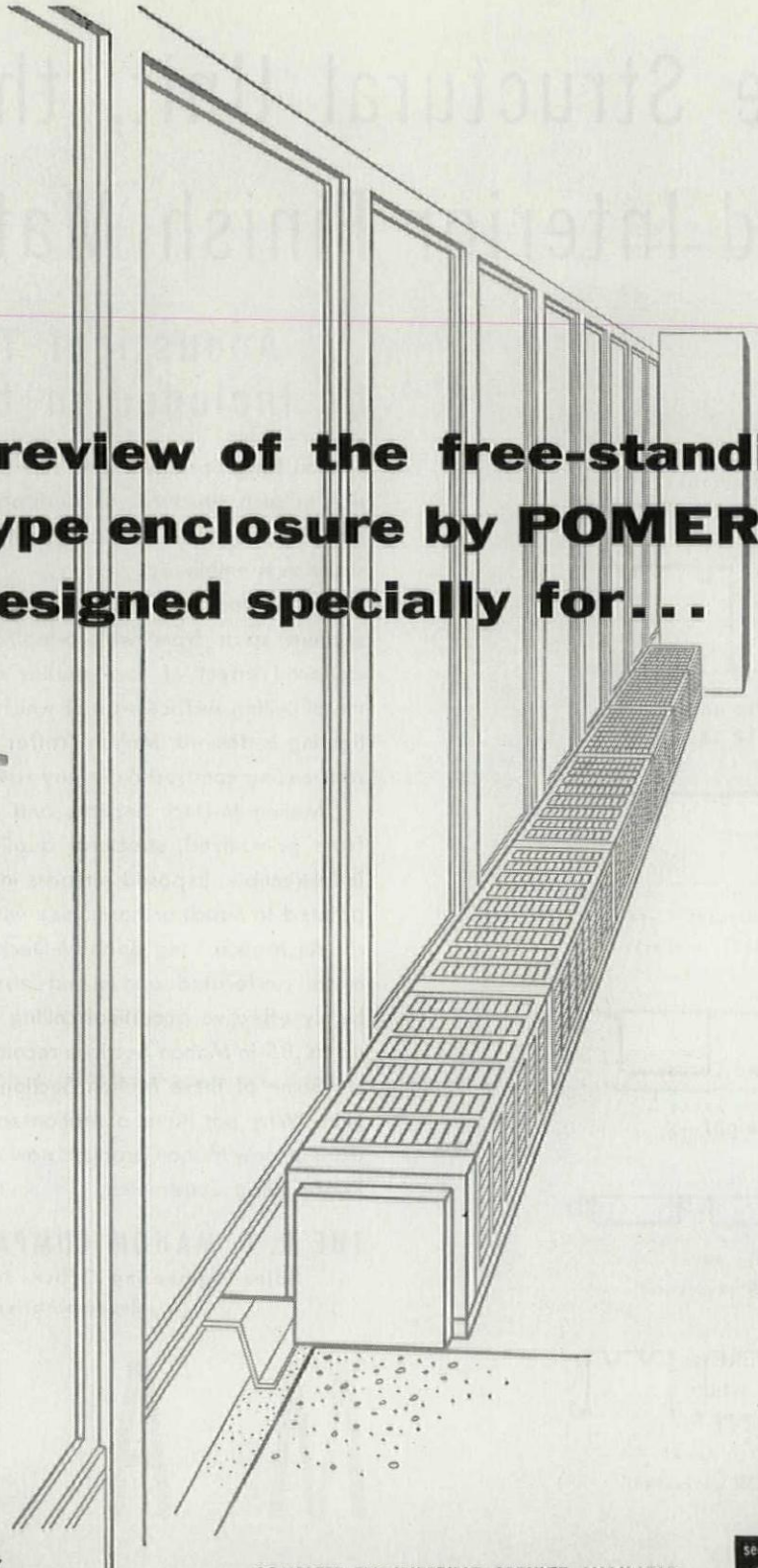


Architects:
Mies van de Rohe
& Philip Johnson
Associate Architects:
Kahn & Jacobs
General Contractor:
George A. Fuller Co.

preview of the free-standing type enclosure by POMEROY designed specially for...



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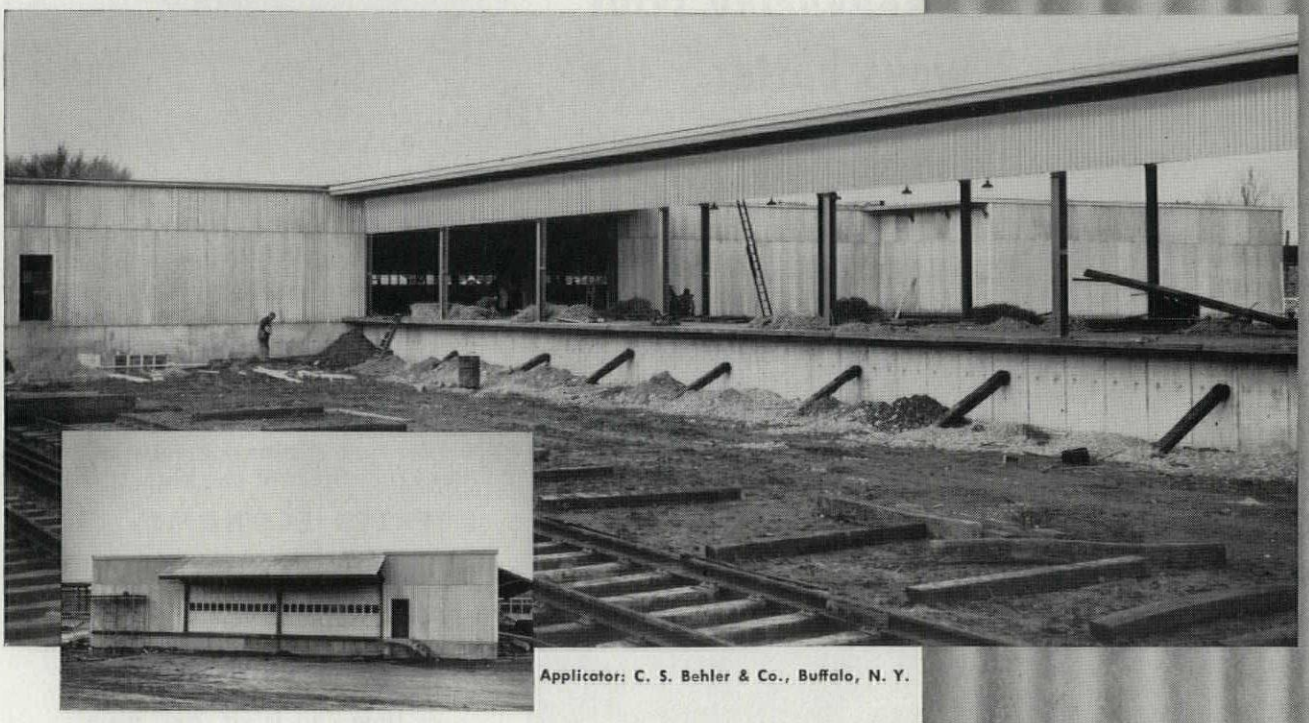

Applicator: C. S. Behler & Co., Buffalo, N. Y.

Here's why Mr. L. V. Lacy, Vice President of Sordoni Construction Co., chose Gold Bond Corrugated ASBESTONE "400" for this Fast-Freight Terminal

"light weight—speedy erection—low cost—freedom from maintenance"

This Buffalo Fast-Freight Terminal for the Delaware, Lackawanna & Western Railroad Co. was built by Sordoni Construction Co. As Mr. Lacy of Sordoni Construction Co. puts it:

"Gold Bond Corrugated ASBESTONE "400" was a most practical material for the exterior walls of the warehouse, which is not heated, because of its light weight, speedy erection, low cost and freedom from maintenance." These are four of the most important points to consider when you specify building products for exterior walls or roofs.

Mr. Lacy's firm put 27,000 square feet of corrosion-resistant Corrugated ASBESTONE "400" on these sidewalls. The money that Gold Bond ASBESTONE "400" saved on the initial application was only the start. ASBESTONE "400" will save maintenance dollars every year—and it actually grows stronger with age.

Does this Fast-Freight "400" story suggest a Gold Bond® Corrugated Asbestone use to you? Wherever you use it, you're getting strength and good looks for a lengthy lifetime. For further details, write Dept. PA-47, National Gypsum Company, P. O. Box 5257-B, New Orleans, La.

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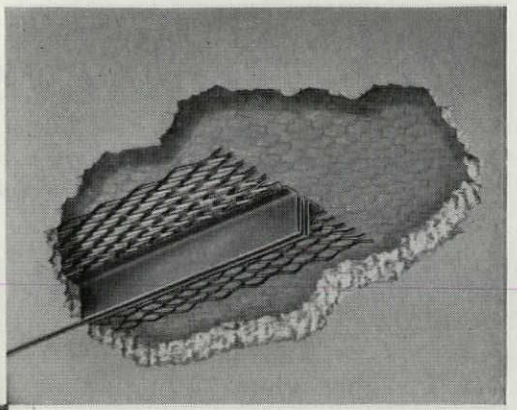
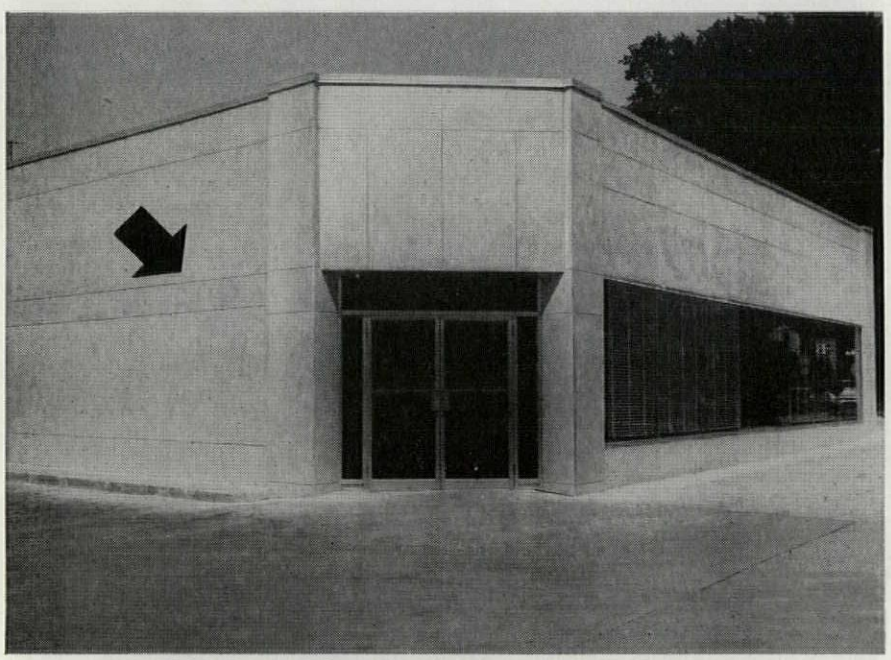
Modernizing in stucco?

low-cost expansion joint

helps do the job 3 ways better



Here's a building being prepared for the application of exterior stucco. At this stage, Penmetal Expansion Joint (see arrow) had been applied to left side only.



Finished remodelling job. Arrow points to Expansion Joint in stucco. Decoratively patterned, this aperture breaks the flat wall expanse, enhances the appearance of the building.

LONGER LASTING

Stucco jobs keep their new look longer when the Penmetal Expansion Joint is applied for *anti-crack protection.* A specially designed ground expands and contracts with any movement of stucco. This absorbs internal stresses and strains – greatly reduces the threat of cracking.

GREATER ECONOMY

Long-run savings on maintenance justify ten times over the small initial cost of a Penmetal Expansion Joint. What's more, the joint provides a work stop—no improvising, no special-order items. Saves time and labor, too; it's a one-piece joint and ground.

BETTER LOOKING

Many architects use the Expansion Joint to enhance the appearance of buildings. They have placed it in squares, rectangles, etc., to break the monotony of drab, flat, building sides. In this way, beauty plus crack resistance is achieved.

Planning to modernize in stucco? Then plan to take advantage of the many benefits of Penmetal's expansion joint. Also used for plastered walls and ceilings. Ask for details.

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OF QUALITY

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PHILADELPHIA SHERATON OPENED

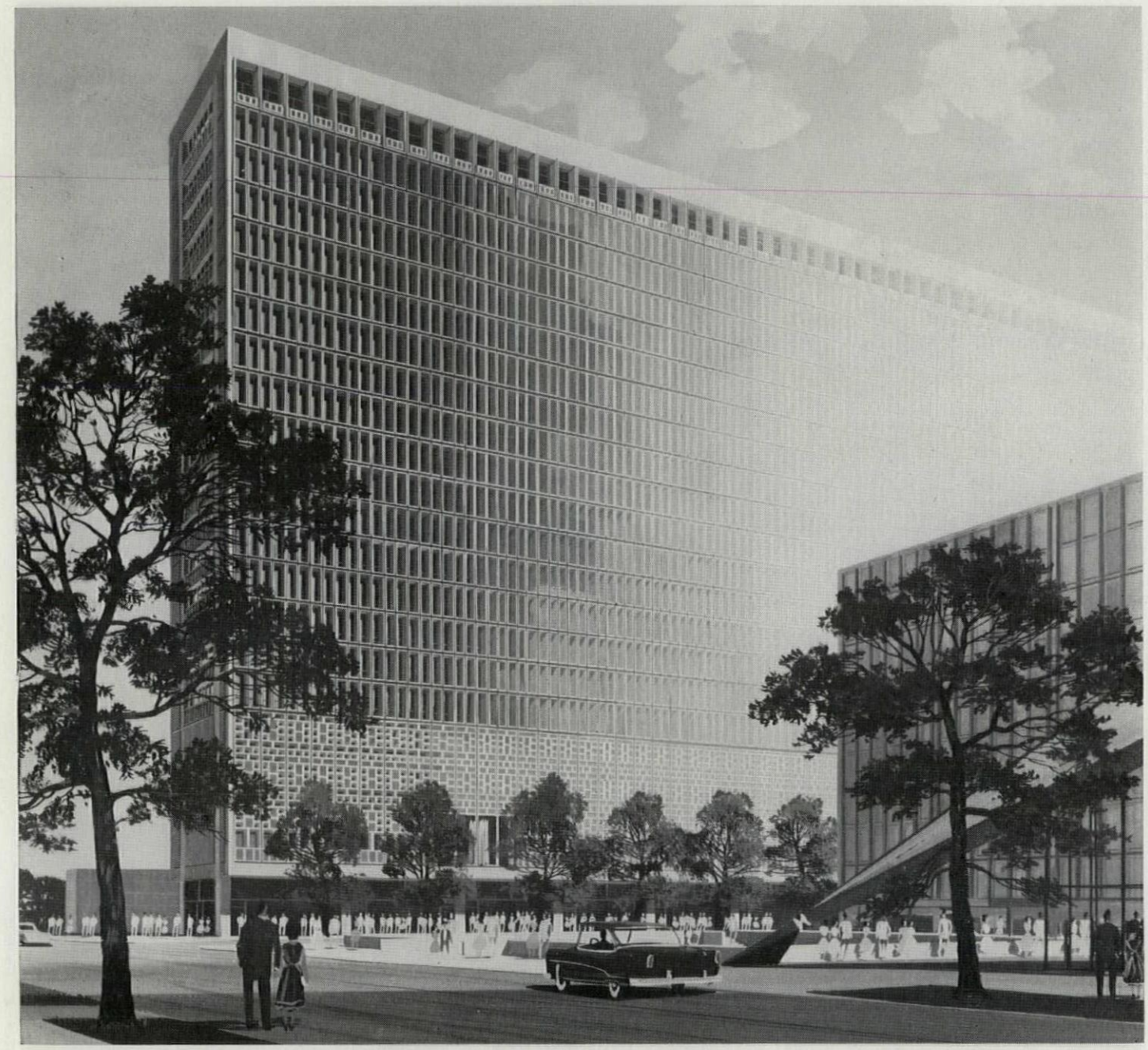
by George A. Sanderson

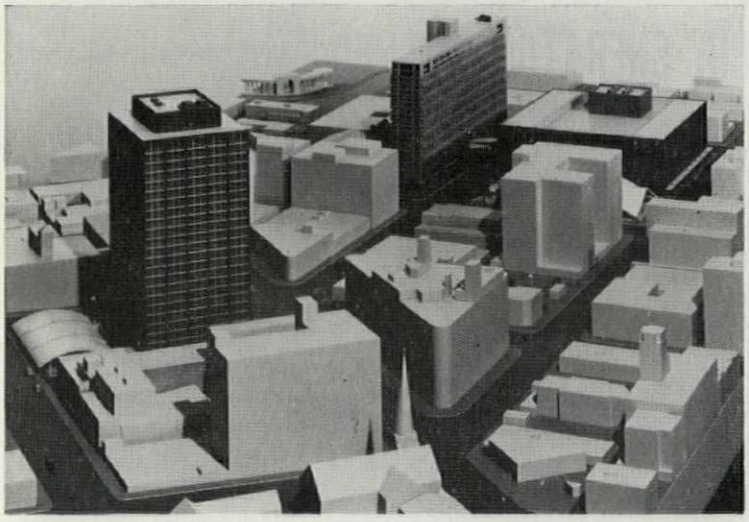
A three-day wingding last month launched the new Philadelphia Hotel Sheraton (to be shown fully in a later issue), designed by Architects Perry, Shaw, Hepburn & Dean with Mary Morrison Kennedy, Architect and Vice-President of decorating and architecture for the Sheraton Corporation of America.

In a way, it was hard to see the hotel for the luminaries. For, in addition to attending limitless parties — a Calypso band from Bermuda; Xavier Cugat; Meyer Davis—I found myself swimming in a sea of officialdom (Mayor Richardson Dilworth, of Philadelphia); filmdom (Zsa Zsa Gabor); TV-dom (Eddie Fisher); baseballdom (Mrs. Cornelius MacGillicuddy); and Sheraton Hotel Corporationdom (Ernest Henderson, President). Hostess for the formal dinner-dance (for Hungarian relief) was Mrs. Perle Mesta; and on hand were Ginger Rogers; Betsy Von Furstenberg; Martha Raye; Lefty Grove; Joe E. Brown; and Gypsy Rose Lee—to mention a few. We were once on the Steve Allen Show (Andrew Sisters); and two mornings, with Dave Garroway. The place was heaving; and it's quite a place.

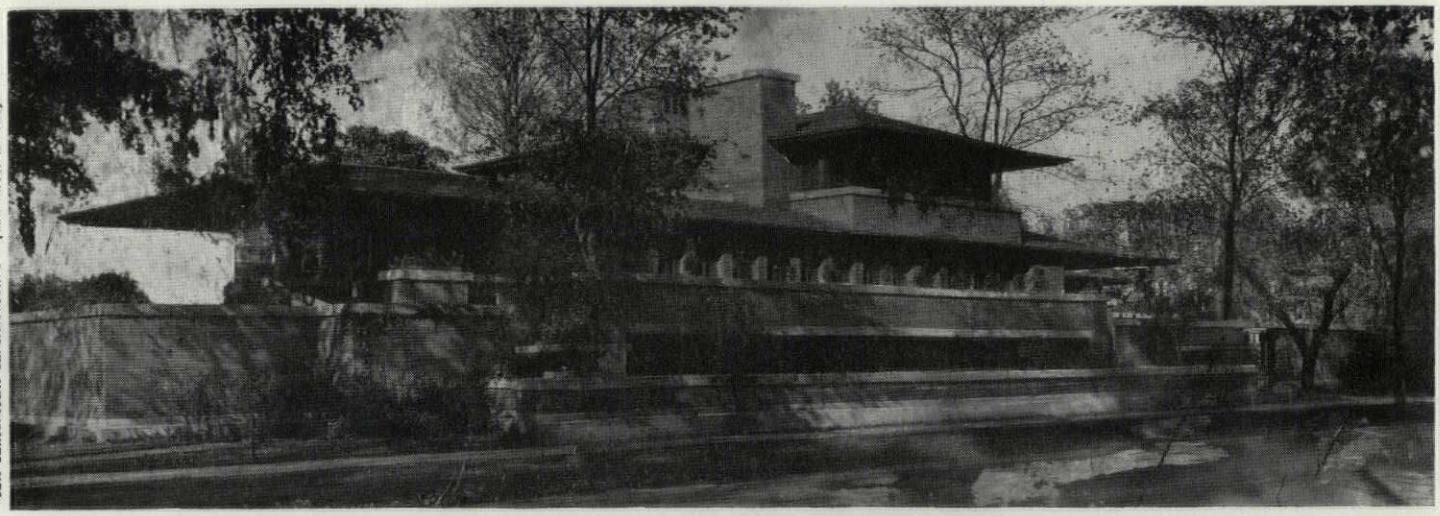
Because of an unusually narrow site, the hotel has a three-story escalator-connected lobby that is elegant, colorful, and—perhaps most newsworthy—well endowed with the related arts. Carpets of the main lobby were designed by Anton Rerregier, who also did montage murals for Connie Mack Room; at the second-floor level, a full-height mosaic wall mural by Gyorgy Kepes; bordering a floating stair, joining the two levels of the main ballroom, a room-height metal-and-glass screen/sculpture by John Rhoden; Lumen Winter's murals on the walls of Town Room restaurant; Sally Swann Carr's life-size, wood-carved figurehead for Indian Queen Tavern; and on the walls of Pennsylvania Ballroom, murals by Francis Scott Bradford.

HOTEL AND STORE SCHEDULED FOR DENVER





A new hotel, department store, and underground parking garage—all units of Denver's Court House Square Development—are soon to be constructed within a short walk from the handsome Mile-High Center (foreground *left*) completed in 1955. Architects, as for the earlier building, are I. M. Pei & Associates for Webb & Knapp. The hotel (*above*) will contain 900 bedrooms and also provide ballroom and convention facilities. Its structure is to be of concrete with an exterior enclosure of precast mosaic frames serving as *brise-soleil*. The department store's structural frame will be of steel, using ribbed slab floors, and a skin enclosure of gold anodized aluminum panels with honeycomb core. Entrance to the store will be through a hyperbolic paraboloid concrete shell structure. The three elements, the 1200-car garage, department store, and hotel are to be interconnected underground.



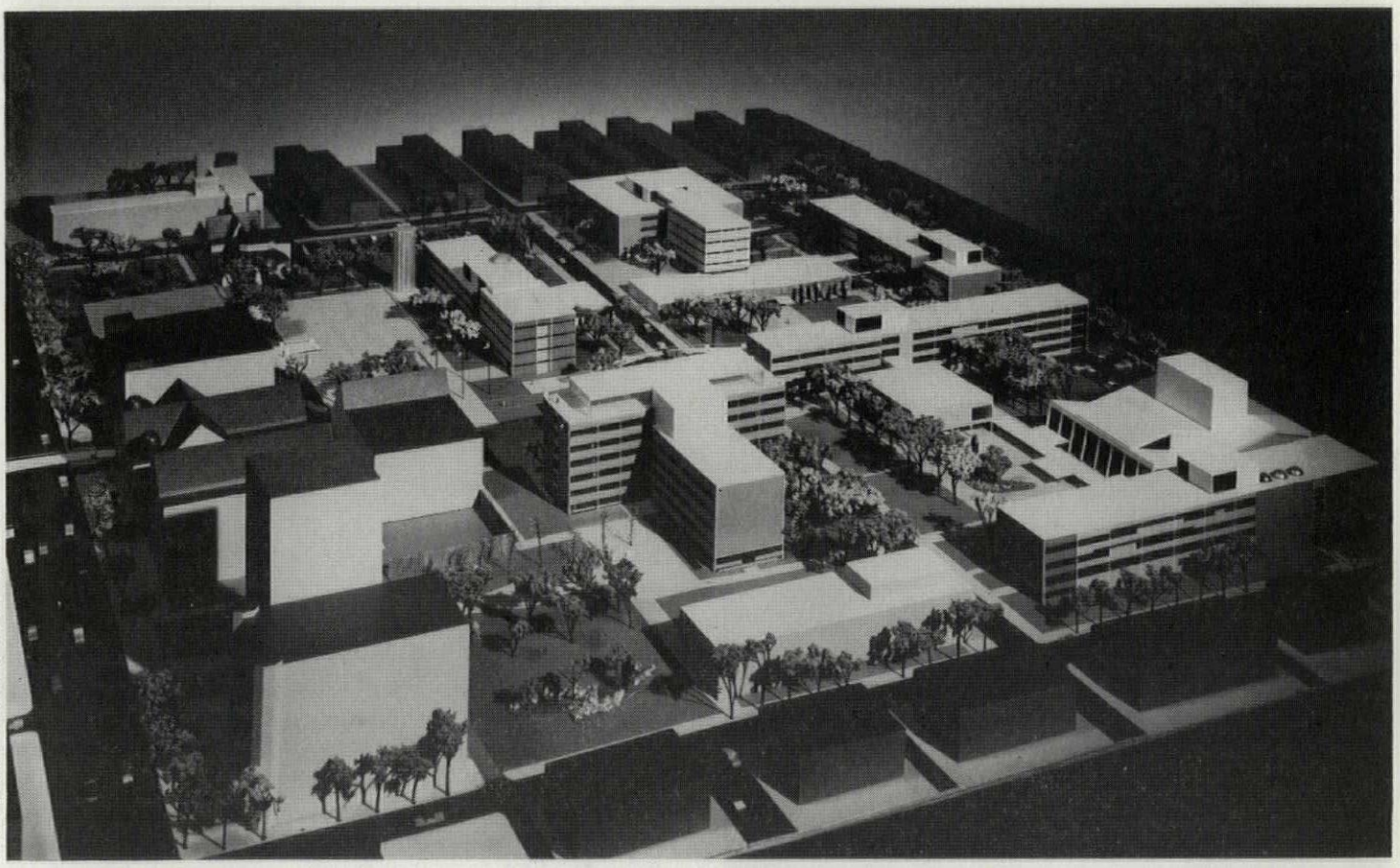
"An American Architecture" (Horizon Press)

ROBIE HOUSE TO BE DESTROYED?

Chicago citizens and groups who respect fine architecture are currently alarmed by threatened demolition of the Robie house, most famed example of Frank Lloyd Wright's early "prairie style." Chicago Theological Seminary has announced the house must go this spring to make way for a dormitory for married students, being designed by Holabird & Root.

Protests from Chicago Chapter, AIA, from a Committee headed by Sculptor Milton Horn, from newspaper letter-writers, from signers of Seminary campus petitions, have been answered by Seminary President A. C. McGiffert, Jr., with statements that the site must be used, or another bought, for the new dormitory. He added that the house would be costly to restore and maintain (the Seminary bought it in 1926) and that it is not suited for use by the Seminary.

Those interested contact: Samuel A. Lichtmann, President, Chicago Chapter, AIA, 53 W. Jackson Blvd., Chicago 4, Ill.



Model photo: Cortlandt V. D. Hubbard

Temple U.'s New Campus Plan

Architects for the new campus development for Temple University, Philadelphia, Pennsylvania, are Nolen & Swinburne. Immediate needs are for six new buildings—Chemistry (top, center, *model photo*); Biology (right of Chemistry building); Physics (left of Chemistry building); School of Business (center, bottom); Teachers College and Communications Center (bottom, right). All buildings of this first phase of the development will be fully air conditioned.

News Bulletins

• Proposed amendment to bill before Subcommittee, H.R. 4660 (which would end lease-purchase program of Federal building and authorize expenditure of $1.5 million for new building program through 1962), has dual purpose: to centralize authority over Federal building in GSA for greatest efficiency and economy while encouraging advice and consent of each agency on design of buildings it will inhabit; to direct Commission on Fine Arts to advise and consult with GSA in establishing high standards of design, style, and ornamentation. Amendment was designed by Representatives Henry S. Reuss (Wis.), and Frank Thompson, Jr. (N.J.)

• Albert C. Martin & Associates, Los Angeles architectural-engineering firm, has established two annual grants for advanced study in architecture at University of Southern California. Unusual aspect of award is extension of firm's facilities and personnel to aid students in design solutions. First winners are: Donald R. Brown, Los Angeles; Rudy L. Veland, Fontana, Calif. . . . School of Future Essay Contest awards—contributed by School Architects Frederic P. Wiedersum Associates, Long Island, N.Y.—will send top winners Betty Bodian, New York City, and Joseph J. Berke, Newark, N.J., on all-expenses paid trips to Paris and Mexico.

• Top prize project in international U.S.A. Tomorrow Manhattan Redevelopment Competition was submitted by firm of Katz, Waisman, Blumenkranz, Stein, Weber (Architects Associated) in collaboration with team from Pratt Institute. Pratt students and faculty members captured 2nd and 3rd prizes also for schemes developed as part of thesis. Winners shown in photo (below) are: (l. to r.) Joseph M. DeChiara, Patrick S. Raspante, Sidney L. Katz, Frank Pisani, Herbert Auerbach—part of 1st Prize team; 2nd Prize team: Theodore Hinz, Paul Sanzari, Olindo Grossi, William Breger (William Bodouva and Alfred Marchesani absent); 3rd Prize team: Breger, Arthur Wrubel, Marc Feldman, Maxwell Levinson (Marc Weissman, Gerald Rosen, John Deans, Ralph Lentsch, Arnold Horn, Norman Wax absent). Winning solution (right) provides elevated crosstown highway, mid-city parking facilities, civic center, and exposition complex for fashion and industry. Areas adjacent to center are developed in parklike surroundings for commercial and housing purposes. Separation of pedestrians from motor traffic, ample thruway facilities, and parking were basic considerations.

• Summary of personal achievements at National Joint Conference on Church Architecture held in St. Louis, Feb. 26-28: Harold E. Wagoner, Philadelphia, Pa., was elected president of Church Architectural Guild of America; Guild's coveted Elbert M. Conover award was presented to Dr. William Kincaid Newman, lawyer, lecturer, and church-building executive of New York, for outstanding contributions to better church design. Guild's Architectural Awards went to: Durham, Anderson & Freed, Seattle, Wash., for design of St. Elizabeth's Episcopal Church, Burien, Wash.; Lawrence, Saunders & Calogne, New Orleans, La., for design of Gretna Methodist Church, Gretna, La.; Alfred W. Johnson and William Sargeant, San Francisco, Calif., for alteration of First Presbyterian Church, Burlingame, Calif. . . . 1957 Lloyd Warren Fellowship—awarded to winner of design competition "An International Airport"—was presented to Robert P. Burns, Jr., Roxboro, N.C. . . . Franklin Chenault Watkins, Philadelphia artist, is 1957 winner of Philadelphia Art Alliance Medal of Achievement.

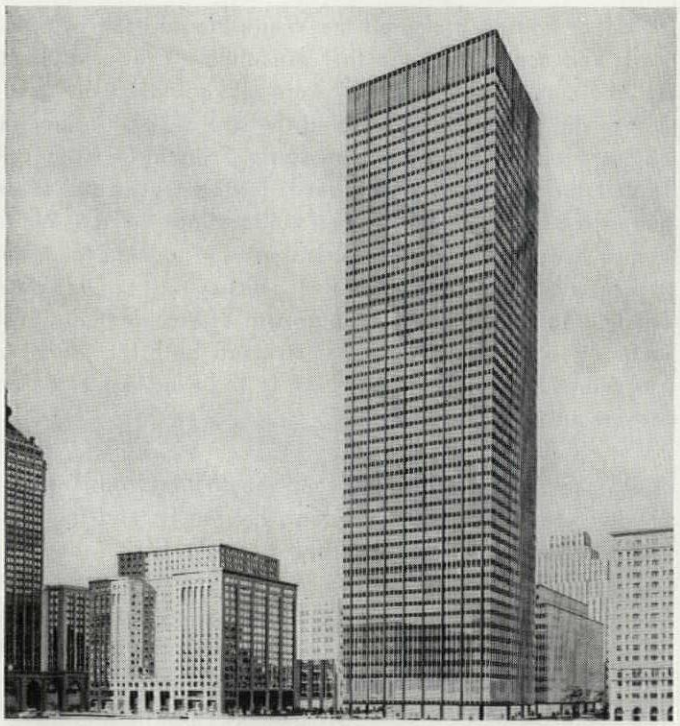
• Pereira & Luckman, co-ordinating architects for contemplated $40-millions National Civic & Cultural Center in Washington, D.C., report that project is materializing rapidly while P/A's Frederick Gutheim reports from Washington

INDUSTRIAL DESIGN CENTER FROM SOUTH
MANHATTAN REDEVELOPMENT

that "the plan still lacks a realistic foundation in the needs of this city of 1.5 million of people, in operating considerations, and in meeting international obligations." Center—which would be constructed with funds raised by public subscription—is envisioned as multipurpose structure housing auditoriums and halls of varying sizes for banquets, balls, and conventions as well as opera, music, theater and exhibitions, Tourist Information Center, parking and dining facilities. As yet, site has not been determined.

• First skyscraper of this generation in Buffalo, N.Y.—18-story, curtain-wall structure designed by Emery Roth & Sons—will be built by Tishman Realty & Construction Company,

Inc., starting late in year. . . . When completed in 1960, new Union Carbide & Carbon Corporation Building (below) will be tallest office building on New York's rapidly changing Park Avenue and among largest in city. Architects are Skidmore, Owings & Merrill.



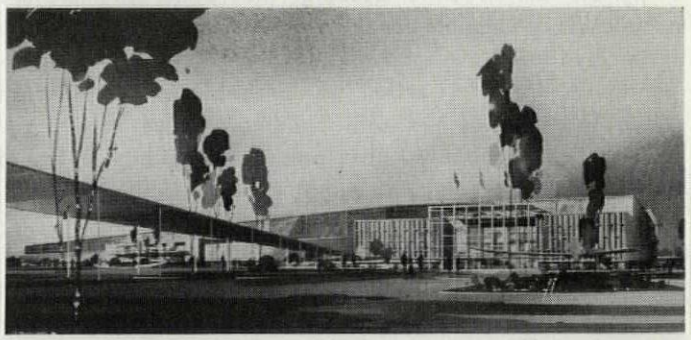
• Architectural historians note: Index of Historical Architecture—selection of 300 buildings in New York City deemed worthy of preservation—represents culmination of six-year survey by Municipal Art Society and Society of Architectural Historians. Condensed copies called New York Landmarks will be sold by MAS at $2 each. . . . James Grote Van Derpool, librarian of Avery Architectural Library, Columbia University, has announced acquisition of 56 original drawings of Saint Patrick's Cathedral, designed by Architect James Renwick, Jr. Other original drawings in collection are largely of 19th Century and include work by A. J. Davis, Richard Upjohn, Detlef Lienau, Calvin Pollard, Martin Thompson, and James Renwick, Sr. . . . First printed book on architecture, De Re Aedificatoria, by 15th Century Architect Leon Battista Alberti, is currently on display at Robinson Hall, Harvard University, in exhibit of architectural books and drawings from 800 to 1800.

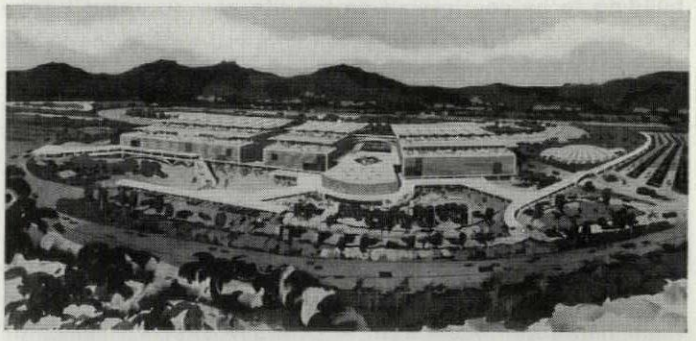
• For extensive activity in field of Industrial Design, New York City's Museum of Modern Art—represented by Museum Director Rene d'Harnoncourt—received La Rinacente's Grand International Compasso d'Oro Award for 1956 in formal ceremony held at Overseas Press Club, New York, Mar. 21.

• Jose Luis Sert, Professor of Architecture and Dean of Faculty of Design in Harvard University, was appointed to additional post as consultant for Harvard's own architectural and long-range planning problems. . . . C. E. Silling, Architect, Charleston, W. Va., was named chairman of national committee on Modular Co-ordination, A62—which was organized under auspices of ASA. . . . IDI officers for 1957 are: George A. Beck, President; Robert E. Redmann, Executive Vice-President; Leon Gordon Miller, Treasurer; John S. Griswold, Secretary. Architect Richard Neutra is now honorary member.

• Construction Surveyors Institute will hold 31st Anniversary Conference in Washington, D.C., May 13-15. For reservations write: G. Szmak, Executive Secretary, CSI, 101 Park Ave., New York 17, N.Y. . . . "A New Century Beckons" will be theme of AIA Centennial Celebration Program to occur May 14-17, in Washington, D.C. . . . Architects' Tour to Japan, headed by Kenneth M. Nishimoto, AIA Pasadena Chapter, Calif., is set for Oct. 1957. Details to be announced.

• New racetrack designs for sites in New York and Caracas, Venezuela—by architectural firm of Arthur Froelich & Associates, Beverly Hills, Calif.—reflect individual consideration of environmental demands. Multitiered Aqueduct Racetrack (below) seats 21,000 persons and holds 65,000. Steel-frame structure with cantilevered trusses exposed above





roof decking is sheathed in pre-cast concrete panels, brick, block masonry and serviced by 18 escalators, 10 elevators. Engineers: Stone & Webster Company. Hipodromo Nacional (above) is 52-building project including school for veterinaries, hospital, school for jockeys, dormitories, and cafeterias. Building seats 8500 and has capacity for 30,000. Multitiered concrete structure with cantilevered grandstands is topped by series of undulating thin-shell roofs. Interior walls are finished in block masonry and mosaic. To control heat and sun, enclosed areas are air conditioned while concrete grills and porcelain enamel louvers protect unshaded facades. Nine elevators and 16 escalators service project. Structural Engineer: Henry Layne; Pre-stressed Concrete Consultant: T. Y. Lin.

Washington Report

by Frederick Gutheim

Building money, the housing-mortgage interest rate, the suspension of the lease-purchase program, and other Federal cuts in construction are probably the most significant items of news here this month. They all reflect the hard-money, anti-inflationary mood of the Administration. Perhaps they reflect a central policy: but it is certainly not a policy that has been formulated in a fashion that will allow people concerned with building to attack it in any effective fashion. Indeed, there is still plenty of evidence that the Administration is construction-minded. The 1958 budget contains major increases in Federal construction projects. While this is an area in which forthcoming budget cuts will probably fall heavily, it is not expected to result in any economically significant drop in building activity. Economists here are impressed with the large volume of private nonresidential building. They point out there are no pockets of unemployment in the construction field. Even if the budget is cut substantially, the total of Federal expenditures for construction will probably exceed that of 1956. Those concerned with building, except commercial housing, can probably count on continued high rates of activity. And it remains to see how much housing will actually be hurt by tight-money policies.

On the heels of the proposed new Federal office building flanking Lafayette Square along Jackson Place, discussed in this column last month, comes now a new Executive Office building to be constructed on the site now occupied by the one-time State, War & Navy Building, just west of the White House. Since the war, this building has accommodated various parts of the expanded Executive Office—the Bureau of the Budget, Office of Defense Mobilization, Council of Economic Advisers, and similar Presidentially oriented agencies. The immediate office of the President is still located in the west wing of the White House, built for that purpose, and extensively remodelled and enlarged at the time the White House itself was comprehensively reconstructed a scant half-dozen years ago. A carefully directed campaign to substantiate the need for enlarged office space for these headquarters has been under way now for some months. More recently it was intensified by the release of a management engineering report recommending the replacement of the old State Building. The climax presumably will come when an Advisory Committee on Presidential Office Space, headed by Robert V. Fleming, a Washington banker and Eisenhower crony, renders its report this June.

All this is part of a single problem, wrapped up with other questions, such as the character of the official residence of the President of the United States. It is a problem that has been repeatedly explored during the last half-century, in which executive power and the activities of the President's office, in particular, have steadily and hugely expanded. Theodore Roosevelt cleared the White House itself of office work, and constructed the first executive office wing. To it, by "the compromise of 1903," were also removed the meetings of the cabinet. Taft doubled the size of the Presidential offices. Hoover increased them again. Franklin D. Roosevelt tripled the executive-office space, largely by means of an underground extension. Truman's alterations to the White House halted this line of expansion, and commenced the great development of executive offices in the Old State building across the street. The growth of Presidential offices under President Eisenhower has strained both the offices in the White House itself, and those in the what is now called the Executive Office Building.

These changes do not imply that the White House is now chiefly a residence. The President, his family, and their immediate servants occupy hardly a single floor (about as much space as a Park Avenue apartment). The rest of the building is given over to public dining and reception rooms, museum, and "palace" functions. There is little space for "living" here—as most of us understand that term. But there is little time for "living," either! When the President is in Washington, he is confined and his time is fully absorbed. The White House social obligations have been greatly increased in recent years, and the visits of foreign chiefs-of-state and political leaders have become vastly more significant. The Eisenhower pattern of living is gradually being understood and publicly accepted, and it is going to make it easier for future Presidents to use the compact and efficient White House apartments while they are working, and to get away to their chosen spots when they can find time to relax. (I suspect this is becoming a familiar living pattern for executives more than we recognize.)

All this means the White House is becoming a ceremonial residence. But it continues a residence for all that, and that character makes its demand on what is done with Jackson Place. How it affects the design of the proposed Executive Office building is less evident. Not enough consideration has been given the architectural value of what now stands there—a building probably more reviled than any other in Washington since its construction in 1888. It may be a compendium of architectural errors, comparable only to the old Trocadero or London's Albert Hall, but it is a revealing one. Henry Adams called it "Mr. Mullet's architectural infant asylum," but the granite pile epitomized the taste of that age. Past efforts to tear it down or modernize it have foundered and, on the whole, I think we would do well to leave it stand. This does not mean that the needs of the Executive Staff should be ignored. They can be accommodated in new buildings elsewhere. If it means they are farther from the President, there are resources of improved communication and transportation to fall back upon. Everyone cannot be in the throne room.

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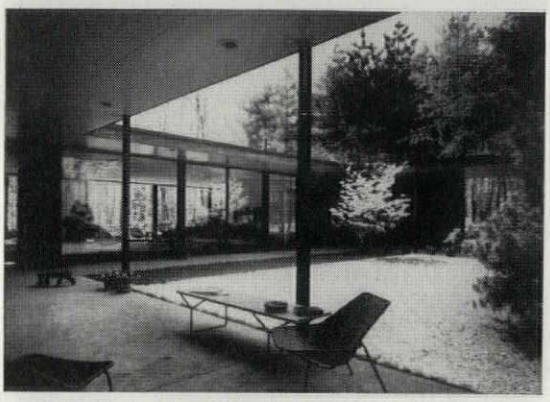

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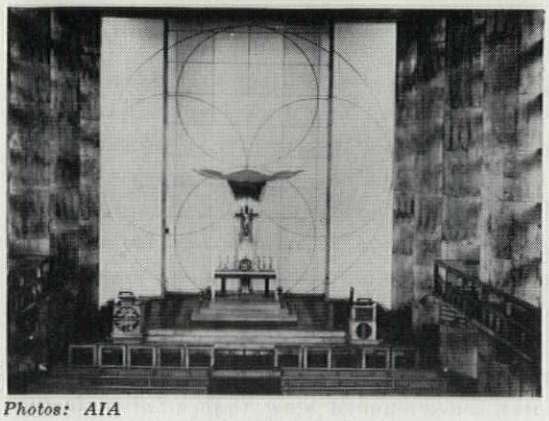

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Photos: AIA

AIA NATIONAL HONOR AWARDS ANNOUNCED

Winners in AIA's Ninth Annual Honor Awards Competition, to be cited for fine design next month at the AIA Convention in Washington, D. C., have been announced. The Jury—Roy F. Larson, Chairman; John Knox Shear; Alden B. Dow; Philip D. Creer; and James M. Hunter—made the following citations from the 344 submitted projects:

first honor awards

1 Office Building for Middlesex Mutual Building Trust, Waltham, Massachusetts. Anderson, Beckwith & Haible, Architects; Turner Construction Company, General Contractor.

2 Junior-Senior High School, Greenburgh, New York. Warren H. Ashley, Architect; Marchant & Minges, Engineers; Stewart M. Muller, Inc., General Contractor.

3 Architect's own house, New Canaan, Connecticut *(December 1956 P/A)*. Eliot Noyes, Architect; Richard Kelly, Lighting Consultant; Borglum & Meek, Inc., Builder.

4 Brazos County Court House and Jail, Bryan, Texas. Caudill, Rowlett & Scott & Associates, Architects; W. E. Simpson, Company, Consulting Engineer; J. W. Hall, Jr., Mechanical Engineer; Caldwell & Caldwell, Landscape Architects; Knoll Associates, Inc., Interior Planning; A. P. Kasch & Sons, General Contractor.

5 St. Anselm's Priory for the Benedictine Fathers, Tokyo, Japan. Antonin Raymond & L. L. Rado, Architects-Engineers and Managers of Construction; Noemi Raymond, stained glass and Stations.

6 Chapel of the Holy Cross, Sedona, Arizona *(October 1956 P/A)*. Anshen & Allen, Architects; Bernard T. Espellage, Bishop of Gallup, Owner; Keith Monroe, Sculptor; Robert D. Sewell, Civil-Structural Engineer; Earl & Grapp, Electrical-Mechanical Engineers; William C. Simpson Company, General Contractor.

awards of merit

Awards of Merit will be given to:

Edward B. Page (residence, Belvedere, California); Skidmore, Owings & Merrill (Wyeth Laboratories, Radnor, Pennsylvania); Antonin Raymond & L. L. Rado (Memorial Hall for Japanese Steel Workers, Kyushu, Japan); R. B. O'Connor & W. H. Kilham, Jr.; Philip M. Chu, Associate in Charge (Tokeneke School, Darien, Connecticut); Golemon & Rolfe; Skidmore, Owings & Merrill, Consulting Architects (Medical Towers office building, Houston, Texas, *June 1957 P/A*); George Matsumoto (residence, Raleigh, North Carolina); John Carl Warnecke (Mark Thomas Inn additions); A. Quincy Jones & Frederick B. Emmons (residence, Los Angeles, California); Curtis & Davis (Our Lady of the Sea General Hospital, Golden Meadow, Louisiana, *November 1956 P/A*); A. Quincy Jones & Frederick B. Emmons (residence, Pacific Palisades, California); Stevens & Wilkinson (Rich's Department Store, Knoxville, Tennessee); A. G. Odell, Jr. (Wilson Junior High School, Charlotte, North Carolina, *May 1957 P/A*); Caudill, Rowlett & Scott (San Jacinto Elementary School, Liberty, Texas); and Paul Thiry (Northeast Branch Public Library, Seattle, Washington).

Financial News

by William Hurd Hillyer

Capital structure is more than ever a matter of attention for architects, now that physical structure is increasingly the result of monetary factors. Outstanding as an object of professional interest, financially, is the projected main building of The Chase Manhattan Bank in New York's Wall Street district.

First thought would indicate that the operation of financing a hundred-odd-millions banking edifice by a seven-billions bank would be just a matter of that institution's drawing a series of official checks to cover labor and materials. Time was when a bank might elect such a course; today the procedure is not so simple.

At the outset of the enterprise, Chase Manhattan found itself owning, among other parcels, two extremely valuable pieces of real estate—its banking-office building at 18 Pine Street, which it now occupies, and the structure at 11 Broad Street used by the bank for clerical overflow. The first step was to sell 18 Pine to the Chemical Corn Exchange Bank and 11 Broad to J. P. Morgan, both for undisclosed (but presumably large) sums. With part of the funds thus realized, Chase Manhattan bought the old Mutual Life building at Cedar and Nassau for $4,500,000 and proceeded to demolish it. This provided part of the land for the proposed building and plaza. As figures now stand (after a number of upward revisions) the new edifice with its $16-millions site will cost $121 millions, of which $94 millions will go into building and plaza construction. Cost of furnishings and special facilities is estimated at $11 millions.

The whole transaction is being handled by means of a holding company, The Chase Manhattan Realty Corporation. This company is a "wholly owned subsidiary" with $5-millions authorized capital, the bank being sole stockholder. Chase's investment in the stock of the realty corporation represents its equity in the building. As of January 31, 1957, the realty holding company borrowed $60 millions on first mortgage from the New York State Teachers Retirement Fund. The loan runs 30 years with customary amortization and bears 4% interest per annum. Under present tight money conditions, this is deemed a favorable arrangement for the bank. Since the loan is owed by the holding company it is not a direct obligation of the bank and does not appear as such on that institution's books. What does appear is the usual item of "Bank Premises and Fixtures" which includes branches and which will represent a book value of about $70 millions.

Excavation for the foundation work of the 60-story tower was started January 29 and major contracts have been let, including those for structural steel. Completion of monetary arrangements for this huge project is regarded by bankers countrywide as an accolade upon the once-controversial realty-holding-company mortgage plan for financing the cost of a bank's own premises. The fact that pension funds are investing in such premises on so large a scale via first mortgage is regarded as significant of a trend that may loosen up the financing of much nonresidential construction. If the great State of New York and the country's second largest bank can find a 4% mortgage mutually profitable, trained observers reason, surely lesser but equally valid building enterprises need not lack liquid funds from the vast pension reservoir.

Analysis: Chase Manhattan plans to occupy, with its own clerical and executive force, approximately two-thirds of the new building's floor space. The cost of such occupancy will therefore be $1,600,000 a year in interest alone. However, this sum is only 1/5th of 1% of the institution's capital funds, or 3½% of its 1956 net earnings. The rental section of the building—some 20 floors—will shoulder an $800,000 annual interest load which, taking similar situations as a criterion, it should be able easily to bear.

• Inflationary pressures are less minatory than a month ago, Guaranty Trust Company of New York reveals. That institution sees the curve of over-all activity as turning downward somewhat earlier than has been generally assumed. Such a conclusion is fostered by a rise in the number of business failures, a shrinkage in new orders for machine tools, uncertain textile conditions, capital expansion cutbacks, and a further decline in new housing starts. These windstraws, however, are seen by Wall Street as pointing to readjustment rather than depression. The financial district no longer shares Government's view that inflation is the country's number one menace.

Tight money, nevertheless, particularly in the mortgage field, is still a problem and shows no signs of loosening. "Fanny May" (Federal National Mortgage Association) is coming to the rescue with over a billion dollars this year embracing 96,000 loans—when Congress gives her the money—but even so huge a sum, officials warn, will not assure "full liquidity" for mortgage investments.

• Outlook for new school financing is sunlit by successful bond sales providing $14 millions for such purposes in the week ended March 8. Interest yield ranged from 2.1% for the Rye, New York, school district issue to 3.80% for the longer maturities of Yuma, Arizona.

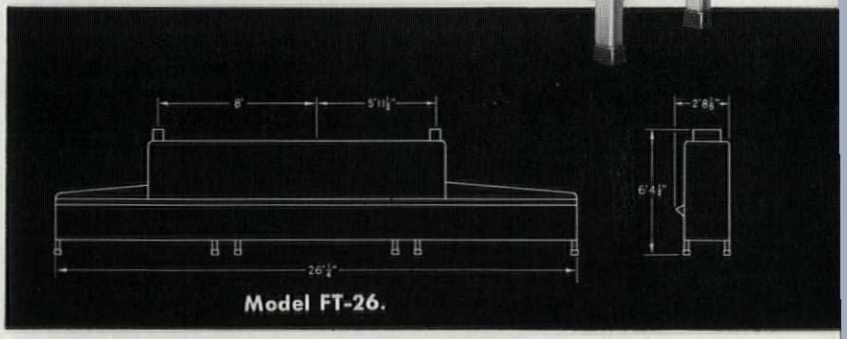
• Early estimates indicate that "gross national product" for 1957 will reach a level of $425 billions, compared with $412 billions for 1956, First National Bank in Dallas, Texas, discloses. Unless conditions change radically, this will mean a $3.5 billions increase in commercial bank loans—and continued tight money.

Efficient water pattern
of Hobart revolving wash action.

a picture of superior big-kitchen performance

or real dishwashing efficiency and thorough sanitation, ither the water pattern or the dishes *must* move. Hobart dheres strictly to this sound, proven washing and rinsng principle. In the flight-type, *both* the water pattern nd the dishes move. You can see the complete coverage f the wash action (above). What you don't see is the ontinuous racking system that conveys the dishes through he scrapping, power wash, power rinsing, final rinsing, raining and drying phases. The jet-powered wash patrn reaches every part of every dish racked in perfectly nclined position by the special stainless steel (nylonpped) flight links. Hobart builds the only continuous acking dishwasher with all-stainless steel conveyors. A less expensive conveyor with nylon flight links is vailable.)

In kitchens where speed and capacity are demanded he flight-type is ideal. Sizes range from 12 to 26 feet ng. Conveyor speeds from 5 to 12 feet per minute. Where volume varies, *one* of 50 other Hobart semi-automatic or dual-drive conveyor models will be exactly right. The smallest is two feet square. Each is designed for maximum volume in a minimum space and with minimum supervision.



Model FT-26.

As an architect, you'll readily appreciate the performance and dependability that are synonymous with the Hobart name. You'll appreciate, too, the complete flexibility of choice offered by the complete Hobart line. Check Sweet's Architectural File for complete specifications on all Hobart kitchen and dishwashing machines or send in the coupon.

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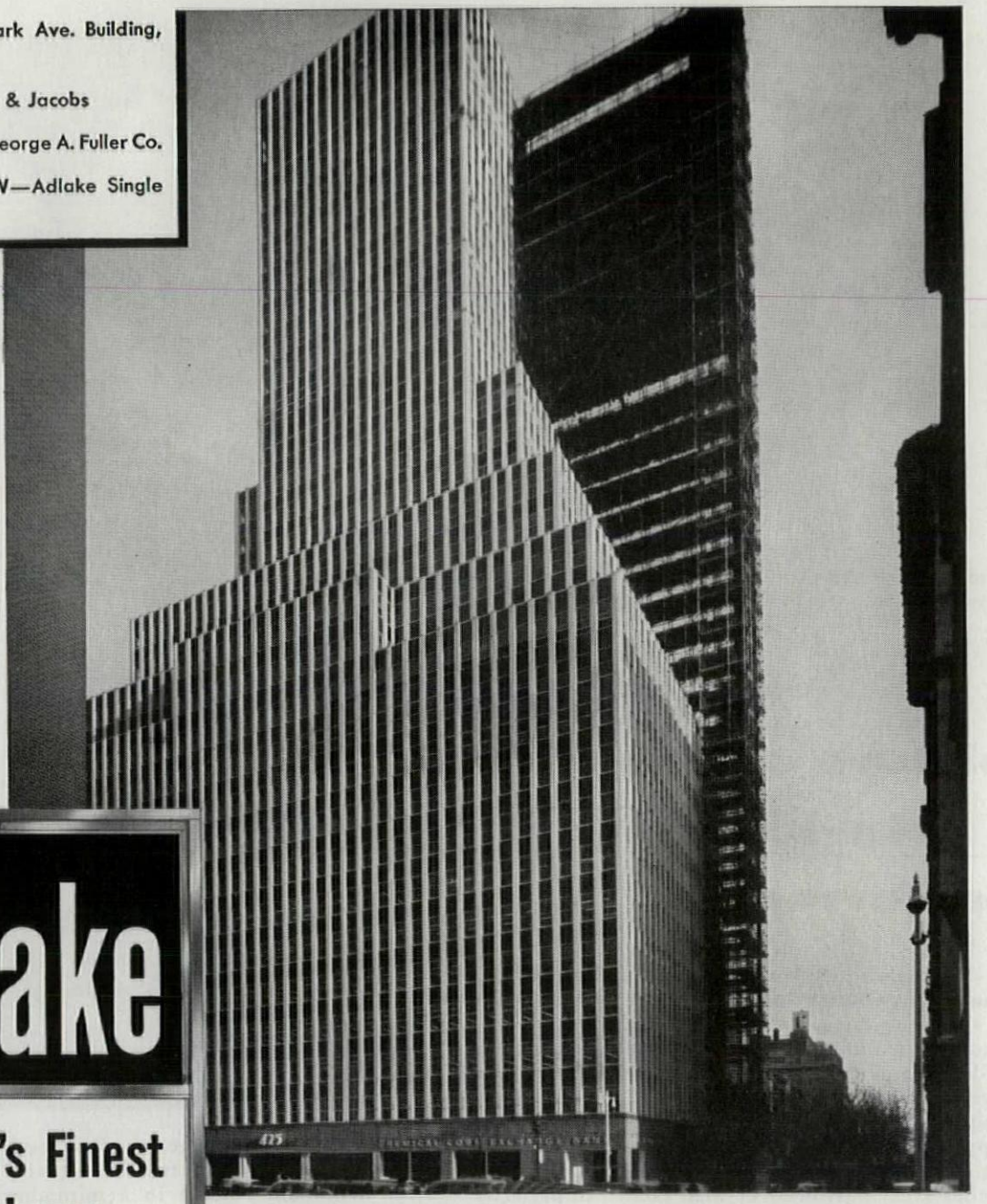
City.....*Zone*.....*State*.....

BUILDING—425 Park Ave. Building, New York, N. Y.

ARCHITECT—Kahn & Jacobs

CONTRACTOR—George A. Fuller Co.

TYPE OF WINDOW—Adlake Single Hung Windows



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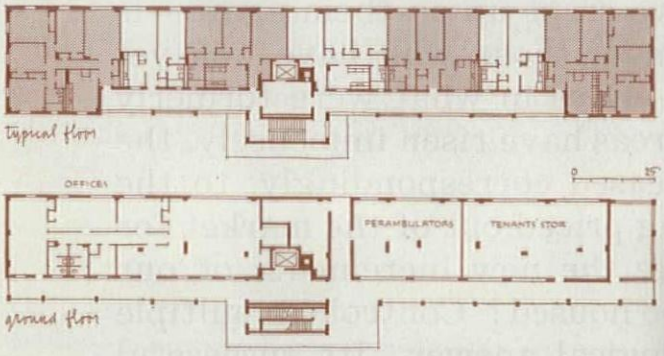
apartment houses: their new significance

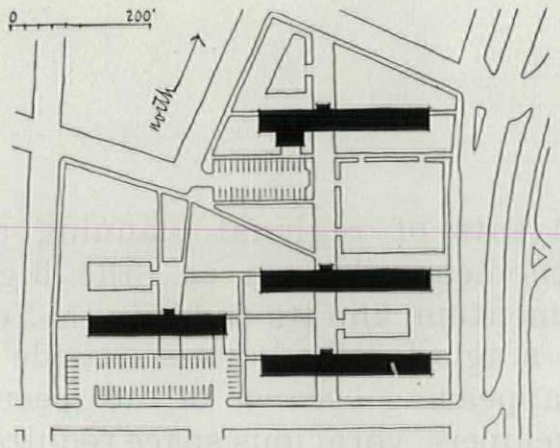
Students of regional planning are agreed that the postwar phenomenon known as "the flight to the suburbs" is losing momentum, and its end is in the foreseeable future. Vacant land for single-family houses outside the cities is on the point of disappearing because of the speculations and successes of tract developers, voracious space requirements of industry, road-building programs, regional recreation areas, and other competitive demands. The disillusionment of so many families who did leave the cities in search of sunlight, fresh air, better school and civic facilities, relief from urban noise and traffic—when the very conditions they were escaping have crept up on them again—is serving to reduce the enthusiasm of those who have not yet ventured to move. Further, land prices in what were formerly rural and undeveloped suburban areas have risen immensely, the cost to tract developers has increased correspondingly, to the point where most families are being priced out of the market for new private homes. How then are the new increments of our exploding national population to be housed? Controlled multiple housing appears to be the only logical answer. Its successful attainment will to a large degree depend upon the architect's skilfulness and ingenuity. The examples on the following pages are representative of solutions within the current pattern of possibilities, from the viewpoints of design, financing, and land planning.

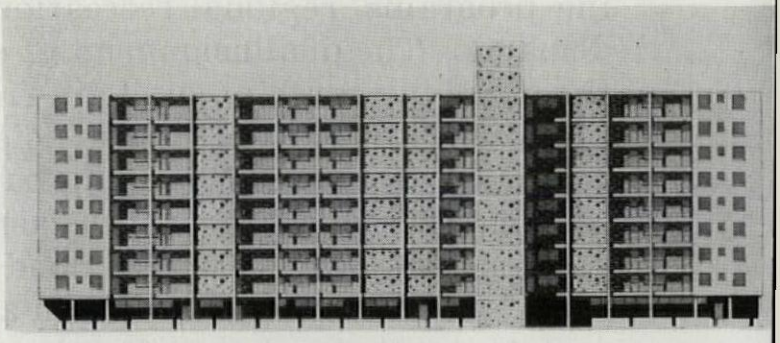
Since land costs within cities have always dictated high-rise and high-density housing, why are apartments a factor even more essential now than before? Most important of all, apartments are a major element of the solution to the problem of urban sprawl. City planners and redevelopment officials are realizing the political and economic importance of retaining a balanced leavening of income groups within the municipality—particularly including the middle-income families—as numerous housing units lost by slum clearance are being replaced by new housing. Finally, a large part of the population prefers apartments to private houses, and once costs bring well designed apartments within their reach through some feasible, universally available, and self-regulating mechanism of site and construction financing, the result will be overwhelming.

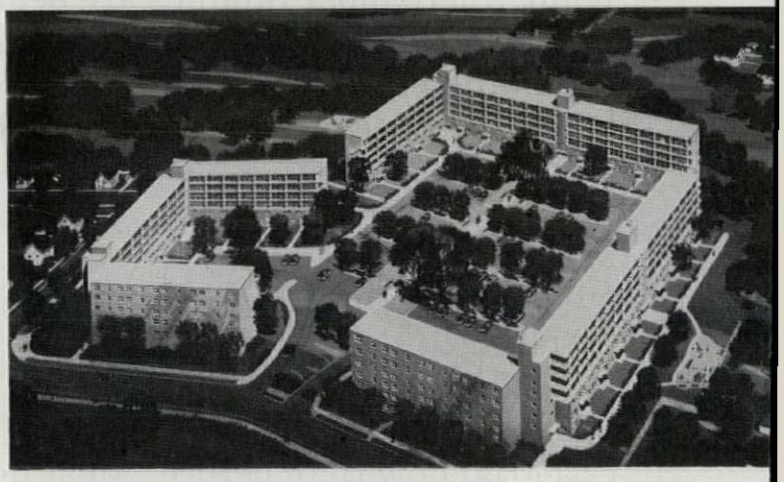
The four projects shown here and the completed Philadelphia apartment house on the pages following are all being assisted by city, state, or federal funds. Principal objective in the planning of these buildings has been to achieve **livability** within the stringent design and budget limitations usually attached to subsidized multiple housing.

This project (*below* and *right*) designed for the New Brunswick, New Jersey, housing authority, will have 246 dwelling units. Service and community facilities are on the ground level. Enclosed elevator lobbies at each floor open onto **exterior access galleries** wide enough to be useful as **fresh-air space for children and adults.** Introduction of the galleries has also made **cross ventilation** possible for all the apartments. Decorative precast-concrete panels and sections of expanded-metal-mesh screening enclose the galleries. Alexander Merchant & Son, New Brunswick, and Turano-Gardner Associates, New York, are the Architects.

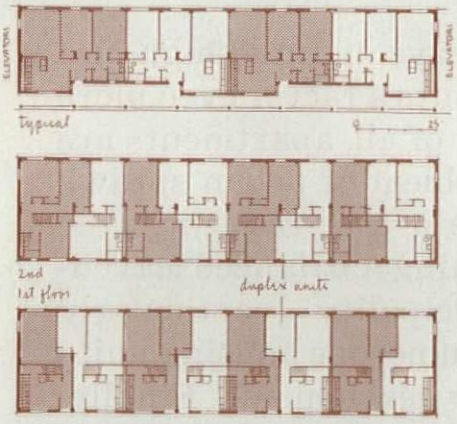




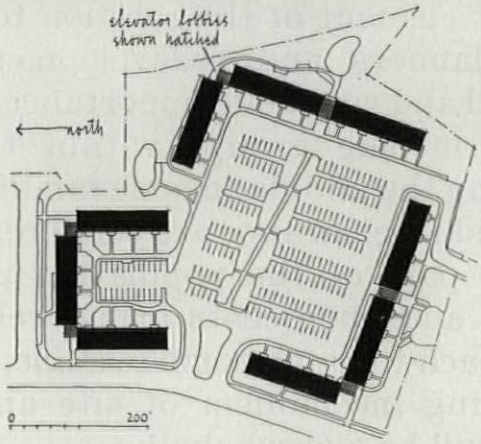




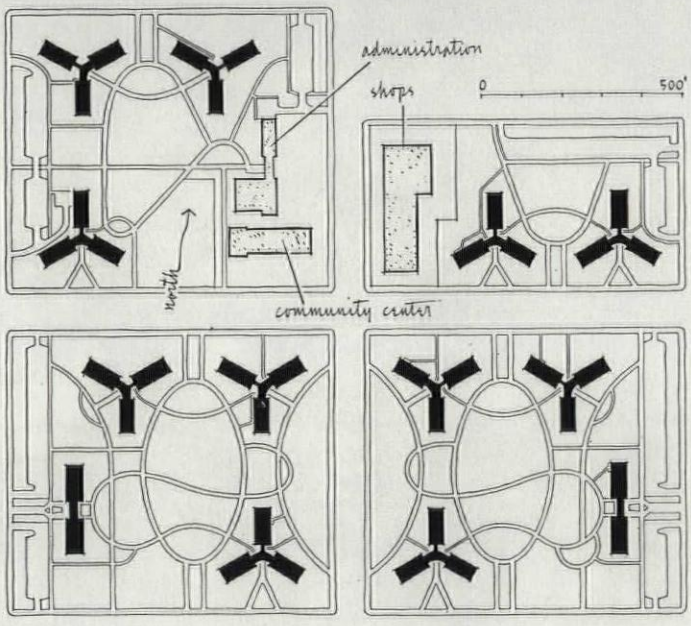
A similar solution with exterior galleries and their consequent benefits was developed for the Housing Authority of Stamford, Connecticut, with assistance from the Housing Division of the Connecticut State Depart-

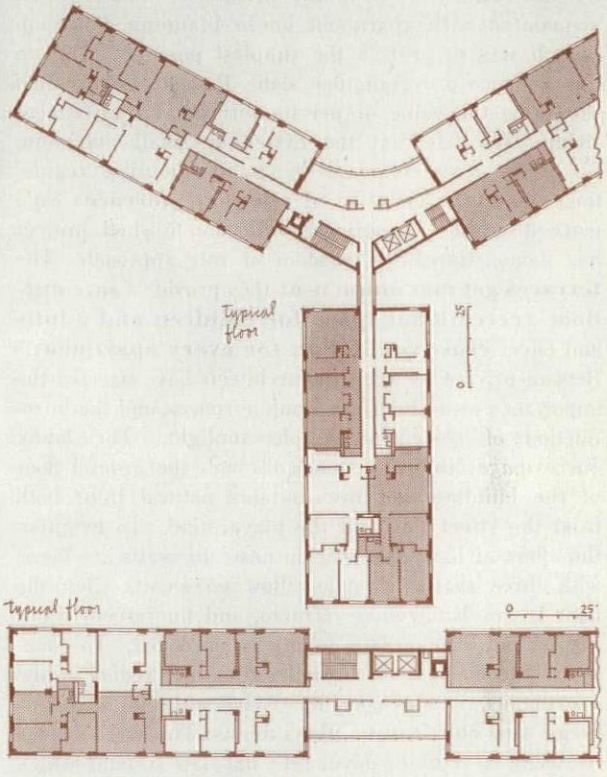


ment of Public Works. Here the design of the gallery is further refined by the **introduction of setbacks.** Large families are accommodated in **duplex units on the first two floors.** These units are directly accessible from the ground level and so help to **lighten the elevator load.** William F. R. Ballard is the Architect for this moderate rental project.

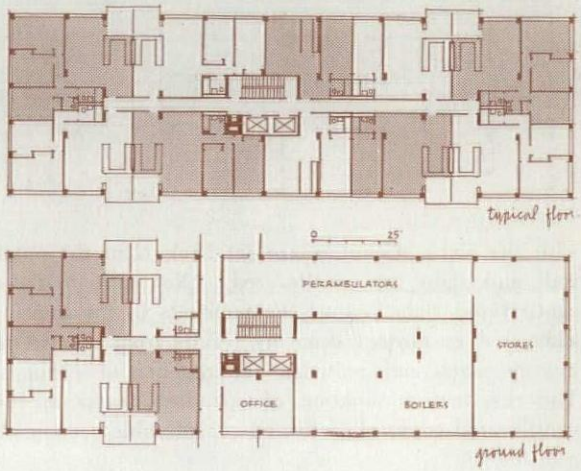


This state-aided low-rent public housing project (*left* and *below*) encompasses 2000 dwellings in four self-contained neighborhood units. Of particular interest in these high-rise structures are the **extended central elevator lobbies** which provide **open-air** spaces **for community use** at every floor. Exteriors of the reinforced concrete structures will be enlivened with **brick of various texture and color** and a gay pattern of **multicolored metal panels** on the protective screening of the open-air lobbies. Architects for this New York City Housing Authority project are Katz, Waisman, Blumenkranz, Stein, Weber: Architects Associated.



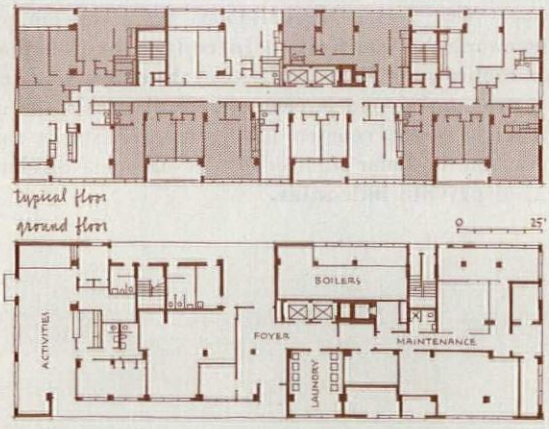


The same architects have designed a co-operative apartment house (*below*) for middle-income families, a state-aided limited profit development made possible through New York's Mitchell-Lama law. The project is noteworthy as the **first to introduce prefabrication techniques into multistory housing design.** The structural frame is concrete. Wall panels are of lightweight precast concrete having integral exterior and interior finish. Color is introduced at slabs and dividing walls of **private balconies.**

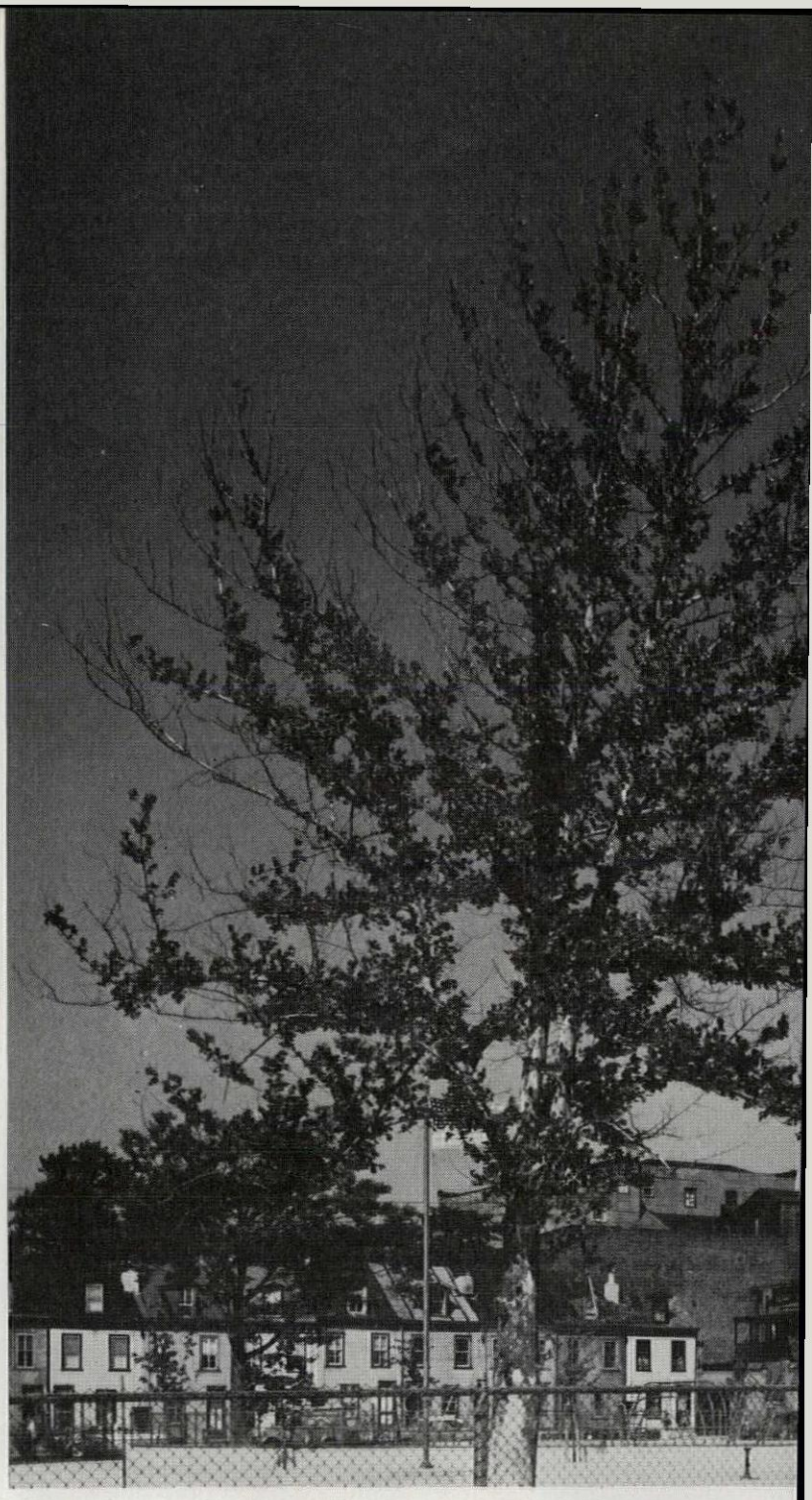


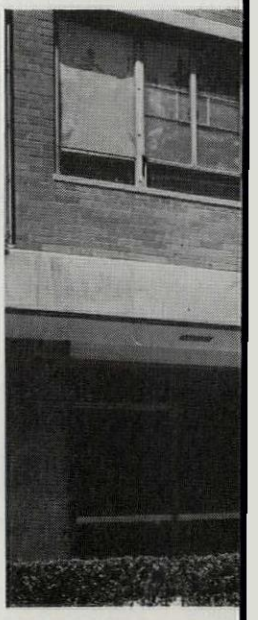
apartment houses: subsidized

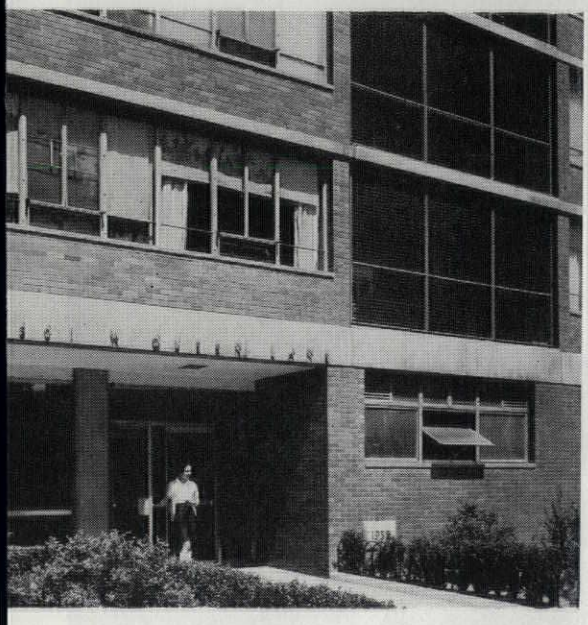
A quite limited area earmarked for housing on a site originally intended as a playground for the Philadelphia Department of Recreation dictated the height of this 16-story building. The project was designed for the Philadelphia Housing Authority, which specified provision of 120 dwelling units, community facilities for large meetings, kitchen, activity room, office for playground director, and toilets for playground users. "In the interest of economy and maximum amenity for the residents," write the architects, who are well acquainted with apartment house planning, "our approach was to provide the simplest possible form—in this instance a rectangular slab. Past experience had shown us the value of private terraces for apartment living. We felt that the extremely small maximum for room areas, imposed by public housing regulations, made the inclusion of **adequate terraces** even more desirable. Experience with the finished project has demonstrated the wisdom of this approach. The **terraces get maximum use**; they provide a **safe outdoor recreational space for children and adults** and effect **cross ventilation for every apartment.**" Beyond private terraces, the architects have stressed the importance of well designed public spaces, and the introduction of color and ample sunlight. The lobby (*acrosspage bottom*) extends through the ground floor of the building and thus obtains natural light both from the street side and the playground. To heighten the effect of light and spaciousness, the walls are faced with three shades of pale-yellow terra-cotta tiles, the floor is gray-and-yellow terrazzo, and fluorescent lighting behind an eggcrate ceiling is employed. To counteract the effect of the small size of the rooms in the apartments, it was considered desirable to introduce **large and continuous glass areas.** This was achieved by using a reinforced-concrete flat-slab system, which also had the advantage of being the most economical since it provided finished floors and ceilings integral



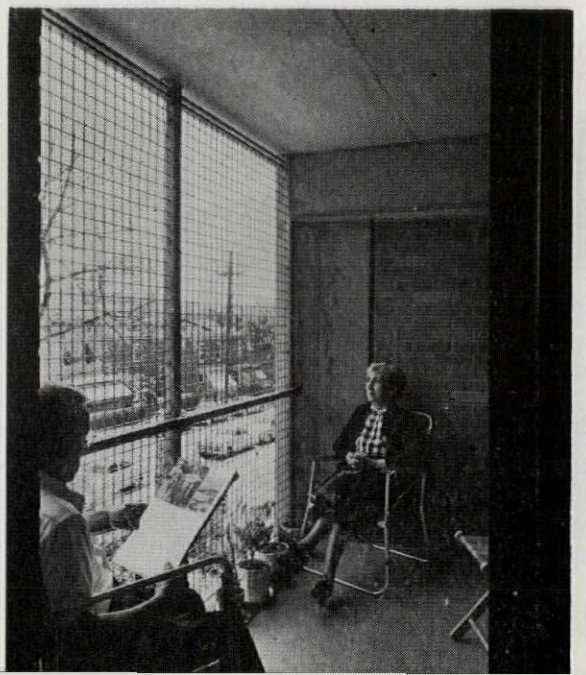
with the slabs. Columns are set back from the outer wall and slabs are cantilevered. "Not only do these cantilevered slabs reduce the moments in the interior slabs, but an obvious economy results from shortening interior slabs and reducing the number of columns. The resultant elimination of spandrel beams at the cantilevered edges also effected considerable economy."

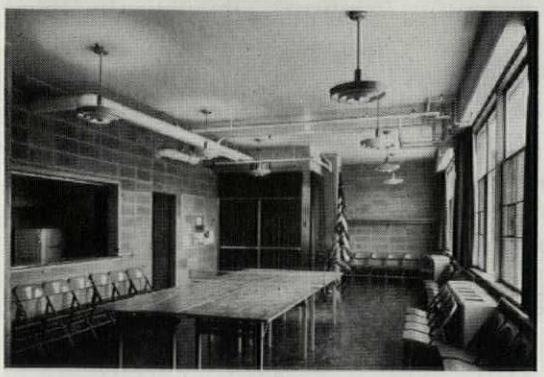


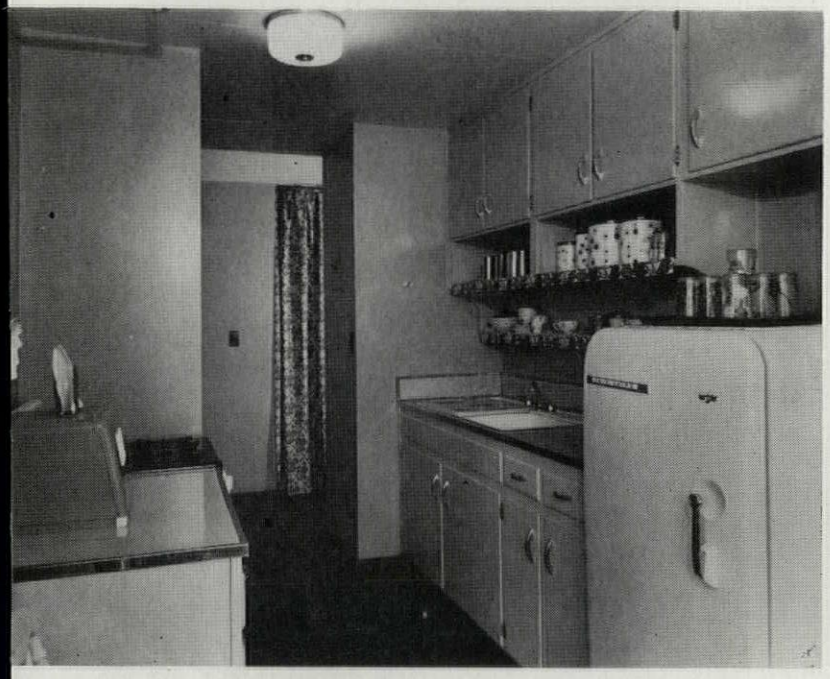




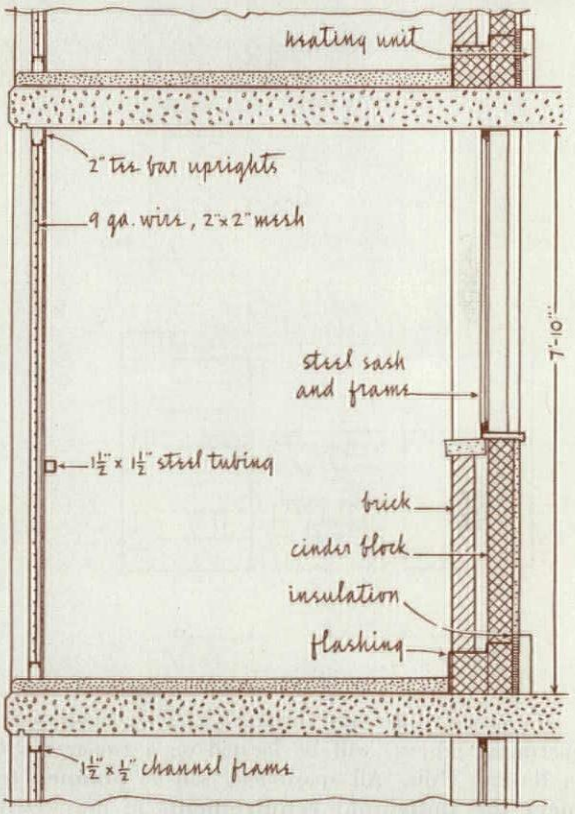
Colors on the exterior of the building are two shades of warm brown—a light tan on the end walls and a chocolate brown on the spandrels of the long exterior walls. Color accents are provided by Mandarin-Red exterior doors to the terraces. In the apartments, a uniform light-beige paint was used to make the rooms appear as spacious as possible; the trim is brown. Doors and trim in service areas are dark brown; in laundry and community rooms at the ground level (acrosspage top) *they are dark green.*







Because of the wind-force factor, the slabs could not be cantilevered at the end walls. "Sufficient wind-resistance," continue the architects, "even beyond structural safety requirements, is necessary for buildings with rigid partitions, to obviate cracking or crushing of the partitions resisting wind loads where the frame is too flexible. If this point is not carefully considered, excessive maintenance will result. To provide the necessary rigidity in the transverse direction, rigid frames are located in the short end walls and at the stairs and elevators (48"-deep columns and 40"-deep beams at the stairs, and 30"-deep columns and 22"-deep spandrels in the short end walls, which, with the masonry built into these walls, sufficiently increase the mass and rigidity). The wind forces are not critical



BALCONY SECTION 3/8"scale

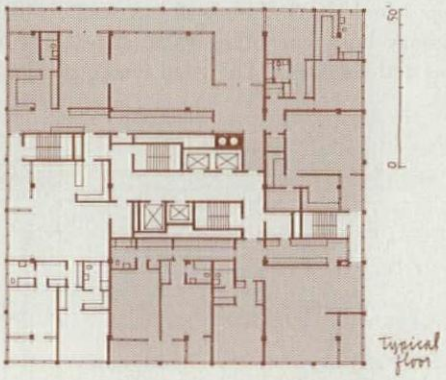
in the longitudinal direction, and need no special provision." For lowest first cost, durability, and ease of maintenance, the following building materials were chosen: concrete, concrete block, brick, solid plaster for interior partitions, and steel sash. The heating system uses forced hot water regulated by outdoor-indoor thermostatic control. Lighting, except for illumination in lobby, is incandescent. Acoustical treatment, in the form of ceiling tiles, was limited to ground floor public spaces.

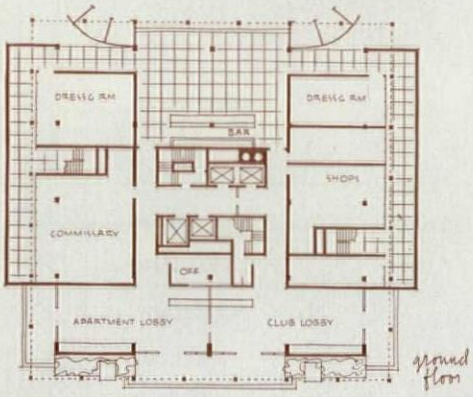
Architects for this apartment building were Roth & Fleisher, Philadelphia; Horace Fleisher, Landscape Architect for the playground; Severud-Elstad-Krueger, Structural Engineers; Charles S. Leopold, Mechanical Engineer; McCloskey & Co., General Contractor.

Photos: Lawrence S. Williams

apartment houses: luxury

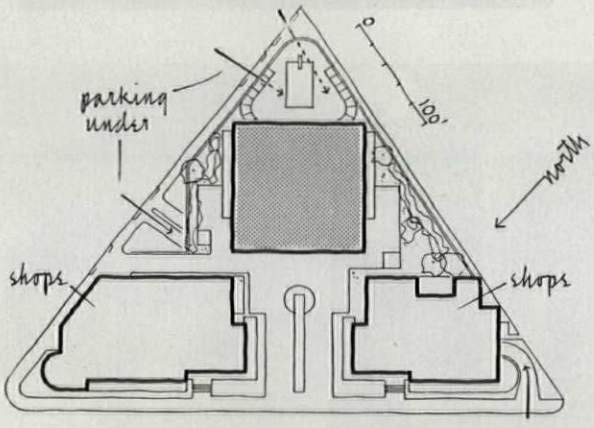
The scarcity of desirable sites for residential development, the price of land in highly developed urban areas, and constantly rising construction costs have practically excluded any privately financed multiple housing except luxury apartments. To secure the necessarily high rentals, these buildings must now include "extras" such as swimming pools, gardens, clubrooms, facilities for maid and food service—all beyond the traditional range of apartment-house amenities. Though both of the luxury buildings shown here are to be built in California, they are characteristic of conditions prevailing across the country.

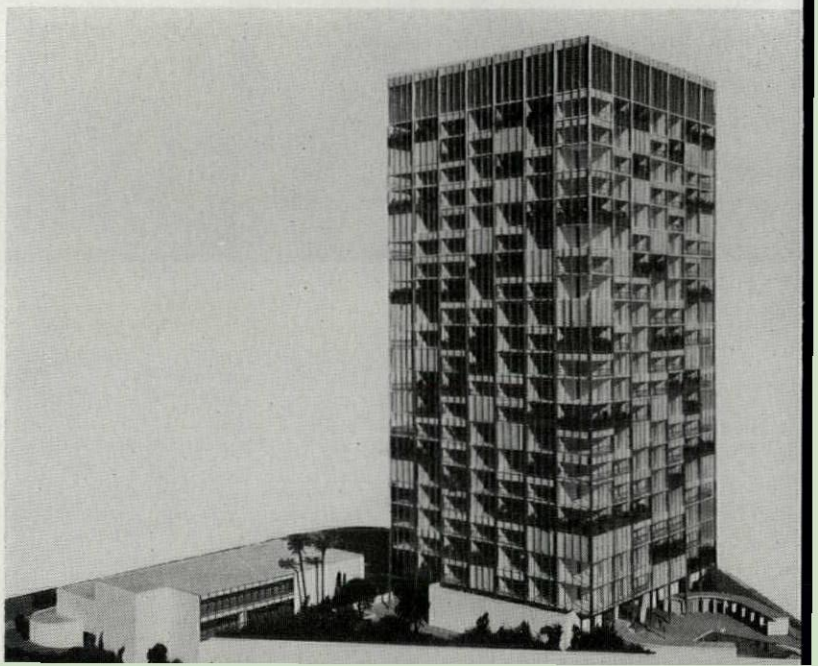




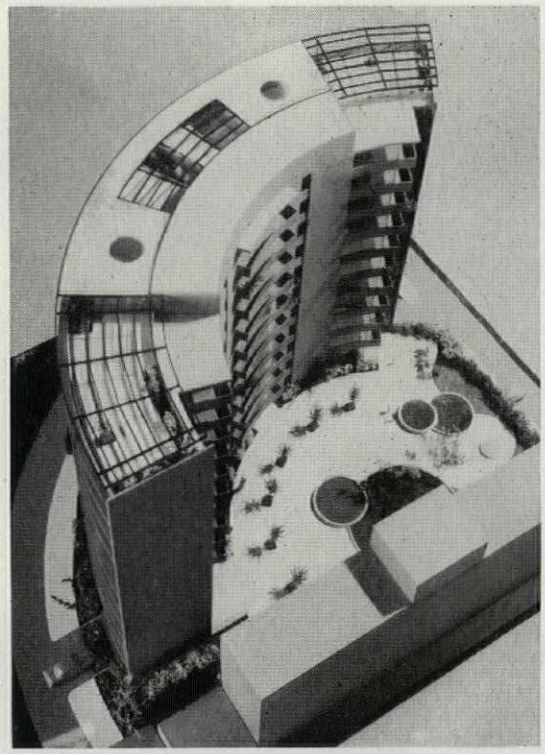
The proposed Beverly Towers, a 22-story co-operative apartment project, will be located on a two-acre site in Beverly Hills. All apartments will be **planned to meet the individual requirements** of prospective owner-tenants. Glass panels or solid walls with an exterior facing of marble may be placed at any point within the stainless-steel grid which supports these exterior-wall materials. Three basement levels will provide shelter for two cars per family and 200 sq ft of fireproof storage space per apartment. In addition, owner-tenants will have available a 20′ x 40′ swimming pool, cabanas, a landscaped terrace, several ground floor shops, and a private club on the top floor. Of particular structural interest is the **lift-slab construction,** the first use of this system for so high a building. Economies resulting from the selection of lift-slab construction amount to $250,000 and a saving in construction time of four months. Moreover, owing to the elimination of the usual heavy beams, the architects were able to secure two extra floors and yet remain within stipulated height limitations. Pereira & Luckman were the Architects.

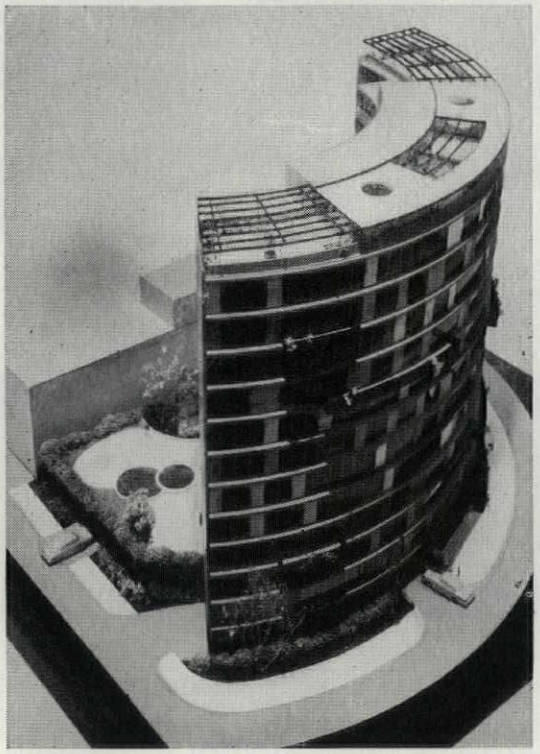
Model photo: Erwin Lang

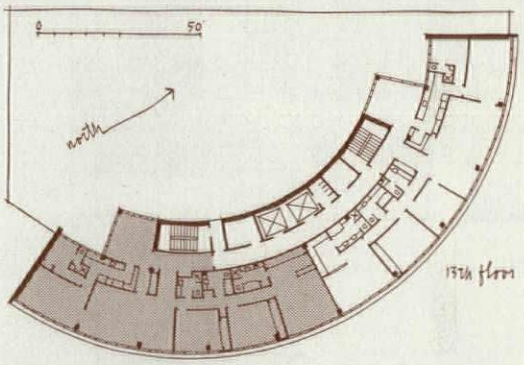


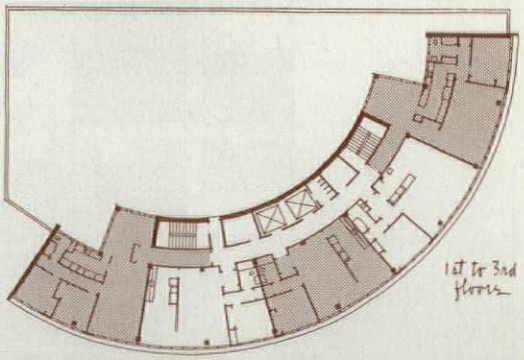


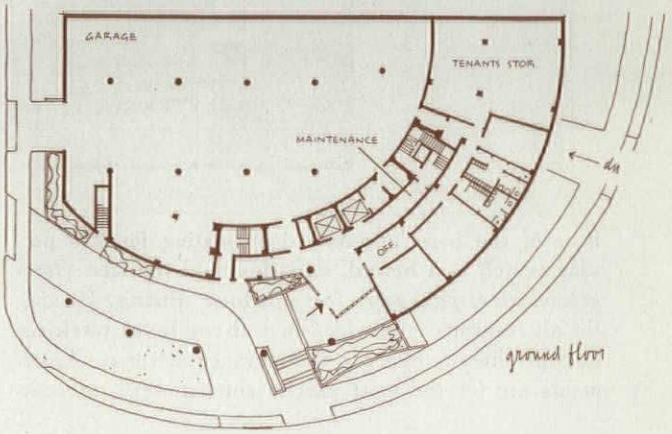
Fundamental considerations in the design of this apartment building to be erected in Oakland, California, were **view, privacy, spaciousness,** and **maximum flexibility of living areas.** The curved form suggested by the irregular shape of the site affords a maximum of view frontage with a minimum of circulation. Each apartment looks over the surrounding parks and Lake Merritt; those on the higher floors view San Francisco Bay as well. Privacy for each unit is assured and space was left in back of the building for a garden. Fifteen prototype apartments have been developed to give prospective buyers a large selection from which to choose. If preferred, open space of any size may be purchased and subdivided to suit the particular requirements. A furred ceiling above the line of baths and kitchens will carry horizontal pipe runs, making it possible to vary the location and number of plumbing fixtures. "The main façade," write the architects, "has been treated as a random-patterned mosaic of glass and porcelain-enameled panels in modular frames, thus providing **flexibility in elevation as well as in plan.**" A two-level garage, each level directly accessible from the exterior provides off-street parking for all owner-members of the co-operative. Architects are Confer & Willis; D. W. Anderson, Associate Architect.





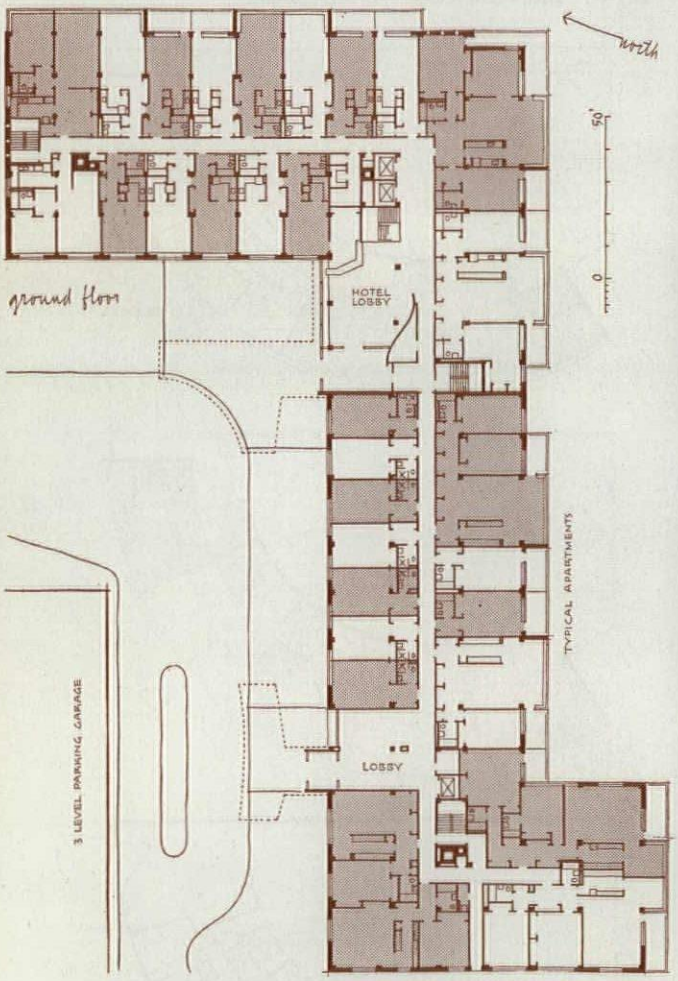


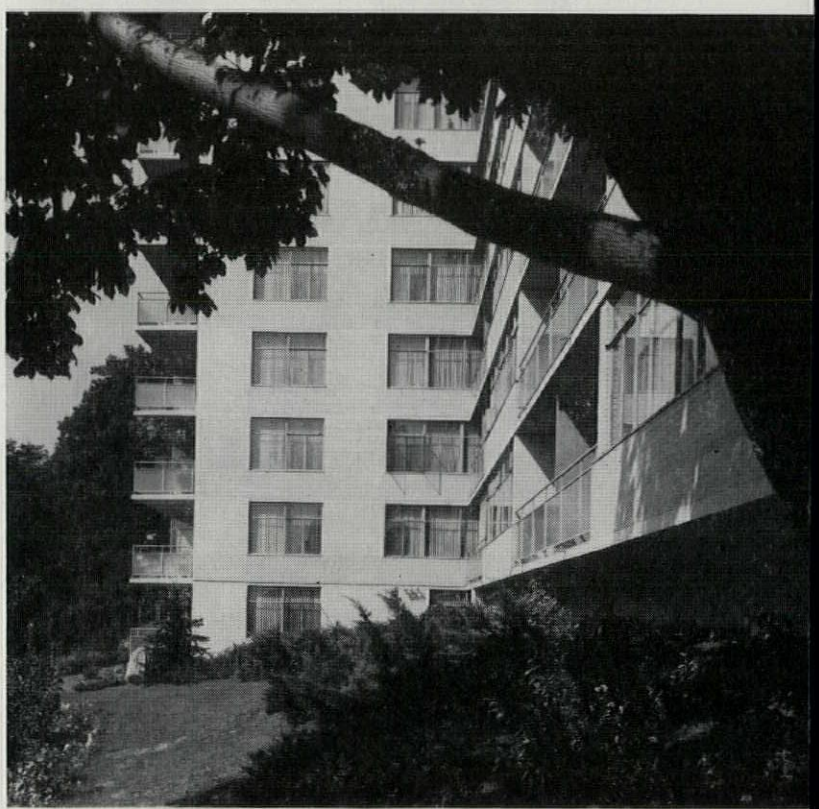




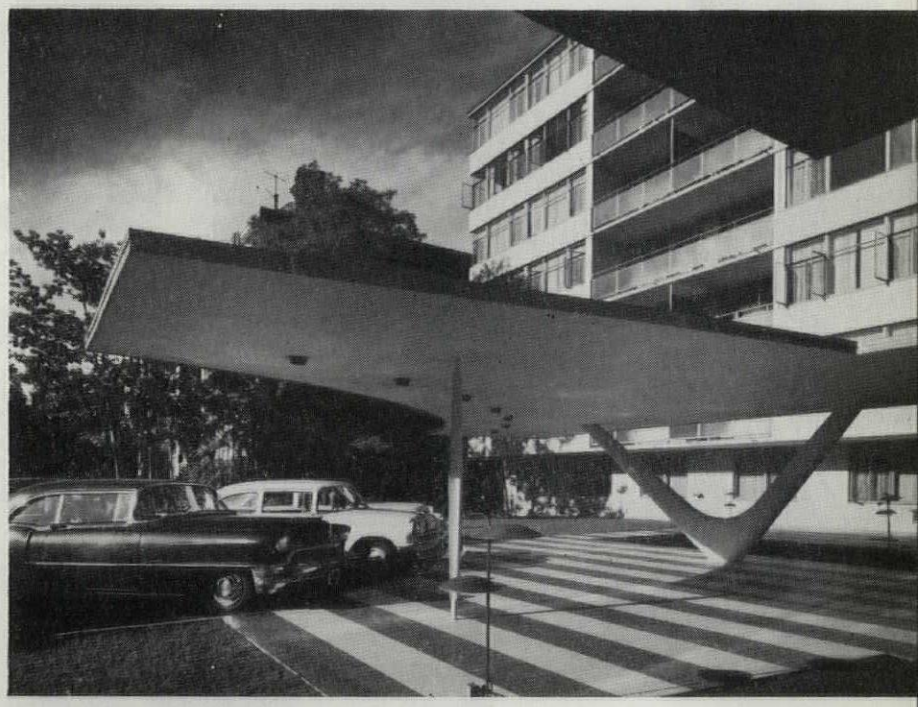
Toronto, Canada

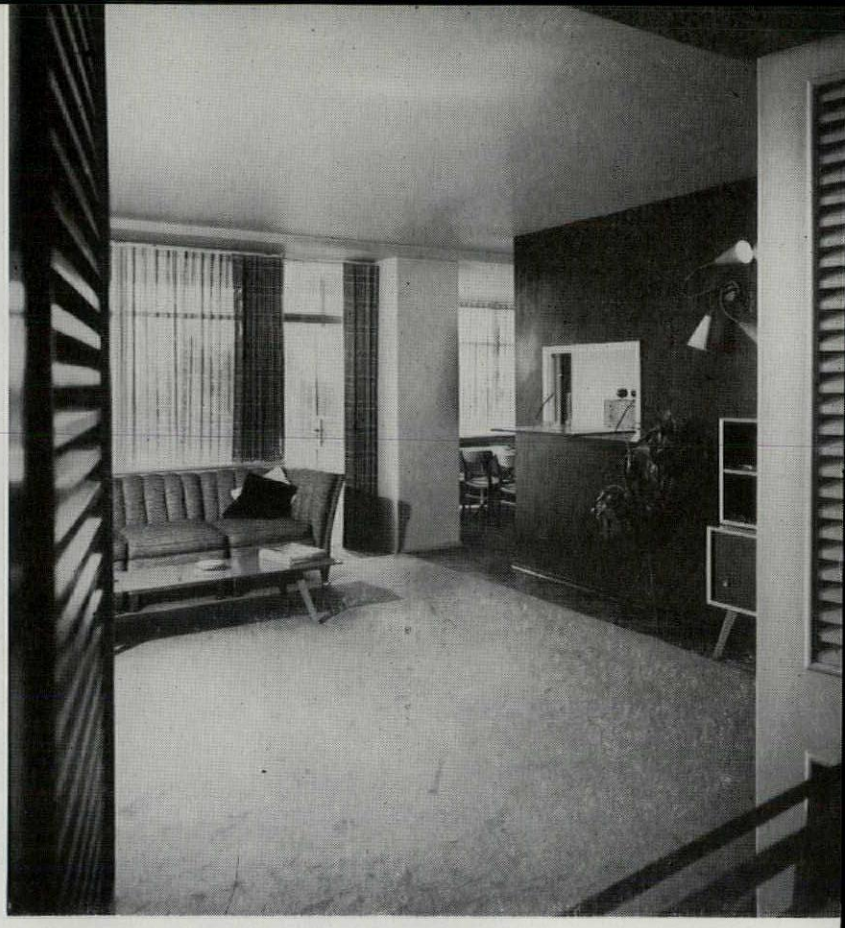
"Sprawling suburbia, remote sites, and staff problems," write the architects, "have produced a situation where it is more economical for the wealthier, older couples with grown-up children to rent a comparatively expensive apartment in the city than retain their old homes in the suburbs." This building, the first of its kind to be erected in the post-war period, has since set a precedent for many such large luxury apartment houses in the city. Its site is a hillside left by the receding waters of Lake Ontario. The plan scheme, a compromise between the original design of two separate buildings linked by a glass foyer, now places the **75-room residential hotel** in one leg of the Z-shaped structure, with apartments in the other two wings. Two lobbies are therefore provided on the ground floor (*plan below*); one with reception desk and parcel storage for the use of the hotel guests (*acrosspage bottom*), the other for the occupants of the apartments. A restaurant below the lobby

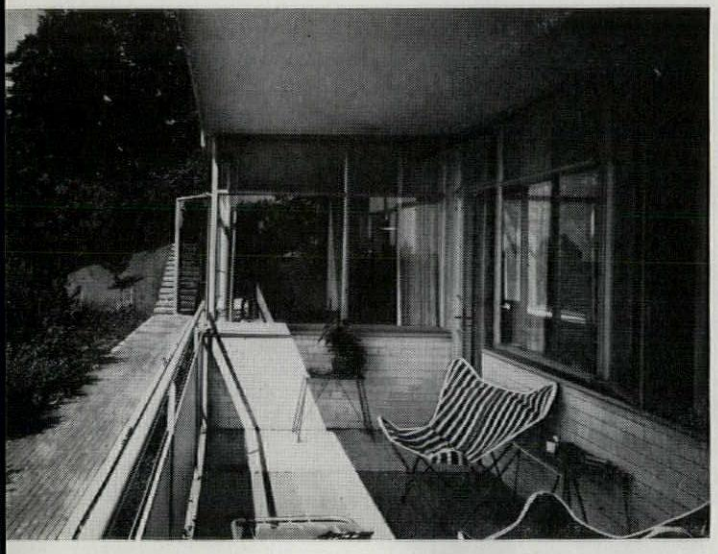


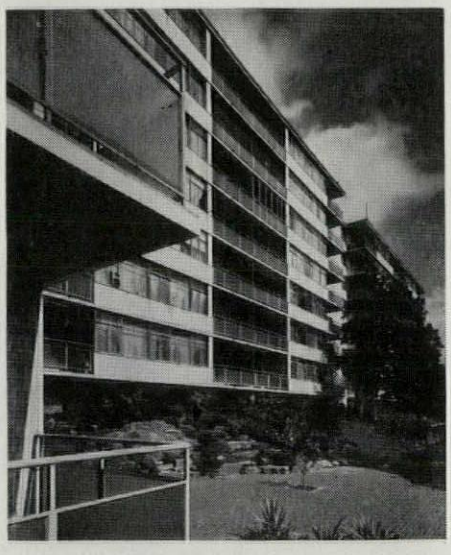


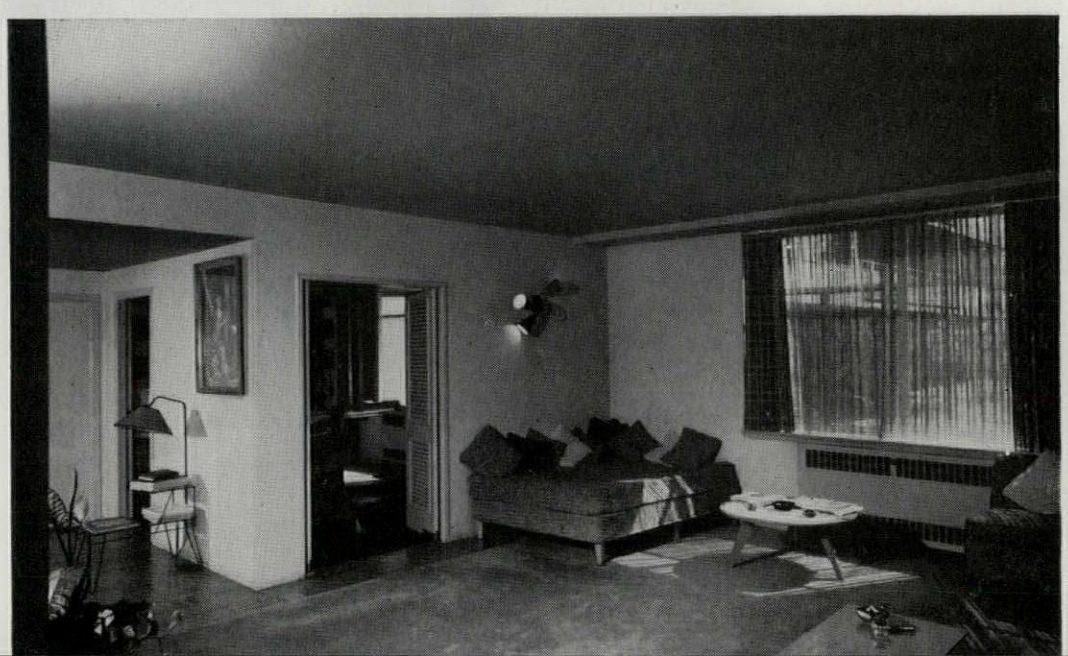
floor of the hotel affords indoor seating for 250 persons as well as a **broad, cantilevered terrace** (*foreground acrosspage top*) **for outdoor dining.** Parking for all residents is provided in a **three-level parking garage** directly opposite the entrance driveway. Apartments are for the most part oriented toward the com-

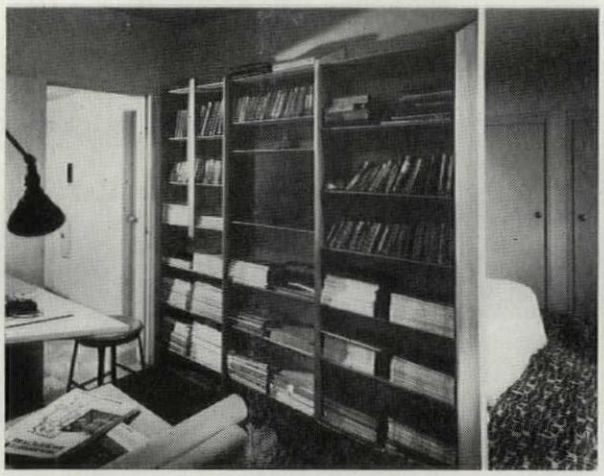




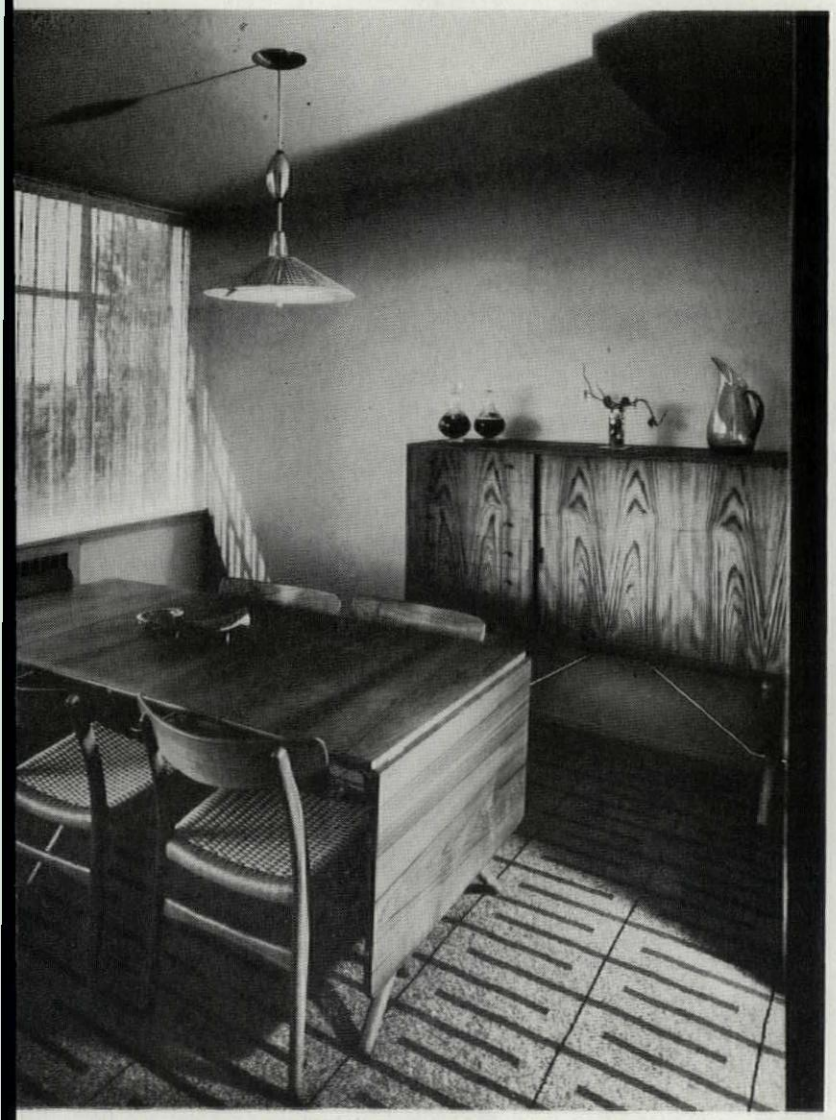


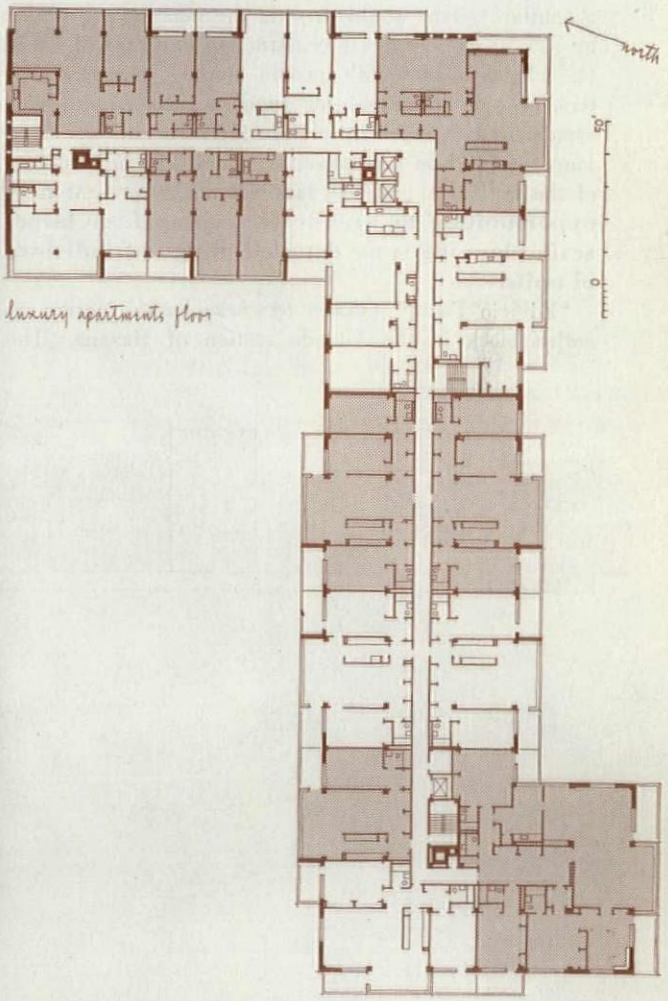






manding view of the city and the lake to the south—only a few face west. **Rooms are of generous dimensions** and all of the one- to five-bedroom units have their **private outdoor areas.** Balconies are cantilevered 7′-0″ from the column line and enclosed by translucent balustrades. These are of wired, cast glass—a material well suited for this purpose since it contributes a feeling of maximum security, is easily maintained, allows the sun to penetrate, yet provides an excellent wind break. The structural frame is of reinforced concrete—floors being of 5″-thick flat-plate construction. Exterior walls are faced with brick, interior walls with plaster. Finished floors are wood block on concrete. Casement-type windows have steel frames; fixed panels use ¼″ plate glass. Heat is supplied through built-in convectors from a forced hot-water high-pressure system. Provision has been made for fully recessed, individual air conditioners concealed from view on the exterior of the building by the balconies.

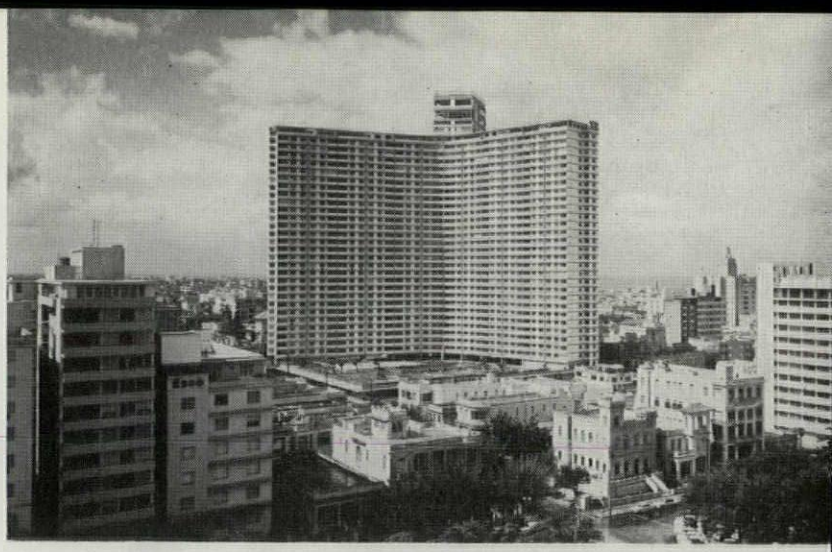




Architects for this Toronto apartment were Page & Steele, Toronto; Peter Dickinson was Partner-in-Charge-of-Design; Edwin Kay, Landscape Design; Hooper & Yolles, Structural Engineers; J. A. Norton, Mechanical Engineer; Roxborough Electric, Electrical Engineers; L. S. Yolles, General Contractor.

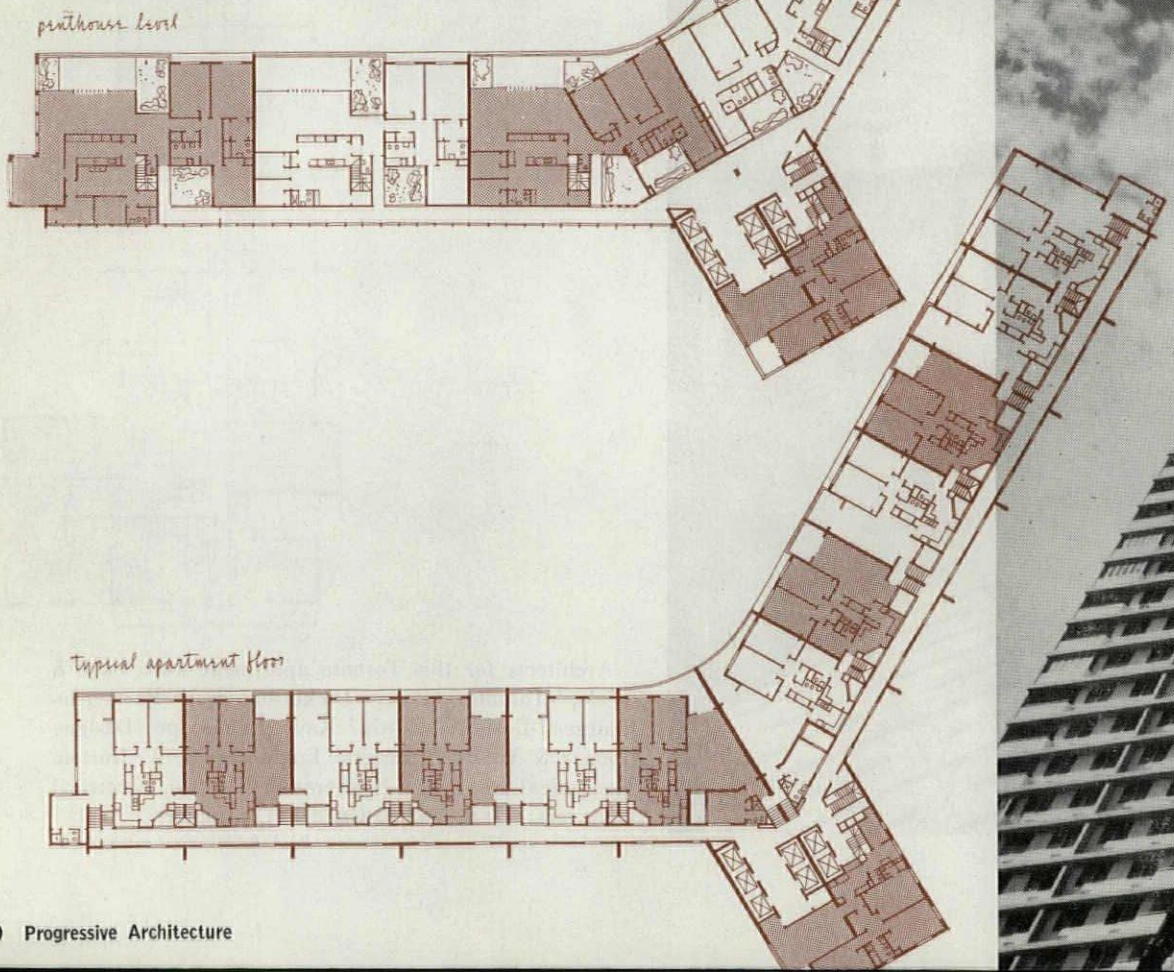
Photos: Hugh Robertson, A.R.P.S.-Panda

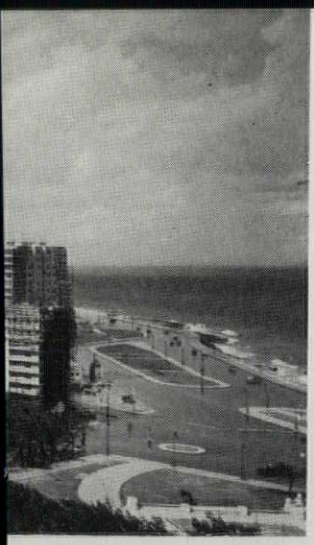
apartment houses: co-operative

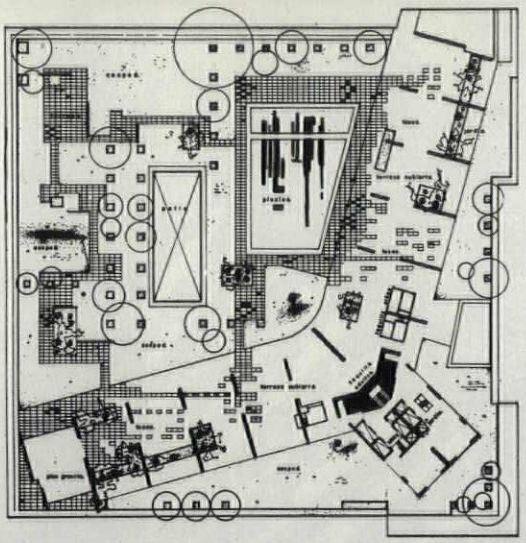


An extraordinary legal device called **"Horizontal Property Law,"** in existence in many South American and European countries, made possible this huge co-operative in Cuba. "Under this law," states Dr. Nestor Moreno, one of the attorneys instrumental in carrying out the enabling legal arrangements, "each apartment unit becomes an individually and completely owned parcel of real property inscribed in the land registry. The proprietor, beyond owning his own unit, is joint owner of the common facilities, such as land, lobbies, stairs, elevators, swimming pool, and other similar adjuncts. According to this statute, the building can be planned to house apartments, offices, stores, or other space utilization. Any combination may be arranged, but it must be clearly delineated in the planning stages." In contrast to the U.S. co-operative system under which "ownership" means owning stock in a building corporation and under which an apartment, as only part of an entity, cannot be independently mortgaged or sold, the horizontal-property law permits individual long-term financing and unhampered sale. Dr. Moreno feels that a similar system would provide the necessary stimulus to U.S. apartment house construction and open the way to badly needed middle-income housing in urban centers. Slum clearance, he suggests, could with this system be conducted by private interests and would no longer depend on governmental action. The introduction of the horizontal-property law would also present **new opportunities to architects,** ranging from **large-scale planning** to the **detailed design of individual units.**

"Edificio Focsa" (*shown on these pages*) covers an entire block in the Vedado section of Havana. The



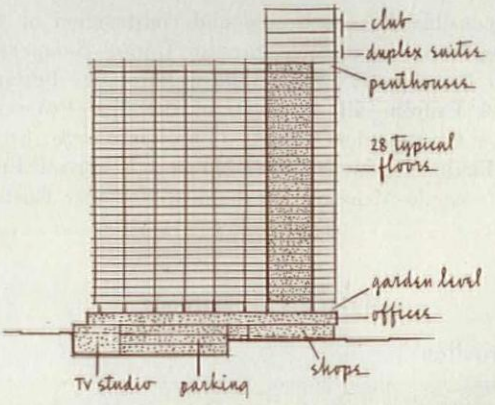




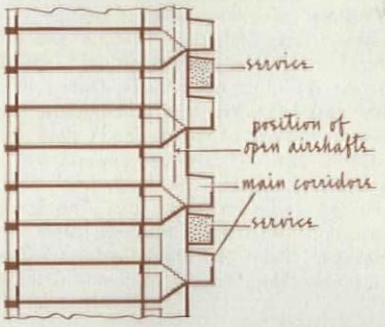
Havana, Cuba

apartment houses: co-operative

site is near the seashore and close to transportation and hotel facilities. In addition to the 373 apartments within this huge structure, other occupants include TV studios, shops, offices, and parking areas in the four stories below the grade level, as well as a bankers' club with independent entrance and separate elevators located in the five-story tower structure, "Twenty



different models," state the architects, "all containing the same number of apartments, distributed among one to eight blocks and from 10 to 30 stories in heights, were compared for appearance, view, privacy, cost of building, and maintenance." The single structure finally selected, now completed and in use, **covers barely 22% of the site** and incorporates many design innovations. Most ingenious is the solution of one special requirement: the **separation of services from the owners' areas.** This has been achieved by providing three elevator halls for every four floors. Two of the

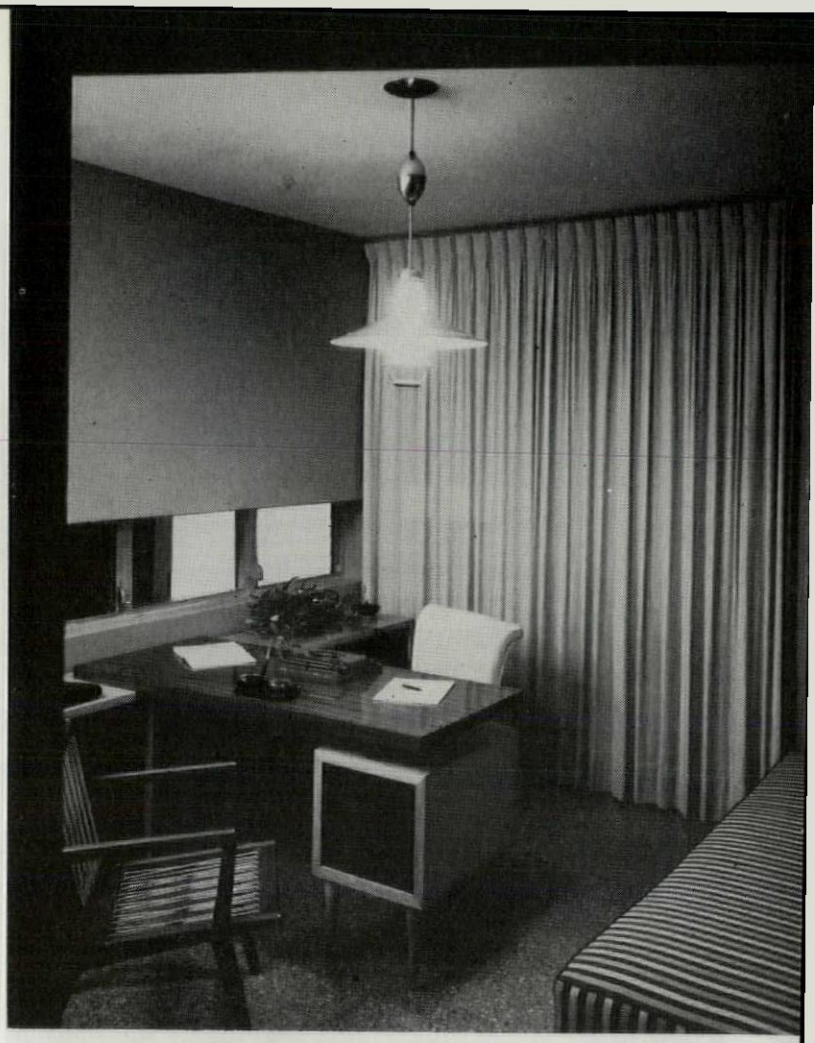


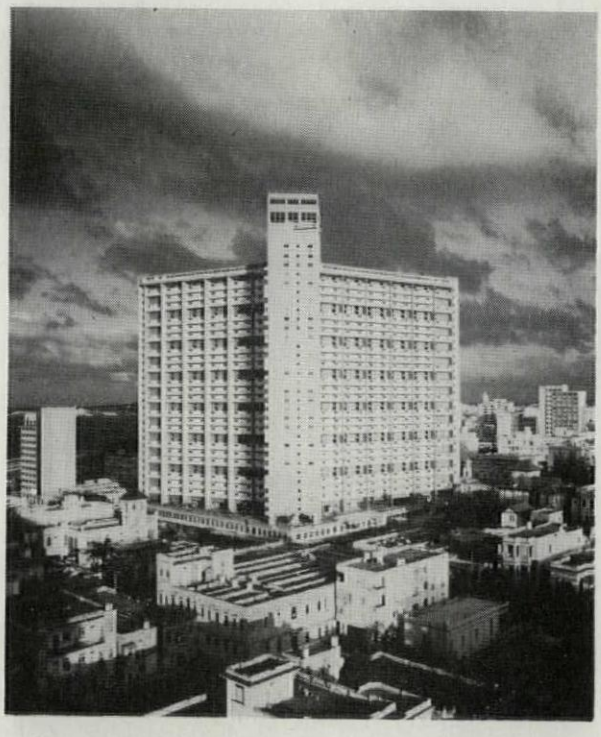
three halls are for the apartment owners, one for service. "Completely separate entrances, elevators, halls, and stairs," write the designers, "make it physically impossible for servants and delivery personnel to meet the owners. This system provides two other advantages. In reducing by half the number of owners' elevators otherwise required, the number of servants' elevators to one fourth, the cost of elevators is considerably diminished both for installation and operation. And by making the ceiling height of the halls 2'-6" lower than that of the apartments, **access to light, view,** and **cross ventilation** is provided through the rear façade of the wings. With such a device, 45% of this façade is free of obstruction from the halls." Garbage is collected through the service halls, at night, and carried by special elevator to a storage silo.

For stability, rigidity, and low cost, reinforced concrete was chosen as the structural material. Horizontal and vertical elements in the structure, as well as the building's plan and its own weight provide the necessary rigidity. Bearing walls serve also as partitions between apartment units. Windows are the glass-jalousy type, tested to withstand hurricane conditions and driving rains.

Responsible for the design and construction of this building were: Architects Ernesto Gómez Sampera & Martin Dominguez; Civil Engineer Bartolomé Bestard; Manuel Padrón—all members of the firm Proyectos, Obras y Construcciones, S. A. Consultants were: Structural Engineers Sáenz-Cancio-Martin; Electrical Engineer Fernando Meneses; Mechanical Engineer Gustavo Bequer.

Photos: Alexandre Georges





Materials & Methods

construction

Structure: foundation, frame, floors, and roof: reinforced concrete: portland cement—Lone Star Cement Corporation; reinforcement—Internationale Crediet Handels-Vereeniging, Rotterdam; walls: concrete block—POCSA, Havana; roof: tower curtain walls: porcelain-enamel panels—Texlite Inc. **Wall Surfacing:** exterior and interior: cement plaster on concrete block—Lone Star Cement Corporation; rest rooms, toilets: gypsum plaster—U.S. Gypsum Company. **Floor Surfacing:** Terrazzo—Luis Mion, S. A., Havana. **Ceiling Surfacing:** gypsum plaster and gypsum board—U.S. Gypsum Company. **Roof Surfacing:** thin concrete slabs over slag; slabs covered with Calendrite—George M. Callender & Company, London; solid roofing asphalt—Texas Company. **Roof Drainage:** gutters & downspouts: lead; asbestos cement—Perduit, Havana; iron—San Jose, Havana. **Partitions:** interior: concrete block—POCSA, Havana; toilets: marble—Cabal y Cia, Havana. **Windows:** jalousies—Kelleher Company; glass: heat absorbing, green tint—Union Comerciale Glaceries Belges, Belgium; storefronts: aluminum extrusions and glass—Sioux Metal Products; skylights: glass block. **Doors:** interior: wood veneer, spiral core—Constructora Cubana de Placarol, Havana; entrance: sliding aluminum and glass doors—Sioux Metal Products; automatic door operators—The Stanley Works. **Hardware:** lock sets: aluminum finish—Schlage Lock Company; hinges: cadmium, metal pin—The Stanley Works; casement: aluminum—Visitaire, Havana; steel panic exit—POCSA, Havana. **Paint & Stain:** exterior—The Glidden Company; interior—The Sherwin Williams Company.

equipment

Equipment: kitchen ranges and water heaters—General Electric Company; wood cabinets—POCSA, Havana; telephone intercom. — Telefonbaund Normalzeit, Frankfurt; plastic-treated sheet surfacing—Plasticrom, Havana. **Elevators:** hoisting equipment, cabs, doors—Otis Elevator Company. **Lighting Fixtures:** living area—Lamparas Quesada, Havana; lobby area—POCSA, Havana. **Electric Distribution:** service entrance switch—BullDog Electric Products Company; multi-breaker—Cutler-Hammer, Inc.; panelboards: POCSA, Havana; wire—Phelps Dodge Corporation; conduit—General Electric Company; emergency generating plant—Allis-Chalmers, Buda Division; multiple TV antenna—Jerrold Electronics Corporation. **Plumbing & Sanitary:** water closets, bidets, tubs, lavatories, and shower controls—Briggs Manufacturing Company; medicine cabinets, chrome accessories—The F. H. Lawson Company; copper pipe—Anaconda Wire & Cable Company; water supply system—Fairbanks, Morse & Company and Lancaster Pump & Manufacturing Company; water-conditioning equipment for swimming pool—Cochrane Corporation.

apartment house air conditioning

by William J. McGuinness*

Designs for new apartment buildings are reflecting a growing inclination among tenants to expect air conditioning. In the past several years, window units have dotted the façades of countless apartment houses. Very effective and still the most inexpensive and adaptable method of adding this facility to modern living in existing structures, window units are now being produced in phenomenal quantities. One brochure[1] refers to 52 manufacturers and over 300 models; consumer information is given on 36 characteristics of these units. This movement has not been without its problems. The installation of units in all major rooms of an existing apartment building can add 30 percent or more to the electrical load. Very few existing houses, not planned for air conditioning, can make this addition without serious or dangerous overloading. This trend in power increase for air conditioners and other electrical devices has given rise recently to the founding of the National Adequate Wiring Bureau whose surveys have revealed fantastically inadequate conditions in wiring. It is safe to say that almost all existing apartment houses need major increases in wiring before window units may be added in all apartments.

The question arises whether proposed buildings should be planned for window units, or for a more integral scheme. Functionally, the window unit encroaches on the natural use of the window and is not always architecturally attractive either within or outside the building (*Figures 1, 2A, and 3*). The use of wall units (*Figures 1, 2B, and 4*) has solved a good many problems for the apartment-house owner. They are self-sufficient, requiring only an electrical connection and an outside grill. The electrical connection is best placed in a concealed position and assigned specifically to the unit. Major rooms often have a large glass area or several windows together. Thus the cooling device can be placed below one window and conventional heating units below the others. In a recently completed apartment building at 35 Park Avenue, New York, designed by Architects Sylvan & Robert L. Bien, conditioner cabinets and convector cabinets were made to match. John Campagna, representing the owning corporation, reports good experience with these wall units, which were manufactured by Amic (*Figures 4 and 5*). This method places control of room temperature in the hands of the tenant—and this appears to be the trend of most new systems. Unlike central systems (*Figure 10*), room units may be turned off when the tenant is out, thus saving him electrical expense. The central system would have to keep operating for all apartments and this unnecessarily high expense would be

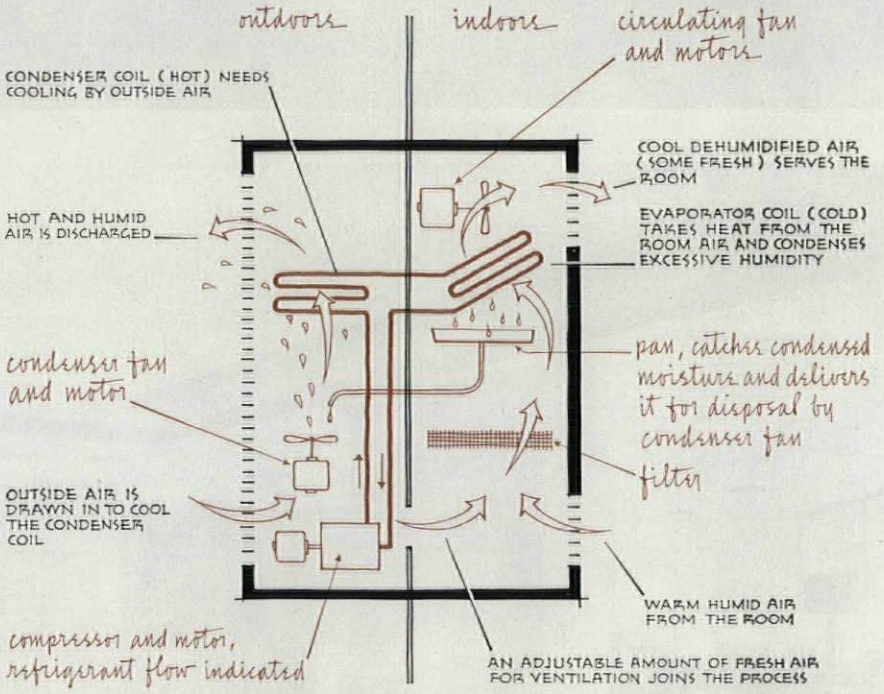


Figure 1—schematic illustration of an air-cooled refrigeration cycle. This self-contained cooling system forms the basis for methods A*—window units,* B*—wall units, and* C *—cabinets with self-contained cooling* (details acrosspage). *Note, in each case, the need for a large outdoor grill to admit and discharge the cooling air.*

* *Chairman, Department of Structural Design, School of Architecture, Pratt Institute, Brooklyn, N. Y.*

[1] *"Specifications of 1956, Room-Window Air Conditioners," April 1956* Refrigerating Engineering.

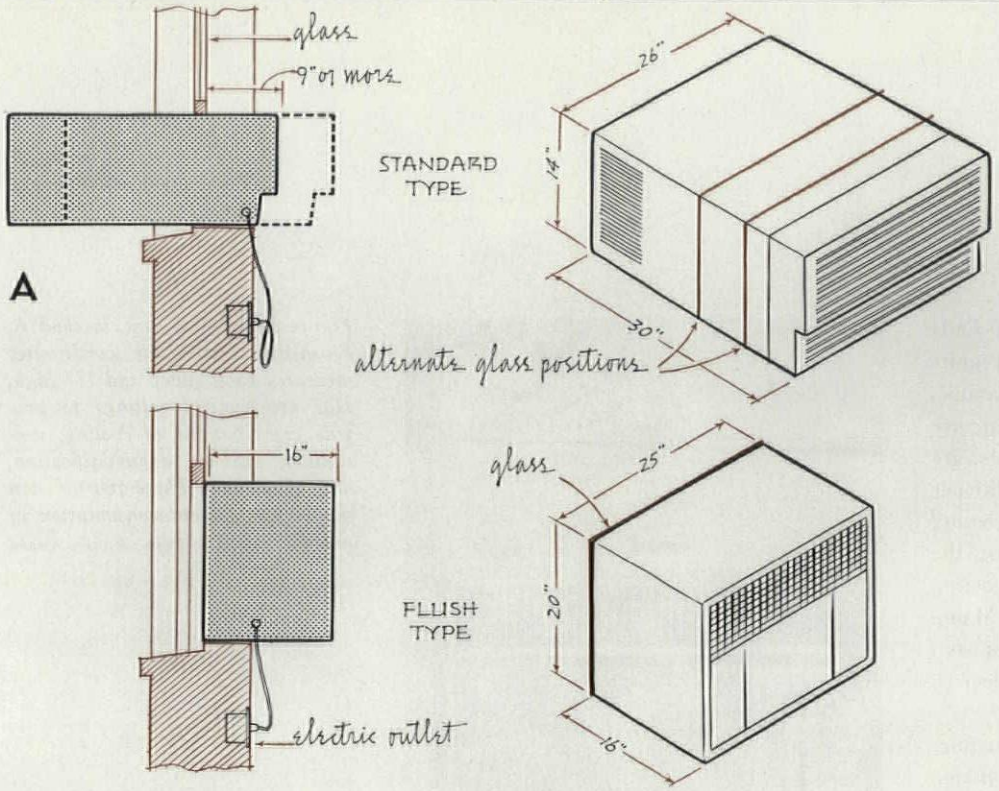


Figure 2A—window unit, method **A**. *This type may project in or out, or be flush. Ratings are usually ½, ¾, 1, and sometimes 1½ hp.*

Data: courtesy General Electric

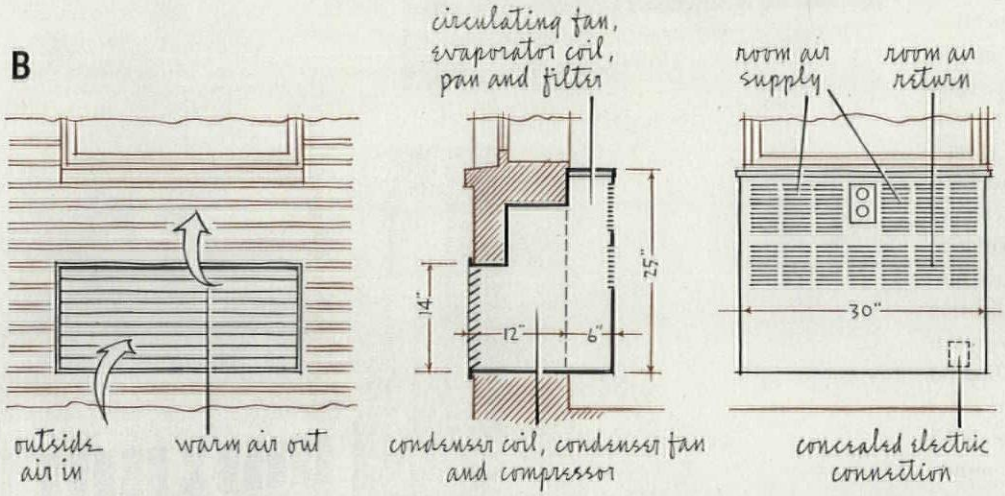


Figure 2B—wall unit, method **B**. *Section indicates usual location of equipment. Air rates for one hp model in cfm: room, 350; outside for condenser cooling, 500; intake for ventilation, 160; exhaust for smoke and odor removal, 160. Weight about 190 lb.*

Data: courtesy Amic

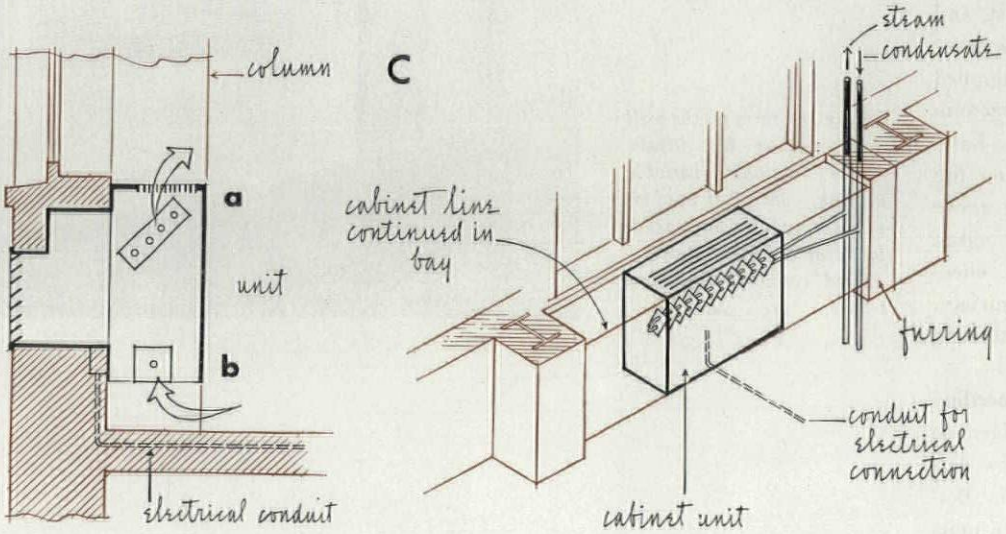


Figure 2C—cabinet with self-contained cooling unit and integral heating, method **C**. *In order to add heating element in form of* **a**—*convector, or* **b**—*finned coils above the evaporator coils, the unit is raised off the floor and served by steam-heating runouts concealed behind a continuation of the cabinet. This falsework may be partially adapted to bookshelves. Cooling process is the same as in* **B**.

charged to the tenant. Campagna finds that repairs can be made on wall units in less than the full time of one mechanic. Service contracts for this function are also possible. Two special controls are suggested: one prevents the conditioner from operating inadvertantly in freezing weather, thus precluding freeze-ups; the other prevents the heating and cooling from operating at the same time. Manufacturers active in the production of wall units are Lewyt, Amic, General Electric, and Chrysler.

Because heating units also require space below windows, a number of manufacturers have combined heating and cooling functions, using interconnecting controls. The principles involved are illustrated (*Figure 2C*). Hot water or steam can be circulated through convectors or finned coils placed in the same air stream as the cooling coil. Sometimes the location of runouts requires that the cabinet extend to the nearest exterior column. As in all air-cooled systems, a large outside grill is needed. The first application of this kind of climate control to apartment houses is now being installed at 136 East 56th Street, New York, for which Emery Roth & Sons were the architects. Samuel Rudin, project owner, states that this system allows the tenant full control and makes possible heating, cooling, dehumidification, air exhaust, and fresh air intake for ventilation. American-Standard units (*Figure 6*) are supplied with steam from a conventional vacuum system served by two boilers in the basement. Register and controls are on top of the cabinets, which are elevated above the floor. Easy cleaning below, clean appearance for the front of cabinet, effective routing of air to the glass surface, and ease of access to controls are claimed as advantages.

Another example of the preceding method will be found in the new Harrison Park Apartments, East Orange, New Jersey, designed by Architect Romolo Bottelli, Jr. There, the use of Carrier units

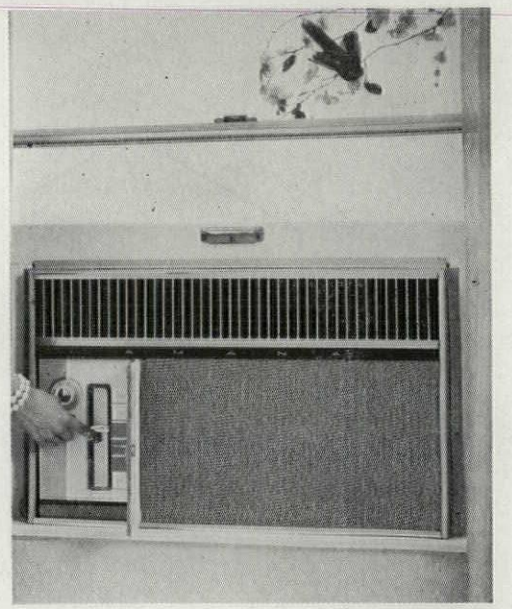


Figure 3—window unit, method **A**. *Flush-front room air conditioner measures 15½" deep and 17" high. Has five control settings to provide combinations of cooling, ventilation, exhaust, dehumidification, and filtering. Three-quarter ton model has current consumption of only 7.5 amps.* Photo: courtesy Amana

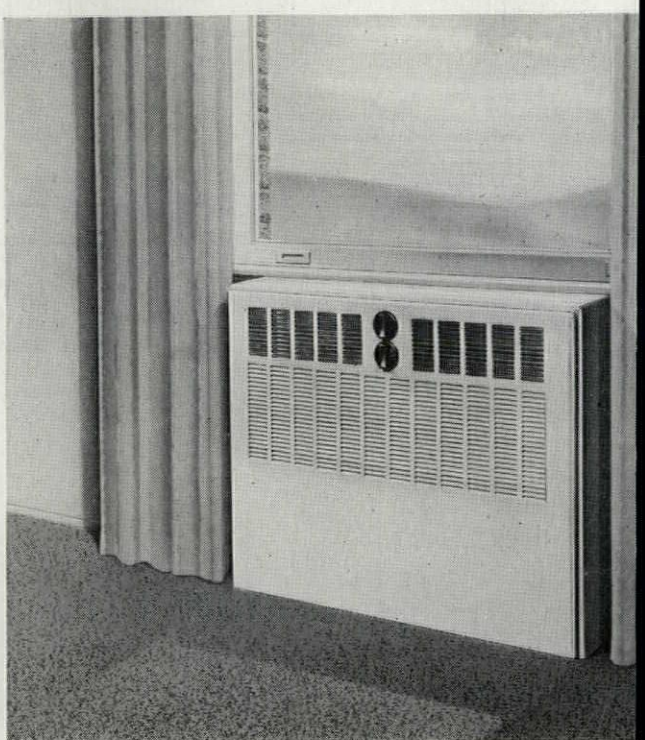


Figure 4—through-the-wall unit, method **B**. *Adjustments include variable cooling, control of outdoor ventilating air, and possibility of exhaust. Only required connection is electricity.* Photo: courtesy Amic

Figure 5—outside grill for a through-the-wall unit (exterior part of installation shown in Figure 4) *represents kind of grill necessary for any air-cooled conditioner using method* A, B, *or* C.

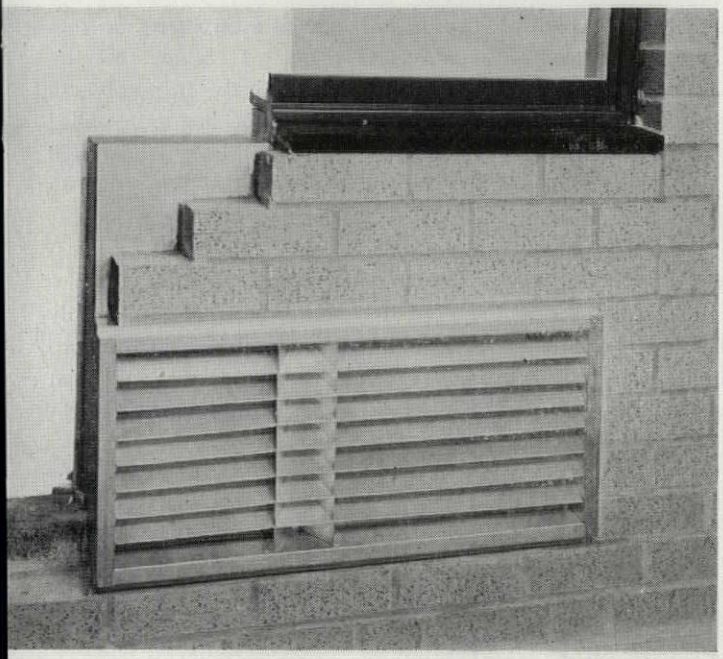
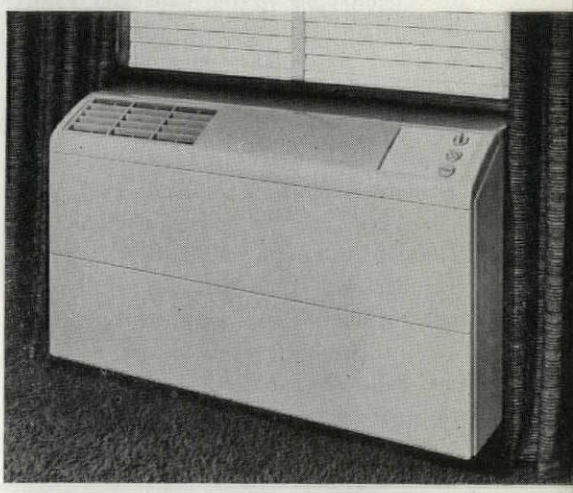


Figure 7—method C. *Short duct, only 5½" high and 24⅞" wide, is only connection required to outside. Fits under windows with stools as low as 23½". Cools, ventilates, exhausts, dehumidifies, filters, and heats.*

Photo: courtesy Carrier



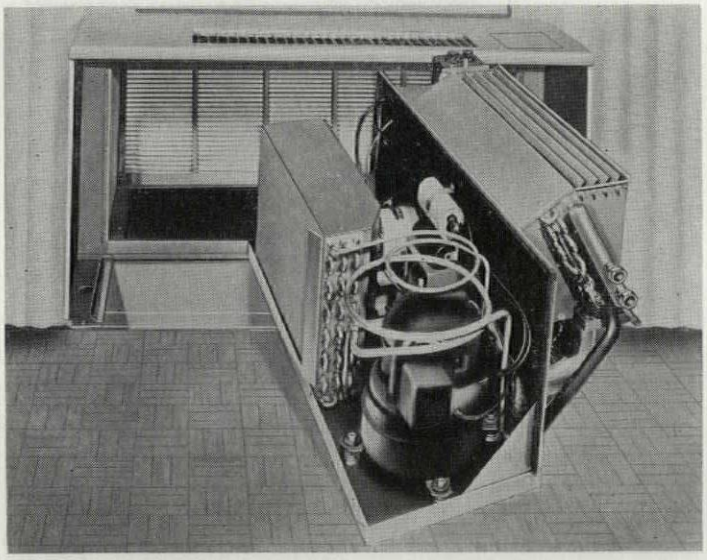
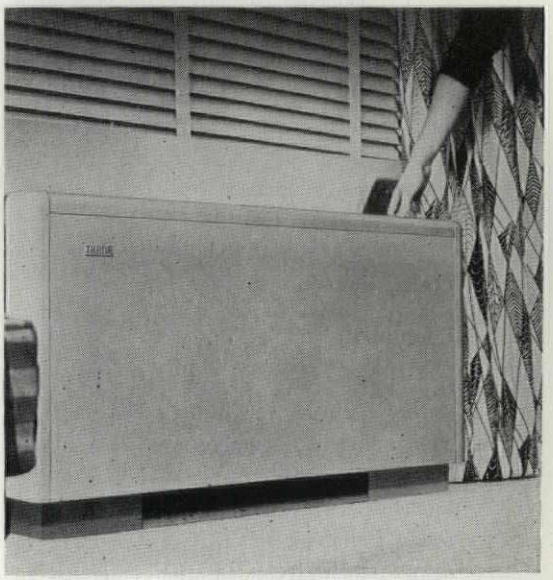


Figure 6—cabinet unit elevated above floor and adapted to heating, method C. *Hexagonal unions at right of installation are for steam connections. When swung back in position, compressor, condenser, and condenser fan are in the wall. Cabinet section, protruding in room, houses cooling coil, heating coil, circulating fan, and controls.*

Photo: courtesy American-Standard

Figure 8—heating and cooling medium from central source, method D. *Over-all depth of this unit is only 9". Recirculating air intake is concealed in toe space. Access to controls is in top panel of cabinet.*

Photo: courtesy Trane



at windows (*Figure 7*) includes heating by means of circulated hot water, centrally heated in the building. These units also condition the air with all of the usual control and air-handling possibilities. Special attention has been given to the conditioning of the halls and lobby. A separate central system with duct distribution cools and dehumidifies air for delivery to the halls, placing them under a slight pressure. This pressure, maintained with warmed air in winter, causes a slight flow of air into the apartment, effectively preventing odors and humidity from drifting into the halls. Everyone familiar with the stuffiness and typical odor of interior halls of apartment buildings, will appreciate this feature. Kitchens and baths are exhausted directly outdoors to assure further the directional flow of air from hall to apartment, to kitchen or bath, and then outdoors.

A great reduction in the size of the outside grill can be made if, instead of using the air cooling principle, a central chiller is used supplying chilled water to the cabinets at each window (*Figure 9*). At 10 East End Avenue, New York, such a system is supplied with hot water by two boilers in the basement. At the same location, there is a central chiller of 400-ton capacity, disposing its heat to a cooling tower. Lobbies are conditioned by Trane units similar to those in rooms, but of a type concealed in furred ceilings. The cabinet units are somewhat simpler in this method. There is no need for compressor, condenser coil, or condenser fan. This makes for less maintenance in the apartment and puts equipment in a centralized location. The employment of an operating engineer is, of course, required. A single-finned coil at the cabinet utilizes either hot water or chilled water; both are supplied by the management at correct temperatures for the ratings of the units (*Figure 8*). Baths and kitchens are exhausted separately, to the roof. Plumbing drains are necessary to dispose of the condensation collected in dehumidifying room air. Runouts collect at a drainage stack next to the water pipes (hot or cold depending on the season) at the nearest column. It may be seen that coils and water distribution pipes double for both warm and chilled water, permitting considerable economy over other types of central systems. Fresh-air admixture and exhaust ventilation are taken care of through an outside grill, which is small because it does not have to handle the additional air for condenser cooling. Controls are just as sensitive in this method as in others, in spite of a remote source of chilling, because variable speed fans make it possible to increase or reduce the cooling to be pulled off the coils. Three rates are available in this particular system. Architect for 10 East End Avenue was H. I. Feldman; owner and builder, Stanley R. Broff.

Conventional central cooling schemes (*Figure 10*) have not been commonly used in apartments. In seeking reasons why they are less used in apartment houses than in office buildings, one might

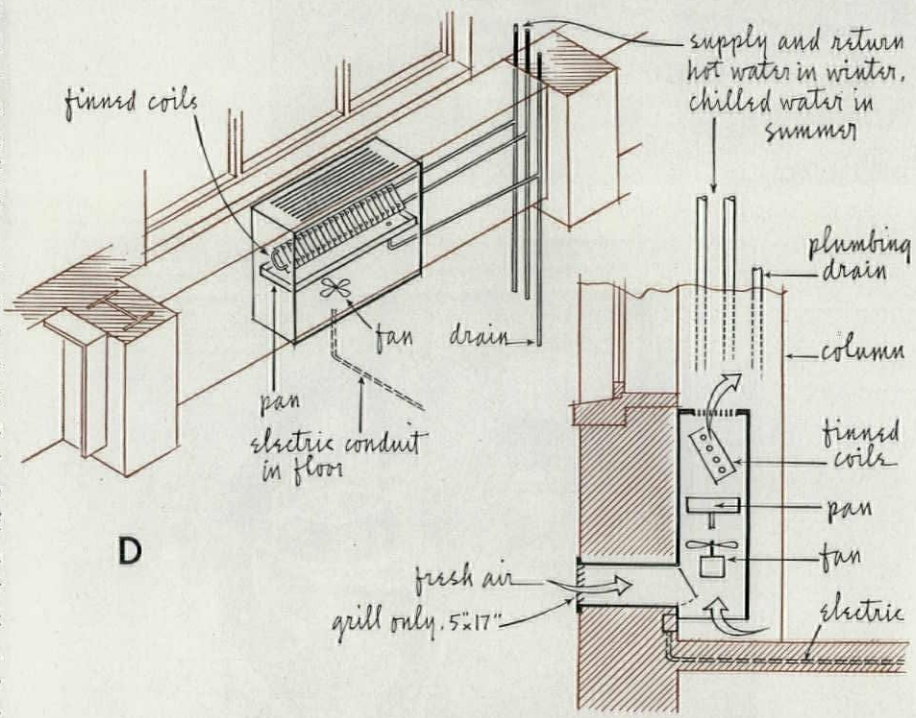


Figure 9—cabinet housing a fan and finned coils which use either hot or chilled water from central source, method D. *Schematic drawing shows essential connections. Central cooling reduces outside grill to size only large enough for ventilating air.* Data: courtesy Trane

list a number of possible reasons. Ceiling heights are usually greater in offices and suspended ceilings hide ductwork without serious loss of headroom. Costs of installing and maintaining the central equipment of this system are undoubtedly higher than in other schemes. All supply ducts must be protected against vapor condensation. In some buildings, air conditioning may be optional for tenants and this is difficult with ducted air. Controlling each apartment is not easy without expensive devices such as motorized dampers and special tempering coils. Shutting off the air flow to a number of apartments seriously disturbs the balance of air flow to remaining apartments, because a group of apartments is commonly supplied by a central fan of fixed output. Finally, control of the system is in the jurisdiction of the owner's staff, a situation that can be just one more item for tenant and owner to disagree over.

The proper selection of conditioners and integral heating coils for output is an engineering problem. In spite of their adjustibility, they cannot be moved into the room and used like a TV set. Small units of ⅓ and ½ hp have not been used widely in apartment houses. Many houses use one hp in living rooms and ¾ hp in bedrooms. Horsepower and tonnage are about numerically equal, so that these numbers may be read as tons. Tonnages up to 1½ and even 2½ have been used in living rooms. Kitchens and baths are cooled by air from adjacent rooms flowing to their exhaust fans. Adjunct heating coils for a room usually produce heat in a range from 3000 to 18,000 Btu per hr. They should be sized just as carefully as radiators or convectors are always sized for residential use.

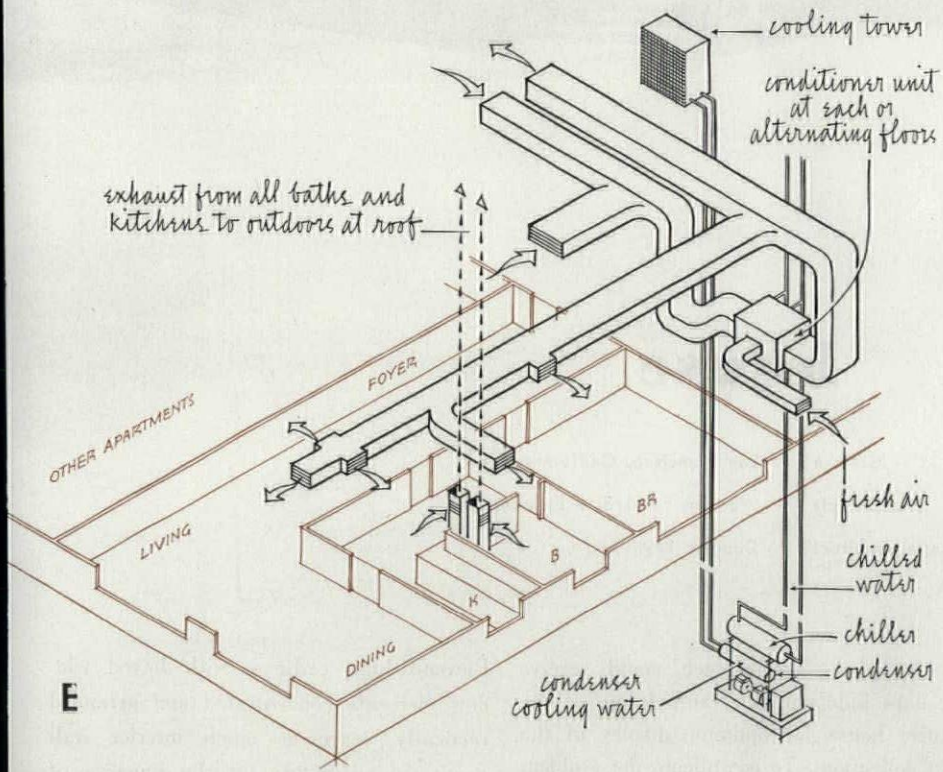
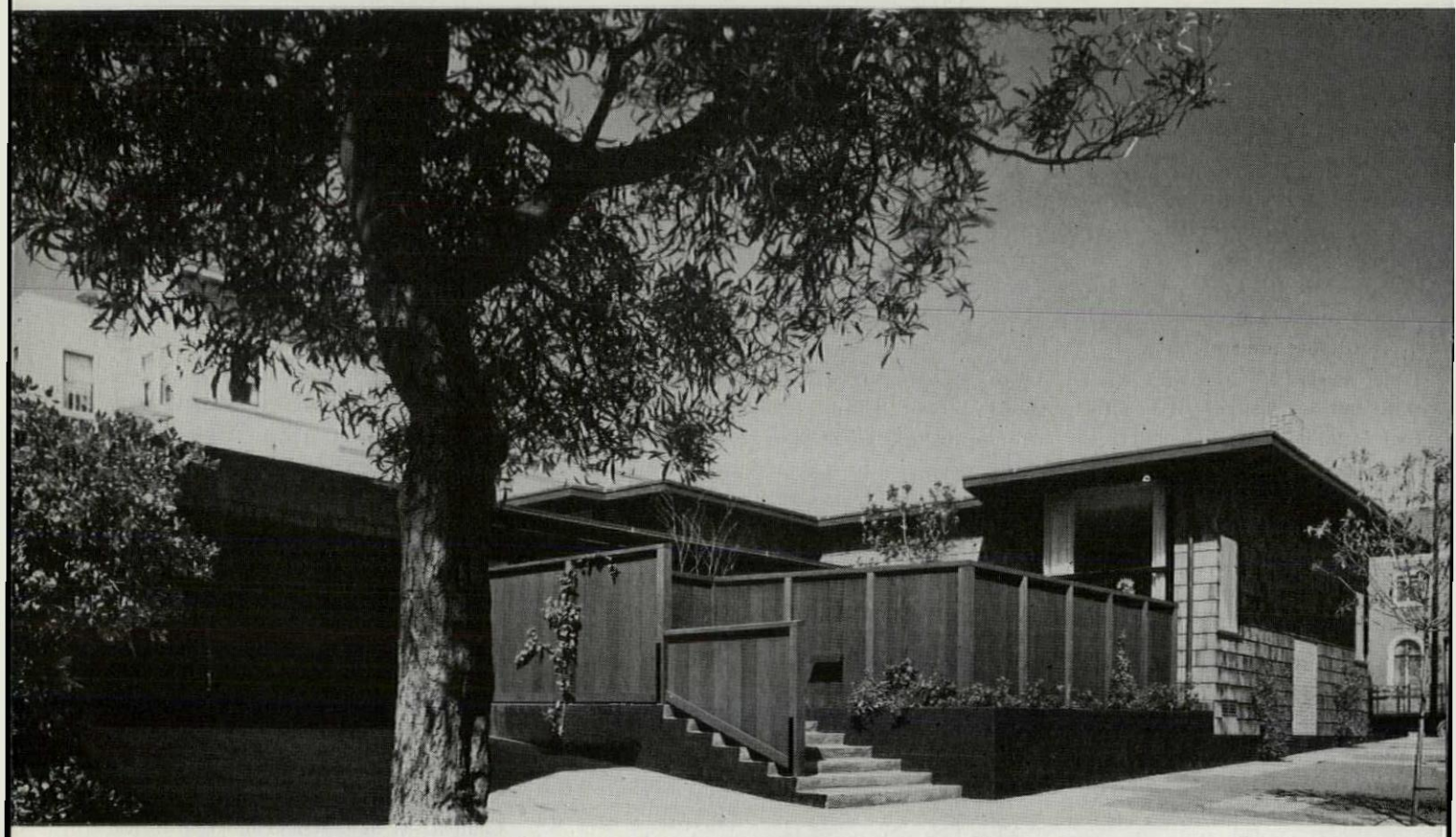


Figure 10—central air conditioning and ducts, method **E.** *Shifting the cooling function to a central chiller and the air handling to conditioners at individual floor levels comprises classic central-station air conditioning. Although standard for office buildings, this system is currently not popular for apartment houses.*

Comparison of cost and other qualities is difficult since there is no distinct separation between "good" and "bad" methods. Obviously, the choice depends on the kind of tenancy, ownership, and location. In absolute cost the several systems probably follow the sequence in which they have been described here, window units being least and central air conditioning most; each case, however, must be individually considered. Intangible costs such as the effect on other parts of the structure and comparative maintenance rates must be carefully studied. In any case, air conditioning brings a distinct increase in power load and maintenance responsibility which must be considered thoroughly. Offering the tenant an option of choice or rejection of air conditioning is usually difficult and needs special study. Not unimportant is the interpretation of the equipment as "real property" or "chattels." Integral units would probably be the former and could be offered for inclusion in mortgage valuation. Window units might, under certain circumstances, fall into the latter category and not be included. Substituting fixed glass for operable windows has not been as universal as might appear. Emergency shutdown of the system or optional disuse in a given apartment might make normal window arrangements highly desirable.



house

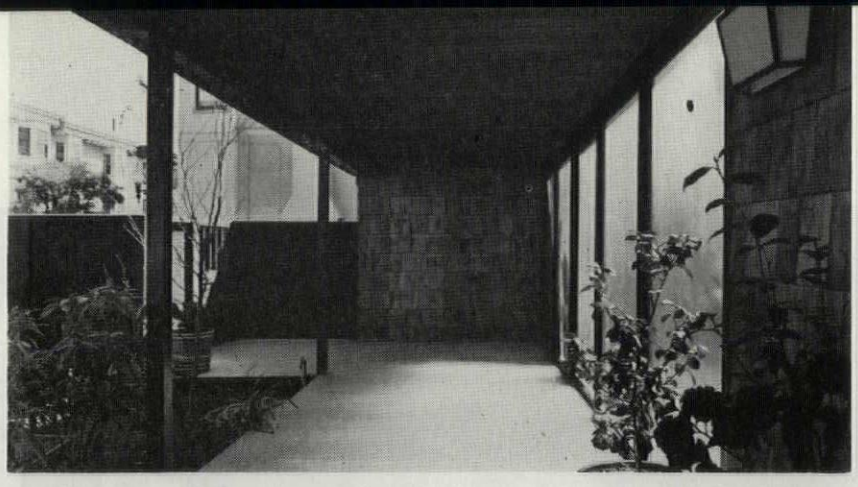
location	San Francisco, California
architects	Wurster, Bernardi & Emmons
landscape architect	Douglas Baylis

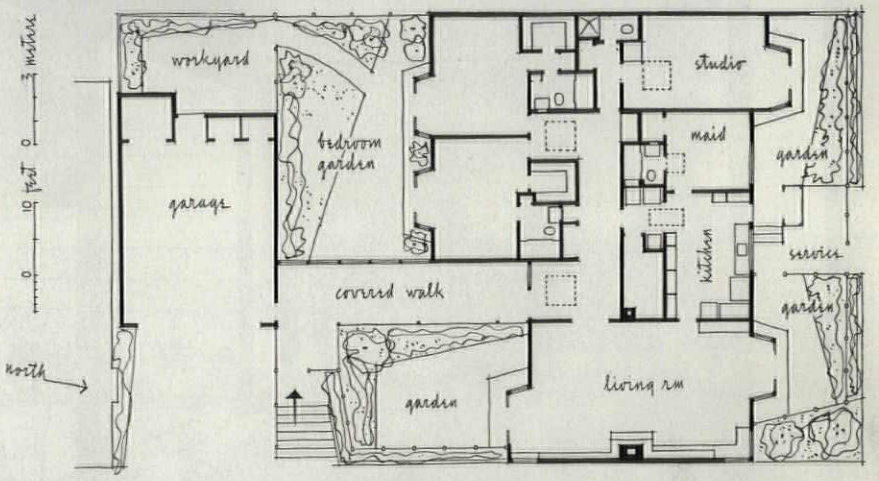
There is much more to this extraordinary house than a first glance reveals. The program itself was exceptional: a home and work place for a couple in their 60's with varied interests—one is a painter and writer, the other is a violinist who also keeps in close touch with business. Jointly, they concern themselves with the graphic and plastic arts and own an extensive collection of paintings and sculpture.

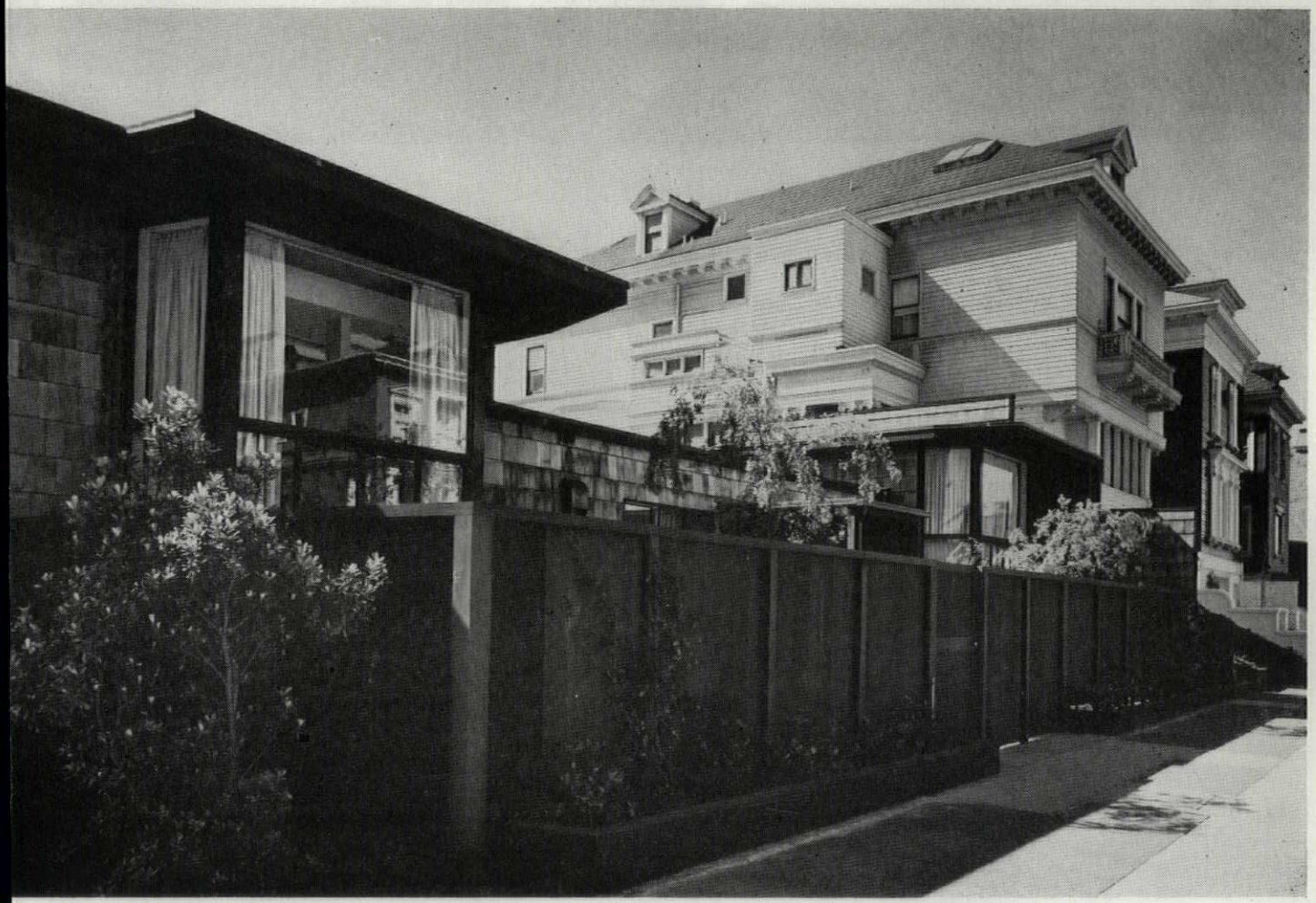
Translated into terms of plan requirements, this meant the need for separate work spaces where each could receive visitors independently, and design of the entire house for optimum display of the art collection. To complicate the problem of providing the desired privacy, the site is an in-town corner lot with busy bordering streets.

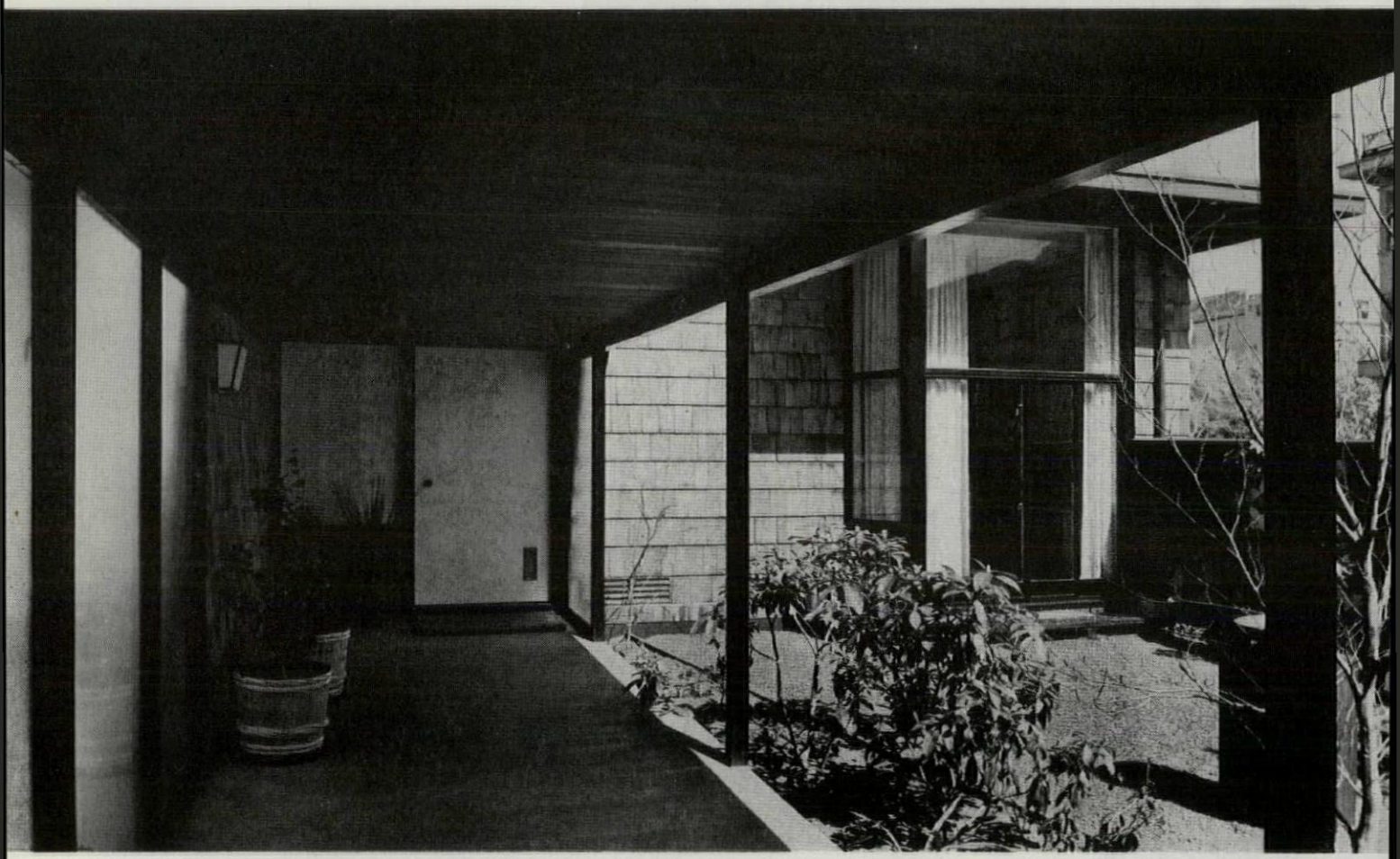
To solve the latter problem, fenced gardens, adjoining all main rooms, both screen against the streets and provide inviting outdoor extensions of interior areas. The husband's and wife's workrooms are at opposite ends of the house. Eleven-ft-high ceilings, with bayed window elements concentrated and arranged vertically, leave as much interior wall space as is feasible for the hanging of paintings.

Structure is wood frame, with cedar shingles on the exterior, vertical painted redwood or plaster on interior walls; doors are flush veneer. A hot-water ceiling-panel system heats the house. Decorator was Beth Armstrong; General Contractor, Jacks & Irvine.



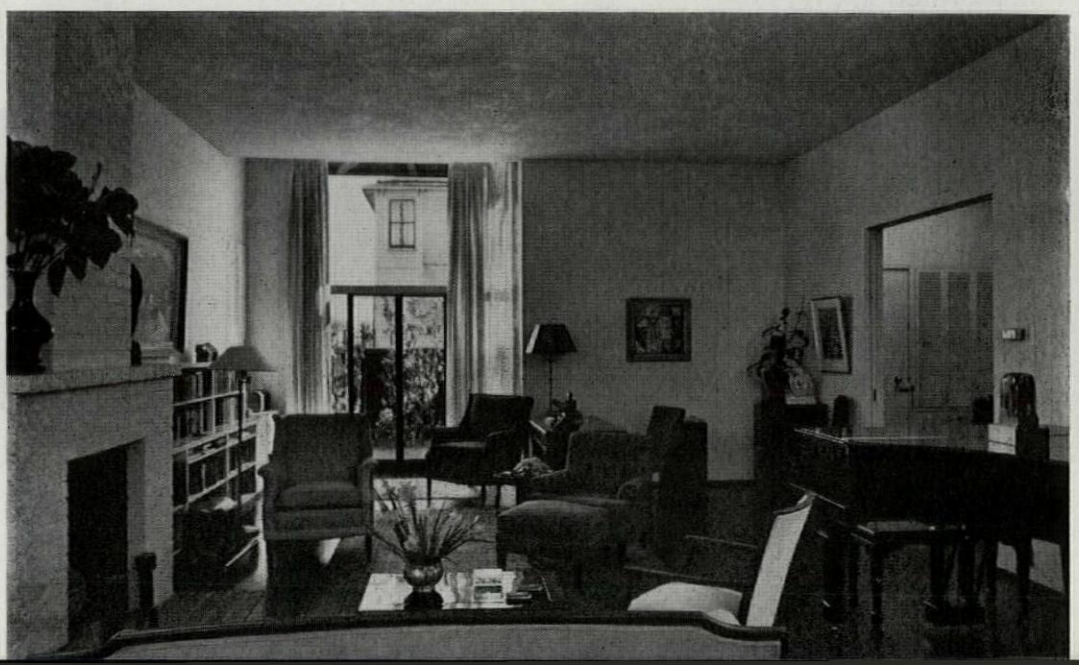

workyard
bedroom
garden
garage
studio
maid
garden
kitchen
service
garden
covered walk
garden
living rm
north
0 10 feet 0 3 meters





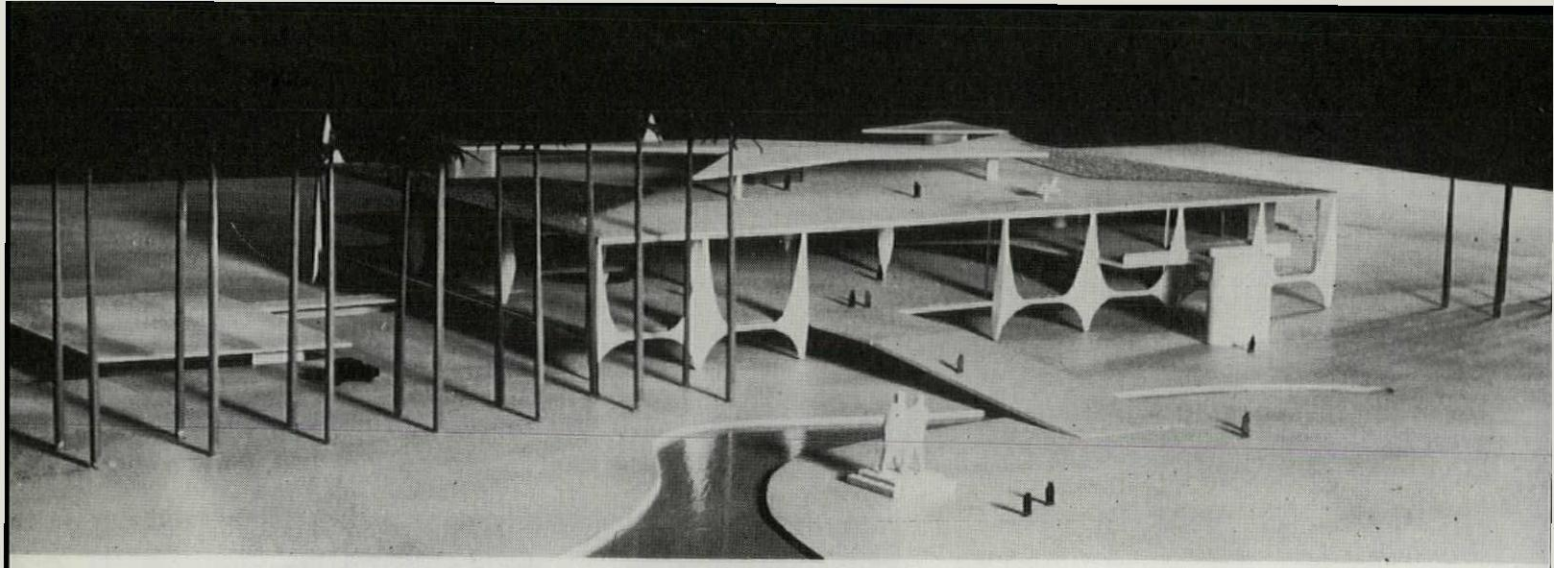
The entrance passage (above) *borders the south living garden; obscured-glass screen at left shields the bedroom garden. The bayed window occurs in the living room* (below), *where walls are of painted, vertically applied 1"x6" flush-joint redwood.*

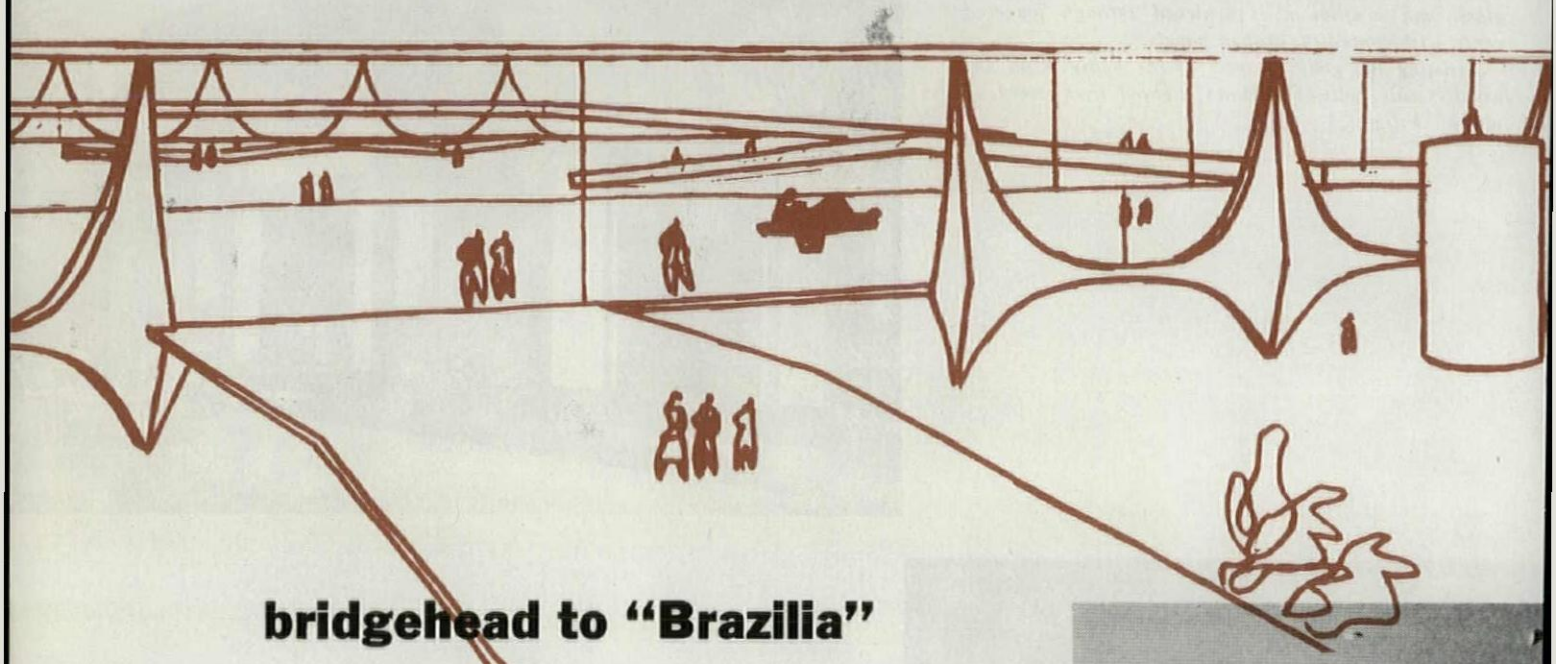
Photos: Roger Sturtevant



The two main bedrooms open to their own fenced garden (right). *Except for the pair of glazed doors in each major room, all window areas are of fixed glass, and ventilation is achieved through louvered vents, with concealed, drop-in panels.*

Assisting the gallery aspect of the house is an unusually wide hallway (below), *lighted from overhead plastic skylights.*



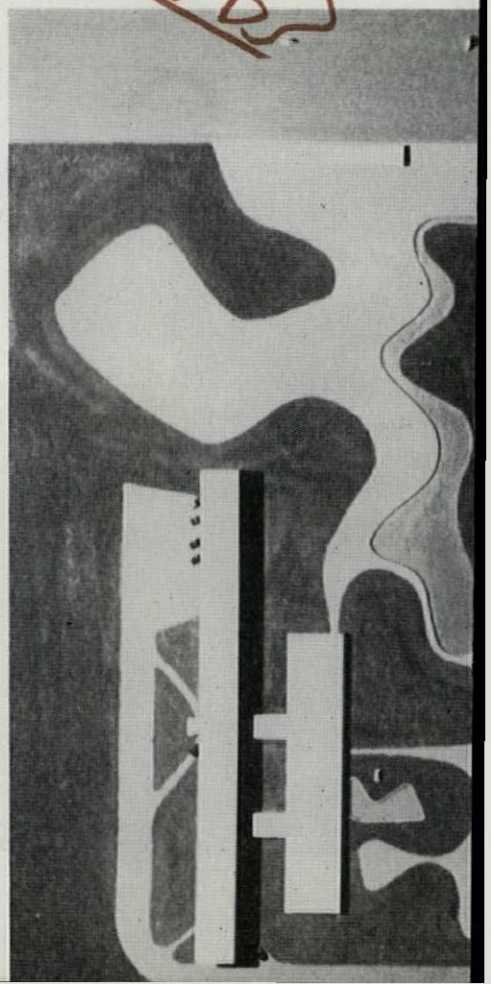


bridgehead to "Brazilia"

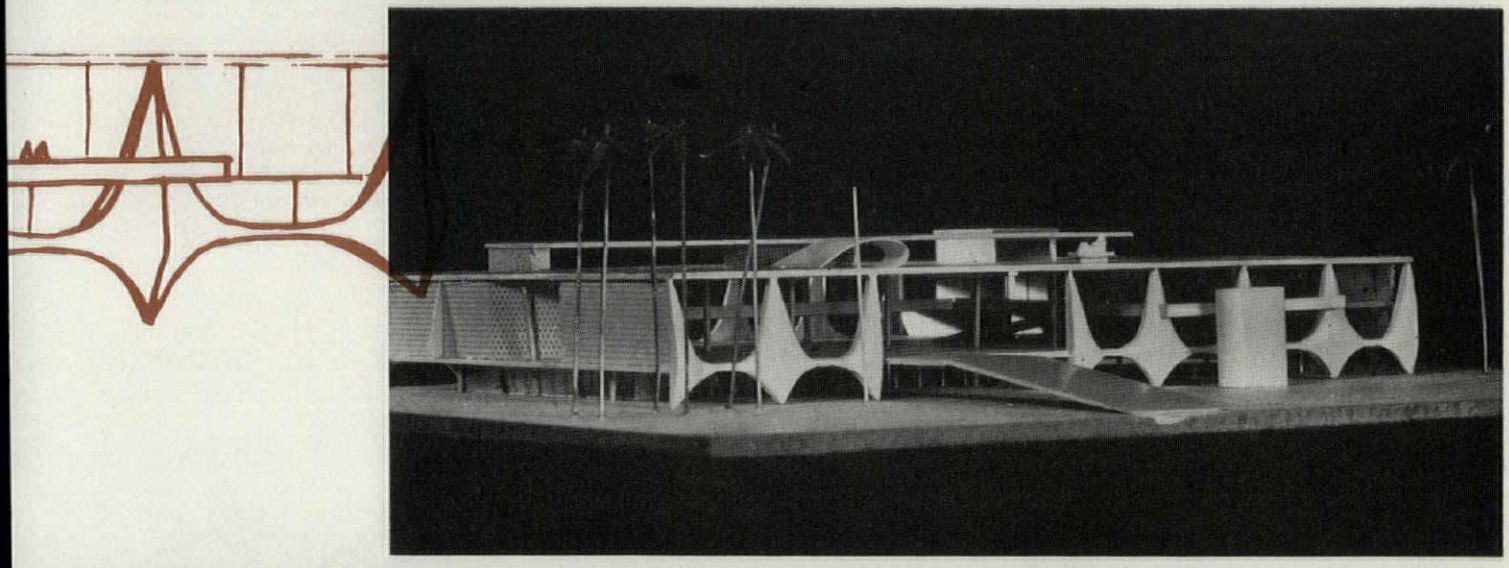
This skeleton Capital—consisting of a Government Palace, a Presidential Residence, an Hotel, and a Chapel—will serve as provisional headquarters for the Brazilian President while the new Capital is being built. Situated in the State of Goyas, near the site of "Brazilia," the group of buildings will later become the nucleus of a tourist center in the new Capital, with the Presidential Residence to be used as a sort of Blair House for distinguished visitors. Ground was broken last January by President Kubitschek; buildings scheduled for occupancy in 1958.

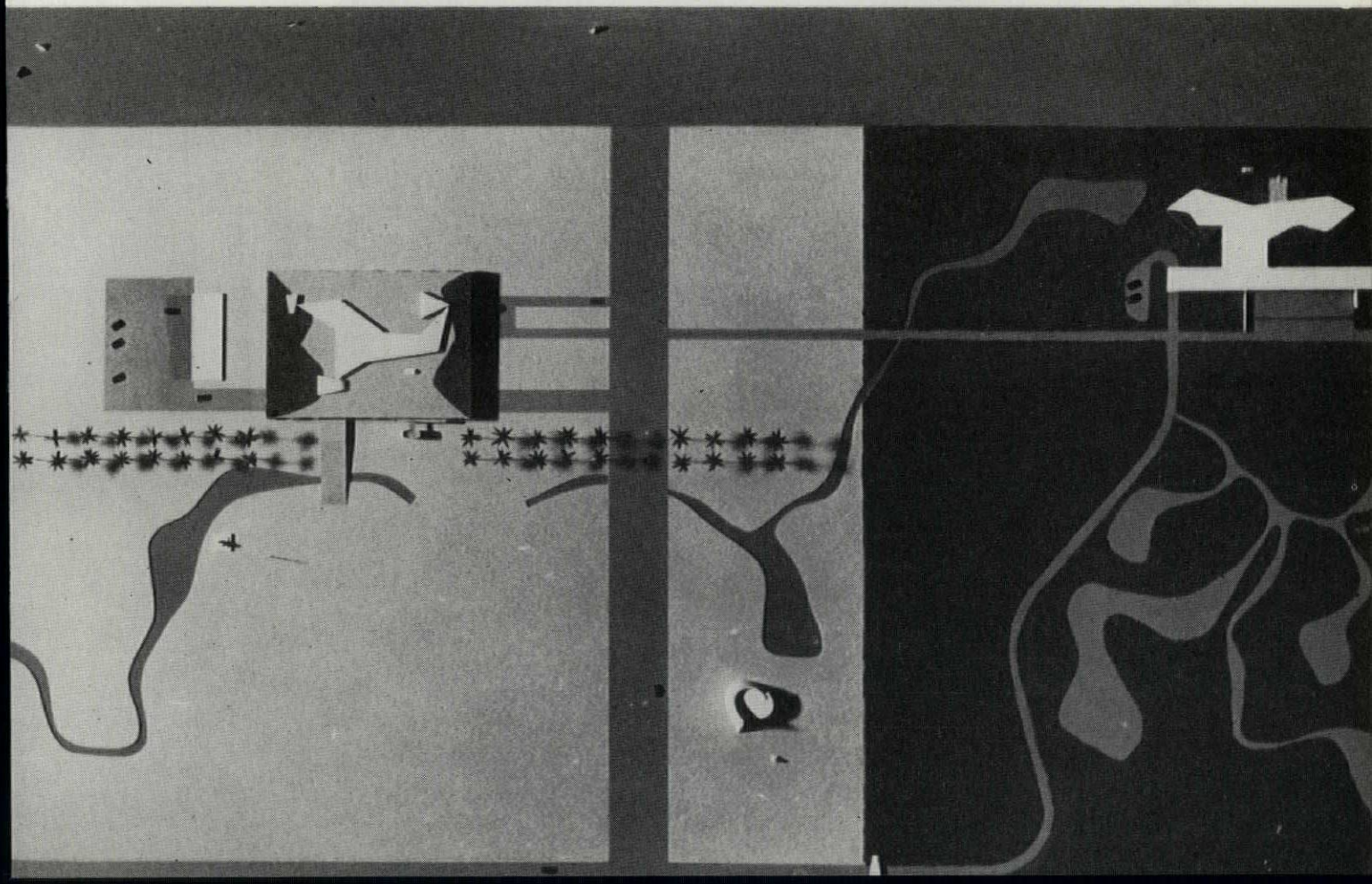
The Government Palace, in the center of the group, will be between a spacious esplanade, suitable for State functions, and an artificial lake. Raised a full story height from the ground, it is to be entered from a broad ramp. Offices for the President and his staff, conference rooms for Cabinet meetings, and halls for State Receptions will occupy one and a half floors of the rectangular building, which is planned approximately 200'x300' in area. The roof will be given over to a garden, with some sheltered lounging facilities. The long main façades of the building will be accented by abstract "caryatids," each an integral part of the reinforced-concrete frame. Well to the right of the Palace will be the Presidential Residence, all on one floor and planned around formal and private patios. The Hotel (to the left) is to be seven stories high and will house Presidential assistants and other administrative personnel. A Chapel, in the lower right-hand corner of the esplanade, completes the scheme.

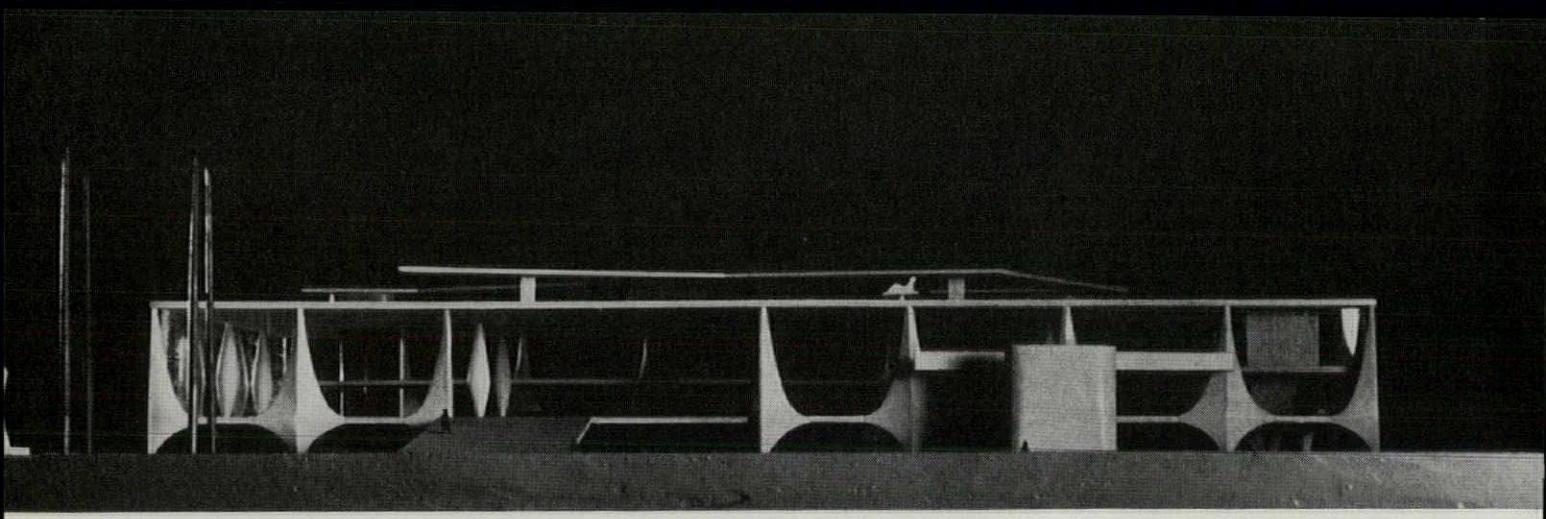
Architect: Oscar Niemeyer

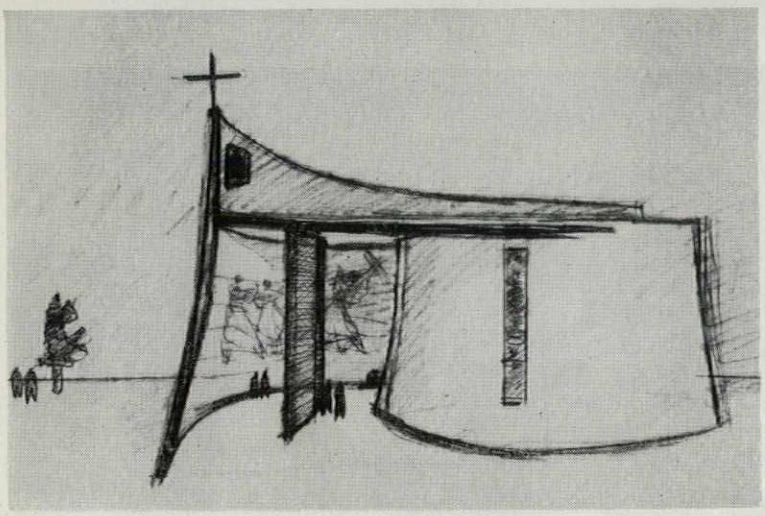


The Government Palace (acrosspage *and* below right), *showing the sculptured columns facing the esplanade. The semi-cylindrical structure at right of the access ramp is a Presidential Tribune.* Photos: Flavio Damm

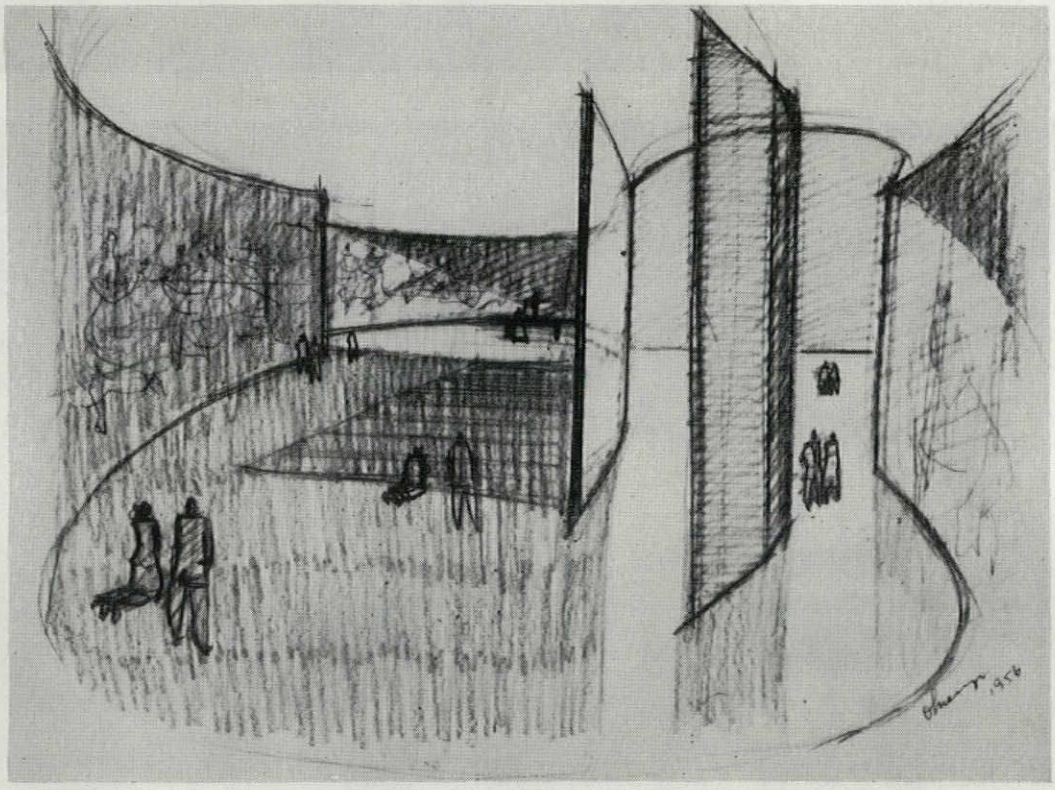








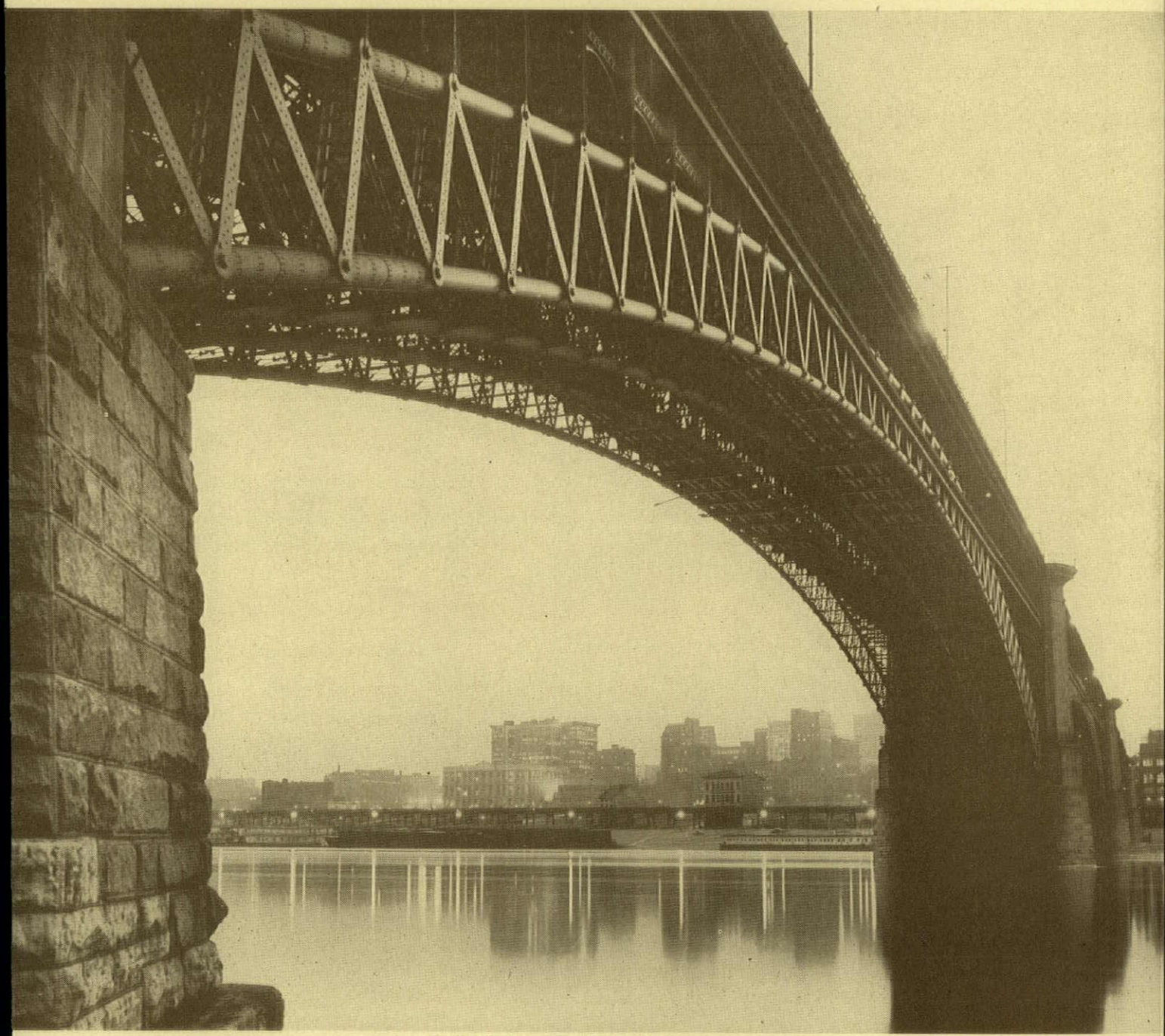
Sketches for the Chapel (left *and* below) *indicate a plan that is reminiscent of the nautilis shell. The building's sculptural form will add visual interest to the esplanade.*



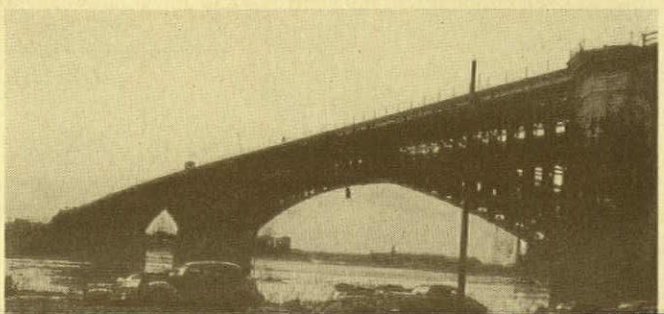
bridgehead to "Brazilia"

PROGRESSIVE ARCHITECTURE IN AMERICA

EADS BRIDGE—1868-74
St. Louis, Missouri
James B. Eads, Designer-Engineer



American Institute of Steel Construction, Inc.



Calvin M. Woodward

METHOD OF ERECTION.

SCALES

FOR FIG. 1-2.

FIG. 1.

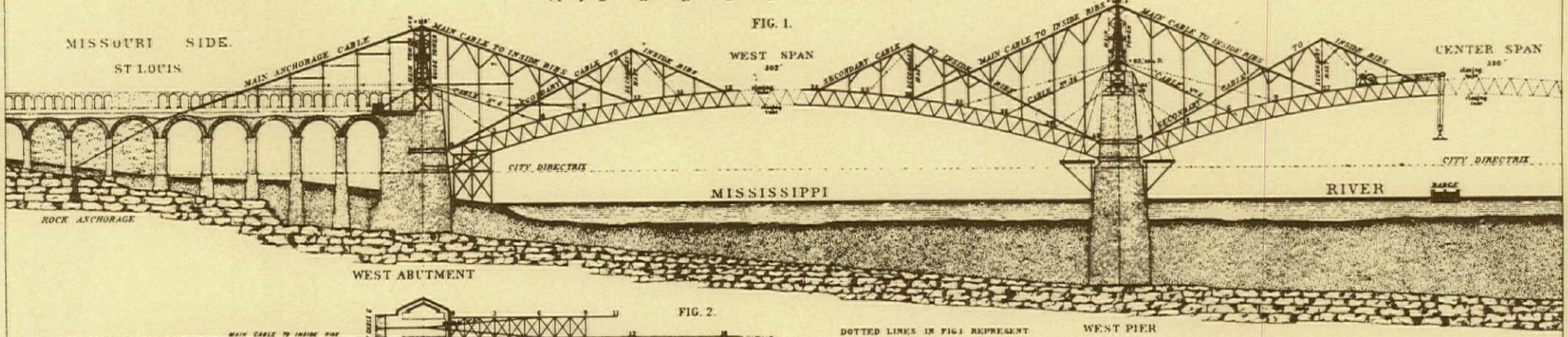
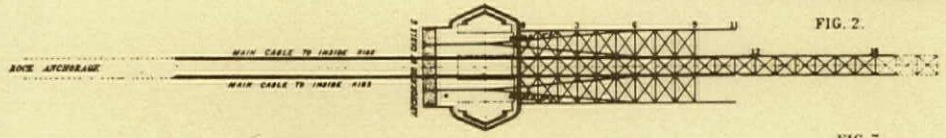


FIG. 2.



DOTTED LINES IN FIG. 1 REPRESENT AUXILIARY CABLES.

MAIN TOWER

FIG. 3

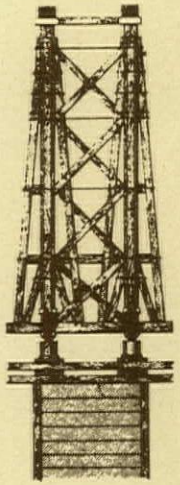


FIG. 4.

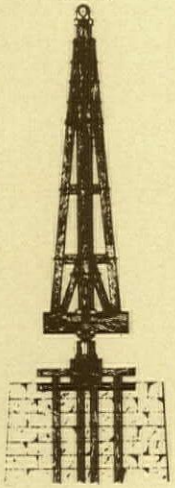


FIG. 10
MAST FOR SECONDARY CABLE

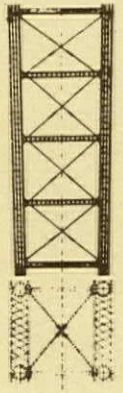


FIG. 7.

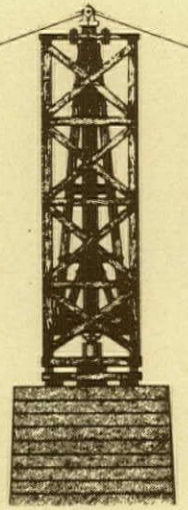


FIG. 9

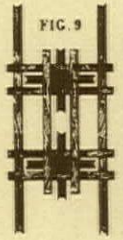


FIG. 8.

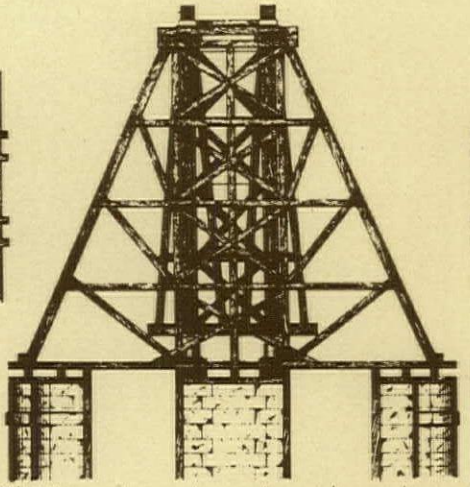
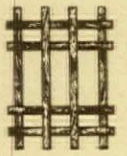
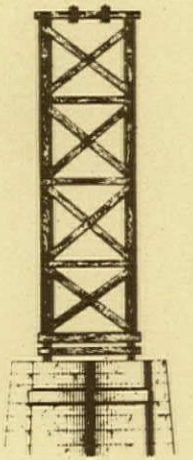


FIG. 6.



GUIDE TOWER
FIG. 5.



FOR FIG. 3-10

FEET

METRES

Julius Bien lith N.Y.

W.P. Gerhard del. 1880

Calvin M. Woodward

ADJUSTABLE TUBE AND DETAILS OF ERECTION.

ADJUSTABLE TUBE.

SCALES.

STEEL

FOR FIG. 1-3 { 0 1 2 3 4 5 6 7 8 9 10 11 12 15 18 21 24 INCHES
10 5 0 5 10 15 20 30 40 50 CENTIMETRES

WROUGHT IRON

FIG. 1 SECTION ef

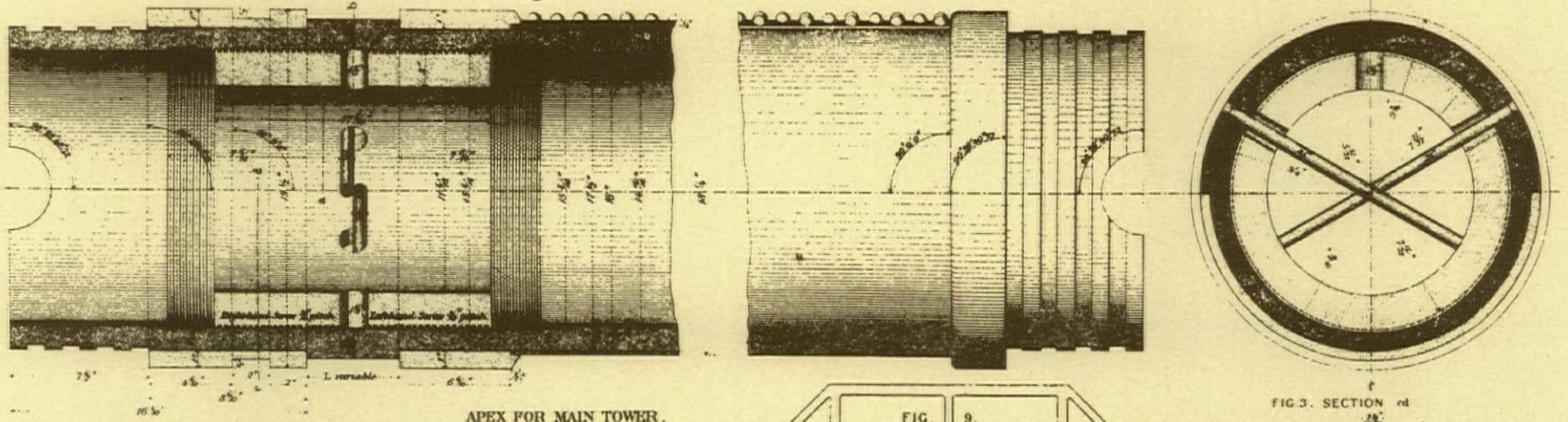
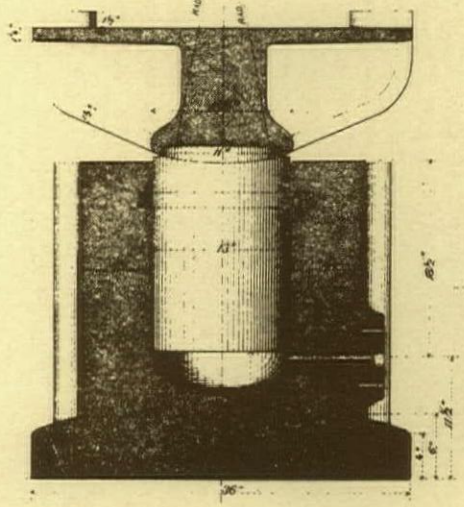


FIG. 2 SECTION ab

FIG. 3. SECTION cd

HYDRAULIC RAM.

FIG. 4.



APEX FOR MAIN TOWER.

FIG. 5.

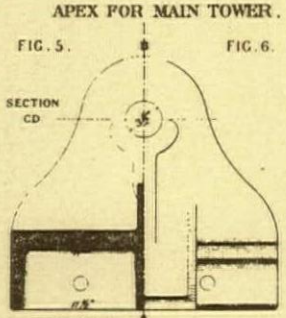


FIG. 6.

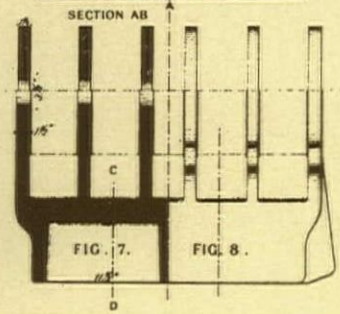


FIG. 7. FIG. 8.

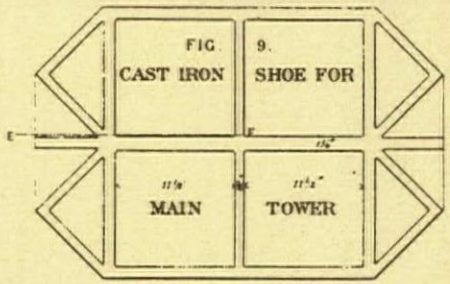


FIG. 10. SECTION EF. FIG. 11.

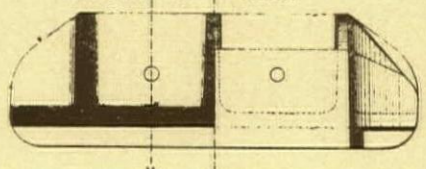
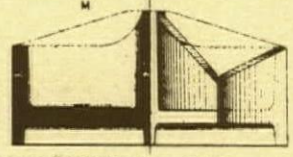


FIG. 12. SECTION LM. FIG. 13.



BALANCE - GAUGE.

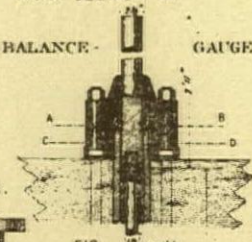


FIG. 16.

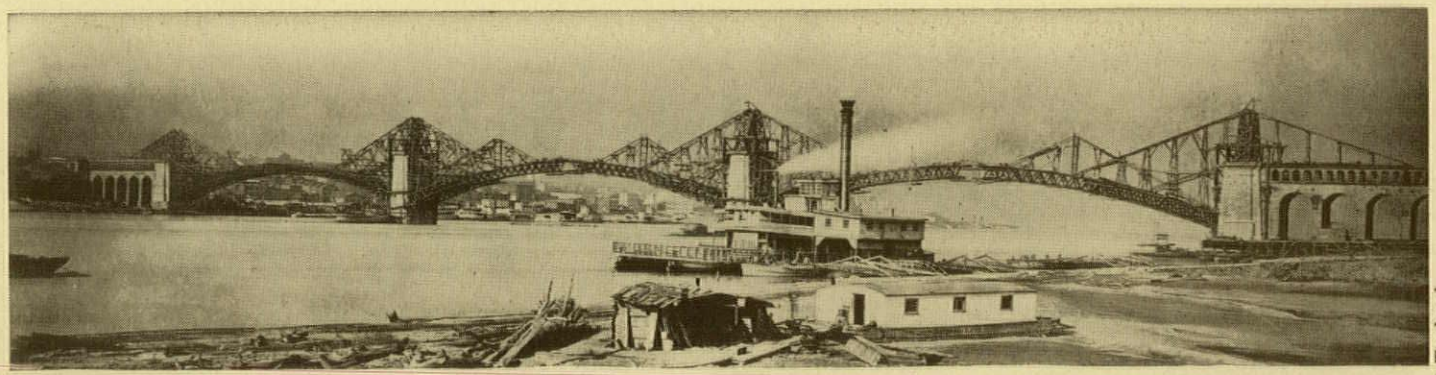
FIG. 15.

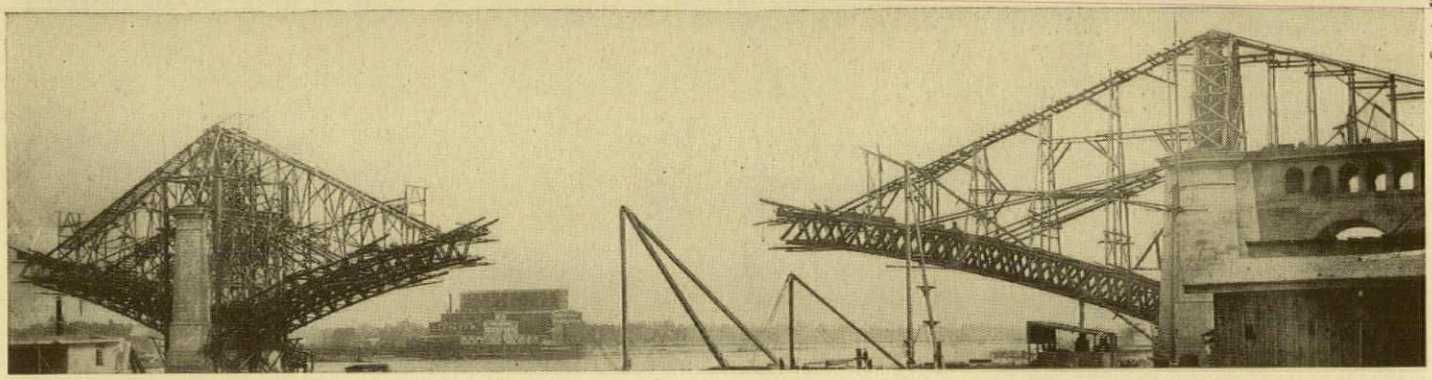
FIG. 14.

FOR FIG. 4-16. { 12 9 6 3 0 1 2 FEET
0 3 10 20 30 40 50 60 70 80 90 100 CENTIMETRES

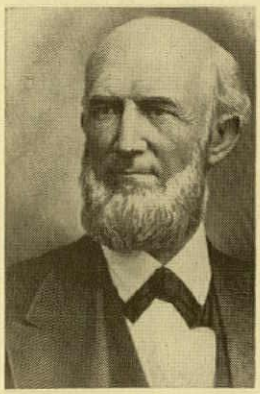
Julius Bien Lith. N.Y.

W.P. Gerhard. del. 1880.





Calvin M. Woodward



James B. Eads

The architecture of the 20th Century owes one of its lasting debts to engineering of the 19th Century. While the Victorians sought the meaning of building in ornament and style, we find it today in structure and form. Their engineers, more often than their architects, were the form-givers; and in such utilitarian structures as James Eads' St. Louis Bridge, Victorian engineering-architecture reached its most expressive and influential level.

The Eads Bridge was much more than a gateway to the West and a link in the railroad conquest of the Continent. A steel-arch bridge of unprecedented span, it was the most daring and original structure of its kind in its day. The design was unique, the material was new, and the methods were unproved. The vision and courage of a pioneer like Eads are hard to grasp after history has accepted his hard-won progress. In this bridge, Eads employed practices many years ahead of his time: the use of hollow, tubular-steel chord members in the first such span ever built almost entirely of steel; the introduction to the United States of the pneumatic-caisson method of founding piers and abutments, with improvements and at depths never before attempted; the analysis and solution of new problems of stress and erection; and the initiation of requirements for structural steel for which no standards yet existed. So novel was the undertaking, that every piece of Andrew Carnegie's steel used in the bridge had to be individually checked—the source of spectacular disputes between Carnegie and Eads. With all of this, Eads also created a work of art. The St. Louis Bridge has survived the test of time in its engineering and in its esthetics, both of which remain outstandingly satisfactory today.

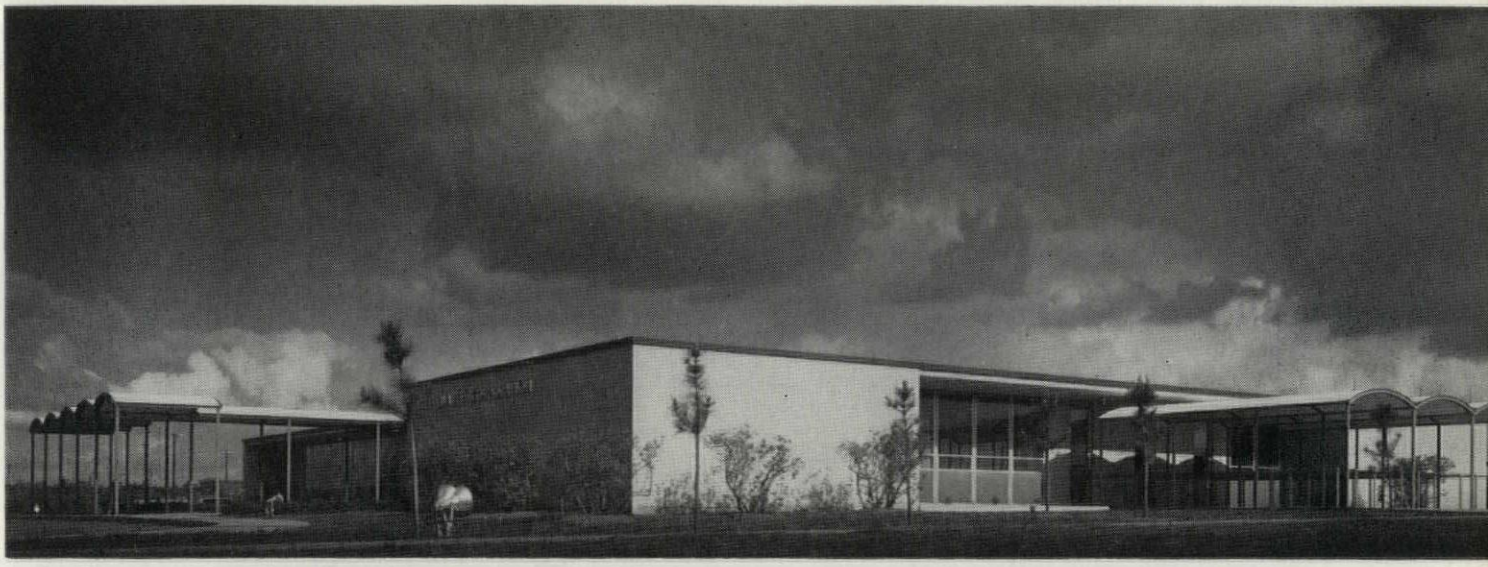
No description of the bridge could tell the story of its innovations better than an account of its erection. Three arches of 502 feet, 520 feet, and 502 feet were constructed, with piers and abutments of stone, at a cost of about $6½ millions. Because of the dangerous, shifting quality of the Mississippi river bed, Eads understood that only the use of pneumatic caissons sunk to bedrock, 95 feet below the surface, would make a firm foundation possible. The difficulties and disasters encountered during the sinking and building of the piers and abutments (1869-1871) sound like the plot of a dime novel. The men were icebound in winter; a tornado struck in spring. Working inside the caissons, in unknown and untested conditions, was extremely hazardous. Oil lamps gave off heavy, sooty smoke, candles burned rapidly, and if fire started, the compressed air made it almost impossible to extinguish. But the most mysterious and dreadful effect was the new "caisson disease"—still little known or understood—which claimed the lives of a dozen men, while a floating hospital under the supervision of Eads' personal physician was in permanent attendance.

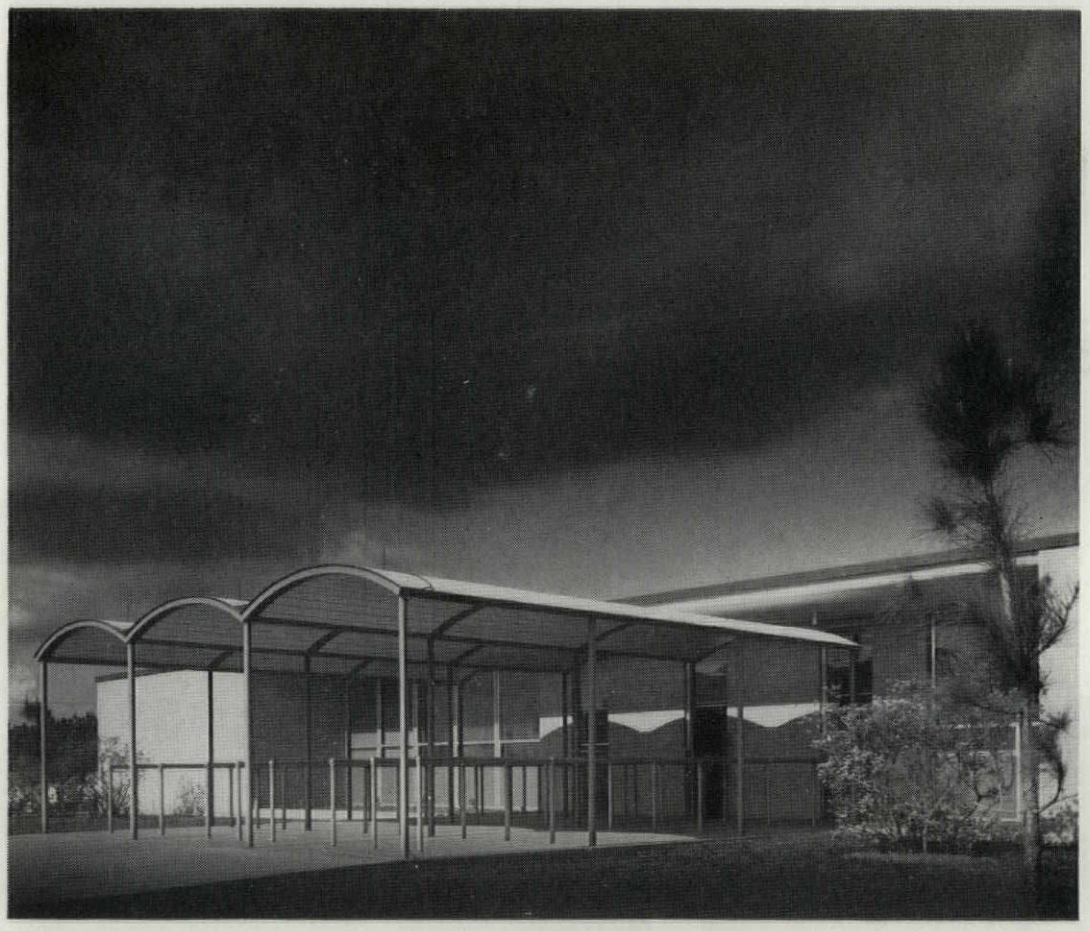
The problems of the superstructure were equally great. An explosion wrecked the steel-rolling mill, delaying production. It seemed impossible to produce parts to meet Eads' rigid specifications. The steel staves took months to make in acceptable and uniform quality; a year passed before the material for the anchor bolts was satisfactory; more than six months went by in unsuccessful attempts to make the brace bars; and a total of two and a half years was spent trying to roll steel couplings for the tubes, with wrought iron finally substituted as a compromise.

The climax of the drama was reached with the joining of the arches. These were cantilevered from the piers to meet in mid-span with the structure self-supporting as the work progressed—the first practical use of this method on a large scale. A loan of a half-million dollars depended on closing the first span by September 19, 1873. Unseasonably warm weather caused such expansion of the metal that it was impossible to insert the connecting tubes as planned. Even the dramatic application of an "ice poultice" failed. Finally, an adjustable tube was used, shortened before insertion and then screwed out again to the proper length. On September 17, the span was successfully closed. The other two spans followed and the roadways were finished shortly after. The bridge was officially opened on July 4, 1874, its bold and graceful arches marking one more milestone in the progress of American building.

ADA LOUISE HUXTABLE

Suggestions and information from John A. Kouwenhoven and Missouri Historical Society are gratefully acknowledged.





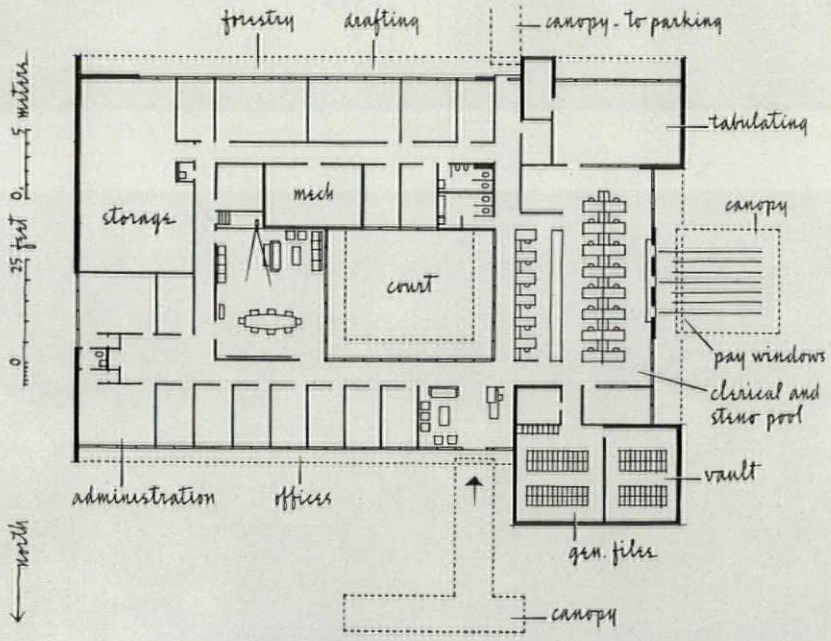
office building

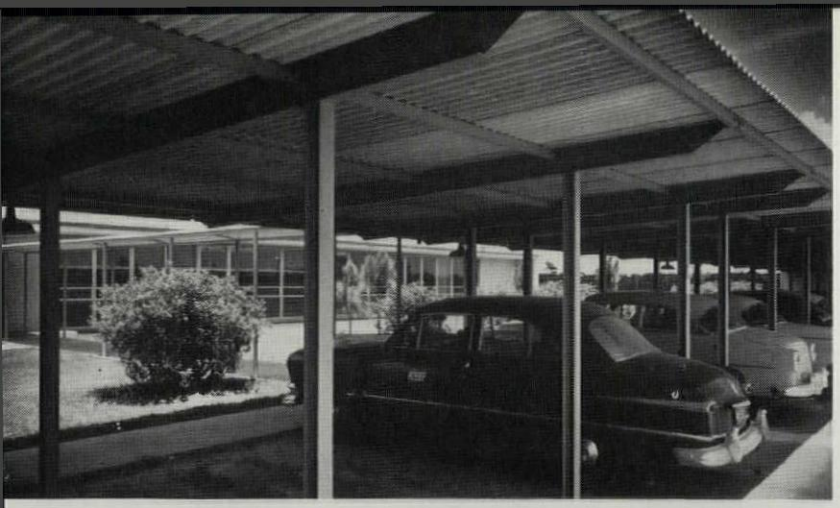
location	Silsbee, Texas
architects	George Pierce—Abel B. Pierce
associate-in-charge	E. J. Goodwin, Jr.

office building

This efficient office building for Kirby Lumber Company has won a remarkable number of design distinctions. First recognized with an Award Citation in P/A's Second Annual Design Awards Program, it later received Medal of Honor in the Houston Chapter, AIA, Honor Awards Program and also Honor Award in Texas Society of Architects' "Architecture 1956" exhibition.

Designed to serve management, accounting, engineering, and personnel departments, it adjoins the lumber mill. Organized around a landscaped courtyard, it has three approaches—the main entrance, to the north; a covered walk, to the rear, connecting with covered parking space; and a protected series of outdoor aisles (toward the mill and employes' parking area) where employes line up to receive their paychecks. Special requirements included a drafting room and map-conference room for the Forestry Department, and a business-conference room. For details of entrance canopy, see SELECTED DETAIL. East and west walls of the steel-framed building are largely of hollow brick masonry; north and south walls consist of glazed aluminum grids with porcelain-enameled steel panels. The roof is a flat, concrete, lift slab. Acoustical plaster or tile is used on ceilings; flooring is vinyl-asbestos tile. The air-conditioned building is heated by forced-circulation hot water. H. E. Bovay, Jr. was Consulting Engineer; W. S. Bellows Construction Company, General Contractor.





Exceptional natural light and a sense of spaciousness are afforded by the central, planted courtyard (below and acrosspage). *Artificial lighting is fluorescent, in recessed, surface mounted, or 4'x4' pendant, louvered fixtures.*

A covered walk (left) *leads from the office building back to a covered parking dock* (above left).

Photos: F. W. Selders

aluminum stressed-skin dome

Early this year an all-aluminum stressed-skin dome—the first structure of its kind ever built—was erected on the island of Hawaii. This dome, designed by engineers of the Product Development Department of the Kaiser Aluminum & Chemical Corporation, was built especially for use as an auditorium—for conventions and entertainment purposes at Kaiser's Hawaiian Village Hotel.

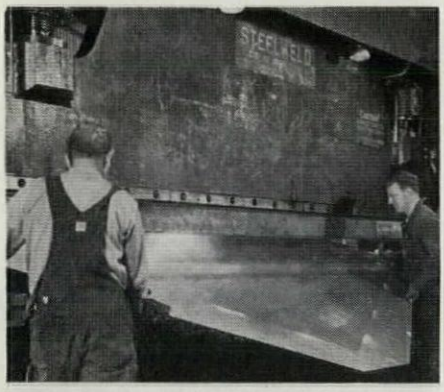
Its design involves the creation of a spherical structure through the use of diamond-shaped aluminum panels geometrically arranged and bolted together at contiguous edges to form a rigid shell. Each panel is curved inward and its short diagonal length is strengthened by the addition of an aluminum strut. Panels and struts, when combined, make a unit of great strength; 575 of these were geometrically grouped to form a dome having a floor diameter of 145 ft and a height of 49 ft 6 in.

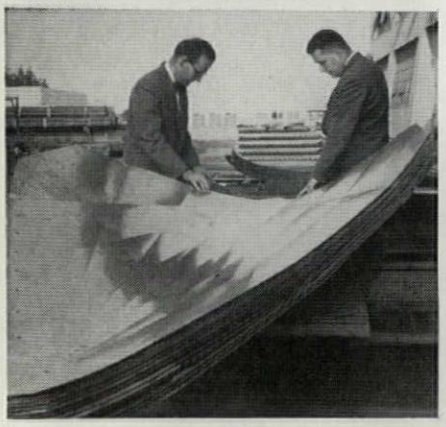
Buckminster Fuller's fundamental work with geodesic structures unquestionably provided the inspiration for this structural concept. In this design, however, both the skin and the struts work concurrently to carry load and to resist wind forces; each assumes approximately 50 percent of the responsibility. Although without interior support, this clear-span structure can withstand loads of over 100 psf. Structural tests indicate that the dome can stand up under wind pressures twice greater than those caused by a hurricane.

erection procedure

A portable mast, made of structural steel and 96 ft tall, was set up in the center of the dome's concrete foundation. Around this mast was assembled a section of panels which, when the dome was completed, constituted the uppermost portion of the dome. This section was first lifted a sufficient height off the ground to allow another perimeter of panels to be installed. This larger section was in turn lifted, a third set of panels installed, and so on until all panels were in place.

The dome was then anchored to 25 concrete piers spaced around the circumference of the floor. Anchorage was accomplished through the use of aluminum struts, each of which has a pin-end connection at its concrete pier to allow for a three-in. change in diameter —the regular expansion and contraction of the metal dome.





After aluminum sheet was sheared into diamond-shaped panels, a press brake was used to make 12 bends (six from either end) in each unit. Appearance of panels before flanges were formed at edges (left).

Delivered to job site, panels were removed from trucks and asssembled into proper categories (below *and* right).

Kaiser Aluminum Photos: Werner Stoy

Castings of various shapes were used on the inside of the dome to join the diamond-shaped panels together where their corners converged. These were fastened to the panels with Huckbolt fasteners, special aluminum bolts which provide a permanent high-strength union. The same type of bolt was used to fasten the panels together along their edges.

A synthetic-rubber compound sealing material was used to calk the cracks between the panels and to make the dome waterproof. A 50-sq ft cover protected opening was left at the top of the dome to aid ventilation. This opening has a permanent cover, made up of five diamond-shaped panels, which is raised three in. above the dome itself.

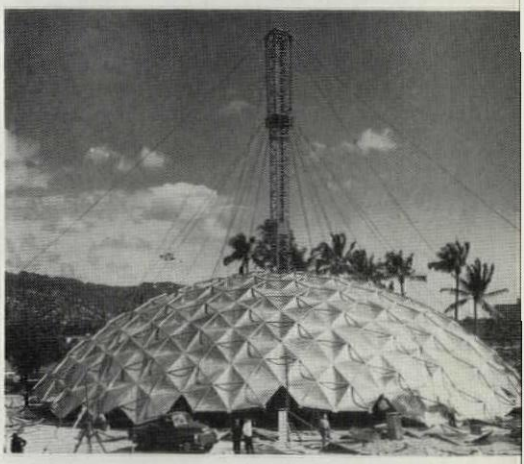
The precision with which the dome was designed and constructed is indicated by the fact that the complete dome "settled" only ¾ in. after all rigging had been cut loose.

Actual erection time (hoisting and installation) required but 20 working hours by a crew of 38 men. Anchorage, removal of mast and rigging, and weatherproofing were completed within a few days after erection.

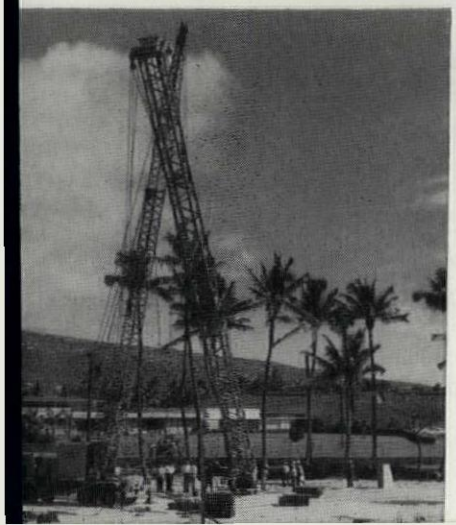
fabrication

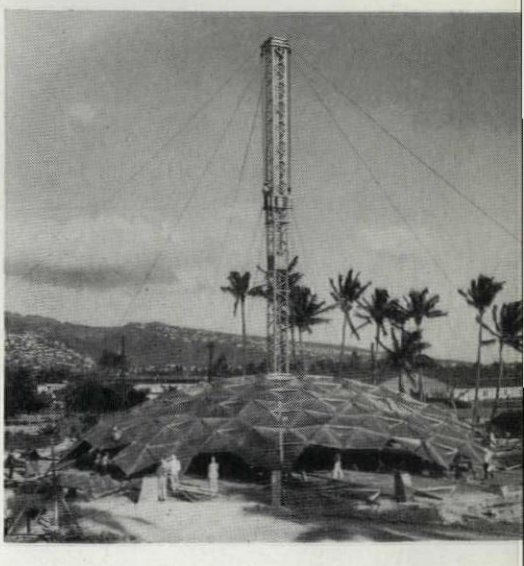
Panels, struts, and castings were fabricated at a Kaiser plant near San Francisco and then shipped to the job site. Templets were used to assure precise drilling of bolt holes in the 0.081 in.—slightly less than 1/16 in.—aluminum sheet of the panels. After drilling, sheets were sheared into diamond-shaped panels of 10 basic sizes. Their lengths—long

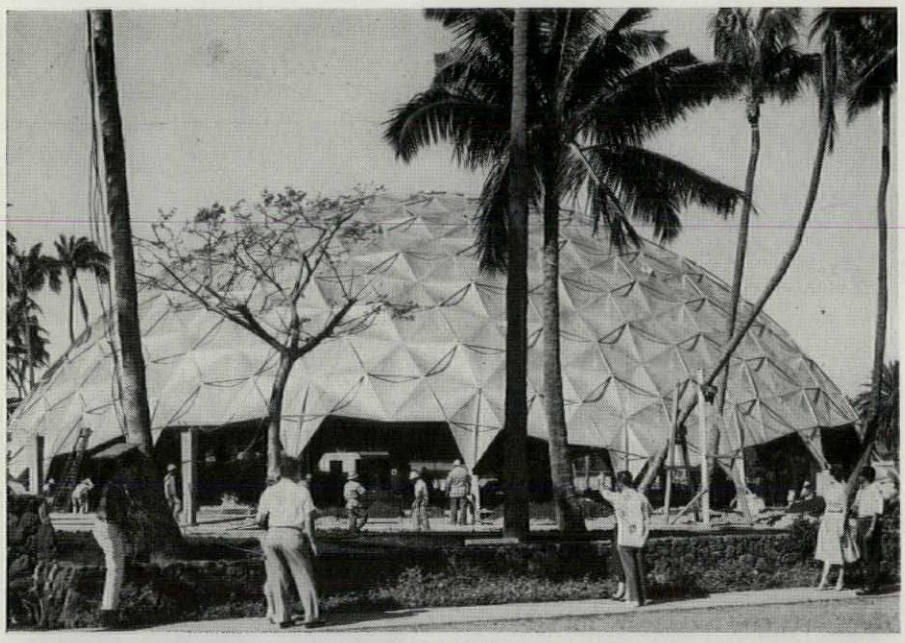
Intermediate stages in assembly and erection of dome. Work crews line up base struts prior to anchoring to 25 concrete piers around circumference of dome (below).

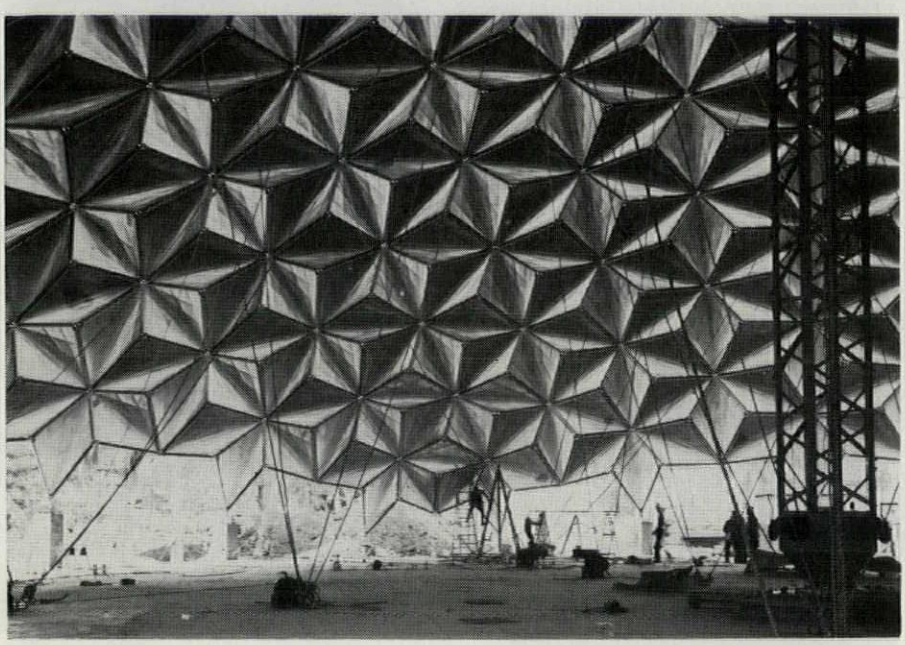


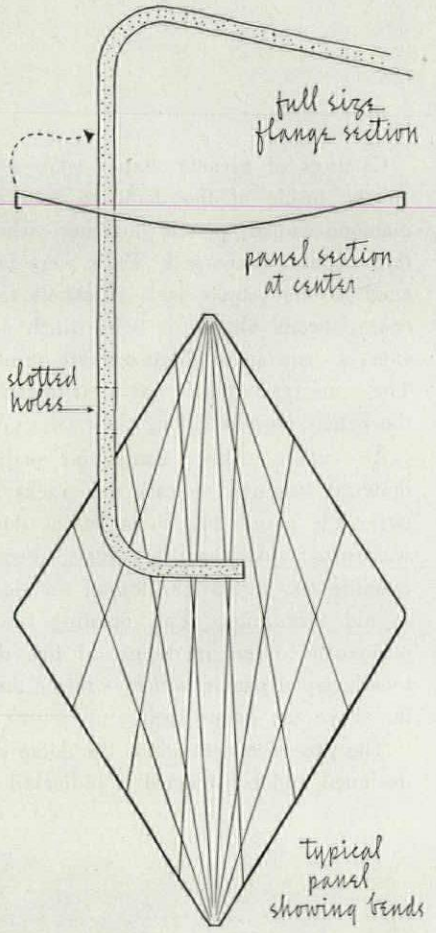
Crane lifts 96-ft portable mast into place. Section of panels, forming upper portion of dome, is assembled and bolted together first (below *and* right).











View of completed dome after base struts were anchored and portable mast removed. Struts were painted pink; panels remained unpainted. Interior of dome shows geometric pattern, formed by panels, and many tie lines used during erection. Portable mast is still in position (left).

Typical panel and full-size section through flange (above).

diagonal—vary from 106 in. to 150 in.; widths range from 65 in. to 82 in. Each panel has a total of 12 bends, six from either end, made by press break—which give curvature to the unit in addition to an interesting pattern. Around the edge of each is a 3¾ in. flange for the purpose of bolting panels together; bolt holes are spaced six in. on center. To facilitate erection, each panel was color coded by a small dab of paint to denote its proportions.

Gage of struts is 0.156 in.—slightly more than ⅛ in. Each strut is U-shaped and is two in. wide and 3½ in. deep. Lengths vary from 62 in. to 79 in.—three in. less than the width of the panel.

cost

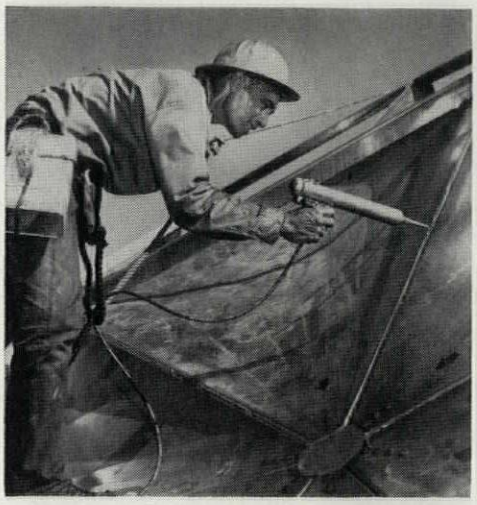
According to Kaiser Aluminum's engineers, an aluminum stressed-skin dome is lower in cost than conventional structures built for the same purpose. Factors such as size, location, and use naturally will affect the cost of future domes; however, it is estimated that the cost to erect elsewhere the same shell as at Hawaii Village would be approximately $4.00 or less per sq ft.

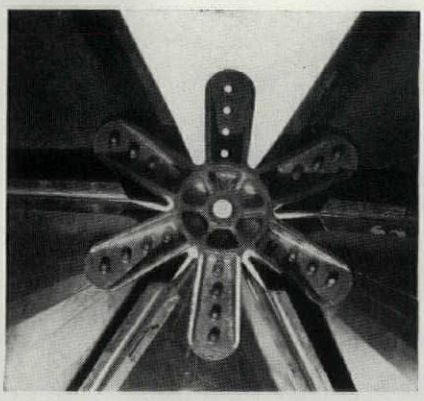
occupancy

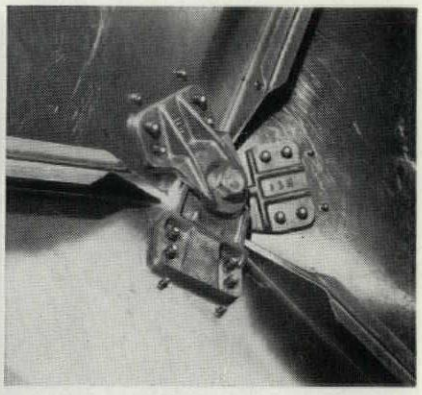
This dome will serve as a completely equipped auditorium with a seating capacity of over 1800. Structures of this type, however, have many other uses—some of which are aircraft hangars, sports

Calking operation required 40 gal of synthetic-rubber compound, a special sealant used to weatherproof the dome (below).

Pin-end connection at base of strut allows dome to expand and contract three in. a day. Tip of base panel extends into track to prevent rotary movement of dome (right).







Individual panel is added to dome (above left). *Workman at top is lining up holes with star-shaped gusset casting, beneath panels, and driving drift pin to hold panel in place until bolted.*

Star-shaped gusset castings were used where six panels converged (above center). *Dome contains 175 of these castings which are 16½ in. in diameter.*

One of 1150 hub castings used where three panels are joined (above right).

arenas, field houses, convention halls, and so on. It is reported that Mayor Morrison of New Orleans has expressed keen interest in the possibility of having such a dome structure with a capacity of 17,000 people to be erected as a sports arena in a community-center type of development that his city is planning.

Bolt, Beranek & Newman, Cambridge, Massachusetts, have been retained as acoustical consultants for the Kaiser Dome. Their preliminary report indicates that the dome presents no unusual acoustical problems and that the curved panels provide better acoustics than a smooth spherical surface. Acoustical material will be applied to only one-third of the interior surface and will be placed directly on the panels, thereby retaining their geometic pattern.

The dome was erected by Terminal Steel Company, Honolulu, T. H., under supervision of Kaiser Aluminum's engineers.

odor control in air conditioning:

Chemical sensibility is primitive; the most lowly of animals possess it—long before they develop brain, nervous system, eyes, ears, nose, or mouth. When the paramecium encounters water that is chemically contaminated, he dodges it just as if he had bumped into an obstacle. In 1883, W. H. Pollock observed that sea-anemones rapidly and beautifully expand if a little meat juice is added to their water. It might be taste or it might be smell, but in such primitive creatures we can only be sure that their behavior is changed by chemicals introduced into their environment. As we rise through the different classes of animal life, we find that there is a gradual but immense development of the chemical senses, characterized by the following features:

1. Reduction of the sensitive area. Whereas protozoa are apparently sensitive over their entire body, man can taste only with the tongue and less delicately with parts of the palate. Furthermore, he can smell only with two small interior surfaces—each about two sq cm in area—on either side of the nose. The change from whole body sensitivity to local sensitivity can be followed through most of its stages in different kinds of living animals.

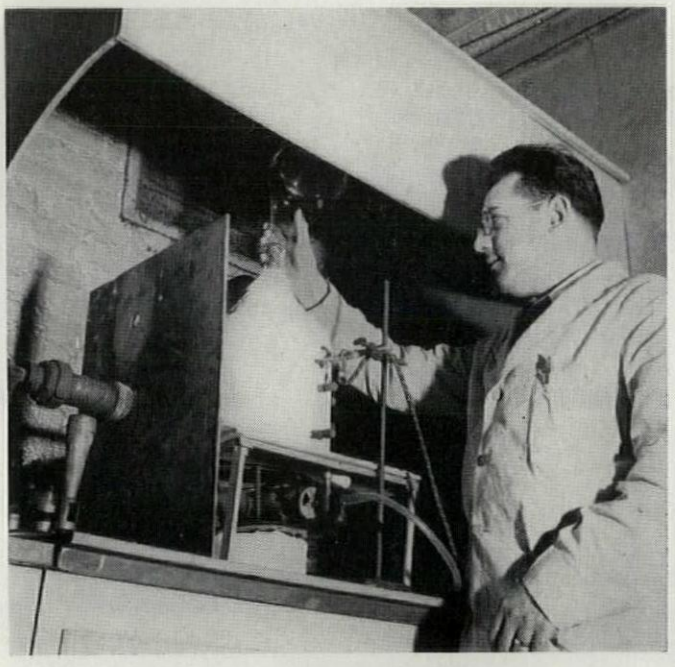
2. Sensations become progressively more sharply defined. As we ascend the scale we find that in moths, ants, and bees, taste and smell are both highly developed and distinct; the original chemical sense has differentiated. In man, taste and smell are separate sensations and are stimulated in different but narrowly restricted areas of the body.

G. H. Parker has pointed out that in man the two surfaces sensitive to smell are anatomically invertebrate in character, since they resemble the skin of the sea-anemone. It is as if we preserve to this day a trace of our sea-inhabiting invertebrate ancestors.

For man, the act of smelling is a simple enough process. To experience smell, it is necessary that particles—perhaps molecules—of the odorant material be present in the air that he breathes. In normal breathing, the main airstream passes through the nose but not the olfactory receptor surfaces high up in the nose.

Volatile aroma of coffee bean, precipitated on surface of chilled mercury, develops a consistent pattern. Bean is floating in center of liquid.

Illustration adapted from photo by Joseph Breitenbach



Lab equipment assembled to recreate a specific odor condition. Technician is capturing a volatile odor in beaker for further examination.

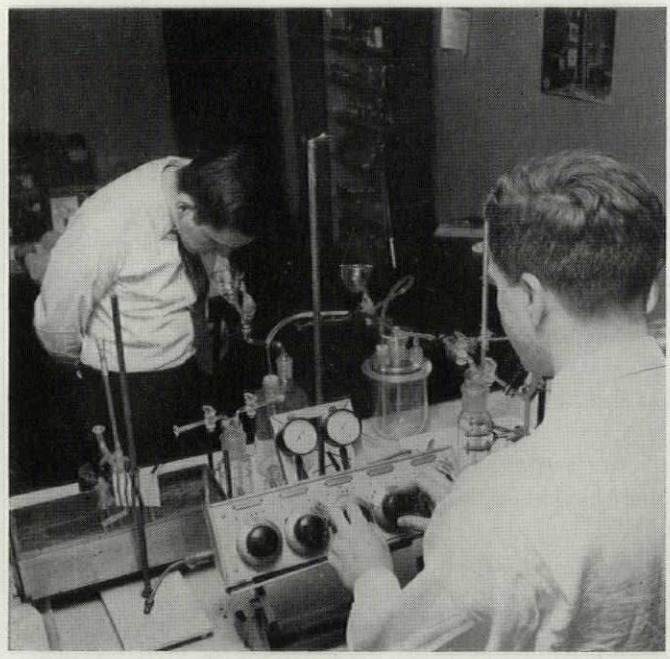
1--the sense of smell*

Eddy currents are formed, however, and some of these swirl to the olfactory receptors. When smell is faintly sensed, the immediate reaction is to sniff in order to increase the intensity of the smell and to savor it to the full. W. Ogle has shown that the mechanism of the sniff forces air higher through the nose where it freely contacts the olfactory receptors. Those receptors contain the ends of a large number of nerve fibers, and as soon as the area is stimulated by contact with odorous air, tiny discontinuous electric currents pass along the nerve fibers —first to the olfactory bulb and then to the cortex or surface of the brain. What happens then is so far conjectural. These electrical impulses are not dissimilar in character, whether they are started by the sight of a light, by the sound of a violin, or by the smell of a rose. The ultimate sensation is determined by the location of that part of the brain that is stimulated.

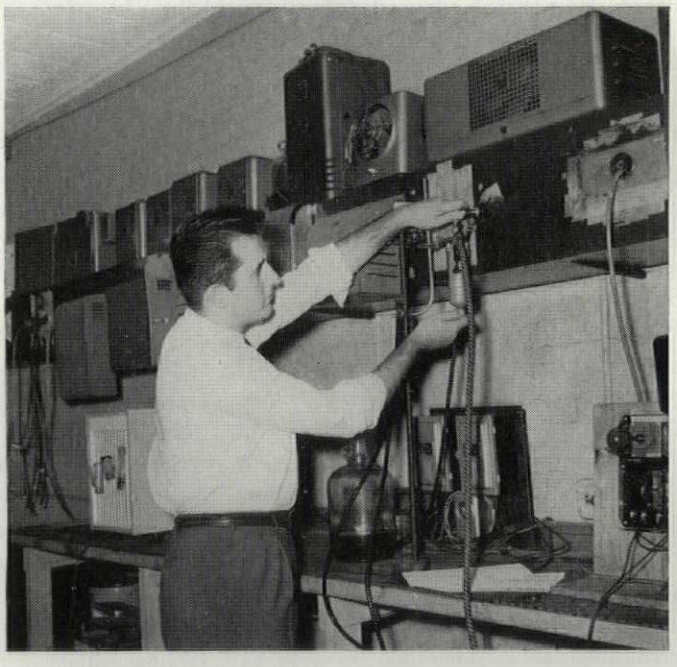
The great majority of people can smell the same smells, usually at about the same dilution, and for the most part they like and dislike the same smells. When coffee is being made in the kitchen, its aroma is clearly noticeable in the bedrooms. Is there any chemical test that would respond to the quantities of furfuryl mercaptan, diacetyl, and acetylpropionyl present in the bedroom air? There is not, but the ordinary person detects them effortlessly. Some people, who use sense of smell every day as a part of their work, can confidently detect differences of five percent in the strength (concentration) of an odor. We should recognize that we have in our noses a finer chemical detector and discriminator than any evolved by the best chemist.

Two primary needs of man, as of every other animal—nutrition and reproduction —were both at one time served by smell. Our way of life has altered and we smell our way neither to the butcher's nor to the altar. Despite our neglect of it, the sense of smell still lives strong within

** This discussion, presented here in greatly reduced form, has been taken from a series of articles that appeared in* The Export Review *of the British Drug & Chemical Industries during 1955, written by R. W. Moncrieff.*



Researchers make odor comparison tests to determine effectiveness of odor counteractant using a multistimulator olfactometer.



Test of various types of deodorizing and air freshening equipment. Technician checks spray head used for large volumes of air such as found in industrial exhaust systems.

us and sometimes it gives us a sharp reminder. We all know of some scent that takes us back to a childhood scene.

Smell has a third function: one of warning. To smell a bad smell is an extremely painful experience and the act of withdrawal is as quick and certain as if the hand had been burned or the foot bitten. People who tamper with warning systems are inviting all sorts of trouble. If the warning signal were eliminated, but not the condition that gave rise to this strangled warning, then dangerous situations might follow. This is a consideration to be borne in mind when we consider methods that are available for deodorization.

What can account for likes and dislikes? Most people like the smell of flowers, most like the smell of a mild cheese; however, let that cheese odor appear in an egg and they will detest it. The smell of onions on a steak may be pleasant, but the same smell on the breath of a companion may be horrible. The truth is that the brain does more than take information from the ends of the receptors and give a straight report on it; it minimizes some of the evidence, exaggerates other parts, lines it up with previous experience, takes a dozen other factors into account and finally comes out with the answer "I like" or "I dislike."

Deodorants of many kinds have been in common use for a long time. Earth is one of the best—certainly the most plentiful—and it was probably its liberal use as such that made early days of civilization at all tolerable. As soon as the nomadic stage was passed, and particularly as soon as people began to live in large groups, troublesome odor problems must have arisen.

Chemical deodorants and disinfectants have become more and more widely used. Formalin is used for swabbing hospitals while oxidizing agents such as the permanganates, the hypochlorites, and hydrogen peroxide have become household commodities. All such agents are intended for direct application to the source of the malodor. When the source is known and when it is accessible and can be treated without harm by an oxidizing agent or disinfectant-type deodorant, such agents are extremely effective. Their attack on the malodor is directed at the source; there is, though, one disadvantage from which most contact deodorants suffer —they are strongly odorous themselves. We have become so familiar with them and have associated them for so long with the clean, fresh smell of aseptic conditions, that many people have come not to be offended by them. Nowadays, powerful bactericides that have only a light odor are available and these may be expected to replace gradually the strong smelling disinfectants that have been used in the past.

Quite a variety of chemicals have been used for deodorizing. Some of them are primarily bactericides. For example, formaldehyde used for swabbing is a most effective deodorant. The ease of preservation of protein specimens in formalin is a sure indication that it inhibits bacterial action. It is to be found in some air fresheners, too, but its inclusion in these seems to be undesirable.

Sometimes metallic salts are used for deodorant action. Aluminum chloride has been used to remove the taste and odor from petroleum stock material which is to be used medicinally. Aluminum salts are widely used too for antiperspiration creams, although the main function of aluminum chloride or aluminum sulphate in these is to prevent sweating.

Chlorophyll is one of the most interesting recruits to the ranks of deodorants. Although it possesses powerful antiodorant properties, the mechanism or mechanisms, whereby it exercises these properties are not yet fully understood.

Although smells are fleeting and elusive, there is one way of catching them and holding them for future reference. That is by absorption. Most odorants either in solution or in vapor form can be absorbed onto the surface of active carbon or silica gel or alumina.

In preceding paragraphs, the destruction of odors by materials or contact deodorants has been discussed. There are, though, many odors that are less easily treated. It is not appropriate to pour some disinfectant on the cooking cabbage, nor to freshen the air by spraying disinfectant in a lounge in which a lot of people have been drinking and smoking. Devices which have been prepared to meet this need are known as space deodorants. In the main, they comprise the wick and spray types for house use, and fan blowers, spraying, and atomizing equipment for industrial, restaurant, institutional kitchen, etc., uses.

When the way in which air fresheners work is discussed, three ways likely to be put forward are: by masking, by anesthetization, and by odor pairing. The third—odor pairing—has much more to commend it: air fresheners of this type consist of a large number of odorant chemicals, which have been chosen so that one of them will "pair" or neutralize any bad smell. For any one of a large number of malodors, there will be a neutralizing "pair" for it in the freshener. Oil of juniper and cologne water, for example, neutralize the smell of camphor. Other examples of these are: cedarwood and rubber; rubber and wax; wax and balsam of Tolu; paraffin and rubber.

While the wick bottle is adequate for an ordinary living room, kitchen, hall, or bathroom, something larger is required for large rooms such as restaurants, cocktail bars, etc. For the latter, another method which has made good headway in the United States is an air freshener that may suitably be in the form of a firm gel in the air-conditioning system.

2--application of the Airkem method

The primary reason that outside air is introduced into air-conditioning systems is to dilute disagreeable odors. Contrary to popular opinion, outdoor air is not free —it must be cleaned, cooled or heated, and have moisture added or removed. Since thousands of cubic feet of treated air are forced through the exhaust outlets of air-conditioning systems, use of outside air should be as carefully considered as power, materials, labor, or any other expense.

Outside air entering an air-conditioning system costs approximately $200/1000 cfm/yr to condition. In the process of being circulated this air comes in contact with minute traces of odor—in ducts, on clothes of occupants, on furniture, and elsewhere. Despite the most rigorous cleaning methods, sufficient odors may be present to become offensive. As soon as an odor concentration of one or two ppm has been reached, it becomes necessary to exhaust it, unless a counteractant such as Airkem is introduced to combat the malodor. Airkem is a liquid complex of a group of materials, including essential oils and the chlorophyll complex as commercially extracted from green plant material. When this liquid is evaporated, its vapors are introduced into the supply air-stream of the air-conditioning system.

Several types of evaporating or dispensing equipment have been developed to utilize effectively this liquid complex with the many types and sizes of air-conditioning systems in current use. One piece of equipment,[1] especially designed for attachment to packaged air-conditioning units, (say 1½, 3, and 5 tons) has no motor or moving parts and does not interfere with the regular operation of the air conditioning. Efficient evaporative surface and damper control permits a metered amount of the liquid to be vaporized and circulated throughout the space treated by the air-conditioning equipment. A continuous flow of room air enters the unit through adjustable louvers and is then drawn over the vaporizing surface. A reservoir and a wick-floatation device keep the wicking surface supplied with fresh emulsion at all times and surface evaporation permits it to enter the air in a vapor state. This air stream is drawn into the air-conditioning unit and thoroughly dispersed in the recirculated odorous room air by a centrifugal fan. Treated conditioned aid is then distributed throughout the area by fan action of the air-conditioning unit. Amount of air to be treated may be controlled by adjustment arm; capacity of the reservoir is 1½ gal. Under normal usage the unit will require only routine servicing and liquid replacement once each month.

For air-conditioned spaces requiring up to 20 tons, a larger system is available consisting of three principal components: vaporizer cabinet, pump and storage unit, and controlling device (*Figure 1*). The vaporizer cabinet, a square metal box that holds a balsa evaporating cartridge (in effect a wood-wicking surface), is mounted on the outside wall of an air-conditioning system in which a small opening has been cut. This component permits air to be drawn off the evaporating surface, since air movement is treated by suction from the air-conditioning system fan. By this method the liquid complex is introduced into the air-conditioning system's makeup chamber, or plenum chamber. The procedure is automatic as long as the air-conditioning fans operate. A pump-tube assembly, mounted on the storage tank, is activated by a solenoid to supply the odor counteractant to the vaporizer. Whenever an electric impulse is delivered to this unit, it pumps a measured amount of odor counteractant up a supply tube which sprays it on the balsa evaporating cartridge. The resultant vapor is drawn into the air stream by the suction created by the air-conditioning system fan. The controller is a timing device which delivers an electric impulse activating the pumping assembly. By the simple expedient of increasing or decreasing the frequency of this action, by manually setting the controller, one can introduce any predetermined amount of vapor into an air-conditioning system. Thus, if a building engineer or superintendent suddenly finds he requires more odor counteractant—to eliminate the odor of paint, for example—he can step up the controller setting to effect the necessary odor counteraction. Conversely, he can decrease or completely turn off this process when it is not required. By the addition of a time clock one can further mechanize this procedure by scheduling odor counteraction during peak odor levels. A good example of this would be a restaurant which would require odor counteraction and air freshening principally during meal hours. By setting the time clock to co-ordinate with these peak odor hours, this entire process becomes fully automatic.

The Airkem method works by odor counteraction or odor neutralization (*as described in Part 1 of this article*). When most odors are combined in groups of two or more, their individual characteristics are no longer as readily distinguished by the olfactory receptors in the nose. Frequently the combined perception effect is a significantly lower odor level than that of each of the constituent odors in the mixture. In other words, mixtures of odors can be controlled to result in a diminishing of the total odor intensity and perception. This may be analogous to a situation in which a disc with red, yellow, and blue stripes, when rapidly spun, appears only as gray. All colors are still present, but in combination they are counteracted, neutralized, or eliminated and the eye sees only a gray or "colored" disc. This same principle oper-

[1] *Airkem Wikfloat Vaporizer.*

TABLE I: POSSIBLE SAVINGS (TYPICAL)

Cooling season	1200 hours @ average ½ max. load
Heating season	3000 hours @ 70% fuel efficiency
Cooling equipment, installed	$300 per ton
Heating equipment, installed	$ 2.50 per 1000 Btu
Power cost	$ .02 per kwh
Fuel cost	$ .11 per gallon
Airkem equipment, installed	$150 to $350 per 1000 cfm of outside air reduction

savings in operating costs

To condition 1000 cfm outdoor air per year, the costs are:

Power—2½ tons x ½ load x 10 hrs x 120 days x 2¢ x 1 kw	$ 30.00
Fuel—½ gal/hr x 14 hrs 215 days x 11¢ gal	165.00
Water pumping, air circulating, and miscellaneous operating	20.00
	$215.00

Cost of Airkem for one year on basis of 1000 cfm reduction in outside air (varies with the rate of odor generation in the particular space).

$75.00 to $125.00

$90.00 to $140.00

The initial cost of equipment to accomplish the saving indicated above will vary between $150 and $350, depending on the size of the air-conditioning system.

ates entirely independent of and is unrelated to masking, anesthetization, and fatigue.

In addition to counteracting odors, this method performs another definite function by adding a note of freshness to indoor air. Just as tap water, placed for a period of time in a glass becomes stale and vitiated, so does air become stale after it has been allowed to stay indoors. Airkem adds ingredients which one associates with outdoor freshness; such materials, including the chlorophyll complex, are put into the air in minute quantities. Thus unpleasant odors are counteracted and a note of freshness is introduced to the recirculated air. Odors tend to be absorbed on surfaces generally—especially on carpets, drapes, walls, and the coils and duct surfaces of air-conditioning systems. The deodorant vapors also go to these surfaces and apparently have the ability to displace the odorous molecules.

When properly installed, there is no objectionable deposit of deodorant on the air-conditioning surfaces. The vapor does not tend to condense out and most of the active ingredients become a true molecular dispersion. Madison Square Garden, in New York, has vaporized thousands of gallons of deodorant into its air-conditioning system over a period of five years and yet no deposit of Airkem has been detected on the duct linings. This is an unusual test because the concentration put through these ducts to take care of circuses, rodeos, horse shows, etc., exceeds by many times that used in conventional air-conditioning systems. Tobacco-smoke odor is unlike most of the other occupancy odors. Freshly formed smoke may be fairly agreeable to many persons. Once the solid smoke particles have separated out and been deposited on rugs, draperies, ducts, and cooling coil surfaces, however, they undergo further chemical changes which make them most obnoxious.

In some systems the air-conditioning load for heating and cooling the outside air may be as high as 30 to 50 percent of the total load. Hence, the air-conditioning system which reduces its outdoor intake to a minimum approaches the most economical use, and requires less installed

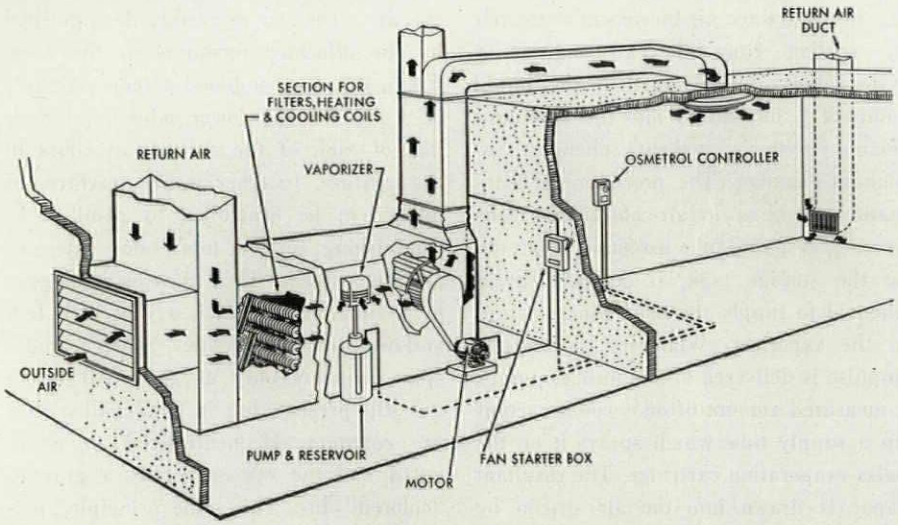
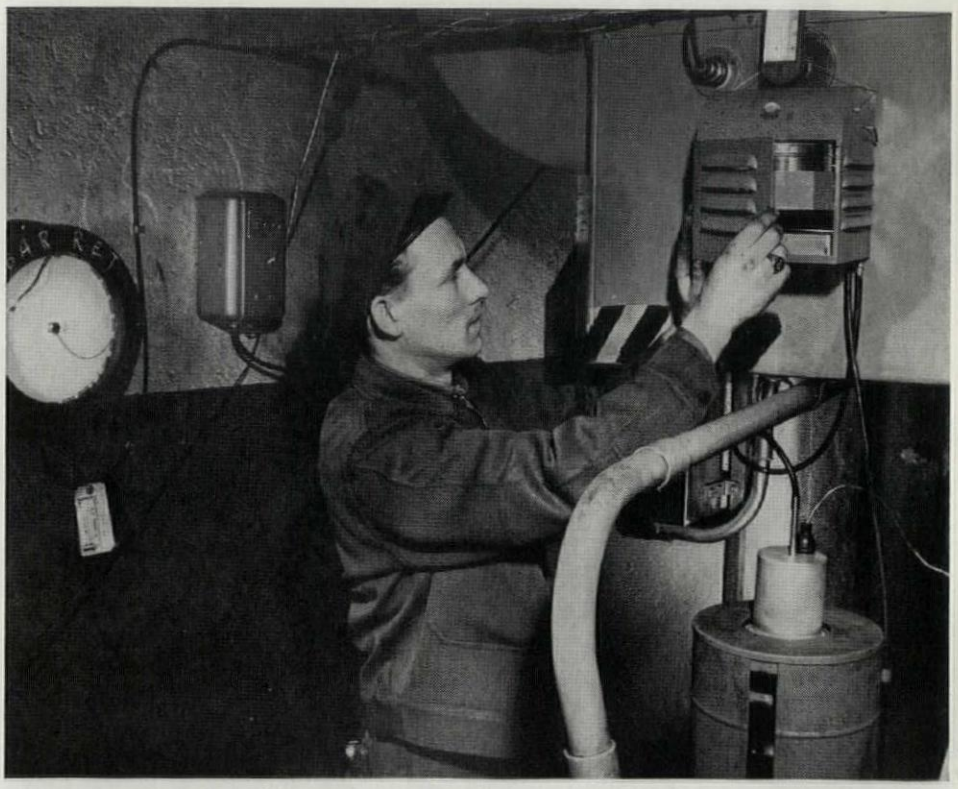


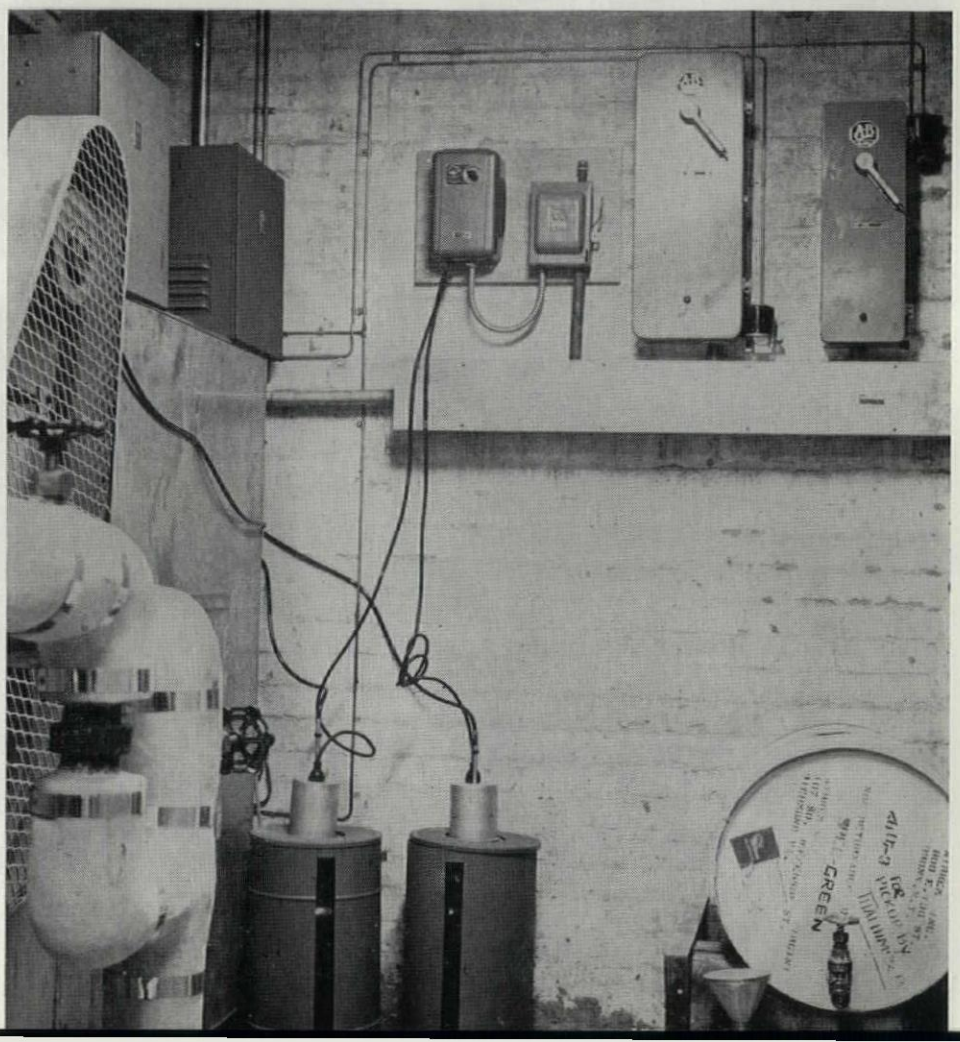
Figure 1—cutaway view of counteractant and air freshener equipment—Model AE Osmetrol —shows adaptation of central air-conditioning or air-circulating system.

Equipment used for control of food odors that would have contaminated apparel and stationery areas of Thalhimers, Richmond, Va.



tonnage and heating equipment. Savings of from 10 to 35 percent of the total heating and cooling costs can be realized by reclaiming some of the conditioned air which will otherwise be wasted. The possible reductions in the cost of operating air-conditioning equipment will, in most cases, more than offset the cost of the liquid complex and result in a further net reduction in the heating and cooling costs.

One gallon of the liquid costs from $6.00 to $7.25 depending on the quantities purchased; one gallon, however, is sufficient to treat 30,000,000 cu ft of malodorous air. The possible savings that may be considered typical for a wide section of the U.S. are indicated (*Table I*).



Installation of odor counteractant equipment for restaurant of the Hotel Commodore, New York.

How Do You Specify and Approve Paint Material?

by Harold J. Rosen

This column was inaugurated on the premise that we could furnish the architect and the specifications writer with the latest authoritative information on materials and methods to be used in the writing of architectural specifications. In this issue, however, I propose to turn the tables and ask you, architect or specifications writer, for information.

The question is simply this: How do you specify and approve paint materials? This is a loaded question; so before you leap to a quick reply permit me to bring you up to date on several methods that are used today, but which are not entirely satisfactory.

In previous years, before the advent of alkyd emulsions, latex paints, polyvinyl acetates, acrylics (and perhaps others by the time this article gets into print), about all we had to deal with in specifying paints was a lead-and-oil paint. Many specifications of that era spelled out the exact proportions to be used in formulating paints. For example, for a primer on exterior wood, one might specify as follows:

White lead .....100 pounds
Raw linseed oil .....7-9 gallons
Drier .....½ pint

For a finish coat on exterior wood, the specification might read as follows:

White lead .....100 pounds
Raw linseed oil .....3 gallons
Drier .....½ pint

Then to insure that you were getting what you specified, you watched the painter measure out and mix the ingredients on the job.

However, the paint industry has come a long way since the days of lead and oil paints, and the architect and specifications writer have not been able to keep pace with these developments. The formulation of paints is a science today, and one must possess a knowledge of chemistry to understand its ramifications.

The paint manufacturers are constantly improving their products through research, and even today's brand changes as new resins, solvents, and plasticizers are discovered.

How then does the specifications writer specify these new paints and approve them? If he specifies Manufacturers A, B, and C (or equal) and the contractor submits Manufacturer D, how does he determine that Manufacturer D is "or equal"? For that matter, how can he equate Manufacturers A, B, and C in the same specifications?

In public work, a specifications writer might use Federal-Specifications paints as criteria, but if these paints are not tested in accordance with these specifications how does he know what he is getting? If you cannot afford to test the paints in accordance with these Federal Specifications and will therefore accept affidavits, you are again on shaky ground because the affidavits are not aways attested to by the proper people. Most manufacturers make their own standard brands and only make paint in accordance with Federal Specifications when large quantities are involved. So if your project requires a small amount of paint, it may be difficult to get Federal-Specifications paints manufactured.

In institutional work, where purchasing agents buy paint for maintenance purposes, some have tried to develop specifications based on washability of the paints. The awards on paint materials are made not necessarily on low bids but on the basis of longevity of the paints based on the number of washings as against the price.

We cannot close our specifications to a limited few manufacturers. It may be that we have personal knowledge that some manufacturer's paint materials are unacceptable, and we may specifically exclude these, or veto them if they are submitted. But there are so many manufacturers of paint that one cannot possibly know them all and arbitrarily disapprove of a paint bearing the name of an unknown manufacturer, unless one has specific information. Yet, how can you approve the brand offered?

Recently a paint-specifications guide entitled "A Modern Guide to Paint Specifications," prepared by the Painting and Decorating Contractors of America, came to my attention. The very problem which I have posed here is unanswered in this guide. While a comprehensive specification on painting has been developed, the paragraph on paint materails is left to the Architect.

For example, on materials, this specifications guide reads as follows:

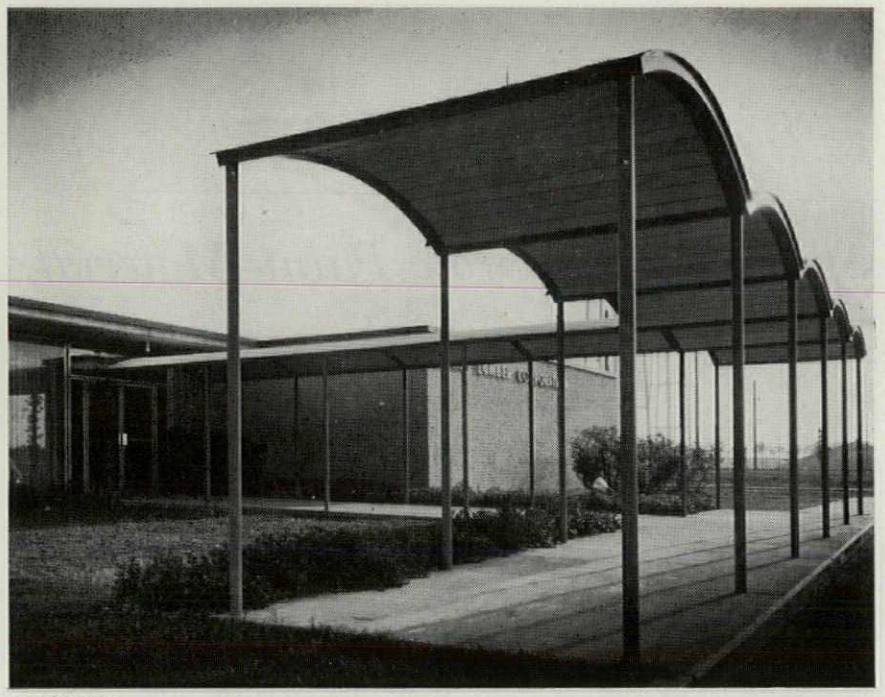
"Recommendation of specific material for fulfilling the intention of the Architect is not considered a function of these recommendations. This data should be obtained by the Architect from the Paint Manufacturers who generously supply any and all necessary information on this subject."

The foreword to this particular painting guide states that "no proprietary brands of materials have been stipulated in the preparation of these specifications."

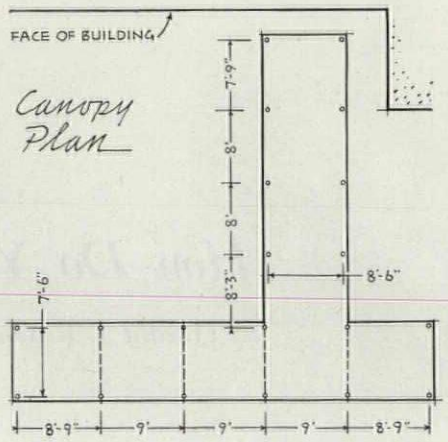
I do not wish to single out these specifications as an example, but I believe that had a satisfactory system been developed, it would have been incorporated in that guide.

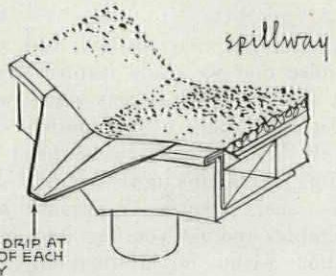
Inasmuch as apparently there is no satisfactory method of specifying and approving paint materials, I am putting the question to you. How do you specify and approve paint materials? We propose to put the question to leading architectural firms, paint manufacturers, and other interested parties. Perhaps if we all put our heads together we can be instrumental in formulating a policy on the specifying and approving of paint materials. We plan to publish the results of this inquiry in this column at a later date.

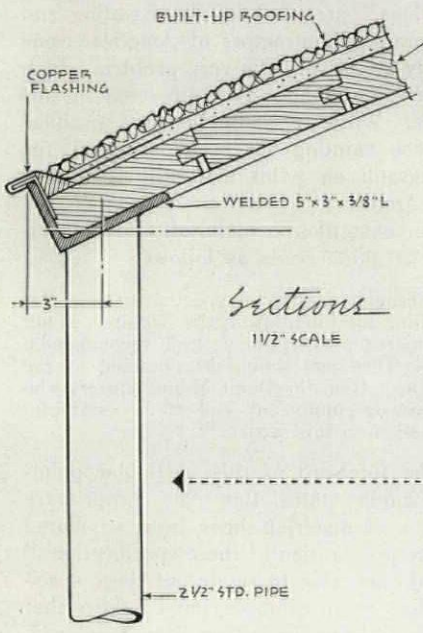
covered walkway

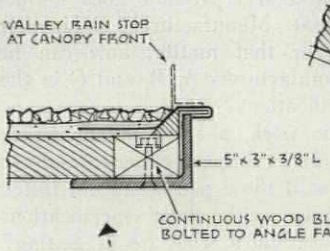


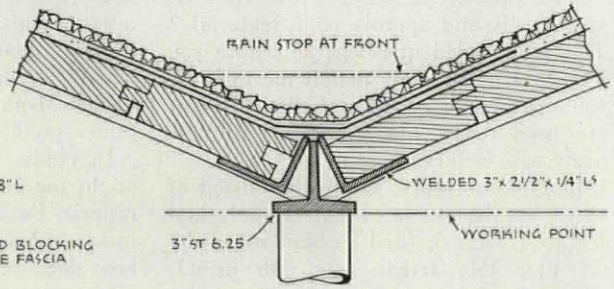
F.W. SEIDERS

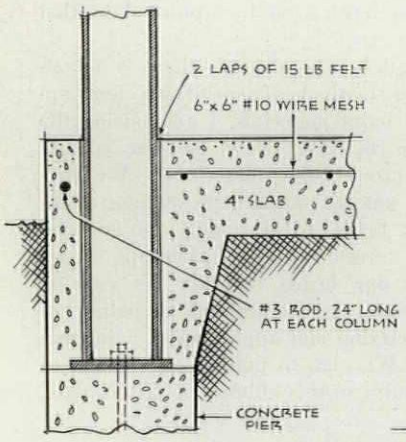


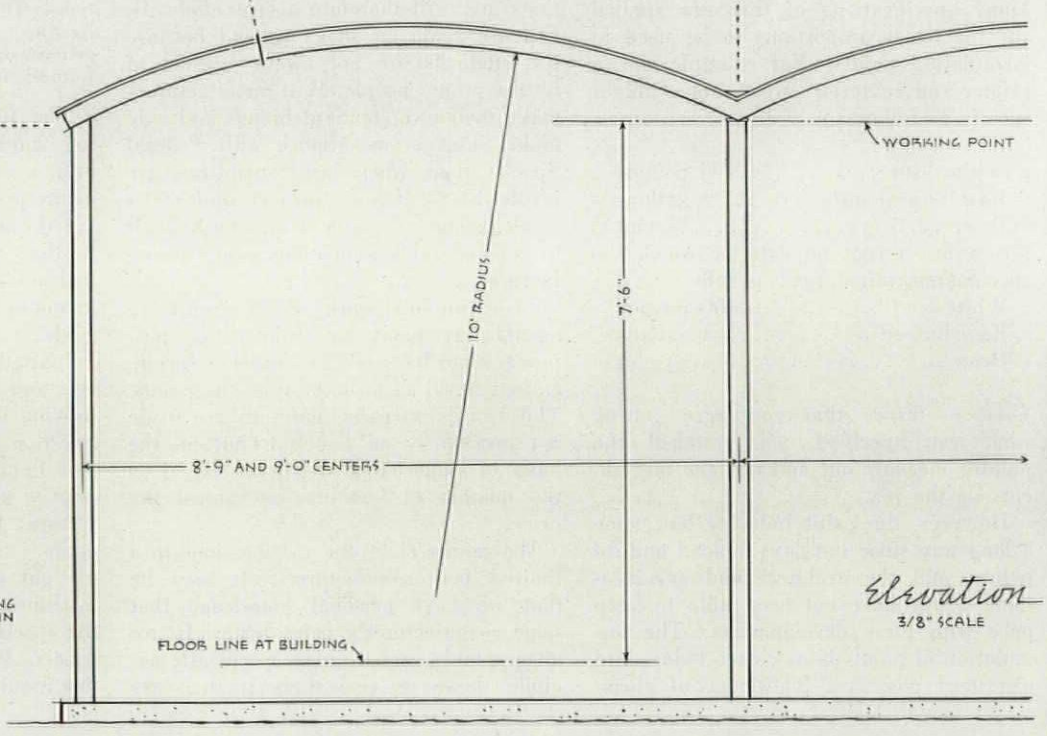












OFFICE BUILDING, Sillsbee, Tex.

George Pierce & Abel B. Pierce, Architects

display unit

BEN SCHNALL

NEWS AGENCY, New York, N. Y.

Hansen & Thuesen Inc., Designers

New Merchandise Mart showroom of Laverne, Inc., displays the firm's textiles, wall coverings, and furniture in a handsome interior designed by Estelle and Erwine Laverne. Elements combine to achieve a quality of light: white-on-white canvas "Patina" wall covering, glass partitions, white overall carpeting. Thirty-three-foot "Marbalia" mural, monumental Piranesi mural, and a wall of sliding fabric panels, luminously backlighted, dramatize the chiarascuro effect. *(See p. 166 for more Market News.)*

Louise Sloane

retail shops

Sharply contrasted in concept and in execution, yet unified in their purpose—to serve the retail customer—are the two New York shops that we show on the following pages. Designers Hansen & Thuesen created for Hotaling's News Agency a crisp, vividly colorful showcase that calls out to the passerby to enter and browse among the foreign-language newspapers, magazines, and books for sale within. Designer Finn Juhl, in remodeling the first floor of Georg Jensen, Inc., devised a richly subtle background for the hundreds of pieces of silverware, porcelain, and allied accessories that gleam and glitter throughout the space. Both shops reflect their respective designers' sensitivity to the emotional quality of the merchandise on display: Hansen & Thuesen choosing bold geometric lines, brilliant lighting, and such frankly contemporary materials as steel, Micarta, and Plexiglas to convey the excitement of news from foreign lands; while Juhl selects the patina of rare woods, gentle curves, soft diffused lighting, and floating ceiling panels of velvety fabric to emphasize the elegant character of Jensen's wares. Yet each shop design has been thought through functionally and practically. In the Hansen & Thuesen shop, the fixture units (*see* SELECTED DETAIL) are designed for maximum display in minimum space, and arranged both for self-service customer ease and watchful visibility by the sales attendant. The Juhl design provides necessary flexibility for frequently changing display requirements through a free-standing shelving system supported overhead by a suspended wood grid.


PARIS MATCH
THE TIMES
EPOCA
DER SPIEGEL
FOREIGN PUBLICATIONS
OUT-OF-TOWN NEWSPAPERS
BACK NUMBER NEWSPAPERS
NEWSPAPERS
REIGN PUBLICATIONS
THE FIELD
MATCH
PICTURE POST
ADAM
DER VOLKS BROCK HAUS
SALON 56

retail shops

data

Color Plan: White walls, medium gray poles, light gray shelves, all showwood walnut with oil finish. Top end panels in fixtures are charcoal gray, lower panels in a variety of colors harmonizing with ceiling signs. Signs are of transparent and opaque Plexiglas and lacquered-enamel masonite in 17 different colors.

cabinetwork

All: designed by Hansen & Thuesen/ executed by Jaff Bros. Woodworks, Inc., 41-43 37 St., Long Island City 1, N. Y.

equipment

Air Conditioning: Carrier Corporation, Syracuse, N. Y.

lighting

Ceiling Fixtures: Century Lighting, Inc., 521 W. 43 St., New York, N. Y.

walls, ceiling, flooring

Walls: painted flat white.

Ceiling: acoustical tile.

Floor: "Nairon Custom Tile"/Congoleum-Nairn, Inc., Kearny, N. J.

accessories

World Maps and Signs: Display Corporation of New York, 253 W. 64 St., New York, N. Y.

client	Hotaling's News Agency, Inc.
location	New York, New York
designers	Hansen & Thuesen, Inc.
associate designer	Granville Ackermann
lighting consultant	Robert Finkelstein

Contributing to the international atmosphere: world maps showing the time in major capitals, colorful blown-up names of publications in many languages. Unobstructed street window affords full view from the outside. Horizontal grid 10" below ceiling conceals wiring, carries signs, ties together vertical metal poles.

Photos: Ben Schnall

p/a interior design data

retail shops

client	Georg Jensen, Inc.
location	New York, New York
designer	Finn Juhl

data

Color Plan: Dominant color is the teakwood, used for display tables, backgrounds, and overhead grid. In free-standing and wall-hung cases, panels are of lacquered, Black Bog Oak and Japanese Bast, all in natural finish. Walls are painted off-white, flooring is black and white, ceiling fabric panels are white.

cabinetwork, lighting

All: designed by Finn Juhl.

Cabinetwork: executed by Bovirke, Copenhagen, Denmark.

Lighting: Louie Poulsen & Co. A/S, Copenhagen, Denmark.

fabrics

Ceiling Panels: fireproofed white cotton duvetyne/ Maharam Fabrics Corp., 130 W. 46 St., New York, N. Y.

flooring

Floor: vinyl-tile/ Robbins Floor Products, Inc., Tuscumbia, Ala.

Overhead grill of teak, carried to ceiling by metal straps, provides support for flexible display units as well as for snap-on accent lights which may be moved about at will. Display units have interchangeable wood panels attached to metal uprights, bracket-supported glass shelves.

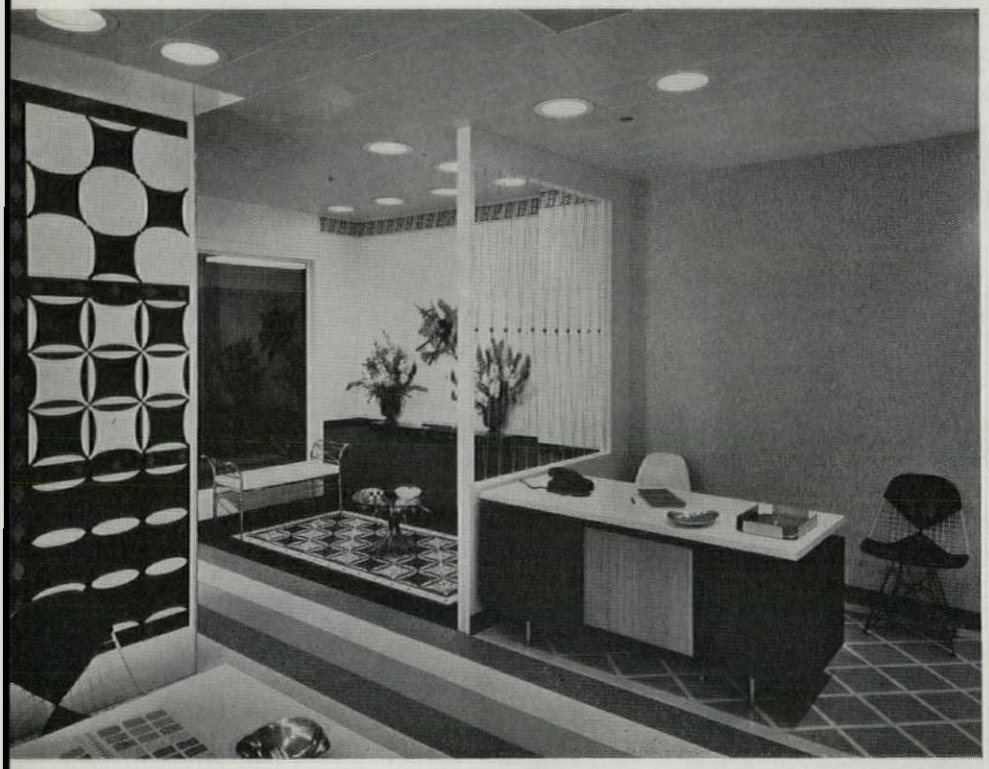
Photos: Louis Reens

Chicago Market Survey

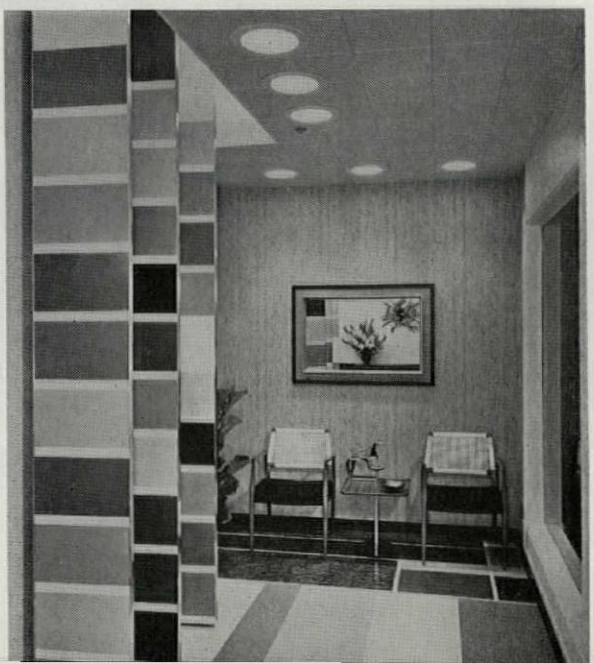
The consistently increasing work of the architect in areas of interior design has electrified the atmosphere of the Chicago home-furnishings market, with "the importance of the architect as interior designer" a topic for panel discussions, humorously pointed dramatic sketches, and focal point of much manufacturers' sales literature. Furniture, floor-and-wall covering, and appliance suppliers are deeply conscious of the desirability of the architect-customer, and are slanting their design and selling efforts to appeal to the architect market.

Outstanding example of a supplier's provision for both the esthetic and practical needs of the customer is Amtico's effective new showroom, designed by Paul MacAlister & Associates in the Merchandise Mart. In a compact 33x18-ft space, the designer has managed to show six different, installed, sample floors; the company's entire diversified assortment of patterns, grades, and colors; and has devised a "Color Scheme Planner" for presenting co-ordinated color schemes. The Planner is composed of three revolving triangular columns, each face carrying eleven separate color schemes, permitting a total of 99 color schemes, to be read from top to bottom. Along one wall, a wing-form display of small samples is specially lighted to avoid hilation and to permit true reading of color.

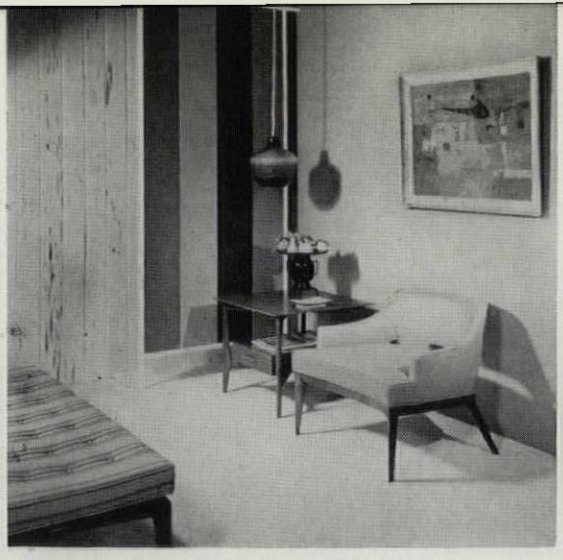
The Upholstery Leather Group's 1957 exhibit introduces both a new upholstery leather, and a lightweight leather suitable for draperies, curtains, shades, folding doors. In its fourteen room settings by members of the American Institute of Decorators, markedly architectural use of leather has been made—in an acoustical ceiling, as a wall covering, for a room divider, for screens, as facing for a storage-wall (*see acrosspage*).



U-arrangement permits display, sales reception, and office areas around central traffic aisle. Owens-Corning Fiberglas acoustical hung ceiling; Lightolier recessed flush lighting; wallpapers by Denst & Soderlund, Bassett & Vollum.

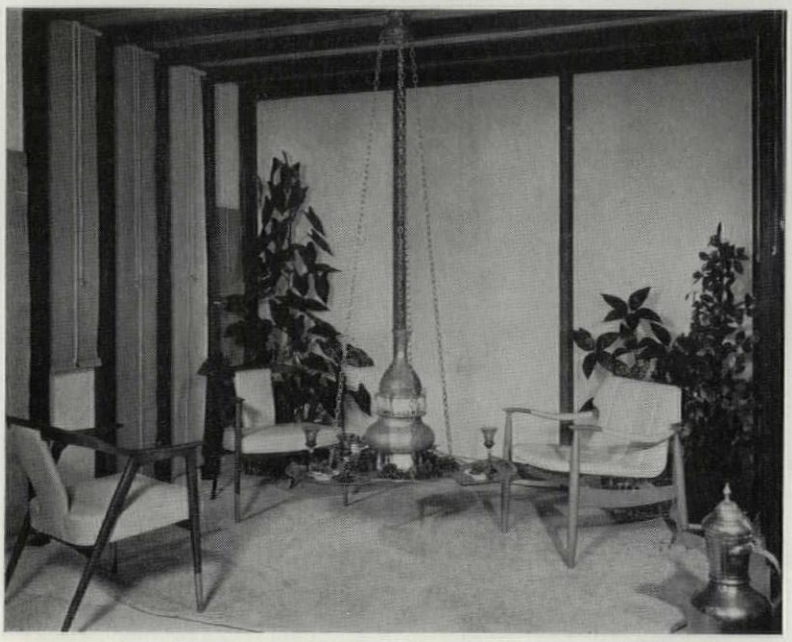


Prize-winning architectural design in 1956 competition, acoustical ceiling by Dave Zeese, combines five shades of leather woven with 1-inch wooden dowels. Setting designed by William Pahlmann; furniture by Jens Risom Designs, Inc., New York, N. Y.



Stationary screen, framed in white metal, uses four leather panels ranging from light beige to chocolate brown, stands against a wall of white pecky cypress. Adjacent wall is gold-colored burlap, chair in vermilion leather, vermilion Venini hanging light. Setting designed by Marius Perrin; furniture by Erwin-Lambeth Furniture Co., Thomasville, N. C.

Oiled-walnut beams frame leather in two tones of yellow and white, and in gold, for ceiling and shade wall. Chairs are competition designs, the pair in oiled walnut with brass ferrules designed by Kwok Wai Lau; the turquoise-lacquered chair with sculptured back and seat molded in one piece of leather designed by Robert B. J. Biggins. Antique Persian brass piece serves both as cocktail table and lighting fixture. Setting designed by Marian Heuer; furniture by S. J. Campbell Co., Chicago, Ill.



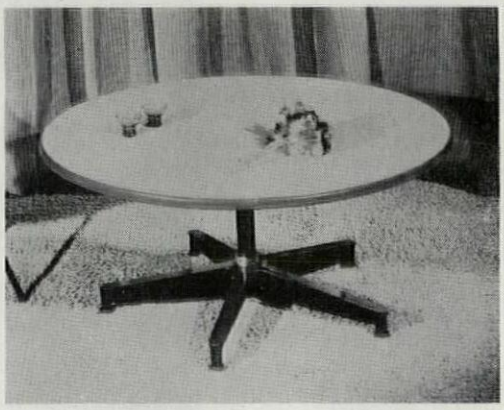
Leather window shades, in mustard yellow and gray, have cut-out snowflake motif (competition design by Betty Cooke). Floor cushions, armless chair, and console table are all leather-covered, in yellow, gray, white, kumquat. Floor is V-joint ebony, walls are by Murals, Inc., Jamaican-weave covering in white. Setting designed by John Wisner; furniture by Arch Gordon Company, Chicago, Ill.

Chicago Market Survey

furniture highlights

Contour chair: designed by Alf Svensson/ steel-tube construction/ foam-rubber no-sag-spring seat and back/ adjusts to reclining position/ wood frame in teak, walnut, or black finish/ 28½" wide, 31" deep, 16" seat, 40¾" back/ **retail:** $149 in top-grade fabric/ **Dux, Inc., 390 Ninth St., San Francisco 3, Calif.**

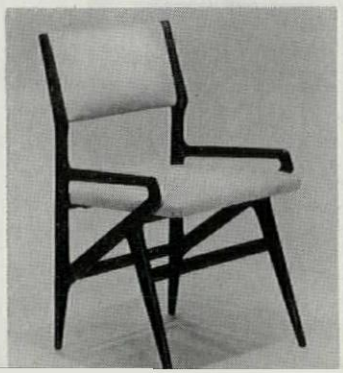
Occasional Chair: designed by Edward J. Wormley/ of laminated natural ash, formed of "X" members/ round, down-filled, back cushion over cane back/ **retail:** $440, cover furnished/ **Dunbar Furniture Co., Berne, Ind.**



Bel Canto Chair: designed by J. Gordon Perlmutter/ floating seat, leather-upholstered in sculptured walnut frame/ **Shearman Brothers Co., Jamestown, N. Y.**

Low Round Table: designed by Charles Eames/ white plastic top, gray vinyl edge, base and shaft of black-lacquered steel tubing, top of star-shaped base of polished aluminum/ 16" high, 36" diam./ **Herman Miller Furniture Co., Zeeland, Mich.**

Side Chair: designed by Gio Ponti/ walnut frame in fluid, unbroken line, slim seat and back upholstery/ **M. Singer & Sons, New York, N. Y.**



the Two Grand Old Names in Lighting *Announce* the New

Guth

Incandescent Lighting Catalog

"*Mr. Holophane*" *says*—

"Glad to have you aboard, Ed. My colleagues tell me your new catalog will prove to be most valuable for Architects and Engineers. Congratulations!"

CHARLES FRANCK,
President
The Holophane Company
New York 17, N. Y.

"*Mr. Guth*" *says*—

"Thank you, Mr. Franck. Our Engineers have had a hey-day with your grand lens-line. The new catalog appears to be a most helpful lighting tool."

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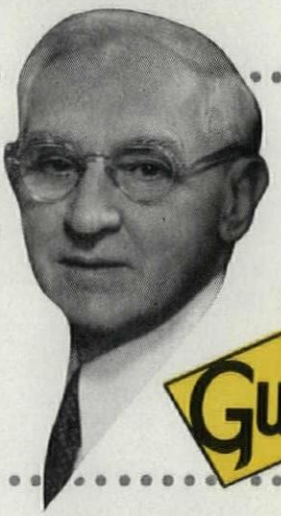
St. Louis 3, Mo.



THE NEW GUTH CATALOG features 8 special indexed sections to completely cover the entire new Brascolite line of incandescent fixtures: square and round recessed units with Holophane Controlenses*, surface and suspended fixtures, night lights, bed lights, gym lights, etc. Complete with photograph of each fixture, plus specifications, dimensional drawings (drawn to scale for easy reproduction), coefficients of utilization, light curves, installation information and other technical data.

Also a special 12 page section including complete Lumen and Point-by-Point Charts, features of Guth quality design and construction, as well as description of the famous ALZAK Lifetime Aluminum Finishing Process.

Write on your letterhead for your complimentary copy of this new catalog today.

Celebrating
Our 55th Anniversary
1902-1957

*®Holophane Co.

Guth brascolite

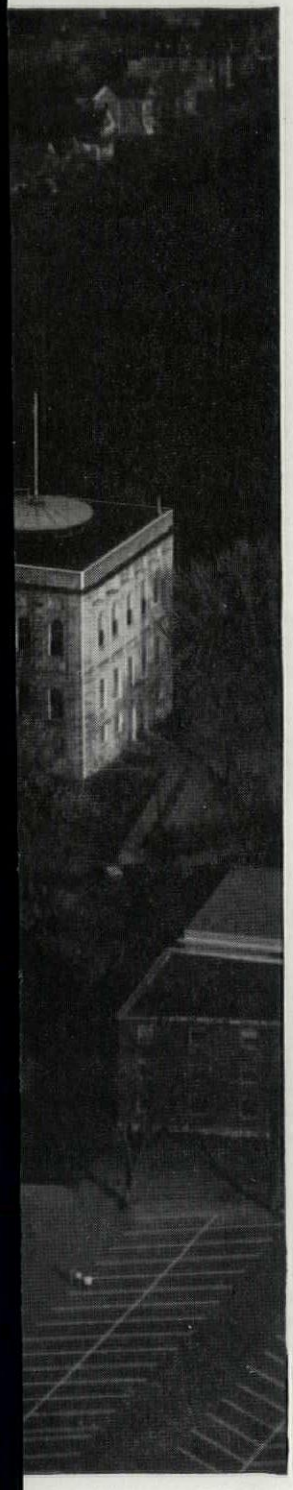
THE EDWIN F. GUTH CO., ST. LOUIS 3, MO.

5 miles of Gold Seal® Floors exclusively for Maine State Office

ARCHITECTS: Miller & Beal, Inc., Portland, Maine. ASSOCIATE ARCHITECTS: Desmond & Lord, Boston, Mass. FLOORING CONTRACTOR: Portland Veos Tile and Flooring Co., Inc., Portland, Maine.

Aerial view of the new Maine State Office Building with the Capitol building at the rear.

specified Building!



Here's an interior view showing a small part of the installation of Gold Seal Inlaid Linoleum. Actually, about 3½ acres of floor space are covered with this ⅛" burlap-backed "Veltone."

MORE than 148,000 square feet of Gold Seal Veltone® ⅛" Inlaid Linoleum has been specified and installed in the new Maine State Office Building at Augusta, Maine.

Originated by Gold Seal, "Veltone" provides an attractive, long-wearing, all-over decoration for use in all public buildings, schools, hospitals, offices, etc. Veltone's excellent resiliency provides quiet and comfort under foot. The unique design of this Inlaid Linoleum literally hides foot marks . . . it's exceptionally easy to clean and keep clean because of its density and surface smoothness. This ease of maintenance naturally reduces the expense of building service and upkeep. For those who prefer the modern textured look in Inlaid Linoleum, Gold Seal offers Sequin®—⅛" thick—with all the advantages of "Veltone."

Gold Seal Vinylbest* Tile and Gold Seal Asphalt Tile were also used in special areas such as the food and photo laboratories.

Specifications—Gold Seal Veltone: 6′ wide yard goods, ⅛" gauge, burlap-backed. Install over suspended wood, or suspended concrete under-floors. Available in 8 colors—Pompeian Grey, Heather Tan, Spicewood, Bermuda Grey, Light Tan, Grey, Brown, Surf Green. Also made in standard gauge for residential use—in 9 colors.

Send for Free Technical Data Book—"Why Resilient Floors"—containing 36 pages of information to help you specify the correct resilient floor for any type of commercial, institutional or residential building. Address Architects' Service Department, Gold Seal Floors and Walls, Congoleum-Nairn Inc., Kearny, N. J.

PROVIDE YOUR CLIENTS WITH THE FINEST IN FLOORING — SPECIFY GOLD SEAL

FOR HOME...BUSINESS...INSTITUTIONS:

BY THE YARD AND TILES—Inlaid Linoleum • Nairon® Plastics • Vinylbest* Tile • Cork Tile • Rubber Tile Asphalt Tile

PRINTED FLOOR AND WALL COVERINGS—Congoleum® and Congowall®

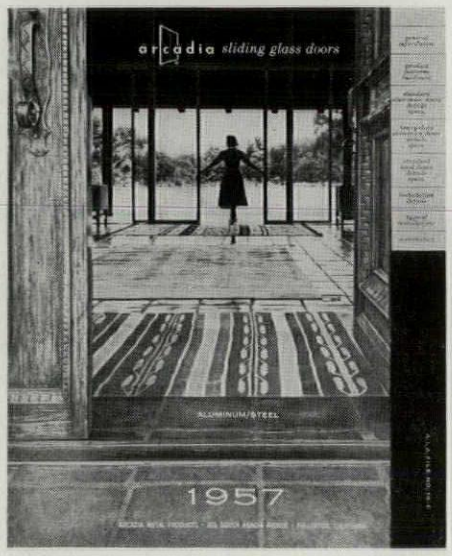
RUGS AND BROADLOOM—LoomWeve®

SATISFACTION GUARANTEED OR YOUR MONEY BACK

FOR THE LOOK THAT'S YEARS AHEAD

Gold Seal® FLOORS AND WALLS

*Trademark



The tremendous growth in popularity of glass-wall construction and the use of sliding glass doors has created a demand for these doors in a wider variety of types, sizes, and materials. Among the few major firms in this country manufacturing both steel and aluminum frames, Arcadia Metal Products offers three basic lines of sliding doors in stock and custom sizes. Full information for architects on these lines is presented in the new Arcadia Sliding Door Catalog.

In addition to conventional sliding doors, the catalog features custom models to permit greater mobility, wider openings, pocket installations, and use with post-and-beam construction. Details, specifications, and table of stock sizes for each line—single and double-glazed standard aluminum, standard steel, and heavy-duty aluminum doors—are grouped for easy reference. Photos show outstanding features including double-seal wool-pile weatherstripping at head section, jamb, interlocker, and sill; contemporary-styled hardware. Installation details are provided in final section. Example shown on cover was designed by Cliff May with architects Higgens & Root for the Lane Publishing Company, Menlo Park, Calif.

395. Arcadia Sliding Door Catalog, 16-p. Arcadia Metal Products, 801 S. Acacia Ave., Fullerton, Calif. R. C.

Editor's 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. Unnumbered items to be obtained directly from manufacturer.*

air and temperature control

108. Copper Tube Panel Grids, 28-p. guide to installation and design of residential radiant heating system using preformed, copper tube panel grids. Discusses principles of radiant panel heating; explains advantages of new system with flexible center spacing that simplifies adaptation to any plan arrangement. Diagrams suggest variety of grid designs for floor and ceiling as well as methods of indicating grid layout in drawings. Gives installation procedure with photo illustrations. Charts, drawings. The American Brass Co., Waterbury 20, Conn.

109. Trane Centravac, 56-p. data book on automatic hermetic centrifugal water chiller for air-conditioning and process systems. Discusses features, controls, and installation of unit composed of two-stage motor-driven centrifugal compressor, shell-and-tube type evaporator and condenser of similar construction. Numerous photos, drawings, and diagrams illustrate components and operation of system. Outlines selection procedure; offers charts of dimensions, capacity ratings, water pressure drops. The Trane Co., La Crosse, Wis.

110. Agitair High Pressure Terminals, 16-p. catalog brochure on series of high-pressure terminals used with conventional diffusers for control and distribution of air in high-velocity systems. Gives background data on high-velocity air distribution and function of components; shows terminals for single-, dual-, and perimeter-duct applications with data to facilitate selection. Charts, photos, diagrams, specifications. Air Devices Inc., 185 Madison Ave., New York 16, N. Y.

111. LoLine Cooling Towers, 16-p. brochure presenting data on compact rectangular cooling towers for industrial air conditioning. Photos show structural and mechanical features; large interior views explain operation of propeller-type fan housed in redwood frame. Special fold-out section of drawings shows tower dimensions and elevations; supporting steel and foundation arrangements for single and multiple cell towers with concrete or wood basins. Typical cross sections, engineering data, specifications. J. F. Pritchard & Co., 4625 Roanoke Pkwy, Kansas City 12, Mo.

construction

Typical Lumber Designs, AIA 19-B, 16-p. 1957 edition of handbook listing large variety of lumber designs using Teco structural connections. Designs range from basic types of trussed rafters and heavy roof trusses to highway structures and farm buildings. Provides: data on spans, depths, spacings, and loads; descriptions; outline drawings; instructions for ordering complete information on any design listed. Request from: Timber Engineering Co., 1319 18 St., N.W., Washington 6, D. C.

270. Steel Joist Bridging, AIA 13-G, 16-p. synopsis of tests made on short-span open-web joists to determine most effective type of bridging. Presents charts compiled from results of three series of tests along with observations and conclusions. Drawings, diagrams, and photos illustrate report. Steel Joist Institute, Dupont Circle Bldg., 1346 Connecticut Ave., N.W., Washington 6, D. C.

271. Fireplaces of Stone, AIA 22-A-2, 22-p. publication showing examples of stone fireplaces for homes selected by Building Stone Institute. Photos indicate wide range of stone types used in fireplaces designed for contemporary or traditional surroundings. Building Stone Institute, 1696 Summer St., Stamford, Conn.

272. Milcor Metal Trim, AIA 20-B-1, 20-p. catalog illustrating types of interior steel trim for various installations. Features standard wall units for window openings—consisting of head and jamb sections, window stools, and convector enclosure panels; gives full data and installation details. Includes sections on plastered-in and clipped-on bases, picture molds, fillet molds, and blackboard trim. Provides installation details for each unit. Photos, specifications, dimensions. Inland Steel Products Co., 4143 W. Burnham St., Milwaukee 1, Wis.

273. Glass for Construction, AIA 26-A, 28-p. booklet providing data on special glass types for architectural applications. Covers tempered plate glass windows and doors, shatterproof glass, insulating glass, transparent mirrors; also patterned, frosted, heat-absorbing, and wire glass. Describes physical properties; suggests installation methods. Gives chart of standard sizes and designs in plate glass windows; table of dimensions and varied patterns in obscure glass. Photos, drawings, specifications. Libbey-Owens-Ford Glass Co., Toledo 3, Ohio.

274. Micro-Match Flooring, 4-p. folder containing information on pre-sanded oak strip flooring supplied in long uniform lengths and double-widths to eliminate problem of matching odd pieces. Color photos show precision tongue and groove connections of strips that form integral finished floor over conventional subflooring, concrete slabs, or joists. Illustrates two available oak grades. Specifications. Miller Brothers Co., Inc., Johnson City, Tenn.

★ **275. Davidson Architectural Porcelain,** AIA-17-A, 20-p. reference catalog with data on porcelain-enamel panels for commercial and institutional buildings. Section on curtain walls provides details and elevations showing installation of single and double-wall panels via mechanical connections. Section on facing panels shows clip attachment for screw connections and gasket-type joints. Gives typical trim and opening details. Illustrates variety of panel surface patterns and channel letter designs. Photos and drawings show: installation of decorative facing panels and louver inserts; exterior remodeling job; installation of checkered-panel pylon. Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio.

★ **276. Mills Movable Walls,** AIA 35-H-6, 68-p. catalog featuring series of modular movable metal partitions designed for office and factory interiors. Details construction features and application of three incombustible, acoustical partition types. Perspective drawings suggest applications using alternate jamb, head, and base details. Covers installations for particular room requirements; details for wall linings and railings. Also, catalogs accessories: transoms, louvers, bookcases, sliding doors, hardware, electrical outlets —giving details for installation. Photos, drawings, specifications, exploded views. The Mills Co., 993 Wayside Rd., Cleveland 10, Ohio.

doors and windows

★ **393. DuraFlex Thresholds,** AIA-14-B, 4-p. folder and inserts introducing two-piece triple-seal threshold for buildings of all types. Sketches show how flexible plastic strip, arched in aluminum base, springs tight against bottom of door to insure effective weather protection; point out vinyl strips along bottom edges of threshold that give additional protection. Provides installation details, list of standard sizes, drawings of standard shapes. The DuraFlex Co., 3500 N.W. 52 St., Miami, Fla.

394. Pyrodor Package Units, AIA-16-A, 24-p. catalog of standard UL approved frame and hardware package units for ready installation. Shows construction features of incombustible, flush metal doors with solid mineral core; gives chart of models available. Provides installation details, sections, and elevations for frames installed with transoms or sidelights. Photos show designs of standard hardware for panic exits, residential doors, and doors in public buildings. Specifications, charts, drawings. Dusing and Hunt, Inc., Dept. P, Lake St., Leroy, N.Y.

electrical equipment, lighting

485. Interior Lighting Design Data, 52-p. manual intended as basic reference book for architects and engineers designing interior lighting installations. Describes footcandle levels required for such seeing tasks as drafting, bookkeeping, and machine operating; levels are assigned to specific interior areas of all conceivable types from armories and airplanes to textile mills. Also, suggests methods of calculating light quantities as well as selecting lighting systems, maintenance factors, and locations for luminaires. Provides tabulated textbook data on room indexes and coefficients of utilization in addition to series of charts that facilitate computations. Westinghouse Lamp Div., Bloomfield, N. J.

486. Milcor Celluflor, 16-p. booklet containing information on cellular steel subfloor which serves as both electrical duct system and lateral reinforcement in concrete slab construction. Lists advantages in economy and flexibility; provides formulas, charts, and tables for determining proper gage and form of steel sections for different loads, spans, and bearing requirements. Construction details show typical applications at critical points. Drawings, specifications. Inland Steel Products Co., 4139 W. Burnham St., Milwaukee 1, Wis.

487. Power Distribution Library, file folder containing first two of series of tab-indexed bulletins on planning load-center systems for industrial power distribution. First brochure covers fundamentals of system, circuit arrangement, size and location of substations, equipment. Second bulletin covers short-circuit protection. Photos, diagrams. General Electric Co., Schenectady 5, N.Y.

488. Modular Lighting Systems, AIA-31-F, 12-p. pamphlet discussing features of modular ceiling lighting systems and pendant lighting units. Describes and illustrates systems designed to coordinate acrylic diffusers, suspended acoustical baffles, sprinklers, air diffusers, and movable partitions. Photos show actual installations; drawings explain assemblies. Catalog section shows variety of pendant lamp designs; includes engineering data. The Wakefield Co., Vermilion, Ohio.

finishers and protectors

521. Stop Rust, 32-p. four-color booklet with sample charts showing wide range of available colors for rust-preventive coatings used in industrial applications. Discusses advantages of use and physical characteristics of primers, long and short oil coatings, machinery finishes, and special heat-resistant, chemical-resistant coatings as well as sealers and floor coatings. Gives instructions for mixing, thinning, and application. Rust-Oleum Corp., Evanston, Ill.

641. Shock and Vibration Control, 4-p. report reviewing basic principles of vibration isolation and shock absorption, with suggestions for their practical application. Classifies vibrations according to origin, which may be directly from machine or indirectly through foundations and walls. Provides formulas and graphs for determining individual problems. T. R. Finn & Co., Inc., 200 Central Ave., Hawthorne, N. J.

insulation (thermal, acoustical)

642. Styrofoam Insulation, AIA 37-B, 16-p. folder enclosing separate detail sheets which illustrate variety of applications for polystyrene, plastic-foam insulation. Clearly drawn details show rigid-type material used to insulate wood and metal windows, masonry-wall door opening, perimeter heating ducts, slabs and foundation walls. Also includes listing of thermal, physical, and water-resistant properties; specification sheet; ordering data. The Dow Chemical Co., Midland, Mich.

643. Perforated Metal Sheets for Sound Control, 6-p. nontechnical bulletin describing application of perforated-metal sheets for acoustical treatment of ceilings, side walls, and enclosures. Isometric drawings show panels of perforated metal and sound-absorbent blankets supported by aluminum-grid ceiling system or fixed to wall with metal-molding caps and spring clips. Illustrates variety of three-dimensional patterns that strengthen sheet material and suggest exciting design possibilities. Diamond Mfg. Co., Wyoming, Pa.

(Continued on page 174)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y. I should like a copy of each piece of Manufacturers' Literature circled. We request students to send their inquiries directly to the manufacturers.

108	275	521	858
109	276	641	955
110	393	642	956
111	394	643	66
270	395	853	
271	485	854	
272	486	855	
273	487	856	
274	488	857	

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Name

Position

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Mailing Address

City *State*

Coupon must be used by 6/1/57.

p/a manufacturers' literature

(Continued from page 173)

specialized equipment

853. Built-in Refrigerator-Freezer, 8 p. brochure describing self-supporting, one-piece refrigerating unit with shell-type condenser. Discusses procedure for built-in installation with diagrammatic illustrations; gives data on electrical connections, cabinet construction, and operation. Dimensions, specifications, photos. Preway, Inc., Wisconsin Rapids, Wis.

854. Steel Kitchens, 20-p. catalog containing information on a wide variety of model sinks, cabinets, and special sink equipment. Features titanium-porcelain, acid-resisting steel sink and cabinet combinations; base cabinets; cabinets with lighting; corner cabinets; micarta covered sink tops; double faucets with aerator and automatic diverter spray. Eljer Div. of The Murray Corporation of America, Three Gateway Center, Pittsburgh 22, Pa.

855. Curtis Kitchens, 24-p. catalog brochure illustrating range of wood cabinets and closets for designing attractive contemporary kitchens. Illustrates several complete kitchens stressing color variety in natural wood or painted effects. Shows selection of storage units with pull-out trays, swinging doors, and spinning shelves as well as storage walls and island units. Scale outline drawing of wall and base cabinets facilitate kitchen planning. Photos. Curtis Companies Service Bureau, Clinton, Iowa.

856. Methods for Plant Layout, 44-p. catalog showing materials and methods for making plant layouts or scale models without preliminary drafting. Describes two-dimensional system using grid sheets, templates, and tapes to create layout from which blueprints are made in usual manner. Drawings show available replicas of piping sections with brass-pin connections; pumps; compressors; ladders and stairs; laboratory furniture; refinery equipment and even scale figures for building miniature assembly lines and fully equipped model plants to facilitate visualization. F. Ward Harman Associates, Halesite, Long Island, N. Y.

857. Gold Nugget Grating, 8-p. bulletin featuring new heavy-duty grating with projection welded connections for sidewalks, loading docks, fire escapes, or factory flooring. Stresses homogenous design using I-beams and secondary load bars in diamond pattern. Illustrates methods of fastening gratings to supports without drilling. Also shows triple-joint design employed in stair treads. Provides safe-loading tables, dimensions, specifications, photos. The Globe Co., 4000 S. Princeton Ave., Chicago 9, Ill.

858. Nuclear Research Reactors, 12-p. bulletin containing data on three nuclear

(Continued on page 178)

Inexpensive acoustical treatment can be attractive, too!

Study this picture. This room is sound-conditioned with the wonder-material of the acoustical industry—Forestone fissured woodfiber acoustical tile.

You'll notice that there are no mechanical-appearing holes drilled all over the ceiling. Forestone catches noise in its hundreds of beautifully-formed *fissures* instead. Yet, because it is made of woodfiber, Forestone costs no more than popular thicknesses of perforated tile.

Forestone is available in 12" x 12" and 24" x 24" tiles; as ceiling board to fit 24" x 24" and 24" x 48" exposed grid suspension systems; and in 12"x23¾" tiles for exposed Z and T suspension systems, with access to utilities.

Now, Forestone is also available in center-scored 12" x 24" tiles with tongue-and-groove joints, flanged for easy stapling or nailing.

When planning your next building, if beauty and economy are important, specify Forestone. For further information call your nearest Simpson Certified Acoustical Contractor today. (See contractors listed on opposite page.)

Forestone®

FISSURED WOODFIBER ACOUSTICAL TILE

Simpson®

SIMPSON LOGGING COMPANY

SHELTON, WASHINGTON

AC-73


METAL CURTAIN
WALL
the creative
building tool
Commercial building built of 3 central core units enclosed in metal curtain wall. Apartment buildings use curtain wall recessed in balcony enclosures. End walls of anodized aluminum panels.
Design by Ray Stuermer, A.I.A.

KAWNEER a single source for a complete metal wall system

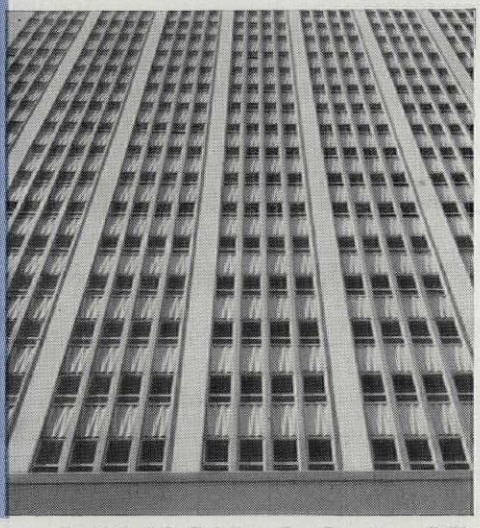
analysis, engineering, fabrication, installation

ANALYSIS AND ENGINEERING—Kawneer engineers will translate your architectural metal wall design in terms of factory fabricated units that will speed erection of your building, and assure client satisfaction. You gain the know-how Kawneer has accumulated through 50 years of architectural metals experience.

FABRICATION—Kawneer has extensive fabricating facilities available for application to your job. These modern facilities and production techniques allow Kawneer to give the most effective execution to your metal wall requirements . . . regardless of the blend of expression and function you may have in your design. Porcelain faced aluminum, stainless steel, colored Alumilite finished aluminum, insulated mullions for condensation and heat control, operating or fixed sash . . . whatever you demand, Kawneer can supply in its metal wall system.

INSTALLATION—Kawneer metal wall contracts are usually direct subcontracts with architect, general contractor or owner. This places complete responsibility for fabrication and erection with one responsible firm. This responsibility allows tight control over anchoring devices, sealing methods and materials, and expansion provisions . . . control that assures you and your client complete satisfaction. Since Kawneer has this control, an effective and adequate guarantee is provided at no extra cost.

Geigy Chemical Co., Greenburg, N. Y. Architect: Skidmore, Owings & Merrill. Contractor: Vermilya Brown Co.



Equitable Life Building, San Francisco, California. Architect: Loubet & Glynn. Contractor: Dinwiddie Construction Company.

Guarantee Mutual Life Co., Omaha, Nebraska.
Architect: Leo A. Daly Co.
Contractor: Peter Kiewit Sons' Co.

IF YOU ARE PLANNING construction that calls for metal wall, any Kawneer district office or the home office in Niles, Michigan, will be pleased to discuss the advantages and characteristics of Kawneer's complete metal wall system with you.

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p/a manufacturers' literature

(Continued from page 174)

reactors available to industrial, educational, and research organizations. Cutaway drawings show features of: highly flexible swimming pool reactor; heavy-water reactor for large-volume projects; nuclear test reactor for precision industrial process experiments. Provides diagrams showing internal mechanisms; tables of reactor characteristics; full descriptions. General Electric, Apparatus Sales Division, Schenectady 5, N. Y.

Compound Diffraction Projector, 24-p. handbook offering complete data on public address loudspeaker system operating on diffraction principle. Analyzes limitations of commonly used sound equipment; gives thorough description of components, performance, and application of system utilizing two coaxial horns for high-quality projection of voice and music. Outlines method for making sound surveys; discusses public address requirements for auditoriums, stadiums, and large interior rooms, with reference to basic acoustical principles. Text is illustrated with numerous diagrams, graphs, and photos. Includes architect's specifications. Electro-Voice, 404 Carroll St., Buchanan, Mich. 35¢

surfacing materials

955. Chalkboards for Schools, 8-p. publication exhibiting line of chalkboards, corkboards, and aluminum frames for schoolrooms. Introduces plastic-faced, curved chalkboard designed to reduce eye fatigue, arm strain, and glare. Also shows porcelain-enamel surface chalkboard which won't chip, warp, break, or shatter. Offers tabulated data on various board compositions. Full size details for recessed or surface-mounted boards and aluminum trim. Photos, specifications. New York Standard Blackboard Co., Inc., 225 Broadway, New York 7, N. Y.

956. Marlite Wall and Ceiling Panels, AIA 23-L (15551), 8-p. bulletin illustrating plastic-finished interior surfacing material. Shows panels in solid colors, with tile scoring, in eight wood finishes, and in five marble patterns; gives description and dimensions for each type. Also includes data on T&G hollow-core paneling available in solid colors and wood finishes. Marsh Wall Products, Inc., Dover, Ohio.

Mahogany Grain Patterns, 32-p. booklet illustrating 40 varieties of mahogany veneer in natural color reproductions. Gives detailed description and standard plate numbers useful for specification and selection. Data covers origin and development of various configurations; includes a glossary of pertinent terms. Special sections show effects obtained by matching pieces. Available only on direct order from Mahogany Assoc., Inc., 666 Lake Shore Drive, Chicago 11, Ill. $1.

interior furnishings

66. Post Furniture for the Drafting Room, 16-p. bulletin on wood and steel furnishings for architectural offices. Shows standard sections for inter-locking, built-up filing cabinets; also illustrates tracing files, drafting tables, and chairs. Dimensions and description for each piece of equipment. Frederick Post Co., 3650 N. Avondale Ave., Chicago 90, Ill.

Dunbar Book of Contemporary Furniture, 208-p. catalog of Edward Wormley's contemporary furniture designs has been issued in handsome book form. Photos in black and white as well as imaginative color plates display capacious sofas with sculptured wood supports; chairs for all occasions—open-work, wood-cradled desk chairs, plump lounge chairs, long-legged side chairs; flip-top, drop-leaf, expandable tables in myriad forms; cabinets doubling as bars, bookcases, or room dividers. Ordering data is tabulated in final section with pictorial recapitulation of items. Request directly from Dunbar Furniture Corp. of Indiana, Berne, Ind. $12.50.

VITROLUX®

BY L·O·F

A COLOR-FUSED, HEAT-STRENGTHENED POLISHED PLATE GLASS for curtain walls and other facing applications

NDUSTRIAL PLANTS

Enduring, True-Toned Colors. Vitreous color is fused to the back surface of clear plate glass. The rich, true color is transmitted to the surface undiminished, unchanged.

Practical, Low-Cost Maintenance. The polished glass surface is non-porous, non-absorbing—practically self-cleaning. Offers high resistance to corrosion and weathering.

For colorful buildings of distinctive character, VITROLUX is the answer.

VITROLUX is made of heat-strengthened polished plate glass. Vitreous color, fire-fused to the back surface, becomes an integral part of the glass. The VITROLUX color is sunfast, enduring—offers the same natural resistance to weathering, crazing and checking inherent in quality glass.

Many curtain wall manufacturers offer framing systems into which VITROLUX is installed much the same as glazing with plate glass. Because VITROLUX is heat-strengthened, all edgework, pattern cutting or drilling of holes must be done at the factory *before* fabrication.

Dimensions—Thickness: $\frac{1}{4}''$ plus $\frac{1}{64}''$ minus $\frac{1}{32}''$. Standard maximum size is 48″ x 84″. Maximum size for special orders is 60″ x 84″.

Ask your L·O·F Distributor for descriptive folder (he's listed under "Glass" in phone book yellow pages), or write Libbey·Owens·Ford Glass Company, 608 Madison Avenue, Toledo 3, Ohio.

L·O·F GLASS

LIBBEY·OWENS·FORD

a Great Name in Glass

TOLEDO 3, OHIO

SEE VITROLUX DISPLAY IN THE LIBBEY·OWENS·FORD BOOTH NO. 77 AT A.I.A. CENTENNIAL CONVENTION.

colors as identified in the Manual*, subject to manufacturing limitations

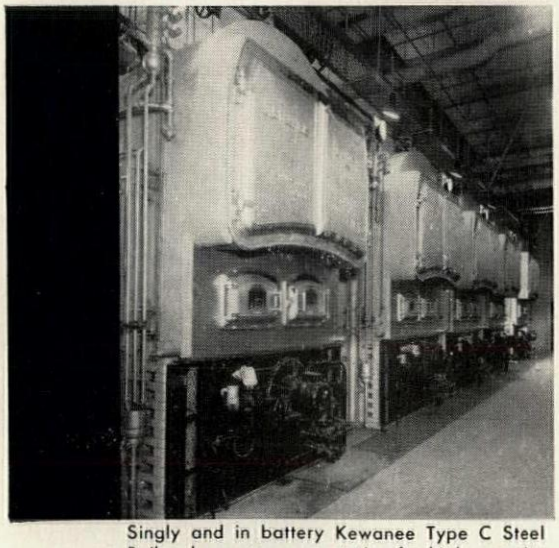
o. 4FE, Silver Gray	No. N, Gunmetal	No. 5LE, Cinnamon	No. 5PO, Chocolate
15LG, Colonial Blue	No. 21LI, Jade Green	No. 22ML, Charcoal	No. 23GE, Sage Green

*Keyed to the Container Corporation of America's Color Harmony Manual.

your
visiting facts
and
figures department

Kewanee Boilers are advertised regularly to your clients in national publications.

your
KEWANEE
man



Singly and in battery Kewanee Type C Steel Boilers have won a reputation for high capacity and efficiency—within a minimum floor space—since introduction in 1928.

• Your mechanical equipment specifications can only be as good as the information behind them. Knowing this, your Kewanee man is data-conscious. He keeps you armed with boiler facts and figures . . . sees that you have an up-to-date catalog . . . is fast to supply specific information you request.

He can intelligently assume this responsibility because he is a qualified boiler specialist. He knows boiler problems—and answers—from years of experience. Also, he maintains close contact with engineering experts at Kewanee Boiler Division—can keep you abreast of latest applications in the field.

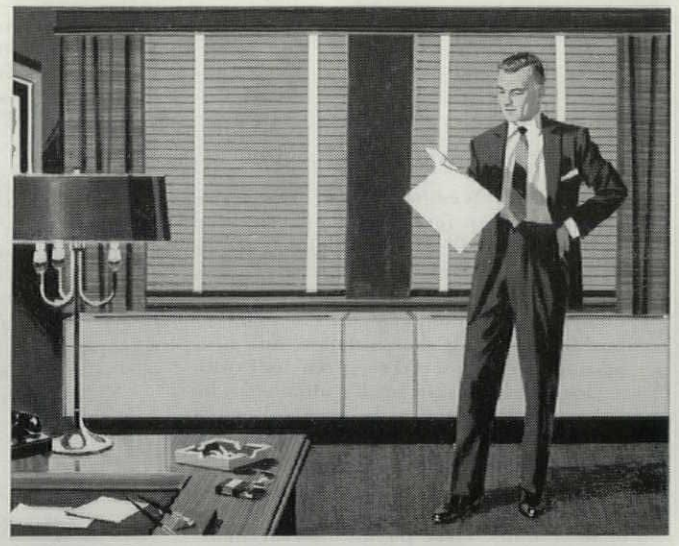
His competence keeps pace with the famed performance of Kewanee Boilers themselves—dependable, efficient models from residential 70,000 Btu units to industrial boilers carrying a 651 h.p. rating. And he is quickly available from a nearby Kewanee Branch Office in the coast-to-coast network.

AMERICAN-STANDARD, KEWANEE BOILER DIVISION, 101 Franklin Street, Kewanee, Illinois.

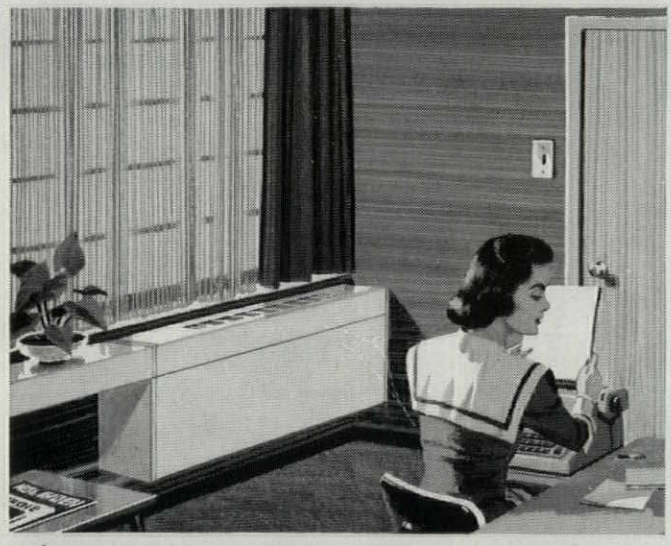
AMERICAN-Standard

KEWANEE BOILER DIVISION

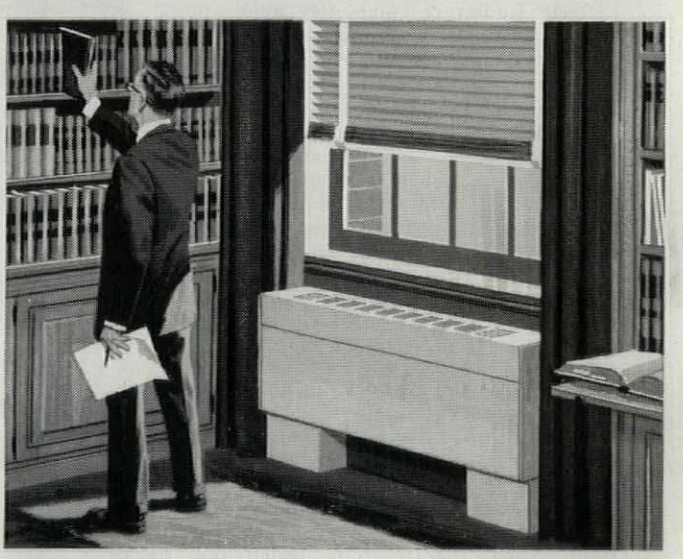
For column-to-column treatment, trim wall-hung units with standard prefabricated enclosures, accessories and shelving are "tailored" to fit building modules.



For a clean, continuous appearance, two well-proportioned Weathermaster base units separated by a filler piece look good, make future partitioning easy.



For pleasing corner assemblies, a wall-hung Modular Weathermaster unit with prefabricated cabinet and run-out enclosure is both attractive and economical.



For floor-fed services, a pedestal arrangement attractively conceals air and water risers. This method of distribution eliminates the need for furred-in risers.

For harmony with custom interiors, a decorative furred-in arrangement with base unit, inlet panel and discharge grille matches any interior treatment.

For modern, all-glass buildings, a "foot-high" column-to-column arrangement is extremely flexible and blends well with modern architecture and furnishings.

air and temperature control

Heat Pump Weathermaker: new packaged heat pump for year-round residential and commercial air conditioning is designed to cut initial and operating costs as well as reduce required floor area. Pump, utilizing outdoor air or water as heat source, can be installed in attic, basement, or closet. Two-piece unit with exterior-mounted air intake eliminates interior ductwork normally used to supply air for heat production. Air-source heat pump may deliver nearly 3 units of heat energy per electrical work unit; using water, pump may deliver as much as 5, 6, or 7 units. Heat pumps now available in 5-hp models will eventually appear in other popular sizes. Carrier Corp., Syracuse 1, N. Y.

Electric Radiator: completely automatic electric steam convector is said to combine advantages of electric heater and ordinary steam radiator: eliminates fan noise, air blast, and dried, burned, or overheated air; requires no liquid or exposed heating element. Radiators, housed in baked-enamel shell, are equipped with thermostat and pilot light. Six models for free-standing or recessed installation are available, ranging in size from 16″ x 20″ to 64″ x 24″. All units are 6″ deep and operate on 230v; capacities range from 650w to 3000w. Spartan Electric Radiator Corp., 52-55 74 St. Maspeth 78, N. Y.

Airtherm Air Conditioner: in new buildings, multiroom central-system air-conditioning unit provides individual-room control of heating and cooling without ductwork; in old buildings, unit is adaptable to existing wet-heat systems. New units feature: quiet operation; one-piece front panel for recessed installation; single-unit motor and fan assembly. Concealed or cabinet-type models installed at floor or ceiling are available in four series ranging from ½-ton to 2-ton capacity, at 160 to 600 cfm. Airtherm Mfg. Co., 745 S. Spring St., St. Louis, Mo.

construction

Ray-O-Lite Panels: translucent reinforced plastic panel awnings and patio coverings are engineered to provide louvered ventilation and soft diffused light. Shatterproof, weatherproof panels do not require painting and are available in 10 integral colors. Panels may be supported by simple aluminum frame to complement contemporary-styled homes. Ray-O-Lite Corporation of America, 316 Peachtree St., N. E., Atlanta, Ga.

doors and windows

Bi-Folding Door Hardware: new hardware sets for bi-folding wood wardrobe doors permit center-hinged panels to fold together against jamb, giving full access to interior. Hardware sets consist of door aligner—secured at bottom of center panels to eliminate bottom guide track; nylon pivots and guides; heavy-gage adjustable steel brackets; header guide track. Packaged sets for two- and four-door openings can be used on doors from ¾″ to 1⅜″ thick. The Stanley Works, New Britain, Conn.

finishers and protectors

Spred Stipple-Texture: new ready-to-use multipurpose latex paint with micronized silica particles is especially formulated for stippling or texturing wall surfaces in single paint application. Paint is also recommended for hiding minor surface imperfections and filling masonry block pores. Applied by brush or roller, new paint provides durable base for finish coats. Product is available in eight color shades. The Glidden Co., Cleveland, Ohio.

insulation (thermal, acoustical)

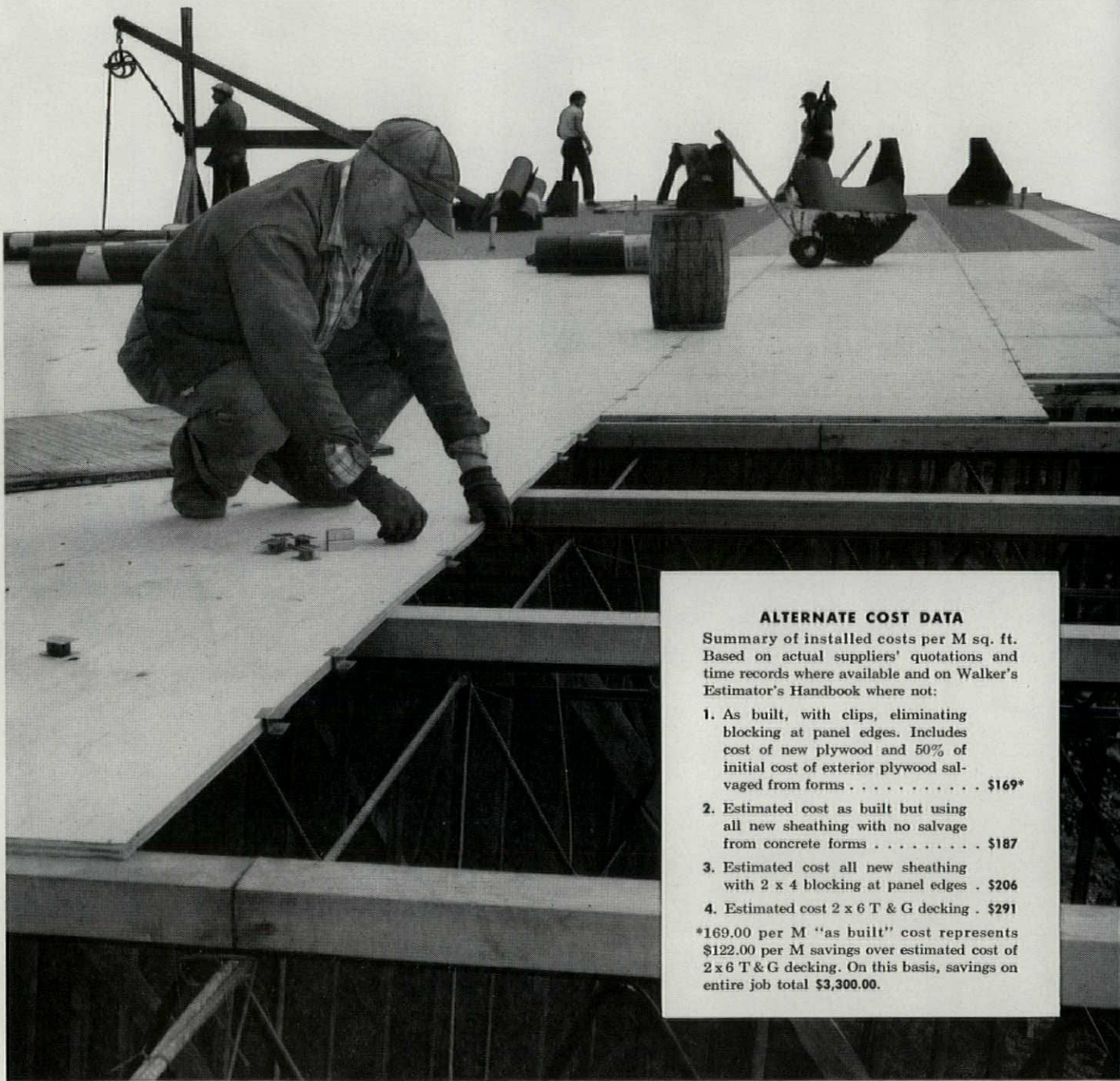
Acoustical Sidewall Panels: for industrial sound control problems, long-strand wood-fiber sidewall panels mounted inside or outside framing girts are claimed to have inherent sound-absorbing properties. Noncombustible panels interlock in vertical tongue-and-groove connection. Panels

(Continued on page 190)


MODERN DOOR CONTROL BY LCN · CLOSER CONCEALED IN DOOR
EDISON JUNIOR HIGH SCHOOL, SIOUX FALLS, SOUTH DAKOTA
LCN CLOSERS, INC., PRINCETON, ILLINOIS
Construction Details on Opposite Page
Harold Spitznagel & Associates, Architects

On James Sales Elementary School, Tacoma, Washington

Fir plywood roof deck helps save $3,300.00



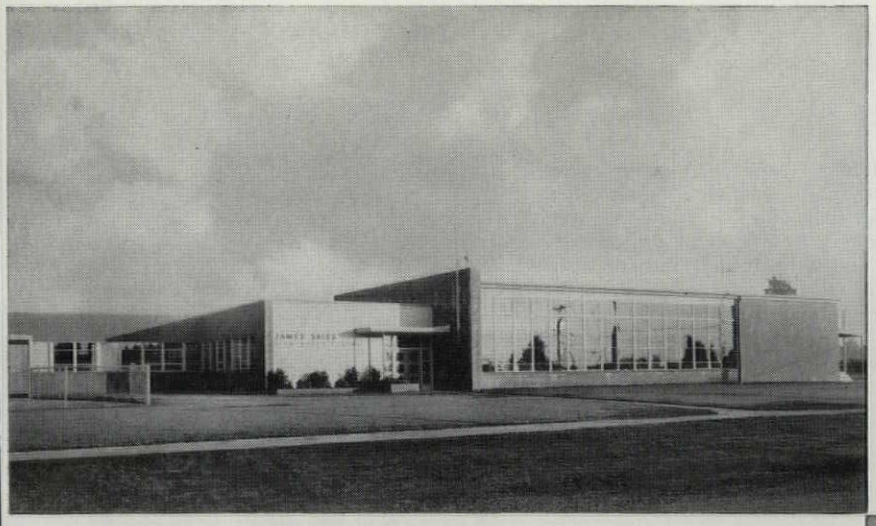
ALTERNATE COST DATA

Summary of installed costs per M sq. ft. Based on actual suppliers' quotations and time records where available and on Walker's Estimator's Handbook where not:

1. As built, with clips, eliminating blocking at panel edges. Includes cost of new plywood and 50% of initial cost of exterior plywood salvaged from forms $169*
2. Estimated cost as built but using all new sheathing with no salvage from concrete forms $187
3. Estimated cost all new sheathing with 2 x 4 blocking at panel edges . $206
4. Estimated cost 2 x 6 T & G decking . $291

*169.00 per M "as built" cost represents $122.00 per M savings over estimated cost of 2 x 6 T & G decking. On this basis, savings on entire job total $3,300.00.

To eliminate 2 x 4 blocking, metal "H" clips were used at unsupported panel edges. Two clips were used for each span. (Clips were responsible for approx. $20 per M of savings; see table above).



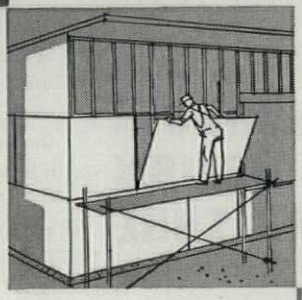
JAMES SALES ELEMENTARY SCHOOL;
Tacoma, Washington
ARCHITECTS: Lea, Pearson and Richards
CONTRACTOR: Nelson Construction Company
STRUCTURAL ENGINEERS: Smith and Murray

5 ways Fir Plywood builds better schools

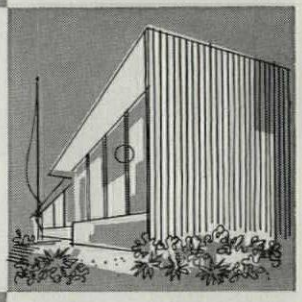
AN EXCELLENT EXAMPLE of how fir plywood roof decking sharply cuts costs as well as provides markedly superior construction is this new U-shaped, 1-story reinforced concrete school.

The contractor estimates ¾" fir plywood saved a total of $3,300.00 on the job; $2,800.00 in actual installed cost, plus an additional $500.00 by amortizing costs of some of the panels previously used for forms. A total of 27,000 sq. ft. were used on the job. Design calculations by the architects show plywood superior in resisting racking forces such as wind loads and earthquakes.

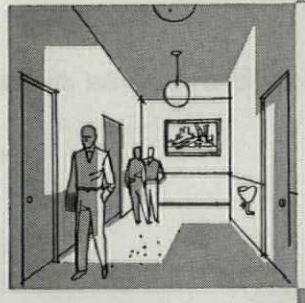
Although many home builders have found thick plywood over wide rafter spacing saves money, this is one of the first detailed cost analyses for a larger building. The idea points the way to new opportunities for reducing costs on commercial and industrial buildings as well as schools.



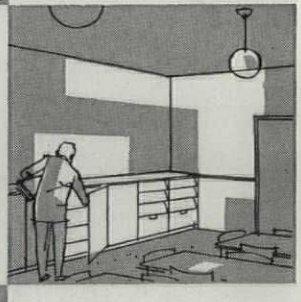
1. Strong, rigid, easy-to-apply wall and roof sheathing.



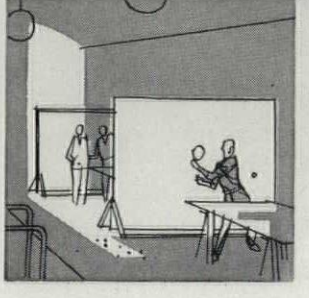
2. Smart, durable siding, soffits and exterior trim.



3. Attractive, damage-resistant paneling and wainscoting.



4. Good-looking wardrobes and storage lockers.



5. Inexpensive, easy-to-build screens, movable partitions.

DFPA TESTED QUALITY

Fir Plywood

means quality construction

FOR YOUR FILES: A new portfolio assembly of basic plywood design and application data for schools, homes, commercial buildings. Includes detailed information about job described above.

DOUGLAS FIR PLYWOOD ASSOCIATION, Tacoma 2, Wash.
(Good USA Only) Dept. 110
Please send fir plywood construction portfolio.

Name_____

Firm_____

Address_____

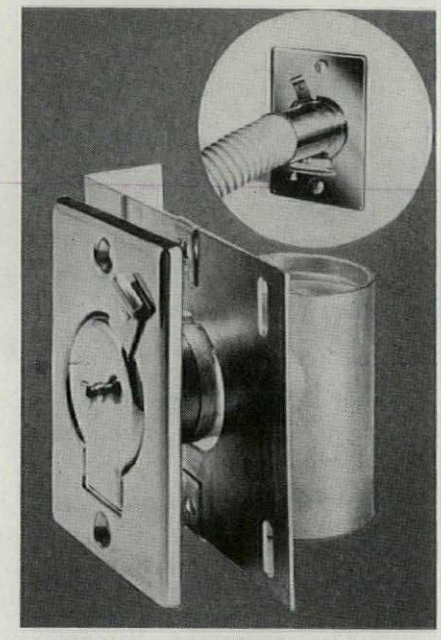
City_____ Zone____ State_____

(Continued from page 186)

feature textured surface and shadowline groove at edges. Compressed 2″ or 3″ panels are 30″ wide and from 4′ to 10′ high. Tectum Corp., 105 S. Sixth St., Newark, Ohio.

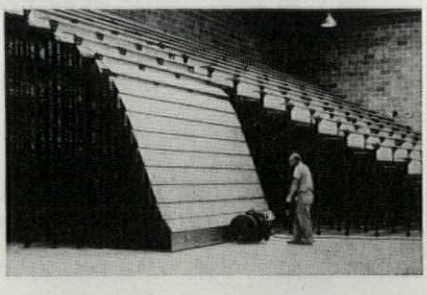
Deltafilm: pure polyethylene film for permanent moisture vapor protection in building construction is lightweight, rotproof, crackproof, and easy to apply. Film is applicable to windows, crawl space, windbreaks, and on-grade slabs; when used under slabs, film is laid over sand base to protect from ground projections; joints are sealed by folding butted edges. Product is said to withstand effects of extreme temperatures. Protective film, furnished in variety of thicknesses, is also recommended for use over sub-flooring to seal dust out and on sidewalls to keep drafts out. The Delta Co., 333 W. 24 Place, Chicago 16, Ill.

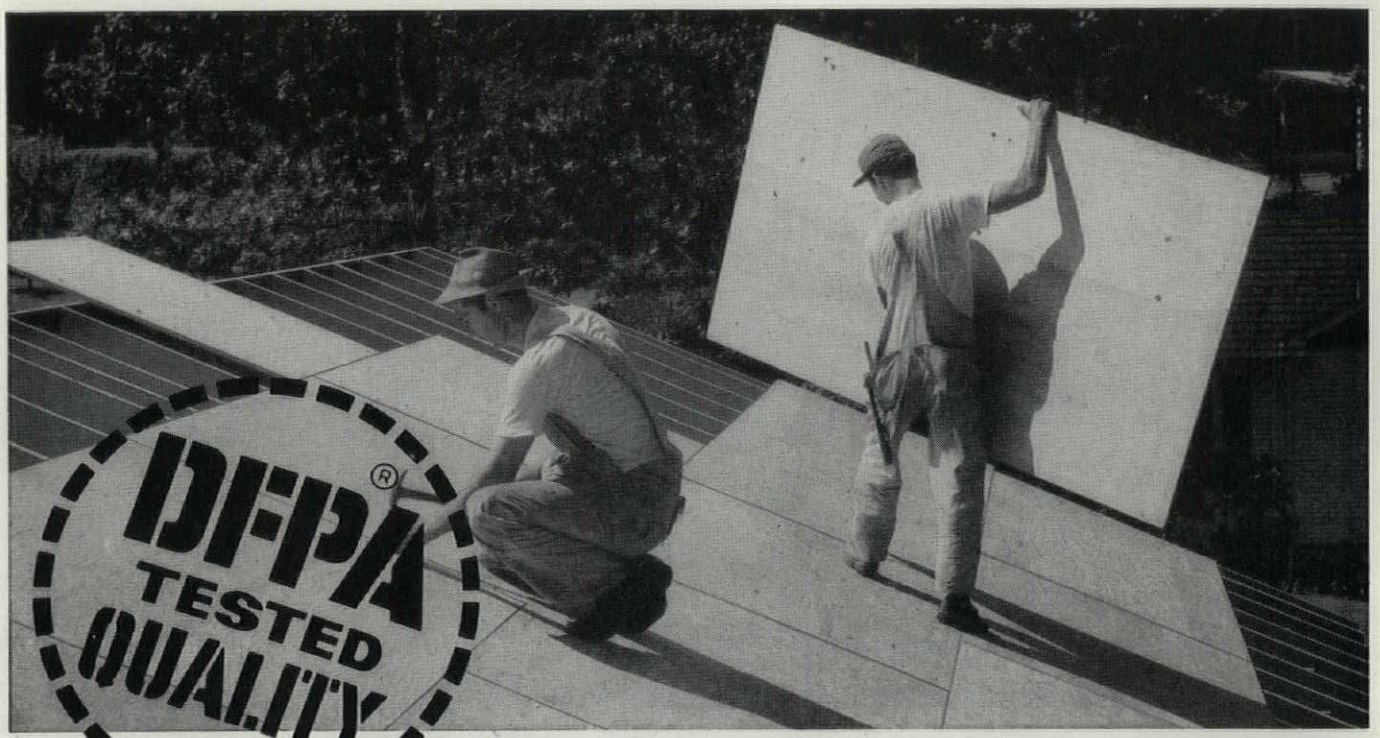
specialized equipment



Vacuum Cleaning System: central built-in vacuum cleaning system (*above*) with motor and tank-type receptacle installed in garage, does away with laborious maneuvering of bulky equipment. Pneumatic 2″ aluminum tubing extends under floor or overhead to desired locations and emerges at floor or low-wall inlet sockets (*above, inset*). Advantages of system include: elimination of operating noise and dust recirculation; powerful, stationary, central-service motor; central receptacle—16″ diameter, 27½″ height—requires less frequent emptying. Two available models have capacity ratings of ¾ hp, 90 cfm; 1¼ hp, 120 cfm. Sequoia Mfg. Co., 1090 Brittan Ave., San Carlos, Calif.

Roll-A-Way Bleachers: with new, powered gymnasium bleachers, opening and closing of 10, 15, 20, or more row-sections is rapid and single-handed operation. Basic component is compact mobile electric power unit (*above*). To operate unit, custodian fits extended gripper arm into opening under front row; this engages attachment bar under bleacher section; action begins with touch of handle switch. Operator need only guide unit from section to section and direct action. Pneumatic tires on power roller protect gym floor. Bleachers may also be operated by hand. Universal Bleacher Co., Champaign, Ill.

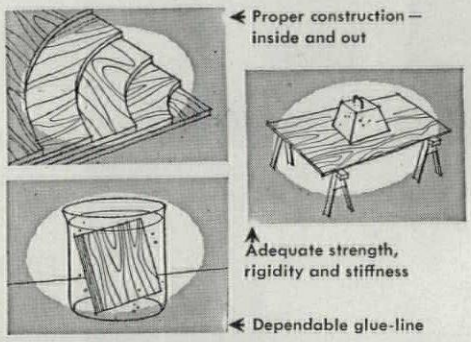




you know you're right when you specify by DFPA* grade-trademarks

factory-inspected, laboratory-tested

To qualify for DFPA grade-trademarks, manufacturers must pass rigid and *continuous* inspection of current plywood production. In addition to these on-the-spot mill checks by DFPA quality supervisors, thousands of samples undergo scientific testing in DFPA laboratories. *Use of grade-trademarks may be withdrawn if quality is not satisfactory.*

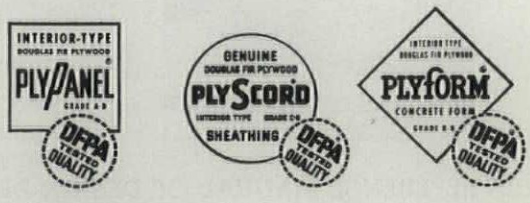


right grade, right quality for every job

DFPA grade-trademarks are specification guides to the *right* grade for a specific job. Only genuine DFPA quality-tested panels bear DFPA registered grade-trademarks. *There are imitations. Don't be misled!*

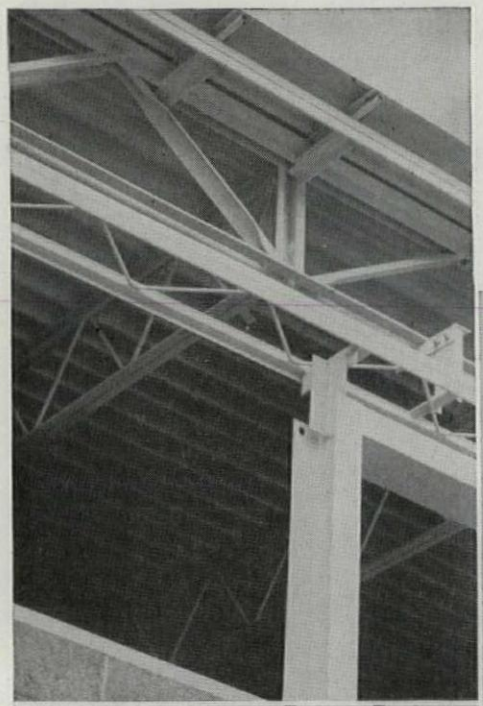
Be sure you can tell the difference.

Send for the *DFPA Quality Story*—a portfolio of grade-use data and a step-by-step description of the DFPA quality control program. Write Douglas Fir Plywood Association, Tacoma 2, Washington. (Offer good USA only)

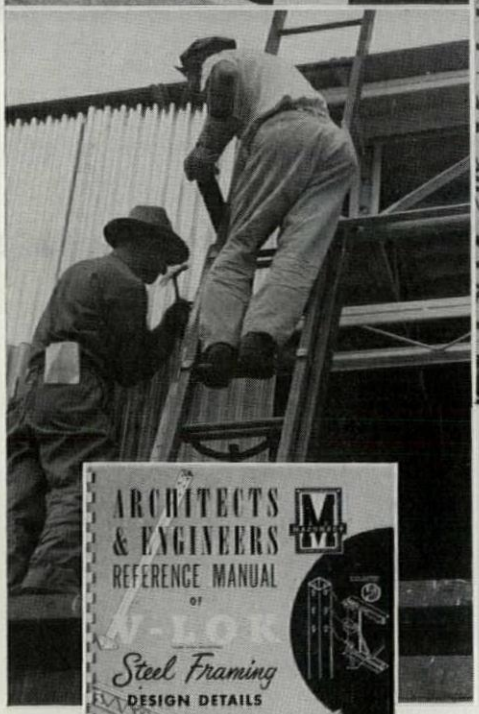


*DFPA stands for Douglas Fir Plywood Association, Tacoma 2, Washington—a non-profit industry organization devoted to product research, promotion and quality maintenance.

DFPA grade-trademarks mean quality FIR PLYWOOD



If You Have a Large Warehouse To Design and Early Occupancy and Cost Are Important Factors..



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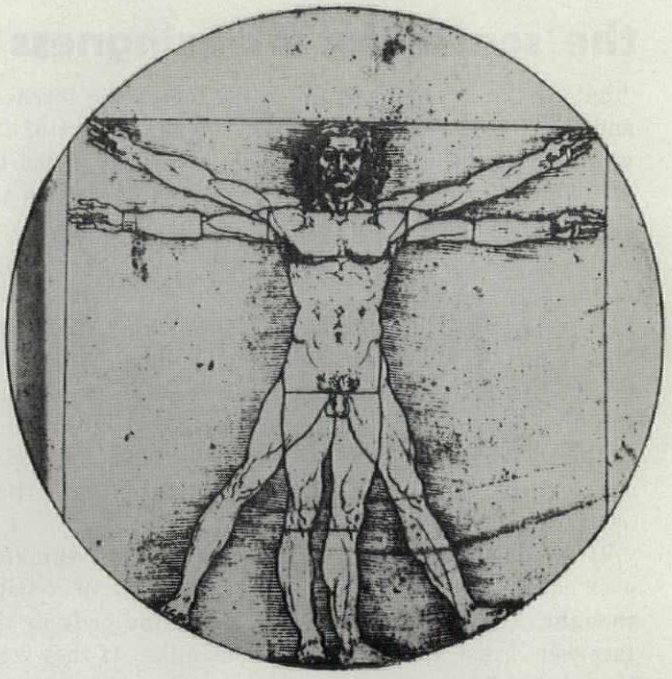
the search for pleasingness



The discussion below is drawn from a provocative book,* While Architecture Lasts: Proposals for a Revival and a Code of Criticism of Modern Architecture, *being written by Robin Boyd, Australian architect, author, and critic who was first brought to attention of P/A readers as editor of the student leaflet,* Smudges, *with which professionals of his country were bombarded several years ago. C. M.

In his first book (*Chapter II*), Vitruvius defined good architectural arrangement as the disposition in their just and proper places of all the parts of the building, and the elegance or pleasing effect of the whole. Pleasing Effect then became the slogan emblazoned on the banner wherever the Classical tradition was carried. To realize this universal property of pleasingness the ancients sought a Golden Rule, the vital touch of nature's design, the key to a perception unlocking the innermost secrets of the design of the universe. Characteristically they began the search on the surface of the human body, believing that the secret of the design of its form would be the key to all creation.

Vitruvius started methodically at the navel, noting it to be the natural central point: "If a man be placed flat on his back with his hands and feet extended, and a pair of compasses centered at his navel, the fingers and toes of his two hands and feet will touch the circumference of a circle described therefrom." (*Book 2, Chapter I.)* He also explained that a square may be discovered in the body, for a man's arm-stretch "will be found to be the same" as his height.

This picture of the man in the circle has pleased many generations. Somehow, it seems evidence of our importance in the scheme of things, suggesting at least a comforting niche for our mortal frames in the cosmic pattern, if not positive proof of our being made in God's image. In his study of the Renaissance, Rudolph Wittkower disagreed with Scott's theory of empathy, of the humanist's simple aim to please the eye. On the contrary, he pictured the age in earnest search of a mathematical and harmonic integration of architecture in the cosmos. The Vitruvian Man "seemed to reveal a deep and fundamental truth about man and the world," he said, "and its importance for Renaissance architects can hardly be over-estimated. The image haunted their imagination." *(Architectural Principles in the Age of Humanism, Part IV.)*

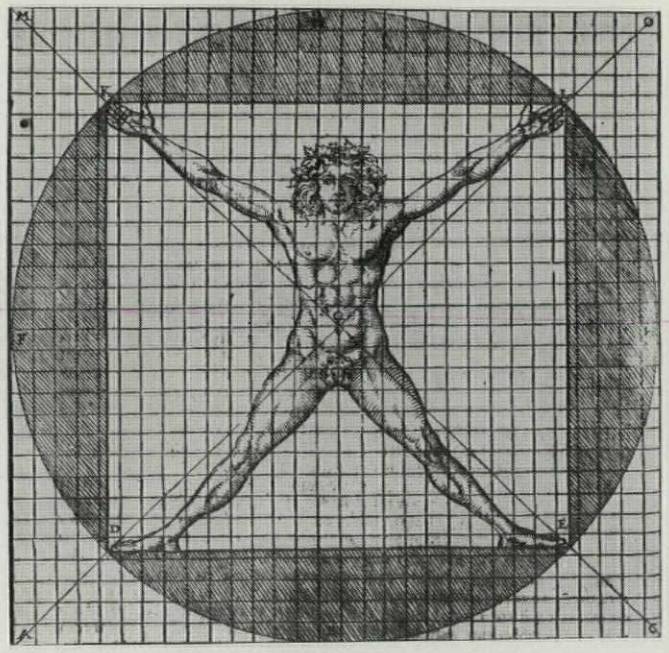
The artists of the Renaissance delighted in illustrating the concept. Leonardo's famous diagram is the most thorough. His man has a body fixed in the center of a superimposed circle and square. Man's limbs are shown in two positions, with legs spread easily and arms raised in a V to touch the circle, and with feet together and arms stretched wide to touch the square. Other artists pictured the Vitruvian figure differently. In 1511, Fra Giocondo, the first to publish a drawing, had Man's arms horizontal and his legs comparatively close together. Cesariano's edition of Vitruvius (1521) spread Man's legs into an acrobatic split. Francesco Giorgi (1525) had to bend his Man's arms to contain them within a circle which had suddenly contracted, for some reason not suggested by Vitruvius, until it almost touched his head. Notwithstanding the different postures, all these universal men were contained precisely within the perfect geometric form of a circle. This is not remarkable since artists can adjust posture and proportions at will. All the men in the pictures are proportioned differently, as indeed are men in life, and the artists could just as well have turned their pens to prove that man bore a striking resemblance to a triangle, or a tree—which may be a more convincing hypothesis. But the circle attracts because it is the most obvious basis of cosmic geometry, and a circular container adds dignity to our physical form. It reminds us that, however vulnerable and ungainly our body may be in comparison with the forms of some of our four-footed co-inhabitants of the world, it alone when spread-eagled can fit inside the shape of the universe. Nevertheless, if we were cats we would fill the Vitruvian circle much more snugly—and in our sleep.

Vitruvius scrutinized his fellow men more closely to find further evidence of harmonic pattern. He was delighted to discover that their frames carried a network of mathematical division: "The human body is so designed by nature," he wrote (*Book 3, Chapter I*),

the search for pleasingness

"that the face from the chin to the top of the forehead and the lowest roots of the hair, is a tenth part of the whole height; the open hand from the wrist to the tip of the middle finger is just the same, the head from the chin to the crown is an eighth, and with the neck and shoulder from the top of the breast to the lowest roots of the hair is a sixth . . ." and so on. Furthermore the face is a veritable graph: "The distance from the bottom of the chin to the underside of the nostrils is one third of it, the nose from the underside of the nostrils to a line between the eyebrows is the same; from there to the lowest roots of the hair is also a third comprising the forehead. . . . The other members too have their own symmetrical proportions."

It is difficult to believe that such wishful thinking ever could have commanded a sizeable body of artistic thought. If the proportions stated for the body or the face were exact, everyone would look alike. If they were intended only as approximate, then they mean nothing as a rule for design, since it is the subtle little differences in proportion which express major differences of character in the human design. And if the ancients were not considering ordinary mortals but only an ideal, a perfect human, a God, then who among the artists are we to follow? Where is the perfectly proportioned



human on which we can base our proportions of building? No doubt he is an athlete—tall, trim, and bronzed, poised against the blue sky of ancient Greece—or perhaps a modern Olympic competitor, Western (of course) Caucasian, and all that, and male. The Vitruvian figures were always male, sometimes aggressively so.

The belief that the elusive "perfect" human body holds a secret of universal proportional beauty was carried high through the Renaissance and appears triumphant again today in the . . . figure with which Le Corbusier embellishes his measuring stick, *Le Modulor*. Le Corbusier proposed *Le Modulor*, after World War II, as a method of standardizing and "harmonizing" dimensions of all manufactured goods while reducing the obstacle created by the irreconcilable metric and foot-and-inch systems, which are now splitting the world. It takes the form of a graduated scale, a useful tool for draftsmen, and is based not on the repetition of even units—inch upon inch—but on a logarithmic progression of lengths. Starting at a basic dimension of 2.26 meters, the intervals diminish in steps of even proportion towards zero, and in the other direction (beyond the length of the tool) enlarge in the same progression toward infinity.

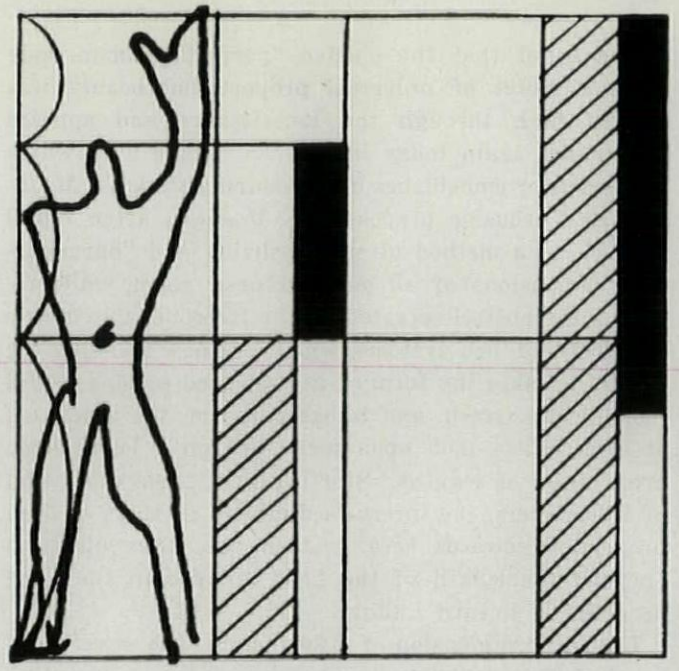
The basic dimension of 2.26 meters was selected by Le Corbusier as being the height of a man standing with one arm raised. He proposed this as a standard dimension for the ceiling-height of rooms, a measurement based on the human being rather than the arbitrary inch or meter. The man whose arm is raised is taken to be six feet tall. In earlier experiments with *Le Modulor*, Le Corbusier recounts that he and his collaborators had adopted a human height of 1.75 meters, but this was not proving satisfactory in some of the practical details of conversion to feet and inches. Then one draftsman suggested: "Isn't that rather a French height? Have you never noticed that in English detective novels, the good-looking men, such as the policemen, are always six feet tall?" *(The Modulor*, Harvard University Press, 1954). So they amended the basic measurement to 1.8288 meters (6 feet) and this solved their problem!

Le Corbusier was not prepared to leave his measuring stick at the utilitarian level. Having selected rationally, if not very scientifically, a basic dimension keyed to human scale, he diverted to the mystic "mathematics of the human body, gracious, elegant and firm." In the body he expected to find, as the Ancients did, "the source of that harmony which moves us: beauty." On the measuring instrument he drew in his familiar easy scrawl the outline of a man—the English policeman, presumably—with one enormous hand raised above his head to the 2.26 meter line. He discovered that the figure could be divided vertically into sections of pleasing mutual relationship. He used the navel, not as a socket for the point of a pair of compasses, but to mark one of the decisive points" of the human body's occupation of space. As he shows it, the policeman's navel is conveniently situated half way between his toes and raised fingers. This central position of the navel, as

the search for pleasingness

noted by Vitruvius, may apply universally to athlete, policeman, giant, or pigmy; because all proposals of this sort avoid specifying whether the raised arm should be stretched or bent, and any differences may be adjusted at the elbow.

Le Corbusier then took three "decisive" dimensions from the figure of his policeman, measuring from ground to the navel, to the top of the head and to the raised fingertips, and from these three he developed the entire system of *Le Modulor*. By combining two simple mathematical progressions, a range of dimensions was obtained from 2.26 meters (basic ceiling height) descending in decreasing steps to the smallest measurable size. It was intended that a tape so graduated should be at hand on every drafting-board, eventually supplanting the foot or centimeter rules. It could eliminate arbitrariness in the subdivisions of building. The architect or draftsman, after being led by functional requirements to an approximate dimension for any detail —for instance, the height of a sill—would consult the tape and select the nearest *Modulor* size. Now, because all *Modulor* sizes are linked in a progression, all the dimensions of the building would be linked or "harmonized" to each other and to human scale. While Le Corbusier was careful to explain that this measuring-tape



did not relieve the artist of any responsibility, while he reserved for the artist the right to make a "personal interpretation" of the proportions which it suggests, still he claimed that *Le Modulor* would help a draftsman to select the most pleasing proportions not only for the parts of architecture, but indeed for sculpture or paint-

ing as well. He was naturally delighted when Albert Einstein wrote: "It is a scale of proportions which makes the bad difficult and the good easy." Durisol Inc., a company in New York, undertook in 1947 to market *Le Modulor* as "a scale for harmonic measurement of space," and Le Corbusier saw himself entering the country of numbers, *"passée la porte des miracles."*

Anyone else is entitled to select other key features of the human frame—for example, the joints: knees, pelvis, and shoulders—and claim for them more decisive roles in the body's occupation of space than that enjoyed by the immobile navel. A different scale could thus be drawn up from the relative positions of these features, no less logically related to the body. Someone else may prefer to base a system on the proportions of the width of a policeman to his height. A dozen different systems of proportioning could be devised on the results of a brief run over a human body with a tape measure. But of all the possible points of reference and combinations of dimensions, Le Corbusier was led by his practised artist's eye direct to the one set of proportions which accorded to the Classical designer's Golden Rule; he selected a division approximating the mathematician's extreme-and-mean ratio, the traditional conception of perfection in proportion, the Golden Section.

If the rational movement in architecture cannot accept any mystical connection between the figure of a man and a Divine System of Proportion, it is nonetheless as impressed by mathematicians as any esthetician of antiquity. In *Architectural Principles in the Age of Humanism*, Professor Wittkower went some way toward presenting a disenchanted post-war generation of architectural students with a creed. Many saw a new direction for a Functionalism that had lost its way, as they followed him through the historic progression of the idea that architecture, in the company of the musical scale, may reach through a system of mathematical ration finally to the being of God Himself. Wittkower traced the growth of number symbolism and mysticism from the Pythagorean conceptions (for example: "Three is the first number because it has beginning, middle, and end. It is divine as the symbol of the Trinity") through Plato's suggestion that cosmic order may be contained, and the harmony of the world expressed, in a pyramidal lambda of the figures 1, 2, 3, 4, 8, 9, 27 ("The ratios between these numbers contain not only all the musical consonances but also the inaudible music of the heavens and the structure of the human soul.") Renaissance architects, practical men, converted the heritage of harmonic theories into workaday techniques. They modified the strict Classical modular system and developed new codes. Palladio in the mid-16th Century gave a general rule to harmonic

the search for pleasingness

proportions for the height of rooms in relation to their width and length. "A wall [was] seen as a unit which contains certain harmonic potentialities," reports Wittkower. "The lowest sub-units, into which the whole unit can be broken up, are the consonant intervals of the musical scale, the cosmic validity of which was not doubted."

Gradually the search for a key to the cosmic harmony was abandoned, but the belief in the existence of a universal beauty and a science of proportions lingered on into the middle of the 18th Century. Then a new tide of rationalism engulfed it with the cold water of the ideas that architecture and music are not comparable since they communicate with the mind through different organs, and that architecture and mathematics operate on different levels: note how a building's apparent proportions change as the observer moves about. The effects of proportion depend on the association of ideas, not an abstract reason, and are relative to the beholder, his nature, his time, and his place. Thus Burke, Kames, Hogarth, Knight, and others argued in the 18th and 19th Centuries, and in the 20th a leader of the modern movement restated the most obvious objection to all Golden Rules: "Beauty is relative because men are different," said Piet Mondrian, a painter for whom an utmost delicacy of proportioning in lines, spaces, and solids constituted the very means of expression. "Attachment to a merely conventional conception of beauty hinders a true vision . . ." *(Plastic Art and Pure Plastic Art.* Wittenborn, New York, 1945).

For two centuries, then, bridging across generations of the picturesque, the romantic, the worldly, and deep into the revolution of the functional, the thought of universal harmony lay dormant. Men with all kinds of conflicting artistic approaches could agree at least on one principle: whatever the style, art was a task for artists and not for mathematicians; it was an understanding between an artist and an observer; it was in the eye that received a satisfying message.

But the closed door of the mathematician's study slowly regained its fascination for the architect. Everything he saw through the keyhole, as the 20th Century developed, suggested analogies with the problems of his own creative work. When the mathematician advanced in his studies of three-dimensional geometry, the designer saw new prospects in plastic forms; and when the mathematician directed his attention to a fourth dimension, the architect would scarcely contain himself. Hence the worldwide enchantment of the title which Siegfried Giedion attached to his famous account of the origins of the modern movement: *Space, Time and Architecture.*

Many architects still respond today to an old magic and look to their profession for somewhat more than creative satisfaction. The polite apathy which the ordinary cultivated layman extends to architecture is counterbalanced by a high intensity of feeling on a certain, thin, professional stratum from which architecture is viewed not simply as the ultimate art of man —for this much is self-evident—but also as dazzling light now shaded by ignorance, a saviour of mankind's soul—not to mention his body. On the day when all building accords to the cosmic harmony, all men will live in order and peace of mind. The secret of the harmony escapes us temporarily, but who can deny that the Greeks were close to it on the Acropolis?

Thus the search for inspiration in numbers is revived, if on a somewhat less emotional plane, and linked now to the technological demand for an international module to reconcile the metric and foot-and-inch systems and to facilitate the prefabrication and international exchange of parts. High-level meetings of professional men and technicians in Italy and England have discussed the physical details while estheticians re-examine the complex arithmetic which the Greeks brought to perfection in the Parthenon. The geometry of the medieval mason is drawn out into the daylight. Even Chartres Cathedral's asymmetrical façade is found probably to be following a mathematical "melody" of dimensions based on an octagonal whorl in the Gothic section and a modular scale in the Romanesque part *(On the Proportions of the South Tower of Chartres Cathedral,* Ernst Levy. *Humanities No. 20,* MIT. 1956).

Le Corbusier was never alone in his experiments with *Le Modulor.* Once again he was leading his profession, this time in the revival of a concept and an argument which had been discredited for two centuries: the concept of an objective system of beauty which may be applied to all men's construction. But what made his invention profoundly significant as an architectural development in the middle of the 20th Century was that it returned, beyond the numbers to the dawn of philosophy to try to find some sort of mysterious link for the system with the proportions of the body, some hint of divine inspiraion. The sheer reaction of these suggestions coming from one of the spiritual leaders of 20th Century architecture might have been expected to take the rational movement's breath away. Instead, thousands of Le Corbusier's disciples round the world began to play with *Le Modulor* and claimed to see some part of the miracle which the inventor himself all but experienced. Some criticism was made at the time of inherent difficulties in the practical application of the scale but there was no sign of shock; only a movement which had retained its rational principles would have been shocked.

the search for pleasingness

The Golden Mean, Golden Cut, or Divine Proportion, which were revived from near oblivion by *Le Modulor*, are the artist's quasi-mathematical terms for one of the geometrical propositions which has fascinated many men who have gone in stumbling search of a rhythm of creation. The Pythagorean mathematicians, who sought a rational explanation for the phenomenon of beauty in the 6th Century B. C. and decided that the circle was the most beautiful figure and the sphere the most beautiful form, first solved the problem of devising a mathematical basis for the perfect visual proportioning of parts. They discovered how to divide a line into two parts, the ratio of the smaller to the greater being the same as the ratio of the greater to the whole line (roughly .618 to 1). As the Pythagoreans discovered, this proposition leads to absorbingly interesting mathematical consequences. For instance, if the length of the smaller section of the divided line is marked on the larger section, again an extreme and mean ratio is created, for the offcut that remains bears the same ratio to the original small section as the small does to the large, and as the large to the whole. This process may be repeated again and again but the end of the line—zero—will never be reached, for the parts of the Golden Proportion are incommensurable, which adds to their

fascination and to the aura of mysticism surrounding them for twenty-six centuries. Artists saw in the phenomenon a Golden Rule of proportions for building, sculpture, and painting. Plato saw in it a clue to the secrets of creation, and Aristotle saw, in the balanced tension of the long and short parts, an analogy for a code of ethics. Developing from the divided line, the esthetic theory of the Golden Section goes on to state that a rectangle formed of the two parts of the linear division is a plane shape of absolute beauty; a solid rectilinear body based on the proportion is one of the forms of absolute beauty; and a building sub-divided in accordance with it will be a building of perfection.

The rule may, in fact, be traced through the proportions of many famous paintings and buildings, and its "objective beauty" is occasionally "proved" by art instructors in simple experiments. If a group of people is asked to select the most pleasing shapes from a range of different lines and rectangles, one is fairly safe in calculating on the majority selecting the figures which approximate to the proportions of the Golden Section. An experiment even so simple as this supplies substantial evidence supporting the idea of a mathematical formula for beauty. Here, clearly, is the basis of a system of scientific determination of the most popular, satisfying shapes and sub-divisions, and eventually an architect might be able to apply this to all the openings

the search for pleasingness

and appurtenances of his buildings.

At the highest pitch of enthusiasm the Golden Section suggests the possibility that the eye can recognize here a microcosm of universal harmony, that the human being somehow senses the progression from zero to infinity of further ratios implicit in the single given ratio, and that somewhere beyond the reach of our present knowledge an understanding of the all-pervading pattern of creation flickers in the soul.

At a lower pitch of excitement, the psychoanalyst interprets the *mystique* of it as a comparatively simple psychological trick. Even when conscientiously applied to the parts of a building, the mathematical simplicity of the proportions of the Golden Section are never obvious. The conscious eye finds nothing offensive yet can find in the lines no apparent mathematical law, but meanwhile the subconscious has perceived the precision hidden in the form relationships and its secret goading of the surface mind is the seat of the fascination.

At the most prosaic level the "universal beauty" of the Golden Section may be explained flatly as a matter of compromise. Any pure mathematical form or simple mathematical system is approved by the eye because it is a decisive statement. A line cut in the middle satisfies because there is nothing woolly about the even

balance of the halves. In a line cut in the golden proportion of .618 to 1 the ratio of the parts is more subtle, but the statement is still clear, for if the cut is moved close to one end of the line, it reduces the shorter section to an inconsequential tag. And if it is not moved far enough from the center the indecision is disturbing; perhaps the draftsman's hand slipped as he was about to make a central cut! A position in which the cut is far enough from the center to be clearly no slip of the pen and far enough from the end to give the short section sufficient strength of its own, is the point at which the eye finds a satisfyingly definite statement; this is approximately the point of the Golden Cut. It may not always agree exactly with the mathematician's calculation, but in practice the eye cannot judge with any accuracy the parts of a building seen in perspective. The arithmetical Golden Progression may be converted for everyday use from decimals to found figures (say 3, 5, 8, 13, etc.) and a Board Room may be cut to this pattern with every confidence in its ultimate pleasingness. It will seem neither constrictingly narrow nor oppressively low, and a building on the same pattern will be neither too thin nor too squat. The Golden Mean means neither too much nor too little, but moderation, the comforting average; everything to rest the eye and nothing to concern the mind.

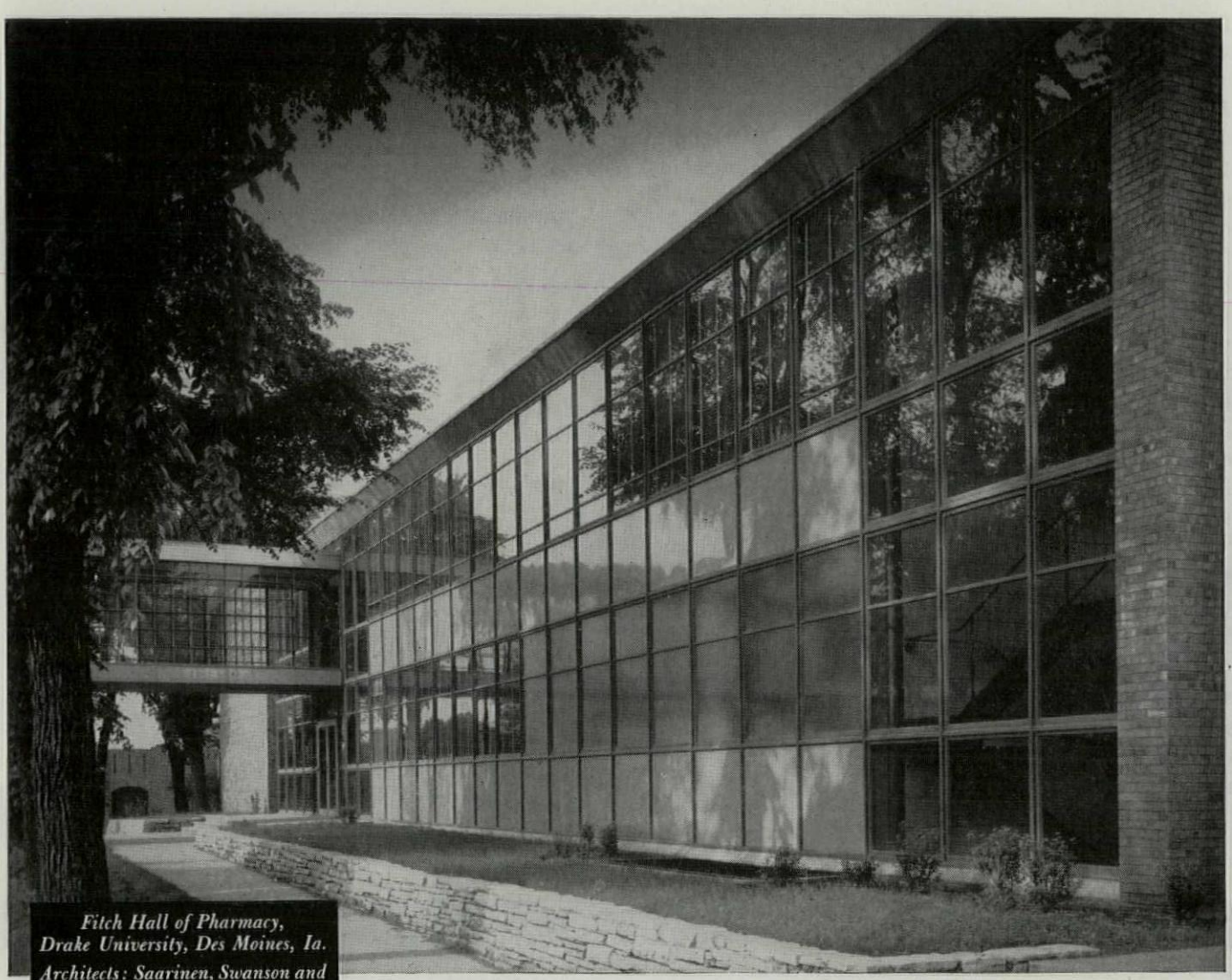
If these are the qualities desired of all buildings

the search for pleasingness

irrespective of their site, environment, function, and meaning to society, then the Golden Mean should dictate the proportions of everything man makes and *Le Modulor* should be on every drawing board. But Le Corbusier cannot believe that these qualities are desirable in all buildings, for his own have the expressive range to be expected from a master who can control tons of concrete as few men can control a tube of paint. The Golden Proportion can be discovered in most of his buildings only if they and credulity are stretched to breaking point—and they will relate to almost anything when thus extended. On the other hand, they may be sensed like a grid of invisible wires between one's eyes and most of Le Corbusier's paintings, contributing to the singular monotony of his work along this sideline.

Contradicting nearly everything that has gone before, Le Corbusier concluded his first book on *Le Modulor* with a caution: "Any door that offers an escape is dangerous," and by quoting Kahnweiler's comment on the Cubist movement (including Le Corbusier's architecture): "Every one of these artists has attempted to create works of art which have as strong an autonomous existence as possible, to produce objects whose unity is ensured by the force of their rhythm and in which the

parts are subordinated to the whole. To each of these objects, fruits of their emotion, they intend by its uniqueness to guarantee complete automony." Could Le Corbusier have discovered a more devastating condemnation of *Le Modulor's* pretentions to universal proportioning? How can a work of art have an autonomous existence while it is pulling its forelock to some inviolable rule of proportion? Le Corbusier makes this apparent contradiction because he sees the dimensions on his measuring stick not as an architectural scale like a foot-rule, but more as a musical scale on which the designer may play freely. But surely language is working some mischief here. Le Corbusier's interpretation of playing freely on *Le Modulor* is to ignore it altogether, to change the key whenever it offers no dimension applicable to a practical task in hand—for instance, in the height of an ordinary doorway. This is the traditional way with systems of architectural proportions. "The artist is always present beside the geometrician," said Viollet-le-Duc, "and will be able to bend the formulas when necessary." *(Dictionnaire Raisonné de l'Architecture Française du XIe au XVIe Siécle: "Proportion," ". . . l'artiste est toujours présent à côte du géomètre, et sait, au besoin, faire fléchir les formules.")* Now, just what—one may ask in Heaven's name—is bent geometry? It is certainly not geometry, probably it is not the best art, and it can hardly be the way to the stars.



Fitch Hall of Pharmacy, Drake University, Des Moines, Ia.
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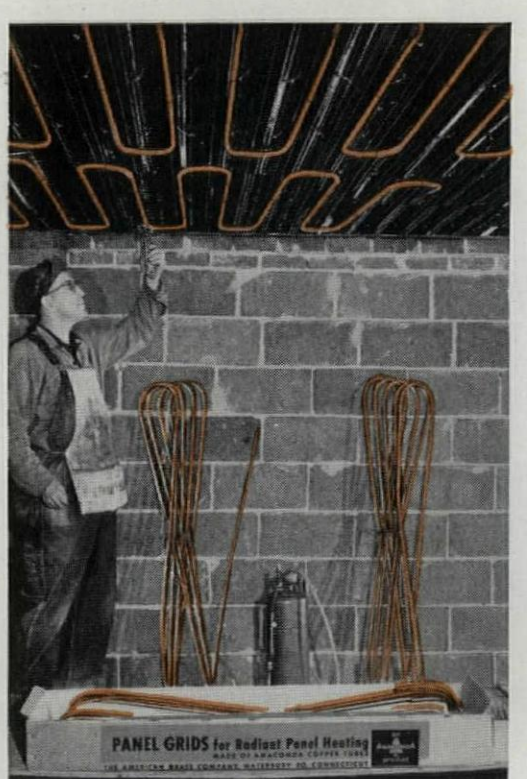

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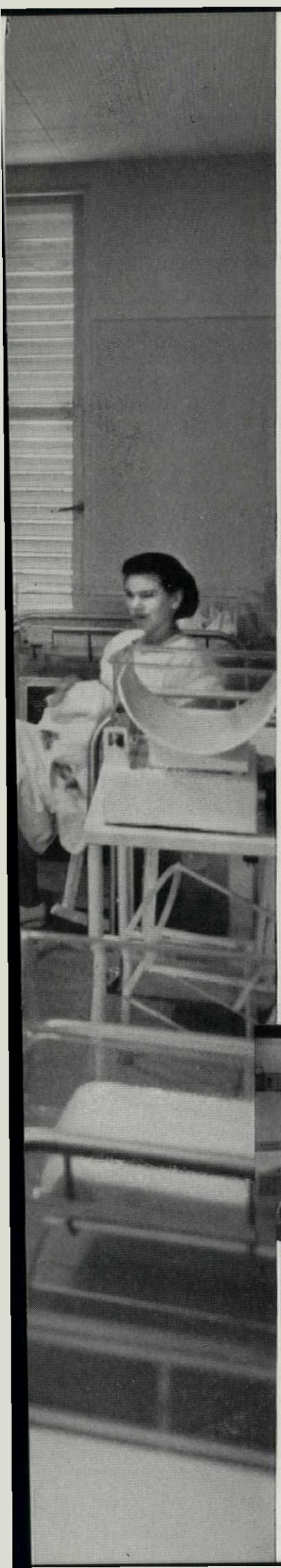

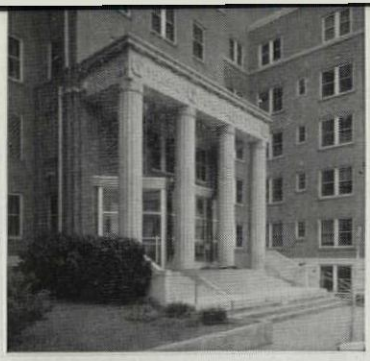

The Shannon Memorial Hospital, San Angelo, Texas. Mechanical and Electrical Engineer, Tippett & Gee, Abilene, Texas; Mechanical Contractor, Bollinger & Sames, San Angelo, Texas; Electrical Contractor, Westbrook Electric Co., San Angelo, Texas Hospital Administrator, Mr. B. Tol Terrell

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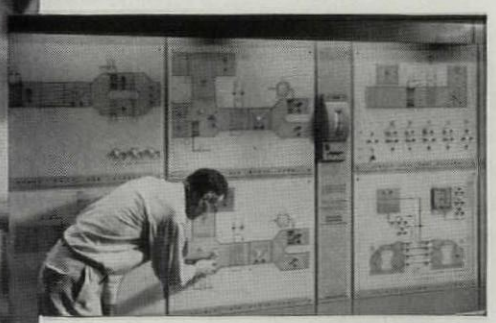

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books received

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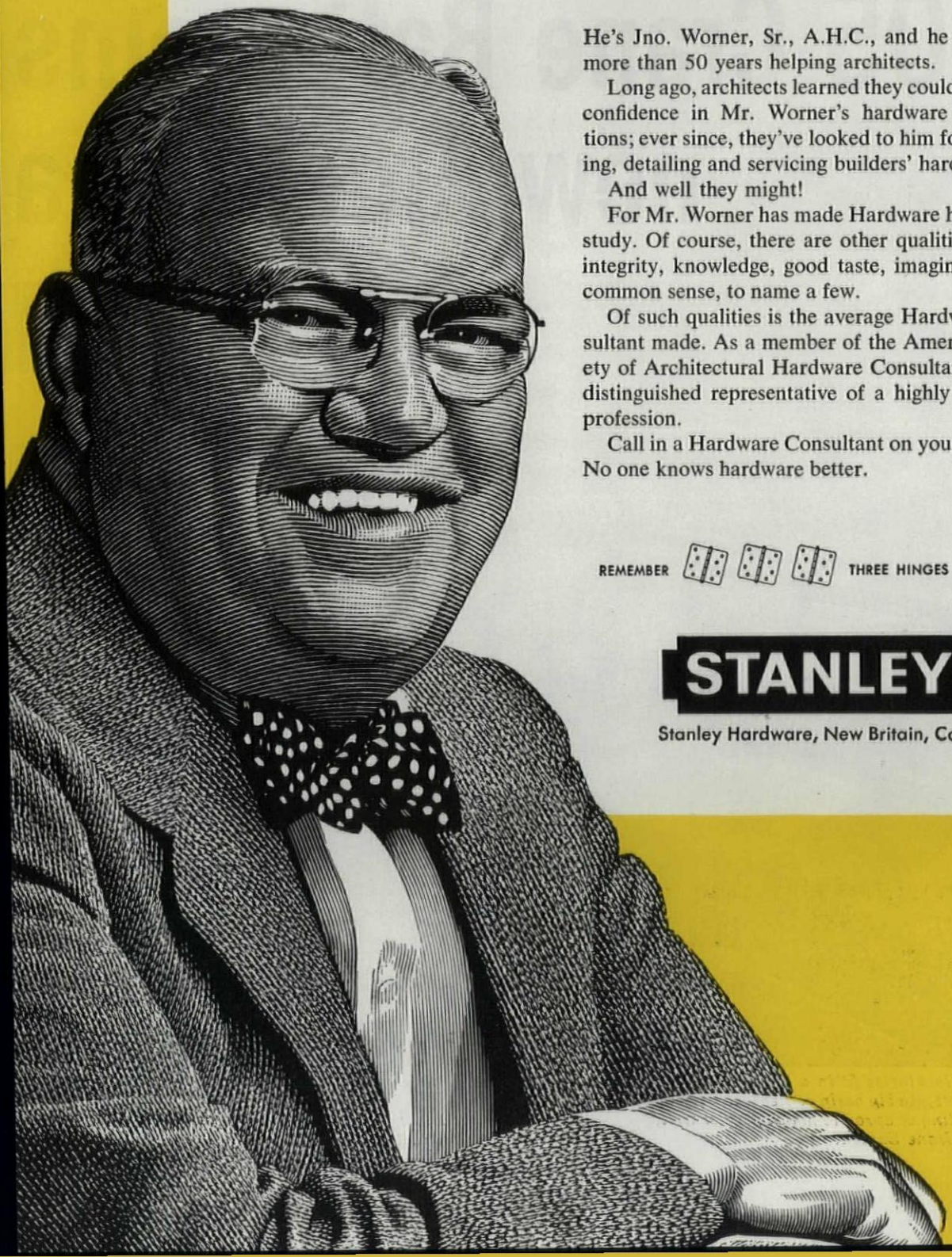
searching self-analysis

Life and Human Habitat. *Richard Neutra. Verlagsanstalt Alexander Koch, Stuttgart, 1956. Distributed in U. S. by Wittenborn & Co., 1018 Madison Ave., New York, N. Y. 317 pp., illus., $18*

From Leone Battista Alberti and Sebastiano Serlio to Jean François Blondel and Roland Levirloys to Gottfried Semper, Adolf Loos, and Frank Lloyd Wright, the attempt to clarify the architect's basic ideas about his art has never done any harm to his creative potentialities. Neutra's *Life and Human Habitat* belongs among those searching self-analyses of artists who have already proved their ingenuity by a great

(Continued on page 214)

Adviser to Architects



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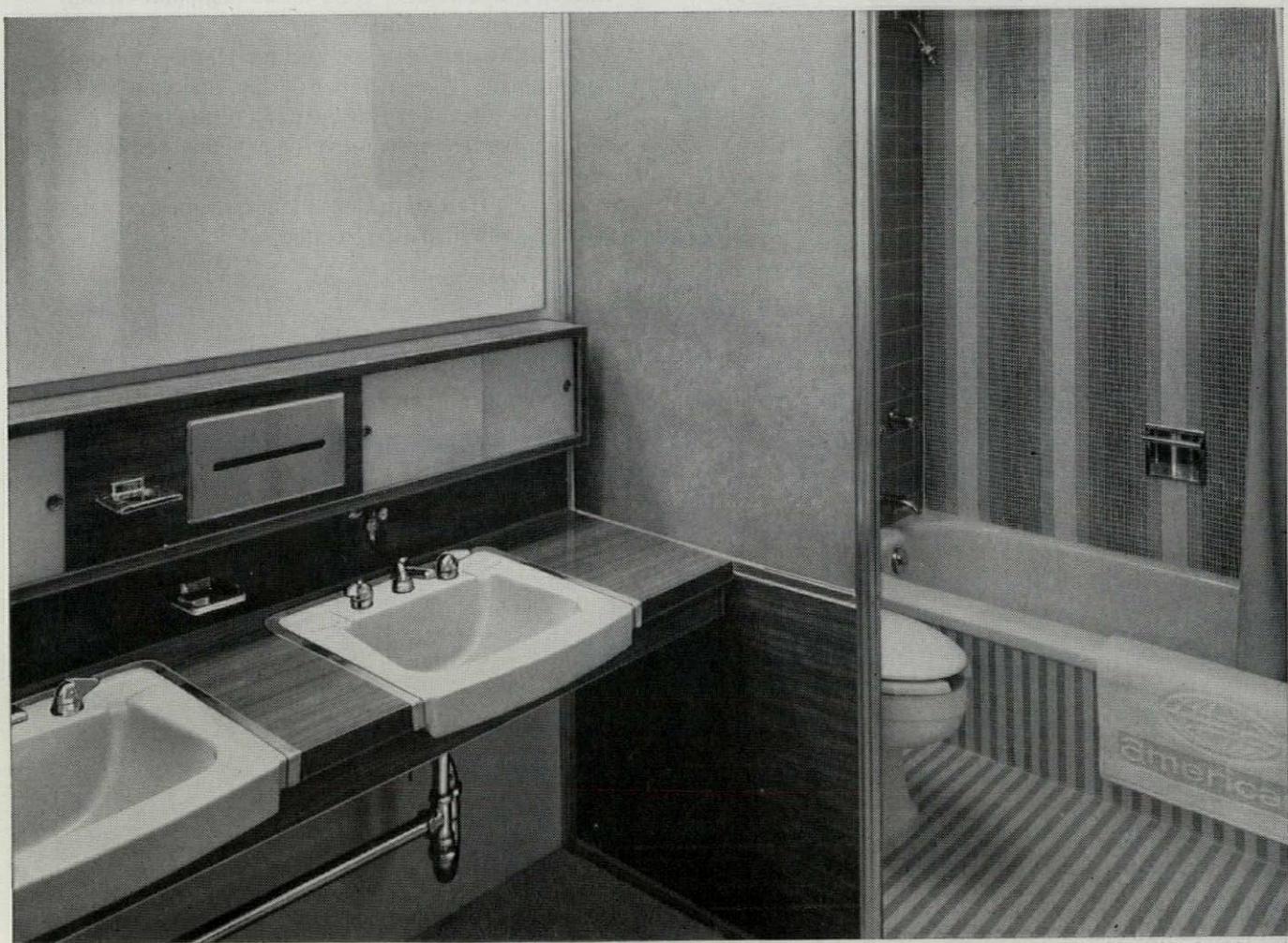

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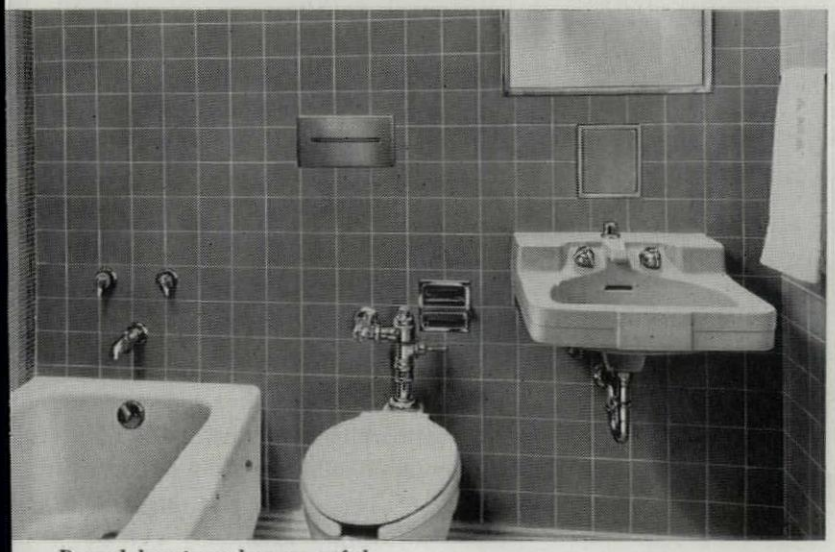
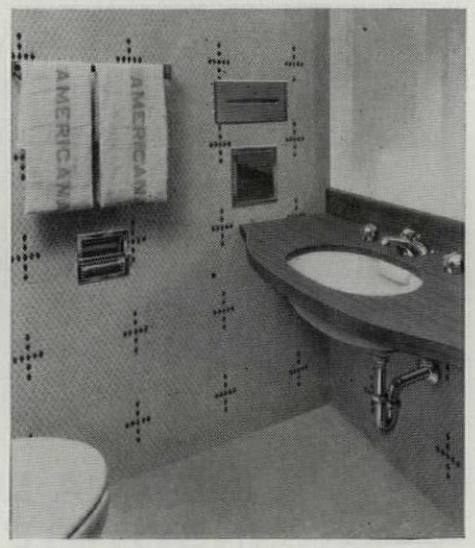


ne Drexel lavatory has graceful na spout molded into beveled trol panel. Bathtub is Crane terion and water closet is Santon.



Crane oval lavatory and Dial-ese controls in Formica counter-top give a rich, luxurious feeling to this bathroom.

(Continued from page 210)

number of actually executed works. Some years ago, Neutra already had developed his basic philosophy in his *Survival through Design*, when he emphasized the physiological and psychological conditions of human existence from which the architect *must* develop his design—a concept which he probably sometimes exaggerated. The present book—text in English and in German—combines many excellent photographs of Neutra's main works with explanatory captions and a thorough interpretation of his theoretical thinking.

The humanist will be gratified by the humaneness of his approach, in contrast to the intellectual dogmatism of Le Corbusier. And the layman will discover that the employment of large glass planes, roof slabs, and cantilever constructions does not automatically mean a "modernistic" expression of the already slightly antiquated "functionalism" of the Twenties. On the contrary, the livability of Neutra's houses is based on his desire to speak to all our senses, from the visual to the kinesthetic, to the totality of conscious living. Not to press the life of people into a form, preordained by the architect, but to create for them spaces, forms, and colors which allow free and relaxed expressions of individual desires—that seems to Neutra the basis of architectural creation.

Each of the more than twenty houses reproduced in this book from many angles and with details, shows from the very beginning the human freedom of the individual who does not try to conform anxiously to the materialistic slogans of a mechanized period. Even the choice of material is dictated by this tendency —although he continuously employs truly new constructions and materials. Typical and not accidental is his abundant use of water in the synthesis of house, garden, and landscape. Considering this attitude toward the surrounding nature — always the touch-stone of a really great architect—one could perhaps say that Wright, in his more brutal structures, tries to emulate the "organic" forms of the landscape; while Neutra opens the spaciousness of his houses toward nature, and adapts them to given natural conditions, but demonstrates by their lines that they are man-made, developed out of an unique human equilibrium of imagination and thought. The emphasis on simple clarity of exactly limited and very definite forms does not contradict fluidity and tactful, humble subordination to nature.

Certainly the self-reliance of the Californian architect, who never in his work became a mere "regional-

(Continued on page 220

Mr. Ketchum (left) and J. C. Marvin of The Pacific Telephone and Telegraph Company, shown here in front of one of Mr. Ketchum's popular College Downs Homes in California's San Fernando Valley.

"Home buyers want concealed telephone wiring"

— says Mr. Russ Ketchum, Builder, of Van Nuys, California

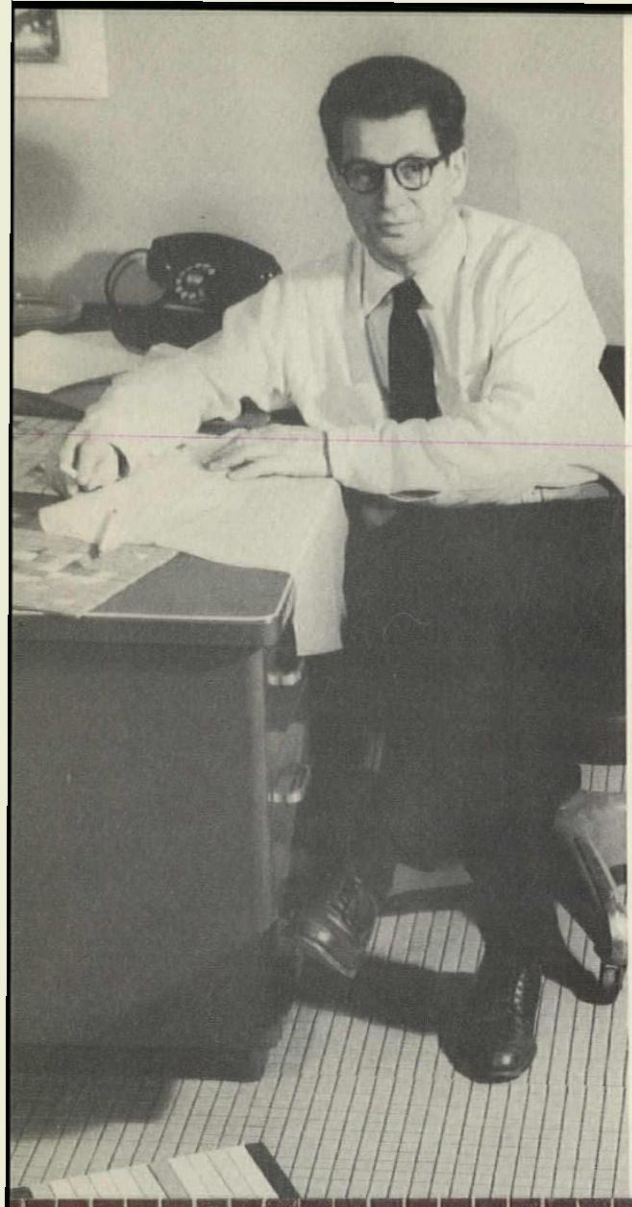
"Here's why home buyers want concealed telephone wiring," says Mr. Ketchum. "They want telephone outlets located as conveniently as electrical outlets, and they want the finished beauty of their rooms preserved, too.

"I'm in business to give people what they want in homes, and today that means concealed telephone wiring along with the many other built-in, ready-to-work conveniences that people look for. I put concealed wiring and telephone outlets in every home I build. It's good business. It's a sales feature I wouldn't be without."

• • •

Your nearest Bell Telephone business office will help you with concealed wiring plans. For details on home telephone wiring, see Sweet's Light Construction File, 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

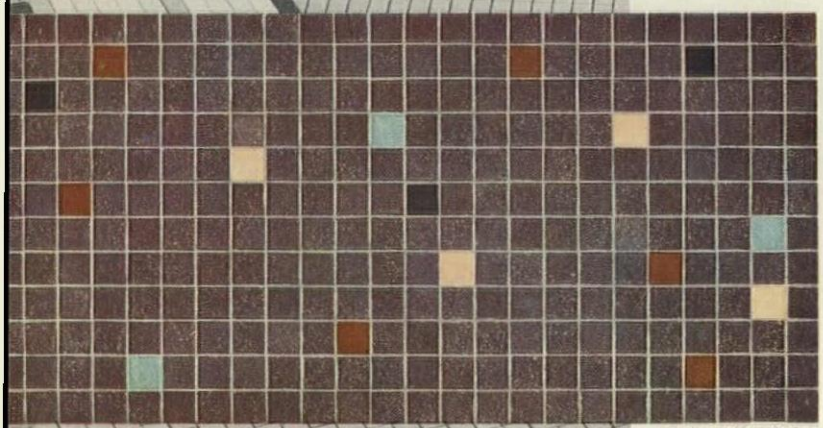
Working together to bring people together
BELL TELEPHONE SYSTEM



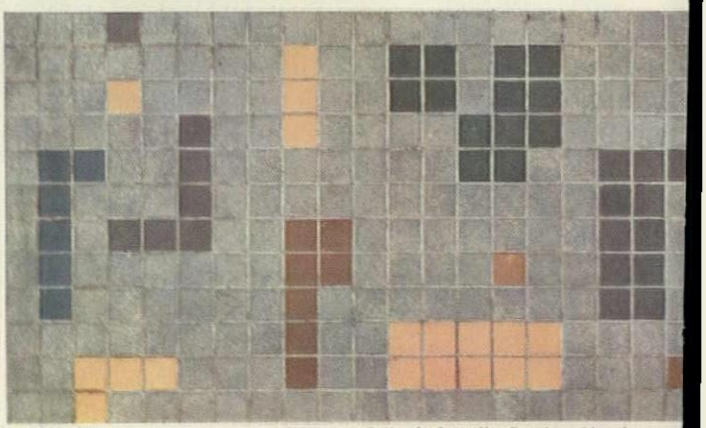
setting the pace for ceramic tile...

Max Spivak designs new stock patterns in Suntile

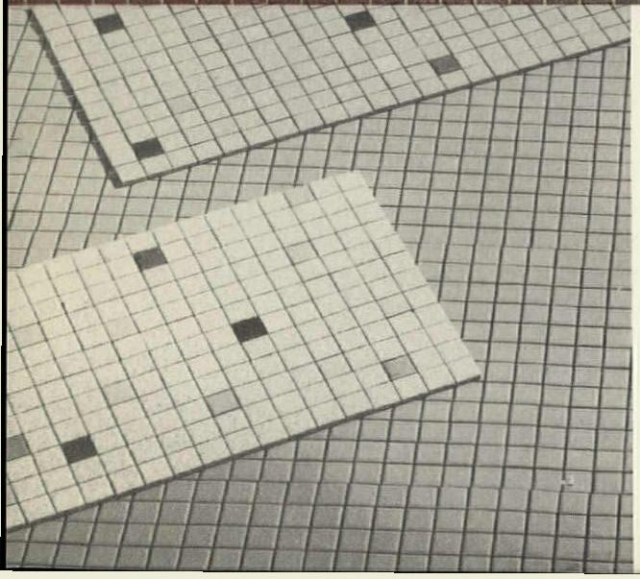
TWO OF THE NINE BASIC 2′ x 1′ MOTIFS



▲ Spivak Suntile Design No. 13
(Static Buckshot) Field color: 148 Walnut



▲ Spivak Suntile Design No. 4
(City Plan) Field Color: 154 Larksp



COLOR BALANCED
Suntile
..... A Ceramic tile
..... Bright with color
..... Right for life

SEND COUPON FOR DATA, FULL COLOR RANGE

THE CAMBRIDGE TILE MFG. CO.
P.O. Box 71, Cincinnati 15, Ohio

Please send me:

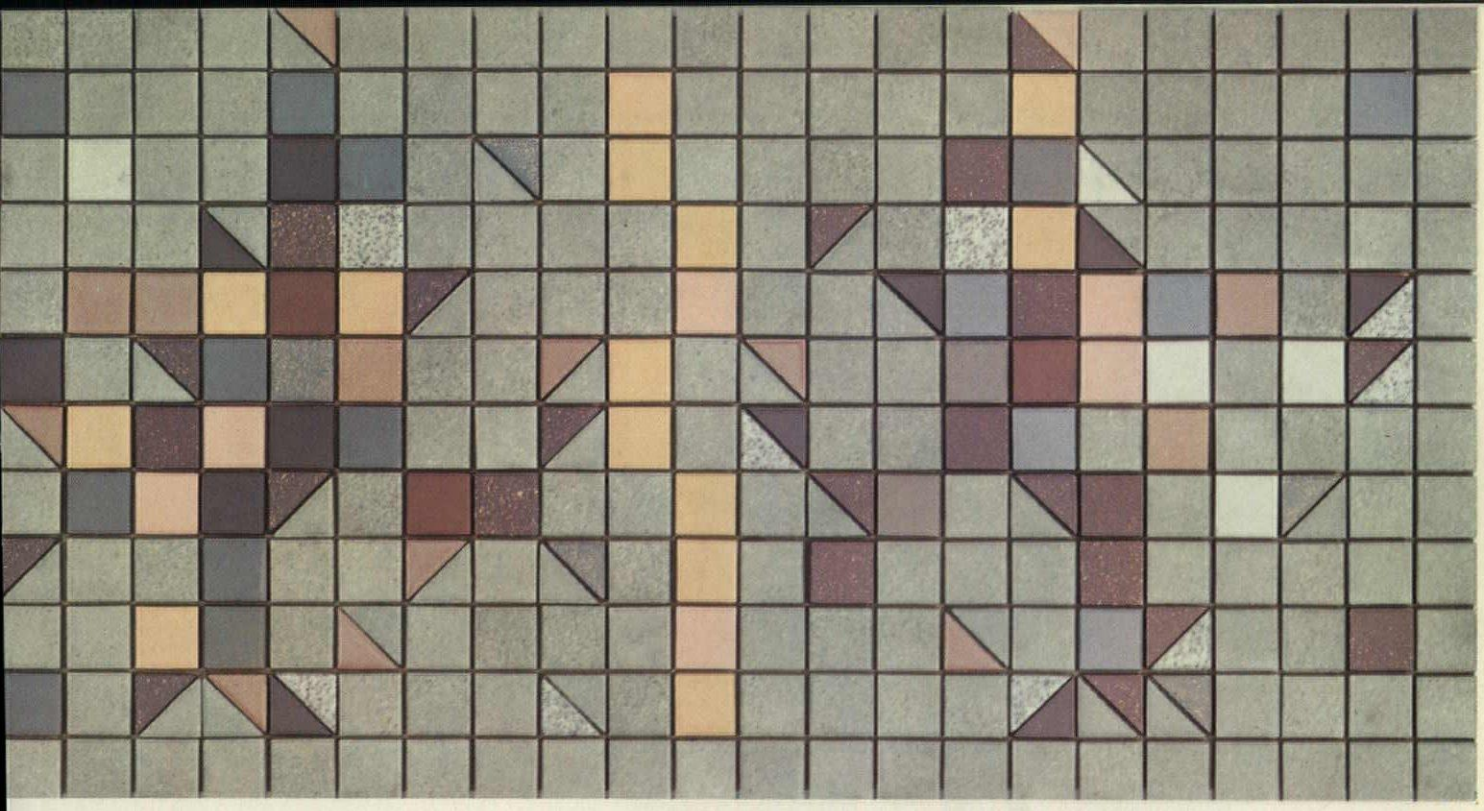
☐ *Folder showing Suntile patterns by Max Spivak in full color.*
☐ *New Suntile Catalog giving data on the full line.*

*Name*_____

*Company*_____

*Address*_____

City _____ *Zone* ____ *State* _____



Suntile Design No. 7 Cock Fight *(ungrouted)*
Field color: I32 Birch Range

ceramics

xciting abstract patterns—subtle color har-
onies — interesting textural effects — wide
sign flexibility—

ese are just some of the features of this new
oup of contemporary stock patterns in Suntile
tinized Ceramics, designed by the well-known
amic mural artist, Max Spivak. They permit
u to take full advantage of both the decora-
e and practical characteristics of Suntile—
a relatively modest budget.

ch of the nine basic motifs is made up of
x 1" unglazed tile mounted on regular 2' x 1'
ets for quick installation. Only a few of the
ny design possibilities offered by this group
suggested here.

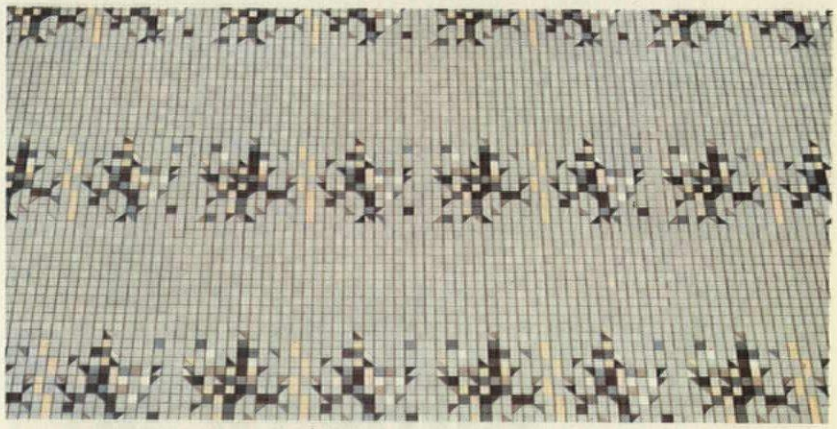
ause only rugged, natural clay and porce-
n Suntile are used, these patterns are equally
viceable in walls, floors or counter tops—
oors and out.

guaranteed installation, call your Author-
l Suntile Dealer. His name is listed in the
low pages of your phone book.

THE CAMBRIDGE TILE MFG. CO.

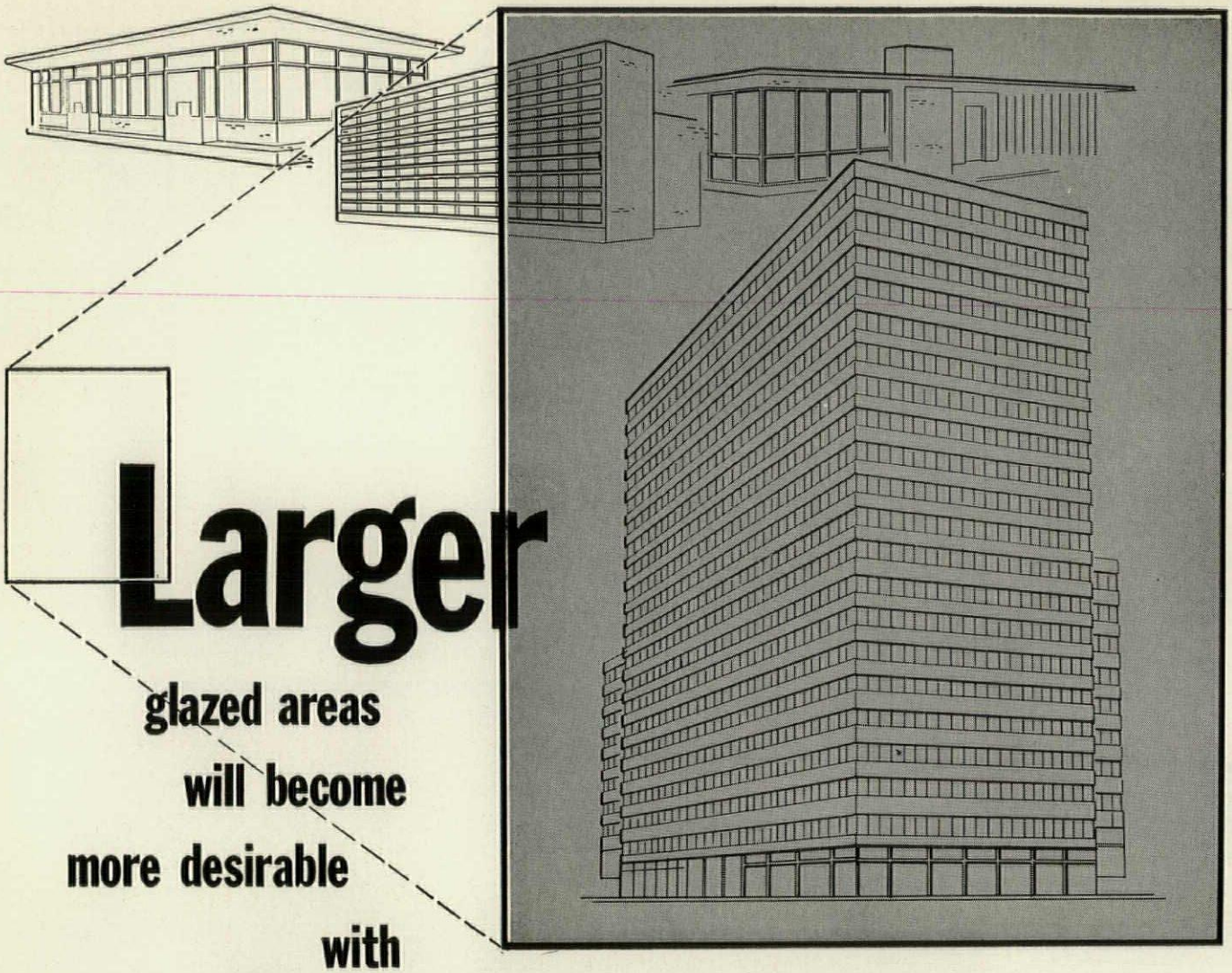
P.O. Box 71, Cincinnati 15, Ohio

▼ Cock Fight Design in Stripes, Field color: I32 Birch Range



▼ Overall Pattern with Cock Fight Design

▼ Cock Fight Design in Field of Spivak Suntile Pattern No. I3 (Static Buckshot) Field color: I48 Walnut



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Total Visible Light	71.1%	61.8%	58.8%	55.0%
Ultraviolet	68.4%	63.7%	63.0%	61.0%
Infrared	79.2%	73.4%	71.7%	68.5%
Total Solar Radiation	75.5%	68.3%	66.3%	62.6%

• Maximum Size: 6' x 10'

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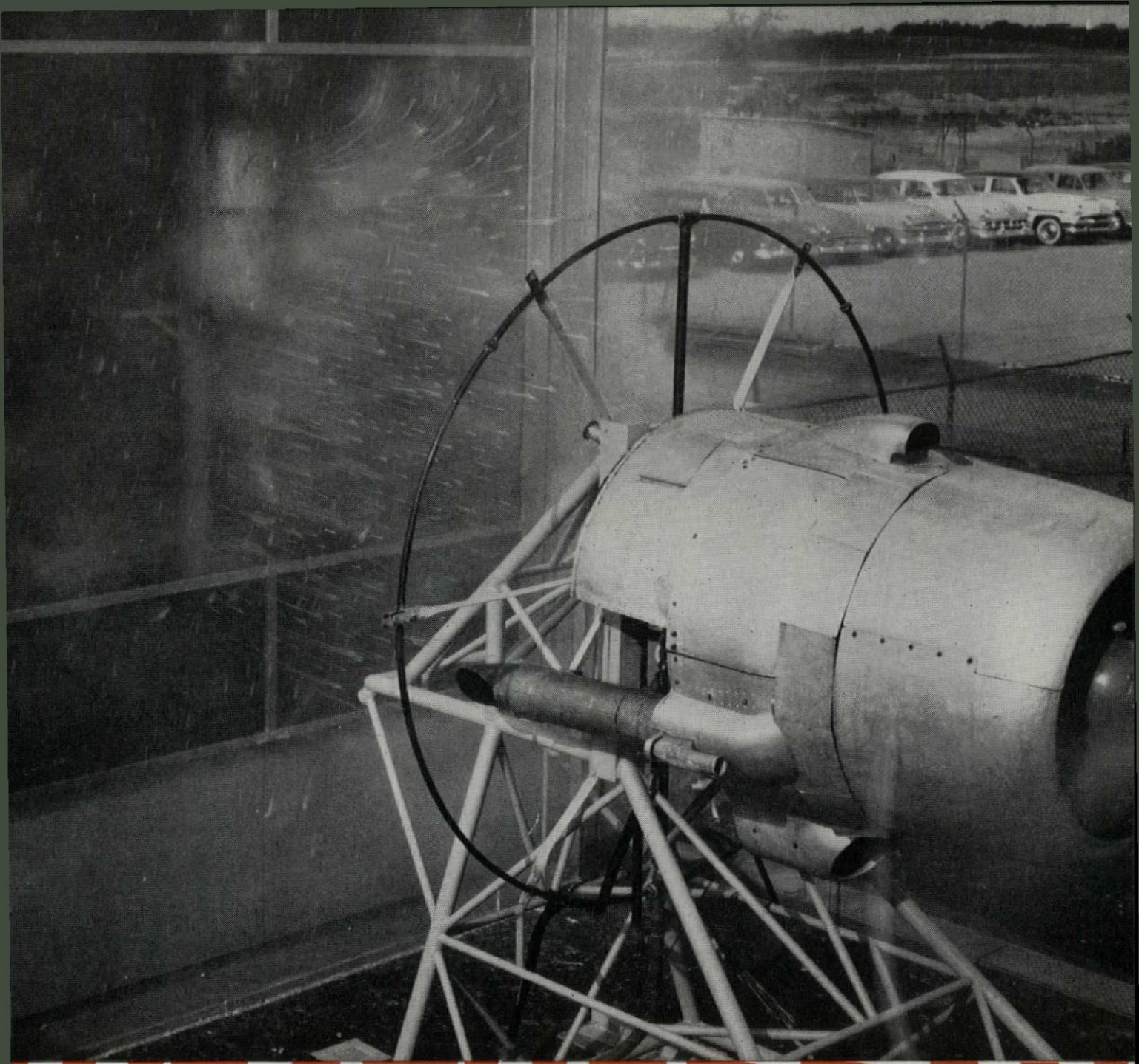

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BRAND CURTAIN WALL SEALER

Photo courtesy of Connecticut General Life Insurance Co.

New curtain wall sealer resists hurricane fury!

Wind hits a screaming 130 m.p.h.

Rain whips out in a 12-inch-per-hour deluge. The curtain wall unit shudders, bends under this man-made blast . . . *but doesn't leak.* WEATHERBAN Brand Curtain Wall Sealer seals its seams.

The purpose of this torturing, simulated weather test? To *prove* the weather-tightness of this WEATHERBAN sealed curtain wall, even under the lash of hurricane fury.

This new curtain wall sealer is a two-part polysulfide rubber-based compound. It cures *chemically* without shrinkage into a durable, solid rubber seal. It stretches, compresses with wall movement, adheres strongly to glass, stone and metal.

Here's why WEATHERBAN Sealer is being picked to seal new buildings . . . why it's being chosen also to repair leaks in older buildings originally sealed with conventional sealers.

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(Continued from page 214)

ist," explains the far-reaching influence on all those who see in the modern movement more than a pattern and combination of new forms which —in contrast to those of the past— only the development of new techniques and the employment of new materials could make possible today. His approach asks for a greater and more intrinsic originality than the usual indulgence in glass, stainless steel, and rectangularity which by so many amateurs is considered as the decisive symptom of "modernism." The layout and technically excellent illustrations of the book correspond to the importance of this very worthwhile publication of the work of one of our best architects. PAUL ZUCKER

personality and performance

California Houses of Gordon Drake. *Douglas Baylis and Joan Parry. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1956. 91 pp., illus., $6.50*

A career of promise, when snuffed out at an early stage, has all the elements of tragedy.

Gordon Drake's active career was short—seven years—but long enough to show how tragic a loss to architecture was its sudden ending. His work was little in volume; but it was great in design importance, as the illustrations demonstrate.

An appreciative introduction by P/A's George Sanderson capably sets the spirit of the book. Written appreciations by two other friends of this reviewer are also included: these features convince him that the personality, philosophy, and performance of Gordon Drake merit whatever permanence and continuance this fine book may inspire.

LAWRENCE E. MAWN

urban design and theory

The Nature of Cities. *L. Hilberseimer. Paul Theobald & Company, 5 N. Wabash Ave., Chicago 2, Ill., 1955. 286 pp., illus., $8.75*

At some point in his latest book, Professor Hilberseimer comes out against the Roman practice of rebuilding cities by imposing from above a rigid system of street design, with little regard either to the physical topography or to the social traditions of the community. In the first part of *The Nature of Cities,* which is a scholarly critique of city patterns from the past, he decries that "dominating form concept to which everything must be subordinated." Yet this is precisely what *he* calls for in the more sensational third part of his book. Here he repeats and elaborates on the schemes he launched in his book *The New*

(Continued on page 224)

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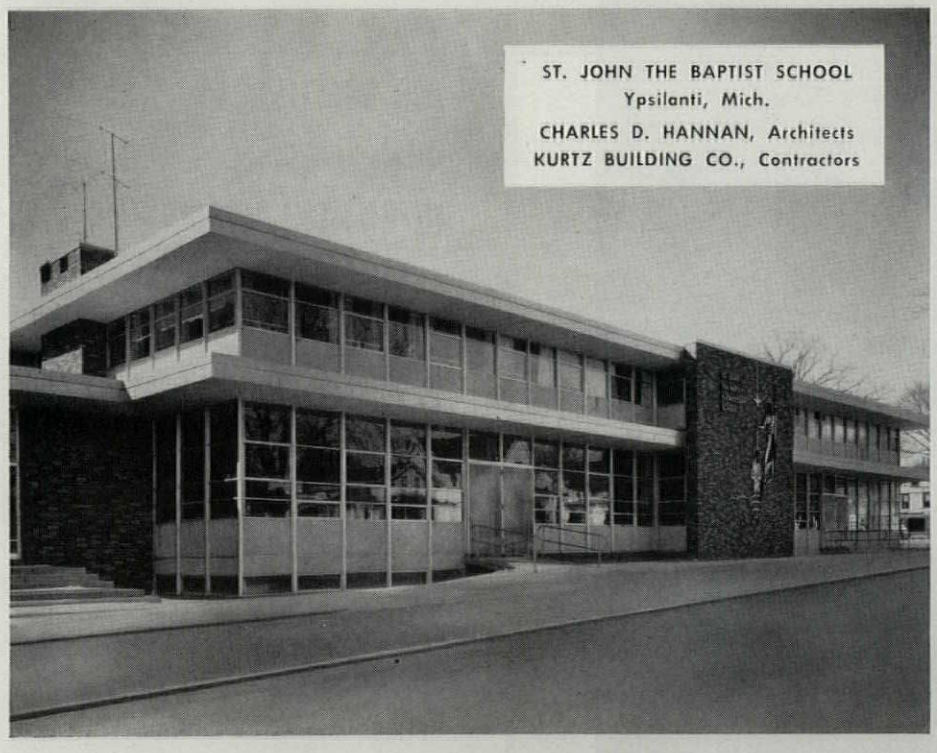

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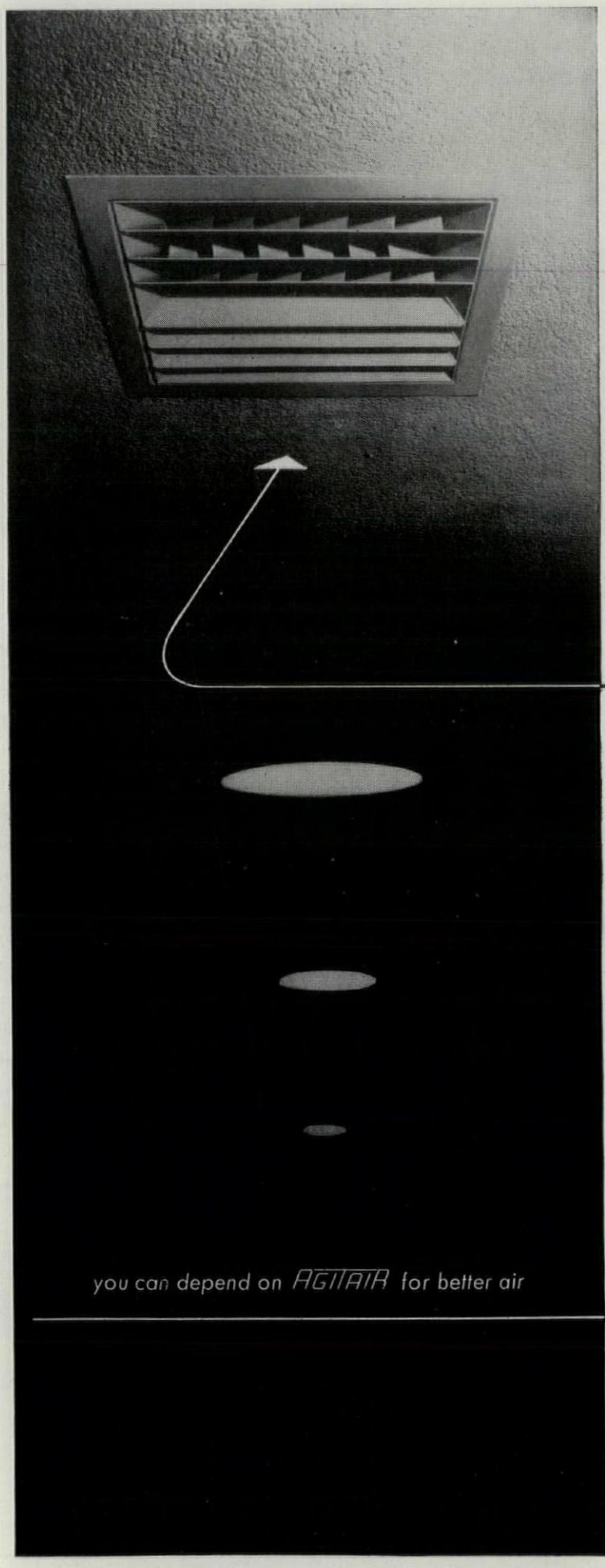

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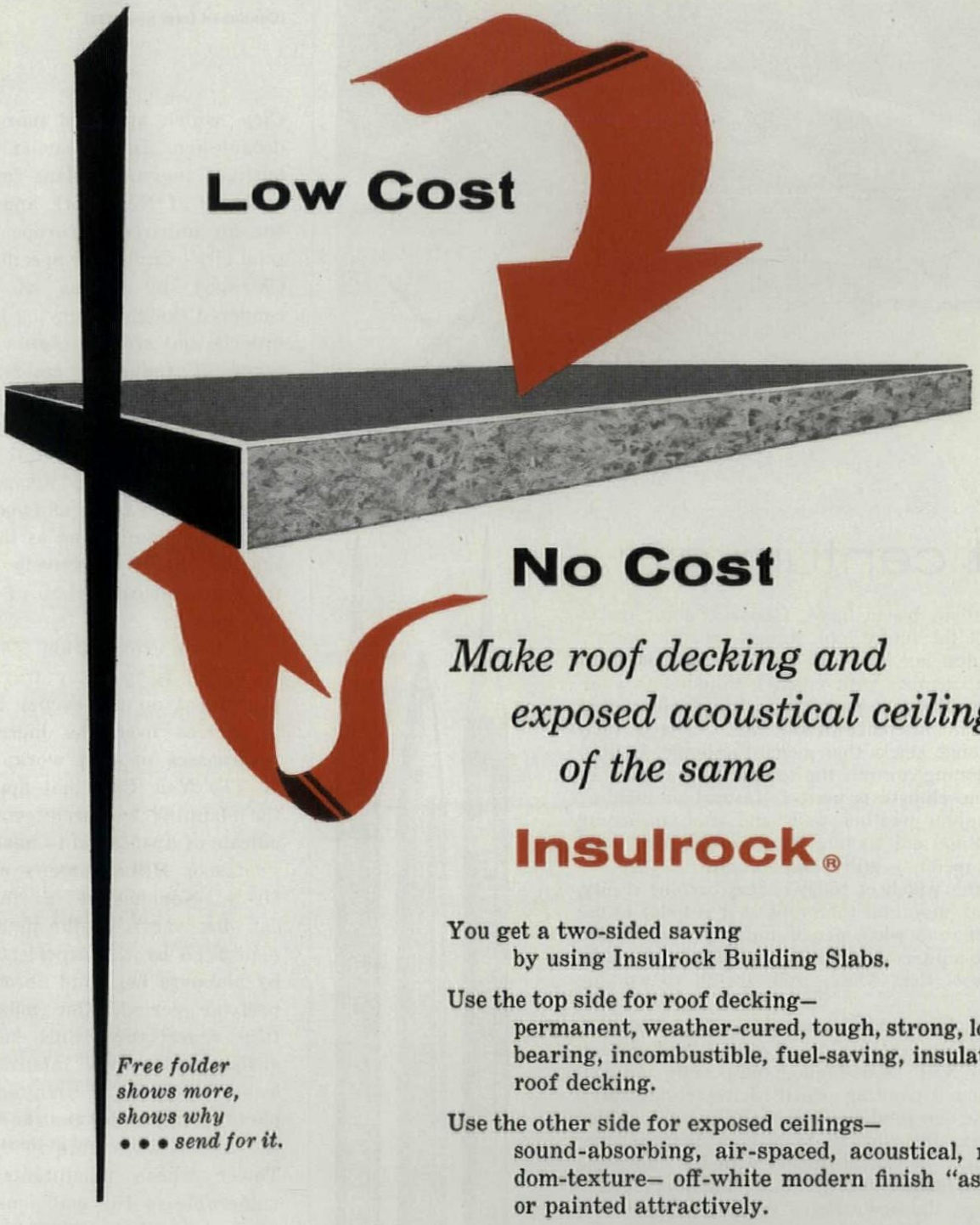

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reviews

(Continued from page 220)

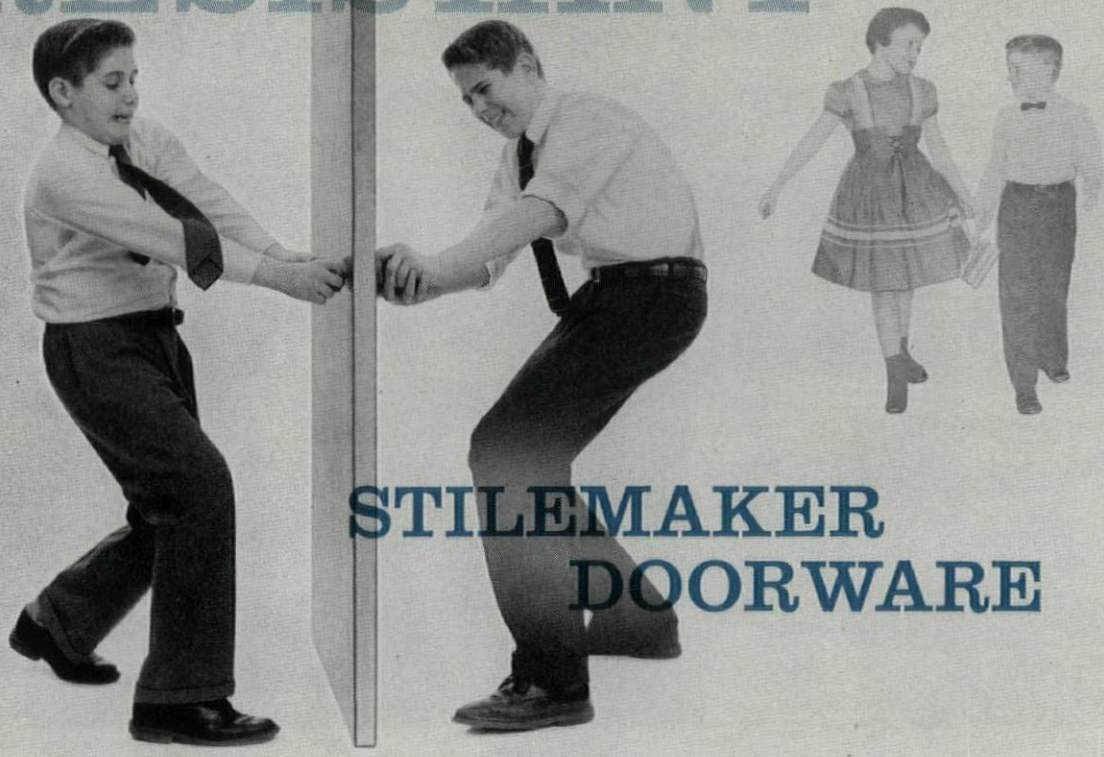
City, which appeared more than a decade ago. In the earlier work, he outlined ingenious plans for the rebuilding of New York and London, for an unnamed "European industrial city" (and, very specifically, for Chicago) by means of skilfully rendered sketches showing beautiful, orderly, but *strictly regimented* patterns of industry, residence, and transportation lines. Drawn on background maps indicating no topographical features other than rivers or waterfronts, they appear to impose on living cities of today a form concept as dominating as the Roman schemes he so effectively criticizes in the historical section of his present book.

On close examination, *The Nature of Cities* is in many ways an improvement on the earlier book, but it carries over the more serious weaknesses of that work. Reviews of *The New City* that appeared in the planning and architectural periodicals of 1945 seem to have escaped Professor Hilberseimer's notice entirely. Nor has he—as far as one can discover from the present book—profited by the experience shared by planners here and abroad in the postwar period. One must, therefore, regrettably (since he is obviously a serious, well intentioned, and learned student of architecture and planning) conclude that he has spent the intervening years in that Ivory Tower whose inhabitants are so vulnerable to the malicious, cynical jibes of that Arch-Antiplanner Moses and his like.

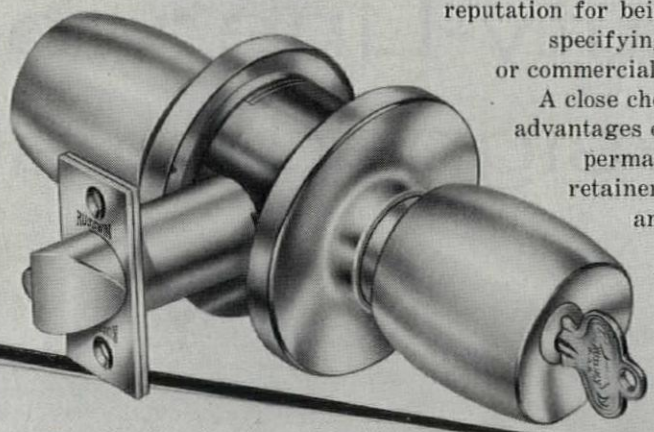
Stimulating as Professor Hilberseimer's theories are, and interesting reading as his arguments may be, they tend to do more harm in the long run to the achievement of concrete results in civic design by the active practicing architects and planners who try to improve our cities within the framework of feasible procedure, than they could pos

(Continued on page 230

ROUGH RESISTANT



STILEMAKER DOORWARE



This heavy-duty cylindrical lock line has earned a schoolwide reputation for being *rough-resistant*...a point to consider when specifying doorware for any type of institutional or commercial building.

A close check of Stilemaker construction will reveal the advantages of such features as...a full ⅝" throw permanently lubricated latch bolt; concealed knob retainers; long knob shank bearing for knob rigidity and many others. All the facts are available in concise form. Consult your Russwin Specialist or write Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

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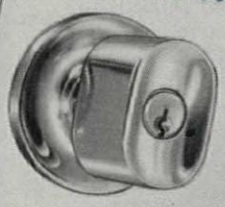
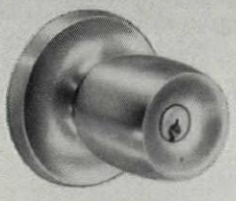


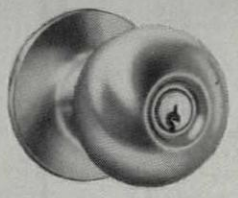
ERA DESIGN
in cast brass, bronze or aluminum

FLARE DESIGN
in cast brass, bronze or aluminum

COSMIC* DESIGN
in wrought brass, bronze or aluminum

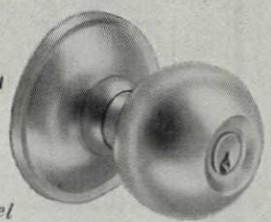


COMET DESIGN
in cast brass, bronze or aluminum



BRISTOL DESIGN
in cast brass, bronze or aluminum

HADDAM* DESIGN
in wrought brass, bronze or aluminum



MONO DESIGN
in cast brass, bronze or aluminum

*Can be furnished in stainless steel

Ideal for living rooms! Glamorous 5′10″ high Beauty-Line Windows combine to form picture WINDOWALLS. Narrow meeting rails give minimum interference with vision. Roto-Lock (illustrated) works under screen, pulls sash corners in tight.

New...Beauty-Line* wood designed to suit

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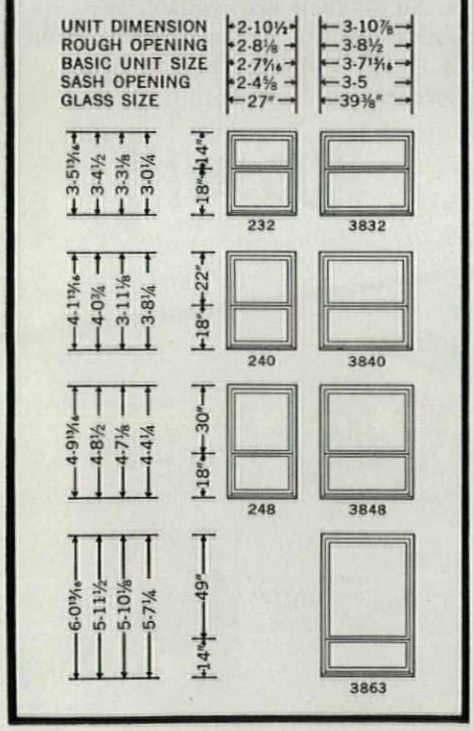
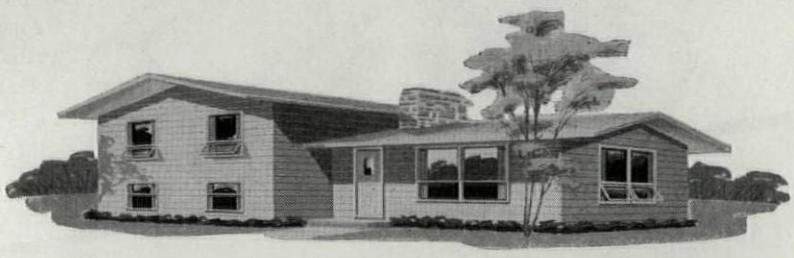
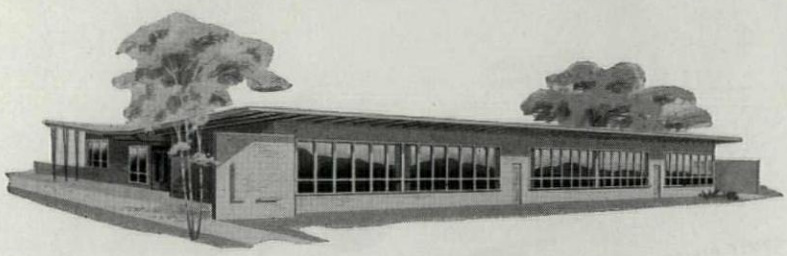
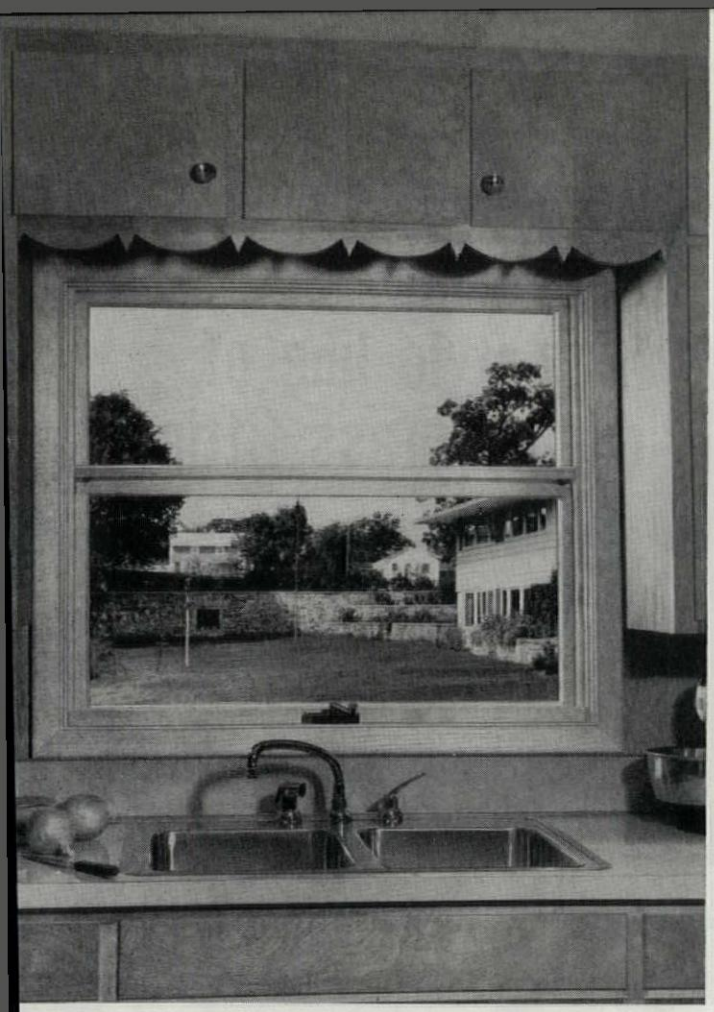




In split level homes, new Beauty-Line Windows blend perfectly to match architectural design—no matter what elevation you're planning.



In schools and light commercial buildings new Beauty-Line Windows adapt to any exterior elevation, admit plenty of light and ventilation.



Ideal for kitchens! 3′3″ Beauty-Line Unit makes perfect kitchen window, easy to operate over kitchen sink. Also serves as excellent privacy window for bedrooms.

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windows by Andersen your building plan

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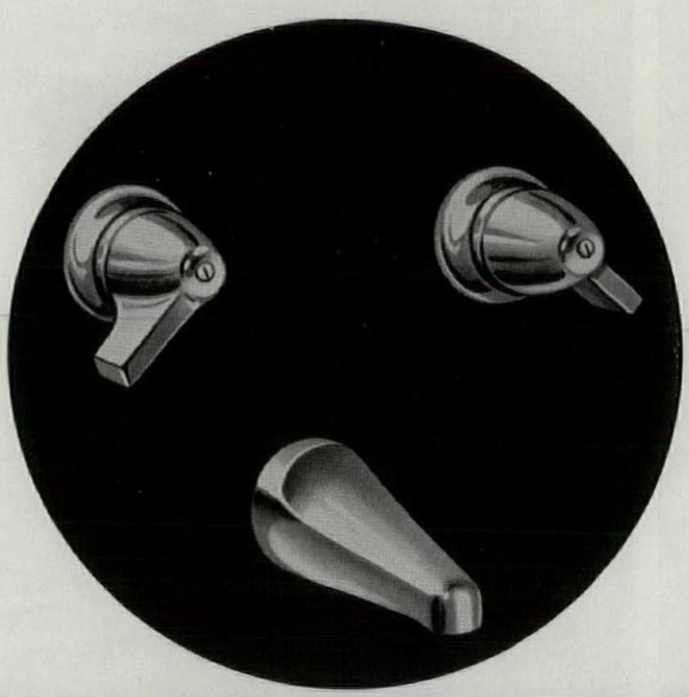

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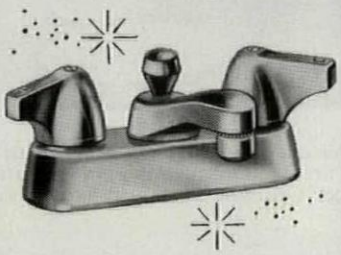
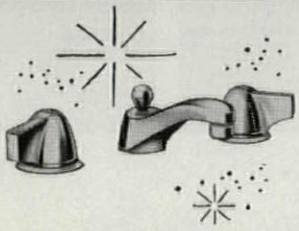
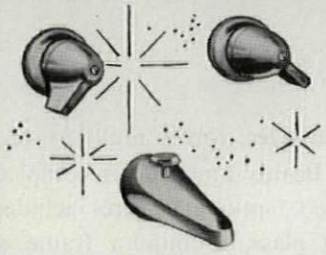


New Eljer center-set lavatory fitting.



New Eljer combination lavatory fitting.

New Eljer deck-type sink fitting.



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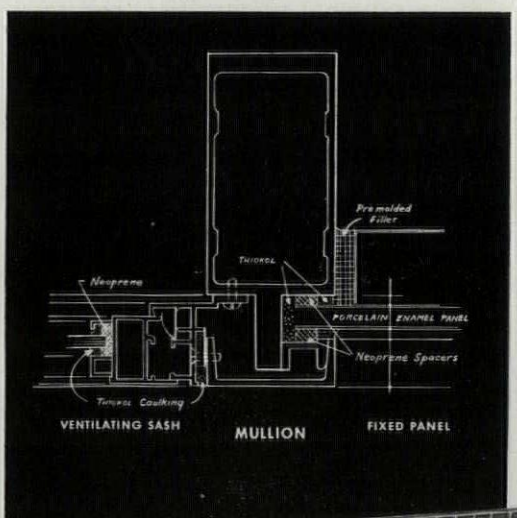
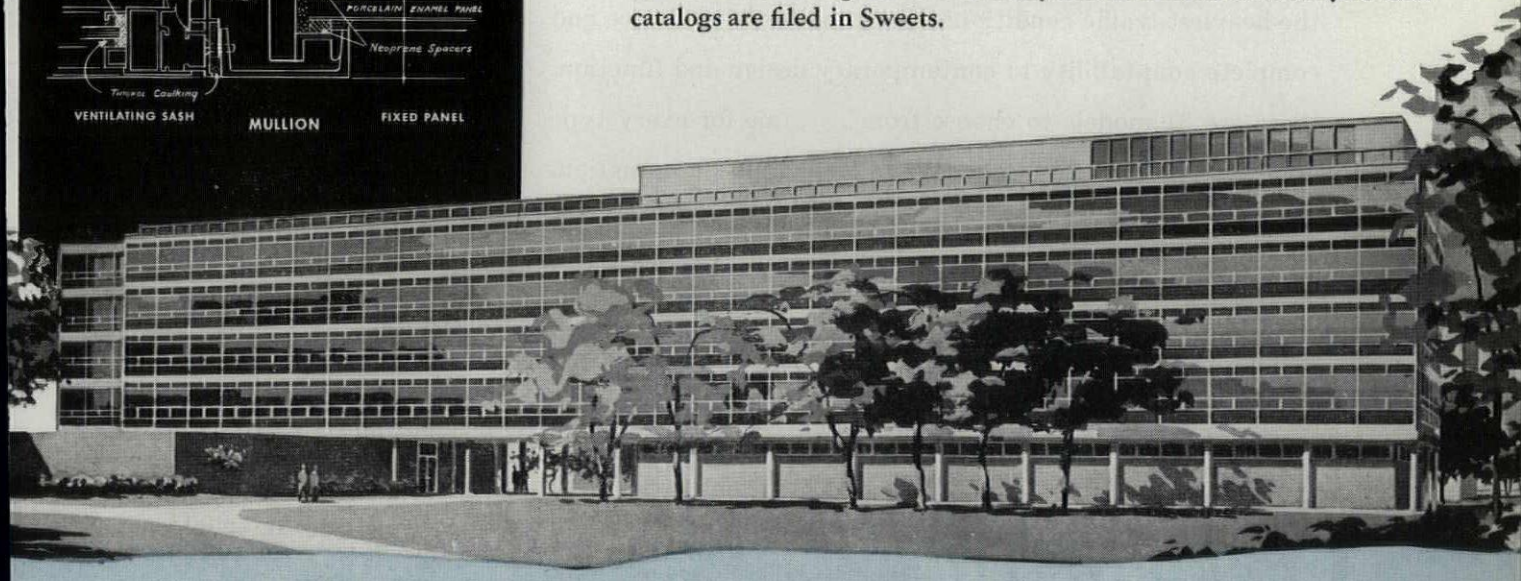
Architects: Skidmore, Owings & Merrill
Contractor: George A. Fuller Co.





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reviews

(Continued from page 224)

sibly do good by engaging the attention of a few sympathetic readers. For, in *The Nature of Cities*, Professor Hilberseimer carries into much further detail the sketch plans for Chicago which he previously published in *The New City*, updating them, perhaps, but apparently having learned nothing from the criticisms that had been made of them a decade ago. He blandly applies the same drastic conversion technique to St. Paul, Washington, and other large cities, as well as to selected medium- and smaller-sized cities such as Elkhorn, Wisconsin, and Rockford, Illinois. It is difficult to understand why the public-relations department of the Illinois Institute of Technology, where Professor Hilberseimer directs the teaching of planning, should think that these far-fetched schemes for Chicago and other existing communities, had to be featured as the selling-point of the new book in the release which they circulated on publication of *The Nature of Cities*. The Chicago plan, even as abstracted in the release, must inevitably be described as "wacky," "long-haired," or, at best, as "star-gazing" by those who go no further than the release or the dust jacket; or even by those who read only that section of the book itself.

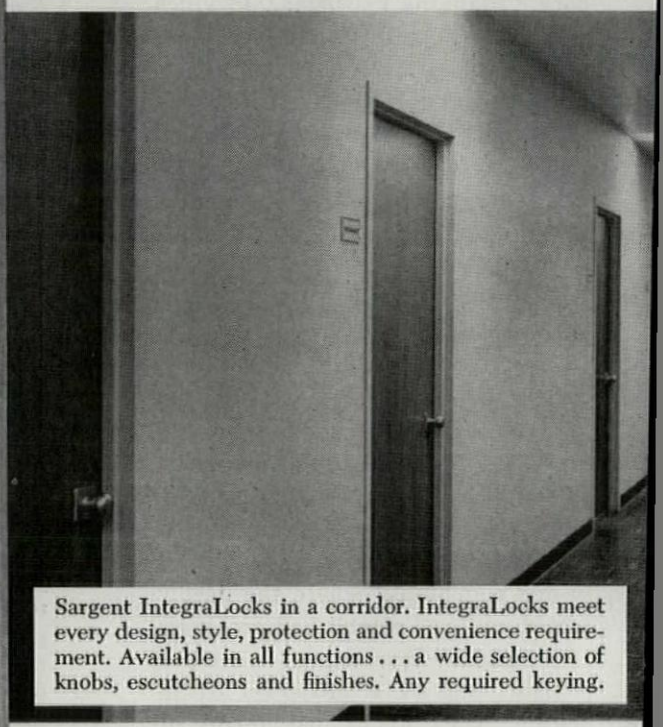
To single out for attention his Chicago scheme, therefore, does a distinct disservice to Professor Hilberseimer, since the book is really a great deal more than that. Divided into three main sections, the first two—"Origin, Growth and Decline" (of cities) and "Pattern and Form" —constitute an excellent, well-documented and illustrated history of city planning. This is a mine of information, full of ideas, and a critical review of urbanism through the ages as seen by an enlightened 20th Century mind. The range is enormous, the illustrations, many taken from old engravings, plans and photographs, are unusual and pro-

vocative. (One could wish, however, that recent photographs, wherever used, were more effective as pictures: dramatic compositions like those of G. E. Kidder Smith, for example, instead of being merely symbols or keys, so to speak, whereby the reader can recall scenes already familiar to him and to which he must then apply further mental effort to relate them to the argument of the text.)

It is in the third section of the book, "Planning Problems," in which the present state of our cities is examined and his ten-year-old theories re-expounded, that Professor Hilberseimer goes sadly astray. It is really too bad, since his basic analysis is correct, his design technique is firm, and his means of expression is convincing; but like so many of the gifted Europeans who have settled here in the last two decades to teach or to practice, he fails to come to grips with the basic financial political, and social realities of the present day. These realities apply not only to the North American scene, but to the European and to the South American as well—in fact to any community where the deeply rooted and well established processes of western democratic financial, political, and social processes are in motion. Only under new forms of government, building on untouched terrain (as are emerging in Asia, Asia Minor, and in Africa), could the beautiful, serene, and formal concepts of Professor Hilberseimer be carried to fruition. Prof. Alexander Klein, imbued with similar idealistic didacticism, when laying out our new towns on the deserts of Israel, may be able to prescribe successfully patterns not unlike Professor Hilberseimer's. They would, however, be neither applicable nor acceptable in the reconstruction of European, and the "renewal" of American, cities.

(Continued on page 238)

SARGENT...



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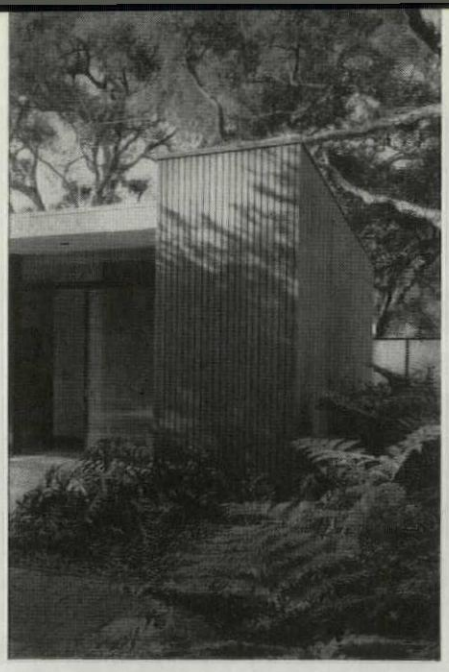

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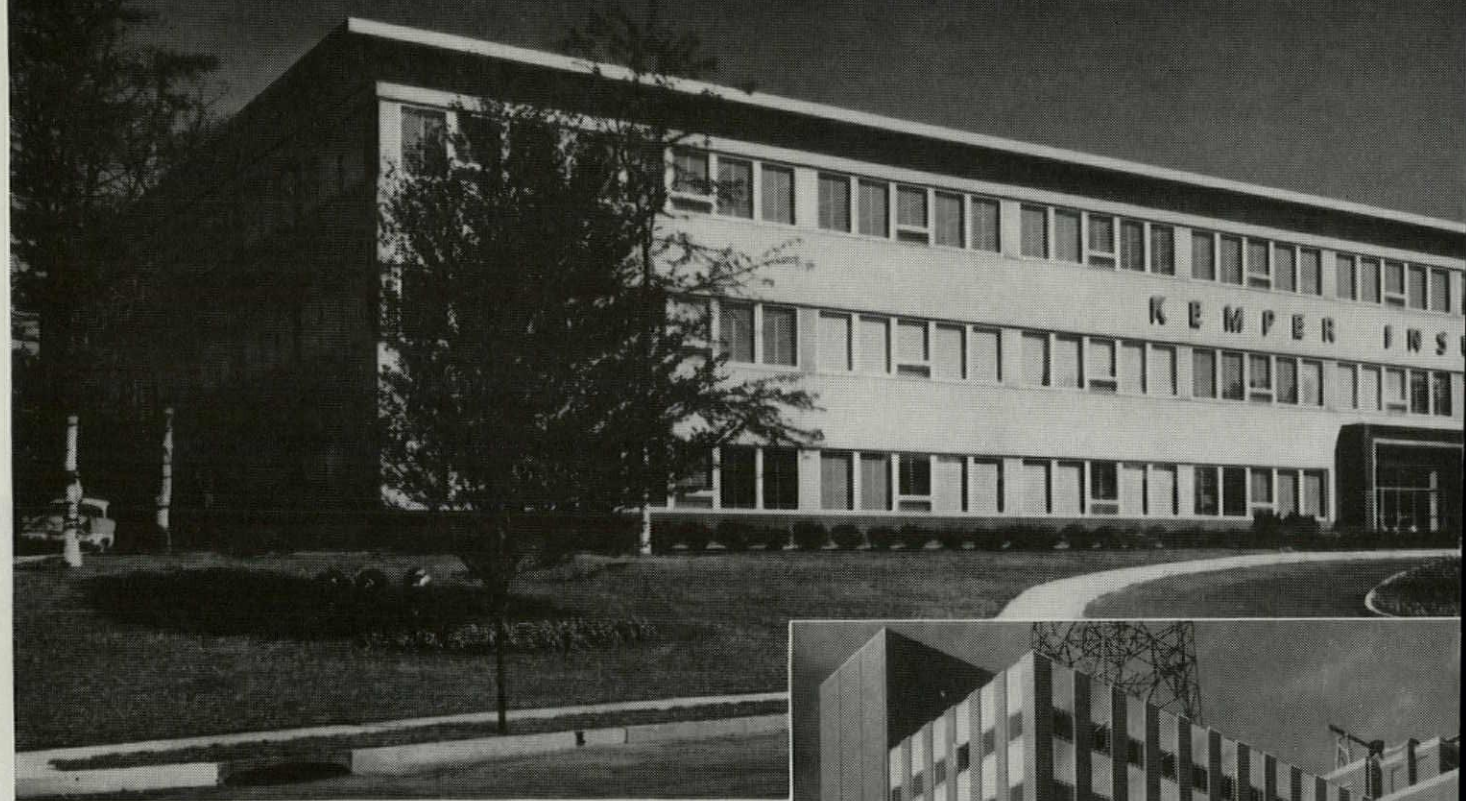

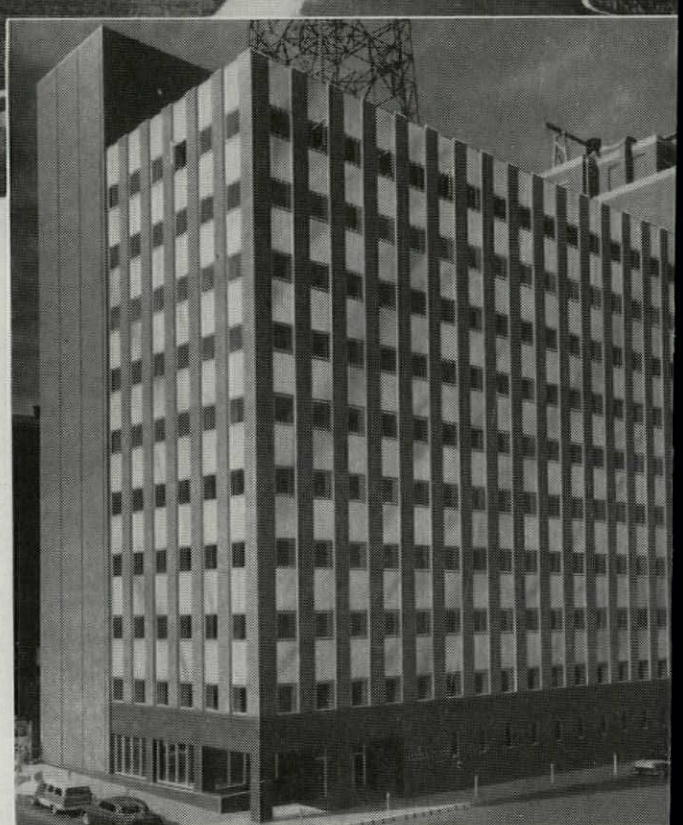

Lumbermens Mutual Casualty Company Building, Summit, N. J. *(Lumbermens Mutual Casualty Company, a division of Kemper Insurance)*

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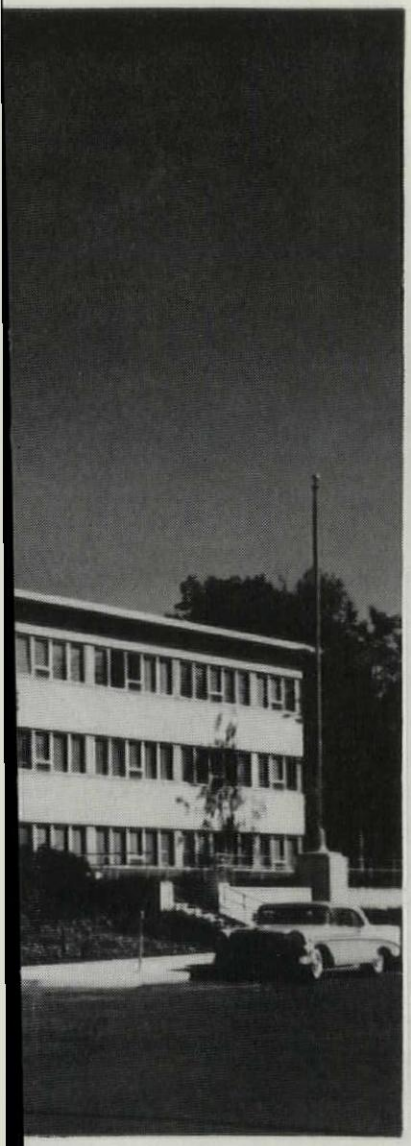
Erector:
David Architectural Iron Works, Chicago

Architects:
Tinsley, Higgins, Lighter & Lyon, Des Moines

REYNOLDS



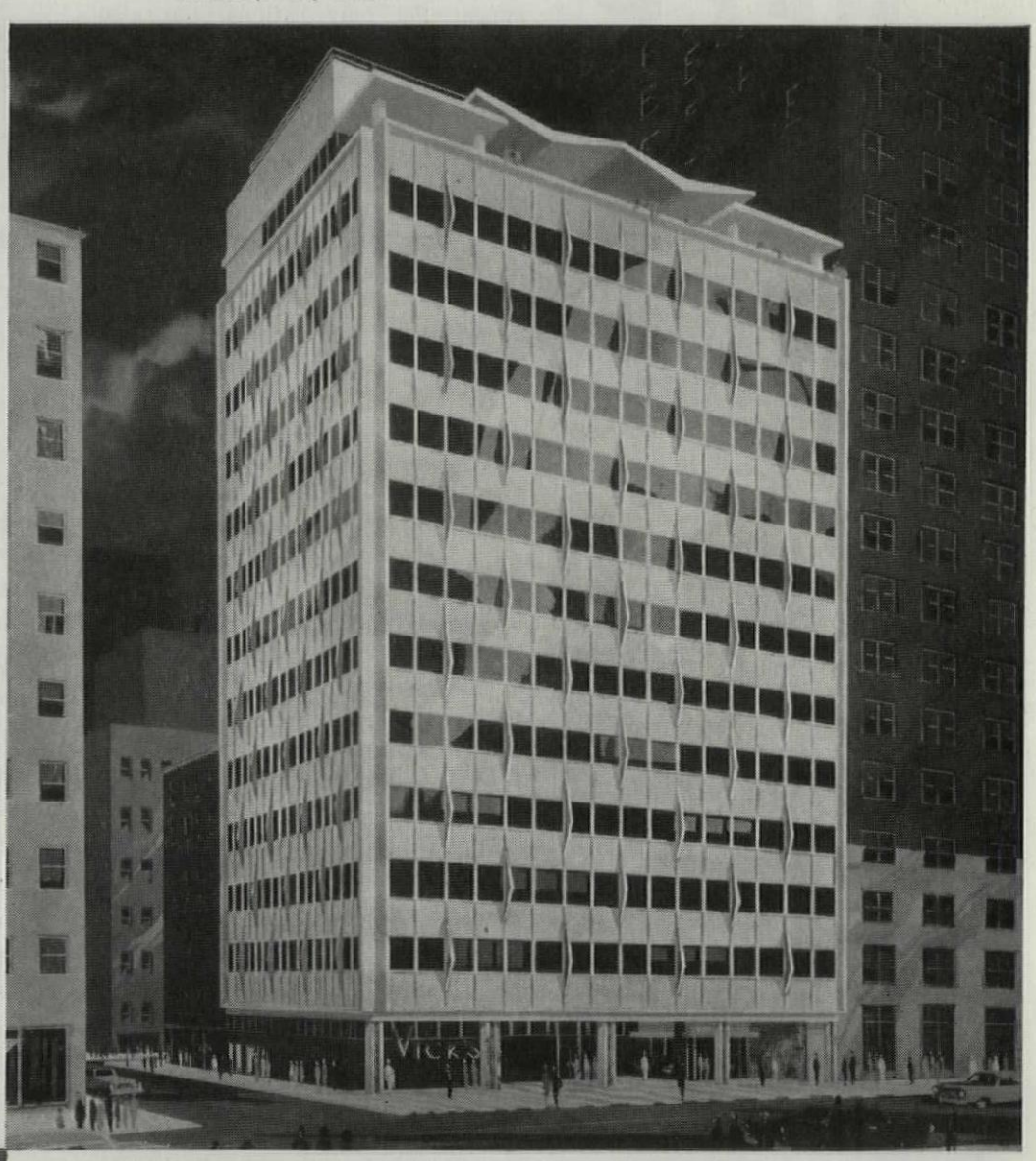
The Vaughn Building, Dallas, Texas

Owner:
The Spartan National Life Insurance Co., Jack C. Vaughn, President

Architect-Engineer:
Hedrick, Stanley & Morey, Dallas

General Contractor:
The Henry C. Beck Co., Dallas

Integrated Wall System Fabricator-Erector:
Texlite, Inc., Dallas



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ALUMINUM

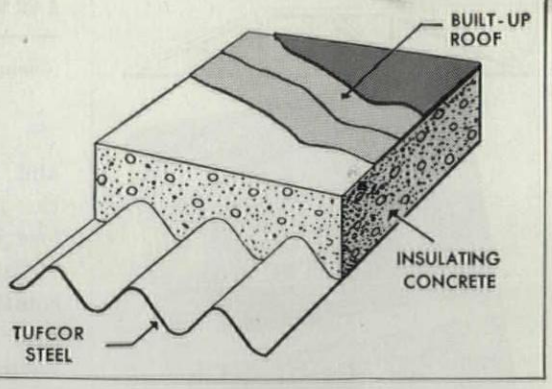
reviews

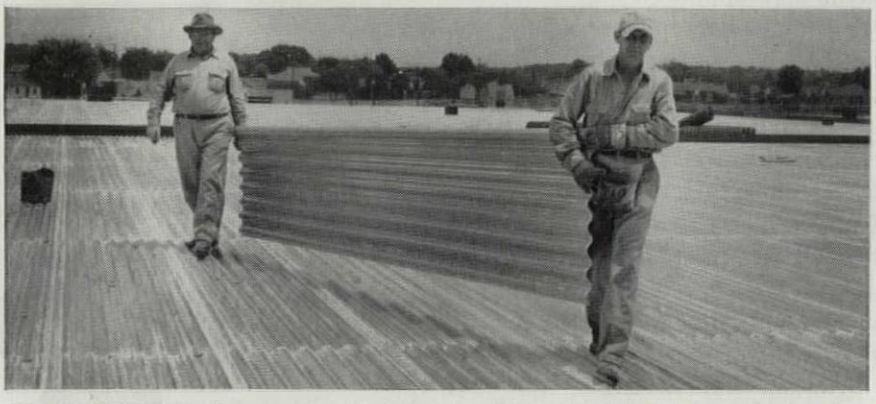
(Continued from page 231)

Applied to some far-off setting, or regarded as pure abstractions, unrelated to the here and now, Professor Hilberseimer's urban patterns appear not only rational but also fascinating and delightful. I regret, therefore, that I must bring in a report which may seem unappreciative of a work of such obviously excellent intentions and of such brilliant, imaginative ingenuity. I cannot conclude without making some comparisons with personalities, living and dead. Le Corbusier's *Ville Radieuse* gathers dust in Algiers as it does in Paris; and the late Martin Wagner's "solution" for Beacon Hill, like the Goodman brothers' for Manhattan, can never be taken seriously. The late Eliel Saarinen and Richard Neutra, on the other hand, have written books which to many of us seem vague and far-fetched if taken literally as proposals for new ways of living, but we know that the dynamic constructions each of them has created in the course of his architectural practice are such positive contributions to our USAnian scene that much can be forgiven them in the way of theorizing when they sit down to write. The late Werner Hegemann, who was not an architect or planner by profession but an historian and a journalist, gave us many works that are unsurpassed, both in English and in German, on architecture, urbanism, and civic design (and I compliment Professor Hilberseimer by comparing the historical parts of his book with Hegemann's *Civic Art*). But at the same time, Hegemann participated actively, with his feet right down on the ground, in the day-by-day fight for better housing and more beautiful cities. Working closely with civic groups, attending committee hearings and official sessions, he never disdained to talk the language and understand the motivations of the bureaucrat, the politician, the realtor,

(Continued on page 242)

TUFCOR® offers permanent firesafe roof construction at low cost





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EFFECTIVE INSULATION. Because insulating concrete is inert, it is one of the most permanent, desirable types of roof insulation. Thickness of concrete fill placed on Tufcor can be varied to obtain desired insulation.

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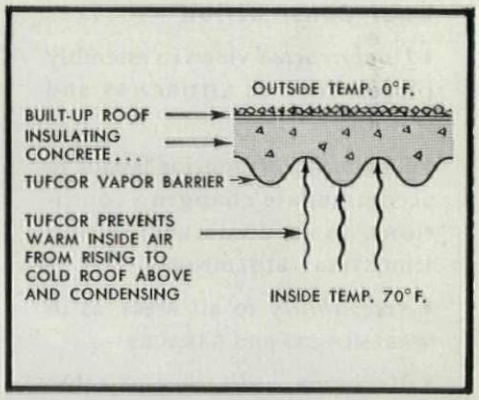

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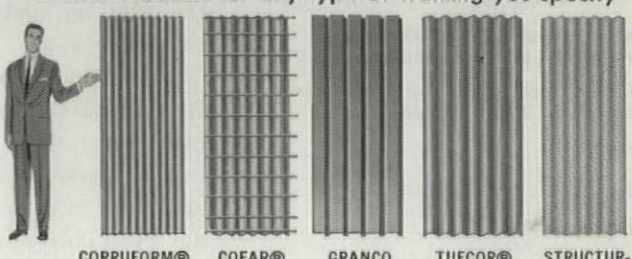


reviews

(Continued from page 238)

and the banker, to say nothing of the architect who cannot afford to lose his client!

Taking this approach, far-sighted solutions offered in the technical field of urbanism by a teacher or a writer stand a better chance of being both applicable and acceptable. We hope Professor Hilberseimer will be with us for many years to come and that his next book will contribute as much to the solutions of current problems as *The Nature of Cities* adds to the literature of urbanistic history. We hope, too, that he will join with the rank and file of practicing civic designers who believe that "the art of the possible" is a goal worth their efforts.

ROBERT C. WEINBERG

color in industry

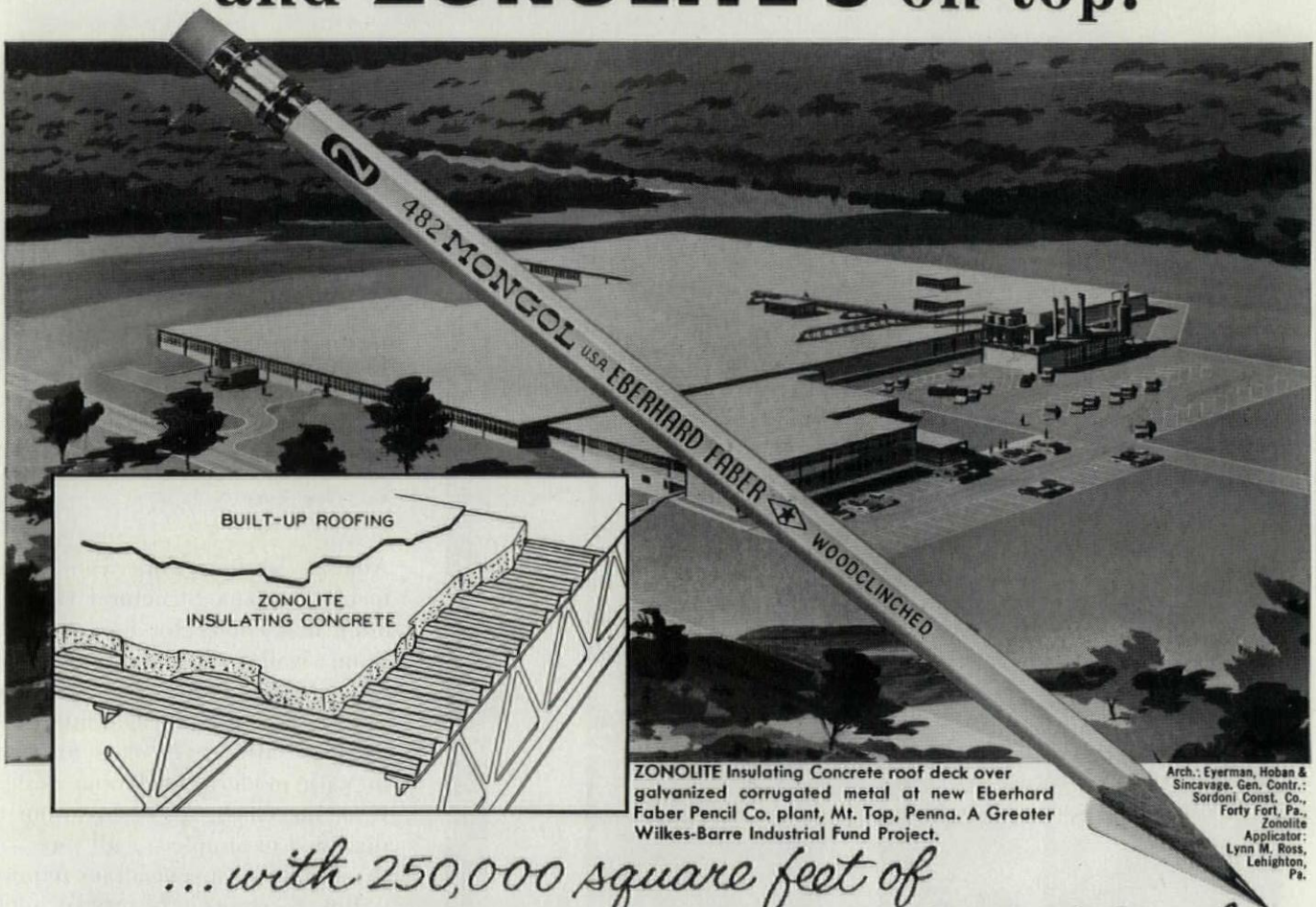
Selling Color to People. *Faber Birren. University Books, Inc., 404 Fourth Ave., New York, N. Y., 1956. 219 pp., illus., $7.50*

One of the outstanding color consultants in the country, the author has written fourteen books on color as well as more than 300 articles on the subject. Here, in his fifteenth book, he discusses the importance of color economically. He feels — and rightly so—that color is becoming "big business" in the United States; and as its power and influence increase, there is a vital need for a better understanding of it and just how it can be used for profit. Color has become one of the chief wants in the life of the American public and thus constitutes an important influence in the advertising, the selling, the styling, and the packaging of consumer goods.

In his approach to the subject, Birren wisely avoids the commonplace subject of color theory and, rather, makes a direct and dynamic approach to color as it applies to industry. This approach necessitates

(Continued on page 248)

EBERHARD FABER sharpens pencil and ZONOLITE'S on top!



ZONOLITE Insulating Concrete roof deck over galvanized corrugated metal at new Eberhard Faber Pencil Co. plant, Mt. Top, Penna. A Greater Wilkes-Barre Industrial Fund Project.

Arch.: Eyerman, Hoban & Sincavage. Gen. Contr.: Sordoni Const. Co., Forty Fort, Pa., Zonolite Applicator: Lynn M. Ross, Lehighton, Pa.

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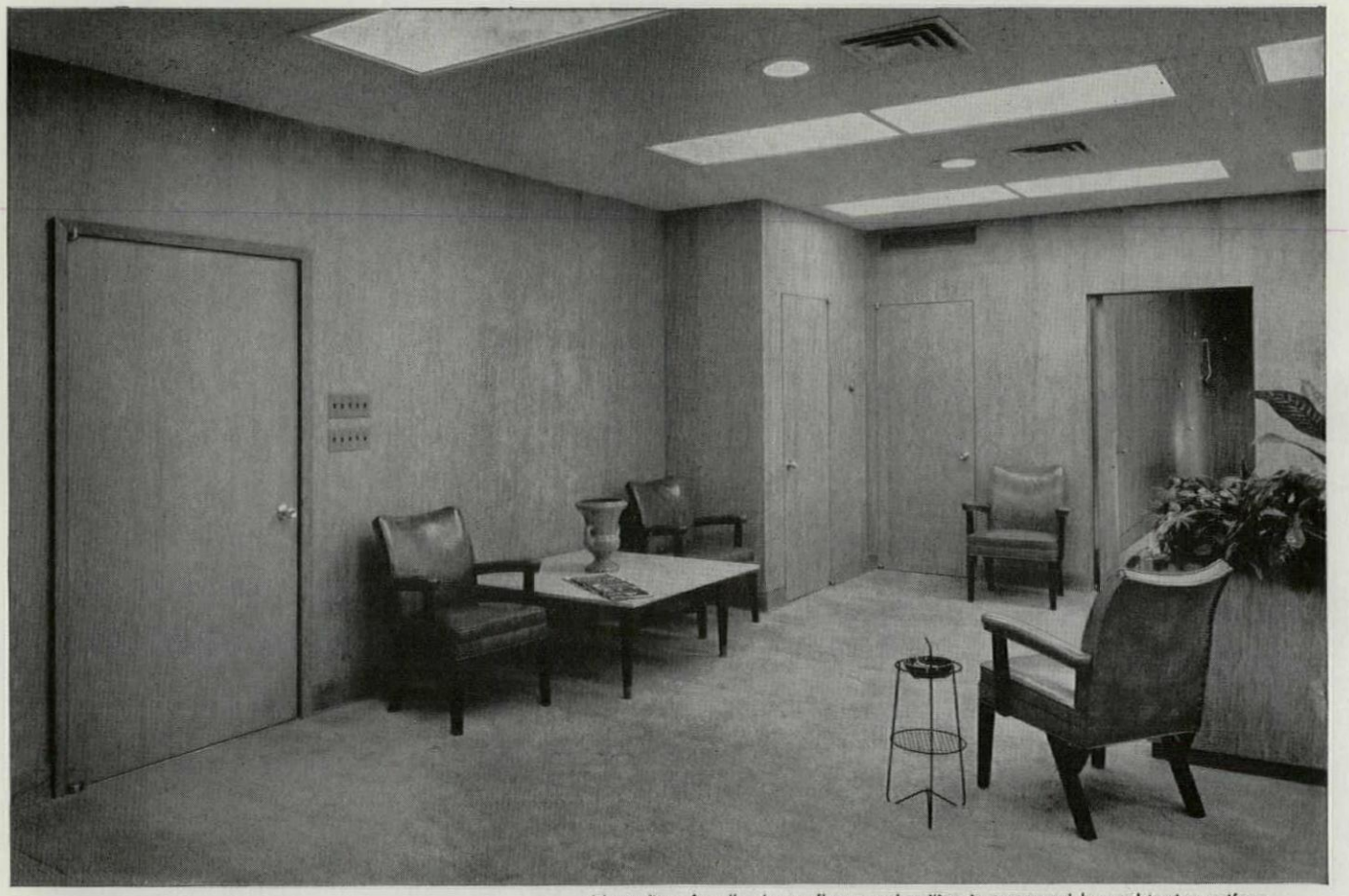

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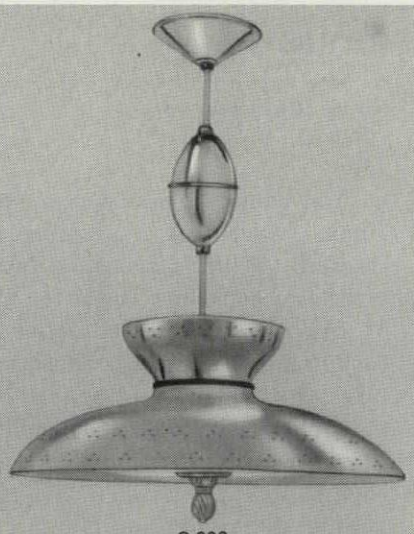

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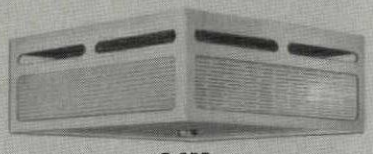

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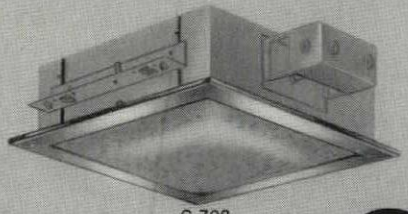

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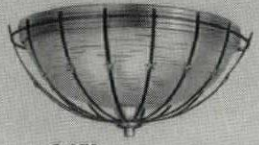

G 273

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reviews

(Continued from page 242)

a first-hand knowledge of mass human psychology, marketing, and research. Being responsible for the styling of consumer goods for many of the nation's top industries and conducting one of the foremost color research agencies in the field, the author possesses the special skill and experience in supplying that knowledge.

This is throughout an especially useful book since it answers so many of the problems that anyone using color in a commercial way is confronted with. It has been written for business executives, sales managers and salesmen, advertising men and research specialists. No doubt many people in those categories realize and appreciate the value of color as a selling tool today, but this authoritative work affords worthwhile and practical guidance on many of the fine points of color use. Such guidance will help industry in serving the public better and surely business can profit accordingly.

Of special interest in this well designed and illustrated book is the chapter on color television because of its potentialities on the current business scene. The author has devoted special research to this use of color, not from the technical point of view of the process, but from the human side. FRANK A. WRENSCH

notices

new associates

RAYMOND W. SIPE, Architect, has become an Associate of RICHARD H. PETERMAN, Architect, 35 W. Market St., Westchester, Pa.

GORDON W. NORRIS, Architect, is now an Associate of JENSEN & MILLS, Architects, 308 S. Tacoma Ave., Tacoma, Wash.

(Continued on page 254)

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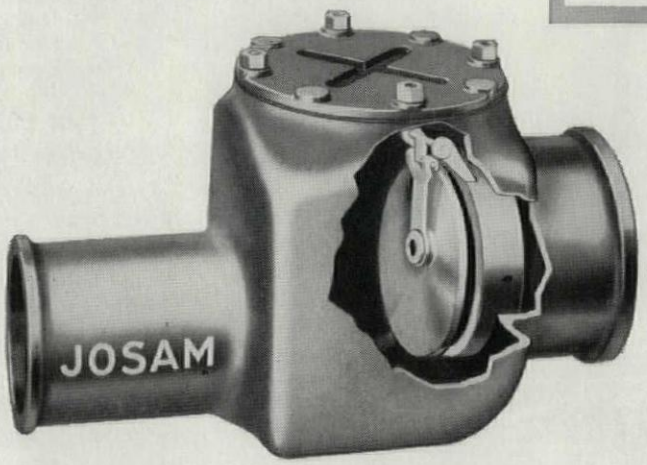

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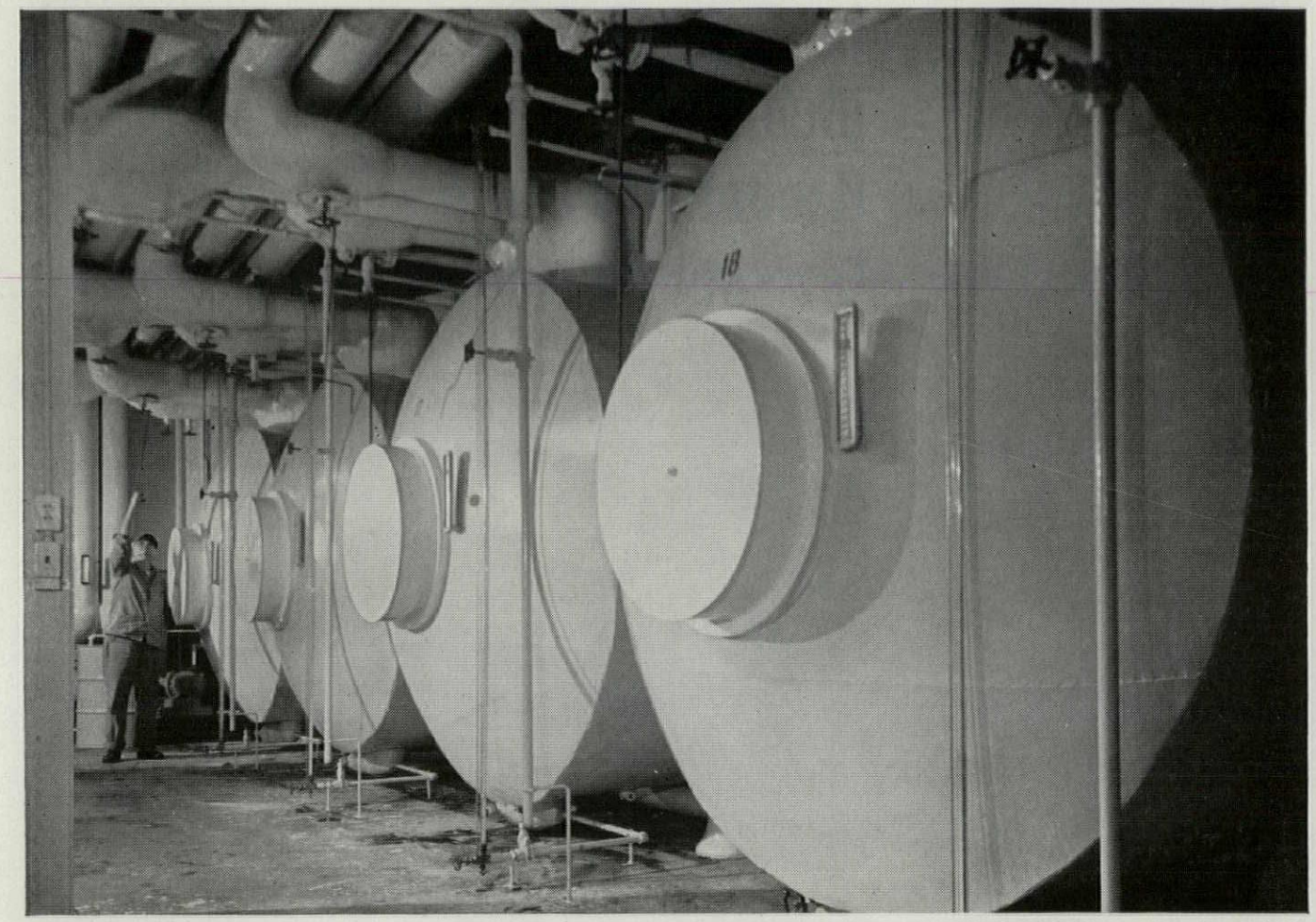


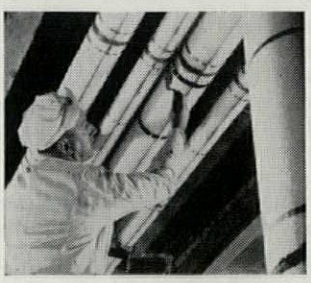
Styrofoam installed by A. B. Schreckinger and Sons of New York City.

For insulation: Styrofoam brings best combination of properties

COMPARE STYROFOAM	INSULATIONS			
	STYROFOAM	A	B	C
Low "K" factor	X		X	X
Superior Water Resistance	X	X		
High Compressive Strength	X	X		X
Light Weight	X		X	
Superior Resistance to rot and vermin	X	X		
Easy handling and fabrication	X			
Low cost installation	X		X	
Lowest cost per year service	X			

Permanent "K" factor average, 0.25. Avg. density, 1.8 lbs. per cu. ft. No odor. No food value. Pleasant to work with. Fabricates with common tools. Does not crumble or settle.

Here's what Best Foods learned from experience:



The makers of Hellmann's Mayonnaise first used Styrofoam* (a Dow plastic foam) in 1952. That was to insulate egg-storage rooms. The results have been so satisfactory that when Best Foods planned a new unit for making salad oil, Styrofoam was specified for 40° insulation in the winterizing cells (see illustration).

When you specify easy-to-install Styrofoam for low-temperature structures or refrigerated equipment, you are ahead with the unique combination of superior properties found only in Styrofoam (see chart). For complete information, write THE DOW CHEMICAL COMPANY, Midland, Michigan—Plastics Sales Dept. PL1714M.

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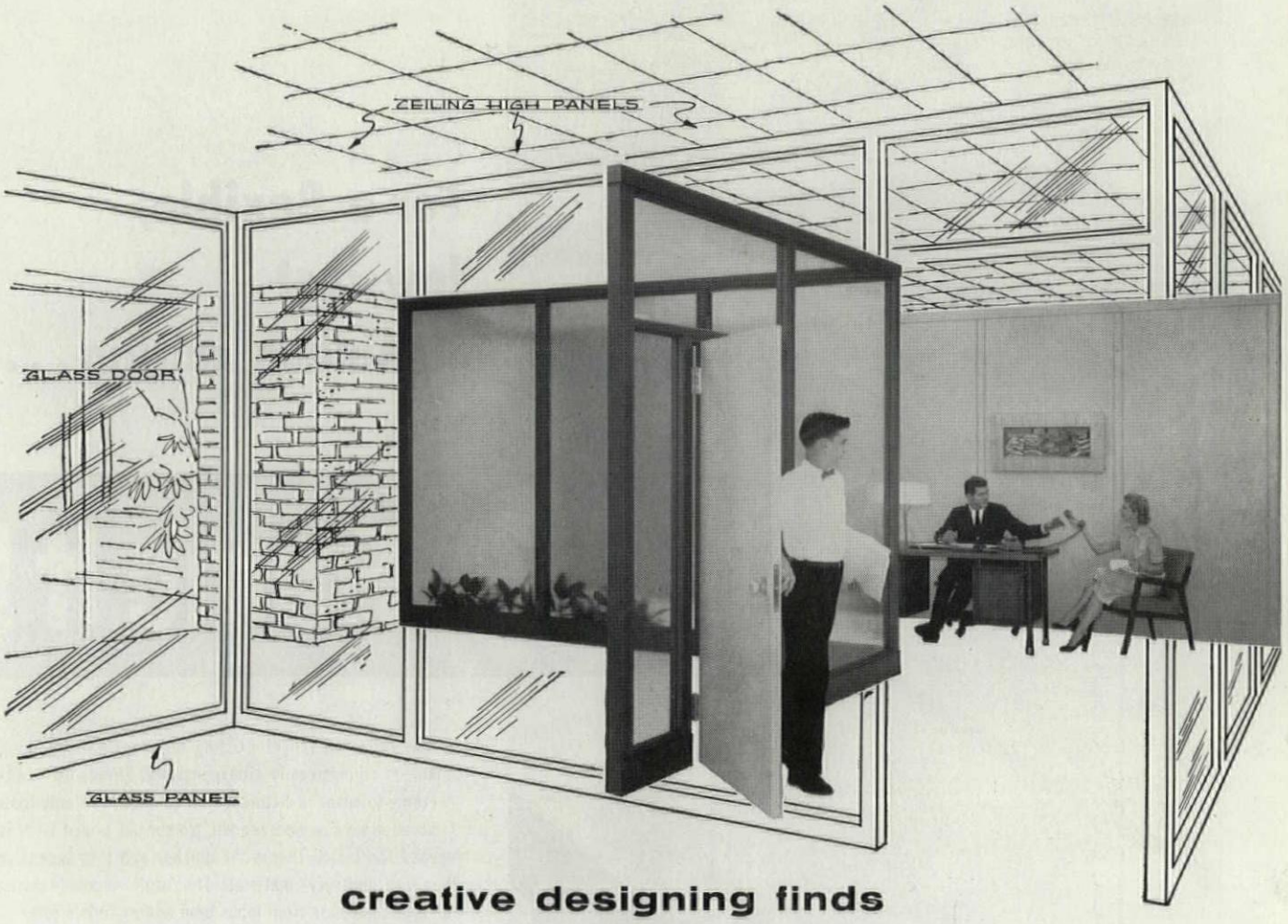

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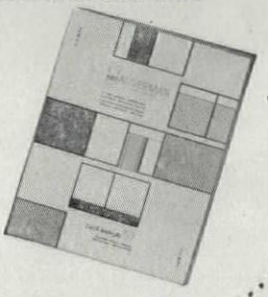

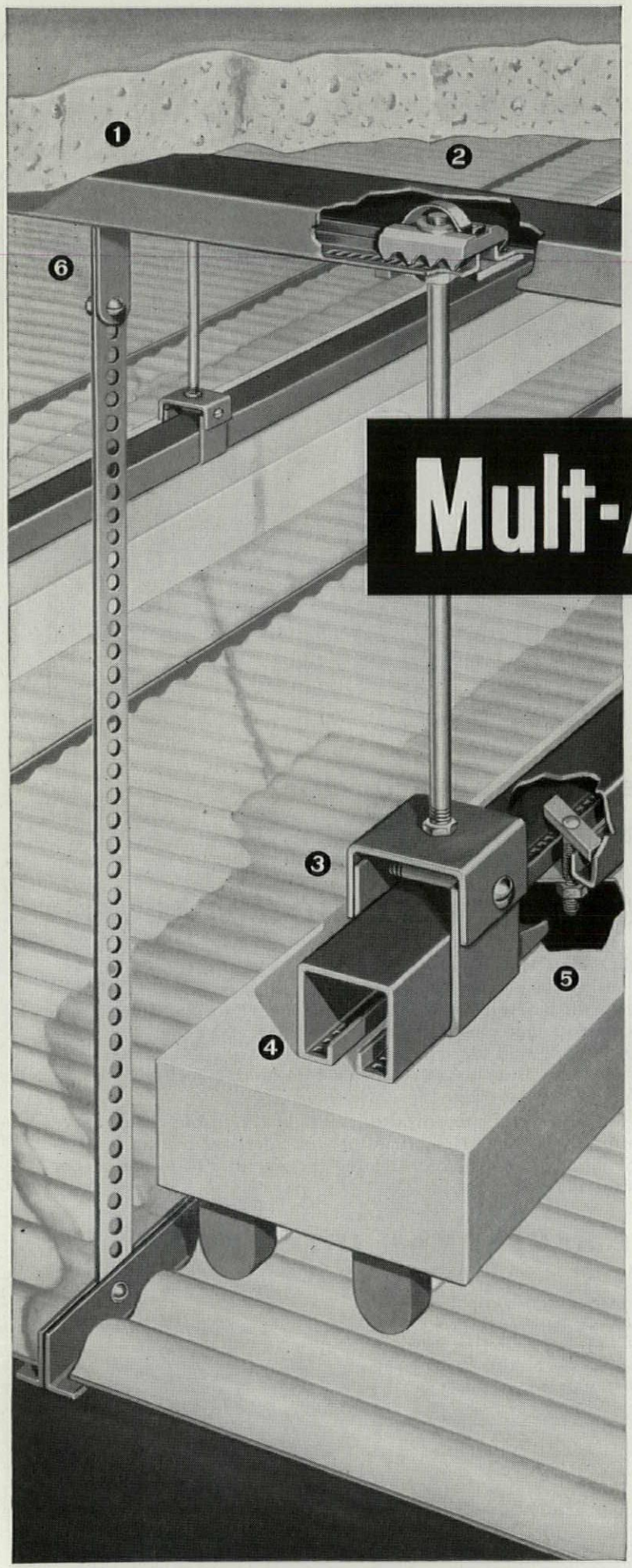

For a flexible, low-cost luminous ceiling...

Mult-A-Frame It!

Now—you can relight existing buildings with modern, luminous ceilings easily—inexpensively. Simply use Mult-A-Frame to suspend fixtures from ceilings. The only tools required are a saw and wrench. No special skilled labor is needed. An installation is far quicker and less expensive than with "ordinary" materials. The result—a double saving for your customers from labor time and materials cost.

Here's how it's done: **1** Attach small Mult-A-Frame channel (No. 3161) to old ceiling with power actuated fastener toggle bolts. **2** Locate Mult-A-Frame spring nut (No. FX 200) in desired position. Insert hanger rod through fitting (No. F 1004) and tighten with jamb nut. Serrations and keyed fittings hold firmly until you're ready for final tightening. Use any standard conduit, or hanger rod, as drop to fixture. **3** The Mult-A-Frame fitting (No. FX 43) clamps around **4** 1⅝ sq. channel (No. 6161) and attaches to the fixture **5** using T-bolt (No. MF-1574). Fixture supports can be placed at any interval both at ceiling and atop the fixture for complete flexibility of installation. **6** Next step is to hang ceiling from Mult-A-Frame channel with Mult-A-Frame fitting (No. FX 75). Any strap, rod, or wires can be used with this fitting for ceiling support.

For complete information on Mult-A-Frame's many uses in the electrical field, write today for your copy of the Electrical-Mechanical Catalog.

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A-3

The J-M Sanacoustic ceiling in the Ohio Fuel Company office in Columbus, Ohio, effectively muffles the noise of business machines. Architects: Karlsberger, McClellan & Gallogly.

Busy—but not noisy...

because Johns-Manville Acoustical Panels reduce disturbing noise

In new buildings or old, business, industry and institutions depend on modern acoustical materials to achieve maximum efficiency. Johns-Manville offers a choice of highly efficient sound-absorbing materials for every need:

J-M Sanacoustic® Panels—perforated metal panels backed with a fireproof, highly sound-absorbent element. The sanitary, white baked-enamel finish is easy to clean, may be repainted.

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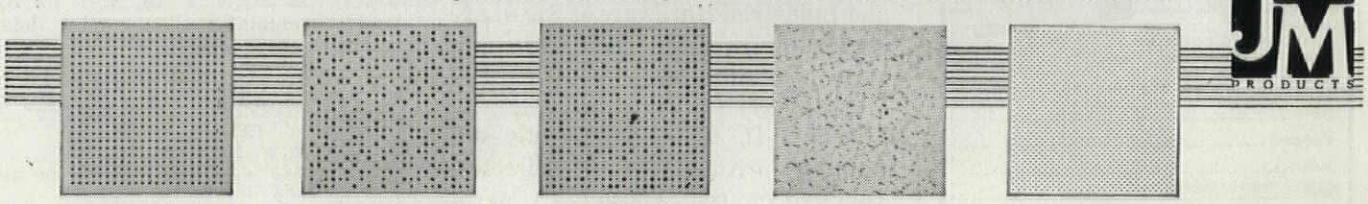

J-M Fibretone Uniform-Drilled | J-M Fibretone Random-Drilled | J-M Fibretone Variety-Drilled | J-M Permacoustic | J-M Sanacoustic

notices

(Continued from page 248)

new associates

RICHARD BOUILLON recently became an Associate of DECKER, CHRISTENSON & KITCHIN, Architects-Engineers, 1411 Fourth Avenue Building, Seattle, Wash.

RICHARD T. LESLIE, Architect, is now an Associate of WATTERSON & WATSON, Architects, 174 Mineola Blvd., Mineola, Long Island, N. Y.

p/a congratulates . . .

ROY A. SHIPLEY, WILLIAM A. CROSSAN, HARRY C. PLUMMER, and A. C. FRISK, elected, respectively, Chairman, Vice-Chairman, Secretary, and Treasurer, 1956-57, of STRUCTURAL CLAY PRODUCTS INSTITUTE, Washington, D.C.

F. C. DELORENZO, new Manager, Advertising & Sales Promotion, Commercial and Industrial Air Conditioning Department, GENERAL ELECTRIC, Bloomfield, N. J.

M. C. FAIRFIELD, Sales Manager, Insulite Division, MINNESOTA AND ONTARIO PAPER COMPANY, recently elected President of NATIONAL MINERAL WOOL ASSOCIATION.

E. H. NICHOLS, J. D. KIRKWOOD, and WALTER C. CONGER, respectively appointed Manager of Sales, Industrial Products, Manager of Sales, Steel Joist and Tower Products, and Manager of Sales, Special Projects Department, Truscon Steel Division, REPUBLIC STEEL CORPORATION, Youngstown, Ohio.

ROBERT B. BYRNE, named Manager of House Furnishing, Bright Wire, and Industrial Hardware of STANLEY-JUDD, division of THE STANLEY WORKS, Wallingford, Conn.

WILLIAM D. CRELLEY, recently appointed Advertising Director, OWENS-CORNING FIBERGLAS CORPORATION, Toledo 1, Ohio.

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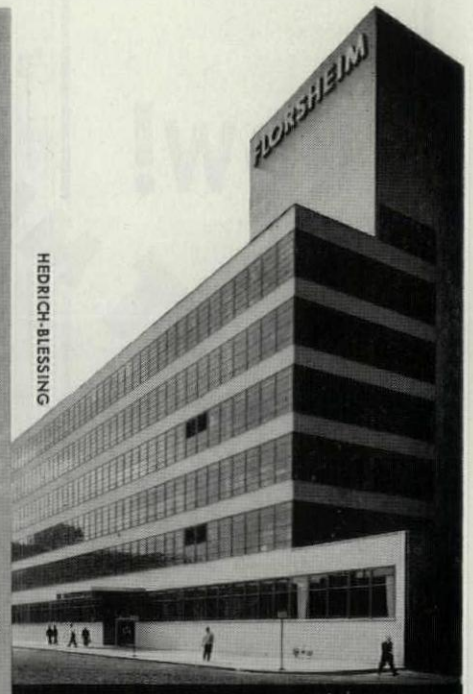
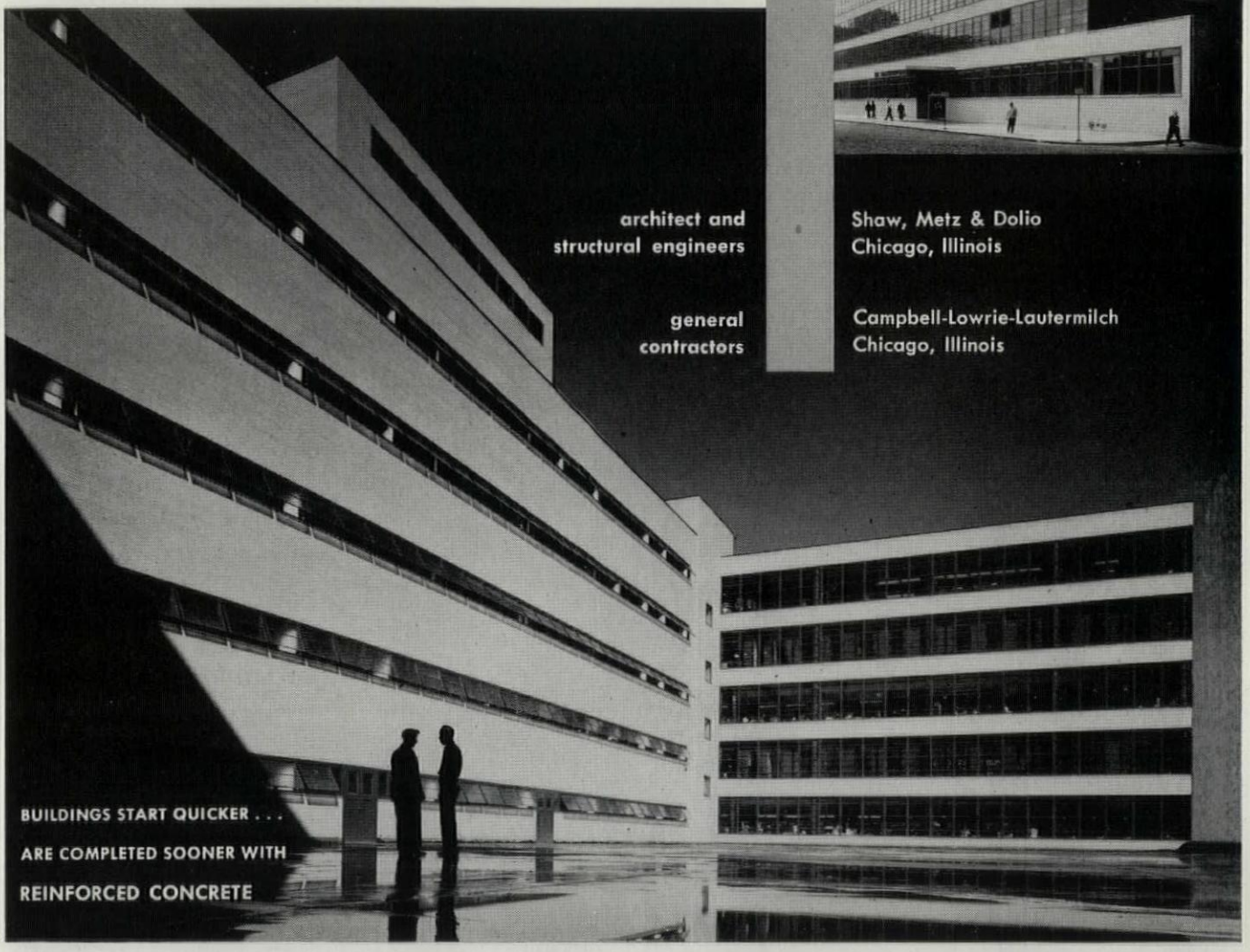
lowers costs

for the new
Florsheim Shoe Company factory
and headquarters in Chicago





architect and structural engineers: Shaw, Metz & Dolio, Chicago, Illinois

general contractors: Campbell-Lowrie-Lautermilch, Chicago, Illinois

Lower over-all costs and design flexibility were the major factors which influenced architects Shaw, Metz & Dolio in their selection of reinforced concrete for the imposing new Florsheim Shoe Company factory and headquarters offices in downtown Chicago.

On many other important industrial projects and buildings from coast to coast, reinforced concrete is also providing better structures for less money. It is a flexible medium, inherently firesafe, and highly resistant to wind, shock, and quake. Furthermore, reinforced concrete buildings start quicker . . . are completed sooner because all necessary materials and labor are readily available from local sources. On your next job, design for beauty plus economy . . . design for reinforced concrete.

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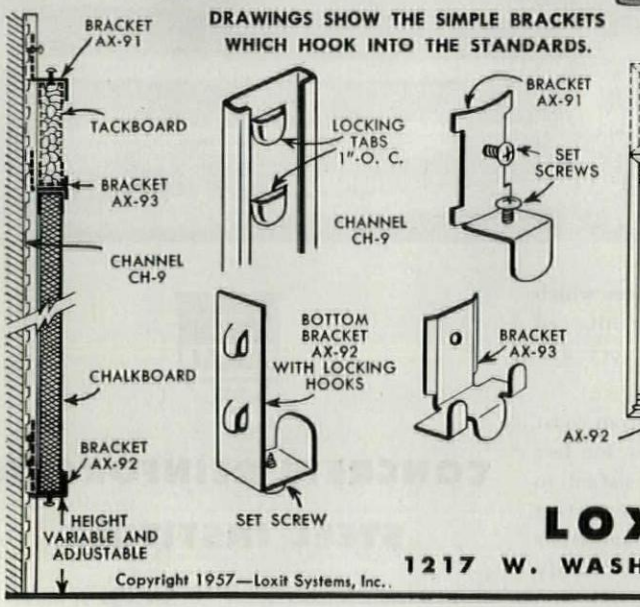
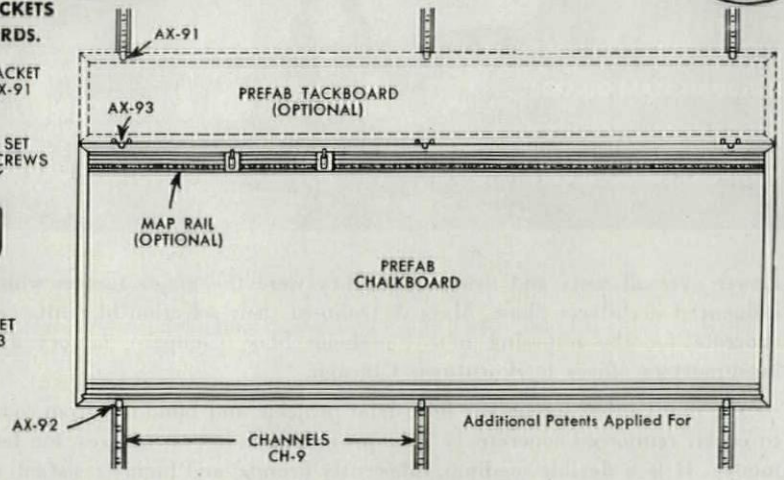


DRAWINGS SHOW THE SIMPLE BRACKETS WHICH HOOK INTO THE STANDARDS.



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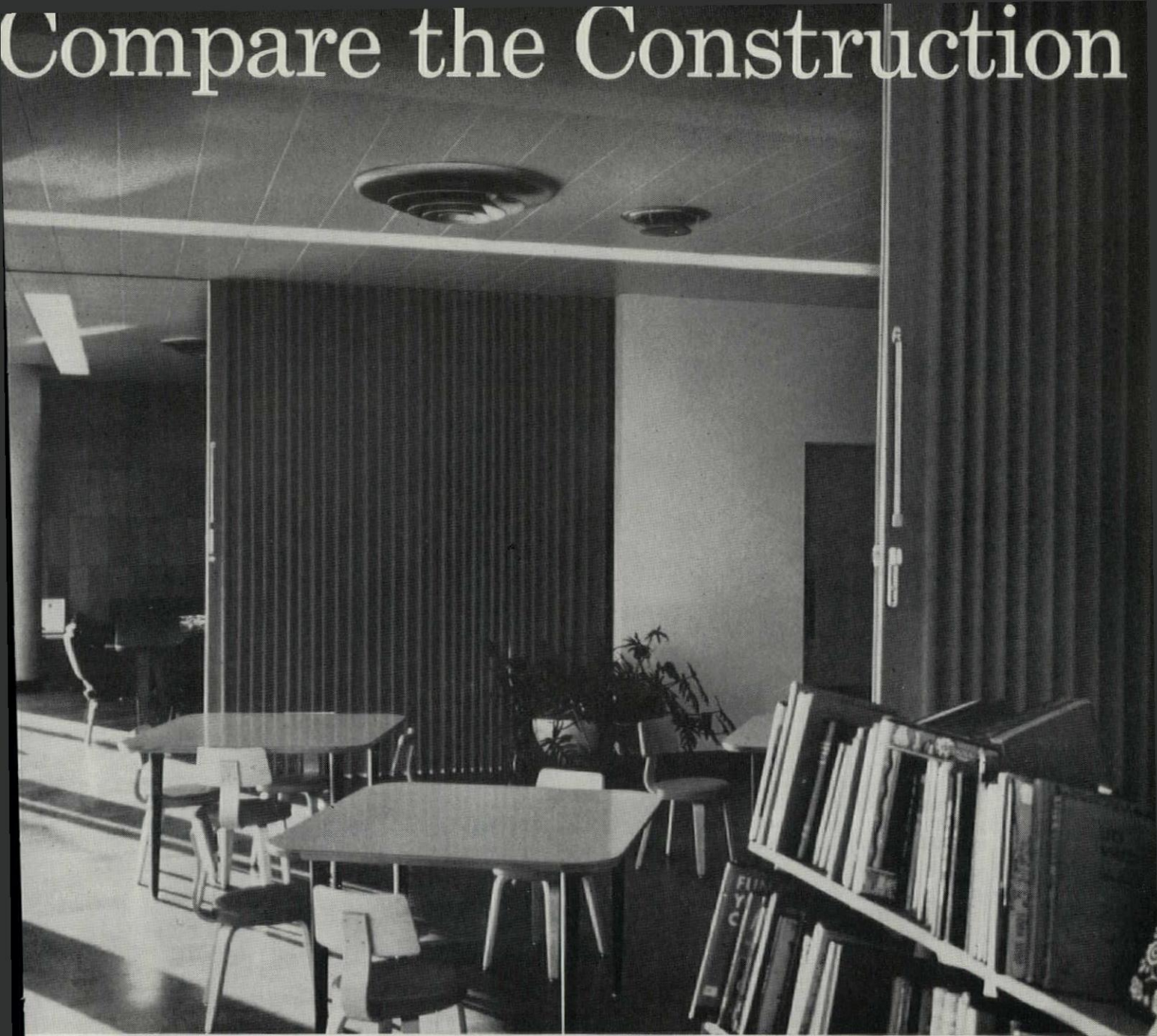

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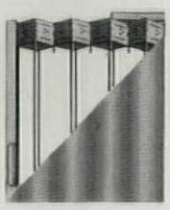

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DOORS

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YOUNGSTOWN "BUCKEYE" CONDUIT

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General Contractor: Manhattan Construction Co., Muskogee, Okla.
Electrical Contractor: Western Division of J. Livingston Co., St. Louis, Mo.
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Fifth and Boston Corporation's strikingly beautiful First National Building at Tulsa, Oklahoma, utilizes quality-controlled Youngstown "Buckeye" Black Enameled Full Weight Rigid Steel Conduit exclusively, for protection of its all-important electrical wiring system.

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Standard-threaded rigid steel conduit is the only wiring system approved today by the National Electrical Code as moisture-, vapor-, dust- and explosion-proof for use in hazardous locations and occupancies.

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Delta Air Lines Ticket Offices, Atlanta, Georgia, showing Acousti-Celotex Celotone* Fissured Mineral Fiber Tile and Acousti-Lux*† Translucent Panels on a suspended ceiling. **Designed by:** Alan L. Ferry. **Acousti-Celotex Contractor:** Acousti Engineering Co.

Effective Lighting + Sound Conditioning + Striking Beauty with Modern Ceiling Treatment

Here is an outstanding example of a "combination" ceiling treatment. It makes this three-way contribution to an interior: 1. Highly-efficient sound conditioning to arrest noise. 2. Soft, diffused lighting. 3. An attractive contribution to the modern decor. Acousti-Celotex Sound Conditioning Tile and Acousti-Lux Translucent Panels provide a compatible blending of light- and sound-conditioning in an integrated ceiling of unusual beauty. From planning and designing stage right through to the job's finish, Acousti-Celotex Distributors will cooperate with you . . . to achieve the utmost in practical and beautiful ceiling integration.

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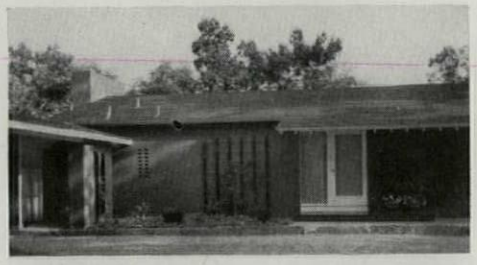

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Same house showing trim painted with Cabot's DOUBLE-WHITE

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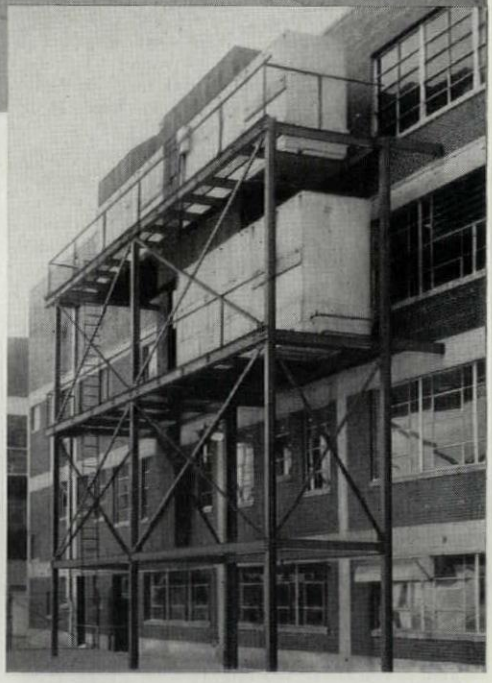

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situations wanted

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ARCHITECT—A.I.A., age 34, family, registered in two eastern states. Now practicing as partner, desires position of responsibility with contemporary firm in new locality. Ten years diversified experience, all phases. Prefer Maryland, Virginia, North Carolina or Florida. Box 476, PROGRESSIVE ARCHITECTURE.

ARCHITECT—29, married, BArch degree, registered by examination in two states. Three years diversified experience in residential, institutional and commercial projects. Client-contractor contacts, design through supervision. Desire immediate relocation with firm doing contemporary work, with opportunity for associateship or partnership. Will consider foreign position. Box 477, PROGRESSIVE ARCHITECTURE.

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ARCHITECTURAL ENGINEER—with 25 years experience in structural design of large industrial and institutional projects in reinforced concrete or steel, seeks similar responsible position with progressive office in the Southwest. Box 479, PROGRESSIVE ARCHITECTURE.

ARCHITECT — registered, 36, 12 years experience handling all phases of work. Desires position as office supervisor and coordinator. Prefer South or West, can arrange interview. Box 480, PROGRESSIVE ARCHITECTURE.

ARCHITECT—studied civil engineering, holds BArch degree, N.C.A.R.B. certificate, nine years experience (five in organization and design) would like to team up with individual or group interested in forming the nucleus of a highly imaginative and aggressive organization. Am willing to relocate anywhere. Box 481, PROGRESSIVE ARCHITECTURE.

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CONTRACTOR: Ewin Engineering Corp., Mobile, Alabama.

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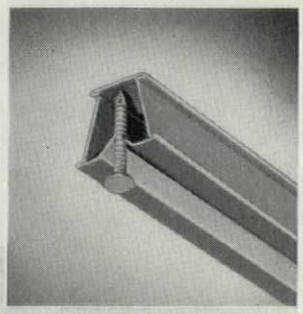

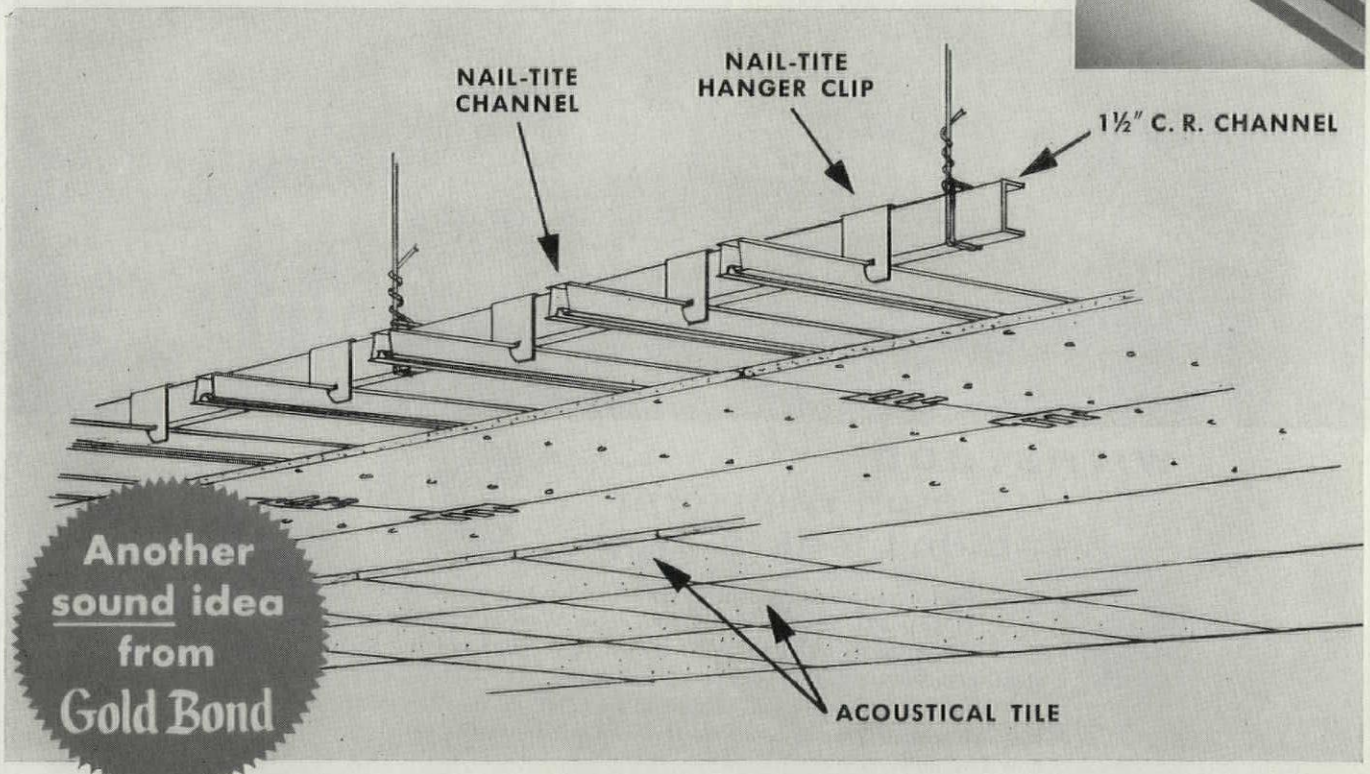

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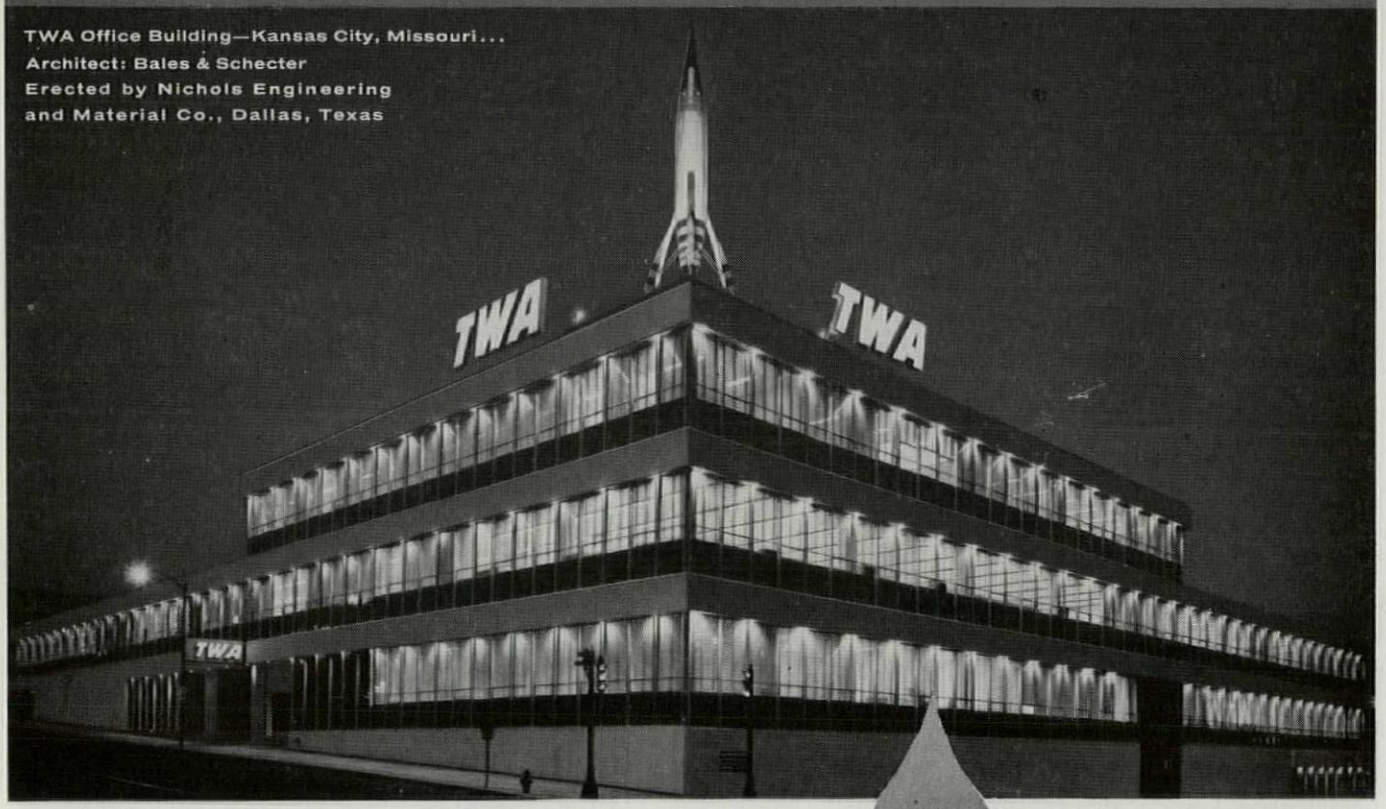

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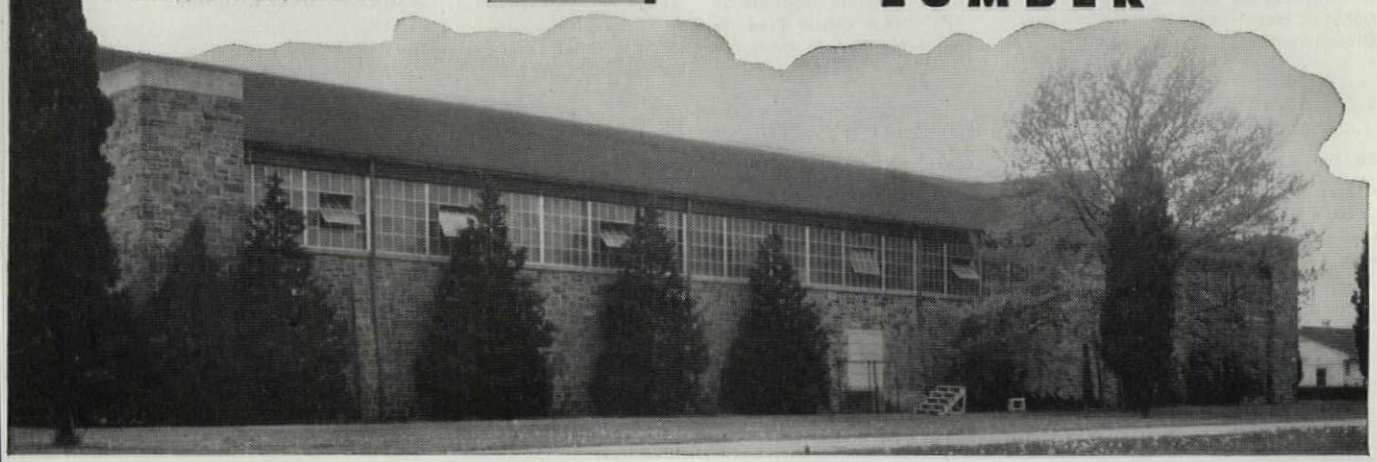

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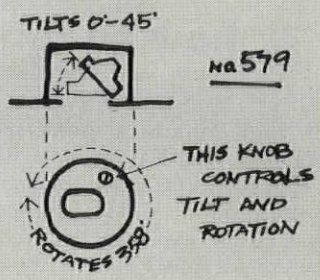

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P.S.

how to look at buildings

Last week end I made a quick trip down to Tampa, Florida, to help the Florida Central AIA Chapter celebrate the hundredth birthday of AIA. In making notes on what one does say about "a new century beckons," I found myself thinking that in the period immediately ahead two attitudes within the profession are going to be important. One is that continuing experiment and serious moves toward further progress must be encouraged. It is certainly clear, as contemporary scientists such as Norbert Wiener keep reminding us, that progress doesn't come automatically; it comes as a conscious move against nature's normal tendency toward disintegration, chaos, and sameness.

The other necessary intra-professional attitude, it seems to me, is one of serious, constructive criticism of current work. Progress through experimentation comes only when results of the experiments are critically evaluated. There must be further moves in this direction (I think the P/A Design Awards Case-Study Seminars are one, and I hope you all agree when they are published) both by the press and by the profession.

•

Many people are thinking—and writing—about the subject of architectural criticism, even though there is little of it carried out. I have just read two manuscripts; both attempt to assist critical understanding of architecture. One, as yet unpublished, is by Robin Boyd, an Australian; the other, just off the press in the United States, is by Bruno Zevi, an Italian.

I find Bruno Zevi's book* (which will be reviewed in our regular REVIEWS pages by someone more competent than I to discuss his historical analyses) both stimulating and disturbing. Stimulating (even, I would say, very important required reading) because of its emphasis on *space* as the definition of architecture—a consideration we are all too apt to depreciate, minimize, or ignore completely in our preoccupation with forms and volumes. Disturbing because his thesis—that interior space, considered in all its aspects of what it is and what it does, is "the most exact definition of architecture that can be given today"—does not entirely check out, even in his own analysis and considering his own selected examples. He has to make too many qualifications, it seems to me, to justify such an absolute basis for a system of interpretation which has to, as he says any interpretation must, "demonstrate its effectiveness in illustrating every work . . ."

After arguing for space as the "protagonist of architecture," Zevi devotes a chapter to problems of representation of space (assuming that an interested person, student or not, cannot *see* every building in which he is interested) and raises some interesting problems regarding indications of the volume and shape and continuity of spatial concepts, by plans, sections, flat elevations. A chapter analyzing, briefly, historic stages of architectural development on the basis of space use, I found most interesting and fresh (although some historians I have discussed the book with quibble at some of his interpretations of historic fact). With his admitted preoccupation with spatial interpretations—the flat statement, in fact, that "no work, lacking interior space, can be considered architecture"—Zevi has to classify some past examples as great sculpture, rather than architecture. The Greek temple, with "an internal space which was never developed creatively, because it had no social function," must be considered, under the architecture-is-interior-space concept, as "a horrible example of non-architecture" and "a giant piece of sculpture," albeit a work of "human genius."

At the other extreme of chronological history, Zevi's thesis needs further elaboration. The contemporary skyscraper is illustrated—presumably as architecture—but there is no attempt to describe it by its definition of interior space—slices of space cut up arbitrarily to answer many tenants' needs. In fact I felt, after the illuminating discussions of Renaissance and Baroque space concepts, that the brief analysis of contemporary treatments of space was quite inadequate. However, the fact that the many trends and subtrends in the current contemporary work are not studied from the space-treatment point of view doesn't mean that this could not be done—or wouldn't be a fascinating study. In fact, Zevi ends his book with a strong argument for a new, complete history of architecture based on this method.

It is the section of the book dealing with various methods of interpreting architecture that most interested me. A study of the literature of criticism leads him to break critical systems into three currently accepted types: those dealing with content (political, scientific, technical, and so on); those which are basically physiological and psychological (symbols, interpretations, empathy); and the formalistic ones (laws, rules, and principles of design). All of them, Zevi feels, neglect space, even though a physio-psychologist such as Geoffrey Scott (whom he quotes at great length) did *discuss* space, and even avowed that "To enclose a space is the object of building; when we build, we do but detach a convenient quantity of space, seclude it and protect it, and all architecture springs from that necessity."

Zevi carries that conviction to its logical end: "spatial interpretation . . . is a superinterpretation, or, if you wish, an underlying-interpretation." It does not compete with other methods of understanding buildings; it supplements them. "Interpretations of space may be political, social, scientific, technical, physio-psychological, musical and geometrical, or formalistic."

In other words, Zevi's original argument that architecture *is* interior space comes down, finally, to an insistence that space considerations *plus* others must be studied. As a matter of fact, *exterior* space is admitted, in parts of the book devoted to urbanism, to be an important partner with interior space in the evaluation of the space content of a city, and of the part exteriors of buildings play in this larger understanding of architecture in urban design.

To return to my original point that we need better evaluation of experiment and progress, I believe that this book is an important and timely reminder that the volumes and forms which catch our eye are a means rather than an end—that the content of architecture, the purpose of architecture, are the factors that somehow the viewers and users of buildings must be made to appreciate.

Thomas H. Creighton

* Architecture as Space. *Bruno Zevi, Horizon Press, New York, N. Y. 288 pp., illus., $7.50.*