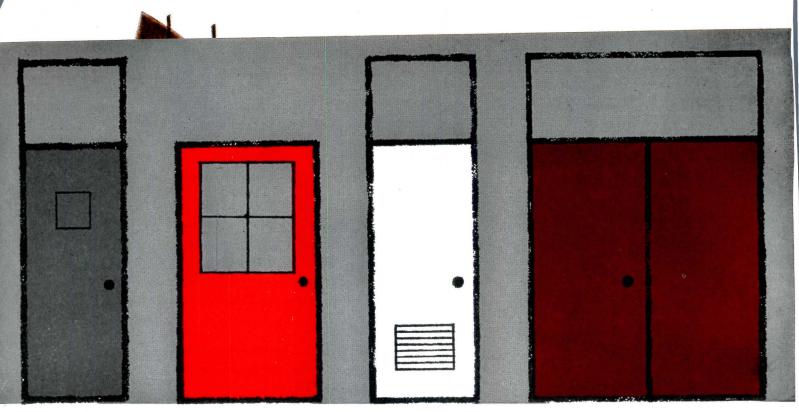


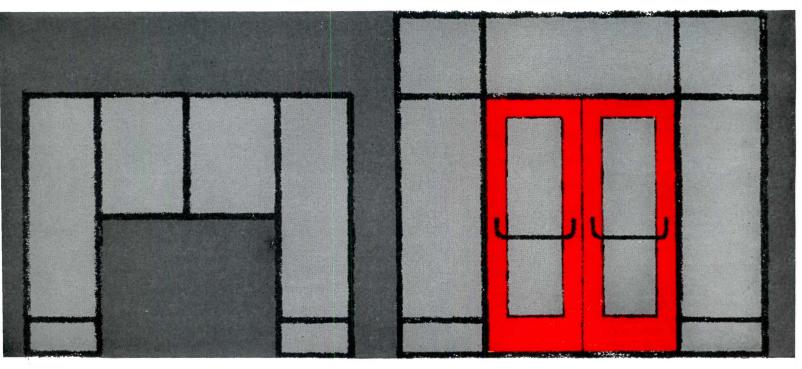


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## Dangers of "Inadequate" Supervision

#### It's the Law Column by Bernard Tomson and Norman Coplan

P/A Practice of Architecture column describing an example of the loss that may be sustained by an architect, if sued for improper or inadequate supervision.

What is the scope of the architect's obligations when he undertakes general supervision of a project? In the contract between the owner and architect, it is generally provided that the architect's supervision is to be distinguished from the continuing superintendence of a "clerk of the works," but the affirmative duties of the architect are seldom spelled out. Consequently, the architect's performance in respect to supervision is often criticized and sometimes subjected to legal challenge. A California case (Pancoast vs. Russell, 307 P. 2d 719) is an example of the loss that may be sustained by an architect if a claim of improper or inadequate supervision is accepted by the

In the *Pancoast* case, the owner contracted with an architect to provide architectural services in connection with the construction of a home. Included in these services were "general supervision of the construction work." The agreement provided that the cost of the superintendence by a full-time inspector or a clerk of the works would be borne by the owner.

The owner, who had some construction experience, frequented the building site as the construction progressed and made many complaints. The chief of these complaints related to the installation of heating ducts, carpentry work, and the manner of pouring concrete. Eventually, the contractor abandoned the project and the owner sought to recover damages from the contractor for breach of contract. At the same time, he also sought to have the architect's license revoked for failure to properly supervise construction. The owner obtained an award of damages in arbitration against the contractor, but his attempts to have the architect's license revoked were unsuccessful.

The owner then instituted action in court for damages against the architect, charging, in substance, that he was negligent in the performance of his duties, particularly with respect to inspection and approval of the contractor's work. The owner further contended that the architect breached his contract by

abandoning the project without the owner's consent. Specifically, the owner charged the architect with permitting substitutions of lumber and material of inferior quality over the protests of the plaintiff and in improperly issuing certificates entitling the contractor to receive payment.

The trial court found that the architect had not properly performed his duties and that he had "carelessly and negligently disregarded" plaintiff's protests, and that he had "failed to provide proper general supervision of the work." It was the opinion of the trial court that the owner, in order to correct defective work of the contractor, which should have been avoided by appropriate supervision on the part of the architect, would be required to raise a portion of the building or remove part of the slab floor, and damages against the architect were, accordingly, awarded in substantial amount.

Upon appeal, the architect contended that the trial court was in error in finding that he had negligently supervised the project, on the ground that he had not undertaken to guarantee or insure proper performance on the part of the contractor. The Appellate Court, in rejecting this contention, asserted:

"There can be no serious contention that the architect's undertaking was that of an absolute guaranty that satisfactory results would ensue. On the other hand, the term 'general supervision,' as used in the instant agreement, must mean something other than mere superficial supervision. Obviously, there can be no real value in supervision unless the same be directed toward securing a workmanlike adherence to specifications and adequate performance on the part of the contractor. As hereinbefore stated, whether appellant rendered such a service to the owner was one of the primary factual issues in the case.

"Defective performance and violations of plans and specifications were repeatedly pointed out to the appellant and, as found by the trial court, there is evidence indicating that 'defendant carelessly and negligently disregarded the protests and objections of plaintiff," and that respondent suffered damage as a result of such conduct."

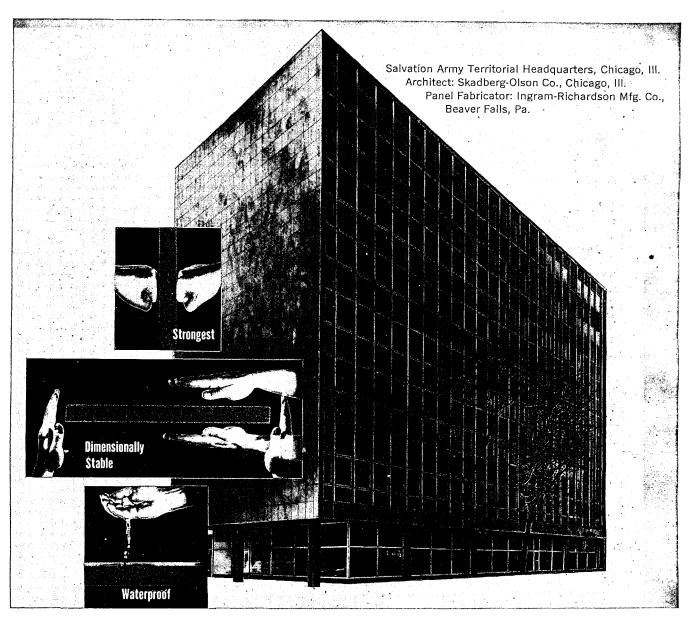
The architect further contended on appeal that the owner had waived any negligence on his part by making payment to the contractor with knowledge of the purported defects in the contractor's work. In response to this argument the Court stated:

"The argument to the effect that respondent's payment to the contractor with knowledge of defective conditions, constitutes a waiver of appellant's alleged negligence, cannot be sustained. What apparently happened was that respondent made a payment to the contractor predicted upon the appellant's certification, with the understanding that certain defects were to be corrected, and that subsequent work should be performed in a proper manner. It is to be noted that this payment was brought about, not by respondent's volition but by the act of the appellant whose duty it was to serve respondent's interest by giving adequate supervision. In all this there is nothing in the nature of a waiver."

As a third ground on appeal, the architect contended that the owner had recovered his damages against the contractor in an arbitration proceeding and that any further award against the architect would constitute a double payment to the owner. In rejecting this contention, the Court stated:

"Nor is there any merit in appellant's insistence that 'The arbitration award rendered as to the dispute between plaintiff and contractor rendered the judgment of the trial court erroneous in law'; that such award was res judicata; and that the present judgment allows respondent to 'recover double compensation.' The present architect-defendant was not a party to the arbitration proceedings between plaintiff and the contractor . . . The issues decided in the plaintiff-contractor arbitration were not identical with those presented in the present action between plaintiff and architect. In Bernhard vs. Bank of America (19 Cal. 2d 807, 122 P. 2d 892), cited by appellant, identity of issues is mentioned as a vital element of the doctrine of res judicata. As said in Alexander vs. Hammarberg (103 Cal. App. 2d 872, 882, 230 P. 2d 299, 406), 'the issues . . . are not identical. . . . The Rahlver case was for damages for breach of a builder's contract, while the instant case is for negligence of the architect in supervising the work."

Supervision by the architect is a difficult, if not perilous, function and there is a wide area of potential liability for alleged negligent performance. This calls for further consideration of the owner-architect and owner-contractor agreements to ascertain if additional safeguards can be included which would make supervision of the project and of the contractor more effective, and at the same time less of a risk to the architect. (See IT'S THE LAW, SEPTEMBER, OCTOBER, and NOVEMBER 1953 P/A).



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### Models of Plastics and Aluminum

by Arthur E. Herman\*

P/A Practice of Architecture article showing and describing construction of large-scale high-grade models. On this page is illustrated the work of Theodore Conrad. Overpage is shown Raymond Lester's work.

Theodore Conrad of Jersey City, N.J. has built more buildings, probably, than any other man in the world-vet he is neither an architect nor a contractor. Conrad is a model-maker; the buildings he creates are in miniature. Most of the recent structures that now enhance Manhattan's skyline were created, in precise replica, by Conrad. He has also modeled such famous buildings as the American Embassy offices in New Delhi, India (Edward Durell Stone, Architect), complete to the lifelike lilypads lying in the pool that fronts that handsome structure. His other creations include Lever House, Seagram

\* President, Commercial Plastics and Supply Corp., New York, N. Y.

House (the model of which was shown at the Brussels Fair and is now on display at the Paris Cultural Center), Manufacturers Trust branch bank building at 43rd Street and Fifth Avenue in New York, and Connecticut General Life Insurance Building, Hartford, Conn., (both by Skidmore, Owings & Merrill). All were reproduced in extraordinary detail by Conrad. He recently completed in record time, using Plexiglas and aluminum, a model of Equitable Life Assurance Sosiety's building on Avenue of the Americas, New York, also an SOM job.

Conrad's two favorite modeling materials are plastics and aluminum. His preference for the two is based, he says, on "more than a dollars-and-cents consideration." He has found the acrylic sheets to be safe to handle, light in weight (about one half the weight of the glass used formerly), easy to fabricate, and easy to apply because of natural flexible facility.

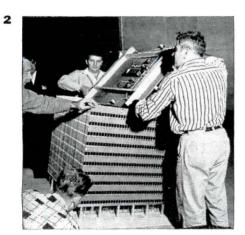
Conrad notes an increasing use of models over the past few years: "A scale model of this type tells a client much more than ordinary linear perspectives on paper. It shows him just what he is going to get and how it will look and it helps him make up his mind more quickly. You can imagine what a help that can be when an architect is explaining some design detail to the president of the company, or to the chairman of the board. Today, scale models are prepared for almost every new structure. Clients insist on it."

As an example of time saving, Conrad cites the fact that it was little more than six weeks after his shopmen began to machine the acrylic sheets that the finishing touches were being applied to the 1/4"-scale Equitable Life model in Conrad's studios in New Jersev. It took 14 hours more to make the final assembly in the lobby of Equitable's present quarters at 393 Seventh Avenue.

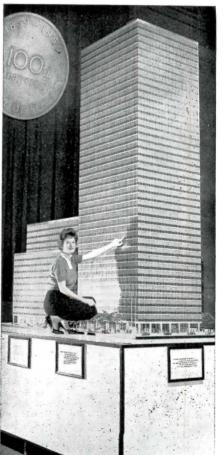
(Continued on page 11)







1 Designer and Model-Maker Theodore Conrad (right) checks first section of Equitable Life Assurance Society's building model. Aluminum and Plexiglas skin graft has been applied to inner plywood base. Aluminum mullion strips were inserted in machined grooves in the plastic. 2 Main-floor fluorescent lighting, precisely simulating that of completed building, is inserted in model. 3 Model is assembled from four separate sections. 4 Finished model is 4'x10'x12' high. Building itself is 540' high, with 42 floors.







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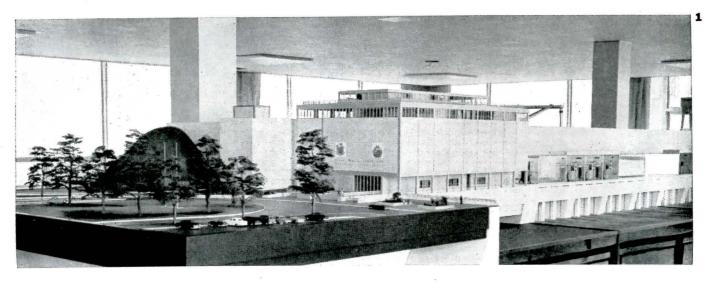
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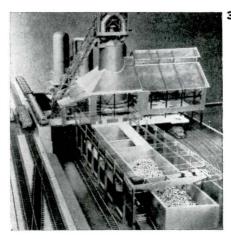
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#### Models of Plastics and Aluminum (continued)





1 Model of Administration Building and Dam, wholly in plastics, which is permanently on display at the Robert Moses Dam on the St. Lawrence River. The display is animated and lighted. 2 Model maker and master craftsman Raymond Lester. 3 Model of a steel mill's proposed new blast furnace, used to study construction program.



Plastics have all but pre-empted the materials formerly used in the model-building field, according to Raymond Lester, a master in miniatures and president of Lester Associates, Inc., Hastings-on-Hudson, New York. Lester and his firm have fabricated intricate, precise plastics models that run the gamut from a massive reproduction of the entire St. Lawrence Valley, 8 feet wide by 43 feet long, to tiny sub-miniature components used in aviation flight training.

"Today's models are not just pretty three-dimensional pictures that are interesting to look at," says Lester. "Each device is designed and built to serve a specific purpose. It is a tool made to order for a specialist. The architect, plant engineer, city planners, the industrial designer, the military instructor, and the advertiser have specific interests and requirements that can be met by study of such plastic models."

Lester's firm not only duplicates existing items, it is called upon frequently to create the prototype of many devices. For example, it has built full-sized rocket engine mock-ups so that designers could solve their problems on an inexpensive plastics and wood prototype instead of the costly real thing. Another important aspect of the work of Lester Associates is providing training devices specifically designed to help Armed Forces personnel to learn highly complex jobs. To accomplish this end, the firm has reduced ocean-going cruisers and tankers to 20-foot classroom models. On the other hand, it has enlarged intricately constructed objects, such as valves, so that they could be seen by an entire class.

By utilizing plastic models of proposed construction, many programming problems can be solved. A few years ago, when one of the leading steel companies contemplated a multimillion dollar expansion program, Lester Associates was commissioned to make a scale model of the proposed construction. The model cost \$10,000 and took four months to construct, but it revealed that major changes had to be made in the program if the project

was to be as successful as the company had planned it. The fact that the animated model was made almost completely in transparent acrylics, helped to point out the need for changes.

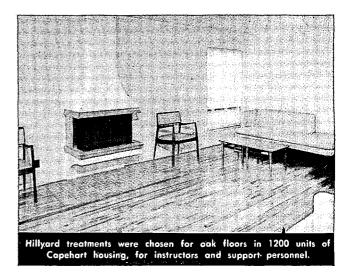
Most of the Lester models are designed and built in Plexiglas. The source of supply (Commercial Plastics and Supply Corporation of New York, in this case) should be close, Lester believes, because of the kind and variety of plastics that must be chosen for special purposes: patterned acrylic sheets, for instance, for a terrain map. The firm finds that plastics materials are machineable to close tolerances, have good dimensional stability, are strong while light in weight, are easy to joint, and are easily formed into intricate shapes,

Other Lester Associates projects have included: a full-scale model of the Vanguard Earth Satellite; the Niagara Power Project; the United Nations Center, built for the State Department; training aids and devices for the Office of Naval Research; and many other edifices and institutions that have been in the news.

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## Temporary Utilities Require Clear Specs

#### Specifications Clinic by Harold J. Rosen

P/A Practice of Architecture this month offers specifications for temporary electric service for light, power, and temporary heat that may be used as a guide and be incorporated in the Supplementary General Conditions of the Contract.

Provisions in construction specifications for temporary electric service for light, power, and temporary heat are not often spelled out clearly. The following articles governing these temporary utilities may be used as a guide to Specifications Writers and incorporated in the Supplementary General Conditions of the Contract.

#### Temporary light and power

- (a) For construction of the building, the General Contractor shall make all arrangements with the Electric Utility Company to provide adequate electric service for all temporary light and power for use of all Contractors and subcontractors as hereinafter specified.
- (b) The General Contractor shall provide, install, and maintain the temporary lighting and power systems from points of the Utility Company to provide the following:
- 1 Safety and watchmen's lighting on all stairs, other locations requiring same, and ample lighting in the rooms of the building.
- 2 Convenience outlets so that the center of any room or space will be not more than distance of the length of a standard trailer as set forth in the Local Electrical Workers and Contractor's Agreements. Those convenience outlets shall be provided as the work progresses and as required by the various Contractors on the Project.
- (c) The light outlets shall consist of left-hand threaded sockets, 100-w lamps, and lamp guards. Provide wiring, service and control switches, and fuse protection to comply with all Local, State and Underwriter's Codes, rules, and regulations.
- (d) Hours of regular service shall be from 7:45 a.m. to 4:45 p.m. on regular working days.
- (e) For work on the building, at times other than as set forth above, any Contractor requiring lighting or power shall arrange for such services, and pay for same, including current consumption.
- (f) Trailers for use in convenience outlets shall be provided by the Contractors or trades using or requiring same.
- (g) The permanent installation may be

used for temporary work.

- (h) For temporary light and power in connection with the proposed building and project as specified above, the General Contractor shall include in his Contract Price the sum of \_\_\_\_\_\_ dollars. The General Contractor shall make his charges against this allowance, for fees, current, material furnished, and labor expended, on a cost-plus basis at net cost plus 10 percent overhead and profit, except for the current consumed on which no overhead or profit will be allowed.
- (i) The General Contractor shall keep accurate records, weekly, of the cost of all labor, current, and materials employed in this work, copies of which shall be turned over to the Architect.
- (j) The temporary light and power maintenance shall not be started before approval by the Architect. If final charges are less than the stipulated allowance, such savings shall revert to the Owner; if the charges are in excess of the allowance, the General Contractor shall be reimbursed by the Owner for such excess over the allowance.
- (k) Power tools not exceeding 1 hp each may be operated from the temporary electric system.
- (1) Each Contractor shall, at his own expense, furnish, install, and maintain all power wiring and all equipment necessary to supply power for tools exceeding 1 hp each for his work and, upon completion of his work, shall remove any temporary power lines installed by him. Each Contractor shall pay for the electrical energy consumed by him for such power, and shall, at his own expense, furnish the metering equipment, make the applications, and obtain the permits necessary to supply such power.

#### Temporary heat

- (a) The General Contractor, as part of his Contract, shall furnish temporary heat during the progress of construction of the building until the building is enclosed.
- 1 The building shall be considered enclosed when it has reached the stage when all exterior walls have been erected, when the roof has been substantially completed, all exterior openings closed up either by the permanently glazed windows and doors, or by adequate and approved temporary closings, and the building is ready for interior masonry and plastering operations.
- 2 The temporary heating to be furnished by the General Contractor before the building is enclosed shall be by salamanders or other local heaters, approved by the Architect. The General Contractor

shall pay for all fuel, maintenance, and attendance required hereby.

- (b) After the building has been enclosed, the General Contractor shall furnish temporary heating radiation, piping, boiler attendance, and fuel for the temporary heating for all trades of all contracts when the outside temperature is below 50 F, when and as directed by the Architect.
- 1 The General Contractor shall provide a complete system of temporary heat to protect the enclosed building from freezing and to expedite the construction of the work. The Contractor may utilize the new heating equipment to accomplish the specified heating results.

2 The General Contractor shall provide temporary heating during normal working hours, which will be from 7:45 a.m. to 4:45 p.m. The General Contractor shall also provide sufficient temporary heat during nonworking hours as directed.

- 4 The temporary heat shall not be started before approval is obtained from the Architect. If final charges are less than the stipulated allowance, such savings shall revert to the Owner, and if the charges are in excess of the allowance, the General Contractor shall be reimbursed by the Owner for such excess over the allowance.
- (c) Upon the conclusion of the temporary heating period, the Contractor shall remove all temporary piping, temporary radiators, etc. The Contractor shall bear all expenses required for repairing any damage incurred by him during the temporary heating period caused by the installation or removal of temporary heating equipment.

The following should be incorporated in the Bid Form or Proposal Forms to obtain Unit Prices for maintenance in connection with the temporary heating:

"If temporary heat is ordered in writing, the following unit prices shall apply to such temporary heat:

- 1 For operating the heating plant 8 hours per day \$\_\_\_\_\_.
- 2 For operating the heating plant 16 hours per day \$\_\_\_\_\_.
- 3 For operating the heating plant 24 hours per day \$\_\_\_\_\_."

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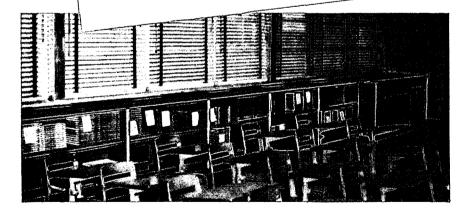
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## Ductwork and Piping Move Out to Perimeter

#### Mechanical Engineering Critique by William J. McGuinness

P/A Practice of Architecture column on mechanical and electrical design and equipment devoted this month to external shafts and hollow structural columns for vertical ducts and pipe risers.

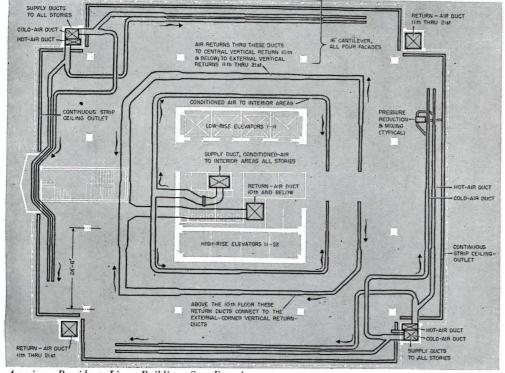
As the glass façade of the modern office building developed, pipes and ducts were gradually cleared away from the building exterior. The early 1950's saw the inevitable disappearance of steam and condensate risers at the exterior columns. They were replaced by risers in the core, near the elevators, often hot and chilled water, branching laterally in the space below each floor and turned up to fancoil units below the glass. Systems of high-pressure conditioned-air increased in popularity, also taking the form of risers in the central core with supply and return runouts in the space above the ceiling at each story. The concomitant architectural form was a glass strip with uniform, pipeless columns set back from the building line. Between these façade strips of clear glass were bands of opaque glass, metal, or masonry; behind these were the floor structure, with horizontal pipes and ducts below it, and sometimes a sill-high space above the floor. There was a strong horizontal accent. Because heat gain and heat loss are maximum at the building perimeter due to the effects of the sun and low temperature, the pipe and duct runouts

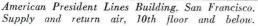
continued at large dimension from the core to the outside curtain of the building. As the intricacy of the mechanical services increased, the depth of the structure-plus-equipment layer attained about one third of the total over-all floor-to-floor height. High-velocity air systems with central units were beginning to replace the formerly popular systems that used air-handling rooms at each story. This stressed the importance of the vertical riser. It began to be difficult to get branches out of the central core past elevators, stairs, and other risers.

One is beginning to see a change in this trend. Much needed has been a relief for the central core, the relocation of risers at the perimeter (where they are most needed), and a reduction in the length-and consequently in the sizeof pipe and duct branches. Not least in importance is the avoidance of bulky ceiling crossovers. This is effected by moving large assemblies of building "arteries and veins" to the surfaces which they serve. Finally, how logical it is to place at the perimeter the parts of the system which have to deal with the effects of sun, shade, and temperature change in the several perimetal zones, leaving at the core a separate network to handle the more stable interior areas.

In their design for the new Headquarters Office Building of American President Lines in San Francisco, Architects Anshen & Allen have maintained the horizontal-strip effect, yet have succeeded in supplying and returning most of the air for perimetal areas through vertical ducts at the perimeter. This solution has been accomplished by shafts at the corners of the building. A general description of this unusual building may aid in visualizing the scheme. Almost square and supported by 16 columns, the building has four 16-ft cantilevered floorslab extensions at each level, terminated at their sides by an extension of the exterior column lines. At the internal corners thus created, shafts carry supply and return ducts to serve the four exterior air-conditioning zones. Air-handling equipment and a 750-ton refrigeration plant are located on the second and third floors (these floors are just below the terrace level and are least desirable for renting). Steam is purchased from a utility company and is taken from street mains.

Hot air and cold air are supplied to all stories through vertical ducts in the shafts at diagonally opposite corners of the building. Each corner duct branches to serve two zones, separately controlled. Pressure reduction and blending are done by equipment in the hung ceiling, and from these points air flows to stripgrill diffusers directly above the glass on the four sides of the building. Local controls assure comfort to personnel in each area. Interior zones on each floor are supplied by a riser duct in the build-







ing core, this riser branching at each floor to a loop just outside the line of elevators. The loop serves ceiling diffusers.

Between the perimeter loop and the interior loop just described, a return loop collects air for return to the second-, third-floor central station. These return loops on the eleventh through the twentyfirst floors are picked up by external return risers on alternate exterior corners. From the tenth floor and down, the loops are picked up (as shown) by an interior return riser which extends down through the core in front of the blank faces of the high-rise elevators. In order to provide a clear space between the elevator banks on the main floor (fourth or "terrace"), the two core ducts-risers are offset at the ceiling of that story.

Summary: Perimeter air-all stories, supplied through corner ducts. Central air-all stories, supplied through core duct. All return air above the tenth floor-carried down through the return ducts at the other two corners. Return air, tenth floor and below-carried down by a return duct in the core. For simplicity in this discussion, some minor variations have been omitted. The cooling tower is on the roof and the core is the location chosen for risers of chilled water, condenser water, steam, and condensate.

Problems quite different from those of comfort air conditioning in an office building are posed by the requirements of a chemistry building in which there is considerable research, in addition to teaching. Yet, a solution similar to that of the Headquarters Office Building of

American President Lines was used, again by Anshen & Allen, in the new Chemistry Building, Unit 1, for the Berkeley Campus of University of California. Maintaining a 12-ft floor-to-floor height, and at the same time accommodating the required quantity of horizontal piping and ducting would substantially reduce the usable building volume. Therefore, 16 hollow, exterior, reinforcedconcrete, structural columns were used to enclose pipes and ducts connected to short lateral branches, thereby minimizing cross-overs and avoiding spaghetti patterns on the ceilings.

These are truly multipurpose columns. Together with the slimmer interior columns they support the building. In the late afternoon when the balconies (between adjacent columns) have ceased to exclude all direct sunlight, the deep exterior columns take over as totally effective sunshades. Finally, they enclose exhaust ducts from all exterior (and some interior) fume hoods (FH on the illustration). These ducts are exhausted by fans behind the masonry grill at the roof level. There are 185 such units, of which 175 are fume-hood exhaust fans. Four of the exterior columns are wet columns. Two of these are shown in the illustration (below) and one is detailed. The piping services include domestic how and cold water, industrial hot and cold water, distilled water, demineralized water, natural gas, vacuum, compressed air, hydrogen sulphide, nitrogen, oxygen, steam, acid waste, vent pipes, and roof leader pipes. There is access to all exterior columns at all floors.

This is a once-through system, with no

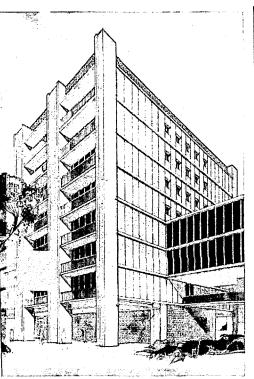
air recirculated. The pressure in the halls is greater than that in the rooms, preventing the flow of air or gases back out into the corridors.

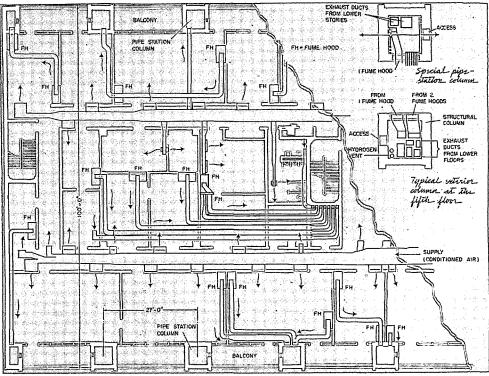
Air intakes at ground level supply all fresh air. It is partially conditioned and distributed through a central vertical duct with branches at each floor in all corridors. From these, the rooms are supplied. This air is regionally tempered in response to local controls before it enters the rooms. Air is exhausted through fume hoods by ducts in the exterior columns. Air in some interior rooms is exhausted through fume hoods to ducts which are assembled at one end of the stair. Roof exhaust fans also connect to these ducts.

Campus steam is used as a general power source. It is converted to 275 F primary hot water. Pumps circulate secondary hot water through the various hot-water systems. Hot water is used for both heating and cooling; the latter is done by absorption-type water chillers.

Summary: All fresh air is brought in at ground level. It is partially conditioned and delivered to rooms via a central riser and ceiling ducts in corridors. After reheat and delivery to rooms, it is exhausted through fume hoods to ducts in hollow exterior columns, and in the case of interior rooms to a central group of exhaust ducts. All exhaust fans are on the roof. Four exterior columns are also pipe station columns.

The mechanical designs of the American President Lines Building were by Eagleson, Engineers, (Charles Krieger, E.E.); and of the Chemistry Building, Unit 1, by Bayha, Weir & Finato.





Building, Unit 1, University California, Supply and exhaust air-for four of seven bays-at typical floor (5th).

## SPECIAL DESIGN

### RIGINATI NS





## Floor-Mate *Originals*

#### ... Repeat Decor Patterns

Amtico Floor-Mate Originals open entirely new worlds of fine custom-design detailing. Specially created Floor-Mate Originals will coordinate or match your choice of wallpaper, fabric, upholstery, or any pattern in a unique all-vinyl flooring. You may express your own individuality with a single Floor-Mate Original as a dramatic highlight, or several may be used to form a scattered repeat or an over-all pattern.

## $Bevelesque\ldots$ Creates Three-dimensional Flooring

 $Decorstrips \dots$  Add Fashionable Inserts

In Bevelesque, Amtico designers have again achieved a new custom look in vinyl flooring. This three-dimensional tile is available in a wide variety of shapes, sizes and designs. Each tile is perfectly beveled in 1/8" gauge and may be combined with matching or contrasting stripping in .080" gauge. Bevelesque is also very handsome when used bevel-to-bevel without stripping. Available in most Amtico Vinyl patterns.



DESIGNED BY MELANIE KAHANE

## $Customotifs \dots$ Achieve Custom Effects



Amtico Customotifs consist of pre-cut centerpieces and arcs of all-vinyl flooring which can be arranged in a multitude of interesting flooring effects. You can create over-all patterns of unusual character and also use Customotifs as random inserts. Because they are available as "in-stock" items, pre-cut Customotifs provide custom detailing at reasonable cost.

#### Amtico Decorstrips offer a variety of "in-stock" all-vinvl insert patterns to create custom effects in feature strips and borders. You may specify circles, diamonds, stars, circles and stars, or circles and diamonds...inserts which cost far less than metal and are so much easier to install and to maintain. They add smart styling to simply patterned floors.



World's Largest Producer of Vinyl and Rubber Floorings

AMERICAN BILTRITE RUBBER COMPANY TRENTON 2. NEW JERSEY





## PERMALIFE VINYL FLOORING

#### SPECIAL ESIGN RIGINATI NS

#### SPECIFICATIONS AND DATA

#### AMTICO FLOOR-MATE ORIGINALS

Thickness: 1/8"... all-vinyl, color throughout Sizes: Any size up to 36" x 36"

Designs: Renaissance, Stardust or Plain Colors

#### AMTICO BEVELESQUE

Thickness: ½8"... all-vinyl, color throughout Standard Sizes: 9" x 9", 12" x 12" Special Sizes: Hexagons, octagons, rectangles, small squares cut from standard tiles Designs: All Amtico Vinyl designs except Terrazzo Stripping: .080"

#### AMTICO CUSTOMOTIFS

Thickness:  $\frac{1}{8}$  or .080"... all-vinyl, color throughout Sizes: 9" x 9" units (includes 1 centerpiece and 4 arcs) Designs: All Amtico Vinyl designs

#### AMTICO DECORSTRIPS

Thickness: 1/8"... all-vinyl, color throughout Sizes: 3" x 36

Inserts: Circles, diamonds, stars, circles and diamonds,

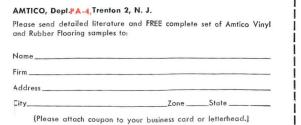
circles and stars Designs: All Amtico Vinyl designs

#### INSTALLATION DATA

Specific installation data on each Amtico Special Design Origination may be obtained from American Biltrite Rubber Company, Trenton 2, New Jersey.

#### MAINTENANCE DATA

A new Amtico Vinvl installation shall be kept free of traffic until cement is thoroughly dry and hard (approx. 24 hours). Do not wash floor for 48 hours after installation. Damp mop the floor with Amtico Floor Cleaner or mild suds or detergent. Floors subject to heavy, dirty traffic can be cleaned with #00 grade steel wool. Use proper glides and casters on all furniture. Do not use paste wax. A coat of Amtico Floor Dressing adds to the glossy appearance of the floor and minimizes









Bevelesque



Decorstrips

DESIGNED BY JOSEPH HOUSTON

Other outstanding Amtico Vinyl Flooring installations: Woodward & Lothrop Store, Bethesda, Md.; Gulf States Bldg., Baton Rouge, La.; Peoples Bank & Trust Co., Langhorne, Pa.; Union Theological Seminary, Richmond, Va.; Michigan State College, East Lansing; Maine Medical Center, Portland; American Hardware Insurance Co., Minneapolis; Rutgers University, New Brunswick, N. J.; Famous-Barr Northland Store, St. Louis; La Potiniere Restaurant, New York City; First National Bank of Tulsa, Okla.; Philadelphia General Hospital; University of South Carolina, Columbia; University of Utah, Salt Lake City; Rogers Jewelry Store, Norfolk, Va.



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NOW IT'S OFFICIAL! an acoustical ceiling system with 48 decibel privacy

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adhesively applied to USG® Gypsum Board—Nailing Channel System

Results of recent official AMA tests proved ACOUSTONE ceiling system reduces sound transmission through the ceiling to adjoining rooms by 48 decibels—an average sound attenuation comparable to the best permanent partitions.

The system used in the test was a typical Acoustone Mineral Fiber Acoustical Tile System; Acoustone tiles adhesively applied to %"Sheetrock\*Firecode Wallboard and suspended on USG Nailing Channels.

Here is a true quality ceiling construction that provides three essentials:

- 1) 48 DECIBEL PRIVACY—
- to reduce unwanted sound from adjacent rooms.
- 2) ONE-HOUR FIRE RATING-
- to meet strict zone and code requirements.
- 3) NON-BREATHING CONTINUOUS STRUCTURAL DIAPHRAGM—
- to provide structural integrity and keep tiles aligned regardless of normal building movement.

For more information, including complete test results, write Dept. PA-93, United States Gypsum, 300 West Adams Street, Chicago 6, Illinois.

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## WHAT THE ARCHITECT SHOULD EXPECT FABRICATOR... to build excellence into his

Metal curtain wall has matured, and in the wake of its ten year climb to architectural prominence, there has been born a vital new branch of building technology . . . the metal curtain wall fabricator.

Working in liaison with the architect, the fabricator can help him avoid some of the problems that he might encounter in the design and construction of curtain wall.

Even as the architect learns more about the advantages and pitfalls of this exciting new structural system, he is turning increasingly to the fabricator for qualified solutions. He recognizes that the experienced fabricator can help him circumvent problems of air infiltration, water leakage and other malfunctions all too common with the improperly engineered and constructed wall.

More than ever, the architect's logical safeguard is the reputable fabricator, the metal engineering expert with the insight and the facilities to assume total responsibility for every phase of curtain wall development.

But what is it that you should rightfully expect your metal curtain wall fabricator to do for you to achieve the best job for the least expenditure? The answer to this lies in these yardsticks by which an architect can measure a curtain wall fabricator's merit:

PRELIMINARY CONSULTATION. Technical advice on the mechanical considerations of curtain wall designs should be made available to the architect at the very outset. Just as you confer with heating engineers or structural engineers, the highly complex aspects of curtain wall design, engineering, fabrication and installation demand the early attention of specialists.

ENGINEERING KNOW-HOW. The ability to preserve the architect's aesthetic desires, while building structural integrity into his curtain wall system, is expected of the reputable fabricator. Engineering modifications must not dispute design, but must support it completely without making their presence known.

ALLOY SELECTION. Whatever metal your design demands, whether aluminum, bronze or stainless steel, the question of alloy selection arises. Structural requirements and finishing treatments such as mechanical finishes, porcelainizing, anodizing, as

well as other special finishes, will respectively demand particular alloy types. The fabricator who is abreast of new developments on the metals scene has current information at his fingertips that can help you select the best and most economical alloy for your use.

DETAIL DRAWINGS. When the architectural design is finalized, the fabricator must submit practical suggestions for realizing the structural requirements of the system. To make the architect's design function properly, the fabricator should be consulted to analyze problems regarding the best types of material to employ, considerations for expansion and contraction, matters concerning finishes, the factors in sealing and the preferable types of protective coatings. To accomplish this, the fabricator must have engineering, testing and production facilities to support these suggestions and to assist in preparing correctly detailed drawings.

FINISHING INFORMATION. The technical intricacies of the various finishes are in the professional domain of the fabricator. He must be able to put forward feasible solutions to problems of achieving uniformity in panels and exposed curtain wall members.

BUDGETING. Costs must be thoroughly aired before any absolute conclusions can be reached on a proposed curtain wall design. Assisted by the fabricator, the architect can assemble price data to translate his conception into an economically realistic wall. The estimating department of the fabricator, therefore, can help the architect develop the best curtain wall system consonant with price.

SPECIFICATIONS. Curtain wall specifications are the crux of a successful end-product. To prevent false interpretations and unwanted deviations from the architect's design, the curtain wall fabricator can participate to insure the proper development of the wall. The fabricator's engineering staff should be used to help define the wall in the specifications that are written.

TESTING RECOMMENDATIONS. Are tests necessary, or are they not? If they are, what dynamic or static test procedures inform you with accuracy whether your system will perform as expected? The fabricator should be responsible for advising on

## F OM HIS METAL CURTAIN WALL

## curtain wall system

"reasonable" tests and when they are applicable to either standard or custom wall systems. He should be able to build adequate mock-ups and conduct exacting tests with suitable equipment and trained technicians.

SHOP DRAWINGS. When the job is awarded, the fabricator chosen must prepare working drawings from the detail drawings available to him. No arbitrary changes can be allowed; it is the fabricator's duty to report to the architect any alterations that he might consider necessary.

FABRICATION. Facilities, technically-trained personnel and qualified supervision must be provided. The fabricator must be equipped to produce in accordance with specifications. Above all, the structural quality of the fabricated product must surpass the minimum test requirements established for it.

JOB COORDINATION. The fabricator must be intimately familiar with his joint responsibilities to the architect, the general contractor and the owner. His work must be correctly coordinated with the construction timetable by maintaining production and delivery schedules.

WORKMANSHIP. Since leakage is the major problem in curtain wall construction, applying sealants is the single most crucial stage of the erection process. While other phases of installation are conducted in a workmanlike manner, anything less than perfection in preparing sealants, in cleaning surfaces for good adhesion and in applying the material properly, can result in premature failure and costly resealing. The fabricator must be well acquainted with the practice and theory of what contemporary sealants can do.

INSTALLATION. The fabricator should be capable of executing all phases of erection with care and thoroughness. *Total responsibility* over the appearance and performance of the curtain wall can rest with him only if all operations are under his control.

GUARANTEE. The installed system must successfully endure two weathering cycles before the fabricator's obligations cease. The proper functioning of windows, panels and glass—provided they have been engineered to meet ambient requirements—is his responsibility until then.

**EXPERIENCE.** For engineering validity, trust to the test of time. The fabricator who points with pride to a lengthy and active career of work with leading architects, has amassed an inventory of experience of immeasurable benefit to you, the architect.

DEPENDABILITY. A productive association with your fabricator can ensue only out of mutual respect and confidence. Look for reliability as a keynote to your relationship. Only the fabricator with past-proven abilities should be accepted for consultation and for fulfillment of your project needs.

FINANCIAL STABILITY. The fiscal health of your fabricator will tell you whether your job is safely entrusted. It will tell you whether your confidence is well placed and whether you can rest secure that the project will be executed perfectly. A structurally sound, firmly established organization has achieved its eminence through satisfactory service . . . the kind of service you deserve to receive.

ALBRO has long applied these meaningful criteria to the creative day-by-day working relationships it fosters with the architect, contractor and owner. As a by-product of a thirty-year-plus tradition of dependable service, ALBRO offers the architect the collective know-how of experts who know what metals can do.

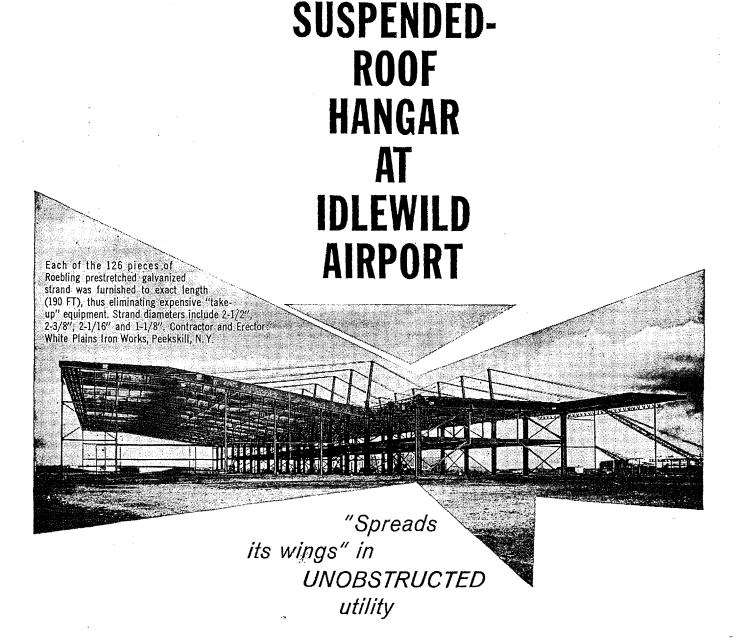
The quality of ALBRO's curtain wall, windows and architectural metal work also reflects the firm's dedication to this tradition. Whether fabricating in aluminum, bronze or stainless steel, ALBRO is the byword for engineering precision. By assuming total responsibility for the quality and performance of every product which leaves its plant, ALBRO will vouch for your ultimate satisfaction with every aspect of metal curtain wall design and development.



ALBRO METAL PRODUCTS CORPORATION 944 Longfellow Ave., New York 59, New York

This analysis of the metal curtain wall fabricator's responsibilities to the architect will be reprinted in booklet form. Copies are available on request. ALBRO's technical catalogs on metal curtain wall, windows and architectural metal work are also available . . . or see them in Sweet's.

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NEW

Built by the Port of New York Authority, Hangar 17 will shelter the jet and propeller-driven giants of some of the world's great international airlines.

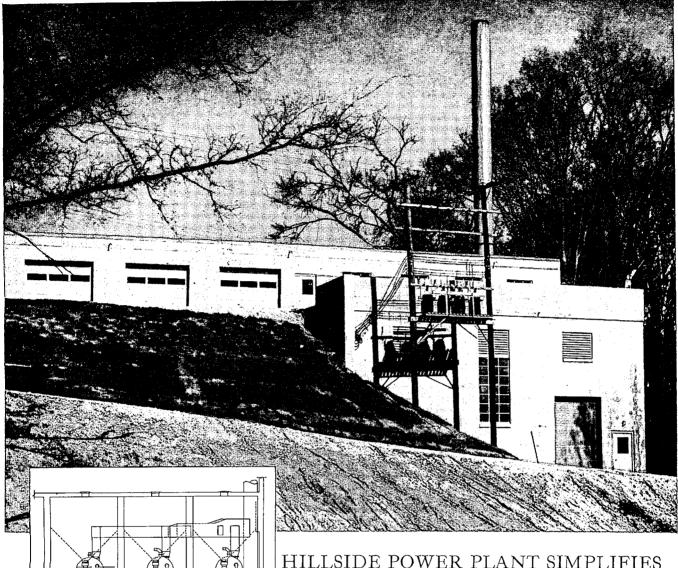
Here is one of the most convincing examples of the incomparable utility of the suspended-roof principle. It lends itself with "column-less" ease to airport hangars and, for that matter, to any structure in which vertical supports would hamper the structure's purpose. Bus terminals, garages, stadia, warehouses all benefit from a free and clear suspended roof.

Roebling's long interest and experience in suspended roofs and suspension systems of all kinds,

puts us in the unique position of being able to work with you on any project involving these principles. We invite your inquiries on any phase or factor of suspended roofs. The data, applications and experience that we have accumulated will be shared with you to the fullest extent. Write Bridge Division, John A. Roebling's Sons Corporation, Trenton 2. New Jersey.



## Modern plants burn coal the modern way



HILLSIDE POWER PLANT SIMPLIFIES OPERATION, DOES DOUBLE DUTY AT OTTERBEIN COLLEGE

When an engineering survey at Otterbein College, Westerville, Ohio, indicated the need for increased steam facilities, plans for a new heating plant were drawn up by the firm of Benham, Richards and Armstrong.

FRONT ELEVATION

The new building was designed for a hillside location to take advantage of gravity in coal handling. Coal is carried by truck to the concrete slab that forms the roof of the boiler room and is delivered directly to the hoppers inside. It is gravity-fed to International-BCR Coal-Pak Automatic boilers, flows through combustion to ash residue . . . an

unusually simple, economical operation. In addition, the upper level of the plant is the college maintenance building, housing college cars and trucks as well as plumbing, painting and other shops. This "split-level" design has fulfilled its function admirably: creating an efficient, easily-handled heating plant as part of a practical, multi-purpose structure.

District engineers of the Bituminous Coal Institute have detailed information on how coal-burning plants lend themselves to modern architectural design. If you have a problem in power plant design, write for the name of the BCI man in your area.

#### BITUMINOUS COAL INSTITUTE

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See our listing in Sweet's Files: A-30J/Bi; PE-4a/Bi; IC-18b/Bi

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CAPRI MOSAIC TILES are unconditionally recommended for new projects as well as modernization of existing exteriors and interiors. When tiles are included in specifications, the choice of CAPRI MOSAIC TILES will make selling much easier, because of their low cost and easy time saving installation.

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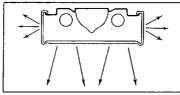
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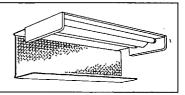
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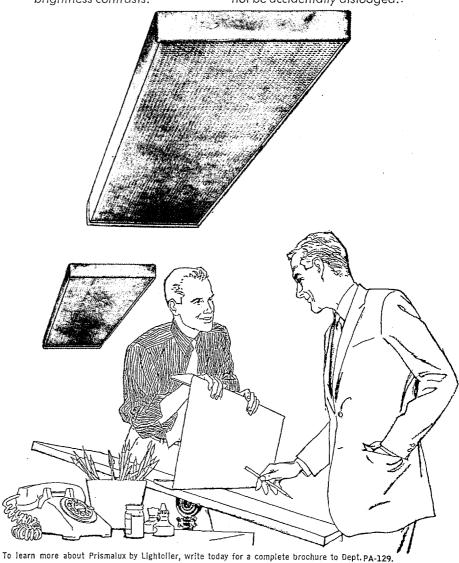
NEW—one-piece lens-and-diffuser with low brightness bottom and luminous diffuser sides to provide glare-free illumination and minimum brightness contrast. Coupled with styling that is crisp and clean, construction that is rugged and trouble free—Prismalux is an excellent specification for stores, offices, schools and other critical lighting applications. In two, three and four light widths, four and eight foot lengths, surface or stem mounted.



The fine-textured prismatic lens floods low-brightness illumination downward. The low-brightness diffuser sides send soft light out across ceilings, reduce brightness contrasts.

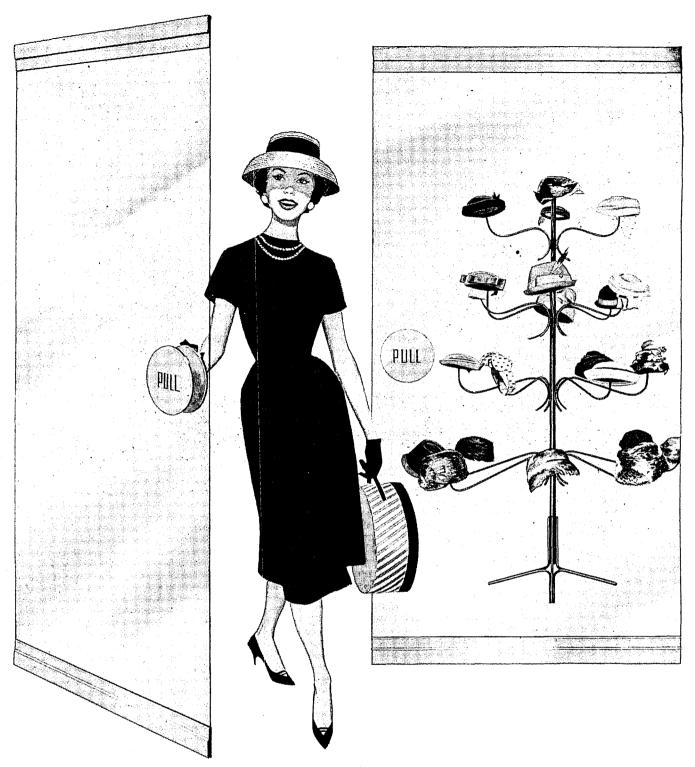


For maximum rigidity, the combination lens-diffuser is supported along its full length. Safety hinges permit access from either side of lens diffuser, cannot be accidentally dislodged...



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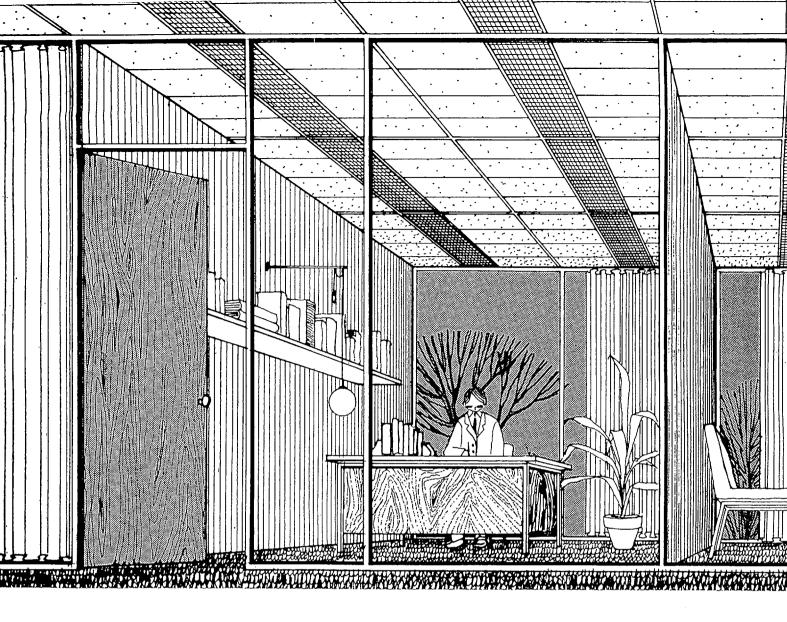
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M-78

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## Overnight partition changes are easy

says Gyo Obata, HELLMUTH, OBATA & KASSABAUM, INC.

**W**/rrn the advent of lightweight construction and what is popularly termed 'open planning', office space requirements have become much more complex. Lighting and air-conditioning ceiling fixtures must be located in such a way as to maintain their function and still present a balanced appearance when partition changes are made. The acoustical ceiling should be designed to make future ceiling alterations unnecessary.

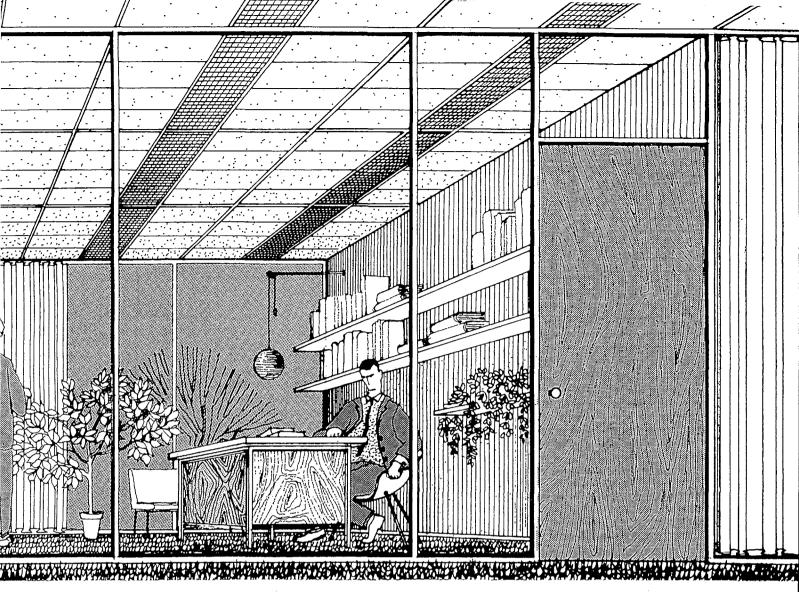
"This is why an acceptable module is one of the best ways to allow for flexibility in partitioning, lighting, and air conditioning."

In the architects' design, 12" x 24" Armstrong Fine

Fissured Travertone has been used in a 4' x 5' module with the tees running every 24" and the Travertone (square edge) with concealed splines every 12". The fixtures are combination lighting and air supply units so that the air outlets will not be visible.

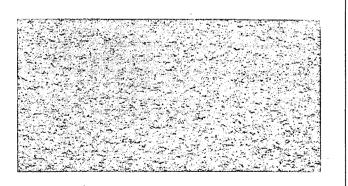
"This modular system makes it possible to rearrange partitions at 4' or 5' intervals without disturbing the balanced appearance of the ceiling or the function of the fixtures."

Travertone is used because it gives quiet dignity to the area. The fine fissuring has a delicacy not usually found in fissured or sculptured acoustical materials.



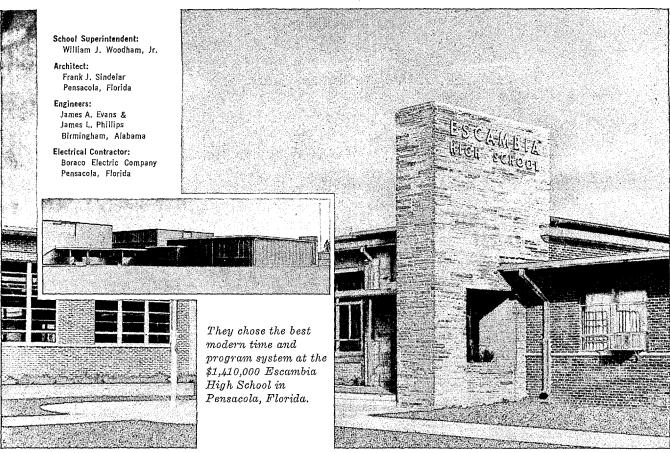
## 1 s modular Armstrong Travertone ceiling"

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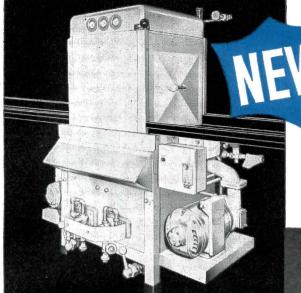
- Jeweled Master Clock movement with automatically wound 72-hour spring power reserve.
- Secondary Clocks standard with hourly and 12-hour supervision correction cycles completed in only 60 seconds.
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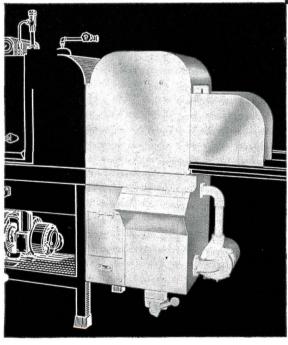
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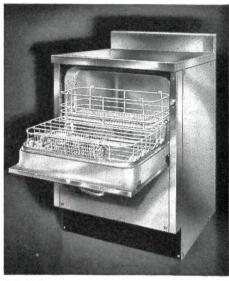
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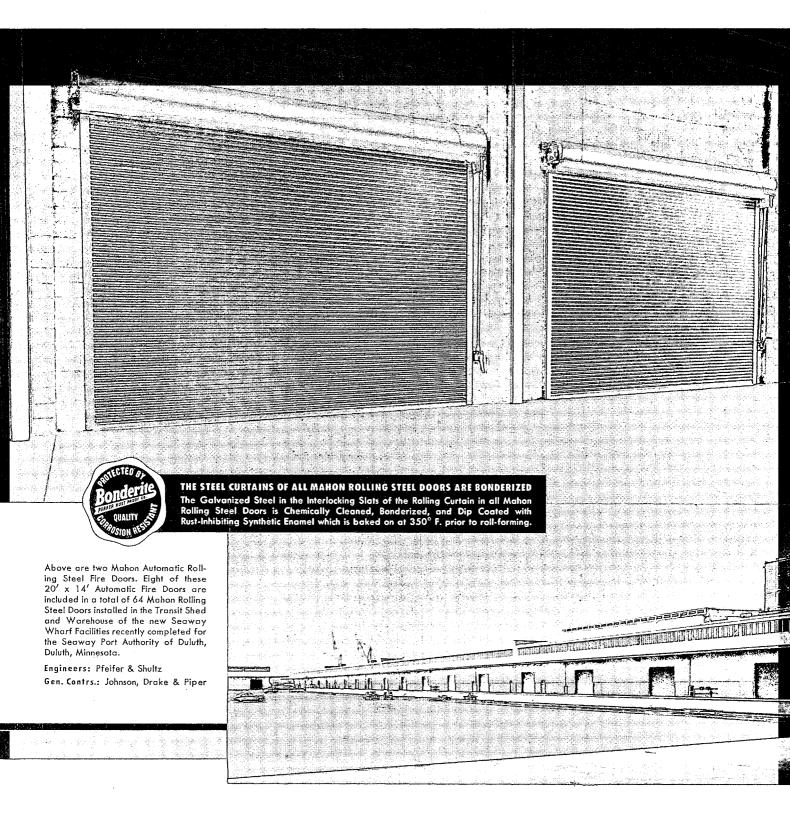


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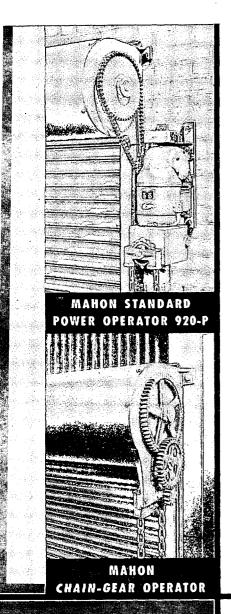
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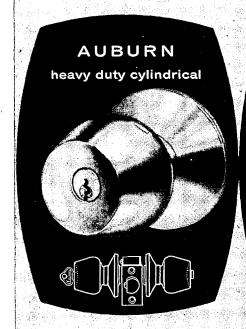
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Handsome tile absorbs up to 80% of all sounds striking it.

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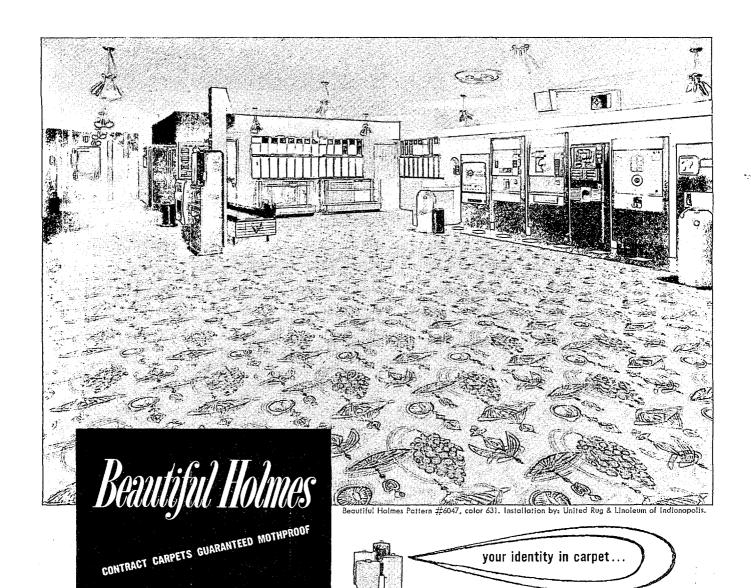
Available ¾" thick in 12" x 12", 12" x 24" sizes; also 12" x 23¾" units for "Z" or "T" suspension systems.

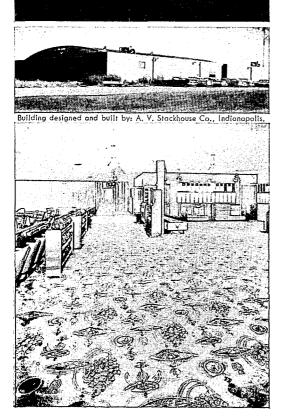
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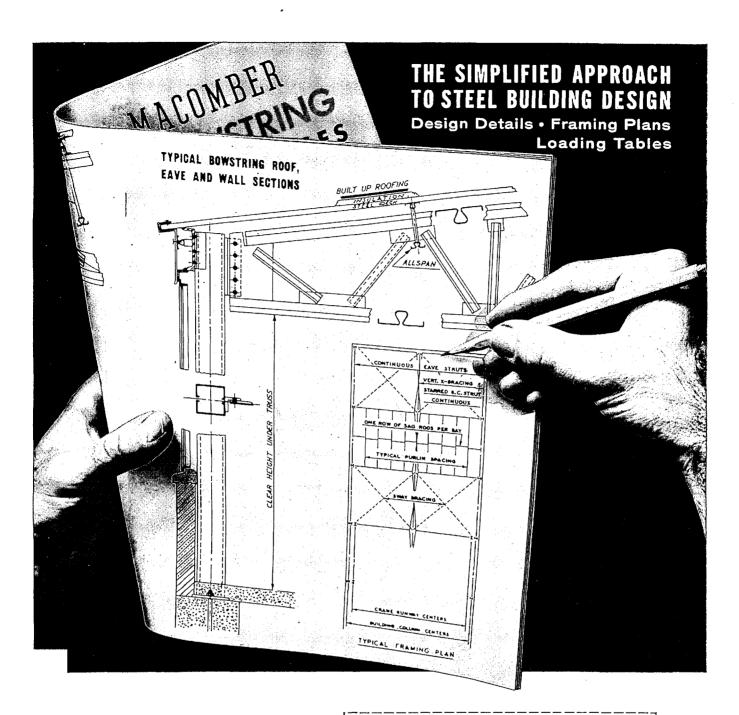
The Hindel Bowling Lanes in Indianapolis had a demonstration of the practicability of Beautiful Holmes carpets when they added 12 new lanes this year. Problem: it was necessary to match, to exact color specification - taupe, coral, turquoise and black - 300 new yards of patterned carpeting to the 240 yards that was installed two years ago. The new Holmes carpet installation was so color-tailored that it was a "natural" to match the existing colors and pattern (a Vertes-type design that partakes of "Around the World in 80 Days"). The warm taupe background color has proved an answer to spotting. When the original carpet was cleaned, it came up so handsomely, it was difficult to tell where the new Holmes carpet met the original. The hidden assets of easy maintenance, color richness and ability to

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take extreme wear make Holmes Contract Carpets especially

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## First, Macomber-

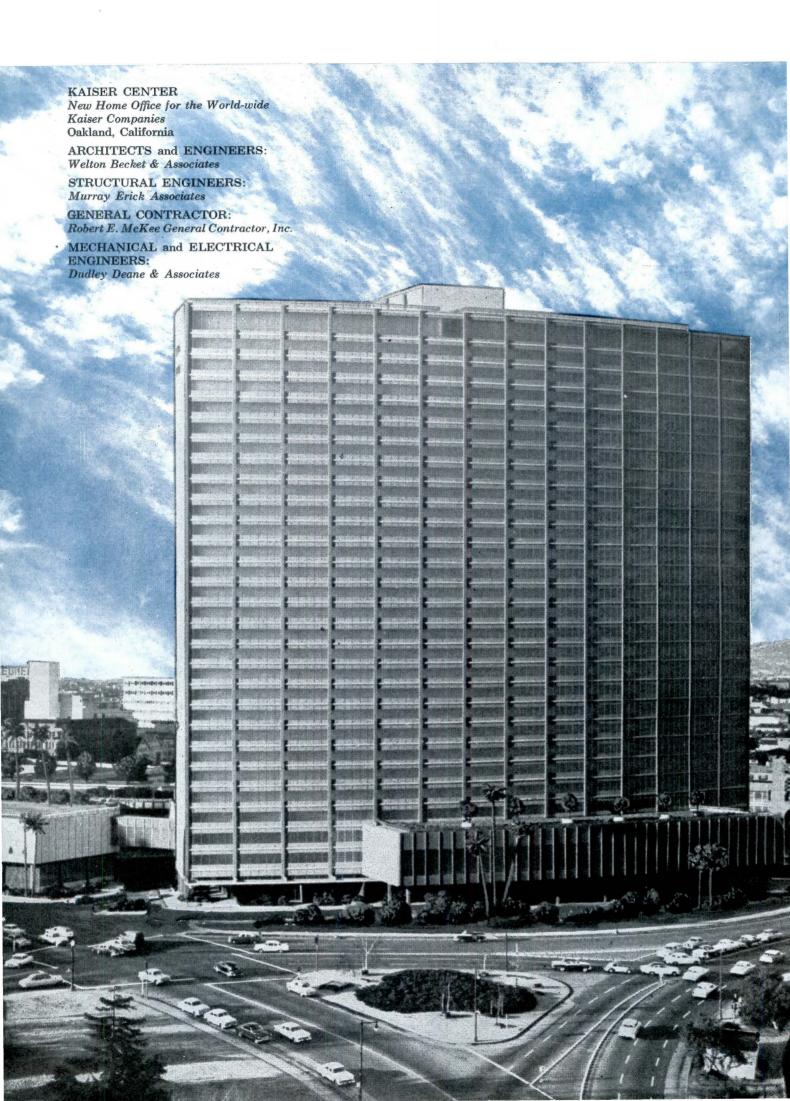
standardized ALL sizes of Bowstring Trusses, then provided complete design details — to scale — to simplify your designing time, to speed deliveries.



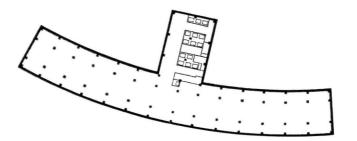


## **MACOMBER**

CANTON 1, OHIO



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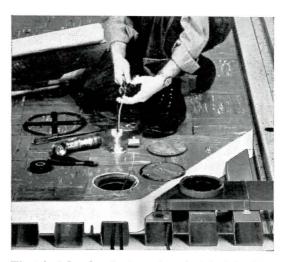


## Milcor Celluflor anticipates tomorrow's electrical load in new Kaiser Center

Here, to provide unlimited electrification at low cost — and meet the challenging construction requirements of a fanshaped floor layout — the architect has combined four types of Milcor Celluflor panels.

In addition to being the structural floor, the underfloor cells serve as raceways to handle the complex cable systems required by illumination, communications, and hundreds of pieces of electronic office equipment in this new 28-story building. And — there's electrical capacity to spare! Service outlets can be installed practically anywhere on the floor. They can be relocated or new ones added — or circuits can be changed — without costly alterations.

There are other advantages of Celluflor — savings of steel, footings, and construction time. For details, see Sweet's Architectural File, section 2a/In — or write for catalog 270.



Electrical header duct carries electrical feeder circuits from the distribution panel transversely across Celluflor cells. Definite patterns of service repetition are established so that proper raceways are easily located, when electric power, telephone, signal, or other service outlets are required in any floor area.

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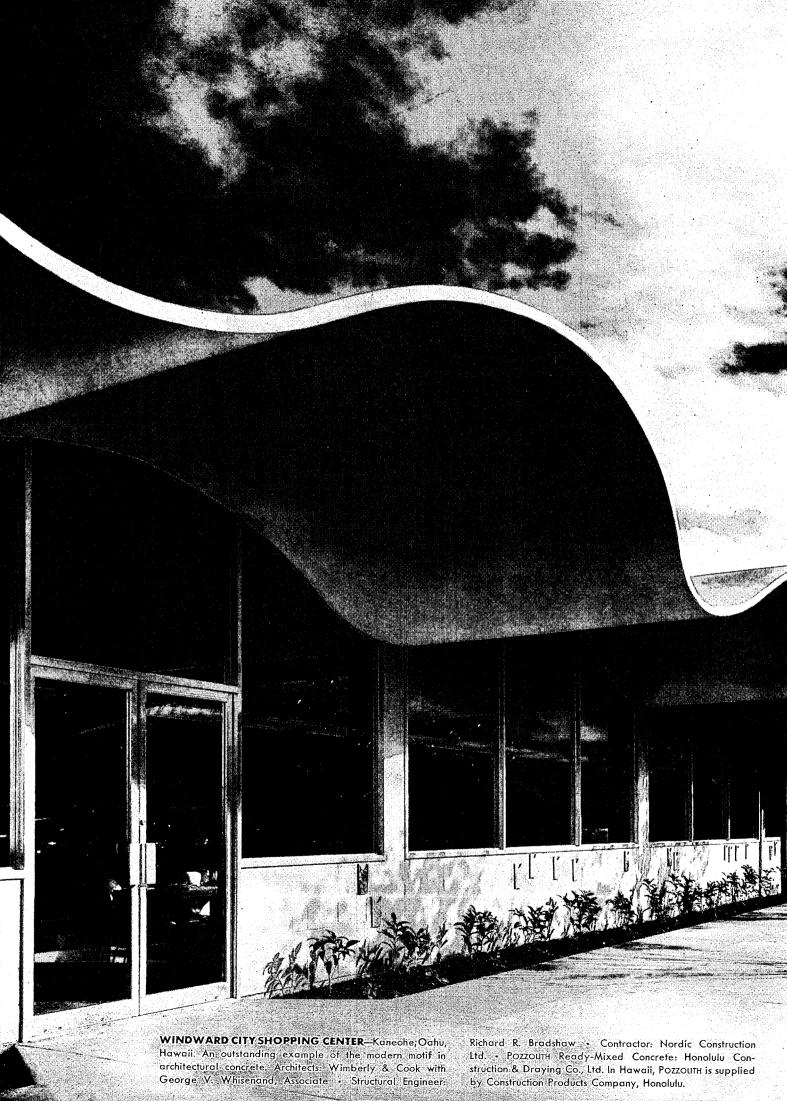
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Exciting design ideas with POZZOLITH concrete . . .

#### Wave-form rooflines, unique dome highlight new Hawaiian shopping center

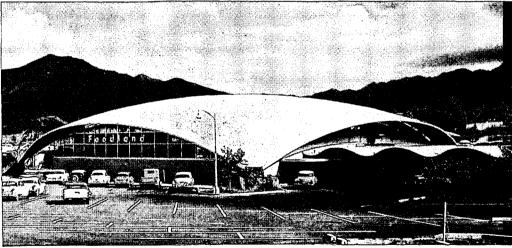
The mood is modern. The theme is functional beauty at Windward City Shopping Center, Kaneohe, Hawaii—a striking example of creative architecture with today's structurally superior concrete.

Concrete for these thin shell roofs was placed with a bottom form only. The concrete readily held its position on sloping forms . . . was easily molded and compacted around the heavy steel reinforcement. The giant 'double-torus' dome, has a square, 128 ft. base and is supported only at the four corners . . . with no intermediate columns.

This is architectural concrete . . . made more versatile and more attractive through the use of Pozzolith. Concrete produced with Pozzolith is a more useful building material . . . superior in performance, in quality and in economy to plain concrete or concrete produced with any other admixture.

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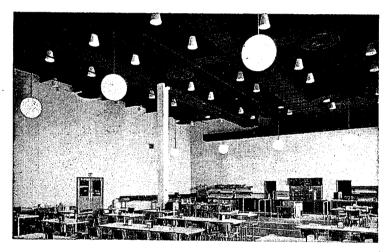
**DOUBLE-TORUS DOME.**—Two toroid forms of reinforced POZZOLITH concrete, at right angles to each other, make up the dramatic dome of Windward City's central building.

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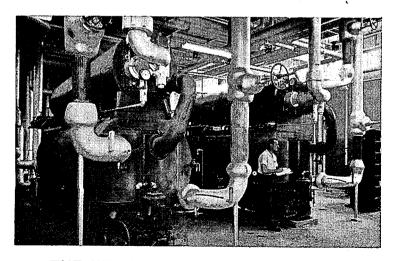
\*POZZOLITH is a registered trademark of The Master Builders Co. for its concrete admixture to reduce water and control entrainment of air and rate of hardening.



NO SUMMERTIME SLUMP With gas as the boiler fuel and York machines, the switch to summer cooling was no problem. Operating costs are low, too, thanks to Gas.



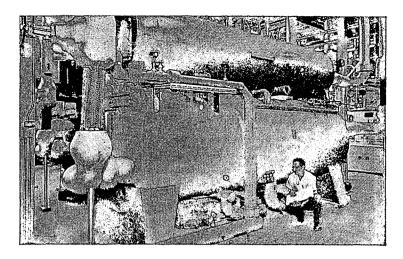
LATEST IN COOLING Gas operated York machines feature the use of tap water as refrigerant and lithium bromide as absorbent, one of the most efficient, practical refrigeration cycles developed so far. Machines start and stop automatically.



THE UTMOST IN FLEXIBILITY The units are cross-connected so that each operates independently if necessary.







MAINTENANCE COSTS TO DATE-ZERO! The Allen Company uses two York machines-a 230-ton unit serving 45,000 sq. ft. of office and cafeteria space, a 170-ton unit for process water cooling. Three small pumps and motors are the only moving parts in the entire system.

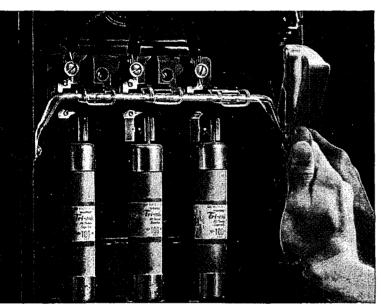
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"With our boilers sized for a winter load, we were naturally oversized for the summer months. But York's gas-operated Lithium Bromide absorption water chillers permit us to make efficient use of part of this steam capacity to cool," says Mr. M. J. Mather, President of the Allen Manufacturing Company, makers of hex-socket screws.

The York Lithium Bromide system eliminates the need for huge compressors found in other types of cooling equipment . . . which brings down the original cost considerably. And with gas the boiler fuel, you make year-round use of an otherwise wasted source of power at rock bottom costs. In addition, York machines are noiseless, lightweight, compact—easy to install and readily adaptable to almost any plant layout.

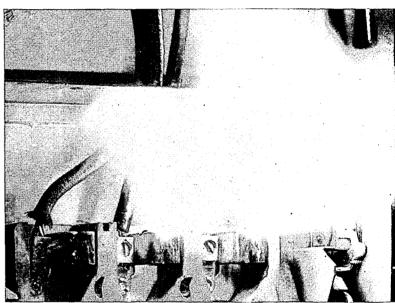
Find out how your present heating system can pay off for you all year 'round with gas-operated York automatic water chilling units. Call your local gas company or write to the York Corporation, Subsidiary of Borg-Warner Corporation, York, Pennsylvania. American Gas Association. OR SAFETY'S SAKE, BUY VACU-BREAK

With BullDog's exclusive clamped-pressure switching contacts



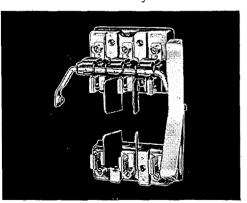
Maximum safety with BullDog Safety Switches

Arcs are smothered before they can cause fire hazard or damage to the switch because contacts are housed inside compact Vacu-Break\* chambers. Pitting and burning of contacts are reduced to an absolute minimum—maintenance is virtually eliminated.



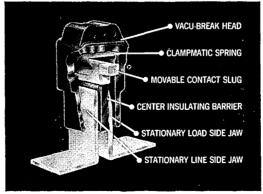
Dangerous arcing with open knifeblade switches

Unconfined flash explosion occurs, burning and pitting blades. Fire hazard and frequent maintenance are the result. These are unretouched photographs of 100 amp, 600 volt switches, operating under 90 ampere, 440 volt load with 40% to 50% power factor.



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#### Chelazzi's challenge

Dear Editor: In OCTOBER 1959 P/A Engineer Paul Chelazzi daringly proposed that the marriage of a suspension system and an arch attempt the happy duration, in spatial terms, of 300 stories.

A building of such kind presupposes, it seems to me, a city-planning technique more highly developed and more broadly diffused than is operative today. Surely, in terms of adding to the burden of traffic alone, installing a 300-story building in the midst of a crowded city would be unthinkable! From a standpoint of esthetics, even on a clear day, because of natural distortional limitations of vision, the proportions of the building beyond the 50th floor would be lost to anyone viewing it from across a street of contemporary width. In fact, the mass would not be comprehended except from great distances or from the air. Certainly, one would hope to find this giant towering above forests of green, its enormity an interesting contract to other building types.

Using what Chelazzi considers an outmoded structural idea—the beam-girder-column system—the best skyscraper architecture in recent years has devoted more thought to solving problems of the relation of the building to its surrounding space and buildings. The possibilities of practically limitless vertical expansion, in terms of cityscape, are themselves limitless. But is not the most absorbing fact of Chelazzi's presentation the suspenarch itself? A slide rule, after all, is an ingenious and useful tool not because it can calculate 2000x2000 but because it can calculate 2x2.

Architects are belatedly becoming increasingly aware of the suspenarch as well as his other engineering ventures. However, a too literal interpretation of Chelazzi's drawings seems to me not the best application of his contribution. Chelazzi's challenge to architects, rather, lies in testing their ability to re-evaluate the many structural possibilities this creative mind has devised and to channel this inspiration to new flights of fancy.

JOAN KAYOCHKA YONKERS, N. Y.

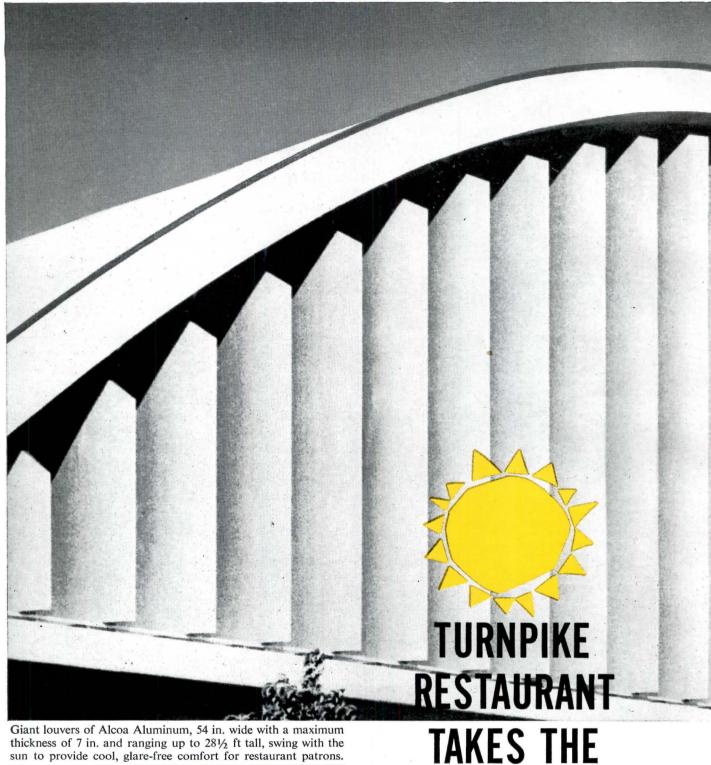
Dear Editor: Paul Chelazzi has revealed in his latest article, "Multi-story Structures," in OCTOBER 1959 P/A, the surprising versatility of the suspenarch which until now was almost confined to the role of wide-span structures. This latest development is not simply another application of the suspenarch, but rather a new conception of its principles which, as a result, are expressed with greater clarity. The efficiency of a system comprised of axially-stressed arches and suspended cables depends on the equal division of the loading between the two elements, and until now this has not been accomplished with ease.

new conception

In his design for a hangar, (DECEM-BER 1957 P/A, Figure 18), Chelazzi proposed carrying the alternate roof panels on the suspended members and the intervening panels on the arches. This is a direct solution, but the castellated roof creates architectural problems. Another solution which is employed in the 30-story and the 300-story buildings, (Figures 6 and 14 respectively in the most recent article), involves hanging half the number of floors on cables from the arch, and hanging the remaining floors on a separate set of cables from the suspended member. The exclusive use of cables to transfer the loads to the suspenarch creates a truly homogeneous structure, though its stability might be impaired by the excessive distance between the lower floors and their support.

Possibly the most satisfactory solution is that used to support the 10-story units in the 120-story structure (Figure 12). Here the suspenarch occurs in the center of a unit where it is sandwiched between the oppressive floors above and those which dangle below. This arrangement appears to create a delicate balance within the structure between the compression of the floor columns and the tension of the cables, and demonstrates almost visibly the mechanics of the suspenarch. Whichever system is used, the basic principles of the suspenarch

(Continued on page 50)

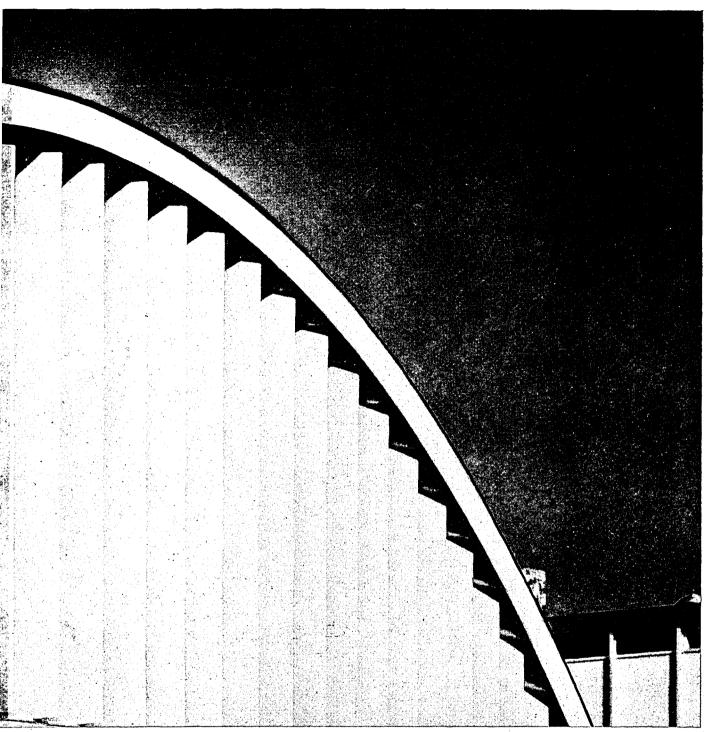


sun to provide cool, glare-free comfort for restaurant patrons.



Dual access to the new CONOCO Midway restaurant-service center is provided by a 52-ft-high arch, spanning the six-lane Will Rogers Turnpike. Location is near Vinita, Okla.

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OWNER: Continental Oil Company, Ponca City, Okla.
ARCHITECT: Hudgins, Thompson, Ball and Associates, Oklahoma City, Okla.
GENERAL CONTRACTOR: Lippert Brothers, Oklahoma City, Okla.
SUN LOUVER SUBCONTRACTOR: Brown Manufacturing Company, Oklahoma

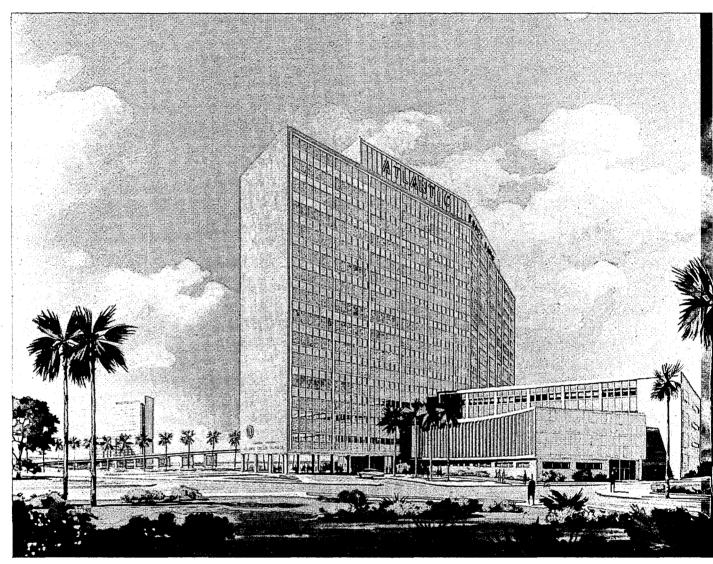
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.. a step ahead of tomorrow

(Continued from page 45)

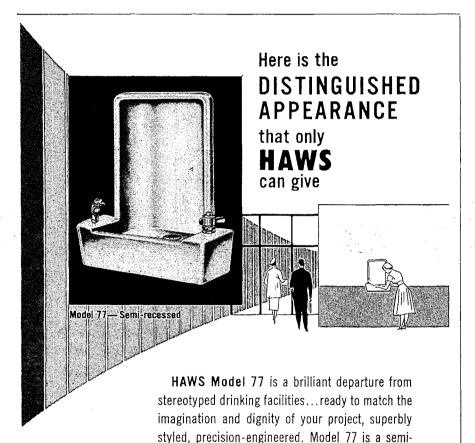
remain unchanged and when combined with the supporting elevator columns and the separate wind resistive framework, it creates a whole which is distinguished for the structural coherence.

In the derivation of the formula H = WL/8f (JULY 1956 P/A), the values

of H and Z were assumed to be practically equal due to the relatively small sag/span ratios. This assumption may not be quite true in the case of the suspenarch in its present form. However, this is probably not a valid criticism as the geometrical shapes of the elements could be rearranged, especially if the apparent value of  $L=2L_1$  were altered.

Chelazzi is to be congratulated on his imaginative and stimulating proposals—which are, obviously, as much a result of his deep understanding of structure as they are of his undoubted ingenuity.

CATHAL O'NEILL M.R.I.A.I., R.I.B.A. Chicago, Illinois



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#### "basically valid"

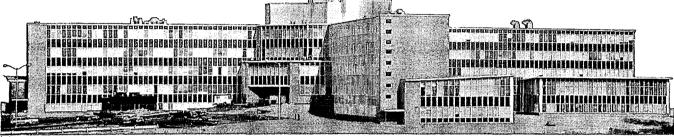
Dear Editor: The article, "Multistory Structures" by Paul Chelazzi (October 1959 P/A) is a noteworthy contribution to the field of creative engineering. An evolution from the present conventional system of building tall structures, particularly through the medium of cable columns acting in tension, has often attracted the attention of designers. The above article, though, I believe to be the first extended presentation of a solution in that direction.

Chelazzi's concept of hanging cable columns from the axially-stressed suspenarch and his general arrangement of structural elements for stability seem to me to be basically valid. There are, however, a number of reservations concerning the proposed system. Developing adequate stiffness and rigidity for the building to function effectively would undoubtedly constitute a major problem. It may be that such a criticism is premature considering the schematic and conceptual nature of Chelazzi's article; however, it is pertinent to note that the problem of stiffness is implicit in the advantages of his structural system. The considerable elastic deformations that would accompany axial stresses and particularly the negligible moment of inertia of the steel cables might necessitate compromising modifications. It would also seem necessary to provide for some form of anchorage of the hanging cable col-

Concerning the support of the suspenarch, the author refers to a condition permitting free displacement. It is not completely clear how this condition can be achieved, particularly at the exterior

(Continued on page 54)

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#### p/a views

(Continued from page 50)

wind columns that do not have the stabilizing effect of gravity loads.

Chelazzi's extremely original work inevitably brings to mind the lamentable inability of the building industry to organize a building research center. The enormous amount of theoretical and experimental work that his designs require and that could be performed through such an agency would generate a stimulating effect on the entire field. Under present limitations, the major accomplishments of leading engineers such as Severud, Weidlinger, and Salvadori only add to their stature.

JOHN MASCIONI
Assistant Professor of Structural Design
Pratt Institute, School of Architecture
Brooklyn, N. Y.

#### therapy forgotten?

Dear Editor: Inasmuch as I am flat on my back in a hospital, I feel particularly well disposed to make a few remarks about Marc Goldstein's Yale Master's Thesis (OCTOBER 1959 P/A).

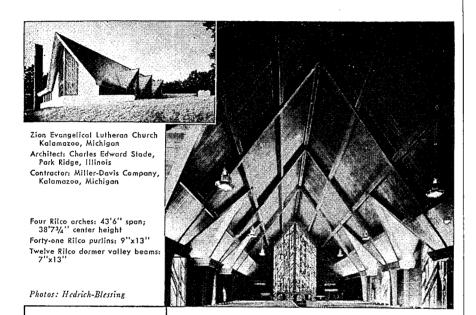
In this design for a hospital one important consideration has been overlooked by Goldstein and John D. Thompson, his Yale School of Medicine colleague. So much emphasis has been directed toward the manipulation of space (often at the sacrifice of function and economy) that the therapeutic role of over-all architectural character has been largely forgotten.

Should a hospital be a World's Fair in miniature or should its architecture partially act as a sedative to quiet fears and inspire confidence? Having been spared the experience of being an expectant mother, I can only surmise that the façade of the three-story unit would cause many a prenatal nightmare. I'll leave it to the reader to decide whether this unit looks more like a giant nuclear reactor than an extrusion die for fluted-aluminum downspouts.

The over-all plan concept of the building is logical and interesting. If the program had not contained the requirement for expansion of individual units, I might question the plan on the basis of climate, land cost, construction and operating economy. But my quarrel is not with the plan; it is with the overmanipulation of certain elements in it. They have either been worked to death or given importance all out of proportion to their function.

For example, the patients' toilets in the main unit. Why were they placed on the exterior wall? Not because they will be easier to heat, easier to clean and service, less costly to construct. Nor because they will improve the view from the patients' windows. The folly of this wallpaper architecture becomes complete when you get to the corner four-bed wards where lavatory and lockers are forced to join the water closets in the exterior wall parade. It may be argued that these rooms are architectural but certainly not functional. More than twice the size of the two-bed wards, there is wall space only for a third bed.

As I look at the representations on (Confinued on page 60)



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#### p/a views

(Continued from page 54)

pages 130 and 131, I cannot help but visualize a more pleasing result had the three-story unit been treated as a simple enclosure, on stilts if you will, to contrast with the more playful one-story units. What this building sorely needs is more of the architecture of repose.

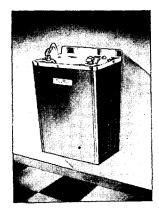
A few words about the business of building versus the art of architecture. The true goals of architecture are very much akin to those of painting, music

and sculpture. A point we sometimes forget, however, is that the limitations imposed on each of the arts have changed in the last few hundred years. These changes have been by far the greatest in the field of architecture. Because more people use it, because bank and industry finance it, and because machines produce it, the architect must work in a vastly different social, economic and technological framework than he did 300 years ago, when his efforts were largely governed by his own creative capabilities. his life span, and the inherent limitations of the few materials with which he worked

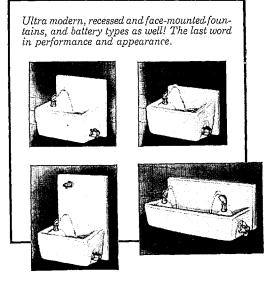
As the nature of architecture has changed so have the architect's responsibilities. Today his material and structural limitations are much broader, thanks to a vigorous building industry, but it is in this very realm that the architect sometimes goes hog-wild, seemingly oblivious to his other responsibilities. Are we always going to justify such behavior by saying he is searching for new art forms?

> WILLIAM LYMAN Birmingham, Michigan

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#### historic renewal

Dear Editor: We were very pleased to read your P.S. in OCTOBER 1959 P/A regarding historic area renewal and the College Hill Study. In the several months since completion of the study report, some very interesting effectuation measures have taken place in Providence. These include passage of state enabling legislation for historic area zoning; action, not only in Providence, but in three other towns towards adoption of ordinances; private rehabilitation of a sizeable number of structures and some rethinking in regard to the priority schedule for the proposed College Hill Urban Renewal project.

LACHLAN F. BLAIR Blair Associates
City and Regional Planning Consultants
Providence, Rhode Island

#### reads last first

Dear Editor: Many months ago I read through your magazine and finally to the P.S. where you had a nice article on the "unread professional architects." Since that time I have been reading the P.S. first, in order that I might not overlook your comments!

In JULY 1959 P/A I noticed where you had attended, as a visiting committeeman, the Graduate School of Design at Harvard. Your remarks concerning the planning schools in the U.S. should be echoed and re-echoed throughout the entire educational system.

> BROOKS MARTIN San Antonio, Texas

Field spline erection technique for Formica shop-veneered panels permits easy panel replacement

Formica surfacing is famous for its rugged resistance to normal wear. But it can be damaged by extreme cases of carelessness or accident.

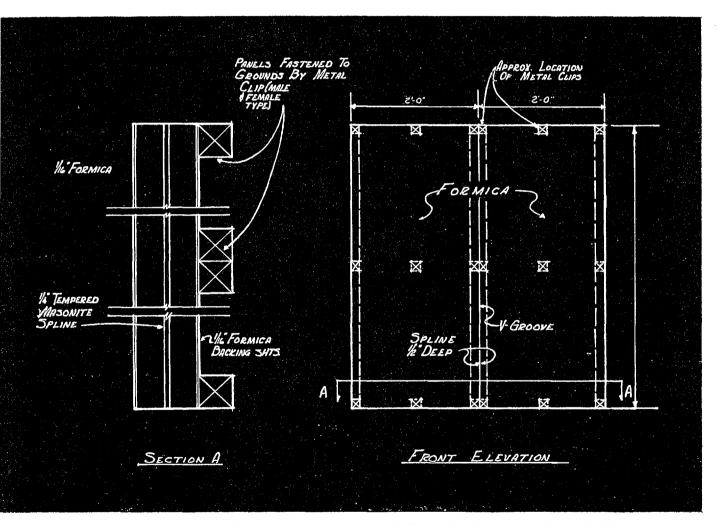
As extra insurance for permanent low cost beauty, the application method used in this installation permits easy single panel replacement quickly, inexpensively.

The wall panels were shop-veneered using Formica 24-CR-85 Cherry Picwood on ¾" mahogany plywood with ¾" Formica backing sheet.

The fabricator secured actual measurements

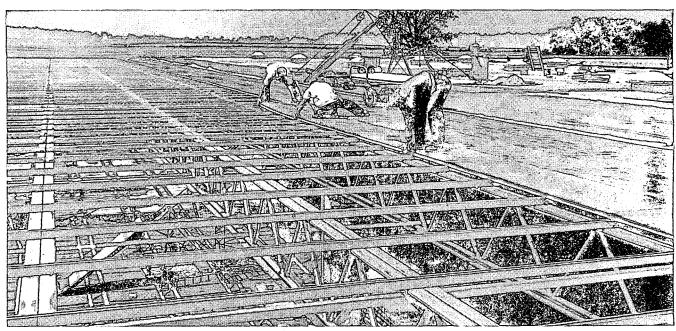
after building walls were up, cut panels to size, numbered them for ease of erection, and grooved them to receive a ¼" spline with ½" penetration. The last panel for each wall was left oversize and cut to fit on the job by the installing general building contractor who used his regular carpenter labor.

The spline was left loose rather than fastened to furring strips. Panels are held in place by metal fasteners with male and female parts screwed to the backs of panels and wood furring strips.

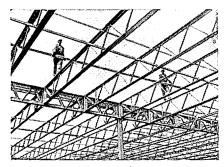


Formica \( \mathcal{U}''\) sheets can also be applied to a variety of core materials on-the-job using Formica Safe-Bond Contact Adhesive. Specifications for Formica wall applications of several types are available (Form #846). Write Formica Corporation, 4604 Spring Grove Ave., Cincinnati 32, Ohio.

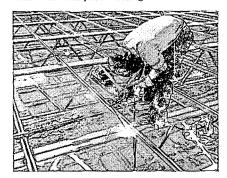
....be sure you get genuine Formica. Look for this wash-off registered trade mark on the surface



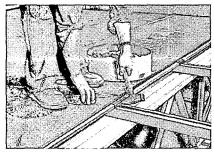
Every phase of the roof deck construction is illustrated in this view: Joists, box section sub-purlins, 2" Tectum plank, built-up roof, gravel coating.



Workmen are shown carrying several 34' long lightweight box sections in the initial phase of the job. The sub-purlins are aligned in position with precision jigs and then fillet welded at each joist crossing.



Welding at each joist crossing provides lateral strength and continuous beam action. Note weld is hidden from view below, by joist.



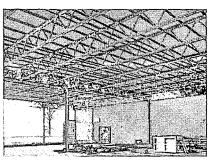
High speed clips are driven over tongue of plank. Tectum planks span three sub-purlins giving added lateral strength. This operation is quickly accomplished; saves time.

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the appearance is excellent."

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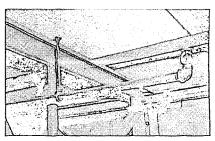
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Building: Scott Chemical Company, Marysville, Ohio. Engineers & Builders: James Campbell Associates, Inc., Marysville, Ohio. Tectum Erector: Bard Roofing & Sheet Metal Co., Columbus, Ohio.



In this close-up, the facility with which the sprinkler system was erected indicates a typical time saving advantage of the new Tectum roof deck assembly. An estimated \$3000 was saved on the erection of the sprinkler system.

# PROG SIVE A TECT RE MEWS PEPOFT



- Mexican Architecture: New Forms, Imitation, or Evocation? (above)
- Christmas Present For Dallas: A Theater by Wright
- Copper and Ferrous Plumbing Installations Timed

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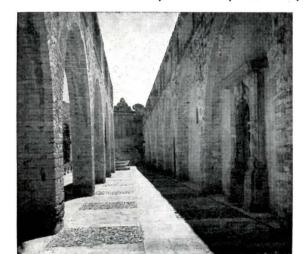
## MEXICAN ARCHITECTURE: NEW FORMS, IMITATION, OR EVOCATION?

#### Examination of Mexican Architecture Pleases and Disappoints

A visit to Mexico provides architectural experiences both encouraging and disheartening. Several exploratory and pioneering spirits, coupled with at least one designer bent on the tasteful preservation of the country's fabulous architectural heritage, give a sense of excitement—that some are in search of something which will rival Mexico's past in qualities of "delight" (p. 69) and emotion-evocation.

Mathias Goeritz' great concrete pylons (above), marking the entrance to a "satellite city" for the capital, are impressive symbols of the new spirit abroad in certain areas of Mexican design. Even though truncated by the developer from their original height, these landmarks have an impact and meaning for the "new" Mexico.

That the great architectural heritage of the country is not being disregarded is evidenced by the meticulous conversion (below) for residential use of an ancient silver reduction plant near Guanajuato by Italian Architect-Designer Giorgio Belloli. He was so successful in this project that the

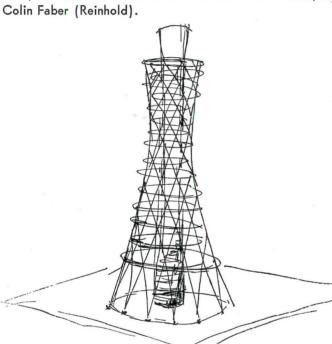




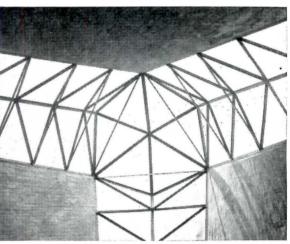
#### p/a news report

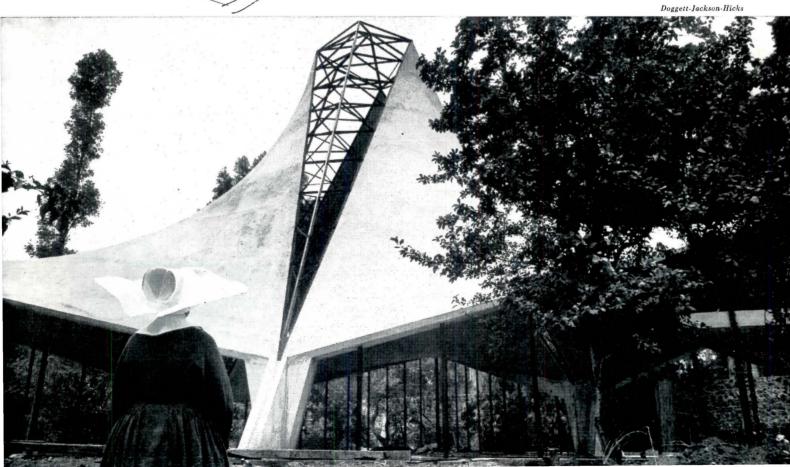
government gave Belloli a nearby church to restore and furnish with his notable collection of Indian and Spanish religious art.

Perhaps the current "most-famous" among Mexican structural innovators is Felix Candela. His chapels of Lomas near Cuernavaca (right) and for the Sisters of San Vicente de Paul in Coyacan (bottom and right center)—with Enrique de la Mora & Fernando Lopez Carmona—exemplify Candela's imaginative exploration of the hyperbolic paraboloid form. A new approach is indicated in his proposal (below) for the Monterrey Insurance Company building in Mexico City. Initial thinking on this project indicates a tall structure hung from a central mast, with tension cables anchoring it. The chapels will be included in a forthcoming book, Candela—Adventurer in New Structural Forms, by Colin Faber (Reinhold).



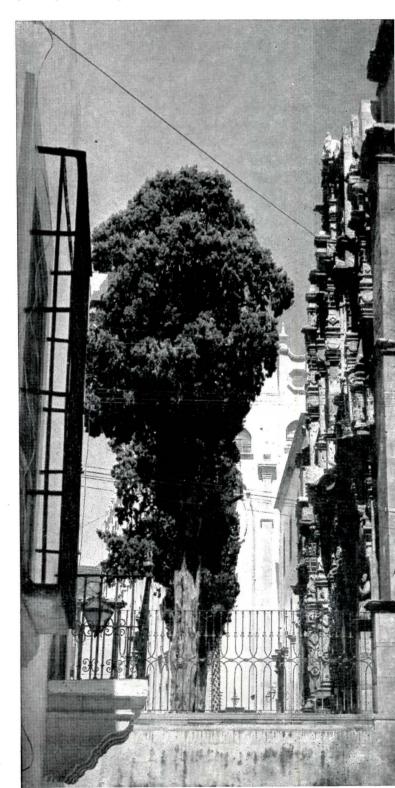


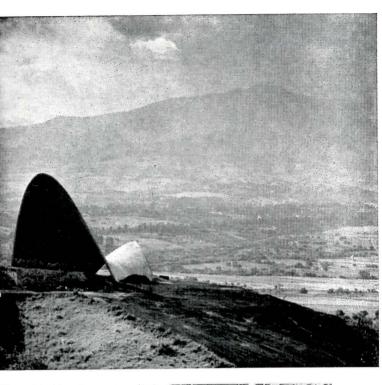




#### p/a news report

The march of the curtain wall up Paseo de la Reforma in Mexico City provides an unedifying spectacle to one who, a decade ago, had seen the Paris-like atmosphere of this boulevard with its low, gray and brown buildings behind park-like arrangements of trees, fountains, and statues. Candela says that the vogue for this building technique provides buildings (below left) which are neither practical (curtain walls have to be practically custom-made there) nor particularly suitable for the climate, which seldom needs extremes of air cooling or heating in its buildings. Since the great majority of Mexican architects are not Candelas or O'Gormans, a future of this more anonymous technological architecture may be predicted. How much more satisfactory would be a contemporary evaluation of the design characteristics which produced building profiles such as this one (below) in Guanajuato! James T. Burns, Jr.









#### MUSEUM OF MODERN ART ANNOUNCES SPACIOUS NEW WING

#### Building Part of \$25,000,000 Fund Drive

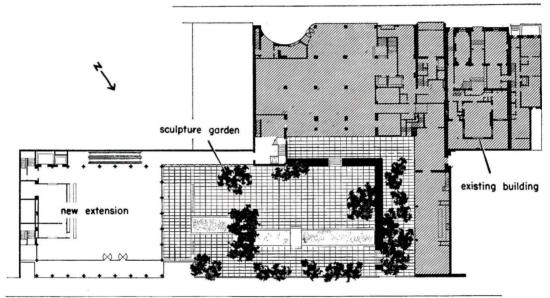
NEW YORK, N. Y.—With construction of new, eight-story wing, exhibition space of Museum of Modern Art will be increased from 12,000 sq ft to 42,000 sq ft. Designed by Philip Johnson Associates, wing (bottom) will be reinforced concrete and steel structure sheathed in stone with glass-walled entrance lobby and two upper windowed stories for print and photography shows, offices, and laboratory. Two underground floors will be for shops and "study storage" (art storerooms so planned that art is easily available for study).

New wing will be built on site of famed Japanese house of several years ago. Thus the present museum building, the new wing, and the museum cafeteria will embrace museum's Sculpture Garden on three sides (below). Two buildings will connect via multi-story glass passageway. Escalators will run height of the wing.

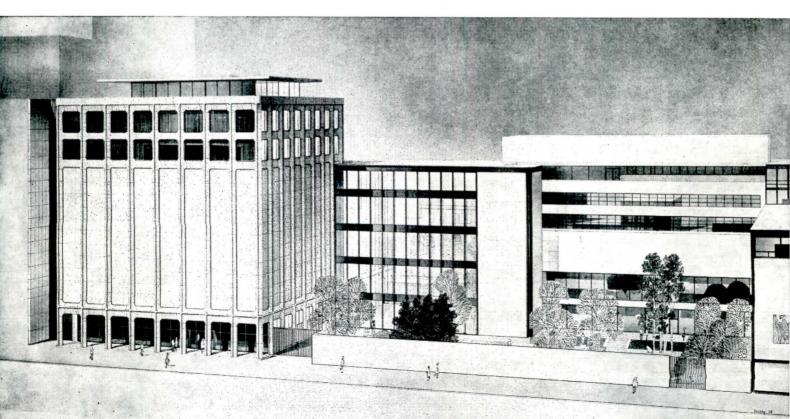
New wing is part of recently-announced \$25,000,000 expansion and building program of Museum of Modern Art. In addition to money for construction and maintenance, funds are being sought for research and conservation, training and publications, and liquidation of loans for restorations made after last year's fire.

Among other advantages, new wing will release entire floor of main museum building for permanent exhibits of architecture and industrial design.

53rd St.

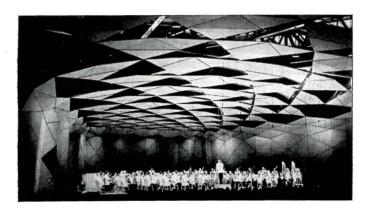


54th St.



#### ARCHITECTURAL BULLETINS

 Charles Munch conducts the Boston Symphony beneath new orchestra shed at Berkshire Festival, Tanglewood, Mass. Shed, in use for first time this past summer season, designed by Eero Saarinen & Associates and acoustical consultants

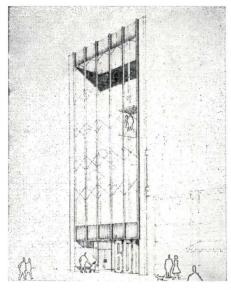


Bolt, Beranek & Newman, Inc. Side walls of Edmund Hawes Talbot Orchestra Canopy are solid plywood modulated in shape, tilted inward at top. Walls extend outward, making space 85 ft wide at front of stage and 35 ft wide at rear; stage is 47 ft deep at deepest point. Ceiling is suspended by steel cables from roof trusses and consists of varioussized triangular panels connected tip-to-tip. Some 12,000 listeners can be accommodated for concerts-6,000 beneath shed and 6,000 on lawn outside.

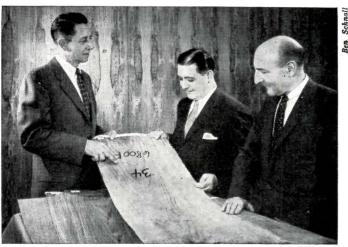
- Executive Furniture Guild of America plans Guild Center for Environmental Study and Development, "to further broader understanding and interpretation of all techniques and practices influencing the development of personal working spaces for business and professional people."
- Headquarters building for Michigan State Medical Society, East Lansing, Mich., is expected to reach completion in June, 1960. Designed by Minoru Yamasaki & Associates, building will have vaulted roof of precast concrete. Secondstory bridge will connect office at that level over two-story high lobby. Located one mile from Michigan State University, headquarters will house executive offices, meeting rooms, and communications studio of Society.



- Exhibition of photographs featuring II notable modern chair designs has been assembled by Herman Miller Furniture Company for showing in museums, schools, etc. "Chairs from Machines" is available from company, only charge being return freight costs. Address: "Chairs from Machines," Herman Miller Furniture Company, Zeeland, Mich.
- Architect Jack Freidin of Freidin-Studley Associates, New York, designed eye-catching façade for the conversion of conventional, six-story, stone-faced office building on Fifth Avenue. Leasers Julian J. Studley, Inc., expect to lease entire building as a store and display area to national retailing oganization and a large manufacturer. Placing elevator in glass "cage" on street not only creates, according to Freidin, a "dramatic landmark," but also saves space in building's core normally used for vertical transportation facilities.



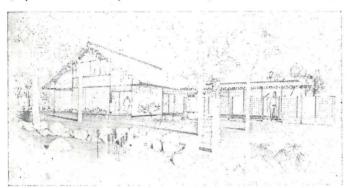
 New York Architects Ted Arthur Homa and Charles W. Beeton examine flitches of wood veneer with U. S. Plywood's representative Clifford Stevens (left), in firm's new architectural showroom. Room, one of first in what eventually will be network covering most regions, is operated in conjunction with warehouse containing 750,000 ft of veneer.



#### p/a news report: bulletins

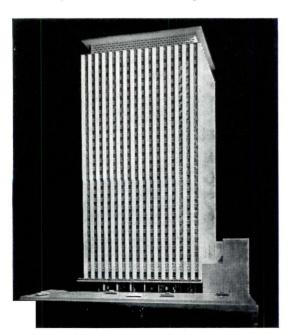
From more than 50 varieties of wood, architects select flitches which interest them, and finished panels are set up for examination under three types of light, warm and cold incandescent, and fluorescent.

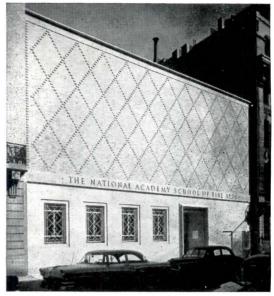
- Urban Land Institute's study, "Metropolitanization of the United States," predicts, by year 2000, 85 percent of country's population-about 320 millions-will live in urban areas. Concurrently, International Council for Building Research Studies and Documentation in Rotterdam heard Dr. J. van Ettinger, president, forecast that by century's end world building capacity will have to be 41/2 times as large as it is today.
- House is one of three designed by Carl Koch & Associates, Cambridge, Mass., for Ferro Corporation of Cleveland to promote use of porcelain enamel in residential design.



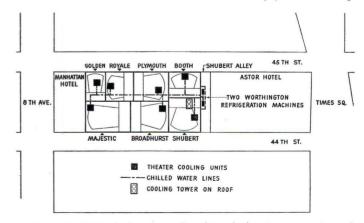
Exterior walls will be porcelain-enameled-steel sandwich panels; and walls and ceiling of mechanical core will be porcelain-enameled steel. Interior dividing walls will be finished in variety of materials. Participating firms are expected to include new developments in wiring, plumbing, and heating.

• Largest office building in New Orleans will be designed by Chicago Architects Shaw Metz & Associates. The \$8.5 millions building will provide 421,000 sq ft of office space in the Crescent City. Demolition of existing structures will proceed shortly after the first of the year.



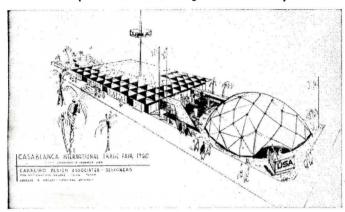


- Across New York's East 89th street from Frank Lloyd Wright's Guggenheim Museum is new School of Fine Arts of National Academy of Design. New York Architects William & Geoffrey Platt designed windowless facade of buff brick in diamond-textured effect. Building has four large and two medium-large studios for 500-student capacity, art supply store, lockers and rest rooms for students and models, lounge, and assembly room which will accommodate 200 people for lectures and meetings.
- N. Y. newspapers commented on opening of Wright's Guggenheim Museum: New York Times (October 21)-"Even the artists were divided. Many, at the preview, handed down a bitter, caustic verdict. Others, in the minority, found the building 'exciting' or 'different,' or adopted a let's-wait-and-see attitude." New York Herald Tribune (October 21)—"That this museum . . . has also turned out to be the most beautiful building in America, appears beyond question to be the majority opinion of architects, artists, critics, and special guests."
- Single, central, air-conditioning system will connect and serve seven Shubert theaters in New York. Worthington Corporation announces 650-ton, central, refrigeration plant will be installed beneath famed Shubert Alley, heart of theater district, whence chilled water will be piped to cooling



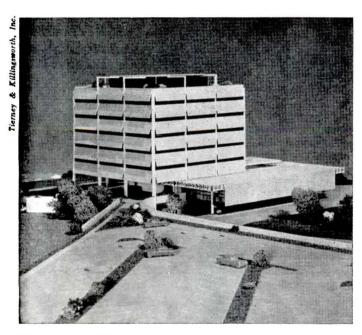
units in individual theaters. Combined theater capacity of almost 8000 seats makes this largest theatrical air-conditioning installation on record. Theaters will continue to operate while new system is being installed.

• Theme of Casablanca (Morocco) International Trade Fair, to be held April 24-May 10, 1960, is Port of Philadelphia. Designed by Carreiro Design Associates (Charles E. Broudy, Supervising Architect), Fair will consist of geodesic dome and square exhibit building with roof of nylon in tri-



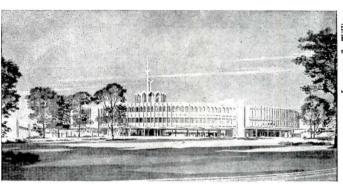
angular form held taut and supported by steel wires. Building will feature Philadelphia's past and present; dome will portray future. After Fair, buildings will be dismantled and shipped to Izmir, Turkey.

- Definite dates for Seattle's Century 21 Exposition have been announced: April 21-October 21, 1962. . . . Last weekend in January 1960 will see annual meeting of Society of Architectural Historians in New York. Sessions will be presided over by Harley McKee, Christopher Tunnard, Holmes Perkins, Robert Brenner. . . . University of Illinois Small Homes Council-Building Research Council will hold 15th annual Short Course in Residential Construction, in Urbana, January 14-15. . . . 56th Annual Convention of American Concrete Institute takes place March 14-17, Hotel Commodore, New York.
- Large, sloping, concrete, wall panels will act as sun shades on bank and office building in Miami designed by Weed Johnson Associates. Bank, which will occupy two lower floors, will be accessible to four streets; depositors will be able to drive up under building to drive-in tellers' windows. Penthouse will contain executive offices, gymnasium, and steam and locker rooms.



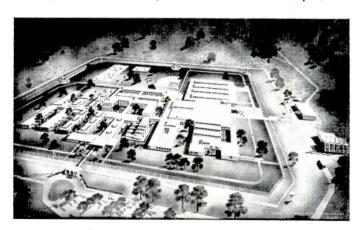
#### p/a news report: **bulletins**

• Robert Moses, speaking on "Critics Build Nothing" before N. Y. Building Congress, likened his critics to beatniks, whiners, vomiters, Yahoos, skunks, sourbellies, twolegged termites (plus 15 or so other compliments); and compared Moses (Robert) directly or by implication with Archie Moore, General Grant, St. Paul, Aristides the Great [sic], Baron Hausmann, Admiral Dewey, and General Somervell. A prompt riposte came from award-winning developer James H. Scheuer (president of New York's Citizens Housing and Planning Council), who likened Moses' tactics to those of Cataline, famous for vituperative outbursts in Roman Senate. Scheuer quoted for Moses Cicero's oration which helped precipitate Cataline's downfall—"How long, O Cataline, will you continue to tax our patience? How long will your furies continue to enrage us? When will you arrive at the end of your unbridled audacity?"



• All national agencies of American Baptist Convention will be brought under one circular roof of proposed head-quarters building at Valley Forge, Pa. Concrete structure, designed by Vincent G. Kling, Philadelphia, will have walls of glass and natural-finished stone. Building will surround central courtyard and chapel. Project also includes graphic arts plant for production of books and periodicals.

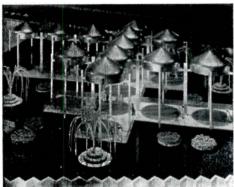
• Medium Security Prison for State of Connecticut consists of about 20 buildings, separated into ten categories according to function: receiving and orientation unit, including cell block for new inmates; food preparation and service unit; industrial and maintenance section; indoor recreational buildings; Protestant chapel, Roman Catholic chapel, and



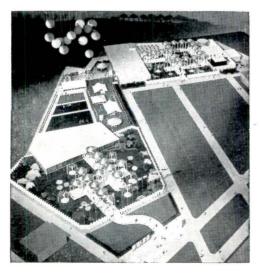
Jewish prayer room; rehabilitation unit; administration building; store house; and powerhouse. All but five of buildings are connected by enclosed corridors. Architects are La-Pierre, Litchfield & Partners, New York.

#### p/a news report: bulletins





 U. S. Exhibit at World Agriculture Fair, New Delhi, India, uses "Indian motifs modified by American treatment . . . to create a feeling of unity between Indians and Americans," according to Architect Minoru Yamasaki, Minoru Yamasaki & Associates, Birmingham, Mich. Fair, which runs from December 11, 1959 to February 14, 1960, is sponsored by Farmers Forum of India and supported by Government agencies. Attendance by 3-4 millions from all parts of Southeast Asia is expected. American section consists of entrance dominated by 40-ft high domes containing photographic description of U. S. farm life; building with large-scale model of typical farm community, communications exhibits, library, and farm kitchen; building housing exhibits of processing and marketing, plus story of U. S. technical assistance program and use of U.S. foods around world; third building showing agricultural uses of atomic energy. Outdoor areas exhibit farm equipment, dairy barn, poultry raising, women's booths with canning, preserving, etc., and stage shows by 4-H boys and girls. Display design is by Frank Noftz & Associates of Detroit, working with the architects.

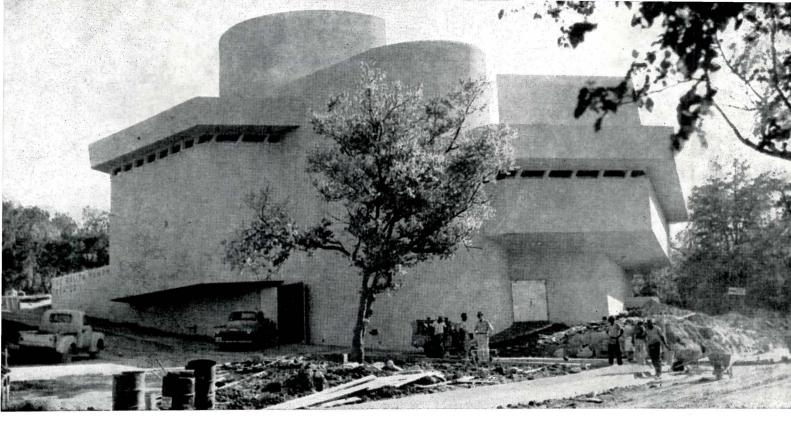


#### **Personalities**

EERO SAARINEN received annual Arts Award from Dickinson College, Carlisle, Pa., Dec. 1; award "covers all the humanities" . . . . Architect WILLIAM F. R. BALLARD (Ballard, Todd & Snibbe, New York) was elected chairman of Citizens' Housing and Planning Council of New York . . . . JOHN W. ROOT (Holabird & Root, Chicago) received civic award for service on Chicago Plan Commission; WIL-LIAM HOLABIRD of same firm replaced him on Commission . . . . FRANK A. MARSTON (Metcalf & Eddy, Consulting Engineers, Boston) was elected president of American Society of Civil Engineers . . . . KAREL YASKO (Foster & Yasko, Wausau, Wis.) has been named Chief Architect for State of Wisconsin . . . . VINCENT G. KLING, Philadelphia, won two awards in 1959 Interior Awards Program of Institutions magazine, for Lankenau Hospital's Medical Science Building and Savarin Restaurant in Penn Center, an Honor Award in School Architecture from Pennsylvania Society of Architects for Riverview Park Building elementary school (which won P/A Award Citation in 1958) .... HIDEO SASAKI will serve as landscape architect and site-planning consultant of New York's Grand Central City



(page 157, March 1959 P/A); he characterizes his designs for the project as "an urbanistic approach in the great western tradition" . . . . Movement to city from suburbs is on increase, VICTOR GRUEN reported to New York Architectural League in talk on apartment-house design. Survey by him revealed that 20% to 40% signing up for New York luxury apartments are former suburbanites . . . . Architect JAMES B. FRANCIS, Richmond, Mich., was elected second national district leader of Amvets . . . . Alcoa 1959 Industrial Design Awards went to CHARLES EAMES, PETER MULLER-MUNK, and F. W. PRIESS (latter is manager of packaging and product design for Montgomery Ward & Company) . . . . JOSEPH AMISANO (Toombs, Amisano & Wells, Atlanta) reports that structural engineers for Lenox Square Shopping Center (page 90, October 1959 P/A) were MUL-LEN & POWELL. DEMETRIOS POLYCHRONE consulted on service station (page 89, April 1959 P/A) . . . . San Francisco voted \$1.8 millions last month for restoration of BERNARD RALPH MAYBECK's fabulous Palace of Fine Arts . . . . RICHARD E. SCHMIDT (Schmidt, Garden & Erickson, Chicago) died October 16.... CHARLES SMITH WHITNEY (Amman & Whitney, Engineers, New York) died in Paris, October 25.



### CHRISTMAS PRESENT FOR DALLAS: A THEATER BY WRIGHT

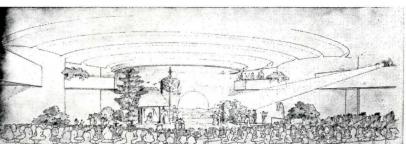
#### **New Center Devoted to Presentation, Education**

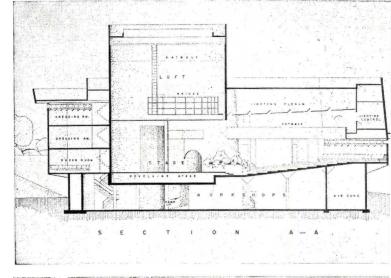
DALLAS, TEXAS—Two days after Christmas, Dallas Theater Center will open its first repertory season in its brand new building, one of last designs of Frank Lloyd Wright.

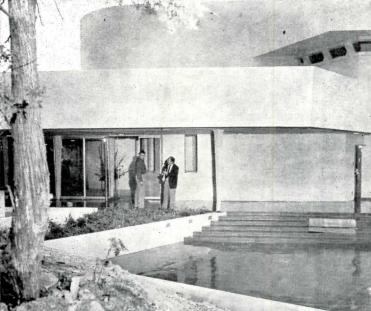
Dallas Theater Center maintains a permanent troupe which produces its entire repertoire in an eight-month season. Center houses graduate school of drama, children's teen-age theater, and adult courses in acting and theater techniques. Actors and technicians have been amply provided for in two levels of dressing, costume, and shower rooms, stage manager's and director's offices, and with latest mechanical and lighting controls.

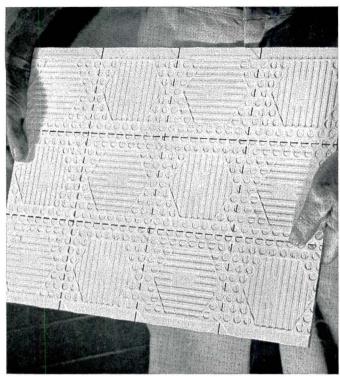
Dallas Theater Center is approached up a forested hill and over two levels of landscaped terrace. Art exhibitions can be held in specially lighted foyer. The 8000 sq. ft. auditorium seats 404 people at orchestra level, and 40 in balcony. Round stage projects into audience and is just a foot above auditorium floor. Stage revolves, and has 14 hydraulic cylinders in floor which raise and lower platforms. Loft area above stage is a 40-ft diameter concrete drum, back wall of which reaches to floor level, creating cyclorama. Lighting plenum occupys entire ceiling of auditorium and allows projection of light from almost vertical to practically horizontal.

Wright provided two roof terraces for Center, one for audience relaxation during intermissions, the other for exclusive use of actors. Audience terrace also serves as outdoor dramatics classroom. Interior and exterior wall color is Wright's favorite—buff.









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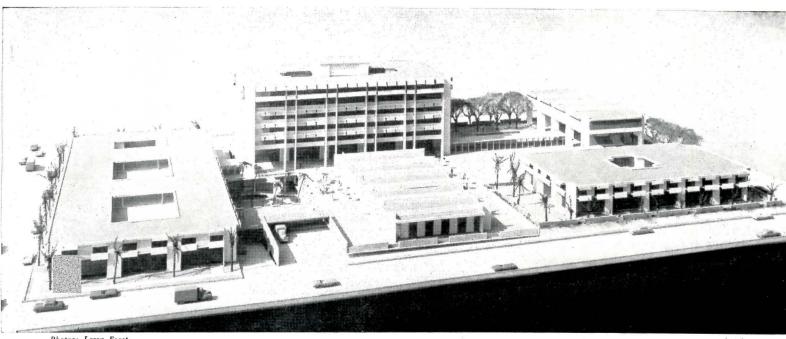
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Photos: Larry Frost

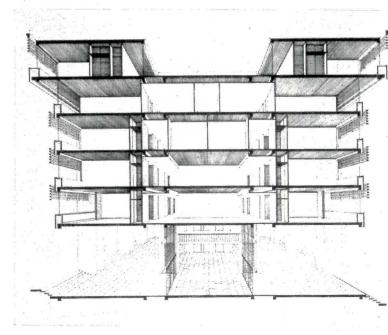
## YOUNG ARCHITECT PROPOSES "VILLAGE" FOR MENTALLY ILL

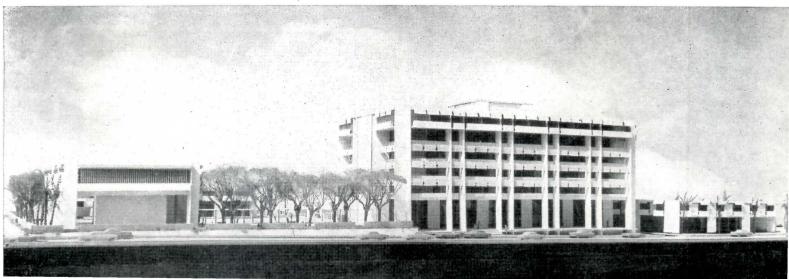
Concept Emphasizes Feeling of Everyday Life

Plan for psychiatric center which would advance cures of patients not only through therapy, but also through sense of participation in an "accepting" community, has been advanced by Architect Bruce Arneill, New Haven, Conn.

Scheme, originally proposed for Los Angeles, consists of two related groups of buildings making up a "village" for mentally ill. One group is made of "urban" buildings, and consists of shopping center where patients and outsiders could shop (Arneill suggests that some patients be temporarily employed here); public dining pavilion where, again, public and patients can mix; and main medical office building, largest building in plan, which would hold administrative and doctors' offices and hotel floor for patients and relatives. (Section of medical building shown at right.) "Residential and recreation" buildings include pavilion and pool for recreation and therapies; and building for recreation and occupational therapy, with second-floor living units.

Arneill says plan can be likened to a resort, but that main idea is that mentally-disturbed people should be able to undergo therapy in a "normal" environment.





#### WASHINGTON PLANNING PROBLEMS: FROM L'ENFANT TO GRUEN

by Frederick Gutheim

The transportation bill for a quarter-century of virtually uncontrolled suburban expansion comes to \$2.8 billions, Washington has been told in a survey of regional expressway and rapid transit needs to 1980. Much of this is due to sprawl, but it is the central city that is hit hardest and will foot the biggest bill. The cost will be far greater when the sacrifices to the appearance and character of the city, the disruption of established neighborhoods and communities, and the disorganization of commercial and industrial areas is counted. Washington is a monumental city. It is just becoming aware of the consequences of its ill-considered inner-highway loop, and the Constitution Avenue bridge-jammed through under Presidential directive, and probably the city's worst planning blunder. L'Enfant's great Mall will be traversed and compromised as it has not been since the heyday of the railroads. A three-level expressway cross-over and the rest of the "chicken guts" (in Robert Moses' elegant phrase) of a major intersection is about to be built between Lincoln Memorial and Stone's National Cultural Center. Violations of Potomac Riverfront parks, Rock Creek Park, the Glover-Archbold park are but some of the instances that have troubled this city as no other planning issue has. The contrast between Washington's scrupulous architectural controls and fast-and-loose highway-and-bridge building is especially anguishing. Other cities face this problem, but it is hitting hard in this Federal city. Tired of fighting rear-guard skirmishes, Fine Arts Commission, official arbiter of civic taste, has finally laid it on the line. The issun, it says, is not projects but the character of the capital city itself. The Commission proposes a modest decentralization of new Federal buildings to other parts of the District of Columbia, and a virtual exclusion from the monumental core of the city of all expressways and high-speed through traffic. If the Commission is to be responsible for the appearance of the city, it contends it should be strengthened in powers and staff, broadened in jurisdiction, and allowed to give advice at earlier stages in the design work. There is enthusiasm for these objectives that has seldom been rallied before. National Capital Planning Commission, long a rubber-stamping device for one-sided compromises worked out between highway and parks officials, has awakened to its responsibilities for civic design. Its new director, William Finley (no relation to David E. Finley, who heads Fine Arts Commission) has warned that only improved design of highways, structures and bridges, and more extensive landscaping will reconcile highways and the city areas they traverse, or buffer traffic's roaring boom from city living. No one has said so directly, yet, but the proposed 300-mile metropolitan-expressway network will be one of the first casualties, unless some way is found to curb the engineering brutalism and excesses of the single-minded highway builders. These issues have appeared in other cities, and they are undoubtedly factors in the current re-evaluation of the urban and industrial portions of the 40,000-mile Inter-regional system by a Presidental committee. The debates on the gas tax in the

closing days of the session showed many members of Congress aware of this impact, and still more troubled that local contributions to the Federal-aid program were distorting local budgets to the disadvantage of schools, housing, and other city programs. All this means that as Washington tries to put its new expressways in the larger picture of city building efforts, it will be pioneering for cities everywhere, and the results will come out as nation-wide policies.

The new headquarters building of National Grange, soon to be occupied here, also illustrates that Fine Arts Commisson lacks the powers needed to safeguard the city's national capital character and appearance. Its advisory jurisdiction must extend to entire blocks of the city, not be limited as at present to buildings facing on public parks or sites. The Grange, a powerful farm organization, has been prominently located on Jackson Place, facing the White House and historic Lafayette Square. It was forced to move out when its site was taken for the Executive Office building, designed by Henry R. Shepley of Boston.

"In January 1957," as Grange officials tell it, "we were served a taking order, and the Government took title to our property by depositing in escrow what it determined was a fair price of \$325,000 for the building and land. This was not acceptable to us, but at first we could not get anyone in the Government to talk to us about it. Then, on a single day in late August, just before the 1957 session of Congress adjourned, more than 100 members of Congress introduced identical bills asking that title be restored to National Grange. We finally reached a settlement whereby we got a comparable area of land just around the corner on H Street, and the architect designed a new building in such a way as to conform to the pattern of the whole block. We think we arrived at a fairly equitable solution, fair to the Grange and fair to the Government."

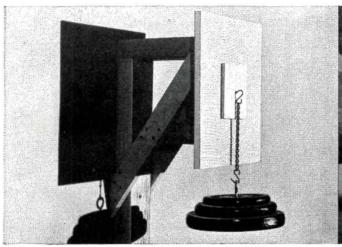
Whether the building "conforms to the pattern of the whole block" is probably debatable. What the Grange's architect designed was a conventional office building, filling the zoning envelope, faced with stone on the street side and showing a "Mary Ann behind" of brick on the other three sides—the ones that would show above the new Court of Claims and Shepley's Executive Office building, and would be seen from the White House-a typical disorderly townscape. The situation was somewhat saved from disaster by the expedient of Government paying the extra cost of facing the offensive brick walls in limestone. While one may conclude that the Grange's settlement was not so "fair" as it appeared, and perhaps the Government should have acquired the whole block, there is a limit to public acquisition and a real case for a stronger regulatory role for our advisory art agency.

Washington has just had an instructive demonstration that it is important to hire the architect first. A three-man panel appointed by the President last month heard presentations from Washington, New York City, and Los

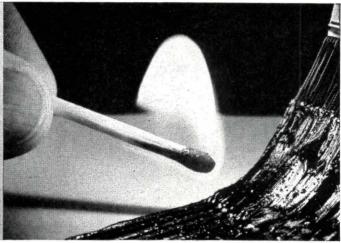
(Continued on page 86)

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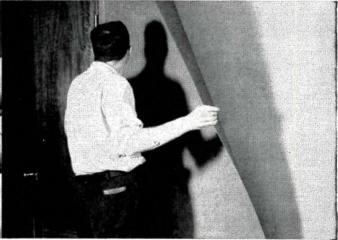
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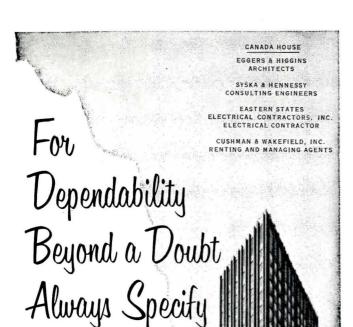


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#### p/a news report: financial

#### FINANCIAL ASPECTS OF PLANNING

by William Hurd Hillyer

P/A is grieved to report the death of Financial Columnist William Hurd Hillyer on October 26. This, his last column, was completed just before he passed away.

The other day, a taxicab driver's attention was attracted by a sign urging Americans to save. In a disgusted tone he commented: "Can you beat it? Sure we save! We're saving lots of our troubles for the guys now in baby carriages." This opinion is shared by many, but let us turn to those whose business of banking better fits them for judging.

With the disappearance of wilderness and prairie within this country, the trend of those who formerly turned to them has been reversed. David Rockefeller, chairman of the Downtown-Lower Manhattan Association's executive committee and vice-chairman of Chase Manhattan Bank, in a recent speech pointed out that there has been an increasingly rapid movement to metropolitan centers since the beginning of the century. To quote him: "We might as well say that here [New York City] and in other large cities we have a new frontier. It is a frontier in what has largely been a man-made wilderness of unplanned building. The new homesteaders are the planners and civic groups which understand the vital need for urban renewal if a desirable way of life is to be preserved in the great cities. . . . Continued unplanned development is no longer possible in present-day metropolitan centers." Rockefeller called attention to the fact that since 1950, nine and one-half million square feet of prime office space had been built or was in the process of construction in the central downtown area. "This is roughly equivalent to a one-story building covering the entire area of lower Manhattan . . . another one-half million square feet of space is planned for completion within the next two years." Rockefeller ended by stating that progress during the year had been "encouraging and prospects are bright for its continuation."

"Short of new developments in price relationships or technology, the next period of expansion in manufacturing capacity may involve a heavier emphasis on plant construction," is the forecast of Chase Manhattan Bank in its publication "Business in Brief." A major mail-order chain has announced a long-range plan for disbursing \$500 millions in the next five years for new stores, with 20 opening in 1960. New York State Banker, in an article by L. A. Jennings, Deputy Comptroller of the Currency, reports restriction on construction loans has been revised, "so as to include . . . loans made to finance the construction of industrial or commercial buildings and having maturities of not to exceed 18 months where there is a valid and binding agreement entered into by a financially responsible lender to advance the full amount of the bank's loans upon completion of the buildings . . . the aggregate amount of all construction loans may not exceed 100% of the bank's capital and surplus." Thus national banks are enabled to make construction loans on industrial or commercial properties which they have not

(Continued on page 86)

# THICK...TOUGH...LIFETIME FINISH FOR WALLS

UPGRADES CONCRETE BLOCK AND OTHER SURFACES TO CERAMIC TILE QUALITY AND BEAUTY... at a fraction of the cost!

New GLID-TILE gives wall surfaces a beautiful, durable tile-like finish at a fraction of the cost of glazed, ceramic or structural tile. This special polyester resin spray finish is almost twenty times as thick as an average coat of paint. It outlasts conventional paint coatings by years!

GLID-TILE may be used over masonry block, concrete, wood, metal, plaster or wallboard. It becomes an integral part of the surface; cures to a continuous, non-porous finish that withstands hard usage, mechanical abuse, impact and abrasion. It resists acids, solvents, alkaline detergents and hot water. Because there are no mortar joints, GLID-TILE is the easiest of all wall coatings to maintain and keep clean . . . a tremendous saving in food processing plants and other operations where sanitation is a must.

GLID-TILE is available in a wide range of colors to meet the most modern color styling requirements—in offices, auditoriums, cafeterias, classrooms, laboratories, washrooms, factory production areas.

Write now for complete details and the name of the firm that applies GLID-TILE coatings in your area.



PROFESSIONAL FINISHES

The Glidden Company

MAINTENANCE FINISHES DIVISION

900 Union Commerce Building • Cleveland 14, Ohio
In Canada: The Glidden Company, Ltd., Toronto, Ontario



before the GLID-TILE coating cracked.

GLID-TILE resists abrasion! Continuous wire brushing did not scratch or mar GLID-TILE'S tough, durable surface.

ATTACH THIS LETTERHEAD A	COUPON TO YOUR COMPANY AND MAIL TO:
	9, The Glidden Company ommerce Building 1, Ohio
Please send i	me the following information on
Free specif	ication folder.
☐ Name of Id	ocal firm that applies GLID-TILE.
Name	
Firm	
Address	
City	State

# An Exciting Glass

for the contemporary church



Available in 100's of colors

Fragments of glass 1" thick, set in reinforced cement, not lead. Color completely through the glass. Fragments chipped on the inside, creating a multitude of facets that reflect and refract light in countless, astonishingly beautiful ways, Produced in our studios in Chartres, France.

> Simple to install—no storm sash needed. No maintenance problems, Also: low first cost.

For contemporary windows and walls of incredible color and beauty-

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For more information, turn to Reader Service card, circle No. 305

#### p/a news report: financial

(Continued from page 84)

been able to do heretofore. However, Dr. Kurt F. Flexner, director of the Mortgage Finance Department, American Bankers Association, places the savings and loan associations in the number one position in the field of mortgage finance today. Let us investigate.

C. R. Mitchell, president, United States Savings and Loan League, called for a review of Government competition in the short-term money market. He said that some substantial withdrawals from savings institutions for the purchase of Government securities have been made in recent weeks. "In the normal course of events, most of these savings would have been available to the home mortgage market," he declared. "The savings invested in Government securities will have to be replaced with new savings if we are to avoid some serious problems in home fiinancing." Chicago Federal Savings and Loan Association feels that to sustain a high number of home starts next season, builders will need to be assured of available financing. They should anticipate needs for funds as early as possible and try to make as high down payments as they can afford.

#### p/a news report: Washington

(Continued from page 82)

Angeles before deciding whether the United States should hold a World's Fair in 1964, and in which of the three competing cities. In the public hearing, governors, mayors, ambassadors, and other talking dignitaries fell over themselves, each claiming the most for their proposition. But it was Architect Victor Gruen, engaged by the Washington group, who carried off the palm. Other presentations raveled at the edge where promotional claims met the hard realities of land, time, or money; Gruen's neatly hemstitched article provided clear if admittedly preliminary answers. Unfortunately, the decision was not made on the basis of who is ready to produce what. New York will have a World's Fair in 1964-or perhaps 1965-the Commission finally decided. (If Seattle produces its Paul Thiry-designed Century 21 Show in 1961, most experts think a four-year interval between the two events is about the minimum.) What Gruen offered was the concept of a fair built on raw land 10 miles from downtown Washington, designed to become a permanent satellite city after the Fair. This would solve the problem of financing costly site improvements to raw land by selling them to a future municipal corporation. He proposed a series of "islands" like shopping centers, below which level services would then be organized, and above which restaurants and exhibit buildings would rise. The pedestrian level would be unified by bridges. Gruen's grasp of the practical details of city planning, and his resolution of the transportation, housing, and other needs of both the Fair and the ultimate satellite city, were compelling features of his presentation. He also impressively urged the merits of the plan as "an opportunity to demonstrate new approaches and new ideas in the field of city planning," and argued that the new town approach would show how to deal with urban sprawl and slums. The operation was a success, but the patient died!



COLORS: Two completely new colors, White and Beige ... plus Green, Sumac Red, Black, Gray, Brown and Russet.

SIZES: New White and Beige... 4" high in 48" lengths only. Other colors ... 2½", 4" and 6" high in 48" lengths ... also 2½" and 4" high in 96-foot rolls.

Now... KenCove costs no more than rubber base! Inside and outside corners can be formed on the job, saving dollars. (Factory molded corners also available - see below.) Matte finish hides wall irregularities. Takes hard usage, resists marring. Call your Kentile Representative or see Sweet's File.



FACTORY MOLDED CORNERS: 4" and  $6^{\prime\prime}$  high for outside corners;  $4^{\prime\prime}$  high only for inside.

© 1959, Kentile, Inc., Brooklyn 15, N. Y.



McQuay thin-line design individual room Seasonmakers are popular, not only because of their convenient size, their high efficiency and their inherent quality, but because they are so extremely versatile and dependable. Every part is easily and quickly accessible. They are easy to install and easy to work with. For example, filters are easily changeable; the slide-out fan deck is quickly removable; the hand of coil is easily reversible in the field.

All McQuay Seasonmakers utilize central station heating and cooling and are available with capacities of 220, 330, 440, 520 and 640 cfm. They furnish individual room comfort at any desired temperature level—heated, filtered air in winter and cooled, dehumidified and filtered air in summer. Seasonmakers are ideal for multi-room buildings such as hotels, apartments, motels, schools, hospitals, offices and residences.

If you haven't already done so, investigate McQuay individual room Seasonmakers. For complete information call the McQuay representative in or near your city, or write McQuay, Inc., 1638 Broadway St. N. E., Minneapolis 13, Minnesota.





AIR CONDITIONING . HEATING . REFRIGERATION

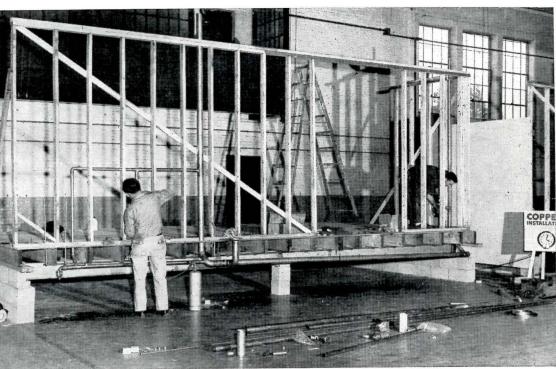
## COPPER AND FERROUS PLUMBING INSTALLATIONS TIMED

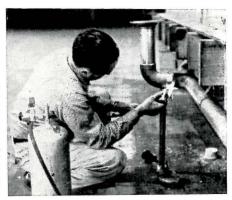
#### **Demonstration Shows Copper System 26 Percent Faster**

WATERBURY, CONN., Oct. 22—To determine a quantitative answer to the frequent question, "What piping material is least expensive to install?" Chase Brass & Copper Company officials today staged a full-scale demonstration presenting timed, comparative installations of two rough plumbing systems—one in copper and the other in ferrous piping. The all-copper system—similar to one in a typical low-cost home, including a full bath and a kitchen with provisions for a dishwasher or washing machine—took 26 percent less time to complete. Total cost of the copper rough plumbing was \$209.09, as compared with \$233.97 for the ferrous installation. These costs included materials, labor, and typical overhead and profit percentages for the plumbing contractor. Piping costs for each system were practically equal; primary savings resulted from reduced

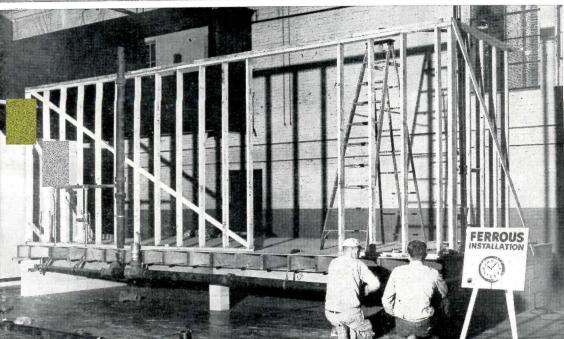
man hours permitting the copper installations to be completed for \$24.88 less than its competitor. For demonstration purposes, twin wood-frame structures were constructed inside the Waterbury Armory. Two competing plumberand-helper teams were supplied by Romaniello Bros. Inc., a local firm. All materials and tools were delivered to the site in advance; however, no prior study of the plumbing layout was allowed, so that both teams started on an equal basis. The City Plumbing Inspector and two instructors from nearby apprentice training centers supervised the work. Copper completed at 71/2 hrs (left top); ferrous installation finished in 101/4 hrs (left bottom). Tools required for copper and ferrous installations, respectively (center right).

Chase Brass & Copper Company







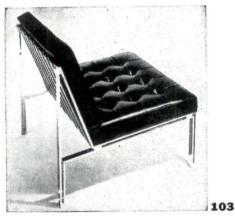


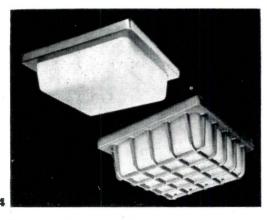


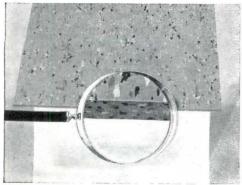












105

#### Safety in Electrical Distribution

New concept in electrical distribution for industrial and commercial buildings provides outstanding flexibility and safety. "XL BUStribution Duct" eliminates costly power take-offs where not needed; separate plug-in switches may be moved to almost any point. Bus plugs are safely installed while power is still on, since plug-in cover remains closed until switch plug is in safe position, and plug cannot be moved while switch is on. Duct withstands unusual electrical and mechanical stresses, it incorporates lowest voltage drop practicable, and it is specifically designed for proper use of aluminum (copper is available if desired). Support is required at 10' intervals.

**Bulldog Electric Products Division** I-T-E Circuit Breaker Company

101

#### Faucets Replaced in Push-Button Plumbing

Revolutionary system of water control eliminates faucets at sink, lavatory, tub, and shower. Colorful push-buttons appear instead, located wherever desired, and control solenoid valves through a low-voltage electrical system. Hot, cold, or warm water is supplied; additional buttons supply extra warm, full or gentle flow, soft or hard water. Warm water is mixed at water heater instead of fixture, thereby requiring only one supply line per fixture and substantially reducing heat loss in line. Further practicality of "Ultraflo" system is elimination of leakage since line is without pressure unless water is being used. Unit is prewired for installation at heater and requires only plug-in to 110 v. single copper tube to each fixture, and light wires to control button.

American Sanitary Manufacturing Company

102

#### **Designs Give Luxury Look to Furniture**

Look of contemporary opulence is given to chairs and sofas by use of glove-skin leather and chrome steel. "Linea" collection features lounge chair (shown), and three-seater sofa, both with box-tufted cushions in either beige, black, brown, or tan. Made in Switzerland. Stendig, Inc.

103

#### Surface-Mounted Lighting Is Vaportight

New surface-mounted vaportight lighting is designed for shower rooms, vestibules, covered walkways, loading platforms, swimming pools, and canopies. Cast aluminum with satin-anodized finish gives "Line 43-88" permanence against corrosive elements indoors and outdoors. Integral castaluminum guard is available for protection against abnormal abuse.

McPhilben Lighting, Inc.

104

#### Floor Tile Has Color Chips Throughout

"Vina-Lux Series 800" tile, with color-chip styling throughout its 1/8" thickness, is designed for heavy-duty industrial, commercial, and institutional areas. Although originally planned as a premium-price product, it can be sold at regular price because of unique Houston plant that is engineered

for exclusive manufacture of vinyl asbestos products.

Asrock Floor Products Division

Uvalde Rock Asphalt Company

105

#### **Girard Designs Six New Textiles**

New line of six textiles designed by Alexander Girard includes "Small Triangles," which is available in crimsondark, grey, navy on white linen; and olive-green-dark on natural linen. Collection also includes two other pigment prints on plain backgrounds, two drapery and casement fabrics combining woven stripes with open work, and "Miller Wool," an upholstery fabric combining wool with 16% nylon in the face and 20% cotton in the back for extra strength. The wool may be had in 15 colors created by Girard.

Herman Miller Furniture Company

106

#### Water Coolers Debut as "Packaged Cooling"

New variety of water coolers has an exclusive feature called "Packaged Cooling" that eliminates major field service. Separate inside cabinet, 12 9/16" x 20", houses entire refrigeration system and can be easily removed for servicing. Front panel is removable as a unit for full access to cooling package. "Advanced" models (with inside plumbing) have flush-to-wall installation; "Wall-Hung" models (shown) have off-the-floor mounting at variable heights.

Sunroc Corporation

107

#### Angular Form Distinguishes Lighting Fixture

Dramatic lighting fixture is a creation of planes and triangles that produce interesting optical illusions. Shade is black metal and white plastic with solid polished brass trim. Soft light is diffused both downward and outward. "Tivoli" is one of 12 new highly-styled fixtures added to the "Enchante" line.

Thomas Industries, Inc.

108

#### Form-Board Offers Outstanding Qualities

New permament form-board, which is faced with glass cloth, offers several outstanding qualities in its installation with poured-in-place gypsum or lightweight-concrete roof decks. Fire safety, exceptional thermal efficiency, high sound absorption, and unusual resistance to damage make it particularly suitable for low-ceiling areas and rooms subject to ceiling impact. Open-weave texture of glass-cloth facing is decorative whether plain or painted. Special sizes larger than the standard 32" x 48" x 1" may be ordered. Owens-Corning Fiberglass Corporation

#### **Ceramic Tile Has New Sculptured Patterns**

"Half Moon" and "Sand Dune" (shown), designed by Peter Quay Yang Associates, are two new patterns of sculptured ceramic tile. Varied effects can be obtained by using patterned tiles with or without plain tiles, and by regulating source and intensity of lighting. Size is 4" x 4"; finish is matte, semi-matte, or glossy.

Robertson Manufacturing Company

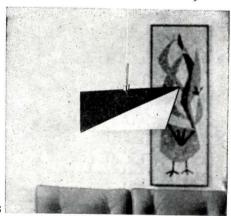
110

(Continued on page 96)

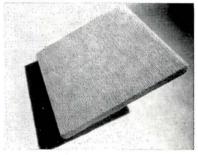




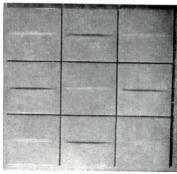
107



108



109







The Lennox Living Laboratory: This \$50,000 school has been built by Lennox Industries, Inc. in Des Moines, Iowa to carry on research in the field of school classroom heating, ventilating and air conditioning. Extensive research and testing is carried on continuously, both with and without students present in the classrooms.

## GAS and LENNOX can

provide your schools with the finest in fresh air heating and ventilating...

at lower operating and building costs

This new Gas system automatically draws in fresh air from outside...warms, cleans, and circulates air quietly and evenly throughout the school.

It's hard to believe, yet  $65\phi$  per square foot was the complete cost of installing a Gas-fired Lennox Comfort Curtain System in the Potosi, Missouri, High School—including automatic controls, ductwork, labor—everything.

This is unusually low, even for the Comfort Curtain, but costs of \$1.03 in Indiana; \$1.15 in Montana; and \$1.12 in South Dakota were *usual and typical* of the amazing savings offered by a Lennox Comfort Curtain System using Gas.

Money saving, safe Gas units are being installed in thousands of schools across the country. If you have specific questions, your local Gas company or a Lennox specialist—or both—will be available to assist the architects and engineers to illustrate how this equipment can best be applied to any specific school plan. Check the facts about Gas and you'll see—modern Gas heating out-performs all other fuels.

Call your local Gas company or write to Lennox Industries, Inc., 1701 East Euclid Ave., Des Moines 5, Iowa. American Gas Association.

(Continued from page 93)

#### Varied-Height Cabinets Store Tables

"Erickson" folding tables now come in six lengths and can be stored in cabinets of six varying heights. Table lengths are 6', 7', 8', 10', 12', and 14', to be stored in cabinets approximately 3', 31/2', 4', 5', 6', and 7' high, respectively. Each cabinet stores one to four tables. Design variations



possible with different height cabinets can be readily seen: tables may be stored beneath window or display areas, or allowed to go full height on windowless walls. Tabletop colors are yellow, turquoise, and light birch plaid; bench colors are charcoal and light birch plaid. Special colors are available.

Haldeman-Homme Manufacturing Company

#### **Insulation Available in New Thicknesses**

Pre-scored expanded polystyrene insulation boards are now fabricated in thicknesses ranging from I" to 2", meeting new FHA Minimum Property Standards for perimeter insulation. "Scorboard" permits adequate insulation for any combination of requirements outlined in the MPS.

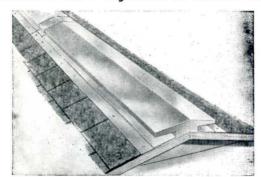
Dow Chemical Company 112

#### Polystyrene Makes Effective Pipe-Covering

Expanded-polystyrene pipe-covering possesses significant insulating efficiency and economy for temperatures lower than 150 F. "Uni-Crest" effectively stops costly heat gain and prevents condensation and dripping; it has a low K factor, is odorless, non-toxic, and moisture-resistant. Low weight minimizes supporting structures. Three standard sizes—I",  $I\frac{1}{2}$ ", and 2"—suit a range of temperatures. United Cork Company 113

#### **Continuous Ridge Ventilates Attic**

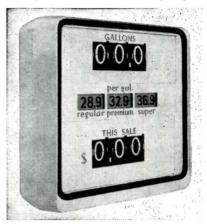
All-aluminum, continuous, ridge vent provides inconspicuous attic ventilation that is engineered for effective condensa-



ion and temperature control. "Vent-A-Ridge" is prefabricated in 8', 9', and 10' lengths and fits any pitch roof. Rain and snow infiltration is prevented by reversed louvers. HC Products Company

#### **Electronic Fueling Gives Design Freedom**

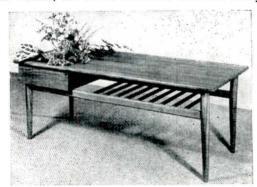
Electronically-controlled push-button delivery system for gasoline introduces totally new concept into service-station layout. There are three basic components of the "Modular Electronic Fuel System": a flow meter, a control unit, and a computer-indicator (shown). Because these are electronically, not mechanically, linked, there is complete flexibility of location among them. Conventional pump islands are no



longer necessary and gasoline may be dispensed from stanchions or from overhead or underground installations. Indicator may be located anywhere that gives best use of space and easiest viewing by motorist: on post or canopy, in retractable or stationary position. Numerals are three times larger than on present pumps, for increased legibility. On a functional basis, cost of system promises to be in reasonable relationship to cost of conventional equipment. Bowser, Inc.

#### Furniture Is Imported from Holland

Furniture designed and manufactured in the Netherlands is now available in U. S. Cocktail table shown comes in teakwood or walnut; has novel container insertion for growing



plants or fresh flowers. Slatted rack under table is for magazines. From "Vega" collection by Ouwenbroek, it costs approximately \$90.

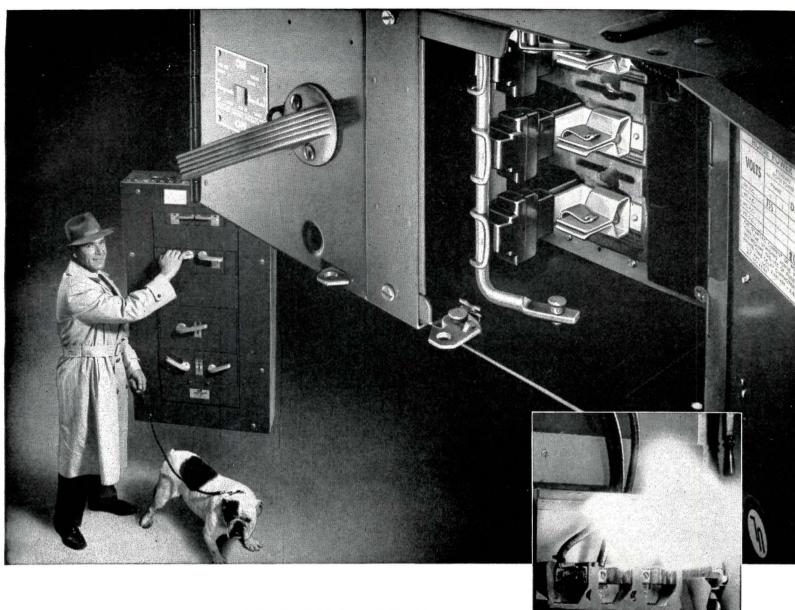
Daniel E. Lewitt Associates

116

#### **Process Restores Roof Shingles**

Polyurethane "liquid resin" promises reroofing without reshingling—by sealing and revitalizing worn-out asphalt shingles, even straightening curled wooden shingles. Formulation is brushed or sprayed onto roof, then followed by layer of sifted sand; for best results, treatment is repeated. On completion, roof is not only watertight but also has unusual resistance to impact and abrasion and a high reflec-

(Continued on page 98)



# FOR SAFETY'S SAKE, SPECIFY VACU-BREAK POWER PANELS

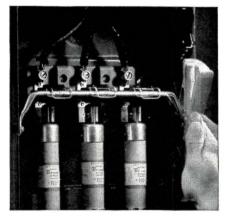
Here are some basic facts why BullDog Power Panels with Vacu-Break\* units are tops in safety and performance. Vacu-Break design minimizes destructive arcs because contacts are housed in compact chambers that extinguish the arcs immediately. Result: maximum safety . . . virtually no pitting or burning of contacts . . . minimum maintenance. Vacu-Break switch units are "quick-make, quickbreak" with an interlocking safety mechanism. Contacts are directly attached to operating handle. No tricky toggles or springs. You get positive, safe switching always. And when the handle is in OFF position, you know the switch is off!

The Clampmatic\* design provides clamped-pressure switching con-

tacts to prevent overheating at these points. Needless heat-generating areas are eliminated because there are no hinged, current carrying parts . . . and all conductors are silvered. BullDog switches also withstand severe fault currents. In recent tests, standard BullDog switches with Amp-Traps\*\* were subjected to a 100,000-amp short circuit current. They were undamaged!

For safety's sake—and superior performance—specify BullDog Vacu-Break Power Panels.

Dangerous flash explosion occurs at instant of "break" in open knifeblade switch . . . causing blades to burn, pit, deteriorate. (This photograph and the one below are unretouched.)



BullDog Vacu-Break chamber smothers arcs before they can cause damage. Both are 100-amp, 600-volt switches, operating under 90-ampere, 440-volt load with 40% to 50% power factor.



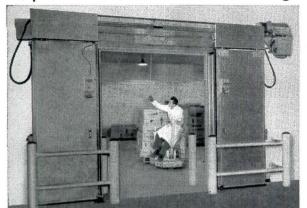
## BULLDOG ELECTRIC PRODUCTS DIVISION I-T-E CIRCUIT BREAKER COMPANY

**BOX 177 • DETROIT 32, MICHIGAN** 

In Canada: 80 Clayson Rd., Toronto 15, Ont. Export Division: 13 East 40th St., New York 16, N.Y.

\*Vacu-Break and Clampmatic are registered trademarks of the I-T-E Circuit Breaker Company. \*\*Amp-Trap is a registered trademark of the Chase-Shawmut Company.

## Automatic Electric Doors Speed Volume Trucking



## Jamison Electroglide\* Doors

A completely new design for power operated doors with famous Jamison Cold Storage Door performance. Fast, automatic opening and closing speeds traffic, saves time, eliminates refrigeration loss.

Send for a copy of new bulletin for data on operation, features, dimensions. Jamison Cold Storage Door Co., Hagerstown, Md. \* T. M. registered

For more information, turn to Reader Service card, circle No. 310

2,000,000 B.T.U.

- 40,948 B.T.U. to 2.000,000 B.T.U. Outbut.
- All units meet the requirements of the ASME Boiler and Pressure Vessel Code.

## PRECISION TIESTIFIC HOT WATER HEATING BOILER

- Complete unit ready for installation with circulating hot water system and water chiller for year-round air-conditioning.
- Conversion easily accomplished where other type fuels now used. Suited for homes, churches, apartments, hotels, motels, hospitals, commercial buildings, swimming pools, snow melting and domestic hot water. Temperature Range 60 to 250 degrees.

#### Every unit tested and inspected.

Write for color brochure and prices.



400- PA North 1st. Street Nashville 7, Tennessee

No ducts! No noise! No chimney! No odors! No flame! For more information, turn to Reader Service card, circle No. 311

## p/a news report: **products**

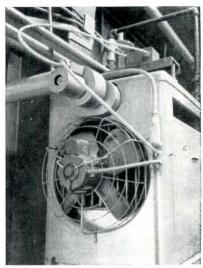
(Continued from page 96)

tance of solar heat. "Del-Coat" treatment is half the price of new roof. 117

#### Delka Research Corporation

#### **Exhauster for Gas Heater Needs No Chimney**

New motorized vent exhauster opens the way for economical and flexible gas-unit heating in office buildings, older manufacturing plants, and multistory warehouses. Gases are exhausted directly to the outdoors through side wall



of building, requiring only standard lightweight 4" pipe and no chimney. "Ventor" improves heater efficiency by eliminating downdrafts and by venting immediately regardless of stack temperature. It is half the size and price of similar-capacity units.

Reznor Manufacturing Company

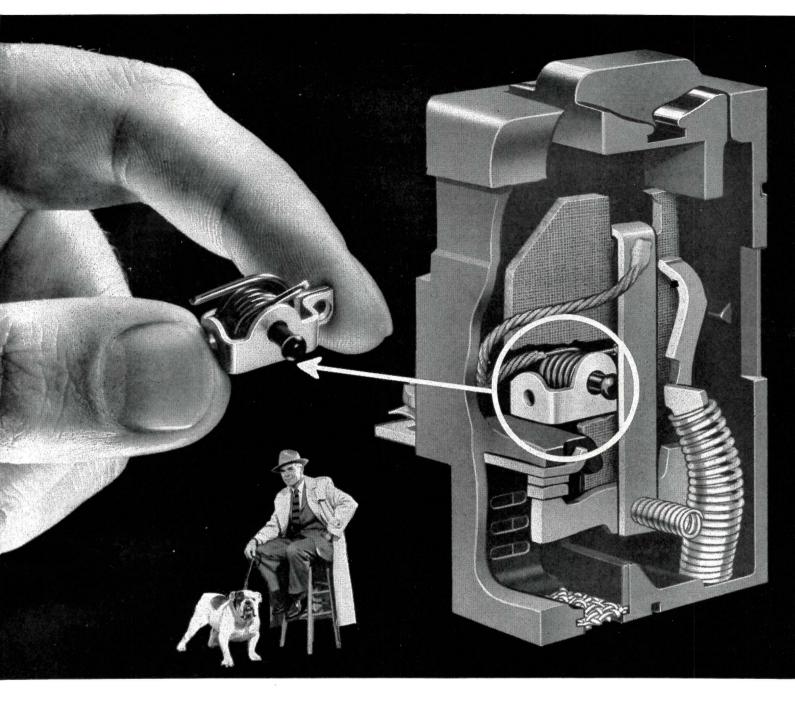
118

#### Molded Plywood Chairs Have Flowing Lines

Molded Plywood chairs, designed by Norman Cherner for Plycraft, Inc., have lines distinguished by free-flowing quality. Cherner states that the chairs have two points of departure from other laminated-plywood chairs: (1) chair



is molded in section as well as contour, and (2) all integral parts are made from a continuous "blanket." Seat and back are of continuous mold, and arm unit and legs are also continuous "bends." Chairs come in solid walnut or maple with walnut core. Side chair is \$29.95, arm chair is \$39.95. B. G. Mesberg Corporation



## NO TROUBLE CALLS WITH PUSHMATIC

coil protection is standard in every breaker

Protect branch circuits against high overloads and "flash-shorts" with Pushmatic® magnetic coil action! BullDog, the first to offer this protection in 15-amp and 20-amp ratings seven years ago, builds this safeguard into every Pushmatic breaker. The solenoid (coil)—coupled with the thermal element—provides double circuit safety. Makes trouble calls a thing of the past.

As you can see in the above picture the Pushmatic uses a *multi-turn coil*. High overloads or "flash-shorts" instantly set up a magnetic field in the coil—causing the metal plunger to trip the latch and break the circuit. BullDog Pushmatics

provide not only maximum branch circuit protection, but protect lamp and appliance cords, too!

Small overloads are taken care of by the thermal-bimetal latch. An overloaded circuit heats the bimetal causing the latch to curve and release. A builtin time delay prevents nuisance tripping in case of harmless overloads.

Play it safe. Protect branch circuits with Pushmatic coil action! Each and every Pushmatic is rigidly tested to assure precision operation. You'll find Pushmatic double protection pays off! Multi-turn coils are standard in all Pushmatics—15 amperes through 50 amperes.

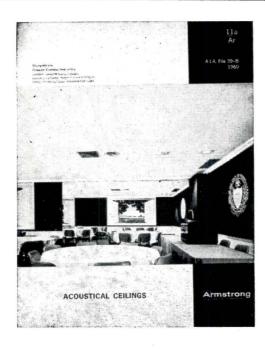


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In Canada: 80 Clayson Rd., Toronto 15, Ont. Export Division: 13 East 40th St., New York 16, N.Y.

## p/a news report: manufacturers' data



Booklet tells about the selection of an acoustical ceiling: how to choose the right material, how to choose correct lighting to go in the ceiling or adjoining it, how to install the ceiling correctly, and how to know the right time to install. Chart gives selection data for Armstrong acoustical materials. Photographs and data on company's line of acoustical-ceiling products are given. An interesting section, illustrated with explanatory details, explains how to prevent sound transmission problems. Five pages of detailed specification information complete booklet. Building Products Div.,

Armstrong Cork Company (AIA 39-B, 36 p.)

200

#### AIR AND TEMPERATURE

#### **Control Systems for Unit Ventilators**

Manual illustrates automatic control systems for hot water, steam, gas-fired, and electric unit ventilators. Actual control applications show all makes and models marketed by the major ventilator companies. For each system, extensive information is given on complete cycles of operation, damper sequence, specifications for precise temperature control, and installation.

Barber-Colman Company (Manual F-7715, 80-p.) 201

#### **Induced-Draft Cooling Towers**

Folder explains installation and operation of 22L series induced-draft steel cooling towers for large-scale air-conditioning requirements. Units offer reduced size and weight (with resultant saving in structural reinforcement for roof-top installation) and increased flexibility of location, particularly at roof-level sites and court areas where space may be critical. Exclusive feature is plastic-fortified cellular fill, giving high concentration of wetted surface for compact, efficient heat transfer.

Carrier Corporation (4-p.) 202

#### **Electric Baseboard Heating**

Ring-binder catalog presents new "Infra-flo" baseboard heater line, incorporating three major engineering advances: (1) first effective combination of infra-red radiation and convection heating, achieved through patented grilled front cover and improved aluminum-fin tubing, (2) greater heating capacity/unit length, and (3) lower surface temperature, maintained at 110-120 F by secondary cool air passage between case and reflector. Heat loss data planning manual is also included.

Electro-Ray Manufacturing Company (19-p.)

Editors' note: Items starred ( $\star$ ) 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.

#### **Versatile Gas-Fired Furnaces**

Brochure presents complete line of gas-fired forced-air furnaces—horizontal, vertical, and counter-flo models—which are adaptable to every residential heating purpose. Economy is assured by lifetime cast-iron burners; quiet operation is provided by heavy steel cabinet (to prevent flutter) and specially-designed combustion chamber (to eliminate expansion-contraction noise). All belt-driven furnaces are engineered for use with 2-, 3-, or 5-T air conditioning. Standard furnace blowers may be easily converted for air conditioning with only motor, belt, and pulley change.

Chattanooga Royal Company (8-p.)

204

#### **Packaged Air Conditioners**

Brochure describes design and construction of packaged air conditioners that cool, filter, circulate, dehumidify, and heat air. Capacities and physical data for both air-cooled and water-cooled designs are presented in tabular form. Both types are easily installed without costly building alterations.

American-Standard, Industrial Division (Bulletin 8525, 8-p.)

205

#### CONSTRUCTION

#### ★ Architectural Use of Copper

Important reference book on the use of copper, brass, and bronze in modern architecture gives comprehensive coverage of copper and its alloys. Available metals, their compositions, colors, standard shapes and sizes, physical properties, fabricating techniques, and architectural applications are fully discussed. Instructions and specifications are included for obtaining various finishes and assuring economical maintenance. Examples of outstanding design in metals are shown in color plates accompanied by fabricators' shop drawings.

The American Brass Company (Publication B-15, 64-p.)

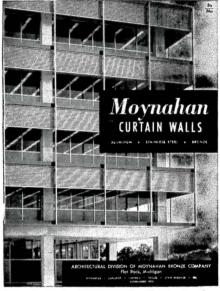
#### Pole-Type Construction

Folder gives basic suggestions for designing and erecting pole-type industrial and commercial buildings. Site selection, pole spacing and anchorage, and roof, floor, and window framing details are discussed and diagrammed. Construction method is based on use of pressure-treated poles for structural members, and offers advantages of easy erection, maintenance, and expansion; 50 percent savings in building costs; protection from decay and termites. Wood Preserving Division,

Koppers Company, Inc. (Plan K-101, 16-p.) 2

#### Weather-Resistant Aluminum Curtain-Walls

Brochure describes Series AW and AW-F gridwall aluminum curtain-wall systems. Neoprene gasketing accommodates expansion and contraction freely and guarantees weather



resistance. Details and photographs illustrate the neat, trim extrusions. Series AW-F may be employed with variable-depth flush mullion to create, reveal and shadow.

Moynahan Bronze Company (8-p.)

#### Sealing Methods for Curtain Walls

Folder on curtain-wall sealing and glazing contains bulletin on new developments in sealing methods, particularly "Dry Seal" method (depending solely on compression for sealing action) and "Wet Seal" method (operating with a sealing compound which is factory-placed in the gasket's reservoirs). Case histories show installation details of several prominent buildings. Data sheet gives stock sizes of setting blocks and spacer shims. Additional technical bulletin reports on a fact-finding forum dealing with sealing methods. Pawling Rubber Corporation.

#### Varieties of Marble and Granite

Source book contains individual data sheets on many varieties of marble and granite, each sheet including color photograph, brief description, history, physical properties (strength ratios, density and hardness characteristics), suggested uses, and examples of prominent existing installations. Additional sheets for ring-binder will be provided every other month. Also included are a folder on marble curtainwall panels and a technical information sheet on the measurement of marble's physical properties.

Vermont Marble Company (34-p.)

210

#### \* Uses of White Portland Cement

Catalog describes many applications of white porcelain cements in building construction and product's manufacture. Information and specific recommendations are included on white portland cement in architectural concrete, terrazzo, cement stucco, highway reflecting curbing and markers, swimming pools, light-reflecting floors, cold-glazed wall finishes, faced concrete block, split block, asbestoscement products, masonry mortar, and cement paints. Properties and types of portland cement are discussed; advantages of using the material in these various applications are clearly presented.

Universal Atlas Cement Division, United States Steel Corporation (24-p.)

211

#### **Aluminum Copings and Gravel Stops**

File folder supplies complete cross-section drawings, installation details and specifications for aluminum coping and gravel stop systems, with information printed on slip sheets for convenient use in direct tracing or reproduction. Brief description emphasizes that aluminum copings and gravel stops are completely watertight, economical, durable, maintenance-free, and non-staining. List of distributors is appended.

Reynolds Metals Company (9-p.)

212

#### DOORS AND WINDOWS

#### **Aluminum Windows and Curtain Walls**

Catalog on aluminum windows and curtain walls gives specifications, half- or full-scale details of company's full line, and photographs of existing installations. Broad selection offers reversible, projected, stationary, single or double hung windows (with double glazing possible in several models), and wide range of curtain walls. In addition, custom and combination suggestions are given.

The Adams & Westlake Company (32-p.)

213

#### ★ Glass Types and Patterns

File folder presenting creative ideas in glass includes new catalog of glass products and separate photographs of Paul McCobb's new textured designs. Discussed in this comprehensive catalog are patterned glasses, sheet glasses, glass doors, spandrel glasses, plate glasses, and special



glasses (for shelving and picture framing). Varieties within each type provide degrees of strength, safety, privacy, decoration, and light-, heat-, and glare-control. Illustration of each product is accompanied by descriptions of its qualities, data on physical characteristics and dimensions, and suggestions of appropriate uses.

American-Saint Gobain Corporation (22-p.)

## 1/2" **Zone Control Baseboard**



## In Woodgrain, Chrome, Copper-Tone, Flat White

. Low cost . Approved industry ratings for Edwards 1/2" tubing greater than many competitive 3/4" sizes . Unbroken Acousti-Cover lengths up to 20 ft. . Quiet, wire slide

Also available: Standard 3/4" Baseboard Radiation.

FREE....70 page design handbook on single and multi-zone hot water baseboard heating systems.

#### EDWARDS ENGINEERING CORP.

2533 ALEXANDER AVE., POMPTON PLAINS. N.J. **TEMPLE 5-2808** 

'One of the nation's largest manufacturers of Residential and Commercial Boilers, Baseboard and Steel-Fin Radiation, Motorized Valves, Air-Cooled and Water-Cooled Condensers.

For more information, turn to Reader Service card, circle No. 313

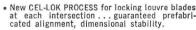
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with ½" x ½" x ½" cells

 exclusive CEL-LOK® **PROCESS** 

#### A NEW CONCEPT IN LOUVRED CEILINGS

Now available - Aluminum Louvres with 1/2" x 1/2" x 1/2" cells. Neo-Ray MINI-CELL louvres now make possible overall luminous ceilings in 2' x 4' or 3' x 3' modular grid systems (or to specification) with the following advantages.



- Visual comfort...high efficiency with Neo-Ray MINI-CELL louvres in Baked White Enamel ... or Ripple-Tex for very low brightness.
- Easy-to-install inverted Tee-bar grid systems ...louvres simply lay into position.
- Ideal for ceilings, skylites, air diffusers... many, many applications.
- . Special sizes to 48" x 48" and larger.
- Available Neo-Matte Alumilite or other finishes on request.

Send for following literature: ... New Product Bulletin N-58 (Mini-Cell) ... Sweet's Architectural File for 1959 ... Louvred Ceiling Catalog No. 544

#### PRODUCTS. 319 East 22nd St. • New York 10, N. Y.

For more information, turn to Reader Service card, circle No. 317

## p/a manu

#### :turers

#### d

#### **Concealed Door Closers**

Folder presents "Hid-n-Rail" (series 500) top-rail concealed door closers, which are designed for simplified installation, servicing, and adjustment. Adaptable for either mortise or surface application, closer has single location for all door swings, one size of mortise, two strengths of springs, and two lengths of arms for openings up to 180 degrees. Information on selection, specification, and ordering is provided.

P. & F. Corbin Division,

The American Hardware Corporation (6-p.)

215

#### **ELECTRICAL EQUIPMENT, LIGHTING**

#### Lighting Distribution System

Booklet on "Universal Lighting Duct" explains its three principal advantages over conventional lighting systems: freedom of design (installation can be planned without regarding placement of fixtures), freedom from change (duct sections can be shifted to meet future requirements), and freedom from obsolescence (system can handle fixture innovations). Typical applications, recommended levels of illumination, and typical layouts are given. Catalog covers full line of ULD systems, including suspension equipment and accessories, and provides installation data, code requirements, and specifications.

BullDog Electric Products Division,

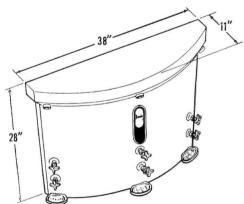
I-T-E Circuit Breaker Company (Bulletin ULD-660, 36-p.)

216

#### SANITATION, WATER SUPPLY, AND PLUMBING

#### **Group-Shower Installations**

Bulletin covering multi-person shower baths gives all details of the basic "Shower Column" along with installation and floor plan suggestions. For maximum economy, as many as



five persons can shower from one set of plumbing connections. Typical photographic views show shower columns alone and with stall-separating partitions. Also described is the new wall-mounted 2- and 3-person shower (illustrated). Bradley Washfountain Company (8-p.)

#### Cork for Walls and Floors

Brochure describes features and uses of "Color-Cork," a burlap-backed, plastic vinyl-coated material produced in 16 muted colors. Low maintenance requirements, sound-reducing properties, and resistance to combustion, chemicals, scratching, and scuffing make it appropriate for walls, floors, and bulletin boards. Resilience and workability are additional advantages. The material has been previously used in this country, but only in limited colors and for a limited purpose.

Gotham Chalkboard & Trim Company, Inc. (4-p.)

#### SURFACING MATERIALS

#### Maple, Beech, and Birch Flooring

Specification manual presents information on northern hard maple, beech, and birch used for flooring. Extensive data on physical characteristics, quality control, guarantee, grading rules, uses, thicknesses and faces, and required quantities are given. Suggested specifications for laying and waterproofing are presented.

Maple Flooring Manufacturers Association (8-p.)

#### Ceramic-Tile Mosaic Patterns

Booklet gives full-color close-ups of "Mosaic Medley" random mixture patterns. Color reproductions of interior and exterior installations, residential and commercial, are included. Medleys are comprised of three or more harmonizing or contrasting colors in each pattern. Over-all color effect is controlled by specifying exact percentages of each color used, allowing accurately predictable color co-ordination with furnishings and other materials. Each pattern is completely unique, because of random distribution of individual tiles. Complete specifications are given on the three types of unglazed ceramic mosaics used in the medleys. The Mosaic Tile Company (Form No. 211, 12-p.)

#### SPECIALIZED EQUIPMENT

#### Glass-Fiber Panels for Room Dividers

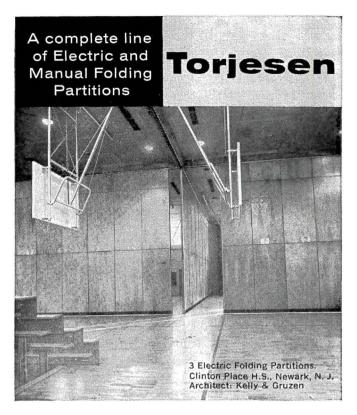
Folder presents "Decro-Vider" light-transmitting glass-fiber panels used in partitions for purposes of decoration, privacy, and space-division. Easily installed aluminum spring-type



tubing extends from floor to ceiling and holds panels in place without permanent fastening. Complete flexibility enables panels to be set in angular or linear alignment. Patterns include metallic gold and silver weaves, contemporary circle design, and silk screen prints.

Styline Products Company (4-p.)

221



#### \* AUTOMATIC ELECTRIC **PARTITIONS**

#### \* MANUAL PARTITIONS

- (a) Top Hung Center Pivot All Hinged (b) Top Hung Center Pivot —
- Pair or Individually Operated
- (c) Top Hung Edge Pivot Pair Operated
  (d) Bottom Bearing Edge Pivot Pair Operated
  (e) Bottom Bearing Edge Pivot —

#### Individually Operated \* HIDDEN PARTITIONS

- No Floor Track . No Exposed Hardware
- Remote Stacking

now available at the same price as Duck or Vinyl

## Torjesen"wall-a-way" **Folding Partitions**

### TOROPLY

America's newest, most economical, pre-finished wood paneling, in a choice of rich finishes. In addition to its economy and durability there is no finishing required or necessary. Toroply is impervious to stains such as ink, crayon, lipstick, etc. Samples and test results on request.

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## MODERNFOLD DOORS TRANSFORM OPEN SPACE INTO PRIVATE

one room into two...quickly, quietly, dramatically!

VERSATILE MODERNFOLD DOORS...make one room do the work of two. Wherever privacy is needed, wherever more usable space is needed . . . consider Modernfold doors. In business and medical offices, in commercial shops and restaurants, in funeral homes, churches and schools, Modernfold doors answer many space needs.

FAMOUS FABRIC LINE...new patterns and weaves, all washable, paintable, durable. With Modernfold's exclusive double-strength, all-steel inner framework for perfect balance, lifetime service!

DIMENSIONAL STABILITY...vital to the life and appearance of folding-door fabrics. Modernfold achieves this stability with an exclusive back-coating process.

SIZE AND COLOR RANGE... Specify Modernfold for the greatest selection. In standard sizes, a wide choice of warm, neutral colors to blend, match or contrast with any color theme. In custom sizes, an almost unlimited size range and choice of pure, vivid color or decorator pattern, either modern or traditional.

**NEW WOOD GRAIN LINE...** for traditional or modern settings. In richly handsome hardwood finishes. They're quiet and easy-gliding.

Your Modernfold distributor is listed under "Doors" in the Yellow Pages.



January PROGRESSIVE ARCHITECTURE

Will Feature the WINNERS of the SEVENTH ANNUAL P/A DESIGN AWARDS.

Don't Miss This First Look at the BEST ARCHITECTURE OF 1960-1961.

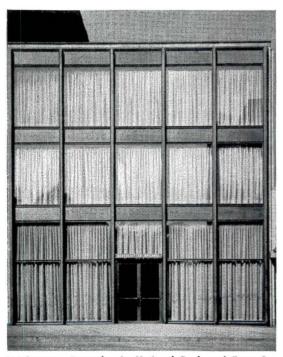
DESIGN AWARDS JURY in action: Lyndon Welch, Engineer, Eberle M. Smith Associates; Dean José Luis Sert, Graduate School of Design, Harvard University; Louis I. Kahn, Architect, Philadelphia; William W. Caudill, Architect, Bryan, Texas; and Ralph Rapson, Head, Department of Architecture, University of Minnesota.





U. S. Marine Corps Reserve Training Center, Houston, Texas. This building has window heads, spandrels and aprons of finely corrugated 24-ounce copper, and copings of plain copper. The copper will be naturally weathered to its pastel blue-green patina. Architect: Wilson, Morris, Crain & Anderson, Houston. General Contractor: Baxter Construction Company, Inc., Houston. Sheet Metal Contractor: A. M. Bowles Company, Houston.

## ANACONDA METALS FOR CURTAIN-WALL CONSTRUCT



Northeastern Pennsylvania National Bank and Trust Co., Scranton, Pennsylvania. The bronze front of this building characterizes modern design employing extruded shapes of Architectural Bronze and sheets of heavy-gage Muntz Metal. The two materials are combined with glass to provide the enduring beauty and feeling of stability so important in banking institutions. All of the bronze was treated to produce a statuary bronze finish. Architect: George M. D. Lewis, Scranton. Fabricator: Standard Iron Works, Scranton.

No other architectural metals possess the versatility and enduring beauty of copper and its alloys-or lend themselves so readily to forming, fabricating and variable finishing to portray concepts of architectural design. Metals readily adaptable to curtain-wall construction include Copper, Red Brass, Architectural Bronze, Muntz Metal, Nickel Silver and Everdur<sup>®</sup> (copper-silicon alloy).

One of the great virtues of copper and its family of alloys is that they will weather naturally to a beautiful patina. Or chemical treatment will produce a color effect which rivals the beauty of weathered copper or bronze.

Illustrated here are two examples of curtain-wall design employing different materials and forms. Details of these and other curtain-wall designs are given in our new publication, "Architectural Metals by Anaconda." Its 64 pages also give practical and detailed information on the metals, their compositions, colors, forms, physical properties, architectural applications, instructions for obtaining various finishes, detailed specifications and many pages of fabricators' shop drawings. For your copy, address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

BRONZE—the architectural metal of distinction

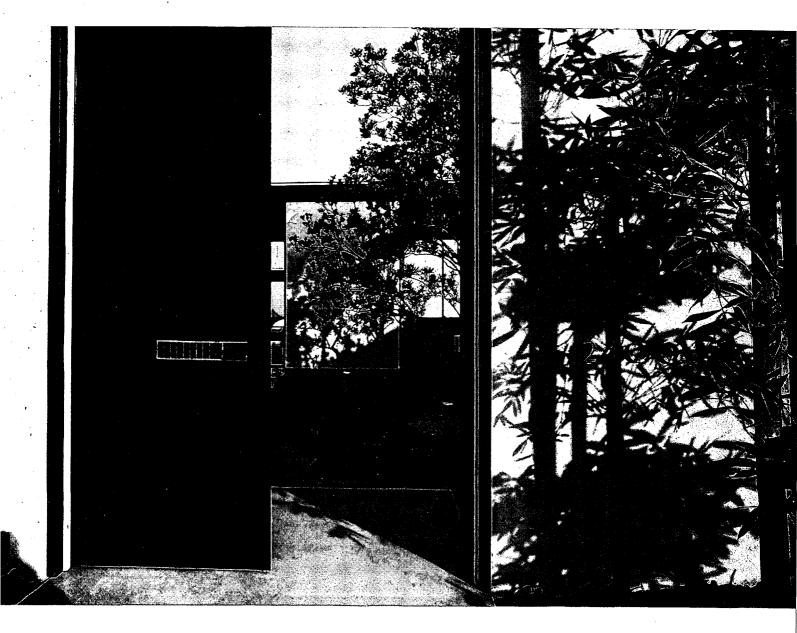
## ANACONDA

ARCHITECTURAL METALS

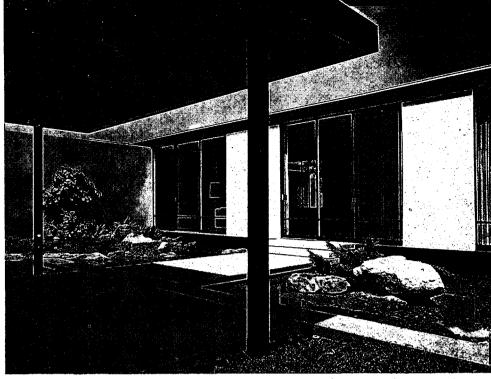
Made by The American Brass Company

The work of two young architects, Thornton Ladd and John Field Kelsey, of Pasadena, California, is the subject of this Progress Report, which traces their highly individual accomplishments from the field of residential architecture to their currently flourishing and notable general practice. The photo below ideally symbolizes their design wish to achieve an entity of structure, landscape, and interior.

progress report: The Work of Ladd & Kelsey

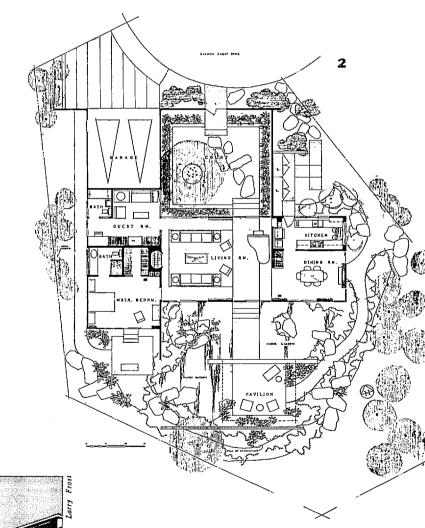


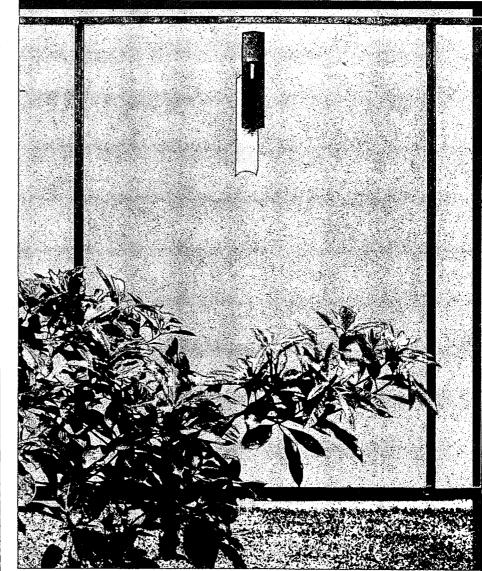




Photos (except as noted): Marvin Rand

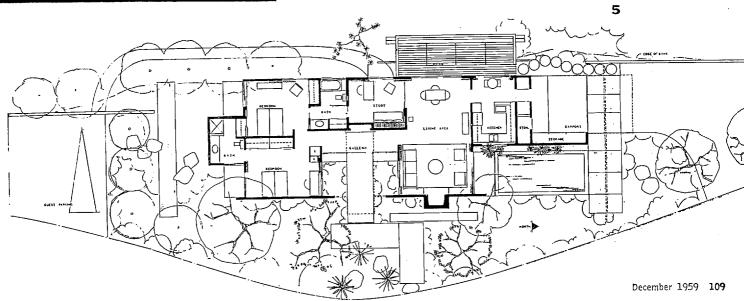
"A house presents in microcosm most of the problems confronting an architect in the design of any building," these architects believe. "Here especially, the need for complete integration of structure and site, of interior and exterior, is paramount; and here, too, the architect first faces the strict discipline of utilizing limited space to its maximum advantage. Residential design is the crucible in which the truly creative innovations of contemporary architecture are originally evolved. In this sense, the house is the architect's laboratory and as such represents one of the most dynamic and productive expressions of his talents." Though residential work represents only five percent of the present gross volume, their experience in this field prepared Ladd & Kelsey for the more complex commissions with which they are involved today. Three basic principles-total design control, orderly articulation of space, and painstaking care in the solution of individual problems-are apparent throughout their work, and particularly in the houses which follow. These include a residence for Hollywood 1 and 2, planned around an entry court; a large residence in Beverly Hills 3, awarded a citation in P/A's 1956 Design Awards Program; and a residence for Pasadena 4, 5, and 6 which, though comparatively small and economical, has had close design attention, as exemplified by the design of the unique rain spout 6.



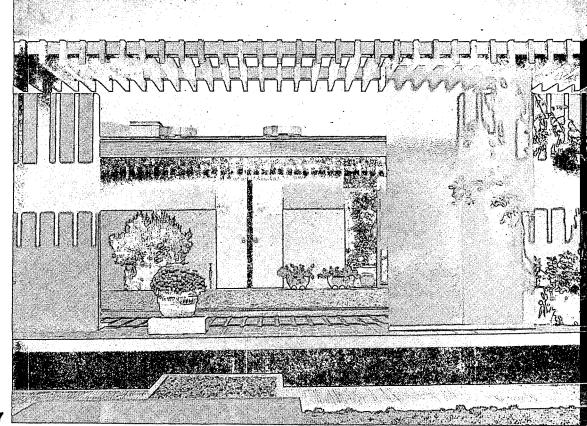








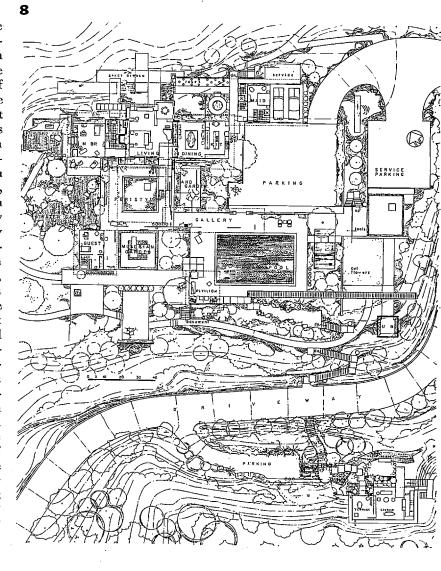
Ladd & Kelsey

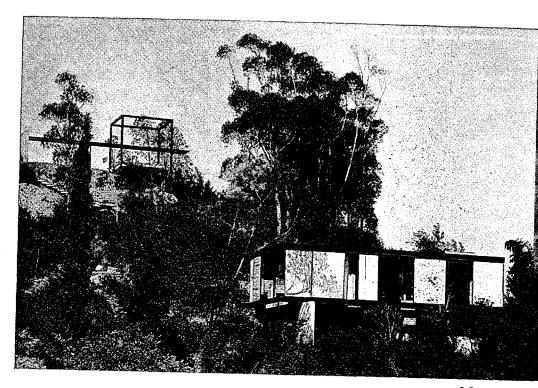


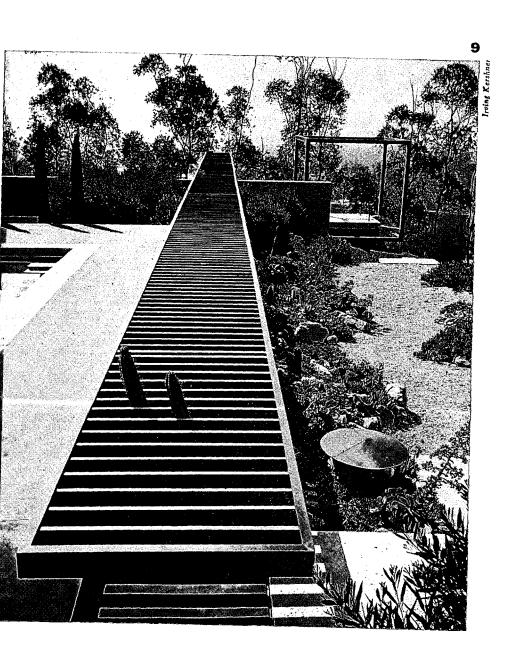
Irving Kershner

By far the most elaborate, but probably the most instructive of the early residential buildings is this house 7, 8, and 9 for Thornton Ladd's mother. "Curiously," he writes, "the plan evolved from an inherent weakness of the site. Because the southeast corner of the hilltop needed some form to tie it to the rest of the plot, a cube of reinforced concrete was built there, and from this point the plan developed rapidly into a linked series of rectangles and squares, including a pool, a pavilion, gardens, and a peristyle. No rules, no formulas, no styles were used; just a combining of those different parts in a way that best seemed to express the purpose they represent. The hilltop site, which at the beginning of the work was a stark plateau with the remains of an unfinished Georgian mansion, was resculptured. Various levels for gardens and terraces were created to eliminate the esthetic dullness of the flat ground. To a great extent the plan for the house was influenced by the conception of the entire propertyboth the outdoors and indoors—as an architectural entity. 'Hilltop' has a sand garden, a water garden, a Mondrian garden, and a peristyle. These gardens distract attention from overpowering vistas and they are structural landscaping devices on a site without fertile soil. Through the intricate arrangement of levels, walls, grilles, and covered walks, the garden areas become individual outdoor 'rooms'-each with its own character but contributing to the architectural harmony."

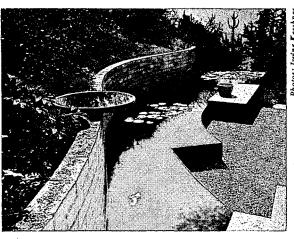
Closely tied into this "architectural entity" is Ladd's own residence 8 and 10.





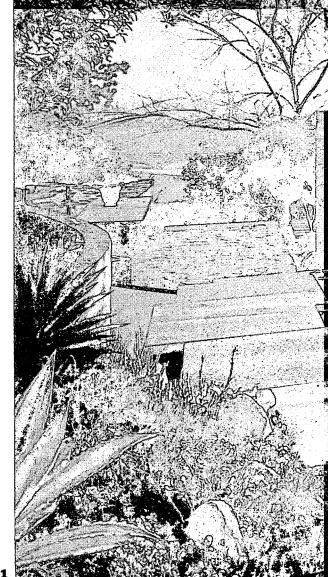


Though Ladd's studio 11 lies considerably below the main residence, the two are visually tied by the cube to which the studio is placed exactly parallel. "The building is a 'one idea' or a 'one motive' structure," writes Ladd, "a simple rectangle, steel frame, wood joist, concrete sheet walls, virtually one room with screen walls for visual division, one structural system, one eave detail, one sunscreen detail, one sliding door and sash detail, and a wood floor and ceiling set in identical patterns. Within these limits, however, there is endless variety of shadow pattern on the canvas screens, cast from the trees and planting around the building. On the hot sunny day, with the screens full-closed and encircling the building, the soft light through the white canvas is ideal for drafting room work; whereas on the cloudy, dull day with the screens full back, the natural light reaches all points in the building." Design details of related areas are particularly well resolved. A water-lily pool 12 has been carved out of the bank following the natural contours of the hill. One side of the pool is bordered with metal to produce a knife edge at the



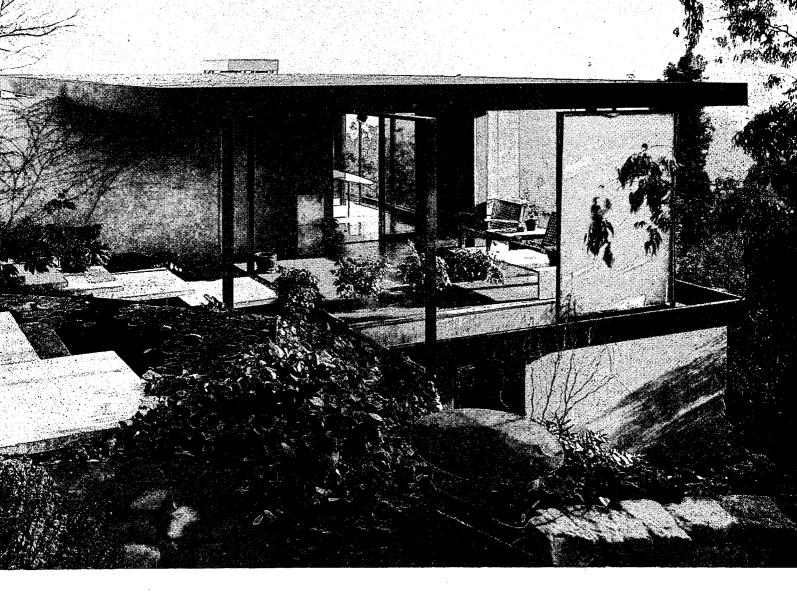
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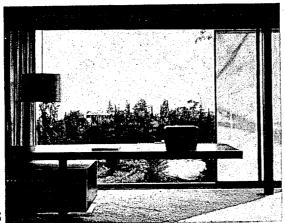
water line. Travertine blocks 13, in striking contrast to the soft ground cover, suggest a bold sculpture in the landscape. Canvas sun screens 14 slide in a separate frame about three feet away from the glass line. Combination desk, conference table and storage unit 15, as all interior furnishings, was designed by the architect. A metal frame 16 recalling the cube on the hill above, is designed to receive sliding glass door. "In design as in everything else," state the architects, "the whole can be no greater than the sum of its parts."



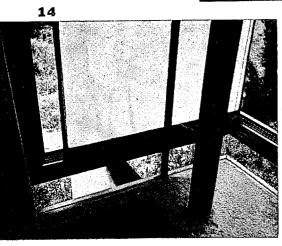
Larry Frost









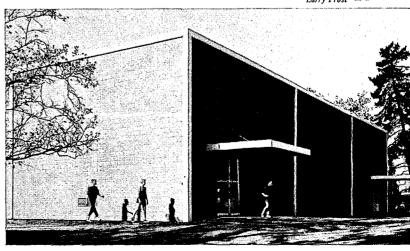




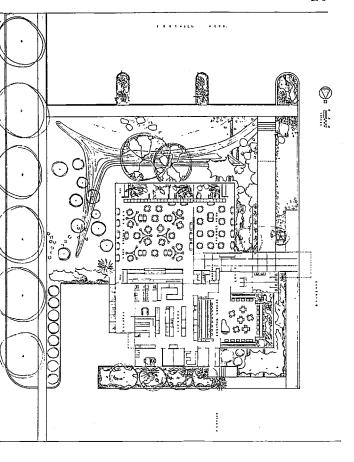
Larry Frost 17

#### Ladd & Kelsey

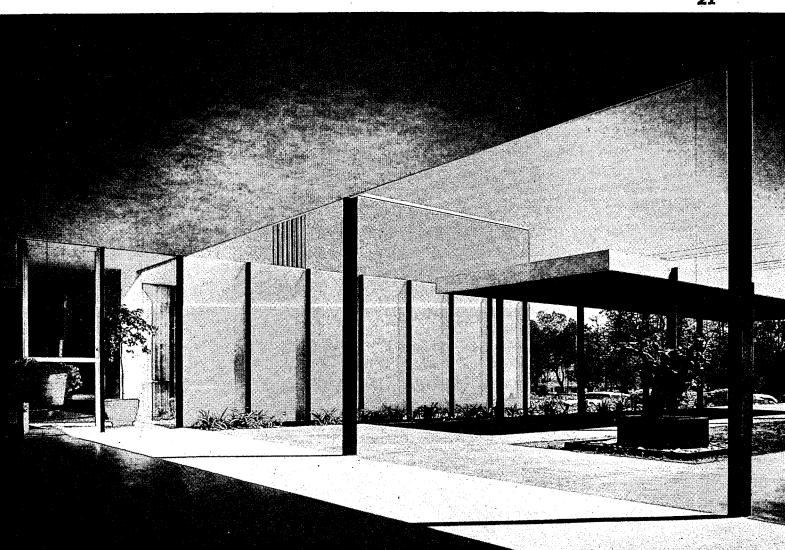
"The diversity of the challenges inherent in a general practice far exceed those of a residential practice," write the architects, "therefore it was only natural to pursue this direction." Typical of the non-residential work more recently under way is the gymnasium 17 and 18 for a preparatory school in Pasadena. This building is the first element of a master plan also designed by Ladd & Kelsey. Construction of the great, skylighted space is of concrete block and glued, laminated arches. On the outside, sheet-metal gutters and downspouts, painted white against the gray-green blocks, contribute to the design functionally and decoratively. The restaurant 19, 20 and 21 in Upland, California is an arrangement of horizontal and vertical planes of silver-green plaster and obscure glass, punctuated by square black steel columns and occasional panels of redwood; the walks of white terrazzo and black concrete reflect the rectilinear design of the façade. Off-white plaster walls form the background inside for brightly colored Indian saris, a watergarden, swaying lanterns, and light-reflecting vaulted plastic panels.

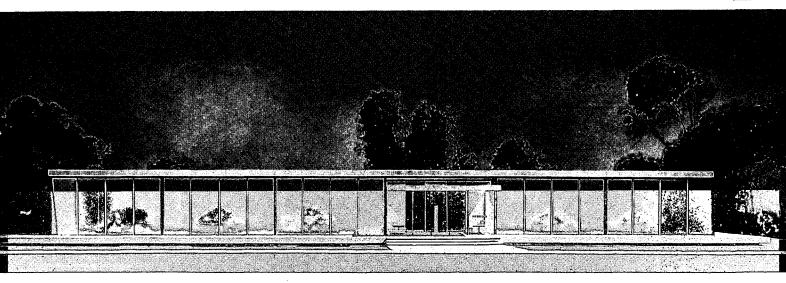


Larry Frost 18



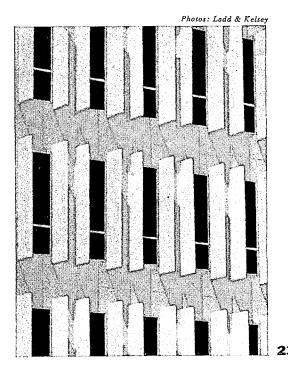


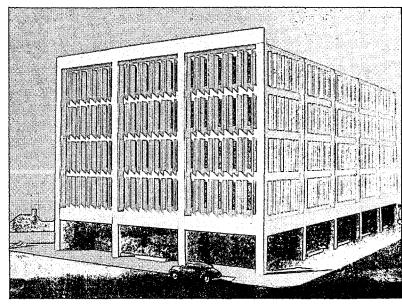


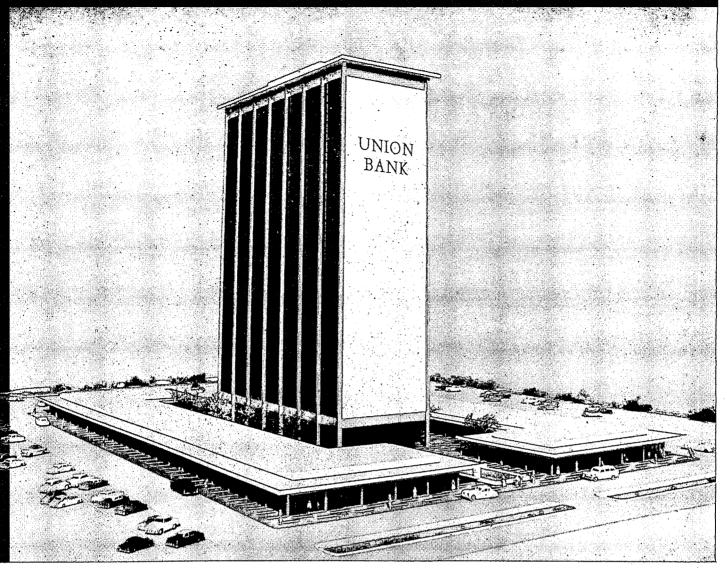


Ladd & Kelsey

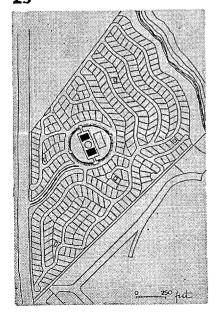
"The projects now in progress," explain the architects, "express our interest in commissions requiring a personalized and comprehensive program. Every assignment receives the attention and supervision of one or the other of the partners. To delegate this responsibility to anyone but the principal of the firm defeats the client's purpose. The office consequently limits the volume of its practicethough not the scope." Indicative of the scope of their practice are these projects on the boards and in various stages of completion: an engineering laboratory 22 for Berkley, Michigan; a 5-story medical building 23 and 24 for Beverly Hills; a master plan 25 and clubhouse 26 for a mobile home park in Laguna Beach, California; a 19-story office building and shopping center 27 in Orange County, California; an oceanside restaurant and group of shops 28 and 29 in Newport Beach, California; and the US Consulate 30 in Niagara Falls, Canada. To assist in the task of carrying these projects to completion the firm employs a staff of ten, and calls on outside engineers and consultants as circumstances require. In presenting architectural ideas to their clients and in studying details during the design process the architects have found models to be invaluable. For example, by means of the three-dimensional mock-up of the curtain wall for the medical office building 23, the sculptural effect of the 5'x13' integrally precast panels and fins could be studied. "The study models," they explain, "are extremely important as a means of checking ourselves in the design evaluation, and to that end, we have set up a model shop with a model maker who is continually busy. This eliminates the subterfuge of hazy, out-of-proportion sketches, which allow only one view of the subject."

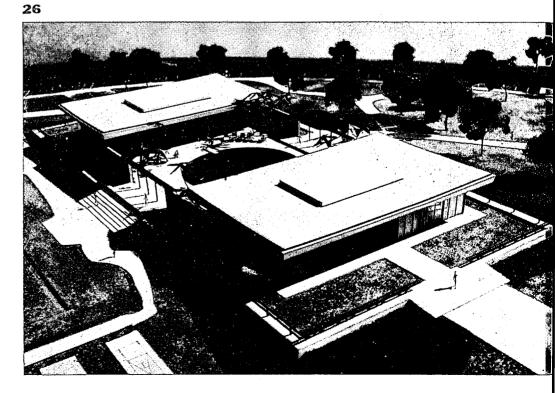


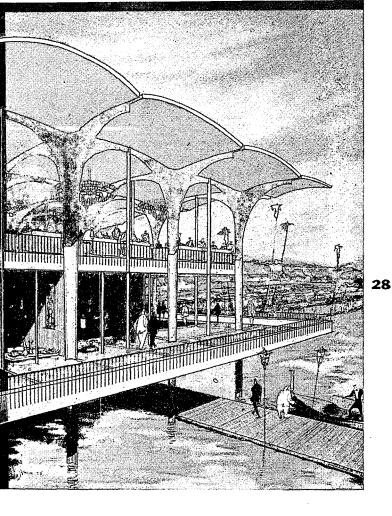












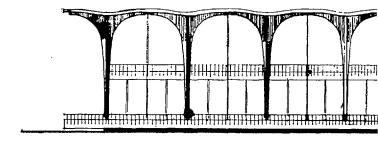
Ladd & Kelsey.

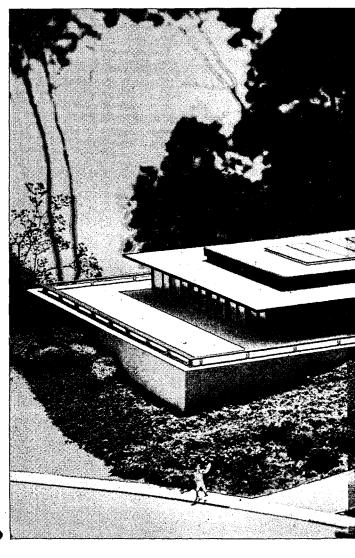
A model of the 'pavilion' 28 and 29 is under construction for closer study of the restaurant which is to be built at the water's edge. Shops and offices are to be on the first level, lifting the restaurant to the second level for even better views. In the attempt to avoid faddish tricks of decoration so current in restaurant design, the pavilion decor is confined to the grace of the quatrefoil structural form, the sparkle of the Venetian chandeliers centered in each dome, and the fascination of the harbor scene.

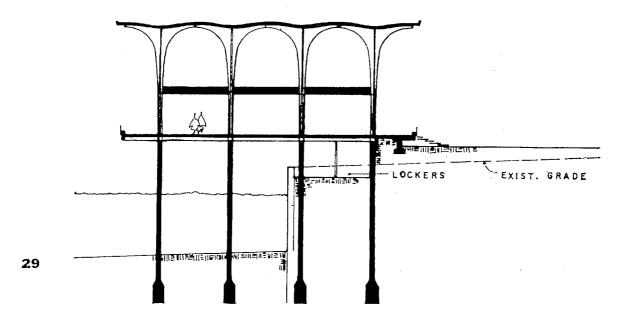
The Consulate 30 will be of two partsan office building and a residence. The steelframed structures will be elevated on a podium and linked by landscaped terraces. In this building the architects tried "to convey the warmth and welcome of a good neighbor, without compromising the dignity of a great power."

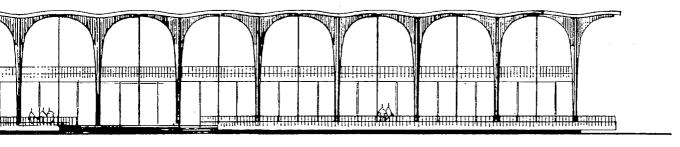
Asked, in summary, to state their design thories, the architects responded, "we find it hard to verbalize categorically the many intuitive and psychic forces which play such an important role in the design evolution. It is particularly difficult to state a theory of design when we realize that we grow in so many ways with each new project, experience, and client." Whether intuitive or based on adherence to fundamentals—their progress is significant.

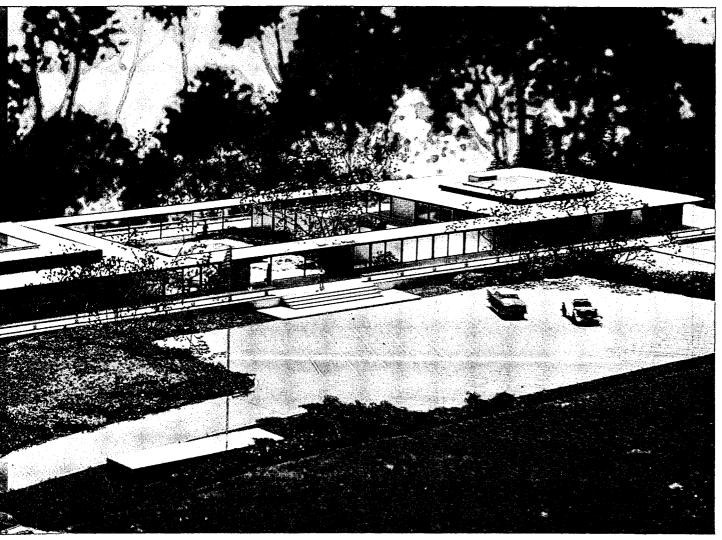
For complete illustration credits see page 214.

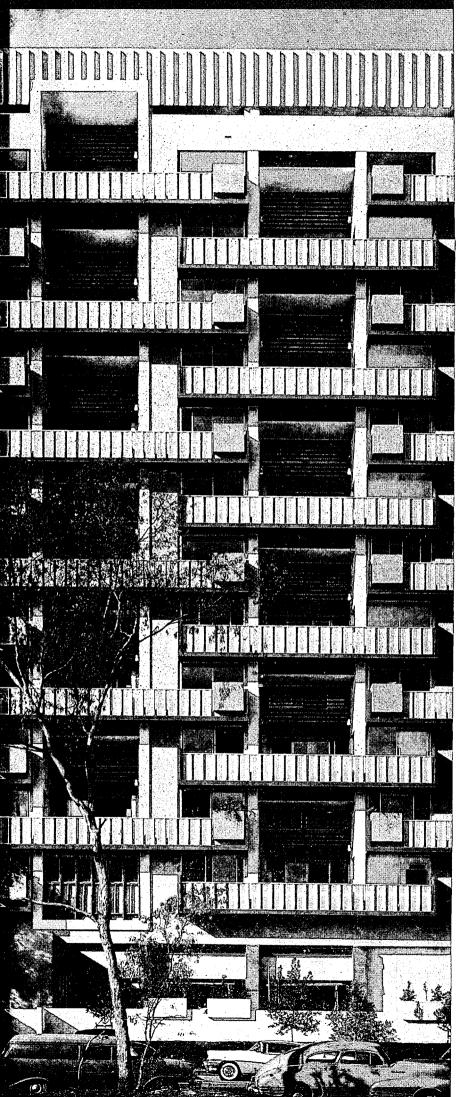












## Wilshire Terrace:

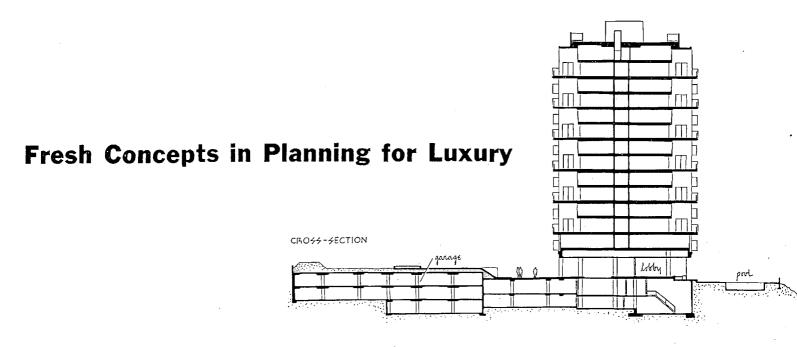
By Ilse Meissner Reese

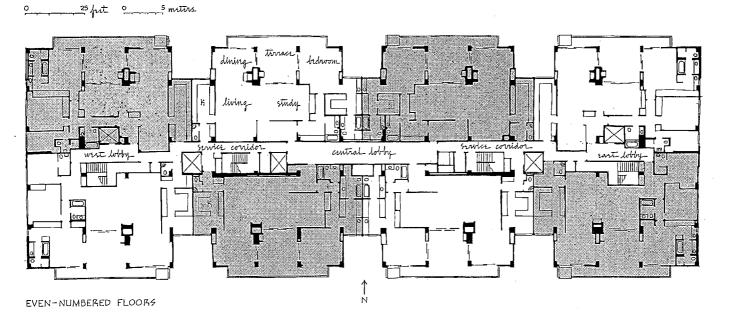
Anyone who has observed, over the past months, the course of "luxury apartment" construction must have wondered, as I have, exactly where the luxury lies. Does it all consist of a resplendently-uniformed doorman, the overtones of a fashionable address, the "lavish" decor of a lobby, the presence of a year-round airconditioning system? All too frequently these are the only significant "luxuries" offered in return for a sizable rental—or large investment plus high monthly maintenance fee, in the case of a co-operative.

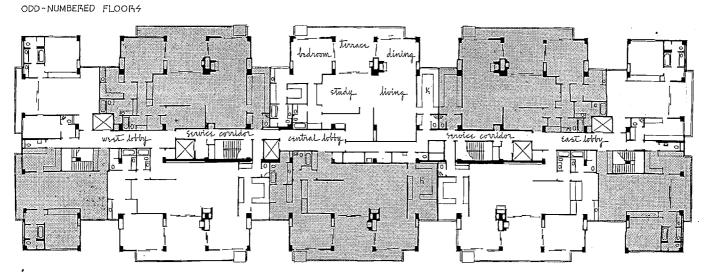
Wilshire Terrace in Beverly Hills, California, represents one of the outstanding departures from such emphasis on the superficial. Thanks to the ingenious planning by its architects, Victor Gruen Associates, luxury was not just "applied" to an otherwise ordinary building, but was built into the structure.

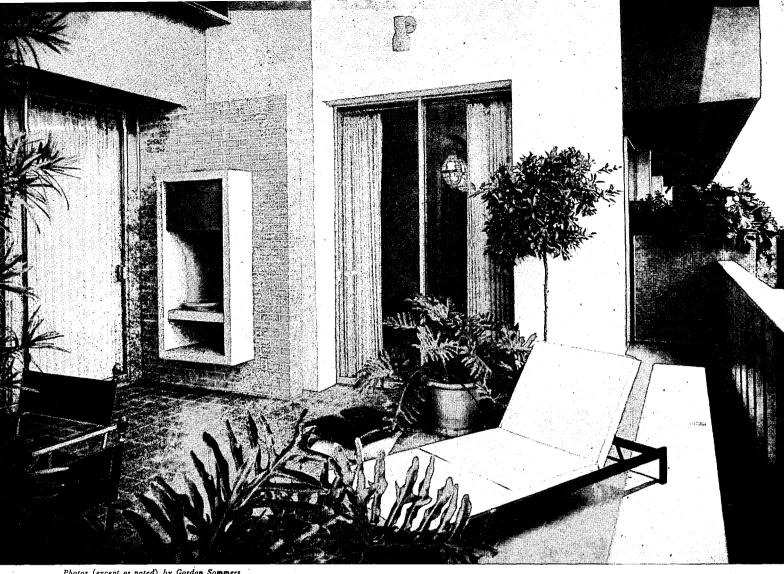
The 14-story apartment co-operative is located on one of the high points of Wilshire Boulevard in the middle of a fine residential neighborhood. Within this propitious environment it was the objective of both sponsor and architect to provide a building genuinely offering the conveniences and services of a fine hotel, also possessing the design attributes of a comfortable private home.

The principal and unique design element of the scheme is the incorporation of two-story high patios for a majority of the 112 apartments in the building. The device of staggering the apartments permitted introduction of this design element (18'x17'x20') while still maintaining the one-level apartment plan. Apartments are shifted by a half-apartment length per floor to form an interlocking system, akin in structure to a honeycomb. The patios are invaluable in providing air, light, and delight to the interior spaces. That this ingenious plan scheme has also favorably affected the design of the exterior is evident in all outside views of the building. Because of the recessing and staggering of the patios, an unusual pattern of light and shade, bold and playful, is ever present-incidently, creating a genuine impression of luxury in the mind of the beholder.

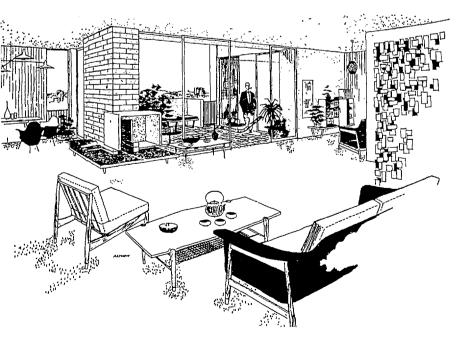








Photos (except as noted) by Gordon Sommers



The patio is, logically, the focal point for all of the major living areas. Through sliding glass doors, the living room, dining room, guest/study/bedroom, and patio are closely interrelated both visually and practically. An indoor-outdoor dual fireplace is provided in the patio and the living room of all apartments except one-bedroom apartments. Individual apartments vary in size from one-bedroom units of 1200 sq ft to three-bedroom quarters of 3500 sq ft. Consonant with the staggered balcony scheme, the ends of the building have 24 small apartments on odd-numbered floors, and 24 larger apartments with maids' rooms and baths on even-numbered floors. For typical patio apartments, separate maids' quarters are provided on the ground floor. The penthouse floor accommodates five specially designed apartments with extensive terraces. Kitchens in all units are of orderly straight-line design, in most cases with a separate laundry and service area. All kitchens are serviced through a completely independent corridor and elevator system which terminates in the basement. Three tenant elevators lead to compact separate lobbies serving no more than four apartments per floor.

Wilshire Terrace is by no means limited to luxury just in interior space and services; of equal importance is the fine site development. Designed for the owners' use as well as their viewing pleasure from above, the north garden is a handsome composition of fountains, sheltered seating areas, and planting beds. The pool terrace is a pleasant recreation area.

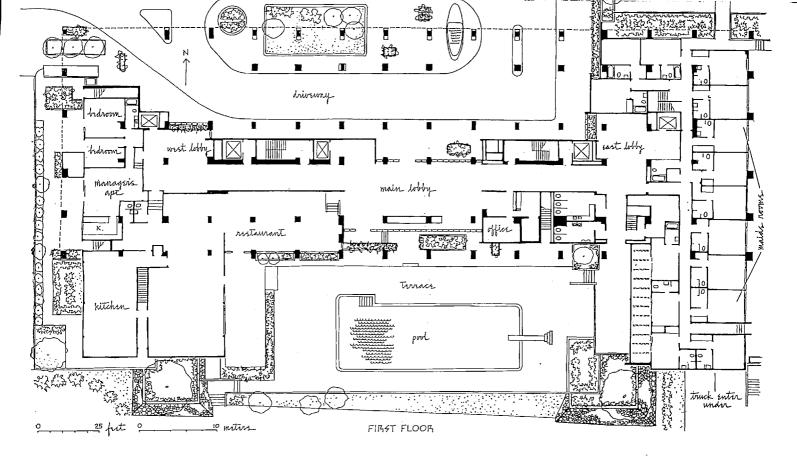












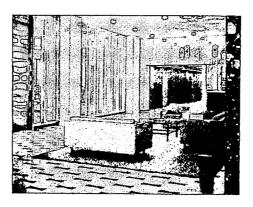
The north garden as well as the pool terrace with showers, lockers, and massage rooms (acrosspage) are all accessible from the first floor (plan above). On this level are the main lobby (top right), a restaurant, the manager's apartment with private terrace (center right), reception room, parcel receiving room, and the series of maids' rooms. One is completely unaware of a three-level garage, located beneath the north garden. For the convenience of residents, attendants move cars between the main entry (bottom right) and the garage. Separate truck-loading facilities are provided on the basement level off Wilshire Boulevard.

Structurally the building is a reinforced-concrete rigid frame, with 5-in floor slabs spanning one way between rigid bents. Horizontal forces are resisted by the rigid-frame action in the short direction, and by concrete shear walls in the long direction. Concrete slabs act as shear diaphragms transmitting horizontal forces to the shear walls. To minimize seismic forces, taking into account dead-load of the structure itself, lightweight concrete was used for all areas above the first floor. Concrete was selected rather than steel for its better sound-resistive qualities.

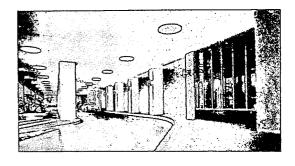
The adjoining three-level underground garage is of reinforced-concrete flat-slab construction. The roof slab carries approximately 6 ft of dirt fill for the land-scaped area above.

The exterior walls of the apartment tower are of brick finished with a plastic-base paint, selected to provide a relatively quiet background for the rather intricate over-all design treatment.

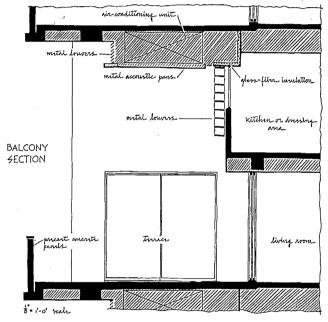
The only bright color accents on the tower façade are the planter-boxes, which are faced with Italian glass-mosaic tiles, in vermilion, and the metal-parapet paneling at the penthouse terraces, in yellow. Whites, grays, light and dark browns are the background colors.







Systems of temperature, lighting, and sound control, in particular, were thoroughly investigated. Each apartment has a multiple heating/air-conditioning system thermostatically controlled to provide separate temperature zones for the living and sleeping areas. Heating coils within the air-conditioner units are provided with hot water from a central boiler plant. With this system, each tenant can control the amount of heating or cooling desired, without affecting any other tenant in the building. Particularly commendable is the location of the air-conditioning units in the patio apartments, where the units are entirely concealed in the patio ceiling. In addition to the heating and cool-



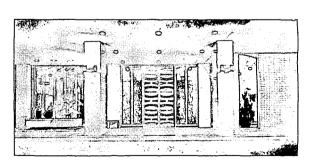
ing system, two separate, central, exhaust systems are provided-one for the kitchen and the other for the toilets. Operation of this system on a 24-hour basis assures proper ventilation at all times. A very important factor in the workability of the two-story patio scheme: the mechanical exhaust prevents the escape of objectionable noise and cooking odors from the kitchens to the patios of apartment owners on the floor below. Metal louvers on the outside of kitchen windows and in dressing rooms cut the line of vision to the patio below, yet do not interfere with the horizontal line of vision.

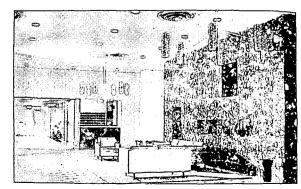
Further mechanical and electrical conveniences are the fully equipped electrical kitchens, television and radio antenna systems, dimmers for lighting, nightlighting for penthouse skylights, electrically movable partitions and room dividers, movie- and music-projection facilities.

For acoustical control, walls between apartments are of double-stud contruction; all piping is completely insulated; the suspended-ceiling system is isolated from supports by felt; kitchen appliances are isolated from party walls; heavy padding is required under carpeting; there is fiber insulation under resilient floor coverings: and glass-fiber sound insulation within ceiling spaces; air-conditioning ducts are treated to prevent air noises; ceilings of patios have been surfaced with acoustical tile.

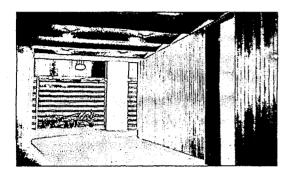
Criticisms which I might make concern individual details rather than broad planning principles or the successful realization of the over-all concept.

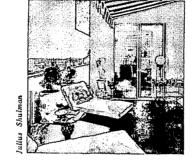
For instance, possibly because of the proximity to Hollywood, too many rich materials have been placed side by side on the ground floor. "Materials were chosen," according to the architects, "for their richness in color and texture—to create a feeling of luxury in the public areas of the building." Not including materials for gardens and terraces, the architects specified "rich marbles, tiles, and woods such as domestic red granite for perimeter exterior columns-white Carrarra marble for columns in main entrance and lobby-Breche Oriental from Italy for sculptured wall in main lobby-Roman travertine for lobby walls-tile of special design from France and Italy for interior and exterior walls-terrazzo with an inlaid pattern of Italian Red Levanto marble for main lobby floor-Italian glass-mosaic tile for exterior walls-Siamese teakwood paneling for spacious corridors connecting main lobby with secondary lobbies." Used singly or in two's or three's, these rich surfacing materials would have served the purpose; however in profusion they tend to convert this area into a materials display or, by association, into a display of affluence. Because of this over-use of materials, I felt a definite disruption of design continuity from the tower section to the ground level of this building. If, in addition, the "decorative" main portals and the massive barrier which separate the lobby from the pool terrace are considered, one must question the result in this small but important portion of the building.

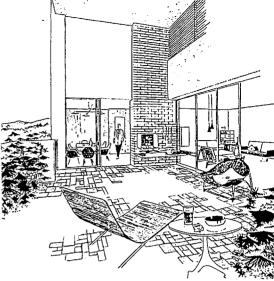




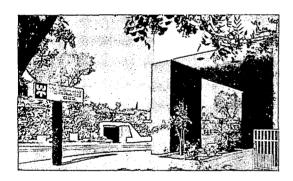
On the other hand, one senses again the architect's full control of space and function on entering the east or west corridor to the sub-lobbies. Both corridors and these smaller lobbies, as well as the individual apartment lobbies, are well articulated.



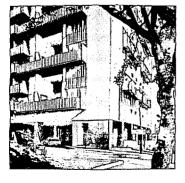


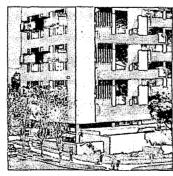


In the area directly adjacent to the lobby, exception may be taken to the use of the rather coarse lava stone as a transitional material between building and garden, to the bulky appearance of the columns, and the awkward intersection of column and tower structure.



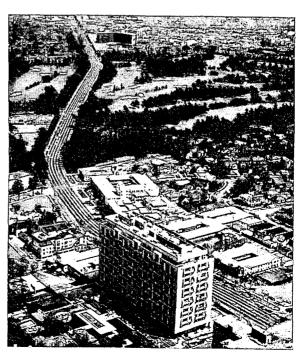
The critical observer wonders why the patio railing was changed from the original version, indicated in the model, to a much heavier one, which visually as well as practically (each concrete section weighs 300 lbs) seems to weigh down the building.





That the two-story patio is not appreciated by all of the building's occupants was discovered while studying details of the patio railing. In one instance, to the dismay of the architects, a canopy has been stretched to cut the lofty height, suggested in the architect's original sketch, to a "cosier" level. In summary, none of these shortcomings is important enough to seriously diminish the total effect, which is one of luxury of architectural space, of genuine comfort and visual pleasure for the resident owner. It is to the credit of architects and the builder-owner that this original building scheme was carried out with understanding and integrity, since many design corners could have been cut and economies in construction effected without the probability of its endangering the sales revenue—judging by today's average standards of "luxury."

Wilshire Terrace was developed and built by Tishman Realty & Construction Company, Inc. Victor Gruen Associates were Architects with Edgardo Contini as Partner-in-Charge; Robert L. Lesnett as Associate-in-Charge; and Neal Butler as Landscape Architect. Ralph E. Philips, Inc., Mechanical-Electrical Engineers; Dr. Vern O. Knudsen, Acoustical Consultant.



## Concordia Evangelical Lutheran Church

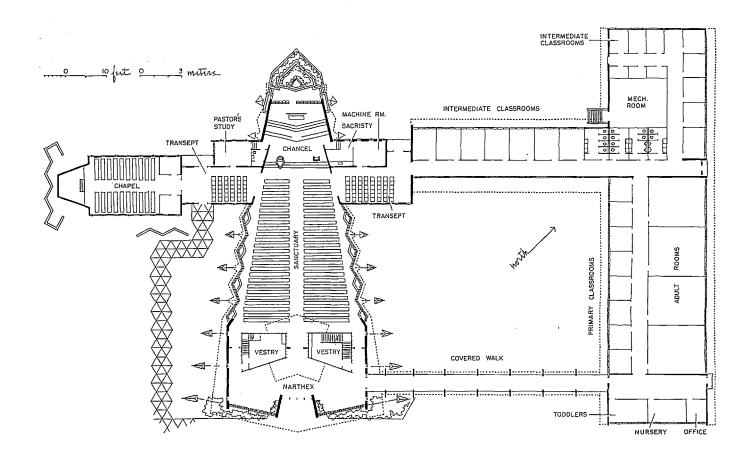
location | Conover, North Carolina architect | A. G. Odell, Jr. & Associates

Strong emphasis on educational facilities in contemporary church programs often results in plan patterns reminiscent of medieval cloisters. The classrooms, corridors, and courtyard are substituted for cells, arcades, and the atrium. The sanctuary dominates the composition and an additional accent is provided by a chapel or baptistry.

The site of this church is one square city block on which a small Lutheran College was previously located. The terrain is flat. The building program called for a sanctuary to seat 450 persons with additional seating in the transept areas; a small chapel with direct access to the exterior to seat 50 persons; educational facilities; and an outdoor altar with an

amplification system for drive-in services.

The triangular motif indicating "Trinity" was used throughout the entire church in roof, walls, and floor design. This design concept is also seen in the use of three crosses, varying in height, as the dominant focal point of the entrance terrace (acrosspage). See SELECTED DETAILS page 155.





Photos: Joseph W Walitos

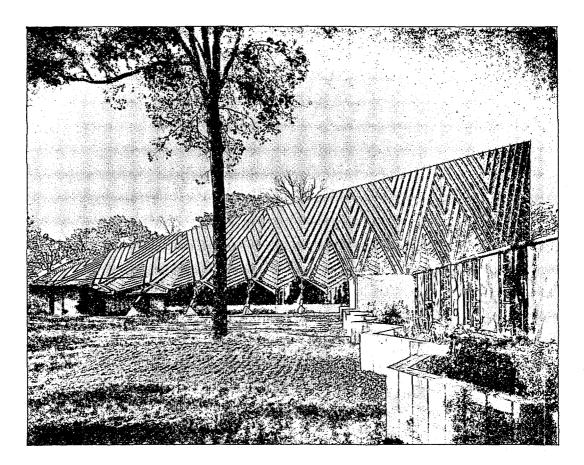


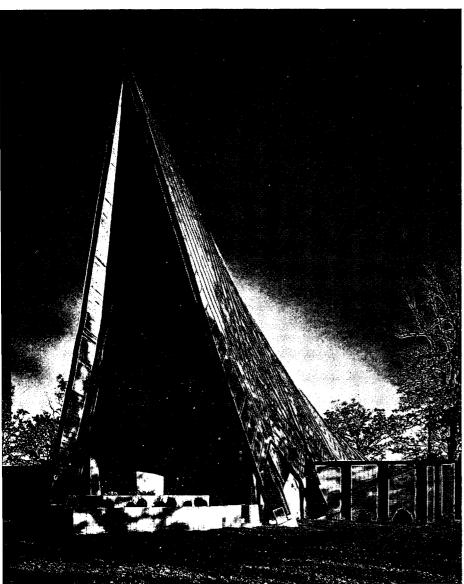
The roof, a dominant element because of its size and shape, demanded careful surface treatment. Sheet copper with batten seams arranged in an interesting triangular pattern added architectural interest. When oxidized, its blue-green will be the principle color of the exterior,

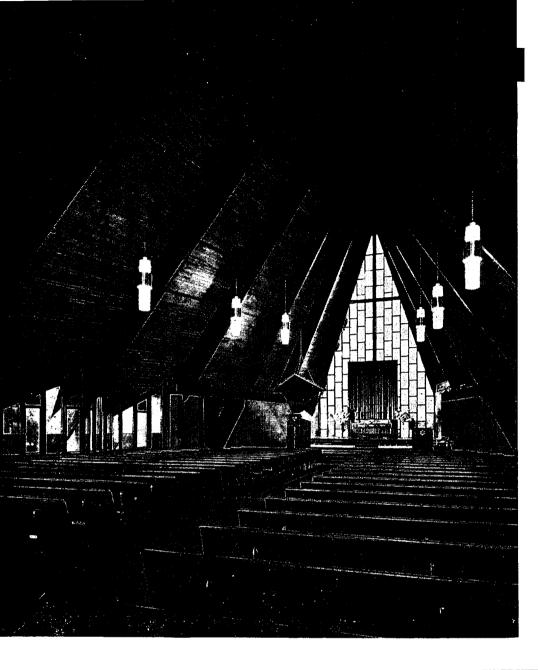
which will be repeated in the copper fascias of the chapel and the educational building. All wood is stained a dark brown, for contrast with the roof and the light buff of the masonry. The spandrel panels of the educational building are painted a dark olive and will be reminiscent of, but contrasting in shade to the final roof color.

Total cost of the building was approximately \$384,000. Mechanical Engineer was W. P. Wells; Electrical Engineer, John C. Bolen; General Contractor, Herman-Sipe Company.



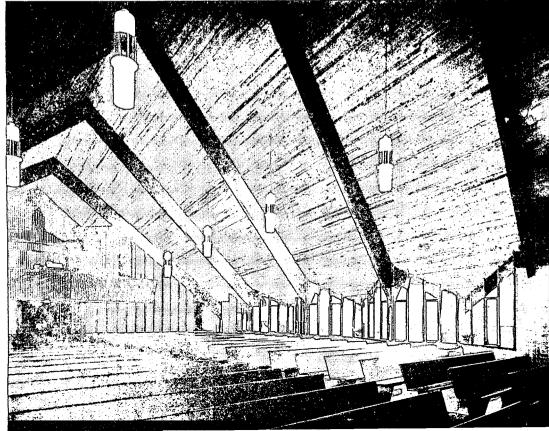


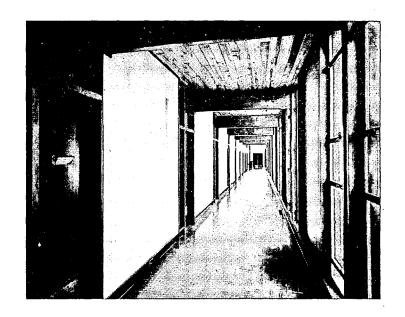




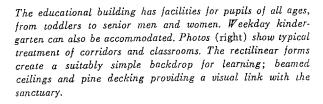
One of the ecclesiastical requirements was to achieve a lofty sanctuary with a great height over the chancel area. The architect's solution was to design the nave in the shape of a wedge (see plan) and to span this area with wood beams of approximately equal length. The beams vary in axial width at each bay to form two hyperbolic parabolids which in turn form the inverted bow of the roof. The bays are 16 ft wide, spanned by pine decking.

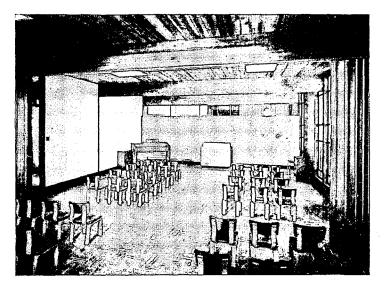
The triangle motif is continued in aisles of the sanctuary (acrosspage).

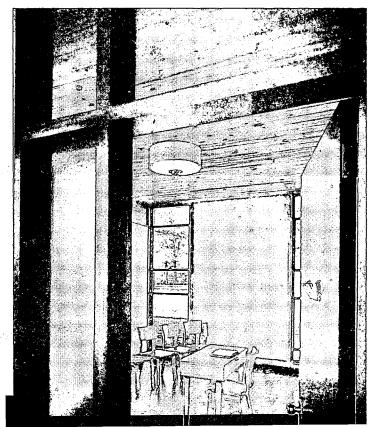


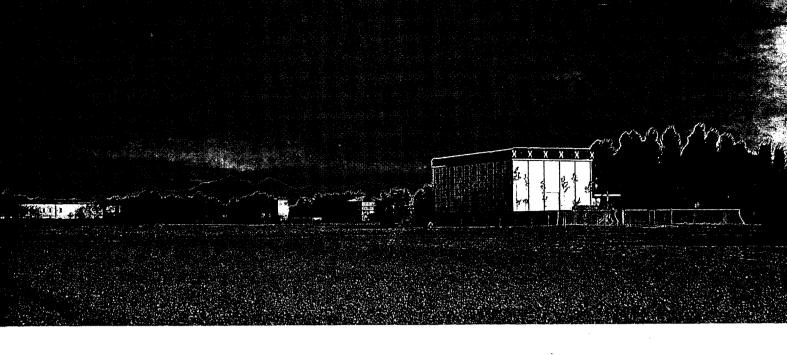






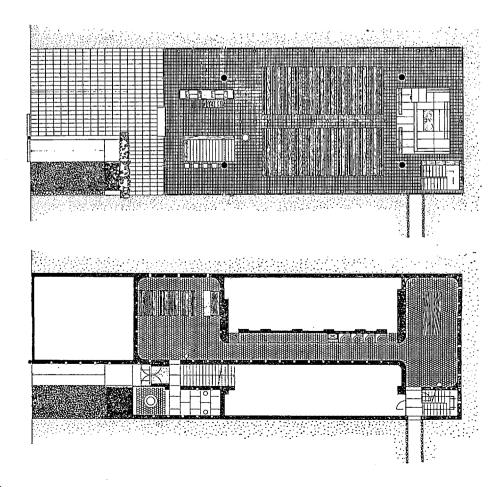






## **Church of Baranzate**

location | Bellate, Milan | Bellate, Milan | Mangiarotti & Morassuti



This new Italian parish church is located on a large open site which links an old and a new residential area of Milan. When landscaping is completed, a series of gardens will provide a gradual transition from the domestic character of the neighborhod to the sacred atmosphere of the sanctuary. This progression in feeling will be augmented by the walled-in courtyard through which one passes to enter the church.

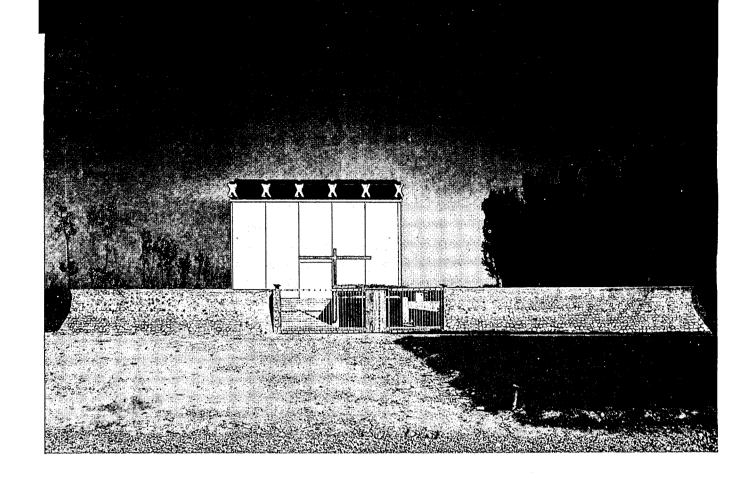
From the courtyard, stairs lead to the upper level and the nave; while a ramp leads to the lower level and crypt where the baptistry, vestry, sacristy, confes-

sionals, and a chapel are located. The floor level of the crypt was determined by the high hydrostatic head; consequently, the floor of the sanctuary had to be raised considerably above the natural grade and has the same elevation as the top of the courtyard wall (see longitudinal section). From a distance, the visual effect is that of a masonry platform above which hovers the light and airy sanctuary.

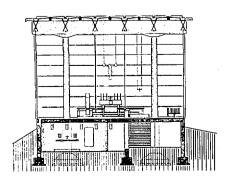
Construction is all concrete. From the thick, curved, and sand-blasted walls of the cavelike crypt rise four slender columns which support the heavy and yet delicate roof structure. The columns were placed so as to equalize the bending moments in the two main cross-beams. On these cross-beams rest precast and prestressed longitudinal beams whose X shape was chosen in order to achieve a light member able to resist horizontal wind pressures on the walls. The longitudinal beams support prefabricated blocks with an X-shaped rib. This interesting structure was designed with the help of Engineer Aldo Favini.

The four walls of the sanctuary are made of double layers of glass with transparent glass used near the ceiling





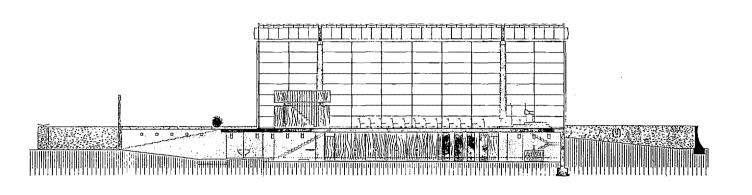


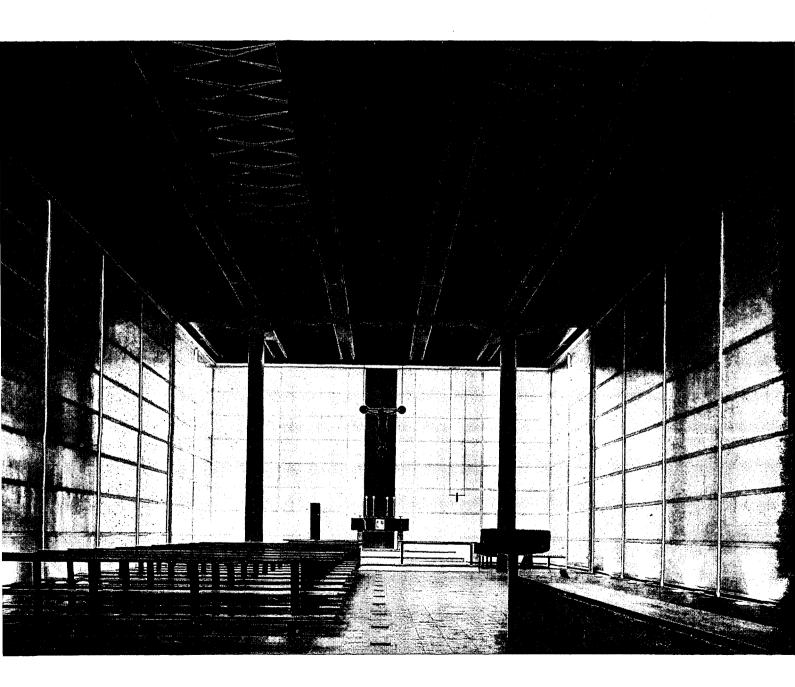


and the floor, the rest being translucent. All floors are paved with brick. The green Levanto marble altar is of the Ambrosian type, thus the priest faces the congregation. The ceiling in the crypt is of white marble plaster (powdered marble and lime).

The ancient wooden crucifix suspended from the ceiling near the altar, the stations of the cross placed on the courtyard walls, the statue of the Virgin and Child in the niche of the chapel, and figures of the four Evangelists that will flank the stairs (not installed yet) add further richness, feeling, and scale to this sensitively designed church.









**Trinity Lutheran Church** 

location associated architects consulting architect Walnut Creek, California Belluschi and Skidmore, Owings & Merrill Pietro Belluschi

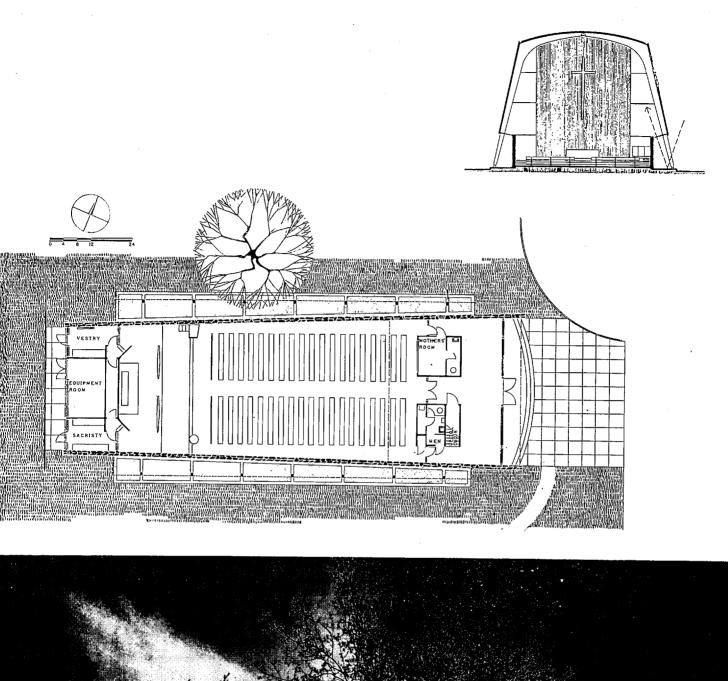
The architect was instructed that the church should symbolize a place of worship, and therefore be set apart and serve no other purpose. The site was a  $2\frac{1}{2}$ -acre residential lot and the building was placed at the highest point of the land, dominating the site and also away from street noises. Parish hall, meditation court, and main landscaping will be added at a later date.

"The design approach," writes the architect, "was to treat the church as

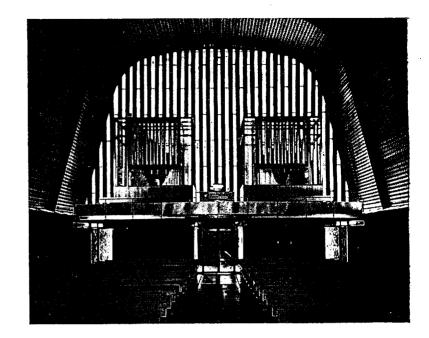
simply as possible, using natural materials and creating a worshipful interior atmosphere. The upper portion of the church is treated as one, large, covering umbrella of wood, with wall and ceiling expressed as one. Stone walls are set back . . . at the worshippers' level, to let in natural reflected light during the day and artificial reflected light at night." (See SELECTED DETAILS p. 157).

Cedar was chosen for the upper portion of the church, because it weathers to an attractive gray, and stone for the lower wall, because it would blend well with the gray of the cedar. Interior color scheme was also limited to the natural color of the materials used.

The free-standing crosses by the entrance to the sanctuary were hand hewn by members of the congregation from telephone poles. The parishioners were also responsible for much of the land-scaping, painting, pouring of sidewalks, and other work. Cost was \$125,000.







"The lighting concept was to have medium intensity in the narthex, a low intensity in the nave, and a high intensity on the altar as the main focal point of worship. This was achieved in the narthex by the use of clear glass and walls; in the nave by the use of reflected light only (which in practice has proved very effective, any change of lighting intensity outside being noticeable in the upward reflection inside and creating drama in the interior space); and on the altar by having the widest area of reflected light and windows alongside the altar."





### The Four Seasons: collaboration for elegance

A rare example of successful collaboration, The Four Seasons restaurant in the Seagram Building, now familiar, is distinguished by an exceptional wealth of work from related design fields—planting, sculpture, and table accessories. Landscape Architect Karl Linn, Sculptor Richard Lippold, and Industrial Designers Garth and Ada Louise Huxtable discuss their roles in collaborating with Architect Philip Johnson and Interior Designer William Pahlmann.

Interior planting was considered from the early design stages as an integral part of the design by the professional team—architect, interior designer, lighting consultant, and landscape architect. Our task was to achieve complete harmony between interior design and interior planting with optimum conditions for plant survival and luxurious leaf.

The clean, elegant articulation of the architecture and its superb refinement are complemented by the majestic specimen trees as living sculptures, plantings with visual and physical strength in the architectural space and volume. Large expanses of uncluttered wall show to better advantage when an irregular, gracefully formed plant is silhouetted against them. Two directions of thought are evident in the design of plantings at The Four Seasons: permanent specimentree plantings, strong entities, and decorative "exhibition" four-seasonal flower displays.

Placement of material was determined very early in the planning. When the over-all size and shape of the major trees around the pool was decided—our aim was the shelter of a canopy—our horticultural goal was to find trees which were hardy under restaurant conditions, flexible enough to squeeze through narrow doorways and to spread, once in place. An extensive search was made in

hundreds of nurseries to find, not the right species but the right trees, and matched trees. They had to be root-pruned well ahead of shipment—to send out new fiber roots over a smaller area to fit inside the tubs. The ornamental fig trees, Ficus decora, seem to have been a wise choice, for new growth indicates that they have righted themselves after traveling.

On-the-spot decisions, placing each plant, were somewhat flexible. In designing interior plantings, I look for unresolved aspects of an interior—a lack of continuity between pieces of furniture, a line ending abruptly, a weightiness on the floor—after basic furniture arrangements and traffic patterns are established. A planting scheme can enliven and draw the entire scheme together.

It was necessary to work closely with Lighting Consultant Richard Kelly and Plant Physiologist Dr. O. Wesley Davidson to establish an optimum micro-climate for plant survival. Research for the project can be considered a pilot experiment in indoor planting.

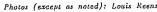
Three basic requirements for plant life are controllable: humidity, light, and temperature. The air-conditioning system produces the necessary humidity for the plantings, supplemented, in the main dining room, by the pool.

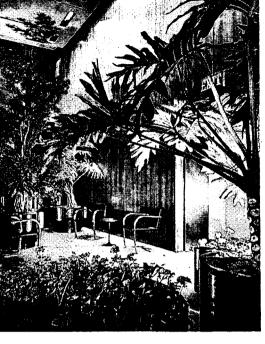
Providing adequate light to sustain

plant life in a green and flowering condition was a much more demanding effort. Overhead lighting provides illumination for the uppermost foliage and, through the canopies of the trees, filters softly in subtle living shadows to the tables below. Uplights which dramatize the plantings are beneficial to their survival. Since the dim lighting of a muted restaurant atmosphere is insufficient for plant nourishment, all lighting is turned on at sunrise and left high until the restaurant opens; for the fig trees, supplementary lighting is added from sunrise to opening time by easily-portable, mercury vapor lamps which provide good light intensity without too much heat. Unfortunately, muted light stimulates plants into spindly growth. To counteract this and to encourage slower growth, the soil is kept relatively dry and room temperature is lowered as much as 8° when the restaurant closes.

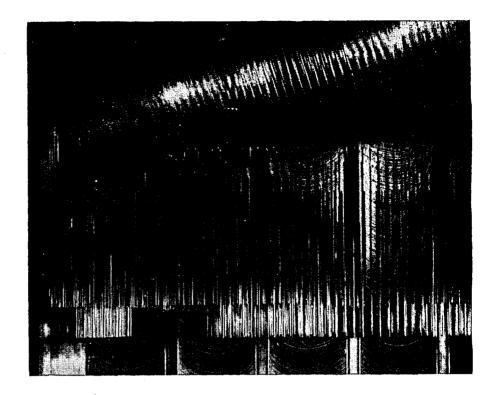
One of the most demanding aspects of the project is that it is not simply a one-time installation: flower displays are changed four times a year. A maintenance crew works three hours each morning removing dead blossoms and leaves, spraying, watering, and cleaning foliage. The project is a continuously living and growing garden, supported by actual growth in proper conditions, or by rotation and substitution. KARL LINN











I was asked by Philip Johnson and Phyllis Lambert to consider the design and execution of two works for this restaurant about a year and half before its completion. At that time, I believe the general layout of the room had been determined; it had also been decided that the dominant interior color and texture would be furnished by the bronze interior columns with wood walls.

The only desire on the part of the architects was to create a more intimate feeling over the bar than the twenty-foothigh ceiling afforded, and to create this feeling without sacrificing the elegance of the space and proportions of the room, such as a dropped ceiling might have done. Also, because the room is square and the general disposition of the elements it contains are asymmetrical, it was stated that a second sculpture in the opposite corner would be desirable to respect the room's symmetry, by balancing the visual emphasis.

I was told also that the sculptures would be the focal points visually in an otherwise uncluttered interior.

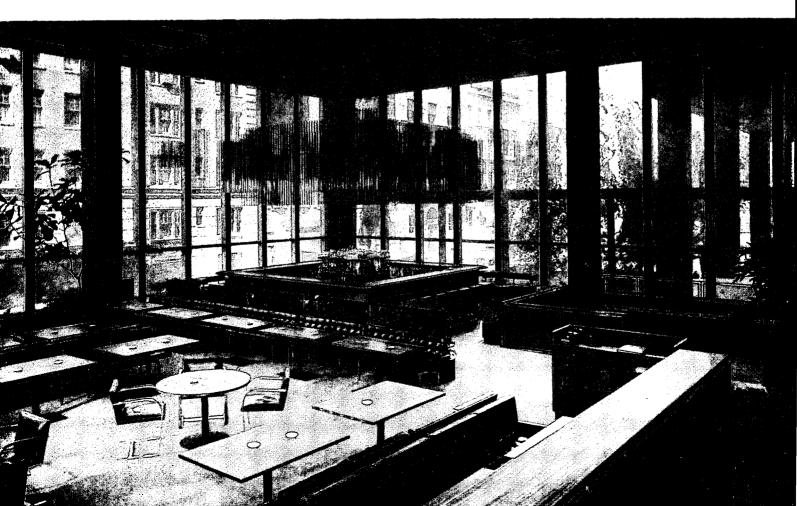
I cannot properly pretend to a clear "design" approach to this problem, because these are, first of all, sculpturesor sculptural constructions—which found their being as any work of art does. I must admit, however, that I have always had a profound admiration for the work of Mies van der Rohe, and consider the Seagram Building one of the architectural masterworks of all time. Further, it is my belief that works of art rise to their noblest expression in collaboration with great architecture, and that the mere fact of collaboration with others is no more inhibiting to the freedom of expression of the artist than is his collaboration with himself, so to speak, when he alone has to determine the limitations of a particular work-or allow the work to set its own limitations, which seems to be more precisely the fashion these days. To me, the limitation, like subject matter, is irrelevant to the creative act. I believe it is irrelevant whose springboard one uses in preparing for the dive into the mysteries of the evolution of form. In fact, if the springboard is not one's own, but a host's, it may even be that its properties are more exciting than one's own; at least it may possess the virtues of the new and unfamiliar. One learns from many sources.

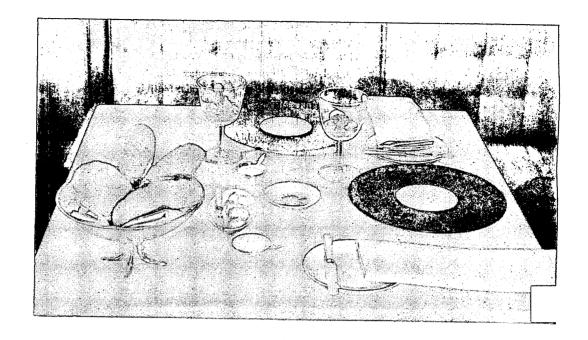
Of course, all this presupposes an intelligent and sympathetic host. I am grateful that, in this case, my hosts seemed pleased with the uses to which I put their springboard, and in no way interfered with my performance. Indeed, they were not only sympathetic to my ideas, but actively constructive in realizing them. After the presentation of my first drawings, the architects sought to design the ceiling and the lighting in order best to accommodate the particular qualities of the sculpture, and decisions of furnishing details, design of the bar, etc., were all undertaken with a lavish sensitivity to what proved to be our mutual intent.

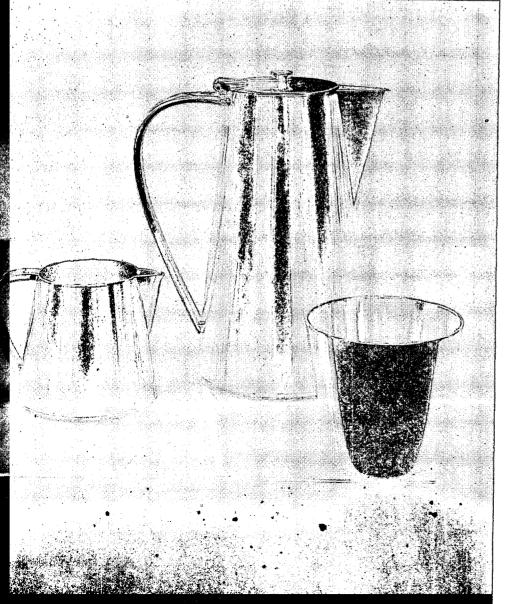
It is easy for me now to suggest the obvious and meaningful relationship of the multiple bronze rods suspended in space to the great hanging bronze mullions on the outside of the building. And it is easy to point out where and how the proportions of the sculptures coincide with such dimensions as the widths of the main supporting columns of the building, or where they depart from such relationships to condense into a miniature statement of the building's form; or expand to reach toward, or at least point to, the supra-human scale of the architecture, thus forming a kind of liaison between the building and the spectator.

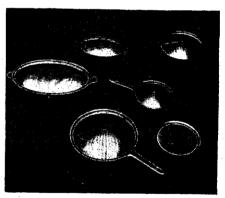
But all of this is hindsight and is what I learned in making these works. My only determined effort was to create a kind of heart for this building of my affections and to translate its beauties into a work of art that would enhance without distraction, repeat without redundancy the virtues of the architecture, and so make an inseparable entity of the two. It is not for me to imply that the building would suffer through lack of the sculpture, but I would like to state that I feel the sculpture would surely lose most of its meaning without the building. Unless this is so, I have not RICHARD LIPPOLD succeeded.

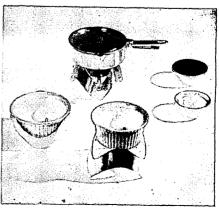








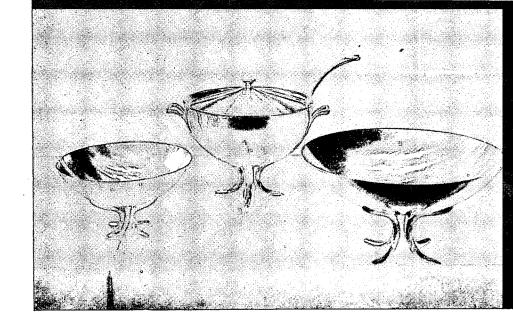


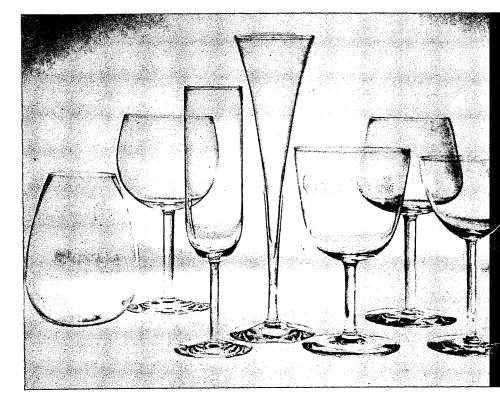


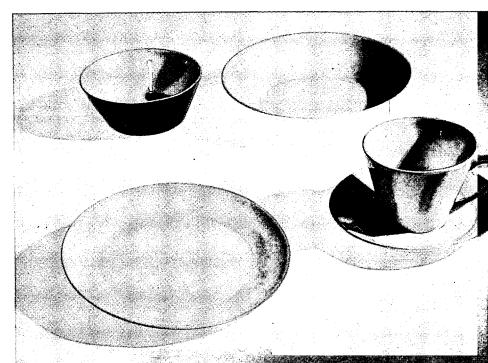
There was nothing conventional about this design project. We had a far-from-ordinary client, Restaurant Associates, Inc., openly adventurous in their attitudes toward food and design, and interested in setting exceptional standards for both. The problem was unusual: to transform their new ideas for food and service into a distinctive, identifiable line of accessories and equipment in keeping with the sophisticated elegance of the restaurant interiors. At the same time, we had to meet a remarkable variety of practical requirements that are part of routine restaurant operation.

Not only did the sumptuous modern architecture require accessories of appropriate character, unavailable from the usual restaurant-supply sources, but also the concept of the restaurant and the philosophy that carried through all of its planning posed a particular design challenge. The emphasis on a seasonal menu and artful presentation of food, to offer the guest a variety of luxurious and sensuous pleasures throughout the meal, called for many handsome and unconventional items. The glassware range, for example, called for distinctly different glasses for various wines and liquors, including two special champagnes. House and seasonal specialties such as caviar, cheeses, hot and cold appetizers, fruits and vegetables in season, all have their individual services. Even the bread tray has been conceived as an unusual, footed centerpiece that stays on the table at all times, adaptable for bread, petits fours, or fruit. One of the primary requisites was that each item should be a unique, identifiable "Four Seasons" piece (the restaurant's symbol, designed by graphic artist Emil Antonucci, appears on several). At the same time, we attempted to maintain a uniform style, based on extreme simplicity, graceful line, and carefully studied form. Eighteen of these pieces have been selected by The Museum of Modern Art for its Design Collection.

In many instances, limitations were imposed by comparatively small quantities, which dictated minimum tooling for limited production. A further concern was the stringent time schedule—in less than nine months, more than sixty items were conceived, designed, and produced: individual wine and food services, complete lines of glass, china, and silver hollowware, and service wagons and tray stands. ADA LOUISE and GARTH HUXTABLE







Year-round use of a residential patio and swimming pool is achieved by a plastic/air blanket covering an aluminum-rib frame. Constantly-maintained pressure of the air blanket between the two layers of plastic helps prevent noise, flutter, and loss of winter heat.

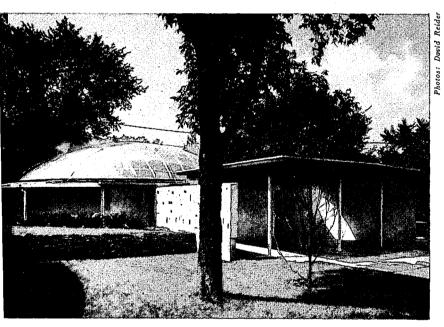
### plastic dome on aluminum ribs

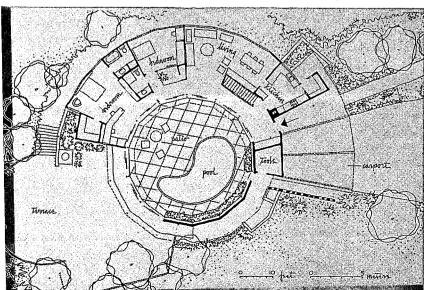
A residential swimming pool in Ann Arbor, Michigan, can be enjoyed throughout the year as the result of an aluminum-rib, plastic dome which encloses the interior patio and pool. Design of the William D. Kennedy residence and its unique structural solution is by Architects George B. Brigham and Joseph T. A. Lee of Ann Arbor.

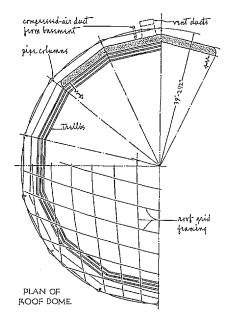
Chief among the owner's requirements was a home oriented toward a private patio and pool, sufficiently protected to give comfortable year-round use. An outdoor sun terrace was to be accessible from this area. The architects felt that a circular plan, with rooms surrounding a glass-walled interior patio, would best answer these requirements and, in addition, provide the maximum accessibility and visual continuity between indoor and "outdoor" areas.

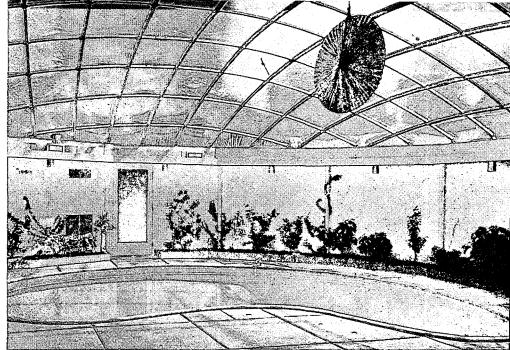
Several criteria for enclosure of the 42' central patio were established: lightness of appearance, economy of material, ease of construction and maintenance, and efficiency of air conditioning. A diagrid overhead-framing system was chosen, the decision being influenced by the work of R. le Ricolais, then under way at the College of Arts and Design, University of Michigan. The inherent structural characteristic in a diagrid system -even distribution of loads at peripheral supports-permits a minimum of structural rib material. Its geometry allows for a low-dome profile, thus permitting lower air-conditioning loads than with the larger air volume of a hemispherical dome. (Initially, a hemispherical shape had also been explored.)

Dome ribs are of aluminum, to reduce maintenance, and are Unistrut sections, selected for their flexibility and easy jobsite assembly. In the assembling process, ribs are placed singly in their approximate locations, temporarily spaced, and finally adjusted and aligned in their permanent positions. Connections at rib intersections are simplified by great-circle design of the ribs. Anchorage at the curb is accomplished by a specially-designed shoe with universal joint, which





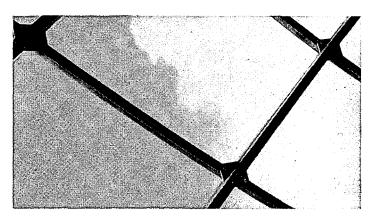


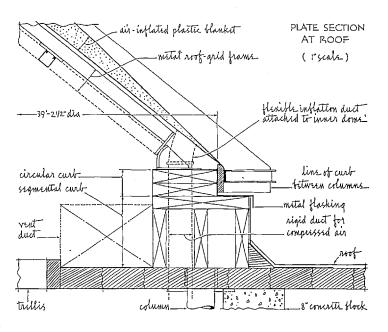


overcomes the problem of ribs and curb meeting at various angles and directions.

The dome cover presented different factors to be considered: transparency, good appearance, freedom from wind noise, and ease of erection and maintenance. The two-layer Mylar cover fabricated by Birdaire, is held down to the curb by a continuous band and kept constantly inflated under pressure by a small compressor. Any movement due to wind or other exterior loads is taken by the outer layer, which remains taut by inner air pressure. Noise or flutter created by such forces is thus isolated from the inner layer by the separating air blanket. This blanket also keeps the inner skin layer free from disturbances and movement that would cause rubbing against the metal ribs. In addition, the inflated two-layer cover insulates against the escape of winter heat. Constant air pressure between the layers keeps a smooth hard-to-the-touch exterior surface; while the inner layer, being firmly pressed against the metal ribs, results in a slightly "quilted" interior surface. When viewed from the interior at night, an interesting reflection is produced by this "quilted" effect.

Winter air conditioning is accomplished by floor radiant heat, with forced warm air eliminating any condensation problem. Summer air conditioning is by a refrigeration system, supplemented by roof spraying, with the spray water collected in a catch basin and recirculated. An additional measure being experimented with to reduce heat load during the summer months is a Saran netting.





Interior space created by the enclosure, showing low profile provided by great-circle ribs of diagrid framing system (top). Connections at rib intersections, simplified by great-circle design of ribs (center). Curb anchorage of rib, accomplished by universal-joint shoe (above).

Redistribution of heat, where simultaneous heating and cooling loads exist, has many possibilities. It provides the basis for an economical combination of package equipment related by simplified controls providing an easily fabricated, installed, and maintained arrangement. Two such systems designed by the author are presented.

## heat-pump redistribution systems

by Gershon Meckler\*

### commercial building

The principle of redistribution of heat can be applied to many commercial buildings in northern latitudes at sizable savings in first cost and operating cost. Simultaneous heat losses and gains provide the opportunity of utilizing combinations of heat-pump equipment staged and zoned in conjunction with atmospheric cooling to provide comfort and utilize internal heat gains as a heat source for building-heat losses. This feature permits sizable savings in terms of both first cost and annual operating costs. To illustrate an application of heat redistribution, the mechanical design for the R & J Furniture Store, Canton, Ohio, is presented. Architects were Cox & Forsythe.

The main-floor ceiling of the show room, containing 25,800 sq ft of conditioned space on two floors, is shown (Figure 1). This building functions primarily as a display area for merchandise and requires a daytime incandescent-lighting load of 20 ftsc. The building is of solid-

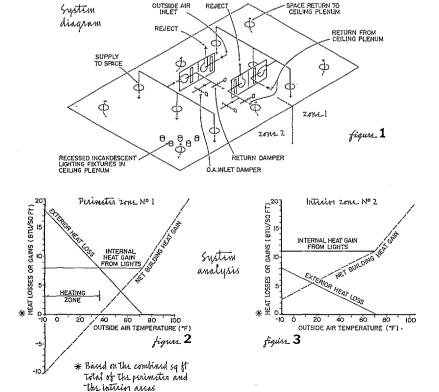
masonry construction, and is insulated. A hung ceiling serves as a common return-air plenum and housing for overhead, recessed lighting for both interior and perimeter zones. The interior-zone heat pumps provide daytime compression refrigeration with outside-air temperatures above 55 F, and switch to atmospheric cooling below 55 F. The perimeter-zone heat pumps provide compression heating or cooling as required. Relief air from the common return-air plenum serves as a source of heat for the perimeter-zone heat pumps when the interior zone is on atmospheric cooling. During winter-night set-back, both interior- and perimeter-zone heat pumps switch to compression heating, to maintain 65 F space temperature.

Separate heat-gain and -loss requirements for the main-floor interior and perimeter zones, as a function of outside temperature, are summarized (Figures 2 and 3). Analysis of these curves provides an explanation of heat redistribution and serves as a basis for justification, selection, and arrangement of heat-pump

equipment. For example, let us assume the system operates at a 20 F outside-air temperature. The perimeter zone shows a 3.5 Btu/hr/sq ft net heat loss while the interior zone shows a 5.5 Btu/hr/sq ft net heat gain. Providing a common-air return, we need add only 1.5 instead of 3.5 Btu/hr/sq ft net heating to the air supplying the perimeter zone and only 2 instead of 5.5 Btu/hr/sq ft net cooling to the air supplying the interior zone. Heat redistribution, in effect, reduces the interior-zone cooling load by 63 percent and the perimeter-zone heating load by 43 percent. When the outside-air temperature rises above 36 F, reversal of thermal load takes place and the perimeter zone calls for cooling. The interior zone calls for cooling at all times, except winter night.

This system incorporates several desirable operating features. Exhausting relief air through the perimeter-zone heatpump air condensers permits a reasonably high coefficient of performance, in spite of low outside-air temperatures. Package heat pumps, available in a wide range of sizes, were matched and arranged to provide partial load-control from 100 to 25 percent. Winter-power demand is effectively stabilized by balancing day lighting with a comparable demand for night compression heating. This type of integrated heat-pump system can maintain uniform temperature control and follow a reversal of thermal load resulting from variable outside conditions.

Separate heating and cooling systems are subject to some serious limitations when simultaneous heating and cooling demands exist within the building; namely: (1) excessive heating and cooling equipment capacity must be provided; (2) system response to rapid variation in internal or external load usually involves some degree of overheating, overcooling, and lag; (3) system control is poor on light, partial load.



In conclusion, presented above is a basis for consideration of integrated airto-air heat-pump systems in northern latitudes by applying the principle of heat redistribution to building areas where there is a year-round high internal-heat release requiring simultaneous heating and cooling. Also presented is a simplified method of evaluating building requirements by graphical-zone analysis. The fact that internal-heat gains result from consumption of electric power makes even more practical the use of electrically driven heat pumps. This results from a more attractive utility rate and the inherent power-demand stabilizing features of the system.

The system described is quite economical—the combined-system first-cost averaging about \$650 per ton for a 55-ton installation. This means a savings realized equivalent to the first cost of a conventional heating system. Heat redistribution affords the possibility of sizable, annual, operating savings, since net simultaneous heating-and-cooling demands are reduced by mixing perimeter- and interior-zone return air; and internal heat gains are utilized to increase the operating efficiencies of the winter-heat pumps below 55 F outside temperature.

### utility building

Continuous heat-redistribution systems utilizing a combination of heat-pump and air-conditioning units have particular application for industrial or utility buildings where variable equipment-heat gains can cause thermal-load reversal during winter operation. This principle of operation is illustrated in the mechanical design of United Telephone Communications Building, located at the U.S. Air Force Base, Bellefontaine, Ohio. William Helser was the architect. This structure contains approximately 1300 sq ft of nonpartitioned area on one floor and houses electronic equipment requiring constant year-round temperature control. This equipment rejects heat gains to the building interior during all seasons of the year. During the winter, depending on the outside-air temperature, the equipment-heat gain may be such that cooling is required to maintain the proper inside temperature. This can vary throughout a day, from heating to cooling and reverse, several times during a 24-hr period. Since the building is generally

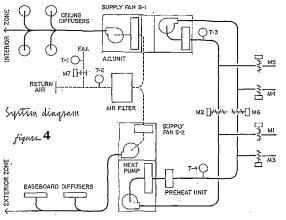
unattended, a completely automatic system is required. A schematic diagram of the system is shown (Figure 4).

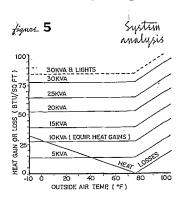
Year-round heating and air conditioning is provided by a package heat pump serving the exterior zone and a package air conditioner serving the interior zone. These units are integrated to supply the total cooling capacity during summer operation. Cooling capacity for equipment-heat gains is provided by the interior-zone air conditioner. The exteriorzone heat pump and the interior-zone air conditioner are interconnected on the air supply side. Equipment-heat release is collected by the air conditioner which transfers this heat through the exteriorzone heat pump to the perimeter of the building for heating. The air condensers of both units are interconnected, to permit winter operation of each at efficient levels.

This system is analogous to a lowvelocity dual-duct arrangement which permits a single stage of cooling for the interior zone, and a single stage of cooling or heating for the exterior zone. On a predetermined rise in space temperature, first interior then exterior compression cooling is activated by a return-air-duct staged thermostat. On a corresponding drop in space temperature, the exterior heat pump supplies single-stage compression heating. Both supply-air fans operate at all times with part of the total air circulated supplied through the heat pump to the perimeter-area baseboard diffusers, and part through the air conditioner to the interior, overhead, ceiling diffusers. Thus, the system can instantly supply or redistribute cold or hot air, depending upon the particular net-space demand.

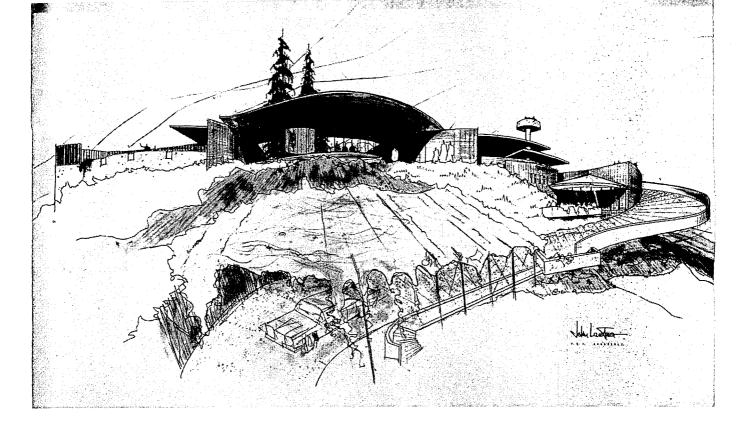
A graphical analysis of the building loads—from which the selection of equipment, arrangement of zones, and staging of the package heat pump and air conditioner was determined-is illustrated (Figure 5). The building requires a maximum cooling capacity of 96 Btu/hr/ sq ft at a maximum heating capacity of 32 Btu/hr/sq ft. The need for a system capable of rapid load reversal is evident (Figure 2). For example, at 10 F outside temperature, the building requires 25 Rtu/hr/sq ft of heating. If 9 kva of equipment is on the line, redistribution of the corresponding heat release just balances the building-heat losses. If an additional 3 kva comes on the line to make a total of 12 kva connected load, the first stage of compression cooling is activated at the interior air conditioner. But if it is an additional 10 kva that comes on the line, to make a total of 19 kva connected load, the second stage of compression cooling is activated at the exterior heat pump. If 16 kva of equipment is suddenly disconnected, reducing the connected load to 3 kva, the first stage of compression heating is activated.

Summarizing: an industrial application has been described for which heat redistribution, by means of heat-pump/ air-conditioner combination, is practical and necessary to achieve simplified, rapid, system response for a single area subject to variable-internal and independent-external heating-and-cooling demands. Analysis of the operation of a conventional system utilizing separate heating and cooling for this specific application was shown to be limited by the following situations: (1) need for excessive heating-and-cooling equipment capacity; (2) some degree of overheating, overcooling, and lag, following the reversal of thremal load. Redistribution of heat between the interior and exterior areas coupled with single-stage heating and two-stage cooling permits this heatpump/air-conditioner system to instantly follow the building thermal load at sizable savings in year-round operating cost.





A.C. UNIT AND HEAT-PUMP REFRIGERATION CYCLE IS CONTROLLED FOR HEATING OR COOLING BY RETURN AIR THERMOSTAT T2 SET AT 76 F WITH 8° DEAD BAND



An unusual and controversial technique—prestressed-concrete block—is used in the supporting structure for a cantilevered driveway ramp of prestressed concrete. The load-test, agreed upon by hesitant officials as the sole proof of adequacy, showed extremely high factor of safety.

### prestressed-concrete driveway ramp

A reinforced-concrete, inclined ramp, cantilevered from and encircling a cylindrical structure, makes a grand sweep around a mountaintop, using an unconventional and controversial construction technique -prestressed-concrete block. The ramp is the driveway of the Kenneth Reiner house in the Silverlake area of Los Angeles; and the round, supporting structure is a guest house. Design of the project is by Architect John Lautner.

In an earlier scheme, the ramp slab was to be supported by columns. T. Y. Lin & Associates, consulting engineers, were engaged to redesign the structure to eliminate the columns and completely cantilever the ramp. This seemed feasible with prestressed concrete, and accordingly, the roadway and round-house walls were redesigned utilizing high-tensile, prestressed steel instead of conventional reinforcing. Since cantilevering the ramp would impose bending stresses in the supporting wall, it was considered preferable to prestress it, too, and thereby prevent all possibility of cracking.

An analysis of construction costs, however, indicated that it would be considerably cheaper to form the wall of concrete block, because of its relatively small diameter of 35'. A wall design incorporating prestressed-concrete block was therefore submitted to the City of Los Angeles for a building permit.

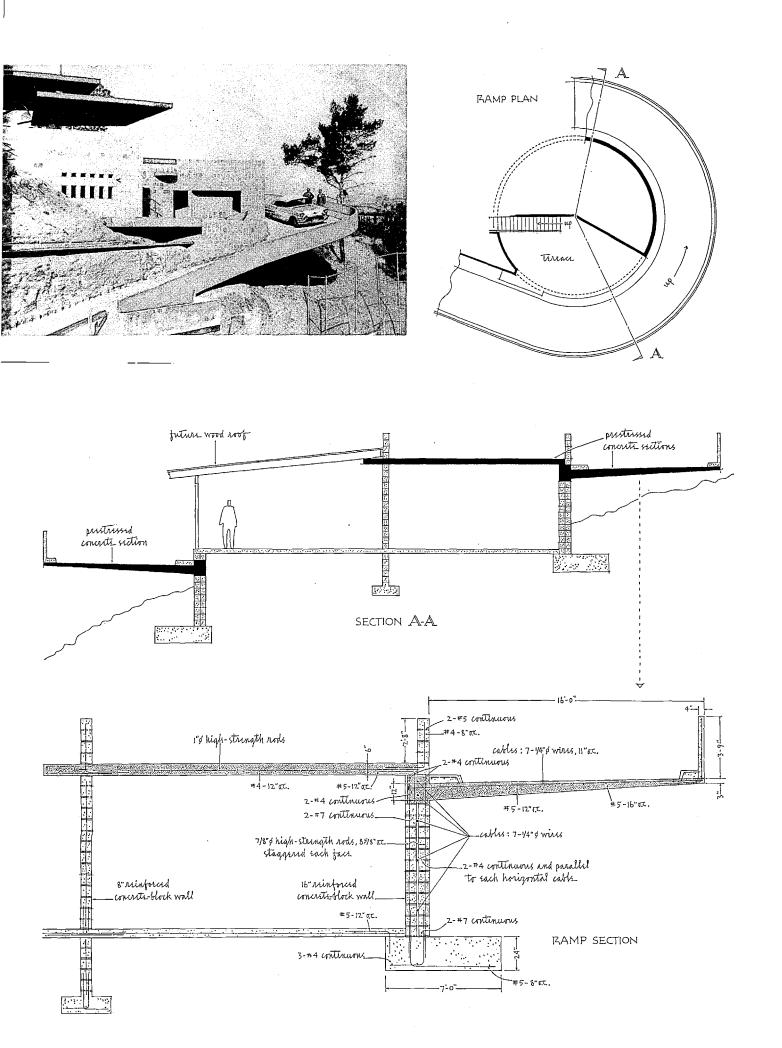
The building department was at first reluctant to approve the design, but in the final agreement accepted a load-test as a sole proof of the structure's adequacy. (A further condition, at the request of the owner, was a reduction of the block-wall thickness from 24" to 16".) The load-test consisted of statically loading the ramp to twice the design live load-for 24 hours, 25,000 lbs of sandbags were placed on the driveway. Had the ramp sagged more than a slight amount it would have been necessary to tear it out, at great expense. The results, however, were highly successful: the ramp could have bent 33 times as much as it actually did and still passed the

requirements set up by the city engineers.

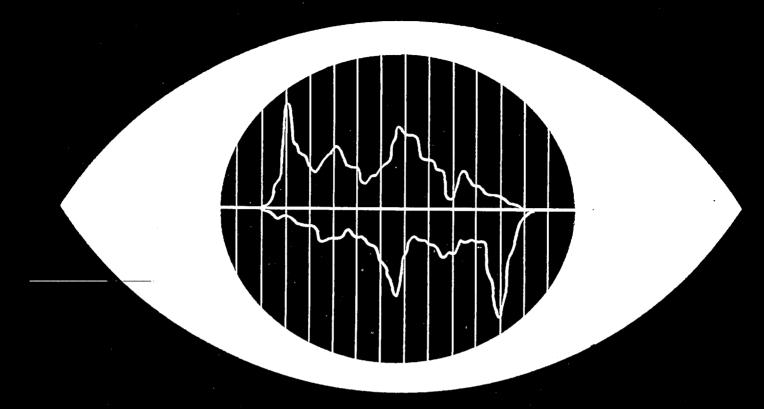
The ramp slab itself is prestressed with high-tensile steel cables composed of seven 1/4"-diameter wires in each cable. Thickness dimensions of the slab are 3" at the periphery and 12" at the inner section of the wall. The wall, made of grouted-concrete-block units having an ultimate compression of 2000 psi, is prestressed with 7/8"-diameter high-tensile rods spaced 85/8" o.c.

In addition to the cantilever action, the ramp portion of the structure acts as a helicoid. Although this feature adds a substantial structural integrity, its effect was not specifically calculated, but instead was taken into consideration as providing an additional factor of safety.

It is apparent that, in spite of its seemingly daring design, the 16" thick walled structure is quite conservatively designed and possesses a very high factor of safety. As an element in the total complex, the ramp is a bold design feature serving to tie the component buildings to each other and their unique site.



## Check Up On Elevator Performance...



# Through The Eyes Of HAUGHTON

# elevonics

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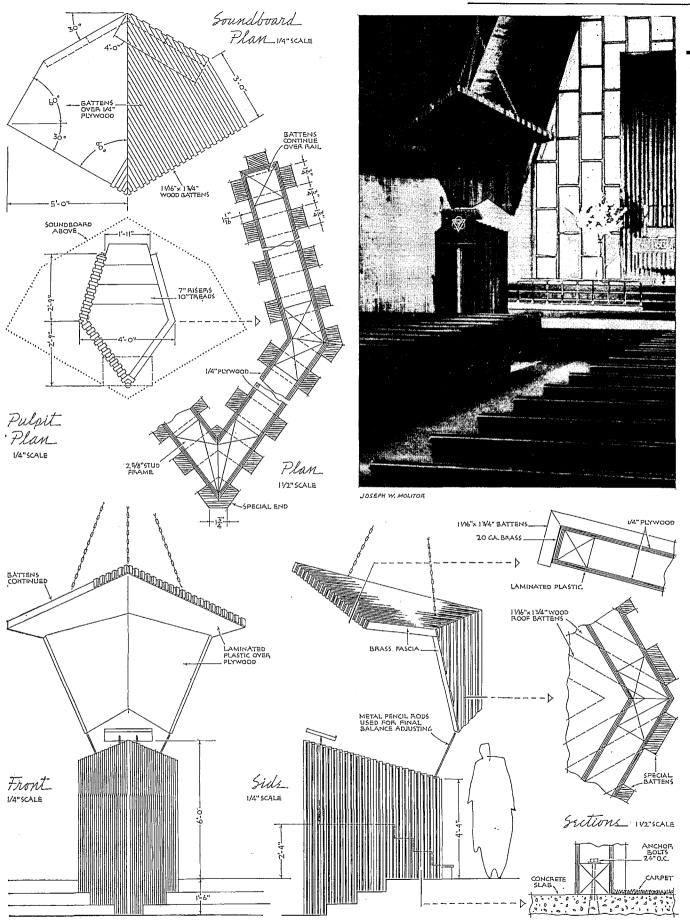


HAUGHTON
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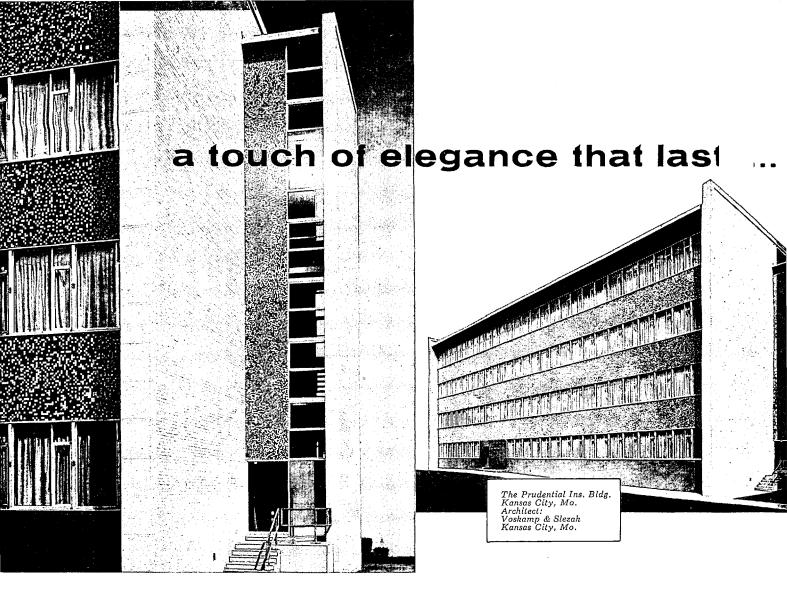
EXECUTIVE OFFICES AND PLANT. TOLEDO 9, OHIO

FACTORY BRANCHES TO SERVE YOU COAST TO COAST



CHURCH, Conover, North Carolina

A. G. Odell, Jr. & Associates, Architects



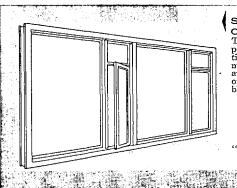
## ALUMINUM CASEMENTS FOR PRUDENTIAL BY MARM

Fenestration of gleaming aluminum puts a jewel-like finishing touch to the bold simplicity of architects Voskamp & Slezak's Prudential Insurance Building in Kansas City. Windows are MARMET Series 5212 Architectural Projected, made up in the interesting combination, (as shown in the section below) of fixed lites alternating with single casement ventilating sash. Marmet's Architectural Projected Windows come in two series; the 550 which is 11/2" in depth and Series 5212, 21/8" in depth. Tubular sash is available in either series for ventilating lites containing large expanses of glass.

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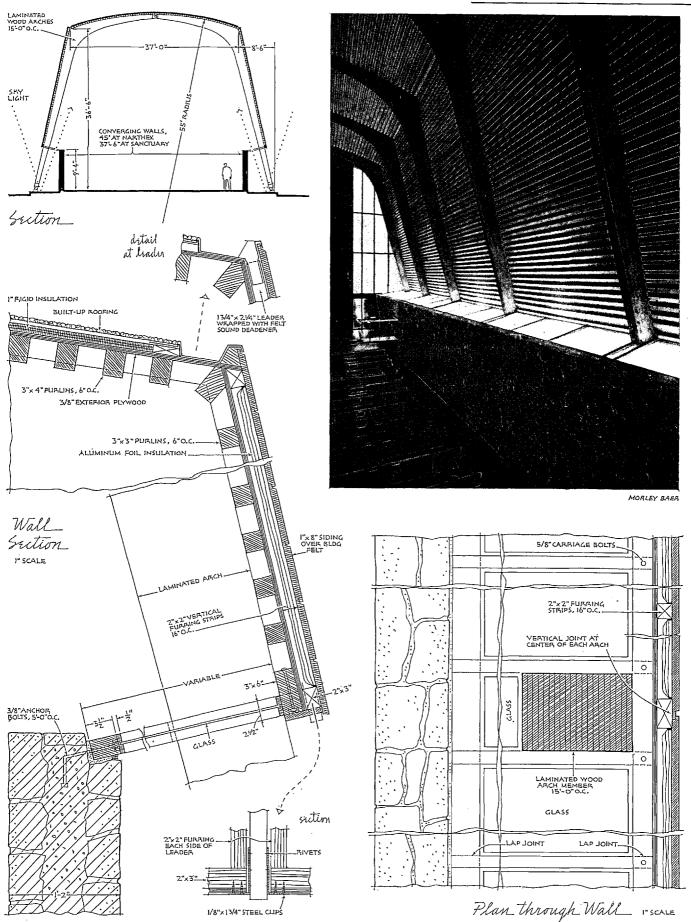
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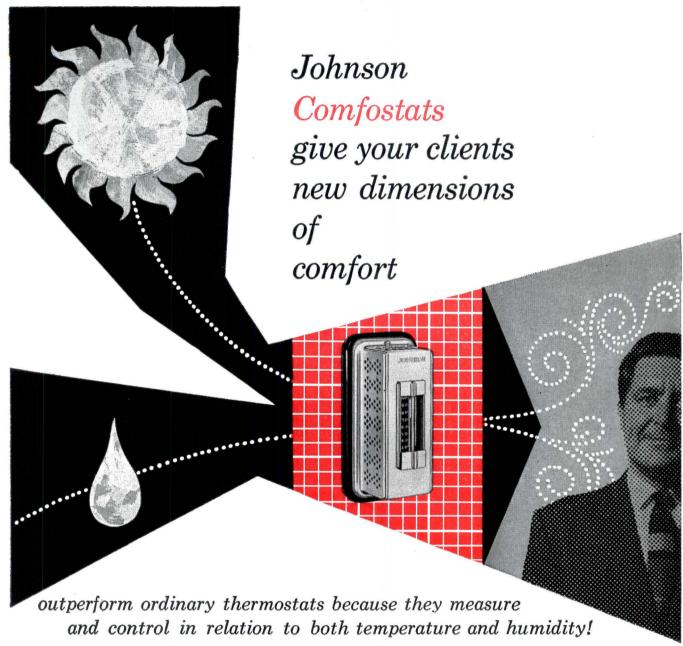
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## A Guide to Recessed Incandescent Lighting

by William F. Blitzer\*

Since they first came into use about 25 years ago, recessed incandescent fixtures—or downlights—have been steadily developed and improved so that today they are essential elements of lighting design. Many individuals, however, are still probably only partially aware of the many effects possible with these fixtures, or the most effective methods of integrating them in the design of structures. Since this situation existed among newer personnel of the author's organization—who would in the future be required to make knowledgeable presentations to architects and engineers—he developed this review of downlighting principles and related them to the company's fixtures to provide a better understanding of them by its representatives. Believing many in the architectural office could likewise learn from this report, it is presented here.

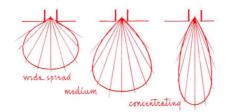
This discussion concerns recessed incandescent lighting: what it can do; how it is produced; the quality factors that make for good performance and lasting satisfaction.

Since all of their output is directed downward, recessed incandescent fixtures are often called "downlights." They first came into use about 25 years ago, as architects and engineers sought answers to the problems posed by lower ceilings and higher levels of illumination. Interiors were being cluttered by a multiplicity of pendant fixtures whose use, in turn, tended to diminish the effective ceiling height. They were also glare sources in many instances. One solution was to recess the lighting fixture into the ceiling, making it unobtrusive. Lenses, reflectors, and baffles were used to direct the light downward and eliminate glare. The trend to downlighting has grown steadily, being aided by the development of improved equipment, and now it is one of the prime tools in the lighting designer's kit.

Downlights can produce a variety of lighting effects. They can be used to create a focal pool of light, to command attention, arouse interest, separate the important from the unimportant. In groups they can produce general background lighting, a sense of freedom and expansiveness, and a warm brilliance—or at low intensity, an intimate restfulness.

### many types for many applications

There are many different types of downlights designed to suit an equally large variety of applications. First of all, there are differing types of light distribution: the wide-spread for general lighting, particularly in areas where some light is desired on adjacent ceiling and wall areas (in kitchens, bathrooms, halls, lobbies, roof overhangs, etc.); the medium spread for general lighting where light is not desired on adjacent ceiling areas (as in any of the above areas plus such locations as dining areas, shops, private offices, etc.); the concentrating for highlighting or accent-lighting (as in entrance halls, living rooms, public areas, merchandise displays in stores, etc.) or for creating high-level general illumination from high ceilings (as under theater marquees, public lobbies, air terminals, churches, etc.).

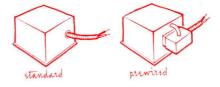


There is a wide variety of sizes and capacities—from 30 to 300 depending on the level of illumination desired, the height, and other characteristics of the room.

There is also a selection of trim or ceiling flanges: completely flush, overlapping, or "dropped" to suit different ceiling materials and constructions and to meet different esthetic needs. Downlights are offered in both enclosed and open types depending on the esthetic effect desired, the bulb used and the relative importance of ease of relamping.



Lastly, recessed units are offered in either standard or prewired constructions, the latter being used in areas where it is required by local codes or where the electrical contractor finds it more economical to install (generally where downlights are spaced singly rather than in groups).



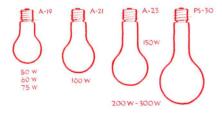
Let us now consider these various types in more detail, seeing the particular features of each, its principle of operation, and its construction.

Downlights can also be used—in conjunction with bright, shiny materials, or rough, nubbly ones—to create sparkle and texture in an interior, as in the mica of a floor, the drapery by a window, the silver and crystal in a store display, or the stone facets in a masonry wall.

<sup>\*</sup> Vice President in charge of Design Engineering and Product Development, Lightolier Incorporated, New York, N. Y.

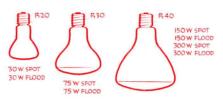
#### light sources

General Service Lamps. The purpose of a recessed lighting fixture is to control the output of the light source-the "bulb"-in order to place the light where it is wanted. The light source itself may be one of several types. The most common is the ordinary bulb, more properly referred to as a "general-service lamp." These are low in cost and over the past few decades have been radically improved in efficiency while being made more compact. Their life expectancy, on the other hand, is generally limited: for bulbs of 75-, 100-, 150-, 200-, and 300-w, it is 750 hours.1 The most common bulbs are "inside frosted," the interior of the glass envelope being lightly etched. These perform well in all downlights, as a rule, although clear bulbs will be more efficient in lens-type downlights since their source is less diffused and the reflector-lens combination can handle its output more precisely. The Deluxe White or silica-coated general-service lamps are too diffuse to function well in any except diffusing-type downlights.



Reflector Lamps. Since a reflector is generally required to redirect the output of a general-service bulb to the zones where it is wanted, it was natural to seek a method of incorporating the reflector into the bulb itself. This was accomplished about two decades ago, and the "Reflector Lamps" or R lamps came into being. Their reflecting surface is of silver deposited on the inner wall of the blown-

glass bulb. R lamps are made in spot- or flood-beam distributions by varying the density of frosting applied to the face of the bulb.



Projector Lamps. A more precise type of reflectorized lamp is the Projector Lamp; these are popularly called PAR lamps. Their bulbs are pressed from heat-resistant glass in two sections. This process permits accurate formation of the reflector contour and rigid positioning of the filament. After the reflector is aluminized, it is fused to the lens to form a one-piece all-glass unit. PAR spot lamps have stippled lenses and the floods have lenses made of prismatic elements. It is the lens that determines the spot or flood distribution, but in any event, PAR lamps have narrower beams of higher candlepower than do the corresponding types of R lamps of equivalent wattage.

While PAR lamps and R lamps are more expensive than general-service lamps, their rated life is 2000 hrs, two to three times that of ordinary bulbs.



Colored Sources. All three types of lamps referred to above are available in colors or pastel tints for purposes of emphasizing a particular range of colors in an interior, should this be desired.

### control media

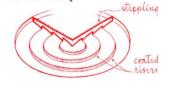
The light which emanates from the bulb can be controlled or redirected by one or more of the following methods: (a) we can reflect it by means of a reflector; or (b) we can refract it through use of a lens; (c) we can spread it by passing it through a diffuser; (d) we can block it with a baffle.

These control media can be used in combination with any of the sources discussed above to produce downlights of various characteristics, from diffuse to highly concentrating. Units with general diffuse distribution are useful for general lighting, while those of the concentrating type are used for special applications where high intensities are required over limited areas or, for general lighting where ceiling heights are great.

Reflector-Lens. We use a reflector-lens combination to produce a medium-beam distribution for general lighting. The reflector is of a parabolic shape (pyramidal in the case of square units), semi-diffuse in finish, and is designed to deliver light to the lens in a definite pattern. A full "lens size" reflector is required for maximum efficiency. The lens redirects and "softens" the light, keeping it out of the glare zone. The



brightness of the lens at normal viewing angles is further reduced by colouvering—that is the risers (vertical surfaces) are coated to form lens-louvers which filter out the glare component of the beam. A further refinement is the stippling on the upper surface of the lens which erases the image of the filament of the lamp.



Reflector-Diffuser. Downlights giving a wider distribution are those which use a piece of diffusing glassware, rather than a lens, in conjunction with the same reflector. This glassware is of homogeneous lucent, or opal glass, to give maximum light without a "hot spot." It is either flat or formed into a

Incandescent lamp life is very sensitive to changes in voltage. For example, operating lamps at 5 percent above their rated voltage will reduce their life by about one half. Similarly, if the voltage is 5 percent below the rated voltage of the lamp, life is increased by more than two thirds. There is, however, an inverse relationship between light output and lamp life, and bulbs are so designed as to produce light at the lowest over-all cost at their rated voltage. In special circumstances, where the cost of replacing a bulb is high due to inaccessible fixture location or high labor rate, it may pay to get longer lamp life by using 125-v bulbs on 120-v circuits.

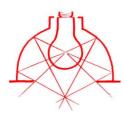
shallow dish to direct light onto adjacent ceiling areas, minimizing the brightness contrast between the fixture and its surround.



Downlights using our new Quadratex glassware have a broader distribution than our lenslights—but not as wide as that of our diffusing opal types—while their surface brightness is lower. The fine texture of the prismatic pattern has a pleasing vibrancy.

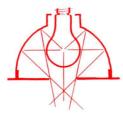


Open Reflector. Reflectors can also be used alone, without either lens or diffuser, to produce medium-spread downlights using general-service lamps. The bulb in these units is hidden from sight at normal viewing angles, as it is raised above the ceiling plane and is concealed by the ceiling flange which has a relatively small aperture through which the light is directed. In downlights of this type, the reflector must be precise in contour and of a highly polished or specular finish. The shape of the reflector is generally ellipsoidal; light emanating from one focal point (the filament of the lamp) is then reflected through the other focal point (located



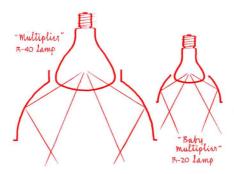
on the axis of the fixture slightly below the ceiling). The reflector must intercept as many of the rays of the lamp as possible, redirect them through the aperture, and must be so arranged within the fixture that any reflection of the lamp filament or of the lamp envelope itself is cut off from normal angles of view. A major feature of this type of downlight is that it can easily be relamped from below without removing the ceiling flange.

A special version of the open reflector downlight is the "pinhole" unit in which



the aperture in the ceiling flange is smaller than the bulb. The illusion produced is of light coming through a pinhole in the ceiling. In this type of fixture, of course, it is necessary to remove the ceiling flange in order to relamp.

Reflector-Reflector Lamp. Reflectors are also used in connection with reflector lamps to direct more light downward and reduce the brightness seen at normal viewing angles. An example of this type of downlight is the "Multiplier" unit in which a polished reflector is used to redirect the outer rays from a reflector lamp. The result is a fixture



of high efficiency, good shielding, and low brightness with a concentrating distribution. Used with a 150- or 300-w R-40 lamp it is useful for lobbies, auditoriums, churches, and other high-ceiling areas. A smaller unit utilizes the 30-w R-20 lamp in an unusually compact arrangement for installation in relatively low ceilings, and where minimum

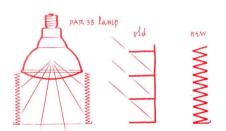
recessing depth is available, such as in shelves, niches, etc.

In all of the downlights discussed above, the reflector plays a key role in maximizing output and minimizing glare. Its surface must not only be properly polished, free from spinning tool and polishing wheel marks, but must stay that way over a long period of time under continuous usage at high temperatures. Because of this all our reflectors are protected by anodic finishes produced by either the Alzak or the Alumilite process. They are produced by electrolytic processes in which special highpurity aluminum alloys of high reflectivity are first electro-chemically brightened for increased efficiency and are then treated in an electrolytic acid to create a clear transparent oxide coating which is physically part of the metal. This oxide coating is one of the hardest substances known to man; it permanently locks in the reflector's brilliance and efficiency.2

Ring Baffle-Projector Lamp. The great advantage in the concentrated narrow beam of the PAR lamp recommends its use in many areas where high levels of illumination are desired, either over limited areas such as merchandise displays, flower boxes, etc., or in large spaces such as public lobbies where the transition from daylight is to be accomplished gradually. In order to shield the bright face of the lamp from view, it is set above the ceiling plane, usually far enough to provide a 45 degree cutoff. In this case, the problem is one of controlling the brightness of the inside face of the fixture which the eve sees. and which will be much brighter than the surrounding ceiling area-even if it is painted black. In order to further reduce this brightness, a series of ring baffles is used, so arranged one above

<sup>&</sup>lt;sup>2</sup> A distinction should be made between the finishes described here and that of ordinary etched aluminum which is superficially similar. An anodic finish will more or less permanently retain a reflectivity of approximately 80 percent, whereas the reflectivity of etched aluminum will in time deteriorate to about 50 percent, or even less.

the other, that each baffle puts the vertical surface just below it in total shadow. Heretofore, these baffles were flat pieces of metal spaced about 1" apart. In our new compression-molded ring baffle (patent pending), these shadow-casting rings are only 1/4" apart and are in one piece. As a result, it is possible to reduce the width of the ceil-



ing trim by 11/2". In a semi-recessed version of this fixture (which is used where limited recessing space is available), this advantage of compactness produces an unusually clean, crisp unit.3



#### ceiling trim

Style. Ceiling trim is of major interest to the architect, because it is one of the many finishing details of his building. The careful choice and co-ordination of such details helps the architect to produce a building that looks as though it were "designed," rather than compiled from a collection of catalogs.

We offer a choice of three styles of trim, two of them ingeniously combined into a single type of fixture. Our "Duo-Style" trim (patent pending) can be installed so that the flange is completely flush with a plaster ceiling. In this case, the plaster ring is inverted to provide a shallow recess into which the thickness of the flange is accommodated. When thus installed, the downlight is most unobtrusive and gives the illusion of a simple "hole-in-a-plane." The outer edge of the flange meets the inside corner of the plaster ring to give a machine-made metal-to-metal joint, rather than a plaster-to-metal joint, and so gives greater precision and positive assurance against light leakage. A tiny V-groove at this point permits the easy paintingin of the trim with the ceiling, and prevents any chipping of paint during relamping.



This same flange can be used on all dry-type ceilings (acoustical tile, plaster board, etc.). In this case the plaster ring is installed in its upright position and a hole slightly larger than the ring is cut in the ceiling material. The flange overlaps the hole and provides a neat clean job in the conventional man-

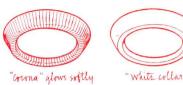


A third style of trim is our "drop flange" (patent pending) which overlaps the ceiling hole in the usual way, but has a 11/4" high vertical edge which clearly defines the presence of the downlight in the manner of a porthole. This gives a fresh look to the ceiling, a sort of articulation which finds its counterpart in many other details in contemporary architecture.



A more dramatic type of drop flange can be obtained by trapping the edge of the beam, and using this light to create a decorative effect in the flange. This can be particularly effective when the light play in the flange is contrasted with a dark ceiling. For example, in

our "Corona" lens-light, spill light is used to illuminate a striped-glass collar. Another type of drop flange, available with an open-reflector type of downlight, is our "White Collar" unit, a precise style which is effective because of its subtle luminescence and simplicity.

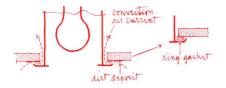


Finish. Ceiling flanges are finished in several ways so as to either match and blend with the ceiling (semi-gloss white enamel), or to contrast with it and give a richer look (a metallic finish such as satin alminum or satin brass). Probably the most important aspect of the finish, after its appearance, is its permanence-its resistance to discoloration, tarnish, etc. For this reason our metallic finishes are not plated finishes on steel, but are anodized finishes on aluminum. Anodized aluminum is a permanent corrosion proof finish which gives lasting protection to the metal. It assures the architect who specifies it that he can revisit his jobs long after they are completed and know that they will not have been marred by rust, peeling, tarnishing, etc. This is of particular importance in such places as kitchens, bathrooms, roof overhangs, and other areas of occasional high humidity.

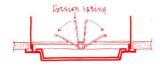
Gasketing. One often sees an installation of downlights, the appearance of which has been spoiled by dirt marks on the ceiling around each light. These black rings are dust deposits left by convection currents which pass between the ceiling and the trim flange, and in so doing leave dirt streaks behind. These convection currents are induced by the heat of the recessed fixture inside the ceiling. In order to prevent the dirt from settling, it is necessary to block the air currents. The idea of using a resilient gasket between the trim flange and the ceiling for this purpose was first introduced by us in 1952. At that time,

<sup>3</sup> The Ring-Baffle downlight is designed for use with PAR lamps, either spot or flood, but not for use with R-type reflector lamps. The R lamps have wider beam spread and a large portion of light at the edge of the beam would be trapped by the baffles and lost, resulting in very poor efficiency. Thus, the "Ring Baffle" downlight is for use with PAR lamps and the "Multiplier" downlight is for use with R lamps.

a woven glass-fiber tube was used as the gasket. About two years later we improved on this by going to a glass-fiber blanket, die cut into a ring. With our new line we are introducing still another improvement in gasketing—a die-cut polyurethane-foam ring. This resilient material is softer than the glass-fiber, is more uniform, and will provide a more effective air seal.



Fastening Means. The ideal method of fastening the trim flange to the fixture would possess several features: it would be invisible, would easily release the flange for purposes of relamping without the use of tools, would operate from any side or direction, would not involve the use of any trick spring latches or locks which might get out of order, and it would permit quick removal of the flange from the fixture should this be desired for servicing or cleaning. Such a fastener was developed by our design staff some years ago. Based on a torsion spring, it is called "Torsiontite." (The Torsiontite fastener has since been patented: U.S. Pat. No. 2,701,299. This simple device is so effective that it has not seemed possible to improve upon it. Accordingly, some dozen manufacturers have applied for and been granted licences to use Torsiontite fasteners in their recessed fixtures).

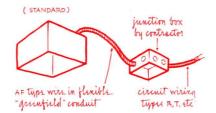


Light-Tightness. Perhaps we should mention, even though it may be obvious, that ceiling trim flanges must be light-tight. This is of particular concern on uneven ceilings such as exist with acoustical plaster or when a poor plastering job is done. Light-tightness can be assured by one or more factors: a

properly designed light baffle on the trim flange; black paint on the inner side of the flange; a resilient gasket. In our downlights, a combination of all of these is used for maximum effectiveness

#### installation

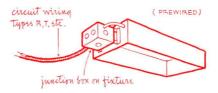
Standard vs. Prewired Construction. The heat output of the incandescent lamp causes downlights to operate at high temperatures—temperatures which are higher than the rating of the circuit wiring in the building. That is, the insulation of the circuit wiring would deteriorate and subsequent short circuits or fires might result if this circuit wiring were brought directly to the socket of the recessed fixture. For this



reason electrical codes require that circuit wiring be brought to a junction box near the recessed fixture, but so insulated from the fixture, by air space or other means, that the temperature in this junction box does not exceed the rating of the circuit wiring (generally 60 C). It has been the practice to have this junction box installed by the electrical contractor. The recessed fixture is then connected to this by means of high-temperature (type AF) wire which is held within a protective covering of flexible conduit ("Greenfield"). In this, the "standard" construction, 60" of AF wire and 48" of Greenfield are furnished by the fixture manufacturer, in conformance with electrical codes.

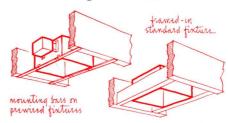
In the past decade another construction, the so-called "prewired" type has come into wide acceptance. In "prewired" fixtures the junction box is attached to the fixture or the plaster frame, and is wired to the socket with a short length of AF wire. The operating temperature in this junction box is 60 C or less, and, therefore, the circuit wiring can be brought directly to it. The advantages of this arrangement to the elec-

trical contractor are several: he does not have to supply and install a separate junction box; he does not need to handle any Greenfield; it is considerably more compact.



A further advantage of the "prewired" construction is that it makes it much easier to inspect splices in the junction box, since it is on or near the fixture. For this reason certain local codes insist on this construction (e.g. Los Angeles City Code).

Our "prewired" fixtures also incorporate other mechanical features which facilitate rapid installation by the contractor. For example, we furnish mounting bars of proper length to span the distance between ceiling joists. These bars eliminate the need for "framingin" the fixture with wood. They are attached to the fixture by means of a sliding arrangement which permits the fixture to be moved from side to side, or up and down, until it is in the proper position and proper height for all thicknesses of ceiling construction.



#### conclusion

This brief essay has attempted to outline the uses of downlights, their principles of operation, the quality factors that make for good performance and lasting satisfaction. It may serve as a guide to the selection of the right type of fixture for any particular application and to the choice of the best product within a range of competitive units of this type. In this way it seeks to advance the practice of downlighting and so improve the appearance, effectiveness, productivity, and enjoyment of lighting installations.

#### construction

aluminum

Plastic Dome On Aluminum Ribs. Dec. '59.

concrete

Architectural Concrete Re-examined, Parts I and II.3 Jan. and Feb. '59.

Distillery, State of Puebla. Feb. '59. Restaurant, Xochimilco. Feb. '59.

Simplified Dome Design. Perry W. Etkes. Apr. '59.

Design Method for Reinforced-Concrete Structures. June '59.

Prestressed-Concrete Driveway Ramp. Dec. '59.

Concrete Finishes For Resilient Floor Covering.<sup>3</sup> Nov. '59.

plastics

Epoxy Plastics In Architecture. Guy G. Rothenstein. Aug. '59.

steel

Showcase Office Building. June '58.

Welded Cantilevered Trusses Frame Elevated School. Aug. '58.

Bucky's Biggest By Far at Baton Rouge. 'Nov. '58.

Steel Frame Houses. J.D. Briggs. Dec. '58.

Suspended Porte-Cochere Roof. Fred N. Severud. Dec. '58. Specifications Data: Stainless Steel. W. H. Withey. Apr. '59.

Multistory Structures. Paul Chelazzi. Oct. '59.

wood

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Laminated-Timber Dome. Dec. '58.

others

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Sources of Specs Are Many.3 Apr. '59.

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Concise/Consistent Specifications Aims Vitiated.<sup>3</sup> June <sup>1</sup>59.

Pratt Study Recommends Economy Wall.<sup>2</sup> July '59.

Proper Specs Guarantee Soundproof Doors.3 July '59.

Insulating Roof-Deck Slabs. Robert A. LaCosse. Aug. '59.

Curtain Wall Specifications. Ross W. Pursifull. Sept. '59.

Curtain-Wall Sealants. Sept. '59.

Floors Integrate Structure/Services.<sup>2</sup> Sept. '59.

New Materials Development.<sup>3</sup> Sept. '59.

Tile Council States Case for New Standards. Oct. '59.

<sup>1</sup> NEWS REPORT

<sup>&</sup>lt;sup>2</sup> MECHANICAL ENGINEERING CRITIQUE

SPECIFICATIONS CLINIC

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#### environmetal control

electrical

Official Approval of Residential Electrical Systems.<sup>2</sup> May '58.

A Miracle in Waterville. June '58.

All-Electric Flameless High School. Albert A. Horner. Aug. '58.

Electrical Metallic Tubing for Houses.<sup>2</sup> Dec. '58. Snow-Melting With Wrought-Iron Pipe. Feb. '59.

Solar Heating for Houses. Aladar Olgyay and Dr. Maria Telkes. Mar. '59.

Round-up: Recent Solar Heating Installations. Mar. '59.

Aluminum Electrical Distribution.2 Apr. '59.

Acousto-Electronic Auditorium. Harry F. Olson. Nov. '59.

equipment

Economic Status of Heat Pump.<sup>2</sup> June '58.

Prefab Plumbing System. Robert H. Chittim. July '58. Nuclear Reactors Defined. Hugh C. Neale. Nov. '58.

Reactors: Basic Engineering Considerations. J. Fruchtbaum. Nov. '58.

Reactors: What Role Can the Architect Play? Lars G. Stenberg. Nov. '58.

Comfort Equipment Tests.<sup>2</sup> Jan. '59.

How to Eliminate Elevated Storage Tanks.<sup>2</sup> Feb. '59.

Modern Venetian Blinds: Function and Anatomy. Groff Conklin. June '59. Centralized Operation in Building Equipment. William J. McGuinness. Aug. '59.

Inspector's Guide: M/E Equipment of Schools.<sup>2</sup> Aug. '59.

Floors Integrate Structure/Services.<sup>2</sup> Sept. '59.

Mental Hospital Has Integrated Odor-Reducing System.<sup>2</sup> Oct. '59.

Centralized Services for Oil-Building Complex.<sup>2</sup> Nov. '59. Heat-pump Redistribution Systems. Gershon Meckler. Dec. '59.

air conditioning

Calculation of Residential Cooling Systems. Groff Conklin. May '58.

Office Air Conditioning: Floor Distribution. July '58. Purchased Steam.<sup>2</sup> July '58.

ventilating

heating

Reducing Cost of Ventilation.<sup>2</sup> Aug. '58.

Radiant Ceiling/Automatic Anthracite Heat. Arthur J. Stickney. Aug. '58.

Air Conditioning in Schools.2 Oct. '58.

Reactor Facilities Require Negative Air Pressure.<sup>2</sup> Nov. '58.

Research Report: Glass/Air Conditioning Report. Apr. '59.

Heat Pump Eliminates Supplementary Electrical-Resistance Heating.<sup>2</sup> May '59.

Rink's Ventilating Equipment Frankly Displayed.<sup>2</sup> June '59. Sunscreen Sculpture Reduces Cooling Load. June '59.

All-Air Heating and Ventilating for Schools. Milo D. Folley and George P. Newton. Oct. '59.

Has School Air Conditioning Arrived? Henry Wright. Nov. '59.

Two Advanced Mechanical/Structural Designs.<sup>2</sup> Dec. '59.

lighting

Architectural Research: Light and Air. Matthew A. Nowak. July '58.

Standards for Levels of Illumination.<sup>2</sup> Sept. '58.

Light As An Architectural Material. Abe H. Feder. Sept. '58.

Brightness Relationships in Classrooms. Kenneth C. Welch. Sept. '58.

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A Case Study: Apartment Lighting. Richard Kelly. Sept. '58.

Museum Lighting. Oct. '59.

A Guide to Recessed Incandescent Lighting. William F. Blitzer. Dec. '59.

others

Anti-Explosion Measures for Manufacturing Plants.<sup>2</sup> Mar. '59.

#### special reports

Lighting Is Architecture. Sept. '58.

Atomic Architecture. Nov. '58.

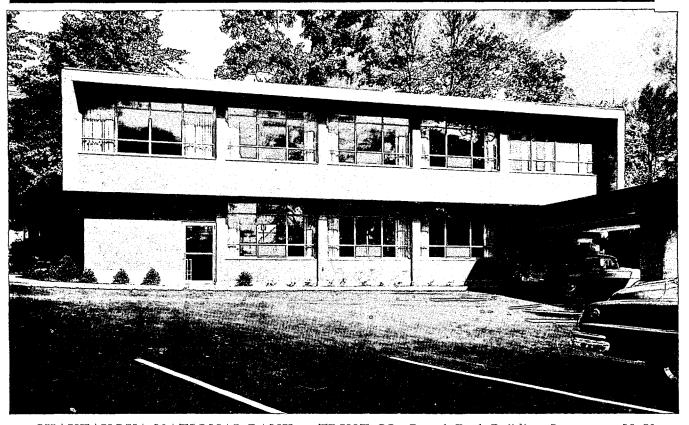
Can A Man Be Architect, Engineer, and Builder? Feb. '59.

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Wall Assemblies. Sept. '59.

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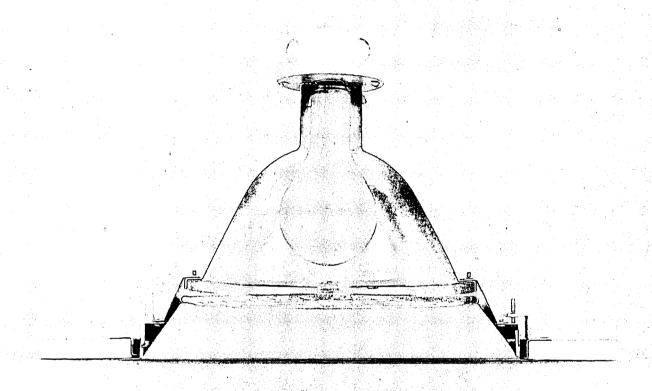
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# HOPE'S WINDOWS, INC., Jamestown, N.Y.

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Cross-section of typical 5100 Series unit

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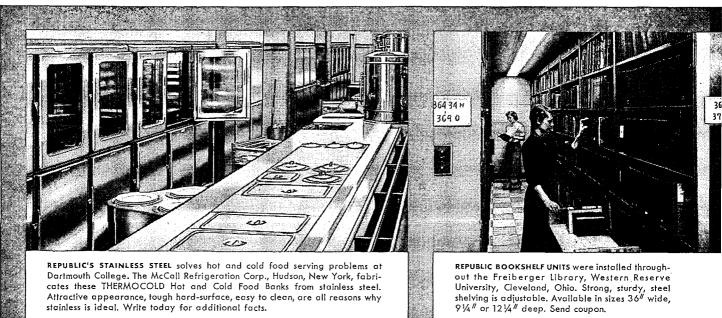
For uniform illumination, these downlites can be installed so that the space between units is the same as the height of the ceiling above the work plane.

Extensive optical research led to a development of exclusive lenses based on a new concept in prism contour and rear surface pattern. These lenses, coupled with mathematically derived Alzak reflectors, produce a significant advancement in performance over conventional fresnelens units.

Efficiencies for the 5000 series range from 61.5% to 71.5%, and from 56.5% to 68.5% for the 5100 series (by E. T. L. test).

The twist-lock fastened door can be opened by hand or by pole from the floor for relamping and maintenance.





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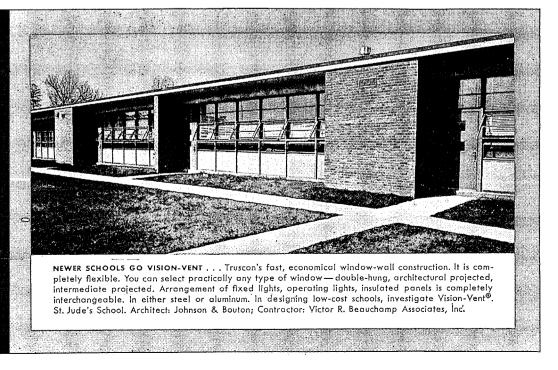
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Republic's Berger Division is the leader in locker manufacturing and installation. Their Planning and Engineering Service takes the whole job off your hands. Assumes responsibility for proper installation. Recommends the right locker for the job. Specify Republic Steel Lockers and get the most for your money.

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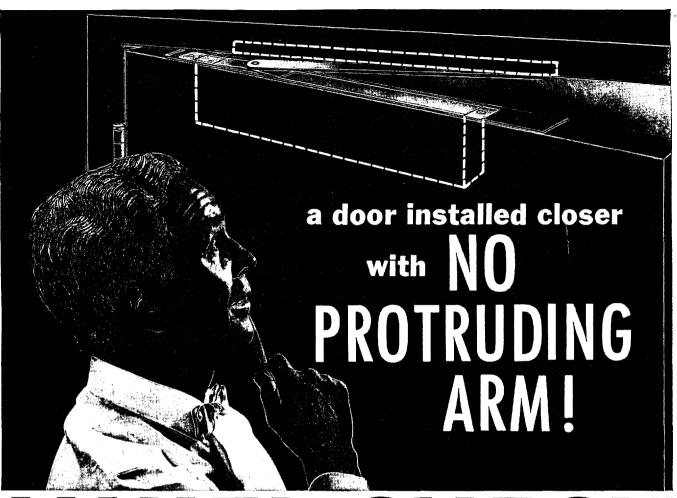
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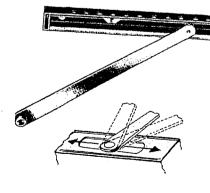






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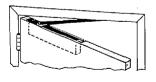
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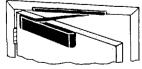
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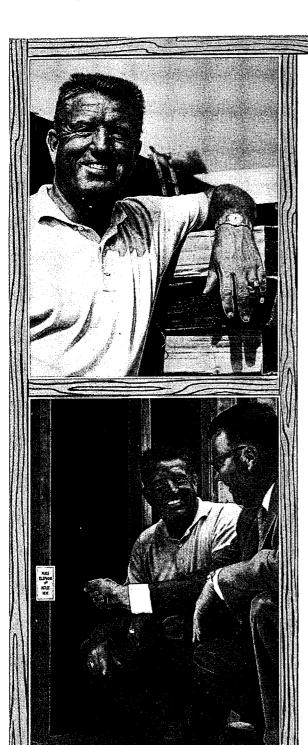
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# "Pre-wired telephone outlets? They're a standard feature of every home we build!"

-SAYS PHIL JONES, CUSTOM BUILDER OF INDIANAPOLIS, INDIANA

"You're not offering the buyer a really modern home unless you provide for his telephone convenience," says builder Phil Jones. "That means giving him built-in, pre-wired telephone outlets in key areas of his home, just as you give him pre-wired electrical outlets."

Phil Jones builds custom homes priced from \$21,000 up, and every one has from three to five outlets for telephone service. "I let the buyer tell me where he wants them located," he says. "After all, he's going to use them.

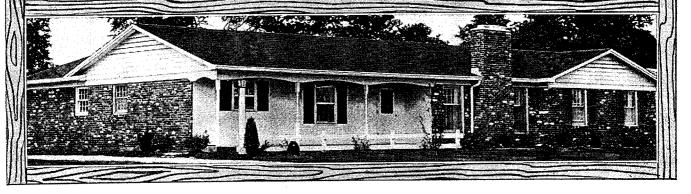
"Pre-wiring makes good sense. People like the idea—and I use it as a solid, competitive sales advantage."

Your local Telephone Business Office will gladly help you with telephone planning for your homes. For details on home telephone installations, see Sweet's Light Construction File 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

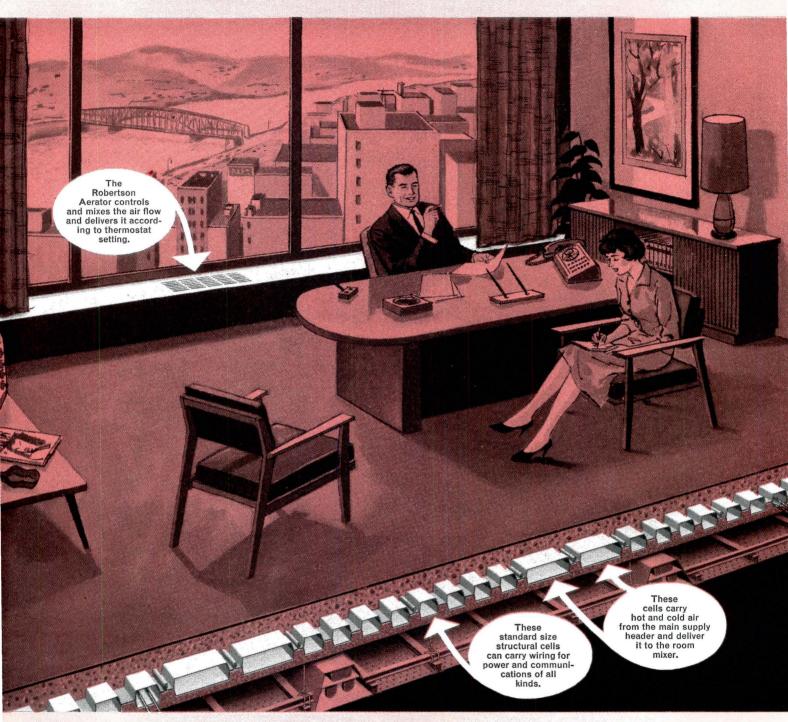
# BELL TELEPHONE SYSTEM



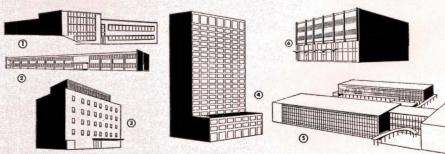
At left, Phil Jones and telephone company man Bob Hill discuss outlet locations. Below is one of the builder's handsome "Johnson Meadows" homes.



# NOW you can design an air-conditioned building for much less money with



Q-AIR FLOOR INSTALLATIONS INCLUDE: 1. Tennessee Eastman Company Industrial Relations Building, Kingsport, Tennessee. Owner-designed and built. 2. Police Headquarters Bldg., Fresno, California. Walter Wagner & Partners, Architects and Engineers; Lewis C. Nelson, Contractor. 3. MD Corporation, Pittsburgh, Pa. Gerard & McDonald, Architects and Engineers; Ragnar Benson, Contractor. 4. First National Bank Building, Fort Worth, Texas. Skidmore, Owings and Merrill and Preston M. Geren, Architects; Childs Construction Co.—W. S. Bellows Construction Corp., Contractors. 5. Morristown Headquarters Bldg., Jersey Central Power and Light Co. and New Jersey Power and Light Co., Morristown, N. J. Bernard Kellenyi, Architect; Blanchard Const. Co., Contr. 6. Tarrant County Savings & Loan Assn., Fort Worth, Tex. Hedrick & Stanley, Architects and Engineers; Thomas S. Byrne, Inc., Contr.



# Robertson Q AIR FLOOR

the three-way construction system that cuts costs three ways

It is now more than a quarter of a century since H. H. Robertson Company developed and introduced Q-Floor, the strong, weight-saving cellular steel subflooring system that provides quick, efficient construction and continuous raceways for all types of wiring. This type of floor system has become the standard for commercial buildings. Now, something completely new and revolutionary has been added. Q-AIR FLOOR not only carries telephone and power lines, but provides hot and cold air for air conditioning as well. Occasional pairs of extra-wide structural cells fit in with the normal Q-Floor system (with no change in the two-foot module) and carry the air to mixing units for discharge into the room. This new system saves your client capital and operating dollars in three distinct ways:

# Initial capital investment cut 5%

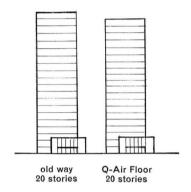
Since Q-Air Floor permits an average saving of a foot of space between each suspended ceiling and the floor surface above, a twenty-story building can be built at the same height as a nineteen-story structure built by older methods. This results in a substantial saving in structural steel, walls, piping . . . in fact every building material that is installed from floor to floor.

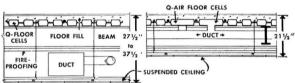
# Reduced building height cuts f 4 BTU requirements 4% to 11%

In normal high-rise buildings, the BTU requirements for heating and cooling are based primarily on exterior wall exposure. Therefore, a saving of 6" to 16" per floor can easily reduce BTU needs by 4% to 11%. This reduction permits the use of lower capacity, lower cost equipment, effecting a saving on capital investment as well as in yearly operating cost.

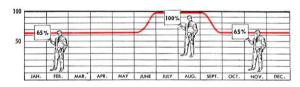
# Yearly power costs cut 30%

The Q-Air Floor system includes the Robertson Aerator, a mixing device with an exclusive seasonal changeover feature. Full blower power is used only for peak summer cooling. The rest of the year the system operates at about 65% of capacity. Older methods require a constant 100% volume of air all year. With Q-Air Floor yearly power cost can be reduced as much as 30%.





Simplified cross sections of ceiling-to-floor-above areas show old way left and Q-Air Floor right. Average compaction is one foot.



During the winter, Robertson Aerators satisfy heating requirements at 65% of peak volume.

For peak summer cooling, aerators deliver 100% volume and system runs at full power.

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As cold weather approaches, changeover device adjusts system back to 65% of peak volume.



Use coupon to send for complete details on Q-Air Floor construction.

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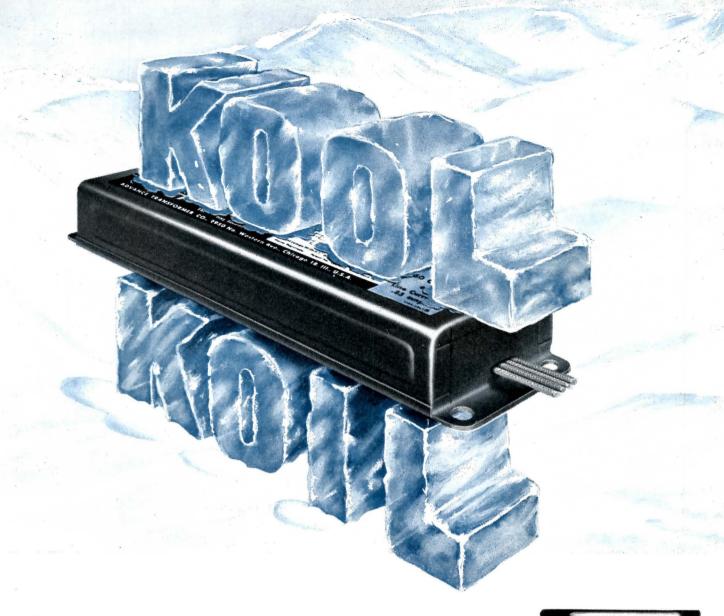
In addition, Aquadam offers these other proven advantages: ability to end "standing water worry";

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For further information on how Aquadam Built-Up Roofs pay off in longer roof life and maximum protection send for a copy of booklet, "J-M Aquadam Built-Up Roofs." Write to: Johns-Manville, Box 158, New York 16, New York. In Canada, write Port Credit, Ontario.

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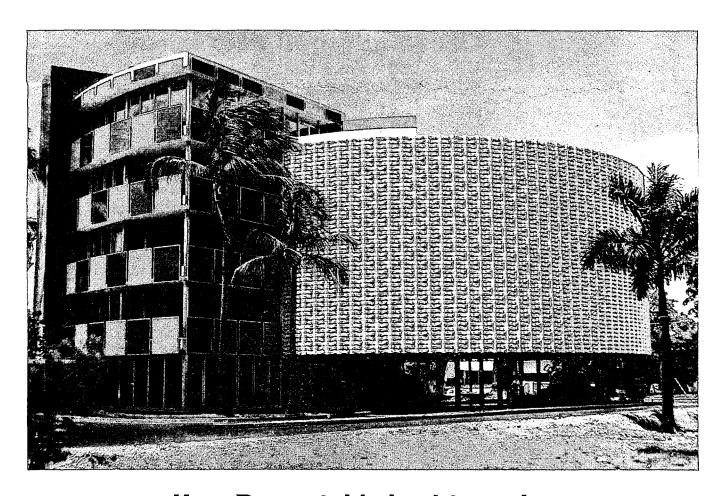


"The Heart of the Lighting Industry"









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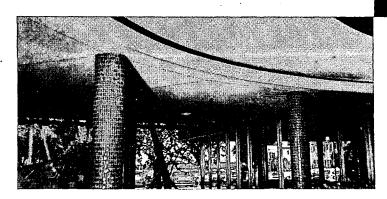
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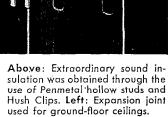
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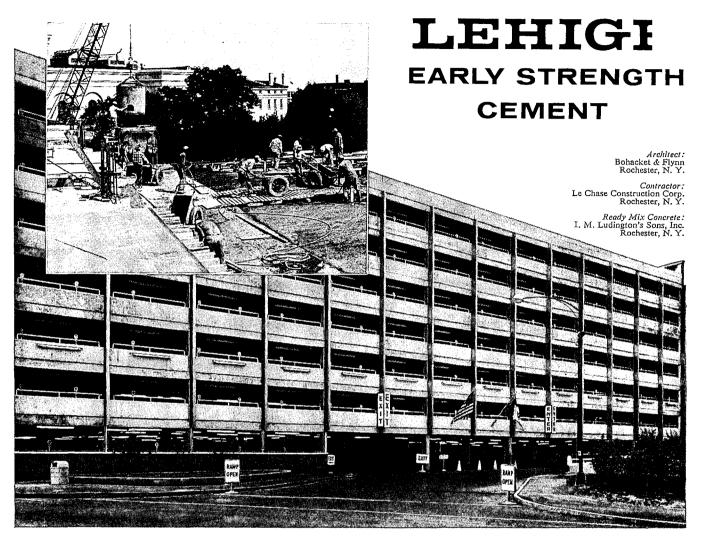
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# bin unit locks

# Rochester adds another concrete parking ramp made wit



Eight parking levels contain 551 metered spaces. Motorists park their own cars, taking advantage of such modern features as automatic coin changers, passenger elevators and a counting system which tells them where spaces are available.

• The Clinton Avenue Parking Ramp is another structure resulting from the forward thinking of the City of Rochester, N. Y. Because of the ramp, 551 more cars have been removed from the curbs of busy downtown streets.

For the second time in 26 months (the city's 523 car Mortimer Street Parking Ramp was completed in March '58) Lehigh Early Strength Cement was chosen for a big Rochester parking facility. The tight schedule called for placement of concrete during most of the Fall and Winter months. Work progressed so well that six floors

were opened temporarily during the Christmas rush. After the holidays, concrete pouring was completed. The ramp has been producing full income since April.

This is another example of how Lehigh Early Strength Cement saves time and money in modern concrete construction. Lehigh Portland Cement Company, Allentown, Pa.

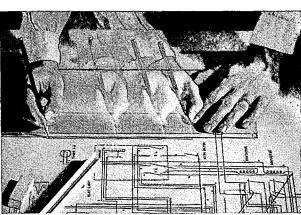
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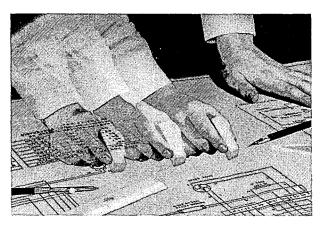
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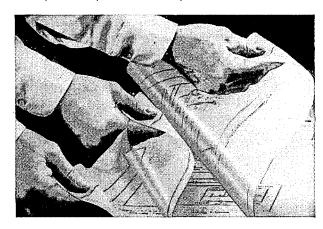
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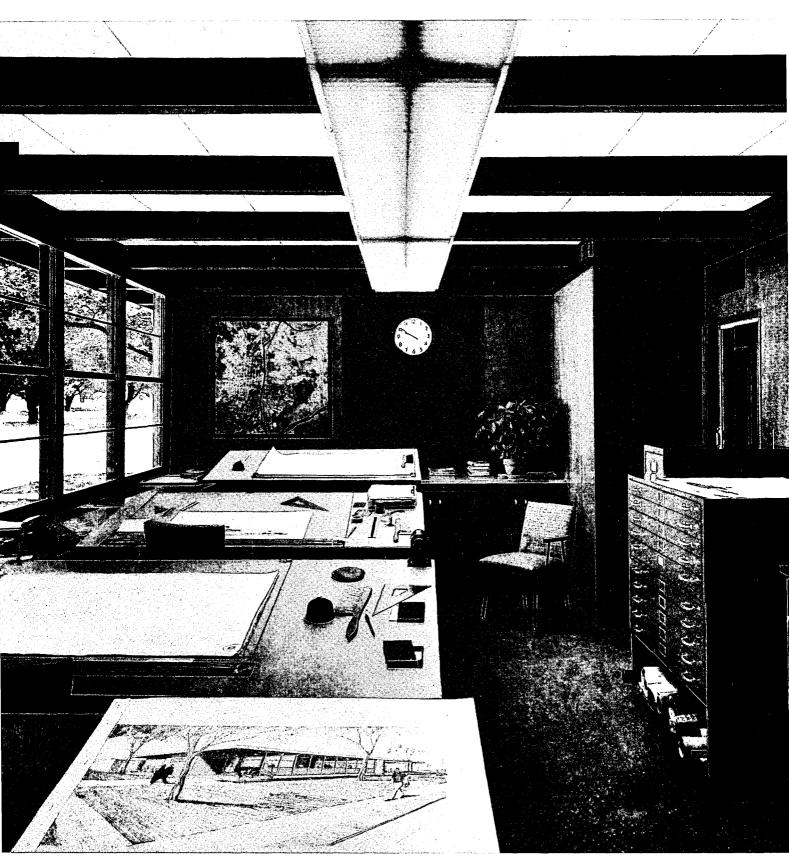
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Drafting room, Butler & Dobson, AIA

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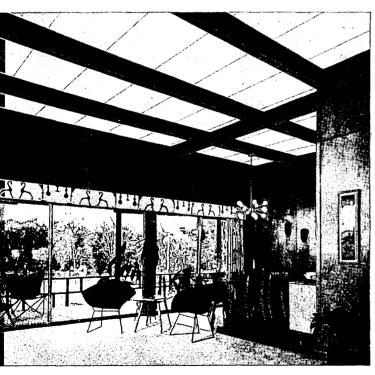
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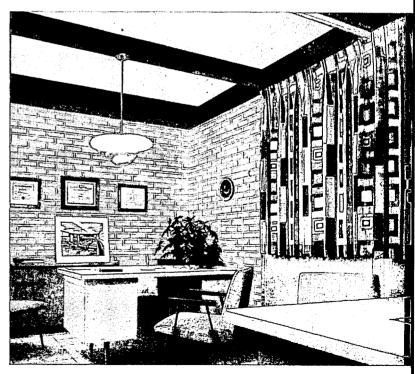
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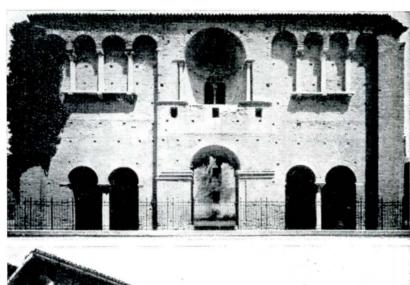
By Sibyl Moboly-Nagy\*

The Pelican History of Art. Edited by Nikolaus Pevsner. Volume Z13. Carolingian and Romanesque Architecture: 800-1200. Kenneth John Conant. Penguin Books Inc., 3300 Clipper Mill Rd., Baltimore, Md., 1959. 388 pp., illus. \$12.50

Professor Conant has achieved high distinction as a teacher of history of architecture at Harvard University and as a scholar to whom his colleagues owe gratitude for his painstaking research and revisualization of many important medieval structures, among them Old St. Peter's in Rome, Santiago de Compostela in Spain, and particularly the three abbeys of Cluny in France. This volume is an extension of this research, dealing with the whole ambient of the Romanesque style from its beginnings in the Carolingian Revival of 800 A.D. to its death, after giving birth to the Gothic, in the 12th Century.

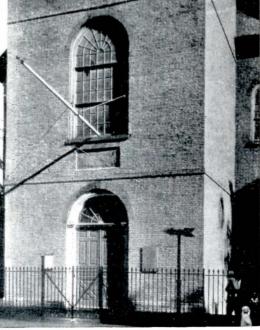
Western civilization, of which we are heirs, originated in Imperial Rome, was preserved and augmented in the Roman (Continued on page 188)

\*Author, critic, professor of architecture, Pratt Institute, Brooklyn, N. Y.





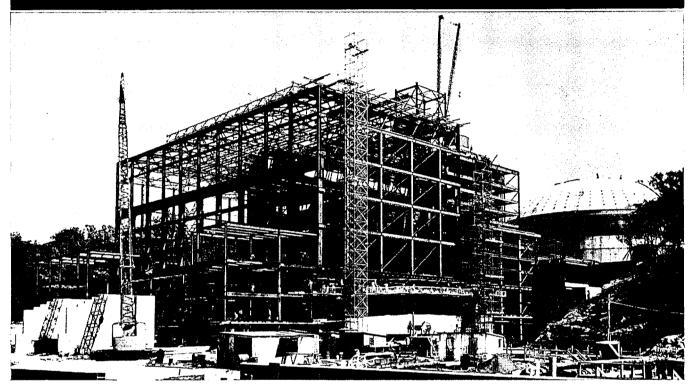




Palace of the Exarchs (circa 700 AD), at top; Bramante's loggia, ducal palace of Vigevano (circa 1490), just above; Church entrance, Notre Dame, Beauvais (8th Century), far left; and Old North Church, Boston (1723).

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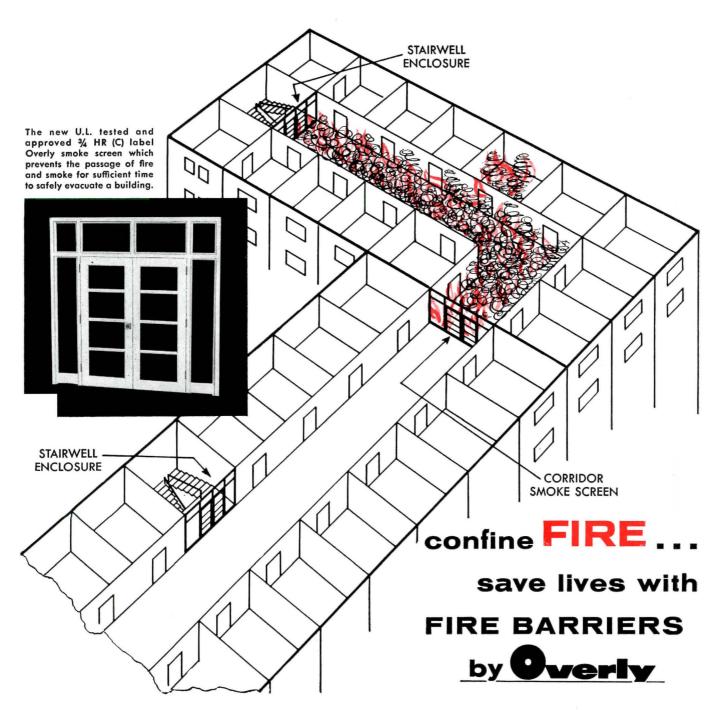
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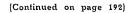
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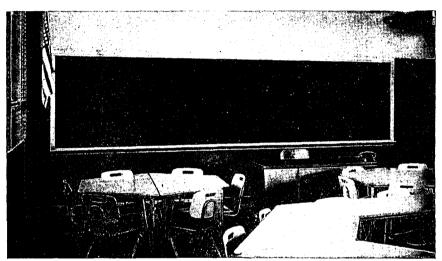
church, and shaped visually in the art and architecture of the Romanesque. It is clear, therefore, that the one underlying leitmotif is the architecture of the Romans with its emphasis on wall enclosure, decorative use of columns, the arch, the groined vault, and, most important, its revolutionary concept of enclosed space that marks a total departure from Greek and Egyptian heritage. This civilization and its buildings were wiped out by

northern barbarian tribes whose devastations were actually pollination processes when seen in the long perspective of his-Conant quotes Charles Rufus Morey's definition: ". . . the naive effort of the barbarian races to revive Rome which their fathers had ruined . . . the gradual sinking of Latin culture below the Celtic and Teutonic surface." After the "naïveté" had been shed, a form language developed; its main characteristics

being Roman rationalism, in proportion and function, fused with the organic vitality of races still living in a state of nature. The Romanesque builder felt an undeviating commitment to be true to purpose and form according to the infinite variations of human needs and natural materials. "Romanesque variety developed out of Roman unity. . . . Designers, struggling on new problems without Roman leadership, worked on a regional basis . . . a style of fascinating byways and local schools."

That, nevertheless, a true style emerged was due to the cohesion supplied by two supra-regional institutions of the Middle Ages: Feudalism and the Church. It is in keeping with the strictly academic orientation of PELICAN HISTORY OF ART that the architecture of Feudalism and its emerging challenge, the Romanesque town, receive only the scantest attention from Conant-especially bewildering and regrettable with regard to the Lombard towns and their influence on secular planning. His book is, rather, a brilliant monument to "the impulse for new architectural developments (which) came chiefly from the monasteries." "Western churchmanship" created ideal cities, based on the spiritual image of Jerusalem the Golden, which produced workable prototypes for every architectural problem of pre-industrial architecture: cathedrals, schools, hospitals, assembly and administrative buildings, kitchens, houses and group housing, workshops, barns, etc. They all made up the selfsufficient world of a Romanesque monastery, together with solutions for grouping, communication, approach, and climatic control. Excellent diagrams and plates in this book demonstrate the incessant cross-fertilization that occurred along the great pilgrimage and crusade routes: overlapping Teutonic and Saracenic elements; the admixture of knowledge of Comacine stone masons with that of wood builders from the north; and the use of stuccoed rubble walls from provincial Rome. His vast historical knowledge enables Conant to speak, through examples, of the struggle for power between the monastic orders after the gentle and wise Benedict of Nursia had left





West Springfield High School West Springfield, Mass.

Arch., Warren H. Ashley West Hartford, Conn.

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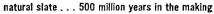
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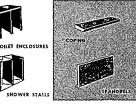
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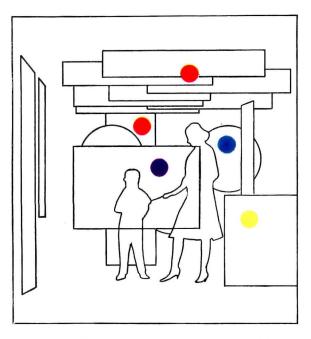


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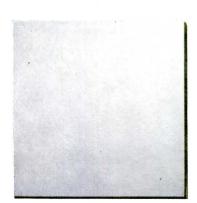
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#### reviews

(Continued from page 188)

the scene. The most powerful of these abbots implemented their spiritual dictatatorship with architectural revolutions. The manifold, sophisticated, and delightful comfort of the Cluniac style-blossoming on the site of a sumptuous Roman villa-smiles impudently at the soilbound, introverted, color-and-towerless austerity of Citeaux; as if the thundering accusation, flung by St. Bernard at Abbot Suger of St. Denis: "... that pomp and circumstance of yours" were written in stone. Whether Conant's over-emphasis on his beloved Burgundy is justified, at the expense of similarly original developments in Italy and Germany, poses a purely scholastic question.

Of general interest and of great value to designing architects is another aspect of this volume. It proves better than any other compendium of medieval architecture the germinal quality of the Romanesque, its historic function as the mother lode of all subsequent architectural styles. We are completely conditioned to two basic stylistic divisions-Gothic and Renaissance-to which we assign with impartial ignorance all historical building. The Gothic derived from the Romanesque; which is illustrated throughout Conant's book in the gradual appearance of flying buttresses, ribbed and pointed vaults and arches, the integration of Western towers, and so on. It is the Renaissance that has tried to disguise its frankly Romanesque origin with a Roman toga. The Palace of the Exarchs (who ruled Ravenna for the Byzantine Empire) dating from about 700 A.D., has an identity with Bramante's loggia at the ducal palace of Vigevano, circa 1490, that is based on principle rather than on detail. Brick walls with their restless texturing call for the slim white exclamation marks of marble columns and the strong whites and blacks of light and shadow (the ground arches in the Bramante structure were originally open) in carefully proportioned openings and recesses. If anything, the Bramante design is more Romanesque than the early medieval prototype, which can be said with equal justification of Romano's Palazzo

(Continued on page 198)

# news about lighting's most versatile design elements

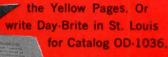
# **UNI-FRAME**

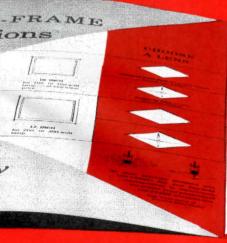
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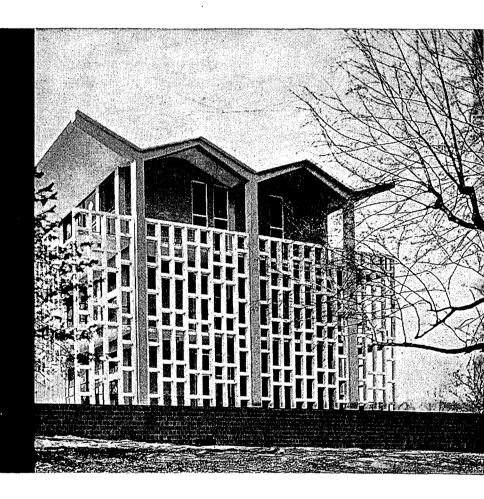
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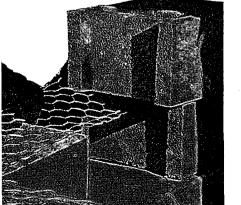
and store. It unrolls in place on the wall, it cuts easily, and it's easy to lap without adding thickness to mortar joints. Full embedment and a strong bond are always assured.

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#### reviews

(Continued from page 192)

del Té in Mantua and of Palladio's Venetian church plans. More startling perhaps, because it is closer to home, is the similarity between the church entrance of Notre Dame in Beauvais (8th Century) and Boston's Old North Church, on Salem Street (1723). The serene beauty of these approaches does not lie in the extreme simplicity of materials and "expressed interior function." It lies in the language of proportion and detailing that emphasizes structural necessities—the arch and the string courses of horizontal divisions -with a keen understanding for the subtle effects of light and shadow. The Beauvais church (1200 years old) is timemarked but not dilapidated. Its beauty is totally beyond the decay of materials because it is inherent in its architectural design. And this, obviously, is equally true of the Old North Church.

At this point, the reviewer will forego the temptation to hammer out the contemporary lesson of the Romanesque. All to be said is: if there should be a widening crack in the curtain wall, what about a study of the design approach of Romanesque builders?

#### an understanding of today

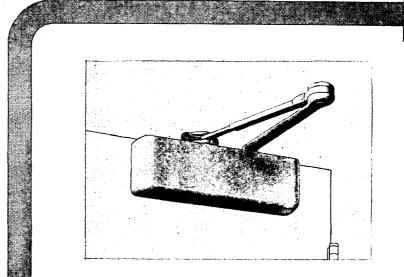
The Way Beyond "Art." Alexander Dorner. New York University Press, New York, N. Y., 1958. 154 pp., illus. \$4

"A more precise title for this study might have been: The decline of the species of visual communication called 'art' and the origin of a new species of visual communication," says the author in his Preface. "Monstrous" he calls this clarification, "due to the inadequacy of traditional language." Language inadequacy or no, this does not deter him from explaining in some 150 pages how the traditional modern approaches to art history, esthetics, art evolution, have all but failed to keep in time with, measure up to, or understand the perceptive results of that unique product of human creativity-art.

"Art" is not as limited as we've been apt to think; time is an all important factor in history; evolution is an even more important factor. Dorner writes: "I might sum up the aim of this study by saying that I wanted to give Time a higher dignity and a deeper meaning than it has in our present philosophies of art history; or, what is the same, that I intended to show that there are much more profound forces of change at work in life, which unite past and present in a much intenser way than we are accustomed to see. These forces break up any timeless foundation of history. They consist of a never-resting interpenetration of

energies which result in their constant self-transformation. This wholly relative, wholly dynamic interpenetrative history has a new power to direct us. History is able to tap a substratum of positive, new-and badly needed-energies for our conduct of life, artistic and otherwise."

A mere observation of the changing, (Continued on page 202)



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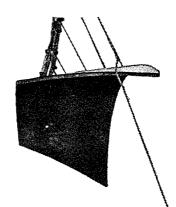
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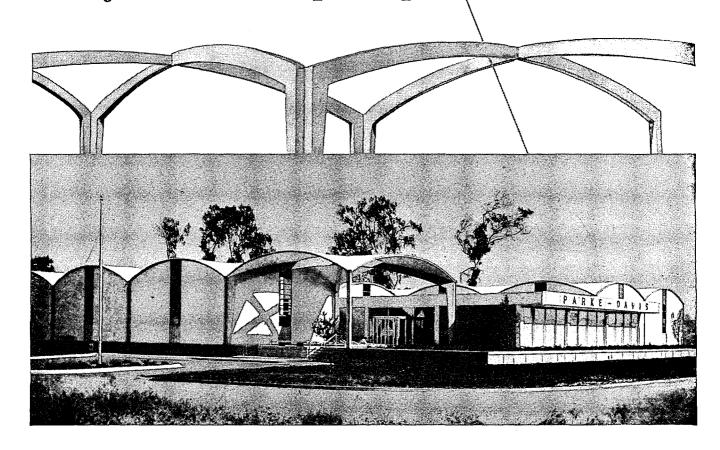
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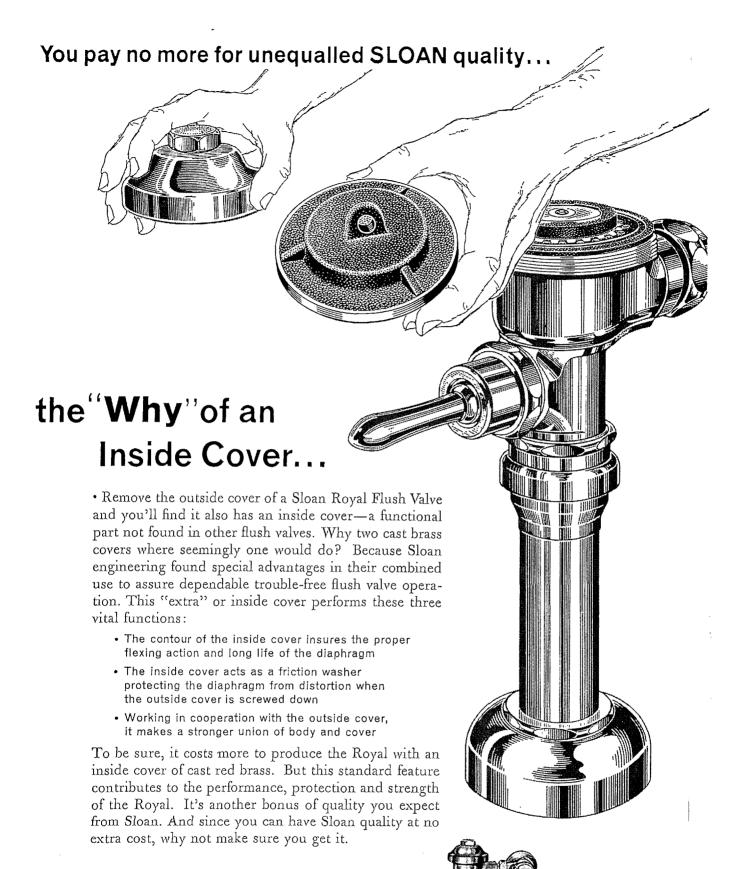
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Architects: Minoru Yamasaki & Assoc., Birmingham, Mich. Associate Architects: Knorr-Elliot Assoc., San Francisco, Calif. Structural Engineers: Amman & Whitney, New York City.



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#### reviews

(Continued from page 198)

transitory world around us obliges us to go beyond our traditional philosophies. What are these philosophies? Dorner limits the western world to two major ones. The first is Greek in origin and had been actively in operation as a tool, a guide, down through the European Renaissance: the immutability of "absolute form" and the subservience of the artist to the Platonic notion of a final, changeless "beauty" from which all art springs and which all transient, human creativity must reflect. As Dorner notes, the artist could conceive of two poles: the stable realm of divine spirit and the changeable realm of sensory experience. The celebrated School of Athens of Raphael is cited as a perfect example of balance between the two poles. The second philosophy is relatively recent. During the 18th Century and the early part of the 19th-the eras of Sceptical Enlightenment and Romanticism-the Renaissance notion of perfect balance had been discarded as being too authoritarian, too strict. Romantic artists no longer put much faith in the objective existence of idealized form. They believed, rather, "in a divine transforming power searching for ever-novel contents and form. As for themselves, they have grown incredibly 'free,'" Neither philosophy, Dorner explains, is without its disadvantages, the former being too limiting, the latter an ultimate invitation to chaos.

What follows is the major bulk of Dorner's study: a long, original analysis of the theoretical, psychological origins of art, in which he sees the "Genesis of Contemporary Art." He discusses at length such notions as beauty, the "magical" reality of primitive "hunter" art ("The mental processes of this kind of mind are confined to sensory experience and so are its desires and creations. This mode of thought and action we call magical."), the more advanced art of the "calendar" cultures of Egypt, Mesopotamia, and Mexico. His analysis of earlier art is particularly noteworthy. Dorner continues with the birth of Western rational thinking and its accompanying discovery of a three-dimensional

(Continued on page 204)



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