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PROGRESSIVE ARCHITECTURE

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Volume XXXVIII, No. 3

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It's the Law by Bernard Tomson

Periodically, this column supplements Tomson's* Architectural & Engineering Law *(Reinhold, 1951) by reporting summaries of cases decided and other matters of interest occurring since the publication of his book. A number of cases meriting more than a capsule treatment will continue to be discussed more extensively.

PART I.

LICENSE LAWS FOR THE ARCHITECT, ENGINEER, SURVEYOR AND GENERAL CONTRACTOR

Chapter 3 — Practising without a License

The failure of an architect, engineer, surveyor, or general contractor to procure a license as required by statute may constitute a misdemeanor subjecting him to criminal prosecution, and render the contracts he has entered into for the performance of professional services, illegal and void.

Idaho. *Johnson* v. *Delane*, 290 Pac. 2d 213 (1955). An engineer licensed in Washington contracted in Idaho to furnish plans and specifications for erection of a building in Idaho where he was not licensed. However, he prepared such plans and specifications in Washington. Held, that he was not practicing engineering in Idaho within meaning of the statute barring recovery of compensation by unlicensed engineers.

•

Arkansas. *Arkansas State Board of Architects* v. *Bank Building & Equipment Corp. of America*, 286 S.W. 2d 323 (1956). In a suit brought by the Arkansas State Board of Architects to enjoin a corporation from engaging in certain activities which the Board alleged to be the practice of architecture in violation of statute, it was held that where a corporation was contracting in Arkansas to furnish architectural services for constructing banks and rearranging the interiors thereof, and where it had a staff of about 200 architects to perform such services, and only the chief architect was licensed within Arkansas to practice the profession of architecture, and he worked for the corporation as an employe and detailed the inspection and supervision work to his subordinates, none of whom was licensed under the Arkansas law, and his name did not appear in the name of the corporation, the corporation was engaging in the practice of architecture in violation of statute.

•

North Carolina. *Tillman* v. *Talbert*, 93 S.E. 2d 101 (1956). In an action by an unlicensed builder-designer to recover in *quantum meruit* for services performed in drawing up plans and specifications for a residence, it was held that where the builder-designer contracted to furnish plans and specifications for a residence estimated to cost $18,000, and subsequently at the defendant's request altered the plans to provide for a residence estimated to cost over $20,000, the builder-designer was entitled to recover in *quantum meruit* for services rendered before the change, in spite of a statute declaring unlawful any agreement other than by licensed architects to furnish plans and specifications for any building valued over $20,000.

•

District of Columbia. *Holiday Homes, Inc.* v. *Briley*, 122 Atl. 2d 229 (1956). Where an architect's license was erroneously renewed in 1953 because the fee forwarded was insufficient, and the architect did not renew his registration until October, 1955, it was held that he could not recover for services rendered while his license as architect had lapsed. However, the violation was applicable only to those services which were rendered under an agreement made in November of 1954 under which the architect consented to the use of existing plans and agreed to design a new house, but did not preclude his recovery of compensation under a separable agreement for the rendering of designs which, in fact, were not furnished until after the renewal of the architect's license.

•

California. *People* v. *Wright*, 293 Pac. 2d 165 (1956). A designer was convicted of the violation of a statute making it a crime for one not licensed as an architect to hold himself out to the public as an architect. The basis of the conviction was the use of the letters "AIA" after the designer's name. On appeal, it was held that under the statute authorizing designers who are not licensed architects to draw plans and specifications and render other architectural services for their employer, such designer had the right to inform the public of his membership in the American Institute of Architects and his display of the sign which, following his name stated "AIA" did not constitute a violation of the statute.

•

Virginia. *Clark* v. *Moore*, 86 S.E. 2d 37 (1955). In an action for services rendered pursuant to an oral contract, it was held that investigation, design, and cost valuation in connection with obtaining an award of contract work at a naval base constituted "engineering" services for which compensation could not be recovered by one not having first obtained a license.

•

California. *Palmer* v. *Brown*, 273 Pac. 2d 306 (1954). Where an unlicensed member of a partnership engaged in the practice of architecture signed without the direction or supervision of the licensed members a certificate of payment in which he, the unlicensed member, was designated as the "architect," his action defeated the licensed partners' right to recover on the partnership contract for the rendition of the architectural services.

•

Georgia. *Folsom* v. *Summer, Locatell & Co., Inc.*, 83 S.E. 2d 855 (1954). In an action for architectural fees due under a contract, it was held that a corporation was not prohibited from using the title "architects and engineers" in its contracts, as the word "person" within the statute prohibiting any but qualified architects to use the title "architect" prohibits only natural persons, in view of the fact that "person" is modified by the pronouns "he" and "she."

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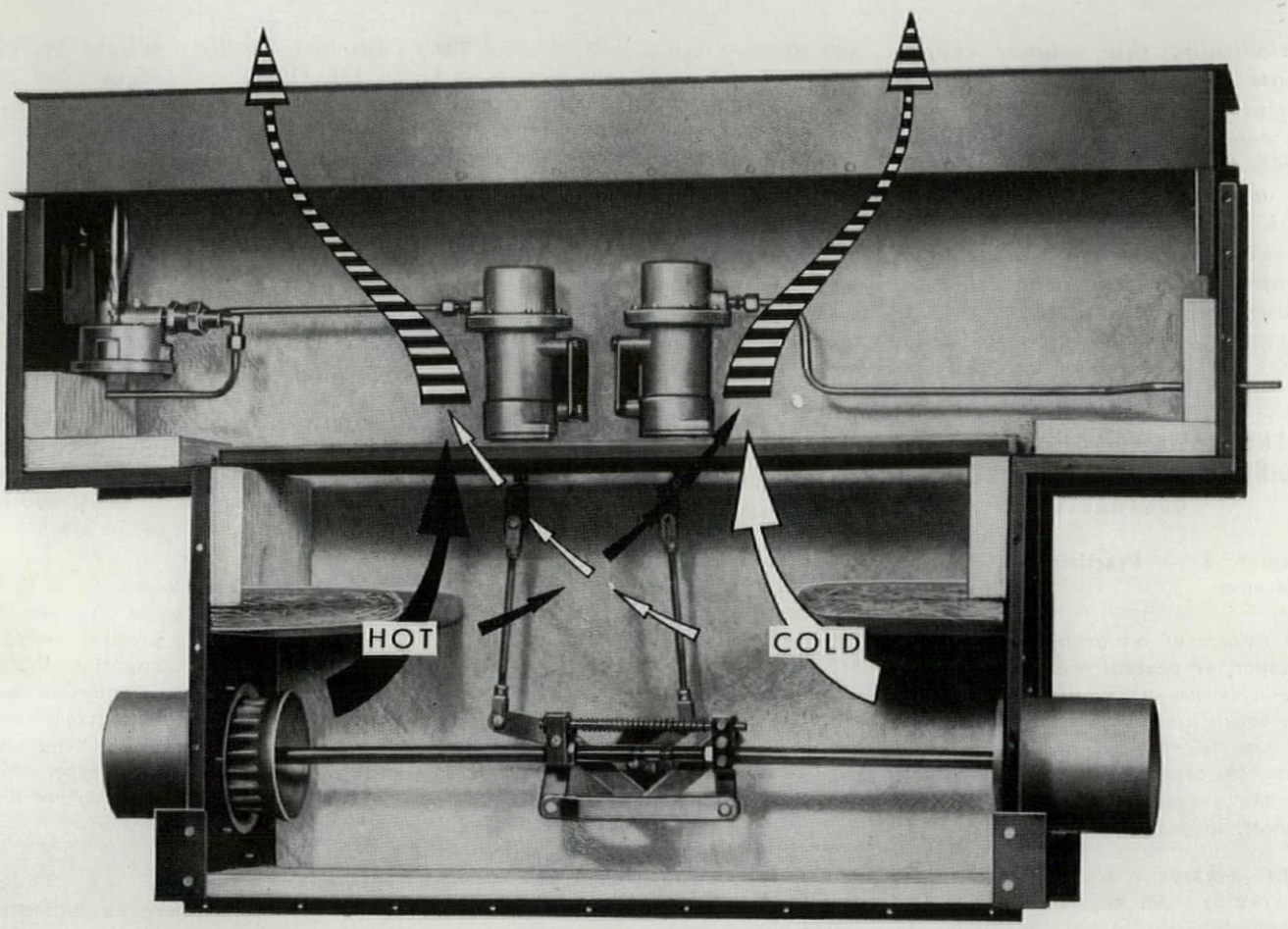

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Mechanical Engineering Critique

by William J. McGuinness

P/A Office Practice *column on mechanical and electrical design and equipment, devoted this month to Atomic Heating.*

present situation

England has in operation one small heating installation using nuclear energy. Five larger ones are being designed in Sweden; the first two of these will heat the entire cities of Stockholm and Vasteras (respective populations: 783,600 and 57,800). One of these systems may be in operation this year and all five are expected to be completed in nine years. Not too generally known is the fact that the first and only nuclear heating plant in the United States has been in successful operation for over a year. This system, designed by Albert I. Brayman,[1] a consulting engineer of Boston, is at the Hanford Works in Richland, Washington. One of its two heat exchangers is shown (*Figure 1*). In November 1955, Dr. Willard F. Libby, Comissioner of the Atomic Energy Commission, made the following statement: "Atomic heat already is an established reality in our production plant at Hanford. It is, of course, obvious that an atomic pile operating for any purpose has enormous quantities of by-product heat produced at the rate of 70,000,000,000 Btu per kg (2.2 lb) of uranium consumed in fission, and therefore it seems clear that the use of atomic-power plants will furnish atomic heat as a by-product at attractive prices. . . . At the Hanford Plant, atomic space heating saves an estimated 1,500,000 gals of fuel oil per yr, or approximately $100,000 per yr."

energy reserves

Undoubtedly, the impetus for the adaptation of atomic energy to heating in England and on the continent has been due to immediate or impending shortages of the so-called "fossil fuels"—coal, oil, and gas. An appraisal of world supply of these resources and indeed of atomic potential is important to all nations, as well as to private industry and to the individual as ultimate consumer. In many areas of the world, the rate of increase in general power use is far greater than the rate of increase in population. Improvements in the efficiency of fuel use and, ultimately, a budget and control of total, world, power potential must be part of long-range plans. At the moment, it seems most advantageous to investigate the use of nuclear energy and its by-products to relieve the demand for other natural fuels.

Brayman, who has an "Access Permit" from the Atomic Energy Commission to study the future possibilities of nuclear heating, has made some statements about the increasing energy demands and resources in the United States. One half of all coal burned in the United States has been consumed since 1920. One half of all the oil and gas consumption has occurred since 1940. Electric and other general power demands have been doubling each decade, a truly startling increase. While good burners often achieve 80 percent fuel efficiency, the national average of efficiency is about 50 percent. Obviously, we are not making the best use of our resources. Heating represents 30 percent of total energy used yearly and is, therefore, an item to be reckoned with. In 1946, the United States exported fuel oil. We now import 1,000,000 bbls per day. Since it is possible that coal and oil resources may be in very short supply within 100 to 200 years, the development of new methods of heating is imperative. Possibilities are solar energy, nuclear energy, and thermo-nuclear energy. The energy received from the sun has not yet been effectively harnessed and thermo-nuclear energy may take 50 years to develop with proper control. It appears that nuclear energy is most adaptable for use in heating.

[1] *Proposed to AEC in 1952 through Chas. T. Main, Inc., Boston.*

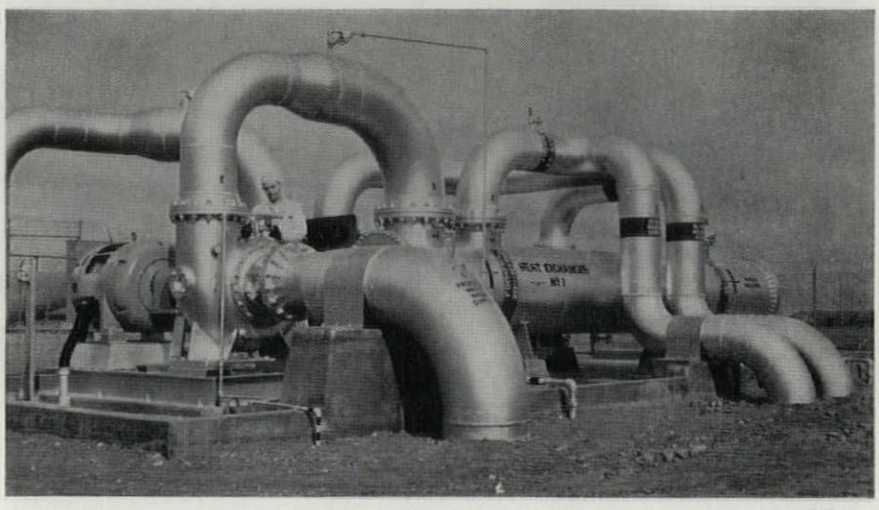
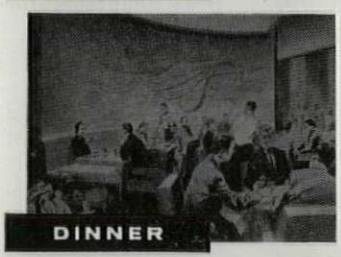


Figure 1—first nuclear-heating system in the U.S.A. Main heat exchanger at the 100-K Area, Hanford Works, Richland, Wash. Capacity of heat exchanger is 50,000,000 Btu/hr and serves to heat an entire production area. Two similar installations were used in duplex, with the piping-distribution systems cross-connected. This is the only installation of its kind in this country.

Photo: courtesy AEC



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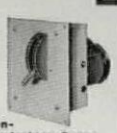

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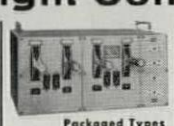

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Mechanical Engineering Critique

the outlook

The best springboard for planning is the plant already operating at Hanford. It is used to heat an entire production area. Its capacity of 100,000,000 Btu per hr (two heat exchangers) would be sufficient to heat 1000 average size houses. Brayman says that with certain modifications in reactor design it could have been increased to heat 100,000 homes. It appears that this kind of system would be suitable for large industrial areas or as a central plant for a utility company supplying heat to a city or part of a city. Detailed information is not available about the Hanford plant, but a transfer of heat from slightly radioactive-process waste water to an antifreeze type of glycol solution is indicated (*see illustrations*). This transfer is made outdoors for heat distribution below ground, probably to remotely located, small, heat exchangers that supply low-temperature hot water or warm air for local needs. The distribution system can be steam, high-temperature hot water, or an antifreeze water solution. This end of the process, following the heat exchanger, need be no different than that of any large heat-distribution system and might resemble the high-temperature hot-water system now quite standard in the U. S. Air Force bases.[2]

It is cheaper to produce nuclear heat than atomic power. The power cycle is only 30 percent efficient, while the thermal cycle approaches 100 percent efficiency. The cost of a reactor for heat is only 50 percent of that for power. For equal output, the over-all plant for heating should cost not more than 15 percent of that for power installation.

Reactors are not suitable for individual houses or small buildings. Future developments may make it possible to use fission by-products for this limited purpose. If a long-awaited technological break-through should occur, millions of gallons of this by-product material now being stored underground could be put to use. This local use of hermetically sealed units awaits much research before it is perfected.

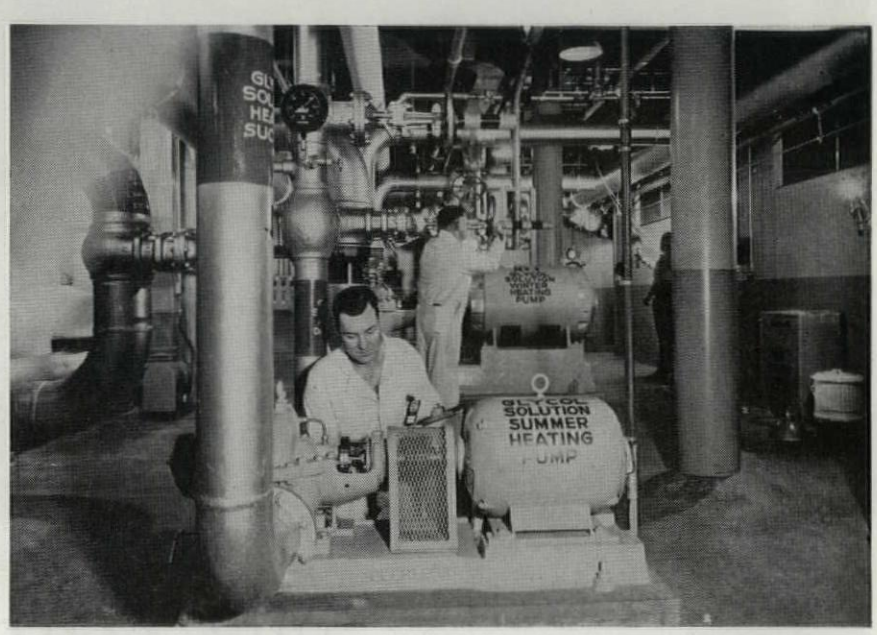

Figure 2 — mechanical-equipment room in the Control Building at the 100-K Area of the Hanford Works. Shown are summer- and winter-heating pumps, together with some of the piping. The Hanford Works is operated by the General Electric Company, under contract with the AEC.

Photo: courtesy AEC

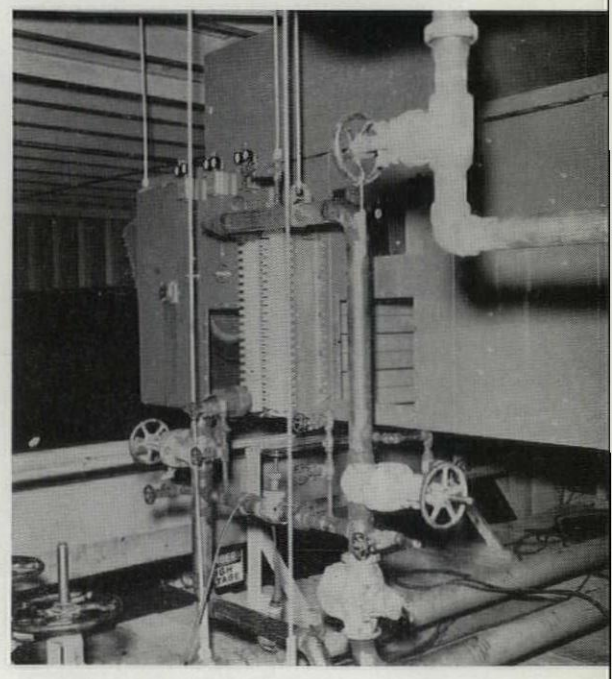

Figure 3—heating and ventilating unit, using atomic heat as the energy source at the Hanford Works. Shown are air-handling unit with special heating coil, face and by-pass dampers, pneumatic controls, and piping. More than 100 of these units were used at this installation—the first of its kind in this country to use nuclear energy as the heat source.

Photo: courtesy AEC

[2] MECHANICAL ENGINEERING CRITIQUE, *October 1955 P/A.*

A focus of social life in the Nation's Capital: the mammoth Grand Ballroom, Sheraton-Park Hotel, Washington, D. C. Seated several thousand at the Eisenhower Testimonial Dinner.

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Mechanical Engineering Critique

Operation of the larger, reactor-type heating installations, like that in Hanford, involves considerable care but no forseeable dangers. There have been no bad accidents in the United States to date. The insurance companies have formed syndicates to handle insurance for nuclear reactors. Since there have been no privately financed examples, the subject of installation and operating costs is wide open. There is evidence, however, that costs will be comparable to those of conventional fuels.

position of the AEC

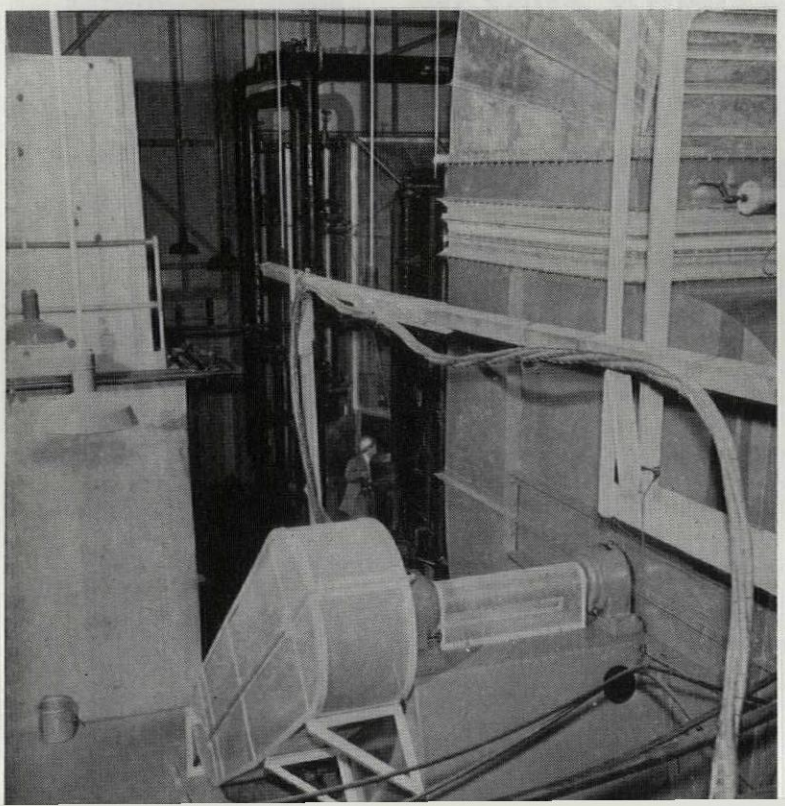
The Atomic Energy Commission now permits private ownership and operation of nuclear reactors by industry, within the framework of the 1954 Atomic Energy Act. The use of nuclear energy for heating is encouraged, but the Government has not yet established a strong program for the promotion of this aspect of atomic use nor any educational plans for private citizens. Initiative for nuclear research and application still rests strongly with the Federal Government. Initial financing by the Government is now assured, and certain tax advantages will encourage industry to assume its responsibility in this new movement.

The AEC has not entered the private power field and there is every reason to believe that it will stay out of the heating business. It may be possible for nonprofit establishments to receive nuclear fuel free of charge, provided that these installations can be classified as "demonstration" facilities.

effect on the trade

No dislocation is expected in the framework of the industries now serving public and private needs for heat, refrigeration and air conditioning, although atomic heat sources can supply all three. Research indicates that probably 10 percent of our major cities could feasibly and economically be heated and cooled by nuclear energy, by 2000 A.D. Except for this major change in the prime heat source, much of the distributing mechanism can be the same or very similar to present equipment. The Institute of Boiler and Radiator Manufacturers and others have begun discussions on atomic heating. All general heating associations are now being encouraged to do the same. The substitution of fission for combustion removes the problem of smoke, odor, and dust, a development that will benefit both the public and the heating industry.

Figure 4—main ventilating system for one of the largest plutonium production atomic-pile reactors in this country. Now in operation at the Hanford Works, it handles approximately 10,000,000 cu ft of air per hr. Note specially designed heating coil located in fan-discharge duct. Heating coil uses nonradioactive atomic heat from reactor, to heat and ventilate building. Photo: courtesy AEC



the new planners

The Government's total investment of $15 billions in the program means that atomic energy is here to stay. Contrary to what might be thought, application of nuclear energy is not the sole property of the scientist and the nuclear physicist. The architect, engineer, and city planner are the important principals in the use of nuclear space heating for large communities. The central plant may be outdoors or below ground and will very probably be located away from centers of population. The fantastic outputs possible in this new method can suggest distribution systems larger than we have ever seen, or perhaps decentralization of substation-type heat exchangers. Within a few years, the nuclear-heating planner will probably make his appearance as an expert in this new field. Since this is a joint effort involving the investor, the public, the planners, and the Government, the legislative and judicial divisions of the Government would have to be active in all matters pertaining to public policy and welfare. Preliminary feasibility studies might not cost more than a fraction of one percent of the final cost of the work and would be the first step to be undertaken in all cases.

The author of this column is indebted to Engineer Brayman, who supplied P/A with most of the information upon which this discussion is based.

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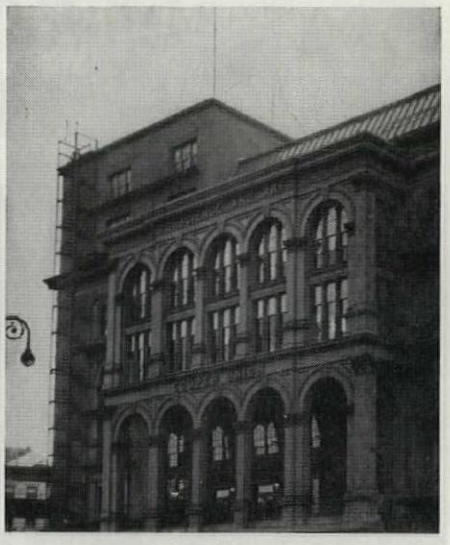


This month, the P/A columns usually reserved for Letters to the Editor are devoted to a report by Rosalind Cohen on the panel discussion, "Development of Creative Leaders," held in conjunction with the Cooper Union Centennial Convocation, October 8-12, 1956.

In the following condensed discussion, an engineer (John Ely Burchard, Dean of Humanities, MIT), an architect (Paul Rudolph), a city planner (José Luis Sert, Dean of Graduate School of Design, Harvard), and a philosopher (Mortimer Adler, Director of Institute for Philosophical Research) describe the adverse effects of the 2nd Industrial Revolution upon art and life in America today and attempt to clarify the responsibilities of leadership in directing our creative energies toward more humanistic ends. Their comments tend to disclaim the popular notions that "less is more" *in art, and* "more is better" *in life.*

architecture—art or building?

SERT: Perhaps the years ahead of us will not be as exciting as those that we have lived through because of the exhilarating developments in science and the arts. But there has been an *overemphasis* on the value and importance of invention in the arts. Many of those who designed great buildings in the past did not care who influenced their work or that is was not entirely original; they just wanted to build *better*. Today we do not see comments about architecture for public buildings emphasizing their good proportions, their harmony, the serenity of the whole; generally what is emphasized is the new and the sensational.

RUDOLPH: We find modern architecture at mid-century a dry, limited, timid, monotonous thing utilizing forms which are merely fashionable without regard to the fundamental concepts behind the great prototypes.

SERT: If we go back to the buildings in Athens, there was nothing entirely new in the forms themselves. But they are outstanding because of their balance, perfection of proportion, and the way they fit the site.

RUDOLPH: Most of our buildings look like assemblages of workable parts from some catalog. Functionalism alone cannot satisfy the need for the sense of symbolism, the lasting monument, vital ideas, and shared emotions that is part of the historical function of architecture to perform.

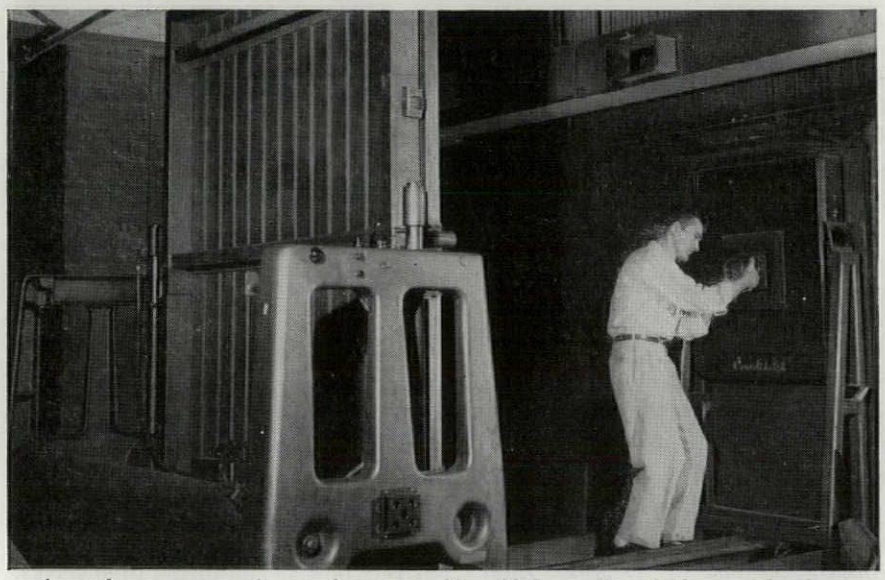
science and technology

BURCHARD: The marriage of scientific theory and engineering practice was a long time in coming. The Greeks were interested in speculating about the nature of the universe. But they had no desire to apply what they knew. The Romans, on the other hand, had little interest in theory. They wanted viable roads for their legions and ample water for their fountains. In the Middle Ages, people were not disposed to scientific investigations. But they were much greater engineers than they are usually credited with being. The application of power to making of cloth began with them. From it came the cloth trade and the beginning of many forces which have been difficult to deal with ever since.

(Continued on page 14)

REINHOLD

DRAFTING TRENDS



A good cameraman is one key to making high quality cloth reproductions.

Cloth reproductions safeguard originals, save drafting time

Many priceless original drawings are subjected to constant punishment. Corners become dog-eared (from filing and handling) and base stock is abused through repeated erasures when elements must be redrawn. In addition, drawings are prematurely aged and discolored as they go through a reproduction machine time after time.

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How photography improves worn original drawings

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Cloth repros simplify enlarging, reducing

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p/a views

(Continued from page 13)

leadership

ADLER: As contrasted with the sphere of art, of the technician, there is the sphere of prudence which is not concerned with production, but with direction. These are quite different spheres of practical thinking, quite different spheres of creativity and call for quite different kinds of talent and occupation, both being indispensable to any society and good relations between the two of utmost importance.

growth and change

BURCHARD: Revolutionary as were the machines that made things, it was the devices that began to shorten space and therefore time that introduced the explosive change which has been threatening us for at least half a century.

ADLER: It is the possession of enormous powers that makes the problem of our society what it is and makes it all the more difficult as our creativity increases; the need for deeper wisdom grows more urgent and vociferous. **RUDOLPH:** The quickly moving vehicle and the unprecedented requirements of sheer bulk have given us new dimensions of scale; we have not begun to face the fact that in 20 years there will probably be 100 million automobiles in this country, or twice the number we have today. This plus the fact that we will have added some 56 million persons in 20 years means that the countryside will have almost disappeared.

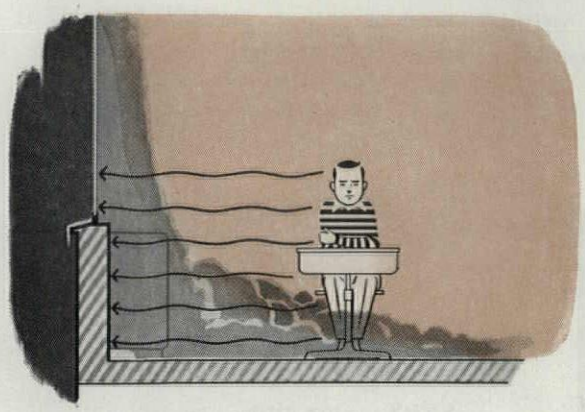
ADLER: The real problem of our society is how to achieve or preserve the good human life and the good society under such rapid conditions of change. This obviously involves the adjustment of what is changing to what is constant. Everything isn't changing. Human nature is not changing, at least not that rapidly, and the nature of society is not changing that rapidly.

BURCHARD: The four great inno-

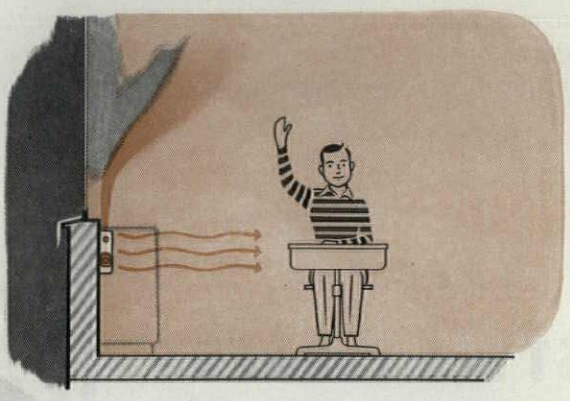
(Continued on page 16)

Wind-o-line Radiation makes the difference!

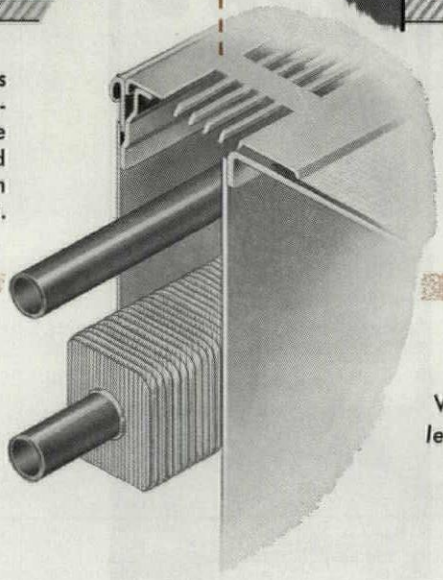
Indoor thermal comfort is related not only to room air temperature, but to the temperature of the surrounding surfaces as well.



Without Wind-o-line Protection, pupils seated near large windows are uncomfortable on cold days because they lose too much body heat to cold surfaces and are exposed to chilling downdrafts—even when the room air temperature is right.



With Wind-o-line Protection, windows, outside walls and floor are warmed to offset the loss of body heat, and a rising blanket of heated air warms and diverts the chilling downdraft. Now all students sit in a *protected learning environment.*



Wind-o-line Radiation installed all along the cold window wall is the bonus feature in the Nesbitt system of heating, cooling and ventilating. Wind-o-line may be concealed by wall-hung enclosures or Nesbitt storage cabinets.

The Nesbitt Series Hot Water Wind-o-line System provides *the protected learning environment at proven lower costs.* You save through: elimination of costly pipe trenches, runouts and pipe covering; smaller pipes and pumps; factory installed piping in the unit ventilator.

The Added Protection of Wind-o-line Radiation Increases the Yield of Good Teaching

Send today for your copy of Publication 101. It tells how you may obtain more learning per school dollar.

CLASSROOM HEATING AND VENTILATING EQUIPMENT BY **Nesbitt**

Made and sold by John J. Nesbitt, Inc., Philadelphia 36, Pa. Sold also by American Blower Corporation and American-Standard Products (Canada) Ltd.

(Continued from page 14)

vations that seem to me to pose this problem with a gravity we have never felt before are those which have *collapsed time* so that world geography is hardly a consideration anymore; the *instruments of communication* which tempt and permit humans to express themselves on any topic to anyone at the very moment when they have a reaction about the topic; the ability to *transfer power* from remote places; and finally the implications of the new *electronic control mechanisms* which substitute the machine for certain operations of the human brain.

perpetual motion

SERT: Today we have greater means for people to move around which is very good, but the more they move around the less they come together and that is one of the great problems of our cities. Everybody is going somewhere but nobody has time to meet the other. **BURCHARD:** If it is so easy and quick to get to a remote area that we are more conscious of the area, this may be good; if it is also easy to get back so that we do not stay very long, this may be bad. If scholars are always on the move, it may be that they will stop thinking.

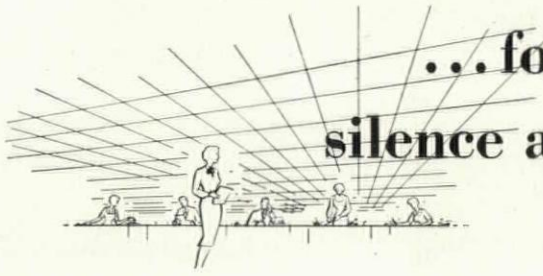
lost art of conversation

SERT: Our cities are especially designed so that conversation, the meeting of minds, should not take place. The Romans in the Forum and the people of the Middle Ages in the square were very animated conversationalists. Toward the end of the 18th Century and on through the 19th Century the cafes were meeting places and much of the art in our world originated around cafe tables in form of discussion. Our Western culture was formed and developed within an urban structure. If we build cities where people are not able to get together, we lose the basic advantages of a big city no matter how many grand office buildings, shopping centers, fine hotels, and highways it has. **ADLER:** I would say that the greatest failure of our civilization is not merely the failure to provide the *material* conditions for conversation, but I think the reason we have not done so is because we have lost *interest* in conversation. If the city is ever to become a place where conversations take place again, it will take place only if the citizens of that city have some kind of liberal training that most American children do not get now in our schools and colleges. We all have special techniques and talents, but to be human we all have to be able to talk to one another—not just chat like monkeys.

(Continued on page 74)

KILNOISE®

MINERAL ACOUSTICAL TILES



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Kilnoise Mineral Acoustical Tiles, the finest *white* ceiling tiles the market, are now also available in a wide range of soft el colors, designed to complement the interior color scheme ny building.

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KILNOISE
Acoustical Tile

NEW ENGLAND LIME COMPANY • *Adams, Massachusetts*

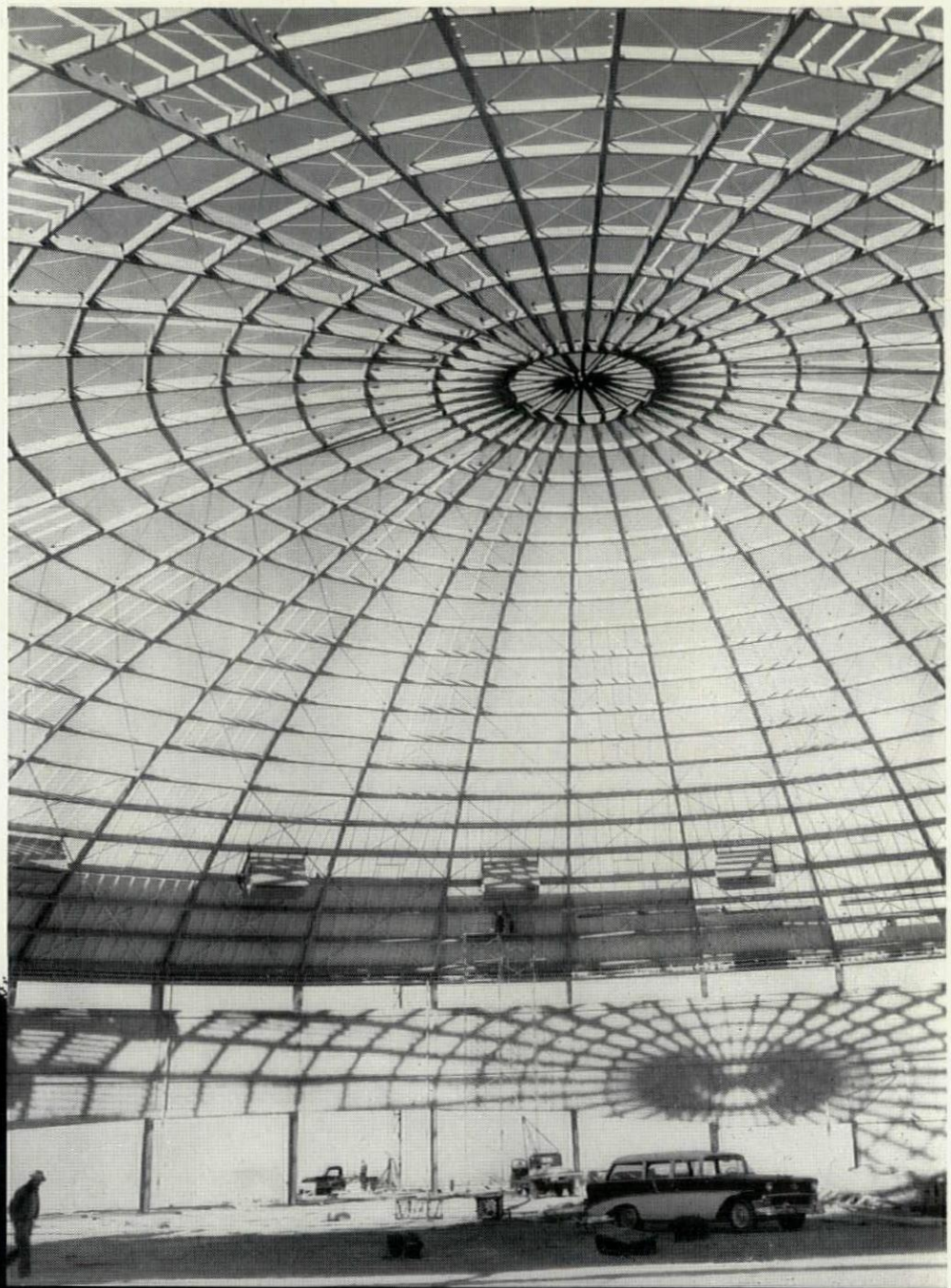
JOB DATA

Architects: Willson & Berg, Bozeman, Montana

Engineer: Ben F. Hurlbutt, Billings, Montana

Contractors: Haggerty & Messmer Company, Bozeman, Montana

- Diameter of dome 300 feet
- Rise of dome 50'-8⅞"
- Seating capacity 12,500
- Number square feet all floors 138,080
- Total cost $1,453,115
- Cost per square foot $11.10
- Ventilation: exhausts air in arena every 15 minutes when filled to capacity.
- Heating: American Blower fan units heated by steam from existing power plant.
- Arena Floor: earth with portable backstop and basketball floor.
- Roof: built-up surface over Tectum decking.
- Sidewalls: curtain wall of colored concrete blocks.



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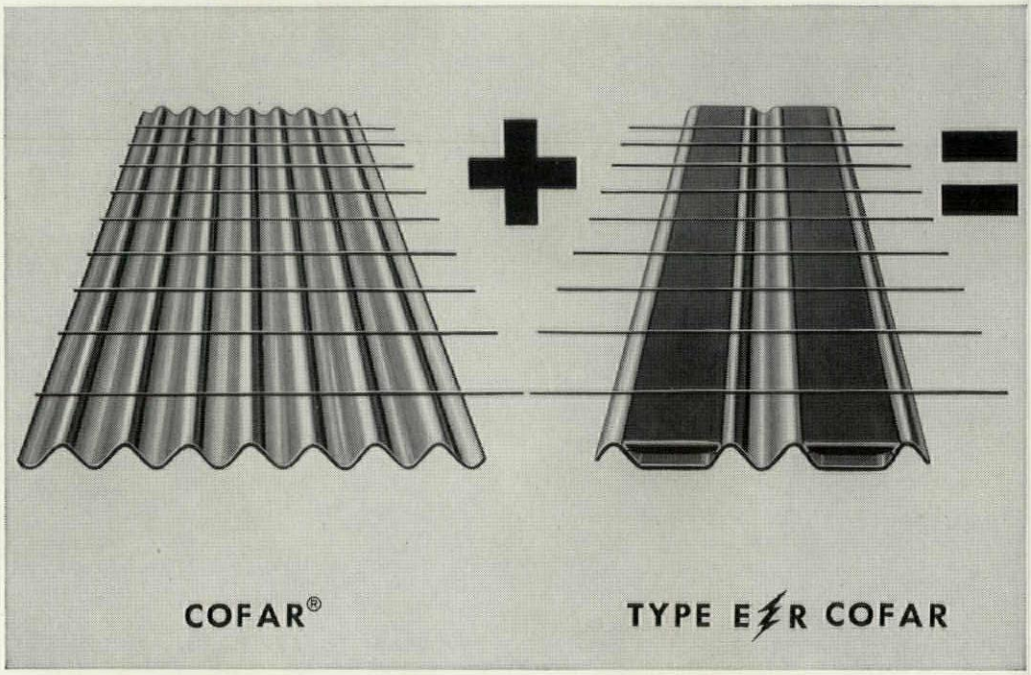
New reinforced concrete floor

Why didn't someone think of this before! One simple, cost-cutting operation, yet it combines 3 major steps in the construction of office building floor slabs—

1. **Forming**
2. **Reinforcing**
3. **Electrification.**

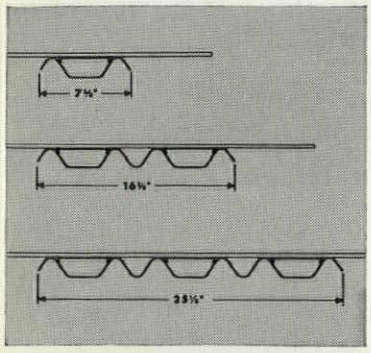
Heart of the system is Type E-R (for "Electrically Ready") Cofar, new cellular units designed to carry wiring. When these cells are combined with Cofar—a unit that forms and reinforces concrete—all 3 slab requirements above are met *before concrete is placed!* Chief advantages: A low-cost, high-strength floor with electrical flexibility that meets the present and future demands of *any* office building. No wasted fill. No wasted ducts or wiring. Fewer construction steps. Here's how it works . . .



Conventional Cofar units are deep-corrugated high-strength steel units—2½ feet wide—with transverse wires welded across corrugations. The steel serves as a tight form for wet concrete and becomes main positive reinforcement when concrete sets. T-wires furnish necessary temperature reinforcement and mechanical anchorage between slab and steel.

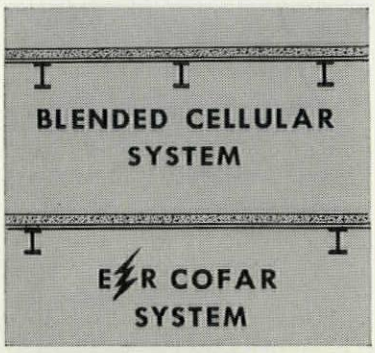
E-R Cofar cells are used between conventional Cofar units. These cells are wide troughs *capped* to form spacious 5.2 square inch raceways for wiring. NOTE: E-R Cofar units also have T-wires welded across corrugations to maintain Cofar composite slab action. Type E-R Cofar is equally suited to steel or concrete frame construction.

CHECK THESE MONEY-SAVING ADVANTAGES OF THE E⚡R COFAR SYSTEM



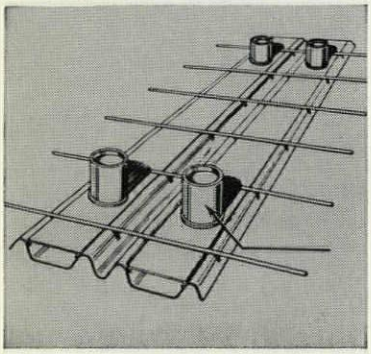
1, 2 or 3-Cell Units

With E-R Cofar, you *choose* the amount of electrification you want. One, two and three-cell units are available and spacing between units may be varied as necessary. Units are available in lengths to 16 feet and are manufactured from heavy gage galvanized steel.



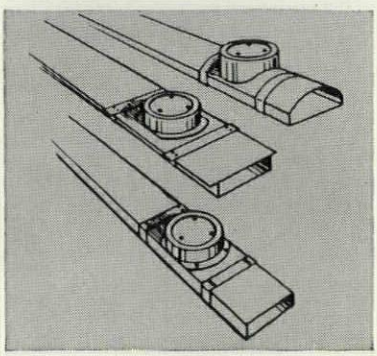
Reduces Framing

Cofar slabs are more economical than any other type of floor forming and deck system on 10′ to 14′ beam spacings. Wide spacing eliminates need for intermediate beams, saves on fire-proofing materials. Lighter dead loads also save on footings and foundations.



Pre-Set Inserts

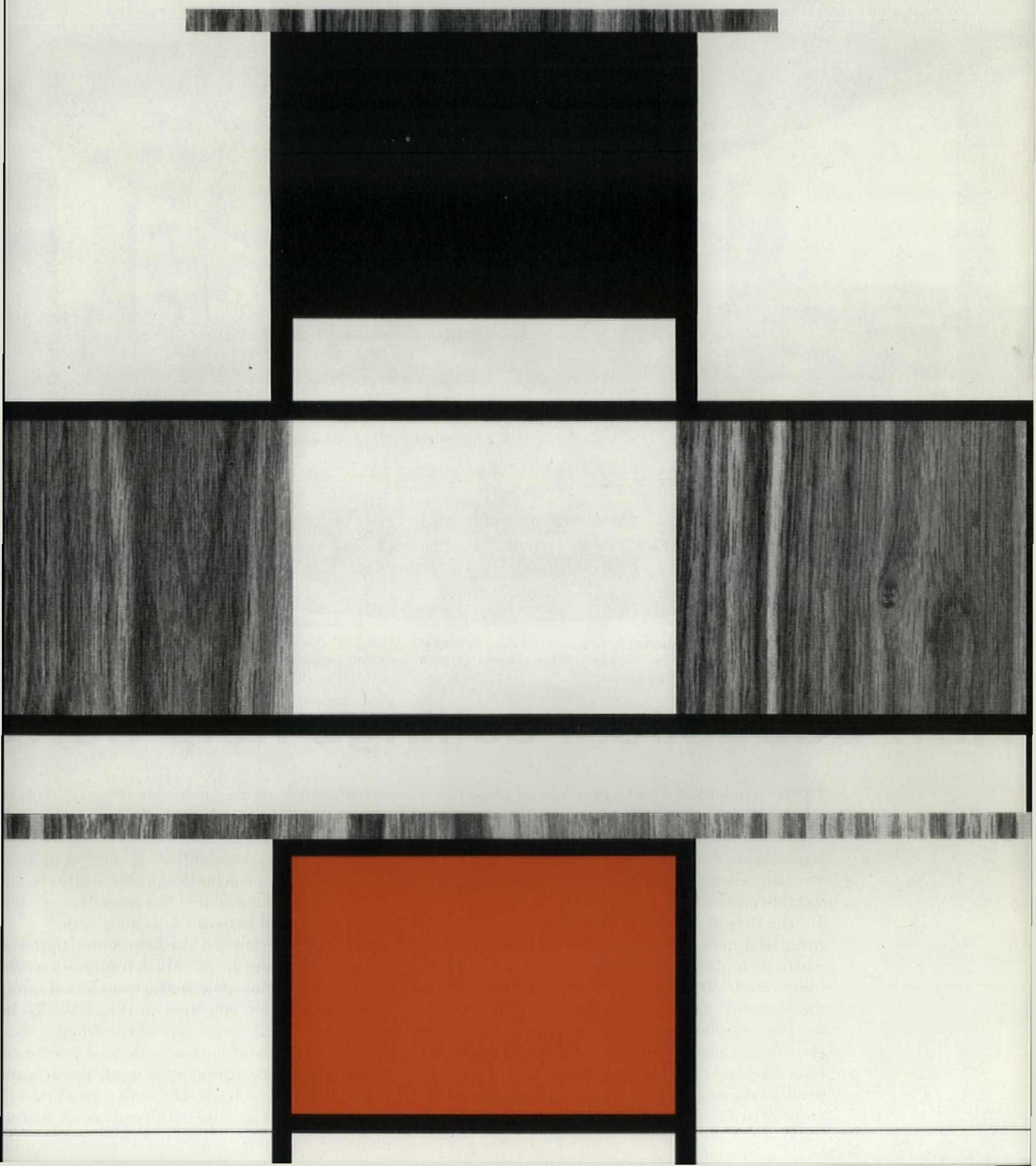
Available with either pre-set or with blank cap plate for after-set inserts, E-R Cofar provides complete electrical accessibility. Pre-set inserts eliminate noisy and costly concrete drilling operation. If desks are rearranged, floor service outlets can be located in *minutes.*



Header Adaptability

Any Underwriters' Laboratories-approved header duct system (such as Nepco or Walker) can be used to activate Type E-R Cofar cells. When two or three-cell units are used, service fittings can be placed as closely as 8 inches apart on the finished floor (see above).

LEHIGH



The amount of noise to be transmitted from this grand concourse to the office areas above is reduced by a suspended acoustical ceili
EAST SIDE AIRLINES TERMINAL, NEW YORK CITY, N. Y.; ARCHITECT: JOHN B. PETERKIN; ACOUSTICAL CONTRACTOR: WILLIAM J. SCULLY ACOUSTICS CORP.

How acoustical ceilings help solv

The standard answer to problems of noise transmitted from one room to another has been airtight mass—solid masonry. This type of construction is not always practical. However, acoustical ceilings can help alleviate noise problems caused by lightweight construction.

1. The Role of Acoustical Materials

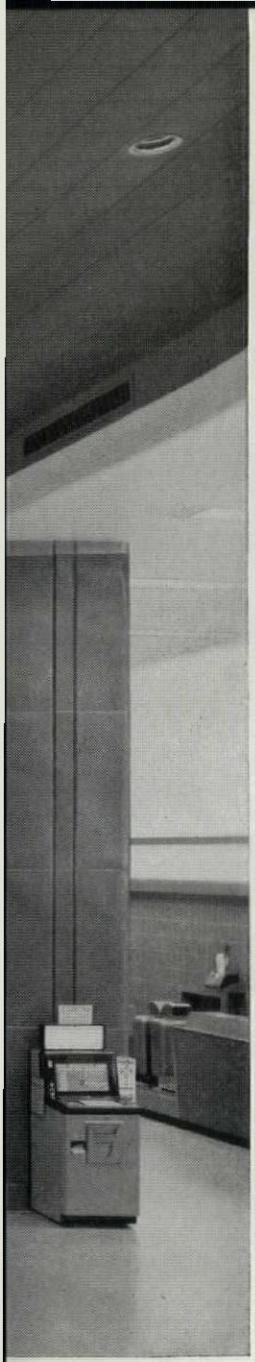
Acoustical materials reduce the intensity of sound where it originates, hence there is less sound to be transmitted. They can also reduce the intensity in the adjoining area after sound is transmitted.

2. Transmission from Floor to Floor

Here is one construction method to help keep sound from traveling from one floor to another. First, suspend a false ceiling of metal lath or wood framing, cover it with sanded gypsum plaster, and install acoustical tile on the underside (Fig. 1). This p vides an airtight membrane, adequate mass, and air space above the suspended ceiling that he minimize sound transmitted to the room bel And, of course, the acoustical material absorbs mu of the transmitted sound in this room.

3. Transmission between Adjoining Areas

Acoustical materials can also help control the leve sound in adjoining areas. Much transmission occ through walls, but some is also transmitted throu continuous ceiling construction (Fig. 2a). To h minimize this, a different type of construction shou be used with movable than with fixed partitioni When movable partitioning is used, the acousti material should be backed up with a membrane th is impervious to air and with good sound transm



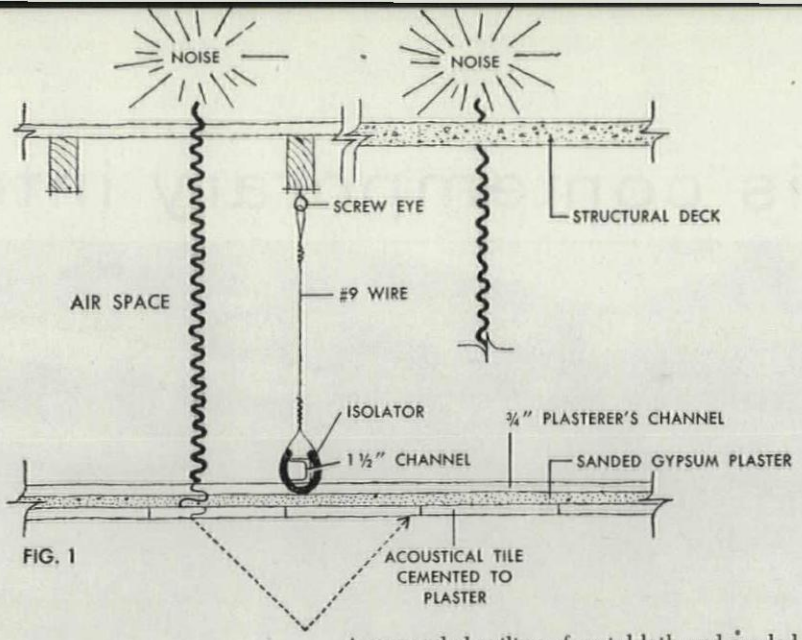


FIG. 1

A suspended ceiling of metal lath and sanded gypsum plaster can be dropped by wire to provide mass, an air space, and an airtight barrier to minimize the flow of sound. An isolator can also be wrapped over the metal supporting channel. The acoustical material provides the sound absorption required in the room below.

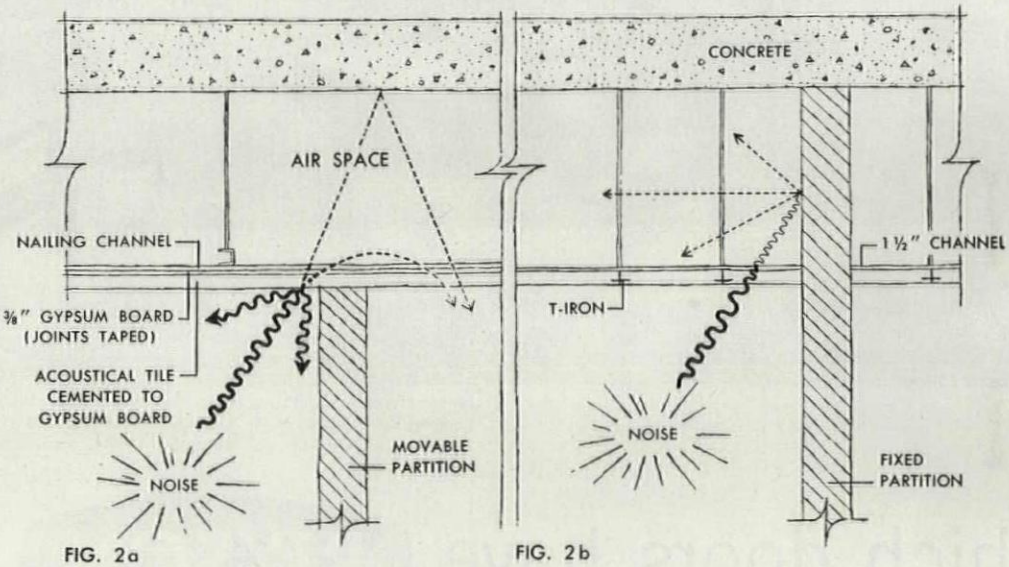


FIG. 2a FIG. 2b

A membrane of ⅜" gypsum board should be installed behind acoustical tile for added mass, unless partitioning is joined to structural ceiling.

sound transmission problems

sion loss (Fig. 2a). Three-eighth-inch gypsum board with all edges taped is highly efficient. This construction has adequate mass and an airtight membrane that help reduce the flow of sound through the ceiling.

When the partition is extended through the acoustical ceiling to the underside of the slab above, the acoustical ceiling requires no special backing (Fig. 2b). The wall acts as an effective barrier to the transmission of sound.

In both types of construction, acoustical materials reduce the intensity of sound before and after transmission.

For details on how Armstrong acoustical materials can help you solve sound transmission and other noise problems, see your Armstrong Acoustical Contractor. An expert in his field, he is familiar with all types of sound conditioning and can recommend a material to satisfy every job need.

For free booklet, "Armstrong Acoustical Materials," filled with data on the latest sound-conditioning methods and materials, write Armstrong Cork Company, 4203 Watson Street, Lancaster, Pennsylvania.

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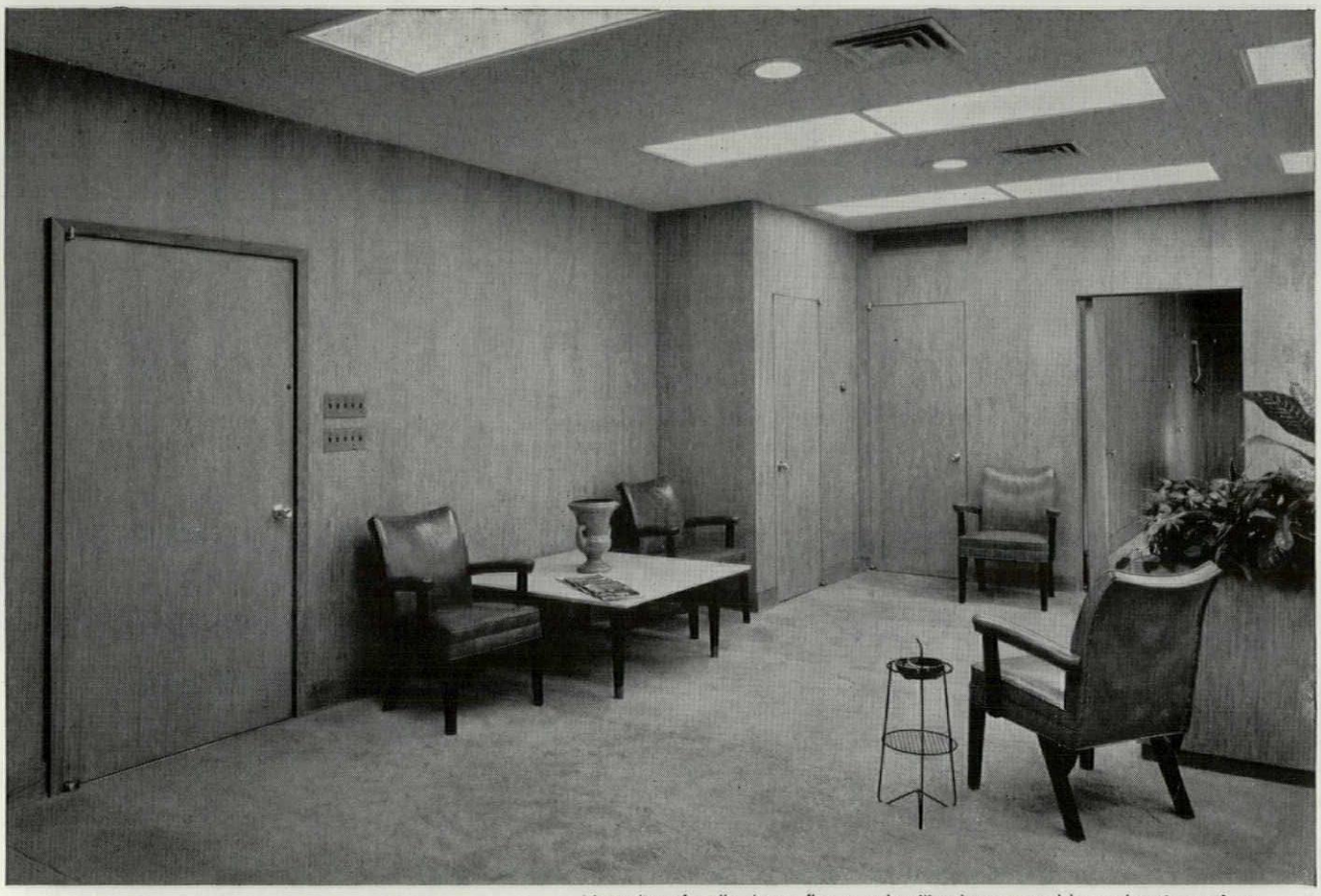

Neutrality of walls, doors, floors and ceiling is preserved by unobtrusive uniform hanging for all doors in the extensive executive suite of the Natural Gas Pipeline Company of America. — Naess & Murphy, architects and engineers, Chicago

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how to light a home with one line

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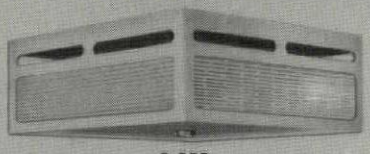

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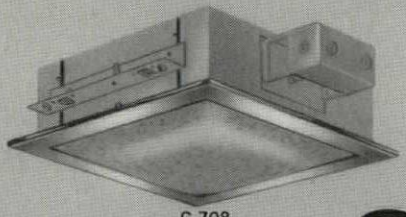

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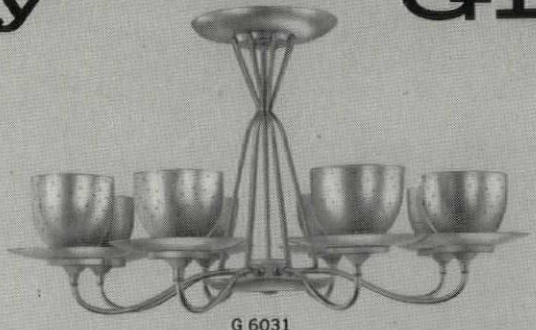

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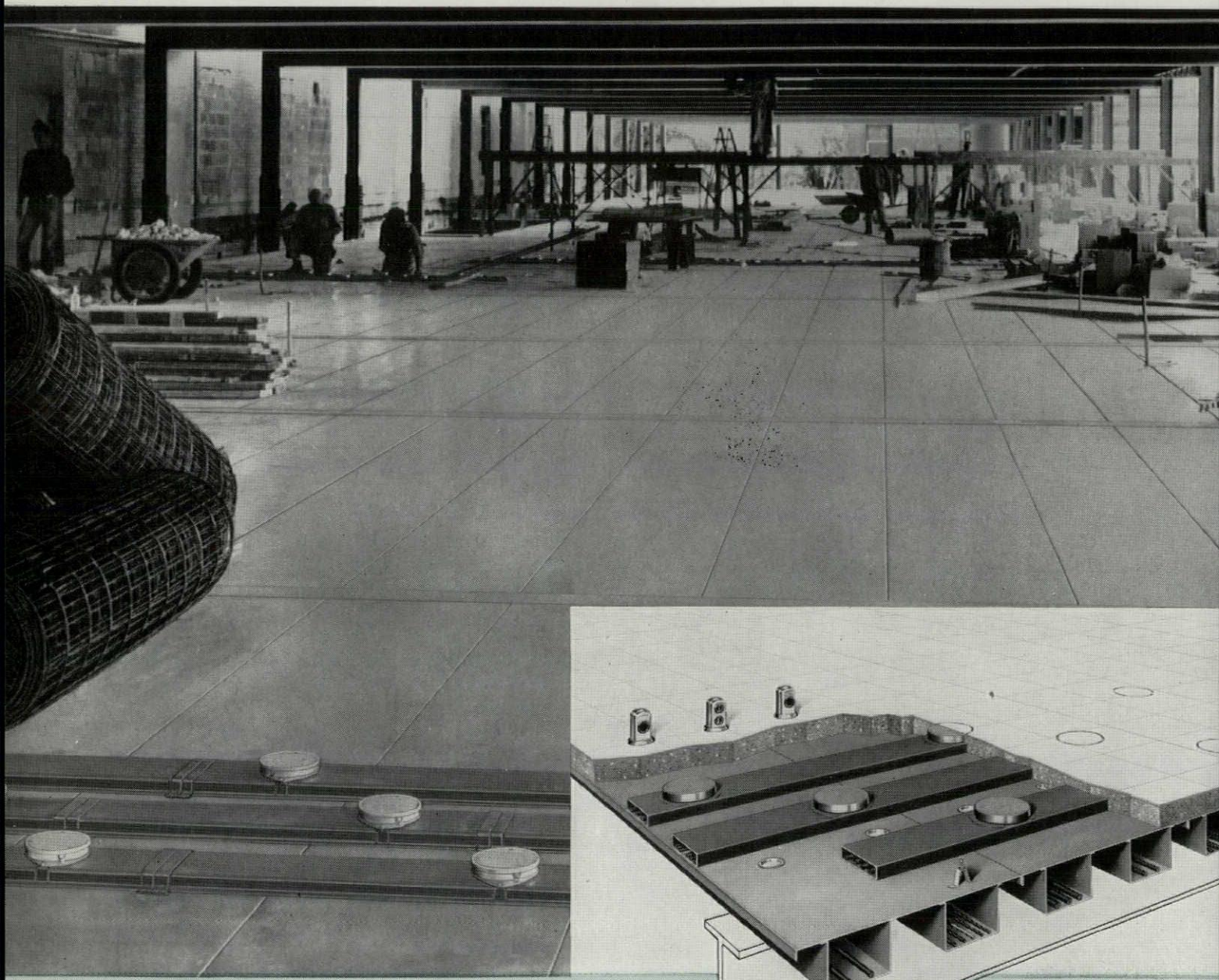

Modern Four Story Office Building for Kansas City Life Insurance Company, Kansas City, Missouri. Mahon Electrified M-Floor Construction was used throughout. Mahon Long Span M-Deck was employed in the Roof Construction. Edward W. Tanner & Associates, Architects. Collins Construction Company, General Contractors.

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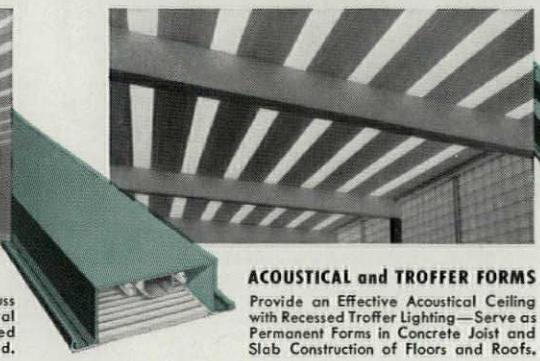

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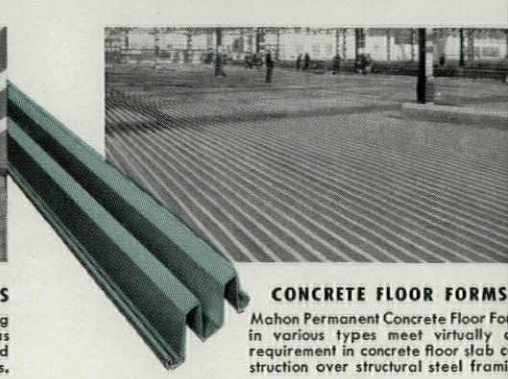

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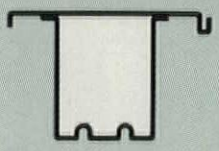
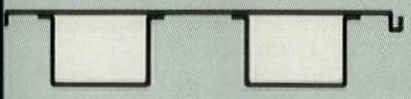
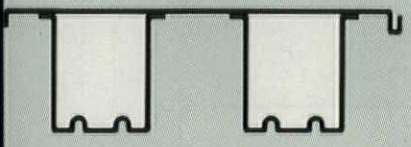


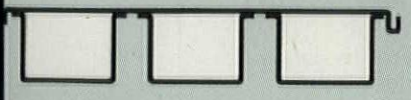
M-FLOOR SECTION
M1



M-FLOOR SECTION
M2



M-FLOOR SECTION
M2X



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M3

When you build with M-Floors, you serve your client in the true tradition of the architectural profession . . . you reduce the cost of his building through inherent advantages of light weight floor construction . . . you build into his building the convenience of all-over electrical availability provided by the Cel-Beam Raceways in the Structural M-Floor . . . you insure his building against electrical obsolescence . . . and, you build his building in a shorter period of time. These are the basic reasons why so many architects are today employing M-Floor construction for multiple story buildings.

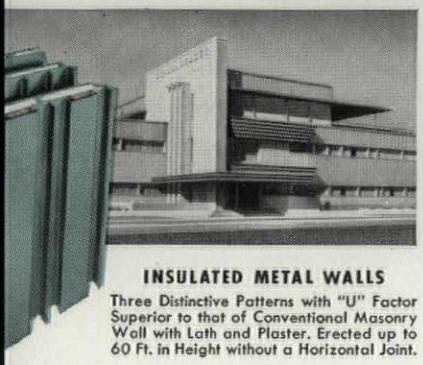
Why do architects and engineers select M-Floors? . . . here are some of the reasons: Mahon M-Floor Cel-Beam Sections are designed to give you a better Section from a structural standpoint, an electrical standpoint, and from a general utility standpoint. The flat Top Plate of the Mahon Section reduces both the amount and weight of concrete topping to a minimum—the flat plate sub-floor surface also reduces cracking as the concrete cures. The Cel-Beam Members of Mahon M-Floor Sections are 6" wide with perpendicular beam-webs. This permits greater latitude in the installation of Floor Service Fittings . . . it also permits 4" diameter access hand-holes between Header Ducts and Cel-Beam Raceways. The 6" wide Cel-Beam Members further provide evenly distributed beam-web supports for the flat Top Plate at not more than 6" on centers . . . this is important, in that it eliminates the possibility of collapse of the Top Plate during construction, and the consequent difficulties to be encountered later in the installation of Electrical Floor Service Fittings.

Compare these points, one by one, with any other Cellular Steel Sub-Floor available today, and you, too, will be convinced that the basic functional requisites of a Cellular Steel Sub-Floor have been more fully realized in the design of Mahon M-Floor Cel-Beam Sections.

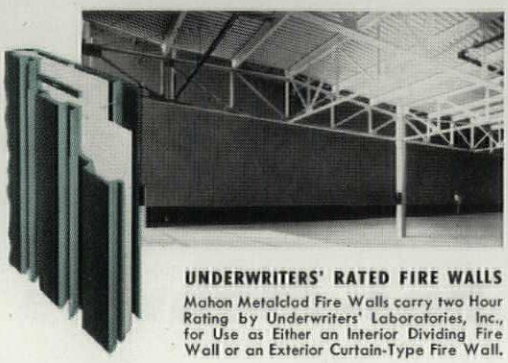
See Sweet's Files for information, or write for Catalogue M-57.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

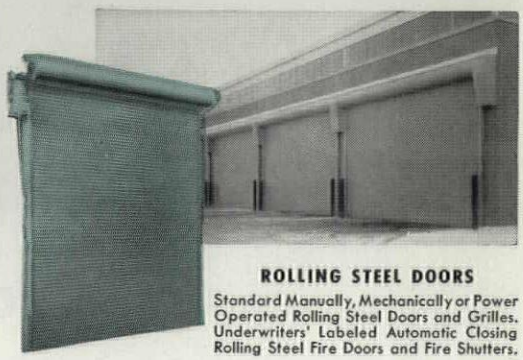
M A H O N



INSULATED METAL WALLS
Three Distinctive Patterns with "U" Factor Superior to that of Conventional Masonry Wall with Lath and Plaster. Erected up to 60 Ft. in Height without a Horizontal Joint.

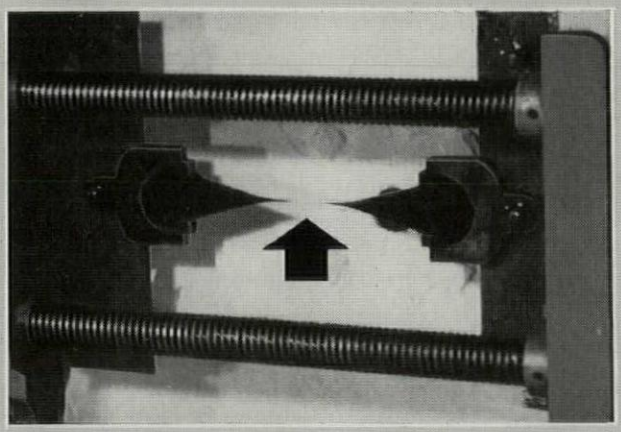


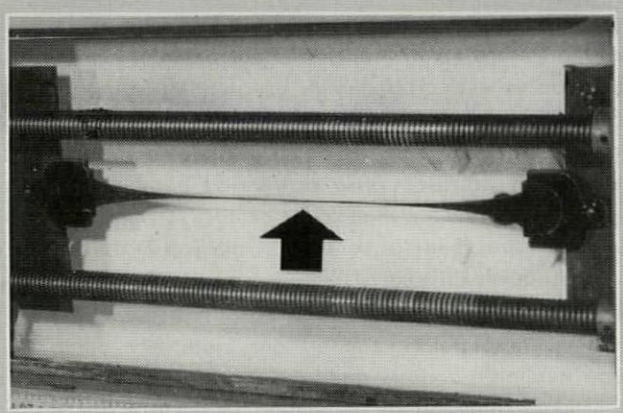
UNDERWRITERS' RATED FIRE WALLS
Mahon Metalclad Fire Walls carry two Hour Rating by Underwriters' Laboratories, Inc., for Use as Either an Interior Dividing Fire Wall or an Exterior Curtain-Type Fire Wall.



ROLLING STEEL DOORS
Standard Manually, Mechanically or Power Operated Rolling Steel Doors and Grilles. Underwriters' Labeled Automatic Closing Rolling Steel Fire Doors and Fire Shutters.

Johns-Manville *Aquadam*® Built-Up Roofs—proved superior by actual tests!





Here's conclusive proof of Aquadam's greater resistance to cracking!

TOP—A typical asphalt is shown at average breaking point of 12 CM.

BOTTOM—This is Aquadam at a 25 CM stretch—100% beyond average—won't break even when stretched to 110 CM.

AQUADAM BUILT-UP ROOFS owe their proven superiority to Aquadam, the special bituminous cementing agent, used in the application of the roofing felts. Aquadam is an exclusive Johns-Manville development.

When applied, Aquadam's excellent adhesive properties create a permanent bond to the felts and to the slag or gravel surfacing. Aquadam's rigidly controlled quality and excellent flow properties assure easier mopping, thorough coverage, longer roof life.

Johns-Manville Aquadam Roofs are specially designed to provide maximum built-up roof service for deck inclines from dead level to ½" per foot. Available in both a smooth-surfaced and a slag or gravel specification.

Your local Approved J-M Contractor is listed in the Yellow Pages of your telephone directory. He will gladly give you complete information about J-M Aquadam Built-Up Roofs. Or, write Johns-Manville, Box 158, New York 16, N. Y. In Canada: 565 Lakeshore Rd. E., Port Credit, Ont.

JOHNS-MANVILLE JM PRODUCTS

CHECK THESE 7 IMPORTANT AQUADAM ADVANTAGES:

- ✓ Outstanding resistance to cracking
- ✓ Improved self-healing properties
- ✓ Superior weather resistance
- ✓ Greater kettle stability
- ✓ Exceptional adhesion, stronger bond
- ✓ Greater resistance to water
- ✓ Excellent uniformity

Johns-Manville

FOR ALL

TYPES OF BUILDINGS

SPECIFY STARK

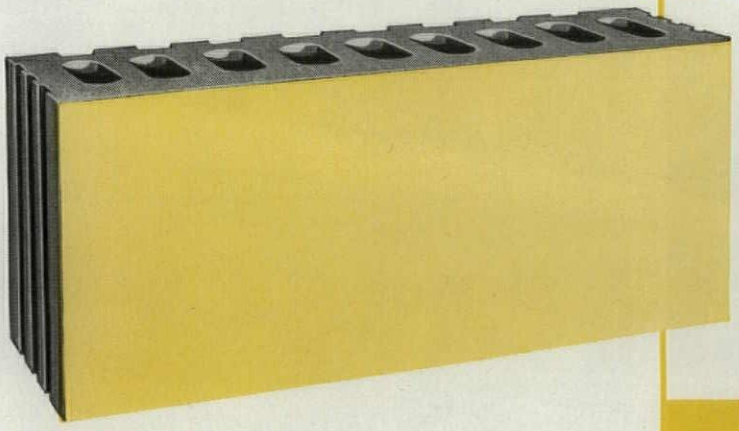
STRUCTURAL GLAZED FACING TILE

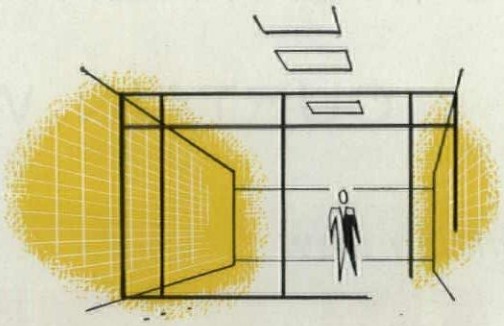
Stark Ceramic Glazed Facing Tile makes the ideal wall in any building.

No other product offers so many advantages such as: (1) Easy to build wall-and-finish-in-one. (2) Beautiful permanent colors. (3) Adaptable to any architectural style. (4) Modular measures. (5) Minimum maintenance. (6) A high degree of quality backed by 47 years experience. In addition to these features, quick deliveries are now possible because of greatly increased production facilities.

It's no wonder that this modern ceramic unit is specified in building after building with the assurance that the first cost is the last cost.

Full information and samples are available from your local Stark distributor or write direct to...





BEAUTIFUL INSTITUTIONAL BUILDINGS

SANITARY HOSPITALS

FIREPROOF SCHOOLS

DURABLE INDUSTRIAL BUILDINGS

STARK CERAMICS, INC.

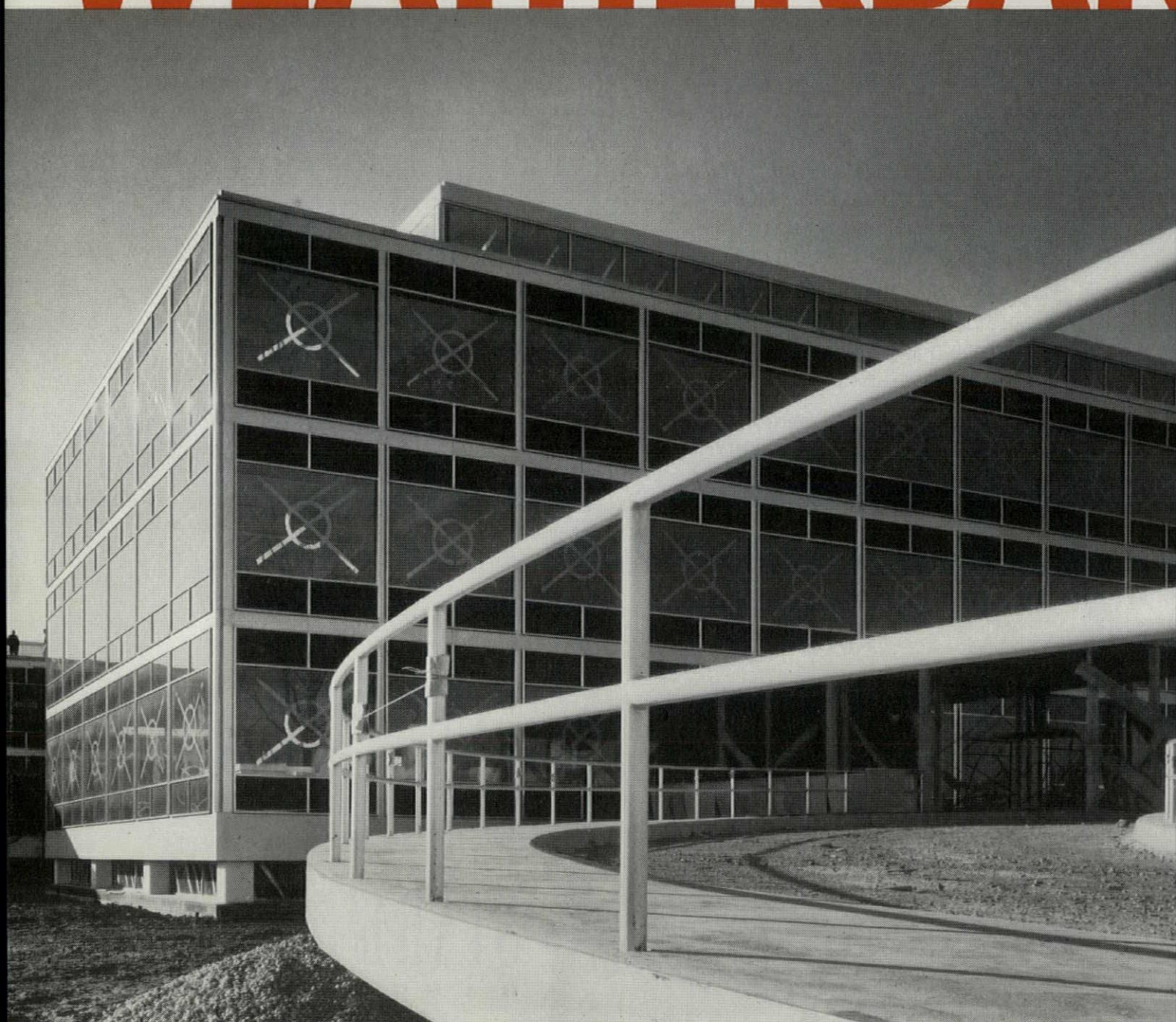
CANTON 1, OHIO

LOCKS WEATHER OUT OF 600,000-SQ.-FT CURTAIN WALL BUILDING

Announcing ***new***

WEATHERBAN

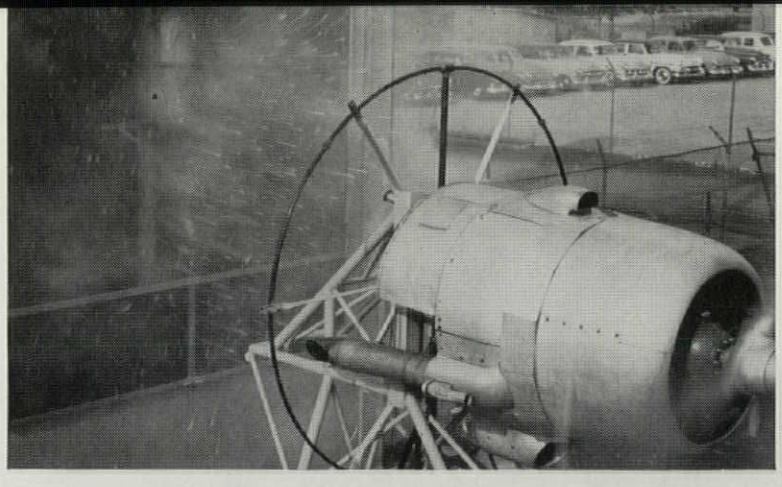
BRAND CURTAIN WALL SEALE



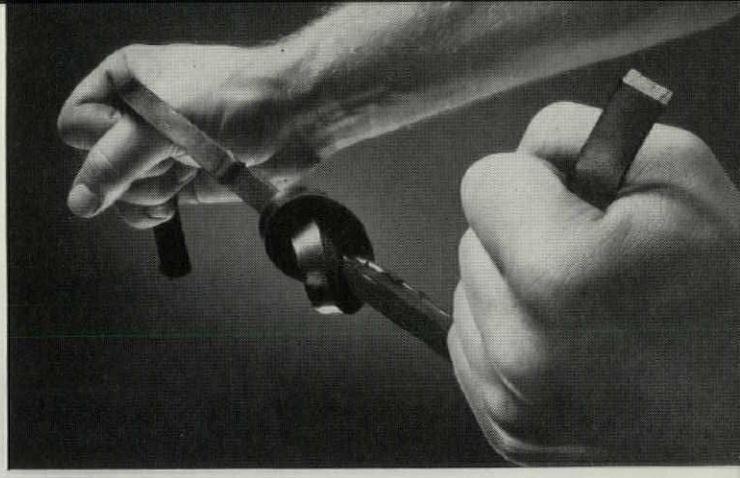
Architect: Skidmore, Owings & Merrill. General contractor: Turner Construction Co.

CHOSEN FOR CONNECTICUT GENERAL LIFE BUILDING

WEATHERBAN Brand Curtain Wall Sealer seals curtain walls of the giant, new Connecticut General Life Insurance Company Building in suburban Hartford, Conn. More than 80% of the wall area is glass. 900 heat-absorbent glass panes (the biggest yet used) measure 8 by 11 feet. Weatherban Sealer seals glass to aluminum channels.



RESISTS WEATHER This WEATHERBAN-sealed test wall withstands hurricane fury without leaking . . . simulated 12-inch-per-hour rainfall driven by 130-m.p.h. wind. Building uses prove that WEATHERBAN Sealer can endure sunlight, atmosphere, temperature extremes, too, for years.



FLEXES LIKE RUBBER WEATHERBAN Sealer is a two-part polysulphide rubber-based compound. It bends, stretches, compresses with wall movement, doesn't flow out of seam, keeps a solid seal. What's more, it cushions glass and metal, guards them from breaking and cracking under buffeting winds.

seals curtain walls
more securely four ways!

WEATHERBAN

BRAND CURTAIN WALL SEALER

Here's a dramatically new sealer that offers you four-way greater dependability in curtain wall sealing . . .

It's WEATHERBAN Brand Curtain Wall Sealer, made by 3M, based on synthetic rubber, specially designed for curtain walls.

Workmen apply WEATHERBAN Sealer by pressure or flow gun. Yet WEATHERBAN Sealer is practically 100% solids. It cures *chemically* into a durable, elastic, solid rubber seal. And it cures without shrinkage.

You get a seal that can resist deterioration, adhere, flex and endure through years of exposure . . . where conventional caulking compounds often fail.

As the result of 13 years of experience with aircraft sealers, 3M has produced in WEATHERBAN a sealer of exceptionally long service life. It endures vibration, sunlight, atmosphere, oils, solvents or gases, still seals tightly.

What's more, WEATHERBAN Sealer prevents wall materials from contacting one another, minimizes galvanic corrosion. Three pleasing colors (aluminum, black, tan) blend with buildings.

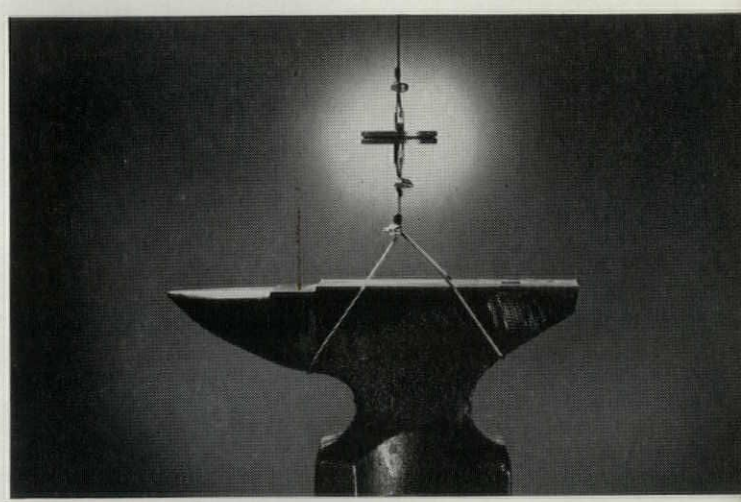
Let the 3M technical staff work out test application or actual application procedures with you.

SEND FOR FREE LITERATURE

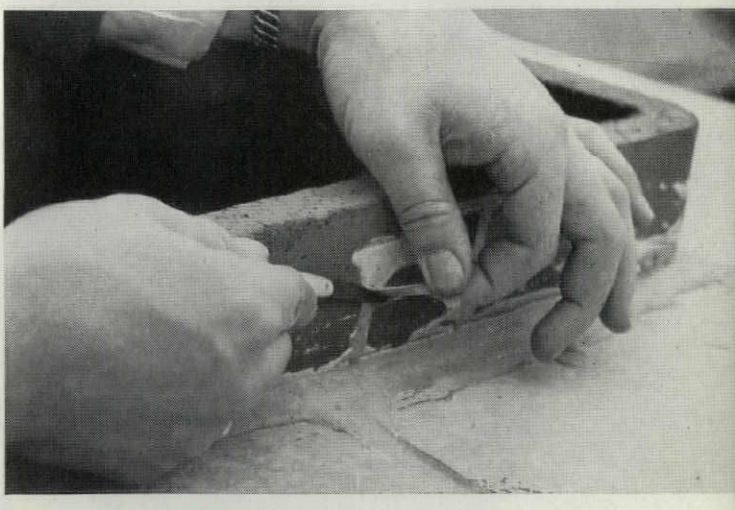
Learn the full facts about WEATHERBAN Sealer now! Send for free booklet: *Performance Facts About WEATHERBAN Brand Curtain Wall Sealer*. Fill out and mail the handy coupon below today. Or write on your business letterhead to:

MINNESOTA MINING AND MANUFACTURING COMPANY
ADHESIVES AND COATINGS DIVISION
Dept. 32, 417 Piquette Ave., Detroit 2, Mich. General Sales Offices: St. Paul 6, Minnesota
Export: 99 Park Ave., N. Y. 16, N. Y. Canada: P. O. Box 757, London, Ont.

PRODUCT OF 3M COMPANY RESEARCH



ADHERES WEATHERBAN Sealer bonds these metal discs, doesn't lose adhesion even when a 125-pound anvil is supported from them. Such positive, lasting adhesion means watertight, dependable sealing. Test WEATHERBAN Sealer yourself on stainless steel, aluminum, glass, stone or concrete.



SEALS FOR YEARS You enjoy minimum upkeep. Still elastic after seven years, WEATHERBAN Sealer sticks tight to glazed parapet caps on this San Francisco rooftop. This is why building owners are picking WEATHERBAN Sealer to repair leaks in curtain walls originally sealed with conventional sealers.

Minnesota Mining and Manufacturing Company
Adhesives and Coatings Division, Dept. 32
417 Piquette Ave., Detroit 2, Michigan

Send me free literature on WEATHERBAN Brand Curtain Wall Sealer. Please (do) (do not) have a 3M Field Engineer contact me at this time.

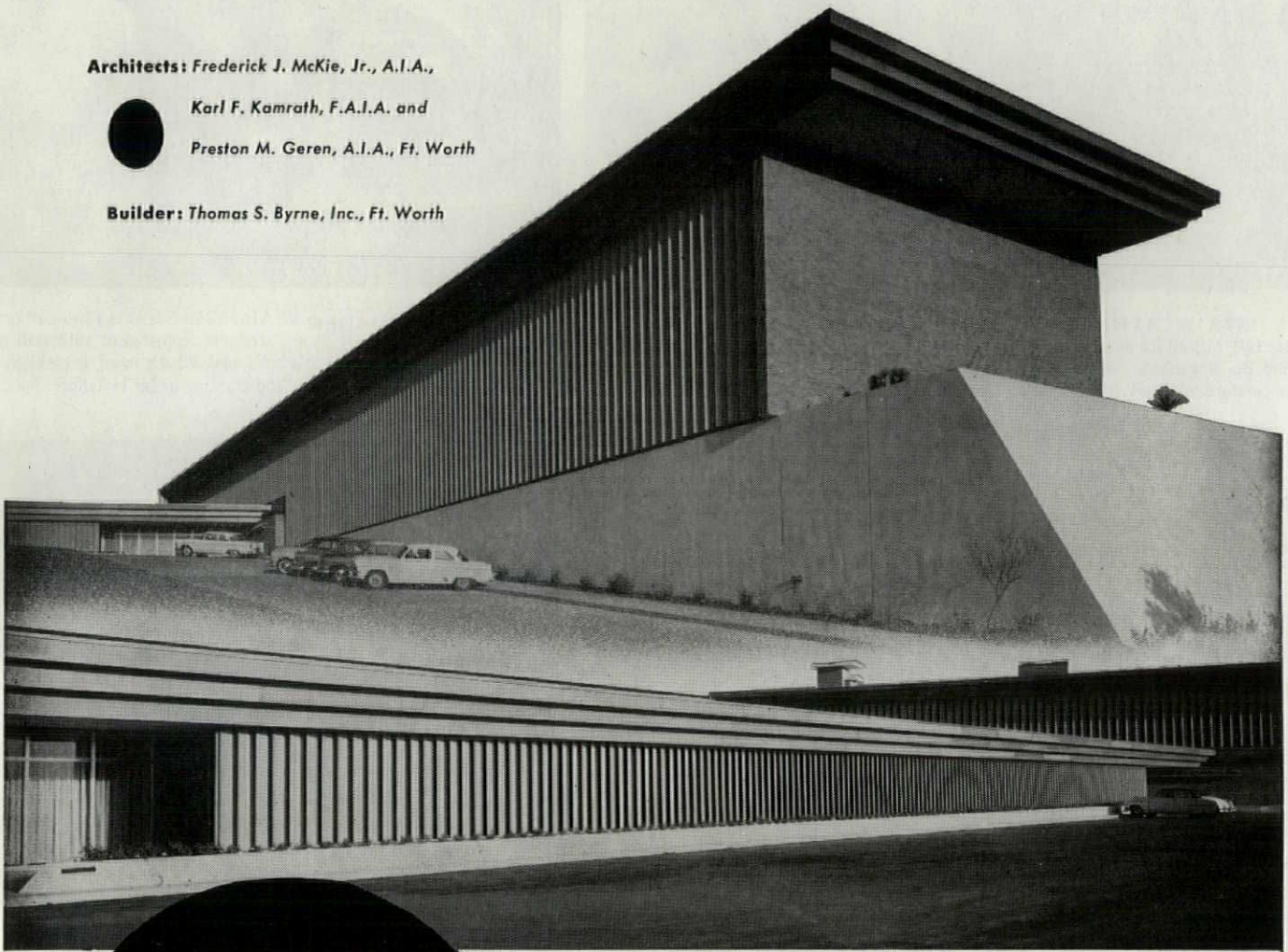
Name_____

Firm_____

Address_____

Architects: *Frederick J. McKie, Jr., A.I.A., Karl F. Kamrath, F.A.I.A. and Preston M. Geren, A.I.A., Ft. Worth*

Builder: *Thomas S. Byrne, Inc., Ft. Worth*



13,580 square feet of air conditioning economy

Glass of this area, "uninsulated" by Solar Control Louvers, would add more than 100 tons to air conditioning needs. Lemlar Louvers are actually cost-free on most modern buildings!

Solar heat is sharply reduced; direct sunlight and skyglare are eliminated; diffused light is distributed evenly throughout the rooms of the new Commercial Standard Insurance Company offices in Ft. Worth, Texas. All five runs of LEMLAR Solar Control Louvers are adjusted with Electric Operators and Solar-time Controls for *automatic* savings.

SOLAR CONTROL

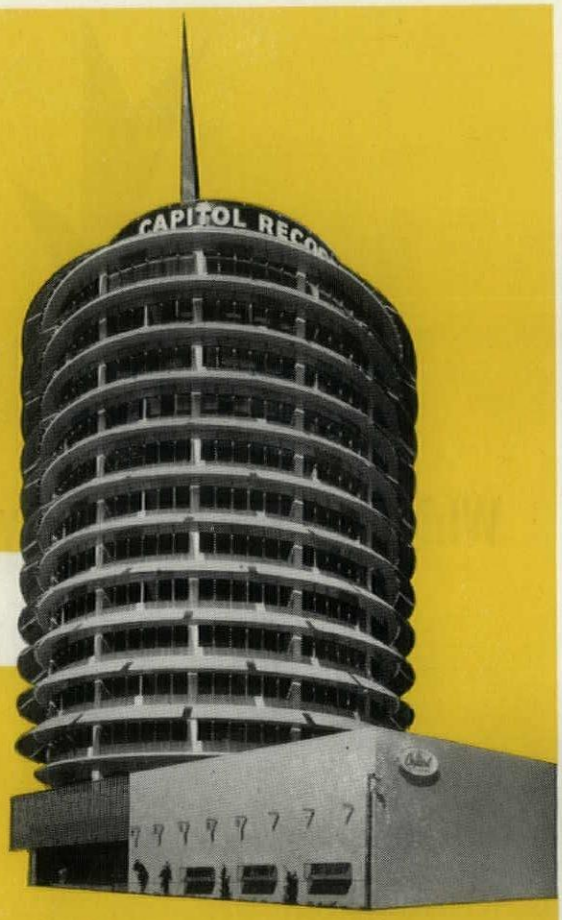
LEMLAR LOUVERS

LEMLAR MANUFACTURING CO. P. O. Box P 3

Write for specific data on Solar Control Louvers and air conditioning economies. Sun charts, plotting daily and seasonal elevations and azimuth angles, are also available for any site.

See Sweet's: Architectural File, 19e/Le; Industrial File, 7f/Le

Within steps of world-famous "Hollywood and Vine" is a striking new Pacific Coast landmark . . . Capitol Records' revolutionary $2,000,000 circular office building . . . another outstanding example of design flexibility made possible with reinforced concrete. The structure, composed of a *reinforced concrete* cylinder thirteen stories in height and ninety feet in diameter, rises above a rectangular one-story base. This unique design achieves substantial economies in construction, operation, and maintenance because stairs, elevators, washrooms, and duct shafts are located in the central core.



REINFORCED CONCRETE

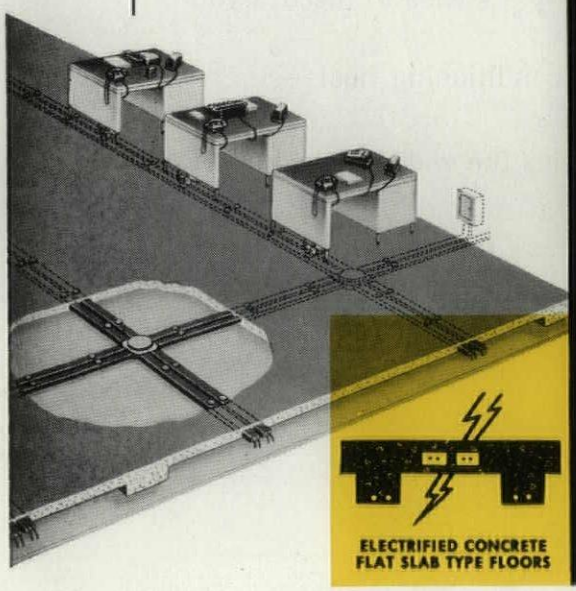
provides clean, functional design for the world's first circular office building

Building	Capitol Records Office Building Hollywood, California
Architect	Welton Becket, F.A.I.A., and Associates Los Angeles, California
Structural Engineer	Murray Erick Los Angeles, California
General Contractor	C. L. Peck Company Los Angeles, California

. . . and R/C DUCT FLOORS (FLAT SLAB TYPE) provide 100% electrical flexibility

For the Capitol Tower, the architects chose a reinforced concrete frame with flat slab type R/C Duct Floors which provide a complete network of underfloor electrical outlets for power, light, telephone, and intercom systems—at a new low cost. Outlets can be connected to convenient risers in a matter of minutes without ripping up or drilling through floors and ducts.

R/C Duct Floors, which meet all building code requirements, consist of *standard* steel electrical distribution ducts set in reinforced concrete joist or slab floors. Cost studies show that R/C Duct Floors average 19% less than cellular steel floors! Before you design your next building, investigate R/C Duct Floors. Write for new 16-page Bulletin.



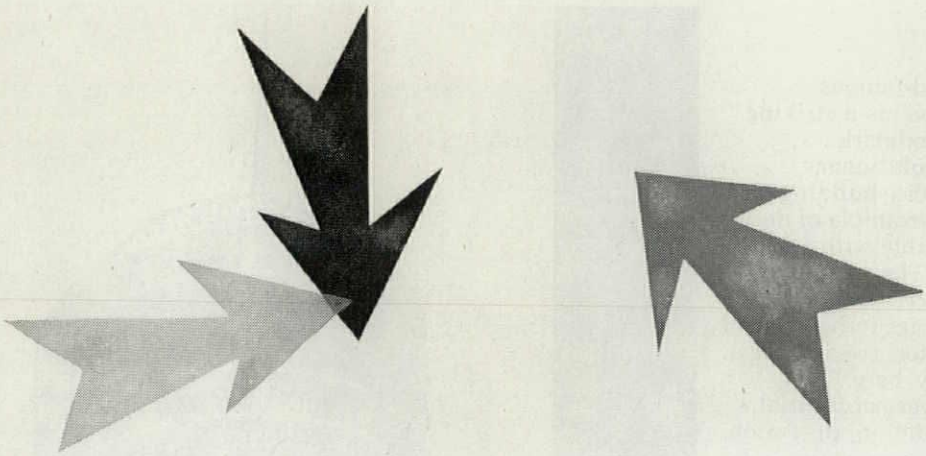
ELECTRIFIED CONCRETE FLAT SLAB TYPE FLOORS

CONCRETE REINFORCING STEEL INSTITUTE

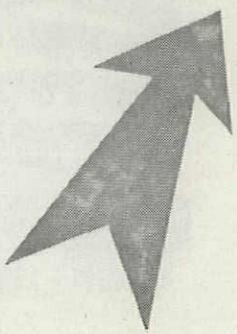
38 South Dearborn Street

Chicago 3, Illinois

CONCRETE REINFORCING STEEL INSTITUTE C.R.S.I. FOUNDED 1924



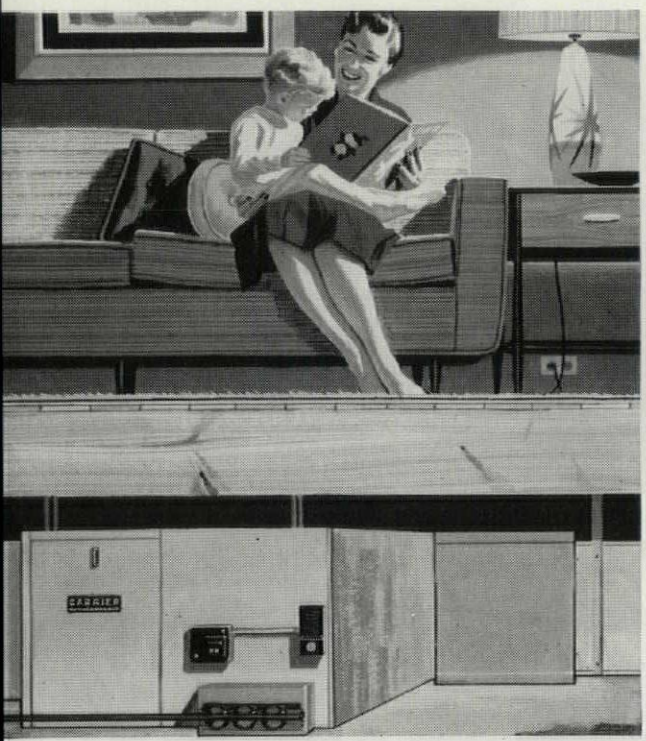
Which is the best way to design an air conditioned house?



There is no one best way to air condition all houses. Each style of architecture, for example, requires its own approach. Some of these are shown at the right. But there are other special problems, too, created by topography, the kind of construction, your own design ingenuity. That's why it's wise to discuss your plans with the man who knows air conditioning best—your Carrier dealer. Because he carries the widest selection of air conditioning equipment in town, his first interest is to recommend the type that serves you best.

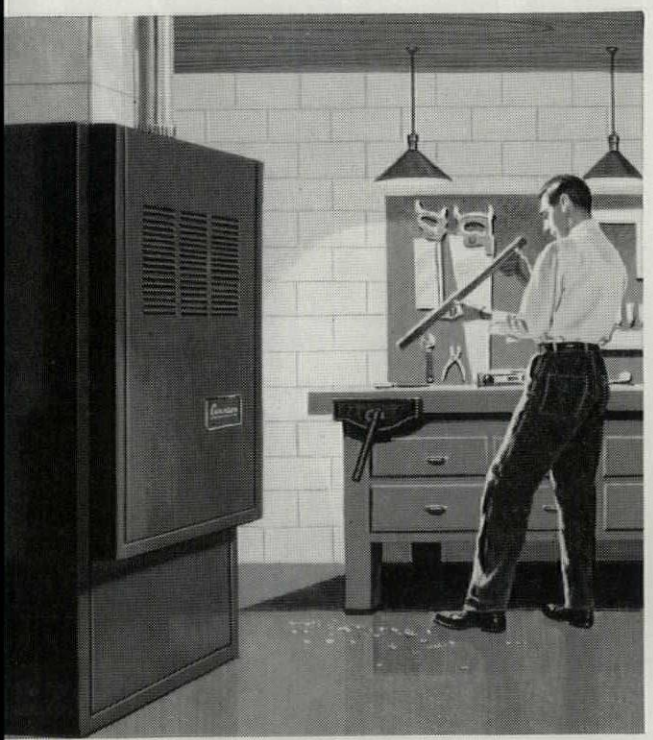
Carrier

It's time to call Carrier. You'll find your Carrier dealer's name in the Classified Directory. Carrier Corporation, Syracuse, New York.



Are your homes ranch type? This horizontal Winter Weathermaker* with Summer Weathermaker alongside uses no space within the house. It fits in the crawl space or attic, and supplies summer cooling and winter heating through the same ductwork. Gas and oil fired models available.

Are your homes split levels? Use an upflow Carrier Winter Weathermaker with a Summer Weathermaker cooling coil on top. This compact combination will occupy little space in the utility room or basement. One simple control regulates winter heating and summer cooling.



Are your homes colonial style? This Carrier Year-round Weathermaker is one good practical answer. Place it in the basement, in a closet or in a utility room. Heating section is gas or oil fired. May be either water or air cooled. Occupies no more space than most furnaces.

Are your homes of contemporary design? Choose the Carrier air conditioning that suits your needs best. This combination, a Carrier Counterflow Winter Weathermaker with a Summer Weathermaker underneath, cools as well as heats. Refrigeration section is located outdoors.

*Reg. U.S. Pat. Off.

Perimeter Insulation—*Wolfe & Gilchrist recommends Styrofoam for perimeter insulation in all their homes. Here Styrofoam is used in Detroit suburb to assure lifetime of warm floors and lower fuel bills.*

only Styrofoam delivers lifetime insulation

. . . *brings unique combination of properties for low-cost installation*

The big swing is on—to insulation made of Styrofoam* (a Dow plastic foam).

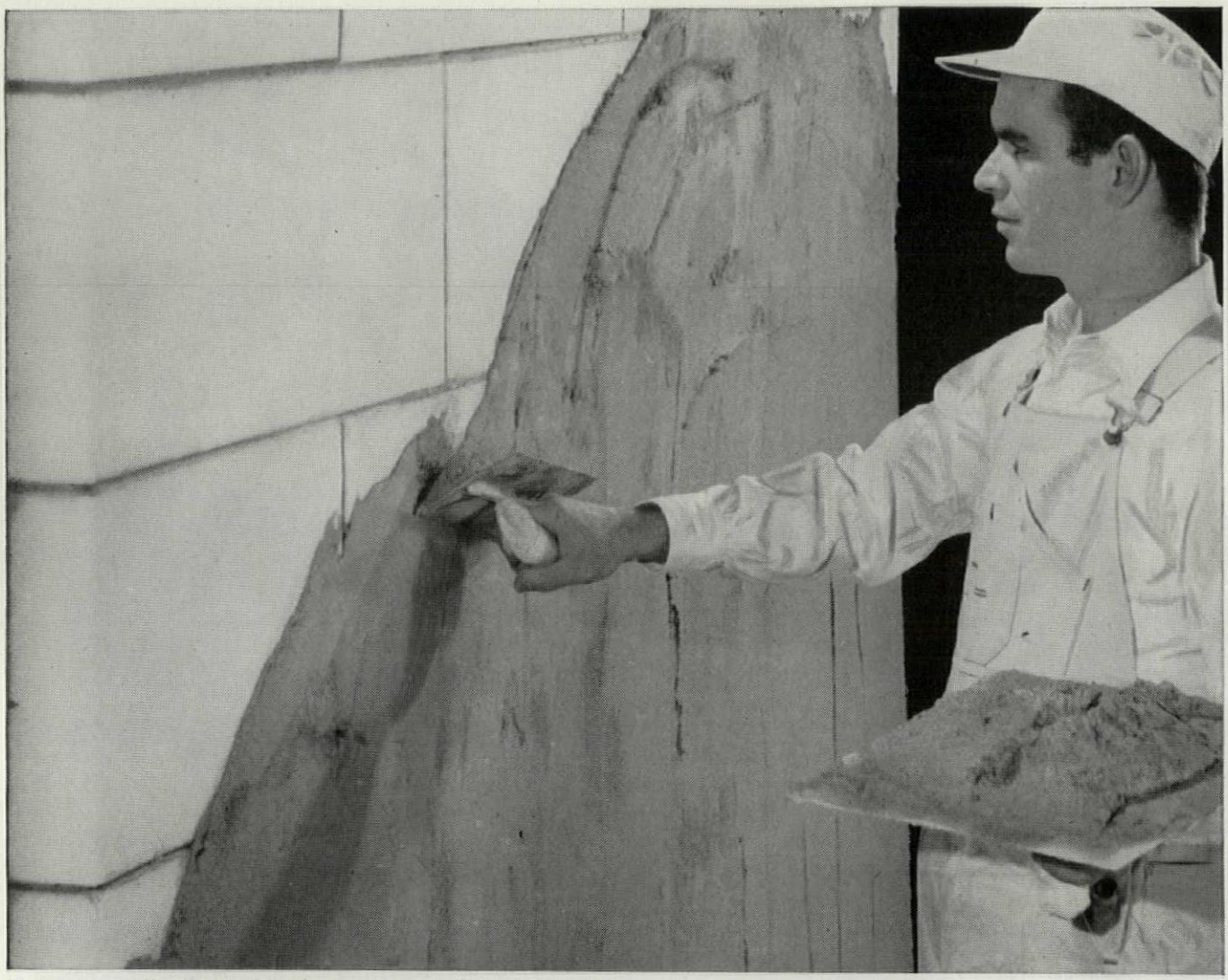
From all over the country, architects and builders report: Styrofoam is a superior, rigid, homogeneous insulation that lasts a lifetime, gives complete satisfaction, and cuts construction costs.

There's good reason, too. Styrofoam is a new kind of insulation, made of expanded polystyrene, with millions of tiny, noninterconnecting air cells that block out heat and cold—as well as water and vapor.

For further information, read the next three pages. THE DOW CHEMICAL COMPANY, Midland, Michigan.

*STYROFOAM IS A REGISTERED TRADEMARK OF THE DOW CHEMICAL COMPANY

YOU CAN DEPEND ON DOW



Plaster keys directly to Styrofoam *without need for furring or lathing. Acts in same capacity as plasterboard but gives added advantages of great strength and high insulation value.*

Styrofoam cuts construction

engineering data

thermal properties

Thermal Conductivity ("K" factor) B.T.U./ft./hr./in./°F.	Average "K" Factor of 0.25 at mean temperature of 40°F.
Linear Thermal Coefficient of Expansion	.00003 to .00004 in./in./°F. between 0°F. and 80°F.
Specific Heat	0.27 B.T.U./lb./°F. at 40°F.
Resistance to heat (Maximum recommended temperature for continuous use)	Styrofoam 22—175°F. Styrofoam 33—155°F.

physical properties

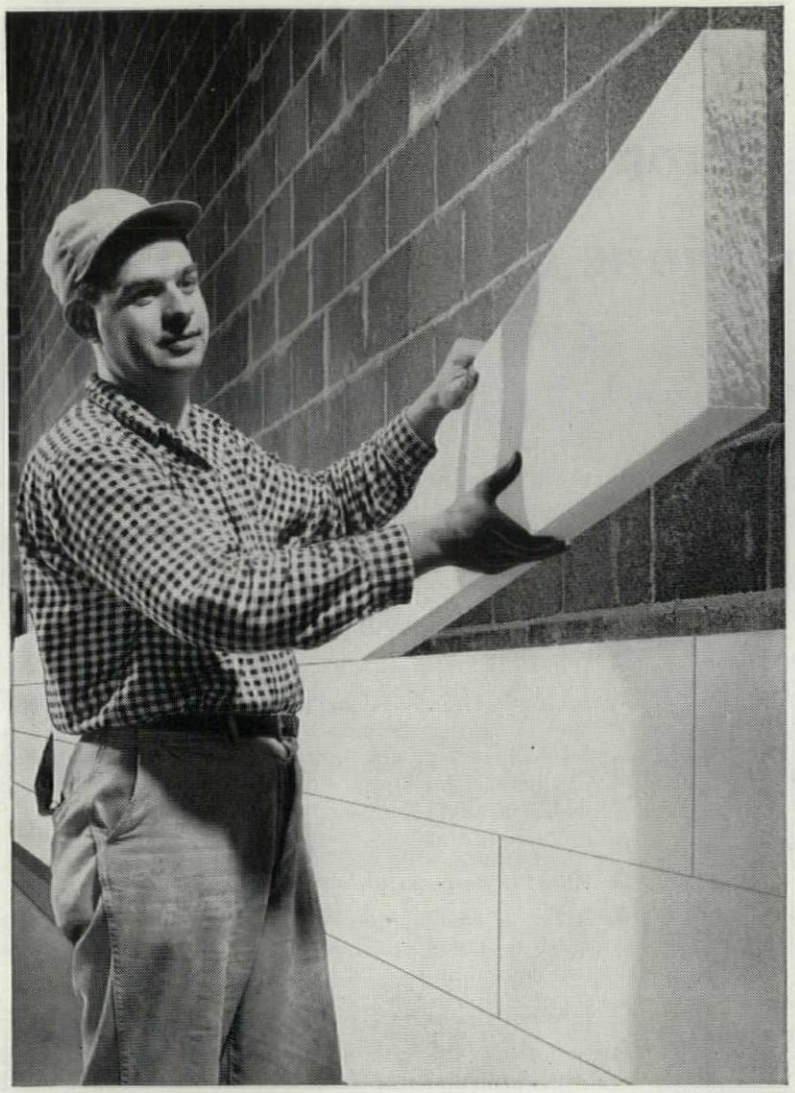
		Styrofoam 22	Styrofoam 33
Density	(lb./cu. ft.)	1.6-2.0	1.7-2.3
Compressive yield strength	(p.s.i.)	16-32	16-38
Tensile strength	(p.s.i.)	45-61	65-95
Shear strength	(p.s.i.)	27-36	30-40
Flexural strength	(p.s.i.)	42-61	48-99
Compressive modulus	(p.s.i.)	1200-1700	1500-2000
Bending modulus	(p.s.i.)	1000-1285	1250-1760
Modulus or rigidity (shear modulus)	(p.s.i.)	700-1600	1000-1300

water resistance properties

Capillarity	None
Water adsorption (when subjected to 90°F., 90% relative humidity for 15 days)	Less than 0.03% by volume
Water adsorption (complete submersion for one week)	Water pickup only on surface cells less than 0.15 lb./sq. ft. of area

vapor transmission

When Styrofoam acts as a barrier between spaces having different atmospheric conditions	1.0-2.0 grains/sq. ft./hr./in. of thickness/in. of Hg vapor pressure difference



Styrofoam adheres readily to masonry. *Portland cement mortar bonds it to masonry easily, quickly, permanently. Assures damp-free, comfortable homes, offices, stores, factories.*

costs *as plaster-base insulation:*

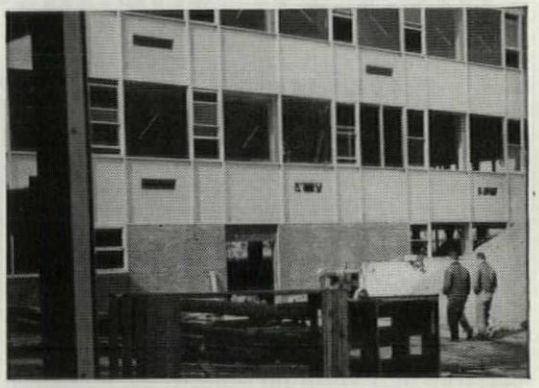
comparative (u) values

wall type	wall thickness	(u) values A*	B*	C*
Brick 4″ face Rest common	8″	.50	.30	.158
	12″	.36	.24	.139
	16″	.28	.20	.123
Concrete	6″	.79	.39	.180
	8″	.70	.36	.175
	10″	.63	.34	.170
	12″	.57	.33	.166
Concrete Block	8″	.56	.32	.164
	12″	.49	.30	.158
Cinder Block	8″	.41	.27	.146
	12″	.38	.25	.142

Where:
*A=plain wall
*B=furred, lathed and plastered wall
*C=1″ thick Styrofoam with plaster direct—no furring or lathing

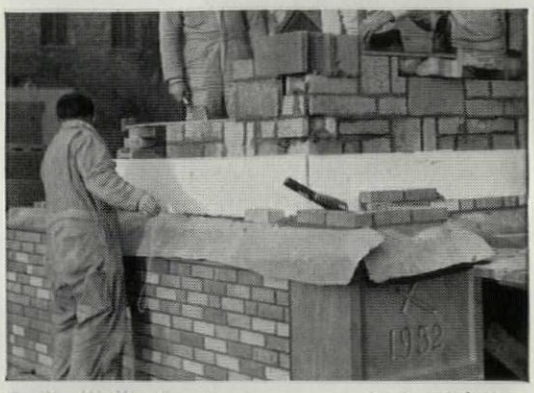
Styrofoam is superior

for many applications



Curtain Walls—*Panels with Styrofoam cores are available from many manufacturers.*

Low-Temperature Pipe Covering and Equipment—*Only Styrofoam offers the right combination of properties.*



Cavity Walls—*Styrofoam proves completely satisfactory as cavity wall insulation for light or heavy construction.*

Perimeter Heating—*Perimeter heating systems operate at maximum efficiency when Styrofoam is used.*

The Dow Chemical Company—first in foam—answers your questions about Styrofoam

Q ***Just how is Styrofoam different from old-fashioned insulation?***

A Styrofoam consists of millions of tiny cells, all uniform, and each completely self-contained, air-tight, preventing passage of water vapor.

Q ***How is Styrofoam made?***

A Polystyrene, a rugged plastic, is expanded forty times under heat and pressure.

Q ***When was Styrofoam first produced commercially?***

A In 1942, The Dow Chemical Company produced plastic foam by expanding polystyrene—the plastic which offers the best combination of characteristics for low-temperature insulation. Immediately, the U.S. Navy began using it as a flotation material.

Q ***Why does Styrofoam have high compressive strength?***

A Because of its unique cellular structure. That's why Styrofoam can be used for self-supporting walls or have concrete floors poured over it. It will support 3,000 lbs. per square foot.

Q ***Is it true that one man can pick up a whole pile of Styrofoam boards?***

A Yes. A board foot weighs only 2.4 ounces. One workman can easily carry 100 bd. ft.

Q ***Why can't water penetrate Styrofoam?***

A The noninterconnecting cellular structure permits water only on the open cut surface cells.

Q ***How is it for thermal conductivity?***

A Tests show the low thermal conductivity of Styrofoam cannot be matched by any other insulation with comparable properties. The average "K" factor is 0.25 B.T.U./ft./hr./in./°F. and it stays low since there is no water pickup.

Q ***How can Styrofoam last a lifetime?***

A This homogeneous Dow plastic foam resists rot, mold and deterioration. Styrofoam has no odor, no food value—it does not attract rodents or vermin. And water cannot penetrate it. Result: consistent, uniform insulation for the life of the structure.

Q ***What kind of tools does it take to install Styrofoam?***

A Only ordinary woodworking tools are required to cut and shape it to fit any application. It is *nonirritating* to the skin and is not brittle. Cannot flake or dust. It's an easily installed insulation.

Q ***Where is Styrofoam used?***

A In 1946, The Dow Chemical Company, first in foam, offered their production to the industrial refrigeration field where only the best is good enough. With new production facilities, Styrofoam has now become widely available to users in a broad number of significant applications.

Q ***What is its most unique feature?***

A It has a combination of essential properties vital to good insulation including lack of water adsorption and constantly low "K" factor.

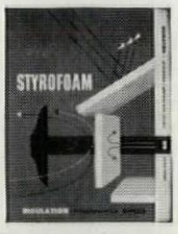
Q ***In what sizes can I get it?***

A Styrofoam is available for immediate shipment in 3-ft., 8-ft., and 9-ft. lengths, 12-in. and 16-in. widths and comes in thicknesses of 1, 1½, 2, 2½, 3, 4 inches.

Q ***Where can I get it?***

A At your local building supply dealer's. He can order from his Styrofoam distributor.

FREE BROCHURE OF CONSTRUCTION DETAIL DRAWINGS



Learn how the Styrofoam combination of properties can be turned to your profit. Address: THE DOW CHEMICAL COMPANY, *Midland, Michigan—Plastics Sales Department PL 1739Z.*

For further information, contact your nearest distributor: CALIFORNIA, Colma: Western Foam Products, Inc. • CALIFORNIA, Los Angeles 13: Pacific Foam Products Company • FLORIDA, Tampa: The Soule Company • GEORGIA, Atlanta 8: Badham Sales Company • ILLINOIS, Chicago 11: The Putnam Organization, Inc. • KANSAS, Kansas City: Styro Products, Inc. • MASSACHUSETTS, Ipswich: Atlantic Foam Products Company • MICHIGAN, Detroit: Par-Foam, Incorporated • MICHIGAN, Midland: Floral Foam Products • MINNESOTA, Minneapolis 8: Edward Sales Corporation • MONTANA, Billings: Madden Construction Supply Company • NEW YORK, Rochester 20: William Summerhays Sons Corp. • NEW YORK, Long Island City 1: Styro Sales Company, Inc. • OHIO, Cincinnati: The Seward Sales Corporation • OHIO, Cleveland 13: Structural Foams, Inc. • PENNSYLVANIA, Plymouth Meeting: G & W H Corson, Incorporated • TEXAS, Houston: The Emerson Company • UTAH, Salt Lake City 10: Utah Lumber Company • WASHINGTON, Seattle 9: Wiley-Bayley Inc. • WISCONSIN, Milwaukee: S & S Sales Corporation • CANADA, Kitchener, Ontario: Durofoam Insulation, Ltd. Or write THE DOW CHEMICAL COMPANY, Midland, Michigan—Plastics Sales Department PL 1739Z.

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A scrub-up sink that's easy to keep sterile. *Made of Crane exclusive Duraclay. Medicines, acids, corrosive solutions or even excessive rubbing with abrasions won't mar the gleaming surface. Designed so surgeon can scrub to shoulder without touching unsterile parts. Photograph above shows installation in Chatham County Memorial Hospital, Savannah, Georgia.* ***Architect:*** *Abreu & Robeson, Atlanta, Georgia.* ***General Contractor:*** *The Jordon Company, Columbus, Georgia.* ***Plumbing Contractor:*** *Seckinger Sons Company, Inc., Atlanta, Georgia.*

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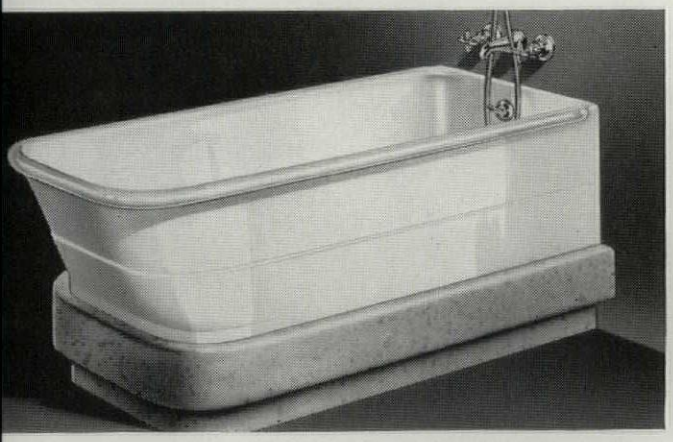
hospital people helped design!

How would you go about designing specialized hospital plumbing fixtures? Well, Crane went right to the source—to doctors, medical technicians, hospital management people and hospital architects.

Part of the result you see here—hospital fixtures designed specifically for hospitals and for hospitals only—*not just adaptations of residential fixtures.*

The larger fixtures are made of the exclusive Crane Duraclay—a vitreous glazed earthenware that has been adopted by thousands of hospitals during the past 15 years. Duraclay will not crack or craze, even under extreme thermal shock. It will not corrode or change color; resists abrasion, acid and stains. And, Crane offers a most complete line of fixtures for ALL hospital plumbing requirements.

Why not talk to your hospital clients about Crane? You'll find that they agree with your preference for Crane hospital fixtures.



Hygiene Pier Pattern Bath for Patients' Wards. *Deeper than ordinary bathtubs. Accessible from three sides—or four in case of free-standing fixture. Makes it easy for nurse to wash patient. Made of famous Duraclay. Available with thermostatic mixer, mercury thermometer, shampoo fitting. Base not included.*

Cornell Service Sink for everyday use. *A general utility disposal sink commonly used on the operating floor, nursing and obstetrical departments. Flushing action is similar to that of a water closet. Base is not included.*

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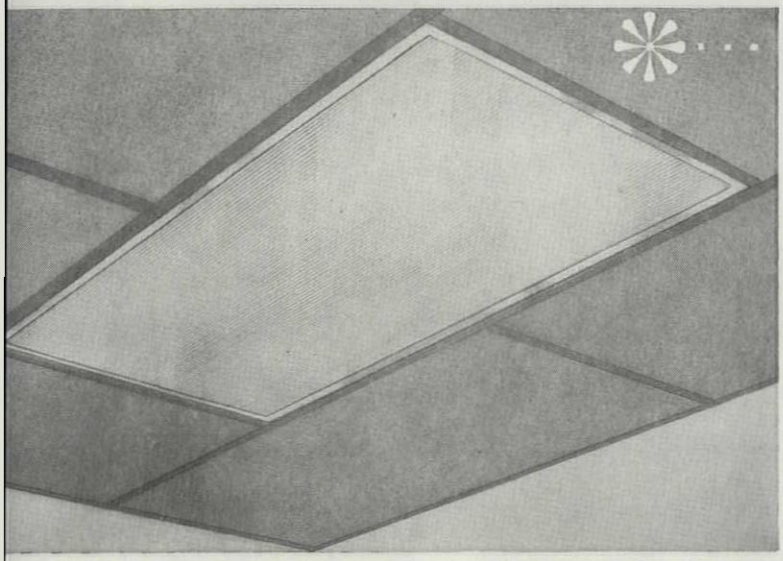
When you put his knowledge of lighting to work for you, your ideas turn into reality! His experience enables him to translate architectural concepts into effective lighting results. You can have confidence in his judgement because he knows how to adapt the flexibility of Smithcraft's line of lighting units into time-saving, economical solutions to lighting problems. Call him in to consult with you or your lighting engineers on any job on your boards . . . you'll find he knows blueprints and budgets as well as he knows lighting!



. . . the 24" wide troffer from *Smithcraft*

Extremely versatile, architecturally integrated recessed lighting, Smithcraft two-foot wide troffers permit wide freedom in the creation of interesting and functional lighting patterns. They present a modern, trim, clean appearance free from light leaks or blemishes and with no visible catches, hinges, or screws. In glass or plastic-shielded units, a clean expanse of shielding is uninterrupted by cross-braces. Doors open or close with simple upwards pressure (patented) and simply lift off for maintenance. In louvered units, louvers are held by Smithcraft's patented Duo-Cam hangers. Louvers hinge from either side and are removed without tools or loose parts.

Smithcraft two-foot wide troffers are adaptable to today's most common ceilings. They are fast, easy and economical to install. There is a wide variety of shielding media available including Steel louvers (providing 30° x 30° shielding), Plastic louvers (42° x 42° shielding), Albalite glass, Corning Pattern #70 glass, Ribbed glass, Polycraft Plastic Dish and Acrylic Plastic.

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Smithcraft 2'-wide Metro Troffers provide 75 footcandles of extremely even illumination throughout Beerman's Department Store, Dayton, Ohio. Metro Troffers are lay-in troffers for inverted "T" Grid ceiling systems.

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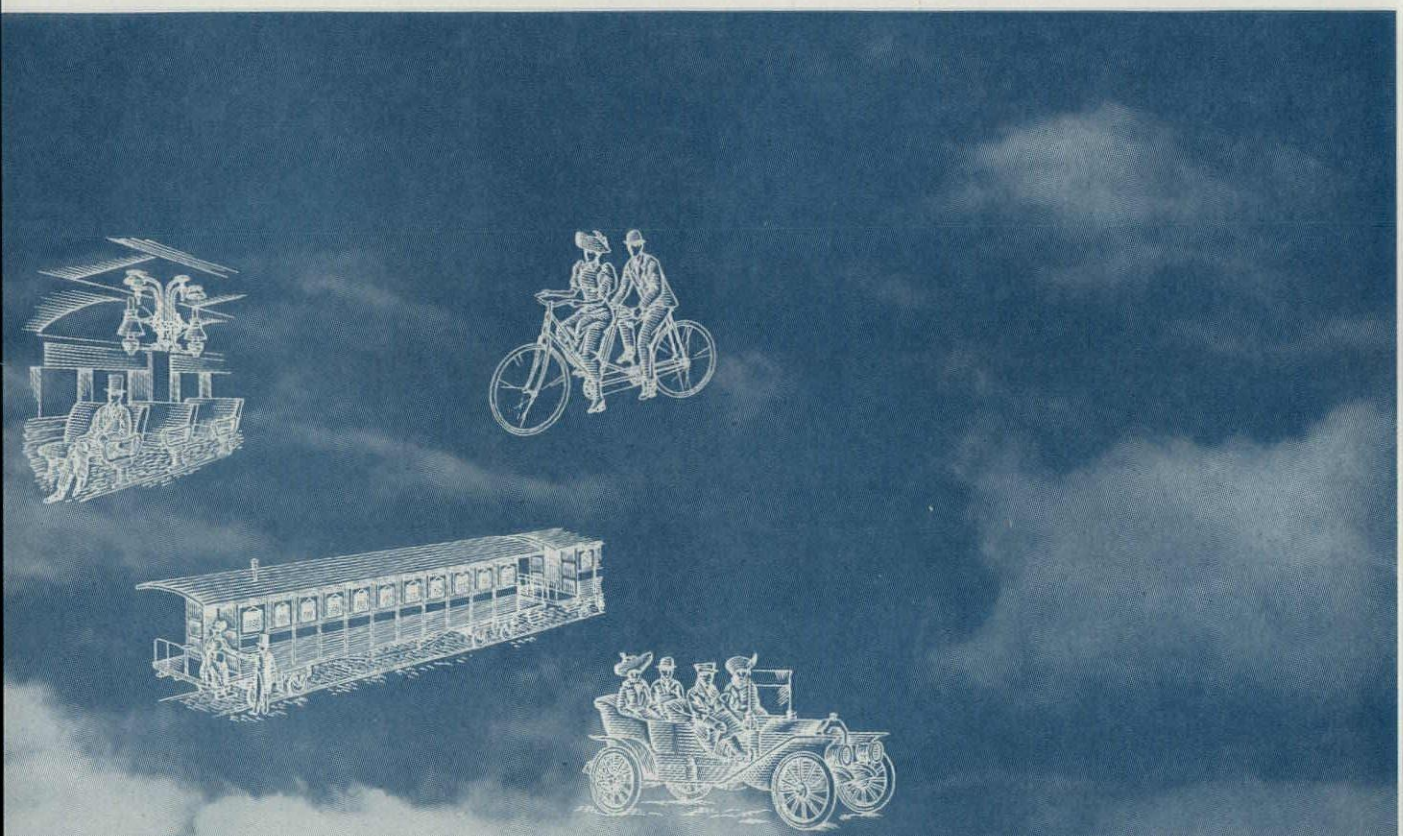

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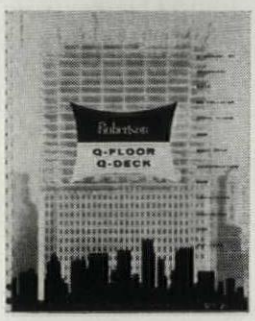
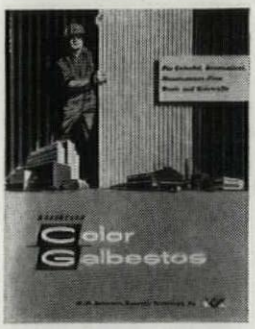


1.
New Composite Q-Floor—Q-Deck Catalog:

Catalog contains technical data on all phases of cellular steel floor and roof deck construction. Structural details and specifications are more complete than ever before.

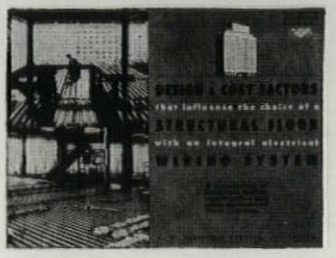


2.
Color Galbestos:

Complete details and specifications on this maintenance-free roofing and siding now available in colors. Catalog shows the four new colors in addition to the standard black and maroon.

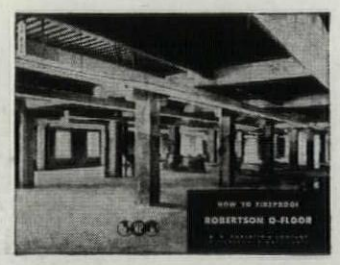
3.
Ventilation Engineering Booklet:

More than a ventilator catalog, this booklet contains tables of exhaust capacities, based upon average wind velocities, temperature differences and height above intake. Use the coupon below.



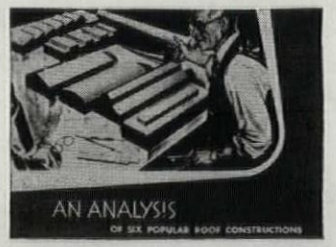
4.
Design and Cost Factors

This book compares Q-Floor with other types. Based upon a typical multi-story building, the study is replete with charts and cost analyses of all structural components.



5.
How to Fireproof Q-Floor and Structural Steel

This is a description of fireproofing methods when Q-Floor is used with structural steel framing. It contains detailed drawings, typical code requirements and fire resistive ratings.



6.
An Analysis of Industrial Roof Construction

All the better-known roof types (flat, monitor, bow-string, double-pitch, high-low bay, saw tooth) are compared on the basis of weight of structural steel, volume, roofing, sash area, flashing, ventilation and daylighting.

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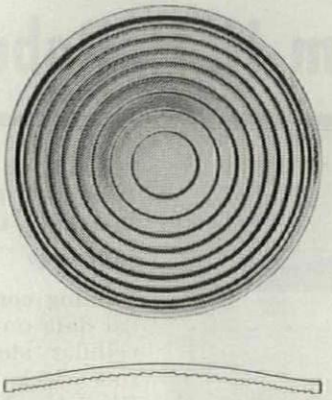
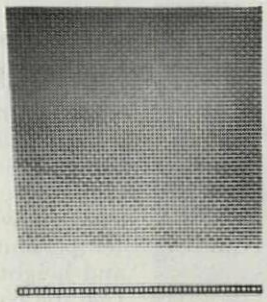
These represent just a few of the many Corning glasses specially designed for engineered lighting applications.

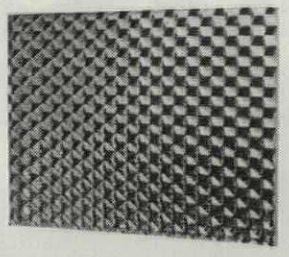


For high efficiency, uniform, general lighting with incandescent lamps, Corning PYREX Concave Lenslites are recommended. Made of a PYREX brand glass, they provide freedom from breakage even in outdoor service with high wattage bulbs. Designed on the Fresnel principle, they give exceptionally even light distribution over a wide area.

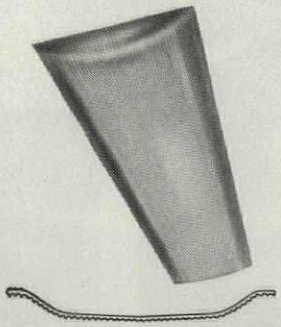


Corning Fota-Lite combines the easy-to-clean, easy-to-handle advantage of a smooth, static-free sheet of glass with the control that louvers afford. The effect is of crystal-clear cells separated by white opal louvers. Available with vertical louver pattern for 45° cutoff, and with 30° slanted louvers for offset beam lighting.

possible light with Engineered Lighting



For uniform, efficient light distribution with low surface brightness, specify Corning Pattern No. 70 Low-Brightness Lens Panels. Optically correct 6-sided pyramids distribute the light in all directions.



For diffused light in the working area with reduced brightness contrast between ceiling and fixture, specify Corning Curved Alba-Lite Panels. Made of a light opal glass the curved panels afford complete diffusion, excellent brightness control free of color distortion, with a part of the light delivered above the horizontal for reduction of contrast in the ceiling area adjacent to the fixture.

Your client's offices, his people, his goods . . . all are in their best possible light . . . when you utilize the principles of engineered lighting in designing his lighting installations.

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As the transmitting and control medium, glass determines the intensity of the light, its direction, its color-revealing fidelity, its comfort. As a part of the lighting fixture, glass also determines the fixture's attractiveness, its ability to fit into the decorative scheme . . . and its ease of maintenance and cleaning.

Corning's laboratories are continually at work to develop more applications for lighting glassware, new glasses, and new methods of controlling light with glass. The experience gained here is available to you at any time—at any stage of an installation—through Corning's staff of lighting consultants.

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Send, now, for your copy of Corning's new "Application Guide for Commercial Lighting Glassware." It will help you in selecting the lighting glassware that meets your specific application requirements for offices, schools, banks, public buildings, stores, displays, hospitals. Write, wire, or phone Lighting Sales Department, Corning Glass Works, Corning, New York.

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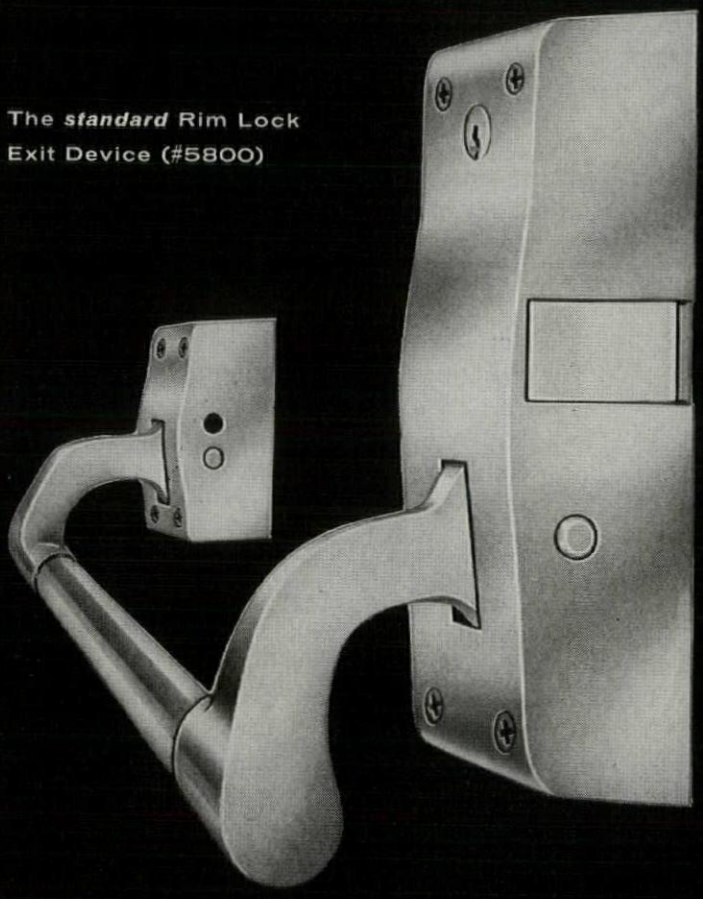
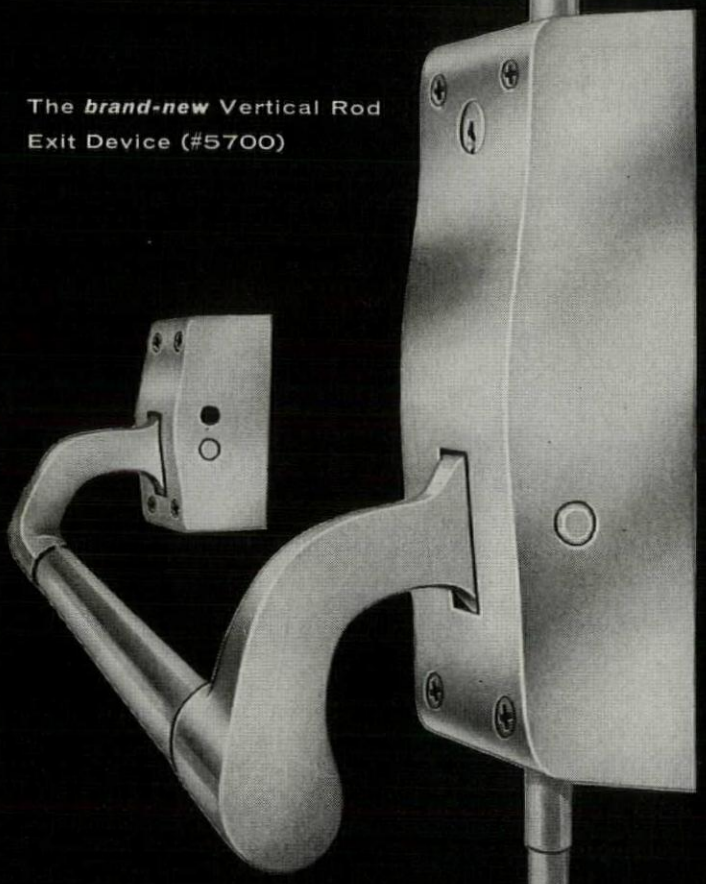
Corning means research in Glass

Sargent's new line of

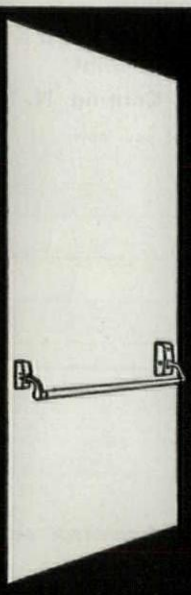
The ***standard*** Rim Lock
Exit Device (#5800)



The ***brand-new*** Vertical Rod
Exit Device (#5700)



These designs conform to the following federal specifications:
Rim Bolts 810H, 810; Mortise Bolts 820H, 820; Vertical Rod 821.



Single door with
Sargent's simple,
sturdy Rim Lock
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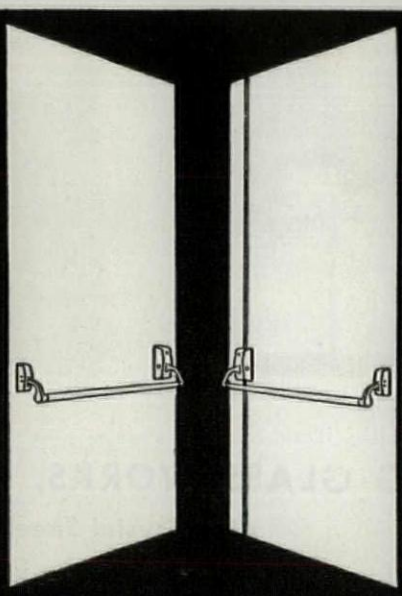


Free-swinging Sargent
Vertical Rod and
Mortise combination
for double doors

EXIT DEVICES

The ***brand-new*** Mortise Lock Exit Device (#5900)

Now you can plan safer quick-exit doors for any building... with all these Sargent designs...

2 all-new designs . . . the *Vertical Rod Exit Device* with simpler, surer gravity action . . . the *Mortise Lock Exit Device* with fast, precise anti-friction design . . . both *new* for *you* from Sargent!

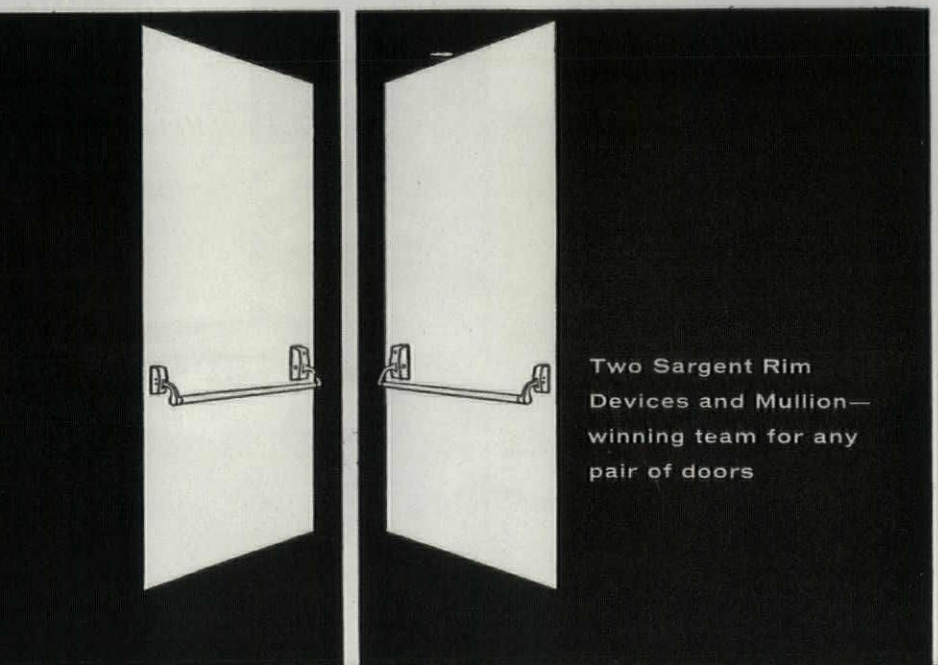
These . . . plus the popular *Rim Lock Exit Device* with only *two* moving parts . . . help make Sargent the most complete, up-to-the-minute line of exit devices anywhere!

Open and close at the lightest touch— no other exit device works easier... smoother... faster!

Rugged, long-lasting construction . . . with stainless steel springs and pivot pins. Flawlessly designed cases . . . never any finger pinching.

Whatever your requirements— specify these exit devices—alone or in combination—for unequalled efficiency and economy. They have 5 smart outside-handle styles. And they readily harmonize with other Sargent hardware.

Choose from bronze, brass, or chrome. Order through your supplier or write direct. The reasonable cost will please you. *Sargent & Company, New Haven 9, Conn., Dept. 15-C.*



Two Sargent Rim Devices and Mullion— winning team for any pair of doors

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Home
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Architect:
Herbert L. Smith
A.I.A.
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Norfolk, Virginia

Virginia architect's home built with Insulite Roof Deck is 10° cooler in summer

Although it does not have air conditioning, this handsome beam-ceilinged home designed for himself by Architect Herbert L. Smith III, A.I.A., Norfolk, Virginia, is often 10 degrees cooler in summer than older homes nearby.

Credit for this built-in comfort goes to Insulite Roof Deck—a 3-in-1 material combining decking, insulation and finished, prepainted ceiling. With Insulite Roof Deck, no roof boards, no added insulation, no plastering or painting are needed.

Yet the comfort, beauty and character of Insulite Roof Deck are not expensive. For a 90-home project at Virginia Beach, Architect Smith has designed very striking $15,000 homes with similar open-beam ceilings. On these, builder Frank Whitehurst, Jr. reports that Roof Deck saves him more than $400 per home.

In warmest and coldest climates, Insulite Roof Deck is now being specified in homes priced from $10,000 to $100,000 . . . in schools, churches, auditoriums . . . and in many types of commercial buildings. Want more information? Write us—Insulite, Minneapolis 2, Minnesota.

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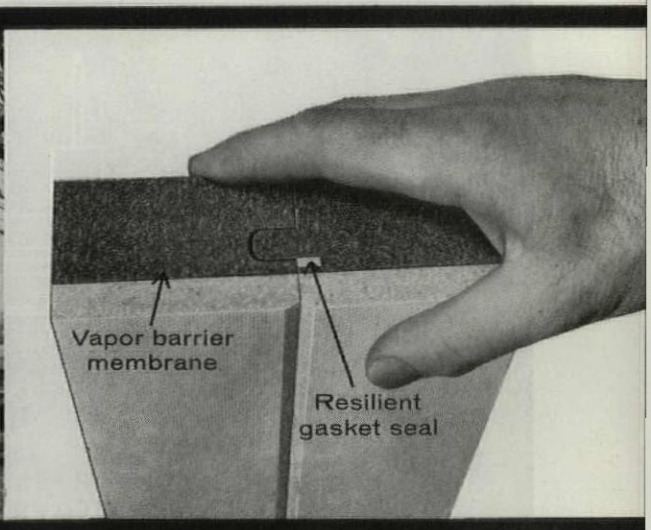
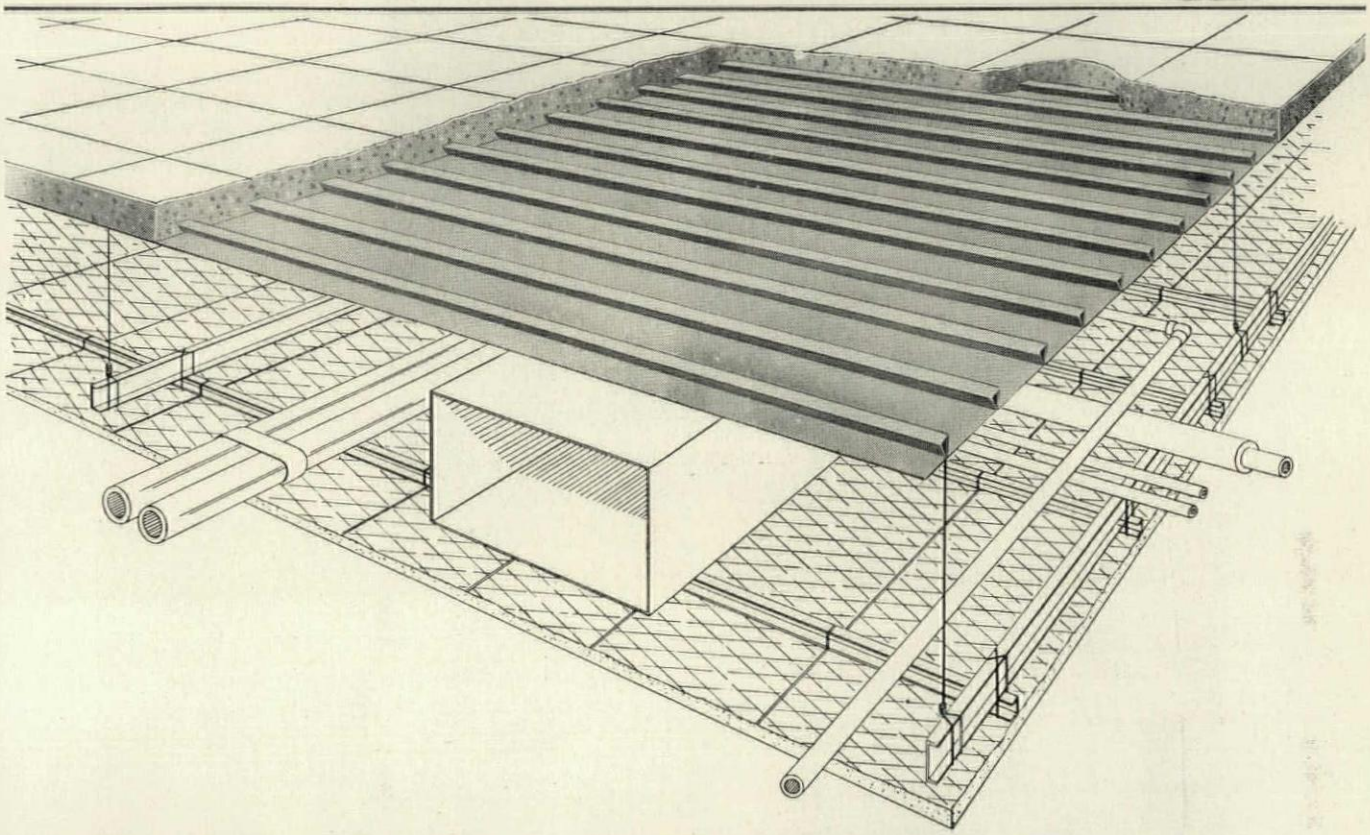


Three bedrooms, a living-dining room, kitchen, family room, 2½ baths and garage are included in Architect Smith's attractive home. All rooms except one bath and a corridor have open-beam ceilings. Roof is 2" Insulite Roof Deck, on beams made of double 2"x8"s with bottom closure.

Easy-handling 2'x8' panels of Insulite Roof Deck are fabricated as shown in cross section at right above. Tongue-and-groove joints on long edges make snug fit. Ceiling surface, including bevels, is prepainted. Made 1½, 2 and 3 inches thick, with vapor barrier available in 2 and 3-inch sizes.

New *Fenestra* design idea for hospital corridors



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Holorib Reinforcing Floor Forms span corridors without intermediate beams . . . provide large area, unobstructed plenum chambers for services.

Modern hospital mechanical requirements often create structural problems for architects and engineers. Fenestra* Galvanized Holorib Reinforcing Floor Forms spanning the corridors can simplify your detailing and make construction easier.

This unique product eliminates bar joists or intermediate beams on spans up to 10 feet—ideal for corridors. It provides an unobstructed plenum chamber for services. A floor slab only 3 inches thick will carry 120 pounds per square foot live load on a 10-foot span.

Galvanized Holorib Reinforcing Floor Forms function as *both permanent incombustible formwork and reinforcing steel*—replacing rods—for concrete slab construction in either structural steel, frame or reinforced concrete buildings. No shoring is required for 8-foot spans and shoring at mid-span only for longer spans and deeper slabs.

In addition to this specialized application, there are many other advantages in using Fenestra Galvanized Holorib Reinforcing Floor Forms for concrete slab construction in all kinds of buildings. Your Fenestra Representative will be happy to give you complete engineering data for your designs. Call him today—listed in the Yellow Pages—or mail the coupon below. *Trademark

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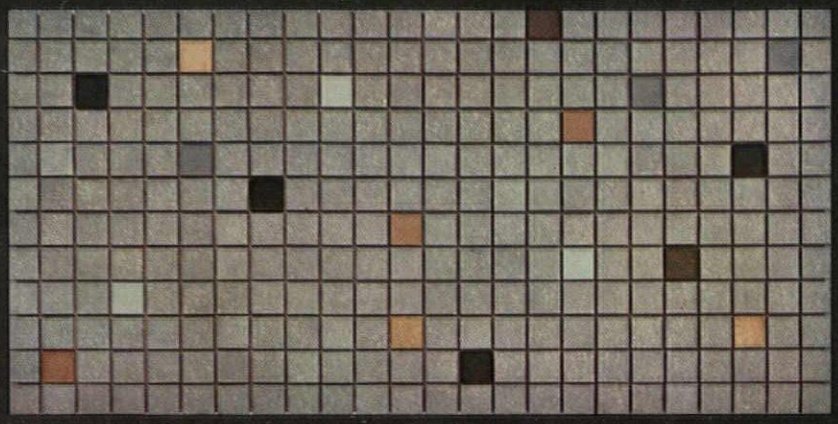
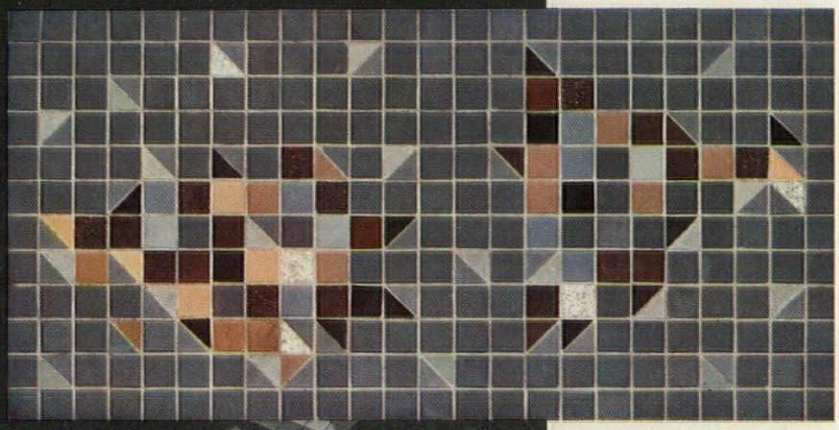


◀ Spivak Suntile Design No. 14 (Static Buc
Field color: 131 Birch

Max Spivak designs in *Suntile* ceramics



▲ Spivak No. 9 (Tropical Fish)
Field color: 271 Turquoise

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FULL COLOR RA

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

Please send me:

☐ *Folder showing Suntile patterns by Spivak in full color.*

☐ *New Suntile catalog giving data o full line.*

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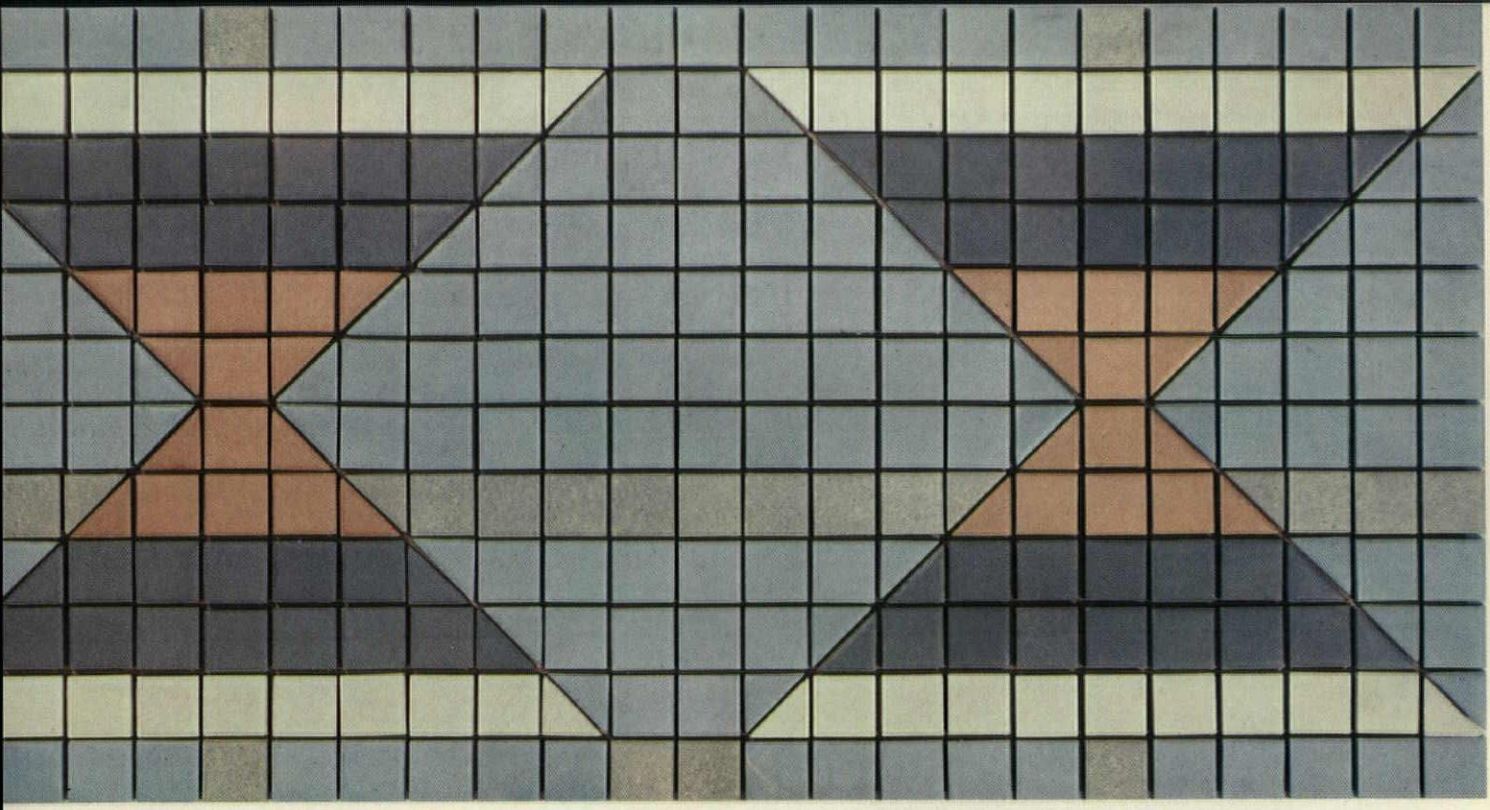

Spivak No. 8 Hour Glass *(ungrouted)*
Field color: 253 Light Dresden Blue

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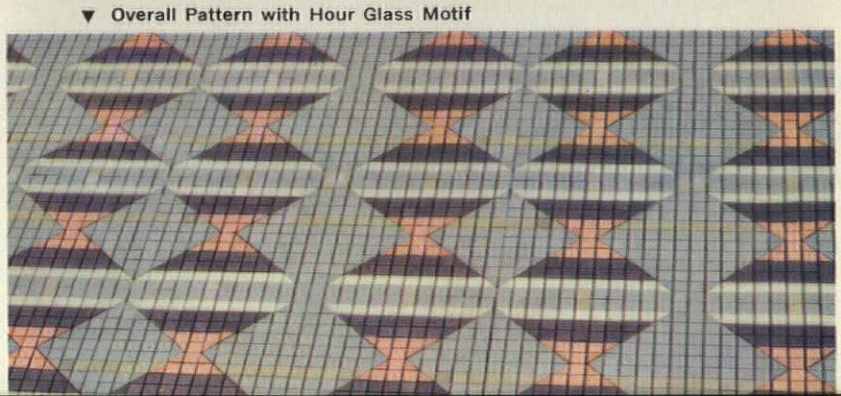
r guaranteed installation, call your Authord Suntile Dealer. His name is listed in the llow pages of your phone book.

▼ Hour Glass Motif with Field color of 253 Light Dresden Blue

▼ Hour Glass Stripe with Spivak No. 14 Birch (Static Buckshot) and Spivak No. 16 White Granite (Static Buckshot)

▼ Overall Pattern with Hour Glass Motif



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

THE CAMBRIDGE TILE MFG. CO.

P.O. Box 71, Cincinnati 15, Ohio

Mr. Knott (right) at the location of his Riverview Homes project in southwest Baltimore, Md., with Earl Schultz, Sr., Construction Superintendent.

"Concealed telephone wiring helps us sell homes"

—says Mr. Henry J. Knott, President, Home Builders Association of Maryland

"We believe that concealed telephone wiring is a strong sales feature," says Mr. Knott, "and its importance is growing every day as home buyers learn to ask for it.

"Concealed telephone wiring itself is a salable item that pleases customers. But it is more than that. Because it helps preserve the interior beauty of a house, it makes the house as a whole more salable. In the Home Builders Association of Maryland, we recommend concealed telephone wiring to all our members."

The progressive Home Builders Association of Maryland has a growing membership of 490 members. Last year in Baltimore City, and in Baltimore and Anne Arundel Counties, they built more than 14,000 homes. Trend-minded builders in the Association, and many others across the country, are convinced of the increasing value of concealed telephone wiring as a quality sales feature.

* * *

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

Working together to bring people together

BELL TELEPHONE SYSTEM

IN COMMERCIAL
WATER HEATING
there is

One leader

Burkay®

a product of

Through research A.O. Smith *... a better way*

A.O.Smith
CORPORATION

PERMAGLAS DIVISION • KANKAKEE, ILL.
International Division, Milwaukee 1, Wisconsin

See Sweet's
ARCHITECTURAL FILE
for
Complete Data

makers of famous **Permaglas**® *glass-lined water heaters...* **Permaglas**® *heating and cooling*

(Continued from page 16)

the engineer—a modern dilemma

BURCHARD: The engineer is dedicated to the application of useful knowledge. He may regret that the elimination of time as a factor of travel is destroying the indigenous, leveling everything to an average; he may worry lest rapid travel around the world lead to superficiality. But it is reasonable to look on all these technical wonders as progress, when looked on purely as *exercises in engineering*. Here is where it may be dangerous to disregard the overwhelming protests of the poets, painters, sculptors, and novelists which have been made in increasing volume over the last 50 years. It is not merely the conventional bellow of the technologically unemployed. It is more nearly the expression of hypersensitive people to their surroundings. The city does not seem to them a *better* city; the words that go over the wires do not appear to them to be *wiser and finer* words; they are not impressed by a future society in which no man, or only a few men, have to do any serious amount of physical labor, but have found nothing better worth doing.

leisure time

BURCHARD: What is a society to be like in which the time one works, in theory, is small but the time one works, in practice, is large because the world is filled with people laboring at manual hobbies, seeking the primitive retreat, the axe and the log, doing all the things that once *had* to be done but now calling it *play* because the work they actually have to do deprives them of any chance for self-satisfaction. Is it enough to provide everyone with *more power, longer life,* and incipiently *more leisure?*

engineers wanted; not wanted

BURCHARD: We live in a world, at least in our country where the great concern is never expressed in a shortage of poets or painters, but we are always talking about the shortage of engineers. What manner of men do we want these creative people to be of whom we steadily say we want more and more? Do our engineers have, in fact, the status in the community accorded to the doctor, lawyer, minister, or perhaps even to the successful businessman? Or are we talking about a group more feared than admired, paid well because they are needed but wanted only for rather specific talents and otherwise regarded as the drones of society? Will this status cause them

(Continued on page 238)

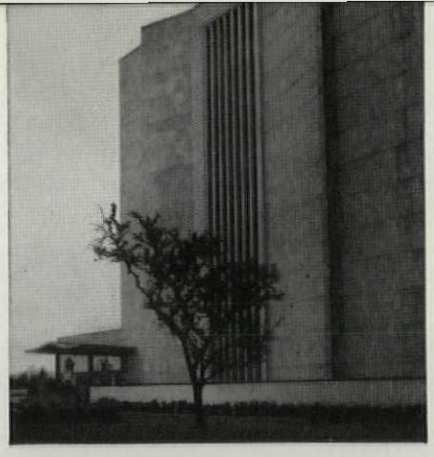
MODERN DOOR CONTROL BY *LCN* · THE NEW "SMOOTHEE" DOOR CLOSER

AN EXPOSED TYPE CLOSER FOR INTERIOR DOORS OF WOOD OR METAL

Officially Nos. 4002, 4003 and 4004

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Application Details on Opposite Page



United Services Automobile Association office building, San Antonio, Texas. Architects: Phelps & Dewees & Simmons, San Antonio; Atlee B. & Robert M. Ayres, San Antonio; Mechanical engineer: Gerard M. Baker, San Antonio; Electrical engineer: Beretta, Greenslade, Clark & Collins, San Antonio; Prime contractor: Henry C. Beck Construction Co., Dallas; Mechanical contractor: A. J. Monier Company, San Antonio.

The right atmosphere calls for quality air conditioning "custom" controlled

WHEN YOUR clients plan to build—or modernize—they're sure to want year-round air conditioning—and complete, coordinated *control.*

For the right atmosphere can help assure improved working efficiency and health of their employees, and customer good will.

The right atmosphere calls for quality heating, ventilating and cooling, planned for the specific needs of their business and individual spaces of the building.

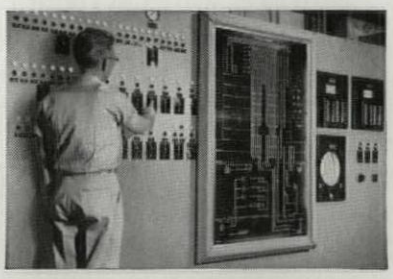
And it calls for a carefully-planned Honeywell control system, *customized* to the building. A good example on both counts is the new home office of the United Services Automobile Association in San Antonio.

Here the Honeywell installation provides individual office temperature control with a thermostat in each office to meet individual preferences. And in each of the building's working spaces strategically-placed thermostats assure comfort no matter what the activity.

Your clients need Honeywell *custom* control to protect their investment in air conditioning equipment, for without quality control, no system will operate as it should—effectively, economically.

To learn how Honeywell custom control can help bring the right atmosphere to any building, new or existing, call your local Honeywell office. Or write Honeywell Dept. PA-3-104, Minneapolis 8, Minnesota.

Master Control Panel Drastically Cuts Operating Costs



Central supervision of year-round indoor environment in the United Services Automobile Association building is provided by this Supervisory DataCenter control panel. By coordinating and centralizing all controls, it allows one man at one location to supervise comfort throughout the building, and to monitor and control operating equipment in the air conditioning system. It adds efficiency, prevents expensive equipment breakdowns and reduces demands on maintenance personnel's time. In this manner the Supervisory DataCenter does much to cut the cost of air conditioning, and at the same time to make it more effective. Only Honeywell has the experience and the complete control line to provide an installation that so effectively ties in all types of control, so well adapts to any building.

The Honeywell Round...
World's Most Popular Thermostat

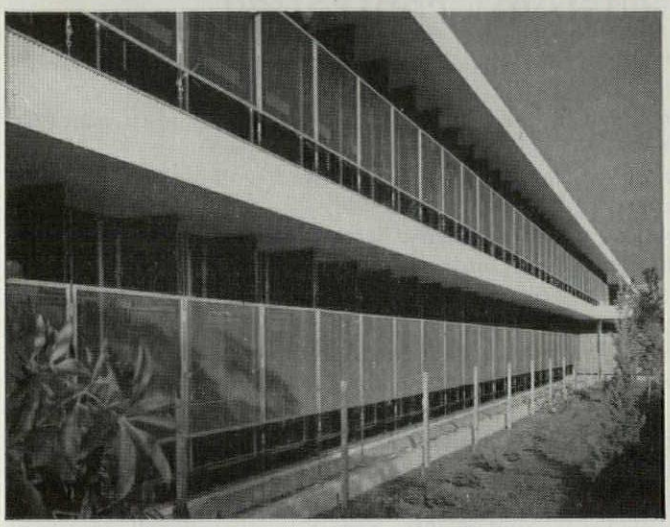
MINNEAPOLIS
Honeywell

Air Conditioning Controls

***Individual thermostats** in large rooms, like the executive suite reception area shown at left, maintain comfortable temperatures at all times, provide the right atmosphere for cordial customer relations. And in the private offices adjoining the reception area, individual office thermostats give occupants finger-tip control of the comfort level they prefer.*

A continuing series of outstanding office buildings, churches, schools, hospitals and industrial structures using NORTON DOOR CLOSERS.

Entrance side of administration building...note novel expanded metal "sunshade."



Roof overhang and panels of louvered screen reduce sun glare on south side.

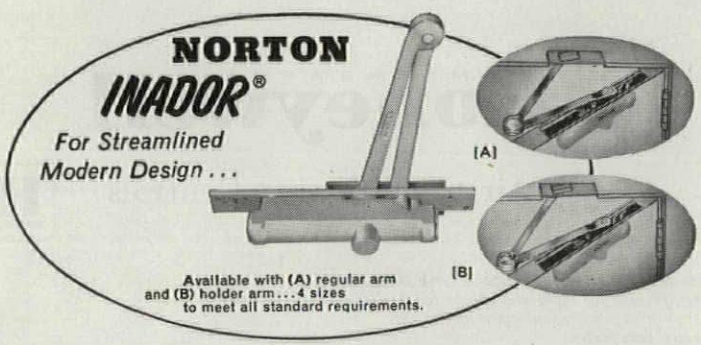
15' Canopy held by structural planting trellises shades cafeteria entrance.

MODERN IN DESIGN...MODERN IN DOOR CLOSERS
NORTON INADORS® Installed in New Lockheed Headquarters

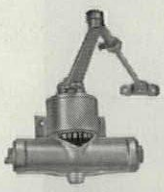
Matching the modern airplane in its dramatic clean-lined simplicity the new administration building of Lockheed Aircraft Service, Inc. at Ontario, California, incorporates many new concepts of design not common in the industrial field.

In complete harmony with these innovations are the Norton INADOR Door Closers used on interior doors. Their compact but powerful mechanism is fully concealed in a mortise in the top rail of each door so there is no compromise with harmony of design. They are, moreover, true liquid-type closers with all the reliability, low maintenance and precision workmanship which the name NORTON always implies.

Current catalog gives complete, illustrated data on all Norton models. Write for it today if you don't already have one.



A complete line of Norton Surface-type Closers is available for installations where concealment is not essential.



NORTON®
DOOR CLOSERS
Dept. PA-37 • Berrien Springs, Michigan

Porcelain enamel fired on steel at 1550°

Weis *Vitre-Steel* compartments are porcelain enameled inside and out for a lifetime of beauty and utility. Exposed surfaces are then refired in your choice of Weis *Vitre-Steel* colors. Glass hard, AA Grade, acid-resisting *Vitre-Steel* withstands not only normal everyday usage, but is highly resistant to acids, cleaning compounds and even defacement. Perfect for hospitals, schools, offices, factories . . . wherever you install them. Available in ceiling-hung type as shown, or floor-braced styles.

SPECIFICATIONS: Panels, stiles and doors shall be flush construction, and shall be made of two face plates of not less than 18-gauge enameling iron with formed edges, cemented under pressure to fiberboard core and joined by welding abutting edges at suitable intervals. Edges shall be bound with die-drawn stainless steel moldings interlocked under tension onto formed edges, mitered and welded at corners and welds ground smooth. Partitions and doors shall finish 1″ thick; stiles shall finish 1¼″ thick.

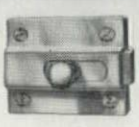
All surfaces, concealed and exposed, shall receive a vitreous porcelain enamel ground coat. All exposed surfaces shall then be given a cover coat, in a color selected from the Weis color chart of decorator colors.

Doors shall be hung on WEIS gravity hinges with upper hinge mounted in recess in edge of door. Doors shall be fitted with slide bar latch, combination keeper and bumper and coat hook with rubber-tipped bumper, all to be brass, chromium plated. Latches and coat hooks shall be attached with theft-resistant screws.

WEIS

WRITE FOR NEW COMPLETE CATALOG

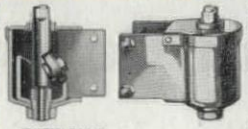
HENRY WEIS MANUFACTURING COMPANY, INC.
367 Weisteel Building, Elkhart, Indiana


SLIDE BAR LATCH

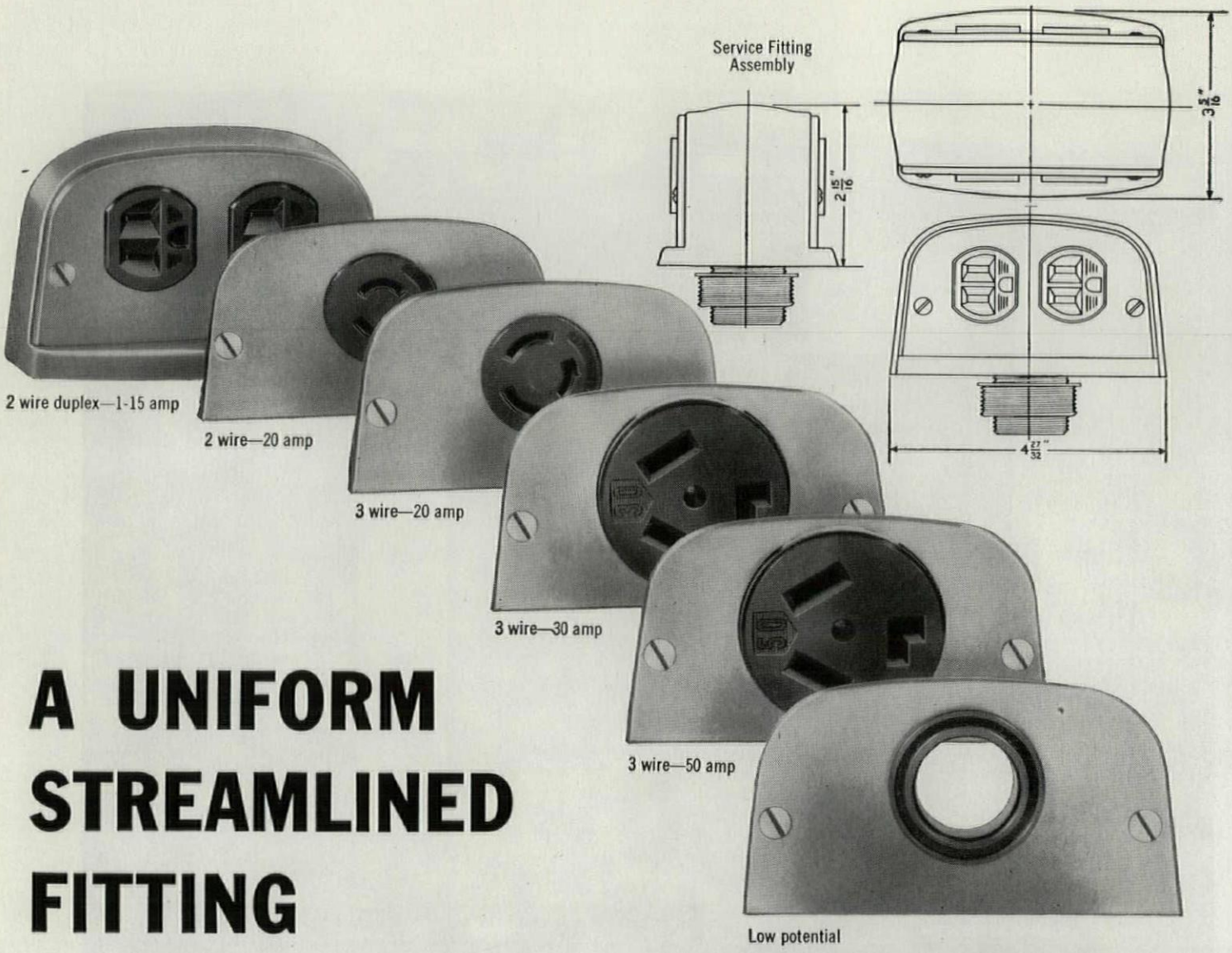

COMBINATION KEEPER AND BUMPER


COMBINATION COAT HOOK AND BUMPER


CUTOUT TYPE TOP DOOR HINGE


CUTAWAY

UNIVERSAL BALL BEARING GRAVITY TYPE BOTTOM DOOR HINGE



A UNIFORM STREAMLINED FITTING

for almost every service requirement

National Electric's complete line of Service Fittings for installation with underfloor electrical distribution provides uniformity of outlets in the finished installation. Every unit can be quickly installed even where the height of the fitting is restricted to less than 3″ by modern desks or other free-standing equipment.

All housings are made up of bright, smooth, die-cast aluminum that presents an attractive, modern appearance. Nepco Service Fittings have a shock-resistant, one-piece housing that cuts installation time and simplifies replacement inventory because the housing is designed to accommodate cover plates for a wide range of services. They are designed to be interchangeable with National Electric's underfloor duct systems and with concrete floor boxes.

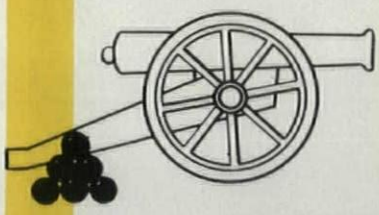
When your plans call for reinforced concrete floor construction, make sure you include a National Electric Nepcoduct underfloor electrical raceway system and NE Service Fittings.

A single, double, or triple duct system, National Electric Nepcoduct provides separate, easily accessible underfloor wiring facilities for light and power, signal circuits, communication and telephone.

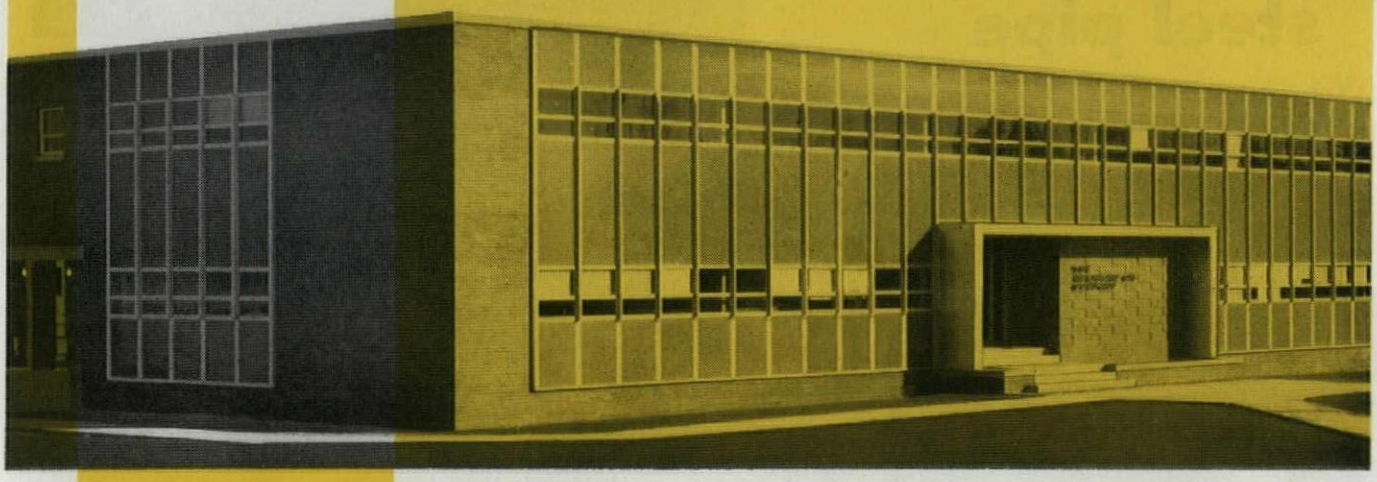
National Electric Products

PITTSBURGH, PA.

2 Plants • 11 Warehouses • 35 Sales Offices



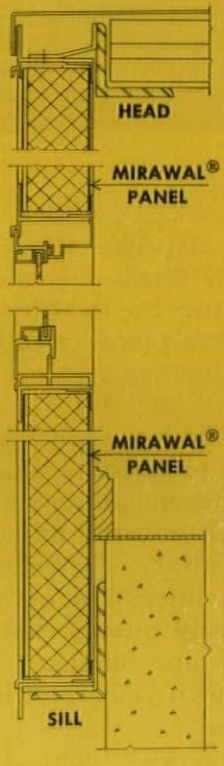
SURRENDER AT YORKTOWN ●



Old style walls surrender to modern

BROWN & GRIST WINDOW WALLS

at AMOCO's *new Yorktown refinery**



Where America won its freedom, the American Oil Company just added a new administration building to its huge oil refinery. AMOCO asked for a modern efficient building to blend with the rest of the plant. The architects chose Brown & Grist Aluminum Window Walls for the job.

These handsome window walls offer almost unlimited freedom of design and materials. A long sweeping front of two-story Brown & Grist walls gives the AMOCO building a clean modern line. Mirawal® panels of Dormitory Gray supplement the refinery's color scheme.

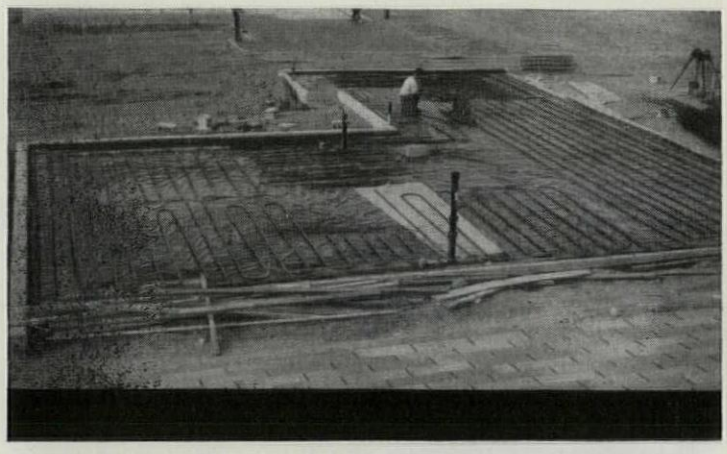
Two story high panel units went up easily and rapidly. Installation cost was low. Maintenance is almost eliminated.

Such advantages of this new type wall construction are *yours* with savings in time, labor and materials. Brown & Grist engineers will work closely with you to meet your own specifications. Write or wire for full details today.

See Sweet's Vol. 17a/Br and 3a/Br

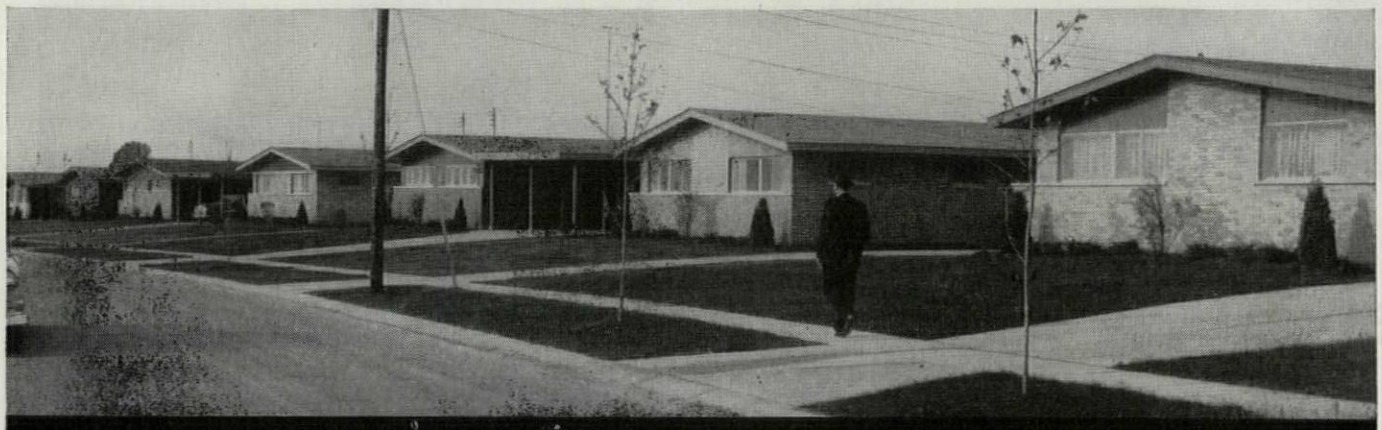
BROWN & GRIST, INC.
25 Tyler Ave. Warwick, Va. Phone 8-1559

**Administration Bldg.—American Oil Co., Yorktown, Va., Williams, Coile & Blanchard—Architects*



Youngstown steel pipe

. . . Gives Long, Maintenance-Free Life to Radiant Heating Installations



Youngstown Steel Pipe was installed by National Heating Co. in this 60-unit development of Modern Builders, Inc., both of Cincinnati, Ohio.

Specify Youngstown and secure these 7 Points of uniform goodness

uniform ductility	uniform wall thickness and size
uniform lengths	uniform strength and toughness
uniform threading	
uniform weldability	

uniform roundness and straightness

Modern residential developments—like this 60-unit project off Cincinnati's Winton Road—demand only the most modern heating facilities. So, to afford these new homeowners warm, draft-free rooms of equalized temperatures, invisible radiant heating systems utilizing Youngstown Steel Pipe were installed.

For years Youngstown Steel Pipe has been specified by leading architects as well as progressive plumbing and heating contractors for its dependability and long life. That's because it's made of only the finest steel by steelmen with over half-a-century of steelmaking knowhow. All Youngstown operations from ore mining to finish threading are closely quality-controlled to give you the best piece of pipe obtainable anywhere. Why not make Youngstown your specification for long, trouble-free installations?

For additional information or service, contact your local Youngstown distributor—or phone our nearest District Sales Office, today.

QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices - Youngstown 1, Ohio

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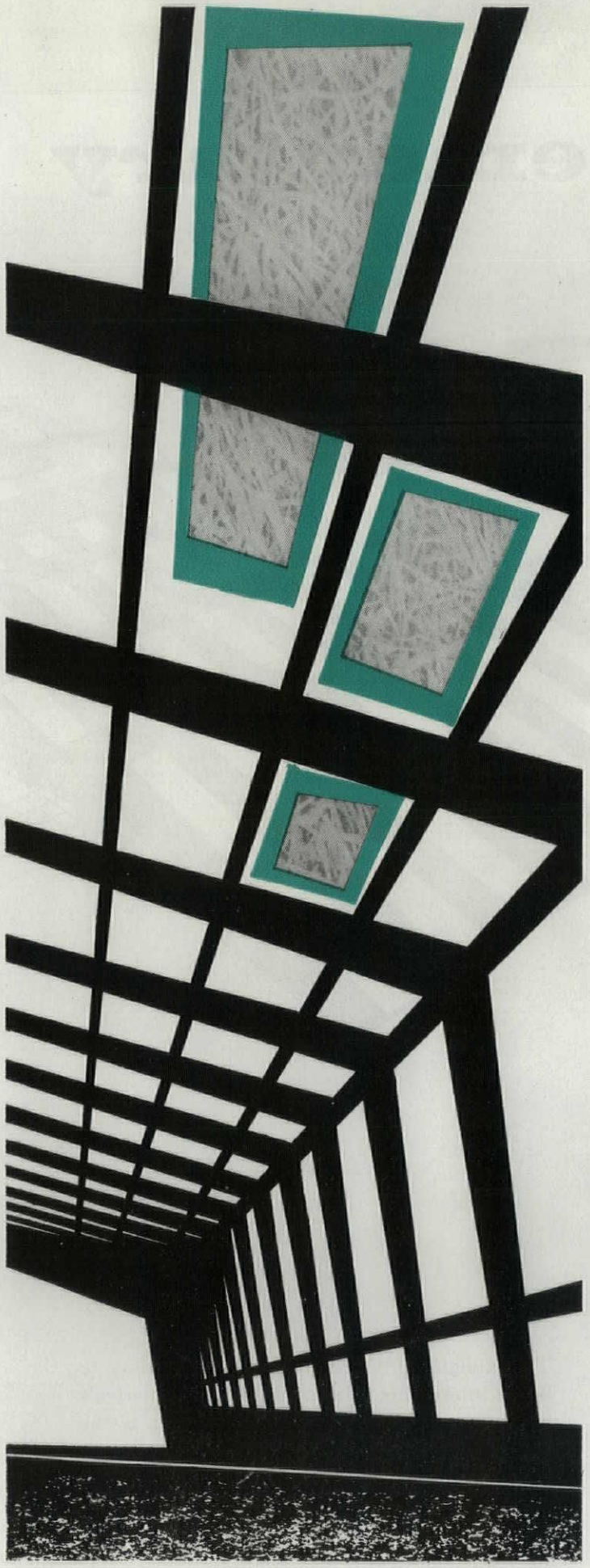

Finished acoustical ceilings FREE when your roof decks are

INSULROCK®

You can apply Insulrock Building Slabs easily and economically as roofing deck on wood or steel roof framing. Pre-cut lengths and varying thicknesses speed up every operation. Nails or clips insure permanent fastening.

Try to match these Insulrock advantages:

Durability—Chemically treated, long, strong wood fibers coated with portland cement and pressure-bonded for permanent strength.

Indestructibility—Weather-cured by outside storing, to withstand all types of weather and climate. Resistant to insects and fungi.

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Insulrock

Insulates—thousands of insulating air pockets honeycomb every Insulrock slab.

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Free ceilings, we said. Here is why:

In one operation and one building material, Insulrock provides roof decking, a finished exposed ceiling, year-'round insulation, sound absorption, good looks, and long, tough service.

Use Insulrock for every industrial, commercial, or institutional building that must look modern, stay modern and *wear* modern. Write for free folder of all-purpose, all-weather applications.

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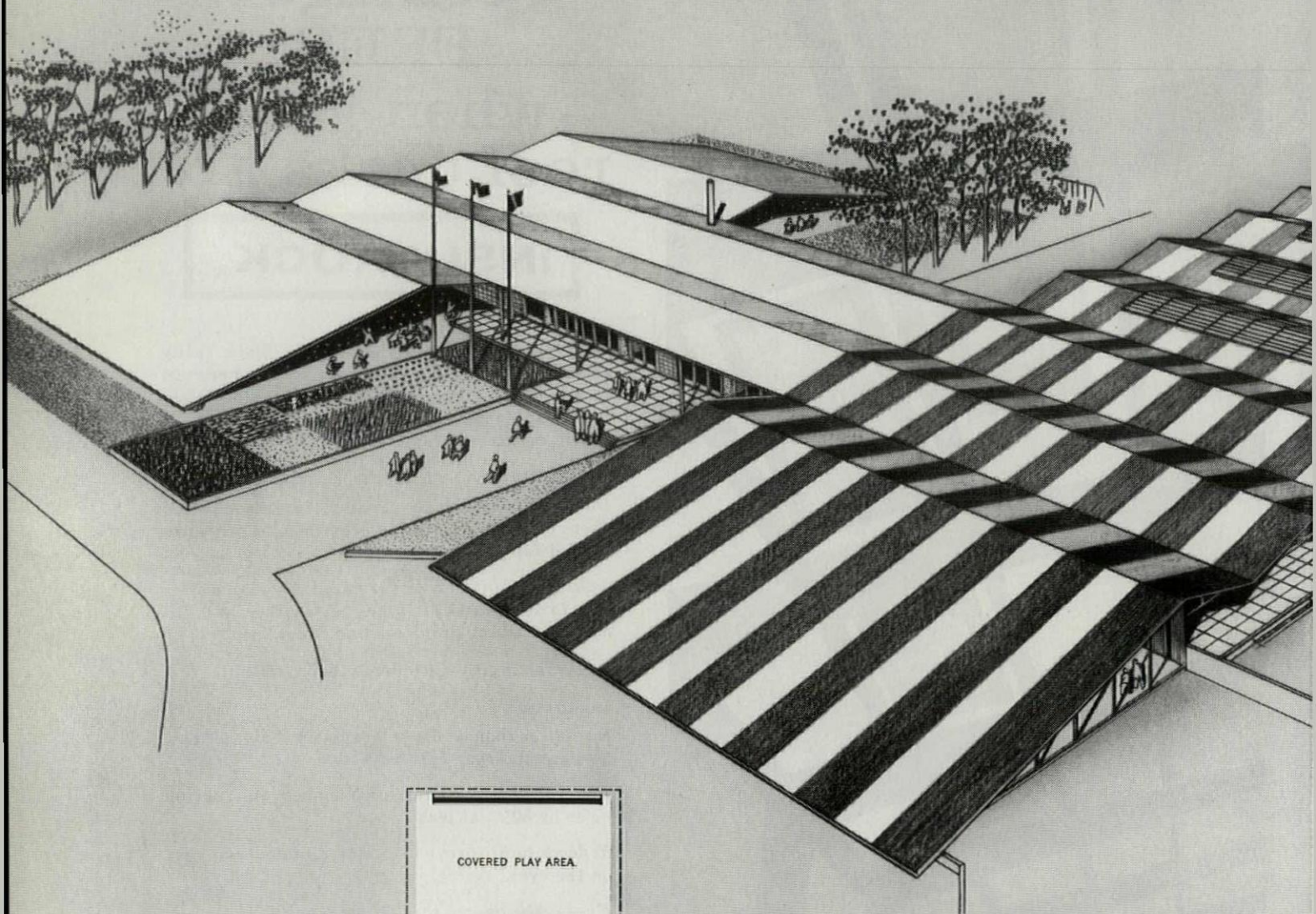
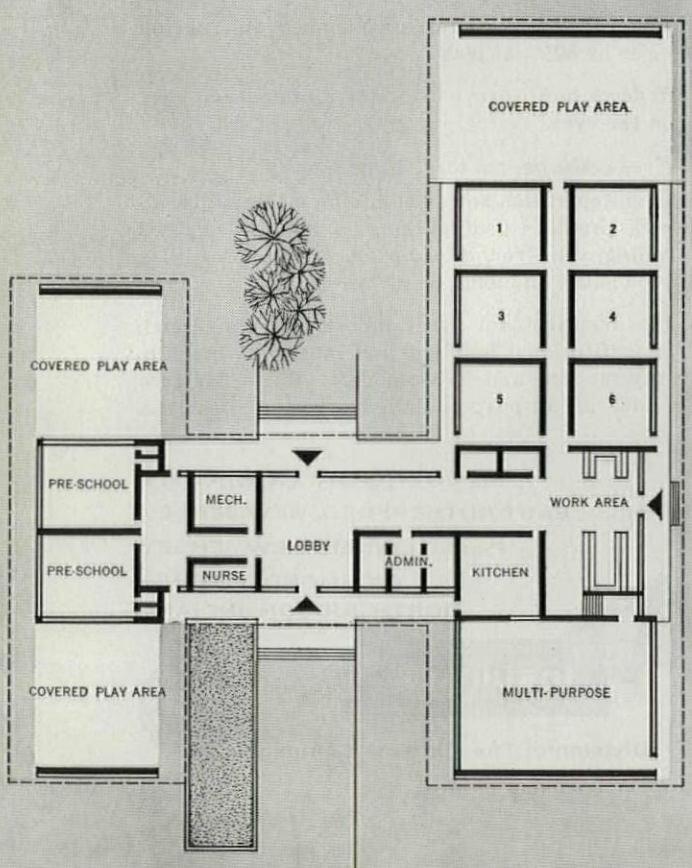
design . . . . . an elementary

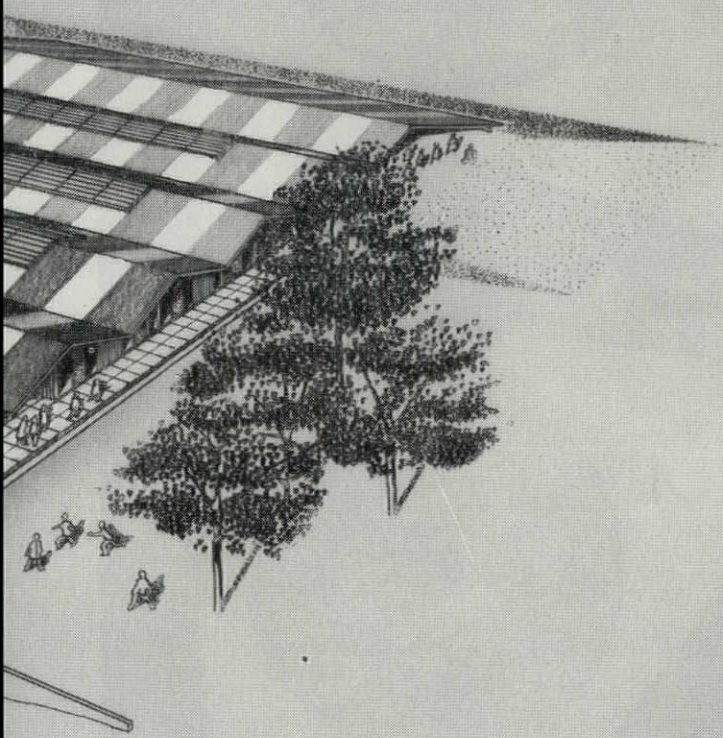




This design study presents what we believe to be an interesting solution of one of America's most important building problems. It is the work of a team of young architects who are gaining recognition for imaginative and workable thinking.

Many widely-known Carey building products are employed in this design study.

school



Carey®

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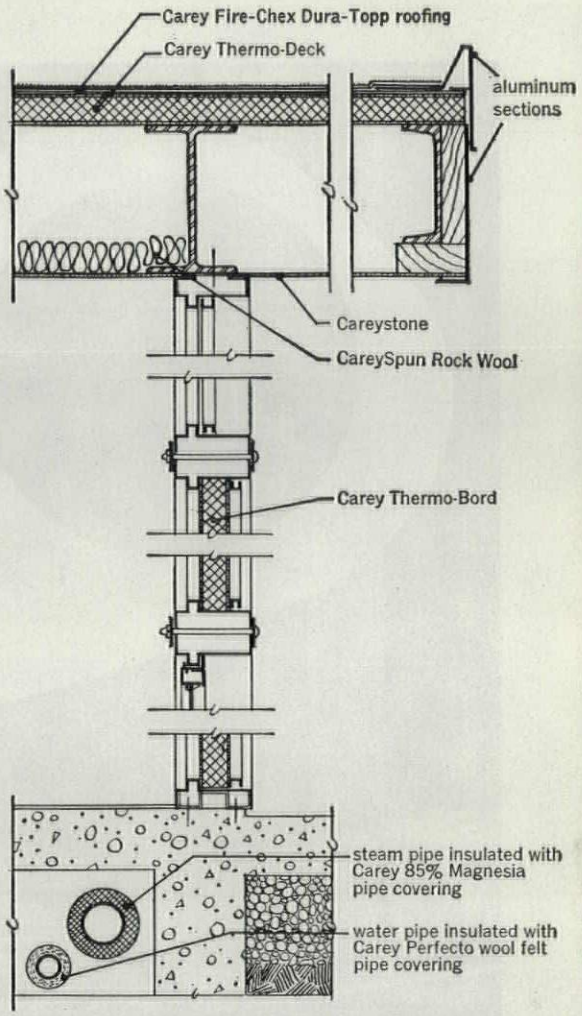
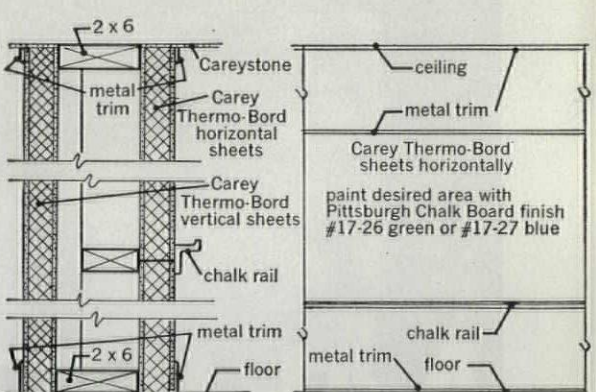
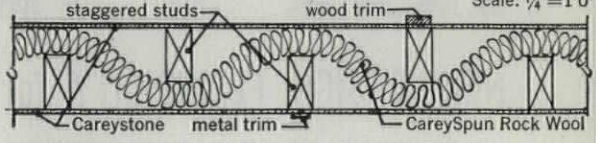


SECTION THROUGH EXTERIOR WALL Scale 1″=1′0″



SECTION THROUGH MOVABLE PARTITION

ELEVATION OF MOVABLE CHALK BOARD PARTITION Scale: ¼″=1′0″



SECTION THROUGH FIXED PARTITION Scale: 1″=1′0″

SEND FOR *your* work sheet which details the wide variety of Carey products selected by the architects for use in this school. Write The Philip Carey Mfg. Company, Lockland, Cincinnati 15, Ohio. Dept. PA-37

NEW DESIGN FLEXIBILITY for interior framing, racks, and equipment supports

Now, good news for cost conscious bolted construction users. Strength and flexibility—you get both when you specify Mult-A-Frame. Three exclusive advantages:

Choice of channel . . . light, medium, or heavy duty . . . 12 or 16 gauge cold rolled steel, factory finished in bonderized baked enamel, prevents rust or corrosion.

Spring-T-bolt . . . may be positioned anywhere along the channel . . . holds fittings firmly in place until tightened. Serrated edges prevent jacknifing, provide extra strength.

Embossed fittings . . . eliminate possibility of fitting rotating about the bolt, gives fully locking structure unmatched by any other framing material.

Ease and economy . . . only tools needed to Mult-A-Frame are saw and wrench. So skilled labor costs are done away with, erection time shortened and scrap eliminated. Mult-A-Frame components may be used again and again as applications change.

For full information . . . send for your free copy of the revised 1957 Mult-A-Frame catalog: pictures, specifications and typical applications in materials handling, electrical-mechanical, and plumbing fields.

Shown above: 1. Mult-A-Frame has available complete line of concrete inserts, pipe rollers and curved channel for tunnel applications. 2. Mult-A-Frame is ideal for grids, catwalks and light supports. Shown here, Mult-A-Framed TV studio. 3. Mult-A-Frame is increasingly popular as a fluorescent fixture hanger and for supporting luminous ceilings.

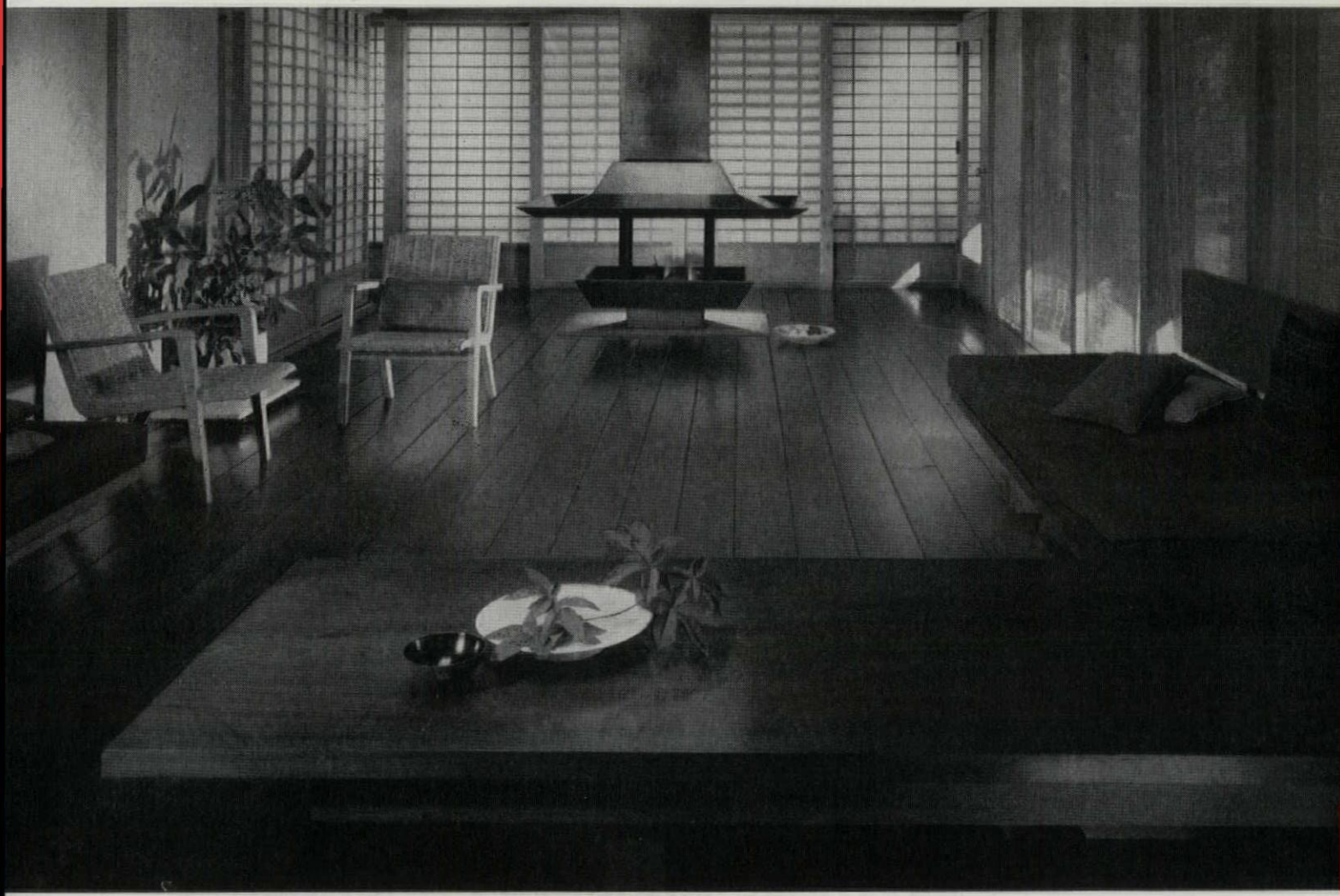
MULT-A-FRAME DIVISION
AINSWORTH MANUFACTURING CORP.
1473 East Atwater St., Detroit 7, Mich.

MULT·A·FRAME
AINSWORTH DETROIT, U.S.A.

A 8

CALIFORNIA REDWOOD

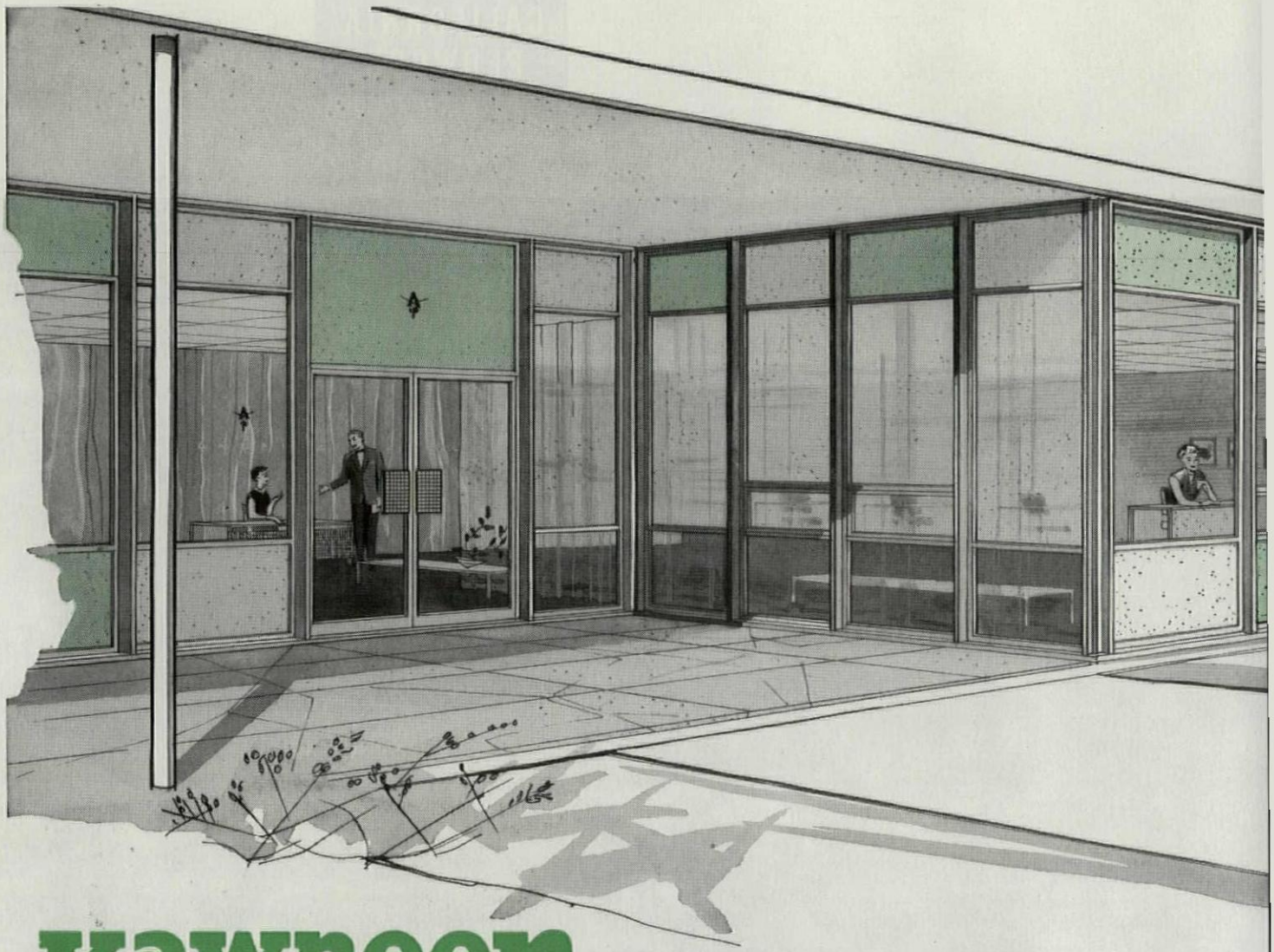
Design: Charles Warren Callister • Photography: Morley Baer



East meets . . . and becomes . . . West beautifully and durably in natural California Redwood. Whether the job is expressive of Orient or Occident, let versatile redwood help give it substance.

CRA

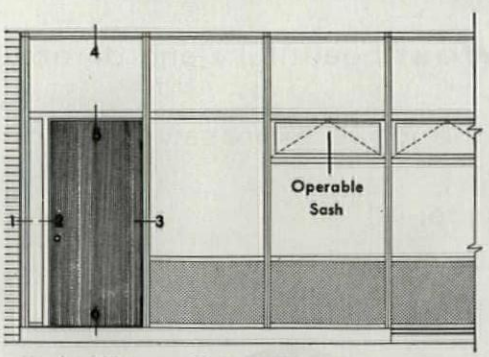
California Redwood Association
576 Sacramento Street • San Francisco 11



Kawneer unit wall

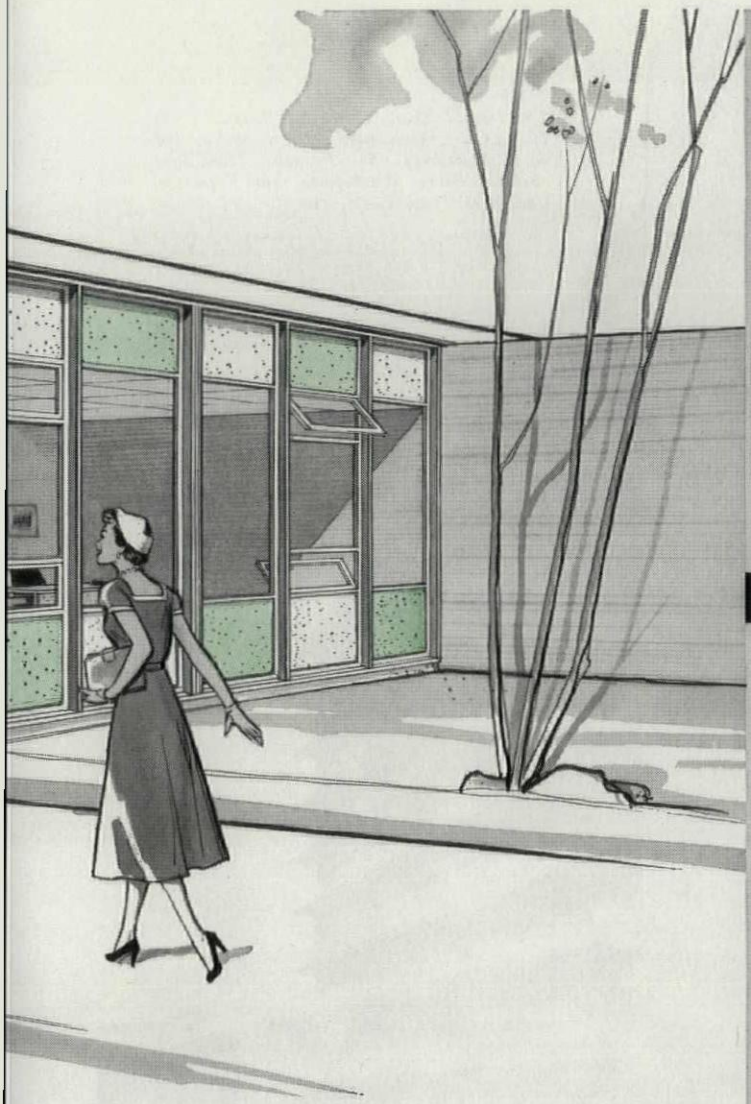
FEATURES MODULAR COMPONENTS...

Modular components are a creative building tool for the architect.

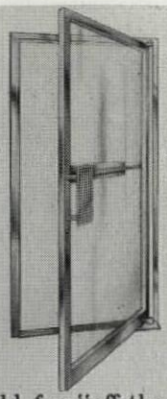


Typical Kawneer Unit Wall Application

Versatility is built into this standardized exterior wall system by Kawneer. Wall modules are available in a range of heights and widths . . . fixed or operating sash can be provided . . . insulated panels can be finished in a choice of colored porcelain enamel or natural aluminum . . . a complete variety of flush or glazed doors are available and in a range of sizes. Whatever your needs, you'll find this flexible new wall system a truly creative and effective building tool.

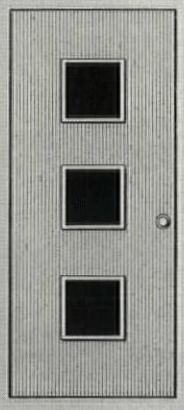


Kawneer welded doors . . . a "custom" touch at standard prices



The contemporary appearance of unit wall calls for a door that will enhance these installations without requiring an excessive investment in custom design and construction. The new Kawneer Welded Door meets these demands since it is produced under rigid production standards and held for "off-the-shelf" delivery. Its slim-line styling plus four interchangeable, stock push-pull hardware styles give it the "custom-tailored" look at standard door prices.

Triple-strength flush doors feature honeycomb core

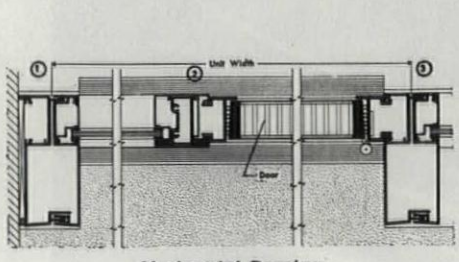


Kawneer's flush doors can add a high degree of distinction to your unit wall applications. Standard door surface is a subtle ribbed aluminum . . . special surfaces in colored vinyl plastic can be provided. Exceptional strength of honeycomb core construction make it ideal for use in heavy traffic areas.

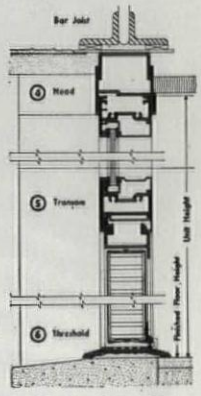
USES STANDARD KAWNEER DOOR UNITS

Modular standardized design assures economy and consistent high quality.

Standardization of all unit wall components provides high quality wall panels produced by the most modern assembly line production methods. These methods allow Kawneer to "build-in" the finest weathering features . . . features that give exceptional water resistance to Kawneer Unit Wall and practically eliminate air infiltration. The economies of mass production tooling, purchasing and assembly are also passed on to you . . . savings you can't afford to pass up. These modern methods are a guarantee that you will receive the product you specified . . . a product *consistent* in design, quality and workmanship.



Horizontal Section



Vertical Section

For more detailed information on Kawneer Unit Wall and Kawneer Standard Door Units, write or call . . .

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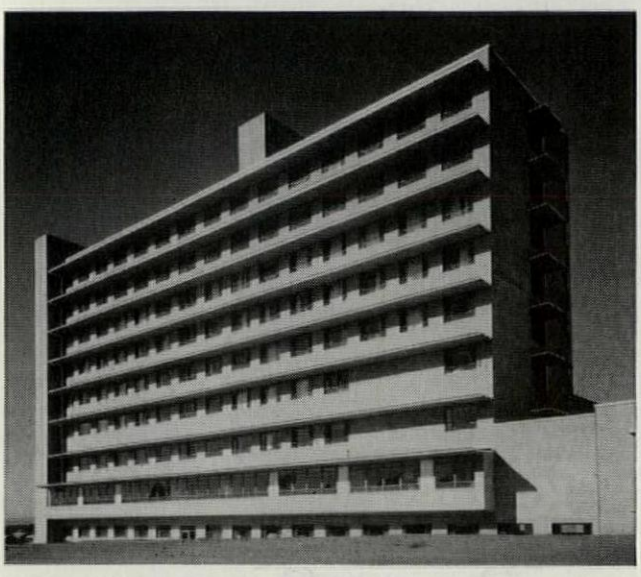
The Donald Sharp Memorial Hospital, San Diego, Calif. Architects: Stone & Mulloy and S. P. Marraccini, San Francisco. Structural engineer: George Washington, San Francisco. Contractor: Trepte Construction Co., San Diego.

CLEAN-CUT BEAUTY AND OUTSTANDING ECONOMY FOR HOSPITALS WITH

Architectural Concrete



These two views of the Donald Sharp Memorial Hospital in San Diego, Calif. show the possibilities of architectural concrete in designing modern hospitals.

This nine-story, 122,500 sq. ft. structure has architectural concrete exterior surfaces, a reinforced concrete frame and flat slab and ribbed concrete floors.

Hospital designers have discovered that architectural concrete offers many advantages, distinctive beauty, rugged strength, unexcelled resistance to the elements, maximum firesafety, long life and unmatched economy.

To get the maximum structural and economical advantages of concrete construction, write for free literature. Distributed only in the United States and Canada.

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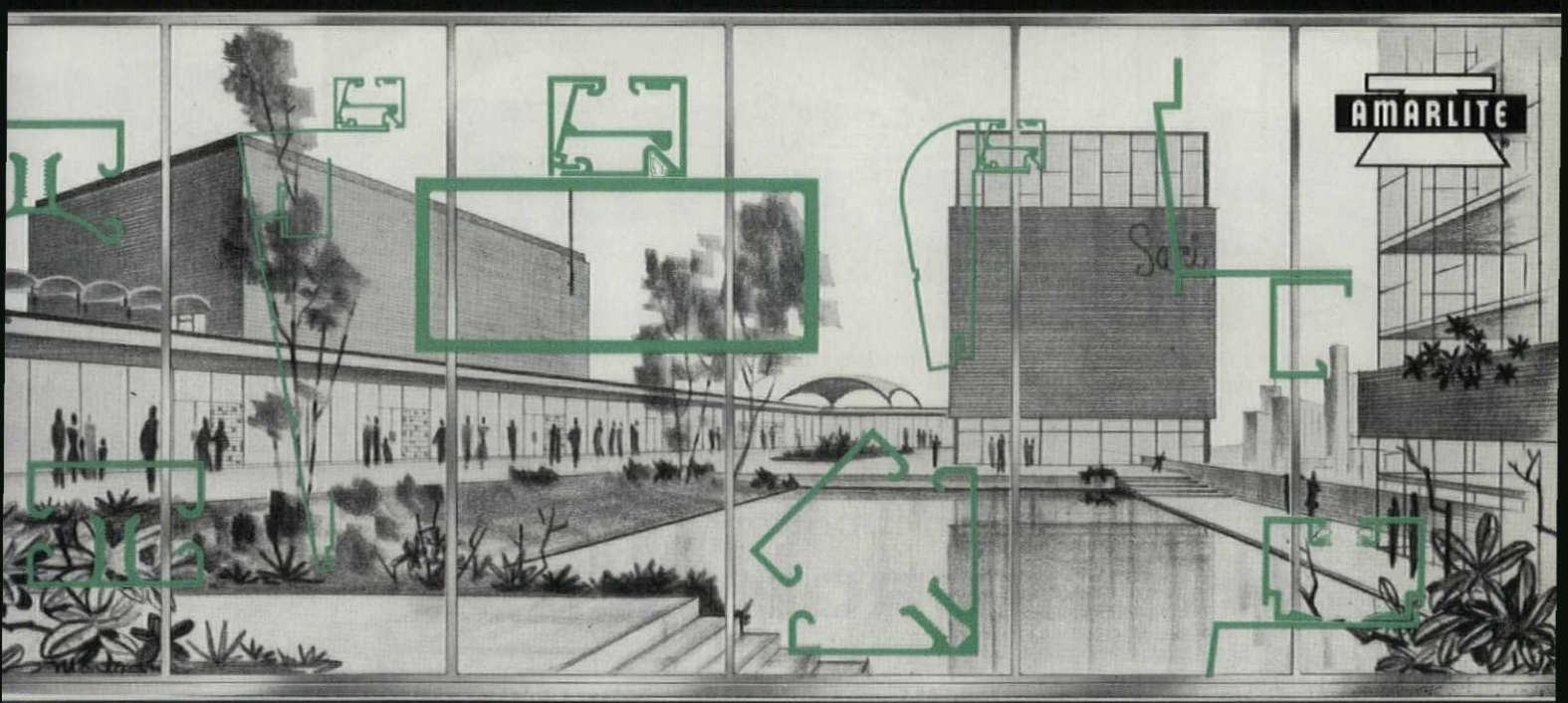
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

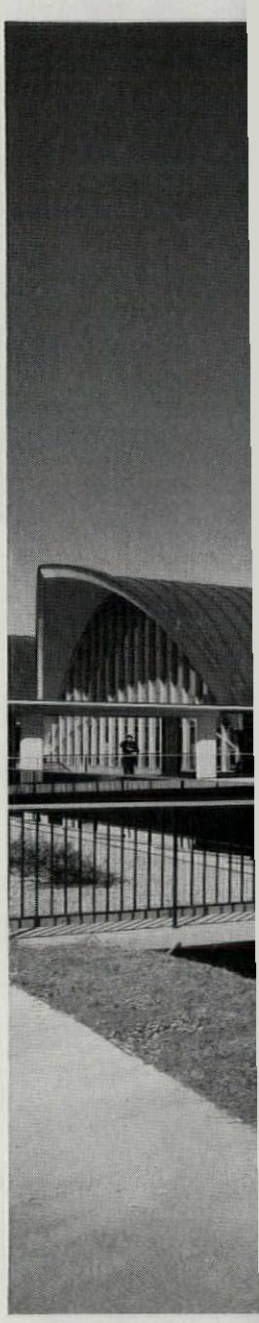
WITH THIS ANNOUNCEMENT AMERICAN ART METALS COMPANY INTRODUCES AMARLITE *Resilient* ALL-EXTRUDED ALUMINUM STORE FRONTS, ESTABLISHING NEW STANDARDS OF BEAUTY, UNIFORMITY AND ENGINEERING PRECISION IN COMMERCIAL EXTERIORS



A comprehensive catalog covering all components in the Amarlite Store Front line has just been published. We'd like to send you a copy. Just send your name and address to Dept. C, American Art Metals Company, 431 Highland Ave., NE, Atlanta, Georgia.

Boldly designed St. Louis Municipal Airport effectively embodies the advantages of SOLEX® HEAT-ABSORBING, GLARE-REDUCING GLASS

A new concept in terminal design, the St. Louis Municipal Airport basically consists of three huge copper-sheathed domes, thirty-two feet high, having no internal supports and providing an unobstructed main passenger floor 412 feet long and 120 feet wide. On all sides, broad expanses of glass give a panoramic view of sky, planes and the surrounding countryside. For the entire main floor, *Pittsburgh's* Solex heat-absorbing, glare-reducing glass was utilized. The soft, greenish tint of this glass makes interiors more comfortable for passengers and personnel alike. Architects: Hellmuth, Yamasaki & Leinweber, St. Louis, Missouri.



Here is a view of the unobstructed main passenger floor. The arched walls of glass on all sides of the terminal provide a panoramic view of the exterior. Solex reduces glare from landing strips.

Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products . . . Sections 7a, 13e, 16d, 21.

Design it better with

PITTSBURGH GLASS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

This exterior view shows the majestic lines of the terminal, as well as the expansive areas of Solex and Pennvernon® window glass—the latter installed where heat and glare are not a consideration.

TOUGH!

SINGLE THIN SHEET OF LAMINATED FOIL LIFTS 6 MEN!

New Aluminum Insulation Uses Sheets of Amazing Strength— Can Take Abuse

Just on the market, this new tough barrier to heat flow, vapor flow, and condensation formation is ideal for insulating factories, residences, hospitals, schools, stores, warehouses, garages; particularly where the insulation is left exposed. *It can take considerable abuse!*

It is important to remember that reflectivity, absorptivity, and emissivity of heat rays or Radiation, are physical properties inherent in the SURFACES of aluminum or of any other material. Thickness is never a factor.

The surfaces of a sheet of paper, for example, have a low 6% reflectivity for heat rays and a correspondingly high 94% absorptivity and emissivity. By covering each side of kraft paper with aluminum foil, a TOUGH 3-ply laminate is produced which has the 97% reflectivity of aluminum, plus its 3% absorptivity and 3% emissivity. It also has 80% reflectivity for LIGHT RAYS; and when exposed, brightens interiors, reduces electric bills.

The laminated aluminum sheets have almost zero permeability to vapor. Infiltration under the flat stapled flanges is slight. *Scientific* aluminum insulation is prefabricated to open automatically, in one operation, into multiple layers of aluminum, fiber, and reflective air spaces. This type of construction minimizes condensation formation. Condensation promotes timber rot, peeling paint, cracking plaster, deterioration of brick, stone, and steel. Heat flow by conduction is slight because air spaces have low density. The layers of fiber and aluminum retard convection, inner and outer.

Facts on heat flow and how to retard it are contained in the new 48-page booklet "Heat Flow by Radiation in Buildings, Simplified Physics," an illustrated, authoritative manual by Alexander Schwartz, noted lecturer and writer. Use coupon for a free copy, and samples.

THERMAL VALUES
Infra Type 4 Parallel Insulation

Up-Heat C .105 = 3⅛" insulation*
Wall-Heat C .068 = 4¾" insulation*
Down-Heat C .042 = 7⅞" insulation*

*Calculated on basis of limiting thermal values cited in Fed. Specs. LLL-f-321b; HH-I-585; HH-I-521c; HH-I-551a.

Cost installed between wood joists, material and labor, about 8¢ sq. ft.

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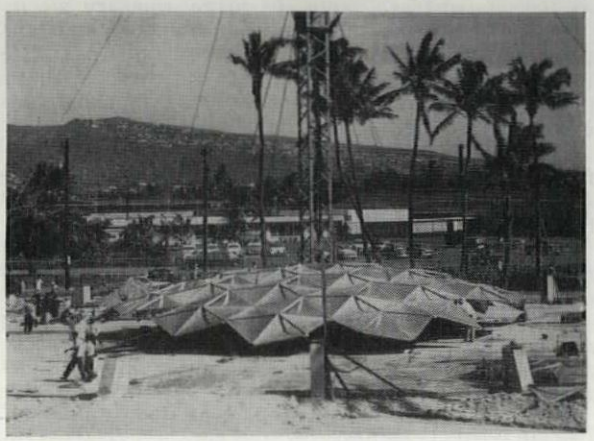
ALUMINUM "GEODESIC" ERUPTS ON WAIKIKI



HONOLULU, HAWAII, Feb. 14—Recently completed here is a remarkable all-aluminum, domed arena, designed by engineers of the Product Development Department of Kaiser Aluminum & Chemical Corporation as an entertainment pavilion for Kaiser's Hawaiian Village Hotel. Full discussion of the structure and method of erection will be published in April 1957 P/A. In brief, the dome consists of 575 diamond-shaped, inward-bent, "sun-burst"-patterned, braced, aluminum panels. These were assembled around a portable steel mast, which raised completed segments of the dome, as each new perimeter row of the diamonds was attached. Result: an arena 145 ft in diameter and 49 ft high at the center. Kaiser Aluminum's engineers attest that an aluminum, stressed-skin dome costs less than a conventional structure.

FOURTH ANNUAL P/A AWARDS DINNER

Creighton, Curtis, Davis

Photo: The Times-Pica

Mrs. Creighton
Mr. & Mrs. Schweikher

Creighton
Mr. & Mrs. Worsley

NEW ORLEANS, LA., Jan 18—Winners of P/A's Annual Award Program were officially announced tonight at the Hotel Roosevelt. Many distinguished guests of civic and national prominence gathered to witness the presentation of the Awards and Citations. Of a total of 800 entries, 25 were considered Award material by the professional Jury. Of these 25 (*see January 1957 P/A*), five Awards and Citations went to local architects and their associates, in whose honor the Fourth Annual Dinner was given in New Orleans.

The Awards are presented annually by PROGRESSIVE ARCHITECTURE for projects still in the planning stages. It is at this significant period of design development, rather than after completion of the building, the Editors feel, that encouragement is needed by the architect as well as client. Awards were made on the basis of site use, choice of structural system and materials, solution of client's program, and over-all design excellence. This year's Award Jury comprised: Marcel Breuer, Architect; Gordon Bunshaft, Architect, partner of Skidmore, Owings & Merrill; Huson Jackson, Architect; Emil Praeger, Engineer, partner of Praeger-Kavanagh; and Harry Weese, Architect.

Presentation festivities opened with messages from Edward B. Silverstein, President of the New Orleans Chapter, AIA, and Acting Mayor Glen P. Clasen. After a brief discussion and slide presentation of each winning project, Awards plaques were presented by Thomas H. Creighton, Editor of PROGRESSIVE ARCHITECTURE to 20 of the winners who attended the ceremony. Main topic of the evening was school design, chosen in deference to the Top Award—the George Washington Carver Junior-Senior High School, designed by Curtis & Davis, New Orleans. Walter D. Cocking, Editor of *The School Executive* and *American School and University* complimenting P/A on its design competition for stimulation of creative design, proceeded to deliver the principal address. For its significance and timeliness we offer below excerpts from this speech:

"Different periods of time develop their own peculiar needs and opportunities. In turn, these needs result in different kinds of expressions and accomplishments which, in turn, are unique to their particular time period. We are moving rapidly into a stage of our history that future historians may well characterize as the electronic era: a time in which most of the labor formerly done by man, and by an unskilled man at that, will be done by machines energized by electricity. In such an era, buildings must undergo profound change in purpose, function, and therefore design.

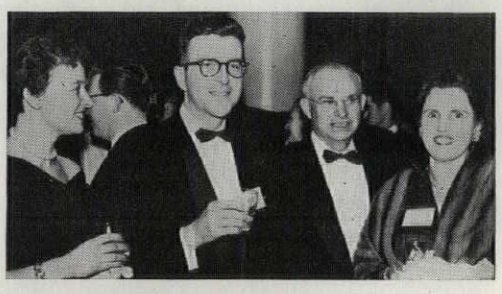
"It is estimated that in 1970 we will be spending annually for new educational buildings at a rate of approximately five billion dollars. Can we design them so they will not become obsolete?

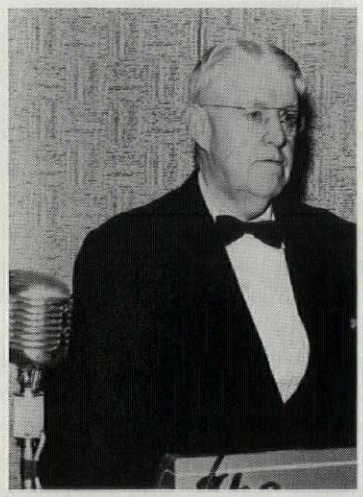
"Maybe it can be said that substantial advances have been made since 1940 in better design of educational buildings. What goes on inside the building, has and is receiving primary attention in design. In large measure we have ceased designing monuments and labeling them schools. There has been a little attention in efforts to synchronize the outside appearance into its immediate environment. Most important of all, some of our most creative architects have discovered the school and are assiduously devoting their talents to designing them for the people who will use them and for the programs which will be conducted in them.

"Realism causes us to state, though, that mediocrity still characterizes the majority of school designs. There is little evidence of any real creative imagination. Far too many architects, judged by results, apparently look upon a school commission as just another job rather

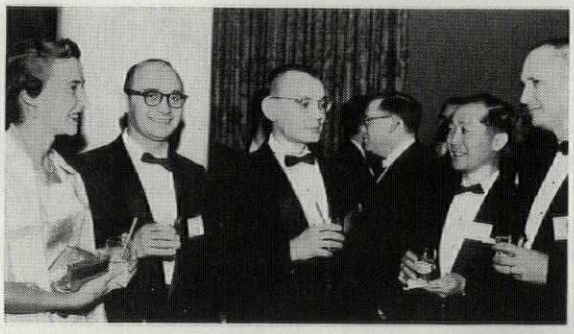
Dr. Walter D. Cocking Chief Speaker of Evening

Mr. & Mrs. Jaroszewicz, Eberle Smiths



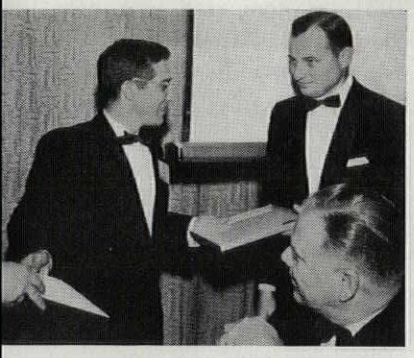


Dr. Cocking



Bill Smith
Yamasaki
Linn Smith

Mr. & Mrs. Balogh, Tarapata



Lawrence, Briede
Acting Mayor Clasen

Creighton, Gruen

than a stimulating creative assignment.

"Hope lies in a growing awareness of the nature of the problem and its compelling need. PROGRESSIVE ARCHITECTURE's Awards Program, as well as the competition sponsored by my own organization, stimulates intelligent effort on the part of more and more architects. Some research, if only a pittance, is getting done. Conferences are increasingly devoted to studying the problem. Most important, we are getting more demonstrations of good design. The average citizen and the educator are becoming interested and are at least receptive to better design. Advances in discovery and technology are making possible better and better design solutions.

"What then are the characteristics good school buildings must possess? First, a good school building helps, rather than hinders, to carry on the activities which the achievement of the goals makes necessary. Second, a good school building is designed primarily for people—those who are to live in it and will use it. Third, a good school building provides for the physical and emotional comfort, and efficiency of those who live in it. Fourth, a good school building possesses atmosphere—an atmosphere which is positive and constructive rather than negative. Fifth, a good school building has beauty or is beautiful. Beauty is intrinsic to good design.

"I would close this discussion with a plea. Good school buildings do and should cost a lot of money. All of us who are concerned with school building, including architects, have succeeded in creating in the minds of the American people an unfortunate climate of opinion. It is that school buildings cost too much. As a result, a search goes on to find ways to get buildings for less and less money. People today, as a result, are seeking for "how much can we get for how little." It is false psychology! We need a *new* psychology—a new climate of opinion in America with respect to school buildings. It will no longer do to try to see how cheap we can build school buildings. The new point of view must be how well we can build them. The mediocrity of today must give way to excellence. You and I can do much to help people to accept the new psychology. Indeed, it is our task."

Mr. & Mrs. Gibbs

Mrs. Schweikher, Brownson, Schweikher

For an evaluation of other social and educational aspects of the three-day meeting in New Orleans, see Thomas Creighton's P.S. Column on page 262.

Financial News

by William Hurd Hillyer

"Is it true that a major glass company has already shut down three of its window glass furnaces and cut operations at two others because of heavy imports?" This question, put to PROGRESSIVE ARCHITECTURE by a responsible businessman, started reactions. Although our publisher, editor, and this writer recognize that present U. S. Government policy encourages the accumulation of dollar exchange by friendly foreign countries, a survey was decided upon because the serious implications of the question justified investigation.

• We'll start with window glass: It transpires that, stimulated by tariff reduction and lower landed cost, foreign competition in this commodity has reached proportions described as "startling." In the first eight months of 1956, some 245 millions of pounds of sheet glass were imported into the United States from 27 countries as compared with 225 millions for the entire year 1955—a gain of 20 millions or nearly 9% in only two-thirds of the year. This importation almost equals the production of Libbey-Owens-Ford Glass Company's Charleston plant, which is the world's largest sheet-glass factory. Two of the shut-down furnaces were at Charleston and a third at L.O.F.'s plant in Shreveport, La. Taking these furnaces out of production caused 500 workmen to be laid off last year.

As for plate glass, the picture is even more arresting. Imports in 1955 were over 32½ million square feet from 13 countries. There were 27.6 million square feet in the first eight months of 1956, or at the increased rate of about 28%, based on last year's figures.

Perhaps the most surprising feature of current window-glass imports—to wit, the first 8 months of 1956—is their country of origin. Seven are satellites of the USSR, and Russia herself shipped to this country some 370,000 pounds. Bulgaria's contribution was 1.2 millions (up from zero in '55) while Czechoslovakia furnished 4.4 millions, a 1.3 million increase over last year. East Germany's total was a trifle under 800,000 pounds, around 25% ahead of 1955. Poland leaped from 2.9 millions to around 6.8 millions, a rise of 130%; Rumania's gain was 1.8 million from nothing; Yugoslavia's 2.7 millions was 1.7 million above her '55 figures. Altogether, Communist and Russian satellite countries shipped some 18½ millions of pounds of sheet glass into the United States during the first two-thirds of 1956. Among the non-Communist countries, Belgium leads with 88.5 millions of pounds. Next in line are France, Japan, and United Kingdom, accounting for 27, 26, and 21 millions, respectively.

In sum total, this country imported 241.5 millions of pounds of sheet glass during the first eight months of 1956, as compared with 225.3 millions for the whole of 1955. Giving effect to the difference of period, the increase was roundly 45 percent.

The glass people make out an impressive case, tariffwise. European glass manufacturers, we learn, are able to sell glass in the United States at a lower price than American glass makers can turn it out and sell it for here. The foreigners, it is claimed, because a continually lowering tariff wall is no longer effective to stem the tide, can beat out glass men in the American market. Workmen abroad in the glass industry draw an average wage of 50 cents an hour; the average straight-time hourly wage paid by a major American glass company is about $2.58. During the '30s, the American manufacturer was protected against such differentials. In recent years, glass duties have been cut back until, today, they amount to some 12% of the domestic manufacturer's selling price. Plate glass enjoyed a 51% tariff protection in 1931, as compared with only 14% today. In the light of these and related data, glass men strongly urge a sweeping re-examination of foreign trade control.

• Steel, though suffering less than glass, importwise, is nevertheless feeling a sharp impact. During the first nine months of last year, imports of major steel-mill products totaled 892,000 net tons, an increase of 227,000 tons over 1955's comparable figures. According to countries of origin the approximate 1956 breakdown in order of volume was as follows: Belgium-Luxembourg, 421,000 tons; France, 185,000; West Germany, 88,000; Japan, 40,000; United Kingdom, 39,000; Canada, 28,000; Sweden, 22,000; Netherlands, 20,000. As to class of product, the most spectacular rise over 1955 was in plate—which rose from 900 tons to 27,000 tons. Similarly, shapes showed a 211,000-ton increase. Wire nails alone fell below '55, with 68,000 net tons as compared with 91,000.

Total steel imports for the entire year 1955, were a trifle short of one million tons. At 1956's last reported rate of increase, the '55-'56 comparison indicates a rise of some 300,000 tons to a total exceeding 1,200,000 tons of imported, major, steel products. Furthermore, there is an import category labeled "other iron and steel products"—many of which, such as cast-iron pipe fittings and fabricated, structural shapes, are used in building. These totaled 114,000 tons in 1955, as against 101,000 for '54. Preliminary '56 figures are not yet available.

In addition, a mounting volume of pig iron and related alloys is coming in. Thus we get, for the full year 1955, a grand import total of 1,466,000 tons (not including scrap) as compared with 1,253,000 in '54. The 1949 aggregate was only 472,000 tons.

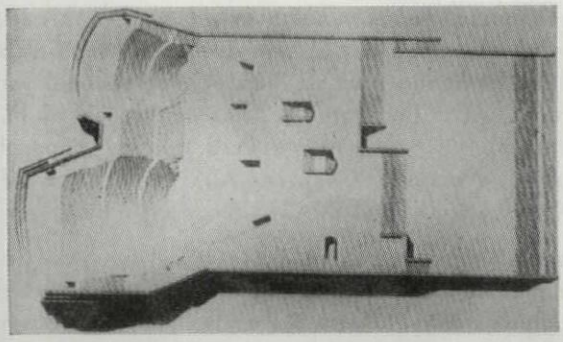
Steel executives and metal research men are keeping a close eye on these developments. A spokesman for the American Iron & Steel Institute calls attention to "some very interesting facts about the trend in imports." He reminds us that the statistics are Department of Commerce figures. Institute executives, when consulted, decline to issue a statement at this time, but assure us that we shall be covered when and if one is forthcoming.

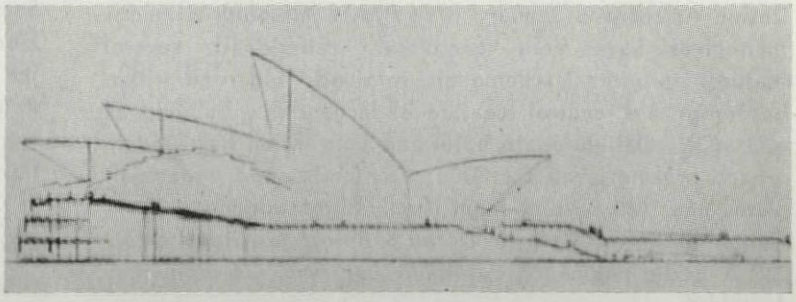
• Portland cement faces a wholly different situation. In flush times, such as the present, a commodity like cement is immune from foreign competition by reason of its weight and bulk. However, the industry remembers only too well the dark days of the depression, when prodigious quantities of cement came into the United States as ballast. Companies like Lone Star, peculiarly vulnerable because so many of its plants are on the coast, have a weather eye out for recessionary trends that might throw our foreign trade situation into reverse and make a repetition of the ballast gambit possible. As one executive recalls it: "Cement in the '30s was viewed by foreign countries as a mere bartering material, priced as zero to nominal. Their need of dollar exchange was so great that they created the exchange by unloading cement upon us. For example, they'd raise a $25,000 credit by dumping, say, 5000 tons at a $5 a ton and then getting its equivalent in cocoa from South America. A European government, as a subsidy measure would take the cocoa for its half-starved inhabitants—and so on. In this country, it's not too soon to prepare for some such contingency by agitation for an anti-dumping act. Such legislation is hard to put through. The 'squawk' must come first from the labor unions."

• In the housing world, a tendency toward cheaper homes is discernable, reversing a 1956 trend. Buyers are increasingly scarce for the $15-35 thousands unit. Higher down payments and a greater mortgage-money tightness are blamed for this condition. Fanny May (Federal National Mortgage Association) is asking for an additional half-billion dollars wherewith to provide strong support of the Federally guaranteed mortgage market. These funds ought to ease the realty-loan tightness during the second and third quarters of 1957. Meanwhile, mortgage debt on non-farm 1- to 4-family houses has risen more than $11 billions since the beginning of last year. Number of units financed by conventional mortgages remains unchanged. New York's largest trust company, however, sees no conclusive sign as yet with respect to the underlying stability of the market for new homes. That institution's experts suggest "a cautious attitude" for the long pull.

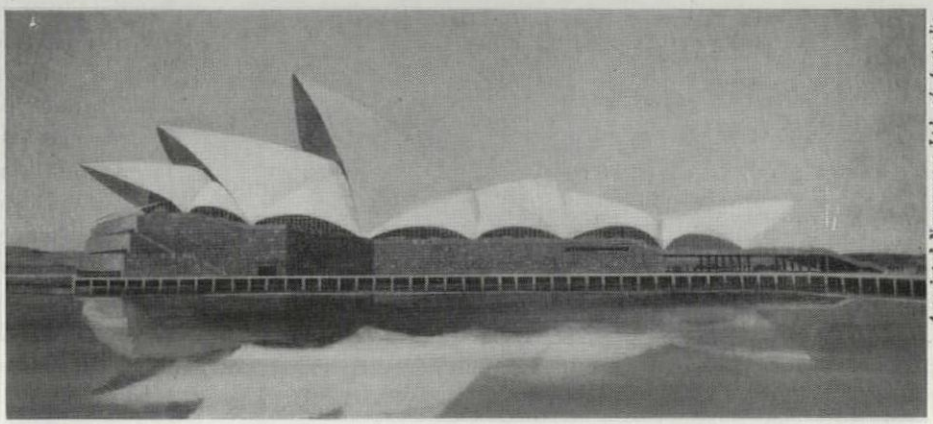
• Commenting on last year's spectacular rise in residential mortgages, commercial bank loans and business capital outlays, President Hayes of the New York Federal Reserve Bank brands the term "tight money" as misleading in its implication that credit has not been available for important expansion. He does not see higher interest rates as constituting in themselves a force toward inflation. The chief effect of tight money on capital expenditures, he hopes, will be to defer and spread out capital expenditures that are not immediately necessary, rather than cause any permanent shrinkage in healthy plans for new constructions, modernization, or expansion. The Federal Reserve System's control measures, he reminds us, do not specifically aim to cut down housing in favor of corporate outlays.

Dane Wins "Aussie" Opera Competition





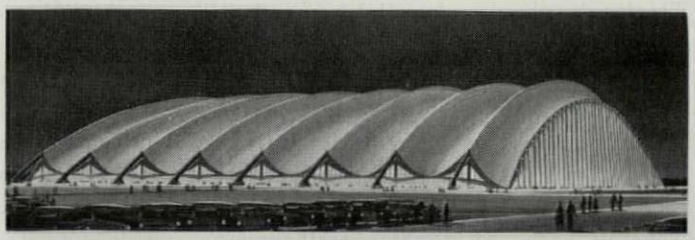
SYDNEY, AUSTRALIA, Jan. 29—Joern Utzon, 38-year-old Danish architect, today won First Prize (£5000) in the worldwide competition for design of the National Opera House, to be built here at Benelong Point. The Jury—J. L. Martin; Cobden Parkes; Eero Saarinen; and H. I. Ashworth—applauded "the general breadth of the imaginative concept" that includes two great auditoria and is dramatically roofed by a series of interlocking, concrete-shell vaults. Second Prize went to Philadelphia Architects Marzella, Loschetter, Cunningham, Weissman, Geddes, and Qualls; Third Prize, to Boissevain & Osmond, of England.

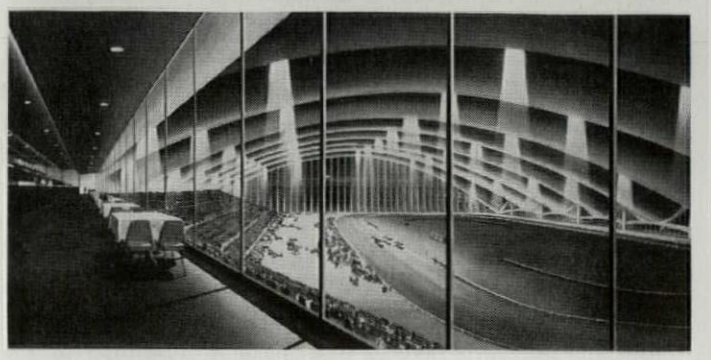


Associated Newspapers Ltd. of Australia

News Bulletins

• Olympic City, world's largest enclosed arena (right) will seat 150,000 spectators—in weather-controlled, uninterrupted interior space—and cover nearly 35 acres in Bronx or Queens, New York. Rising to peak height of 250 ft, eight interconnecting hyperbolic-paraboloids forming roof (below right) will be constructed of welded-aluminum plates and stiffened at connecting ridges by extrusions or structural shapes; plates between will have additional diagonal stiffening of shallow extrusions welded to upperside in continuous lines. Ridge sections bearing down on reinforced-concrete bents transfer loads to rock by means of pile clusters. End walls, composed of metal-and-glass filler panels, are set between braced structural-metal fins. Project will be large enough to permit playing of four simultaneous professional football games. Winter harness-racing season is expected to provide sound economic basis for arena. Structure, designed by Frank Grad & Sons, Architects; Urbahn, Brayton & Burrows, Associated Architects; Roberts U. Schaefer Co., Consulting Engineers, will include such varied facilities as: exhibition hall, restaurants, police station, stables, infirmary, and garages.





• Prudential Center, $100,000,000 integrated business, civic, and residential complex of 12 buildings (below) will occupy 31 acres of what is now Back Bay Yards of Boston & Albany Railroad in Boston, Mass. Major elements to be constructed by Prudential Insurance Company of America are: towering 50-story office building planned as northeastern headquarters for Prudential operations; apartment and commercial units (right of rendering). Private negotiations are underway for hotel (background left). Circular 6000-seat Convention Hall will be built by city; other circular structure is to be restaurant. Site location is essentially same as that of Boston Center design that won P/A First Design Award (see January 1954 P/A). Although buildings themselves have been completely redesigned, several features of original scheme are retained: ring road within border of site; central location of large office building as well as its relationship to hotel and convention hall; underground parking levels for 5000 cars; landscaped pedestrian plazas and walkways at main level. Firms working on new Center design are: Hoyle, Doran & Berry, Architects; Metcalf & Eddy, Engineers; Pereira & Luckman, Co-ordinating Architects.

• As precaution against increasing inflationary pressures, General Services Administration has temporarily suspended further construction under Federal lease-purchase public building program—which permitted Government to buy buildings on long-term installment plan from private builders. GSA will continue to acquire sites and plan projects, within confines of available funds.

• Fourth Annual Conference for Architects and Engineers, sponsored by College of Engineering at Ohio State University, will take place on Ohio State campus, May 3. . . . ASME 2nd Design Conference will occur in N. Y. Coliseum May 20-23.

• 1957 Arnold W. Brunner Scholarship grant of $2400 has been given by New York Chapter, AIA, to Samuel Ratensky and Richard W. Snibbe, to develop joint project—critical analysis of large-scale urban housing in U.S.A. and abroad. Second award of same amount was presented to Caleb Hornbostel for furthering work on "Materials Handbook for the Architect." . . . Theodore H. Irion and Leonard H. Reinke, Oshkosh, Wis., won First Award in 1957 biennial competition of Wisconsin Chapter, AIA, for design of Dartmoor Motor Inn, at Fond du Lac, Wis.

• Cash awards totaling more than $1100 will be given to prize-winning sculptors participating in Philadelphia Art Alliance exhibition, May 17-June 9. Minna Harkavy, Ibram Lassaw, and William Zorach will serve on Awards Jury. For details on eligibility and submissions write: Philadelphia Alliance, 251 S. 18 St., Philadelphia 3, Pa. . . . Industrial Designers' Institute will present Gold Medal and Citations to individuals or design teams submitting winning entries in 7th Annual IDI Design Award Program. Request entry forms—due May 5—from Walter C. Granville, 38 S. Dearborn St., Chicago 3, Ill. . . . First Rubber-Floor Design Awards Competition offering $2000 in prizes to architect and flooring contractor for outstanding flooring installation completed during 1957, will close Dec. 31. For rules and entry blanks write: Rubber Flooring Division, Rubber Manufacturers Association, Inc., 444 Madison Ave., New York 22, N. Y.

• Kate Neal Kinley Memorial Fellowship granting $1300 for year of graduate study in U.S.A. or abroad will be made to candidate in fine arts field. Applications due May 15. Write: Dean Allen Weller, College of Fine & Applied Arts, University of Illinois, Urbana, Ill. . . . NIAE Jury for award of $5000 Lloyd Warren Fellowship, will consist of Architects Max Abramowitz, Robert Carson, Lathrop Douglass, Harmon H. Goldstone, Morris Ketchum, Walther Prokosch, Benjamin L. Smith, Kenneth K. Stowell, and Otto J. Teegen.

• Jury of Architects chosen by AIA to select winner of R. S. Reynolds Memorial Award includes: George Bain Cummings, Willem Dudok, Percival Goodman, Ludwig Mies van der Rohe, and Edgar I. Williams. . . . At recent National Association of Students of Architecture forum, officers elected were: President, Thymio Papayannis, MIT; Vice-President, Robert S. Harris, Rice Institute; Secretary-Treasurer, Edward Burkhead, Texas A. & M. Also named were Student Editors: Donald R. Roark, University of Colorado; George S. Crane, Texas Technical College; and six Regional Directors. . . . Howard S. Cullman, U.S. Commissioner General to Brussels World's Fair of 1958, has appointed Industrial Designer Peter Muller-Munk planning consultant on U.S. exhibits.

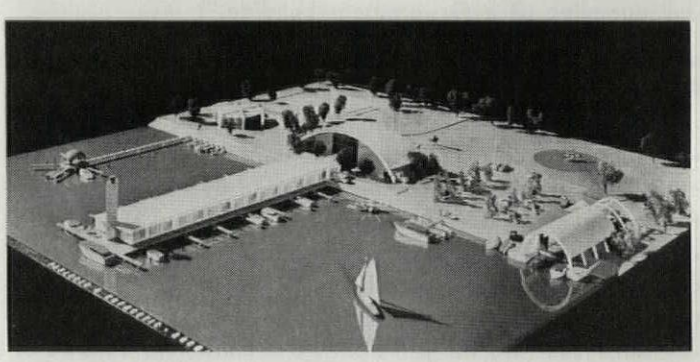
• Architectural standards, prepared by Philadelphia Architects Thalheimer & Weitz, for all future public construction will be adopted in Pennsylvania—following study of similar standards in California and New York.

• Fourth Annual Convention of Architectural Photographers' Association will be held Mar. 22-24, Washington, D.C. to coincide with International Photographic Exposition.

• Two noteworthy architectural exhibitions in N.Y.C. will utilize models, drawings, photos, and slides: "Buildings for Business and Government" display will be on view Feb. 27-May 5, at Museum of Modern Art; "New York: City of Art" exhibit will include many original drawings of work over past 75 years. Showing at Architectural League of New York will run Apr. 23-May 16.

• Topics discussed at seminar, "Curtain Wall Do's and Don'ts," held in New York, Jan. 29, will be thoroughly explored in article by Harold R. Sleeper to appear in June issue of P/A. Range of subject matter will include: aluminum, stainless steel, and glass curtain walls; insulation; sealants; spandrel panel design; fastening methods and fabrication.

• Brand-new building type launched at recent National Motor Show in New York, is "Boatel"—sponsored by Scott-Atwater Mfg. Co., and designed by Pavlecic & Kovacevic, Architects. Proposal shown in model (below) includes over-water pavilion of boatel rooms with adjoining docks; arched-roof restaurant-shop unit; boat-service station; circular club house; and small heliport.



architecture coming of age

by Ada Louise Huxtable

That architecture in America is "coming of age" is evidenced not only by the increasing number of significant structures being designed and erected in the United States but also by a growing interest in the history and tradition of building. Historical precedent and present-day practice are no longer considered incompatible; it is even the current intellectual fashion for the architect, who previously spoke only of the future, to acknowledge a debt to the past.

Society of Architectural Historians, founded in 1940 and now numbering close to 1000 members, has devoted much energy to piecing together the vital story of architectural continuity, and to the accurate revelation of that remarkable, rich heritage that has led to the logical development of the contemporary expression. Meeting in Detroit, January 24-27, the SAH members applied themselves with attentive erudition to a variety of subjects. Among these were papers by Winston Weisman and by Edgar Kaufmann, Jr., shedding surprising new light on Sullivan's stylistic sources; a re-evaluation by Rudolf Wittkower of that most delightful Venetian puff-pastry, Santa Maria della Salute; and conscientious investigation of such recent phenomena as the nearby General Motors Technical Center. From Fragonard's "Progress of Love" (architectural decoration) to Detroit's early industrial plants (architectural innovation), the sessions showed a remarkable breadth of interest and depth of scholarship. One morning's ambitious stylistic redefinition ranged from Rome to the Renaissance, ending with an additional perceptive analysis by Vincent J. Scully, Jr., of today's architectural expression.

Book Awards announced by SAH and the College Art Association (which convened concurrently) each honored works of architectural history: Carroll L. V. Meeks' Railroad Station and Vincent J. Scully, Jr.'s Shingle Style, both published by Yale University Press.

SAH officers elected for the new year are: Carroll L. V. Meeks, President; Richard H. Howland, Vice-President; Robert Walker, Treasurer; Barbara Wriston, Secretary.

Washington Report

by Frederick Gutheim

The immediate possibility of action on a planned $27-millions Executive Office Building north of the White House and facing Lafayette Square has stirred many emotions here. The structure—nearly as large as the Interior Department—would cover the entire block north of Pennsylvania Avenue. Only Blair House, where the State Department entertains visiting dignitaries, and Decatur House, of Benjamin Latrobe's design, most of which is now used as a naval museum, would be spared. The historic houses fronting Lafayette Square, although not quite in the same architectural class as those forming the north side of New York's Washington Square, have much the same value in establishing the residential scale of the area. Their elimination will raise the most fundamental architectural and planning questions. (The proposed red-brick "Georgian" building has already been castigated as "another enormous dull dumpling of a Government building.")

• It may be objected that the unity of this blockfront was first broken when the Brookings Institution and two other office buildings were constructed in the late 1920's. And with equal justice it could be said that the replacement of early Federal mansions on the northside of the Square and the razing of H. H. Richardson's Hay-Adams houses had cast the die against the preservation of the residential character of an area in which the White House itself is the chief residence. Indeed, aside from the now-threatened Jackson Place row, the principal old architecture consists of the half-block occupied by the National Science Foundation (a house made famous by Dolly Madison); the Ashburton House; and St. John's Church. The latter building, "the church of the Presidents," designed by Latrobe, has been thoroughly reconstructed with architectural discrimination within the last couple of years. Once a new Federal office building rises on the west side of the Square, it is inconceivable that the long-proposed annex to the Treasury on the East side would be postponed.

• It is ironic that the National Trust for Historic Preservation, the private organization chartered by Congress for the express purpose of preserving buildings of architectural and historic consequence, would be one of those evicted from its national headquarters on Jackson Place.

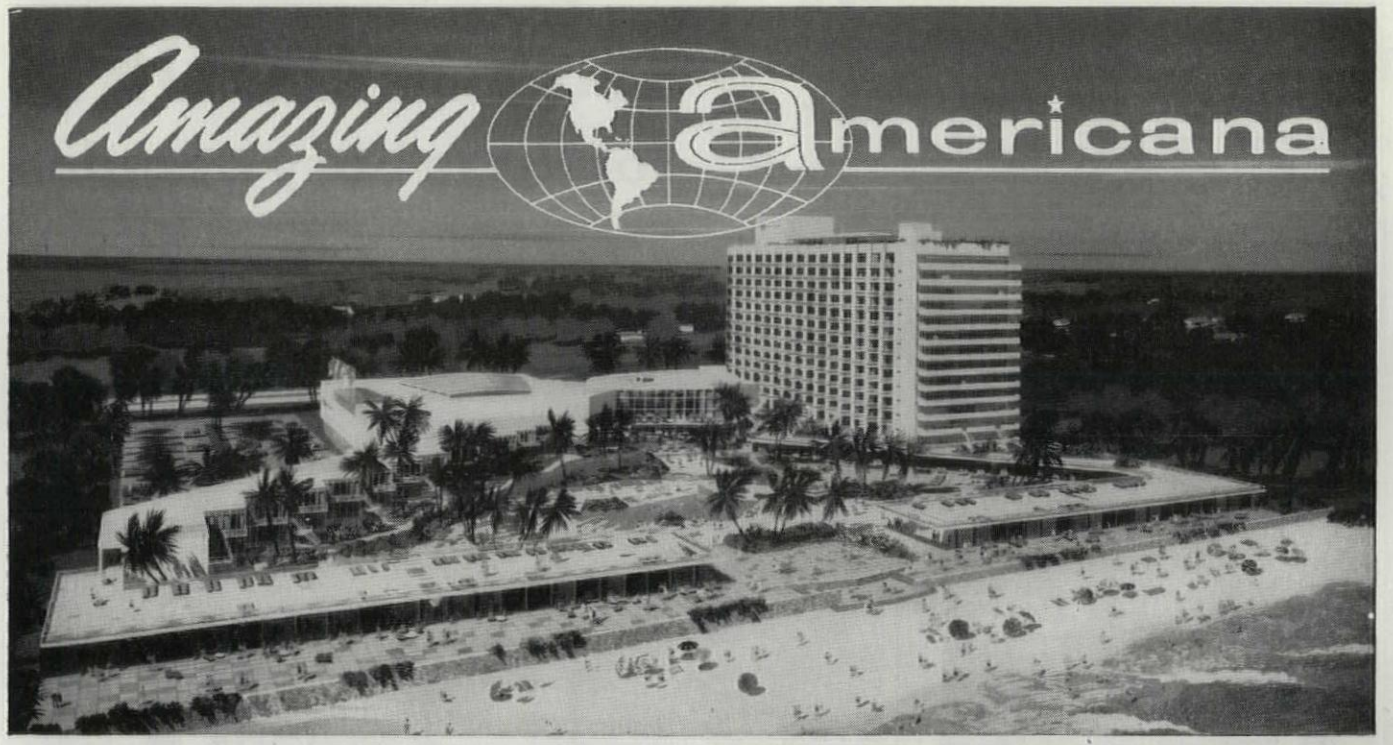
• The pressures that lie behind this proposal stem from the White House organization and its vast expansion by the Eisenhower Administration. There are probably more people who knew the General's SHAEF headquarters operation during the war, or his subsequent NATO headquarters, than who understand what has happened to the Presidential headquarters. But in each case a similar staff expansion of unprecedented magnitude was required by the Eisenhower way of doing business. The congestion of the White House offices is a standard complaint, a standby of newspaper columnists. Despite its complete reconstruction by President Truman (who was bitterly criticized for it), the White House today contains more functionaries than ever before. Across the street, the old State-War-Navy Buildings have been renamed the Executive Office Building. This architectural memento of General Grant's administration contains behind its French neo-classic cascades of columns the Budget Bureau, the National Security Council, the Office of Defense Mobilization, and most of the recent White House staff expansion.

The office space needed by these activities and the place where they should be located are two separate questions. Inseparable from the latter is the key issue of the White House itself. Should it be a public building, full of offices; or should it be a residence? Its charm, so miraculously preserved during its recent renovation, has derived from its delicate balance between these two characters. That balance would be threatened by the construction of the proposed office block facing Jackson Place, as much and inevitably as by the proposed enlargement of the White House offices themselves.

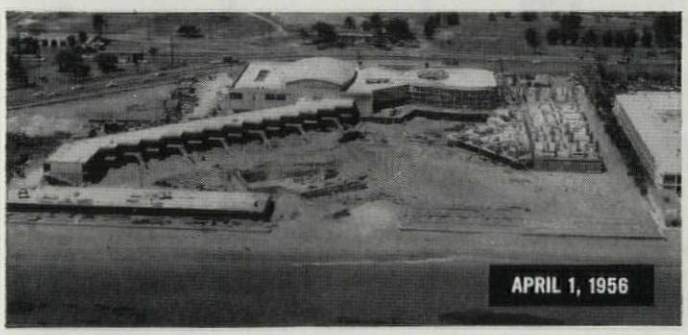
The best solution is probably to preserve the residential aspect of Jackson Place through the eastern half of the block. On the western half, facing Seventeenth Street, a frankly utilitarian structure—about all we can expect of Federal building in these preoccupied and uninspired days—could be allowed. The polite name for it, coined by a Central Intelligence Agency official and applied to Harrison & Abramovitz' design, is "austere but attractive." Over a period of years, the tall office buildings that have been allowed to intrude on Jackson Place could be replaced with structures in residential scale. Probably the entire area should be acquired by the Government, but there is no reason why suitable private organizations (like the National Trust) should not continue to occupy these buildings. They could also serve as official residences—for (among others) the Vice-President. Threatened for many years by Federal acquisition and demolition, the maintenance of these houses has been sadly neglected, but they are far from beyond reasonable repair.

The initiative for a plan of this sort ought to come from the National Trust. It would set an example that would benefit many other cities throughout the country where similar situations exist.

• The capital's other preservation problem, the extension of the East Front of the Capitol, is still shrouded in secrecy. A panel of three distinguished consultants, headed by Henry R. Shepley, is understood to have recommended against the changes Congress has already authorized. Instead, the panel proposes expanding the Capitol on the west side. This sensible proposal has yet to come to public attention, and it is to be hoped that the Architect of the Capitol will soon release it.



Floor-a-Week Frame Construction . . . 50% Form Saving



ENCORE FOR 'INCOR' This year's big news on South Florida's Gold Coast is the amazing Americana. Architect Morris Lapidus, who designed the Fontainebleau in 1954 and Eden Roc in 1955, has endowed the Americana with a distinction all its own, by blending touches of decor from all the Americas. Matching brilliant design is the staunch, fire-safe concrete construction, and newsworthy indeed is the Contractor's performance in completing this far-from-simple design in record time.

Miami Beach prohibits building December through March. So construction from foundation to lobby floor of the 15-story, 475-room guest unit was completed September through November. Resuming construction April 1, the Contractor went onto a high-speed 'Incor' schedule on the superstructure, to assure early-December opening.

Forms filled with concrete one day, stripped and jumped the next . . . structure topped out July 15 . . . 14 stories and roof erected in as many weeks. Typical 'Incor'* results: 50 to 60% saving on forms . . . faster completion, less job overhead . . . earlier rentals . . . quality concrete, with high ultimate strength matching high-early performance. Duplicating similar record on Fontainebleau and Eden Roc . . . another encore for 'Incor.'

*Reg. U. S. Pat. Off.

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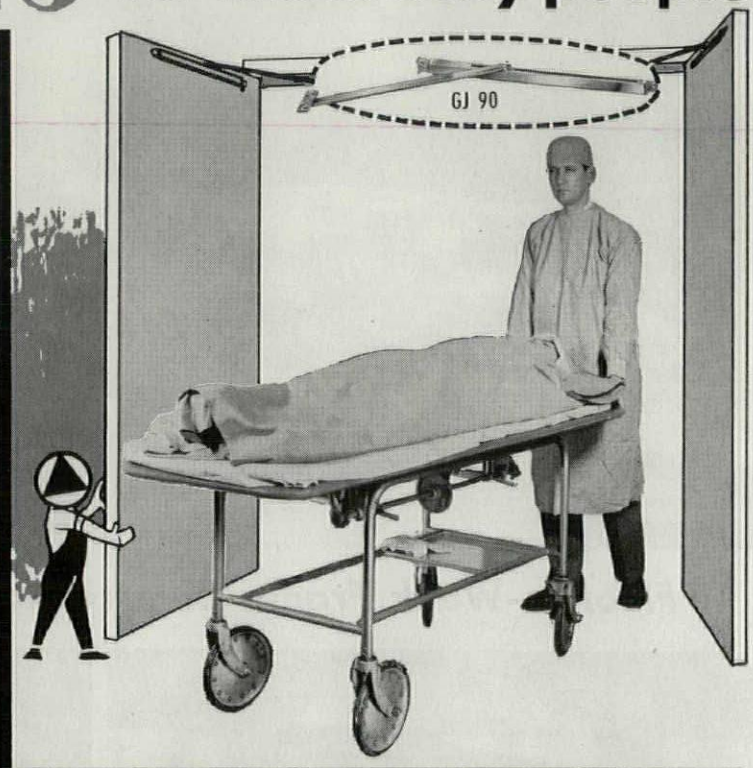

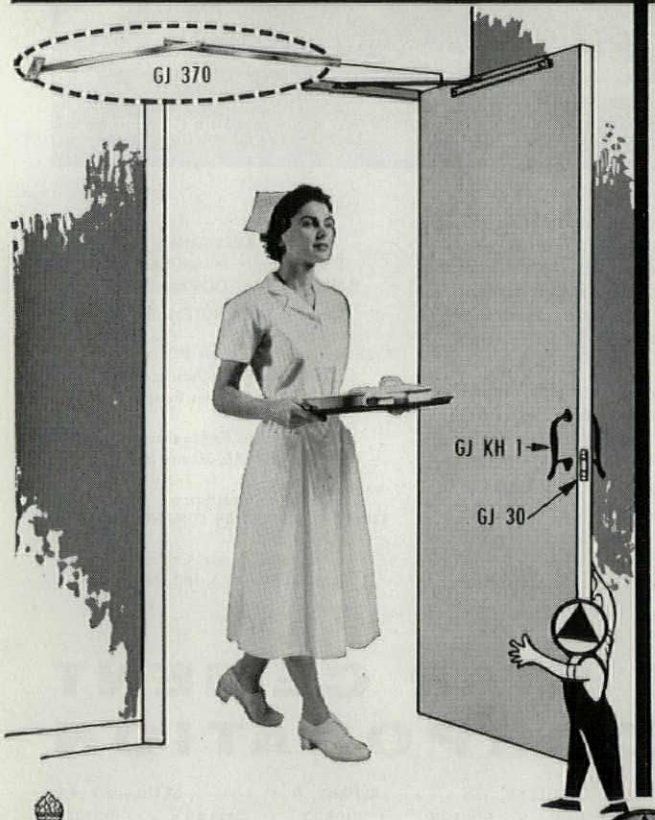

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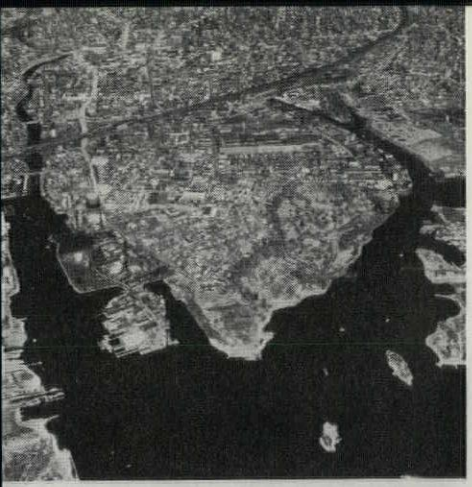


the architect and his community

Sherwood, Mills & Smith: Stamford, Connecticut

In our series of "Architect and His Community" studies, to date, it has been our good fortune to document a surprising number of variations on the basic theme. Among others, we have reported on a firm that succeeded in a small community; we have studied the procedures of the big-city office; we have explored a new, young firm that has managed to bring new architectural horizons to an older city; and we have analyzed a practice that prospers in a relatively isolated center. This month, in focusing on the firm of Sherwood, Mills & Smith and Stamford, Connecticut, we look at a remarkably thriving office that, located but 50 minutes by train from New York's Grand Central Terminal, elected to hang out its shingle in the smaller center. How and why this was done—its advantages and disadvantages—are the subject of the following discussion.

Stamford, about 35 miles northeast of New York City, has a population of some 84,000 and an area of 38 square miles; its harbor opens into Long Island Sound.

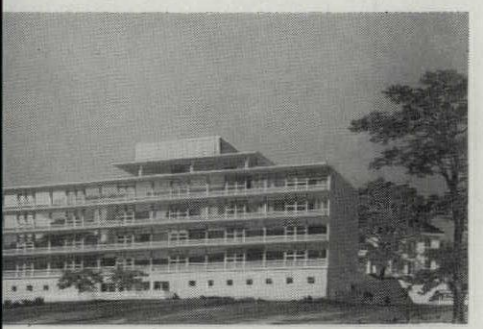
Junior and senior partners of the firm of Sherwood, Mills & Smith are: (standing) *Thomas Norton, Willis N. Mills; and* (seated) *Carrell S. McNulty, Jr., Gray Taylor, A. Raymond von Brock, Lester W. Smith, and Thorne Sherwood.*

Photos: Fairchild Aerial Surveys Inc.
Robert Stahman

For the new six-story Litchfield County Hospital in Winsted (below), *steel columns and prestressed lift slabs are used —one of the first multistory lift-slab installations in the area.*

To provide much-needed instructional space for nurses' training at the Stamford Hospital, a two-story wing (bottom) *has been added—a nursing-arts room on the upper floor; two lecture-classrooms on the lower level, divided by a movable partition. which, when opened, forms a single area.*

Rendering: Vincent Furno
Photo: Robert Stahman



When Thorne Sherwood, Willis N. Mills, and Lester W. Smith returned from war service with the Navy, Marine Corps, and Army Air Forces, respectively, they decided to pool their resources and found a partnership for the practice of architecture. This was in 1946. In the brief intervening years, the firm has prospered mightily, growing from the original one room, where the partners employed a part-time secretary, to an establishment today of about 40 persons, with a sizable central office and an auxiliary drafting space in a neighboring building for special projects. A firm of this size they find ideal for the volume of work currently in the office or under construction —approximately $25-millions worth.

why Stamford?

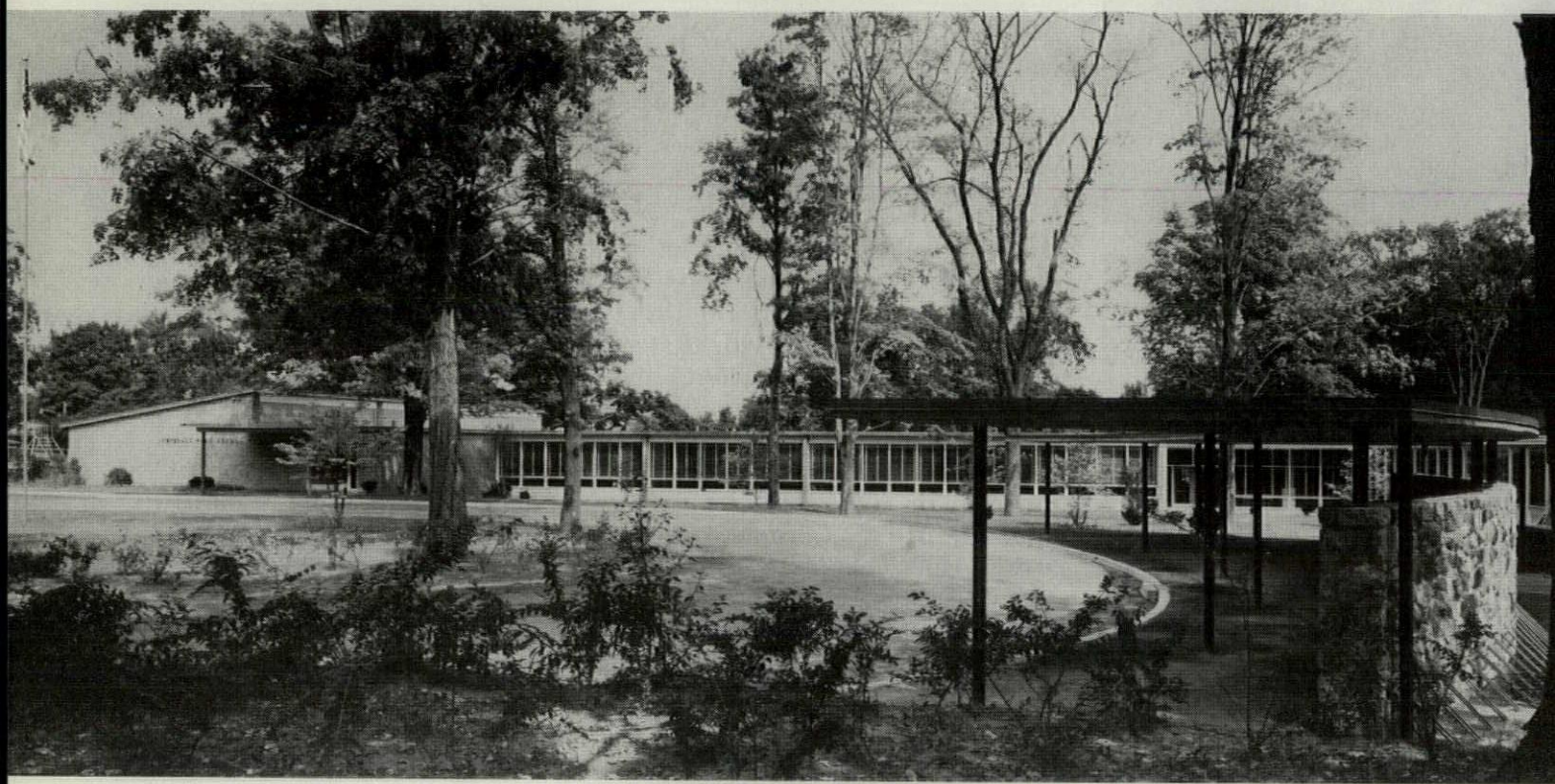
An initial decision was to establish the firm in the residential-industrial city of Stamford, Connecticut, 50 minutes by train from New York, rather than in the metropolis, itself. And it is a decision they have never regretted. In fact, they would recommend location in similar communities to other firms planning to open their doors.

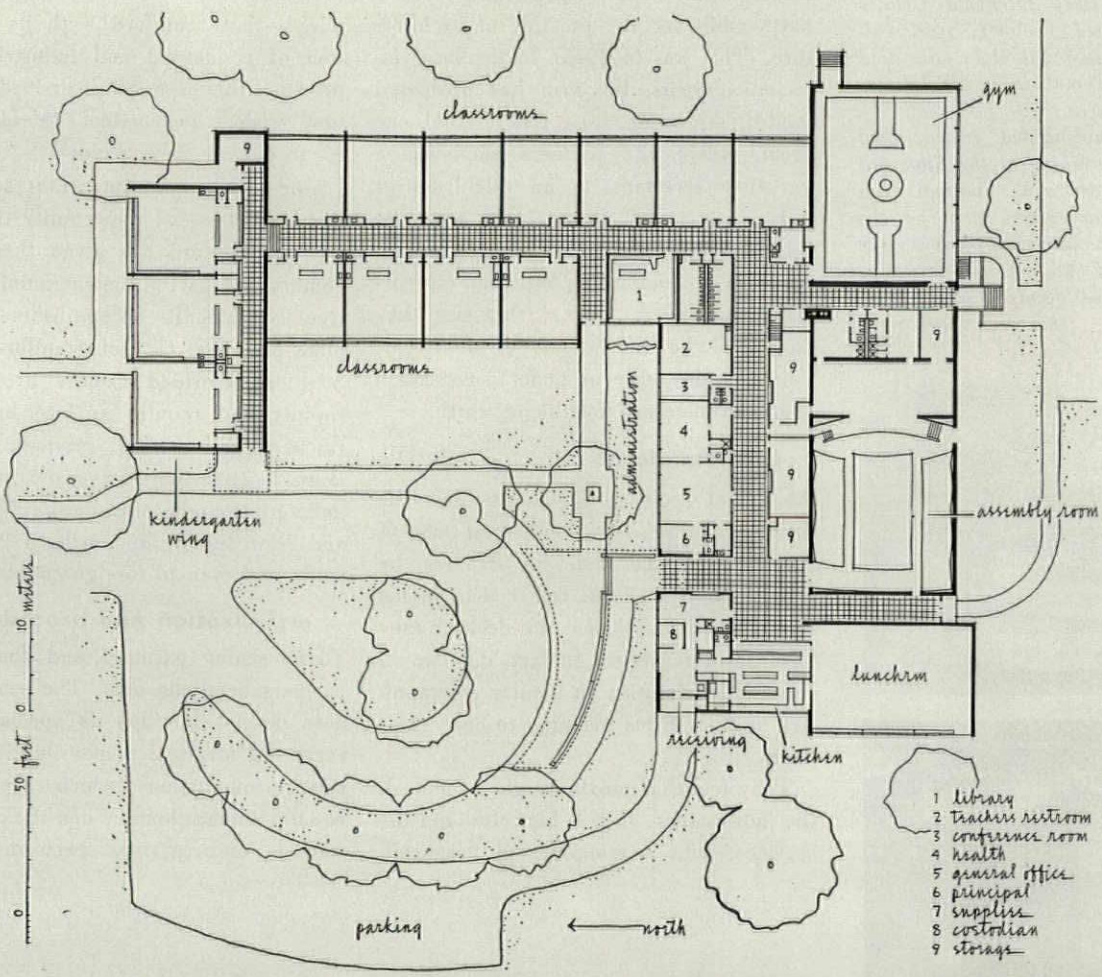
They feel that proximity gives them all the advantages of the big city and its services, with a minimum of its disadvantages. The daily chore of commuting is obviated; they feel they lead pleasanter lives, no one of them being more than a half hour's easy drive from home; and they have discovered—as they had surmised—that Stamford, with its combination of residential and industrial areas, provides the type of diversified practice they wished to conduct (a fact amply borne out on these pages).

One of the most important advantages they report is the opportunity that working in Stamford has given them to become a real part of the community, an extremely difficult accomplishment in a huge city. The City of Stamford and all Southern Fairfield County are growing rapidly and require an ever-broadening range of architectural services. Furthermore, location there by no means restricts their practice in neighboring New York and New Jersey; in northern New England; and even in foreign countries.

organization and procedures

Three senior partners and four junior partners head the firm. The senior partners do not function as specialists, but carry out identical responsibilities on different commissions which are divided equally among them. When the office first started, each partner performed every




classrooms
gym
classrooms
administration
kindergarten wing
assembly room
lunchrm
receiving
kitchen
parking
north
0
50 feet
0
10 meters
1 library
2 teachers restroom
3 conference room
4 health
5 general office
6 principal
7 supplies
8 custodian
9 storage

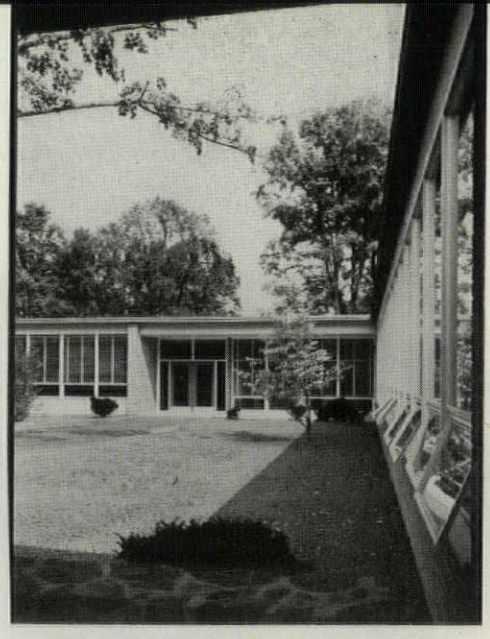
function in the office, interchangeably; all of them designing, making presentation and working drawings, writing specifications, and supervising work.

As the firm increased to 18 or 20, each partner still oversaw the work with draftsmen, outside supervision men, specification writers, etc. It became apparent, however, that certain outstanding young men in the office could be entrusted with any of these activities and perform them all. These men became junior partners and were put in charge of projects under a senior partner, thus relieving the latter for general policy and guidance of design.

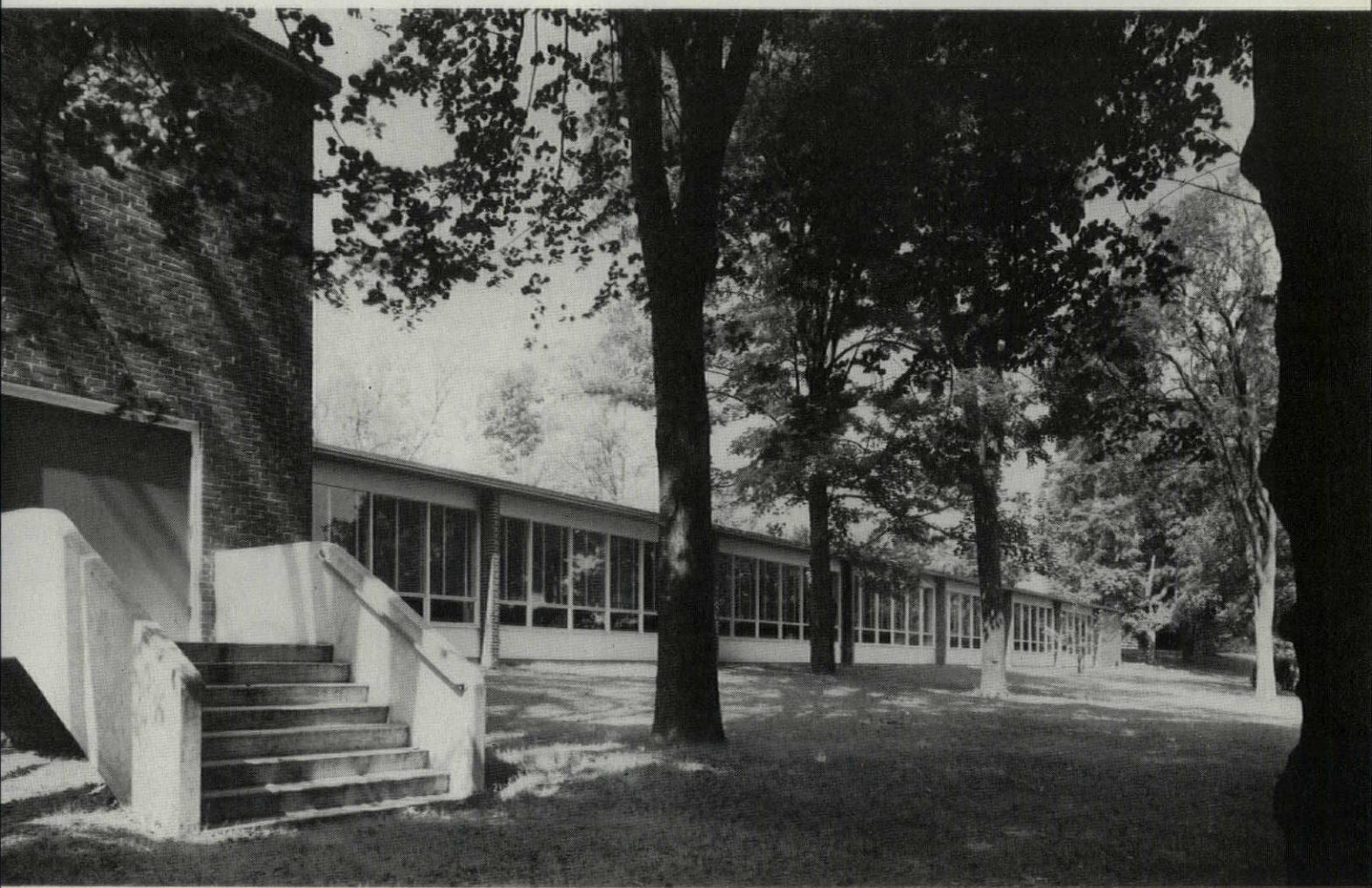
On a typical, important project, a senior partner heads a group, with a junior partner assisting. Under these are a job captain and a drafting force, assigned by a chief draftsman, who is himself a junior partner and has general surveillance over all work. "Specialization in our office is confined to specifications, supervision, color, furnishings, and public relations," the partners report, "each of which is under one person's direction. The senior partner retains intimate contact with a job from beginning to end, and usually handles all of the client contact throughout the job. He also initiates the preliminary design."

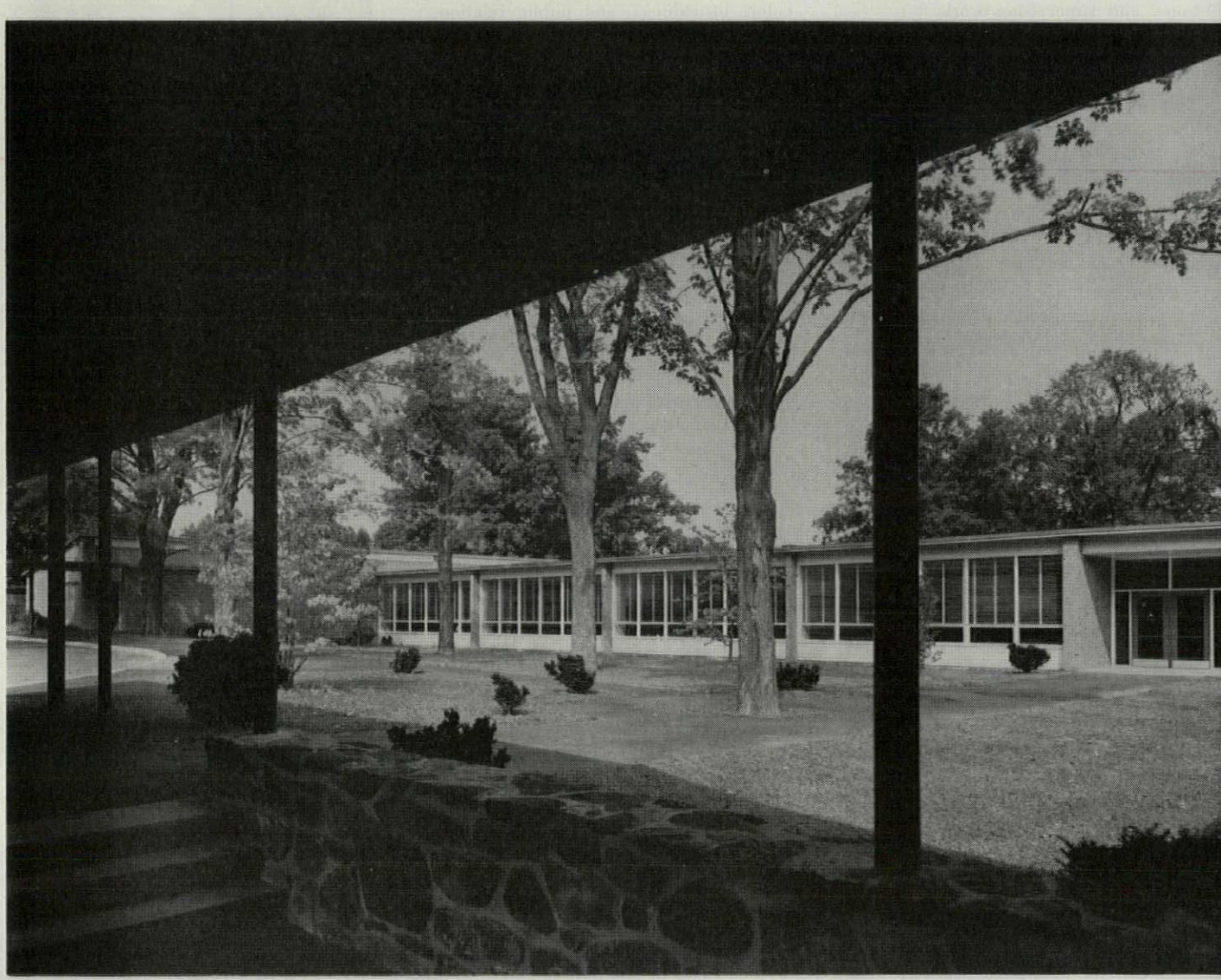
The present office size, they feel, is not too large to permit close control of the work by the partners. It could even grow slightly larger, but a substantial increase would require changes in organization. One of the junior partners heads the design department, which assists in the development and presentation of ideas on

(Continued on page 112)



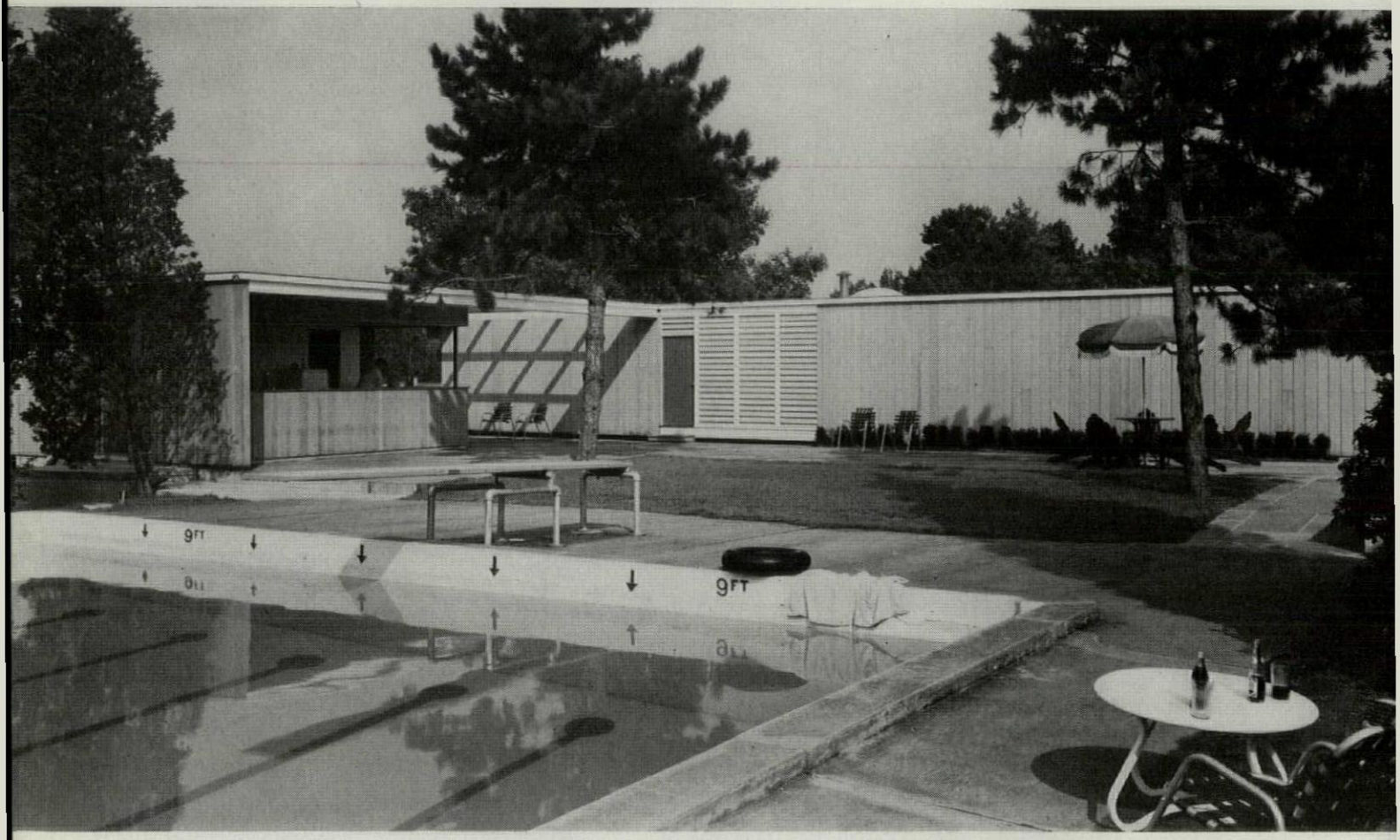
The fact that the Veterans Park Elementary School in Ridgefield is located in a public park with handsome trees and a surrounding residential neighborhood brought the refreshing early decision that the design should be informal and homelike—the opposite of a civic monument. Three distinct elements (kindergartens, classrooms, and public-use rooms) are graciously disposed around a central courtyard. Structure combines steel frame and masonry bearing walls. Photos: Ezra Stoller





Interior walls of the school are painted concrete block, plaster, or birch plywood; flooring is asphalt tile, except in the gym, where maple was used; ceilings are finished with acoustical tile. Heating derives from a hot-water radiant system. Eustis Dearborn was Job Captain; Seelye, Stevenson, Value & Knecht, Structural Engineers; Frederic E. Sutton, Mechanical Engineer; Bryan J. Lynch, Landscape Architect; and George L. Hickey, Inc., General Contractor.

The window walls of bilaterally lighted kindergartens (right) *open to a play garden of their own. At the opposite end of the school* (below, *left to right*) *are the cafeteria unit; auditorium; and gymnasium.*

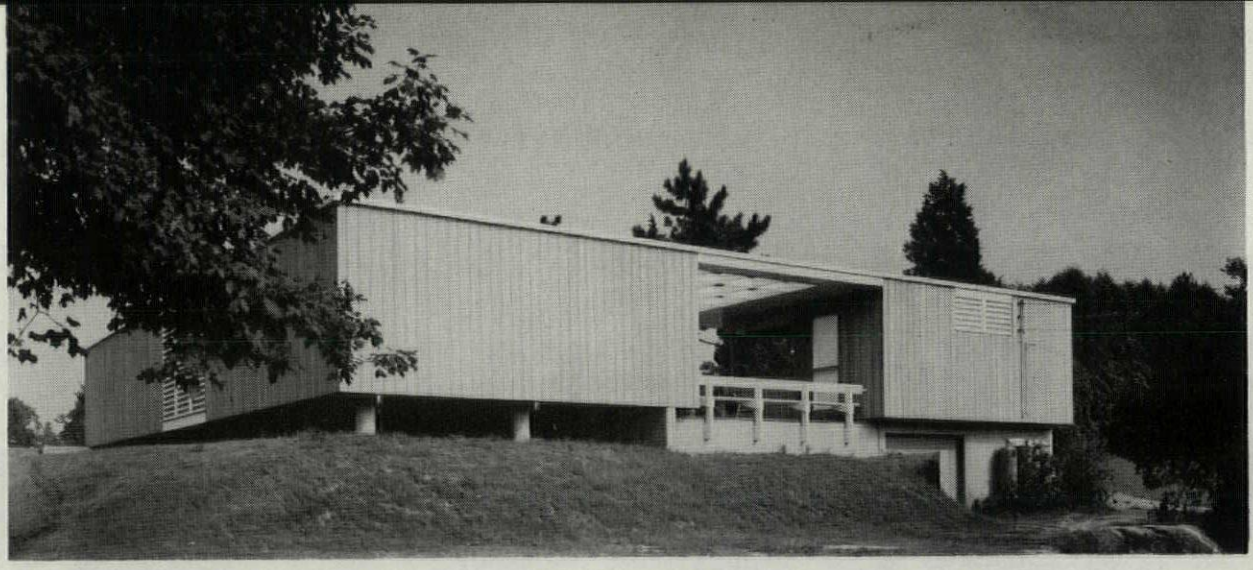


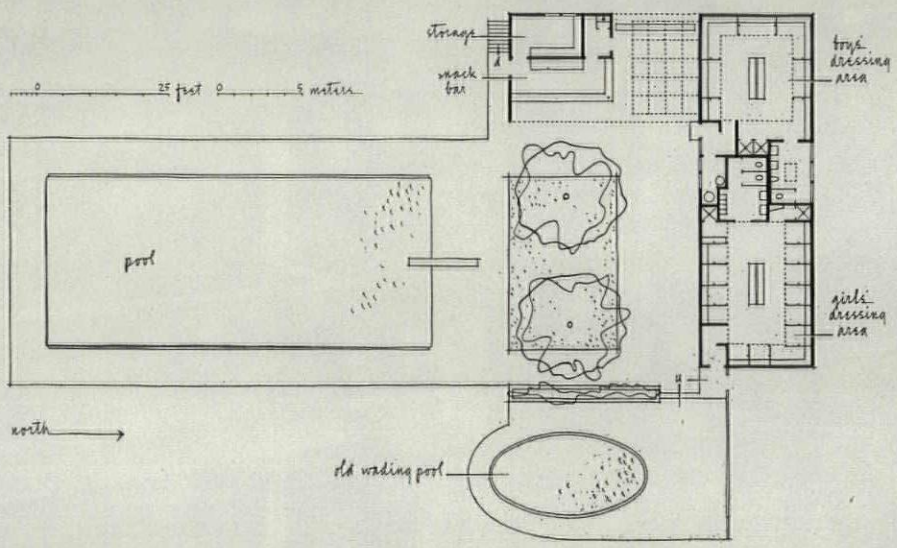
Adjoining the swimming pool and wading pool of the New Canaan Country Club is this modest bathhouse, with snack bar for light refreshments. Plumbing is grouped in the center, with bathhouse patios, open to the sky, at either side. The plain, unbroken walls of the structure form a simple background for the poolside flagstone terrace; framing is exposed on the interior. Gray-stained redwood and white trim are the finish materials, and the timber frame is supported on concrete piers. Richard Lathrop was Job Captain; John S. Gardner, General Contractor.

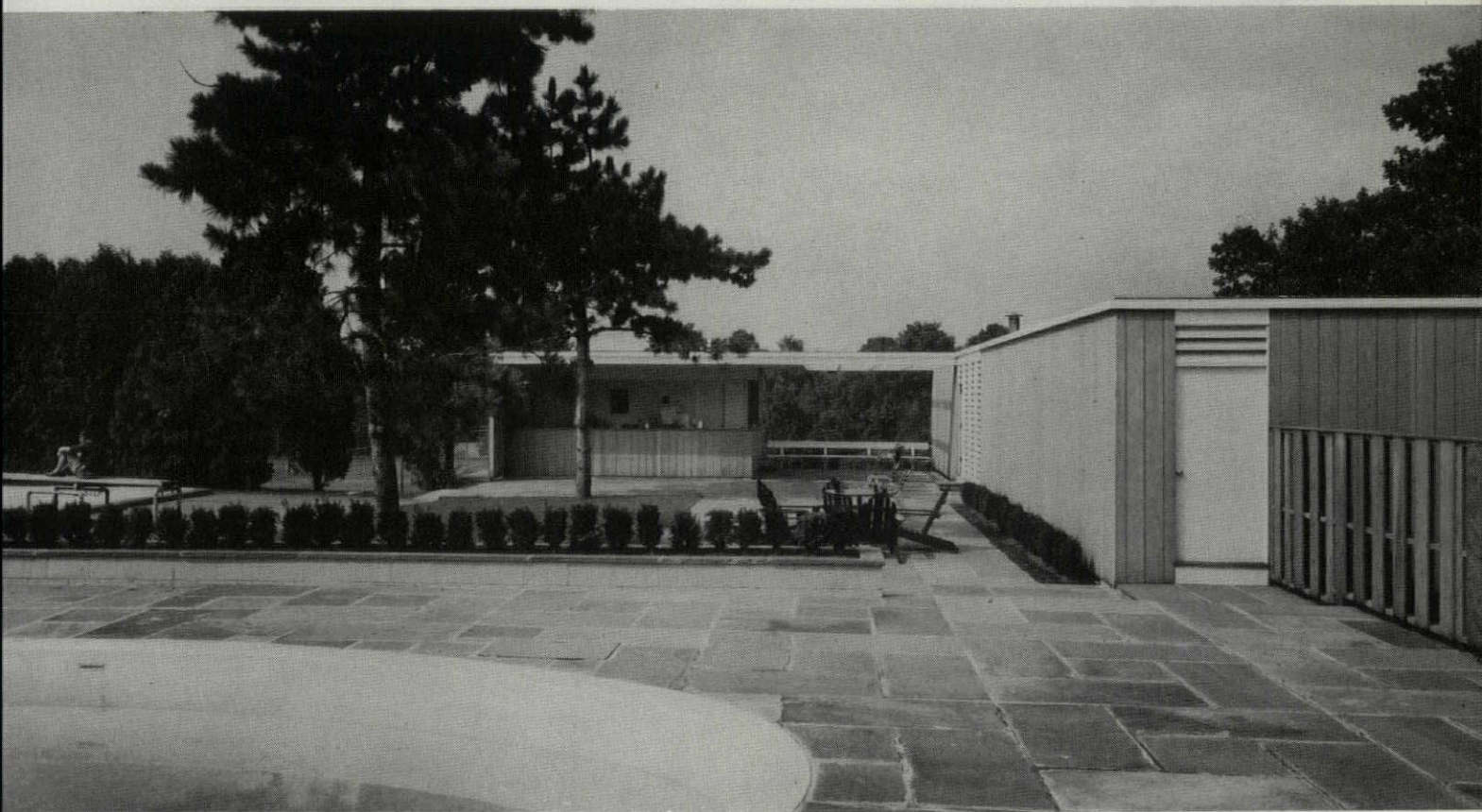
Photos: Ezra Stoller

all projects. Another junior partner is in charge of the drafting room and performs vital responsibilities in the management of the office, including employment of personnel, promotions, etc. The other two junior partners are expert production men who take charge of the largest and most important projects, especially during the preparation of working drawings and the construction stages. Lester Smith has this to say about the success of the office setup: "Since these young men have become junior partners, the efficiency of the office has increased enormously, not only because they are bearing ever-increasing responsibilities, but also because their ideas and enthusiasm have benefited the office as a whole."

Early commissions of the firm included a small building for Kent School, in Kent; a house for the brother of one of the partners (which was never built); a few minor alterations to houses; and a bathhouse for a local yacht club. The big opportunity came in 1948, when Sherwood, Mills & Smith, together with O'Connor & Kilham, were commissioned to design the South School, in New Canaan. From that point on, commissions began to come in steadily, with schools in the majority. But, not wishing to become school specialists, the firm continuously tried to keep as much variety as possible. With impressive success, one may point out, considering the fact that recent and current commissions in Connecticut include residences, churches, public and private schools, office buildings, hospitals, hotels, laboratories, clubs, a prison, factories, showrooms and stores,




storage
snack bar
boys' dressing area
0 25 feet 0 5 meters
pool
girls' dressing area
north
old wading pool



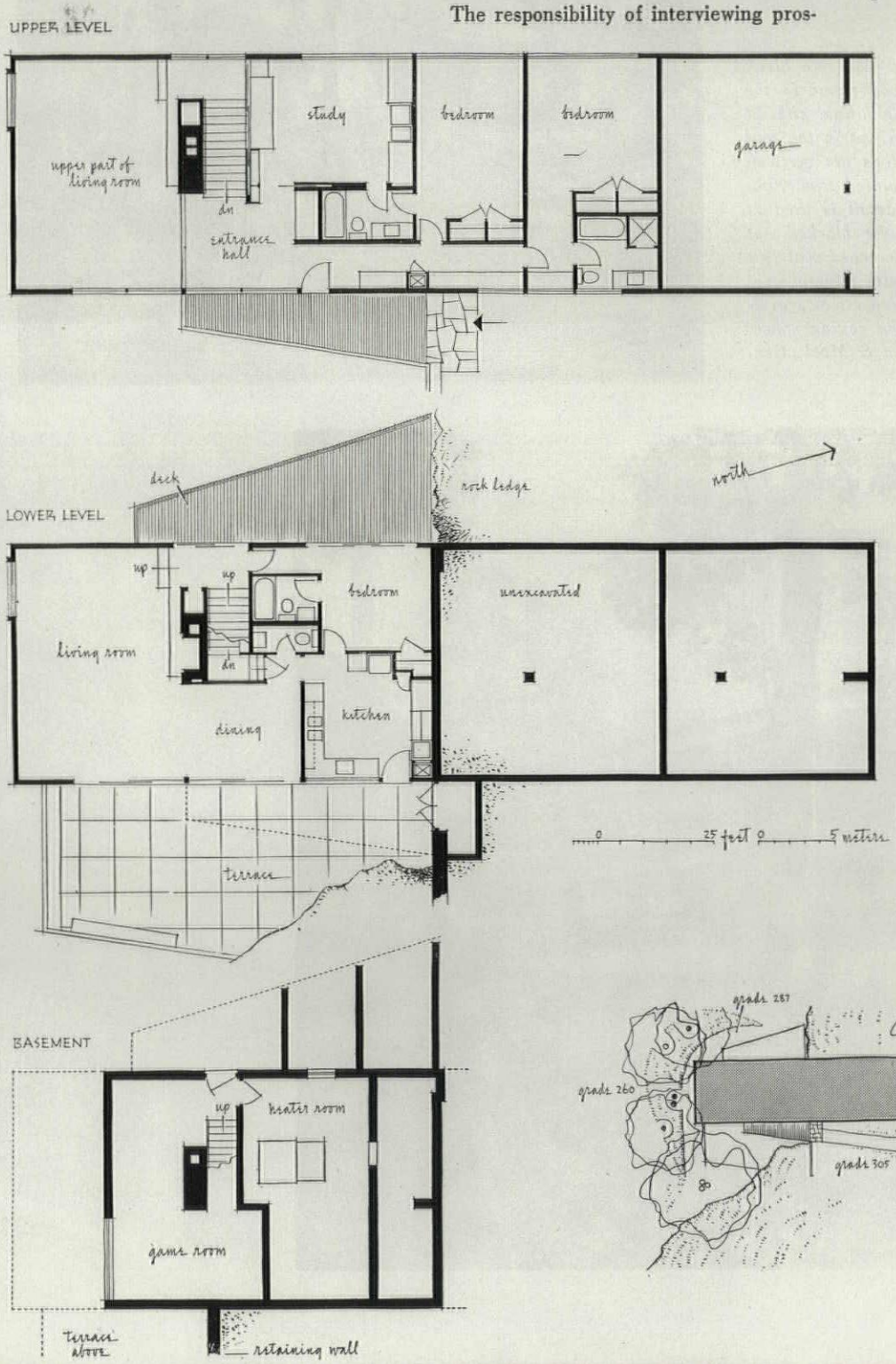
dormitories, and museums.

As for the firm's approach to design, Willis Mills sums up the viewpoint over the years: "Our attitude toward design has changed in emphasis, rather than in basic philosophy. Our original desire to do good work was occasionally subdued in order to land a commission and keep going. The emphasis now is to do a large variety of good work, rather than a large volume. From a standpoint of design treatment, there is also a change toward a more orderly, less complex treatment. We feel that our design has improved, but time will tell whether we are right."

The responsibility of interviewing prospective clients is shared equally among the three senior partners. Techniques used in developing design consist primarily of drawings, diagrams, sketches, and (where appropriate) graphs. Models are used occasionally, but usually for presenting a design rather than for study purposes.

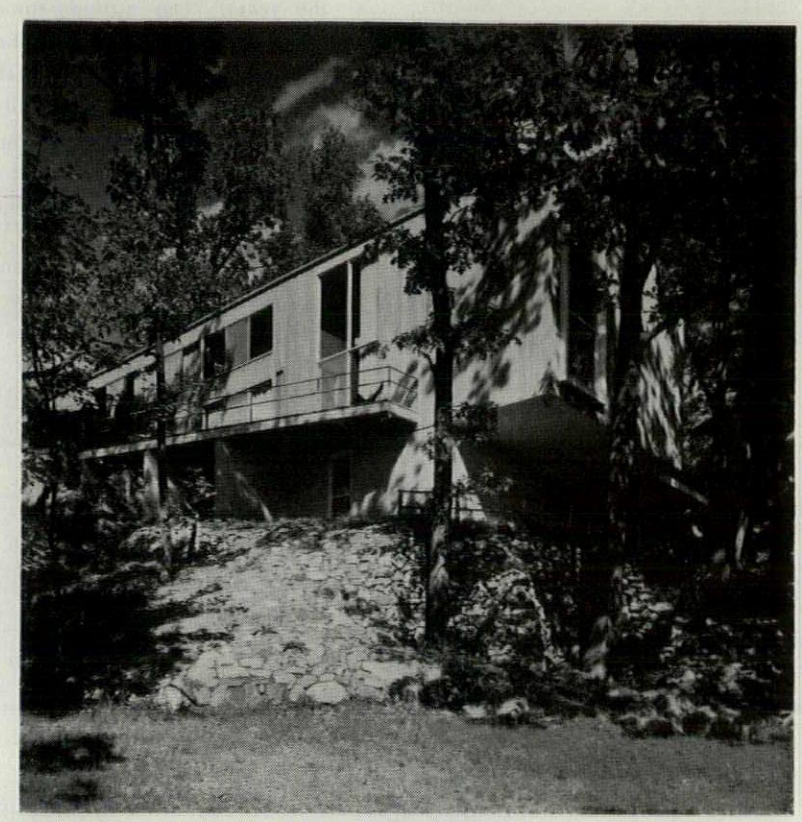
A general brochure which presents the work of the firm, states the service rendered, office organization, and biographical information on each partner. Illustrated with examples of work in different categories, it is used frequently to acquaint prospects with the firm's work,

(Continued on page 121)

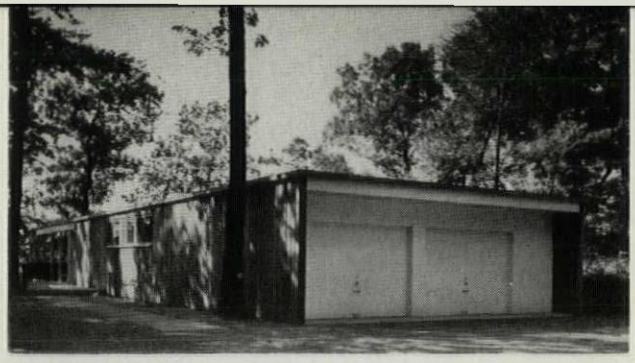


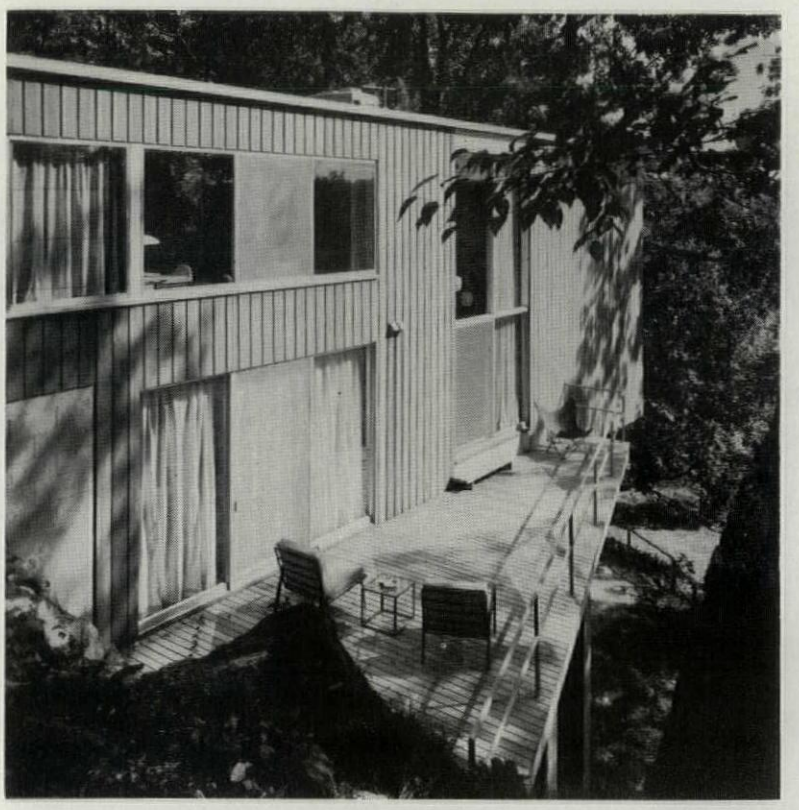
When Willis Mills decided to build his own home, he chose a beautiful, precipitous, rocky, wooded hillside in New Canaan that many another would have thought impossible as a site. Between the relatively level areas at the top and bottom of the slope, there is a difference in elevation of 45 feet. In the three-level plan, with cantilevered portions at each level, the drama of the site is fully exploited. The entrance walk extends into a cantilevered deck that looks down onto a concrete sitting-terrace tucked into the hillside. On the opposite side of the house, at the next level down, a projecting porch provides a treetop aerie overlooking the steep slope below.

Photos: Joseph W. Molitor

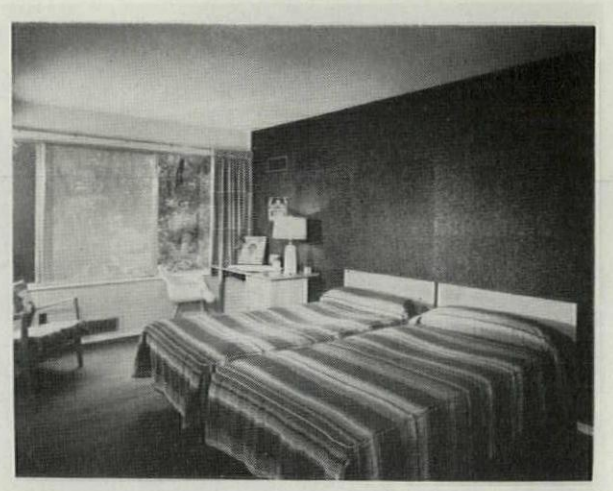


Structurally, the house is a composite—concrete block at grade or back into the hillside, wood frame in the main, with some steel columns and longitudinal girts at the center of the first and second floors and in the roof frame. Exterior walls of framed portions are vertical, natural-redwood boarding with white-painted trim. Sliding sash are aluminum. An unusual detail is used at the eaves—a continuous, 4-in.-wide baffle blocked out from the wall, protecting a continuous screened vent just below the gravel stop. This combines with mineral-wool insulation at ceiling level and white, reflective, gravel-roof surface to avoid overheating of the ceiling space. John Iverson was Job Captain; Borglum & Meek, General Contractor.



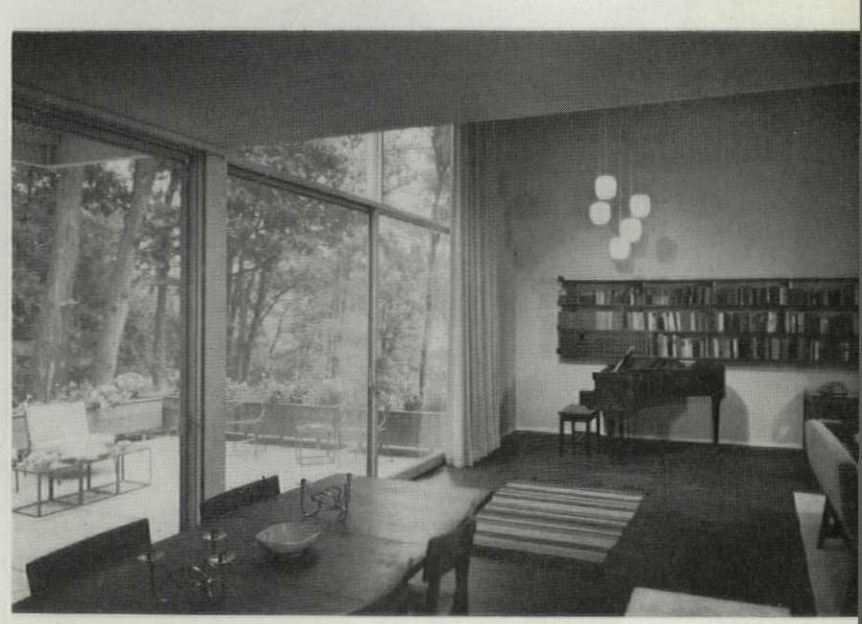


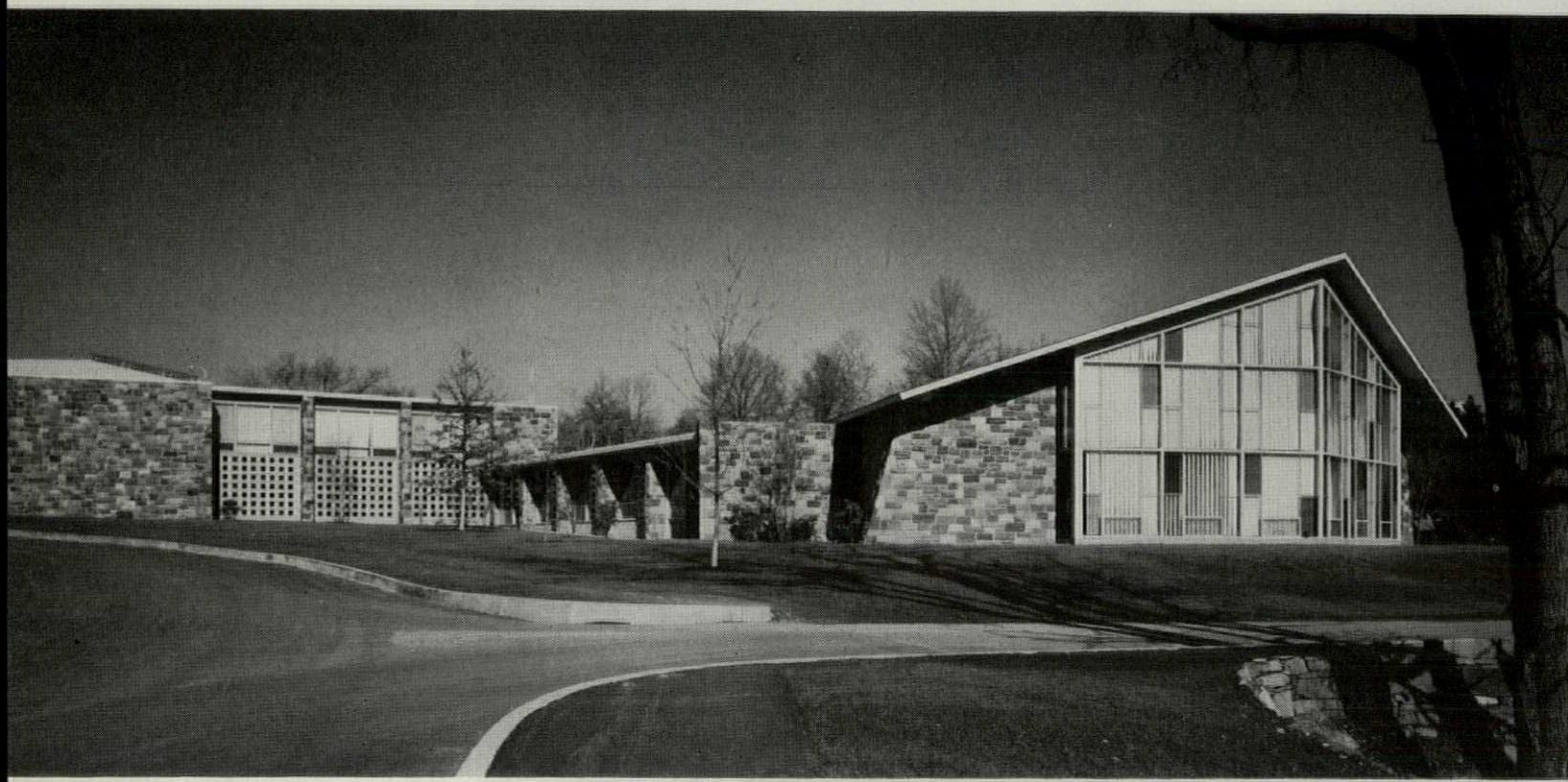
The extreme restraint of the design at the topmost (entrance) level (above) *is in marked contrast to the drama that confronts the visitor as he discovers the plunging slope beyond. On the west side of the house* (left) *is an intermediate porch of treated lumber supported on steel cantilevers; on the east* (below), *the entrance deck projecting above the outdoor terrace adjoining the two-story-high living room.*

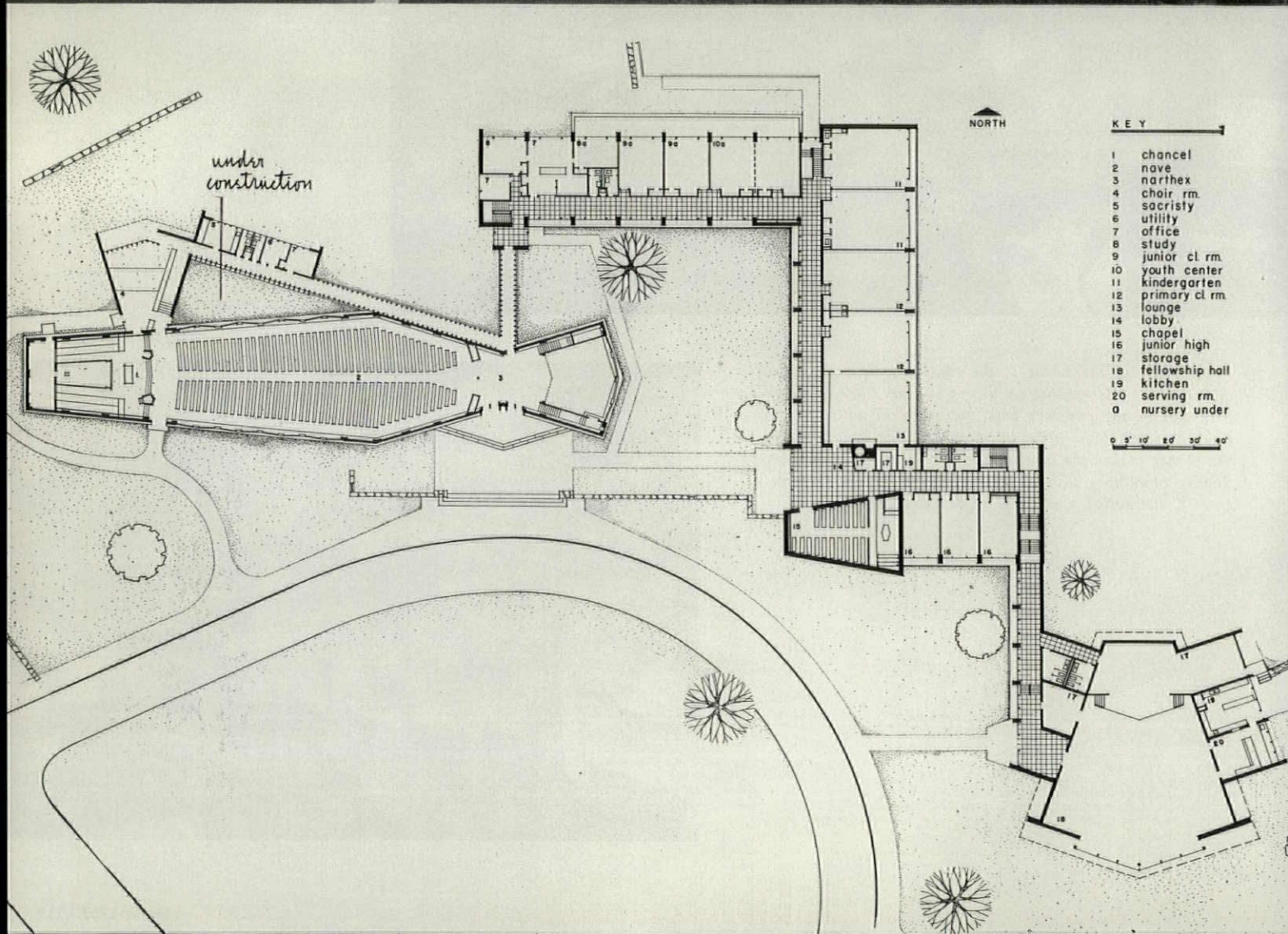


The bedrooms and study occupy the top floor. Sliding panels and doors separate the study from adjoining areas, so that it may be fully opened or (when used as a guest room) completely private. Heating is accomplished by a zoned, warm-air system, with continuous fan operation and low velocity. Galvanized steel ducts are sized, located, and insulated to provide for future cooling, if desired.

Focal point of the house is the two-story living room, with dining space planned as an alcove at one side. The ceiling here and in the entrance hall and study above is painted a light cerulean blue. The full-height, triple-hung window in the corner makes the most of the view into the trees outside. Sliding aluminum sash open the room to the terrace on the east. Construction cost came to $15 a square foot.





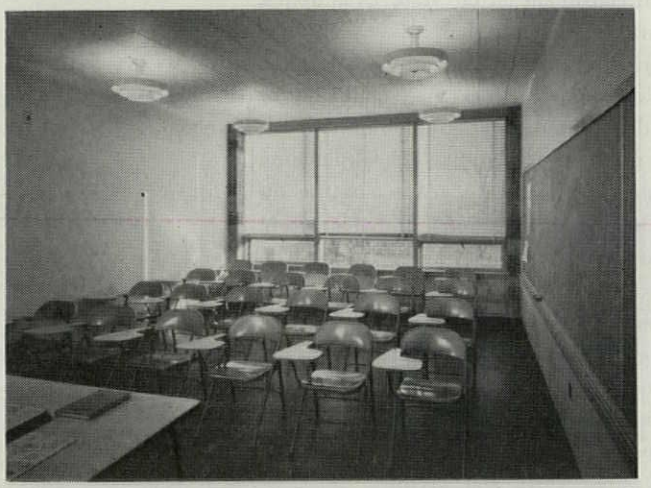

under construction
NORTH
KEY
1 chancel
2 nave
3 narthex
4 choir rm.
5 sacristy
6 utility
7 office
8 study
9 junior cl. rm.
10 youth center
11 kindergarten
12 primary cl. rm.
13 lounge
14 lobby
15 chapel
16 junior high
17 storage
18 fellowship hall
19 kitchen
20 serving rm.
a nursery under

methods of operation, etc. Separate brochures or folders on health facilities and individual school projects are also distributed when considered helpful. These latter brochures give details on all phases of a school project, including cost figures, plans, and design factors.

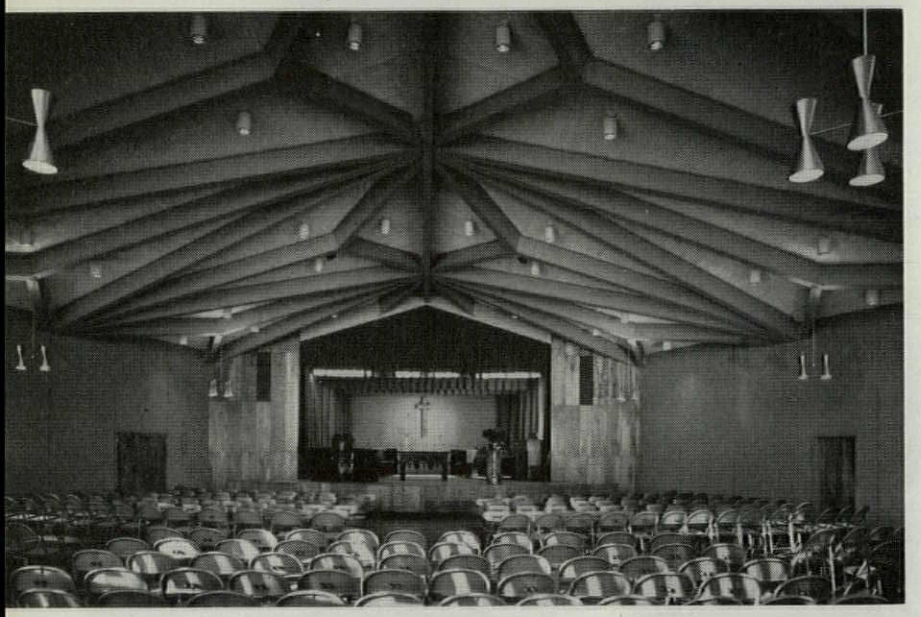
"One development with our firm has been a more positive approach to the client," comments Thorne Sherwood. "Although we live in the 'climate' of design, the client too seldom is receptive to the best design approach of which the architect is capable. It seems to me that it is our responsibility to prevent the compromised, diluted scheme whenever possible and retain the best features of a design."

As the organization has grown, it has been found desirable to have an educational consultant on the staff. Evan Jones, a former superintendent of schools, has contributed much to the firm in developing school jobs from the standpoint of population studies, programming, and advice to clients on specific school-planning problems. For several years now the office has also had a color and decorating department, headed by Esther Mills, who was trained as both an architect and a painter. "We believe that color is vitally important to the success of any job," the partners agree. "By establishing this department, we have been able to improve not only its quality but also the degree of integrating color and architecture."

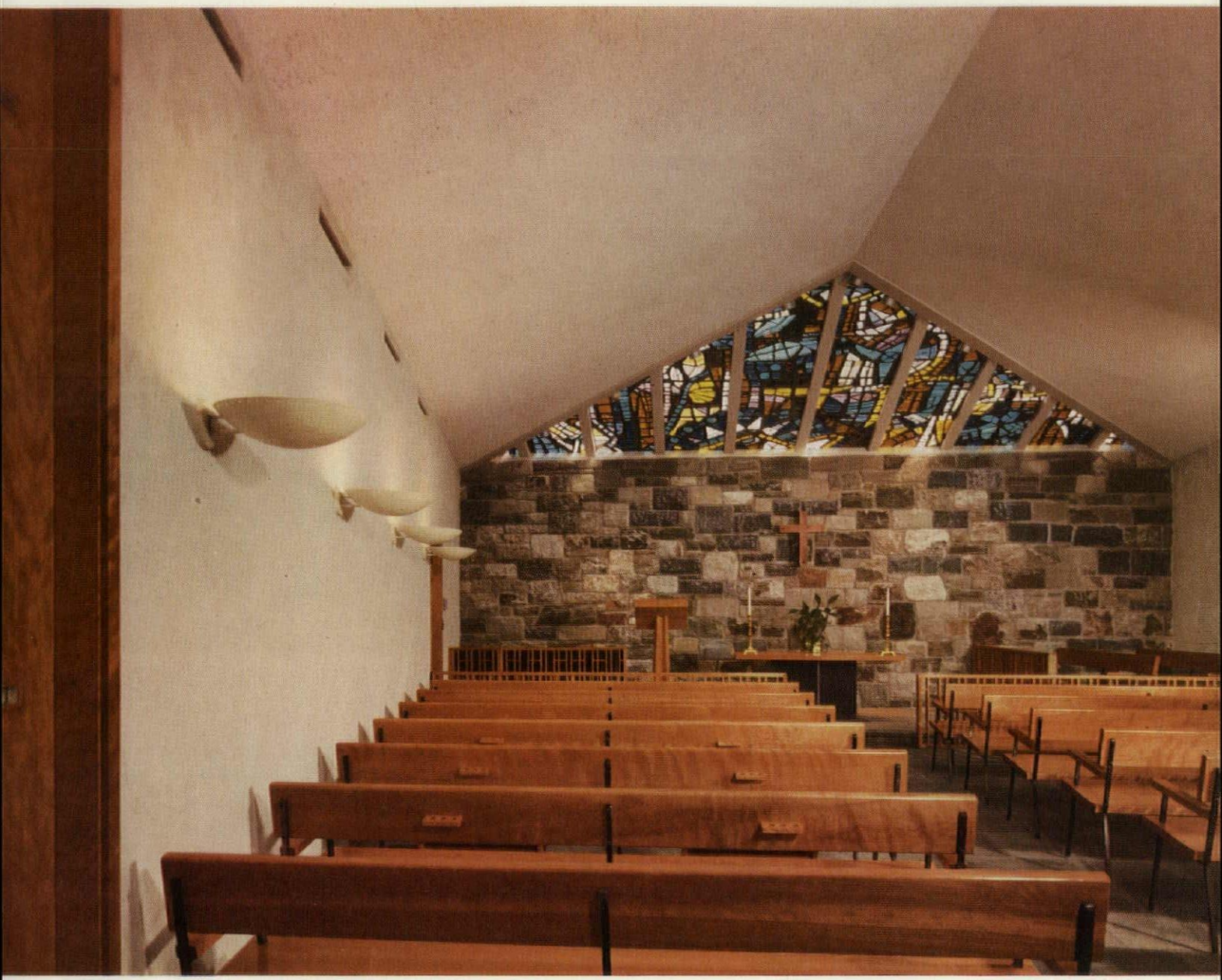
For Stamford's First Presbyterian Church, Associated Architects were Sherwood, Mills & Smith (chiefly responsible for site work and Sunday School, Chapel, and social hall shown here) *and Harrison & Abramovitz (directly responsible for the huge Sanctuary, seen under construction, left of* photo below, *which will eventually crown and dominate the entire group). Every advantage was taken of the rolling, 10-acre site, with elements disposed on several different levels.* Photos: Joseph W. Molitor



The building frame uses both steel and concrete, with walls of concrete block or stone from the site. Radiant warm air is used in many areas.. To daylight interior space of the larger (primary) classrooms (below) *plastic skylights are used. A. Raymond von Brock was Job Captain; Esther Mills, Color Consultant; Bryan J. Lynch, Landscape Architect.*



An exceptional structural feature is the roof framing of Fellowship Hall (temporarily used as the main church) that consists of an elongated pentagon, varying in span from 26 to 74 feet. Star beams are used with buttresses to take thrust. In the architects' words, this system not only produces an uniform visual treatment but also "avoids horizontal ties at the eaves and gives a spaciousness and height not possible with conventional framing." Seelye, Stevenson, Value & Knecht were Structural Engineers; Fred Dubin Associates, Mechanical Engineers; Deluca Construction Company, General Contractor.



The Chapel, seating 100, employs a subdued color palette, relying chiefly on natural stone, flagstone, wood, and white plaster—a foil to the richness of the 1-in.-thick stained glass panels executed by Gabriel Loire of Chartres from designs by Matthew Wysocki. The in-sloping glass is illuminated at night from outside floodlighting.

"The client expects more from a building than the efficient enclosure of space. Beauty, ingenuity, fitness, and economy are all vital to successful architecture. Solving the client's problems in terms of these elements is the function of the architect."
Sherwood, Mills & Smith

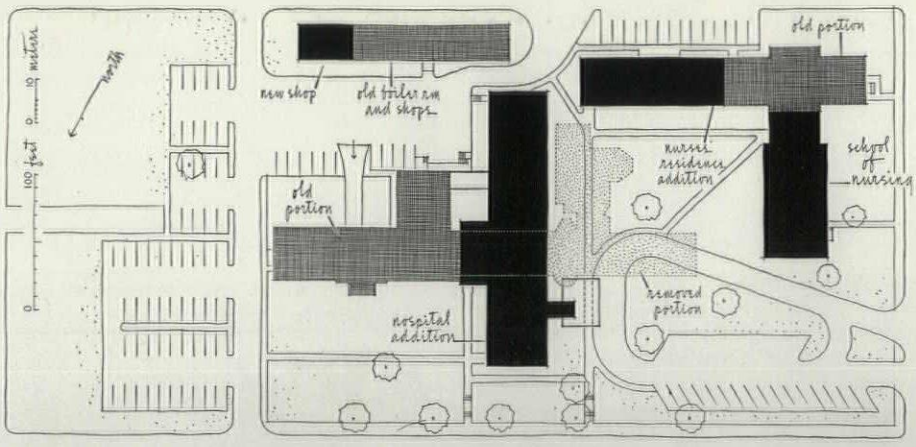
hospital additions

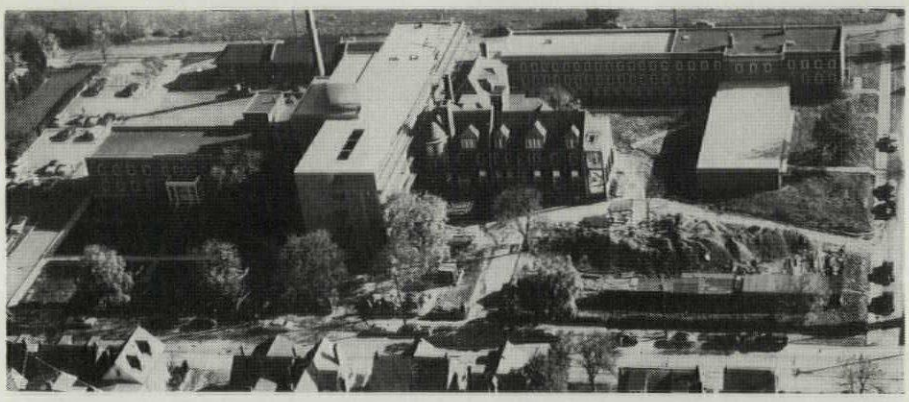
location	Pottstown, Pennsylvania
architect	Vincent G. Kling
associate-in-charge	Frederick G. Roth

Within a two-year period, the face of Pottstown Hospital has been dramatically transformed by a remarkable piece of architectural surgery. A new hospital wing has been erected directly through the center point of the old plant (*aerial photo acrosspage*). "It seemed obvious from the start," writes the architect, "that any building which could serve the hospital's function and still be integrated with the nurses' building and the existing steam plant, would have to be constructed at right angles to the existing plant." A remaining portion of the old building, which now forms the stem of the T-shaped plan, houses facilities such as food services, general supplies, ambulance and morticians' services. The new wing, placed perpendicularly to services, accommodates 140 beds, 40 bassinets, and clinic facilities for 20,000 outpatient visitors annually. Most of the patients' rooms are oriented toward the campuslike garden of the hospital and the distant views beyond. Traffic flows smoothly in this plan and a direct corridor connection, with delivery suites in the old building, facilitates circulation still further. Since the old hospital had to remain in operation throughout the two-year construction period, it was imperative to select quiet and clean construction methods. Thus the structural-steel frame was bolted rather than riveted. Floors and roof slabs are of reinforced concrete. Broad faces of the building are clad in porcelain-enameled panels—a clean as well as colorful and maintenance-free dry-wall construction method. Surfaces of the panels are of porcelain enamel on an aluminum-honey-comb core with a flat-sheet paint-grip steel back. The same material was also used for the sun-screening device (*see* SELECTED DETAIL) at the southwest exposure of the hospital wing.

In addition to the new 5-story wing, other parts of the hospital complex are the three-story nurses' residence, which has been partially remodeled and extended, and the new one-story school of nursing. These two minor structures are joined in L-shape, defining two sides of the court.

Pennell & Wiltberger were Mechanical Electrical Engineers; Stevens & Bruder, Structural Engineers; E. H. Keefer & Son, General Contractor; The Howard P. Foley Company, Electrical Contractor; and Corbit's Inc., Mechanical Contractor.

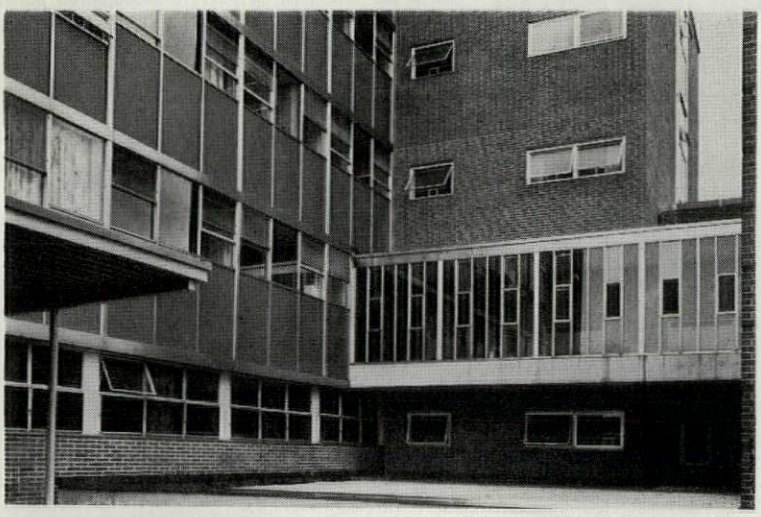




New hospital wing was erected through the center of the old plant, near existing services, so as to keep corridor lengths to a minimum, integrate the new building with older structures which are to remain, provide adequate parking area, and create an orderly landscaped court. Three-story nurses' residence was enlarged and partially remodeled. Joined to this structure at right angles is the school of nursing. Aerial photo: Bill Harris

Southwest façade of the new hospital wing (left) *is a curtain wall of porcelain-enameled panels and glass in a stainless-steel grid. In contrast, end walls are primarily of brick.*

Photos (except as noted): Lawrence S. Williams

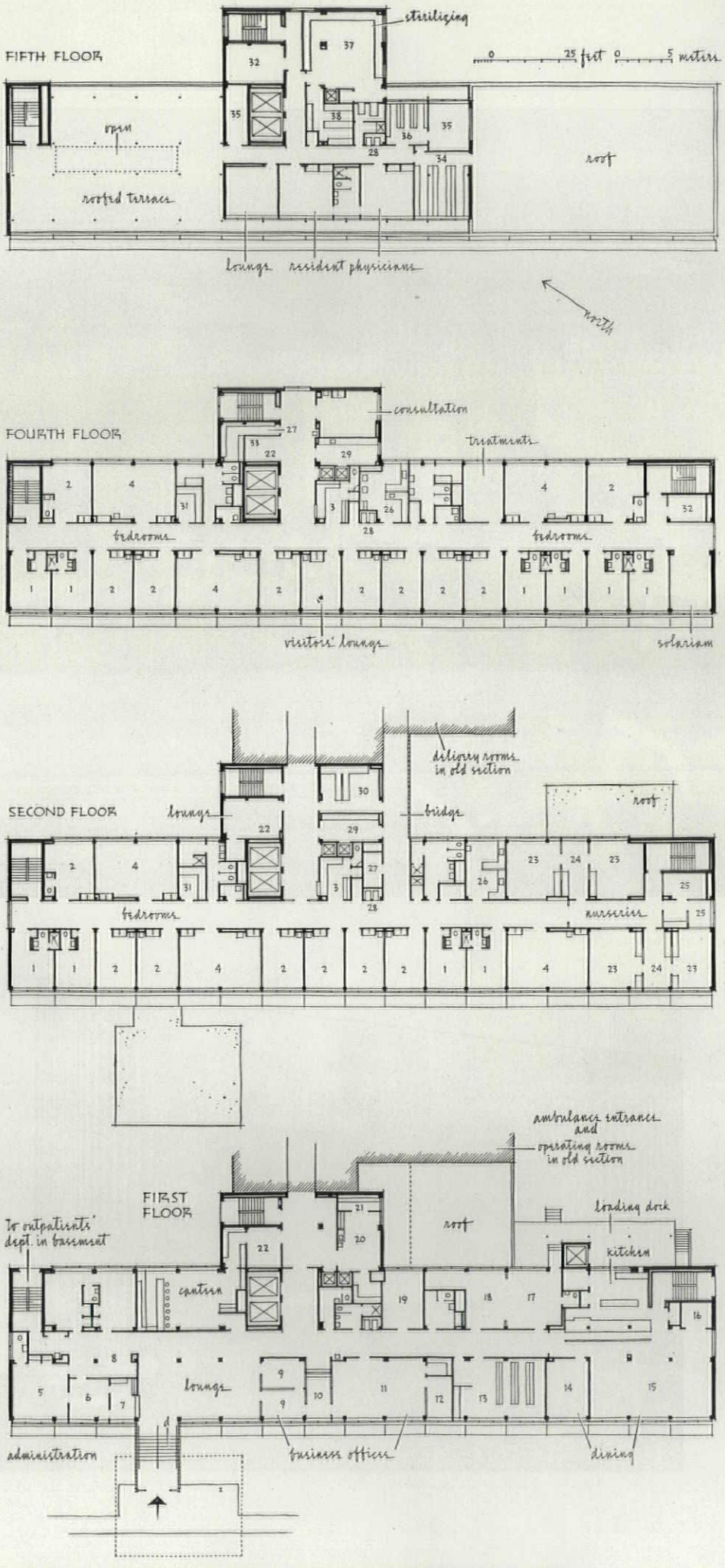


The newly transformed hospital complex (top)—*school of nursing in foreground, the new 5-story 140-bed wing in the rear.*

Secondary passageway (above) *connects new hospital wing directly with delivery suite in the existing structure.*

Approximately one-third of the basement of the main structure is devoted to an outpatient clinic, the remainder to storage and food services.

1 one-bed room
2 two-bed room
3 nurses' station
4 four-bed room
5 administrator
6 secretary
7 receptionist
8 waiting
9 admissions
10 cashier
11 general office
12 accounting
13 medical records
14 private dining
15 staff dining
16 air-cond. unit
17 doctors' lounge
18 conference room
19 social service
20 fracture room
21 plaster room
22 future elevator
23 nursery
24 examination room
25 suspect nursery
26 utility room
27 linen stores
28 linen/waste chutes
29 pantry
30 formula room
31 flower room
32 storage
33 wheel chairs
34 x-ray storage
35 fan room
36 record storage
37 central sterilizing
38 sterile supply



Materials & Methods

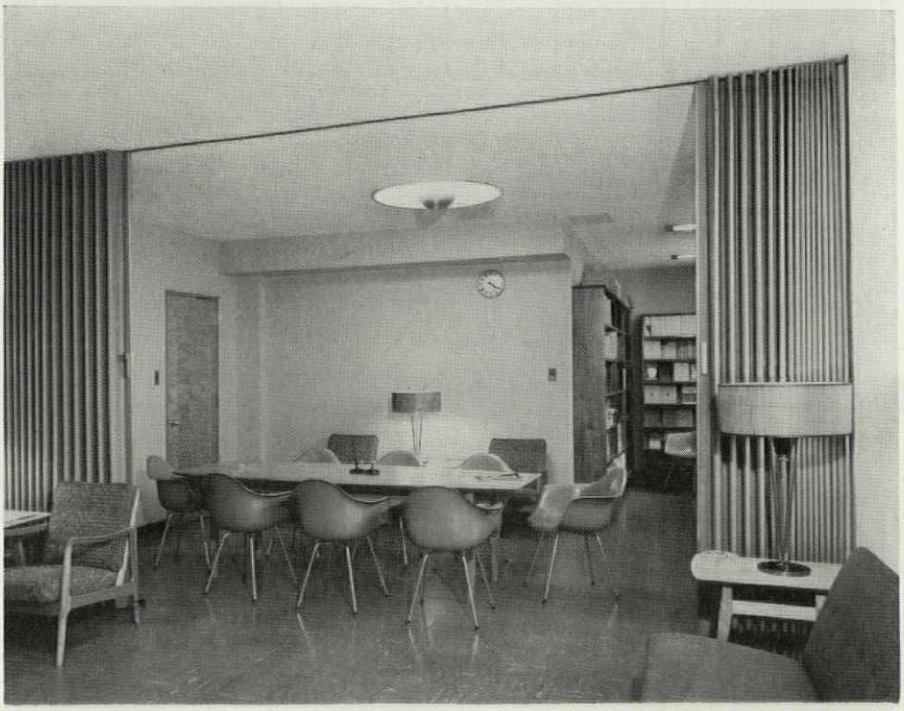
construction

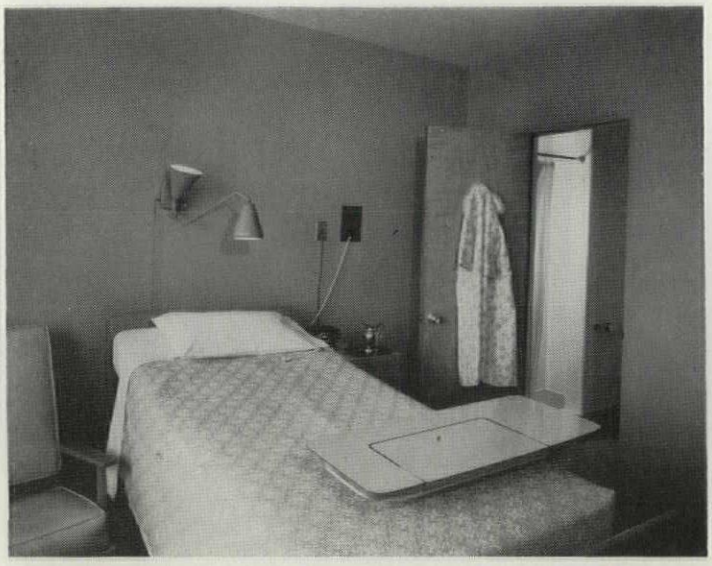
Foundation: reinforced concrete. **Structure:** structural-steel frame—Bethlehem Steel Company; porcelain-enamel curtain-wall panels—Seaporcel Metals, Inc.; floors & roof: reinforced concrete. **Wall Surfacing:** exterior: brick and metal panels in stainless-steel grid; cellular-steel sunshades—H. H. Robertson Company; interior: plaster and glazed structural tile; rest rooms, toilets: ceramic and glazed structural tile—The Mosaic Tile Company. **Floor Surfacing:** rubber and asphalt tile—Mastic Tile Corporation of America. **Ceiling Surfacing:** hard plaster and acoustical plaster—New England Lime Company. **Roof Surfacing:** built-up roofing. **Insulation:** acoustical plaster; perlite concrete on roof slab—Perlite Corporation; diocrete behind metal-panel sidewalls. **Partitions:** interior: metal stud and plaster, concrete block and plaster—National Gypsum Company. **Windows:** aluminum and stainless steel—J. S. Thorn Company. **Doors:** interior: flush, mineral core—U.S. Plywood Corporation. **Hardware:** lock sets—Russell and Erwin, Division of American Hardware Corporation; door closers—LCN Closers, Inc.; panic exit—Von Duprin, Division of Vonnegut Hardware Company. **Paint & Stain:** Pratt and Lambert, Inc.

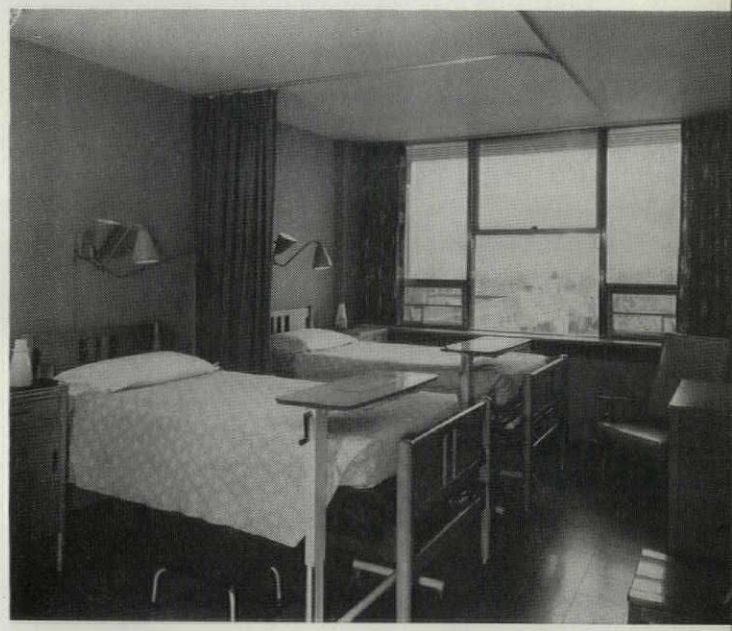
equipment

Special Equipment: stainless-steel kitchen—S. Blickman, Inc.; laundry—American Laundry Machinery Company; nurses call system and intercom—Executone, Inc.; fire alarm system—American District Telegraph Company. **Lighting Fixtures:** office area—Skylike Lighting Company, Division of Silvray Lighting Inc.; classroom areas: concentric-ring pendants—Prescolite Manufacturing Corporation; overbed hospitality lights—Kurt Versen Lamps, Inc. **Electric Distribution:** service entrance switch—Westinghouse Electric Corporation; wire—Phelps Dodge Corporation, Habirshaw Division; generating plant—D. W. Onan & Sons; panelboards and multibreaker—Trumbull Components Department, General Electric Company. **Plumbing & Sanitary:** water closets, tubs, lavatories, toilet seats, hospital fixtures—American Radiator & Standard Sanitary Corporation. **Heating:** type: forced hot water; boiler—Babcock & Wilcox Company; radiators—Warren Webster Company; controls—Minneapolis-Honeywell Regulator Company. **Air Conditioning:** equipment—American Blower Corporation; cooling tower and compressor—Acme Industries, Inc.

Entrance lobby (above) *and doctors' lounge* (right), *as all interiors, are furnished in the character of an attractive hotel, avoiding the usual clinical atmosphere.*



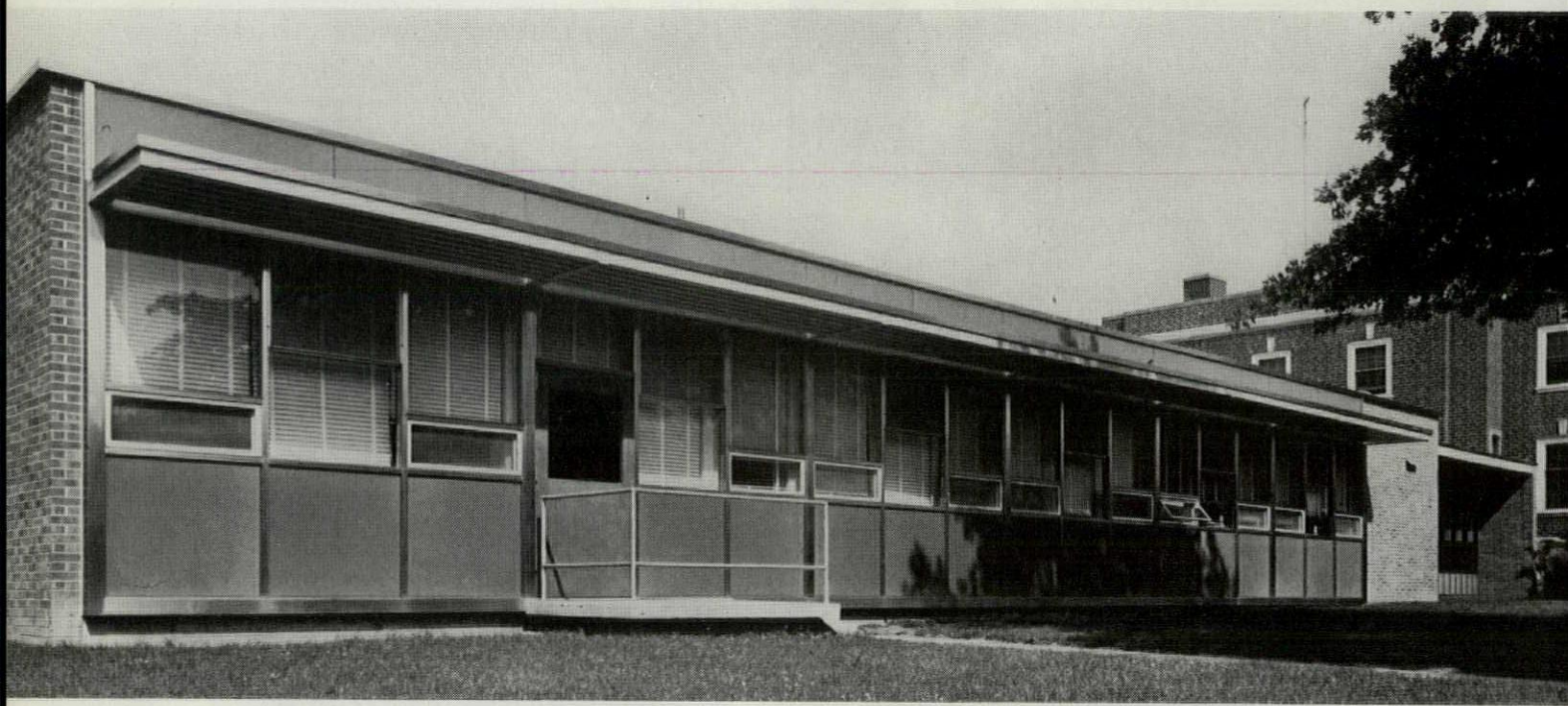


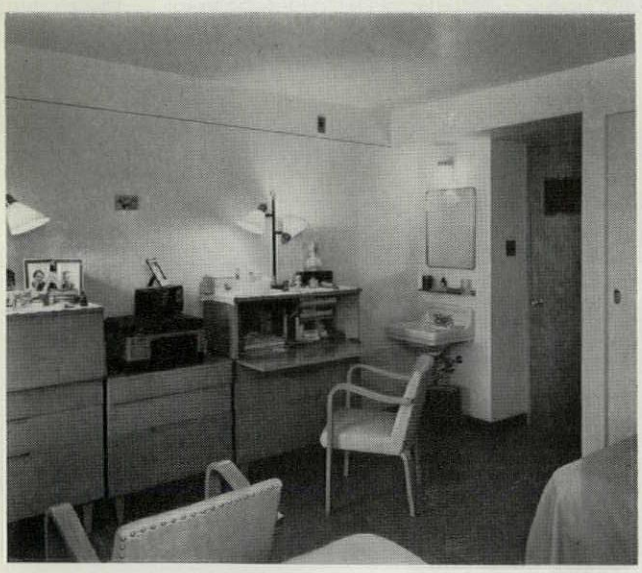


Patients' rooms (above *and* right) *are restful and cheerful due to large glass areas, light wall surfaces, and colorful draperies.*

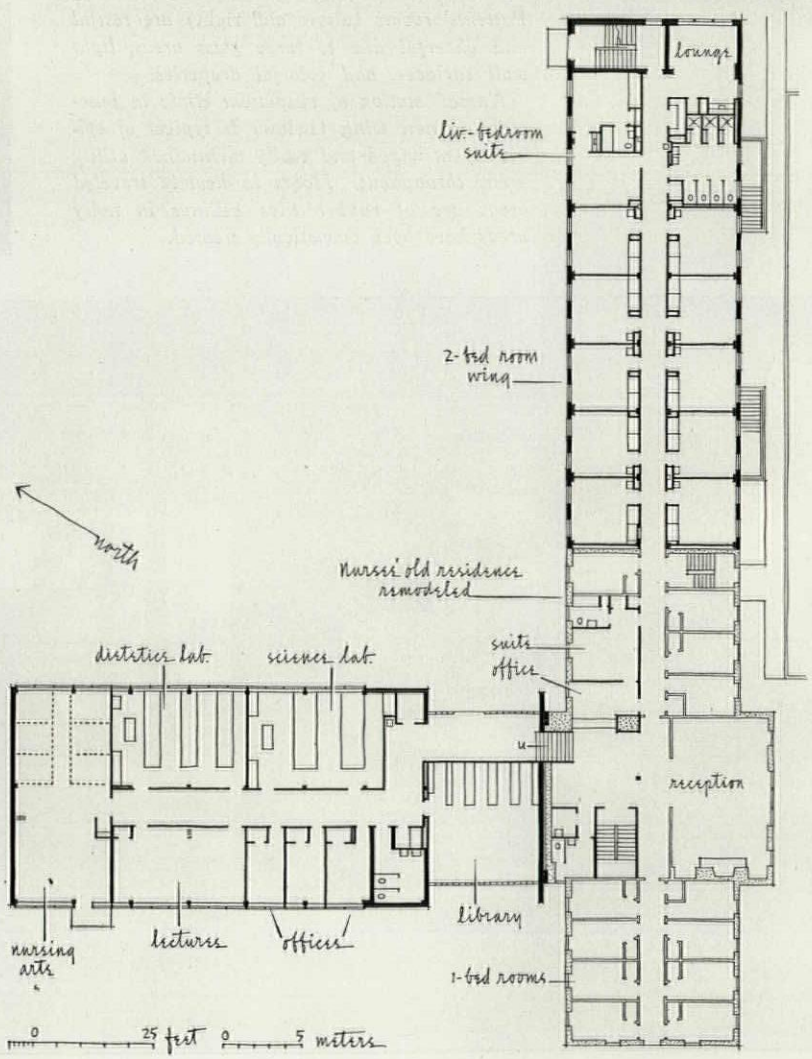
Nurses' station of outpatient clinic in basement of new wing (below) *is typical of efficiently arranged and easily maintained utility areas throughout. Floors in heavily traveled areas are of rubber tile; ceilings in noisy areas have been acoustically treated.*

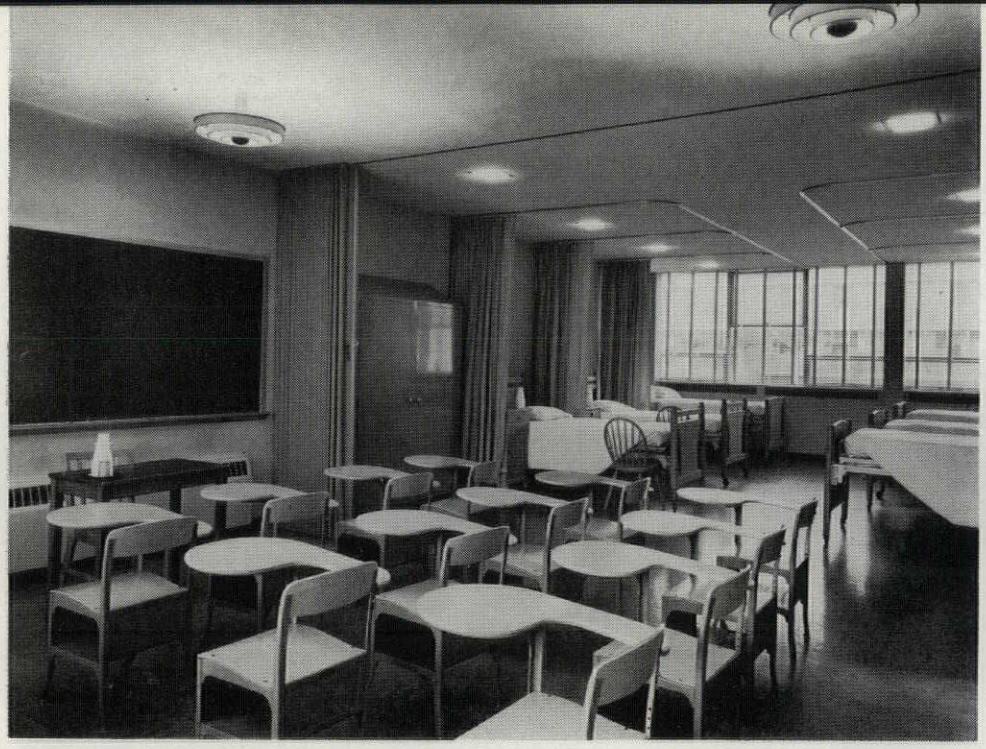
nurses' residence and school of nursing





Nurses' accommodations have been greatly expanded and improved since older building was remodeled and enlarged. Typical nurses' room in newly added section (above) *accommodates two beds.*



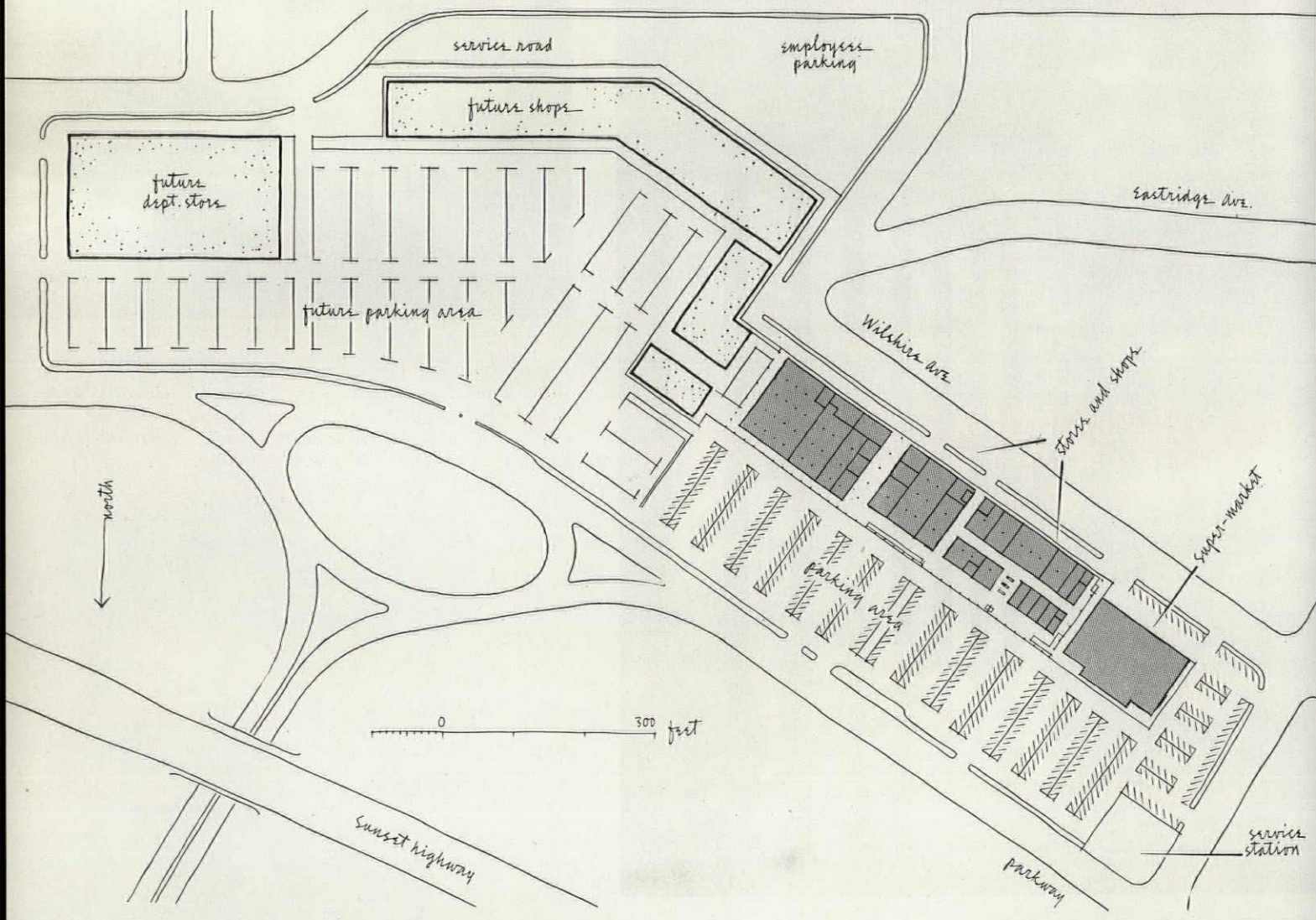


School of nursing (acrosspage top) *is entered through lobby* (left) *which joins directly with the nurses' residence. Well-lighted, well-equipped classrooms are located in the one-story school of nursing; a large auditorium and locker rooms in the basement of the three-story nurses' residence.*

shopping center

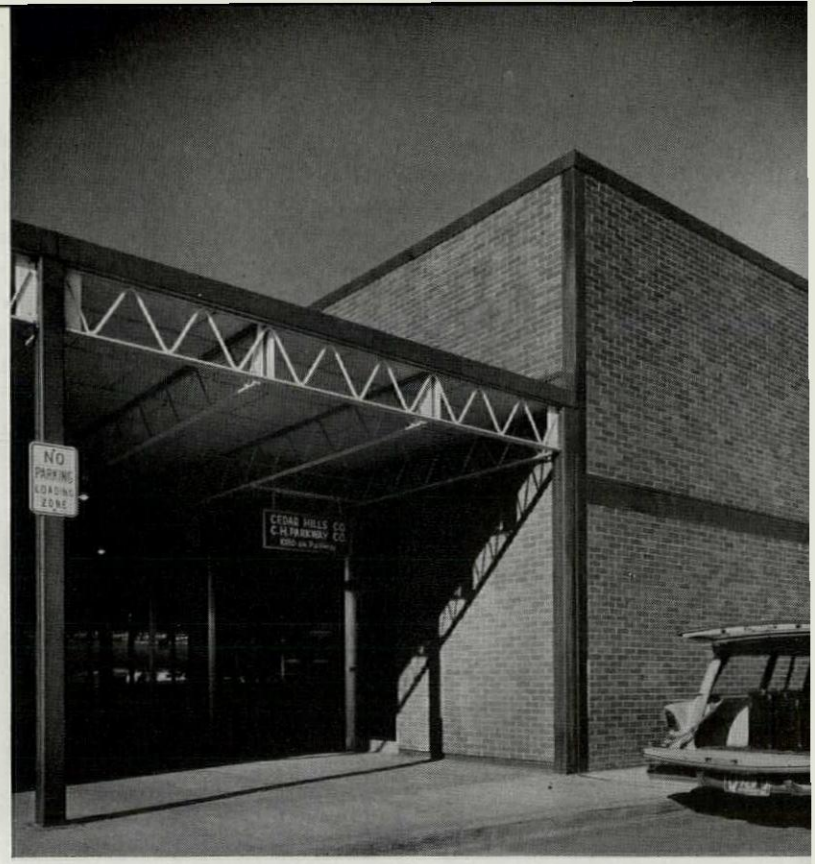
location | Beaverton, Oregon

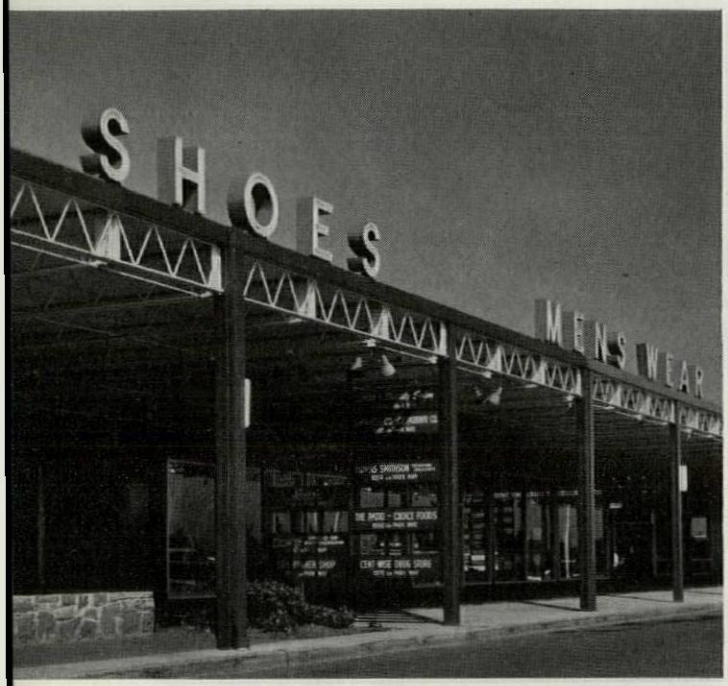
architects | Belluschi and Skidmore, Owings & Merrill



This shopping center is located about four miles west of the City of Portland and is part of a planned development for 750 families. In addition, there are 30,000 potential customers within a 2½-mile radius, and 130,000 within 5 miles. As the market demands, a major department store and shops will be added. The initial portion (now in operation and illustrated here) consists of a one-story structure for small shops and variety store, and a detached supermarket. Economy of construction, low maintenance costs, maximum flexibility, and the provision of an agreeable setting were the primary factors to be considered during the design stages. Contributing greatly to the pleasant atmosphere are the covered walks, the courts of greenery, the abundance of glass and bright colors, and the light-steel structure. Partitions and exterior walls are nonbearing, giving tenants a maximum of freedom in the interior arrangement. Store fronts have been enlivened by a variety of filler panels—brick, T&G cedar or hemlock, cement asbestos board, aluminum-framed glass. Miles K. Cooper & Roland Rosé were Structural Engineers; K. Donald Kroeker & Associates, Mechanical Engineers; Grant Kelley & Associates, Electrical Engineers; Henry M. Mason Company, General Contractor.

shopping center





Signs, an important aspect of shopping center planning, were well co-ordinated with this structure, under the design control of the architects.

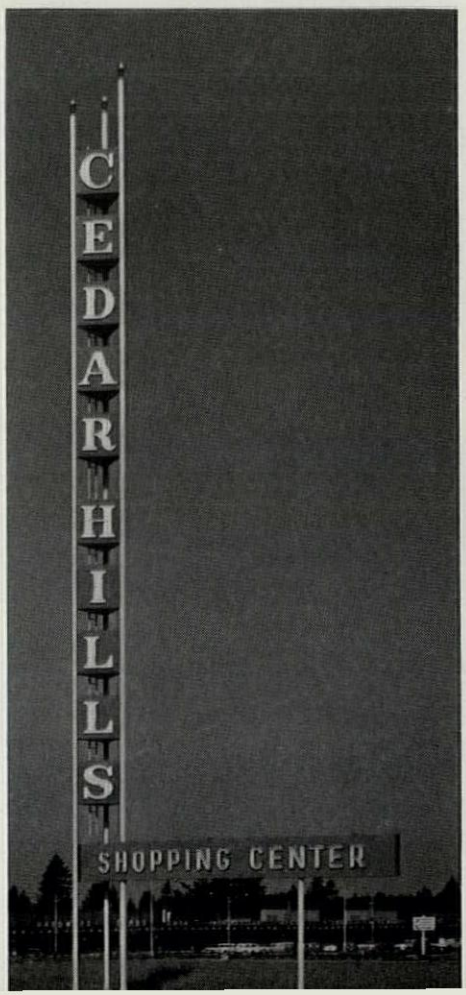
Interlocking steel-frame system (details acrosspage), *which eliminates bolting, riveting, or welding, made for ease and economy of construction. Part of the steel frame was designed to take the load of future second-story offices. Columns are placed 16'x26' o.c. and support open-web joists. Brick cavity-panel walls at rear of building resist lateral forces of steel frame. The roof slab is of poured-in place gypsum on insulating formboard for the interior, on cement-asbestos formboard in exposed areas. The floor is a reinforced-concrete slab with waterproof membrane on gravel fill, except over partial basement area, where a two-way reinforced-concrete slab is used.*

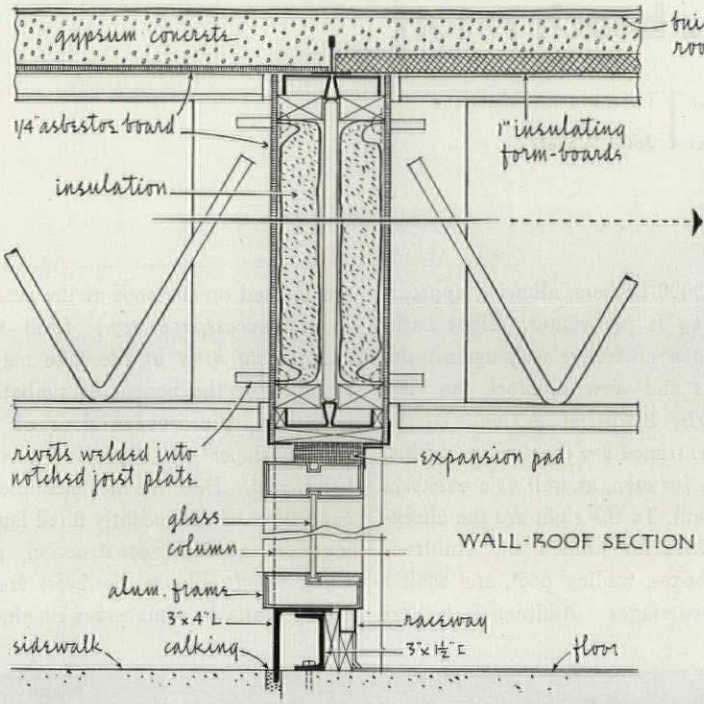
Stores are heated by warm air from gas furnaces installed in penthouses or in attic spaces. A future air-cooling system will act in conjunction with the warm-air system by pumping cool water through coils in the individual ducts.

Interior lighting is fluorescent and incandescent, subject to tenants' requirements. Arcades have incandescent spot-lighting; parking areas use fluorescents.

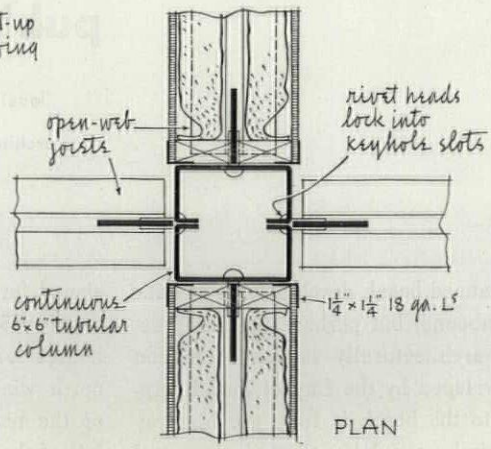
Acoustic treatment is limited to fiber boards. If necessary, individual tenants may improve acoustical conditions by installing suspended ceilings.

Photos: Dearborn-Massar





WALL-ROOF SECTION



PLAN

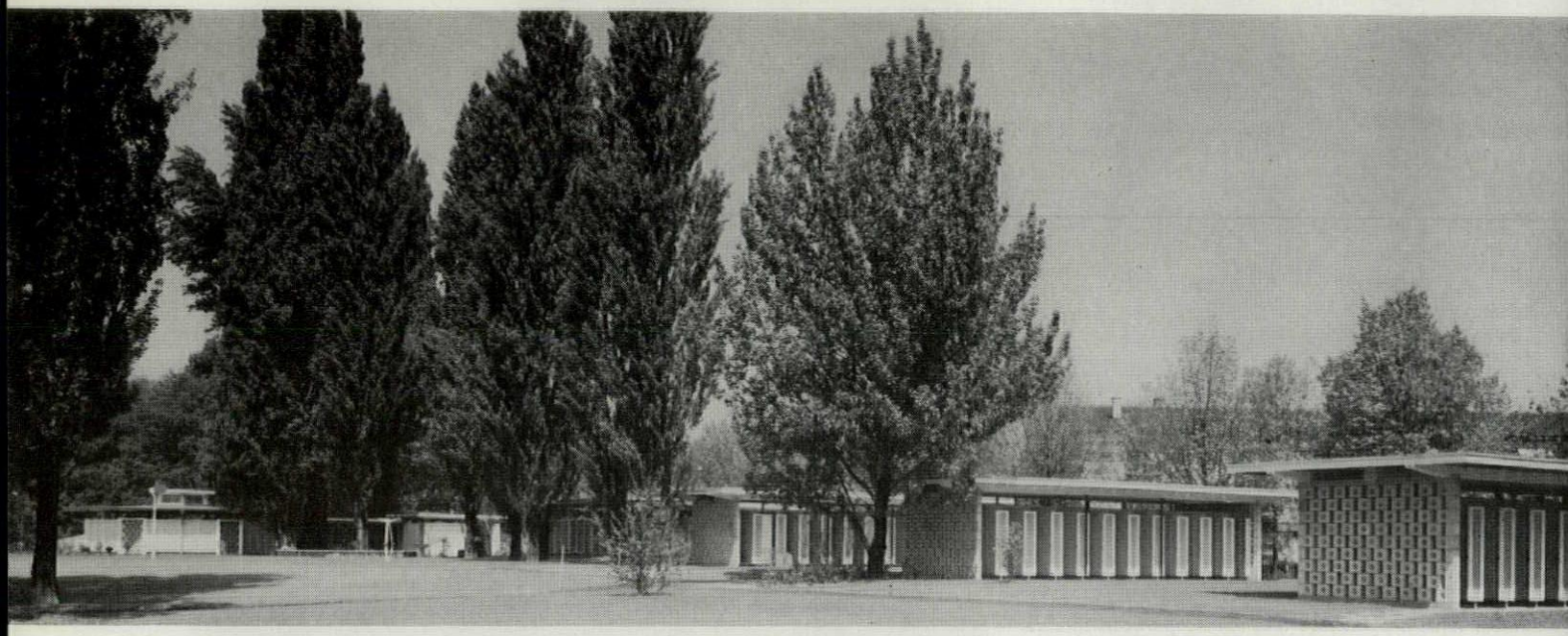
public beach resort

location | Tiefenbronn, Switzerland
architect | Josef Schuetz

Well planned beach developments at Lake Zurich abound, but perhaps the most successful architecturally is this recreation area developed by the City of Zurich. Approach to the beach is from the highway which circles the lake, through a control gate (*acrosspage bottom*) sheltered by slender concrete umbrellas. Directly beyond, the lake shore is visible through great trees and imaginatively planted grounds. Accommodations have been designed for 3000 bathers, allowing approximately 75 sq ft per visitor. Eight bathhouses form a protective wall against the north winds and serve to block the view of the nearby industrial section. To the left of the entrance are checkroom, cabins, and lockers for men, as well as a cafeteria and restaurant. To the right are the checkroom facilities for women and children, with sand boxes, wading pool, and shelter for baby carriages. Additional lockers are located on the roof of the main check room (*acrosspage top*) from which a magnificent view of the lake may be enjoyed. For the benefit of sunbathers and sightseers, the wooden floor of the roof terrace slopes up to provide a convenient head rest. Due to the unstable ground conditions of the recently filled land, buildings are of light construction, primarily using wood. Floors, however, are of concrete; walls in some areas of glass block.

Seldom have architecture and landscape been so skilfully united as in this Swiss work. Passage from the gatehouse to main bathhouse leads, past subtle planting, across pond (above). *The beach resort is used only four months of the year, the park grounds are free to the public during the remainder of the year.*

Photos: Walter Binder



Bathhouses (above) *are of light construction. End walls are pierced and lockers do not touch ceiling or ground, to avoid obstructing air circulation.*

Olympic-size diving tower (below) *with three springboards is a handsome composition in reinforced concrete; footbridge and pool for non-swimmers are visible in background.*

Visitors receive clothes hangers with small baskets, which they return to the counter with all their belongings after having changed clothes in the cubicles provided within the large bathhouse (right).

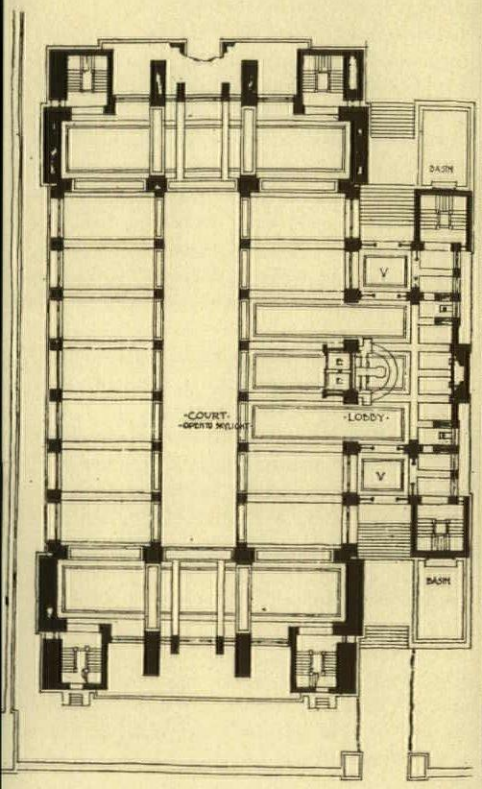
A graceful footbridge (below) *connects bathhouses at the shore with the shallow circular pool for nonswimmers.*

public beach resort

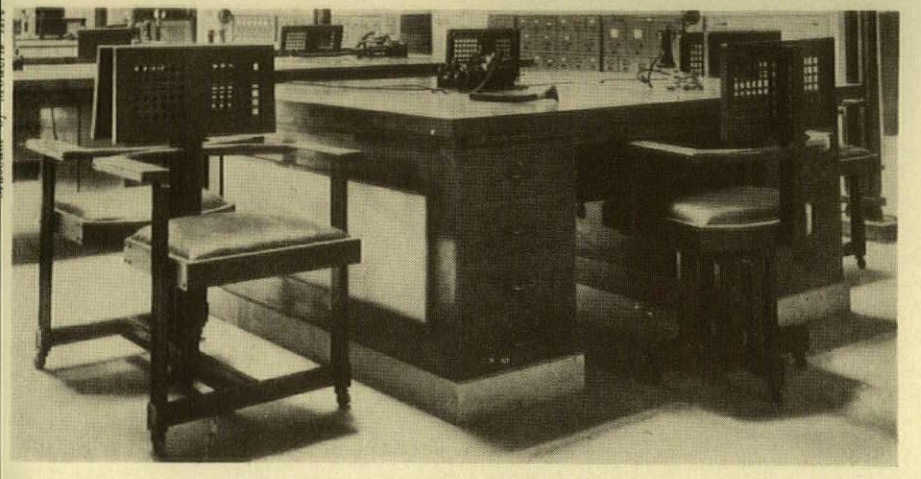
Chief accent of the beach development is the conical roof of the tea house (left), *an airy shelter on high ground near the edge of the lake.*

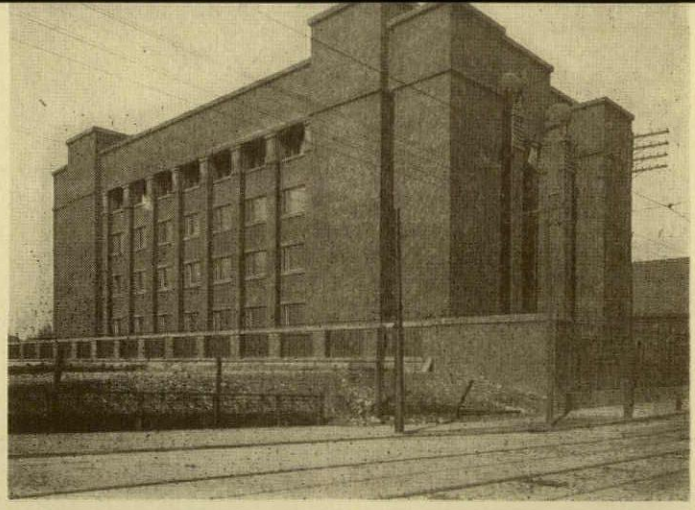
PROGRESSIVE ARCHITECTURE IN AMERICA

LARKIN COMPANY ADMINISTRATION BUILDING — 1904
Buffalo, New York
Frank Lloyd Wright, Architect



"An American Architecture"





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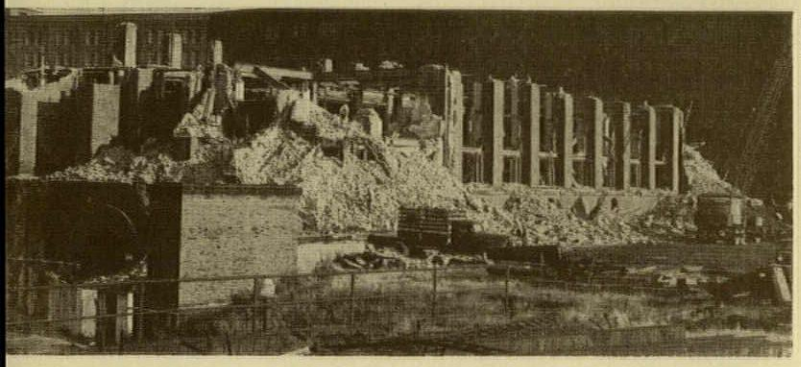


Paxtresser, Buffalo

In 1950, Frank Lloyd Wright's Larkin Company Administration Building was sold for $5000, to be demolished immediately for a $100,000 truck-storage garage. Its passing was little noticed although, when it was newly completed, this same building electrified the architectural world. So absolute was its departure from tradition, so radical were its innovations, so startling its appearance, that it shocked and puzzled more often than it pleased. Soon the center of impassioned comment and controversy, its influence was destined to be world-wide: it became a landmark, an undisputed turning point in commercial design. In less than fifty years, the initial antagonism turned to acceptance, and then to apathy. Such is the irony of architectural progress in America—its most important monuments quickly forgotten or destroyed.

When new, the Larkin Building was generally considered a structure of unfamiliar and striking brutality. Tradition, as it applied to the relatively new field of industrial architecture, dictated a polite *pastiche* of historical forms disguising utilitarian interiors. A half century of experiment with borrowed styles—revivalism, classicism, eclecticism, romantic dilettantism—had done little to solve the important design problem of the American business building. Simplicity and directness are rare qualities in life and architecture, and the ability to work without evasion, indirection, or recourse to clichés is surprisingly uncommon. The unique contribution of the Larkin Building was that it did present a fresh approach, a total departure from accepted practices. Conceived with clarity and monumentality, it offered a straightforward, logical answer to specific requirements. Functionally and esthetically, the building was shaped by its needs, environment, and avowed commercial nature.

To provide space for the administrative and clerical staff of a large mail-order business, Wright designed a commodious interior court, open the full height of the building and surrounded by five stories of gallery offices. To provide the best possible working conditions in an industrial neighborhood, he virtually sealed the building from its environment and installed an early form of air conditioning—an unprecedented step at the time. In plan, the four massive, top-lighted corner towers are seen to contain most of the necessary facilities—pipe-shafts, heating system, ventilating air-intakes, and fire stairs, leaving the central court free for working purposes. Even the entrance vestibule, placed in an annex on the north side of the building, was kept separate from the main block. Ample daylight was admitted by skylights in the roof of the court and by banks of double-glazed windows at each gallery level; an amenity that has been replaced by the uniform glare and discoloration of "modern" artificial illumination. These handsome, utilitarian interiors conceived for maximum efficiency and comfort incorporated some outstanding new features. For the first time, standardized metal desks, chairs, and cabinets were used throughout a business building. All furnishings and fittings except telephones and wastebaskets—which had been previously contracted—were from designs of the architect. Ease of operation and maintenance dictated simple, novel forms far in advance of their day: attached, swinging seats, desks that formed closed rows for cleaning and opened out easily for use. Banks of built-in steel filing cabinets were placed at a uniform 7′ height beneath all windows. Henry-Russell Hitchcock, in his work on Wright, *In the Nature of Materials* (1942), calls the gallery offices "masterpieces of detail with which the . . . industrial vocabulary of design has hardly caught up a generation later."

The exterior of the building expressed the interior structure and function with an impressive monumentality prophetic of the future scale and importance of commercial architecture. The side walls and corner towers presented a strong, compact composition of stark, vertical forms in brick, relieved by the light and shadow of projecting and receding volumes, organized with the decisive massing of some archaic monument. Originally, planting provided a pleasing balance for the severity of the design. To most of Wright's contemporaries, this unaccustomed simplicity was appalling. Russell Sturgis in *Architectural Record* (April 1908), after admitting the architectural dead-end of the purloined Renaissance palazzo, called the Larkin Building a "well-thought-out design, every detail of construction and all the appliances . . . studied with care . . . a building which no one can fail to accept," but sighed nostalgically for the delicacy and refinement that might have been afforded by a few well-placed moldings, cornices, and arcades; and ended by condemning it as "an extremely ugly building" and "a monster of awkwardness." "The wonder will grow on you more and more," says the confused and somewhat querulous critic, "how such a costly, careful, thoughtful, well-planned building should be made up of such incongruous parts, leading to such a hopeless result." Wright's monumental towers were "crude masses." The basic confusion of Ruskinian philosophy and the artificial dualism of the "practical" and the "artistic" still lingered in the 20th Century in such pronouncements as ". . . it was thought well . . . not to pretend to build a monument of architecture when a working structure was desired." Sturgis and his *confrères* were acutely uncomfortable in the presence of Wright's incomprehensible departures from convention! Wright's own comment was that "most of the critic's 'architecture' has been left out. Therefore the work may have the same claim to consideration as a 'work of art' as an ocean liner, a locomotive, or a battleship."

Even when the true significance of the Larkin Building was acknowledged in the following decades, proper interpretation was often ignored during eager adoption of its relative starkness as an *avant-garde* mannerism by a generation of European architects and esthetes. The underlying lessons of the work—its simple logic, its remarkable efficiency, and the superb handling of its utilitarian forms—are only now becoming the accepted governing principles of contemporary commercial architecture.

ADA LOUISE HUXTABLE

Appreciation is expressed to Grant C. Manson for the privilege of consulting his forthcoming book, The Work of Frank Lloyd Wright to 1910: The Source and Foundations of His Style *(to be published next year by Reinhold); photos from* An American Architecture *by Frank Lloyd Wright, edited by Edgar Kaufmann, Jr. (Horizon Press, 1955).*

Perlite Insulating Concrete: Curtain-Wall Design

by Richard J. O'Heir*

Progress in architecture depends generally on the interrelationship of three basic factors: ideas in the minds of designers; the development of new construction tools and materials; and acceptance by craftsmen of the more efficient building techniques. When advances in these areas occur simultaneously, progress in construction design and methods can be rapid.

An excellent example is provided by the development of ultra-lightweight fire-retardant aggregates for plaster during the past decade. This has led to significant changes in construction by permitting an entirely new system of membrane-type fireproofing for steel-framed buildings. Similarly, the growing use of these aggregates in concrete during the last five years has led architects and contractors to evolve important applications of insulating concrete in curtain-wall construction. In both cases, machine application of the lighter-weight plaster and concrete (approved by labor groups) accelerated these changes.

The rapidity and magnitude of these two developments is reflected clearly in the increasing popularity of perlite—an expanded volcanic rock virtually unknown ten years ago. Today, it is used in half of all the plaster applied in the United States and is also finding increased use as an aggregate in lightweight insulating concrete for curtain walls and roof decks. It seems likely that the latter applications offer the greater possibilities for imaginative advances in buliding design. A now-classic example is the Alcoa building in Pittsburgh, designed by Harrison & Abramovitz, where the use of perlite-concrete back-up behind aluminum panels saved 1500 tons of structural steel and provided an additional 15,000 sq ft of rentable space.

From the viewpoint of the contemporary architect, perlite's three major properties are its lightness, fire resistance, and excellent insulating properties. Since these characteristics are of primary consideration in the design of roof decks and the wall of multiple-story structures, it is not surprising that the use of perlite insulating concrete has been pioneered by architects of monumental multistory buildings and of large-roofed industrial plants.

It is also significant that many of the techniques developed in curtain-wall design for skyscraper-type buildings are now being profitably transferred to light construction projects, such as shopping centers, schools, and even homes. The reason for this is that perlite concrete—in addition to its lightness, fire resistance, and insulating properties—enjoys another important property, moderate structural strength.

It may be well to review these attributes of perlite insulating concrete before considering its application in curtain-wall construction.

First, the weight of perlite concrete used in most applications ranges from only 25 lb to 50 lb per cu ft. Before the advent of lightweight aggregates, concrete was considered light if it weighed between 85 lb and 120 lb per cu ft. Today this is considered the medium-weight range.

The insulation value and structural strength of perlite concrete are indicated. *(See Table I. Since the most common mix proportions are (1) four cu ft of perlite per sack of portland cement for curtain-wall construction and (2) six cu ft of perlite per sack of portland cement for roof decks, figures are shown for each combination.)*

It is obvious *(from Table I)* that in discussing insulating concrete the method of placement must be considered. Pneumatic application, even with the low pressures used with plaster-spraying equipment generally causes densification of the perlite concrete, with a resultant increase in both strength and thermal conductivity.

Tests[1] indicate that this increase in density does not result from crushing or breakdown of the aggregate but is due to separation of the air from the concrete during placement. Although an air entraining agent is used to increase the plasticity of the mix for easier passage through the hose, this air may be separated at the nozzle if desired. Various types of nozzles can be used with the spray equipment, to govern the amount of air retained and control the strength of the concrete. To assure meeting design

**Technical Director, Perlite Institute, New York, N. Y.*

[1] *Made by the E-Z-On Corporation, Chicago Ill., spray-gun manufacturers.*

Table I: Insulation Value and Structural Strength of Perlite Concrete

Mix ratio cement	Mix ratio perlite	Hand placed concrete: Dry density	Hand placed concrete: Thermal "k"	Hand placed concrete: Compressive strength	Machine placed concrete*: Dry density	Machine placed concrete*: Thermal "k"	Machine placed concrete*: Compressive strength
1 cf	4 cf	36 pcf	0.77	440	50 pcf	1.4	1000+
1 cf	6 cf	27 pcf	0.58	180			

**For machine placing, approximately 3 to 5 lbs of calcium-aluminate cement is added per bag of regular portland cement to produce faster setting time of the material on the wall.*

requirements, the architect should therefore specify the compressive strength required. For most curtain-wall back-up requirements, a minimum of 1000 psi perlite concrete is recommended when spray application is specified.

One of the major advantages of perlite-concrete wall construction is its fire resistance. For example, a four-in. solid perlite-concrete wall provides a full four-hr fire rating. In part, this fire retardance is due to the insulating property of the perlite. Equally important, however, is the unique "steam release" action of perlite-portland cement as well as of perlite-gypsum mixes. Even when bone dry, these mixes contain chemically combined water which is released when the wall surface is exposed to fire. As the fire blazes, the water is released and converted into steam. This process continues progressively through the wall as exposure to fire continues. But, until all of the chemically combined water is released and consumed, the temperature of the unexposed face of the wall will not rise above 212 F.

Another fire-limiting factor is that perlite concrete stays in place since it has only limited expansion at high temperatures. On the other hand, concrete and plaster made with heavy, unexpanded aggregates tend to bulge and spall off, due to expansion of these aggregates.

In an actual four-hr test of four-in. thick perlite insulating concrete back-up wall—as used in the Alcoa, Republic National Bank, and Bank of the Southwest buildings—the temperature of the unexposed wall face averaged only 159 F at the end of the four-hr test.

Importantly, this type of fire resistant back-up provides more-than-adequate interior protection for the fastenings of the metal curtain wall, thus assuring that the wall will stay in place.

In relating this background material to curtain-wall design, the distinction should first be made between the two general types of curtain wall: the sandwich panel and the veneer facing with separate back-up wall. While perlite concrete is used in both types of construction, this article is concerned primarily with the latter and also with precast perlite panels.

The concept of curtain-wall as opposed to the loadbearing wall is certainly not new. But the recent development of *thin* and *lightweight* curtain walls is new and, to an important degree, the advent of lightweight aggregate concrete with its advantages has been instrumental in this development.

Modern perlite-concrete, curtain-wall systems do considerably more than meet the primary functions of a wall which are, of course, to enclose a building and act as a barrier to climate and unauthorized entry. In erection, they permit substantial cost savings because: (1) their lightness and thinness save space and conserve structural steel; (2) they can be installed from inside the building regardless of weather; and (3) they can be either prefabricated or machine applied on the site. Furthermore, freedom of expression is provided in a choice of facings such as aluminum, bronze, glass, porcelain enamel, steel, or other suitable materials.

In addition, perlite-concrete, curtain-wall systems can be designed to provide many of the advantages of much heavier and bulkier masonry construction. These include control of sound transmission, ability to carry windload, high heat capacity, and fire retardance, as well as thermal insulation *without creating a vapor condensation problem.*

The factor of fire retardance brings up the question of how much fire protection should be required of exterior curtain walls. It is a problem that has plagued architects, building code officials, and materials manufacturers for years. The trend has been toward relaxing the old standard for four-hr fire retardant requirement. But how far that trend will continue and what effect it will have on advancing insurance rates will depend largely on the fire-loss record of thin-walled buildings in the next few years. No definitive record on this still new type of construction has yet been compiled.

With perlite-concrete curtain walls, no reduction or exceptions to existing fire-retardant ratings are generally required, since a four-in. thickness of perlite insulating concrete is adequate for four-hr fire protection.

At the same time, the perlite-concrete back-up wall can carry the same wind load as the facing material. If the building skin which normally carries the windload is destroyed by fire, the back-up wall must sustain the windload or be destroyed—in which case its fire-retardant value would be nil.

In designing the insulating concrete back-up, there are several advantages in keeping it structurally independent of the facing material. First, the air space provides for a drift current of air to carry water vapor out of the wall system and thus prevent condensation. Research has shown that where movement of vapor is unobstructed, condensation does not occur. Secondly, by providing a ventilated air space, the exterior panel actually functions as a shading device to shield the insulating concrete from direct sunlight. As a result, much of the heat absorbed by the metal skin is dispersed by convection on both sides of the panel.

This protection, together with the heat capacity of the insulating concrete, makes the back-up wall slower to respond to temperature changes. Thus, a sort of flywheel effect is created which tends to smooth out the peaks and valleys of heating and air-conditioning loads, minimiz-

ing the need for special quick-response mechanical equipment.

typical applications

The walls of the recently completed Medical Towers Building and the Bank of the Southwest, both in Houston, are excellent examples of the use of insulating-concrete back-up walls in multistory construction.

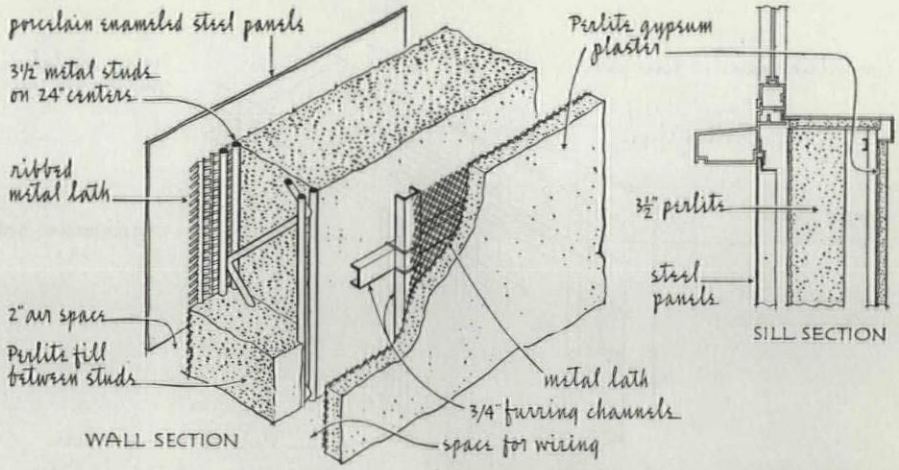
The Medical Towers,[2] designed by Golemon & Rolfe with Skidmore, Owings & Merrill as consultants, employed a perlite insulating concrete back-up behind spandrel panels of blue porcelain-enameled aluminum. As shown (*Figures 1 and 2*), the panels are attached to brackets which are anchored to the spandrel beams. Paper-backed wire lath is then installed as a base for the sprayed-on insulating concrete which is applied in four one-in. coats. A furred-out wall of metal lath and perlite-gypsum plaster was added for the interior finish.

In the 20-story Bank of the Southwest wall, designed by Kenneth Franzheim, perforated-aluminum sheets were used as a base on which to spray the perlite concrete, (*Figures 3 and 4*). Reinforcing was provided by No. 3 rods spaced 12″ o.c. With the spandrel-type, curtain walls used in multistory office buildings, the area of the back-up wall is generally not large. Therefore, the need for reinforcing is minimized.

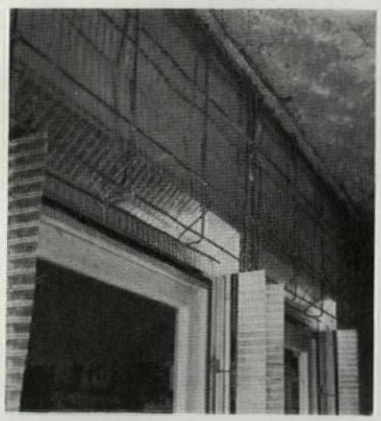
However, as the curtain wall steps down from the skyscraper to the one- and two-story building, the total area of the back-up wall must then be designed to carry a greater wind load as protection against possible destruction of the exterior panels.

A typical illustration of this type of wall in light construction is to be found in the new $10-millions Hillside Shopping Center on the outskirts of Chicago,

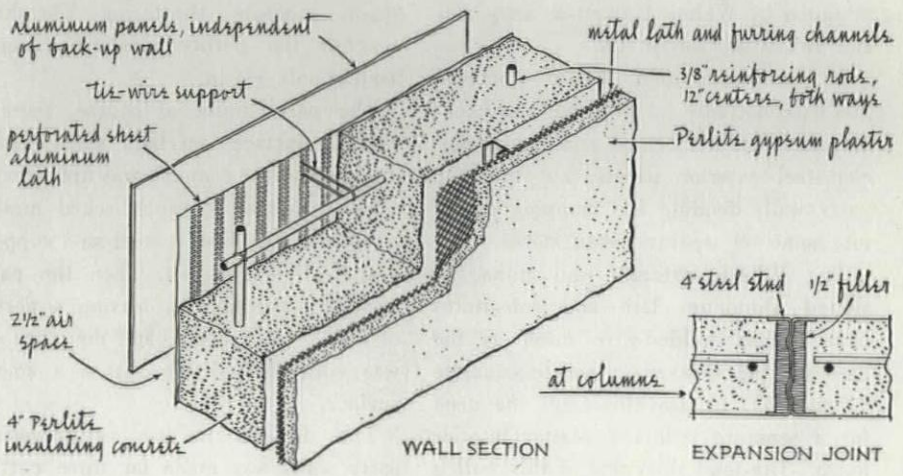
[2] *Award Citation: 1954 P/A Design Awards Program.*



Figures 1 and 2—isometric details of perlite-insulating-concrete back-up and related exterior view of The Medical Towers, Houston.



Figures 3 and 4—interior view of Bank of the Southwest, Houston, shows perforated-aluminum sheets and placement of reinforcement before spraying perlite-concrete back-up. Additional details of wall (below) *implement photo.*



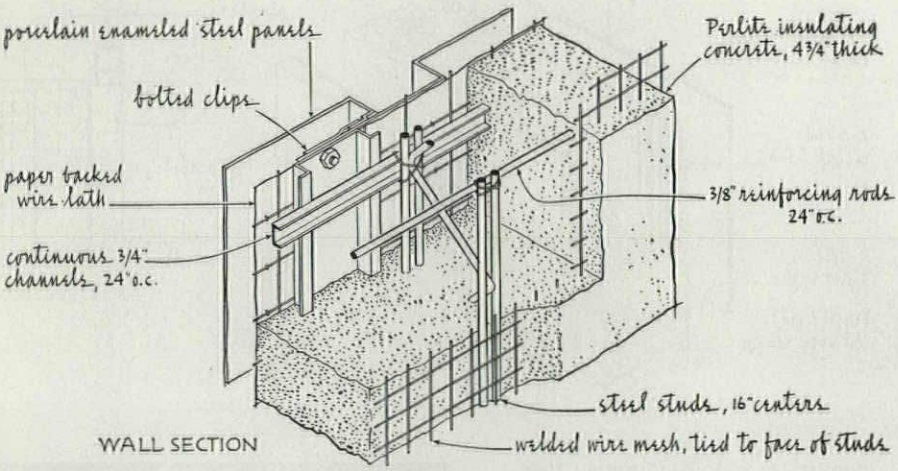


Figure 5—details of wall at Hillside Shopping Center, near Chicago, indicate paper-backed welded-wire mesh used as base for sprayed-on perlite concrete.

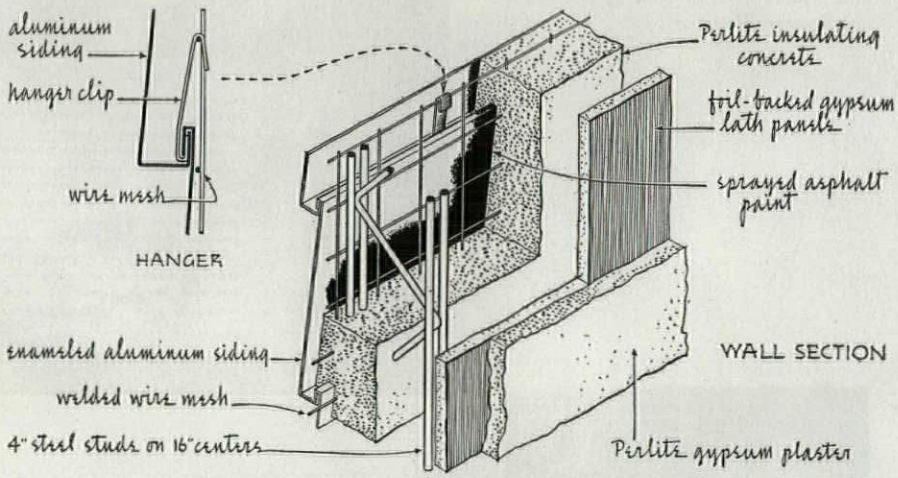


Figure 6—example of lightweight-steel and perlite-concrete wall in house construction.

designed by Welton Beckett & Associates and Bruce A. Gordon Co.

In this installation, perlite concrete was used not only for fire-retardant back-up and insulation behind porcelain-enameled-steel exterior panels, but also for party walls dividing the shopping center into some 60 separate retail stores.

The Hillside exterior wall omits the slotted aluminum lath and substitutes paper-backed welded-wire mesh as the base for the sprayed-on perlite concrete (*Figure 5*). It also eliminates the need for a separate lath and plaster interior finish. The total thickness of this wall is 6¼-in., including the facing. The thickness of the perlite insulating-concrete itself is only 4¾-in.

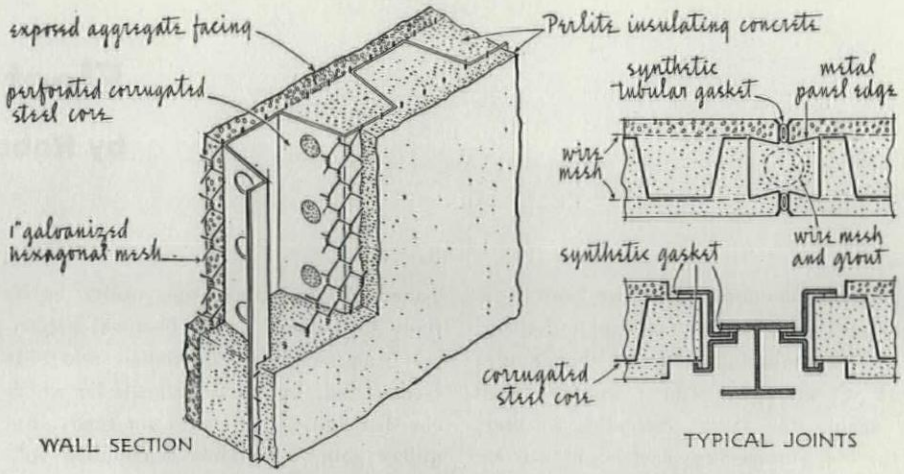
The party walls, of course, required finished surfaces on both sides. Therefore, the perlite concrete was first sprayed on one side of a paper-backed mesh—which was attached to steel stud supports—and allowed to set. Then the paper backing was removed, leaving a portion of wire mesh exposed, and the other side was sprayed and brought to a smooth surface.

The decision to use perlite-concrete party walls was made for three particularly good reasons: speed and convenience of erection; excellent fire resistance; and their effectiveness as barriers to unauthorized entry since the interior wire-mesh reinforcing makes them unusually resistant to penetration.

Unlike the wall design of many multiple-story structures, no attempt was made to include a vapor barrier in the Hillside walls. The 1½-in. ventilating space between the exterior steel panels and the perlite-concrete back-up was designed to dissipate any vapor passing through the wall. This air space is provided by the use of fluted panels. These actually touch the perlite concrete at regular intervals permitting ready attachment of the panels to the back-up wall and, in addition, providing an attractive exterior.

Progress is also being made in the application of sprayed-on perlite concrete and plaster to houses. A number of lightweight-steel and perlite-concrete houses have recently been constructed, using this technique.

Essentially, these structures consist of a metal-stud framework to which reinforcing welded-wire mesh is attached (*Figure 6*). Then prefinished enameled-aluminum siding is clipped to the mesh, and steel-roof trusses are welded to the upper track of the outside wall. Perlite insulating concrete is then sprayed against the back of the asphalt-painted aluminum. A three-in. thickness is built up to afford adequate fire resistance, sound conditioning, and insulation. A 1½-in. space is left in the wall to facilitate installation of electrical wiring, and a foil-backed gypsum lath is clipped to the inner face of the studs. The foil serves as a vapor barrier. The interior is then finished with sprayed-on perlite plaster. It should be noted that in



Figures 7 and 8—precast-wall panels at Tecfab plant, Beltsville, Md. Consist of perlite insulating concrete with an exterior facing of integrally cast colored-stone aggregate. Note two types of edge forming (right).

place of the aluminum siding, any other suitable facing such as stucco, brick veneer, or shingles may be employed.

The roof is constructed by rolling a paper-backed-wire floor lath over the trusses and topping it with perlite-insulating concrete. Shingles are nailed to the concrete just as to wood.

Although conventional in appearance, this house is fire-, rot-, and vermin-proof and compares favorably in cost with standard wood construction.

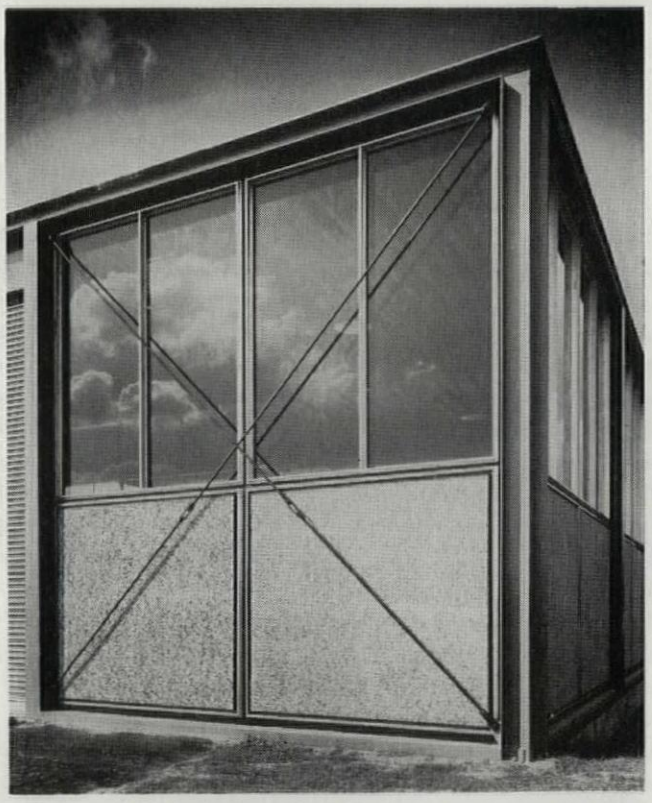
precast wall panels

While lightweight concrete has so far been used primarily as insulating fire-retardant back-up wall or as the core of sandwich-type panels, recent developments indicate increasing application in completely precast wall panels.

Such a prefabricated insulating-concrete wall system has already been developed for both commercial and residential construction.[3] Principal showcase for this new type of wall is the Tecfab Inc. plant,[4] designed by Charles M. Goodman Associates (*Figures 7 and 8*).

Essentially, the typical panel in this plant consist of 3½-in. perlite insulating concrete with an exterior facing of ½-in. colored-stone aggregate, cast integrally with the panel. This construction provides a U factor of 0.17. If desired, other corrosion-resistant exterior finishes such as porcelain-enameled metal can be used.

The perlite concrete is reinforced with an imbedded corrugated-steel core and welded-wire mesh; all edges are steel framed. As indicated (*Figure 7*) two types of edge framing are used: a concealed steel edge for joining wall sections where an all-masonry exterior is desired, and an exposed steel edging where structural details are expressed in the building exterior. The smooth perlite-concrete interior face can be painted.



Weighing only 16 to 17 psf, Tecfab panels are easy to erect, even in large sizes. An 8′x8′ panel is the most common size although irregular shapes can be readily produced. Of importance—these panels can also be used without finish facing for interior partitions and floor and roof systems.

summary

The use of lightweight insulating concrete in curtain-wall construction provides a unique combination of cost-cutting advantages: fire resistance, wind load capacity, insulation, sound absorption, ease of erection, and simplified maintenance. At the same time, it is adaptable to any type of exterior facing, offering considerable freedom of design. For these reasons, some of America's leading architects have pioneered in the design of curtain walls using insulating concrete—a fact that indicates extremely favorable prospects for this building material of the future.

[3] *Developed by Tecfab, Inc., Beltsville, Md.*
[4] *Award Citation: 1954 P/A Design Awards Program.*

Electric House Heating:

by Robert H. Emerick*

If we tell our clients what we *hear* about electric house heating, we can tell them: (a) it's wonderful; (b) it's abominable; (c) it's all right; (d) I wouldn't want it again; (e) it is reasonable in cost; (f) it's ruinous in cost; and so on. Even the electric utility companies that sell the current for electric house heating are not united in their desire to provide this sort of service. Some discourage it; others say "we love it."

Obviously these crazy, mixed-up reactions indicate we must examine a client's particular situation before we tell him anything. Actually, whether electric house heating is for him, or for anyone else, will depend heavily on our analysis of these factors:

1. The geographic location of the house, both countrywise and locally.

2. The kind of heating equipment desired; whether to use direct-heating, resistance units—such as baseboards, or indirect systems of the hot-water generation or heat-pump type.

3. Whether the client will be satisfied with simple heating, or must he have cooling, ventilation, humidity control, and air filtration as well.

4. How much he can afford to spend in a year for heating only.

5. Whether the house is a new one, still on the architect's drawing board, or an old structure never designed for electric heating.

6. Whether the local utility company wants its customers to have electric heating, or prefers that they use something else.

All of these factors are more or less interrelated—for example, geographic location and the attitude of the local utility. Reluctance to accept electric heating customers is based almost always on the difficulties of meeting still higher peaks on a system that is already heavily overloaded. For instance, one utility in its reply to a query of the National Electrical Manufacturers Association said: "It creates undesireable peak loads for which our distribution system is not ready. Requires going to higher distribution voltage." Certainly, a prospective house heating customer will not be welcomed in that town.

In contrast, home owners in the Pacific Northwest and in the Tennessee Valley areas are offered highly attractive rates, and consequently electric heating can make a strong case for itself there. However, for everybody, the cost of service to country and suburban customers is an item to consider, primarily because each customer is so far from other customers that individual transformers are needed. For the average small- to medium-sized home, the utility company or local cooperative must spend approximately $300 to extend service to each country or suburban customer, and the liquidation of that much investment, at current service rates, can stretch out over a period of years. In short, if our client's new home is intended for the wide open spaces, he should not be surprised if the utility company asks him to pay the service extension cost, or at least a part of it. This can be a factor in his deciding to adopt, or reject, electric heating.

We can tell our clients, early in the discussion, that six forms of electric heating are available for our choosing. They are:

1. Radiant panels, in either the floor or the ceiling.

2. Radiant-glass panels.

3. Heat pumps, either with or without electric strip heaters for severe weather. The new compound design for heat pumps makes strip heaters unnecessary, but adds to the original cost of the plant.

4. Electric unit heaters that incorporate a fan and can be used with duct systems, if desired.

5. Direct space heaters, portable and of the wall type.

6. Baseboard installations.

Which of these, individually or in combination, is best for any given client cannot be appointed without study. To illustrate, every one of them with the exception of heat pump installations, operates normally without any facility for cooling, ventilation, air filtration, or humidity control. Many clients will be entirely satisfied inside these limitations, but others will want the full, year-'round treatment, and the supplementary equipment naturally adds substantially to the capital investment, in these latter cases, an integrated heat-pump installation certainly will be preferable.

All of the six forms enjoy the common virtues of being relatively clean, convenient, easy to control, and without the need for chimneys, fuel, water, or drain piping. The cost of installation will be less than any equivalent means for providing comfort. These are advantages indeed; now suppose we examine the individual forms for other, not always happy features.

Radiant panels come in three forms. First, we can imbed electric cables in the concrete floor, or in the plaster of the ceiling. These cables are approximately ⅛ in. diameter and are covered with a suitable insulation, usually plastic. In capacity, they range from approximately 50 w to 3000 w and can be obtained for either 120-v or 240-v service.

The second form consists of a heating wire of copper alloy sealed between phenolic sheets, and then jacketed with aluminum sheathing. These panels come in standard sizes of 46", 58", and 70" lengths by 17½" wide, and their current demand is 21 w per sq ft. They are placed against the ceiling plaster or sheet rock and held in position by molding strips at their edges.

The final form of the panel is a body of natural rubber treated to make it conductive for electricity. Thickness is ap-

* *Consulting Mechanical Engineer, North Charleston, S. C.*

What Can We Tell Our Clients?

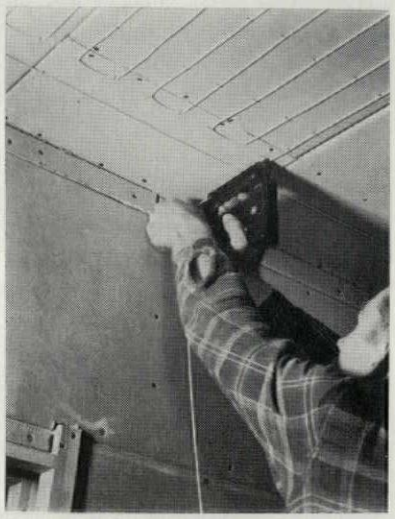
proximately 1/16" and the standard sizes are: 3'x4'; 4'x4'; and 4'x6'. Each panel is rated at 22 w per sq ft of area.

Any offering of a conductive panel should be pondered carefully. This is not because of any service deficiency, but rather the result of a prominent manufacturer's intention of discontinuing the line for reasons of competitive costs. Should replacement ever be needed, we might not be able to obtain the same sort of panels.

All of these radiant panels have the we-won't-be-liked-by-everybody-else characteristic, recognized in all radiant panels. We know that a warm floor causes some human feet to swell, and we know that there are some who object to the impact of warmth from a ceiling only a couple of feet above their heads. So our first question to a client will be:

"Do you know by expierence that your family likes radiant heat?"

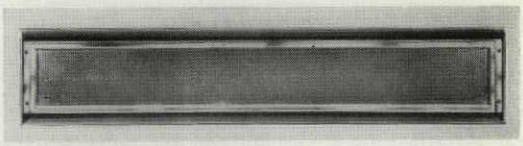
And if he doesn't know by experience, we can recommend that he spend a night in a motel that uses radiant heating.

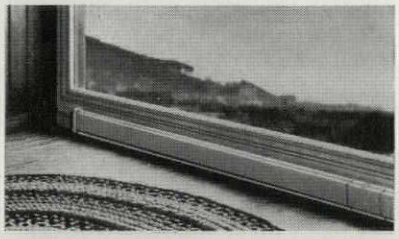


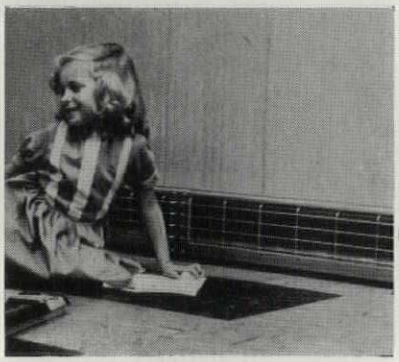
Radiant cables, stapled to lath before plastering, conduct electricity at temperatures only slightly above body heat (left). *Room temperatures vary slightly from floor to ceiling.* Ceilheat, Inc.

Our clients probably have seen radiant-glass panels, but few of them are likely to know that a radiant-glass panel, rated at 1000 w, might actually pull up to 1500 w during the first 20 minutes of operation, when being started up from a cold state. Our client should be told this, because such a battery of glass panels can

Specifications for deflector-top radiant glass heat baseboard unit (below): *height 9⅜", length 47½", depth 2¼"* (top) *1¾"* (bottom), *240v, 750w, 3.1 amps* (hot) *4.7* (cold). Continental Radiant Glass Heating Corp.

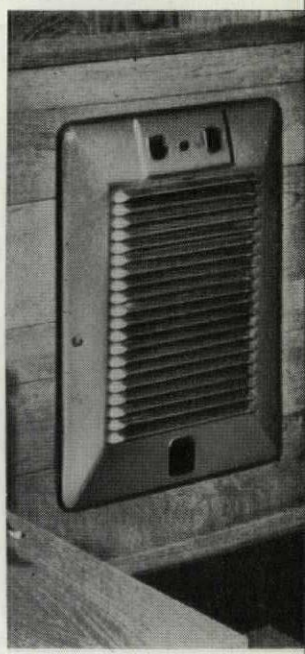






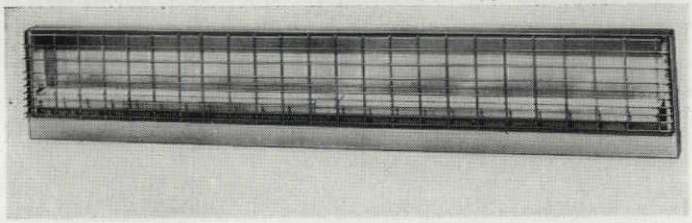
Electric baseboard (above left) *was engineered for maximum surface temperature of 140 F with 157 w/lin ft. Cooler air is warmed by concealed electric elements then circulated by convection. Face of unit radiates heat into room.* Wesix Electric Heater Co.

Built-in wall heater has separate switches for fan and heater (right); *240-v, 4500-w, 15, 354 Btu output/hr.* Thermador Electrical Manufacturing Co.



Quartz panel facing upward in lower half of base board unit (below) *is superimposed over nichrome electric element; back of unit is aluminum reflector. Specifications: 48" wide, 8" high, 2" deep, 1000w, 8.3/4.2 amps, 120/240v.* Electriglas Corp.

Radiant glass baseboard heating units (above), *36¾" long and 7¼" high, are rated at 400w, 240v (1365 Btu per hr) or approximately 133 w/lin ft (435 Btu/lin ft).* Berko Electric Manufacturing Corp.



do things to inflate the electric demand, and if the utility company includes a demand charge in their rates, he may find himself paying for a demand that occurred only once or twice in a whole heating year.

Another consideration, if our client's house is to be near an air field, or somewhere along the route of low flying jet airplanes, he should obtain from the glass panel supplier or manufacturer a guarantee against shattering of the glass by the sound wave. This casualty might never occur, but in several instances noted by this writer, cracks in the glass panels were observed immediately after the noisy passage of a jet. These might be pure coincidence, of course, but the possibility should be kept in mind. If an insurance policy is taken to safeguard the house against airplane damage, it should be extended to cover damage from the sound wave also.

Electric utility companies that object to a resistance type of heater, often will accept without reluctance, a heat-storage installation, provided the system is governed by a demand limiter, or takes its energy as off-peak power. In this category we have the electrically heated hot-water generator, the hot water being circulated through convectors or baseboards in the conventional way.

We can tell a client this arrangement is a good one if his house is existing, if he has hot-water heating already in place, if he must install a new furnace, and if, finally, he is situated in an area of favorable electric rates. Another advantage is that nowhere, as can be the case with a resistance heater, is a glowing or extremely hot surface exposed to a dusty and therefore possibly explosive, atmosphere. In short, the danger from fire originating in a hot-water system where the source of heat is an electric, submerged element, is practically nonexistent.

By contrast, we can use warm air circulated through ducts, but the usual design of these systems incorporates a resistance heater of some kind, such as a strip heater in the passage. This arrangement should never, and we repeat never, be used unless the air is filtered immediately before making contact with the heating element; otherwise, the danger from a dust or lint fire soon becomes present.

As a unified installation, this method of heating is assembled more often than otherwise to meet the requirements of a particular owner—for example, in a group of two or three contiguous offices, or in a warehouse, where chimney and fuel facilities are not available, and summer cooling ducts are existing or planned. For house heating, economical control is difficult.

Electric baseboard is, comparatively, a new arrival in the house heating family, and is likely to become popular with people who want simple heating and who also, by reason of their geographic or financial position, can afford it. In appearance, electric baseboard takes two forms. One form looks like any other baseboard; in fact whether the manufacturer installs an electric element or finned tubing inside the enclosure, is the customer's choice. The second form is simply a stretched out glass panel, its surface protected by wire guards.

The heat output of the covered element baseboard approximates 250 w per linear ft. In British thermal units this is 853, and to match it we must go to 1¼-in. finned-copper tubing, and fill it with 200 F water. The glass panel form offers about 133 w per linear ft.

Both forms of baseboard provide blank, or dummy sections, to maintain a continuous baseboard where heating is not needed. Both forms also are controlled by thermostats, and the covered element sections incorporate a baseboard-located thermostat if desired, thereby eliminating the wall instrument. A recommended method of obtaining economy is to shut off all heating in unoccupied rooms, consequently a wall switch is essential, even if the people in the house do forget to use it at times.

A wall heater that is winning considerable acceptance and is somewhat smaller than the typical glass panel, presents louvered fronts and incorporates a built-in fan behind the hot elements. Despite its size, it produces a mighty heat output—for example, 4500 w from a wall area of about 14 in. x 18 in. These units likewise are thermostatically controlled, but when they are running we all will know it, especially if we happen to be in line with the hot blast. Some nervous persons might object to the sound of the fan, since it is not quite silent.

A summary of various electrical heating forms, with their advantages and limitations is given (*Table I*).

operating costs of electric heating

We can tell a client that if operating cost is his first consideration, he should: (a) choose another kind of heating; or (b) condition himself to continuing vigilance in the turning off of switches and the careful setting of thermostats. Incidentally, the thermostat that is mounted in a section of the baseboard, takes a bit of jiggling, since a movement of one division on the scale will affect the room temperature anywhere between 2 and 4 degrees.

For a cost to have meaning, we must develop first an estimate of the annual total, then compare that estimate with equivalent heating by some conventional form of fuel—coal, oil, or gas. The formula for estimating the annual current consumption in kilowatt hours is:

$$\text{Kilowatt-hours} = \frac{H \times D}{Td \times K}$$

H= Calculated heat loss from the house in Btu per hr.

D= Average annual degree days for the area, adjusted if the total is less than 1800 (*Figure 1*).

Td= Temperature difference between inside and outside temperatures.

K= Constant for electric heating equipment. Determined by Federal Housing Administration. For direct or resistance heating, K is equivalent to 170 and for glass panels it is 200.

To illustrate, assume a house on Long Island having a computed heat loss of 100,000 Btu per hr at 0 F outdoors and 72 F inside. The normal degree days for New York City is 5050; allowing 5300 for the greater exposure on Long Island, our equation sets up like this:

$$\text{kwhr} = \frac{100{,}000 \times 5300}{72 \times 200 \text{ (glass panels)}} = 36{,}800$$

For any winter month, the kwhr load varies approximately as the degree days of that month form a percentage of the

Table I: Some Characteristics of Electric Heating

Form of unit	Reactions of users Pro	Reactions of users Contra
All electric units.	Clean. For new houses, cheaper to install than fuel systems. Convenient. Easily controlled. Low maintenance.	Except in a few areas, are comparatively expensive to operate. Complete air treatment is extra.
Cables in ceiling, or conductive rubber panels.	Invisible heat. Easy to install.	Used with low ceilings, may disturb some persons by impact of heat on their heads.
Cables in floor.	Same as above.	Warm floors cause foot swelling in some individuals. Floor mass produces some lag in temperature adjustment.
Glass panels.	Installed at reasonable cost. Completely satisfactory heating. Good appearance.	Panels appear to be subject to stress and vibration cracks. A one year guarantee is considered too short.
Wall heaters with fans.	Fast heating. Require little wall space. Neat, unobtrusive appearance. High-heat capacity.	Room tends to cool quickly during off part of cycle. Can't sit in line of hot blast.
Baseboard.	Unobtrusive appearance. Excellent heat distribution. High heat capacity. A new development.	Is considered inconvenient to clean by some persons.
Electric boilers.	Provides hot water or steam to conventional convectors and panels. No fire hazard. Eliminates chimneys and fuel. May find some advantages in an off-peak electric rate with heat storage in the water.	No saving in installation costs. Operating maintenance is greater than with simple electric heating, due to mechanical troubles.
Heat pump.	Provides both heating and cooling. Much cheaper to run than direct electric heating.	Use of wells or ground coils for heat sink is expensive and can be troublesome. Air heat source loses capacity in cold weather. Maintenance and adjustments can be a nuisance.

entire season. For example, in the New York area, January produces approximately 20 percent of the season's total; consequently, the January current bill would be based on 7360 kwhr.

Our next step is to convert these 36,800 kwhr into the equivalent consumption of coal, gas, and oil. As a basis for comparison, we will assume that coal costs $20 a ton, that it contains 13,800 Btu to the pound, and is burned with an average efficiency of 70 percent. The figures for oil fuel will be 15¢ per gallon, 19,000 Btu per pound, and 70 per cent efficiency. Natural gas usually is purchased on a block rate, and in this study we will use figures as follows:

	per month
For the 1st 200 cu ft	$1.10
Next 800 cu ft	27½¢ per 100
Next 2000 cu ft	20¢ " "
All over 3000 cu ft	10½¢ " "

The burning efficiency will be assumed at 85 per cent and the heat value of the natural gas as 1020 Btu per cu ft.

The direct conversion shows our 36,800 kwhr to be equal in heat value to 6½ tons of coal *burned;* 1180 gallons of oil *burned;* and finally 145,000 cu ft of natural gas, *burned.* These burned figures have been adjusted of course for the efficiency of the combustion process. By applying the unit rates shown previously, the annual cost of these other fuels becomes $130 for coal, $177 for oil, and $186 for natural gas.

For the electrical heating charges, suppose we use a typical city-block rate:

First	15 kwhr		$1.00
Next	45 "	@	4½¢ per kwhr
"	140 "	"	2½¢ " "
"	300 "	"	1½¢ " "
All over	500 "	"	1¼¢ " "

Our seasonal cost, as the summation of the monthly charges under this rate schedule, comes to $623, or more than three times that of the most expensive traditional fuel. The maximum month, January, produces an electric heating bill of $124, and we can anticipate nearly as much for December, February, and March.

The average of current for this particular example is 1.694¢ per kwhr; thus the indications are that electric heating will not be for economy minded clients until the average rate falls below 1¢, while conventional fuels rise substantially above their present prices.

case for "reasonable premium" clients

For every client who wants electric heating at any price (and there are some) probably a half dozen are willing to pay what they call a reasonable premium for it, but not three or four times conventional fuels. To these we can say:

"If you will insulate the house completely, weatherstrip the doors, and use double-glazing in the windows, the heating load will be cut in half."

However, this sort of economy treatment will reduce the heating bills regardless of the fuels, consequently the spread between electric heating and the other forms remains unfavorable to the former. Whether the client can, or cannot digest the new bill, only he can say.

A "reasonable premium" often is considered acceptable by the owner of an existing building that is having heating trouble. Perhaps the system never was

designed properly, or some piping which is buried in concrete is leaking or stopped up; and on occasion the boiler has come to the end of its physical life. These clients are concerned with avoiding a large and immediate investment for repairs and replacements, and in the circumstances a moderate increase in operating costs looks rosy by contrast.

To these clients we must explain that the increase in operating costs will not be moderate unless the premises are thoroughly insulated, and moreover if their ceilings are in the 12 ft and higher class, which is common for old houses, the very volume of the rooms will make a low-heating bill almost impossible to realize. Finally, a rewriting job most likely will be in prospect, particularly if the plan is to use baseboard or wall-mounted heaters.

The balance then looks like this:
Operating cost per year x 10 years=$X
Remodeling costs plus electric units= Y
Total cost of electric heat for 10 years=$Z

Is this cheaper than repairing or replacing equipment in the existing system over a 10 year outlook?

estimating diversity

Traditionally the public utility companies have not been much concerned by the demand factors of the residential load. In the mass, residential consumption provides excellent diversity by its nature, but that mass is commencing to be speckled with growing spots of air-conditioning peaks in the summer, and heating peaks in the winter. In the circumstances we can expect, in time, to face a demand form of charge in many areas, and particularly where the electric company is already hard put to meet system peaks.

Peaks from electric heating become more pronounced as the outside temperature falls. For example, suppose a house with half a dozen, 4500-w wall units is operating in mild weather on a schedule of five minutes heating and 10 minutes off, as called for by the thermostat. A half-hour demand meter would show a total withdrawal from the electric service supply of 4500 w during that one-half hour period. Then the outside temperature falls below zero, and there is no off period, thus producing a total demand of 13.5 kw. Our one way of controlling the demand of operating in severe weather (and the electric companies hope we will take it), is to shut off all heating, or to turn down the thermostat, in our unoccupied rooms. By doing this, we achieve diversity, save ourselves from having to pay a maximum demand charge based on 13.5 kw, and postpone the day when the utility company may be obliged to raise its voltage and its rates.

For estimating the percentage of the connected heating load that will demand current at any given time, Figure 1 will be helpful. Of course, accurate demand estimating will depend heavily on the individual household concerned; for instance the number of rooms that must be heated simultaneously, the desired inside temperature, the coming and going habits of the family members.

To illustrate the application of the demand chart (*Figure 2*), assume again we have an installation designed for 0 F, and that it consists of six 4.5 kw wall-type heating units. Obviously at 0 F outdoors, each unit will operate at its full capacity (unless they have been oversized) and the demand will equal 4.5 kw multiplied by the number of units in operation. If we use the hand switches to turn off the heat in unoccupied rooms as we should, probably no more than four of our six units will be dispensing comfort simultaneously, and the total demand will be 18 kw/2 (one-half hour demand meter), or 9 kw.

To discover the demand at something less than full load, we simply follow the design curve to the outside temperature, and read the percentage on the vertical scale to the left. Thus, at 10 F outside, our system which is intended to meet O F if necessary, will show a demand of:

$$4.5 \text{ x } 86\% \text{ x } 4 \text{ units operating} = \frac{15.48 \text{ kw}}{2} = 7.74 \text{ kw}$$

Incidentally, most utility companies originally used a one hour demand meter, but this was replaced by the one-half hour instrument in order to measure more accurately the actual impact of a connected load on the generating system.

The relationships of monthly heating demands for any electric installation, exclusive of domestic hot water, refrigerators, deep-freezes, and other appliances may be expected to approximate:

December-January	100% (Maximum)
November-February-March	73%
October-April	50%
May	25%

summing it up

We now can tell our clients that, having examined the ways, means, and rates of electric heating, we find it to have these general characteristics:

1. It is clean, effective, convenient, comparatively economical to install, and usually easy to maintain.

2. Except in areas of favorable electric rates, the utility charges for energy might approximate three times the cost of equivalent fuel.

3. Cooling, air cleaning, and humidity control, aside from heat pump jobs, are not integral parts of electric heating.

4. As a rule, the application of electric heating to an old building incurs a substantial new investment by the owner.

5. For the simple heating of new homes, electricity is recommended for consideration by people who, geographically or financially, can afford it.

One thing more we should tell our clients, and this is especially important. We should tell them that the business of matching the right form of electric heating with the right owner is a problem to be solved by experts in the field. Short circuits to dissatisfaction are easy to come by, and, as some users say, the results *can* be wonderful.

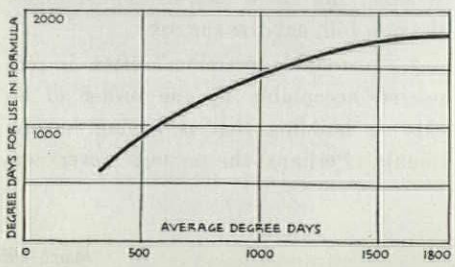


Figure 1—degree days for estimating electric energy.

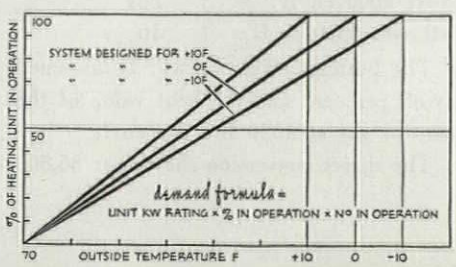
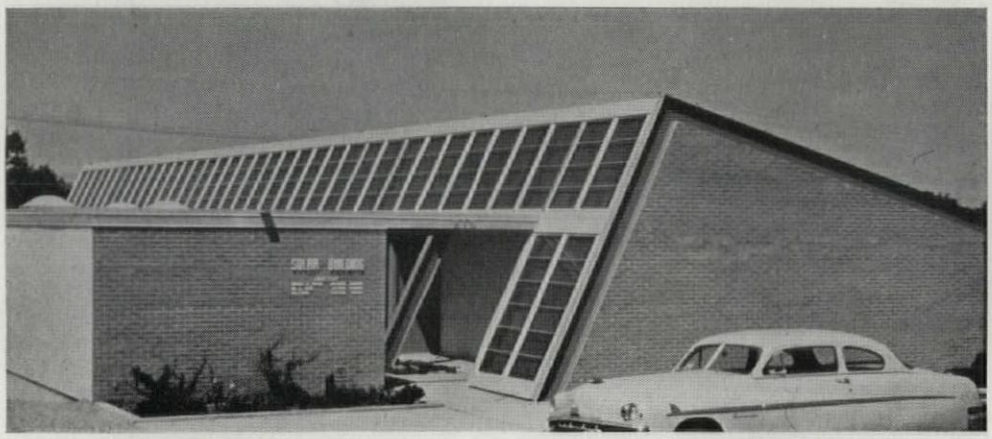
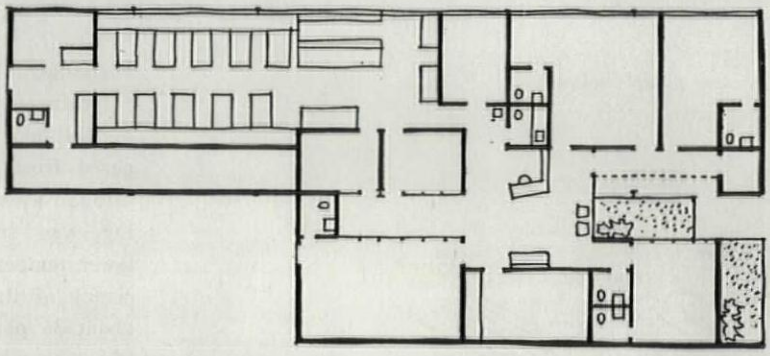


Figure 2—unit operation and outside temperature.

Solar-Heated Office Building





In recent years, numerous published papers have discussed various aspects of exploiting free and abundant solar energy for domestic heating[1] and a few solar houses have actually been built, lived in, and studied. For the most part, these examples have been in the realm of theory and applied research. Now, for the first time, a solar commercial building has been built at Albuquerque, New Mexico, to house the offices of Bridgers & Paxton, well known engineers who have executed mechanical designs for some of the most outstanding contemporary buildings in the Southwest.[2] Architects integrating structure and environmental control were Stanley & Wright; Bridgers & Paxton were mechanical engineers for their own building.

Operating and performance data obtained from this system will serve as a basis for the design of future similar buildings. Also, the data will be compared with design calculations to determine the degree of accuracy of the theoretical predictions that were assumed. Although additional knowledge will undoubtedly be gained for future application, this building can already be justified economically. Comprising an area of 4300 sq ft, its total cost came to $57,500 or approximately $13.60 per sq ft—about the same figure for comparable buildings in the area with complete year-round air conditioning. The great plus, however, will be in future savings, since operating costs cannot help being lower than those with a conventional gas-fired boiler or furnace.

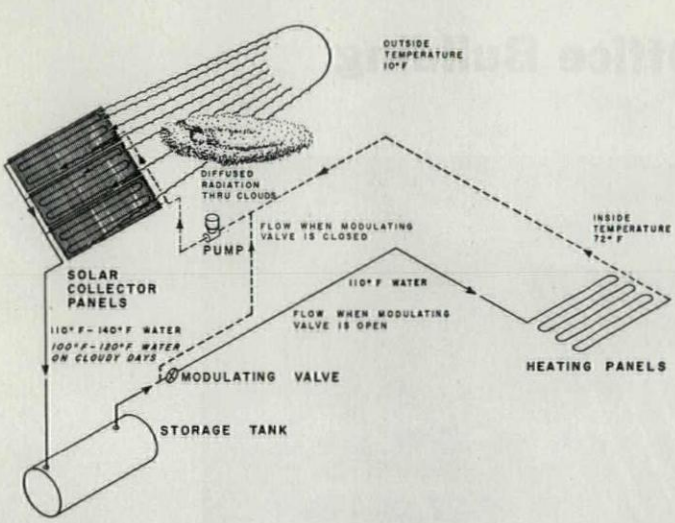
Basic components of the system are: an 800-sq-ft flat-plate solar collector using water as the heat transport medium; a 7½-ton water chiller operated as a heat pump in winter and used for cooling in summer; a 6000-gal water tank for heat storage; an evaporative cooler (for summer use only); two pumps for circulating water through the system; and a distribution system for heating and cooling.

The collector, which serves as one wall of the office building, faces south and is tilted 30 degrees from vertical. Its orientation produces a maximum efficiency during the months of December and January. Principal elements of the collector are a flat metal plate, painted black on one side, and a glass cover. The plates are made of two bonded-aluminum sheets containing flow routes for the heat transport medium.

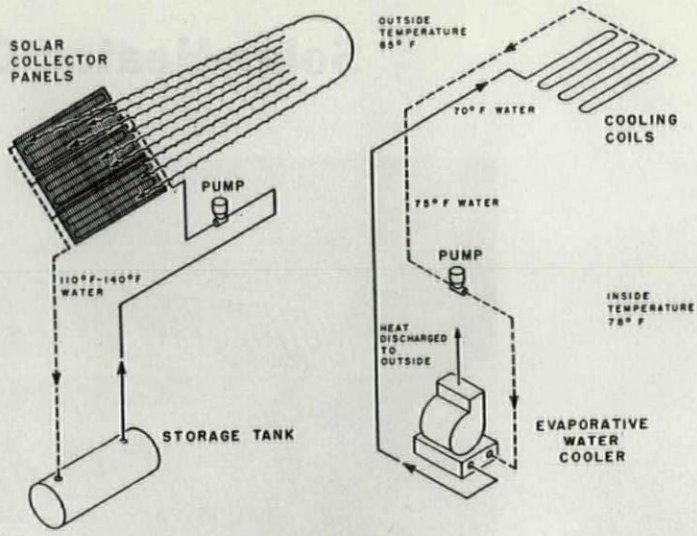
Wave lengths of solar-energy particles, in general, lie on the visible or ultraviolet spectrum. The glass cover is transparent to this short-wave radiation so that the particles can pass through easily and strike the collector plate. Energy is then released in the infrared spectrum as heat. The glass cover is opaque to this longer energy-wave radiation and thus the heat is trapped and conducted to the water in the tubes and carried away to storage.

The 6000 gal underground water tank used as the storage element represents a capacity of 50,000 Btu for every degree

1 *"Design Procedure for a Solar House," March 1952 P/A; "Principles of Solar House Design," May 1955 P/A.*
2 *Simms Building, September 1955 P/A.*

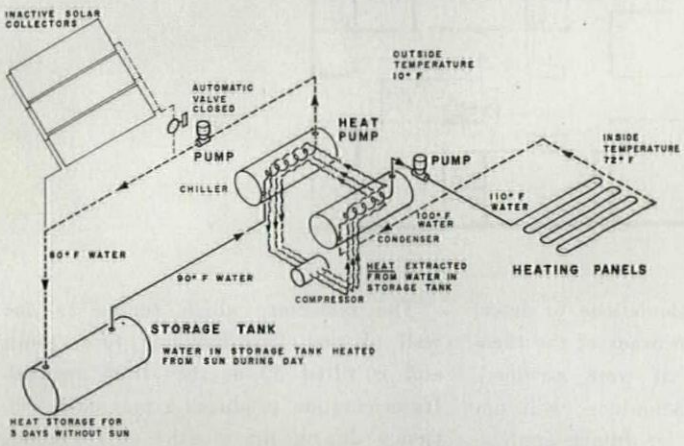


Water circuits for heating and cooling the solar office building. *Solar heating with collector panels and storage tank* (above).



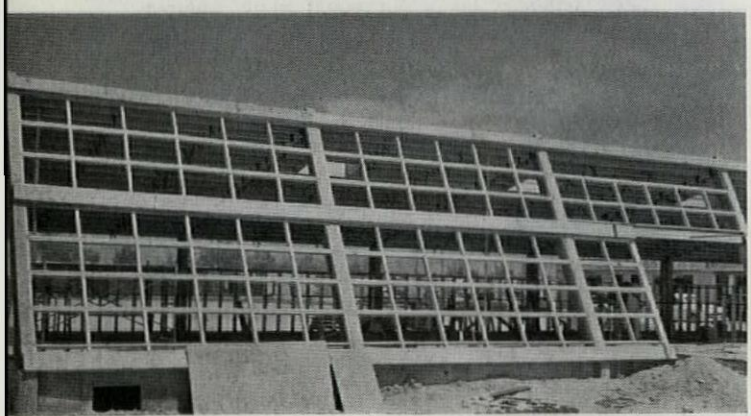
Storing heat while cooling.

Solar heating with heat pump (below).

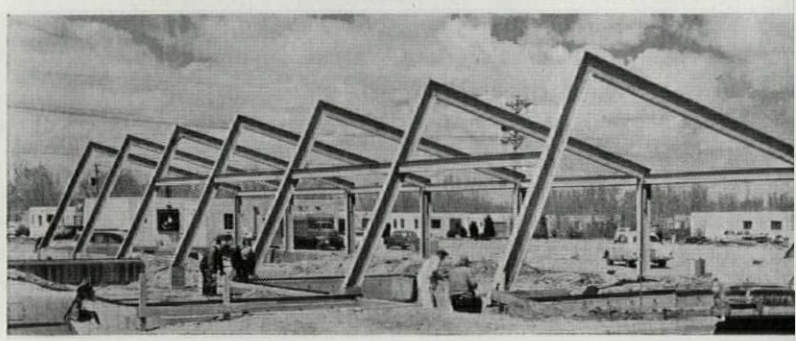


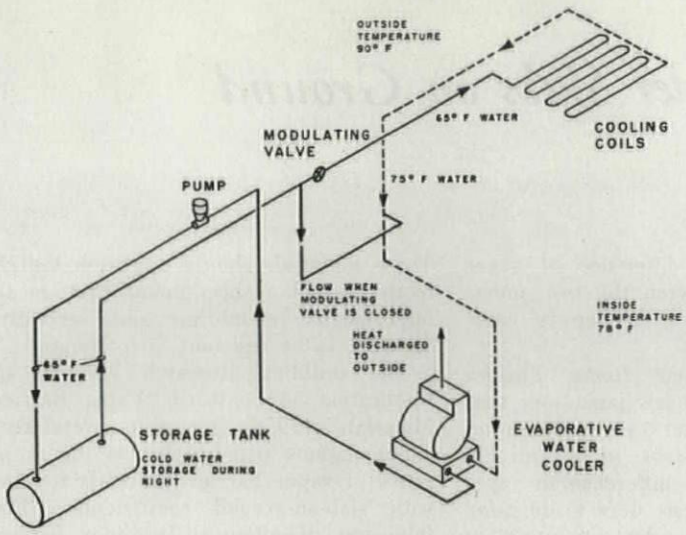
F change in the storage temperature.

Heating is accomplished through ceiling-and-floor radiant panels with tempered fresh air for ventilation supplied through a central air system. Panel heating was selected principally because lower temperatures are needed. The efficiency of the solar collector runs from about 35 percent at 110 F to as high as 85 percent at 40 F collector temperature.

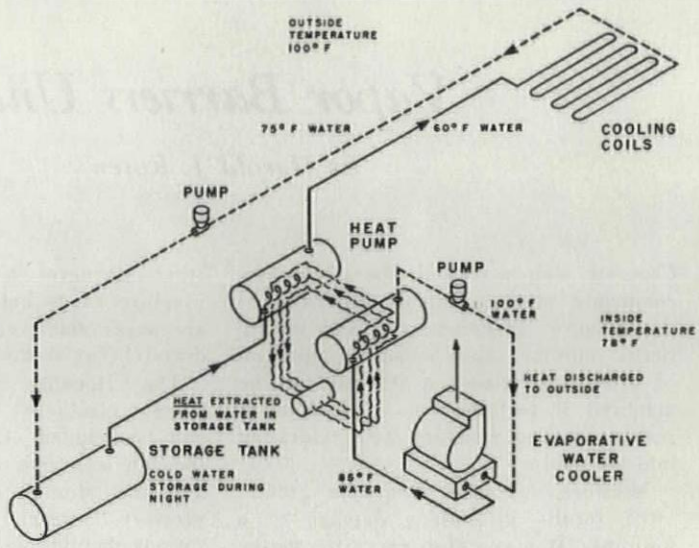


Progress photos show erection of structural-steel bents and superimposed wood framework that will carry aluminum plates of the collector.





Cooling with storage tank and evaporative cooler.

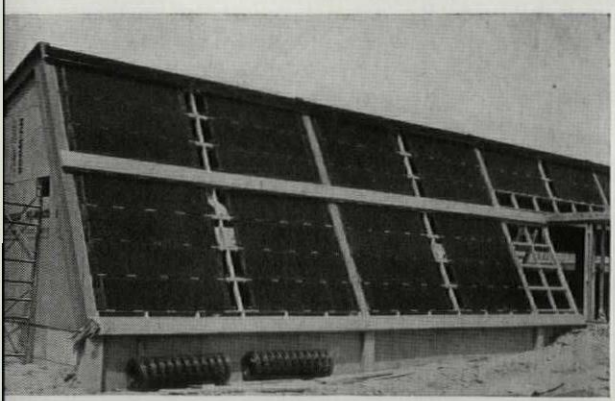


Cooling with heat pump.

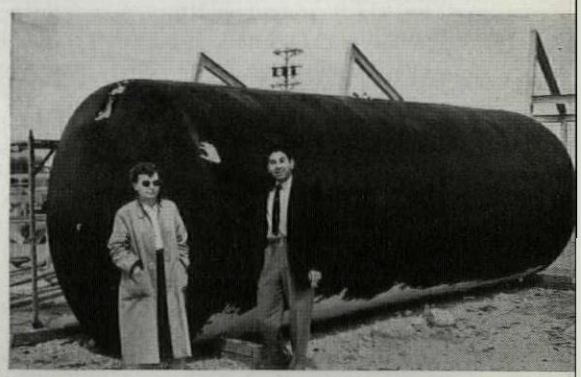
Summer cooling is carried by the ceiling panels plus the air system.

Naturally, whenever conditions permit, the system will operate directly from collector through storage to distribution. However, during prolonged periods of high heating demand and low solar-energy availability, the temperature of the storage water may drop below the level necessary for satisfactory heating of the building. Increasing the size of the collector and/or tank to meet such a condition presents awkward architectural, economical, and space problems. Since the efficiency of the collector temperature decreases, some device for raising the temperature level of the water in the distribution system while allowing storage and collector temperatures to fall (to as low as 35 F) will increase both storage and collector capacity. For this, the heat pump is a simple and effective solution and, since it can be used for summer cooling, utilization and economic factors are favorable.

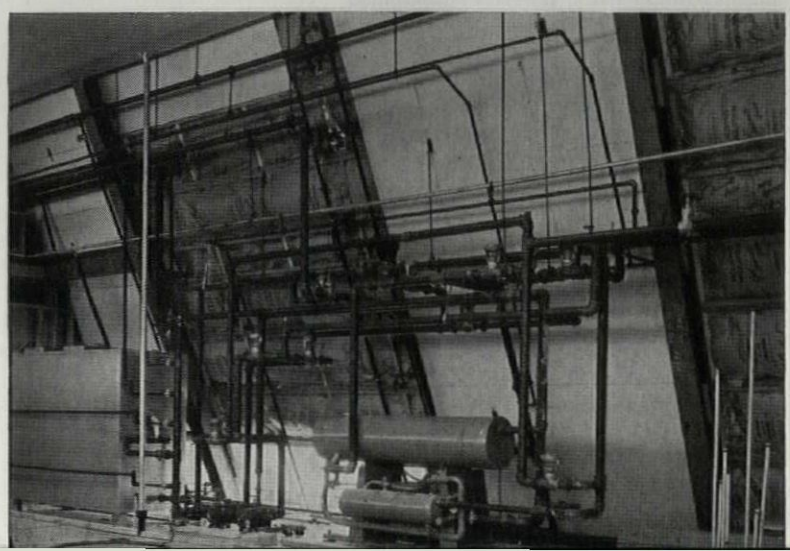
An evaporative water cooler serves as a cooling tower for the heat pump on the summer cooling cycle. It can also be used at night to cool water which can then be stored for use during the day.



Water-carrying aluminum plates, painted black on exterior exposure, are in position and ready for linking pipework and glass cover. An air space, glass-fiber insulation, and gypsum-board sheathing make up interior side of collector. All equipment components, except the collector, are of standard manufacture.



The 6000-gal water-storage tank, insulated and waterproofed, is ready for underground installation.



Vapor Barriers Under Slabs on Ground

by Harold J. Rosen

Concrete slab-on-ground floors are now commonly used in almost all parts of this country for commercial and institutional buildings and houses. Utilization of areas with slabs on ground can be achieved if certain steps are taken to prevent ground moisture from migrating into the slab.

Moisture migration from the ground often results in serious damage to a building. It may cause excessive dampness in basements, rotting of wood framing, deterioration of adhesive bonding floor finish material to slab-on-ground floors, rusting of tools and deterioration by mildew of rugs, furnishings, and clothing. While adhesives used in the placing of resilient flooring materials may be good vapor barriers, it has been found that these adhesives lose a large portion of their dry bond strength when the concrete slab on which they are placed becomes damp. This condition has been reported in the National Bureau of Standards Report BMS59, Properties of Adhesives for Floor Coverings.

Housing and Home Finance Agency Research Paper No. 28 entitled "Moisture Migration from the Ground" (*April 1954*), states that there are three ways by which ground moisture may gain access to a building; by leakage, capillarity, and vapor migration. These may occur separately or simultaneously. Moisture originating in the ground should not be confused with condensation of moisture out of humid air on cold floor slabs particularly during hot, humid summer weather.

Moisture migration in the form of leakage is simply water which finds its way by gravity to the surface of slabs on grade through cracks or openings, honeycombed concrete, imperfect water-resistant coatings, or poorly constructed water-resistant membranes. Moisture migration through capillarity is the result of "wick action" where the tension on the surface of the liquid when it is confined causes a movement of moisture. Moisture migration in the form of water vapor is caused by differences in vapor pressure between two areas. The phenomenon of moisture migration in the form of water vapor, which is actually an invisible gas, is perhaps less understood than the other forms of moisture migration, but it exists, nevertheless, and acts in accordance with the physical laws of gases. One of these laws is that vapor will travel from one area to another whenever a difference of vapor pressure exists between the two, unless an impervious vapor barrier is introduced between them.

The Housing and Home Finance Agency conducted a few laboratory tests and concluded that vapor migrates through concrete slabs in measurable quantities due to a difference in vapor pressure. Several tests were made using various membranes under concrete slabs and with coarse, washed gravel beneath the membrane, simulating typical types of floor slab construction. One test was made with a concrete slab poured directly on earth without using a membrane or a gravel course. Where membranes were employed over the gravel-base course, the tests concluded that the amount of moisture passing through in the form of water vapor was directly proportional to the vapor permeability of the membrane.

Several conclusions were drawn from the few tests which were conducted, as follows:

1. That moisture originating in damp soil will move upward through the slab either by capillary action or in the form of water vapor.

2. That a gravel-base course may interrupt capillary action but will not prevent water vapor migration.

3. Moisture may travel through a concrete slab more rapidly as water vapor than as liquid water.

4. Membranes which are highly impermeable are effective in reducing moisture migration from the ground.

The need for a vapor barrier beneath concrete slabs on grade has been established on the basis of these tests and on the basis of tests conducted by others. Roofing materials such as 15-pound felts cemented together with bituminous material and roll roofing have been used as vapor barriers. While the durability of these materials is satisfactory when applied to roofs, their effective life when in contact with damp soil where they would be subject to soil poisons and rot fungi was questioned. Tests have been conducted on roofing materials exposed to rot fungi, and it has been disclosed that the 15-pound felts have disintegrated to be relatively ineffective as a vapor barrier after three years. The 55-pound roll roofing had a much longer life when exposed to soil poisons. Industry is developing membrane materials specially designed for use in contact with the ground. These materials should approach the effectiveness of a sheet metal, first, as an impermeable membrane and, secondly, in order to be resistant to rot fungi.

The Building Research Institute in Publication 445 entitled "Vapor Barrier Materials" (*1956*) has made several recommendations with respect to the properties of vapor barrier materials for use with slab-on-ground construction. The following definition of a vapor barrier was recommended by the Building Research Institute:

A material or coating used in construction sufficiently resistant to vapor transmission to retard the passage of water vapor from zones of high vapor pressure to zones of low vapor pressure.

The Building Research Institute publication further stated that a vapor barrier when used with slab-on-ground construction should have the following properties:

1. The vapor barrier should have a permeance or water-vapor transmission rate, of not more than 0.5 perm.

2. The vapor barrier should possess the following physical properties:

a. Resistance to alternate wetting and drying.

b. Resistance to prolonged soaking.

c. Resistance to decay.

d. Resistance to abrasion.

e. Resistance to plastic flow and elevated temperatures.

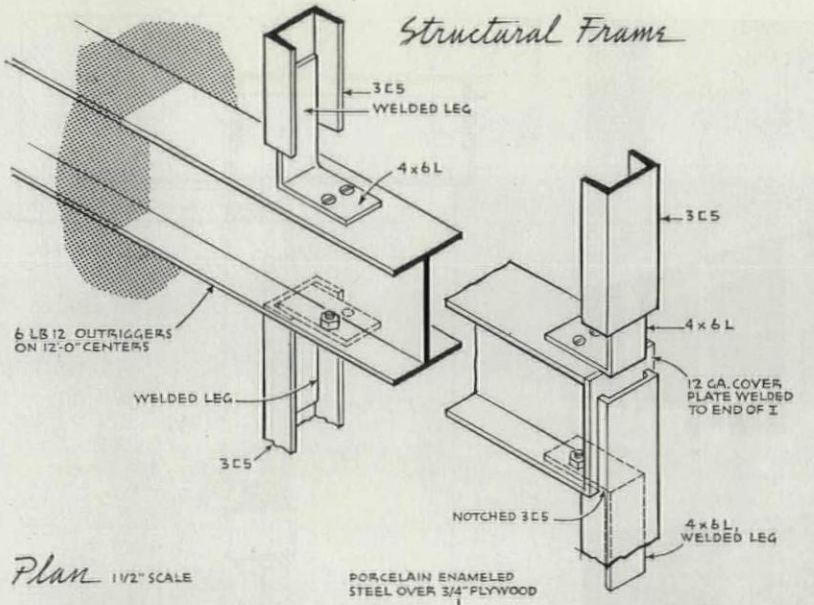
Several recommendations were made by the Building Research Institute with respect to further research and development on vapor barriers in connection with their selection and use: a recognized standard for testing vapor barrier materials; the development of data with respect to the effect of soil poisons on various vapor barriers; the development of data that will establish the effective service life of various vapor barriers.

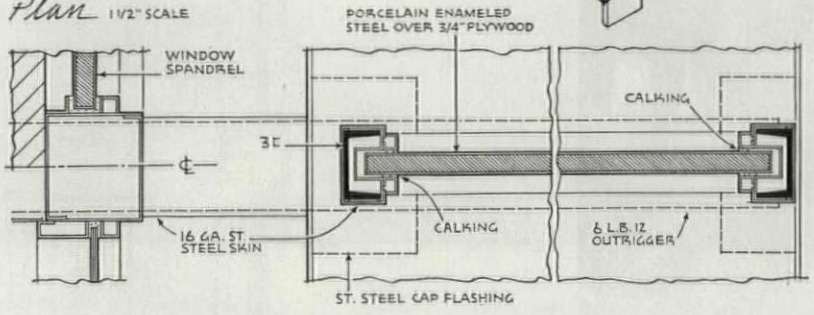
Pending the establishment of more authoritative data the following specification recommendations are made. Slabs on ground constructed as follows:

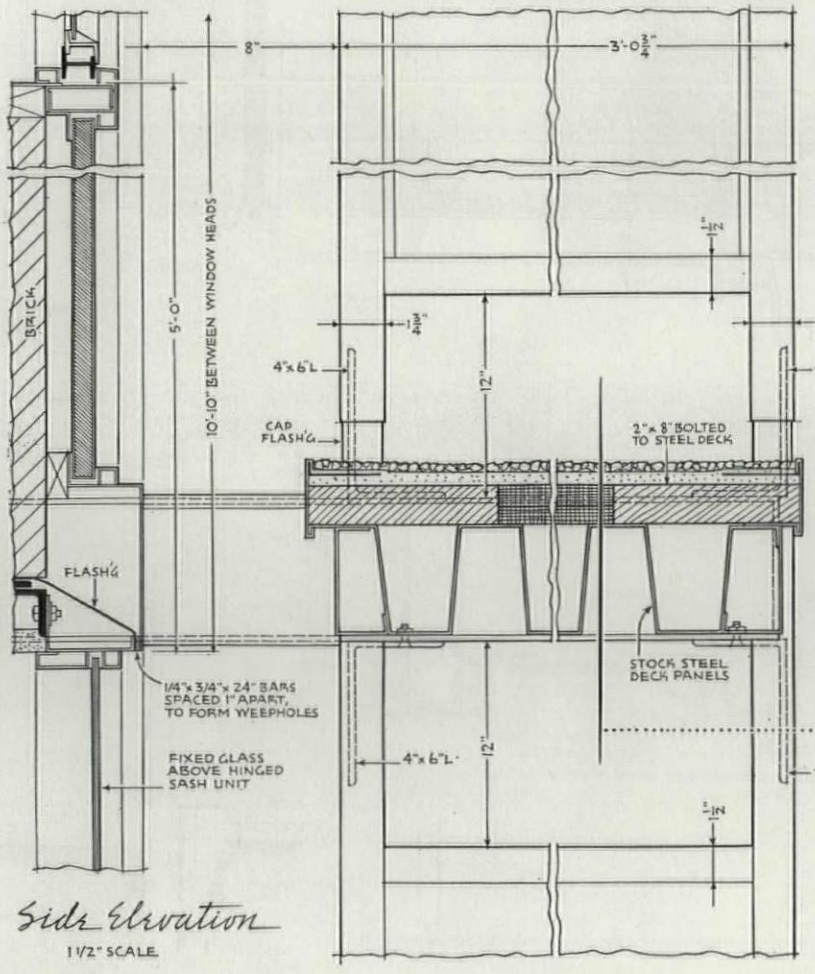
A base course of well compacted gravel or crushed stone 4 or more inches thick shall first be installed. Over this porous fill provide a 1-inch bed of sand to prevent puncturing of the vapor barrier. Install a vapor barrier of 55-pound roll roofing, polyethelyne film or other approved vapor barrier having a permeance of not more than 0.5 perm, turned up to the top of the slab around all edges.

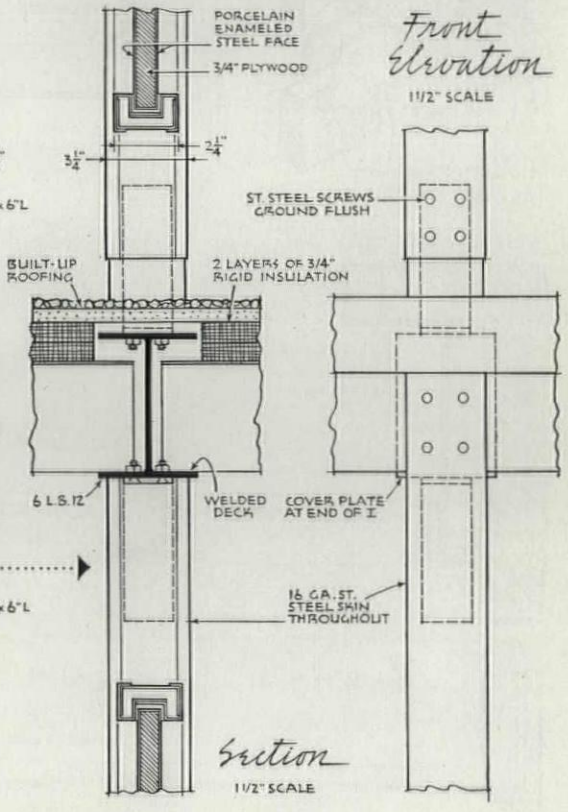
wall section

LAWRENCE S. WILLIAMS



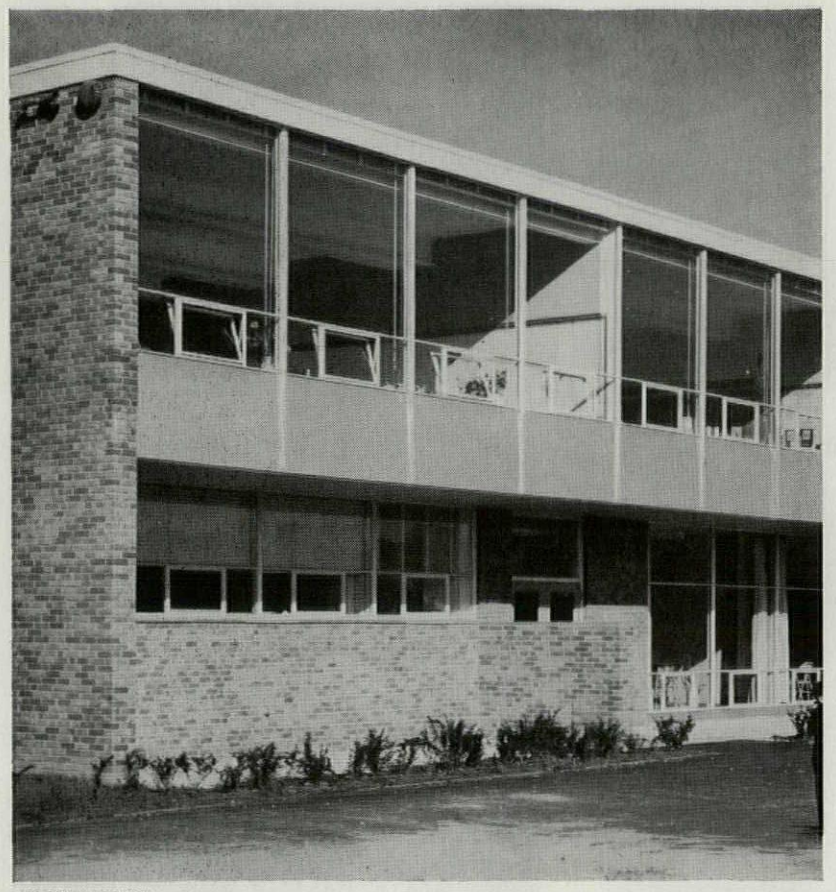






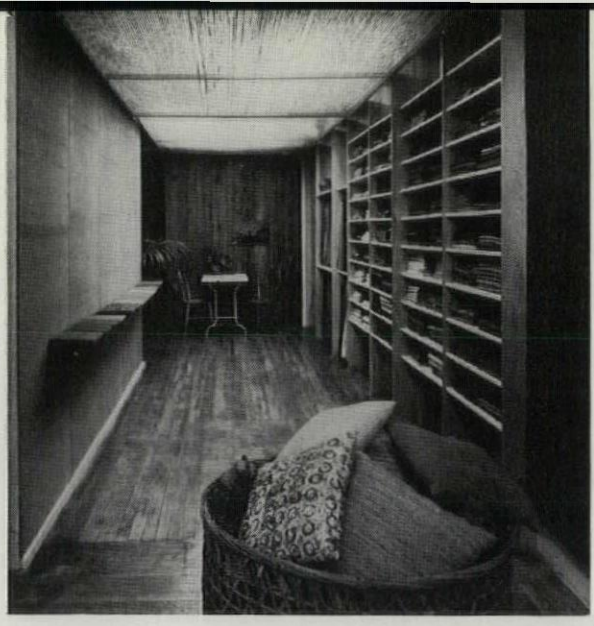
HOSPITAL, Pottstown, Pa.
Vincent G. Kling, Architect

wall section



JOSEPH W MOLITOR

ELEMENTARY SCHOOL, Sharon, Conn.
Sherwood, Mill & Smith, Architects



Fabric show room of Jack Lenor Larsen, Inc., New York (Larsen, Designer; Win Anderson, Associate) achieves its purpose of simplicity and timelessness as a gracious background for the firm's distinctive fabrics. Natural materials and colors offset the brilliance of the textiles. Walls are vertical weathered pine, Japanese-grass matting, or painted white; floors, rubbed-down red-oak parquet; ceiling, Fiberglas "Synskyn" with paper raffia for texture interest. Photos: Louis Reens

Louise Sloane

showrooms

Leading fabric and furniture designers with architectural *clientèle* approach their selling problems with an eye to their architect-customers' comfort, esthetic sense, and own problems of salesmanship. By designing showrooms that are handsome, convenient, and helpful to the architect's own clients whom he brings or sends in, these designers add useful assets to the quality and design of the merchandise itself.

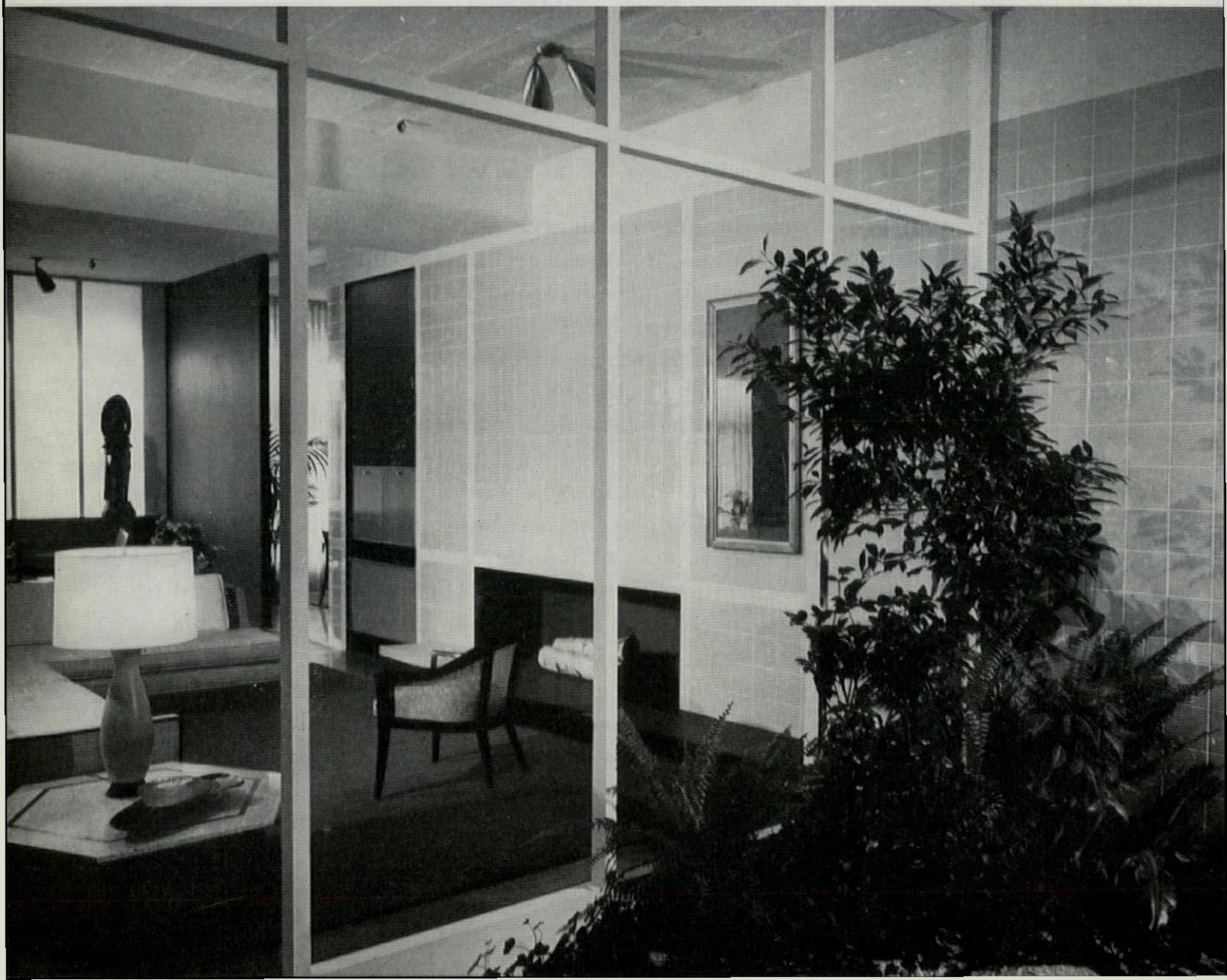
This service trend is interestingly exemplified in the four new showrooms we show this month. In Jack Lenor Larsen's new showroom, where his custom prints and handweaves are sold in New York, fabrics are mounted on free-standing shelves; folded into open shelves; hung where light can come through them. Fabrics are easy to see, to handle, and to visualize in use. Harvey Probber offers his furniture collection, one of great diversity and adaptability, richly displayed in colorful and well appointed settings in his spacious new showroom. Bertha Schaefer creates for the furniture of M. Singer & Sons a background that integrates a distinguished collection of fine art with the top-flight design of the furniture. Boris Kroll and Jens Risom join forces to design a fabric-furniture showroom notable for its quiet architectural dignity.

Handled very much as though they were galleries, each of these showrooms is worth a visit for the interior-design stimulus they offer.

showrooms

client	Harvey Probber, Inc.
location	New York, New York
designer	Harvey Probber
associates	John and Earline Brice

Tempting settings, brilliant handling of color, extensive use of varied and contrasting surface materials, discriminating "accessorizing," combine to make a veritable showplace of Harvey Probber's 10,000 feet of furniture display space in New York's Fuller Building. "In use" presentation of the firm's diversified furniture collection in a complete penthouse apartment setting, as well as in other room-area settings, serves both to show the merchandise to advantage and to provide rewarding interior-design ideas. In the co-ordinated color planning, particular use has been made of blues, turquoise, white, and apricot. The several floorings, lending drama throughout, are sandalwood-finished-oak parquet; antique-white vinyl-tile; walnut parquet; and area rugs in sharp, vivid colors. Window and wall treatments include Swiss batiste, Fiberglas, matchstick blinds, frosted-plate glass, ceramic tile, walnut paneling.



data

furniture

All: Harvey Probber, Inc., 41 E. 57 St., New York, N. Y.

partitions, walls

Ceramic Tile: American Olean Tile Co., 101 Park Ave., New York, N. Y.

Frosted Glass: Mississippi Glass Co., 88 Angelica St., St. Louis, Mo.

Walnut Panels: Roddis Lumber & Veneer Co., Holyoke, Mass.

flooring

Oak Parquet: E. L. Bruce Co., Memphis, Tenn.

Walnut Parquet: Harris Flooring Co., 39 Powerhouse Road, Roslyn, Long Island, N. Y.

Vinyl-Tile: "Matico"/ Mastic Tile Corp. of America, Newburgh, N. Y.

Carpet: Needletuft Rug Mills, Division of Cabin Crafts, Dalton, Ga.

showrooms

client	M. Singer & Sons
location	New York, New York
designer	Bertha Schaefer
associate	Agnes Mills
lighting	Richard Kelly

data

furniture

Designers: Carlo di Carli, Vita Latis, Ico Parisi, Gio Ponti, and Bertha Schaefer/ M. Singer & Sons, 41 E. 57 St., New York, N. Y.

partitions

All: Gotham Wood Products & Millwork Inc., 698 Second Ave., New York, N. Y.

windows

Plastic and Wire Blinds: M. Singer & Sons.

lighting

Fixtures: Stamford Lighting, 429 W. Broadway, New York, N. Y.; Spear Lighting, 61 Clymer St., Brooklyn, N. Y.; Nelson-Tombacher Co., 81 Prospect Ave., Brooklyn, N. Y.; Kleigl Bros., 321 W. 50 St., New York, N. Y.

walls

Papers: Gene McDonald Inc., 601 Madison Ave., New York, N. Y.; W.H.S. Lloyd Co., Inc., 16 E. 52 St., New York, N.Y.; Kesco Design, Seattle, Wash.; Louis W. Bowen Inc., 509 Madison Ave., New York, N. Y.; Stevens-Nelson Paper Corp., 109 E. 31 St., New York, N. Y.; Murals, Inc., 16 E. 53 St., New York, N. Y.; Kneedler-Fauchere, 451 Jackson Sq., San Francisco, Calif.

flooring

Carpeting: "Broadfelt"/ Clarke, Cutler & McDermott, Franklin, Mass.

art and accessories

Paintings: Angelo Ippolito, Julio Girona, John Little, Cameron Booth, Balcomb Greene, John Grillo, Linda Lindeberg, Siv Holme, A. M. Bing; **Spread and Wall Textiles:** Mariska Karasz; **String Composition:** Sue Fuller; **Metal Sculptures:** Jules Struppeck, Manolo Pascual, Joseph Konzal, Wolfgang Behl; **Stoneware Birds:** L. E. J. Rhodes; **Wood Sculpture:** Franz Sandow; **Aluminum Mobile:** Richard Thomas; **Ceramics:** Frans Wildenhain, Gerry Williams; **Customwoven Tapestry:** Franklin Colvin/ Bertha Schaefer Galleries, 32 E. 57 St., New York, N. Y.

Skilful use of color, placement of paritions, and adroit integration of works of art into the scheme were the designer's well chosen tools to direct flow of customer traffic and to set off merchandise in this furniture showroom. The discreet color plan accents a mucilage-color shell with white textured papers on the partitions, introduces a brilliant yellow wall to pull traffic in one direction, a vivid orange paper to direct it around another corner. Paintings focalize the furniture groupings, which are placed in areas of varied proportions and act as continuing points of color interest. A mural in the central area at the end of a traffic vista creates the final dramatic moment. The dark ceiling and light carpeting throughout unify the plan. Photos: Scott Hyde

showrooms

client | Pritchard & Roberts, Inc.
location | Dallas, Texas
designers | Boris Kroll, Jens Risom

For their Dallas represensatives, Kroll of Boris Kroll Fabrics, Inc., and Risom of Jens Risom Design, Inc., devised a joint showroom to display their respective fabrics and furniture in a suitable sales setting. Careful dimensional planning permits easy flow of traffic from one area to another, and a subdued background of off-white walls and vinyl-tile floors recedes appropriately from the rich woods of the furniture and the glowing colors of the textiles. At the entrance, ceiling-to-floor glass panels flank a walnut door, offering an inviting pre-view. Upholstered fabric panels, staggered to give a mural-like effect, form a divider between fabric and furniture displays, and are also used as wall decoration with furniture groupings.

Photos: Ulric Meisel

data

furniture

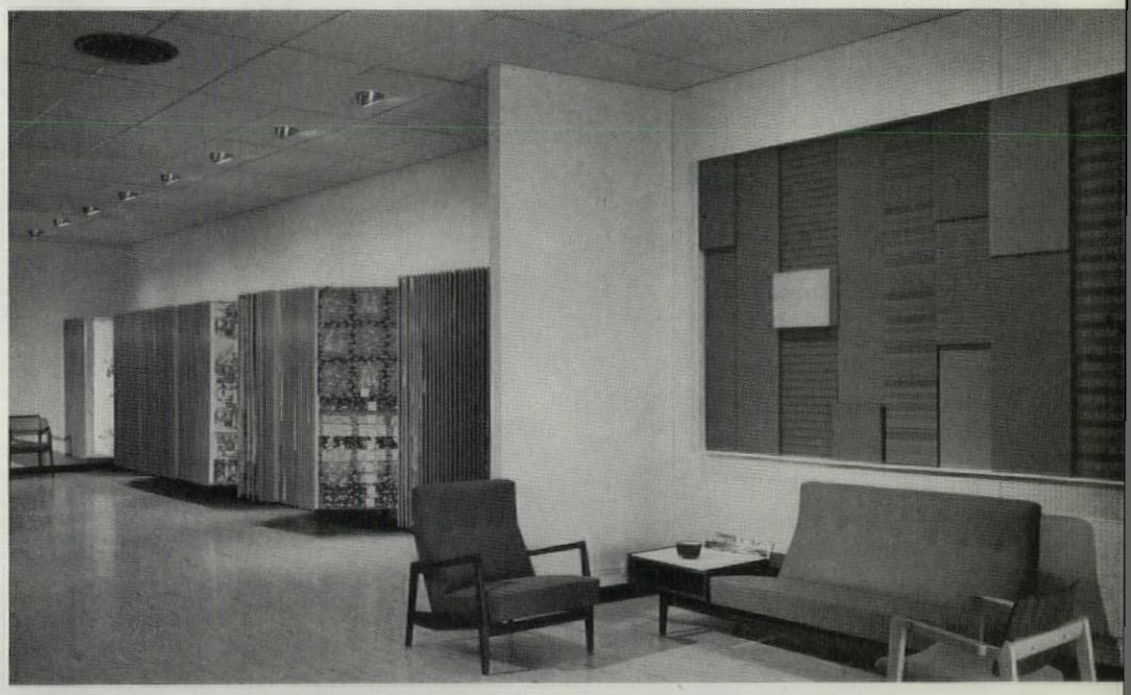
All: Jens Risom Design, Inc., 49 E. 53 St., New York, N. Y.

fabrics

All: Boris Kroll Fabrics, Inc., 220 E. 51 St., New York, N. Y.

walls, flooring, ceiling

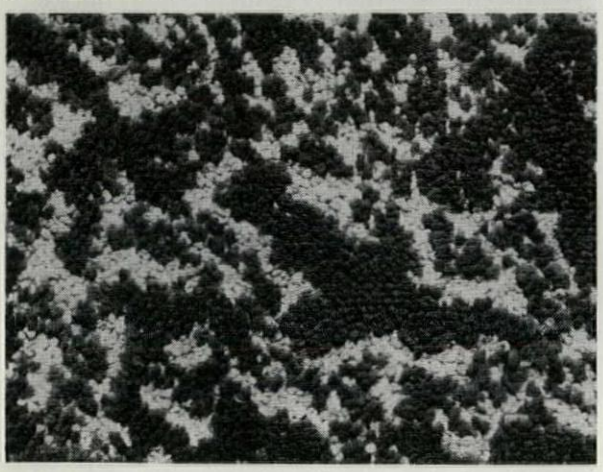
Walls: painted white.
Floor: vinyl tile/ Robbins Floor Products, Inc., Tuscumbia, Ala.
Ceiling: white acoustical tile/ The Celotex Corp., 120 South LaSalle St., Chicago, Ill.



p/a interior design products

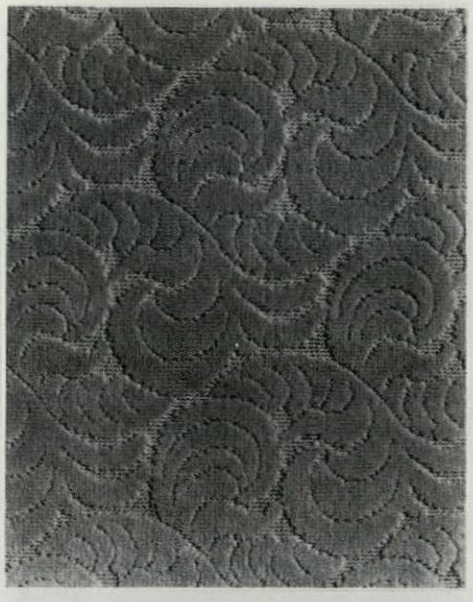
new carpet highlights

"Dynamic": introducing Dynel fiber, strong, tough, resistant to burning, mold, mildew, insects, and chemical damage/ colorfast, wear-, soil-, and flame-resistant/ sculptured-leaf Wilton with 3-dimensional loop pile/ wide color range/ **retail:** $13.95 sq yd/ **C. H. Masland & Sons, Carlisle, Pa.**



"Comodoro": sharply dimensional two-level abstract texture/ hand-carved look achieved through contrast between bulky, straight, solid-color yarns and background of heavy natural white yarns/ all wool/ six colorings/ in 12- and 15-ft widths/ **retail:** $2.79 sq ft/ **Bigelow Rugs and Carpets, 140 Madison Ave., New York, N. Y.**

"Venetia": new Wilton weave, embossed effect, all-wool broadloom/ plume design in cut pile on background of irregular loops/ in nine colors/ 27-in. and 9-, 12-, and 15-ft widths/ **retail:** $12.95 sq yd/ **Archibald Holmes & Son, Erie Ave. and K. St., Philadelphia 24, Pa.**



"Tower Hill": all-wool looped-pile tufted/ dominant color shade with harmonizing background accents/ seven color combinations/ 9-, 12-, and 15-ft widths/ **retail:** $1.39 sq ft/ **Gulistan Carpet, A. & M. Karagheusian, Inc., 295 Fifth Ave., New York, N. Y.**

"Calliope": tufted of 3-ply rayon yarns/ single-level solid color loop pile with metallic silver and gold yarn accents/ eight colors/ 12- and 15-ft widths/ **retail:** $7.95 sq yd/ **Sanford Carpets, 296 5th Ave., New York 16, N. Y.**

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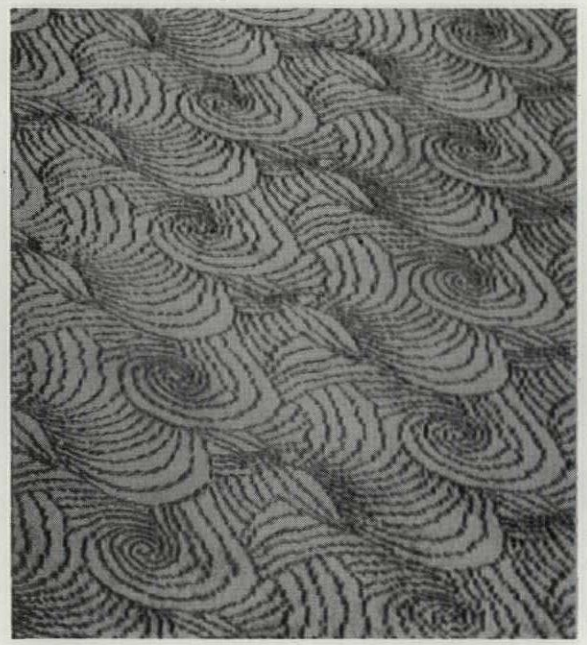

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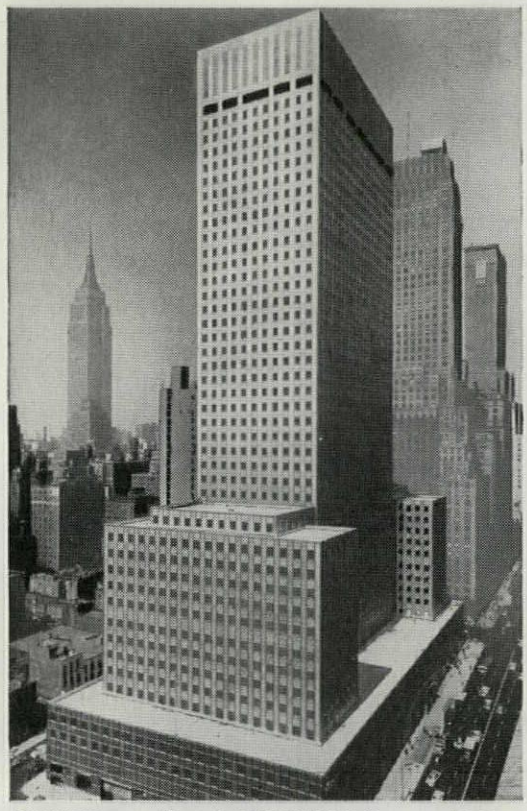
Dining Room, Builders Trade Employees Ass., New York.
Architect: Kahn & Jacobs.
Beautiful Holmes Carpet: brown design on green ground.
Installation by: **W. & J. SLOANE, CONTRACT DIVISION, NEW YORK.**

Job-Proved CELOTEX Roof Insulation Tops New York's Socony Mobil Building



80,000 sq. ft. of CELOTEX Preseal! Two critical inches higher than its 45 stories look, the world's biggest metal office building wears the world's finest "liner" under its roof-cap . . . Celotex Preseal Roof Insulation, by New York Roofing Co. BUILDING OWNER: Galbreath Corp., John W. Galbreath and Peter B. Ruffin. ASSOCIATED ARCHITECTS: Harrison & Abramovitz; John B. Peterkin. GENERAL CONTRACTOR: Turner Construction Co.

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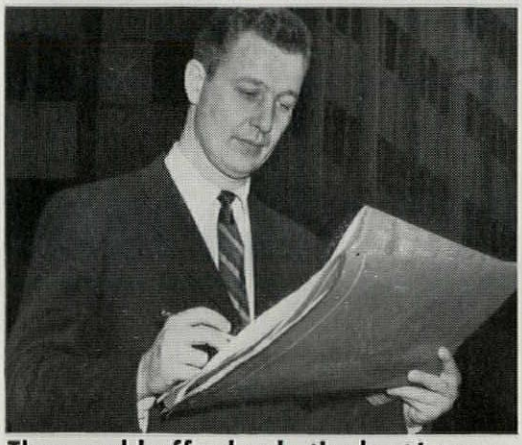

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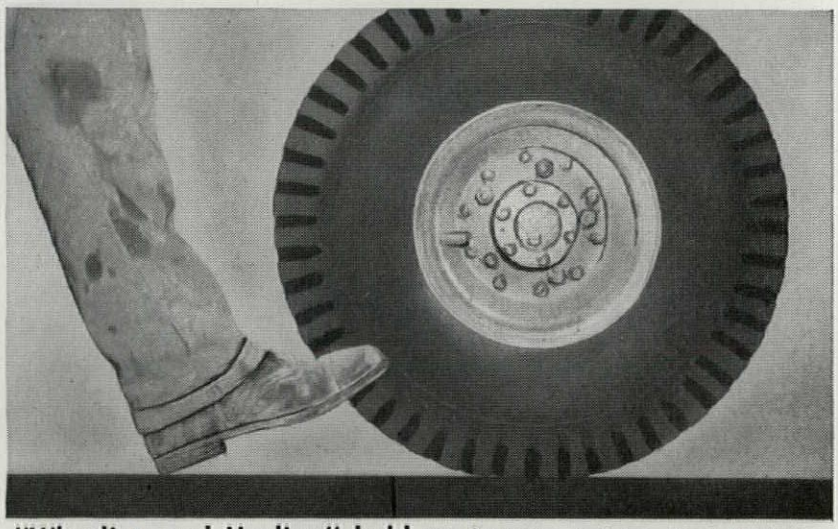

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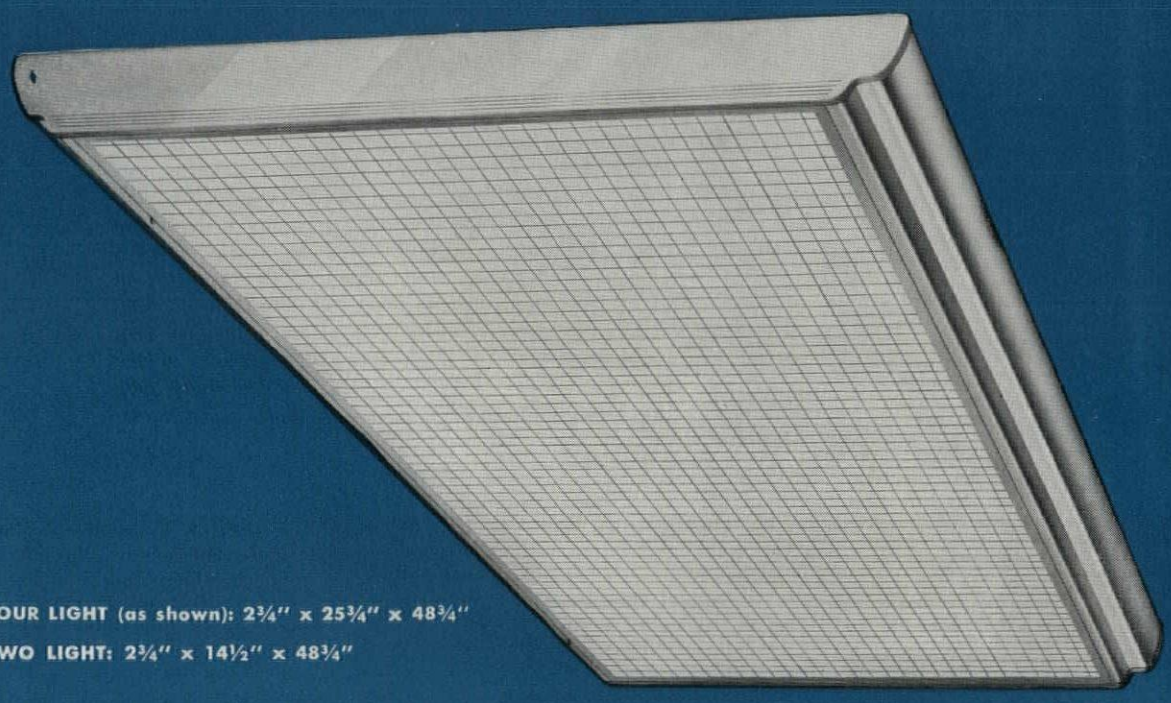
For specifications, samples, information manual, write The Celotex Corporation, 120 S. La Salle St., Chicago 3, Illinois

The thinnest fixture ever designed with no dark areas



FOUR LIGHT (as shown): 2¾" x 25¾" x 48¾"
TWO LIGHT: 2¾" x 14½" x 48¾"

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This beautiful surface-mount fixture is only 2¾" deep, the thinnest ever designed without panels or strips to conceal the ballasts. In the Ceilo-35, the ballasts are mounted in the sides, an exclusive Gibson development which provides a smooth, unbroken panel of light.

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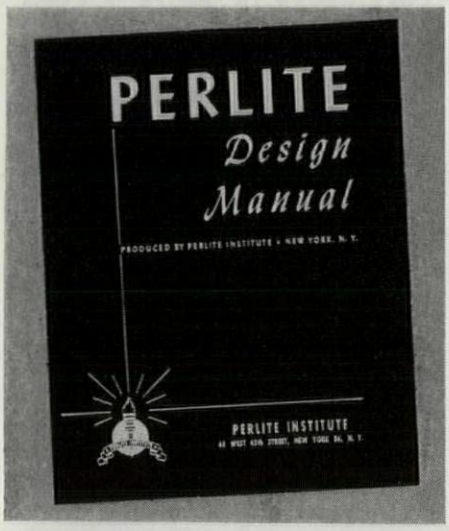
p/a manufacturers' literature



Perlite Design Manual, utilizing latest concepts in presentation and organization of material, is tailor-made for architects and engineers. Published by Perlite Institute, the new manual in handy loose-leaf form provides all data required for designing, detailing, and specifying components of complete building section on jobs using perlite products.

Eighteen detachable brochures in five sections—on floors, roof decks, curtain walls, perlite-insulating concrete, and perlite-gypsum plaster—contain complete data for each system to minimize need for cross-reference. Ready reference charts and tables give U-factors, dead loads, and loadbearing capacity data for variety of structural systems; perspective detail drawings featured on brochure covers explain each system while photos within show various stages in construction. Guide specifications in both short and long form are completed by filling in the blanks. Folders include: descriptions of principal features, advantages, and limitations of system; details, dimensions, and physical properties of materials used; supplementary data.

269. Perlite Design Manual, *80-p., are available from Perlite Institute, 45 W. 45 St., New York 36, N. Y.* R. C.

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

air and temperature control

101. Series 3 Cooling Towers, 4-p. circular presenting data on induced-draft cooling towers for central station air-conditioning and refrigeration systems in commercial/industrial plants. Describes design of tower featuring pressure-type water distribution. Cutaway photo indicates: noncorrosive redwood pipe system and nailless filling; removable louvers; propeller-type fan; corrugated cement-asbestos sheathing. Fluor Products Co., 1200 E. Washington Blvd., Whittier, Calif.

102. De Bothezat Bifurcator Fan, 20-p. catalog with selection data on induced-draft bifurcator fans for exhausting air that is abnormally hot, corrosive, flammable, or explosive. Explains advantages of unit which eliminates need for unduly tall stacks and insures efficient boiler operation. Photos show units installed; cutaways indicate construction features. Outlines method for selection using graphs, tables, and charts provided. De Bothezat Fans Division of American Machine and Metals, Inc., East Moline, Ill.

103. Duct Sizing Calculator, 21-p. instruction manual with pocket containing sliding-scale air-conditioning duct calculator. Manual explains procedure for determining residential heat gains. Supplies map and chart for calculating outdoor temperature range to determine capacity of air-conditioning units; discusses factors influencing duct and register size and location. Gives instructions for using calculator to size complete supply- and return-duct systems for small homes. Armstrong Furnace Co., Columbus 8, Ohio.

104. Pacific Steel Boilers, AIA 30-C-1, 44-p. catalog covering residential/commercial, automatic, or hand-fired steel boilers, comprised of two dissociable parts (shell and firebox) to permit delivery through doors or windows. Presents low-waterline, high-firebox, wet-back, and front-smoke outlet boilers, fired by gas, coal, or oil. Also reviews: hot water supply and storage tanks; induced draft fans; heating coils. Detail data, description, dimensioned drawings, photos, of all units. Pacific Steel Boiler Div., Johnstown, Pa.

105. Chromalox Electric Heating, AIA 31-K-3, 16-p. product guide exhibiting line of built-in and bracket-mounted residential electric heaters. Describes electric baseboards, radiant wall panels and ceilings, high-output fan-driven heaters. Photos show fully installed units while drawings illustrate procedure for installation. Also presents selection of thermostats as well as automatic and manual portable heaters. Chart of approximate heating costs and kw requirements. Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa.

106. Gas Vent Pipe and Fittings, AIA 30-D-4, 16-p.

107. Facts About Gas Venting, AIA 30-D-4, 16-p. Two booklets on insulated gas venting systems for use with home gas appliances. First booklet presents components in catalog form. Shows round and oval pipes with galvanized-steel outer casing, aluminum inner pipe, and special coupler connection; lists standard-length pipe sections and adjustable, telescopic type. Discusses economies in design and installation of system. Photos, outline drawings. Second booklet outlines fundamentals of gas venting. Detail drawings show installation of vertical vents in most common locations. Includes: data on selection of vents and planning system for particular requirements; partial catalog of components. Metalbestos Div., William Wallace Co., Belmont, Calif.

★ **Uni-Flow Nomogram.** For architects and engineers, durable nomogram chart offers simple method of determining outlet areas needed to project heated air of given temperature to floor. Solutions are based on given jet length, temperature differential, and CFM. Chart provides instructions and sample problem. Pencil marks made on face of nomogram are easily removed for repeated use. Available free on request to: Barber-Colman Co., Dept. 766, Rockford, Ill.

construction

264. Milcor Ribform, AIA 13-G, 4-p. brochure containing information on permanent steel base for short-span concrete floor and roof slabs. Gives section properties of standard and heavy-duty designs; describes erection procedure; supplies tabulated data on maximum spans and loads for base used with various types of concrete. Photos, drawings. Inland Steel Products Co., P. O. Box 393, Milwaukee 1, Wisc.

265. Stran-Steel Buildings, 20-p. booklet demonstrating design versatility and economy of prefabricated modular-steel construction for industrial or commercial purposes. Handsome four-color renderings show rigid-frame and bow-string truss designs adapted to specific requirements of manufacturing and processing plant, warehouse, retail shop, bus terminal, and service building. Illustrates erection procedure and variety of available components ranging from fasteners, flashing, and panels to canopies and ventilators. Provides floor plans and details of frame at critical points. Stran-Steel Corp., Detroit 29, Mich.

266. Southern Pine, AIA-19-1, 8-p. bulletin offering data on Southern Pine lumber for light-frame construction. Specifies grades used for framing members, subflooring, sheathing, wood paneling, drop siding, and trim. Drawings show applica-

tion of lumber, standard panel patterns and fillets. Tabulated dimensions, specifications, photos. Southern Pine Association, P. O. Box 1170, New Orleans 4, La.

267. Surco Latex Binder, 4-p. folder on versatile latex emulsion for binding and strengthening common building materials. Describes two basic types of latex binder for hard wearing, indoor surfaces and outdoor application. Discusses advantages and application of binders used with terrazzo flooring, waterproof coatings, plaster, concrete finishes, and underlayment. Photos, specifications. Surco International Corp., 1389 Peachtree St., N. E., Atlanta 9, Ga.

268. Marcolite Skylights, AIA-12-J, 8-p. pamphlet illustrating features and selection of aluminum-framed, corrugated fiber-glass skylights. Details installation of models with self-contained curb and roof flange as well as models for use over curb construction. Also shows roof hatchways and automatic ventilating skylights with pneumatic or motorized controls. Photos, drawings, sizes, specifications. The Marco Co., 45 Greenwood Ave., East Orange, N. J.

doors and windows

388. Bilt-Well Doors, 4-p. circular showing line of residential wood doors with decorative glass panels. Illustrates doors with series of square panels or single rectangular insert. Features floral patterns and simulated wrought-iron effects. Also shows doors with decorative wood panels. Data on construction; dimensions. Carr, Adams & Collier Co., Dubuque, Iowa.

389. Panelfab Doors, 4-p.

390. Panelfab Panels, 4-p. Two leaflets containing data on resin-impregnated honeycomb-core products. First circular illustrates standard designs for fire-, vermin-, and rot-resistant aluminum-faced doors with one-piece extruded aluminum frame. Photos show solid panel, louvered and glass-panel types fully installed. Details, sizes. Porcelain-enamel faced panels for use as partitions, curtain walls, table tops, or doors are featured in second brochure. Includes listing of various panel types. Drawings show extruded edge, tray-edge, and open-edge sandwich panels. Photos, specifications. Panelfab Products, Inc., 2000 N. E., 146 St., N. Miami, Fla.

391. Aluminum Window Walls, AIA-17-A, 8-p.

392. Aluminum Awning Windows, AIA-16-E, 12-p. Two booklets presenting data on aluminum-framed windows for industrial, or institutional buildings. First booklet deals with single- and multi-story window wall units designed to suit individual venting requirements. Lists variety of typical panel compositions. Numerous installation details; sections; elevations show full panel wall with fixed-glass or awning windows. Second booklet features manually operated awning windows in variety of standard sizes and arrangements. Provides half-scale installation details and section drawings for various window types. Specifications, photos. Brown & Grist, Inc., 25 Tyler Ave., Warwick, Va.

Hollowell Shelving. 32-p. looseleaf catalog of steel storage units and accessories with multiple-pierced parts to permit flexible positioning of shelves. Illustrations suggest numerous unit assemblies for use in production areas, tool rooms, offices, stores, or homes. Shows step-by-step procedure for building from simple post and shelf arrangement to fully-enclosed, tamperproof models with backs, sides, boxes, bins, tops, and sliding or swinging doors. Also, sloping shelf types for tool storage; shelf-capacity chart. Available to architects requesting on letterheads. Hollowell Div., Standard Pressed Steel Co., Jenkintown, Pa.

electrical equipment, lighting

482. Emergency Lighting, 12-p. catalog showing equipment for centralized self-supervising emergency lighting system used in hospitals, schools, or industry. Explains advantages of foolproof system for providing instantaneous, automatic illumination, when regular power fails. Illustrates control panels, consoles, and lighting fixtures as well as special non-acid battery. Wiring diagrams, performance charts, photos. Standard Electric Time Co., Springfield 2, Mass.

Calculating Coefficients of Utilization, 40-p. report compiled by Committee on Lighting Design Practice of IES, presents results of efforts to simplify and improve method of lighting calculation. Describes new method for calculating coefficients of utilization; recommends desirable reflectance combinations; supplies series of work sheets for computations and graphs for determining factors. Order directly from: Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y. 50¢

483. Sound-Powered Telephone Systems, 8-p. catalog of components for telephone systems which operate on current generated by speaker's voice—thereby eliminating static noises associated with battery-powered phones. Illustrates equipment and accessories for complete systems ranging from simple, lightweight receiver/transmitter units used with megaphones or geophysical instruments to complex industrial stations linking numerous substations for use by construction and repair crew, police and fire departments, or industrial workers. United States Instrument Corp., P. O. Box 33A, Charlottesville, Va.

484. Essential Data for General Lighting Design, 16-p. booklet offering useful information on selection and design of lighting systems for stores, schools, and factories. Covers: luminous ceilings; filament, mercury, and fluorescent lamps. Discusses general lighting principles as basis for calculation. Provides tables of recommended footcandles, room ratios, and coefficients of utilization. Includes computation check tables for approximating required number of lamps. Sketches suggest lighting layouts to harmonize with contemporary interiors. Illustrates variety of available luminaire designs. Large Lamp Dept., General Electric Co., Cleveland 12, Ohio.

"Plan-It-Yourself" Lighting Layout Kit, packet containing equipment and data for planning complete fluorescent lighting layouts using 1-, 4-, 8-ft fixtures as well as luminous ceilings. Provides: fluorescent lighting silde-rule estimator to determine number of fixtures required; scaled cardboard fixture units with gummed-paper replicas to fix permanent layout; scaled layout sheets. Includes booklet of general lighting design data and folder listing capacities, dimensions, and prices for series of lamps and accessories. Also, wiring diagrams, photos. Available on direct request to: General Electric Co., Large Lamp Dept., Nela Park, Cleveland 12, Ohio. $1.75

insulation (thermal, acoustical)

638. Duct Insulation, 2-p. data sheets intended to aid architects in writing specifications for insulation of heating and air-conditioning duct systems using spun mineral wool. Describes various methods for attaching and finishing insulation. Includes data for specifying plain, vapor barrier, or coated types. Engineering Dept., Baldwin-Hill Co., Trenton, N. J.

639. Poretherm Insulating Concrete, (80), 4-p. circular explaining applications of lightweight concrete formed with air

(Continued on page 176)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y.

I should like a copy of each piece of Manufacturers' Literature circled. We request students to send their inquiries directly to the manufacturers.

101	266	483	851
102	267	484	852
103	268	638	949
104	388	639	950
105	389	640	951
106	390	733	952
107	391	734	65
264	392	849	
265	482	850	

please print

Name _____

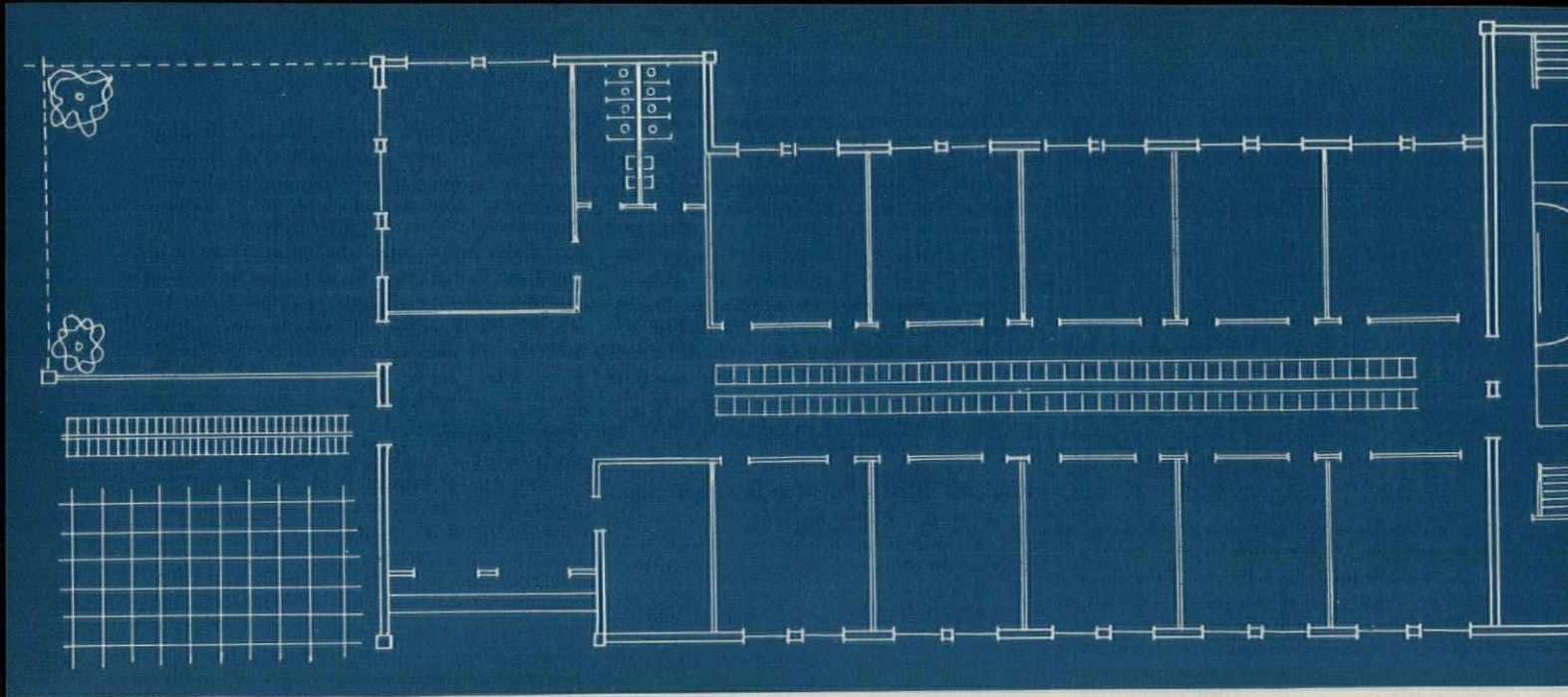
Position _____

Firm _____

Mailing Address _____

City _____ *State* _____

Coupon must be used by 5/1/57.



Before completing your school plans...

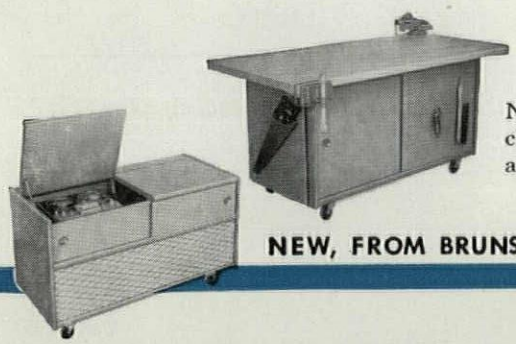
check *all* the areas where Brunswick can serve you

While your school is still in the blueprint stage . . . or earlier . . . is the time to review the complete Brunswick line. Call on Brunswick for the solution to virtually any problem involving seating, storage and space-saving. You'll find that nobody knows school equipment like Brunswick for no other manufacturer offers such a broad range of products.

You'll find, too, that there is economy in the long run when you call on Brunswick. Classroom seating and work surfaces, movable classroom cabinets, folding gym seating, folding partitions . . . the entire line . . . all are designed to make your school function more efficiently.

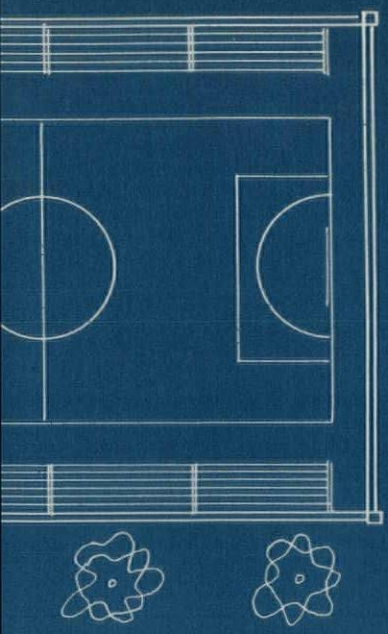
Your Brunswick representative is prepared to work with you right from the start. He can prove that nobody knows school equipment like Brunswick. He can prove that just *one* line continues to set the pace . . . Brunswick. Why not put him to work on your problems, today!

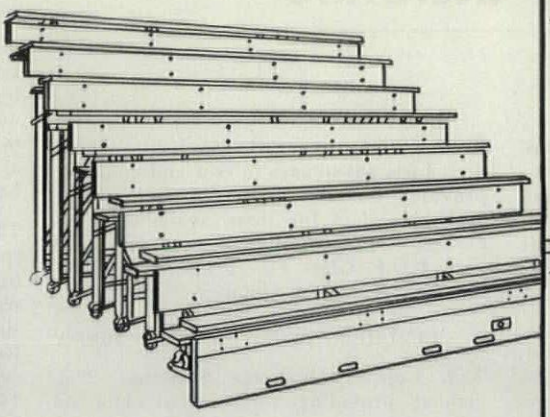
Brunswick service includes classroom layout as well as all detail work showing the installation of such equipment as folding gym seating and folding partitions. Be sure you take advantage of this when planning *your* new school.



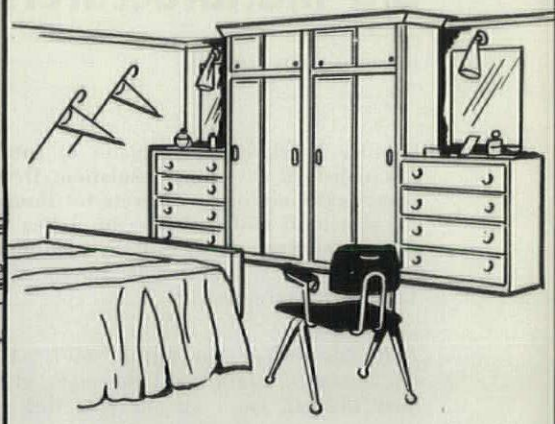
New additions to the Brunswick line include these two special-purpose cabinets: an audio center and a movable workbench.

NEW, FROM BRUNSWICK

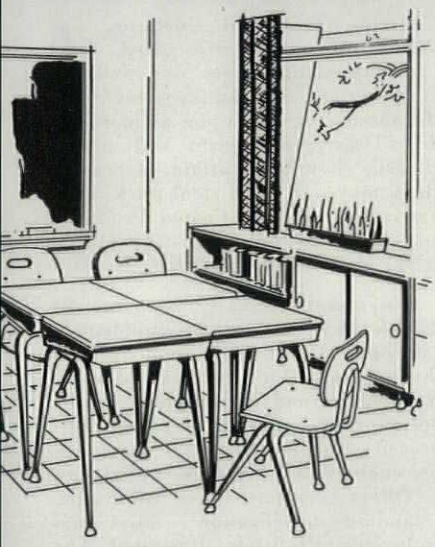




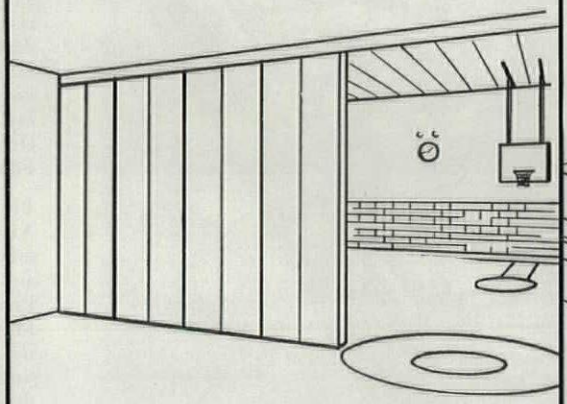
FOLDING GYM SEATING



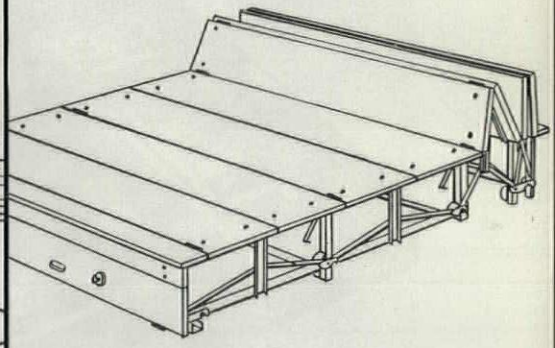
CLOSET WALLS



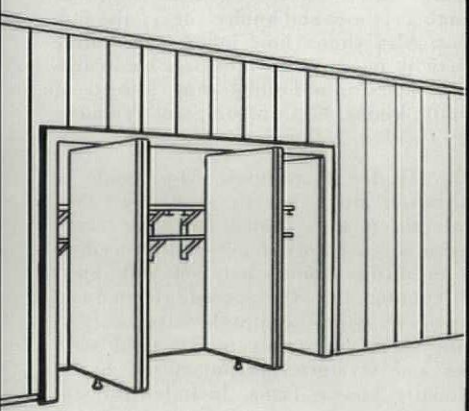
CLASSROOM FURNITURE



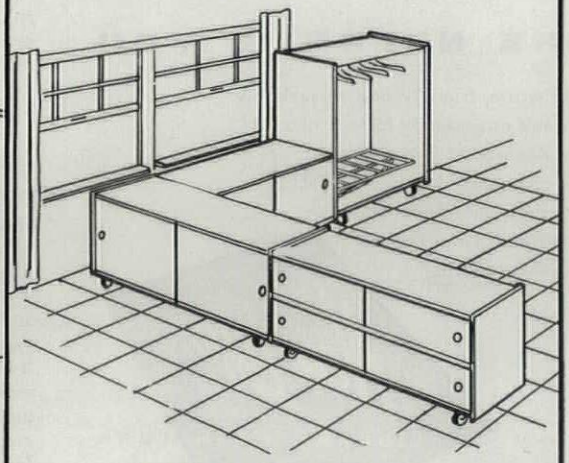
FOLDING PARTITIONS



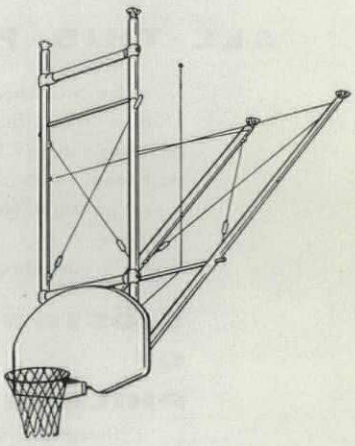
FOLDING STAGES



FOLDING WARDROBES



MOVABLE CABINETS



FOLDING BACKSTOPS

THE BRUNSWICK-BALKE COLLENDER COMPANY
623 SOUTH WABASH AVENUE • CHICAGO 5, ILLINOIS

Brunswick

p/a manufacturers' literature

(Continued from page 173)

bubbles in place of aggregates to insure low moisture absorbing insulation. Drawings suggest use of air-concrete for insulating structural roof decks; as insulating fill for ground floor slabs; as lightweight floor fill. Provides technical data. Porete Mfg., Co., North Arlington, N. J.

640. Glass-Fiber Insulation, (WHN-11), 4-p. brochure featuring lightweight glass-fiber blanket, faced on one side with reflective aluminum foil, for home insulation. Lists advantages in cost and comfort; provides thermal resistance factors and packaging data for three available thicknesses; shows installation in ceiling and wall. L.O.F. Glass Fibers Co., 1810 Madison Ave., Toledo 1, Ohio.

sanitation, plumbing, water supply

733. Copper Drainage Systems, 20-p. manual providing fundamental data on design and arrangement of copper drainage systems. Lists essential parts and basic types of systems. Catalog components for waste lines and soil stacks. Includes charts to facilitate sizing of soil and vent piping as well as glossary of terms. Nibco, Elkhart, Ind.

734. Plumb-Easy Drains, AIA-29-C, 96-p. spiral-bound catalog, tab-indexed in six sections that cover wide assortment of: cast-iron or bronze drains for floors, roofs, and showers; swimming pool fittings; access boxes; hydrants and trap standards; interceptors. Illustrations of each item are accompanied by clearly drawn details, giving full information. Provides installation data for grease interceptors serving commercial sinks and dishwashers; instructions for installing oil interceptor serving multiple floor drains, metal chip bins, trench drains. Jay R. Smith Mfg. Co., Union, N. J.

specialized equipment

849. Bemis Transwall Curtains, 4-p. brochure introducing plastic-coated, jute-fabric folding partitions for use in workshops, cafeterias, or plants where fire-resistant, sound-retardant room dividers are desirable. Describes features and advantages. Details show how curtain, suspended on rollers, moves in rigid steel track. Photos, drawings. Transwall Coated Products, Division of Bemis Bro. Bag Co., 610 S. Fourth St., Minneapolis 15, Minn.

850. Sanymetal Toilet Compartments, AIA 35-H-6, 28-p. catalog with supplementary data on series of toilet compartments and shower stalls for group installation. Provides photos and construction details for floor supported, ceiling-hung, and overhead-braced cubicles; discusses materials, finishes, engineering advances, and design details. Offers complete set of color samples, standard specifications, toilet and shower layouts. Profusely illustrated. The Sanymetal Products Co., 1683 Urbana Rd., Cleveland 12, Ohio.

851. Tempo Cabinet Hardware, 4-p. leaflet featuring cabinet knobs and drawer pulls with dissociable parts to permit wide color flexibility. Four-color illustrations suggest varied effects attained by interchanging cones-and-knobs or pulls-and-plates. Also shows how infinite decorative variety is possible by inserting laminated-plastic discs into hollow cone instead of metallic knobs. Washington Steel Products, Inc., Tacoma 2, Wash.

852. Hudee Handbook, 34-p. guide to application and selection of stainless-steel or aluminum sink frames for cabinet-type flat-rim sinks. Shows step-by-step procedure for installing frames between sink bowl and counter top via special clamp-down system. Provides comprehensive list of frame sizes and types to be used with sinks and lavatories manufactured by 48 nationally known firms. Includes full-size cross-sections showing clamp connections for various counter and bowl-ledge dimensions. Also illustrates use of bar assemblies for joining separate cabinet units. Photos, drawings. Walter E. Sleck and Co., 225 W. Hubbard St., Chicago 10, Ill.

(Continued on page 180)

Design for Hospital Entrance by Belluschi and Skidmore, Owings & Merrill

"CERAMIC TILE...FOR PERMANENT COLOR CLARITY, DURABILITY AND MINIMUM MAINTENANCE"

BELLUSCHI AND SKIDMORE, OWINGS & MERRILL

Belluschi and Skidmore, Owings & Merrill bypassed the institutional look . . . made ceramic tile color a therapeutic factor in this refreshing hospital entrance design . . . and guaranteed long life and low maintenance with well-considered ceramic tile specifications.

Tile's unique beauty, design flexibility and durability were all fully recognized. Imaginative use of standard tile units achieved an air of relaxation, efficiency and rigid cleanliness. Beauty is only the eye-catching part of the story. Consider the design from a hospital trustee "cost-accounting" viewpoint.

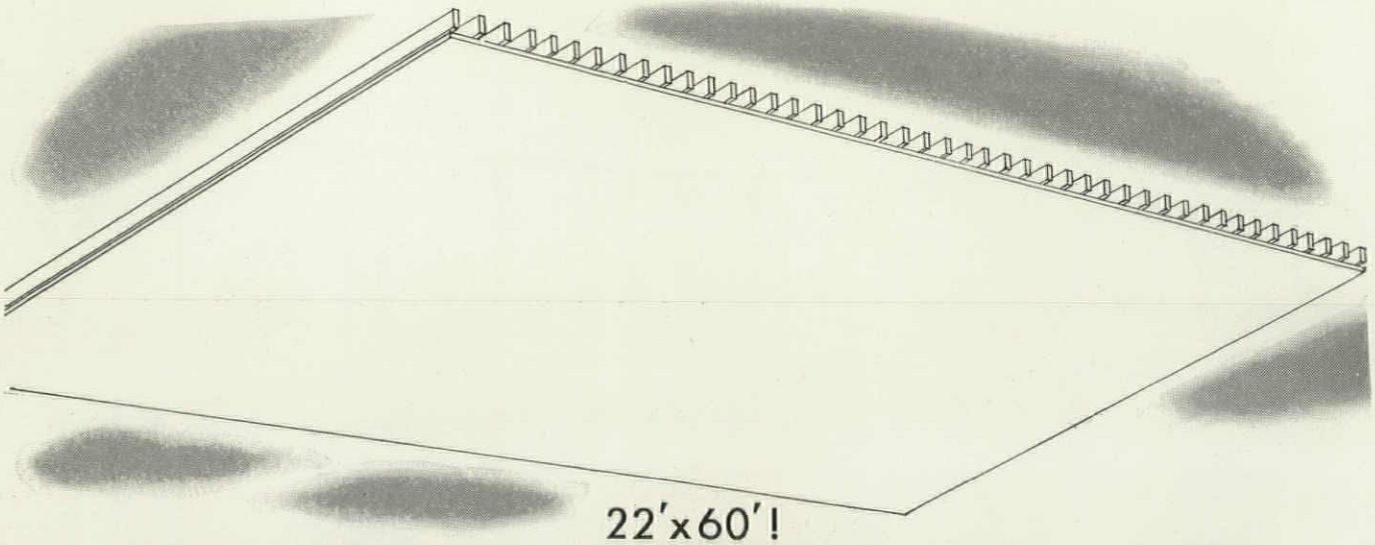
There's a tile floor to fight foot traffic for years with minimum wear and maintenance. The glazed tile wall at the right will gleam brightly on generations of patients. Take the inside-outside penetrating wall in the center—vivid proof of how tile's fired-fast colors can take extreme exposures. Note the smaller tiles facing the front of the reception desk. These fireproof surfaces will never need waxing, costly maintenance or replacement.

If you demand beauty, durability, long-range economy or design flexibility, you will find that ceramic tile provides them all. Your local tile contractor will give the details on the wide range of colors, textures and sizes. Specify ceramic tile on your next residential, institutional or commercial building. Both you and your client will be glad you did.

The Modern Style is CERAMIC tile

TILE COUNCIL OF AMERICA, Inc., Room 3401, 10 East 40th St., N.Y. 16, N.Y. or Room 933, 727 W. 7th St., Los Angeles, Calif.

PARTICIPATING COMPANIES: American Encaustic Tiling Co., Inc. • Atlantic Tile Mfg. Co. • Cambridge Tile Mfg. Co. • Carlyle Tile Co. General Tile Co. • Gladding, McBean and Co. • Jordan Tile Mfg. Co. • Lone Star Ceramics Co. • Monarch Tile Mfg. Inc. • Mosaic Tile Co. • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pacific Tile and Porcelain Co. • Pomona Tile Mfg. Co. Ridgeway Tile Co. • Robertson Mfg. Co. • Royal Tile Mfg. Co. • Sparta Ceramic Co. • Stylon Corp. • Stylon Southern Corp. Summitville Tiles, Inc. • Texeramics, Inc. • United States Ceramic Tile Co. • Wenczel Tile Co. • Winburn Tile Mfg. Co.



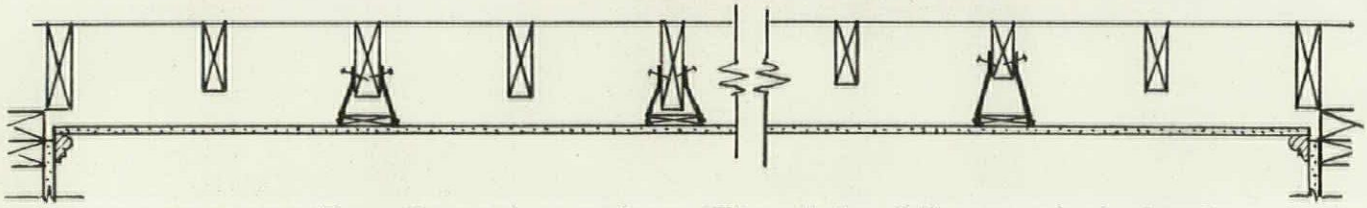
22′x60′!

WILSON AIR-FLOAT CEILINGS

PATENT APPLIED FOR

. . . continuous, crackproof coverage for any area

THE ONE POSSIBLE SOLUTION TO THE IMPOSSIBLE CEILING SITUATION



CASE HISTORY: Two ceilings to be covered — each measuring 22′ x 60′. The bottoms of the joists were out of line by as much as four inches. Wilson Air-float Ceilings proved to be the only type of construction that could meet this situation — *economically.*

THE ARCHITECT said:

This was the only feasible type of ceiling under the existing conditions.

THE BUILDER said:

The fastest method of putting up a ceiling I've ever seen.

THE DEALER said:

Remarkable! A whole new market for me; I can keep one applicator busy on this alone.

THE CARPENTER said:

Why didn't someone think of this before? I have learned a wholly new trade!

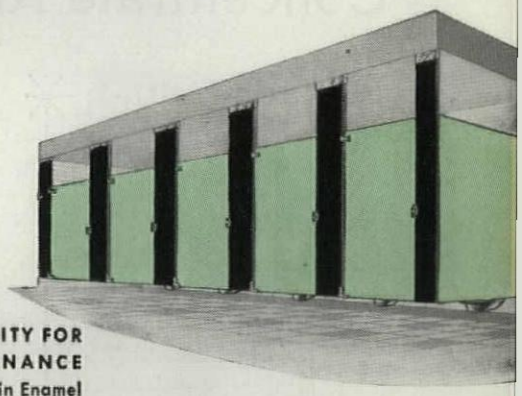
THE PLASTERER said:

I'd have lost my shirt trying to level up before I could have plastered that ceiling.

LET US SEND YOU illustrated literature and blueprint information on this simple, but revolutionary, new "continuous dry-wall" method of ceiling construction. The whole ceiling literally floats — free to expand or contract as a unit — in either overall dimension. Economical and quick to apply — three men cover a minimum of 200 square feet per hour! In new construction, ceilings can be hung directly to rafters or collar beams — *with no ceiling joists or bearing walls!* The surface material is *weatherproof* Homasote; takes paint, stain or wallpaper. All other materials are standard and inexpensive. No special equipment required. Write for the facts today! Kindly address your inquiry to Department C-18.

HOMASOTE COMPANY
TRENTON 3, NEW JERSEY

ILET COMPARTMENT CONSTRUCTION THAT *Saves money for building owners*

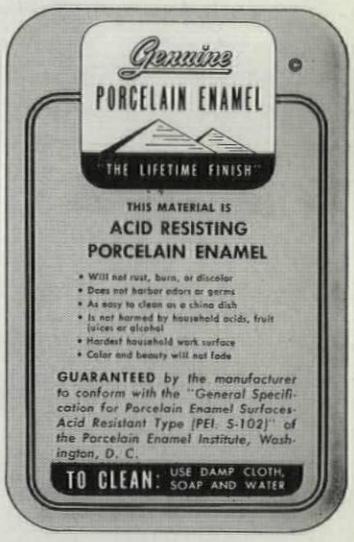


Ask *Six Searching Questions* TO EVALUATE Sanymetal PORCENA*

(*Porcelain on Steel)

LABEL OF QUALITY FOR LOWEST MAINTENANCE

Porcena meets Porcelain Enamel Institute standards for acid-resisting porcelain enamel—recognized label of quality. Quality enamel for toilet compartments, pioneered by Sanymetal, costs less to maintain. It withstands scratches, shocks, is easily cleansed of pencil and lipstick marks, *never requires refinishing.*



YOUR REASON for selecting Sanymetal *PORCENA* (Vitreous Porcelain on Steel) as the material for toilet compartments is to save money for the building owner. *PORCENA* saves because it is durable, so easily cleaned. But to compare *PORCENA* with others products, get candid answers to these questions:

Is the product—

... proved by many thousands of successful installations, not by a few, to be beyond an "experimental" stage? *Sanymetal Porcena is!*

... guaranteed for quality attested by the Porcelain Enamel Institute label? *Sanymetal Porcena is!*

... available in 22 lustrous, lasting, uniform colors? *Sanymetal Porcena is!*

... fully engineered so there is no need to drill, cut, or shape the porcelain surface, exposing bare metal? *Sanymetal Porcena is!*

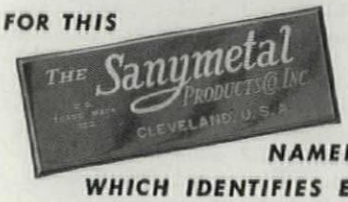
... fitted with hardware designed to match the extra durability and weight of porcelain enamel construction? Hardware for *Sanymetal Porcena is!*

... backed by 20 years of experience in which *not one* installation has failed, faded, required repair or replacement in normal use? This is true of *Sanymetal Porcena!*

Ask these revealing questions, and let the answers be your guide.

See Sweet's, or send for Catalog 93 describing all Sanymetal Compartments. If you wish we will mail you all advertisements in this series explaining construction details that mean quality.

OOK FOR THIS



NAMEPLATE WHICH IDENTIFIES EVERY SANYMETAL INSTALLATION

Sanymetal® PRODUCTS COMPANY, INC

1683 URBANA ROAD • CLEVELAND 12, OHIO

ORCENA *is a long-life construction feature available on all* **Sanymetal** *Flush Type Compartment*

p/a manufacturers' literature

(Continued from page 176)

Atomic Plants and Reactors, 12-p. publication offering visual and descriptive data on nuclear power plants, reactors, and components developed to compete commercially with conventional power stations in remote locations or where chemical fuels are costly. Features five-page insert of transparent overlays showing details of typical reactor system. In addition, photo of plant model shows how equipment is arranged to prevent radioactive exposure. Includes drawings of pressurized water reactor cycle and reactor core as well as nuclear-plant heat balance diagram. Available free on request to: Alco Products, Inc., P. O. Box 1065, Schenectady, N. Y.

surfacing materials

954. Textolite Surfacing, AIA 35-C-12, 6-p. file folder illustrating assortment of colorful patterns and wood grain effects available in laminated plastic material for surfacing walls and counters. Color photos show surfaces of simulated marble and solid pastel-color in actual applications. Specifications. General Electric, Coshocton, Ohio.

950. Saivo Glass Mosaic, 8-p. brochure containing information on Italian imported glass mosaic tile with unusual resistance to acids, alkalis, temperature, and abrasion in addition to unlimited design possibilities. Color photos show large area exterior applications as protective, decorative wall covering as well as interior applications to floors, columns, and mural panels. Gives tabulated test results, dimensions, and shipping data. American Import and Export Co., Land Title Bldg., Philadelphia 10, Pa.

951. Ceramic Tile, AIA-23a, 4-color catalog with charts showing colors available in glazed and unglazed ceramic tiles for floors or walls. Tables show trim shapes and sizes. Includes selection of china bathroom accessories as well as permanently conductive tiles for hospitals; suggests many color combinations with patterns using geometric shapes and pictorial tile strips. Shows unusual effects attained by decorating surfaces with preconceived all-over design instead of reiterating basic pattern such as octagon and dot. American-Olean Tile Co., Lansdale, Pa.

952. Formica Vertical Surfaces, 8-p. booklet discussing application of laminated-plastic material to existing wall surfaces or baseboards. Gives instructions for surface preparation, fitting, trimming, and veneering of sheet material. Explains use of variety of tools that insure accurate installation. Photos illustrate critical steps in application of material to walls and as wainscoting. Also shows interesting wall effects achieved by matching stained and enamel-colored block, strip, or diamond-shaped pieces. Formica Corp., 4614 Spring Grove Ave., Cincinnati 32, Ohio.

interior furnishings

65. Steel Office Furniture, 16-p. brochure describing metal office furniture, attractively shown in color photographs. Features furniture in contemporary taste for color, design, and space-saving possibilities. Selected details show: stainless steel and colored leg bases, possible color schemes, textolite desk tops, perforated back panels for desks. Steelcase, Inc., Grand Rapids, Mich.

Directional Designs, 112-p. hardbound volume presenting Paul McCobb's "Directional Furniture Collection" will interest architects and interior planners. Precise proportions and rigid rectangularity characterize series of cabinets, cases, and storage chests; brass-framed room dividers; marble-topped tables; and cane-panelled headboards, reproduced in black and white. Photos are supplemented with data on dimensions, construction, and materials; drawings suggest alternate furniture arrangements. Color chart shows leather, marble, and wood finishes. Order directly from: Directional, 201 E. 57 St., New York, N. Y. $6.

NAESS and MURPHY, *Architects and Engineers, Chicago*
GEORGE A. FULLER CO., *General Contractor*

R. B. HAYWARD CO. & JAMAR-OLMEN CO., *Ventilating Contractor*
KROESCHELL ENGINEERING CO., *Heating Contractor*
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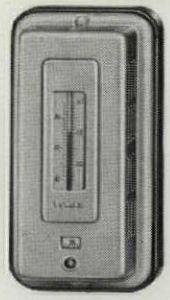
CHICAGO SUN-TIMES

Modern $15,000,000 building now being erected on the north bank of the Chicago River between Wabash and Rush. It will include a plaza and scenic promenade along the river's edge.

Air Conditioning throughout

America's most modern newspaper plant

will be regulated by a **POWERS** *Automatic temperature and humidity control system*



Symbol of Economy and Quality Control

High speed production of 120,000 newspapers an hour will be aided here by the combination of an outstanding modern building and the latest mechanical equipment designed for maximum efficiency.

In the building's ten acres of air conditioned space, Powers control will play an important role by providing ideal indoor weather for administrative offices, editorial, art, typesetting and engraving departments and pressrooms. Color Printing in close register especially demands the precise temperature and humidity control assured by a Powers system.

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reversible windows

keep window washing indoors

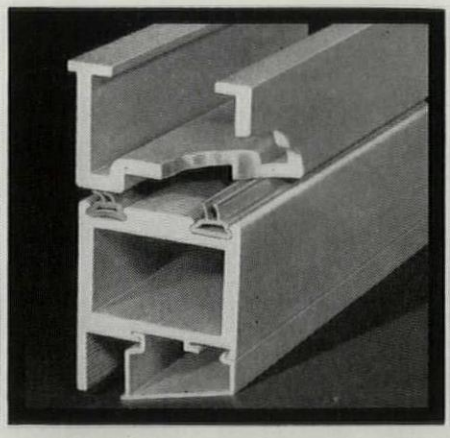
The window washer cleans both sides of this reversible window *from the inside*, eliminating need for outside hooks or hanging scaffolds and rails.

Yet, in addition to window cleaning convenience, Flour City's Reversible Window provides *complete weather seals*, with air and water infiltration practically zero.

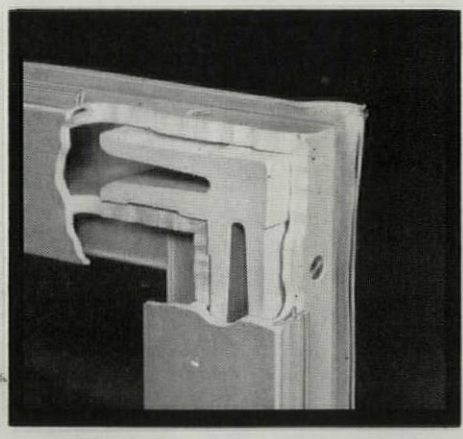
The Flour City window opens only by the window washer's key, to maintain controlled ventilation in air conditioned buildings, yet allows emergency ventilation should the need arise.

This window rotates a full 360° with a positive latch-lock in the 180° position. A simple flip of the latch and the window swings to its original position where it locks automatically.

For the *utmost in building design*, specify Flour City Reversible Windows . . . *custom built to your specifications.*



TWO continuous one-piece vinyl weatherstrips with double fins seal against air and water infiltration. Corners are mitered and heat sealed.



Aluminum corner blocks and sealant inserted under pneumatic pressure create rigid and leakproof corners.

See Our Catalog in Sweet's file 17 a Flo

The FLOUR CITY Ornamental IRON COMPANY

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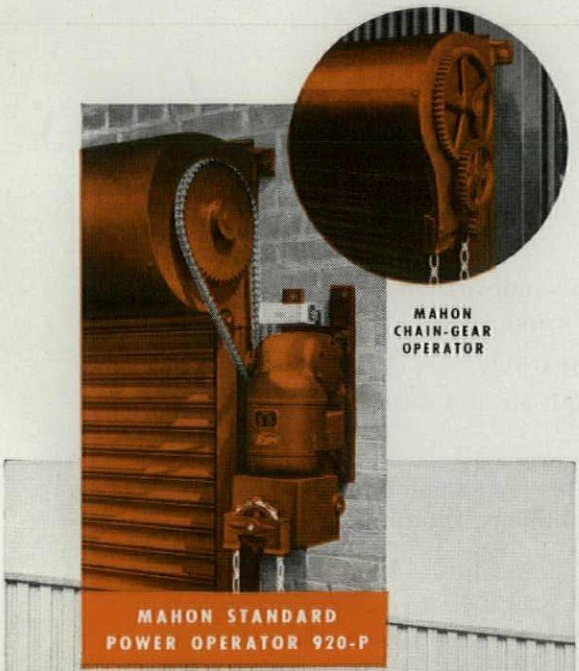
Rolling Steel Doors

Manually, Mechanically, or Electrically Operated



MAHON CHAIN-GEAR OPERATOR

MAHON STANDARD POWER OPERATOR 920-P

For truck and railroad openings in industrial and commercial buildings, and loading dock and transfer dock openings, rolling steel doors offer definite timesaving and space saving advantages over any other type of door. The vertical roll-up action of the door utilizes no usable space either inside or outside the opening—and, there are no overhead tracks or other obstructions to interfere with crane handling or restrict headroom adjacent to the opening. No other type of door can give you the positive security, firesafety, and the everyday operating convenience of a quick-opening, quick-closing, power operated rolling steel door. Permanent, all-metal construction reduces maintenance to a negligible factor, and assures a lifetime of continuous trouble-free service. When you buy a rolling steel door, it will pay you to check specifications carefully . . . you'll find that Mahon doors are built better to give you better service over a longer period of time—for instance, the galvanized steel in Mahon curtain slats is BONDERIZED and DIP-COATED with Synthetic Enamel which is baked on at 350° F. prior to roll-forming. This is just one of the extra-value features of Mahon Rolling Steel Doors . . . comparison will disclose many others that add up to a greater over-all value which will prove to be a much better investment. See Sweet's Files for complete information and Specifications, or write for Catalog G-57.

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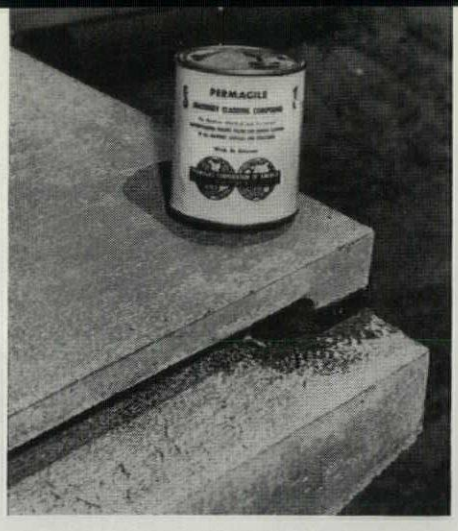
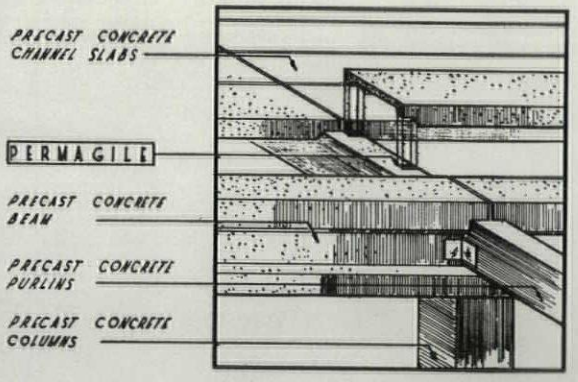
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Underwriters' Labeled Rolling Steel Fire Doors and Fire Shutters; Underwriters' Rated Fire Walls; Insulated Metal Curtain Walls; Electrified M-Floors; Acoustical and Troffer Forms; and Steel Roof Decks and Long Span M-Decks.

ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

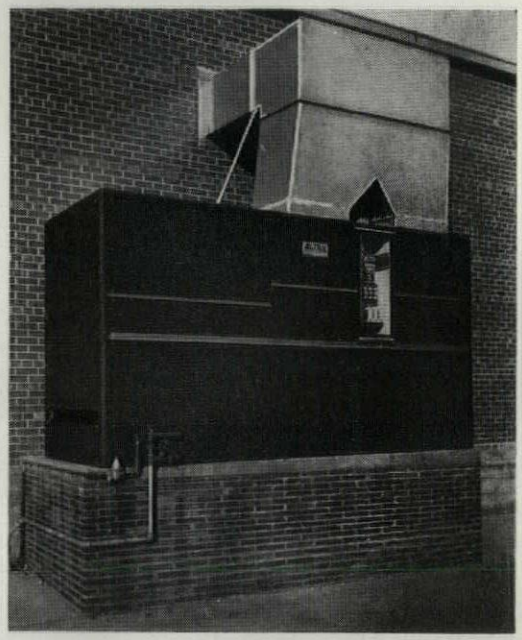
Mahon Power Operated Rolling Steel Doors installed in a railroad opening, a truck opening, and two loading dock openings in a new building for Samuel G. Keywell Co., Inc., Detroit, Michigan. Campbell Engineering Co., Designers. H. F. Campbell Construction Co., General Contractors.

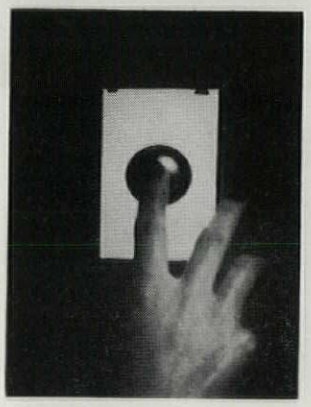
MAHON



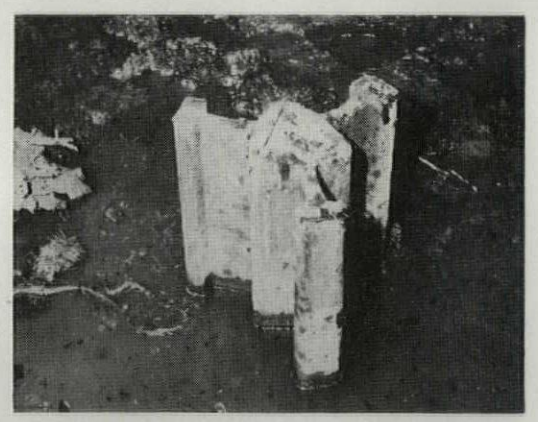


A warehouse, designed by Kansas City Architects Bales & Schecter, has its roof channel slabs "welded" to supporting purlins with a new polyplastic alloy (above). *Dabs of plastic, 2½" x 2", anchor a slab so strongly that the slab itself would break before the joints gave way. Called Permagile, the plastic comes in the form of a viscous paste plus a pre-measured supply of liquid reactor—all in one can—and when mixed can be applied with trowel. Once hardened Permagile has a compressive strength of 35,000 and a tensile strength of 9000 psi. Permagile Corp. of America, 37-23 33 St., Long Island City 1, N. Y.*

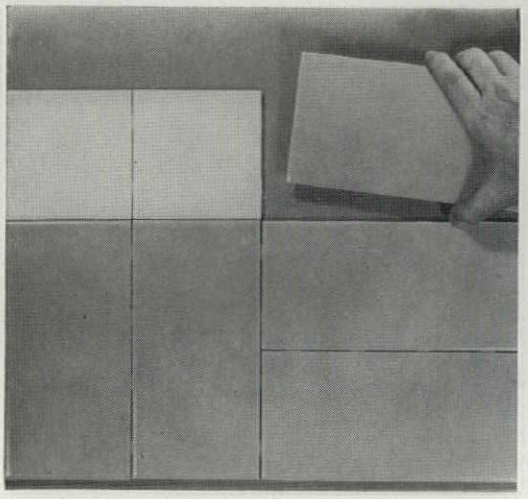




Switchplate utilizing Panelescent lamp produces light without use of bulbs, tubes, filaments, or cathodes (left). *Operates on principle of electroluminescence—creation of light by excitation of certain materials placed in electric field. Lamps will shortly be placed on market by major manufacturer in field. Sylvania Electric Products, Inc., 1740 Broadway, New York, N. Y.*



New weatherproof line of high-capacity packaged air-conditioning equipment for outdoor installation (above) *saves interior space, eliminates water-cooling tower by use of built-in evaporative condenser, and houses all component equipment in self-contained unit. Units are manufactured in 10-, 15-, 20-, 25-, and 30-ton sizes; controls are mounted in acrylic plastic weather-tamper-proof box. Special gloss paint colors will blend with building. Alton Manufacturing Co., 1112 Ross Ave., Dallas, Tex.*



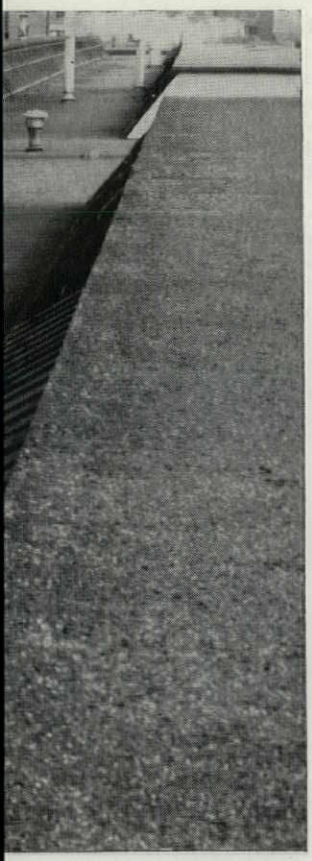
Foundation piles, made from three rail sections welded at base edges, take advantage of high tensile, yield, and compressive strength of rail steel to effectively resist forces from any direction (above). *Supplied in sizes from 60 to 133 lb per ft and lengths from 28 to 39 ft or multiples. L. B. Foster Co., 11 Park Place, New York, N. Y.*

Glazed wall tile, 8½" x 4¼", can be set either horizontally or vertically and can be used with standard 4¼ squares (left). *Available in 50 different colors. American-Olean Tile Co., Lansdale, Pa.*

Fenestra Industrial Steel Windows that need no painting, ready to be installed replacing the old monitor sash on Caterpillar Tractor Co., Building HH, Peoria, Illinois

Shown here are A. F. Wiedeman, Caterpillar Construction Engineer, and C. Y. Chapman, Construction Superintendent, examining the Fenestra Bend Bar Test that demonstrates the stronger bond of the Fenestra finish. Mr. Chapman, holding the Fenestra test bar, calls it "one of the best jobs I've ever seen." Your Fenestra representative can show you this same test. Ask to see it today.

The Fenestra FENLITE Finish is also available on the complete line of Fenestra Intermediate Windows for schools, office buildings and other fine structures.



Caterpillar Tractor Co.,
Peoria, Illinois, chooses Fenestra
Industrial Steel Windows
because they estimate they will

SAVE WINDOW PAINTING COSTS FOR 20 YEARS!

Maintaining nearly five miles of monitor windows on the roof of Caterpillar Building HH and the foundry at Peoria, Illinois, was an expensive and time-consuming problem. With the ordinary sash originally installed in these buildings, a complete paint job was required every four years. Even with this kind of care, the fixed sash in these monitors needed extensive reglazing and rehabilitation a few years ago.

Under the direction of W. H. Zurhorst, Manager, Plant Engineering, a plan was developed by C. Y. Chapman, Construction Superintendent, and A. F. Wiedeman, Construction Engineer, to completely replace the sash with Fenestra® Industrial Steel Windows that needed no painting. Based on careful tests they estimate that these windows will require *no maintenance painting for at least 20 years.* This saving in labor and materials will pay for the replacement!

New Fenestra FENLITE Finish

Fenestra Industrial Steel Windows with the New FENLITE Finish give longer life without painting *plus* a distinctive, new, window beauty. The FENLITE process is an exclusive Fenestra development based on years of experience and research with corrosion-resistant finishes for steel windows.

If you are planning a new plant, or if you are trying to solve an expensive maintenance problem with your present windows, get the facts about New Fenestra FENLITE Industrial Steel Windows. Call your local Fenestra representative—listed in the Yellow Pages—or mail the coupon below.

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p/a products

(Continued from page 185)

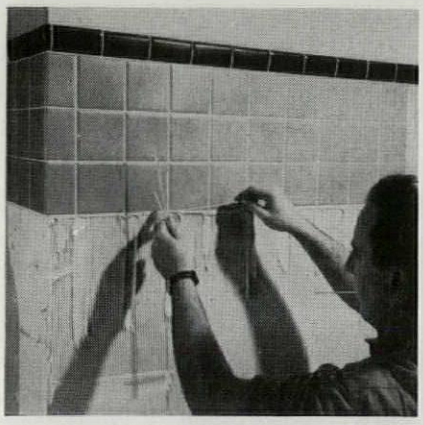
air and temperature control

Duracor Ducts and Hoods: lightweight, corrosion-resistant fume ducts and tank hoods—fabricated of thermo-setting plastic and synthetic fibers—can be formed to meet individual specifications for size and shape. Characteristics of material make ducts particularly suitable for handling plating, pickling, and chemical fumes while low weight factor eases problems of overhead installation. The Ceilcote Co., Inc., 4919 Ridge Rd., Cleveland, Ohio.

construction

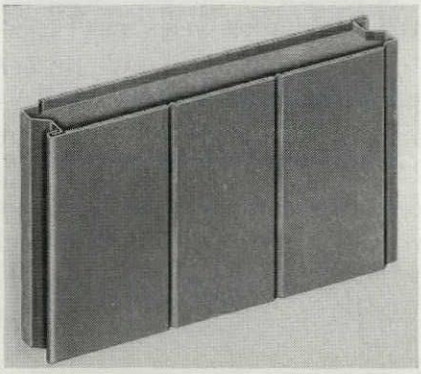
Virtricon-Faced Concrete Block: recently developed cold-glazing process for concrete has stimulated production of concrete block and panels with cold-glazed finish. New block finish gives color depth and three-dimensional effect. Since new glaze acts as integral part of block surface, finish has outstanding attributes; it is permanent, stainproof, and washable. Block is particularly practical for institutional buildings, hotels, or factories. Virtricon, Inc., 26-02 First St., Long Island City 2, N. Y.

Plastic-Tile Grout Strips: new plastic grout strips for plastic wall tile, end flat appearance of butt-to-butt application, are inexpensive, and easy to apply. Tile and



grout strips are laid alternately (*above*) in same adhesive bed. After first tile is set and edge cleared of mastic, vertical strip is aligned to edge; then next tile is installed. When first course is completed, horizontal strips are placed. Strips of white matte finish are 1/10" wide and equal in depth to bevelled shoulder of tile or 1/16". Vertical strips are 4¼", horizontal strips are 18" long. Units for bullnose cap, outside corners, and cove moulding are supplied. Artcrest Plastics Co., Inc., 255 W. 79 St., Chicago, Ill.

Fenestra Wall Panel: to reduce costs of lightweight metal-panel construction, standard insulated wall panel features improved

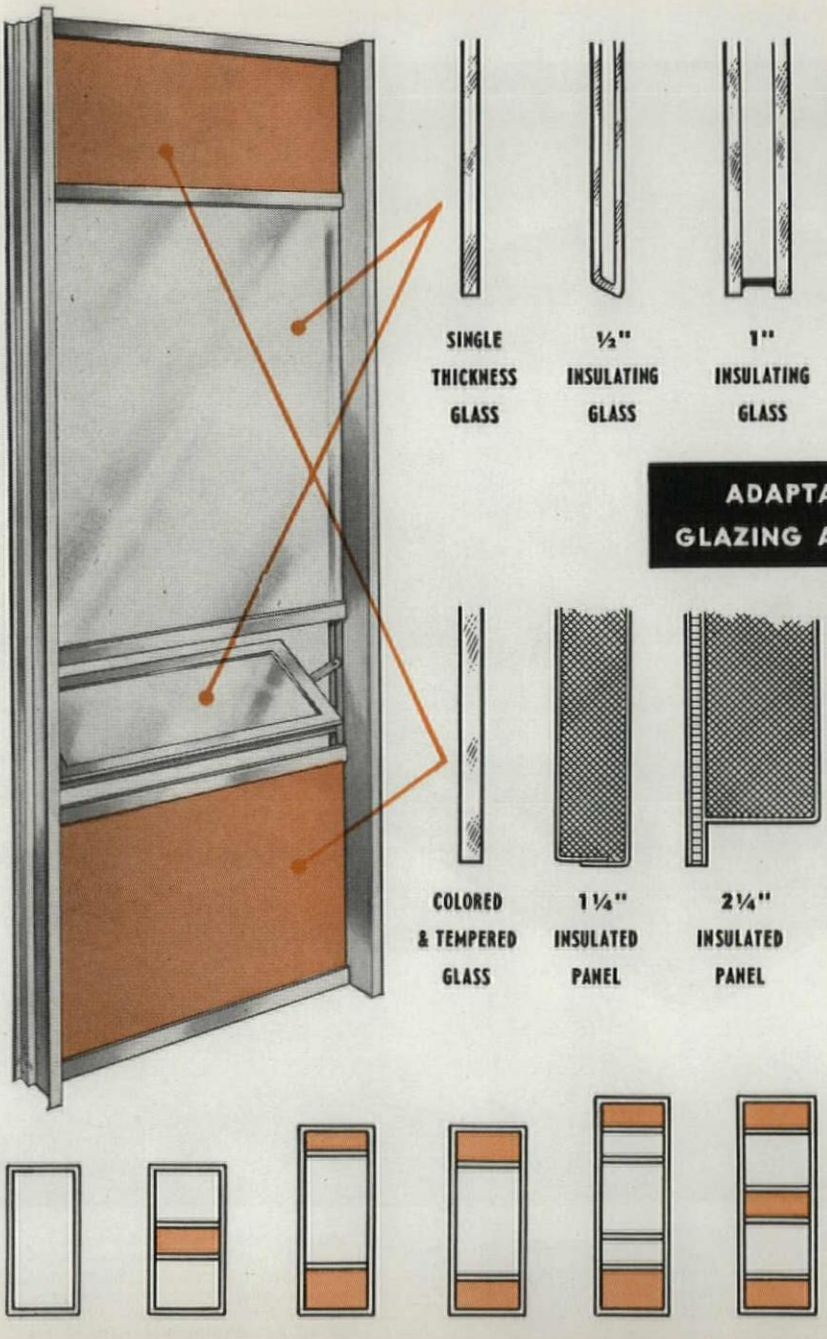


design and new dimensions. Panel (*above*) is prefabricaed of two formed members with felt insert between tongue-and-groove joint; borosilicate glass fiber insulation is nonsettling, chemically inert, and acid resistant; vertical ribs on exterior add depth to appearance. Available in galvanized steel or grained aluminum, panel can be welded, bolted, or clipped in place. Unit, 24" wide, 3" deep, and from 6 to 14 ft long, delivers over-all "U" factor from .16 to .19. When perforated for

(Continued on page 192)

. . . and now Brasco Wall

STOCK SIZE MODULAR ALUMINUM UNITS



The Newest Concept of Versatile Window Wall Construction . . . Expertly Engineered for One-Story and Multi-Story Commercial, Industrial, Institutional and Public Buildings.

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Please mail NEW BRASCO WALL DETAILS

Name & Title_____

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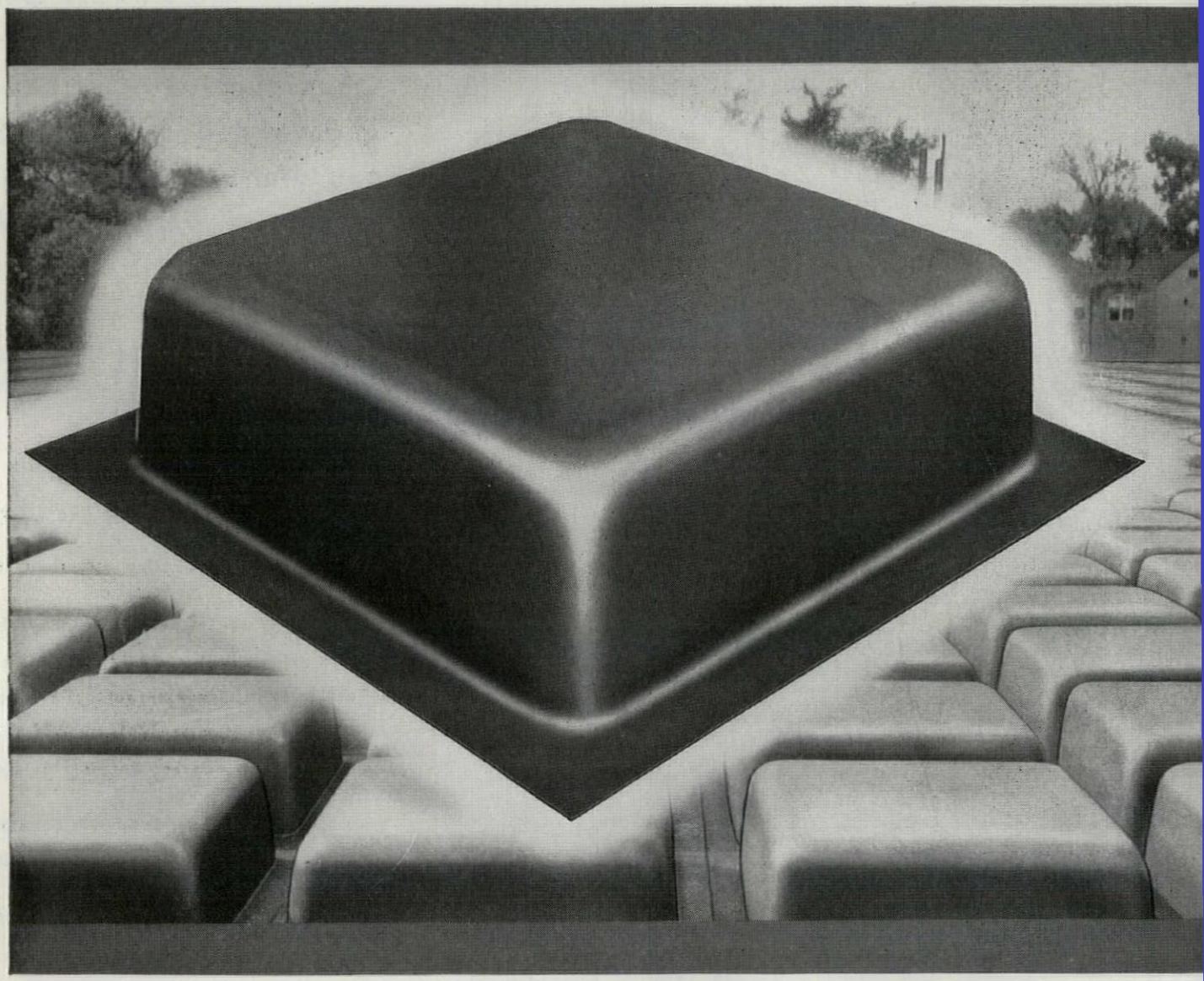
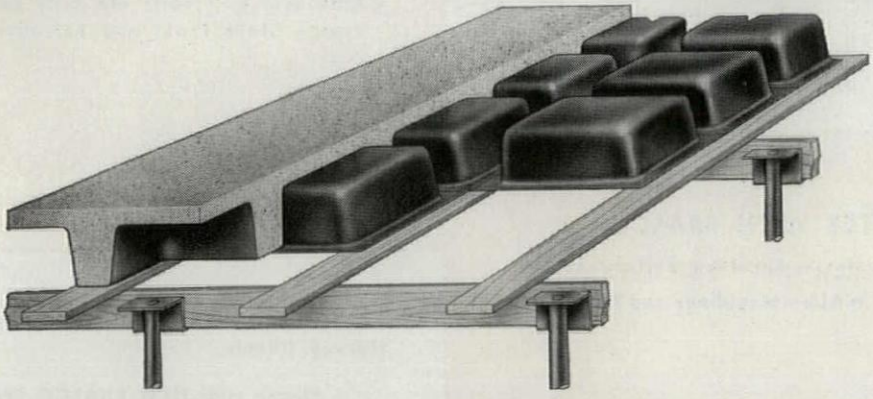
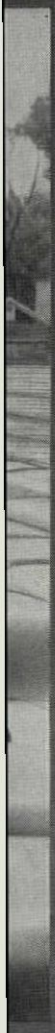
WIDE OPEN *SPACES...*





Showing how Steeldomes are used in forming waffle-type (two-way) concrete joist construction. Steeldomes are rigid, deep-drawn, one-piece units. Flanges forming standard-width joist soffits are an integral part of the Steeldomes. When erected Steeldomes are butted at all soffit joints, and eliminate the common defects of forms which must be lapped. Wide column spacings for open floor areas are easily achieved, because of (a) the basic economy of two-way construction, and (b) the saving of dead-load through use of a joist framing system. Story heights are decreased by the elimination of deep beams. Standard Steeldomes have a void of 30" x 30" and an overall plan size of 36" x 36" including flanges. Standard depths are 8", 10", 12", and 14".

WITH ECONOMY...FOR TODAY'S CONSTRUCTION



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Maximum use of floor space is a must in today's functional buildings. And the most practical way to design wide open floor areas . . . with no projecting beams . . . is by using waffle-type concrete joist construction formed with Ceco-Meyer one-piece Steeldomes. The new Ceco method is the most economical way of forming waffle-type concrete joist construction. In most cases you save up to 30% in materials . . . up to 40% in floor weight compared with the use of flat plate. Besides saving money, labor and materials, Ceco Steeldomes form smooth concrete surfaces for exposed ceilings of high quality finish—pleasing waffle-pattern design at no extra cost. R/C duct underfloor electrification may be readily installed—and pipes, ducts and other mechanical equipment can be located without interference of projecting beams. In planning your next building project, call in your Ceco product specialists.

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City_____ State_____

PA

(Continued from page 188)

acoustical purposes, panel absorbs 90 percent of sound striking surface. Fenestra, Inc., Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.

doors and windows

West Tension Door: consisting of 1" thick tempered-plate glass compressed under thin-metal frame, new nonsagging durable door offers unusual design possibilities. Tension bolts are concealed in frame while compressive springs are hidden in lower glazing channel. Locks and accessories in standard or custom lines are interchangeable and door can be fitted with any combination of pull or push-plate handles. Where desirable, handles are applied to glass with locks in top or bottom rails. Durable design makes doors suitable for use with automatic opening devices. Unit is adaptable to overhead closes, center- or offset-mounted with standard hinge or special offset built-in hinge; standard sidelights are supplied. Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.

"Style-Trend" Window: removable, double-hung window unit for homes offers many attractive features. Sliding groove on sill and complete weatherstripping reduce wind infiltration; wood frame is treated to resist water and acid; sill pitch and drip groove insure proper drainage. Sash is readily removed by application of pressure; in replacement, spring-type balance engages pin on sash. Ready-to-install units are available in several sash types and all popular sizes with screens and storm sash. Curtis Companies Inc., Clinton, Iowa.

electrical equipment, lighting

Sierraplex Receptacles: line of contemporary-styled electrical outlets and wall plates in distinctive new design may be specified to meet exact requirements. New wiring devices feature: holes for back wiring, wire strip gage, break-off strip for two-circuit installation. Outlets are encased in arc-resistant housing of ivory or brown plastic; matching wall plates, available in hundreds of unusual designs, may be ordered in stainless steel, plastic, or brass. Sierra Electric Corp., 15100 S. Figueroa, P. O. Box 85, Gardena, Calif.

specialized equipment

Vitre-Steel Toilet Compartments: popularity of porcelain-enameled shower cabinets has prompted manufacturer to introduce line of steel toilet compartments with porcelain enamel surface. Glass-hard surface is highly resistant to acids, cleaning compounds, and defacement. Available in ceiling-hung and floor-braced styles, compartment groups are especially suitable for rugged wear expected in institutional applications. Henry Weis Mfg. Co., Inc., 721 Bower St., Elkhart, Ind.

Imprest Plaster Molds: lightweight aluminum molds for impressing designs in plaster will relieve monotony of expansive acoustical ceilings. Patterns are impressed into acoustical plaster at pre-determined intervals. Special plastic tools are used to impress border; molds for border have adjustable gage to mark uniform distance from wall. Other molds have removable handles for easy storage. Four ready-made patterns are available but architects' designs can be made to order. Howard E. Rose Industries, 1628 N. Columbia Blvd., Portland 17, Ore.

Guth Micro-Hanger: to align fluorescent lighting fixtures, new zinc-coated, bonderized steel hanger permits micromatic vertical adjustment up to 1". Twist of stem raises or lowers fixtures; special ball socket allows for flexible mounting in any direction on ceilings sloped as much as 40 degrees. Curved canopy design and slender ½" hanger stem will not impair modern decor. The Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3, Mo.

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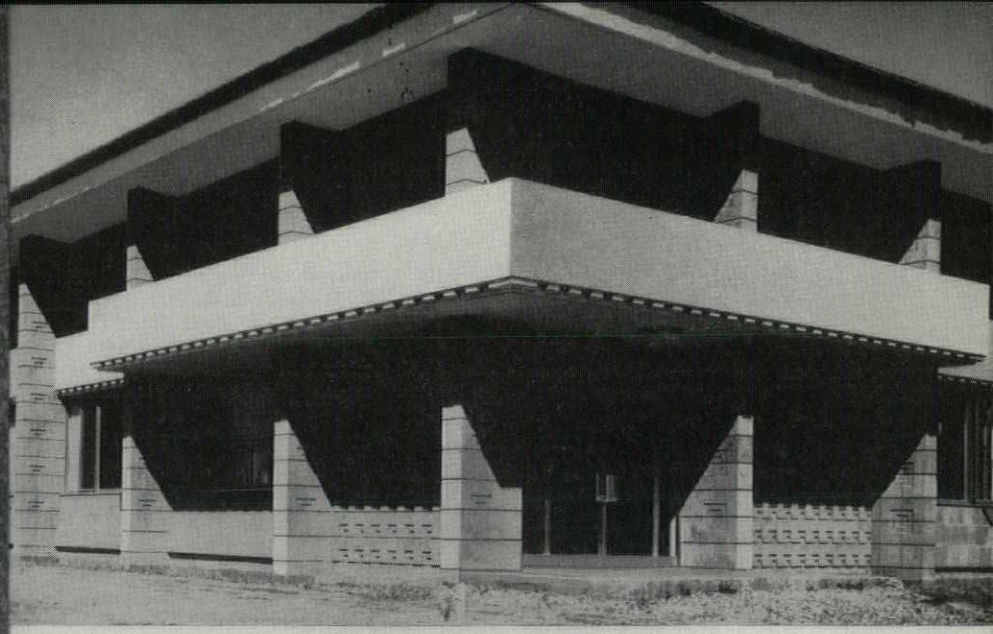
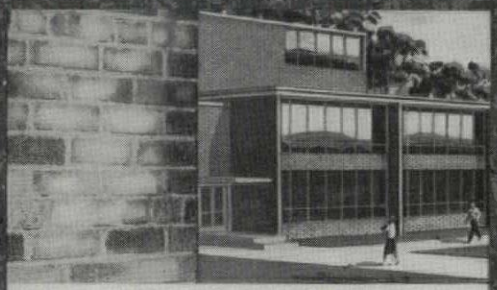


New Residence Hall, University of California, Santa Barbara College.
Architects: Pereira & Luckman. Treated with: Hydro-Lox, manufactured by Dunn-Edwards Corporation, Los Angeles, California, containing G-E Silicones.
Treated by: Smith-Palas Company, Painting Contractors, Hollywood, California



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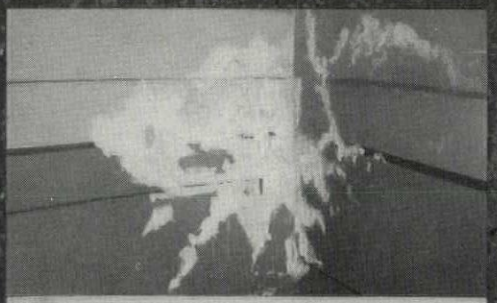

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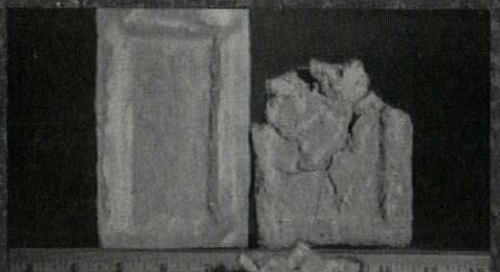

Prolongs masonry life! After 35 freeze-thaw cycles, concrete block treated with G-E silicones (left) shows but slight scaling; untreated block (right) is badly disintegrated.

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books received

The Core of the City. John Rannells. Columbia University Press, 2960 Broadway, New York, N. Y., 1956. 233 pp., illus., $5.50

Capital Formation in Residential Real Estate. Leo Grebler, David M. Blank, Louis Winnick. Princeton University Press, Princeton, N. J., 1956. 519 pp., $10.50

Course in Beginning Watercolor. John B. Musacchia, Henri A. Fluchere, Melvin J. Grainger. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1956, 75 pp., illus., $3.50

Architects' Detail Sheets. 2nd Series. Edited by Edward D. Mills. Philosophical Library Inc., 15 E. 40 St., New York, N. Y., 1956. 228 pp., illus., $12

Japan's New Architecture. Edited by Shinji Koike. Shokokusha Publishing Co., Inc., Tokyo, Japan, 1956. Distributed in U.S. by Wittenborn & Co., 1018 Madison Ave., New York, N. Y. 141 pp., illus., $9

Shoin Architecture. Harumichi Kitao. Shokokusha Publishing Co., Inc., Tokyo, Japan, 1956. Distributed in U.S. by Wittenborn & Co., 1018 Madison Ave., New York, N. Y. 192 pp., illus., $12

Symposium on Impact Testing. American Society for Testing Materials, 1916 Race St., Philadelphia, Pa., 1956. 170 pp., illus., $3.50

Masonry Simplified. Vol. 1. J. Ralph Dalzell & Gilbert Townsend. American Technical Society, 848 E. 58 St., Chicago, Ill., 1956. 463 pp., illus., $5.40

Course in Pencil Sketching. Ernest W. Watson. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1956. 63 pp., illus., $2.50

American Civil Engineering Practice. Vols. I & II. Edited by Robert W. Abbett. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1956. Illus., $15 per vol.

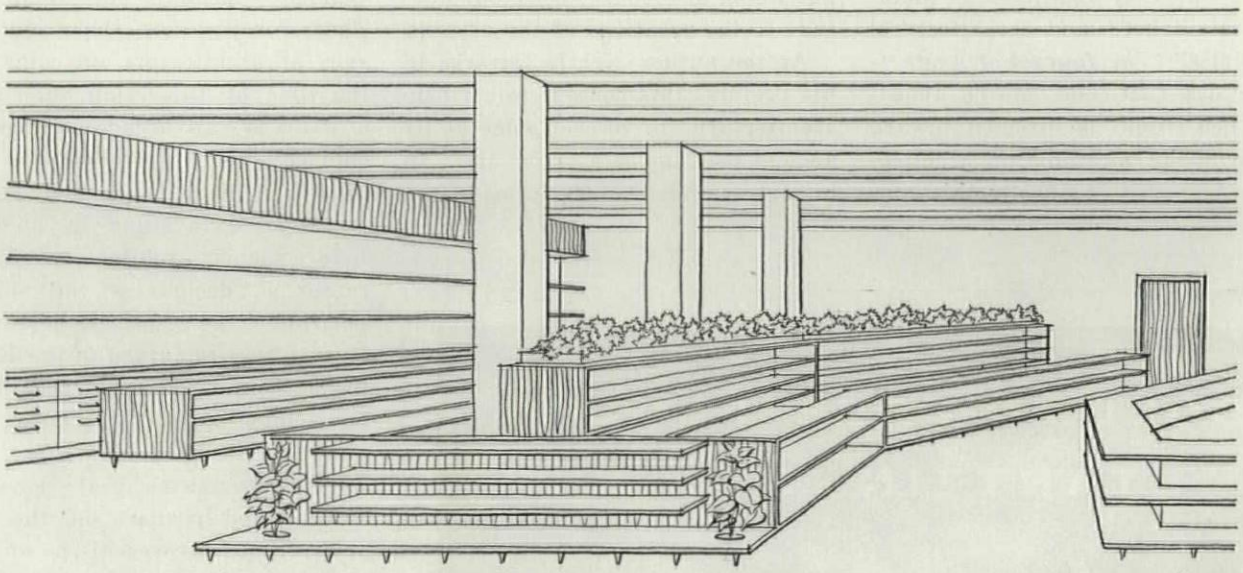
Design in Civil Architecture. Vol. 1. Elevational Treatments. A. E. Richardson & Hector O. Corfiato. Philosophical Library, Inc., 15 E. 40 St., New York, N. Y., 1956. 211 pp., illus., $15

new interpretation

Architectural Symbolism of Imperial Rome and the Middle Ages. *E. Baldwin Smith. Princeton University Press, Princeton, N. J., 1956. 219 pp., $7.50*

Only the expert in the field of late Roman, Byzantine, and Islamic archeology can do justice to the very scholarly last work of the late E. Baldwin Smith, formerly Howard Crosby Butler Professor of the History of Architecture at Princeton University. The reason, however, for reviewing it here for readers interested primarily in contemporary architecture, is that Professor Smith's approach is characteristic of a new trend in architectural history, which has brought forth such works as *The Gothic Cathedral* by Otto von

(Continued on page 196)



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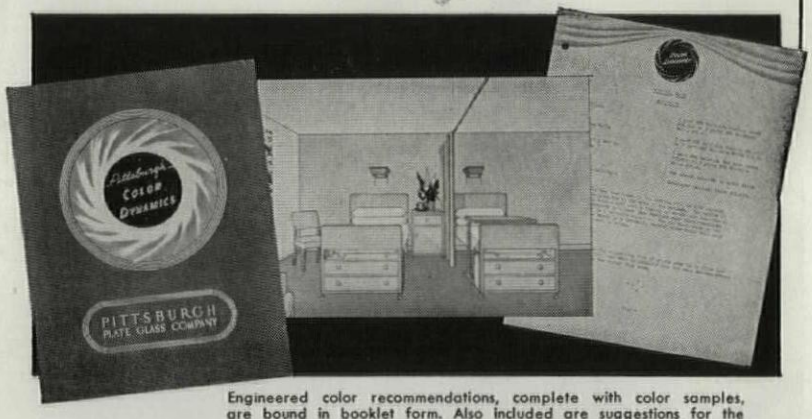

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(Continued from page 194)

Simson (see review below), and papers like Clay Lancaster's "Metaphysical Beliefs and Architectural Principles" (*The Journal of Aesthetics & Art Criticism*, March 1956). This new trend is directed toward the symbolic meaning of architecture. And quite naturally this concept cannot be confined to the past but would also characterize our attitude to the creations of the present.

As the author rightly remarks in his preface, this concept would help architecture "to recover some of its ancient prestige as a major art." In his opinion, elementary forms of the individual building represent not only expressions of a continuously changing, specific, stylistic epoch, but also may have an intrinsically symbolic meaning of their own. Thus, for instance, the graphic images of architecture on coins from the time of Diocletian on, such as a gateway, an arcade, a cupola, a baldachin, or a portal do not imply that the emperor, framed by them, is supposed to stand in, under, or before such an architectural element; rather it designates the spiritual position of the respective personality. Heaven was imagined in the East in terms of a royal residence. Palace and temple did not only mean buildings of different functions; they were also emblems of the governing and exalted position of the *pater orbis*. Smith proves his point by an abundance of Roman and Byzantine coins, Byzantine mosaics, ivory tablets, early illuminated manuscripts, and even fragments of the Bayeux Tapestry. Architecture associated with the ruler was always meant as an impressive manifestation of the enduring supremacy, first, of the state and, later, of the heavenly Ruler. And this symbolic character often prevails in the structures themselves, like certain buildings of the Villa Hadriani near Rome and in churches. Often the westwork of Romanesque churches and their towered façades were meant as a dramatic expression of the emperor's Christ-like domination. Emperor and high dignitaries of the Church were to be seen figuratively enshrined above ordinary mortals. As Smith emphasizes, "it is very difficult for the matter-of-fact modern reader to comprehend the ceremonial and symbolic purpose of the domical vestibules and halls in Roman and Byzantine palaces."

We are not accustomed to this architectural symbolism which is here analyzed in many structures from the first Christian centuries to St. Denis. And yet, the desire to make a modern office building, like the Empire State Building, the highest in town or to create elab-

(Continued on page 200)

metlwal STEEL PARTITIONS AND PANELING

for modern functional interiors

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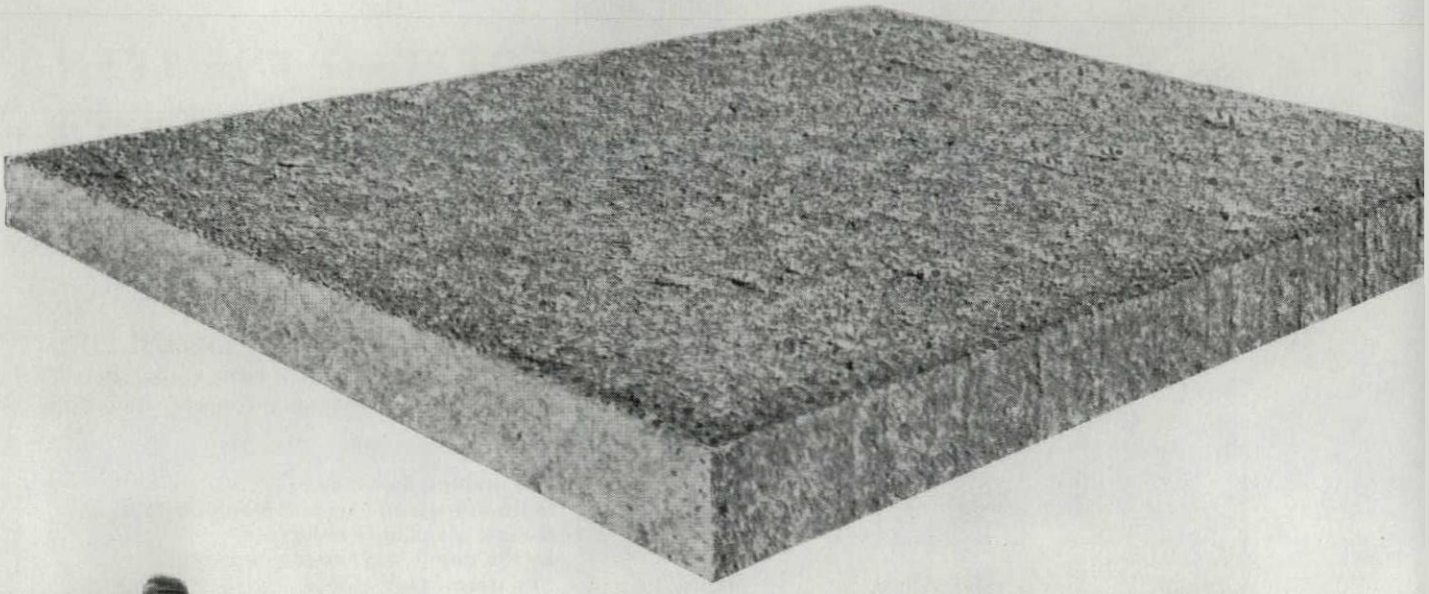

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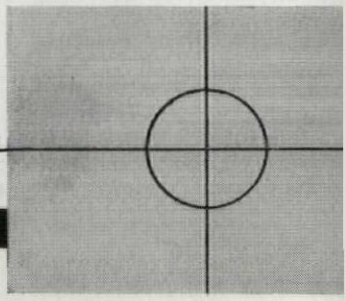

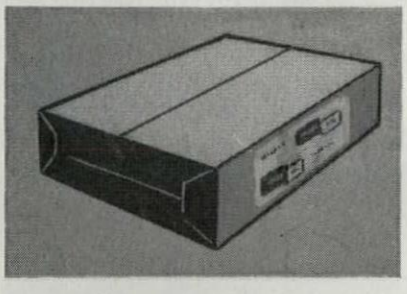

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1. U values are expressed in BTU/SQ. Ft./Hr./Degrees F temperature differential, still air inside and 15 MPH wind velocity outside.

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

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

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

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(Continued from page 196)

orate and expensive plazas before new skyscrapers is certainly not dictated by formalistic architectural considerations but preponderantly by the search for a symbolic expression of the power of these very enterprises. These uses of architectural elements prove a nonfunctional purpose and an identification of visual expression with symbolic meaning.

Professor Smith's work, aside from its great archeological merits, may open our eyes to the parallelism of certain tendencies of our time to similar ones in the past.

PAUL ZUCKER

light and proportion

The Gothic Cathedral. *Otto von Simson. Bollingen Series XVVIII. Pantheon Books, Inc., New York, N. Y., 1956. 307 pp., illus., $6.50*

There is a very definite reason for reviewing in a magazine devoted to contemporary architecture such a scholarly study of the history of ideas as Professor von Simson's *The Gothic Cathedral.* The work is outstanding in that it is one of the few publications on architectural history giving more than pat historical sequences and rationalized explanations of architectural developments during a certain period or in a specific region. This is based on a philosophical concept of architecture and on historical and theological knowledge of medieval thinking and feeling paralleled by very few historians of our time. Like the late Prof. E. Baldwin Smith's *Architectural Symbolism of Imperial Rome and the Middle Ages* (see review above), Professor von Simson emphasizes the symbolic meaning of architectural expression. Beyond the historical research, the author has undertaken the task (extremely difficult in our age of over-evaluated functionalism) of proving to what degree the Gothic edifice (i.e., the cathedral) is meant as a SYMBOL of the radiance of an eternal and universal truth, as revealed in Sacred Scripture, and also as the result of a rational system of thought. This approach is so entirely alien to the thinking of the last three or four generations, after the sweet exegesis in Romantic writings on architecture, that courage is needed to build a systematic analysis of architectural creations putting aside the usual esthetic considerations.

"The Middle Ages lived in the presence of the supernatural, which impressed itself upon every aspect of human life." Thus architecture becomes the representation of a supernatural reality, and the esthetic and constructive aspects of Gothic architecture become less important. How the religious vision was translated into architectural form is Pro-

(Continued on page 204)

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are better than ever!

Every day, builders and contractors are discovering the big advantages of building with plaster reinforced with Keymesh, Keycorner and Keybead.

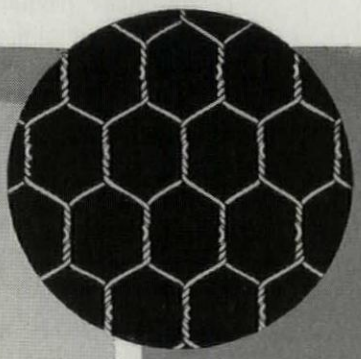
For example, Keymesh adds 50% greater fire safety to plaster ceilings in frame construction. It triples the fire endurance limit of open web, steel joist construction. And when you fireproof steel beams and columns with Keymesh reinforced plaster, the reduction in the insurance rate soon pays for the fireproofing.

Keycorner economically provides the extra strength that takes the worry out of trouble spots like corners, wall-ceiling junctures and joints.

Keybead allows exacting work on outside corners where ordinary beads fail. You save time and money.

In addition to these hidden values, the Three Keys help make plaster even more beautiful, more easily adapted to any design requirement.

For far better construction that costs very little, ask your plastering contractor to figure your jobs with the Three Keys to Stronger Plaster.



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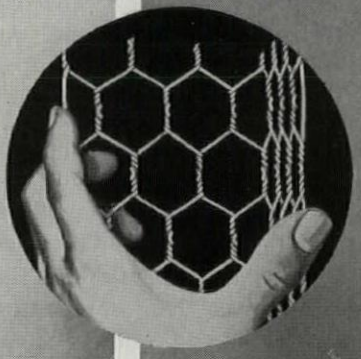
Tests prove that Keymesh-type Galvanized reinforcing lath increases fire safety of plaster ceilings a minimum of fifty per-cent . . . in some cases many, many times more. Since this is true by actual fire tests*, imagine the extra strength that a Keymesh ceiling or wall has against ordinary, day-to-day stress and strain. The hex mesh is a network of reinforcement. Plaster completely embeds the steel wires to make a solid, reinforced ceiling or wall. Keymesh stops plaster cracks before they start. It makes lath and plaster better than ever.

*Building Materials and Structures Report 141 National Bureau of Standards.



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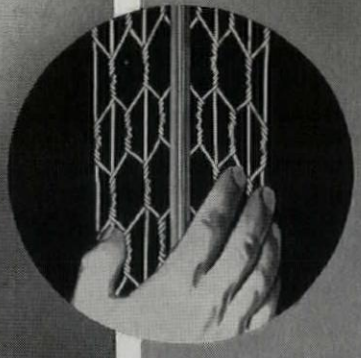

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(Continued from page 200)

fessor von Simson's main problem: he believes "the use of light and the unique relationship between structure and appearance is the answer." Thus light and proportion are to the medieval mind not only symbolic or esthetic attributes but also "formative and ordering principles of creation."

Saint-Denis and Chartres exemplify this decisive development. The reflections of Abbot Suger regarding light are for the author far more important than those of all practical builders. "The Middle Ages which talked so much about the science of architecture actually built with practically no theoretical science at all."

In an appendix, "On the Proportion of the South Tower of Chartres Cathedral," Prof. Ernst Levy analyzes the tower in detail, as to shape and proportion and the possibility of a regulating mathematical canon. He recognizes in the octagon the defining element of all measurements.

Professor von Simson has succeeded in demonstrating the integration of medieval vision and symbolism, of medieval esthetic theory and practice; perhaps somewhat underestimating the natural tendency of every craftsman, even the medieval one, to create earthly beauty. The eminent scholarship of the author, equally familiar with medieval theology, philoshophy, and art history, leaves this reviewer stunned and enthusiastic. PAUL ZUCKER

articulate analysis

Contemporary Church Art. *Anton Henze and Theodore Filthaut. Edited by Maurice Lavanoux. Sheed & Ward, 840 Broadway, New York, N. Y., 1956. 192 pp., illus., $7.50*

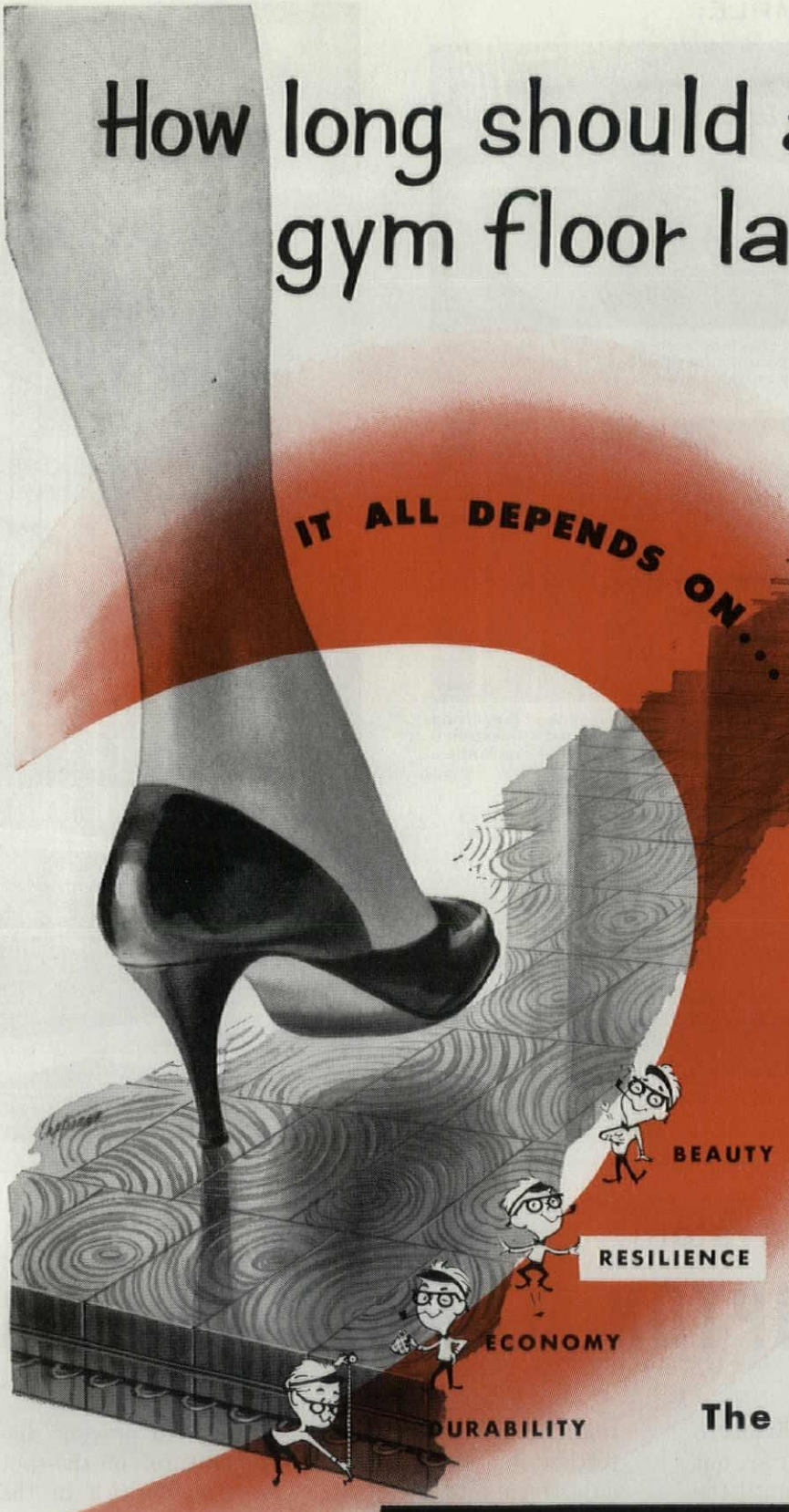
The arts have never been more eloquent than when united with religion. In our time, we may justly wonder whether art and religion have fulfilled, let alone transcended, their social functions. An attempt to assay the situation is made in *Contemporary Church Art* by Anton Henze, historian, and Theodore Filthaut, theologian. Considering the profusion of disjointed and esoteric books on contemporary art, pseudo-religion, and religious substitutes, this book offers a particularly coherent, articulate analysis of the relationship between art, architecture, and Catholicism.

Henze discusses the contemporary development of Church art and architecture in order to determine their potentialities and position in history. According to his text, supplemented by 127 pages of photographs, the "modern" Church began toward the end of the 19th Century. Religion

(Continued on page 208)

How long should a gym floor last?

IT ALL DEPENDS ON . . .



Usage . . . Maintenance . . . Installation . . . It's the *extra* activities in school gyms that shorten the life of many a floor.

You can't always restrict a gym's use to basketball and physical education classes, so you need a floor with more resiliency, durability and toughness, to withstand any kind of abuse.

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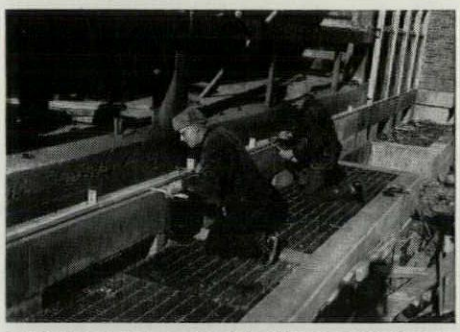
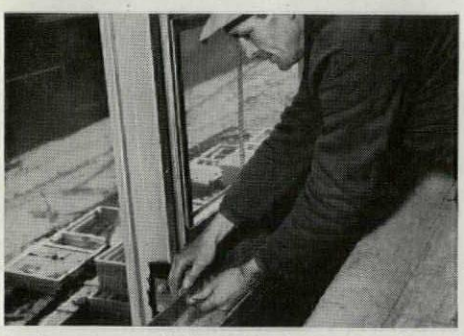
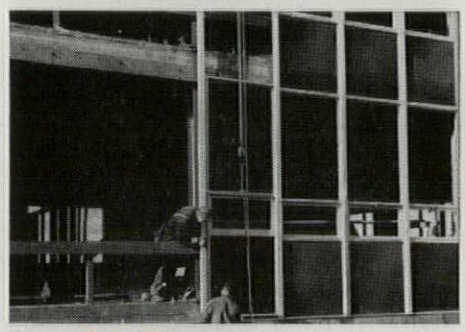


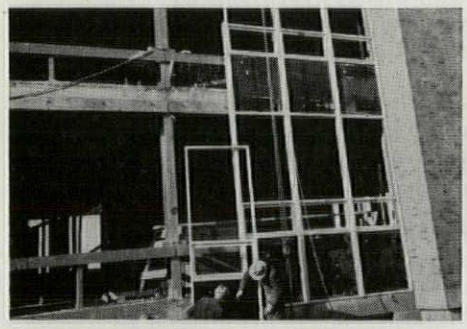
Lupton crewmen accurately align and attach continuous aluminum sill at base of wall. Clips for anchoring mullions are factory pre-set and welded.



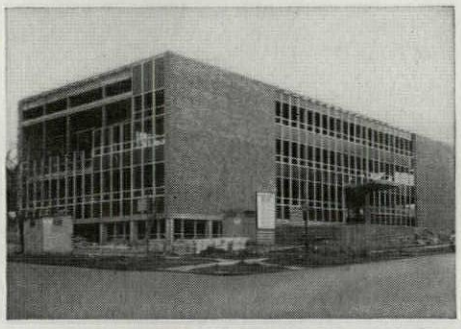
Lupton crewman bolts mullion to structural frame with heavy galvanized steel clips. Slotted holes permit accurate alignment.



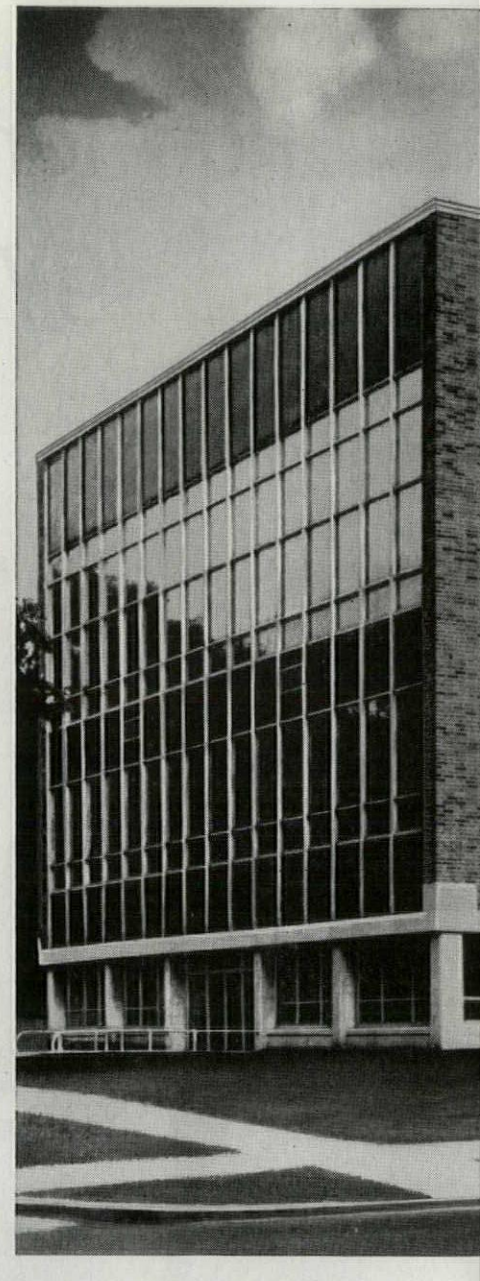
The vertical mullions that act as the "organizing element" of the wall are positioned with extreme accuracy, regardless of structural irregularities.



Here Lupton curtain wall units are positioned from outside building—convenient handling procedure for two- and three-story buildings.



Niagara County Building nears completion. Time and money saved in construction draw compound interest in minimum maintenance costs.



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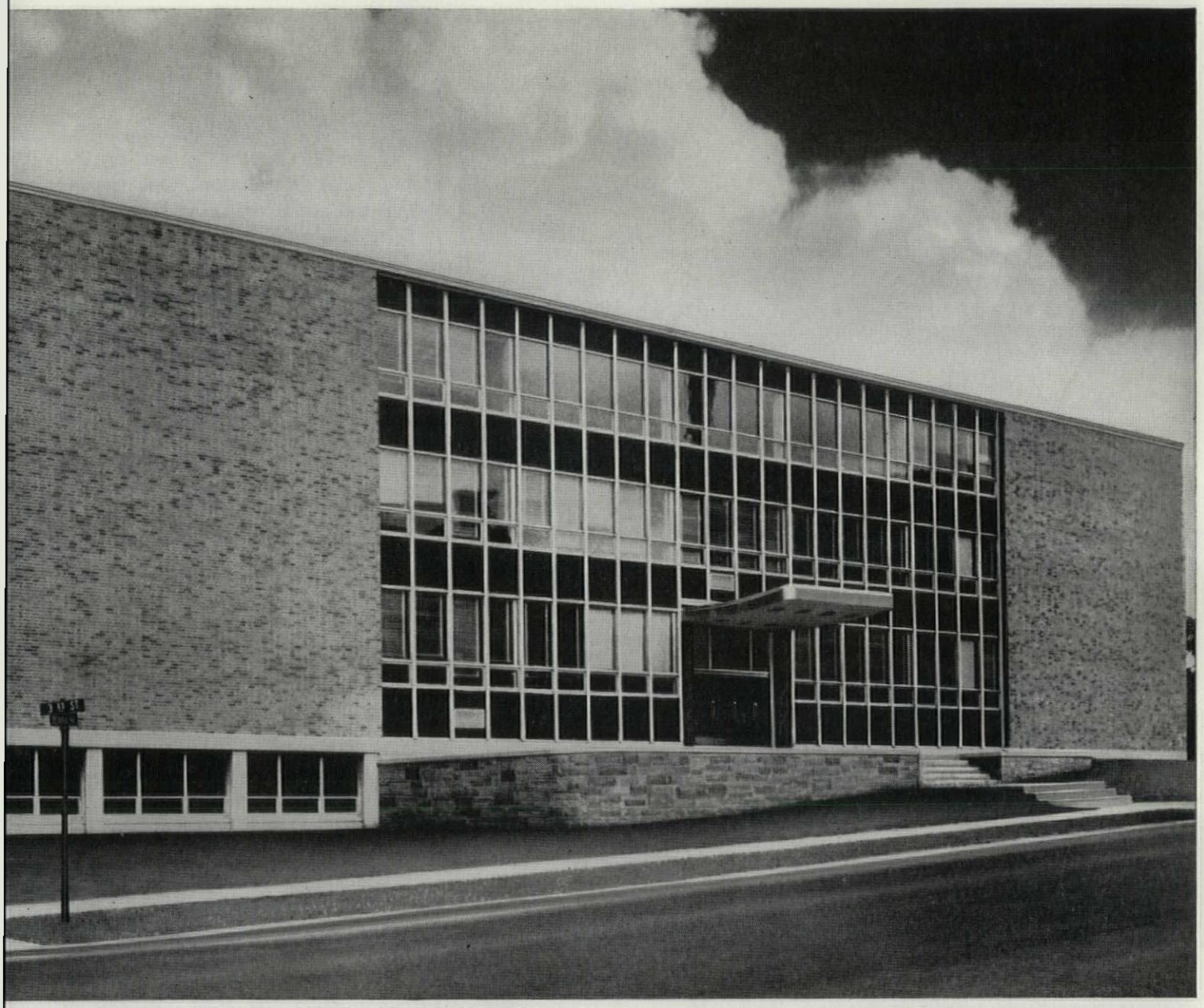

NIAGARA COUNTY BUILDING, NIAGARA FALLS, N.Y. Arch.: Charles F. Obenhack. Contr.: Walter S. Johnson Building Co. Lupton Curtain-Wall System, Type G. Width module, 4'-0". Double glazing, 1" thick fixed lights, ½" thick in ventilators. Ventilators open in. Opaque areas are double panel construction. Outside face is green-black porcelain enamel laminated with honeycomb core, galvanized back. Inside face is galvanized steel sheet covering 1" thick insulation. Back-up wall to sill height.

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reviews

(Continued from page 204)

did not escape the impact of the Industrial Revolution and consequential social changes. New social relationships demanded recognition within the Church. To keep abreast of the times, religious leaders gave the Church new purpose. Expressed in liturgical terms, the worshippers, hitherto silent onlookers, would become active participants in the sacrificial offering. In other words, the congregation was to be brought into more intimate contact with the altar. Furthermore, there was a general trend toward stripping the ceremony to essentials so that its significance could be grasped immediately.

Church architecture, beginning in 1922 with Notre-Dame du Raincy by A. and G. Perret, attempted to express this liturgical concept by bringing the altar physically closer to the congregation in a light, open, unified interior, where slender columns replaced the massive pillars of earlier churches. Soon churches in Switzerland and Germany echoed this development with certain modifications. Of these, St. Anthony's in Basel was particularly important. In contrast to the Gothic masking of prior concrete churches, St. Anthony's built in 1927 by Karl Moser was a frank (if stark) expression of concrete construction. These primary developments were summarized in Rudolph Schwartz's church at Aachen, where neither pillars, separate altar enclosures, nor ornament were employed—the entire design being a matter of mass and proportion which fulfilled only the strictest liturgical requirements. All of these churches were bold, matter-of-fact, and plainly structural solutions. However, the search for basic form did not end here. As the early designs were based on the basilica plan, they did not fully exploit the possibilities of bringing the congregation and altar together. Circular and oval plans were used by later architects, after which combinations

(Continued on page 212)

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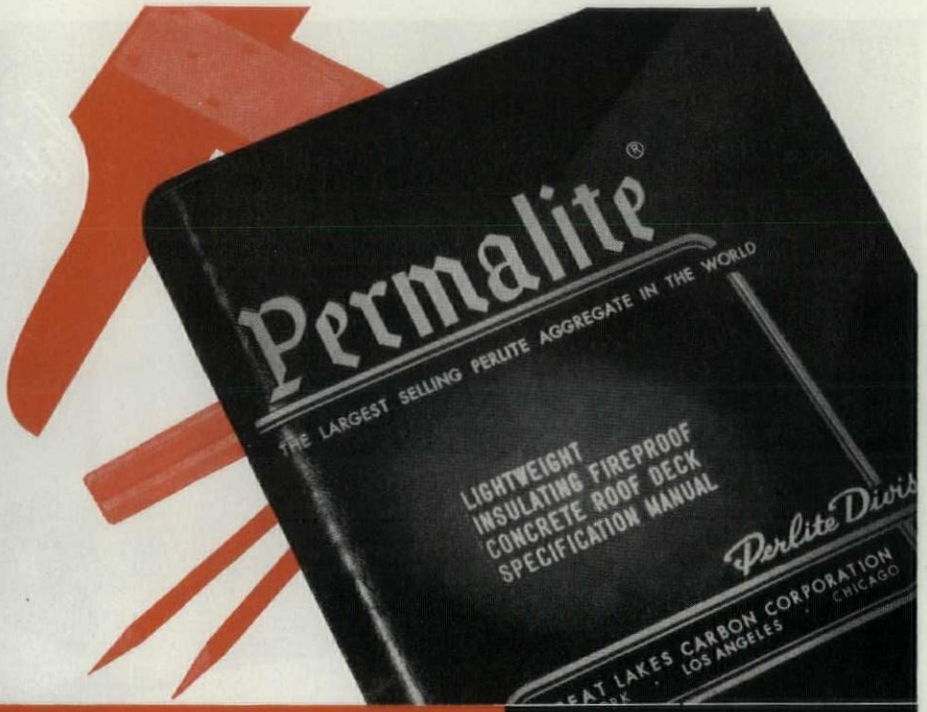

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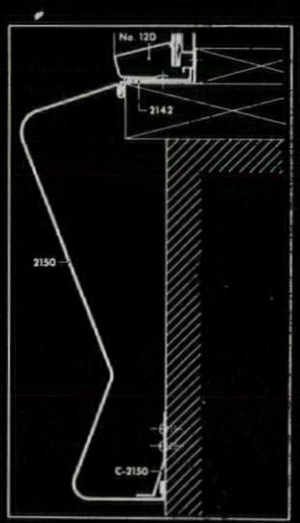

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reviews

(Continued from page 208)

were devised. Greater freedom in plan, design, and construction was pursued until, once again, startling innovations occurred—LeCorbusier's chapel at Ronchamp exceeded the limitations of regular geometric shapes with a completely plastic form. And in the architecturally commonplace chapel of Matisse, the power of integrated artistic expression, albeit personal, was reaffirmed.

These—prominent among Henze's examples of brave new directions explored by 20th Century architects, artists, and craftsmen—are hardly well presented in the photographic section where they are ranged alongside a collection of "repository trash" and liturgical cartoons. If the purpose of the illustrations is to provide a representative cross-section of contemporary Church art (which would undoubtedly include some mediocre examples) then we might expect some specific criticism of the worst as well as the best work. Unfortunately, the authors don't comply.

Nevertheless, some tentative conclusions can be drawn from the illustrations: most of the buildings are derived from forms originating in exhibition halls or industrial enclosures; the art has more mysterious origins and sometimes horrifying results. Among these are a primitive "Madonna," a nightmarish "Last Supper," a naive "Annunciation," several stylized "Saints," and a host of abortive figures of Christ. Generally more inspired designs characterize the candlesticks, chalices, fonts, censers, and other ritual vessels (reduced to simple, well-proportioned forms, these articles represent the best efforts of industrial designers anywhere).

All this serves to remind us of Henze's contention that we are, so to speak, the primitive people of a new era, struggling to express the new relationships of man to man, man to government, and man to God.

(Continued on page 214)

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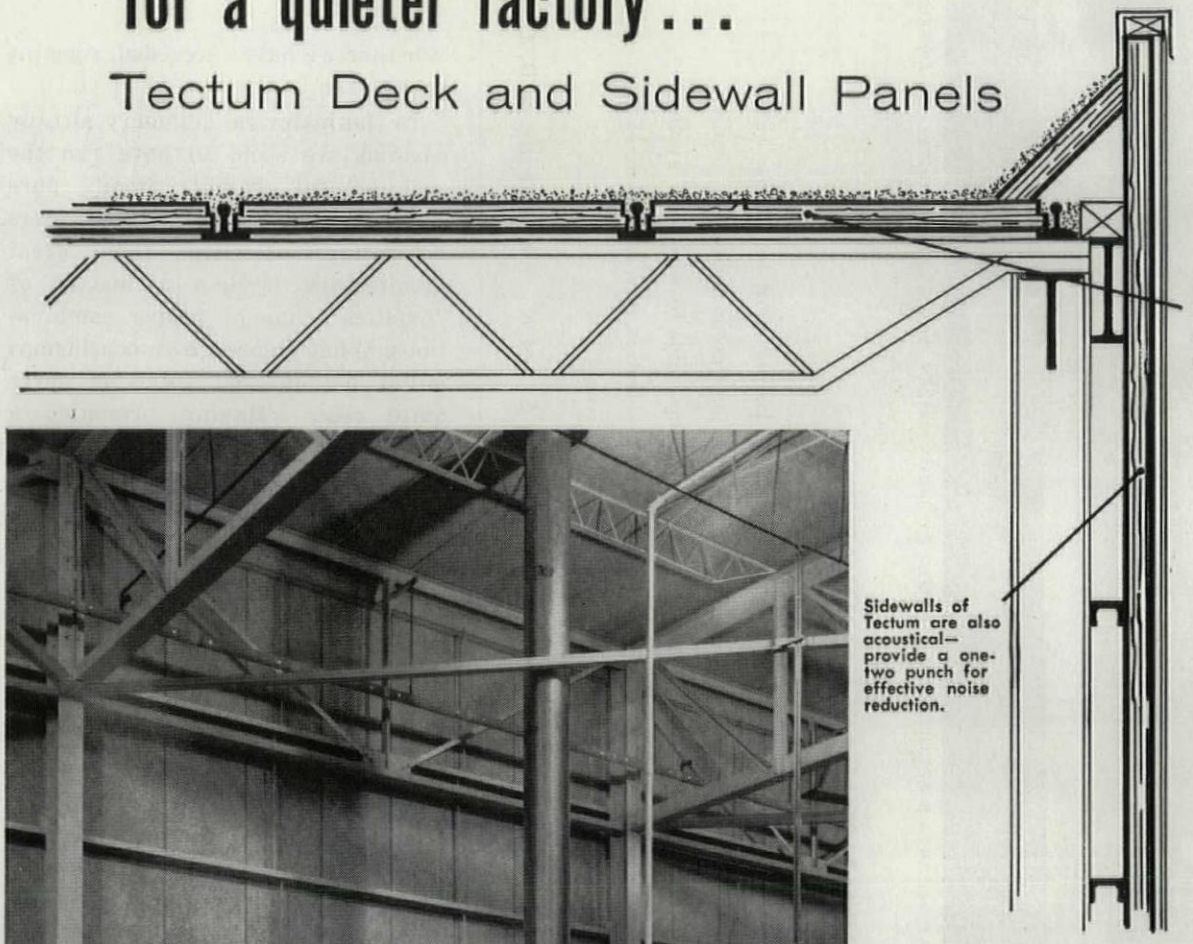

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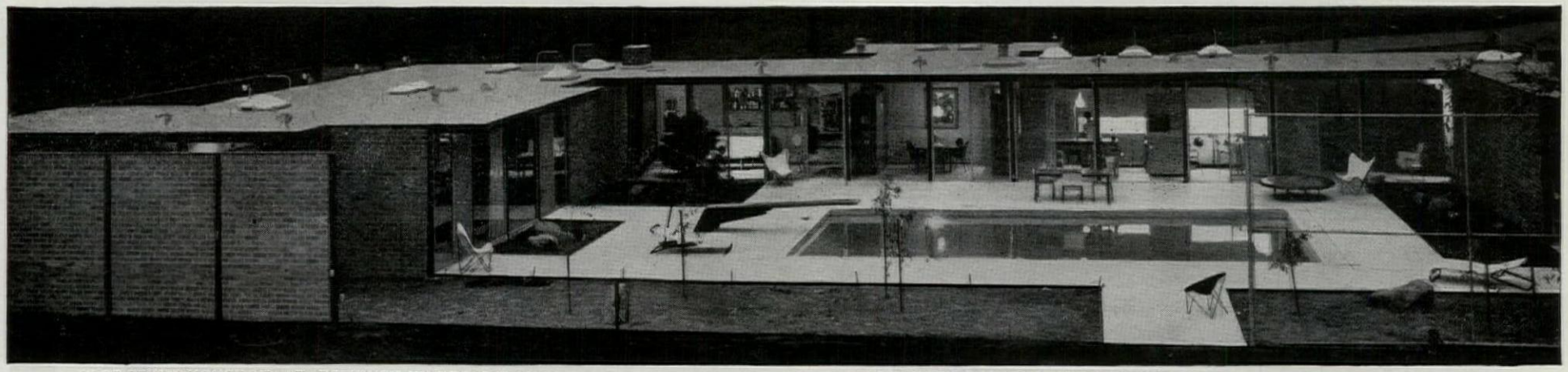


CASE STUDY HOUSE NO. 17, DESIGNED BY CRAIG ELLWOOD FOR THE MAGAZINE, ARTS & ARCHITECTURE. PHOTO BY JASON HAILEY, 506 S. SAN VICENTE, LOS ANGELES

reviews

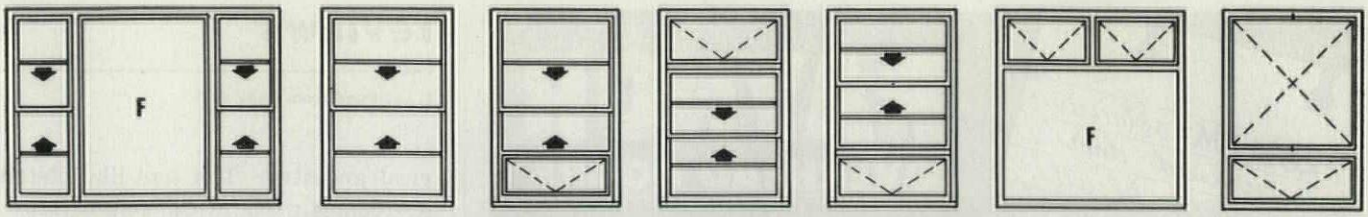
(Continued from page 212)

Whether we have succeeded, remains to be seen.

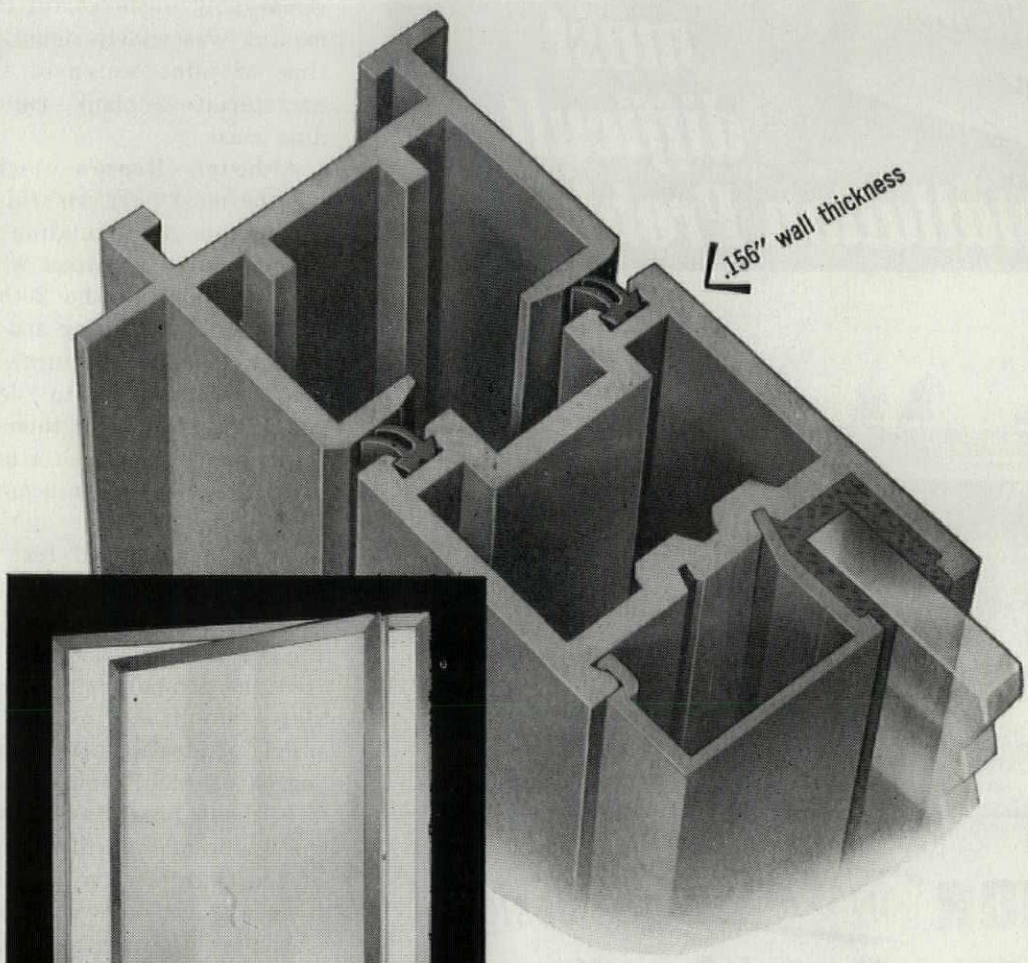
In the historical summary already covered, we seem to have run the architectural gamut from "pure structure" to "pure form" to "pure decoration." Perhaps then, great architecture is less a matter of "purities" than of proper combinations. What Henze's own conclusions might be, on this point, is never quite clear. Having presented a sound and illuminating historical survey, he subsequently resorts to pedantic historical comparisons in order to prove that contemporary Church architecture is *logical* and *adequate* as an expression of our time. Few would deny the former assumption. But to substantiate the significance of the Church today, he "type-casts" it as the "Tent of God" and provides a rather specious argument. He reasons thus: in every age, the dominant building type is an expression of the ruling group of that period. Today, the technical-industrial worker and manager are the predominant group, and since the most characteristic building of this group is a light, simply constructed, steel-framed building (which he terms "tent-like")—then the 20th Century is symbolized architecturally by the "Tent of Labor." Hence, the church may be appropriately called the "Tent of God," just as the Baroque church was a "Palace of God," the Medieval church a "Castle of God," and so forth.

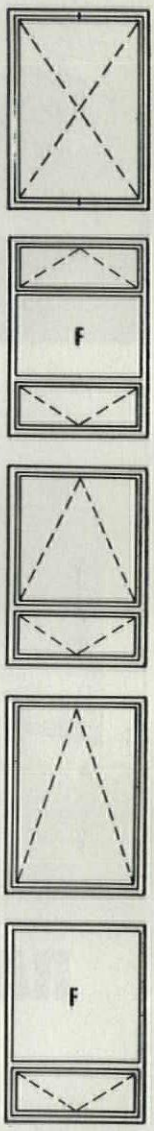
Whatever relation this play with words has to architecture is not entirely coincidental. The 20th Century church, as we have seen, has taken many forms. One of the frequently recurring types with slanting walls, sloping roof, flexible, plan, and light construction could conceivably be construed as a tent-form. Whereas others—with bare and boxy walls, sweeping roofs or domes, and parabolic supports—are often literal reflections of their industrial/theat-

(Continued on page 216)



MONUMENTAL TYPE ALUMINUM WINDOWS





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reviews

(Continued from page 214)

rical ancestry. The tent-like church overcomes these profane associations and suggests a more distinctive symbolism. That we have all been remarkably unsuccessful in symbol-making was widely remarked at the time of joint design of the U. N. Secretariat—a blank, rigid, forbidding mass.

Although Henze's symbolism is for the most part wishful thinking, it presents a stimulating challenge to the church architect who has already discovered the 20th Century idiom for "commodity and firmness" (function and structure) but who has not yet learned to "delight," to relate buildings to their environment, and to establish a meaningful style as well as significant as symbolism.

In the theological text of co-author Theodore Filthaut, the "Tent of God" is traced to its source in the Old Testament, where it symbolized the temporary houses of worship established by the nomadic people of Moses as they wandered in search of the Promised Land.

Filthaut presents a simple, lucid discussion of the liturgical functions of the church, altar, and devotional images as well as two often neglected elements: the font and the porch. He points out that the font, for all its ritualistic significance, is often treated as "a mere container for baptismal water" while the porch (or lobby)—an intermediate space for preparation that is considered essential to theaters—has all but disappeared in the modern church. All too often, sterile, incomplete designs are defended on the basis of economy while, in many cases, expenditures for mechanical equipment consume funds that might otherwise finance works of art.

Beyond the spatial requirements determined by cult practices, the church must communicate through its form and the arrangement of its components, the profound, indefin-

(Continued on page 220)

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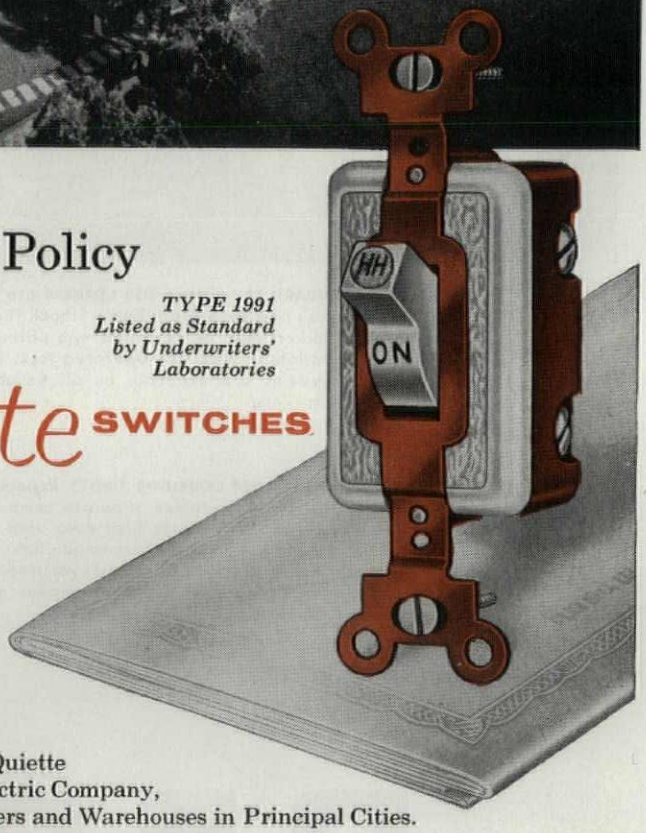

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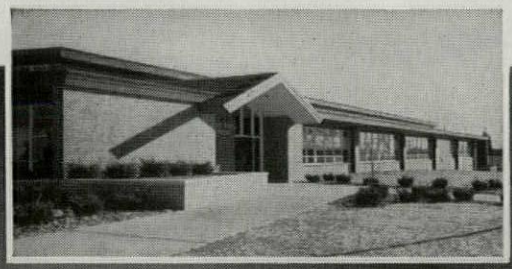
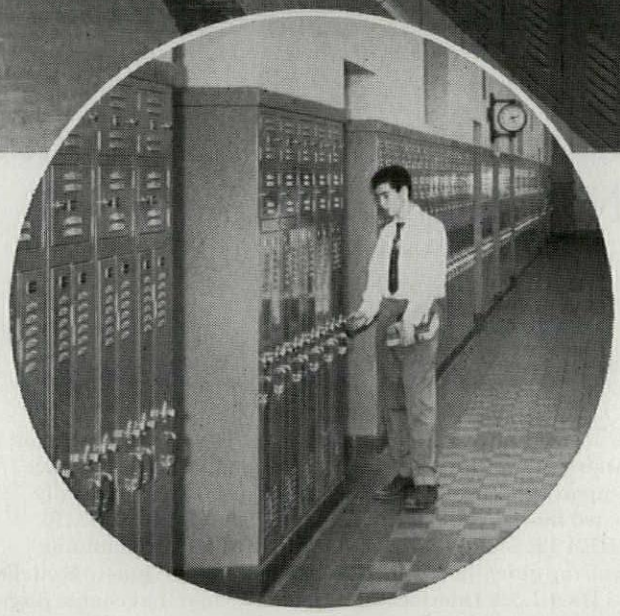


Belle Ryan Grade School, Omaha, Nebraska,
Leo A. Daly Co., architects, W. Boyd Jones, contractor.



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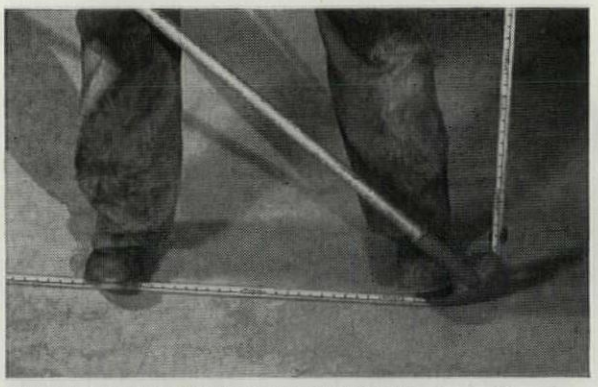

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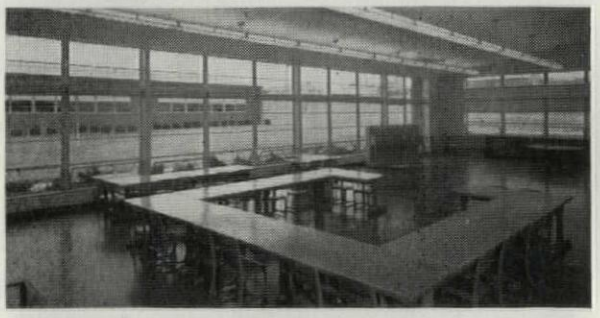

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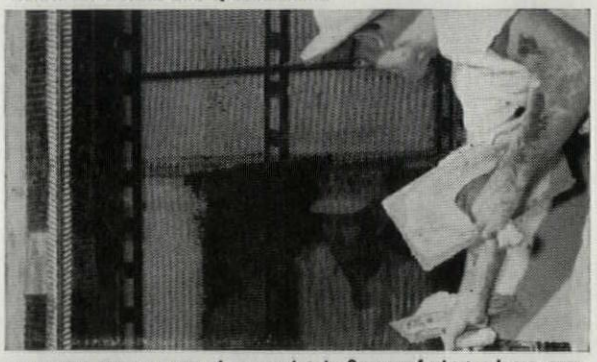

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reviews

(Continued from page 216)

able presence of God. The fulfilment of this lofty function would seem to be the justification for its existence.

The "tent" may not be the ultimate expressive form of our time. But it is, at least, an attempt to articulate the religious disposition of this century. Can the mournful reactionaries who would disinter architectural styles of the past, restore as well, the spiritual and practical needs that generated them? Can art forms born under institutions now extinct express the aspirations of modern man? And finally, what is the relationship between contemporary art and the Church today?

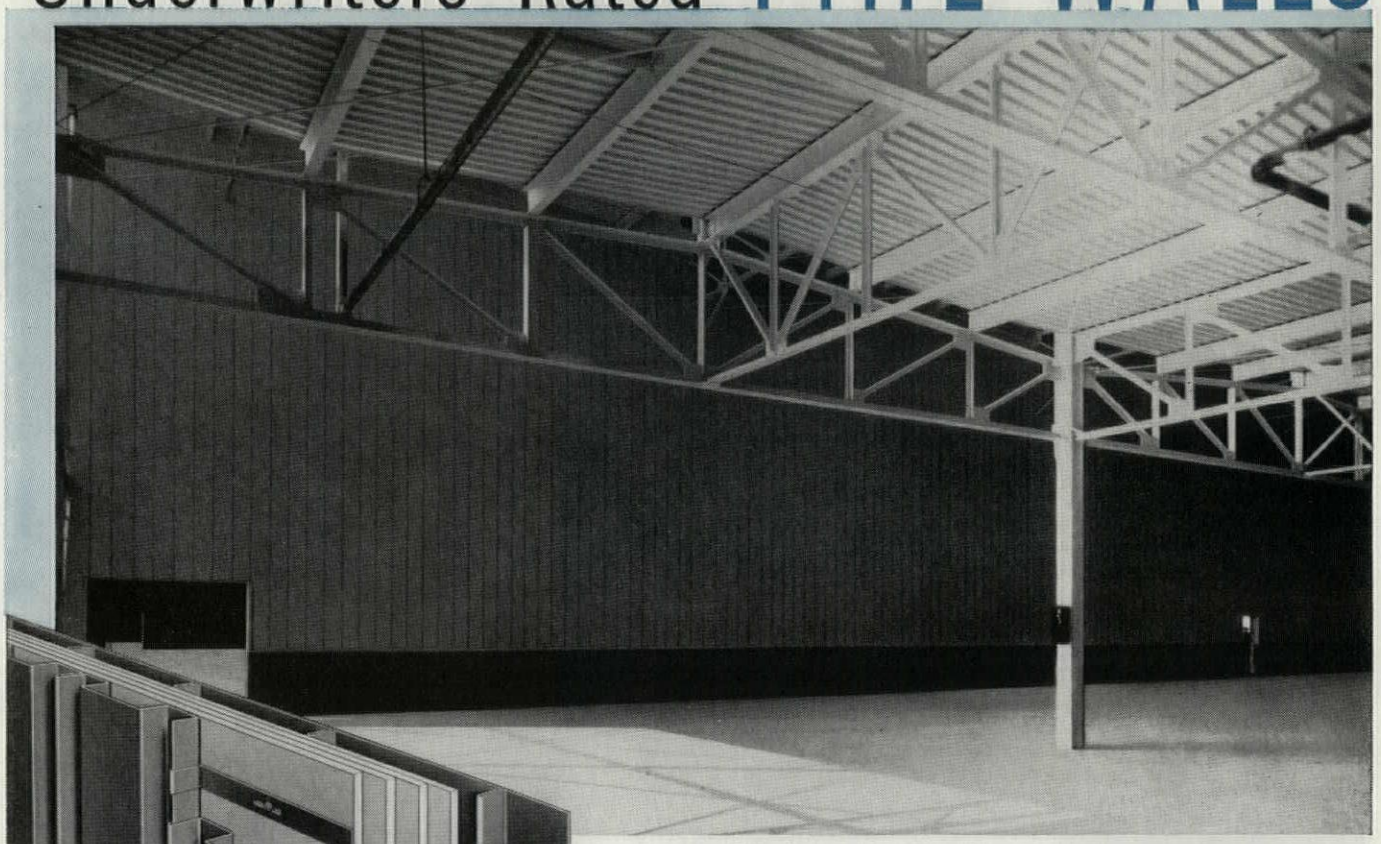
Both authors explain that within the Catholic Church, the Image, based on the Word of the Gospel and conveyed by painting or sculpture, is of inestimable importance. To each image a particular function and position is assigned. If an artist accepts these designations, considering the needs of the Christian community rather than his personal taste and judgment, he is allowed full scope in matters of style and form.

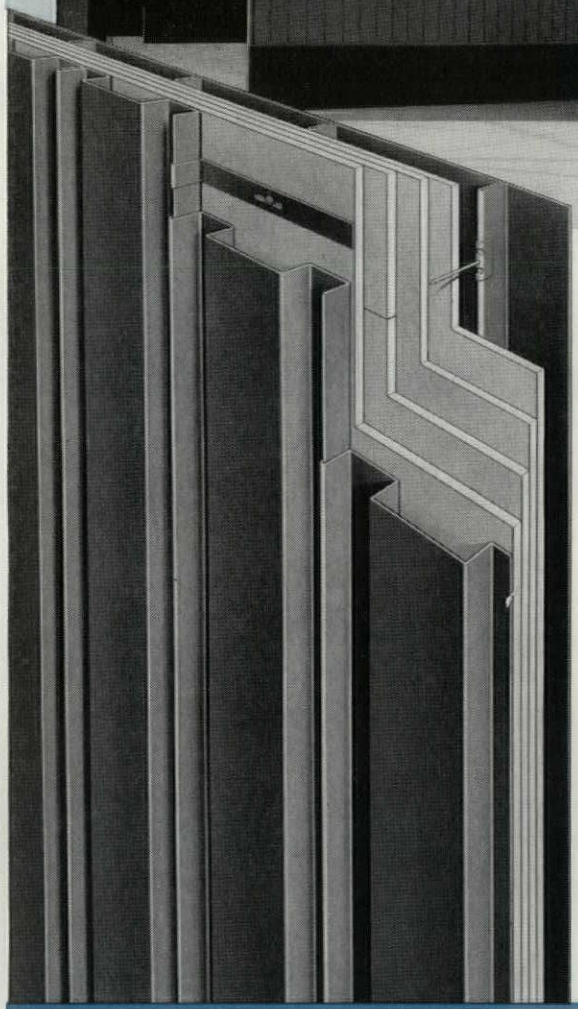
Henze seizes the most trying aspects of present clergy-artist-architect relations, in his less speculative moments. The artist is criticized for discarding content—for expressing what *he* feels instead of what the Church would have him feel. The Church is blamed for infrequent patronage of these arts (which do not meet its standards). And the architect is charged with failure to provide space for art works that the Church will not commission.

The authors have done us a service by perceptively analyzing the condition of Church art today and describing the aims of the Church. But in the last analysis, it is only by a revitalization of *all* our institutions and clarification of their aims that can bring meaning to the arts which reflect them. R. C.

(Continued on page 224)

Underwriters' Rated FIRE WALLS





Section of Mahon Metalclad Fire Wall showing Construction Features. Four layers of ½" Plaster Board are sandwiched between Roll-Formed Steel Wall Plates. All Joints in both Wall Plates and Plaster Board are Offset.

. . . for Interior or Exterior Use!

Mahon Underwriters' Rated Metalclad Fire Walls are now available for use as interior dividing fire walls or as exterior curtain-type fire walls. They can be installed in old or new buildings, of either steel or reinforced concrete construction, where a fire hazard may exist, or where the requirements of Fire Insurance Underwriters or Building Codes must be met. The Mahon Metalclad Fire Wall is field constructed. It has been tested by the Underwriters' Laboratories, Inc., and has been given a Two-Hour Rating for use as either an interior or exterior fire wall. When employed as an exterior wall, Fiberglas insulation can be inserted between the interlocking ribs of the inner wall plates, thus providing insulating properties superior to that of a conventional masonry wall with furred lath and plaster. Exterior Wall Plates may be Aluminum, Stainless Steel or Enamel Coated Cold Rolled Steel. The important feature of the Mahon Fire Wall is the Impaling Clip with its Stainless Steel Spike (Patents Pending) which permits construction of the wall with only .0048 sq. in. of through-metal per sq. ft. of wall area. Mahon engineers will cooperate fully in supplying information and assistance in adapting this product to your particular requirement.

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago • Representatives in Principal Cities

Manufacturers of Underwriters' Rated Metalclad Fire Walls; Insulated Metal Curtain Walls; Steel Roof Deck and Long Span M-Decks; Acoustical and Troffer Forms; Electrified M-Floors; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Fire Doors and Fire Shutters.

MAHON

THE BIG DIFFERENCE IN ROOFING

may be in the bond that backs it!

See Sweet's 1957 Industrial Construction File: 4a/Fr

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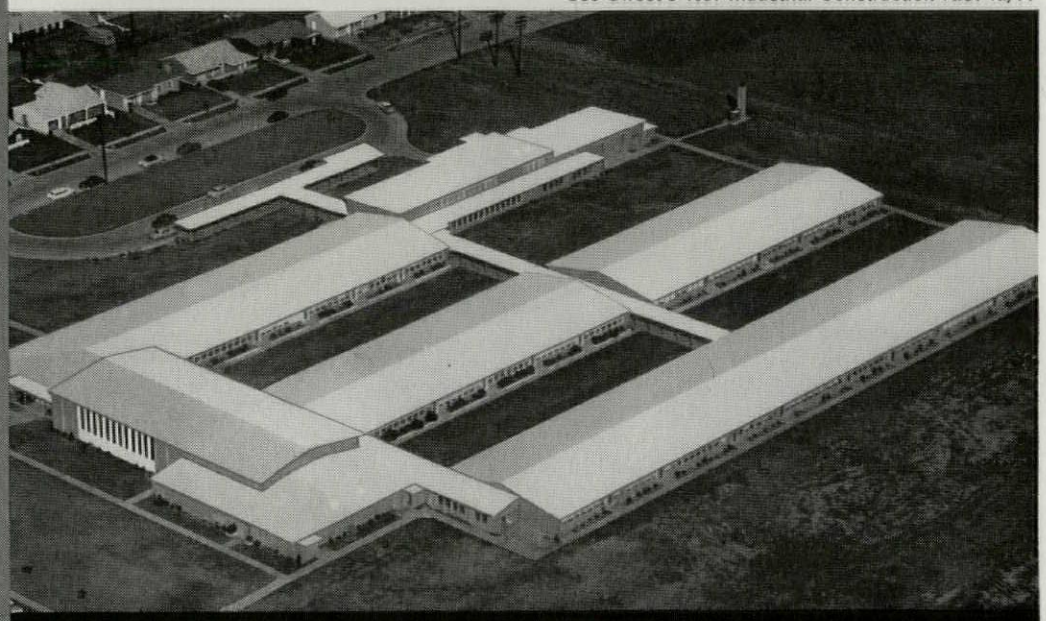
Deer Park Independent School District
ARCHITECT:
Emory S. White
2017 S. Shepherd
Houston, Texas
GENERAL CONTRACTORS:
1st Section:
Marko Construction Co.
6714 Long Drive
Houston, Texas
2nd Section:
Marshall Construction Co.
4009 Center Street
Houston, Texas
ROOFING CONTRACTOR:
Atlas Roofing Co.
515 Milby St.,
Houston, Texas



FRY ROOFING

A bond that insures payment for roofing materials only, or for any amount less than cost of materials PLUS labor, in the event of roof failure, is called a "penal sum" bond. Fry Roofing is backed by FULL VALUE bonds, covering cost of roofing materials AND their application, under conditions specified in each bond.

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There you have two good reasons why FRY Roofing—1016 squares of it—was chosen for the beautiful new Texas school pictured above. May we suggest that you specify a Fry FULL VALUE Bonded Roof on your next job? For condensed specifications on FRY built-up or asphalt shingle roofing, see your Sweet's. For complete details and specimen BOND, write FRY today!

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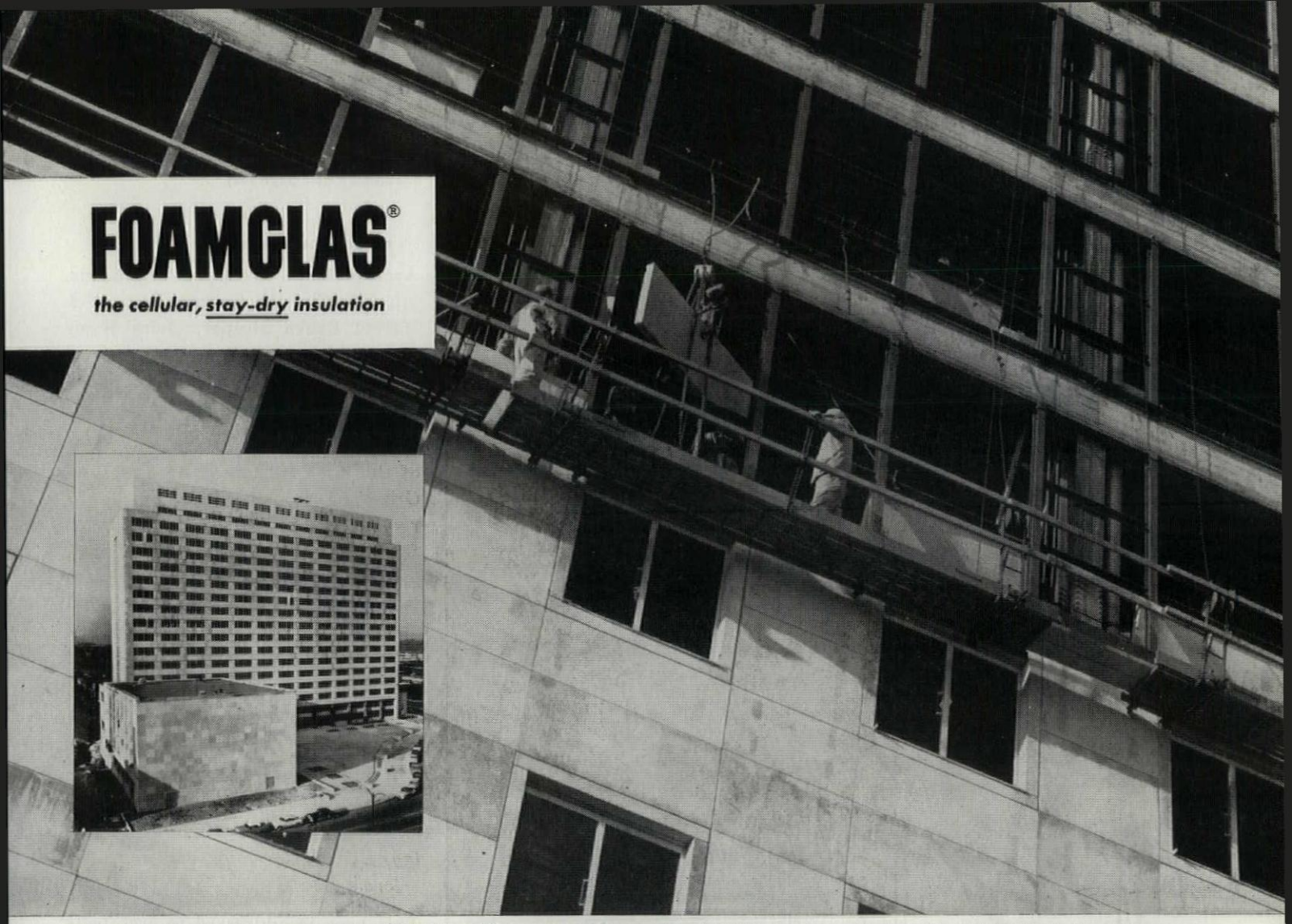
the cellular, stay-dry insulation



Limestone faced curtain walls of the $10-million, 18-story Labor & Industry Building are hung on a steel grid framework. A backing of moisture-proof FOAMGLAS insures constantly reliable insulation to keep heating—cooling costs down. Incombustible, the insulation provides extra fire protection, too. (Identical curtain wall construction and materials were also used in the 11-story Health and Welfare Building.)

Behind This New Look in Curtain Walls . . .

FOAMGLAS insulation backs limestone faced panels for constant U-value—acts as natural vapor barrier on two Pennsylvania state buildings

Lacy, Atherton & Davis, Architects and Engineers, created a new look in curtain walls for two Commonwealth of Pennsylvania office buildings built by The General State Authority to house the Department of Labor and Industry and the Department of Health and Welfare in Harrisburg. Their curtain design consists of panels of 4″ limestone backed with 2″ of inorganic FOAMGLAS . . . the light yet strong and rigid, all-glass insulation that is its own vapor barrier.

The sealed glass cells of FOAMGLAS are impervious to moisture and vapor. That means there's no moisture absorption to reduce insulating value. Constant U-value is assured . . . for continuing economy in operation of the buildings' year-round air conditioning systems.

FOAMGLAS also insulates the buildings' roofs. There, its unique compressive strength makes it the perfect base for built-up roofing. On both roof and wall panels, important cost savings were possible because FOAMGLAS eliminated the need for separate vapor barriers.

See for yourself why FOAMGLAS is the perfect insulation for *your* designs! Send today for a free sample with directions for six simple tests that clearly demonstrate its unique benefits. Also ask for a 1957 FOAMGLAS Architectural Data Booklet. Write . . .

Pittsburgh Corning Corporation
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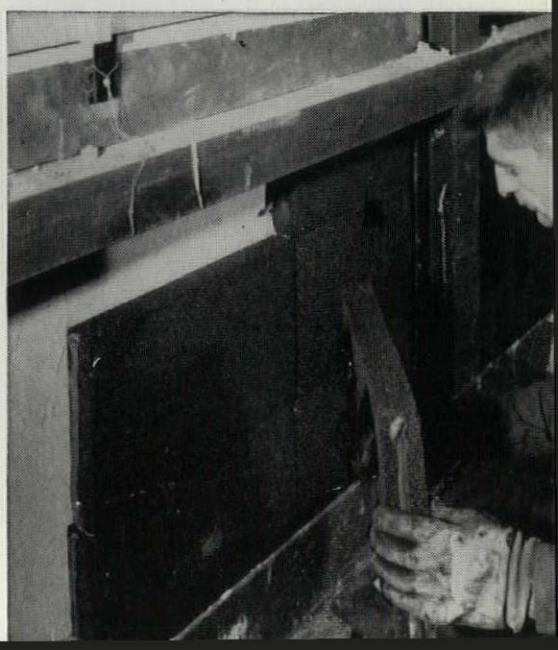
Pittsburgh 22, Pennsylvania
In Canada: 57 Bloor St. W., Toronto, Ontario

Also manufacturers of PC Glass Blocks

Blocks of 2″ FOAMGLAS were applied to backs of limestone panels with 4 gobs of cold setting mastic. A bead of sealing compound on block edges sealed all joints. (In some inaccessible locations, the unique strength and rigidity of FOAMGLAS permitted its installation as a free-standing wall, prior to hanging the limestone facing.) An interior metal lining completed the wall construction.



reviews

(Continued from page 220)

reference revised

Architectural Graphic Standards. 5th Ed. Charles George Ramsey & Harold Reeve Sleeper. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1956. 758 pp., illus., $18.50

About three-quarters of the contents of this fifth edition of *Architectural Graphic Standards* are either new or revised, and eight major subjects, as follows, have been added: design of plank-and-beam framing; curtain walls; pneumatic tubes; elevators and escalators; design of fireplaces; comparative costs of roof covering; furniture and equipment; ceramic-tile usage. M. S

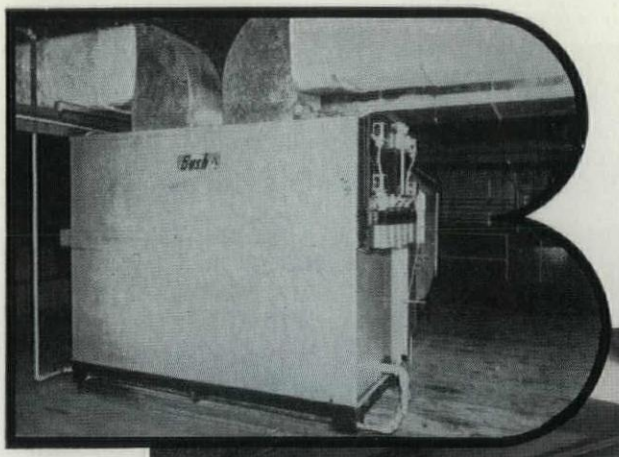
the use of light

Lichtarchitektur. *Dr. Walter Köhler and Wassili Luckhardt. Bauwelt Verlag, Berlin, Germany. 232 pp., illus. (German text)*

This book is addressed to architects and others in the construction field as well as the lighting engineer. More and more light and color are recognized as important building elements which must be properly understood and brought into the picture even in the early planning stages. It is the purpose of this book to point out that the combined efforts of the design-conscious technician and the technically minded artist are necessary to produce the successful structure. For, writes Dr. Köhler, "forms and colors are dead if not called to life through light."

The book is logically divided into two main sections: first, the photo collection by Architect Wassili Luckhardt demonstrating light and color as important factors in modern architecture; second, the text portion by Lighting Engineer Dr. Walter Köhler—a scientific, and, in part, historical and philosophical foundation for the designer. Lighting installations in many fields are dis-

(Continued on page 228)



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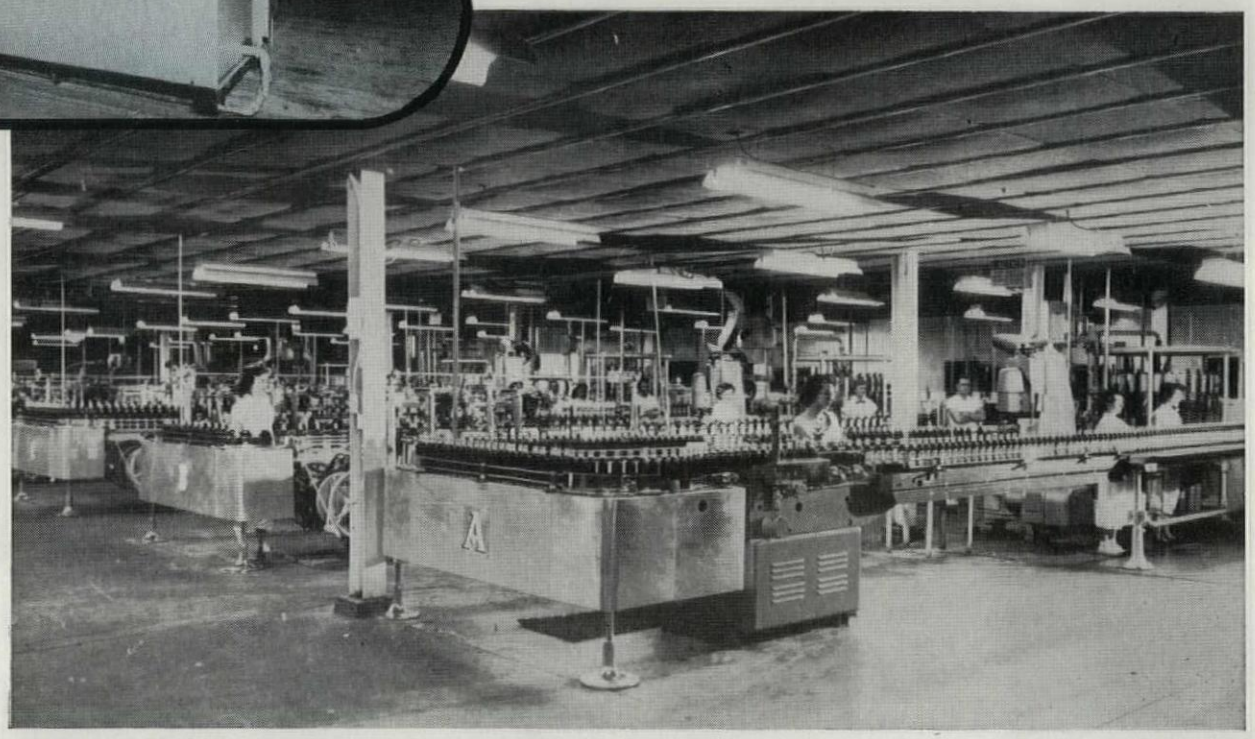

Handling FOUR-FOLD Job at Ultra-Modern GALLO Winery

A DUNHAM-BUSH Vertical Air Handling Unit provides both product temperature control and comfort conditioning . . . handles both cooling and heating requirements in the ultra-modern bottling room at E. & J. Gallo Winery, Modesto, Calif. Face and by-pass damper sections, mixing box assembly and filter section permit flexibility and close control of the conditioned area.

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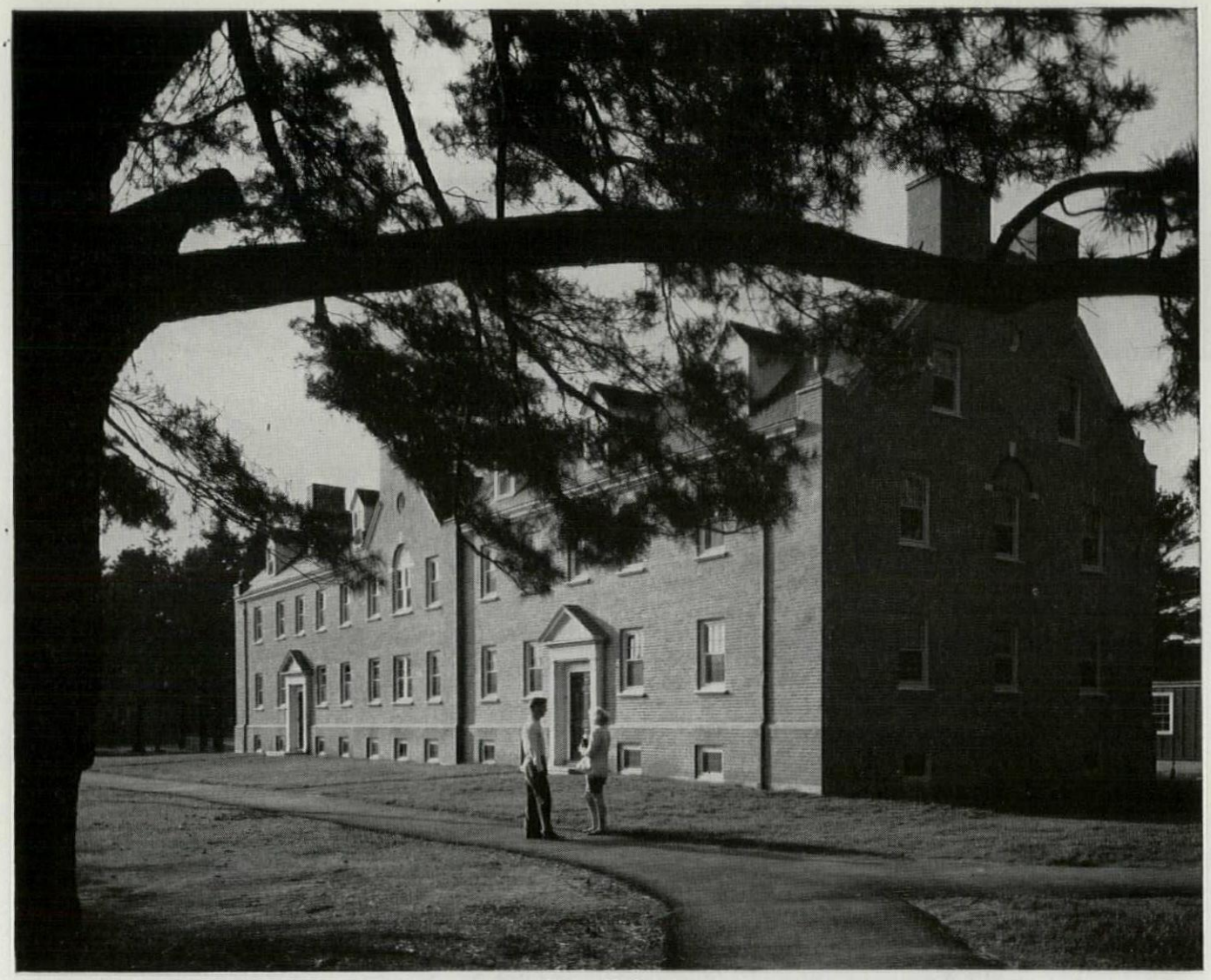

The new Gordon College dormitory was designed by Monahan, Meikle & Johnson, architects, of Pawtucket, R. I. General Contractor was George B. H. Macomber Co. of Boston, Mass.

STEEL JOISTS HELP PROVIDE FIRE-SAFETY FOR COLLEGE DORMITORY

Bethlehem Open-Web Steel Joists were used in the floor and ceiling construction of this attractive new dormitory at Gordon College, Wenham, Mass. This type of construction – steel joists in combination with floor slab and poured ceiling – provides fire-resistance of up to four hours.

There were other advantages in using Bethlehem Steel Joists. The joists help to make the structure permanently non-sagging and non-warping, holding future maintenance to a minimum.

They arrived at the job site fully-fabricated and clearly marked, ready for immediate erection. Only field welding was necessary to secure the joists firmly in place. They simplified the work of other building trades, as pipes and conduits could be run right through the open webs, and overhead lighting fixtures were readily installed.

We have published a new illustrated catalog on Bethlehem Open-Web Steel Joists, including both the Shortspan and Longspan Series, and giving complete information on design, specifications and joist accessories. If you would like a copy, please write to the nearest Bethlehem sales office, or send your request direct to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM OPEN-WEB STEEL JOISTS

BETHLEHEM STEEL

For insulation: Styrofoam brings best combination of properties

COMPARE STYROFOAM*	INSULATIONS			
	STYROFOAM	A	B	C
Low "K" factor	X		X	X
Superior Water Resistance	X	X		
High Compressive Strength	X	X		X
Light Weight	X		X	
Superior Resistance to rot and vermin	X	X		
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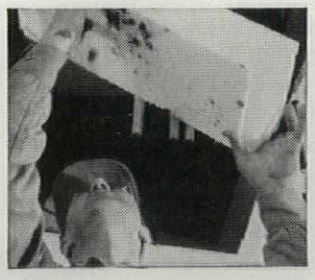
Low-cost installation	X		X	
Lowest cost per year	X			

Permanent "K" factor average, 0.25. Avg. density, 1.8 lbs. per cu. ft. No odor. No food value. Pleasant to work with. Fabricates with common tools. Does not crumble or settle.

Cold storage plant's experience proves it!



Eleven years ago, Flint Cold Storage Co., a large Flint, Michigan, firm, used Styrofoam (a Dow plastic foam) to assure superior insulation in its original plant. Many additions have been made since then—including a very low temperature fruit freezing plant. And Styrofoam has been used in every case (see photo) for both equipment and building insulation.

Flint's Russell Soule writes, "We are heartily endorsing it to everyone for its low cost, high insulation efficiency, as well as its ease of installation." For complete information write THE DOW CHEMICAL COMPANY, Midland, Michigan—Plastics Sales Department PL1700L.

*Styrofoam is a registered trademark of The Dow Chemical Company

YOU CAN DEPEND ON DOW

reviews

(Continued from page 224)

cussed and fully illustrated with sketches and photos.

Lichtarchitektur will undoubtedly prove to be a stimulus for architects and engineers, and as there is nothing of ths type in the American library, it is hoped that a translation of this work, or an equally comprehensive volume, will soon be available for the English-speaking designer. I.M.R.

architectural heritage of Malta

The Building of Malta. *J. Quentin Hughes. Alec Tiranti Ltd., London, England. Distributed in U.S. by Transatlantic Arts, Inc., Hollywood-by-the-Sea, Fla., 1956. 242 pp., illus., $10*

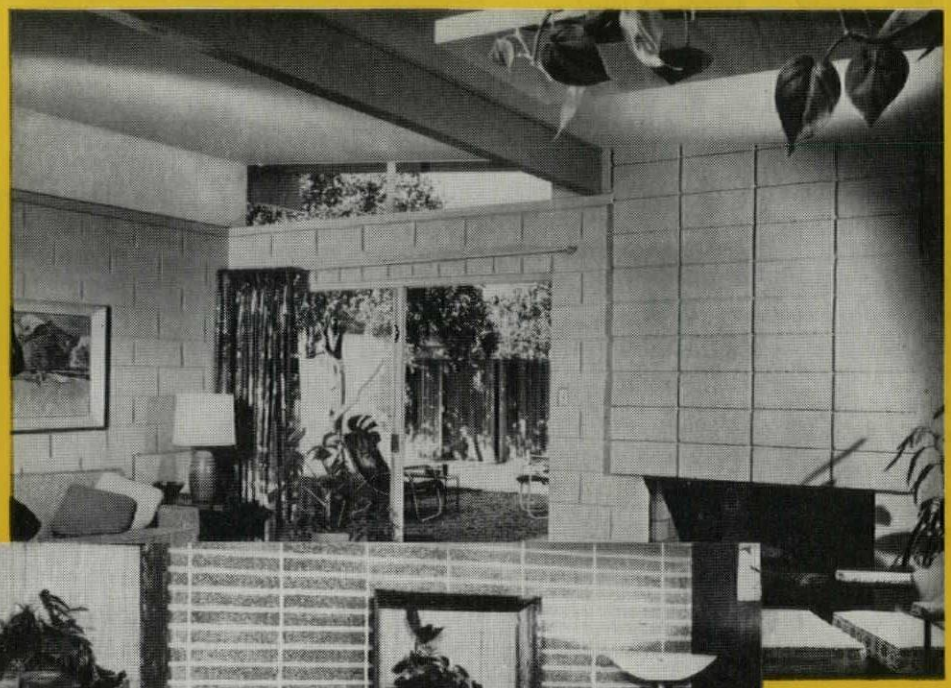
This sixth volume in the noted "Tiranti Library" series (previous ones included such works as *Ten Books on Architecture, Architectural Principles in the Age of Humanism,* and *Boulée's Treatise on Architecture*), is as well prepared and presented as the others in the series. Like its predecessors, it, too, has the happy quality of treating an architectural heritage that is, upon investigation, quite remarkable. Though it may be a fairly special subject, Hughes' study of the Mediterranean island's building between 1530 and 1795 should find considerable appeal because of what it reveals to the uninitiated.

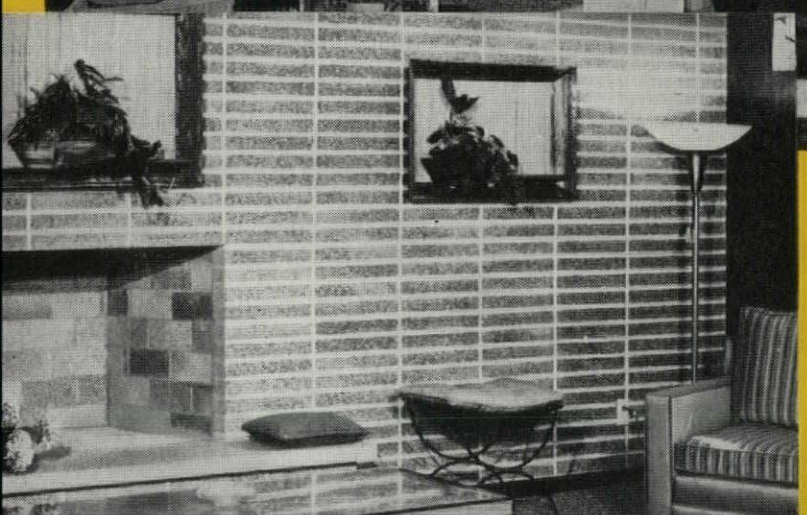
When the Knights of St. John of Jerusalem transferred their headquarters to Malta in the 16th Century and firmly entrenched themselves with military constructions, they then turned their attention to the building of churches, palaces, hospitals, houses, and inns. The wealth and the taste of the Knights attracted the finest architects and the most skilled engineers from the mainland and created an atmosphere which stimulated native talent. Thus,

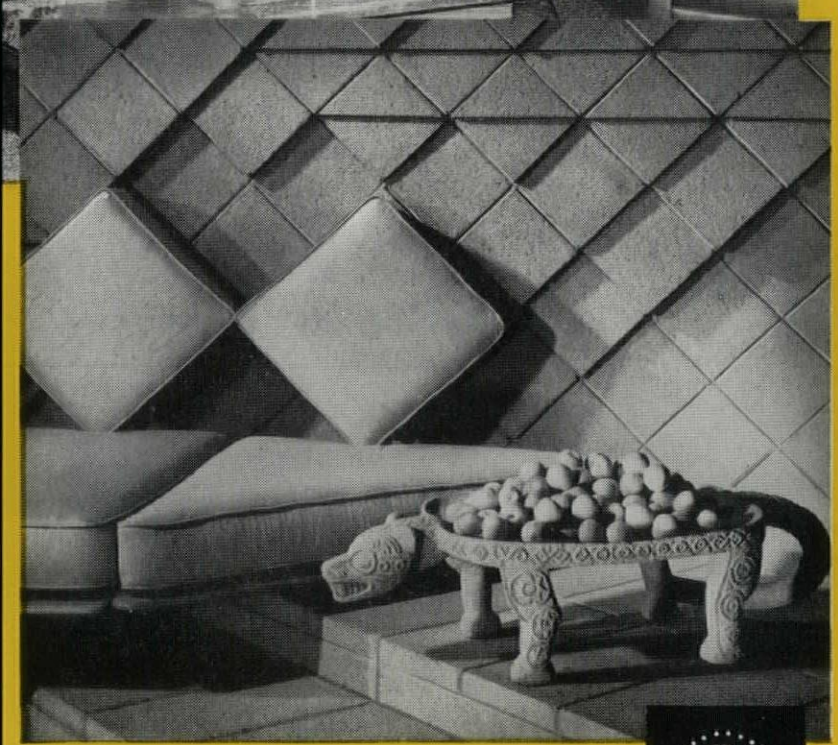
(Continued on page 232)

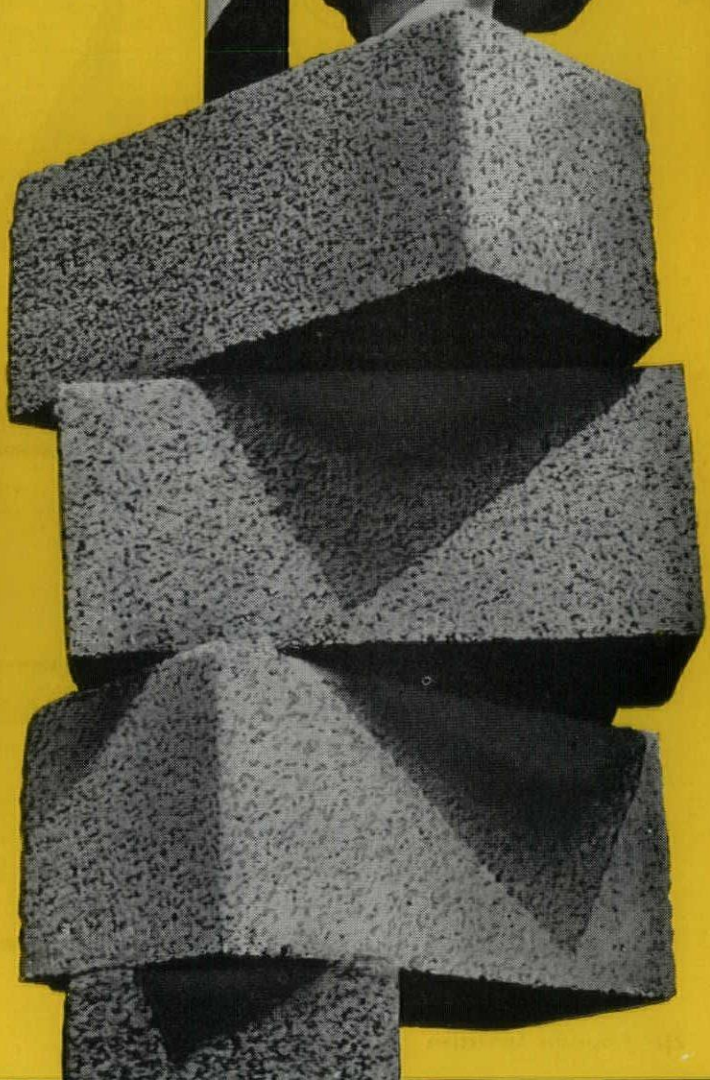
Versatile Concrete Masonry

the newest outlook in building









You can keep up to date on block by checking with your local NCMA member—he has all the facts. Call him soon.

NATIONAL CONCRETE MASONRY ASSOCIATION • 38 SOUTH DEARBORN • CHICAGO

reviews

(Continued from page 228)

during that period, there arose a profusion of buildings whose planning and design were equal to what was being done on the mainland. For its size, Malta is one of the richest places in architecture in the world. This volume, illustrated with more than 300 drawings and photographs, is a comprehensive guide to the vast artistic wealth the Knights established during the two hundred and fifty odd years they spent there.

FRANK A. WRENSCH

design reference

Engineering Manual. *Bell & Gossett Company, Morton Grove, Ill., 1956. 299 pp., $10*

Winner of the Certificate of Merit awarded by the Producers' Council for Manufacturers' Literature, the new *Engineering Manual* of the Bell & Gossett Company is an excellent design reference for hot-water heating and for domestic hot-water systems. Bell & Gossett has always been an outstanding contributor to the general fund of engineering knowledge about this phase of heating. This manual is the successor to several previous publications which were always in great demand by engineers. When well done, as in this case, there is something very real-

notices

new offices, partnerships

SMITH & SMITH, Architects, 2908 N. Woodward Ave., Royal Oak, Mich.

HAAS, REGISTER, CUMMINGS, & HUTCHINSON, Architects-Engineers, 115 Park St., Jacksonville, Fla.

WEST & WATERS, Architects, 1342 McAnsh Sq., Sarasota, Fla.

A. G. JAN RUHTENBERG & WALTER H. WEBER, Architects, 235 Mesa Rd., Colorado Springs, Colo.

istic and immediately usable about a design text issuing from a source which also designs and produces most of the equipment and controls necessary for heating systems. For the engineer who is concerned both with theory and with the practical problem of designing and sizing a system for construction, this book is invaluable.

A very broad coverage includes physiological principles, building construction as related to heating, radiation, design principles, tables and charts, controls, design examples, and a summary of the manufacturer's products. The ten design examples include heating for a garden-apartment community, a multistory apartment building, baseboard heating for a school, a system for a 190-ft yacht, and heating for a one-story industrial building and offices.

In the introduction, Company President E. J. Gossett expresses thanks to those who are responsible for the preparation of the book: Harold A. Lockhart, John H. Hanley, Louis Oosten, Lawrence J. Smith, and Gilbert F. Carlson. As one who has used this book and former handbooks of the Bell & Gossett Company, the writer can really attest to their great merit.

WILLIAM J. McGUINNESS

telecommunications consultant

WALTER J. DUSCHINSKY, D. Sc., 310 E. 44 St., New York, N. Y., is offering his consulting services in the communications, electronics, and automation fields to architects and engineers. Co-ordination and integration of the new, complex electronic technology, with architectural planning and design criteria, are promised. Enquiries by principals are invited.

(Continued on page 236)

Must a Fire Door

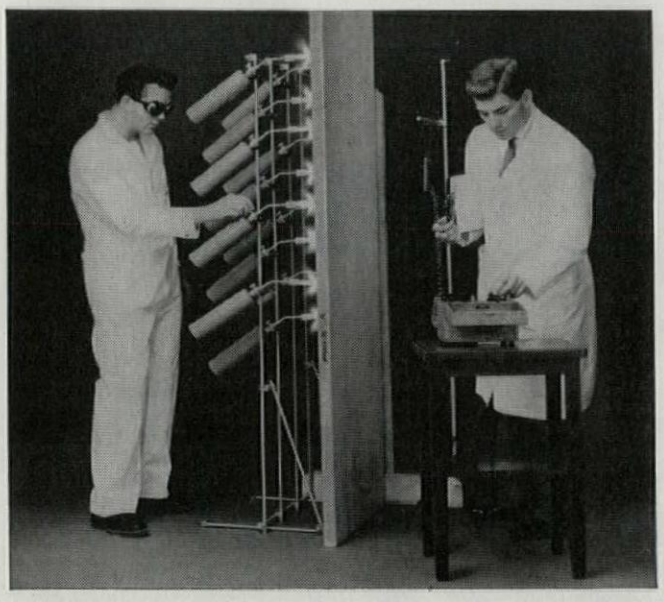
What about heat transmission?

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

What about proven performance?

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

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



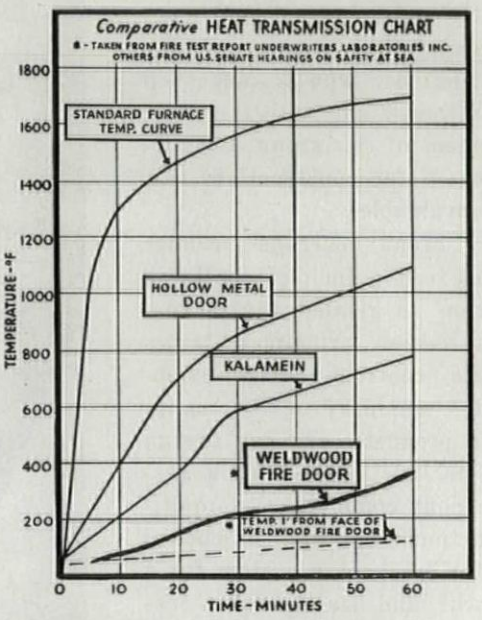


Chart shows *true* UL tests—not "averaged figures."

What about weight?

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

What about day-to-day use?

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

What about appearance?

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

be only "Fireproof"?

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

What about construction?

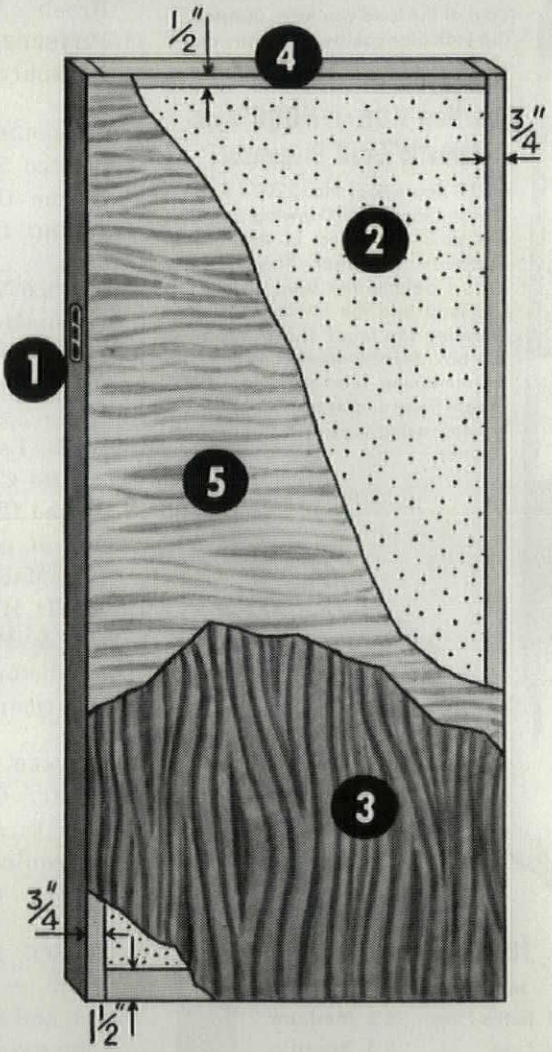
Compare the construction of the Weldwood Fire Door point by point:

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

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

What about a guarantee?

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



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SEND FOR MORE INFORMATION
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Gentlemen: Please send me the following:

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

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

notices

(Continued from page 233)

p/a congratulates . . .

JOSEPH G. MEURER, appointed Sales Engineer in parts of Indiana, Kentucky, and Tennessee for INLAND STEEL PRODUCTS COMPANY, Milwaukee, Wis.

C. ROBERT FAY and L. STANTON WILLIAMS, respectively elected Vice-President-in-Charge of Paint and Brush Division, and Controller, PITTSBURGH PLATE GLASS COMPANY, Pittsburgh, Pa.

MALCOLM E. FISCHER, recently appointed Sales Manager of Door and Frame Division, OVERLY MANUFACTURING COMPANY, Greensburg, Pa.

HAROLD V. SMITH, new District Representative, mid-south territory, for KOCH REFRIGERATORS, INC., Kansas City, Kan.

W. B. LARKIN of BUTLER MANUFACTURING COMPANY, Kansas City, Mo., elected Chairman of Board of Directors of newly formed METAL BUILDING MANUFACTURERS' ASSOCIATION, and D. H. MALCOLM of ARMCO DRAINAGE & METAL PRODUCTS COMPANY, Middletown, Ohio, elected Vice-Chairman.

HOWARD M. CUTSHAW, newly appointed General Sales Manager for Iron Fireman and Selec-Temp heating equipment, IRON FIREMAN MANUFACTURING CO., Cleveland, Ohio.

JOSEPH PELLICANO, whose appointment as Sales Representative, Oregon and Southern Idaho, MCPHILBEN LIGHTING COMPANY, 1329 Willoughby Ave., Brooklyn, N. Y., was recently announced.

revised credits

C. Ernest Daffin, Architect, Tallahassee, as well as Stevens & Wilkinson, Atlanta, Architects-Engineers (see page 80, January 1957 P/A) should be credited for Tallahassee Memorial Hospital design.

p/a views

(Continued from page 74)

to be invited to conferences on matters of vital concern to the society—where their general talents and ethics are all they can contribute and their *specific* exercise is not in demand? Have not science and engineering a higher cultural significance than this implies? **ADLER:** We need technicians and engineers who, in addition to their creativity, have sufficient wisdom to be responsive to and co-operative with wise leadership. I say the failure of specialization and the failure of communications among political leaders, the problems of the engineer in relation to society, the low level and disappearance of conversation — these things are the evidence we have, I think, that we have failed miserably in our schooling. We have not produced wise leadership in our society in the last 50 years.

education

ADLER: The problem of producing wise leadership is one that every society has faced, but our society faces that problem in an unique way. Before the beginning of the Industrial Revolution the business of cultivating wise leadership had been the central educational problem and was solved as far as it could be solved by the kind of liberal learning that has almost disappeared from American life in the 20th Century.

the beautiful and the good

BURCHARD: In the actions our machines serve they are neutral. The great question is—can the men who make them profess the same neutrality as is implicit in their creations? **ADLER:** We need leaders wise enough to cope with the creativity of our society and in spite of all the accidental changes of its material conditions to retain the unchanging element of a good society and a good life for man. **BURCHARD:** Questions of *morality,* of *esthetics,* or even general *social good* in connec-

(Continued on page 240)

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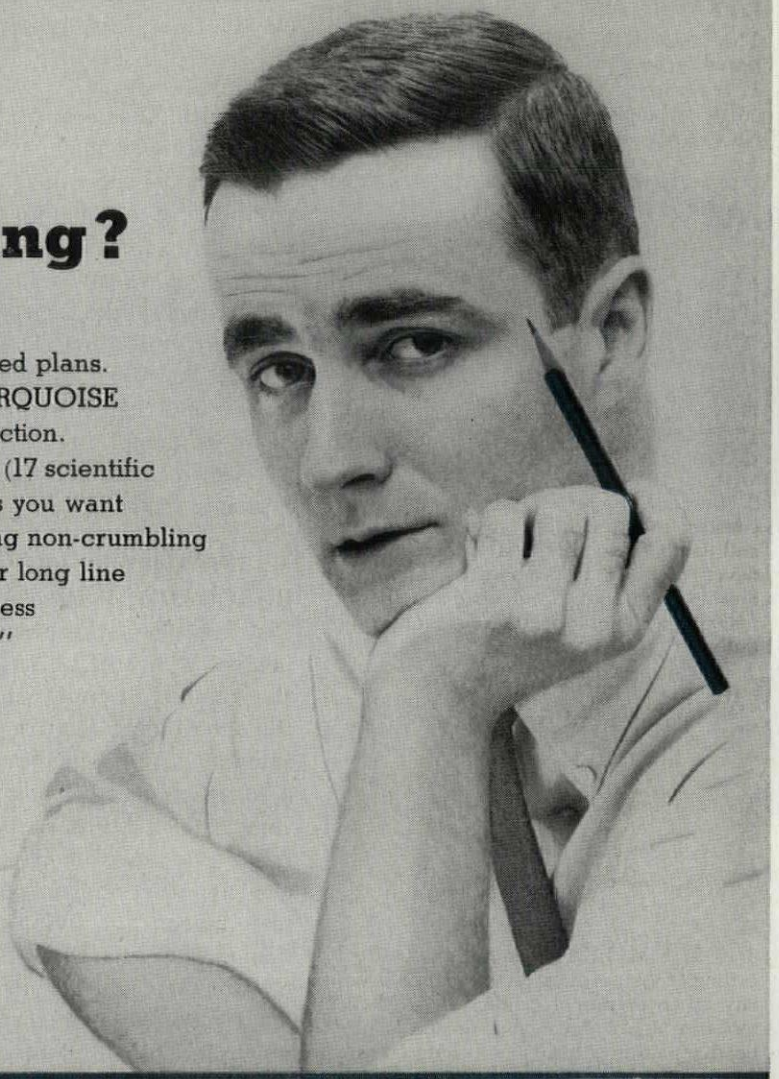

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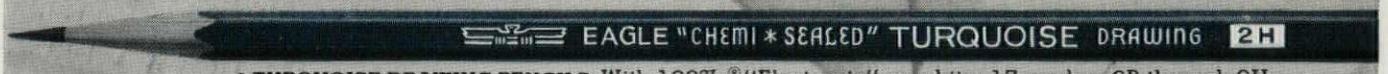

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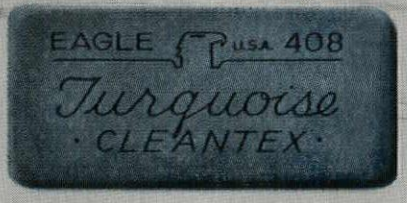

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p/a views

(Continued from page 238)

tion with the use of engineering works seem seldom to have been raised in the early days. The mighty engineering of the Colosseum provided seats for the entertainment of the mob at depraved spectacles. Did the engineers like the spectacles too? Did they build the Colosseum *despite* their abhorrence of the events, on the ground that it was none of their business except to do it well? Are we prepared to say whether or not it should have been?

chaos and uniformity

BURCHARD: Is it enough to have a fast car, a superhighway, an elegant bridge, a beautiful building, when the Sunset Strip is ubiquitous, or the same, from Los Angeles to Passamaquoddy; when the whole city is a maze of used-car dumps, parking ramps, neon signs, visual disorder; when every city is like every other city and there is no particular human reason for living in any *particular* place? **RUDOLPH:** The great architectural movements of the past have been precisely formulated in a given area, then adapted and spread to other regions, suiting themselves to the particular ways of life of the new area. Today we ignore the *particular* requirements.

the creative and the wise

ADLER: We have to adjust and relate the changing material conditions to the abiding good of the human spirit. This requires us to realize the premise of our industrial power by turning our creativity into channels which support the progress of civilization in its human aspects and not merely in its material conditions. **BURCHARD:** Should our engineers *prevent* the building of a Snake River Canyon; should they *decline* to provide superhighways that lead from chaos to chaos; should they attempt not only to make fine television tubes but also to have more to say about the *quality* of what the

(Continued on page 248)

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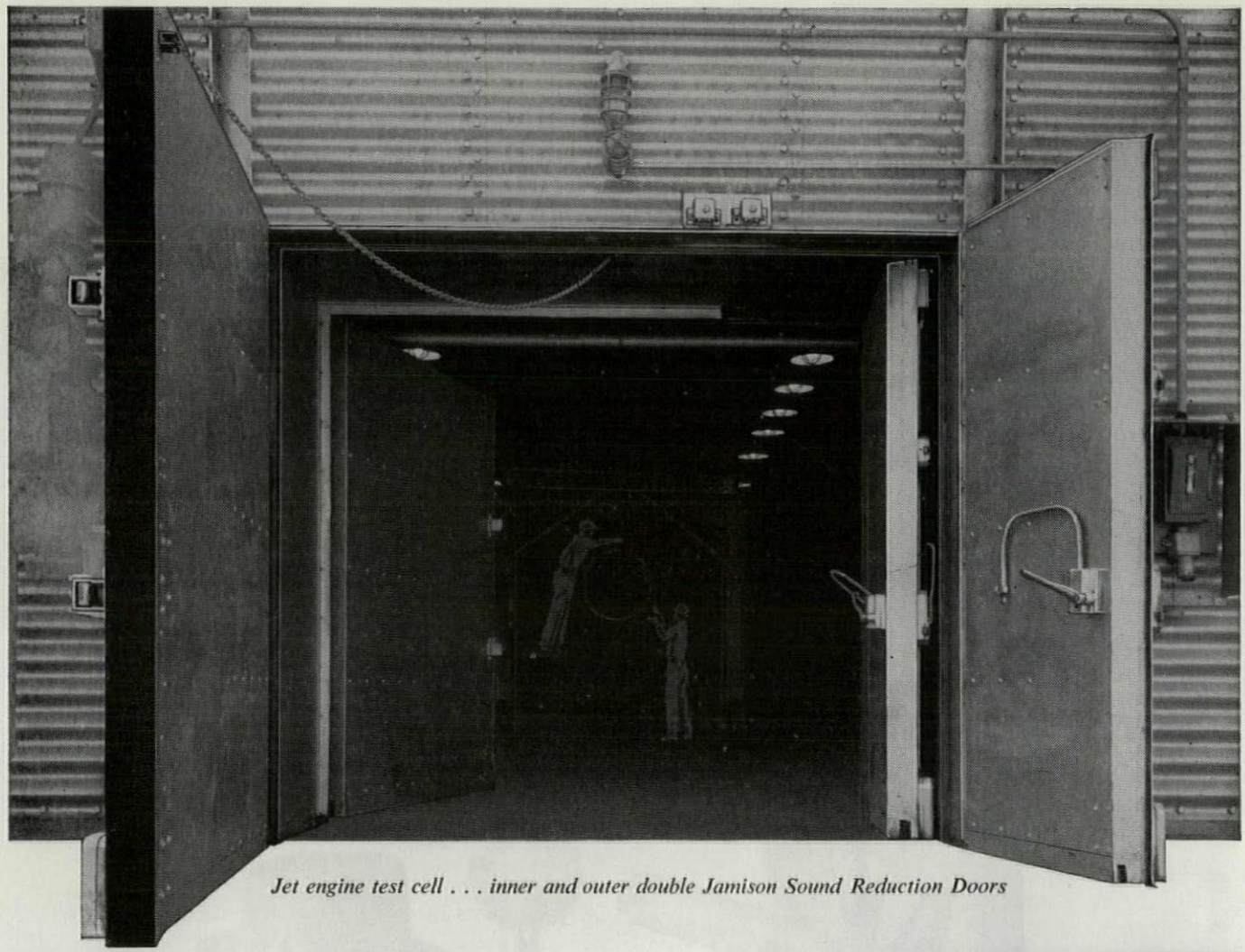

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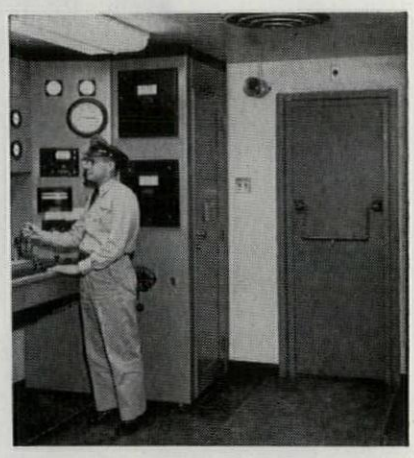

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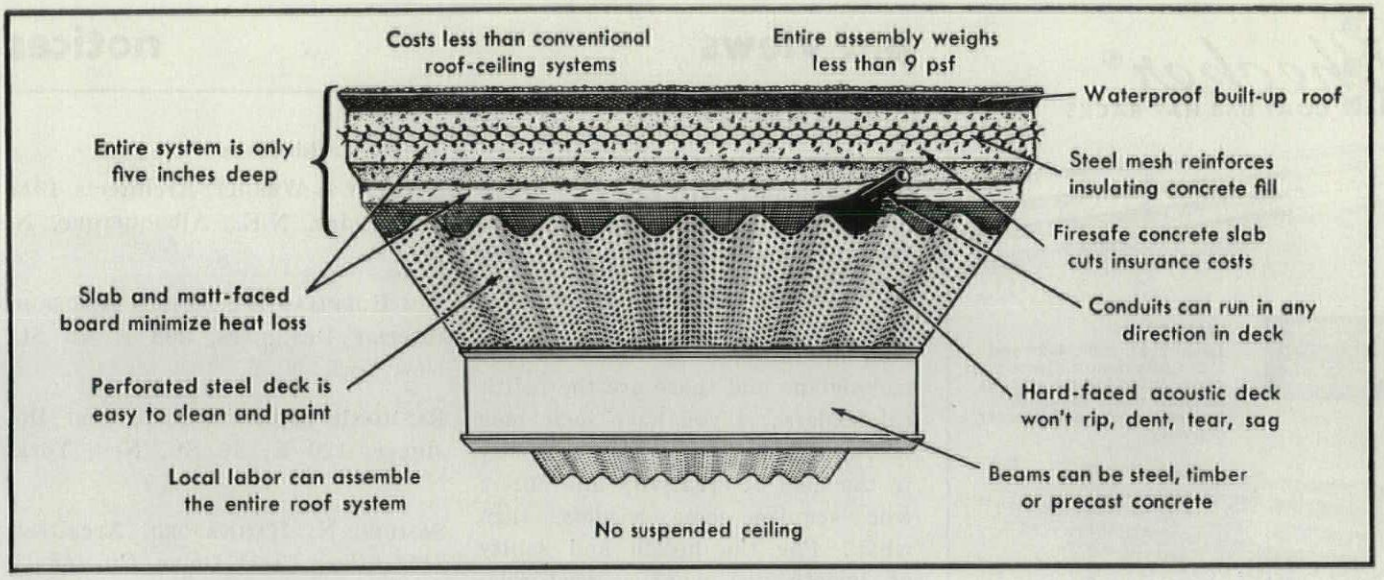

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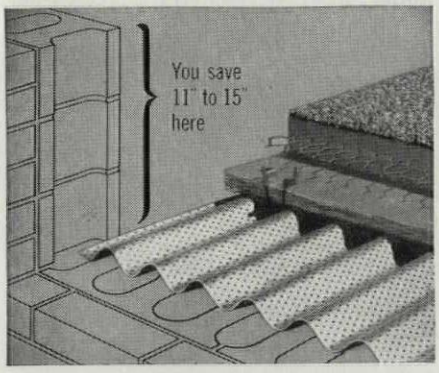

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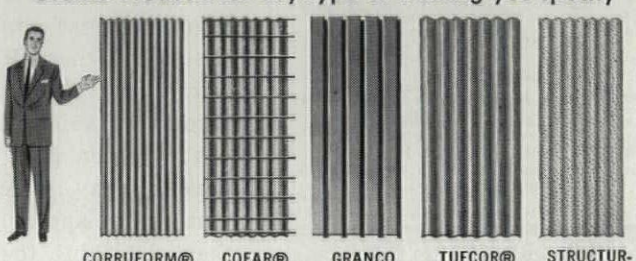

p/a views

(Continued from page 240)

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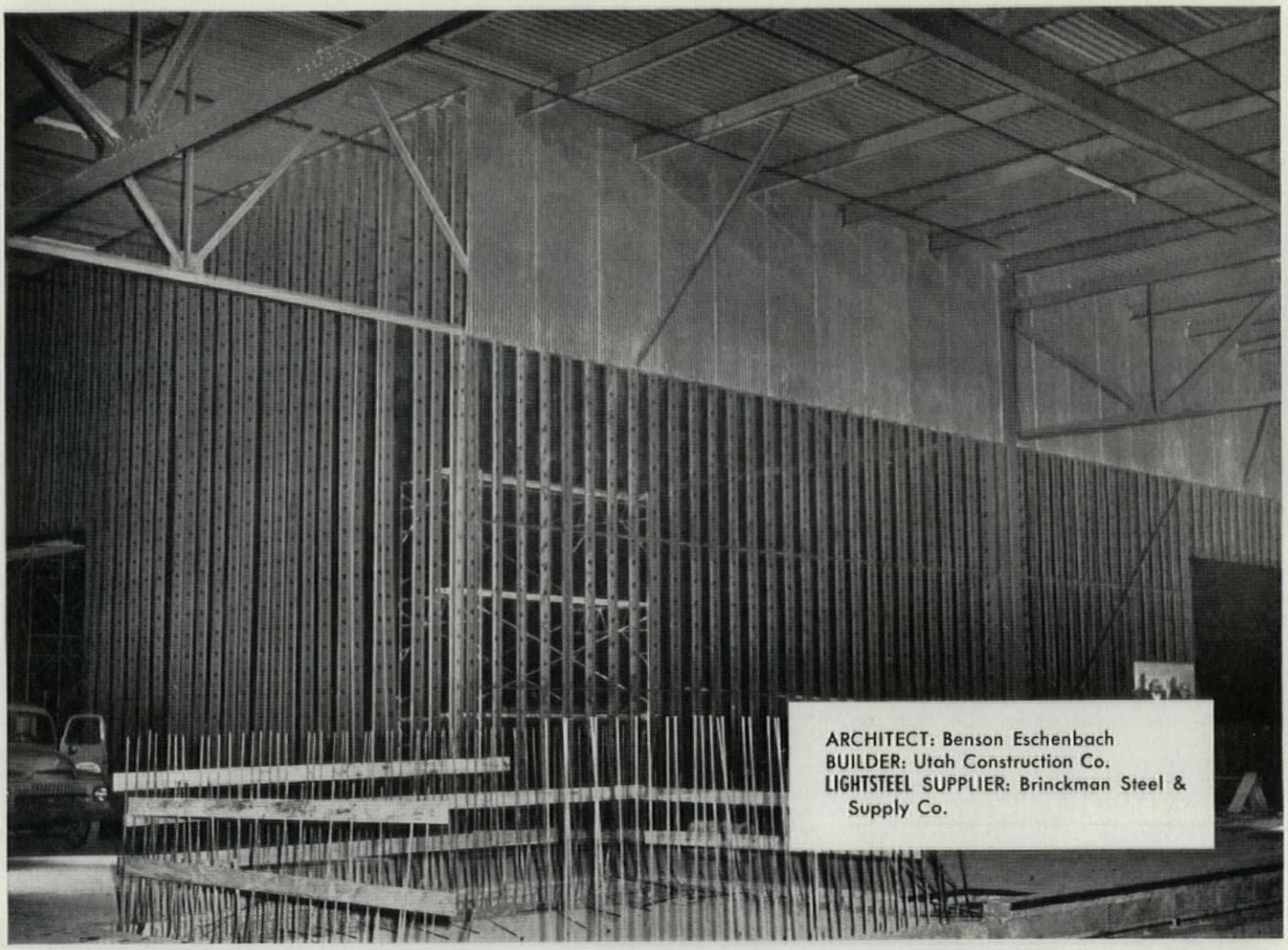

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(Continued on Page 254)

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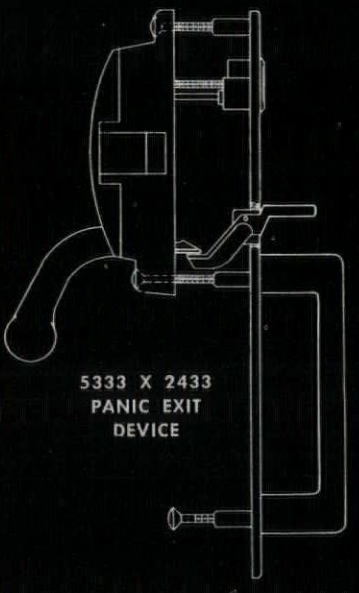

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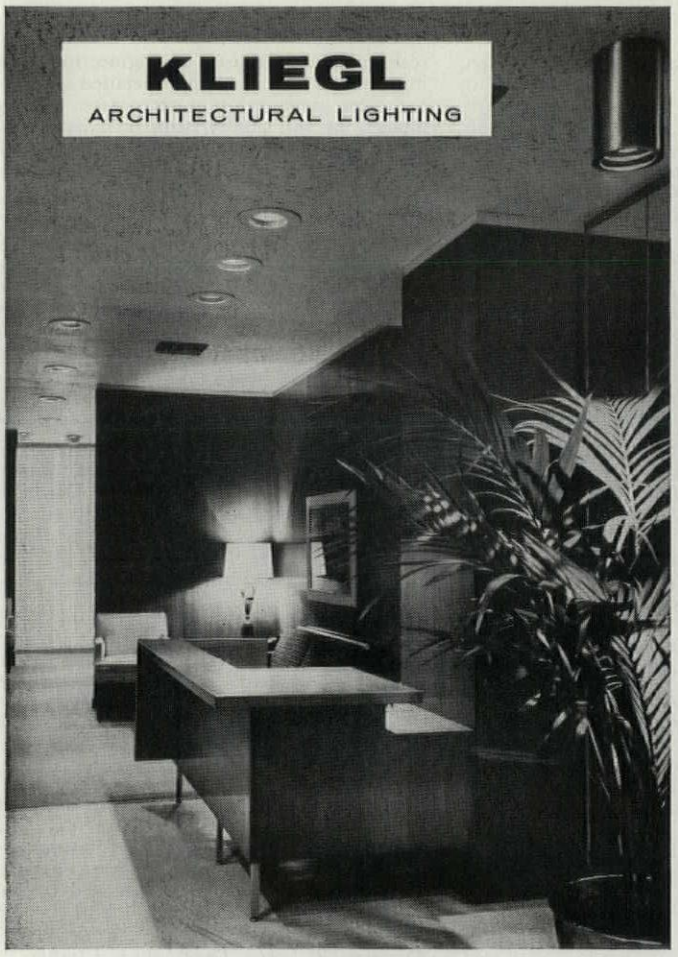

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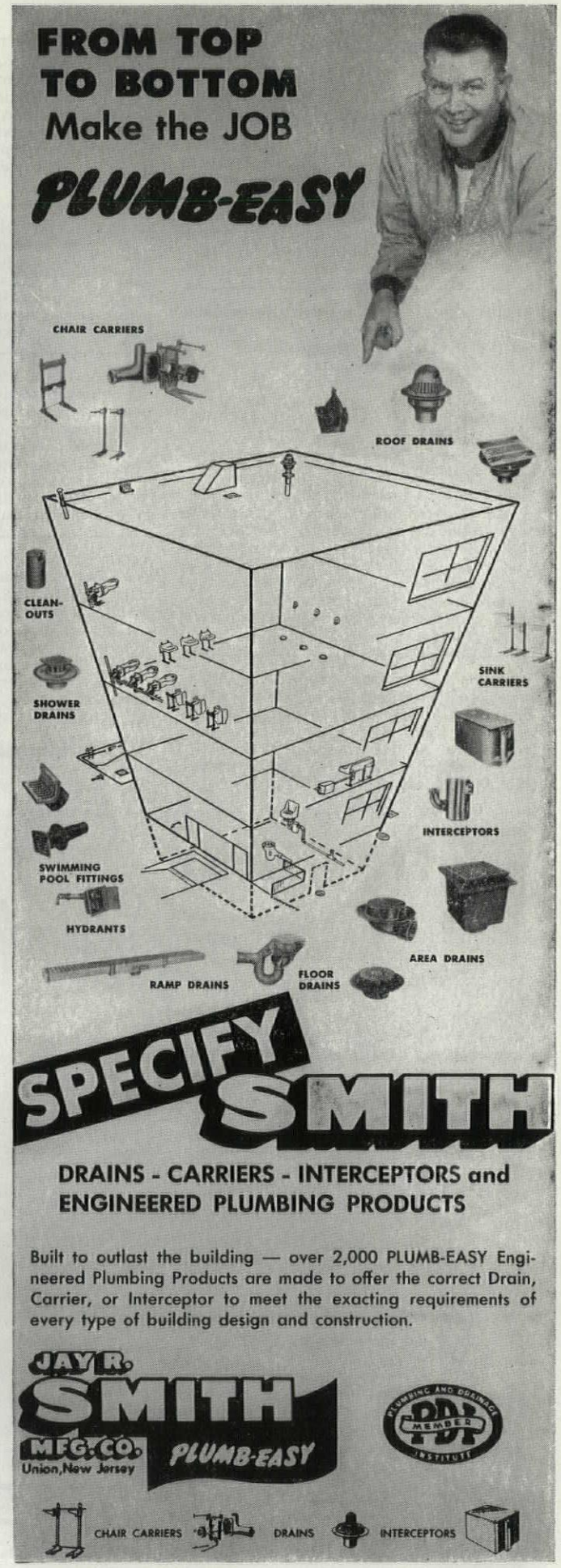

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(Continued from page 250)

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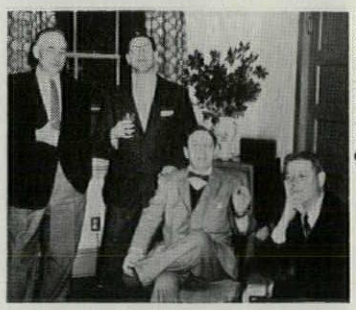

Photos: Fred Darragh

Creighton, Curtis, Gruen, Davis, relax and mug on day after P/A's first Design Award Seminar.

This year's P/A Design Awards presentation function (what was called, off and on in New Orleans, the P/A Convention) is reported in the NEWS SURVEY of this issue. The banquet and its prior reception were, I believe, the most pleasant and impressive we have yet had—made so primarily by the attendance of a large number of local citizens (including architects), as well as almost all of the Award and Citation winners from all parts of the country. The handsome gathering was visually reported in the TV news program that evening and, in addition to that, newspaper reporting (in news and editorial columns) and TV coverage was remarkable. A half-hour TV program on Sunday was devoted to the work of Curtis & Davis, springing from the Awards presentations.

The factors that made this year's "Convention" unusual—and will make it difficult to repeat—were, however, the local hospitality and the case-study Seminar (which had been announced on this page in December 1956 P/A).

For the out-of-town winners of plaques, Arthur Davis gave a cocktail party in his handsome new house which was, to use a tired but sometimes meaningful word, fabulous. Then, on the third day of the gathering, a bus tour of current New Orleans architecture, which had been arranged by students and faculty at Tulane and was directed by John Saunders, ended at Covington, La., for another—let's use it again—fabulous party. Jim Burns, P/A's Research and Promotion Manager, comes from Covington and his parents, in a gesture of pride and hospitality, threw a real Louisiana barbecue party at their estately home—complete with fine drinks, delicious food, and a Dixieland band (several of whose members were replaced, during the afternoon by midwest, Dixieland-addict architects).

Social affairs also included, of course, extra-curricular excursions up Bourbon Street. Miscellaneous memories include Gordon Bunshaft setting off to find the Wildcat Girl, after having been duly impressed by the Cat Girl; Harry Weese deciding he'd better learn to jitterbug; Barney Gruzen taking pride in his wife, Evelyn's, singing at Antoine's; Jan Ruhtenberg standing to deliver a concert-type "Bravo!" after a virtuoso drum performance at the Dream Palace Dixieland Dance Hall. U.S. architecture, I'm sure, took tremendous strides forward as these leaders of architectonic culture absorbed some of the culture of the Vieux Carré.

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As for the Seminar at the Architectural School at Tulane University, it seemed to be the opinion of those who attended that it could be counted a real success. Briefly, to repeat a description of its method, the five Award-winning projects were discussed critically: first, the designing architect presented his project (words and slides); then a prepared discussant analyzed it (as critically as he wished); finally, general discussion, from audience and panel, followed. How this can be reported, I don't yet know; a tape-recorded transcript is now being studied, but I'm afraid many remarks from the floor and quick asides will either be lost or will not have the spark of the cross-fire of the moment.

I believe that the meeting—all day Saturday, with about 200 people attending—did come as close as possible to a larger extension of one of those rare bull sessions when two or three good architect friends sit down over a drink and, frankly and critically, discuss one another's current projects. No holds were barred, yet the discussion was constructive. Several arguments got quite heated: architecture as sculpture; the validity of arbitrary, "I *want* to do it that way," design decisions; the correctness or wrongness of "open invitation" glass-walled design in public buildings; the matter of consistency in roof and wall design; and so on.

I admired especially the ability of the designers, whose works were analyzed, to take the gaff. Yamasaki particularly (and I'm sure the other four will agree) won the hearts of the gathering by his patience, as well as his firmness, in the face of discussion that caused him to remark at one point, "Perhaps I'd better go home and redesign the building!" None was hurt—and I'm sure every one benefitted. Students and faculty at Tulane who, under John Dinwiddie's direction carried through the preparations, assured me that *they* did. And in MC'ing the affair I had a perfectly wonderful time.

At lunch on the day of the Seminar I had asked Victor Gruen to speak on the broader subject of relationship of buildings to one another, and urban design. It worried many of us that we were discussing only individual, isolated design efforts—often lost in the urban landscape. Victor did an inspired job, in a talk which lifted the whole level of the conference and which we will publish later in the year.

•

From New Orleans, I took a quick trip to Mexico—my first. If my notes shake together and my pictures come out, I'll report that separately later. As a teaser (particularly to arouse Ed Bacon and other ardent advocates), I'll say that I was greatly disappointed in University City. And if we think we are at a design "crisis" in the States; brother, are *they* at a "where do we go next" point! As propitiation, I will also say that architectural personalities there are tremendous; there is great personal strength, dynamism, charm, and I think, in some instances, genius.

Also, in Mexico, there is the ever-present amoeba. No matter how you guard and protect yourself, it is likely to get you. It got me, and any inadequacies in this piece may be laid to the fact that it is hand-wroten in bed.

Thomas H. Creighton

Award Winning architects and wives gather at the Burns home in Covington, La., on third day of P/A "Convention." Tivadar Balogh, Michigan architect, demonstrates his other aptitude—as drummer.