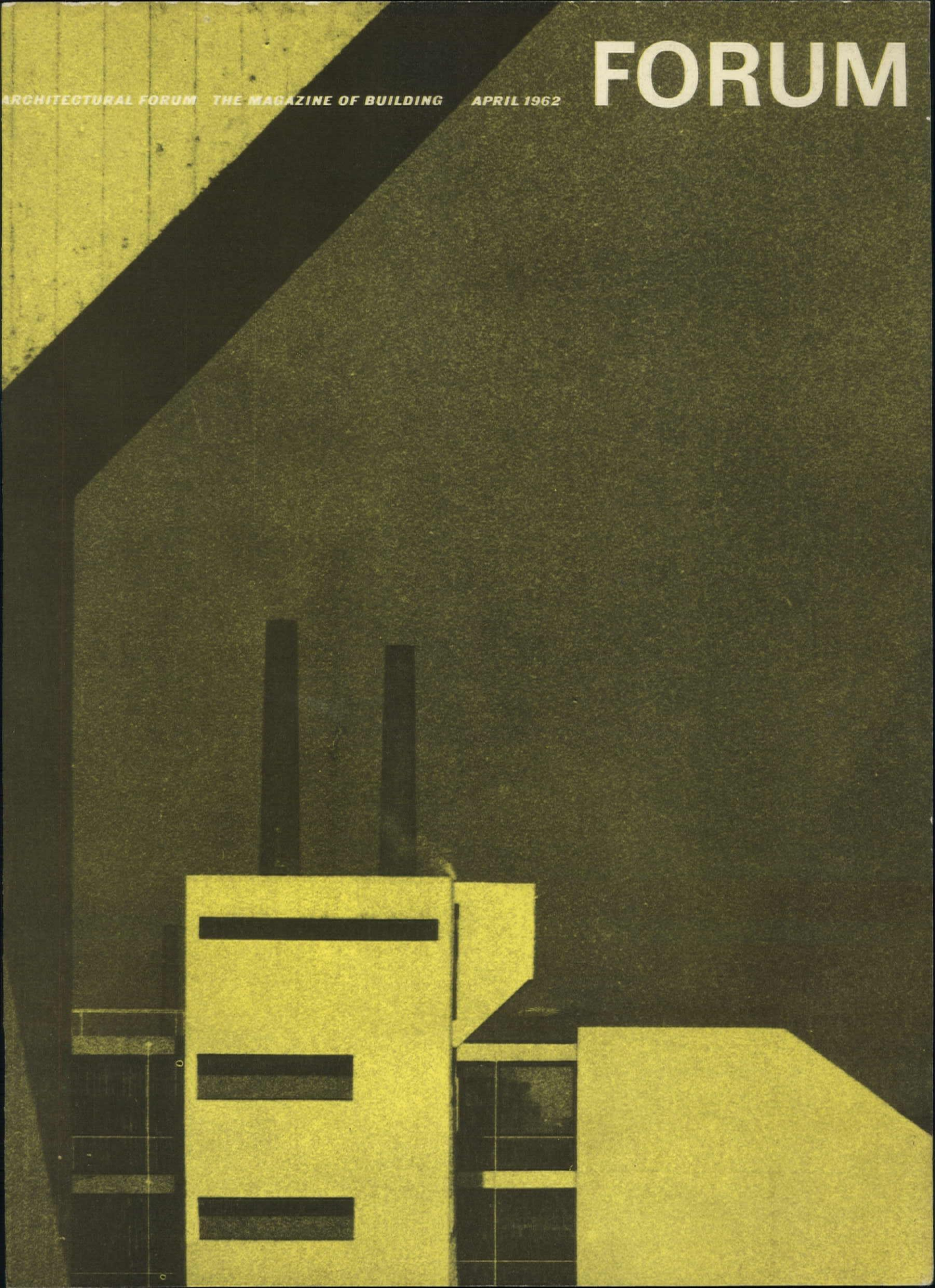
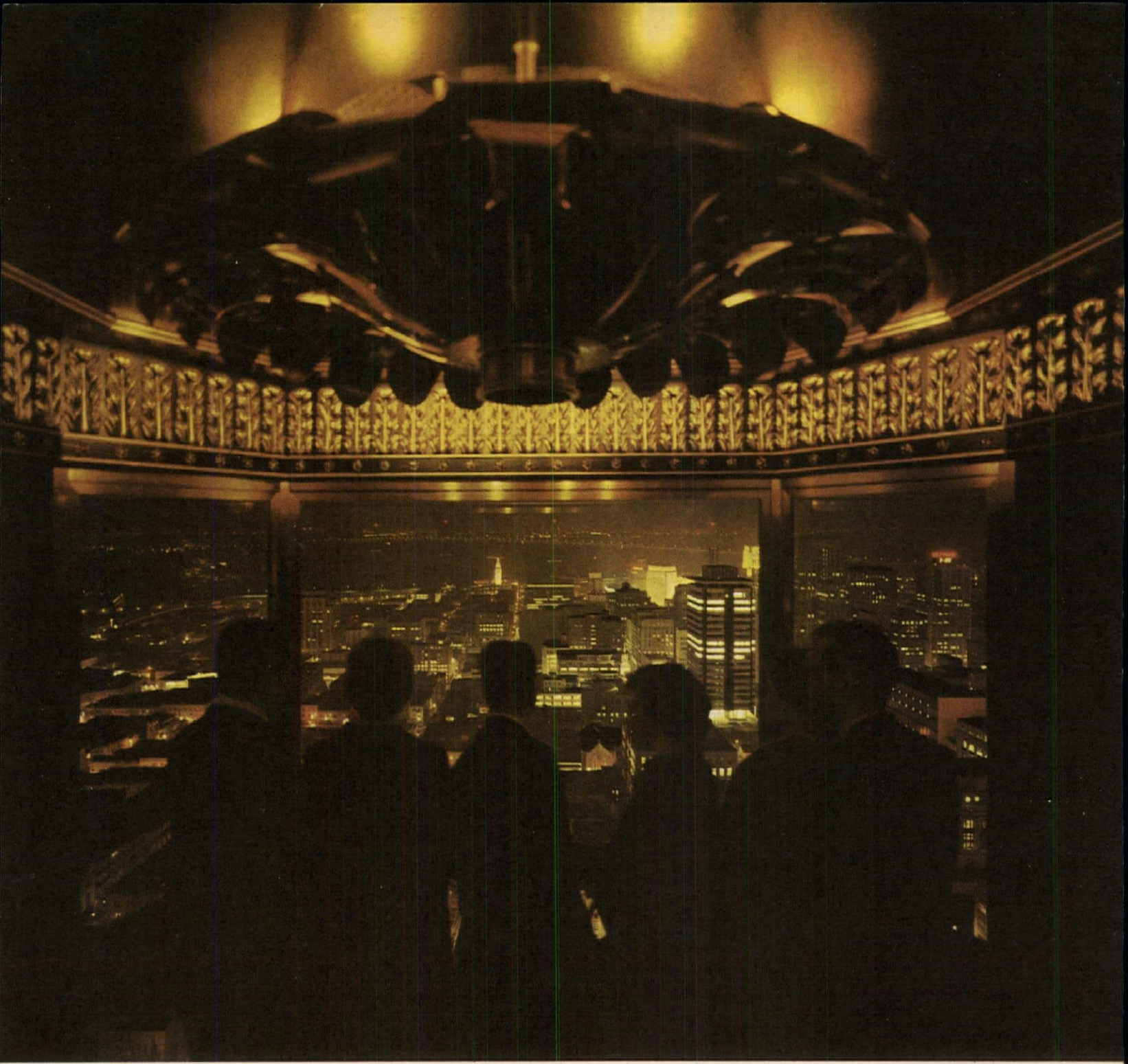
ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING APRIL 1962

FORUM





Fairmont Hotel & Tower • Owners J. D. Weiler and Benj. H. Swig • Richard L. Swig, President & Managing Director

San Francisco as seen from the unique outside elevator that takes guests to the top of the new Fairmont Hotel Tower. Elevator cars and entrances by W. S. Tyler. Architect: Mario Gaidano. General Contractors: Haas and Haynie. Elevators by Otis. The W. S. Tyler Company • Cleveland, Ohio.
St. Catharines, Ontario. Offices in principal cities.

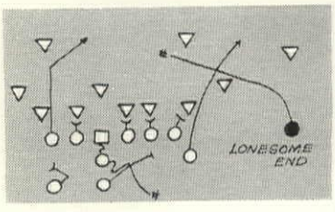
W. S. TYLER

PUBLISHER'S NOTE

Much of FORUM's staff is trained or experienced in the art of architecture and the business of building, but the art it knows best is journalism, and the business it knows best is publishing. On the other hand, judging from the questions they ask, many of FORUM's readers don't know much about magazine publishing and would like to know more. If you are one of these, read on.

Like building a building, publishing a magazine is a team operation. FORUM's team consists of five departments, some of which work closely together while others are autonomous:

■ The "lonesome end" on FORUM's team is the editorial department; it operates independently, completely free of influence from other departments. To the editor



and managing editor is delegated full responsibility for the editorial policy and direction of the magazine, and for its editorial content, its quality, and its timely production. The managing editor also supervises the editorial office and staff of 30 people.

■ At the other end of the line is the advertising department whose 13 salesmen are distributed in six offices around the country. They sell the advertising which not only generates much of FORUM's revenue, but also provides much useful information for its readers.

■ Serving both of these departments is the production manager and his two assistants. Through them is channeled all traffic with the paper mills, photoengravers, printer, binder, and post office.

■ The circulation department consists of a small staff in New York which encourages the renewal of old subscriptions and sells new ones—mostly by mail. It is served by a contractor in Marion, Ohio, who handles the myriad problems involved in keeping straight FORUM's ever increasing list of subscribers. (The list at the moment is more than 63,000 names long—35 per cent longer than it was in 1952 and about 55 per cent longer than the list of either of the other magazines in the field.)

■ The five-man promotion department serves the advertising department by assembling and distributing information about the building market and about FORUM for the benefit of building materials manufacturers and their advertising agencies. For example, the advertisement on page 191 (which also appears in five marketing magazines) is a product of this department. So is a series of folders explaining the six essential differences which set FORUM apart from other magazines in the field. (Readers who would like to learn more about the FORUM operation may write to the promotion manager for copies of these brochures.)

Finally there is the publisher's office, assisted by the general manager, which supervises and coordinates the work of all five departments and is responsible to the management of TIME INC. for the editorial and financial success of the magazine.

And that, very briefly, is what makes FORUM.—J.C.H. JR.

THE BOLD LOOK OF INDUSTRY 76

"Undesigned" structures shape strong architecture (p. 78)

Newspaper plant in Pennsylvania by Louis Kahn (p. 82)

Engine testing plant in Indiana by Harry Weese (p. 88)

Four different kinds of factory walls (p. 90)

Expressive warehouse in Germany by Egon Eiermann (p. 92)

PUSH-BUTTON FACTORIES 86

How gradual automation is affecting building design.

GALLERY: THE AMERICAN WAREHOUSE 94

Walker Evans explores some fine old examples of the genre.

URBAN RENEWAL IN TROUBLE 99

First of a series on how a vital program must improve.

EERO SAARINEN: A COMPLETE ARCHITECT 102

The 1962 AIA Gold Medalist was a man of many facets.

TECHNOLOGY: BUILDING MAINTENANCE 120

It takes planning as well as work to keep a building alive.

LIFT-SLAB APARTMENTS 124

New towers in Michigan are the largest of their kind.

REBUILDING 128

Knoxville's mall . . . Piccadilly tunnel . . . 1961 statistics.

5 **NEWS**

19 **LETTERS**

31 **PROJECTS**

37 **PRODUCTS**

75 **EDITORIAL**

158 **ABROAD**

165 **BOOKS**

194 **EDITOR'S NOTE**

Cover: Neckermann warehouse in Frankfurt, Germany, by Architect Egon Eiermann (see page 92). Photo: Horstheinz Neuendorff.

20 Editorial, subscription, and advertising data.

190 Advertising index.

Published monthly by TIME INC., Time and Life Building, Rockefeller Center, New York 20, N.Y. This issue is published in national and separate editions. Additional pages of separate editions numbered or allowed for as follows: Western edition W-1—W-12. Regional: Northeast, Southeast, Central and Western R-1, R-2. Entered as second-class matter at New York, N. Y. and at additional mailing offices. Subscription price $6.50 a year.

Member, Audit Bureau of Circulations and Associated Business Publications.

Cafeteria in General Electric's Space Technology Center, Valley Forge, Pa.

Armstrong Ventilating Ceilings: a new air-diffusion system plenum-engineered to work evenly, thoroughly, silently

(WITHOUT DIFFUSER DUCTS, CONVENTIONAL DIFFUSERS, DIRT OR DRAFTS)

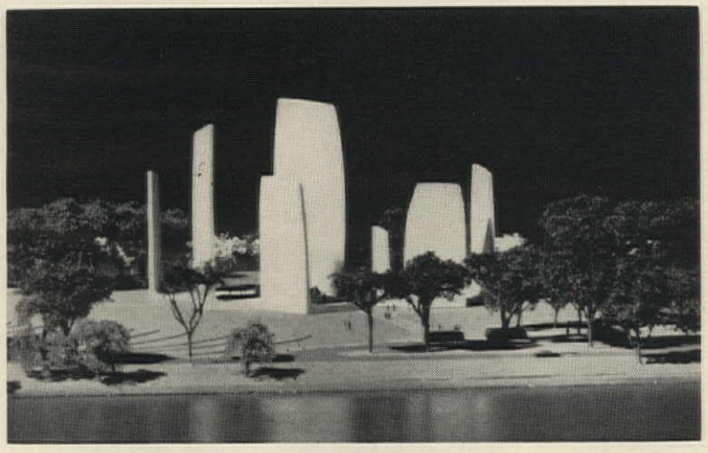
Proposed FDR Memorial bogs down (below)
Recreation or revenue from the Indiana Dunes? (page 7)
Transit plans by several cities (page 9)
Better design for public housing (page 11)

FDR MEMORIAL FAILS FINE ARTS TEST

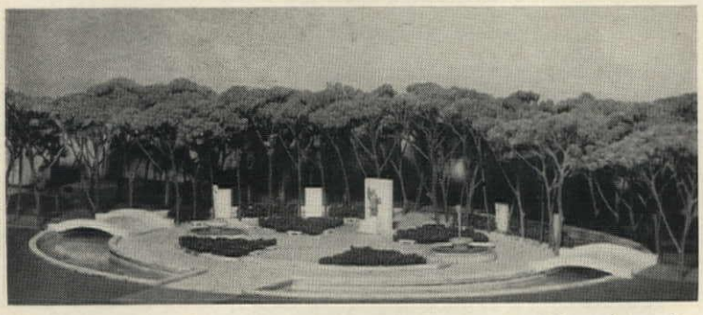
On February 21 the Federal Commission of Fine Arts turned down the proposed FDR Memorial, thus dimming the chances of eventual construction for the controversial design.

For over a year, the only noncontroversial aspect of the Memorial has been the manner in which a design was obtained. The story began in 1955 when Congress established the 12-man Franklin Delano Roosevelt Memorial Commission, chaired by former U.S. Attorney General Francis Biddle and advised by seven experts in the architectural arts, "to formulate plans for the design, construction and location of a permanent memorial" to President Roosevelt. A national competition was held; 574 entries were submitted and judged by a distinguished jury headed by Architect Pietro Belluschi.

GEORGE CSERNA



ABBIE ROWE—NATIONAL PARK SERVICE



FDR's inscribed tablets (above); TR's park and statue (below).

The best design out of 574 submitted from all over

The winner was the design by Architects Pedersen & Tilney (with Norman Hoberman, sculptor; Joseph Wasserman and David Beer, associates; Ammann and Whitney, structural engineers). For the design to be constructed, however, it would have to be reviewed favorably by many groups including The Commission of Fine Arts, which met on January 17.

Speaking for the proposed memorial were Judge Francis Biddle, Architect Philip Johnson, Jury Chairman Belluschi and several others. They found the design to be a success. "I think we are in an age of great monuments. I think this is one," said Johnson. On the other side, the conservative National Academy of Design's President John Harbeson thought it "a disorganized agglomeration of ugly forms."

Legalistic objections

After listening to these and other views, the Commission of Fine Arts expressed its (reportedly) unanimous disapproval of the winning design. The seven members felt that it was not "harmonious" (as law demanded) with the nearby Washington, Jefferson, and Lincoln Monuments; that "it is lacking in repose and the quality of monumental permanence that are the essence of the three memorials with which it must by law conform"; and that the durability of the proposed concrete finish was questionable.

Francis Biddle responded immediately: "I can hardly think that the action of the Commission of Fine Arts is calculated to encourage the Government hereafter to rely on the best architects they can obtain to plan and build public buildings." The next step: Judge Biddle will consult with his commission and report on the matter to Congress.

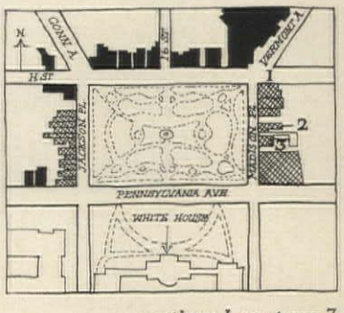
TR to shout "Bully"

Meanwhile, FDR's kinsman, Teddy, was getting his memorial —a 17-foot-high bronze statue by Sculptor Paul Manship of the President on the verge of shouting "Bully!" To be located on Theodore Roosevelt Island, the statue will be the central figure of an oval plaza 264 feet wide, with fountains and four monoliths carrying inscriptions of statements by TR. The Commission of Fine Arts passed this orthodox, if less than sophisticated, memorial by Architect Eric Gugler without hesitation.

Lafayette Square goes square

Changes will be made in the "front yard of the White House." Lafayette Square seems headed for a massive renovation. All the old buildings on the east side and most of those on the west side of the square will be razed to make way for federal buildings. Gone will be the Dolly Madison House, the Benjamin Tayloe Home, and the Belasco Theatre, along with the traditionally intimate, residential scale of the park. In their stead will be such important edifices as the new executive offices of the President, the United States Court of Claims, and the United States Court of Customs and Patent Appeals—all, evidently, in the stripped neoclassical manner.

President Kennedy seems to favor the new look (after some initial hesitation), and the Commission of Fine Arts, which will review the final designs for the new buildings, is expected to applaud intelligently. Construction may start in the fall on the east side of the square, and early next year on the west side.



Lafayette Square: crosshatched areas are to be razed, black ones retained. Shown are 1) Dolly Madison House; 2) Tayloe Home; 3) Belasco Theater.

continued on page 7

adaptability

DUNHAM-BUSH FIN-VECTOR RADIATION

New Dunham-Bush Fin-Vector radiation is designed for universal structural adaptability. It's always esthetically and functionally correct for residential buildings or commercial or industrial or institutional installations. Slide 'n snap installation saves time, saves money. Three cover styles with snap and lock design, eliminating screws and splice plates, provide uninterrupted flow of beauty . . . your assurance of adaptability to any specifications.

CHURCH
Style TFC

OFFICE BUILDING
Style TFC

SORORITY HOUSE
Style SC

ENTRANCE LOBBY
Style FC

SCHOOL
Style SC

Request complete Fin-Vector data, Forms No. 1271 through No. 1277.

DUNHAM-BUSH

DUNHAM-BUSH, INC.

WEST HARTFORD 10, CONNECTICUT, U. S. A.

SALES OFFICES LOCATED IN PRINCIPAL CITIES

continued

MICHAEL ROUGIER—LIFE

Senator Paul H. Douglas on the Dunes

THE DUNES OF INDIANA QUESTION

Will the Indiana Dunes become a 9,000-acre National Park, or will much of the Lake Michigan waterfront be converted to a deep-water harbor? Four members of a nine-man Senate subcommittee are reported to be in favor of saving the dunes for recreational uses. One more vote in favor, and the case would be passed on to Congress.

President Kennedy has recommended that the dunes be conserved. Also for the proposed park is the Department of the Interior, which has stated that the dunes contain "outstanding scenic, scientific, and recreational values . . . are of national significance, and should be preserved in federal ownership for the enjoyment and benefit of all Americans."

Such support has encouraged proponents of the park, led by Democratic Senator Paul H. Douglas of Illinois, whose bill is before the subcommittee. He and 250,000 petition signers feel that the dunes constitute a wonderful waterfront recreation area in the midst of the Chicago-Gary complex of 7 million people.

Opponents of the park scheme include steel interests which own much of the dune land, and Indiana politicians headed by Governor Matthew E. Welsh and House Minority Leader Charles A. Halleck. This group wishes to build a deep-water industrial harbor at Burns Ditch. A feasibility study by the Corps of Army Engineers has indicated that the port could be built for an estimated $68 million, $25.5 million of which would be supplied by the federal government. One likely benefit: more employment in the area and more revenue to the state.

RICE PREPARES STUDENTS FOR REAL WORLD

Rice University's Department of Architecture has developed a new appendage to its educational system. Called the "Preceptorship Program," it is designed to remove the student from his synthetic," academic world where there are no clients, "no cost realities, no construction, no supervision, no bog at nine feet to play havoc with footings, and no building committee to say no." Fourth, fifth, or sixth-year students will live for two or three weeks with a preceptor—that is, an outstanding architect practicing in the South and Southwest. Thus, these promising students will be exposed to "the way of life, the thinking, the problems, and the satisfactions of an architect of high professional stature." Preceptors for the next two years: Richard L. Aeck, Atlanta; O'Neil Ford, San Antonio; Charles Granger, Austin; David G. Murray, Tulsa; George F. Pierce, Houston; and E. Davis Wilcox, Tyler. In the words of its originators, the new program is a "controlled, educational experience for potential leaders, by leaders."

TIBURON BRIDGE SCHEME DEFEATED

Unlike the original plans for the hyperplain San Mateo (Calif.) Bridge, which died of abundantly justified esthetic criticism (FORUM, Jan. '62), the plans for the Tiburon Bridge are dying a more natural death: the bridge's usefulness is in doubt.

From the beginning, not many liked San Francisco's proposed second link with Marin County. Architect George Rockrise of the city's planning commission called the Tiburon Bridge "an absolute murder of open space, of the hills and the waterfront." The bridge was to have originated at Telegraph Hill, risen high enough to clear ocean liners and aircraft carriers, touched down at Angel Island, and taken off again for Marin. The approaches in San Francisco, according to the *Chronicle*, "would wind around the Embarcadero like spaghetti."

The City Planning Commission condemned the project as a threat to Telegraph Hill, North Beach, Angel Island, and the Tiburon Peninsula. Said one member of the Commission: "This bridge [is] a sort of lonely hearts club. San Francisco and Marin aren't sure they want it, but a very active marriage broker is trying to bring them together."

The "broker," State Senator J. Eugene McAteer, who wants to succeed Mayor George Christopher this fall, then put a stop to $500,000 worth of studies and test borings, but continued a $200,000 project of "regional traffic studies, aerial maps and surveys." The likely contribution of this substitute project, however, is slight.

WOOD BASKETRY-TENSEGRITY GEODESIC DOME

This picture shows 340 pieces of precut lumber of two standard sizes, a telephone pole (used only as an assembly rig), a Southern Illinois University Instructor named Harold Grosowsky, and his design class. Missing: R. Buckminster Fuller, the class' professor and inventor of the 72-foot-diameter "Basketry-Tensegrity Geodesic Dome" pictured. Although this "unskinned" pilot model of Fuller's radical construction system cost about $3,000, commercial acceptance of the system, according to Fuller, would pare costs by 50 per cent. Not only would the lumber industry be revolutionized, he adds, but also widespread use of the method "could economically and satisfactorily house a world already too demanding of irreplaceable natural resources." Even more importantly, the system is expandable; it uses only about one-third the material mass of conventional geodesic domes and can be enlarged to enormous sizes by adding more members—not bigger ones. On the basis of the SIU experiment, Fuller has told Japanese architects to go ahead with plans for the three basketry-tensegrity domes he was commissioned to build. Included: an 800-foot dome for the Tokyo Giants' ballpark.

continued on page 9

ELJER . . . FIRST IN NEW IDEAS

1

Introducing Eljer's new "Triangle"

Fit a toilet in a corner? Eljer did it and look what a smart idea it is. Looks dramatically new. Saves valuable space.

Whether you are designing new homes or modernizing older ones, this new toilet gives you greater design freedom. Now you can more easily create new bathroom designs using the built-in flexibility of the *Triangle* toilet by Eljer.

Available in six beautiful colors plus snowy white. The Murray Corporation of America, Eljer Plumbingware Division, 3 Gateway Center, Pittsburgh 22, Pennsylvania.

ELJER
FINE PLUMBING FIXTURES

continued

THE PERENNIAL PROBLEM: RAPID TRANSIT

Everybody talks about transit, but few seem to get past the planning boards:

Boston has passed the wishful stage and is after funds. The Mass Transportation Commission and Joint Legislative Committee on Transportation want $4.6 million from the HHFA and $2.3 million from the state for a series of experiments and studies. These would include: a feasibility study for the extension of rapid-transit facilities into suburban areas; comprehensive surveys of transportation patterns in Boston; tightening the railroad schedules; and lowering rates to attract commuters. Earlier, however, the Boston & Maine railroad announced that it would probably have to cancel half its commuter services when the new interstate highway into Boston and tunnel into Boston harbor are completed.

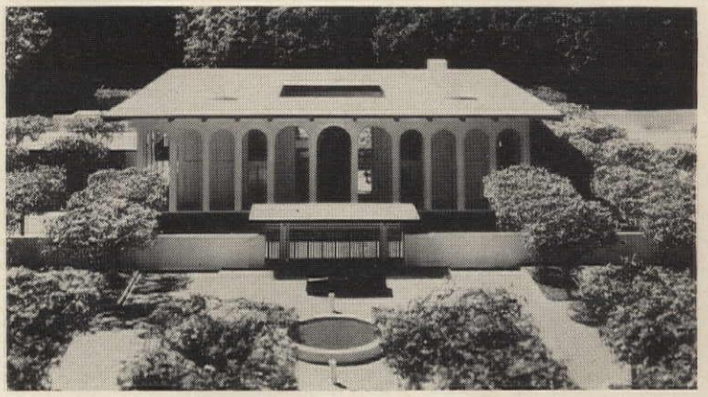
Philadelphia, meanwhile, is looking ahead. An integrated transportation grid for the greater Philadelphia area in the next quarter century is proposed by the Penn-Jersey transportation study. The study puts forth four alternative plans, one of which will be the object of a $3 million, three-year study. These include automated highways (based on electronic devices now being developed), and automated railways; and schemes using all types of surface transport and using only expressway buses.

Washington, D.C. will consider private transit: the privately owned D.C. Transit System, Inc., headed by O. Roy Chalk, has proposed an elevated, high-speed train from Georgetown to Washington International Airport. Cutting across a broad suburban area where the population is rapidly expanding, the line would cost $73.2 million. It would cover the 25.9 miles in 25 minutes—20 minutes faster than by existing transit. The plan also represents, interestingly enough, private enterprise's challenge to the federal government's National Capital Transportation Agency, which has already recommended a combination bus-subway system to be considered by Congress in November. D.C. Transit's scheme has the advantage of being cheaper to construct and to maintain.

Los Angeles, according to L.A. MTA Board Chairman A. J. Eyraud, is not just talking transit: "We are boring through the earth to discover what lies in the path of our subway construction." Dig they did—and were startled to strike oil on Wilshire Boulevard. Taking brief note of the small deposit, MTA continued with its preliminary engineering stage of the "Backbone" route extending from west of Beverly Hills, through downtown L.A., to El Monte. Pending congressional approval of federal insurance to guarantee private revenue bonds, the 22.7-mile route will be constructed by January 1965. MTA also announced that an investigation was being carried out "to determine the feasibility of using large-capacity helicopters to serve areas beyond the point where rapid-transit lines will terminate."

New York and New Jersey have yet to strike oil, but they have struck a bargain. The Port of New York Authority has plans to extend the Hudson Tubes system so that New Jersey commuter railroads will be linked with rapid transit to Manhattan. To be included are: a new link of the Hudson Tubes extending from Hoboken to Secaucus; a $25 million tubes and bus terminal in Jersey City; three new transfer stations in New Jersey; and rejuvenation of track and equipment. All this will cost an estimated $130 million (with another $270 million set aside for a World Trade Center in lower Manhattan's west side.)

While several of these points were suggested in previous years, and an East Side World Trade Center was proposed last year (see FORUM, May '61), New Jersey's legislature has not in the past given its approval although New York's has. This time, however, New Jersey came through, and New York followed suit last month. The only problem seems to be to determine the value of the Hudson Tubes and of the two terminal buildings in Manhattan.



CALIFORNIA'S PROPOSED GUBERNATORIAL MANSION

One hundred and ninety-seven entries were submitted in the first stage of the competition for the new Governor's Mansion to be built in Sacramento, Calif. In December, the field was narrowed to ten finalists and last month the award went to the project (above) by Worley K. Wong, Allan Don Fong, Harry W. Nimitz and Terry Tong—all of the firm Campbell & Wong of San Francisco. The four-man jury included Pietro Belluschi, Frank W. Kent, Stephen C. Pepper, and Lutah Maria Briggs; William W. Wurster and Daniel J. Nacht were professional advisors.

Planned around a 36 by 36-foot central patio, the mansion will have living quarters for the Governor upstairs and the official rooms on the ground floor. "We weren't trying to build a monument to the architects," said Allan Don Fong, "We realized that people would be living there." And the Governor will live well: a 100-foot veranda on the second floor, a musician's loft, ten baths and eight fireplaces are designed for the mansion, and a swimming pool, cabana and barbecue facilities for the grounds.

A total of $475,000 has been appropriated for the building, which will be located in the center of a block across from Capitol Park. Construction is scheduled to start later this year and the mansion should be ready for occupancy next year.

JIM BURKE—LIFE

DOWN WITH ARCHITECTURE! UP WITH THE COLUMNS!

Manhattan's Pennsylvania Station will definitely be demolished, much to the regret of thousands of admirers of Charles Follen McKim's 1910 masterpiece.

Included in their number is CASABELLA, the highbrow Italian architectural magazine, which called the plans for Penn Station's proposed replacement "awkward and rather unhappy." The plans include a high-rise office building (the AMF Tower), a new Madison Square Garden, and a 30-story combination office building-hotel. Construction is to start this summer.

All, however, is not lost: New York's Park Commissioner, Newbold Morris, is trying to save the 84 Doric columns that adorn the exterior of the station (above). He hopes to relocate them somewhere —perhaps in Flushing Meadow Park after the 1964 World's Fair.

continued on page 11

Why damage before dedication?

Chances are this floor will receive more abuse during construction than in the next 5 years combined. As the building goes up, we forget to look down...but it's a very critical time for new floors.

The Hillyard floor treatment program will do the job better than "KEEP OFF" signs...and for a longer time. Your Hillyard Maintaineer will show you how to protect all floors during construction, and he will be pleased to draft a plan that will cut maintenance costs by 50% when the owner takes over. You'll like the way flooring complaints will be eliminated. No matter what type of floor you specify—Hillyard seals and finishes are manufacturer approved.

Plan protection for your floors, with your Hillyard Maintaineer...the man who follows through for you. At your request, he will survey your finished floors, and recommend proper maintenance procedures at no cost to you. District offices are listed in Sweet's, or call collect.

HILLYARD
FLOOR TREATMENTS
St. Joseph, Missouri, U.S.A.
Passaic, New Jersey
San Jose, California

"On your staff, not your payroll" / **PROPRIETARY CHEMISTS SINCE 1907**

continued

NEW GROWTH PATTERN FOR U.S. CITIES?

Eight years ago, when the J. L. Hudson Co. opened Northland at the geographic, if not population, center of the Detroit metropolitan area, it was a shopping center only. Now it has become an urban "subcenter," and it is still developing. Already built on Hudson's 400 acres of land are office buildings for Reynolds Metals (FORUM, Nov. '59), Standard Oil of Indiana, Michigan Bell Telephone, and three insurance companies. Being constructed in the vicinity are eight other office buildings, a 200-room hotel (the largest built in the Detroit area since the 1920s), a restaurant, and a seven-story medical building.

One result of this building boom has been to make the immediate area an eye-catching architectural display for the heavy traffic along Eight Mile Road. While no obvious attempt was made to relate the architecture of the new buildings to one another, neither is there much cheap jerry-building strip construction going up. Certainly best of the group is Minoru Yamasaki's Reynold's building (below), with its gold anodized sunscreen and reflecting pool.

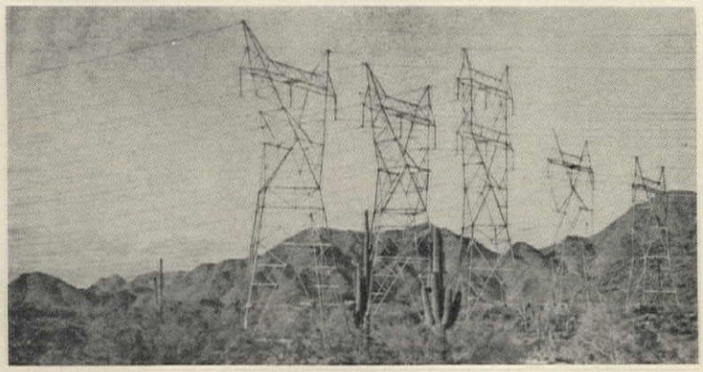
Because of this boom, Northland was included in the 26-square-mile city of Southfield when that city was incorporated in 1958. Southfield had a 1960 population of over 31,000, anticipates 70,000 in 1970.

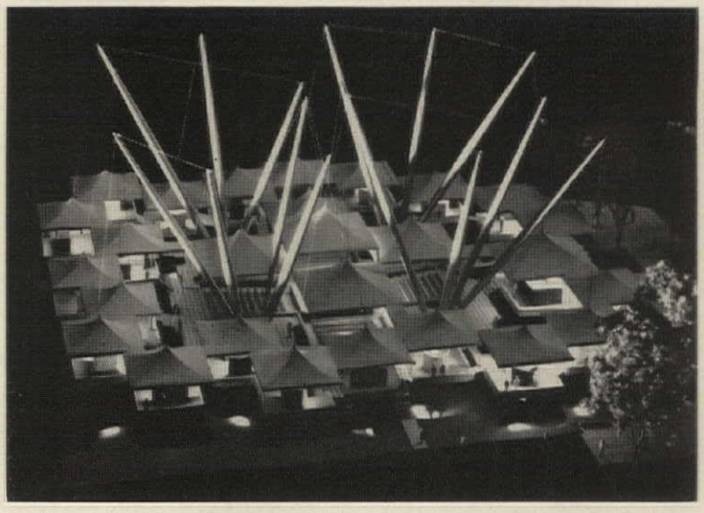
The dramatic Northland expansion suggests a new growth pattern for American cities: that of building around a successful shopping center because of its success. Signs of urban subcenter building have appeared beside Seven Corners Center, Arlington, Va., Randhurst and Oak Ridge Center, Chicago, and elsewhere.

SYMBOL VS. PRECEPT IN THE ARIZONA DESERT

Frank Lloyd Wright thought that steel towers carrying high-voltage power lines symbolized "the scaffolds of a pioneer society." He also believed that a building should achieve a close affinity with nature. Nowhere, perhaps, did he design a house which fits into its environment so completely as at Taliesin West in Paradise Valley, Ariz. There, his home-school-workshop, a recognized masterwork with its great concrete masses and its light, tentlike ceiling, effectively echoes the mountain and desert landscape.

At Taliesin West, in 1950, symbol and precept clashed for the first time. The Bureau of Reclamation of the Department of the Interior built a power line down the valley. Wright strongly opposed the line, fought its construction in vain. Now, the Bureau has another power line planned and the Arizona Public Service Company wants to add three more. The proposed total: five lines, a "virtual forest" of steel within 100 yards of Wright's famous "camp" (as shown in the photomontage below). Protests have been registered, as they were in 1950. This time, however, the plan's opponents are placing much faith in the esthetic judgment of Secretary of the Interior Stewart Udall, to whom they have appealed.





ELIZABETH MEREDITH

INGENIOUS AND INVITING PAVILION FOR NEW JERSEY

This design by Architect Philip Sheridan Collins was the unanimous choice of the Jury of Awards for the New Jersey Tercentenary Pavilion at the 1964-65 New York World's Fair. Sixteen tapered booms will hold up 21 small pavilion roofs (one for each of the State's counties). Each pavilion in turn is raised on a platform above an encircling reflecting pool. In the center of the exhibiting area are a theater and four interior gardens; exterior gardens and broad promenades separate the show from other Fair buildings. Total cost: under $1 million. The combination of careful landscaping and inventive design promises to make this pavilion an interesting, if admittedly exhibitionist, example of world's fair architecture.

PHA TO GET BETTER ARCHITECTURE

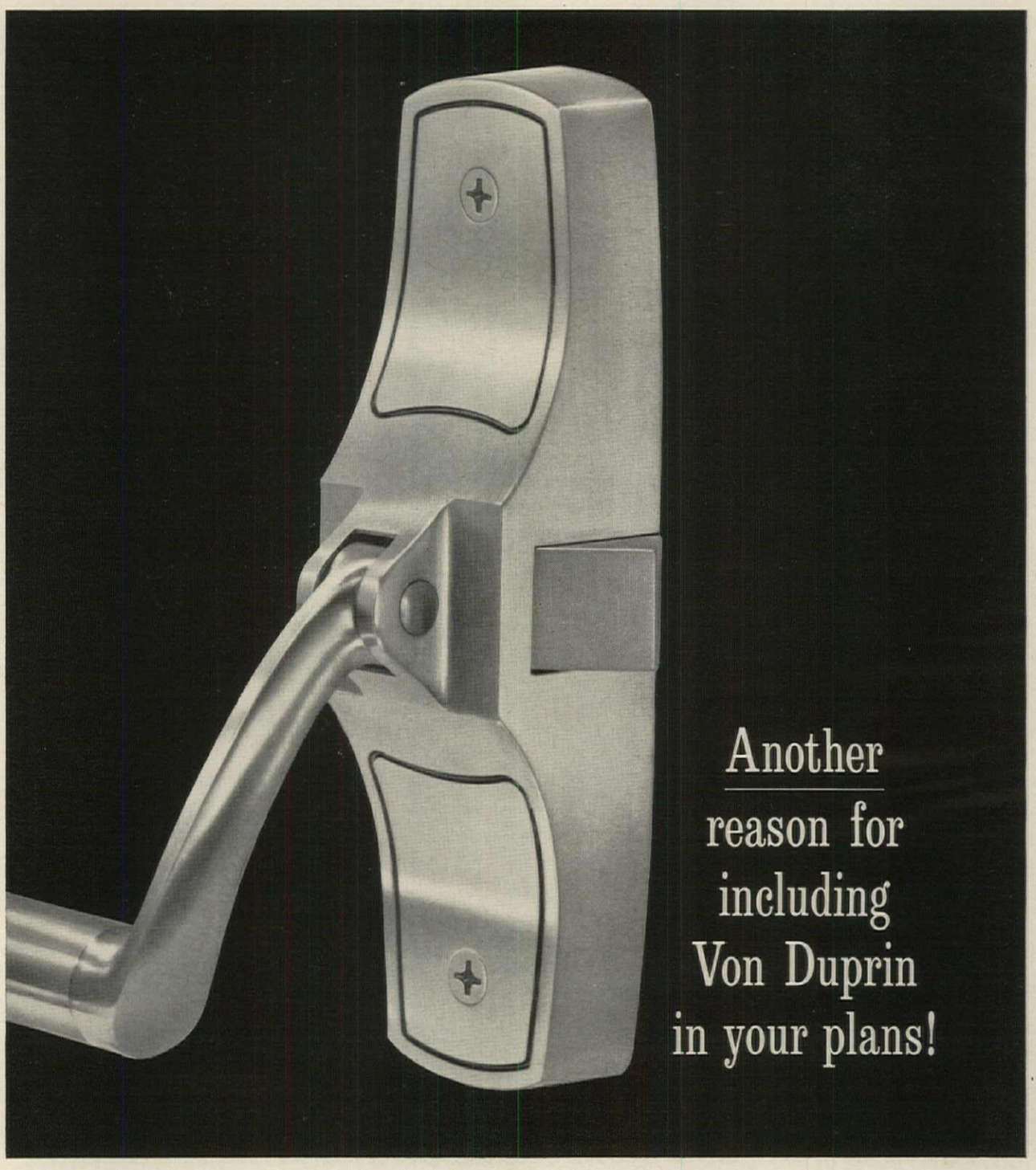
Marie McGuire, PHA Commissioner, has always wanted to get better architecture in public housing. Last month, a directive was issued to PHA regional directors and local housing authorities. It states that procedures "should be more flexible in order to encourage the concentration of effort where it will be most productive." Present standards, under Section 207.1 of the low-cost housing manual, are no longer to be regarded as mandatory but more as "guide lines." Public housing projects still may not be elaborate. Neither should they be drab. In a related move, the PHA also set up a joint committee with the AIA which will advise the PHA on all aspects of design and architectural practice.

BRIEFS: STEEL CODE, FLOOD INSURANCE

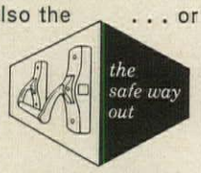
The American Institute of Steel Construction has recently announced a new code for structural steel in buildings. First revision since 1945, the new standards will allow important economies in the use of steel in high-rise buildings. Not only can savings of from 5 to 10 per cent be effected, but also about 10 to 15 per cent of excess weight can be trimmed from buildings to permit simpler, cleaner design as the new steels perform more work per pound. Since steel costs can amount to about 15 per cent of total building expense, the savings promise to be considerable.

As a result of the recent destructive storm that struck the Atlantic coast, interest in the dormant Federal Flood Insurance Act of 1956 is being revived. Co-sponsored by then-Senator John F. Kennedy, the legislation is on the statute books, but has never been implemented because of opposition from an appropriations subcommittee. Should funds be realized, the building of second homes in waterfront vacation areas would be stimulated because mortgage money would be easier to find, and premiums on water and wave damage insurance would become more feasible.

continued on page 13



● As you can see from the new model 77 shown here, Von Duprin leadership in exit hardware covers design as well as engineering . . . and "the safe way out" is also the smart way out. The 77 is available in bronze or chromium finish, plain or with tough vinyl fabrics—in six warm, wonderful colors—applied permanently to cases and/or crossbars. Write for free, full-color Bulletin 611, showing 77 rim, mortise lock and vertical rod devices . . . or for Von Duprin Catalog 59V, showing the full line of exit devices that *look* best and *work* best!



VON DUPRIN DIVISION, VONNEGUT HARDWARE CO.
402 W. MARYLAND ST., INDIANAPOLIS 25, INDIANA

Von Duprin 77 Exit Devices

People in the news

MAUREY GARBER

Heckscher

U.S. CULTURAL COORDINATOR

Last month, the White House announced the appointment of AUGUST HECKSCHER to the created post of Special White House Consultant on the Arts. Heckscher, director of the Twentieth Century Fund, will spend two days a week in Washington "to work with the staff and take a look at the general policies of the Government in the field of art." His first task will be "to find out what is going on and to try to coordinate it."

What *is* going on? Several departments, such as Interior, HEW and Treasury, plus the Urban Renewal Administration, have programs that affect the cultural environment of the country.

What, exactly, Heckscher will suggest remains to be seen. But, in 1960, he contributed a chapter on "The Quality of American Culture" to the Report of the President's Commission on National Goals. Wrote Heckscher: "We face the question today whether our cultural standards can be brought into balance with our material well-being." The answer, he felt, was "not reassuring." He added that the government should "create a home for art"; that it should help support the arts and set the example in such specific fields as building and collecting books and works of art.

STUDENT WINS REYNOLDS PRIZE

The winner of the $5,000 second annual Reynolds Aluminum Prize for Architectural Students is JON H. STARNES, a fifth-year student at the University of Texas, for his design of a warped space frame. According to the jury (OLINDO GROSSI, HAROLD SPITZNAGEL, and LINN SMITH), the "winning award stood out because of its diversity of application within the large-scale space-frame concept now under constant study. . . . With a minimum number of elements the designer has solved a particularly difficult joint problem, utilizing uniform members throughout."

HONORS AND MORE HONORS

Creative artists in every field were elected last month to membership in the National Institute of Arts and Letters. New appointments in the Department of Art include: ALEXANDER ARCHIPENKO, Russian-born sculptor and teacher; WALTER GROPIUS, one of the leading pioneers of modern architecture, who recently received the Kaufmann International Design Award (FORUM, Feb. '62); and ISAMU NOGUCHI, internationally acclaimed sculptor and designer.

Architect-City Planner VICTOR GRUEN, perhaps best known for his Northland Shopping Center, was elected a Fellow of the International Institute of Arts and Letters. His Midtown Plaza in Rochester, N.Y., the nation's first

Gruen

downtown urban renewal project wholly financed with private funds, is scheduled to open later this spring.

The 1962 Gold Medal of the Royal Institute of British Architects has been awarded to SVEN MARKELIUS, Swedish architect and city planner. His Swedish Pavilion in the 1939 New York World's Fair was widely considered the most important building at that exhibition. He also was a consultant for the U.N. Building in New York and designed the Economic and Social Council chamber there. In Sweden, he was city planning director of Stockholm from 1944 to 1954. Under his inspiration were built such fine satellite communities as Vällingby and Farsta.

BERT STEINGRUBY RESIGNS

Once upon a time there was a nice man whose name was BERT STEINGRUBY. He worked as manager of a low-rent public housing project in St. Louis. Seven hundred and eight families lived in the project. Every month, when it was time for the rent, the families would pay Mr. Steingruby. Sometimes some of the people could not pay all of the rent, and Mr. Steingruby would help them with his own money. He said that he did not need all of his monthly $600 even though he had five children, two of whom lived at home, and that he had lent about $1,000 over four years which had never been paid back. He said, "I don't consider it as money lost. It's charity helping these people." So the director of the St. Louis Housing Authority, CHARLES FARRIS, said that Mr. Steingruby violated policy by accepting partial payments on rent and making up the difference with his own money. Mr. Steingruby had to resign. He said, "A lot of people still call me at home for help. But there's not much I can do for them." And he said, "To me housing is a vital thing. We rout people out of their homes when we tear down slums to improve the city. (We locate them in projects.) Then we put them out of housing projects and they form their own slums again." Bert Steingruby is a foreman at a small plant now. He earns $300 a month. He has no regrets.

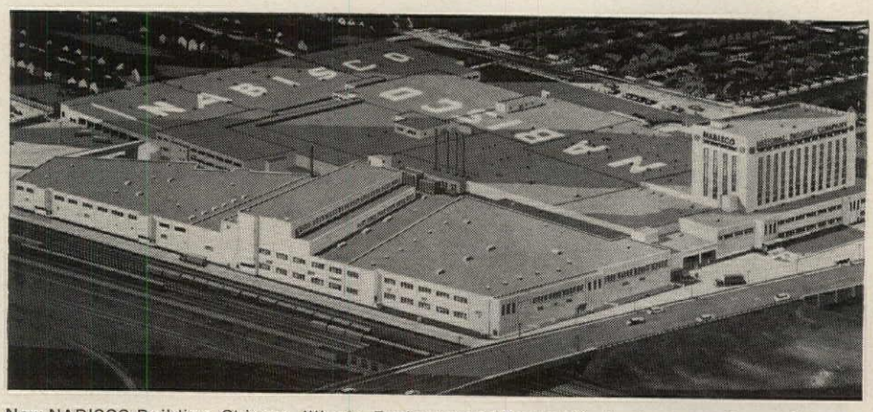
HALPRIN ACCEPTS HIGHWAY CHALLENGE IN SAN FRANCISCO

Last month, Landscape Architect LAWRENCE HALPRIN was engaged by the state as consultant to improve the design of San Francisco's proposed, controversial freeways. "The job," said Halprin, "is a wonderful challenge." True enough—and he will need all his skills to meet it. One major attempt to push seven superhighways through the scenic, hilly city ended when a massive protest from citizens moved the board of supervisors to block the freeways at the edge of town (FORUM, April '59). Shortly after that, work on the elevated Embarcadero Freeway was halted before it could spoil the city's view of the entire waterfront.

Perhaps Halprin can solve the esthetic problems; he is well known for his consulting work on the Oakland Overpass as well as his landscaping for the Empire Expressway in Seattle and the Federal Exhibits building at the Seattle World's Fair. His first new task in San Francisco will be the design of a link between the Central Freeway near Civic Center and the Park Presidio via the Golden Gate Park Panhandle area. Discussing the work ahead, Halprin added, "We do have an opportunity to do the job well. And we do need the freeways." That, too, is true enough. END

The Embarcadero Freeway, blocking San Francisco's waterfront

Structural wire fabric solves



New NABISCO Building, Chicago, Illinois. Engineers and General Contractors were Ragnar Benson, Inc., Chicago. Consulting Structural Engineers: Paul Rogers & Associates, Inc., Chicago.

a hot problem in the new NABISCO plant

Hot ovens hundreds of feet long cause serious expansion problems in the floors of large bakeries. In the new NABISCO plant in Chicago, about 540 feet of the building had to be built without any expansion joints. This was necessary for two reasons. First, expansion joints are undesirable within the length of the ovens. Second, the joints are unsanitary in a food plant.

To assure a safe and stable structure, all temperature stresses had to be taken up internally. This was done by reinforcing the floors top and bottom with high-tensile USS American Structural Wire Fabric.

Installation costs were reduced because the reinforcing steel was placed in large sheets, eliminating tedious piece-by-piece tying. Sheets were generally 8′10″ cc of longitudinal wires, by 23′6″ tip to tip. Longitudinal wires were 0.4615″ in diameter and transverse wires were 0.3625″ diameter and spaced 6″ on centers.

The cold drawn wire in USS American Structural Wire Fabric has a minimum yield strength of 60,000 psi which permits a design stress of 30,000 psi and gives a substantial safety factor against possible overloads. The amount of reinforcing steel required is reduced by almost 30% compared to conventional reinforcing bars. If you are not already receiving our technical bulletins on Structural Wire Fabric, write on your letterhead to American Steel and Wire, Dept. 2146, Rockefeller Bldg., Cleveland 13, Ohio. USS and American are registered trademarks

Innovators in Wire

American Steel and Wire
Division of
United States Steel

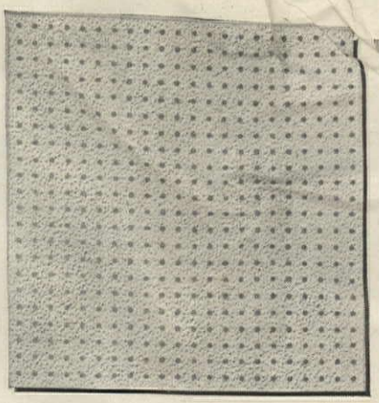
USS

One sheet of fabric, typically 8′10″ x 23′6″ for the entire positive steel of a span, is handled and placed as a unit. Weight about 450 lbs.

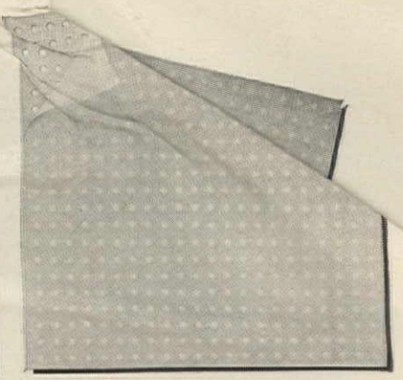
Two layers of steel fabric on 6″ centers help keep expansion and contraction to a minimum in heated floors.

Gold Bond gives you a moisture-resistant

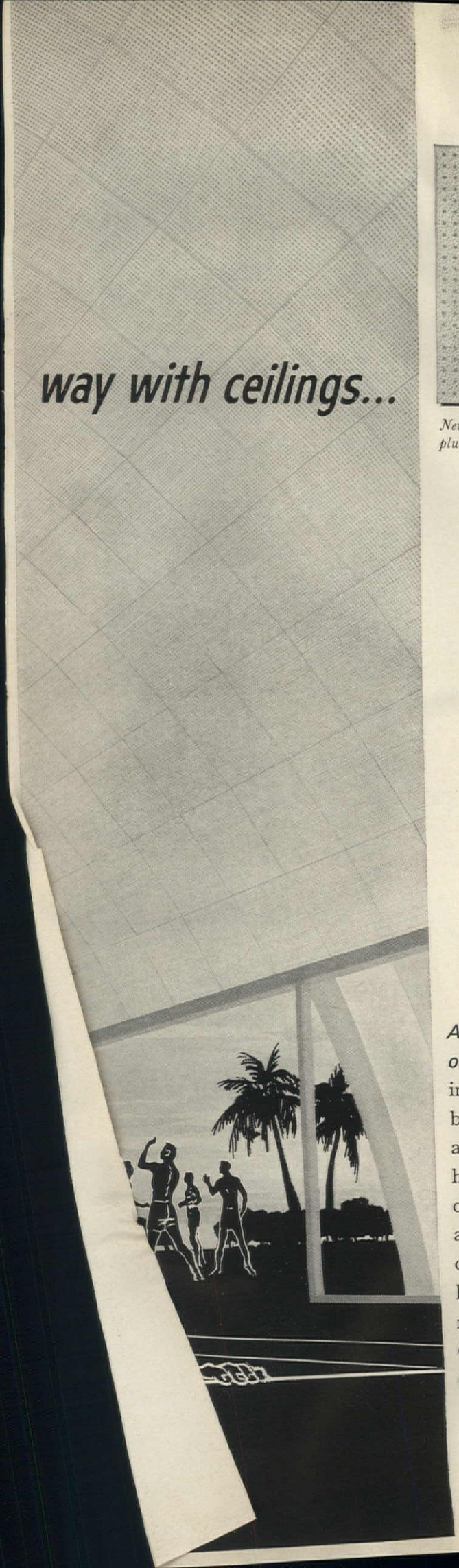
way with ceilings...



New special coating for protection plus new "rippletone" texture



New membrane backing reduces sound by diaphragmatic action



Asbestibel Perforated Asbestos—a way to design moisture out, beauty in. Guaranteed not to shrink, warp or sag, even in above-average humidity areas. And when the panels are backed with mineral wool pads (in various thicknesses), you get a wide range of sound-absorbing coefficiencies. New features have been added: 1. Perforated Asbestos Panels with a low-cost membrane backing that reduces sound by diaphragmatic action. 2. New special coating for surface protection makes cleaning easier and faster. 3. A new "rippletone" texture for heightened visual interest. For even more ways with ceilings, call your Gold Bond® Representative. National Gypsum Company, Buffalo 13, N. Y.

Gold Bond®
ACOUSTICAL PRODUCTS

e's a hardware

when to be made...

this man relies on past *experience*

"Look-alikes" may puzzle the novice; but the man of experience doesn't just look at hardware. He looks beyond and sees – the *tangibles* and *intangibles* of his specification.

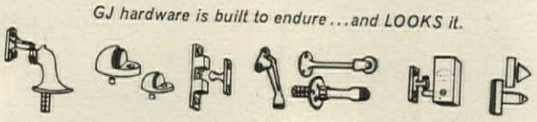
He knows the practical value of having his order analyzed as a double-check against errors, and the reassurance of custom-engineering assistance when it's needed.

He knows that the guarantee of durability and smooth function is in the original design, basic metal, precise machining and the expert finishing of an item.

He knows the time and money that are saved when the correct hardware reaches the building site on time.

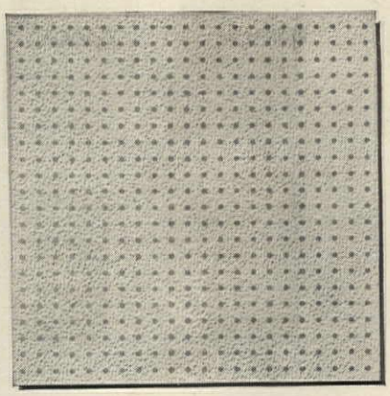
Because this man knows GJ . . . he specifies GJ . . . for the *quality that he demands*, the *service-extras he has a right to expect*, and the *scheduled delivery that he needs*.

GJ hardware is built to endure . . . and LOOKS it.

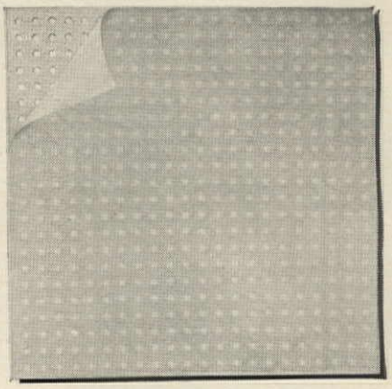


GLYNN • JOHNSON CORPORATION
4422 n. ravenswood ave. • chicago 40, illinois

way with ceilings...



New special coating for protection plus new "rippletone" texture



New membrane backing reduces sound by diaphragmatic action

Asbestibel Perforated Asbestos—a way to design moisture out, beauty in. Guaranteed not to shrink, warp or sag, even in above-average humidity areas. And when the panels are backed with mineral wool pads (in various thicknesses), you get a wide range of sound-absorbing coefficiencies. New features have been added: 1. Perforated Asbestos Panels with a low-cost membrane backing that reduces sound by diaphragmatic action. 2. New special coating for surface protection makes cleaning easier and faster. 3. A new "rippletone" texture for heightened visual interest. For even more ways with ceilings, call your Gold Bond® Representative. National Gypsum Company, Buffalo 13, N. Y.

Gold Bond®
ACOUSTICAL PRODUCTS

when there's a hardware selection to be made...

this man relies on past *experience*

"Look-alikes" may puzzle the novice; but the man of experience doesn't just look at hardware. He looks beyond and sees – the *tangibles* and *intangibles* of his specification.

He knows the practical value of having his order analyzed as a double-check against errors, and the reassurance of custom-engineering assistance when it's needed.

He knows that the guarantee of durability and smooth function is in the original design, basic metal, precise machining and the expert finishing of an item.

He knows the time and money that are saved when the correct hardware reaches the building site on time.

Because this man knows GJ . . . he specifies GJ . . . for the *quality that he demands*, the *service-extras he has a right to expect*, and the *scheduled delivery that he needs*.

GJ hardware is built to endure . . . and LOOKS it.

GLYNN • JOHNSON CORPORATION
4422 n. ravenswood ave. • chicago 40, illinois

IN DEFENSE OF ARCHITECTURE

■ *The following letter, printed almost in full, is from Mrs. Sibyl Moholy-Nagy. It was prompted by various critical discussions that have appeared in* FORUM *in regard to* The Death and Life of Great American Cities, *the recent book by* FORUM *Senior Editor Jane Jacobs. Mrs. Moholy-Nagy is, of course, a distinguished architectural critic and historian. Her letter concludes* FORUM's *discussion of Mrs. Jacobs' provocative book.*

It is one of the great services rendered by Jane Jacobs' book (*The Death and Life of Great American Cities*—FORUM, Sept., Oct. '61; March '62) that she has forced the smoldering tension between city planners and planning administrators into the open. Planners will have either to give up on urban renewal or make an organized stand for or against high-rise housing, densities, zoning, subsidies, Title I, and all the other incantations that have made this new professional field as incomprehensible and hermetic as faith healing. Architects have rarely been given a chance to intrude into the implementation of either planned or inflicted urban renewal, and this too is borne out by Jane Jacobs' book.

On the first 372 pages the city emerges as a network of streets threatened by housing projects. Both are evaluated and found good or evil according to purely social criteria. With Chapter 19 ("Visual order: its limitations and possibilities"), the tenor of the book changes abruptly. Italics proclaim that *"A City Cannot Be a Work Of Art,"* and, from then to the conclusion 76 pages later, not the planner but the architect is the villain. Bravely solving what has puzzled milleniums before her, Jane Jacobs develops a new theory of art whose ultimate purpose is "to reassure us of our humanity," although the artistic process is found to be "arbitrary, symbolic, and abstract." Any notion to consider this an interpretation of the School of New York painting is dispelled by the next thought which fixes her target:

"To approach a city, or even a city neighborhood as if it were a larger architectural problem, capable of being given order by converting it into a disciplined work of art, is to make the mistake of attempting to substitute art for life. The results of such profound confusion between art and life are neither life nor art. They are taxidermy. In its place, taxidermy can be a useful and decent craft. However, it goes too far when the specimens . . . are exhibitions of dead, stuffed cities."

This life-killing architectural taxidermy, "continuously more picky and precious," in collusion with the "futile and deeply reactionary" Garden City Movement, are unmasked as "primarily architectural design cults rather than cults of social reform. Indirectly through the Utopian tradition, and directly through the more realistic doctrine of art by imposition, modern city planning has been burdened from its beginning with the unsuitable aim of converting cities into disciplined works of art."

Surely, the repetitive use of the term "disciplined work of art" as an accusation is no coincidence. It forces even on the most evasive architectural reader the realization that he is guilty by association with 3,000 years of urban history.

This primitive ignorance of the profound concern of architects for the city puts Jane Jacobs in the same camp with administrative city planners, whose prominent representative, Edward J. Logue (FORUM, March '62), could declare from the lecture platform of New York's Museum of Modern Art that "architecture is a silly profession." (He followed this statement with a caricature of architectural attitudes that cheapened his own office but not that of the architect.)

In city building each sin is Original Sin, permanent and irredeemable. The sin of arrogance that finds designed environment contemptible, because it sometimes clashes with either expediency or sentimentality, deprives the defenseless citizen of all respect for the achievements of the past, and of the dignity of participation in the new architectural concepts of his time. No journalistic sleight of hand can transform streets into primary causes unconditioned by the architectural volumes that define their vacuum. The fate of the more-or-less happy sidewalk watchers, invented by Jane Jacobs, is determined by architectural tradition. The grace or failure of the architects who designed their city, generation after generation and building by building, made their habitat identifiable. Beyond this at-homeness with the face of their street rather than with its soiled feet, urban character was assured by the "irrelevant concoctions" of civic centers and monumental edifices, the boldest statements of architectural conviction of a leading cultured minority.

Since the beginning of the city, this unduplicable civic personality has provided a communal experience in which the people of all the gray Hudson streets of the world could proudly share. Not "eye catchers . . . landmarks . . . pushcart vendors . . . edifices in cheap and makeshift fashion . . ."— advocated at various points by Jane Jacobs to induce a strained and artificial diversity—but buildings as singular masterpieces, as functional servants, and as designed dwellings in inexhaustible variety, proclaim a city rich or poor in vitality. The great "uneconomical" plazas, the "empty" parks, the "dull" avenues with elegant homes, furnish the festive counterpoint to the modest environment of the service streets. The Sunday crowd surging over the terraces at Versailles, loafing on the Spanish Steps, paddling on the Serpentine, or thronging the Guggenheim Museum and The Cloisters, do not seek art to confirm their humanity. They have come to participate unconsciously in a cultural continuity that transcends their meager personal life-span.

If this were all the architect as autonomous artist had to offer, it would demand his inclusion into the redesigning of every city; but architecture is more universal than this. A recognized truth, such as the need for housing, is nothing but a generality until a creative mind gives it form. Jane Jacobs carefully avoids hinting at the type of dwelling that must replace the tenements of Manhattan when even social reform can no longer prevent their collapse. If the city is to survive as a residential location, these dwellings will not be designed by the fantasies of romantic slum dwellers or by the artless efficiency of housing commissioners. A new prototype of urban dwelling can only come from a professional architect. Only he can translate the new visions in space, form, structure, material, and multiple relationships into the next development of urban environment.

Admittedly people with such aims are poor participants in the frantic brotherhood of the street, proclaiming a grotesquely distorted concept of democracy. To serve the city best, the architect must love his art more than the people. The mold he creates for their lives will only be beneficial if it fulfills an ideal standard that transcends their limited social experience. Man became man not only through his urge for survival, but through his desire to create a beautiful environment. Any African native, European peasant, or eighteenth-century American would find this statement redundant.

Architecture, being nonscientific, noncategorical, and pragmatic, has been and remains man's greatest tool to make this desire visible and viable. Only the architect can "approach a city neighborhood as if it were a larger architectural problem, capable of being given order by converting it into a disciplined work of art." This release from chaos through design is the last hope of the depersonalized city dwellers of today to see himself restored to urban tradition. The quality of his dwelling will give him the will to endure—as did in their time and for their inhabitants the houses of the Ile St. Louis, of Bath, Mannheim, Chatham Village, Stjordalshallen, and Roemerstadt—because architecture is the fourth dimension of history.

SIBYL MOHOLY-NAGY
New York City

FORUM'S "NEW LOOK"

Forum: Now and then an issue of a magazine makes one proud to be an architect, and that is just what the February FORUM does for me.

It is a beautiful issue with richness for

continued on page 20

the past and the present. Foothill Junior College, the strong art center for the University of Georgia, the buildings at Mount Holyoke, Cornell, and Missouri, and the University of Virginia, all total a magnificent layout. Thank you for such a thoughtful broad-based effort.

WILLIAM W. WURSTER
Berkeley — *University of California*
Dean, College of Environmental Design

Forum: Congratulations on the handsome new format, which packs a great deal of useful information into a concise, selective, and attractive publication.

GLEN PAULSEN
Bloomfield Hills, Mich. — *Architect*

Forum: Your publication of new and old college buildings (Feb. '62) was very interesting indeed. Marvelous photography by George Cserna of the Virginia campus.

A special salute to you for the excellent critical appraisal of Cornell's new Olin Graduate Library. I am glad that an authority like FORUM has made a definite statement on its fine qualities.

"It fits into an old campus with consummate grace and ease." What more can an architect want and do?

LEO L. J. DE BEVER
Eindhoven, Netherlands — *Architect*

MIES' BACARDI

Forum: . . . an excellent presentation of the more interesting facts of our building (FORUM, Jan. '62).

LIC. ERNESTO ROBLES LEON
Tultitlan, Mexico — *Vice President*
Bacardi Y Compania, S. A.

ARCHITECTURAL FORUM is published monthly by TIME INC., Time & Life Building, Rockefeller Center, New York 20, N. Y.

SUBSCRIPTION SERVICE: Address all subscriptions and correspondence concerning them to: ARCHITECTURAL FORUM Subscription Dept., 540 N. Michigan Ave., Chicago 11, Ill. Subscription rates: in U.S., U.S. Possessions and Canada, one year $6.50; elsewhere, one year, $12. Single copies, if available, $1.

CHANGE OF ADDRESS: Four weeks is required for change of address. When ordering a change please name magazine and furnish a label from a recent wrapper. If no label is available please state as exactly as possible the address to which magazine has been sent. Changes cannot be made without old as well as new address.

EDITORIAL CORRESPONDENCE should be addressed to ARCHITECTURAL FORUM, Time & Life Building, Rockefeller Center, New York 20, N. Y. FORUM will not be responsible for unsolicited manuscripts or illustrations submitted, and it will not return such material unless accompanied by postage.

ADVERTISING CORRESPONDENCE should be addressed to the advertising director, ARCHITECTURAL FORUM, Time & Life Building, Rockefeller Center, New York 20, N. Y.

TIME INC. also publishes TIME, LIFE, FORTUNE, SPORTS ILLUSTRATED, and HOUSE & HOME and with its subsidiaries the international editions of TIME and LIFE. Chairman of the Board, Andrew Heiskell; Chairman, Executive Committee, Roy E. Larsen; Chairman, Finance Committee, Charles L. Stillman; President, James A. Linen; Executive Vice President and Treasurer, D. W. Brumbaugh; Senior Vice President, Howard Black; Vice President and Secretary, Bernard Barnes; Vice Presidents, Edgar R. Baker, Clay Buckhout, Arnold W. Carlson, Allen Grover, C. D. Jackson, Arthur R. Murphy, Ralph D. Paine, Jr., P. I. Prentice, Weston C. Pullen, Jr.; Comptroller and Assistant Secretary, John F. Harvey; Assistant Treasurer, W. G. Davis; Asst. Comptroller and Asst. Secretary, Charles L. Gleason, Jr.

Test fences in Massachusetts and Florida expose Bostik Architectural Coatings to the elements.

New Texture! Color! Weather-Safety!

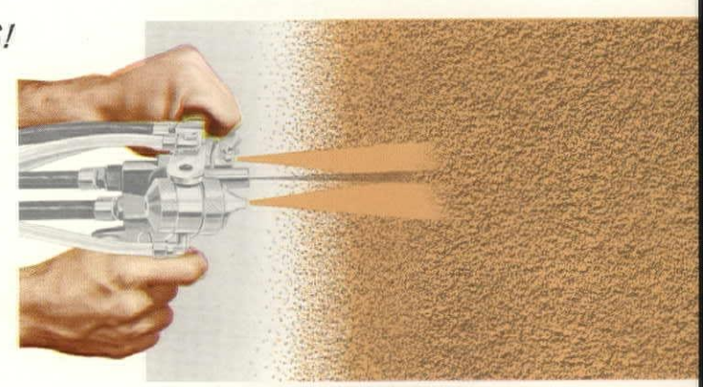
Give concrete, masonry the "finished look" that LASTS!

Here's the answer to giving concrete surfaces, brick, masonry, cement asbestos board a "finished look" that lasts — while keeping the budget down.

Ruggedly "weather-safe," these coatings preserve exterior surfaces against sun, rain, wind and weather. Blister resistant, they breathe to let moisture vapor out, yet prevent wind-driven rain from penetrating. Fade and fire resistant, they shrug off the freeze-thaw cycles of the North, the humidity and scorching sun of the South.

Distinctively textured in sixteen basic architectural colors, Bostik Architectural Coatings permit striking new design expressions at a surprisingly low cost.

A well-tested product of polyurethane chemistry, Bostik Architectural Coatings are quickly, durably sprayed on. Just turn the page for further performance data. For the full story, see your nearest franchised, factory-trained applicator or representative listed on the back . . . or write B.B. Chemical Co., today.



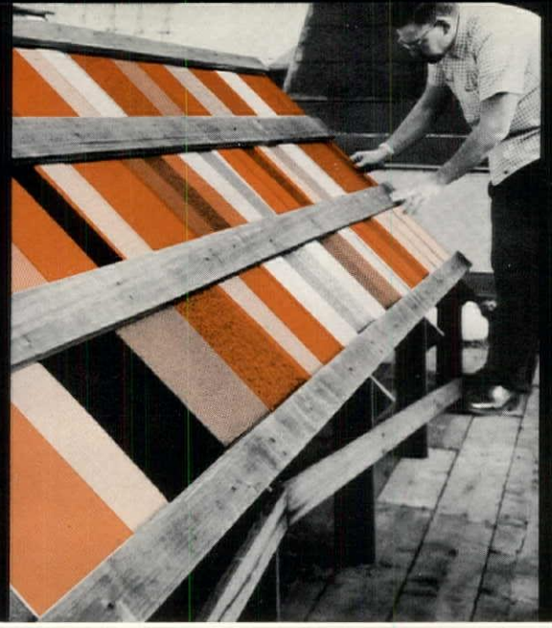
Bostik™

ARCHITECTURAL COATINGS

TURN FOR MORE...

R 1

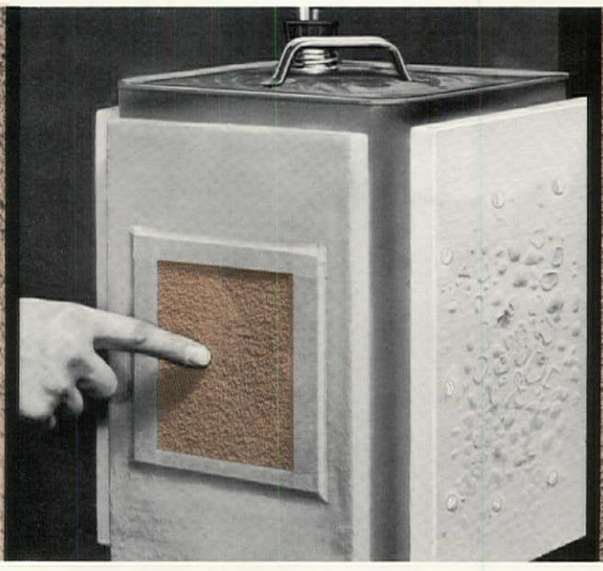
PERFORMANCE DATA ON Bostik ARCHITECTURAL COATINGS

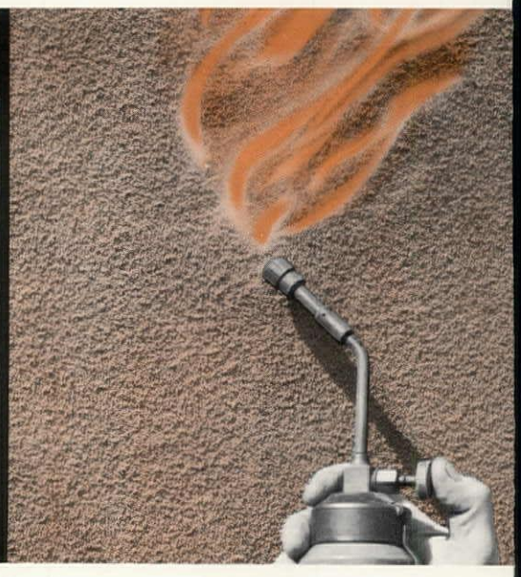


The "Weather-Safe" Coating that gives a "finished look" to Concrete and Masonry . . .

Resists fading. Test fences in Florida and New England, standard 500-hour Fade-ometer tests, 2000-hour Weatherometer tests, and six years of actual field use, show that all but a few of the brightest colors may be expected to last many years in the sunniest climates.

Freeze-Thaw-Proof . . . 200 Cycles. Samples have been alternately immersed in water, frozen, air-dried, immersed in water, frozen, baked in 150°F oven for 200 days without any change in coating appearance or integrity.





Water-Safe. A steady stream of water that penetrates unfinished cement asbestos board in 30 minutes shows no penetration after eight hours when board has been treated with Bostik Architectural Coating. There was no change in coating color or integrity, nor evidence of mildew following 200 hours of exposure to 80% relative humidity at 105°F.

Won't Blister. Tests show Bostik Architectural Coatings breathe to let moisture vapor out. Vapor pressures that blister ordinary oil paints and membrane type coatings, such as vinyl, etc., merely transmit water vapor through these coatings with no effect on color or integrity.

Smoke and Flame Resistant. Independent research laboratory reports on ASTM E-84-59T "Tunnel" test show that Bostik Architectural Coatings present negligible fire hazard when applied on non-combustible sub-strates. Fuel contributed 2, flame spread 5 and smoke density 4.

For complete test results, contact your nearest franchised applicator or representative listed here, or write B. B. Chemical Co.

Architectural Coatings of Alabama
Division of Vulcan Painters, Inc.
804 7th Avenue, Birmingham, Alabama

Smith-Palas Co., Inc.
417 East Regent St., Inglewood, California

Frank E. Connell & Son, Inc.
Architectural Division
519 Hickory St., San Francisco 2, California

Tabo Chemical Corp.
8438 San Fernando Rd., Sun Valley, California

Florida Insulation & Fireproofing Co.
1465 N.E. 129th St., Miami 61, Florida

Goodman Decorating Co., Inc.
210 Simpson St., N.W., Atlanta, Georgia

Cooke Associates
P.O. #485, Stone Mountain, Georgia

Kirchdorfer & Howell, Inc.
425 East Woodbine Ave., Louisville 8, Ky.

Chapman Waterproofing Co.
10 Alger St., So. Boston, Massachusetts

Texturecote, Inc.
21040 Coolidge Highway
Oak Park 37, Detroit, Michigan

Curran V. Neilsen Painting
& Decorating Co.
3827 Edgewood Ave., Minneapolis 6, Minnesota

Scally Waterproofing Co., Inc.
7259 Devonshire, St. Louis 19, Missouri

Moore Maintenance Products
614 Redman Ave., Haddonfield, New Jersey

C. Toto Associates, Inc.
P. O. Box 135, Madison, New Jersey

New York Office: B. B. Chemical Co.
Div. of U.S.M.C., 1 West 16th Street,
New York City 11, New York

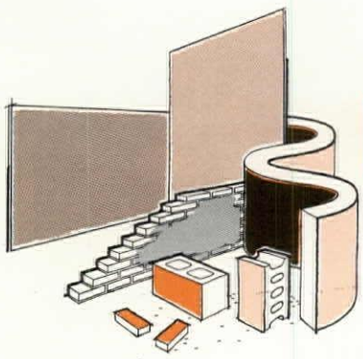
United Tile Company, Inc.
501 Good-Latimer
Dallas, Texas

Architectural Coatings Co.
3223 West Avenue, San Antonio, Texas

Bailey Sales Co.
3223 West Avenue, San Antonio, Texas

United Tile Company
2506 Franklin Avenue, Waco, Texas

Economy Cast Stone Company
15 East Franklin St., Richmond, Virginia



Bostik T.M.
ARCHITECTURAL COATINGS

See us at the CSI and AIA Conventions

A.I.A. File No. 25-B-39

B.B. Chemical Co., Division of United Shoe Machinery Corporation, 784 Memorial Drive, Cambridge 39, Massachusetts

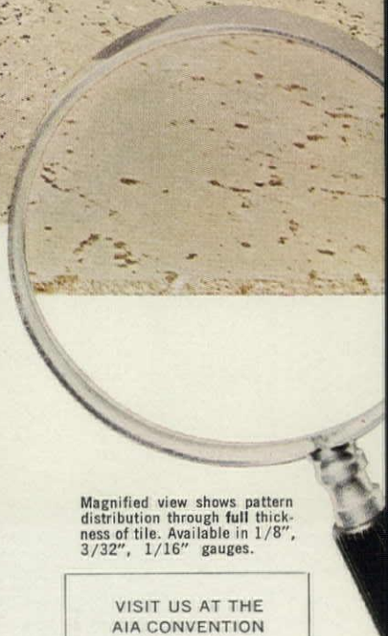
R 2

Colors: VM-461 Alabaster Gold with black feature strip

Vina-Lux® PREMIERE *Series*

elegant floor beauty that won't "walk off". . .

. . . because the travertine patterning is distributed through the full thickness of the tile. Premiere Series in Vina-Lux vinyl asbestos tile is a unique combination of subtle styling and rugged resistance to maximum traffic loads . . . delivers so much more value and performance than surface patterns . . . yet costs no more. Specify Vina-Lux Premiere Series, for installation over concrete — above, on or below grade, or over wood or plywood subfloors. Consult Sweet's Catalog — or let us send you samples, color charts and detailed architectural specifications. Azrock Floor Products Division, Uvalde Rock Asphalt Company, 502A Frost Building, San Antonio, Texas.

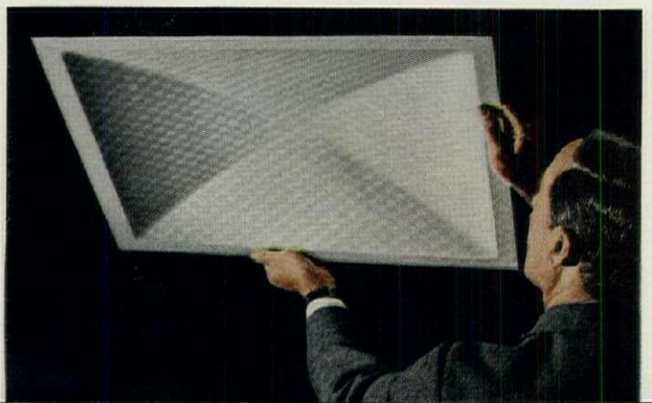


Magnified view shows pattern distribution through full thickness of tile. Available in 1/8", 3/32", 1/16" gauges.

VISIT US AT THE
AIA CONVENTION
EXHIBIT NO. 82

another fine floor by AZROCK®

ACOUSTI-SHELL – new J-M acoustical product –



Acoustical ceilings can now be more than just a plane surface! New J-M Acousti-Shell is a molded unit that rises gently to a 2" vaulted center.

This third dimensional effect adds both height and interest to virtually any ceiling, as the above photograph demonstrates. The panels also offer excellent sound absorption across the entire audible range.

And because each Acousti-Shell unit is made entirely of fiber glass, it has a flame-spread rating of zero. The base material is sound-absorbing glass fibers . . . the sur-

brings a true 3rd dimension to sound control!

facing material is a woven fiber glass fabric. These are molded into units 24" x 24" x 2" high, which are of a shell-like thickness about one-third that of flat sound-control panels. Yet they are strong, rigid and easily installed in a simple suspended grid system.

Standard Acousti-Shell fabric colors are white, blue and green. On special order, however, the surface fabric may be dyed in a wide variety of colors or can be printed with custom designs.

The new Acousti-Shell line also includes flat panels for borders, for areas around columns and beams, for spot-light cut-outs and similar uses.

For more information and a look at this unique new ceiling panel, call your J-M Representative. Or write Johns-Manville, Dept. AF-4, Box 158, New York 16, N. Y. In Canada: Port Credit, Ont. Cable: Johnmanvil.

JOHNS-MANVILLE JM PRODUCTS

DuKane

DEPTH OF SERVICE

on-the-spot sound and communication system consultation, installation supervision and follow-up service!

Since 1922, DUKANE has built a coveted reputation for electronic excellence, beauty, dependability and long life in sound and communication systems. DUKANE Depth of Line and Depth of Experience is backed by Sales Engineering Distributor Depth of Service.

A call to your local DUKANE Distributor starts the ball rolling. After a consultation with you regarding your sound and communication system needs, the DUKANE Distributor will make his recommendations to provide the most efficient system consistent with requirements and budget.

After specification, he follows and supervises the sound and communication system installation to completion. His training assures you proper installation for complete satisfaction.

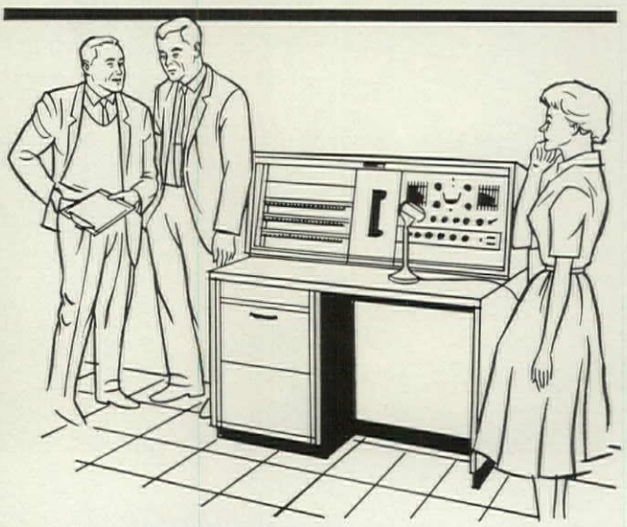
Keeping the system operating to your customer's or client's complete satisfaction over the years is a responsibility your DUKANE Distributor assumes in a service contract. He also sees that customer personnel are efficiently schooled in operation and usage of the system.

The proof of his experience is the countless number of DUKANE Sound and Communication System installations which are turning profitable and high efficiency records in hospitals, schools, business, industry, churches, sports and recreation areas, hotels, motels, etc. 300 DUKANE Sales Engineering Distributors nationwide assure "phone call" nearness for consultation and service.

CONSULTATION SERVICE

INSTALLATION SUPERVISION

FOLLOW-UP SERVICE



WRITE TODAY FOR FULL DETAILS ON DUKANE DEPTH OF LINE IN SOUND AND COMMUNICATION SYSTEMS

NAME_____

TITLE_____

FIRM_____

STREET_____

CITY_____ STATE_____

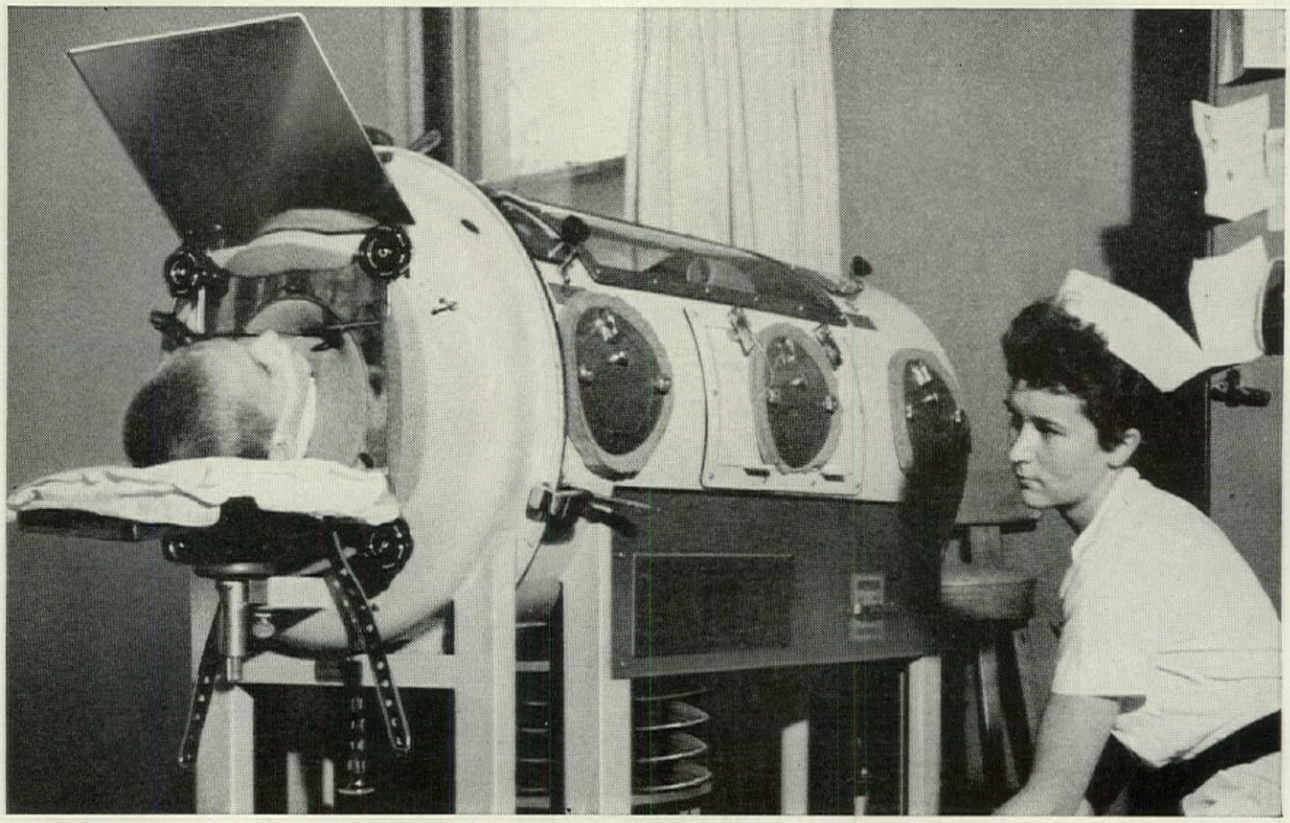
DuKane CORPORATION

COMMERCIAL SOUND DIVISION

DEPT. AF-42 / ST. CHARLES, ILLINOIS

Is STAND-BY a big enough word
in your POWER PLANNING?

In business and in hospitals, power loss is inconvenient... and expensive!



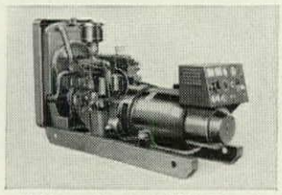
Power loss in hospitals can affect lives. In business, it's usually limited to financial loss. Stand-by power should be available to cover at least the minimum power needs a firm, institution, or place of business requires for continuing operation.

Increasing use of electric and electronic equipment increases power consumption every year . . . requiring additional emergency stand-by power.

When planning your stand-by power requirements, count on Kohler. With a reputation for long, arduous service and reliability, Kohler electric plants supply emergency power and light with units ranging in size from 500 to 115,000 watts, AC. Using gasoline, gas and Diesel fuel, and employing several starting and cooling systems, Kohler units are specifically designed for stand-by use—or as sole power sources.

All units meet NEMA, AIEE, ASA and Canadian Standards Association recommendations. All can be serviced throughout the world. All are famous for dependability.

Engineers: see Sweet's Architectural Catalog and Industrial Construction Catalog or write to Kohler Co., Dept. P-504, Kohler, Wisconsin.



Kohler 35R081, 35 KW Diesel, remote starting, liquid-cooled

KOHLER OF KOHLER

Kohler Co., Established 1873 • Kohler, Wisconsin

ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

Cleveland Institute of Music building, Cleveland, Ohio. **Architects:** Schafer, Flynn & Williams, Cleveland. **Contractor:** Hunkin-Conkey Construction Company, Cleveland. **Structural Engineers:** Barber, Magee & Hoffman, Cleveland. **Precast Concrete Panel Manufacturer:** "Marzaic" by Marietta Concrete Division, Martin Marietta Corporation, Marietta, Ohio.

SCHAFER, FLYNN & WILLIAMS

specified reinforced, precast white concrete for the graceful structural columns of this new music building in Cleveland. Made of ATLAS WHITE portland cement and exposed quartz aggregate, the shaped columns, with haunch, support both the roof and second floor. The 5-inch-thick insulated spandrel panels are also precast exposed aggregate white concrete, attached with bolts to the structural concrete frame. □ More architects are recognizing the structural as well as the decorative qualities of precast white concrete. It can be cast in a variety of sizes, shapes, colors and textures. Installation is fast, simple, economical. Maintenance costs are low. □ For specific information, consult your local precast concrete manufacturer. For a 32-page brochure titled "White Concrete in Architecture," describing properties and installation details, write to Universal Atlas, 100 Park Ave., New York 17, New York.

Universal Atlas Cement
Division of
United States Steel

USS

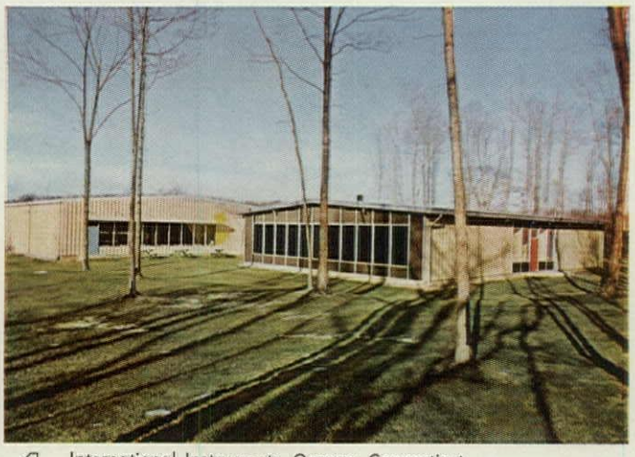
"USS" and "ATLAS" are registered trademarks.

WF-55

1 Cooper Theatre, Denver. Architect/Richard J. Crowther and Associates, Denver. Designer/Melvin C. Glatz, Lakewood, Colorado.

2 Waialae Bowl, Honolulu, Hawaii. Architect/Takashi Anbe, A.I.A., Honolulu, Hawaii.

3 Gladding McBean Co., warehouse, San Francisco, California. Architects/Sutton and Stephens, San Francisco, California



4 International Instruments, Orange, Connecticut. Architects/Pedersen and Tilney, New Haven, Connecticut.

Can you pick the Butler buildings in this group?

1. This is the first theatre of its type, designed and constructed in the round, specifically for showing Cinerama productions. No, it is not a Butler building. However, the rotunda is sheathed in Butler Monopanl, insulated curtain wall. One-foot width modules and permanent, self-sealing joints were part of the reason.

2. No single photograph could convey the ingenious design treatment throughout this bowling lane by Takashi Anbe. Here, the steel structural and roof systems are by Butler.

3. This warehouse is essentially a pre-engineered Butler building, all but the façade on the street side. This is faced with masonry, and a decorative tile product manufactured by the owners.

4. Everything in sight on these two buildings is by Butler... roof, curtain walls and structural systems. Butler's two finest, insulated curtain walls are used throughout. These precision-fabricated structures bear the closest scrutiny for materials, fabrication, detailing and appearance.

Actually, there are no "Butler buildings" in this group. That is the point. In each, there are other materials in greater or lesser proportion, and the role of the architect is paramount. Butler offers you not a "packaged building"—but a pre-engineered, modular system, useful on the one hand as one or several components—or on the other, as an integral total approach to design and materials.

This system... in part or in toto... is sometimes the best solution. See what 32 architects and architectural firms have done recently with the Butler Building System. Ask your nearby Butler Builder to show you the sound-strip film, "Facing the Public." Or write direct requesting further information.

BUTLER®

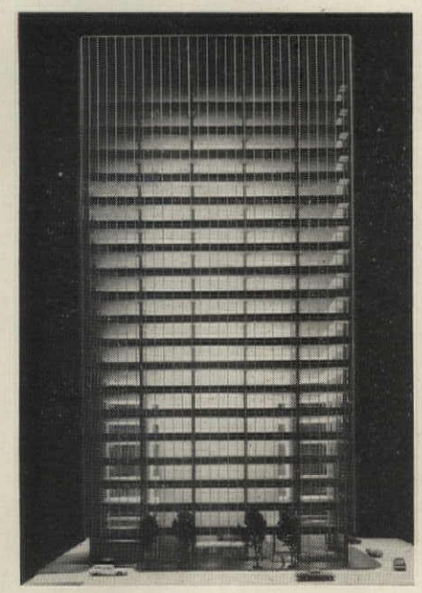
Sales Offices and Dealers Nationwide

BUTLER MANUFACTURING COMPANY

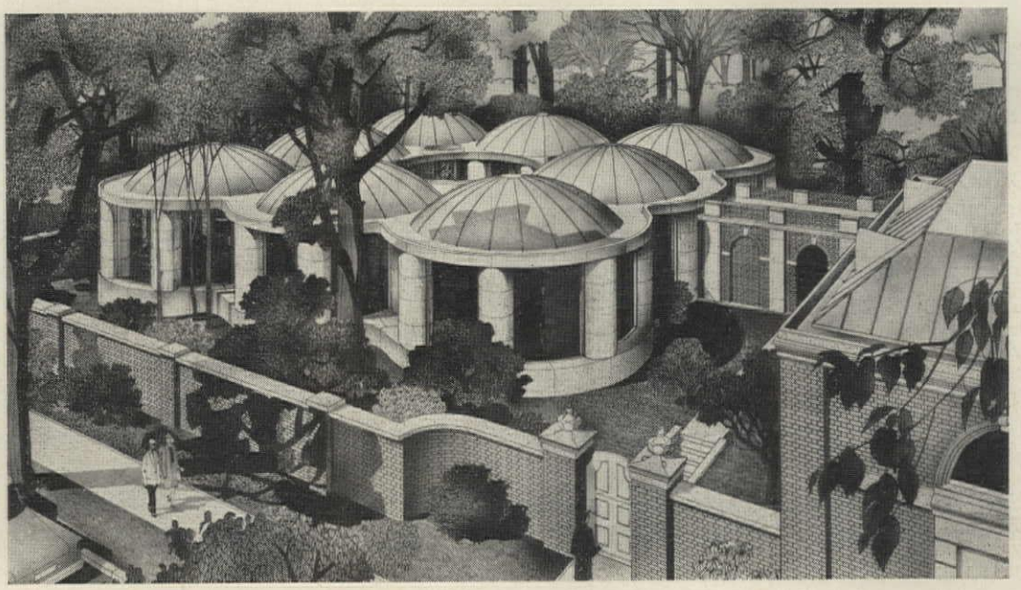
7336 EAST 13TH STREET, KANSAS CITY 26, MISSOURI

Manufacturers of Metal Buildings • Plastic Panels • Equipment for Farming, Transportation, Bulk Storage, Outdoor Advertising • Contract Manufacture

Multidomed museum by Philip Johnson (below)
Tall tower and placid pool in Cleveland (page 33)
Circles for a bank and a church (page 35)

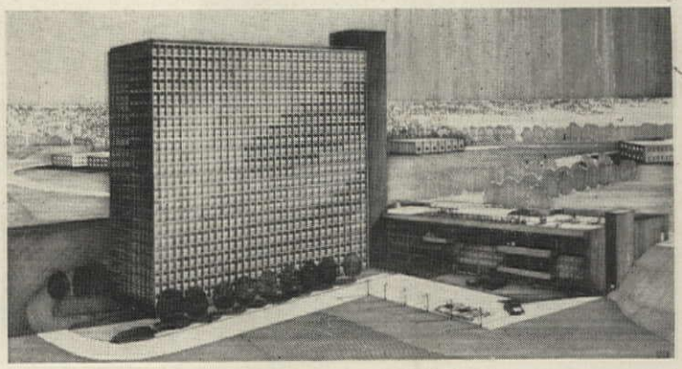


1. *Houston offices by Kenneth E. Bentsen*



2. *Philip Johnson's domes for Dumbarton Oaks museum: eight galleries around a court*

3. *Prototype for floating schools by Tishman Research Corp.*



4. *Portland, Ore. apartment house by Wolff & Zimmer*

1. TALL OFFICES IN HOUSTON. The Southwest Tower, slated for a downtown corner in Houston, will stretch up 21 stories from a brown-brick sidewalk plaza. Bright aluminum mullions, black porcelain enamel, and gray glass will provide a bright-and-dark contrast to emphasize the tower's vertical lines. The Bank of the Southwest, the tower's landlord, will reserve the basement and a lobby bank for itself, rent the rest. Architect: Kenneth E. Bentsen.

2. DUMBARTON OAKS MUSEUM. Nine cylinders, eight of them pavilions topped by domes and the ninth left open, will be added to the Georgian mansion at the Dumbarton Oaks estate in Washington, D.C., to house the pre-Columbian art collection of Mr. and Mrs. Robert Woods Bliss. The domes will line up three to a side to form a square around the court and pool; each will cover a separate glass-walled gallery. Architects: Philip Johnson Associates.

3. FLOATING SCHOOLS. For cities near oceans, rivers, or lakes, the Tishman Research Corp. proposes streamlining Liberty ships into floating schools, to be moored wherever the classroom shortage is most acute. The first such school, under consideration by a UN-sponsored school for staff members' children on New York City's East River, would probably cost in the neighborhood of $4 to $5 million. The price is admittedly high, but subsequent ship-schools, benefiting from the design experience of the first, would cost less. A number of shipbuilding firms, a designer of ship interiors, A. Baker Barnhart, and the Ford Foundation's Educational Facilities Laboratories worked with Tishman on the model design.

4. PORTLAND APARTMENTS. University Senior Citizens, a nonprofit corporation, plans to build this apartment house near the University of Portland campus and overlooking the Willamette River in Portland, Ore. Its 24-story grid of reinforced concrete will contain 380 apartments, dining rooms, an auditorium, and other facilities. Portland Architects Wolff & Zimmer estimate the cost at $5.6 million.

continued on page 33

WORLD'S LARGEST SCIENCE EXHIBIT is housed in Federal Science Pavilion constructed entirely of precast, prestressed concrete components made with 'Incor' 24-hour Cement.

ARCHITECTS: Minoru Yamasaki & Associates; Naramore, Bain, Brady & Johanson; STRUCTURAL ENGINEERS: Worthington, Skilling, Helle & Jackson; GENERAL CONTRACTOR: Purvis Construction Co.; PRESTRESSED COMPONENTS: Associated Sand & Gravel Co., Inc.

FOUR-ACRE COLISEUM is uncluttered by interior columns. Roof trusses are supported by massive concrete tripods and edge beams made with Lone Star Portland Cement.

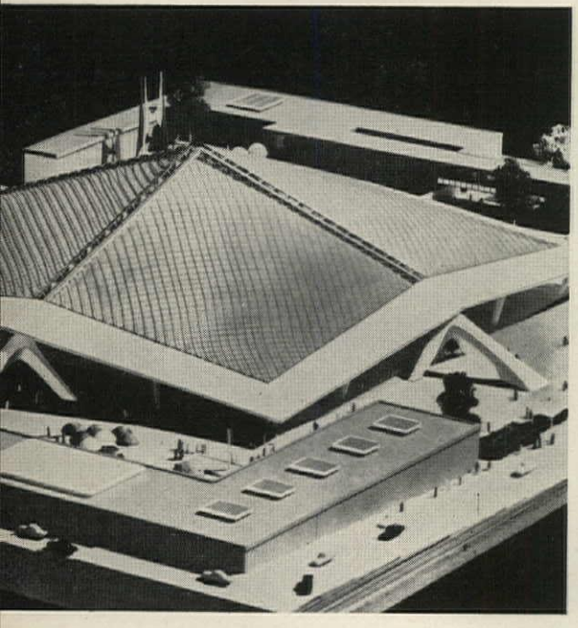
ARCHITECT: Paul Thiry; STRUCTURAL ENGINEERS: Peter H. Hostmark and Associates; GENERAL CONTRACTOR: Howard S. Wright Construction Co.; READY-MIX CONCRETE: Pioneer Sand & Gravel Co.

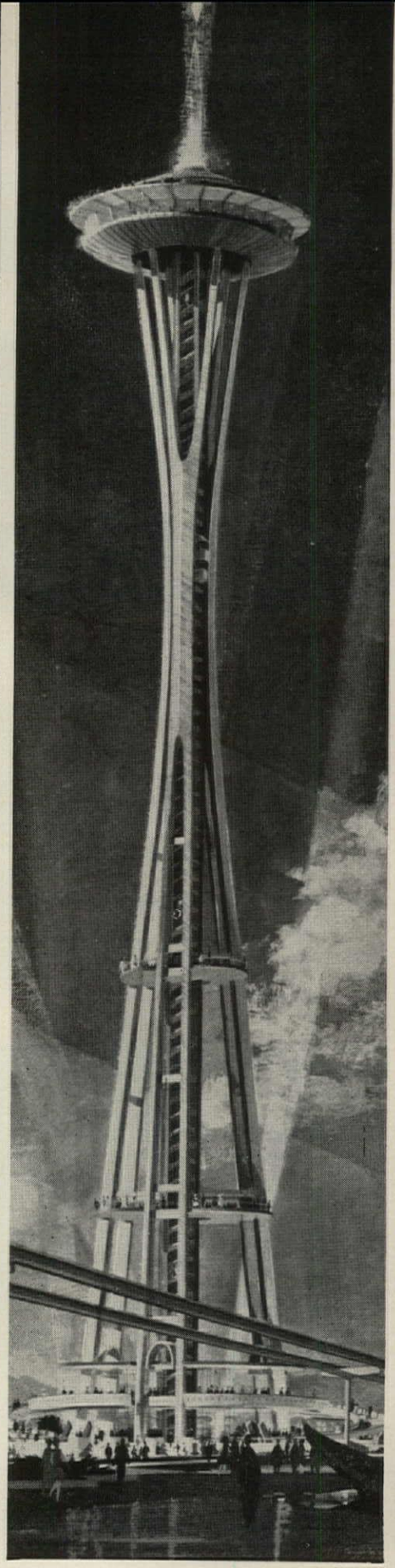
SIXTY-STORY SPACE NEEDLE is securely anchored with 2820 cubic yards of Lone Star Cement concrete, largest pour ever in Seattle. Decks and diaphragm bracing at 100-ft, 200-ft and top levels are also concrete.

ARCHITECT: John Graham & Co.; GENERAL CONTRACTOR: Howard S. Wright Construction Co.; READY-MIX CONCRETE: Pioneer Sand & Gravel Co.

MONORAIL SYSTEM whisks visitors out to the Fair along precast, prestressed concrete beams manufactured with 'Incor' 24-hour cement.

DESIGN: Alweg Rapid Transit Systems; CONSTRUCTION: Howard S. Wright Construction Co.; PRESTRESSED BEAMS: Concrete Technology Corp.





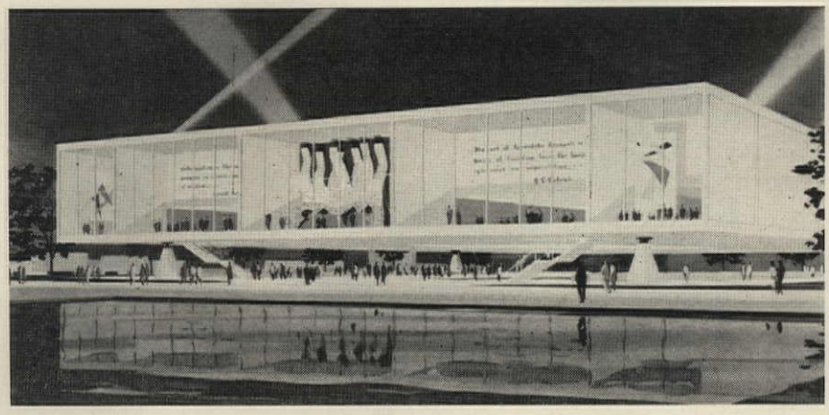
new ideas take concrete form at Seattle World's Fair

Seattle's Century 21 Exposition offers the opportunity of seeing at first hand some of the most spectacular and imaginative uses yet made of concrete. Delicate arches, sculptured panels and massive foundations furnish impressive testimony to modern concrete's beauty, strength and durability. Lone Star Portland and Incor® 24-hour Portland Cements were selected for all of these major "theme" structures of Century 21.

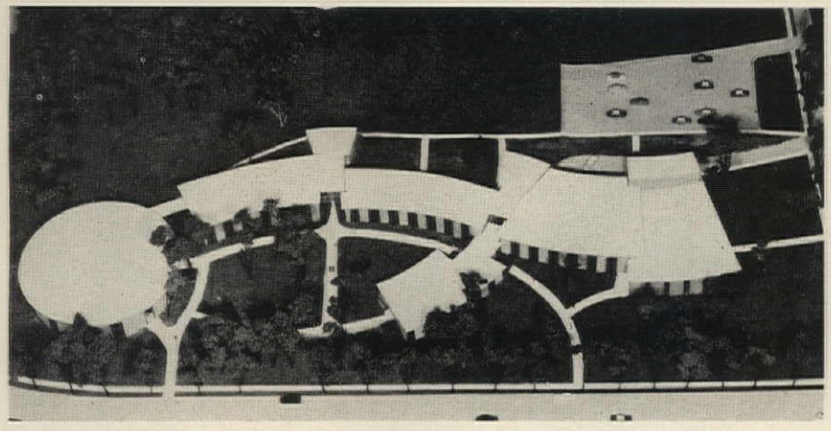
Lone Star Cement Corporation

100 PARK AVENUE, NEW YORK 17, N.Y.

continued



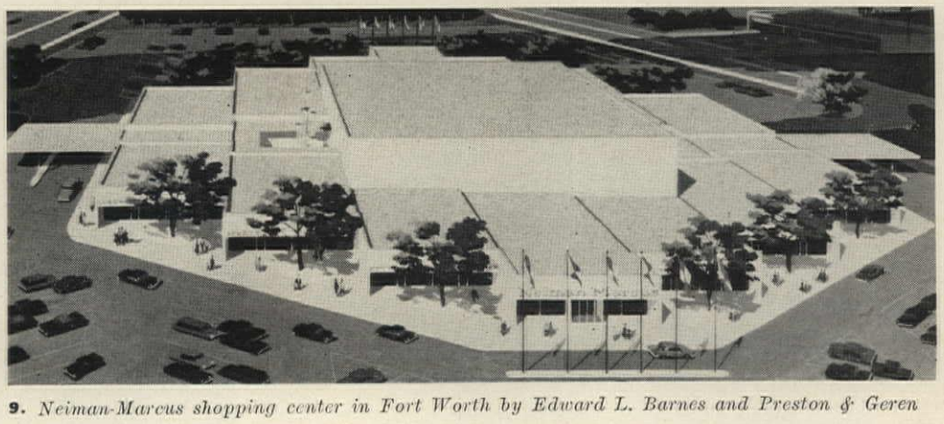
5. *For the New York World's Fair: Skidmore, Owings & Merrill's health pavilion*



6. *Montclair Academy in New Jersey by Epple & Seaman, Philips & Kaufman*

7. *Cleveland's Erieview project by I. M. Pei*

8. *New York college chapel by Vincent Kling*



9. *Neiman-Marcus shopping center in Fort Worth by Edward L. Barnes and Preston & Geren*

5. HALL OF MEDICINE. For the New York World's Fair, Skidmore, Owings & Merrill have designed a Hall of Medicine and Health for the American Museum of Health. Some 60 exhibits will be displayed behind the pavilion's glass walls, the most important ones illustrating accident prevention and man's life-span. Associate: Will Burtin.

6. BOYS' SCHOOL IN NEW JERSEY. Montclair Academy in Montclair, N.J., will pull down its old buildings to make way for a string of six new ones curving along the hilly site. The new buildings, by Architects Epple & Seaman, Philips & Kaufman, are (left to right) a circular gym, classrooms, a library (foreground), and a wedge-shaped chapel.

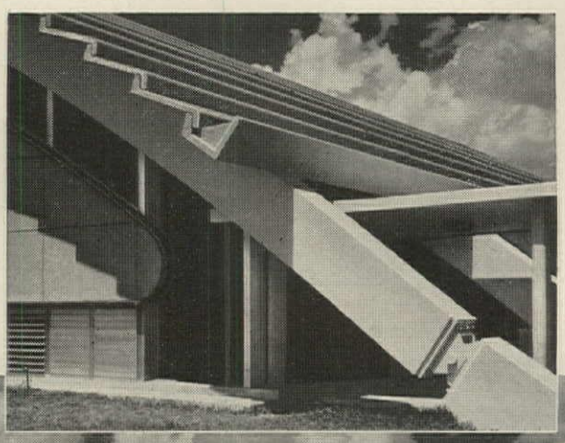
7. CLEVELAND TOWER. The first segment of Cleveland's mammoth Erieview urban renewal project to get under way will be this 40-story tower, part of Architects I. M. Pei & Associates' plan for the whole area. Developers John W. Galbreath and Peter B. Ruffin have bought the site and selected Harrison & Abramovitz to design the tower, following the Pei plan for a metal-and-glass façade, reflecting pool, and plaza.

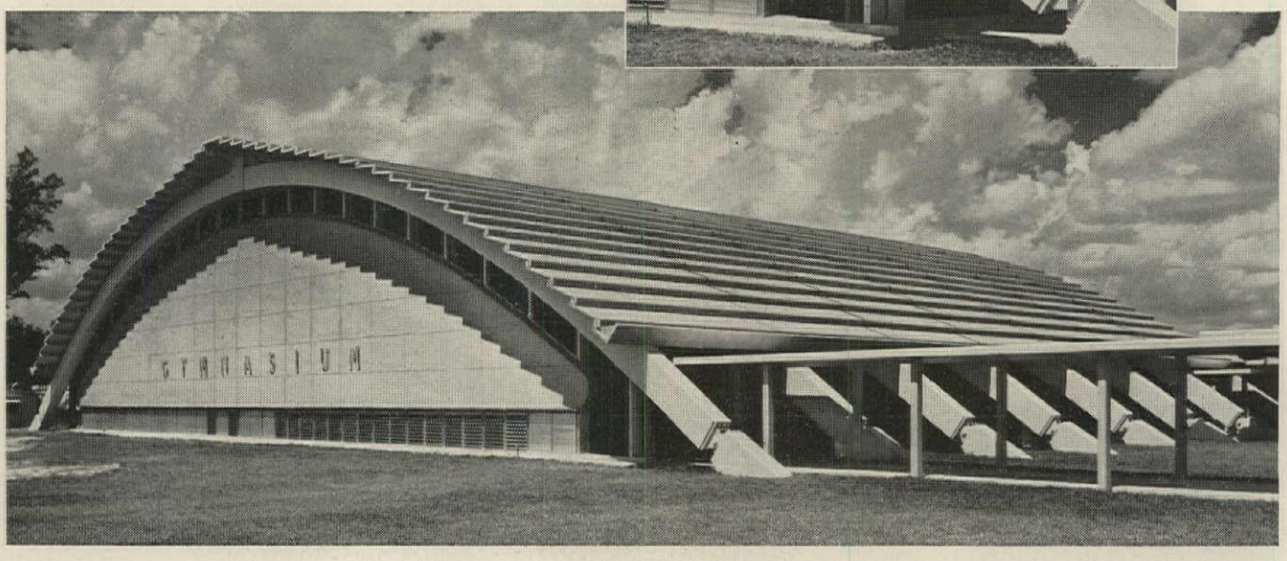
8. COLLEGE CHAPEL. A big tent roof of split-cedar shakes will drop nearly to the ground in Vincent Kling's design for the Keuka College chapel in Keuka Park, N.Y. Another higher roof will admit daylight through a band of clerestory windows over the transept. Inside, too, the roof will dominate, the timbers exposed over the 600-seat sanctuary. Classrooms and offices will be in a single story tucked underneath.

9. TEXAS SHOPPING CENTER. That revered Dallas institution, Neiman-Marcus, is invading Fort Worth to establish its own shopping center around a large branch store. Blocked out in ten squares stepped down from the center, rental space will add up to 40,000 square feet. These smaller shops will be built of block bearing walls and open-web steel joists; the Neiman-Marcus store will be framed in steel. Finishes are of textured stucco. Architects: Edward Larrabee Barnes, Preston & Geren, associated.

continued on page 35

UNUSUAL PRECAST CONCRETE DESIGN for GYM ROOF





The small picture above shows shape and ceramic tile finish of roof slabs. Each panel spans 16′, is 2″ thick, and 4′ wide including upward and downward legs. Special units at bottom act as rain gutter. Aqua colored high-glaze tile was applied by casting it integrally with the slabs as a form liner. Tiles were later grouted and given a coat of silicone waterproofing.

View of completed gym speaks for its grace and practicality. Roof slabs were attached only by welds to dowels in the arches, solving problems involving thermal expansion and contraction. Then joints were covered with sheet copper strips set in a caulking compound.

• Modern precast concrete was imaginatively used to achieve an outstanding combination of function and beauty in Miami Central High's new gymnasium.

The three-hinged arches were cast on a concrete form at Precast Corporation's plant for minimum tolerances and maximum uniformity. In place, they rise directly from buttress footings supported on precast piling. Unusual precast roof slabs span the 16′ between arches. In addition to upward and downward legs for a shingle-type fit, the slabs also have a unique facing of glazed tile.

Lehigh Early Strength Cement was used for peak efficiency in the production of all precast units. In precasting the arches, for example, its use made it possible to turn out two arch-halves a week from a single form.

Lehigh Portland Cement Co., Allentown, Pa.

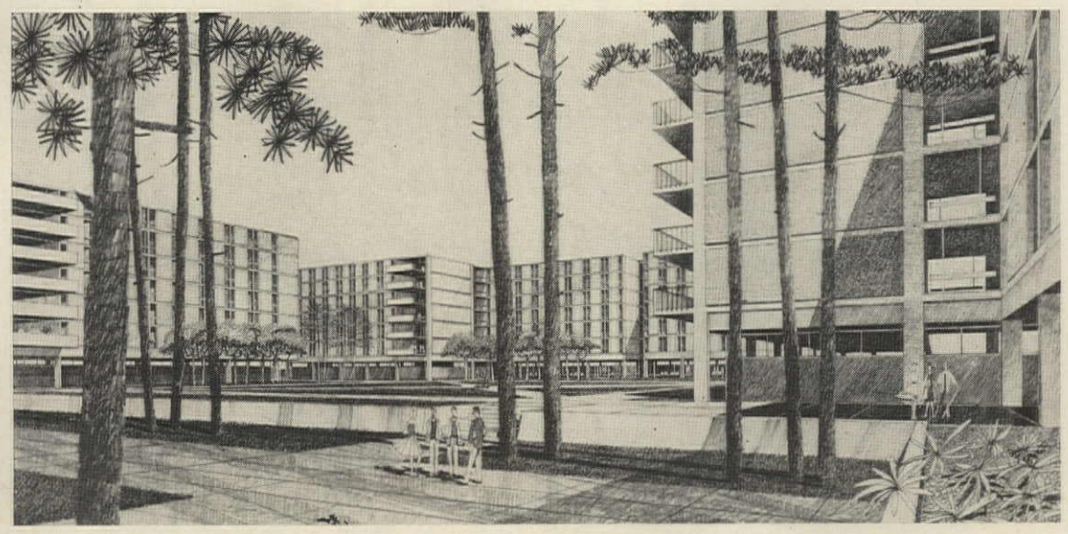
Miami Central High School Gymnasium
Architects: Polevitzky, Johnson & Associates
Structural Engineers: H. J. Ross Associates
Contractor: Thompson-Polizzi Construction Co.
Fabrication/Erection of Precast Concrete: Precast Corp.
All of Miami, Florida

Each of the arches spans 160′ and is spaced 16′ center to center. The arch skeleton is braced by precast lateral members with welded connections. Gym floor space is 12,000 sq. ft., and there is a 10′ wide covered walkway on each side. Note "steps" and projecting dowels cast into arches for securing roof panels.

LEHIGH CEMENTS

continued

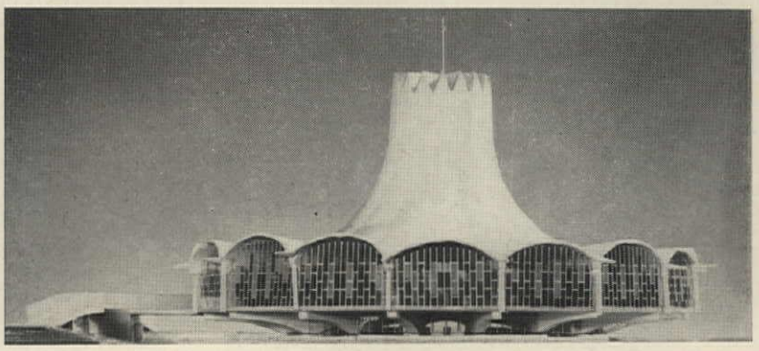
10. *Charles Luckman's Boston hotel*



11. *University of Massachusetts dormitories by Hugh Stubbins & Associates to house 1,200 students*

12. *Plan for New Jersey state offices, by Frank Grad & Sons*

13. *Branch bank in Los Angeles by Welton Becket & Associates*



14. *Church in Fort Wayne, Ind. designed by Architect Orus Eash*

10. BOSTON HOTEL. So vast and varied are the restaurants planned for the Hotel America in Boston's Prudential Center that 1,000 diners at a clip will be able to savor roast beef, seafood, Oriental fare, smorgasbord, and Turkish delight in appropriately garnished rooms. The hotel will be varied, too, combining a three-floor motel close to the garage, 20 floors of standard hotel rooms, and luxurious residential suites on top. Charles Luckman Associates designed the project, which will cost $25 million for 25 stories.

11. COLLEGE DORMITORIES. The University of Massachusetts in Amherst plans to shelter 1,200 members of its expanding student body in this complex of new dormitories designed by Hugh Stubbins & Associates of Cambridge. The structure will be precast concrete bents; masonry will be used for both interior and exterior walls.

12. NEW JERSEY CAPITOL PLAN. The state of New Jersey is rushing its Capitol Development Program, by Frank Grad & Sons, to a 1964 completion, in time for the state tercentenary. In this model photograph of the Trenton riverfront, the two structures rendered in detail are a 13-story labor and industry building by the Grad firm, and a health and agriculture building and attached round laboratory by Alfred Clauss & Associates. The block towers are proposed offices.

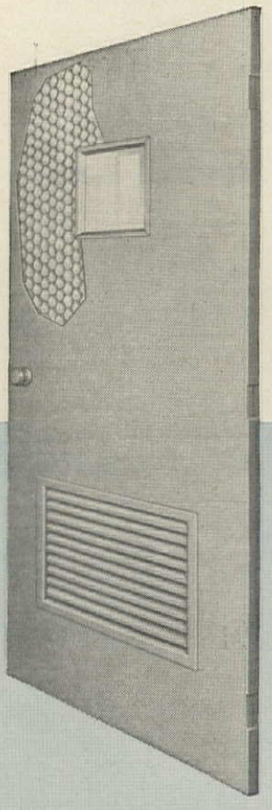
13. CIRCULAR BANK. A round pavilion cantilevered eight feet from a stone base is Welton Becket & Associates' design for the Security First National Bank in Del Webb's International Airport Center, Los Angeles. Four precast concrete bridges will carry customers over a dry moat and into a main banking room walled in glass and roofed with tapered precast concrete vaults.

14. CIRCULAR CHURCH. For Fort Wayne's Immanuel Baptist Church, now taking shape, Architect Orus Eash has elevated the sanctuary, wrapped perimeter classrooms in stained glass, and drawn the roof into a saw-toothed peak. Concrete bents cantilever the main floor past a ring of basement classrooms and storage space. END

STEELCRAFT

The finest name in...

METAL DOORS and FRAMES

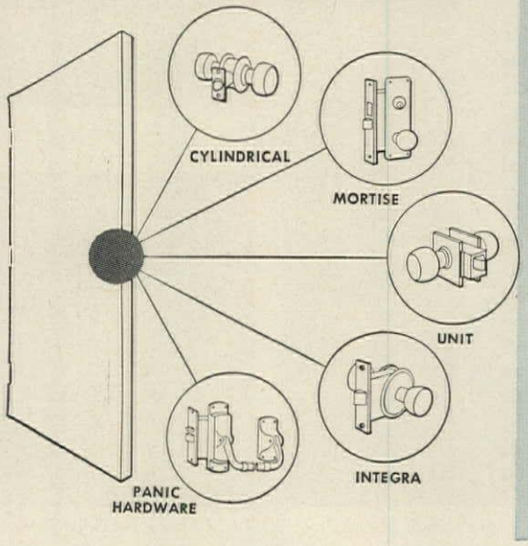


Honeycomb core—A Steelcraft development that provides new strength! A honeycomb core is permanently bonded to two layers of steel . . . deadens sound, adds ruggedness.

Another constructive suggestion from the Steelcraft Idea File.

Ease of coordinating hardware on Steelcraft products is pointed out to Robert D. Hodgson, architect, and Hal R. Scott, hardware supplier, by John Lynch, salesman for Steelcraft's Salt Lake City distributor, Buehner Block Company.

COMPLETE FREEDOM OF HARDWARE SELECTION



Steelcraft doors and frames offer the architect and hardware consultant complete freedom of hardware selection. Standard preparations are available on Steelcraft doors for every major type of lock. All Steelcraft doors can be used interchangeably on any Steelcraft frame. Call your Steelcraft distributor for special assistance in coordinating hardware and approval drawings . . . save delivery time . . . cut construction costs.

THE STEELCRAFT MANUFACTURING COMPANY

9017 Blue Ash Road, Cincinnati 42, Ohio

STEEL Craft METAL DOORS AND FRAMES

Lightweight beam for concrete pours (below)

A shakeless, self-sharpening saw (page 38)

Low-cost aluminum door (page 40)

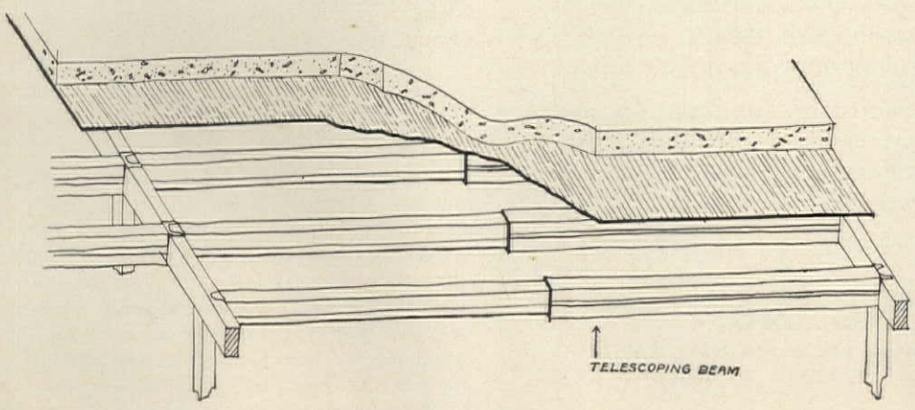
TELESCOPING BEAM

The aluminum I-beams and box sections shown above are adjustable shoring beams which simplify the placement of concrete slabs. Wedged into place as temporary supports during concrete pours, *Alcoa*Hico beams* are easily removed and installed again on succeeding floors. Replacing other kinds of framing with this adjustable beam results in savings of up to 40 per cent in framing costs, according to its promoters (Alcoa and Hico developed the beam together; Hico is marketing it). The biggest factor is the time saved in stripping forms. Only three men are needed: two to dislodge the beam ends and telescope the two sections, and one to carry away the collapsed beams.

As shown here, the I-beam nests inside the box section. Extended the length of the span, the beam locks with a few turns of a bolt at the bottom of the box section. The weight of the top slab flattens the beam's built-in camber so that it is entirely level.

Three standard beam sizes span from 6 to 17 feet. With the addition of another box section telescoped over the I-beam's free end, the beam can be made to span 21 feet. The weight of the smallest beam, which spans 6 to 10 feet, is 45 pounds; the largest, spanning 11 to 17 feet, weighs 74 pounds. Currently the Alcoa*Hico beam is available in Boston, New York, Chicago, Pittsburgh, and surrounding areas at a rental cost of 4 to 6 cents per square foot of floor slab supported. Later this year it will be available nationally.

Manufacturer: Hico Corp. of America, 30 Rockefeller Plaza, New York 20.



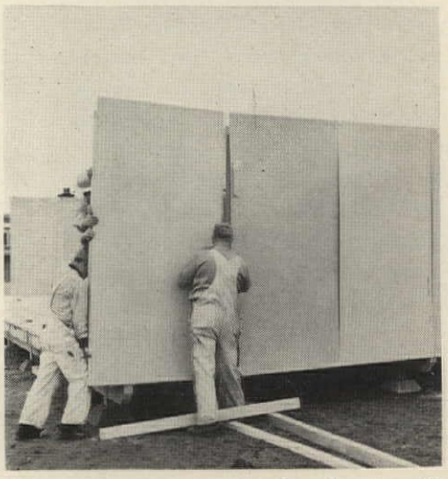
RUBBER-FACED PLYWOOD

A new rubber coating for plywood, permanently laminated to it in the factory, promises to give that material a tough, weatherproof finish good for 20 years without maintenance. The coating is Du Pont's Hypalon synthetic rubber; the permanent laminating process (and the plywood) belong to Georgia-Pacific, who claim that the new product will resist weather without becoming brittle, even with age, and will outlast by four or five times the best quality paints.

As shown in the photograph below, finished panels come from the plywood hot-press covered with paper release sheets to protect them until they are installed. In production now are 8 by 10-foot panels, ⅜ inch thick; other sizes and thicknesses will come later. Panel edges are shiplapped and do not require further covering (although matching battens may be used to cover panel joints, and roof panels can be calked and taped for appearance and added protection, as on the school walls pictured). The colors available are pastels: blue, green, gray, yellow, and white. Installed price is competitive with other quality factory-finished siding, including metal, and with quality unfinished siding that must be painted on the job.

To round out its new line, Georgia-Pacific markets matching accessories: screw-shank aluminum nails in the same colors, Hypalon-covered battens, and Hypalon touch-up paint for window casings and other trim.

Manufacturer: Georgia-Pacific Corp., Equitable Building, Portland 4, Ore.



continued on page 38

continued

SELF-SHARPENING SAW

A radically new chain saw—which sharpens and oils itself, jet sprays fuel into its engine, and vibrates much less than previous models—is now being marketed by the McCulloch Corp. of Los Angeles. This small but powerful single-cylinder, two-cycle machine, the *McCulloch BP-1,* packs into a 15-pound frame advantages hitherto available only in heavier equipment. It is being produced in limited quantities, with full production slated for later this year.

Most important to the smoothness of the saw's operation is the balanced-piston principle on which it works. In this system, one power piston is counterbalanced by a second piston which does not fire. This second piston equalizes stroke and thrust at the crankshaft to smooth out the shakes common to most engine-powered saws. The balancing piston also doubles as a timing valve to regulate fuel intake and as a compressor to charge the combustion chamber with fuel.

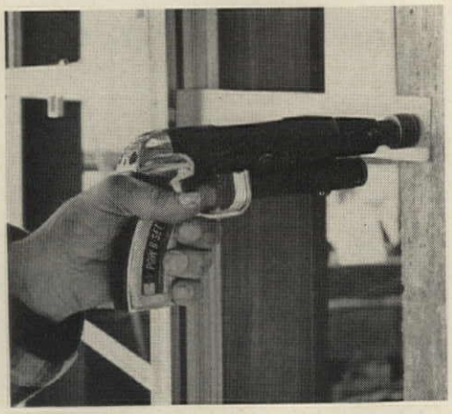
In another refinement, a pushbutton sets in motion a carborundum wheel which sharpens the saw while it is in use; the button also adjusts the wheel to the proper filing angle.

Alloys of aluminum and magnesium account for the engine's lightness. It weighs only 9 pounds by itself, 15 pounds complete with saw. The cost is about $300.

Manufacturer: McCulloch Corp., 6101 W. Century Blvd., Los Angeles 45.

SMALL FASTENING GUN

Any construction man can look like "Gunsmoke's" Marshal Dillon when he packs *Pow-R-Set,* Ramset's new fastening tool that comes with its own leather holster. In action, the new gun tackles a variety of medium fastening chores, especially those in hard-to-reach places where a bigger tool would be clumsy to maneuver. It drives pins or threaded fasteners into metal, masonry, concrete, or wood.



This is the first time Ramset has combined a powder-actuated device, which works on the principle of its heavy-duty Jobmaster tools, with piston action in a low-velocity gun. A pull on the trigger fires a blank cartridge, the power from the cartridge pushes the piston, and the piston hammers the fastener into the surface.

Used on two major jobs so far, a housing project in Brooklyn and a high school in Maryland, Pow-R-Set speeded up the fastening of window frames and curtain-wall components. The supervisor on the high-school job figured a time saving of two weeks; the client estimated at least $2,000 pared from labor costs.

The gun is compact, about three inches longer than a man's hand, and weighs 4½ pounds. It operates at a low noise level and automatically expels spent cartridges. For $112.50 (list), the buyer gets the gun, an assortment of tools, and a tool kit; the holster costs $5 more.

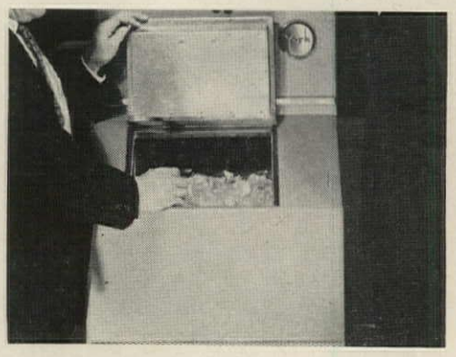
Manufacturer: Ramset, Winchester-Western Div., Olin Mathieson Chemical Corp., 275 Winchester Ave., New Haven 4, Conn.

THERMOELECTRIC ICE

Hexagonal ice cubes might seem a little farfetched, but to Borg-Warner the facets are good business: the larger surface area of a hexagon freezes faster and cools drinks quicker than does a cube or a cylinder. With this new shape in cubes, the company has introduced the first commercial thermoelectric ice-cube maker that also stores its own ice. Last year Borg-Warner installed the first batch of thermoelectric refrigerators, which made 18 cubes in a single tray, in the Chicago-Sheraton Hotel (FORUM, May '61). Further work on the thermoelectric principle—passing direct current through two dissimilar metals—and more efficient use of materials enabled Borg-Warner's York Division to reduce the cost substantially.

When it goes on the market in June, the storage unit, which freezes cubes in 28 minutes and stores 30 pounds of ice at a time, will cost $800 to $1,000, compared to the single tray, which took 5 hours to freeze and cost $200.

continued on page 40



Equally significant features of the new machine, says Borg-Warner, are that it has no moving parts, runs indefinitely without maintenance or repair, and requires about the same amount of power that a single floor lamp uses.

Manufacturer: York Div., Borg-Warner Corp., York, Pa.

LOW-COST DOOR

To its standard line of steel doors, Steelcraft Manufacturing Co. has added an aluminum flush door lower in cost, according to Steelcraft, than any other quality aluminum door on the market. Cost range: $60 to $70 each, plus installation, in the least expensive (mill) finish.

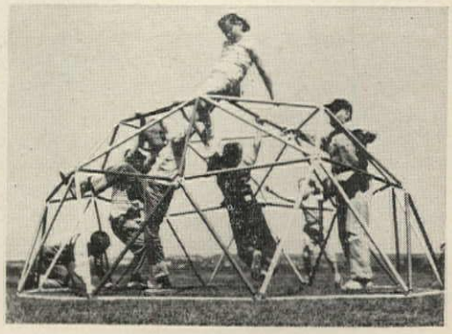
Like the steel doors which Steelcraft has been turning out for some years, the new one is a sandwich panel of impregnated-paper honeycomb, but bonded to facings of heavy-gauge aluminum. Besides an absolutely flat surface, Steelcraft will offer Alcoa's embossed patterns and a variety of finishes: anodized, prime coated, or finish painted for interior and exterior use.

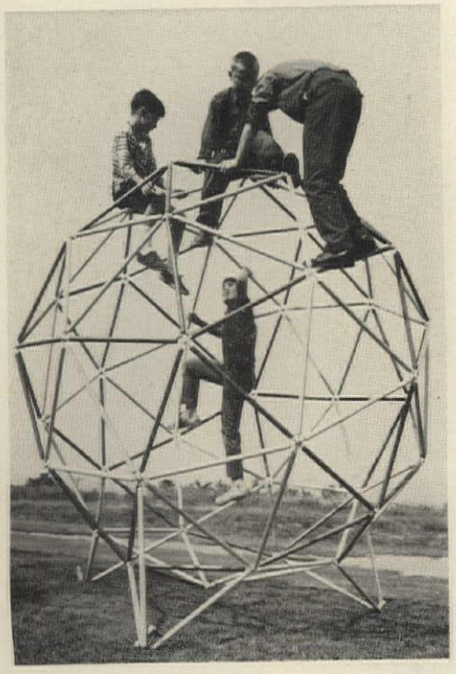
Standard heights: 6 feet, 8 inches to 8 feet; widths: 2 feet to 3 feet, 8 inches; thickness: 1¾ inches.

Manufacturer: Steelcraft Manufacturing Co., 9017 Blue Ash Rd., Cincinnati 42.

CHILD-SIZE DOMES

A student entrepreneur at the Harvard Graduate School of Design, Lionel Spiro, is marketing tot-size versions of Bucky Fuller's geodesic domes, both hemispheres and spheres. Sold knocked-down and packed into





cartons ready for assembly, both versions require only pliers and a wrench to bolt the metal connectors together. Equal-sized struts are hardwood dowels with a red and yellow baked enamel finish.

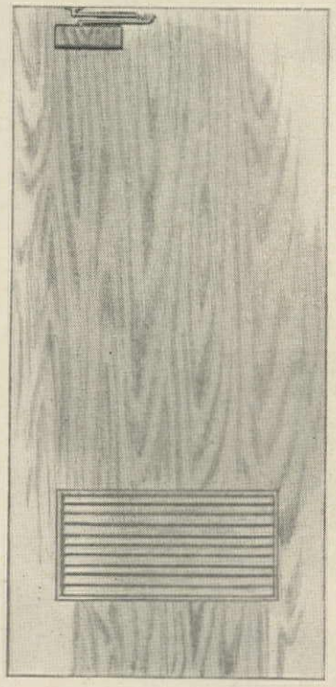
There are two dome sizes, 8 and 11 feet in diameter, which cost $50 and $80 respectively (vinyl covers are available at extra cost). The sphere, actually two 8-foot domes combined, costs $100.

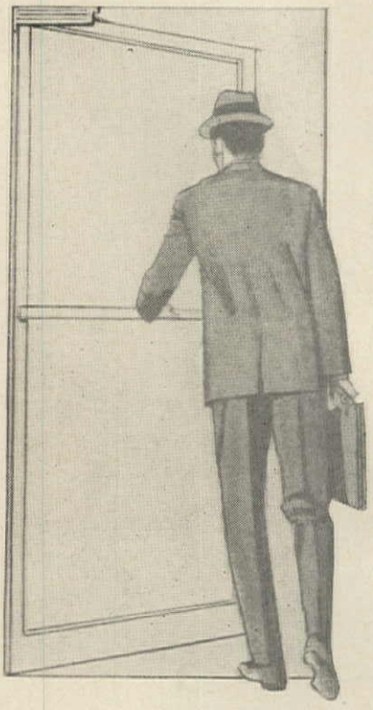
Manufacturer: Children's Domain Div., Best Lumber Co., 794 N. Main St., Fall River, Mass.

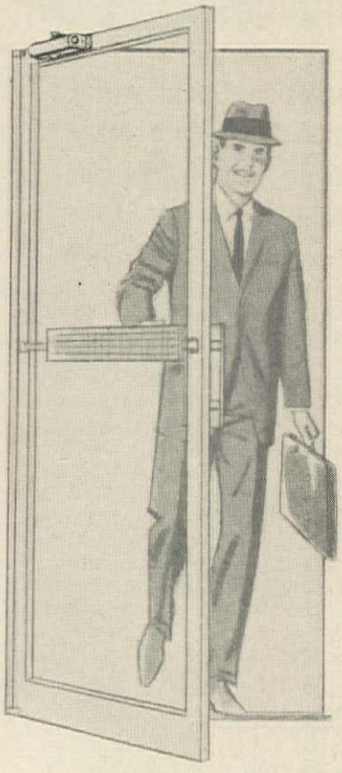
PREVIEW

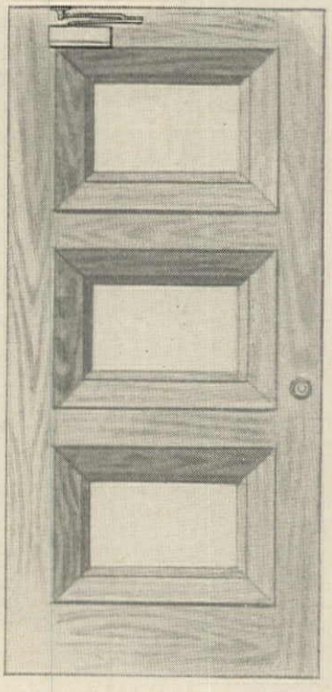
A portable version of the *Visual Task Evaluator,* an optical instrument which determines amounts of light required for specific tasks (FORUM, June '59), enables lighting engineers to make on-the-spot measurements rather than relying on bulky equipment in the laboratory. The prototype, developed by Dr. H. Richard Blackwell and Benjamin O. Pritchard at Ohio State, is about the size of a portable typewriter.

The principle of operation is the same as in the large instrument: a bright light and a glass plate set up an obstacle of reflection through which the observer tries to see his task. By adjusting the light source, he reaches a point where he can barely make it out; that barely visible point is called the "threshold level." The task can then be matched to a laboratory disc for which the lighting requirements have been worked out, thus determining the necessary levels of the new task. The portable evaluator was developed for the Illuminating Engineering Society by the Illuminating Engineering Research Institute, which will license manufacturers to produce instruments. END









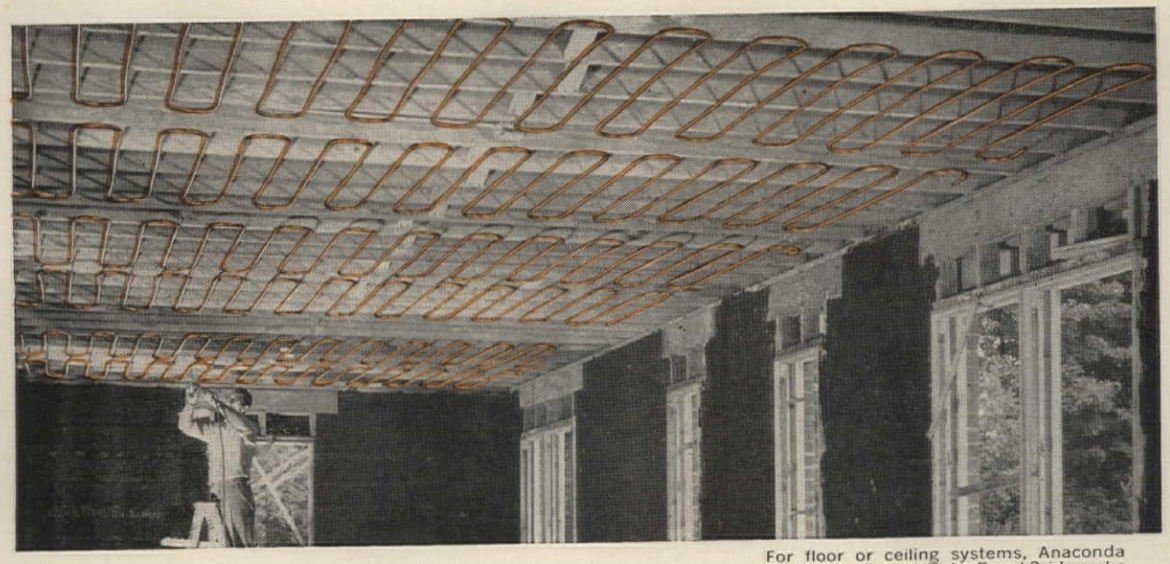
No matter what style doors you plan to use, there are NORTON® door closers to compliment and control them

For specifications, sizing information and complete details write for new Norton Catalog "K".

NORTON DOOR CLOSERS

for Complete Architectural Compatibility 372 Meyer Rd., Bensenville, Illinois

1030



For floor or ceiling systems, Anaconda Preformed Copper Tube Panel Grids make installations easier and quicker.

Anaconda Copper Products for radiant panel heating

In hospitals . . . In schools . . .
In churches . . .
In commercial buildings . . .
In residences . . .

There's a growing demand for this superior, clean, draft-free, uniform-temperature type of heating system, and in installation after installation Anaconda is specified.

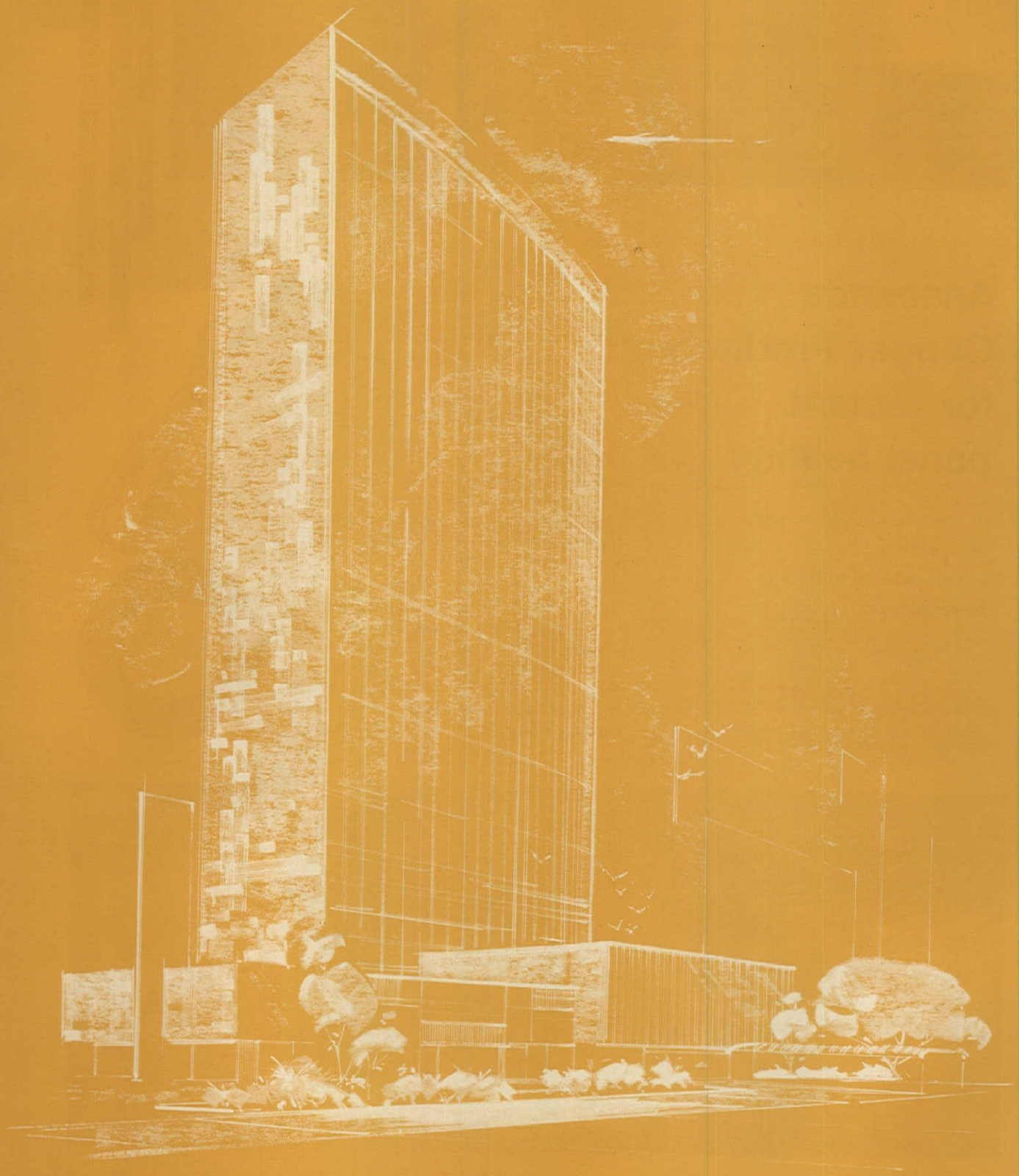
The reason: Anaconda products make it easy to take advantage of the demand by offering tube in convenient 60′ and 100′ continuous-length coils . . . 20′ straight lengths . . . a complete range of fittings . . . and ready-to-install preformed panel grids. The latter, an exclusive Anaconda development known as PG's, offers many economies.

Anaconda Publications B-1 and C-6 will give you complete information including engineering data and installation procedures. For your free copies, write Anaconda American Brass Company, Waterbury 20, Conn. In Canada write: Anaconda American Brass Ltd., New Toronto, Ontario.

61-2002

ANACONDA®
AMERICAN BRASS COMPANY

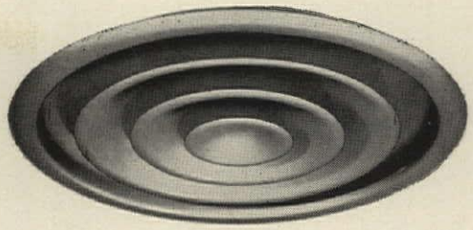
EFFICIENCY IN THE OFFICE

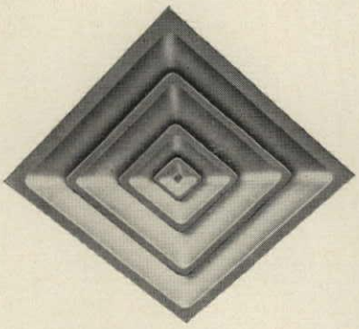


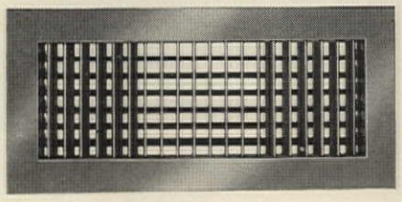
TUTTLE & BAILEY AIR DISTRIBUTION EQUIPMENT has been proved in every kind of installation

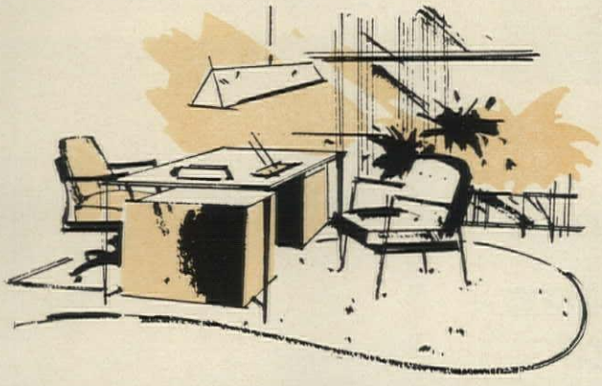
The broad range of T&B air distribution devices and accessory equipment for heating, cooling and ventilating answers every requirement of the architect, engineer and client. As the largest full-line manufacturer, T&B offers the precise piece of equipment for each job . . . setting the highest standards of appearance and performance.

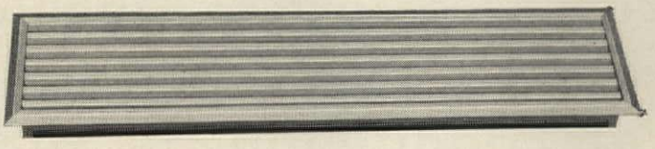
Write for the name and address of the Factory Office or Sales Representative nearest you.

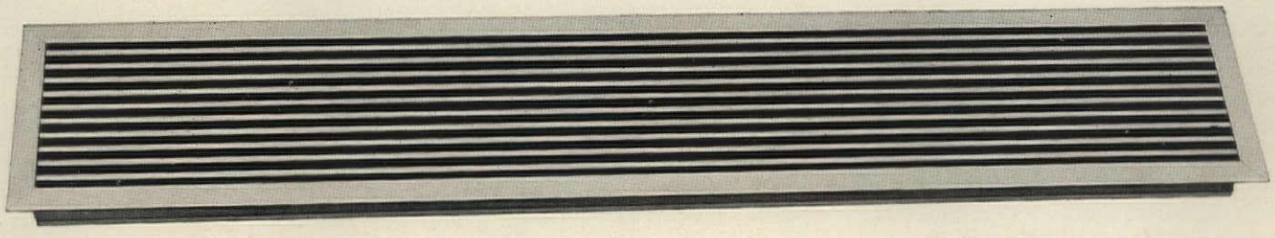


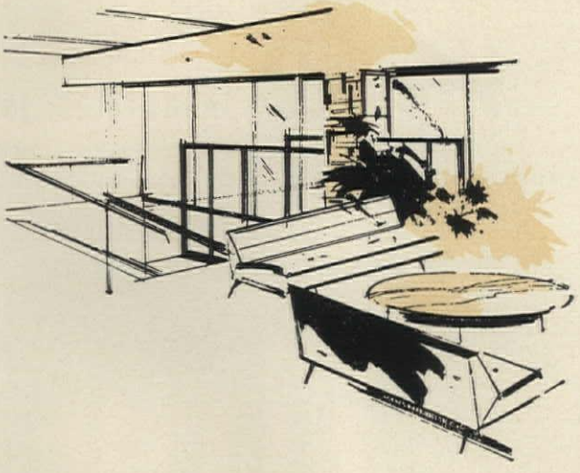


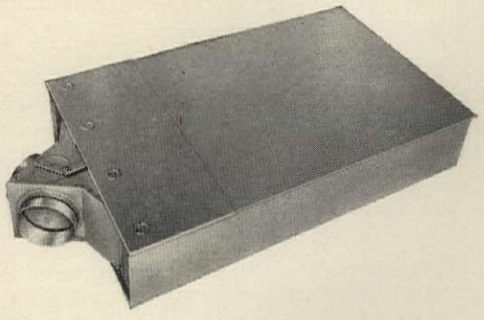






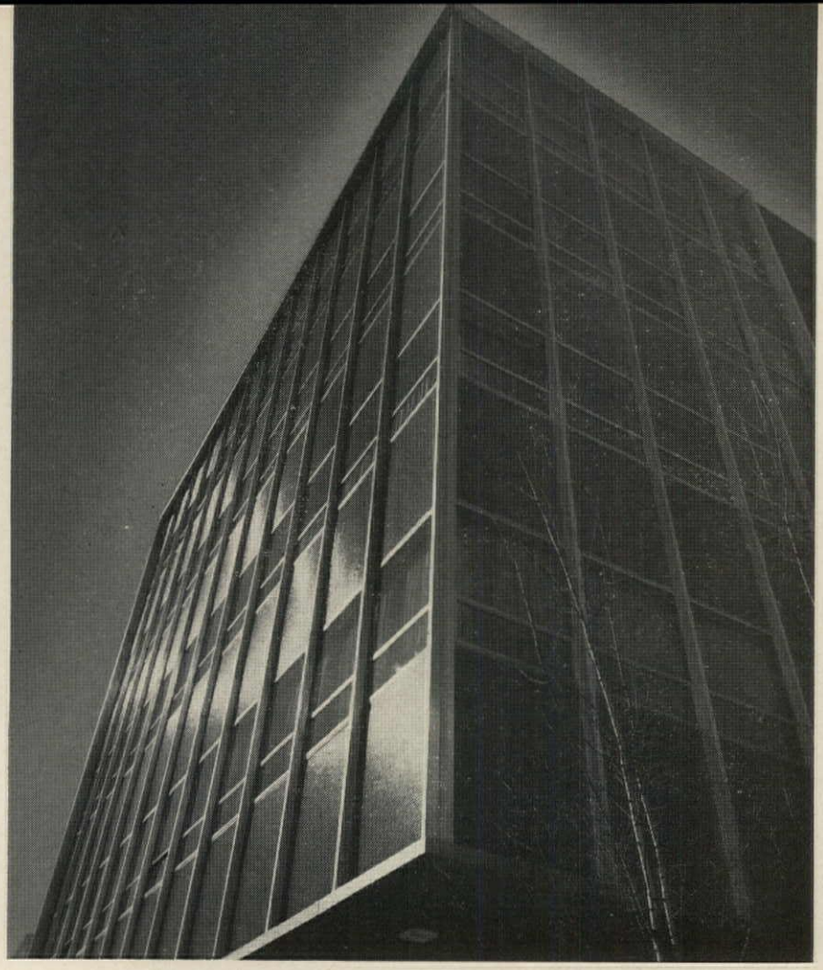


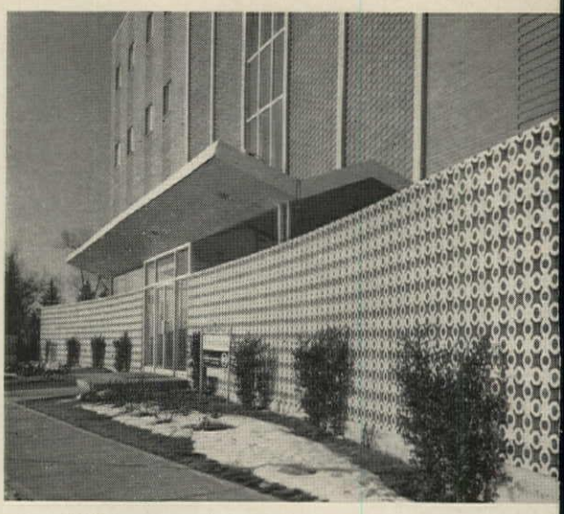




TUTTLE & BAILEY

Division of Allied Thermal Corporation
New Britain, Connecticut
Tuttle & Bailey Pacific, Inc., City of Industry, Calif.





101 University Boulevard Building—Denver, Colorado
Architect: William B. Fullerton, Kansas City
Mechanical Contractor: Natkin & Co., Denver

500 Summer Street—Stamford, Connecticut
Architects: Sternbach & Rheaume, Stamford
Consulting Engineers: Tizian Associates, Stamford
General Contractors: F. D. Rich Co., Stamford

National Western Life Insurance Co.—Denver, Colorado
Architect: John F. Milan, Denver
Consulting Engineer: Francis E. Stark, Denver
Mechanical Contractor: Midwest Plumbing & Heating, Denver

From Stamford to Stockton...
"the word" in office building air conditioning is *Acme*

Striking new office buildings are multiplying in cities across the nation. Featuring dynamic, modern design, the newest building materials and equipment, they achieve a happy harmony of functional beauty, efficiency and comfort. In the latter area, what could be more functional than air conditioning? . . . for, certainly, people feel better, work better, in clean, temperate, properly humidified air. As a result, office building air conditioning is rapidly becoming an "automatic."

More and more, too, owners, architects, engineers, contractors are turning to Acme-system air conditioning . . . a turn occasioned by Acme's time-proved talent for delivering unrivaled quality at a competitive price. True, Acme equipment may cost more. Frankly, it's *worth* more, for Acme steadfastly refuses to cut product corners. But, there's more to the cost of air conditioning than the equipment price tag. Initially, there are additional building structural and equipment installation costs. And, year after year, there are operating and service expenses. Acme-system engineering saves you money in *all* these areas and gives you longer equipment life, to boot! So, when you're "shopping" for air conditioning, look for quality . . . look at *all* the cost factors . . . look to Acme to give you more for less, plus the convenience of leasing and financing plans, if desired.

Acme INDUSTRIES, INC.

JACKSON, MICHIGAN • GREENVILLE, ALABAMA

Manufacturers of quality air conditioning and refrigeration equipment since 1919

Hunter Building—Stockton, California • Architect: Jack Chernoff, Beverly Hills • Mechanical Contractor: Advance Plumbing & Heating, Stockton

To All Our Good Friends in Color

ARCHITECTS...DESIGNERS...
STYLISTS...ALL
CREATIVE COLORISTS...

NOW your most imaginative color ideas can be expressed precisely in MARTIN SENOUR'S new collection.

Now available... the NU-HUE II Color System...Winner of the A.I.D. International Design Award...New brilliant, permanent pigments...New modern vehicles...New automatic mixing—electronically controlled...Colors range from vibrant ULTRAtones of navy blue depth to palest tints and off-whites...They are systematically organized for easy color finding...Loose 3″ x 5″ color chips ...Many handy reference tools combine to make this the most advanced and versatile color collection ever assembled.

For complete descriptive information and a special exchange offer to all owners of Martin Senour's Nu-Hue Custom Color Directory or the Color Co-ordinator Directory, please fill out and return the coupon. Check which system you use.

INTERNATIONAL RESOURCES COUNCIL DESIGN AWARD

MARTIN SENOUR PAINTS

2500 SOUTH SENOUR AVENUE
CHICAGO 8, ILLINOIS

MARTIN SENOUR PAINTS
2500 SOUTH SENOUR AVENUE
CHICAGO 8, ILLINOIS

Please send me complete information on

☐ MARTIN SENOUR'S NU-HUE II COLOR SYSTEM

We are interested in the Special Exchange Offer.
We now use:

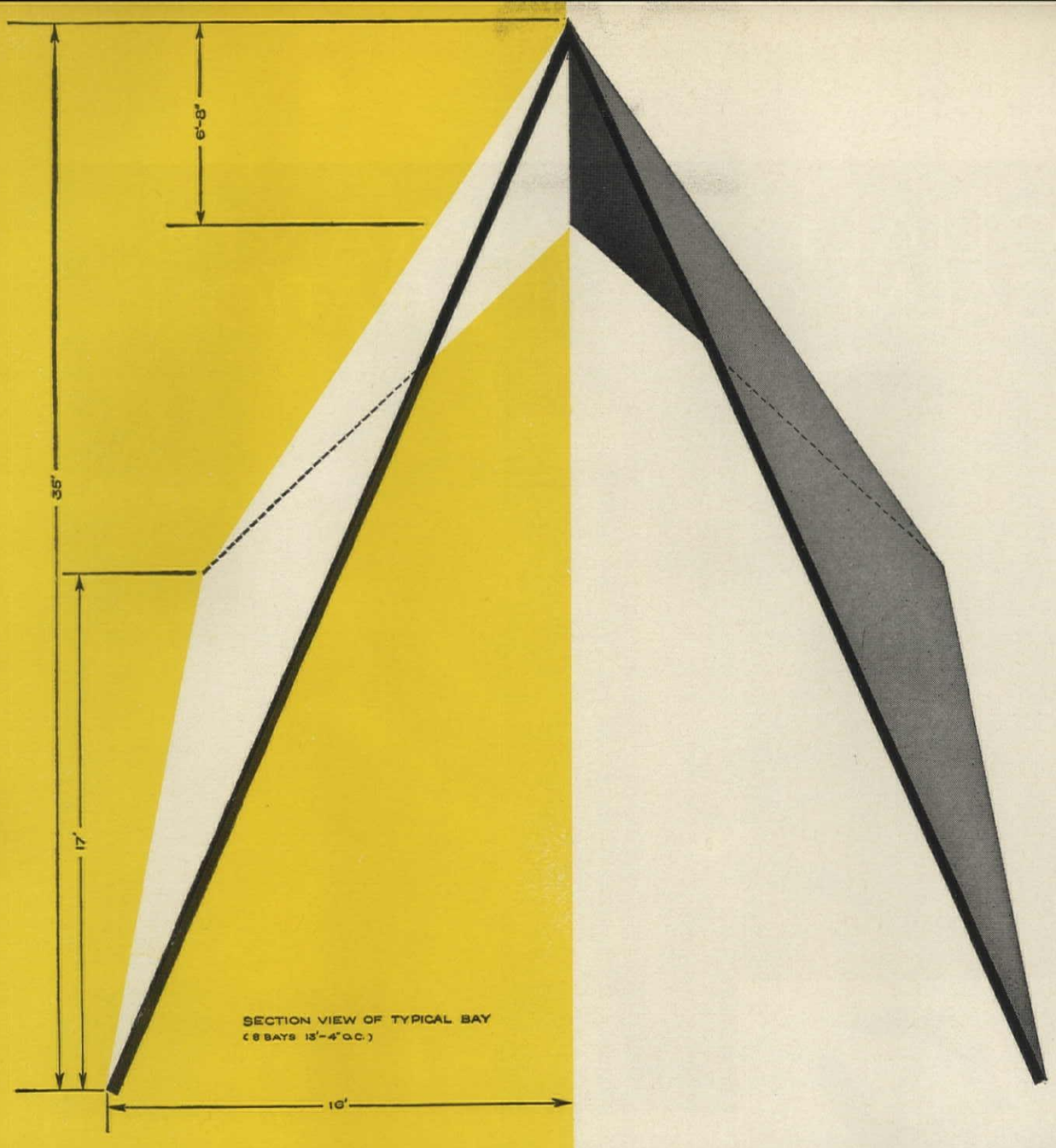
☐ NU-HUE CUSTOM COLOR DIRECTORY ☐ COLOR CO-ORDINATOR DIRECTORY
☐ OTHER MARTIN SENOUR SYSTEM

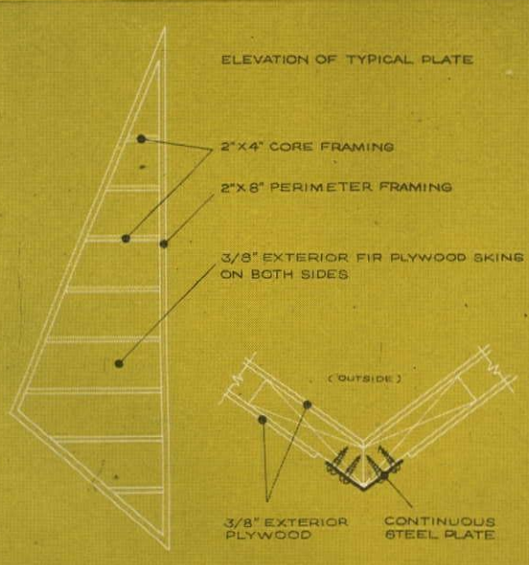
NAME_____

STREET_____

CITY_____ ZONE____ STATE_____

the most exciting ideas take shape in fir plywood





INDEPENDENT CONGREGATIONAL CHURCH

LOCATION:	St. Louis
ARCHITECTS:	Manske & Dieckmann, St. Louis
COMPONENTS:	Roof Structures, Inc., Webster Groves, Mo.
BUILDER:	A. H. Haeseler, St. Louis

THE NINE SOARING PINNACLES of this church, recalling the boldness of Gothic arches, are a vigorous expression of advancing plywood technology. The roof is a space plane, a step beyond the folded plate with more versatility than any other clear-span technique using wood.

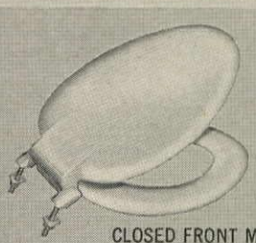
Like all folded plates, the space plane acquires strength and rigidity from interaction of inclined plywood diaphragms. But its components may take shapes other than rectangular, to create more complex designs. Here they are triangular stressed skin panels. Forces are transferred from one to another, and the entire multi-faceted roof becomes a lid-like shell, supported only at edges. Steel buttresses anchored to foundations absorb lateral thrusts. Clear-span area is 32' x 110'.

The absence of framework or posts is only one of several advantages this roof shares with space planes in general. It went up fast (15 days); huge plywood components were precisely fabricated to insure exact fit. Prefabrication also guaranteed close cost control and quality of workmanship and materials. In-place cost compared well with other means of obtaining a similar span.

For basic fir plywood design data, write (USA only) Douglas Fir Plywood Assn., Tacoma 2, Wash.

QUALITY WARRANTS CALM CONSIDERATION

OPEN FRONT MODELS
with or without covers for regular or elongated bowls. Black, white or color.



CLOSED FRONT MODELS
with same options as above. Both models provide choice of six hinge types.

PRICE can never substitute for judgment. The intrinsic value built into the product . . . the design, the manufacturing skill, the base material . . . must be evaluated along with the integrity of the maker to determine true value. This process precedes good specifications. At Beneke similar thoroughness precedes production of the complete line of seats that merit your specifications. May we prove it?

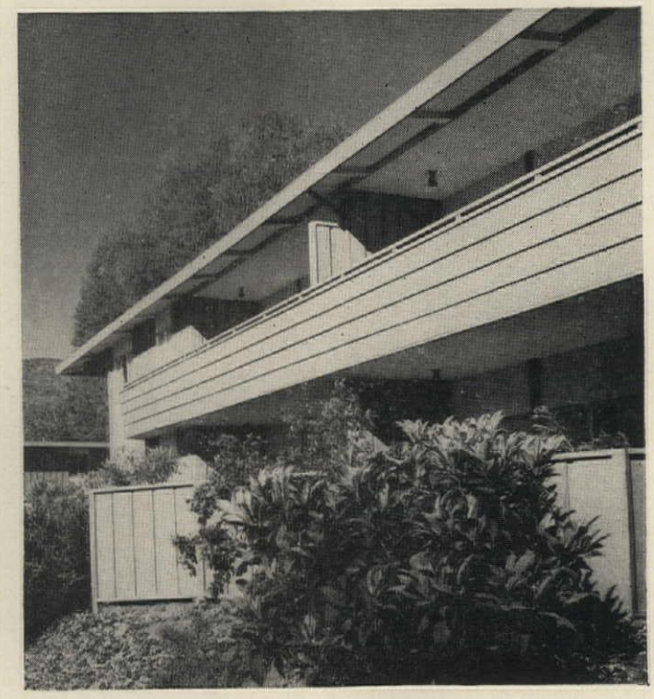
BENEKE* CORPORATION
COLUMBUS, MISSISSIPPI

*THE FIRST NAME IN TOILET SEATS—NOW THE LAST WORD IN SPECIFICATION QUALITY SEATS

A glass-walled entrance framed with vertically channeled siding and a plank-and-beam overhead creates an imposing approach to the interior court of the Bay Tree Apartments. This extraordinary 7-unit, 2-story design is located in Los Gatos, California. Architect: Fred Marburg.

For individual comforts in multiple dwellings

use WOOD . . . and your imagination



Wood blends naturally into this sloping, semi-wooded, 2½-acre site to accomplish a unique change in apartment living. Wood fencing, dividers and close-spaced railings give all apartments full privacy.

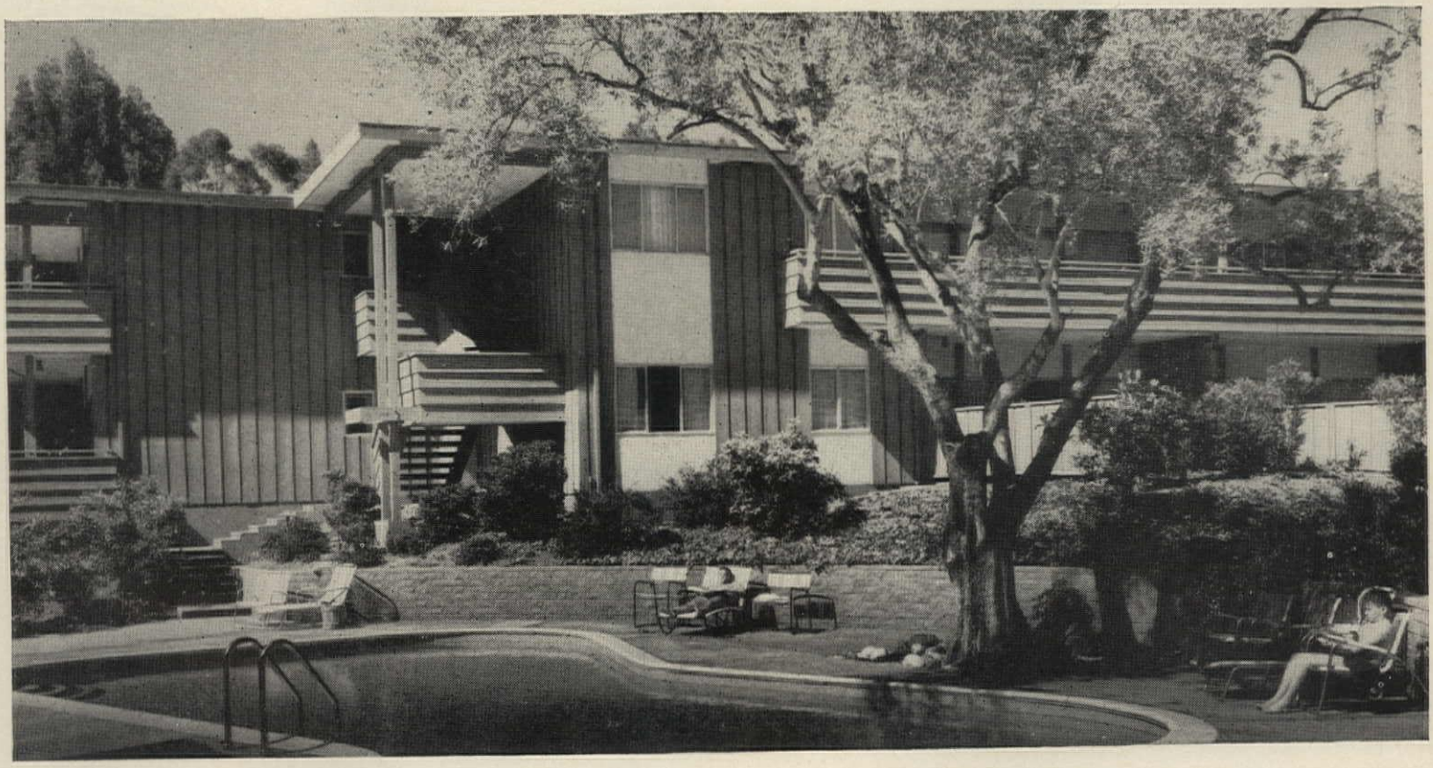
Unlimited livability is apparent in an apartment building of wood. You can work wood into any shape to fit your design, achieve infinite variations in a basic plan to suit the site. Yet wood retains its familiarity in every application to create inviting exteriors, warm interiors. Lengthy laminated beams, narrow-spaced paneling, or random-width flooring . . . all bespeak the inherent strength of wood, its integrity and economy.

The diversity of wood's grains and tones welcomes the use of other materials of every kind. Its acoustical advantages help quiet next-door noises, maintain room-to-room privacy. Wood has the ability to insulate naturally, too . . . the capacity to weather generations of wear, beautifully. For more information on designing with wood, write:

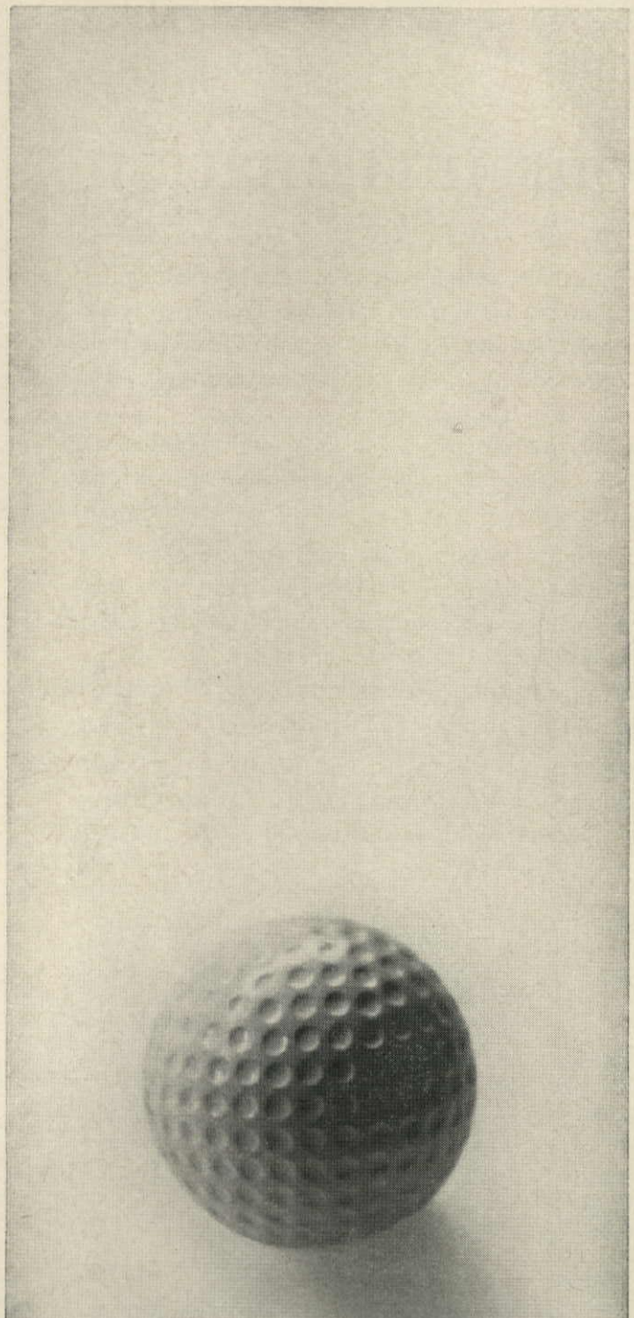
NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington 6, D.C.

nlma

find the better way with **wood**



Settled around the pool in a garden-and-tree-filled courtyard, these apartments of rough-sawn siding, exposed framing, and overhanging plank-and-beam roofing provide comfortable living room for more than 20 families per acre.

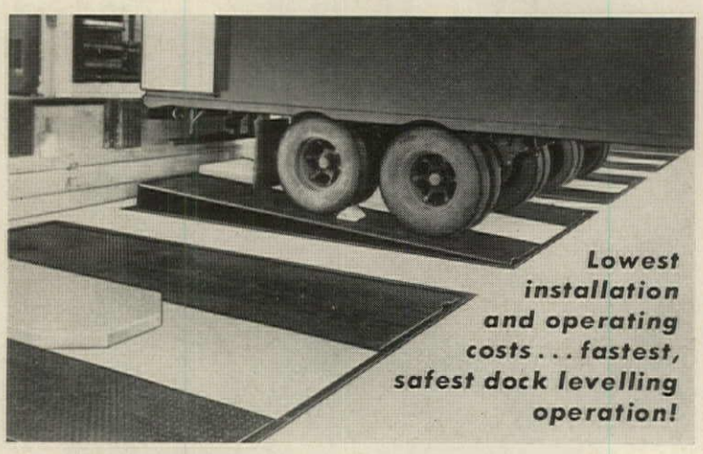


Fore! Arthur Elrod, A.I.D., had just designed the El Dorado Country Club in Palm Springs, California . . . all except for the carpet. He invited Magee to take a swing at it. The Magee men teed off on the problem and came in with three sensational sporting designs that were real winners. No extra charge, of course, for Magee's Commercial Carpet Design Service. To get it, wire or write,

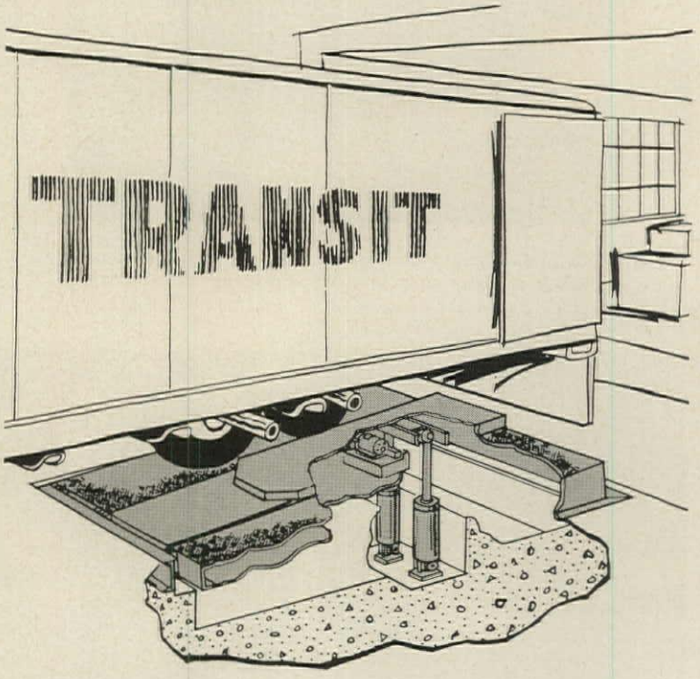
magee
COMMERCIAL CARPETS

THE MAGEE CARPET COMPANY, 295 FIFTH AVENUE, N. Y. 16, N. Y.

THE AUTOQUIP
DOCKMISER
TRUCK LEVELER



It's "PACKAGE DESIGNED"! The Autoquip Dockmiser is a complete unit ready for use. Two men can readily complete installation in 3 hours. And no underground piping!



CONSIDER THESE FEATURES

- Easy access to power system. Entire power system (rams and power unit) is easily removed through access opening for servicing . . . without entering pit!
- Wheel locator speeds trailer positioning over Dockmiser, saves time, trouble.
- Pit requirement is minimal. Dockmiser recesses in less space —another savings.
- Rugged platform design . . . proved safety!
- Maintenance is greatly reduced.

Write today for complete information

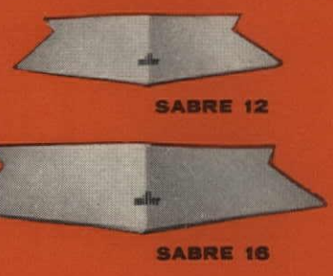
Autoquip CORPORATION

1140 SOUTH WASHTENAW • CHICAGO 12, ILLINOIS

The Pace-Setting Sabre by miller...

...now in *TWO NEW SIZES* at LOWER PRICES

SABRE



- Two new sizes meet virtually any requirement
- 2, 3 and 4 LP. units in 4 ft. and 8 ft. lengths
- New, self-hinging closures of prismatic plastic

FOR LIGHTING SCHOOLS, OFFICES, STORES

Now, you can choose a SABRE to satisfy practically any of your general lighting needs. Sabre, the *original*, prismatic plastic wrap-around fixture has been completely redesigned to provide you with full flexibility for today's and tomorrow's lighting requirements. Performance and quality are high as ever; prices are so low you'll find them pleasantly surprising. The end result is the most fixture-per-dollar yet!

TWO NEW SIZES—*Sabre 12*—2 lp. unit, with a generous 13⅜" width. *Sabre 16*—2, 3 & 4 lp. units 17⅜" wide. Both of these new SABRES are now available in 4 ft. and *8 ft. channels.*

NEW, SELF-HINGING CLOSURES in convenient 4 ft. length provide easy access from either side for relamping and cleaning. Closures are of crystal-clear, prismatic plastic offering excellent lighting *efficiency* and brightness control. Choice of light stable grade Polystyrene or Acrylic lenses.

For a *free four-page folder* describing these new Sabre fixtures in full, write Dept. 162 or contact your Miller Representative.

LIGHTING BY
miller
SINCE 1844

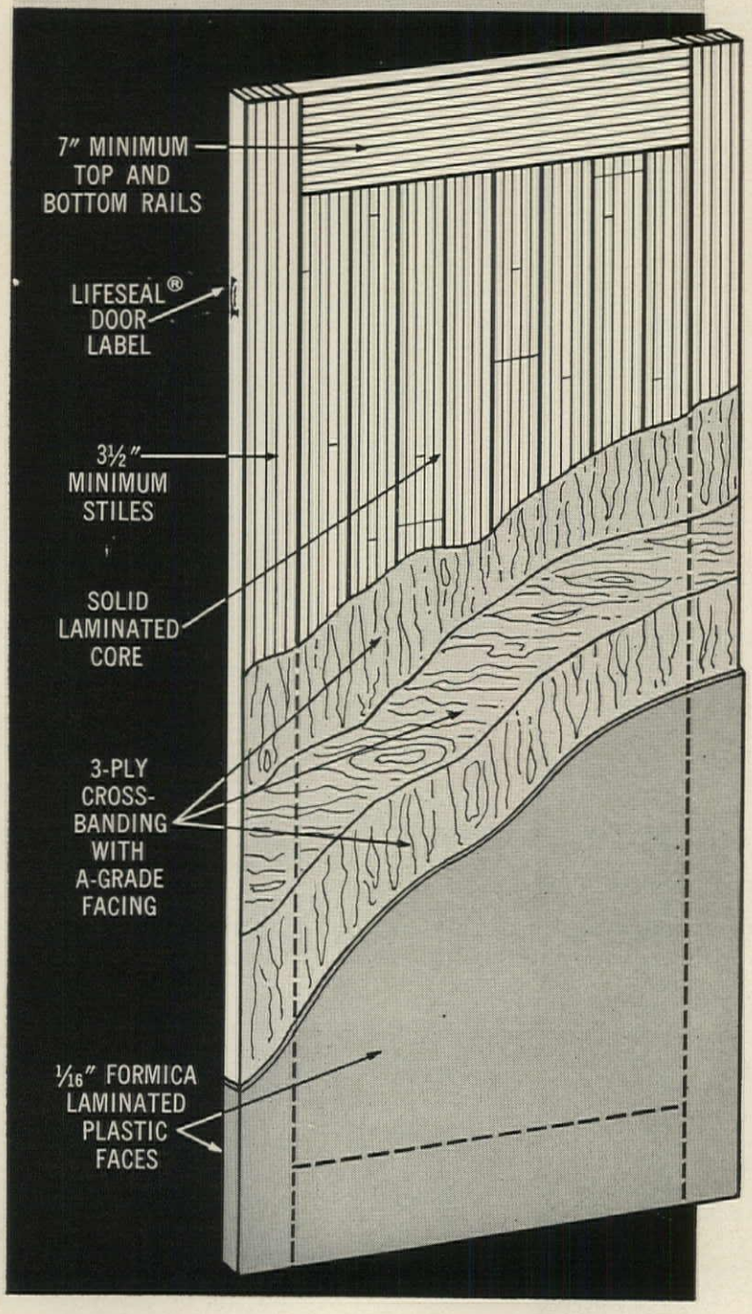
THE miller COMPANY • MERIDEN, CONN. • UTICA, OHIO

Specify the Doors with the

LIFETIME GUARANTEE

FORMICA®

LIFESEAL® DOORS



You can see at a glance the built-in quality features of Formica® Lifeseal® Doors. Sturdy inner construction with the finest materials, exacting workmanship, plus rugged Formica laminated plastic faces mean lasting, trouble-free service on the job.

That's why we proudly give this door a Lifetime Guarantee.

Other outstanding features:

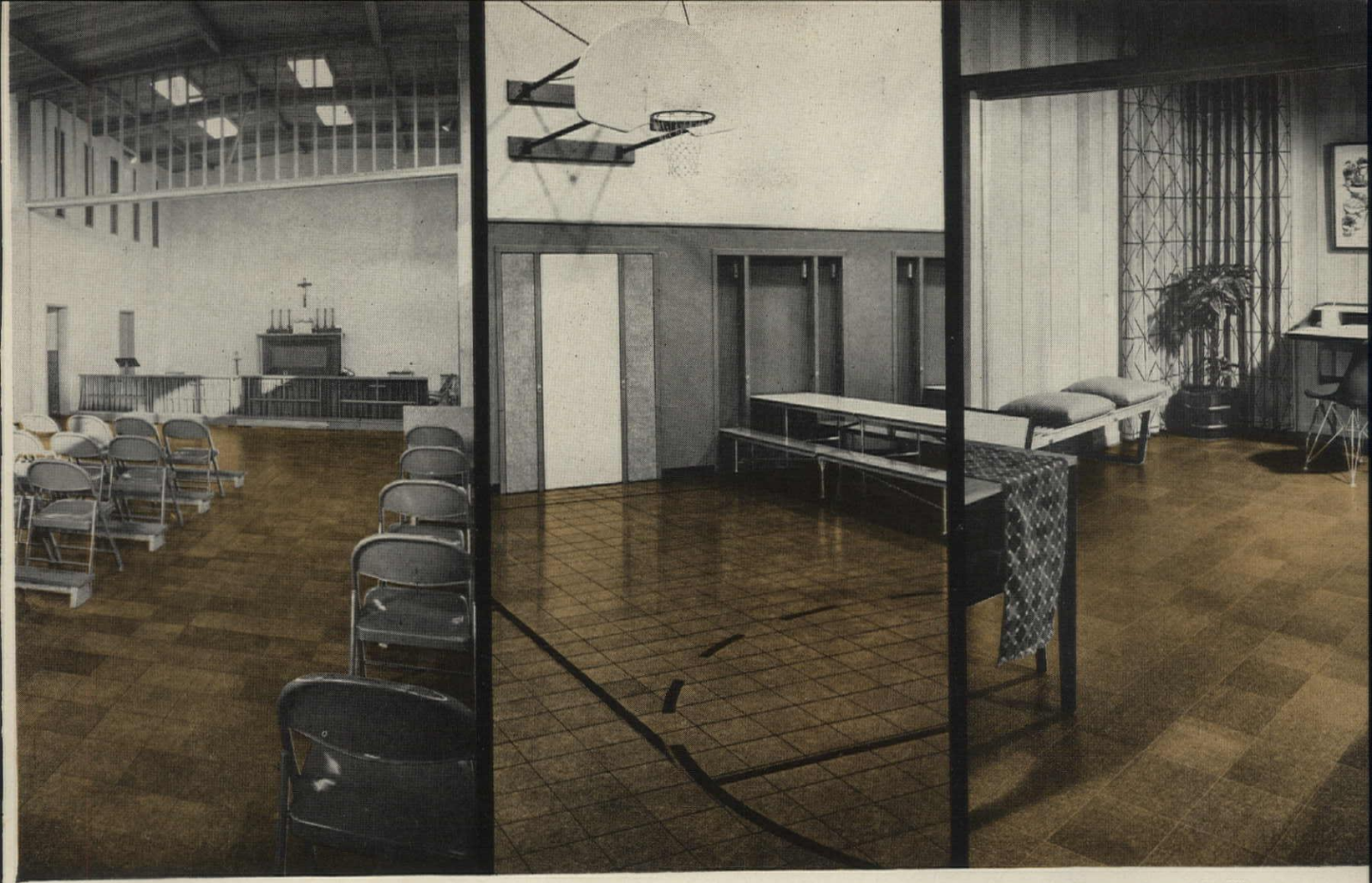
- **Prefinished,** mortised for hardware, ready to install. Only 20 minutes from carton to completion.
- **Ease and economy of maintenance.** Doors never require repainting or refinishing, are easy to keep clean.
- **Available in 3 types:** Standard, Fire, X-ray.
- **Choice of 55 colors and woodgrains** to harmonize with practically any decor.

For technical information and specifications, see Sweet's Architectural File $\frac{16c}{Fo}$ or phone your nearest Formica sales representative. He'll be happy to show you samples and point out construction features.

Formica Lifeseal Doors are
a product of Formica Corporation
subsidiary of CYANAMID

FORMICA CORPORATION

Cincinnati 32, Ohio



The congregation of this church chose Par-Tile for its rich warmth of texture, low initial cost, and because it isn't damaged by women's spike heels. Par-Tile is guaranteed for 15 years.

Forrest Par-Tile was used to hold the line on building cost in this school multi-purpose room. Par-Tile is not damaged by women's spike heels, kids boots, roller skates, heavy furniture. Will not check or splinter.

In this family room Forrest Par-Tile provides a warm, clean, durable floor for kids to play on. Par-Tile makes an excellent dance floor, too.

PROBLEM HOW TO HOLD THE LINE ON COST AND STILL PROVIDE A QUALITY WOOD-BLOCK FLOOR

SOLUTION SPECIFY **FORREST PAR-TILE*** WOOD-BLOCK FLOORING... IT'S BEAUTIFUL, YET COSTS ONLY ABOUT 40c PER FOOT, APPLIED

The pressure is on you every day to design a quality school or home or office building, but to **hold the line on cost.** You know, too, that, in nearly every instance, when quality is improved, cost jumps.

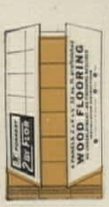
However, in the case of wood-block flooring this is not necessarily true. Forrest Par-Tile wood-block flooring is a quality product . . . yet it can be applied for approximately 40c per square foot. And—it is prefinished at the factory. No sanding or finishing on the job.

True, it lacks the conventional wood grain. But look at the advantages: • When applied, it is rich and warm. Really beautiful • Par-Tile is uniform, smooth, harder than oak or maple. Women's spike heels, which ruin other floors, won't leave the slightest dent • Par-Tile is tongue and groove, forms one solid floor • Easy and fast to lay • Prefinished at the factory with twin coats of vinyl • **Par-Tile is guaranteed for 15 years** • Exceeds FHA requirements.

Par-Tile is proving successful in churches, schools, offices, bowling alleys, ballroom floors. In homes for family room, and party room, Par-Tile is perfect.

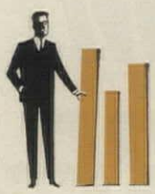
Builders tell us that Par-Tile in the family room, study, party room, make it much easier to sell "spec" homes.

OTHER FORREST FLOORING



FORREST
2BY-FLOR®
2′ x 4′ panels, 4 to a carton, nails included. Easy to handle. Easy to put down over old floor or on new construction.

FORREST
QUIK-FLOR®
4′ x 4′ panels for fast application over old floor. Goes down fast on new construction. Makes ideal new floor.



FORREST
RANDOM PLANK®
The same quality material as Forrest Par-Tile in plank width and random lengths. Tongue and groove. Simulated wood pegs optional.

For complete information, ask your floor covering or building material dealer, refer to **A.I.A. File No. 19-E-92,** or write to Forrest Industries, Inc., P. O. Box 78, Dillard, Ore.

*Pat. No. 3001902

FORREST INDUSTRIES

PRESENTING

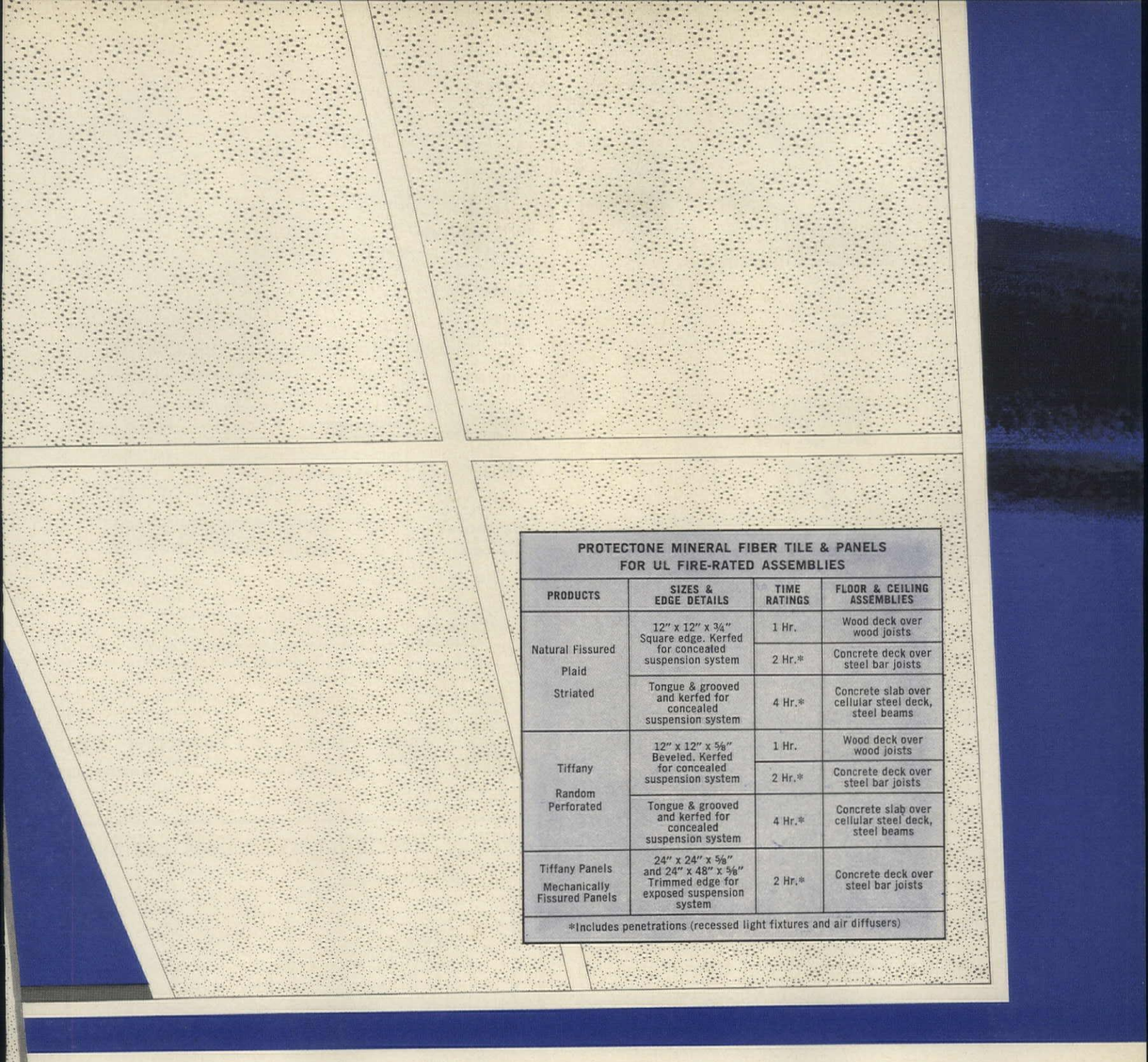
*Tiffany**

LAY-IN ACOUSTICAL PANELS
FOR 2-HOUR UL FIRE-RATED ASSEMBLY

NOW...FROM CELOTEX...

*U.S. Design Pat. No. D-191,203

MOST COMPLETE RANGE OF FIRE-RATED CEILINGS!



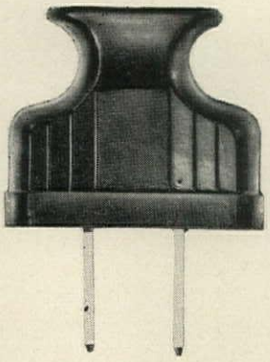
PROTECTONE MINERAL FIBER TILE & PANELS FOR UL FIRE-RATED ASSEMBLIES			
PRODUCTS	**SIZES & EDGE DETAILS**	**TIME RATINGS**	**FLOOR & CEILING ASSEMBLIES**
Natural Fissured Plaid Striated	12" x 12" x ¾" Square edge. Kerfed for concealed suspension system	1 Hr.	Wood deck over wood joists
		2 Hr.*	Concrete deck over steel bar joists
	Tongue & grooved and kerfed for concealed suspension system	4 Hr.*	Concrete slab over cellular steel deck, steel beams
Tiffany Random Perforated	12" x 12" x 5/8" Beveled. Kerfed for concealed suspension system	1 Hr.	Wood deck over wood joists
		2 Hr.*	Concrete deck over steel bar joists
	Tongue & grooved and kerfed for concealed suspension system	4 Hr.*	Concrete slab over cellular steel deck, steel beams
Tiffany Panels Mechanically Fissured Panels	24" x 24" x 5/8" and 24" x 48" x 5/8" Trimmed edge for exposed suspension system	2 Hr.*	Concrete deck over steel bar joists
*Includes penetrations (recessed light fixtures and air diffusers)			

With elegant new Tiffany pattern now in 2' x 2' and 2' x 4' panels for fast lay-in . . . the Celotex family of PROTECTONE† fire-retardant mineral fiber tiles and panels offers the widest choice of patterns for UL time-rated suspended ceiling assemblies. No spray or membrane intermediate protection required. Dry installation speeds other trades. Building owners save money . . . benefit from earlier occupancy, reduced insurance premiums. Your Acousti-Celotex distributor, listed in the Yellow Pages, is a member of the world's most experienced acoustical organization. He offers valuable Ceiling Consultation Service, without obligation.

ACOUSTI-CELOTEX
TRADEMARK REG. U.S. PAT. OFF.
PRODUCTS

†Trademark

THE CELOTEX CORPORATION, 120 S. LA SALLE ST., CHICAGO 3, ILLINOIS
IN CANADA: DOMINION SOUND EQUIPMENTS, LIMITED, MONTREAL, QUEBEC



HOW TO PLUG A LAMP

The method is quite simple – you begin with an outlet. That's how the Lamp and Shade Institute of America have sparked their vigorous, new, advertising campaign. Careful study showed the need for more and more portable lamps that can be placed wherever the need is, and more outlets to accommodate them.

To design a truly functional home, plan to put more outlets in every room. The Lamp and Shade Institute of America is plugging the lamp – your contribution will be appreciated.

THE LAMP & SHADE INSTITUTE OF AMERICA

THE LIGHT OF YOUR LIFE

Moments of repose are made so much more comfortable with light. By the light of a lamp, that long awaited trip, those lifelong dreams, become meaningful and real. With the beauty of portable lamps, healthful, properly placed light helps to protect your vision. For the light of your life, select the perfection of lamps, and more lamps. For proper decor and lighting, choose a minimum of five tasteful lamps for the living room; four for the bedroom. Put more light into your life.

Look for the label signifying membership by merit of the

LAMP AND SHADE INSTITUTE OF AMERICA

APPEARING IN HOUSE BEAUTIFUL AND HOUSE & GARDEN

BUILD WITH BLOCK

and build for keeps

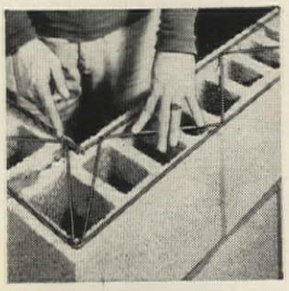
Modern concrete masonry gives full value for the building dollar with a superb combination of visual dynamics and functional stability. The beauty lasts—especially when reinforced with Dur-o-wal, the truss-designed steel rod assembly that can more than double flexural strength, outfunctions brick-header construction. For technical evidence, attach this ad to your letterhead, send to any Dur-o-wal address below.

DUR-O-WAL®

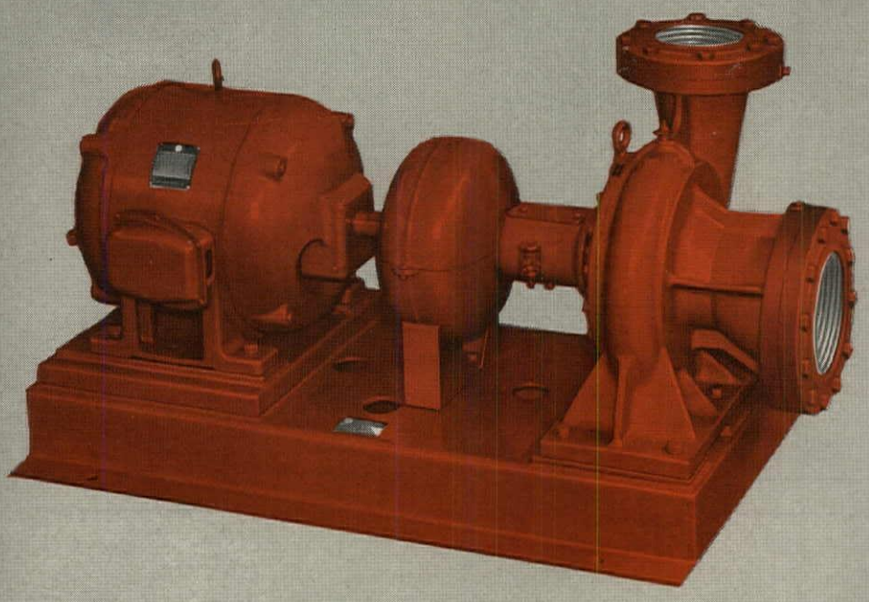
Masonry Wall Reinforcement and Rapid Control Joint

DUR-O-WAL MANUFACTURING PLANTS

- Dur-O-waL Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.**
- Dur-O-waL Prod., Inc., Box 628, **SYRACUSE, N. Y.**
- Dur-O-waL Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.**
- Dur-O-waL Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.**
- Dur-O-waL Inc., 1678 Norwood Ave., **TOLEDO, OHIO**
- Dur-O-waL of Ill., 260 S. Highland Ave., **AURORA, ILL.**
- Dur-O-waL Prod. of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.**
- Dur-O-waL of Colorado, 29th and Court St., **PUEBLO, COLO.**
- Dur-O-waL Northwest Co., 3310 Wallingford Ave., **SEATTLE, WASH.**
- Dur-O-waL of Minn., 2653-37th Ave., So., **MINNEAPOLIS, MINN.**
- Dur-O-waL Ltd., 789 Woodward Avenue, **HAMILTON, ONTARIO, CANADA**



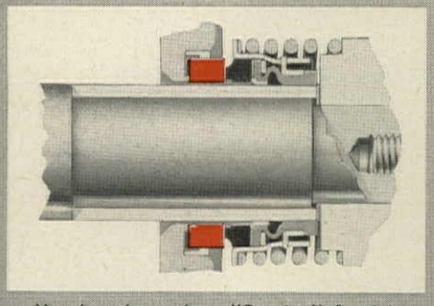
Strength with flexibility—the two basic factors for a repair-free masonry wall are assured by these engineered companion products. Dur-o-wal reinforcement, top left, increases flexural strength 71 to 261 per cent, depending on weight Dur-o-wal, number of courses, type of mortar. The ready-made Rapid Control Joint, beneath with its neoprene compound flange flexes with the wall, keeps itself sealed tight.



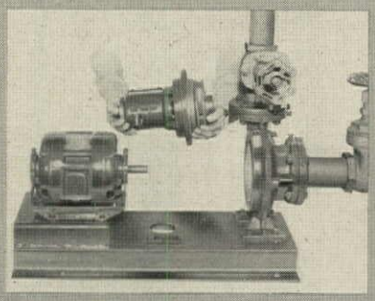
B&G®
UNIVERSAL PUMP

now available in "C" size units up to

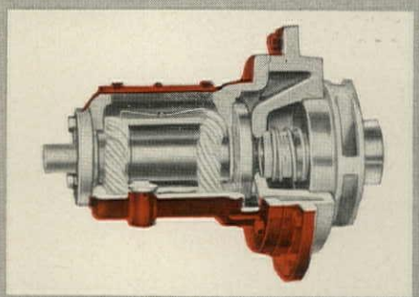
60 H.P.



Harder-than-glass "Remite" Seal is wear- and leak-proof.



Vertical split-case construction permits easy servicing without breaking pipe connections.



2 sizes of removable bearing frames cover entire range from 1 to 60 H.P.

THE *Quiet* PUMP FOR CIRCULATED WATER SYSTEMS

B&G Universal Pumps are engineered and built to satisfy in every detail the exacting demands of circulated water heating and cooling systems...distinguished by numerous features which assure *silent, vibrationless operation*. When properly installed, flexible connections or resilient pads are not required.

Universal Pump motors, for example, are specially constructed and selected for *extra-quiet* operation. Long *sleeve* bearings are used in both motor and pump —another assurance of silent, vibrationless operation and long life of both pump and motor. The oversized shaft is made of special alloy steel, with an integral, heat-treated thrust collar to absorb end-thrust. Water leakage is prevented by the file-hard "Remite" seal...a B&G development.

Stock Universals are available with non-overloading motors to 25 H.P....made-to-order "C" sizes are available to 60 H.P. and can be equipped with motors best suited to design conditions of head and flow.

SEND FOR SELECTION DATA

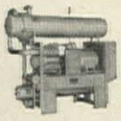
BELL & GOSSETT COMPANY

Dept. HB-62, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

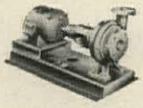
PUMPS...HEAT EXCHANGERS...AIR CONDITIONING AND PROCESS COOLING EQUIPMENT

Booster Pumps

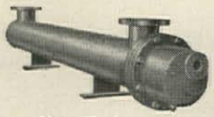


Package Liquid Coolers

Refrigeration Compressors



Centrifugal Pumps



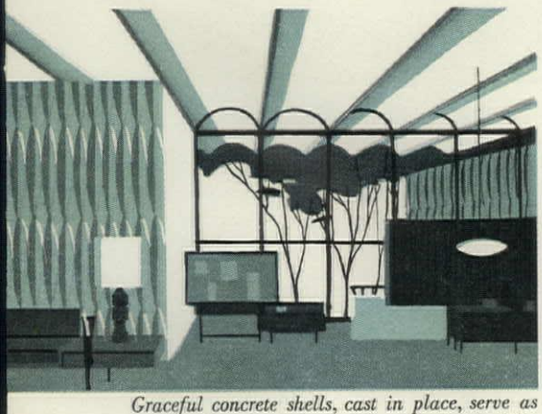
Heat Exchangers

Oil-less Air Compressors

The best ideas are more exciting in **concrete**

New headquarters building, Purex Corp., Lakewood, Calif.

"Packaging" space the easy way... with sculptured concrete curtain walls



Graceful concrete shells, cast in place, serve as roof and ceiling for a 2½ story lobby. The 4-inch-thick shells cantilever 10 feet beyond the entry to reflect in the adjacent pool. Architects: Anthony & Langford, Whittier, California.

From broad, vaulted lobby to spacious, top-floor executive offices, this new headquarters building reflects Purex Corporation's regard for modern, efficient packaging of their products.

62,000 feet of floor space were enclosed quickly with only forty panels of precast concrete fastened directly to the 3-story frame. Sculptured curtain wall panels, cast from an original leaf design by artist John Edward Svenson, point up the beautiful effects possible with modern concrete. Reusable molds will provide identical panels for future expansion of the building.

More and more architects are finding that distinctive design and advanced construction techniques grow readily from concrete's infinite versatility.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Little girl blue...

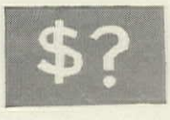
Why start a cloudburst of your own on the dry, warm side of that window? Watch for the sun in comfort through Glass by American-Saint Gobain. • Like each of the hundreds of A-SG products—plate, window, patterned and special flat glasses—it's made with a little more care, a little extra quality. And the A-SG line is backed by a centuries-long tradition of technical excellence. • American-Saint Gobain Corporation, Kingsport, Tennessee.

serving people through glass... AMERICAN-SAINT GOBAIN

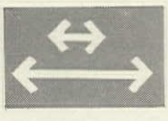
ARCHITECTS . . . BUILDERS . . . ENGINEERS:

General Electric's New Zoneline '42' is the answer to your air-conditioning problems

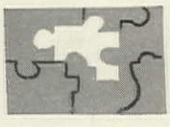
General Electric's Zoneline '42' is a dramatic new approach to zonal air conditioning. It was designed to provide you with a system that is efficient, economical and aesthetically pleasing. Here are six important ways it can help you:



Low Cost. Your initial investment is low because there are no costly compressors, chillers, towers or ducts to install, nor is valuable building space required for the heavy equipment. And there's no chance of your entire building's suffering due to failure of a central component.

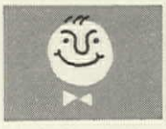


Full Range of Capacities. These models offer cooling capacities of 8,000 to 15,000 BTU/Hr. Thermaline '42' heat pumps, for year-round heating and cooling, offer heating and cooling up to 13,500 BTU/Hr. Capacities tested and rated in compliance with NEMA Standard CN-1.

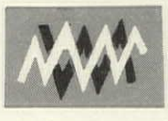


Compatible with Heating. Hot-water baseboard, hot-water convectors, electric baseboard or ceiling electric cable are some of the possibilities. Or specify Thermaline '42' heat pumps or Zoneline '42' units with integral electric-resistance elements and controls for year-round comfort.

Handsome Design. The Zoneline '42' features General Electric's exclusive interior baffle plus accessible controls and a rugged, handsome air-discharge grille. The baffle may be painted, paneled or decorated to harmonize with room décor. Newly styled exterior grilles, too.



Individual Room Control. Each tenant can select the exact degree of heating or cooling he prefers. Fresh air, filtered and cool, is available at the flick of a switch. Owners benefit, too—individual rooms or zones may be shut off when unoccupied for greater operating economy.



Low Noise Level. The full 42-inch width of the Zoneline with a radically different air-flow system and much greater space inside has significantly reduced noise levels. And General Electric's rotary compressor cuts vibration—and resulting noise—to a minimum.

There are many, many more advantages to zonal air conditioning with General Electric's new Zoneline '42'. Superior de-humidification . . . new positive water-disposal system with no moving parts . . . General Electric's famous quality and dependability. Why not mail in this coupon and learn more about them?

Progress Is Our Most Important Product

GENERAL ELECTRIC

Send me complete information on General Electric's new Zoneline '42'.

General Electric Company
Room Air Conditioner Dept.—Room 104-D
Appliance Park, Louisville 1, Kentucky

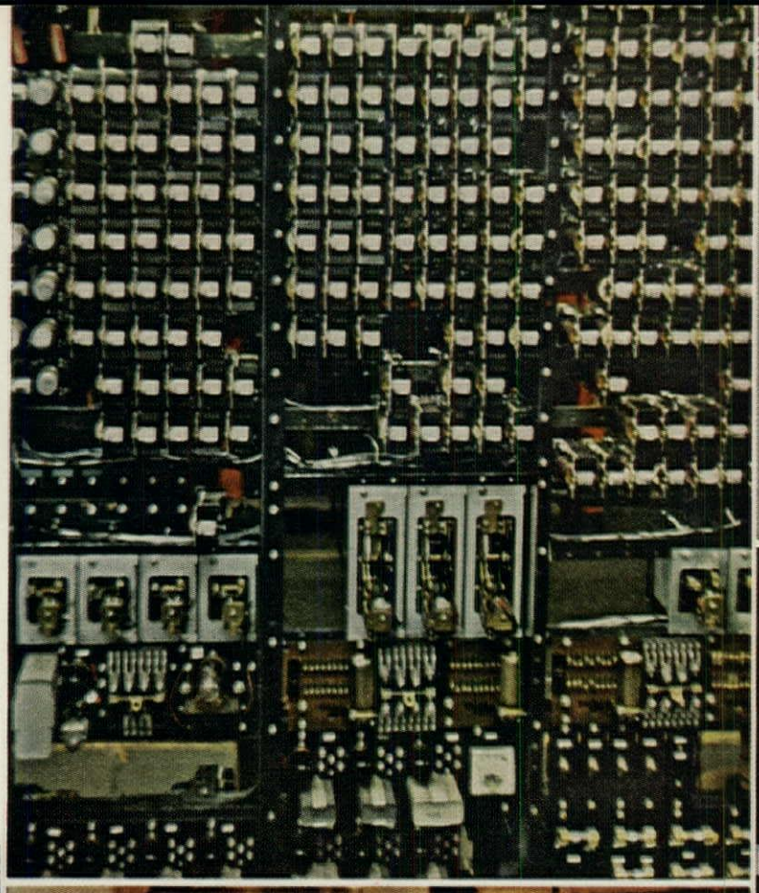
Name_____ Position_____

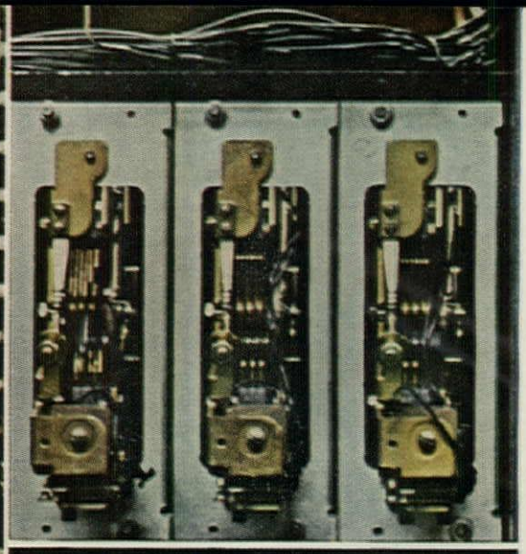
Firm_____

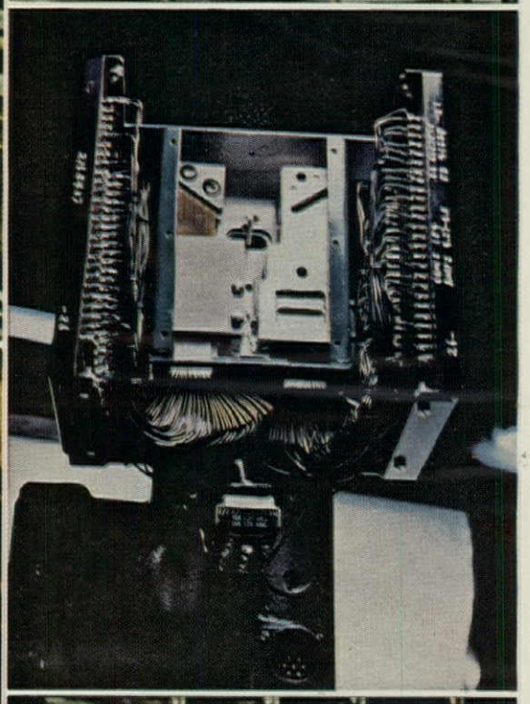
Address_____

City_____ Zone____ State_____

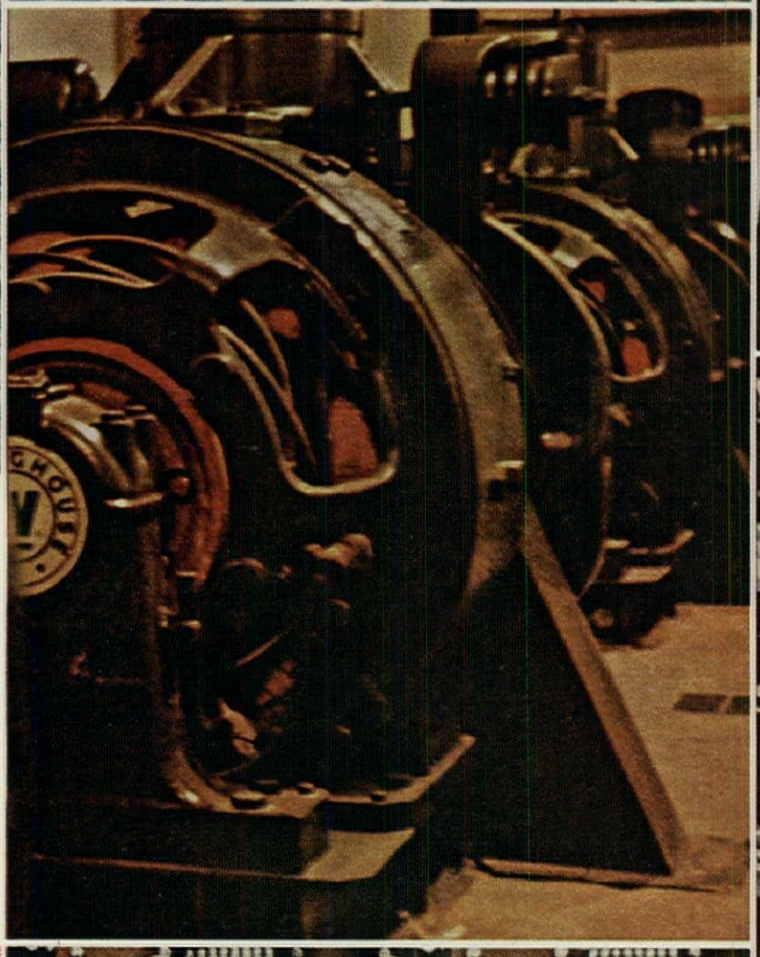
AF-4

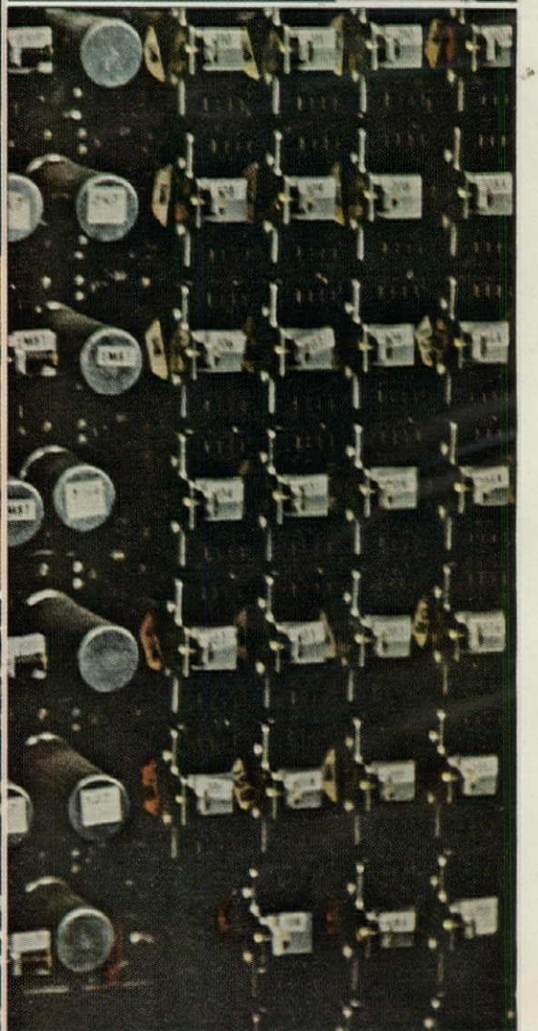


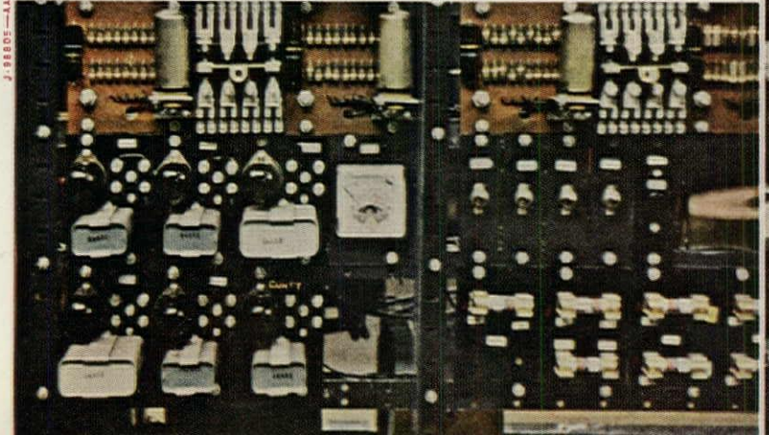





UP
DOWN







FORUM

ARCHITECTURAL FORUM published by TIME INC

QUOTE . . . UNQUOTE

"The world is loaded with unoccupied balconies . . ."—*Critic John Crosby.*

"The Soviet [housing] program has been a failure . . . because of their failure to observe both of the cardinal principles of Karl Marx: from each in accordance with his ability, to each in accordance with his needs; whereas in the U.S. our public housing is far more consistent with the principles of Marxism."—*ICA Housing Chief Osborne T. Boyd.*

"The new $18 million addition to the U.S. Capitol is being used largely to house private hideaway offices for senior Senators. These offices are wholly and completely unnecessary. . . . Figuring their share of the total cost of the project, they are the most expensive offices ever constructed in Washington."—*Senator William Proxmire.*

"That escape from reality described as a shelter program . . ."—*Former AEC Chairman David Lilienthal.*

"A lot of our new churches . . . are as comfortable, as livable, as homelike, or perhaps as clublike as they can afford to be. Redwood, flagstones, plants, mahogany, carpets, upholstered pews, boudoir colors. . . . What has happened to transcendence and power and austerity and nobility?"—*Architect Edward A. Sovik.*

"Replacing [smashed] glass windows in American diplomatic missions is one of the biggest expense items in the State Department budget and yet the U.S. refuses to be intimidated by such demonstrations. Proof of this is that every new American embassy being designed now provides for larger windows than the previous one."—*Columnist Art Buchwald.*

"We have found that many people who move to suburbia find it disturbia."—*Boston Mayor John F. Collins.*

"The dream of my earlier years was to become an architect. And since I did not I have become an architect of theological systems."—*Theologian Paul Tillich.*

The slow progress of architecture in Washington

was not helped when the Commission of Fine Arts last month vetoed the design for the FDR Memorial, going over the heads of one of the finest juries in one of the best-organized art and architecture competitions ever held in the U.S.

Whether the competition ever should have gotten under way was a subject on which there were divided opinions, especially on the part of those who disliked seeing further monuments in Washington (except for their own favorite subjects). Also there were criticisms of the bold design itself, and not all of them by traditionalists. But the most important item that went under the axe with the Fine Arts Commission's disapproval was the probability that any bold, forward-looking design at all could ever win approval for use in Washington by the federal government.

There have been two concepts to which the Commission of Fine Arts in Washington has been, to put it mildly, uniformly unsympathetic. One is competitions as such, and the other is the use of any design not Beaux Arts in any important Washington location.

The case in favor of competitions is that there is great need in a democracy for a way of getting fresh blood into government work, and that the best way is professional leadership. Admittedly, even professional juries are fallible—but let us face it, when did a fresh, bold design ever win unanimous support, either within the arts, or among the general public? There simply is no way of creating a fine national work of art by public-opinion poll. The only way that offers some hope is for democracy to enlist leadership; to ask a highly qualified group of artists and art critics to arrive at a selection.

Another argument for competitions is that they upset cliquishness by government bodies responsible for art. The group from which these pick their artists tends ever to narrow. The Commission of Fine Arts reflects this in the way it has been bestowing or withholding its approval. It knocked out the splendid winning design of the other big national competition for a Washington government building that it was called on to review: the 1939 design for a Smithsonian Gallery of Art by the late world-famous architect Eliel Saarinen. Beaux Arts designs seem always to get through, even when they are architecturally as vacuous as the New Senate Office Building. The record threatens to become permanent: Beaux Arts designs in, living architecture out.

A mild consolation is that the Administration seems to be moving away from the sort of stereotypes long dictated by the Commission of Fine Arts. Last month, there were two further reports from Washington: first, at Cabinet level the President's Ad Hoc Committee on Federal Office Space declared that "care must be taken to avoid the development of an official style. Design must flow from the architectural profession to the government, not vice versa." And, second, the White House announced the appointment of August Heckscher, director of the Twentieth Century Fund, to be coordinator of cultural affairs to the President. Mr. Heckscher has long been a wise and discerning friend of the arts. We wish him luck. We wish the arts luck. Both will need it.

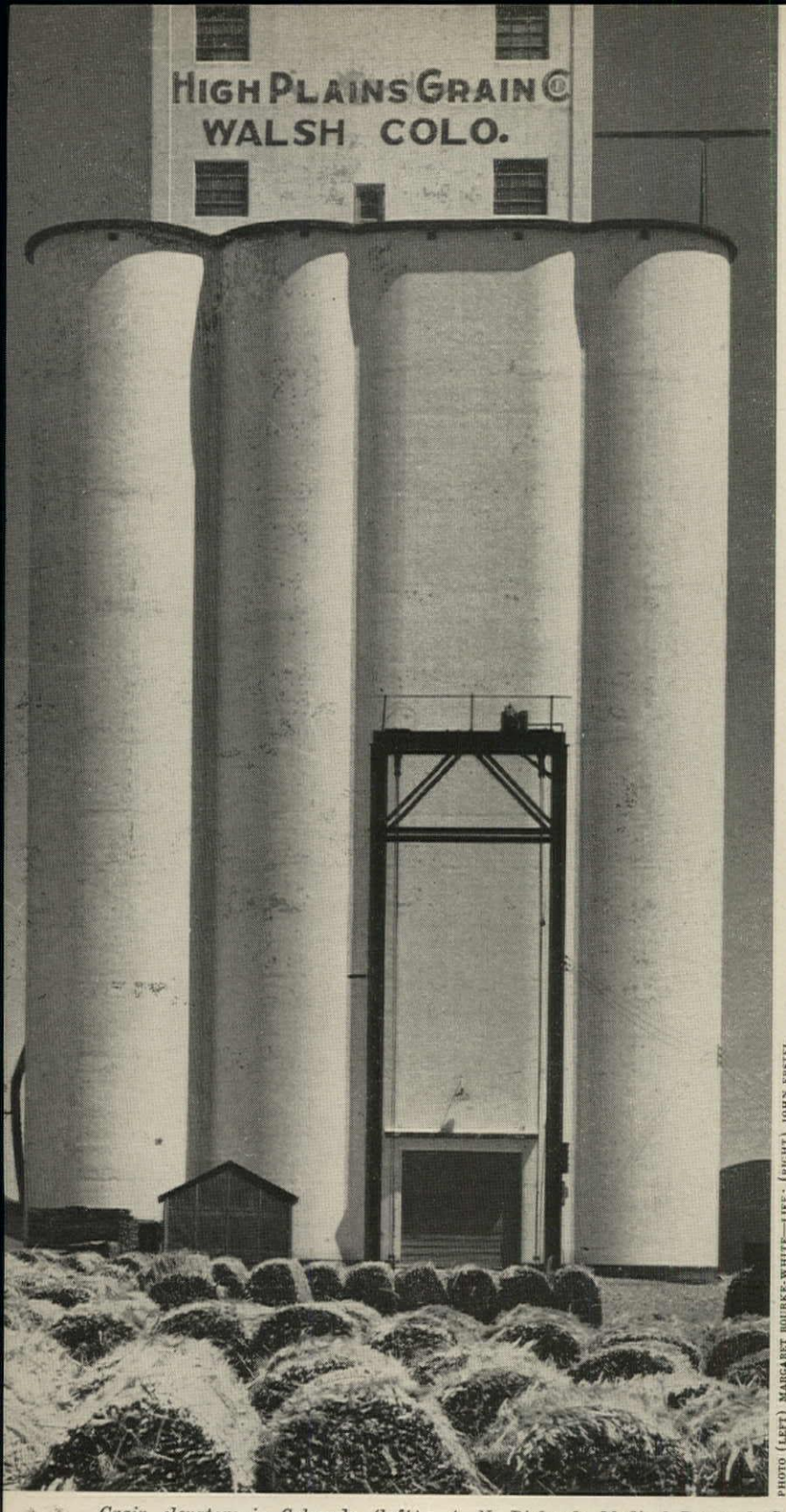
BOLD STRUCTURES FOR INDUSTRY

BURNS BROTHERS

Esterhazy potash plant of the International Minerals & Chemical Corp. Ltd., Saskatchewan, Canada

The designers and owners of this great, spiderlike potash plant in western Canada would be amazed to see their building published or exhibited as an example of some highly sophisticated art form. For buildings like this plant just seem to happen; no one tries to make them beautiful; the engineers just try to make them work. If someone thinks the result looks OK, so much the better; if not—too bad.

Yet it is simple industrial buildings like this plant that have inspired modern architecture for more than a century. They continue to do so today: for some of the evidence, see the next 20 pages.



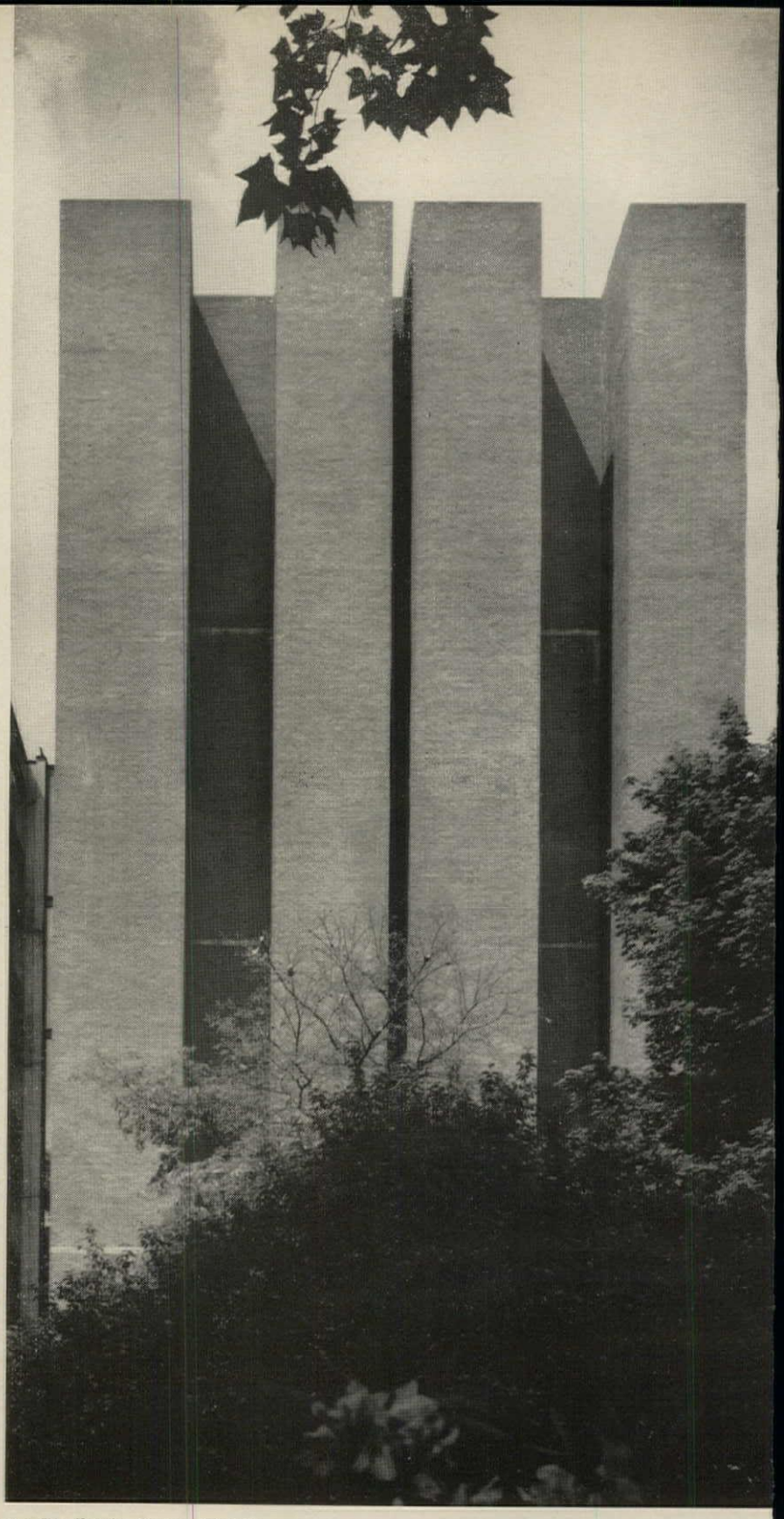


PHOTO (LEFT) MARGARET BOURKE-WHITE—LIFE; (RIGHT) JOHN EBSTEL

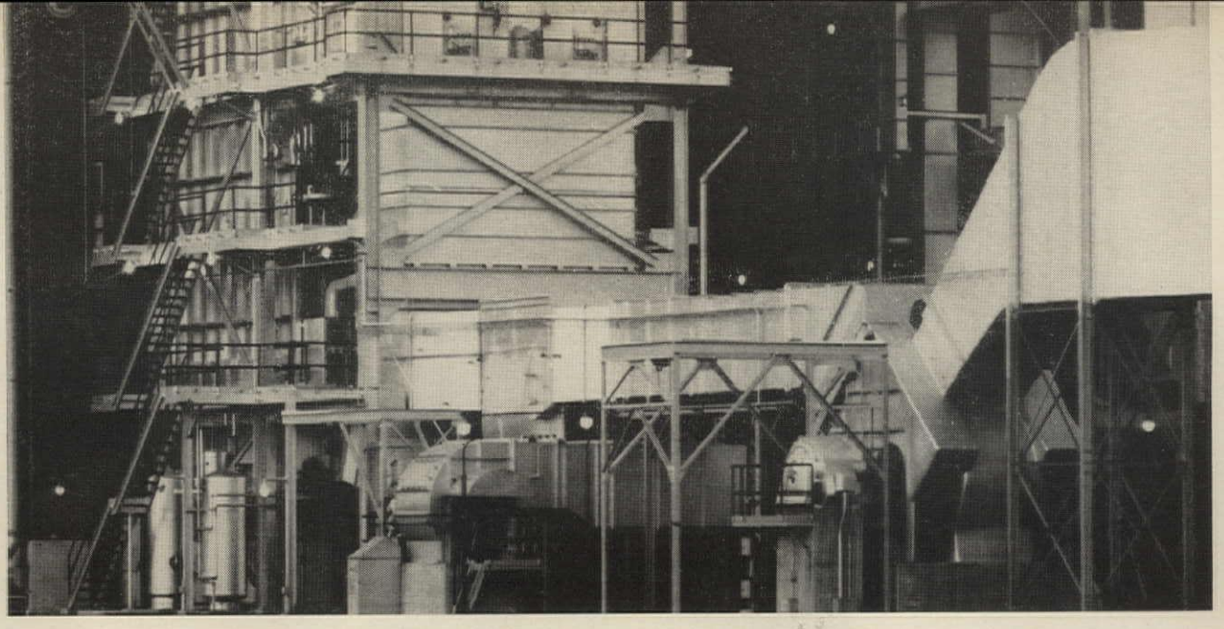
Grain elevators in Colorado (left); A. N. Richards Medical Research Center by Louis Kahn (right).

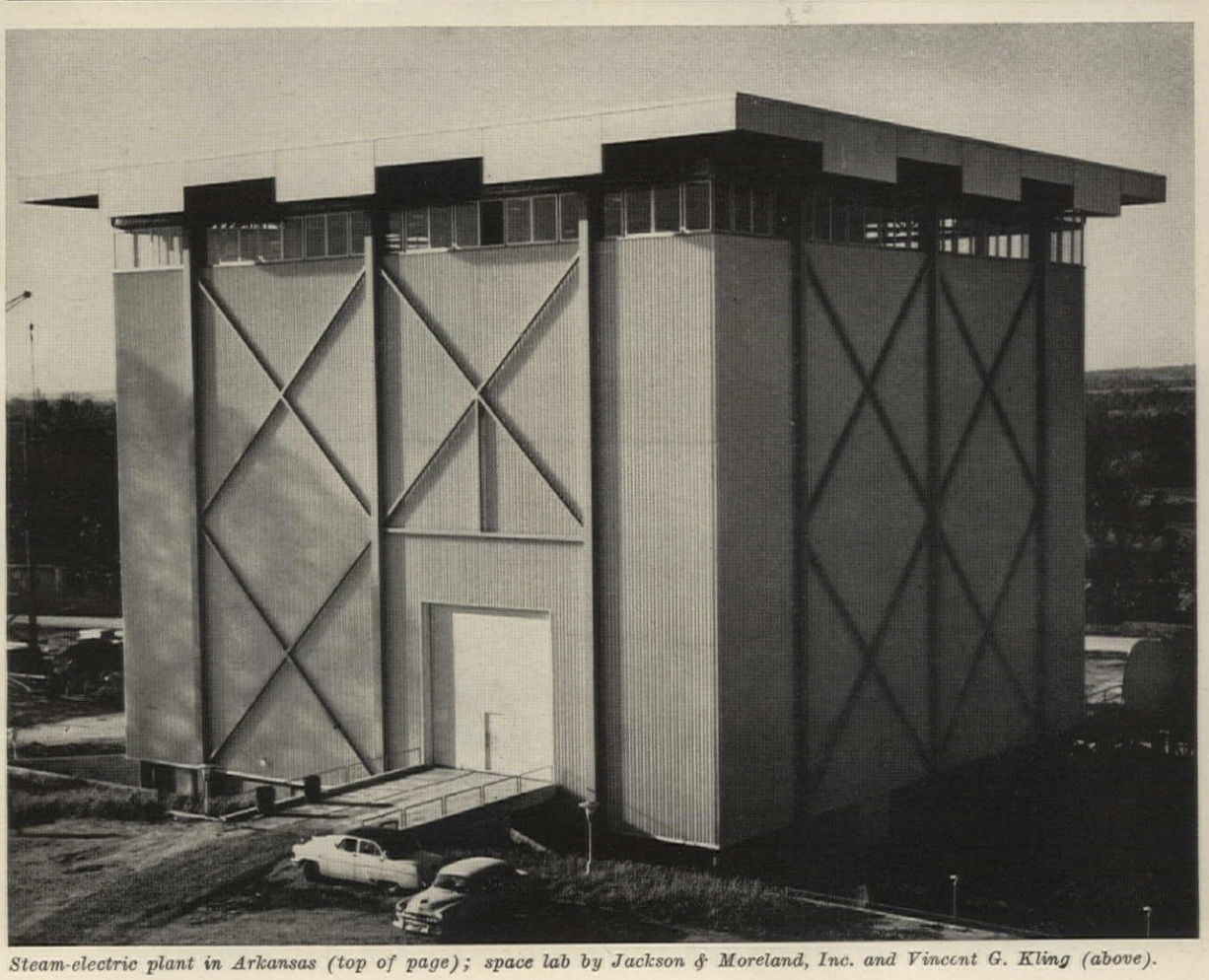
THE LOOK OF INDUSTRY

Fifty years ago architecture, to most Americans, meant stylistic revival. But to many European architects and critics, American architecture meant something quite different: they were excited by the seemingly undesigned, unsophisticated, but tremendously vigorous buildings of U.S. industry. Indeed, the only other U.S. buildings they admired were such bold structures as Wright's Larkin Building of 1904—which, of course, was a genius-brother-under-the-skin to the standard grain elevator of the midwestern plains.

U.S. architecture long ago caught up with its critics. It has also overtaken them—and not always in the direction first mapped out by the Larkin Building: for a while it seemed as if the bold shapes of silos, train sheds, factories, and warehouses were going to undergo a new kind of cosmetic treatment—twentieth-century *froufrou*.

Now it seems that the beauticians may be on the wane, and that America's best architects are returning to the original sources of their inspiration. A sophisticated designer like Louis Kahn may be talking about San Gimignano's towers when describing his medical research center at Penn (above), but in the back of his mind is also the image of a grain elevator. And Vincent Kling, who has been responsible for some hand-





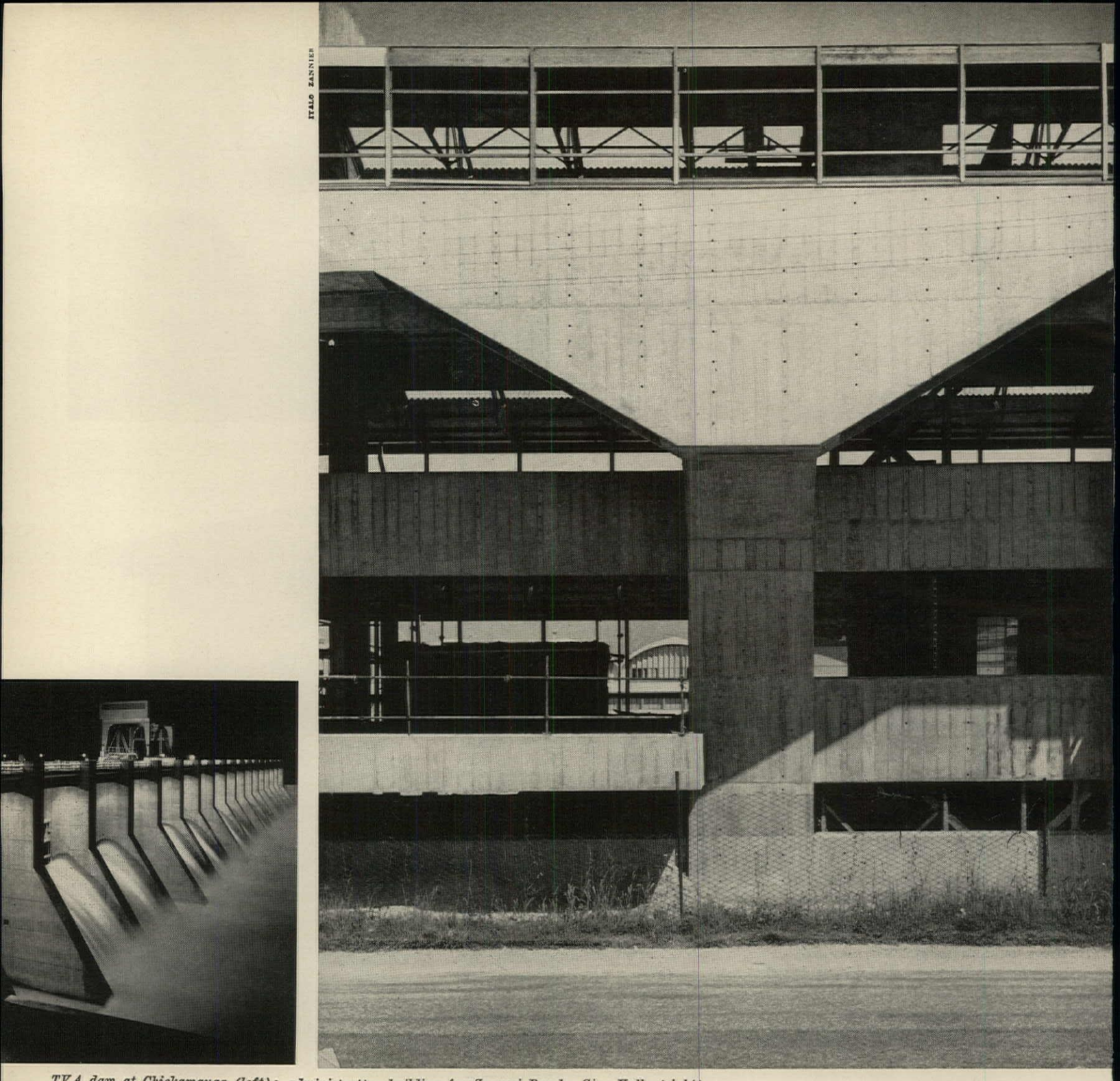
COURTESY VINCENT G. KLING, A.I.A.

Steam-electric plant in Arkansas (top of page); space lab by Jackson & Moreland, Inc. and Vincent G. Kling (above).

some, decorative architecture, may justify, in terms of pure engineering, the powerful form and delicate cross bracing of his new Space Environmental Laboratory (above). But engineering alone did not produce this cool cube: Kling, like Kahn, took the sober vocabulary of industrial building and turned it into magnificent prose. (The lab was built for the General Electric Space Technology Center at Valley Forge, in association with Jackson & Moreland, Inc.) The steam-electric plant of the Arkansas Power & Light Company (top) was not designed for anything but power and light in the most literal sense—but it has lent much of that power and light to sophisticated designers like Kling, whose selective eye can translate the cross-braced steel frame of the Arkansas engineers into a striking piece of architecture.

It is important that this distinction between engineering and architecture be kept clear: quite frequently, a structure that has been straightforwardly engineered will look ugly as sin (but function extremely well); and just as frequently, a basically handsome industrial structure will be spoiled by insensitive architects called in as exterior decorators.

But when creative engineers and sensitive architects reach an understanding, the result is apt to be a highly successful industrial structure. One reason for this is that few industrial buildings have to satisfy secondary requirements of public



ITALO ZANNIER

TVA dam at Chickamauga (left); administration building for Zanussi Rex by Gino Valle (right).

relations and salesmanship—requirements that often destroy commercial building designed for spurious "eye appeal" (see page 194).

The industrial look is by no means confined to new U.S. architecture; in fact, some of the finest examples are found in Europe and Asia—especially in countries not quite rich enough to waste money on "eye appeal." Invert the TVA's rugged concrete dam (above, left) and you have something quite similar to Gino Valle's concrete administration building for Zanussi Rex in Pordenone, Italy (right). With its brute, exposed concrete forms, Valle's powerful structure also shares some qualities with raised highways and overhead cranes.

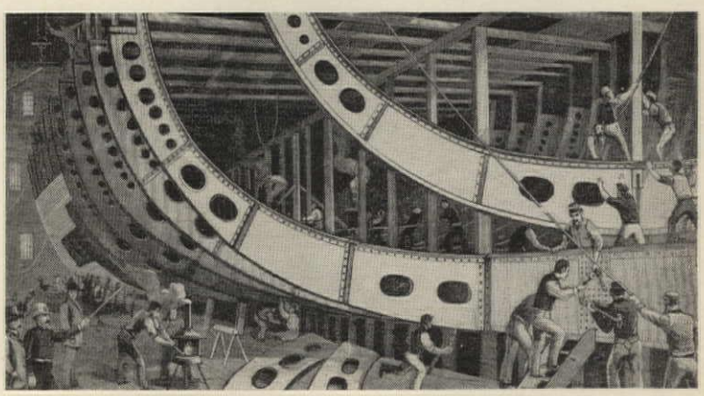
Because the U.S. is so large, transportation and communication have always been central to American life; and structures connected with transportation and communication have given the greatest impetus to American building and American architecture. The great bridges, train sheds, highways, harbors, airplane hangars, radio towers are familiar sources of inspiration; less familiar is the technology of railroad cars, automobiles, ships, and airplanes, and the impact *its* forms have had upon U.S. architecture. The pumping plant in Walnut Creek, Calif. (opposite) by John Carl Warnecke was framed with familiar steel arches—familiar, in part, because they were first developed for such structures as the battleship Maine (right),

KARL H. BECK

Pumping plant at Walnut Creek, Calif. by John Warnecke (above); battleship Maine (below) under construction in Brooklyn Navy Yard.

and have since become the stock-in-trade of industrial and other building. They have lost none of their power or elegance in the process; indeed, when refined by a sensitive architect, these simple structural forms gain in grace. And when left alone by an intelligent client, they can declare the rugged power of industrial building so often concealed behind the frills of exterior decorations.

On the next 12 pages are some of the new industrial buildings that *were* designed by architects, consciously and carefully, to express that rugged power. Tomorrow's critics may well consider these straight industrial structures the true spokesmen for our architecture.



PHOTOS: GEORGE CSERNA

West elevation (above) shows alternating 10 and 12-foot structural bays. Left: a 12-foot bay. Note use of brick for piers, block for walls.

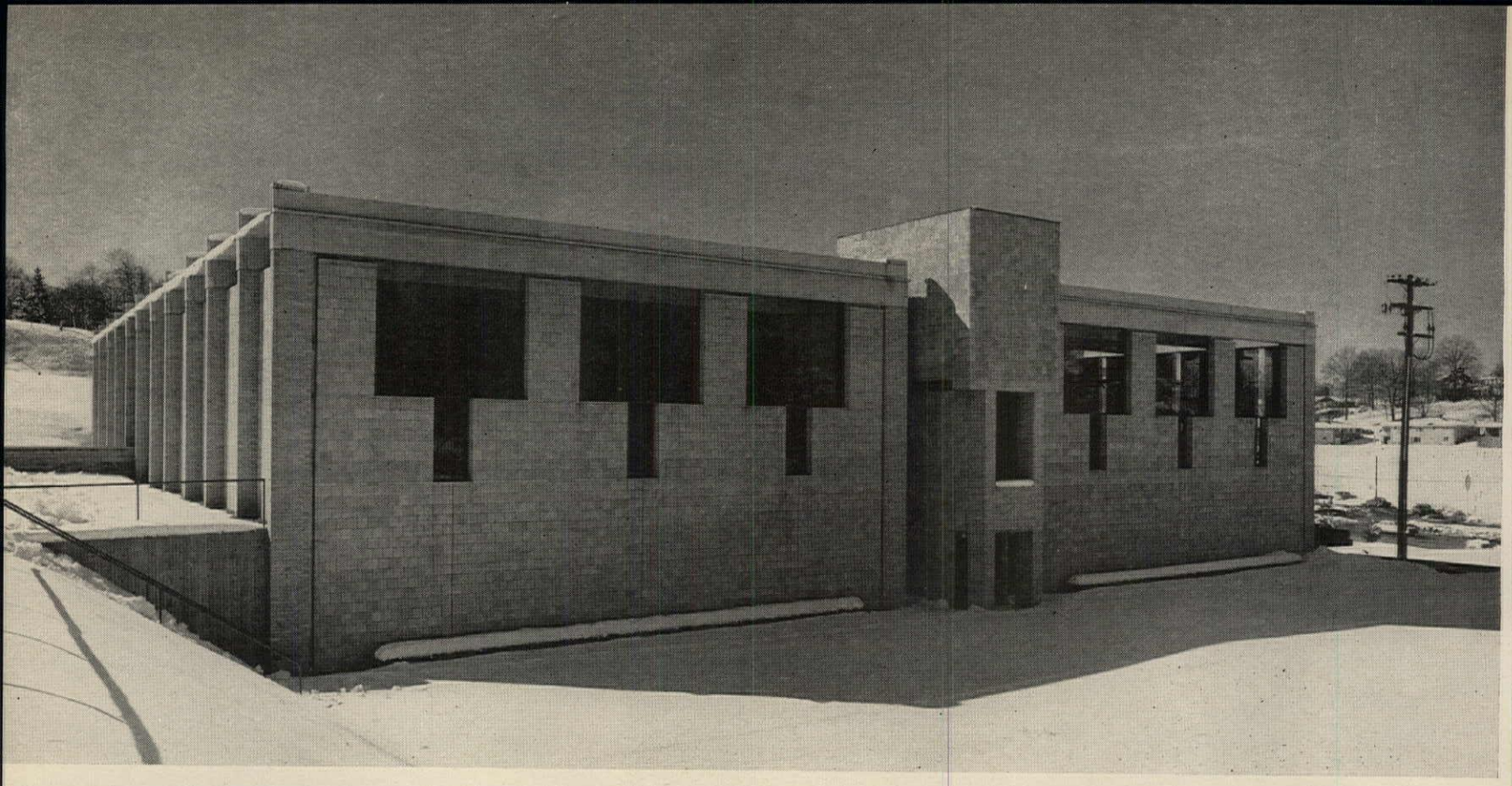
KAHN NEWSPAPER SHOP

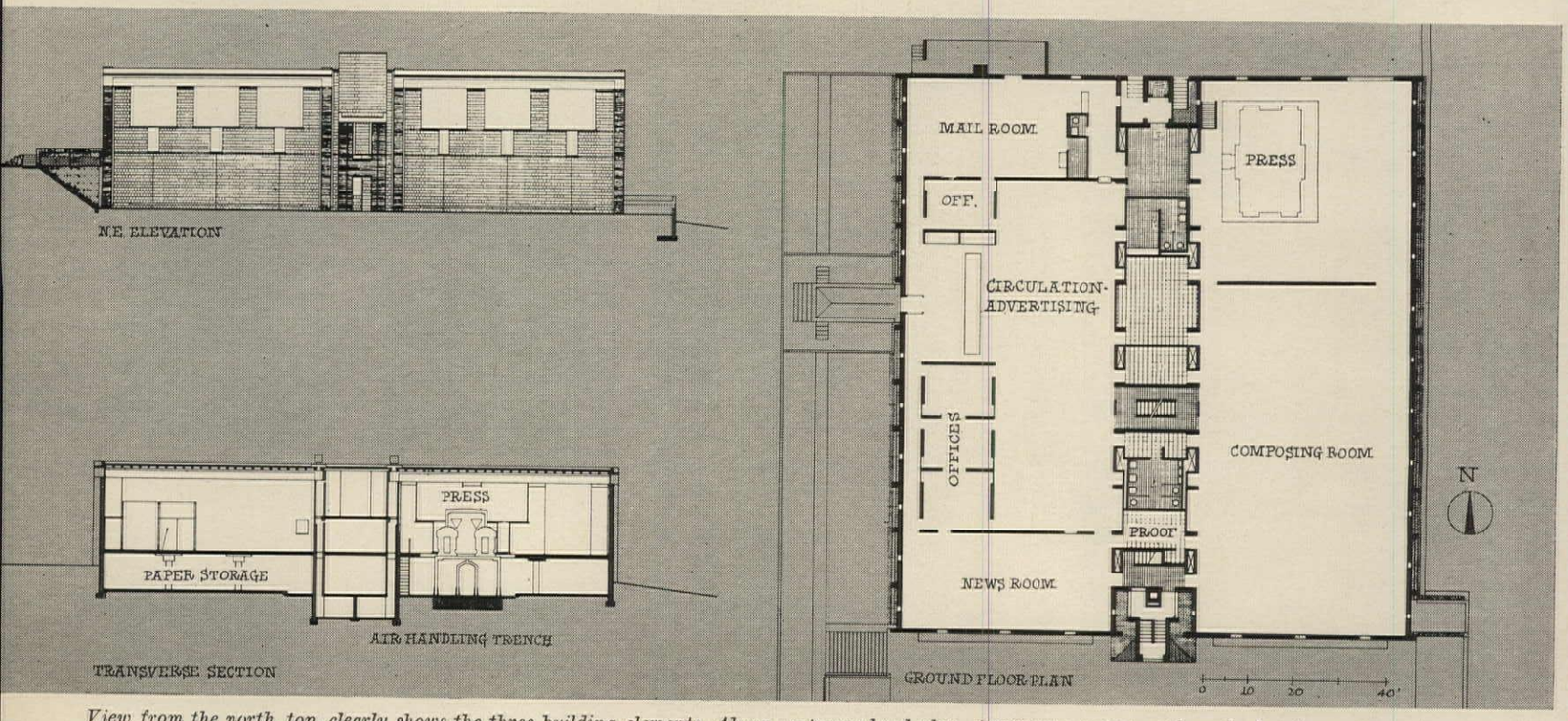
The concrete structure shown on these pages is the latest completed work by Architect Louis Kahn.

When Mrs. Robert Herbert, owner of the Greensburg, Pa. *Tribune-Review* decided to build a new plant for her paper, her nephew, William Huff, was working in Kahn's office. Mrs. Herbert had thought that Kahn would not be interested in designing so mundane a building as a newspaper plant, but was happy to discover through Huff that the opposite was true: Kahn was delighted to do it. The structure shown here is the result.

The plant is, in effect, three buildings side by side: two large two-story blocks on the outside, with a narrow, four-story spine sandwiched between them. (The lower floors of the two-story blocks and the two bottom floors of the four-story block are underground—see section page 84.) The entrance level contains the major functions of the newspaper.

On one side of the spine are circulation, mailing, advertising, news, and business offices. The last are unroofed cubicles. On the other side of the spine are the composing room and the stereotype and pressroom. Dispatch, proofreading rooms, and toilets (all of which serve both halves of the entrance level) are in the block between. The top level of the core





View from the north, top, clearly shows the three building elements. Above: entrance-level plan, transverse section, and north elevation.

contains a skylighted boardroom and a lounge.

Newsprint, ink, and other printing equipment are stored in the basement areas of the two large blocks. The basement also contains the mechanical equipment room, darkroom, locker room, and janitor's closet.

Under the spine is an air-handling trench large enough to be considered a subbasement. Fresh air is sucked into the core at the north end of the building under the concrete block box which contains the cooling equipment. It then passes through the mechanical equipment room into the trench, and from the trench up into vertical shafts in the outside walls of the spine. Conditioned air enters the various rooms through registers; it returns through vertical slots in the inner walls.

The structure is concrete block, concrete brick, and precast and cast-in-place concrete. In the two large blocks of the building, the cast-in-place floor of the entrance level is carried on four rows of supports: two inner rows of cast-in-place columns and two outer rows of concrete-brick piers. These piers continue up to carry the precast, prestressed concrete roof beams which, in turn, carry the precast roof-deck. The floor and roof of the mezzanine are the same precast deck; the entrance-level floor is cast-in-place.

Supporting elements of the structure are distinguished from those elements which are nonsupporting. In the east and west

PHOTOS: GEORGE CSERNA

Inside the newsroom, looking toward the northeast corner of the building. This space is typical of the large areas in the building.

sides, the concrete-block wall helps brace the piers and, thus, butts directly against them. On the north and south sides, on the other hand, the piers can stand alone, and deep reveals separate them from the walls. In both cases, the wall is clearly considered a screen with the windows cut into it. To make this emphatic, the glass is placed at the back of the wall plane and set in grooved blocks. This effectively eliminates all but one horizontal muntin bar.

Even the most minor connection or detail is carefully considered. The expansion joints, the blocks which cover the prestressing wires in the beam-ends, and the joints in the roof coping and their cover caps—each detail bears study.

On the east and west sides of the building, the windows were made narrow slots to control the morning and afternoon sun. The north and south sides could be opened up, but the client wanted a maximum of usable wall area against which to put filing cabinets, shelves, et cetera. Kahn's solution: large openings above head height, small ones below.

FACTS AND FIGURES

Greensburg Tribune-Review Building, Cabin Hill Drive, Greensburg, Pa. Architect: Louis I. Kahn. Engineers: Keast & Hood—Dr. August E. Komendant (structural), Fred S. Dubin Assoc. (mechanical and electrical). General contractors: Westmoreland Const. Co. Construction cost: $492,500. Site development cost: $7,500. Building area: 33,100 square feet. Cost per square foot: $14.87.

THESE TRENDS MAY RESHAPE FACTORY DESIGN

Push-button factories—acres of machines tended by a few human beings of solitary and heady power—are still much further in the future than cartoons and banquet prophecies would have us think.

Automation today, and presumably for years to come, is a combination of highly mechanized operations mixed with less mechanized or even unmechanized steps. In the words of James Bright, author of one of the principal works on the subject, automation means "doing things notably *more* automatically than customary"; this turns out to mean radically differing stages of advancement among different automating industries and even among different processes within the same industry. For example, a mechanization profile of an oil refinery, one of the most highly automated types of plant, shows a startling interspersion of hand tool and hand procedures, mingled with self-directing and self-correcting machines.

How automation may affect design

Nevertheless, in its spotty fashion, automation is proceeding far enough and fast enough to account for several emerging trends in factory design. These trends have to do with space needs, control of the environment, and appearance—in short, with factors that are very much the traditional concerns of architecture. It will be less possible to put up a brick structure, top it with a tin roof, and come up with a workable factory building. But the architect of an automated plant will find that while more is demanded of him, more constrictions are put upon him also. He will have to do more, and do it with less freedom.

Fortunately, plant architects who are sensitive to the changes as they occur, will not be suddenly flummoxed by bewilderingly new requirements, even though these changes may add up, cumulatively, to breakthroughs. From time to time, to be sure, a fairly radical jump may come, but hardly by magic or without heralds. For instance, one factor that confines much automation today to islands within production processes is the inflexibility of materials movements imposed by track, belt, or chute systems: a lift truck with a man operating it can be tremendously more flexible. Lift trucks that can find their own way around may be developed; and when they are, this one factor will certainly stimulate mechanization and self-control in other, adjacent steps and will bring, in its train, automation to processes and products for which automation would not be worthwhile today.

As automation proceeds, it requires fewer (and frequently less skilled) production workers but it also requires a higher proportion of highly skilled maintenance workers. Arthur Brown of A. D. Little, Inc., the industrial research firm, points out that the push-button plant is still only a dream, but that eventually, if the process of automation were to reach its logical conclusions, a building skin for the protection of workers might not be necessary. The machinery, in the sense that it is a housing and pipeline for products, might be built outdoors, as much refinery equipment is now. Maintenance workers would then carry along, or produce as required, their own plastic skins, just as they can carry along their own lights in factories that have no need for permanent lighting.

Meanwhile, the need for highly skilled maintenance in mechanized plants may, according to Dr. Brown, eventually result in other design changes as well: for example, the higher *proportion* of clerical, and probably female, workers, and the three-shift operation logical for expensive and intensive mechanization may impel more plants to locate within central cities. This, in turn, would require more emphasis on vertical materials handling systems, and it would mean overcoming or countering such disadvantages of multistory buildings as their resistance to expandability and to long spans combined with heavy floor capabilities. But these are distant problems.

More capacity, less space

Automation generally means fewer machines, not more. The machines are more complex but more compact. In addition, less space is needed around machines for operators, much less aisle space is needed, and less *temporary, in-process* storage around machines. All this adds up to smaller factories, even though capacity may be vastly increased.

On the other hand, warehousing, both for materials coming in and those going out, is apt to be considerably larger and more dramatic than in older plants. For instance, automated bakeries, feed plants and the like convert from handling their raw materials in bags to handling them in bulk. Flour arrives in huge bulk shipments to go straight from storage into conveyors, and thus one of the first automated bakeries has storage silos 90 feet high for its ingredients.

At the output end of an automated plant, little storage should be needed—at least in theory. The products *ought* to be shipped off almost as they come from the lines. This is what high-production plants aim at, but it is more easily said than done; for it requires fantastic dovetailing of production schedules with customer requirements. The penalties of any hitch in shipment or sales, in a plant where it costs a lot to stop the machinery, where two or three shifts are operating, and where the lines have a very high capacity, can be a situation like that faced by the sorcerer's apprentice. Warehousing for expectable abrupt *contretemps* is only realistic.

Warehouse design may thus pose some of the greatest demands on

the ingenuity of plant architects. For instance, pie-slice shaped warehouses are a possibility, for concentrated input and speedy outgo.

Machine environment

Complex machines are less adaptable to their environments than human beings. Automated plants mean more temperature and humidity control, to closer tolerances. The degree of control is apt to vary within a plant; in automation lingo, the range is from "white" (very highly controlled, as in computer rooms) to "gray" (areas in which the environment control is more for the benefit of the product than of the machinery).

Controlled environment means a more closed environment, which in turn means few or no windows. But this, of course, has to be reconciled with human needs, so the result is not oppressive and avoids overwhelming monotony. Color and greater design attention than is usual in rest rooms and lounges are obviously desirable.

Layout first

In automation, the machinery layout comes first; the enclosure and its subsidiary facilities are last in the planning process. This has always been true to some degree of good plant design but it reaches an extreme where automation encompasses movement of the product from process to process. The tyranny of layout, and the precision of layout, are quite beyond the normal province of architectural considerations. For instance, columns or other building structure features become useless as reference points. The grid or module of an automated plant is "set up with a transit instead of a ruler." The grid marks must be accurate to within ⅛ inch, sometimes less. The contractor is therefore supervised by plant engineers, rather than by the architect.

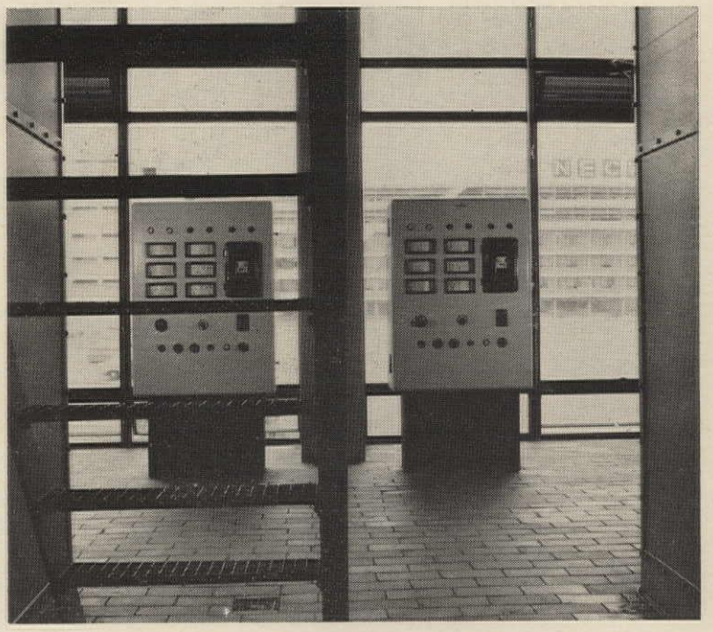
This is one aspect of a more general situation in the architect-client and architect-contractor relationships for factory building. In most building jobs, the engineers with whom architects principally deal are structural, mechanical, and electrical engineers who take their main cues from architectural decisions. In automated plant design, engineers plan the layout and make most decisions to which the shelter and the architecture, if any, is cued. The engineer also has a larger voice in all client decisions.

Appearance for production

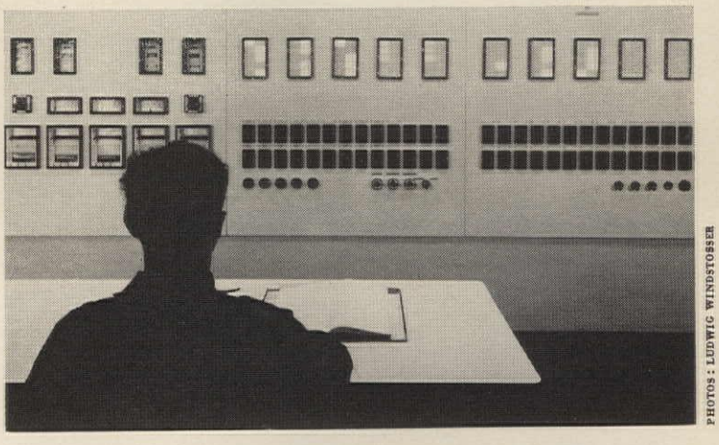
Paradoxically, the sheer look of things, as one factor of plant design, can be more important in an automated plant than in older-style factories. This is recognized in even the design of the automation equipment itself. Color, heavy brushed-chrome knobs, even built-in ashtrays, are examples. There is method in this ostentation. It is intended to impress the people who are responsible for the machines (a responsibility that may require the exercise of very little actual skill) with the fact that this is an expensive machine. The idea is to make the machine's tenders careful and proud of it. Suitably impressed workers have been known to bring in gifts of appreciation and homage to a machine's designer!

Bright points out that pride seems to have almost as much influence as conscious dollar-and-cents figuring on the decision to automate. "If we're going to build a new plant, we want the best," is a common attitude of a management pursuing automation. A certain risk and willingness to experiment are usually implied.

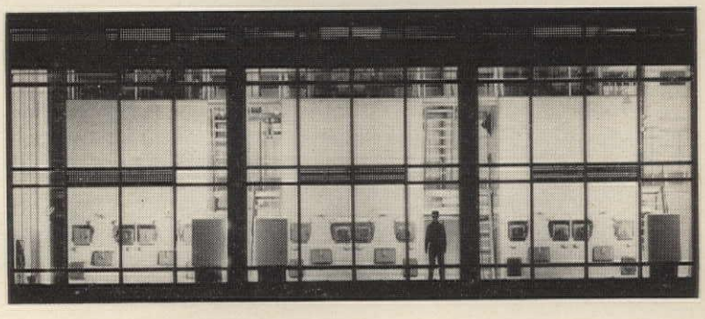
The plant designer who fails to appreciate these intangible but powerful factors will miss part of the point; he will also miss a large part of his opportunity to create a significant industrial building, rather than a routine shell.



IBM 7070 data-processing equipment (photos, above and below) is capable of handling 150,000 mail orders daily in the new Neckermann warehouse and office building in Frankfurt, (story, page 92).



PHOTOS: LUDWIG WINDSTOSSER



ENGINE TESTING PLANT

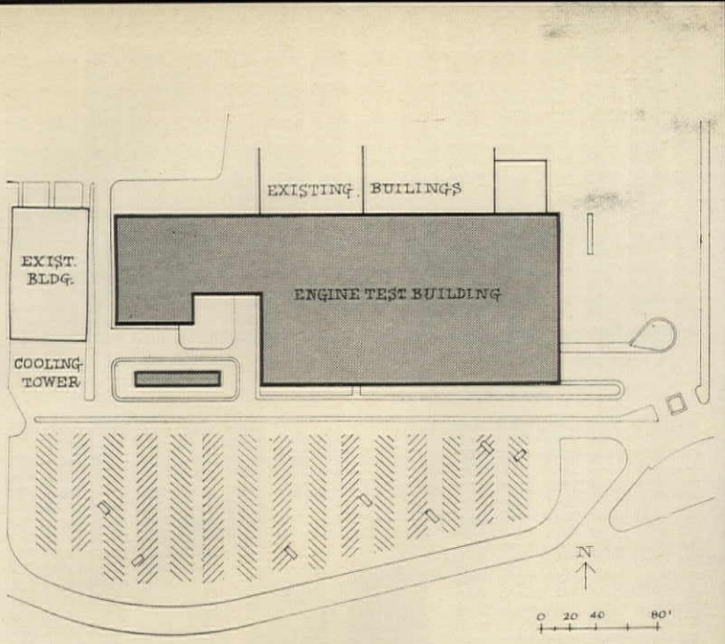
There is much more to the new building by Architect Harry Weese for the Cummins Engine Company than its walls (see page 90), handsome as these are.

The building houses the company's dynamometer engine-testing facility. This facility takes heavy diesel truck engines off the assembly line, subjects each one to four hours of carefully monitored "running in" tests, performs other tests on related electrical systems such as generators, and then crates them for shipping either by truck or rail. The building, latest product of the company's continuing relationship with Architect Weese, is located in Columbus, Ind.

Clearly, any plant in which men must conduct tests on big truck engines running steadily presents problems of employee welfare.

One problem is keeping the air free of noxious vapors. Mufflers, located over each test room, exhaust vapors to the outside through a forest of small roof stacks.

Noise is a second major problem. Though the men wear earplugs, the architect asked Bolt, Beranek & Newman to conduct thorough studies of the physiological impact of noise. As a result of their report, each testing block was enclosed on three sides and overhead to form a cell lined with acous-



Dynamometer engine testing facility (photos, left and right) is part of a complex of buildings designed by Architect Harry Weese which includes cooling tower (below, center) and assembly line (below, left).

PHOTOS: BALTAZAR KORAB

tical material. The massive engines are moved in and out of the test cells by large hooks sliding along a framework of overhead runners.

Lighting also received careful consideration, for psychological as well as physiological reasons. A skylight system, using plastic domes, provides a level of 35 footcandles on a gray day. In addition, however, glass was installed in the walls at eye level to give employees views of the horizon.

The test building (at right in photo above) is connected to the main plant and forms a vast horizontal complex with it. The building has two floors, the upper given over to the tests themselves, the lower used for storage.

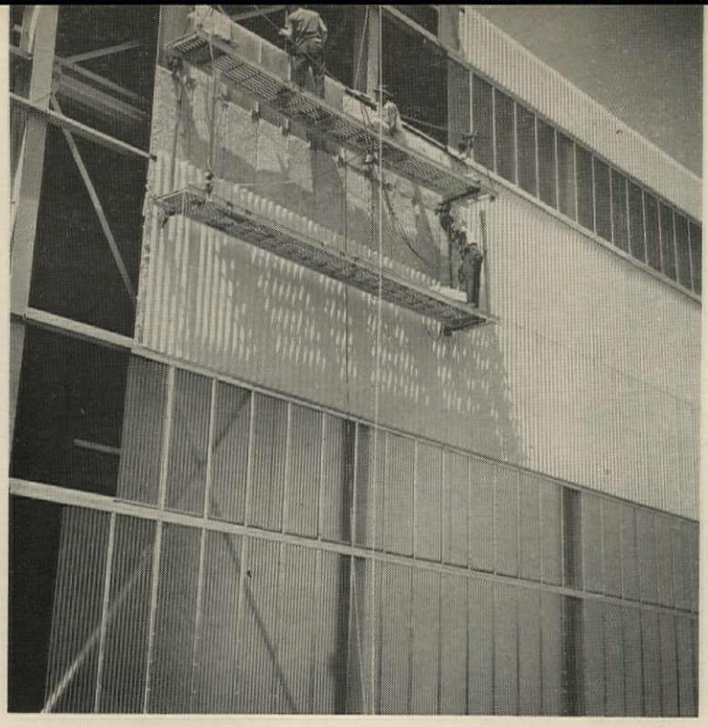
FACTS AND FIGURES

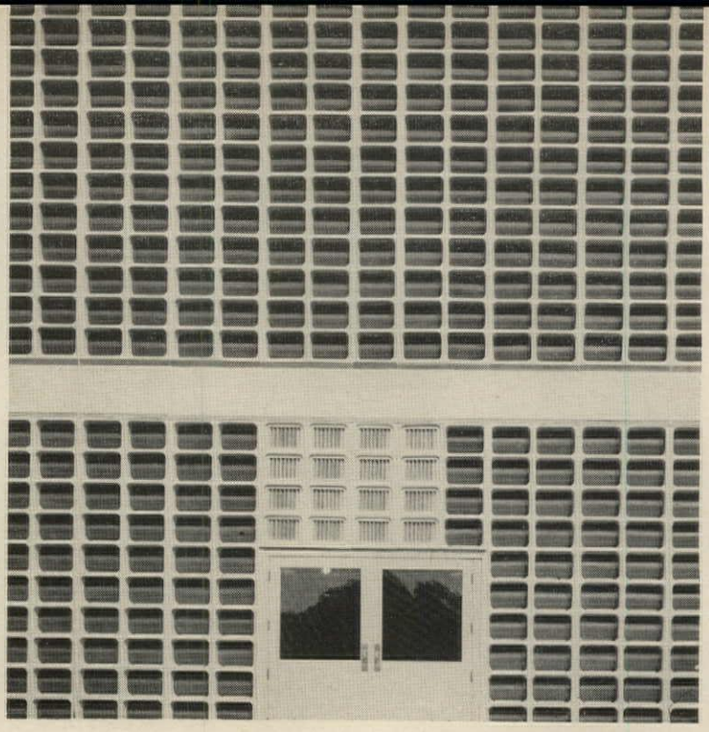
Engine Test Building, Cummins Engine Company, Inc., Columbus, Ind.

Architects: Harry Weese & Associates. Landscape architect: Franz Lipp. Engineers: Frank Kornacker & Associates (structural), Samuel R. Lewis & Associates (mechanical, electrical). Acoustical consultants: Bolt, Beranek & Newman. General contractor: Repp & Mundt.

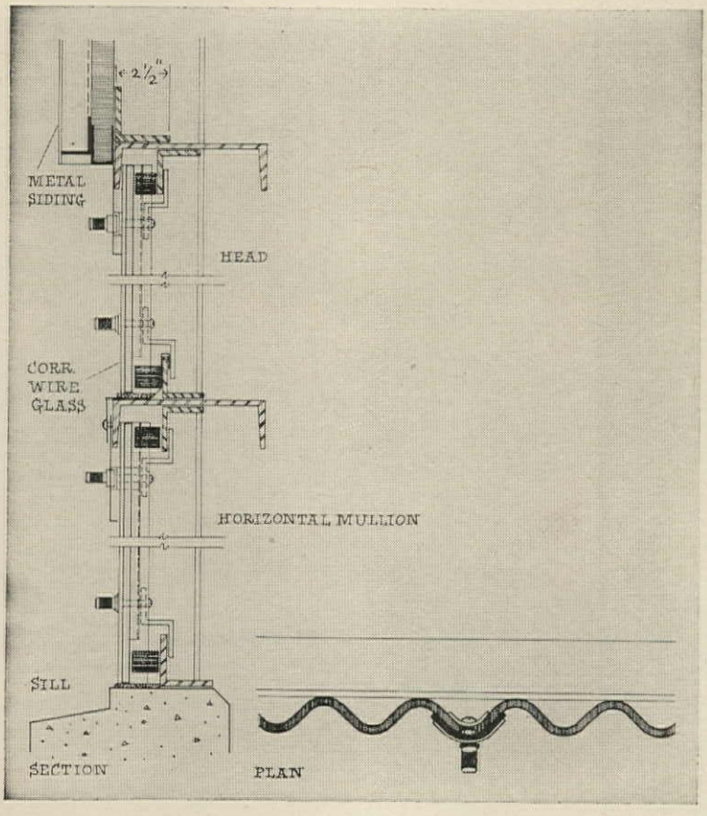
Total cost (includes land and site development, furnishings, equipment, and fees): $4,884,666. Construction cost: $2,920,273. Building area: 303,280 square feet. Cost per square foot: $13.

Construction details: concrete slab on core sand fill at grade; 11-inch flat slab on reinforced concrete columns 20 feet on centers on spread footings for upper level; self-supporting walls of ribbed panels (see page 90); roof of 8-foot steel trusses, 20 feet on centers, spanning 80 feet; steel columns, steel purlins supporting poured gypsum roof-deck.

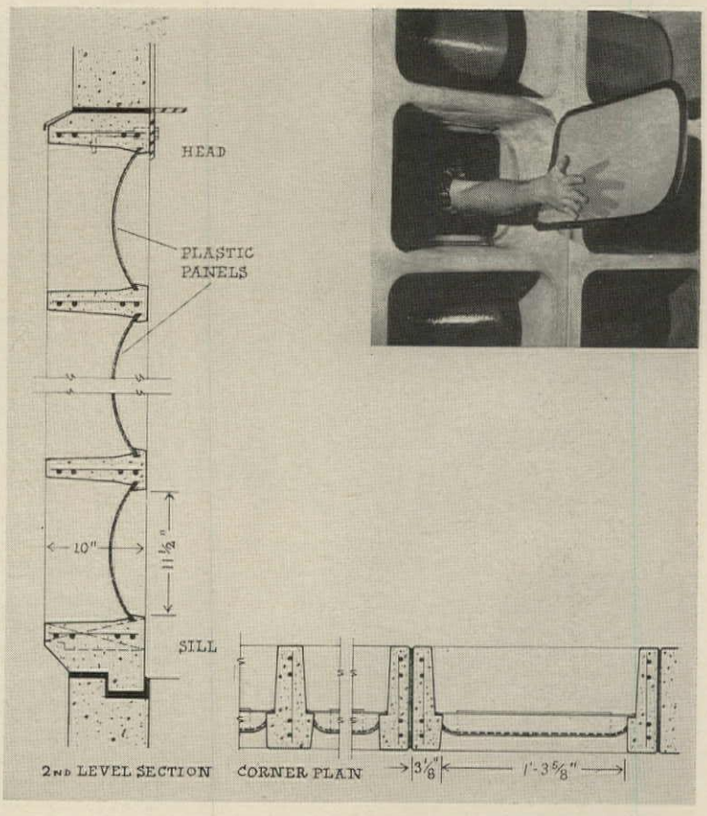




JOSEPH W. MOLITOR



Wired corrugated glass and insulated spandrel panels, new materials not yet on the market, went into the walls of this warehouse in Tennessee.



Plastic "pop out" windows were set into a grillwork of slender precast concrete ribs to minimize blast damage in this Michigan chemical plant.

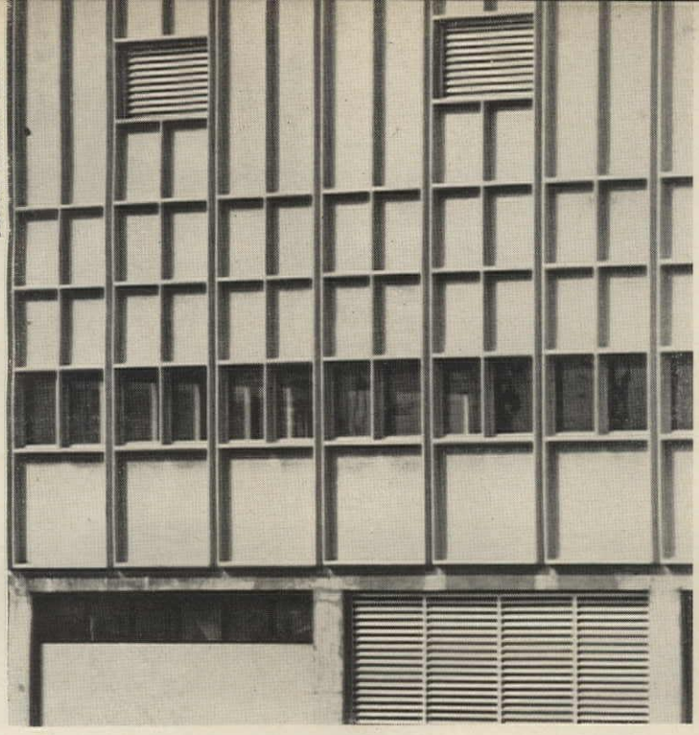
WALLS FOR FACTORIES

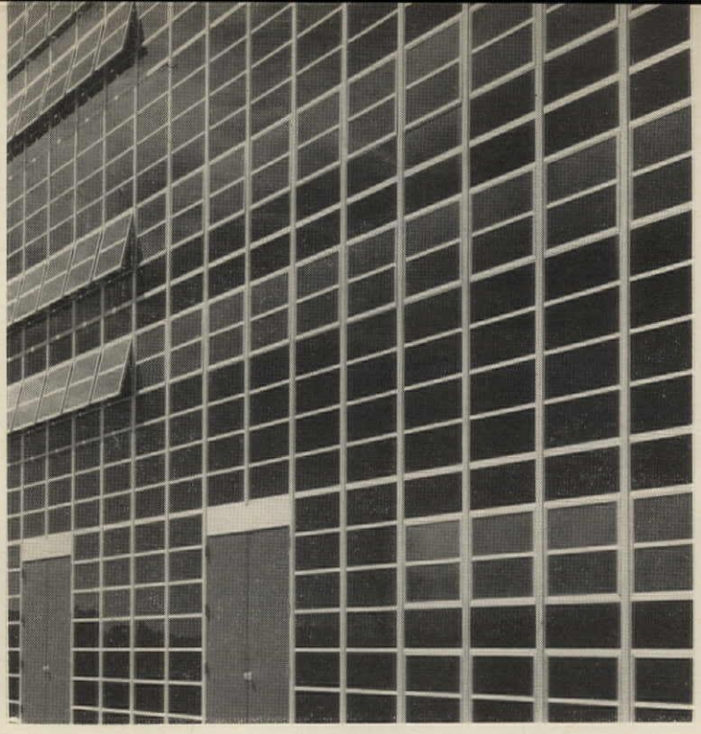
Of the four industrial walls shown here, one posed a problem so interesting that its solution was almost bound to be interesting. The other three turned out to be interesting because their designers and owners took "ordinary" problems more seriously than they are normally taken.

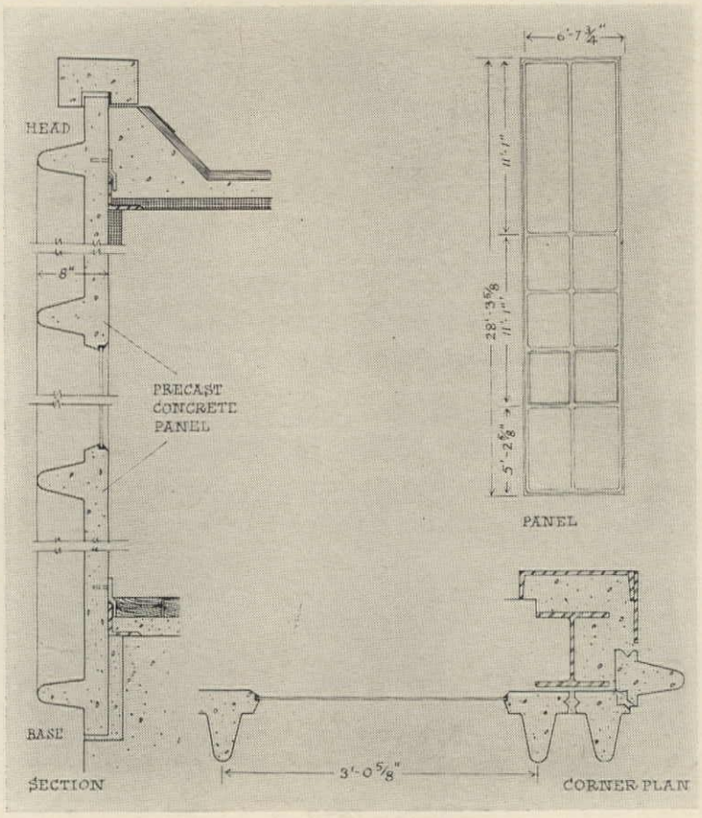
Nothing, it would seem, could be more routine than a warehouse wall in the Tennessee hills. But American-Saint Gobain got a more-than-decent warehouse façade by use of two of the company's new materials not yet on the market: wired corrugated glass, and insulated spandrel panels with a royal-blue glass exterior, polyester foam center, and sheet-steel backup. The building was designed by the Compagnie de Saint-Gobain of France with the engineering concern of H. K. Ferguson Company, Inc., and built by the Daniel Construction Company.

The Parke, Davis Chemical Plant wall in Holland, Mich., second from left, is the one with the offbeat problem. Explosions are a constant possibility in this plant. So the walls were designed as a grillwork of slender precast concrete ribs (in story-high panels), filled in with 10,000 blue plastic "pop-out" windows which occupy 80 per cent of the exterior wall. At a pressure of 20 to 30 pounds per square foot, the

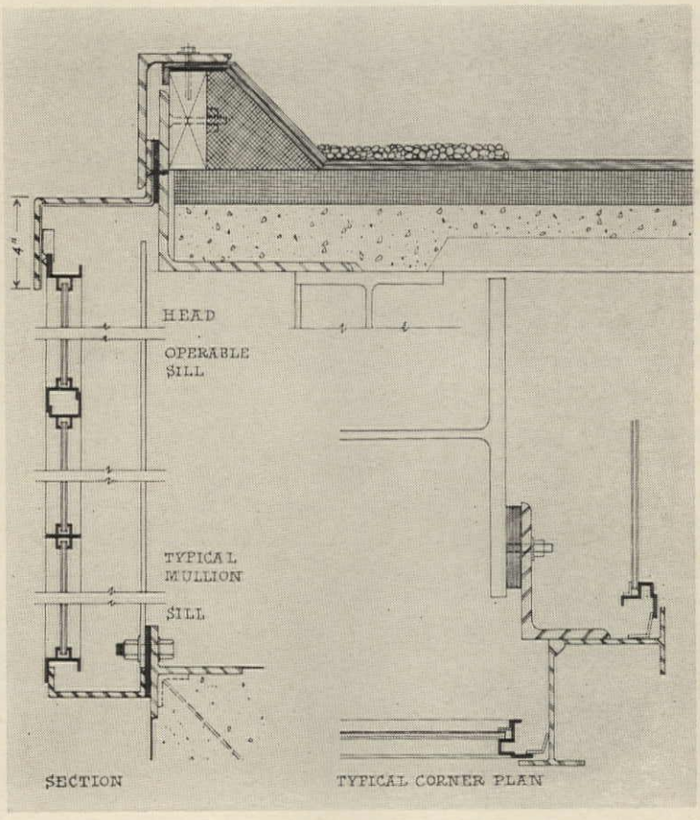
PHOTOS: BALTAZAR KORAB







Ribbed panels, cast in molds 400 miles away and erected by crane, form self-supporting walls of this Indiana factory for diesel truck engines.

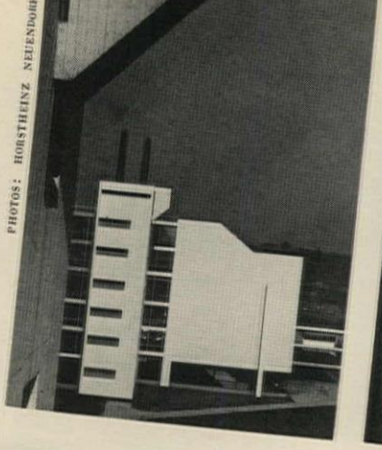


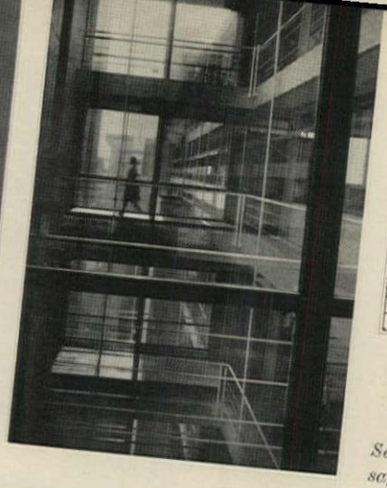
Glass-and-aluminum curtain wall, stretched tautly over a structural steel frame, encloses power plant of this Michigan research laboratory.

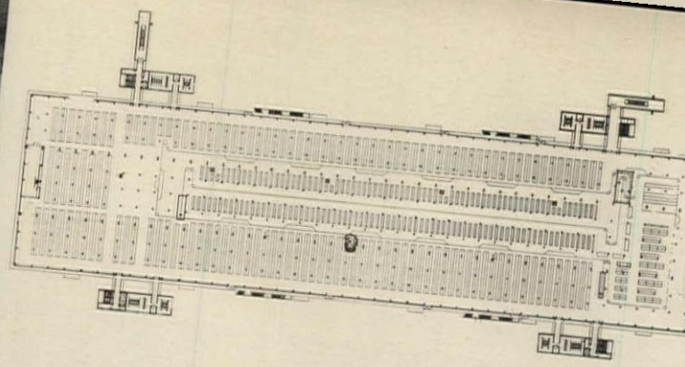
plastic pops out to relieve interior pressure instantly and minimize blast damage. The pop-out wall, which cost $5.30 per square foot (including development costs), was conceived by the architect-engineers, A. M. Kinney Associates, and the patents assigned to Parke, Davis & Co. Darin & Armstrong, Inc. were the builders.

The Cummins Engine Company's dynamometer testing building, second from right, has self-supporting concrete walls formed of ribbed panels that were cast in concrete molds 400 miles away, shipped by flatbed truck and erected with a 20-ton crane. The system cost $4.20 per square foot in place, including insulation. The panels are 28 feet high, 6 feet, 8 inches wide, and 2½ inches deep. They were secured to the structural frame at each corner and at the top and the base. Where glass occurs, it is held by a cast rabbet and gun-applied calking compound. Harry Weese & Associates were the architects, Repp & Mundt the builders.

The power plant at the Parke, Davis research center in Ann Arbor (right) is sheathed with a crisp, glass-and-aluminum curtain wall over a structural steel frame. Designed by Skidmore, Owings & Merrill and constructed by the Barton-Malow Company, the wall cost $5.80 per square foot. It represents an ultimate of a familiar type—and none the less handsome for that.

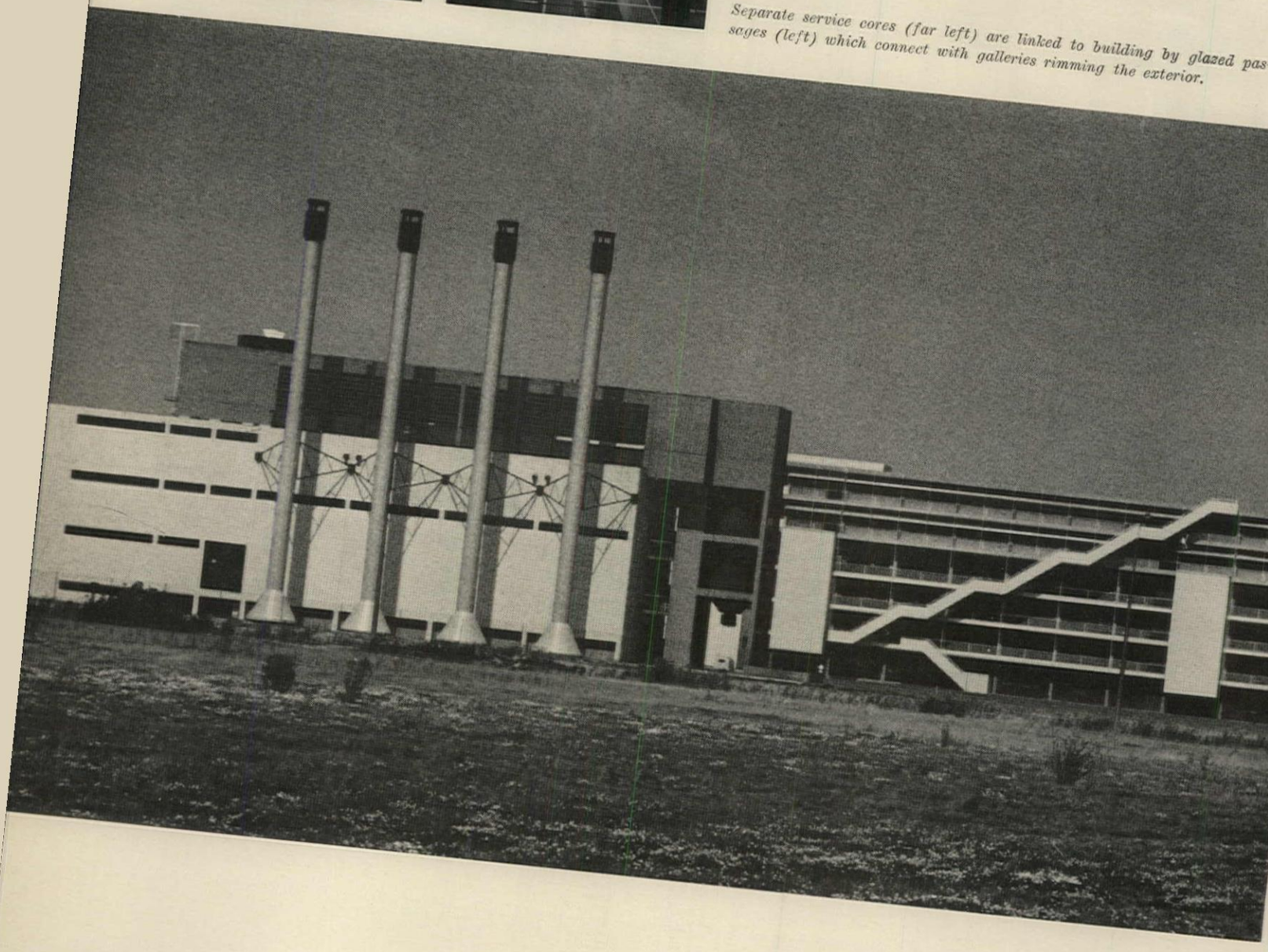






PHOTOS: HORSTHEINZ NEUENDORF

Separate service cores (far left) are linked to building by glazed pas sages (left) which connect with galleries rimming the exterior.



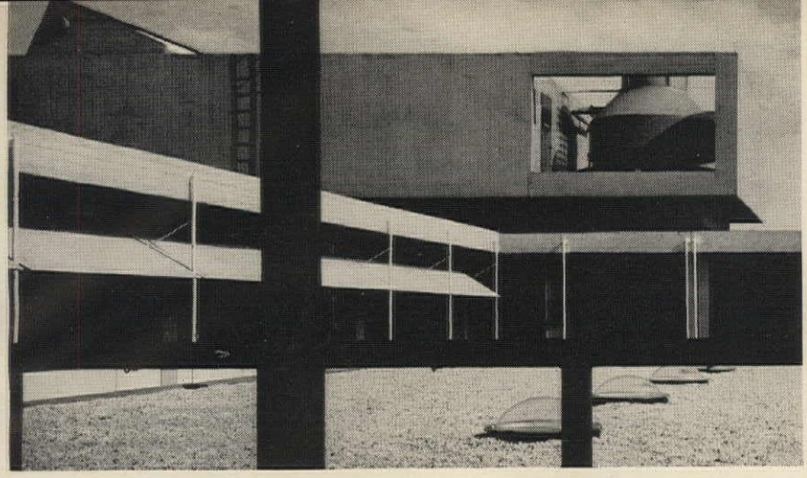
SIX-STORY WAREHOUSE

Stairs, air-conditioning equipment, and even corridors are brought to the surface as bold design elements in Architect Egon Eiermann's sophisticated warehouse and office building. Home of the Neckermann mail-order company in Frankfurt, Germany, the structure provides four floors for storage and distribution, with two floors of offices on top.

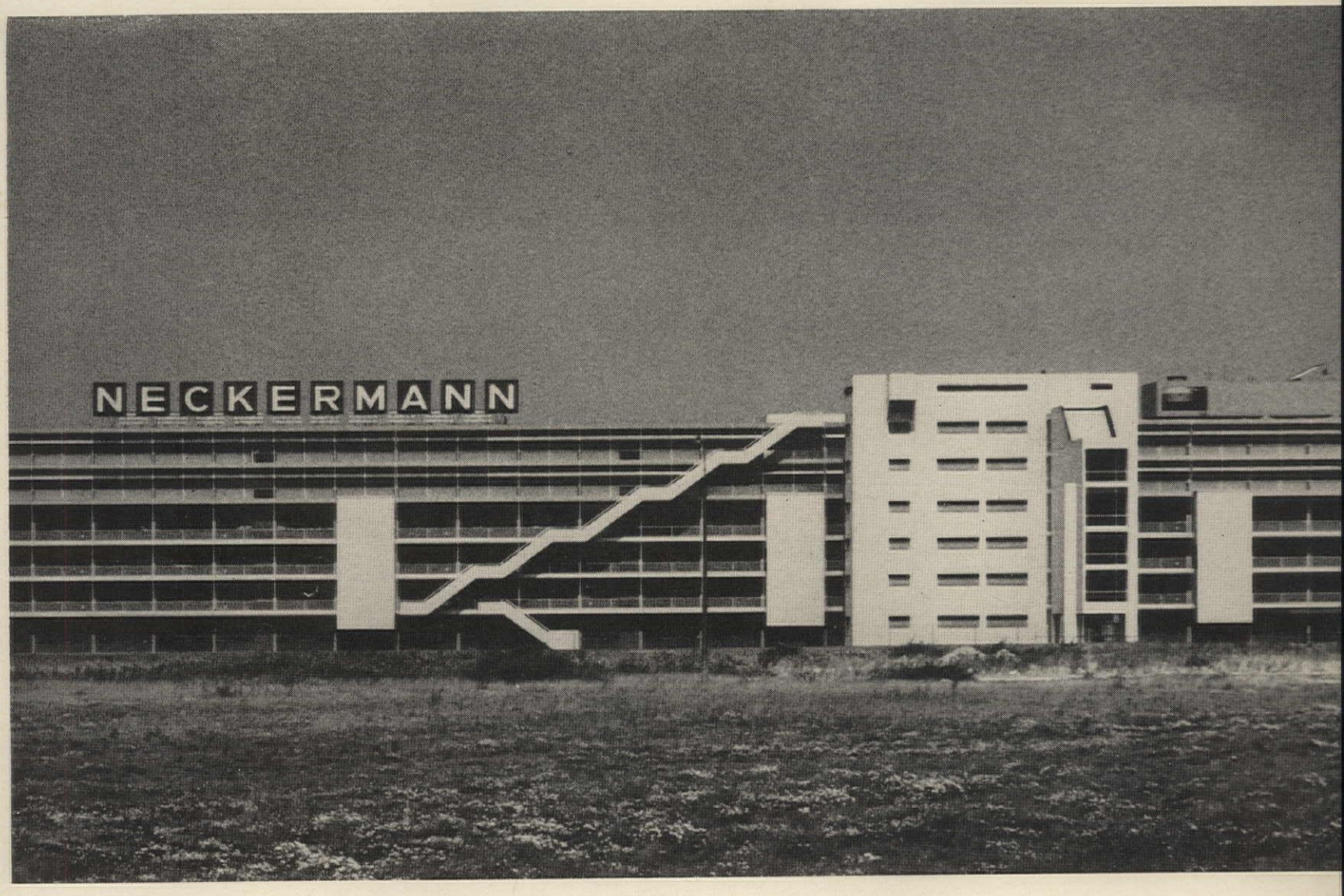
Two related considerations were primarily responsible for the building's form:

The first was that the warehouse floors could function most efficiently if each was a continuous, uninterrupted space. To achieve this, those elements which normally do interrupt spaces—service cores and air-conditioning equipment—were pulled outside the basic envelope (plan, above, and photo, top left). Glazed passages (photo, top center) link the main building with four service cores containing stairs and washrooms. Large air-conditioning units, serving the four warehouse floors, are hung on the long façades, six on each side. The upper two administrative floors have a separate air-conditioning system.

Fire safety was the second consideration. The building, which houses 3,000 men and women, is 860 feet long and 200 feet wide. And, because of these great dimensions, the



One of many rooftop courts (left) gives light and views to offices



four service cores were too far apart to allow satisfactory emergency egress. The architect's solution, stamped clearly on the façades, was to rim the building with galleries which lead to free-hanging exterior stairs, two on each long side.

The structure consists of a reinforced concrete skeleton forming a 20 by 20-foot bay. Eight expansion joints, six longitudinal and two transverse, cut through the building. Where they occur, stanchions are doubled, providing space between them for electrical cables and ventilation ducts. The expansion joints also helped in the construction process, dividing the building into separate sections which were erected by different construction companies at a great saving in time.

A series of rooftop courts (photo, top of page), carved out in depths of either one or two stories, brings light and views to office workers in the top two floors.

FACTS AND FIGURES

Josef Neckermann mail-order house, Frankfurt/Main, Germany. Architect: Egon Eiermann. Engineers: Karl Winkelmann & Rudolf Lux (structural), Dr. Hans Friedrich (mechanical), Dr. Hans Leussink (soil conditions), Nico Hariton (factory layout).
Building area (main block): approx. 1 million square feet.
Special features: mail order operation controlled by IBM 7070 data-processing equipment capable of handling 150,000 mail orders daily. These and other business machines have been located in separately air-conditioned area on fourth floor of the building.

THE AMERICAN WAREHOUSE

PHOTOGRAPHS AND TEXT BY WALKER EVANS

The stove bolts, the go-carts, and the boxes of nutmegs we cannot live without lie in those beautiful old warehouses down by the waterfront. If you explore the warehouse district on a fair Sunday morning you begin to feel the essence of these buildings. It comes out in their atmosphere of solidity and use and heavy work. The very style these structures have evolved, simply by nature, could not be more fitting. And behind those rows of russet iron shutters one senses the wealth of wildly improbable goods, of spice, timber, tobacco, musk, and axle grease.

The warehouse exists because all the interminable shoving and hauling and parking and ticketing of materials has to have a place of operations somewhere near shipping and railroading. And, yes, those barns and incubators have style. They are far more satisfying to look at than, say, a typical municipal museum building that has been designed to put you into a self-consciously cultural mood.

The finest examples of warehouse, architecturally speaking, are found in our older seaboard cities and towns. The photographs on these pages are a fair sample of the genre.

A Sunday morning at the loading platform

The silences of Water Street, Brooklyn

Nineteenth-century brickwork and iron stars

Our chief instrument for urban rebuilding has advanced considerably, but is now in trouble on several fronts. Here is the first of a series of articles suggesting why. BY DAVID B. CARLSON

URBAN RENEWAL: RUNNING HARD, SITTING STILL

"It takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that."

No planner, architect, or city official could have described the present $4 billion urban renewal program any better than Lewis Carroll's Queen of Hearts. She was, admittedly, speaking of other things. But the vast urban renewal program—now some 930 projects of many kinds in about 520 localities—while broadening its scope of operations, is, at the same time, nervously analysing its many serious defects.

The most serious defect is the unsolved problem of relocation, and this ties directly into problems of rehousing minorities and into the rehabilitation of slum dwellings. Some observers think that rehabilitation is the answer to the problem of the rehousing of slum dwellers, but rehabilitation seems unable to get off the ground.

In subsequent months, FORUM will examine several of the basic issues of urban renewal, such as the role of the private market and the importance of better urban design to the program. This first article, however, will deal with the problems arising out of the expansion of the renewal program, as well as the social and economic implications of its increasing orientation toward the total community.

An experiment full of paradoxes

Professor William L. C. Wheaton, director of the University of Pennsylvania's Institute for Urban Studies, says that "renewal has so far been an experimental program on an experimental basis. We've just been developing skills."

In the course of developing skills, renewal has become a very different program from what it was in the early 1950s, when slum clearance was its prime goal, or even after 1954, when slum prevention was added to that objective. What has happened is, according to Urban Renewal Administration Commissioner William L. Slayton, that "what was once a slum clearance program has become a land use program."

Housing is no longer the focus for the renewal effort. About 11 per cent of all renewal land under contract is now slated for commercial reuse, and another 17 per cent for industrial use. Moreover, about 35 per cent of all renewal acreage has been set aside for public facilities. (Cities are learning fast that it is worth their while to lump as many public facilities as possible into renewal areas, and thereby receive credit for their cost toward the city's one-third share of total renewal cost.) This leaves only 37 per cent of total renewal acreage for residential reuse.

This shift in emphasis from residential reuse and slum clearance represents only one of many apparent paradoxes of an urban renewal program administered by federal housing agencies. Here are some of the others:

- Although purportedly a slum clearance program, urban renewal has cleared only about 2,000 acres of slums in a dozen years, and HHFA Administrator Robert Weaver acknowledges the program will in the future minimize clearance and stress rehabilitation and conservation. The basic reason is that clearance has solved few problems, and intensified the problem of relocation.
- Renewal was started as a housing program, but nonresidential land use is now dominating the picture (see above). Latest figures show that renewal has built far fewer units (42,767) than it has destroyed (138,574), which indicates another reason why relocation is so critical.
- While it was once felt that renewal's toughest problem would be attracting the private market to develop slum land (and it *was* a key problem at first), the situation is reversed in many cities today, where would-be redevelopers have to be turned away because cleared land cannot be made available to them.
- Renewal has been regarded as the means of getting lower-cost new housing. Economist Louis Winnick has said that "the real objective of government aid is to bring down the rent, or price, of new private real estate to its market level." But most housing built under urban renewal has been high-rent housing, so much so that some cities—including New York—have called a halt to some new projects until a more rational economic approach is devised.

A strategy for renewal—and the human dilemma

These paradoxes derive in part from what has been, until recently, a limited view of urban renewal's potential and its objectives. The new emphasis on land use, coupled with programs passed last year for mass transit and open space, show how the program is moving away from housing and clearance, and toward total city—and, indeed, area—redevelopment.

This shift can be seen clearly in the revamped program for Philadelphia, generally reputed to have done as good a job of urban renewal as any city in the nation. William L. Rafsky, director of the Redevelopment Authority, acknowledges Philadelphia's effort is now "a far cry from slum clearance. . . . it is based upon four major areas of action: 1) center city development, in the realization that [center city's] health is vital for the whole area; 2) rehabilitation and conservation of housing; 3) land for industry, most of it assembled

through Title I procedures; and 4) aid to institutions." Nowhere in Rafsky's program is slum clearance as such a stated goal, although it is implicit, and new housing is not mentioned at all.

In an effort to put this sort of program on a rational basis, Philadelphia (and about 40 other cities) are currently working on a community renewal program (CRP). This is designed to provide cities with "a strategy for renewal," as former URA Commissioner Richard L. Steiner puts it. This strategy, he adds, "must assess the extent, nature, causes and trends of blight . . . identify all the tools . . . and set forth a program realistically related to resources and limiting factors."

No single device is more symptomatic of urban renewal's current self-appraisal than CRP. Some critics have even wondered whether or not renewal programs should be delayed somewhat until CRP's are completed. (New York's $2 million CRP will take two years, San Francisco's about 18 months.) But Wheaton, who had much to do with fathering this broad-gauge approach to renewal planning, thinks not: "We are not really doing . . . much damage in our current program, and we will probably continue to use the tools we have, crude as they are."

CRP work now underway points beyond the immediate problems of time lags in application processing, and the dangers arising from cities undertaking occasional projects, unrelated to any rational program. Planners are beginning to realize that most of the paradoxes of the program can be resolved. But many realize also that they must tackle, head-on, the much broader problems of what makes slums start and grow, and what to do about slum dwellers themselves, before renewal can make the most of its ambitious plans. Until this is done, renewal may run hard, with its broader approach, but it will still be standing still.

Relocation: Already a dirty word in America

If you were to ask an urban renewal official what his toughest problem is, he would unhesitatingly answer "relocation." HHFA Administrator Robert Weaver, for instance, says flatly that "relocation has become a dirty word in America." (It has become so dirty that federal officials propose changing the name to "rehousing" —but this would not change the problem.) While some renewal proponents thought relocation of families from clearance areas would become easier if the housing shortage abated, relocation has become "more prickly than ever," according to URA Assistant Commissioner Frederick Hayes. URA has, in the past year or so, made relocation rules much stiffer, to insure that cities will not slide out of their legal responsibilities for finding safe and sanitary housing for displaced families, as they have in the past.

URA Commissioner Slayton points out that some 75 per cent of all displaced families have moved into standard housing as certified by local agencies, and only eight per cent went to substandard units—contrary to federal law. Of course, the government cannot force people to go into standard housing, any more than it can force them into public housing, which an increasing number of families abhor. While public housing has long been the crutch for relocation (with about half of all displaced families eligible for it), only 18 per cent of all relocated families have gone to public housing, and many of these go resigned.

And no one has yet come up with an answer to what is in many respects relocation's most excruciating problem—the very poor. Statistics indicate that about 11 per cent of all families displaced by urban renewal cannot even afford the rents in public housing projects—and public housing, in turn, doesn't want them because the very poor depress the rent roll.

URA relocation head James Banks, who did one of the best relocation jobs in the nation when he was with Washington D. C.'s Redevelopment Land Agency, is well aware of the problems that make relocation prickly. And he says hopefully that "we are in the process of meeting the failure of relocation." One of the biggest failures of all has been in New York City, where relocation has been handled by private redevelopers themselves, some of whom simply milked the slums they bought from the city for their own benefit and then bailed out. Although New York's urban renewal agencies have been thoroughly overhauled in the wake of scandals, it remains the only city where slum property, rather than cleared land, is sold to redevelopers, who then must clear it and relocate families. Banks says: "This is not the way to handle relocation, which is, I believe, basically a public responsibility."

As a public responsibility, relocation must do a better job, in social terms, if renewal is to survive. Last year's Commission on Civil Rights Report on Housing said flatly that "the most significant failure of urban renewal has been in relocation." Over 60 per cent of all families displaced for urban renewal have been nonwhite. The great postwar displacement of white, middle-income city dwellers with nonwhite, lower income families from rural areas is a problem which has not been met with much honesty. In the South, renewal has been openly used to maintain segregated school districts, and box Negroes into ghettos.

And the record in northern cities is not much better. Renewal technicians in cities and in the federal government cannot, as some think, wait for a free housing market to develop by itself in cities so that at least relocation can be dislodged from racial considerations. And an executive order from the White House banning discrimination in federal programs will not be the answer, either, although it would help.

"Promise of stability"

The Civil Rights report suggests that one answer to the problem of relocation might lie in a different direction from that generally taken in renewal so far: "New . . . emphasis on the preservation of existing housing rather than clearance [holds] future promise of stability to central city residents, many of whom are Negroes and members of other minority groups."

This promise is likely to be thwarted, however, by two overriding factors: 1) Rehabilitation is so far stymied, with techniques

of design and financing still unclear; and 2) even with rehabilitation, it is unlikely that a project area's residents will be allowed to stay there.

Rehabilitation has so far worked best through massive intervention by social institutions of influence, such as universities, hospitals, or even the local government. Thus Hyde Park in Chicago, under the steadfast direction and careful shepherding of the University of Chicago, is often cited as a landmark. And it might well be that institutions can do large-scale rehabilitation, where the object is to preserve residential character—and land values. But what of most gray areas, depressed socially and physically, seemingly with no place to go but down? In these areas are captured vast reservoirs of nonwhites, with the most limited housing choice, because of both income and color.

It is not the great gray areas that are currently being slated for rehabilitation and conservation. It is rather those areas which appear, on the basis of real estate appraisal studies, to be most marketable. The private real estate market established the early pattern for what areas would be cleared under the 1949 Title I law, and this pattern led directly to "projectitis"—the unplanned and massive development of scattered slum areas. Yet today, for all the fine work being done to put renewal on a community-wide basis, the private market continues to be the focus of concern in rehabilitation.

Most urban renewal observers believe that wide-scale rehabilitation by private enterprise can succeed only if the Federal Housing Administration develops a workable mortgage insurance program for it. A special FHA team was dispatched to Baltimore, where it worked with local officials for weeks devising standards for rehabilitation for the Harlem Park project area, which is hardly one of the city's worst slums. FHA has made commitments for several mortgages in the area, but seems unsure as to whether the Baltimore study has produced a nation-wide formula for rehabilitation—or only one for Harlem Park. FHA Commissioner Neal Hardy believes that FHA may have to set standards for every project area in every city of the U.S. This prospect makes renewal practitioners shudder; one redeveloper, with wide experience in the program, says frankly that "if we have to wait for FHA to write up standards for all sorts of housing in all sorts of urban environments, this program will never get off the ground."

The same problems

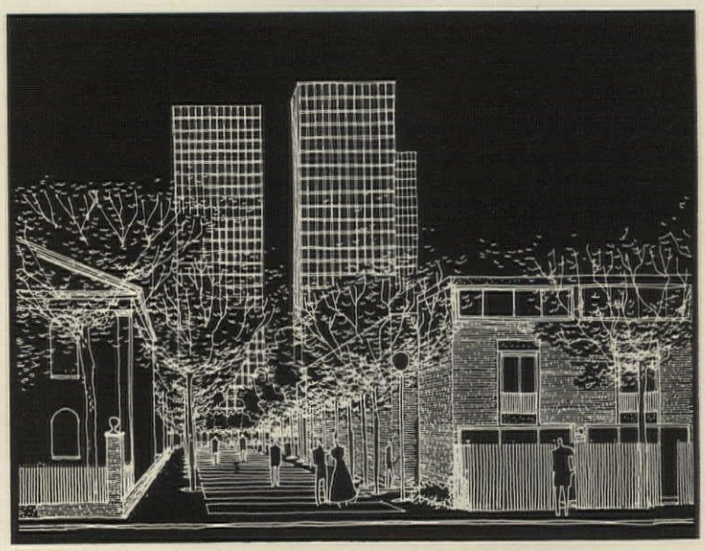
Continuing effort to enlist the aid of the private market, through FHA and other attractions, to help solve the knotty problems of rehabilitation and relocation is understandable. For the private market has proved eminently successful in heeding public exhortations to build luxury housing on renewal sites that have been prepackaged by local authorities. James Rouse, the Baltimore mortgage broker who was chairman of the redevelopment subcommittee which gave birth to urban renewal in 1954, believes that "rehabilitation has many of the same problems that renewal had six years ago . . . and until we lick those problems we can't hope to cope with the gray areas." Rouse believes that techniques must be devised to make vast areas available for rehabilitation by develop-

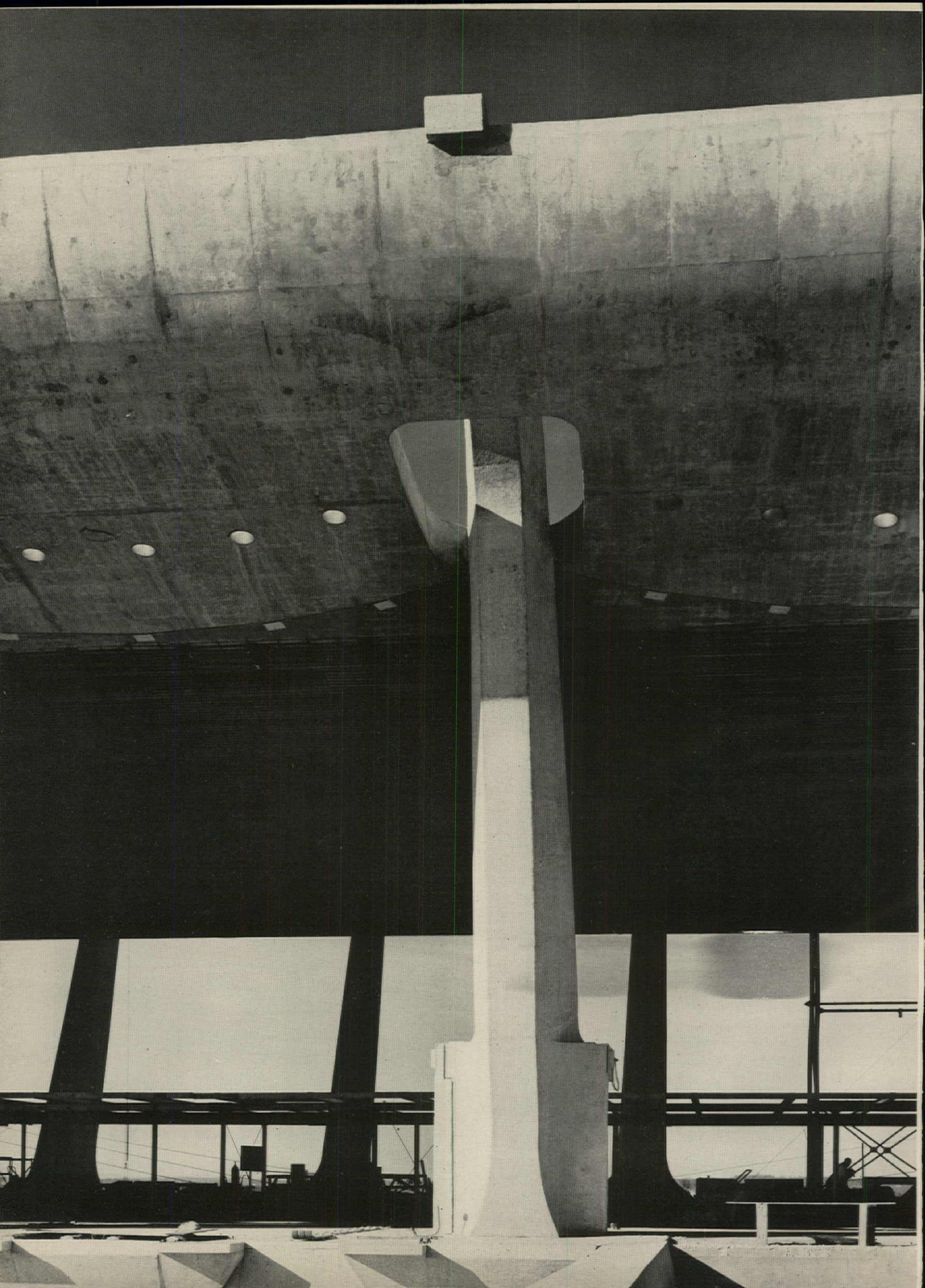
continued on page 183

SKYVIEWS

GETTING GOOD DESIGN INTO URBAN RENEWAL

A basic defect in most urban renewal projects, according to URA head William L. Slayton, is "unwillingness to accept design, beauty and esthetics as major criteria." This is so despite recent evidence in Washington, D.C., San Francisco, and other cities that projects awarded on the basis of design consideration can result in high-quality architecture as well as sound economic standards. Some critics still believe that land price should continue to be the chief criterion for disposing of renewal sites; but a growing number of cities are getting better design through competition based on architectural criteria. These pictures show a typical New York urban renewal project (above) planned with an eye only to a housing-starved market, and Philadelphia's Society Hill project, by I. M. Pei (below) planned for city scale and urban amenity.





The 1962 recipient of the American Institute of Architects' gold medal designed his own life with the same concentration, fierce attention to detail, and immense force that he spent on his buildings

EERO SAARINEN, A COMPLETE ARCHITECT

BY WALTER McQUADE

"Eero had a happy childhood, with people from Sibelius to Mannerheim frequenting his father's house in Finland, but he recalled childhood as a time you just had to endure before you could grow up and begin really having fun." In Los Angeles last month Charles Eames reminisced about an old friend. Just as Eero Saarinen used to, Eames paused at length between sentences. "Fun to him was superadult concentration on his work. But with all Eero's highly refined skills, he remained always like a puppy with big feet."

"I remember, for instance, twenty-five years ago when he worked out fantastic methods for bumming cigarettes. He would light a match and bring it up to his face and look surprised: 'Oops—I thought I had a cigarette.' "

Many people were reminiscing about Eero Saarinen this month, before he began to slide away from personal memory into myth. It was already evident there was going to be an Eero Saarinen legend; it had begun even in his lifetime. When he sat with his wife Aline at last year's AIA banquet for Le Corbusier in Philadelphia, a part of the crowd, he was also apart, the most famous young architect in America, perhaps in the world. His abrupt death four months later at 51 was like Thomas Wolfe's at 38, George Gershwin's at 39. Like Gershwin and Wolfe, he had rushed very early into the mansion of his talent; and there were indications he was struck down just as he reached the staircase.

These indications, his last designs, are larger than they were a year ago, for some of them now are near completion: the sinewy, majestic Dulles Airport terminal (left and page 108), the rich, rough Yale Colleges (page 116), the toughly intellectual CBS office tower design (page 112). In these designs and several others his demand to become a very great architect was beginning to come into final focus.

If Saarinen does not make the list of history's great architects, it will not be for want of trying, and probably not for want of talent, but for lack of time. He was a tremendous worker, and was not just plodding across a desert; he was headed up the Matterhorn. Personal memories of Saarinen by friends center in his unswerving force, his quiet confidence in methodical work to produce inspiration, and his lust for that work. He did not approach a problem in design or in life and walk around it, observing. He threshed it, like wheat. He was a man of many parts, but like the stones in Macchu Pichu, the parts were fitted so close together that in action he seemed like a single idea.

His surprising quality to people first meeting him was lack of pretentiousness. Most famous architects act a lofty

GEORGE CSERNA

role, but Eero Saarinen was too direct for that. All his pride —and there was plenty of it—went into his buildings. He was one designer who did most of his sketching on ugly, yellow, lined legal pads, not crisp tracing paper. (He got in the habit because the pads were usually what turned up at clients' meetings.) As pressure increased on his time, he became more and more methodical in all matters. Aline Saarinen remembers when he was coming to New York to court her nine years ago, taking her out to exquisite dinners at the best restaurants: "At first I was amazed, then amused at Eero for carrying around a little list of the best vintages of wines in his pocket. While the waiter stood by, he would take his list out and thoughtfully check the restaurant's wine list with his own categorized notes. What impressed me was that in contrast to most men I knew, he had the strength of a man who didn't have to pretend."

His technique in conversation, as in design, was usually to proceed amiably toward a discernible conclusion. If the discussion became one of opposites, he inevitably pulled his

opponent to his own slow pace, pausing to listen, puffing his pipe, finally pushing him over with an eloquence in disguise. But mostly he listened. Elia Kazan, one of Saarinen's clients for the Lincoln Center Repertory Theater, says, "I've never seen a man absorb so much." He was not totally absorbent; when a hurried member of a client's committee interrupted him in the middle of a design presentation, and asked him if he could talk a little faster, Saarinen listened to the question politely, puffing his pipe, then said calmly, "No." Puff, puff. "But I can say less."

It was difficult to get a show of real anger out of him. Says Philip Johnson: "Eero just got silenter and silenter and silenter—but then, finally, sometimes, would lash out with the insult direct, real arrogance." Richard Kelly, the lighting expert, remembers being called to the telephone in San Diego by Saarinen in New York. Saarinen had just finished an argument with someone about lighting, but wanted to check all his information with Kelly. (He also suspected his opponent might be calling Kelly too.) "Eero as usual was right," Kelly says, "But I asked him anyway how he had gone about convincing the other fellow. 'I just listed my facts in order,' Eero said, 'At the beginning I told him *in the first place, you may be wrong.*' "

His associates and employees still treasure his dependability —"He never, simply never, let you down"—and his humor. This is the kind of guileful story Saarinen himself took glee in telling: He had been one of 40 American architects invited in 1959 to the University of California at Berkeley by a team of Carnegie-supported psychologists inquiring into the nature of creativity. In one of the many tests, each of the 40 architects was put into a private booth with a set of small, colored mosaic tiles and invited to make a design. After they had all finished, Saarinen was standing in the hall chatting with Philip Johnson, a man as mercurial as Saarinen was meticulous. Saarinen recalled, "I asked Philip what he did with the tiles, and he said, 'Oh, those colors were awful. I threw the colored tiles away and used only the black and white. What did you do, Eero?'

"I told Philip I had used only the white, and he was so jealous."

When a young designer came into the Saarinen office looking for a job he was likely to be given a test: "Draw a horse," he was told. It wasn't the accuracy of the drawing he was judged by, but the zest with which he reached for the paper and pencil and went to work. (One applicant insisted he had never seen a horse. "Then draw a woman with no clothes on," was the rejoinder.)

The bright young architectural graduates did come in droves, a sure sign of an architect's vitality, and Saarinen and his partners, John Dinkeloo and Joe Lacy, built a brilliant staff, with Kevin Roche as Saarinen's right hand in design.

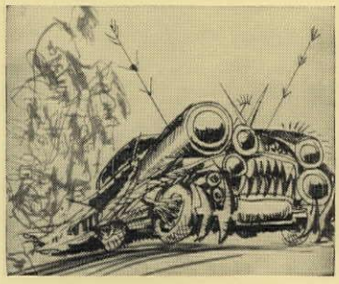
Saarinen recognized that the sure way to get good employees was to get interesting jobs, and he developed into a forceful client's man to do it. It was he who had Charles Eames make a motion picture to convince the airlines to approve the Saarinen scheme for the Dulles Airport job, perhaps the first filmed architectural commercial. Most of his success with clients was on the basis of steadiness. Says President A. Whitney Griswold of Yale, for whom the Saarinen office has done some of its best work: "Eero was always patient, with no desire to score back wittily against critical clients who went after him. He was painstaking, professional, indulged in no recriminations. He never got angry, even when he had a right to. There was no false pride. He had unmatched ability in site planning, and a feeling for history as a continuous stream, rather than as a series of unrelated episodes. He was both an artist and a scholar." But the other secret of Saarinen's relations with clients was the fact that he pulled them along with him up the slope of his Matterhorn. He educated them in the importance—and the pleasure —of ambitious architecture.

Eero Saarinen completed arrangements for his famous move from Michigan to Connecticut just before he died. A large, new, drafting-room wing was built behind an enormous old brick mansion atop a hill near New Haven. He sited the new wing very carefully, to spare an immense tree growing in what became the parking space. After the building was finished the tree was felled by lightning, enlarging the parking space somewhat, but such is the momentum of the Saarinen office today that it is almost impossible to squeeze another Volkswagen into that parking space.

The Saarinen method: a schedule that surrounded him

The only staff job Saarinen ever held in New York City was in the office of Norman Bel Geddes, for four weeks in the 1930s. All other times he avoided the compulsive rhythm of the big cities for one of his own devising, working with his father Eliel in Cranbrook before the war, in a house in Georgetown from 1944 to 1945 (doing projects for the O.S.S.), then, after the war, back in Bloomfield Hills.

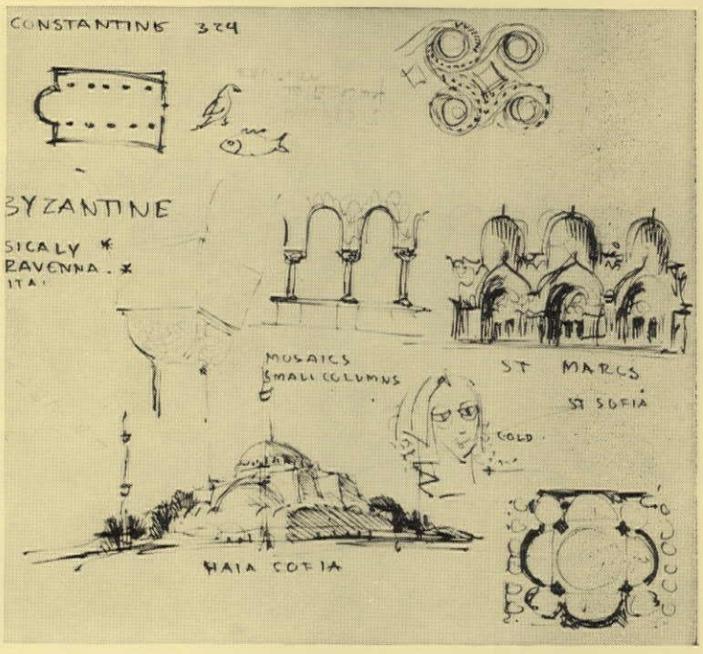
The Saarinen rhythm might not have been as speedy as a city's, but it kept him in gear almost all the time. It was the protective but unremitting creative life of the studio into which he had been born, the big house in Finland. Aline Saarinen recalls: "Eero would come home about 5:45 and we would have martinis, and play with Eames

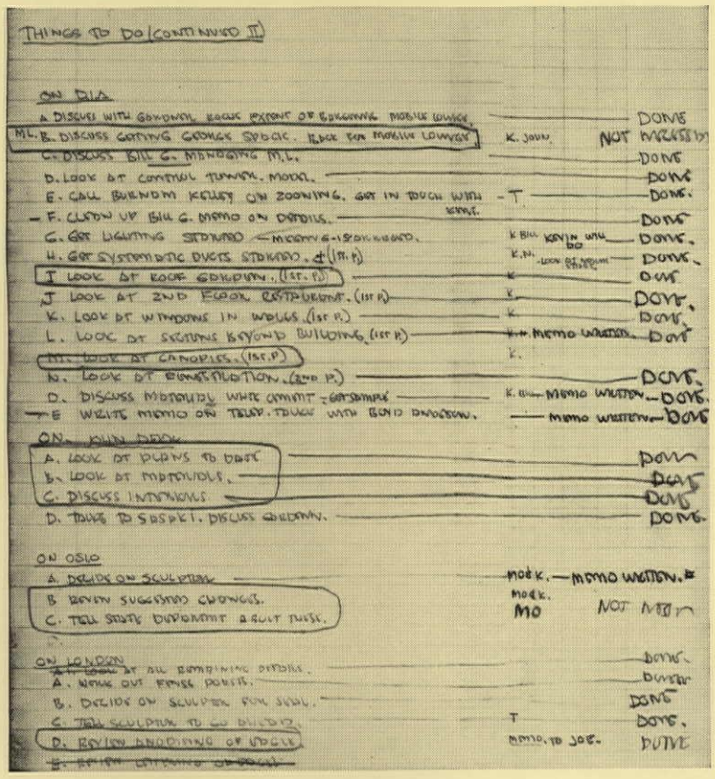


(their son, now 7) until about 7:30. They drew a lot of pictures together, of course (above). We had dinner usually about 7:30, then coffee and some talk, and then we would go to the workroom. There was a break about 10:30 or 11 for a drink, and perhaps a look at the news, then long, wonderful conversations, discussions, and yellow-pad drawings over night caps. He worked late, and so he slept late; he seldom got over to the office before 9:30 in the morning." When Saarinen had to go back to the drafting room to work at night, rather than in the workroom at home, his trail would be ascertained intently the next morning by his staff, by following the path of Old Granger tobacco he left. For a new draftsman to find a sizable amount of Old Granger on his drafting board was a worrisome experience. For him to find the boss' spectacles was alarming.

Saarinen was probably one of history's most incessant list makers and charters of action. Everything had to be reduced to paper.

At the bottom of this column is page two of one such list, with items dutifully marked DONE. This charting included even the making of a half-serious master-appraisal sheet for a future wife, between his two marriages, including categories all the way from amount of style in dress to emotional generosity. (Says Aline, "I came across this chart after we were married and discovered he had not rated me high in clothes, and was furious.") Mrs. Saarinen, a well-known, and very smartly dressed art critic, sometimes read her day's production of prose to her husband in the evening; typically, he would sit drawing a chart with a rising and falling line of interest as she read from page to page, then present it to her.





Hong Kong, Japan, Brazil, Athens and the Greek Isles (three times), and Munich. On these, the earlier sketching of his post-student days (above) was replaced by the constant clicking of his camera.

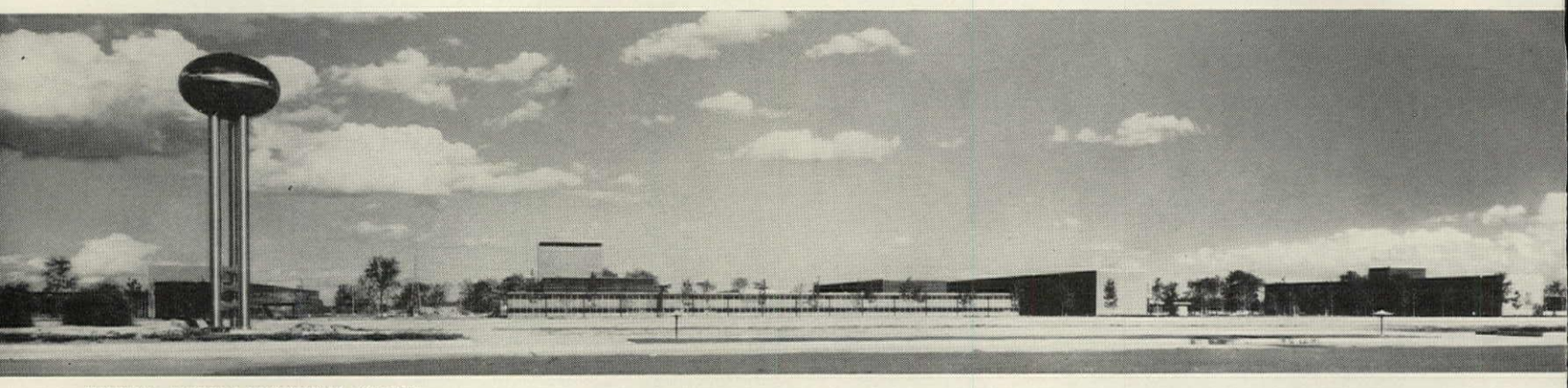
Saarinen's will stipulates that his name shall not go on any work he did not design personally, but the matter of formal reorganization of Saarinen and Associates has not yet been worked out. The firm is too busy just now completing old jobs and beginning new ones.

CROW ISLAND SCHOOL

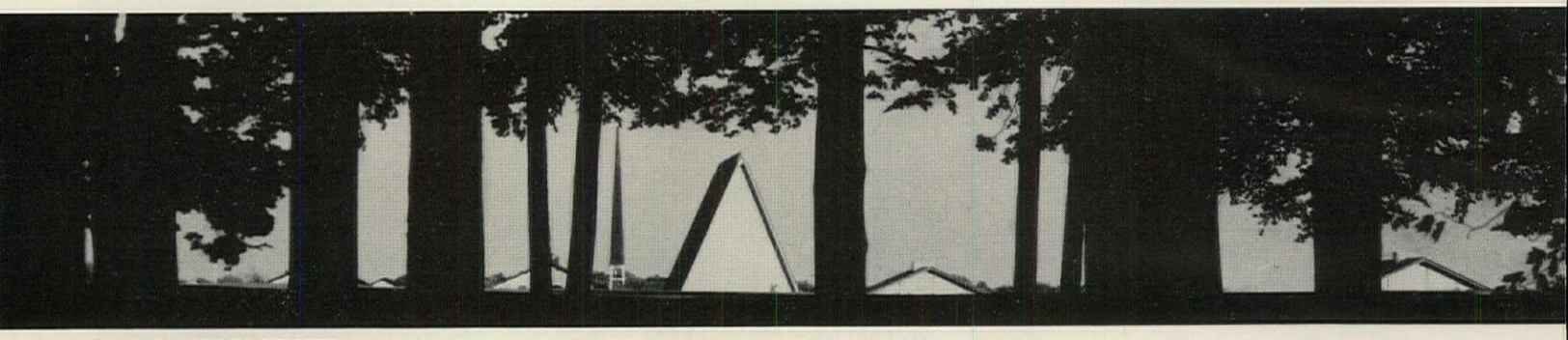
BERKSHIRE MUSIC CENTER

JEFFERSON MEMORIAL

IRWIN UNION BANK & TRUST CO.

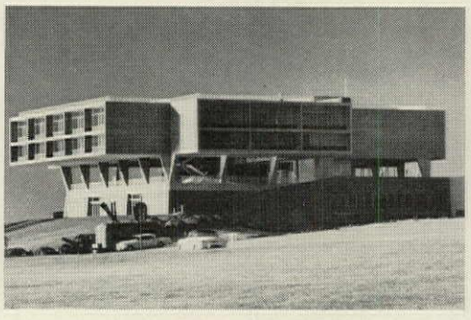


GENERAL MOTORS TECHNICAL CENTER

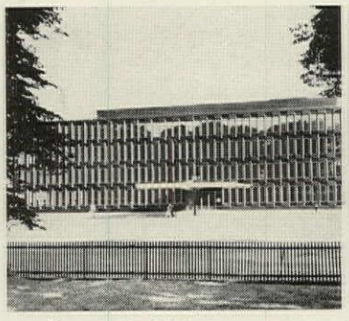


CONCORDIA SENIOR COLLEGE

M.I.T. AUDITORIUM



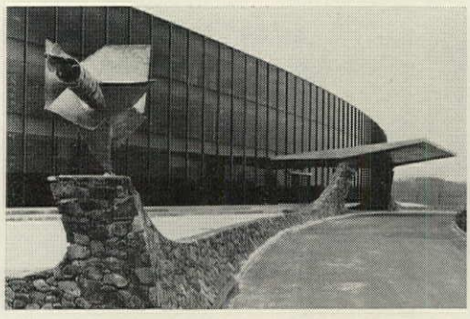
MILWAUKEE COUNTY WAR MEMORIAL



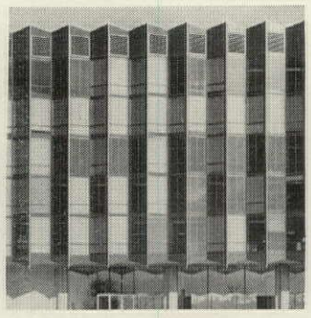
U.S. EMBASSY, OSLO

YALE HOCKEY RINK

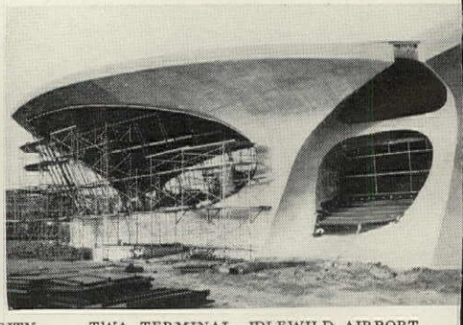
U.S. EMBASSY, LONDON



IBM RESEARCH CENTER



LAW LIBRARY, CHICAGO UNIVERSITY



TWA TERMINAL, IDLEWILD AIRPORT
WASHINGTON INTERNATIONAL AIRPORT

A seeker after new shapes

Soon after his widely acclaimed General Motors design Saarinen began building exuberant shapes, and critics decided he was becoming a structural architect, one bent on expressing more the way a building was engineered than what it does. But he denied this; he held that the vast dome of the Massachusetts Institute of Technology auditorium was the most *Miesian* building he had yet done, in that he was creating a valid structure, then tenanting it as he wished. Many of his colleagues passed this off as a sophisticated defense for the almost indefensible effort of cramming an auditorium into that shape.

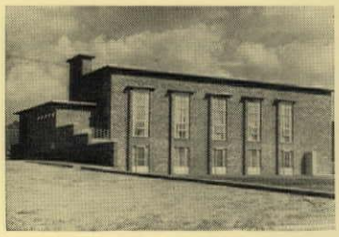
But as time passed and more buildings came out of Bloomfield Hills it became apparent that Saarinen did have a different balance in mind than most architects between function and architectural characterization. Even as he was completing the G.M. job, he had designed the steep shapes of Concordia College near Fort Wayne. It was mood architecture; at the time, he said he had in mind the white German winter sky where Lutheranism originated. From this and other buildings, Saarinen kept learning. What Concordia taught him, he later said, was the importance of keeping the interiors keyed in feeling to the exteriors (Concordia disappointed him in this respect.) Other lessons: On a trip through France in the late 1950s, visiting Romanesque churches, he said he realized the arches on the chapel accompanying the M.I.T. auditorium were not strong enough. Saarinen felt the Irwin Trust Co. bank was a success in that it fitted into its city site gracefully and improved the neighborhood, but from it he learned something important to him about emphasis; sometimes it was necessary to overstate: "If you are going to have an overhang, it has to be a hell of an overhang, if it is going to come across to people."

What it all came down to was his wish to build an expressive architecture, an antiassembly-line architecture. Each building should be as distinctive as each person should. It was toward the end that he really began to get the hang of orchestrating the nature of the project, the nature of the spaces, nature of the site, nature of the materials, and nature of the construction method to compose a completely balanced statement, whose component characteristics did not compete, but built up on one another.

It is likely that the most majestic single statement of this integrated expressionism will be his design for Dulles Terminal at the new Washington International Airport to open in the fall. The building is unfinished in that the window wall has not yet been inserted, but the great exposed frame and roof are a rare architectural experience today in sheer strength and grace. Centrally located on a site of more than 15 square miles, the terminal consists of two rows of outward leaning pillars with a vast suspension roof slung from them. It fits its function in a neater way than any other airport (see page 108); it is majestic not only from the ground but from the air; approaching it from the hilly access road is as exciting as going to a great ocean liner in a small launch, climbing the crests and troughs of waves as it sits there waiting.

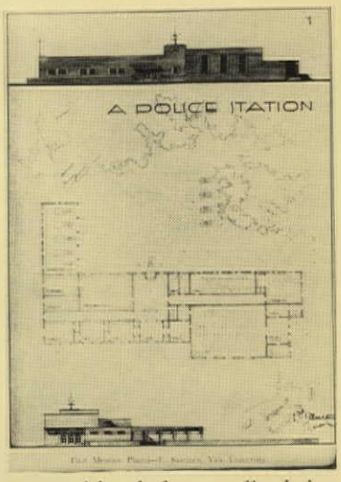
Influence of a famous father on his son

Eliel Saarinen was a man very unlike Eero, alternately stern and sparkling; his work was deeply steeped in humanism rather than technology, without the striving quality of his son's. One of Eero Saarinen's medal-winning student projects at Yale, a design for a police station (right) shows the mark of the famous father on the renowned son. Below is Eero's own first design within his father's office, a community building in Fenton, Mich. Towards the

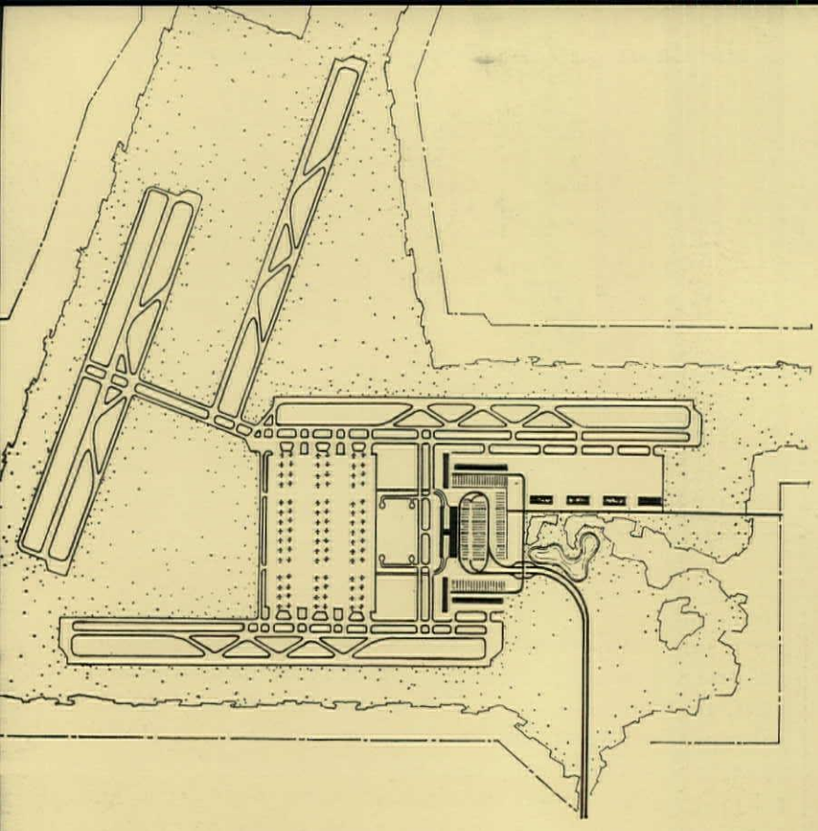


end, Architect Ralph Walker thinks that the son began to have a stimulating effect on the father's work. But still the elder's influence continues to be seen in such expressions as the designs for the new Yale colleges (page 116), in which outdoor spaces are defined almost into rooms by masonry buildings, somewhat as the elder Saarinen did it at Cranbrook, near Detroit, the school and studio where his son grew up.

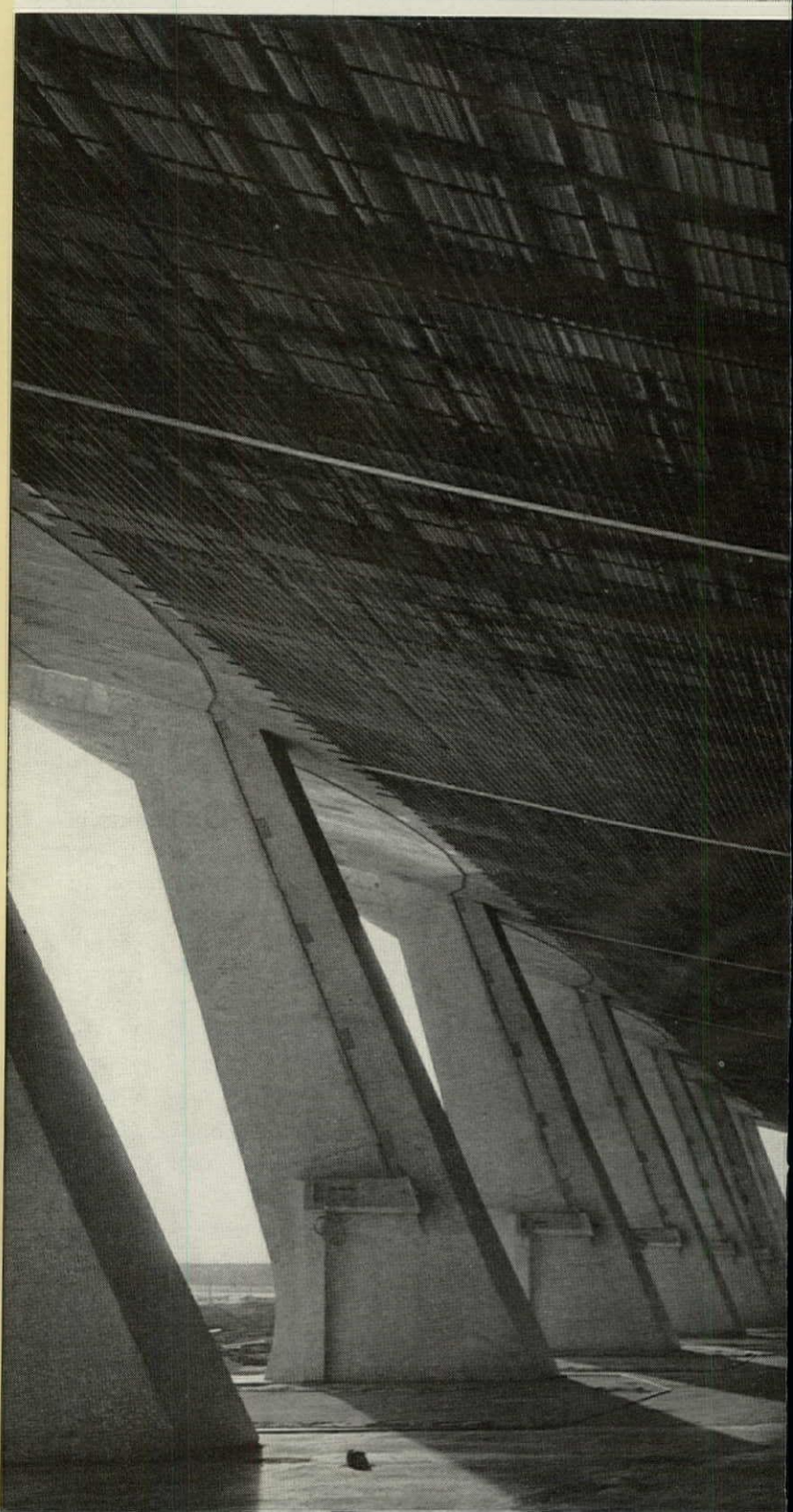
Another of Eliel's subtleties, the element of surprise, is also included in Yale, as it is at Cranbrook, a place which demands many visits before really being known. Eliel Saarinen used a number of Milles sculptures at Cranbrook. Eero engaged sculptor Constantino Nivola to execute scores of works to put on and among the buildings of the new colleges in New Haven.



FOR PHOTO CREDITS SEE PAGE 108



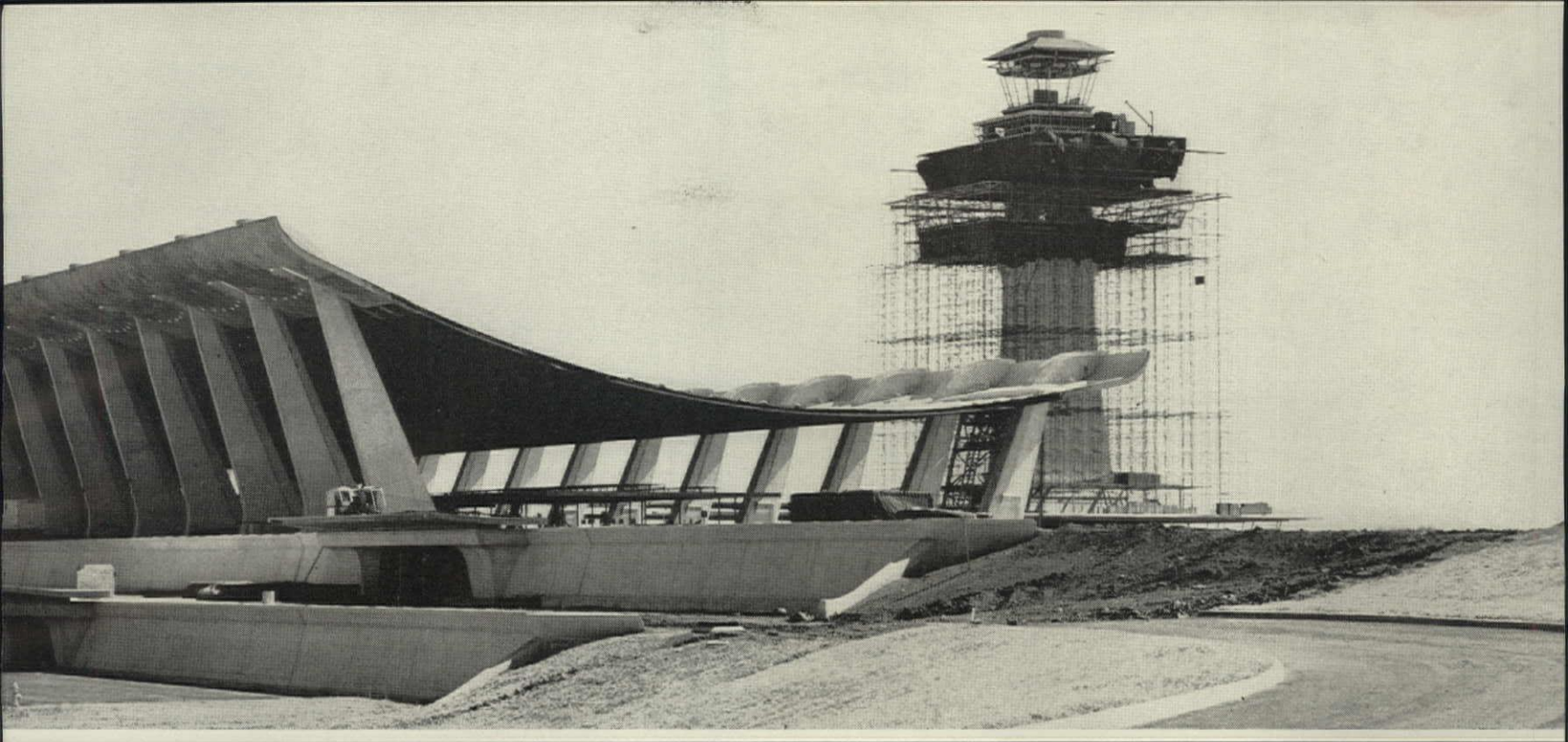
PHOTOS: GEORGE CSERNA

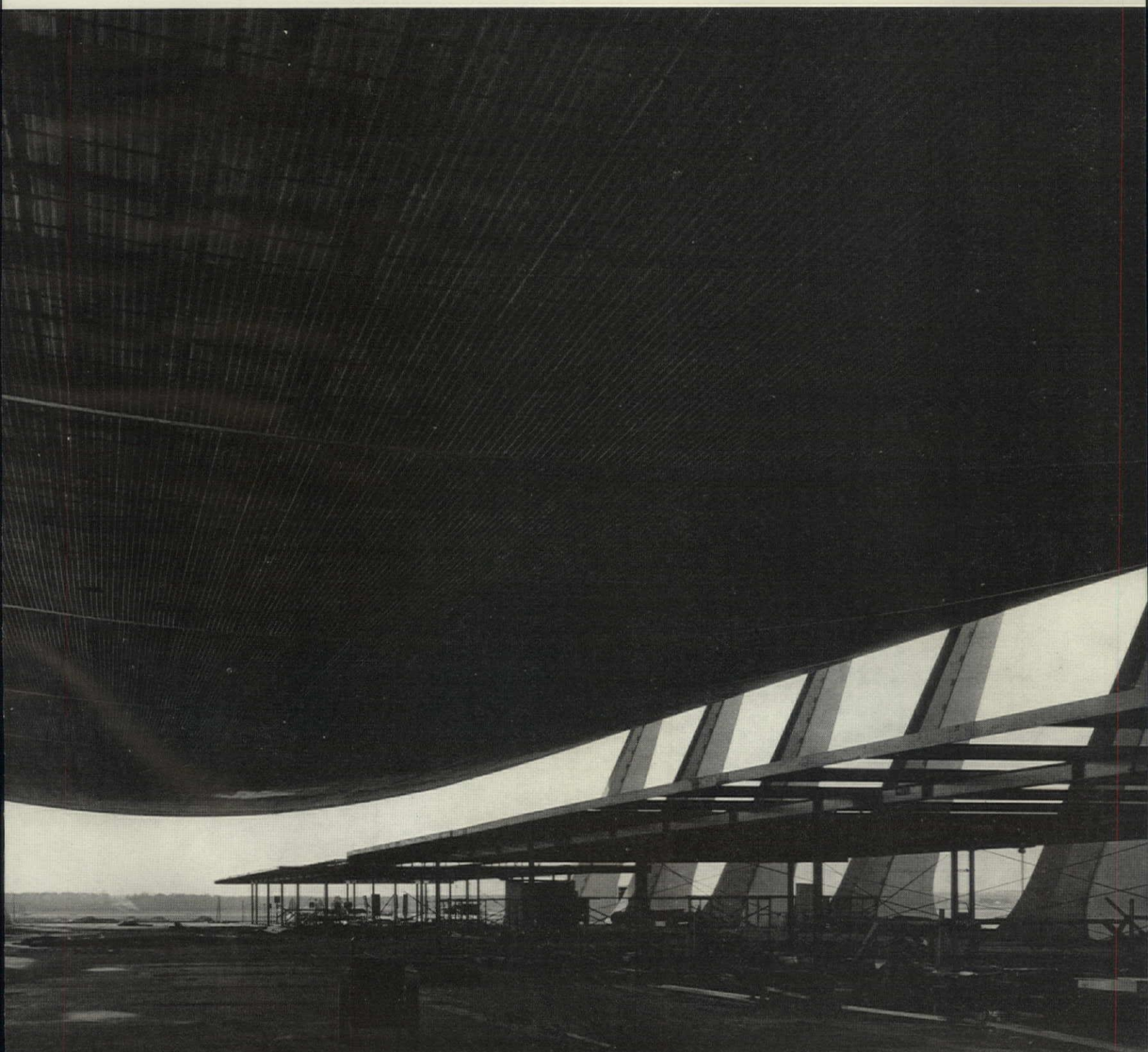


WASHINGTON'S HUGE INTERNATIONAL AIRPORT NEARS COMPLETION

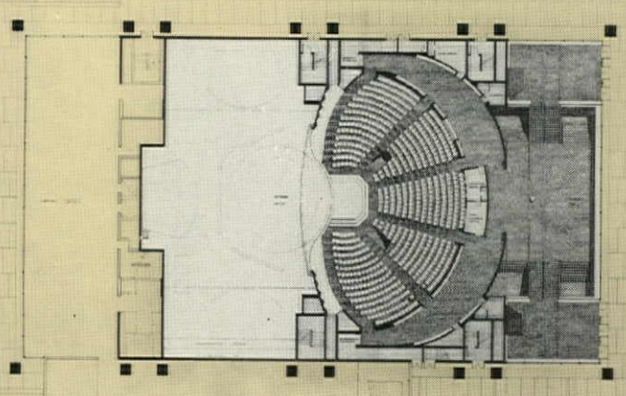
Dulles Terminal is a mighty building, and behind it are significant operational ideas. From this central structure immense vehicles called mobile lounges (below) will trundle the passengers out to the airliners waiting near the two-mile-long runways. This will save not only a great deal of walking for the passengers, but also a great deal of taxiing for the planes. (Their servicing center is set out nearer the runways than the terminal, and is like an immense gas station.) The idea of using a vehicle to carry passengers to and from planes out on remote aprons is not new; this is done in several European airfields. But Saarinen was determined to make the buses into something more architectural, and—in principle, at least—he succeeded. Although a consultant on the design of the lounge, Saarinen did not control its design, and the prototype vehicle, although it seems to work efficiently, is a lumbering beast, at best, in its appearance. Prime design contractor on Dulles is the engineering firm, Ammann & Whitney. The Saarinen office is part of their team.

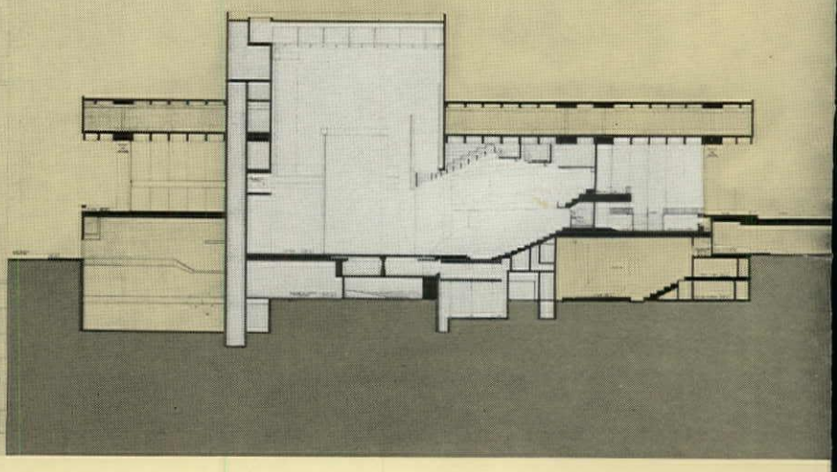
PHOTO CREDITS FOR PAGE 106; GORDON COSTER, GOTTSCHO-SCHLEISNER, RICHARD SHIRK, HEDRICH-BLESSING, LIONEL FREEDMAN, BALTAZAR KORAB, EZRA STOLLER, K. TEIGER, HENK SNOEK, GEORGE CSERNA, A. FEININGER—LIFE, DAN PAGE, RICHARD WOOD.





Early sketches (above) and later drawings (below) for repertory theater at Lincoln Center, done by Saarinen office with Jo Mielziner as consultant





Competitor and Cooperator

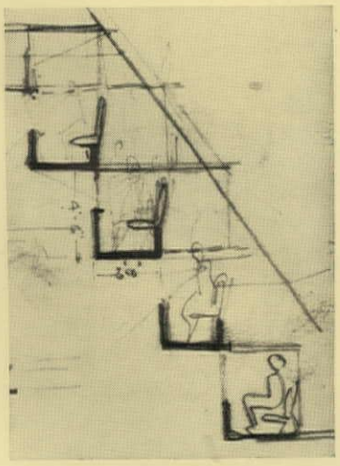
Relaxing on the beach at Newport one summer with his wife, Saarinen heard there was to be a competition for sand sculpture. It is typical of him that he leapt into it, with full attention, also typical that he ended up with a special prize in his age group (photo, right). He usually did win competitions.

Competent as Saarinen was as a competitor, no less formidable a force than Gordon Bunshaft, of Skidmore, Owings and Merrill, testifies that he was also an excellent collaborator. Each was assigned to do a separate building at Lincoln Center, but the site was so cramped they decided to marry the buildings. To everyone's amazement the two strong men worked together as smoothly as Bunshaft's Mercedes.

Designing a theater to be sited inside another building

"You have to first chase the problems," Saarinen said, "Once you have caught them, you can always solve them." The repertory theater by Saarinen, to be combined with Skidmore, Owings and Merrill's library at Lincoln Center, is a fine example of this process. The Saarinen office, with Jo Mielziner as consulting designer, started designing it from the inside out before there was a site. They rented two vacant theaters in Pontiac, Mich. and for four months made full-scale mock-ups to establish sight lines. Saarinen's architectural impulse was to "paper the house with people," using a system of shallow balconies (sketches, below and facing page). But when this proved difficult because of lighting angles, he cheerfully gave up his favorite idea, the reverse balconies. He did keep a highly finished "permanent" feeling in atmosphere.

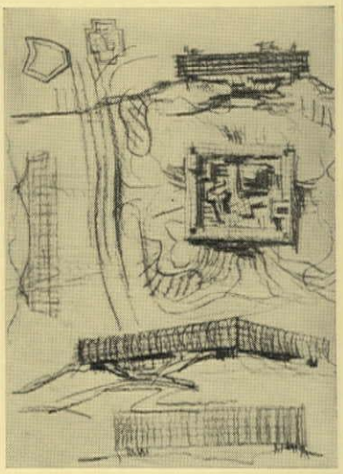
To give the stage flexibility, the designers mounted an apron down front on a hydraulic lift. Even without this extension the stage projects 12 feet into the audience. The proscenium is also designed as an iris, to be closed or opened at will. Not only is the backstage big, but trucks can drive directly in from the street to unload scenery.

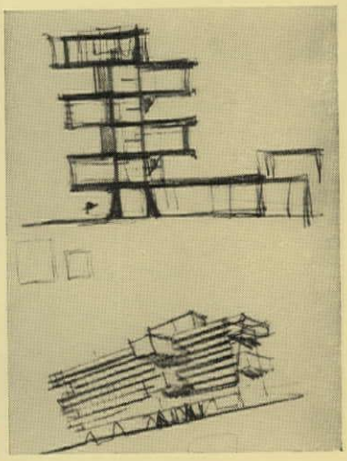


The stages of strategy in a competition are well illustrated by the Saarinen office's entry in the World Health Organization competition in 1960, an invited tourney in which they placed second to Jean Tschumi of Switzerland.

The first move was to study the jury. "Who is the strong man?" Saarinen always asked. "And what will stimulate him?" The next was to make space diagrams, "to see it on the wall." Then, before getting too familiar with the problems, they laid out dummy perspectives and plans on sheets so they could settle on coherent terms of presentation to the jurors. "Later on, we won't be able to look at it as freshly as they will."

Then came design: analysis of shapes and massing, defining all the diverse physical possibilities. In this case Saarinen and his staff began to work toward a building supported at the corners. Saarinen made a trip to the site in Switzerland and came back strongly convinced that the building should stand parallel to Lake Geneva, and should be a tall one with sculptural form. Then came, according to an associate, "an unembarrassed reaching for shapes." A truss idea evolved from the earlier tendency to support the mass by its corners; the curved wall was used because it made sense functionally and because it also would give the structure an identifiable shape. The consulting engineer was called in, and twelve people were put on the final drawings for two weeks. The entire process covered only two months.






BAR
STEAKS-CHOPS
555

An analyst and an organizer

When Saarinen was tapped in 1960 to design the CBS building for a blockfront site on Sixth Avenue in the 50s, he knew that the throat of the problem was the New York zoning law, then under rewriting, and he went for it. The episode, now well along (the site is almost cleared; construction contracts have been signed), is a clear example of his ingenuity, indefatigability, and insight as an operational architect.

Immediately, as most architects do in New York, he wanted to build a sheer tower, set back from the street, on stilts. Soon he was having exploratory meetings with zoning experts, such as Gordon Bunshaft and Ed Matthews of SOM, and Jack Gurney, and later with James Felt of the Planning Commission and other New York City planners, to find out if a tower could work economically. He established that the area per floor would have to be near 20,000 square feet gross for an economical structure (in contrast to Seagram's 16,000 square feet on tower floors). The proposed new zoning would still have permitted only 16,000 square feet, but, working together, the city planners and architects came out with a new formula which would yield the right square footage and produce a pleasant plaza for the city.

Another eminent design factor was that Chairman William Paley of CBS specifically did not want a sleek, shiny building: "I thought we'd had enough of that around New York." The Saarinen office agreed heartily; Saarinen already wanted to use reinforced concrete for structure, and face it with stone. For the sake of economy, however, a steel design was kept on the back of the stove all along. But as it worked out, according to Kevin Roche, they hit a time when the steel cost curve, going up, intersected with the concrete curve, going down. The building's contract price has come in five per cent under the budget, although interior spans are 35 feet—very wide for concrete—and there are no columns in the office space.

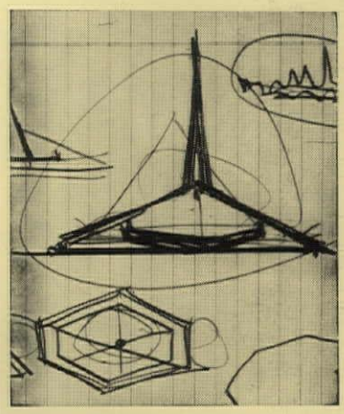
Mock-ups, models, and full-scale site selection

Mock-ups and model techniques, which since World War II have become the mode of the modern, major American architect, owe a good deal to the Saarinen office. The mock-ups were full-scale sections of buildings completed to test the technical advances. The models, such as CBS (across page, planted in its urban environment by FORUM's art department), were not only for demonstrating the design to clients, but for determining it. One afternoon, for example, a number of the collaborators on Lincoln Center held a meeting at the Saarinen office and talked about revising the site plan. Saarinen had six designers standing by, and whenever a suggestion was developed in the committee, one designer would dart out, make a massing model and return in minutes. That afternoon settled a great many things.

As Saarinen's models got bigger and more complete, the sketches got faster and more basic; but the ideas were in them. Right is an early sketch of his last design, a church for Columbus, Ind. Below: working full-scale, siting the Deere Co. building in farmland near Moline, Ill.

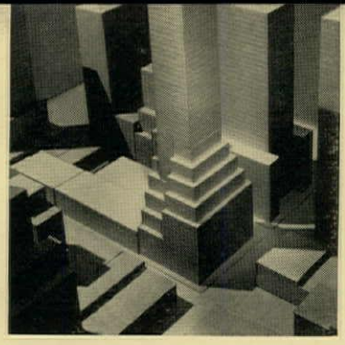
Design by-product: It was at Cranbrook before World War II that Saarinen first began designing chairs. The group of students there in the 1930s has become a famous one, including Marianne Strengell, Edmund Bacon, Harry Weese, Charles Eames, Harry Bertoia, Ralph Rapson, and Florence Shust, a ward of the Eliel Saarinens, who later became Mrs. Hans Knoll, and now is Mrs. Harry Hood Bassett. It was with Eames that Saarinen won a prize in the Museum of Modern Art chair competition in 1941. All his own designs were produced and marketed by Knoll Associates.

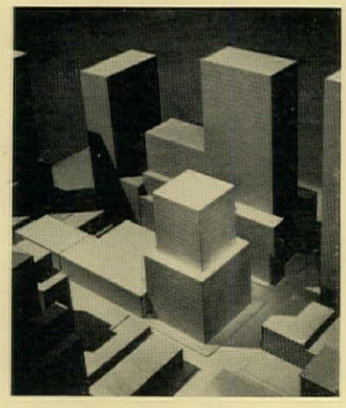
The most popular piece of furniture Saarinen designed for the Knolls was a shapely arm chair with metal legs, but the most famous was his "womb" chair shown here baked in the form of a birthday cake by Florence Knoll for Eero Saarinen. When the late Hans Knoll wrote Eero in 1948, asking for a more conventional name for the piece,

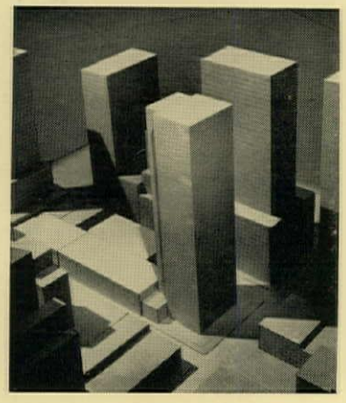


Saarinen replied: "I have been thinking and thinking about a printable name for that chair, but my mind keeps turning to those which are more biological, rather than less biological."

MODEL PHOTO: EZRA STOLLER; BACKGROUND: WALTER DARBY

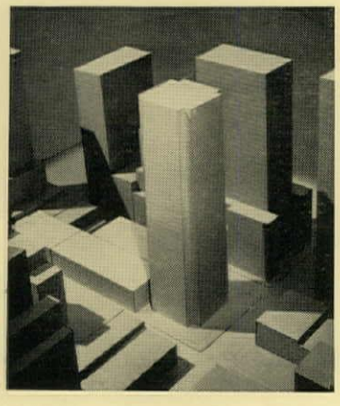




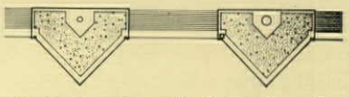


CBS: *INTELLECT AND SPIRIT*

Envelope studies for the CBS building in model form (left) show a few of the more obvious alternatives open to the Saarinen office in massing. The old-style conventional wedding cake is the first, top, succeeded by various tower studies in which open plaza space is traded for the right to build straight up from the lowest floor. What the final design (right) does is set a tower, with no "bustles" behind it, cleanly on a depressed plaza. A small, separate building contains the truck dock.

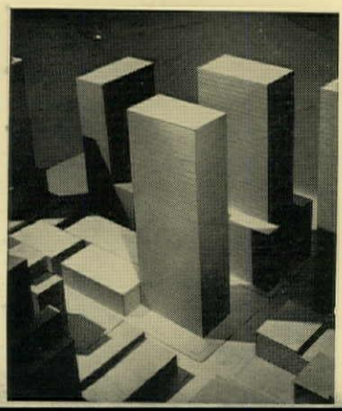


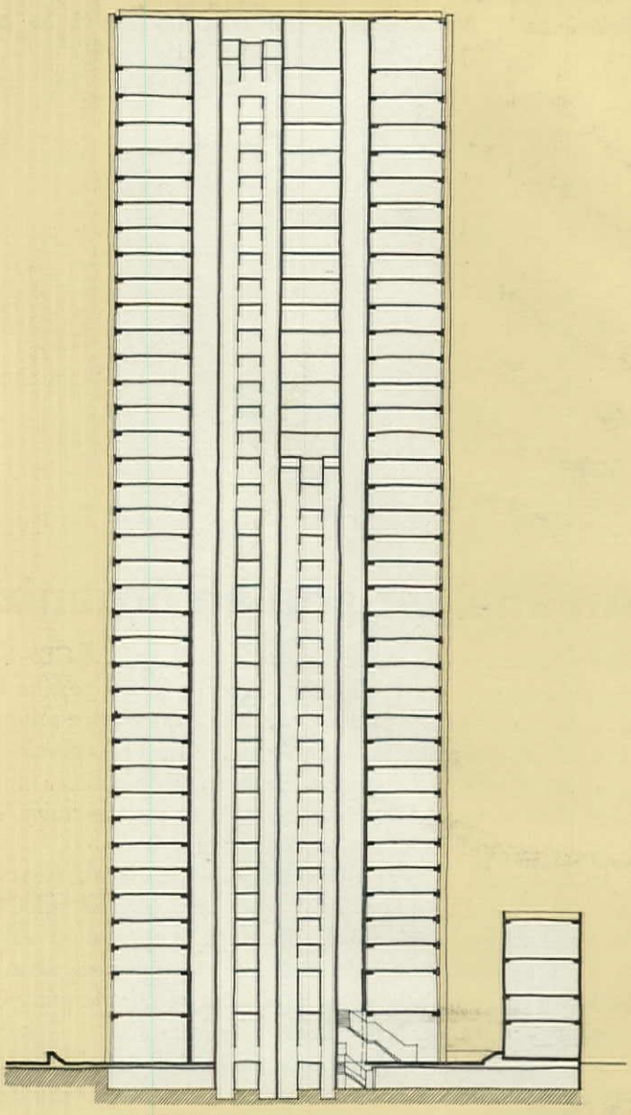
In plan the service core of the building is designed to permit circulation within its walls, saving the space of a public corridor around the core. (Adding two doors to the core walls brings circulation to the four quarters of the building, which means there can be four tenants per floor.) The top floor and the floor directly above the lobby are mechanical floors, with ducts



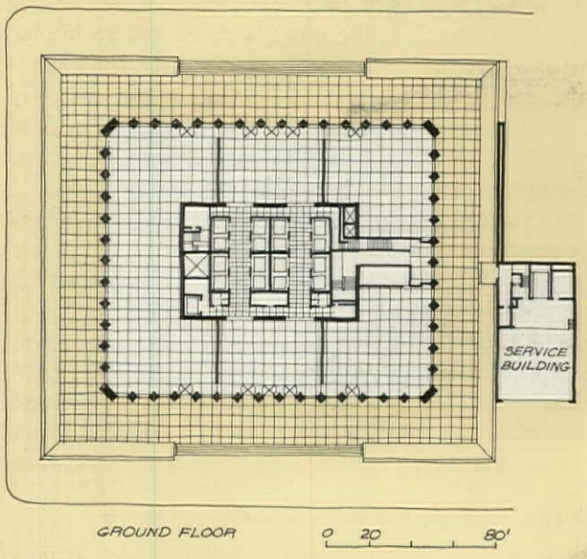
running up and down in the exterior columns (above).

When the CBS tower is completed, its siting will probably make it the focus of its neighborhood of massive new commercial buildings, making most of them look like weak brutes. It will be that rare event, a New York office building with a strong identity.

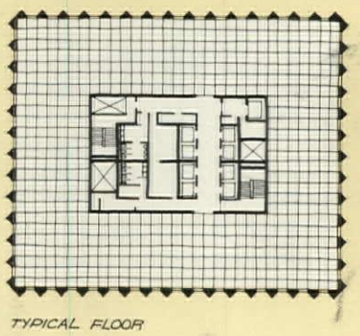




LONGITUDINAL SECTION

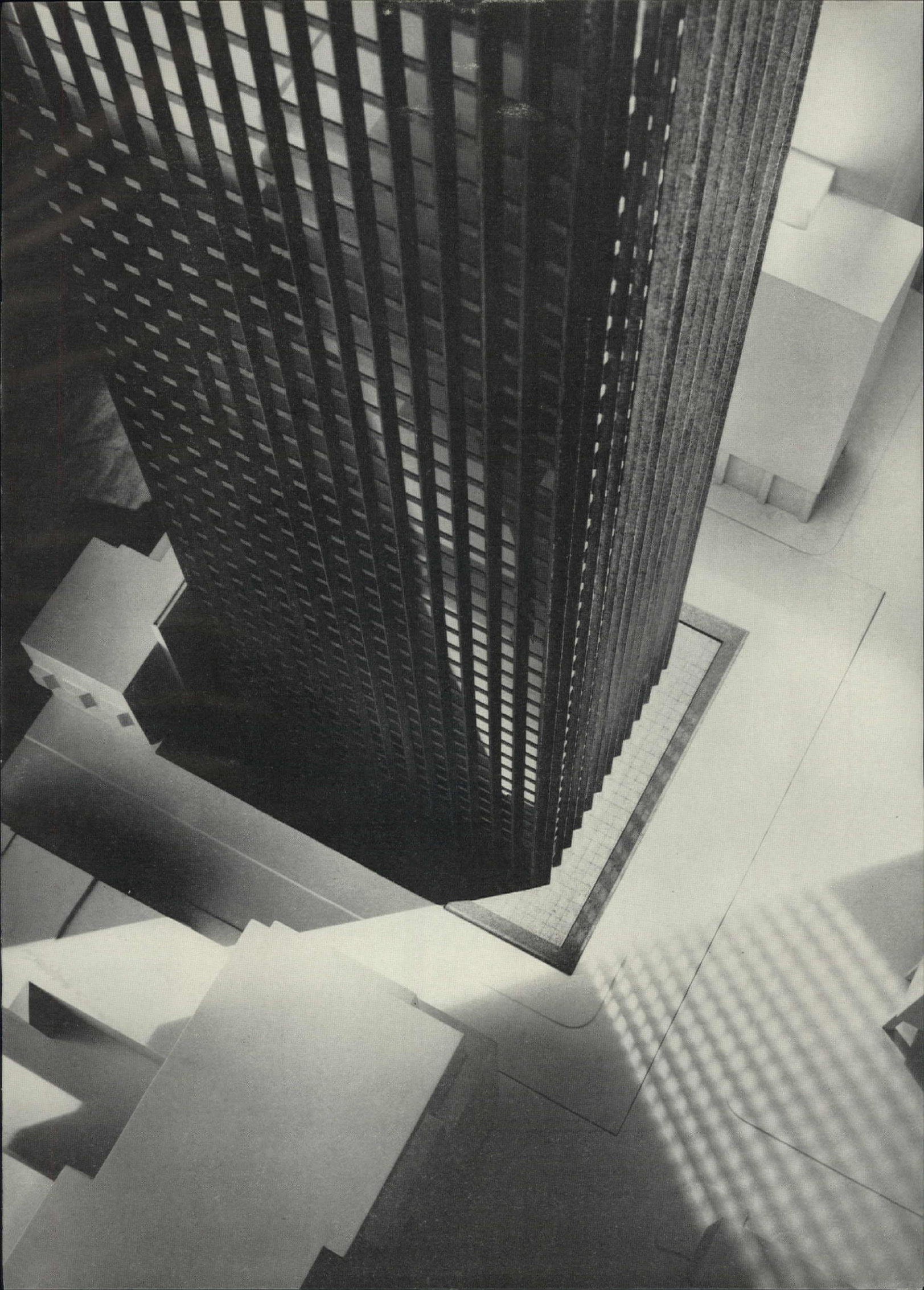


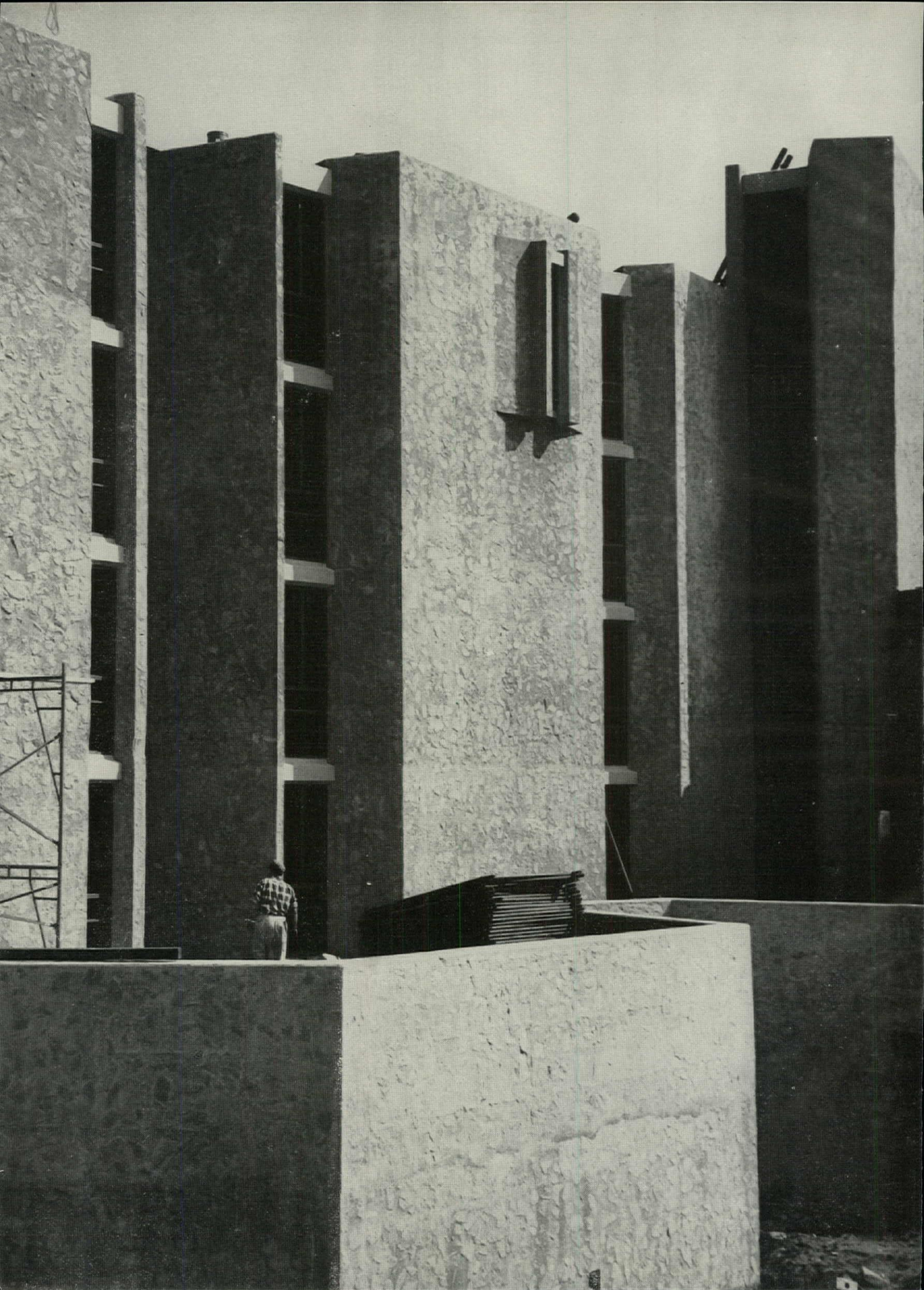
GROUND FLOOR 0 20 80'



TYPICAL FLOOR

PHOTO OPP. © EZRA STOLLER ASSOCIATES





A very responsible architect

When the Old Dominion Foundation, headed by philanthropist Paul Mellon, friend and Yale classmate of A. Whitney Griswold, bestowed the magnificent sum of $15 million dollars on Yale in 1958, President Griswold suggested to Mellon that Saarinen be commissioned to build two new residential colleges for Yale. The site selected was a tight wedge between the looming medieval-cathedral architecture of the Payne Whitney gymnasium to one side, across a busy street, and the brick semi-Georgian angularity of the graduate-school tower to another side. But the problem went beyond compatibility.

For one thing there was the matter of budget. The total was large, but only half of it was for building. "Saarinen was tied down by financial strings like Gulliver in Lilliput," says Griswold. Most difficult, Saarinen had deliberately been getting away from handcraft methods in his designs, favoring industrial walls, but masonry was strongly hinted by the client as a material. "A feeling of permanency" was the requirement.

Saarinen could take direction, but he turned it into his own direction. The colleges, now nearing completion, are masonry, but of an industrial style: the stone was dropped into formwork, then a special mortar was pressured in through hoses attached to sides of the forms, and scrubbed out later to reveal the stonework. Most significant, the wall, according to the Saarinen office, cost less than "a good brick wall."

Having invented them, what the designers then did with these walls, against the backdrop of imitation Gothic and imitation Georgian (and real street traffic), was an exercise in a more subtle strength. They retained the best, and least dated, of Yale architectural attributes, the small, intricate outdoor spaces among buildings. The characteristic of the architect which the Yale colleges will bring out is probably the one Eero Saarinen himself was proudest of in his office: "Responsibility to the client and to the surroundings."

A letter from an architect to a corporate client

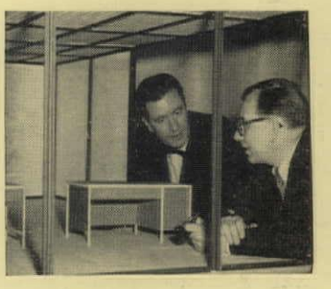
Few architects generated such personal warmth from clients as did Saarinen. Part of the reason for this regard-beyond-business may be indicated by a letter Saarinen wrote to a client, William A. Hewitt, president of the Deere Co. Hewitt, in fun, had sent Saarinen some clippings of hideous Victorian furniture from a French magazine, asking if this wasn't the way they should plan to furnish the Deere boardroom. Part of Saarinen's grave reply:

Dear Bill:

We have just been working on models of the executive area and they show real promise of achieving interiors of the same quality as the Katsura Palace . . . It would be a shame to spoil them with furniture. . . . I could, for instance, imagine that in your office we would have a low (very low) beautiful lacquer table—something about 12 inches high. The quality of the lacquer should match the finish of the telephone, because you will probably need a telephone. In the other corner, diagonally across from this table, we might provide a neck rest, which takes the place of the chaise longue of the Western world.

Now, the boardroom. I have in mind there the same general treatment—that is, concept of defurnishing. The room is planned to seat 30 persons. Instead of providing that horrible monstrosity produced by the Western world—the standard corporation boardroom table—why don't we provide for each member a small lacquer tray, about 12 by 16 inches, and on these they could keep a neat rice-paper pad and a pencil (or a brush if they preferred—that part could be optional). For some of the older members of the board with creaking knee joints a small pillow could be provided. Instead of the traditional bottle of water and the glasses which adorn every boardroom table, I suggest—and here again I go to borrow from the great Japanese tradition—the Geisha girl. She would stand immobile in the corner of the boardroom and the moment one of your board members looked thirsty, she, in her attentive way, would snuggle up to him with a cool drink of water (or *sake*—if he was the type). This would eliminate entirely the gross interruption to the spatial quality of the room made by the tray with water bottle and glasses.

Now I realize fully well that there are some objections to this mode of corporate life. I approached IBM with somewhat similar suggestions—they turned me down, even if it would have

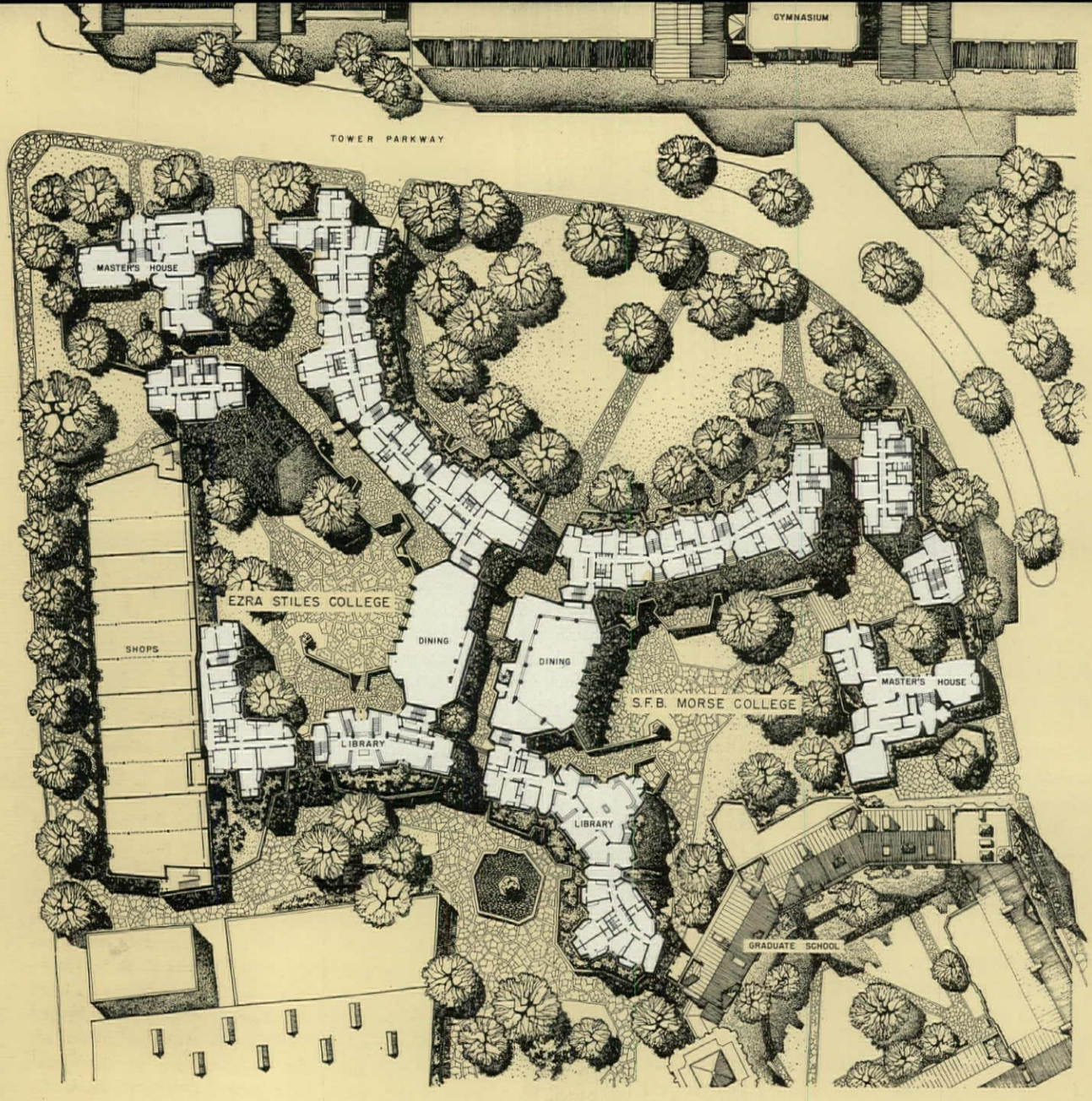


saved Tom Watson money. General Motors also did not wish to go along with this—they never told me quite why. Their objections, as will be yours, are that legs of Western-civilization men simply are not used to sitting on the floor. This is all tommyrot—in six months people would have developed the ability—and they could think with joy about all the muscles they never would have used if they were not working for John Deere and Company. Then the argument will go—Yes, maybe so, but what about visitors? Quite frankly, for them you may have to provide an occasional chair. But not all visitors—a large percentage of your visitors come from the ranches of the West and there they have a way of kneeling and leaning on one leg—thus a large percentage of occasional chairs for visitors could also be eliminated. It really all boils down to keeping six or eight chairs around for the Wall Street people when they come to look you over—they are not very flexible and their joints creak. . . .

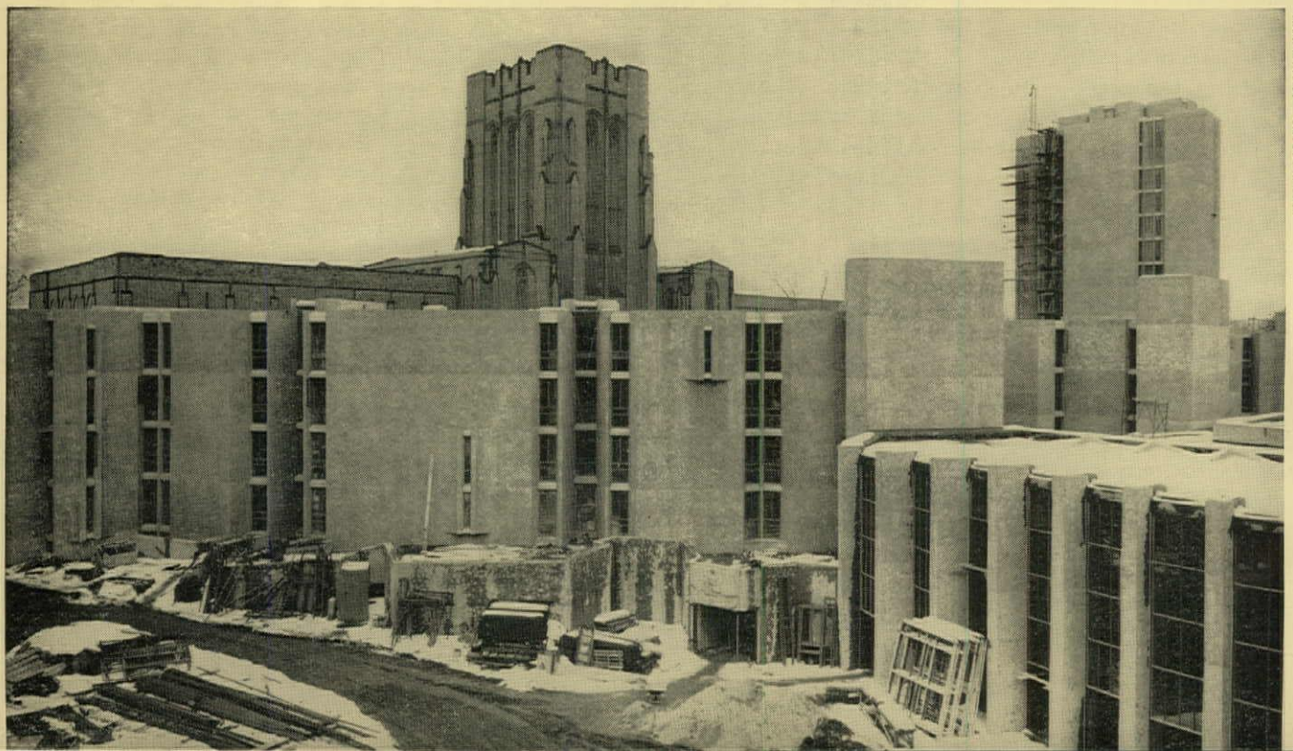
Now, I have outlined my thoughts about the furnishings for the special areas, and as you see, they are in conflict with your suggestions. I hate the word compromise, but I suppose there is nothing else to do but try to hammer out one of those. . .

As ever, Eero

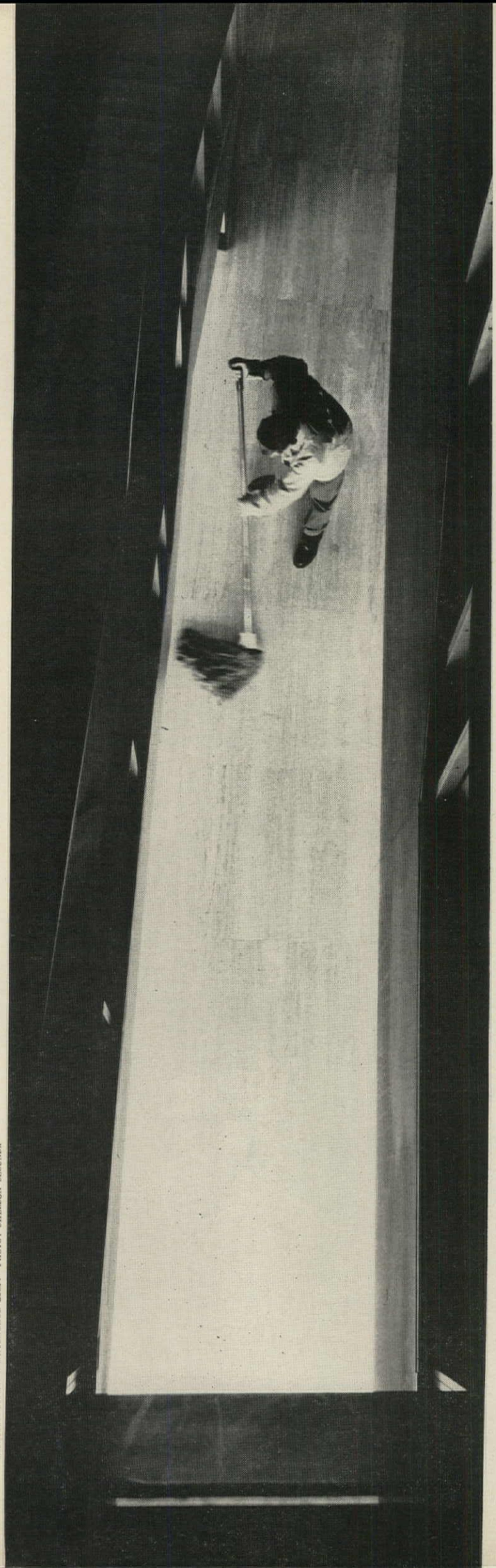
DAN PAGE



Two new Yale residential colleges, now nearing completion, are walled off from side streets by a line of shops which are part of the design; another college, to be added in the future, will extend the curve of these two toward area in upper right of the site plan, above. Beyond the new colleges in the photograph below appears the Gothic height of Payne Whitney gymnasium.



GEORGE CSERNA, OPP. DAN PAGE



COURTESY ALLIED MAINTENANCE CORP. PHOTO: SHELDON SECUNDA

MAINTENANCE: KEEPING A BUILDING ALIVE

A building begins to deteriorate from the very first moment it faces the elements. It is attacked from all sides and from within. Its pieces settle, its joints flex in the wind. Airborne chemicals and dirt attack and coat the exterior and eat away at the skin. People bring dirt inside with them, wearing down floors and marring walls. All the while, hardware is getting looser, light bulbs are burning out, and elevator and air-conditioning machinery is wearing out.

The problems of building maintenance are of concern to architect, contractor, and client alike. The architect's professional reputation depends greatly upon how well his buildings hold up. For the contractor, it is not only a matter of reputation; there are guarantees to be backed. And in the end, of course, it is the client who must live in the building and pay the bills for cleaning, repair, and replacement.

The appearance and real-estate value of a building, not to mention its ability to fulfill its basic functions, depend largely upon just how much it is allowed to wear out. Once a certain point is reached, the building is economically dead.

The speed with which the usable life of a building passes varies considerably. A building considered primarily as a means to a quick profit may be maintained to a very different set of standards than an owner-occupied or institutional building. The speculative building will very likely be designed with low first cost as the prime consideration, all but ignoring later maintenance costs. But, like the car owner who doesn't "trade in" every year or two, the building owner who keeps his building may find the maintenance problem looming large.

MAINTENANCE STARTS WITH DESIGN

Cleaning is one of the largest single items in the building budget. The National Association of Building Owners and Managers says that a good 50 cents per square foot per year are spent on cleaning commercial buildings, plus about 22 cents per square foot on repairs, alterations, and redecoration. In short, the annual maintenance costs for a typical office building may add up to over five per cent of its original cost. The figures for stores, schools, and other buildings do not vary too much from these.

Although maintenance begins only after the completion of the building, its extent is dependent upon decisions made in the design and construction phases. Among the design decisions are ease of access to mechanical equipment, provisions for convenient cleaning, and the selection of materials with

good wearing properties and appropriate finishes.

Almost all mechanical equipment has a limited life-span. For example, the approximate useful life of an AC motor for an air-conditioning fan (considering obsolescence as well as deterioration) is about 15 years; for an evaporative condenser, about ten. A 40-watt fluorescent tube may last 15,000 hours. Access doors and working room around electrical and mechanical equipment are, therefore, necessities.

The cleaning process itself can affect design. A standard example: Baseboards—which are subject to marking by vacuum cleaners, waxers and mops, and splashing by soapy waters, solvents, or chemicals—should be of a dark, durable material.

It is best to avoid placing two materials which need radically different cleaning methods directly next to each other, e.g., a floor which must be washed (stone or terrazzo) alongside a floor which must be sealed, polished, or both (wood, vinyl).

FIRST COST vs. MAINTENANCE COST

A material with a relatively high first cost may actually be less expensive to use than a material with a lower first cost and higher maintenance cost. To calculate the actual yearly cost of a given material, some building owners and architects divide the first cost (plus interest on first cost—usually taken at five per cent) by the expected life in years and then add the annual cost of cleaning.

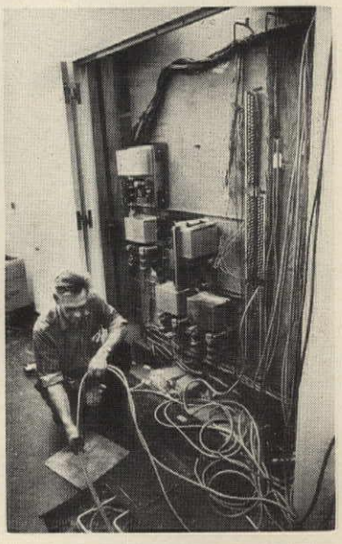
The life-span of a material varies enormously, depending on where and how it is used, but a comparison of flooring materials, for example, shows that high first cost and high maintenance cost do not necessarily coincide. Terrazzo on first cost may run $1.80 to $2. per square foot installed, about six times as much as asphalt tile at 35 cents per square foot, and about twice as much as homogeneous vinyl tile at about $1 per square foot. However, costs of upkeep, according to maintenance companies, are less for terrazzo than for vinyl and less, in turn, for vinyl than for asphalt. (To figure total cost, the life-span of the material must be known.)

Much the same criteria apply to wall and ceiling materials as to floor materials. Generally speaking, gray or neutral colors show less dirt than blacks or whites, and matte surfaces show smudges and stains less than glossy ones.

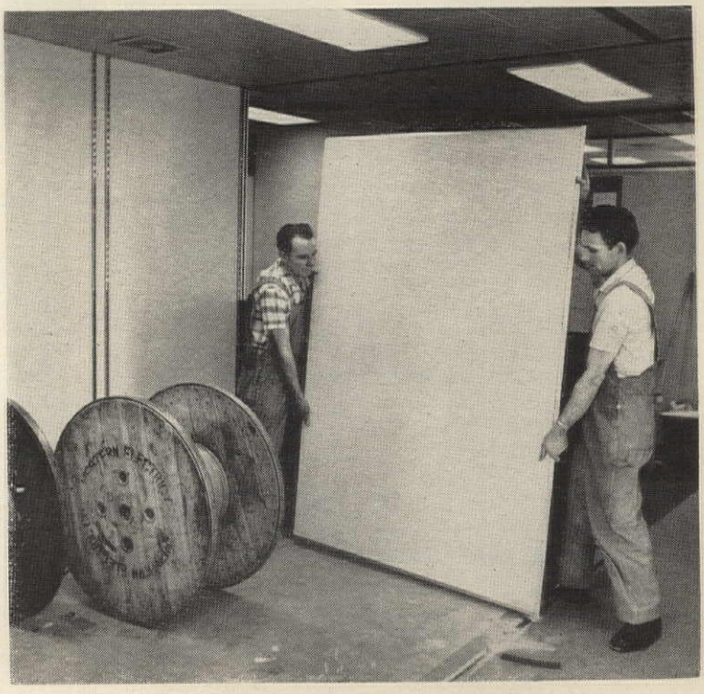
Air conditioning can reduce interior cleaning and painting as much as 70 per cent by filtering out dirt before it enters the building. Viscous impingement, water spray, or dry filtering systems—depending upon the particular type—are able to remove up to 80 to 90 per cent of airborne dirt by weight, but they remove fewer of the smaller particles which discolor surfaces than more expensive electrostatic precipitators.

Less labor is needed to shift a movable partition than a semipermanent wall. Costs of only one shift often make the total cost of a movable partition less than a semipermanent one.

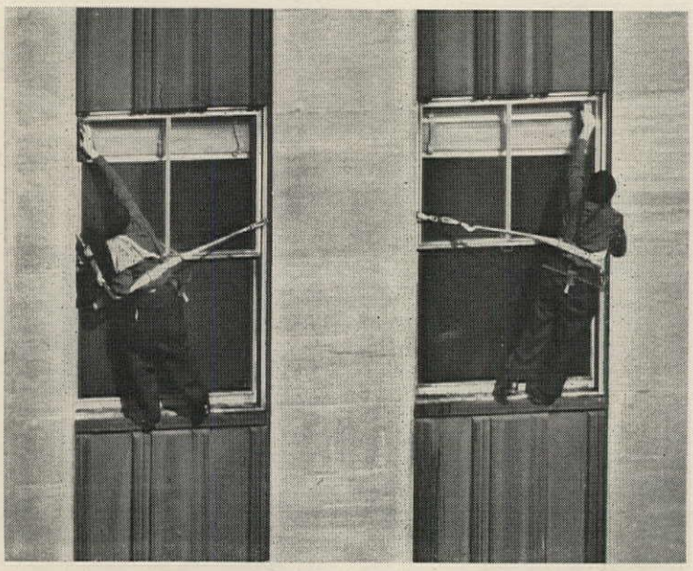
Easy access to wiring and duct-work will facilitate replacement, since most mechanical equipment will wear out in time. Moreover, when walls shift, wires and grills must shift as well. It is important, therefore, that the mechanical and lighting systems be laid out on the same module as the office partitions.



WALTER DORAN



WALTER DORAN



ANTHONY LINCK

Movable vs. fixed glass: movable windows are usually slower to clean than fixed. In all-glass buildings, fixed windows are especially economical since cleaners can take care of the spandrels while washing the windows.

RAY ESCHE

On the exterior of a building, three variables come into play: cleaning costs, structural maintenance costs (calking and pointing), and heating and ventilating costs. A thin, metal curtain wall may provide more rental space inside the building line than a heavy masonry wall, but in some cases first costs may be greater for the curtain wall. Both need maintenance: the masonry wall will need pointing, sealing, and cleaning from time to time; the curtain wall will need recalking and washing.

The maintenance of glass presents its own set of problems. Inexpensive, oil-based calking compounds will generally mean more broken panes and more frequent recalking than will the more expensive resilient types. Glass is cleaned more often than most other exterior wall materials. Fixed glass on multistory buildings usually requires a special window-washing platform: an exterior, open elevator rig that may run as high as $100,000. But, this is almost a necessity if broken panes must be replaced from the outside and if the spandrels and trim as well as glass must be cleaned frequently, as is the case with most metal curtain walls. Operable windows can be cleaned and replaced from the inside, but they are more expensive than fixed. Mohawk Maintenance Company, one of the largest, charges almost one-third less per square foot to wash fixed glass with an outside rig than to wash movable glass, because the fixed glass can be washed more quickly.

Architects Anshen & Allen investigated both systems when designing the International Building in San Francisco (FORUM, March '62). They found that a window-washing rig alone ran in the neighborhood of $70,000, and that fixed windows would cost half again as much to maintain as operable windows. This would offset the extra first cost of operating windows in less than five years. (One reason for the higher cost of cleaning fixed windows: High winds often make outside cleaning on a rig next to impossible in the afternoon in San Francisco.) The building, moreover, was to be faced with precast concrete spandrels, which require less cleaning than most metal curtain walls, and hence less need for a rig. Result: the building has vertically pivoted windows.

DO-IT-YOURSELF, OR CONTRACT OUT?

Once the construction gangs have departed, the maintenance of the building is in the hands of the owner. It is he who must put in motion the anonymous army of maintenance people, the nighttime occupants of the building.

There are protagonists of both staff and contract maintenance. Those who favor the former claim that they can look after their own building and their tenants better than an outsider can. Those in favor of contract cleaning cite these

advantages: transfer of responsibility for personnel and supervision to an outside specialist, and the replacement of a variable item in the budget with one that is agreed upon and fixed. For most large office buildings the sheer size and complexity of the cleaning and maintenance problem means that at least some of the work must be contracted. But regardless of whether the owner or operator chooses to maintain the building with his own staff or use contract maintenance, the maintenance of the building should be organized systematically. This will entail detailed and regular cleaning, replacement, and preventive maintenance schedules.

In the long run, preventive maintenance is usually more economical than spot maintenance. The ubiquitous light bulb is an example. In many medium- to large-sized buildings, labor cost, not bulb cost, is the controlling factor. Labor cost for spot replacement of burned-out fluorescent tubes, according to one survey, averages about $1.40 per tube, whereas labor for group relamping rarely exceeds 20 cents per tube. Group relamping is generally economical when tubes have gone through 70 to 80 per cent of average lamp life.

FUTURE HELP FOR BUILDING MAINTENANCE

Unfortunately, a great problem—and one which is almost certain to grow more acute in the future—is the relative lack of objective performance data on the new materials which are flooding the building market. Early dry-joint curtain walls, in many cases, have already had to be calked. The anodized aluminum curtain wall of the Alcoa Building in Pittsburgh has not yet provided its intended test of the weathering qualities of anodized aluminum: the protective lacquer coating is so good that it has yet to wear away. But, along with the inevitable uncertainties, new materials may bring solutions to many of the traditional maintenance problems.

To some extent help is already here. Epoxy coatings are being used in such places as concrete warehouse floors to give almost indestructible surfaces, and with other plastic coatings they may almost eliminate the deterioration of metal walls. The Division of Buildings and Stores at Yale University, for one, has found that the new transparent silicone coatings can make masonry walls almost element proof and otherwise nearly maintenance free. Similarly, the life of mechanical equipment, from lamp bulbs to bearings, is being extended.

The ideal, presumably, is a building which would need no cleaning and all of whose elements would wear out at exactly the same time—a building which lives to a ripe old age and then dies all at once. But, until that ideal is reached, and probably beyond, buildings will need careful design and a good deal of elbow grease. END

EDMUND GERARD

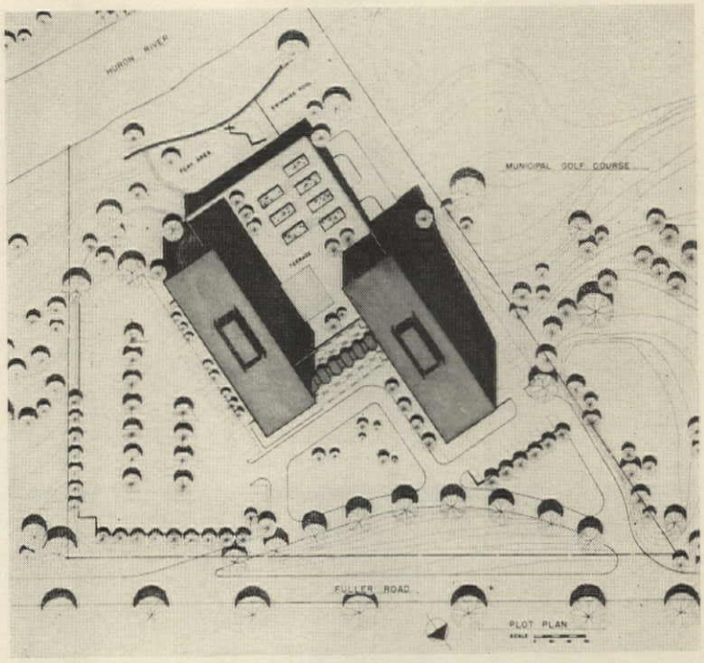
About half of the labor force needed for the maintenance of Rockefeller Center. These men and women perform several dozen separate operations daily according to a predetermined schedule.

LIFT-SLAB APARTMENTS

The tallest lift-slab buildings in the U. S., and the biggest lift-slabs anywhere, are the Huron Towers Apartments in Ann Arbor, Mich. It is not alone as a technical tour de force that these twin towers are significant, however. They are unusual too in design, in financing, and in site utilization.

High-rise apartments are a largely urban phenomenon, but Huron Towers are in a relatively small town—and on the outskirts at that. (Except for University of Michigan dormitories, Ann Arbor hadn't seen any high-rise housing built since the twenties.) Developer Morton Scholnick gambled on the quality of the buildings, and a fine site (bordered by the Huron River, a municipal golf course, and Michigan's new north campus) to attract tenants at comparatively high rentals from the fast growing university and several nearby industrial research laboratories.

Financing is of interest chiefly because 82 per cent of the total cost was covered by a $5,770,800 mortgage, the largest ever insured by FHA's Detroit office. As Bernard Landis observed in last month's FORUM, FHA's tendency to encourage repetition of yesterday's successes, and discourage tomorrow's, isn't universal. FHA's Detroit office is evidently one that welcomes intelligent innovation.



The towers are angled and offset to give tenants maximum view of river

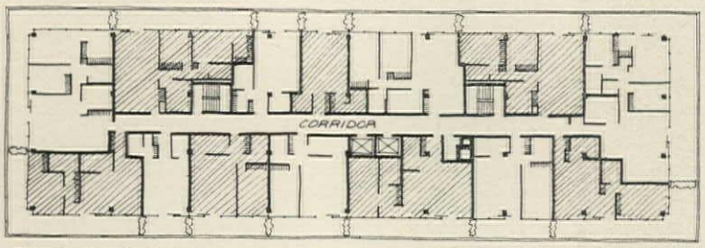
A broad terrace between the towers roofs a 313-car, three-level garage

A fresh face with character

Architecturally, these buildings stand in refreshing contrast to the featureless, neuter façade that almost always envelops the American apartment house. Depth and texture are provided by fieldstone walls at the base, by cantilevered balconies with serrated edges, by the exposed aggregate of the precast balcony parapets, by patterned paving and plantings on the broad terrace between the towers. These are not slick buildings even though the exterior walls (set six feet behind balcony edges) are glass and porcelain enamel.

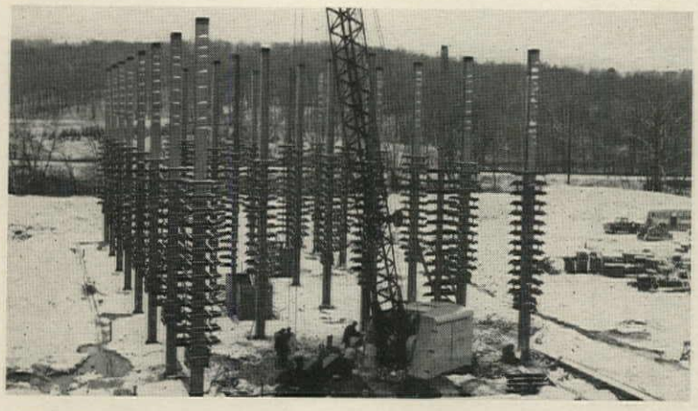
Lift-slab construction contributed one of the buildings' architectural graces: the exceptionally thin, delicate-looking floor slabs. The lift-slab technique also made it possible to pour concrete during a rigorous Michigan winter. Because reinforced concrete slabs were poured one on top of another at ground level, a temporary plastic shelter could be rigged easily to protect the pour. When all slabs had been poured around the 36 steel columns (with collars to permit jacking), the shelter was dismantled and the slabs were hoisted up along the columns by hydraulic jacks.

At first, the columns were two stories higher than the topmost slab. Then the slabs were lifted, two at a time, by jacks atop each column. When slabs reached the column tops, two

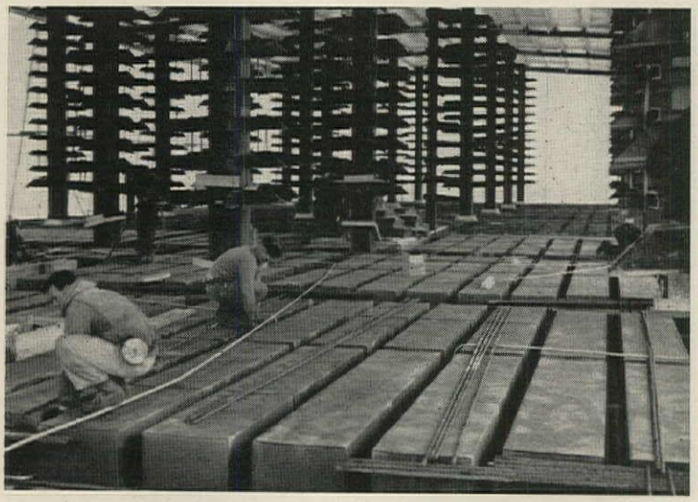


TYPICAL FLOOR PLAN

0 10 40'



"Limbs" are jacked up columns after floor slabs are poured around them



Plastic tent keeps work area warm enough while floor slabs are poured

Columns of nearer tower must be raised for stack of slabs to go higher

more stories were added to the columns' height and the process was repeated. A truck-mounted crane drove around the top slab during its slow ascent lifting steel for the columns and other building components. As each of the slabs reached position, it was welded and grouted to the columns in a permanent bond. Twenty weeks elapsed before the highest slab was in place, during which time other work was, of course, proceeding on lower floors.

Architects King & Lewis concede that a Mexican lift-slab building is taller than their twins, which have 12 apartment levels above high-ceilinged, largely open lobby floors. But their slabs are the largest and heaviest yet lifted—215 by 70 feet, and 820 tons apiece. Among the interested sidewalk superintendents was Philip Youtz, Dean of Michigan's School of Architecture and coinventor of the lift-slab method.

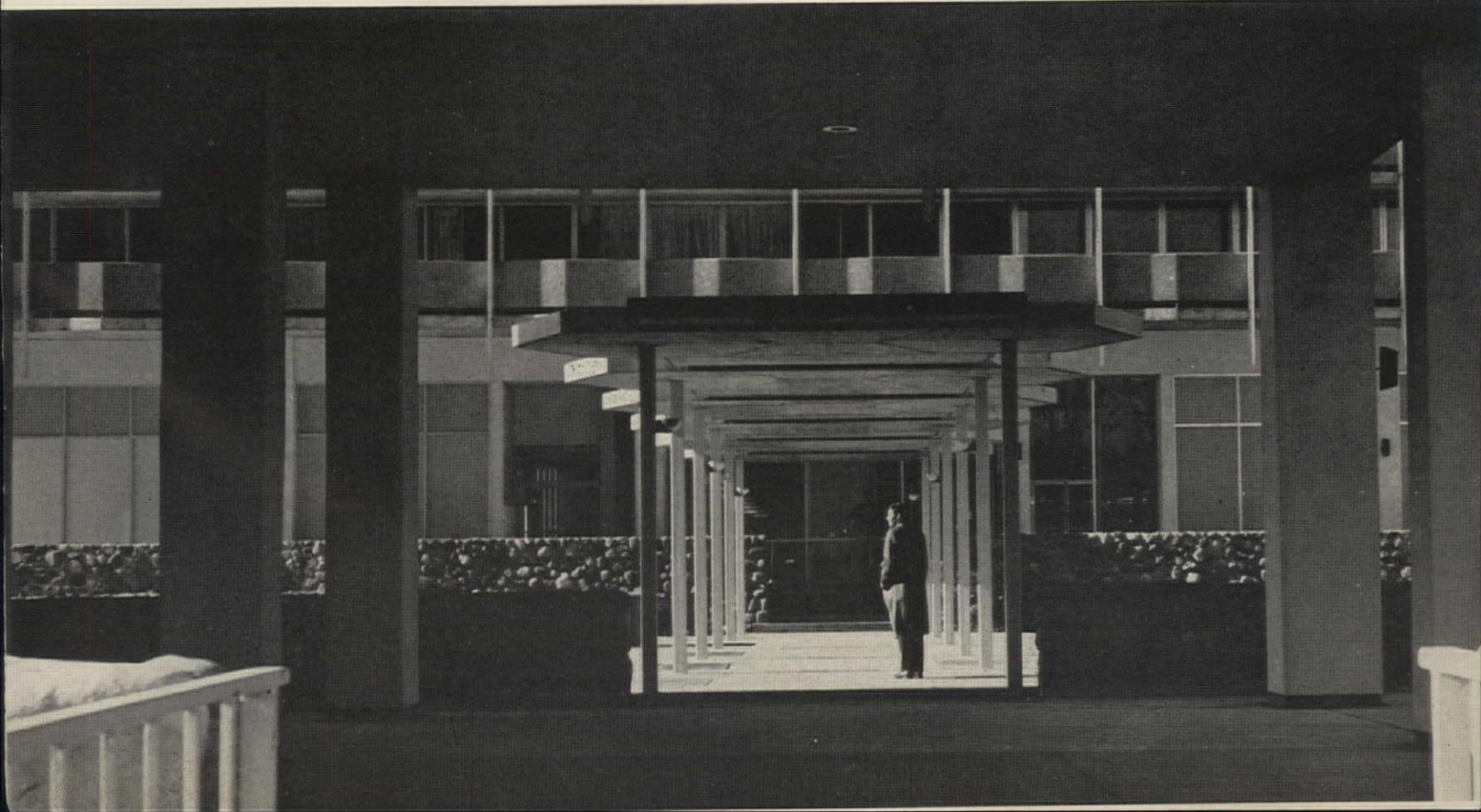
The towers each contain 180 units ranging from efficiency apartments renting at $119 to three-bedroom apartments that rent for $340. Typical floors contain five efficiencies, five one-bedroom units, three two-bedroom units, and two three-bedroom units. Kitchens and baths parallel the double-loaded corridors, reserving window-wall light and view for living-rooms and bedrooms. Sliding glass doors lead to balconies that are screened for privacy at each party wall.

One building's ground floor contains a beauty salon, drug-store, valet service and similar conveniences. Both lobby floors, connected by a covered walk, have promenades overlooking a landscaped terrace that is the roof of a 313-car garage. Because of the sharply sloping site, each of the garage's three levels has an entry on grade. Parking costs $22.50 per month, but free outdoor parking is also available.

FACTS AND FIGURES

Huron Towers Apartments, Ann Arbor, Mich. Owners: Morton L. Scholnick and Seymour Dunitz. Architects: King & Lewis, Inc. Engineers: Richard McClurg (structural); Migdal & Layne (mechanical). General contractor: Future House Apartments, Inc. Lift-slab contractor: Long Construction Co. Cost (excluding land, landscaping, garage, and furnishings): $4,235,452. Building area: 346,600 square feet. Cost per square foot: $12.22. Total cost of project: about $7 million. Financing: 39-year FHA-insured mortgage, $5,770,800 at 4½ per cent. Site: former 8-acre orchard. Construction details: four rows of nine steel columns carry floors of reinforced concrete cantilevered on all sides to form 6-foot balconies. Nine-inch slabs are 215 by 70 feet, weigh 820 tons, and were lifted into position by hydraulic jacks. Wall sections of glass and aluminum, 5 by 8 feet, are fastened to slabs by stainless steel screws in aluminum anchors. Aluminum vertical members support balcony parapets precast in 10-foot sections. Living rooms and bedrooms have heating and air-conditioning units with individual thermostatic controls and fresh-air intakes. Each tower is served by two elevators. Penthouses conceal elevator machinery, exhaust fans, and other equipment.

Rear entrance (above) opens onto an outdoor parking lot. Canopy protecting walk between main entries (below) echoes pavement pattern.



Knoxville's old Market House (above, foreground) was razed and streets on each side were closed to form Market Square Mall (below)

KNOXVILLE'S NEW MALL

With a few notable exceptions, such as Toledo and Kalamazoo, the rebuilding of downtown into a pedestrian paradise has remained the stuff of dreams on many an architect's drawing board. By working together with businessmen and city officials, however, the architects of Knoxville, Tenn. have helped to turn the dream into a profitable reality in that city's new Market Square Mall.

The mall, which replaces Knoxville's venerable Market House (photo opposite), was conceived by a group of businessmen in 1958 and authorized by the city council in 1959. Architectural services were volunteered by the East Tennessee Chapter of AIA (the cost to be borne by a pro-rata assessment of Knoxville members). The Downtown Knoxville Association, a businessmen's group that sponsored the Gay Street Promenade (FORUM, Feb. '61), enthusiastically adopted the mall as its second civic improvement project.

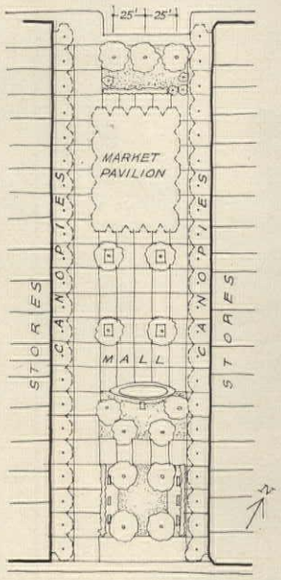
Of course, the mall had opponents too. There was sentiment for the preservation of historic Market House (built in stages between 1853 and 1890)—until fire gutted the interior. In addition, it was discovered that the land had been deeded to the city generations ago on condition that it would revert to the donor's heirs if used for anything other than a public market. The matter is before a court, but the city contends that its title is validated by the open-air market pavilion that stands at the north end of the new mall.

The sidewalk canopies, which do much to unify the 130 by 440-foot mall and camouflage some undistinguished store fronts, were not part of the original plan. They were separately commissioned by the store owners, who shared costs on a front-foot basis. Plans are also underway for the remodeling of individual stores.

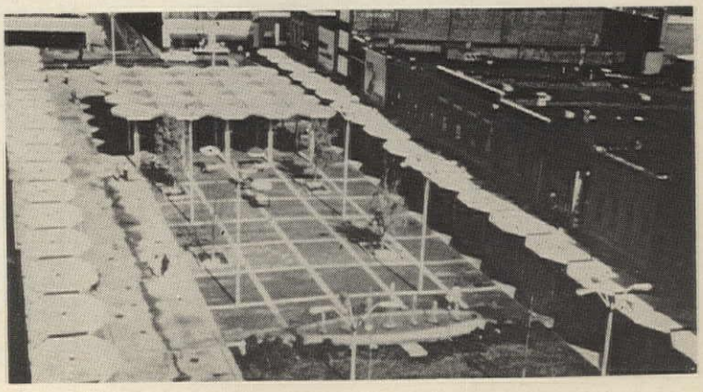
On the basis of their new mall, merchants predicted $6,780,000 in sales in 1962, an increase of 21 per cent. Actually, volume is running slightly better than this. The store vacancy rate dropped from 24 per cent to 8 per cent while the mall was being planned and built, and is now dwindling toward the vanishing point. New tenants are of high caliber. The undertaking already seems to have justified itself economically.

Costs were $86,000 for the mall, $47,000 for the pavilion, $55,000 for the sidewalk canopies, and $125,000 for the relocation of utility lines. Total cost: $313,000.

A special committee of the AIA chapter acted as architects for the mall and pavilion. Painter, Weeks & McCarthy designed the sidewalk canopies. General contractors: Roehl Construction Co. and Southeast Construction Co.



Elongated octagons of precast concrete form sidewalk canopies (above) and the roof of a pavilion where flowers and produce are sold (below). The mall itself (plan, and bottom photo) is a concrete grid filled with red brick, concrete, or turf. Fountains, greenery, and benches lend a parklike atmosphere.



A TUNNEL IN PICCADILLY

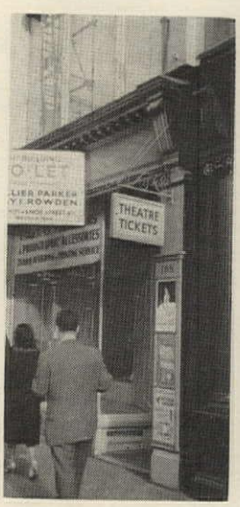
Both inside and out, necessity was the mother of invention in this remodeling project for Iraqi Airways by Architects Alison and Peter Smithson.

Two doors from the airline's small offices on Piccadilly in London are the offices of Pan American Airways, whose fascia sign is high, wide, and glaring. Against this, the Smithsons decided to pose discreet understatement (photo right).

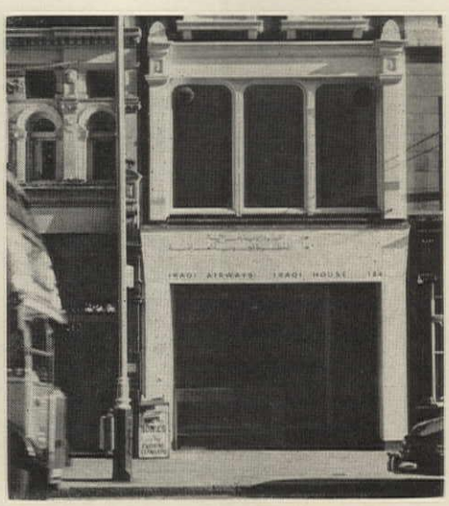
Inside, the airline's ground floor ticket office, 14 by 75 feet, would fit into a jetliner's fuselage. So the architects made a virtue of the tunnellike quality of the space by emphasizing it (photo opposite). Half of the building's frontage was taken up by entries, and a conventional window display would have completely blocked the tunnel mouth; so the Smithsons ingeniously sank a display well below the sidewalk, where it can be viewed "from the air" by passersby (photo below).

Copies of Iraqi bas-reliefs are molded in undulating walls the color and texture of desert sands. Counters are faced with blue tile from Iraq; carpeting is pale khaki. Cylindrical light wells in the ceiling and floor let daylight into the back of the office and transmit some of it to the basement beneath.

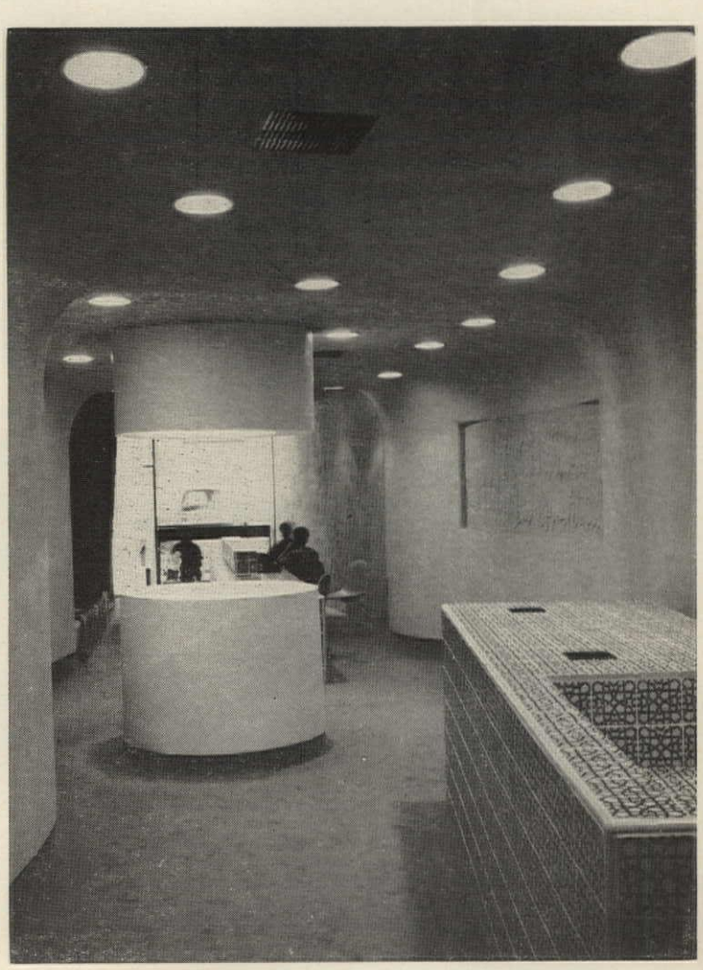
Cost, including less extensive remodeling and repairs on five other floors, was about $50,000. Lettering and displays were designed by Edward Wright.



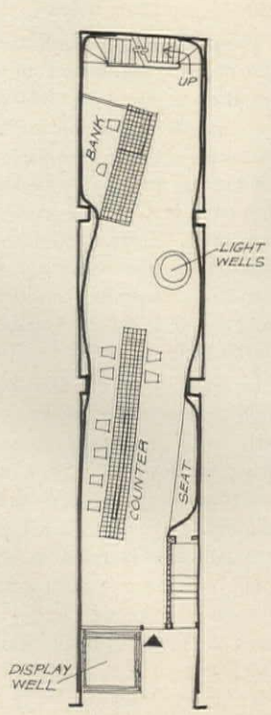
Before

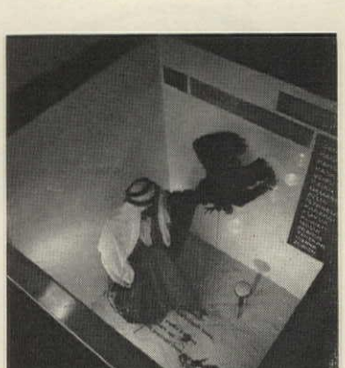


After



PHOTOS: (LEFT & OPP.) KERRY DUNDAS





Undulating walls of the "tunnel" (opposite page and right) are of plaster on metal formwork. First display in the sunken show window (above) depicts one of man's earliest interests in flight: falconry.

REBUILDING GOES UP 15%

The growing trend toward remodeling of older structures, in preference to demolishing and starting anew, is strongly reflected in FORUM's final compilation of building permits issued in 1961. Among 16 cities surveyed (see table below), the dollar volume of additions and alterations ranged as high as 42 per cent of all building authorized. Of this volume nonresidential remodeling took by far the lion's share, averaging 75 per cent of permits issued (in Detroit the figure was closer to 90 per cent). And despite the lingering effects of recession, total rebuilding permits in 1961 rose over 15 per cent over the previous year.

Property owners and architects, the figures would seem to indicate, are becoming more aware of the advantages to be gained in salvaging older buildings whose structure and location are sound. In Philadelphia, for example, where remodeling permits were up a whopping 61 per cent, an increasing number of old brownstones, some of them slum tenements, are being stripped to the frame and the interiors transformed into modern and extremely rentable apartments. In one of the city's largest single projects, the downtown Wellington Apartments were rebuilt last year at a cost of $2.5 million, when it became evident that the proposed new building for the site could never duplicate at reasonable prices such qualities as the soundproofing of 13-inch-thick floors.

The trend is not confined to Philadelphia by any means. New York, not surprisingly, is leading in total volume of office building and rebuilding, due to a shortage of prime office space, and to a rush by builders to get plans filed before the city's new, more stringent zoning law went into effect at the end of the year. (Since New York is not typical of U.S. cities, nor even of itself for 1961, totals are given with and without New York figures.)

Only four cities showed a decline in rebuilding. The only appreciable drop was that in Boston (32 per cent); despite this, nonresidential additions and alterations there were higher only in 1960 and in 1957, and last year's dollar volume is higher than the average for the previous five years.

Atlanta's continued decline in new building within the city proper—partly due to overbuilding of apartments in the last few years—has been offset somewhat by a heavy investment in rebuilding, up almost 40 per cent. Two factors in particular are credited for this: higher mortgage rates, and the plentiful new office space which is forcing owners to remodel in order to compete.

Buffalo, Denver, Minneapolis, and St. Louis all give evidence of a healthy surge of rebuilding activity. Pittsburgh reports much hospital reconstruction planned, and a high volume in building and rebuilding permits for colleges in the area (those for the University of Pittsburgh total $10 million).

In Cleveland, office and hospital rebuilding almost tripled, and with the renovation of the city's underground auditorium-exhibition hall, recreational remodeling recorded a healthy rise.

Prospects for 1962

Analysis of rebuilding activity by type of building reveals several changes in 1961, although office rebuilding continued to dominate. There was a noticeable increase in the share spent for hospitals and recreational structures. Store rebuilding dropped off nearly a third and there were slight declines in factories, churches, and schools (see chart below).

Prospects for 1962 indicate continued rises, contingent to some extent upon mortgage rates, which are currently caught in the battle for savings between the banks and the savings and loan associations. However, if Congress should, as predicted, permit commercial banks to make mortgage loans from time deposits, considerable money will become available to spur building activity.

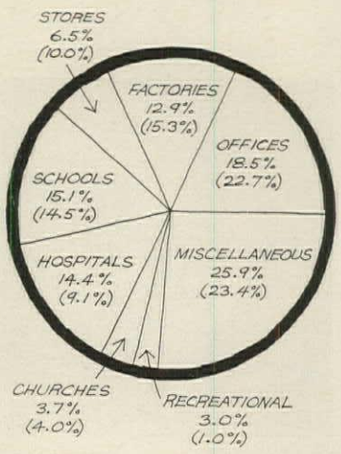
In any event, a $60 billion building year is forecast by the experts, with the major gains expected in hospital, school, office, and apartment building and rebuilding. Predictions are for a 5 to 7 per cent increase in educational building, a 7 to 11 per cent increase in hospitals. On the other hand, the boom in hotels and motels (FORUM, Feb. '62) may be petering out. END

1961 REBUILDING PERMITS IN 16 MAJOR CITIES

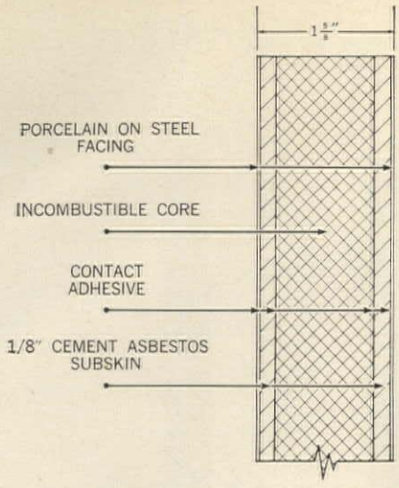
Additions and alterations, in thousands of dollars:

City	Residential	Nonresidential	Total	Change '60-'61	Rebldg. as % of total	% of rebldg. that is nonresidential
ATLANTA	$ 5,257	$ 20,112	$ 25,369	+39.5%	29.4	79.3
BOSTON	4,725	11,127	15,852	—32.0%	24.5	70.2
BUFFALO	1,561	7,462	9,023	+25.9%	25.2	82.6
CHICAGO	10,956	34,548	45,504	— 8.7%	11.3	75.9
CLEVELAND	2,987	35,273	37,660	+33.8%	42.4	93.7
DENVER	3,687	14,647	18,334	+15.2%	22.8	80.0
DETROIT	3,947	34,295	38,242	+ 7.7%	41.4	89.7
LOS ANGELES	34,515	54,380	88,897	— 8.4%	13.2	61.2
MINNEAPOLIS	3,106	14,321	17,427	+17.2%	25.4	82.2
NEW YORK	47,242	128,884	176,126	+44.6%	6.8	73.2
PITTSBURGH	2,459	10,710	13,169	+40.2%	29.2	81.8
PHILADELPHIA	3,863	23,107	26,973	+61.4%	16.1	85.6
ST. LOUIS	2,178	10,361	12,539	+16.1%	16.3	82.6
SAN FRANCISCO	11,715	22,071	33,786	+ 6.4%	33.0	65.2
SEATTLE	5,188	22,236	27,424	+ 2.5%	25.1	81.1
WASHINGTON*	3,887	6,280	10,167	—14.2%	11.9	61.8
TOTAL	$147,223	$449,814	$597,037	+15.8%	12.5	75.3
TOTAL WITHOUT N. Y. CITY	$ 99,981	$320,930	$420,911	+ 5.8%	19.3	76.3

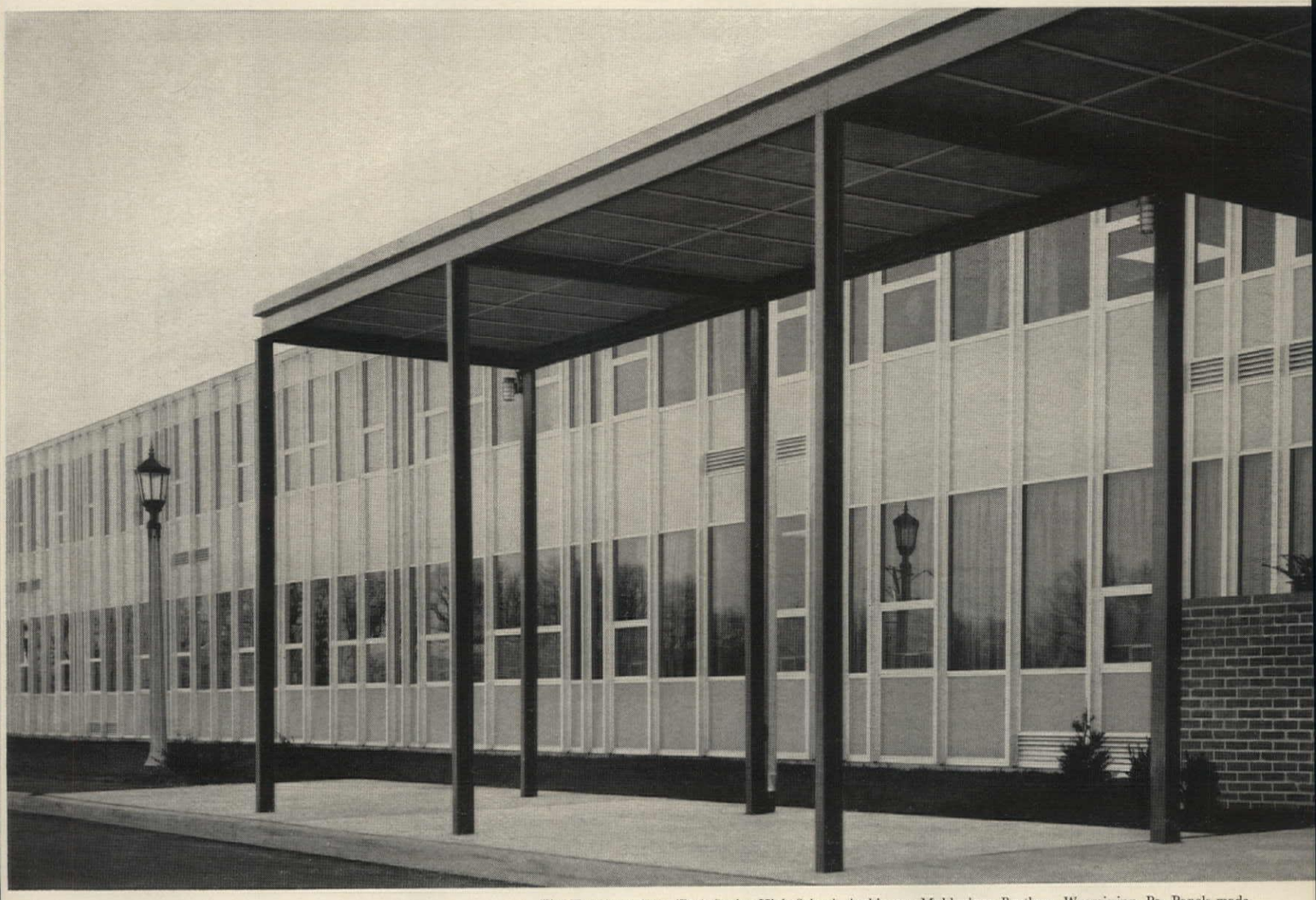
* Does not include government building.



SHARE OF REBUILDING *in nonresidential categories for 1961 (figures in parentheses are share of market in 1960). Based on permits in Boston, Chicago, Cleveland, Detroit, New York, and St. Louis.*



Laminated panels provide beauty and utility in this new school



The Kutztown Area (Pa.) Senior High School. Architects: Muhlenberg Brothers, Wyomissing, Pa. Panels made by Mirawal Division of Birdsboro Corporation, Birdsboro, Pa., for Modu-Wall, Inc., Parchment, Michigan.

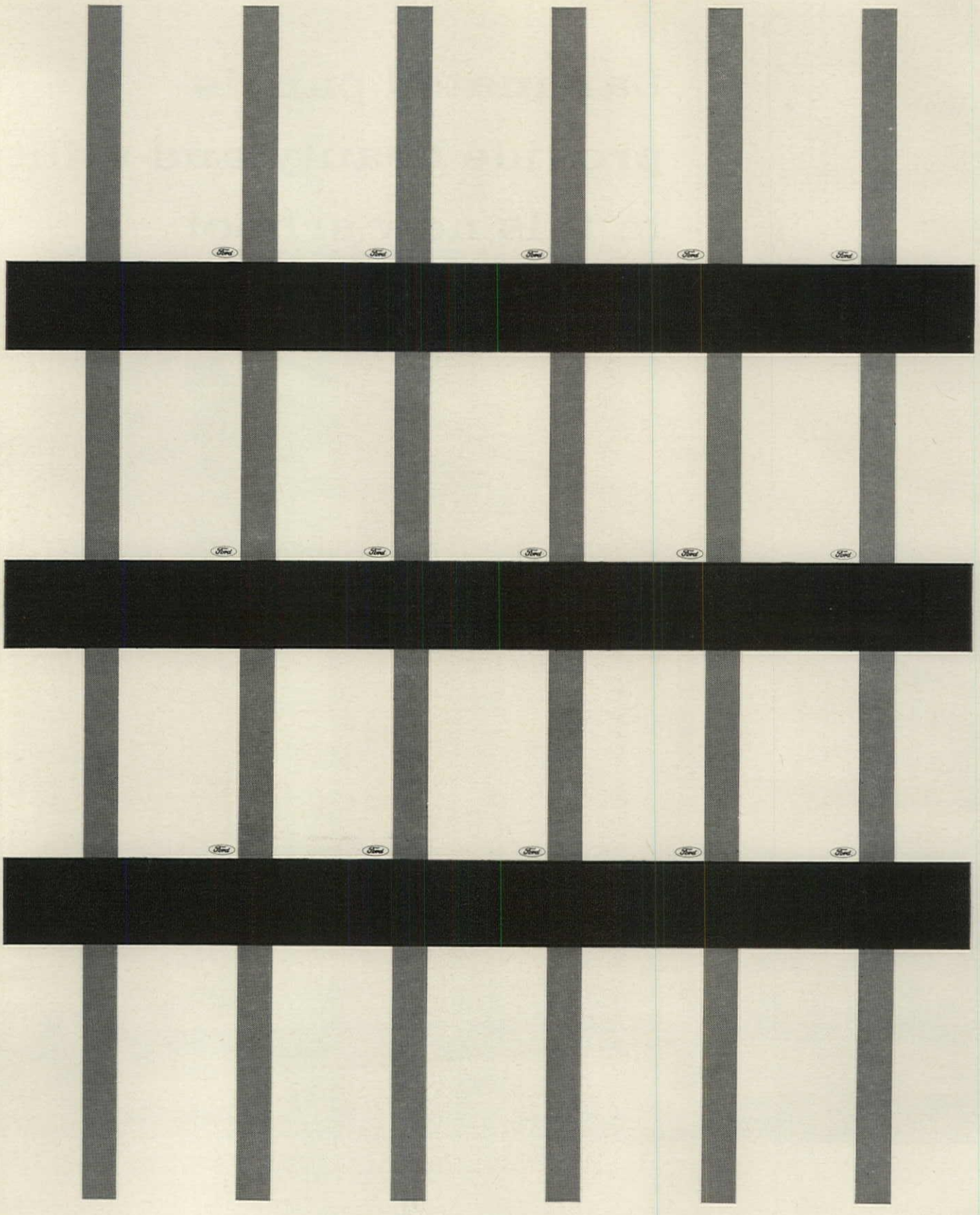
Modern laminated panels combine attractive exterior and interior finish with thermal insulation to provide practical, economical curtain walls in this new high school. Porcelain enamel steel surfaces—soft green outside, gloss gray inside—need no refinishing, are easy to keep sparkling clean.

An incombustible insulating material faced with subskins of cement asbestos board forms the basic panel. An Armstrong contact adhesive bonds core, subskins, and surfacing into a strong, permanently rigid panel.

Armstrong contact adhesives provide a superior bond with high resistance to static load and heat, as well as excellent weathering and aging properties. They eliminate many of the problems formerly associated with laminated panel construction.

Armstrong contact adhesives are being used in the construction of a wide variety of laminated panels. For more information on contact adhesives for panel construction, write Armstrong Cork Company, Industrial Division, 8004 Drake Street, Lancaster, Pennsylvania.

Armstrong ADHESIVES



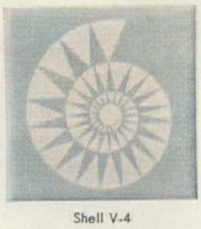
NEW SYMBOL OF QUALITY

From the world's largest integrated flat glass facility comes a new symbol of quality in architectural glass. Available now in clear and tinted plate. Coming soon... clear sheet. For complete specifications on Ford architectural glass write:
GLASS SALES, FORD MOTOR COMPANY, 20,000 ROTUNDA DRIVE, DEARBORN, MICHIGAN

PRODUCTS OF
Ford
MOTOR COMPANY

Decorated tile wall: Medallion and Rondo. Back wall: Scored design SD-1 in 345 Cr. Cobalt. Floor: 2" x 1" oblongs, Horizon. Plate 455.

New decorated tile offers lasting elegance A new series of decorated tile . . . created especially to dramatize entrances, feature walls, and other areas. Grouped in patterns or set at random in a tiled wall, they add charm and beauty to powder rooms and bathrooms, family rooms and kitchens. For larger areas, such as corridor walls, American Olean offers new Sparklets* to add bright, gem-like flashes of color to the scored tile pattern. Write for Booklet 1040. It shows in color all the new designs and includes suggestions for their use. *Trademark

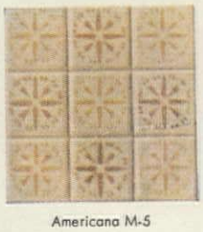


Shell V-4

Rooster Q-4

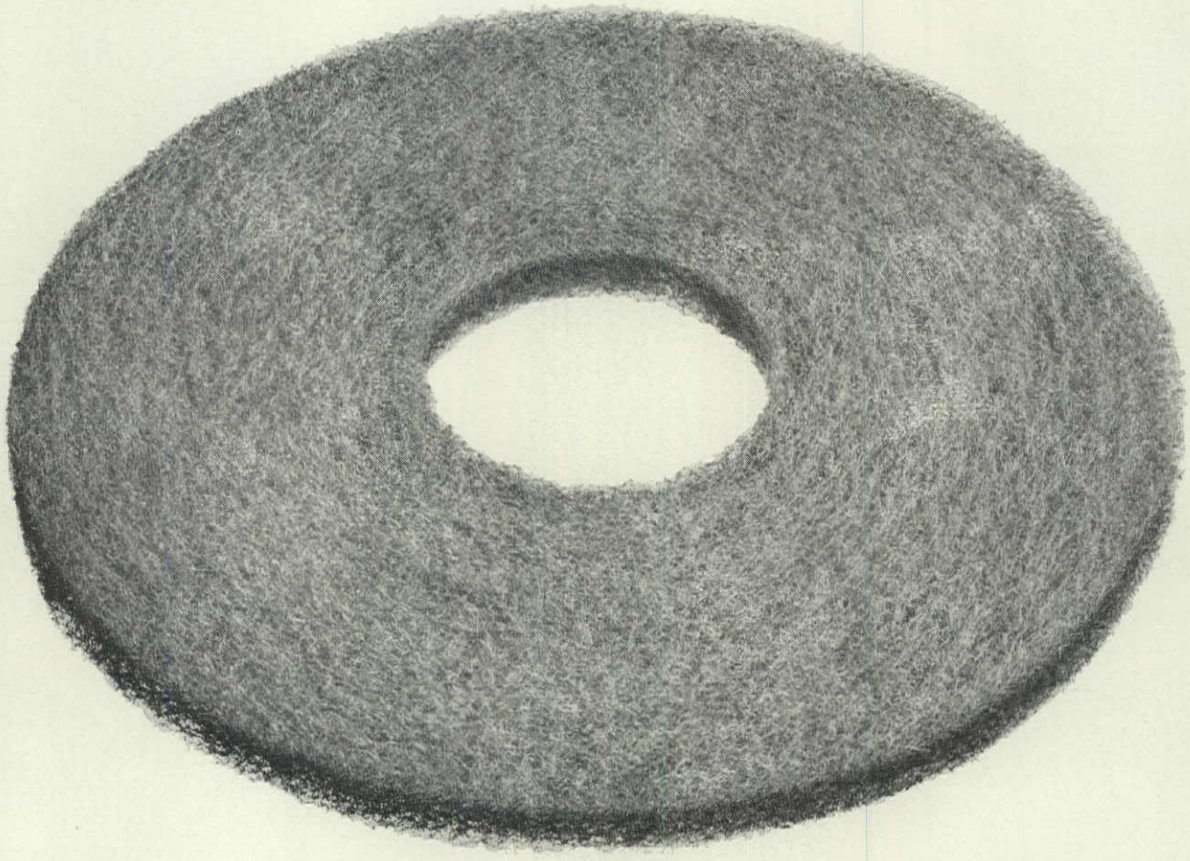
CERAMIC TILE
American Olean

Fleur D-2



Americana M-5

AMERICAN OLEAN TILE COMPANY • EXECUTIVE OFFICES: 1670 CANNON AVE., LANSDALE, PA. • A SUBSIDIARY OF NATIONAL GYPSUM COMPANY



This pad is all it takes to polish Goodyear DeLuxe True Vinyl Floor

This homogeneous vinyl floor is so tough and wear-resistant—it doesn't require waxing. You can count on continued good looks with simple polishing brush or buffer pad.

And DeLuxe True Vinyl sells now at a new low price — the lowest ever for a homogeneous vinyl floor. The solid quality and the beautiful patterns go all the way through. Their lasting good looks and low maintenance cost will be testimony to your good judgment.

DeLuxe True Vinyl is available in new multicolored marbleized colors. In 1/16" gauge for residential use and 1/8" for commercial and heavy traffic use, both in 9" x 9" tiles. For specifications, see your nearest Goodyear Floors Distributor, or write: Goodyear, Flooring Dept., Akron 16, Ohio.

GOODYEAR

FLOORING PRODUCTS

Lobby, corridor and operating room walls are of Romany•Spartan tile. Carrying out the decorative theme, even the entrance exterior is faced with ceramic mosaics in a harmonious custom pattern.

FRANK CUNEO MEMORIAL HOSPITAL, Chicago, Ill.
Architects: BELLI & BELLI CO. INC., Chicago, Ill.
Tile Contractor: McWAYNE COMPANY, Chicago, Ill.

Plate No. 2018

Building dollars go farther with Romany•Spartan ceramic tile

When it comes to wall and floor finishes, consider these Romany•Spartan "plus-values". The most complete range of sizes, colors and finishes, glazed and unglazed, in standard or custom patterns, gives you unlimited latitude in the selection of your decorative theme. All but the extra large units are specially back-mounted for swift, low-cost installation. Romany•Spartan tile never needs replacement—retains its fresh, sparkling appearance for a building lifetime with minimum care. There's conductive tile, too, for operating room floors. And with Ceramaflex®, 1-inch squares of ceramic tile securely embedded in an impervious rubber grid, you get all the advantages of genuine ceramic tile on floors that are quiet and easy on the feet. Want information, samples or design help? Call your nearby Romany•Spartan distributor or write United States Ceramic Tile Company, Department AF-23, Canton 2, Ohio.

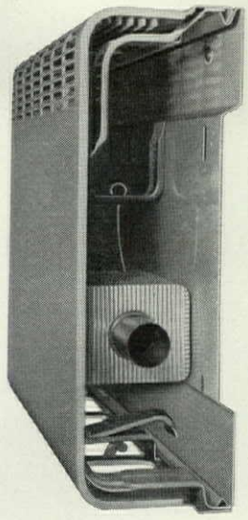
ROMANY SPARTAN®
CERAMIC TILE

MEMBER TILE COUNCIL OF AMERICA, INC. PRODUCERS COUNCIL

UNITED STATES CERAMIC TILE COMPANY

See our full line catalog in Sweet's Architectural File 13d/Un

Ithaca Senior High School, Ithaca, N. Y.; architects, Perkins & Will; photo, Libbey • Owens • Ford Glass Co.



Five heights, seven lengths; ten types of heating element steam or h.w.; also electric; all die-formed accessories; baked enamel finish in six modern colors

Friendly go-between... Nesbitt perimeter radiation

Where outdoors and indoors meet, as at a glass wall, Nesbitt Sill-line Radiation is frequently the moderator, reconciling differences, and maintaining a comfortable indoor environment for productive work or study.

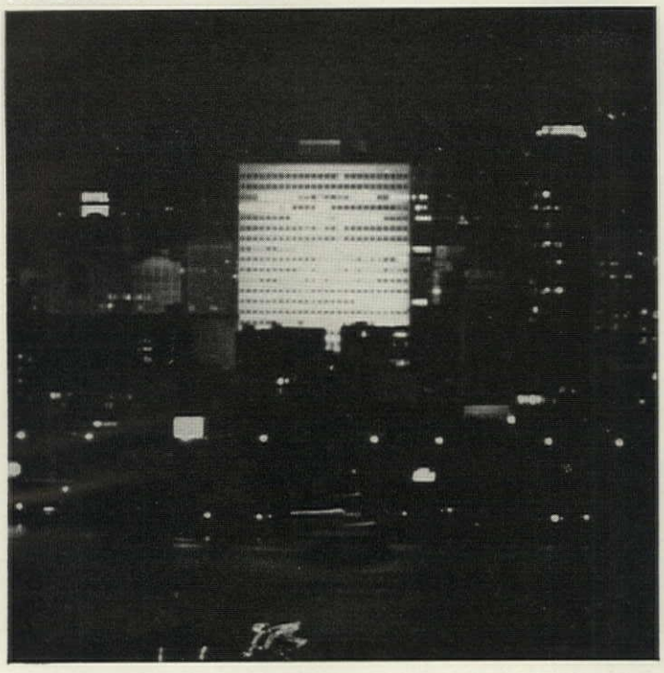
Sill-line is the best friend glass ever had; it is double assurance that people inside may view the outside world with all its charm and none of its harm.

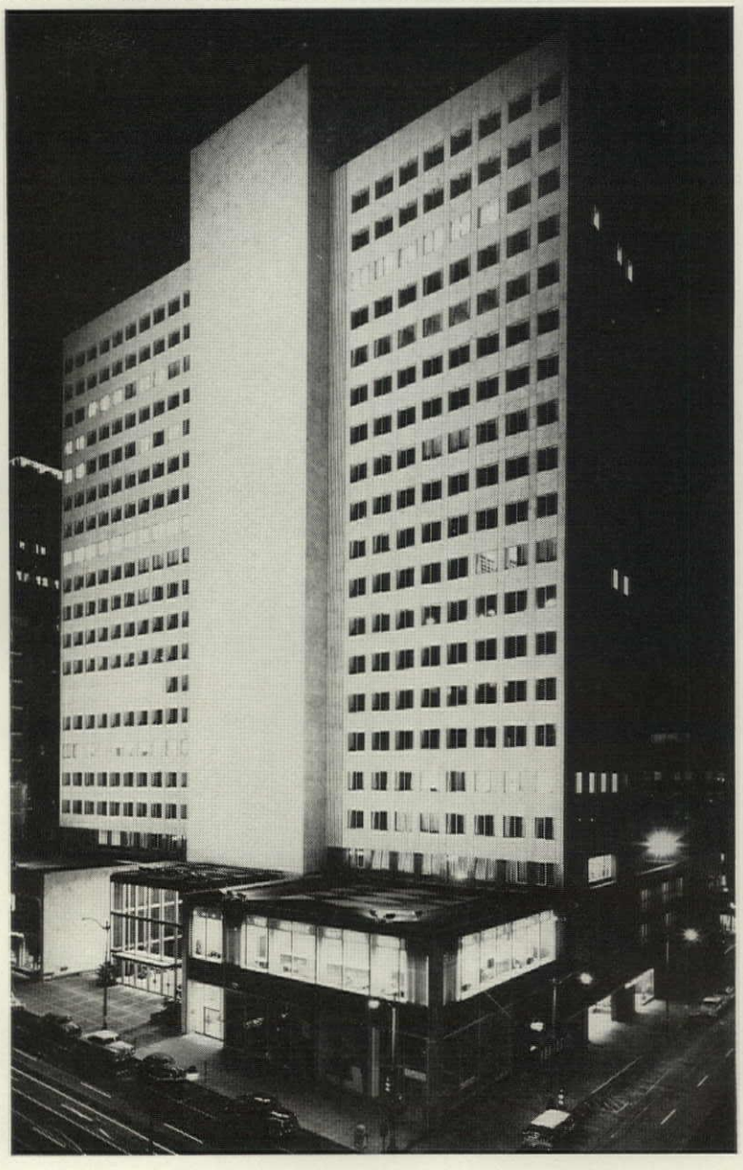
It is the favored form of heating with many designers of large-windowed structures because of its strength, beauty, conformity, comfort protection, and economy.

Nesbitt SILL-LINE RADIATION

Made and sold by John J. Nesbitt, Inc., Philadelphia 36, Pa. — Publications 30-2 and 31-2 (integrated with storage cabinets)

A SPECTACULAR LANDMARK . . . THE WASHINGTON BUILDING, SEATTLE





Why hide your building's beauty at night?

The beauty you design into your client's building is a business asset that can work for him 'round the clock instead of just during daylight hours. Wide-Lite floodlighting will turn the building into a night-time landmark!

See how the smooth rectangular light patterns of Wide-Lite floodlights emphasize the glowing white beauty and striking lines of the Washington building shown here. And see how it dominates the Seattle skyline at night!

Whether your building is large or small, low and rambling, or reaching for the sky, there are Wide-Lite models that are ideal for its decorative lighting. Each has these important advantages: broad, smooth light pattern, free from shadows or "hot spots". . . rugged cast aluminum body . . . tempered glass lens to protect reflector and lamp . . . deep cooling fins . . . patented Stabilux socket to grip the lamp at its upper end to prevent lamp breakage . . . low operating cost.

A Wide-Lite representative will be glad to work with you to plan the most effective floodlighting of your building. Just mail the coupon, or send details on your lighting problems. No obligation, of course.

WIDE-LITE®

WIDE-LITE CORPORATION

A Division of Esquire, Inc.

In Canada: Wakefield Lighting Limited

WIDE-LITE CORPORATION Dept. KB 111

4114 Gulf Freeway • Houston, Texas

Tell me more about Wide-Lite decorative floodlighting!

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

These walls come decorated

You're looking at a remarkable new Gold Bond building product called Durasan. Wallboard and decorative surface all in one. Its gypsum-rock core is fireproof. Its vinyl-plastic surface is *people*-proof. Very important. No one knows better than you what the chair-leaners (to say nothing of the carbon-paper clan) can do to *painted* walls. Durasan, on the other hand, *won't* crack or chip. Smudges and marks swish right off with soap and water. So these walls stay as handsome as the day they were installed. You can recommend Durasan for installation right over existing walls, if you like. And these beautiful pre-decorated panels cost no more than many vinyl wall-covering materials alone. This fact makes National Gypsum Company, makers of Gold Bond®, properly proud. Durasan is another outstanding example of the way we are helping you in your efforts to save money for your clients. National Gypsum Company, Buffalo 2, New York.

Gold Bond®
DURASAN

Subsidiaries: American Olean Tile Co. and Murray Tile Co., Inc.—Ceramic and Quarry Tile; Huron Portland Cement Co. in the Midwest and Allentown Portland Cement Co. in the East.

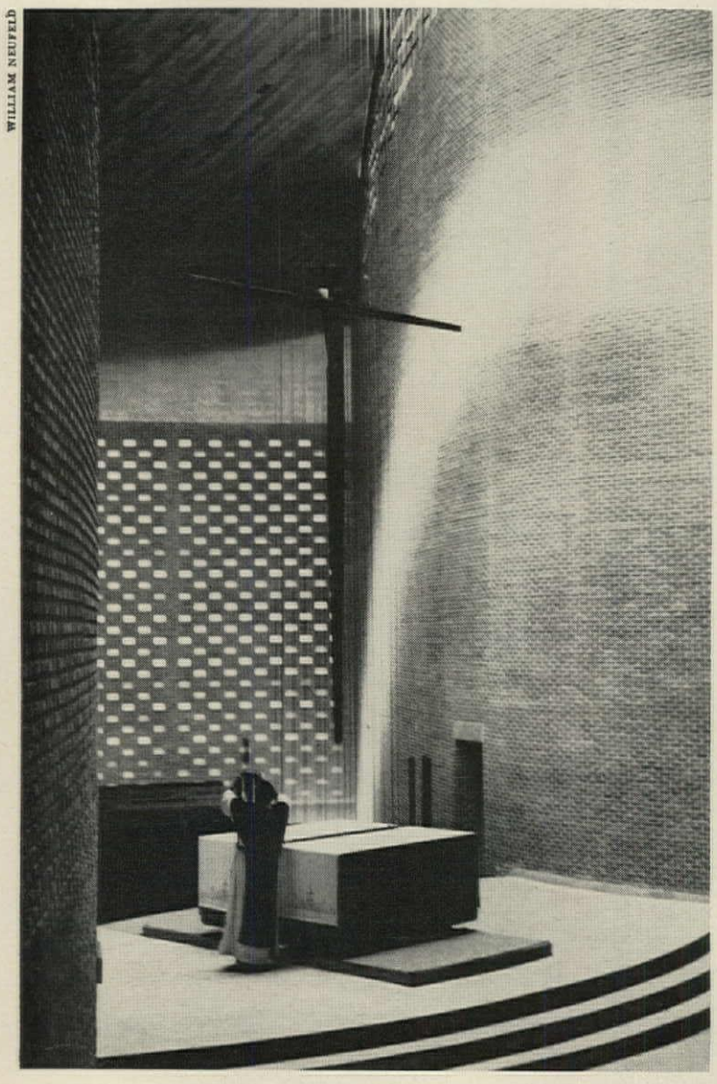
genuine **WALNUT...**
THE ARISTOCRAT
OF ARCHITECTURAL WOODS

Genuine Walnut—in plywood panels or in solids — in walls, floors, doors or millwork—offers an infinite range of grains and figures providing a uniquely creative medium for striking architectural installations. The 1961 edition of "Walnut Veneer Types", standard guide for specifying walnut, and Walnut A.I.A. File No. 19-F are available on request. The Association welcomes further inquiries whenever it may be of assistance.

AMERICAN WALNUT MANUFACTURERS' ASSOCIATION, 666T LAKE SHORE DRIVE, CHICAGO 11

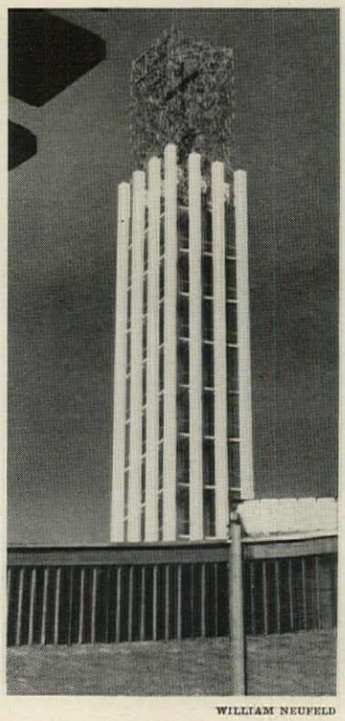
Dedicated to the conservation and proper use of Walnut, an American heritage for finest furniture and cabinetry

GENUINE AMERICAN WALNUT



WILLIAM NEUFELD

SPANISH MONASTERY. Architect Miguel Fisac designed this Dominican monastery in suburban Alcobendas, near Madrid. The tower (right) rises 198 feet and is crowned by a cross enmeshed in iron, also designed by Fisac. A succession of ramps leads to the top of the tower, which is supported by 16 pillars, in groups of four. One wall of the monastery is composed of variegated fragments of glass imbedded in the concrete siding. The artist, Austrian Adolf C. Winternitz, has executed these *vitrales* with scenes from the Bible and the lives of the martyrs. The main chapel (above), dedicated to St. Peter the Martyr, is dominated by a hanging cross sculptured by Pablo Serrano, flanked on two sides by brick walls and lighted naturally through glass panels overhead. The grilled screen beyond adds another pattern of light to the interior of the chapel, which is dominated by a massive altar.



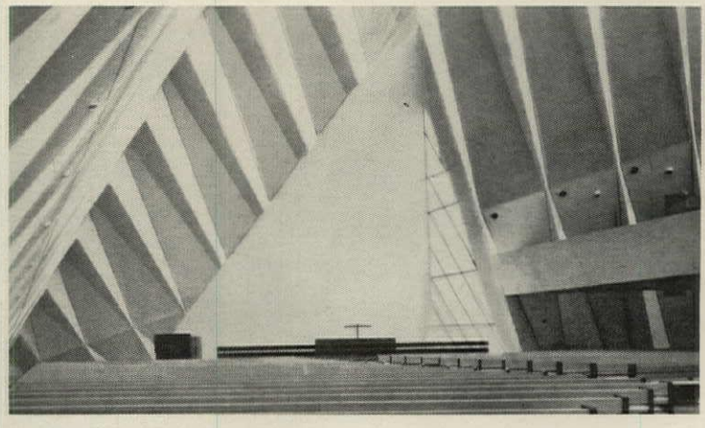
WILLIAM NEUFELD

THE WORKS OF AFFONSO EDUARDO REIDY

BRAZILIAN MUSEUM. Rio de Janeiro's new Museum of Modern Art by Architect Affonso Eduardo Reidy is rising apace on its magnificent site overlooking Guanabara Bay. The administration building (above) is being used temporarily to house exhibits and has the same sidelighting and expansive view that will be found in the connecting gallery now nearing completion (right). Bifurcated external frames of reinforced concrete provide support

ARCHITECTURE FORMES & FONCTIONS

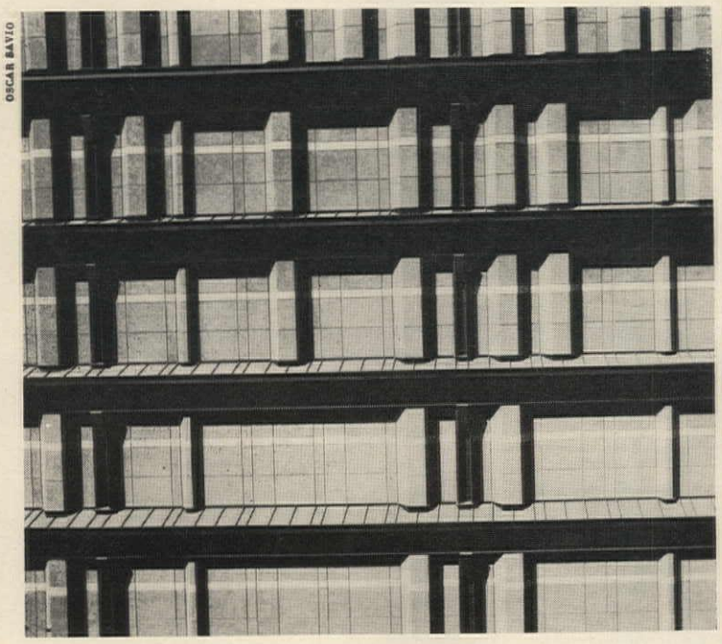
for the floors of the gallery, which will be entirely free of interior columns. A projected 1,000-seat theater will complete the group.



COURTESY "ARK"

FINNISH CHURCH. Architect Aarno Ruusuvuori's winning entry in a 1958 competition has been recently constructed at Hyvinkää in southern Finland. The pyramidal church is lighted principally from acute-angled windows near the ceiling and to the right of the altar (above), sealing in the congregation from the outside world and concentrating attention on the unadorned cross. An organ loft to the right of the altar forms a horizontal break in the church's interior of soaring beams.

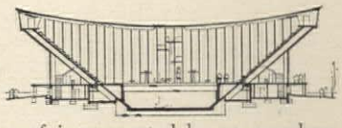
ROMAN EMPORIUM. A dramatic addition to Rome's Piazza Fiume is La Rinascente, a new department store designed by Architects Franco Albini and Franca Helg. A "machine for selling" with a strong architectural character of its own, the store has a steel frame sheathed in prefabricated panels of crushed granite and red marble. Undulations in the windowless wall (below) provide not only design interest but space for air conditioning and water risers. Entrance is through two "air doors" to three floors below ground, and six floors of selling, storage, and office space above.



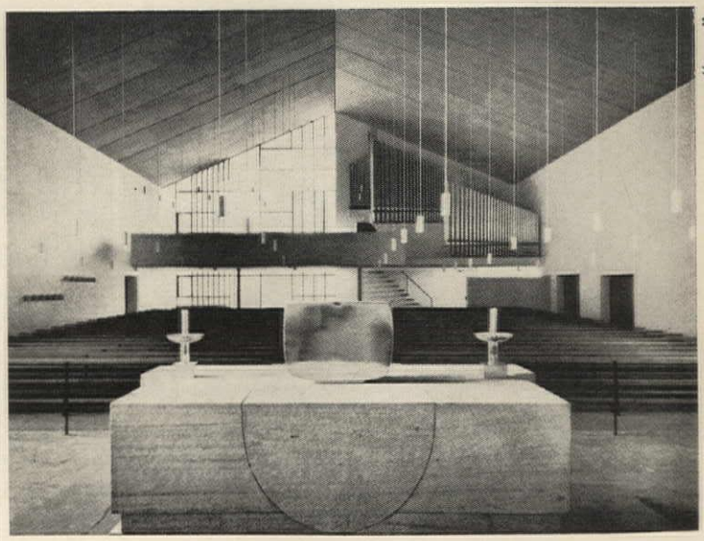
OSCAR BAVIO

EDWARD ZAK

GERMAN POOL. Friedrich Hetzelt's new swimming stadium at Wuppertal, near Düsseldorf, offers Olympic facilities for water polo, diving, and swimming meets in one big pool. Column-free seating for 2,100 spectators is provided under a catenary suspension roof of 2¼-inch-thick concrete, designed in collaboration with Engineer Fritz Leonhardt. The

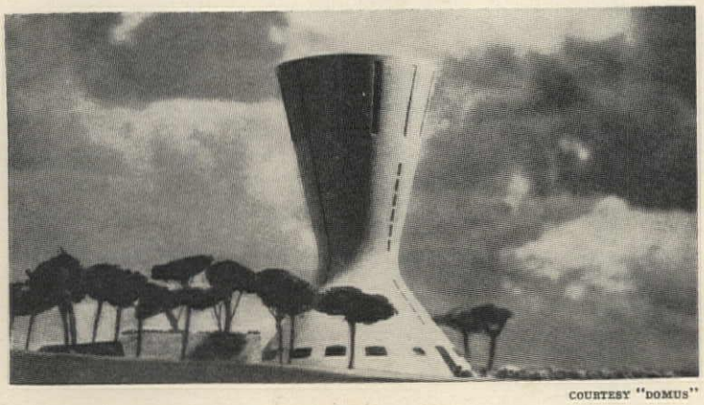


roof is supported by 22 members of rigid concrete, each 18 feet wide. The ceiling of lightweight aggregate panels is suspended from the roof, with the intervening space utilized for ductwork.



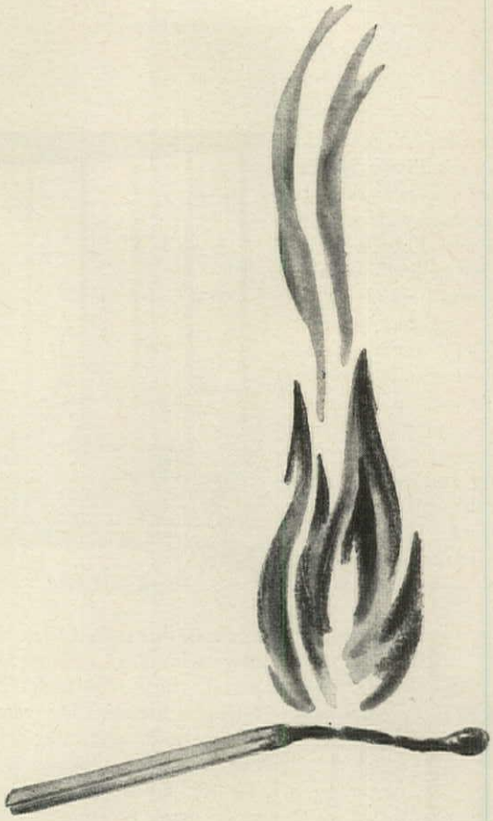
COURTESY "WERK"

ITALIAN HOURGLASS. The water tower and pumping station shown in the model below was designed by Architect Angelo Mangiarotti in collaboration with Engineer Aldo Favini. Its curvaceous façade will soar 164 feet over the Roman *campagna*. The water reservoir, in the top quarter of the tower, is balanced by a broad base containing utility rooms. Connecting the two are central elevators encircled by a winding staircase. This neat solution combines all functions of a hydraulic plant in a single fluid shape.



COURTESY "DOMUS"

SWISS CHURCH. St. John's Catholic Church at Döttingen, designed by Architect Hermann Baur, is an interesting study in counterpoise between a low-lying gabled roof and the eccentrically slender shaft and boxlike belfry of a free standing tower (right). The altar of fitted stone and the candelabra (above) are by Sculptor Paul Speck. The rear wall provides a pattern of asymmetrical light and shadow; the choir loft here is hung before a window of irregularly divided glass. END



There's
no match
anywhere

for a **DONLEY INCINERATOR!**

Get complete and rapid burning of refuse . . . without lighting a match . . . with the fully automatic Donley Safety Burner that provides frequent small fires at regular intervals. Complete protection against flame failure is afforded by the special Donley Safety Pilot. Full use of the grate area for maximum burning efficiency is assured by Donley's exclusive Heat Spreader.

For safety and efficiency, specify a Donley Incinerator. All parts and detailed drawings are available through Donley Dealers everywhere for installation by local contractors.

Write today for your personal copy of the Donley Incinerator Catalog or see it in Sweet's. 8238-DB

INCINERATOR INSTITUTE OF AMERICA MEMBER

THE Donley BROTHERS COMPANY

13945 Miles Avenue . Cleveland 5, Ohio

"We selected Haughton Elevators for the new Penn Towers . . . to provide speed with comfort"

. . . says Mr. Sylvester J. Lowery, President, Penn Towers, Inc.

Penn Towers, Philadelphia, Pa., Samuel J. Oshiver Associates, Architects and Engineers, Gilbane Building Company, General Contractors

Combining the features of a luxurious apartment hotel and modern office building, the new Penn Towers in Philadelphia will have the most advanced system of electronically-controlled elevators, keyed to the age of automation. ■ Eight Haughton Operatorless Elevators will transport passengers with uncanny speed and comfort along the glass-enclosed vertical highways that bisect the front of this striking new building. ■ An automatic electronic computer will constantly receive and analyze data pertaining to amount and character of traffic, and make adjustments to match traffic needs exactly. ■ Such is the magic of Haughton Elevonics* . . . key to new standards in elevator performance. ■ Incorporate the advantages of Haughton Elevators in your plans. ■ Contact your Haughton sales office (listed in the yellow pages), see Sweet's File 24a/Ha, or write: Haughton Elevator Company, Div. of Toledo Scale Corporation, Toledo 9, Ohio. ■ Passenger and Freight Elevators, Escalators, Dumbwaiters.

EMBLEM OF EXCELLENCE IN VERTICAL TRANSPORTATION

* *Haughton's advanced program in systems research and engineering, with specific emphasis on the creative application of electronic devices and instrumentation for betterment of systems design and performance. Registered in U. S. Patent Office.*

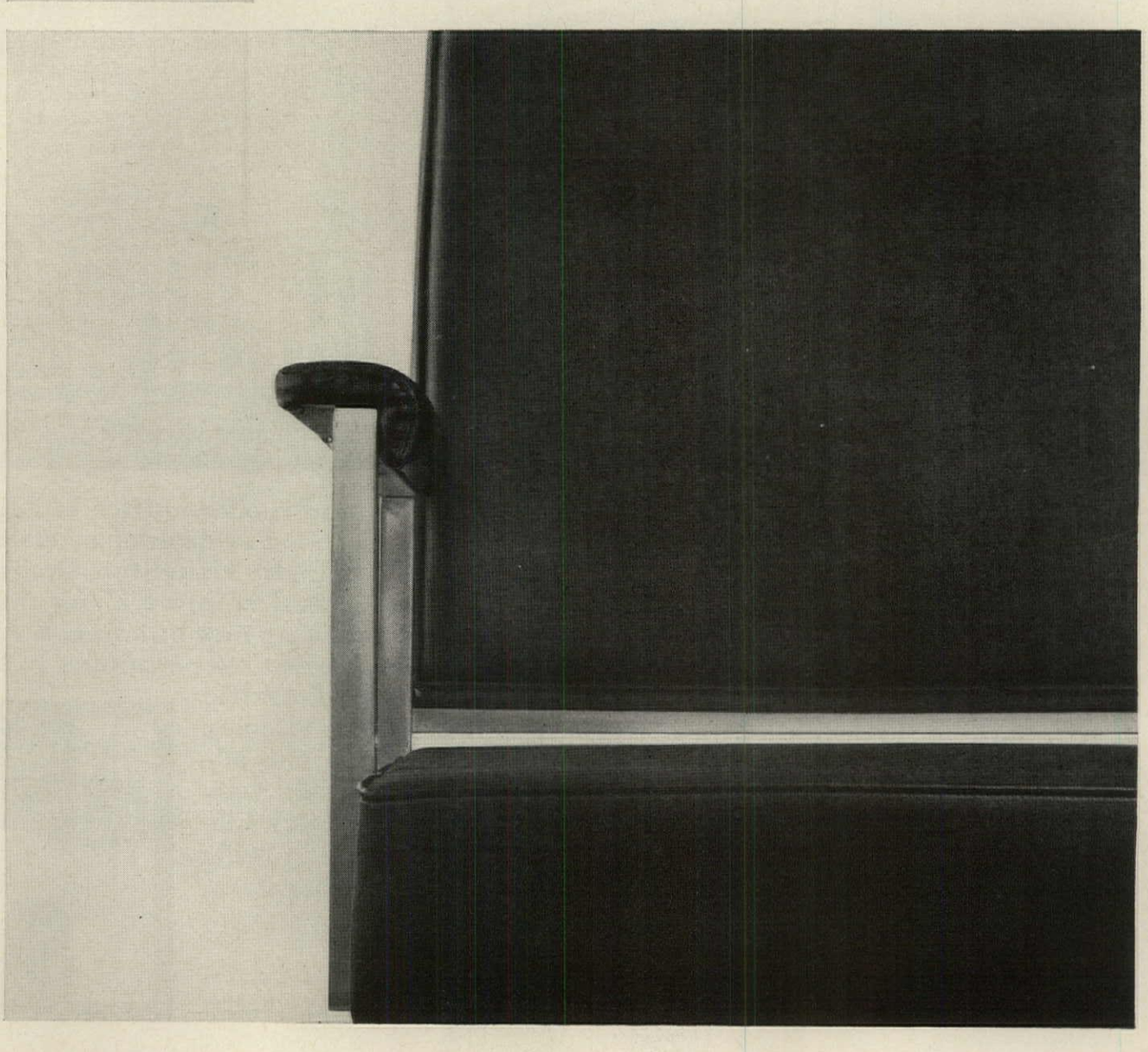
NOW DORIC IS A CHAIR, TOO . . .
A CRISP NEW DESIGN IN OFFICE SEATING

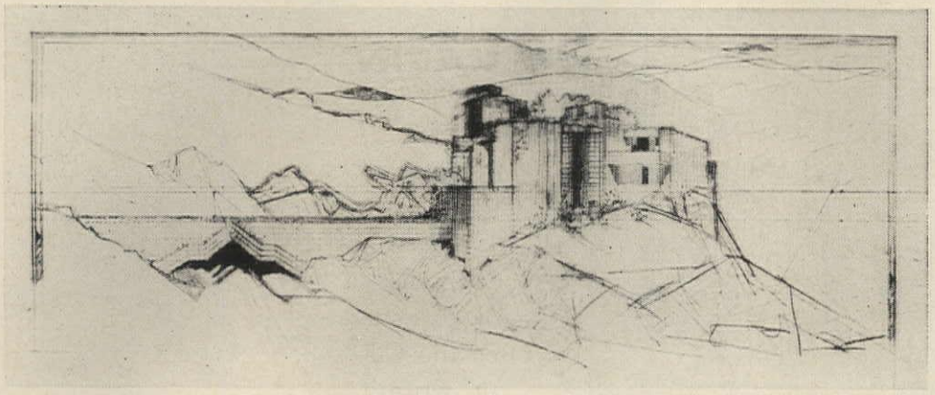
The DORIC Chair was inevitable. Enthusiastic response of designers and their clients to the simple, urbane clarity of line and materials in the DORIC Desk made it so.

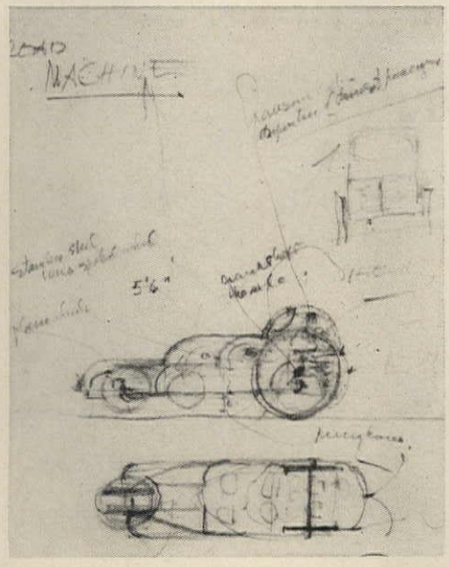
That same spare, linear elegance now has been wedded to a new chair design which offers a dramatic array of colors and metallic finishes . . . upholstery materials ranging from high fashion fabrics to superb muted leathers . . . the exclusive Corry Jamestown four-way instant seating adjustment which matches chair not just to physical build but to the user's sitting attitude as well.

Investigate this crisp new look in office seating designs. Contact the CJ dealer listed in your yellow pages, or write to: Corry Jamestown Corporation, Dept. AF-42, Corry, Pennsylvania.

CORRY JAMESTOWN







THE DRAWINGS OF FRANK LLOYD WRIGHT. Assembled, with introduction by, Arthur Drexler. Published by the Museum of Modern Art, 11 West 53rd St., and Horizon Press, 156 Fifth Ave., New York, N.Y. 320 pp. 9" x 12". Illus. $15.

As a former student of Wright has said, he was one person in the lecture hall, another on the site, but the whole man only when a pencil was in his hand. This volume, one of the most complete collections of his drawings to be published, reproduces—scribbles, erasures, patches, and all—some 300 of them, from the earliest house renderings to some of the more fanciful stadia and "driving machines" of later years (see cuts).

The quality of the drawings varies almost as much as the designs themselves; some are Wright's own quick sketches, others the grandly detailed work carried out by the Taliesin fellowship. They range from the lavish projects for the Mile High Chicago needle, the Madison Civic Center, and Broadacre City, down to curtains, lighting fixtures, and chairs. A surprising number have never appeared in public print before.

The task of selection was carried out by Arthur Drexler, director of the Department of Architecture at New York's Museum of Modern Art, who worked at Taliesin East and West with full access to Wright's abundant files.

An exhibit of originals of Wright's drawings will be on view at the Museum of Modern Art until May 6.

THE GREAT AGES OF WORLD ARCHITECTURE. 8 volumes (5 more in preparation). Published by George Braziller, 215 Park Ave. South, New York, N.Y. Each volume about 125 pp. 7½" x 10¼". Illus. $4.95 each.

This ambitious series of slim monographs, written by scholars and aimed at serious students of art history, is also intended for general consumption. And certainly the very slimness of the volumes will be far more alluring to the timid neophyte than the bulk of other, more formidable tomes. The essays are brief, running to 48 pages, followed by 60-odd pages of photographs and drawings—which are not only well chosen but excellently reproduced, though inconveniently separated from the text—plus footnotes, bibliography, and index.

Still, in its attempt to reach both professional and amateur at the same time, the series risks being neither fish nor fowl; and the results, inevitably, are uneven.

Medieval Architecture, by Carnegie Tech's Howard Saalman, for example, frequently uses brief and obscure parentheses which can only stump the laymen without fully satisfying the scholar.

On the other hand, *Modern Architecture,* by Yale's Vincent Scully Jr. (by all odds the most successful of the group), is told so vividly and avoids superficiality so completely that it can, and should, delight both serious student and armchair architect.

Other volumes in the series are: *Greek Architecture,* by archaeologist Robert L. Scranton of the University of Chicago; *Roman Architecture,* by Yale's Frank E. Brown, a scholar in classical archaeology and history; *Early Christian and Byzantine Architecture,* by art historian William MacDonald, also of Yale; *Gothic Architecture,* by Robert Branner, art historian at Columbia; *Renaissance Architecture,* by Bates Lowry, chairman of the Department of Art at Pomona; and *Baroque and Rococo Archi-*

continued on page 168

After Styrotac™ bonding cement is applied to either the wall or to Styrofoam, the insulation is pressed in place (center). After overnight setting, gypsum wallboard is either spot-coated or notch-trowelled with Styrotac and pressed in place over the Styrofoam insulation (right).

STYROFOAM®

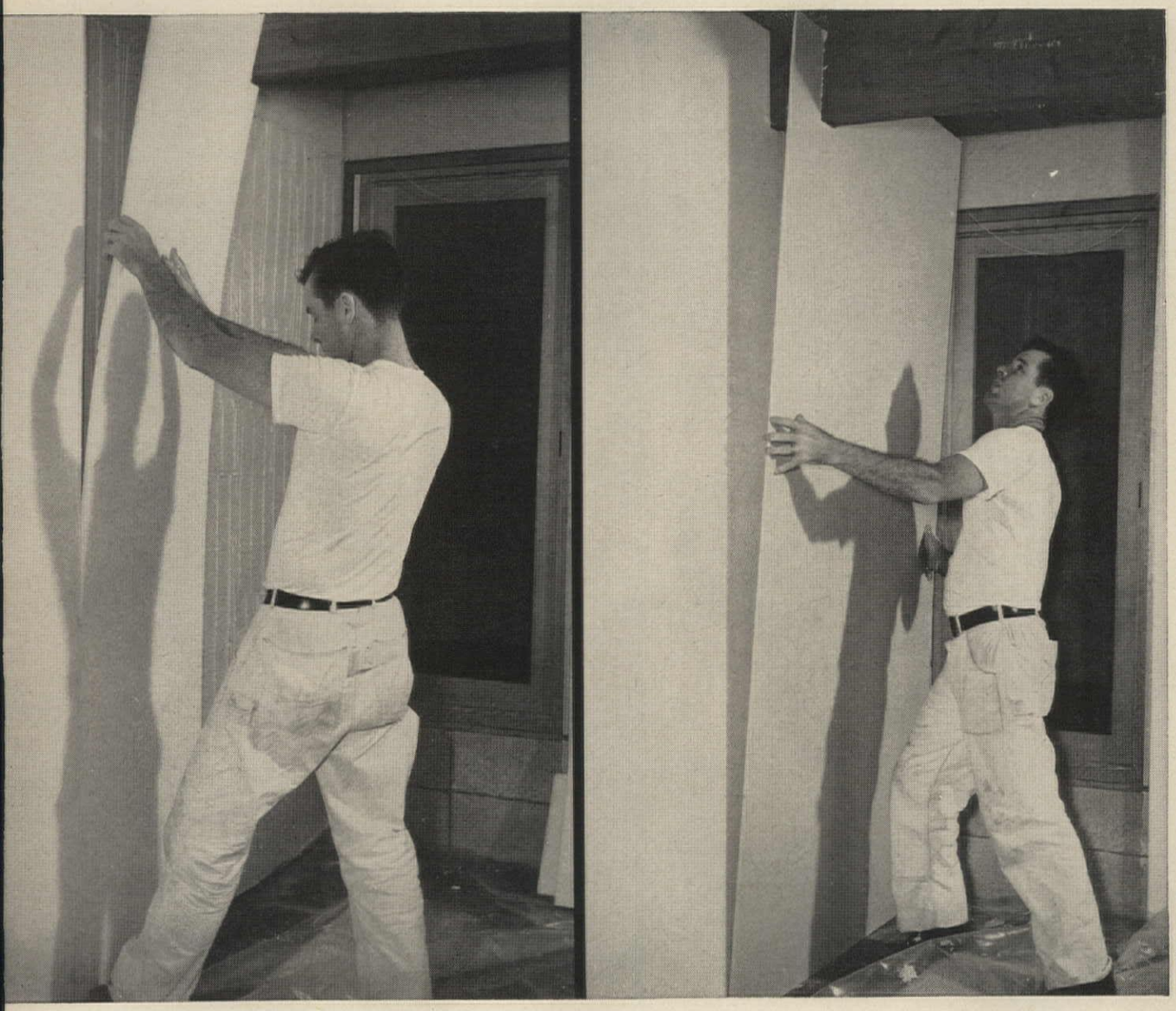
Here's a new step-saving, cost-saving method using Styrofoam insulation for insulating masonry structures which produces permanently high insulating values, provides a solid base for wallboard, and eliminates the problem of nail-popping . . . all in a single operation.

This new method makes use of Styrotac to bond Styrofoam brand insulation board directly to the inside face of the masonry wall, as illustrated. After the bonding cement has set overnight, gypsum wallboard is then adhered to the Styrofoam insulation using the same material.

Using this method, furring and lathing are eliminated, producing a solid insulated wall with no hollows. There is no wood present for insects to feed on, no nail holes to fill and "pop," and the completely-supported wallboard will not bow in or warp. This new insulating method, developed by Dow, offers architects a means of building-in the quality of double-laminate walls, using only a single thickness of wallboard.

Styrotac can be applied to dry absorbent masonry surfaces without first wetting the surface, or it can be applied to the Styrofoam. Either spot application or full coverage using a notched trowel is recommended. Only firm hand pressure against the boards of Styrofoam is required to bond them solidly to the wall.

For wet plaster installations, Styrofoam insulation is first bonded to the masonry wall with Styrocrete® or portland cement mortar. Wet plaster is then applied directly to the face of the Styrofoam. The cellular structure of Styrofoam



New insulating method saves money, saves steps in masonry construction

insulation provides positive keying action to the plaster, producing maximum bond strength.

STYROFOAM insulation board provides permanent insulating values for masonry buildings because of its high resistance to moisture, and its low "K" factor. Styrofoam rigid foam insulation contains millions of tiny non-interconnecting air cells which don't soak up water or moisture, don't rot or mildew. *No separate vapor barrier is needed!* And because Styrofoam insulation has no food value, it doesn't attract insects or vermin. In addition, the high insulating efficiency of this insulation keeps heating and cooling costs to a minimum, year in, year out.

For more information on the time-saving, cost-saving advantages of using Styrofoam insulation and this new insulating method for masonry construction, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 1301LH4.

Styrofoam is a registered trademark of The Dow Chemical Company. It is applied only to the homogeneous expanded polystyrene made according to an exclusive Dow process. Styrofoam brand insulation board is available only from Dow and its authorized representatives.

THE DOW CHEMICAL COMPANY DOW Midland, Michigan

continued

tecture, by M.I.T.'s Henry Millon. The remaining volumes in the series, due to be published in the spring of 1963, will be devoted to Persian, Chinese and Indian, Pre-Colombian, Western Islamic, and Japanese architecture.

ARCHITECT, Creating Man's Environment. By Robert W. McLaughlin. The Macmillan Co., 60 Fifth Ave., New York, N.Y. 200 pp. 5¼" x 8¼". Illus. $3.50.

Without patronizing his young readers, and without exposing them to occupational exhortation, director McLaughlin of Princeton's School of Architecture has written a superb description of the profession of architecture for would-be architects.

It is an encouraging picture he draws, but not an especially romantic one; his choice of pencil is nearer F than 3B. The satisfaction promised is that of creating useful buildings. The money isn't bad, either, the author points out, but the work schedule can be a drain. McLaughlin lists a typical week of a typically successful architectural firm, and it is both full and diverse. The picture is delicately optimistic, but such undertones as the drift of design responsibility to the drafting room are implicit, if not underscored.

To give greater depth to the explanation of a profession, five architects' biographies and positions are sketched, each in ten or fewer pages: Louis Sullivan, Charles F. McKim, Louis Skidmore, Eero Saarinen, and Louis I. Kahn. All are well done.

A good deal of Dean McLaughlin's book, quite naturally, is about education; information is presented rather neutrally, but is complete to a list of approved architectural schools.

If all Macmillian's "Career Books" (*Professor, Lawyer, Physician,* and *Nurse* so far) are as well done, it is a fine series. *Architect* might even be good reading for someone not planning to become an architect, but considering marrying one.—W.MC Q.

THE DARKENING GLASS, A Portrait of Ruskin's Genius. By John D. Rosenberg. Columbia University Press, 2960 Broadway, New York, N.Y. 274 pp. 6" x 9¼". Illus. $5.

Mr. Rosenberg is a master of creative reticence, and his beautiful, lucid "portrait of Ruskin's genius" builds up for the reader the terror of a brave man's fate far more effectively than sentiment and emphasis could. For Ruskin in all his "shattered majesty" was a hero who never thought that his duty was less than to plunge into the vortex of the most desperate contradictions with which he, and the arts he was concerned with, were beset.

The title "The Darkening Glass" recalls that Ruskin (for reasons which his intellectual biographer wisely does not try to sound—they might even have been "purely physical") turned gradually mad under his own horrified self-observation, and spent his last eleven years "slowly dying" beyond human communication. Yet Rosenberg is concerned with Ruskin not for his life but for his thought; the life has to be recounted because Ruskin was a genius whose personal experience directly conditioned the development of his thought.

Ruskin's entire background and his beliefs were intensely evangelical, but he had an acutely and incurably sensuous nature. For example, there was his intense concern with economic justice, a concern which he set down in *Unto This Last* and which was to set afire a young man named Ghandi in distant India. Indeed, Ruskin's thought was to suffuse the approach to "welfare" of all twentieth-century nations. Yet, this concern started out of esthetics: the starvation of ordinary people's dim, drab spiritual lives. Ruskin's theories about the sumptuous Venetian paintings that he so loved started, on

continued on page 173

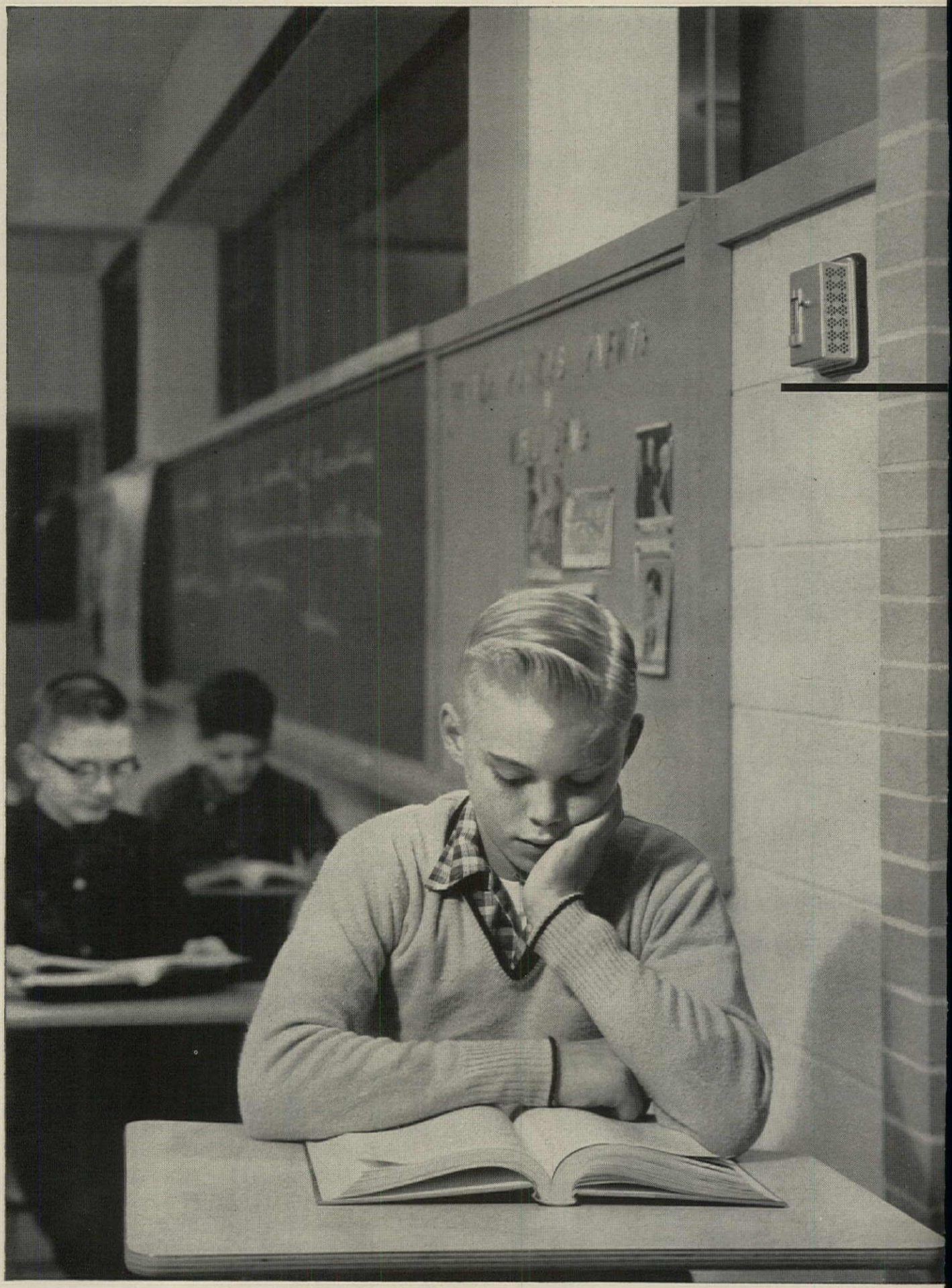
New York Hospital adds color . . . for life. This is the *new* Coney Island Hospital in Brooklyn, New York. The face is colorful and clean and will stay that way for the life of the building because the architects chose HANLEY Duramic® Glazed Brick for the exterior. If you want to add color, not costs, to your next project, take a look at HANLEY'S more than fifty shades of glazed brick and tile. Make your projects distinctive and colorful permanently because HANLEY Duramic® Glazed Brick is self-cleaning and colors do not fade. Specify uniform quality HANLEY Duramic® Glazed Brick for your next project.

See the complete Hanley line in Sweets.

Coney Island Hospital, Brooklyn, N. Y. / Architects: Katz, Waisman, Blumenkranz, Stein & Weber / General Contractor: Gerace & Castagna, Inc. / Hanley Shade 623 Limestone Grey Fine Speck

HANLEY COMPANY

One Gateway Center, Pittsburgh 22, Pennsylvania
Sales Offices: New York • Buffalo • Pittsburgh



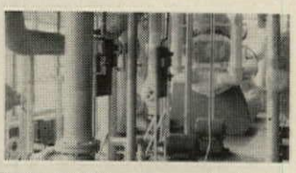
Attracts tenants with comfort cooling by GAS-operated CARRIER Absorption Refrigeration

H. L. Vokes Company of Cleveland, designers and builders of the new 3101 Euclid Avenue Building in that city, are experts in two-way satisfaction. They satisfied their tenants and their own cost requirements with one of the most efficient types of modern air conditioning – Gas-operated Carrier Absorption Refrigeration.

Comfort cooling in this building starts at the same two gas-fired boilers that furnish heat in winter. The Carrier absorption unit uses low pressure steam from the boilers as the energy source for water chilling. Thus, no prime mover is needed. Boiler capacity is put to use on a year 'round basis. And thrifty gas keeps fuel costs low.

Judge for yourself the efficiency and economy of Gas-operated Carrier Absorption Refrigeration. Specific performance data and cost details are yours for the asking. Just call your local gas company, or write to Carrier Air Conditioning Co., Syracuse 1, N. Y.

AMERICAN GAS ASSOCIATION.



AIR CONDITIONING PENTHOUSE. This equipment in penthouse atop the building includes two gas-fired Bryant boilers, 300-ton capacity Carrier Absorption unit to chill water for the Carrier Weathermaster air conditioning system, and Carrier cooling towers, too. Roof-top installation frees basement area for other uses.

This new 3101 Euclid Avenue Building in Cleveland meets every modern requirement in the book. Attractive exterior, with glass and aluminum curtain walls. Most comfortable interior, with air conditioning by Gas-operated Carrier Absorption Refrigeration.

FOR HEATING & COOLING GAS IS GOOD BUSINESS

the contrary, out of morality: it was through this combined moral passion and erotic love that he got these priceless treasures preserved.

Ruskin faced up to whatever he saw. His early passionate Wordsworthian love of nature, and his translation of Turner in terms of truth to nature, were embittered for him when he discovered even in nature the cruelties that his more scientific contemporary Darwin also found. Ruskin's "unconversion" from the narrow faith of his parents through the greater largeness (and voluptuousness) of Veronese's and Tintoretto's world was summary. But he never lost the preaching habit, for his faith in truth and faith ever remained, and salvation was to be sought even though it never seemed to be at hand.

Alas, Ruskin could not face up to what he simply could not understand, and a qualified psychiatrist would have a field day interpreting the inversions and frustrations of this star-crossed spirit.

Mr. Rosenberg's well-organized, clear, unpretentious account of Ruskin's full thought is well worth a modern reader's time, for the reader is given the means of going beyond the writer to sound out the depth to which today's views of architecture and city planning (among other things) are Ruskinian still. This is true not only of such outgrowths as Lewis Mumford's pompous, multistory dispensations concerning cities and human life, but of many unexamined everyday articles of belief, held close by serious architects, concerning such things as "truth" in architecture and the salvation by architecture of the society it serves.—D.H.

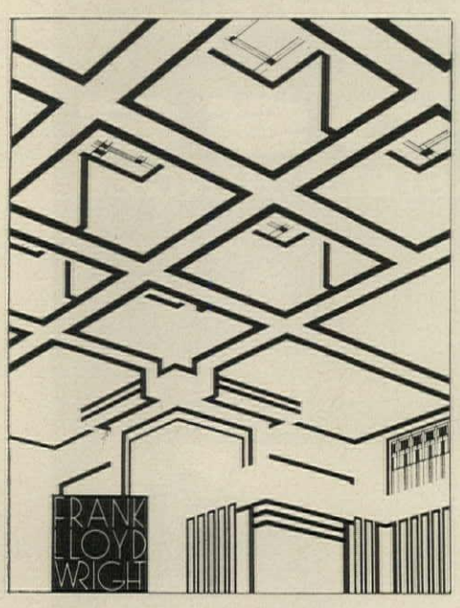
ARCHITECTURE: FORMES ET FONCTIONS 1961-1962. Published by Editions Anthony Krafft, Lausanne. Distributed by George Wittenborn Inc., 1018 Madison Ave., New York, 21, N.Y. 234 pp. 9¼" x 12". Illus. $7.50.

This is the eighth year of publication of the Swiss annual encyclopedia, a handsome potpourri of articles and illustrations of recent world architecture, urban studies, and the "plastic arts." Included are extensive and well-photographed coverage of "the Style of Nervi," "My Thoughts, My Worries, My Hopes" by Richard J. Neutra, and "Mondrian and the Idea of Architecture," by Michel Seuphor. One section is devoted to the best examples of Swiss architecture of the current year and singles out Swiss Architect Otto Glaus with a compendium of his most recent work.

In French, with abbreviated English translations at the back.

SIGN LANGUAGE FOR BUILDINGS AND LANDSCAPE. By Mildred Constantine and Egbert Jacobson. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. 211 pp. 8½" x 10¾". Illus. $15.

A unique book that treats the landscape and cityscape of sign and slogan with imagination and skill. END

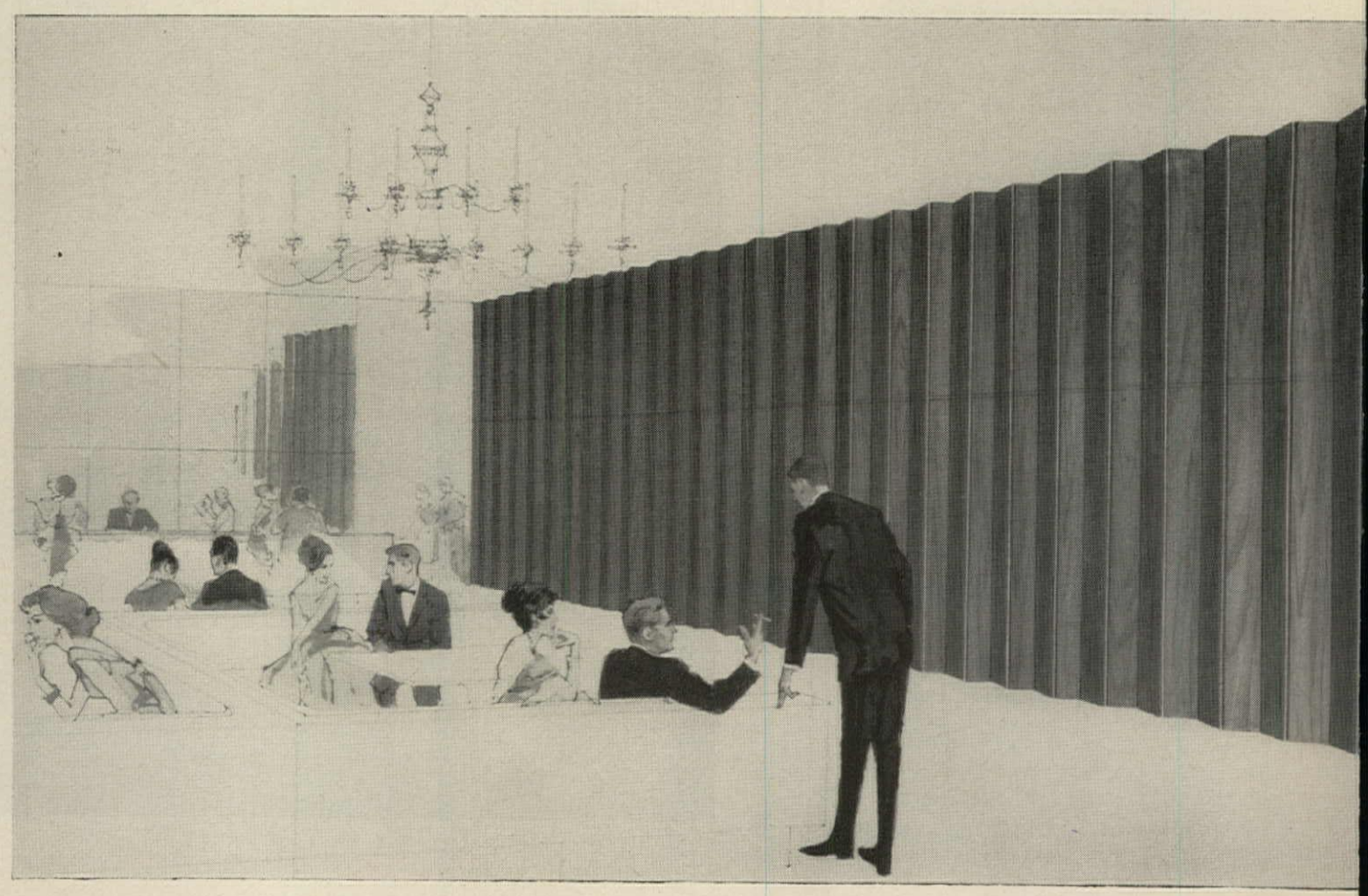


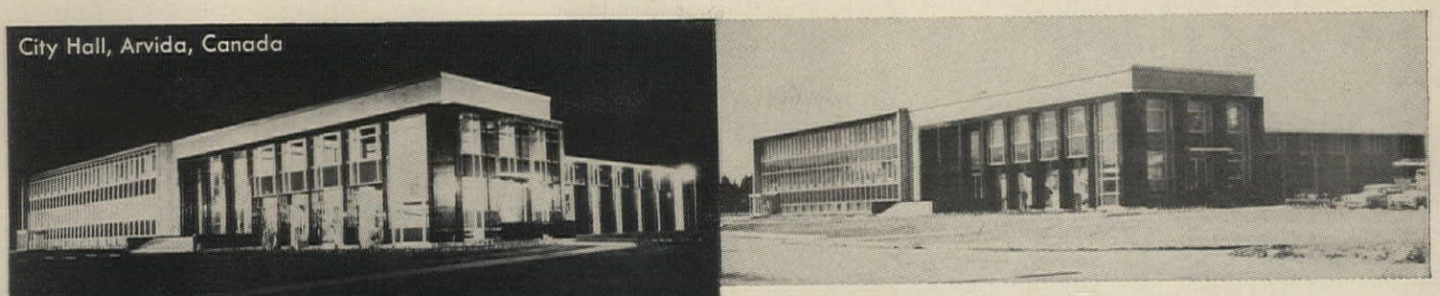
The Seven Decades of Frank Lloyd Wright

Through seven decades of building nearly every type of building, Frank Lloyd Wright was extraordinarily sensitive to his times, as only the man who made the epoch his own could have been.

In a special 32-page reprint including color and gatefold pages, the editors of Architectural FORUM review Wright's major works including the Beth Sholom Synagogue, the Guggenheim Museum, his own Taliesins, his houses and his unfinished work.

For fifty cents a copy, this unique reprint on the works of Frank Lloyd Wright is available by writing Architectural FORUM, Room 1941D, Time and Life Building, New York 20, New York.





night....and day

Bertrand Dallaire, Architect, Jonquiere, Que.

Infranor floodlight type INA-10

GOOD ARCHITECTURAL DESIGN DESERVES TO BE SEEN

A building lighted by the Infranor system attracts many more eyes at night than it does in daylight.

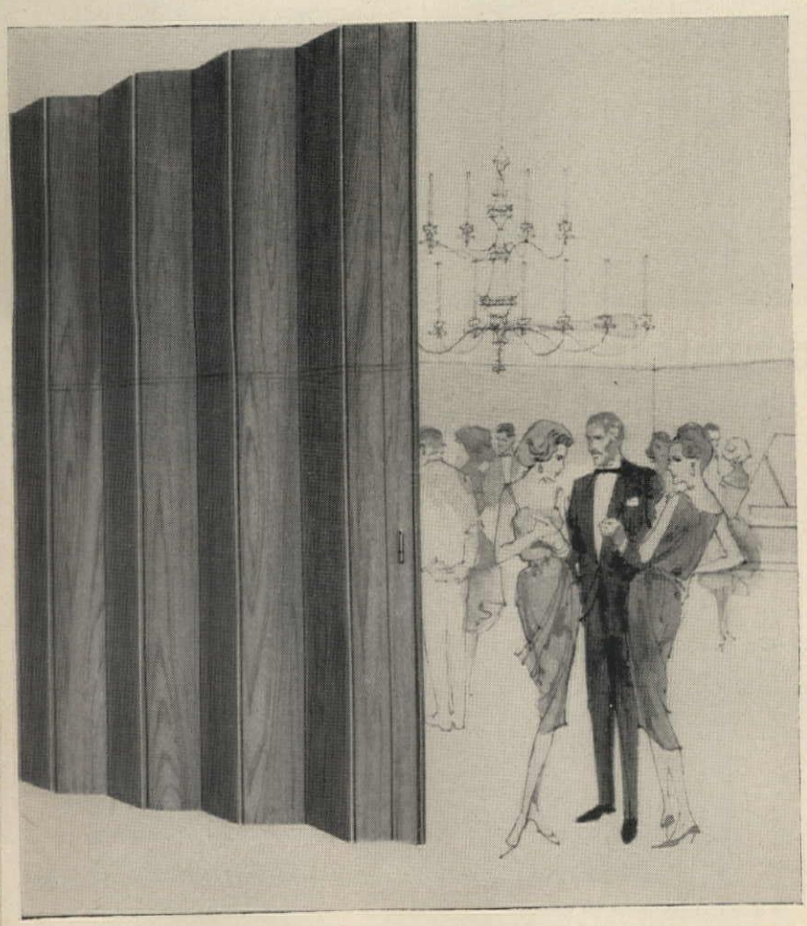
The inherent beauty in architectural design, materials, and colors are complemented by the even illumination and enhanced texture achieved by the Infranor System.

Infranor floodlighting systems project a rectangular beam, adjusted at the factory, giving maximum light on the target with a minimum of light spillage.

WRITE for complete details or submit your lighting problems to us — we'll gladly help you.

INFRANOR OF NORTH AMERICA, INC.

798 Silas Deane Highway, Wethersfield, Conn.
Telephone: Area Code 203, JAckson 9-2634



Now! In 12" panels...

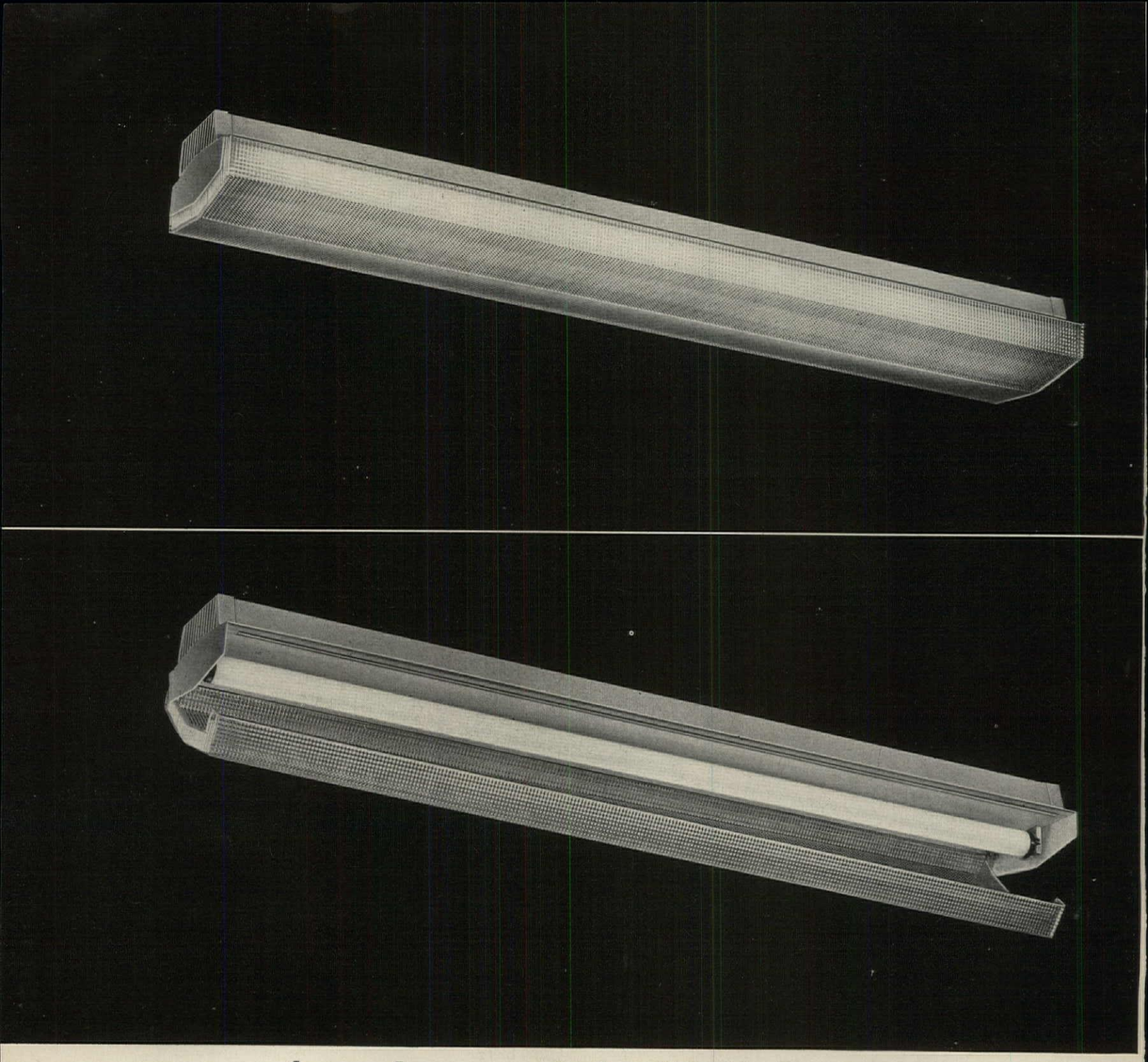
new Woodmaster 1200

● For sheer size and beauty, the new Woodmaster 1200 has no peer. Extending across giant openings in foot-wide panels, a single partition can span as much as 50'8" x 16'0". And pairing or use in series can add any further width desired. Yet, despite its huge size, the 1200 operates easily on ball bearing trolleys. Available in four handsome genuine hardwoods: oak, walnut, philippine mahogany and birch . . . each finished to a satin smoothness. For full information, write Dept. A142.

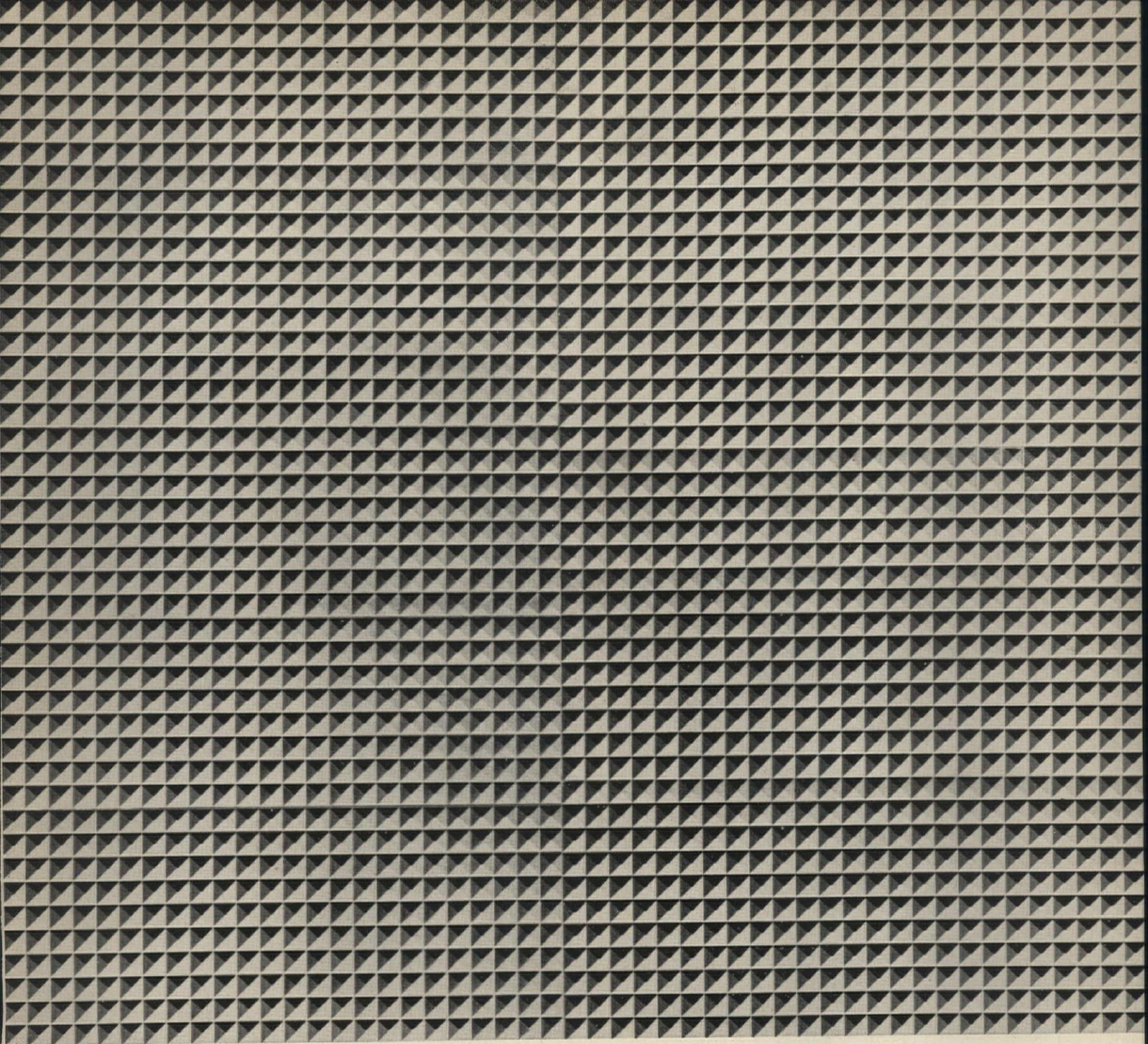
modernfold

NEW CASTLE PRODUCTS, INC. • NEW CASTLE, INDIANA

In Canada: New Castle Products Canada, Ltd., St. Lambert, Quebec. Manufacturers of "Modernfold" Operable Walls, Partitions and Doors; "Air Doors"; "Modern-Cote" Wall Coverings; "Peabody" School Furniture, and "Pyrox" Sheathed Thermocouples.



1 good reason to look into Opticon...



or 16,792*

Each Opticon® lens—sides, ends and face—is a single crystal-clear injection-molded unit four feet long. Each is comprised of more than 16,000 individual, optically engineered prisms. *16,792 by our count. The precisely molded, regressed bottom prisms provide wide-angle, glare-free task light, while the prisms on the side are patterned inside and out at cross directions to throw softly diffused peripheral lighting on ceiling areas for low brightness contrast.

Equally important is Lightolier's ability to design and produce this fixture at a low budget price while maintaining its respected standards of performance, aesthetics, and quality construction.

There are two catches to it (on each side). Press either side and the entire lens swings away on safety hinges for swift relamping without tools.

Other Lightolier touches: interlocking ends for straight, continuous runs (without dark joiner straps), slim 4½" depth, completely enclosed construction to keep fixture clean longer. Opticon is available in one- or two-lamp models, 48" or 96" length, stem or surface mounted. For more information on Opticon, write to Lightolier, Jersey City 5, N.J., for Brochure AF4-33.

LIGHTOLIER®

Opticon is stocked by the Authorized Lightolier Distributors listed on page 178.

fyi

(for your illumination)

Lightolier fixtures are stocked and sold by the following Distributors:

ALABAMA
Birmingham: Mayer Elec. Sup. Co. **Mobile:** F. E. Smith Elec. Co.

ALASKA
Anchorage: Northern Sup. Co.

ARIZONA
Phoenix: Brown Wholesale Elec. **Tucson:** Beacon Ltg. Fix. Co.

ARKANSAS
Little Rock: Adcock Ltg. & Sup.

CALIFORNIA
Bakersfield: San Joaquin Whlse. Elec. Co. **Fresno:** Electrical Suppliers, Inc. **Los Angeles:** Gough Industries, Inc. **Palm Springs:** Tri-County Elec. Whlsrs. **Riverside:** Tri-County Elec. Whlsrs. **Sacramento:** Capital Whlse. Elec. Co. **San Bernardino:** Tri-County Elec. Whlsrs. **San Diego:** Sunlight Elec. Sup. Co. **San Francisco:** California Elec. Sup. Co.

COLORADO
Denver: Central Elec. Sup. Co.

CONNECTICUT
Bridgeport: B. M. Tower Co., Inc. **Hartford:** Beacon Light & Sup. Co. **New Haven:** Grand Light & Sup. Co. **New London:** United Elec. Sup. Co. **South Norwalk:** Klaff's Inc. **Stamford:** Marle Co. **Waterbury:** Starbuck Sprague Co., Suburban Supply Co.

DISTRICT OF COLUMBIA
Washington: Maurice Elec. Sup. Co., National Elec. Wholesalers

FLORIDA
Miami: Farrey's Whlse. Hdwe. Co.

GEORGIA
Atlanta: Atlanta Ltg. Fix. Co., Electrical Wholesalers, Noland Co. **Augusta:** Hart Elec. Sup. Co. **Columbus:** P. & W. Elec. Sup. Co. **Macon:** Noland Co.

HAWAII
Honolulu: Hawaiian Light & Sup. Co.

ILLINOIS
Champaign: Tepper Elec. Sup. Co. **Chicago:** Efengee Elec. Sup. Co., Englewood Elec. Sup. Co., Harlo Elec. Sup. Co., Hyland Elec. Sup. Co., Metropolitan Elec. Sup., Steiner Elec. Co., Wholesale Elec. Sup. Co. **Elgin:** Fox Elec. Sup. Co. **Joliet:** Joliet Elec. Sup. **Rockford:** Englewood Elec. Sup. Co. **Springfield:** Springfield Elec. Sup. Co.

INDIANA
Ft. Wayne: Mossman-Yarnelle Co. **Gary:** Englewood Elec. Sup. Co. **Indianapolis:** Farrell-Argast Elec. Co. **South Bend:** Englewood Elec. Sup. Co.

IOWA
Des Moines: Weston Lighting, Inc.

KANSAS
Kansas City: W. T. Foley Elec. Co. **Wichita:** Architectural Lighting, Inc.

KENTUCKY
Louisville: Henry J. Rueff Co.

LOUISIANA
Baton Rouge: Electrical Wholesalers, Inc. **New Orleans:** Interstate Elec. Co.

MAINE
Bangor: Standard Elec. Co. **Portland:** Holmes Elec. Supply Co.

MARYLAND
Baltimore: Baltimore Gas Light Co., Dominion Elec. Sup. Co. **Hagerstown:** Noland Co., Tristate Elec. Sup. Co. **Salisbury:** Artcraft Elec. Sup. Co.

MASSACHUSETTS
Boston: Boston Lamp Co., Mass. Gas & Elec. Light Co., Henry L. Wolfers, Inc. **Pittsfield:** Carr Supply Co. **Springfield:** M. W. Zimmerman, Inc. **Waltham:** Standard Elec. **Worcester:** Benjamin Elec. Sup. Co.

MICHIGAN
Detroit: Madison Elec. Co., Michigan Chandelier Co. **Flint:** Royalite Co. **Grand Rapids:** Purchase Elec. Sup. Co. **Jackson:** Electric Wholesale Sup. Co. **Kalamazoo:** West Michigan Elec. Co. **Lansing:** Michigan Elec. Sup. Co. **Muskegon:** Fitzpatrick Elec. Sup. Co. **Pontiac:** Standard Elec. Sup. Co. **Saginaw:** Schmerheim Elec. Co., Standard Elec. Sup. Co.

MINNESOTA
Duluth: Northern Elec. Sup. Co. **Minneapolis:** North Central Elec. Distr. Co. Northland Elec. Sup. Co., Terminal Elec. Corp. **St. Paul:** Lax Elec. Co.

MISSISSIPPI
Jackson: Stuart C. Irby Co.

MISSOURI
Kansas City: Glasco Elec. Co., Rossner Elec. Sup. Co. **St. Louis:** M. K. Clark **Springfield:** Southern Materials Co.

MONTANA
Great Falls: Glacier State Elec.

NEBRASKA
Lincoln: White Electric Supply Co. **Omaha:** Electric Fix. & Sup. Co.

NEVADA
Reno: Western Elec. Dists. Co.

NEW HAMPSHIRE
Portsmouth: Mass. Gas & Elec. Light Co.

NEW JERSEY
Atlantic City: Franklin Elec. Sup. Co. **Camden:** National Elec. Sup. Co.

NEW MEXICO
Albuquerque: The Lighting and Main Co.

NEW YORK
Binghamton: Freije Elec. Sup. Co. **Buffalo:** Buffalo Incand. Light Co. Inc. **Nanuet (Rockland Co.):** Rockland Lighting. **Niagara Falls:** Hysen Supplies Inc. **Poughkeepsie:** Electra Sup. Co. **Rochester:** Rowe Electric Sup. Co. **Schenectady:** American Elec. Sup. Co. **Syracuse:** Superior Elec. Corp. **White Plains:** Wolar Lighting Corp.

NORTH CAROLINA
Asheville: Electric Sup. Co. **Charlotte:** Independent Elec. Sup. Co. **Durham:** Noland Co. **Greensboro:** Elec. Sup. & Equip. Co. **High Point:** Electric Sup. Inc. **Kinston:** Kinston Elec. **Raleigh:** Electrical Equipment Co. **Winston-Salem:** Noland Co.

NORTH DAKOTA
Fargo: Border States Elec. Sup. Co., Northwest Elec. Sup. Inc.

OHIO
Akron: The Sacks Elec. Sup. Co. **Canton:** Electric Sales Co. **Cincinnati:** B. & B. Elec. Co., F. D. Lawrence Electric Co., Richards Elec. Sup. Co. **Cleveland:** The H. Leff Electric Co., Midland Elec. Co. **Columbus:** Elgee Elec. Co., The Loeb Elec. Co. **Dayton:** Duellman Elec. Co. **Springfield:** The W. W. Elec. Co. **Toledo:** Gross Elec. Fix. Co. **Youngstown:** The Braff Ltg. Fix. Co.

OKLAHOMA
Oklahoma City: Elec. Sup. of Oklahoma, Hunzicker Bros.

OREGON
Portland: Baker-Barkon Co., Malloy Robinson Co.

PENNSYLVANIA
Allentown: Coleman Elec. Co. **Erie:** Kraus Elec. Co. **Harrisburg:** Fluorescent Sup. Co., Schaedler Bros. **Hazleton:** Power Elec. Co. Inc. **Lancaster:** Jno. E. Graybill & Co. **New Castle:** Midwestern Elec. Co. **Norristown:** Norristown Elec. Sup. Co. **Philadelphia:** Gold Seal Elec. Sup. Co., Logan Elec. Sup. Co., Inc., Pyramid Elec. Sup. Co., Inc., Silver's Elec. Sup. Co., Sylvan Elec. Fix. Co., West Phila. Elec. Sup. Co. **Pittsburgh:** Allied Elec. Sup. Co., Argo Lite Studios, Brown & Green, Wally Elec. Sup. Co. **Reading:** Coleman Elec. Co. **Scranton:** Lewis & Reif, Inc. **Uniontown:** Pioneer Electric Dist. **West Chester:** West Chester Elec. Sup. Co. **Wilkes-Barre:** Anthracite Elec. **Williamsport:** Lowry Electric Co. **York:** Jno. E. Graybill & Co.

RHODE ISLAND
Pawtucket: Major Elec. Sup. Co. **Providence:** Leavitt Colson Co., Tops Elec. Sup. Co.

SOUTH CAROLINA
Columbia: Capital Elec. Sup., Noland Co. **Greenville:** Sullivan Hdwe. Co.

SOUTH DAKOTA
Watertown: J. H. Larson Elec. Co.

TENNESSEE
Chattanooga: Mills & Lupton Sup. Co., Noland Co. **Knoxville:** The Keener Co. **Memphis:** Belvedere Lighting Co. **Nashville:** Nashville Elec. Sup. Co.

TEXAS
Brownsville: Electric Fix. Sup. Co. **Dallas:** Rogers Elec. Sup. Co. **Ft. Worth:** Anderson Fixture Co., Cummins Supply Co., General Industrial Sup. Corp. **Houston:** Anderson Lighting Co., Gulf Coast Elec. Sup. Co., Inc., Marlin Associates, Worth Elec. Sup. Co. **San Antonio:** Electrical Distrib. Co., Southern Equip. Co., Strauss-Frank Co., Worth Elec. Sup. Co., **Waco:** Dealers Elec. Sup. Co.

UTAH
Salt Lake City: Artistic Lighting

VIRGINIA
Arlington: Dominion Elec. Sup. Co. Inc., Noland Co. **Lynchburg:** Mid-State Elec. Sup. Co. Inc. **Richmond:** Atlantic Elec. Sup. Co. **Roanoke:** Noland Co.

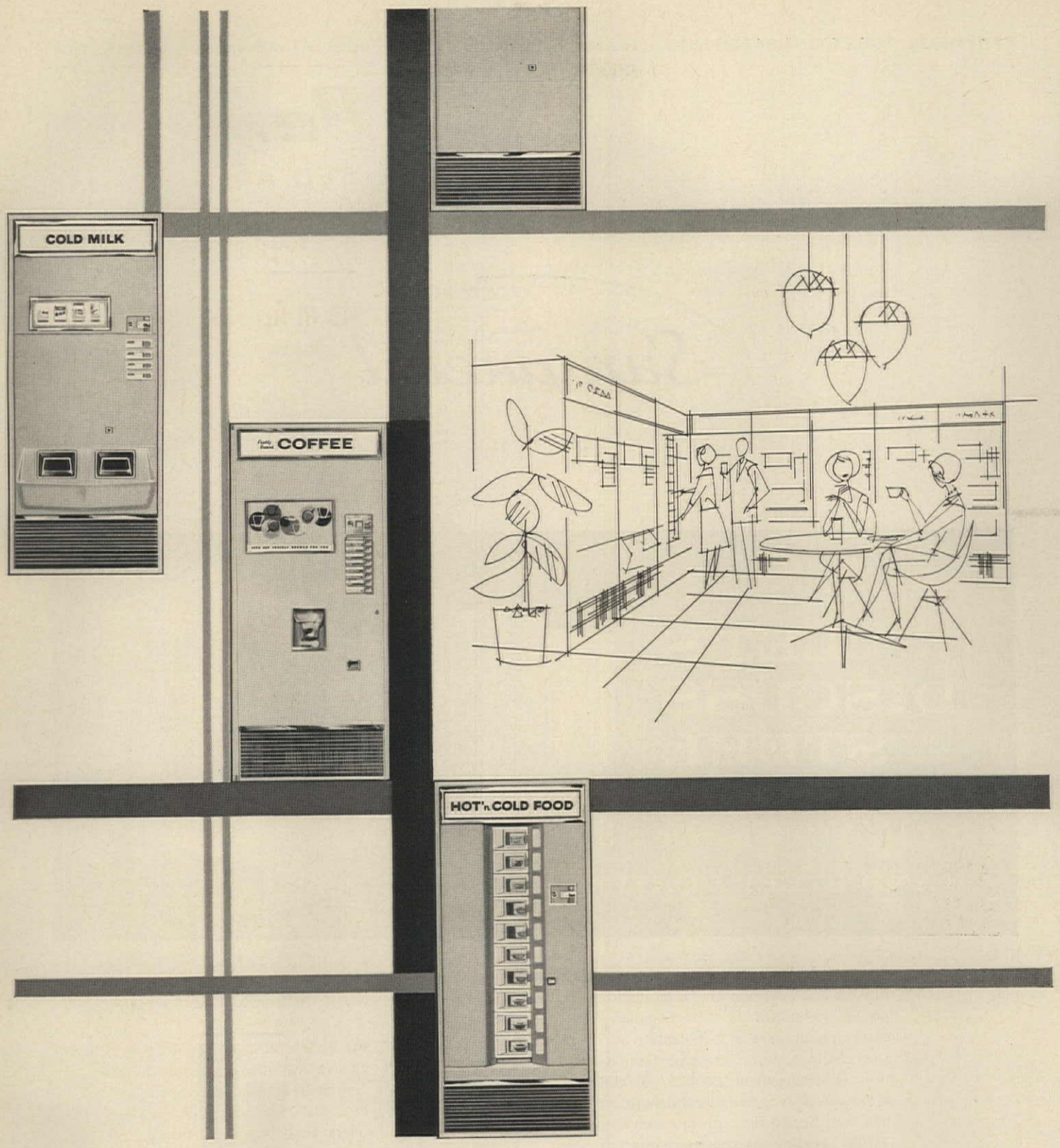
WASHINGTON
Seattle: Seattle Lighting Fix. Co.

WEST VIRGINIA
Bluefield: Bluefield Supply Co. **Charleston:** Capitol Light Co., Goldfarb Elec. Sup. Co. **Wheeling:** The Front Co.

WISCONSIN
Appleton: Moe Northern Co. **Eau Claire:** W. H. Hobbs Supply Co. **La Crosse:** W. A. Roosevelt Co. **Milwaukee:** Electric-Craft Lighting, Lappin Electric Co., Standard Elec. Sup. Co. **Racine:** Milch Elec. Sup. Co.

CANADA
Edmonton: Alberta Elec. Sup. Ltd. **Montreal:** L.D.G. Products, Inc., Gray Elec. Co., Union Elec. Sup. Co. Ltd. **Toronto:** Revere Elec. Dist., Toronto Ltg. Studios, Union Elec. Sup.

PUERTO RICO
San Juan: Sole Electric



Vendo modular concept provides more food and refreshment per square foot

Here's the answer for clients whose plans call for volume feeding in a minimum of space. Vendo equipment is designed to save space... make layout easy and simplify feeding problems. The need for manual service counters and extensive kitchen facilities on the premises is eliminated with the installation of this clean, functional-looking automatic vending equipment. Investigate its many possibilities—mail the coupon today!

Refer to Sweet's Catalog File 25a/Ve for details and specifications on the complete line of Vendo equipment.

Vendo®
World's largest manufacturer of automatic merchandising equipment

(attach to your letterhead) AF-2

THE VENDO COMPANY
1221 Baltimore Avenue, Kansas City 5, Missouri
Please send me more information on Automatic Food Service Installations.

Name_____

Company_____

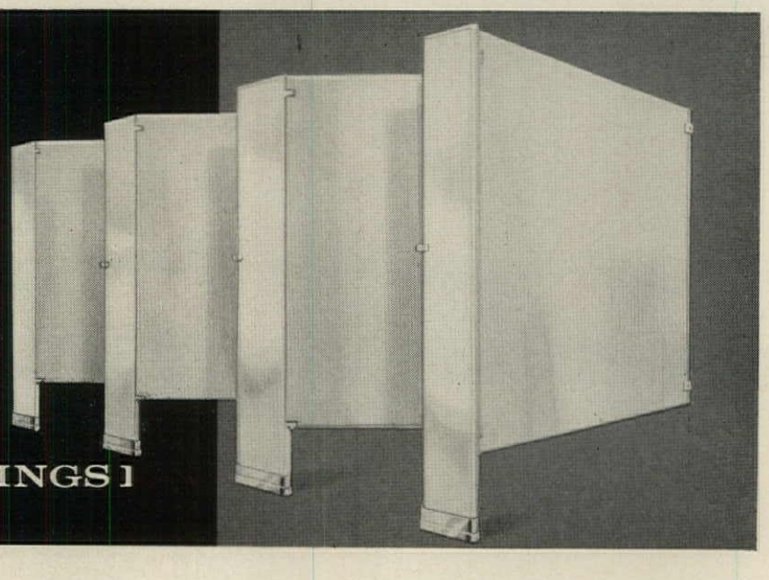
Street_____

City_____ State_____

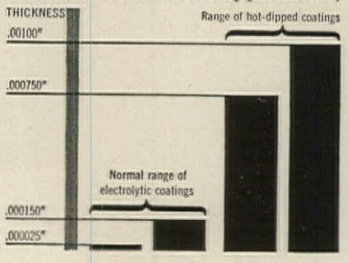
Sanymetal®

LET'S DISCUSS STEEL

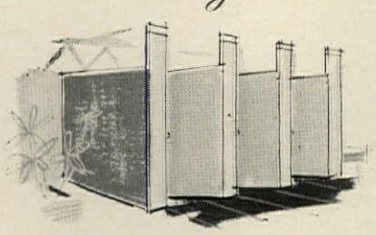
[AND STEEL COATINGS]



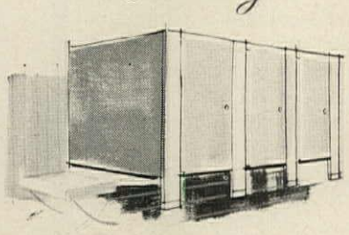
A great deal of discussion continues throughout the steel partition industry concerning finishes and coatings. This is as it should be because these elements control the appearance, quality and useful life of the installation. ■ Many fabricators recommend a specification for electrolytic type steel coatings. Within this specification your steel protection could range from .000025" to .000150" in thickness. ■ Sanymetal recommends and supplies, whenever specified, hot-dipped galvanizing which supplies .000750" to .00100" coating thickness (see chart at right) . . . better finish, longer life, lowest maintenance. Specify Sanymetal quality first . . . to last. Write for full story.



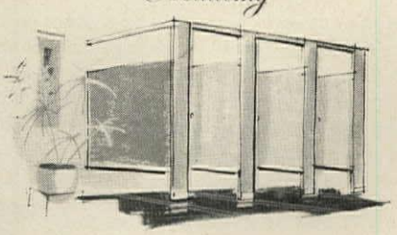
Century



Normandy



Academy



THE SANYMETAL PRODUCTS CO., INC. • 1687 URBANA ROAD • CLEVELAND 12, OHIO

This emblem means real advantages to you

. . . on a lighting fixture ballast

CBM® CERTIFIED by ETL

1. Longer lamp life . . . up to 12 months longer

2. Longer ballast life . . . long trouble-free operation under normal conditions

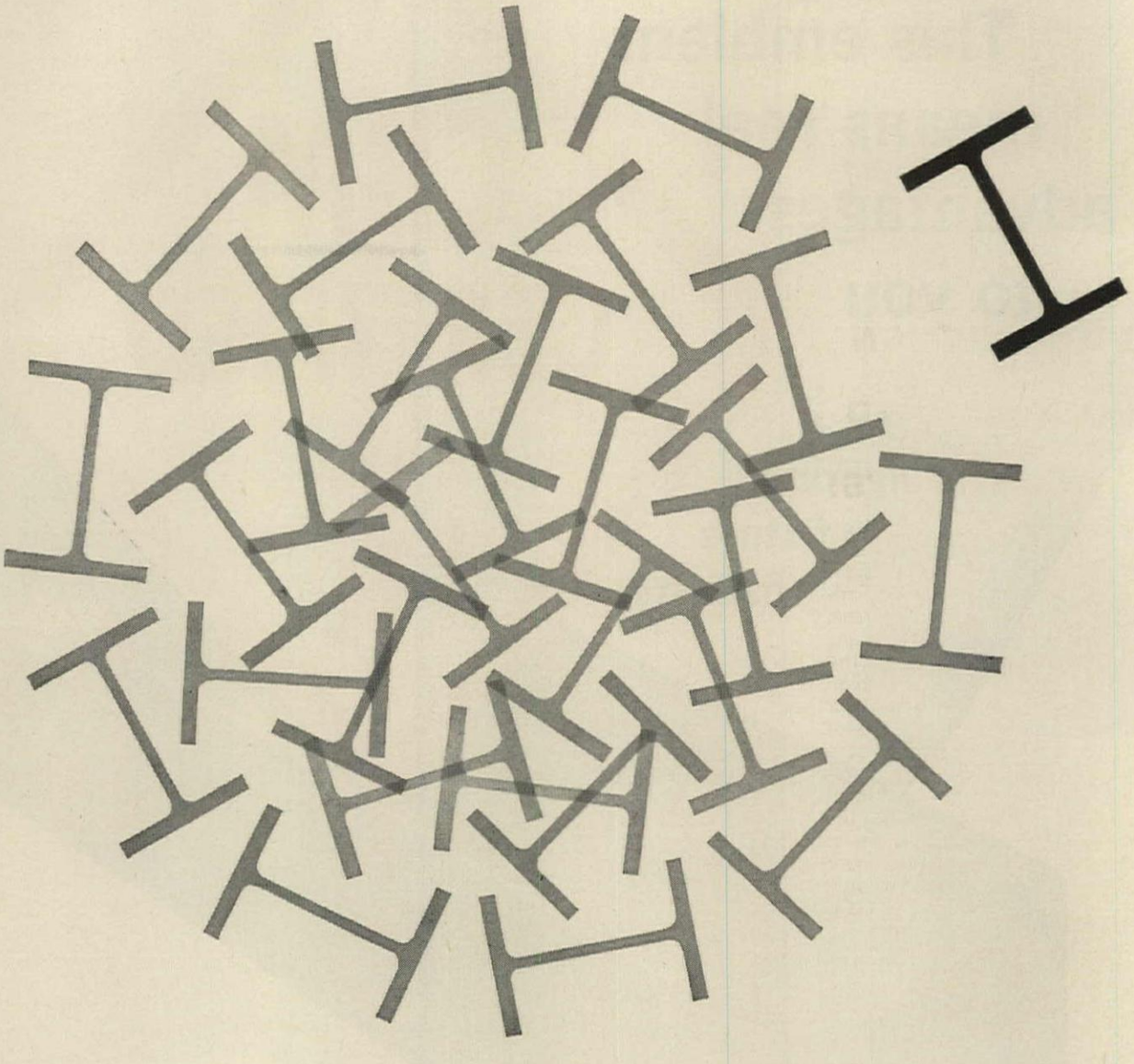
3. Positive starting . . . plus power factor correction, UL listing

4. Full light output . . . assures rated light from fluorescent lamps

. . . these practical advantages and others grow out of *specified performance.* Certified CBM Ballasts are produced by leading manufacturers to meet rigid specifications . . . set by ASA and checked by Electrical Testing Laboratories. Good reasons why it pays to be sure of Certified CBM Ballasts in fluorescent fixtures that you specify or install. For helpful news and facts on ballasts, ask us to send you CBM News.

CERTIFIED BALLAST MANUFACTURERS
2116 Keith Building, Cleveland 15, Ohio

Participation in CBM is open to any manufacturer who wishes to qualify. 1-62



NEW AISC SPECIFICATION POINTS THE WAY TO EVEN GREATER DESIGN FREEDOM IN STEEL!

For the architect and engineer, the new AISC Specification opens wide exciting new uses of steel—new opportunities for imaginative design with no sacrifice of strength or safety. Through plastic design, greater spans than ever are now possible. Utilizing the properties of composite action, smaller and fewer beams can be used, freeing large areas for uncluttered work space or for eye-pleasing vistas. What's more, the new Specification clearly points the way to the reduction of steel tonnage with consequent increased dollar savings.

Use Steel for Modern Construction

For a copy of the new Specification, write to the American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, New York; or Inland Steel Company, Dept. S, 30 West Monroe Street, Chicago 3, Illinois.

continued

ers, just as they buy cleared sites today under Title I. "Only if the developer is given a large enough area so he can create a truly new environment can rehabilitation work." People in the areas would all be removed, as in clearance. There would be little or no provision for voluntary rehabilitation.

Others are less optimistic than Rouse. Winnick says that "future prospects do not point to the replacement of all or most existing slums by private real estate facilities," and he is particularly pessimistic about gray areas, where "it would be difficult to find a market for apartments renting for more than $18 to $25 per room. In such cases, something more powerful than land write-downs may be needed."

The "something else" Winnick mentions has been given much thought, and some observers believe that the gray areas need a vast injection of public funds to do the rehabilitation and clearance job where private enterprise will not undertake it. This could happen, they say, if urban renewal were afforded anything like the vast reallocation of federal funds which John Dyckman and Reginald Isaacs suggest in their provocative book *Capital Requirements for Urban Development.* The authors show that it is feasible, within the foreseeable growth potential of the nation's output, to sink one trillion dollars into renewal to clear all urban and rural slums in a dozen more years. But here is precisely where renewal would come right back to the very essence of what plagues rehabilitation and relocation—i.e. unpopularity in the slums themselves.

An unpopular program

The dilemma was stated this way by David Wallace, Professor of planning at the University of Pennsylvania: "To go into the gray areas with massive intervention . . . would be to court disaster. The program would get less popular rapidly."

The program *is* unpopular in the slums, no matter how much real estate interests, merchants, and local chambers of commerce might like it. As Planner Carl Feiss says, "the basic weakness of slum programs since the earliest days is that slum people are not storming city hall to get out of the slums."

If anything, the contrary has been true. Renewal has engendered a great deal of bitterness, and this bitterness has already been traded upon by interests dead set against renewal on philosophic grounds. (Renewal programs have already been killed in Phoenix, Ariz., Spokane, Wash., Springfield, Ore., and other cities.) Slum dwellers, who must be relocated, seem not to want high-rise apartment living even if they could afford it. They believe renewal is aimed at displacing them, not rehousing them, and are cynical about what gets built on renewal sites —high-cost apartments, insulated from the greater community by having their own schools, stores, and recreational facilities.

Can a middle class be created?

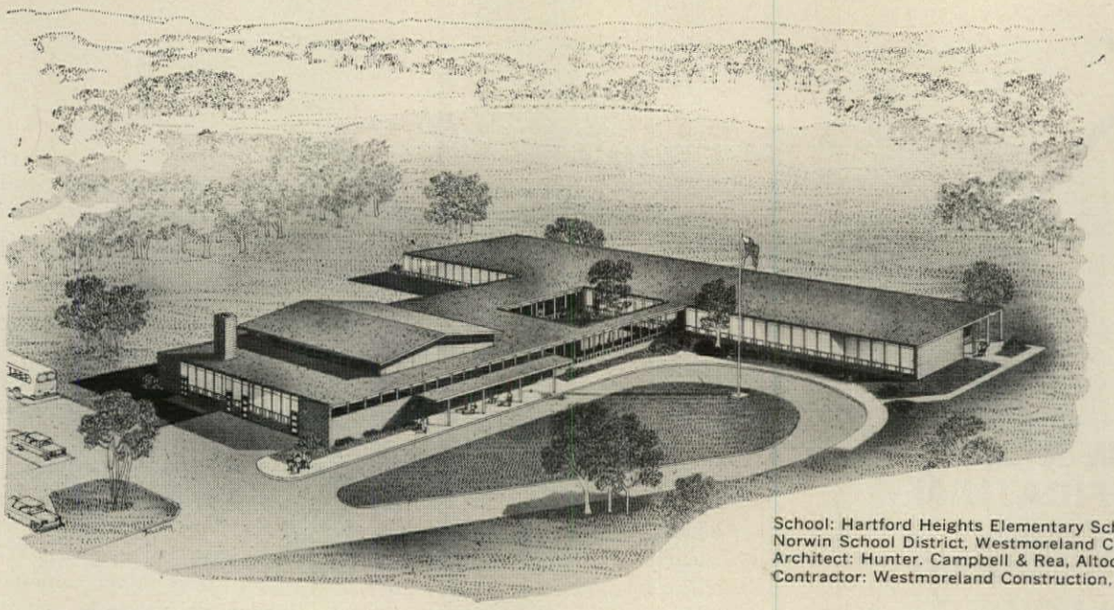
Many forward thinking critics perceive that until the elementary problem of the slum dweller himself is conquered, slums themselves will be with us for a long time. No city has generated more thought on the subject than Philadelphia, where Temple University has requested a grant from the Ford Foundation for a pioneering program for North Philadelphia's slums. This program "rests on the assumption that North Philadelphians can be motivated to improve their lot."

What Temple University proposes to do, with a small army of social workers and psychologists, is to inculcate in the slum dwellers certain middle-class attitudes which they do not now possess. The area would be divided into districts, each with its own microcosm of social and political services. A first effort will be to "induce and assist workers (unskilled and semiskilled) to upgrade their skills."

Can slum dwellers be impressed into the middle class? And to what middle class will Temple University's researchers lead them? The comfortable, white, suburban middle class? The almost equally (economically) comfortable but less privileged Negro middle class, toward which most gray-area residents would presumably aspire? The Temple program seems to be driving to the very heart of the urban redevelopment problem —but is it on the right road? Or must cities wait until today's slum dwellers develop their own middle class, as their predecessors did before them?

No matter what programs are undertaken, from chopping a few days off the time lag in urban renewal project processing, to the broad reaches of imposing middle-class mores and goals on slum dwellers, urban renewal is a long way from achieving its ultimate objective of clearing slums and preventing blight in American cities. As Edmund Bacon, executive director of Philadelphia's City Planning Commission, has said "the notion that the final objective of urban renewal is to produce a total, completely renewed neighborhood is cockeyed . . . a great many people will live in blighted areas for many years to come." END

Next month, as part of its special issue on the city of Chicago, FORUM *will examine that city's renewal effort, with special reference to the massive Hyde Park rehabilitation program.*



School: Hartford Heights Elementary School,
Norwin School District, Westmoreland County, Penna.
Architect: Hunter, Campbell & Rea, Altoona, Penna.
Contractor: Westmoreland Construction, Greensburg, Penna.

Design your new school with a long and bright future in mind

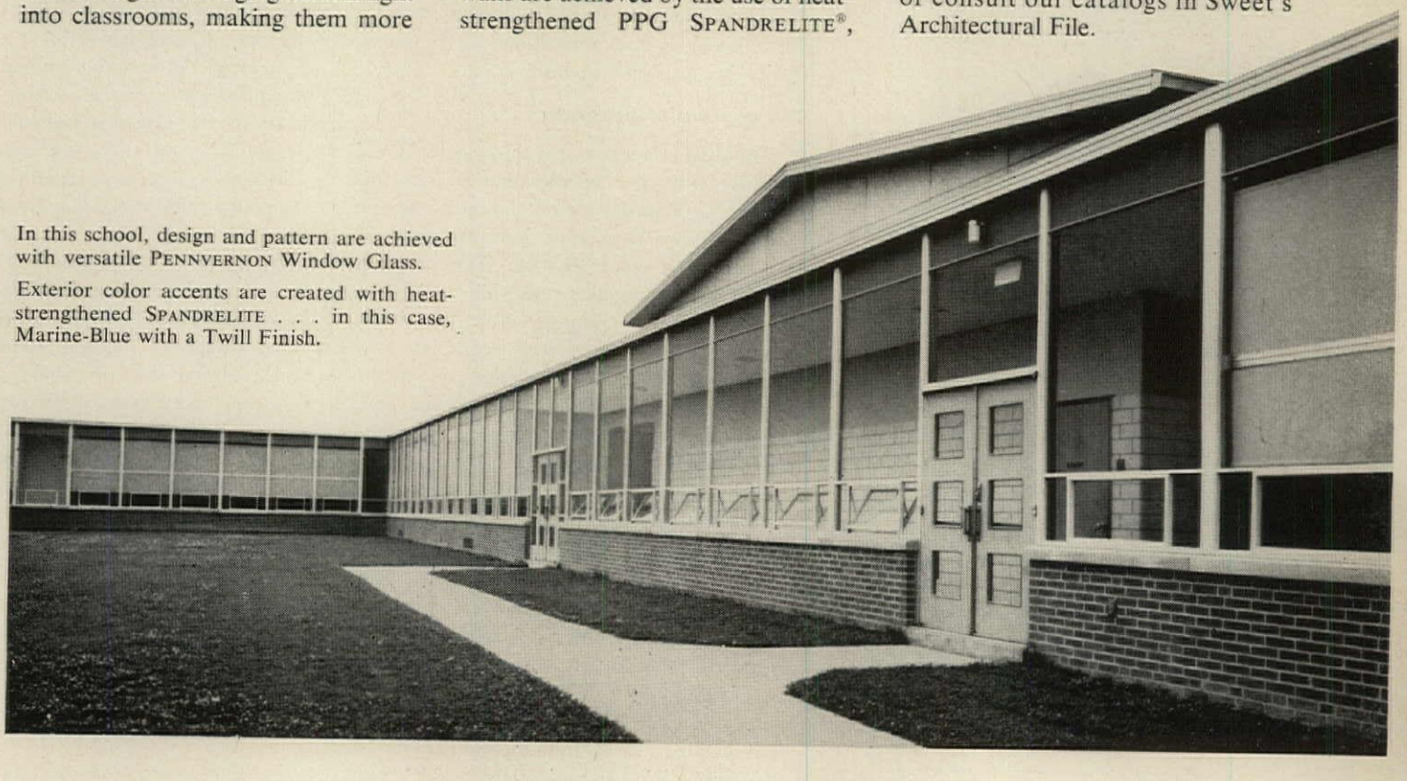
In this light, airy Pennsylvania elementary school, the architect demonstrates the flexibility of glass in designing a distinctive and functional school building.

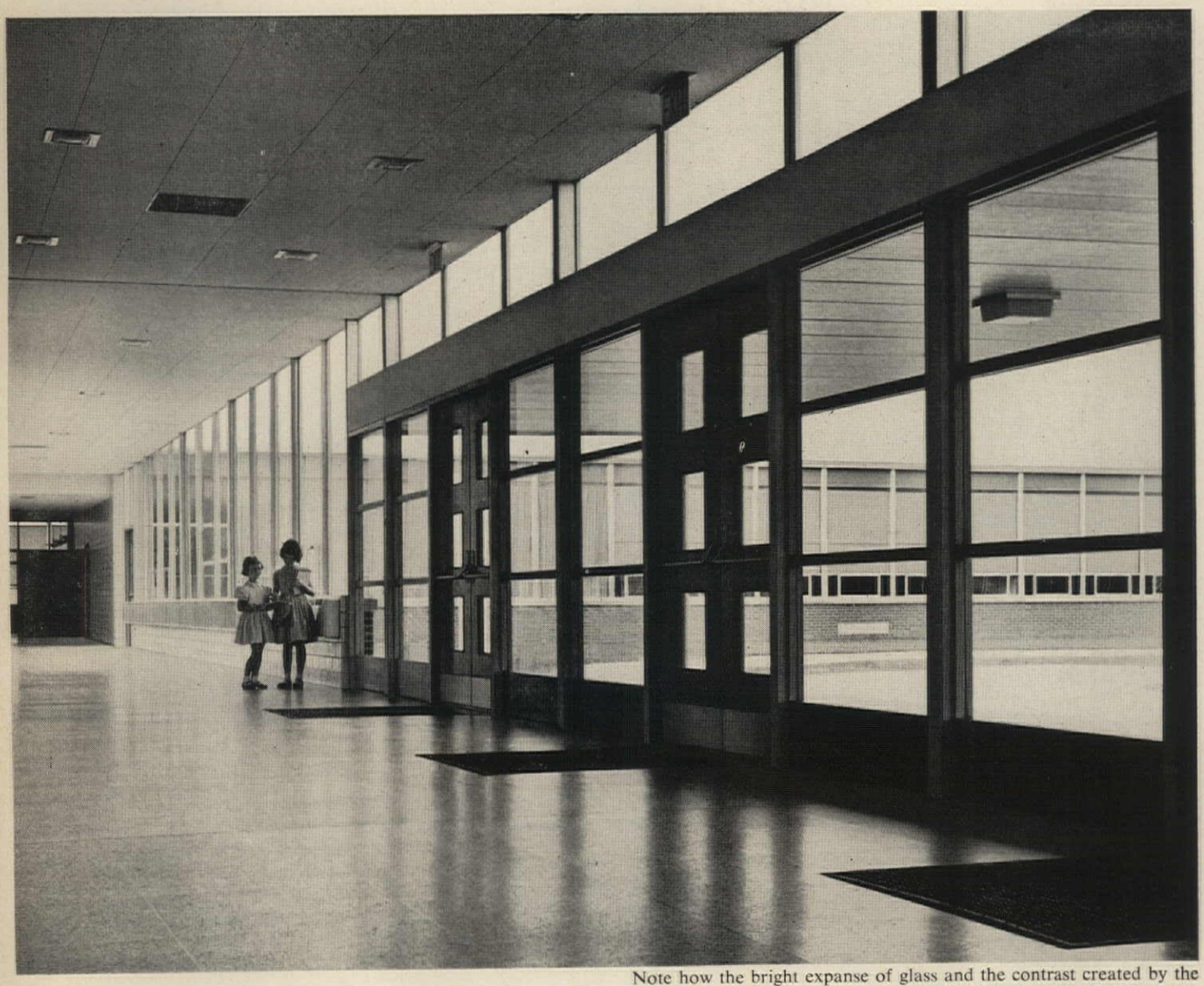
With schools glass-clad, you create walls-of-light... bringing natural light into classrooms, making them more inviting and conducive to study. The classrooms and corridors are outdoor-bright, look and feel more spacious year after year when glazed with PPG PENNVERNON® Window Glass. Color accents in the exterior walls are achieved by the use of heat-strengthened PPG SPANDRELITE®, available in an array of 18 fused-on ceramic colors. *(Colors to specification.)*

For the complete story about PPG products especially suitable for schools, contact your nearby Pittsburgh architectural representative—or consult our catalogs in Sweet's Architectural File.

In this school, design and pattern are achieved with versatile PENNVERNON Window Glass.

Exterior color accents are created with heat-strengthened SPANDRELITE . . . in this case, Marine-Blue with a Twill Finish.





Note how the bright expanse of glass and the contrast created by the mullions compliment one another at the entrance area of this school.

These dependable glass products from PPG give you the freedom of expression you seek in designing schools for beauty, function and durability:

SOLEX®: green tint, heat-absorbing, glare-reducing glass

SOLARGRAY®: neutral-gray, heat-absorbing, glare-reducing plate glass

TWINDOW®: world's finest all-weather insulating glass

PENNVERNON® Window Glass: window glass at its best

POLISHED PLATE GLASS: for clear, undistorted vision

HERCULITE®: shock-resisting tempered plate glass

PENNVERNON® GRAYLITE™: neutral-gray, glare-reducing window glass

SPANDRELITE®: heat-strengthened glass with ceramic color fused to the back

PPG®

PITTSBURGH PLATE GLASS COMPANY

Paints • Glass • Chemicals • Fiber Glass

In Canada: Canadian Pittsburgh Industries Limited

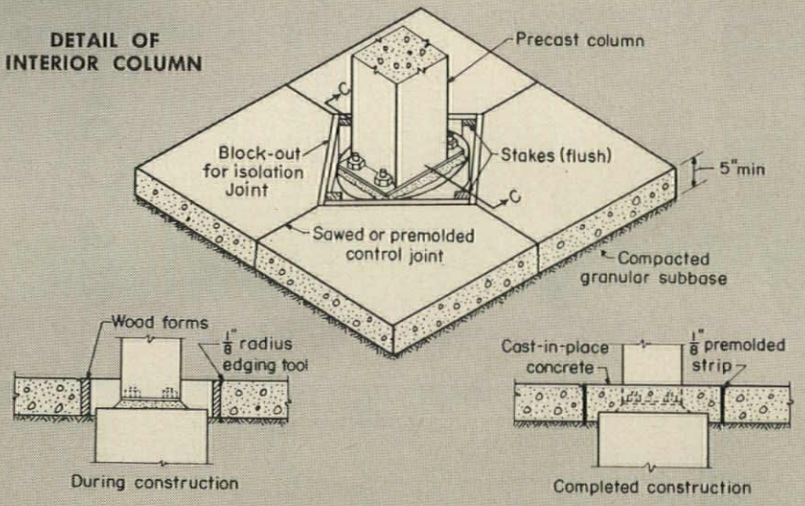
NO. 1 concrete floor joints

a.i.a. file: 4-a

Prepared as a service to architects by Portland Cement Association

Clip along dotted line

DETAIL OF INTERIOR COLUMN



SECTION C-C SHOWING ISOLATION JOINTS

Two types of joints recommended for slab-on-ground floors:

1. ***Control joint***—allows differential movement only in the plane of the floor. Recommended spacing approximately 20 ft.

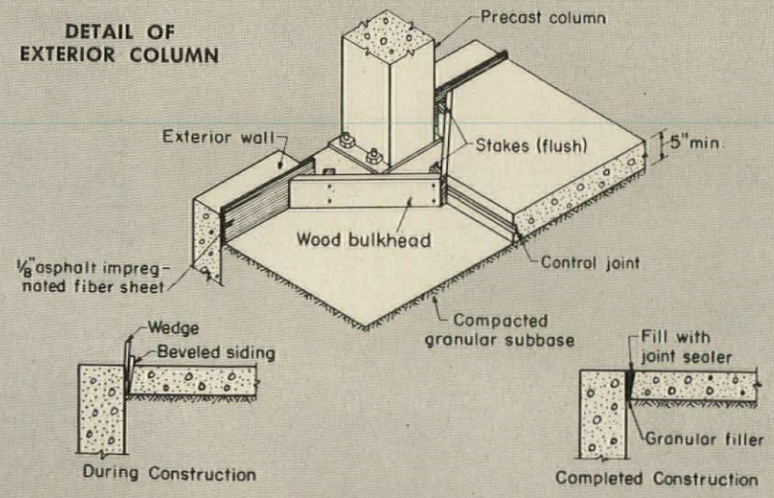
2. ***Isolation joint***—allows differential movement in all directions.

Proper construction of control joints is important to satisfactory functioning of a floor on ground. In general, control joints are made by creating planes of weakness in the slab. Volume changes due to variation in temperature and moisture then occur without causing random cracking. Control joints may be made several ways. Sawing a slot in the top of the finished slab is often most economical.

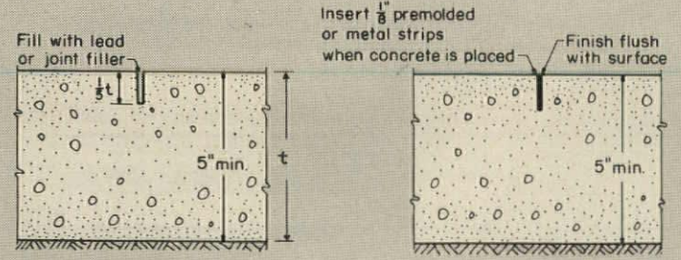
Isolation joints separate or isolate concrete slabs from columns, footings or walls to permit both horizontal movement due to volume changes and vertical movement due to differential settlements.

Get complete technical literature on additional aspects of design of concrete floors, as well as any other applications of concrete. (U.S. and Canada only.) Send a request on your letterhead.

DETAIL OF EXTERIOR COLUMN



ALTERNATE WALL ISOLATION JOINT



SAWED CONTROL JOINT

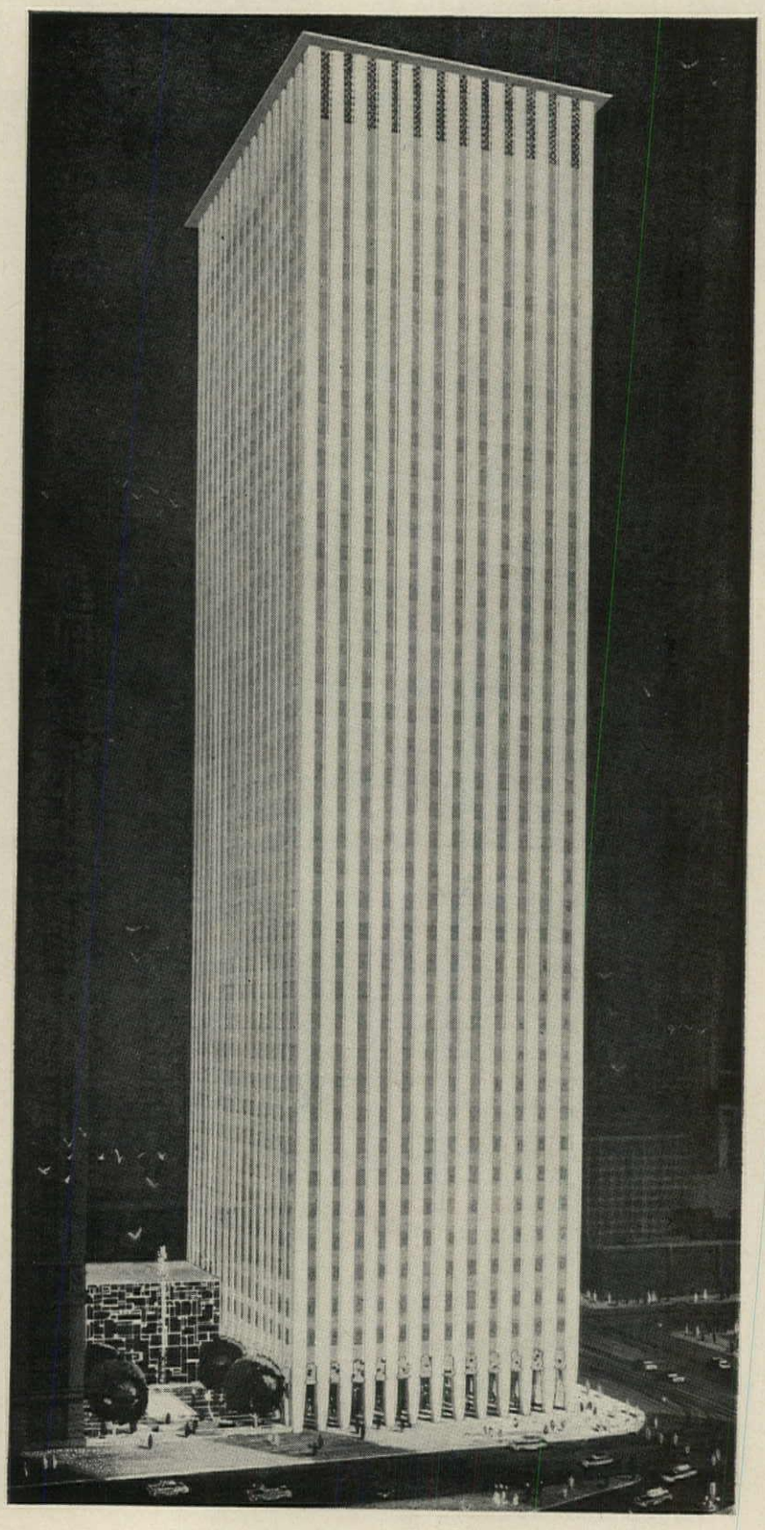
FORMED CONTROL JOINT

PORTLAND CEMENT ASSOCIATION

Dept. 4-7, 33 West Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of concrete

GO FIRST CLASS
GO STAINLESS!



"Framed in stainless and topped with ColorRold" will be key words for Chicago's United Insurance Company of America Building now under construction. Approximately 200,000 lbs. of *lifetime* stainless steel is being fabricated for 1800 window frames, anchor plates for the marble siding, roof flashing, and installations in the first and observation floors.

The crowning touch of beauty in the exterior design is a series of ornamental stainless steel louvers around the four sides of the fortieth floor, providing fresh air for the air conditioning system. They are formed of Gray ColorRold® color-coated stainless steel.

No building is too large or small to benefit from the lustrous beauty and care-free life of stainless steel—the truly *first-class* architectural material.

Our catalogs are listed in SWEET'S

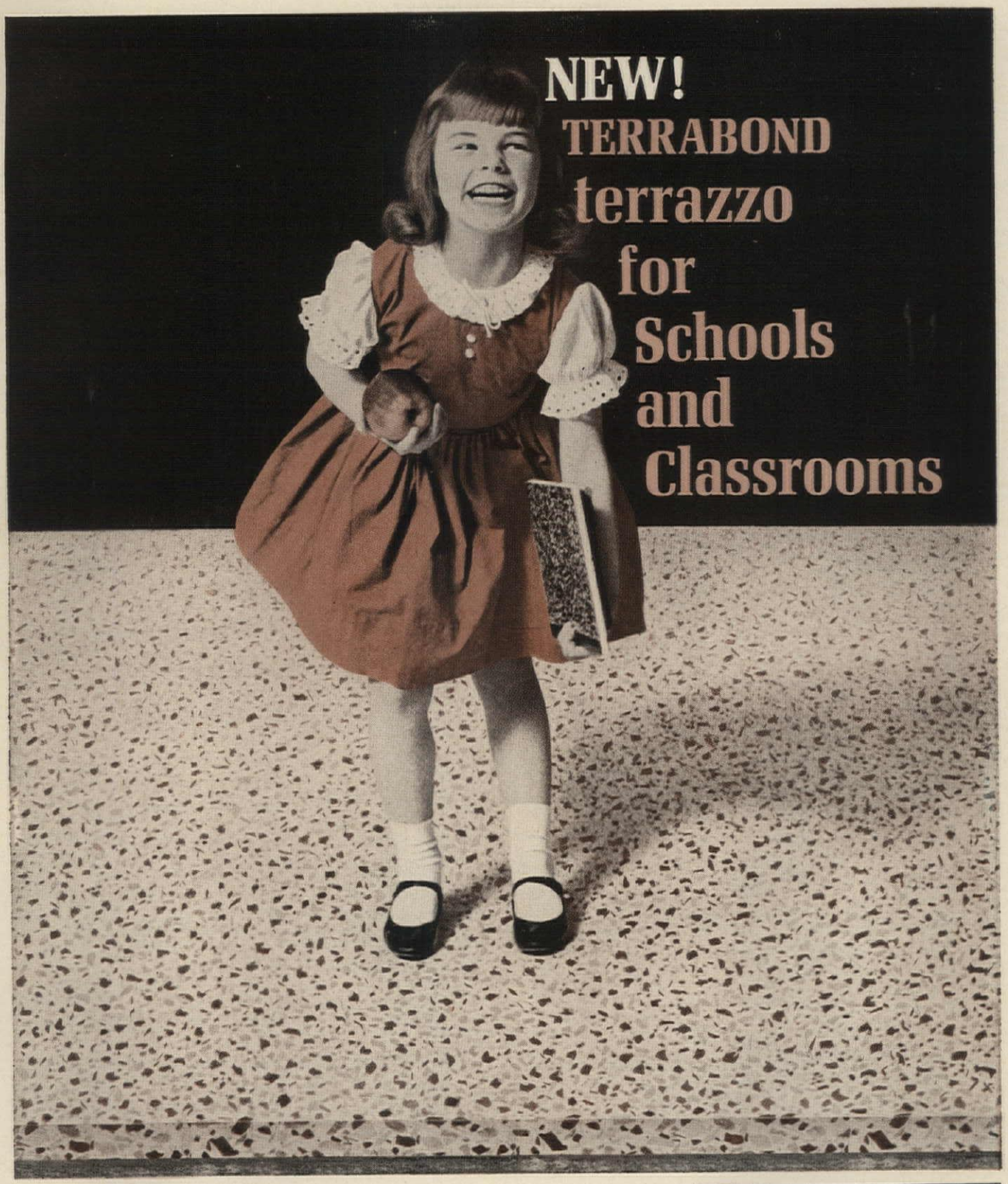
WASHINGTON STEEL CORPORATION

Washington, Pa.

Architect: Shaw-Metz and Associates, 208 S. LaSalle St., Chicago, Illinois

General Contractor: A. L. Jackson & Company, Chicago, Illinois

Fabricator: Flour City Architectural Division, Hupp Corporation, Minneapolis, Minn.



Beautifully practical...
Costs no more to install than resilient flooring.

A truly sensible innovation for schools and classroom design, genuine terrazzo by the TERRABOND process for floors brings with it the infinite beauty, long life and low maintenance cost of portland cement terrazzo—coupled with low installation cost. TERRABOND terrazzo can be installed at $\frac{3}{8}$th inches. Grade levels are not raised appreciably. Deadweight, floor thickness, installation time, and material costs come down. TERRABOND terrazzo can be installed anytime, anywhere—even in place of existing worn-out resilient floors. In classroms, it stands up beautifully to abusive traffic, cleans up with the whisk of a damp mop. Maintenance of TERRABOND flooring costs 15c to 20c per square foot per year compared to 65c to 95c for resilient flooring. For complete information write Thiokol or use coupon.

Thiokol®
CHEMICAL CORPORATION
780 N. Clinton Ave., Trenton 7, N. J.
In Canada: Naugatuck Chemicals Division, Dominion Rubber Company, Elmira, Ontario

Gentlemen: Please send me complete details about TERRABOND process terrazzo.

NAME_____
FIRM_____
ADDRESS_____
CITY_____ STATE_____ 8C

Italic line indicates advertising agency

Acme Industries, Inc. 46
Gray & Kilgore, Inc.

Air Devices, Inc. 178
The Powerad Company

American Gas Association 172
Ketchum, MacLeod & Grove, Inc.

American Hardware Corp.
(P & F Corbin Div.) 139, 140
Wilson, Haight & Welch, Inc.

American Hardware Corp.
(Russell & Erwin Div.) 72
Noyes & Company, Inc.

American Olean Tile Co. 135
Arndt, Preston, Chapin, Lamb & Keen, Inc.

American-St. Gobain Corp. 64
G. M. Basford Co.

American Steel & Wire Division
(United States Steel Corp.) 14, 15
Batten, Barton, Durstine & Osborn, Inc.

American Telephone & Telegraph Co. 4
N. W. Ayer & Son, Inc.

American Walnut Mfrs. Assn. 157
Isker & Adajian, Inc.

Anaconda American Brass Company 43
Wilson, Haight & Welch, Inc.

Armstrong Cork Company 2, 3, 133
Batten, Barton, Durstine & Osborn, Inc.

Automated Building Components, Inc. 60
E. J. Scheaffer & Associates Adv. Agency, Inc.

Autoquip Corporation 54
Leonard Primer Advertising

Bostik
(BB Chemical Company)
Regional Edition R-1, 2
Sutherland-Abbott

Bell & Gossett Company 62
Donald L. Paus Advertising

Beneke Corporation 50
Christopher Advertising Counsel

Butler Manufacturing Co. 28
Aubrey, Finlay, Marley & Hodgson, Inc.

Cambridge Tile Mfg. Co. 138
Wildrick & Miller, Inc.

Carlisle Tire & Rubber Div.
(Carlisle Corp.) 165
Merchandising, Incorporated

Carrier Air Conditioning Co. 172
Ketchum, MacLeod & Grove, Inc.

Celotex Corp., The 58, 59
MacFarland, Aveyard & Co.

Certified Ballast Manufacturers 181
Foster & Davies, Inc.

Corbin Div., P & F
(American Hardware Corp.) 139, 140
Wilson, Haight & Welch, Inc.

Corry Jamestown Mfg. Corp. 164
Ketchum, MacLeod & Grove, Inc.

Day-Brite Lighting, Inc. 38, 39
Winius-Brandon Co.

Donley Brothers Co., The 160
Penn & Hamaker, Inc.

Douglas Fir Plywood Assn. 48, 49
Cole & Weber, Inc.

Dow Chemical Company 166, 167
MacManus, John & Adams, Inc.

Dow Corning Corp. 141, 142, 143, 144
Church and Guisewite Advertising, Inc.

DuKane Corp. 24
Connor Associates

Dunham-Bush, Inc. 6
William Schaller Co., Inc.

Dur-O-WaL 61
Roche, Rickerd & Cleary, Inc.

Eljer Plumbingware Division
(The Murray Corp. of America) 8
Fuller & Smith & Ross, Inc.

...on Bronze Co. 40
...th & Rowland

Fibreboard Paper Products Corp.
(Pabco Gypsum Div.)
Western Edition W8, 9, 10, 11
Cunningham & Walsh, Inc.

Flintkote Co., The 193
Philip J. Meany Company

Fluor Products Co. .....**Western Edition W6, 7**
Allen. De St. Maurice & Spitz Adv.

Ford Motor Co.
(Glass Sales) 134
Batten, Barton, Durstine & Osborn, Inc.

Formica Corp. 56, 145
Perry-Brown, Inc.

Forrest Industries, Inc. 57
Morton and Stanton

Fuller & Company, W. P.
Western Edition W4, 5
Fletcher Richards, Calkins & Holden, Inc.

General Electric Company 65
Young & Rubicam, Inc.

General Fireproofing Co. 146
The Griswold-Eschleman Co.

Glynn-Johnson Corp. 18
Edwin E. Geiger Advertising

Goodyear Tire & Rubber Company 136
Kudner Agency, Inc.

Guth Company, The Edwin F. 137
H. George Bloch, Inc.

Hanley Co., Inc. 169
The Albert P. Hill Co., Inc.

Hastings Aluminum Products, Inc. 187
Aves Advertising, Inc.

Haughton Elevator Co. 163
Beeson-Reichert, Inc.

Haws Drinking Faucet Co. 168
Pacific Advertising Staff

Hillyard Chemical Company 10
Bozell & Jacobs, Inc.

Infranor of North America, Inc. 175
J. Roy McLennan Adv.

Inland Steel Company 132, 133
Edward H. Weiss & Co.

Jackson Exit Device Corp. 25
Nelson Newmark Advertising

Johns-Manville Corporation 22, 23
Cunningham & Walsh, Inc.

Johnson Service Co. 170, 171
Hoffman, York, Paulson & Gerlach, Inc.

Kawneer Co., The 192
Fuller & Smith & Ross, Inc.

Kentile, Inc. .....**Cover IV**
Benton & Bowles, Inc.

Keystone Steel & Wire Co. 70, 71
Fuller & Smith & Ross, Inc.

Kinnear Mfg. Co. 20
Wheeler-Kight & Gainey, Inc.

Kohler Company 26
Clinton E. Frank, Inc.

Laclede Steel Co. .....**Regional Edition R-1, 2**
Batz-Hodgson-Neuwoehner, Inc.

Lamp & Shade Institute of America 60
Arndt, Preston, Chapin, Lamb & Keen, Inc.

Lehigh Portland Cement Company 34
Lewis & Gilman, Incorporated

Libbey-Owens-Ford Glass Co. 151, 152, 153, 154
Fuller & Smith & Ross, Inc.

Lightolier, Inc. 176, 177, 178
Sudler & Hennessey, Inc.

Lone Star Cement Corporation 32
Hazard Advertising Company, Inc.

Magee Carpet Co., The 54
Grey Advertising, Inc.

Martin-Senour Co., The 47
MacFarland, Aveyard & Co.

McKinney Mfg. Co. 41
W. S. Hill Company

Miller Company, The 55
Harrison House

Mississippi Glass Co. 161, 162
Ralph Smith Advertising Agency

Mosaic Tile Company, The 155, 156
Farson, Huff & Northlich, Inc.

National Gypsum Company 16, 17, 150
Fuller & Smith & Ross, Inc.

National Lumber Manufacturers Assn. ..52, 53
Van Sant, Dugdale & Co., Inc.

Nesbitt, Inc., John J. 148
George Moll Advertising, Inc.

New Castle Products Co. 174, 175
Caldwell, Larkin & Sidener-Van Riper, Inc.

Norris Thermador Corp.
Western Edition W2, 3
David Olen Advertising

Norton Door Closer Co. 42
Erwin Wasey, Ruthrauff & Ryan, Inc.

Overly Manufacturing Co. 68, 69
Marsteller, Inc.

Pittsburgh Plate Glass Co. 184, 185
J. Walter Thompson Co.

Portland Cement Association 63, 186, 187
J. Walter Thompson Co.

Rambusch Decorating Co. 187
Roeding & Arnold, Inc.

Russell & Erwin Div.
(The American Hardware Corp.) 72
Noyes & Company, Inc.

Sanymetal Products Co., Inc., The 180
Belden & Frenz & Lehman, Inc.

Smoot-Holman Company
Western Edition W-12
Neale Advertising Associates

Soss Manufacturing Co. 173
Harry H. Goldberg, Jr., Adv., Inc.

Spencer Turbine Co. 51
William Schaller Co., Inc.

Steelcraft Mfg. Co. 36
John L. Magro Advertising, Inc.

Thiokol Chemical Corp. 189
Hicks & Greist, Incorporated

Tuttle & Bailey
(Div. of Allied Thermal Corp.) 44, 45
Wilson, Haight & Welch, Inc.

Tyler, W. S., Co., The .....**Cover II**
The Griswold-Eshleman Co.

United States Ceramic Tile Co. 147
The Griswold-Eshleman Co.

United States Plywood Corp. .....**Cover III**
Kenyon & Eckhardt, Inc.

United States Steel Corp.
(American Steel & Wire Division) 14, 15
Batten, Barton, Durstine & Osborn, Inc.

Universal Atlas Cement Co.
(United States Steel Corp.) 27
Batten, Barton, Durstine & Osborn, Inc.

Uvalde Rock Asphalt Co. 21
Glenn Advertising, Inc.

Vendo Company, The 179
Hill, Rogers, Mason & Scott, Inc.

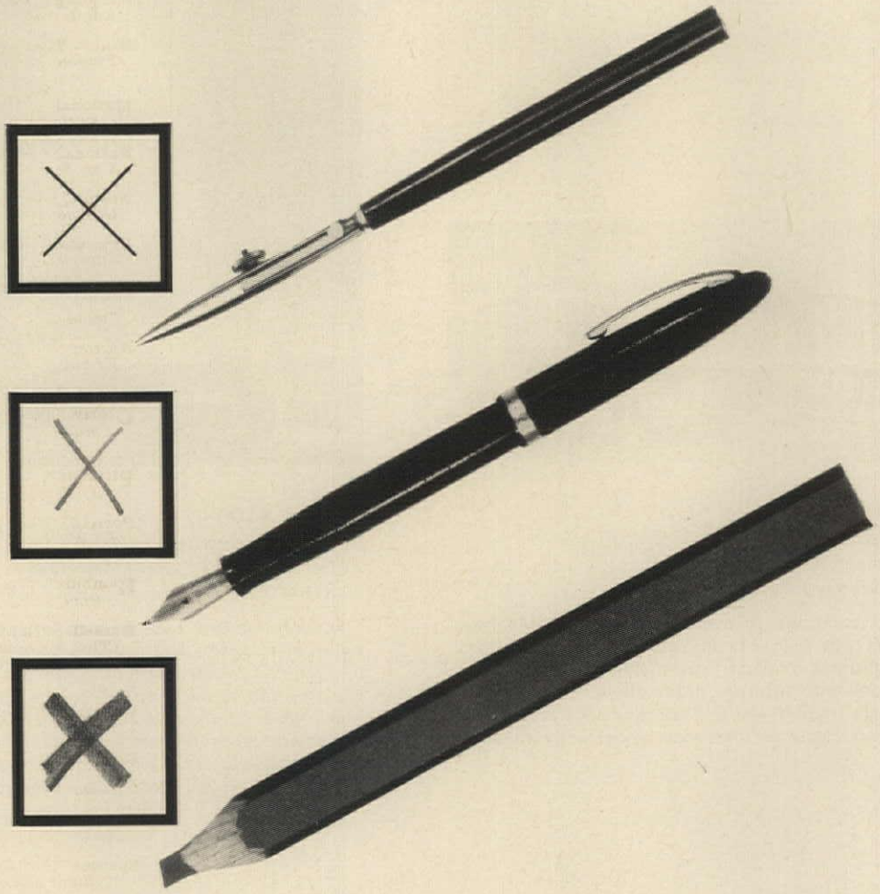
Vogel-Peterson Co. 60
Ross Llewellyn, Inc.

Vonnegut Hardware Co. 12
Caldwell, Larkin & Sidener-Van Riper, Inc.

Washington Steel Corp. 188
Cabbot & Coffman, Inc.

Westinghouse Electric Corp. 66, 67
Ketchum, MacLeod & Grove, Inc.

Wide-Lite Corporation 149
Ritchie Advertising Agency



YOUR FAVORITE CANDIDATE IS NO SHOO-IN

Getting your product elected into a building requires a unanimous vote. For in this business even a two-thirds majority is not enough—while the architect/engineer often proposes, just as often the builder or the client disposes.

Fortunately, there's one way to sway all three at the same time—through advertising in Architectural FORUM. It is the one magazine which editorially covers the art of architecture, the technology of construction, the economics of building. And it addresses itself not only to the individual interests of architects, contractors and clients but to the combined interest of all three: getting the building built.

This essential difference between FORUM and the other publications in the field explains FORUM's large paid circulation* among the men who control all three votes you need to make a sale.

*FORUM's audience consists of 62,000 subscribers (some 200,000 readers) principally architects, contractors, and clients — the men who individually and jointly control the approval, specification and purchase of building products. It includes the leaders in each group — the trend setters, the volume producers. (To wit: all of the 100 biggest U.S. architects are FORUM subscribers, and these 100 alone account for about 20% of all U.S. building construction.)

FORUM: essentially different — for readers... and for advertisers

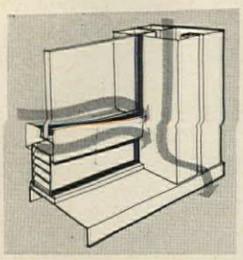
SERIES 3000
BUILDING: *Meigs Field Terminal, Chicago, Illinois*
ARCHITECT: *Consoer & Morgan*
CONTRACTOR: *Mercury Builders, Inc.*

More than 700 buildings all over the United States have Kawneer's 3000 Unit Wall. It is an excellent low-rise system. The weather-tightness of each proves that the principle of unit construction—with internal drainage—is successful in practice. Kawneer-trained wall and window contractors contribute to this successful performance by correctly installing the system.

SERIES 4100
BUILDING: *Gibraltar Savings & Loan*
ARCHITECT: *Victor Gruen Associates*
CONTRACTOR: *William Simpson Construction Company*

This high-rise Unit System is being specified more and more by architects who had previously used window wall systems on high-rise construction. The reasons are simple: 4100 has the strength to weather the severe conditions that high-rise buildings are subjected to, and its internal drainage system assures weather-tightness. Installation by Kawneer Wall Systems Contractors or Kawneer's Contract Dept., itself, depending on the size and complexity of the job.

Kawneer unit wall systems with I.D.* are performance proved



Unit Wall Systems with internal drainage were pioneered and developed by Kawneer Company. The original concept (Series 3000 was the first to utilize I.D.*) has proved so sound that no basic changes have been made since the origination of the idea seven years ago. Kawneer Unit Systems successfully solve the problems in metal curtain wall construction; thermal movement, stress and leakage.

When you design your next building, assure the integrity of the walls with a suitable Kawneer Unit System. For complete information call your Kawneer representative or write:

INTERNAL DRAINAGE SYSTEMS *in Kawneer Unit Walls collect any water that gets past the seals and into the walls, drains it down the verticals and out. Water does not get through the walls and into the building.*

Kawneer

KAWNEER CO., Niles, Mich., Richmond, Calif. • KAWNEER CO., CANADA, LTD., Toronto, Canada

"OH MAMA, DEAR MAMA,"

said the Walrus to the Winged Lady, "they have hung out your hide along the highway, and stuffed it with hamburger, and am I glad, glad, glad!"

"Speaking of the International Style of Architecture," droned Professor Thrugg, "the most important of all international styles and the *most* international has been created by the People themselves, in their majesty.

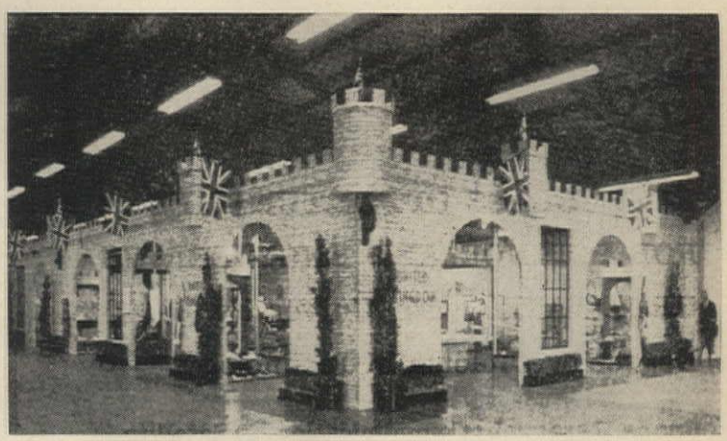
"It's everywhere. Go outside London, go outside Milan, go outside Los Angeles (if you can get outside it), go outside Frankfort, Paris, New York, Tokyo, Bombay, Sidney, or Johannesburg. Or just go outside. It's the same all over.

"FREE ASSOCIATION

is part of the idea," went on Thrugg—"all clichés past and present, far and near, thrown into a Common Market. Be Ye Childlike is the First Commandment.

"Hard profit is found in these cold dreams," Thrugg went on, "as attested by the learned Dr. Helen Recknagel, editor of the *Cornell Quarterly*. Her analysis of Polynesia-by-Columbus, Ohio (below, left) exudes 'fast write-off and sale and leaseback,' as the genius proprietors, Henry and Sapp, have managed this.

"The ones who seem a bit sticky about this sort of thing," sighed Thrugg, "are the British."



MORTON LUPTON

"AS CALIFORNIANS SEE US,"

columnist Pendennis, writing in *The Observer* of London, complained, "this prize-winning British pavilion at the California State Fair (photo, above) seems to be the ultimate in the projection of Britain as thatched cottages, drawbridges, and oxen roasted on the village green.

"This image, says the Board of Trade, is beamed only to America: We did something utterly modern for India.

"The reply to critics is: 'However we may shudder, Americans simply adore it.'

"Though responsible for this policy, the Board of Trade's Exhibition Department doesn't produce the actual design. That was done by Displays Unlimited, of San Francisco. Proof of this stodge is in the swallowing—the thing won a gold medal. Imitation-stone wallpaper by Sanderson's."

Poor Thrugg! He thinks it is international, but we have leadership.

So let's be patriotic and take on the burden, with the noblesse oblige that leadership imposes.

Douglas Haskell

HOD