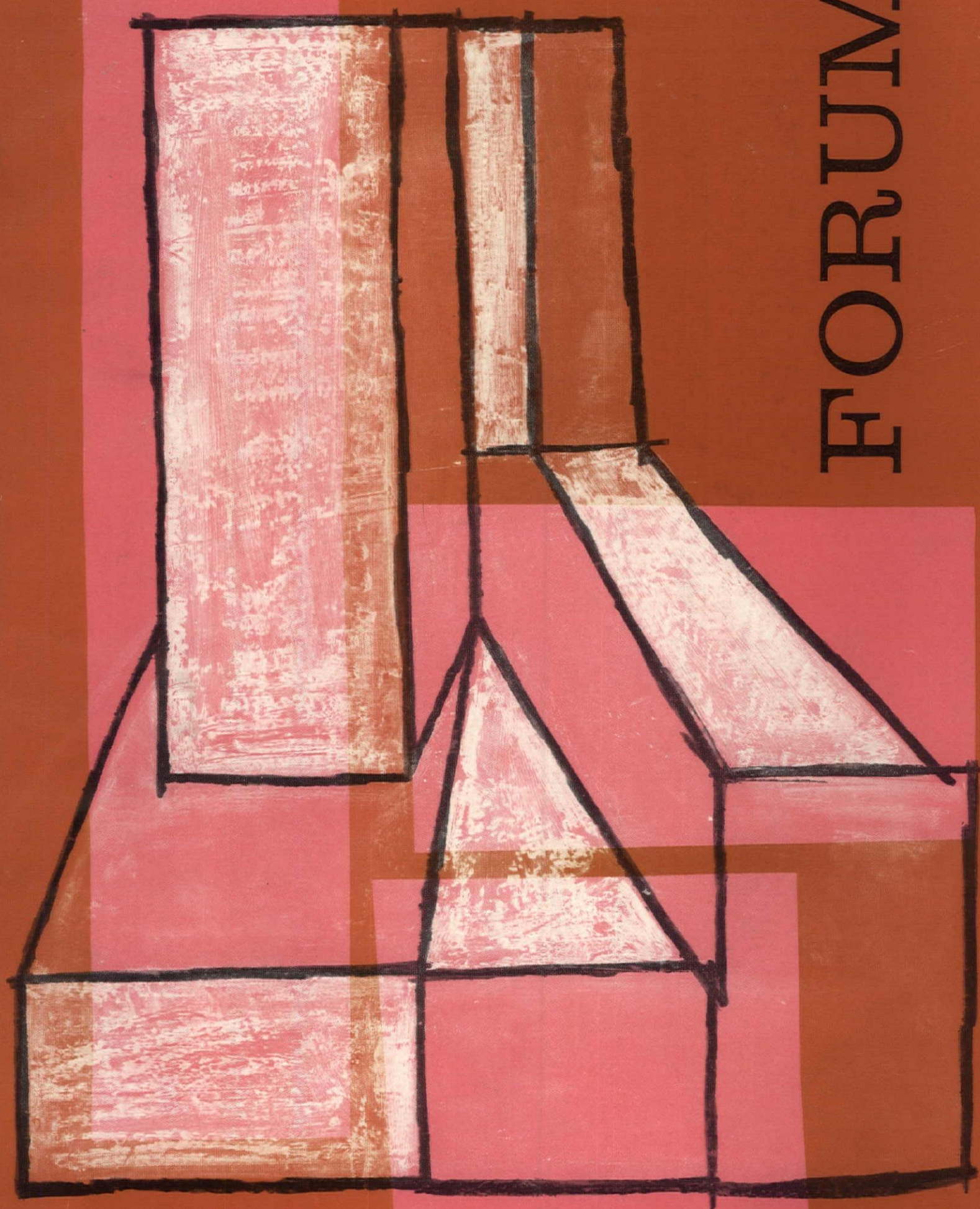


Architectural Forum / the magazine of building / February 1958

FORUM



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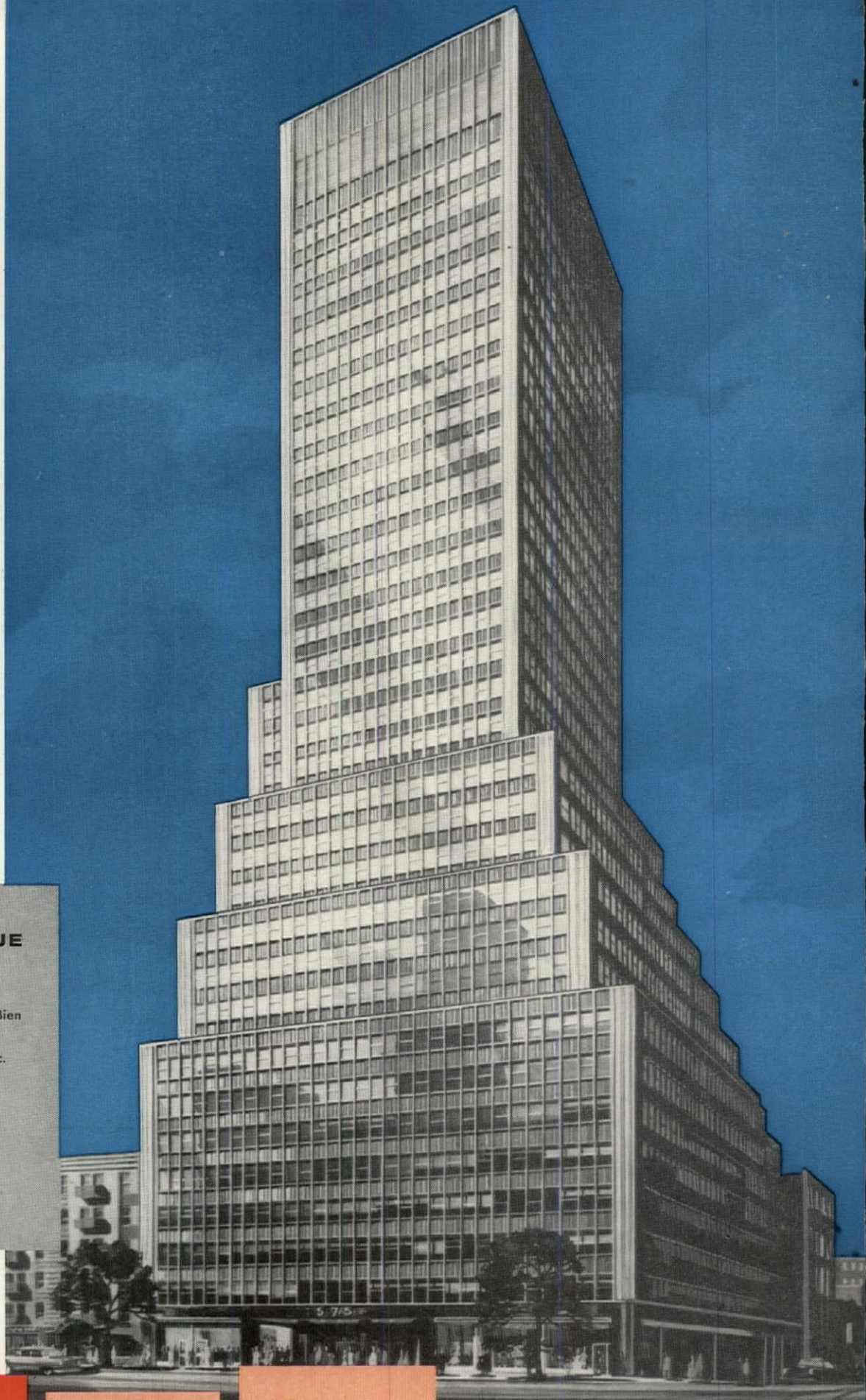
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based on the theory of bulk
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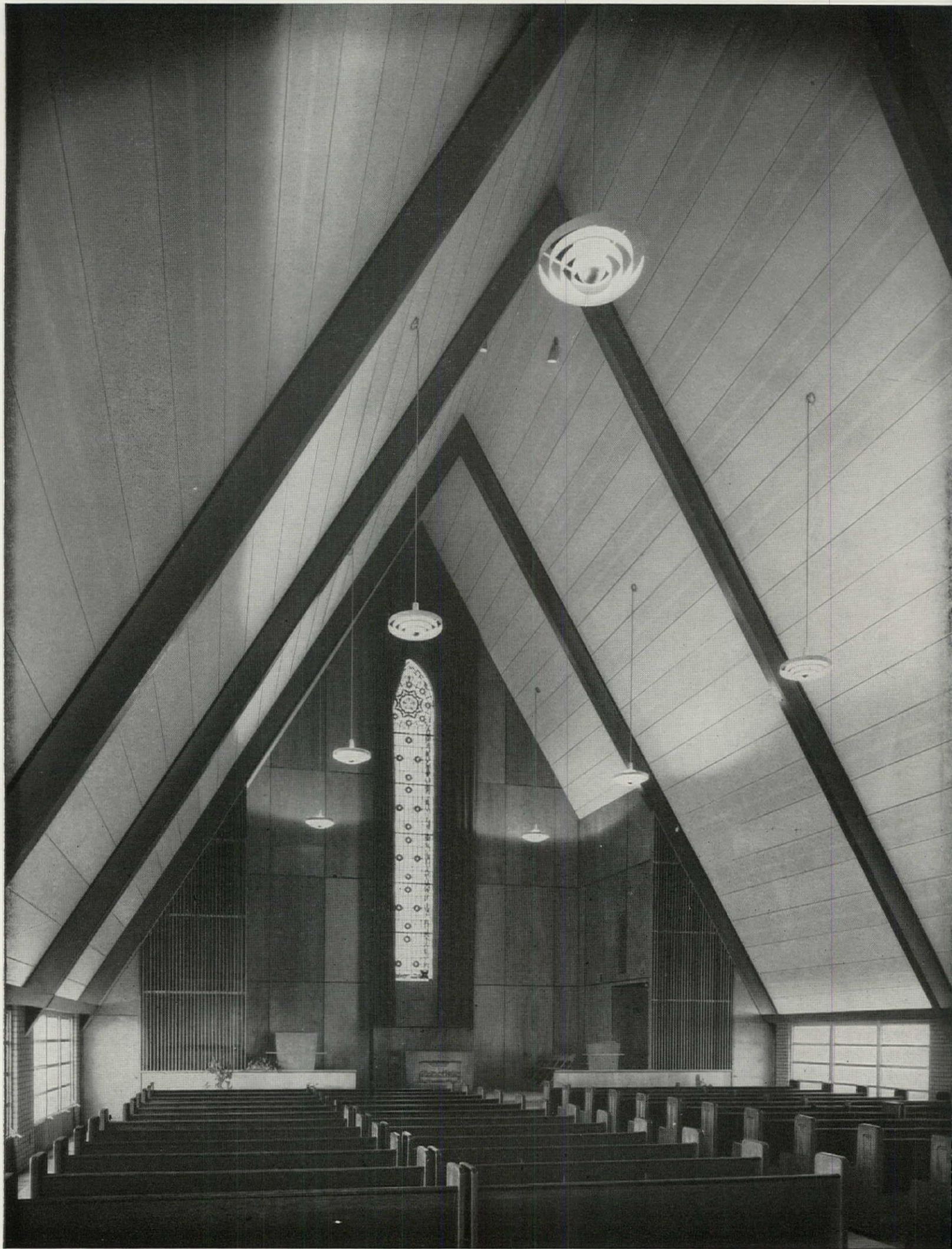
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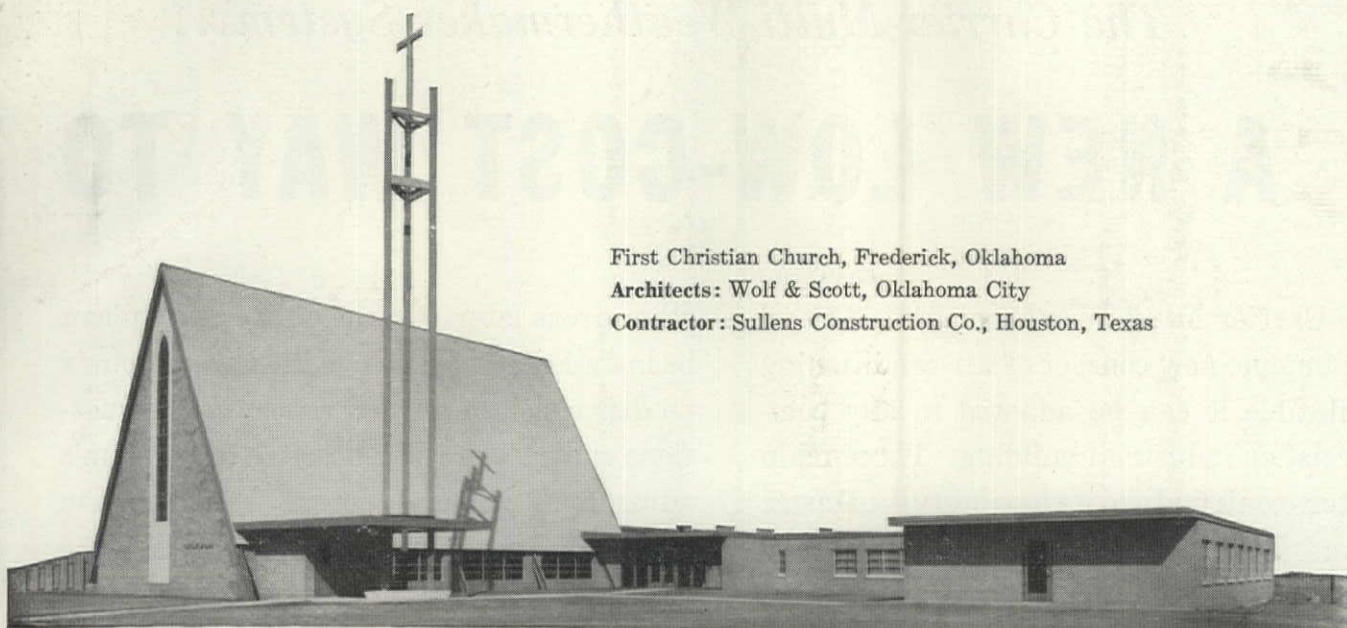
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First Christian Church, Frederick, Oklahoma
 Architects: Wolf & Scott, Oklahoma City
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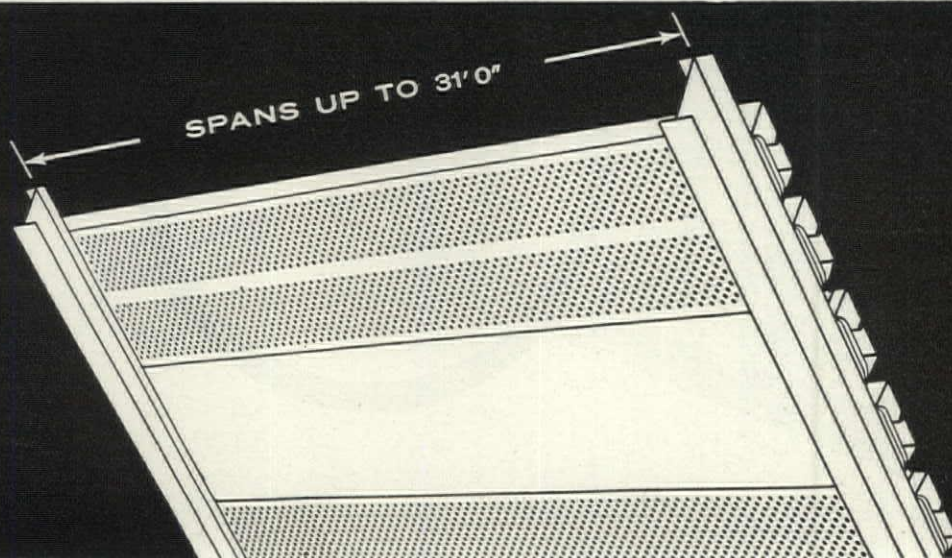
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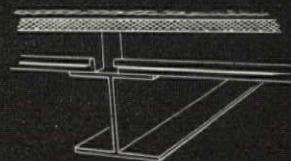
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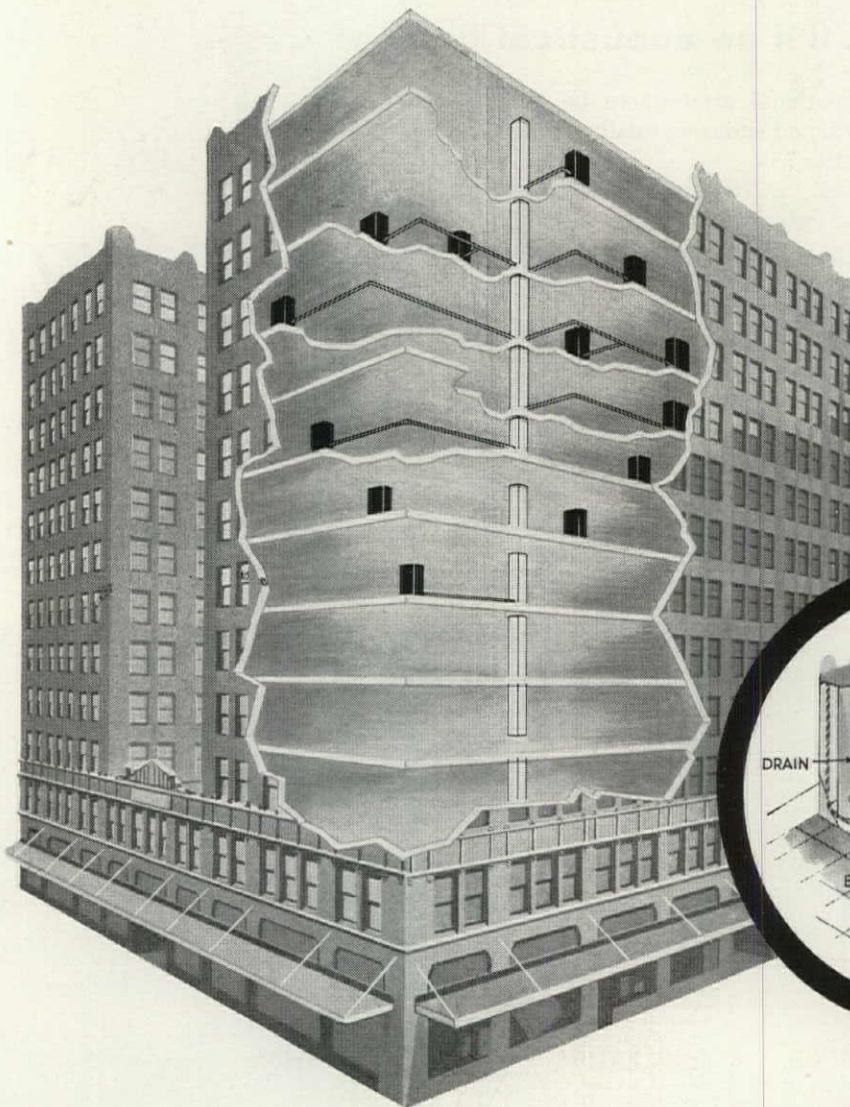


The Carrier Multi-Weathermaker System...

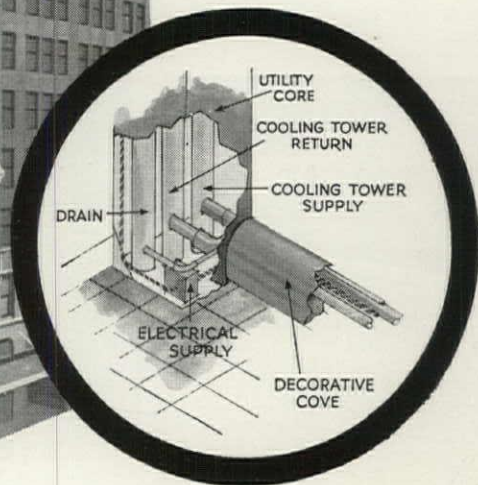
A NEW LOW-COST WAY TO

The Carrier Multi-Weathermaker* System is a unique, new concept of air conditioning so flexible it can be adapted to any commercial or industrial building. Three main factors contribute to its flexibility—a Master Plan, Utility Core and self-contained Weathermaker units. Where funds are limited, the System can be installed in critical areas first, then expanded to include

other areas later. Or the entire System can be installed at one time. Either way, there's no disruption of normal routine. The questions and answers here describe the System's advantages in some detail. For complete details, call your Carrier dealer, listed in the Classified Directory. Or write for the booklet, "Carrier Multi-Weathermaker System." Carrier Corporation, Syracuse, New York.



In a typical multi-story office building, the Utility Core of the System is installed vertically to provide service outlets to each floor. In a low, horizontal factory, the Core is suspended parallel to the floor to provide maximum flexibility. Units can be used many ways, four of which are shown on the right.



AIR CONDITION A BUILDING!



For individual offices, the Carrier Multi-Weathermaker System can economically air condition each office. Individual Weathermaker units, connected to inexpensive ducts, do the job. Units can be recessed in a wall or storage area.

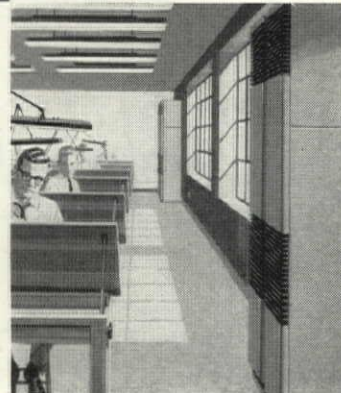


For a whole floor of a building, a Carrier Multi-Weathermaker System can air condition the entire space with a number of units. Each individual Weathermaker has all the components necessary to cool, dehumidify, filter and circulate the air.

For an open production area of a plant, a high-capacity Carrier Commercial Weathermaker using special ductwork can spot-cool an assembly line. In the System, you can air condition other plant areas with smaller air or water cooled Weathermakers.



For an engineering-drafting room, quiet Carrier Weathermakers can discharge draft-free air without any ductwork. The Multi-Weathermaker System permits air conditioning in one area while the System is shut off elsewhere.



Q. What makes this System new and unique?

A. The Master Plan, which co-ordinates installation of individual Weathermaker units in one integrated System — not a hodgepodge of unrelated “packaged installations.”

Q. How is the Master Plan applied to an average office building?

A. First, a survey determines the cooling capacity required to air condition the building. Then, zone by zone, the Plan pinpoints the location of individual Weathermaker units required to handle the load. In addition, to simplify the installation of utilities from cooling tower to Weathermakers, the Plan provides a unique central Utility Core that houses the cooling tower supply and return piping, drain piping and electrical service. These utilities are sized to service all of the Weathermakers that will ultimately become part of the Multi-Weathermaker System.

Q. How many Utility Cores are required in a building?

A. In an average building, usually one. In larger buildings, several are required.

Q. How does the System's flexibility apply to installation and financing?

A. If financing is available, the System can be installed all at once. Otherwise, it can be installed in predetermined

sections step-by-step — an area, a floor or several offices at a time. In this way, financing can be conveniently spread over a period of years.

Q. Does “low-cost” apply both to installation and operation?

A. Yes. Here's why: Weathermaker units are relatively low in cost and inexpensive to install. They operate only when needed, so operating costs are strictly controlled. They're as easy to turn on and off as an electric light, so the expense of hiring an operating engineer is usually eliminated. Because of Carrier quality, service expense is minimum. And the System offers substantial tax advantages.

Q. How quickly can a System be installed?

A. That depends on the building. And whether you want to install it all at once or step by step. In general, it's fast. All work can be done during regular hours without interrupting routine. And once the Utility Core is installed, individual units may be moved about and connected wherever they are needed to meet a temporarily increased heat load.

Q. What does a Weathermaker unit look like?

A. We've shown four here in commercial and industrial installations. More are shown in the 24-page booklet on the System. We'll be glad to send you this on request. We think you'll find it interesting and helpful.



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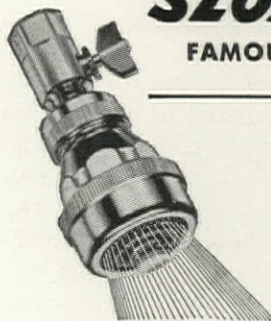
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Photo • HEDRICH-BLESSING

• The new 19-story INLAND STEEL BUILDING in CHICAGO is a gleaming structure of stainless steel and green-tinted glass above a recessed ground floor—no stores or shops. It is a praiseworthy achievement in planning that provides occupants with many most-wanted features. The entire main block is supported on seven pairs of exterior columns. Each floor is a wide open area, unobstructed by pillars, and may be divided by movable steel partitions which are anchored into metal

channels in ceiling grids. An adjoining 25-story windowless steel tower houses elevators, fire stairs, washrooms and other utilities. The cellular steel flooring, topped by lightweight concrete, carries air conditioning to perimeter floor grilles and electrical service and telephone wiring to all sections of the office floor. As are thousands of other expertly planned buildings, this new pace setter is completely equipped with SLOAN *Flush VALVES*.



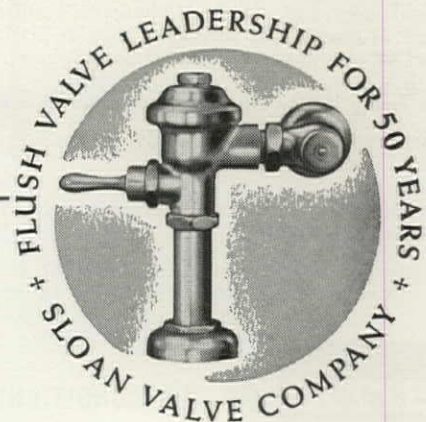
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Ad No. 124—7 x 10 in.—B&W
Trade Papers, February, 1958
Agency: Reincke, Meyer & Finn

President proposes five-year urban renewal plan, with federal share of cost gradually shrinking

President Eisenhower's budget for fiscal 1959 painted a contrasting picture of the federal government gradually backing away from some housing and building functions, while moving deeper into others. Over-all, however, most experts say that the President's proposals add up to a net decrease in federal responsibility in the area of housing and community facilities construction, even though the budget calls for an increase in federal construction spending (page 43).

Perhaps the most controversial housing proposal in the budget message was the Administration's plan to put urban renewal on a five-year basis, with gradually declining federal participation. The President's message said, "Now that this important program is well underway throughout the nation and the gains to participating communities have become well recognized, I believe the time has come when states and local communities should assume a share of the administrative responsibilities and financial costs more nearly commensurate with the benefits which their citizens receive." To do this he recommends a five-point program:

- ▶ Local communities should share costs of advance planning on renewal projects. This had already been proposed by a joint state-federal conference on transferring certain federal functions to the states.

- ▶ Each state should have "a special agency for urban redevelopment, housing and metropolitan planning to assume, as soon as possible, the financial responsibility for local planning of urban renewal projects. Adoption of this recommendation will be a constructive first step toward increasing the role of the states in this program and should ultimately permit the federal government to withdraw from supervision and review of planning."

- ▶ Capital grants for urban renewal should be put on a five-year basis—through fiscal 1964—but the federal share of net project costs would gradually decline over that period. For fiscal 1959, the President recommended new spending authorizations of \$200 million

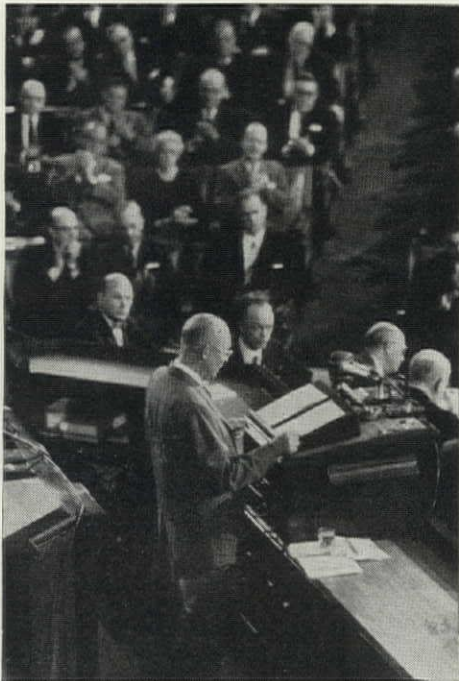
—citing the fact that \$50 million in unused spending authority, funds that the Budget Bureau held up after Congress appropriated \$350 million last year, is still available—and he asked for \$250 million a year each year thereafter until fiscal 1961. From 1962 to 1964, he asked for \$200 million each fiscal year. But instead of continuing on the current basis, with the federal government paying two-thirds of net project costs, and the cities paying one-third, the federal share would be cut to 60 per cent by fiscal 1960, then to 55 per cent in 1961, and to 50 per cent for the years 1962 to 1964. (Thus total federal-state outlays for renewal would theoretically increase from a maximum of \$375 million now to \$400 million in 1962.)

- ▶ The Urban Renewal Administration should be authorized to help local public agencies finance nonresidential urban renewal projects "by guaranteeing obligations issued to finance such projects." Present rules allow URA to use 10 per cent of its funds to aid nonresidential renewal areas. So far, the proposal to guarantee local obligations hasn't been completely worked out, but Washington observers guess it would work similarly to the public housing program, in which the federal government backs the bonds of local housing authorities.

The budget proposals on renewal have already drawn some fire, and there are indications that they may be in for a rough time in Congress. Peculiarly enough, much of the opposition to the President's renewal program will probably come from advocates of the program who have long wanted it put on a long-term basis but who do not feel that the federal share of renewal's cost should be cut; particularly not in such a way that another layer of government (the State) is imposed on an already cumbersome governmental procedure. One of the first to criticize the budget proposals was New Jersey's Liberal Republican Senator, Clifford P. Case, who said, "We need to explore very carefully this recommendation lest a downgraded incentive factor bog down an essential program."

continued on page 8

HANK WALKER—LIFE



The fact is, and most congressmen know it, that few states are now in a position to finance a large portion of urban renewal costs. Most of the mayors testifying before the Rains Committee on renewal in Washington just before the budget message was delivered called for *more* rather than less federal participation in the renewal program.

Urban renewal wasn't the only building program that the President backed away from in his budget message. The Department of Health, Education & Welfare had its hospital construction, sewage facilities, and school building programs sliced. Federal grants for hospital construction under the Hill-Burton Act are to be cut nearly in half, from \$112 million in fiscal 1958 to \$75 million in the coming fiscal year. Said the President: "In view of progress already made toward meeting community hospital requirements for general beds, the federal program should be modified to meet only the most urgent needs..." HEW officials dispute this view, claim that the states are still clamoring for 800,000 more beds for general hospitals.

HEW's program for aid in construction of sewage treatment plants wasn't cut for fiscal 1959—municipalities still will get \$45 million of federal assistance—but beginning in fiscal 1960, the Administration would like to turn the whole program back to the states. To provide the states with a source of revenue to pay for the program, the federal treasury would turn over to them its tax on telephone facilities.

Federal aid to school construction in areas where federal installations have caused a need for new schools would also be cut under the President's budget proposals, although not right away. This program, also under HEW, would continue at current rates of about \$45 to \$50 million a year, but in fiscal 1960 it would be cut back to \$20.5 million. The budget proposal asked that the present program be modified to apply only to "instances where the federal personnel both live and work on federal property."

While these building programs were being trimmed — or jettisoned altogether — in the budget message, the old-line housing functions performed by such agencies as the Federal Housing Administration, Federal National Mortgage Association and Community Facilities Administration, were generally strengthened. The President asked that many of the credit shackles—

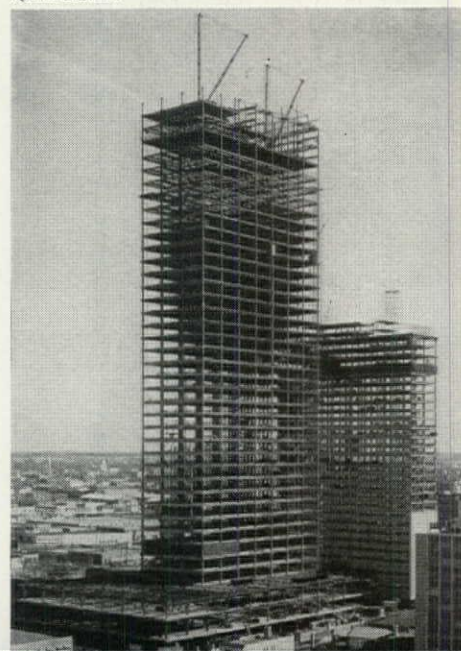
such as unrealistic interest rates and cumbersome controls on mortgage discounts—be struck from FHA and FNMA loan and mortgage guarantee programs. He said that FHA, FNMA and other housing agencies "could fulfill their statutory objectives and promote the stability and growth of the economy more effectively if the heads of the various agencies had wider discretionary authority to set the terms on which funds are available to qualified borrowers under federal insurance or guarantee of private loans." (This proposal is not likely to find favor with Congress, which has traditionally been reluctant to let federal housing administrators have much free rein.)

FHA's total underwriting authority would be increased in the budget by \$3 billion (or about 10 per cent of the total insurance in force), and this will probably be passed by Congress as a matter of course. However, Administration proposals that FHA's authorizations be put on a four-year continuing basis, will probably not get far. The President had asked for a \$3-billion-a-year increase for the next four years in maximum permissible FHA-insured mortgages outstanding. Congress, however likes to have FHA come to it every year for new underwriting authority, so it can use the FHA program, which is so popular with builders and bankers, as a lever to push through other housing legislation.

DALLAS' TALLEST SKYSCRAPER

The tallest structure in Dallas is the new, 42-story Southland Life Insurance Co. tower, one of three towers rising from a huge central base that covers a city block in downtown Dallas. Behind the Southland tower is the Sheraton-Dallas hotel, which is 28 stories high. A third tower, an office building of 32 stories, is planned for the future. Architects are Welton Becket & Associates.

SQUIRE HASKINS



URBAN RENEWAL

Ten year renewal need put at \$3.2 billion

Before President Eisenhower even proposed his five-year plan for urban renewal, supporters of the federal slum clearance program were marshaling their weapons—largely statistical and oratorical—to insure the program's continuance at least in its present form.

First, the American Municipal Association (AMA) revealed the results of a three-month survey conducted to determine how much federal financial assistance the 400 largest U.S. cities with active urban renewal programs will require in the next ten years. Based on the replies of 236 cities, AMA estimates that federal participation in urban renewal will have to total \$3.2 billion over the next ten years—considerably more than any current administration notions about the magnitude of the program. In 1958, the cities expect to request a total of \$494 million—almost twice the amount of federal funds that will be available. For the next five years—the period for which the President has requested approximately \$1.2 billion in capital grant funds—the cities estimate they will ask for over \$1.8 billion.

The AMA, which a month ago came out in support of a program of \$500 million a year for renewal and slum clearance (FORUM, Jan. '58), also reported that there were about \$260 million of requests for capital grants being processed at the end of 1957.

In the week before the President delivered his budget message to Congress, Representative Albert Rains (D, Ala.), chairman of the House Subcommittee on Housing and a leading urban renewal advocate, held hearings designed to muster support for a continuing and expanded program. Philip F. Tripp, president of the National Association of Housing & Redevelopment Officials (NAHRO) asked for a ten-year, \$5 billion federal program. Like most of the others who spoke at the hearings, Tripp emphasized the importance of renewal to long-range national security: "We must recognize that a substantial part of our security is dependent on the continued existence of the urban areas which provide the environment for so much of our educational, scientific, and industrial potential." Tripp also asked for more

federal aid to cities for clearing and redeveloping commercial and industrial blight, and for a reduction in the city's share of redevelopment costs. Reiterating NAHRO's convention resolutions, he came out for an expanded public housing program, recommending that the equivalent of 10 per cent of all housing starts per year be federally aided public housing.

A number of mayors, led by Richard C. Lee of New Haven, testified to the renewal program's necessity, too. Lee also asked for a \$10 billion, five-year urban renewal program.

Other urban renewal advocates, from Gov. George M. Leader of Pennsylvania and LIFE Publisher Andrew Heiskell to Developer William Zeckendorf, urged that the federal program be continued and expanded. But, as the hearings ended, their pleas were only partially heeded in President Eisenhower's budget message which proposed a measure of continuity—but coupled it with a plan for gradually diminishing federal participation in the renewal program (see page 7). However, Congress, and particularly Representative Rains, still have their innings coming up on the urban renewal program.

Scheuer gets Mill Creek, Sacramento projects

The handful of private developers who are most involved in the remodeling of U.S. cities have been scrambling about the nation in recent weeks with these results:

In St. Louis, James Scheuer of New York won a top prize in the urban renewal grab bag. Scheuer walked away with the job of building a new residential area on the 465-acre Mill Creek Valley site near downtown St. Louis. Scheuer got the job after the Land Clearance for Redevelopment Authority voted 3 to 2 against William Zeckendorf's competitive proposal.

Scheuer's victory was apparently due in large measure to his cohorts in the redevelopment scheme—a group of local St. Louis realtors and developers. This group is to redevelop the 165 acres of industrial property and 25 acres of commercial property on the site. After the vote was taken, William Zeckendorf Jr. accused the redevelopment authority of favoritism to the local interests, and, by affiliation, to Scheuer. (The

Authority later admitted to Mayor Raymond Tucker that localism had played a major part in its voting.)

Zeckendorf had wanted to get the whole Mill Creek job—commercial and industrial as well as residential—and exclusive rights to the adjacent Plaza area project as well. Webb & Knapp's architect, I. M. Pei, had drawn up a plan for the residential area with town houses and high-rise apartments laid out in formal squares and ovals. Some of the authority members seemed to prefer Scheuer's design—done by Mayer, Whittlesey & Glass—simply on the grounds that it was more casual. It features town houses, too, which will be sold as individual homes (\$12,000 to \$20,000), as well as high-rise apartments, and two- and three-story garden-type apartments.

In Washington, Scheuer and Roger L. Stevens got their commitment for a permanent \$5.8 million 5 per cent loan under section 220 of FHA's mortgage insurance program. This will finance the first half of the Southwest Area B project, a short distance from the Capitol, and will enable them to start construction this month (just a year behind schedule). Scheuer and Stevens plan to build 80 garden apartments and 402 units in one elevator structure. The permanent financing was obtained from John Hancock Mutual Life Insurance Co. of Boston, which made the loan at a discount to yield 5.05 per cent.

In Sacramento, Calif., Scheuer and Stevens scored another coup last month when they made an agreement with the Sacramento Redevelopment Agency to build 800 apartments, an office building and some commercial structures in that city's Capitol Mall project area at a cost of \$15 million. Work is due to begin later this year on clearing the site, which is part of a 62-block redevelopment area.

In Newark, N.J., the Newark Housing Authority announced that it had accepted the offer of Herbert S. Greenwald to build 1,100 units of middle-income housing and commercial structures in the city's Broad Street and Branch Brook redevelopment sites. Shortly before the Greenwald offer was accepted, the Redevelopment Corporation of New Jersey, which had originally agreed to do the project, had to withdraw because of a seven-month stalemate in its negotiations with FHA. The federal agency had insisted the project be built for 13 to 16 per cent less than the \$17.6 million Redevelopment Corp. planned to spend.

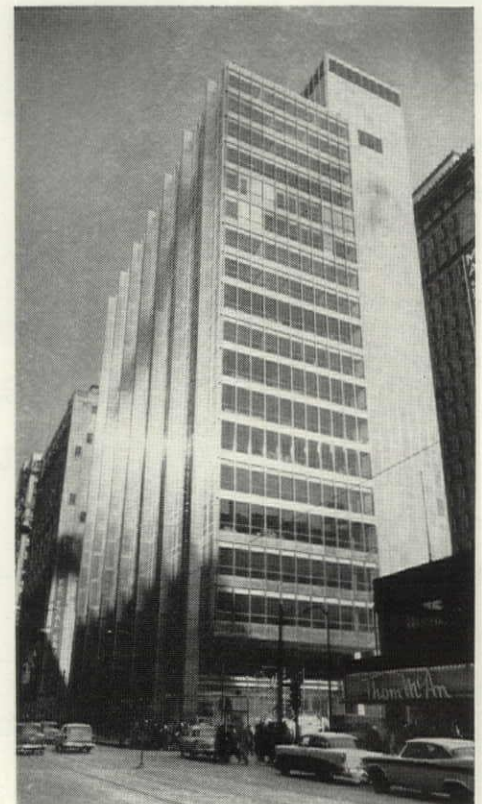
Court clears Lincoln Square obstacle

An important court decision and a near-record capital grant from the federal Urban Renewal Administration highlight the latest chapter in the stormy history of New York City's Lincoln Square redevelopment project.

The latest legal development is a setback for those merchants and residents in the area who have long opposed the \$205 million project. State Supreme Court Justice Owen McGivern ruled that resale of part of the property to Fordham University would not violate guarantees of separation of church and state, and that federal and state moneys paid in the form of write-downs on the land did not constitute any "gift or subsidy" to Fordham or other redevelopers. "In hard reality," McGivern

continued on page 11

KAUFMANN & FABRY



IN CHICAGO, A NEW OFFICE BUILDING

Chicago's first new office building in over 20 years, the Inland Steel Building at Dearborn and Monroe Streets was being occupied early this month. Designed by Skidmore, Owings & Merrill, the building is a glittering glass and steel jewel in Chicago's slowly redeveloping downtown. The top eight floors of the 19-story structure will be occupied by Inland. One of the tenants in the fully rented lower floors: SOM itself, taking two and a half floors for its Chicago office.

HOW BIG IS A PATTERN?

A noted educator in interior design has urged that vinyl wall covering patterns be made large enough to be seen at a distance. Many architects, on the other hand, champion textured surfaces with patterns on a very small scale. Most Cotan Cohyde fabrics are styled in small designs, in smooth and rough textures; a few in larger patterns (notably our Harlequin*). How big should new patterns be? We'd be happy to hear from advocates of both sides.

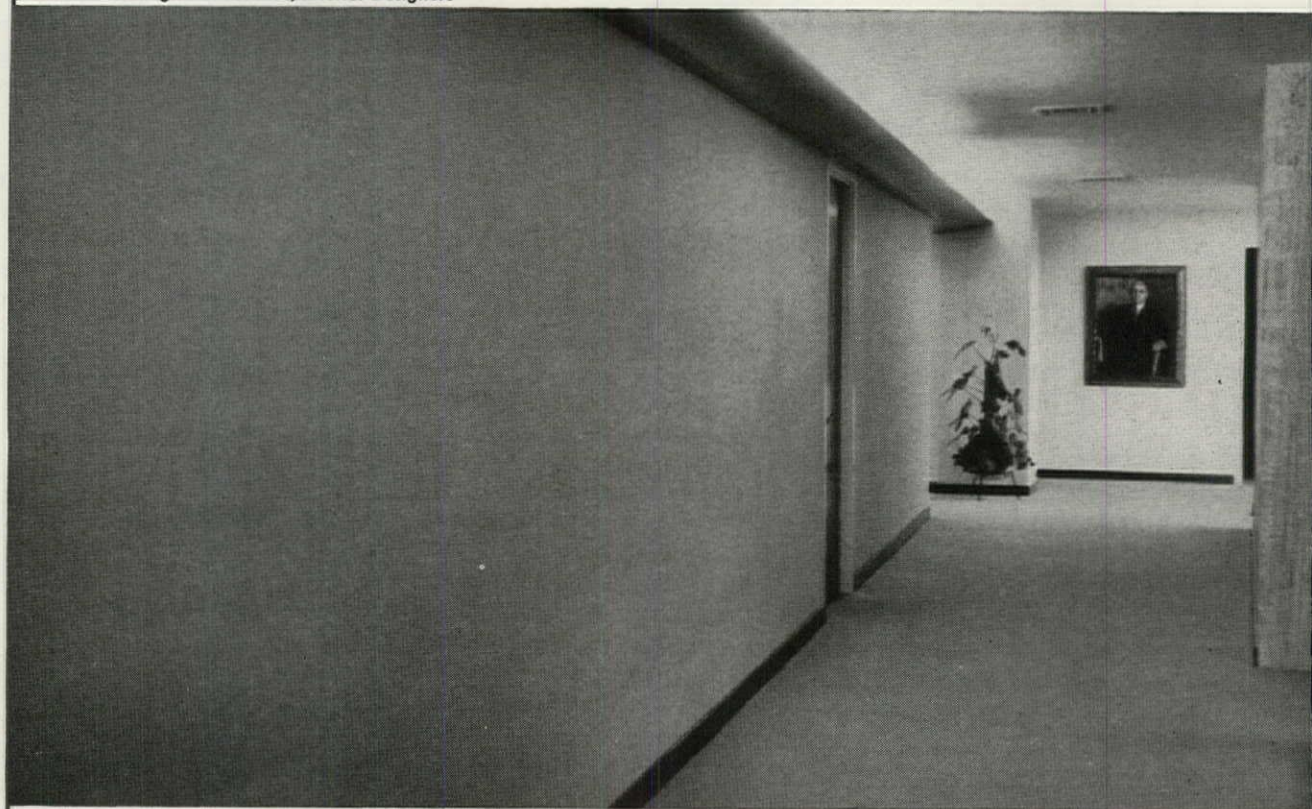
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SPECIFICATIONS, PLEASE


We've listed architects' specifications, installation instructions, physical characteristics and our regional distributors in a new illustrated folder on Cotan vinyl fabrics. You'll find it informative and useful for reference. For your copy, write to Dept. F, Cotan, 345 Oliver Street, Newark, N. J.

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said, "to exclude Fordham or any other sectarian institution from great overall community planning efforts, such as the Lincoln Square project, would be to relegate such institutions to the other side of the tracks."

Lincoln Square opponents immediately appealed McGivern's decision, and their legal efforts prevented the city from taking title to the 68-acre project area by the January 31 target date. City attorneys argued before the Appellate Division that further delays might cause other sponsors of the development to pull out of the project completely.

While the legal hassle continued, the federal Urban Renewal Administration finally approved a \$27.3 million capital grant for the Lincoln Square project. This will cover two-thirds of the net deficit resulting from purchase and clearance of the land. The city will pay the remaining one-third.

Another smaller, but nevertheless controversial, New York redevelopment project moved a step closer to completion last month when the city's Board of Estimate approved the \$12.5 million Park Row project. This project will be near City Hall in lower Manhattan. Its most striking feature is that its sponsor is a cooperative housing corporation formed by the city's Municipal Credit Union with the help of the State Credit Union League. Once land is cleared, the credit union plans to build 400 units on the site. Because the project will necessitate razing venerable St. Joachim's Roman Catholic Church, it has been fought by parishioners. Also, the question of tax exemption still has to be settled by the Board of Estimate before Park Row can move into the actual development stage.

MILITARY BUILDING

Bomb shelter controversy revived by two reports

One of the most provocative arguments of our time is getting underway in Washington this month. It centers specifically on proposals for a vast program for building protective shelters against nuclear attack, and encompasses the question—still unanswered after 12 years of cold and hot war—of where a shelter program should stand in relation to our total defense.

This time the question of shelters is being argued before the House Military Operations subcommittee in Washing-

ton, in an entirely new framework—the Russian Sputniks and missile capabilities have put the U.S. in a seriously defensive state of mind. Perhaps more important than the House hearings are the private deliberations on shelters now going on within the Administration—and in the Pentagon. In his budget message, President Eisenhower devoted only one terse sentence to shelters: "The question of a shelter program is under consideration and tests of various types of shelters are continuing." But the brevity of the statement should not be considered a measure of the seriousness with which the Administration regards the problem.

The basis for the Administration's current shelter discussion lies in two reports, the still secret Gaither report and the Rockefeller report which was made public a few weeks ago. The consensus of expert opinion about the shelter portions of the Gaither report is that they recommend a shelter construction program, primarily for radioactive fallout protection, which would cost \$22 billion. Construction would be stretched out over five years or possibly more. The size of the shelter program advocated in the Gaither report is said to have surprised the Administration, and set off a broad re-examination of the whole civil defense program.

The other report was made by the Rockefeller Brothers Fund. It recommends a three-part civil defense program:

- ▶ A warning system, including a means of gathering "information about radiological levels."
- ▶ "Protection against fallout. A fallout shelter program could reduce casualties substantially."
- ▶ "Protection against atomic blast and heat. A deep shelter program should be carefully studied."

The Rockefeller report also touched on what is certain to become a major source of argument, at least by the time Congress turns its full attention to the shelter problem in coming weeks: Can we really protect against nuclear blast, or only against fallout? If only the latter, does it make sense to build shelters in heavily industrialized target areas, which would be leveled by nuclear blast, or just to build fallout shelters in outlying areas?

Washington observers say that any shelter construction program such as recommended by the Gaither and Rockefeller reports will run into strong opposition from many within the Administration, both on military and budgetary grounds. Some military spokesmen

are understood to oppose a big shelter program because they believe that the money spent for shelters is better spent to increase our military capability, which, they argue, is the best defense we have. The counter argument to this, and one that evidently swayed the Gaither group, is that if the country is unable to muster enough energy for a counterblow following a nuclear attack, because of expected heavy losses of life, all the defensive weapons in the world wouldn't help.

A large shelter building program has been steadily gaining support from other sources, too. Dr. Edward H. Teller, noted atomic scientist, told a Senate hearing that fallout shelters were absolutely essential to the nation's survival. Last month, TIME, INC. Editor-in-Chief Henry R. Luce, speaking at Founder's Day exercises at the University of Pennsylvania, came out for a shelter program costing \$2 billion to \$3 billion a year, with expenses shared by federal, state and local governments. "Shelters," Luce said, "are not only a practical but a moral necessity."

continued on page 12

MARVIN RAND



IN PASADENA, PILLS BEHIND THE FILIGREE

"Can this place also make pills?" was the wondering query of Arthur Hanisch when he first ambled through the sparkling new pharmaceutical factory designed by Edward D. Stone. Hanisch, president of Stuart Co., hired Stone to design the plant after seeing a picture of Stone's New Delhi embassy (FORUM, Dec. '57). The \$3 million building has much of the airy charm of the embassy, with a 400 foot white-and-gold filigree façade, black-bottomed reflecting pools and five fountains. Inside, the building has a central inner court which can be used as a dining area.

Philadelphia grand jury probes hospital cracks

Last summer, a special grand jury set out to investigate the sudden appearance of large cracks in the walls of a new \$3.4 million food service building at Philadelphia's General Hospital (FORUM, July '57). Last month, the verdict was returned: although no criminal negligence was found, the jury charged that the incompetence of public officials and the ignorance of the building's architects resulted in unnecessary costs estimated at \$70,000.

The jury's decision was heavily influenced by a special report made by an investigating team of three architects and an engineer: Philadelphia Architects Morton Keast, David H. Morgan and Walter Antrim, and New York Engineer Fred N. Severud. This group of experts decided that the major cause of the cracks in the building was an exposed continuous concrete canopy on the roof which was put in without expansion joints.

The panel analyzed the problem as follows: "The canopies at the roof level are directly exposed to heat and cold. Since the building is heated and insulated, this means that these canopies must of necessity behave differently from the rest of the building. When the sun shines upon them they absorb the heat and expand, particularly so since they are not insulated. This expansion will produce a kick against the rest of the building not heated by the sun to the same extent. As night falls, and during winter, when very cold weather sets in, the opposite action takes place, and the canopies exert a gigantic pull on the structure. The forces engendered are dependent upon the temperature differential, and are, in extreme cases, of a very large order."

The "kick" that is produced by this sort of action is enforced, in the case of the hospital building, by a stair well wall that runs the height of the building, and acts as an anchor. Thus, the whole building in effect twists when expansion or contraction takes place.

The question of responsibility for such a defect was hard to fix. For one thing, the original architect, Eugene Stopper, died in 1951. Most of the public officials involved have passed from the scene. But the four experts, while naming no names, made a forthright statement pertinent to both the

engineering and architectural professions: "It seems to us that it was the original designing engineer who should have been aware of the danger inherent in constructing the canopies continuously, without any joints whatever. . . . However, this knowledge of concrete canopy reactions was not generally known at the time of the preparation of the working drawings of this building in 1950." They went on to say that "Actual responsibility for faults in the

construction of the building must rest on the original architect. . . ."

The experts feel that the faults can be remedied by cutting the canopy and putting in expansion joints where necessary, and rebuilding cracked masonry.

The grand jury noted that, "We are convinced that if this building had been constructed for private industry the owners would have been more careful in attending to the building deficiencies."

Feud between builders and county supervisor mars completion of Pittsburgh hospital

"An architect's dream, but a builder's nightmare."

That was the tag hung on the \$22.4 million John J. Kane Hospital for the aged that was dedicated this month in Scott Township, just south of Pittsburgh. Ever since excavations were started more than three years ago, this Allegheny County project has left a trail of grief for most of its builders and subcontractors. Its completion is about 15 months behind schedule.

Several weeks ago, the job's troublesome record got a widespread public airing when Harry L. King, project engineer for the county, charged that workmen had cost builders and suppliers \$250,000 by helping themselves to all sorts of equipment, fittings, and supplies. King said mercury switches, towel bars, door hinges—and even 30 toilets—had been stolen.

This charge brought bubbling to the surface many gripes that builders had grumbled about for three years. The gist of their retort was: Sure there has been pilfering, but no more than usual on such a job, and nothing like \$250,000 worth; the biggest source of loss and delay has been the County Engineer, King himself.

The most vehement denunciation of the Kane project comes from Mrs. Dorothy Sherry, widow of Builder Harry Sherry, who, until his death over a year ago headed Sherry-Richards Co., the major contractor on the job. Mrs. Sherry says the firm lost "\$2 million and then some" on the project, and adds that she "lost more than just money. That project killed my husband."

Shortly after Sherry died, his bonding company took over responsibility

for completion of Sherry-Richards' \$13.3 million contract, and S. N. Nielson, also a Chicago construction firm, has taken over actual completion of the work.

Mrs. Sherry says that virtually all the subcontractors have lost money on the job, too, and some have admitted to losses.

Most losses resulted from King's interpretations of job specifications, say the builders. His interpretations caused some costs to run as much as 50 per cent higher than original bids, they say. One example was a running battle King waged with contractors over the handling of concrete. Contractors claimed that original specifications called for covering newly laid concrete with paper while it was drying. King, however, maintained that the concrete should be continuously wet down while curing. He compelled the contractors to wet it, resulting, they say, in unforeseen added costs. In another instance, the contractors won a concrete hassle. Early in the project, workers were ready to pour concrete in 22 degree weather, but the County Supervisor ordered them not to proceed. Despite the order—and the threat of using county police to back it up—the company foreman ordered the concrete poured anyway. It did not freeze and the contractors won at least this one skirmish.

The hospital has three main structures: an eight-story general hospital for bed patients; a three-story semi-ambulant section; a two-story ambulant section with easy access to an auditorium and chapel. The hospital was designed by two Pittsburgh firms, Mitchell & Ritchey and Button & McLean.

The center of the storm, County Supervisor King, is a 50-year-old Yale graduate who once worked as an inspector on construction of the Pentagon and who was with the National Housing Administration (now HHFA) before moving to Pittsburgh. Engineer King dismisses all the charges leveled against him with a simple comment, "They can't take it." About charges that he is not only a perfectionist, but changes his mind with disturbing frequency, resulting in hefty losses for contractors, King says, "All I've done is make them conform to specifications which were available to them at the time they submitted their bids. If I really wanted to tighten up on this job, then it really would get rough."

MISCELLANY

Canada's wrong way bridge, a \$12,000 error

"It could happen to anyone." That is what everybody concerned with the project replied when questioned about how it happened that a new approach to an overpass on the multimillion dollar Burlington Skyway near Hamilton, Ontario was banked the wrong way.

No one noticed the mistake until after the approach and the \$150,000 overpass were almost built. Then the chagrined engineers had to rebank the approach with more gravel and concrete to get the proper slope. Cost to repair the blunder: \$12,000.

One explanation of the error, which occurred over four months ago, but was made public only a few weeks ago, was that the designing engineer got his compass directions scrambled, and thereby got the slope going west instead of east—or was it east instead of west? At any rate, an engineering consultant for the Skyway explains it this way: "The design for such an overpass goes through several hands. The planning begins with the Highways Department of the Provincial government, which decides on locations and levels. The bridge section of this department fills in all the structures, such as this overpass. The basic figures are established and turned over to firms of consulting engineers." The mistake, he says, "occurred somewhere between the first studies of the highway and the completion by our firm of the erring design."

Skouras reveals plans for \$300 million L.A. project

"We're going to make this more than just another business development," says Spyros Skouras, president of Twentieth Century-Fox, referring to his plan to redevelop the 284-acre Fox movie lot in Los Angeles. "It's going to be cultural, too."

Among the cultural amenities: a 4,000-seat auditorium and 79 acres of movie and TV studios. But Skouras will cram a lot of business in among the culture. As designed by Architects Welton Becket & Associates, Skouras' development in West Los Angeles calls for just about everything you could find in any large city—stores, apartments (with swimming pools), a 1,000-room hotel, garages, and even

underground oil pumping stations for Fox's lucrative oil business.

Skouras thinks he will be able to interest insurance companies in investing in this ambitious scheme, and reportedly one large eastern company is already considering putting \$50 million into it. On an expected investment of \$300 million, Fox hopes to garner \$36 million a year in net income—not bad considering that the real estate itself cost only \$1 million to assemble over many years.

Still shifting building models around his "Century City," movie magnate-developer Skouras says: "I would like to do for Los Angeles what the Rockefellers did for New York."



RADIO CITY OF THE WEST is the ambitious plan of Twentieth Century-Fox President Spyros Skouras. Besides apartments, stores and hotel, he plans to build eight new office buildings along Santa Monica Blvd., highlighted by three 22-story "lens-shaped" structures, and

one 30-story office tower (top picture, foreground) that will be higher than any building in Los Angeles. Lower picture shows commercial area (left) well separated from residential development (upper right). A mile-long mall runs through the heart of the project.

WASHINGTON

Commerce-BLS statistics struggle gets hot

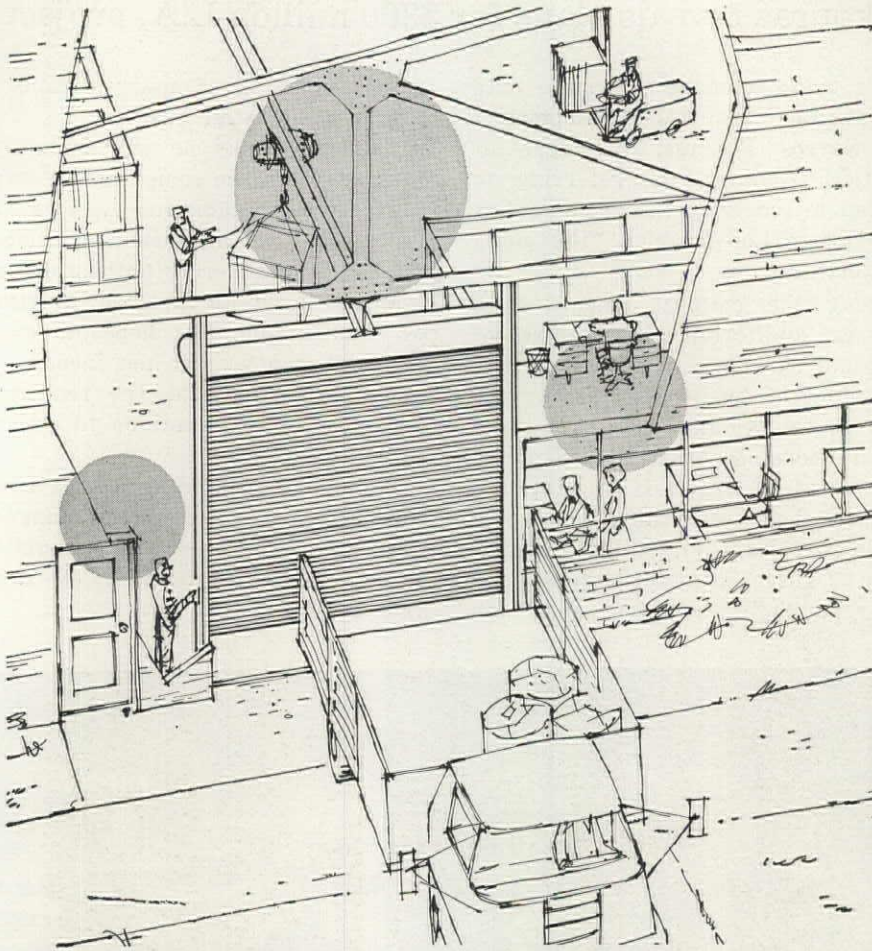
Behind the dull façade of federal statistics gathering, a fierce bureaucratic struggle is taking place. Combatants are the Department of Commerce and the Bureau of Labor Statistics, a division of the Department of Labor. The prize: complete jurisdiction over the gathering and collating of all federal statistics on construction and housing.

Commerce made preliminary moves to absorb BLS, say Washington observers, when it set up a new Office of Construction Statistics last month. This unit, to be headed by Walter W. Schneider, will consolidate the gathering of all Commerce's present building statistics into an independent branch of the Business & Defense Services Administration within Commerce. At present, Commerce gathers figures on commercial, industrial, and state and local government construction volume. BLS reports on residential and federal building.

Behind the scenes is the ever watchful Budget Bureau, which is interested in economies that presumably would result from the consolidation of the two agencies. Last year, the Budget Bureau tried to push the Commerce operation into BLS, but Commerce Secretary Sinclair Weeks squelched the move. Now, evidently Budget wants to move in the other direction, and is reportedly agitating quietly for a merger.

Many building industry groups are supporting the move to put BLS into Commerce, largely on the grounds that Commerce is most directly concerned with aiding business with its statistical and economic studies. The AFL-CIO, on the other hand, has promised it will fight any efforts to move BLS into Commerce. Most economists have supported some sort of consolidation of construction statistics in order to get more coherent figures. The recent Census showing a difference of some 20 per cent, or 2.7 million units, in BLS figures and housing census figures has opened to debate the BLS system of measuring starts by checking metropolitan area building permits. Unofficially, Commerce thinks it can measure starts better by making field surveys in areas where building permit enforcement is lax or nonexistent. The Census

continued on page 16



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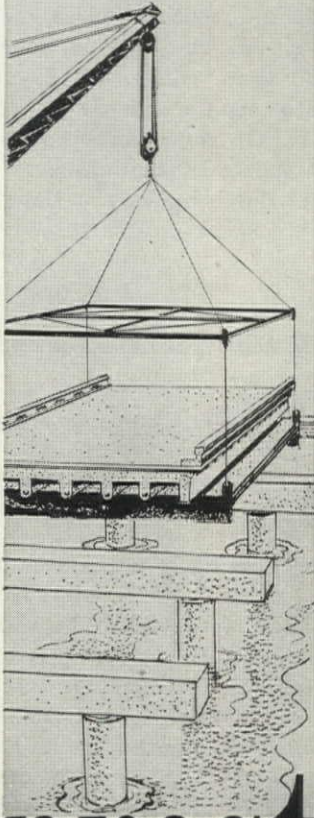
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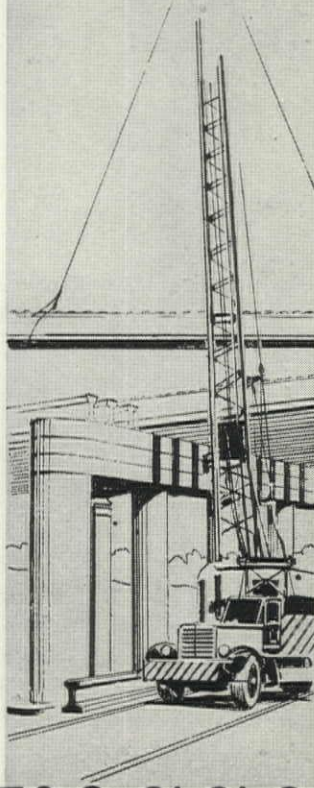
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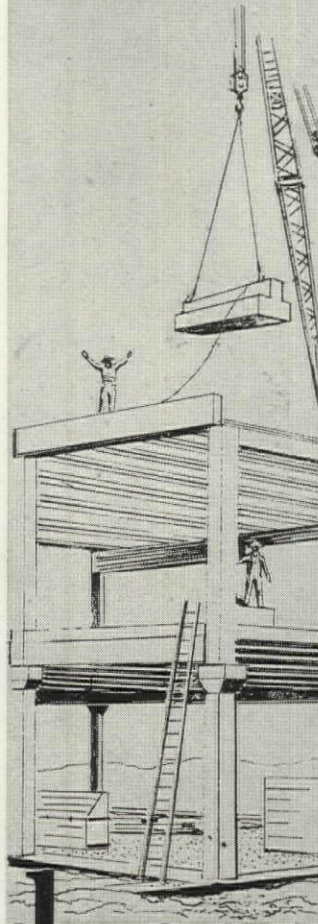
CAUSEWAYS



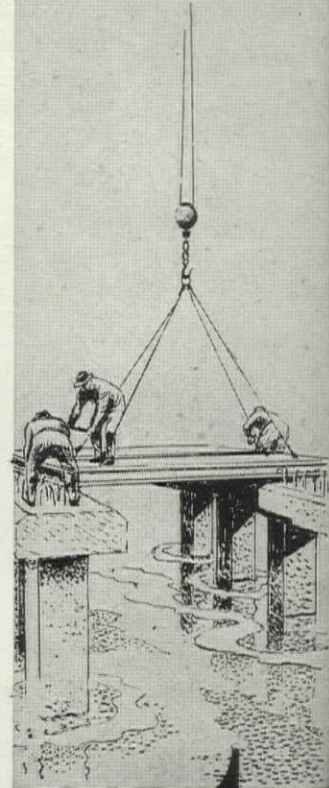
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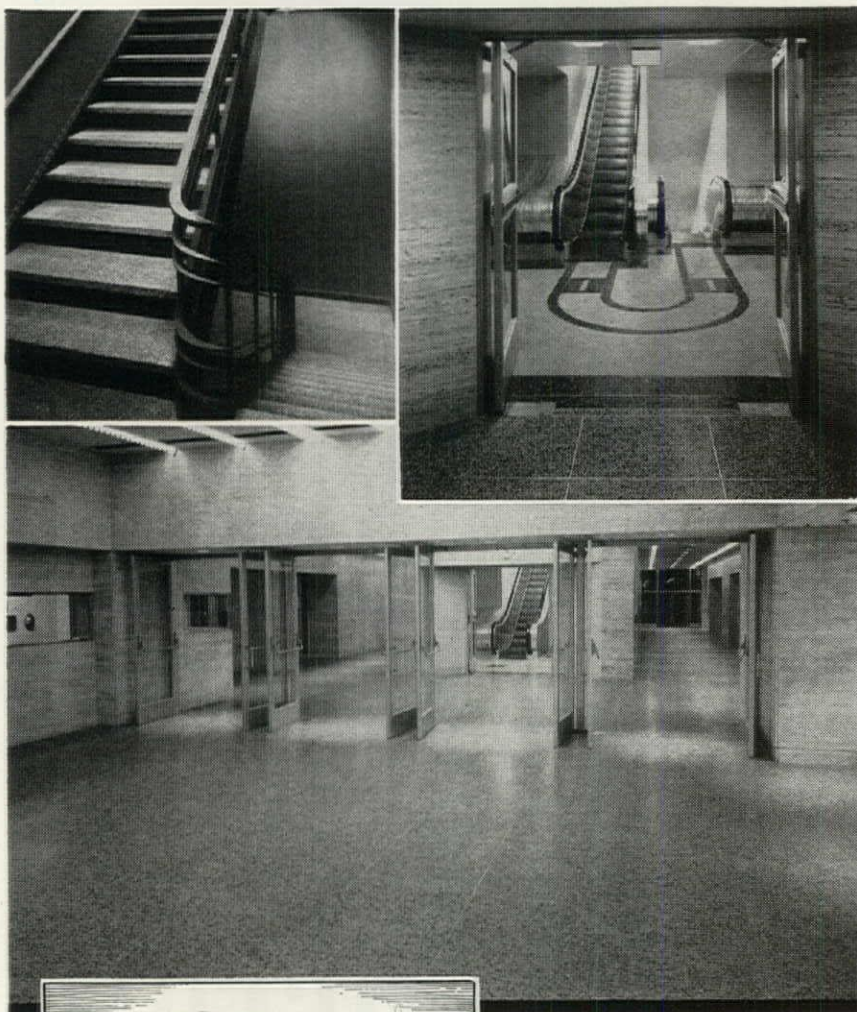
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Bureau, which is part of Commerce, has just gotten \$500,000 in additional funds to study nonresidential construction in areas which don't issue building permits (e.g., most rural areas), and presumably the same could be done for residential building.

The BLS operation would probably have to be moved into Commerce through an executive order for reorganization, which Congress would have to vote down within 60 days if it wished to keep the order from becoming effective. Or consolidation could also be accomplished via interagency agreement but this is unlikely as Department of Labor officials are sure to fight the move.

METROPOLITAN PROBLEMS

**New York-Jersey transit
report meets opposition**

Almost unanimous opposition greeted the final report submitted last month by the bi-state Metropolitan Rapid Transit Commission to the legislatures and governors of New York and New Jersey.

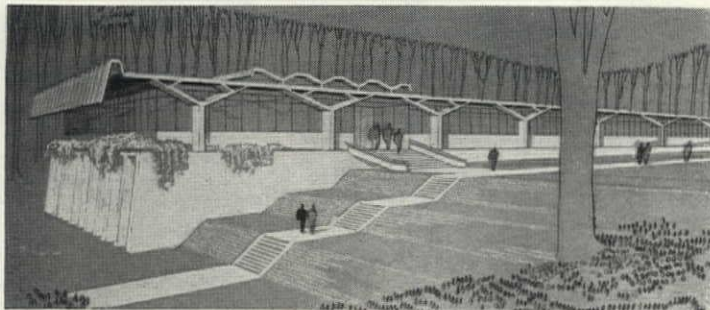
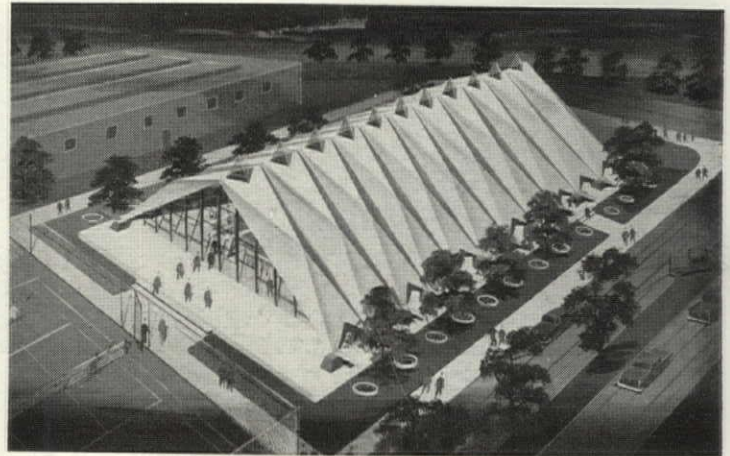
The report is actually a modification of a widely publicized preliminary report of last May, which recommended a \$400 million rapid transit loop with an underground arc on the Jersey side, a new Hudson River crossing at 59th Street and a tie-in with existing BMT subway tracks. The latest report recommends new trackage and tunnels for the Hudson & Manhattan RR, in the same pattern as the first report. But, citing testimony of New York City Transit Authority head, Charles Patterson, that the BMT system isn't adequate for the anticipated increase in traffic, the report recommends a new subway line from the Battery to 59th Street. The whole system would be run by a bi-state commission. Total cost: \$500 million. Annual deficit for the system: \$7 million if fares are set at 50¢ for a one-way trip.

New York's Mayor Wagner, and the mayors of Jersey City and Newark, as well as county leaders in Jersey, have come out against the plan, largely on the grounds that it is too costly. So far, at least, the mayors and county officers of the affected areas don't seem to agree with the commission's statement that "The cost will be large; but the cost of inaction is already far larger and will progressively grow still larger."

A roundup of recent and significant proposals

POOL UNDER A TENT

U.S. Coast Guard trainees will practice aquatic activities under this tent of concrete prismatic panels studded with blue glass skylights. The new training pool, in Alameda, Calif., was designed by Architect Ernest J. Kump of Palo Alto and Engineer Walter L. Dickey of Sun Valley. In addition to a seven-lane, 25-meter pool, there will be 1- and 3-meter diving boards and a 15-foot-high abandon-ship platform.

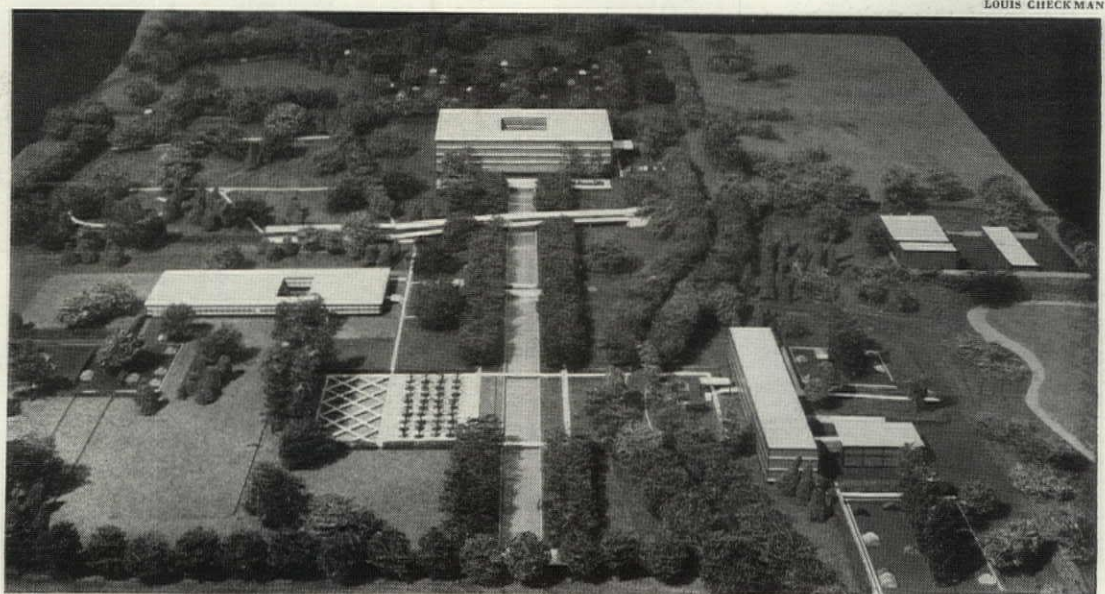


ALBURTUS—YALE NEWS BUREAU

PAUL RUDOLPH'S DOUBLE DEBUT AT YALE

Following close on the heels of his selection as chairman of Yale's Department of Architecture came the announcement that Paul Rudolph had designed the William B. Greeley Memorial Laboratory for the Forestry School—the first example of his work at Yale. The

Greeley Laboratory, of glass and concrete, will provide space for the University's expanding research in wood technology. Research now done in Valhalla, N.Y., will be transferred to the new laboratory, consolidating the Forestry School in New Haven.



LOUIS CHECKMAN

COUNTRY LIFE FOR UNION CARBIDE RESEARCHERS

Though not really in the deep bush, the 280-acre Westchester County site of Union Carbide's research center appears to be much farther from New York City than it is. Skidmore, Ow-

ings & Merrill, also architects of Union Carbide's midtown Manhattan home office (FORUM, Aug. '57), designed the four-story office building, smaller utilities and maintenance build-

ing (right), 600-foot reflecting pool, basic-research lab (left), and customer-service laboratory (foreground), all of reinforced concrete with metal-and-glass exteriors.



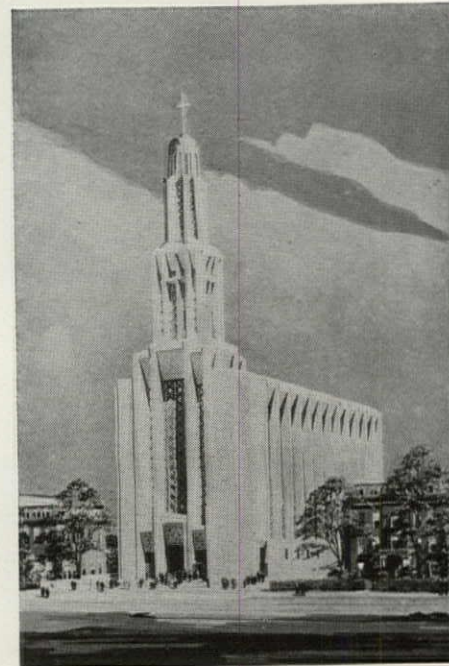
NEW PLANT FOR PLYMOUTH'S SOUTHWEST PUSH

To a manufacturer in the highly competitive automobile business the fast-growing Southwest and South-Central U.S. markets look good indeed. Chrysler Corp. has recently announced plans to invade the area, using as a base a new 1.3-million-square-foot plant near St. Louis that will assemble Plymouths. Albert Kahn

Associated Architects & Engineers of Detroit designed the main plant, which has precast concrete walls hung on a structural steel frame. Fronting the plant is a 65,000-square-foot administration building, designed by the St. Louis firm of Sverdrup & Parcel. Next spring's production goal: 60 Plymouths per hour.

OLD SITE, NEW CHURCH

Just a year after St. Joseph's Cathedral in Hartford, Conn. was totally destroyed by fire, church authorities announced that an even larger cathedral would be built on the same site. Eggers & Higgins designed the new cathedral (right), which will cost over \$6 million.

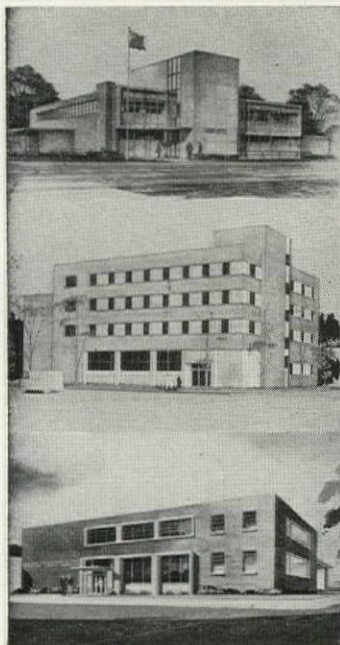
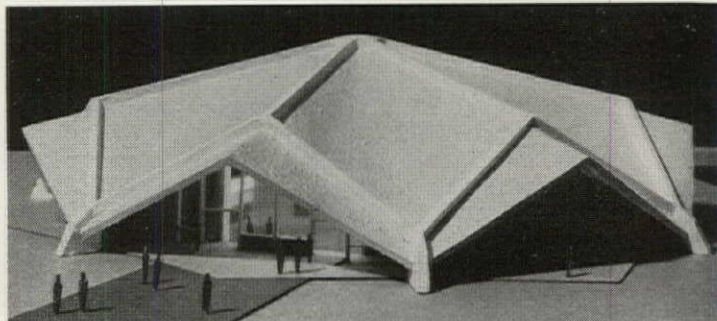


MULTIPURPOSE HYPERBOLIC PARABOLOID

Next month Architects Bassetti & Morse plan to start construction of this multipurpose (e.g., cafeteria, assembly hall, and exercise room) addition to the high school in Mercer

Island, Wash. The new building has a thin-shell hyperbolic-paraboloid concrete roof and is expected to cost \$140,000 for 11,000 square feet of enclosed space.

ART HUFT



U. S. AT HOME

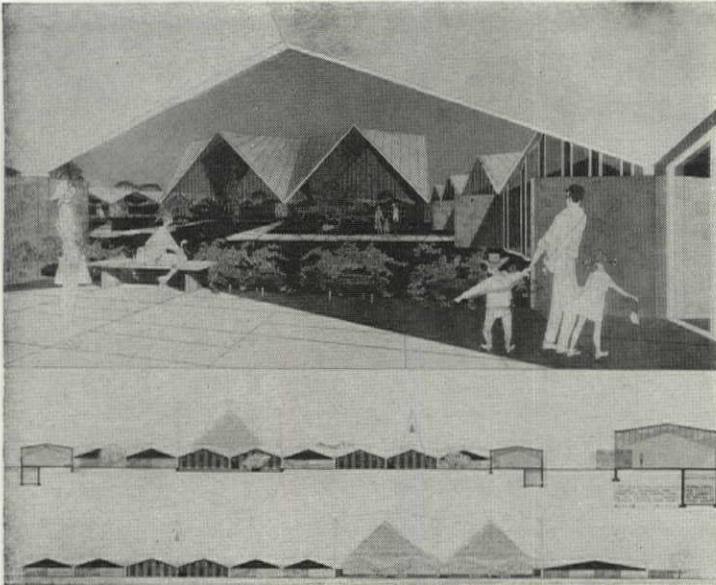
Almost made-to-order illustrations for the FORUM Editorial, on page 67, are these three uninspiring new buildings, approved recently by the General Services Administration. They are typical of the unimposing architectural face which the U.S. Government wears in public. All of them, it should be noted, are billed by the GSA as "contemporary" in style, and the top one, a post office for Laurel, Miss., is called "functional," too. Estimated cost: \$829,000. The middle building is a post office and courthouse—with a penthouse—in Greenville, Miss. The third, another post office, will be built in Manning, S. C.



SWISS CHANCELLERY IN WASHINGTON

When Architect William Lescaze set about designing a chancellery for the Swiss embassy in Washington, he tried to fit his design into its location—a residential section of

the city. The building at the left is the two-story chancellery (office building). The separate wing at the right is for receptions and conferences; glass-enclosed lobby, center.



COWBOY HALL OF FAME FOR OKLAHOMA

Two young Birmingham, Mich. architects went to Oklahoma, where the corn—and the cowboys—grow as high as an elephant's eye, and there found fame and fortune. Harold Jack Begrow and Jack W. Brown won a nationwide competition

to design a Cowboy Hall of Fame. The competition gave them \$10,000 plus 6 per cent of the cost of the \$5 million project. To commemorate "the life and times of the cowboy," it will be financed by contributions from 17 western states.



INTERCHURCH CENTER

A \$20 million Interchurch Center sponsored by Protestant and Eastern Orthodox churches is under way in New York City. The new center was designed by Voorhees, Walker, Smith & Smith and Collens, Willis & Beckonert. A special advisory committee had asked that a striking architectural statement be made, but this conservative approach was chosen instead.

LOUIS CHECKMAN



SYNAGOGUE ON A GARDEN PLATFORM

To mark the separation between the religious and social portions of Congregation Beth El in South Orange, N. J., Architects Davis, Brody & Wisniewski of New York set the

synagogue itself on a garden platform. Between services, worshipers can gather in three open plazas. Sculptured screens, symbolizing seven days of creation, will face the street.



ANOTHER PEAK IN SAN FRANCISCO'S SKY LINE

On the edge of what San Francisco planners hope will one day be the finest redeveloped area in the city, Benjamin H. Swig plans to erect a new 25-story skyscraper. Architect William Lescaze designed a tower faced with

glass, aluminum, and generous portions of blue ceramic tile. The building, which will cost around \$10 million, will overlook the produce-market area that has long been marked as part of the city's future Golden Gateway redevelopment.

SHERATON'S "HIGHWAY-HOTEL" IN BINGHAMTON

Across the Chenango River from downtown Binghamton, N. Y., Sheraton Corp., manager of some 45 hotels throughout the world, plans to build a \$4-million, 200-room highway

hotel, with a small wing for a TV station. Architects for the new hotel are Samuel Glaser Associates of Boston and Mrs. Mary Morrison Kennedy, a Sheraton vice president.



Owners: **Boston Manufacturers Mutual Insurance Company
and Mutual Boiler and Machinery Insurance Company
Waltham, Massachusetts**

Architects: **Anderson, Beckwith & Haible.**

Mechanical Engineer: **Delbrook Ventilating Co.**

Mechanical Contractor: **C. H. Cronin Co., all of Boston, Mass.**

Air view shows central court.



Above: Reception Lobby.



Above: Cafeteria and Lounge.



Right: Court, Penthouse and Lounge.

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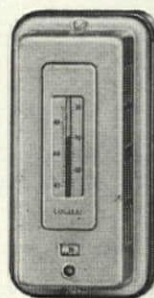
This Winner of Significant Architectural Awards is one of the nation's outstanding suburban office buildings. It was a 1957 recipient of the highest building design award of the American Institute of Architects. It also received the Boston Arts Festival Architecture Award and the 1957 Parker Medal for "the most beautiful building in Metropolitan Boston". In addition to "achieving such splendid use of its site and such useful splendor in its central court the building provides an attractive, pleasing environment, comfortable and highly efficient to work in."

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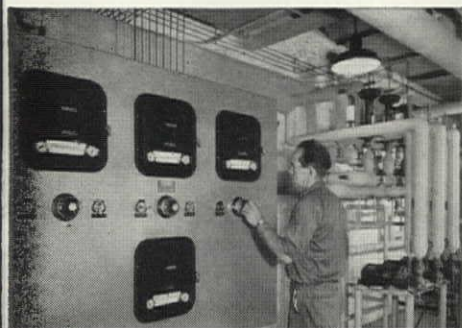
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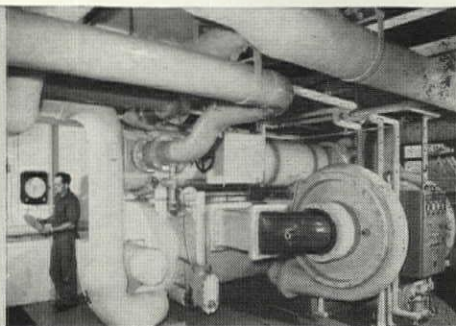
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Right: Chilled water supply for air conditioning units is regulated by a Powers Temperature Recording Controller.



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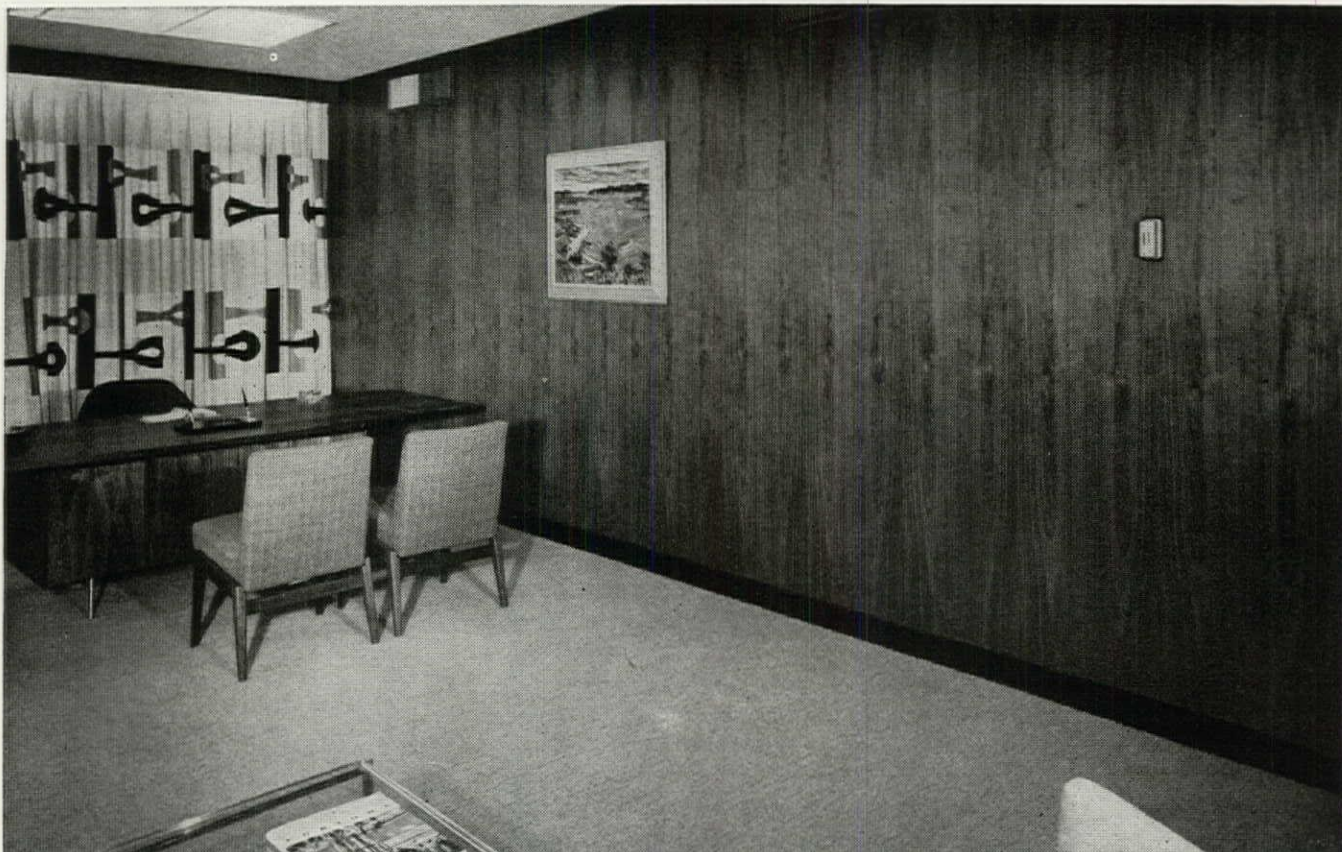
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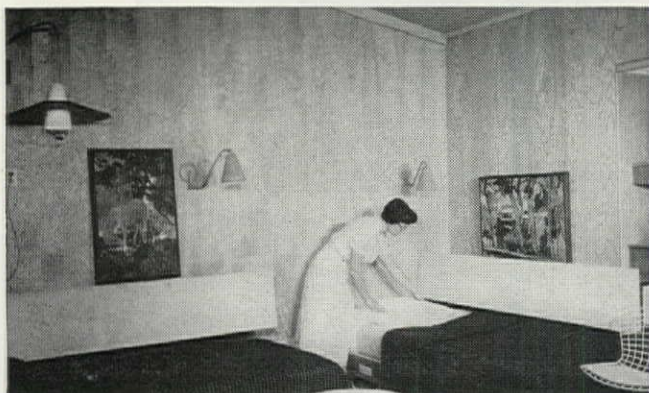
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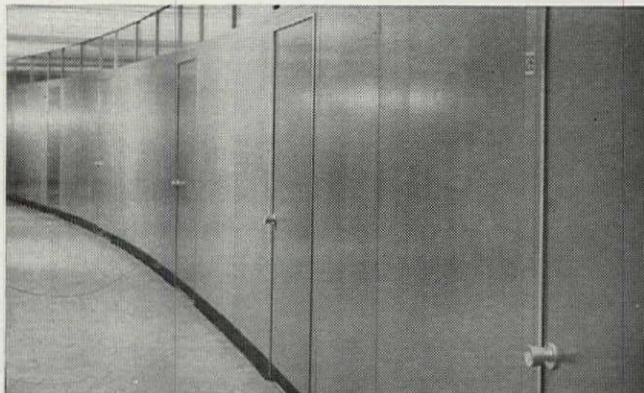


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Weldwood birch movable partitions, installed with 1/2-inch clearance below luminous ceiling, follow the curve of this corridor in the new home office of Medusa Portland Cement Company, Cleveland, Ohio. Arch.: Ernest Payer.



Eisenhower budget calls for federal construction outlays to rise 15 per cent

In the first month of 1958 it was hard to separate the economics from the politics of construction. Faced with the problems of a cold-space-war offensive from the Soviet Union on the one hand, and a "minor readjustment" or "baby recession" in the domestic economy on the other, the Administration served up its answer to the economic challenges in the form of actions and proposals that focus heavily on the building industry.

By mid-January, industrial production had dropped 6 per cent from last August, and unemployment was about 4 million, or around 6 per cent of the total civilian labor force, the highest level since early 1950. More vaporous than hard statistics, but more important, too, was the vital question of consumer confidence. A spokesman for the National Association of Home Builders, Economist Nathaniel Rogg, said glumly that "anyone who is relying on housing to bring us out of the recession had better look again. Our sales depend too much on consumer confidence, as well as consumer incomes." Rogg, symbolizing perhaps the rather polished pessimism of home builders who are hoping to shake looser credit terms out of the money managers, sees home building as at best "a stabilizing influence" this year. Most other forecasters look for an upswing from the 989,700 units started last year to somewhere around 1.1 million starts in 1958.

Despite the drop in employment and production—and the home builders' pessimism—the Eisenhower administration is not going to ram through a crash program of civilian public works. This was made clear in the President's budget message which provided no significant increases in civilian public works spending. An Administration economist noted that "there may have been at one time on the back shelf possible public works projects if they were needed—but they are not being contemplated now." This confirms that the administration is following the economic philosophy of one-time head of the Council of Economic Advisers, Arthur F. Burns, who in a recent book, *Prosperity without Inflation*, wrote, "... emphasis at the start of a recession should ordinarily be on the easing of credit conditions, later on tax reductions for both individuals and business, still later on the rescheduling of federal expenditure within totals set by long-term considerations, and—only as a

last resort—on large public works programs."

This does not mean that Washington is ignoring building in its moves to spark employment and output. Before Christmas, President Eisenhower made it clear that construction was no longer the stepchild it seemed during the tight money days of the past year and a half. He released \$177 million that had been appropriated by Congress for housing and construction but which had been frozen by the Budget Bureau. The Federal National Mortgage Association got \$107 million of the \$177 million for purchasing mortgages on Capehart Act housing for servicemen. (Most of this money has already been spoken for, according to Washington reports.) Another \$20 million went to Fannie Mae to buy cooperative housing mortgages, and the Urban Renewal Administration got \$50 million for further capital grants—half of the \$100 million frozen last year after Congress authorized \$350 million in capital grant reservation funds for the year.

The Eisenhower budget for fiscal 1959 asks for over \$2.2 billion in new obligatory authority for military and civilian public works and an over-all rise in federal construction authorizations to \$7.2 billion, 15 per cent higher than fiscal 1958 (page 7). Highway spending, under the federal highway aid program for the 41,000-mile federal road system, will rise to

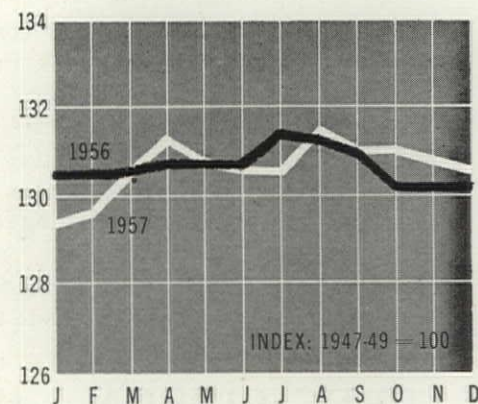
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BOX SCORE OF CONSTRUCTION

(Expenditures in millions of dollars)

PRIVATE BUILDING		Full Year		
	Dec. '57	1957	1956	±%
Nonresidential	764	9,138	8,817	+4
Industrial	248	3,162	3,084	+3
Commercial	305	3,570	3,631	-2
Offices; lofts; warehouses .	172	1,864	1,684	+11
Stores; restau- rants; garages	133	1,706	1,947	-12
Religious	74	868	768	+13
Educational	44	519	536	-3
Hospital; insti- tutions	48	505	328	+54
Residential (nonfarm)	1,345	16,571	17,632	-6
Public utilities	483	5,830	5,113	+14
*PRIVATE TOTAL	2,705	22,313	33,242	†
PUBLIC BUILDING				
Nonresidential	342	4,481	4,072	+10
Industrial	32	458	453	+1
Educational	226	2,832	2,549	+11
Hospital; insti- tutions	24	333	298	+12
Residential	57	510	292	+75
Military	88	1,275	1,395	-9
Highways	275	4,840	4,470	+8
Sewer; water	97	1,347	1,275	+6
*PUBLIC TOTAL	962	13,942	12,818	+9
*GRAND TOTAL	3,667	47,255	46,060	+3
<i>*Minor components not shown, so total exceeds sum of parts.</i>				
<i>†Less than 1 per cent.</i>				

*Minor components not shown, so total exceeds sum of parts.
†Less than 1 per cent.



BUILDING MATERIALS PRICES steadied in December, after three months of slight declines. Bureau of Labor Statistics reported a December index of 130.1 (1947-49=100), compared to a Dec. 1956 mark of 130.5. For the year, lumber and plumbing equipment prices declined the most, while structural steel prices rose 13 per cent.

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\$2.3 billion in fiscal 1959 compared to \$1.7 billion in fiscal 1958. Military construction spending will go up to at least \$2.1 billion, a gain of \$140 million, and maybe more as more funds are diverted to building missile bases and other defense installations. One government economist estimates military building expenditures will rise by at least \$200 million, mainly because of dispersal plans for the Strategic Air Command. In his budget message the President said that "fully half of the 1959 program of military construction" will be accounted for by SAC and new weapons installations.

Although no action was proposed for fiscal 1959 on a school construction program, and construction cutbacks were budgeted for the Corps of Engineers, Department of Health, Education and Welfare, and Bureau of Reclamation, the Administration's proposals add up to a further over-all growth in federal construction expenditures. And Congress may still reinstate cuts asked in pet reclamation and Engineers' projects—traditionally the choicest servings from the pork barrel.

BUILDING ACTIVITY

Building in 1957: Record volume, but slower growth

There were few surprises in the December figures for spending on new construction, but the data gave economists the final piece of information with which to analyze the biggest building year in history. December building volume totaled \$3.7 billion, 3 per cent better than December 1956. And this addition to the 11-month totals made 1957, with \$47.2 billion worth of new construction, a 3 per cent bigger year than 1956.

There are already two obvious facts about the kind of building year 1957 was:

- ▶ The gain over 1956 was caused entirely by price increases. While construction outlays rose 3 per cent, building costs rose just about as much. Thus physical volume actually declined slightly from 1956. This means that the annual growth of new construction outlays, which averaged around 7 per cent a year in the early 1950's, has temporarily ceased. Last year's decline in physical volume coupled with a 2.2 per cent drop in physical volume in 1956 indicates that, in physical terms at least, construction has ceased, for the moment, to be a growth factor in the general economy.
- ▶ What construction gains there were in 1957 came principally in the public sector, which accounted for 94 per cent of the total dollar gain in 1957 spending. Highways and school expenditures alone made up 55 per cent of the total gain. Even with prices rising, the private sector of building

PUBLIC BUILDING

Federal highway system will cost \$10 billion more than anticipated, says Commerce Secretary Weeks

The federal highway program was plagued last month by higher costs, and indications that the Administration plans to use the highway trust fund, from which federal highway aid is paid, for spending not directly related to building the 41,000-mile federal road system scheduled for completion by 1972.

First, Commerce Secretary Sinclair Weeks declared that, due to higher prices and the need for more interchanges and grade separations on local roads than originally planned, the cost of the proposed federal highway network was now being estimated at \$37 billion—a whopping \$10 billion increase over the original estimates made only a year and a half ago.

Weeks said that another reason for rising costs is that new estimates indicate

auto traffic will be 15 per cent higher by 1975 than initially forecast, and this will mean an additional 5 per cent increase in spending for wider highways.

However, Weeks maintained that there was no need yet to call for increased expenditures beyond those already authorized by Congress. In fiscal 1959, spending for the highway net will total \$2.3 billion and the funds already requested would be sufficient to attain that level of spending.

The new estimates of total cost would put the federal share at \$34 billion for the whole program. The formula calls for 90 per cent of the cost of the roads to be borne by federal funds, and 10 per cent by the states. Weeks said the road program as a whole was proceeding "on schedule" although Federal Highway Administrator Bertram D. Tallamy said eight states are still behind schedule.

Weeks criticized the practice of states and localities reimbursing public utilities for costs of relocating facilities displaced by the highway program. "If federal aid funds continue to be available to reimburse the states for the cost of relocating utility facilities, federal spending for that purpose will increase substantially and less will be available for the construction of highways."

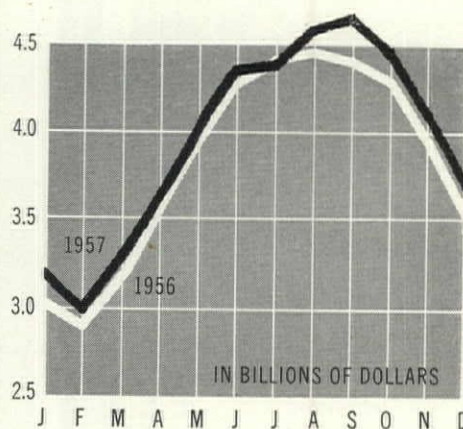
Less will also be available for highways, at least those that are part of the federal system, if the Administration's budget proposals for using highway trust funds go through. In his budget message, President Eisenhower made three proposals that would siphon off highway trust funds—which result largely from federal taxes on gasoline and tires—from the federal interstate highway system. For fiscal 1959 he proposed:

- ▶ to use \$32 million from the \$2.6 billion fund for building roads in public forests and reservations.
- ▶ to channel \$32 million of aviation gasoline tax revenues, now part of the highway fund, into the general treasury.
- ▶ to use \$3.7 million to have the fund pay for its own administration plus the cost of the Labor Dept.'s efforts in determining wages on road construction.

Senator Albert Gore (D, Tenn.) has already accused the Administration of turning the highway trust fund into a "grab bag." As chairman of the Senate subcommittee on roads, Gore plans to hold hear-

continued on page 46

just held its own last year, which indicates a further decline in physical volume from 1956. Residential building was off 6 per cent (in current dollars), largely due to the 10 per cent drop in spending for new non-farm housing starts. A \$717 million rise in spending by public utilities offset much of the decline in housing and in construction outlays for commercial building and private educational facilities.



TOTAL SPENDING for new construction hit a new record of \$47.2 billion in 1957. But the 3 per cent dollar rise in spending above 1956 was the smallest percentage gain in the post-war period. Physical volume actually declined.

3

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ings this month on the budget proposals. The big question that remains to be answered, if not in fiscal 1959, then sometime shortly thereafter, is how the federal government will pay its share of this vastly costlier program when there are already indications that the highway trust fund will fall \$10 billion short of providing adequate cash—even at today's prices.

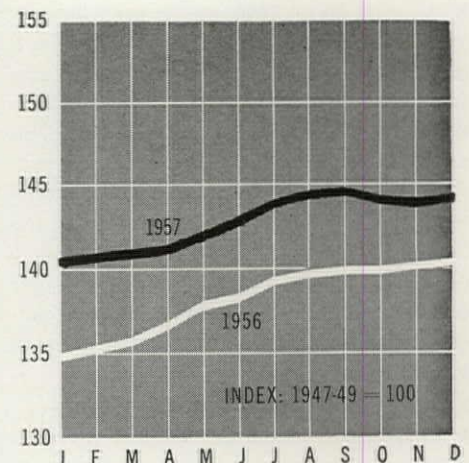
MONEY

One-third of states expect budget deficits in 1958

In a year that seems already clouded with crises of varying magnitudes, a new storm has billowed up, this time on the horizon of state finances. Late last year, there were some isolated rumblings that state revenues in a few instances might not measure up to early estimates. Early in January and continuing throughout the month the rumblings became full-throated cries. A recent survey shows that revenues from existing state taxes will fall short of budgeted outlays in at least one-third of the states in the nation, leaving some with painful deficits which could be reflected in a slowdown in public works and other state building programs.

New York was among the first to point to lagging revenues. Governor Harriman reported that state income in fiscal 1958 would be some \$20 million below earlier estimates. (Harriman wasted no time in blaming federal "tight money" policies and other Administration measures for the state's fix.) In New York, unemployment is running ahead of joblessness in any other

continued on page 48



CONSTRUCTION COSTS in nonresidential building advanced slightly for the first time in three months. The E. H. Boeckh & Assoc. index was 144.1 in December, below the Sept. high, but four points above Dec. 1956.



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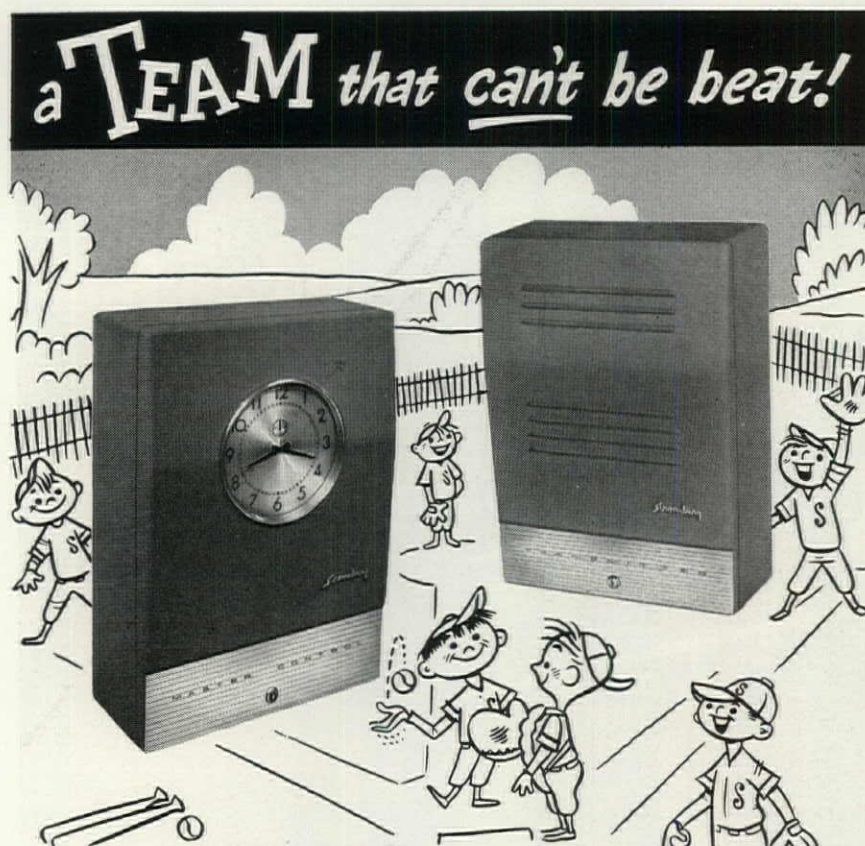
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state. With 420,000 idle in mid-January the state, besides suffering loss of revenues, is faced with heavier than normal welfare payments stemming from the unemployment problem.

Aggravating the New York State situation was the recent demand by the State Conference of Mayors, representing mayors from most of the state's cities and villages, for increased state aid. The conference made its call for more funds because of a population rise that "has not produced the increase in revenue to the municipalities in proportion to the increase in the yield of the share of taxes." The mayors asked for more state aid for sewage-plant construction, increased subsidies for highway-site acquisitions, and greater reimbursements for property taken off local tax rolls for state building.

New York is just one of 16 states that expected revenues to fall behind budgetary estimates, according to a mid-January survey of the *New York Times*. (Another 18 states, however, estimated that their revenues would actually be higher than expected. Most of these states are less populous and less industrialized than those with threatened deficits.) Three states, Michigan, Delaware, and Florida, called their present fiscal situation a "crisis."

There was no firm geographic pattern to the survey results—states adjacent to each other often reported directly opposite fiscal outlooks. In the Midwest, for instance, Michigan and Nebraska reported revenues sagging, while Illinois, Minnesota, and Iowa all said their income for fiscal 1958 was running ahead of estimates. Michigan, hit hard by unemployment in the automobile industry, estimates a deficit for the year of \$20 million to \$30 million, with sales tax receipts showing the biggest drop.

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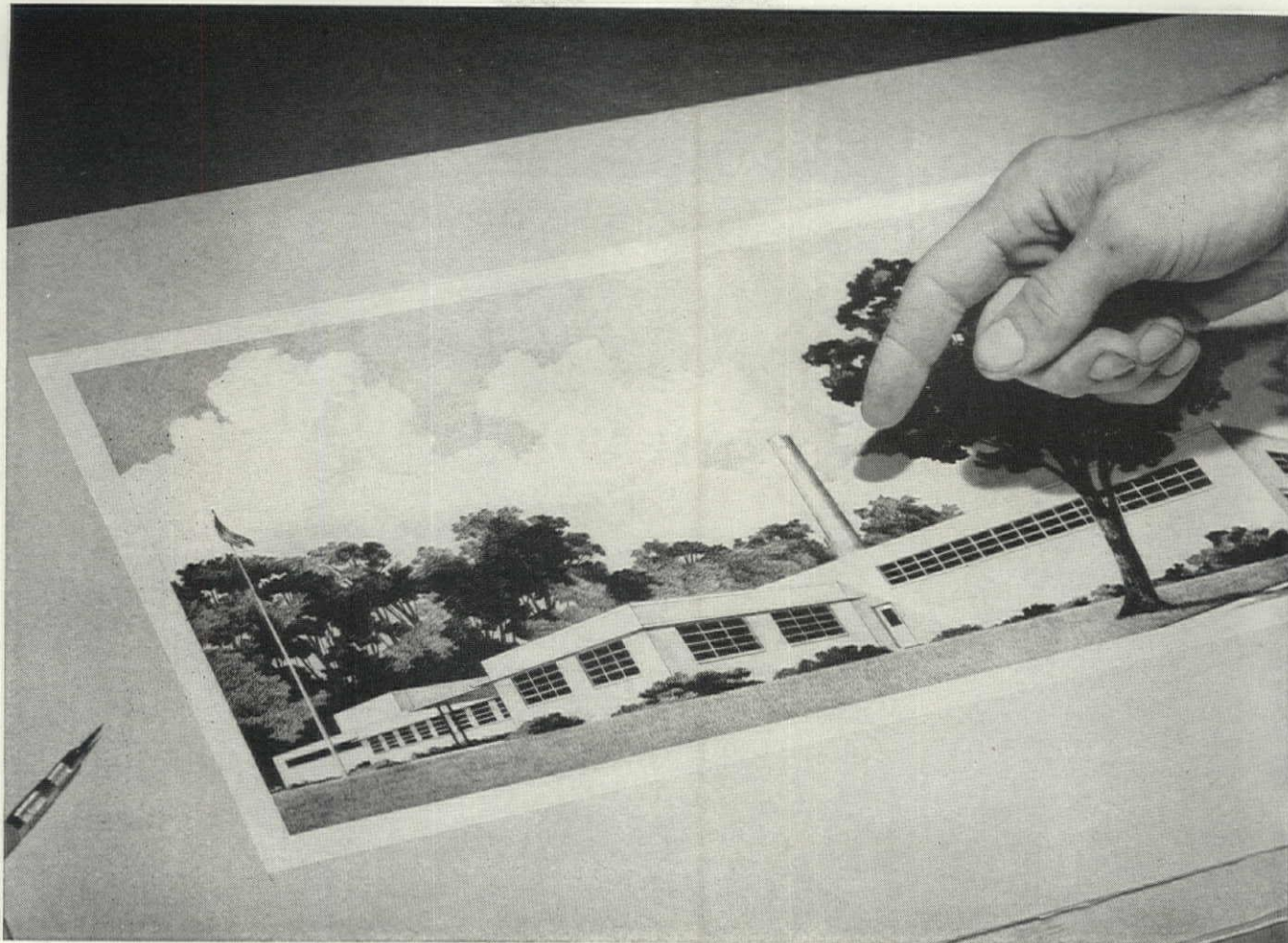
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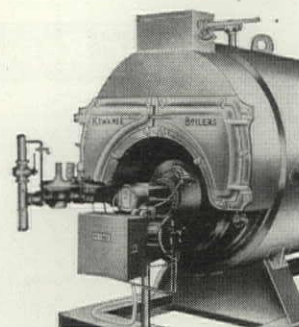
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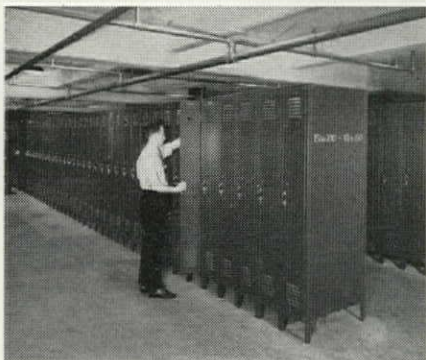
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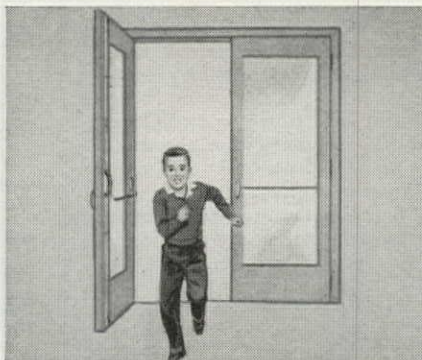
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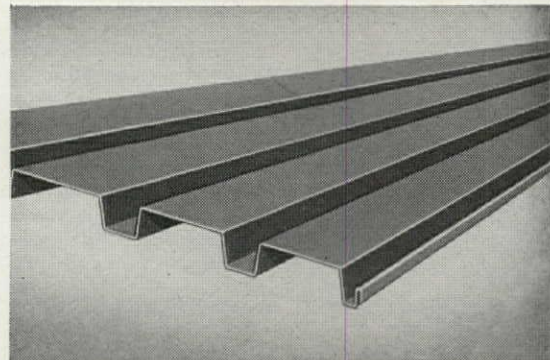
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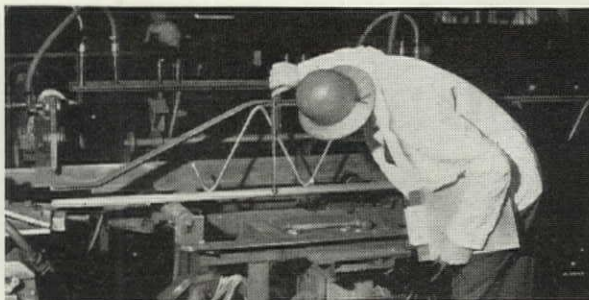
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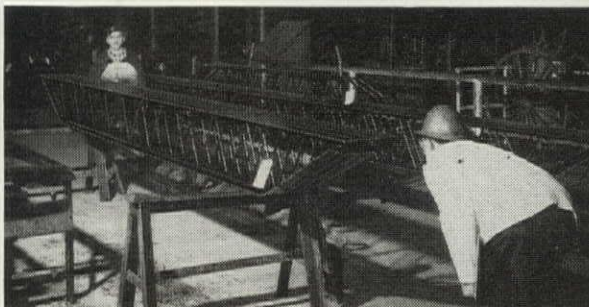
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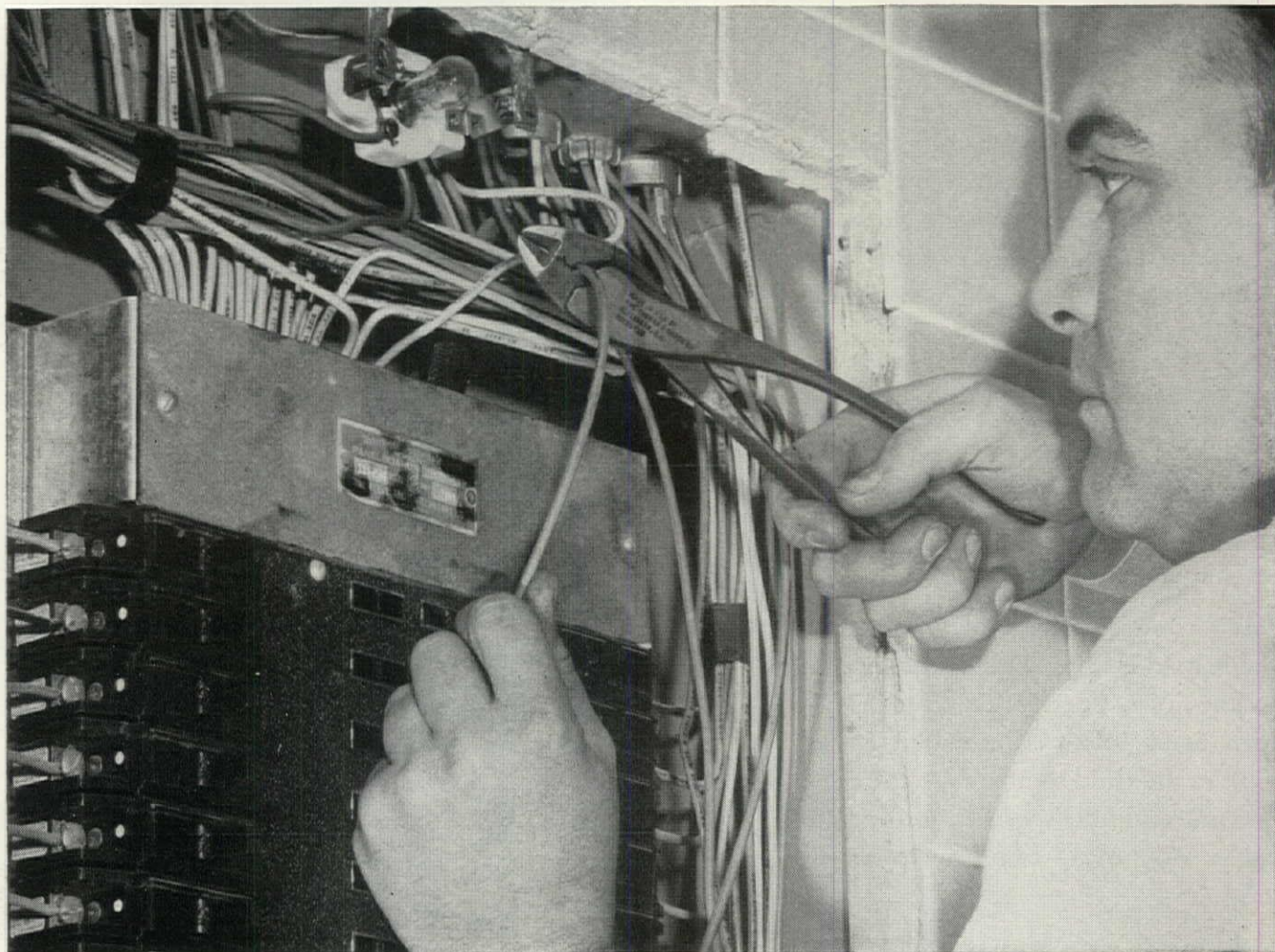
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News about

B.F. Goodrich Chemical raw materials



For a lifetime of adequate wiring... insulation of Geon

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These materials have exceptional properties that give TW building wire many desirable features: smaller overall wire diameters are possible because of improved insulating ability; permanent fire resistance; resistance to acids, oils, alkalis, dampness, fungi and voltage

breakdowns. Since Geon polyvinyl materials have exceptional aging characteristics, insulation maintains strength and flexibility.

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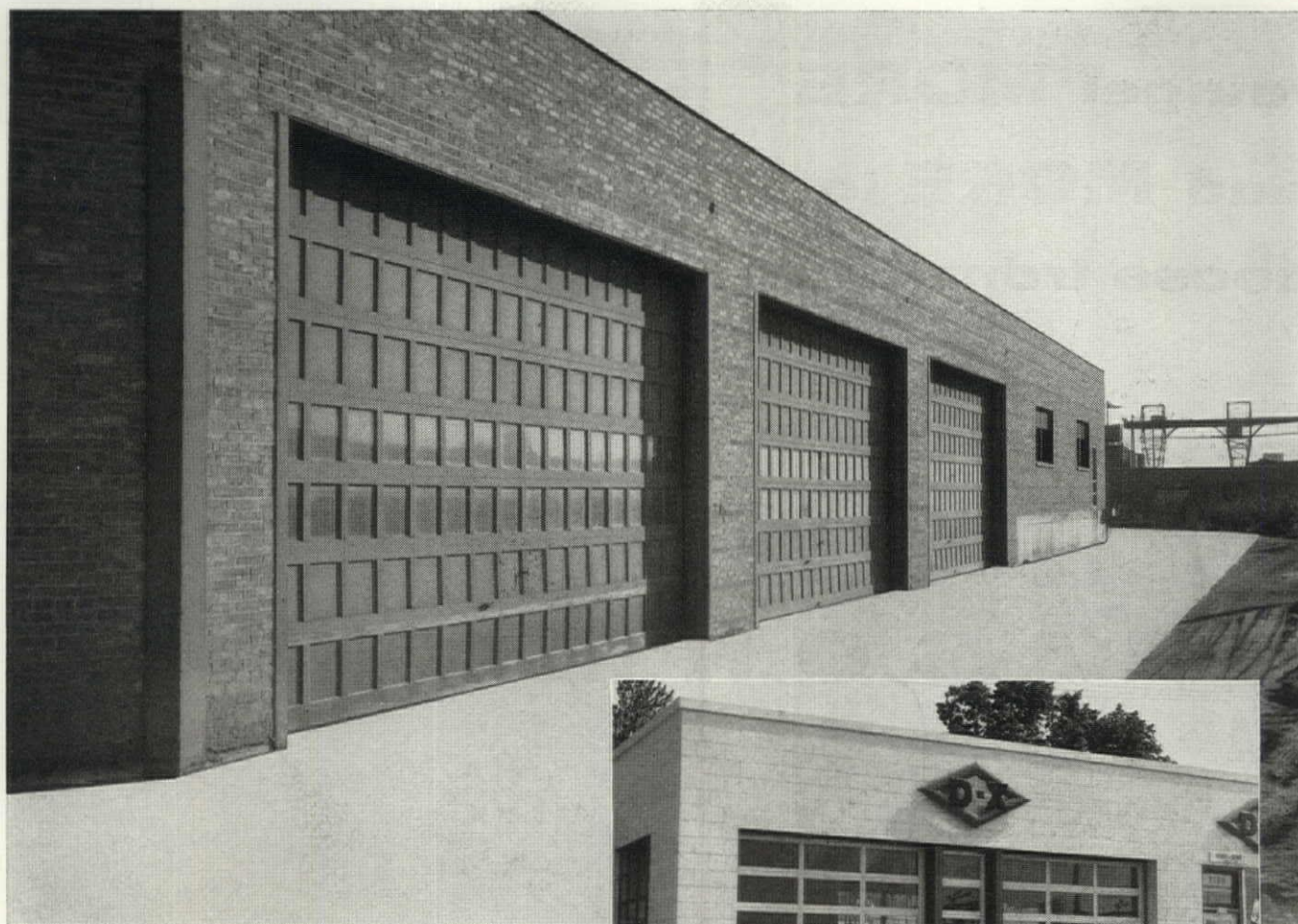
3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



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Yes, Ro-Way features add up to the greatest overhead door value on the market. So specify Ro-Way overhead type doors for all your commercial, industrial and residential buildings. They're available in standard and special sizes to meet any design problem.

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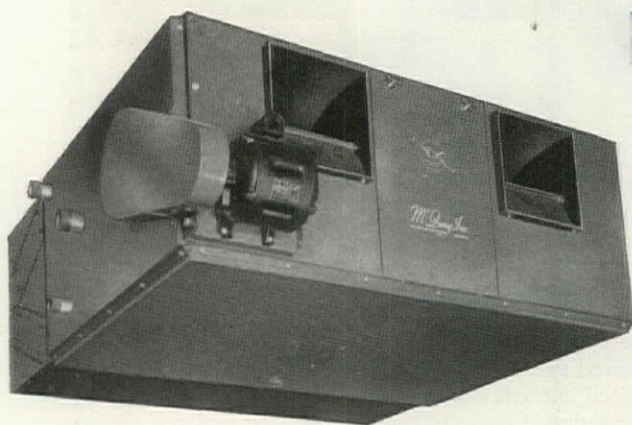
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McQuay vertical Seasonmaster, shown above, with direct expansion coil, steam coil, face and by-pass, and flat filter section. Heavy gage galvanized channel framework to form a rigid structure. Sixteen sizes available in either horizontal or vertical type. C.F.M. range from 640 to 29,000.



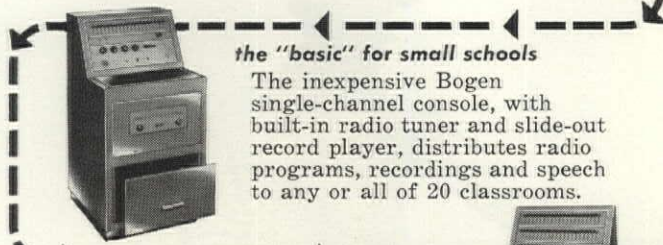
McQuay INC.



AIR CONDITIONING
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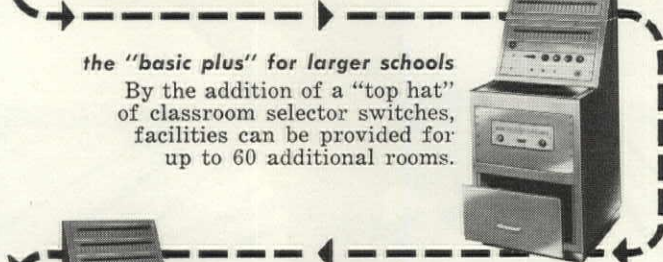
In School Planning specify economical

BOGEN BUILDING-BLOCK SOUND SYSTEMS



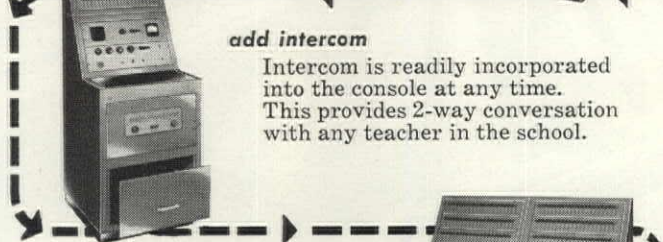
the "basic" for small schools

The inexpensive Bogen single-channel console, with built-in radio tuner and slide-out record player, distributes radio programs, recordings and speech to any or all of 20 classrooms.



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Intercom is readily incorporated into the console at any time. This provides 2-way conversation with any teacher in the school.



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To find out all the things a Bogen Sound System can do to simplify your planning — and at the lowest possible cost — request our 16-page brochure (or see Sweet's Architectural File 33a/B0).

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Gentlemen: Send your 16-page brochure describing Bogen Sound Systems for Schools.

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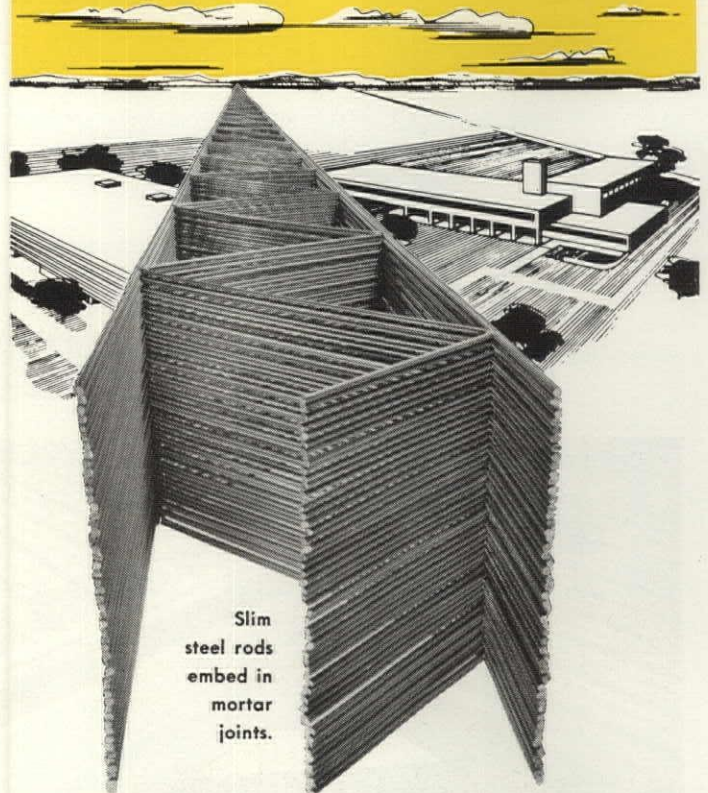
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steel rods
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**TRUSSED DESIGN
BUTT WELD
DEFORMED RODS**

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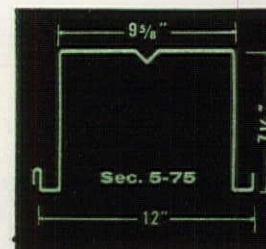
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Two new Robertson

Long-Span Deck Types..



H. H. Robertson Company

2403 Farmers Bank Building • Pittsburgh 22, Pennsylvania

Please send additional information on Long-Span Q-Deck.

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TITLE

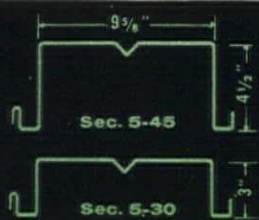
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CITY

Because Long-Span Q-Deck is manufactured with exceptional accuracy, rib lines are clean and straight—make ideal exposed ceilings. And because the fluted shape has demonstrated a marked degree of noise reduction, further acoustical treatment is not necessary in many cases.





The basic cross-section of Section 5-45 and 5-30 is the same as standard long-span Section 5-75. Only the height changes.

for new roof design freedom

Robertson's Section 5 Long-Span Q-Deck has enjoyed wide acceptance since its introduction two years ago. It has filled the requirements for economical long spans in the construction of schools, supermarkets and other building types. Now, two new variations have been added to further increase cost-savings and add to design latitude.

You will notice from the drawings above that the basic cross-section is the same—only the vertical dimensions have been changed. The underside of the decks retain the same appearance making practical the combination of all three types for greater economy for varying load and span requirements.

As with all of Robertson's five Q-Deck types, the new Long-Span designs are weight-saving, strong, precisely made and easily erected. Lighting fixtures can be recessed, surface mounted or suspended. Any type of insulation (1" minimum) and built-up roofing can be applied. Write for literature which includes complete details, load and property tables.

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In England—Robertson Thain Ltd.,
Ellesmere Port, Cheshire
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Hamilton, Ontario



U.S.A. ABROAD

Forum:

I am happy to see the FORUM carrying the ball for worthy and imaginative official architecture.

Your comments about the architect-client relationship at the State Department's Office of Foreign Building (FORUM, Dec. '57) are penetrating. I have not often run into a more satisfactory relationship. The aims are clearly defined, the premises agreed upon, and the utmost freedom within these limits is granted. The opportunity to match wits with one's peers is most rewarding.

Equal credit should be given the distinguished architects who have served or are serving on the committee and the discerning and able administrators and project managers in the Foreign Buildings Office for their smooth operation of this program.

Private industry could learn a great deal from their methods.

HARRY WEESE, architect
Harry Weese & Associates
Chicago, Ill.

CLUTTERED GALLERY

Forum:

Does not the cube allow and invite complete freedom within its well-defined space? Mr. Kiesler's jungle-space in The World House Gallery (FORUM, Oct. '57) is limiting, confining, confusing, and mostly cute.

The Gallery fails chiefly because, being such a cluttered space, it fights the pictures and overwhelms them.

WILLIAM JOHN GARD JR., treasurer
Parsons School of Design
New York, N. Y.

THAT READER'S DIGEST ARTICLE

Forum:

Congratulations on a very fine job in answering the *Reader's Digest* article on school architecture (FORUM, Nov. '57).

This is the kind of leadership in public relations the architectural profession is so badly in need of. Architects design school buildings, and it logically follows that they should lead in providing the school community with the advances afforded us by our technology. We need progressive leadership—your article is a big step in this direction.

DEAN L. GUSTAVSON, architect
Salt Lake City, Utah.

Forum:

Your school articles continue to render an extremely important service to education. You are bringing to many boards of education and many able and conscientious school architects a most urgently needed aid in their efforts to provide the children of our country with adequate and functional school buildings built with the maximum of effective economy. For this you have our very sincere appreciation.

We are going to mail 850 reprints of FORUM's *Digest* article to the presidents of all the boards of education in the State of New York.

THOMAS C. FETHERSTON, president
New York State School Boards Association
Albany, N. Y.

Forum:

... an excellent rebuttal.

A. L. PETERSON, regional director
Structural Clay Products Institute
Denver, Colo.

Forum:

Please mail a copy to each member of our Board of Education. I found the issue very exciting.

ROBERT SARGENT SHRIVER JR., president
Board of Education
Chicago, Ill.

Forum:

May I have three more copies to help us convince our school board and superintendent of the inaccuracies and misconceptions created by the *Reader's Digest*?

EILEEN McHUGH
Gloucester Citizens for Better Schools
Gloucester Point, Va.

Forum:

... a wonderful job.

ARTHUR RIGOLO, architect
Clifton, N. J.

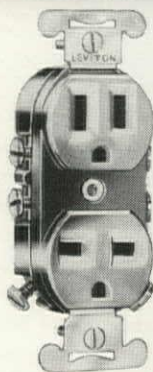
Forum:

Your article answering the *Reader's Digest* attack on school construction is a service not only to the architectural profession but to everyone who is concerned with decent educational values. There is probably no greater field for misrepresentation than the economic evaluation of our new schools.

It is presently fashionable to consider what facilities are necessary to education. The elimination of all the specialized

continued on page 58

Meeting Your Rigid Specifications...



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Look for a LEVITON 5000 number on the devices you specify. It proves that you are getting a LEVITON Specification Grade device—your assurance of top quality and dependability.



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Letters

cont'd

teaching rooms, approached from the point of view of economy, can only lead eventually to the further intellectual impoverishment of our country.

We are now suffering from the first fruits of the elimination of "frills" in education. Any measures that are taken to reverse this tendency constitute a high public service. For this reason, particularly, I commend you for exposing the fallacies in the *Reader's Digest*.

RICHARD G. STEIN, *architect*
Architects Associated
New York, N. Y.

Forum:

The position of architects and designers and their value to society are all too unknown to the general public. Instead of a positive, continuing, and abundant program of education of the public, we find little if any information dispersed. The AIA doubtless has some kind of program, but it is nowhere near adequate. If we do not like to see articles such as *Reader's Digest's*, it would seem wise to "get there first" with some positive education for the public.

JOHN CARDEN CAMPBELL
Campbell & Wong, architects
San Francisco, Calif.

COST COMPARISON

Forum:

I have spent a good many years reading articles on construction costs, hoping I will find an authentic essay by someone with no ax to grind, someone who makes his living deciphering that most important question in the world of building, "What's it gonna cost?"

Even after looking at your fine piece, "How to compare school costs" (FORUM, Nov. '57), I'm discouraged.

JACQUES ING CRAMER PRIEST
Estimators Ltd.
Los Angeles, Calif.

■ FORUM seeks no easy answer to cost comparison, but it does seek a more accurate one.—ED.

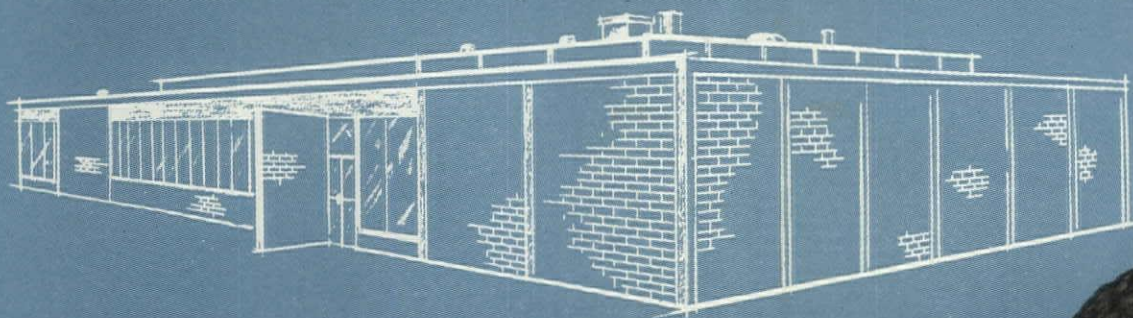
SLAG'S STATISTICS

Forum:

Your article on lightweight aggregates (FORUM, Sept. '57) is excellent. However, the properties listed for expanded slag are inaccurate. Values for the overall range of compressive strength are: modulus of elasticity—2.0 to 4.0; shrinkage—0.02 to 0.04; and conductivity—1.5 to 3.0.

E. W. BAUMAN, *managing director*
National Slag Association
Washington, D. C.

END



ATLAS[®] MORTAR

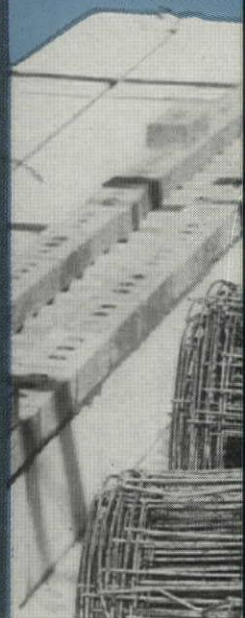
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PROJECT: Office and warehouse,
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ARCHITECT: David Griswold

MASONRY

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says R. J. Randolph, Mason Foreman
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- To produce serviceable, watertight masonry walls, the mortar mix must be plastic—and have adequate "board life."
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(Complies with ASTM and Federal Specifications.)

Write for your copy of "Build Better Masonry,"
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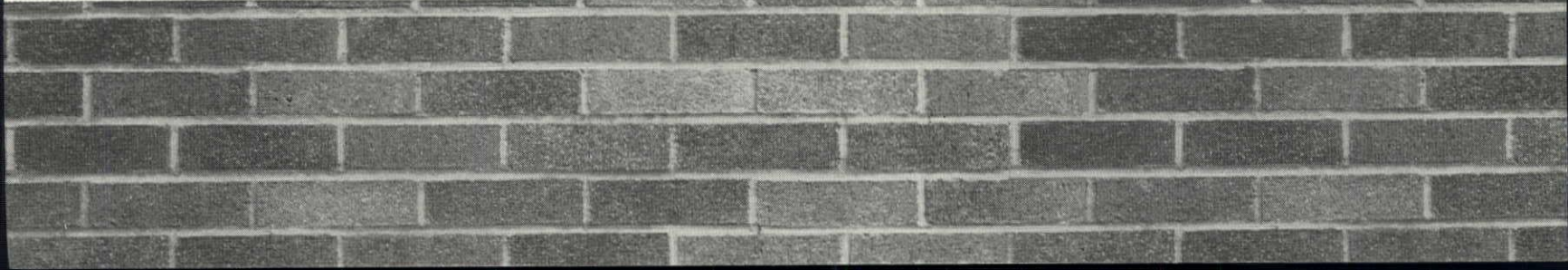


M-69

TRADE-MARK

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

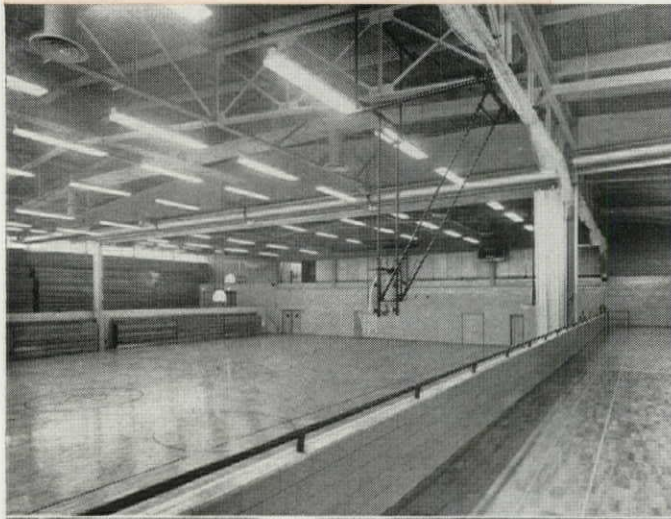
OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco



Rolling Metal Doors

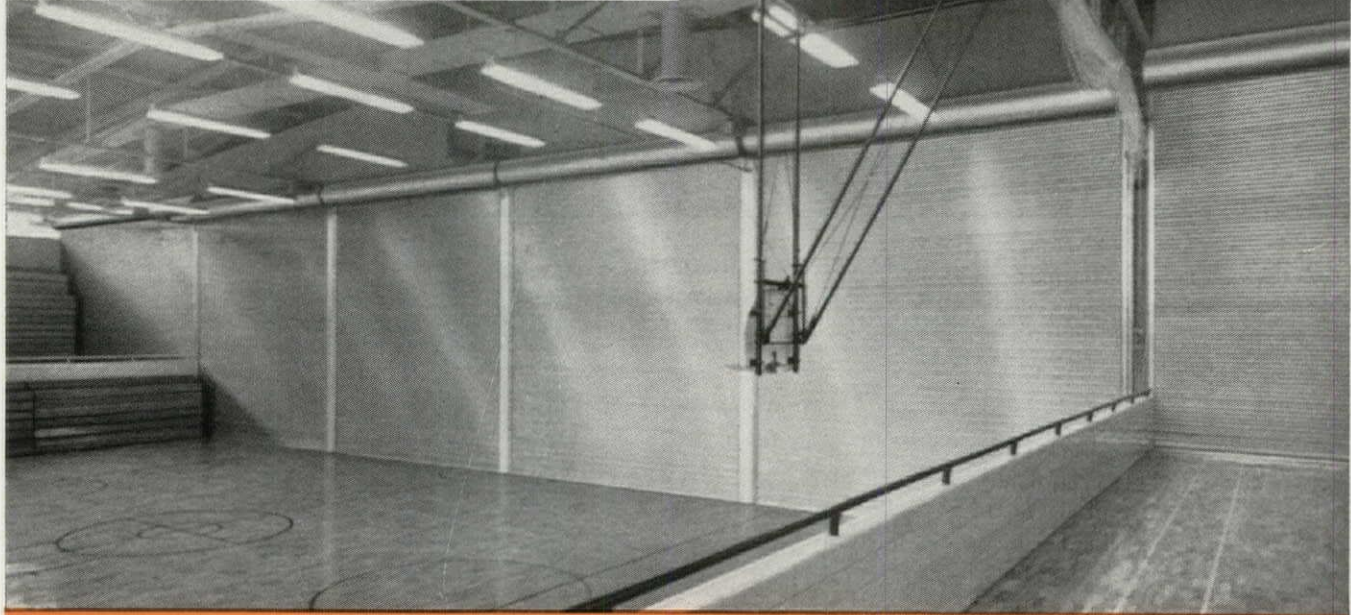
Provide Removable Dividing Wall in School Gymnasium!

The six aluminum rolling doors illustrated here, which form a dividing wall in a school gymnasium, are electrically controlled by push-buttons on a single panel. When the doors are fully opened, the mullions between doors on the main floor are moved out of the way by means of an overhead track and nested at either side, leaving the entire gymnasium floor clear.



Roll-up Doors of Aluminum or Stainless Steel, with movable mullions, offer the best solution to the problem of providing a removable dividing wall in modern school gymnasiums. Three power operated rolling doors are usually employed to divide the main floor area . . . two more power operated rolling doors are employed to divide the balcony on either side of the gymnasium floor—thus dividing the entire gymnasium into two separate parts. The important advantage of this type of dividing wall is its roll-up, overhead storage when not in use . . . no storage pockets to consume floor space and obstruct vision—no track required in the floor. In the installation below, all visible parts of the rolling doors are aluminum. Similar installations can be made in stainless steel, or in prime coated galvanized steel which can be painted after erection to harmonize with the general decorative scheme. For high quality Rolling Metal Doors of all types, including Underwriters' Labeled Rolling Steel Fire Doors and Window Shutters, see Mahon's Insert in Sweet's Files, or write for Mahon Catalogue G-58. Inquiries relative to special purpose doors, and installations such as the one illustrated here, should be addressed to the Home Office in Detroit for prompt attention.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices: Detroit, New York, Chicago • Representatives in Principal Cities
Manufacturers of Rolling Metal Doors, Grilles, and Automatic Underwriters' Labeled
Rolling Steel Fire Doors and Shutters; Insulated Metal Curtain Walls and Underwriters'
Rated Fire Walls; Electrified M-Floors; Roof Decks and Long Span M-Decks.



ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Interior view of Gymnasium in the new Birmingham High School, Birmingham, Michigan. Swanson Associates, Bloomfield Hills, Michigan, Architects. Cunningham-Limp Company, Detroit, Michigan, General Contractors.

MAHON

Wright to design dome theater for Mike Todd; planning expert to study metropolitan Washington

A unique amalgam of personalities in architecture, industry, and the entertainment business cropped up recently with the announcement that **Frank Lloyd Wright** is designing theaters for show-business titans **Mike Todd** and **Sylvester L. (Pat) Weaver** (former head of NBC). Wright will design a basic theater, using as a central element the Kaiser Aluminum dome, originally designed for Kaiser by **Buckminster Fuller**. Todd, Weaver, and **Henry J. Kaiser** are backing the enterprise, which plans to build theaters to be sold to franchised dealers throughout the world. Wright has the title of "master architect" with the new company, called Dome Enterprises, and Weaver is president and manager.

The whole thing started when Todd and Weaver began looking for a different type of theater into which they could pour what they call "packaged entertainment." Chief ingredients of the package would be Todd's spectacle-type movies, such as *Around the World In 80 Days*. These are geared particularly to the Todd A-O screening process (although they can also be projected on a flat screen), and Todd A-O will be part of the package for any local exhibitor who takes out a Weaver-Todd dome theater franchise. Says a spokesman for the group, "It'll be something like Howard Johnson's—only with movies."

Wright isn't the only person revamping Fuller's dome. Kaiser engineers are also working on some modifications of the original dome. Chief among these is the replacement of the 25 piers, on which the dome presently rests, with only five piers. Kaiser expects to lick this problem without much trouble.

Wright's job, according to a company spokesman, is to "design a theater that will incorporate the dome but which will make the Kaiser dome distinctive from other

domes." So far, Wright has not come up with a design, and there is no set schedule for getting the new design into production. (The dome itself will probably stay the same size as the first three that have been built by Kaiser—145 feet in diameter.)

Meanwhile, Fuller's basic dome is attracting continuing interest. In Walnut Creek, near San Francisco, **David Huenergardt**, of Pavilion Theater Inc., plans to build a Kaiser-Fuller dome theater for musical comedies and live drama. Huenergardt hopes to finance the construction through a \$440,000 stock issue. In Quantico Va., the geodesic dome is threatening to put the tent out of business, at least for the Marine Corps. The Corps is testing a plastic-covered, 36-foot-diameter dome for use as a field headquarters.



GUTHEIM

APPOINTMENTS

Frederick A. (Fritz) Gutheim, 49-year-old planning consultant and author, has been appointed staff director for the joint Senate-House committee looking into the myriad civic problems of metropolitan Washington D. C. Gutheim will take a year's leave of absence from his job as vice president of Galaxy Inc., management consultants, to devote full time to the committee job. A long-time resident of the Washington area, and a well-known planner and lecturer on urban problems, Gutheim was picked over 12 other candidates for the staff post, which pays \$14,800.

... **Dr. Julius A. Stratton**, acting president of the Massachusetts Institute of Technology, announced that MIT's School of Architecture and Planning will have a new division, called the Center for Urban and Regional Studies. Partially supported by the Rockefeller Foundation, the new Center "will try to determine what the physical form of the metropolitan region of the future should be and what we can do to bring it about," says Dr. Stratton.

continued on page 63

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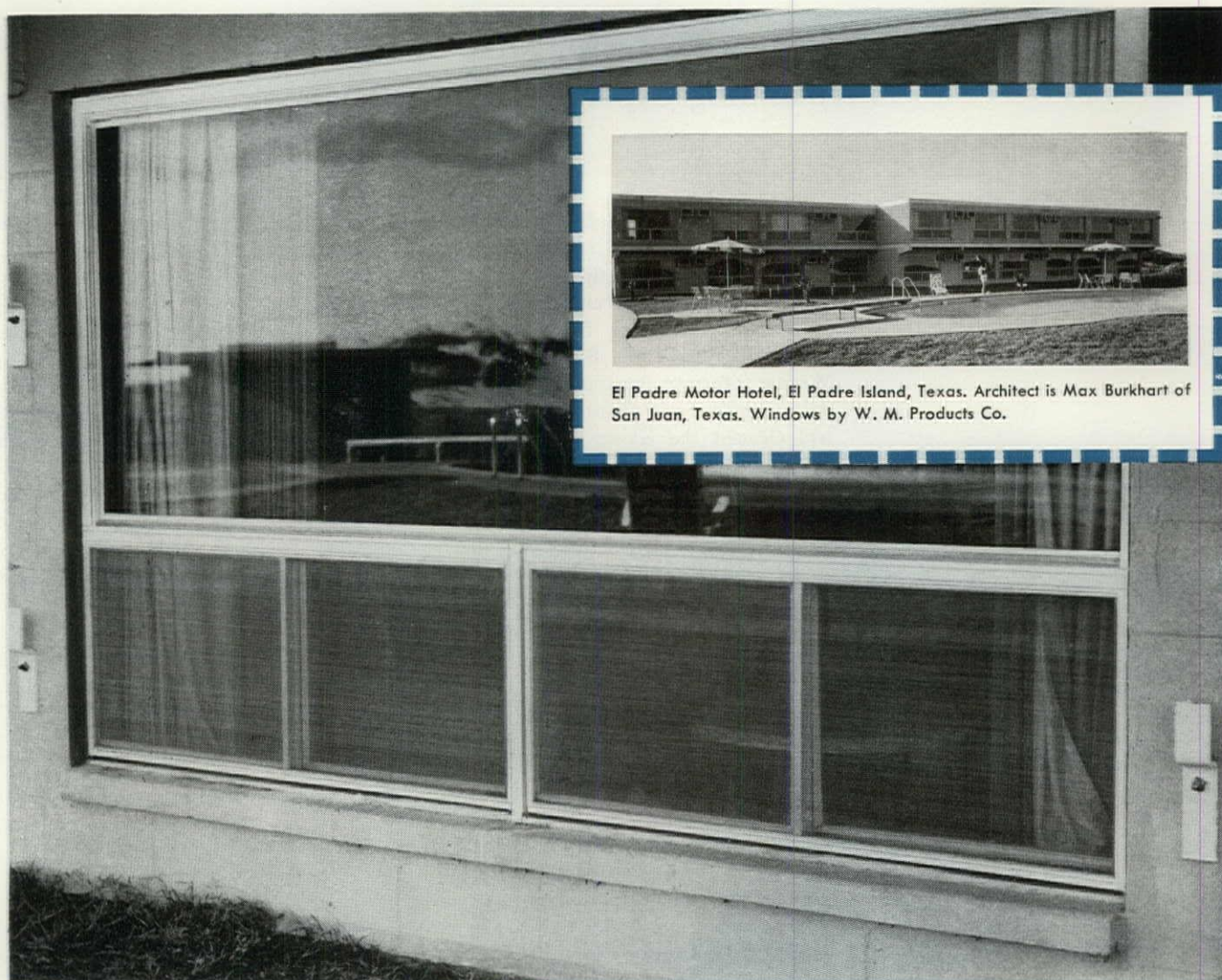


WEAVER

WRIGHT

TODD

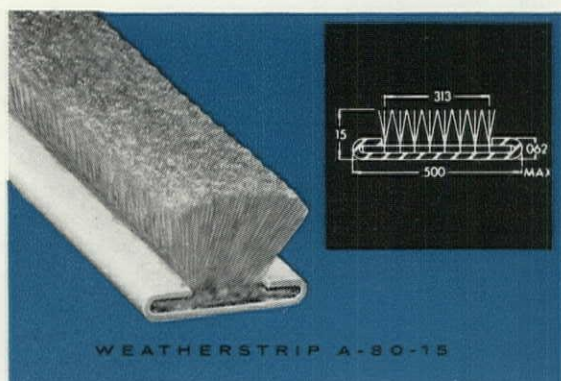
KAISER



El Padre Motor Hotel, El Padre Island, Texas. Architect is Max Burkhardt of San Juan, Texas. Windows by W. M. Products Co.

Only the view gets through with **DRAFTITE***

WOOL PILE WEATHERSEAL



WEATHERSTRIP A-80-15

Dense wool pile secured to an aluminum core provides an effective seal against air infiltration and exfiltration and at the same time permits the vent to be opened and closed quietly and easily.

Heat, wind, sand and ocean spray are kept outside . . . air-conditioned comfort is sealed inside. The El Padre Motor Hotel, El Padre Island, Texas, does it with Watson Horizontal Slide Windows by W. M. Products Co., and DraftTite* wool pile weatherstripping.

Manufacturers of quality metal windows adopt DraftTite . . . because there's nothing better for a permanent, leak-proof, wind-resistant seal around the perimeters of windows—whether sliding, double hung or other movable types. Why don't you call on our engineering facilities to help solve your sealing problems? Or send for our catalog illustrating DraftTite standard sizes and shapes for every type of window and door.

*Trade Mark



The Standard Products Co.

BUILDING PRODUCTS DIVISION, 316 FISHER BLDG., DETROIT 2, MICH.
PLANTS AT LEXINGTON, KENTUCKY AND FULLERTON, CALIFORNIA

Heading the Center will be a 12-year veteran of MIT's City and Regional Planning Department, **Dr. Lloyd Rodwin**. Rodwin plans to use advanced mathematical techniques, including an IBM 704 electronic computer, in the Center's urban studies. . . . The new president of the American Academy in Rome is New York Landscape Architect **Michael Rapuano**, of **Clarke & Rapuano**. Now in its 64th year, the American Academy fosters the arts and humanities, mainly through granting fellowships to American artists and scholars to study in Rome. The scholarships are financed by income from the Academy's endowment fund. . . . Two recent appointments to the Urban Renewal Administration are **Charles Lowrey Oswald** and **Lester M. Haddad**. Oswald, who is 65, has been made deputy commissioner. Oswald has had no previous experience in housing or building, but recently retired after 41 years with the Bell Telephone System. At his retirement, he was assistant vice president of the Chesapeake & Potomac Telephone Co. Haddad has been appointed director of URA's demonstration grant program. The program allows URA to make grants up to two-thirds of the cost of a project to local public agencies for experiments and research in facilitating urban renewal projects.



SMITH

YALE DEAN RETIRES

Yale University announced the retirement of **Boyd M. Smith**, dean of the Yale School of Architecture and Design. Two years ago, Smith reached the arbitrary retirement age of 70 but stayed on to head the school until a new dean, **Gibson A. Danes** (FORUM, July '57), could take over. Danes was formerly chairman of the Department of Art at the University of California in Los Angeles.

COLISEUM SUIT SETTLED

In Los Angeles, the last legal impediment to construction of the Los Angeles Coliseum was cleared with the settlement of a suit brought against the Coliseum commission last April by **Stiles** and **Robert Clements**, original architects on the project. The Clementses, who were discharged from the

Coliseum job last year because their plans "did not comply with the financial limits of the project," originally sued for \$374,434, around six per cent of the estimated total \$6 million cost of the project. But they settled out of court for \$60,000. Replacing the Clementses on the Coliseum project are **Welton Becket & Assocs.** Construction will start early next month.



LESTER M. HADDAD

SHEPLEY WALKER BELLUSCHI

STATE DEPARTMENT COMMENDED

The Architectural League of New York, the AIA, LIFE, and FORUM teamed together to give the U.S. State Department a pat on the back for the distinguished design of its embassies abroad. **Olindo Grossi**, president of the League, presented a citation to **William P. Hughes**, who accepted on behalf of Secretary of State Dulles. FORUM cited the three architects who were on the advisory board of the State Department's Office of Foreign Buildings when the prize-winning embassies were designed: **Pietro Belluschi**, **Henry R. Shepley**, and **Ralph T. Walker**. (Today's architect members: **Eero Saarinen**, **Edgar I. Williams**, **Richard M. Bennett**. The State Department appoints a staff member and a diplomat to the five-man advisory committee.) The awards were made at a special exhibit of models and photographs of U.S. embassies, held at the League's midtown New York headquarters.

ARCHITECTS, BY DEGREES

Melton Ferris, AIA California Council executive director, gave a State Senate committee—and the whole architectural profession—some provocative facts at a recent hearing on the operations of California's Department of Professional and Vocational Standards, which includes the State Board of Architectural Examiners. Ferris told the senators that the Board had checked the educational backgrounds of the last 1,000 architects it licensed and had found that more than one-third of those who passed the state examination had never completed college and did not have a degree from an accredited school of architecture. Yet the 329 persons in this category did nearly as well in the state exams as did those who had received degrees—the latter had to take the exams an average of 2.8 times before

passing, while the group without degrees took it an average of 3.14 times. Thirty-two applicants who had never had any formal education after high school passed the state exam after taking it an average of 3.26 times, Ferris said.

DEATHS: **Henry van de Velde**, 94, a pioneer in the earliest days of modern architecture, died in Switzerland. Though little known in this country, van de Velde, a Belgian, was highly regarded throughout Europe as both an architect and designer. His furniture exhibit at Dresden in 1897 is credited with setting into motion the whole European arts and crafts reform movement. Van de Velde headed the Weimar Academy for Arts and Crafts, which propagated the notion of "werkbund"—the union of all the arts and social sciences. In 1918, van de Velde stepped down and recommended as his successor **Walter Gropius**, who carried the "werkbund" idea further with the establishment of the famed Bauhaus, an extension of the Weimar Academy.



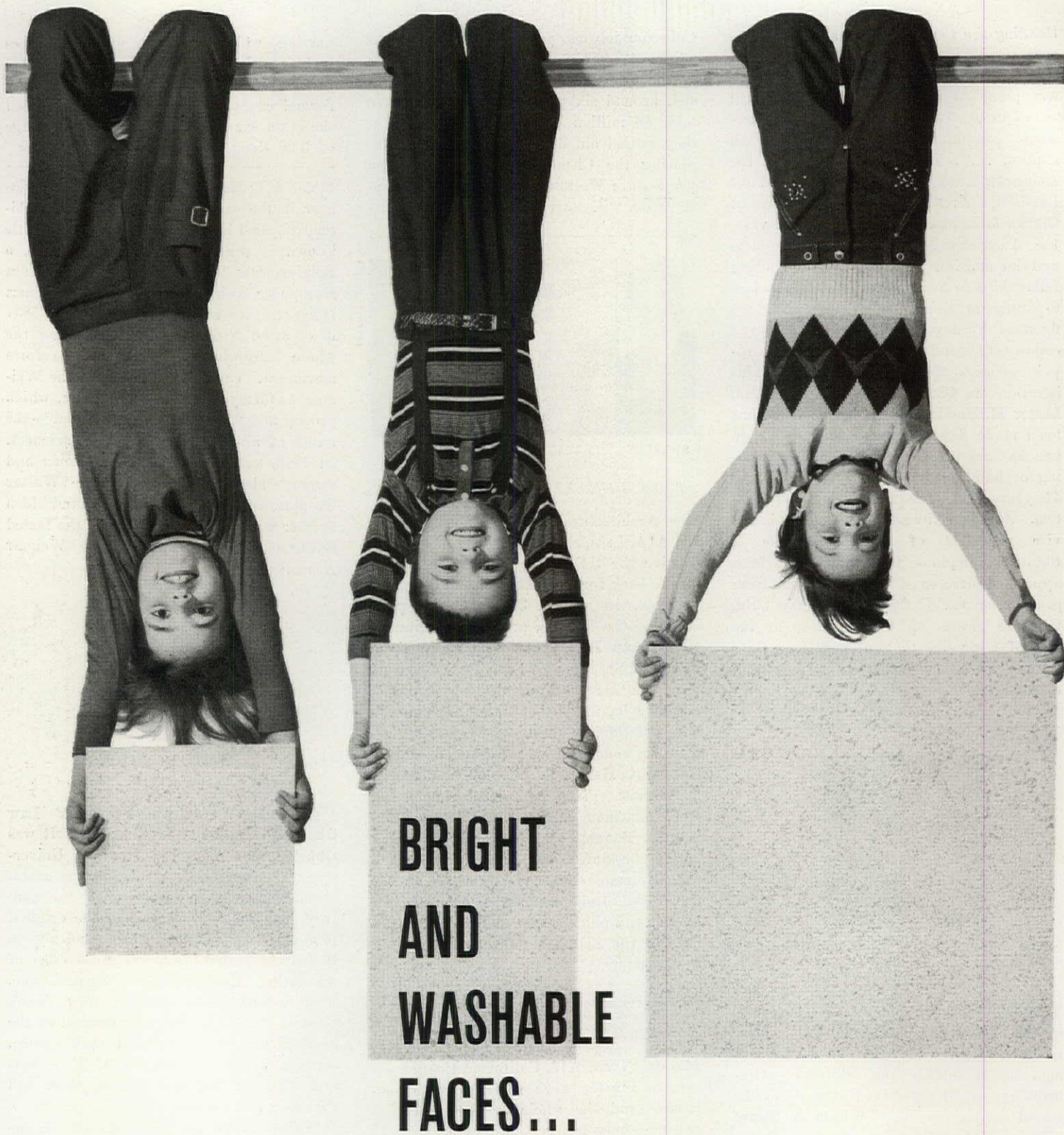
OLMSTED

Landscape Architect **Frederick Law Olmsted**, 87, died at Malibu Calif. It was Olmsted who pioneered Harvard University's famous courses in landscape architecture just after the turn of the century. In 1905, he was one of the original founders of the American Academy in Rome. He started his career in the office of his father, **Frederick Law Olmsted**, who, with **Calvert Vaux**, designed New York's Central Park. He was instrumental in the development of the national park system, serving on the Commission of Fine Arts and with the National Capital Park and Planning Commission.

Walter McQuade, 68, architect for the Port of New York Authority, died at his New York City home. McQuade was once editor of *The Architect* and is well known for his design of the Port Authority Bus Terminal and the approaches to the Lincoln Tunnel.

Prof. Ernest Wilby, 89, died in Windsor Ont. Wilby is remembered for his pioneering work with Architect **Albert Kahn** in developing concrete pier and steel sash systems for handsome early industrial construction. He supervised the building of Henry Ford's Highland Park automobile plant and the headquarters for the *Detroit News*.

END



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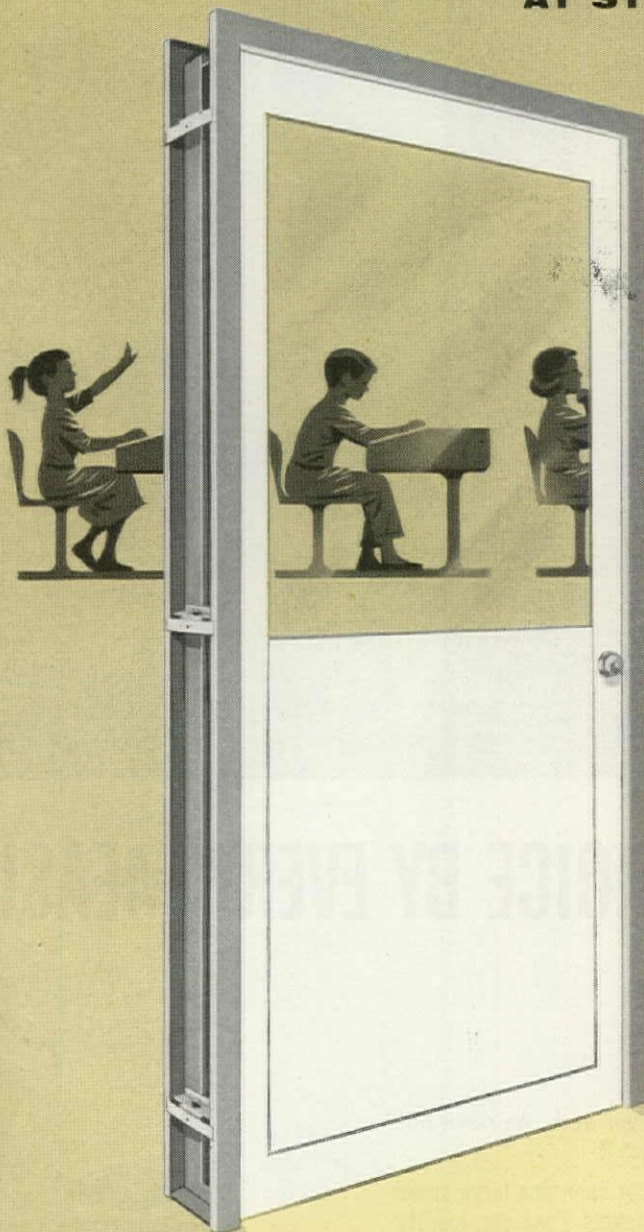
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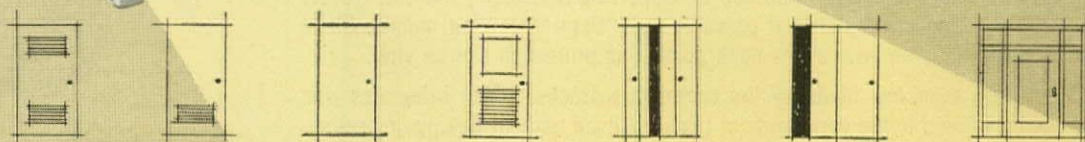


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Editorial

Good looks abroad —why not here?

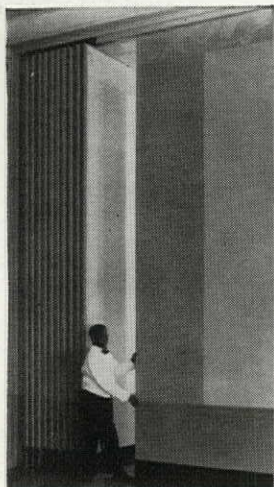
Last month visitors to the galleries of the New York Architectural League were treated to an exhibit of some of the finest American architectural products built in years: the imaginative and vigorous new U.S. embassies, consulates, and other diplomatic buildings that are going up in growing numbers overseas (for a sampling, see page 70 and the Dec. 1957 FORUM). Praise for the buildings ran high; LIFE editorially commended the State Department for the work of its Office of Foreign Buildings (FBO), and FORUM awarded citations to FBO's architectural advisory committee (see People, page 63).

All in all, it was a happy occasion for U. S. architecture, but it raised an old, nagging question that has grown too big to remain unanswered much longer. *Why can't American architects and the U.S. government, working together, produce as fine architecture at home as they have overseas?*

The sad fact facing the American public every day is that most of its "modern" federal architecture—and nearly all state, county, and municipal architecture—is uninspired,

cheap-looking, or just plain ugly. Several new government office buildings proposed for Washington (e.g., the new Senate office building) constitute an architecture of pure habit and timidity, a stripped-down version of the neoclassic that no longer expresses what America is all about. Other recently built government structures, especially those out of Washington, are merely shallow, glittering imitations of commercial building fronts now in vogue. With the exception of a few "special" projects, such as the new Air Force Academy in Colorado and an occasional fine civic building, the offices, court houses, post offices, warehouses, archives, and military installations that continue to go up around the country are hardly the kinds of architecture to symbolize the aspirations of the world's leading democracy or, indeed, to kindle any enthusiasm or respect for the law or government itself.

Perhaps one long-range reason for the deplorable state of civic architecture today is that the generation of educated gentlemen who so carefully shaped the Republic's early architecture in the classic forms, that



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PAUL D. GALEESE
MANAGER

September 6, 1957

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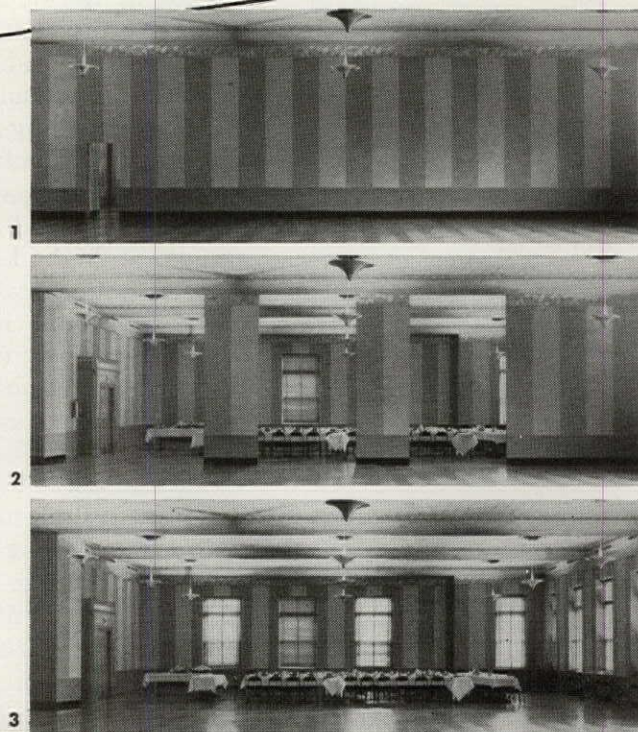
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to them bespoke both dignity and democracy, have long since yielded place to a bureaucracy of not always very learned representatives of the people. To these men—and many of their constituents—the idea of beauty in government buildings has, through some peculiar twist of economic logic, come to be erroneously identified with waste. Ordinary government buildings cost enough, the theory goes; beautiful ones might well cost still more.

A more immediate reason for the present mediocrity of government buildings is the way they come into being these days. The methods by which an architect is chosen for a government job—in Washington D. C. or Walla Walla Wash.—is a process of elaborate outward fairness, often mixed with elaborate inner expediency, patronage, and pressure. What suffers first—and most—is quality.

Not so many years ago, the State Department was just as guilty of promoting bad architecture as were other government agencies, but foreign criticism, coupled with a broadening concept of America's world role, led State to adopt a new approach. What distinguishes the Foreign Buildings operation is that State no longer relies solely on its own amateur judgment in choosing its architects but calls in a committee of eminent architects, who are appointed through the AIA. The committee works with two of State's top men. Congressmen, usually to their own great relief, are told that political favors just aren't part of the ground rules. Architects are now selected for State Department projects purely on the basis of merit. They are carefully instructed in the aims of FBO's program, and then they are set free to use their talents without impediment. The advisory committee draws on its own profes-

sional skill to criticize the designs and to recommend revisions.

So far, this system is the only one that has consistently produced a high standard of official architecture. Art commissions, such as the one that is supposed to guide Washington's architecture, may be composed of the most distinguished architects available, but they are limited at best to preventing the most horrid errors, and they are without power to initiate ideas or to follow them through. Design competitions are another oft-suggested device for assuring high architectural standards, but for the great run of buildings they are too cumbersome, expensive, and embarrassing—and do not always produce the best solution.

What it boils down to is this: if the U. S. is to have a symbolic and inspiring architecture at home, it must make a major policy move toward getting it. Why not try State's FBO system at home, then, in the Public Buildings Service, in the Post Office Department, in the Defense Department, and other agencies as well? We would soon find out whether the public really wants good architecture; whether it wants *all* government architecture, from atomic towns down to the smallest municipal buildings, to be expressive of dignity, democracy, and the dynamic quality of twentieth-century America. The answer might be surprising.

A famous house rescued

Chicago newspapers within recent weeks divulged a cheering story. The Robie House in Chicago, Frank Lloyd Wright's 1908 masterpiece, is to be saved from demolition. Webb & Knapp, the realty company headed by William Zeckendorf, has offered to purchase it for \$125,000. If the plan goes through, the Chicago Theological Seminary, the present owner, will carry out its building program elsewhere. Webb & Knapp plans to use the house as headquarters during the three years the firm anticipates working on the Hyde Park redevelopment project and plans then to turn it over to the National Trust for Historic Preservation (a privately owned, Congress-chartered organization). The Trust has stipulated, as the main condition of acceptance, that there must be money available for maintenance. It is understood that such a guarantee is expected.

The nation's thanks are due to Mr. Zeckendorf and his associates for this unprecedented gift of a building, preserved just because it is a masterpiece of architecture. Thanks are due, too, to Architect William E. Hartmann, head of the Chicago office of Skidmore, Owings & Merrill, and his friends in the AIA who also worked valiantly on the problem. END



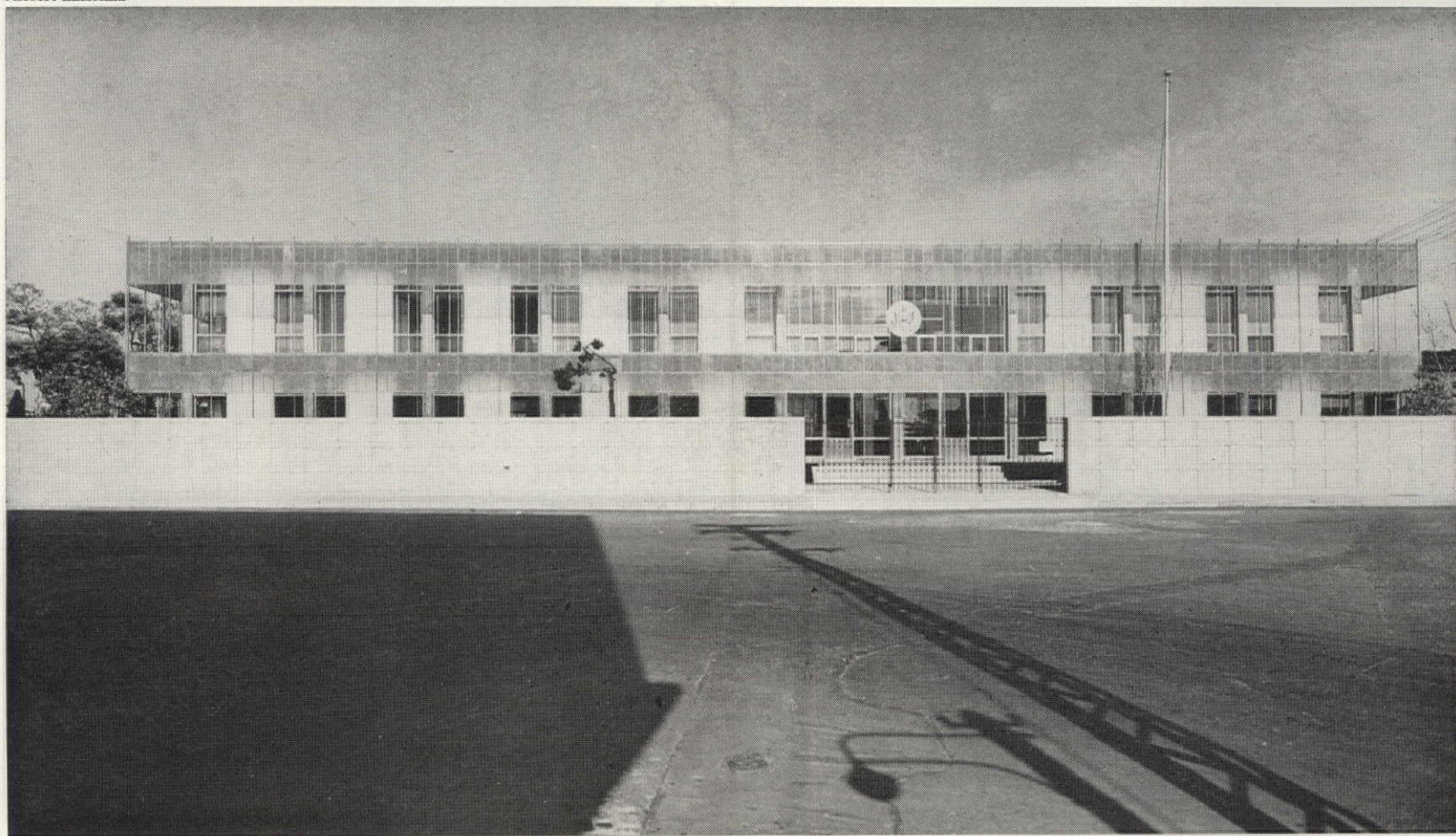
A handsome outpost in Japan

JOHN LAUNOIS—BLACK STAR



In the new American Consulate in Kobe, the problem of "official" architecture is handled with freshness and tact. The solution: light, modern pavilions and delicate patterns, in a lovely native garden.

PHOTOS: KIMATAMA



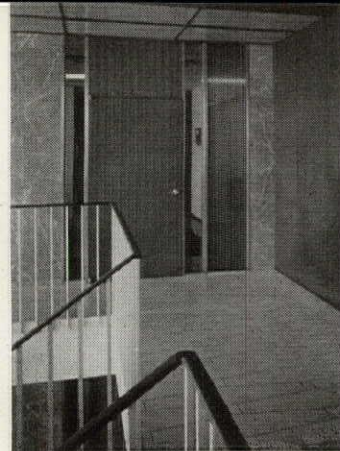
Delicate bands of glass-fiber plastic in a bronze gridwork adapt traditional *shoji* screens to a new outdoor use, helping to shade the air-conditioned office building (seen here on the garden side).

Standing quietly in bustling downtown Kobe, Japan, this new American Consulate by Detroit Architect Minoru Yamasaki and his associates looks more like an inviting garden pavilion than an official office building. In the manner of fine old Japanese temples, it is raised slightly off the ground, setting it above dampness and a little apart from humbler neighbors. Around a rhythmic façade of simple wall panels and openings, the floors are extended outward like trellised galleries, shaded by bands of plastic panels.

The new consulate and its staff buildings and gardens were com-

pleted in Dec. 1956 at a cost of \$428,000. Less subtly designed, they might have been a copy of Japanese design. Or, as happens at home, they might have been a grim stone image of Washington neoclassic (see Editorial, page 67). Fortunately, however, it has not been the State Department's policy in recent years to ask for the bizarre, the fashionable—or the very conventional. Instead, State now requires of architects only a serious study of climate, culture, and local materials, and sets them free to design. The delightful building on these pages is one reward of that enlightened policy.

UNITED STATES CONSULATE, Kobe, Japan
ARCHITECTS AND ENGINEERS: Yamasaki, Leinweber & Associates
STRUCTURAL ENGINEER: Yoshikatsu Tsuboi
LANDSCAPE ARCHITECT: Ken Nakajima
GENERAL CONTRACTOR: Ohbayashi-Gumi Ltd.



Office of the consul general has its entrance flanked by narrow glass panels set in the gleaming marble walls.



Slim stairs at the rear of the main entrance hall echo the fine-lined patterns of the building's exterior.

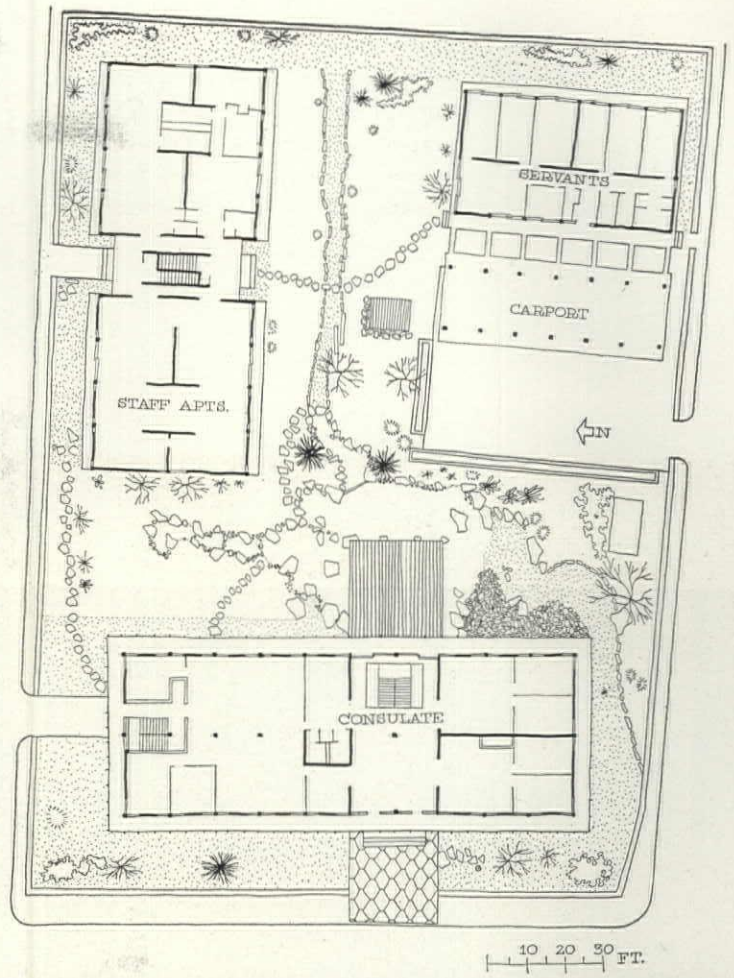


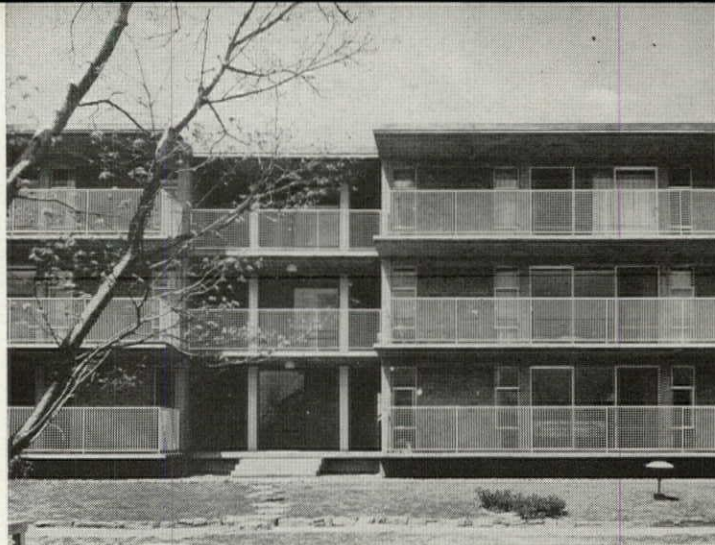
Translucence of glass and plastic gives the main entrance a light, luminous quality. The white solid wall panels stiffen the building against earthquake and incorporate flat air-conditioning ducts, allowing the exposed concrete columns to be slimmer. The light iron gate repeats some of the building's line patterns.



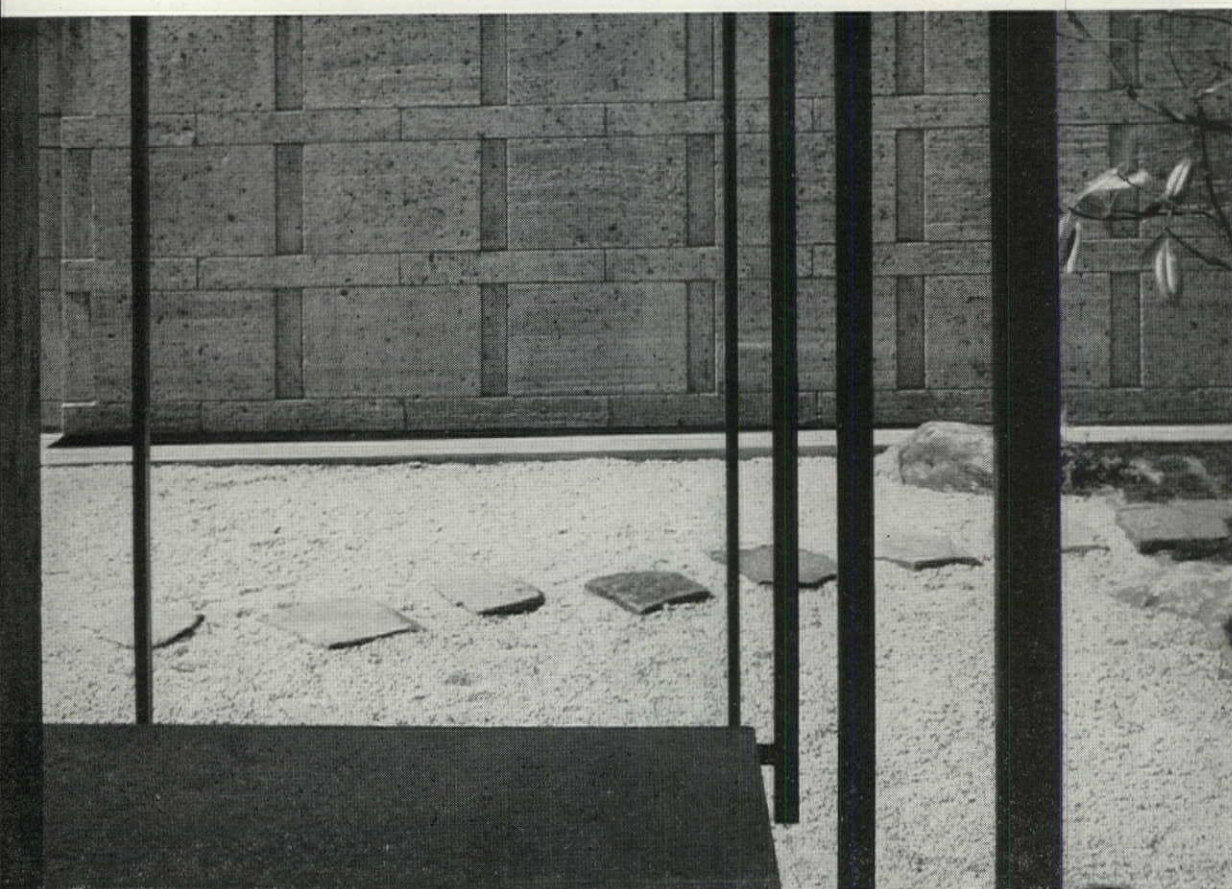
Entrance hall: a polished terrazzo floor leads in from the entrance walk, introducing a contrasting lozenge pattern of bronze stripping. Outside, the plastic sun screens can be seen below the overhanging second floor. The consular section is to the left, economics and information offices to the right.







Balconies give families in the ten staff apartments behind the office building a view of the consulate's inner garden.

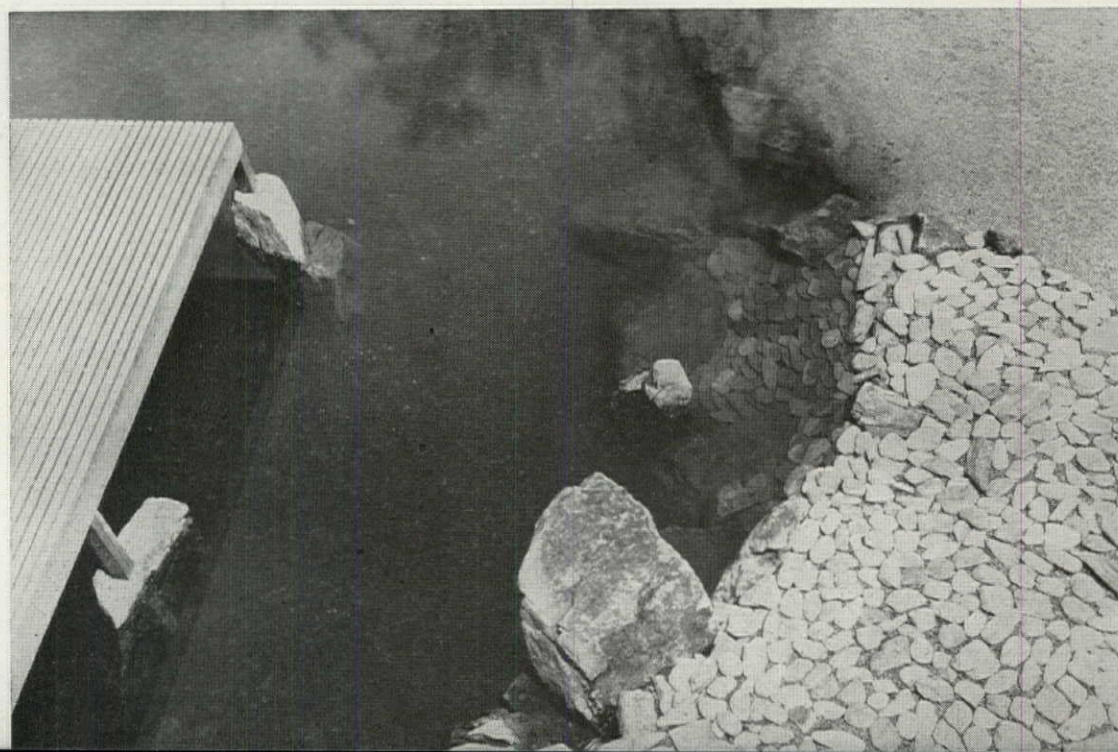


Patterned wall of lava stone is pleasing to the eye but discouraging to prowlers. With rubber-edged panels set in gateways, the wall also becomes a dike against floods.



Openness, simplicity, line, and pattern—America bows to its host. This view is from the consulate office building, across an open porch to the garden and apartments beyond.

Patterned stones and gravel around a pool add subtle textures to the light, crisp buildings and their setting.





The city: economic problem No. 1

According to six distinguished experts, the knottiest economic problem confronting the U.S. is that baffling institution, the city.

The privately financed Committee for Economic Development recently invited 50 leading economists and public leaders of the Free World to answer an evocative question: "What is the most important economic problem to be faced by the U.S. in the next 20 years?" As might be expected, a large proportion of the experts cited such cosmic crushers as "aid to underdeveloped countries" and "inflation" as the most nettlesome questions. (Significantly, no one was worried about a serious recession.) But the answers of six of the experts should be of particular interest to architects and all others interested in civic planning. For these six distinguished experts were concerned above all else with the economic problems of the city and its surrounding hinterland. Urbanization, congestion, location, renewal, the metropolitan area—these were the key words in their essays, which are briefly excerpted below:

Albert Hart
Columbia University

My candidate for "the" problem of the coming decades is the well-known but underrated evil of congestion. The root of the difficulty is what economic theorists call the "neighborhood effect" of actions

LOIS MURKLAND



ALBERT HART

that make perfectly good sense from the actors' private standpoint. The nuisances of noise, dirt, air pollution, crowding, destruction of recreation areas, parking mess, loss

of time in traffic, dilution of education, deterioration of water supply are all examples in this field.

Taken one at a time, these problems look impossible to solve largely because they are responsibilities of local government and work on so large a scale that it would take an unattainable level of intergovernment cooperation to handle them. The trouble is that they interact. The measures we take to handle one problem often pre-empt sites in a way that presently blocks the solution of another.

Despite generations of talk, there is no example of an adjustment of state boundaries to improve the distribution of governmental responsibilities; municipal boundaries seem more and more to be frozen; and effective intergovernmental authorities remain rare and in most cases underfinanced.

Looked at in the large, congestion adds up to a major problem. It calls upon us to evolve democratically workable programs for population control, for control of land use going far beyond anything we have seen, for extending the time-horizon and perceptive depth of private and governmental foresight, and for reforming government finance without accentuating centralization.

Barbara Ward Jackson
The London Economist

Every assessment of America's future economic problems will presumably begin with the most dynamic factor in the American community—the bounding birth rate. It is now a conservative estimate to expect a population of some 220 millions by 1975. If the three- and four-child family becomes the pattern of the future, the estimate should be considerably higher.

In any normal, responsible family

the arrival of more children leads to a change in habits of spending. More money will be set aside for education, for health, for insurance, for housing. Parents cut down some less essential expenditure—smok-



BARBARA WARD JACKSON

ing, perhaps, or drinking—or postpone desirable purchases—new drapes or a new automobile.

When, in the great family that is the nation, a multitude of new babies pours into the community, it would not be unreasonable to expect something of the same kind of shift in spending. Housing, health, education—these would claim more of the national income than would a wide range of consumer goods.

This reasonable assumption is, however, a little complicated by the fact that some of the higher expenditures made necessary by America's growing population come out of the public purse. The millions of new houses that will have to be built, when the babies born in the great upsurge of population in the early 1940's begin to marry and form their own homes, will be financed mainly by the families themselves. But the streets, the water supplies, the sanitation, the urban and suburban amenities, the police and fire protection, which help to turn four walls and a roof into a functioning unit in a civilized community, must all come from tax money. Most medical bills and insurance payments will be privately financed, but much more public money will be needed for hospital building and for various forms of preventive medical

services. Education, by the fundamental decision to provide all Americans with a free birthright of learning, must to an overwhelming degree come from public funds.

Can one make any estimate of the scale of need for social capital in the coming decades? The survey published by the Twentieth Century Fund in 1955 attempted a comprehensive assessment and carried its forecasts to 1960. Its conclusion was that in virtually every field of publicly financed community need, there would be deficits in the 1960's. In terms of the 1950 dollar, these would run at the level of over \$5 billion a year in education, over \$1 billion for health and hospitals, nearly \$1 billion for the preservation of natural resources, over \$500 million for sanitation and water supply, and another \$500 million for police, fire protection, and postal services. But these figures leave out another urgent social need—to bring American housing, with nearly 2 million substandard units, up to a reasonable level.

A domestic program ready prepared for schools, hospitals, transportation, and urban redevelopment is the logical accompaniment of all serious attempts at disarmament. But the program itself involves political, not economic decisions. If tomorrow's citizens believed education to be as essential to national survival as are today's weapons of defense, there would be no fear of a shortfall either in social capital or in high levels of employment. But democracy, in America or elsewhere, has not yet reached such a decision.

Luther Gulick

Institute of Public Administration

In the 12 years since the end of World War II, the U.S. has experienced one of its most spectacular periods of economic development.

Yet at the moment we find ourselves confronted with an evil that threatens to throttle a large part of our business activity and to rob us of the fruits of our ever advancing technology. That is the stagnation and dry rot that has attacked the great metropolitan centers of our country.

Just what is this "metropolitan problem"? It is the discontent of millions of human beings. It is a vast and growing dissatisfaction with life in and around the great cities. People are not satisfied with their homes and housing, with their trip to and from work, and with the aggravation, costs, and delays of traffic and parking. They are distraught by the lack of schools and recreational facilities for their children and themselves, and they are

FERDINAND VOGEL



LUTHER GULICK

concerned by social pressures, neighborhood conditions, youthful delinquency, and crime. People find shopping difficult and more regimented, and the ever more needed services hard to get and expensive. They struggle with water shortages, with bad drainage and sewer conditions, with dirt and noise which they don't like. They find the city centers "old style," inconvenient, dismal, and repulsive, and the old buses, streetcars, trains, and other methods of mass movement uncomfortable and slow, even though they are cheap in comparison with rising wages. And when people move to the suburbs and take work in a new suburban factory, store, or other enterprise, they find that many of the evils

they sought to escape move in right after them, with mounting taxes to plague them there too. It all adds up to the greatest American domestic problem, the "problem of the metropolitan region."

The breakdown of local government in the metropolitan area comes straight out of bad political engineering and nothing else. There has been a sudden change in the governmental needs and the effective demands of human beings living in the new-patterned metropolitan complexes. The structure of city government, political and administrative, was never designed or evolved to meet these new needs. For many of the requirements there is no machinery at all; for others there was a system, but that system is now sadly inadequate and obsolete, and the effort of inadequate jurisdictions to deal with the problems that have grown beyond them results in awkward arrangements, makeshifts, frustrations, and failure.

The reason for the breakdown of local government in the metropolitan regions is found in four facts:

1. *A governmental vacuum*—many of the things that now need doing for the people who live in the metropolitan area have never been assigned to or undertaken as a task by any government, federal, state, or local.

2. *Fractionalization of assigned duties*—many local services and controls have coalesced while governmental jurisdictions have remained as they were. Thus each has but a fraction of a now unified problem to handle.

3. *Political imbalance*—produced by population and economic movements with respect to inflexible boundaries, which leave many a governmental unit with an unbalanced population and a truncated economy, neither of which is equal to the governmental activities now required.

4. *The lack of clearheaded and courageous political leadership and a recognition that we face a metropolitan problem*—due in large measure to ignorance, jurisdictional fractionalization, and political imbalance.

No governmental body, for example, has been given the broad job of seeing to it that the metropolitan region as a whole is given a decent, effective, and economical total system of transportation. We live and snarl in a governmental vacuum.

Government is now falling down on its part of the job. It is falling down because the major tasks are not now assigned to any level of government, and those tasks which are partly assigned are split up into undoable fractions among jurisdictions that are politically and economically incapable of functioning as to these problems. Set up as we now are, we cannot even develop the political responsibility or leadership called for.

Reginald Isaacs
Harvard University

Despite all efforts now being made by public and private enterprise, cities are deteriorating at a faster rate than they are being renewed through new construction, repair, or maintenance. Not one city is known to have a program so complete as to be able to renew at even the same rate that its deterioration takes place. Sporadic capital works projects and cleanup campaigns, no matter how many and how costly, do not necessarily add up to mean-

FABIAN BACHRACH



REGINALD ISAACS

ingful programs. Such programs, so frequently fragmental, expedient, and opportunistic, are fractional in terms of needed urban treatment.

Depending on condition and market, the costs of rehabilitation and conservation of residential areas are within a range of \$15 million to \$100

continued on page 168

A nine-page report on Idlewild

New aerial gateway to America

JOHN ROSS

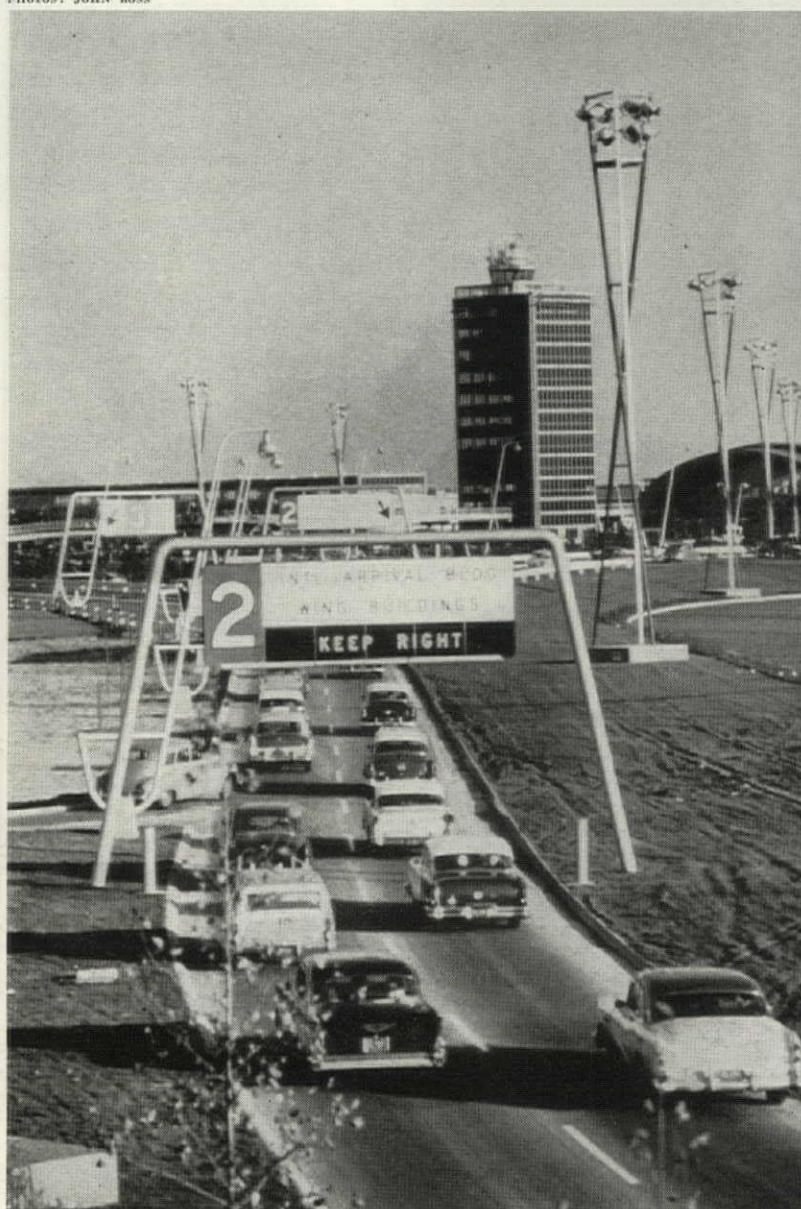


Fifteen years and \$235 million went into building the world's greatest airport, while harried passengers used temporary shacks. Now, at last, New York opens its glittering portal to a jet-age world.

Huge mobile by Alexander Calder hangs from the arched parabola of the arrivals hall.



In its exuberance at finally getting its first real air terminal built, The Port of New York Authority may have done a little overfurnishing of its 655-acre patio (photo, right). And a few critics wonder how all the animated shapes of the new aerial city will hang together by the time the six terminals for U.S. airlines are finished (see sketch). But for a swelling flood of travelers and sight-seers, the important fact is that the big new airport is finally a reality.

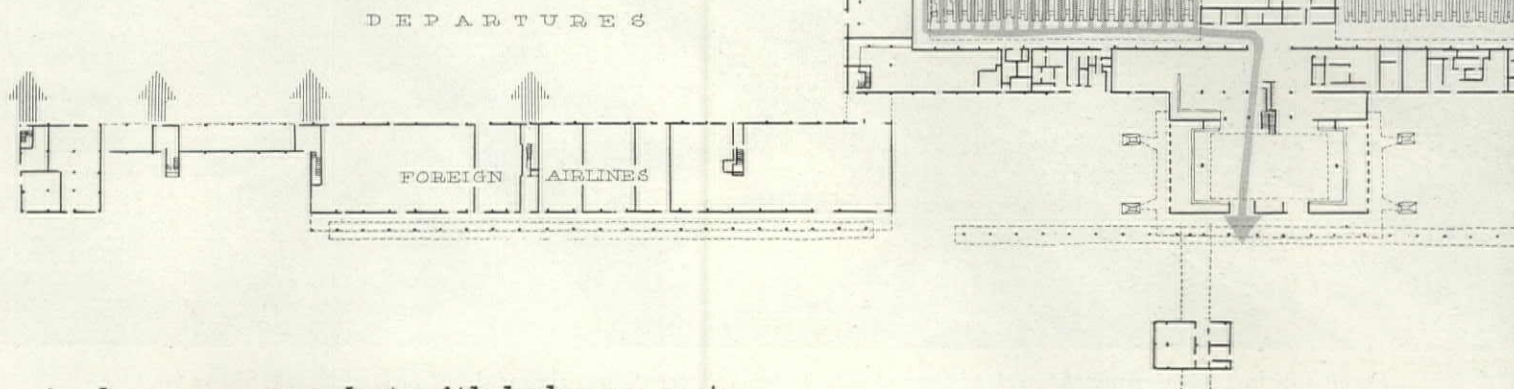


Main approach: view of control tower and arrivals arch is nearly obscured by a clutter of signs, high-level tripod lights, low-level gooseneck lights. Sketch at top of page shows eventual Terminal City.





Comfortable spectators' lounges overlook the customs halls.



For arrivals, a supermarket with balcony seats

Passengers coming in from any one of ten arrival gates pass through health and immigration channels and emerge into big, luminous-ceilinged customs halls, where they are escorted to baggage bins that line the side of the rooms toward the field (partial plan above shows one of the twin health-immigration-customs channels). Under their flight numbers, the inner doors of the bins are pulled up to display waiting baggage in slanted racks. Passengers may take their own bags—with the help of supermarket carts or redcaps, if they like—to customs inspectors at any one of 18 pairs of checkout counters in each hall. The inspectors operate short conveyor counters to move bags into position, depositing inspected luggage in small slanting racks, from which other porters can cart them out through

the arrivals hall to cars or airline buses. Under the new passenger-handling system—which is designed not only for speed but for close scrutiny of a passenger and his baggage all the way—some flights have been getting from plane to bus in less than 15 minutes, compared with almost an hour at the old terminal.

"Aunt Minnies"—friends, relatives, sight-seers who come to meet the planes—are directed from the main entrance hall up a central escalator, where they can watch the customs show from balcony lounges (photo, above) or can use the 4,000-foot observation deck, shops, and restaurants concentrated on the second and third floors, out of the incoming passengers' way. The terminal's advertising, happily, is restrained to a few light boxes across from the spectators' balconies.

For departures, a long international cocktail



JOHN BOSS

In Lufthansa lounge a seasoned passenger waits.

DIMITRI KESSEL—LIFE



Foreign airline wings flank the arch of the arrivals building, presenting a façade 2,300 feet, or 11 city blocks long.

Stretching on either side of the U-shaped arrivals building and its stainless-steel-clad arch, two long wings house 14 departure "terminals" for foreign-flag airlines, leaving expansion space at the ends for a few more lines (bottom left in photo above). The foreign airlines, which rent various-sized blocks of two- or three-story space from the Port Authority, have been allowed to fit out the interiors to their own taste within a purposely strong, unifying architectural framework. The result is a bright spectrum of paintings, murals, wall sculpture, stairways, furniture, and fountain pools, competitive yet coherent—a stimulating international cocktail (see sampling of interiors on opposite page).

Passengers departing on any foreign airline drive directly to their own airline "terminal," check in their

bags at downstairs counters and ascend to private mezzanine lounges, where most airlines have provided a cocktail corner and a snack bar. When their flight is called, passengers walk out into second-story concourses that extend along the back of the terminal. When they are opposite their plane, they descend at one of the 14 departure gates, without ever getting mixed up with incoming passengers on the lower level, or sight-seers on the upper levels of the central section. (Should direct second-story loading of passengers eventually become practicable, these concourses could be equipped with movable covered gangways.) On the terminal's third floor, foreign airlines have offices above the wings; over the center section of the arrivals building itself is The Golden Door restaurant, with a fine view of the field.



Air France (by Itkin, Affrime & Becker).



Lufthansa (by G. B. & R. M. Ollinger).

PHOTOS: (TOP RIGHT) MARC NEUHOF; (OTHERS) JOHN ROSS



KLM Royal Dutch Airlines (by Raymond & Rado).



SABENA Belgian World Airlines (by Michael Saphier Assoc.).



British Overseas Airways Corp. (by LaFarge, Knox & Murphy).



COURTESY PORT OF NEW YORK AUTHORITY

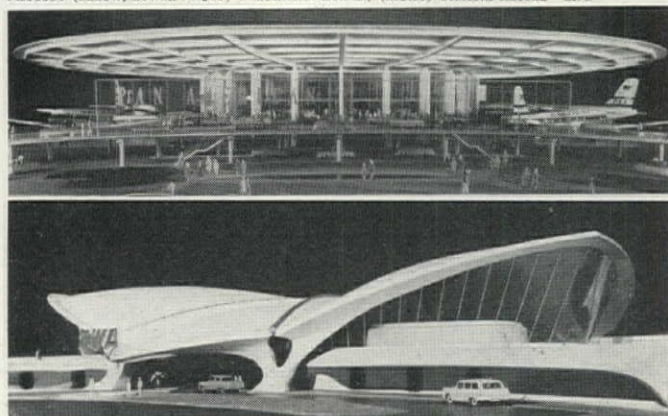
Huge wings of concrete, hung from cables, set off hangars building for Pan American (above) and TWA. Engineers: Ammann & Whitney.

An aerial city takes shape

The spanking new international terminal building, one of the largest airport buildings in the world, is only part of a still larger scheme to solve New York's air-traffic problem. The aerial city had its genesis back in 1942, when New York foresightedly started to fill in the Idlewild marshes for a big new airport, before leasing the area to the Port Authority. As air traffic through Idlewild leapfrogged up from less than 250,000 passengers a year in 1949, the first full year Idlewild was in operation (traffic was over 5 million last year), the Port Authority's chief aviation planner, Thomas Sullivan, and his staff drew up scheme after scheme, finally concluded that a single building to handle the growing traffic would have to be almost 2 miles long. Since estimates indicated that only 5 per cent of the incoming passengers were changing airlines without going into the city, the Port Authority started to work out a decentralized scheme to substitute driving for walking, and to give each big domestic airline its own terminal to design and manage, taking care of the few inter-line shuttlers in special buses (a few are already in operation). Within their \$150 million Terminal City, which by 1960 will have gate positions for 140 planes, the Port Authority and design coordinator Wallace Harrison have devised 10 miles of roadways, and have provided parking space for 6,000 cars, carefully broken up by the landscaping, lagoon, and fountains of a 220-acre International Park (see map, opposite page). By 1965, with new hangars, service buildings, and a 320-room hotel going up outside the ring, Idlewild's 4,900 acres will have become a \$300-million-plus aerial city, with 22,000 employees, 11 million flying customers yearly, and too many visiting "Aunt Minnies" to count.

END

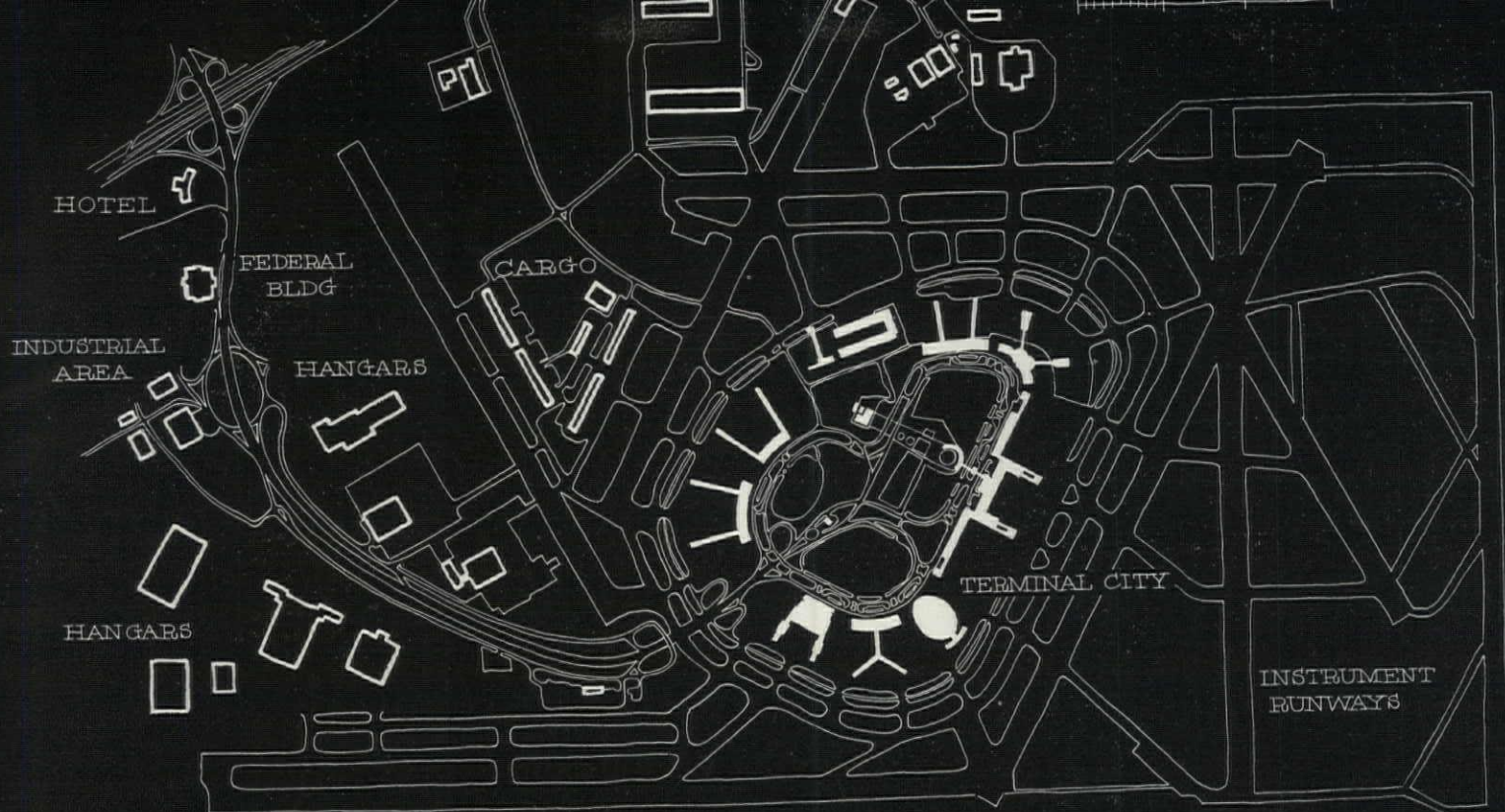
PHOTOS: (BELOW, LOWER PHOTO) BALTHASAR KORAB; (RIGHT) DIMITRI KESSEL—LIFE



Pan Am's "parasol" terminal will hold down one end of the new international terminal. Architects: Tippetts-Abbett-McCarthy-Stratton; Ives, Turano & Gardner.

TWA's "bird," designed by Eero Saarinen & Associates for the other major U.S. overseas carrier, will complete the international part of Terminal City.

Liberty Fountain, changing shape and colors on a 6-minute cycle, soars 60 feet above the central mall. Visitors ascend a ramp, which goes around the fountain and through the control tower into the upper part of the arrivals hall behind.



The city plans of

ROBERT PHILLIPS



Harland Bartholomew

Without seeming to try,
he made his planning
firm the country's biggest.
But the cities are
presenting new challenges.

City Planner Bartholomew says: "To plan effectively, someone must bring the matter down to earth." Yankee-born Bartholomew, shown here with plan for Washington, D. C. has been bringing "realism" to planning for nearly half a century. Besides heading his own firm, he now bosses Washington's plan commission.

The imprint of Harland Bartholomew & Associates, city planners, is probably on more city plans than that of any other firm of its kind in the U.S. Few large American cities are without a file somewhere of the ponderous, often dusty volumes of the comprehensive city plan which has been the Bartholomew stock-in-trade for 40 years. The market for such plans is dwindling as more and more cities get their own planning agencies. And many critics, sometimes called dreamers, are beginning to question whether these often dry, conservative, routinized "master plans" have done any good, on the evidence of U.S. cities, or are adequate to meet the unprecedented needs of the new urban complex. But operating somewhere between the dreamers and hardheads of city development, with leanings toward the latter, is Bartholomew & Associates, still going strong.

Bartholomew & Associates is in many ways a fantastic, little-known operation. To the average businessman, trained to believe that success goes to the go-getter, its low-pressure history may prove disconcerting. Last year the firm grossed \$2.2 million, which is success by any standard. Since its formation, it has completed comprehensive plans for 117 U.S. and Canadian cities, ranging from Washington, D.C. down to Ladue, Mo., which makes it probably the largest and most active of the 40-odd city planning firms that operate nationally. Beyond this, it has done zoning studies for 158 other communities; laid out more than \$40 million worth of World War II housing and other facilities; master-planned military bases from Wright Field to Kwajalein; designed a new town in Hawaii; and positioned sewer and water lines for Karachi, Pakistan. Yet, on the word of Harland Bartholomew, senior partner, almost none of this work was solicited by the firm. "We have never really gone out and hunted for business," he says. And Bartholomew & Associates has hardly changed its

modes and methods of operation in nearly 40 years.

Some of the firm's conservative character is seen in its headquarters, squeezed into part of a floor in a middle-aged office building in St. Louis. Except for a drafting room, its array of desks, files, and small offices has much the same dark, monochromatic, lumber-and-leather look as a law office. Space is tight, and the partners' offices, including Bartholomew's, reflect it. From here, the partners direct branch offices in Atlanta and Honolulu, and a total staff of 145 people, some of whom are always out on long-term projects. Actually, the firm has never wanted to change greatly, and, by and large, it hasn't. Currently it is working on nine comprehensive city plans (among them Beaumont, Tex., Duluth, Minn., and Minot, N.D.) and ten zoning studies, but until last month the firm had just the same number of partners, four, that it had in the twenties (it has now raised the total by two). And its planning approach and techniques have hardly changed either.

In on the ground floor

Most of the character of the business stems from Harland Bartholomew, founder and still active head of the firm at 68, though much of his time is now spent away from the office as chairman of the National Capital Planning Commission, the official planning agency for Washington. To a surprising extent after nearly 40 years, Bartholomew's personality—slightly courtly, careful and conservative, with all the recklessness, it has been said, of a Maine bank loan officer—still conditions not only the firm's physical surroundings, but its policies and its planning. It could hardly be otherwise, considering his background and schooling.

Bartholomew came into planning in 1912, after securing a degree in civil engineering from Rutgers University, going to work for E. P.

Goodrich, a New York firm of engineers. His first job was working on harbor plans for Portland, Ore., and Los Angeles-Long Beach, Calif. But that same year Goodrich got a contract, in association with Architect George B. Ford, to do a city plan for Newark, N.J., which had just set up a planning commission. Bartholomew was put to work on it, and after the job was finished he stayed on, as a city employee, to broaden the plan and supplement it with a highway program. "Very possibly it was the first permanent job anywhere in city planning," Bartholomew says, "and if I lacked experience for it, so did just about everyone else."

In 1912, city planning in the U.S. was still in its barest infancy. Less than 20 years had passed since the great Frederick Law Olmsted and Daniel H. Burnham in their plan for the Chicago World's Fair of 1893 had awakened the country to the value of orderly grouping and design, and only three years had lapsed since Burnham's electrifying comprehensive plan for Chicago. Though a handful of men was taking up city planning as a profession—John Nolen, Charles M. Robinson,

Edward H. Bennett, as well as Burnham and Frederick Law Olmsted Jr.—only one school, Harvard, had a course in it, and the country as a whole was still to be convinced of planning's virtues. What acceptance there was was divided between the ideals of the City Beautiful movement, then breathing its last amid the leafy arches of a few pretty avenues and monumental city circles, and the forces of the City Efficient, which in the decades ahead were to trade civic design for zoning, the sharp demarcation of city areas by function. Thus Bartholomew came in on the ground floor.

The Newark plan, as so many of these plans were destined to do, came to nothing immediately. But it did lead in 1915 to Bartholomew being offered a commission by a citizens' group to do a full-scale plan for St. Louis. Bartholomew moved to St. Louis and has lived there ever since. He worked three solid years on the St. Louis plan, part of the time for the citizens' group, later for the city as planning engineer, a job he held until 1950. The result was the massively documented, elaborately mapped city master plan which, as a package of several vol-

umes, became the Bartholomew trade mark. It set out to consider the city's needs and growth in all aspects, but heavily on the engineering side: highways and streets, transportation, public utilities, parks, schools, housing, public buildings, appearance, capital spending, and above all zoning, which Bartholomew raised into a master planning tool.

Over the years, Bartholomew and his partners have, to be sure, enlarged the scope of their plans and refined their techniques, but the product itself still bears a striking resemblance to the St. Louis prototype. Moreover, this prototype has given rise to a host of similar plans, the general criticism of which is that they are carefully drawn to formula, thoroughly engineered, and overridingly dull, cautious, and unimaginative. That they are no cure-all even where applied is demonstrated by the fact that St. Louis today has much the same congestion, decay at the center, and other ills that modern cities are heir to.

If such criticism nettles Bartholomew, he easily brushes it aside. "In the minds of some people," he says, "we are horribly conservative; in

Unworried partners foresee less big-city planning, but more highway work ahead. Flanking Bartholomew (from left) are El-

dridge Lovelace, Harry W. Alexander, and Russell H. Riley. Bartholomew is only survivor of firm's original four partners.



the minds of others we are as radical as we can be. We'll always be caught between the men with the big ideas and the real estate people, and there's very little we can do about it."

Through the years

Within a year of the St. Louis plan in 1918, Bartholomew and three partners (all now dead) were firmly in city planning. Zoning was going like wildfire, and within a few months the firm had a contract for an ordinance for Washington, D.C., and assignments to advise on city plans in Omaha and Detroit. By the mid-twenties, it was adding new jobs at a rate of three city plans a year (price: \$7,500 to \$20,000), and the staff was up to 12 to 15. (Just how many of its plans have been carried out, the firm doesn't know; its estimate, however, is about 75 per cent.)

Most of the work flowed in because of Bartholomew's mounting reputation. He became a professor of civic design at the University of Illinois, a consultant to the National Capital Park and Planning Commission, and, in 1931, chairman of the

Subdivision Layout Committee for Hoover's White House Conference on Home Building and Home Ownership. In 1932 he published a book, *Urban Land Uses* (expanded in a 1955 version as *Land Use in American Cities*) that probably did more to spread his name than any other work. Drawn from 22 city studies, this book was the first to delineate on a broad scale the land-use pattern of America's urban centers. Its findings had tremendous impact, for while developers had been saying that 30 to 40 per cent of the city should be zoned commercial and multifamily residential, Bartholomew's figures showed that the total usage for apartment and commercial buildings came to no more than about 3½ per cent.

To survive the depression, when, between 1931 and 1937, the firm had no planning contracts at all, Bartholomew went to work for the National Resources Planning Board, "a sort of relief organization for planners." By 1937, though, city-plan contracts began to trickle in again. Memphis asked for a revision of its original plan, and so did Lansing, Mich. (In all, the firm has done about 30 such updatings.) But it wasn't until World War II that the firm got back to its size in the Twenties—and way beyond it.

If the war was hard on architects, it was a bonanza for most planners. Not only was there military work to do, but many cities seized on the lull in building to draw fresh plans and prepare public works as a prop for any postwar depression. In 1942, Bartholomew & Associates found itself with a \$500,000 contract to lay out 11,200 units of government wartime housing, plus community facilities, on five separate sites near Norfolk and Portsmouth, Va. Within two months, the firm's staff shot up from 25 to over 200. A year later, it was called in to do a 30-day rush job for \$28 million worth of construction at Wright Field, Ohio, and hardly was this finished when it went on to do a similar job for Patterson Field, Ohio. Meanwhile, Newark was asking for a revision of its plan (the firm set up a branch in Newark that lasted until 1950) and Vancouver contracted for a re-do.

At the end of the emergency,



Chief designer, Claire Avis, is an architect who has been with Bartholomew for most of time since 1941. She did site plans for Navy shore stations, now works mainly on shopping centers, subdivisions.

while the firm dropped back temporarily to a staff of about 25, its momentum was such that it did not lack for business. Through most of the postwar years it has been able to hold a level of about nine major city contracts per year. It has done comprehensive plans for Dallas, New Orleans, Oklahoma City, for burned-out Bar Harbor, Me., and modern Williamsburg, to coordinate it with the colonial restoration.

Until this year, three partners in addition to Bartholomew ran the firm, as in the beginning. All three have been with the firm since at least the Thirties, and all have somewhat similar backgrounds. Russell H. Riley, 54, is a landscape architect and engineer who became a partner in 1934; Harry W. Alexander, 58, is a civil engineer who began as a resident engineer during the twenties and became a partner in 1938; and Eldridge Lovelace, 44, is a landscape architect who began as a draftsman in 1935 and has been a partner only since 1943.

This year two additional partners were taken in: William S. Pollard Jr., 33, who has been the firm's chief engineer since 1955, and Donald H. Wolbrink, 46, a landscape architect and planner who heads the Honolulu branch office and has been in charge of all work in the Pacific since 1947.

Except for Wolbrink, who is permanently in Honolulu, and Bartholomew

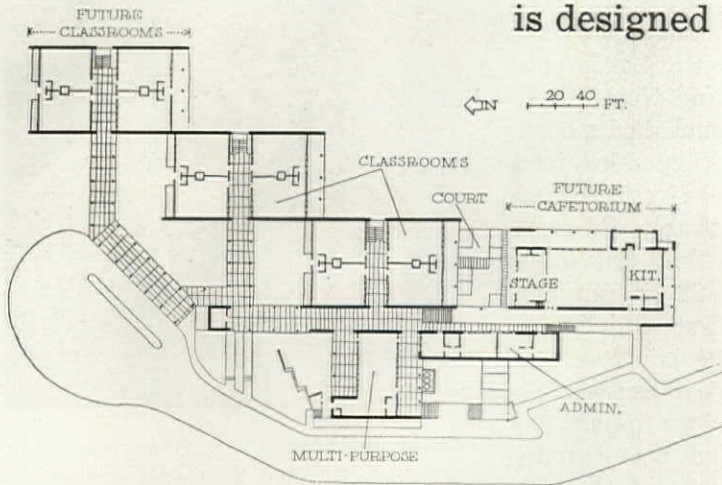
continued on page 156

PHOTOS: GEORGE HARRIS



Chief engineer, William S. Pollard Jr., was University of Illinois teacher until 1955, has just become partner. A highway specialist, he is currently in charge of road job in Memphis and Shelby County.

This building, full of nature and daylight,
is designed to make the most of a site nobody wanted.



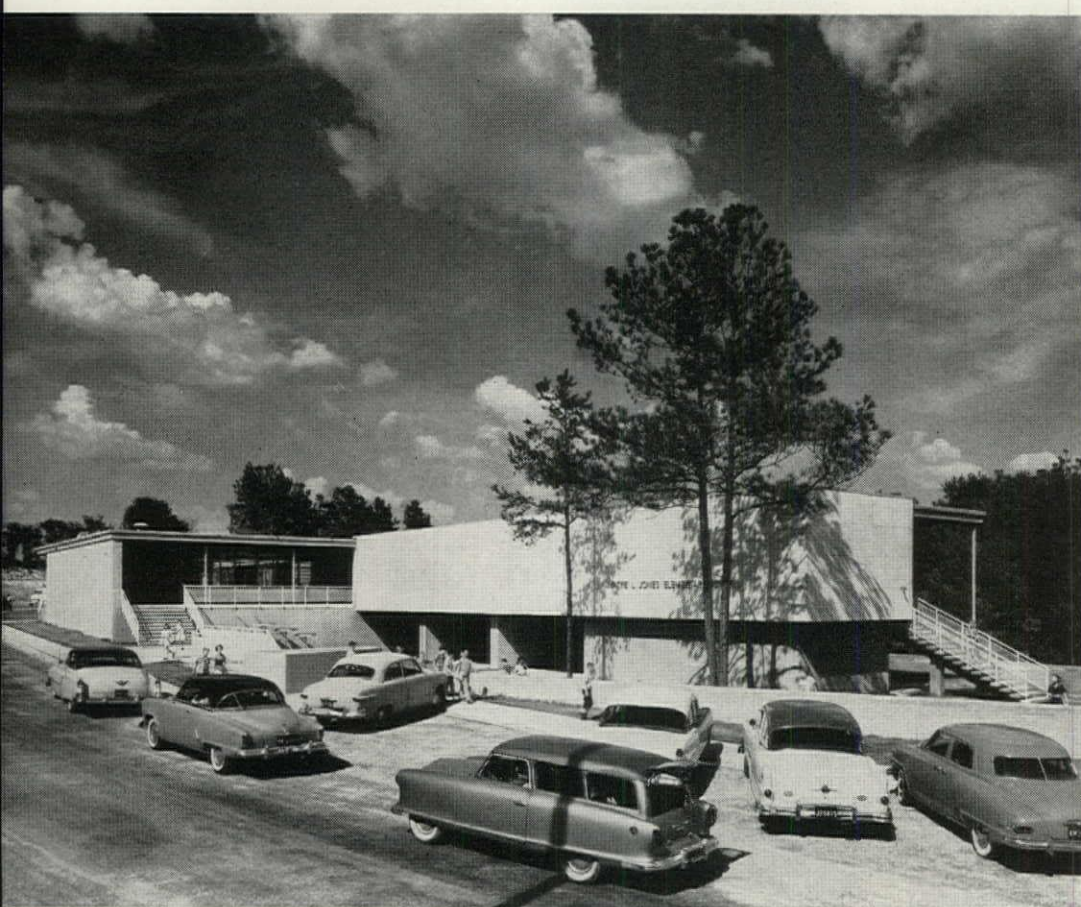
Easygoing school in Texas

The rough-and-tumble development of oil-rich Tyler, Texas forced the local school board to accept a somewhat scrubby 10-acre hillside plot for its new school. By emphasizing the few natural charms of the site, a scattering of trees, and by creating a breezy, fresh-air plan that was just right for the community, Architect E. Davis Wilcox was able to make the school board's back-to-the-wall decision look like a bit of inspiration.

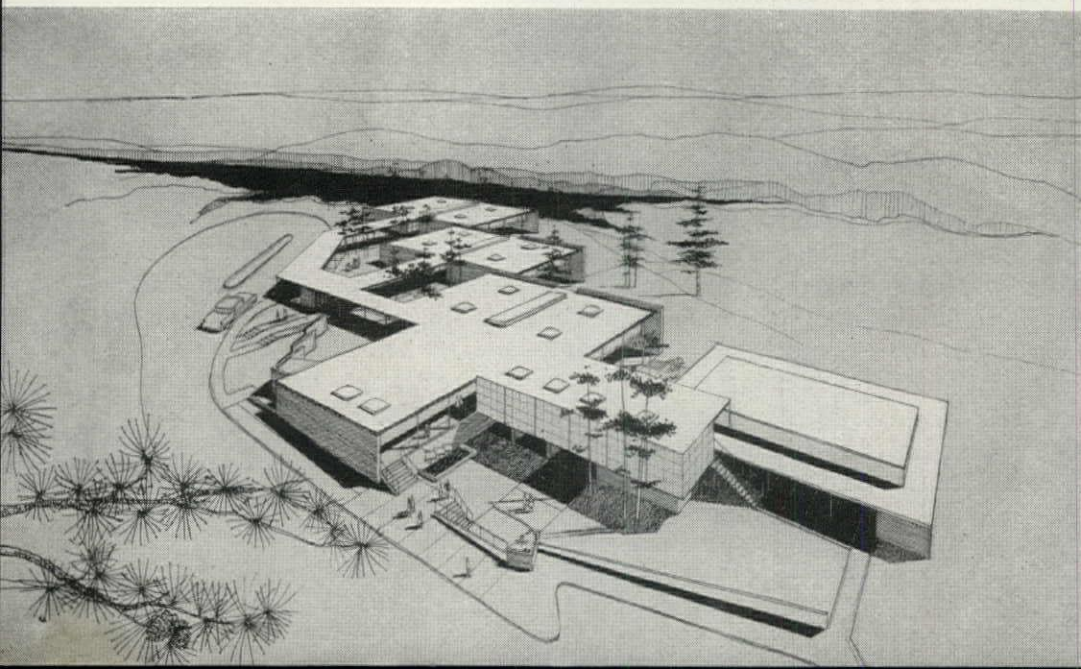
Supported by concrete columns, the upper level of the Mattie L. Jones Elementary School is strung out along the slope in four zigzag sections, the foremost being the administration wing and the remaining three, classroom clusters. Beneath is a lower level with room for several open play areas, 14,000 square feet of covered play area, and a 360-seat, combination auditorium-cafeteria (cafetorium). Connecting the two levels are broad staircases leading into open corridors.

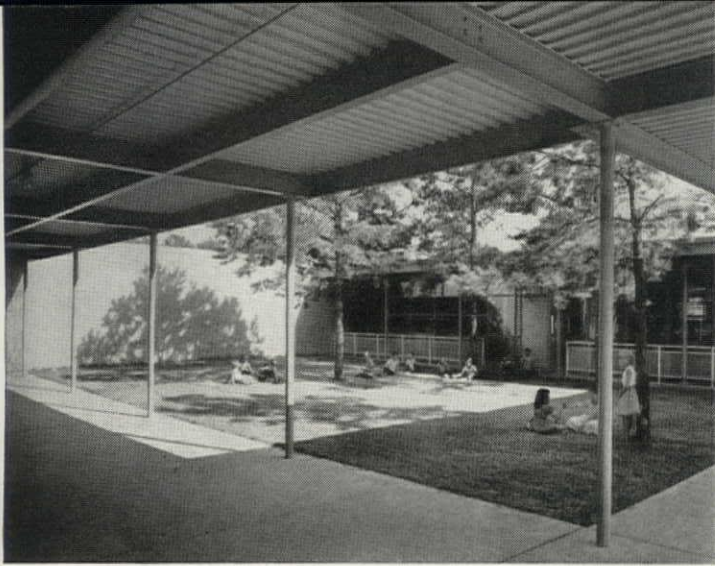
Everything has now been built except the outermost quadruple classroom unit and the cafetorium. And the school has been designed with an easygoing efficiency (several outdoor classrooms; a highly flexible plan) that should prove particularly interesting to school planners of the cost-conscious variety.

Total construction cost of the 360-pupil school was \$354,497, including estimates for the future additions. Using N. L. Engelhardt Jr.'s school-building-cost formula (FORUM, Nov. '57), the architect puts the *adjusted* construction cost (excluding foundations) at \$7.51 per gross square foot, or \$14.65 per net square foot. END



From its front approaches (above) the school follows the northeasterly slope (below).

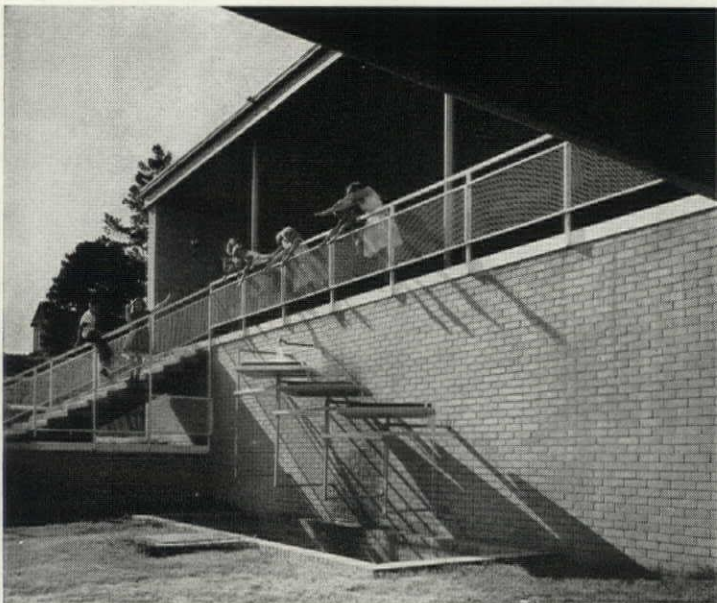




Pine trees were left to hum above the outdoor classrooms. Shelter and shade were given by steel-roofed breezeways.



A lower-level greensward extends outward and downhill from the asphalted play area beneath the classroom wings.



A three-level fountain outside the administration wing adds another of nature's noises to the children's play world.



The cafetorium will be added in a second phase of building, located where three children are running in the foreground.

Light streams into the wood-paneled classrooms through floor-to-ceiling glass exterior walls, modulated by trees and porticoes.

MATTIE L. JONES SCHOOL,
Tyler, Texas

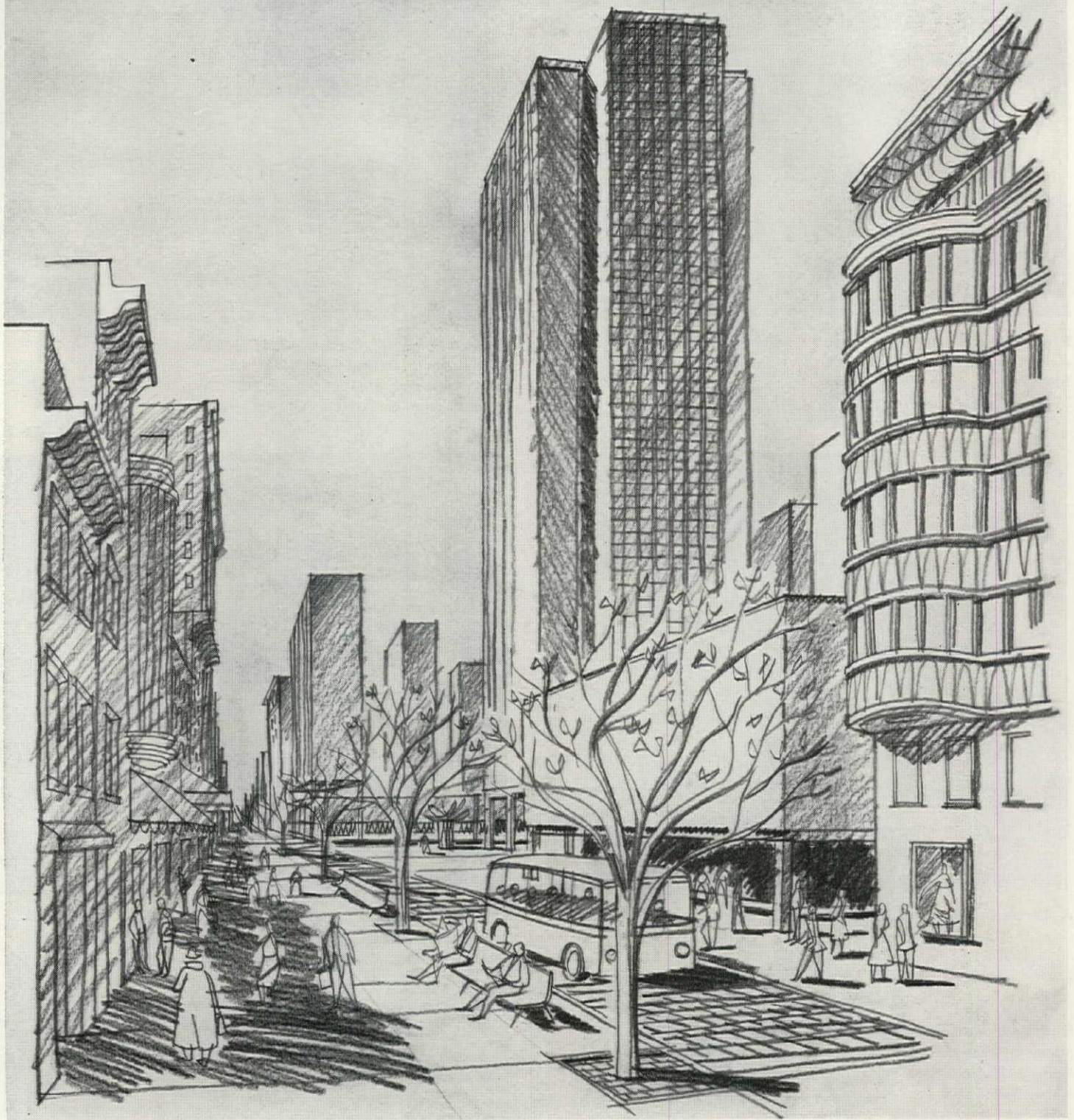
ARCHITECTS:
E. Davis Wilcox Assoc.

ENGINEERS:
Demopoulos & Ferguson and
J. W. Hall Jr.

CONTRACTOR:
R. L. Clanahan Const. Co.



PHOTOS: ROLAND CHATHAM



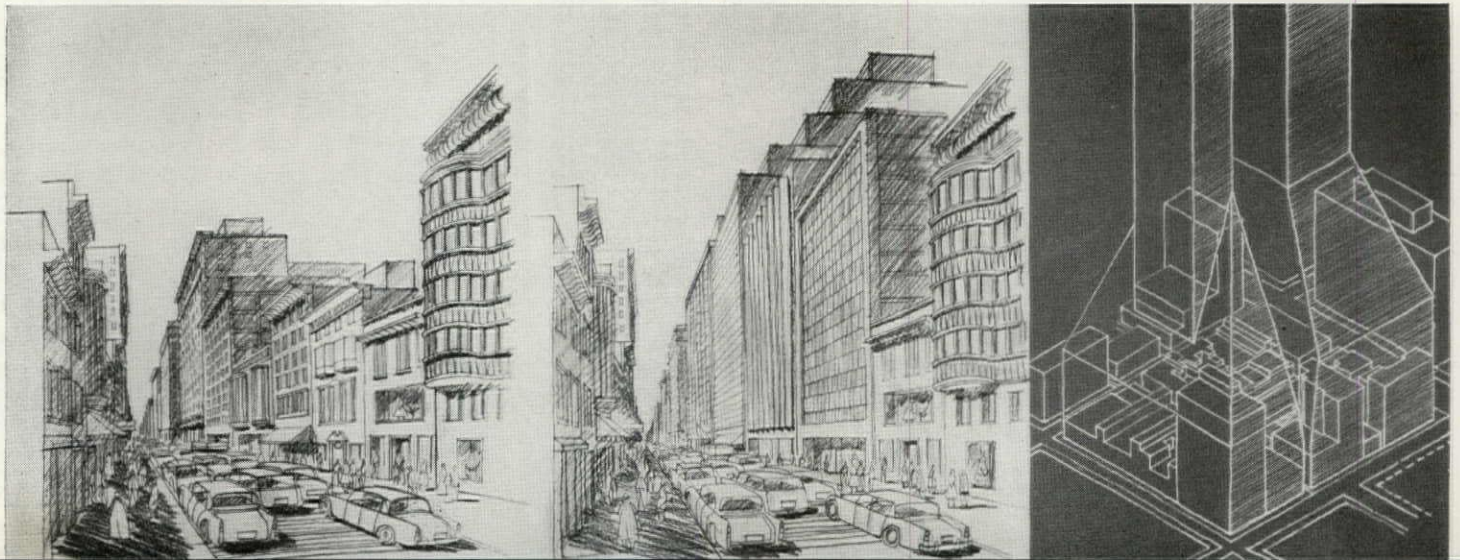
SKETCHES BY ARCHITECTS GEDDES, BRECHER, & QUALLS

1

2

3

4



A new concept of bulk zoning gives cities a powerful tool for gaining open space—yet allows taller buildings and more floor space.

A key to open cities

BY RICHARD A. MILLER

The biggest obstacles to enlightened city building and to the provision of spacious plazas and sheltering arcades in U.S. central cities, ironically, are the archaic zoning laws still in force in virtually every major city. Originally established to restrain the man who owned a piece of land "all the way up" from trying to fill all of it, the rigid and arbitrary controls on the size and shape of buildings have themselves stimulated evils as unsavory as the instincts they were designed to curb.

For where land values are high, real estate economics virtually require that the builder fill his bulk "envelope" to the maximum in order to spread the cost of the land over the largest amount of rentable space. A developer who allots some of the precious envelope space to a plaza, an arcade, or an unrequired setback has a hard time competing with his neighbors who do not (see "The earning power of plazas," FORUM, Jan. '58). And present zoning laws not only penalize civic-minded builders who leave open space; they also

discourage sensible structure, functional arrangements of space, and good design. They prescribe a certain geometry that reduces the architect's role to one of "putting wallpaper over bumps." They leave him almost no discretion in design.

Like most American cities, Chicago and Philadelphia were, until recently, tied up in the strait jacket imposed by these archaic regulations. Then, in both cities, similar zoning suggestions of such elementary logic were proposed that it is a wonder no one proposed them before. Instead of penalizing the allotment of open space, the reformers asked, why not offer a reward for virtue? Instead of setting a rigid maximum-bulk envelope, why not establish a flexible control that would reward the provision of open space by allowing the builder, as a *quid pro quo*, to build a taller building with more floor space?

Here is how the new system works: A basic allowable floor space is set as a ratio of the lot area. This ratio is called the "F.A.R.," or floor-area-to-lot-area ratio. In Philadelphia, for example, the basic "floor-area ratio" in the center of the city would be 5 to 1. If the whole lot is covered, five full floors can be built. But the builder can use the floor-area allowance any way he desires. Thus, if only one half of the lot is covered, the basic floor-area ratio of 5 to 1 would allow ten floors.

But in return for covering only one half of his lot, the developer is also granted a floor-space premium of 10 square feet for every 1 square foot of open space on the ground. As this can work out, instead of ten floors, a building occupying half of

its lot can rise an additional ten full floors (because of the 10-to-1 ratio) on the occupied half of the lot. For each kind of open space—arcades, courts, setbacks on the ground, and setbacks above the ground—other premiums are offered. By accumulating these premiums, a developer can build a great deal more space than if he covered his entire lot.

Outmoded wedding cakes

Until the Chicago-Philadelphia idea was introduced, there had been only three basic bulk-zoning systems. The oldest technique (and the one still most in use) simply established a maximum-height limitation. The second defined bulk on the basis of a "recession plane" (see sketch 4, opposite), which forced buildings to be set back in tiers, like a wedding cake. The third used a floor-area ratio combined with other provisions (including, in most cases, a recession plane). There are about a half-dozen such ordinances. What distinguishes the Chicago-Philadelphia bulk-zoning proposals from the earlier F.A.R. ordinances is one additional provision: premiums of extra floor space for open space.

The ubiquitous "wedding-cake" setback requirements, first established in New York in 1916 and later adopted in many other cities (unlike the simple maximum-height limit) prescribed the arrangement of the bulk—but did so much too rigidly. Although varied in detail, all these ordinances were based on a recession plane.

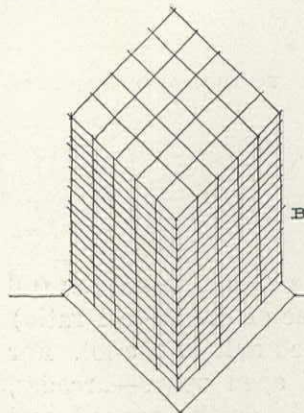
Quite simply, the recession plane is an imaginary wall tipped back from the center of the street, and, above a certain height, from the

Spacious streets result from the new zoning proposal, which permits bigger buildings if they provide open space. The large sketch (1) illustrates several types of open space Philadelphia developers may provide to increase building size. The new building in the foreground has an arcade and a fourth-floor setback. The tower rises out of a plaza. The distant slab buildings are grouped above a low structure of arcades interspersed with open courts. The new look will be more compatible with the present city character (2) than the walled-in appearance that would result from the old recession-plane control (3 and 4).

How the Chicago and Philadelphia premiums stack up:

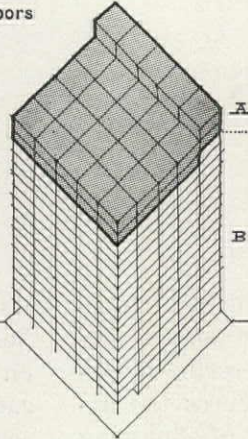
CHICAGO

16 floors



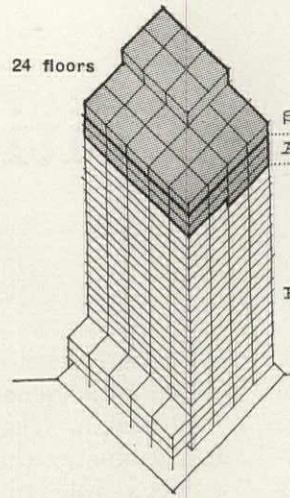
Basic floor area ... 160,000 sq. ft.

19 floors



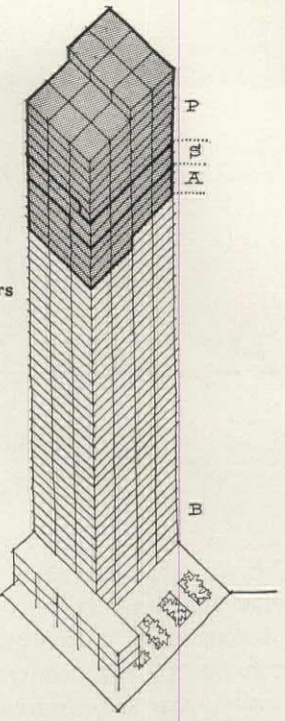
Basic floor area ... 160,000 sq. ft.
Arcade premium ... 20,000 sq. ft.
Total floor area ... 180,000 sq. ft.

24 floors



Basic floor area ... 160,000 sq. ft.
Arcade premium ... 20,000 sq. ft.
Setback premium ... 10,400 sq. ft.
Total floor area ... 190,400 sq. ft.

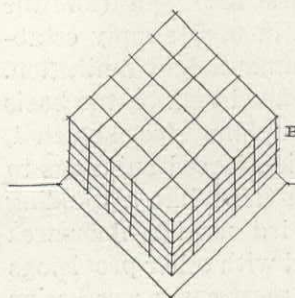
45 floors



Basic floor area ... 160,000 sq. ft.
Arcade premium ... 20,000 sq. ft.
Setback premium ... 10,400 sq. ft.
Plaza premium ... 27,200 sq. ft.
Total floor area ... 217,600 sq. ft.

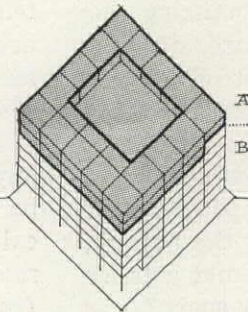
PHILADELPHIA

5 floors



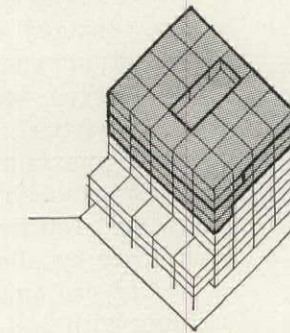
Basic floor area ... 50,000 sq. ft.

7 floors



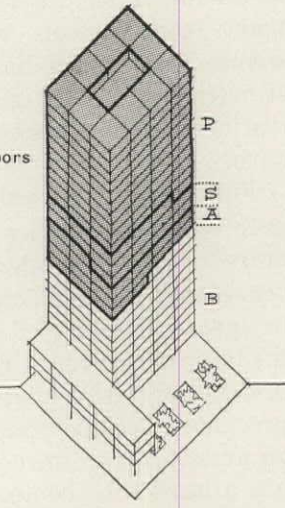
Basic floor area ... 50,000 sq. ft.
Arcade premium ... 15,000 sq. ft.
Total floor area ... 65,000 sq. ft.

9 floors



Basic floor area ... 50,000 sq. ft.
Arcade premium ... 15,000 sq. ft.
Setback premium ... 10,000 sq. ft.
Total floor area ... 75,000 sq. ft.

25 floors



Basic floor area ... 50,000 sq. ft.
Arcade premium ... 15,000 sq. ft.
Setback premium ... 10,000 sq. ft.
Plaza premium ... 48,000 sq. ft.
Total floor area ... 123,000 sq. ft.

FOUR BUILDING VOLUMES possible on identical 10,000-square-foot lots in Chicago and Philadelphia are compared above. The pairs of sketches above show the maximum sizes of buildings allowed with various provisions of open space. The lots are located in the highest density commercial districts in each city (B7-7 in Chicago, C-4 in Philadelphia). Streets are 60 feet wide.

side and rear lot lines.* No part of a building could obtrude beyond these imaginary walls. Established originally to prevent the kind of building practice that turned city streets into dark canyons choked with traffic (such as Wall Street in New York City), the recession-plane laws soon created buildings that looked like the Ziggurat Tower of Babylon.

*Except for towers, which in the New York law and in others are allowed to rise to infinity on the center 25 per cent of the lot.

Long a theoretical alternative to both the maximum-height and recession-plane laws has been a floor-area ratio, combined with some technique for defining how the allowable space could be arranged. Since World War II, London has used an F.A.R. control coupled with a cumbersome "light-fan" concept, which requires that a certain proportion of the "fan" have free exposure to light and air at legally required windows. The pioneering

1950 Harrison, Ballard, and Allen proposals for New York (FORUM, Sept. '50) used an F.A.R. control combined with a simplified "light fan" and a so-called "angle of light obstruction" (in reality, another kind of recession plane). The new contribution of the Harrison, Ballard, and Allen proposals was that the angle of light obstruction could be averaged along the street frontage, which would have provided a measure of freedom in design. However, both the London law and the New York proposals were too complex, and they have not been widely imitated.

Tale of two cities

But the demand for reforming the old maximum-height or recession-plane laws, first raised on the basis of the "look" they gave city design, has lately been getting new support on more influential grounds. Architects were anxious to break out of the strait jacket imposed on their planning (many said the controls, rather than the architect, designed the modern skyscraper). Structural engineers chafed at the necessity of contorting the structural framing to fit jagged lot lines and wedding-cake setbacks. Realtors objected to the severe limitations as making it increasingly difficult to build in the central city against the pull of cheaper land in the suburbs. More and more, the need for opening up the central city became apparent to the thoughtful citizen.

During 1951, Chicago's City Council Committee on Buildings and Zoning began a comprehensive revision of Chicago's zoning ordinance. And in 1955, Philadelphia Mayor Joseph S. Clark Jr. appointed a Zoning Advisory Commission, headed by Architect, Planner, and University of Pennsylvania Dean G. Holmes Perkins, to perform the same task.

The procedures and techniques of both groups were surprisingly similar. Instead of hiring a private firm of outside consultants to do the whole job as a package, each group assembled its own technical staff (directed in Chicago by Planners Harry F. Chaddick and George H. Kranenberg Jr. and in Philadelphia by James H. Ward). Both groups continuously and conscientiously

consulted with a wide group of city officials and community leaders. In each case, the reformers also took the logical (and unusual) step of working with a special group of architects, realtors, and attorneys on revisions in bulk controls.

Oddly enough, each of these special groups, after a close look at purely local needs, proposed the F.A.R.-plus-premiums system for limiting the arrangement of building bulk in ways most beneficial to the community as a whole.

In Chicago, the original premium idea seems to have been first proposed in the award-winning entry of Pace Associates, architects, Realtor Graham Aldis, and Lawyer Robert Cushman to the 1954 Carson-Pirie-Scott Competition for replanning the loop district (FORUM, Nov. '54). Before the idea was made a part of the proposed law, many groups helped refine it into its present form.

In Dec. 1956, the Zoning Advisory Commission in Philadelphia called in Architects Robert Geddes, Melvin Brecher, and George Qualls as special consultants to study existing bulk controls and to propose a new system. Geddes and partners chose, in turn, Realtor Reynold Greenberg Jr. and University of Pennsylvania Law School Associate Professor Paul Mishkin as their consultants. The Geddes group had first encountered the premium idea in an article by D. H. Crompton in the Oct. 1955 *British Town Planning Review*, which criticized the effect of the London rules.

Except for sharing the basic principle, the Chicago law (in effect since July 1957) and the Philadelphia proposal (not yet adopted) differ substantially. Most importantly, in the central business districts of Chicago, the basic F.A.R. is varied between 7 to 1 and 16 to 1. In Philadelphia, the basic F.A.R. is 5 to 1, but premiums are allowed to lots fronting on streets 60 feet or more in width.

F.A.R. factors are used in all the 71 types of zoning districts in Chicago, but premiums are allowed in only seven central city districts.* In Philadelphia, out of 36 district types, F.A.R. factors and premiums

* An allowance of extra floor space is granted in nearly all Chicago's zoning districts for buildings fronting on 5 acres or more of public open space (such as Grant Park or the Chicago River). Philadelphia does not allow any similar exception.

are used only in the five central city districts.

These variations are not merely capricious. The Philadelphia F.A.R. is set lower than Chicago's because the present city profile is lower than Chicago's. More important, in the Philadelphia proposal the use of the open-space premiums is given greater encouragement because the base F.A.R. is lower. Chicago, on the other hand, has long been a city of high-walled streets, the highest and noblest being the side of Michigan Avenue facing the great open expanse of Grant Park.

Both ordinances allow premiums for setbacks on ground level and above the first floor. The Chicago law, however, gives proportionately more weight to covered arcades, undoubtedly as a result of the Congress Street widening, which gave the city a taste of arcades. In Philadelphia, open-air interior courts, such as the one provided in the new Transportation Building in Penn Center, are given premiums. The Chicago ordinance does not allow any credit for such courts.

Both cities considered the possibility of allowing premiums to be averaged over large, multiownership parcels. While such a provision would encourage more cohesive civic design, neither city could see its way through the maze of legal and functional problems that such averaging was likely to involve.

Hope for the central city

Many other U.S. cities now have rezoning studies under way (New York, for one, recently commissioned a study from Architects Voorhees, Walker, Smith, & Smith). As additional cities adopt the Chicago-Philadelphia bulk-zoning idea (as they surely will), the variations from city to city will increase. Any city using the premiums will obviously arrange them to suit local needs and ideas.

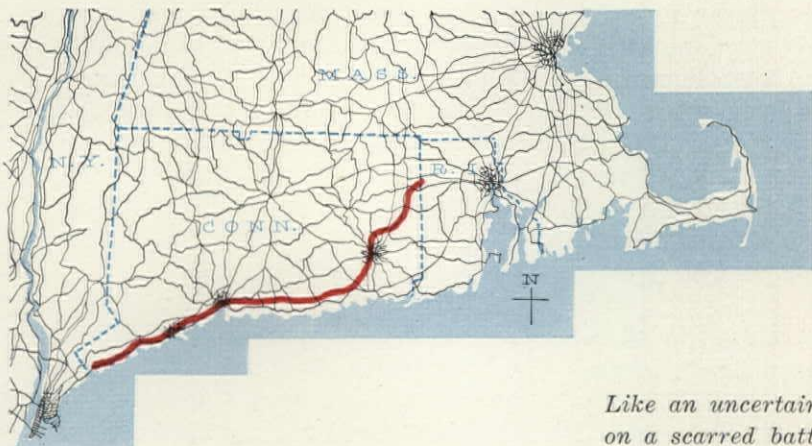
There is little solace in the bulk-zoning idea, however, for those who would prefer city streets to have uniform cornice lines. Under flexible controls, the American instinct for freedom and breathing space will have free rein, and it will very likely have a highly varied—and salutary—effect on the architecture of the central city. END

To build a turnpike

For two years the city-gouging preparation of a route for the Connecticut Turnpike went on with a destructiveness that seemed indiscriminate, at times wanton. No longer obscured by its protective neighborhood, the shoddy tavern was exposed to the embarrassment of daylight. But often, too, the charming mansion and its tree-shaded street were blasted beyond memory. The pattern of the bulldozer's tread was everywhere.

Then slowly signs of construction appeared: fill for grading, a tipsy parade of newly driven piles, the sinuous sculpture of an interchange. Unevenly, but with force and grace, a broad, fluent traffic artery was joined together, closely tagging the tracks of the venerable New Haven Railroad.

Last month the first driver paid his \$1.85 to drive the 124 completed miles of the Connecticut Turnpike from Greenwich to Killingly. But more spectacular than the completed road is the massive impact of its construction process—as recorded in the photographs on these pages.



Like an uncertain platoon on a scarred battlefield, trestles set up two years ago for a bridge over New Haven's Quinnipiac River gave scant promise of today's impressive span.







The bars and shops of Bridgeport's West Side were blanched by unexpected sunlight when the wreckers swept past. After destruction came pipe pilings, sunk through mud to bedrock.

Then came fill—mountains and deserts of it—dredged from the bottom of Long Island Sound. Engulfing homes and factories, the overflowing heaps had to be held back by dike-like retaining walls.





At winter noontime the peaceful shadow of a Bridgeport church fell on the block-wide swath of fill and destruction. Soon afterward the giant sand pile was swarming with workmen again.



A deeply furrowed, heavily traveled coastline of rivers and roadways lay between the western end of the turnpike and its eastern objective. Bridges and underpasses were the answer: the road makes 273 leaps and dives within 124 miles.

Stamped into the face of the land were footmarks of the giant earth movers that had come to reshape the mobility of an entire region. Yet the tracks resembled nothing mightier than a child's seaside construction project.



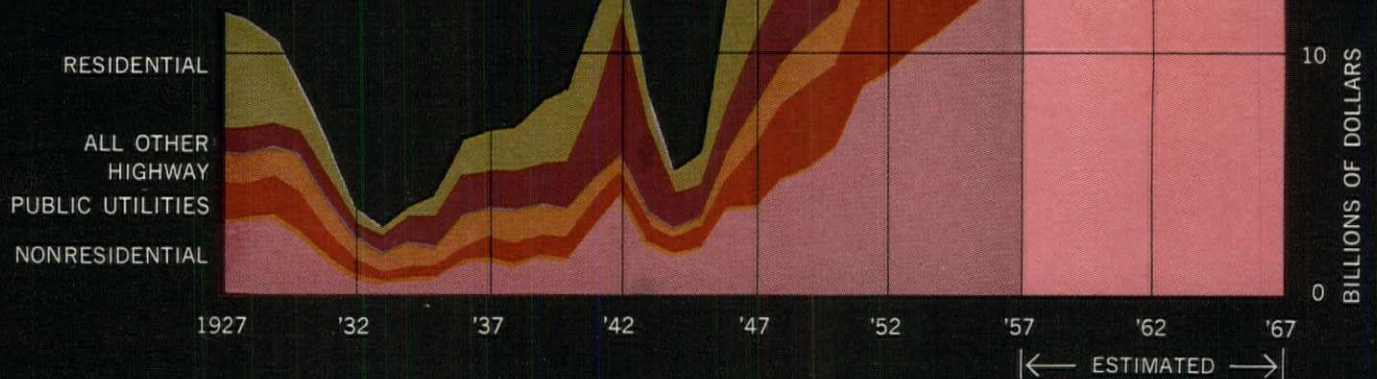
*Along the New Haven
water front stretched the
massive, greening limbs
of an interchange that, after
more than three years of
sporadic growth, awaited final
grafting to the other
segments of the turnpike.*

PHOTOGRAPHS BY ROBERT M. MOTTAR—FORTUNE



The bullish outlook for building

TOTAL BUILDING 1927-1967



Source: U. S. Departments of Commerce and Labor; FORUM estimates.

Note: Public utilities includes only privately financed utilities; all figures in current dollars, except 1962, 1967 estimates which are in constant 1957 dollars.

Despite the business letdown, the construction industry's outlook remains dazzling.

FORUM's forecast: a massive \$600 billion of building in the decade ahead—more than the present value of all existing private structures.

Seldom has an industry faced so prosperous a future as that which now confronts the U.S. construction industry. At a time when much of the economy has been revising its business forecasts downward, the outlook for construction has been going through a series of surprisingly sharp markups. Building prospects for 1958, which were good before the economic letdown began last autumn, are now nearly \$300 million better. And there is a good chance of even greater improvement. Farther ahead, over the next decade, the prospect of tremendous new gains in construction spending has become increasingly likely. Indeed, building's long-range outlook, always fabulous, is today brighter than ever before.

This dazzling vision of the future is based on two new and detailed studies that have just been completed by FORUM's economic consultant, Miles Colean. One of these surveys is a second look, in line with the now-complete 1957 building totals, at the probable level of construction activity for the current year. The other is the second FORUM estimate of building volume for the decade ahead. (The first ten-year forecast appeared in Dec. 1956.) Taken together, the two studies represent the latest and most comprehensive data available on the construction outlook. Here,

Long-term growth of new construction will push building's volume to \$70 billion in 1967, 48 per cent above last year. The biggest gain—88 per cent—will be in highway spending. Next in line: nonresidential construction, up 50 per cent by 1967.

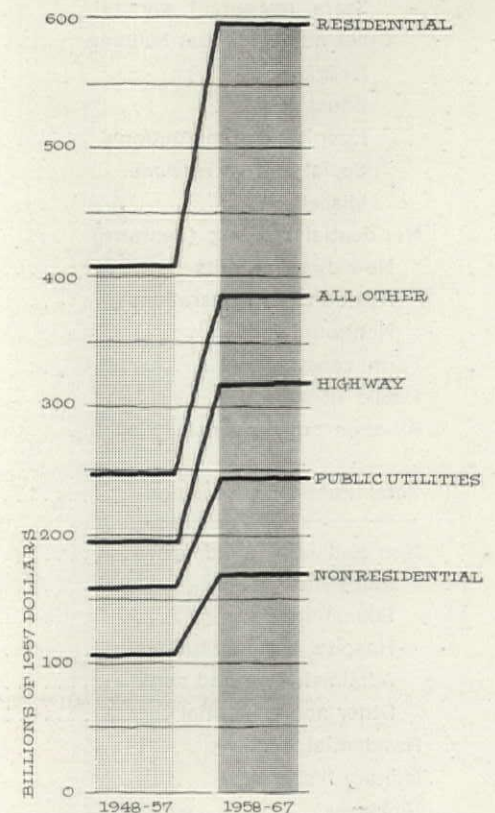
specifically, is what they show:

1958. New construction this year will climb nearly 4 per cent above last year's total of \$47.3 billion to a new record of \$49 billion (all data in constant 1957 dollars). This will be an increase in actual physical volume. In contrast, during 1957, dollar volume rose 3 per cent (\$1.2 billion) because of inflation, but physical volume dipped about 1 per cent.

This new forecast compares with an anticipated rise of 3 per cent, which as late as last autumn seemed about the best that could be hoped for (FORUM, Oct. '57). Most of the gain stems from residential building, now past the worst of its slump and rapidly moving into a period when easing credit will produce a moderate rise in new housing starts. Helped by apartment construction, which should top 100,000 units this year, housing can now look to a year in which about 1,050,000 new units will be started, compared with the 1-million-or-less units that were forecast last fall and 1957's actual total of 1,039,200. Beyond this, it now seems likely there will be a slight pickup in commercial construction—about 4.5 per cent over the autumn forecast—with easier money again responsible. There will also be some added building by privately financed public utilities, now expected to total \$6.2 billion. All told, this extra \$1.2 billion gain in dollar volume will be more than enough to compensate for what now seems likely to be a bigger dip than previously anticipated in industrial construction (new capital spending surveys point to a drop of nearly 12 per cent—\$450 million—under last fall's forecast).

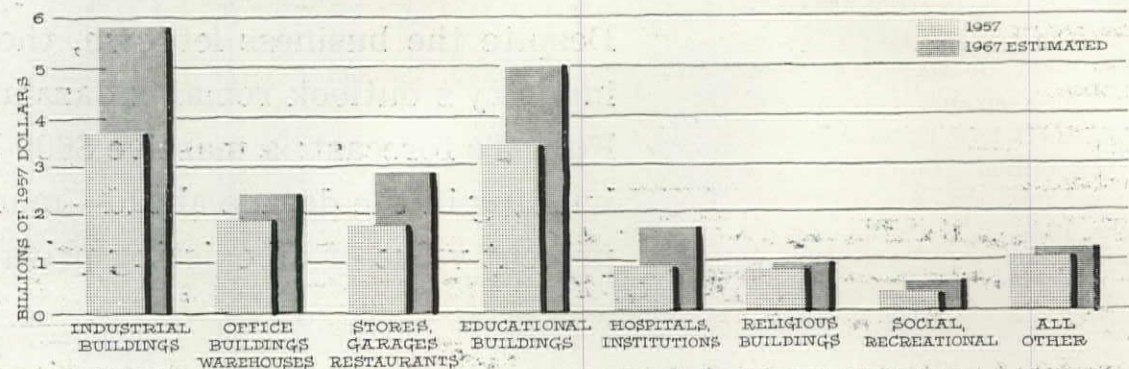
1958-1967. By 1967, the annual rate of new construction will have soared to nearly \$70 billion (in 1957 dollars), a massive 48 per cent increase above last year. This estimate reflects a substantial addition to the projections that FORUM made just a year ago. In recent months, a sweeping revision of government figures for residential additions and alterations, which stemmed from a special study by the Bureau of Labor Statistics, has added about \$2 billion a

Coming: another boom decade



A 50 per cent gain in construction spending will make the next decade the biggest in building history. Total outlays for new construction will be nearly \$600 billion, compared with \$409.6 billion (1957 dollars) from 1948 through 1957.

The big gains in nonresidential building



Fastest growing sectors of nonresidential building will be hospitals (1967 gain: outlays 96 per cent over last year), social and recreational (77 per cent gain), and industrial (60 per cent gain).

NEW CONSTRUCTION EXPENDITURES (in millions of 1957 dollars)

	1957	1958	Change 1957-58	1962	Change 1957-62	1967	Change 1957-67
TOTAL NEW CONSTRUCTION	47,255	49,000	3.7%	57,300	21.3%	70,000	48.1%
Total Private Construction	33,313	33,800	1.5	39,200	17.7	48,300	45.0
Nonresidential building	9,138	8,900	-2.6	11,000	20.4	13,700	49.9
Industrial	3,162	2,800	-11.4	3,900	23.3	5,200	64.5
Commercial	3,570	3,500	-2.0	4,200	17.6	5,100	42.9
Warehouse, office, loft	1,864	1,900	1.9	2,000	7.3	2,400	28.8
Store, restaurant, garage	1,706	1,600	-6.2	2,200	29.0	2,700	58.3
Other nonresidential building	2,406	2,600	8.1	2,900	20.5	3,400	41.3
Religious	868	920	6.0	900	3.7	950	9.4
Educational	519	550	6.0	800	54.1	900	73.4
Hospital and institutional	505	590	16.8	600	18.8	750	48.5
Social and recreational	309	320	3.6	400	29.4	550	78.0
Miscellaneous	205	220	7.3	200	-2.4	250	22.0
Residential building (nonfarm)	16,571	17,000	2.6	19,700	18.9	24,000	44.8
New dwelling units	12,160	12,300	1.2	14,300	17.6	17,200	41.4
Additions and alterations	3,912	4,200	7.4	4,800	22.7	6,000	53.4
Nonhousekeeping	499	500	*	600	20.2	800	60.3
Farm construction	1,590	1,500	-5.7	1,700	6.9	1,800	13.2
Public utilities	5,830	6,200	6.3	6,600	13.2	8,500	45.8
All other private construction	184	200	8.7	200	8.7	300	63.0
Total Public Construction	13,942	15,200	9.0	18,100	29.8	21,000	55.6
Nonresidential building	4,481	4,900	9.4	5,100	13.8	6,500	45.1
Industrial	458	550	20.1	600	31.0	600	31.0
Educational	2,832	3,050	7.7	3,200	13.0	4,100	44.8
Hospital and institutional	333	350	5.1	500	50.2	900	170.3
Administrative and service	434	500	15.2	800	-6.8	900	4.9
Other nonresidential	424	450	6.1	800	-6.8	900	4.9
Residential building	510	600	17.6	300	-41.2	300	-41.2
Military facilities	1,275	1,200	-5.9	1,400	9.8	1,300	2.0
Highways	4,840	5,600	15.7	7,900	63.2	9,100	88.0
Sewer and water systems	1,347	1,400	3.9	1,700	26.2	2,400	78.2
Miscellaneous public service	393	400	1.8	600	52.7	900	129.6
Conservation and development	975	950	-2.6	900	-7.7	950	-2.6
All other public construction	121	150	24.0	200	65.3	250	106.6

*Less than 1 per cent.

year to the construction totals for the last few years. Carried forward and applied to each of the years in the next decade, this change has meant a sizable upgrading of estimates. It now appears that close to \$600 billion (1957 dollars) will be spent on new construction during the 1958-1967 decade—nearly \$200 billion, or 50 per cent, more than went into building in the decade 1948-1957, the greatest building-boom period to date.

Private residential building alone will account for \$200 billion of new construction in the ten years ahead; \$85 billion will be spent on industrial and commercial construction, \$16 billion on religious and private institutional buildings, and \$75 billion on utilities. Outlays for schools and educational facilities will amount to about \$45 billion, while highway spending will total at least \$75 billion, and outlays for sewer and water systems, nearly \$20 billion. All told, during the coming decade, new construction expenditures will just about equal the present depreciated value of all private structures—homes, office buildings, factories, stores, etc.—standing in the U.S. today.

Golden decade

The statistical assumptions underlying FORUM's ten-year forecast are exceedingly conservative—assuming that the coming decade will be free of war and serious depression. FORUM has no fear that its estimates are too optimistic. For one thing, they are based on projections of statistics that undoubtedly understate the actual volume of construction today (e.g., further adjustments will probably have to be made in the estimates for new dwelling units as a result of the Census Bureau's 1956 housing inventory, which has just been published). Beyond this, the estimates are also conservative in that they assume that the American standard of living—i.e., productivity—will rise no faster during the next decade than during the last one. They also assume that construction's contribution to gross national product (GNP: the total value of all goods and services produced in the U.S.) will be only slightly larger in the next ten years than in the last ten.

More specifically, FORUM's construction projections for the coming decade are based on an estimate of future gross national product per capita multiplied by future population estimates. They suppose that the increase in per capita GNP will be at a compound rate of about 1.85 per cent a year, which is roughly the average for the postwar period. In addition, they assume that construction's share of total GNP will be only 11.5 per cent in 1967, a slice which is a bare 0.6 percentage points greater than today. Even if defense imposes a heavy drain on the economy during the coming decade, technological advance is likely to mean a greater improvement in living standards and, consequently, because of obsolescence, in construction's share of product, than these estimates take into account. Thus, in all probability, any revision of the figures will have to be on the up side.

As FORUM reported a year ago, the dominant force in future construction will be the need for continually improving and expanding the nation's capital plant. There will be not only a fairly steady climb in the amount of industrial and commercial building, but also tremendous additions to utility capacity to serve a market that by 1967 will add up to nearly 200 million people. By the same token, population increases will force an expansion of public facilities—highways, sewers, schools, hospitals, airports, etc. Practically every segment of the building industry will feel the impact of this vigorous growth:

Business building. The current slump in industrial and commercial building will soon be forgotten. Despite all the talk of overcapacity, the U.S. today is actually greatly underequipped to meet the long-range challenges of more people, better living standards, and new production techniques. By 1967, FORUM anticipates that the annual rate of factory building will be more than 70 per cent higher than now; commercial construction, which will have to strain to meet the needs of new urban redevelopment, will have increased by 43 per cent.

Residential construction. By 1967, the number of households in the U.S.

will have risen to about 58.2 million. As a result, 1.5 million new housing starts a year will be as common ten years from now as 1 million are today. Apartment construction alone will be running at a rate of 200,000 to 300,000 new units a year (compared with about 100,000 units now). In all, the volume of housing is likely to be nearly 45 per cent greater in 1967 than it is now.

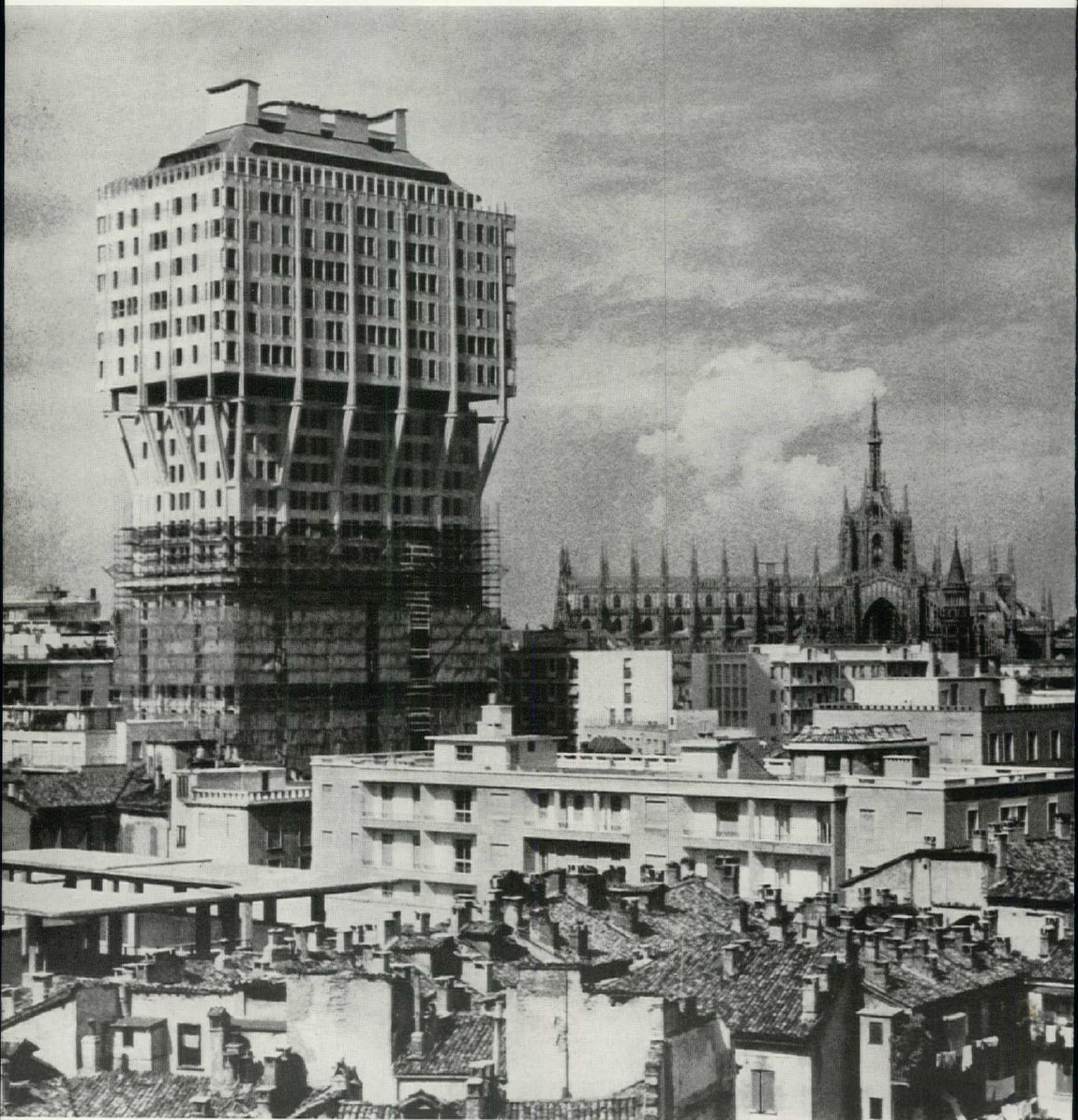
Schools. Ten years from now, the number of young people of school and college age will have soared from today's 44.8 million to more than 58 million. Educational building will be racing against population growth, and the volume of school construction will be at least 45 per cent greater in 1967 than last year.

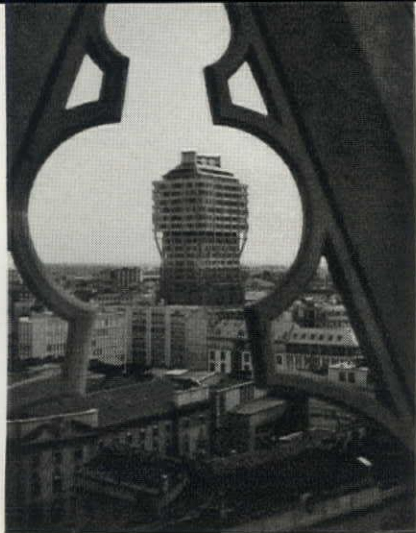
Hospitals and churches. Population growth, rising health standards, and new medical discoveries will add tremendously to required outlays for hospitals and research centers. Spending for this purpose, which was less than \$850 million in 1957, will be more than \$1.6 billion in 1967. Meanwhile, church building will continue to boom.

Highways. At the end of the coming decade, annual outlays for highway and street construction will still be rising, even though the spending rate, now \$4.8 billion a year, will have topped \$9 billion (exclusive of right-of-way costs). The multiple effects of this unparalleled expansion in highway construction can hardly be overestimated. Every aspect of urban life will feel its impact. The road-building program has the power both to intensify the suburban shift and to restore the balance between the close-in and outlying divisions of the metropolitan area. It is likely to do some of both.

With such auspicious prospects as these for the decade as a whole, the construction industry should be able to take in stride the occasional years when expansion may falter. As FORUM said a year ago, the outlook for building is so dazzling that the only troubling question is whether the economy can supply the men and materials that will be needed to make the goals attainable. If the economy can achieve these building objectives, it will have an unprecedented prop for prosperity not only for the next ten years but for all the decades beyond. **END**

Modern tower in old Milan





Stone tracery on the roof of the nearby Milan Cathedral (seen also in the background of the photo at the left) frames the bulging 26-story tower of the new apartment and office building nearby.

The Torre Velasca spreads out at the top like a medieval battlement—but it does so for very peaceful reasons.

A CRITIQUE BY G. M. KALLMAN

The new Torre Velasca apartment-office building in Milan, Italy does not adopt the typical form of a modern tower nor does it establish a prototype for a new form. Unlike Frank Lloyd Wright's Price Tower in Bartlesville, Okla. or Mies van der Rohe's Seagram Building in New York, it is not a self-sufficient structure that could be located anywhere. Instead, it is a valiant essay in the neglected art of fitting modern architecture into a historic continuity of building, within which it seeks its own status. Unlike most modern architecture, which is displaced, rebellious, and alien to its immediate environment, the Milan tower shows a definite response to the forms and figuration of its surroundings. Thus, it is natural that the building should be complex and crossbred in a manner both intriguing and disturbing, for this cannot be called as handsome a building as many that are far less important.

The other tall new buildings in Milan have been built in districts beyond the ancient center. In contrast, the Milan tower rises out of the narrow streets of the old city. As the one significant new volume in the area, it shares the sky line with the great Gothic pile of the Cathedral and its garish display of sculpture, pinnacles, and finials (photo, left).

This confrontation of the ancient and the new is both shocking and evocative. The memory-loaded camera of the eye at once registers associative images. The giant mushroom shape of the tower and the brackets supporting the cantilevered upper floors recall medieval machicolated defense towers. The cage-like appearance of the exterior frame is more reminiscent of Gothic structure than it is of skeleton frame and curtain wall. The arrangement of the parts in such a way as to emphasize the primary and subordinate the supporting elements, the effect of solidity and weight, and the hip roof all seem far removed from modern architecture.

But the tower does not have a deliberately historicized silhouette. The archaic outline develops as a secondary image, a dimension that may or may not be read. It is stated, then denied and opposed by other associations, for example, the similarity to the artless structures that get built for agriculture and shipping. In fact, the more closely the tower is studied, the more apparent its complex dialectic becomes—between function and form, construction and ornament, new technology and ancient forms.

Instead of following the current urban pattern of Milan, in which new buildings match the old and follow the old street fronts, the tower is built in the center of its site, providing a vital contrast to its immediate neighbors. In terms of urban living, it provides another contrast. The combination of apartments and offices in one building resists the trend toward devitalization of the center of the city, which occurs wherever office buildings replace residential structures.

Apartments over offices

Unlike Wright's Price Tower, which stacks apartments and offices side by side, the Milan tower carries its apartments *above* the offices. The latter are contracted into a narrower shaft under the larger apartment floors (larger to accommodate the more extensive internal service areas of the apartments). This disposition of volumes, narrow below and broader on top, gains precious ground for the plaza and compensates for the low site coverage of the building without an increase of building height beyond the permissible level.

The plaza derives its distinctive quality from the sheltering form and outline of the tower. Unlike recent free-standing towers in the U.S., such as the R.C.A. Building in Rockefeller Center and the new Seagram Building, which stretch straight upward toward infinity, the

Medieval towers like that of the Palazzo Vecchio in Florence (below), which the new Torre Velasca in Milan resembles, were bracketed out at the top so portholes in the floor between the brackets could be opened to drop boiling oil on besiegers below. If the Milan tower (left) were in a colder climate, it might drop equally lethal icicles on passers-by. Apartments occupy the wider upper floors, and offices are in the slimmer lower section.



JAMES WHITMORE—LIFE



Penthouse machinery rooms and ventilating intakes of the Torre Velasca stand only a few feet lower than the topmost pinnacles of the Cathedral (foreground).

Milan tower achieves a still point in space. This limiting of the height lends a humanized effect, which is supported by the projection of the exhibition hall into the open space of the plaza, thus anchoring the building to the ground.

The cage-like exterior structure of the tower neatly ties two different building volumes, one above the other, into a single system as it springs out, arbor-like, connecting the slender stem and the broad head. This structure results in a varied bay size. In the stem, the two end bays on the broad side of the building are narrower than the three middle bays. In the head, the variation occurs on the short side, where the end bays are broader than the middle one. The fact that this transition is made to look easy is a triumph of design.

Taking full advantage of the plastic qualities of concrete, the exposed structural framework is molded with great refinement. Expressing the gathering weight it carries, this framework is wedge-shaped in cross section at the top, changing into a tee-shaped section in the lower shaft of the offices and, in turn, to a 3-foot-square pier at the base. Brackets, supporting the cantilevered apartment floors, develop out of the leg of the tee below; these are aided by slender braces below the overhang. Contributing to the articulate refinement of the framework are the doubled corner piers, which branch into splayed brackets at the top.

Whereas the typical curtain wall, which encloses a building without reference to varied interior functions, has developed general, mechanically repeated, and sometimes arbitrary graphic patterns, the envelope of the Torre is a specific weave of major structure, substructure, and wall. Behind the regular repetition every 5 feet of precast concrete mullions (which end as finials against the sky), a varied pattern of solid panel, reflective glass surface, and void is played. This game is particularly active in the

top sector, where the balcony recesses are disposed irregularly and the wall face and openings are arranged to suit the apartments (photo, right).

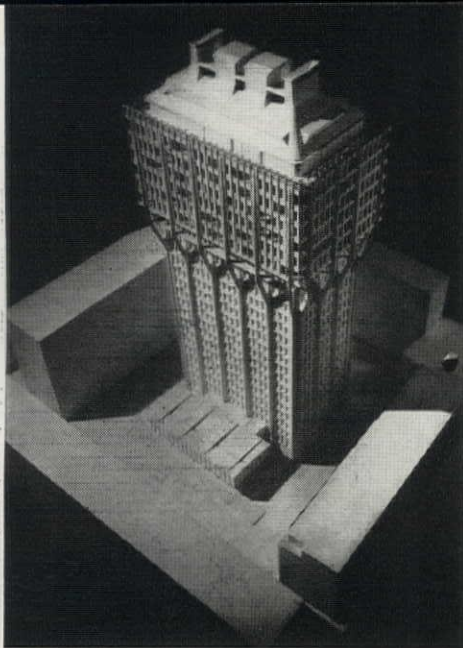
An impossible task

But in the final analysis, this polyphonic composition becomes an aesthetic liability. The deliberately close tonal values of the wall panels and structural parts merge, so that in daylight the plastic qualities of the wall seem to dissolve. At a distance, the intricate qualifications and articulations of the façade are lost, and the overall volume of the building appears raw and at a disadvantage. The structure and the main volumes seem locked in a neutralizing struggle. Without the drama of irreconcilable conflict or the assumption of dominance of one over the other, the structure is reduced to an ephemeral scaffolding. The wall face, which seems too weighty and solid to need the support of the frame that embraces it, appears detached from the general thematic composition.

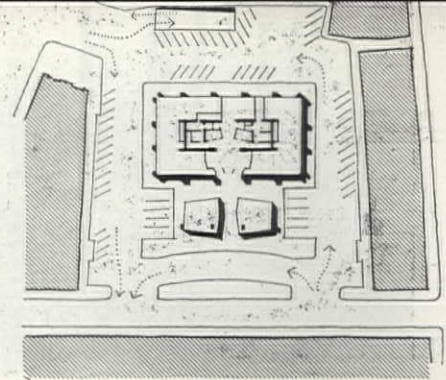
Perhaps the designers set themselves a task impossible to resolve completely. To develop significant architecture out of the complexities of modern life and the disciplines of construction is difficult enough. To add to this a sense of the continuity of time and place is a burden of responsibility assumed by very few architects in our day. The effort to achieve total harmony is what makes this building significant, though not wholly beautiful. END



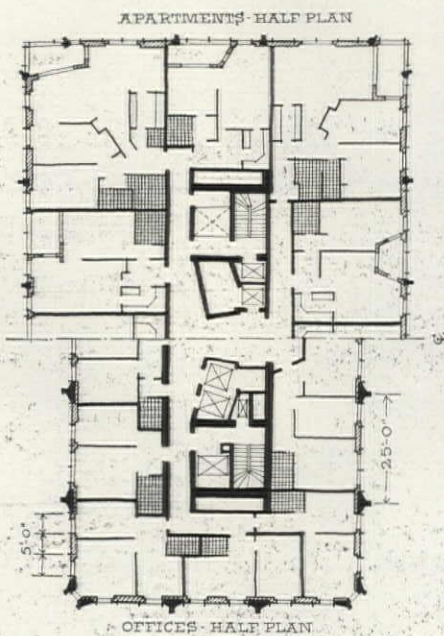
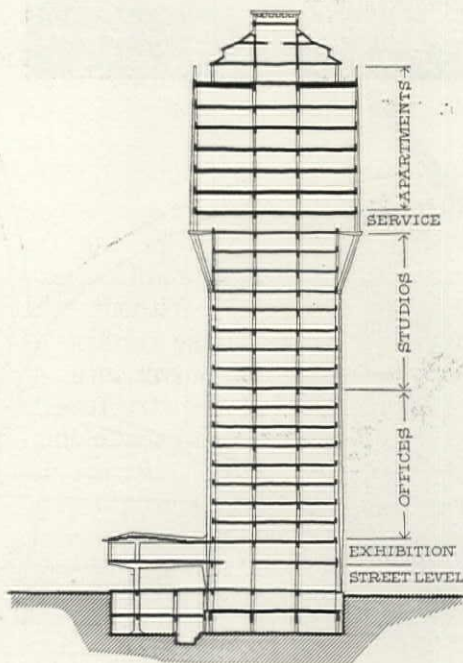
Larger apartment floors are compared with the smaller office floors in the plan at the right. Hatched areas indicate baths. The larger area is needed in the upper floors to make room for kitchens, which were not required on the lower office floors.



Plaza at the base of the tower (plan, right) gains precious space by virtue of the slimmed-down lower floors. In the plaza is an exhibition hall on stilts, which projects out from the second floor of the tower over the building's main entrance (model photo, left).



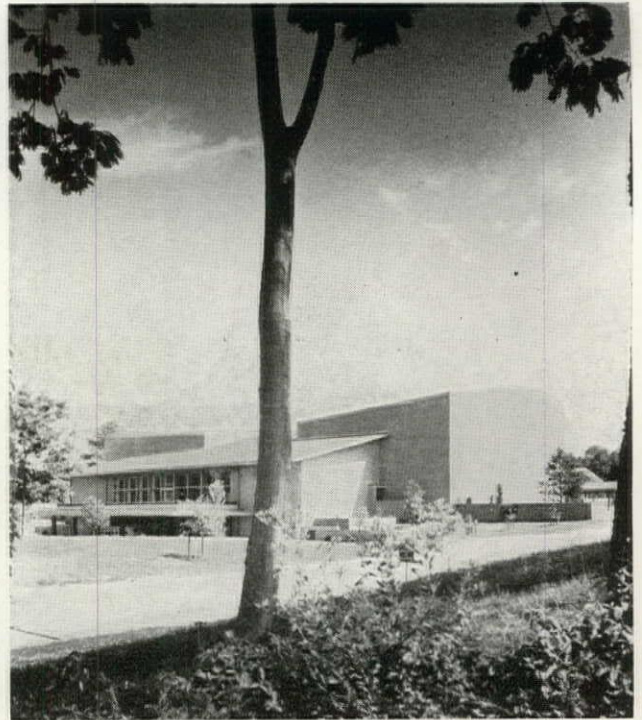
FARABOLA



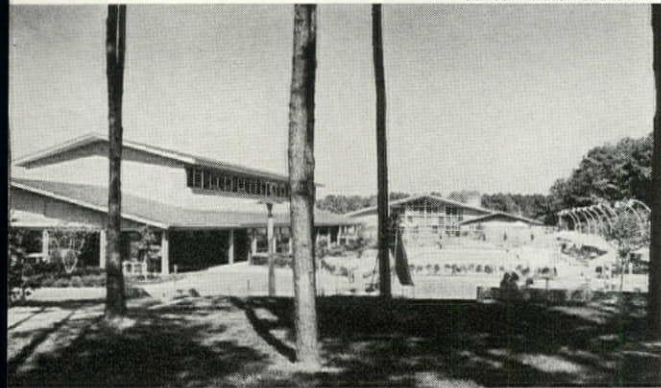


Motel.

PHOTOS - ROBERT C. LAUTMAN

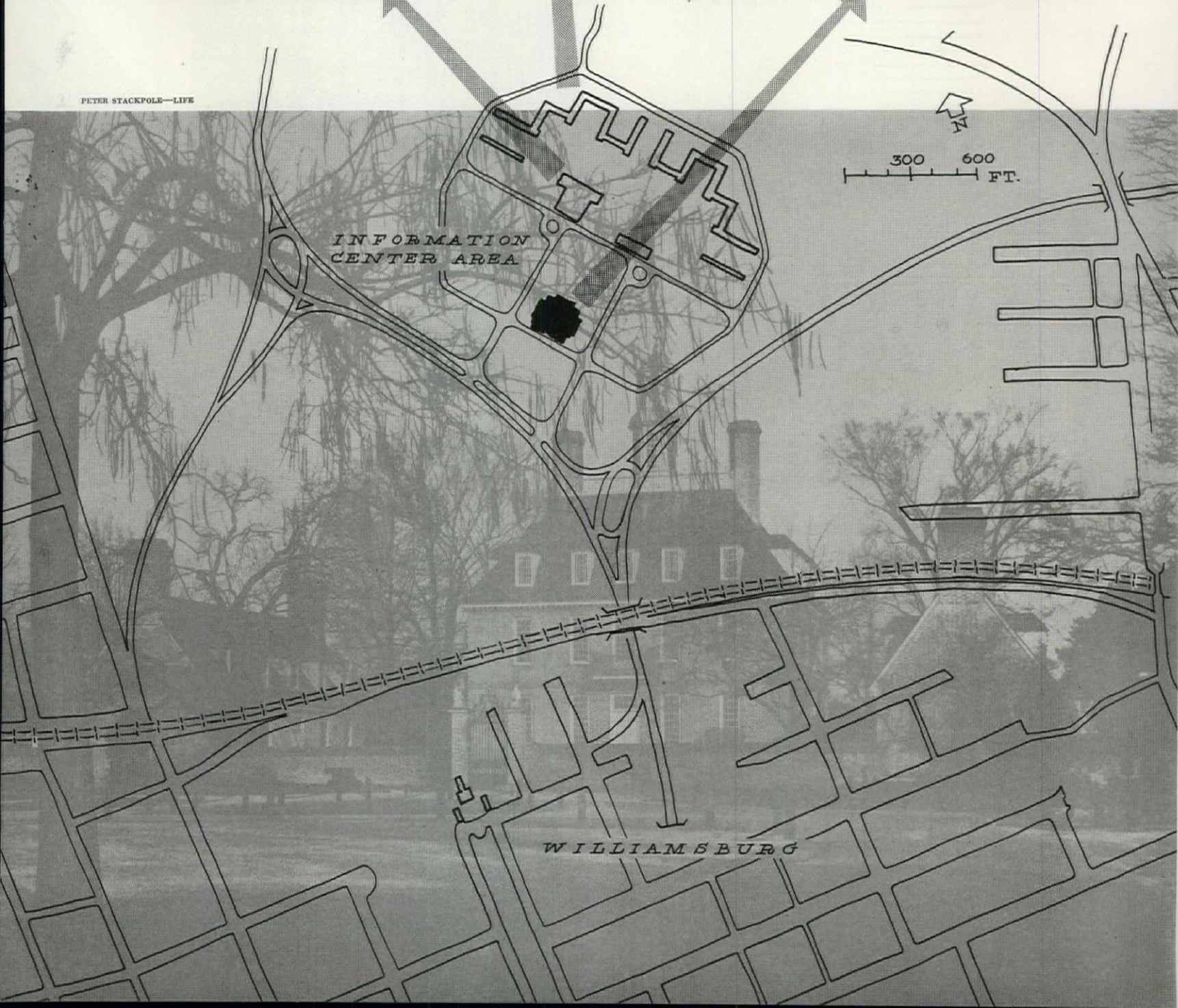


Information center.



Administration building and cafeteria.

PETER STACKPOLE—LIFE



The approach to Williamsburg

Visitors enter Virginia's colonial capital through a contemporary information, exhibit, and theater center that serves as a bridge in time.



Sheltered walkway from cars to lobby.

Nowhere has a more persuasive image of America's past been raised than at Williamsburg, Va. Reconstructed from maps exhumed from musty attics and rebuilt on foundations revealed by patient excavation, the colonial capital of Virginia stands now substantially as it did before the Revolutionary War.

For John D. Rockefeller Jr., who spent \$61.5 million on the restoration and its supporting facilities, and then endowed nonprofit Colonial Williamsburg, Inc. with funds now worth \$34.6 million, the goal was clear: "I wasn't trying to recreate a lovely city nor was I interested in

Questions of where to stay and what to see are quickly settled at the lobby information desks.

PHOTOS: ALEXANDRE GEORGES



a collection of old houses. I was trying to recreate Williamsburg as it stood in the eighteenth century."

But the success of the undertaking threatened to spoil it. Soon after the restoration was started in 1927, visitors began coming to Williamsburg in increasing numbers (1.1 million last year). Their cars, parked bumper to bumper on Duke of Gloucester Street, threatened to destroy the illusion of the carefully restored part of the town. And the visitors, stepping from twentieth-century cars into eighteenth-century streets, had to make an abrupt transition without time to adjust.

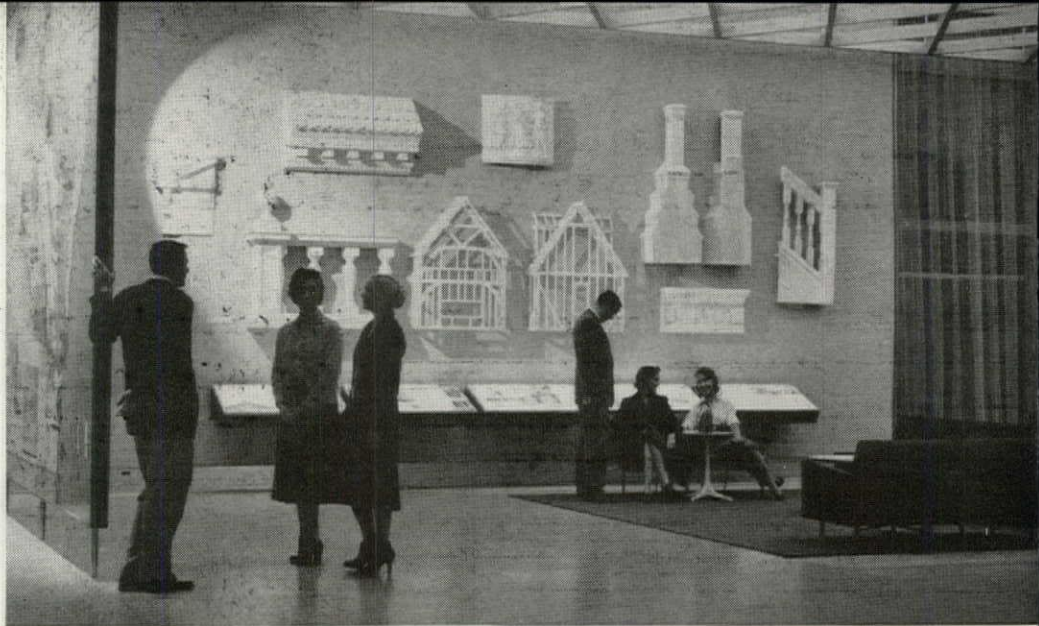
The solution to this illusion-destroying juxtaposition was to build parking lots for 1,000 cars on a 40-acre golf-course site one-half mile north of the restored area. Now, on leaving their cars, visitors approach the eighteenth-century town by way of an information, exhibit, and theater building before boarding special buses for the restoration area.

The exterior of the new information building, like the exterior of the nearby 216-room motel, the cafeteria, and the administration building (all of which were opened in March 1957), is contemporary but quietly conservative in design.

Inside the information center, however, the most advanced exhibit and theater design techniques have been used. The tourist starts at the brightly lit information area in the center of the building, where literature and tickets are dispensed at a large circular desk in the middle of the floor (plan, right). From here, the visitor can tour the exhibits, ride the escalators to the bus, or wait in one of the lounges on either side of the lobby for the next performance in one of the twin film theaters.

The total cost of the motel, cafeteria, administration, and information buildings, and the parking lot was \$11.3 million. The Information Center alone cost \$2.8 million; the exhibits and film, \$1.1 million.

The fact that Colonial Williamsburg chose contemporary architecture for these gateway buildings should guide any city with a similar adaptation problem. Actually, it was more respectful of the past to use contemporary design than it would have been to build a sham copy. END



Models on the wall in the lounge illustrate eighteenth-century architecture and building techniques. A large map of the Virginia Colony, by Herbert Bayer, screens the lounge from the entrance.

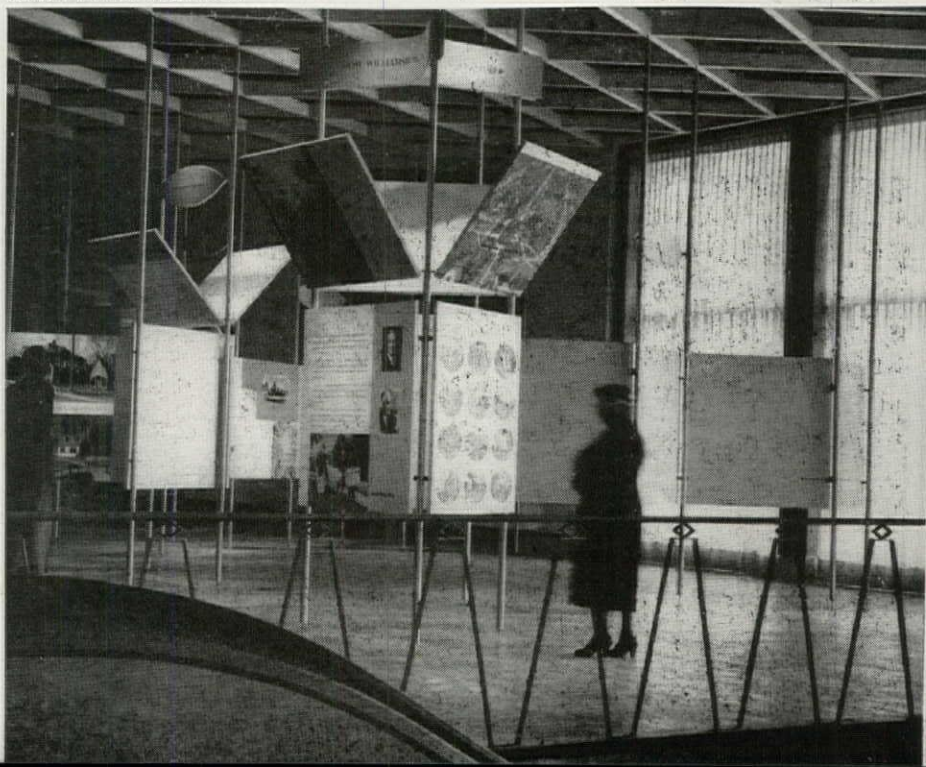


PHOTOS ABOVE: ALEXANDRE GEORGES

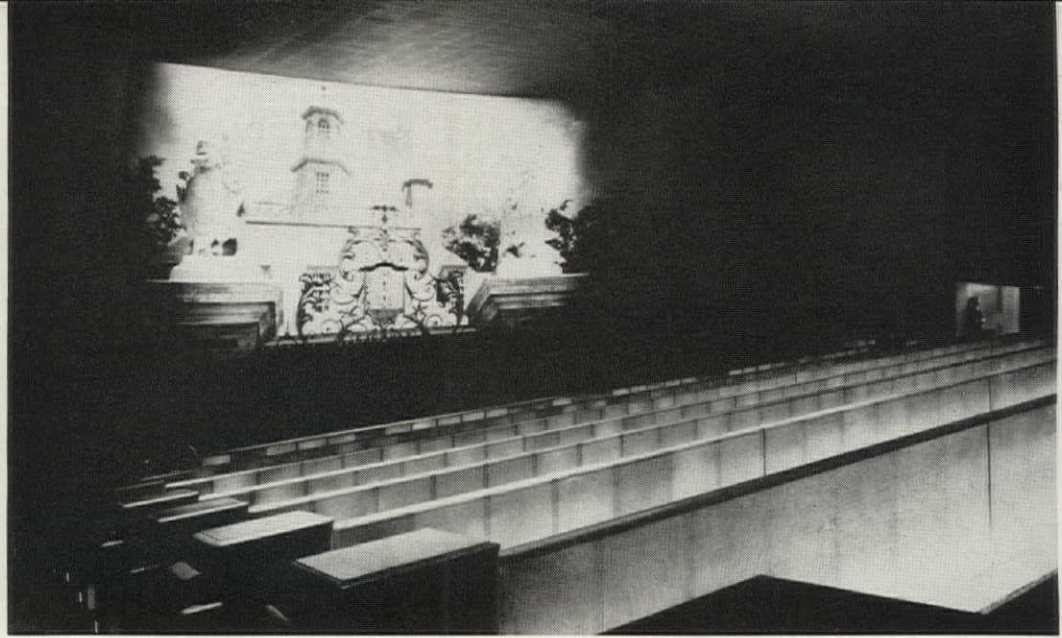
Ceiling grid of extruded aluminum channels extends throughout the information area. In the lounge (left) cold cathode light strips are set inside the channels to throw soft illumination against the ceiling. In the information area the diamond-patterned grid is fitted with an egg-crate baffle to conceal the ceiling-mounted cold cathode tubes.

Display panels in the exhibit area are fastened to grooved poles, positioned between intersections in the grid and sockets in the floor. Grid-connected spotlights provide high-contrast lighting on the exhibits.

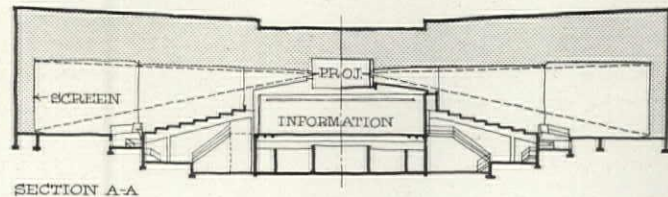
COURTESY COLONIAL WILLIAMSBURG



Twin theaters, each seating 250 people, flank the exhibit area and allow one projection room to serve both (see section, right). The theaters operate continuously on a 20-minute alternating schedule, showing a 35-minute, wide-screen movie about eighteenth-century Williamsburg. The compound curve of the 120-foot-long screen (see plan) results in "vignetting" or edge fading of the picture (photo, right), which heightens the impression of realism for the spectator. Between the seat rows, 3-foot-high baffle walls are inserted to screen the backs of viewers seated ahead. Distracting influences were further subdued by the simple design of the room and the monochromatic gray tones.



PHOTOS: ROBERT C. LAUTMAN



SECTION A-A

INFORMATION CENTER, Williamsburg, Va.

ARCHITECTS: staff architects, Colonial Williamsburg, Inc.

ENGINEERS: Cleverdon, Varney & Pike (structural)

Wiley & Wilson (mechanical-electrical)

CONSULTANTS: George Nelson & Co., Inc.

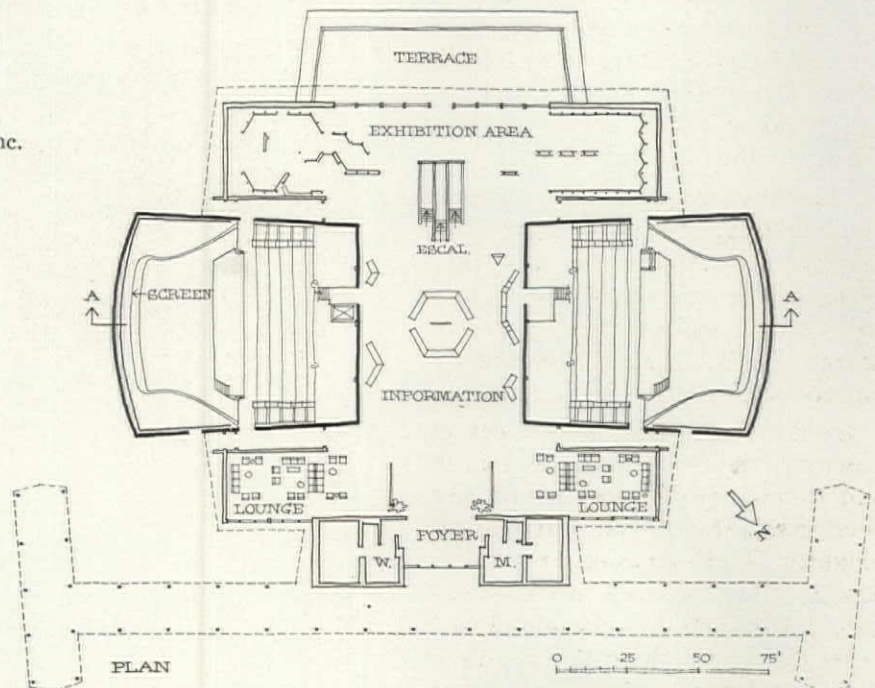
(interior and exhibit design)

Ben Schlanger (theater design)

Gerald B. Ewing (lighting)

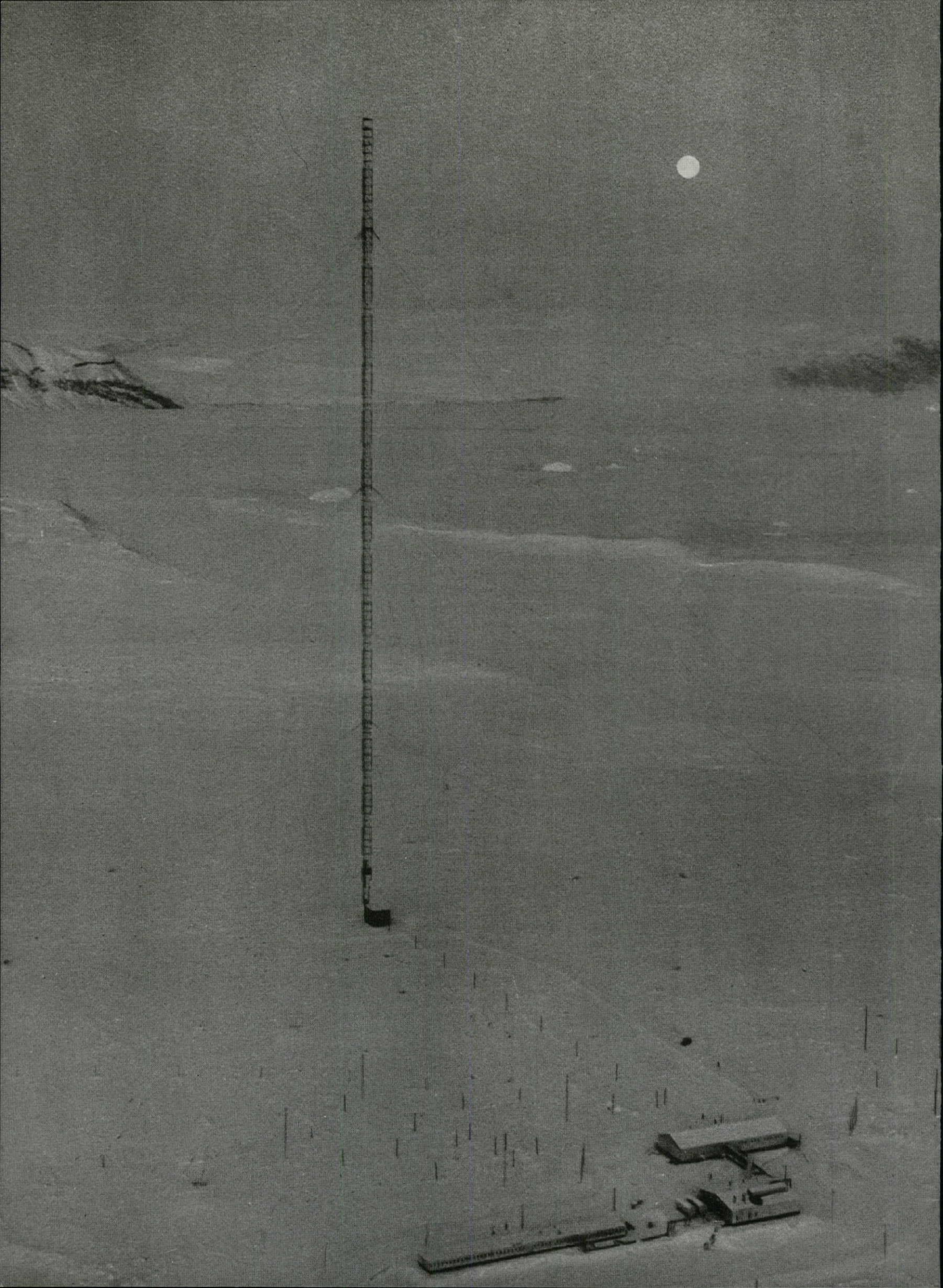
Bolt, Beranek, & Newman, Inc. (acoustics)

Wilbur S. Smith & Assocs. (traffic and parking)



Escalators (right in photo, below) carry visitors from the exhibit area to the lower-level lobby (top of plan, right), where they board buses for the trip to the restored area.







PHOTOS: (LEFT) GEORGE SILK—LIFE; (ABOVE) M. GRAYROFF

Technology. The enormous U.S. airbase at Thule above the Arctic Circle is a great feat of architecture and engineering.

Building below zero

Thule Air Base, firmly affixed over 100 square miles of Greenland's arctic crust, is more than a military outpost, the northernmost of major U.S. bases. It is an architectural and technical feat of heroic proportions, carried out jointly by the firms of Metcalf & Eddy, La Pierre, Litchfield & Partners, and the U.S. Army Corps of Engineers. It is also a natural laboratory for proving structures and materials under extreme conditions that may, nevertheless, have more application to domestic construction than might first appear, and that has already proved useful in designing other remote bases. Some of Thule's lessons may even apply to setting up beachheads in outer space.

For Thule has features remarkably resembling those of the moon. Knud Rasmussen, who explored the area in 1910, found it a kind of lunar crater, sheltered by huge boulder hills from winds off a gigantic ice cap at Greenland's northern tip. He named it after the Latin *ultima thule*, meaning a land beyond the beyond. Rasmussen trans-

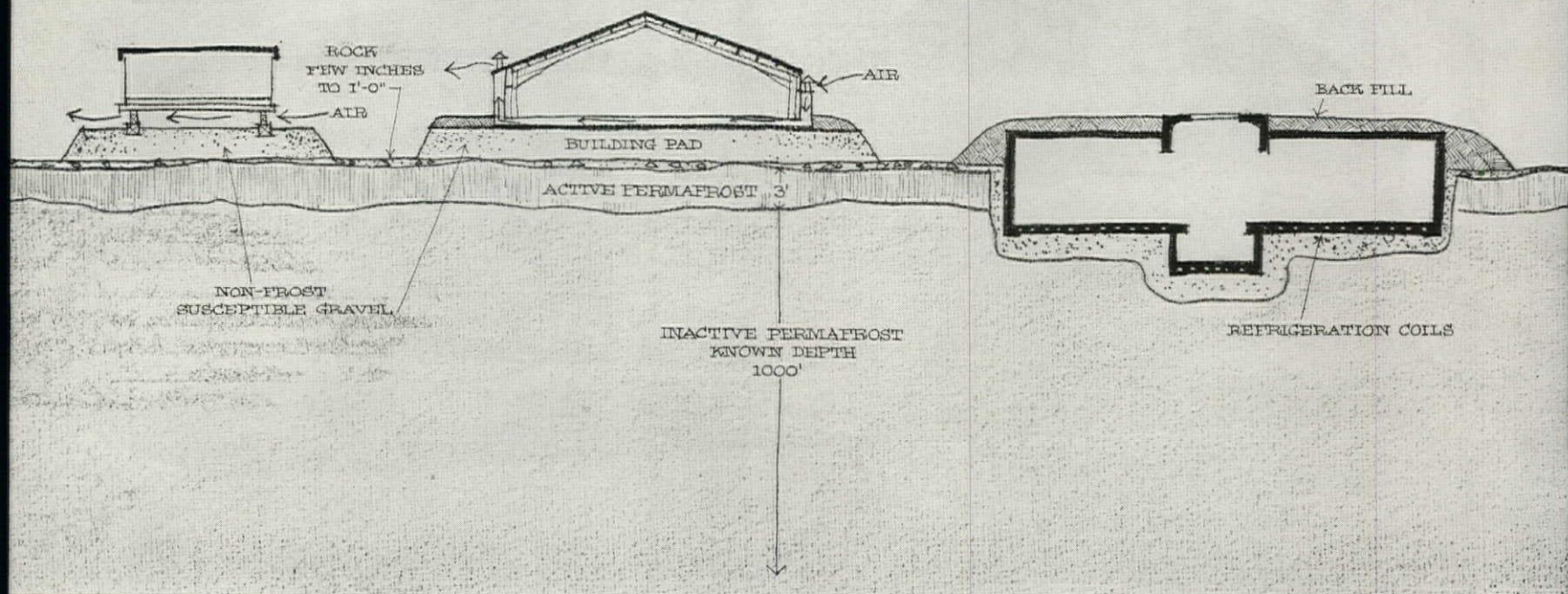
mitted his dream of a polar way station here to another Arctic explorer and young flier, Bernt Balchen, in a Third Avenue bar in Manhattan the night after Lindbergh hopped the Atlantic. Balchen remembered it in World War II. As an Air Force colonel, he guided construction of an emergency air strip on Thule, and during the Korean War, he persuaded the Air Force that this barren sea-level plain, kept miraculously snow-free by its windbreakers, would make an ideal air base.

Late in 1950, with the consent of the Danish government, a crash program was mounted whose object was to build a working air base on Thule before the close of the next, short arctic summer. (The only accommodation was that the sun would be up 24 hours a day.) This meant planning and prefabricating buildings in the U.S. for a huge air and icebreaker lift to a site just 890 miles short of the North Pole. Nine months later over 400 buildings had been erected, including 114 barracks, 6 big hangars, and 15 huge fuel tanks. A year later the base was substantially completed. Since 1952, building has been going on continuously (last season 1,200 U.S. and Danish workers went in and came out) but

at a more leisurely pace, while designers continue to experiment and study their mistakes.

Many of the original buildings have not taken gracefully the buffeting of Thule's horrendous but weirdly beautiful environment. The problems were tremendous and, to most of the architects and engineers, unprecedented. First, there was the barren unyielding earth, frozen to great depth in a mixture known as "permafrost." Then there were winds up to 145 miles an hour and temperatures down to 50 degrees Fahrenheit below zero, which in summer could yet reach 70 degrees Fahrenheit and to a sizzling 120 degrees Fahrenheit on reflective aluminum roof panels, causing mastic sealants to bubble and drip. At the same time, in all seasons there was a steady, dry 3 per cent humidity, acting as a cold kiln, pulling moisture from lumber and all resilient materials. All these conditions together posed great challenges to design. Parted roof joints and warped panels were among the worst failures, and the architects now realize that fewer modifications would be required today if there had been more research and technical information available originally. But that

THULE RADIO TOWER, almost as high as Empire State Building, is braced against 150-mile winds by 18 guy wires in three tiers.

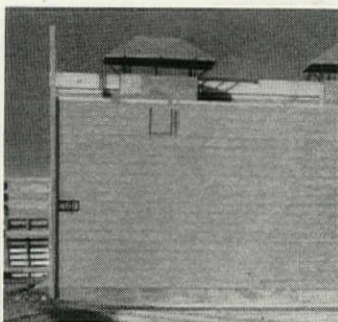


PERMAFROST (frozen subsoil) foundations must be kept from thawing by putting heated buildings on stilts, ventilating or refrigerating floors.



COURTESY U.S. ARMY

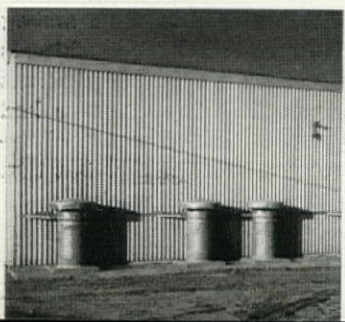
VENTILATION DUCTS of pre-cast concrete and other materials are formed in foundations of heavy utility buildings.



M. GRAYDOFF

WALL INTAKES are placed high on lee of building, low on windward to induce downdraft of cold air through floor.

SNORKEL VENTS, shaped like ash cans, connect with underfloor channels. Lids shield them from blowing snow and ice.



COURTESY U.S. ARMY

is a deficiency which their own work is lessening for the future.

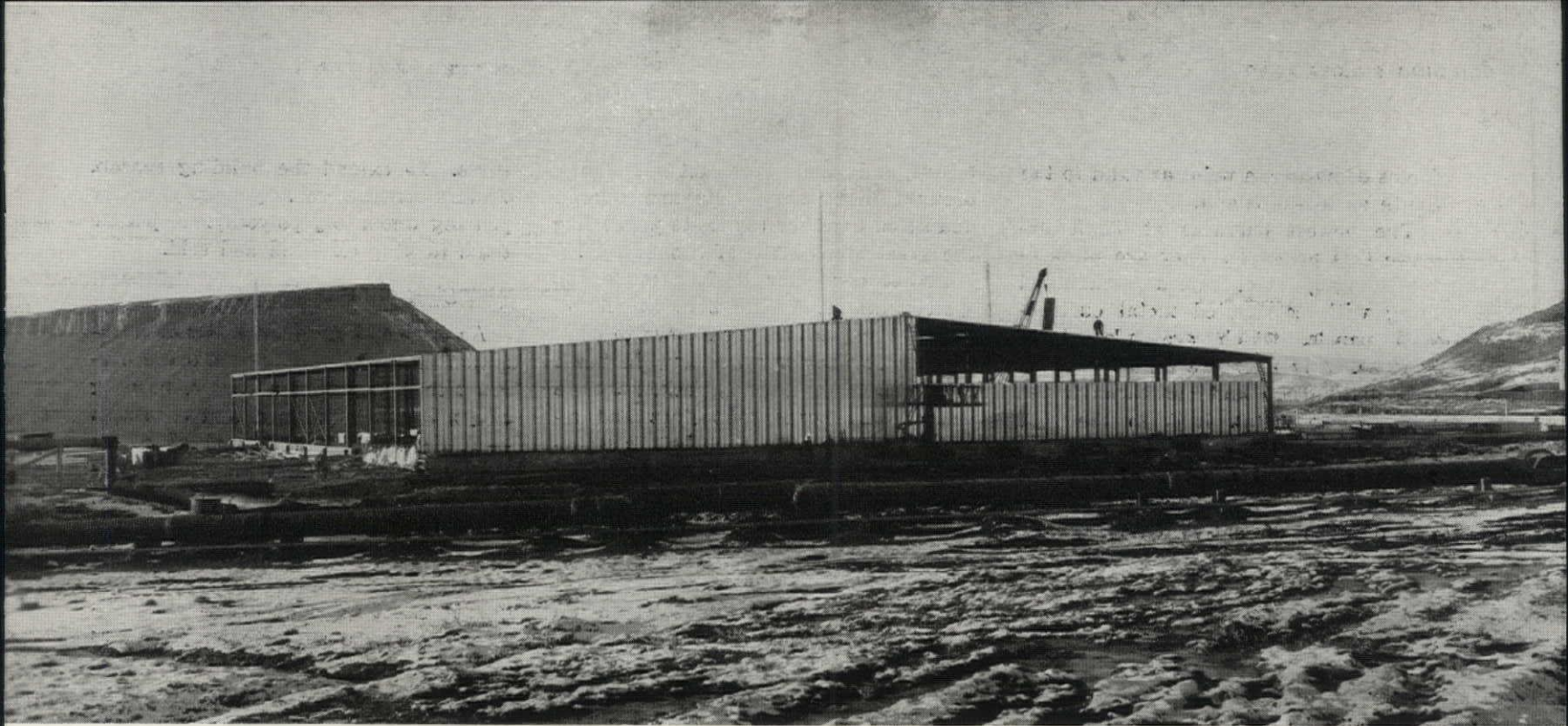
Frozen quagmire

Permafrost was the first and most serious problem. Permafrost is a mass of glacial ice, stone, and organic rubble covering immense areas in northern latitudes, including large parts of Alaska. It comes in two troublesome varieties, usually together: a top or active zone, averaging 3 feet thick at Thule, which thaws and refreezes with the seasons; and below this, an inactive layer, about 40 per cent fossil ice, which may go as deep as 1,000 feet. Permafrost cannot be dug or bulldozed, but it can be dynamited, with some trouble, for the inactive layer, once exposed, forms another inconstant active zone. All previous research on permafrost, of which there has been considerable in Canada, Russia, and at a U.S. government laboratory at Winnetka, Ill., showed that it has great load-bearing qualities, provided it is thoroughly insulated or isolated from the warmth of the buildings erected on it. Heat turns it into a quagmire.

Hence the designers of Thule raised their first lightweight buildings up on short stub columns, over a gravel ground cover, so as to allow arctic ventilation beneath the floors to keep the permafrost permanent. For warehouses and other heavier buildings, which could not be raised conveniently on stilts, they devised thick, gravel-bedded concrete-slab floors in which were embedded sundry pipes, tubes, and

conduits, drawing in cold outside air from side-wall vents and chambers. In the rib-slab technique, ducts were formed directly in the masonry by laying down corrugated metal pans before the pour to create continuous hollow runs. (This was direct but crude floor ventilation, with snow often getting down the vents to freeze up airways until spring.) For huge hangars, the permafrost had to be compromised by blasting excavations for deep piles, then filling in around them with rock and water. The man-made mixture, simulating permafrost, was then allowed to freeze, thereby matching the density and bearing value of the surrounding inactive layer.

Last season, given the task of laying down launching sites for short-range missiles, the designers made a much more sophisticated approach to permafrost. Since the launching chambers, concealed by backfill, had to be absolutely rigid, and no air snoots could stick up, the designers had to provide a positive means of keeping the earth solid that would not be subject to weather change. Recalling that cooling coils had once been buried directly in sagging permafrost at another Greenland base, the engineers built freon cooling coils into the foundations to keep the whole site stable by mechanical refrigeration. One proud engineer noted that "some limp problem soils back in the States could be isolated around footings and kept solidified with coils. Why, the last legs of the Jersey Turnpike might have been a



COURTESY U.S. ARMY

CURTAIN-WALL PANELS are hung on rigid steel frames for new utility buildings and barracks. Corrugations in the panels vent air and moisture.

lot easier to put down in a permanent swamp."

Arctic walls

In 1950, when the architects first decided on their major building project—some 10 acres of barracks—they fastened on the idea of prefab units light enough to be flown in and swiftly erected by two-men crews. But, in addition to all the design limitations imposed by material shortages, military manuals, and the haste of war, the architects discovered in 1950—unbelievable as it may now seem—that not one building manufacturer was prepared to turn out the 2 million or so modular, sandwich-wall panels needed.

They finally found a Connecticut manufacturer of outdoor walk-in refrigerators, the Clements Panel Co., which was making a panel approaching their needs. Clements put its whole production line for four months on rushing out the panels—aluminum on $\frac{1}{4}$ -inch plywood with glass-fiber filler—in 200 variations on the 2-foot and 4-foot modules, in lengths up to 10 feet. Since timber or steel framing would take too much transit space and time to erect, it was decided to use the demonstrably strong panels as load-bearing walls, floors, and partitions. For roofs, the architects worked out a flanged aluminum panel system, again because they could find no manufac-

turer to supply or guarantee a conventional built-up roof for the Arctic.

The architects selected the Clements panels mainly because ingenious jointing made these practically weather-tight. But the architects underestimated the Thule weather. As it turned out, the Arctic winds racked the panels, and whatever joint compounds did not shrivel in the cold, oozed out in the beating summer sun. Ice mist got into the roof seams, soaked into the dried-out plywood, and froze there to buckle the panels in winter and cause them to leak in summer. Too late the architects discovered that weather-tightness was an unnecessary goal. The solution was not to fight but to live with the

LIGHT SANDWICH PANELS form self-bearing walls, floors, and roofs of early Thule barracks. They were first U.S. production run of such units.

GEORGE SILK—LIFE



forces of nature, a point as valid to the South as to the North.

The newest barracks at Thule observe this principle. They are pitched-roof, rigid, steel-framed structures, hung with corrugated metal curtain-wall panels, which are allowed to breathe. Any moisture that forms inside drips down and out through the ribs in the metal. Ribs in the roof panels are also left unsealed at each end to allow natural passage of air and moisture. The architects are following the practice of native Greenlanders, who for many years have kept their snug, wood-frame houses dry by leaving large openings in the attic for wind and snow to blow through.

Native stone

Of all the designs and materials tried, the one that seems to fit best into Thule's awesome landscape is concrete, which has been used for many of the larger structures. Compared with these, neighboring metal prefabs look forlornly shop-born. Concrete construction at Thule has followed two methods, one precasting, the other casting in place.

Handsome by far, with a stone sturdiness suiting the primeval setting, are four structures used for storage and service clubs, which were erected in 1956. They are built of precast *Schokbeton*—Dutch for "shock concrete." This unusual casting system, devised in Holland and gaining wide use in Europe, consists of precasting building units on a vibrator, a shock treatment that densifies the mix and produces components of exceedingly spare, strong, and precise dimensions. Structural frames, as well as wall-panel and roof sections, are thus produced. For Thule, heavy columns, girts,

beams, and panels were cast in Holland, brought in by ship, then maneuvered and fitted together (opposite page) like the great stone slabs of Stonehenge.

Preset connector devices make the system unique. Anchor bolts at column footings act as leveling screws to compensate for minor variations in beam length. Dense mortar is packed around column and beam connectors and allowed to cure; then each bolt is tightened to a stress of 8,000 pounds per square inch. The resulting mechanically linked system has a useful duality. In assembly, enough margin for play is provided for sectional construction; yet the completed building, mortared at all seams, has the strength and rigidity of a post-tensioned monolithic structure.

The *Schokbeton* buildings have withstood without a crack one and a half cycles of Thule's worst weather, and have otherwise proved excellent structures. But for Thule their big disadvantage is cost: one 2-acre warehouse cost about \$6 million, including shipping charges. Yet the Thule buildings may serve to introduce this style of construction to the U.S., where *Schokbeton* is unknown, but where it might bring to concrete the neat precision that metal-panel construction has.

The biggest part of Thule's recent construction, however, has been poured-in-place concrete. The engineers have been steadily sharpening their techniques under arctic conditions and are now working a nearby rock mountain for coarse and fine aggregate to save on transportation. Last season some 28,000 cubic yards of concrete were poured—about double the amount going into a huge skyscraper foundation, such as the one for the new Chase Manhattan Tower in New York—often in high winds and near freezing tempera-

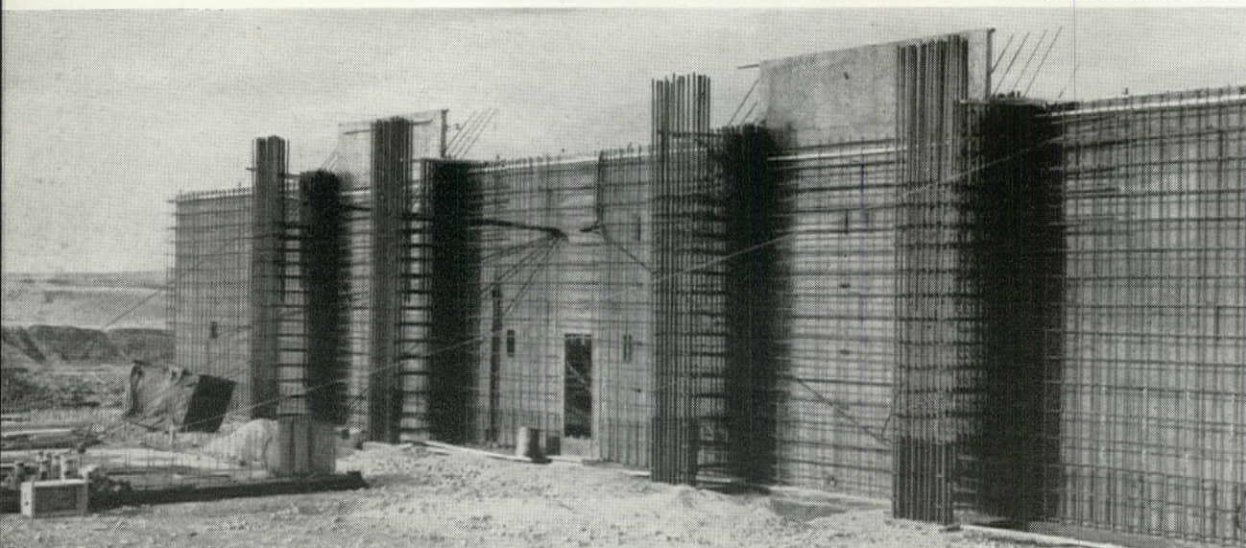
tures. To extend the building season, Thule's contractors may next year try pouring under big polyethylene plastic tents to keep off wind and cold.

Changing climate

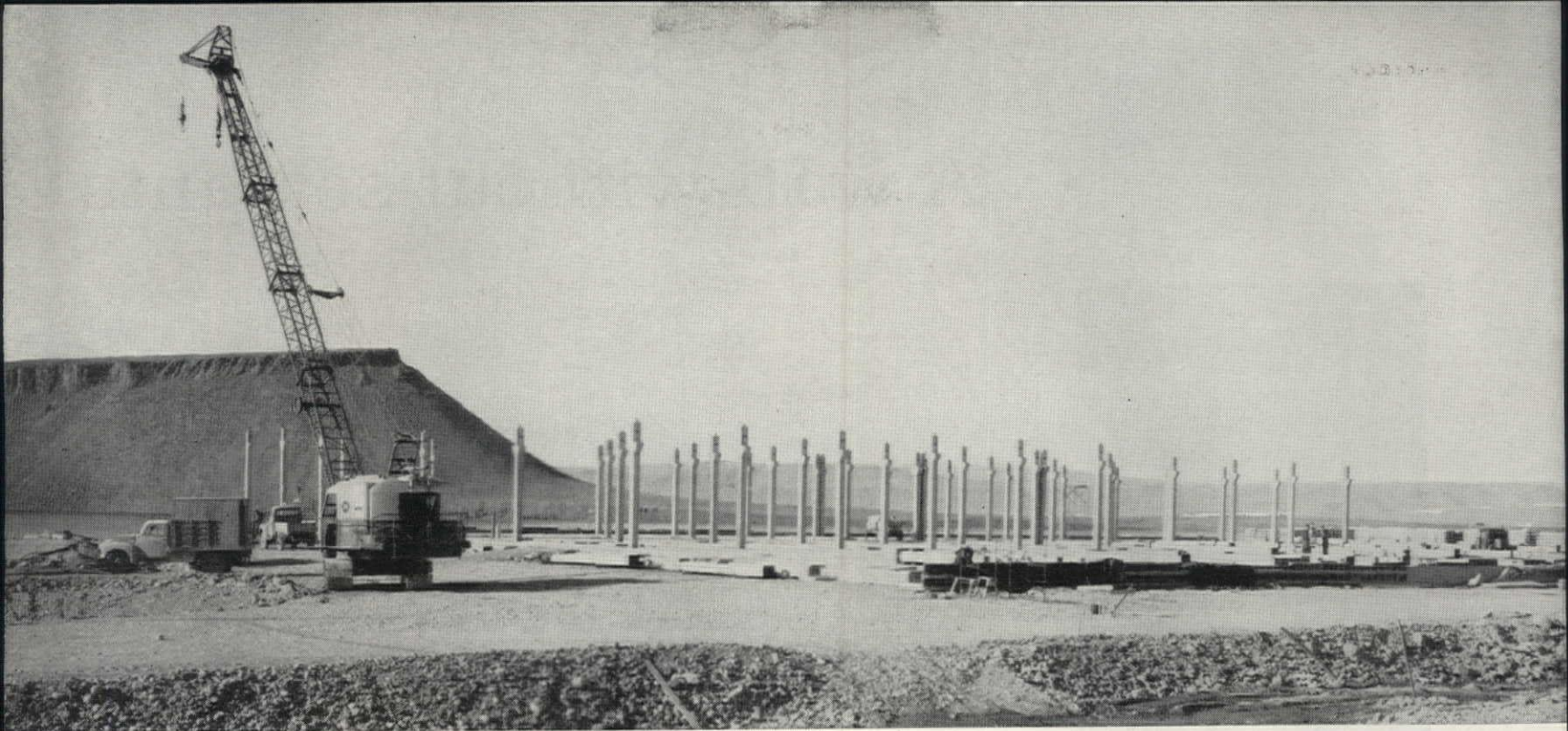
As more and more amenities of civilization have been brought into the barren site—including a chapel, bowling alleys, indoor plumbing, and television—Thule becomes a symbol of man's ability to inhabit and ameliorate any environment, however harsh. Indeed, the mere presence of buildings and men on Thule's once empty plain is already changing its local climate. The heat-mirror effect of large areas of aluminum has raised summer temperatures 5 to 10 degrees above the previous average, sending clouds of warmish air and fog over the bay. The clouds in turn are "seeded" by road dust and smoke from an asphalt plant to precipitate the first rains ever known in the area. Each season, the 4-inch-high Arctic willow trees grew more abundant.

Of course, Thule has more practical portents, even aside from its military values. It is a strategic weather-observation station, keeping a sharp eye on the easterly moving weather that is a dominant element in the climate of Europe and a key factor in commercial air traffic over that part of the globe. It is also a forerunner of the kind of air stations that will be needed for peaceful jet traffic by the short route over the Pole. And it is above all an outpost for that day, seriously predicted by many Arctic explorers, such as Vilhjalmur Stefansson, when the Arctic will open and blossom under human development. But as of today, Thule Air Base is simply a monument to man's unprofitable courage, resourcefulness, and endurance. END

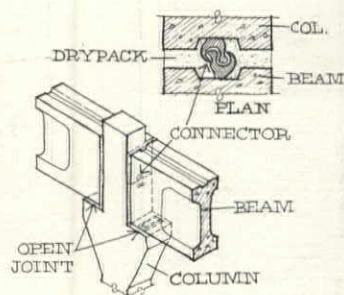
PHOTOS: COURTESY U.S. ARMY



SHORT-RANGE MISSILE SITE going up presents a fortresslike appearance. The concrete reinforcing bars covering its face are welded for absolute rigidity. Such structures take huge volumes of concrete, plus over 60,000 cubic yards of earth backfill to cover the completed building from view.

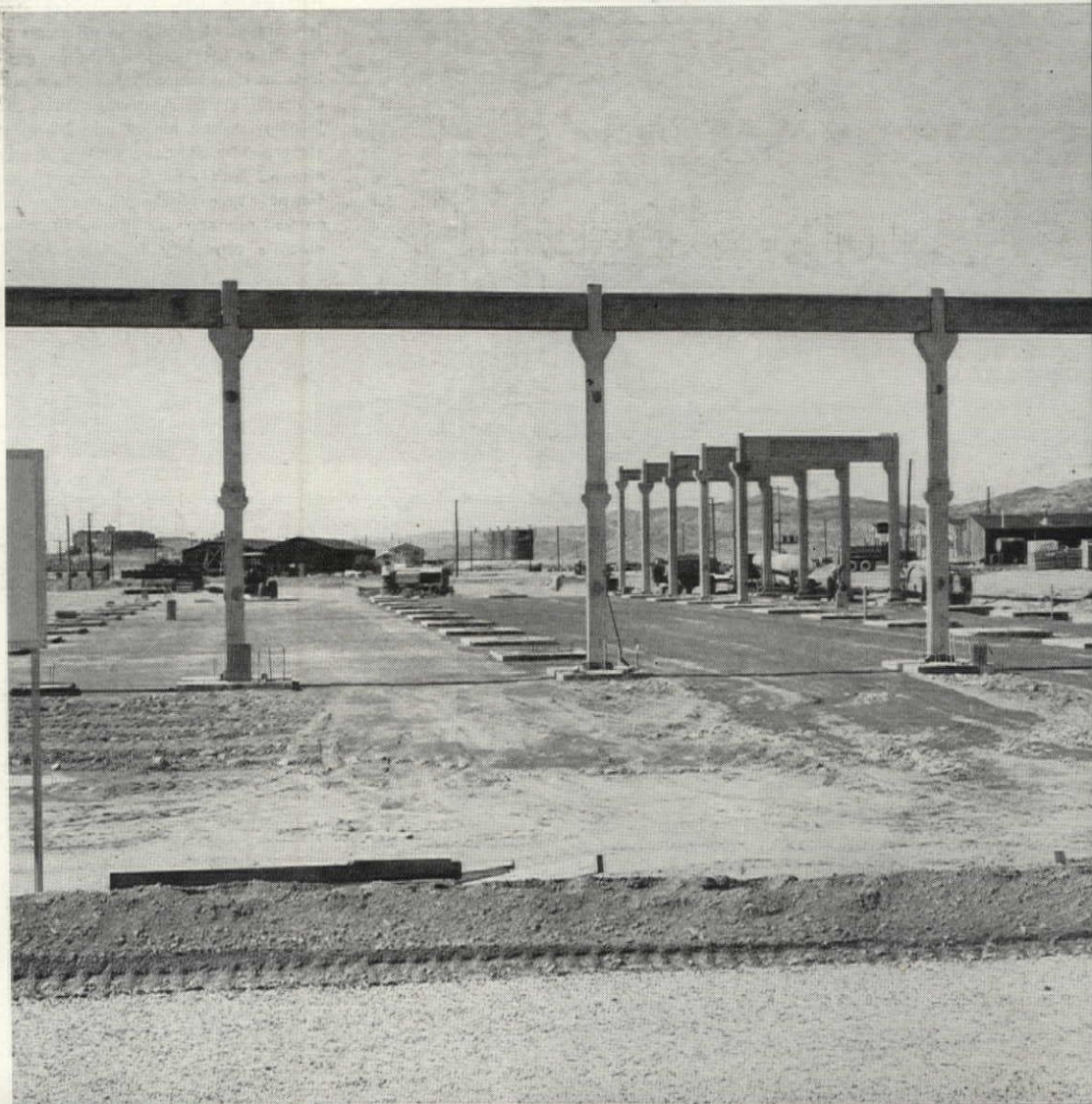
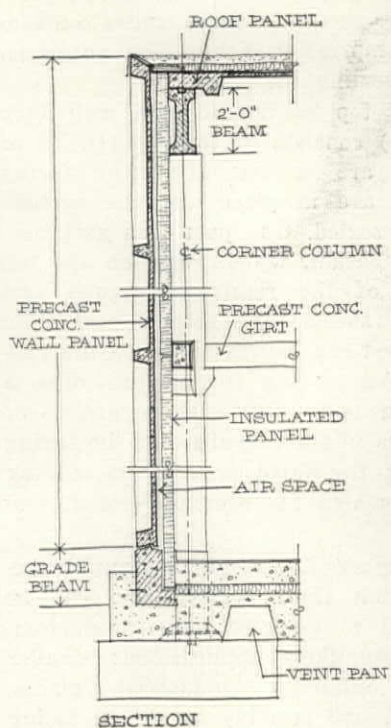


BARRACKS of Schokbeton, or densified concrete, show neatness of this thin, hung masonry-panel construction. Below is cross-section detail of wall showing interior insulating panel.

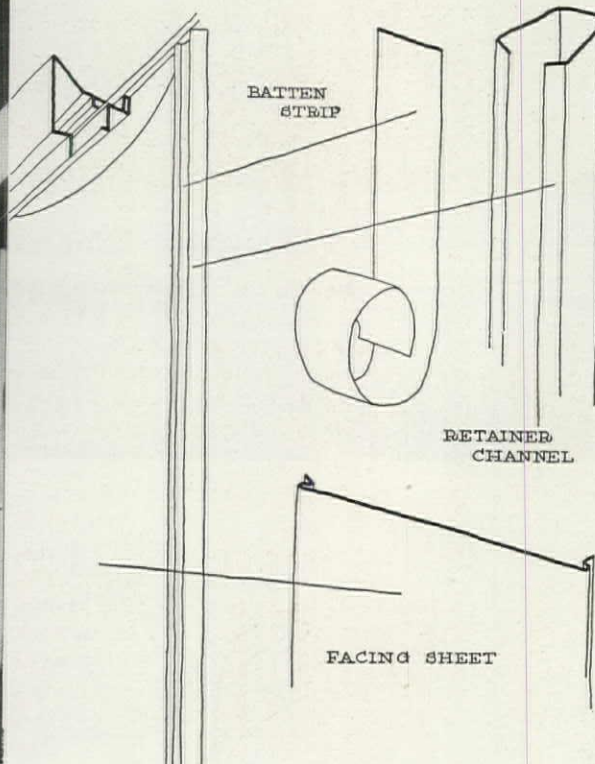


COLUMNS of Schokbeton, set plumb on base plates bolted to footings, form first elements in this Dutch precast structural system transported by ship to Thule.

BEAMS for 20-foot warehouse bays (below) fit into column notches. Left is detail of column-beam joint. After mortar is packed around connectors and cured, anchor bolts are tightened to prestress the frame.



A wall without sealants



The sketches and photos at left show a new jointing system for metal curtain walls. It is unique in that it requires no sealants and few gaskets; instead, the system takes advantage of the strength and durability characteristics of its key metal, stainless steel.

The system was developed at Princeton University's School of Architecture by Architect Wayne F. Koppes and Director Robert W. McLaughlin, under sponsorship of the Stainless Steel Producers Committee of the American Iron & Steel Institute. The aim of the development, which is one of nine undertaken by the school under Institute sponsorship, was to design a jointing system that would be weather-tight, yet free from "the usual difficulties of sealing and maintenance," and that would also provide ample tolerance and free movement to allow for thermal expansion and contraction.

The basic parts in the system (sketches, left) are the retainer channel, the batten strip, and the facing sheets. The channel and the batten strip, acting in opposition to one another, are clamped around the rolled edges of the facing sheets. As the photo (bottom, left) shows, the batten strip is placed within the channel by the use of a spreading device, which forces apart the curved edges of the facing sheets. When the spreading device is removed, the pieces of metal begin to act upon one another: the batten strip, now arched in compression, forces against the facing sheets, causing the sheets to curve under continuing compression action and automatically sealing the joint.

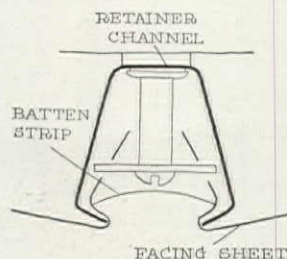
The top edging of the wall (top sketch) consists of three parts, all of which are applied after the facing sheets are in place and the vertical joints sealed. One part is a soft neoprene gasket, which rests on the top edges of the retainer channels and facing sheets; the second part is a Z-shaped cap, which sits atop the gasket, compressing it and providing a continuous weather seal, regardless of changes in the curvature of the facing sheets; the third part is the edging itself, which fits over the gasket and cap.

Designers Koppes and McLaughlin believe that their curtain wall can be adapted to low-cost mass production. Its most likely applications: smaller office buildings, industrial plants, schools, and possibly as a wall facing in building modernization.

END



COMPRESSION is the integrator in this steel curtain-wall system, which needs no sealants or gaskets in its vertical joints. Instead, a metal strip is snapped into the joint with the aid of special tools (left). The concave facing sheets expand and contract freely with temperature changes; the sheets' curved surfaces overcome the thin metal's tendency to ripple.



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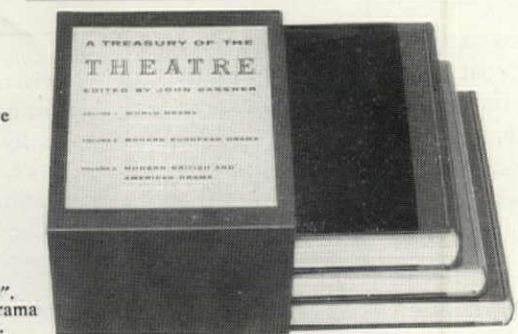
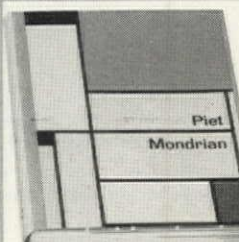
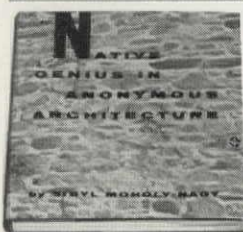
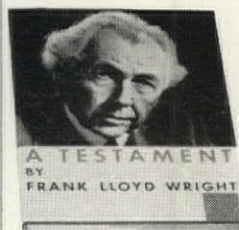
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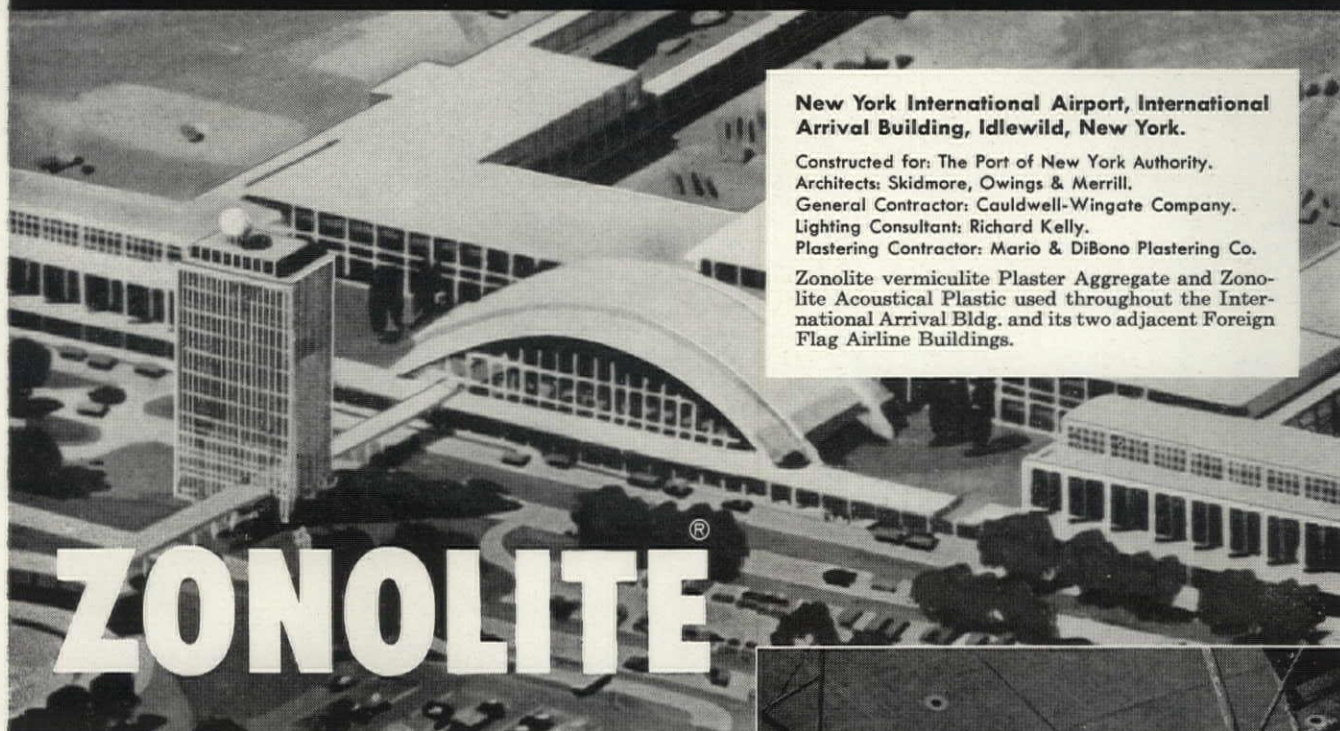
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Zonolite vermiculite Plaster Aggregate and Zonolite Acoustical Plastic used throughout the International Arrival Bldg. and its two adjacent Foreign Flag Airline Buildings.

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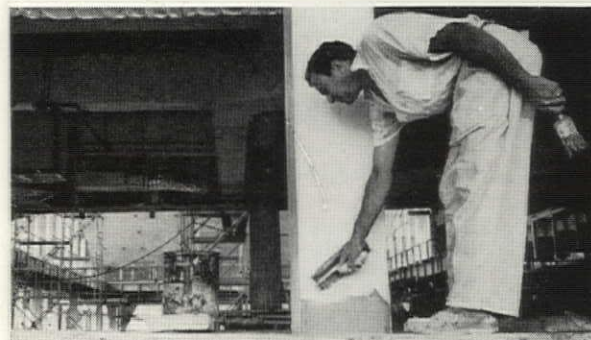
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M A S O N R Y U N I T S

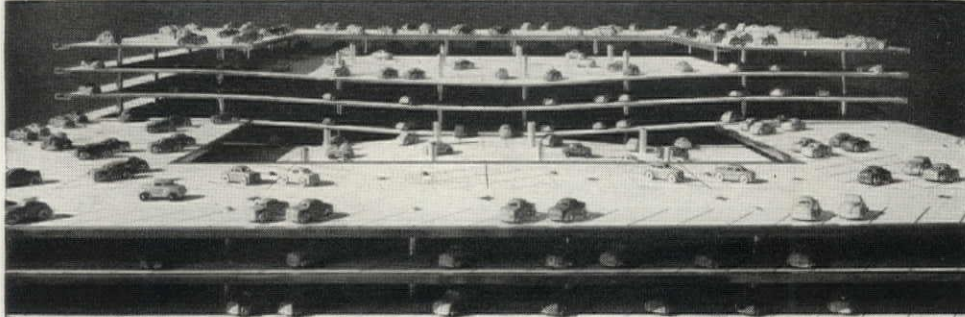
**HOW
ACCOMPLISHED:**

Textured 8 x 8 x 8 inch Waylite Units stacked diagonally. Some units set in wall at different level for shadow effect.

CREDITS:

Pub Bar and Restaurant, Philadelphia. Architects: Armand Carroll and Wm. J. Stephenson. Mason contractors: Casper Bros.

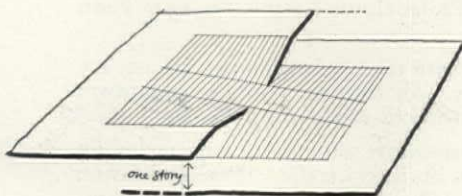
Brief accounts of noteworthy developments



PARABOLIC GARAGE

The problem of building more efficient parking garages is crying for solution almost as desperately as the traffic problem from which it stems. One of the most recent and unusual proposals, not yet built, is shown in the cutaway model above. It differs from most multistory garages of recent design (FORUM, Feb. '53) in being without separate ramps or elevators. In place of ramps, its designer, E. M. Khoury, of Canoga Park Calif., has warped certain sections of each floor into a kind of hyperbolic paraboloid (curves formed by straight lines), so that each floor merges almost imperceptibly into the next and all levels are joined in an unbroken spiral from top to bottom.

The sketch shows how each level is shaped and how, by warping the floors, the levels are joined together. The



peripheral areas of each floor are level, suggesting to Khoury that such a structure could be designed as an office building with a parking-garage core, using the curved areas for parking and all level areas at the periphery for office space. The design would allow 5 per cent more parked cars than a conventional ramp design of equal size.

Construction can be as straightforward as in a conventional design, Khoury says, because the warped parabolic areas can be designed as straight, sloping lines, rather than as curved surfaces, and the structure can have steel instead of reinforced concrete as

its skeleton. Construction is made easy by the nature of the design: every point on the floor is the same height above the floor below.

Perhaps the ultimate in elevator garages is one that will be completed in 1959 on New York's West Side. The structure will be a conventional eight-story building; one attendant will be able to handle its 276 cars. A complex elevator-conveyer system moves each car vertically and horizontally to its assigned space. Speed-Park Inc., developer of the system, plans to build similar systems in other cities. Capacity can range from 60 to 2,000 cars. Otis Elevator Co. is associated in the project; it will manufacture, install, and maintain the equipment and controls.

STABLE SOIL

The importance of chemistry in the building science is nowhere more apparent than in the new field of soil solidification. With some chemicals, it is possible to reduce the soil's water permeability, as American Cyanamid has demonstrated with acrylic resins (FORUM, June '57). With others, such as phosphoric acid, it may soon be possible to improve the load-bearing capacity of a broad spectrum of fine-grained clay soils, an advance which may result in significant timesavings in the preparation of building foundations.

At the Massachusetts Institute of Technology, where much of the soil research is being carried on, it is believed that phosphoric acid, with the addition of trace amounts of organic materials, shows considerable promise as an economically realistic soil solidifier. In a recent series of tests, MIT scientists have examined five soils of widely differing composition, mixing each with water and with small amounts of phos-

phoric acid. Each of the soils solidified, the coarser-grained soils showing the highest strength, the finer-grained soils requiring larger amounts of acid to gain stability.

Ultimately, if MIT's research effort meets its objective, the acid stabilizers will be so effective and economical that it will be unnecessary to remove the existing soil from a foundation site.

SMOG AND THE AUTO

In the city's battle against the enveloping smog, it is more evident with each advance that the most affluent source is automobile exhaust. But to isolate the source and to control it are distinctly different problems, as recent developments indicate, with the problem of control being by far the more difficult:

► General Motors' engineers have developed a "maximum performance carburetor" that eliminates 90 per cent of the smog-producing nitrogen oxides in automobile exhausts. But, says GM, the device would cost each motorist about \$70 a year, because it reduces gasoline mileage by about 26 per cent. Still less encouraging, the carburetor increases the exhaust's carbon monoxide output.

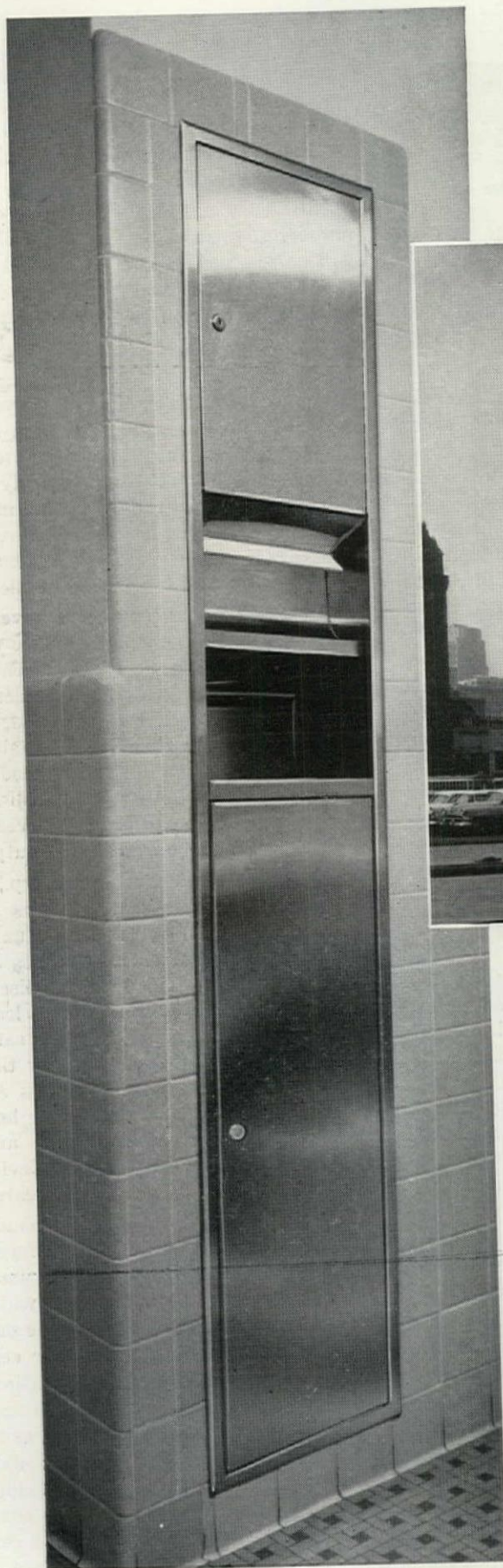
► At the Atlantic Research Corp., in Alexandria Va., physical chemists are searching for the ideal conditions under which a mixture of exhaust fumes can be made to burn. Once this is discovered, the chemists will set out to learn why certain conditions are more satisfactory for exhaust-fume burning than others. Research sponsors at Los Angeles' Air Pollution Foundation hope the findings will encourage the auto industry to produce a control device, based on the data of Atlantic Research.

► At the Armour Research Foundation, scientists are on quite a different tack. By coating the engine's piston heads with a spray-on ceramic, which acts as a catalyst, carbon monoxide output can be reduced 10 to 24 per cent during acceleration and deceleration; exhaust output of unburned hydrocarbons can be decreased by as much as 50 per cent. However, the tests to date have been made with only unleaded gasolines, and it is likely to be some time before the scientists can be certain that the technique will have a significant effect in reducing the smog-producing elements in exhausts. END

NIBROC[®] CABINETS and TOWELS

**Save Floor Space,
Improve Washroom Appearance
in New Philadelphia Office Building**

PENN CENTER BUILDING, Philadelphia, Pa.
Architects: Emery Roth & Sons, New York
Builder: Uris Brothers, New York



In keeping with a desire to provide tenants with the finest washroom facilities available, Nibroc Recessed Cabinets and Nibroc Towels have been installed in Philadelphia's attractive new Penn Center Building.

Nibroc, America's first wet strength towels for commercial use, are super-absorbent, strong, sanitary, soft textured. Because *one* towel dries both hands, they speed washroom traffic—end waste.

The new, improved recessed dispensers with waste receptacles are highly popular for washrooms with heavy traffic. They load faster, hold more towels, and are beautifully constructed of 22-gauge stainless steel. For staggered installation, dispenser and waste receptacle are obtainable separately. Wall cabinets available in white enamel, chromium plate or stainless steel.

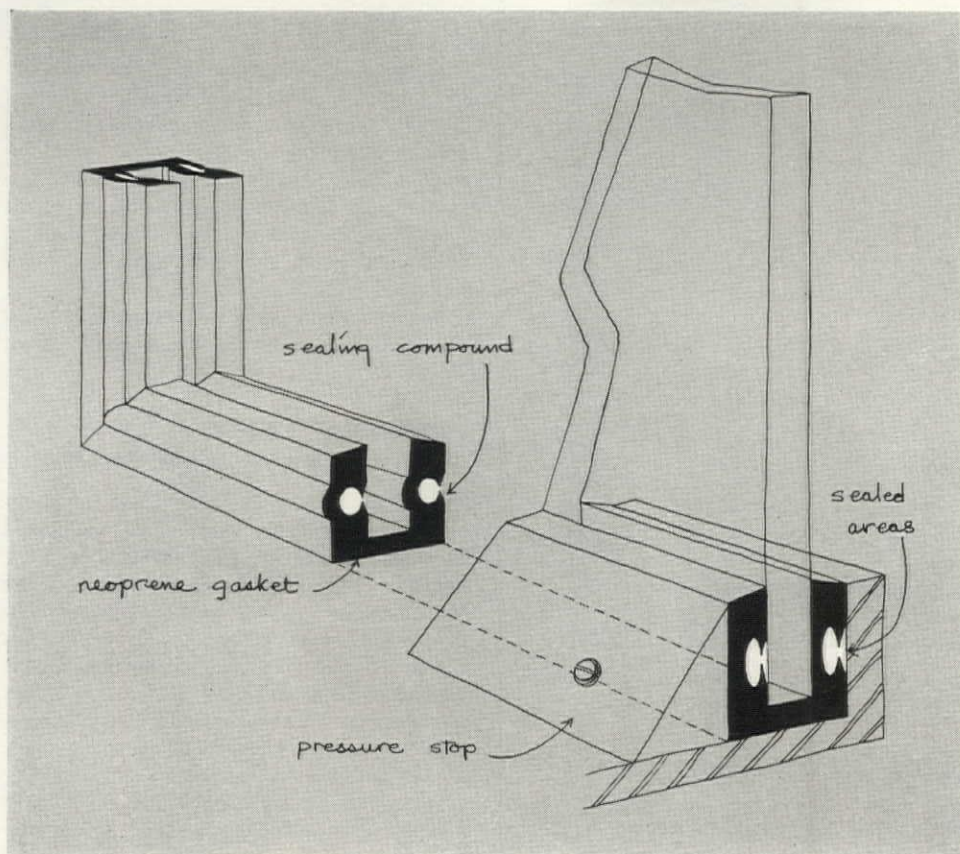
For complete satisfaction, choose Nibroc Towels and Cabinets. Look under "Paper Towels" in your classified directory for name of nearest distributor, or write Dept. UN-2, at our Boston office.

See Sweets Catalog for full details about Nibroc Cabinets—wall, floor model and recessed.

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Mills: Berlin & Gorham, New Hampshire

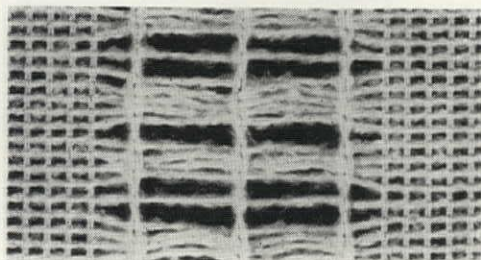
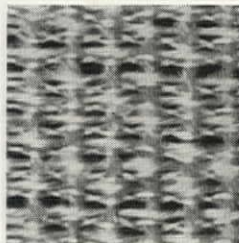
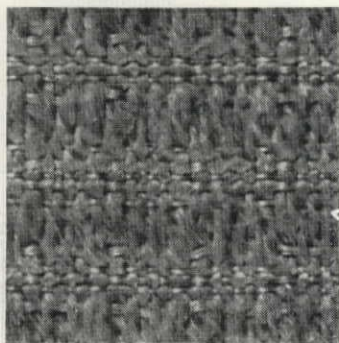
Sealer-loaded gasket . . . soft glass yarn . . . modular filing . . . "cold" metal joining



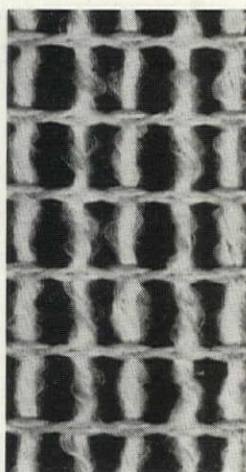
CURTAIN WALL GASKET has built-in sealer reservoirs

A new labor-saving technique for sealing curtain wall joints has been developed by the Pawling Rubber Co. Designed to speed up and simplify on-the-job weather stripping, the method employs a U-shaped, rubber (neoprene) extrusion or channel that is mitered and vulcanized to form a weather-tight gasket. The key feature of the unit, however, is a unique system of reservoirs built into the inner and/or outer surfaces of each channel (wherever a bond is required). These reservoirs are filled, at the factory, with a special Pawling-formulated sealing compound. At the erection site, the gaskets are snapped (like rubber bands) over panels or glass; this assembly is then positioned in the frame and drawn up tight with pressure stops. When pressure is applied on the gasket, the mastic compound squeezes out of the reservoirs to form a permanently wet, but firm, seal between mating surfaces. Besides offering notable time and labor savings, the technique has the added advantage of calking both sides of the panel simultaneously. Since panel sizes in curtain wall construction vary widely, the extrusions are custom-designed to fit each specific application. Cost per linear foot: 15 to 20 cents. Estimated installation cost: 60 cents a linear foot.

Manufacturer: Pawling Rubber Corp., Pawling, N.Y.



NEW FABRICS, tightly or loosely woven of glass-fiber yarns, have a hand-loomed look.



AIR-BLOWN GLASS YARN imparts a soft look to drapes

Despite their many practical advantages, decorative fabrics woven from glass fibers have long suffered from a rather hard, glossy look and feel. But Owens-Corning has just introduced a new glass-fiber yarn for drapes and curtains that could jump Fiberglas fabrics to the head of the decorative-materials class; for cloth manufactured from this yarn has a texture that looks and feels like wool or mohair—and in some instances, linen. Trademarked *Fiberglas Aerocor*, the new yarn is produced by a DuPont process known as "Taslan"—a method whereby a strand, or group of strands, can be bulked up or blown up under concentrated air pressure, thus decreasing the density and increasing the diameter of each strand 30 to 40 per cent. When the process is applied to standard (continuous) Fiberglas filaments, it produces a fluffed-out glass yarn that is more opaque, far less synthetic looking, and much softer—while continuing to offer all the unique properties of the original

continued on page 130



At top of page, new bearing ring plant of The Fafnir Bearing Company of New Britain, Conn., at Newington, Conn. Below is view of locker and washroom. Design and construction by The Austin Company.

Note Use of Both Circular and Semi-Circular Bradleys

In this new Fafnir bearing ring plant, wash-up facilities are located in the locker-room. Note, too, that the area where a column is located is not wasted. Two Bradley *semi-circular* Washfountains, back to back, solved the problem. Ordinarily the semi-circular fixtures are used in narrower rooms and are installed at wall.

With all Bradleys, fewer piping connections are required—just three to serve 8 to 10 persons. Space is saved and water consumption greatly reduced because each Washfountain, while serving groups, uses no more than an individual wash basin. And with foot-control, *water is cut off immediately* foot is lifted from the control ring at base.

There are no faucets to manipulate or maintain. Hands need touch nothing but the clean tempered water coming from the central sprayhead.

For new buildings—for extensions to present plants, and for modernizing old washrooms—you get greater economy and user satisfaction with Bradleys.

For dimensions and complete specifications, write for Catalog 5601. BRADLEY WASHFOUNTAIN CO., 2235 W. Michigan St., Milwaukee 1, Wis.



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Catalog
5601

BRADLEY

Washfountains

Distributed Through Plumbing Wholesalers

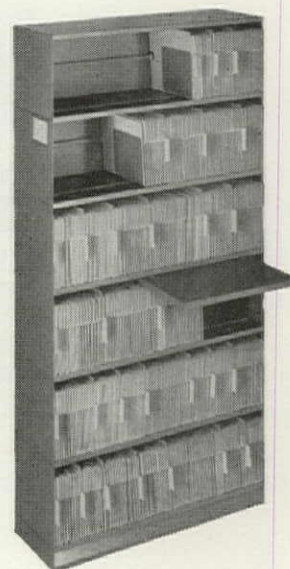
filament: the woven cloth is fire-resistant and mothproof; it will not stretch or shrink, mildew or sun rot; it is translucent, yet provides insulation. Though the new open-weave materials (pictured on page 129) seem to be the most popular innovation in the new Fiberglas line, a host of provincial, traditional, and contemporary designs are being presented on close-weave fabrics in a variety of vibrant colors. The open-weave fabrics are white; but, according to Owens-Corning, texturized *Aerocor* yarn also takes color more successfully than previous glass fabrics. However, a heavy use of color tends to rob the material of some of its characteristic softness. More expensive than fabrics woven of continuous glass-fiber yarns, *Aerocor* cloth is priced from \$1.98 to \$12 per yard.

Manufacturer: Owens-Corning Fiberglas Corp., 598 Madison Avenue, New York 22, N.Y.

OPEN-SHELF FILING costs less and occupies less space

The *Add-A-Shelf*—a new idea in open-shelf filing recently introduced by Diebold Inc.—capitalizes on good design and the flexibility of modular construction: it looks trim, speeds up filing and finding (no drawers to open or close), and provides decided cost and space savings over conventional filing cabinets. Furthermore, its modular structure allows for easy expansion as a company's records grow. Through a simple, no-tools-required, interlocking system, individual filing units are merely added (top-to-bottom, side-by-side, or back-to-back) as increased space is required. Priced at \$8.30 each, three of these units afford a filing capacity equal to that of the average four-drawer cabinet—but cost roughly 25 per cent less and occupy just half the space.

Naturally, any open-shelf system offers little or no protection against dust or untidy filing; and soiled folders must be replaced to maintain appearance. However, this system may also encourage more frequent cleaning out of files.

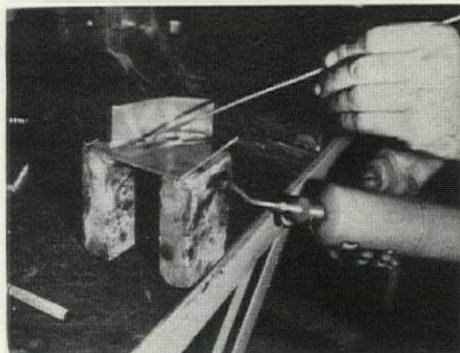


Marketed in two sizes to accommodate both letter and legal-size folders, *Add-A-Shelf* units are equipped with movable folder supports and filing guides. A removable posting shelf that locks into place where it is needed (see photo) and a special base section are also available. All units come in standard gray, but other colors may be ordered at a slight additional cost.

Manufacturer: Diebold Inc., 818 Mulberry Rd., Canton 2, Ohio.

NEW JOINING MATERIAL chemically welds nonferrous metals

Under the influence of heat, *InterAct*, a new wire-sheathed joining material, causes similar and dissimilar nonferrous metals to flow together at temperatures lower than the melting point of either metal. The resulting joint, according to the manufacturer, is usually stronger than either metal involved and has greater corrosion resistance. Chemically speaking, *InterAct* is a reaction eutectic: a material which, at about 725 to 810 degrees Fahrenheit, reduces surface oxide through reaction and forms a union between metals by creating an intersurface eutectic (fusible) solution.



The basic product is composed of chlorides of zinc, lithium, potassium, and sodium encased in a 1/8-inch-diameter tubing (an alloy of zinc and aluminum) that is wound in coils. Both the internal material and its sheathing play an integral part in the chemical joining process. The *InterAct* technique—which should not be likened to soldering (where a third metal grips two other metals to itself) or welding (where two similar metals are bonded at temperatures far above the melting point of either)—now makes chemical joining on the job commercially feasible at a cost of about 11½ cents a foot. The shelf life of *InterAct* is said to be indefinite. But when the material is not in use, the coil tip must be capped with an epoxy resin, as *InterAct* is an intensely hygroscopic material (on contact with air it quickly absorbs and retains moisture, thereby destroying itself and the zinc container). For heavy industrial use, *InterAct* is also available in powder and granular forms, packaged in polyethylene bags. Price for the standard 1/8-inch wire (which fits standard size welding guns) is \$6 a pound.

Manufacturer: Interactics Inc., Northfield and Forbes Roads, Bedford, Ohio.

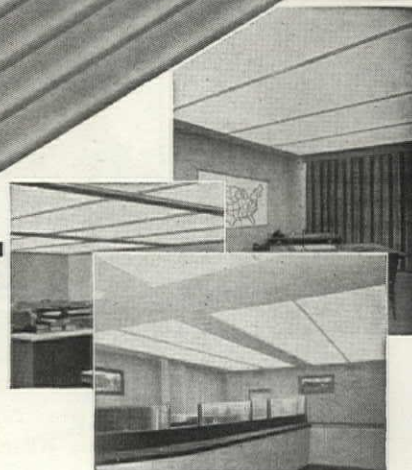
continued on page 132

WORTH WAITING FOR!



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*the new sensation in
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Selecting a plant site? Think of a home site too!



Or you can put it this way: keep employees happy and they'll do a better job.

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For information about available sites, see your nearest "U.P." representative or get in touch with us direct.



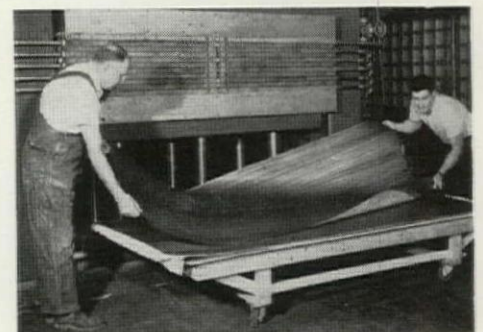
Map shows the vast western area served by Union Pacific



INDUSTRIAL DEVELOPMENT DEPARTMENT
UNION PACIFIC RAILROAD
OMAHA 2, NEBRASKA

VINYL-FACED WOOD VENEER will not crack or cloud with age

As a wall-covering material that simulates wood paneling, real-wood veneers are not new. Several (some with a vinyl facing, others without) have been on the market for quite a few years. But *Furnaflex*, a handsome real-wood veneer produced by an exclusive German process, is new and different. Basically a wood laminate (wallpaper-thin wood veneer is sandwiched between cotton cloth and a vinyl film), *Furnaflex* is said to be permanently flexible—that is, it will never crack with age, either on the wall or in storage; it will not cloud or turn chalky white; and because of its protective vinyl surface, it needs no periodical waxing or refinishing. In addition, *Furnaflex* costs about 25 per cent less than other veneer-type materials: standard 4-by-8-foot sheets sell for 58 to 62 cents a square foot. Available in dull, satin, or glossy veneers of oak, birch, wal-

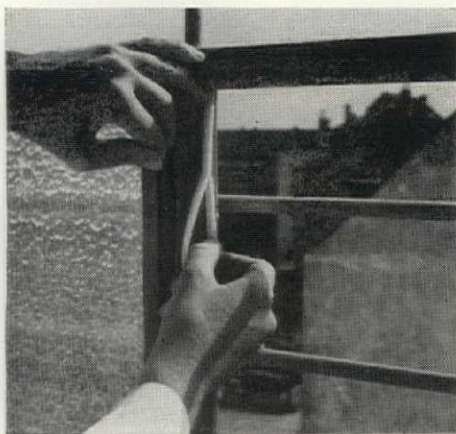


nut, mahogany, and cherry, the material is 25-thousandths of an inch thick; it can be cut with a knife or heavy scissors and rolled for shipping or to ease application. However, folding to 90 degrees will split the veneer and its vinyl facing. A recommended mastic adhesive (\$4 a gallon) is also marketed by the manufacturer. Installation cost: 25 cents a square foot.

Manufacturer: Wilcox-Woolford Corp., Pikeland Ave., Spring City, Pa.

URETHAN FOAM TAPE marketed as weather stripping

For many door or window weather-stripping operations, such old stand-bys as felt, rubber, and putty may soon be replaced by a versatile plastic tape called *Tesamoll*. A polyurethane foam chemically cemented to an adhesive carrier, the product (a German one) is new to this country, but boasts an impressive array of desirable and practical characteristics. It is light in weight (about one-third as heavy as rubber); under slight pressure the tape's adhesive undercoating adheres to almost any clean, dry surface and is said to bond more firmly with time; it is rotproof, fungus-proof, and fireproof; it insulates against temperature extremes, noise, and dust; it is water-repellent; it can be painted; and, being a spongy plastic mass, it acts (unlike putty) as a damping cushion against vibration, chatter, and shock. However, speed of application seems

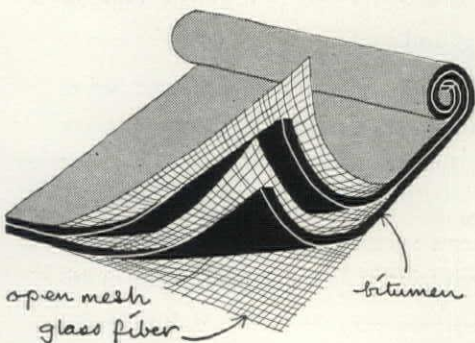


to be *Tesamoll's* greatest virtue. No nails are required—no gluing, moistening, or preheating is necessary. After removal of the protective foil backing, *Tesamoll* tape is simply pressed into place, thereby offering a considerable saving in time and labor. Marketed in roll form, *Tesamoll* is available in a variety of widths, thicknesses, and colors. The list price for the standard ½-inch wide, ¼-inch thick, 4¼-yard roll is 59 cents. But prices for all roll sizes are subject to quantity discounts.

Manufacturer: P. Beiersdorf, Hamburg, West Germany. Marketed in the U.S. by United Mineral & Chemical Corp., 16 Hudson St., New York 13, N.Y.

WATERTIGHT ROOFING MEMBRANE sandwiches bitumen and glass cloth

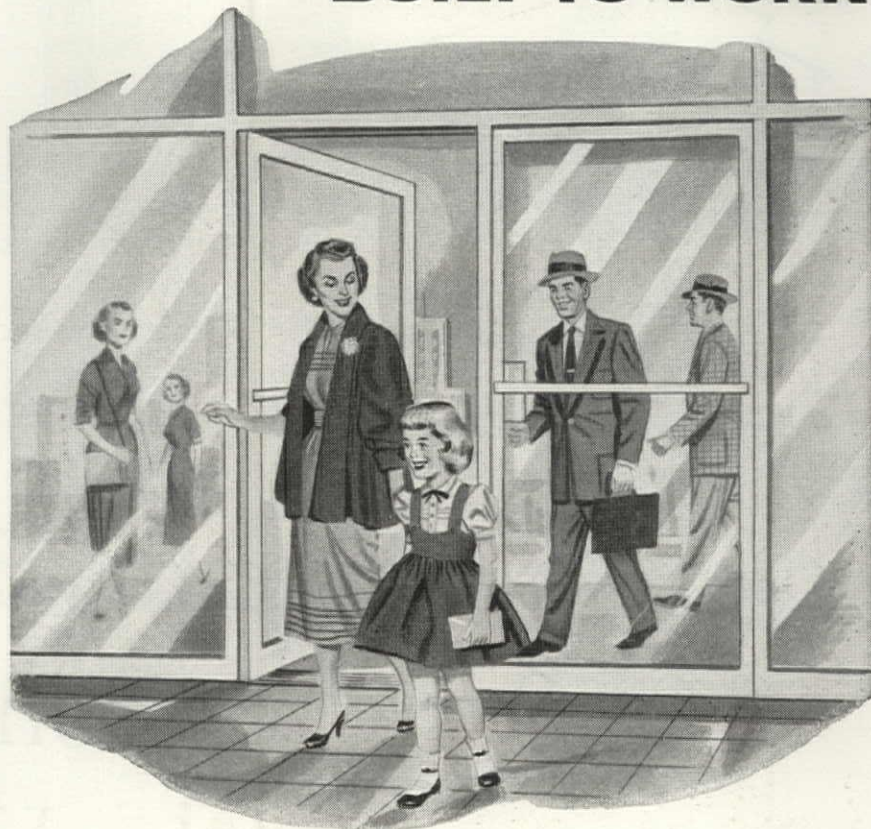
By laminating plies of open-mesh glass-fiber cloth with coal-tar pitch or asphalt, the manufacturer of *Glasell Flexroll* has produced a new waterproofing material with obvious advantages: since the material is merely applied to roof surfaces with adhesive or mopped on with hot bitumen, no slow build-up of tar layers and reinforcement plies is necessary and labor costs are cut substantially. At the same time, a uniform waterproofing thick-



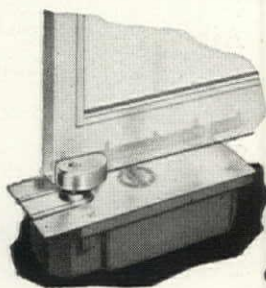
ness is achieved at all points. Priced at 12 cents a square foot in pitch and 9 cents in asphalt, *Glasell Flexroll* comes in 44-inch-wide rolls that weigh 50 pounds and cover one square (100 square feet) of roof. A 22-inch-wide roll that weighs and covers just half as much is also available. When the material is applied cold, a special *Glasell* adhesive is recommended (cost of adhesive: 70 cents a gallon for the asphalt membrane, 85 cents for the pitch).

Manufacturer: Twinsburg-Miller Corp., Route 91, Twinsburg, Ohio. END

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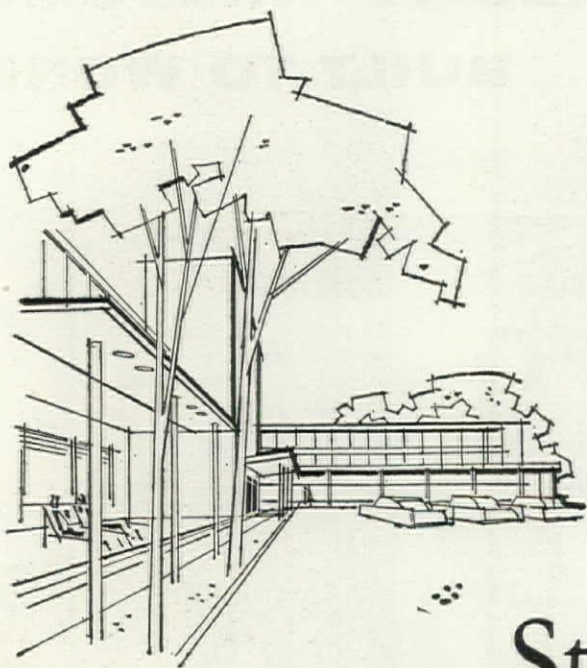


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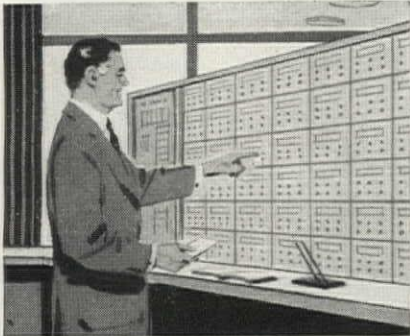
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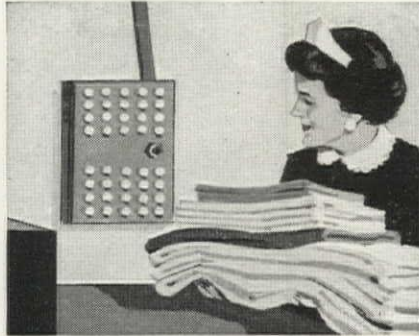
Honeywell



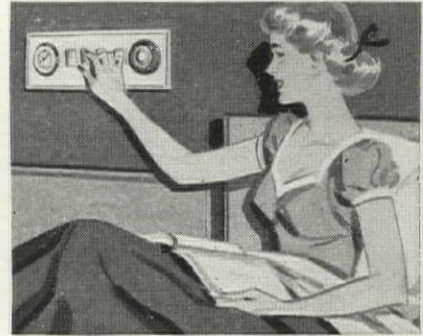
First in Controls



The status of each room; occupied, reserved or vacant is indicated on the front desk console. It can be read at a glance by the desk clerk.



Maid signal notifies clerk and housekeeper where maids are working and when rooms are made up. Enables clerk to signal what rooms are to be done.



Morning call—"message for you" signal frees busy switchboard, wakes guest with buzzer, bell or chimes. "Message for you" light stays on until acknowledged.



Honeywell designed Systems Control Center for hotels, called the Hotel-Motel Master*, puts up to 24 separate functions under the control of one man at a hotel's front desk.

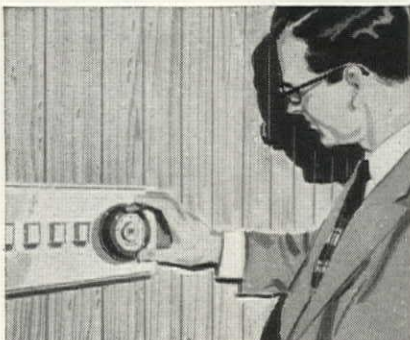


Fire detection signal rings buzzer at the front desk. Flashing light indicates origin of the fire, enables clerk to send help immediately to the area.



Centralized controls for air conditioning, heating, lights, TV allow clerk to shut off equipment when guests leave, turn it on just before room is occupied.

*T. M. Reg.



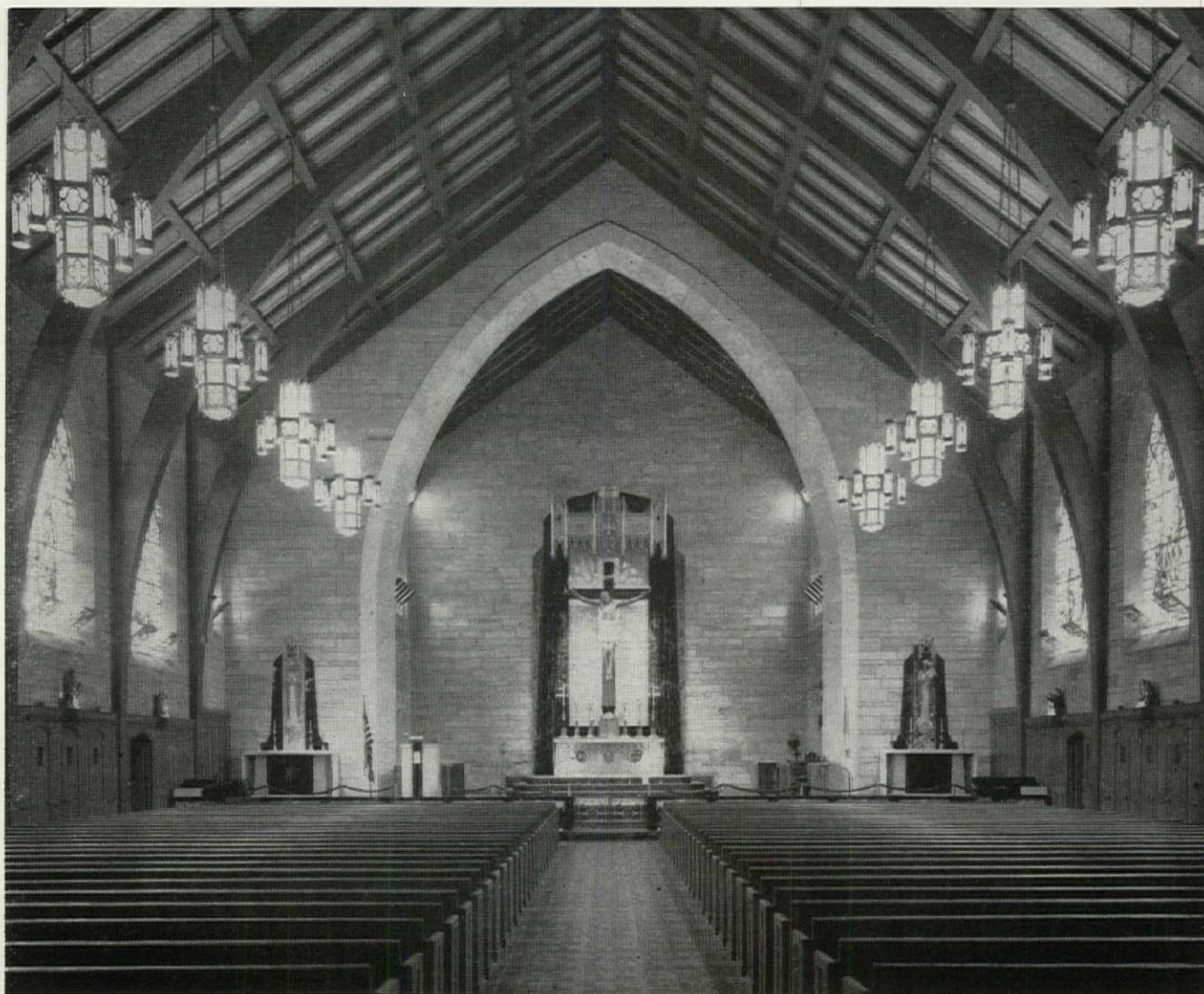
Guestroom temperature control (Honeywell Wall Mounted Thermostat) allows each guest to select the temperature at which he feels most comfortable.



Weatherscope* automatically signals an up-to-date weather forecast to each guest, enabling them to dress according to the weather. Clerk operates master signal only.



Hold-up alarm operated by foot notifies house detective and others of trouble at the front desk, brings help quickly in case of emergency.



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Beautiful new St. Paul's Catholic Church, Princeton, N. J.

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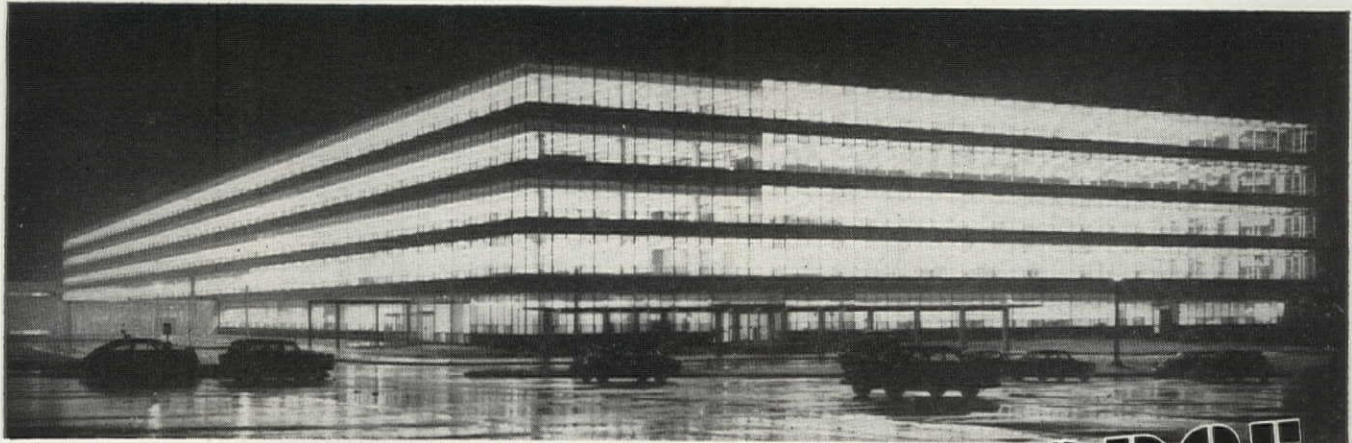
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WIRE BY PHELPS DODGE

This modern AG Record Center building* in St. Louis, Mo., is virtually an oversized glass filing cabinet. Housed here are service records of 20,000,000 persons who have served in the Army or Air Force since the Civil War.

A dependable wiring system was an important part of the building's specifications. That's why Phelps Dodge wire and cable was installed.

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*Joint General Contractors: Fruin-Colnon Contracting Co., St. Louis, Mo., and Peter Kiewit Sons' Co., Omaha, Neb.,
Electrical Contractor: Mack Electric Co., St. Louis, Mo.



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**Two good reasons why
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HERCULITE®

The use of Pittsburgh's HERCULITE Doors and Polished Plate Glass gives this entrance to the new building of the First Security Bank of Salt Lake City, Utah, an open, spacious feeling. Installations such as this one do so much to please existing customers and attract new business. That is why architects and building owners overwhelmingly turn to Pittsburgh for their entrance requirements.

Two of the four HERCULITE Doors installed here are equipped with the PITTCOMATIC® automatic door opener. Architects: Bank Building and Equipment Corporation of America, St. Louis, Mo.; Associate Architect: Slack W. Winburn, Salt Lake City.





TUBELITE®

In the new Harris' Supermarket, Waycross, Georgia, TUBELITE Doors give the entrance an inviting look. The mat-operated PITTCOMATIC automatic door openers are ideal for this service, making it easy for customers to enter and leave without the bother of pushing doors. TUBELITE Doors and Frames are noted for their extreme architectural flexibility. Their clean, simple lines make them adaptable to any scheme. TUBELITE marks a decided advance in hollow metal entrance design. The frames have an exclusive interlocking feature which affords utmost rigidity. TUBELITE offers a high-quality product at moderate cost.

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For complete information on Pittsburgh Doors, see Sweet's Architectural File—Sections 16a and 16d. If further specific details are required, write direct to Pittsburgh Plate Glass Company, Room 8133, 632 Fort Duquesne Blvd., Pittsburgh 22, Pennsylvania.

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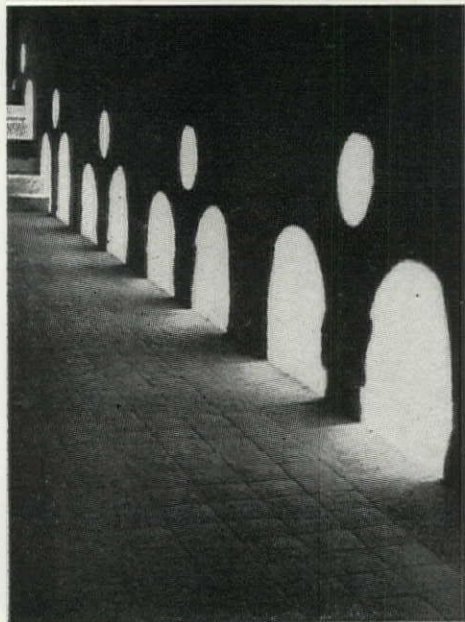


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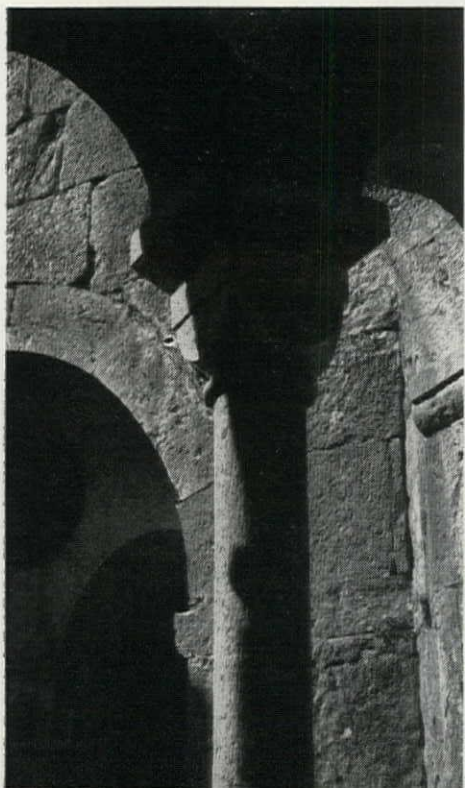
French monastery . . . U.S. design . . . Japanese gardens



ARCHITECTURE OF TRUTH. Arranged with Quotations and Notes by Francois Cali. Published by George Braziller, Inc., 215 Fourth Ave., New York 3, N.Y. 164 pp. Illus. \$15

This walk through the twelfth-century Cistercian monastery of Le Thoronet is one of the most inspiring experiences to be had in the realm of architectural literature. M. Herve's photographs are magnificent, fully up to Le Corbusier's introductory claim that "the pictures in this book are witnesses to the truth."

Stone by stone, arch by arch, through damp passageways into brilliant sunlight



the reader is led, accompanied by perfectly harmonized scriptural and poetic selections.

PROBLEMS OF DESIGN. By George Nelson. Published by Whitney Publications, Inc., 18 E. 50th St., New York 22, N.Y. 205 pp. 8 1/2" x 8 1/2". \$10

Some readers may find the title more than a bit forbidding. But for George Nelson, a notable architect, industrial designer, and one-time managing editor of FORUM, the "Problems of Design" cover a fascinating range of subjects, from the planned obsolescence of buildings to the wiry underpinnings of modern furniture.

The 26 essays in the book cover, in fact, a world as wide as Nelson can make it. Without attempting anything like an organized exposition, the book collects a variety of his speeches and magazine articles in one place.

This is eminently worth doing. For Nelson has a lucid writing style and a rare sense of humor. He has an inquiring mind that often bends to the speculative. The book reveals him at his best.

GARDENS OF JAPAN. By Tetsuro Yoshida. Published by Frederick A. Praeger, Inc., 15 W. 47th St., New York 36, N.Y. 187 pp. Illus. \$12.50

The late Professor Yoshida was as responsible as any Japanese artist for the reasonably sturdy bridge of understanding that now exists between the architecture of his country and that of the Western world. Both in his written works and in his own buildings, he encouraged the understanding of foreign students. He accomplishes just that in his last book on Japanese gardens. What is dealt with here is not the exclusivity of this form of Japanese art, but its validity in terms of pure design.

A handsome and instructive volume.

BOOKS RECEIVED

FARM HOUSING. By Glenn H. Beyer and J. Hugh Rose. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. 194 pp. 9" x 6". \$6

CITY AND SUBURBAN HOUSING. Edited by Poyntz Tyler. Published by H. W. Wilson Co., 950 University Ave., New York 52, N.Y. 190 pp. 5 1/4" x 8". \$2

THE CIVIC AND ARCHITECTURAL DEVELOPMENT OF PROVIDENCE. By John Hutchins Cady. Published by The Book Shop, 75 Westminster St., Providence 3, R.I. 319 pp. Illus. 11" x 8 1/2". \$12.50

continued on page 142



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Used for the first time are two-tone, dusty pink laminated-insulated panels, 7 ft. x 10 ft. fitted into 10 ft. x 13 ft. modular aluminum frames. The sandwich construction includes an insulating core providing complete incombustibility, insulation and sound deadening qualities. Contrasting with the flat-surface curtain wall facade are the new Seaporcel formed panels, used as a vertical accent and as a decorative band course above the second floor.

Said Rogers & Butler of the two new panels: "This development represents a forerunner in the search by contemporary architects to achieve greater interest, variety, color and texture in new buildings designed for today's needs. They offer a means to practical economy, since they bring larger, prefabricated components, with factory-assembly precision to the building site."

For more information about Seaporcel and Seaporclad write for brochure 16.



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IN BRAZIL: Rheem Metalurgica, S.A., Rio De Janeiro
IN CANADA: General Steel Wares, Ltd., London and Toronto, Ont.
IN CHILE: Fabrica de Enlozados, S.A., "Fensa", Santiago
IN DENMARK: Glud & Marstrands Fabriker, Copenhagen
IN FRANCE: Societe Equipement Menager Japy, Paris

IN GREAT BRITAIN: Edward Curran Engineering, Ltd., Cardiff, Wales
IN HOLLAND: N. V. Emailleerfabriek "De Ijsel", Dieren
IN ITALY: S.I.L.T.A.L. & Filiberto Crespi, Milan
IN NORWAY: A/S Teknogiass, Sub. Co. of A/S Moss
Glasvaerk, Moss
IN SWITZERLAND: Metallwarenfabrik Zug, Zug
IN TURKEY: Madeni Esya Sac ve Emaye Fabrikalari
T.A.S., Bakirkoy, Istanbul



Books

cont'd

ESTIMATING GENERAL CONSTRUCTION COSTS. Second Edition. By Louis Dallavia. Published by F. W. Dodge Corp., 119 W. 40th St., New York, N.Y. 197 pp. 6 1/4" x 9 1/4". \$8.50

THE ENGLISH CATHEDRAL THROUGH THE CENTURIES. By G. H. Cook. Published by The Macmillan Co., 60 Fifth Ave., New York 11, N.Y. 384 pp. 5 3/4" x 9 1/4". Illus. \$9

MODERN SCHOOL SHOP PLANNING. Revised Edition. Published by Prakken Publications, 330 Thompson St., Ann Arbor, Mich. Spiral bound. 184 pp. 8 1/2" x 11". Illus. \$3.85

JAPANESE ARCHITECTURAL TECHNIQUES. Published by The Architectural Institute of Japan, Tokyo, Japan. 67 pp. 5 3/4" x 8 1/2". Illus.

AMERICAN CIVIL ENGINEERING PRACTICE. In three volumes. By Robert W. Abbett. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y. 5 3/4" x 8 1/2". \$55.00 the set

HANDBOOK OF REAL ESTATE FORMS. By E. J. Friedman. Published by Prentice-Hall, Inc., Englewood Cliffs, N.J. 441 pp. 6" x 9"

TECHNICAL PUBLICATIONS

A selection of new handbooks, textbooks, technical reports, brochures, and commercial leaflets, noteworthy for their information content or pictorial format or both.

1958 GLASS BLOCKS CATALOGUE. Published by Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa. 32 pp. Illus.

A detailed outline of this company's glass-block technique for building curtain walls. Light transmission, insulation values, accessory materials, and complete specifications are presented. Clean page layout, some fine photos and section drawings, plus a special take-out on color glass blocks make this a catalogue of more than routine interest.

PAINT: ARCHITECTS' SPECIFICATION MANUAL. Published by the Glidden Co., 900 Union Commerce Bldg., Cleveland 14, Ohio. 27 pp.

An easy-to-follow description of Glidden painting systems for a variety of surfaces, with detailed attention to application methods, drying times, calculated coverages, and recommended thinners.

WOOD: COLORS AND KINDS. Agricultural Handbook No. 101. Published for the U.S. Dept. of Agriculture's Forest Products Laboratory by the Supt. of Documents, Govt. Printing Office, Washington 25, D.C. 36 pp. Illus. 50¢

The first comprehensive nontechnical guide to the identification of different woods, with a large section of technically accurate color photographs of representative U.S. woods. A handsome publication.

WESTERN RED CEDAR LUMBER: Grades and Uses. Published by the West Coast Lumbermen's Assn., 1410 S.W. Morrison St., Portland, Ore. 35 pp. Illus.

Complete information on this versatile, reddish, decay-resistant wood, with full-page color illustrations of representative grades, conversion tables, information on grade stamps, recommended nailing practices, roof-decking spans.

RECOMMENDED PRACTICE FOR WINTER CONCRETING (ACI 605-56). Published by the American Concrete Institute, 18263 W. McNichols Rd., Detroit 19, Mich. 24 pp. Illus. 75¢

Technical data on methods and mixes for concreting during cold weather to insure fast setting, prevent damage from freezing and thawing, maintain proper curing conditions.

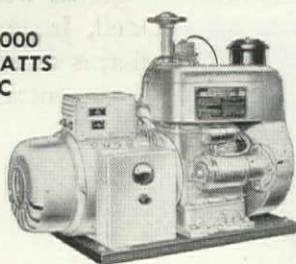
STAINLESS STEEL CATALOGUE. Published by Sharon Steel Corp., Sharon, Pa. 32 pp. Illus.

A technical summary of the most used stainless steels, covering composition, strength, and typical applications. **END**



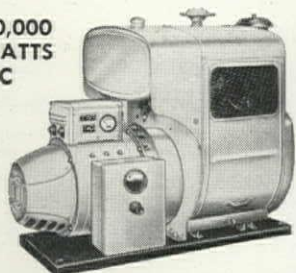
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See 1958 Sweet's Architectural File, Catalog 10a-Ce. Write for Specifications, Samples, Information Manual.

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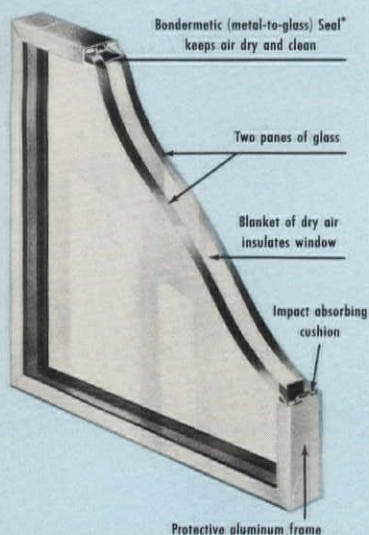
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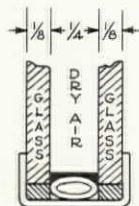
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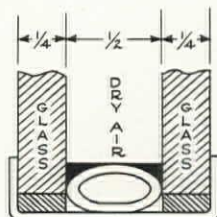


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SHEET GLASS

Double-strength "A" quality and $\frac{3}{16}$ " sheet glass. Economical double-glazing.



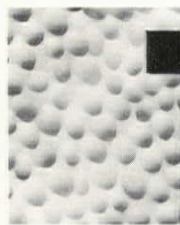
POLISHED PLATE

$\frac{1}{8}$ " or $\frac{1}{4}$ " polished plate glass for finest optics and appearance.



HEAT ABSORBING

$\frac{1}{8}$ " or $\frac{1}{4}$ " Heat Absorbing Plate Glass, a transparent blue-green glass, used to reduce solar heat and light transmission. $\frac{1}{4}$ " Parallel-O-Grey Plate Glass can be combined with a clear pane in *Thermopane* to reduce glare and cut solar heat entrance. Colors seen through this tinted glass remain true.



PATTERNED GLASS

While *Thermopane* is made with many Blue Ridge patterns for light diffusion, it is available for faster delivery when fabricated with Flutex®, Hammered, or Velvex®. For filtered daylight, *Thermopane* can be made with Hammered AKLO*.



TEMPERED PLATE

For extra resistance to thermal shock or impact, $\frac{1}{4}$ " Tuf-flex® tempered plate glass can be used.

*Registered Trade Mark—licensed by Corning Glass Works

INSULATING GLASS WITH BONDERMETIC SEAL

PERFORMANCE DATA

As compared to single glass, heat loss through windows is reduced 44% by using insulating glass that has a $\frac{1}{4}$ " air space. With a $\frac{1}{2}$ " air space, heat loss is reduced 50%.

The over-all heat transmission coefficient U varies with

the ranges of temperature at which it is determined. For most practical heat loss calculations, coefficient U is the value determined at 10 degrees outside temperature, 70 degrees inside temperature, 15 mph outside air velocity, and 0.25 mph average inside air velocity.

Kind of Glass	Glass Thickness	U Value	
Single Glass	$\frac{1}{8}$ "	1.16	
	$\frac{1}{4}$ "	1.15	
Thermopane Insulating Glass	$\frac{1}{8}$ " or $\frac{1}{4}$ "	$\frac{1}{4}$ " air space	$\frac{1}{2}$ " air space
		.65	.58

SOUND INSULATION

Thermopane also reduces sound transmission, a great virtue in noisy locations. Units 1" thick reduce noise transmission 44% compared with $\frac{1}{4}$ " single glass.

GLAZING INFORMATION

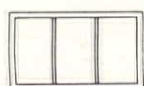
Since *Thermopane* is a factory-sealed insulating glass unit and is subject to movement due to changes of temperature and barometric pressure, adequate provision should be made for expansion and contraction.

An approved cushioning material must be used so there is no contact between the sash and glass at any point.

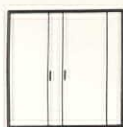
L·O·F has available Neoprene setting blocks for units $\frac{1}{2}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", and 1" thick. Also, for units $\frac{1}{2}$ " thick, the company can supply a metal glazing clip for use in steel, aluminum and wood sash. Under no condition should units be forced into any type of sash. Face clearances between glass and stops must be at least $\frac{1}{8}$ ". Edge clearances between glass and frame must not be less than $\frac{1}{8}$ " on each edge for $\frac{1}{2}$ " *Thermopane*, and $\frac{1}{4}$ " on each edge for units over $\frac{1}{2}$ ". For detailed glazing information, ask for *Thermopane* Manual.

The contractor, architect and building owner should assume responsibility in seeing that glazing instructions are followed and *not accept the job if they haven't been.*

Cushion-Framed *Thermopane* can be used in these standard types of window sash and sliding doors



- Picture Windows and Window Walls
56 sizes



- Sliding Doors
3 sizes



- Double Hung Windows (2-light)
14 sizes



- Double Hung Windows (4-light)
14 sizes



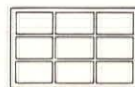
- Wood Casements
7 sizes



- Wood Awning Windows
6 sizes



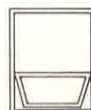
- Residential Steel Casements
6 sizes



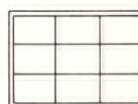
- Wood Panel Windows
2 sizes for fixed lights
2 sizes for ventilators



- Panel Window with Louvers
1 size

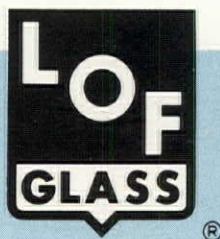


- Modified Wood Panel Window
1 size



- Metal Panel Windows
1 size for fixed lights
1 size for ventilators

For further information, contact your local L·O·F Glass Distributor or Dealer (listed under "Glass" in phone book yellow pages) or write to Libbey-Owens-Ford Glass Company, 608 Madison Ave., Toledo 3, Ohio.



GLASSEAL *Thermopane*[®]

INSULATING GLASS

TECHNICAL INFORMATION

GlasSeal *Thermopane* is a factory-fabricated insulating unit. It cannot be cut or altered in any way. The smooth, clean edges make units easy to glaze. Glazing information available upon request.

KIND OF GLASS

GlasSeal *Thermopane* is available only in DSA Sheet Glass with a nominal $\frac{3}{16}$ " air space. Total thickness of units, $.450 \pm .050$.

STANDARD SIZES

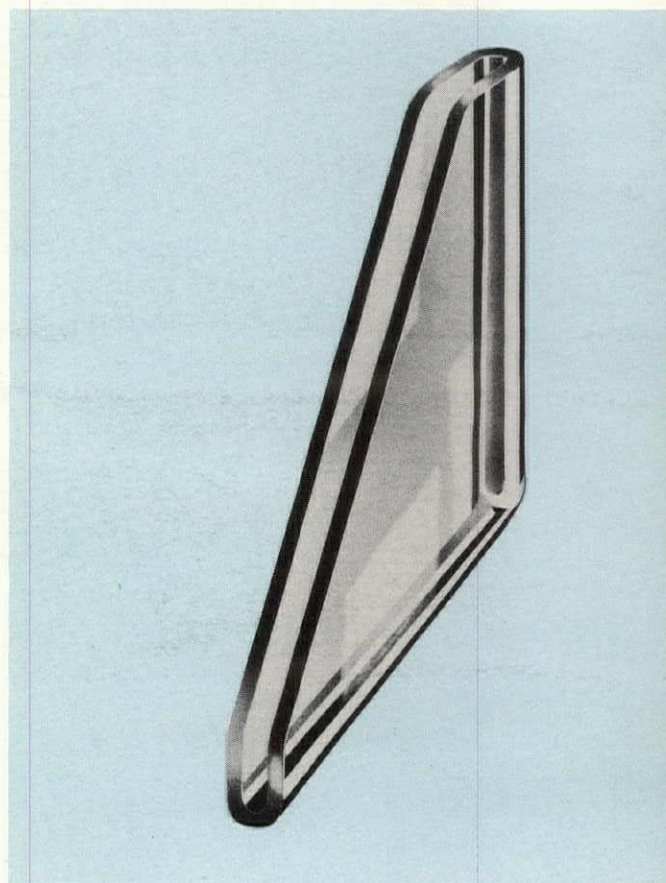
Now available in five standard sizes: $45\frac{1}{2}" \times 25\frac{1}{2}"$, $42\frac{1}{2}" \times 22\frac{1}{2}"$, $36" \times 24"$, $34\frac{11}{16}" \times 22\frac{11}{16}"$, $32" \times 16"$.

Special sizes can be fabricated in production run quantities of 500 units or more, within the size limitations stated below.

SIZE LIMITATIONS

Dimensions in one direction cannot be less than 14" or more than 38", and not over 62" in the other direction. Total area of unit cannot exceed 1,440 sq. in.

For further information, contact your local L·O·F Distributor or Dealer
(listed under "Glass" in the phone book yellow pages) or write to



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Architect: Welton Beckett & Associates—Los Angeles, Calif.



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A-1

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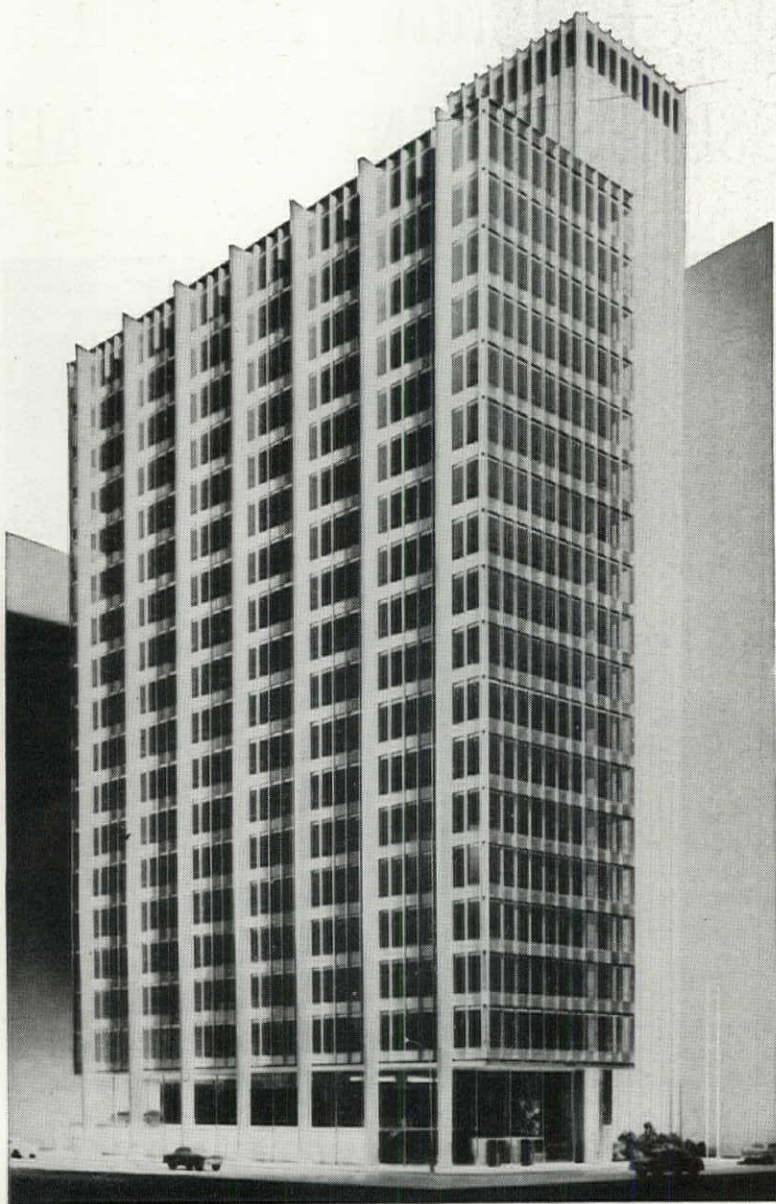
Be sure color and texture are not damaged by harsh, so called "quick" cleaners.

Specify Hillyard Super Hil-Brite 100% Carnauba Wax to bring out to the full the natural beauty of the flooring material—cover it with a tough, lustrous film of protection that will add years to the floor's life, pleasure to the client's eyes as the floors reflect the beauty of a new building.

Ask him to survey the floors on your boards, recommend treatments, serve as your "Job Captain".

Ask him also for A.I.A. numbered files containing Architect's information on treatment of all types of floors, and detailed step-by-step treatment instructions for use by your contractor.

*The Hillyard Maintaineer is
"On Your Staff, Not Your Payroll"*



CHICAGO'S NEW INLAND STEEL BUILDING (Photo by Hube Henry, Hedrich-Blessing)
Skidmore, Owings and Merrill—Architects...Turner Construction Co.—Gen. Contractor

**FIRST BUILDING
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NEW NICKEL-SAVING
ALLEGHENY-PIONEERED
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The Inland Steel Company's new headquarters in Chicago numbers some important firsts among its outstanding features. It is the first large office building to be built in Chicago's loop in 20 years. It is also Chicago's first stainless curtain wall building, and the first building anywhere to use the new low-nickel stainless grades pioneered by Allegheny Ludlum.

Allegheny 200-series stainless steels (Types 201 and 202) are the answer to one of the knottiest problems that have faced architects and designers who want to use the superior durability, strength and beauty inherent in stainless steel. Now, with the in-

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• If these new steels sound interesting to you, give us a call. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

WSW 6673

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What other people are saying

ARCHITECTURE'S CHANGES

Last autumn Robert W. McLaughlin, Director of Princeton's School of Architecture, gave the University's Committee on Capital Needs an informal talk on the trends in architecture that are affecting the school's curriculum.

The most important changes to architecture within the life of this school [since 1919] fall into three categories:

The first category involves the impact of science and technology on the art of architecture. We as architects did not dream this up; it happened to us. Outstanding examples of this impact are space-enclosing methods like thin shell domes, space frames, and curtain walls. Other examples lie within the area of mechanical equipment, indicated by a new vocabulary of radiant heating, air conditioning, and climate control. When we realize that 45 per cent of the cost of some buildings lies in mechanical equipment, rather than in the building proper, we realize how powerfully these methods have impinged on architecture as we once knew it. A wealth of new materials—plastics, new nonferrous metals, or synthetic adhesives, to mention only a few—have raised stimulating possibilities as well as many technical and aesthetic problems. This technological impact has increased at a constantly accelerating rate, being most obvious since World War II. It shows no signs of abating.

A second category of change has involved a widening concept of the scope of architecture. From an exclusively individual art in the tradition of the Renaissance, catering to a limited group of patrons and dealing with the more delicate aspects of visual taste, architecture has returned to a natural and more universal state. We are in a less self-conscious period than the Renaissance. No longer is Park Avenue to be considered architecture, while the slums behind are discussed as merely slums—they are bad architecture. Lake Shore Drive is hardly satisfactory as a mining-camp building front for the tawdriness of Wabash Avenue and the rest of Chicago to the west.

Housing and town planning and urban redevelopment are as much the field of the architect as country houses or golf clubs are.

The third category of change involves the visual or expressive side of architecture—one most readily recognized because it is what architecture looks like. After an unprecedented period of eclecticism, during which basic decisions in the design of architecture involved such moot points

as whether to lay on Gothic or Georgian detail, architecture has been painfully returning to its rightful place as the natural, logical, and occasionally beautiful expression of the time in which it is created.

INVITE THE CONTRACTOR

In a day of searching for new ways to lower school costs, Architect J. M. Barrow of Urbana Ill. has made a sensible suggestion: invite the contractor to join the planning committee. The suggestion was made in a recent article in *The Nation's Schools*.

I propose that one more member, one of great importance, be added to the building team. That new member is the builder, sometimes known as the general contractor. For too long we have held the builder at arm's length, until his low bid won him a place on the team. And this is *after* the plans and specifications are fixed. The architect must recognize the value of working closely with the builder during the development of the building plans and material specifications.

A local building contractor is best qualified to determine the availability and cost of proposed materials. He is familiar with the local union situation and knows whether any jurisdictional problems exist within the various building crafts. He knows the skill of the available craftsmen and the probable availability of manpower at the time the proposed building would be under construction. Only a contractor who is building a particular project can actually bring about a savings. The architect may plan and hope for it, but it takes the contractor with the low bid to confirm that opinion and to pass the savings on to the owner.

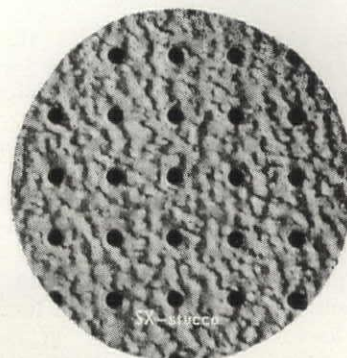
\$500 BILLION OF HOUSING

James H. Scheuer, long a spokesman for enlightened renewal policies, wagged a warning finger at the Administration in his speech at ACTION's Pacific Coast Urban Renewal Clinic in October.

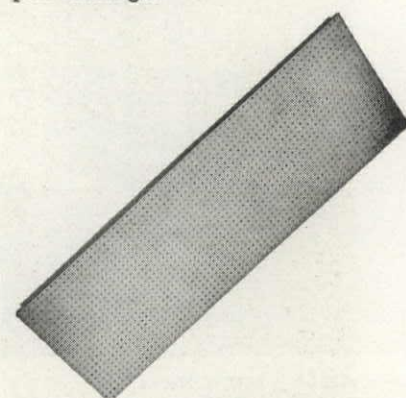
There seems to be a growing body of evidence that the highest administration echelons still view the entire urban renewal and housing program as a device for stabilizing the economy—as a spigot, to be turned on and off as current economic and fiscal forces run their ever

continued on page 148

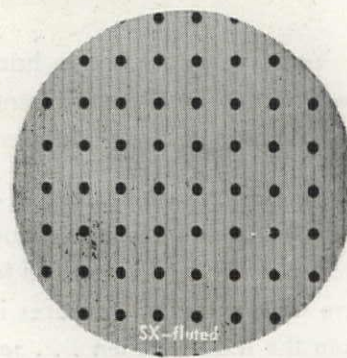
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changing course. The viewpoint, if continued, will surely be recorded as one of the tragic blunders in domestic policy in modern times.

We know from our post-World-War-II experience that the only acceptable way for us to channel and control these powerful population forces is to plan *in advance*. Once the unplanned surge has taken place and time has run out, the price will be paid and the battle lost.

We have heard some talk in recent

months that it would be well to turn back responsibility to the cities and states for the provision of the immense volume of needed housing and community facilities. A few cold hard facts of life in this connection might be pertinent.

Consider, first, the total volume of needs for community facilities of all kinds. In 1954 the Department of Commerce estimated that cities across the nation would be required to spend during the decade ending in 1964 approximately \$200 billion

to bring municipal facilities and services up to the minimum acceptable level. These would include expenditures for roads, schools, sewers and water facilities, hospital plants, and so forth. Against the target of \$20 billion a year for ten years, city and state governments are now spending approximately \$10 billion annually.

Thus, the current deficit is growing each year. But even with this inadequate level of expenditures, cities and states have increased their bonded indebtedness three-fold since 1946—from about \$15 billion to about \$50 billion. To meet the Commerce Department's estimate of community needs, they would have to treble their present level of bonded indebtedness in the decade to come.

Consider, secondly, the immense volume of housing needs. By 1975 we will have to produce about \$300 billion of new housing for the 20 million additional new families in our expanding metropolitan areas. And, in addition, the Twentieth Century Fund's monumental study, "America's Needs and Resources," advises us that we must spend almost \$100 billion to bring our present housing inventory up to a satisfactory minimum standard, by rehabilitation where feasible and by demolition and renewal where the bulldozer is the only indicated treatment for the cancer of blight.

Lastly, the various public improvement programs for slum clearance, highways, schools, and other municipal facilities are currently displacing annually upward of 100,000 families, predominantly low-income minority families. This is creating a demand over the next decade for at least 1 million units of moderate-priced relocation housing, which will cost well over \$10 billion. Thus the most conservative and workmanlike estimate of our future housing needs by 1975 ranges upward toward \$500 billion—or, in other words, one-half a trillion dollars.

We have considered the full list of urban needs—both housing and community facilities. Now let us consider the comparable resources of local, state, and federal governments. Since 1939, the federal tax take has increased about thirteenfold, whereas total tax revenues of cities and states have increased only three times. With the federal government's revenues from cities and states, it is clear that federal authorities will have to make a meaningful contribution to the enormous job of creating the basic structural forms of the cities and suburbs of tomorrow. The federal government cannot delegate to the cities and states responsibility for these immense expenditures by making minor and inconsequential tax concessions.

It is high time that top administration policy makers established a long-term and continuing program geared to financial support of state and city programs of urban renewal over a period of at least a decade ahead.



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★ Besides the diet kitchens on the five patient floors of the Memorial Unit, one of which is illustrated above, Van equipped the main kitchen which provides food for the entire hospital and all cafeterias. One of the design features is the kitchen elevator . . . running up from the main kitchen . . . serving all diet kitchens . . . ideal transportation as it is exclusively for dietary use.

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Branches in Principal Cities

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CINCINNATI 2, OHIO

continued on page 150



Dye maker brightens fuel cost picture

Burning coal at Toms River-Cincinnati saves 20% on fuel costs, permits clean steam generation

The ultra-modern Toms River-Cincinnati Chemicals Corp. plant in Toms River, N. J., produces millions of pounds of dyes a year. A large, dependable steam supply is necessary in this operation for chemical processes and heat. To fill these requirements, the firm's power plant burns *coal*—since the cost of the nearest competitive fuel runs 20% higher. In addition, thanks to automatic operation and modern equipment, the power plant meets the rigid standards of cleanliness required

in such manufacturing operations.

Consult an engineering firm

If you are remodeling or building new power facilities, consult a qualified engineering firm. Such concerns—familiar with the latest in fuel costs and equipment—will effect great savings for you in efficiency and fuel economy over the years.

Facts you should know about coal

Not only is bituminous coal the lowest-cost fuel in most industrial areas, but

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For additional case histories on burning coal the modern way or for technical advisory service, write to the address below.

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THE CRITIC'S AMERICA

Of the many visiting critics who have traveled across the U.S. forming opinions of how it all looks, Sir Hugh Casson, eminent British architect, is one of the best qualified. His conclusions appeared in the New York Times Magazine.

Most thinking Americans are now agreed that the policy of visual *laissez faire* is out-of-date; here and there attempts are being made to fight suburban blight and

downtown decay and to create city centers that really are centers and not just street corners; more and more schools of architecture and planning are studying seriously the problems of townscape and civic environment.

All this is true enough, but meanwhile the mess goes on growing, and not enough people seem to care. Now why is this? Obviously, there are many reasons—not least among them the pressure of the postwar building boom and the terrifying demand of the automobile, a modern mon-

ster as insatiable as any medieval dragon, that daily gobbles up for its needs more and more land and leaves everywhere behind it a trail of squalor and litter of every size and description.

But there are other reasons more fundamental even than these—among them the resistance of a highly competitive society to any sort of planning or control; the faith that economics determines our environment is too sacred to be questioned; the belief that land is a source of speculation and that whatever promises wealth is therefore good, that advertising and exploitation and industrialization are barometers of prosperity and therefore of human happiness; and finally, and perhaps most powerful of all, the old pioneering attitude that there is always plenty of room over the hill and if you do make a mess, well, move on and leave it to somebody else to clear up, because America is smart enough and rich enough to lick any problem when it gets around to it.

But we Europeans cannot help feeling that what makes the ugliness of, say, Los Angeles or Indianapolis or Detroit so alarming is not so much its hopeless, hapless endlessness, or even the apathy of the citizens who endure it, but the suspicion that here—like it or lump it—is, for all of us, the city of the future.

MR. WRIGHT'S AGRONOMY

In October Frank Lloyd Wright addressed the Chicago Dynamic Forum. To an audience prepared to applaud the wonder of Chicago's steel-clad industrialism, his words had a strange ring.

We have no business and never had any business to copy England and become a great industrialism. I don't know how the North wiping out the agronomy of the South came to that conclusion. We once had a gift from Nature that made an industrialization unnecessary, if not calamitous. We should be the greatest agronomy in the whole world today. With our advantages, the curse should have been taken off of living in the country. The farmer should be an aristocrat. But the natural order was changed. God knows you have evidence enough of the change that has taken place—how long it takes to get from here to there; how the going to and fro is wasting the energy of the American people; how we are up against a confusion and distortion that we are not reckoning with.

Now, to me, the unraveling of all this is an architect's job, his province. And I think if we had architects today interested in architecture instead of architects interested in architects, we'd get further ahead with this problem than we are now.

I don't believe it is a question for the insurance man or the realtor or for any city planner that I know about. It is fundamentally ethical.

continued on page 152



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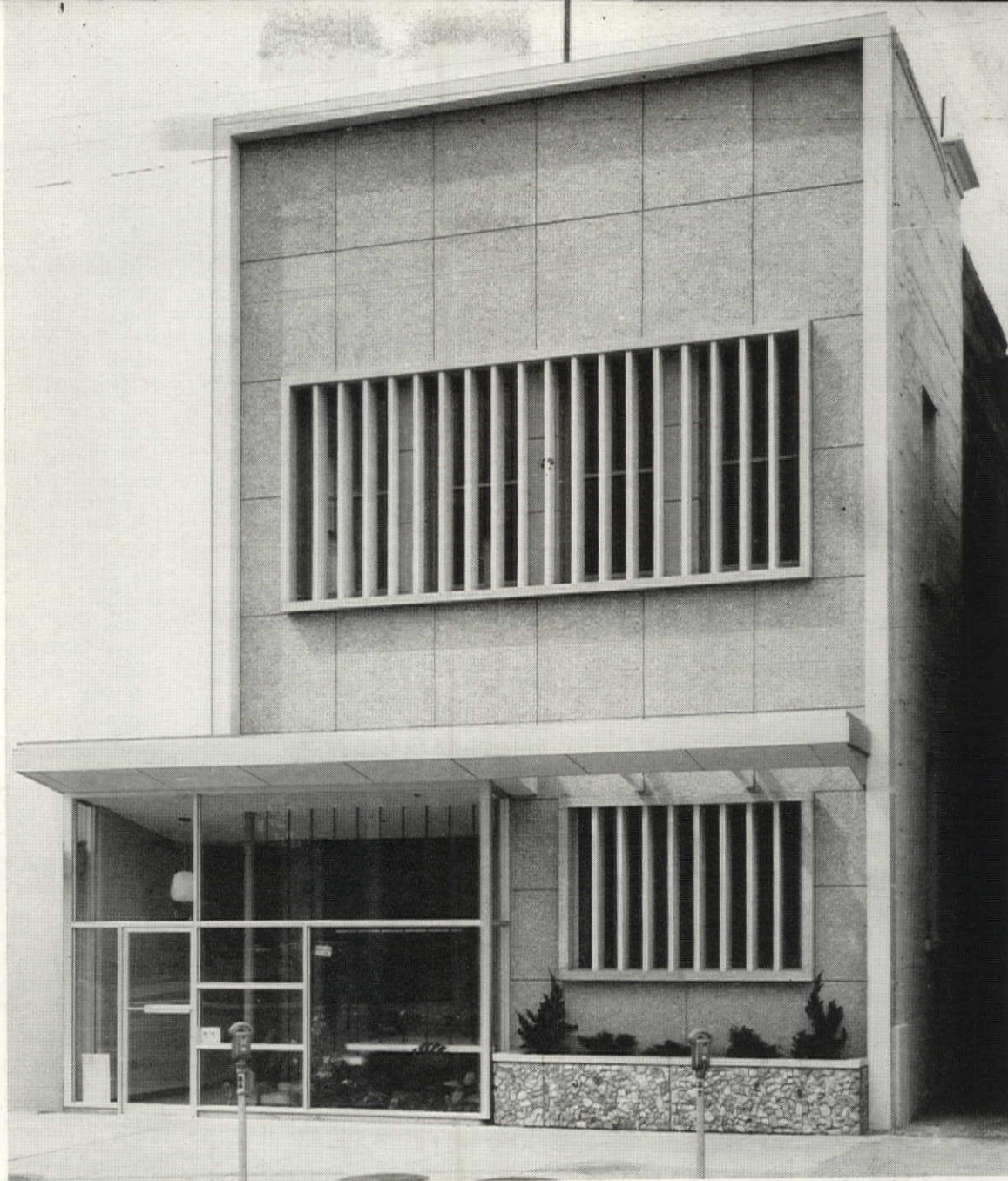
Dept. AF-2 • Branford, Conn.





BEFORE

AFTER



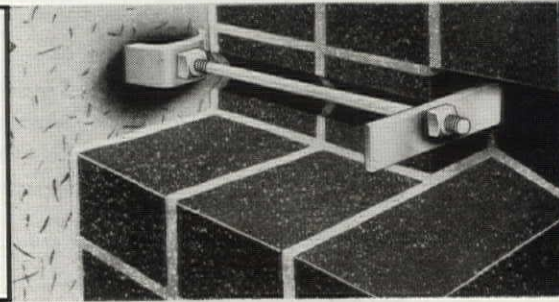
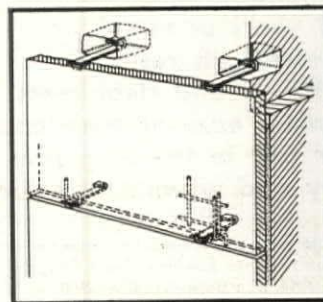
(Left): This old sandstone office building was given a smart ultra-modern look with contrasting textures in the Mo-Sai facing, planter and louvers.

Face-lifting "Main Street" with

Owners of soundly constructed but outdated-appearing stores and office buildings are finding they can bring in more business — and do it economically — with an architect-designed Mo-Sai "face-lifting."

Mo-Sai can be cast to match or contrast with existing materials... it can be made in special decorative shapes to match the main facing... even raised and inlaid lettering and insignia can be cast in Mo-Sai for a variety of strikingly beautiful effects. Textures and tones can be infinitely varied to suit any taste. Mo-Sai can be used to add special touches of decorative beauty — or for a complete refacing. Truly the Mo-Sai look is the newest look on the remodeled stores and offices of "Main Street, U. S. A."... just as it is on the smartest new suburban stores and shopping centers, banks and office buildings.

Mo-Sai



Detail above shows two typical methods of anchoring Mo-Sai to existing masonry walls. Other methods can be used for Mo-Sai on preconstructed concrete, steel-frame, etc.

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THE CITY SPEAKS

In his new book, *The Astonished Muse*, Reuel Denney devotes a chapter to the way U.S. cities look and sound. Here are some of his conclusions.

We used to think that the single-mindedness of the American temper expressed itself well enough in the classically varied repetitions that make up the sky line. Each

corporate personality built one tower, and one alone, to add to the sky line.

We hardly think so any more, now that we are less sure what the city as a whole advertises and now that the corporation moves some of its production functions from the industrial town to the suburb, while at the same time it moves its overhead functions, to some degree, from the city to the suburb.

What the city of the future will put

forward as its massed visual message is not, we think, something that will be modeled exclusively on the present. Everything at the moment indicates that the physical surroundings of the city emphasize the escape from it more than the access to it. And very soon the pressure of industrial events will open up new, central spaces that could not have been predicted before.

In Chicago, for example, the process is gradually leaving the Loop as a sort of freestanding hive in the center of a circular twilight zone. New uses of this zone tend to accentuate less intensive uses of the available area, both for population density and for building footage on sites. There is no doubt that open space will increase in this area, but there is doubt about the uses that can be made of it.

It may be too optimistic to expect imaginative use of the emptied space near the city center. Possibly we shall see space that could have been monumental refilled piecemeal. Nevertheless, intelligent critics will continue to ask how urban life is related to urban appearance. Visitors to New York will continue to scorn the massive sordidness of its new East River apartments. Visitors to Chicago will continue to scorn the one-block façade along Lake Michigan, belied by what stands behind it. Frontality remains the poorest urban rhetoric in the world.

WHAT IS AN ARCHITECT?

Dean John E. Burchard and Professor Albert Bush-Brown, both of MIT, have developed a theory that fear of architects comes from not knowing them. Their collaborative study appeared in *Harper's* magazine.

Why do Americans exhibit such a strange reluctance to consult architects? There is, first of all, general uncertainty as to what an architect is. Is he a professional man like a doctor or lawyer, with codes of ethics and performance, whose primary function is to serve the interests of the client and only the client? Is he a businessman intent upon gaining new jobs and protecting economic interests, his own as well as the client's? Is he an artist primarily dedicated to making something beautiful?

At the same time there is a subtle uneasiness that the architect may tend to make things monumental and permanent for an America that wants innovation and change. You will often find him, for example, on a committee formed to save a building that stands in the way of a super-highway, like H. H. Richardson's Allegheny County Courthouse and Jail.

Yet this reservation is seldom as powerful as three beliefs which are held more generally: that architects are expensive; that they may not be technically competent; and that they are no better qualified than any other democratic man to decide matters of taste.

END



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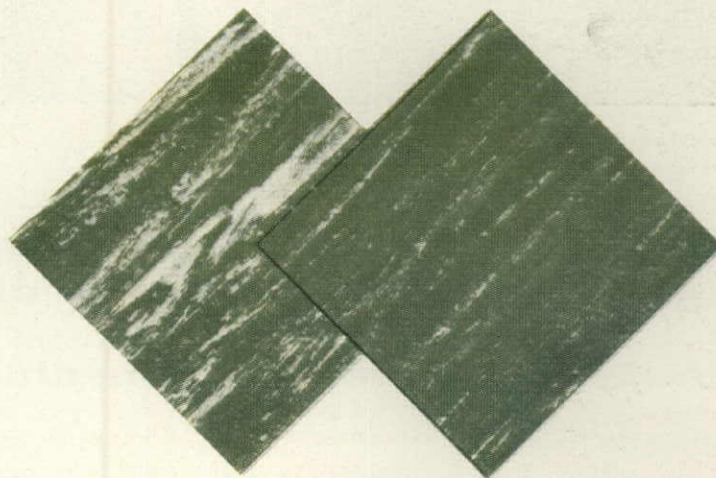
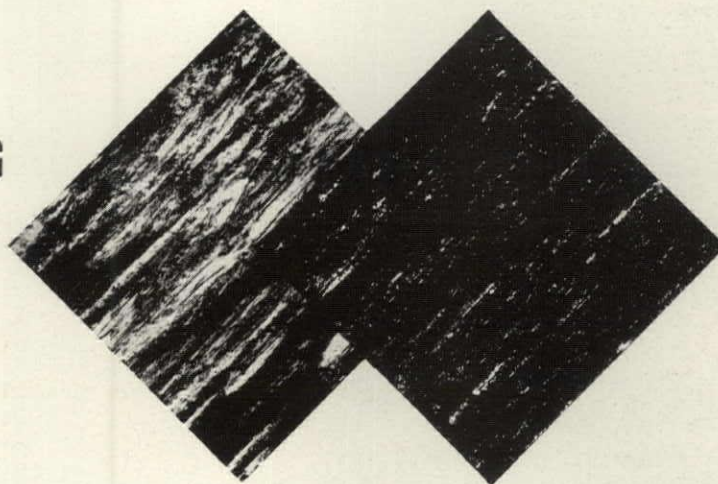
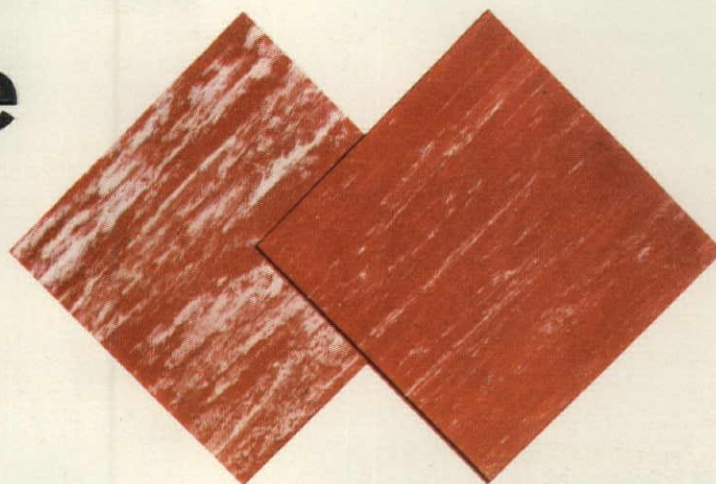
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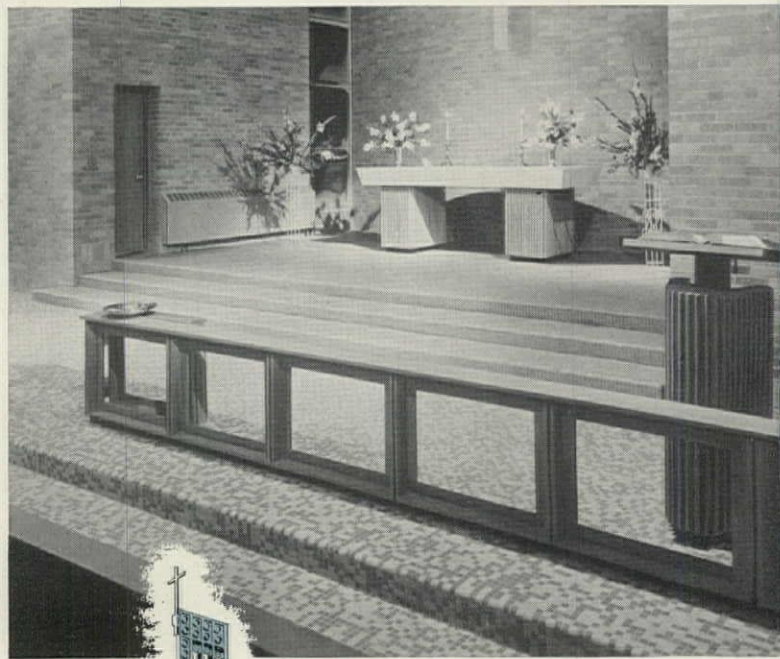
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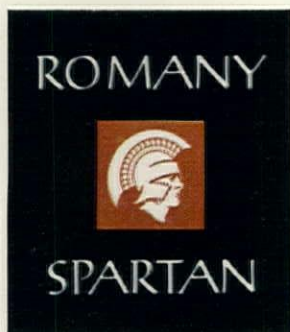
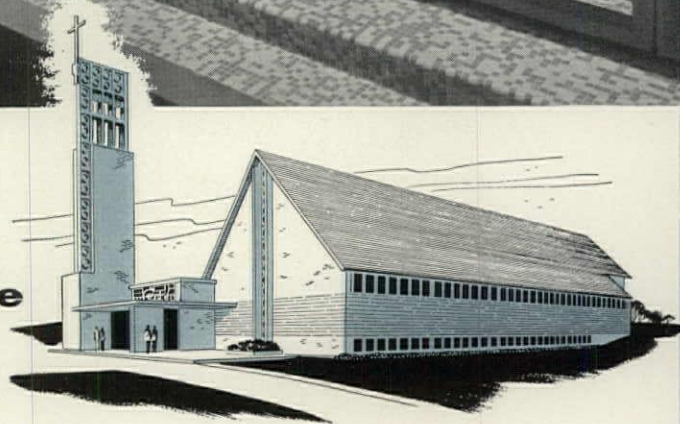
First Methodist Church, Hopkins, Minn.

Architects: Armstrong & Schlichting, Minneapolis, Minn.

Tile Contractor: Drake Marble Co., Minneapolis, Minn.



Romany•Spartan tile lends serene beauty to Minnesota church



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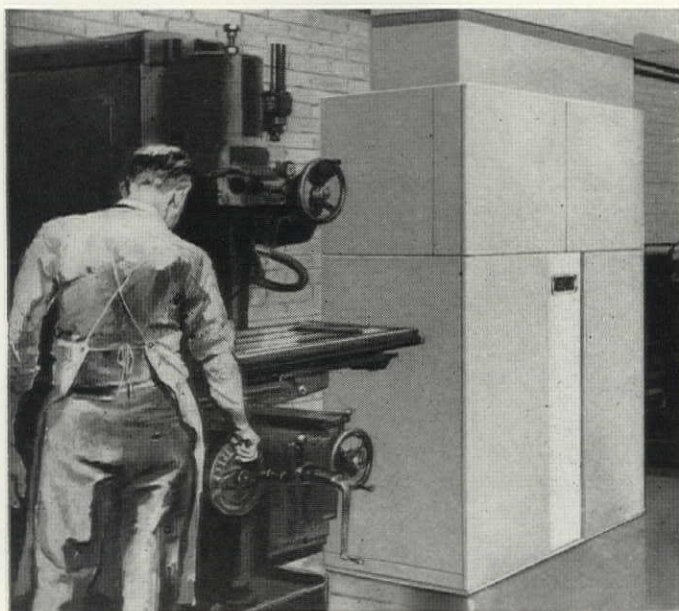
Simplicity of line and imaginative blending of textures and color keynote the warm, friendly interior of the new First Methodist Church in Hopkins, Minnesota. To help achieve this dignified, yet colorful effect, the architects chose Romany•Spartan small unit tile in subdued colors—plain for chancel floor and random pattern for sanctuary.

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mew, each partner will usually have under his wing six or more jobs which may be spotted anywhere within the U.S. or Canada, and may involve a city or county plan, renewal study, a scheme for a shopping center or subdivision development. Every contract is assigned to one of the partners for over-all supervision.

On comprehensive city plans, which generally take three years from start to finish, the partner will pick one of the firm's planners as job captain or field representative to move into the city and set up an office there. The field representative, far from being a mere agent, pulls together the background data—population trends, traffic counts, land-use statistics, economic characteristics, etc.—analyzes the material and drafts the proposals from which the partner will write the final report. (One man, of course, does not do all this; on big contracts there is an assistant job captain; further, much of the actual data assembling is done by the staff of the city plan commission and other city departments and by locally recruited survey teams.)

In the main, the policy is to do as much of the planning as possible at the local level. Thus the partner in charge is likely to be a frequent commuter for as long as the planning process goes on. The chief engineer will come out, too, to work on proposals for streets and public works, and so will the firm's chief designer, Claire Avis, if design problems are involved for schools or civic

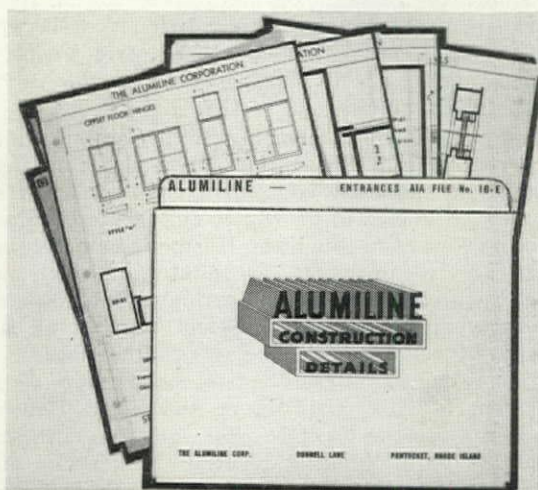
centers. (Most architectural work, however, is on private development contracts rather than on city plans.) Writing of the final report, which usually appears in sections over the three years, drafting of maps and charts, and printing are handled in the St. Louis headquarters.

While the price of a Bartholomew plan will vary with the size of the community and the amount of work, a city of 100,000 people can expect today to pay about \$75,000 for a comprehensive plan. The firm's exact fee will be figured in one of two ways: 1) on the basis of a direct cost estimate—man-hours, travel, living expenses, printing, and materials—plus overhead (about 30 per cent of total costs) and an undisclosed percentage for profit; or 2) on a cost-plus basis of two, or two and one-half, times direct salary costs, plus living, travel, and material expenses. (Cost-plus is usually used on those city jobs where precise estimates are difficult; it is also applied to most private contracts.)

For most of the postwar period, the firm's gross has been running between \$500,000 and \$700,000 a year, with about one-half of this coming from city plans and the rest from military and private work. In 1956 and 1957, though, a heavy amount of classified military planning in the Pacific boosted the total take to \$1.4 million and then to \$2.2 million. The expectation is that 1958 will hit about \$1.5 million, with new highway work making up for some drop-off in military volume.

Exactly how much of this gross income is carried to profit is not known, of course. But, considering that

continued on page 160



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The architect had to come up with a solution to the deep, high ceilinging area and he did. He modernized this old-fashioned interior adroitly—made a handsome, well illuminated banking area by running I-beams across the dome, and suspending Litecontrol's integral Luminous Ceiling from the beams. (note small photo.) Lamps may be easily serviced from the catwalks.

The diffusing medium (upper photo) is plastic grid louvers. Beauty of this material is that it is easy to work with (it was cut "tailor-made" around the curve of the soffit) . . . it is lightweight . . . translucent . . . and has the functional low brightness look with high light transmission onto the work surfaces. The shielding angles are noteworthy — $45^{\circ} \times 45^{\circ}$.

RESULT: A lighting job of overall distinction.

Whether you are starting "from scratch" or are remodelling, have a "problem" installation (or not), there is a way to do it better with LITECONTROL.



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ELECTRICAL ENGINEER: Martin E. Keane Associates, Boston, Mass.

ELECTRICAL CONTRACTOR: Walter Reddin, Portsmouth, N. H.

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FIXTURE: Litecontrol Luminous Ceiling, using molded plastic grid louvers. Slimline single-lamp strip fixtures on 24" centers.

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Work area on tellers' counters, average 63 foot-candles in service. Overall average throughout room, 52 foot-candles in service.


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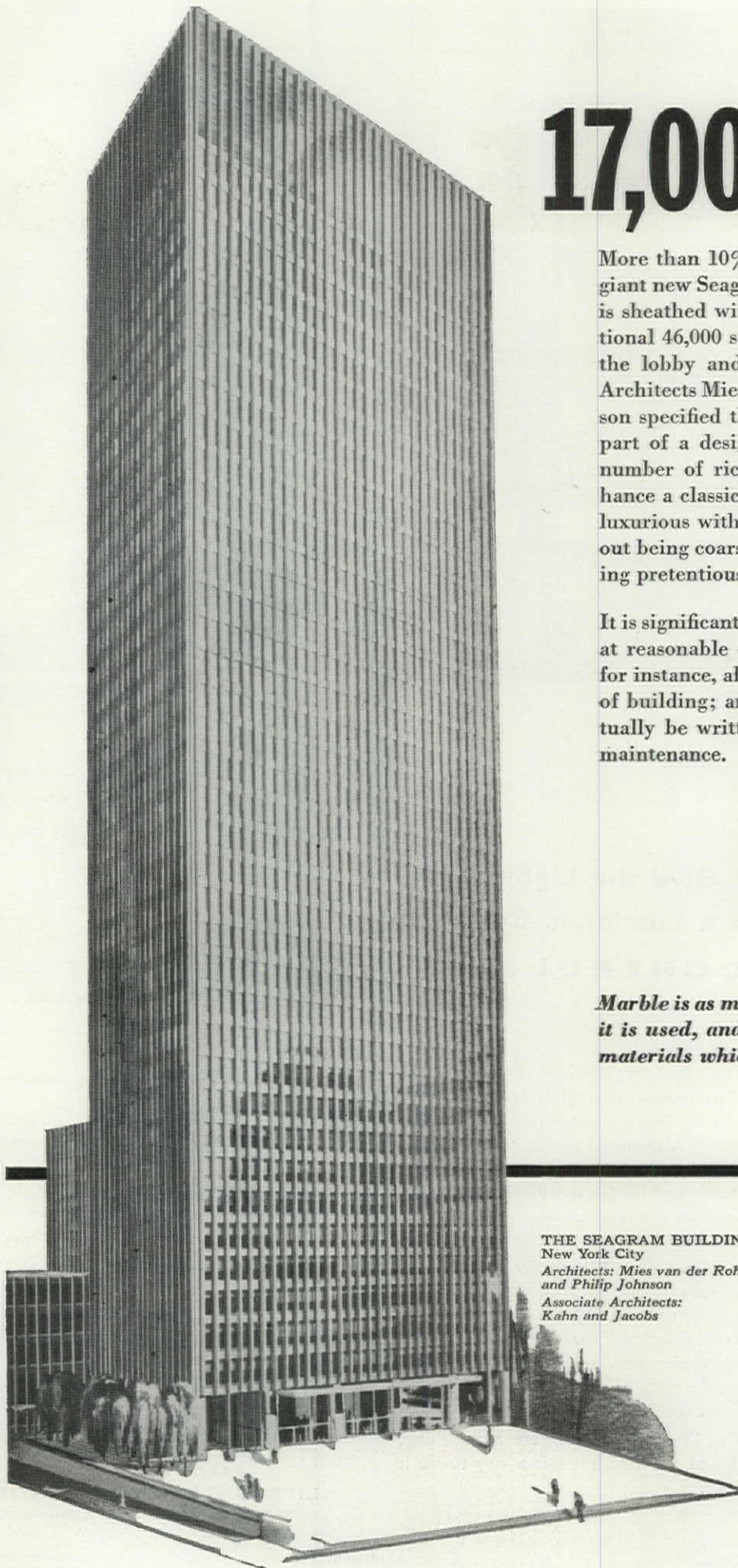
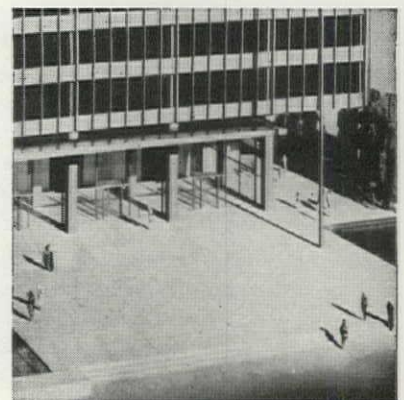
More than 10% of the exterior surface of the giant new Seagram Building in New York City is sheathed with marble panels, and an additional 46,000 square feet of marble is used in the lobby and throughout the upper floors. Architects Mies van der Rohe and Philip Johnson specified this great quantity of marble as part of a design plan which utilizes a small number of rich, compatible materials to enhance a classical simplicity. The total effect is luxurious without being gaudy, modern without being coarse, and monumental without being pretentious.

It is significant that these effects were achieved at reasonable cost. The vast areas of marble, for instance, absorbed less than 3% of the cost of building; and this small amount will eventually be written off through savings on low maintenance.

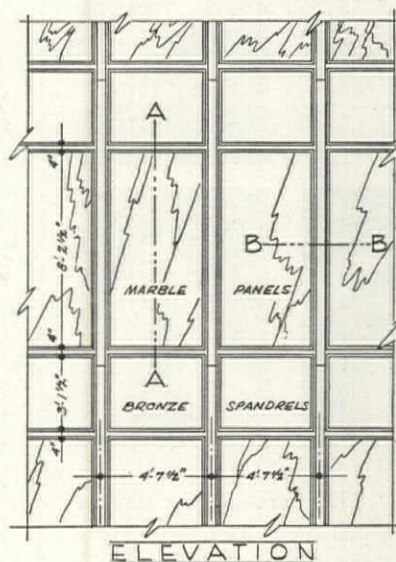
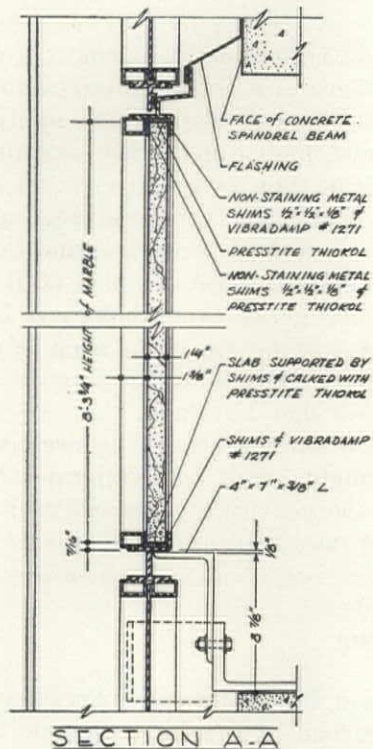


Marble is as modern as the building in which it is used, and more economical than most materials which might be used in its place.

THE SEAGRAM BUILDING,
New York City
Architects: Mies van der Rohe
and Philip Johnson
Associate Architects:
Kahn and Jacobs



OF MARBLE PANELS

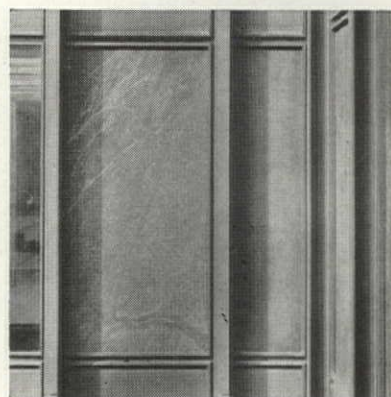
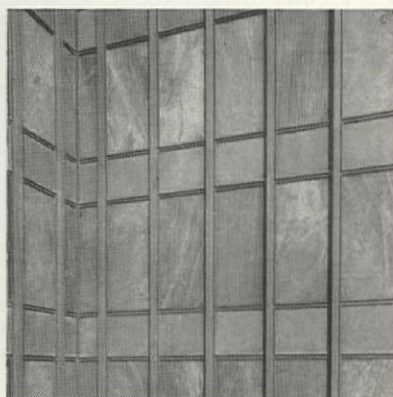
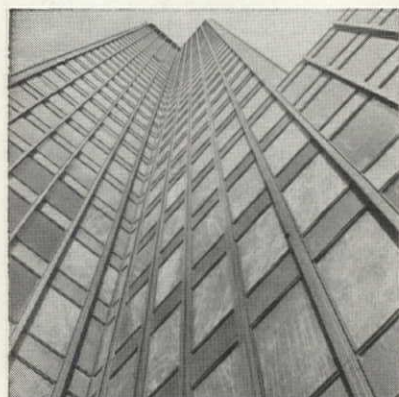
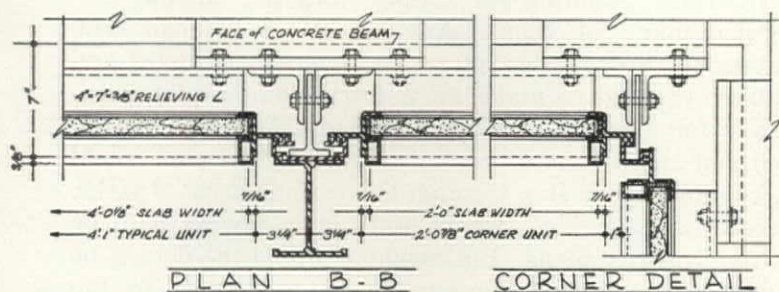


The Marble Institute of America has developed a wealth of information on marble which is available on request by writing:



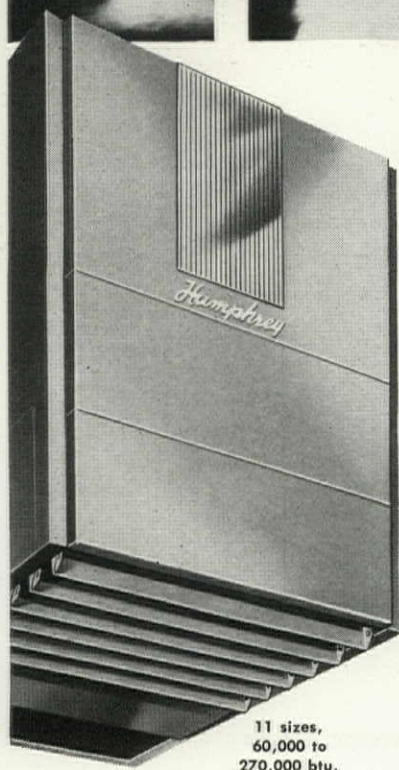
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HARLAND BARTHOLOMEW *continued*

Bartholomew & Associates is a cost-conscious operation, the net probably has been at least as good as that for most successful architectural practices, somewhere, say, between 20 and 25 per cent of gross income. Whatever the precise amount, about 20 per cent of profit has gone into year-end bonuses and into percentage payments to the firm's 12 associate employees. The rest has belonged to the partners (all of whom, incidentally, draw small fixed salaries).

Typically, the firm is not out actively looking for work even today. While there is a feeling that private city planning has probably passed its peak—so many cities now have been planned, and so many are continuing to set up planning staffs of their own—there is no aggressive move into new fields. The firm is expecting more highway work under the federal program, and Pollard's elevation to partner status reflects this. But it is not thinking yet of specific goals, even though it believes highway engineering will be its main area of future growth. In general, its attitude at the moment seems best conveyed by Eldridge Lovelace: “All of us find what we are doing so extraordinarily interesting that none of us have thought about something we are not doing. All of us are so heavily involved in each job as it comes along that we are not looking for a new challenge.”

Challenge of the future

Yet the challenges in U.S. cities are everywhere. And the final, telling criticism of the Bartholomew type of city plans—basic as many of their engineering features are to any planning—is simply that they do not recognize many of them. Any interested layman who ploughed through the 100 or 200 pages, plus maps and tables, that go to make up a Bartholomew plan summary for even a small-sized city might well come out without any firm idea of what was said. The plan would take him step by step through the various areas—parks, streets, zoning, etc.—which state laws say have to be covered in city plans. But nowhere would the details be added up, the parts become humanly related to the whole. And nowhere could the hopeful citizen find the truly bold proposal or the exciting vision of what the city might be if it really tried.

To take a specific plan, Bartholomew & Associates in 1955 completed a comprehensive study for Cloquet, Minn., a small city (population: 10,000), but one of the country's most important centers for wood products processing. In all, the summary of the plan runs to 100 pages, not including maps, and of these about one-third are given over to a recital of the city's history, a routine description of its economy and population, and some projections of growth. The plan itself starts on page 28 and almost immediately launches into a listing of highly specific proposals: changes in the zoning ordinance and street plan (“the minimum required to correct inadequacies”); recommendations for parking (mainly shifts in meter timing and arrangement and the creation of

continued on page 164

This school was a top award winner in the Fifth Annual Competition for better school design sponsored by the School Executive magazine.

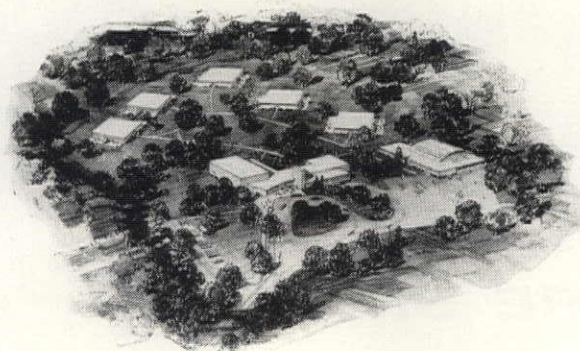


WILBERT SNOW ELEMENTARY SCHOOL, MIDDLETOWN, CONN.

Architect: Warren H. Ashley

Contractor: Wadhams & May Company

HOPE'S WINDOWS were chosen for this award winning school



● An unusual feature of Wilbert Snow School is that administrative offices, cafeteria facilities, a large gymnasium and the classroom units (see insert above) are all housed in separate buildings as shown in the small aerial view at left.

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some off-street lots); public buildings, schools, parks, and the appearance of the city ("good appearance of the whole city is largely dependent upon the proper design and maintenance of streets"). The study concludes with a proposed capital spending program, which is about as close as it comes to any over-all summing up, and a plea for public understanding and support.

Even from a reading of many Bartholomew plans, it is impossible to identify them with any recognized philosophy of planning. ("If we have a doctrine, it is to have no doctrine," says Partner Harry Alexander.) This, however, is probably more of a strength than a weakness. The fact that Bartholomew plans are so thoroughly unopinionated, that they so largely avoid the more controversial social and esthetic aspects of planning, while seeming to fulfill all requirements, makes them particularly palatable to city administrators. "Practical" and carefully costed, they are not likely to cause trouble for anyone, and, indeed, they could not be better designed to discourage headlines.

"If you object to Bartholomew's approach," says Planning Critic Grady Clay, speaking of the recently finished Bartholomew plan for Louisville and Jefferson County, "you would describe it as one of 'preliminary compromise.' If you approve it, you might call it 'preliminary consent of all parties.' Either way, with the exception of the proposal for a combined park authority,

the reports are merely a summary of what people in Louisville are willing to do at the moment, not what ought to be done or could be done beyond that."

But since the forties, a new era has been emerging in U.S. city planning. The outside expert report is no longer considered enough and, indeed, it is now seen to have serious drawbacks: its lack of community participation and its consequent failure to recognize fully the political and social influences that have to be taken into account to make an effective plan; its label as a foreign product imposed from outside; and its one-shot status and lack of continuity.

Beyond this, the very aims of planning have shifted. The City Efficient, with its concentration on the physical, is today far less important than the City Effective, the metropolis which must adjust to its human and economic problems in order to survive. Increasingly, the city is having to be thought of as an environment, and this approach seems almost essential if the country is to remedy its cultural and educational shortcomings in the years ahead.

Thus, for Bartholomew & Associates, the future is likely to be quite different from its past. In its youth, it made significant contributions to the cause of planning when the fight was plan versus no plan; it helped to pioneer and refine techniques; and it unquestionably kept cities from being in a far greater mess than they would have been with no plan at all. The question now is whether the firm can adjust to a new role. If it can't, there is always the highway business. END

HOW LONG IS A LONGSPAN JOIST?

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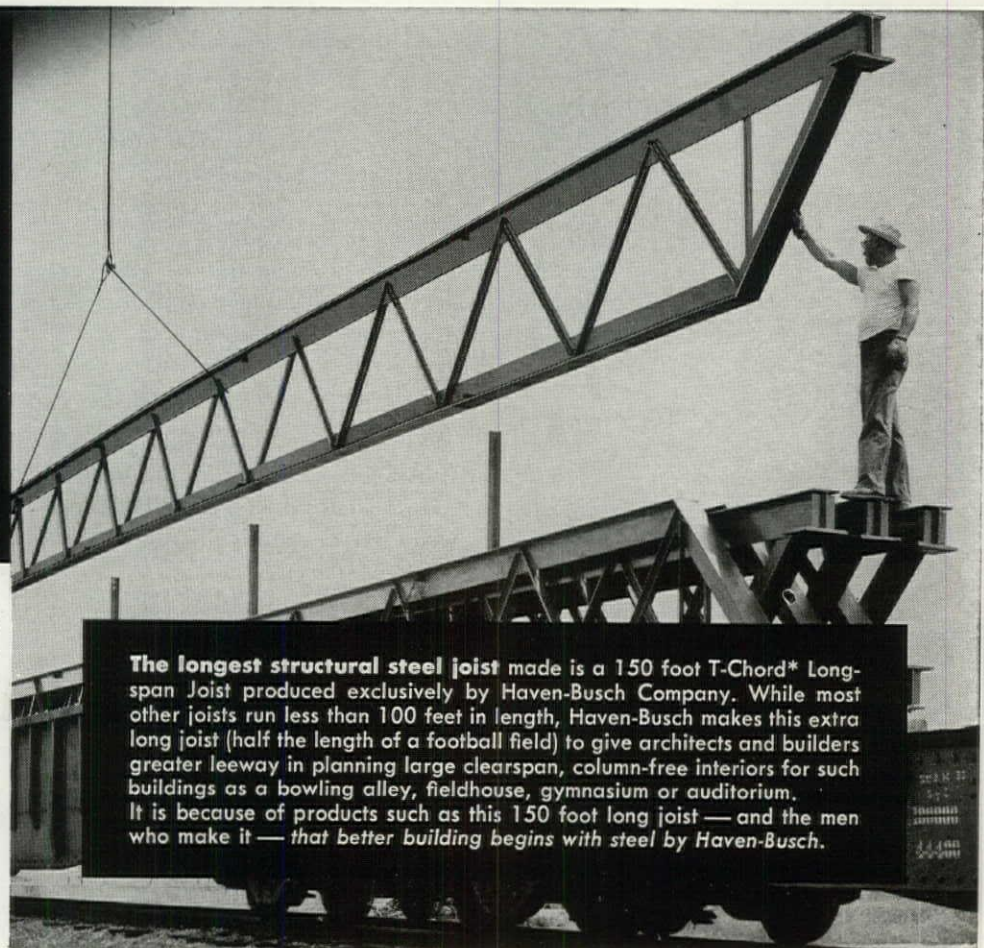
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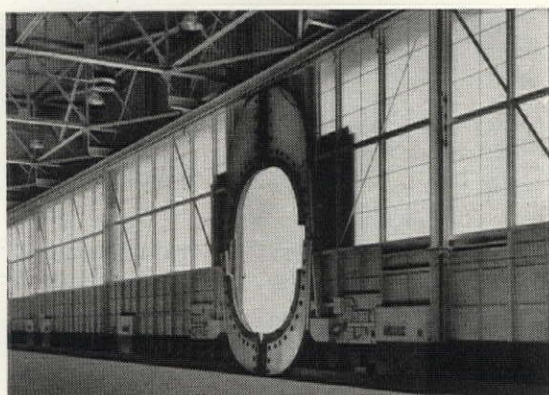
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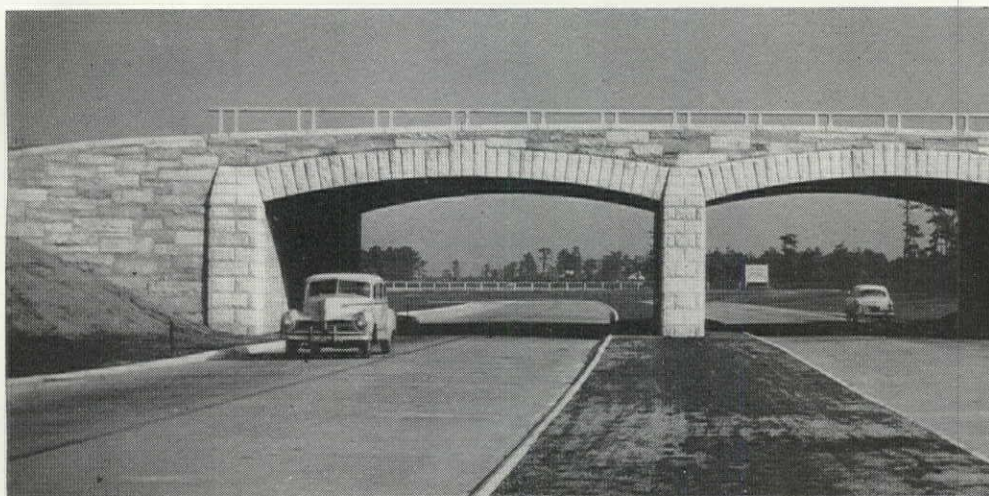
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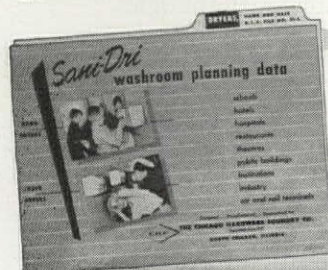
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Designed to insure faster delivery at lower cost, MARMET entrances are engineered to meet all conditions. Shop drawings are eliminated... saving time and allowing the construction of the masonry opening to proceed. Clip anchors furnished with the frame sections, allow the aluminum to be adjusted to the masonry opening.

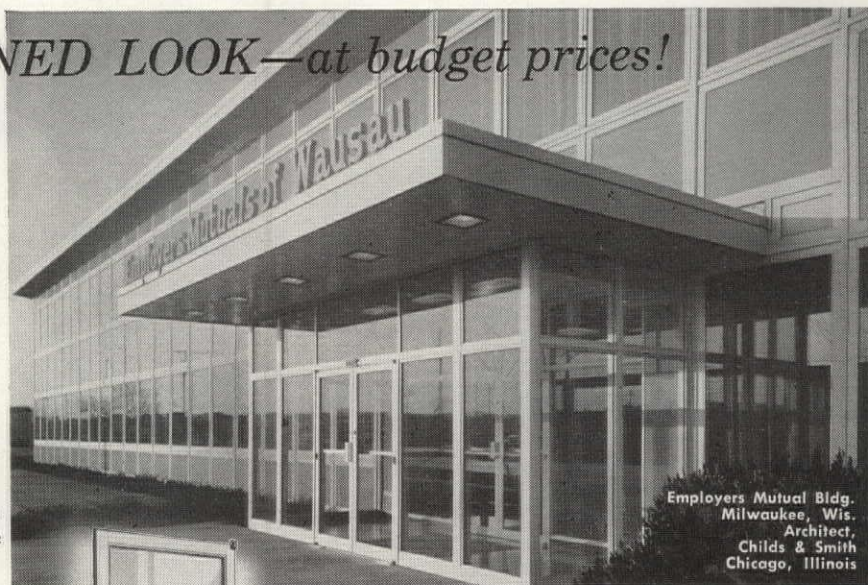
Both doors and entrances have a lustrous aluminite finish (etched in a special dip treatment) that "stays new" indefinitely... never requires painting.

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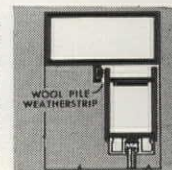
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Tubular door sections plus a Thru-Weld process that fuses the members with complete penetration of the metal, provides great strength, maximum glass area... and leaves no halos, no exposed screws... only a neat hairline joint.



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Plastic backed wool pile weatherstripping mounted on the door frames assures effective protection against the elements.



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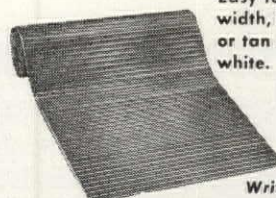
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Same exclusive "V" Rib. Easy to clean! 48" or 36" width, in black, red, green or tan — NIRU in grey or white.

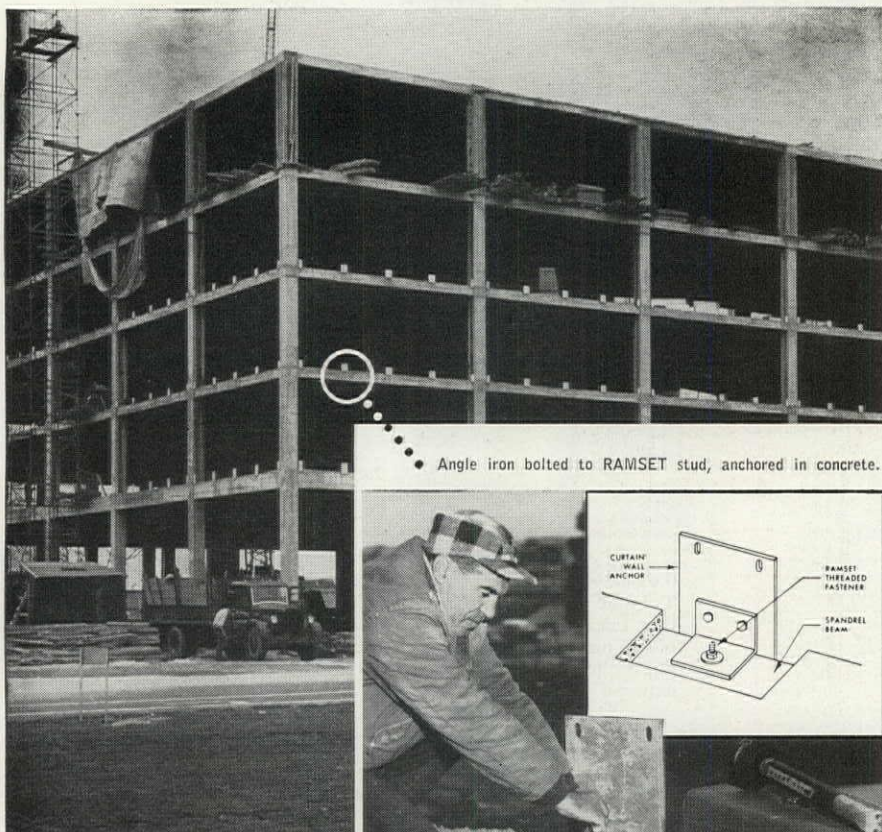


WINDSHIELD WIPER
ACTION

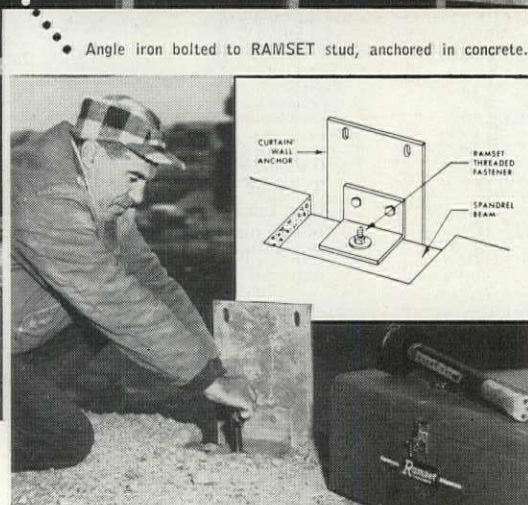
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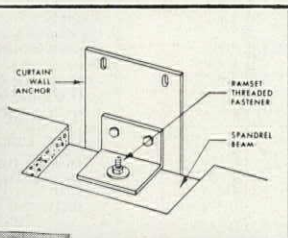
WEAR PROOF MAT CO. 2156 W. FULTON CHICAGO 12, ILLINOIS (DEPT. A)



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Architect: I. M. Pei Associates
General Contractor: George A. Fuller
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Angle iron bolted to RAMSET stud, anchored in concrete.

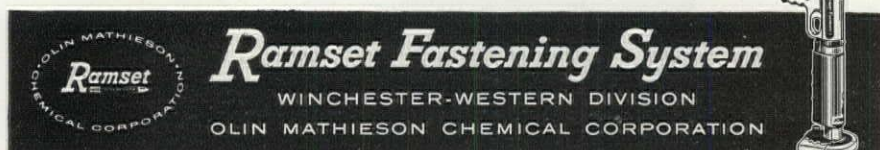


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For full details about RAMSET and its applications to your problems, call your nearby RAMSET dealer, or write for free new catalog, ready now.



12157-B BERE A ROAD

CLEVELAND 11, OHIO



THE CITY

continued from page 78

million per square mile. The cost of razing a square-mile slum and rebuilding it for residential purposes is in terms of \$200 million to \$300 million per square mile.

For the U.S. as a whole, \$1,865 billion dollars—almost \$2 trillion—must be expended by public and private enterprise during the period 1958-1970 to meet the needs for new construction, rehabilitation, conservation, and maintenance.

The total gross national product of the nation as a whole for the period to 1970 has been estimated at \$7 trillion. More than 25 per cent of this amount will be required for total urban renewal expenditures, if minimum acceptable standards are to be met.

Federation or anarchy

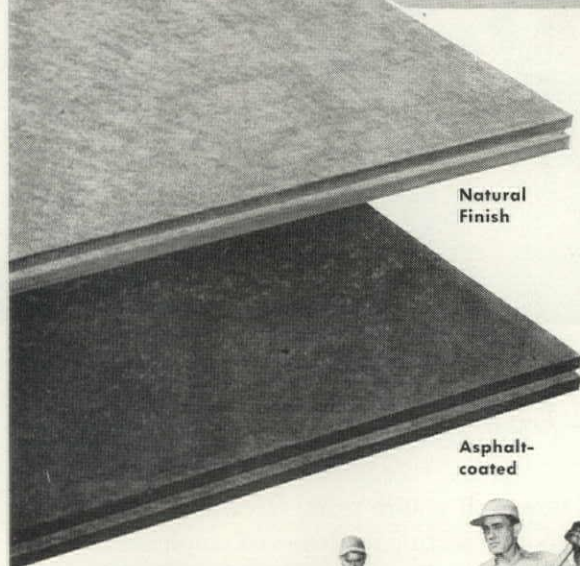
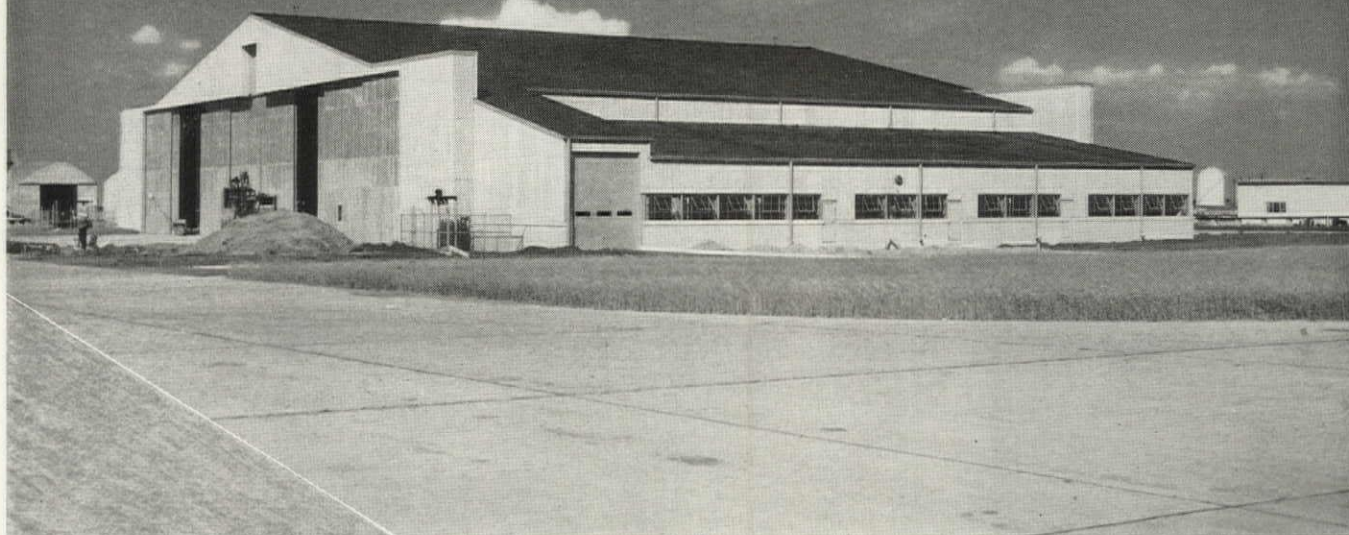
Obviously, new means must be sought not only to reduce urban renewal requirements but to redirect consumer interests. Judging by the present-day attitudes, the problems of city deterioration will not be met without reorientation of value standards, policies, and laws toward new choices and decisions. Improved technology can provide new instruments; without new philosophy, the instruments would not be used.

There must be recognition that our metropolitan areas are threatened by anarchy resulting from the paradox of governmental proliferation, yet being without governmental responsibility for problems common to all of the area. There is uneconomic duplication and overlapping in government, and in the provision of facilities and services. Some forms of centralized responsibilities for collection of data, identification of problems, planning, programming, financing, and execution must be established. Some reasonable form of mutual aid, confederation or association of governments is required.

Should there be further delay, the costs will be greater. Should there be early recognition of the common problem, adequate research, consumer re-education, comprehensive planning and programming, and pur-

continued on page 172

MINOT AIR FORCE BASE GETS ROOF INSULATION VALUE THAT LASTS!



INSULATION ROOF BOARD

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Gold Bond Insulation Roof Board was used at the new Minot Air Force Base, Minot, N. D. for pitched roofs on hangers and for flat administration and service building roofs. Here's why:

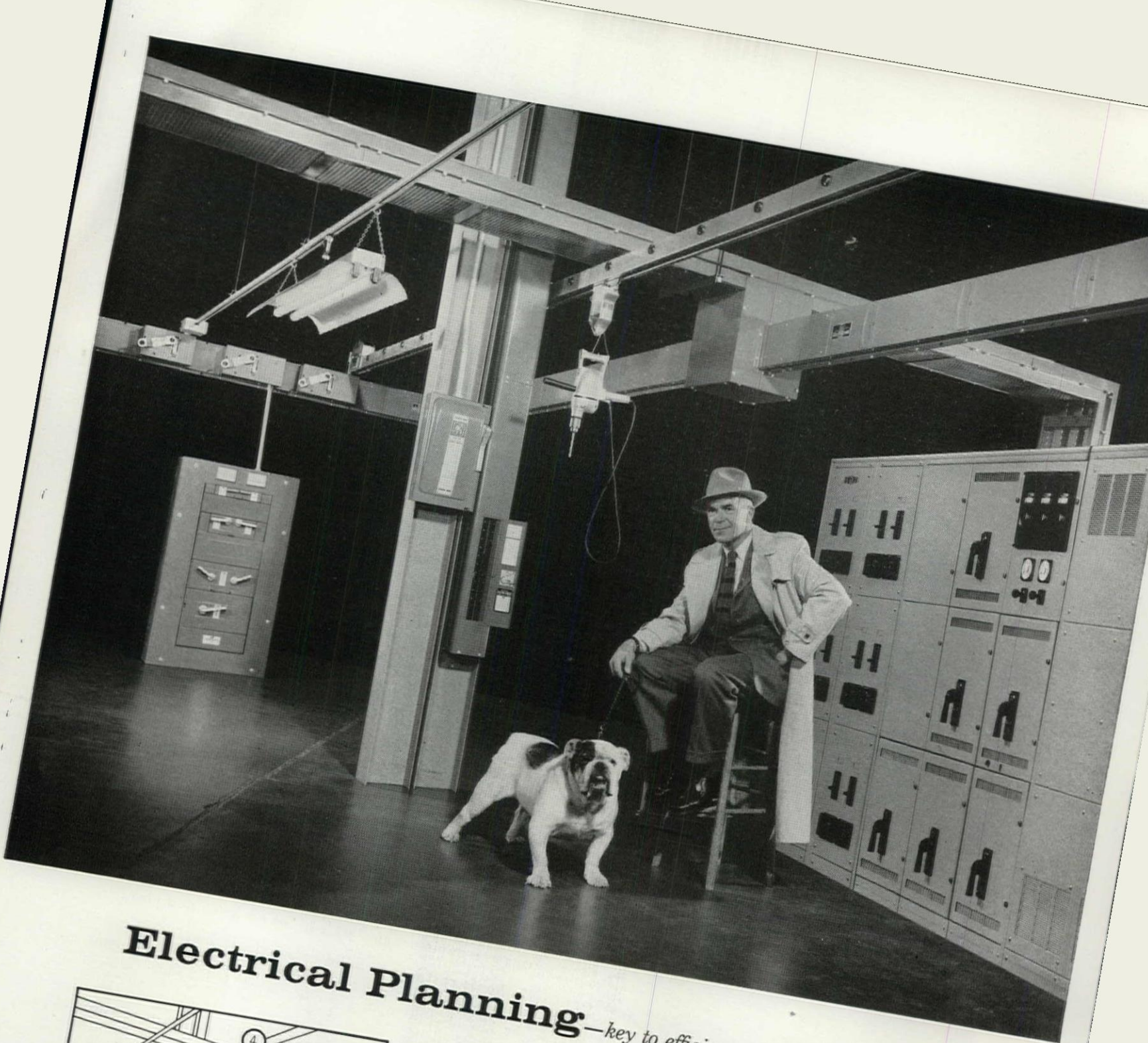
1. Roof insulation value gets maximum protection because Gold Bond's unique "Fiberlok" fabricating process makes the roof board highly resistant to compression from workmen's feet and wheelbarrows during construction. *And* it cuts to a minimum any "soak-in" of hot pitch or asphalt.

2. Roofs cost less to build because Gold Bond Roof Board is rigid, easy to handle; its smooth surface speeds mopping; its low absorption of pitch or asphalt holds down cost of these materials.

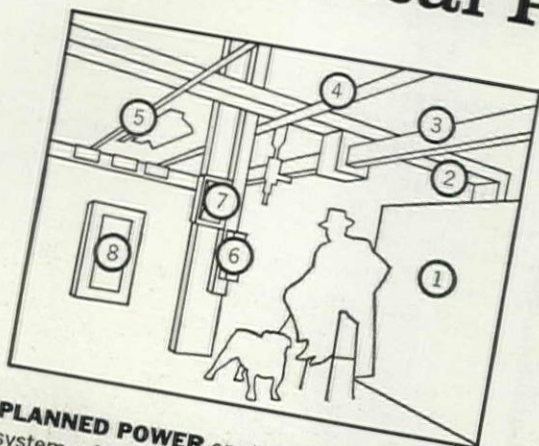
3. Gold Bond Insulation Roof Board is moisture-resistant because the fibers are treated with water-resistant rosin or asphalt. Available with treatment to protect from termites and dry rot; and with full asphalt coating for still more moisture-protection if needed. You can specify square, shiplap or off-set edges... thicknesses to meet any specified "C" value.

For further information, call your Gold Bond® representative or write National Gypsum Company, Dept. AF-28, Buffalo 2, New York.

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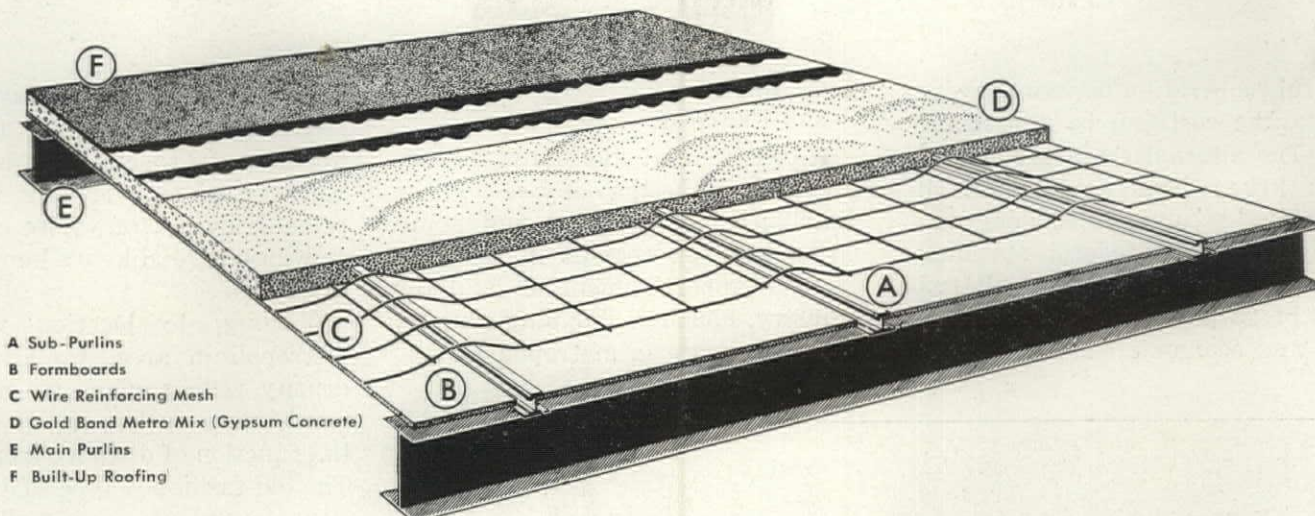
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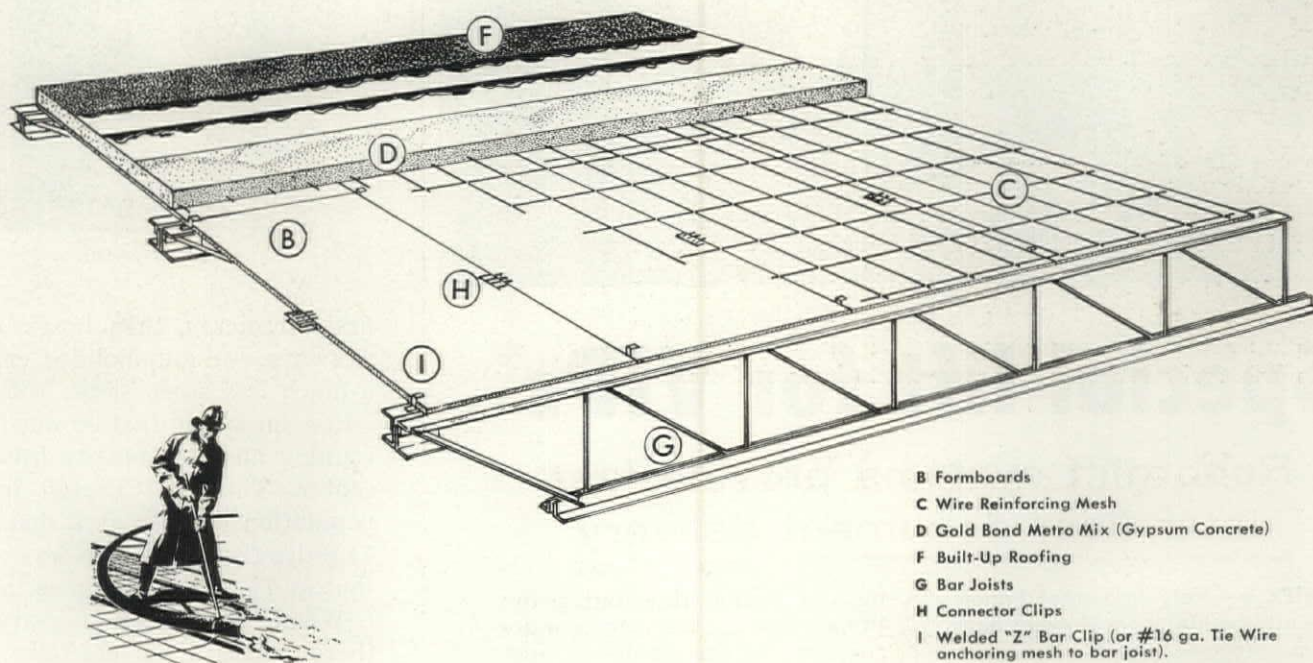


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- A Sub-Purlins
- B Formboards
- C Wire Reinforcing Mesh
- D Gold Bond Metro Mix (Gypsum Concrete)
- E Main Purlins
- F Built-Up Roofing

Design with or without sub-purlins with Gold Bond "Firefighter" Roof Decks



- B Formboards
- C Wire Reinforcing Mesh
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Either way, Gold Bond® "FIREFIGHTER" Roof Deck provides an incombustible, monolithic roof slab that goes on fast and lasts with rock-like ruggedness. For detailed specifications, consult Sweet's Catalogue 2g/Na—or write Dept. AF-28, National Gypsum Company, Buffalo 2, New York.



NATIONAL GYPSUM COMPANY

poseful cooperation between governments, the cost can be appreciably less. The alternatives are unacceptable: urban bankruptcy, state-administered receiverships, along with vastly increased federal spending. Beyond these are the final alternatives of social disorder, disintegration, and economic chaos.

Colin Clark
Oxford University

I believe that the most serious problem will be that of *location*, the distribution of industry and population between regions in the U.S. and the apportionment of land for industry, housing, shopping centers, and open space in metropolises.

In the location of industry there seems to be a real danger of disequilibrium, of "to him that hath shall more be given," leaving vast "depressed areas," of whose cause and of whose cure alike we know far too little.

Turning to location within a metropolitan area, we always find density falling off as we move outward, more or less as an exponential function of distance from center. The old-fashioned type of industrial city, dependent upon walking and horse transport, shows a "steep" density slope, i.e. high densities at the center falling off very rapidly as we proceed outward, with open country only a few miles away. But the new pattern of settlement, using



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first streetcars, then buses, electric railways, and automobiles, called for a much less steep slope, with population spreading farther out into the country and the density less at the center. Thus in Chicago in 1950, population density at a distance of 14 miles from the Loop was equal to that at 7½ miles' distance in 1910.

When population density falls, there ensues a fall not only in land values but also (as a survey conducted by Columbia University for the Mayor of New York showed) in the real value of buildings. After allowing for changes in the purchasing power of money, land values were found to have been falling heavily since 1929; and new construction was not keeping pace with deterioration. Finally, with places of employment, recreations, and department stores moving to the suburbs too, the movement becomes cumulative, and the final disintegration of the city is at hand.

continued on page 176

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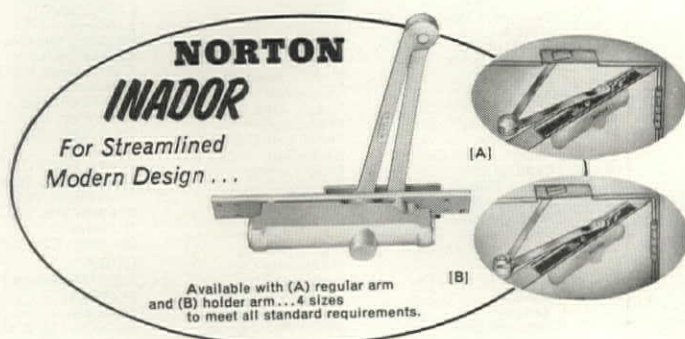
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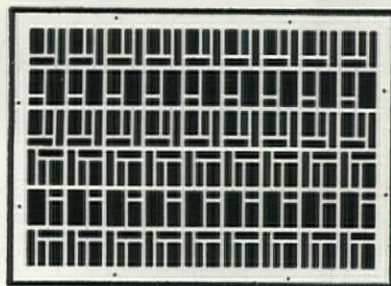
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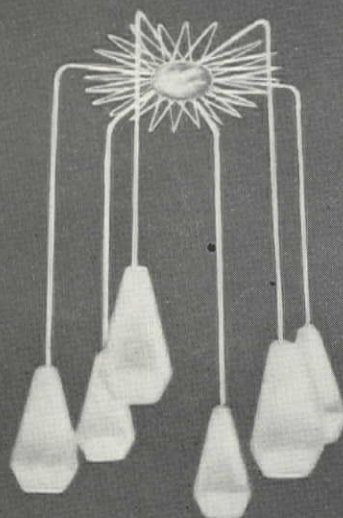
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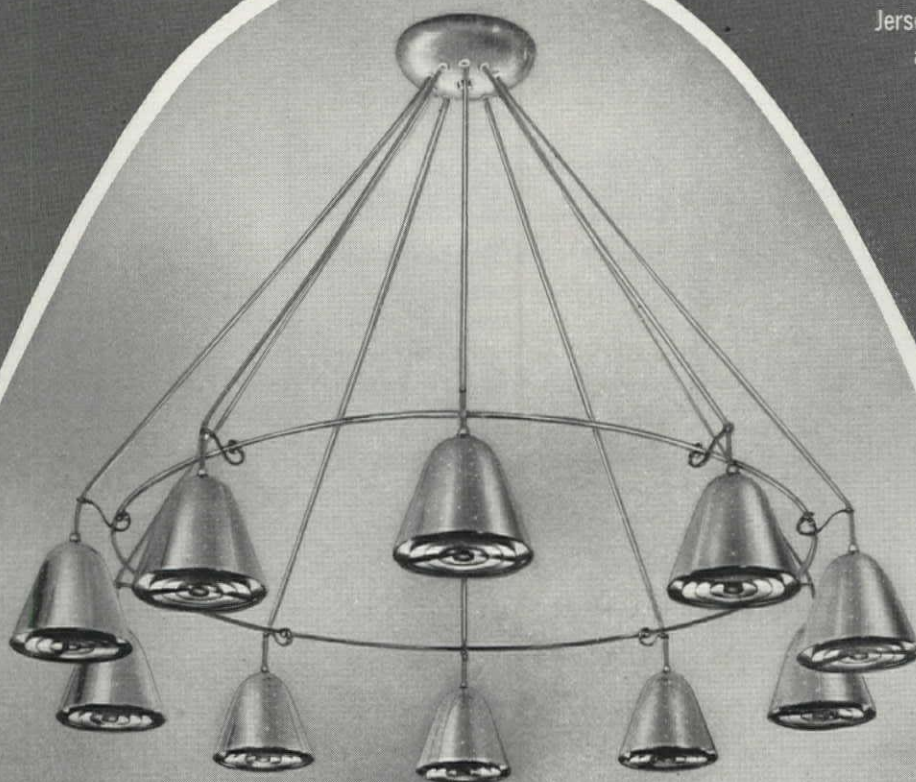
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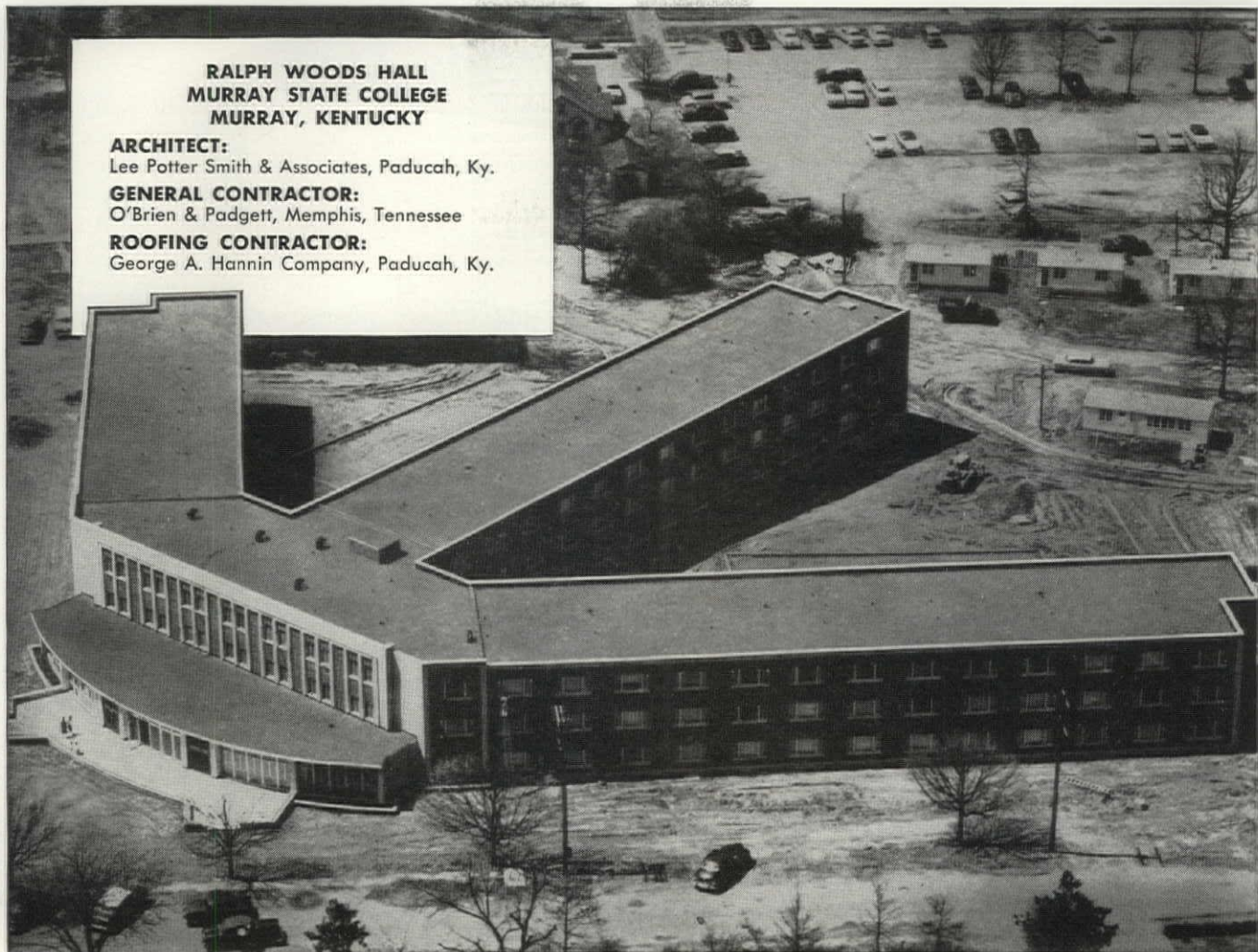
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MURRAY STATE COLLEGE
MURRAY, KENTUCKY**

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Lee Potter Smith & Associates, Paducah, Ky.

GENERAL CONTRACTOR:

O'Brien & Padgett, Memphis, Tennessee

ROOFING CONTRACTOR:

George A. Hannin Company, Paducah, Ky.

On Murray State College's new dormitory . . .

A RUBEROID BUILT-UP ROOF

Was engineered to fit the job

Ralph Woods Hall, the new dormitory for women at Murray State College, has a unique design feature. Three dormitories are joined into one by connecting three wings with a large circular lobby.

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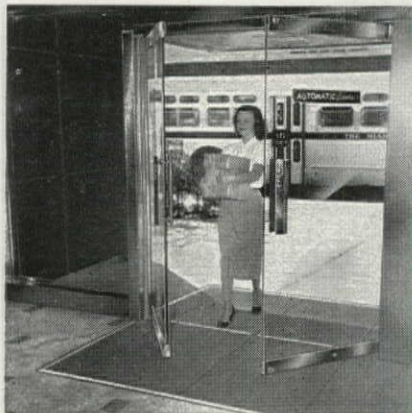
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Asphalt and Asbestos Building Materials

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Automatic Door Openings Rate Consideration of Store Planners

An important part of any store front is the door openings. Make them automatic and you get functional efficiency *that is good for business*. Where store doors are operated automatically by STANLEY MAGIC-DOOR controls, customers find shopping easier and more pleasant . . . so that's where they do business.

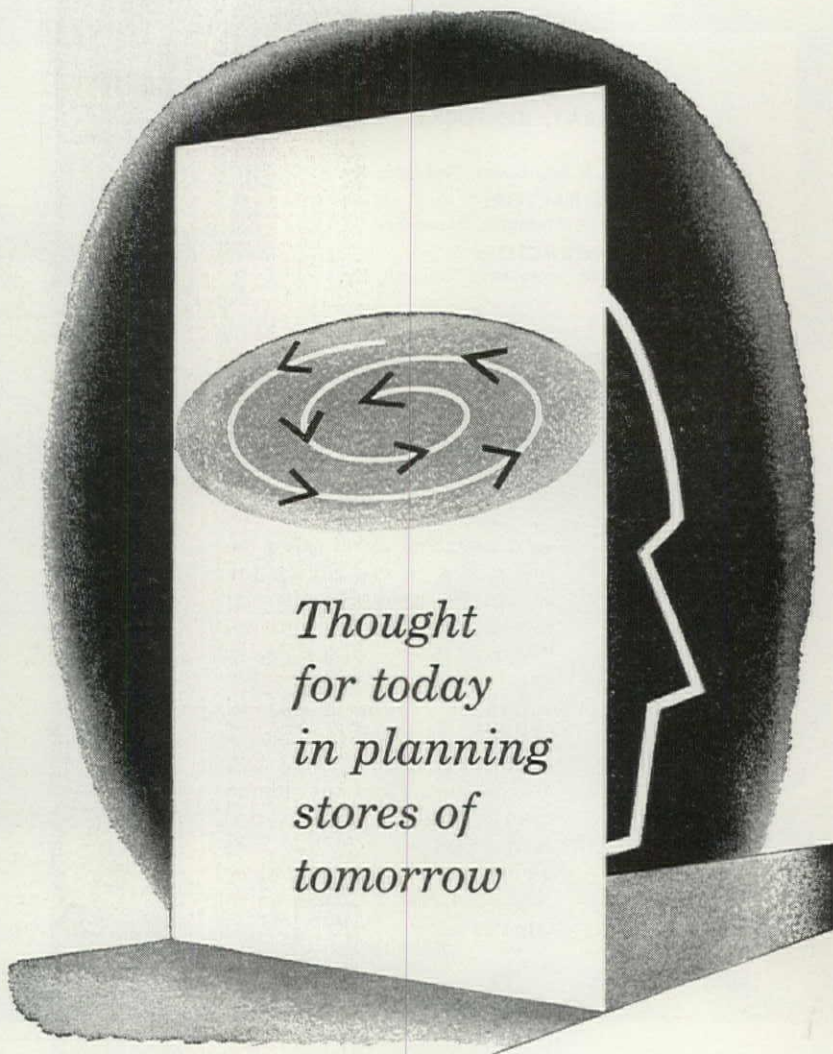


In the complete MAGIC-DOOR line, the controls most suitable for the operation of store entrance doors are STANLEY MAGIC-DOOR carpet or photoelectric controls. Because of the growing trend toward more colorful store entrances, STANLEY MAGIC-DOOR carpets are available in a range of weather-fast, traffic-resistant colors.

MAGIC-DOOR operators may be visible or concealed overhead or in the floor. *They meet every architectural requirement of space and appearance.*



When planning automatic door openings for tomorrow's stores, remember that MAGIC-DOOR has been the leader in the field for a quarter of a century. Write for complete information and the address of your MAGIC-DOOR authorized representative.



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MAGIC-DOOR Controls

Design functional efficiency into your store plans by including automatic door controls. And in making your selection *look to the leader in the field . . . STANLEY MAGIC-DOOR.*

MAGIC-DOOR controls are products of a quarter-century of experience. In thousands of installations, they have proved dependable.

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A continuing review of international building

STRIKING IN CANADA

In Bagotville, Quebec, about 100 miles north of Quebec City, Architect Paul-Marie Côté has designed a jagged church that strikingly interrupts the flatness of a riverside landscape. The roof of St. Mark's Church is formed by steep, thin planes of reinforced concrete, "folded" to give them great strength. The building is taller at the glass-enclosed entrance than at the altar end, so that, from the inside, the view along the nave is progressively restricted, finely focused on the circular altar.



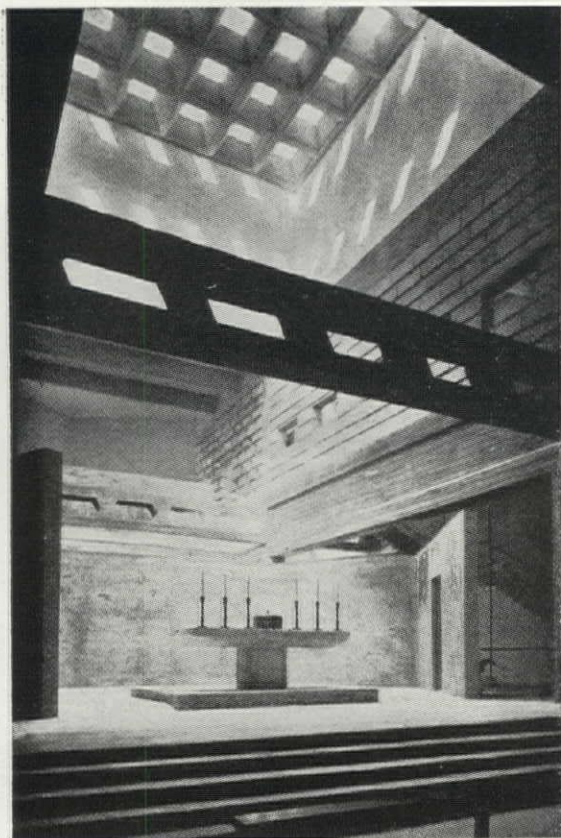
COURTESY "RAIC JOURNAL"

PROTECTIVE IN ITALY

On the outskirts of Milan, Architects Luigi Figani and Gino Pollini have built a church that combines great structural strength with a mystical atmosphere. Strength is given by massive concrete beams (some of which have the open-web look of U. S. Architect Louis Kahn's structures—FORUM, Oct. '57) and by roughly chiseled stonework.

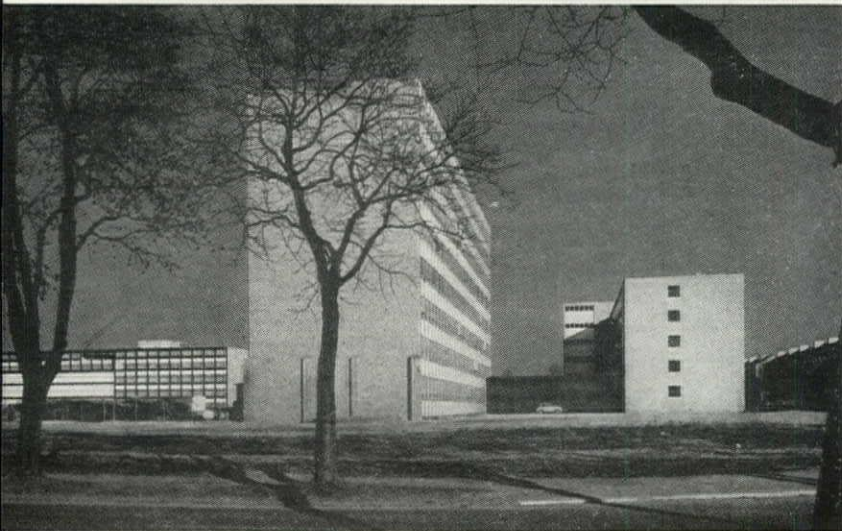
The aura of mysticism results partly from the architect's decision to filter natural light through holes deeply pierced in the walls and roof. Even in the model (below), the solidity of the stone and protective muscularity of the structure can be felt. In the church itself (left) an altar screen reinforces the architecture's sheltering effect.

PHOTOS COURTESY "L'ARCHITETTURA"





PHOTOS COURTESY "BAUEN & WOHNEN"



GERMAN CORPORATE FACE

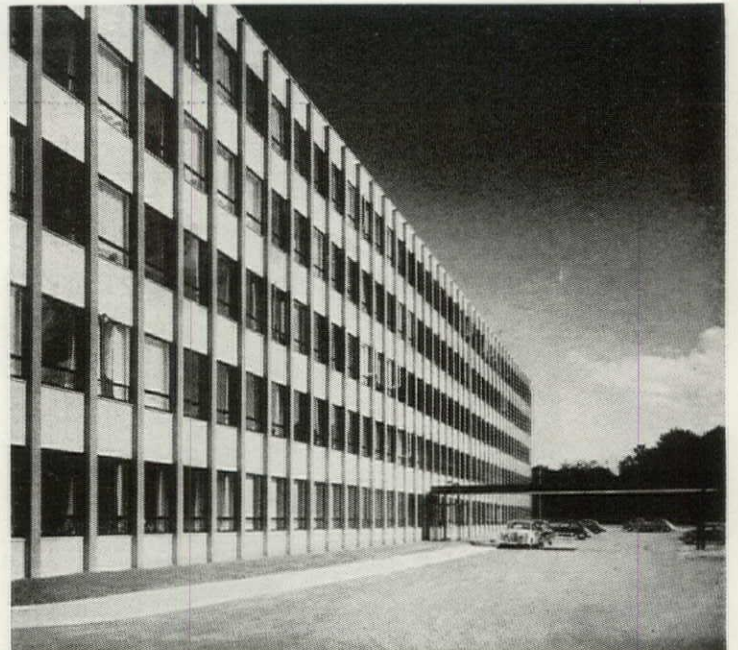
Since 1916, West Germany's Siemens & Halske Co.—now the largest electrical-equipment firm in Europe — has contributed much noteworthy architecture and planning to European building. Somewhat like GE in this country, Siemens early recognized the advantages of enlightened employee relations and advanced industrial design. "Siemens City" in Berlin, built during the period 1932 to 1934, still stands as a statement of what a progressive firm can do in plant construction and employee housing.

One of the company's few operative outposts at the end of World War II was in Munich; and it was in Munich, after years of exploration, that Siemens decided to concentrate its postwar building effort—a program of industrial architecture and planning that ranks with the largest in Europe.

Unlike the highly diversified architectural styles characteristic of the postwar building programs of most European companies, Siemens has sought

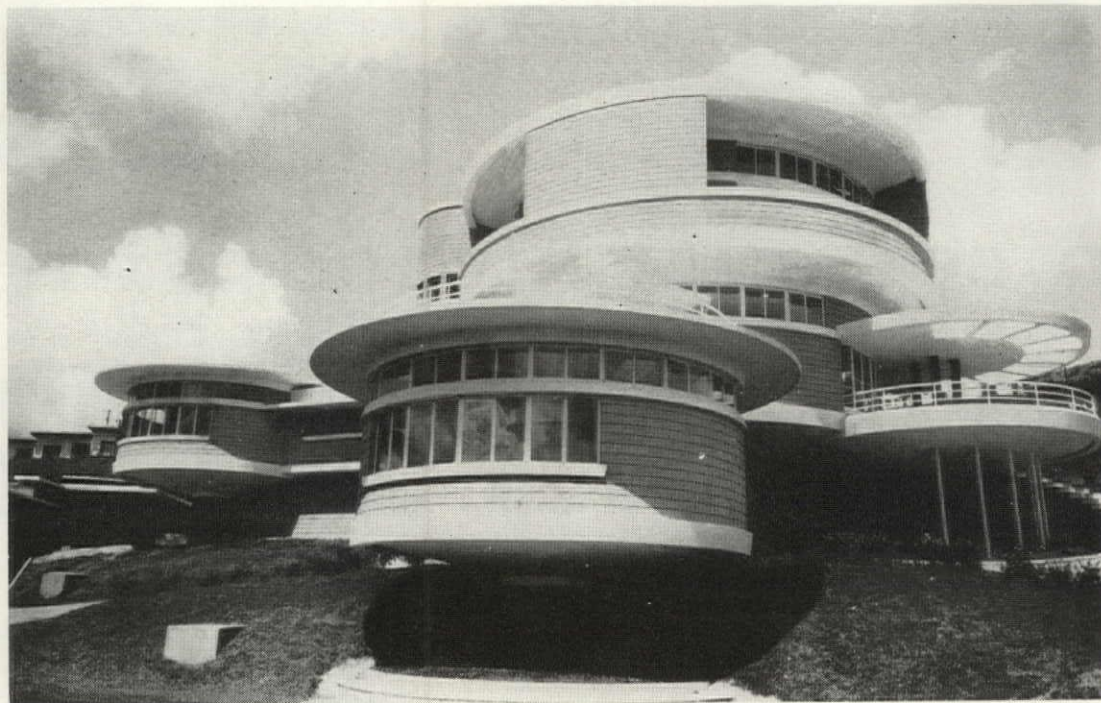
to maintain a strong unity of design (for both aesthetic and economic reasons). The unity is apparent in the buildings shown on this page, despite the variety of their uses. All were designed by Munich Architect Hans Maurer, who worked in cooperation with Siemens & Halske's building division. Largest of the structures is the sway-backed main administration building (1) that has room for ground-floor exhibition areas, an auditorium, and top-floor training rooms, as well as for administrative offices.

The most heavily concentrated Siemens grouping will be on Munich's Balanstrasse (2), where three factory buildings have already been constructed. Clearly related to the main administration building are the new management offices on Hofmanstrasse (3). Most delightful of the buildings is the nearby workers' cafeteria and lounge (4) that manages to harmonize with the other buildings, while adding rhythms of its own.

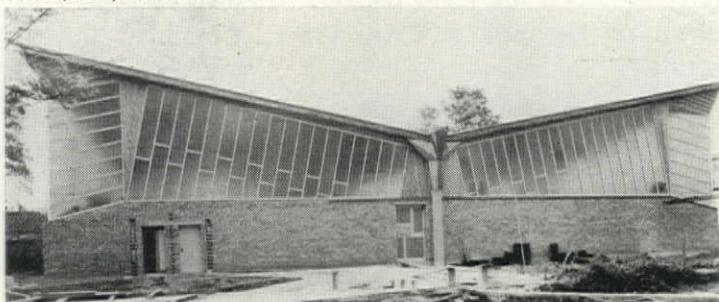


EAST AFRICA CONTEMPORARY

Circling upward from its four stems, Contractor R. J. Mehta's new house in Kampala, Uganda was designed by Kenya Architect Kersey D. Moddie to be "an organic plan for contemporary living in Africa." Whether or not the house fulfills that purpose, it offers an ingenious solution to the problem of building on a hillside: vertical piers rather than horizontal foundations. It also takes maximum advantage of the scenic possibilities of the site, while giving neighbors below an opportunity to ponder what organic architecture really is.

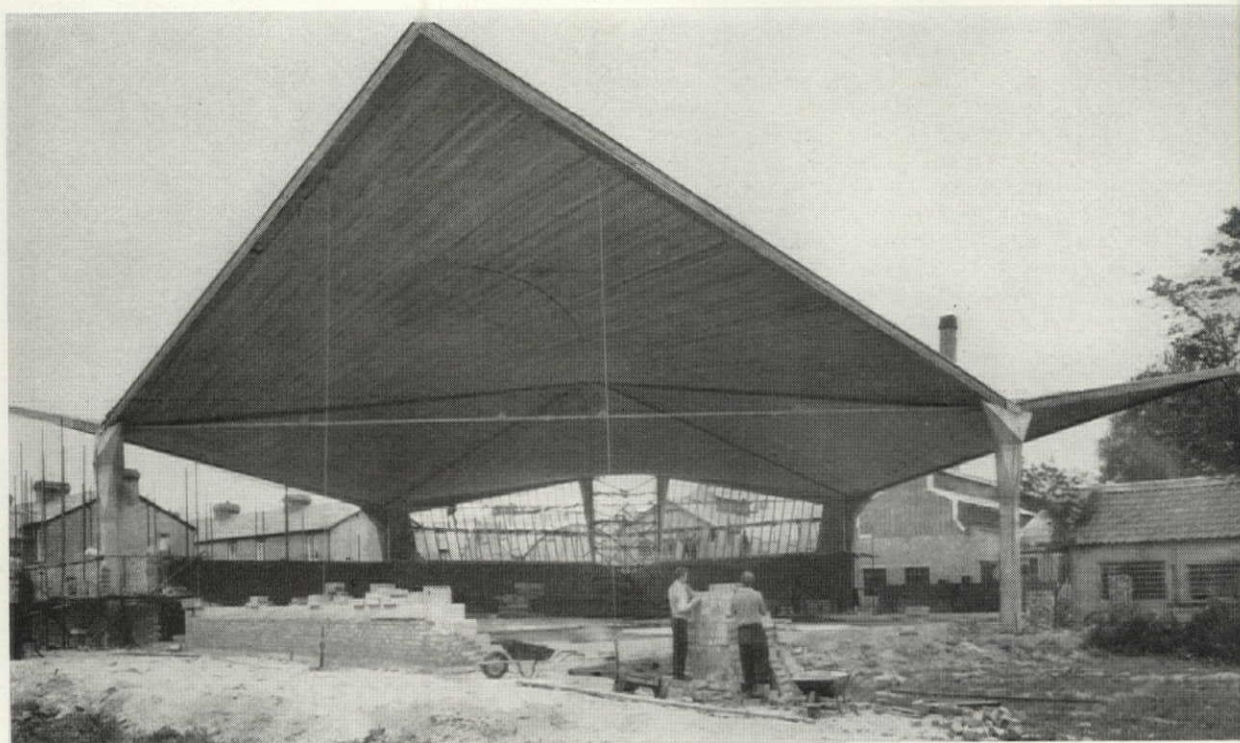


PHOTOS (BELOW): F. FUTCHER & SON



BRITISH FLYING CARPET

The international race for supremacy in shell construction may not be so vital as the competition in armaments, but it is nonetheless heated. An interesting entry from England is the wooden roof of a weaving shed for the Wilton Royal Carpet Co. in Salisbury (seen in construction at right). Built of four 57-foot-square hyperbolic paraboloid sections, the laminated wood roof is supported by four concrete columns. Architect Robert Townsend is pleased that construction costs of the completed building (above) have been kept below \$10 per square foot. The owners are equally pleased with the lofty, open floor area, a notable contrast to interiors of nearby seventeenth-century buildings. END



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PROMISES WILLIAM E. EBY, CHICAGO LATHING CONTRACTOR

Everybody wants crack-free ceilings. That's why Bill Eby's guarantee is so important to you. "Believe me, I wouldn't make such a guarantee unless I'm sure," emphasizes Eby. "This lathing system will give you crack-free ceilings every time. And anybody can use this system. It's no Eby patent.

"I searched for years for a better lathing system. I tested and rejected any number of systems and reinforcements," Eby points out. "Now after three years of using this new lathing system with Keymesh and Keycorner, I know I'm right.

"Here's another fact that may surprise you. Builders

are switching back to lath and plaster for one big reason—savings. New application systems and modern colored plaster add up to a low-cost buy. You save the costs of paint and painting. Above this, lower maintenance costs and increased fire safety make lath and plaster a top value.

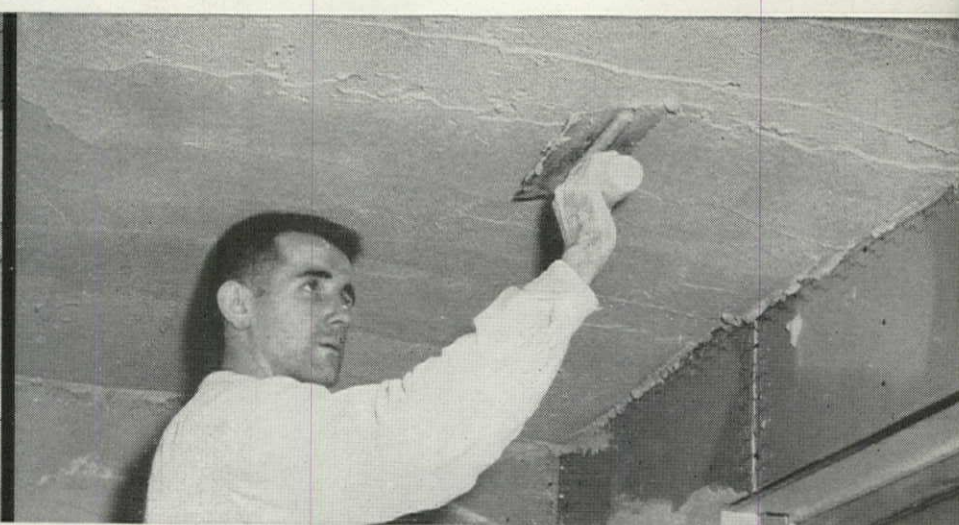
"Absolutely no ceiling cracks with this lathing system. You get added life from plaster. Upkeep costs are slashed. Yet Keymesh and Keycorner let me hold costs in line."

* * *

It will pay you to learn all the facts about the Eby system of lathing with Keymesh and Keycorner and why he can make this guarantee of a crack-free ceiling.



Eby (left) inspects application of Keycorner, used to reinforce joints. Keycorner is also used at all wall and corner junctures.

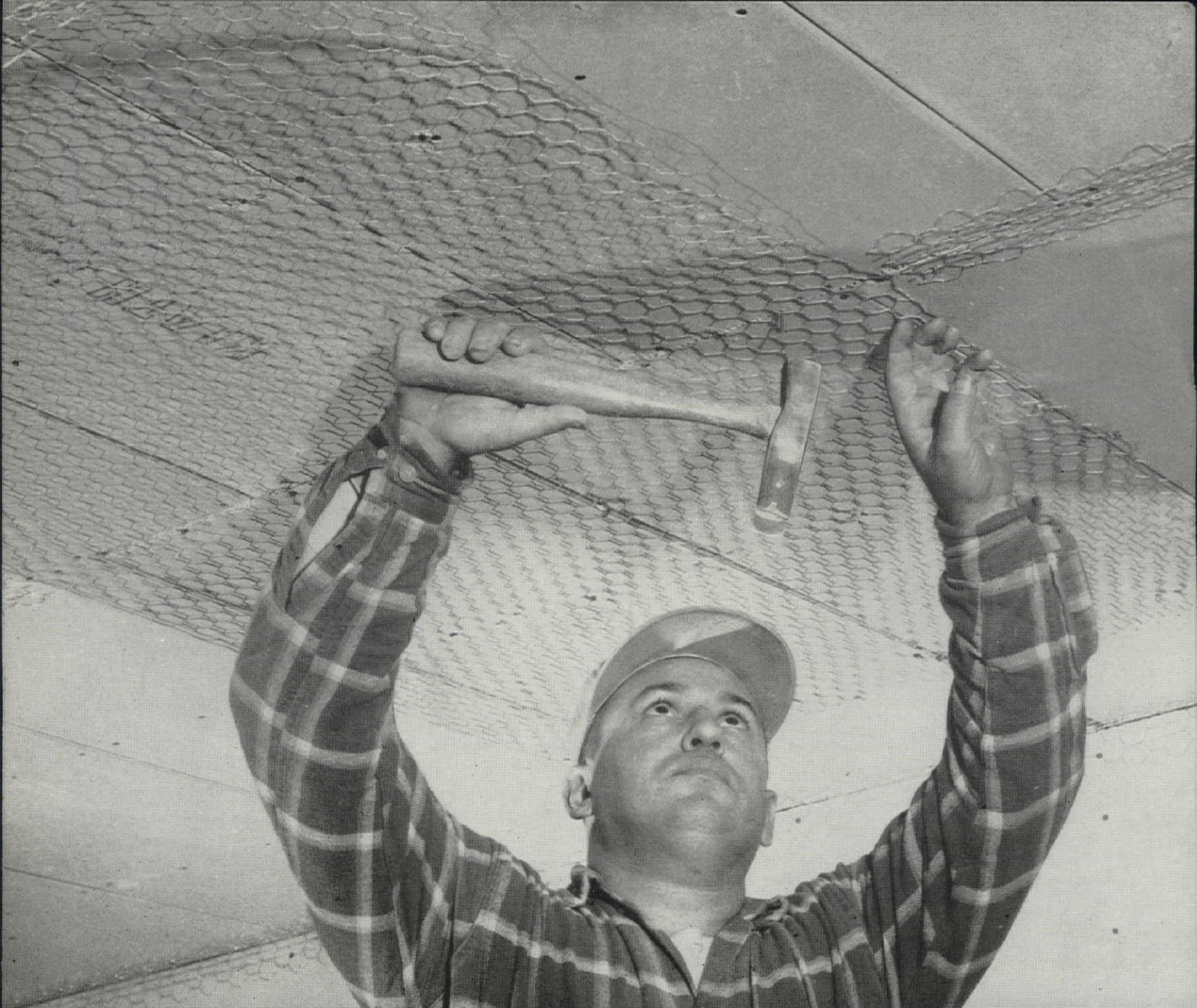


Plaster is applied over reinforced ceiling. The open mesh of both Keymesh and Keycorner assures imbedment in plaster. The open mesh also insures full bond of plaster with gypsum lath.

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Peoria 7, Illinois

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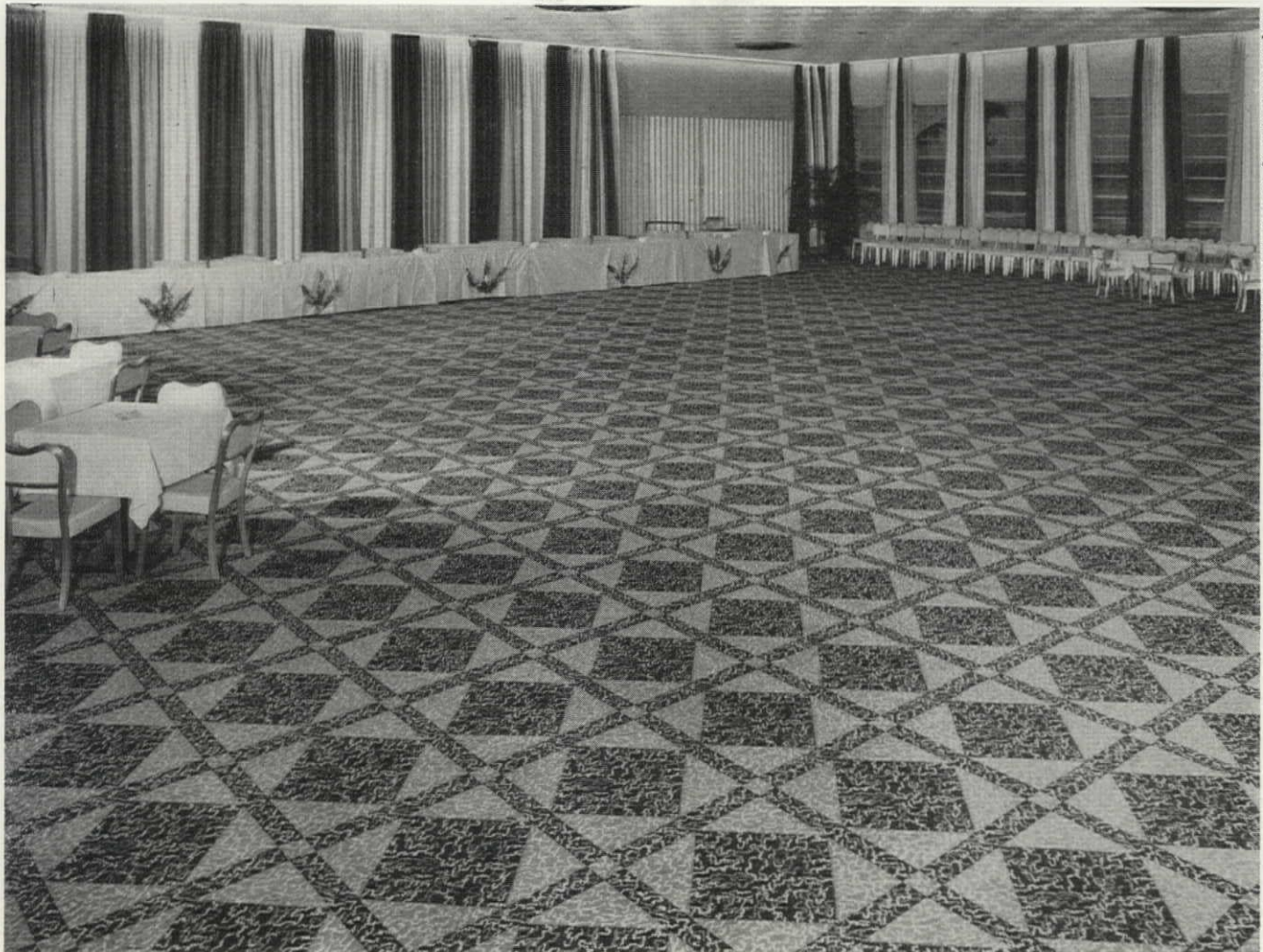
THE EBY SYSTEM OF LATHING. Instead of staggering end joints of gypsum lath, longitudinal joints are staggered. Keycorner lath is applied to the continuous joints at 4 ft. intervals. Then, through the center of the room, one strip of 1" x 20 ga. Keymesh, 36" wide, is applied. This adds extra reinforcement where it's needed and assures full thickness of plaster.



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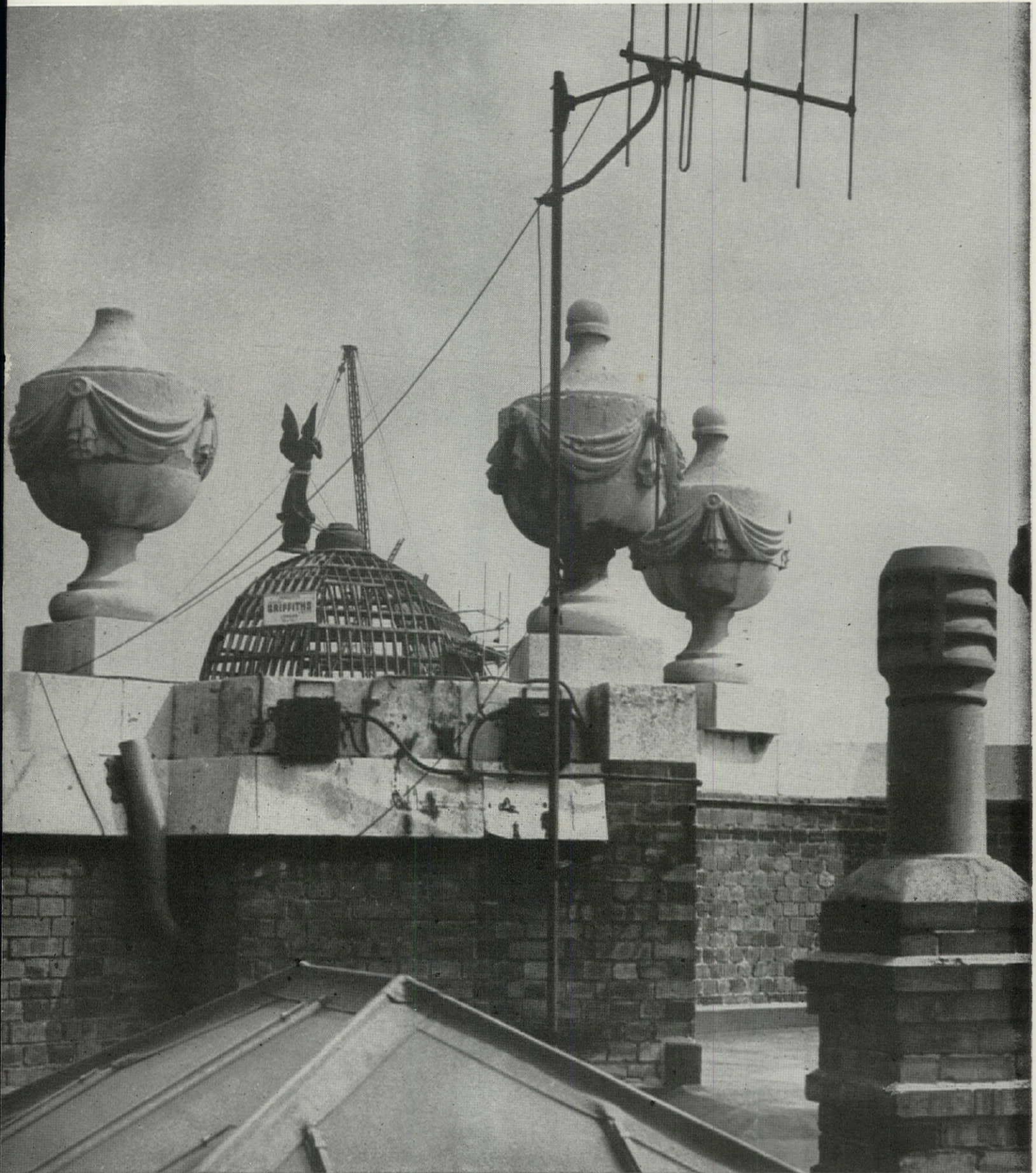
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DEMOLITION OF LONDON'S GAIETY THEATER. PHOTOGRAPHED BY J. R. D. HEMING



*An angel on her way down
is viewed with sympathy
by a gallery of roof sculpture*