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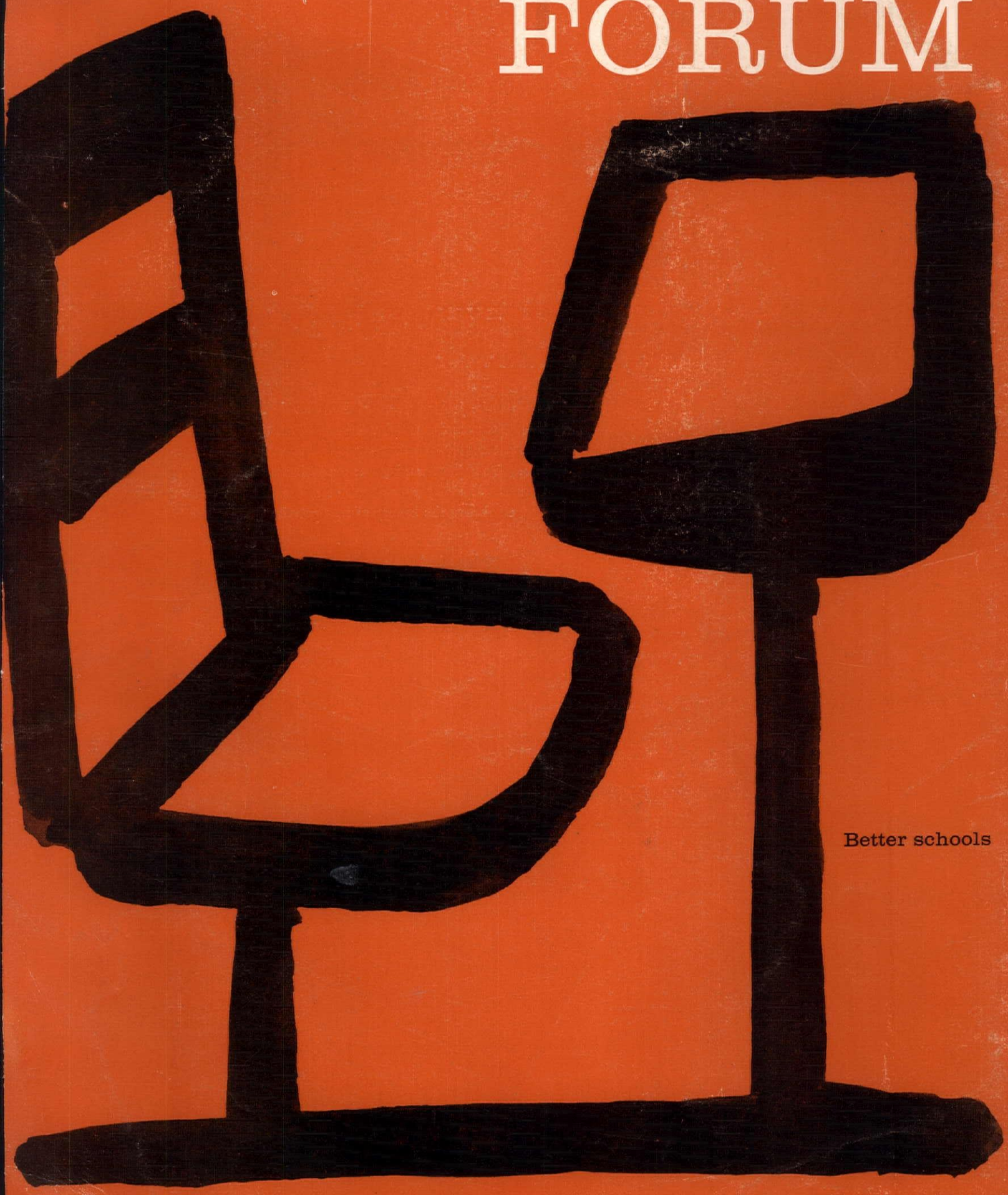
FORUM



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VOLUME 109, NUMBER 5

Published monthly by TIME INC.
9 Rockefeller Plaza,
New York 20, N.Y.
Entered as second-class matter
at New York, N.Y.
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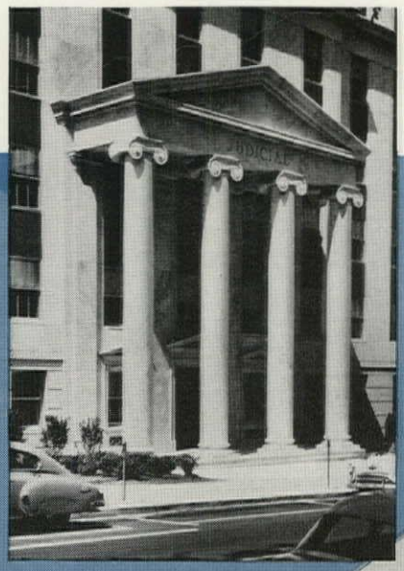

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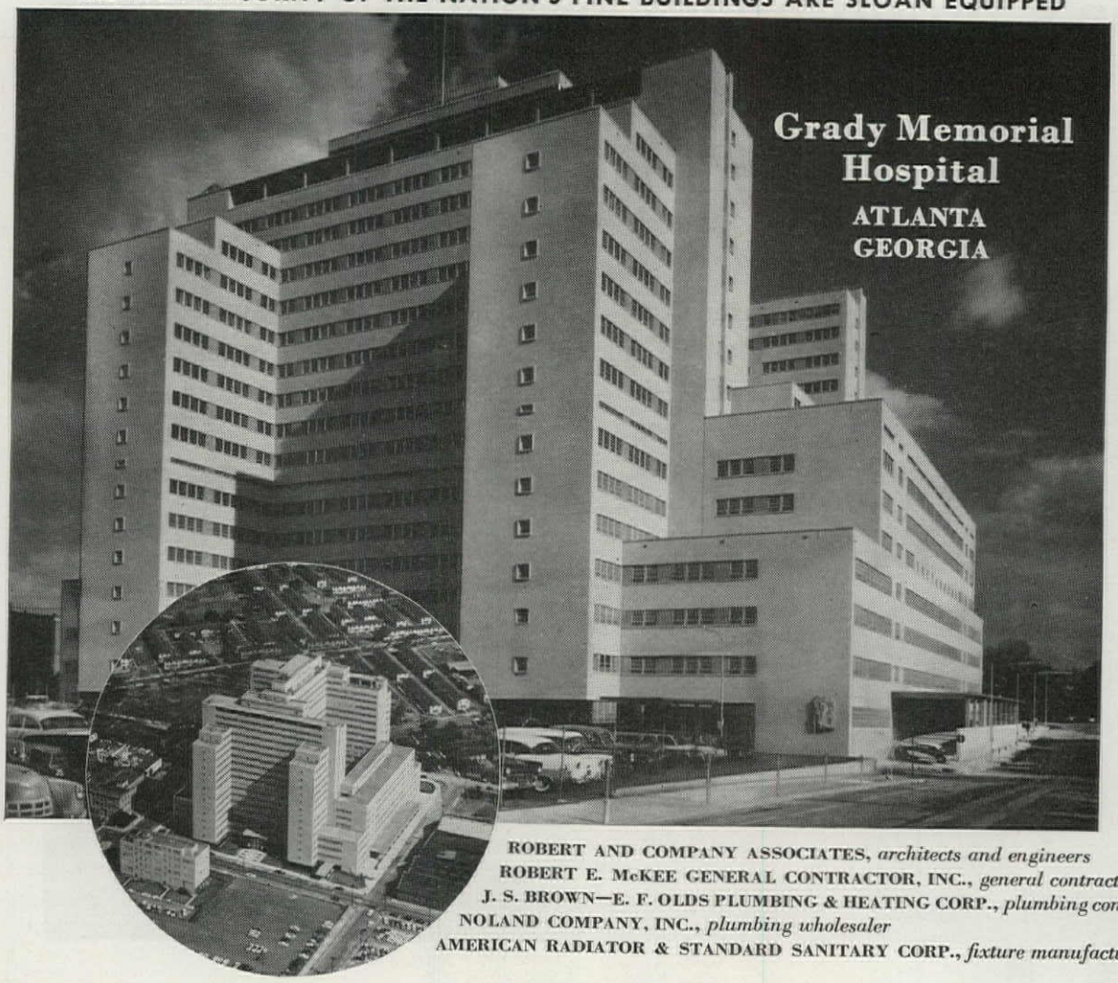

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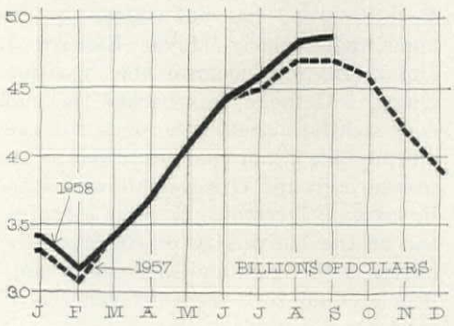
Record spending for new construction continues, but tighter mortgage money worries builders

SPENDING FOR NEW CONSTRUCTION



BOX SCORE OF CONSTRUCTION

(Expenditures in millions of dollars)

	Sept.	Jan.-Sept.		
PRIVATE BUILDING	1958	1958	1957	±%
Nonresidential	742	6,489	7,071	—8
Industrial	174	1,914	2,704	—29
Commercial	316	2,611	2,596	+1
Office buildings, warehouses	168	1,492	1,353	+10
Stores; restaurants; garages	148	1,119	1,243	—10
Religious	80	623	636	—2
Educational	53	412	384	+7
Hospital; institutions	52	460	370	+24
Residential (nonfarm)	1,742	12,760	12,544	+2
Public utilities	565	4,433	4,213	+5
Total Private*	3,229	25,085	25,225	—1
PUBLIC BUILDING				
Nonresidential	425	3,416	3,368	+1
Industrial	33	285	368	—23
Educational	258	2,160	2,102	+3
Hospital; institutions	35	256	257	**
Residential	73	578	342	+69
Military	125	850	985	—14
Highways	685	4,215	3,836	+10
Sewer; water	130	1,036	1,021	+1
Total Public*	1,606	11,282	10,659	+6
*GRAND TOTAL	4,835	36,367	35,884	+1

** Minor components not shown, so total exceeds sum of parts.*

*** Less than 1 per cent.*

Total spending for new construction rose to a new monthly record in September, and brought construction expenditures for the first nine months of this year to $36.4 billion, about 1 per cent higher than for the same period in 1957. The volume of spending for September alone was about $4.8 billion, which was 3 per cent higher than in September 1957.

The most striking feature of the latest government report on building outlays was the upsurge of private residential construction. Spending for new dwelling units in September ($1.3 billion) was 11 per cent higher than in September 1957, and in the first nine months of 1958 ran 2 per cent ahead of 1957. The Department of Labor announced that 108,000 new private units were started in September, raising the seasonally adjusted annual rate of new starts to 1,220,000—the highest rate in three years. For the first nine months of this year, the annual rate works out to 1,054,000 new starts compared with only 985,000 in the first nine months of last year.

Public building, meanwhile, rose 6 per cent over 1957 in the first nine months of this year, largely because of the quickening pace of highway construction (up 10 per cent over the first nine months of 1957), and a 69 per cent increase in spending for public housing, mostly Capehart Act housing—i.e., new units on military installations. The highway building speed-up has proved a particular blessing for cement manufacturers, who last month announced that shipments were well above seasonal levels, particularly in the Midwest. However, most cement manufacturers doubted that there would be a price increase soon, for despite rising wages and fuel costs, capacity is still well above shipments.

Two of the biggest minus areas in building are industrial building and the construction of stores, restaurants, and garages. Industrial building was down 41 per cent in September as compared with September 1957, and for the first nine months was 29 per cent below the similar period in 1957. Although store building was off 10 per cent in the first nine months, signs of a recovery (predicted last month by FORUM Consultant Miles Colean) are showing up. The year-to-year lag in September was only 1 per cent. But office building construction, which was up 10 per cent for the first nine months, began showing the first signs of weakness in September—volume of new office construction was 3 per cent below September 1957.

The big question in the building outlook now is the possible effect of tighter money on the volume of new construction, particularly on the private residential sector, which accounts for 26 per cent of all building (see below).

Tighter money threatens home-building revival

The specter of tight mortgage money, so tight that it could again cripple home building as it did last year, was giving bankers, builders, and economists the shivers last month. John C. Hall, president of the Mortgage Bankers Association, summed up the feelings of many: "After a few months of a reversal of the downward trend in interest rates, we face the prospect of having funds diverted from mortgage investment as rapidly as they were turned toward it last winter."

Home building has experienced a remarkable recovery in the past few months, with new starts hitting an annual rate of 1,220,000 in September, well above the nine-year low of last February (915,000). This has been due largely to easier conditions in the money market resulting from a combination of lower interest rates and an infusion of new funds into mortgage investment. But last month this picture was already changing drastically. The $1 billion in emergency funds that was handed to the Federal National Mortgage Association last April for buying government-insured mortgages has been exhausted, and interest rates in the money market generally have lately taken a sharp swing upward. Even the Federal Housing Administration experienced the pangs of money shortage when it announced that it had already run through most of the $4 billion in new insuring authority that Congress granted it last

continued on page 6

spring. In an effort to husband its fast-dwindling insurance fund, FHA has set up a new system under which it will not make firm reservations of insurance funds for new mortgages, but will only issue a less binding "agreement to insure." Under this system, home builders may have more difficulty getting mortgage money from lenders, as the new commitment will not be so binding on FHA as was its usual commitment method.

Due to the government's long-standing policy of putting interest rate ceilings on federally insured or guaranteed mortgages—which are all-important in the housing market—yields on these mortgages look increasingly unattractive as yields on other securities—particularly government and corporate bonds—rise. Mortgages insured by the Veterans' Administration, with an interest ceiling of 4.75 per cent, are already far out of line with the general market (5.5 to 6 per cent), and mortgages insured by the Federal Housing Administration are selling at discounts of 2 to 3 per cent. There has already been a shrinkage in requests for appraisals by VA—they dropped 6.5 per cent in September, to the lowest monthly mark since last April.

Another indication of how tight mortgage money has become recently was the heavy amount of mortgages—$9 million in one week last month—offered to FNMA as part of its secondary market program. As money tightens, builders and lenders offer mortgages they hold to FNMA, in order to get cash with which to make new mortgages—at higher rates.

Some Congressmen are concerned about the possible effects of tighter money on home building. Senate Majority Leader Lyndon B. Johnson (D, Texas) said a new housing bill would have "the highest priority" when Congress convenes. Representative Albert Rains (D, Alabama), chairman of the Housing Subcommittee of the House Banking & Currency Committee, said last month that the "first order of business" in considering housing legislation in January ought to be an additional $1 billion in new funds for FNMA.

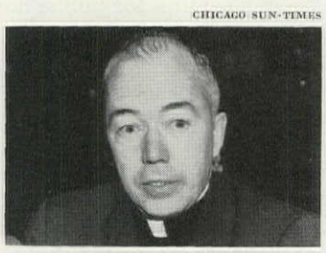
Actually, the present mortgage market is not likely to get any better in the near future. Although the shortage may not become so severe as last year, the Federal Reserve Board has indicated that it intends to adopt a firm policy against inflation on a broad front. Just two weeks ago, the Fed raised its discount rate—the interest rate it charges member banks when they borrow from the Fed—from 2 per cent to 2.5 per cent. This follows a ¼ of 1 per cent increase last August. More important, the U.S. Treasury, which early last month borrowed $3.5 million selling short-term issues at attractive rates, still has a staggering amount of refinancing to do in coming months ($30.8 billion in six months), and must carry it out in the face of heavy competition for investment funds from corporations, states, and localities. As FORUM Consultant Miles Colean said recently: "Much depends on how the Treasury handles its staggering financing operations, and the way in which the Federal Reserve gives it an assist."

Chicago renewal project approved over protests

Chicago's $38-million Hyde Park-Kenwood urban renewal project met its severest test last month, when the housing and planning committee of the City Council finally approved plans for the redevelopment as drawn up by Webb & Knapp Incorporated and the University of Chicago (FORUM, April 1958). The decision marked the end of the first round of a bitter struggle that has seen Catholic, Negro, and Communist pressure groups allied in a common cause against the redevelopment proposal for the 900-acre site on the South Side.

Leading the battle has been Monsignor John J. Egan, executive director of the Cardinal's Conservation Committee for the Chicago Archdiocese, which

CHICAGO SUN-TIMES



MSGR. EGAN

is the largest archdiocese (nearly 2 million Catholics) in the U.S. Egan is basically opposed to the Hyde Park-Kenwood project for three reasons:

- He wants more public housing for low-income groups. There will be 84 units of low-rent housing built in the area under the plan, and Egan wants at least 200 units.
- Egan says no land should be cleared until it is immediately ready for re-use.
- He wants a "coordinated" relocation program (about 19,000 persons will be moved from the area) in stages to avoid overcrowding in other areas of the city.

Joining Egan in opposing the plan were various Negro groups (including the NAACP) both in the area and outside it. One of the most vociferous objectors was James West, executive secretary of the Communist Party of Illinois, who characteristically reviled the plan as "a design by certain banking interests to wall off a select section of the city from the tidal wave breaking out of the blighted ghetto next door."

The Catholic opposition to Hyde Park-Kenwood has put Chicago politicians, particularly Mayor Richard J. Daley, in an uncomfortable position. Daley, a Catholic, has backed the plan consistently, although he does not rule out possible minor changes to soothe the pressure groups. One well-known Catholic layman, Jerome G. Kerwin, a professor at the University of Chicago, disagrees with Egan, and says that "many people of my own faith are concerned" over the Church's stand.

Leaders of other faiths do not agree with Egan either. Rev. Leslie Pennington, of the First Unitarian Church, warns that any additional public housing should be well scattered "to avoid concentration of social problems." Rabbi Jacob J. Weinstein has urged adoption of the plan in order "to preserve the harmony of races, nationalities, creeds, eggheads and squares, Bourbons and Babbitts, who have made it the colorful and exciting neighborhood that it is."

The hassle over Hyde Park-Kenwood, and particularly the Catholic church's role in it, is being closely watched by all city officials interested in urban renewal. In a magazine article last spring, Egan indicated that the execution of the whole urban renewal program is open to serious question. He said, "There are alarming indications that this program, which affects the lives of hundreds of thousands of individuals and the existence of so many institutions such as our Catholic parishes, is beginning to slip away from the people who eventually must pay for it and must endure inconveniences for its execution."

One of the prime purposes of urban renewal, of course, has been to lure upper- and middle-income families (which are usually white) back into the city by providing new housing in a pleasant urban environment. This approach necessarily involves displacing lower-income families to other areas, and frequently means building public housing. If there should be a concerted effort by the Catholic church to oppose this approach, it could cause a reappraisal of the whole renewal program, and, in some areas, kill it completely.

Which building won the competition?

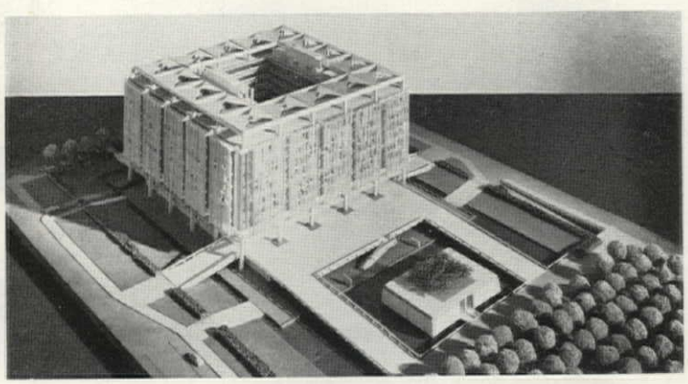
One of the biggest architectural competitions ever held closed last month with the final judging of the eight designs for a new Toronto city hall shown below. The eight finalists had been selected from 520 contestants from 42 countries, and each of the eight got $7,500. The five judges were unanimous in picking a winner from the eight, all of which the jury termed "of an exceptionally high standard." To find out which entry won, turn to page 9.

PANDA

ARCHITECTS: HALLDOR GUNNLOGSSON & JORNE NIELSEN, COPENHAGEN

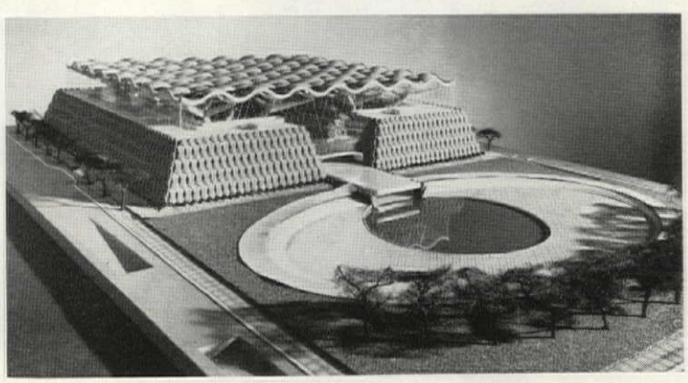
ARCHITECTS: PERKINS & WILL, WHITE PLAINS, NEW YORK

ARCHITECT: DAVID E. HORNE, TORONTO

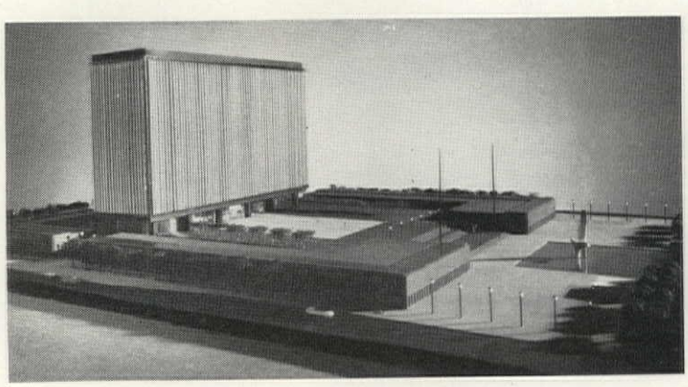


ARCHITECTS: MIKUTOWSKI, RAFFERTY & RAFFERTY, ST. PAUL

ARCHITECT: VILJO REWELL, HELSINKI



ARCHITECT: JOHN H. ANDREWS, WESTFIELD, NEW YORK



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Winner of the competition was Viljo Rewell (picture, below), a 48-year-old Finnish architect. Rewell will get $25,000 in cash (on top of the $7,500 each semifinalist gets) and an estimated $1 million in fees to design and supervise construction of the building, which is supposed to cost around $18 million.

The five judges of the competition were Sir William Holford of Great Britain, Ernesto Rogers from Italy, C.E. Pratt from Vancouver, Gordon Stephenson from Toronto, and Eero Saarinen of the U.S. Professor Eric Arthur of the School of Architecture, University of Toronto, was professional adviser and nonvoting chairman. Saarinen, Rogers, and Pratt reportedly favored Rewell's design from the first, but Holford and Stephenson were opposed to it, largely on practical grounds.

Holford and Stephenson agreed that Rewell's design is the most imaginative of the entries, but they questioned its suitability to the site and "as an answer to the requirements of the administrative program." Their specific criticisms may very well lead to fairly heavy revisions in the design, although the basic concept of two curved towers cupping a saucer-shaped assembly hall will probably remain. These are the main criticisms of the minority:

1. The blank concrete walls of the towers "shut out the city" to the north, east, and partially to the west. (The walls facing into the assembly hall are to be glass.) The minority suggests that these walls, rising 356 feet for the higher tower, and 290 feet for the other one, could have "an adverse effect on the future redevelopment" of the area.

2. The "internal circulation" in the building complex is too complicated, making movement from one structure to another more difficult than it should be.

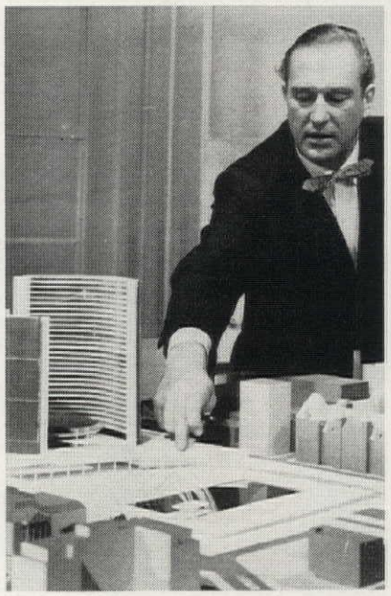
3. The council chamber itself, nestling between the two skyscrapers, has "defects as working accommodation, and a poor outlook."

4. "The form of construction proposed for the office towers is probably the most expensive which could be devised for vertical slabs," [it will cost] "much more than the council had in mind."

Rewell's design won enthusiastic support from all the jury as "the most original in conception of any of those submitted." The jury added, "Its monumental qualities are of a high order and it is a composition of great strength. Its shape is distinctive and dramatic, setting it apart from other structures in Toronto and from administrative and office buildings everywhere." Holford himself called it "a new symbol of civic administration . . . it combines the symbolic with the practical for the first time in such a public building."

Toronto is bound by the rules of the competition to go ahead with Rewell's design, and Mayor Nathan Phillips and other city officials have already voiced their enthusiasm for it. Cost of the project may be the biggest stumbling block, however (some unofficial estimates are that it might cost as much as $30 million), and there will probably be further revising of Rewell's design to cut down on its more costly elements.

TORONTO TELEGRAM



THE WINNER AT TORONTO

Viljo Rewell (pronounced Rev-ell), 48-year-old Finnish architect, was in Zurich, Switzerland when the news reached him that he had been picked over 519 other entrants as winner of the international competition for the Toronto City Hall. Rewell's first reaction was, "I'm thrilled beyond words," as he prepared to make his first trip to Canada. Rewell is a graduate of Helsinki's Institute of Technology, and worked for a while as assistant to Finland's famed Alvar Aalto. So far, all his work has been in Finland, where he has designed apartment houses, office buildings, factories, schools, churches, and a nine-story hotel in Helsinki. He is superintendent of the Museum of Finnish Architecture, and he says architectural competitions in Finland "have an important position in our traditions." Rewell has three daughters, and is an ardent yachtsman. When asked by the Toronto Star if he was Finland's most prominent architect, Rewell replied, "I don't like to say it, but I might rank about second."

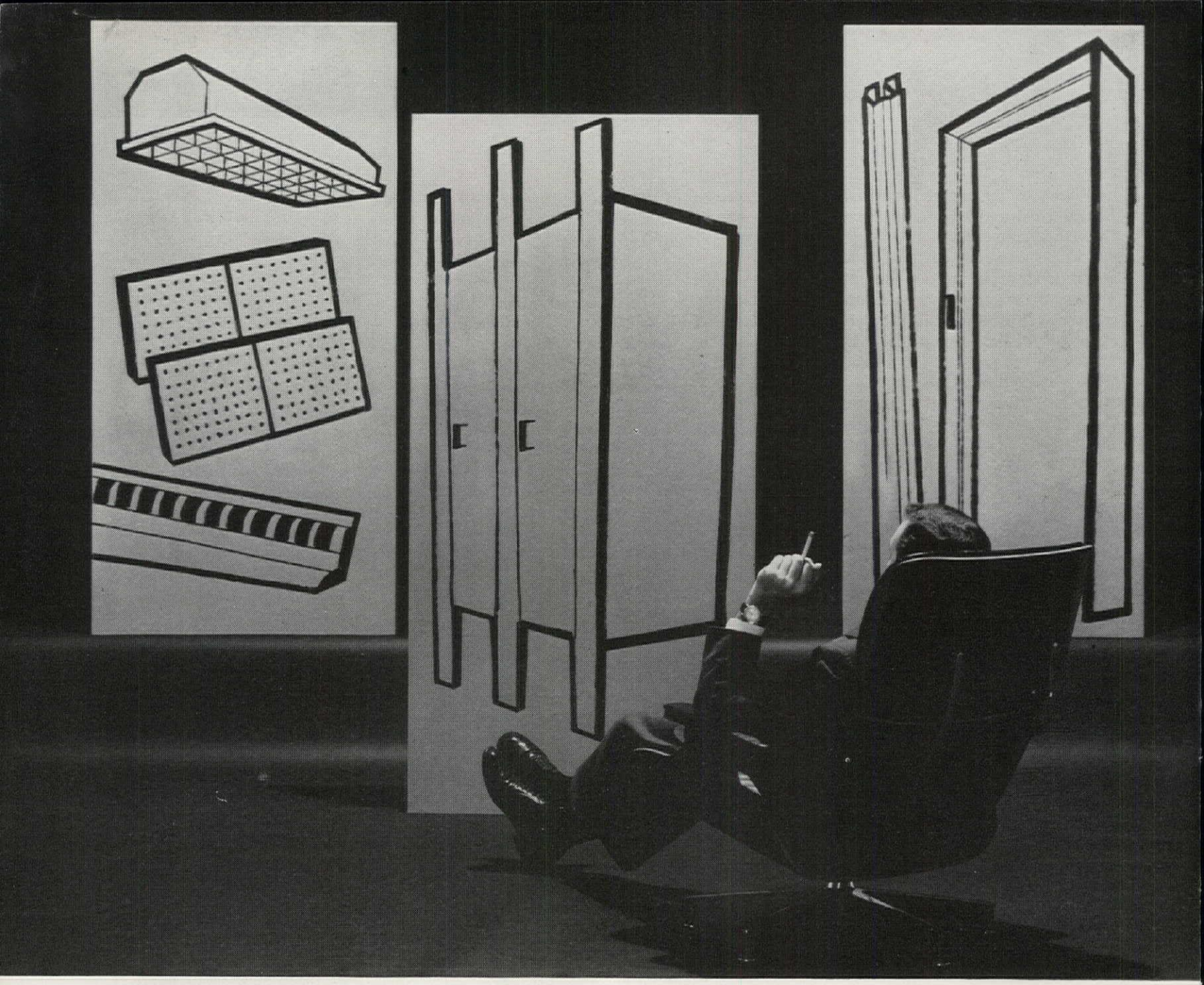
Executives propose Lower Manhattan renewal

A few months ago, a new group called the Downtown-Lower Manhattan Association was formed with the purpose of framing plans for the future development of what are probably the most valuable 564 acres of real estate in the world. Last month, the association, headed by the Chase Manhattan Bank's vice president, David Rockefeller, and Seamen's Bank for Savings' president, John D. Butt, came up with its first proposals. They constitute a broad framework for the redevelopment of lower Manhattan, focusing on traffic improvements, land use and urban renewal, and putting aside, for the time being, the sticky questions of who pays how much and for what.

The lower Manhattan area presents some of the most peculiar urban problems ever faced anywhere. To start with, only 1 per cent of its area is residential (about 4,000 persons live there, mostly in the area just east of City Hall), yet on any working day there are over 400,000 persons in the area. And downtown Manhattan's streets are not much wider today than they were when Peter Minuit clumped about them. But to accommodate the flood of commuters, streets are a necessity, so there are plenty of them—about 46 per cent of the area is paving of some sort. Most of the buildings are not skyscrapers at all, despite the clichés about Wall Street canyons. In fact, 52 per cent of all buildings in the

continued on page 11

Lower Manhattan, showing two major renewal areas, as proposed by the Downtown-Lower Manhattan Association (see above).



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downtown area are over 100 years old, most of them old-law tenements three or four stories high. However, there has been something of a building boom downtown—since 1950, 16 new office buildings with a total 7.4 million square feet of space have been built or are abuilding, including the Chase Manhattan's new 60-story tower. Consequently, the area is one of great contrasts, where the population is either a tidal wave or a puddle, buildings either 60 stories tall or three, and the great investment and commercial banking houses rub shoulders with the West Side Produce Market and the Fulton Fish Market.

The recommendations of the association, prepared with the aid of Skidmore, Owings & Merrill, would clear up much of this ambiguity. The report recommends that both the fish market and the produce market be moved elsewhere in the city, that the lower East Side piers be redeveloped to include a heliport and small boat basin. With the fish market and its immediate environs gone, the way would be open for the further development of more financial area skyscrapers. A redevelopment area on the West Side, in the section surrounding the produce market, would be redeveloped for industrial and heavy commercial use. Some new housing would be provided, including luxury apartments at Battery Park, which would double the number of residents presently in the area.

The association hopes that the city will first tackle its street widening recommendations, and rezone the redevelopment areas according to its plans. And it says it is "prepared to seek financial support for redevelopment projects either within our membership or from outside sources," the latter presumably referring to federal urban renewal funds. Whether the association's plans ever bear fruit will depend to a large degree on how powerful its arguments appear to the many city—and federal—agencies with which it will have to deal.

Rationing of renewal funds meets opposition

The federal urban renewal program, which only recently was beginning to show the first tangible evidence of nine years' labors, is now facing the most severe fiscal crisis since its inception. The trouble started in late summer when Congress failed to pass an omnibus housing measure, which would have included at least $250 million a year in capital grant funds for the Urban Renewal Administration, and possibly more. This left URA with a bare $54 million with which to make new commitments to municipalities for urban renewal projects. President Eisenhower quickly released $100 million in funds which he had postponed spending since 1955, but this still left URA with less than half the amount of funds needed to meet some $362 million of applications for urban renewal money.

Two months ago, URA attempted to solve its problem by setting up a rationing formula based on the population of the cities applying for funds (FORUM, October 1958). This aroused a cry of protest from many cities, particularly those of medium size which had large urban renewal projects planned. (Buffalo, New York, for example, has applied for a total of $18 million in capital grants from the federal government. Under the new formula, Buffalo would get only $2.5 million.) Planners and municipal officials alike complained that the formula represented a reversal of URA's policy of encouraging big projects and the redevelopment of large areas, rather than the piecemeal type of small projects that marked the early days of slum clearance under Title I. They argued that large projects can seldom be chopped in half—or less—and many of these projects will have to be abandoned if federal aid is cut back.

Last month, URA softened its rationing program somewhat by allowing cities which could not feasibly cut back the size of their applications to assume a stand-by status for federal funds. Then, if at some future time more federal funds are available, URA will process the application in the full amount, and the city will retain its position in the waiting line for federal funds. However, the latest URA directive warned that "no assurance can be given at this time as to either the ultimate consideration these applications will receive or the manner in which they will be handled if consideration does become possible."

Cities that elect to go into this stand-by status may find themselves with a long wait. URA Commissioner Richard L. Steiner told FORUM last month that if the renewal program continues at the rate of only $250 million a year, the "stand-by" cities will be out of luck. "The rationing formula itself was geared to an annual level of $250 million," Steiner said. Steiner defended the formula by observing that "If we had not developed the formula, the 25 cities at the top of the list would have exhausted our funds. By using it, we will be able to approve projects in 90 cities."

The brightest hope for cities that elect to keep their capital grant applications at their original levels, rather than trim them according to the URA formula, is that Congress may approve an urban renewal program larger than

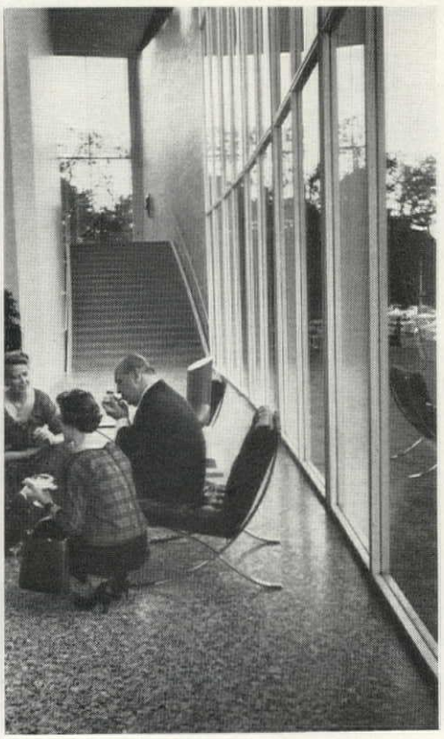
continued on page 13

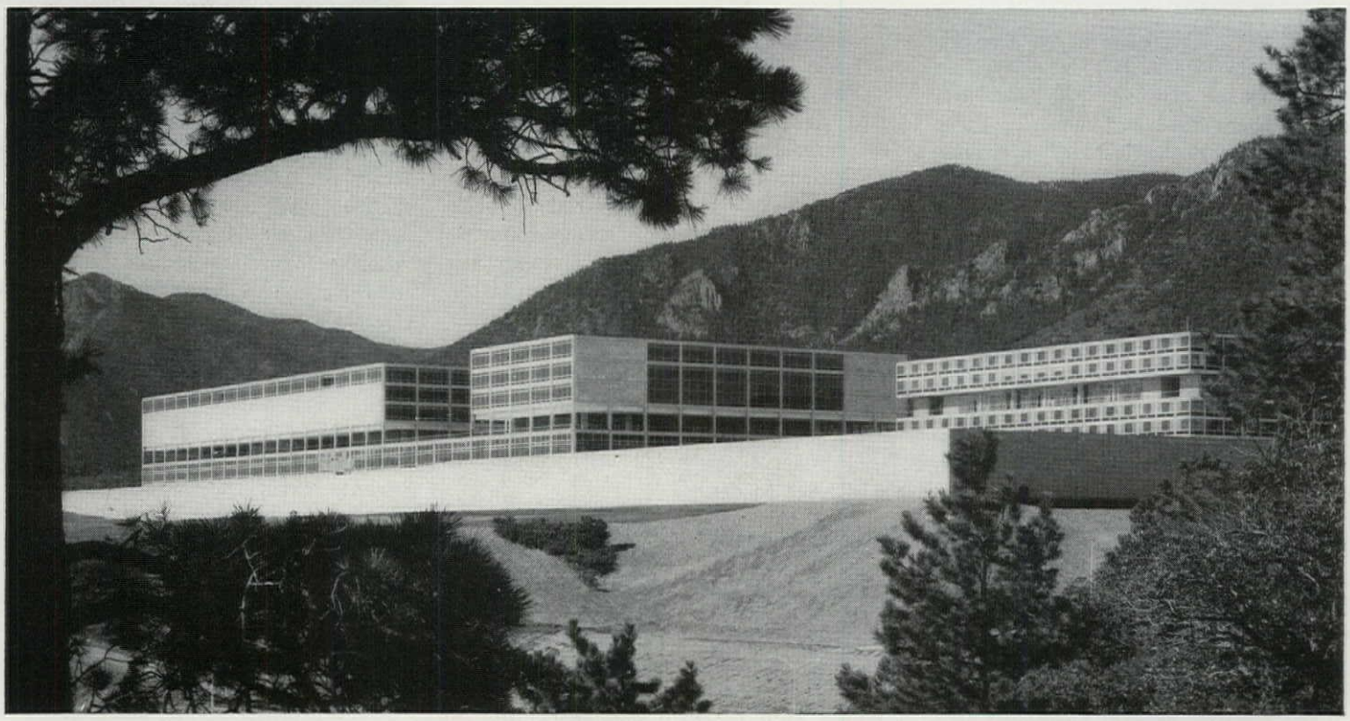
HOUSTON'S MIESIAN CURVE

Mies van der Rohe, best noted for his stiff, 90-degree-angle architecture, has effectively used a curved wall in his design for Cullinan Hall, a new addition to Houston's Museum of Fine Arts. Mies, shown at right sitting with other guests at the hall's opening, designed a curving sheath of gray glass and steel for the front wall, and has developed an airy open feeling in the handsome interior.

MAURICE MILLER

EVE ARNOLD-MAGNUM





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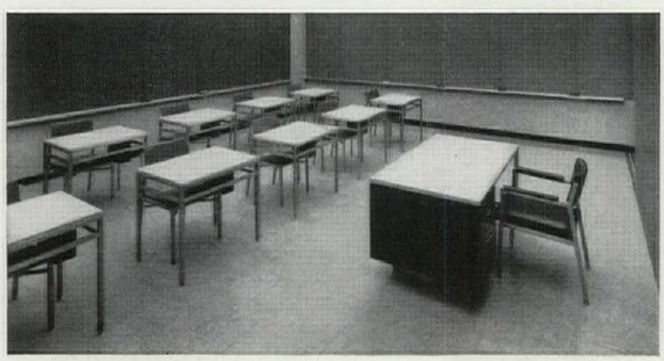

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the one the administration has recommended ($250 million a year for six years). Some housing officials guess that URA would have to have at least $350 million a year for six years to go back to a first-come, first-served basis.

Housing officials ponder urban renewal's future

Last month, San Francisco's Mayor George Christopher stepped to the podium to welcome the 25th annual convention of the National Association of Housing and Redevelopment Officials. In the course of his brief address, Christopher noted that "the road to slum clearance and blight removal is not an easy one," and members of the audience nodded knowingly at each other as he said it. For NAHRO's formal proceedings were largely overshadowed this year by the *brouhaha* that blew up in the convention city just as some 1,600 NAHRO officials were gathering. First there were charges that some city employees were speculating in slum land, involving possible conflicts of interest. Then Mayor Christopher asked to have a new director for the city's Redevelopment Agency, a "younger, more vigorous man" to replace 69-year-old Eugene Riordan, who would be asked to remain on the staff. Christopher later had to argue for approval by the Board of Supervisors of the $200-million Golden Gateway redevelopment project, which had to be approved (it finally was), in order to hold a $5 million federal grant. Finally federal Housing & Home Finance Administrator Albert M. Cole announced that HHFA was checking into the "slowness" of renewal in San Francisco, adding that "San Francisco is behind most other cities of its size in its redevelopment program." All in all, Mayor Christopher, and his city, had provided a most striking example of just how rocky the road to slum clearance can get.

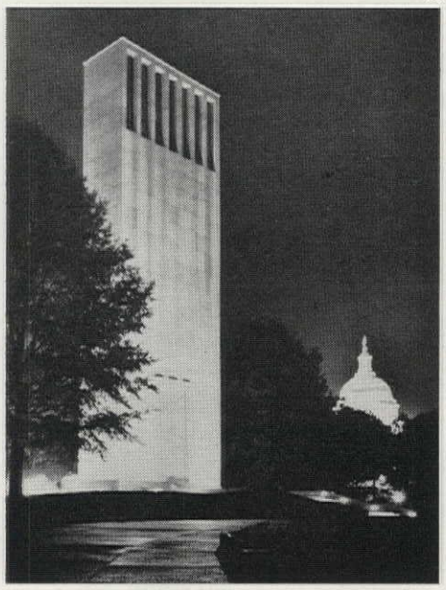
In the moments when NAHRO members were not discussing Christopher's problems, they were mostly concerned with the future of the federal urban renewal program, and the effects of the recently adopted formula for rationing Urban Renewal Administration funds (see preceding story). Many of the speeches and informal sessions dealt at length with the necessity for getting the program on a sustaining basis, something NAHRO has long pressed for. In its resolutions, NAHRO called for a federal renewal program of $600 million a year for the next ten years, an increase in the federal government's share of renewal costs from two-thirds to 80 per cent, and elimination of the requirement that renewal be predominantly residential.

Underscoring the need for a broader program of urban renewal were several estimates of what the cost of renewal would be in the future. New York State Housing Commissioner Joseph P. McMurray estimated that the country will need a whopping $425 billion in private and public housing and urban renewal funds in the next decade. McMurray said that the present annual output of new homes (about 1.1 million a year) should be doubled just to keep up with annual housing needs. McMurray cited New York's plan to allow the state to pay one-half of each city's portion of renewal costs (which is only one-third of the total cost, the federal government paying the other two-thirds). Martin L. Millspaugh Jr., assistant commissioner of program planning with URA, said that the country could spend as much as $2 trillion on future redevelopment.

M. Carter McFarland, economic director for HHFA, made what is probably the first on-the-record admission that federal requirements for a "workable program"—usually the first step a city must take to get federal urban renewal aid—are almost nonexistent. (HHFA has so far approved 546 workable programs.) McFarland said: "So far the only communities denied certification are those unwilling to try," and added that a small town could get approval if it merely said it would name a committee to study its local problems.

Before the housing and renewal officials wound up their business, they elected John R. Searles Jr., executive director of the District of Columbia's Redevelopment Land Agency, to be the president for 1958-1959. Searles succeeds Phillip Tripp of New Bedford, Massachusetts.

AP



TAFT MEMORIAL

Tourists visiting Washington, D.C. next spring will find a new and melodious attraction on Capitol Hill, the Robert Taft Memorial Tower. The tower, erected by friends of the late Ohio Senator, cost almost $900,000. It has a carillon of 27 bells, which will peal over Washington every quarter-hour. The 100-foot-high tower will be donated to Congress by the Taft Memorial Foundation upon completion of landscaping and interior detailing. The memorial was designed by Douglas Orr of New Haven, Connecticut, and built by Charles H. Tompkins Company.

Briefs

Boola Boo-hoo: Yale University no sooner got its spanking-new, Eero Saarinen-designed hockey rink finished than the New Haven tax assessor plunked the $1.2 million structure on the tax rolls. The university argues that the building is part of its educational plant, and should be tax-exempt. The tax assessor claims that it is taxable because, like the Yale Bowl, which is assessed for $700,000, it will charge admission. The rink has been assessed for $350,000, and annual taxes would total $13,561.

A vote for Metro: Dade County, Florida voters last month cast an approving vote for the nation's only formal metropolitan government. By a 74,000 to 50,000 tally, county voters killed a charter amendment that would have granted autonomy to the 26 municipalities in the county. If the amendment had passed, the 16-month-old metropolitan government might have been nullified by a secession of many of the municipal governments, which don't favor the county-wide government, even though the voters evidently do.

The city disposable: Columbia University Professor J. Marshall Miller, director of the first International Seminar on Urban Renewal recently held at The Hague, declared that cities should be "disposable." Planners and architects, said Miller, should stop trying "to build for all eternity. We should design structures, perhaps whole cities, to be written off more quickly." END

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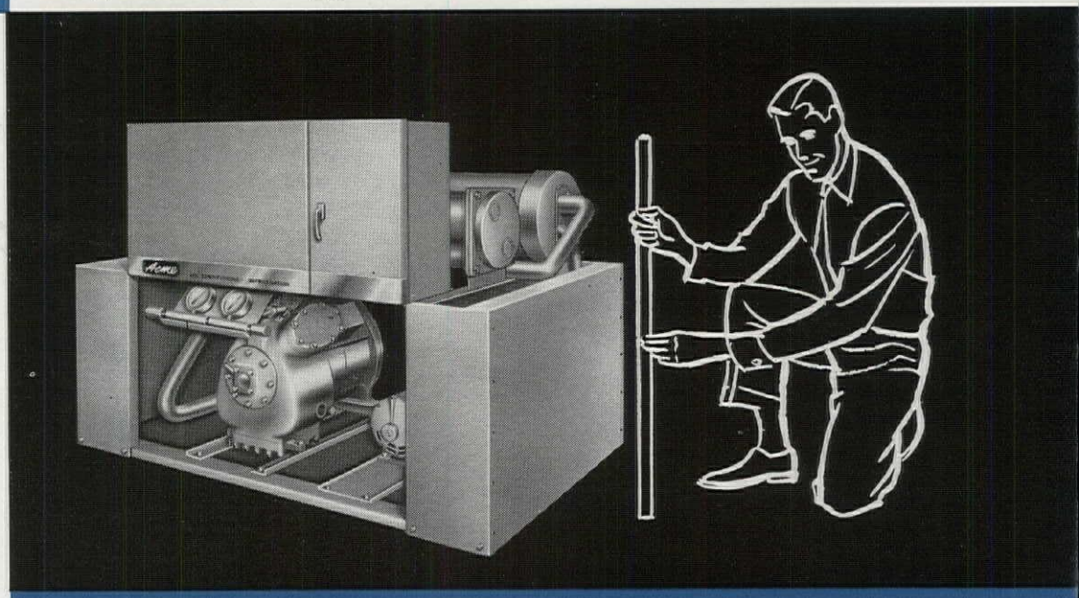

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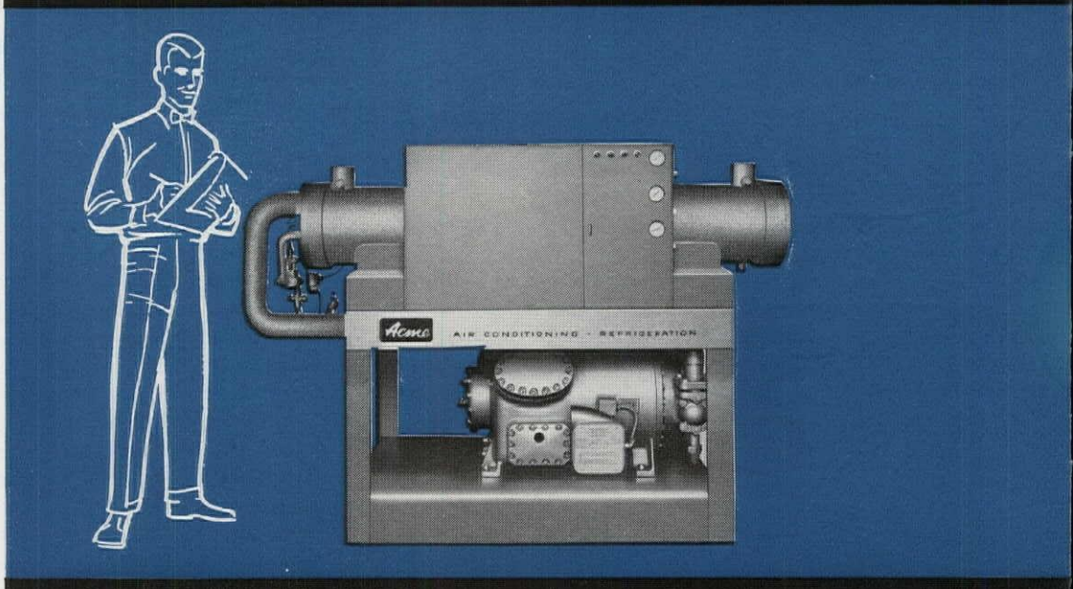

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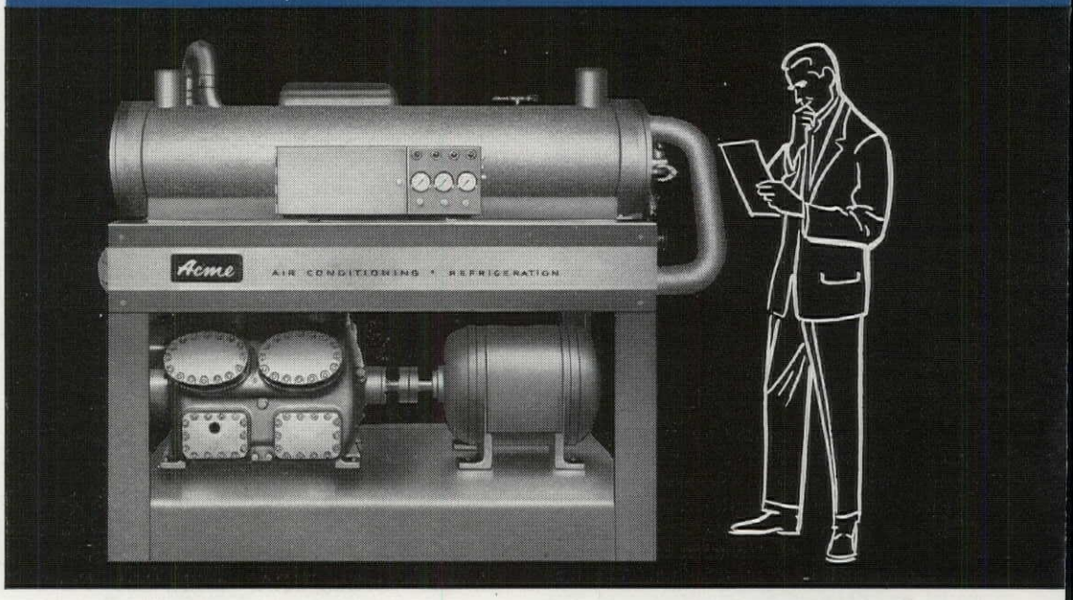

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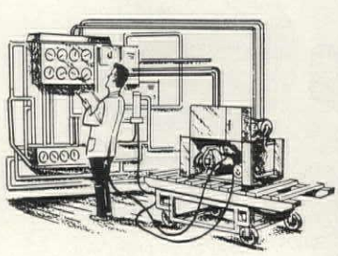

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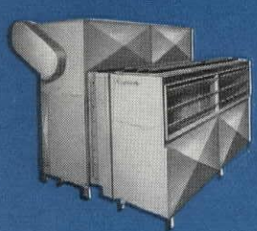

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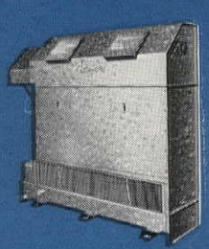

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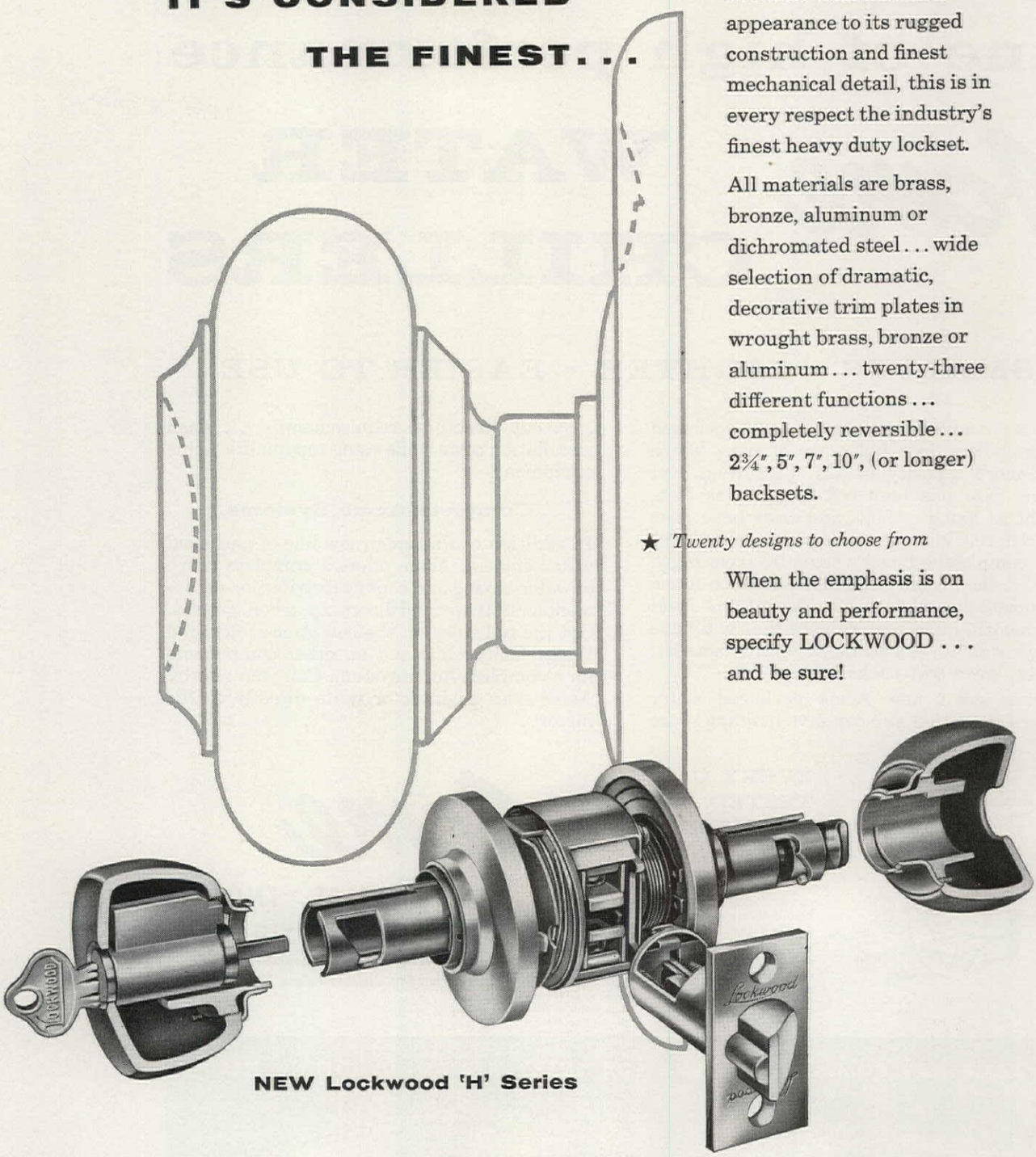

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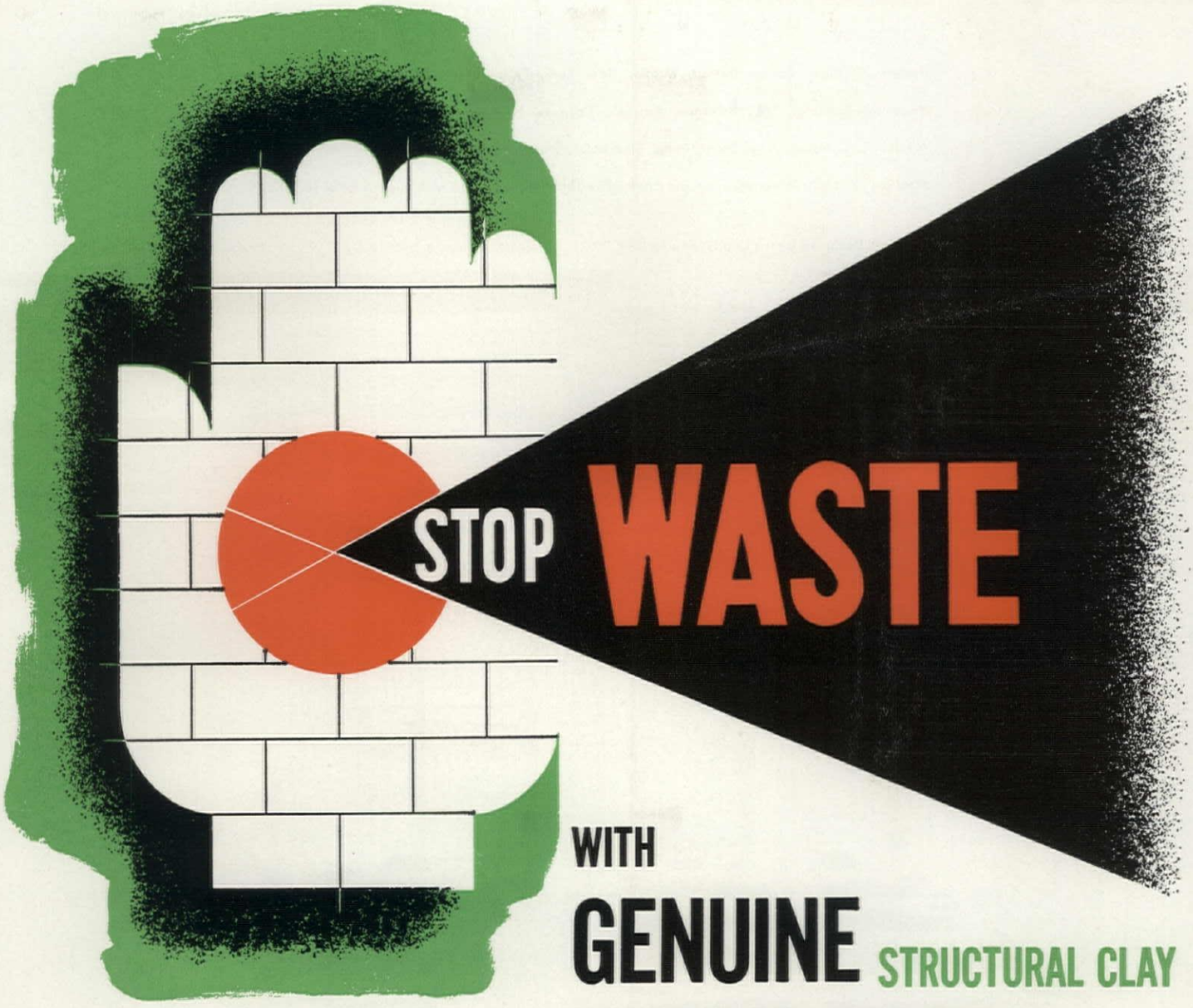

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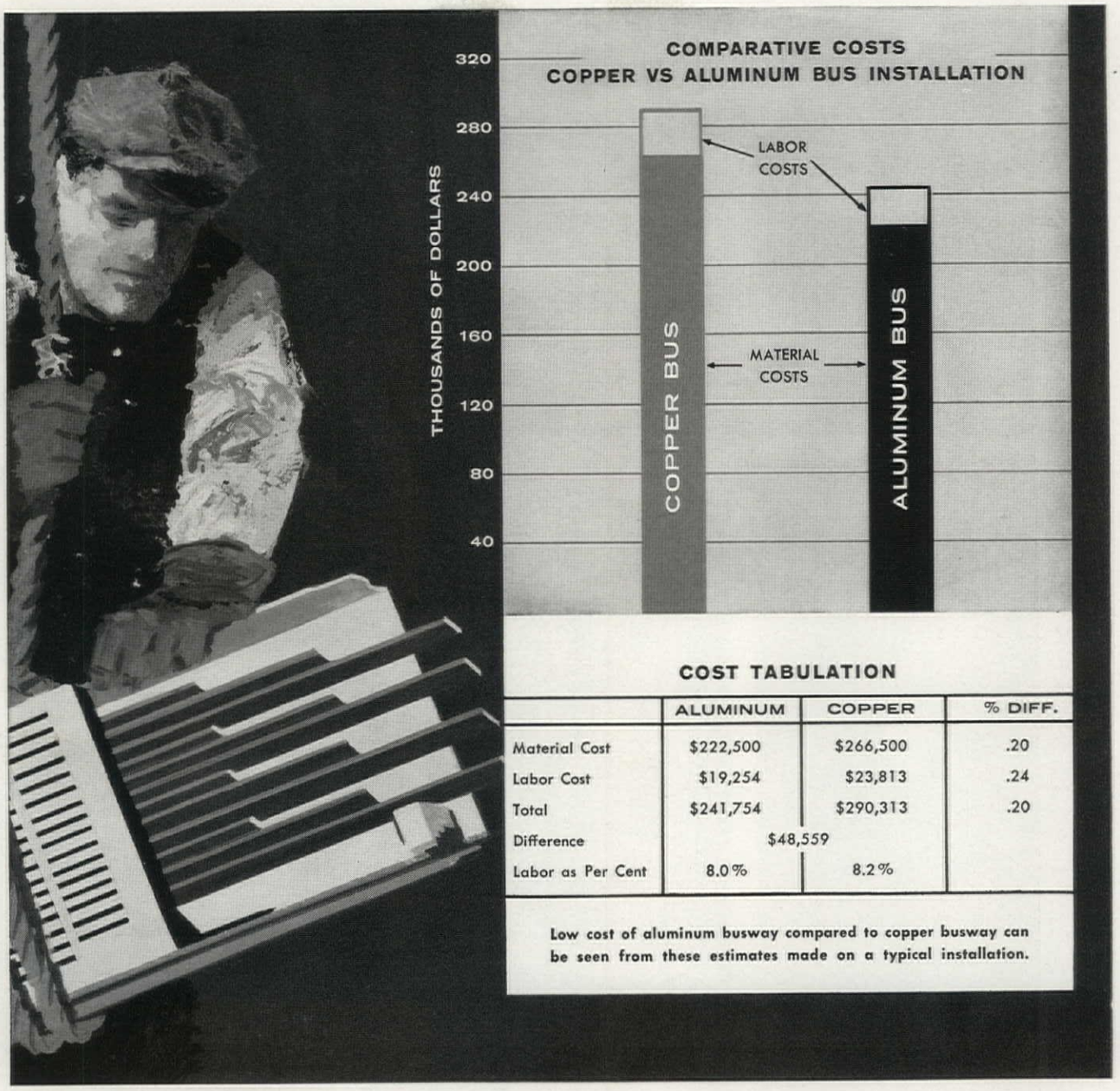

COST TABULATION

	ALUMINUM	COPPER	% DIFF.
Material Cost	$222,500	$266,500	.20
Labor Cost	$19,254	$23,813	.24
Total	$241,754	$290,313	.20
Difference	$48,559		
Labor as Per Cent	8.0%	8.2%	

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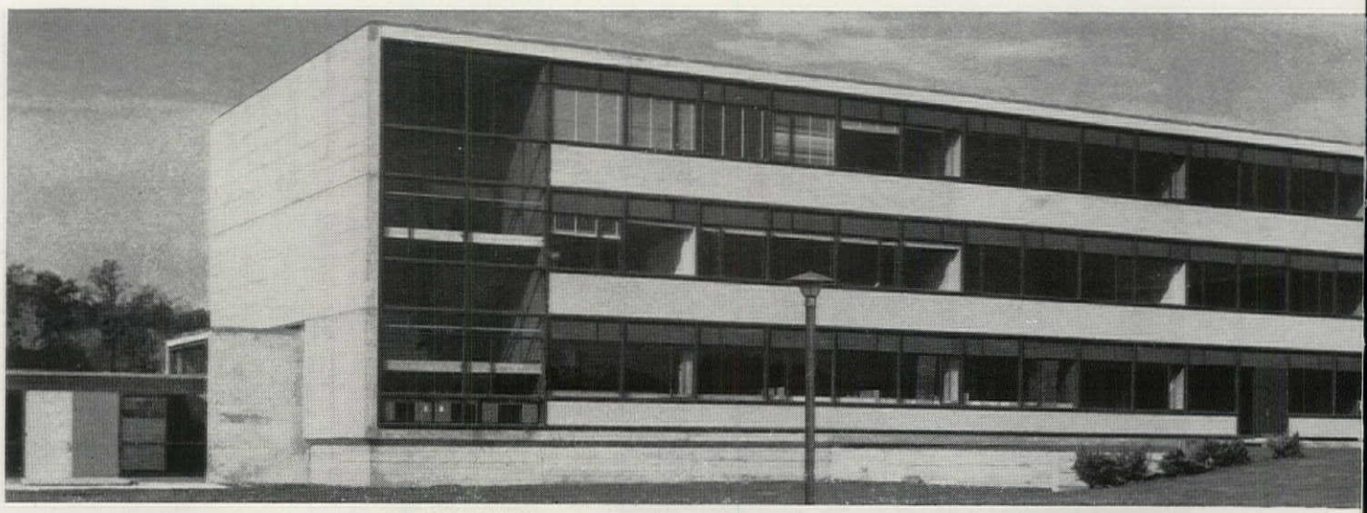

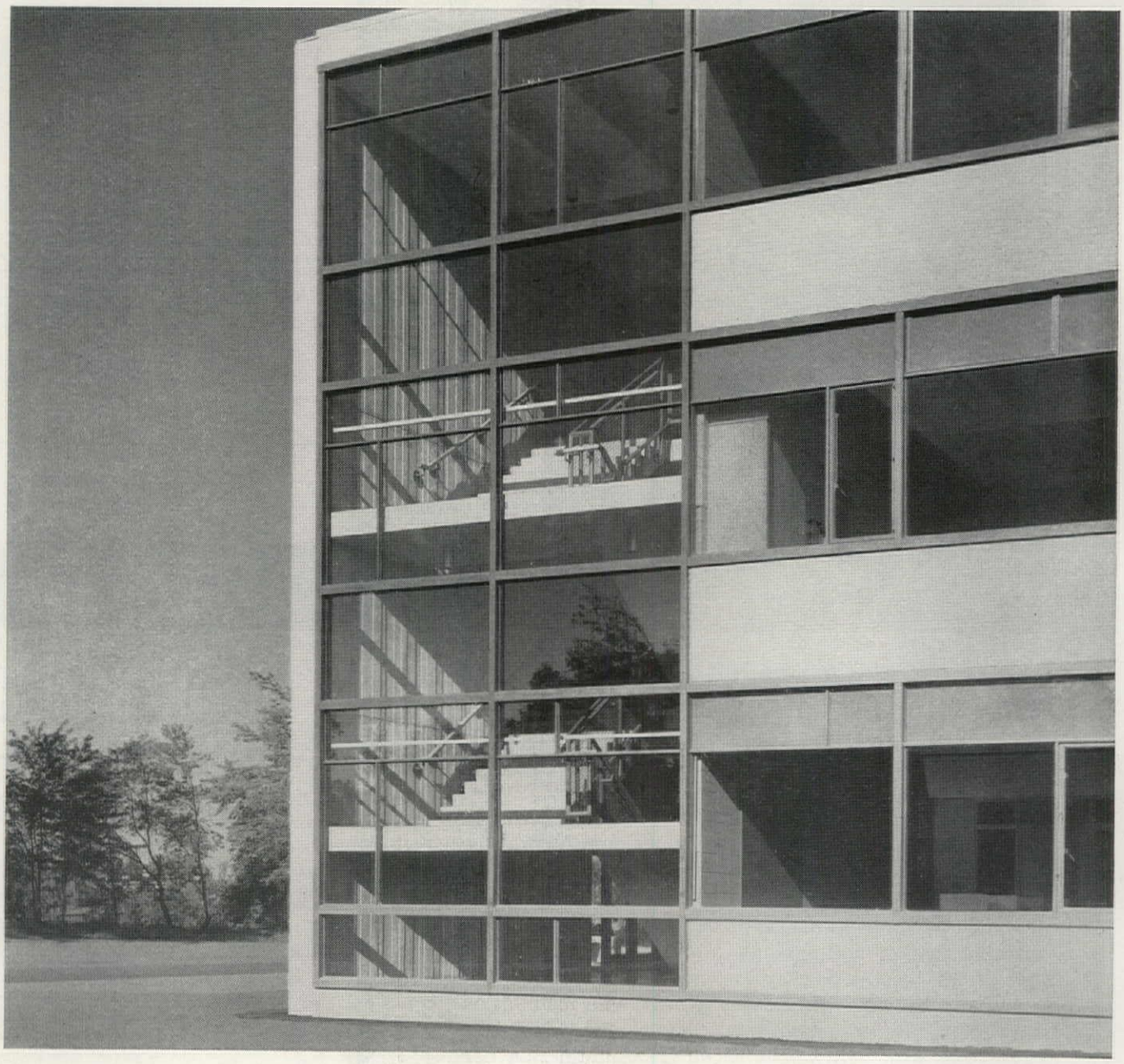

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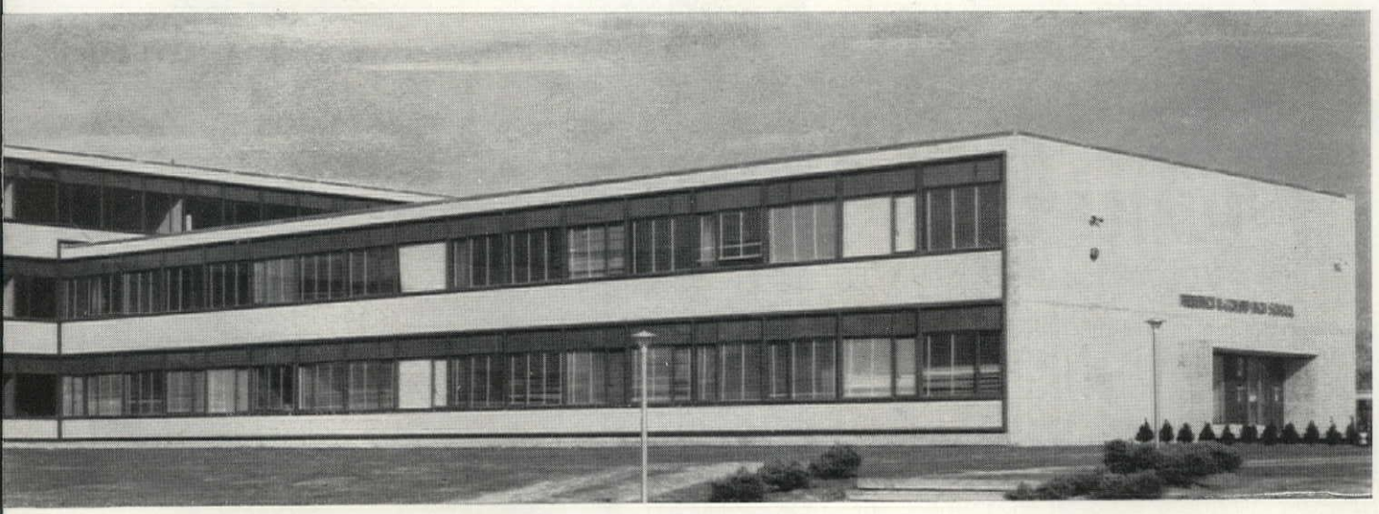

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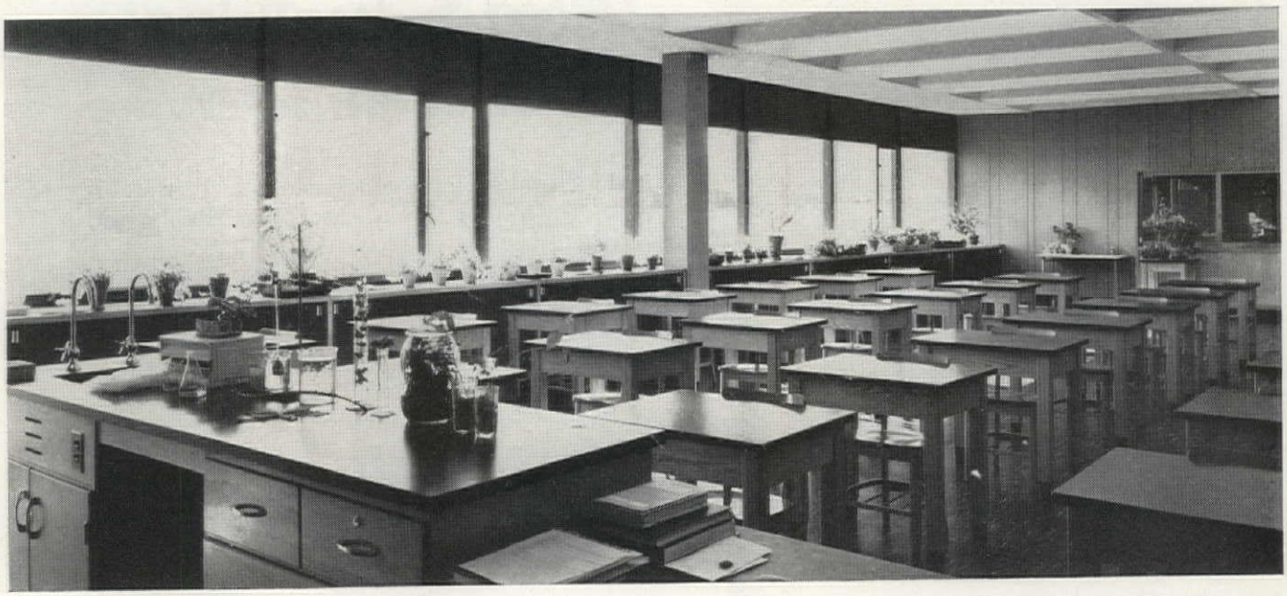

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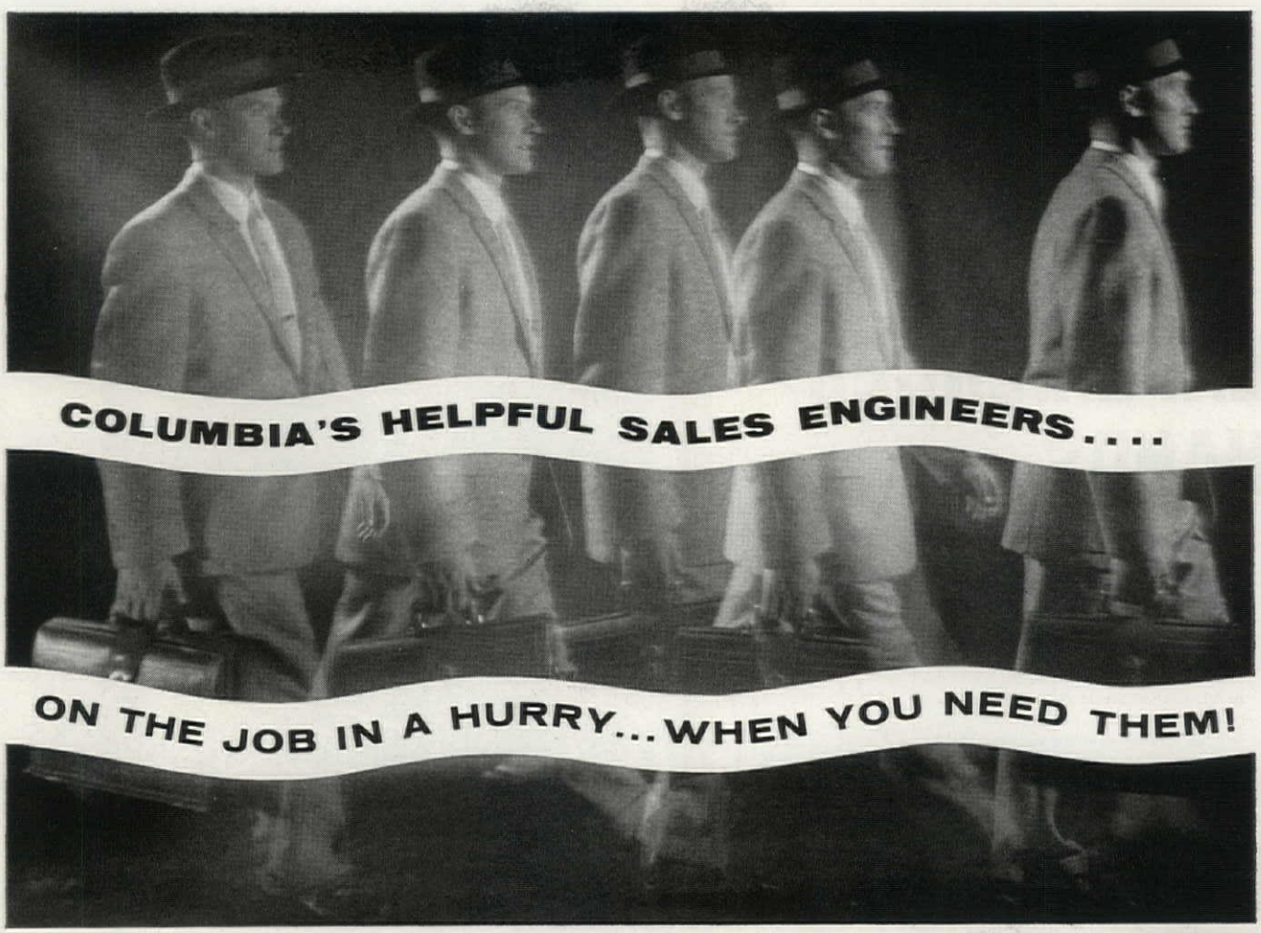

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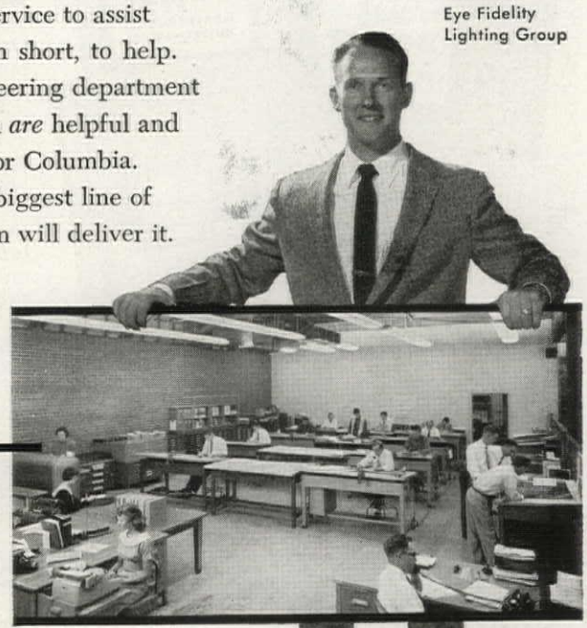

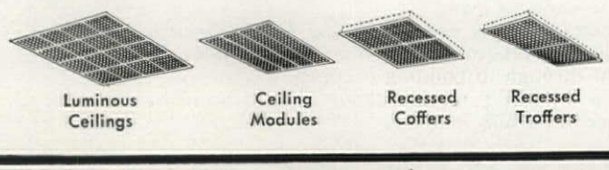

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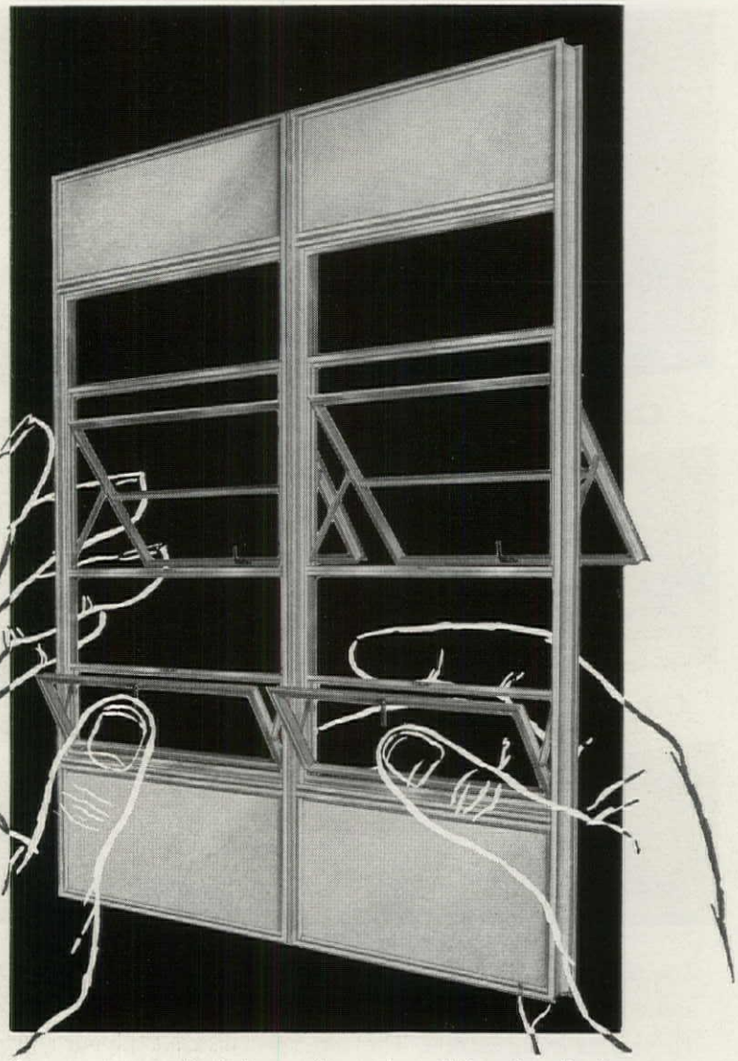

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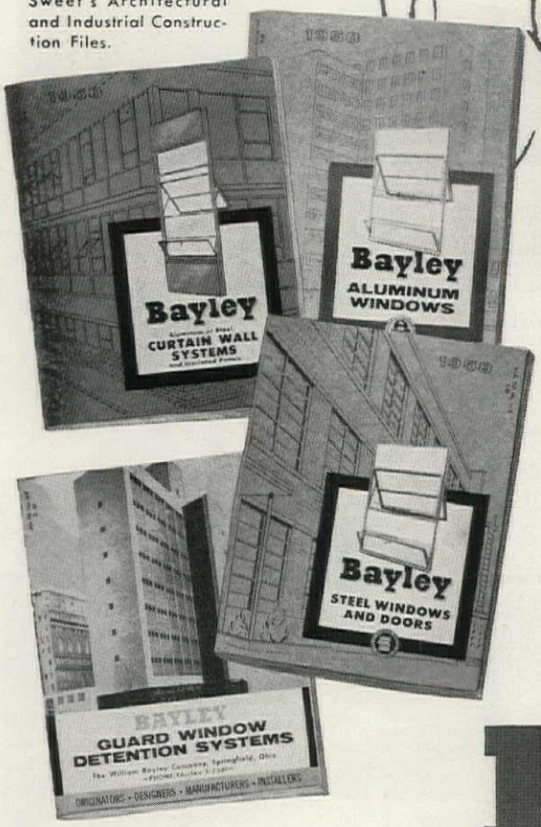

On every point of window and curtain-wall function, Bayley systems give you maximum effectiveness . . . cost-saving, trouble-free erection . . . unusual design latitude without the extra cost and delay of fully "customized" fabrication.

And there's an *exclusive* Bayley feature of even greater importance: the *extra services* you can count on when you place your window-wall problems in Bayley's skilled and capable hands.

You are invited to counsel with Bayley engineers from the first moment windows or curtain walls enter into your planning picture. The earlier you do so, the sooner you get helpful information on what today's foremost curtain-wall specialists have learned to provide for—and to avoid.

These extra services encompass the *follow-through* responsibility Bayley assures for every job on which Bayley products are used—right through to building occupancy.

There's a BAYLEY representative in your immediate area at your service. Call him in today.

BAYLEY

Steel and Aluminum **Windows and Curtain Walls**

The **WILLIAM BAYLEY Co.**
Springfield, Ohio

District Sales Offices:
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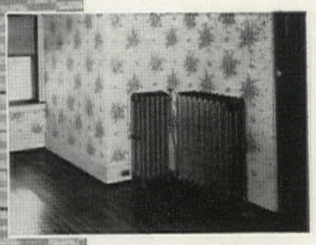


Room in 50-year-old single home modernized into two apartments by Mr. Arthur Stockdale, Cleveland, Ohio, shows contrast between old and new in steam heating. Trim, compact SelecTemp unit at left (only 18″ high) has maximum heat output of 12,000 Btu per hour. Built-in modulating non-electric thermostat controls forced circulation of filtered warm air.

Individual room-by-room temperature control now economical and practical

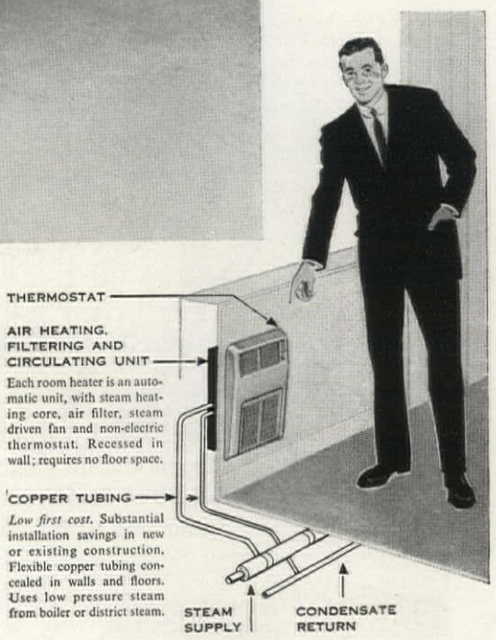
The Iron Fireman SelecTemp heating system has the basic economy and efficiency of steam heat, but with all of these added advantages:

A thermostat in every room. Occupants choose the temperature they prefer. More important, each room gets just the amount of heat it needs, regardless of heat from sun or fireplace or heat loss from cold winds.

Modulating heat control. The *volume* of heat is constantly adjusted to room needs—a little or a lot as required. No "on-off" cycling.

Amazing capacity in small space. SelecTemp compactness is due to the extremely efficient honeycomb copper heat exchanger, together with forced air circulation, delivering up to 120 cfm from the 12,000 Btu room unit (shown above), only 18″ x 13⅝″ in size.

For more information see catalog in Sweet's Architectural and Light Construction files, or mail coupon.



FOR BUILDINGS AND HOMES

SelecTemp installations now in use range from medium size homes to large office buildings with hundreds of room units. SelecTemp heating has proved widely adaptable. Churches can heat rooms for mid-week use without heating the entire building. Hospitals can meet patients' special needs, while non-electric fans and thermostats make SelecTemp units safe in operating rooms. Motels cut fuel bills by reducing daytime room temperatures; rooms are quickly reheated, as needed. In apartment buildings and dormitories, individual room thermostats end tenant complaints. Schools can keep the gymnasium cool and study and classrooms at the desired warmth. Homes can have cool sleeping rooms; warm bathrooms and nursery. Experience proves fuel and maintenance costs are low. Initial cost comparable to conventional hot water and steam systems, which do not have room-by-room control.

IRON FIREMAN®

Engineered **Heating and Cooling**

IRON FIREMAN MANUFACTURING COMPANY
3048 West 106th Street, Cleveland 11, Ohio
(In Canada, 80 Ward Street, Toronto, Ont.)

☐ Send SelecTemp specifications and full information.

☐ Arrange for brief demonstration of SelecTemp room unit; in actual operation, in our office.

Name_____

Firm_____

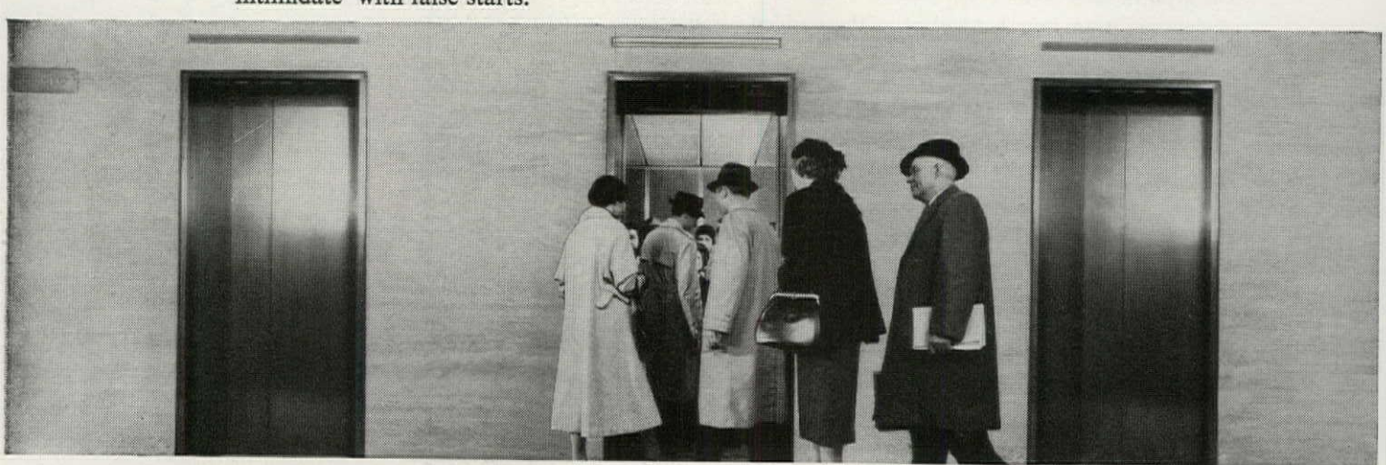
Address_____

City_____ State_____

WESTINGHOUSE TRAFFIC SENTINEL®

1 "Westinghouse developed Traffic Sentinel exclusively for its operatorless elevators," explains Betty Furness. "It is a door control mechanism which operates electronically. In this picture, elevator doors open the instant the elevator arrives at the floor to allow passengers to enter.

2 "Doors remain motionless during continuous loading of the elevator. This is the built-in courtesy feature of Traffic Sentinel. Doors don't startle passengers by closing prematurely, neither do they 'intimidate' with false starts.

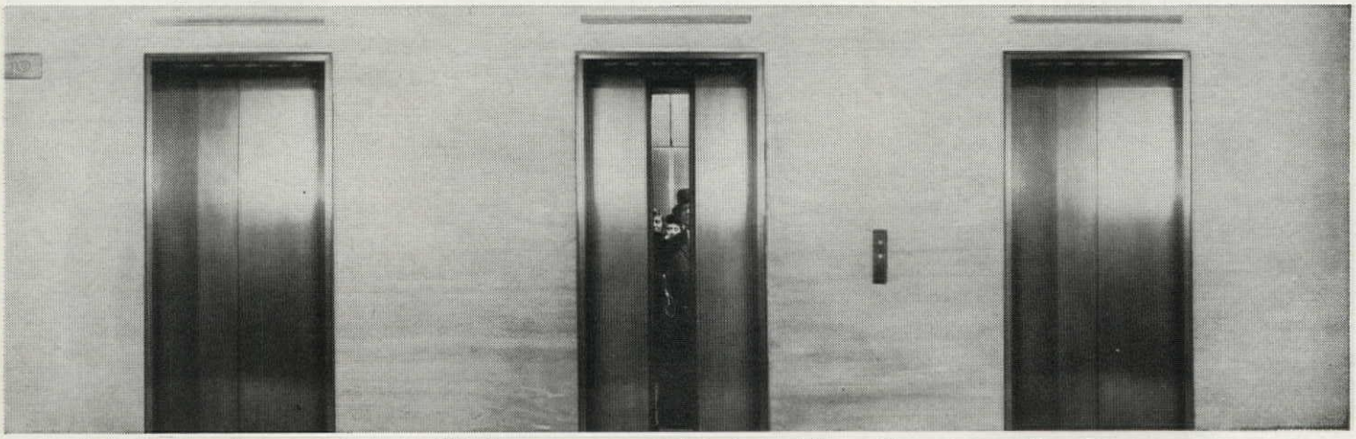


3 "Last remaining passengers are entering elevator, yet not once have the doors attempted to close. The reason is simple: door openings and door closings are controlled by Traffic Sentinel which is activated by passenger traffic flow—automatically . . . electronically.

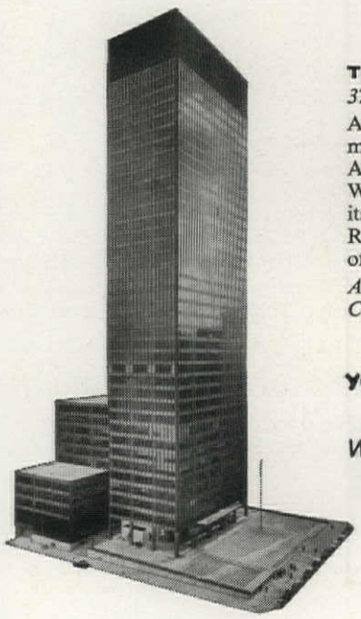
Westinghouse **TRAFFIC SENTINEL ELEVATOR DOORS**

DOORS HAVE BUILT-IN COURTESY

4 "All passengers have entered the elevator. We are about to witness the final timesaving feature of these magic Traffic Sentinel controlled doors. They will start to close almost immediately after the last passenger has entered.



5 "Doors close and elevator will take passengers to their desired floors. No overcrowding. Doors are closed automatically and courteously when the last passenger enters—or when the elevator becomes substantially loaded."

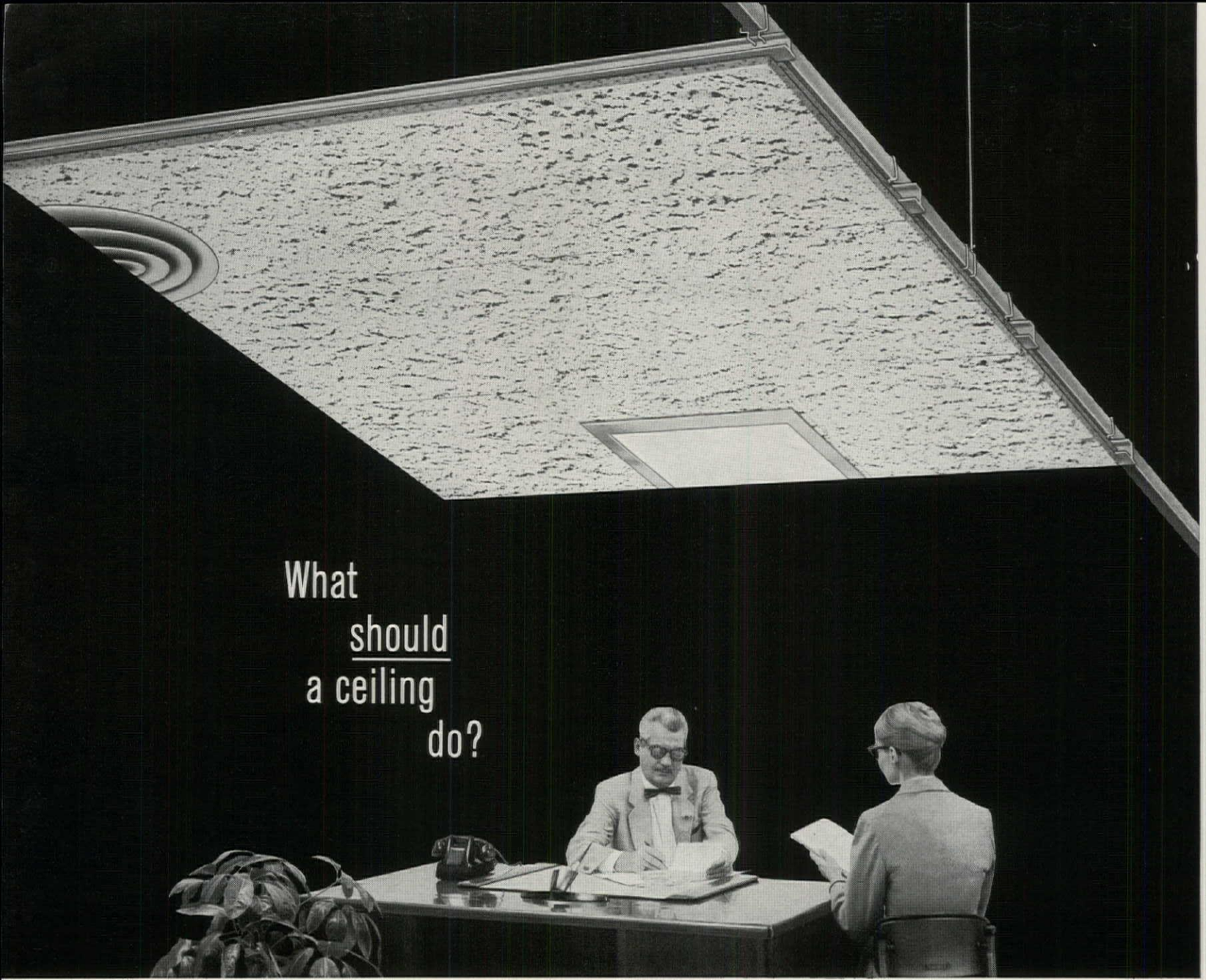


THE SEAGRAM BUILDING
375 Park Avenue in New York City
An advanced expression of modern architecture is embodied in this much publicized 38 story building.
All interior photographs shown were made on the lobby floor.
When you visit New York City, see this remarkable building with its smooth, quiet Westinghouse Operatorless Elevators.
Ride and experience for yourself the politeness and timesaving features of elevator doors controlled by Traffic Sentinel.
Architect—Mies van der Rohe and Philip Johnson
Contractor—George A. Fuller Company

YOU CAN BE SURE...IF IT'S Westinghouse

WESTINGHOUSE ELEVATORS AND ELECTRIC STAIRWAYS

J98762AA



Comfort *is one of the* 7 functions *of a modern ceiling*

In planning a comfortable and productive environment, a vital consideration is the ceiling – the most important surface in the room.

ACOUSTONE Ceiling Systems by U.S.G. help you create this atmosphere of comfort – and achievement – by combining inspiring beauty with functional lighting; by accommodating all the above-ceiling facilities that bring heat, light and air to the room; and, above all, by an outstanding capacity to control distracting, unwanted sound.

For full information, or a free showing of the 16 mm. color and sound film, "More than Meets the Eye," contact your nearby ACOUSTONE Tile Contractor, or write Dept. AF-86, 300 W. Adams St., Chicago 6, Ill. Additional information is in Sweet's Catalog, section 11a/Uni.

- structure
- sound absorption
- sound isolation
- fire protection
- beauty
- **comfort**
- economy

SOUND CONTROL IS A JOB FOR EXPERTS

ACOUSTONE*

MINERAL ACOUSTICAL TILE

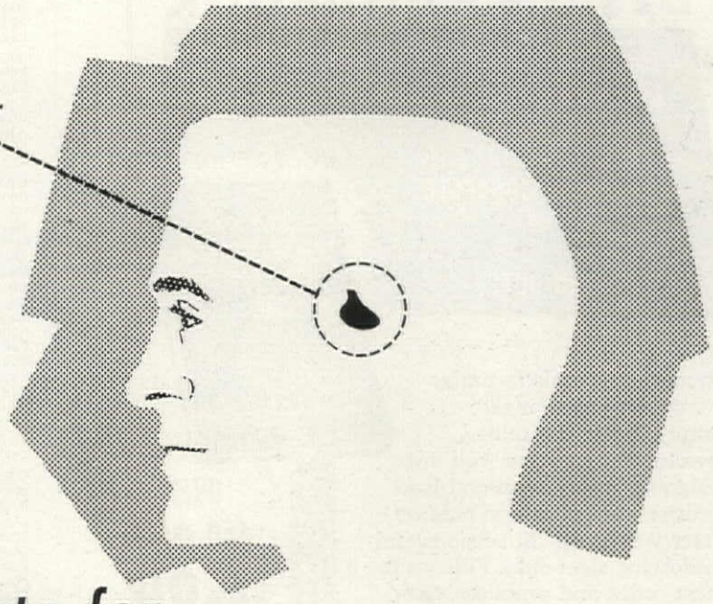
*T. M. Reg. U. S. Pat. Off.

UNITED STATES GYPSUM

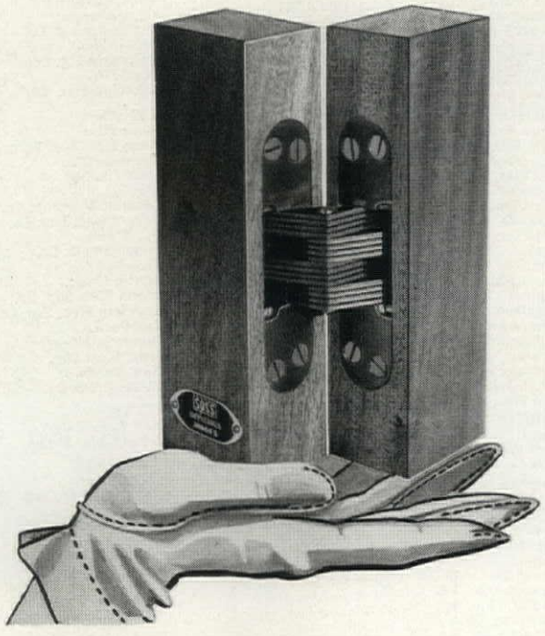
UNITED STATES GYPSUM — The greatest name in building

The Story of Your Growth Governor

In the very center of your head, on the floor of the cranium, lies the Pituitary Gland. This gland is composed of an "anterior" and a "posterior" lobe. The anterior lobe secretes a hormone that governs the extent of bone growth. Whether you are short or tall depends on the amount of hormone secreted during your growing years by the Pituitary Gland which is about the size of a large pea! There's no substitute for your Pituitary Gland or for Soss Invisible Hinges, either!



there's no substitute for



SOSS INVISIBLE HINGES —*either.*

"The Hinge That Hides Itself"

Here's the only hinge that creates flush, smooth surfaces. Around the globe, architects, builders, and home owners choose Soss Invisible Hinges whenever they want to create a masterpiece of modern architectural design. There's a place for Soss Hinges in every building. Use them whenever you want the best. There's no substitute for Soss Invisible Hinges, either!

Other quality Soss Products that offer unusual architectural effects:

SOSS LIFT-IN LATCH

Eliminates service calls to repair loose knobs. Extremely easy to install. Eliminates need for door stops. Makes opening doors much easier at all times. Smart, modern, flush-type design. Body is formed from solid casting. Available in all standard U. S. finishes with or without locking mechanism for all interior swinging doors.

SOSS OLIVE BUTT

Low in cost. Installation is similar to any 3½" butt hinge. When open, door can be taken off without removing pins or screws. Lifetime nylon bushing. Choice of attractive finishes. Adaptable to either 1⅜" or 1¾" interior or exterior doors. Lifetime Guarantee.

Write today for price list and free illustrated catalogue on these advanced Soss products

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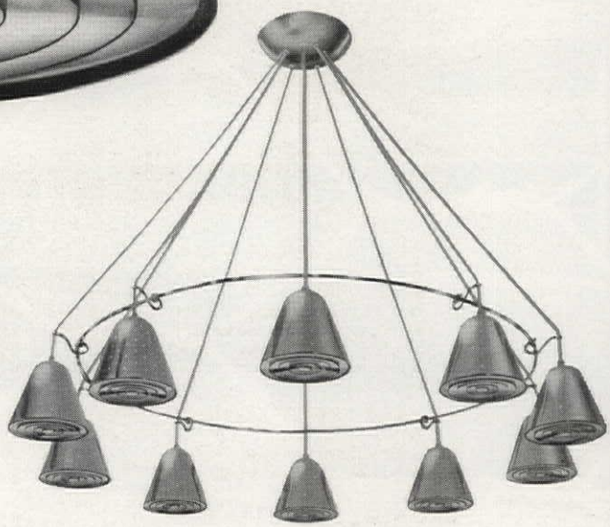
DETROIT 13, MICHIGAN

RONDO *has a feeling of rhythm that makes it exciting in a wide variety of residential and public interiors. It is also an ingenious way to hide an unsightly ceiling without structural changes. The model shown here provides a broad flood of down light over a wide area. Concentric louvers banish glare. Available in pierced brass or eggshell textured opal glass in ten and six light models at our showrooms and at the authorized distributors listed left. For the full-color 40-page Portfolio Collection Catalog, write on professional letterhead to Dept. R, Jersey City 5, New Jersey.*



LIGHTOLIER

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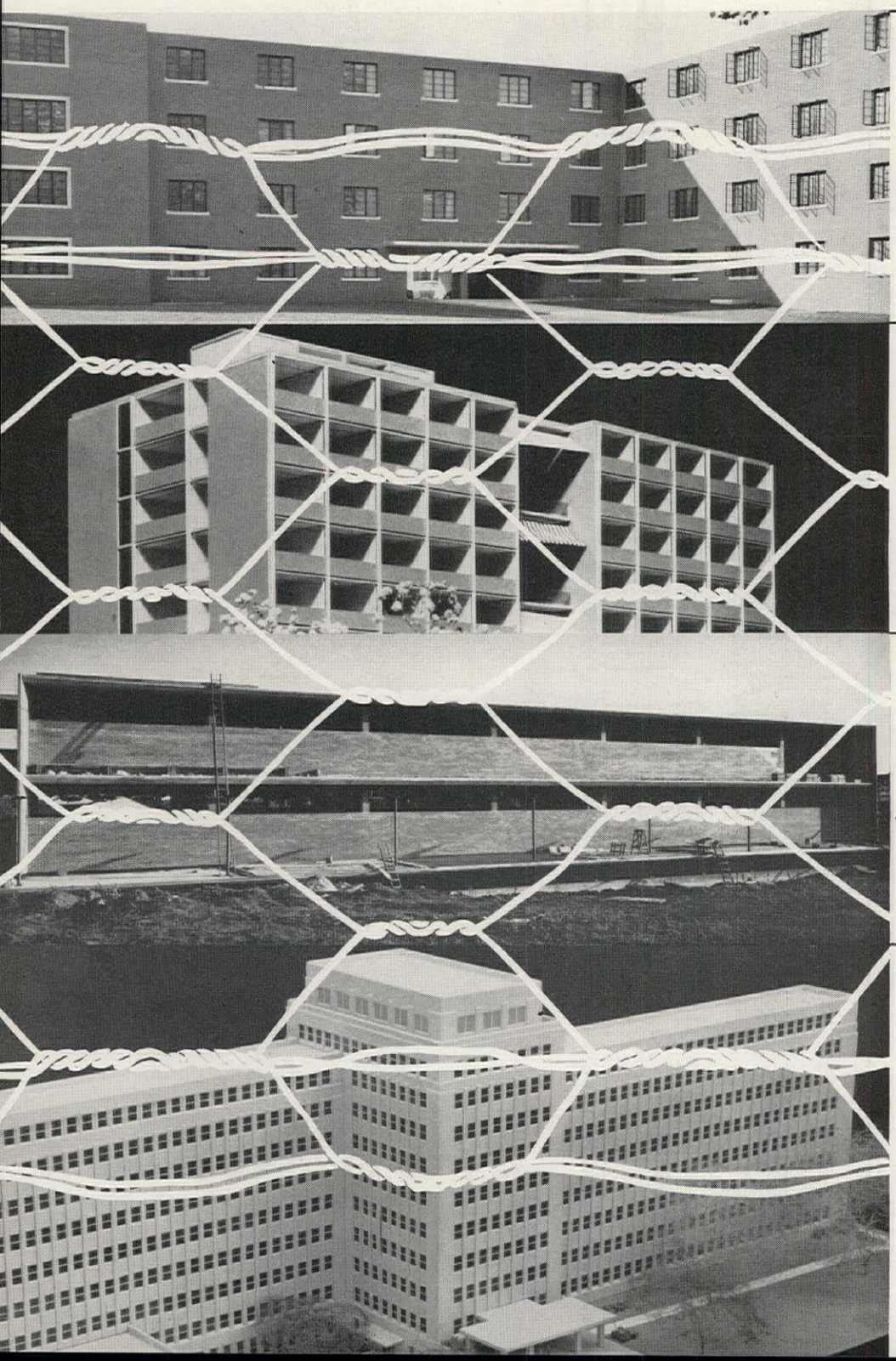
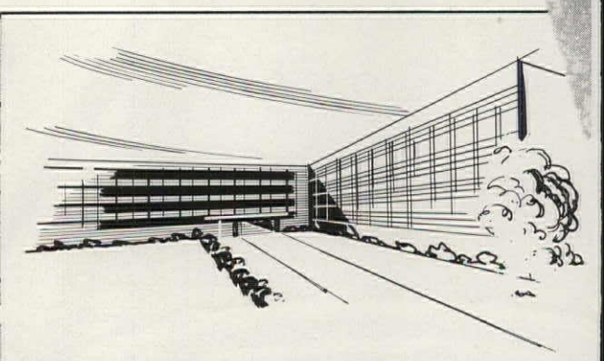
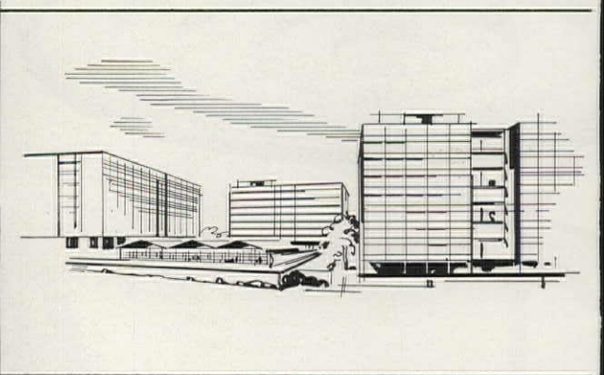
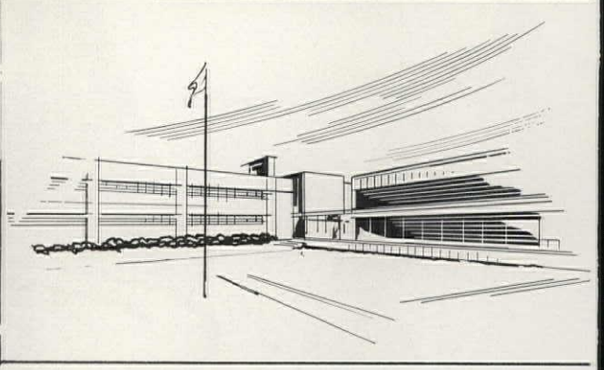
keywall

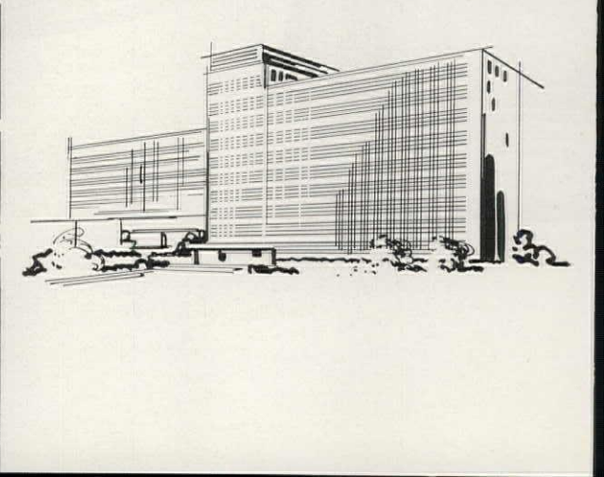
GALVANIZED MASONRY REINFORCEMENT











goes to college

Campus buildings are getting greater reinforcement at lower cost

Iowa

Iowa State College: Keywall masonry reinforcement approved for Helser Hall, a new men's dormitory at Iowa State College, Ames, Iowa. Architect: Brooks-Borg, Des Moines, Iowa; General Contractor: W. A. Klinger Construction Co., Sioux City, Iowa.

Missouri

University of Missouri: Three 9-story residence halls and a single cafeteria unit for women students being constructed at the University of Missouri, Columbia, Missouri. Keywall is being used in this vast project. Architect: Hellmuth, Obata and Kassabaum, St. Louis, Missouri. General Contractor: D. C. Bass & Sons, Enid, Oklahoma.

Kansas

University of Wichita: Keywall used in masonry curtain walls in the new Mathematics and Physics Building at the University of Wichita, Wichita, Kansas. Architect: W. I. Fisher & Company, Wichita, Kansas. General Contractor: Hahner & Foreman Inc., Wichita, Kan.

Indiana

Indiana University: The Elisha Ballantine Hall, a basic course classroom building at Indiana University, Bloomington, Indiana. Masonry walls are being reinforced with Keywall. Architect: A. M. Strauss Inc., Fort Wayne, Indiana. General Contractor: Huber, Hunt and Nichols Inc., Indianapolis, Indiana.

Architects accept Keywall masonry joint reinforcement for building projects at colleges and universities. Look at these new classroom buildings and residence halls at four leading universities. Masonry joints on these buildings are being reinforced with Keywall for added strength, greater crack resistance.

The ability of Keywall to increase lateral strength and reduce shrinkage cracks in masonry has been demonstrated on job after job. Recent tests confirm this superior quality. Architects know they're getting effective reinforcement at a savings.

Masons like Keywall . . . they use it as specified. They find it easy to handle and easy to adapt to a wide range of applications. Keywall can be lapped at corners without adding thickness to joints. Full embedment and a complete bond are assured.

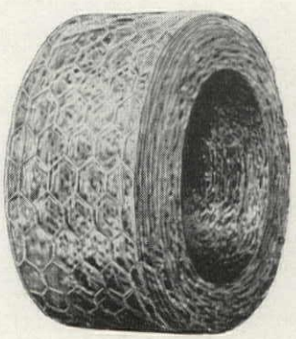
Galvanized Keywall can be stored any place without rusting. No wonder Keywall wins wide acceptance among builders and architects!

Keywall is made for the following wall thicknesses: 4″, 6″, 8″, 10″ and 12″.

KEYSTONE STEEL & WIRE CO.

PEORIA 7, ILLINOIS

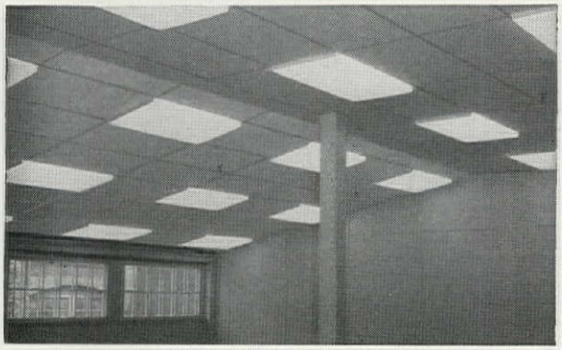
Keywall • Keycorner • Keymesh®
Keystrip • Welded Wire Fabric



NEW Smithcraft SLENDEX

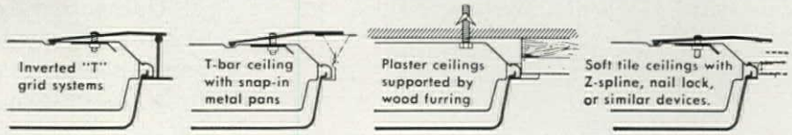
breaks the ceiling space barrier

BREAKS THE CEILING SPACE BARRIER! 100 SLENDEX 2' x 4' units, selected from the offerings of 14 manufacturers, installed in the testing laboratory of one of the nation's largest steel companies. Ceiling 7'6" at lowest point; 1½" cavity depth.



SLENDEX solves tough ceiling problems . . . in acute ceiling space conditions . . . in low ceilings . . . in minimum cavities. Recesses only 1⅜" . . . SLENDEX is so shallow it handles like tile! Slender, sleek architectural styling is complemented by unique engineering features. Requires no extra depth for tilting . . . goes into the ceiling *flat*. Simplified installation and maintenance. Clean uniform lighting . . . no dark center streaks. Now — simplify your lighting job by using the new Smithcraft SLENDEX!

ADAPTS TO ALL COMMON CEILING TYPES

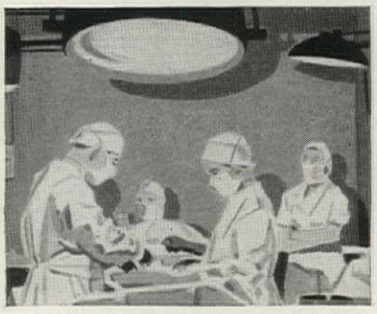


Write today for the complete Smithcraft Catalog, your buying guide to "America's finest fluorescent lighting."

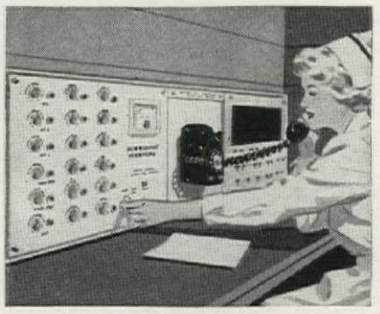
Smithcraft
LIGHTING
CHELSEA 50, MASSACHUSETTS

can practically manage themselves!

Honeywell now centralizes supervision of building functions—replaces legwork with cheaper, faster electrical signals.

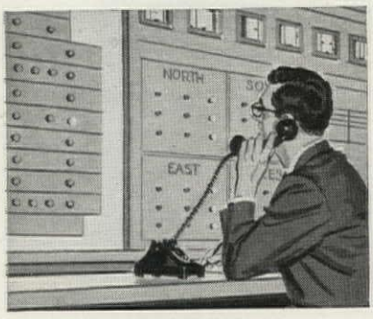


Air cleaner supervision
Panel supervises operation of electronic air cleaners to protect hospital cleanliness, trap microscopic particles. Gives bacterial and viral arrestance of 90% or more.

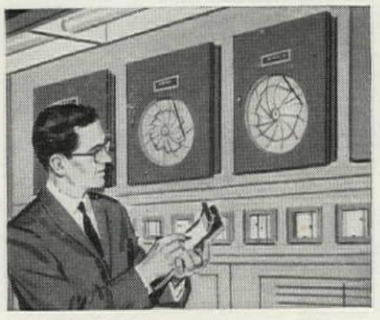


Remote control and communication
Lets nurse control temperatures in sterile areas and in areas where control by occupants is undesirable. She can also communicate with these same areas.

Bedside self-service center
A mobile bedside table which can incorporate: room temperature control, nurse intercom, clock, telephone outlet, light dimmer and control, other functions.



Fire detection and alarm
Sounds alarm and flashes light showing fire's exact location. Supervisor can direct quick action. Fire-sprinkler system, if used, can be tied in to same panel.



Utilities consumption records
Gives daily departmental metered record of power, steam and chilled water used. Connected to high speed typewriter, will fill in regular accounting forms.

Mechanical failure detection
From panel, supervisor can spot trouble at any point in air conditioning, plumbing or other mechanical system, send crews to remedy before breakdowns occur.

This new control concept from Honeywell enables a building to almost take care of itself—automatically.

Called a Supervisory DataCenter*, it lets one man do the work of crews. For it places all the functions shown above—and any others that benefit from centralized control—under the supervision of a single control center.

It's easy to operate, requires no special training. And its maintenance can be handled through a low cost service agreement. Each control center is custom designed. Even before blueprints are started, a Honeywell specialist will work with you and your engineer to allow free expression of your ideas, as they apply to both design and function.

It's at this original planning stage that his specialized control knowledge can be useful in developing a system that will save the most money for your client. For more information about this new concept, call your local Honeywell office or write Minneapolis-Honeywell, Department MB-11-147, Minneapolis 8, Minnesota.

*Trademark

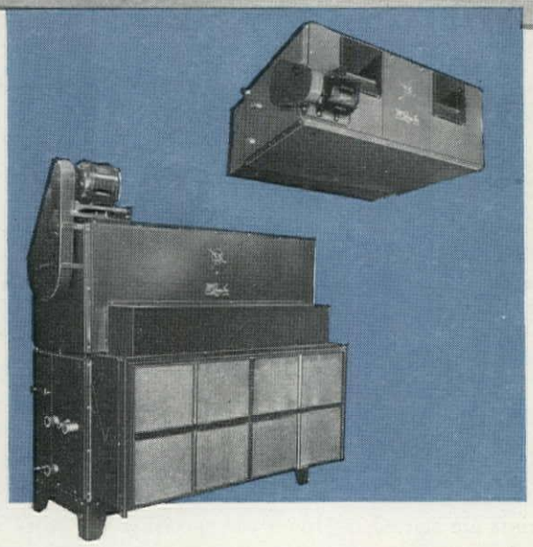
Honeywell

H HONEYWELL First in Control

a Monument to
a Monument to

PERSHING AIR CONDITIONING BY McQuay

Pershing Municipal Auditorium, Lincoln, Neb.
Architects: Davis & Wilson, Lincoln
Consulting Engineer: William Cassell, Kansas City, Mo.
Mechanical Contractors: Natkin & Co., Lincoln.



The Pershing Municipal Auditorium is a showplace in Lincoln, Nebraska. It is a monument to General Pershing and a monument to air conditioning. Thirteen McQuay Seasonmaster units and ten McQuay water coils provide year 'round air conditioning for this modern structure. To be sure that your next air conditioning job functions at its very best, see your McQuay representative. He will be glad to assist you in any air conditioning heating or refrigeration problems you may have. McQuay, Inc., 1609 Broadway Street N. E., Minneapolis 13, Minnesota.

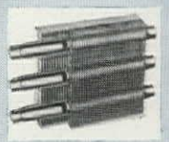
McQuay Horizontal and Vertical Seasonmaster central station air conditioning units. They are available with water coils, steam coils or direct expansion coils. Removable panels permit complete accessibility for inspection or service. All Seasonmaster units are made with the exclusive McQuay Ripple-Fin coils. Seventeen sizes available. Range from 640 cfm to 38,000 cfm.

McQuay INC.

MAKE THE SEASONS COME TO YOU

AIR CONDITIONING • HEATING • REFRIGERATION

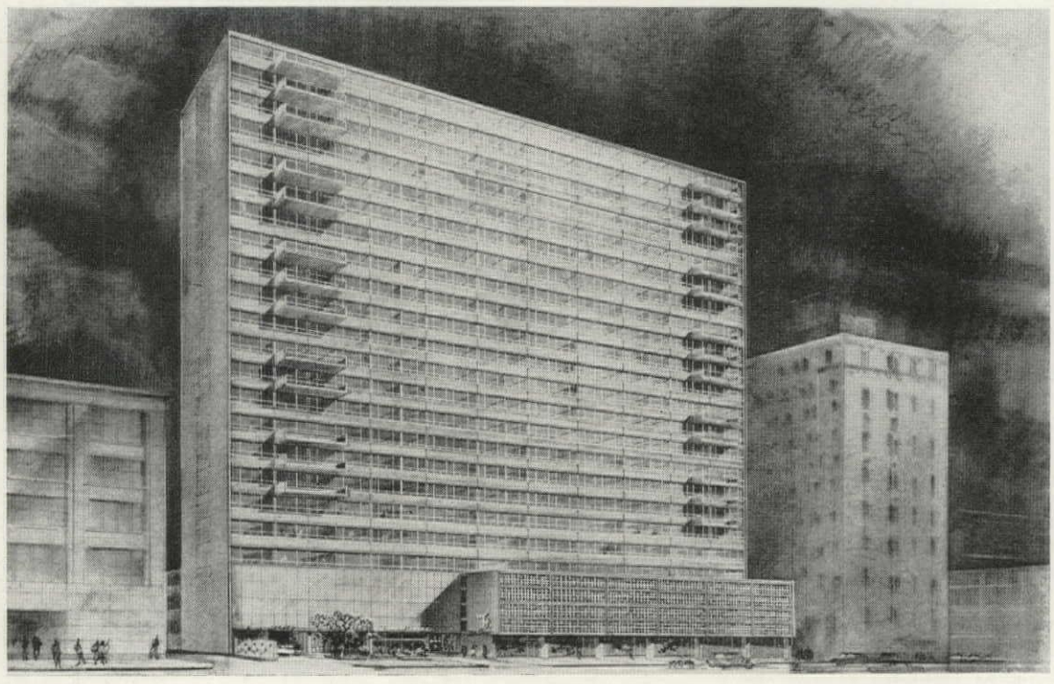
McQuay Means Quality



McQuay units feature the exclusive Ripple Fin Coils which create maximum air turbulence and have wide, full fin collars that act as automatic spacers to form a tube around the coil tube for greatest heat transfer and protection. Dura-Frame "V" channel construction provides the strength and rigidity necessary for quiet, trouble-free operation.

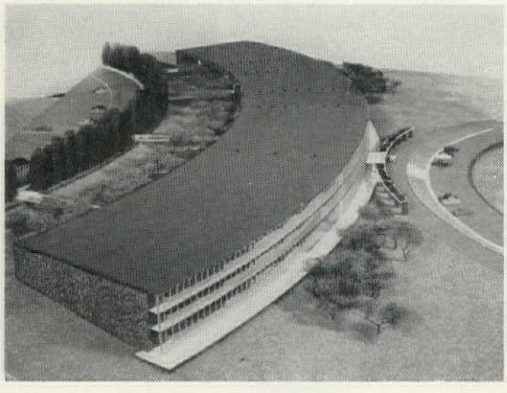
Projects

A roundup of recent and significant proposals



APARTMENT SKYSCRAPER FOR DOWNTOWN CLEVELAND

In downtown Cleveland, a 24-story apartment tower (above) will be built by Developer Theodore W. Berenson of Boston and Cleveland Attorney Sydney N. Galvin. To be known as Town House, the reinforced-concrete, glass-clad building will have 420 suites and a four-level parking garage beneath a landscaped terrace. Architects for the project, which will cost $6.5 million, are John Hans Graham & Associates of Washington, D.C. The project will be started next spring and is scheduled for completion by 1960.

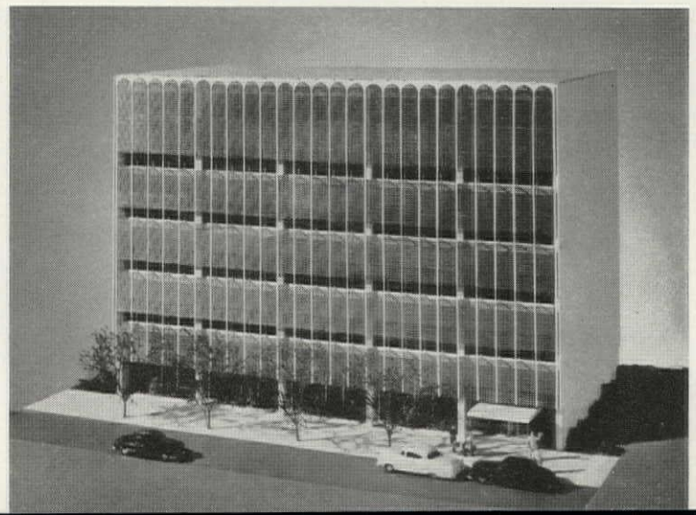


IBM RESEARCH LABORATORY

On a 224-acre tract in Yorktown, New York, the International Business Machines Corporation will build the two-story, crescent-shaped research laboratory (shown above). Scheduled for completion by late 1960, the glass-and-rubble-faced structure will house roughly 1,500 employees and will be the firm's largest single research center and administrative headquarters for other IBM laboratories. Over-all floor space: 450,000 square feet. Architects for the project: Eero Saarinen & Associates of Bloomfield Hills, Michigan.

OFFICE BUILDING FOR PASADENA

The model below is of the six-story Independent Life Insurance Building to be built at Pasadena, California, from plans by Welton Becket & Associates. A $1.2-million structure, it will be faced with vertical aluminum colonnades and gold anodized aluminum grillwork. The insurance firm, which will move its main headquarters from Los Angeles, will occupy two floors; the other floors will be leased.

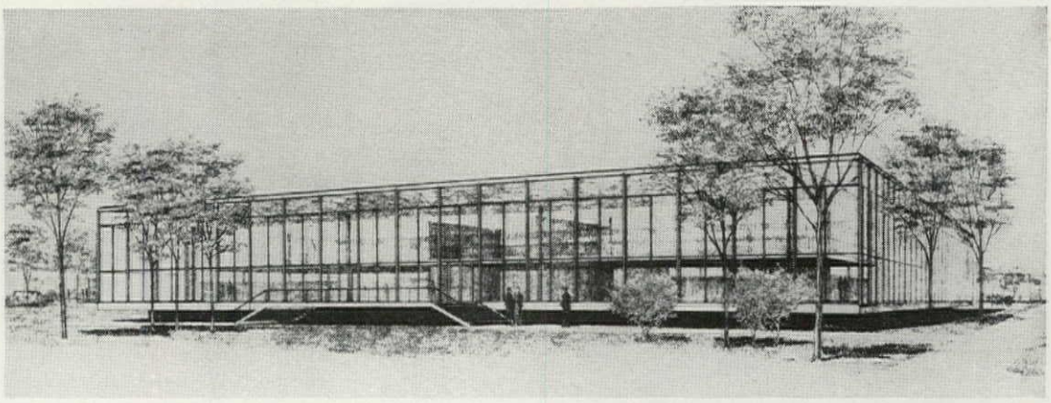


UCLA PSYCHOLOGY BUILDING

The University of California will erect a seven-story, H-shaped education-psychology building (left) with a campus concourse running beneath the bridge of the H. To be finished by 1960, the building will have 15 classrooms, animal research facilities, library, and a special dead-sound chamber. Its exterior will be of metal and glass panels marked with free-standing columns. Cost: $7 million. Gardner A. Dailey & Associates of San Francisco are the architects.

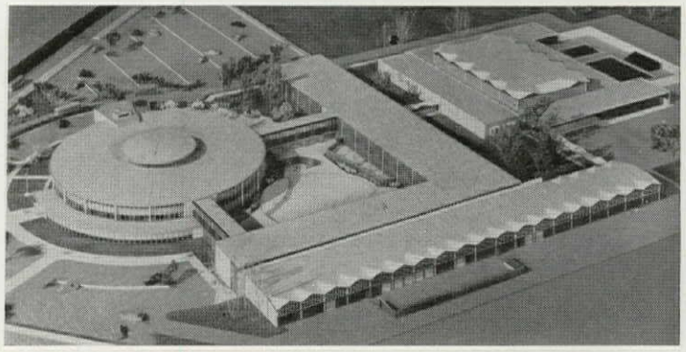
STUDENT UNION FOR IIT

Skidmore, Owings & Merrill have planned a student union building for the Illinois Institute of Technology (right) which looks very much like the many Mies van der Rohe-designed buildings around the campus. The $2.4 million steel-and-glass project will have clubrooms, bowling alleys, billiard and card rooms, cafeteria, and a small theater. Over-all floor space: about 100,000 square feet.



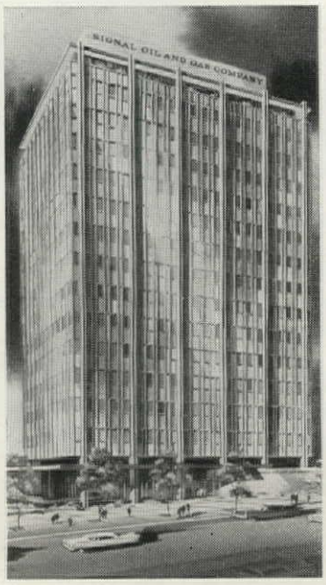
MUNICIPAL TOWER FOR INDIANAPOLIS

Twenty-six stories high, with a gross floor area of 960,000 square feet, the Indianapolis City-County Building shown below will be the tallest and largest office building in the state of Indiana. The building's center tower section, which will be used for administrative offices, will be sheathed in gray glass. The exterior of the two wings flanking the tower will be of Indiana limestone. One wing will house police facilities, the other will contain 16 courtrooms. A three-level, 625-car parking garage will be located beneath the building. Expected to cost about $28 million, the project is the design of Allied Architects & Engineers Incorporated.



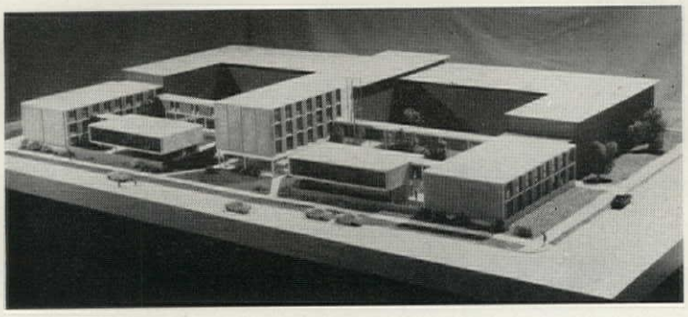
CLASSES-IN-THE-ROUND FOR CALIFORNIA HIGH SCHOOL

The circular section of Pacific High School in San Leandro, California (above) will be topped with a concrete shell and will contain 19 wedge-shaped classrooms around the outer rims of its two floors, a cafeteria in the center of the first floor, and a library in the center of the second. An L-shaped building containing science, homemaking, art, and shop facilities, as well as a gym (upper right hand corner) will be connected to the classroom section by enclosed walkways. To be built on a 30-acre site, the reinforced concrete project will be faced with porcelained panels. It will accommodate 1,900 students. The architects are Schmidts, Hardman & Wong of Berkeley. Cost: about $3.3 million.



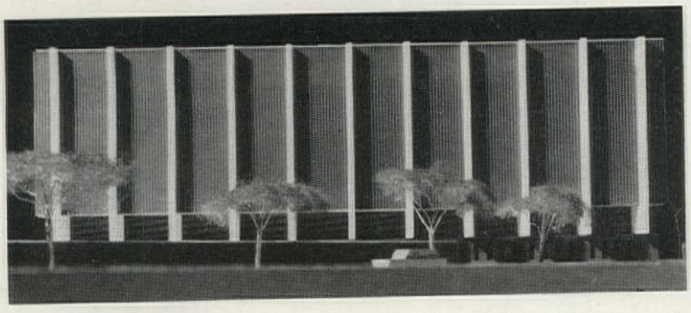
LOS ANGELES OFFICE TOWER

By the spring of 1960, the Signal Oil and Gas Company will be headquartered in the 15-story, $5-million office building pictured at left. Now under construction at the corner of Wilshire Boulevard and Beaudry Avenue, in Los Angeles, the 200,000 square-foot structure will be sheathed with porcelain, glass, and gold anodized aluminum panels. C.L. Peck and Robert S. Norman of Los Angeles are financing the building, which is the design of Pereira & Luckman.



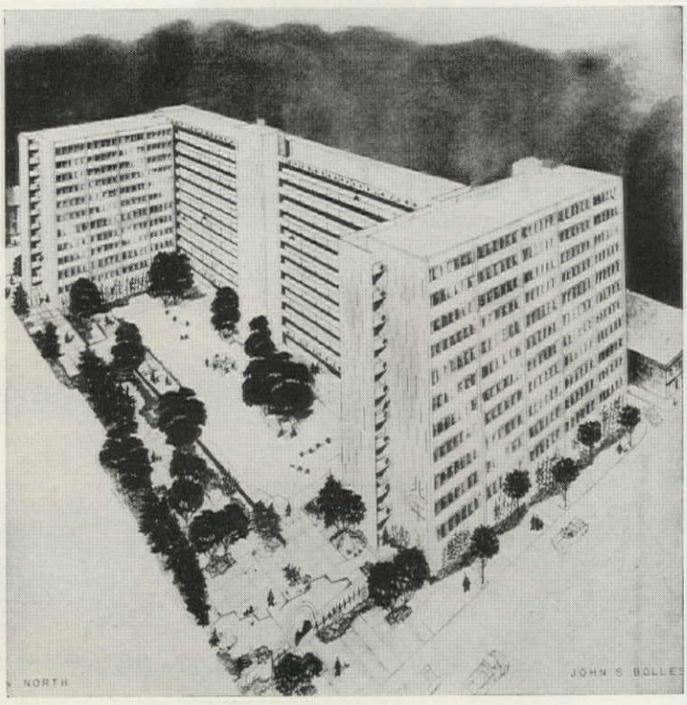
ULTRAMODERN SCHOOL FOR THE BLIND

The Missouri School for the Blind (Saint Louis) is adding to its original plant (at rear in photo above) five dormitories, an infirmary, classrooms, offices, and enclosed courtyards, all handsomely styled to eliminate any institutional stigma. Designed by St. Louis Architects Pearce & Pearce, the project will be faced in pink brick, limestone, blue-tinted glass, and bright-colored porcelain panels. Cost: $891,500.



JAIL WITHOUT BARS IN DETROIT

Inmates at Detroit's Wayne County Jail (above) will be imprisoned behind walls of milk-white glass backed by black steel grillwork, instead of bars. To be built at the corner of Beaubien Street and Gratiot Avenue behind the present jail, the new eight-story building has been designed as maximum-security detention quarters for 251 male prisoners. Architects for the project are Eberle M. Smith Associates of Detroit. Cost: about $2.3 million.



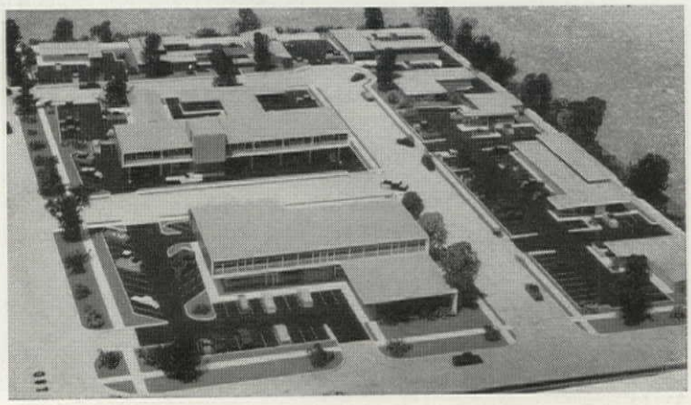
PUBLIC HOUSING FOR SAN FRANCISCO'S CHINATOWN

Architect John S. Bolles has designed three 12-story apartment towers (above) to provide low-rent public housing for 150 families and 44 elderly single persons in San Francisco's Chinatown. The apartment blocks, to be built by the San Francisco Housing Authority, will enclose play courts and a shaded Chinese garden with moon gate and reflecting pools, and will be topped by a community laundry with open-air drying docks. Cost: about $2.2 million.

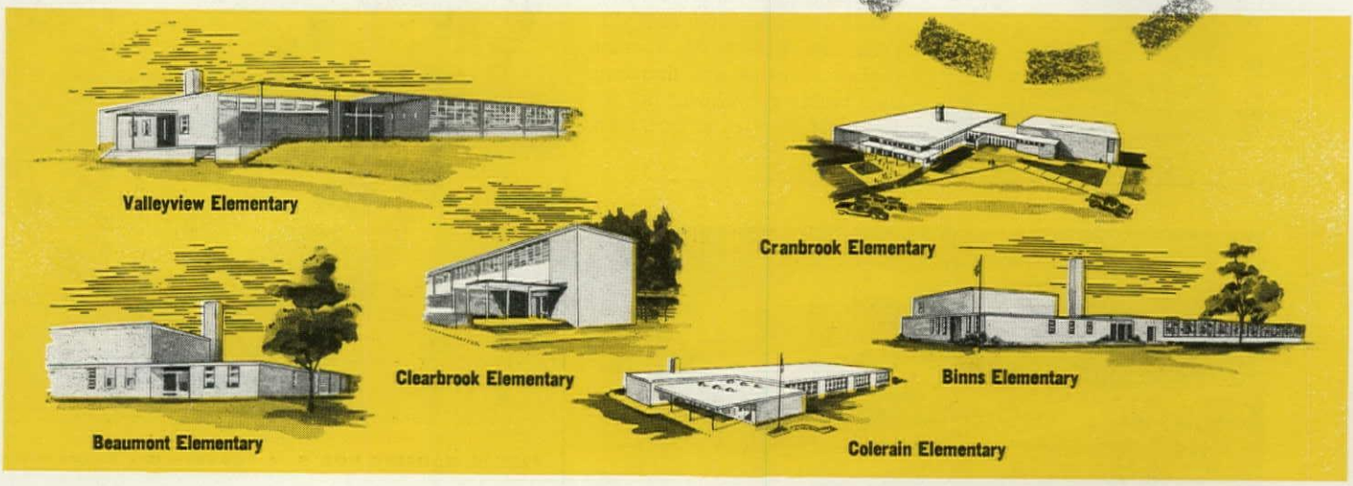
DOCTOR'S VILLAGE FOR HOUSTON

A 6.5-acre professional "village" for doctors and dentists will soon be built in Houston, Texas, by Joseph P. Holland. The $2-million project, planned by Houston Architect Boone Amyx, includes ten one-story clinics, accommodating 50 doctors, a two-story commercial corner containing a drugstore, restaurant, florist, and gift shop, and a 36-room hotel for out-of-town patients.

END



Twenty-three Public Schools HUBBELLIZED



During 1957 these nine new schools, plus fourteen other school building projects, were completed in Columbus, Ohio. All are equipped with Hubbell specification grade wiring devices.

Such acceptance of a product by the entire building "team", has prompted the use of a new word in Columbus. The word is "Hubbellized", meaning that Hubbell quality wiring devices are installed throughout a building for greater wiring dependability, safety, convenience and trouble free operation.

But you may well ask, how can we justify this added expense? The answer is this: ***top quality is always lowest in cost to service.*** The added initial cost for Hubbell quality is very little, but the value difference is very great. This greater value is reflected in long term wiring satisfaction for the life of the school. That's the objective in Columbus and that is why it will pay you to add the word "Hubbellized" to your building vocabulary.

A complete list of the "Hubbellized" Columbus, Ohio schools, including names of architects, consulting engineers and electrical contractors, is shown at right.

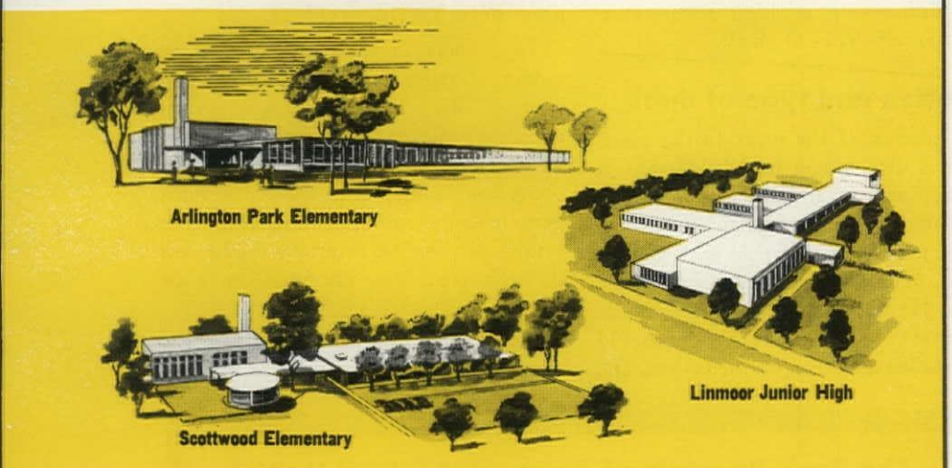
Quiet, dependable A. C. switch control, specifically designed for fluorescent lighting.

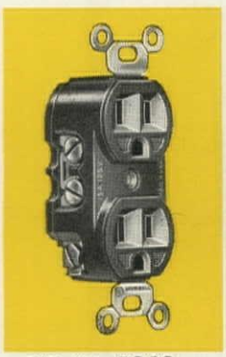
CAT. NO. **1201**
specification grade
"TOPPER" A. C. SWITCH
15 amperes, 120-277 volts

CAT. NO. **9260**
specification grade,
double T-slot
CONVENIENCE OUTLET
15 amperes, 125 volts

Double T-slot convenience for all 125 volt general purpose applications throughout the school.

in Columbus, Ohio During 1957





CAT. NO. **5262**
3-wire Grounding-type
DUPLEX RECEPTACLE
15 amperes, 125 volts

Designed for complete safety, in compliance with National Electrical Code requirements for use with 125 volt electrical tools and equipment.

HUBBELL-EQUIPPED COLUMBUS, OHIO SCHOOLS COMPLETED IN 1957

Binns Elementary, 1080 Binns Boulevard
Architect, David Schackne, Jr.
Consulting Engineer, Gould H. Ayres & Associates
Electrical Contractor, American Electric Works

Beaumont Elementary, 2155 Fenton Street
Architect, David Schackne, Jr.
Consulting Engineer, Gould H. Ayres & Associates
Electrical Contractor, Haines Electric, Inc., Grove City

Linmoor Junior High, 2001 Hamilton Avenue
Architect, David Schackne, Jr.
Consulting Engineer, Gould H. Ayres & Associates
Electrical Contractor, McCarty Bros. Electric Co.

Cranbrook Elementary, 908 Bricker Boulevard
Architect, Wm. R. M cDonald
Consulting Engineer, Gould H. Ayres & Associates
Electrical Contractor, Persha Electric Company

Scottwood Elementary, 3392 Scottwood Road
Architect, Brooks & Coddington
Consulting Engineer, Gould H. Ayres & Associates
Electrical Contractor, Berls Electric Company

Clearbrook Elementary, 31 N. Seventeenth Street
Architect, Richard L. Tully & Frederick H. Hobbs, Jr.
Consulting Engineer, Robert S. Curl & Associates
Electrical Contractor, Berls Electric Company

Colerain Elementary, 499 E. Weisheimer Road
Architect, Kellam & Foley
Consulting Engineer, Merton A. Rietzke
Electrical Contractor, Berls Electric Company

Valleyview Elementary, 2989 Valleyview Drive
Architect, James H. Holroyd & Robert H. Myers
Consulting Engineer, H. A. Williams & Associates
Electrical Contractor, C T H Electric Company

Arlington Park Elementary, 2400 Mock Road
Architect, Tibbals-Crumley-Musson
Consulting Engineer, Tibbals-Crumley-Musson
Electrical Contractor, American Electric Works

(All firms are in Columbus, Ohio, unless otherwise indicated.)

Devices supplied by the following Hubbell distributors in Columbus:
Bernard Electric Supply Co.
Graybar Electric Co.
Loeb Electric Co.
McCleery Carpenter Electric Co..

HARVEY HUBBELL, INC.
QUALITY WIRING DEVICES
BRIDGEPORT 2, CONNECTICUT

WIRING DEVICE OFFICE AND WAREHOUSE LOCATIONS

Bridgeport 2, Connecticut
State and Bostwick Streets

Chicago 7, Illinois
37 South Sangamon Street

Los Angeles 12, California
103 North Santa Fe Avenue

San Francisco, California
1675 Hudson Avenue

IN CANADA:
Scarborough, Ontario
1160 Birchmount Road

A MODERN CONCEPT FOR

Heating, Ventilating and Cooling of Schools

By F. J. KURTH, Vice President
in Charge of Engineering, Anemostat Corporation of America

Educational efficiency

The Anemostat Dual Duct High Velocity System provides a controlled and healthy environment in accordance with the highest standards of comfort and is therefore conducive to more vigorous activity in the classrooms. It is a modern heating and ventilating system, carefully researched and new in concept, and is economical to install and operate. It is an effective heating and ventilating system, which later can be readily adapted to air conditioning by the addition of a central-station type refrigeration system.

Because large sums of money must be spent for new schools, it is important to study all factors which will improve educational efficiency. Though well constructed and equipped, many new schools are not provided with modern heating, ventilating or cooling systems which furnish comfort during all seasons of the year. Experience has shown that a proper climatic condition will improve student and teacher efficiency to the extent of a cumulative gain of approximately twenty percent.

System design

First the volume of air required for a classroom must be determined. In most communities this is regulated by local codes on a cubic foot per pupil basis.

Although requirements vary in different localities from ten to thirty cubic feet of fresh air per minute, there are other factors which must be considered: for ventilation purposes, when cooling is not used, a large volume of air will, of course, do a better job than a small volume; however, the introduction of from 1000 to 1200 cubic feet of air per minute is adequate. If air conditioning is installed, the engineer may specify air temperature differentials of 30° or more between the supply air in the cold duct and the room temperature—Anemostat Air Diffusers will diffuse air at high temperature differentials without draft.

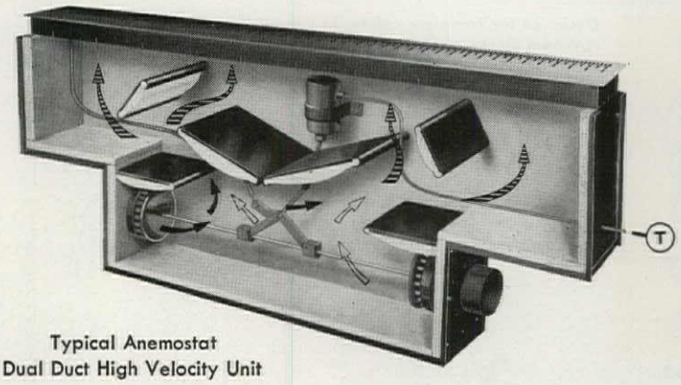
Location and type of units

The location of the units in the classroom is determined by the climate of the community in which the school is located and the construction of the school with particular reference to glass areas. When winters are severe the *under the window type units* must be used and two units per classroom should be installed as shown on the layout. The return air can be moved through corridors, ducts in corridors or exhaust plenums in the corridor ceilings.

In schools in mild climates or in colder climates where double glazing is used, the *sidewall units* will do an excellent job of year-round heating, ventilating and cooling. Two units providing from 500 to 600 CFM each per classroom are recommended. The return air can be returned to the fan through corridors, corridor ducts or plenums.

When two units are installed in a classroom, both are controlled by one

The Basic Principle of Anemostat School Units



Typical Anemostat
Dual Duct High Velocity Unit

The illustration shows a high velocity unit designed for a dual duct system for either heating and ventilating or complete air conditioning. To maintain ideal conditions, air is evenly and draftlessly diffused at high velocity throughout the classroom at controlled temperature; one duct carries cold air from the outside of the building, or cold air cooled by coils and mechanical refrigeration, the second duct carries warm air, which consists of a mixture of fresh and recirculated air heated by hot water or steam coils from heating boilers or by hot air furnaces. The thermostat in the classroom opens the hot air valve and closes the cold air valve, or vice versa depending on the room temperature requirements.

thermostat which should be located on an inside wall.

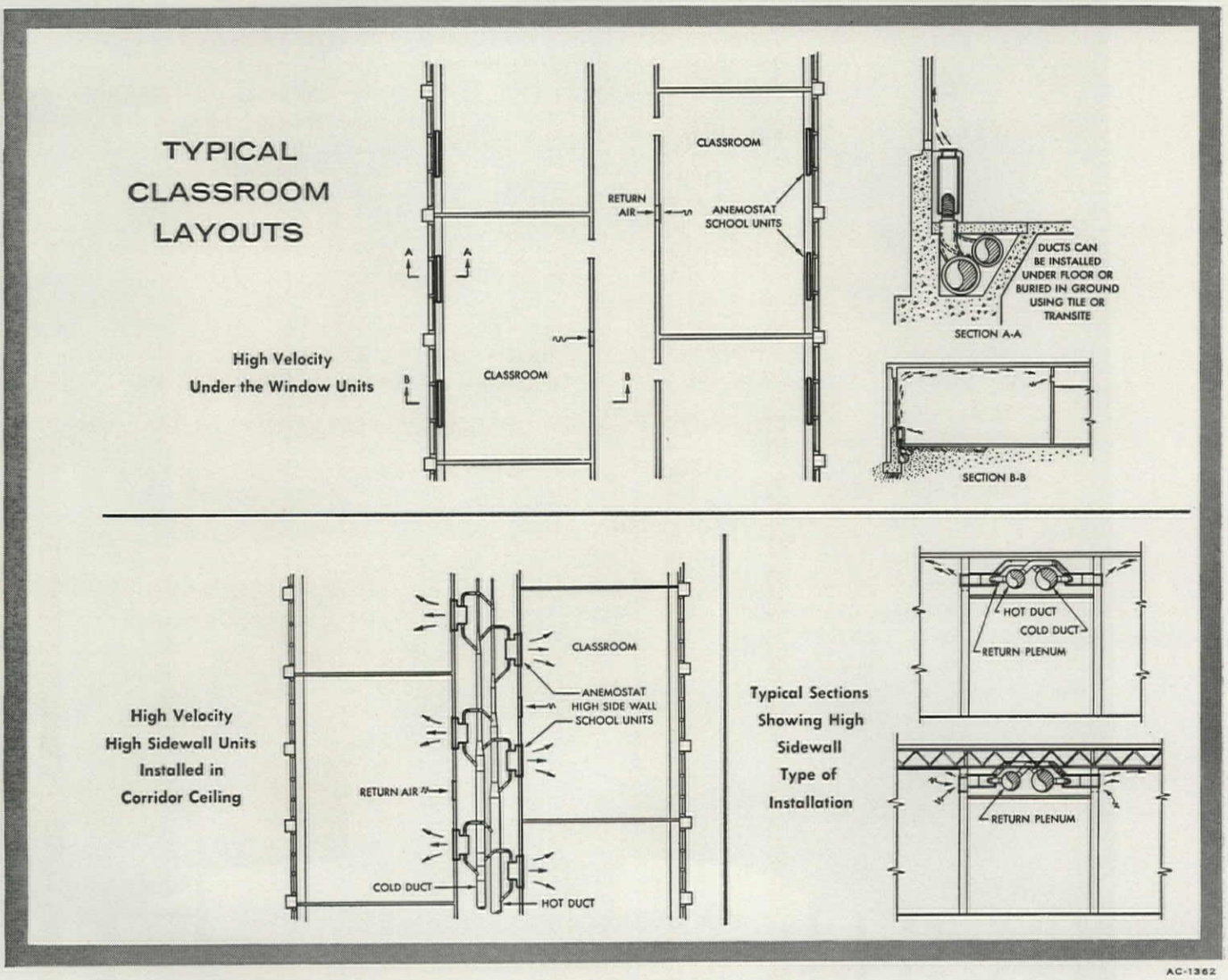
Ducts

The ducts can be installed in various ways depending on the type of structure: beneath the floor, on classroom or corridor ceilings, in roof spaces or on top of the roof. If tile or transite pipe is used the ducts can actually be buried in the ground. Because no water or steam is used, the ducts can be run in practically any space, as corrosion or trapping is not a problem.

Equipment room

For reasons of economy, the fan room or rooms should be so located as to keep the duct runs as short as possible. However, there is no problem in running ducts long distances; dual duct systems in commercial buildings often have duct-runs of over 500 feet. The fans are usually of the Class II type and can be either the forward or backward curve type. Consideration should be given to fans of the air-foil type, which are designed for quiet operation at high pressures.

Mechanical or electrostatic filters are generally used in high class commercial buildings and should also be considered for schools. Clean, filtered air properly diffused at controlled temperature is the answer to health and comfort in classrooms.



AC-1362

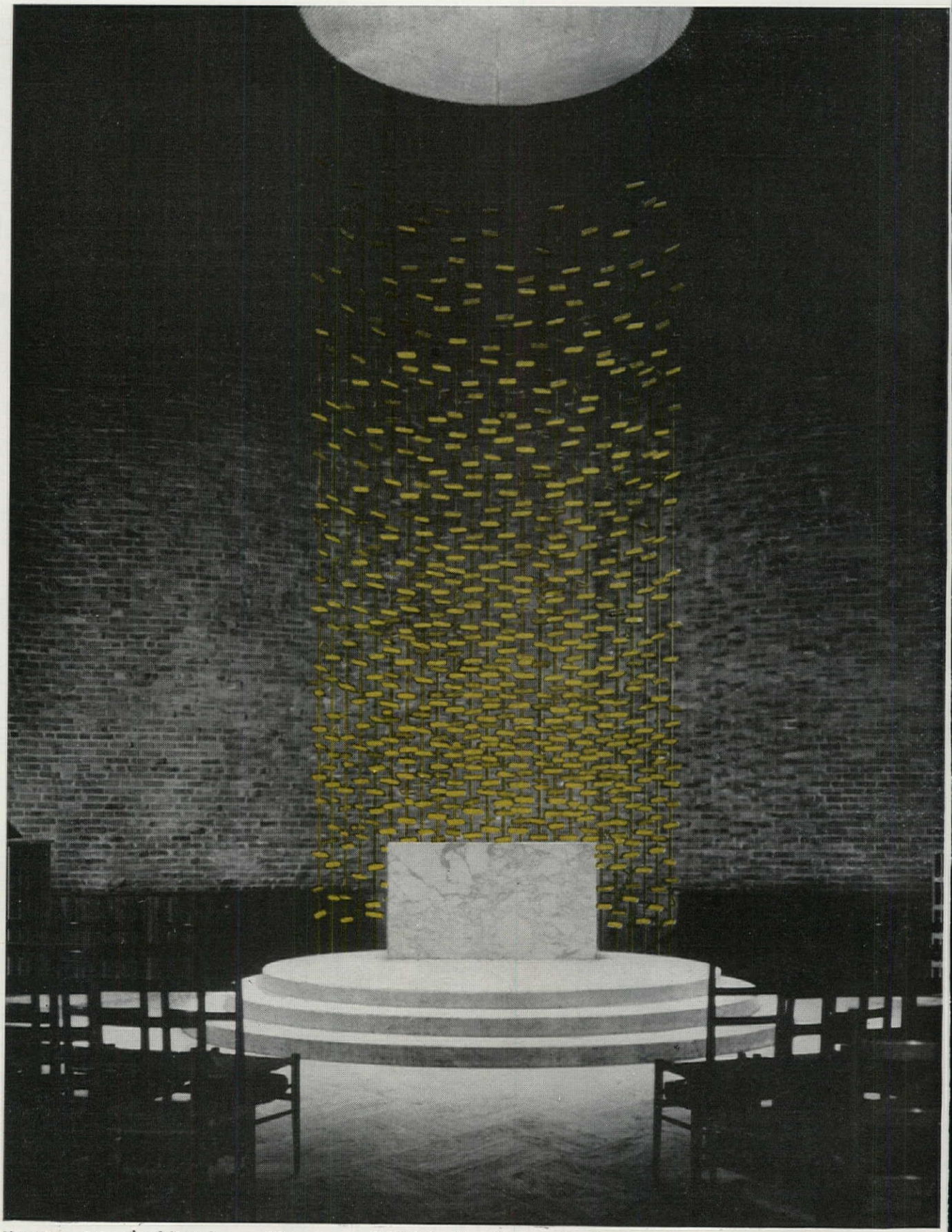
Advantages of the Anemostat Dual Duct High Velocity System

The Anemostat dual duct high velocity air distribution system for heating, ventilating and cooling is ideal for all types of classrooms from kindergarten through college. It offers many important architectural and engineering advantages:

1. *Low First Cost*
2. *Low Maintenance Costs*
3. *Draftless Air Distribution*
4. *Eliminates Window Down Drafts*
5. *Scientific Temperature Control*
6. *Easily Adapted to Future Air Conditioning*
7. *Quiet Operation*
8. *Rugged Construction*
9. *Meets All Code Requirements*
10. *Pressure Balanced*
11. *Meets Modern Architectural Design*

New Anemostat School Catalog
contains complete data on Anemostat Dual Duct High Velocity Units. Write for your copy to

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



This unique design of a delicate brass and bronze screen behind the altar of Kresge Chapel at Massachusetts Institute of Technology in Cambridge, Massachusetts, is an excellent example of welded sculpture. Harry Bertoia, Sculptor, Bally, Pennsylvania, Eero Saarinen, Architect, Bloomfield Hills, Michigan.

Design possibilities unlimited...

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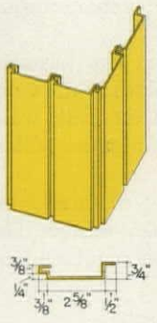
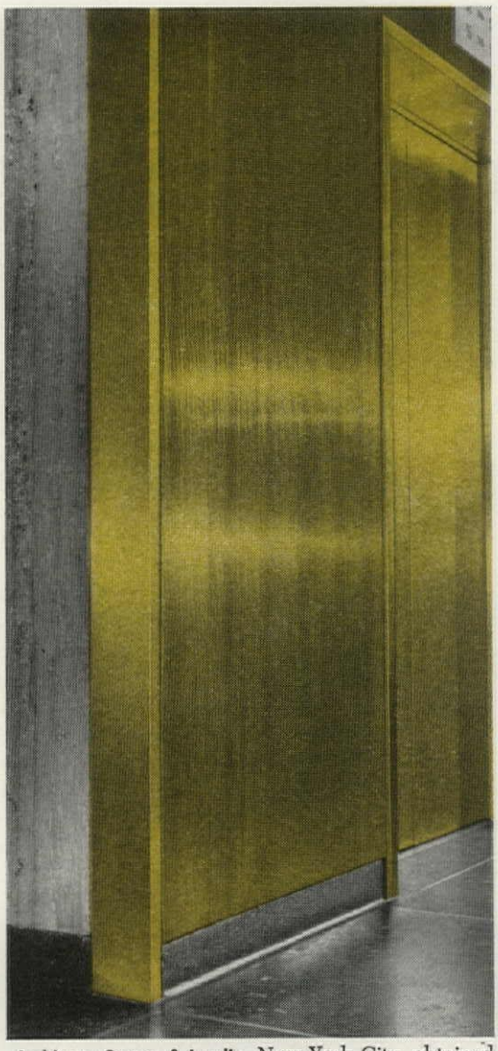
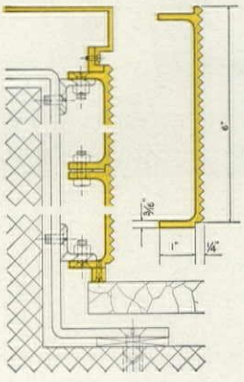
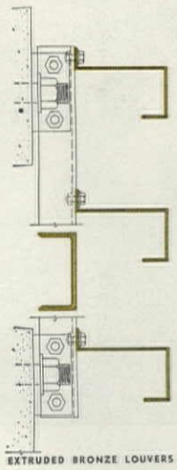


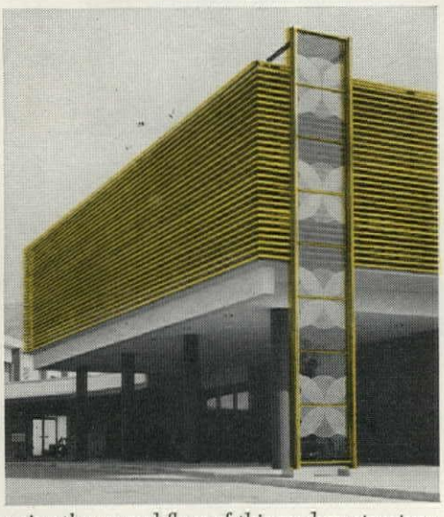
Bronze sheets and extrusions were used extensively in remodeling the entrances and lobby of an office building. Interlocking, channel-shaped extrusions, detailed at right, formed trim, modern floor-to-ceiling panels. Architects: Thalheimer & Weitz, Philadelphia. Fabricator: John G. Leise Metal Works, Philadelphia.



Architects Carson & Lundin, New York City, obtained an extremely interesting wall treatment in the lobby of an office building through the use of striated architectural bronze extrusions, detailed below. Fabricator: C. E. Halback & Co., Brooklyn, N. Y.







The decorative and functional louvers covering the second floor of this modern structure are extrusions of architectural bronze (see detail at left). The decorative tinted glass panel is framed with Anaconda Red Brass rectangular tube. Architects: Albert C. Martin & Associates, Los Angeles. Fabricator: A. J. Bayer Company, Los Angeles.

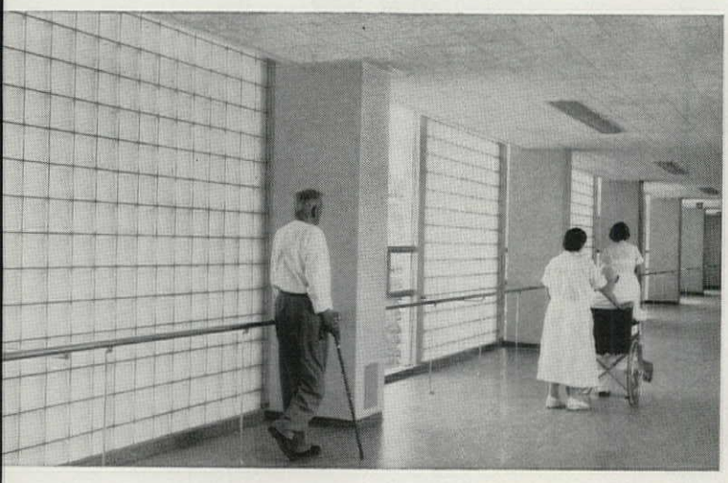
CURTAIN WALL IN A CORE BUILDING

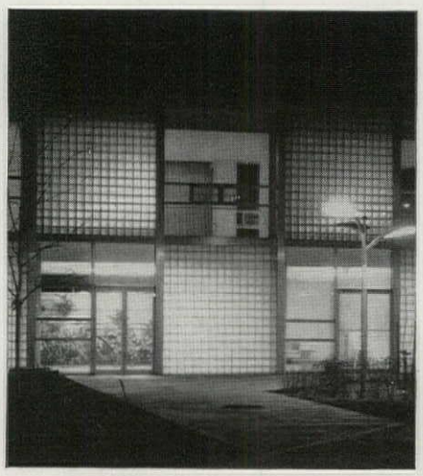
The structure that links together the three basic units of Pittsburgh's John J. Kane Hospital is called the Core Building. This facility is an orderly system of corridors that serves as a main traffic artery for staff and patients. In a way, the Core Building functions as a "Public Square" within this Hospital City of hope and rehabilitation for the aged.

With the exceptions of two passageway connections, both sides of the Core Building are uninterrupted curtain walls of alternating panels of functional Glass Blocks and plate glass.

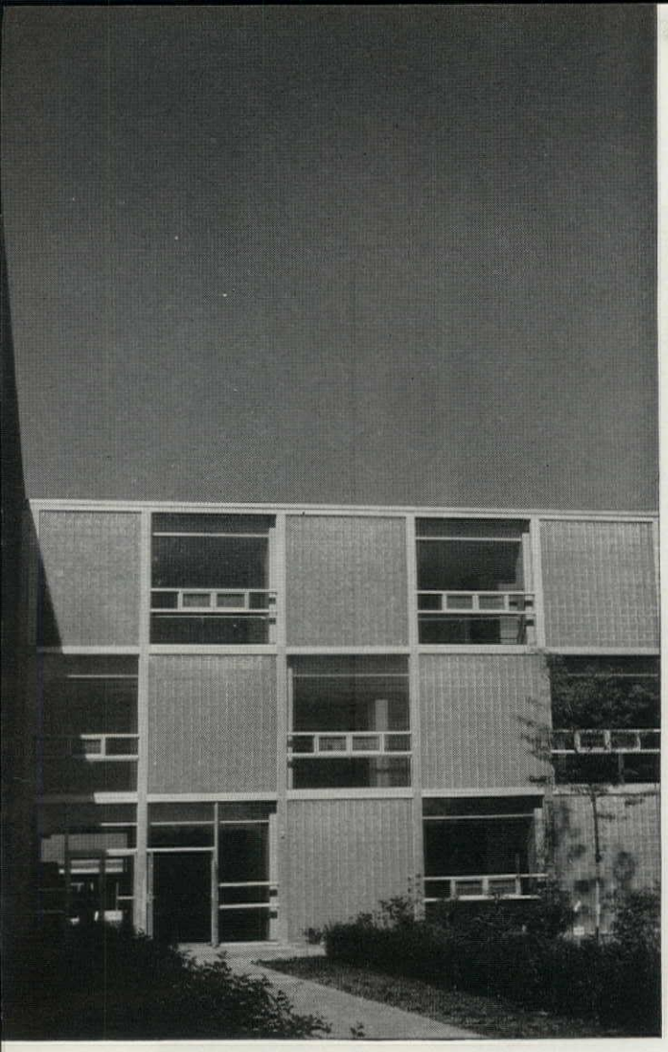
Psychological security dictated part of the thinking behind this design. The Glass Block panels, set at regular intervals, help create the feeling of solid, protective balusters in a huge railing. This aspect of the design works toward overcoming the "falling off" sensation that many people, and particularly the aged, experience when walking near the outside edge of a multi-storied building. The need for this security-impression is heightened here because handrailings, close to the curtain wall, support feeble, halting patients as they move from one area to the other, or pull themselves in wheel chairs.

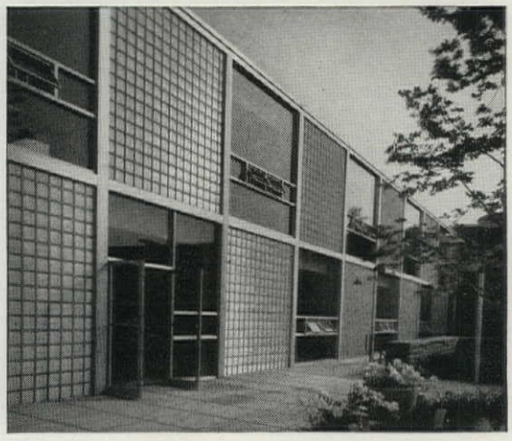
Therapeutic value provided additional support for the curtain wall design. Because monotony is so much a part of the lives of so many of the patients, the Kane Hospital planners





PITTSBURGH



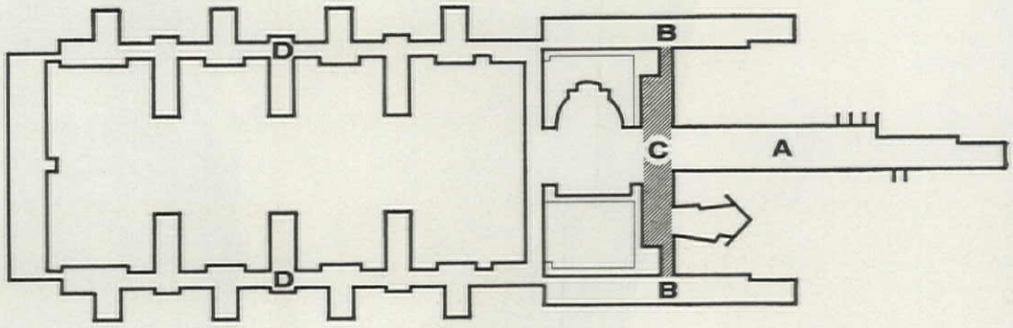


determined that the interplay of voids and solids, and the varied effects of incoming light in the corridor areas, would considerably increase the interest level of the environment.

Exterior interest and harmony were final considerations. Texture, substance, and a non-institutional appearance were all requirements that the Glass Block panels helped to satisfy.

The Glass Blocks used in the Kane Hospital were manufactured by Pittsburgh Corning Corporation. These Glass Blocks, identified as Prism B, are designed to reduce glare and heat, and transmit diffused and softened daylight. Their insulation value is equal to an eight-inch thick masonry wall. This feature lowers heat loss. And the maintenance-free characteristics of the PC Glass Block panels blend effectively with the other materials used in the curtain wall.

For product details on conventional PC Glass Blocks, and our new Color Glass Blocks, write for our General Catalog. Pittsburgh Corning Corporation, Dept. E-118, One Gateway Center, Pittsburgh 22, Pennsylvania. In Canada: 57 Bloor Street West, Toronto, Ontario. Also manufacturers of FOAMGLAS® insulation.

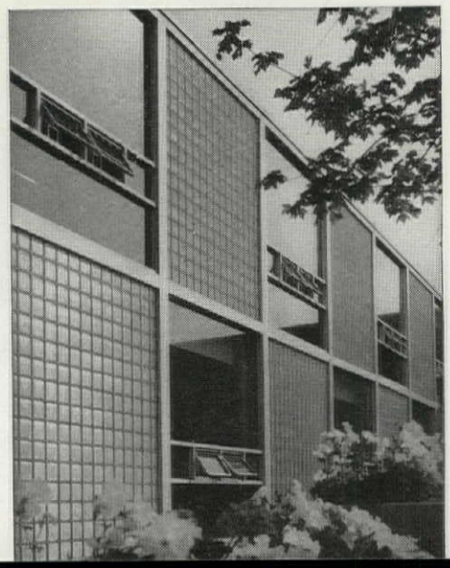


A. Main Hospital B. Semi-ambulant C. Core Building D. Ambulant

John J. Kane Hospital, Pittsburgh, Pa., is owned by Allegheny County Institution District.

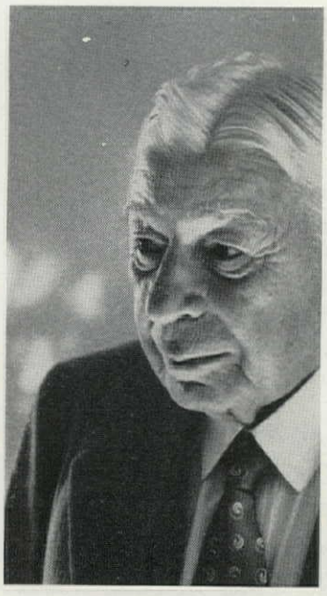
Architects: Button & McLean—Mitchell & Ritchey, Pittsburgh, Pa.

General Contractor: Sherry-Richards Company, Chicago, Ill.



PC CORNING

Arthur Vining Davis' latest Florida real estate venture blocked by SEC; Neutra gains new honors

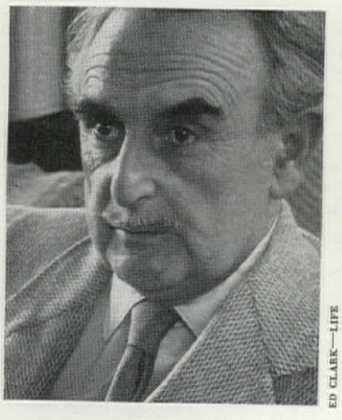


DAN WEINER—FORTUNE

DAVIS
He wants to incorporate.

Arthur Vining Davis, 91-year-old multimillionaire (FORTUNE magazine rates his fortune in the $400 to $700 million category) who over the past 12 years has swapped most of his vast holdings of Aluminum Company of America stock for Florida real estate, ran into an obstacle in his latest realty venture. A few weeks ago, Davis announced through two New York investment firms that he was going to consolidate all his Florida land holdings (some 100,000 acres in southeastern Florida) into a new corporation to be called Arvida Corporation. The holdings of Arvida would be worth over $100 million, including the $22.5-million Boca Raton Hotel and Club, which Davis bought in 1956. In order to build houses and shopping centers on some of the vast acreage he owns in Dade, Broward, and Palm Beach Counties, Davis proposed to sell $25 to $30 million of stock in Arvida. However, the Securities & Exchange Commission pounced on Arvida and its two broker-dealer firms—Carl M. Loeb, Rhoades & Company and Dominick & Dominick—and got a temporary injunction restraining them from further "violations" of the Securities Act of 1933. SEC claimed that the Arvida announcement was in fact part of a sales campaign to sell stock prior to registration of the issue with SEC. Davis' legal battery got a court order vacating the restraining order scant hours after it was issued. SEC then filed a complaint against the broker-dealers in federal district court, and prepared to hold its own hearings on the case.

SEC based its court case largely on a survey of ten stock dealers, who, it said, already had reservations for about 40,000 shares of Arvida stock, at around $11 a share. (Such a practice of getting "intentions to purchase" is not uncommon, say Wall Street broker-dealers.) If SEC should prove that the announcement did, in fact, constitute an attempt to sell stock prior to registration, it could revoke or suspend the registration of the broker-dealers, as well as their memberships in the National Association of Securities Dealers.



ED CLARK—LIFE

NEUTRA
Just "a local boy from Vienna."

NEUTRA RECEIVES AWARDS

Peripatetic Architect **Richard J. Neutra** returned from a tour of Africa recently to collect a new heap of garlands. From Venice, he received word that he had been elected an honorary member of the College of Academicians of Fine Arts of Venice, a venerable institution of some 200 years. This preceded by two weeks his being awarded the grand prize of the city of Vienna, Austria, for his "outstanding achievements in the field of architecture and city planning."

Neutra, who was born in Vienna 66 years ago, said on receiving this award: "I feel strangely at home in Manila, or Lima, or Madrid. A local boy of Vienna cannot help but be a sort of cosmopolitan boy . . . he is brought up to make constructive comparisons between Johannesburg, Caracas, and the great capitals of Europe and our own country. . . ."

The "local boy from Vienna" further underscored his cosmopolitanism when he reported that the building pace in Africa is furious, from schools in Ghana to a film projection center in East Nigeria, which is supposed to help acquaint natives with peoples of other lands. And the African trip itself was not without garlands: Neutra was invited to become an honorary member of the East African Institute of Architects, which represents the profession in Kenya, Uganda, and Tanganyika.

CORNER IN HARDWOOD

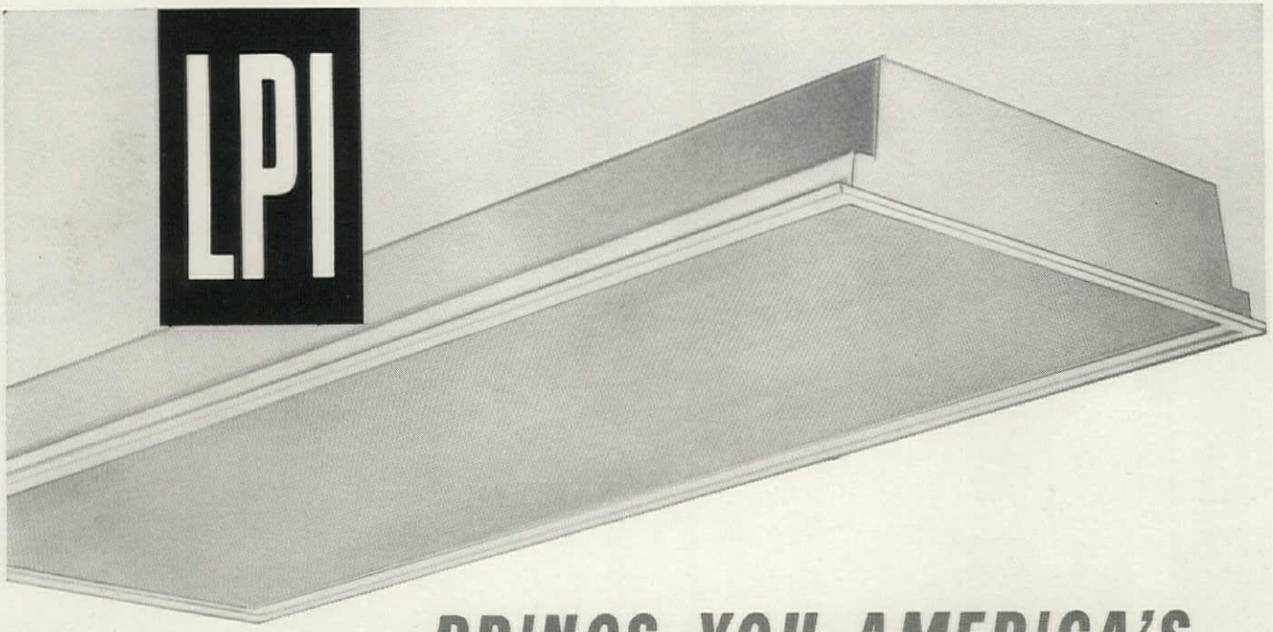
Wall Street's most epic battle for corporate control this year involved one of the nation's leading hardwood flooring companies, E. L. Bruce Company of Memphis, Tennessee. The other protagonist was **Edward M. Gilbert**, a director of Empire

NEW YORK TIMES

GILBERT
A dream of Empire.

Millwork Corporation, manufacturer of lumber and plywood, with headquarters in New York City. Gilbert, who had long eyed Bruce covetously, saw his chance to buy a

continued on page 71



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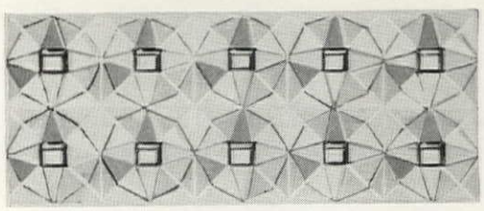
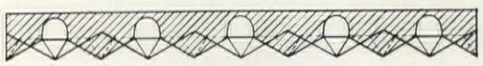


PLAN VIEW



CROSS SECTION

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Harwell Hamilton Harris

THE MODERN STYLE IS

controlling stock interest early this year. At the time Gilbert started buying, the stock was selling for around $17 a share, and before he was finished he had bought some $5 million worth himself (around 120,000 shares of the 314,600 outstanding) while his associates, including his father, Harry Gilbert, president of Empire Millwork, held another 50,000 shares. But in the process of buying control of Bruce, Gilbert had left some wreckage in his wake. His spirited purchases boosted the price of Bruce stock to $77 per share by last June, and speculators had sold short—i.e., borrowed stock, then sold it with the intention of buying it back later on the open market at a lower price—some 15,500 shares. At this point, the American Stock Exchange, on which Bruce was traded, suspended trading in the stock, because it claimed there was not an adequate floating supply of the stock to make a market. The short sellers, who had borrowed most of their stock from Gilbert interests, were forced to make deliveries and scrambled to get stock to do so. As they could only buy stock on the over-the-counter market, where there was not much left, they pushed the price to an astronomic $192 a share. Gilbert finally said that he would not press for delivery of the borrowed shares, and the price dropped to around $40.

Gilbert's group finally gained half the seats (seven out of 14) on the Bruce board of directors, and Gilbert himself will head the executive committee. **C. Arthur Bruce** and **E. L. Bruce Jr.** will retain their posts as chairman and president, respectively.

Now Gilbert is looking elsewhere for new acquisitions. His dream—an integrated supply empire, producing a full line of building materials.

NEW JOBS: A ROUNDUP

In Miami, Florida, Los Angeles Mayor **Norris Poulson** fended off quips about the seventh-place L. A. (formerly Brooklyn) Dodgers long enough to assume his post as president of the U. S. Conference of Mayors, taking over from New York's

LOS ANGELES MIRROR-NEWS

POULSON

Robert F. Wagner at the Mayors' annual convention. Poulson said he will seek to improve federal-municipal relations, and the mayors made it clear that they thought one way to start would be for the federal government to loosen its purse strings a bit. Among the resolutions: a call for a $350-million-a-year, ten-year urban-renewal program, including a step-up in the federal share of renewal outlays, a $100-million-a-year, four-year airport-construction program. Chances of getting the latter are slim, as President Eisenhower vetoed a $437-million airport construction grant program recently.

James W. Cawdrey, Seattle builder, was nominated for the presidency of the Associated General Contractors and **John A. Volpe**, one-time Federal Highway Administrator (1956) from Malden, Massachusetts, for the vice presidency at AGC's midyear meeting in Atlanta, Georgia. Nomination is tantamount to election in AGC. Cawdrey, now vice president, will succeed present President **Fred W. Heldenfels Jr.** of Corpus Christi, Texas.

Peter Selz, former chairman of the Art Department at Pomona College, Claremont,

continued on page 74

Introducing:

JAMES LAMANTIA

WALTER DARAN

In this issue, on pages 134 to 139, FORUM devotes its "Gallery" to the close-linked art and architecture of **James Lamantia**, 35, winner of the Prix de Rome for architecture in 1948. Lamantia, who studied painting in Rome in the winter of 1949-50 under the Fulbright Act, has followed a dual career ever since, and he finds that his two fields of interest complement one another nicely. Lamantia, a native of New Orleans, graduated from Tulane in 1943 and from Harvard's Graduate School of Design in 1947. In 1950 he joined the architectural firm of Burk, LeBreton & Lamantia (one of New Orleans' busiest firms and winner of the Gulf States Regional AIA's first honor award in 1957). He has had his paintings, both water colors and oils, exhibited in a number of group shows and has had one-man shows in Dallas, New Orleans, and Havana.

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Architect: Herbert E. Duncan, Kansas City, Missouri
Electrical Contractor: Twin City Electric Company
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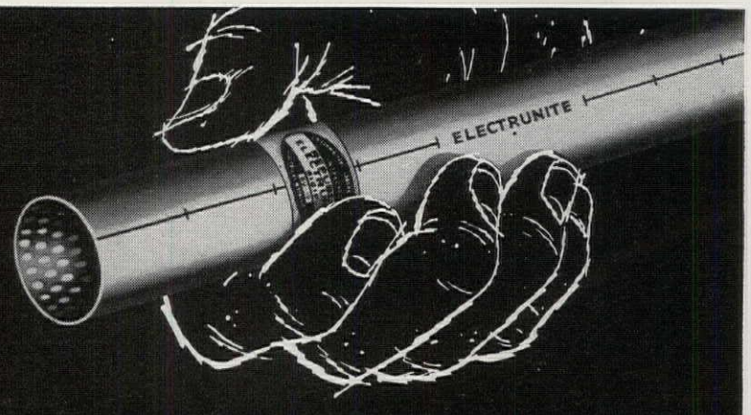
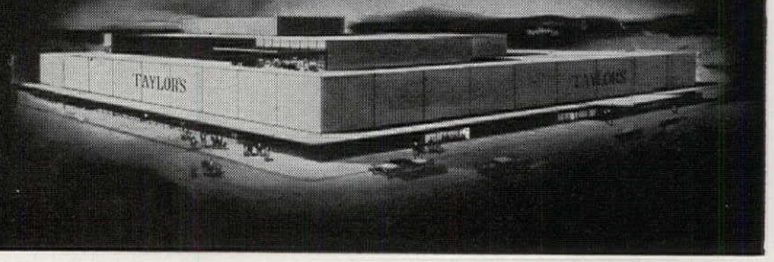
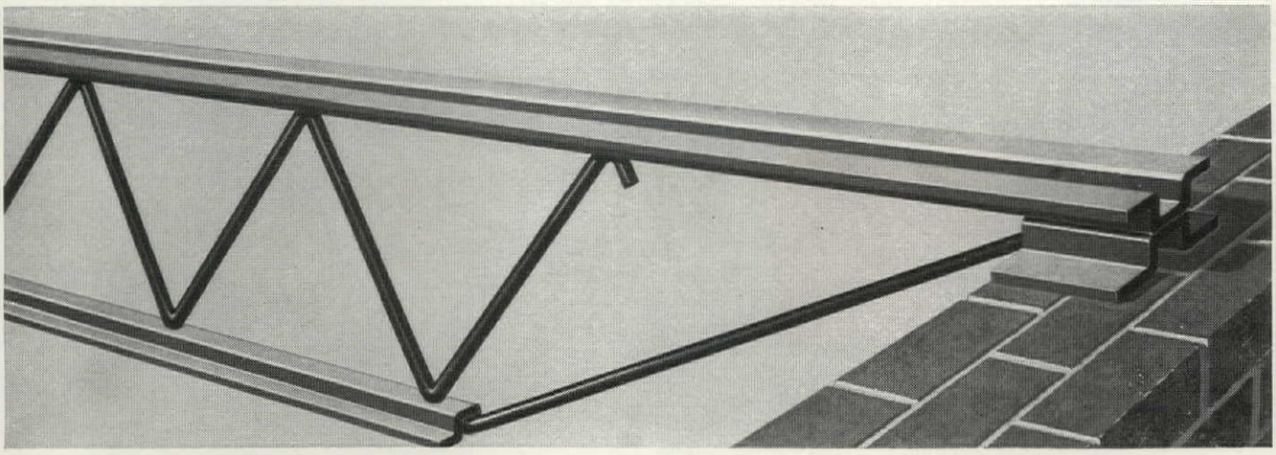


Department Store: Wm. Taylor Son & Company, Cleveland, Ohio
Architect: Welton Becket, F.A.I.A. and Associates, Los Angeles, California

Junior-Senior High School: Hampton Township School
District, Allegheny County, Pennsylvania
Architect: Celli-Flynn, McKeesport, Pennsylvania
General Contractor: Perry J. Dick, Inc.,
Large, Pennsylvania
Electrical Contractor: Reno Electric Company,
Pittsburgh, Pennsylvania





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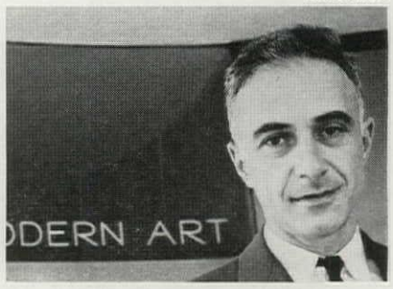
California, will be the new curator of the Department of Painting and Sculpture Exhibitions of the Museum of Modern Art in New York City. Selz, a Ph.D. from the University of Chicago and a Fulbright scholar in 1949, succeeds Andrew C. Ritchie, who resigned last year. The Museum, which suffered a damaging fire six months ago, reopened last month after spending $850,000 for remodeling. (Among the shows opening last month at the refurbished museum: "Architecture worth saving," based on the FORUM article of the same title in the June 1958 issue.)

ALLYN BAUM



SELZ

Mies van der Rohe's successor as director of the Department of Architecture at the Illinois Institute of Technology will be Mies's assistant (since 1953), **Reginald F. Malcolmson**, who will be acting director. Malcolmson, 46, was born in Dublin, studied and practiced in Ireland before coming to IIT in 1947. Two years later, he joined the faculty at IIT.

Famed Bridge-builder **David B. Steinman** (FORUM, August 1958) has been retained by the government of Pakistan to design a new $2.5-million bridge with a main span of 850 feet over the Indus River between Rohri and Sukkur.

SHIRE, HOUSING EXPERT, DIES

Albert C. (Pete) Shire, 62, who was well-known for establishing construction standards for low-cost housing under Federal Housing Administration programs, died a few weeks ago in Chicago. At his death, Shire was director of planning for the Michael Reese Hospital in Chicago, where he was overseeing construction of new hospital facilities. In the early 1930's, Shire was an associate editor of ARCHITECTURAL FORUM, and went from here to the newly created FHA as chief engineer of the Technical Section in the Mortgage Insurance Division. END

in hospitals noise is measured by the foot

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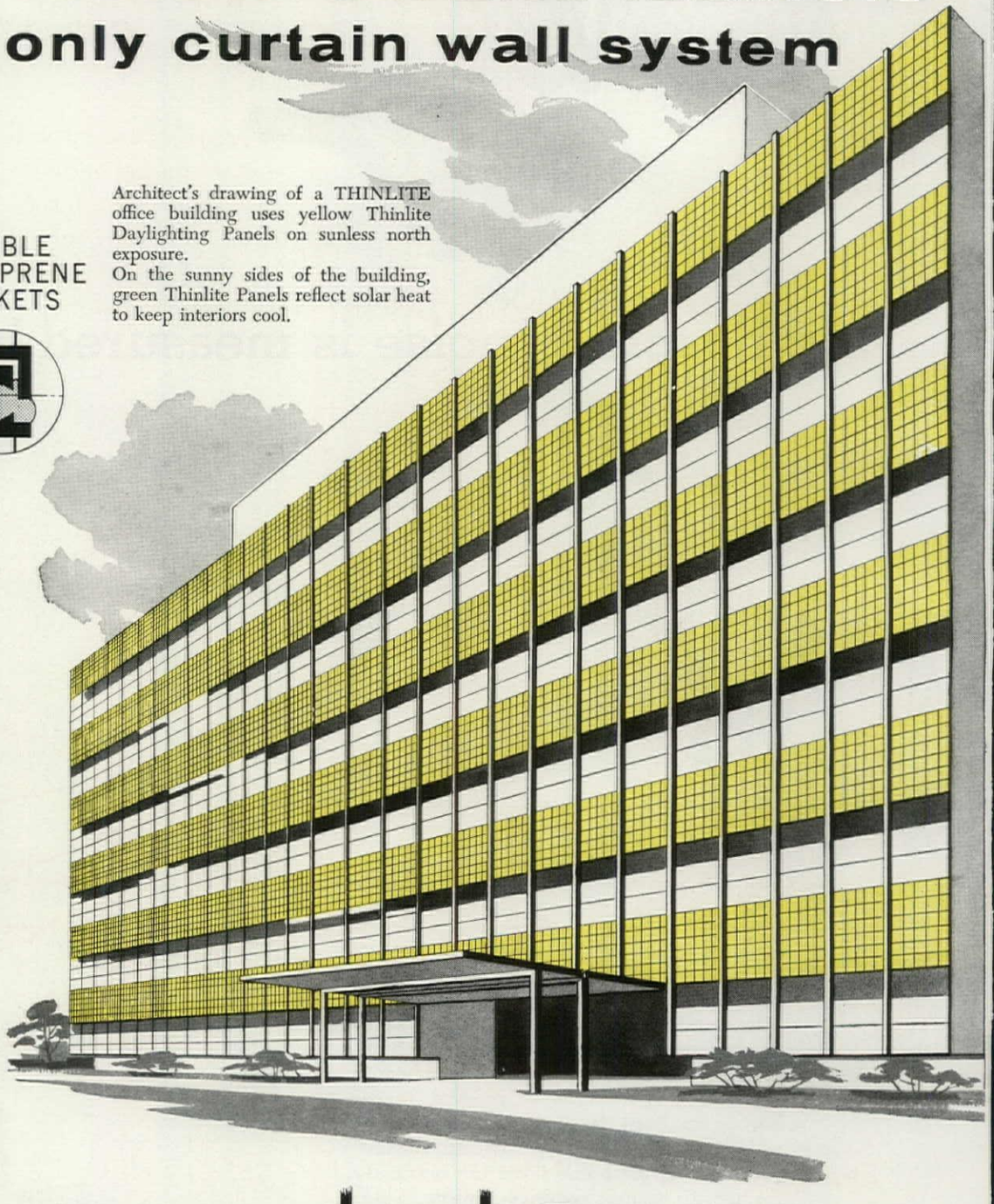

Architect's drawing of a THINLITE office building uses yellow Thinlite Daylighting Panels on sunless north exposure.
On the sunny sides of the building, green Thinlite Panels reflect solar heat to keep interiors cool.

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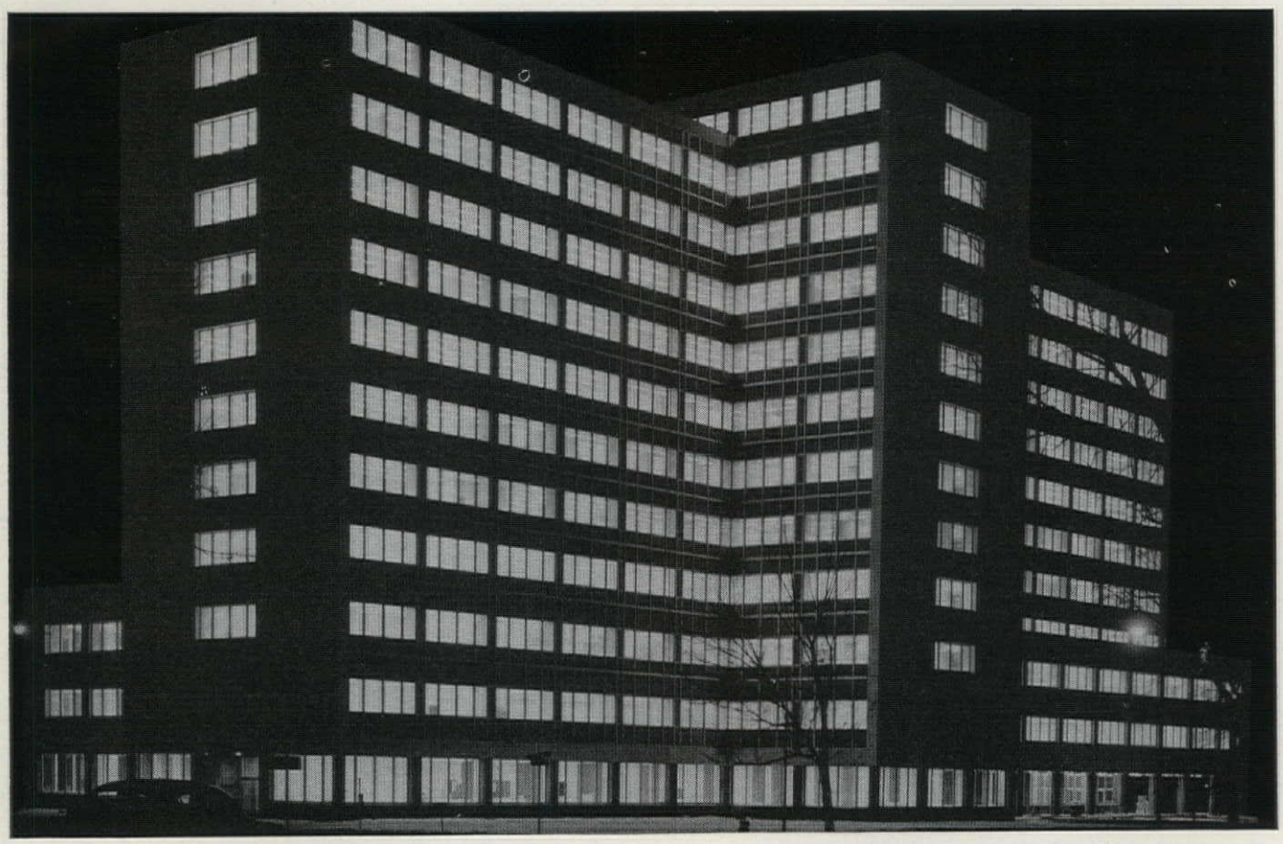

Kansas State Office Building, Topeka, Kansas. John A. Brown, State Architect (at time building was designed). Windows, 1300 series by Cupples Products Corporation.

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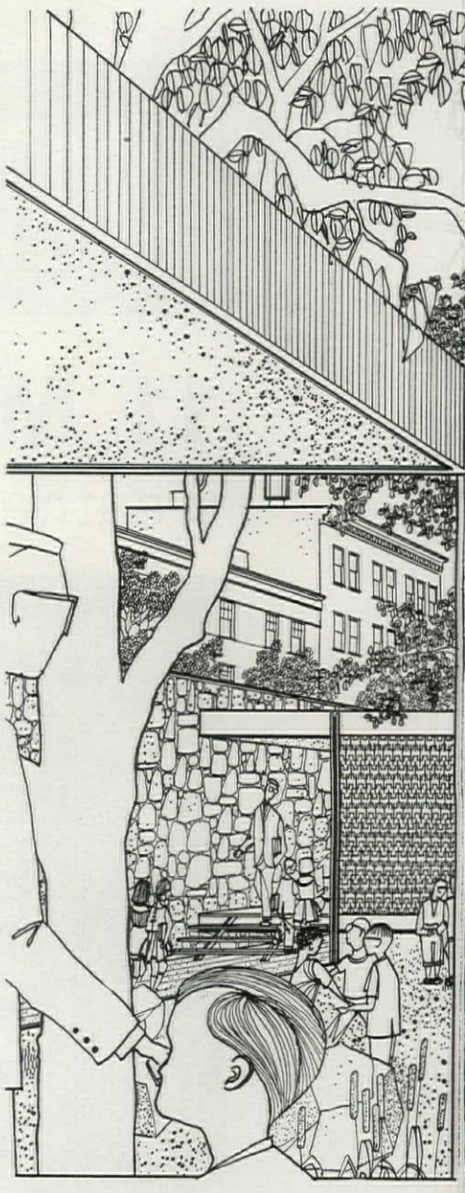

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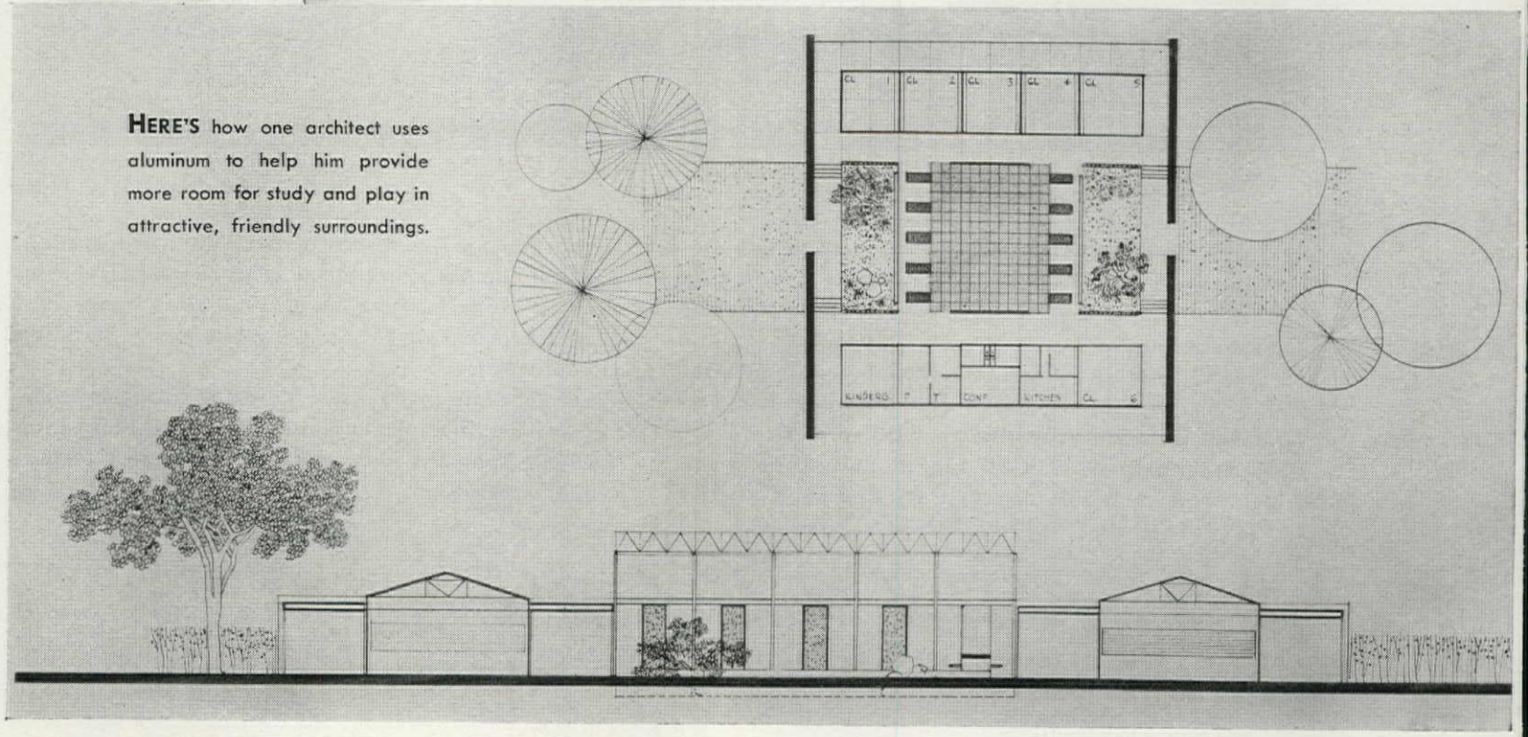
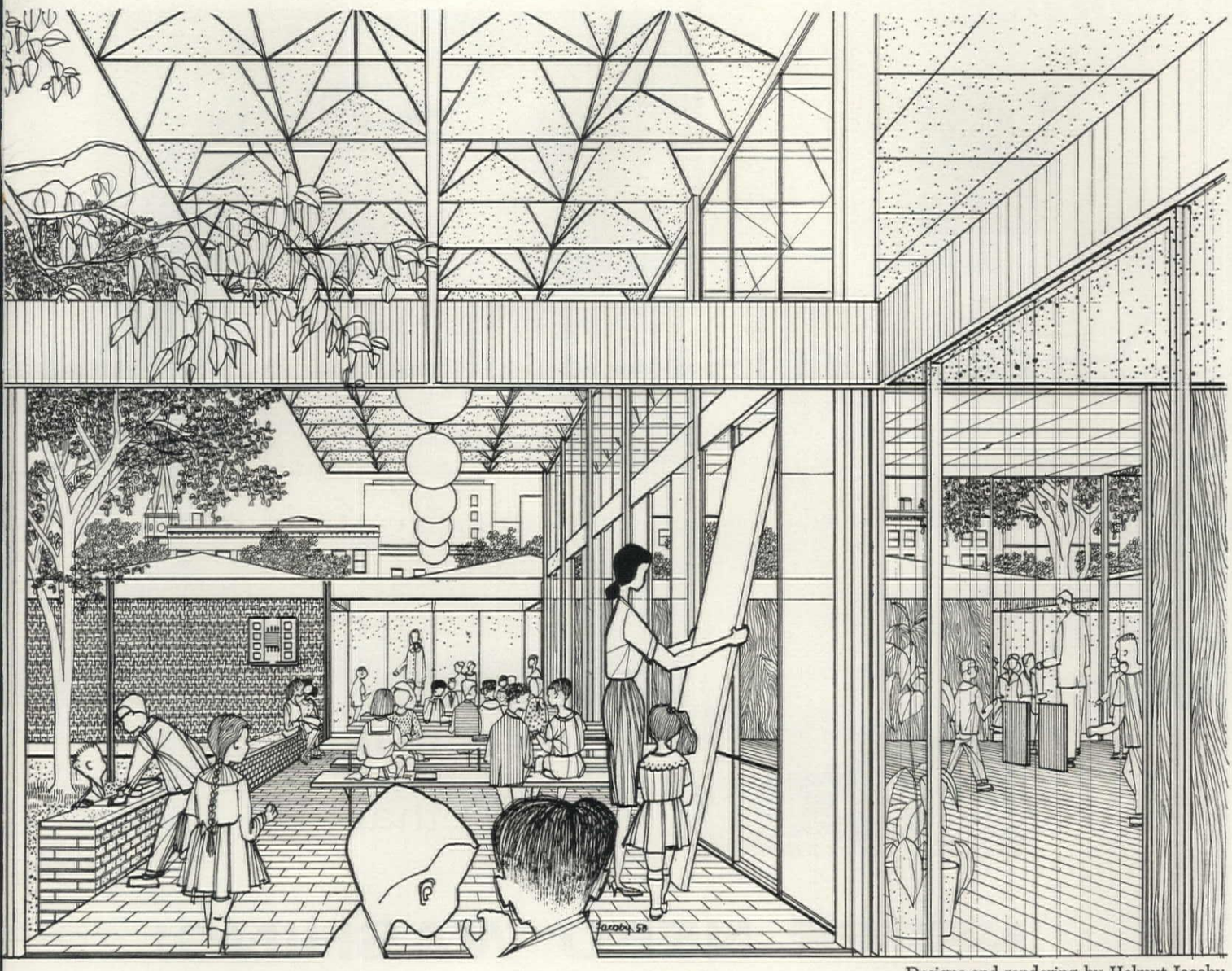
HERE'S how one architect uses aluminum to help him provide more room for study and play in attractive, friendly surroundings.





Designs and rendering by Helmut Jacoby

Working with hypothetical school requirements, our architect shows, in the rendering and plan, some ways he would use aluminum to attain his effect, with very special reference to color and the metal's economy in the repetition of shop-fabricated elements.

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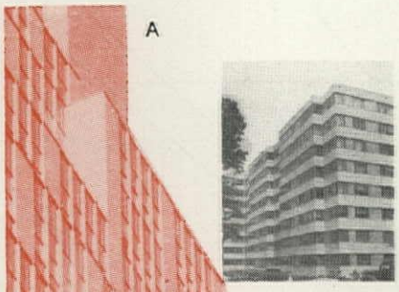

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BIG ARCHITECTS

Forum:

I compliment you on your analysis of the big architects (FORUM, September 1958). Your magazine has rendered another invaluable service to the profession.

CLARENCE S. THALHEIMER, *architect*
Thalheimer & Weitz
Philadelphia, Pennsylvania

Forum:

Your survey of the 100 biggest architectural firms was the greatest comedy of the day and a complete waste of time by all participants. It revealed nothing except information for the Revenue Department, and an opportunity to become a dollar egomaniac in the eyes of the profession.

ROBERT M. LITTLE, *architect*
Miami, Florida

Forum:

Does it take these monster organizations to handle their monster clients? The answer, of course, is no.

HARRY WEESE, *architect*
Harry Weese & Associates
Chicago, Illinois

Forum:

We are happy to note such vigorous growth in a profession which is so important to the welfare of the country and to the national defense. Your article will interest everyone in the construction business, both government and civilian.

EDWARD J. SHERIDAN, *director of construction*
Office of the Assistant Secretary of Defense
Washington, D.C.

Forum:

An analysis of your published results lends some justification to our apprehension about the accuracy and efficacy of this venture. We realize your motives were of the best and are sorry that, in our opinion, the results do not justify the effort.

THOMAS F. ELLERBE, *president*
Ellerbe & Company, architects and engineers
Saint Paul, Minnesota

Forum:

I have heard this report discussed quite a bit in our area and would like to make a suggestion.

It is difficult for any architectural firm to estimate "the amount of construction put in place" in any given year and, as a result, some of the firms' figures represent the amount of work under contract in 1957 and under contract in 1958. These projects take anywhere from three to five years to work out of an office. Therefore, the figures are duplications.

I would like to suggest that the figures used to arrive at the largest firms in the U.S. be based upon the average number of employees per year.

If you feel that the volume of work should be the guiding factor, then a truer picture would be given by the amount of fees received per year. This figure would represent construction put in place as well as drawings produced.

ALBERT S. GOLEMON, *architect*
Golemon & Rolfe
Houston, Texas

Forum:

Your list of the 100 biggest architects might lead some readers to conclude that SOM is based in New York and that the information given applies solely to our New York office. This is far from the case, for the figures reflect the four offices which we maintain in New York, Chicago, San Francisco, and Portland, Oregon.

ROBERT W. CUTLER, *architect*
Skidmore, Owings & Merrill
New York, New York

• *Supplementing its reports on the industry's biggest clients and architects,* FORUM *this month lists the biggest building contractors (page 124).*—ED.

FREE SCHOOLS

Forum:

I was interested in the article "Schools for 'free'" in your October issue. It is evident that some such methods must be employed in certain cases if other means of financing bog down.

THOMAS T. CRENSHAW, *architect*
Sargent-Webster-Crenshaw & Folley
Watertown, New York

Forum:

The prospect of "schools for 'free'" frightens me.

Isn't it conceivable that, as the idea of free schools catches on, the quality, size, plan concept, etc. will become more and more the prerogative of the mass builder? What happens to the desire for progress in educational methods, fostered by the educators, citizens interested in education, and school boards—progress which is being

continued on page 84

currently reflected in *some* of our presently conceived schools?

Since the school plant will not be revenue producing, the quality of the plant will be short cut. Houses selling for under $15,000 will have schools of cinder-block cubicles; $25,000 houses, slightly better schools, etc.

We cannot afford to have "schools for 'free'" and cast off the responsibility which is ours: to build and pay for the educational tools which are required for our children's education.

LOUIS J. DRAKOS, *architect*
West Hartford, Connecticut

Forum:

The building of a new school by a speculative builder as a "come on" is justified only in terms of immediate need for the school to be in operation at the time families move into the homes.

On every other count there seems to be strong objection to the practice.

Obviously the home builder in producing his school will be under the temptation to provide a big show for little money, possibly at the expense of future maintenance. It is well known how speculative home builders pay more attention to details in bathroom chrome, shower enclosures, kitchen cabinets, and similar accessories than they do to such basic considerations as waterproof basement, adequate roof drainage, and top-quality construction and equipment where it does not show. Not every speculative builder yields to this temptation, but it is a far healthier situation where the temptation does not exist.

LESTER W. SMITH, *architect*
Sherwood, Mills & Smith
Stamford, Connecticut

Forum:

This is a pathetic and ineffectual way to go about getting the school facilities America so sorely needs. It certainly assures our children getting obsolete school facilities.

When land to the average home builder is simply something he loads with houses in an unnatural arrangement of roads and lots which considers the future home owner last of all, how can he be expected to do any more than act accordingly on any school he proposes to build and give (?) to the community.

CHARLES M. GOODMAN, *architect*
Washington, D.C.

Forum:

In our experience, the best schools are built in those communities with an enlightened and interested citizenry. Such schools are supported and are a source of great community pride. Because the peo-

continued on page 86

Office area in Connecticut General Life Insurance Building. Movable partitions, dividers, walls, doors and planter boxes are all surfaced with Consoweld laminated plastic. (Upper right) Luncheon tables in employees' lounge, also Consoweld surfaced.

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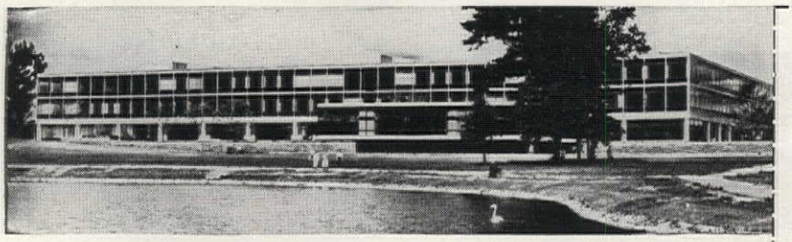

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ple have an investment of thought as well as money, they have a genuine feeling of ownership and responsibility. Obviously, in a community with no population this highly desirable condition is impossible to create. We are simply left in the hands of the home builders and the state or county authorities. And even if the builder does his conscientious best, the resulting school will never have the same acceptance or affectionate respect.

Perhaps your excellent article will help to stimulate some thoughtful answers to what seems to be an insoluble problem.

PHILIP WILL JR., *architect*
Perkins & Will
Chicago, Illinois

DEEP WATERWAY

Forum:

Your article on the Saint Lawrence Seaway (FORUM, September 1958) implies that Detroit will have a 27-foot-deep channel in 1959. The 27-foot channel will reach Toledo in 1959, but the necessary dredging of the connecting channels to Detroit will not be completed until 1962 according to the U.S. Corps of Engineers. Until this dredging is completed, the deeper draft vessels cannot serve Detroit when loaded to their maximum load lines. This means that Toledo will be the western terminus of the Saint Lawrence Seaway next year and until 1962.

JOHN W. YAGER, *mayor*
Toledo, Ohio

FLLW

Forum:

Bravo! Every article in your series on modern architecture I have found lucid, stimulating, and apropos. And in the final installment on Frank Lloyd Wright (FORUM, September 1958) you have presented the finest story and essay-length appreciation of the Old Man I have yet read. For your sensitivity to and understanding of his unique, highly personal exponency of the American tradition, I have only admiration.

LANDIS GORES, *architect*
New Canaan, Connecticut

Forum:

. . . superb!

SIBYL MOHOLY-NAGY, *professor*
School of Architecture
Pratt Institute
Brooklyn, New York

Forum:

Your article on Frank Lloyd Wright stresses the inspirational forces involved in the combining of spaces, but there is another force that is quite apparent in

continued on page 88

aluminum achieves!

Because the extruded aluminum mullions serve a dual function, structural and ornamental, extremely close tolerances and freedom from bow and camber were required. These one-piece aluminum extrusions—more than 1700 in all—ranged in length from 23 feet 10 inches to 26 feet. They are Kaiser Aluminum alloy 6063, finished with a five-minute etch.

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Wright's work that was voiced by Louis Sullivan: "Take care of the extremities and the rest will take care of itself." This is an excellent rule in any work of art. The eye, ear, and mind all seem to rest at extremities, and when these extremities are satisfying, the composition seems superior.

You never find a line in Wright's work that does not end in a careful touch. This is one of the least understood characteristics of his work and every bit as important as his spacial relationships.

ALDEN B. DOW, *architect*
Midland, Michigan

Forum:

It is as difficult to describe with words the space of a Wright structure as it is adequately to photograph the structure. Therefore, I think your author has done exceptionally well.

It is unfortunate that magazines such as FORUM, and her sister publications, LIFE, FORTUNE, and TIME, have not given Wright the support he has deserved, and in effect have attempted to mold public opinion toward a boxlike commercial architecture.

Instead of an Air Force Academy designed by Frank Lloyd Wright and standing as a national shrine, we have a series of little Lever Brothers buildings up against the rocky mountains.

HAROLD C. PRICE JR.
H. C. Price Company
Bartlesville, Oklahoma

• FORUM *has devoted more space to Wright and his buildings (including Reader Price's office-apartment tower in Bartlesville) than to the work of any other architect.*—ED.

END

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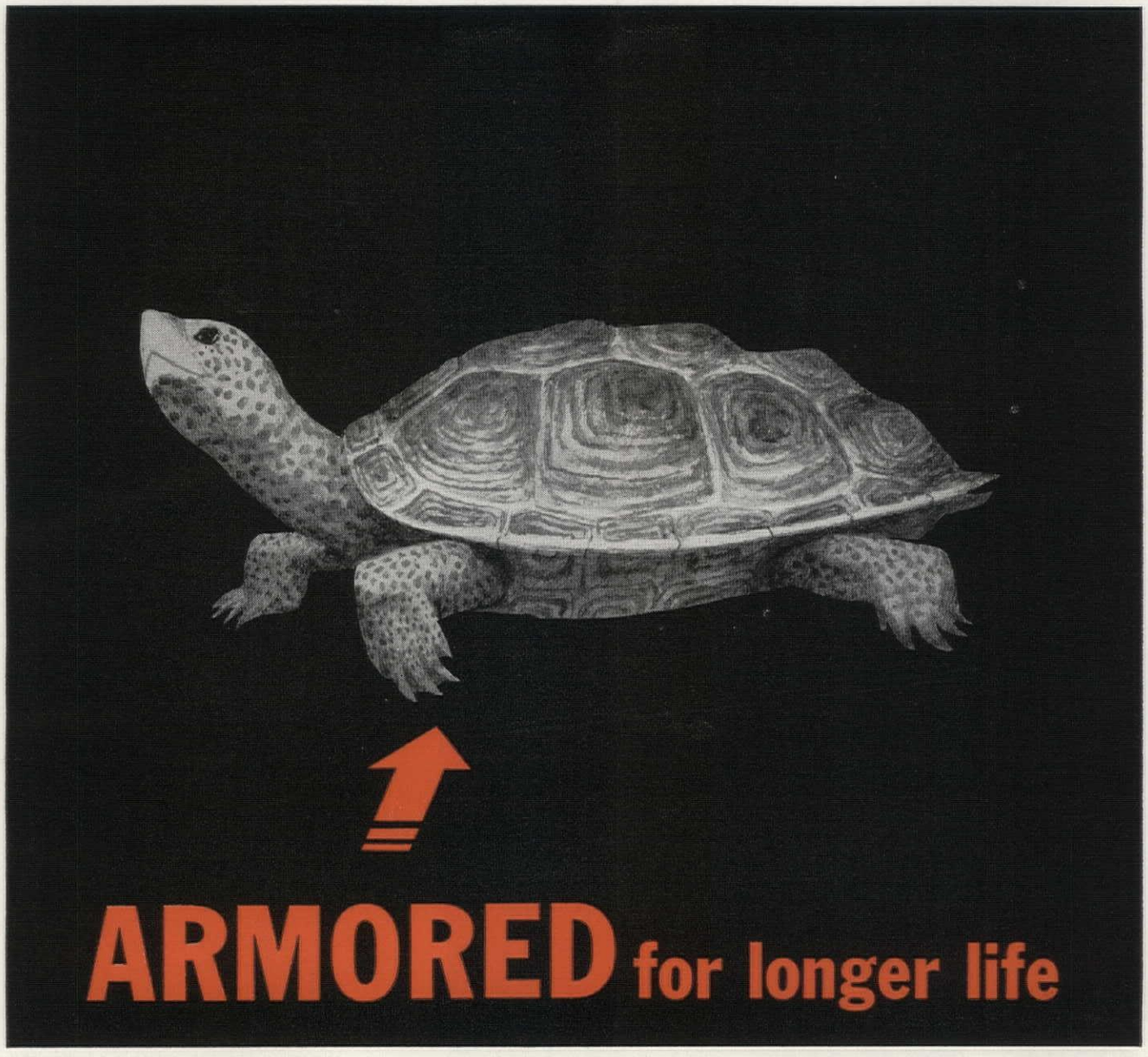

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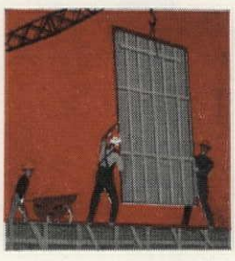

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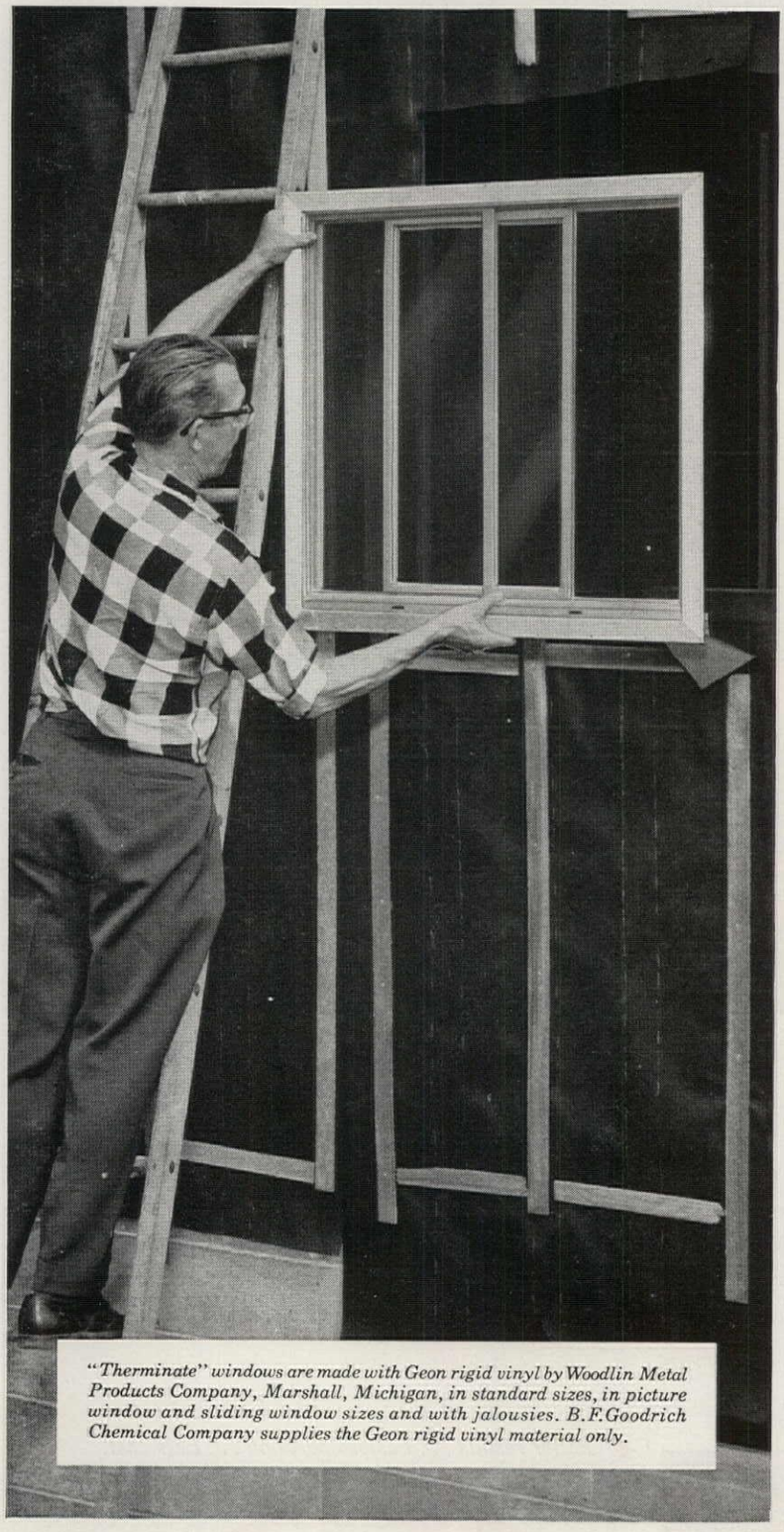

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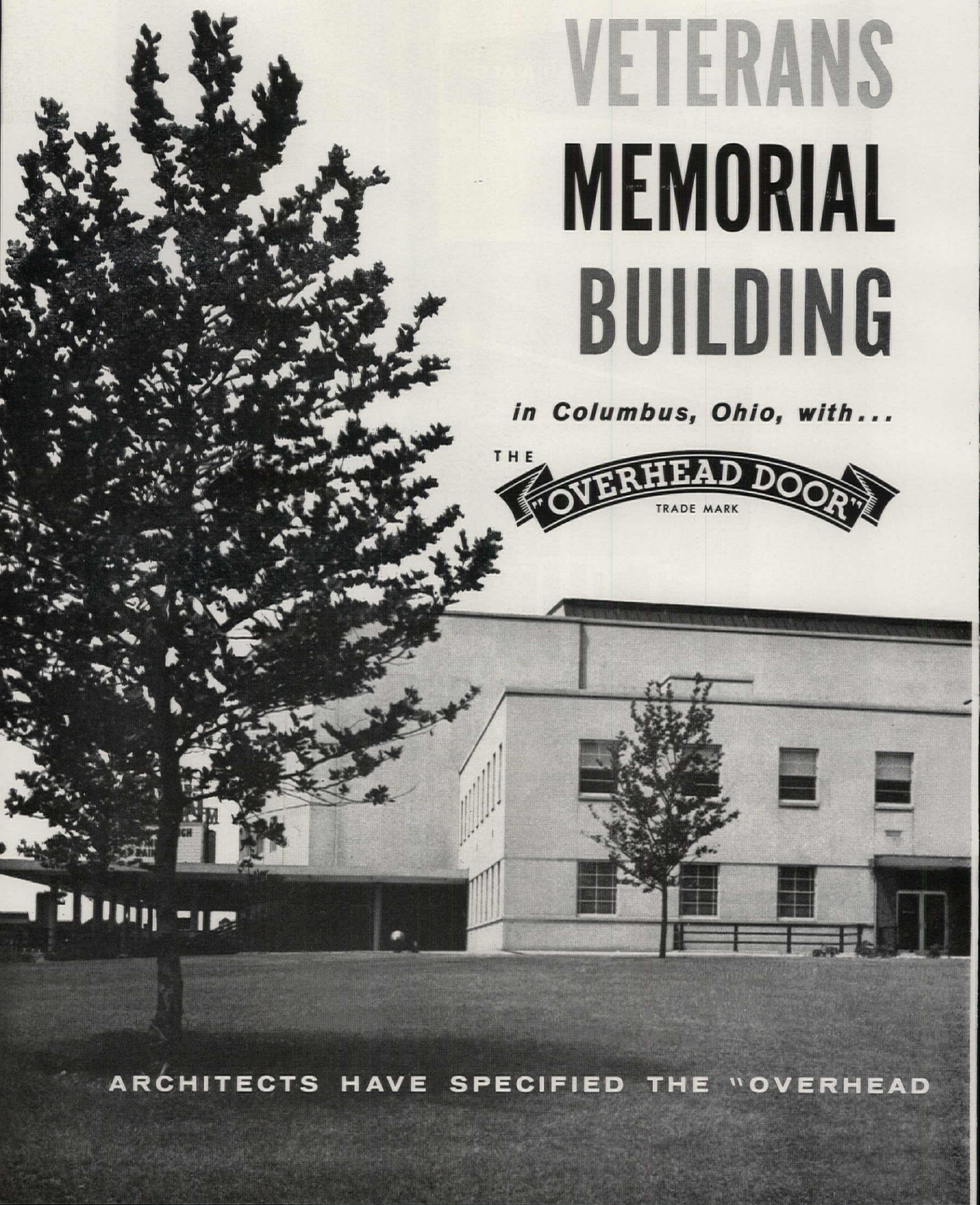

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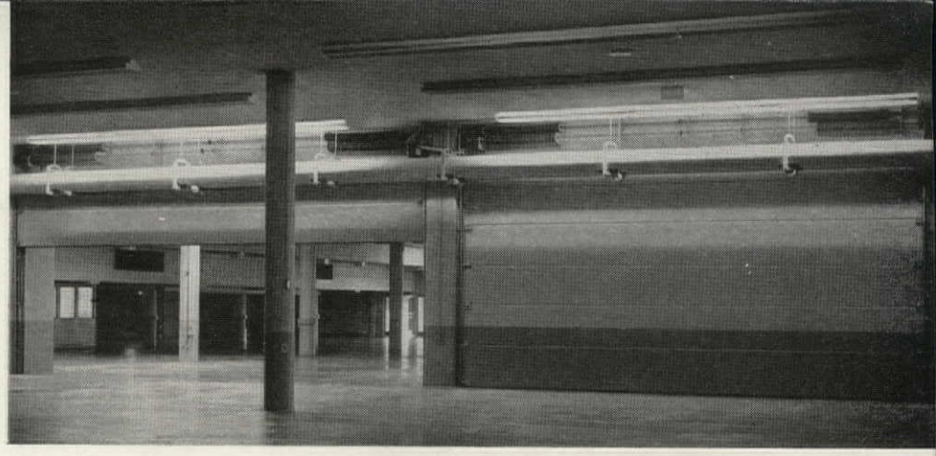

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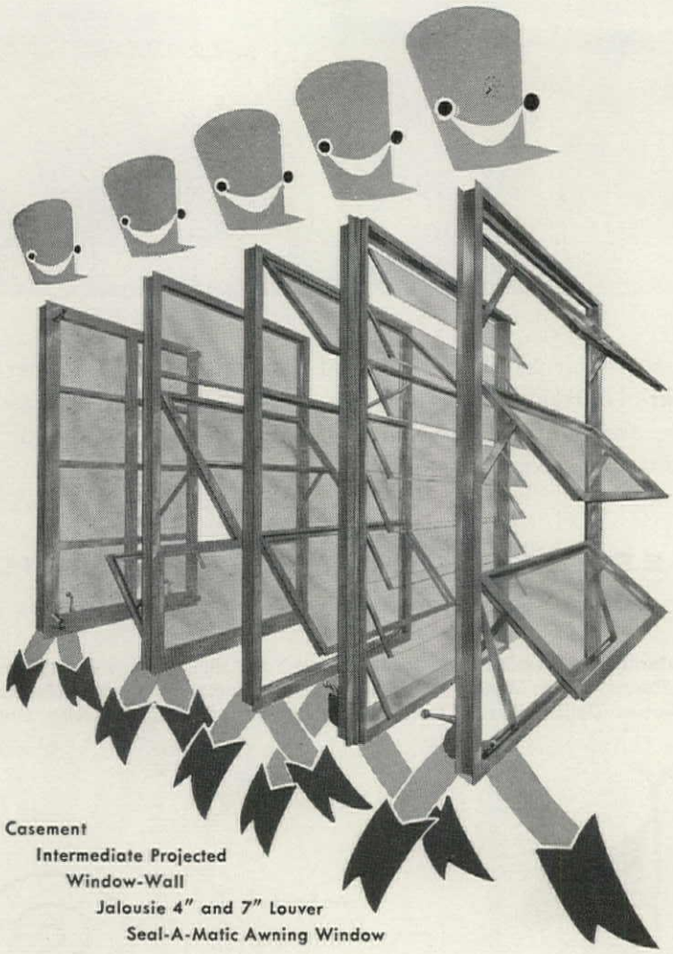

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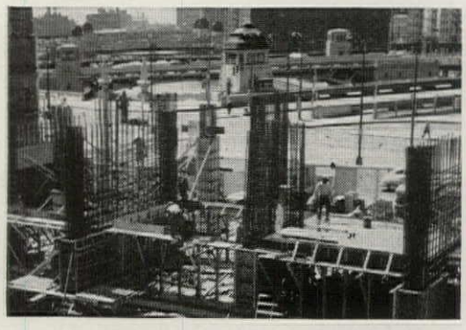

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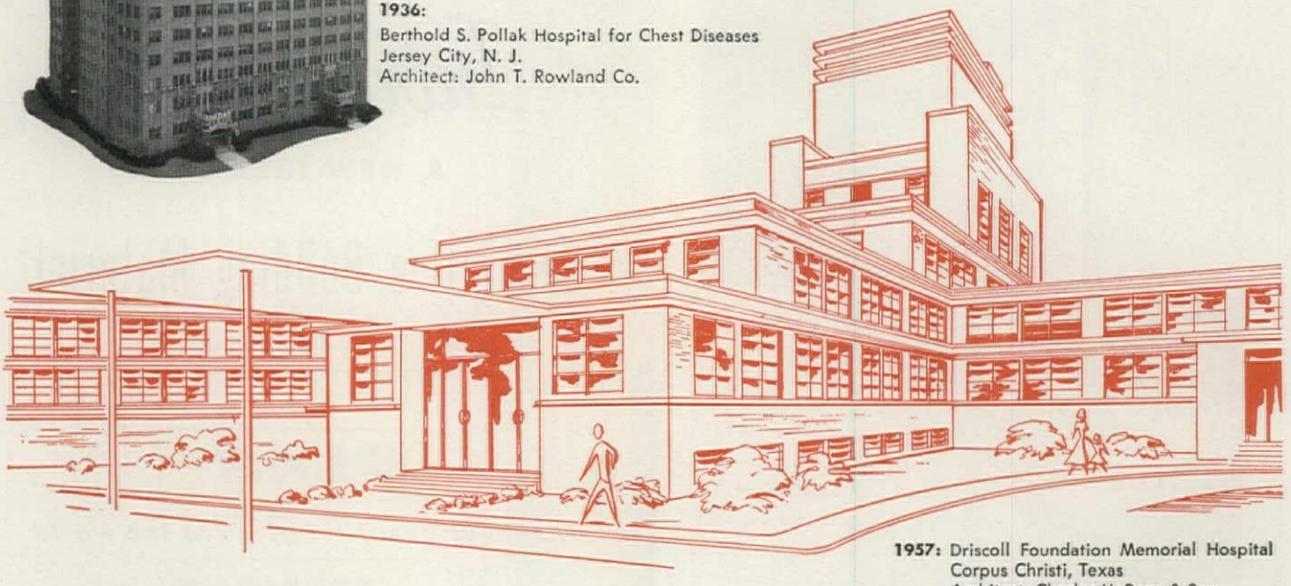

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Editorial

Dangerous myths about school costs

Evaluating the true merit—and cost—of a school building program can be an exceedingly tricky business, especially for the untrained citizens who comprise most school boards. FORUM tried a year ago to help these citizens by publishing a detailed scoring system devised by Dr. Nickolaus L. Engelhardt Jr. ("How to compare school costs," November 1957). In this issue, on page 104, the process is carried a step further, with a critical and detached comparison between schools which are relatively new and comparable in size but vary in the effectiveness with which the money was invested.

Since these schools are identified, readers who are sufficiently interested are in position to check what is said. This is, alas, not the way in which the high-kiting controversy over schoolhouse values and costs has generally been conducted. In particular, those writers who have hit on the term "school palaces" have had themselves a field day, making lurid accusations of extravagance without identifying the communities in question.

Such an episode occurred last year when Writer Holman Harvey produced one of those ringing indictments of excessive school costs in *Reader's Digest*. After digging out the locality of the schools, FORUM's editors found the story to be full of unchecked allegations and facts reported only in part or mistaken entirely. Letters to FORUM from school authorities declared that quotations attributed to them in the *Digest* were contrary to their dearest convictions ("That *Reader's Digest* article," FORUM, November 1957). Yet the damage had already been done: millions of copies of the "school palaces" story had been circulated among anxious citizens, and some of them, believing what they read, helped to vote down a great many good and highly essential school-bond issues last year and this.

The temptation to resort to glossy phrases such as "school palaces" seems to persist. The latest school-palace story appeared, again in the *Digest*, last month— the condensation of an article more than a year old, by Dorothy Thompson, which was originally published in *Ladies' Home Journal* for August 1957. This article is especially fascinating because it compounds some strange reporting with an indictment which is really a quarrel with a major aspect of American civilization.

The town which Miss Thompson accuses of wastefulness but which she does not name is Woodstock, Vermont. Another central fact which Miss Thompson does not report is that Woodstock takes great pride in its new high school. The town may, of course, be wrong. Miss Thompson may be right. Yet the town did manage to acquire its "palace" at a square-foot cost of $10.80, which was below the national average of that date (today's national average has risen to over $13) and in a geographic district whose building-cost index is comparable to the national average. Apparently Woodstock did not agree

continued on page 103

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that its tax rate was "being upped beyond the capacity of most parents to pay," for it voted for the bonds better than two to one. The superintendent, Clarence Amsden, says citizens have almost unanimously told him they like the school, and Benton Dryden, editor of the Weekly *Vermont Standard*, has received no letters of protest.

The gymnasium, which Miss Thompson finds "worthy of a fashionable athletic club"—really a standard high-school gym—is modestly equipped. And since *any* standard high-school gym can seat 1,200 as a public hall, the local architects, Helmer & Cole, would seem to merit praise, not blame, for equipping it with a stage for the double purpose. Woodstock, in going in for home economics and shop, is either as right or as wrong as most America is. This is cause for debate and not for consternation. Newsmen say that the mothers who have visited the school since the article appeared have "100 per cent disagreed with their Barnard neighbor's criticism of the home economics section." And these mothers saw the actual school, in which Miss Thompson is reported not to have set foot since its completion a full year ago.

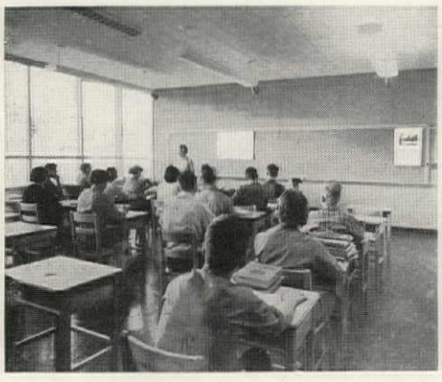
The temptation to discuss the Thompson doctrines on the relative cost of single-story vs. two-story buildings, on the ocular effects of glass walls, on the relative cost of "decorator colors" vs. schoolhouse brown, and on many other issues calling for judgment, must be passed by with the remark that responsible school people and architects find most of these problems more complicated than Miss Thompson does. For example, although it is perfectly true that a two-story plan "secures twice as much room under one roof and on one foundation," the greater fire-safety problem of a school with stairs calls for far more expensive fireproof construction of both stories because the pupils cannot simply step out on the grass, and the fire department cannot reach the entire interior from the ground. Moreover, stairs add their own expense, eat up their own share of space, and have a constricting influence on plans. It would seem wiser to let qualified architects solve these problems, case by case, than to flood the country with overnight generalizations.

But Miss Thompson has something more disquieting to say. In her article she quite emphatically equates high thinking with plain living and with nothing else. "Young people should learn basic things under conditions suitable to the standard of living most of them can reasonably anticipate," she argues, implying that it is useless to prepare children for a higher standard. This is a widely held Puritan doctrine but it is not an ideal in which America as a whole believes. This civilization says that as men learn to work together, and, with widespread knowledge, learn to multiply their skill, they entitle themselves to the richer life that is possible with a finer house, a finer car, wider travel, quicker world-wide information, and a finer school to help keep all of it going.

In this spirit, FORUM offers, on page 104, a somewhat different appraisal of the "cheap" school vs. the "high-spirited" school, and beginning on page 110, reports on four other school plants chosen for the one compelling reason that all appear to be excellent places in which to learn. One of their excellences is that they are beautiful. If America cannot be made more wonderful, and its children trained by practice to see what beauty is, of what value is all our work?

Woodstock's bargain-rate "palace."

How extravagant can a school be with plain brick walls, wood trim . . .



. . . unplastered classrooms . . .

. . . and low-maintenance corridors?

Criticism

What makes one school "better"?

Here are two schools of approximately equal cost and size. Why is one excellent and the other merely adequate? The answer may lie in something as intangible—and important—as space.

BY RUSSELL BOURNE

"The greatest enemy of educational architecture today," said a leading U.S. architect recently, "is the Puritan ethic—the philosophy that if you are spending money and enjoying yourself, you must be wrong; if you're suffering, you're in good shape."

Whether the general mediocrity of U.S. school building can be blamed on Puritanism is debatable, but it has certainly been demonstrated that school boards and school architects are under constant pressure from tax-weary citizens to keep their spending to a minimum. This impoverished attitude of most U.S. communities toward school building is, undoubtedly, the chief reason for the "minimum" quality of most new schools. Yet, lack of municipal money is not always directly to blame. As the two schools contrasted on these pages show, excellence need cost no more than mediocrity. And as the four schools on pages 110 to 123 show, space and high-spirited architecture are two luxuries that can often be purchased at relatively little cost.

The school shown at upper right is the Collins Elementary School in Livingston, New Jersey, by Architect Frederick Elsasser. It is typical of schools now being

Corridors can be restrictive tunnels 8 feet wide, like those in the Collins School in Livingston, New Jersey (above), or pleasant and instructive passageways like the 9-foot-wide corridors of the imaginatively designed Homestead School in Garden City, Long Island (opposite page).

PHOTOS: WALLACE LITWIN

Exterior design of the Homestead School (left) and the Collins School (above) epitomizes the difference between mere adequacy and excellence. Whereas Collins' sturdily built, awkwardly proportioned main entrance looks like a sham colonial portico, Homestead's chief architectural element, the chimney and gable of the multipurpose room, is skillfully proportioned and thoroughly contemporary.

A point-by-point comparison

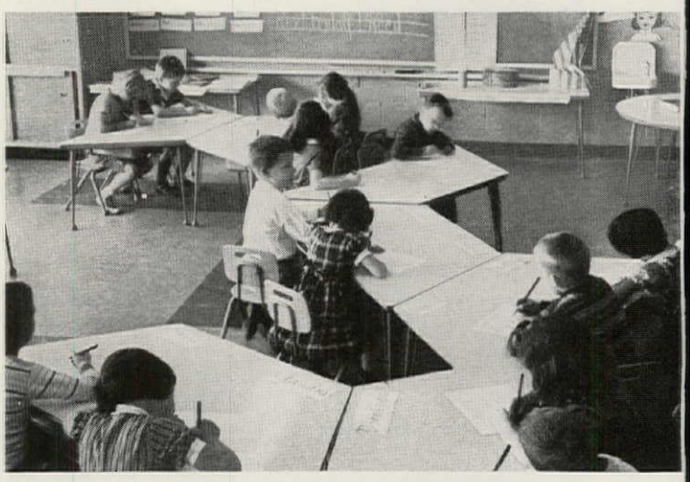
built in a spirit of long-suffering devotion to duty. The most significant point about the Collins School is not its cost ($18.70 per square foot—slightly above average for its geographic area) nor its undistinguished appearance. It is, rather, that the architects, faced with various choices for economy's sake, took the first answer available — make it tighter. And in so doing they skimped on the most important thing a school offers: space for learning. Their classrooms, designed to hold 30 children, have a clear floor area of 22 feet by 30 feet —barely up to the New Jersey State "recommended minimum." It was doubtless a good impulse to use long-lasting, low-maintenance materials. But, considering the cramped space that resulted, the question is whether, for instance, terrazzo in the corridors at $1.50 per square foot installed might not in this case have yielded to vinyl tile at half that cost and the difference put into building the classrooms larger.

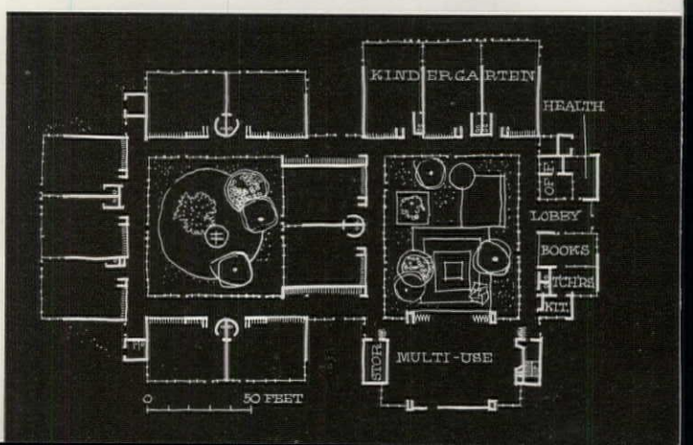
The Homestead School in Garden City, Long Island (right) was, by contrast, conceived initially and throughout its various planning stages as a building that should give the most generous school, in terms of space and spirit, for a reasonable cost. Reasonable cost, according to the school board's research, would come to $18 to $19 per square foot. The question of specifically what kind of space should be provided was answered in part by the well-known School Architects Perkins & Will, and in part by Homestead's supervising principal, Mrs. Betty Vazquez, who served as chairman of the faculty committee on school construction. She, too, had economy to consider, but her primary concerns were: to leave teachers alone (i.e., uninterrupted by "special skills" teachers) in classrooms large enough and well enough equipped to demand imaginative use; and to provide accessible and sheltered outdoor areas for teaching and games. The result of this collaboration is a school that saves on materials in order to experiment with space, form, and color. Painted concrete-block walls are used unashamedly, as are asphalt tile floors and unprepossessing chalkboards and tackboards. What is lost in long-term maintenance economies is more than regained by an imaginative and generous design that is already getting the best work out of children and teachers alike. Homestead, says Mrs. Vazquez, "is that rare and wonderful building, a piece of architecture from the ground up."

On the following pages, FORUM analyzes in some detail the advantages of this school that recognizes the educational benefits of architecture, as opposed to a school that allowed itself to be talked out of better architecture by cost considerations.

The statistical similarities between the Collins School

continued on page 196

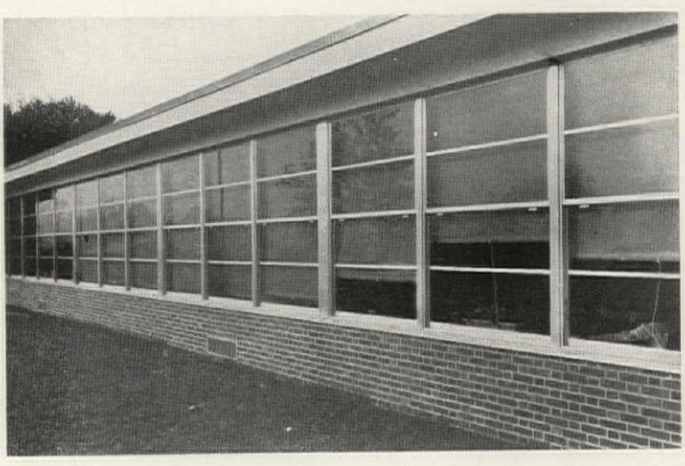




of excellence vs. mediocrity.

Large classrooms, like those at Homestead (left), measure 27 feet by 37 feet, have more room for flexible arrangements of basic furniture than do the rooms at Collins (right), which measure 22 feet by 30 feet—339 square feet smaller. Note the difference in wall materials: plaster is used at Collins; painted concrete block, which is considerably less expensive and equally acceptable acoustically, is used at Homestead.

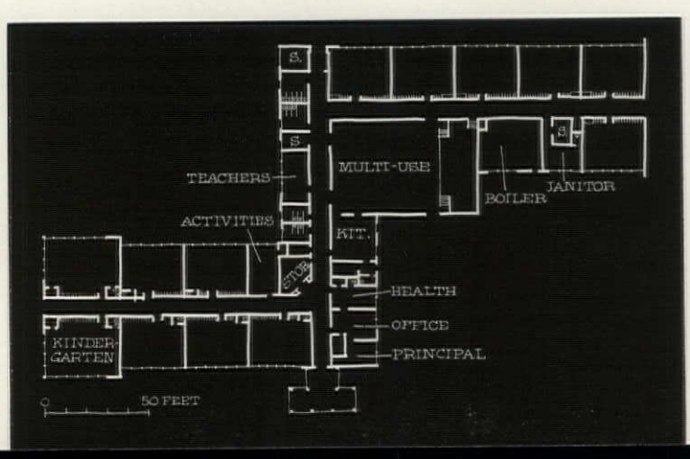
Adequate overhang is necessary to avoid the kind of makeshift sun protection that the Collins teachers must often resort to (right). At Homestead (left) the overhang is a full 3 feet, as compared to 2 feet at Collins. The sun problem is magnified at Collins by the fact that the classrooms face east and west and can only with difficulty be shielded from the low-angled morning and afternoon sunlight.



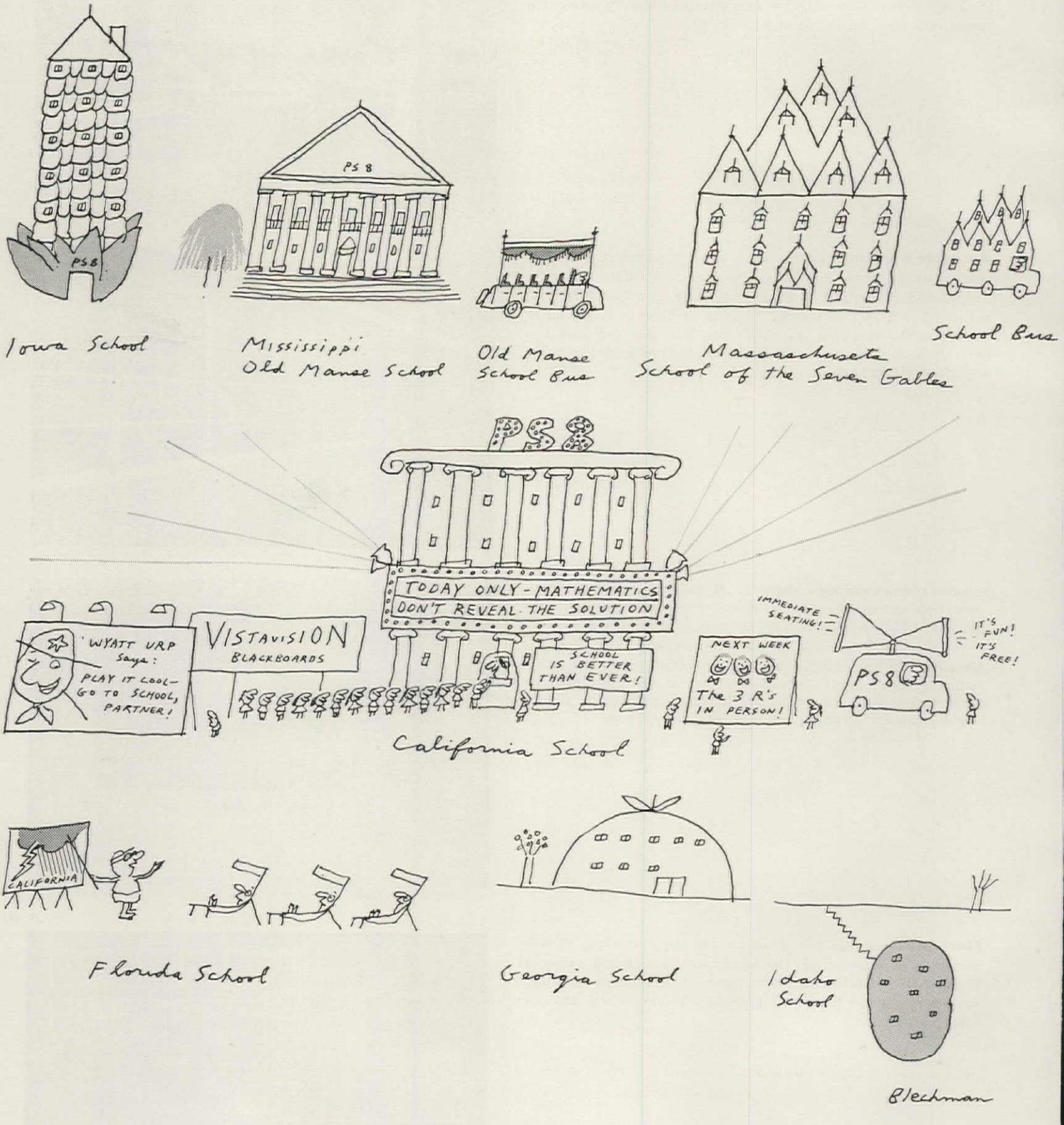
Informal multipurpose room at Homestead (left), which is opened up whenever possible to take advantage of its access to the larger of the school's two interior courts, is furnished as comfortably as the playrooms in the surrounding houses (note the fireplace). By contrast, the expensive multipurpose room of the Collins School (right) has all the warmth of a drillhall. Its remoteness from home and nature is emphasized by the giant's-height windows through which no child could ever see.

Floor plans of the two schools show the sprawling, episodic character of Homestead (left) and the constricted space at Collins. The generous classroom space at Homestead is supplemented by outdoor teaching spaces in the two courts and surrounding grounds.

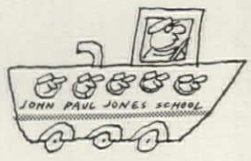
END

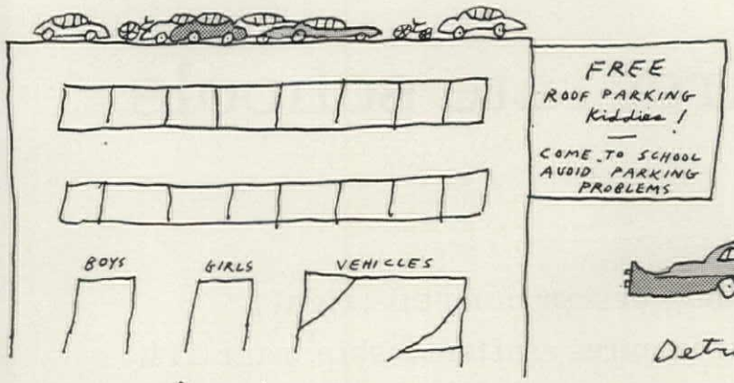


Home-grown schools

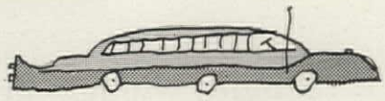


Educational plants, like ears of corn and baking potatoes, are influenced by the regions in which they grow—but perhaps not to the extent imagined by Cartoonist R. O. Blechman.

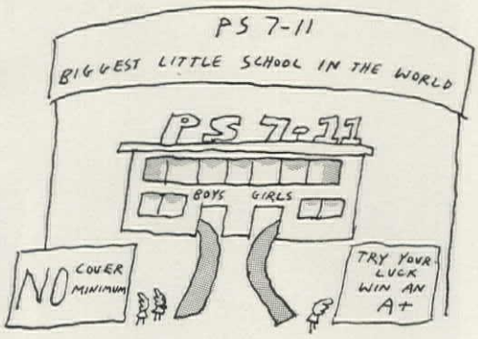




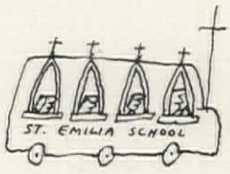
Detroit School

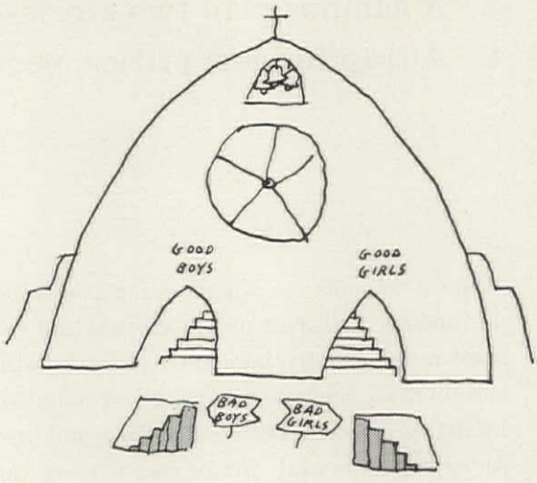


Detroit School Bus

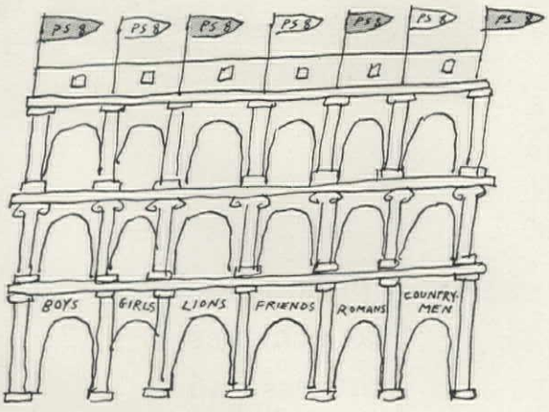


Reno School





Gothic School
The Little Red Cloisters



Roman School
The Little Red Colosseum

Greek Revival School
The Little Red Parthenon

School Chariot

Cartoons reprinted from *Schoolhouse*, a new book produced by Aluminum Company of America, Eggers & Higgins, architects, and Walter McQuade—published by Simon & Schuster.

Four first-rate schools

1. A light, winning design in metal (right).
2. A school that inspires craftsmanship, page 114.
3. A campus plan two stories high, page 118.
4. A trap for cost critics, page 120.

Modern schools no longer surprise Americans any more than do modern factories or stores. Yet the modern school has developed more slowly than most other building forms. The birth of the modern schoolhouse occurred a half-century ago when U.S. attitudes toward both education and architecture began to be more experimental. Many years were then spent in borrowing techniques and materials from other, faster-changing building types; schools began to look like modern houses, factories, and commercial buildings. Then, in the adolescence of school architecture, designers of the post-World War II years began to invent their own techniques, designing ingenious—and sometimes gimmicky—new methods for getting daylight into classrooms, for example.

Graduation from the tentative years is finally upon us. This year, the American Institute of Architects granted two of its five top design awards to schools* (both of them by the same architect, Mario Ciampi), and this means something. School design has, at last, achieved maturity, together with a calming down in technique. The best new modern schools, four of which are shown on the following pages, have an inspiring intangible quality about them that goes far beyond the earlier goals of modern school architecture: the environments which they create are, in themselves, high-spirited stimulants to learning.

* Westmoor High School (FORUM, May 1958).
Sonoma Elementary School (facing page).

1. A prize school that achieves lightness and beauty with simple materials.

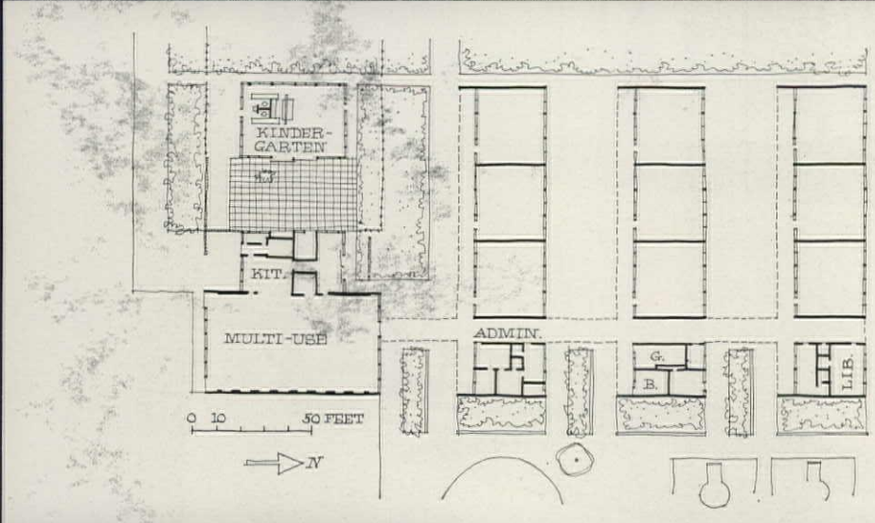
RONDAL PARTRIDGE

Suspended canopy provides a sheltered walkway, without any columns for children to run into.

"The now almost antiquated concept of cutting and fitting each piece of wood in the field is no longer economical or consistent with progress." This steely statement by Mario Ciampi did not lose in translation to classrooms. Indeed the idea gained so much in structural integrity and grace that this modest building was given a top honor award by the American Institute of Architects at its convention in Cleveland this year.

Why is this school so good? In making its award, the AIA jury honored the building particularly for the cheerful mood it sets. Here is a design, the judges implied, that went to the factory to be built, but came out livelier than most handicraft, a sonnet composed on a slide rule. It is light, gay, and explicit; children can look at it and almost understand how it was put together.

How did Ciampi achieve this extra beauty with ordinary industrial materials? The picture above shows the answer particularly well. First he fined down the structure to a minimum and opened up walls with glass, and he used color happily. But then (as shown overleaf) he gave the products of the rolling mills and glass factories some rough, warm neighbors—end walls of concrete block and redwood—and he shaped them subtly.



SONOMA ELEMENTARY SCHOOL, SONOMA, CALIFORNIA.
ARCHITECT: *Mario J. Ciampi;* LANDSCAPE ARCHITECT: *Lawrence Halprin;* STRUCTURAL ENGINEER: *Ellison & Sedgewick;* MECHANICAL ENGINEER: *Buonaccorsi & Murray;* ELECTRICAL ENGINEER: *Charles Von Bergen;* GENERAL CONTRACTOR: *Herbert Crocker Company.*

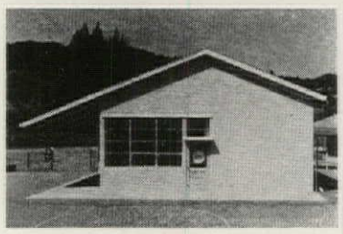
Structural frame is exposed throughout the entire building. Paths from the classrooms to the central toilet rooms are protected down the sides of the classroom rows by the same overhangs to the south that serve as sun shields.

Inside the classrooms (right) the structure is clearly visible. Steel roof decking, left exposed, makes a good ceiling for breaking up reverberation. Because the partitions between rooms are topped with glass, light seems to come into the classrooms from all directions—in fact, it does, in varying degrees.

Solid end walls are anchors for the spidery structure of the rest of Sonoma Elementary School.

PHOTOS: RONDAL PARTRIDGE

First school built on this site in 1894 bore California Mission trademark.

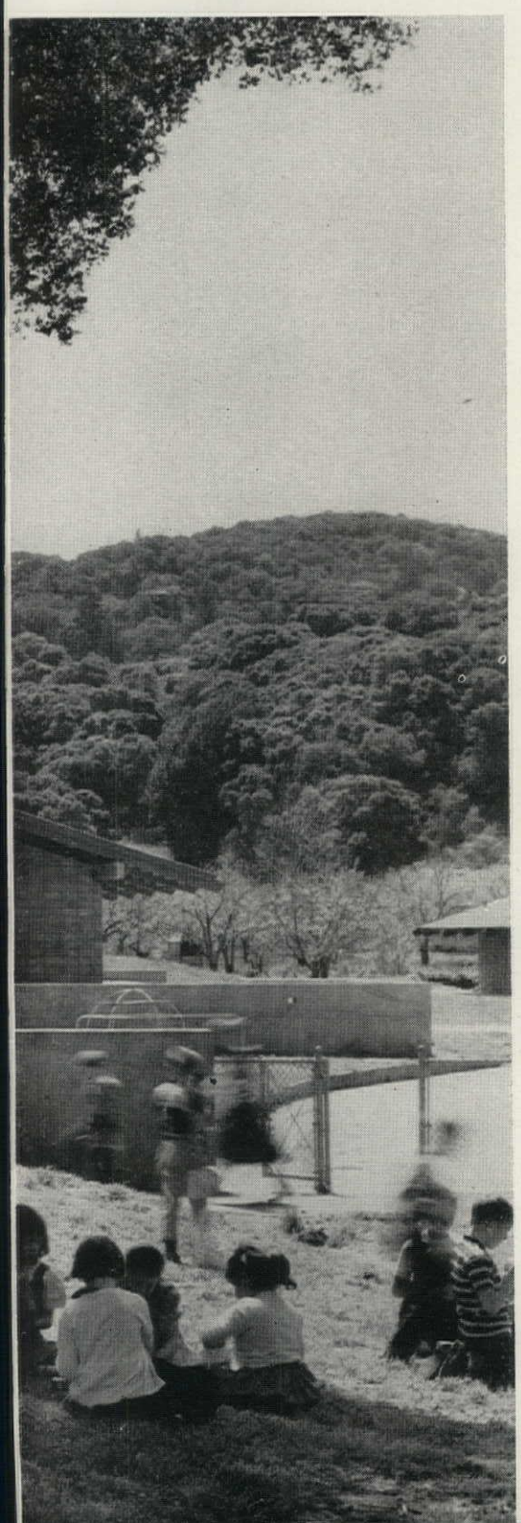


1952 addition (left) was utilitarian but unimaginative architecturally.

Newest buildings (below) were completed last year. Library is in the foreground, the multi-use building in the background.

PHOTOS : RONDAL PARTRIDGE

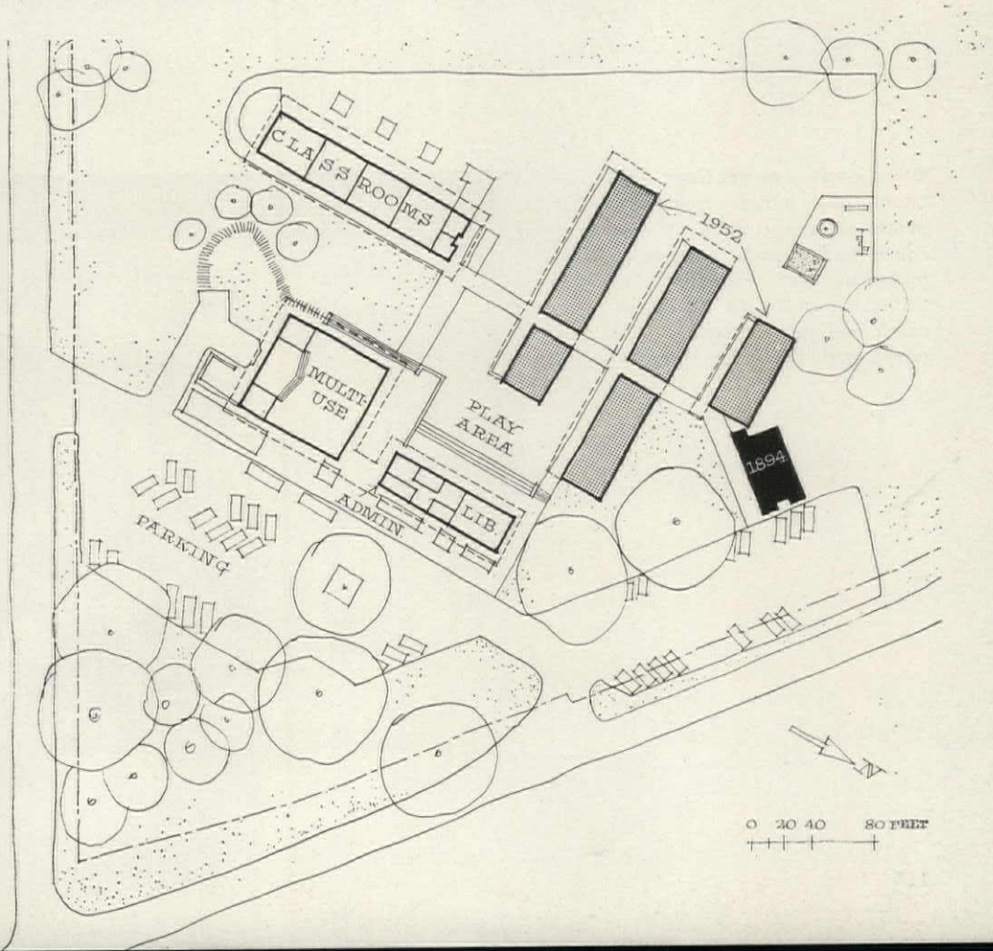
2. A schoolhouse that conveys the joy of craftsmanship.



On a single school site in San Mateo County, California, is trapped a unique case record of evolving school architecture. Three very different schoolhouses built here over a half-century span are all still in use; indeed, they are all part of the same school. Viewed together they show that the poise of a regional architecture is learned slowly.

First, in 1894, the innocently decorated wood structure shown in the photo (above, left) was built. Many classes graduated. Then, in the early 1950's, new classroom buildings were added in a style that stressed efficiency, economy, and stark simplicity, those sometimes tiresome virtues in architecture. Then, most recently, after new growth in the neighborhood, the school board asked a pair of architects to give them a building which would really fit their casually beautiful site.

The school they got contrasts sharply with Ciampi's factory-finished school, shown on the pages preceding; the children who go to the Portola school will be surrounded every day by familiar kinds of wood and masonry put together with loving craftsmanship—an unspoken lesson the children can carry into their own future living environment.



PORTOLA VALLEY SCHOOL, SAN MATEO COUNTY, CALIFORNIA.
ARCHITECT: *Callister & Rosse;* STRUCTURAL ENGINEER: *John A. Blume & Associates;* MECHANICAL & ELECTRICAL ENGINEER: *Vandament & Darmsted;* GENERAL CONTRACTOR: *Leonard Semas & Company;* ACOUSTICAL CONSULTANT: *Dariel Fitzroy.*

Entrance to the new addition to the Portola school opens on a quiet, tree-rimmed parking and loading zone for school buses. To shelter the entrance, the designers continued the laminated Douglas fir girders from one building to the next and roofed them.

Overhead connection between the wings creates a protected play space. Warm colors and natural finishes of materials were carefully retained in order to avoid too much feeling of newness compared with the older wings.

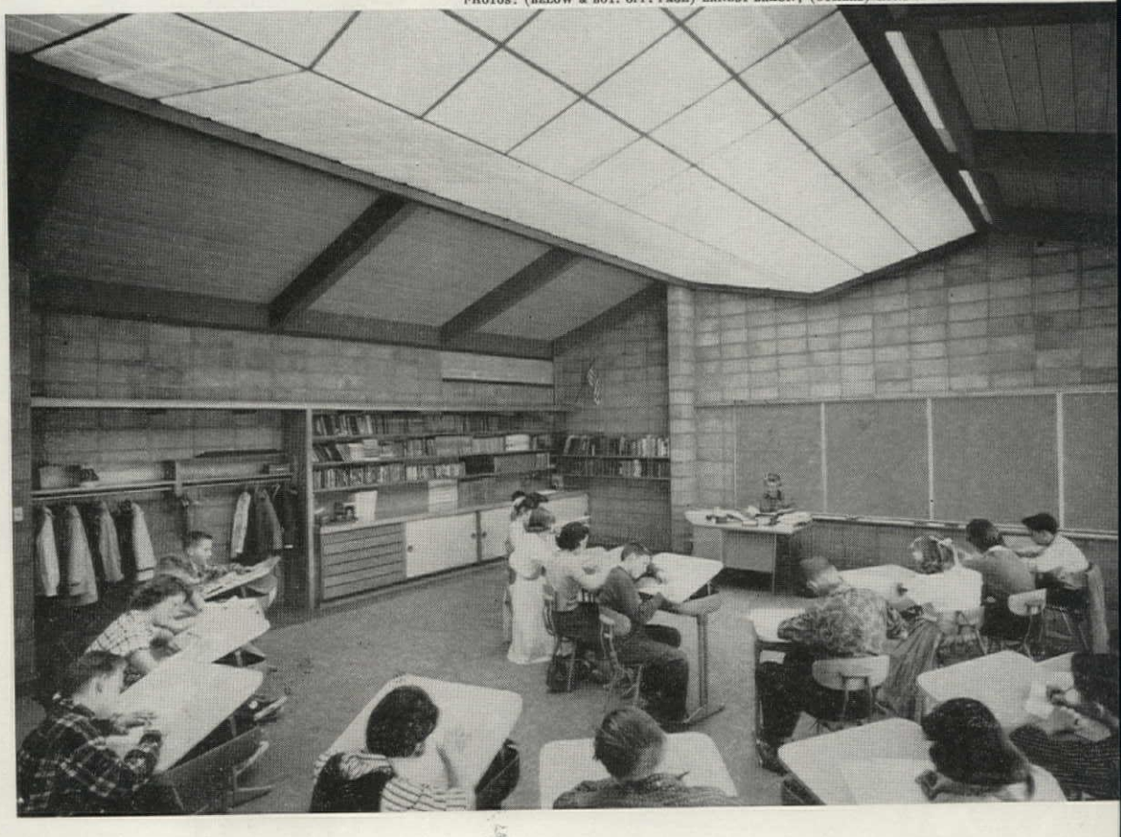
Sliding doors are a feature of the Portola school, and the areas immediately outside the classrooms are screened by fencing to extend the interior partitions outdoors and define each classroom's own yard. Some room overhangs are opened with louver boards.

1894

1952

PHOTOS: (BELOW & BOT. OPP. PAGE) ERNEST BRAUN; (OTHERS) RONDAL PARTRIDGE

1957



Concrete-block walls are exposed both inside and outside, and a long skylight rides the roof peak, allowing the classrooms to be oriented to the best view instead of to the steadiest light. Small photos (above) are interiors of the older wings.

Entrance hall in each classroom wing is used also as art classroom.

Campus common occupies central area among complex of buildings.

3. A two-story campus school with the easy atmosphere of home.

This school design is one which connects strongly with the tradition of its surroundings, in this case Pennsylvania's rocky fields. Welsh Valley Junior High School's large walls are made of the same chunky native stone as many of the houses to which its school buses commute. For further informality, ceilings are as low as the law would allow; the roofs have a pleasant pitch and overhang; many of the indoor partitions are naked common brick.

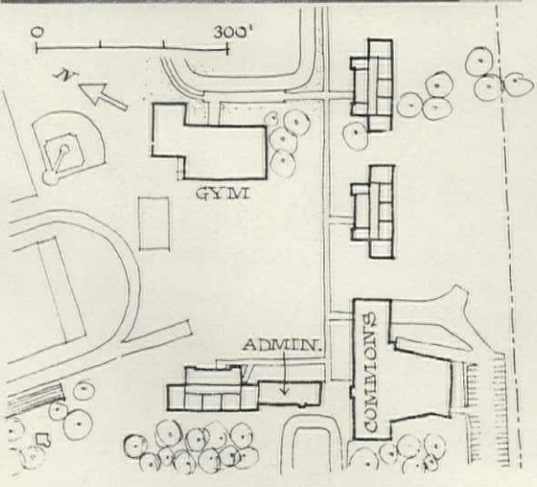
Psychology, more than simple tradition, is behind this. Like the designers of the schools on the preceding pages, these architects were out to build a school that would seem neither overpowering nor dull to the adolescents who were to spend their days there. Avoid these two faults, they decided, and you eliminate two big teaching barriers. So they built a school as familiar and pleasant as the sturdy stone houses nearby, but much less inhibited in plan (below).

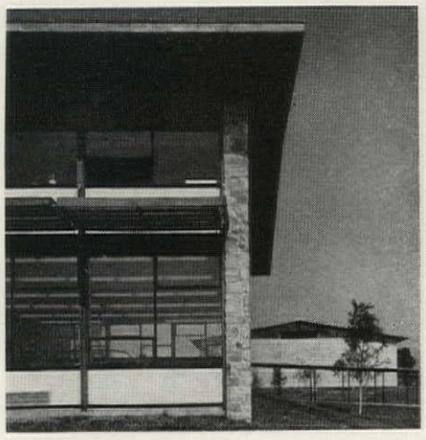
The strategy behind the floor plan evolved from a shrewd stipulation by the school-board client: the building must be planned so that any approach to education could be accommodated, e.g., the school must be adaptable to separating students by age groups, or throwing them in together. The solution is a school for 750 pupils that could possibly be used as six separate five-room teaching units. For there are three two-story classroom buildings of ten rooms each, and each floor has identical, independent facilities to teach the whole curriculum.

PHOTOS: LAWRENCE S. WILLIAMS

1.

2.





3.

Cantilevers, slats, stone:

1. Cafeteria-auditorium building is cantilevered out over a stone foundation wall. 2. Auditorium wall is slatted to improve acoustics. 3. Native stone was used for walk at the end of classroom buildings.

WELSH VALLEY JUNIOR HIGH SCHOOL, PENN VALLEY, NARBERTH, PENNSYLVANIA.
ARCHITECT: *Harbeson, Hough, Livingston & Larson;* STRUCTURAL ENGINEER: *Chester I. Duncan & Son;* MECHANICAL & ELECTRICAL ENGINEER: *Moody & Hutchison;* GENERAL CONTRACTOR: *Frank H. Wilson Company;* ACOUSTICAL CONSULTANT: *Michael J. Kodaras.*


ACTIVITY
SOCIAL
ACADEMIC
N
300'

4. A $3.5 million high school that was a bargain.

Here is a school that is a beautiful mousetrap for those sturdy citizens who like to rise and proclaim stoutly that children are being educated in palaces, or in needlessly lavish country-club surroundings. This new high school in San Angelo, Texas has a man-made lake and a dozen separate buildings on its 30-acre site (expensive land in town, acquired by condemnation, *not* cheap real estate, a long bus ride out of town). The buildings are almost all air conditioned, except, of course, for the big swimming pool. There are snack bars, views on little courtyards, and facilities for teaching and learning that few junior colleges can match, certainly not San Angelo Junior College, nearby. And unlike most campus-type schools, this one has pleasant walks, planting areas, benches—in short, a campus!

And when the accusations of "splendor" come forth, they fade quickly. For even with a $3.5 million price tag this is not an expensive school. It is a big one, and a good one. It was built for 2,150 students, actually accommodates 2,500, and could take 3,000. Its glory is that it has benefited from the economies of bigness. The architects have saved on the mechanics of building—repetitive construction, mechanized erection techniques—but then have shrewdly spent some of these savings on amenities, so that this building group totally lacks the mind-killing monotony of the usual large high school. For the cost figures on this school bargain see page 122.

PHOTOS: ULRIC MEISEL—DALLAS

Campus plan of San Angelo Central High School (left) permits separation of academic area from areas of noisier activities such as gymnasium. There are separate academic buildings for sophomores, juniors, and seniors. One boundary of the pleasant campus is the North Concho River (with a municipal golf course on the other side); another is the city botanical garden. Artificial lake (bottom of photo) on the 30-acre site has a larger function than charm. It is also a pool for site drainage. The site was a hilly one for Texas (photo, right) and the architects disturbed few contours.

SAN ANGELO CENTRAL HIGH SCHOOL, SAN ANGELO, TEXAS. ARCHITECT: *Caudill, Rowlett & Scott;* ASSOCIATE ARCHITECT: *Max D. Lovett;* STRUCTURAL ENGINEER: *Edward F. Nye;* MECHANICAL & ELECTRICAL ENGINEER: *J. W. Hall Jr.;* GENERAL CONTRACTOR: *Rose Construction Company;* ACOUSTICAL CONSULTANT: *Richard N. Lane.* LANDSCAPE ARCHITECT: *Robert F. White.*

Cost breakdown:

BUILDING CONSTRUCTION

General construction	$1,815,048
Plumbing	99,928
Heating and ventilating	379,691
Electrical	206,982
Cabinetwork	68,628
Painting	34,000
Building construction cost	$2,604,277

FIXED EQUIPMENT

Kitchen	51,000
Science and bleachers	36,700
Draperies	8,380
Stage	5,953
Auditorium seating	22,216
Fixed equipment cost	124,249

MOVABLE FURNITURE AND EQUIPMENT	144,751

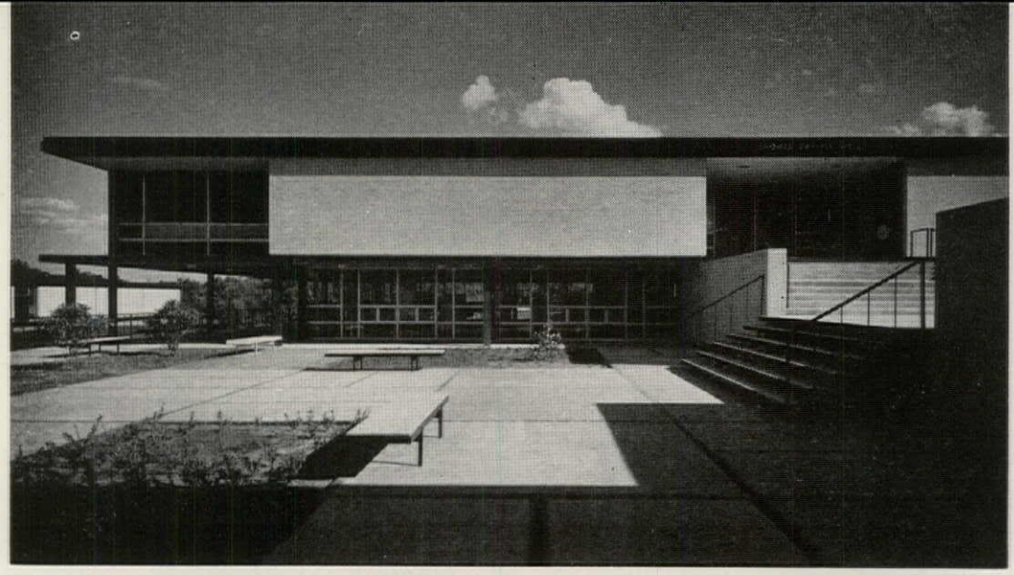
SITE DEVELOPMENT

Grading	25,000
Drainage	7,784
Roads	1,875
Paved courts, terrace	12,000
Parking	20,212
Fencing	4,590
Water supply	3,712
Sewage system	6,632
Gas service	2,532
Electric service	9,700
Outdoor equipment	4,100
Concrete-brick walks	51,600
Landscaping construction	15,500
Planting	8,200
Site development cost	173,437

PROFESSIONAL FEES

Architectural, structural, mechanical and electrical, acoustical, landscaping fees	170,000
LAND	325,000
Total cost	$3,541,714

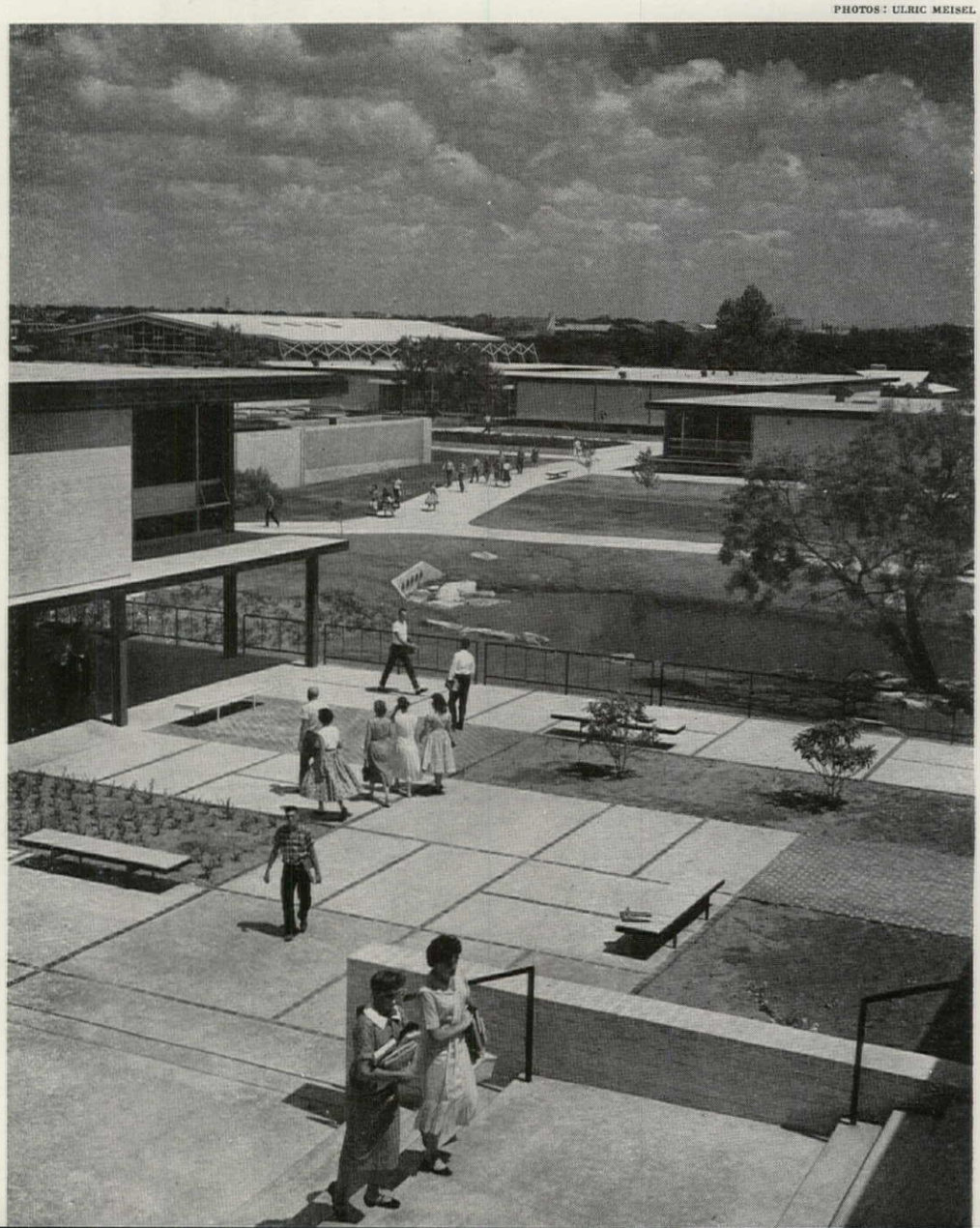
Patterned paving was made economically of concrete, enlivened with brick strips. The tops of the benches which are scattered across the campus are also cast concrete.



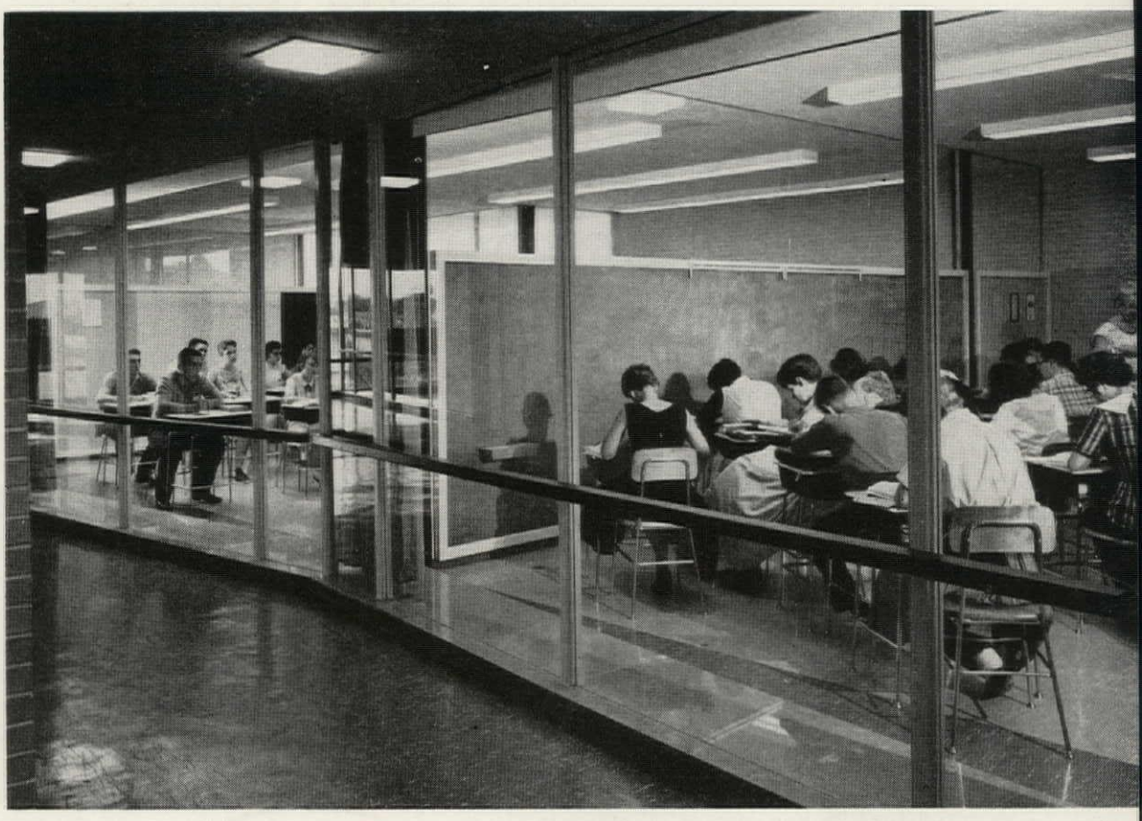
Auditorium is the most spectacular building at the San Angelo school. Framed in steel, it is circular in plan; its roof is a fan of folded planes.

Classroom buildings have relatively little glazing on the exterior. This keeps the heat gain down and makes air conditioning more economical. Care was taken also to keep glass shaded from the sun.

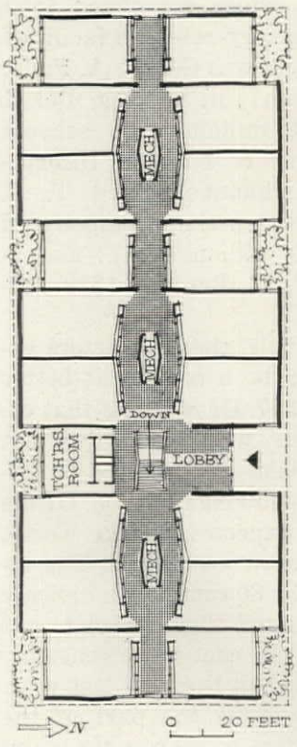
PHOTOS: ULRIC MEISEL



Storage facilities for students, on the ground floors of the classroom buildings, have simple shelves instead of expensive lockers.



Classrooms are walled with glass on the corridor side, but the view across the hall into other classrooms is partly blocked by solid partitions enclosing the air-conditioning machinery located in the center of the hall, as shown in the photograph below.



Wide stairway from the classroom level to the storage space below is needed for the sudden heavy traffic at the end of classes. In the center of the hall on the upper level is seen one of the three mechanical "islands" which house the air-conditioning equipment for the classroom building. END

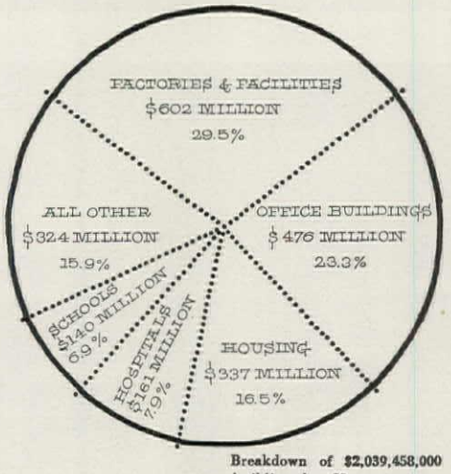
One hundred general contractors account for $2.5 billion of building construction annually, more than 7 per cent of all the new building in the U.S.

Building's biggest contractors

The 100 biggest general-building contractors in the U.S. last year were responsible for more than 7 per cent of all the construction that went into new buildings. These 100 firms, comprising fewer than two-tenths of 1 per cent of the nation's 85,000 general-building contractors, completed nearly $2.5 billion of construction out of an estimated $34 billion that went into buildings. Moreover, the 83 firms, for which work breakdowns are available, accounted for: 25 per cent of all office and warehouse building; 15 per cent of industrial building; and 19 per cent of hospital construction.

These findings are based on a comprehensive and unprecedented FORUM survey of 480 leading general-building contractors. On the following pages are listed the 100 largest contractors, ranked according to volume of building construction put in place in 1957. The figures shown exclude heavy construction (e.g., dams, highways, etc.), industrial process-plant construction (petroleum refineries, ore reduction facilities, etc.), and all work done for a firm's own account (which bars builders such as William Levitt from the list). The directory also excludes four general contractors and four package builders who would probably rank among the top 100, but from whom no data could be obtained.*

The 100 contractors on this list do not, of course, account for anywhere near so much construction as do the 100 biggest architects (FORUM, September 1958). The $2.5 billion of new construction put up by the 100 contractors was only a little more than half the $4.4 billion of construction designed by the 100 largest architects. Further, no contracting firm approached the $250 million of new construction accounted for by architecture's biggest firm, Giffels & Rossetti. While there are various reasons for this gap, the main ones are the extra man-hours and investment required to construct a building, as compared with designing it, and competition: there are nearly nine times as many general contractors as there are architects.



Breakdown of $2,039,458,000 building by 83 contractors.

WHAT THE BIG BUILDERS BUILD

The biggest building contractor last year was New York's George A. Fuller Company. Its estimated $135 million of building construction put in place shaded the $125 million of second-ranking Turner Construction Company, also of New York, and was well ahead of the $104 million of Del E. Webb Construction Company of Phoenix, which was third. In fourth place was Philadelphia's John McShain, Incorporated (an estimated $60.5 million of building construction put in place), followed by Detroit's Darin & Armstrong, Incorporated ($59 million).

Behind these leaders there were seven other firms which individually completed from $40 million to $60 million of new buildings; 29 others with $20 million to $40 million; and 59 with less than $20 million.

Among the 83 firms which classified their work, the biggest constructor of industrial plants and research buildings was Darin & Armstrong, which completed $55.6 million of factory-research facilities. No. 1 in offices was George A. Fuller ($85.4 million); in housing, Del E. Webb ($31 million); in schools, Huber, Hunt & Nichols, Incorporated of Indianapolis and T. C. Bateson Construction Company of Dallas ($10 million each); and in hospitals, T. C. Bateson ($22 million).

On the whole, the contractors expect 1958 to be a somewhat better year than 1957. Of 80 firms that estimated their work for this year, as well as last, 42 expected to improve their showings in 1958. Of the others, 31 expected to do worse, while 7 foresaw no change. The estimates of the 80 companies indicate that, as a group, they expect to put in place 7.4 per cent more construction in 1958 than they did last year. This optimism on the part of the biggest builders reinforces the many signs that construction has once again resumed its strong uptrend.

END

Note: The FORUM *directory of the 100 biggest building contractors, together with lists of the 100 biggest architects and the 100 biggest building clients, may be obtained by mailing 25¢ per copy to* ARCHITECTURAL FORUM, *9 Rockefeller Plaza, New York 20, N.Y.*

* The missing contractors: J. A. Jones Construction Co., Charlotte, N.C.; Grove, Shepherd, Wilson & Kruge, Inc., New York; John Lowry, Inc., New York; Ralph M. Parsons Co., Los Angeles. The missing package builders: The Austin Co.; Bank Building & Equipment Corp.; Holmes & Narver, Inc.; United Engineers & Constructors, Inc.

The 100 largest building contractors

	Firm	Construction put in place 1957 ($000)	Construction put in place 1958 (est.) ($000)	Type of construction in 1957 (per cent) Industrial & research	Office	Residential	Hospital & institutional	School	Other
1	George A. Fuller (New York)	135,000[1]/	141,750	16.9	63.2	7	7	1.4	4.2
2	Turner Construction (New York)	125,200	137,000	36.6	35.5	12.6	6.2	1.6	7.5
3	Del E. Webb Construction (Phoenix)	104,088	110,234	25.4	44.9	29.7	0	0	0
4	John McShain (Philadelphia)	60,500	81,000			(Not available)			
5	Darin & Armstrong (Detroit)	59,061	75,360	94.2	0	0	0.4	2.3	3.1
6	Robert E. McKee (El Paso)	55,359	67,857	13.2	24.1	30.9	20.3	0.1	11.5
7	Hilp & Rhodes (San Francisco)	47,600	52,500	31.5	0	0	0	0	68.5
8	Perini Corp. (Framingham, Mass.)	47,000	47,000—			(Not available)			
9	J. W. Bateson (Dallas)	46,000	N.A.			(Not available)			
10	Johnson, Drake & Piper (Minneapolis)	45,000	30,000	40	14	14	1	8	23
11	Hunkin-Conkey Construction (Cleveland)	40,865	N.A.			(Not available)			
12	Gilbane Building (Providence)	40,000	48,000	50	17.5	5	10	12.5	5
13	Daniel Construction (Greenville, S.C.)	39,889	47,859	71.9	7.2	2.6	0	6.4	11.9
14	Huber, Hunt & Nichols (Indianapolis)	39,550	25,000	62.5	12.5	0	0	25	0
15	Gust K. Newberg Construction (Chicago)	37,314	N.A.	18.3	20.7	0	21.2	9.5	30.3
16	T. C. Bateson Construction (Dallas)	35,000	15,000	0	0	8.6	62.9	28.6	0
17	Taylor Construction (Miami)	31,250	39,500	0	0	88.8	8	0	3.2
18	O. W. Burke (Detroit)	31,000	25,500	48.4	0	3.2	6.5	0	42
19	Virginia Engineering (Newport News)	31,000	36,000	41.9	12.9	16.1	12.9	9.7	6.5
20	Diesel Construction (New York)	30,800	34,850	0	98.1	0	0	0	1.9
21	C. L. Peck (Los Angeles)	30,800	30,000	2.4	83.3	0	0	0	14.3
22	R. P. Farnsworth (New Orleans)	30,000	N.A.			(Not available)			
23	George F. Driscoll (New York)	29,418	27,124	0	0.4	48.7	12.6	9.9	28.4
24	Paul Tishman (New York)	29,200	N.A.			(Not available)			
25	Farnsworth & Chambers (Houston)	28,989	28,989	16.7	0	0	26.6	30	26.6
26	Shubow & Hollo (Detroit)	26,250	N.A.			(Not available)			
27	H. K. Ferguson (Cleveland)	25,750	19,000	79.6	0	0	0	0	20.4
28	Henry C. Beck (Dallas)	25,500	N.A.	47.8	33.7	0	5.5	0	12.9
29	Terminal Construction (Woodridge, N.J.)	25,200	29,600	0	15	55	0	10	20
30	Charles H. Tompkins (Washington, D.C.)	25,000+	N.A.			(Not available)			
31	Frank Briscoe (Newark, N.J.)	25,000	30,000	56	24	0	20	0	0
32	Walsh Construction (New York)	23,785	N.A.	47.8	47.8	0	4.3	0	0
33	W. E. Wood (Detroit)	23,675[2]/	8,000	92.9	0	0	5.9	1.2	0
34	Ragnar Benson (Chicago)	23,500[1]/	N.A.	0	50	0	0	0	50
35	Swinerton & Walberg (San Francisco)	23,246	25,500	46.3	41.5	2.4	4.9	0	4.9
36	J. A. McNeil (Alhambra, Calif.)	22,500	14,500	35.6	40	3.3	8.9	12.2	0
37	McCloskey & Co. (Philadelphia)	22,400	25,300	0	23.2	24.1	0	21	31.7
38	Malan Construction (New York)	22,012	19,811	45.5	0	13.6	18.2	9.1	13.6
39	McNeil Construction (Los Angeles)	21,114	15,000			(Not available)			
40	Bryant & Detwiler (Detroit)	21,000	28,000	38.1	41.2	0	10.6	0	10.1
41	John W. Cowper (Buffalo)	20,560	20,000	25	21.3	1.0	5.2	46.8	0.7
42	H. R. H. Construction (New York)	20,437	30,066	0	24.5	56.5	0	10.1	8.9
43	C. H. Leavell (El Paso)	20,120	26,696	38.4	18.8	30.9	0	0	11.9
44	Walter Kidde Constructors (New York)	19,600	18,100	95.4	1.1	0	3.5	0	0
45	Haas-Haynie (San Francisco)	19,424	27,600	40.3	40.5	3.7	0	0	15.5
46	Diversified Builders (Paramount, Calif.)	19,270	24,000	16.2	0	13.4	0	0	70.5
47	Inland Construction (Morton Grove, Ill.)	18,580	15,600	2	6.5	0	0	0	91.5
48	Jordan Company (Columbus, Georgia)	18,202	15,517	18.7	0	12.6	34	0	34.7
49	Cauldwell-Wingate (New York)	18,164	9,797			(Not available)			
50	Myers Brothers Construction (Los Angeles)	18,000	40,000	20.3	27.8	38.9	0	0	13.6

NOTES: 1/FORUM estimate; 2/total for fiscal year. Dollar figures include each firm's proportionate share of joint venture projects. Plus or minus signs indicate actual amount is slightly more, or less, than amount shown; some figures are averages of high and low estimates by firms. N.A. means data is not available. "Other" construction includes stores, banks, garages, restaurants, churches, social and recreational buildings, military structures, public utility buildings, prisons and courthouses, and transportation terminal buildings.

The 100 largest building contractors

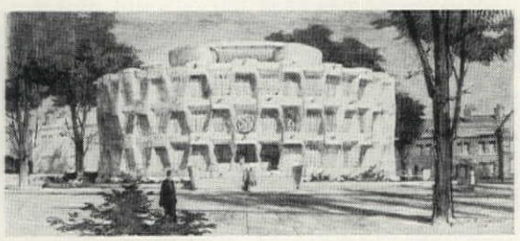
	Firm	Construction put in place		Type of construction in 1957 (per cent)					
		1957 ($000)	1958 (est.) ($000)	Industrial & research	Office	Residential	Hospital & institutional	School	Other
51	Starrett Brothers & Eken (New York)	**18,000**	18,000	20	80	0	0	0	0
52	Martin K. Eby Construction (Wichita)	**17,845**	N.A.	(Not available)					
53	MacDonald Construction (St. Louis)	**17,710**	46,607	3.4	16.9	0	0	0	79.6
54	S. N. Nielsen (Chicago)	**17,575**	18,000	5.8	4.8	26.7	25.6	9	27.8
55	Plak Construction (Miami)	**17,500**	N.A.	0	0	80	0	0	20
56	Sumner M. Sollitt (Chicago)	**17,000+**	12,000	23.5	17.6	41.2	17.6	0	0
57	Miller-Davis (Kalamazoo)	**16,865**	11,000	15.9	5.6	29.2	3.1	14.8	31.4
58	S. S. Silberblatt (New York)	**16,569**	N.A.	0	0	100	0	0	0
59	Paul Smith Construction (Tampa)	**16,538**	8,000	78.8	1.6	0.2	15.7	0.3	3.4
60	William L. Crow Construction (New York)	**16,450**	13,000	32.8	24.3	0	18.2	12.2	12.2
61	W. S. Bellows Construction (Houston)	**16,000**	N.A.	(Not available)					
62	John A. Volpe Construction (Malden, Mass.)	**16,000**	N.A.	0	0	0	20	10	70
63	Mellon-Stuart (Pittsburgh)	**15,970**	14,760	25.1	18.6	6.2	5.1	8.8	36.2
64	Cal Kovens Construction (Miami Beach)	**15,600**	4,500	2.6	1.3	96.2	0	0	0
65	Cahill Brothers (San Francisco)	**15,555**	25,500	0	50	44.1	5.9	0	0
66	William Simpson Construction (Los Angeles)	**15,000**	14,250	40	26.7	0	13.3	0	20
67	Rust Engineering (Pittsburgh)	**14,928**	N.A.	85.4	0	0	0	0	14.6
68	J. A. Utley (Royal Oak, Mich.)	**14,700**	19,000	76.2	17	0	1.7	0	5.1
69	Hegeman-Harris (New York)	**14,500**	12,000	9.3	44.5	37.9	0	6.5	2.8
70	Psaty & Fuhrman (New York)	**14,464**	17,000	0	0	32.7	10.7	54.7	1.9
71	Wark & Co. (Philadelphia)	**14,250**	N.A.	(Not available)					
72	Mead & Mount Construction (Denver)	**14,101**	12,000	11.7	64.6	17.2	0.09	5.5	0.95
73	Corbetta Construction (New York)	**14,100**	16,300	(Not available)					
74	Florida Builders (St. Petersburg)	**14,000**	16,000	0	0	100	0	0	0
75	Winn-Senter Construction (Kansas City, Mo.)	**14,000**	14,000+	(Not available)					
76	Williams & Burrows (Belmont, Calif.)	**13,980**	25,000	21.5	10.7	15.3	21.3	17.2	14.1
77	Davison Construction (Manchester, N.H.)	**13,901**	19,000	53.8	0	46.2	0	0	0
78	Southeastern Construction (Charlotte, N.C.)	**13,500**	15,000	35	10	0	10	10	35
79	Aberthaw Construction (Boston)	**13,000**	13,000	83.1	7.7	0	0	0	9.2
80	Foster & Creighton (Nashville, Tenn.)	**12,843**	13,500	49.7	0	9.2	12.5	3.3	25.6
81	George B. H. Macomber (Boston)	**12,718**	10,000	25	16.7	16.7	0	37.5	4.2
82	Arthur Venneri (Westfield, N.J.)	**12,500**	22,400	7.2	0	16	24	48	4.8
83	Lasker-Goldman (New York)	**12,336**	13,262	0	7.5	0	20.3	72.1	0
84	Albert M. Higley (Cleveland)	**12,200**	8,000	16.4	6.6	0	0	8.2	68.9
85	James Stewart (Falls Church, Va.)	**12,173**	16,000	21	13.5	7.1	14.4	12.6	31.4
86	Stolte, Inc. (Oakland, Calif.)	**12,150**	N.A.	22.2	0	0	0	24.7	53.1
87	F. D. Rich (Stamford, Conn.)	**12,131**	12,000	0	0	0	41.7	0	58.3
88	Lembke Construction (Albuquerque, N. M.)	**12,042**	15,500	0	25	0	16.6	33.2	25.3
89	S. S. Jacobs (Jacksonville, Fla.)	**12,000**	12,000	71.7	13.3	3.3	8.3	0	3.3
90	B. J. Lucarelli (Newark)	**12,000**	12,000+	(Not available)					
91	F. H. McGraw (Hartford)	**12,000**	7,000	83.3	16.7	0	0	0	0
92	Joseph L. Muscarelle (Maywood, N.J.)	**12,000**	13,500	40	4	0	0	12	44
93	J. H. Pomeroy (San Francisco)	**12,000**	24,000	8.3	8.3	83.3	0	0	0
94	Olson Construction (Lincoln, Neb.)	**11,820**	N.A.	32.7	7	11.2	0	4.2	43.4
95	Brice Building (Birmingham)	**11,800**	9,800	14.6	17.1	7.3	7.3	17.1	36.6
96	H. L. Coble Construction (Greensboro, N.C.)	**11,600**	26,000	6.6	6.6	80.3	3.3	3.3	0
97	Doyle & Russell (Richmond, Va.)	**11,500**	11,500	19.7	39.6	0	21.9	12.9	5.9
98	W. R. Grimshaw (Tulsa, Okla.)	**11,427**	18,500	10.2	68.8	0	1.6	7.7	11.7
99	A. L. Jackson (Chicago)	**11,400**	16,500	48.2	30.7	0	10.5	10.5	0
100	Howard S. Wright (Seattle)	**11,295**	13,625	28.0	0.6	11.6	0.6	16.0	43.3

HANS WILD—LIFE

Celtic towers in Killarney, like those shown above, suggested the form of the new U.S. Embassy building (below).

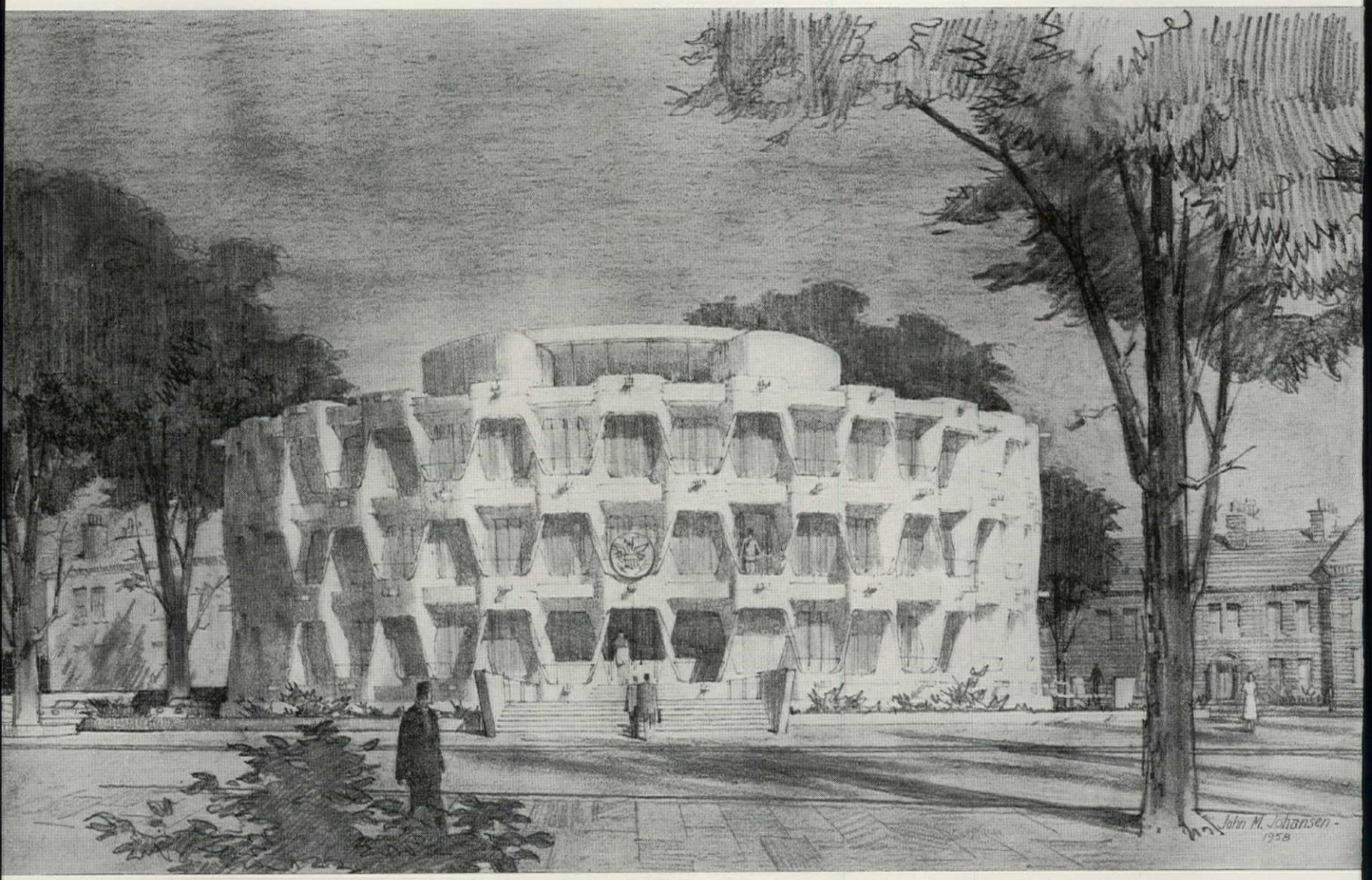
For Eire, a new "Celtic tower"

The proposed U.S. Embassy for Dublin will be a blend of Irish tradition and modern American concrete technology.

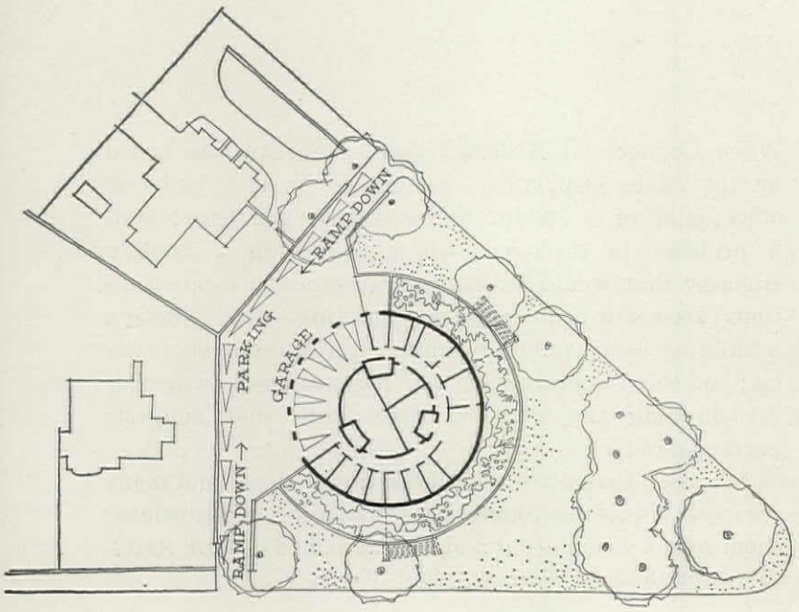


When Connecticut Architect John Johansen was asked by the State Department to design its new embassy office building in Dublin, he faced three problems: first, a problem in diplomacy—how to design a modern embassy that would have some reference to local traditions; second, a problem in site planning—how to design a building that would look right on a pie-shaped corner lot; and third, a problem in monumentality—how to give his building the kind of ruggedness that suggests permanence.

Johansen found the answers in many places and many periods. Where he found them, and how he translated them into a fascinating and distinguished design (left), are explained on the next four pages.

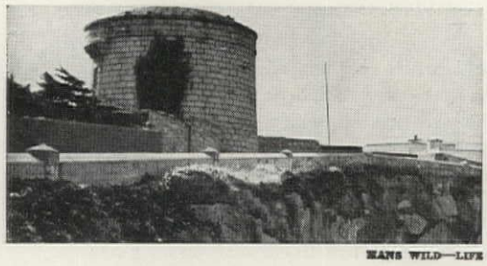


Robust facade patterns of Dublin Embassy (above) consist of precast, structural concrete elements. Site plan (below) shows the moat that surrounds the cylindrical building, also demonstrates how this simple plan-shape makes effective use of a difficult lot.

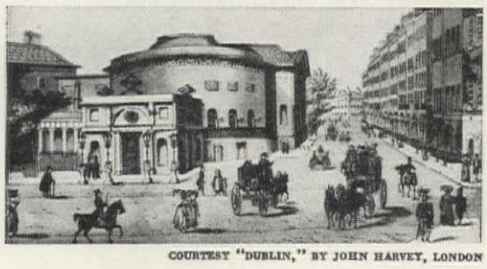


The Dublin Embassy will be a four-story building, doughnut-shaped in plan. Three stories will be above grade; the fourth will be a basement, surrounded by a 20-foot-wide moat, filled largely with planting. Two bridges span this moat to give access to pedestrian entrances; a ramp down into the rear portion of the moat gives access to a parking lot and garage.

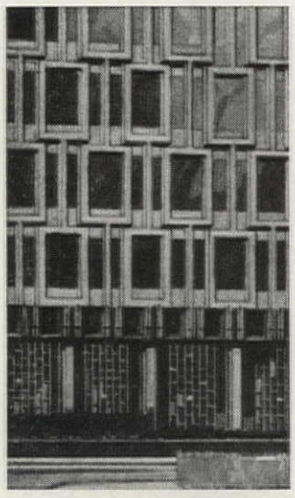
Architect Johansen arrived at this unusual scheme in a very logical way. Faced with the need for a free-standing building (for security reasons, among others), he first determined that the one form that would not turn its back upon neighbors was the cylinder. Since his site was a 30-degree, pie-shaped corner lot, with two neighbors to the rear instead of the usual one, the

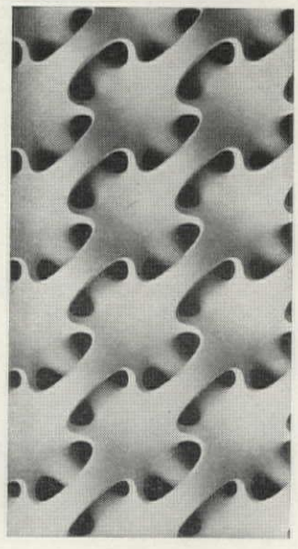


HANS WILD—LIFE



COURTESY "DUBLIN," BY JOHN HARVEY, LONDON





Cylindrical buildings, common throughout Ireland, suggested the form for Johansen's embassy. Top (left) is the early nineteenth-century defensive tower near Dublin in which James Joyce wrote parts of *Ulysses*. Below is Dublin's seventeenth-century *Rotunda*, a theater building remarkably similar in shape to the proposed embassy. *The Rotunda* is also located on a corner lot. At bottom is a portion of the *National Library of Ireland*, with its circular court. Johansen found the circular motif also in Celtic crosses and jewelry.

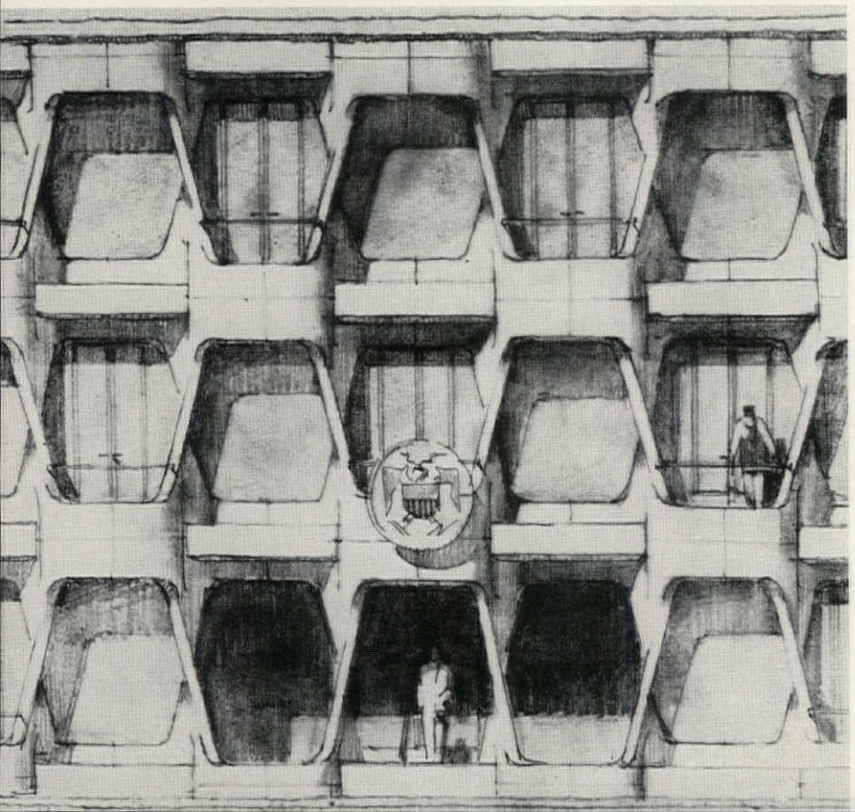
Basket-weave pattern of the façade was first suggested to Johansen by the interlaced, interwoven motifs found in Celtic stone carvings, jewelry, and the illuminations in the "Book of Kells," the eighth-century Irish manuscript of the four gospels. He was also influenced by Saarinen's London Embassy project with its precast façade units (top right) and Designer Erwin Hauer's sculptural concrete screens (bottom right). The result of these influences was a continuous circular façade, with one-story-high precast units which act structurally. These units, made up of twisted I-shapes (see next page), interlock to create a "concrete basket" whose weave moves into the light and sway from it.

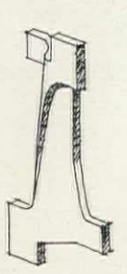
cylinder proved to be especially suitable. Other facts favoring the cylinder: it complied with all setback regulations, it preserved most existing trees, it produced the maximum volume possible within any given peripheral length and, in Johansen's words, "a circular building does not destroy the space it occupies."

Moreover, Johansen found many a precedent for his cylinder in Irish tradition. "The circular form is prominent in all early Celtic-Christian design," he points out. "It is found in the early round towers of the fifth century and, much later, in the defensive towers of Napoleonic times." In Dublin itself, the cylindrical building has cropped up again and again: The Bank of Ireland and the Rotunda (now a theater), both built in the seventeenth century, use a circular plan to deal with very similar, pie-shaped corner sites.

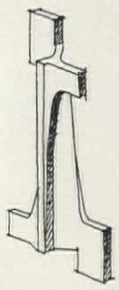
Even the structure of the building (see the next page) attempts to blend with Dublin tradition: the rusticated granite base within the moat recalls common Dublin practice; and the precast façade units are of portland limestone—a material widely used in the city.

Apart from the Georgian Society of Dublin which finds the building too bizarre, most Irish architects are pleased with Johansen's design. Fearful at first that the U.S. might import a metal-and-glass cube, Dubliners are relieved to see a building that is polite without being condescending, and that treats Dublin as a mature city, worthy of the best that U.S. architecture has to offer.



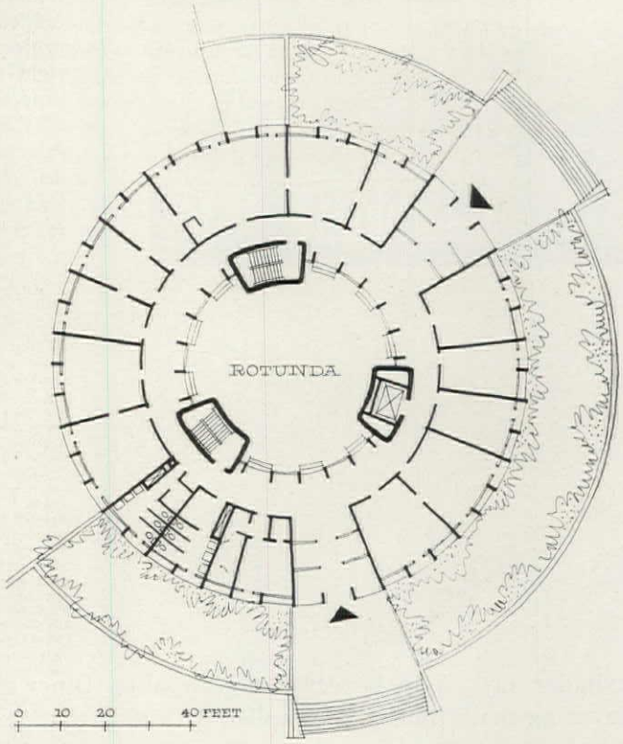


EXTERIOR VIEW

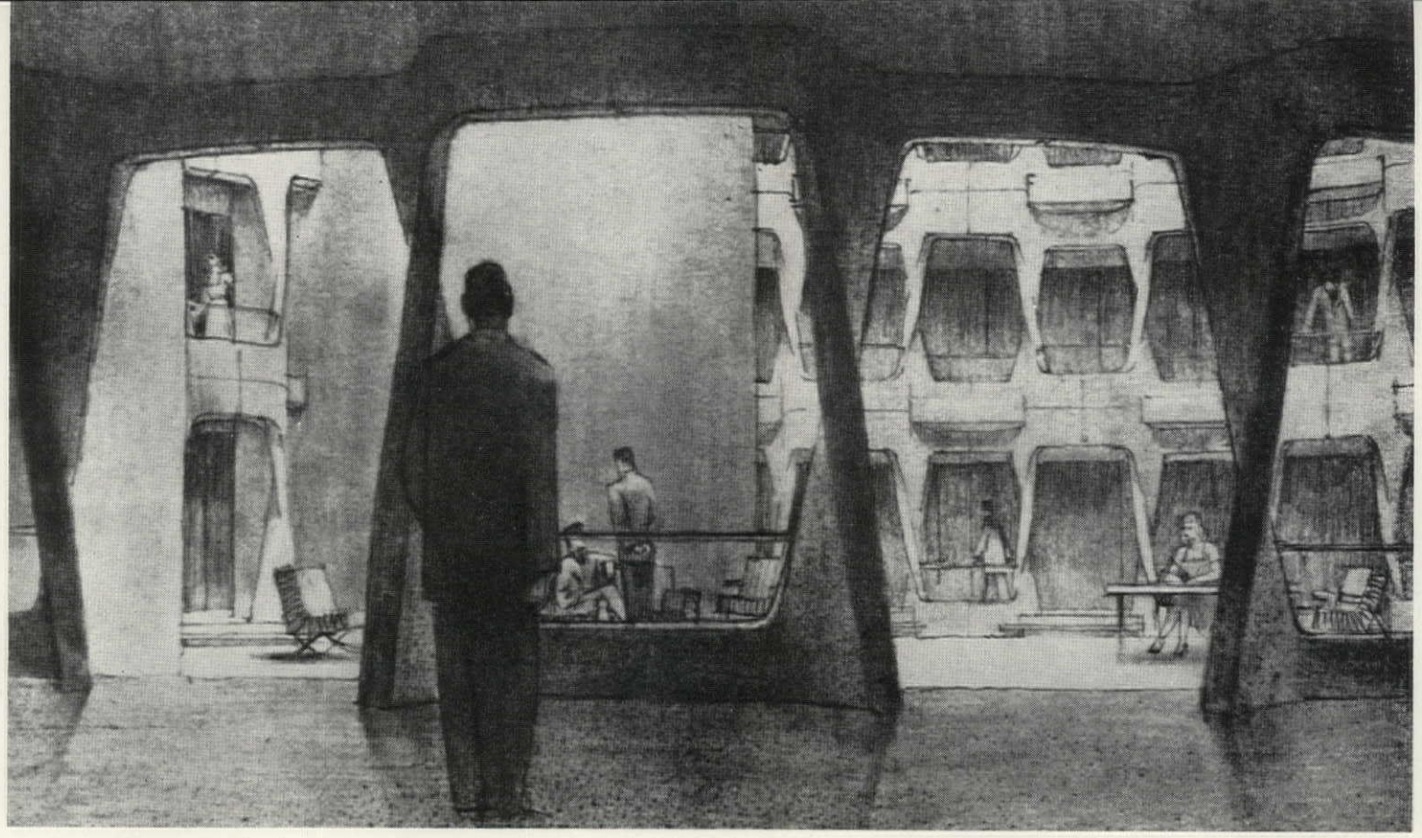


INTERIOR VIEW

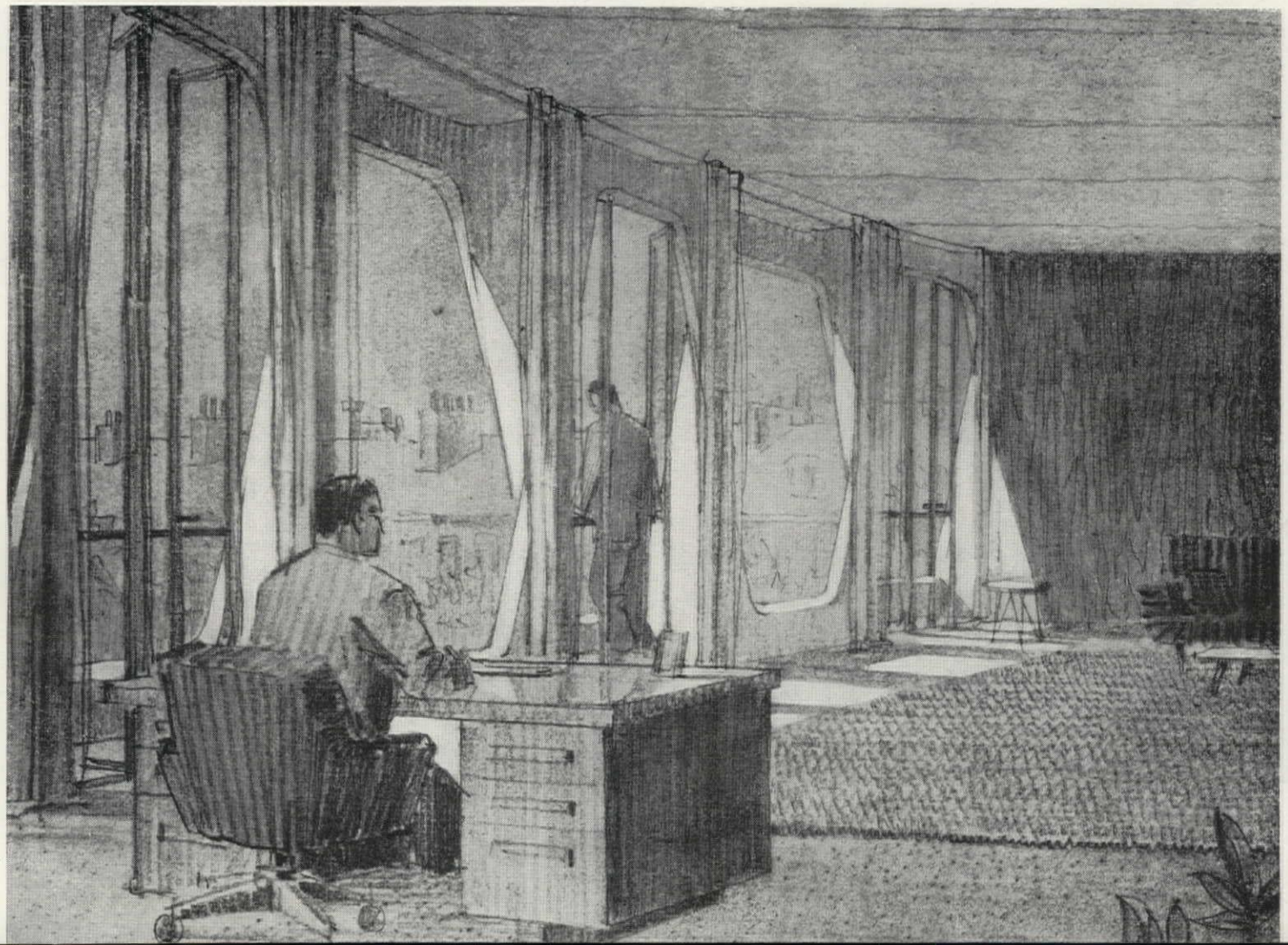
Structural walls consist of story-high, precast units of reconstructed portland limestone, shaped like a twisted letter I. Drawing (at left) shows how the structure is put together, with ring-shaped floor beams weaving in and out of the wall surface. Projecting scuppers drain balconies which occur in alternate bays; the remaining bays are filled with fixed glass (see plan, below). The structural system is used both for the periphery of the building and for the smaller ring around the central court. Prestressed floor slabs span the 26-foot distance between these two concentric, structural cylinders.



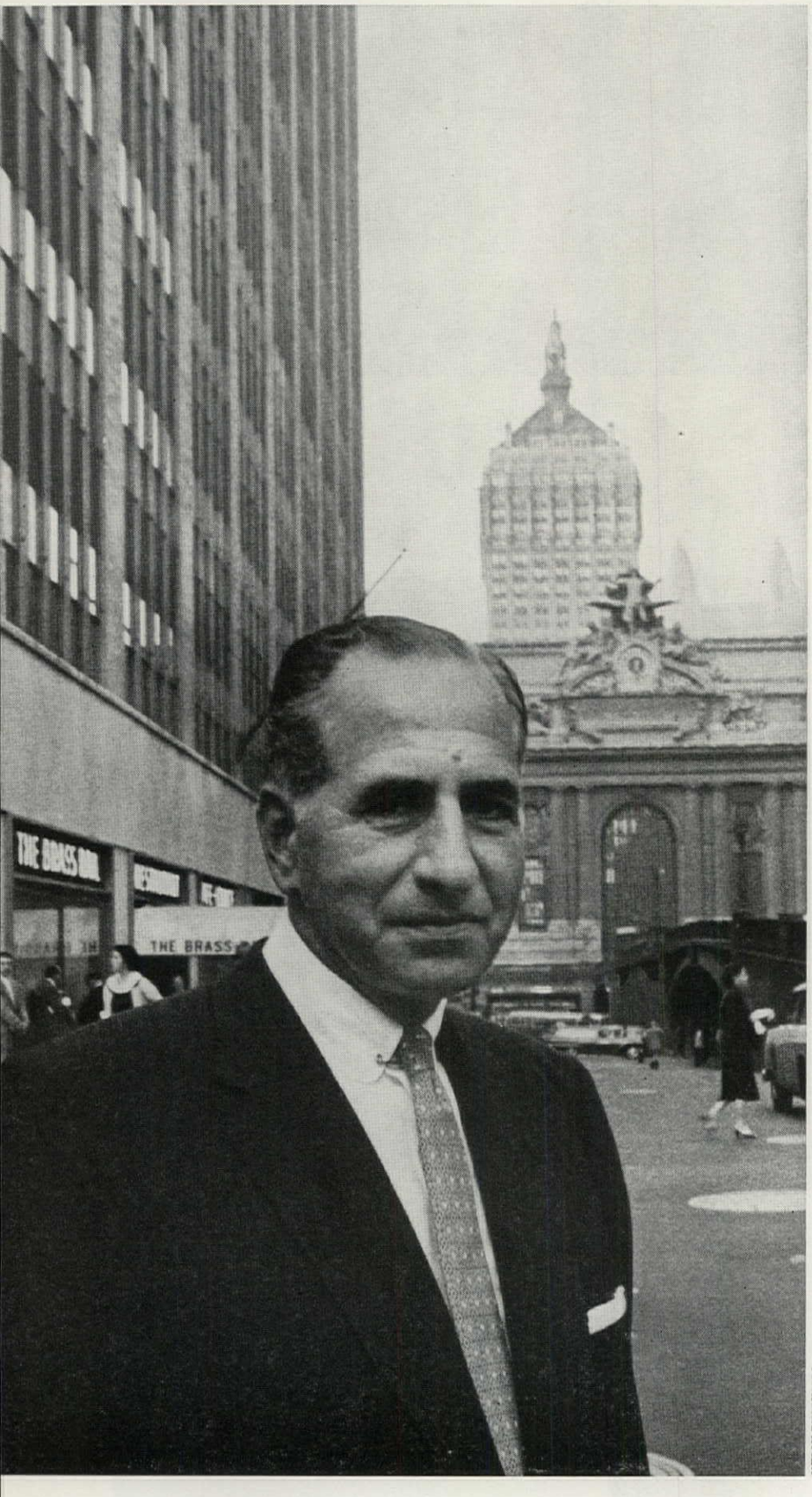
Doughnut-shaped plan (above) has a ring of offices centered upon a three-story-high covered rotunda. Three massive shafts contain elevator and stairs. Circular galleries overlook the rotunda and provide access to offices. The module around the periphery of the building is 7 feet 6 inches, and every office is at least two modules wide. (Since there are no corner offices to designate the rank of the occupant, important embassy officials will get offices three or more modules wide.) Left: exterior wall detail showing alternating bays of balconies and windows.



Interior spaces are shaped by structural system. Above: a view at main-floor level into the central rotunda, showing the galleries that ring this space. Rotunda measures 50 feet across, is lit through clerestories above. It serves as the main lobby for the embassy. Below: ambassador's office, showing alternating windows and balconies. All drawings shown here were prepared by Johansen himself. END



Grand Central's Wolfson



MYRON EHRENBERG

One day in early May of this year, even the most hardened New York subway riders and commuters looked twice at one front-page story in their newspapers. A builder named Erwin S. Wolfson, it said, planned to put up a 50-story, $100-million office tower smack on top of the train platforms of Grand Central Station. The building would house some 25,000 office workers, shuttling them up from the area's molelike passageways on 100 elevators and moving stairs, offering them restaurants and exhibition spaces, three new legitimate theaters, parking for 2,000 cars. When complete (by 1962 if all went well), the building's 3 million square feet of floor space would easily surpass the rentable areas of Manhattan's two biggest office towers, the RCA and Empire State buildings. In fact, plunked down on New York's most strategically central site, Grand Central City would be the biggest commercial office building in the world.

There have been other ambitious schemes for Grand Central, of course. In 1954 Realtor William Zeckendorf pictured the magnificent 1913 terminal torn down in favor of a glassy blockbuster 80 stories high, complete with sidewalks in the sky and helicopters blithely landing 1,000 feet up. This time, however, the grand old high-vaulted terminal room is to be left intact, and the tower built right behind it on the site of a lower and less beautiful building used for offices, mail, and baggage handling (see sketch). This time, moreover, the promoting group is headed by Wolfson, and he has been serious enough to negotiate an 80-year land lease with the New York Central and New Haven railroads.

In New York's phenomenal postwar building boom, Erwin Service Wolfson, 56-year-old chairman and principal owner of Diesel Construction Company, has been responsible

The head of Diesel Construction has quietly built a solid career in real estate. Now he proposes to build the world's biggest commercial office building on New York's most strategic site.

BY OGDEN TANNER

for probably more new office space than any other single investor-builder. As promoter, contractor, part owner and manager of ten office buildings (and two apartment houses) erected since 1946, and as general contractor for seven other office buildings, Erwin Wolfson (no kin to company raider Louis Wolfson) has helped erect close to $300 million worth of Manhattan's glittering, jagged new sky line. He has, moreover, a strikingly high reputation among members of his profession. "Erwin," summed up a fellow realtor recently, "knows money. He also knows tenants, and location. A lot of promoters don't know construction; Wolfson does, and he doesn't have to ask questions. But probably the biggest thing, in New York real estate anyway, is that you can count on his word. Wolfson's honest, and he has a lot of friends."

The compleat builder

Wolfson is hardly the needle-eyed, cigar-chomping type of real estate speculator. A trim, courteous, and friendly man whose taste runs to conservative gray suits, he would look as much at home at a college faculty meeting as he does mapping building strategy in his four-room office-apartment suite on Manhattan's West 58th Street. Here Wolfson administers his real estate empire from comfortably modern quarters. As a building investor, he has his own staff of 20; as chairman of Diesel's board, he oversees the operations of another staff of 20 in a nearby building under President Carl Morse, a graduate engineer with 27 years of experience in New York construction.

When he does not have to stay in New York overnight, Wolfson himself joins the ranks of the commuters filing through Grand Central. From the Port Chester, New York station, 29 miles up the line, he drives home to a 30-acre "sort of farm" in the rural suburb of Purchase, where he and his wife Rose and their 18-year-old son (now at Harvard) and 13-year-old daughter live in a 14-room neo-Georgian manse designed by Delano & Aldrich. Every week end Wolfson gets in three to five hours of riding (he owns four horses), swims energetically in his pool, often has neighboring realtors and builders over for a game on his new tennis court. ("As in business," says one opponent, "Erwin is always polite. But he hates to lose.")

On Tuesday nights, Wolfson, a Cincinnati University graduate (A.B., 1924), leaves his office and catches a cab downtown to the New School for Social Research, where he keeps up an old college interest by taking a night course on American foreign affairs. ("Sometimes," he says, wistfully, "I think I'd rather be a diplomat.") In other spare time he devotes his considerable energies to the Westchester County Parkway Commission, the Academy of Religion and Mental Health, and a wide range of Jewish philanthropies from Brandeis University to Israel's Technion institute of engineering.

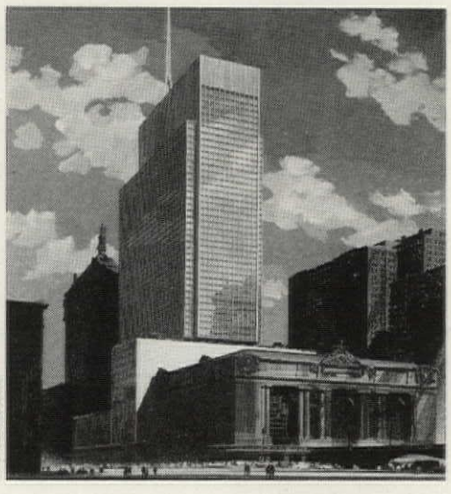
Early bubbles

Born the son of a Cincinnati pants manufacturer, Erwin Wolfson got his first sweet taste of real estate in 1924, when, fresh from college and pondering a teaching career, he decided to take a month's vacation in Florida. Swept up in the excitement of Florida's land boom, he bought a couple of lots for $500, built a small house for $6,500—and promptly sold the package for $20,000. The month's vacation turned into a two-year adventure, and Wolfson built more houses, a few apartments and small commercial buildings. Then, in 1926, Florida's real estate bubble burst, and the 24-year-old builder watched his young fortune quickly disappear.

Deciding to give New York a try, Wolfson traveled north and got a job as an "assistant to the assistant timekeeper" on an office building going up at 2 Park Avenue. During the next few years he supervised a score of buildings for the old Abe Adelson organization. Then the building bubble burst in New York, too — and the whole country — and Wolfson and a lot of other people started looking around for something to do. With Saul Lautenberg, another young Adelson associate, he formed the Diesel Electric Company, started installing private power plants in buildings to save operating money for depression-hit owners who had been buying their steam and electricity. When mortgage money opened up again, the partners began to put up whole buildings, changed the name of the firm to Diesel Construction and worked their way up through larger and larger projects until Lautenberg's death in 1952. Then Wolfson bought out his partner's estate and started building on his own.

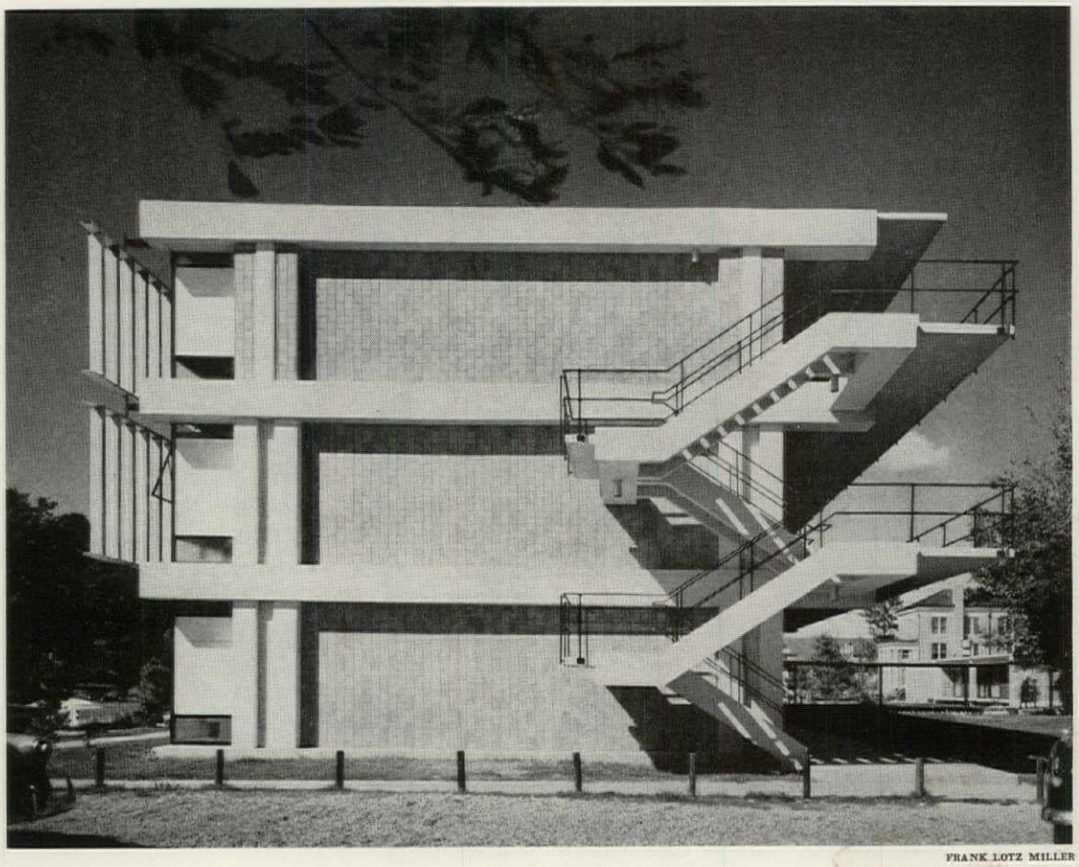
The Grand Central project is far and away his most ambitious under-

continued on page 200



ADOLPH STUDLY

Roth design for Grand Central City shows 50-story tower set between terminal and older New York Central office building. Tower treatment is being restudied.

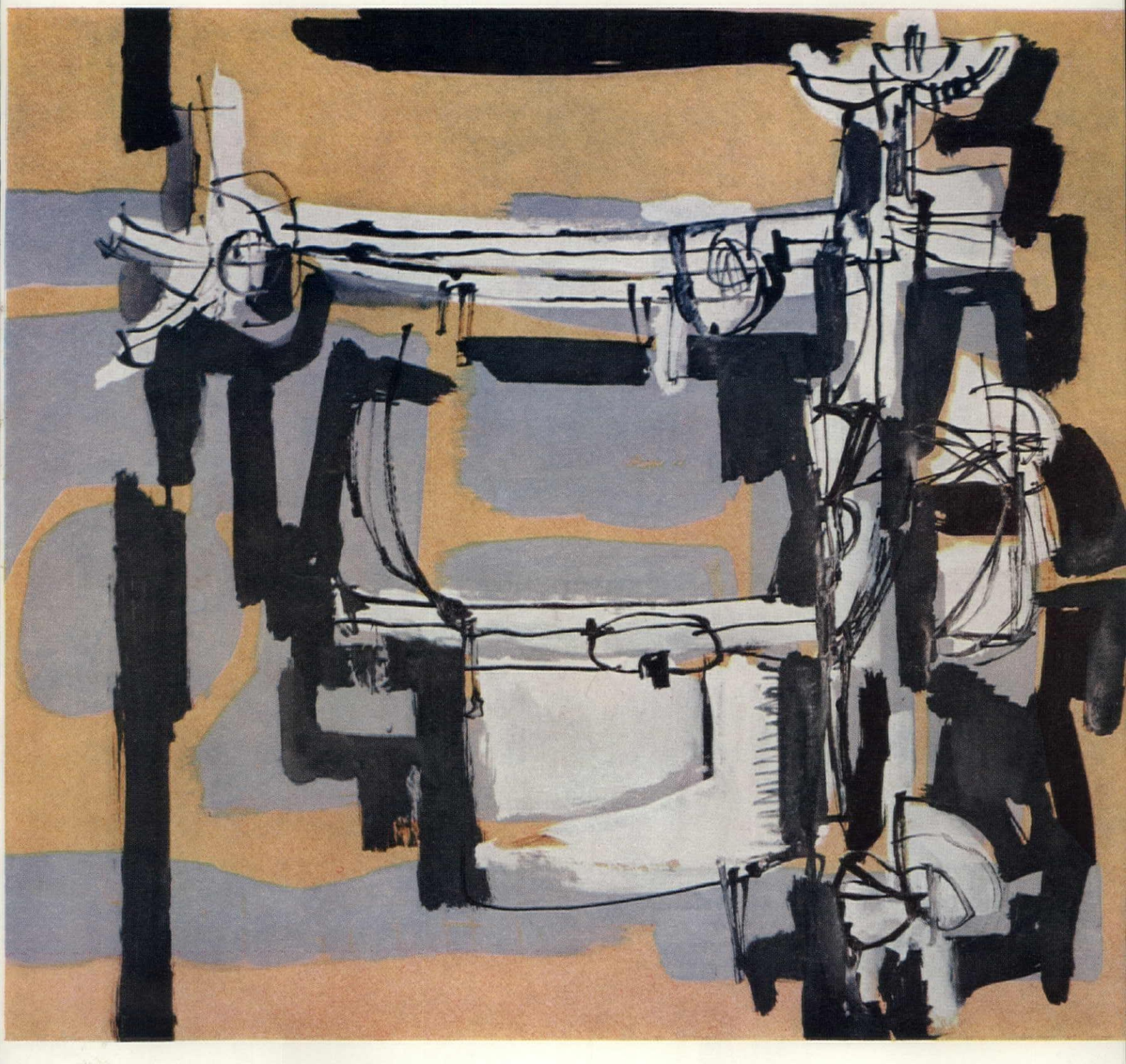


FRANK LOTZ MILLER

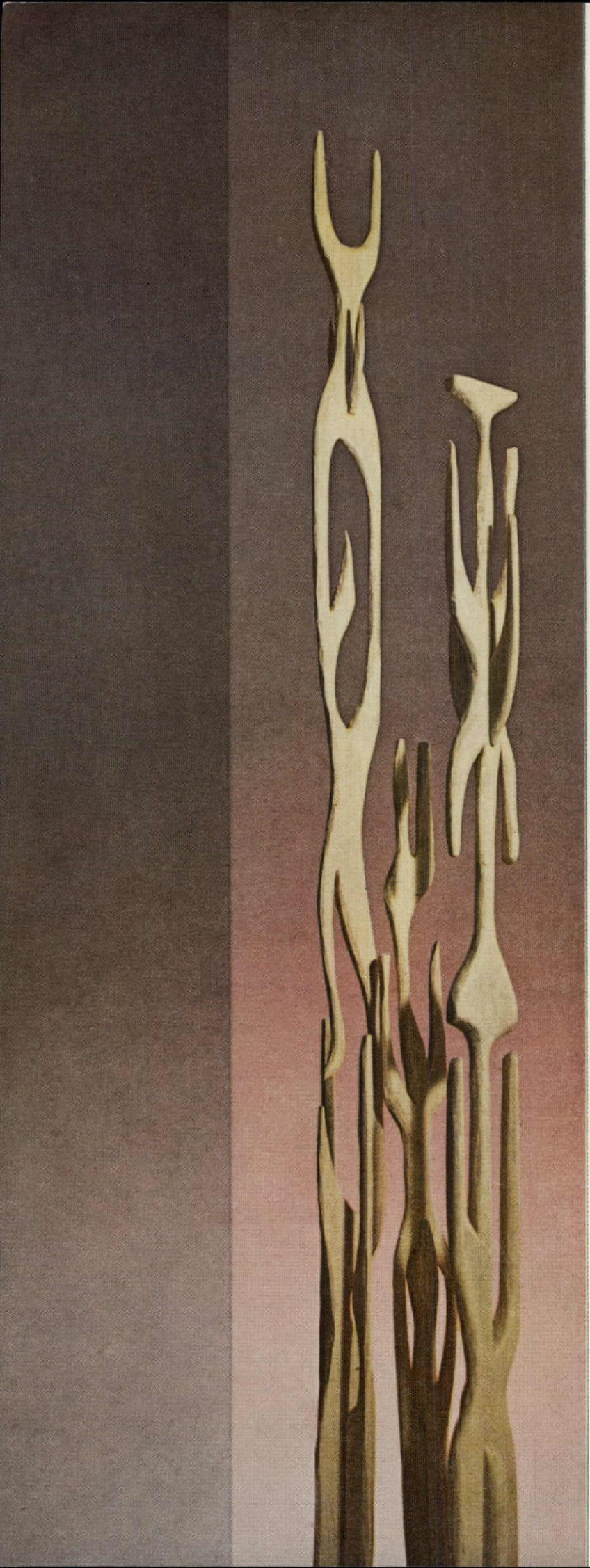
The equal arts of James Lamantia

Ever since the Nude descended the Staircase, modern art's abstract forms and astonishing colors have puzzled and occasionally outraged the general public. The conventional view that modern art should be a representation of the real world has been severely battered. But recently there have been indications that even modern art can have something to do with life; that the forms and images the modern artist puts on canvas are not necessarily taken out of his hat.

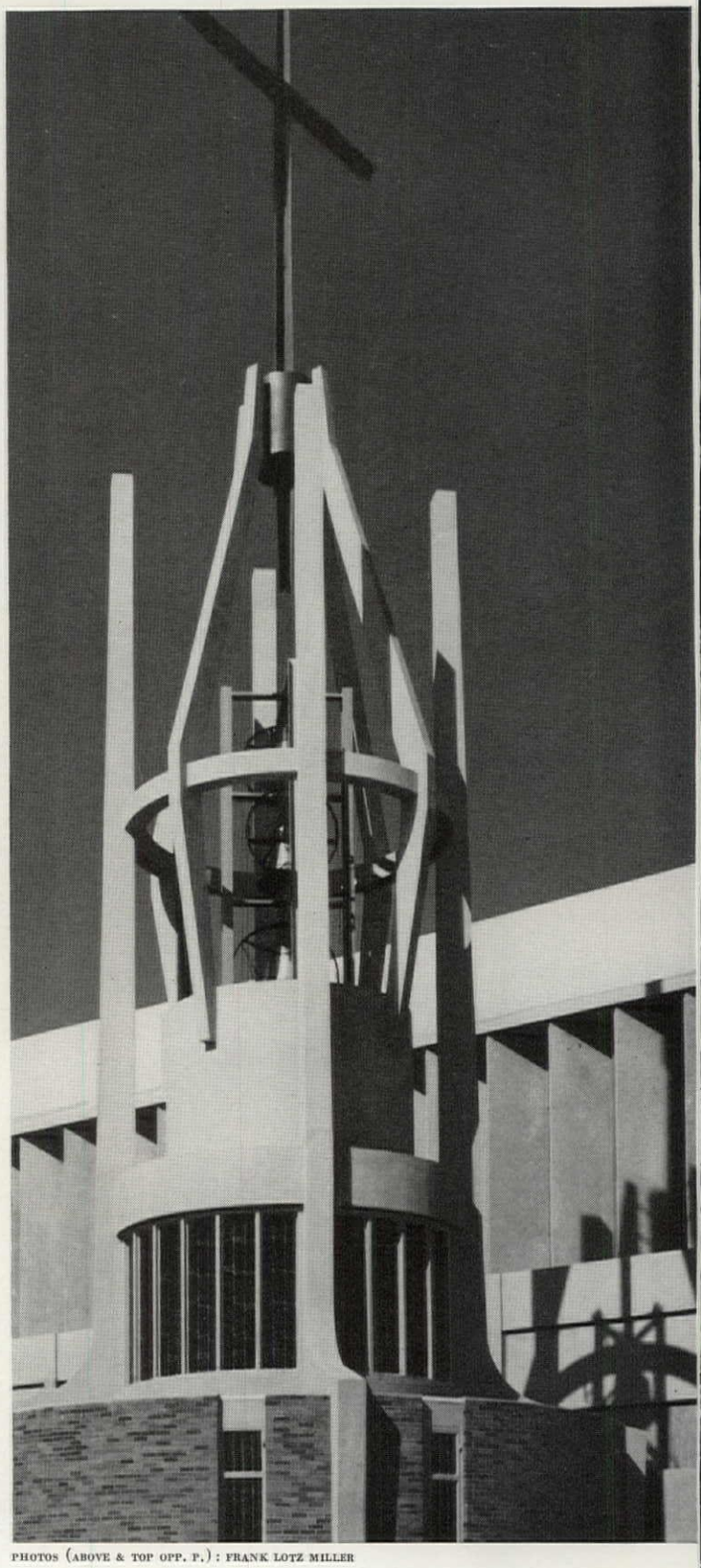
Artist-architect James Lamantia, for example, has found that the design principles that control his abstract painting are also dominant in his architecture. Or, as he puts it: "Painting and architecture are equal arts; you say some things in one and some things in the other. But what you have to say is ultimately the same." This linkage can be seen clearly in the comparison of one of Lamantia's New Orleans buildings (above) with one of his paintings (right)—and in the similar pairings on the following pages.



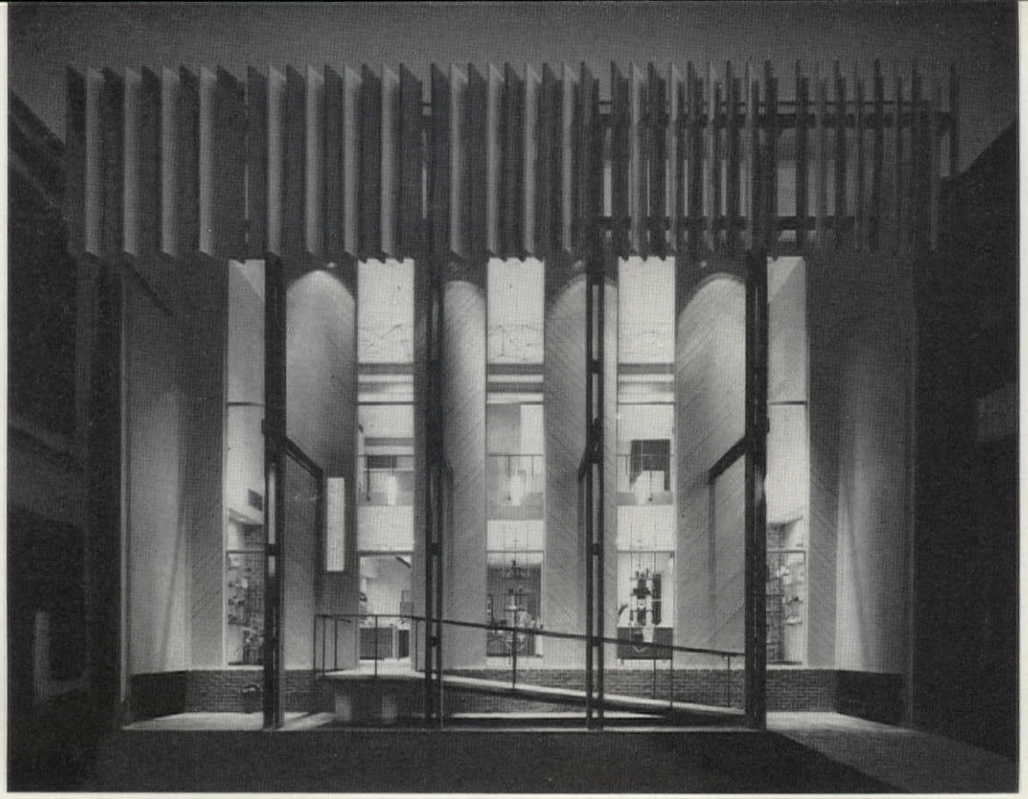
The bold white slashes and deep shadows of Lamantia's student club building at Southwestern Louisiana Institute (opposite page) are repeated in the tones of his vigorous gouache and ink drawing (above).



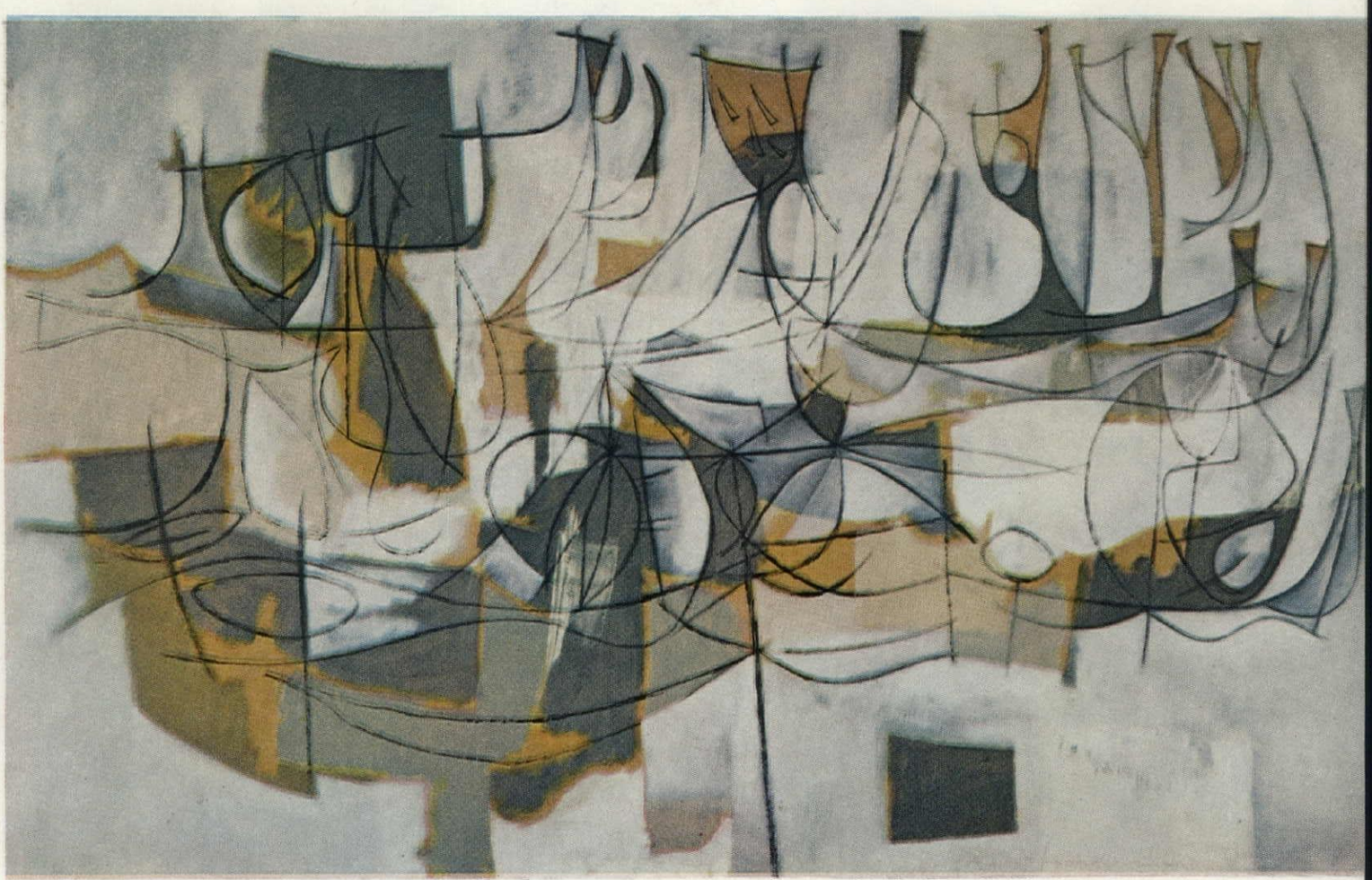
The complex intertwinings of a small Lamantia wood carving give the same illusion of aspiration found in the lofty campanile he constructed for St. Catherine of Siena Church, in Metairie, Louisiana.

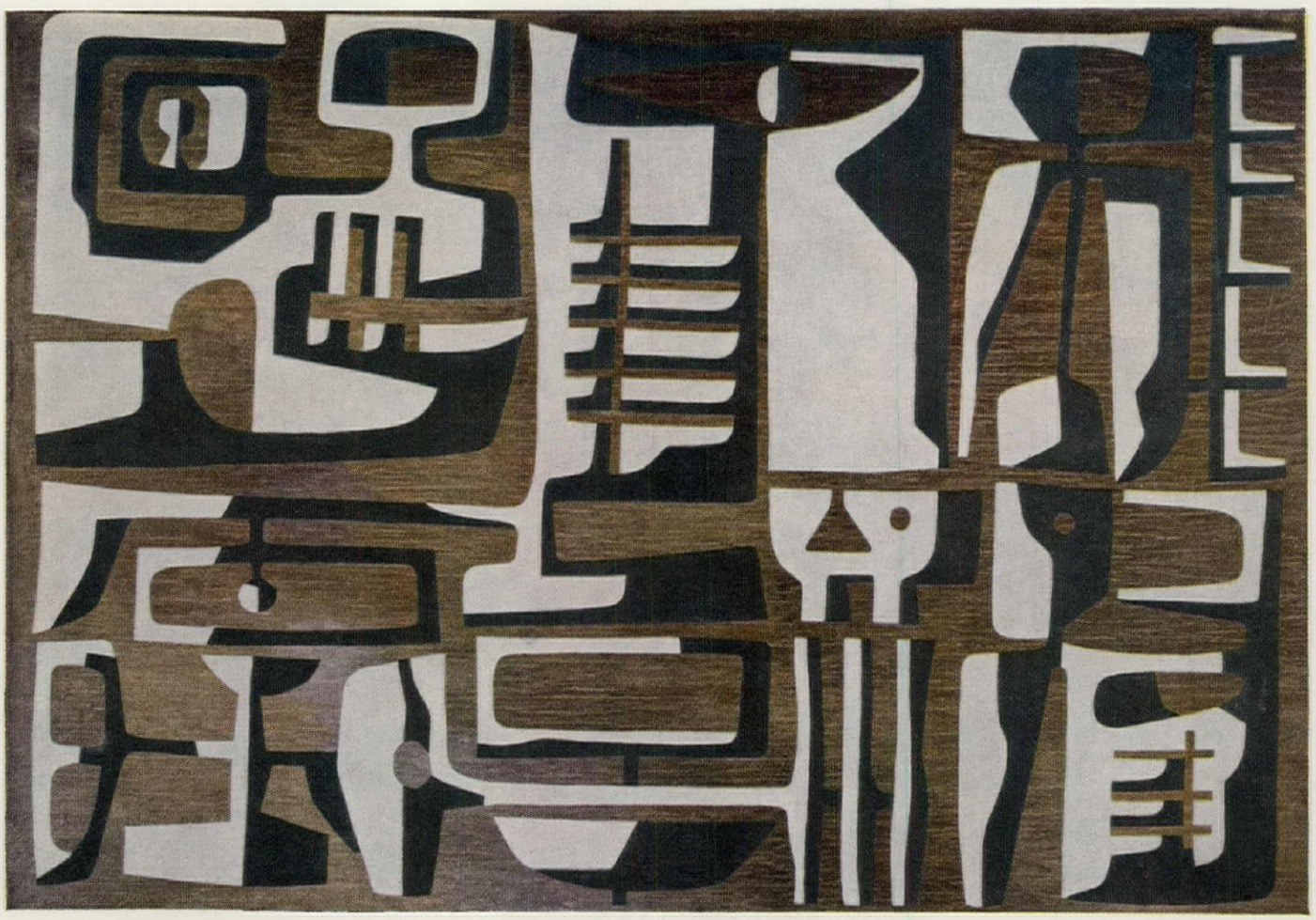


PHOTOS (ABOVE & TOP OPP. P.): FRANK LOTZ MILLER



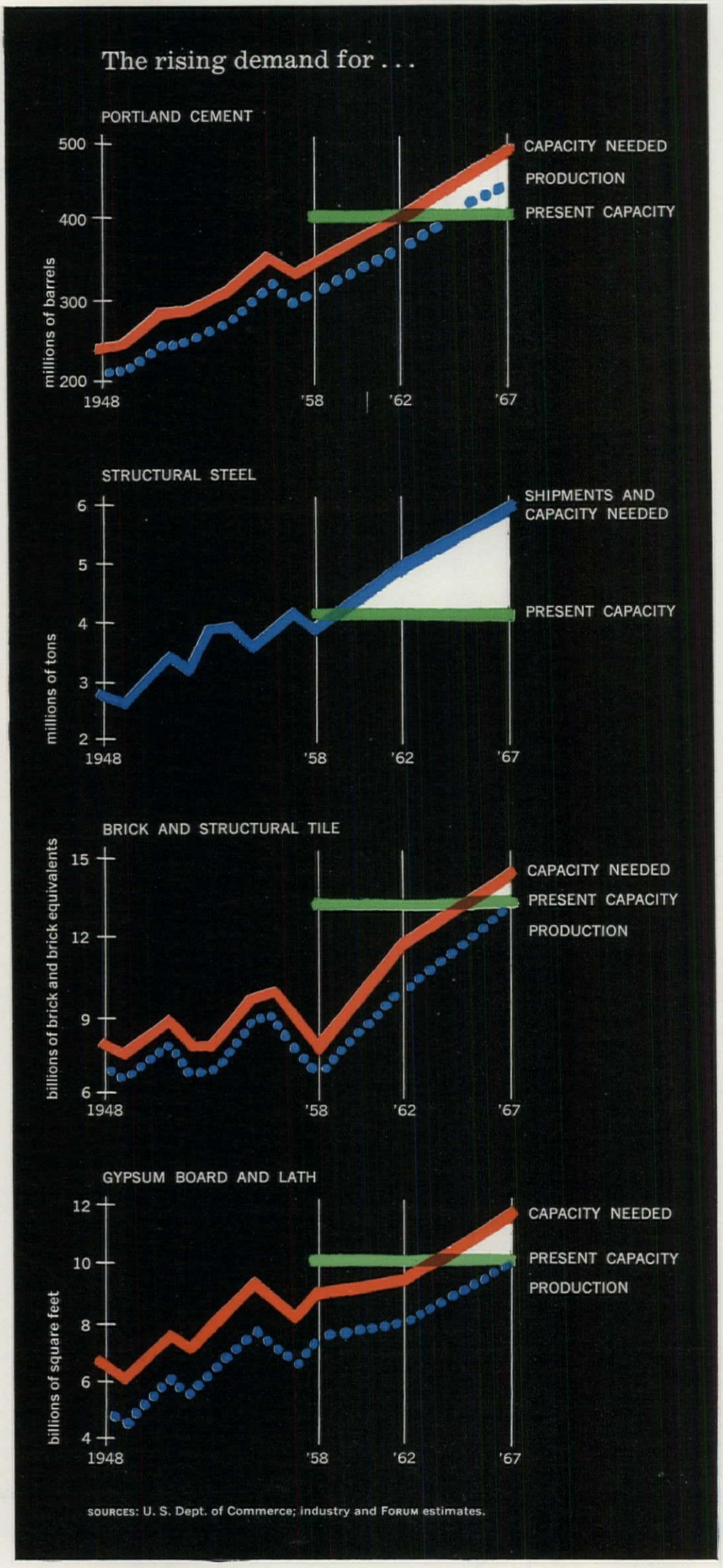
The contention of light and dark, shape and shadow in a Lamantia-designed New Orleans storefront (above) is the major theme of the oil painting below.





The balanced shapes and stripes of a Lamantia abstraction in oils (above) are recalled by his stark decoration for the chapel of a Louisiana church (right).

FRANK LOTZ MILLER



Needed

Within the next few years the growth of U.S. construction is probably going to put an end to most of today's worries about overcapacity in building materials. Since 1956, when the construction boom broke its stride, overcapacity in building-materials production has been much in evidence, particularly in cement, brick, gypsum board, and lumber. But by 1962, and possibly sooner, a significant change should occur. The revived growth of new construction—an aggregate gain of 7.5 per cent in physical volume over the next four years, according to FORUM's estimates—will absorb most of the idle capacity that exists today. And by 1967 construction will have grown so much, close to 43.6 per cent over 1958, that adding capacity, rather than using up existing plant, may well be the serious problem.

This conservative estimate of the long-range construction-materials outlook, is drawn from a special FORUM survey of present capacity and future needs for four key types of building materials—structural steel, brick and tile, gypsum board and lath, and portland cement. The projections, which are probably minimal, are based on: 1) the average ratios prevailing between yearly production (or shipments) of each material and the annual physical volume of construction in the decade 1948-57*; 2) the application of these ratios to FORUM's ten-year forecast of new construction (February 1958) which conservatively predicted a building volume of $57.3

Great growth in materials output will be needed to keep up with boom construction spending, which will reach a record of $70 billion a year in 1967. Present steel capacity will be inadequate even for 1962's building requirements. Brick, cement, and gypsum producers will have to expand plant as much as 22 per cent by 1967.

The upswing in construction will quickly use up the excess plant that now worries building materials manufacturers. BY FRANK FOGARTY

soon: more materials capacity

billion in 1962 and $70 billion in 1967 (in constant 1957 dollars). The study reveals that, barring rapid technological change in the use of materials, the present capacity for cement, brick and structural tile, and gypsum products, will be just about adequate to meet new construction needs in 1962, but will fall a good bit short of 1967 requirements (considering the long lead times involved in new plant construction, planning will have to start soon for the facilities to meet these needs). In structural steel, where rolling-mill capacity only lately has been boosted enough to meet demand, new expansion will be needed even before 1962. More specifically:

Portland cement required by the construction industry in 1962 will amount to about 364 million barrels, compared with the industry's present capacity of an estimated 406 million barrels and output in 1958 of about 304 million barrels. While the industry has been running at about 75 per cent of capacity this past year, it considers its most efficient operating rate to be about 90 per cent. On such a basis, cement would have, with its present facilities, slightly more than enough capacity to meet 1962 requirements—406 million barrels against a needed plant of 404 million barrels. But by 1967 it will have to have facilities for 493 million barrels, or nearly 22 per cent more plant than it has now.

Brick and tile producers will have to turn out the equivalent of about 9.9 billion bricks for 1962 construction against this year's output of roughly 7 billion. Thus, at an 85 per cent operating rate, which brickmakers consider optimum (the rate this year: about 50 per cent), the industry would need a maximum capacity of about 11.6 billion brick in 1962. Since brick capacity is now somewhat more than 13 billion bricks, an excess plant of roughly 1.5 billion bricks will remain. By 1967, though, the surplus will vanish, and brickmakers will have to expand capacity to 14.3 billion bricks a year.

Gypsum board and lath capacity is now about 10 billion square feet a year, enough to meet 1962 needs for 7.9 billion square feet (assuming operations at 85 per cent of capacity against this year's 75 per cent). By 1967, gypsum requirements will soar to 9.7 billion square feet, and plant will have to expand to 11.5 billion square feet, or 11.5 per cent more than it is now. Most of this expansion, i.e., about 1 billion square feet of capacity, is already planned.

Structural steel rolling capacity, 7 million net tons in 1958, is roughly 1 million tons short of what will be needed in 1962. On the average only about 60 per cent of total mill shipments of heavy structural shapes winds up as fabricated steel shipped to builders. Assuming this ratio will apply in 1962, about 8 million tons of rolling capacity, at 100 per cent operations, will be needed to produce the 4.8 million tons of fabricated shapes that construction will require (actually all of this added capacity is planned now and should be completed by 1960). By 1967, the construction industry will need 5.8 million tons of shapes. Rolling capacity will thus have to expand again to almost 9.7 million tons.

All of this indicates clearly that, long range, the building-materials industry has been on fairly solid ground in pushing expansion as it has over the past few years. The only trouble was that materials manufacturers pushed ahead of construction's short-run growth prospects. And they were then caught by the slump in housing and in commercial and industrial building which helped produce a declining physical volume of construction in 1957.

Cement, for instance, began a large-scale modernization and expansion of plant during 1954 and 1955. By 1958, its capacity was up more than 30 per cent over 1955. But because of the easing in construction, cement output will actually be lower this year—by 3.8 per cent— than in 1956. In the same vein, clay products manufacturers expanded their plant 16 per cent between 1954 and 1957, yet production last year was off 4.2 per cent from 1954. Much the same pattern holds for gypsum products, where capacity doubled from 1954 to 1955 only to be followed by a 15 per cent drop in production in 1957 against 1955. And it undoubtedly applies to other materials industries where capacity data is unavailable (e.g., in lumber, where softwood production has dropped 15 per cent since 1955, one estimate is that there is now enough mill capacity to meet the softwood needs of at least the next ten years).

On the whole, most materials-manufacturing executives view this burden of overcapacity fairly calmly. The general pickup in the economy, the brightened outlook for housing, and the increasing signs that construction may soon rise to new record levels, have reinforced the feeling that the worst is over. Meanwhile, even the surfeit of the last few years has not completely stalled expansion. The cement industry, for example, plans to build seven new plants in the next three years, almost 13 million barrels of additional capacity. The main reason for the expansion: the highway program which will be one of the most formidable forces in construction's record decade ahead. Hence once again, the pains of overcapacity appear to be passing, as they always do in a dynamically expanding economy. END

*Ratios for brick and tile and for gypsum products have been calculated on the basis of annual construction totals less the outlays for highways, sewer and water systems, and conservation. Consumption of brick and gypsum is relatively insignificant in these areas of engineering construction.

In the heart of Denver, this new department store offers a pleasant plaza, an extraordinary show window—and plenty of parking space.

Mid-city "shopping center"

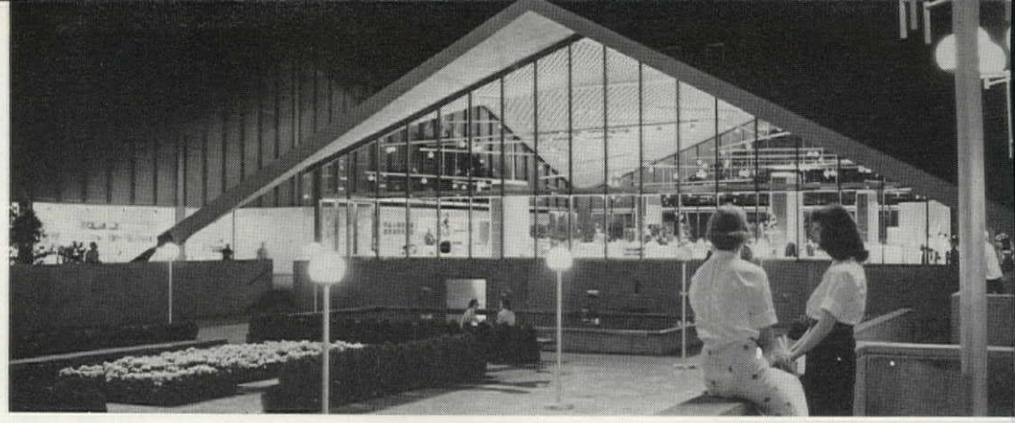
Department-store front of anodized aluminum forms a honey-colored backdrop for the generous plaza and the glassy sidewalk shop.

Last August a big, new department store unlike any other in the U. S. opened in Denver, bringing to the heart of that city the four basic amenities of the suburban shopping center: 1) convenient, self-service parking; 2) one-stop shopping; 3) an inviting atmosphere of open space; and 4) that less tangible, but highly magnetic attraction—newness.

Developed by William Zeckendorf's Webb & Knapp, and designed by Architect Ieoh Ming Pei and Associate Architects Ketchum, Gina & Sharp, the gleaming $14-million project occupies half of Webb & Knapp's two-block, $35-million Courthouse Square—just one block from Zeckendorf's other Denver landmark, Mile High Center. Not so elaborately detailed as Mile High but, appropriately, more commercial looking, the store consists of two sharply contrasting structures set beside a spacious, tree-shaded plaza and sunken skating rink. Alongside the main store stands the widest-spanning hyperbolic paraboloid shell structure in the U.S., measuring 113 feet by 132 feet (FORUM, July 1958), serving as a street-side women's accessory shop and as the main entrance to the store. Its shape, radically different from any other in the downtown landscape, dominates 16th Street, Denver's busiest thoroughfare, and its huge triangular glass walls provide an eye-catching, four-sided show window for the main store. (Both buildings are leased by the newly merged May Company and Daniels & Fisher department stores.)

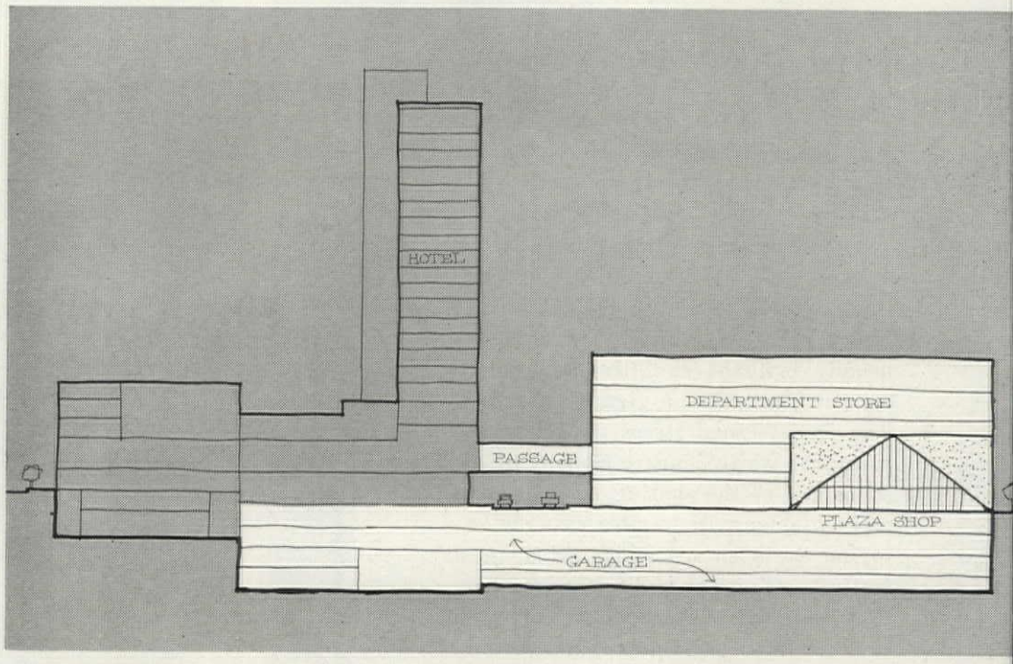
The square (266 feet by 266 feet) main-store section rises four stories tall behind the shell and the plaza. Except for a recessed band of display windows along the plaza level, its broad, mullion-ribbed face is an unbroken wall of honey-colored, aluminum panels. Specially fabricated, these panels are used to enclose the entire main-store section and can be replaced with glass panels of the same size whenever additional display windows are needed.

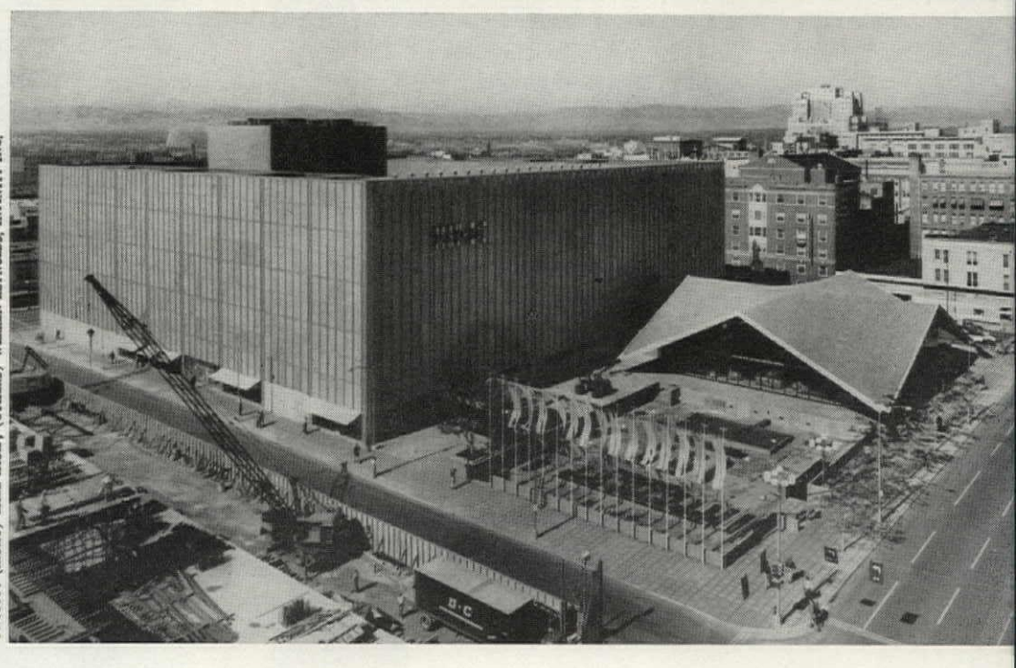
Four main sales floors, each containing more than 50,000 square feet of merchandising floor space, a budget basement, and an unfinished penthouse containing fan rooms, cooling tower, and future expansion space are located in this section. The interiors, designed by Ketchum & Sharp, are



The accessory shop looms like a glittering, strange-shaped showcase above the north end of the plaza, providing window shoppers with a panoramic view of boutique-type merchandise.

Zeckendorf's $35-million project for Denver's "Courthouse Square" includes the May-D & F store and its plaza-flanked, shell-roofed accessory shop; a three-level, underground parking garage, and a 21-story hotel now under construction (lower left in bottom photo).





PHOTOS: (RIGHT) MILE HIGH; (OTHERS) WARREN REYNOLDS, INFINITY INC.

noteworthy for their bold use of brilliant color and lighting and the way most of the space has been broken down into small, intimately scaled shops.

Beneath both the May–D & F buildings and the plaza a vast, three-level parking garage (see preceding page) stretches through to the basement of the 21-story Hilton hotel (which is now under construction in the adjoining block and is also part of Zeckendorf's Courthouse Square project). The garage, an independent concession leased by Parkrite-Denver Company, has space for 1,160 cars and is connected to the store by elevators so customers can park and go to any floor in the store or hotel, or to the shops and restaurants in the underground concourse, without going outdoors.

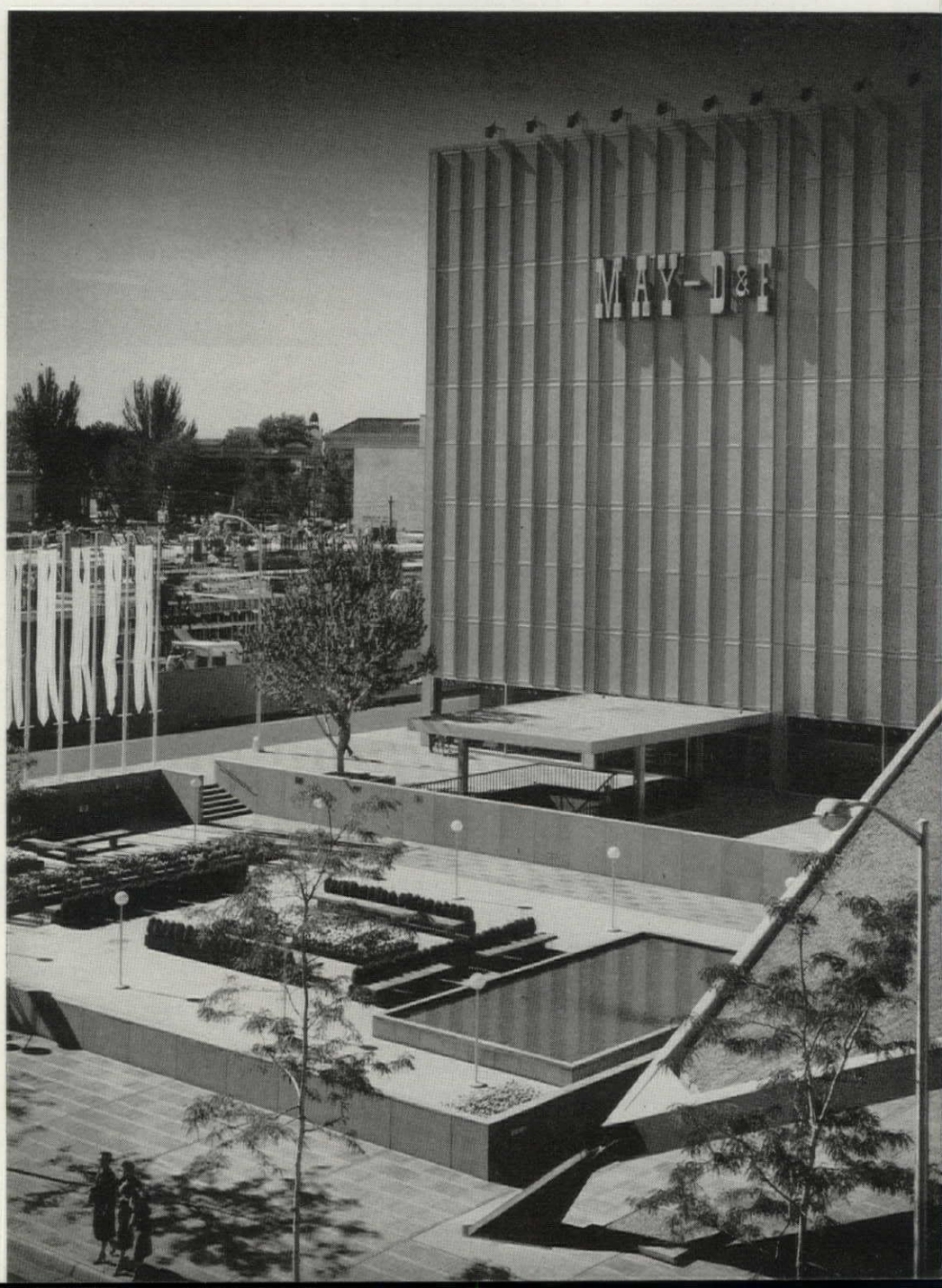
The May–D & F project is already a thriving commercial success and a top tourist attraction. By night, the big accessory shop gives strollers an enticing view of glittering boutique-type merchandise—dramatically lit by a maze of multicolored "jackstraw" light fixtures (designed by Ketchum & Sharp). By day, under Denver's unusually brilliant sun, the main store section gleams like a gigantic gift box. The honey-locust trees fringing the plaza, the white banners blowing at the south end of the skating rink, and the sight of many Denverites casually enjoying the open space, all add up to a festive setting for selling.

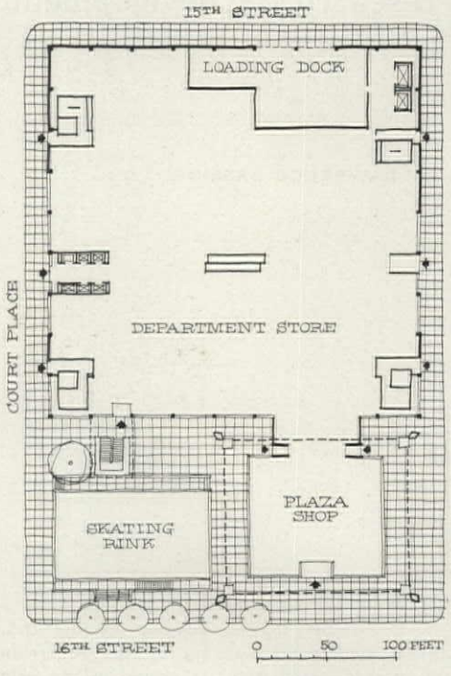
Indeed, this elegant store may well breathe fresh life into urban retailing generally. At the time of its conception, back in 1945 when Zeckendorf contracted to buy the municipally owned Courthouse Square site for $818,600, the advent of the suburban shopping center was casting a small, but gloomy, shadow on the future of downtown merchandising all over the U.S. Since then, with suburbia growing at an even faster pace, that shadow has lengthened steadily. As a result only a handful of department stores (fewer than ten) have been built within the core areas of U.S. cities during the last decade. Zeckendorf's hope was to build a downtown retailing center so dazzling that it would bring the suburban shopping dollar back to the city. Judging by May–D & F's sales thus far, it appears that, in Denver at least, he is doing just that.

Inside the accessory shop shell (photos left) lighting, soundproofing, and air conditioning are achieved, respectively, by suspended "jackstraw" fixtures, a ceiling pattern of 3-inch glass-fiber cubes, and four cooling towers (not shown).

Store interior, designed by Ketchum & Sharp, uses a wide variety of brilliant colors to highlight goods on display. Most department stores subdue their colors so as not to upstage the merchandise.

Plaza skating rink (decorated with shrubbery in photo at right) will be used in summer as an open-air restaurant. Behind the rink (see plan), a neatly detailed, canopy-covered stair well leads to the budget basement, concourse, and garage.





ARCHITECTS: *I. M. Pei & Associates.* ASSOCIATE ARCHITECTS: *Ketchum, Gina & Sharp*.* INTERIOR DESIGN: *Ketchum & Sharp, architects*.* STRUCTURAL ENGINEERS: *Weiskopf & Pickworth and Roberts & Schaefer Co.* FOUNDATION ENGINEERS: *Moran, Proctor, Mueser & Rutledge.* MECHANICAL AND ELECTRICAL ENGINEERS: *Jaros, Baum & Bolles.* GENERAL CONTRACTOR: *Webb & Knapp Construction Corp.*

END

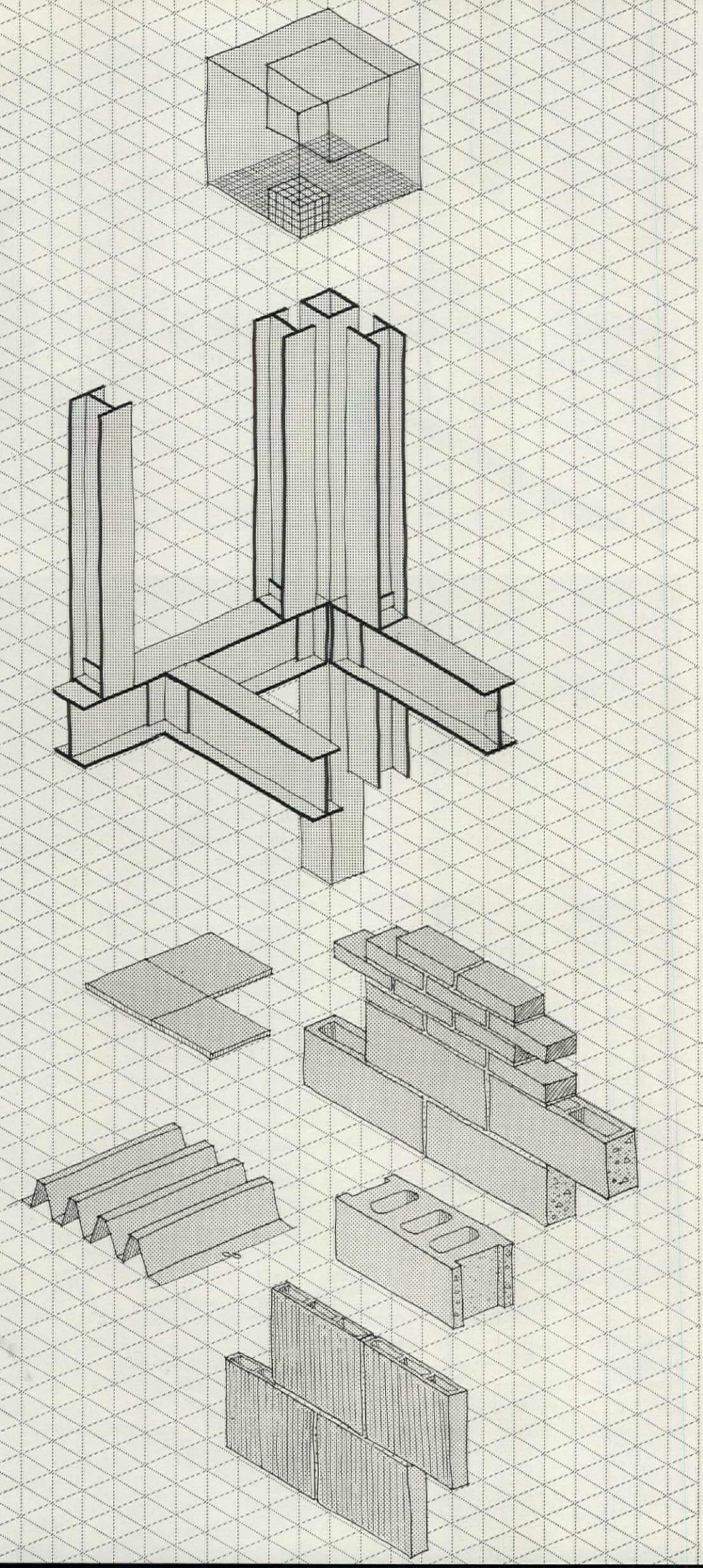
*Morris Ketchum Jr., partner-in-charge.

Technology

New hope for standardization

Modular dimensioning can work an industrial revolution in building. But it still needs wider understanding and deeper research and development.

BY LAWRENCE LESSING



THE 4-INCH CUBE, adopted as the U.S. basic module for building by the American Standards Association, is shown in the grid structure at the top (left). On this three-dimensional lattice (background), all building dimensions—height, width, depth, thickness of wall, floor, and other components—may be coordinated. When all building products are made in whole multiples of the basic module with allowance for jointing—as shown in the steel section, brick, block, and other components (left)—all parts fit without wastage. Thus design, manufacture, and construction may be coordinated to industrial mass production, with fewer part sizes, lower costs, great labor saving on the site.

What the universal screw thread and other dimensional standards were to the early industrial revolution, Modular Measure, or the standardization of building components to coordinated dimensions, is to the building industry today. The modular system and its further development holds the promise of a vast increase in productivity, lower costs, and a final joining of the industrial revolution by the building arts. But these benefits cannot accrue until the whole industry, from architect to builder, is working in modular scale.

In 1945 the American Standards Association, after investigation, designated the 4-inch cube as the base U. S. module, the first step toward practical use. On this three-dimensional unit and multiples thereof, as on a grid (see diagram opposite), all building design, planning, manufacture of components, construction and assembly could be coordinated to produce more efficient, economical building. Last year, after some 12 years of promotion and slowly rising interest, the Modular Building Standards Association was formed under the substantial sponsorship of the American Institute of Architects, the Associated General Contractors of America, the National Association of Home Builders, and the Producers' Council. Last month a permanent executive director, Byron Bloomfield from the AIA, was appointed to press for wider acceptance of modular measure. Thus there has been progress, but all of it startlingly recent, slow, small in volume, and still marked by wide misunderstanding and resistance.

Module's belated birth

Nothing, perhaps, is more indicative of the glacial movement of ideas in the building arts and trades than that only now are they beginning to grapple seriously with the problem of standardization, two centuries after the start of the industrial revolution. The modular measure idea, in fact, is little more than 20 years old. All the present development dates from 1936 and a single book, *The Evolving House*, the posthumous work of a wealthy New England engineer and textile manufacturer, Albert Farwell Bemis, who devoted the last 15 years of his life to the first research study of dimensional coordination in building. His "cubical modular method" (FORUM, April 1937) theoretically did for building what another Yankee invention, Eli Whitney's principle of interchangeability of parts, did for factory mass production a century before.

The first big confusion as to what Bemis had done arose from the fact that modules had been used as simple units of measure and proportion almost from the beginnings of architecture. The Greeks took as a module the radius of a temple column, to which all other dimensions of the building were then related. And various systems, some as purely mystical as Pythagorean numbers games, have flourished since the time of Vitruvius. The latest is Le Corbusier's Modulor, a system based on a modular ratio of 1.618 to 1, which attracted a certain cult after World War II, being supposed to scale dimensions to the human form and yield a series of proportions which he called the Golden Mean. More prosaically, many modern buildings are built on a repetitive modular scale, individually selected, such as the design modules notably used by Frank Lloyd Wright almost from the start of his practice.

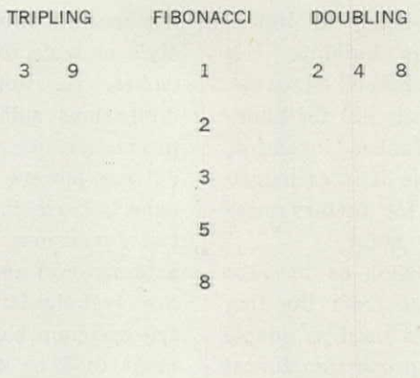
But none of these is true modular coordination. Rather they are systems of esthetic proportioning, selected by the architect, often having to do only with the rhythm of a façade or major structural members. They are not mathematically commensurate in all dimensions (e.g., the sum of a number of smaller components is seldom equal to another larger component) and they are used without any over-all relation to component dimensions, interior floor and room dimensions, or construction, which is still carried out largely by the old cut-and-patch method, laboriously fitting together materials on the site. As industrialism moved further into manufacture of building components and subassemblies, the lack of a common measure in building design led to a wilderness waste of odd sizes for various components. Once there were 600 different sizes of metal windows alone, for instance.

Bemis, whose original modest purpose was to aid low-cost housing, sought a module that would be esthetically neutral, allowing any architectural style or scale to play within its boundaries, yet limiting the number of dimensions sufficiently to allow mass production to release its great cost-cutting powers. He fastened on the cube because it contained all the spatial dimensions in which buildings are actually built and because most of them are rectangular. He narrowed down the optimum base cube size by experiment to 3 or 4 inches because these offered the best compromise in multiples to fit traditional brick and frame-house materials and construction practices. Finally, he decided that the module must be considered in practice as the sum of the building component plus the jointing.

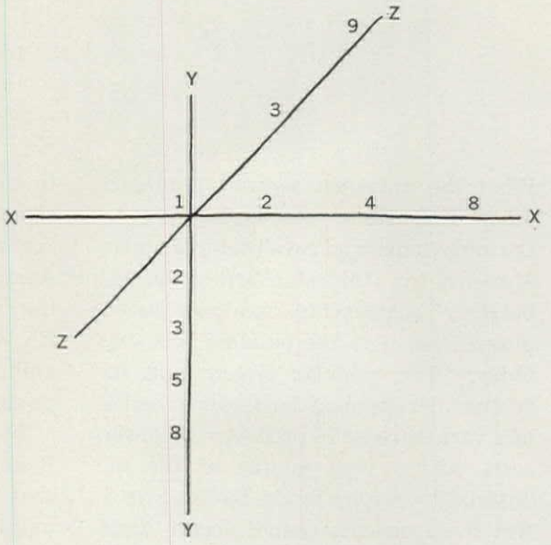
Everybody gains

Whatever the standard cubic module eventually decided upon, Bemis had hit upon a fruitful, abstract, spatial idea, occurring to no one before, by which all building parts and dimensions could be made to fit together in a great variety of ways. If architects would design buildings on a modular reference grid, and if manufacturers would produce all building products in a range of sizes that were multiples of the base module, then construction would consist simply of assembling or dropping materials, components, and equipment in place without fitting operations or waste. By making all walls, floors, and ceilings conform in thickness to the module, interiors would automatically be modular, easy to subdivide and finish off with modular products.

For the architect such modular design could mean a great simplification and saving in drafting procedures, eliminating the anarchy of figuring dimensions to fractions of an inch. (Practice has shown savings up to 15 to 25 per cent in drafting and checking costs through time saved in dimensioning and ability to reuse sections and details interchangeably.) For manufacturers it could mean, in addition to the essential economy of longer production runs on fewer sizes, an incalculably large saving on the costs of distributing and stocking excessive numbers of component sizes. For the contractor it could mean rapid, labor-



STAGE 1



STAGE 2

saving assembly of buildings on the site, with less confusion and chance of error in following plans. And, in the end, it could mean cheaper, more precise, and better buildings for all.

The rise of the cube

No significant progress was made in the modular idea until World War II. Then the need for swift reconstruction in war-torn England and Germany pushed these countries toward the modular cube. A vast and successful experiment in Britain, using various large-sized modules ranging from 3 feet up to 10 feet, quickly raised over 175 prefabricated schools of pleasing variety in a five-year period. The German Standards Association settled on a series of standard modular sizes for buildings, and the Scandinavian countries set going a well-developed research program, now bearing fruit. More recently, the European Productivity Agency of the Organization for European Economic Cooperation, with 11 member countries participating, has made a thorough study of modular coordination, settled on a 10-centimeter cube (close to 4 inches), published an excellent handbook, and is currently engaged in a program in which each country is erecting two modular demonstration buildings for study.

Ironically, nothing so ambitious has yet occurred in the U. S. The readiest adherents to modular measure have been the manufacturers, though no one yet knows how many or exactly what products are available in modular sizes. The clay products industry generally has gone over to modular dimensions, making available in most regions, for instance, a modular brick that is close to the old "standard" brick in dimensions but fitting, with mortar joints, into some multiple of 4 inches. Panel board, sheathing, glass block, and metal panels are to some extent available in modular sizes. The aluminum window industry is moving to modular; some other metal windows are following suit. And an industrial committee is studying with the ASA the problem of setting modular standards for integrated ceilings. But all this is still only a small part of the vast, dispersed building products industry, and some items, such as modular bricks, have met with only limited success.

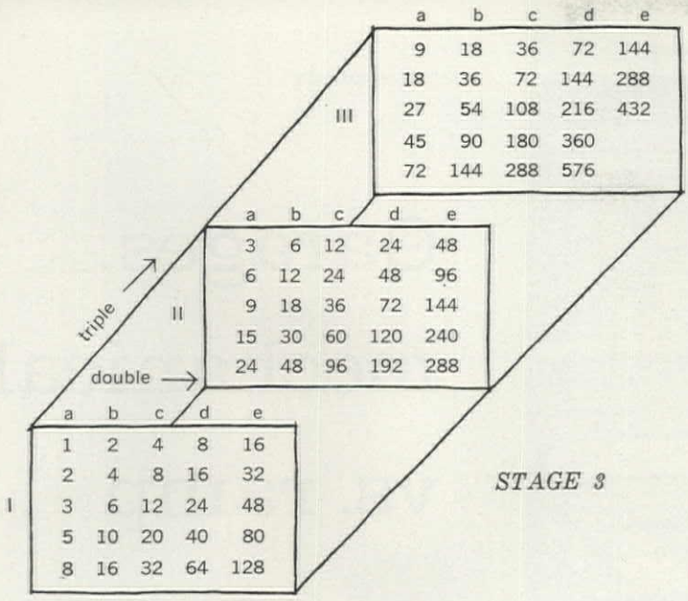
The main block to modular progress is still the architect, that key figure in any substantial move to modular construction. A recent broad survey of professional practices by the AIA, which elicited over 70 per cent response, found that about 50 per cent of individual architects and firms use some form of modular design (including simple proportioning modules for individual buildings), while 17 per cent design on the standard 4-inch modular reference grid. This is better than anyone expected, but still indicates that only a small part of the profession is actually using modular coordination in day-to-day office practice. Moreover, while the list includes some fair-to-middling-sized local firms, such as C. E. Silling and Associates of Charleston, West Virginia, and a range of modular buildings from offices and air terminals to schools and hospitals, no big architectural offices or top "name" architects, with the exception of Walter Gropius, have supported the movement.

Most architectural objections to modular measure have been systematically exploded. The argument, for instance, that conversion to modular design cannot take place until more modular products are available, is countered by the fact that modular design has been advantageously used as a simplification of drafting procedure even where there were no modular products to draw on, and that no great number of such products will be available until more architects specify them. But the hardest argument to down is the charge that modular measure is too restrictive, too deadening to freedom and creativity of design. There are some actual technical limitations to the 4-inch module, as will be seen in a moment, but modular measure as a system has no more inherent limitations for art than meter in poetry or the harmonic scale in music.

A universal standard

What many architects have failed to grasp is the abstraction that modular measure is simply a three-dimensional scale that will allow architecture to play more fully on the modern industrial organ. Almost any modern building design may be converted to modular by giving or taking 2 or 3 inches in significant dimensions, and modular buildings thus far are hardly distinguishable at a glance from traditionally designed structures. Moreover, there is no law that modular measure need be used exclusively throughout a design or that it cannot be departed from for special purposes, but the economic advantages of such a standard for the bulk of building are overwhelming. The architect who stubbornly maintains that his module is the linear inch has failed to understand the mathematical and philosophical implications.

The architect is faced with the fact that industrialism inevitably presses toward further and further standard-



STAGE 3

MODULAR NUMBER PATTERN, devised by Ezra D. Ehrenkrantz of the University of California at Berkeley, is an ingenious mathematical expansion of the modular system to allow more than one base module. It is generated (far left) from three numbers series. These are placed on three coordinates (center): the doubling series reading across on the x axis, the Fibonacci or additive downward on the y axis, and the tripling on the z axis (viewed as going into the page). The numbers are then transferred for use to the three-dimensional card arrangement (left). Reading on any axis, architects and manufacturers may select dimensions based on the 4-inch module, a 3-inch module, many others, yet stay within a limited number of coordinated sizes to achieve standardization.

ization, much of it bad. The number of prefabrication schemes, packaged buildings, proprietary curtain-wall systems, integrated floor and ceiling systems, held to a manufacturer's individually selected dimensions, is constantly growing. The only hope of architecture for countering this trend is to embrace a more universal standard, which will satisfy the pressing need for economy, more housing and building, yet allow flexibility in design and a wider choice of truly interchangeable components. Evidence is mounting that the 4-inch cubic module is only the first important step toward this goal, that additional standard dimensions are needed for greater flexibility, and that most of the architectural resistance might be overcome by this development.

Future development in modules

The British experiment in school building following the war showed up some serious defects in limiting dimensions to a single basic module. While the 4-inch module works well enough in small sizes, such as components for houses, in larger sizes, such as wall spandrels and ribbon windows for large buildings, it is difficult to match various dimensions. The lack of subdivisions at the small end of the scale also cramps detailing and certain types of construction, such as reinforced concrete, where thicknesses limited to 4, 8, and 12 inches do not follow the best, most economic practices. The British Building Research Station therefore undertook some basic research on modules, and out of this in 1955 came a brilliant proposal for extension of the system by Ezra D. Ehrenkrantz, a young American architect and MIT graduate, working in England on a Fulbright Fellowship, and now assistant research architect at the University of California at Berkeley.

Ehrenkrantz proposed that the 4-inch module be integrated into a broader three-dimensional framework or number pattern employing three geometrical numbers series. The first is a doubling series: 1, 2, 4, 8, 16, etc. The second is a tripling series: 1, 3, 9, 27, etc. And the third is an additive or Fibonacci series (after the Italian monk who discovered it): 1, 2, 3, 5, 8, 13, etc., in which the last two terms in the series are always added to give the next number. When these three series are combined in a three-dimensional way on three cards (see diagram above)—the additive series reading down the columns on each card, the doubling series across the columns, and the tripling series in the third-dimensional plane—a pattern of whole numbers results which can be put together in a great variety of ways and still be made to add up to almost any desired sum. What is set up here is a more abstract (i.e., mathematical) spatial model than the simple cube for the coordination of dimensions.

The total pattern contains a group of related dimensions which in effect gives greater flexibility to planning on the basis of a 4-inch module, a 3-inch module, Corbusier's Golden Mean, and many other modular possibilities, yet limits the number of product sizes below even those of the 4-inch module between 0 and 12 feet. From this pattern the manufacturer could select an integrated series of component sizes, and the architect could then coordinate the best components of many manufacturers in a single building in new ways and new rhythms. For instance, instead of the rigid repetitive rhythm of two 24-inch-wide wall panels, three 16's, or four 12's to make up a 48-inch wall section, many other off-beat rhythms are available in the new system, such as $30 + 18$, $16 + 32$, $12 + 16 + 20$, $12 + 18 + 18$. Components would be standardized, but the building would be left flexible to design.

Research needed

The proposed modular system is not simple and needs intensive study. "What we really need," said Albert G. H. Dietz, MIT engineer, in a speech before the Massachusetts Building Congress, "is a system which gives maximum flexibility with the smallest number of individual parts. This is a problem for research. It is a numbers game, if you will. Mathematicians can handle this sort of thing. . . . But this in itself is not enough. Research of this type requires close coordination among the engineers, the architects, the builders, the men in the field, and the research men. This is a job for the building industry as a whole."

For this kind of basic building research, however, the U. S. as yet has no counterpart of the British Building Research Station and no private equivalents. The new Modular Building Standards Association has scant funds for a year and is canvasing the industry and the professions for membership pledges. And this work embraces only education, no research. If not enough active support is forthcoming, the modular movement may languish for still another decade. Yet a solution to the problem of standardization in building would benefit not only the U.S. but the whole hard-pressed world in its present population explosion. END

Garages: mechanical vs. ramp

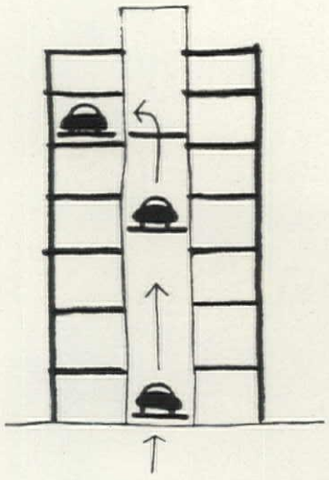
CARY SCHULZ

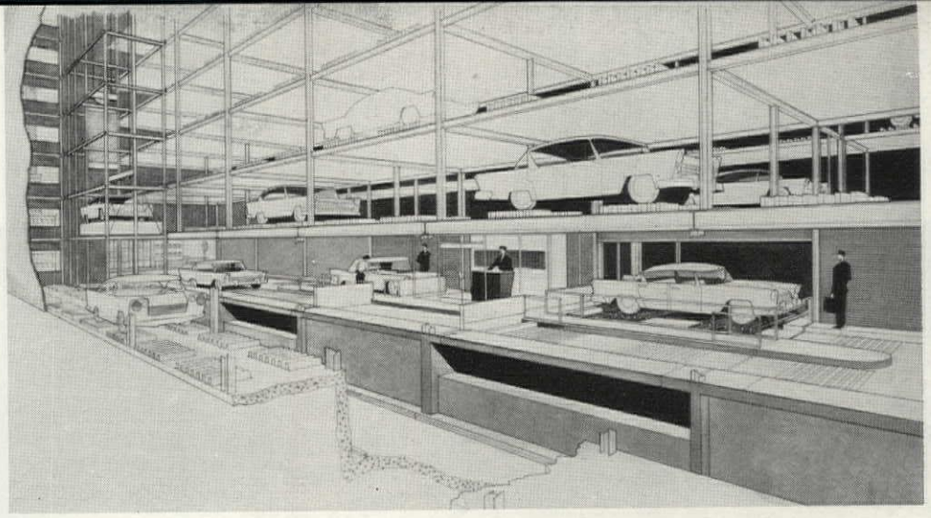
Every major city of the U.S. is facing the same problem: what to do with its burgeoning automobile population. A vast parking industry has sprung up to meet this challenge, offering $4½ billion worth of storage facilities, including an impressive array of mechanical systems and complex building designs.

Two of the newest ideas are sketched on the following pages: one is an electromechanical system (opposite page, top) for midtown New York, with space for 230 cars and operation by a single attendant. The other is a self-service nonmechanical system for 800 cars (page 152), for downtown Minneapolis.

In essence, these systems represent the most advanced approaches to the parking problem. But neither mechanical systems nor self-service types have yet solved completely the fundamental problem of too many cars and too little space downtown. Mechanical systems (like those sketches at right) make efficient use of small space, but bog down when car-handling efficiency is most essential, i.e., at peak capacity. (Generally, a mechanical system handles one car per minute per elevator.) Self-service systems, on the other hand, are more efficient at peak, and less costly to build and maintain, but demand greater areas of scarce downtown real estate.

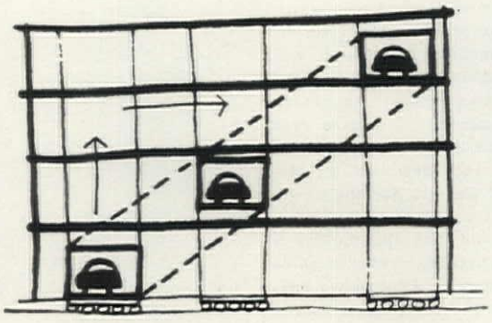
The center of a large city can probably never provide sufficient garage space for every driver. As the Bureau of Public Roads points out: the population of the large U.S. city (over 1 million population) is 72 times that of the small city (10,000 to 25,000), but the area of the large city's central business district is only eight times as large as the small city's.





Mechanical garages

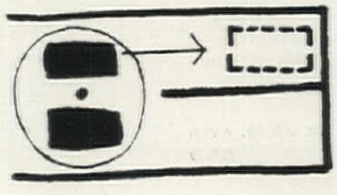
NEWEST MECHANICAL SYSTEM will be incorporated in the Speed-Park garage (above), to be completed in midtown New York next year. This highly automatic system, with a 230-car capacity, requires only one attendant, was designed by Engineer Mihai Alimanestiano, in cooperation with the Otis Elevator Company. Motorist drives onto one of two parking stations on the ground floor, then walks to the attendant's desk; attendant removes a numbered key from a central control panel, setting elevator in motion. The elevator moves into position adjacent to the car, where a fork-lift conveyor is extended from the elevator and under the car's wheels. Conveyor picks up car, moves it laterally into the elevator, which carries it to the locker corresponding to the numbered key; the same conveyor lifts the car into its locker space. On departure, the driver gives his key to the attendant, who brings the car down to ground level by inserting the key into the control panel. This system is especially adaptable to long, narrow lots, because cars are lifted sideways into lockers. But cost is relatively high: around $3,000 per car space.



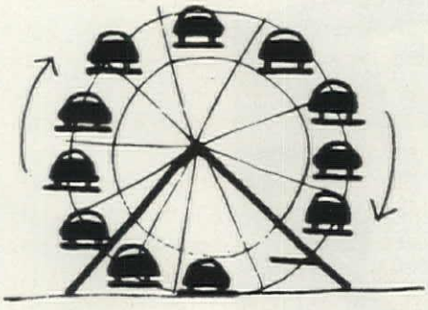
MOST POPULAR GARAGES, of the mechanical type, are those developed by Pigeon Hole Parking, of Spokane (sketch left, and photo opposite page), with 64 units in operation, and Bowser Engineering of Des Moines, with 23 units. The principal differences between the two systems: Pigeon Hole supports its hydraulic elevator on the ground; Bowser's electric elevator is suspended from the roof. The elevators in both systems move both horizontally and vertically; thus, as the sketch indicates, an incoming car can be carried to any available stall within the elevator's reach. Another difference: Pigeon Hole moves a car from the elevator to the stall via a dolly, which is operated from a control mechanism on the elevator; in the Bowser system, the car is driven in and out of its stall by an attendant.

Pigeon Hole's latest installation, a 14-story garage in Columbus, Ohio, on a lot measuring 62 feet by 67 feet, has a capacity of 192 cars. Bowser's latest is an 11-story structure in Boston, on a lot measuring 184 feet by 114 feet, and has a capacity of 630 cars.

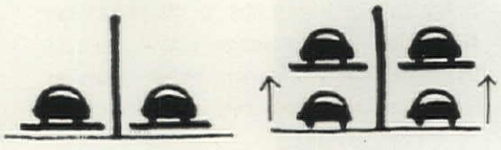
Pigeon Hole estimates the cost of one of its structures at $1,300 to $1,800 per stall, excluding cost of land; Bowser says its cost per stall is $1,600 to $2,500, depending on design, excluding land cost.



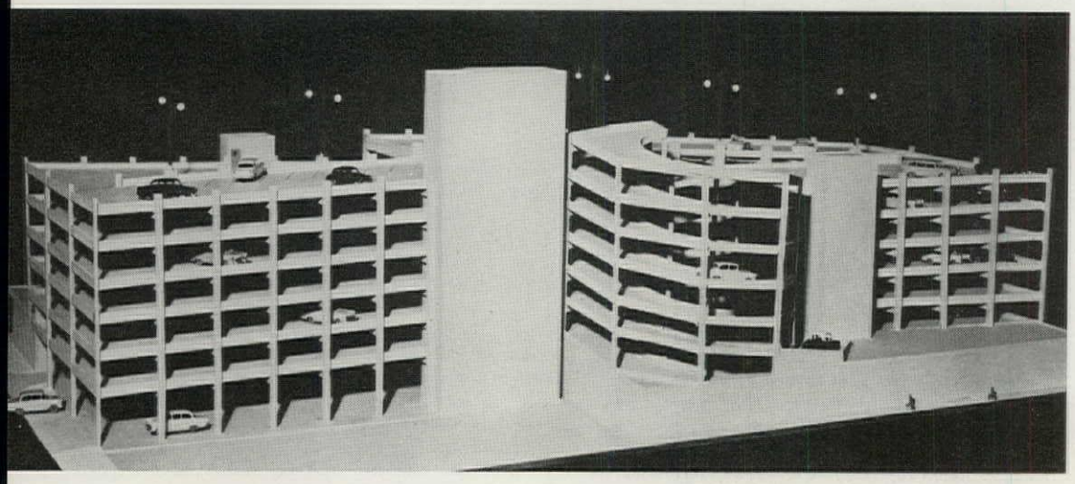
TURNTABLE PLATFORM is the key element in this mechanical system, designed by Parkmaster Systems, of Spokane, Washington. A turntable arrangement permits one elevator to carry two cars at a time, also enables two-deep parking. A self-propelled shuttle, operated from a control station over the elevator platform, slips under the car and carries it to and from its stall. One disadvantage of the Parkmaster system: extra moving is required if the desired car happens to be parked in a back stall. Two units have been built, one in Spokane and the other in Winnipeg. The Spokane unit is built on a lot measuring 53½ feet by 104 feet, with seven levels and a capacity of 163 cars; the unit has been in operation for about a year. The 342-car Winnipeg installation is made up of two eight-level Parkmaster units. The cost per stall is about the same as that of Pigeon Hole.



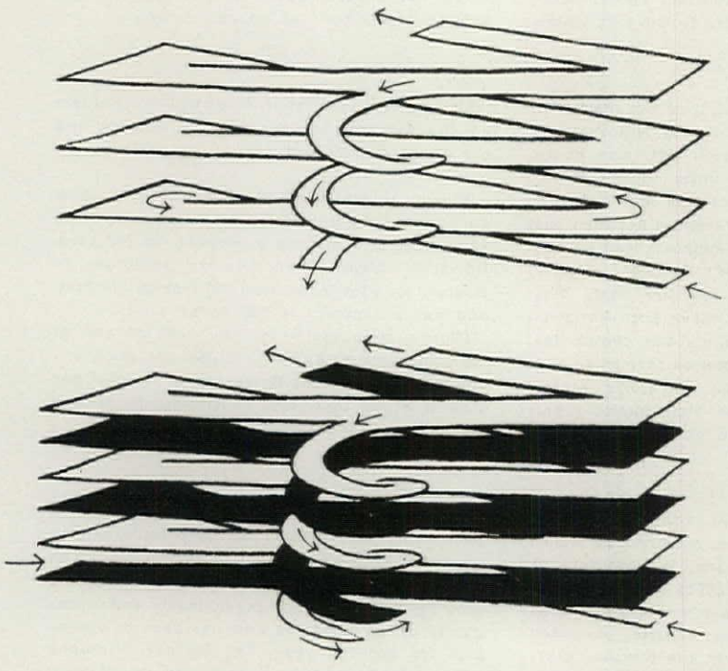
MODIFIED FERRIS WHEEL, designed by Auto Park Towers, Incorporated, of Jackson, Mississippi, resembles a system which Westinghouse experimented with in the thirties, then discarded as impractical. The new system is said to be more practical because of improved equipment, e.g., speed-regulating devices. Auto Park has built two models and hopes to build a 20-car unit soon. Any number of units can be built, side by side, then operated from a single control panel. With only a single unit, this system may be too costly. Designer, P. J. Scott, says that a unit can be built for "less than $2,000 per stall."



SIMPLEST DEVICE for mechanical parking is this four-car unit developed by Simmons Industries Incorporated, of Albany, New York. This unit is powered hydraulically, works something like the lifting mechanism on a fork-lift truck. By lifting two cars off the floor, provided there are at least 12½ feet of headroom, the system simply doubles the parking space of any lot or garage. One obvious problem: if a parked car on the rack is wanted, the car beneath it must be moved so that rack can be lowered. The largest single installation will be in Chicago's new Fidelity office building, where 29 four-car units will provide capacity for 116 cars. Equipment cost, per space, is $1,000 to $1,600, depending upon the number of units ordered. The first installation was made in Washington in 1955.

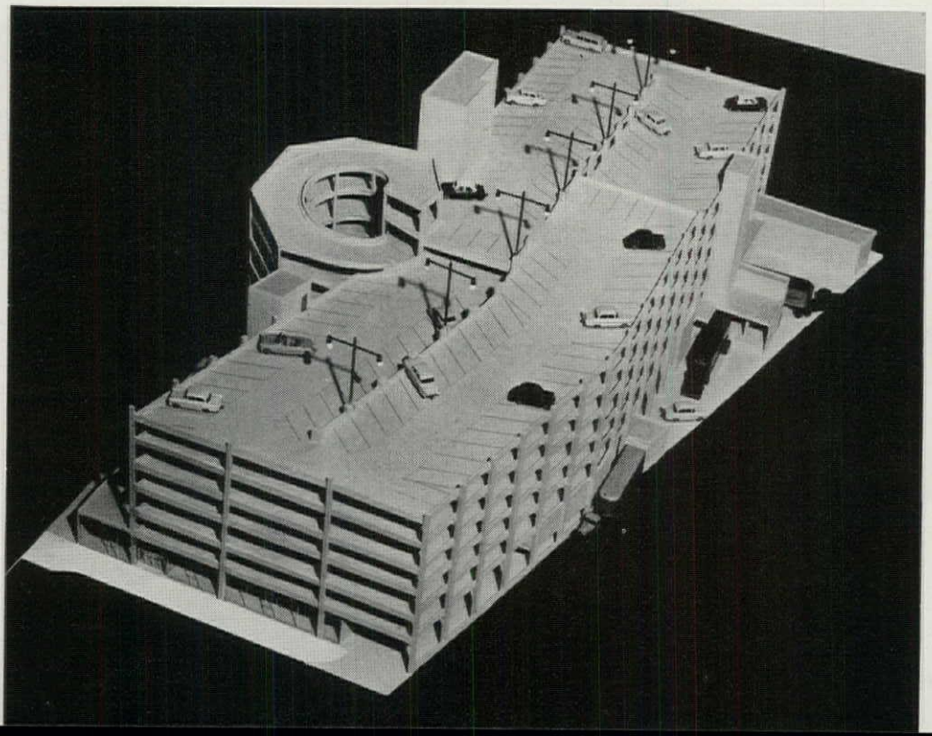


Ramp garages



THE RAMP GARAGE has one big advantage over a mechanical system: speed. The six-level structure shown here is soon to be completed in Minneapolis, and can discharge 800 cars per hour, compared with only 150 to 200 per hour in most mechanical garages equipped with three elevators. In this self-service ramp system, handling operations can overlap, and the cost per car space is slightly under $1,200, which is less than the cost of most mechanical garages. The disadvantage of any self-service ramp system is its demand for space, e.g., this garage requires 320 square feet per car, including aisle and ramp space; mechanical garages require less, about 250 square feet, including elevator space.

The Minneapolis garage, designed by National Garages, Inc., of Detroit, for the downtown area, consists of six sloping floors, interleaved in such a manner that the facility is actually two separate parking decks of three floors each. The top sketch (left) shows one-half of the structure; incoming cars ascend via the sloped parking levels until they reach available spaces; on departure, cars move to the spiral ramp and down. Bottom sketch shows how the second set of parking floors is meshed with the first set. The advantage of separating the system into two distinct garages is that flow of cars within each is made smoother: note that cars on black decks never make contact with cars on white, even when coming down ramps. **END**



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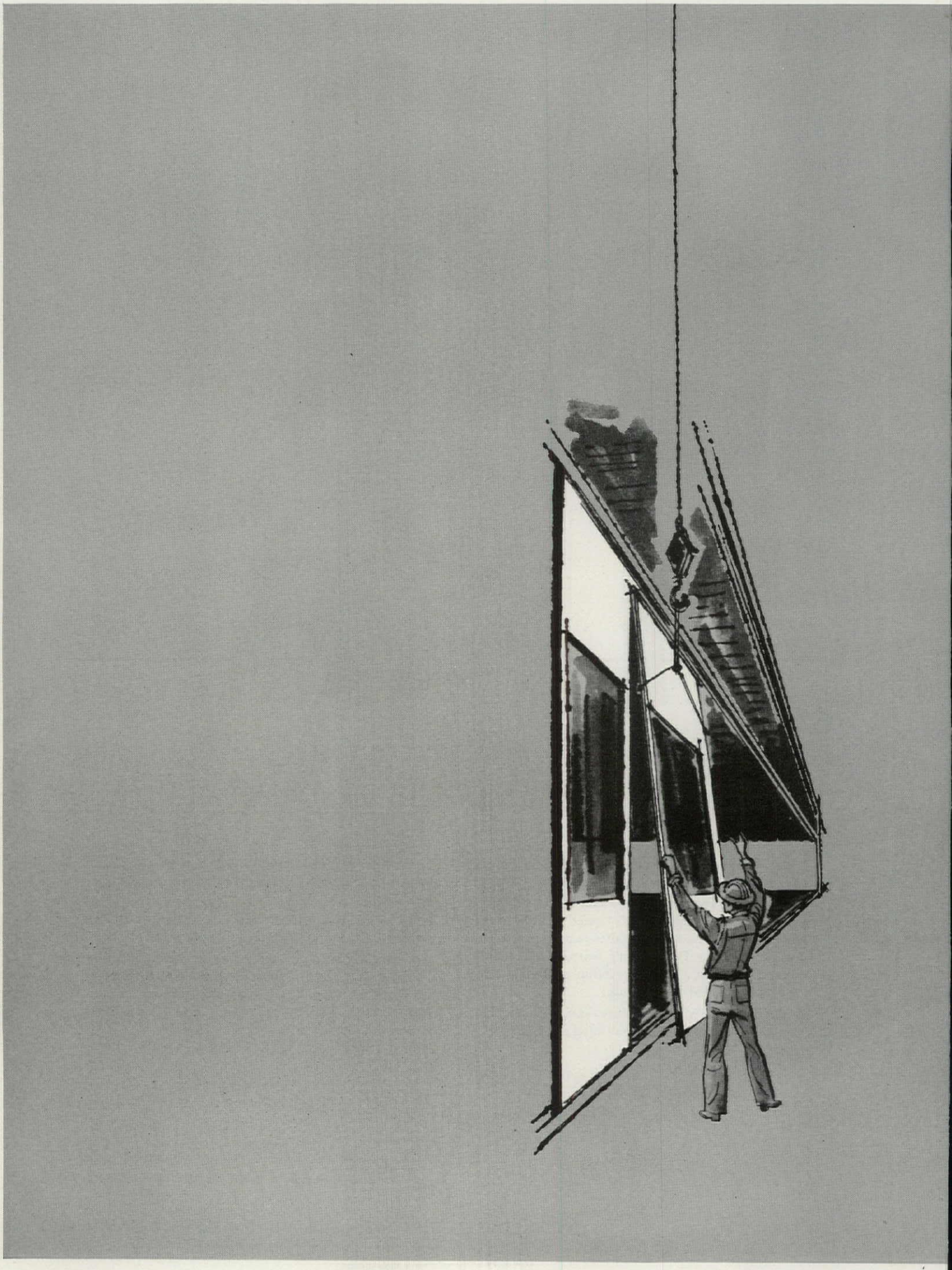

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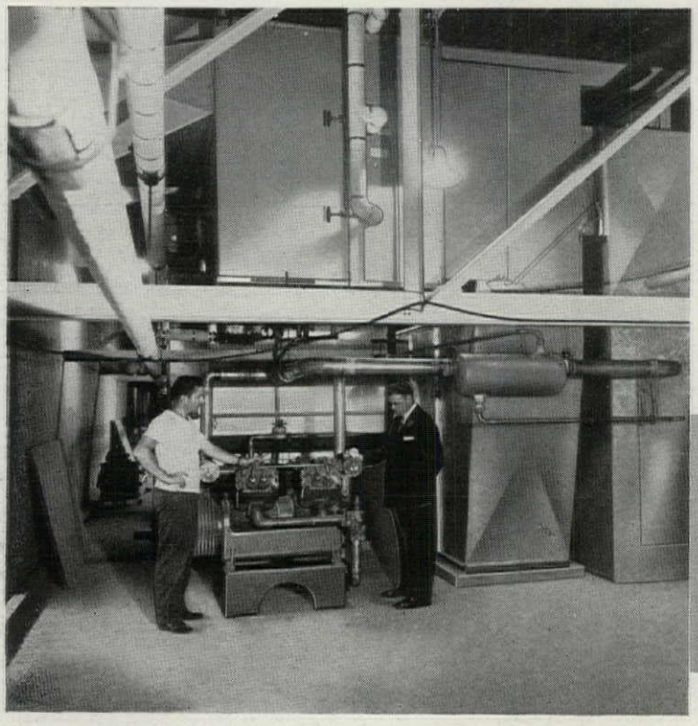

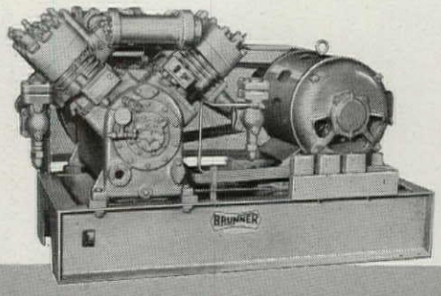

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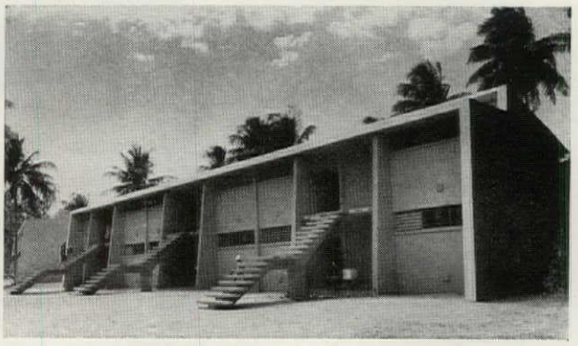
A focus on current architecture

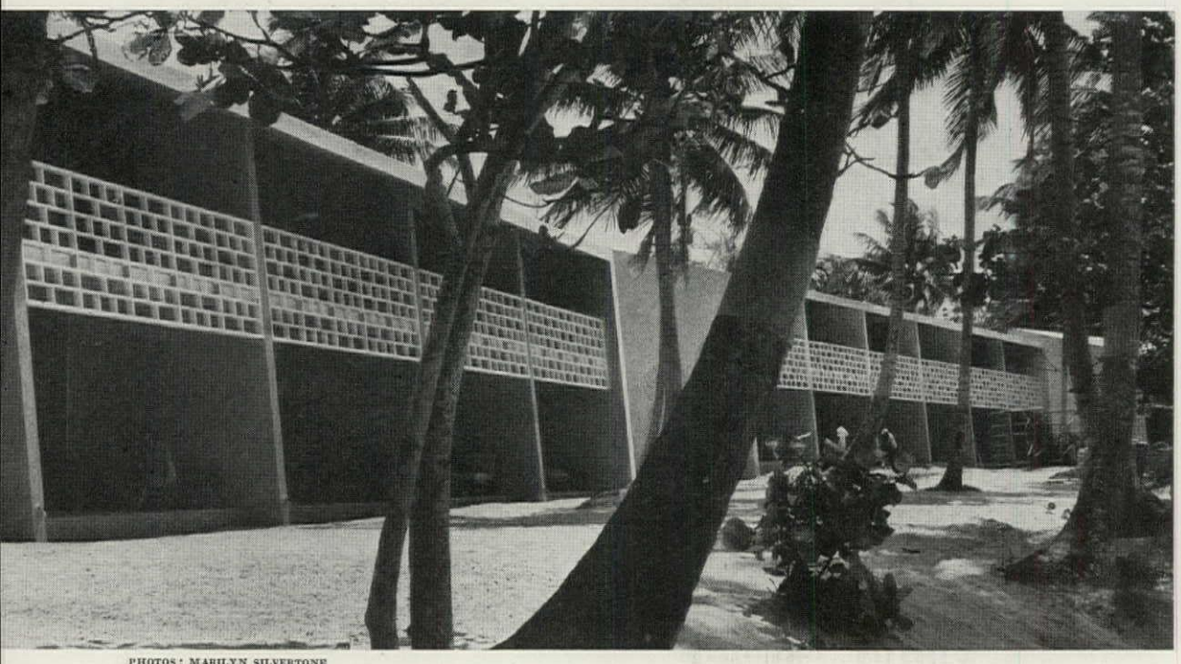
MARC NEUHOF

SCOTT HYDE

PATTERNED COMPANY HEADQUARTERS

Behind a façade of white marble ribwork, the Deering-Milliken Company's new headquarters on Sixth Avenue in Manhattan welcomes textile buyers into big open floors full of other striking patterns: there are, for example, the neat ranks of salesmen's desks (left, below) and the orderly geometry of filing cabinets and sample drawers used as space dividers (left). Overhead, meanwhile, a checkerboard ceiling alternates dark aluminum panels housing air-conditioning outlets with white plastic squares for lights. On the upper floors, movable metal partitions topped by glass fit into the ceiling grid (above), separating outside conference rooms, showrooms, and offices from the central reception, display, and office areas. Architects: Carson & Lundin. Interior designers: Knoll Planning Unit. Contractor: Turner Construction Company.

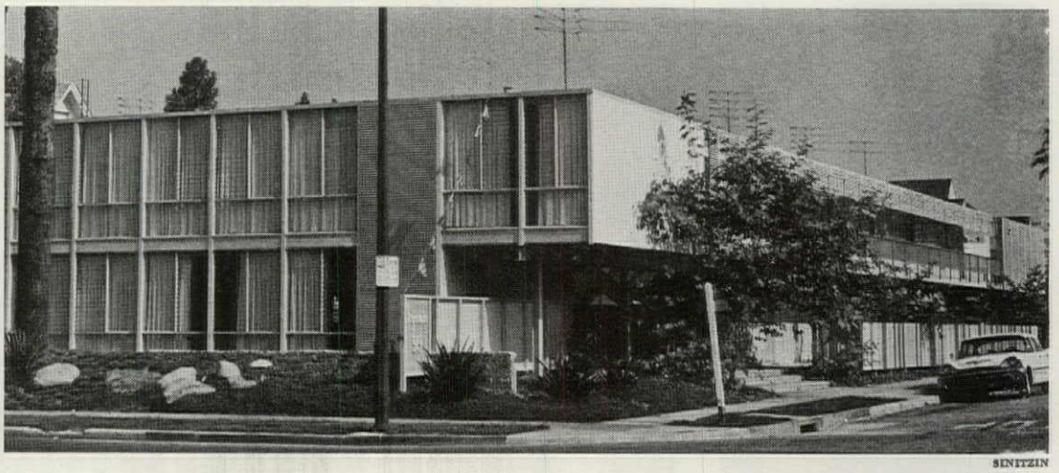




PHOTOS: MARILYN SILVERTONE

SEASIDE SUITES

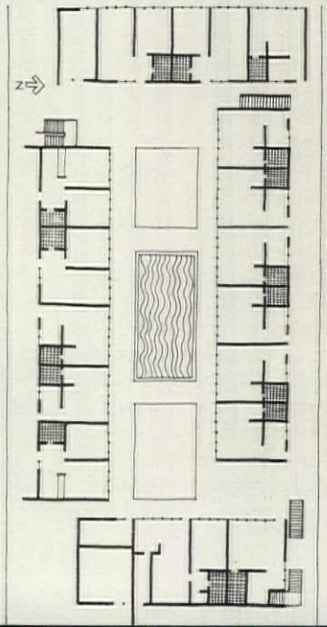
Near San Juan, Puerto Rico, Philanthropist - Conservationist-Real Estate Developer Laurance Rockefeller has launched a new resort as romantically scenic as his earlier Caneel Bay Plantation in the Virgin Islands—but not so posh. At a cost of some $6 million, Architects Goldstone & Dearborn of New York and O'Kelly & Mendez of Puerto Rico have built nine two-story, concrete-framed beach houses, simple in form (left) and manageable in price ($45 per room, American plan). Each unit contains 12 rooms, each of which can be used individually or grouped with others to form a large suite. Contractor: Caribbean Enterprises Company of Puerto Rico.



SINITZIN

POOLSIDE APARTMENTS

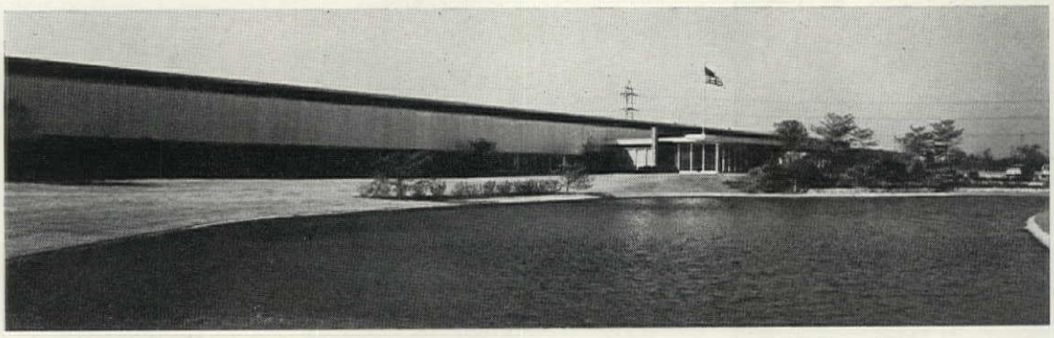
In Los Angeles, near the University of Southern California campus, Architect-alumnus Richard Dorman offers students and other apartment dwellers a pleasant environment for patio living, downtown. Dorman's new Trojanaire Apartments, which contain 38 moderate-rent apartments ($100 to $125), open onto a Pompeian inner court, where tenants can relax on a sun terrace or in a 20 by 40 foot swimming pool. Entrances and bedrooms are off galleries around the outside, away from poolside activity. The simple wood-frame structure is brightly detailed with latticed sunscreens and colored wall panels. To the rear is a parking lot for 25 cars. Total cost, including pool: $180,000. Contractor: M. Saltman.

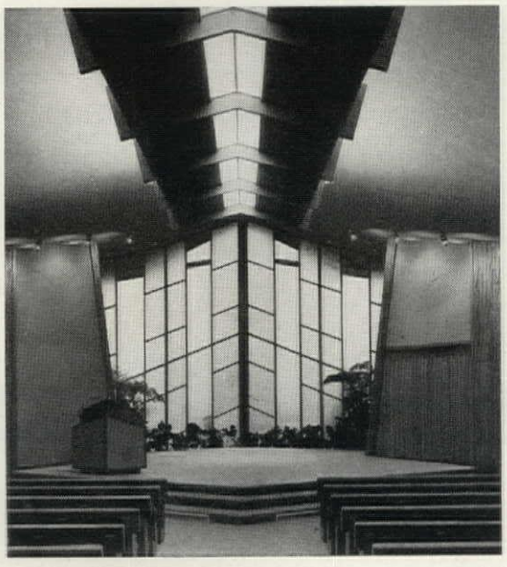


PHOTOS: TORKEL KORLING

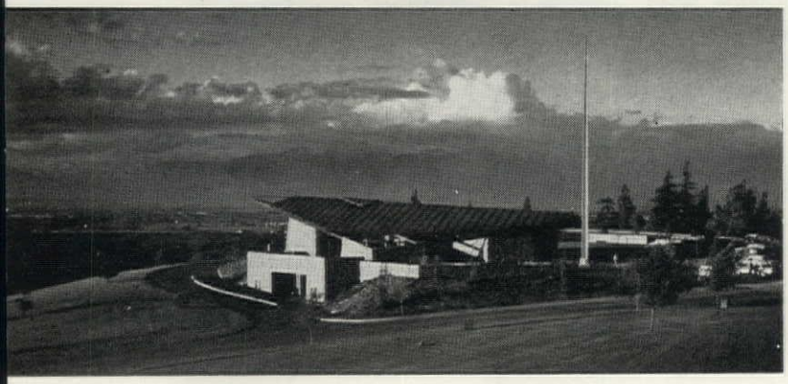
PARKSIDE PLANT

In an attempt to please neighbors and attract employees, the Square D Company (automation equipment) has set its new $3.5-million Milwaukee plant in a shaded oasis just off the highway. In front of a long, clean-lined factory, Square D's offices, cafeteria, and reception lounge look out on a big, free-form artificial lake which doubles as a fire reservoir and cooling pond for air-conditioning water. Lush planting around the waterhole closely matches that of a park across the road. Designer: Brooks Stevens & Associates. Architects: Grasshold-Johnson. Landscaper: Franz Lipp.



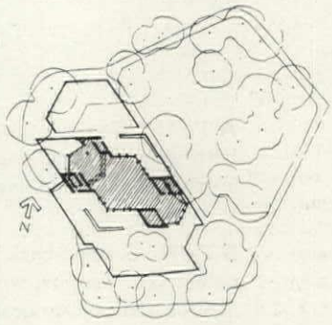


PHOTOS: PRESTON E. MITCHELL

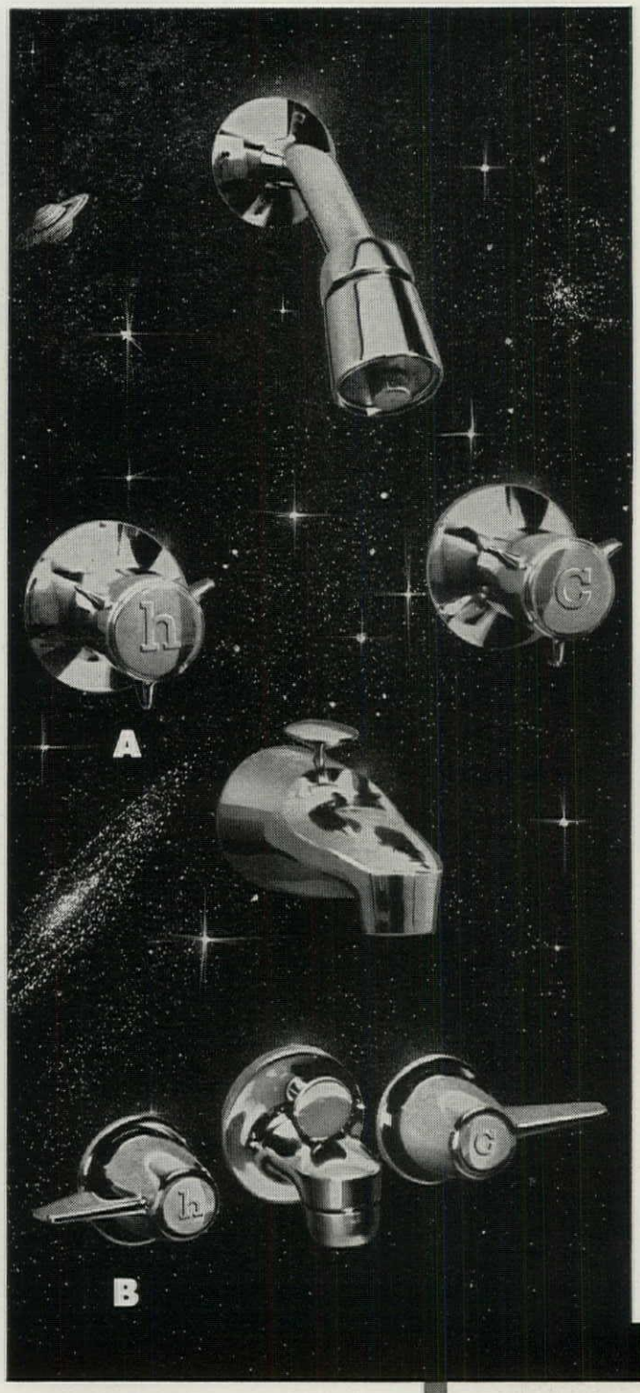


HILLSIDE CHAPEL

On a secluded redwood slope above Whittier, California, the angular planes of the Hillside Chapels' copper-clad roof rise in folded aspiration above the mass of a solid, earthbound stone base. In a merger of building and landscape, the nave opens out to a view of the valley through a high gable end of rose-tinted glass, and the rough stone walls angle out to embrace the fountains and reflecting pools of a churchyard garden (see plan). In front, a slim, three-flanged steel pylon rises 80 feet high to mark the entrance. The 122-seat chapel, one of three dotting the quiet burial



glades of Rose Hills Memorial Park, was designed for funerals, but some visitors have asked to be married there. Architect and engineers: Albert C. Martin & Associates. Contractors: L. E. Dixon. END



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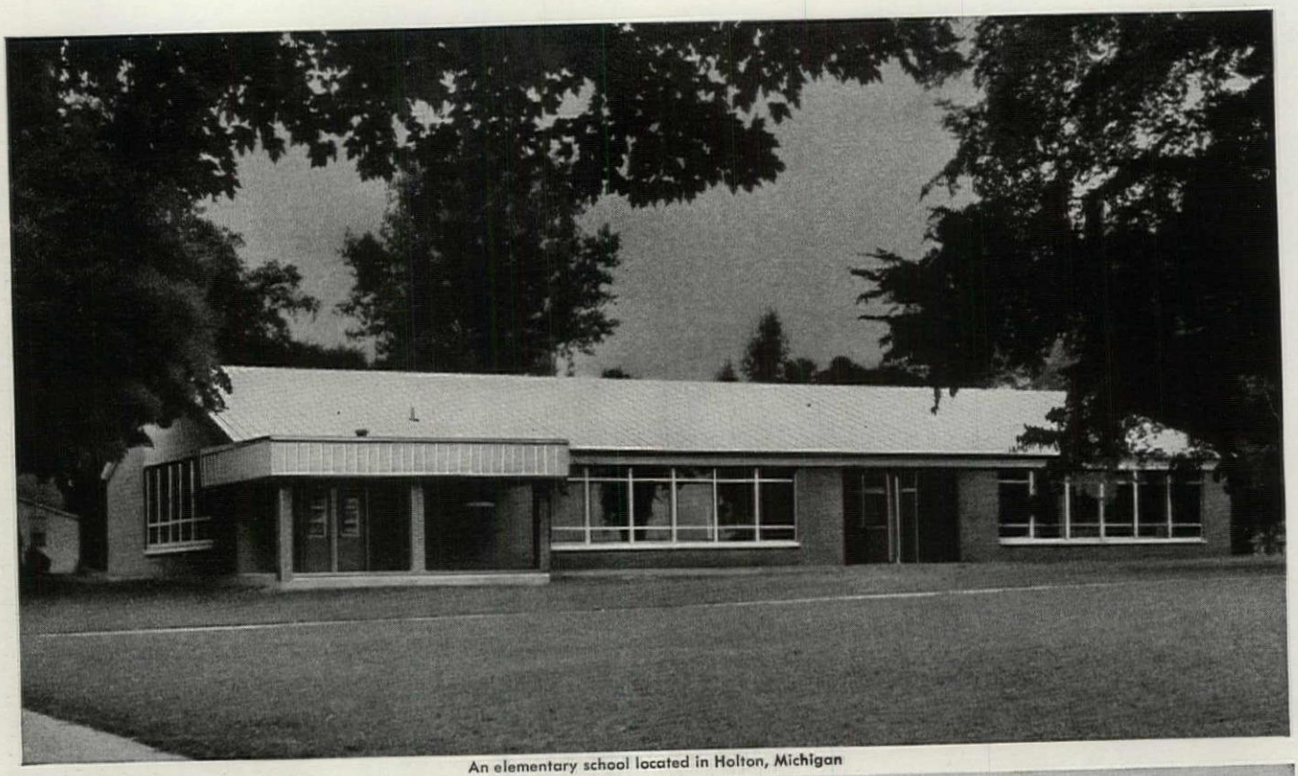
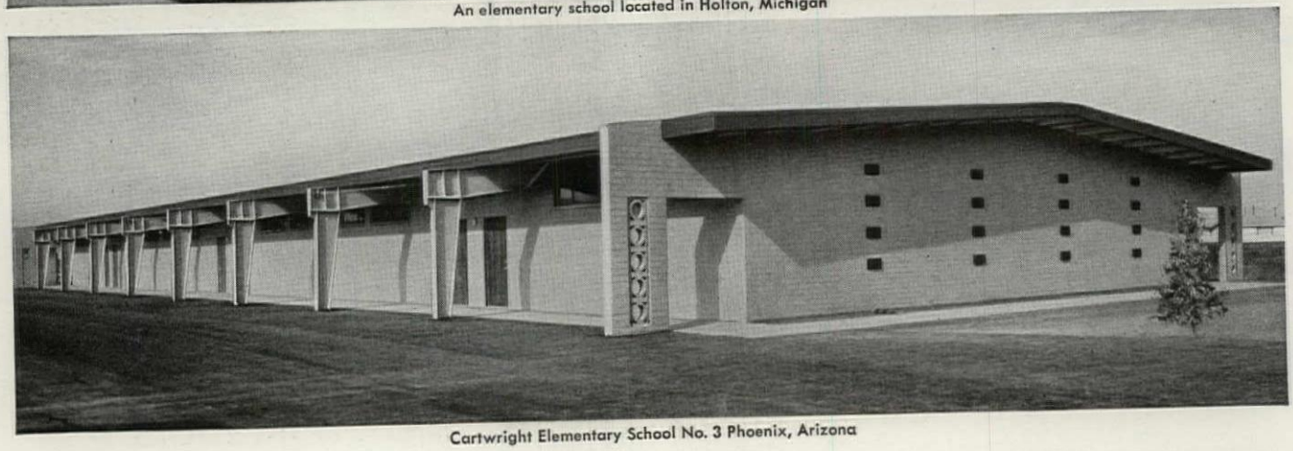


An elementary school located in Holton, Michigan



Cartwright Elementary School No. 3 Phoenix, Arizona

One system of building created both of these schools on modest budgets

In spite of the vast difference in outward appearance, the schools above have one thing in common. They both provide much-needed classroom space at a cost-per-pupil that other quality building methods cannot match.

How is this possible? The answer is simple. Both schools were created with the Butler Building System—the lowest-cost way to build well.

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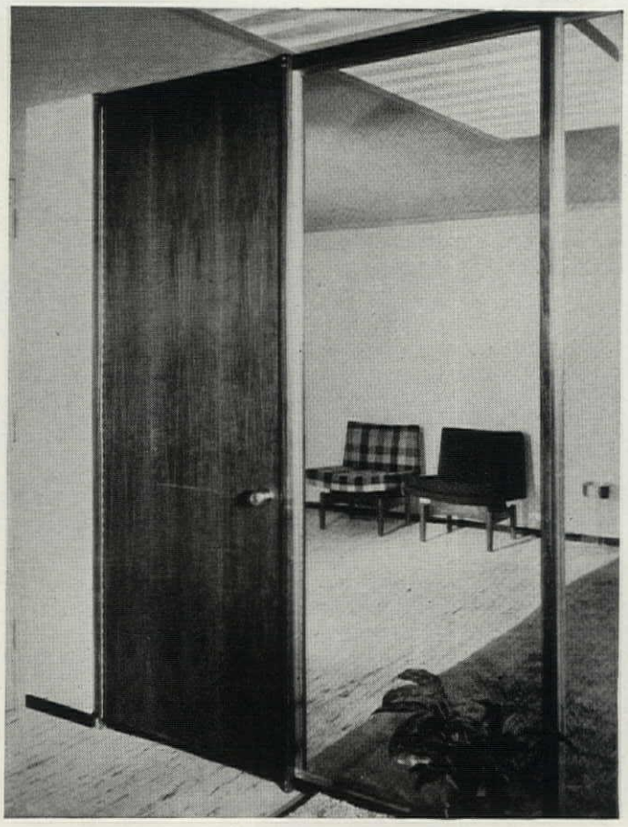
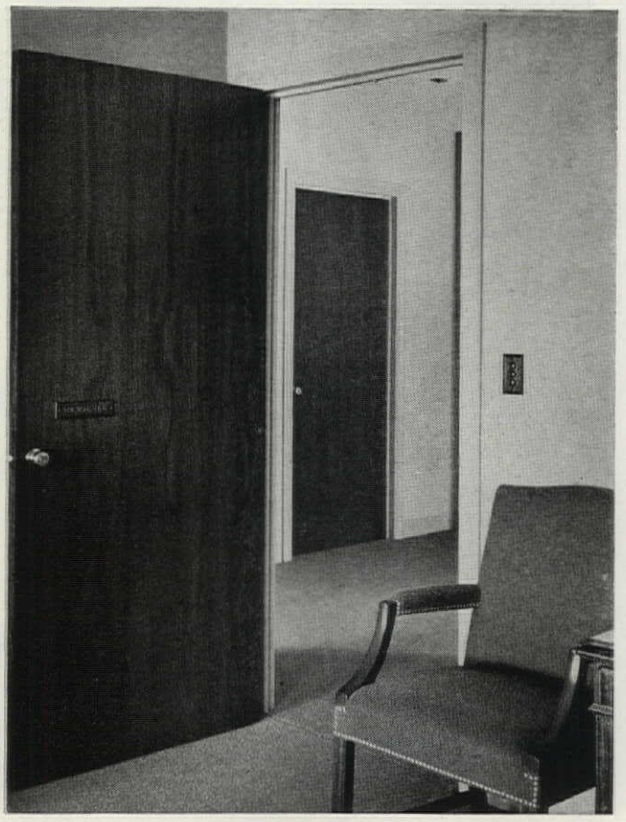


GOOD PUBLIC RELATIONS begin at the door. Here the traditional dignity of this walnut-faced Weldwood "Stay-Strate®" Door provides contrasting balance for the airy mood created by pastel colors and glass. "Stay-Strate" Doors—in a wide range of beautiful hardwood veneer faces—have inert, incombustible mineral cores of Weldrok®, and are unconditionally guaranteed to give completely satisfactory service. Guarantee includes replacement and all labor costs involved.



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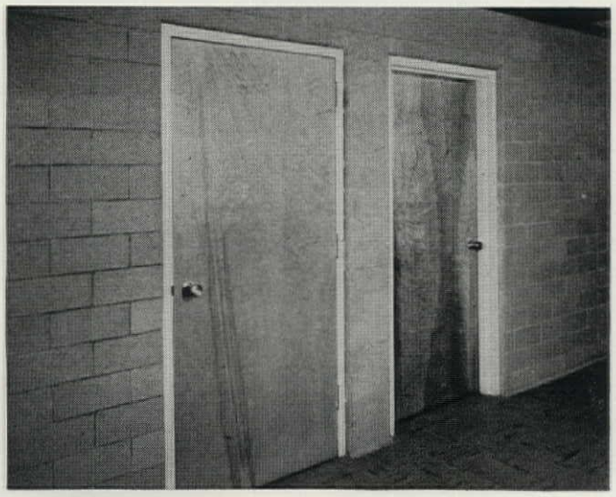
Architectural Doors by Weldwood . . .

beautiful complements to well-designed interiors



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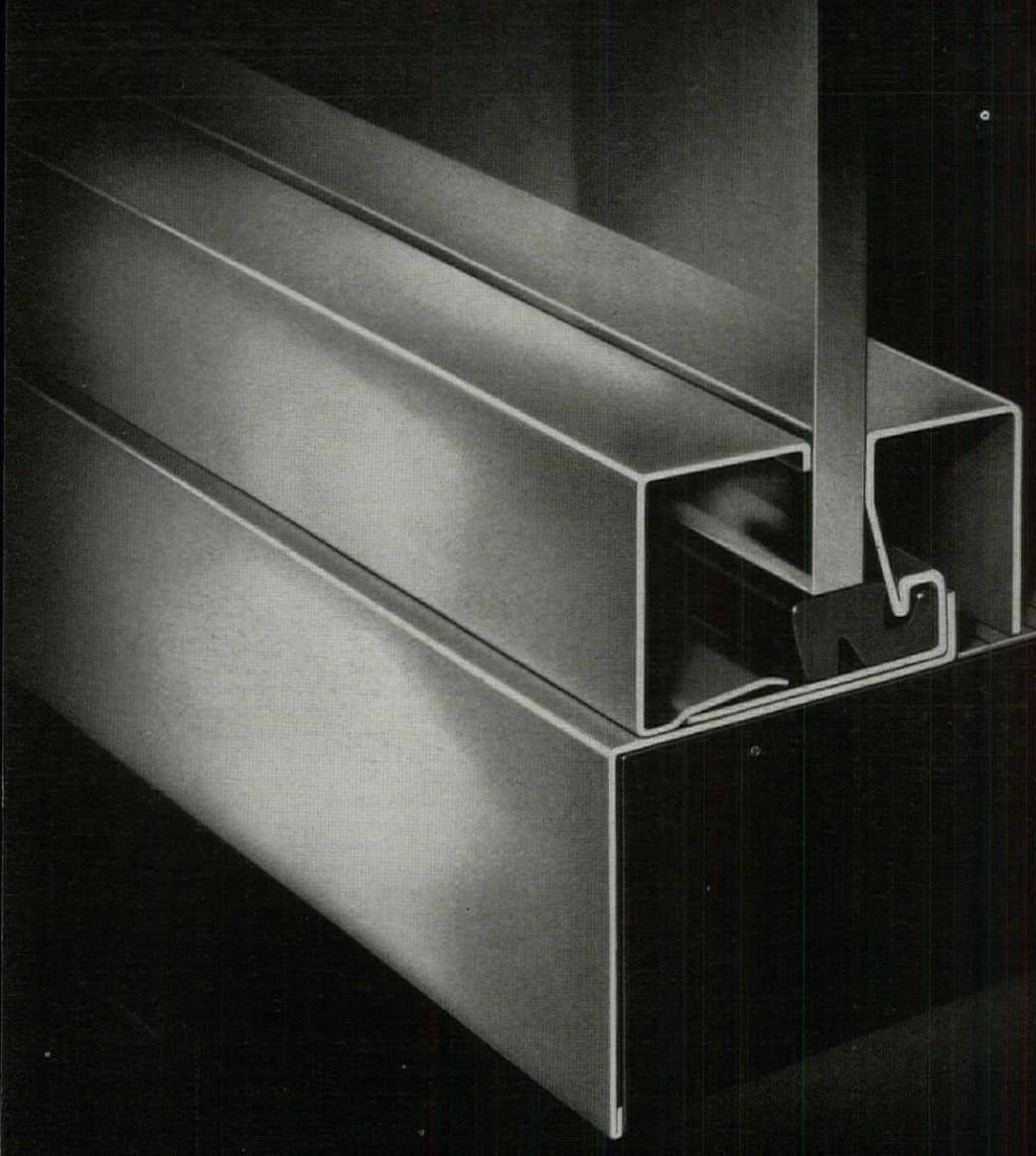

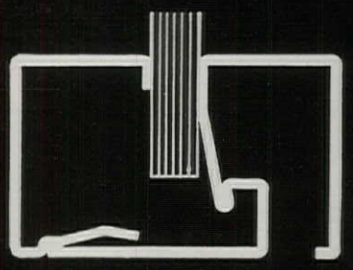

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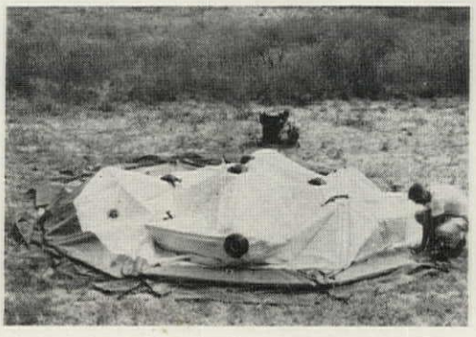
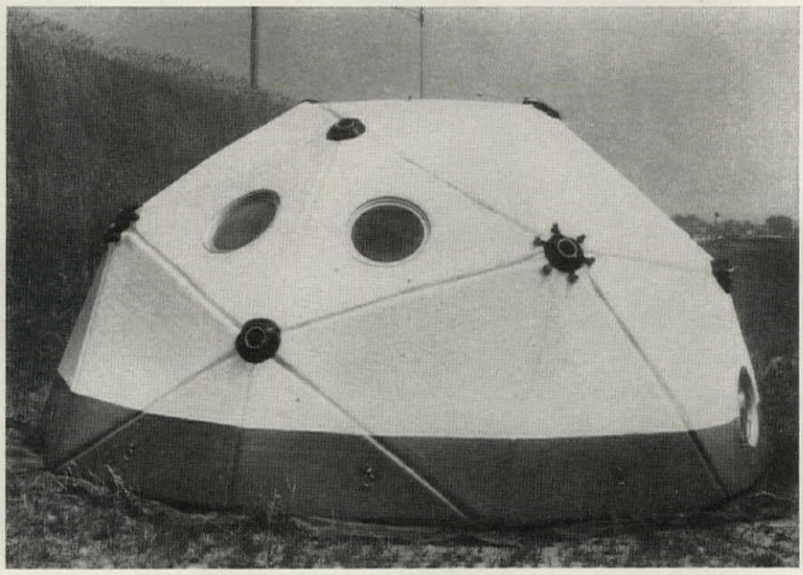
Rugged pneumatic dome . . . soundproofing light diffuser . . . sprayed-on upholstery . . . supersized dirt scooper





PNEUMATIC GEODESIC DOME
pumps up like an air mattress

By applying R. Buckminster Fuller's geodesic principle to an air-inflated structure, a Connecticut corset manufacturer (Berger Brothers Company of New Haven) has come up with a multipurpose, portable, nylon dome-shelter (photos, above) that is easy to erect and remarkably sturdy for its weight.

Whereas other air-inflated structures now on the market are "air-supported"—relying on interior air pressure—the new *Geodome* is not, and does not require a constant air supply from a blower. Instead, it is self-supporting, consisting of pneumatic panels of neoprene-coated nylon. To erect the *Geodome*, these panels are simply pumped up, simultaneously, much like an air mattress. Once the dome is inflated the compressor can be disconnected, and windows or doors left open, since each air-filled panel maintains its pressure individually. Approximate inflation time: 5 minutes.

Weighing just 200 pounds a 16½-foot-diameter model is light enough to be lifted by two men, yet strong enough (according to the manufacturer's tests) to bear snow loads of as much as 30 pounds per square foot and ride out gale winds of up to 120 miles per hour. In addition, the pneumatic method of stiffening the panels provides an insulating dead air space of about 3 inches; and deflated, the entire dome can be folded to fit easily into the back of a jeep or station wagon.

Two models are now in production. One (the 16½-foot unit mentioned above) has 8.3 feet of center headroom, and 218 square feet of floor space. The other, being built for the Air Force, has a 48-foot diameter, center headroom of 24 feet, and a floor area of 1,810 square feet. Still priced too high for most industrial or commercial uses, the 16½-foot *Geodome* sells for $6,500. A price for the larger model has not yet been announced.

Manufacturer: Berger Brothers Co., 135 Derby Ave., New Haven, Conn.

PAPER-THIN LIGHT DIFFUSER
also serves as soundproofing

The Wakefield Company of Vermilion, Ohio, has introduced a new translucent ceiling panel which not only serves as a diffusing medium for electrical lighting, but also provides soundproofing said to equal that provided by 3 inches of acoustical tile. Called *Super-Wakon*, the panel looks and feels much like a rigid sheet of white parchment. It consists of a clear vinyl "paper" faced on both sides with a porous cellulous film. The core is about 0.001 inches thick and perforated with holes about 1/16 inch in diameter. Light is diffused by the facing films and by a pigmented resin used to bond the films to the core. Sound is absorbed in the facings' tiny pores. Installed cost for the complete

continued on page 178

ceiling system, which includes fluorescent lamp channels, suspension rods, grid, and the *Super-Wakon* panels, is about $3 per square foot.

Manufacturer: Wakefield Co., 731 S. Water St., Vermilion, Ohio.

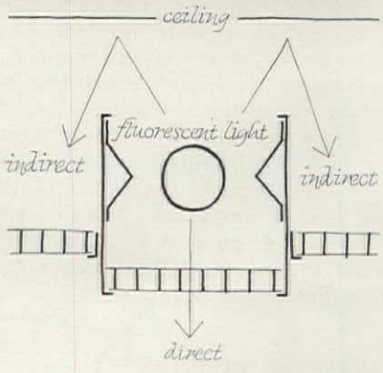
PLASTIC SKIN FOR DOMES
strengthened by imbedded nylon mesh

Scotchpak, a semitransparent polyester film which may soon be used by airlines as a lightweight packaging for Martinis, is also being marketed as a tough, weatherproof skin for air-supported buildings. A Minnesota Mining and Manufacturing product, *Scotchpak* is reinforced with a mesh of nylon fibers loosely inserted within the plastic, making it remarkably strong (tensile strength: about 25,000 pounds per square inch) and almost totally tearproof. The material, which is heat sealable, is said to be impervious to moisture and highly resistant to chemical or solvent attack. Weight per square yard: about ½ pound. Cost: $1 per square yard.

Manufacturer: Minnesota Mining & Manufacturing Co., 900 Bush Ave., St. Paul 6, Minn.

COLORFUL PLASTIC CEILING
designed for high-level lighting

A strikingly colorful suspended ceiling designed to provide comfortable high-level illumination (as much as 250 foot-candles) at a relatively low cost has been introduced by Silvray Lighting of Bound Brook, New Jersey. Called *Colorceil*, the



new modular system uses high-output fluorescent lamps placed in individual fixture compartments on 2-foot centers. Between these compartments are "dropped" large egg-crate panels of translucent, colored (or

white) plastic. While roughly one third of the light passes through white egg-crate strips located directly beneath the lamps, the balance of light is indirectly reflected from the ceiling through the colored panels—thereby creating a luminous color-glow that has little or no glare. Maintenance is easy, since panels can be simply lifted out for cleaning or repairs; the panels' egg-crate structure is said to aid in soundproofing; and, since most of the *Colorceil* ceiling surface is open, sprinkler heads can be mounted out of sight on the original ceiling.

Panels are available in pastel shades of red, pink, blue, green, and yellow. A single basic module measures 8 feet, 2½ inches by 6 feet, 3 inches. Cost per square foot, excluding lamps and installation charges: about $3.

Manufacturer: Silvray Lighting Inc., 100 W. Main St., Bound Brook, N.J.

MAMMOTH EARTH-MOVER has separate motor for each wheel

With an eye to the country's multimillion-dollar road building program, R. G. LeTourneau, Incorporated has put on sale a new line of supersized, self-propelled earth scrapers that are the largest and most powerful in the world. Shown below is the

baby of the line, a 70-ton giant that in one scoop can pick up and move 50 cubic yards of dirt—or almost twice as much as the biggest machines now on the market.

Another major difference between the LeTourneau scraper and conventional models is that each of the new machine's four rubber-tired wheels is individually powered by a high-torque electric motor—a concept that took the company 11 years and $12 million to develop. Tremendous traction is the result: if one wheel slips on a slick surface, the power going to that wheel is automatically redirected to the other three wheels. Over-all power is supplied by a 600 horsepower diesel-electric engine. Biggest model in the line: a 125-tonner with a Gargantuan 100-cubic-yard capacity. Prices begin at $100,000.

Manufacturer: R. G. LeTourneau, Inc., 2399 S. MacArthur, Longview, Tex.

SPRAYED-ON UPHOLSTERY gives chair weather-tight skin

The new *Aeon Chair* marks a significant innovation in furniture construction in that it is upholstered with a coating of

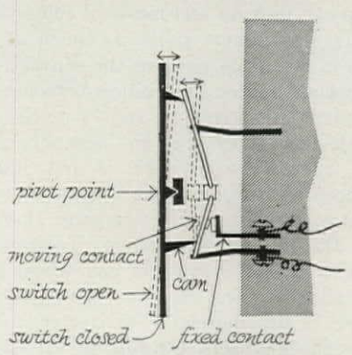
continued on page 180

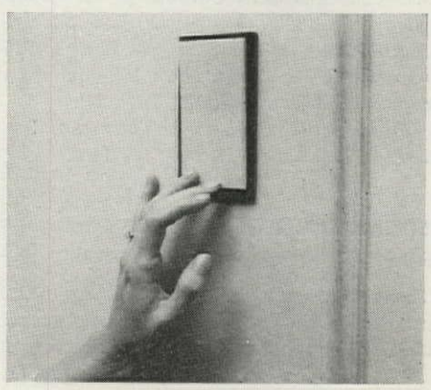
sprayed-on plastic. The chair (above) is constructed this way: a tailored, ½-inch-thick sheet of vinyl foam is laminated to a glass-fiber-reinforced polyester shell; then (as shown in the photo above) a specially formulated, heavy vinyl is sprayed over the foam cushioning—and over the back and underside of the shell—to form a tough, waterproof, weather-tight skin that has no seams or laps. The result is a comfortably cushioned, multipurpose chair that can be cleaned with soap and water, used outdoors as well as in. Available in 12 colors, on either regular, swivel, or stacking legs of tubular steel, the *Aeon Chair* costs from $45 to $60.

Manufacturer: Aeon Industries Inc., Box 208, Gracie Station, New York, N.Y.

PRESSURE SWITCH
has novel internal mechanism

The Bryant Electric Company of Bridgeport, Connecticut has put on sale a new wall switch (below) which is radically unlike conventional types in both form and



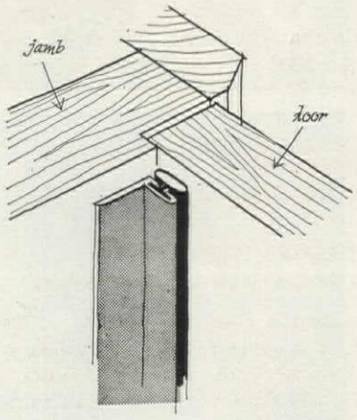


function. Known as the *Fashion Plate*, it is operated by a large flat-faced actuator which is simply touched on top for "on," at bottom for "off." This uniqueness of design relies on internal toggle arms (instead of the customary coiled springs) that are moved up or down by the actuator as it rotates, seesaw fashion, on a fixed center support (see drawing). Designed to fit standard wall boxes, the switch has a black or white plastic frameplate and an ivory plastic actuator. A translucent actuator, which can be painted or backed with wall paper to match a room's decor, is also available. Retail cost for a single pole switch: about $2.

Manufacturer: Bryant Electric Co., 1421 State, Bridgeport, Conn.

PLASTIC WEATHERSTRIPPING is low in cost and easy to apply

Weatherstop, a new plastic weatherstripping for metal or wood doors and windows, is composed of a soft, gray vinyl tube (similar to that used on refrigerator doors), inserted into a thin strip of rigid, but flexible, white vinyl (drawing below).



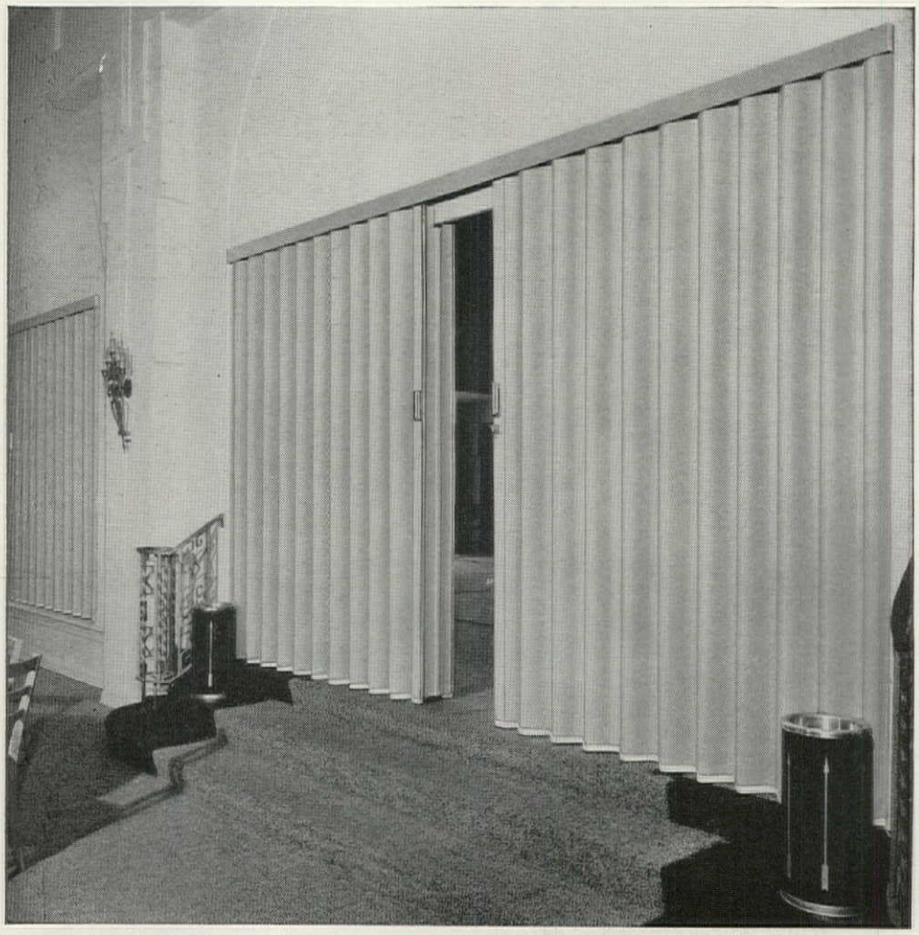
It is applied to jambs and header with tacks or an adhesive. The material will not rust, discolor, peel, or crack, and being flexible it will adjust itself to uneven or warped surfaces. A precut set, enough for one average-sized door, includes two 7-foot pieces and one 3-foot piece. Price per set: $4.95.

Manufacturer: Weatherstop Co. Inc., 506 McKerchey Bldg., 2631 Woodward Ave., Detroit 1, Mich.

LIQUID FLAMEPROOFING protects most interior fabrics

Draperies, upholstery, rugs, displays, etc., made of cotton, wool, silk, linen, burlap, paper, viscose rayon, and other cellulosic materials, can be effectively protected against flame by a new liquid flameproofing called *MS-2*. Application is by spraying or dipping. Nonpoisonous and odorless, the colorless solution will not stain or stiffen materials and will not wear off or vacuum out. However, the manufacturer reports that *MS-2* will not prevent charring; it is ineffective on certain synthetic

continued on page 182



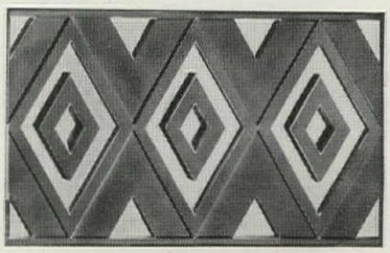
Ballroom, Empire Room, Dover Room—Hotel Monica, Santa Monica, Calif.
Contractor & Designer—Joseph Illig & Sons—Los Angeles

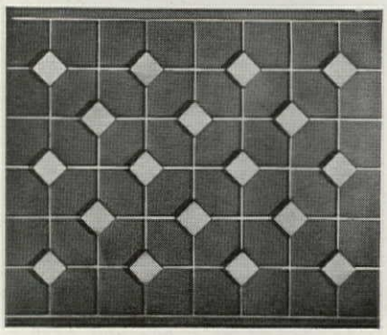
fibers or plastic materials; and fabrics must be retreated after they have been laundered. In minimum quantities of .55 gallons the product sells for $2 per gallon.

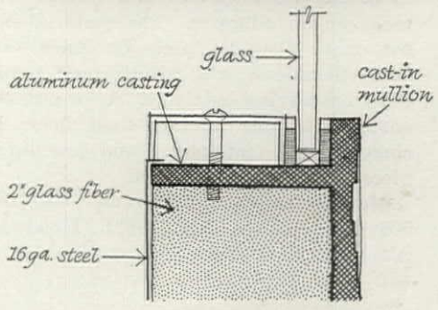
Manufacturer: International Flameproofing Corp., 450 Airport Blvd., San Antonio, Tex.

DECORATIVE METAL PANELS eliminate horizontal mullions

The photos and diagram below are of a new line of cast-aluminum spandrel panels recently introduced by the Michaels Art Bronze Company (Covington, Kentucky) as part of its metal curtain wall system. The panels are of special interest in that they bring custom metal tracery within the budget range of small- or medium-sized buildings (stamped panels, long a common decorative material, are economically feasible only when used in volume on







large projects). They also feature a special, cast-in mullion (see diagram) which eliminates the need for horizontal mullions, thereby simplifying the structural nature of the façade and visually accenting the vertical mullions. The panels are available in a variety of exterior textures, colors, and designs, are backed by 2 inches of glass-fiber insulation and faced inside with 16-gauge steel. Approximate cost per square foot: $6 to $8, or about the same as conventional, flat-surfaced aluminum panels.

Manufacturer: Michaels Art Bronze Co., Inc., P.O. Box 668, Covington, Ky.

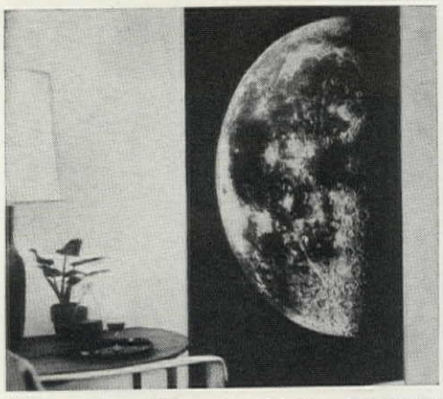
CONCRETE FORM LUBRICANT
leaves smooth, glossy surface

The Shell Oil Company is marketing a new lubricant for concrete forms. Before casting, *Shell Form Compound,* a grayish-white waxy substance, is mixed with water and sprayed, with standard spraying equipment, onto the forms. Key advantages claimed for the product: it dries fast, permitting easy stripping of forms; it gives concrete a smooth, glossy surface, and leaves no deposits. (Conventional oils or waxes not only tend to build up a tough film but also stain the concrete and often cause pits and other surface blemishes.) One gallon, when diluted, will cover approximately 500 square feet. Cost per gallon: about $1.

Manufacturer: Shell Oil Co., 50 W. 50th St., New York 20, N. Y.

CELESTIAL MURALS
bring outer space to interior walls

Astro Murals, pictured here, are vivid blue-black and white photo enlargements of celestial phenomena. They are now being marketed as decorative wall coverings for Sputnik-age schools, institutions, and



offices. Ten different subjects (spanning the heavens from Saturn to the Great Nebula in Andromeda) are available, mounted or unmounted, in sizes ranging from 2 by 3 feet to 7 by 9 feet. The vinyl coated prints sell for about 90 cents per square foot on heavy paper, twice as much on cloth.

Manufacturer: Astro Murals, Inc., 231 W. 58th St., New York, N.Y.

GERMAN DRAFTING PENCIL
has smearproof plastic lead

The German-made *Duralar* pencil now on the market for architects, engineers, and draftsmen has a plastic, instead of graphite, lead which is completely smearproof when used on mylar plastic tracing films. Though easily erasable *Duralar* tracings can be handled over and over without loss of detail—and absence of light-reflecting graphite assures sharp, clear photographic reproductions. Available in five different degrees of softness, the pencils sell for $20 a gross.

U.S. Distributor: J.S. Staedtler, Inc., 25 Di Carolis Court, Hackensack, N.J. END

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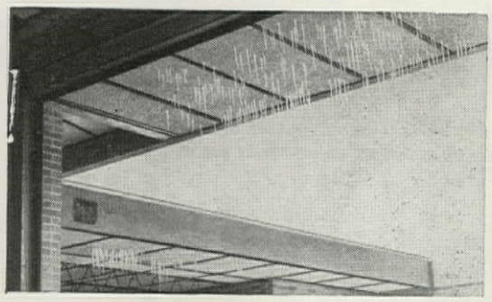
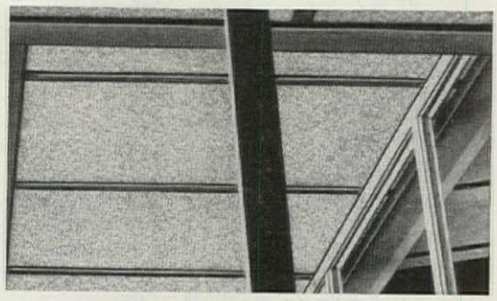
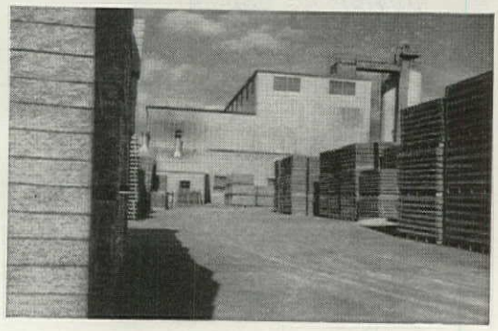
Investigate Insulrock savings. Get details today.

Insulrock's year-around weather resistance makes Insulrock perfect for outside exposed areas, like this overhang.





Technical note:
soaked, frozen, thawed, then dried out, Insulrock retains original strength, is stronger than minimum specifications, works 100% efficiently for you.



Insulrock dares the elements. Outside storage proves unequalled durability under all-year weather pounding.

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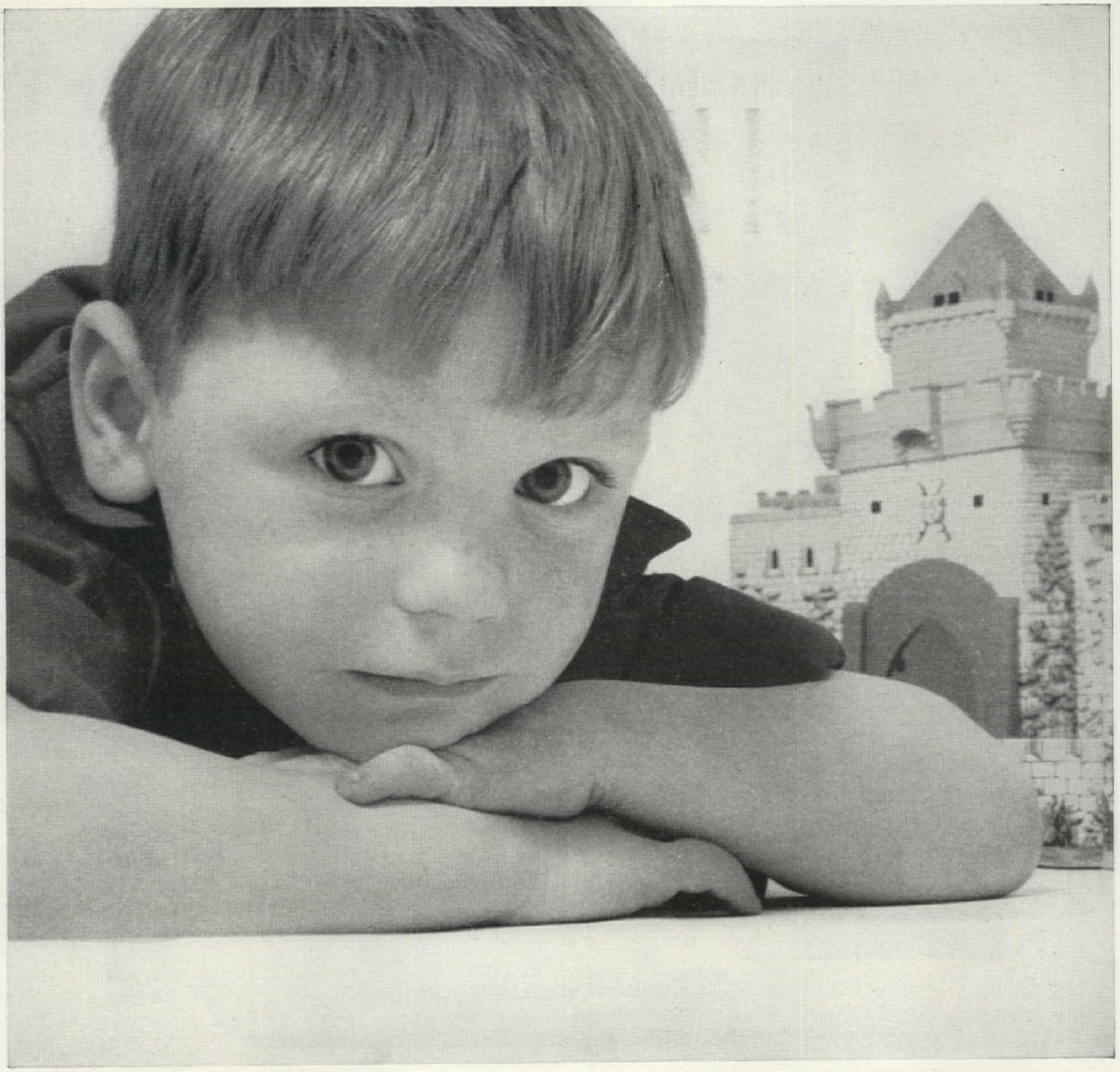

A man's home is his castle—or is it?

Make sure *your* home guards your family's happiness and security. Make certain it is safe, sound, in good repair. Decay feeds on *small* flaws . . . peeling paint, cracked walls, loose shingles, splintered steps.

Start your repairs now. Prices are reasonable, financing is easier, supplies are plentiful. You can protect your investment . . . increase the value of your home . . . save time and trouble by acting right away.

Your example will encourage others. Just as one run-down home can start a slum, one well-kept home can start a neighborhood-improvement program . . . help bring you more enjoyable community conditions.

Keep up your home, then give active support to your local urban renewal programs. Help yourself by working for the preservation of good neighborhoods . . . the rehabilitation of shabby neighborhoods . . . the renewal of worn-out neighborhoods.

Your support is essential all the time, but *particularly* vital today. Homes and neighborhoods are the bulwarks of our personal and economic security. Your home and neighborhood-improvement efforts *now* can help assure that security, and bring you more *personal* benefits in many ways.

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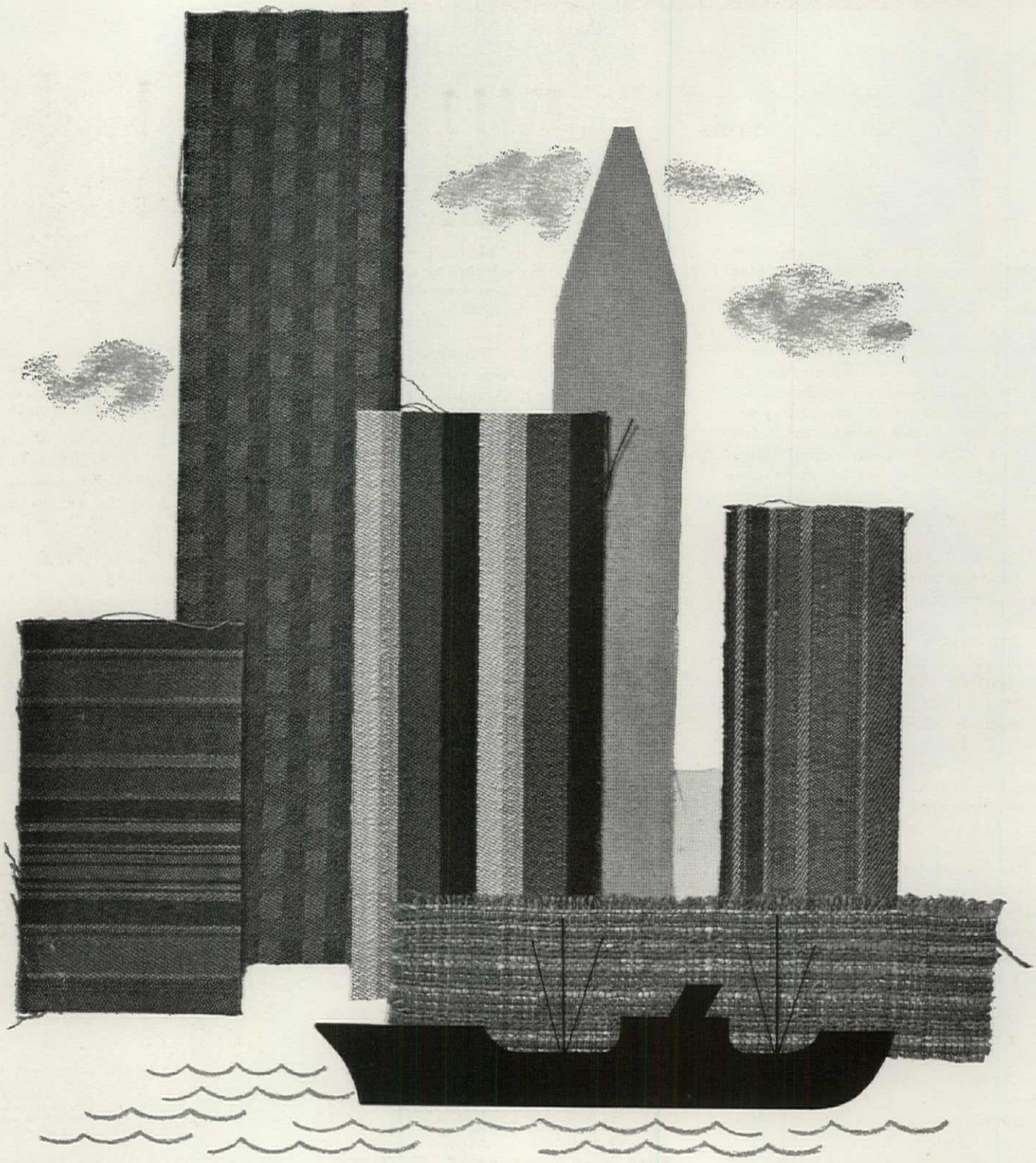

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Books

Codes . . . dams . . . churches

HOUSING CODES, THE KEY TO HOUSING CONSERVATION. (Three volumes.) Published by New York State Division of Housing, 270 Broadway, New York 7, N.Y. Free.

These three brief volumes do an excellent job of identifying the main causes of urban rot and suggesting possible remedies. They are the result of a two-year, $145,000 study of housing codes conducted by the New York State Division of Housing, two-thirds of the cost of which was borne by the Federal Housing and Home Finance Agency. Housing standards and their enforcement were surveyed in 43 New York communities of less than 50,000 population each, and in all of the state's 15 cities of more than 50,000—except New York City.

The first volume catalogues the municipal sins of omission that may cause urban blight and the growth of slums. It points out that among the 43 communities of less than 50,000 population that were surveyed, 27 had no regulations whatever requiring the proper maintenance of housing, and 30 had no regulations requiring even such basic facilities as toilets, bathtubs, or water supply. The first volume suggests some practical corrective measures that can be taken by any state or local officials who may decide to tackle the blight problem. For example the report recommends:

- County, rather than municipal, administration and enforcement of housing and building regulations.
- Allowing two or more adjacent municipalities to share the pro rata expenses of hiring competent, full-time inspection and enforcement officers (rather than part-time officials)—even though they might administer somewhat different codes in different localities.
- State enforcement of housing and building standards, if necessary; or state technical assistance to communities on a fee or contractual basis; or state financial assistance to stimulate local conservation and rehabilitation.

The second and third volumes contain, respectively, a "model" housing-standards ordinance, and an "administrative guide" for enforcing such an ordinance.

Unfortunately, there is little prospect that the recommended reforms will be undertaken soon; there is not even any vigorous support for them from the Urban Renewal Administration. Nevertheless, the report serves a useful purpose: it clearly defines goals, and makes available an exceptionally readable and candid official "documentation" of the way slums are often nurtured by official indifference, ineptitude, and political expediency.

THE BUILDING OF TVA. An Illustrated History. By John H. Kyle. Published by Louisiana State University Press, Baton Rouge 3, Louisiana. 162 pp. 7½" x 10½". $7.50.

To some people the Tennessee Valley Authority and its dramatic structures represent one of the high points of democracy in action. Others consider it a dangerous giant-step toward socialism. But, regardless of political attitudes toward this huge project (it covers an area three-fourths the size of England), the physical achievements of the TVA are now a proud part of American architectural history. This book, published on TVA's 25th anniversary, is an excellent record of these achievements.

HISTORIC CHURCHES OF THE UNITED STATES. By Robert C. Broderick. Published by Wilfred Funk, Inc., 153 E. 24th St., New York, N.Y. 257 pp. 6" x 9". Illus. $3.95.

In eloquent hands the story of the spread of Christianity across the U.S. could become a great piece of Americana. But, this collection of murky photographs and pedestrian text blocks is, unfortunately, far from the ultimate. Author Broderick disclaims any effort to present a review of architecturally significant U.S. churches—which is just as well, for the truth is that American churches have been, for the most part, adaptations of what preceded them in other lands. Only rarely has native genius or denominational inspiration produced greatness. Perhaps what is most lacking in this book is honest criticism.

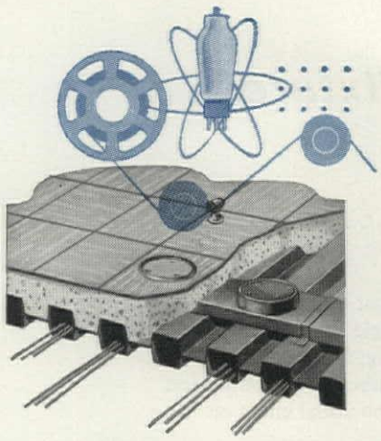
SUMMER AIR CONDITIONING. By Seichi Konzo, J. Raymond Carroll, and Harlan D. Bareither. Published by Windsor Press, 200 E. Ontario St., Chicago, Ill. 554 pp. 6" x 9". Illus. $7.50.

This is a fundamental text and reference for those who require a basic understanding of heating and cooling as applied to residential work. It was prepared especially for the U.S. Armed Forces Institute and, as such, contains problems and exercises to test the student's understanding of the material presented. The book's intent is to explain how and why things are done the way they are done in the heating-air-conditioning industry, and what makes equipment operate the way it does. The authors are members of the Mechanical Engineering Department of the University of Illinois. END

Architects & Engineers:
Skidmore, Owings & Merrill

Weiskopf & Pickworth, structural consultants
Sepka & Hennessy, mechanical, electrical

General Contractor:
George A. Fuller Co.



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52-story Union Carbide Building will STAY modern with Milcor Celluflor — 900,000 square feet of it!

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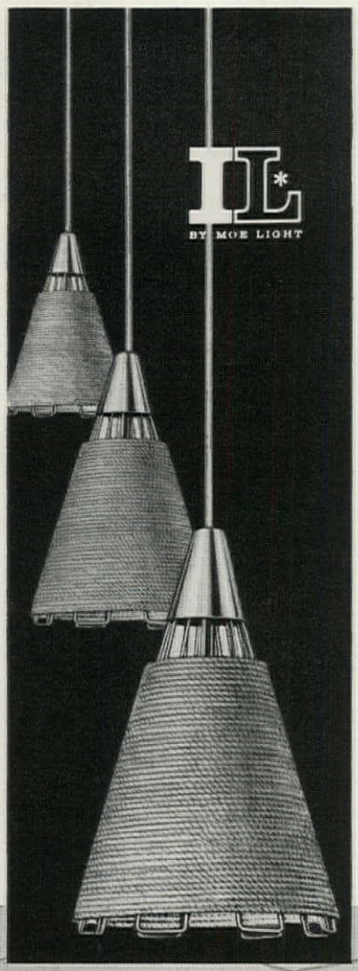

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Excerpts

What other people are saying

CITY CHARACTER

The most charming cities result from lack of planning. This was the disquieting conclusion reached by PAUL JACQUES GRILLO, professor of architecture at the University of Notre Dame, in a talk before the Great Lakes District Regional Conference of the AIA.

The beauty and greatness of cities lie in their personality. Character, as rare in architecture as in men, is also the most cherished quality in both. We know that we may fall in love with a city because of its extraordinary charm and uniqueness of personality—but certainly not because it is clean, easy to drive through, or because it makes a lovely picture on a piece of paper.

What places remain on the list of cities with charm and personality—friends we dream of visiting again? Are they not all cities that could win grand prizes for their filth? Istanbul, Venice, Marseilles, or Lisbon. They all are old cities grown out of nowhere, without plan, without architects, flouting all rules, ignoring all the laws and even the name of town planning, but realizing organic miracles of art and delight for the pedestrian. They are all cities in size, but villages at heart.

Now, if we take our American cities and try to list also the ten dearest to our hearts, cities that mean something to us, cities that gave us a thrill the first time we discovered them—a thrill that we feel again and again as we come to know them better—we may find high on the list downtown Manhattan, San Francisco, New Orleans, or even the microscopic Carson City, Nevada.

What do we find particularly successful in the design of these towns? Certainly not the narrow crooked streets of downtown Manhattan, the 20-per-cent slopes of the most idiotic and dearest streets of San Francisco, the flytraps of New Orleans, and the dirt road that proudly calls itself the main street of Nevada's capital city. What we are aware of is a sensation of constant surprise, of delighted expectancy. We feel as though we were led by the hand of a friend into wonders of enchantment and new impressions.

If we try to analyze the greatest successes in city architecture in the U.S., we find them to be the result of sheer planning heresy. If our forefathers had followed the rules, we would not today enjoy the superbly crazy trip up San Francisco's Powell Street in a cable car where strangers meeting for the first time become best friends within two blocks. We would not have this supreme restaurant in Carson City that advertises itself as *not* being in Duncan Hines. The tip of Manhattan and its disorderly skyline would not make our heart skip a beat when our ship, back from abroad, turns the point of the Narrows at dawn—because we would have instead some kind of military skyline of a rhythmic pattern of well-classified boxes à la Le Corbusier.

ART MEETS ARCHITECTURE

It will not be easy to entice art out of the galleries, museums, and private collections, where it has been driven, into man's everyday environment, where it belongs. But the experiences of Architect VICTOR GRUEN in integrating art and architecture prove that it can be done. These experiences were the basis of his recent speech before the Architectural League of New York.

Art and architecture are like two people who haven't seen one another since early childhood and suddenly meet again, acting clumsy and awkward. Their communications are slow and troublesome. They have grown apart over the years. They can't remember each other's faces and characteristics, and both feel upset about the peculiarities which each of them has acquired in the long years of separation.

In architecture, as in the arts, the problem lies not in style. Organic architecture and functional architecture both can be happy with art in their fashion. There is, however, one style of architecture rather dominant in this country, which, in its relationship to the arts, is definitely segregationalist. It is the "*janitorial style.*" Its expressions are guided by the broomstick of the maintenance man who, for example, may decree that all interiors must be painted a dirty-ish brown because they won't show dirt. The janitorial style is opposed to anything which needs cleaning, washing, polishing, or any other type of maintenance.

Behind the janitor stands, of course, the client. In order to change his attitude, we have to use specific arguments. In most cases, we have to convince him that an inspiring environment, that indeed, expressions of art, are good for business. He wants it to be proved to him that the capital investment in art can be amortized quickly and profitably. Inas-

continued on page 192

much as these are facts which can be proven to be true, we are not engaging in any devious activity if we proceed along these lines. We are only living up to our professional duty of giving the client not just what he wants but what he ought to want.

And finally, we have to sell the idea of integrating art with our environment to the public. The public, which for a century and a half has seen art only in the zoos of museums and art galleries, is bewildered and scared if it meets up with the beasts outside their cages. Maybe art, when let out of the cages should, at least for a time, not roar too loudly in order not to create the panicky screaming: "The lions are loose!"

One of the family

Art itself, used to the life behind the iron bars of the zoological gardens, accustomed to being fed by expert keepers in cages labeled as to species, is, when let free, just about as scared as the public. It has forgotten how to live in the open spaces, exposed to wind and weather, to sunshine and the wide blue sky. It is embarrassed to be observed and touched by people engaged in their daily tasks, with all bars removed.

For the inmates of the zoo and the zoo visitors to meet out in the open with full understanding and real mutual enjoyment will take some years, maybe a century. Herbert Read, the English art critic and historian, says: "Art must be regarded as a necessity, like bread and water; but like bread and water, it must be accepted as a matter of course; it must be an integral part of our daily life, and must not be made a fuss of. It should be treated, not as a guest, not even as a paying guest, but as one of the family."

In order for us to be familiar with art, it must become part of our daily environment. In order to make this possible, our environment has to be replanned and reshaped, and this is where the contribution of the architect is overpoweringly important. It is his task to recreate our man-made environment in such manner that it is both fully utilitarian and, to rephrase Corbusier, "full of grace, of smile, and of delight."

Architecture's noblest aim and greatest obligation is to hold body and soul together. We have to stop the anachronistic spreading of cities and suburbia and the destruction of nature and landscape. We have to reshape our cities into places where one can not only work but also really live. We have to unscramble the melee of machines and flesh, of automobiles and pedestrians. We have to bring order into the chaotic conglomeration of the urban scene—and we will have to act pretty fast because soon we will be a nation with 60 million automobiles and no place to go.

Breaking the unsound barrier

I know from my own experience [in the development of the Northland and Eastland shopping centers in Detroit and the Southdale shopping center in Minneapolis —ED.] of the sweat and blood which was involved in the achievement and the tremendous amount of energy which was spent in persuading clients, not only to make the necessary financial investment, but also to risk public criticism. A great amount of work was expended both by the artists and architects in the new experience of cooperating with each other. At first we had to reach, in the beginning stages of the project development, an understanding about our roles; we had to agree on points of basic philosophy as to the character, size, placement, color, materials, and so on. Then there were hundreds of technical difficulties, all arising from the fact that the artists were confronted with a task which was generally foreign to them, of creating work for

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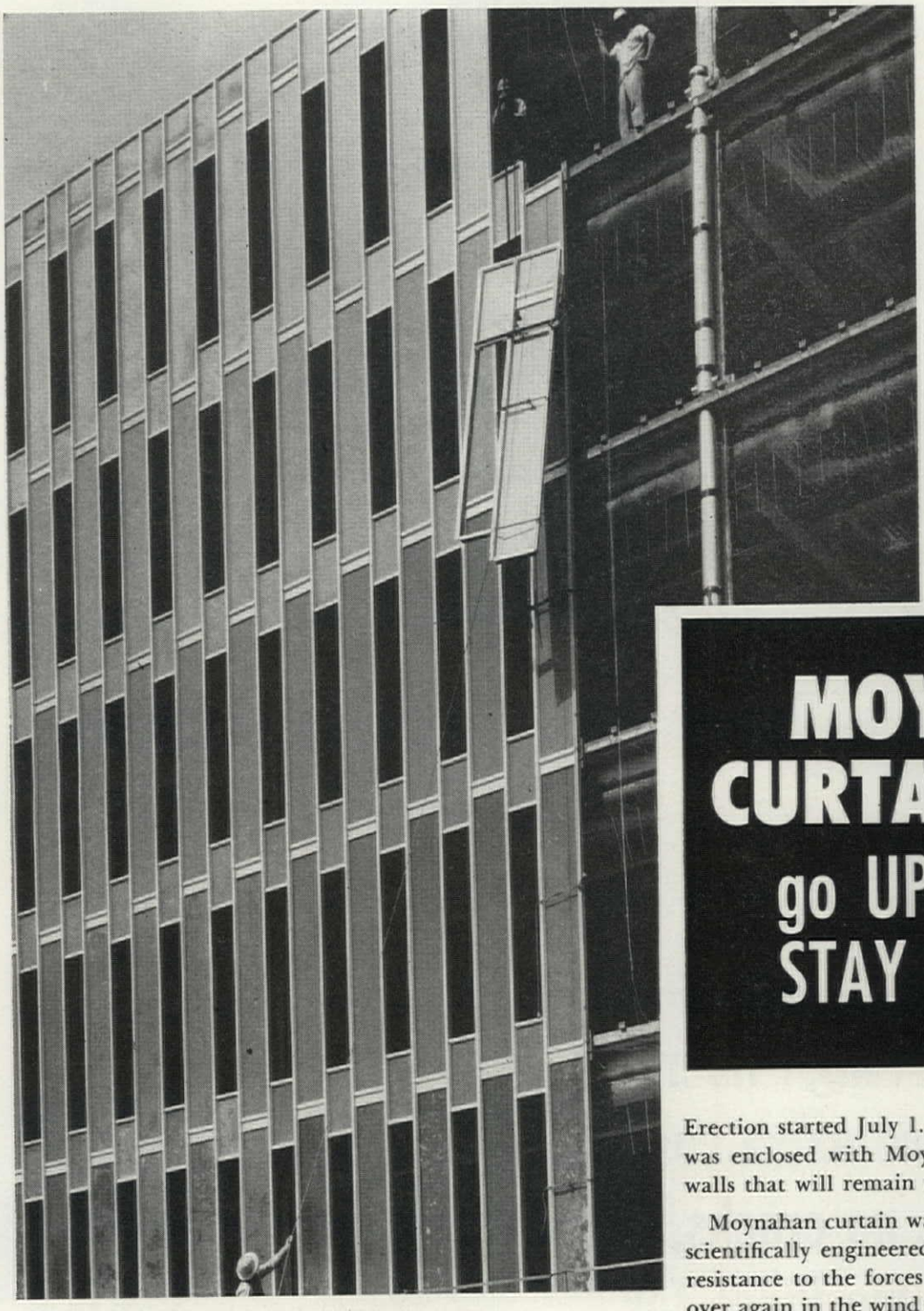

I.B.M. building being erected in Detroit, Mich.
Architect: Pedersen & Tilney of New York.
Gen. Contractor: R. E. Dailey & Co. of Detroit, Mich.

MOYNAHAN CURTAIN WALLS go UP in a JIFFY STAY UP forever

Erection started July 1. Five weeks later the entire building was enclosed with Moynahan aluminum curtain walls . . . walls that will remain weathertight during the years ahead.

Moynahan curtain walls assemble rapidly because they are scientifically engineered and precisely manufactured. Their resistance to the forces of nature has been proven over and over again in the wind tunnel at Flat Rock. Here, wind and water have been smashed against standard curtain walls in excess of 120 miles per hour without any indication of leakage or seepage.

This is why all Moynahan Curtain Walls and component parts are guaranteed to meet or surpass the most rigid building standards, and why you can specify these products with confidence.

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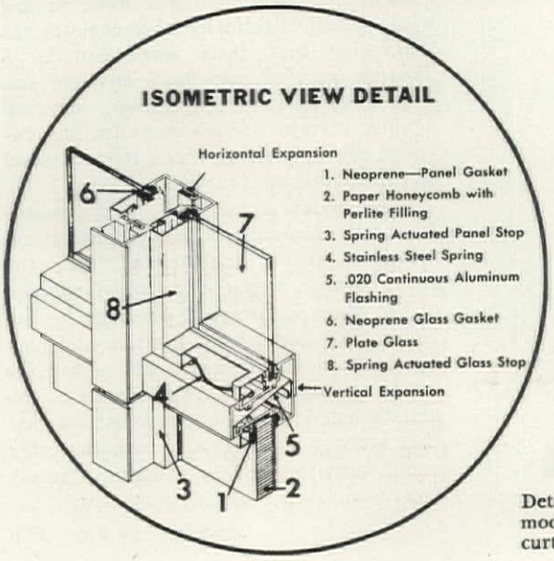

Detail of Moynahan modified series AW curtain wall.

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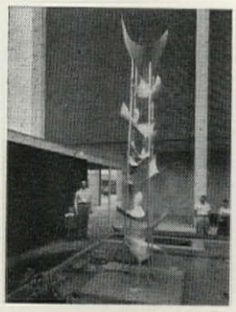


"Marine metamorphosis" by Morris Brose.

Granite "hippo" by William McVey.

Bird cage by R. L. Baumfeld.

outdoors. Close cooperation was necessary to assure proper effectiveness, weather resistance, wind resistance, and proper outdoor scale.

What are the results of the common efforts of the 20 artists participating on these projects, and ourselves? [For some of the results in Gruen's Detroit and Minneapolis shopping centers, see photos, left—ED.]

Nothing earth-shaking has been accomplished. The individual works of art will be judged differently by various people. Some might be regarded as outright corny, and others as too highbrow, but that seems rather unimportant. What is significant is that we have succeeded in creating environments which, freed of mechanized traffic and other disturbing influences, give an opportunity for people on foot to look, observe, and contemplate. We have tried to live up to this newly found chance of bringing people and the arts together. We have done so not only through sculpture and murals, but also through graphics expressions, landscaping, and street furniture.

The concrete results of these efforts were many:

- We have broken through the "*un*sound barrier" which clients had erected in their own minds against the use of anything not purely utilitarian in architecture.

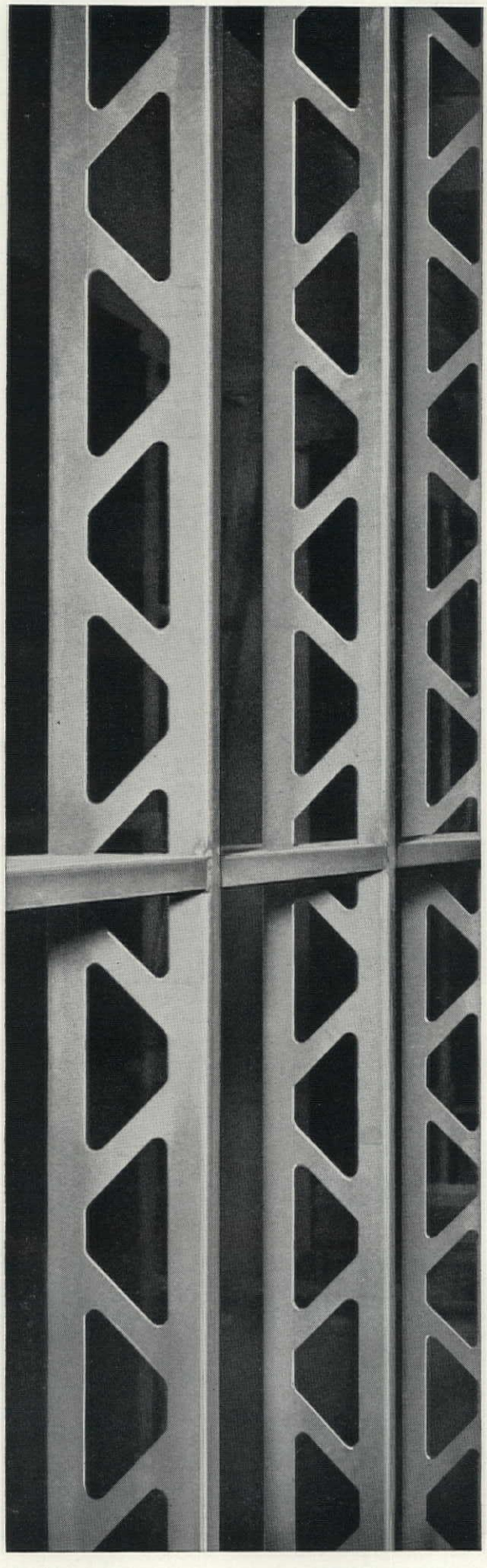
- We have done so in the framework of projects which are true expressions of our society which, whether we like it or not, is a business society, and we have met the problem head-on in purely commercial surroundings.

- We have brought the public on a familiar footing with art. The 25-million shoppers who visit these centers yearly take these expressions of art now in their daily stride. Housewives arrange their rendezvous at the "giraffe" or "the golden trees" and the children climb on the "bear." There is a general naïve enjoyment of the fountains and the sculptures.

- Finally, the artists who have worked with us enthusiastically have come to the realization that their work can be a dynamic part of man-made environment. Thus we have progressed somehow against certain prejudices prevailing between art and society which Herbert Read has described as follows:

"The notion of an art . . . divorced from the general process of social development is an illusion; and, since the artist cannot escape the transformation of life which is always in progress, he had better take stock of his position and play his part in the process. If he believes in the reality and the importance of the artistic activity in itself, he must see that that activity is integrated with the other social activities which constitute the active totality of social development."

END



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WHAT MAKES ONE SCHOOL "BETTER"?

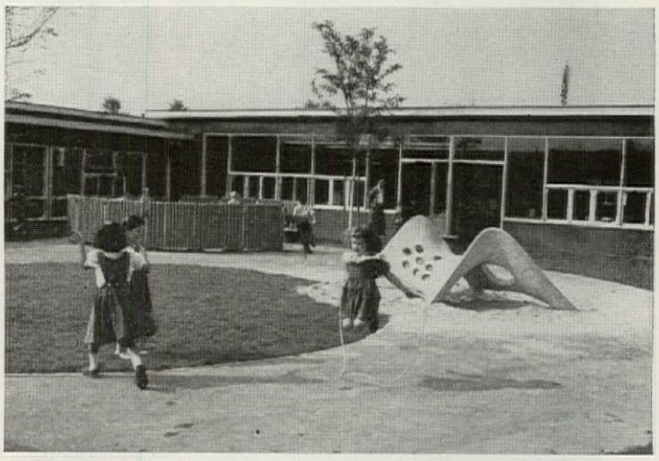
continued from page 106

and the Homestead School are striking. The gross floor areas are quite comparable (23,000 square feet vs. 26,710 square feet), as are the total costs ($430,121 vs. $459,082). The socio-economic factors involved are almost identical, each school having been set in the midst of a fast-growing community characterized by owner-occupied homes in the $15,000 to $20,000 price range. On the other hand, there are some differences, as there are between all schools: Collins has a kitchen for noon meals, Homestead sends the children home for lunch (a fact that has been taken into account in FORUM's cost comparisons); Collins has a school population of 415 in grades kindergarten through sixth, Homestead has 325 enrolled in grades kindergarten through third.

But the big difference between the two schools lies in net educational area. This includes all of the space

Further comparison

Special subjects (music, art, etc.) are taught in two totally different environments. At Homestead (above), which leaves its activities room free for library browsing, pupils are taught music and other skills in their own room by their own teacher. At



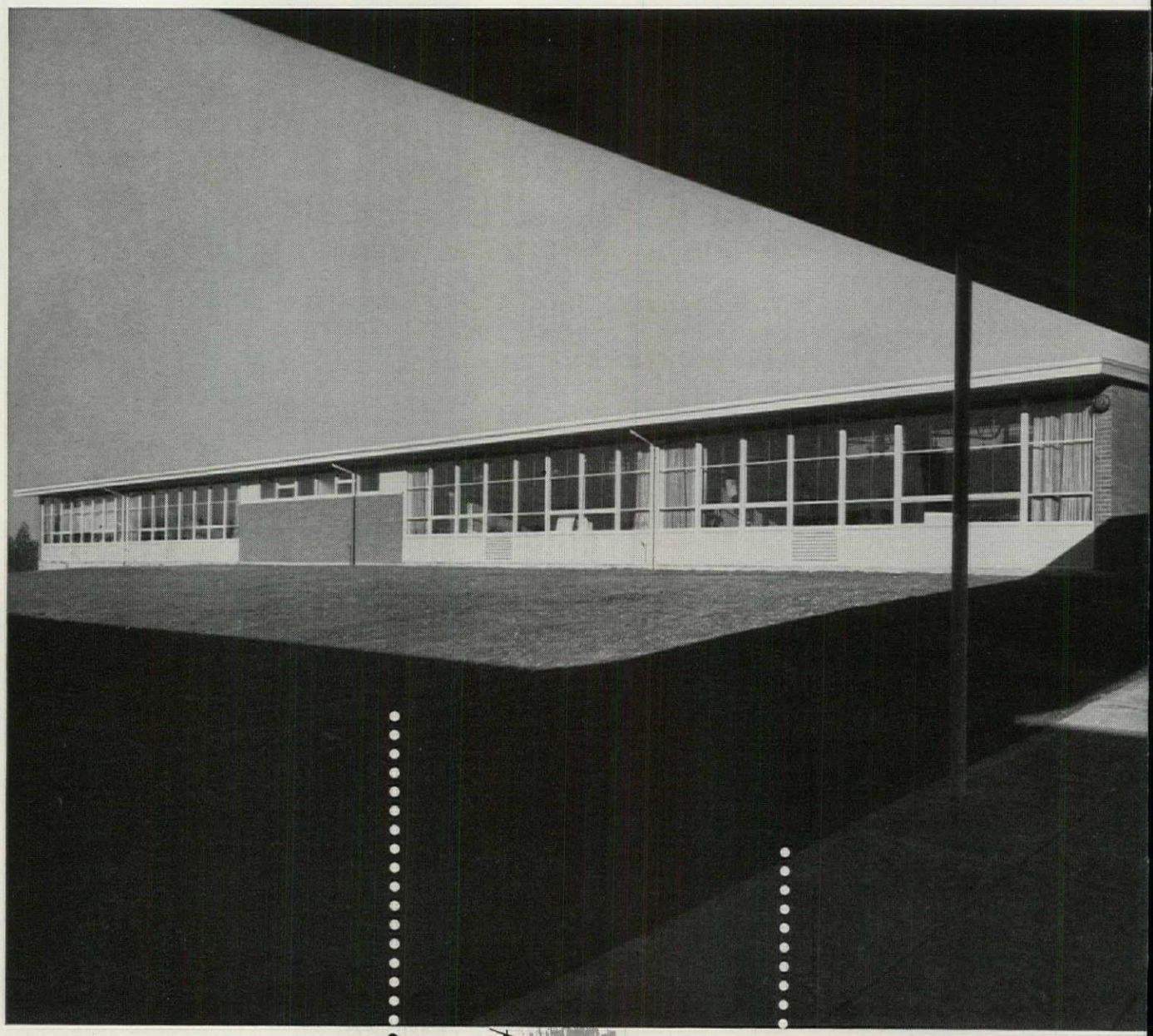
Imaginative play areas outside the Homestead School (above) offer built-in equipment, can double as outdoor classrooms. Collins'

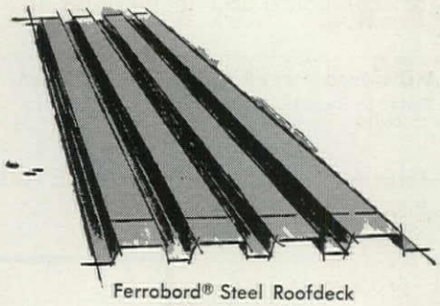
used by children and faculty for teaching, administration, special activities, and recreation; it does not include Collins' kitchen, either school's boiler room, or corridors. Collins, the less generous school, has a net educational area of 12,757 square feet; Homestead's is 17,685 square feet. In terms of area per pupil, therefore, the contrast is between Collins' 31 square feet of net educational area per child and Homestead's astonishing 54. And, in terms of the dollars spent on each educational square foot per pupil, the more "luxurious" school turns out to be the better buy: dividing the total educational area into the total school cost, each foot of educational area works out to an estimated $34 at the Collins School and only $26 at Homestead. This last factor, usually overlooked, provides the truest measure of the two schools' relative economic value.

of excellence vs. mediocrity.

Collins (above), the pupils are taken to a special activities room, where the conditions are even tighter (15 feet by 22 feet, 11½ inches) than those in home rooms.

play fields, by contrast, are bare and formalized, allowing no integration of indoor and outdoor spaces. END





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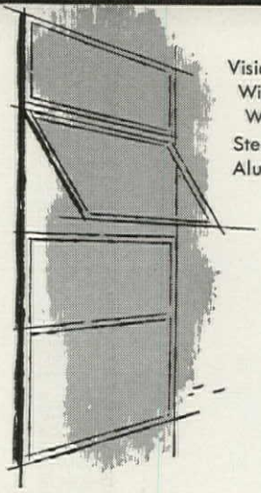

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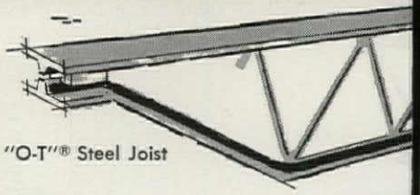

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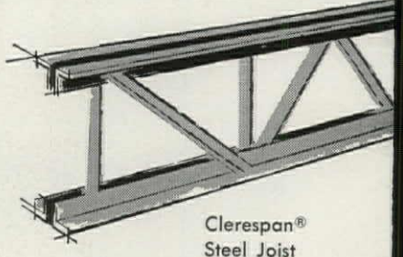

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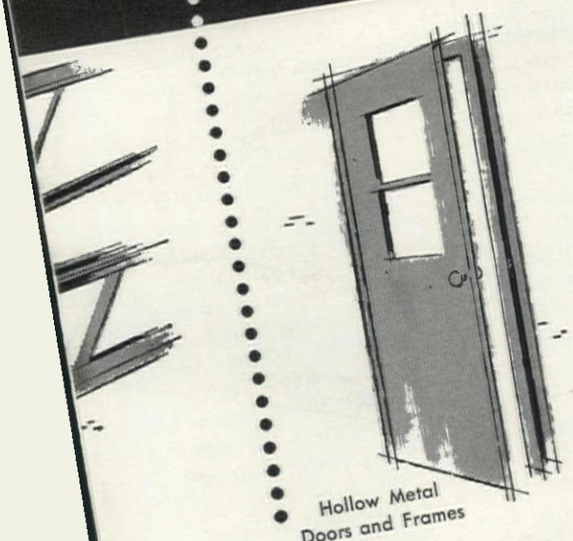

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taking to date. Wolfson freely admits that he is up against one of the toughest combinations of problems a promoter or a builder could face. There are first, the ordinary real estate problems. "As in any commercial office building," says Wolfson, "the first question is: will it rent, and at what price? Then, of course, you have to get tenants, and then mortgage money—a lot of both in this case. Once the land and tenant leases are signed, you've reached the point of no return. You're hooked, and everything you have is on the line."

In Grand Central, Wolfson also has the considerable structural problem of meshing the footings for a 50-story building into the fan of railheads and platforms coming into the station, without disrupting the 500-odd trains that enter and leave daily. This detail alone could cost as much as $4 to $5 million over "normal" foundations for this size of building. There is also the problem of moving 25,000 people, plus visitors, in and out of what is already the most heavily traveled area in town.

To complicate matters further, Wolfson would like to balance economics against esthetics and come up with a truly significant piece of civic architecture for Grand Central City. In the past, Wolfson, like other speculative builders in Manhattan, has produced only buildings which have, in effect, been designed by highly competitive rent schedules, by New York's ancient "wedding-cake" zoning envelope, and by the present widespread fixation on bland, shiny curtain walls. On this job, however, Wolfson decided to get some first-rate design advice. From a list of leading architects supplied by his own longtime architect, Richard Roth, Wolfson picked the two top names and hired as consultants Walter Gropius, former dean of Harvard's School of Design, and Pietro Belluschi, present dean of MIT's School of Architecture.

Roth's original design, which was tailored to Wolfson's specification of 3 million square feet of rentable space. is undergoing further study. The first counterproposal by the new consultants was for a slimmer, more freestanding tower with slab sides faceted into a shape that in plan resembles an elongated hexagon or lozenge. But the Gropius-Belluschi plan provided for only 1.5 million square feet, which Wolfson's figures show would be uneconomical on this highly valuable site. Present studies are being made on a compromise of some 2.5 million square feet (which would still top the RCA building's 2.3 million square feet).

The search for the ideal combination is proceeding. Yet, like other realtors, Wolfson is still genuinely puzzled about how to integrate good architecture with good business. "In a heavily built-up place like New York," he says "doing anything to improve the city is so terribly, terribly costly. Our 'wedding cakes' are not the architects' fault, but the fault of competitive economics and New York zoning, and the builders who must work within their bounds."

Perhaps Wolfson will not be able to bridge the gap between New York's tight economics and the great architectural spaces and structures the city so sorely needs. Perhaps Grand Central City, if it is built, will have to be an architectural compromise. But chances seem good that it *will* be built, for as even one skeptic about the project concedes, "When Wolfson starts something, he usually succeeds." END

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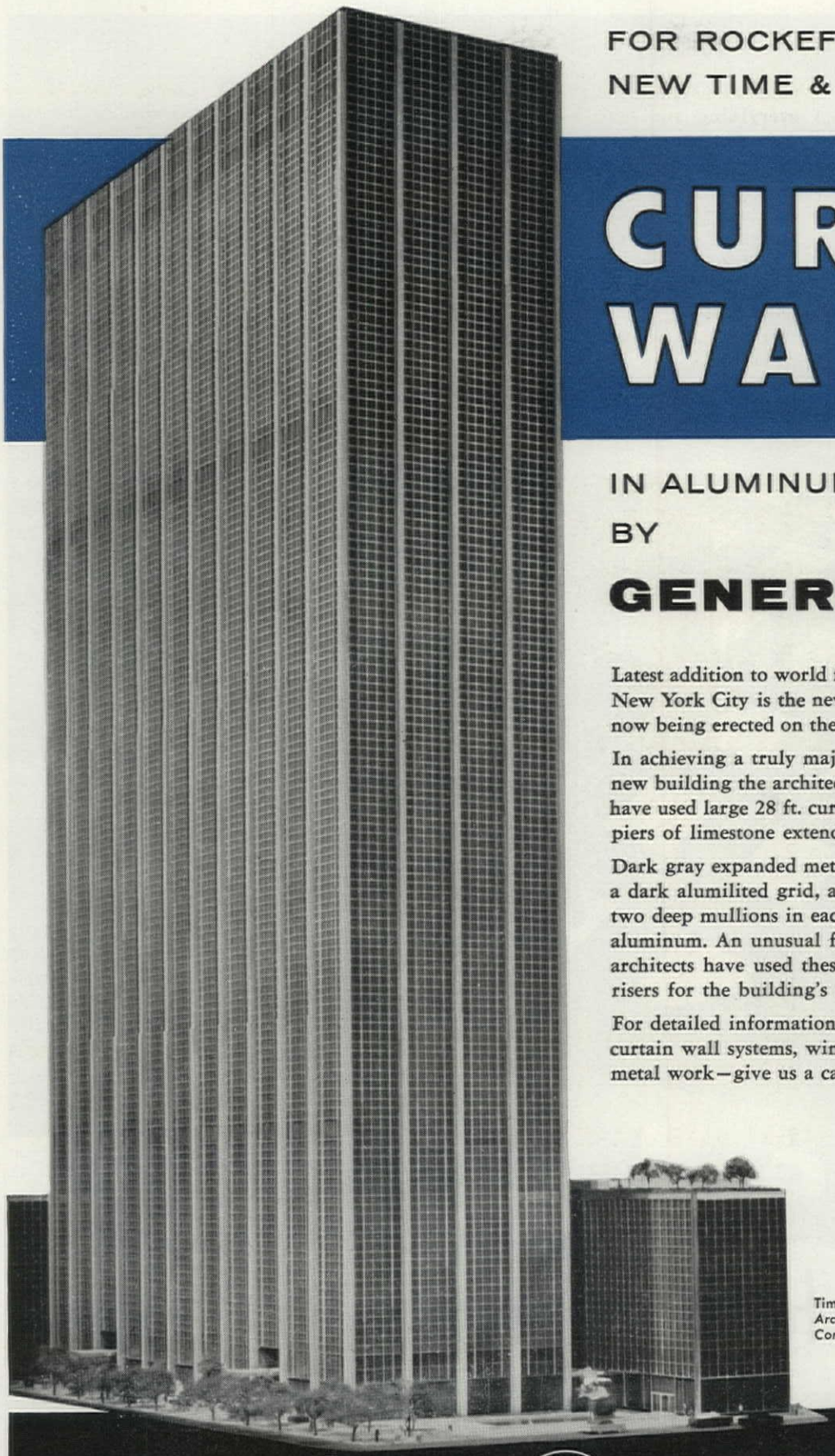

Time & Life Building, New York, N. Y.
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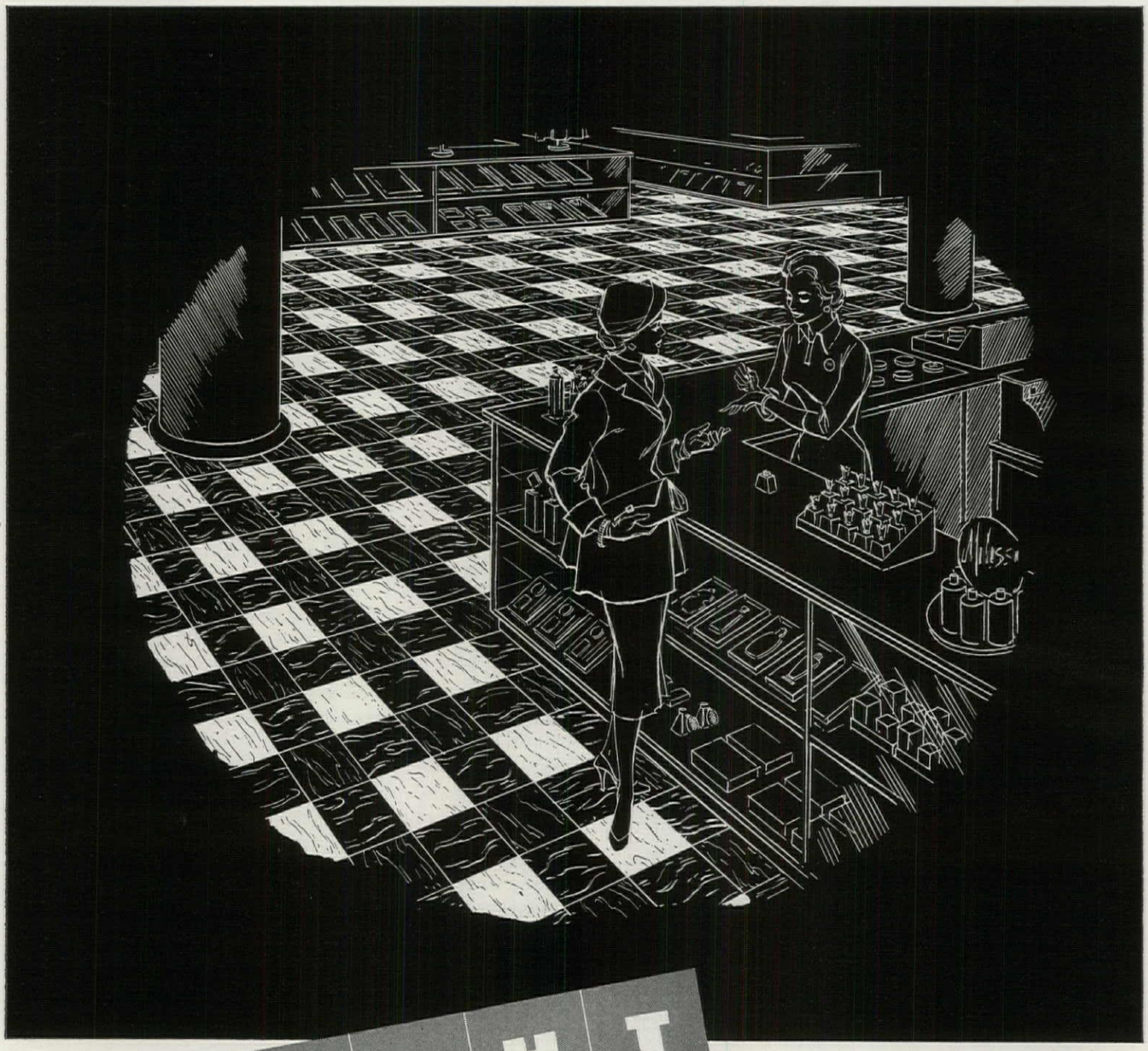

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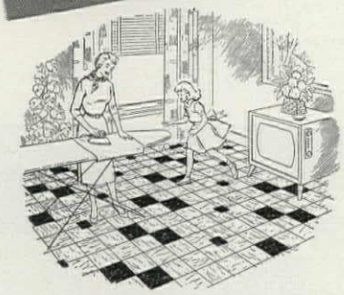

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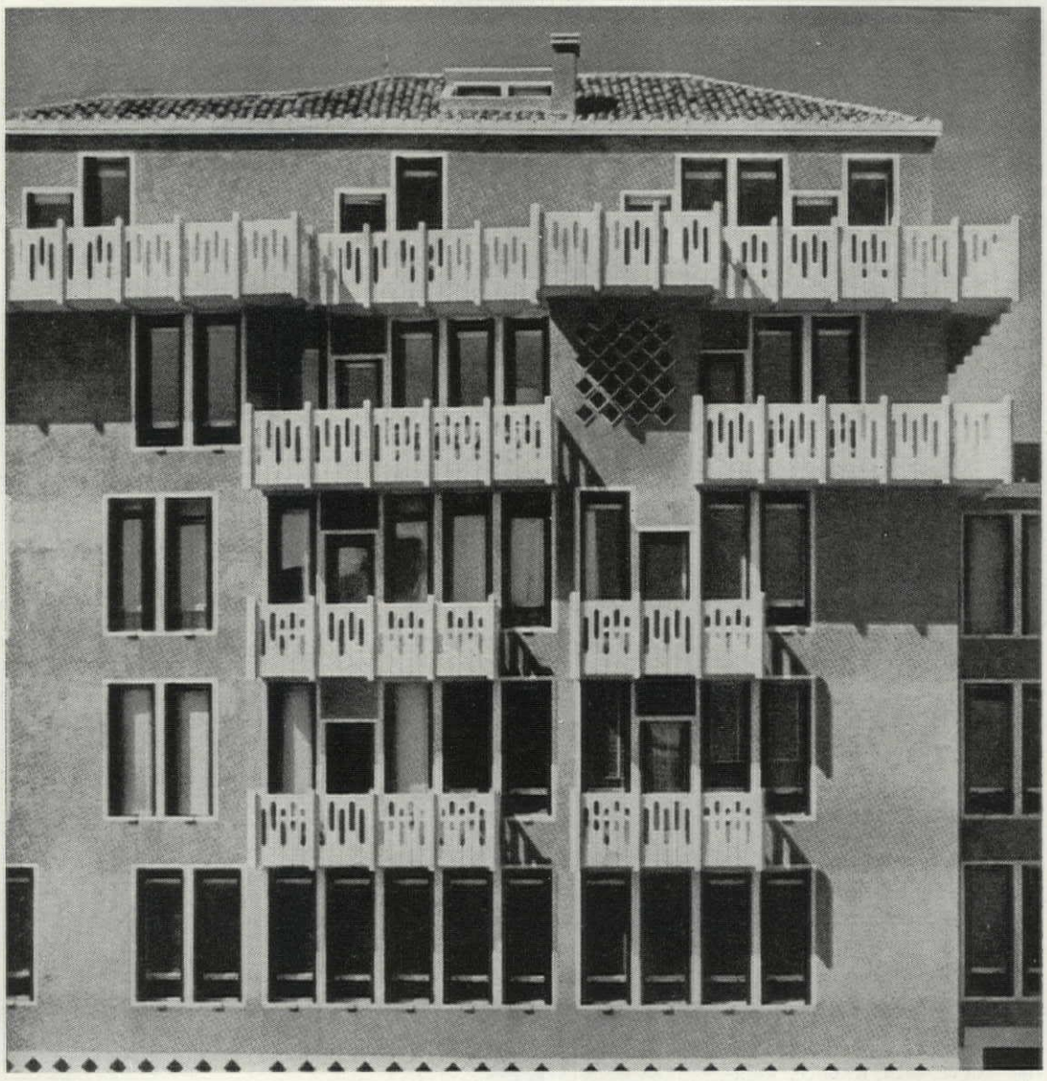
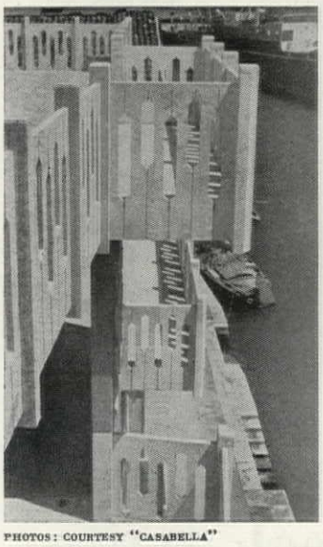
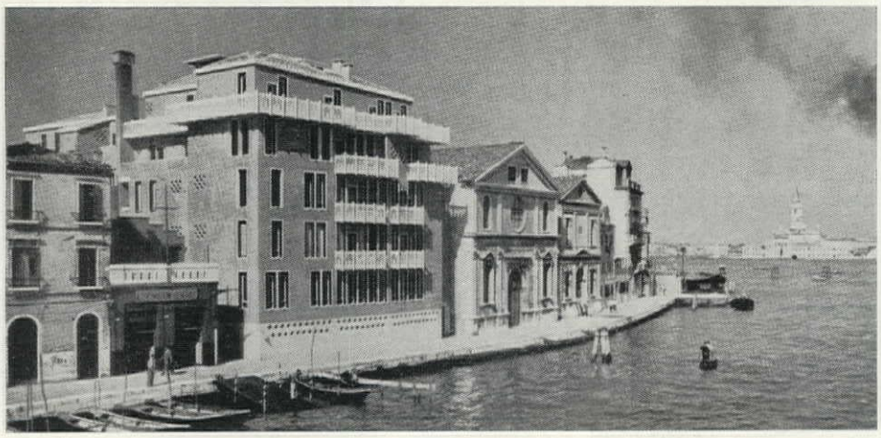




PHOTOS: COURTESY "CASABELLA"

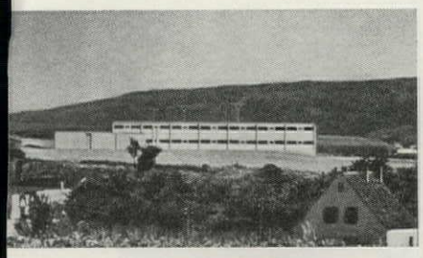


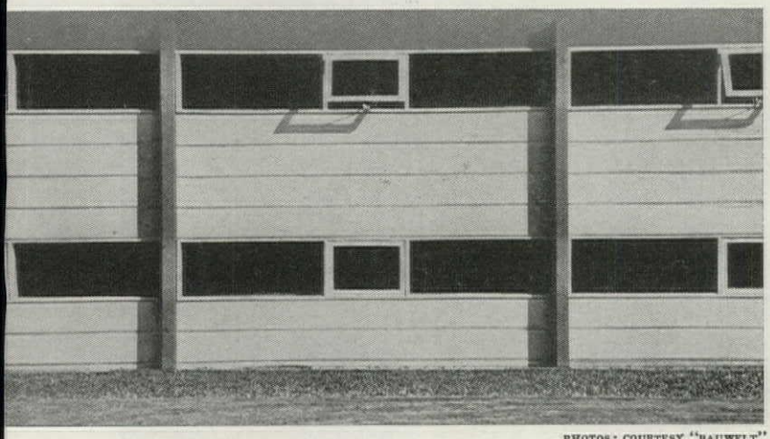
HARMONY IN VENICE

At a bend in Venice's Giudecca Canal, Architect Ignazio Gardella has built a villa that offers an unusual solution to the problem of relating a contemporary building to more venerable neighbors. Whereas the eighteenth-century church next door is balanced and serene, the villa is irregular and lively (see details above and far left). But the villa is not so offbeat as it first appears: it is painted in traditional colors (brick-red plaster, white trim, green shutters), it repeats the church's tall windows, and, more importantly, it works as a mediator between the classic church and the neighborhood's more raffish buildings (left).

GERMAN ECONOMY

Prefabrication in Germany has reached the point where a distinctive electrical parts factory can be built for minimal cost with the aid of imaginative architects. Using prefabricated masonry wall and roof panels (below) to cover a simple steel skeleton, Essen Architects Schulze-Fielitz, von Altenstadt, and von Rudolff devised a basic factory for $1.50 per square foot (not counting foundation and heating), 25 per cent below average cost. Yet the factory fits winsomely into the rural landscape (left).

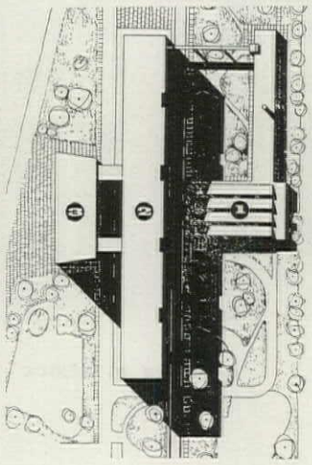




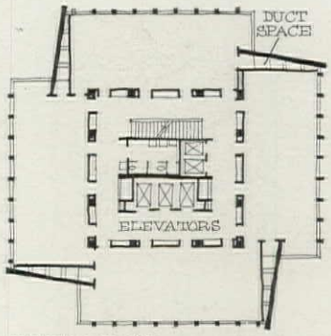
PHOTOS: COURTESY "BAUWELT"

HUNGARIAN BRUTALITY

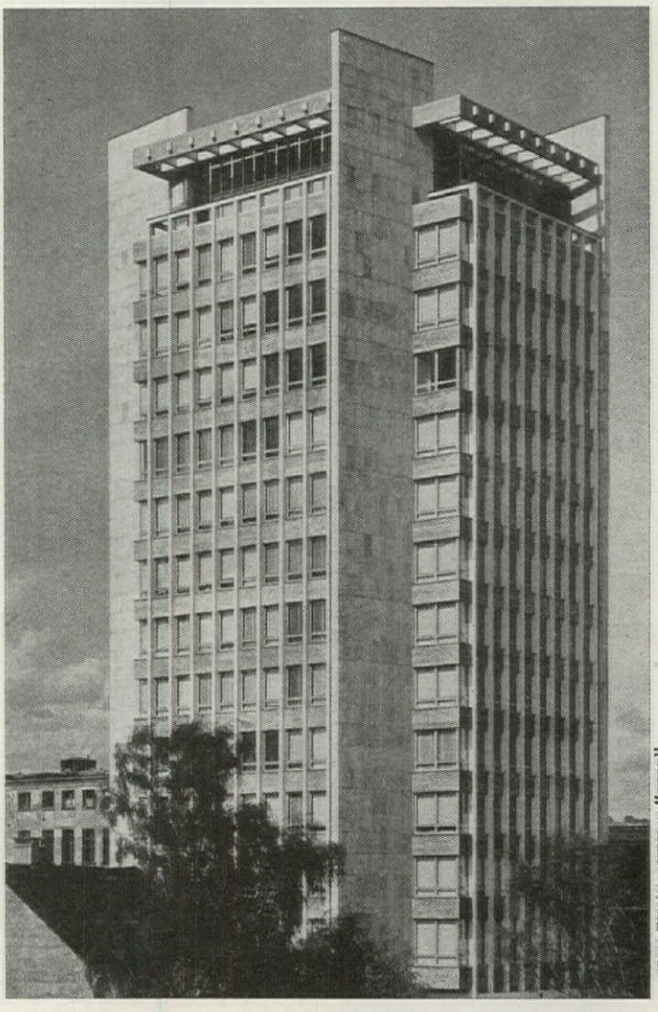
Beyond Budapest, 45 miles from the Soviet border, stands a new tobacco processing plant that, in its formidable appearance, tells much about Hungary's current architectural style. The planner of the building, Rimanóczy Gyula, designed it for three operations: tobacco storage (1), curing and fermentation (2), worker education (3). He then constructed the plant with a bare, reinforced concrete frame and with cladding so indiscriminately brutal that it might conceal anything from a prison to an old-fashioned gasworks.



COURTESY: "MAGYAR EPITOMUVESZET"



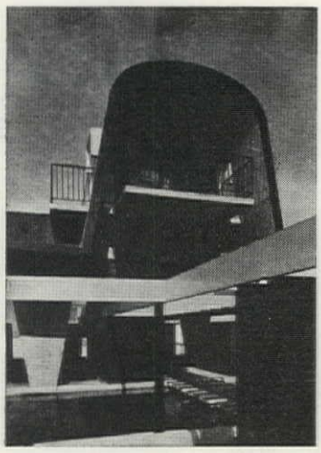
TYPICAL FLOOR



PETER HEMAN, COURTESY "WERK"

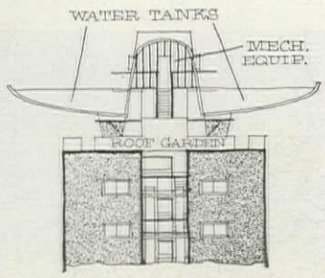
SWISS FINS

Like Frank Lloyd Wright's famous Price Tower, this 15-story office building tower for the J. R. Geigy Company (chemicals) in Basel, Switzerland has a strongly textured look and is marked by stabilizing fins that jut out from the building's mass. But unlike the Price Tower whose interior is ingeniously divided into living and working spaces, the design of Swiss Architects Martin and Karl Burckhardt offers a more standard floor (see plan, top). Also, the fins of this building do not radiate out from the center, but are actually wind-bracing devices which are shaped to contain air-conditioning ducts and other necessary services.

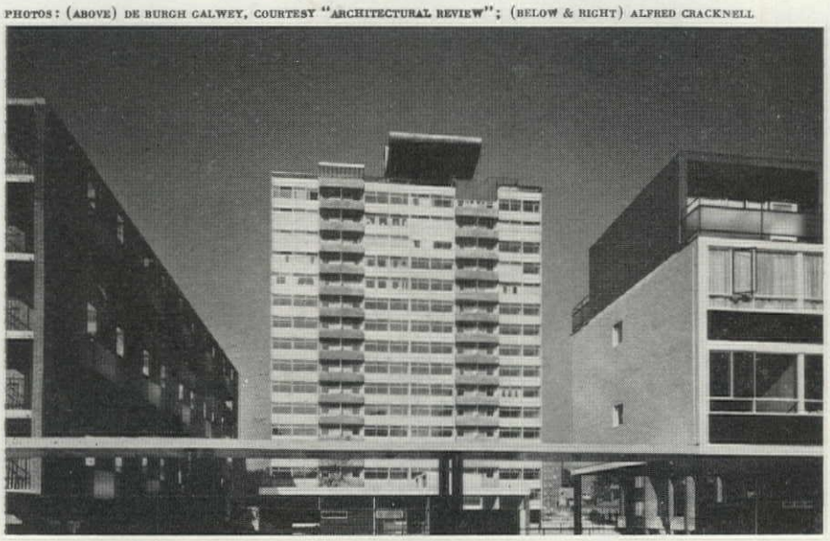


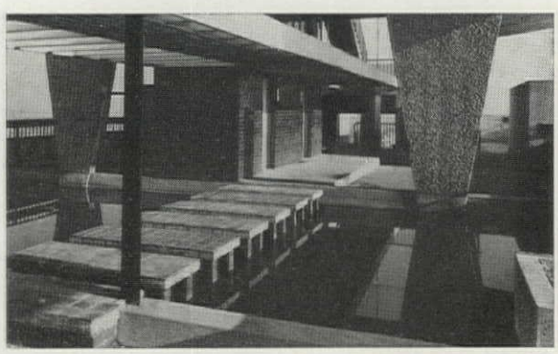
WINGS OVER LONDON

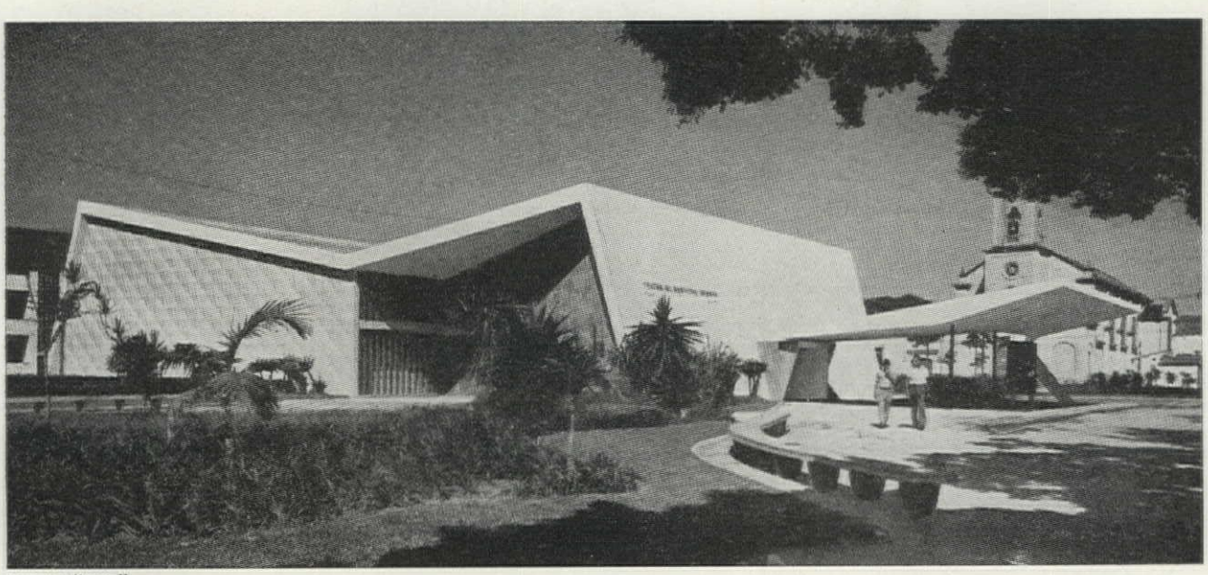
The upswept roof line and cantilevered balconies of London's newest apartment building, Great Arthur House (below), would appear sprightly in any city, but in London they look downright shocking. For the city's building codes have long militated against the building of anything that is experimental, either esthetically or structurally. Architects Chamberlin, Powell & Bon got their design approved on the basis that everything was functional (the wings on the roof contain two 5,000-gallon water tanks —see sketch, right; the balconies help stabilize the inner cross walls). Functional or not, the building offers about the most delightful view (from the rooftop "Bellvedere"—left) and roofscape (right, below) to be found in London.



PHOTOS: (ABOVE) DE BURGH GALWEY, COURTESY "ARCHITECTURAL REVIEW"; (BELOW & RIGHT) ALFRED CRACKNELL



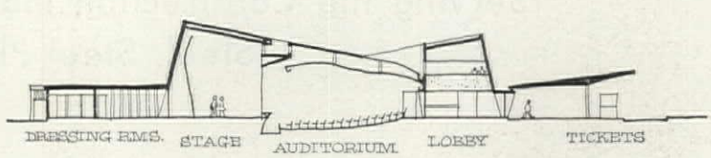




COURTESY "BOUW"

FRAMED IN RIO

The renowned Brazilian Architect Affonso Eduardo Reidy has designed an intimate theater in Rio de Janeiro that, in contrast with his usual gigantic, undulating structures, is quite modest and precise. He has made the difficult job of bringing a theater's many elements under artistic control look easy by putting the three major elements under a simple, M-shaped concrete frame and by sheathing the sides in textured wood and aluminum panels. Out front is a canopy which mirrors the theater's dominant form. END



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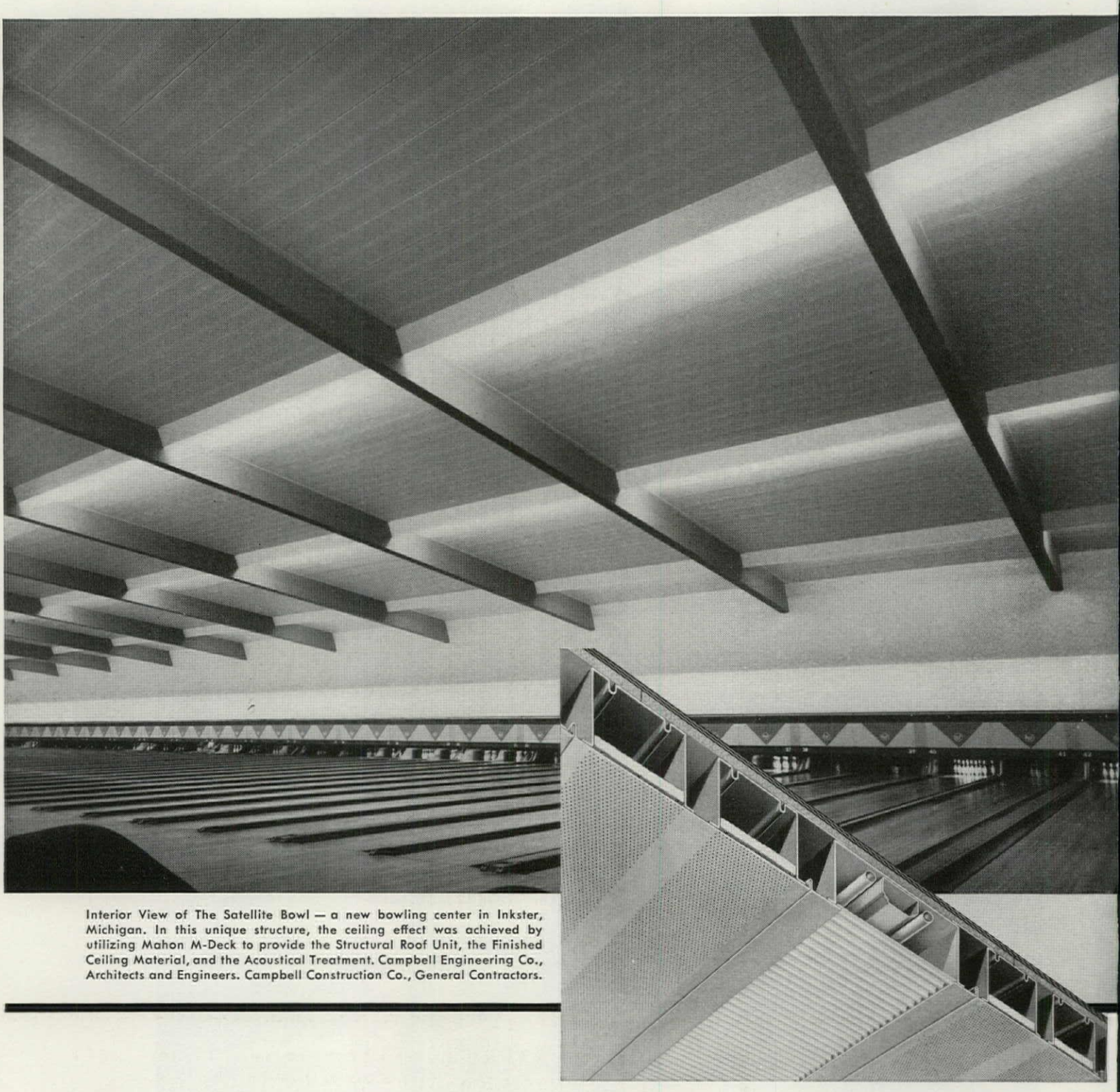

Interior View of The Satellite Bowl — a new bowling center in Inkster, Michigan. In this unique structure, the ceiling effect was achieved by utilizing Mahon M-Deck to provide the Structural Roof Unit, the Finished Ceiling Material, and the Acoustical Treatment. Campbell Engineering Co., Architects and Engineers. Campbell Construction Co., General Contractors.

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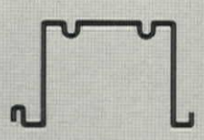
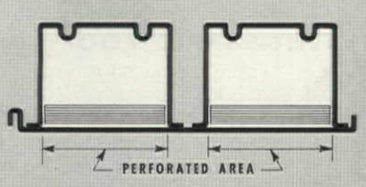
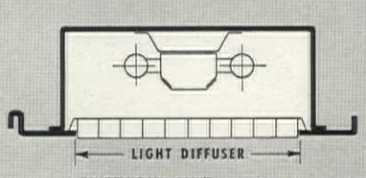


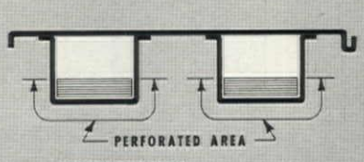
SECTION M1-OB
OPEN BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M1T (Troffer)
DEPTH 6" or 7½"



SECTION M2 (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

At Left: Cross Section of Long Span M-Deck Combined Roof-Ceiling with Troffer Lighting.

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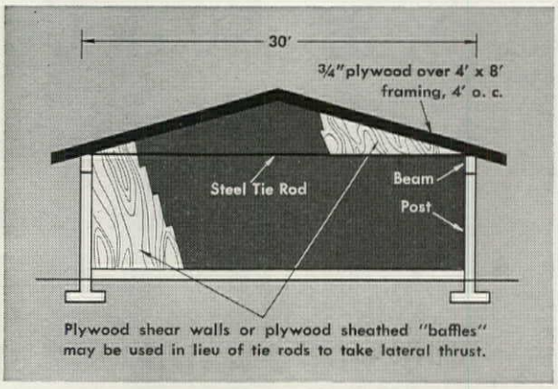
new approaches to structural design with fir plywood



Tilted roof planes (each a rigid plywood diaphragm) provide mutual support at ridge, permit long, clear spans. Diaphragm action transfers horizontal thrust to steel ties or fir plywood end walls.

FIR PLYWOOD

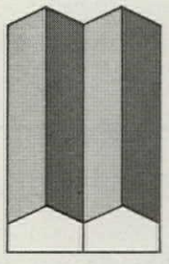
TENT-SHAPED ROOF UNITS

ARCHITECTS AND ENGINEERS:
John Lyon Reid & Partners, San Francisco, Calif.
Partners in Charge: William A. Gillis, A. I. A., and Dr. Alexander Tarics, Structural Engineer

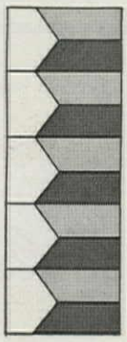
THIS folded plate plywood roof system developed for an expandable community school offers a straightforward solution to the problem of obtaining a high degree of design flexibility at low cost.

The basic tent-shaped canopy units may be placed separately or combined in series or rows to cover any given area. With supports needed only at wide intervals, walls and partitions may be arranged or re-arranged as needed.

Structurally, the system relies on the outstanding diaphragm strength of the plywood sheathing. The roof planes—each a rigid plywood diaphragm—are inclined to form a giant inverted "V" beam, eliminating posts or trusses normally required for support under the ridge. Because the roof is self-supporting at the center, rafter spans can be nearly doubled, e.g., up to 50 feet with 4 x 14's on four foot centers. Diaphragm action also permits ties and supporting columns to be placed at wide intervals.



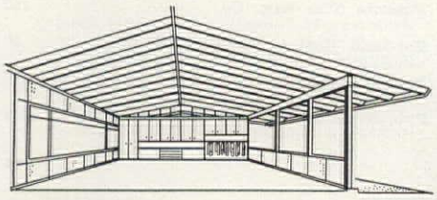
Basic units can be arranged in series or rows as needed



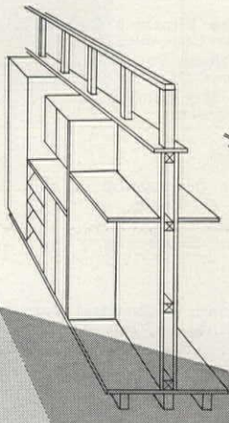
ONE OF A SERIES FROM "SCHOOLS OF THE FUTURE"

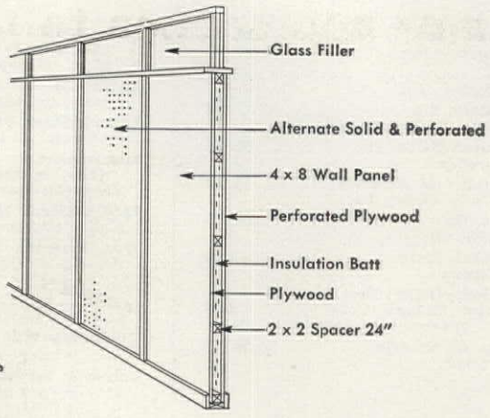
. . . a portfolio collection of outstanding designs by six leading architectural firms. Material includes details on folded plate roof system shown above. For free copy, write (USA only) Douglas Fir Plywood Association, Tacoma, Wash.

Also write for information about design and engineering consultation services.



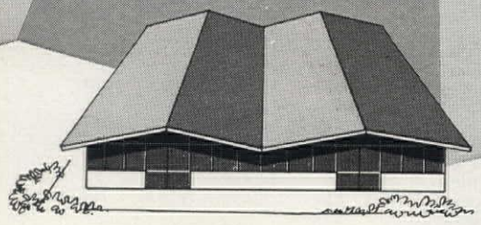
The interior may be left open for classroom uses
. . . or divided into smaller areas by movable partitions



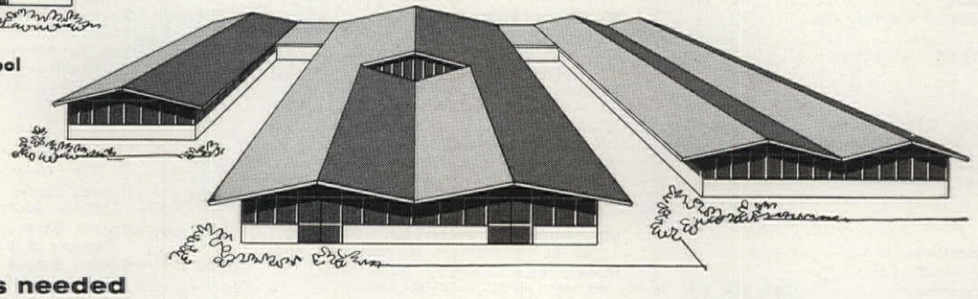


FOLDED PLATE ROOF

PROVIDE MAXIMUM FLEXIBILITY FOR AN EXPANDABLE SCHOOL

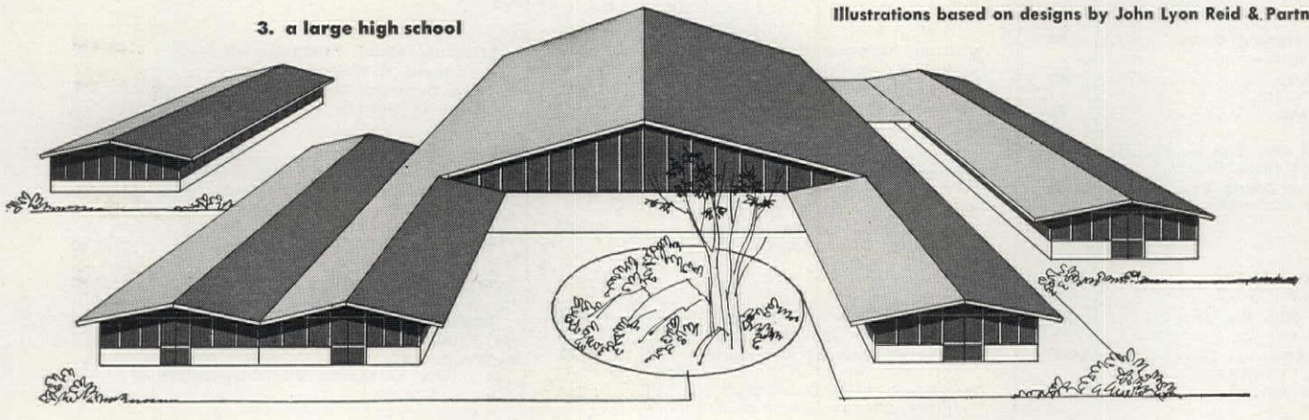


1. a small elementary school



Units can be added as needed

3. a large high school



Illustrations based on designs by John Lyon Reid & Partners

Ad Index

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