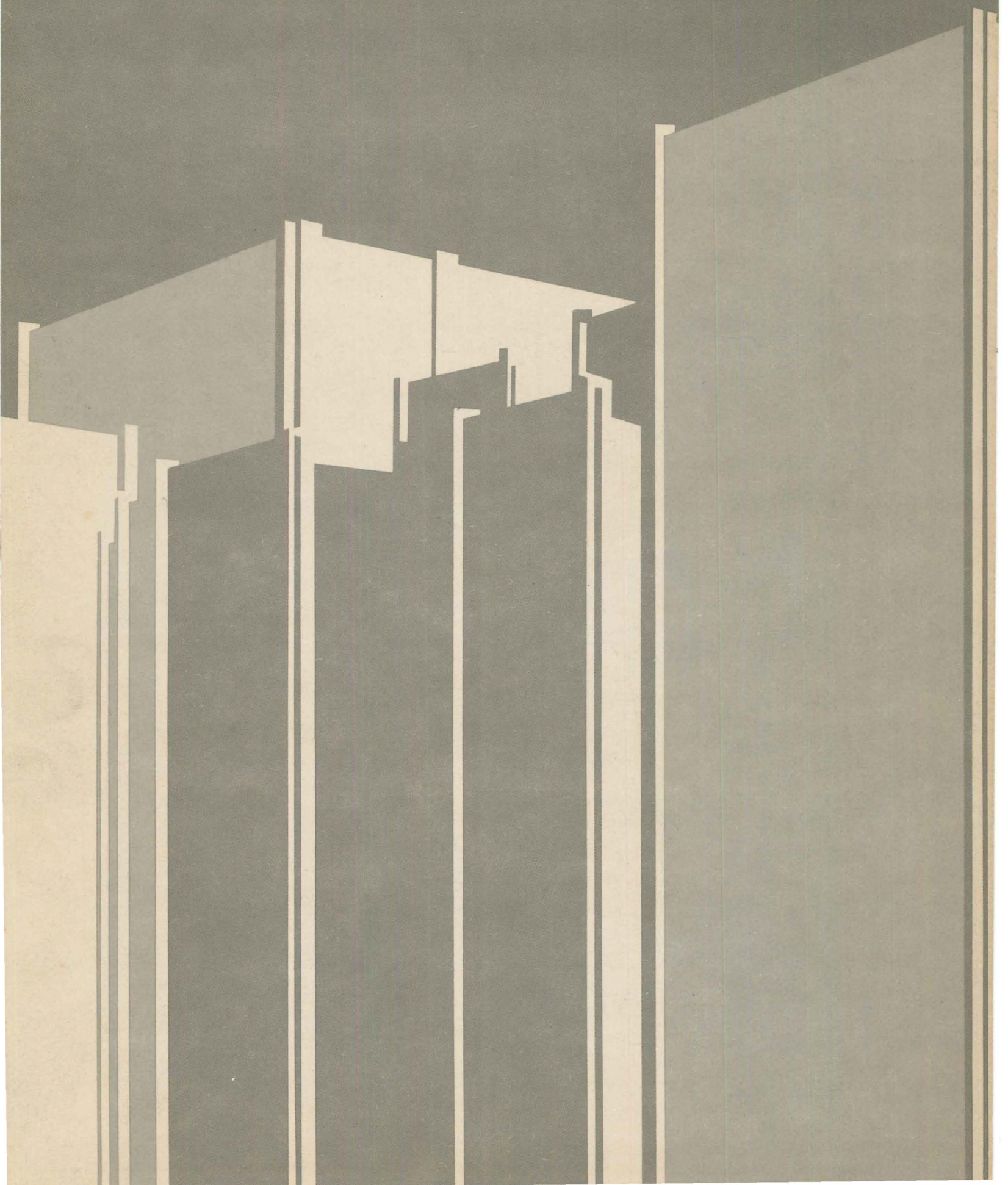
RCHITECTURAL FORUM THE MAGAZINE OF BUILDING DECEMBER 1963

FORUM



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PUBLISHER'S NOTE

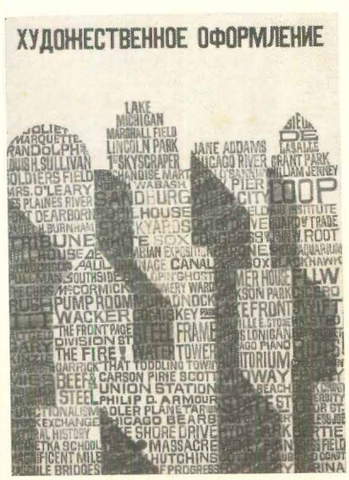
Although architectural criticism is a part of the editorial bill-of-fare of almost every issue of FORUM, in the October issue it was the main course. The editors that month (inside a road sign cover—see cut) devoted 34 pages to a critical appraisal of the effect of transportation planning on the life, form, and pattern of American cities.

Apparently October's main course was appetizing, for the editors have since been swamped with readers' congratulatory letters (see page 47) and requests for reprints. By mid-November more than 4,000 reprints had been ordered. While they last, extra copies are available to anyone who would like to put this comprehensive document into the hands of other people who influence the destinies of our cities. (The price is 50 cents a copy.)

Speaking of editorial by-products, FORUM's current series of ten posters entitled "Great Architecture for the Sixties" has so far this year been hung in 503 places, including museums, libraries, department stores, bank lobbies, and even a telephone employees' credit union. The latest request for the posters, produced by the editors to encourage public acceptance of good architecture, came from the U.S. Information Agency. Accompanying the Government's check for $5 was a letter stating that "the posters were highly recommended to us and will be used for display in American exhibits in Moscow."

This poster exhibit will be the second representation of FORUM behind the Iron Curtain. Already in Russia is a graphic arts exhibit, sponsored by the U.S. State Department, which contains two FORUM covers. The more recent of the two is Artist Ray Komai's wordy representation of the Chicago skyline which introduced FORUM's May, 1962 issue on the architectural renaissance of that city (see cut). Incidentally, those Russian hieroglyphics spell "graphic arts."

It is with mixed emotions (pride and humility) that FORUM's editors view the wide ranging of their influence beyond the covers of their magazine, the minds of their 62,500 subscribers, and the shores of their country.—J.G.H. JR.



STRENGTH OR BANALITY? 68
Religious architecture may need a 20th century Reformation

SEVEN NEW CHURCHES 74
They restate the old virtues of simplicity and power

SUBURBANITES VOTE FOR PLANNING 84
A New York regional survey brings in all the right answers

ROMANCE AND THE LEGISLATURE 86
Edward Durell Stone weaves magic into a Carolina capitol

WHAT IT TAKES TO BE A CLIENT 94
No. 3: How to turn a problem into a set of building plans

MANY-FACETED SETTING FOR THE ARTS 98
Indianapolis' Clowes Hall makes high drama of theater-going

NEW PATTERNS FOR URBAN LIFE 106
Two authors explore ways to restore sanity through privacy

MONASTIC PREP SCHOOL 108
Bold structures match the mood of a famous modern abbey

WELL-BALANCED SUNDAY SCHOOL 114
A graceful addition saves space for a suburban temple

WHAT HAPPENED AT PHILHARMONIC HALL? 118
The technology of acoustics goes through a celebrated test

5 **NEWS**
25 **PROJECTS**
47 **LETTERS**
63 **FURNISHINGS**
67 **EDITORIAL**
124 **EDITOR'S NOTE**
129 **BOOKS**
149 **PRODUCTS**

Cover: Drawing by Pieter Brattinga, G.K.F., from a detail of Indianapolis' Clowes Hall (see story page 98)

48 Editorial, subscription, and advertising data.
160 Advertising index.

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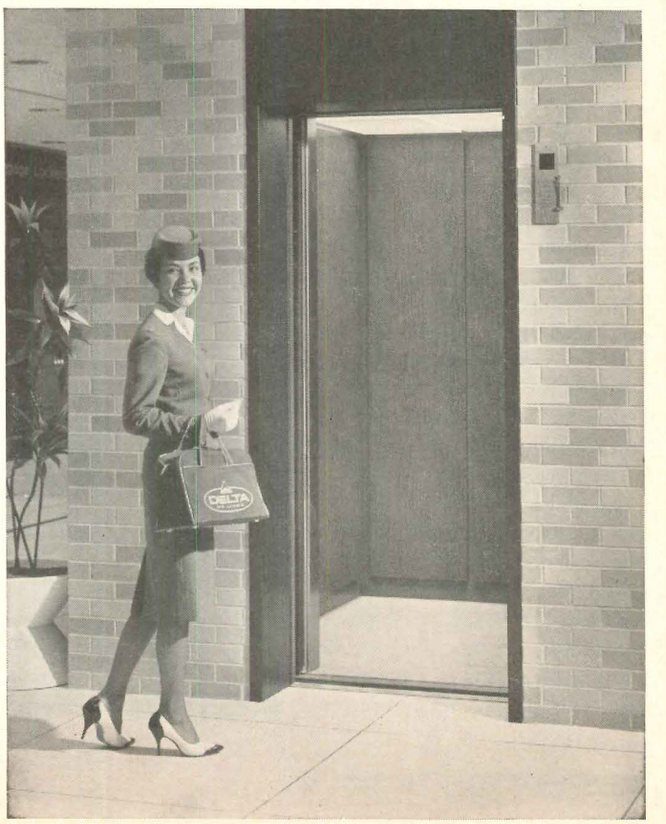

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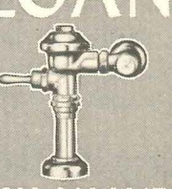

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No sign of building volume falling (below)
NAREB meets in NYC (page 7)
Penn Station under the axe (page 9)
An "education center" for Providence, R. I. (page 11)

EXPERTS SEE A CONTINUING BUILDING BOOM

As 1963 draws to a close, most economists agree that the nation's economic outlook is good, and that the building industry will have another big year in 1964. The figures for the first nine months of construction surely point that way: total dollar volume of new expenditures rose by nearly 5 per cent, with building a healthy 8.6 per cent ahead of the comparable period in 1962 (see chart below).

Forecast: some oversupply, causing many wary investors

Amidst the cheerful forecasting, however, there are words of caution. New York University Economist Dr. Jules Backman warned real estate investors a few weeks ago that "we are in the later, not in the earlier, stages of an expansion. You can no longer count on being rescued from investment mistakes by general price inflation or by shortages which put a premium on space which otherwise might not be considered desirable. . . . Markets are now more fully supplied, and in some instances, oversupplied."

The Mortgage Bankers Association of America's 50th convention in San Francisco reinforced this point. Milford A. Vieser, chairman of the finance committee of The Mutual Life Insurance Co., told his audience that "the point has been reached when investors should increase their caution. 'Yield for yield's sake' certainly cannot be taken as a safe working principle." Vieser noted that the present ample supply of money for mortgage investment will continue, but warned: "Credit terms today are more liberal than they were a few years ago. It is also true that, at some point, liberalization becomes deterioration; many opinions have been expressed that this point has already been reached." He added the future might well see "a gradual, moderate, but definite increase" in mortgage interest rates.

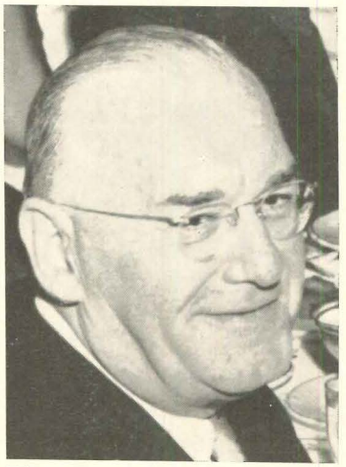
Other observers pinpointed the building categories that might constitute the most hazardous investments now: apartments, office buildings, hotels and motels, shopping centers. Still, the figures for 1963's first nine months show apartments, once again, lead all building categories—up almost 41 per cent. There has been some overbuilding in luxury apartments —notably in New York, Chicago, Los Angeles, and Philadelphia. This fact has been taken into consideration by the National Association of Home Builders, which recently predicted that next year apartment building will drop by 5 per cent (to 525,000 units from 1963's 550,000). The NAHB forecast, however, runs contrary to many others, including FORUM's own (Nov. '63).

One apartment expert told the National Association of Real Estate Investment Funds recently that he was, on the whole, optimistic. Said Chicago Investor John W. Baird: "With the exception of some suburban locations, the present renting conditions indicate an increasing demand for well-located, newer apartments, particularly close to the central city." NAREIF member Boyd T. Barnard sharpened the situation still further: "Our problem ahead," he said, "lies in meeting the demand of middle-income groups at prices they can afford."

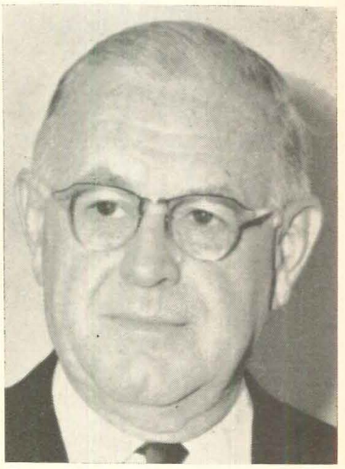
Somewhat surprisingly, the volume of office building registered a substantial increase in 1963's first three quarters: up 10.2 per cent. In this category, too, there has been much talk of oversupply, as spotlighted by high vacancy rates (*News,* Sept. '63). Nonetheless, Barnard commented: "Our anticipated population increase is encouraging in connection with the office building industry. And the changing character of our economy calls for more service business in relation to production, which in turn means provision for office functions. . . . In the 20 or more cities which the Central Business District Council of the Urban Land Institute has studied, we found a lack of modern office facilities in each one. We recommended building one or more office buildings, and where this was done, the projects were successful and caused other improvements to take place."

According to recent surveys by the Department of Commerce and Standard & Poor's, industrial building should do better in the

CRISTOF STUDIO



Vieser



Barnard

NEW CONSTRUCTION EXPENDITURES, FIRST 9 MOS. 1963 VS. 1962

	(millions of dollars) 1963			1962	% Change
	Private	Public	Total	Total	in Totals
BUILDING CONSTRUCTION					
Industrial	$2,132	$323	$2,455	$2,376	3.3
Office and warehouse	2,005	....	2,005	1,820	10.2
Store, restaurant, garage	1,623	....	1,623	1,808	—10.2
Religious	706	....	706	728	—3.0
Educational	471	2,257	2,728	2,694	1.3
Hospital and institutional	771	331	1,102	976	12.9
Social and recreational	470	154	624	686	—9.0
Public administrative and service	....	591	591	513	15.2
Apartments	3,900	250	4,150	3,007	38.0
Hotel, motel, dormitory	933	251	1,184	1,149	3.0
All other building	1,619	1,292	2,911	2,738	6.3
TOTAL	$14,630	$5,449	$20,079	$18,495	8.6
HOUSE CONSTRUCTION	14,900	93	14,993	15,077	—0.6
OTHER CONSTRUCTION	4,069	8,179	12,248	11,537	6.2
TOTAL CONSTRUCTION	$33,599	$13,721	$47,320	$45,109	4.9

SOURCE: BUREAU OF THE CENSUS AND MILES L. COLEAN ESTIMATES BASED ON CENSUS DATA.

continued on page 7

Atlanta Towers, 22-story, 120-unit apartment. Aeck Associates, Inc., Architects.

Why Atlanta Towers went total-electric... by General Electric

The new 120-unit Atlanta Towers is the latest total-electric Gold Medallion project of developer A. B. Simms, and is equipped by General Electric from its zone-electric heating and cooling units to its modern electric kitchens.

Mr. Simms gives the following reasons for building Atlanta Towers to Gold Medallion standards and selecting General Electric's equipment and program: **1. Reasonable initial investment. 2. Economical operating costs. 3. Flexibility in performing maintenance. 4. Individual room control for heating and cooling. 5. Wide range of equipment and appliances which can be included as standard equipment in each apartment. 6. Valuable electrical system design counsel. 7. Promotional support to speed rentals.**

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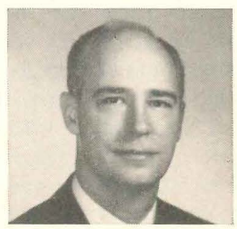

A. B. Simms, the developer of Atlanta Towers, is now building Bay Shore Towers in Tampa, Florida, another total-electric Gold Medallion high-rise apartment equipped by General Electric.

GENERAL ELECTRIC

continued from page 5

next few months. It rose by only 3.3 per cent during 1963's first three quarters.

A similarly small gain (3 per cent) took place in the hotel, motel, and dormitory category. The outlook for the near future, however, is not good. Last year, some 2,000 motels and 80 hotels were built—and seem to have supplied the market more than adequately.

The big decrease shown in the figures came in store building. One explanation lies in the decline in new shopping center construction. But Barnard at the NAREIF meeting noted that retail sales are expected to reach about $290 billion in 1970, a 25 per cent increase over 1962's sales. Thus, he said, the long-term outlook should be bright.

ARTS AND ARCHITECTURE OPENS AT YALE

HANS NAMUTH

Architect Rudolph (left) and Critic Pevsner (right) listen to Brewster

A flock of celebrities from the U. S. and abroad alighted at New Haven, Conn. last month for what was called "one of the most auspicious gatherings of the arts" in many a year. The occasion was the dedication of Paul Rudolph's energetic, imaginative, and "possibly great" Arts and Architecture building at Yale University—about which more will be said in next month's FORUM.

During the afternoon, some 2,500 curious, pleased, and often bewildered guests wandered through the building's myriad levels and changing spaces. From a podium set up on the vast second-floor "jury space," Yale's new President, Kingman Brewster (photo above), spoke of the University's bold building program, and its main force, the late Whitney Griswold. He was followed by the eminent British architectural historian and critic, Nikolaus Pevsner, who delivered a quiet but occasionally barbed dedication address.

Compared to the "exacting, neutral style" of earlier modern architecture, said Pevsner, "emphasis [has] returned. . . . Spaces interlock in a most exciting way, not only horizontally but also vertically, and not only inside but also between the inside and outside world. It is all very masculine, a violent stimulus to students." Pevsner warned the students, however, "not to imitate what you now have around you . . . woe to him who imitates Paul Rudolph [or any] artist–architect concerned primarily with self-expression."

Great architecture, Pevsner concluded, is the joint product of the client and the architect. "Well," he said, "here we have the rare case in which the client was the architect and the architect was the client. Whatever you see and inspect is exactly as the brief demanded it. I find that a most stimulating and valuable lesson."

CUNNINGHAM-WERDNIGG

REALTORS EXAMINE RENEWAL AND BUILDING

When the National Association of Real Estate Boards began its annual convention last month in New York City, each realtor was presented with an official "statement of policy" for adoption later in the week. NAREB took a conservative position on all subjects that smacked of federal subsidy: it came out against the creation of a cabinet-level urban affairs post, against federal aid to mass transportation, against 221(d)3 housing, against public housing.

Turning to urban renewal, NAREB urged Congress to cut down the program to its bare minimum: "We recommend that loans and grants be limited to areas which are slums or clearly blighted."

Nonetheless, one afternoon's session was devoted to renewal, and all the panelists were enthusiastic about it. New York Realtor John Robert White stressed that "urban renewal needs your help in selling the 500 million square feet of land now available to it in the U.S.," and in acting as consultants to communities. Appraiser Charles Seymour believed that "the renewal program is vital; its accomplishments and achievements outweigh its disadvantages and failures." Said Boston Industrial Realtor William S. Ballard: "Industrial renewal can help encourage urban growth and vitality." Also in favor of renewal as a field for brokers and investors was President James F. Oates of the Equitable Life Assurance Society.

Some far-sighted views were expressed on other subjects. Builder Sam Lefrak announced that his advice to American developers would be "Go East, young man, go East—to Europe, Africa, and Asia." There, he said, the opportunities and the need for multi-family housing are so pressing that Americans cannot afford to let them pass.

Real Estate Developer William Zeckendorf predicted that in a decade some large shopping centers would become obsolete, and would have to expand vertically. His fellow panelists disagreed, but Roger S. Smith of Food Fairs Properties noted that the highly successful Cross County center in Yonkers, N.Y. was planning to do just that. Zeckendorf also predicted that as thousands of homes sprang up around shopping centers, municipalities would start taxing the centers more heavily.

From James O. Boisi, the New York Central System's vice president for real estate, came the prediction that automation and cybernetics will cause a second industrial revolution. "With the advent of this technology," he said, "certain changes in our industrial economy are bound to take place. These are changes that will undoubtedly require location of new plants, relocation of existing industries, expansion of others." On the whole, most realtors were optimistic about the office building and apartment booms (including condominiums). Economist Gordon W. McKinley predicted, however, that there would be about 10,000 less apartment units built in 1964 than this year.

ELECTION RESULTS FAVOR URBAN RENEWAL

Do U.S. voters approve of urban renewal? If last month's elections are any indication, it seems that, on the whole, they do.

▶ In Boston, site of the most ambitious renewal program in the nation, incumbent Democrat Mayor John F. Collins was easily re-elected. Campaigning on his impressive past record, Collins predicted: "Neither Rome nor Boston was built in a day, but Boston will be rebuilt in a decade." Collins swept back into office by one of the largest pluralities in the past 50 years—34,000 votes. Significantly, he carried wards in both Charlestown and Roxbury, where neighborhood renewal plans have met some opposition.

▶ The city which launched Edmund Logue, Boston's redevelopment chief, re-elected Democrat Mayor Richard C. Lee for the sixth time. New Haven, Conn. voters showed that they approve of Lee's well-known renewal program by an 11,000-vote margin.

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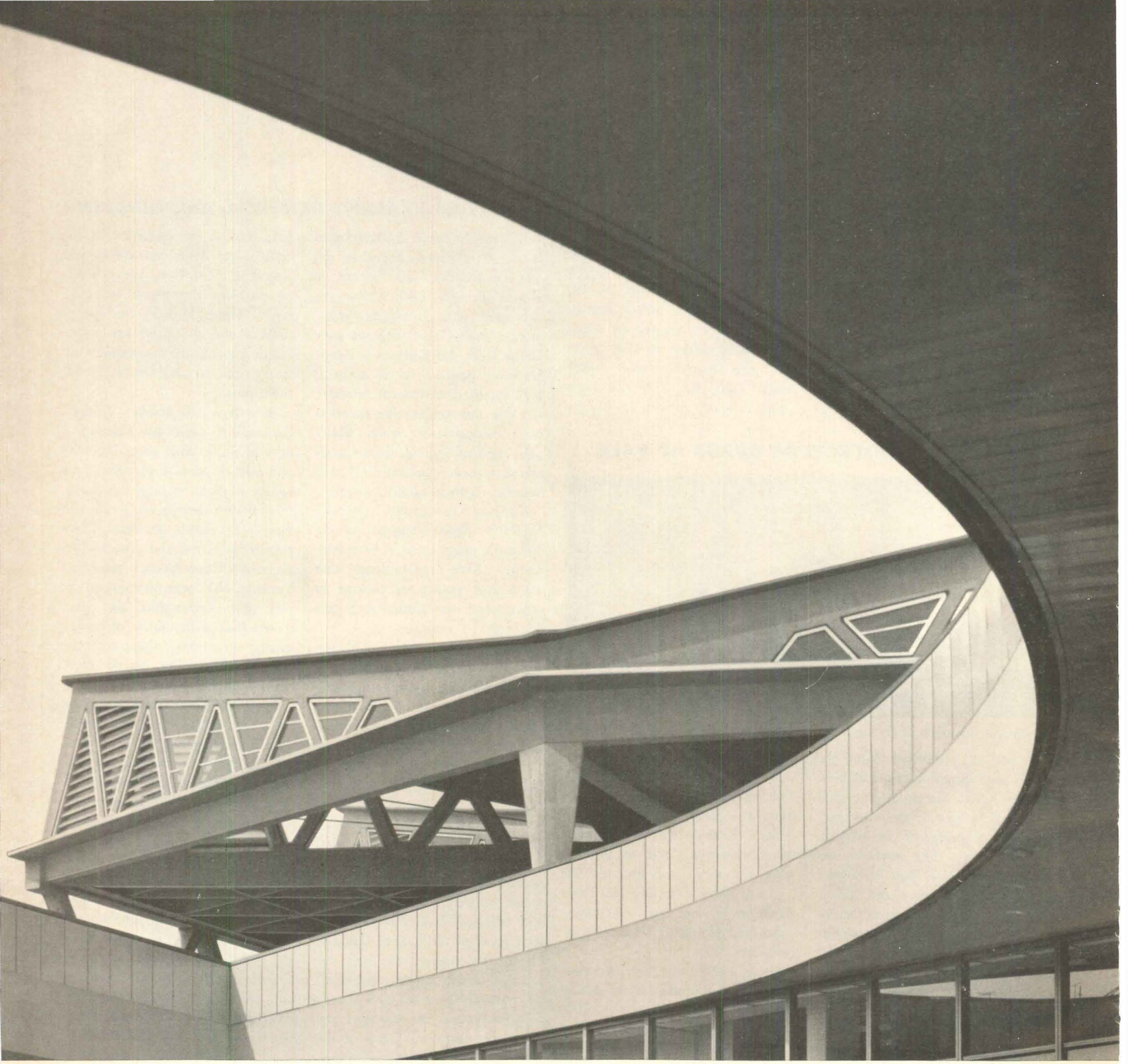

Through this entrance to New York pass more than 40,000 passengers daily. The station was designed and built by The Port of New York Authority.

AT THE NORTHWEST GATEWAY TO NEW YORK

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continued from page 7

▶ In Philadelphia, incumbent Mayor James H. Tate, Democrat, came under heavy fire from civil rights groups. But part of his appeal had been his large renewal program, which helped him return to office by the relatively small margin of 61,000 votes.
▶ In Indianapolis, which has long scorned renewal subsidies, Democrat John J. Barton pledged that he would enter federal programs. Barton was elected mayor by some 5,400 votes.
▶ In Fargo, N. D., a bare majority carried a proposal to pay for renewal by increased taxes instead of borrowing. But in Cleveland, which had twice approved renewal bond issues since 1949, voters rejected an $8 million renewal issue.

WALTER DAHAN

"WORK" STARTS ON PENNSYLVANIA STATION

On a dismal morning in late October, the demolition of Manhattan's Penn Station began. A battery of electric jackhammers ripped into the base of the granite columns flanking the 33rd Street entrance to the famed old landmark designed by Charles Follen McKim (photo).

At "start of work" ceremonies, officials concerned with the 22,000-seat sports arena and twin office towers planned for the site marched up to supervise the removal of the first eagle from its 53-year-long perch. No speeches were made nor final tributes paid; if there was hardly a dry cheek in the crowd, it was only because a slight rain fell steadily.

By midmorning, the first eagle had been swung down to street level where the hard-hatted dignitaries posed for photographs. Included were representatives of:
▶ The Lipsett Division of Luria Bros., which has the multimillion-dollar wrecking job;
▶ The Pennsylvania Railroad, present owner, which has shed most of a $1.6 million annual tax and maintenance burden in selling off 75 per cent of its air rights above ground;
▶ Madison Square Garden Corp., sponsor of the $100 million arena–office complex.
▶ Charles Luckman Associates, the architects;
▶ Turner Construction Co. and Del Webb Corp., which share the site preparation and construction contracts (their work, estimated at $64 million, began almost concurrently with the demolition);
▶ Tishman Realty and Construction Co., which the Madison Square Garden Corp. has appointed project manager.

Notably absent from the ceremonies were representatives of the city (which will gain an additional $3.5 million in taxes from the new complex), and, as one construction man remarked, "those boys from AGBANY," the band of New York architects formed last year chiefly to save Penn Station (*News*, Sept. '62).

The six eagles were carted to a nearby parking lot to await an undecided fate. Some of the 84 Roman Doric columns might end up as a decorative colonnade in Manhattan's Battery Park—if the city's Parks Department goes ahead with a plan proposed last year by some civic groups.

Editorialized the New York *Times*: "Any city gets what it admires, will pay for, and, ultimately deserves. Even when we had Penn Station, we couldn't afford to keep it clean. We want and deserve tin-can architecture in a tin-horn culture. And we will probably be judged not by the monuments we build but by those we have destroyed."

Apparently, at least a few others felt much the same way. Late that afternoon, six lone architects showed up to picket the demolition job. They wore black armbands, and their signs bore one word: "Shame."

PLANNERS DEFINE THEIR FUTURE PROBLEMS

Much modern planning is just "pretty pictures, purple paragraphs, and a minimum of statistics," said Urban Specialist Julian Levi of Chicago. "The elected official is generally more farsighted and courageous than the planner in assessing what is politically possible."

If the 900 experts present at the American Institute of Planners' annual meeting in Milwaukee stiffened in their seats, it was not noticeable; the criticism was probably easier to handle than the planning problems with which they were faced: decaying cities, poverty and race troubles, uninformed or apathetic public opinion.

AIP's keynote speech, by former Philadelphia Mayor Richardson Dilworth, set the tone. "Never in the history of our nation have we had a greater need for planning," he said. "All the money spent on physical renewal will be of little avail unless it is possible for people to move conveniently, rapidly, and comfortably into, out of, and throughout urban areas.

"But the overriding challenges to the great urban areas today are spiritual ones," Dilworth continued. "Unless we can solve the problems of crime and race relations, all the rest will turn to ashes."

Are planners equipped to handle these problems? Levi doubted it; Washington, D.C. Planner Frederick Gutheim agreed, saying that the tools of the profession need to be greatly enlarged. Gutheim also defined the major needs of central cities: the creation of jobs near the labor market, and "urban schools like suburban schools, schools that are community schools." Compounding the difficulties, said FHA Assistant Administrator Morton Schussheim, was the fact that cities are losing both leadership and spendable income to the suburb.

Another criticism came from Harold F. Wise, consultant to California, New York, Pennsylvania, and Hawaii: By dealing directly with cities in granting aid for renewal and planning, the federal government is in effect "freezing" the geographical boundaries of cities. This hampers the state's own attempts to deal with regional problems, Wise said.

Charles Abrams noted the difficulties of city planners "trying to do their jobs between the Negro and liberal pressures on the one hand and the local pressures of home owners, private builders, saving and loan associations, and city businessmen on the other."

One solution to public-opinion problems was suggested by the New York Regional Plan Association's William B. Shore. Faced with planning a megalopolis, RPA embarked on an unusual scheme to educate some 5,600 area residents and then ask them questions about alternatives (see "Suburbanites vote for planning," page 84). RPA is now faced with trying to translate these "middle-class values" into action. When finished, Shore believes that the entire community, not just the middle class, will benefit.

continued on page 10

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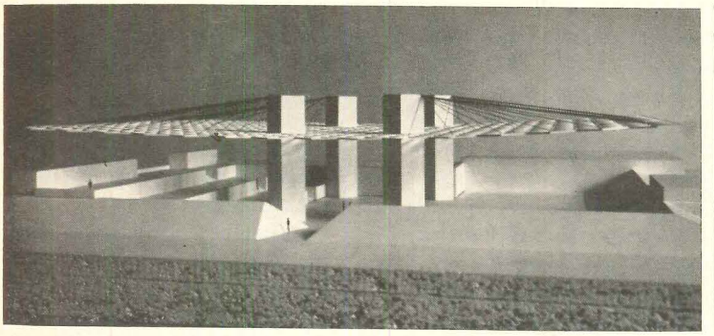


AIRY PAVILION FOR AIA'S 1965 D.C. FESTIVAL

Given support, financial and other, this airy umbrella will stand in the heart of Washington, D. C. during the summer of 1965. Designed by Architect Philip Johnson, it is the Federal Pavilion, to be sited in Pershing Square as the focal point of the four-month-long "Washington Festival."

Earlier this year, the AIA noted that 1) both its annual convention and the Eleventh Pan American Congress of Architects would be held in the nation's capital during 1965; 2) hopefully, the city would have some of its most important new rejuvenation projects under way—e.g., the rehabilitation of Lafayette Square, the construction of the National Cultural Center, the upgrading of Pennsylvania Avenue. What better time and place to conduct a festival dramatizing urban design? The big problem, of course, was (and is) financial; though sponsored mainly by the AIA, the festival needs considerable help from the city, the federal government, and the building industry.

The pavilion design is an auspicious start; it is strong, graceful, appropriate to the occasion and climate. Open on all sides (though shielded by earth embankments), it is covered by a huge steel space frame suspended from four 75-foot-high pillars. On the terrace floor, a restaurant, library, and large exhibition area are planned. Beneath will be an auditorium where a Charles Eames–produced film of "The Cities of the New World" will be shown.

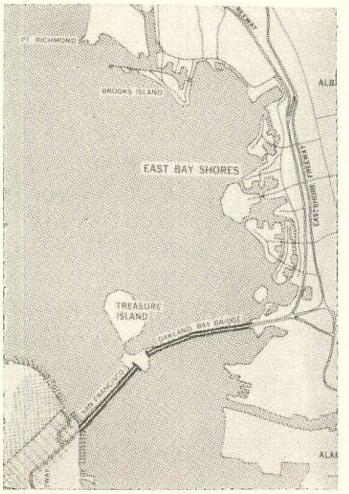
After the festival is over, the $1.4 million building will be dismantled, probably to be re-erected in a capital city of the Americas.

GRUEN PLAN ANNOUNCED FOR EAST S.F. BAY

After a year's study, the Atchison, Topeka and Santa Fe Railroad Co. last month entered its own intriguing plan in the San Francisco Bay sweepstakes, then settled back to let the proposals "soak" for a while.

Prepared by Victor Gruen Associates, the scheme would gradually dredge up new shores and peninsulas along an 8-mile-long strip of East Bay tidal flats, mainly owned by the railroad (see map). The 3,400 acres of property involved falls within five cities: Richmond, Albany, Berkeley, Emeryville, and Oakland. Before the plan can be implemented, all land owners, public and private, must approve it—no mean feat anywhere.

Only Richmond officials were completely enthusiastic: most of their part would be developed into a high tax-producing industrial area. The other cities grumbled that they had too much water and not enough land, that they did not need more residential tracts, that they should have more industrial land. Oakland wanted a deep water port, but the study showed that the mud-clay bottom in that area was far from ideal for such use.



The most promising land use, said the planners, is residential: sprawl is creating a sharp demand for central locations with superior recreation nearby. (There is, besides the myriad waterways and attendant marinas, a whole island in the Berkeley section devoted to a golf course.) Living facilities for 100,000 people, schools, and commercial areas are envisioned —all just 10 minutes by hydrofoil from San Francisco.

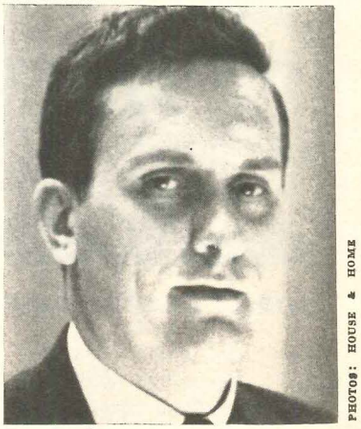
Though all the cities wanted new industrial tracts, the planners felt industry would look to less expensive sites. Berkeley and Emeryville, however, got sizeable areas for light industry.

If the plan is implemented, site preparation will amount to at least $150 million, of which the railroad would pay two thirds. The entire project would cost around $1 billion.

Compared to other recent plans, the new scheme is imaginative and broad in scope; California Governor Edmund G. Brown, for one, is enthusiastic. Whether the project reaches fruition or not, Bay Area residents have been made a little more aware of what their region could become with bold planning.

MANUFACTURERS REJECT RESEARCH SUBSIDY

Slayter



Eberhard

PHOTOS: HOUSE & HOME

Partly in anger, and partly for the record, some 280 representatives of building materials manufacturers and trade associations (and a few architects, contractors, and engineers) met in Washington, D.C. a few weeks ago to review the charge that the construction industry badly needed a shot in the arm. The meeting, which called itself the National Construction Industry Research and Development Conference, refuted the proposed remedy: a comprehensive, federally subsidized research program by the U.S. Department of Commerce.

For this year, the refutation seemed gratuitous; powerful industry groups had already squelched the Civilian Industrial Technology Program's chances of getting appropriations from Congress (FORUM, Sept. '63). The conference's main conclusion was an expression of satisfaction with private enterprise's own research and the industry's economic health.

Economist Gordon W. McKinley pointed out that nonresidential construction since World War II has, in real dollars, grown at a faster rate than the rest of the economy. "This is not the record of a lagging industry," said McKinley.

Several speakers questioned the value of the federal government's help to any industry. Said Armstrong Cork Co. Vice President James H. Binns: "If our experience over the last 30 years means anything, it is that . . . government intervention and control stifle the natural forces of competition, and when carried to ex-

tremes seen elsewhere in our economy, the effect is debilitating."

Many panelists noted that untold millions of dollars are poured into research and development by the manufacturers themselves, by such affiliated industries as chemicals and electronics, and by universities and private research organizations. "We didn't have any government help in coming up with our new achievements in glass," reported Ganes Slayter, research vice president of Owens-Corning Fiberglas.

The only suggestion for new action came from the Department of Commerce's building consultant, John P. Eberhard. He proposed that industry and government join to create a National Building Alliance which would serve both as a clearing house and a generator of research information for the building industry. It would complement the industry's own poorly supported ($150,000 a year) Building Research Institute —a thought in which BRI, among others, did not rejoice: "With increased support from the building industry," BRI pleaded in a release, "and greater participation in Institute activities, BRI could assert its natural leadership role in the field of building research and development."

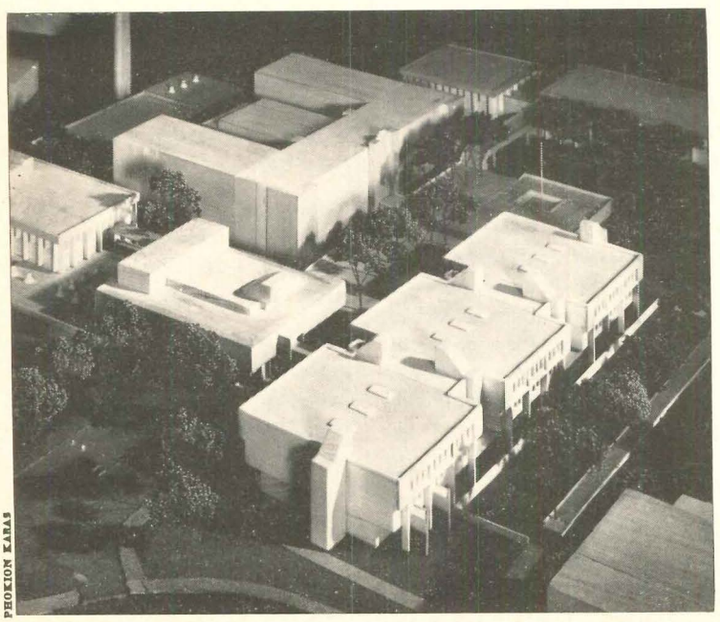
Of Commerce's proposed four-point program, the conferees accepted only one: that the federal government should conduct a continuing census of public and private building research. The other three points (dissemination of information; development of performance criteria; development of fundamental knowledge on environment, design, and building processes) were judged unnecessary, as private business could, if it wanted, carry out these aims.

If the conference's main purpose was to fend off a revival of the CIT program in the future, it probably failed. Last month, at a Senate hearing, AIA Executive Director William Scheick, among others, testified in favor of the proposal. And behind the scenes, Department of Commerce leaders still hoped to encourage other segments of the building industry to support the measure the next time it came up.

NEW KIND OF CITY SCHOOL FOR PROVIDENCE

Providence, R.I. has just completed the nation's first design competition for an "education center" set in an urban renewal area. From all reports it was an almost unqualified success — and might well provide ideas for a number of other cities.

The winning submission — by local architects Albert Harkness and Peter Geddes, associated with The Architects Collaborative of Cambridge, Mass.—received rave reviews from a distinguished jury (see below). More important, the Providence School Committee gave the design its unanimous approval, and asked the winners to proceed with working drawings. Their $25,000 prize money will be applied against an estimated $300,000 in fees.



PHOKION KARAS

As drawn up by the city and Professional Adviser Walter F. Bogner, the competition asked "eligible" architects to create a new common campus for Classical High School (college preparatory), and Central High School (preparatory and vocational).

Despite a limited project budget of $5.7 million and a small site (21 acres), the goals of the competition were ambitious: to upgrade the neighborhood, to extend Providence's renewal efforts (the big Weybosset Hill office–apartment project is nearby), and to help alleviate the central city's need for more schools.

At first, the city decided to limit submissions to Rhode Island architects who are members of the AIA. This severe limitation prompted three Rhode Island non-AIA architects to seek an injunction; the court, however, ruled that the limitation was legal and reasonable. Several participants got around these strictures by allying themselves with Rhode Island AIA members, who filed the plans. Significantly the competition drew only 18 entries, somewhat less than expected in view of its importance.

The jury consisted of three Providence officials (Public Schools Superintendent James L. Hanley, Redevelopment Agency Head Edmund M. Mauro, and Banker Clarence H. Gifford) and four architects (Henry L. Wright, Pietro Belluschi, William Caudill, and Alonzo J. Harriman).

Because of the space restrictions, emphasis fell heavily on site planning, plus efficient, flexible use of space.

The winning entry gave Classical High a three-section, three-story building for its classrooms and library (foreground of model photo). These rooms, which are organized by subjects of instruction, can be easily converted to other uses; connected behind are an auditorium–cafeteria and gymnasium. At the rear of Central High (E-shaped building) is a new auditorium, cafeteria, and auto-body shop. Rounding out the group is Central High's big new gym (out of picture, top). Interestingly, the winner was the lowest in estimated cost among the premiated designs.

Second prize of $5,000 went to Fenton G. Keyes Associates, and the $1,000 third prize to David Aldrich and Geometrics Inc., all of Providence. Five other submissions were given awards.

WATER STORAGE TANK BURSTS

COURTESY ENGINEERING NEWS-RECORD

The first time it was being filled a few weeks ago, the handsome 500,000-gallon tank shown above had reached about 85 per cent of its capacity when it burst. The rush of water spilled onto the Oakland, Calif. residential area below it with the result only too visible in the second photo above.

Observation of the scattered debris has already disclosed one probable cause of failure: faulty welding of joints between the precast panels. Special attention will be paid to the inquiry, for the water tank, designed by San Francisco Architects Knorr & Elliott, was the prototype for a series of some 60 such structures projected for the East Bay area. Intended as a handsome and well-landscaped addition to neighborhoods, unlike most water tanks, it had won a 1962 design award.

continued on page 12

THE NEWS IN BRIEF

New competitions. At the request of the Office of Civil Defense, the AIA is conducting a national competition for the design of a shopping center incorporating a fallout shelter. First prize is $15,000. Seven regional first prizes of $4,000 each, eight $1,000 second prizes, and eight $500 third prizes will be given. Registration closes Jan. 31, 1964. Information: A. Stanley McGaughan, professional adviser, 1341 New Hampshire Ave., N.W., Washington, D.C., 20036.

Another competition was announced last month. The subject: a new building for the Boston Architectural Center, to house educational, social, and organizational activities. First prize (plus the commission) will be $5,000; second prize, $2,000; third prize, $1,000. Programs are available from Professional Adviser Walter F. Bogner, Boston Architectural Center, 320 Newbury Street.

Scholarships. ACTION, Inc. recently asked private business to give more voluntary support to graduate education in urban planning, renewal, and development. To date, the ALCOA Foundation of the Aluminum Co. of America, and the Crown-Zellerbach Foundation have given scholarships. ALCOA sponsors two fellowships of $1,500 each at the University of Pittsburgh; Crown Zellerbach sponsors a $2,500 annual fellowship at the University of California at Berkeley.

Last month, the Pittsburgh Plate Glass Foundation established its $5,000 annual fellowship in urban design. The award will be made through the AIA to a graduate scholar in an accredited architectural school.

QUOTE . . . UNQUOTE

"It is impossible to say when art ends and science begins."—*Herbert Spencer.*

"If Penn Station were art, someone would have dug into his pocket to save it."—*Wrecking firm President Morris Lipsett.*

"I look forward to an America which will not be afraid of grace and beauty, which will protect the beauty of our natural environment, which will preserve the great old American houses and squares and parks of our national past, and which will build handsome and balanced cities for our future." — *President Kennedy at Amherst College.*

"Penn Center [in Philadelphia] was handed on a silver platter to architects and contractors of no distinction or imagination, who have put up buildings so lacking in character that they might just as well not be there at all."—*Nathaniel Burt, in "The Perennial Philadelphians."*

"The architect as an artist, the painter, the sculptor, the musician, and in a different way, the poet, are all regarded with the same distrust once accorded the working scientist." — *Dean of Architecture Joseph R. Passonneau, Washington University.*

"The center of the city is falling apart; its landmarks are being destroyed. . . . All of the poetry is born in the dirty city. I wouldn't live anywhere else." — *Architect O'Neil Ford.*

"Of all the resources devoted to urban renewal, the one in very short supply is, without question, manpower."—*URA Commissioner William L. Slayton.*

"When a building becomes obsolete or out-of-fashion, it is remodeled. When a product becomes obsolete it is discarded." —*Industrial Designer Montgomery Ferar.*

"How easy the architect would have it, if architecture were only a science."—*Dr. Martin E. Marty, Assoc. Editor, Christian Century.*

"We continue to place house against house and field against field until there is no place in the world to be alone."—*The Prophet Isaiah.*

"Construction is the oldest science on earth . . . but it is the least advanced. To make progress we need more creativity."—*Structural Engineer Lev Zetlin.*

WINFIELD PARKS—TIME

PELL HEARS ARTS BILLS

From October 28 to November 1 daily hearings were held to give Congressional sanction to the President's Advisory Council on the Arts. Headed by Senator CLAIBORNE PELL (D., R.I.), some 40 prominent witnesses from all sectors of the arts gathered to consider two bills: one, introduced by Senator JACOB JAVITS (R., N.Y.), to establish a U.S. National Arts Foundation; another authored by Senator HUBERT HUMPHREY (D., Minn.) which would furnish a statutory basis for a National Council on the Arts. Most of the witnesses endorsed the bills. Among those present were such notables as J. ROY CARROLL, president of AIA; Dancer Katherine Dunham, who pointed out that the "artistic caliber in the U.S. is below that of other countries"; and Sol Hurok, impresario, who commented on the great need for theaters throughout the country. Senator Pell looks forward to reporting the bills to the Senate after subcommittee study, hopefully before Christmas.

NEW COMMISSIONER FOR NYC

New York Mayor Wagner recently announced that he had selected the man to replace outgoing Public Works Commissioner PETER J. REIDY, who leaves to head the Triborough Bridge and Tunnel Authority. He is Civil Engineer BRADFORD N. CLARK, an administrative partner in the architectural firm of Eggers & Higgins, and highly experienced in all aspects of New York construction.

With responsibility for the planning, design, and construction of some $200 million in municipal building annually, Clark's new post is, as Mayor Wagner put it, "a huge undertaking." On the Public Works Commissioner's docket right now, for example, are such important projects as the still controversial Civic Center, the tardy Hall of Science at the World's Fair, and the shifting of the Fulton Fish Market.

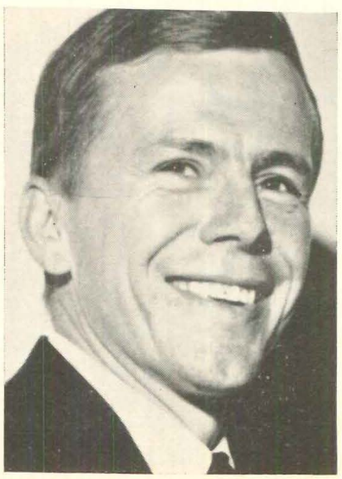
OPPERMAN LEAVES NIMAPC

PAUL OPPERMAN, executive director of the prestigious Northeastern Illinois Metropolitan Area Planning Commission, resigned recently to join the Massachusetts Institute of Technology as Albert Farwell Bemis lecturer in metropolitan planning. Opperman, who moves to his new post in February, will also become a partner in the firm of Adams, Howard & Greeley, Cambridge planning consultants.

CONCRETE AWARD

At the recent Prestressed Concrete Institute's annual convention in San Francisco, Canadian Architect MAURICE ROBILLARD received first prize in PCI's design contest from ELMER D. CLARK, newly elected PCI president. Robillard's prize-winning St. Richard Church in Cote St. Luc, Quebec, which uses T-shaped sections of prestressed concrete for walls, floor, and roof, was built at a cost of $230,000 and seats 900. Commented Robillard on accepting the award: "Contemporary architecture will be greatly influenced by prestressed concrete. We are only at the beginning of its uses."

Robillard



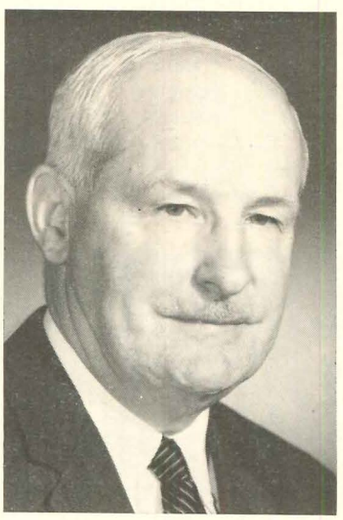
NATIONAL PHOTO SVC.

NEW NAMES AT ALCOA

When the Aluminum Co. of America took over Zeckendorf Property Corp. last summer, it obtained several apartment projects (*News,* Aug. '63). Four of these—Kips Bay Plaza, Lincoln Towers, and Park West Village in Manhattan, and Society Hill in Philadelphia—were formed into a subsidiary company called Alcoa Residences, Inc. A few weeks ago, ARI announced the election of veteran Alcoa official VAUGHN R. CHASE as president, and former ZPC officer JOHN M. O'MARA as vice president.

The remaining building phases in the four residential communities will be handled by the ARI Construction Corp. (formerly Webb & Knapp Construction Corp.) under long-time president A. J. FARANDA and his newly elected vice president LOUIS WINKLER.

Last month, Alcoa announced yet another appointment: Lawyer ROBERT C. ERICKSON as general manager of Alcoa Properties, Inc., which runs all Alcoa projects.



N. Y. PICKS KAWECKI

CHARLES S. KAWECKI was recently appointed New York State Architect in charge of preparing plans, specifications, designs, and estimates for the construction and reconstruction of state facilities not awarded to private architects.

Kawecki, a state career employee with 35 years service, follows CARL W. LARSON, who retired last February. He has designed or supervised plans for many projects, including the Syracuse State Office Building, the Upstate Medical Center at Syracuse, the Veterinary College at Cornell.

BARD AWARDS JURY

Having created a furor in its first competition by finding no civic buildings worthy of award (*News,* July '63), the City Club of New York has announced a second architectural awards program for 1964. This time the contest will be among private projects completed in New York City since Jan. 1, 1960. The buildings will be judged by Architects EDWARD LARRABEE BARNES, PHILIP JOHNSON, and I. M. PEI, along with FORUM Managing Editor PETER BLAKE, and City Club Trustee LEON BRAND. The Club announced that in 1965 the awards would be devoted once again to government-commissioned buildings.

BRIEFLY NOTED

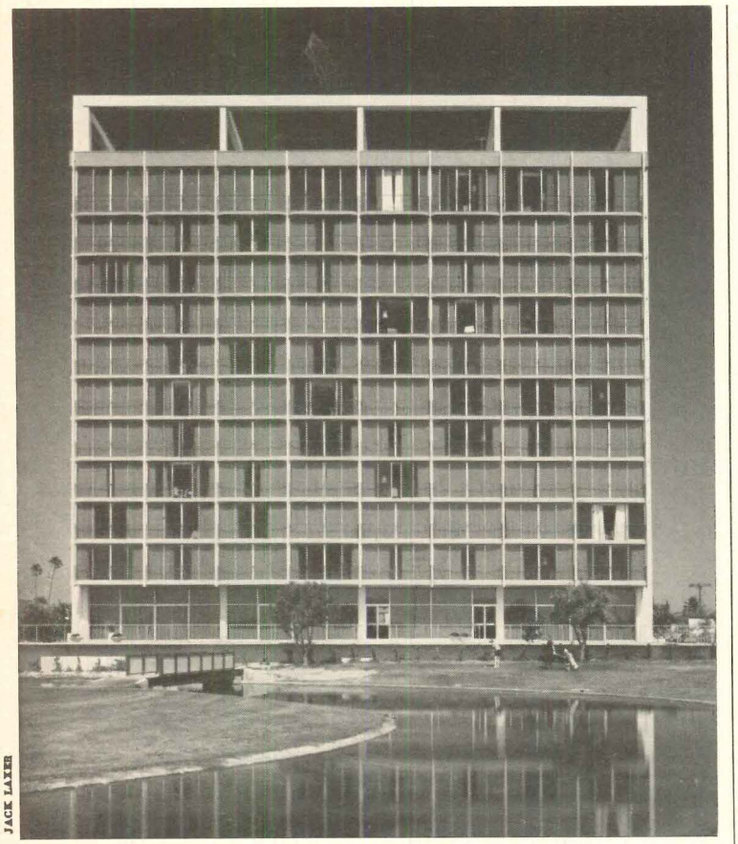
Reappointed to the Baltimore Planning Commission after a conflict of interest two years ago was Architect ALEXANDER S. COCHRAN (*News,* March '61). Cochran resigned from the commission when a design contract for a city hospital expansion program was awarded to his firm. He could thank the League of Women Voters, who helped get legislation which allows architects to serve on the commission.

Architect NATHAN R. GINSBURG, former president of the New York Society of Architects and undaunted champion of a unified New York City Civic Center, this month receives the Society's Sidney L. Strauss Memorial Award for 1963. The citation: outstanding service for the benefit of the architectural profession.

HANS B. SPIEGEL was appointed last month as community relations coordinator in the Urban Renewal Administration's division of relocation and community organization. A former group-relations professor at Springfield (Mass.) College, Spiegel hopes to develop methods to help community organizations understand and participate in local urban renewal programs.

continued on page 14

Building in the News

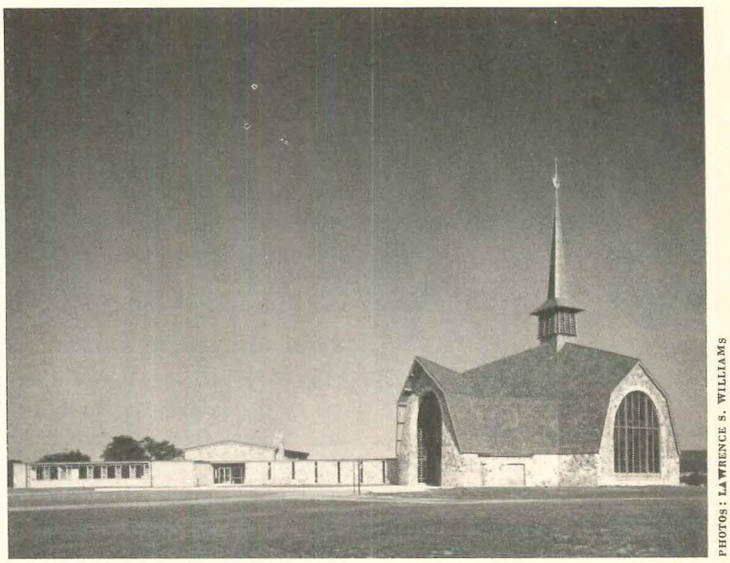


JACK LAXER

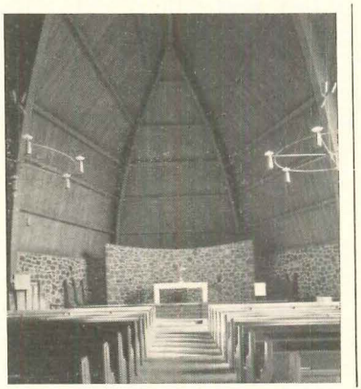
CALIFORNIA HOTEL. The new $2.5 million Disneyland Hotel Tower is the latest addition to Wrather Corp.'s 60-acre resort facility in Anaheim. The 11-story building, set in Japanese gardens, is made of post-tensioned concrete employing the lift-slab method of erection. In addition to 150 guest rooms, the tower provides a penthouse lounge, overlooking Disneyland and reached by an exterior elevator housed in an exposed shaft (on the other side of the building). Architects: Weber & Nicholson. Engineers: Albert A. Erkel & Associates (structural), Sam Evans (mechanical), John Snyder (electrical). Contractor: Ryan Construction Co.

CY GITLIN

NEW YORK HOTEL (above). Holiday Inn International, near Idlewild Airport, contains 140 guest rooms raised on columns above a ground floor devoted to lobby, restaurant, and offices. The semicircular balconies set up lively exterior rhythms but, as in many buildings, seem too small and exposed to be very serviceable. Architects: Laurence Werfel & Associates. Engineers: Greenhut & Taffel (structural), Jack Stone (mechanical). General contractor: Yarby Associates. Cost: about $1.2 million.

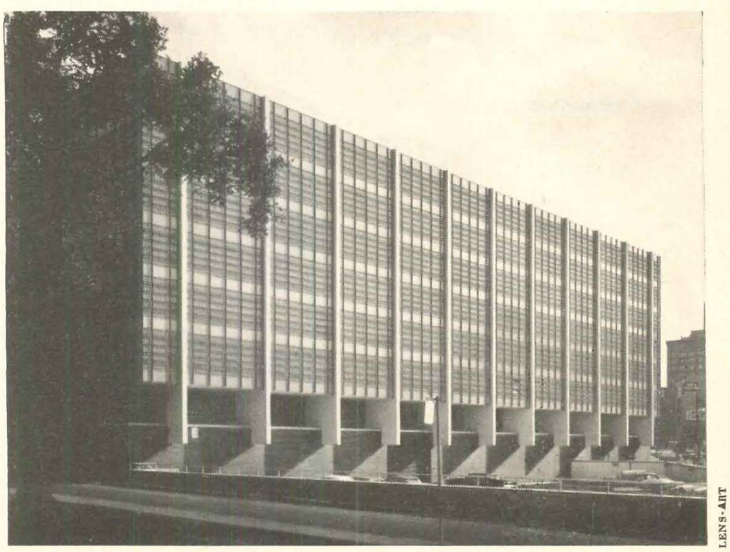


PHOTOS: LAWRENCE S. WILLIAMS



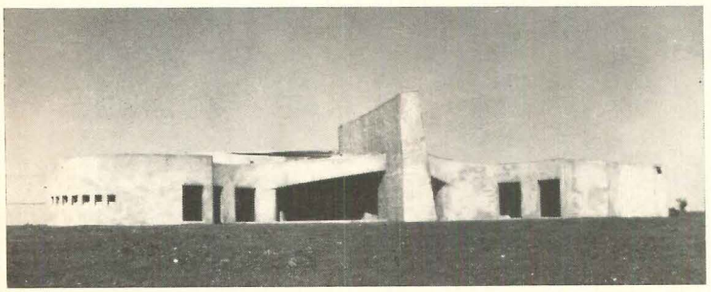
PENNSYLVANIA CHURCH. The rugged fieldstone walls, steep roof, and massive timber framing (left) of St. John's Evangelical Lutheran Church in Phoenixville, Pa. clearly evoke the handsome Pennsylvania Dutch barns which dot the surrounding countryside. Architects: William Heyl Thompson and Lawrence Drake. Engineers: Lambert, McGee & Costello (structural), Roy Larry Schlein (mechanical, electrical). General contractor: C. Raymond Davis, Inc. Cost: $375,000.

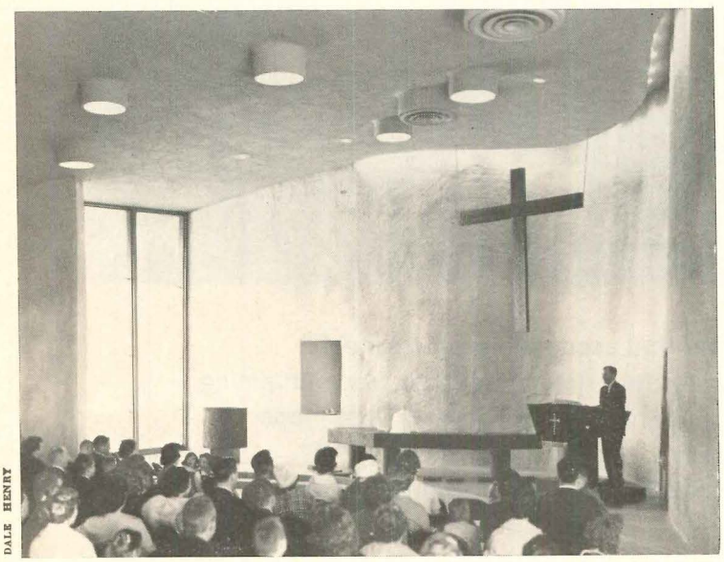
MICHIGAN JAIL (below). The new annex to Detroit's Wayne County Jail sets a high standard of design for penal institutions. The seven-story structure is of reinforced concrete, with exterior columns cantilevered from a central core. The walls are made up of a milky, translucent glass set into closely spaced galvanized steel sash. The annex, which contains both maximum and minimum security areas monitored by television cameras, is linked to the existing jail behind it at all levels. Architects & engineers: Eberle M. Smith Associates, Inc. Contractor: Darin & Armstrong. Cost: $3 million.



LENS-ART

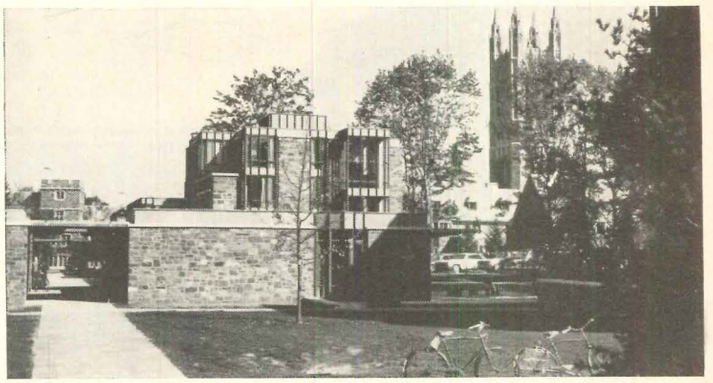
MANHATTAN CENTER. This bronze- and glass-sheathed office building, designed by Architect William Lescaze, stands directly across from the United Nations and houses various U.N.-related church agencies. The structure is of reinforced concrete, and has outdoor terraces on the second and 12th floors. For the street-floor chapel, Henry Lee Willet designed a mural-like window of faceted chunks of glass set into a 13 by 25 foot sculptured metal wall. The $3 million Center was built under the auspices of the Methodist Church and is under the direction of the Department of International Affairs of the National Council of Churches. Engineers: Greenhut & Taffel (structural), R.L. Stinard & Associates (mechanical, electrical). General contractor: Diesel Construction Co., Inc.

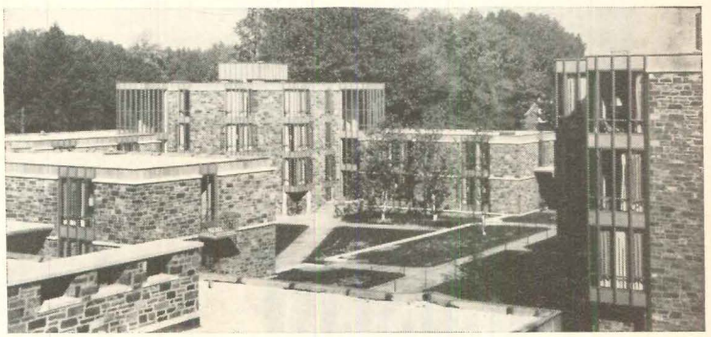




DALE HENRY

TEXAS CHURCH. The massive walls of the St. Stephen Methodist Church, in Mesquite, Texas result from an unusual and economical new construction technique: they are made of concrete block laid without mortar, then covered on both sides with a cement-base spray coat. The free-form church, which resembles a sort of prairie Ronchamps, will be built in three stages to surround a central courtyard. Cost for the first stage: $12.75 per square foot. Architects: Pratt, Box and Henderson. Engineers: Joseph J. Nagler (structural), Gregerson & Gaynor, Inc. (mechanical, electrical). General contractor: Campbell Brothers, Inc.

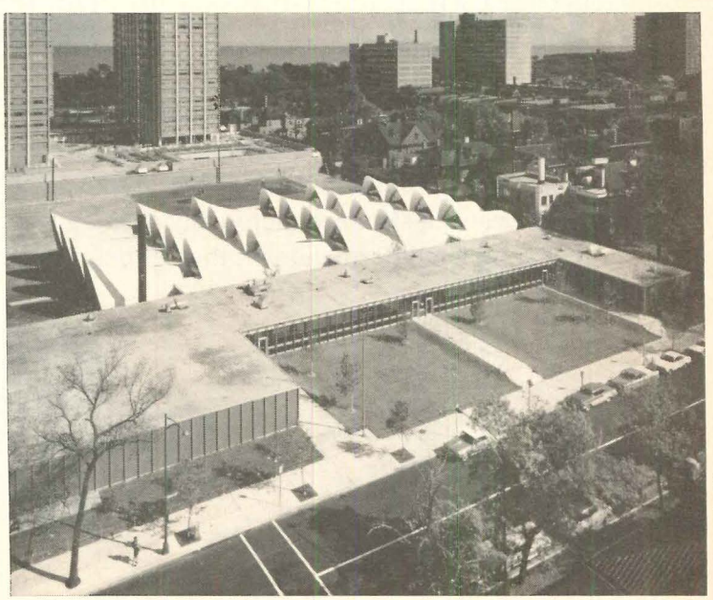




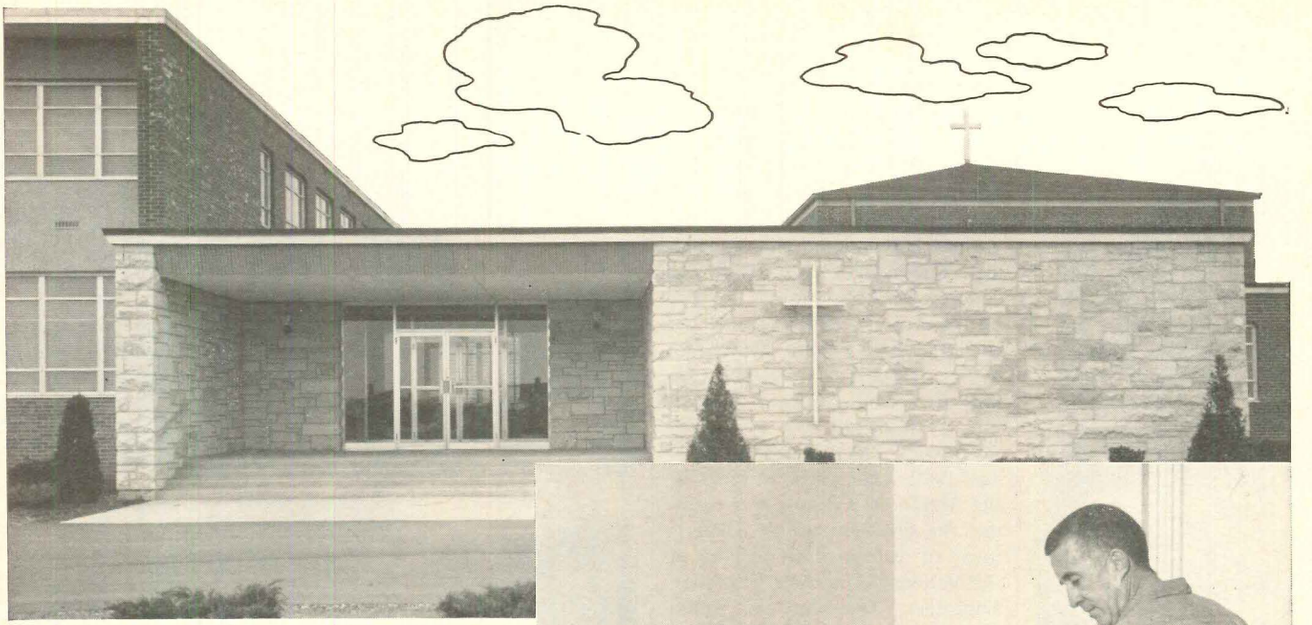
PHOTOS: OGDEN TANNER

PRINCETON DORMS (above). The new additions to Princeton's spired Graduate School resemble a small Gothic village, composed of modestly scaled masonry dormitories of differing heights, arranged to enclose a variety of courtyards. The windows are broken up by the mullions into narrow verticals to further the Gothic mood. Architects: Ballard Todd Associates. Engineers: Fraioli, Blum & Yesselman (structural), Peter Bruder (mechanical, electrical). Contractor: Matthews Construction Co. Cost: $2 million.

ILLINOIS SCHOOL. (below). In Chicago's new Joseph Brenneman Elementary School, Architect Bertrand Goldberg tried to shape spaces which "present a unified spatial entity for a child to promote better education visually and emotionally." This led him to design cave-shaped, thin-shell classrooms, which function as a series of small-scaled "one-room schoolhouses." In the foreground is a more conventional gymnasium and office wing. Contractor: Mercury Builders, Inc. Cost: $868,-450. END



HEDRICH-BLESSING



MARION HIGH SCHOOL, CHICAGO HEIGHTS, ILLINOIS

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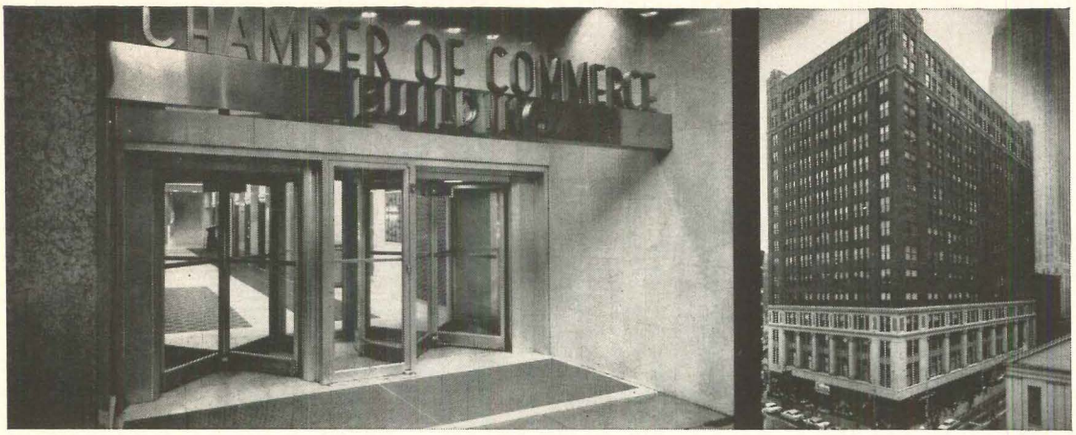

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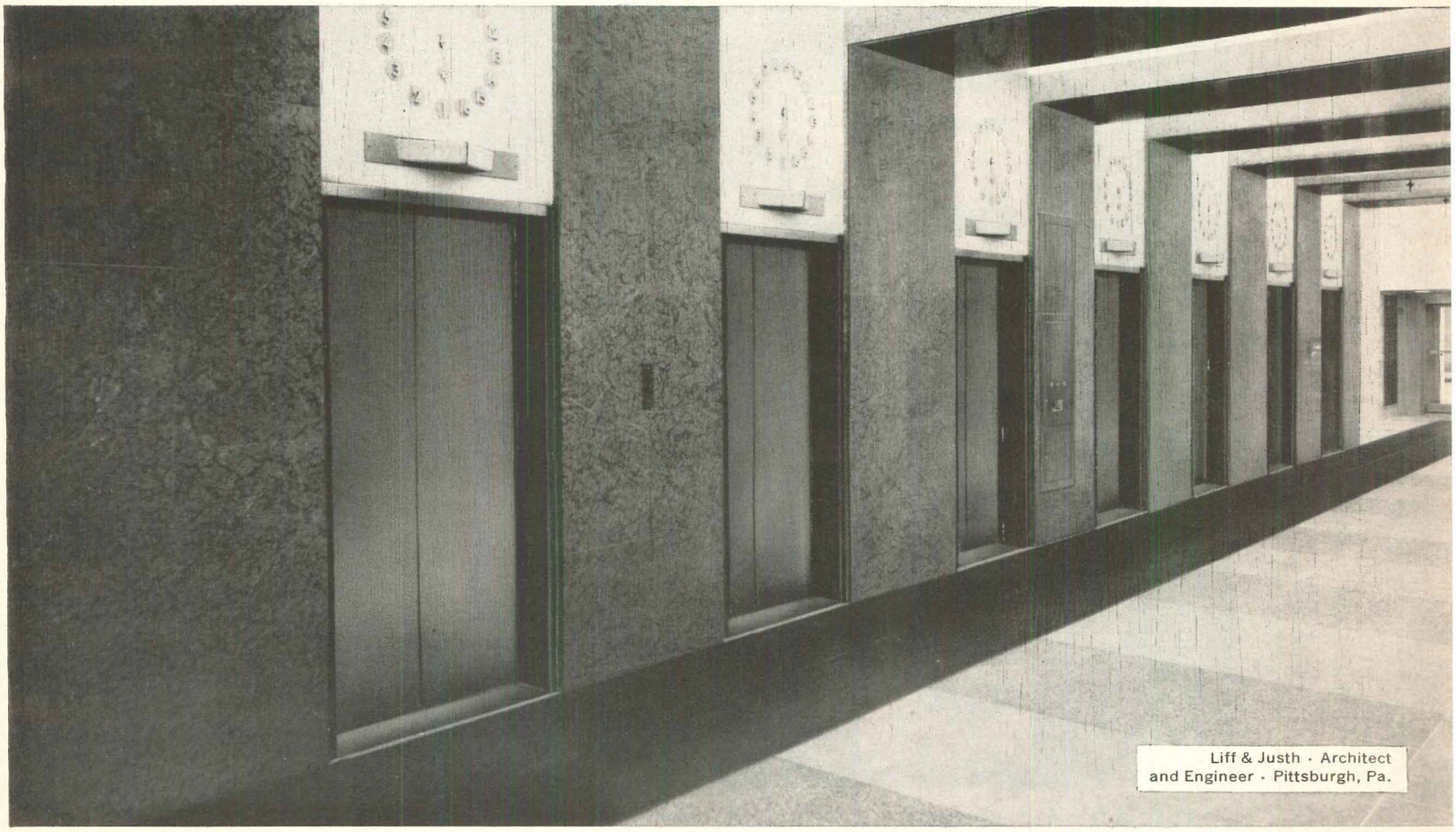

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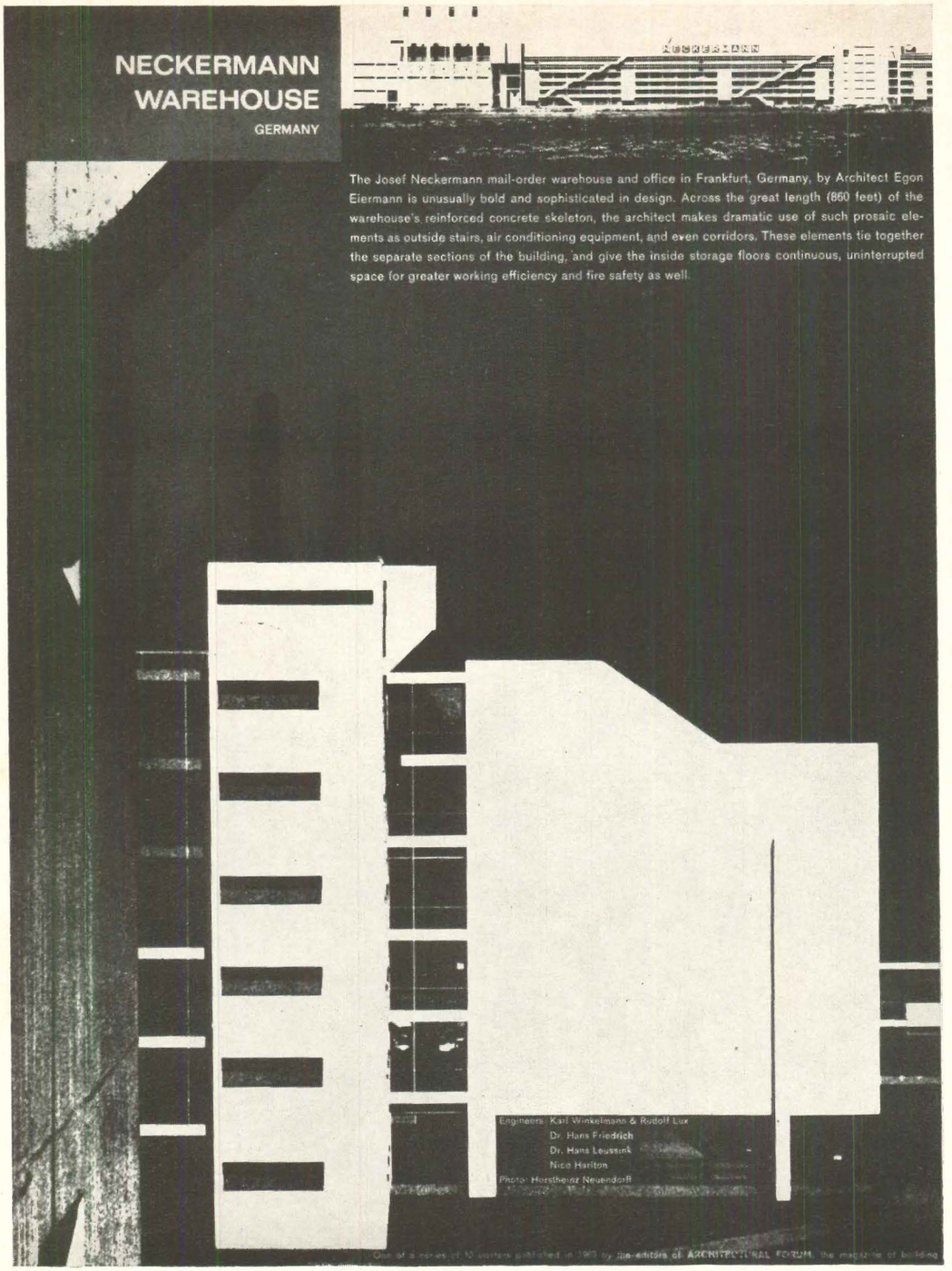
TOTAL ELEVATOR MODERNIZATION WITH NEW HAUGHTON AUTO-SIGNAMATIC CONTROL PUTS THE ACCENT ON SERVICE

IT'S UNEXCELLED Step into one of the seven smartly-appointed cars. Press the button for your floor. Almost before you know it, the door glides open, and you step out after a ride so smooth and swift it's best described as high-speed velvet. Playing a key role in the bold, imaginative modernization program at Pittsburgh's Chamber of Commerce Building, the new Haughton fully-automatic (operatorless) elevator system clearly demonstrates that a building needn't be new to have the newest in elevator service. Operational features include a new, advanced-design electronic computer control system developed by Haughton Elevonics.* It matches elevator availability to traffic needs, even during "coffee breaks" and morning, noon and evening rush hours . . . assures truly unexcelled service. Incorporate the advantages of Haughton Elevators in your plans for modernization or building. Contact your Haughton sales office (listed in the Yellow Pages) or write: Haughton Elevator Company, Div. of Toledo Scale Corporation, Toledo 9, Ohio. Passenger and Freight Elevators, Escalators, Dumbwaiters.

EMBLEM OF EXCELLENCE IN VERTICAL TRANSPORTATION

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



GREAT ARCHITECTURE FOR THE SIXTIES

A GRAPHIC EXHIBIT FOR BETTER PUBLIC UNDERSTANDING AND APPRECIATION OF CONTEMPORARY ARCHITECTURE

Due to the popularity and demand of its first poster exhibit (now completely sold out) Architectural FORUM has produced its second annual edition of posters for public exhibition. Incorporated in the poster set are handsome black and white photographs of ten new buildings* which, in the opinion of FORUM's editors, have contributed significantly to the art of architecture in 1962.

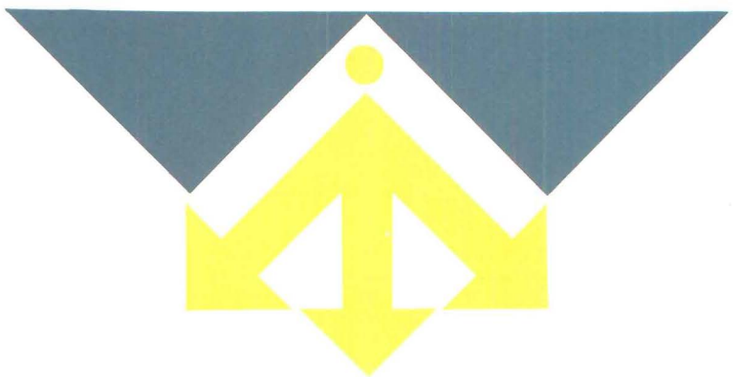
Designed by John Martinez, a leading graphic artist, the ten posters are particularly suitable for display in schools, colleges, libraries, museums and other public areas such as convention halls, banks and department stores.

Each poster measures 18½" x 24"; but the full set is designed to hang handsomely as a unit.

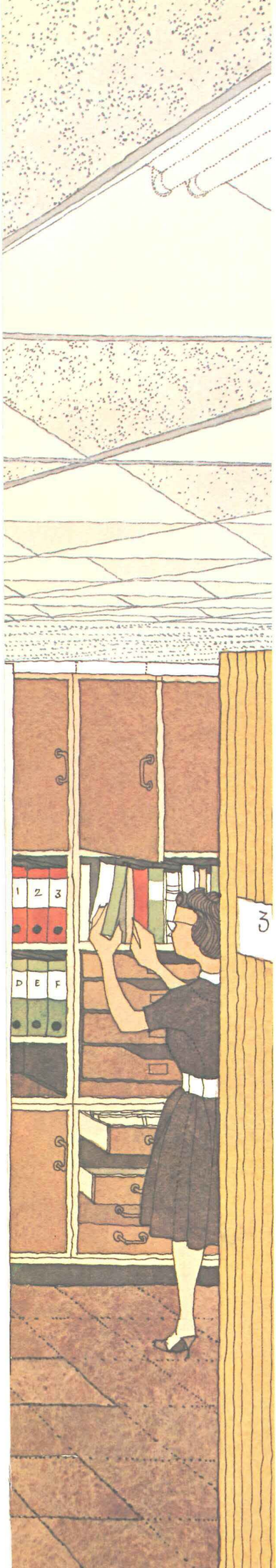
Cost: $5.00 per set postpaid while the limited supply lasts. Address all inquiries to Architectural Forum, Room 19-39, Time & Life Building, Rockefeller Center, New York 20, N.Y.

*U.S. SCIENCE PAVILION BY MINORU YAMASAKI / COLUMBUS ELEMENTARY SCHOOL BY JOHN CARL WARNECKE / NECKERMANN WAREHOUSE BY EGON EIERMANN / FOOTHILL JUNIOR COLLEGE BY ERNEST J. KUMP AND MASTEN & HURD / PLACE VILLE MARIE BY I. M. PEI / ASSEMBLY BUILDING BY LE CORBUSIER / MARIN COUNTY CENTER BY FRANK LLOYD WRIGHT / NEW HAVEN GARAGE BY PAUL RUDOLPH / DULLES INTERNATIONAL AIRPORT BY EERO SAARINEN / BACARDI BUILDING BY MIES VAN DER ROHE

ARMSTRONG LUMINAIRE CEILING SYSTEM



Announcing another bold development in ceiling systems from Armstrong



Renderings by Gordon Cullen.

ARMSTRONG LUMINAIRE CEILING SYSTEM

Room-wide illumination, cleanly integrated with a modern, "tented" design

This system gives 10% more light, avoids gloom and glare, simplifies specification and installation.

This is a completely new lighting-ceiling system designed and developed by Armstrong. It integrates lighting with air distribution and sound control in a single, modern ceiling assembly. Instead of different components competing for limited space in the ceiling, this unified system coordinates their functions, eliminating much of the complexity and clutter of the ceiling. With this coordination, their performance improves: lighting is more uniform; air distribution is more efficient; the sound-absorbing area increases.

Better lighting

The system provides excellent illumination: uniform, comfortable, complete. Each module can take one, two or three tubes, giving lighting levels from fifty to a hundred and seventy footcandles in a typical room. The angled ceiling panels and vertical end panels give each lighting fixture 22 sq. ft. of reflective surface—more than twice that of a typical recessed troffer. This configuration also directs all light downward. The Armstrong Luminaire Ceiling System delivers at least 10% more light to the work plane than most commercial fixtures.

Uniform, shadow-free

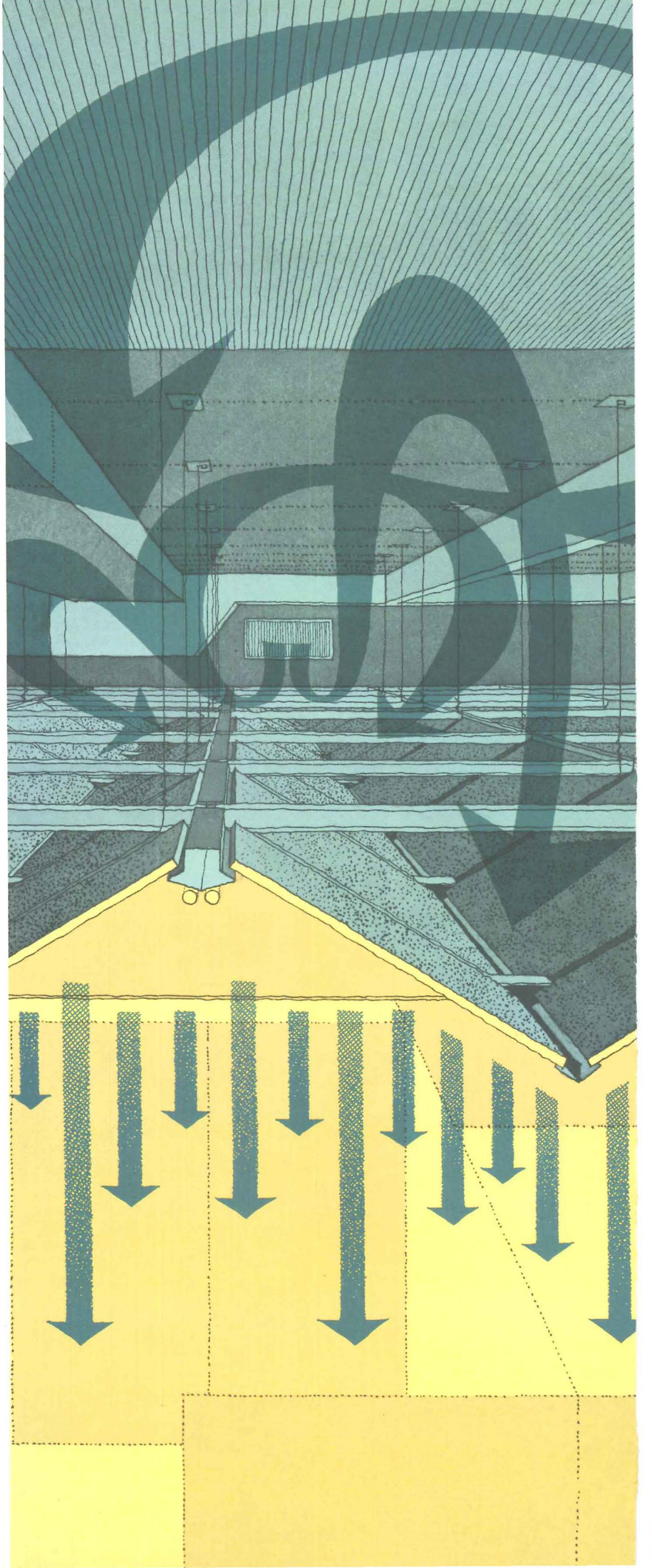
This illumination is also more uniform than lighting from a conventional system. Every module contains a lamp, so light from adjacent modules overlaps, producing room-wide, shadow-free illumination. And because the lamp is located high inside the unit, the triangular end panels and angled side panels shield it from the normal line of sight. The room is full of light, yet there is no direct glare.

Illumination by the Armstrong System meets the new lighting levels recommended by the Illuminating Engineering Society for offices, schools, factories, stores and similar buildings. The system considerably simplifies both specification and installation. One source supplies all materials; one grid supports the ceiling and the lights.

Armstrong Luminaire Ceiling System

How it provides for

1. Air distribution
2. Sound absorption
3. Less maintenance
4. Decorative finish
5. Movable partitions

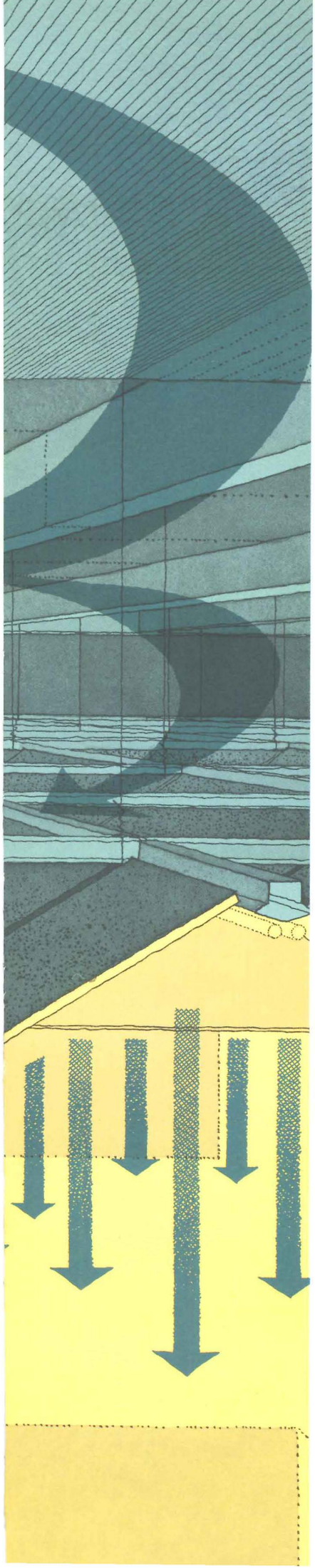


1. **Room-wide air distribution totally integrated with lighting.** The Armstrong Luminaire Ceiling System combines smoothly with the Ventilating Ceiling System. There is no loss of efficiency: lighting and air distribution complement each other. In fact, because the Luminaire Ceiling delivers more light than a conventional system, it can provide the same lighting level with fewer lamps, thereby reducing the heat load.

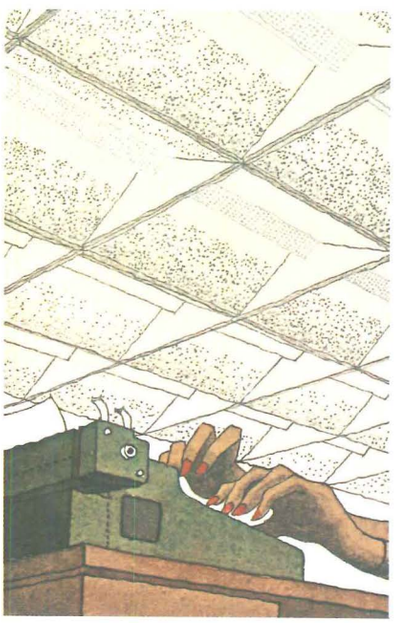
The Ventilating Ceiling works in its usual way: a stub duct fills the sealed plenum with conditioned air; this air is forced, under low pressure, down through thousands of openings in the ceiling panels, ventilating and heating or cooling every inch of space below.

Armstrong's exclusive Plenum Engineering Procedures, expanded to cover the Luminaire System, insure that air distribution is uniform and complete. And because the ceiling itself distributes air, all diffusers and most supply ducts are eliminated. This commonly saves 30¢ per sq. ft.

The open design prevents heat build-up: all fluorescent tubes are constantly exposed to the conditioned air in the room. This keeps their temperature close to the optimum, at which they emit most light, hold the correct color and last longest.

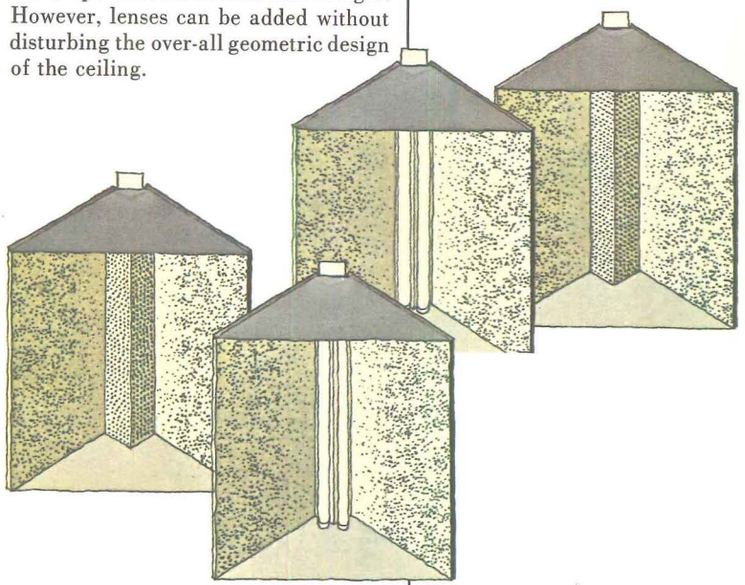


2. Sound-absorbing area increased. With its folded-plate design, the Luminaire Ceiling System has considerably more surface area than a flat ceiling. The design acts as a room-wide baffle to sound waves; in addition, the ceiling panels are highly sound absorbent. All this makes the space below quieter and more comfortable.

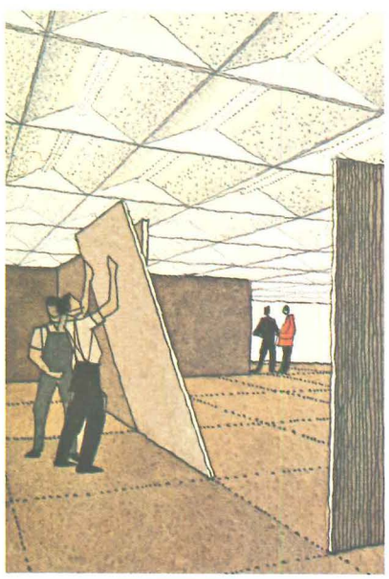


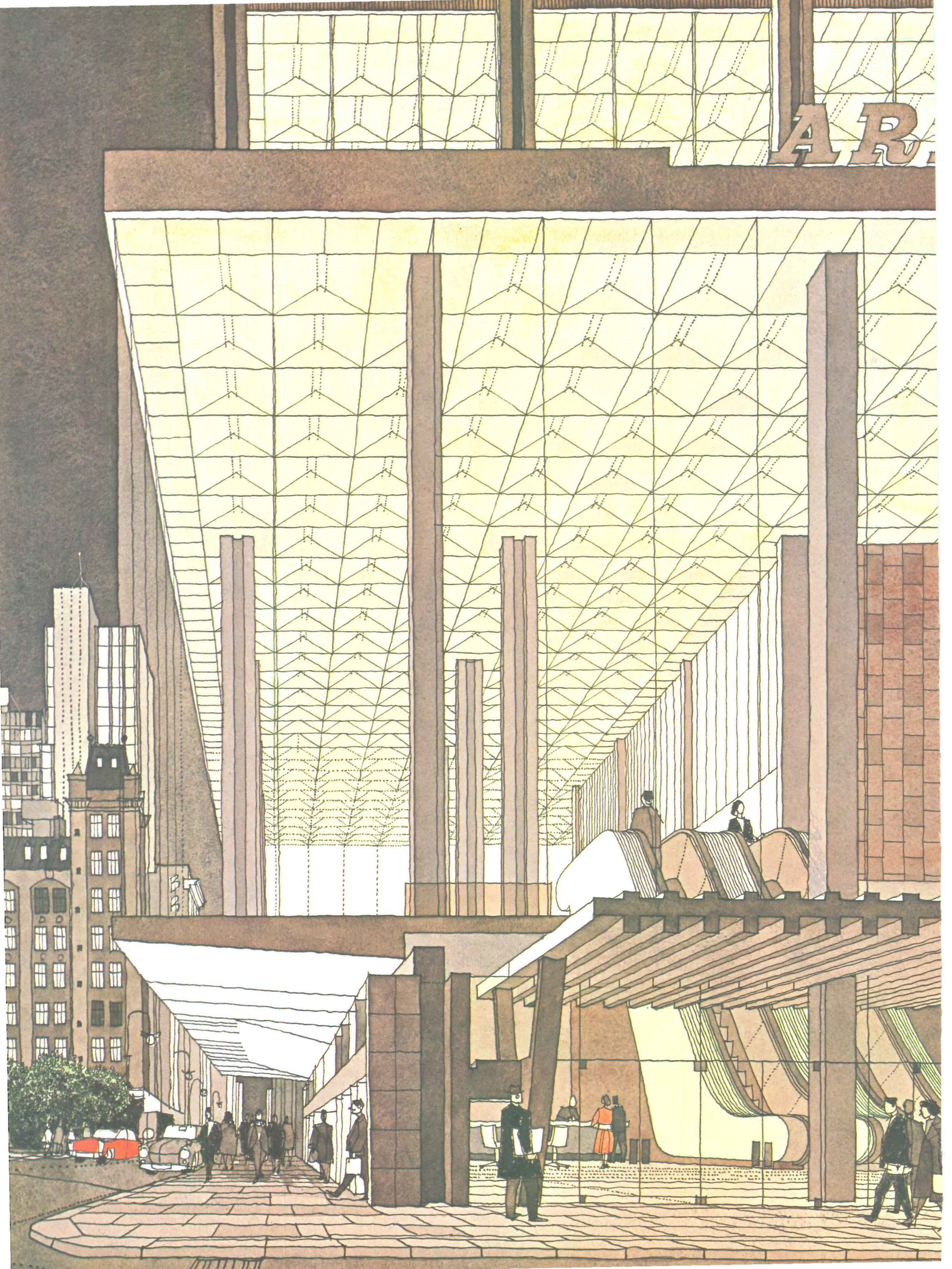
3. Less maintenance. Because the lamps are not enclosed, maintenance is simple: fluorescent tubes are changed and the ballast and wiring inspected from below. The lamp fixture is smooth and easy to clean. Each Luminaire panel lifts out, giving instant access to the plenum. The constant delivery of conditioned air through the Luminaire panels keeps dust away from the lamps; this helps maintain their average output of light at a high level. Its good maintenance factor may often mean that the Armstrong Luminaire Ceiling System can supply the desired level of illumination with fewer lamps than a conventional system.

4. Design effect can incorporate lenses. Scattered perforations give the surface of the Luminaire panels an attractive non-directional pattern. The Luminaire Ceiling gives complete visual comfort without lenses, grilles or shields below the lamps. The cut-off angle of each module effectively shields the lamps from the normal line of sight. However, lenses can be added without disturbing the over-all geometric design of the ceiling.



5. Partitions follow any grid; lighting, air conditioning unchanged. The square, modular framework of the Luminaire Ceiling Systems means that ceiling-high partitions can follow any grid line. (A special adaptor channel fits the V-shaped grid.) Layout is flexible within this modular pattern: no matter where the partitions run, each unit of the Luminaire Ceiling supplies light and conditioned air to the space below. Lighting and air-distribution systems can even be installed and working before the final room layout is decided.

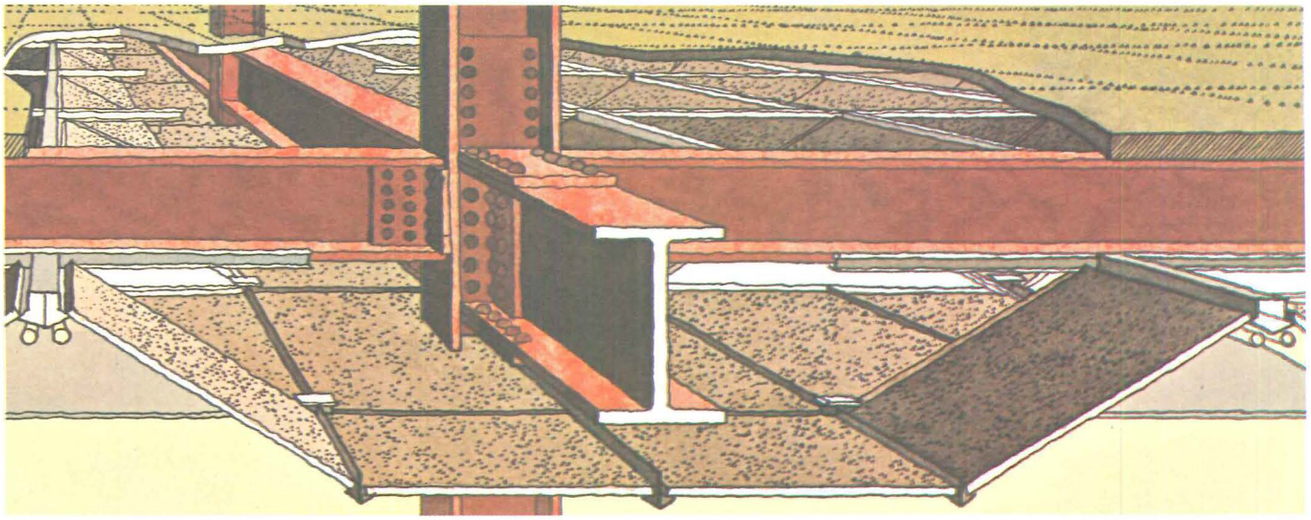


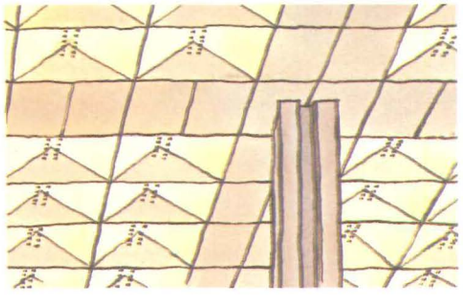


Armstrong Luminaire Ceiling System

The beauty of a luminous ceiling; the efficiency of an integrated system.

With the whole ceiling used to illuminate, there is a soft, even "wash" of light throughout the space below. This high level of illumination contrasts with the low brightness of the ceiling itself: there is no direct glare. Because a Ventilating Ceiling is completely integrated with the Luminaire System, there are no diffusers or registers to intrude. (So the advantages of room-wide diffusion apply equally to lighting and to air distribution.) The angled design provides an interesting, three-dimensional surface. This system holds considerable design possibilities for office areas, banks, schools, stores, restaurants and institutional buildings.





Modifications to fit under beams and around columns. Whether the main structural members are parallel with the fluorescent tubes or perpendicular to them, the modification is the same: a row of flat ceiling panels replaces a row of regular Luminaire modules. This creates a space wide and deep enough to accommodate the beam. The flat panels rest on the Luminaire Ceiling grid.

Air for the Ventilating Ceiling panels circulates easily between the base of the beam and the top of the ceiling. When a column pierces the ceiling, flat panels fill the space between the column and the surrounding modules.

The small rendering (left) shows how this beam-and-column modification looks from below. All ceiling panels—both flat and angled—are the same material and pattern, and there is no break in the basic modular layout.

The Armstrong Luminaire Ceiling System

Numerous installations in progress; to see one, call your Armstrong architectural specialist

In many buildings throughout the country, the Armstrong Luminaire Ceiling System has been specified and is installed or under installation. If you would like to see the system in operation, call your Armstrong architectural specialist or District Office (listed below). A visit will be arranged so that you can see and judge the lighting, air distribution, acoustical and decorative merits of this remarkable new system. Or you can see a working model of the system in your office by calling your Armstrong representative.

More information

For complete data, specifications, and drawings of the Armstrong Luminaire Ceiling System, please call your Armstrong architectural specialist or Armstrong District Office, or your Armstrong Ceiling Systems Contractor; or write Armstrong, 4212 Rooney Street, Lancaster, Pa.

Armstrong CEILING SYSTEMS

ATLANTA, GA.
1904 Monroe Drive, N.E.
876-6392

BOSTON, MASS.
200 First Avenue
New England Ind. Ctr.
Needham Heights 94
HIllcrest 4-5700

CHARLOTTE, N. C.
1127 E. Morehead St.
333-7741

CHICAGO, ILL.
6535 W. Irving Park Rd.
736-9440

CINCINNATI, OHIO
1057 Meta Drive
351-3330

CLEVELAND, OHIO
2975 Superior Ave.
621-7900

DALLAS, TEXAS
2727 Oak Lawn Ave.
LAkeside 1-5126

DENVER, COLO.
35 West 5th Ave.
244-0543

DETROIT, MICH.
Free Press Building
321 Lafayette Ave., West
963-8322

KANSAS CITY, MO.
500 W. 26th St.
VIctor 2-9155

LOS ANGELES, CALIF.
5983 E. Smithway St.
723-9381

MINNEAPOLIS, MINN.
4539 Hiawatha Ave.
721-2447

NEW ORLEANS, LA.
3308 Tulane Ave.
822-1676

NEW YORK, N. Y.
60 W. 49th St.
Rockefeller Center
JUdson 2-3700

PHILADELPHIA, PA.
301 City Line Ave.
Bala-Cynwyd
TEnnyson 9-6640

PITTSBURGH, PA.
24th St. & Allegheny R.
281-7474

ST. LOUIS, MO.
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SAN FRANCISCO, CALIF.
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697-1833

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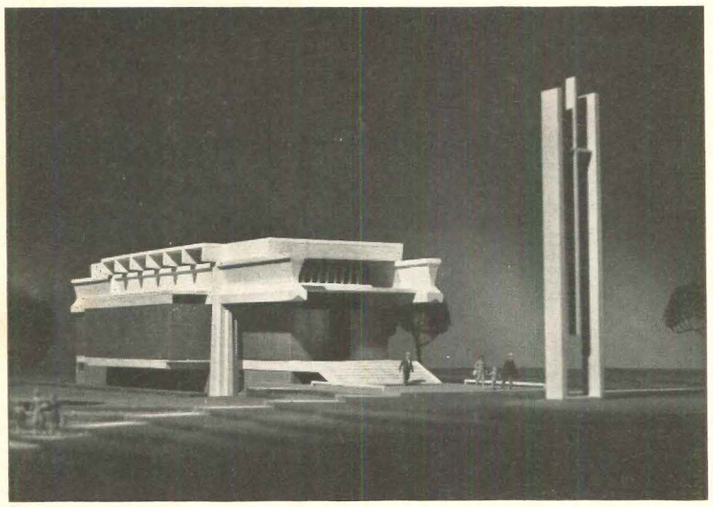
CANADA
6911 Decarie Boulevard
Montreal 29, Quebec

Bold new shapes for education (below)
Huge sports arena for skiing indoors (page 31)



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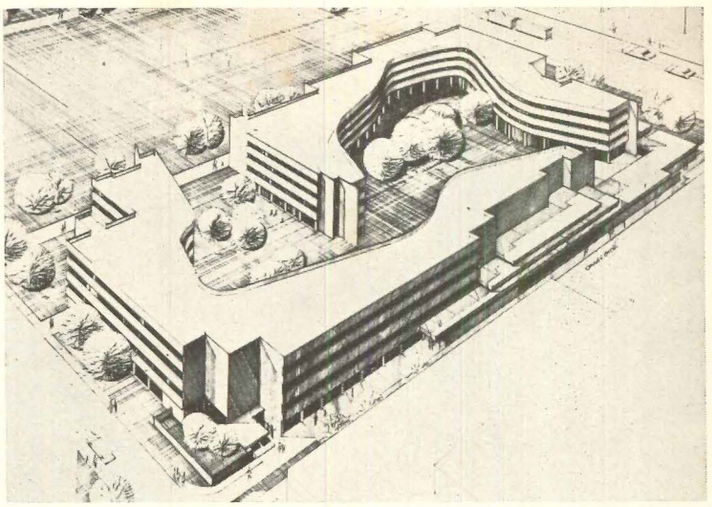

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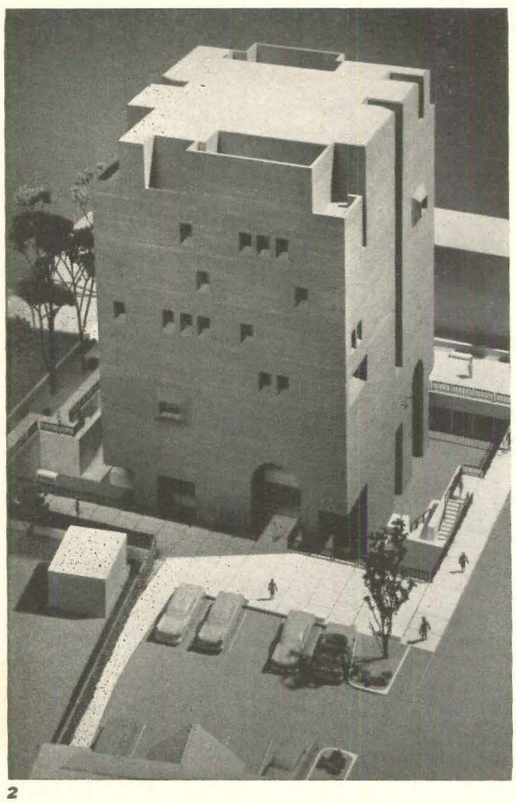

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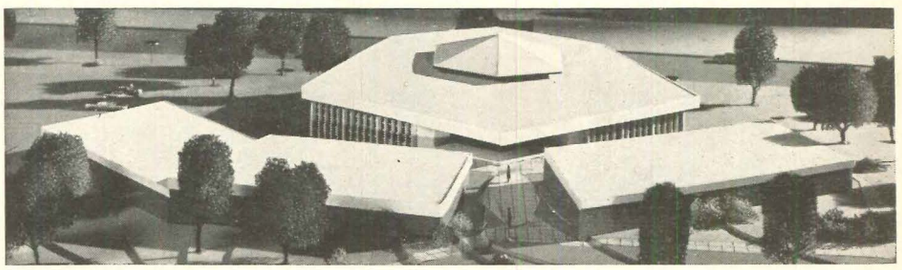

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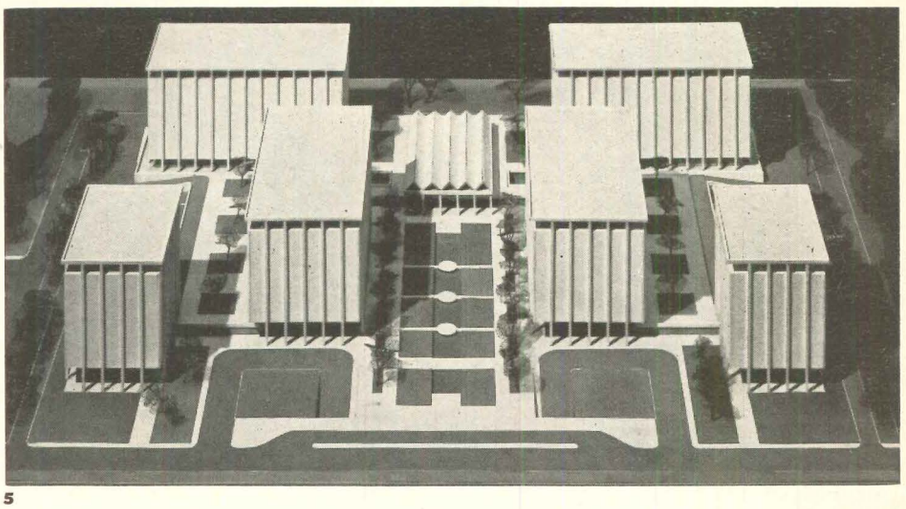


5

1. PENNSYLVANIA CHURCH. The bold shape of the Zion Evangelical Lutheran Church in Bridgeville, Pa., will stem from giant concrete columns supporting concrete beams, topped by precast T sections. The 350-seat nave is enclosed by cavity masonry walls which stand free of the columns above a basement social hall. Architect: Tasso Katselas.

2. HARVARD SCHOOL. Early next year, Harvard's Graduate School of Education will start building this seven-story, $1.6 million research and teaching center opposite neo-Georgian Longfellow Hall. For continuity, the walls of this final design (see also *Projects,* June '63) will be of red Harvard brick—broken by arching, two-story entrances, exterior stair cores (for interior flexibility), and a random pattern of deep-set windows. Classrooms and labs will open onto a sunken plaza. Architects: Caudill, Rowlett, Scott.

3. TORONTO COLLEGE. Contractor Taylor Woodrow has begun work on the University of Toronto's $2.5 million New College, the first of two men's residence halls that will form an unusual, self-contained quadrangle for some 600 students. To break up the big masses, Architects Rounthwaite & Fairfield have staggered their brick and concrete walls toward the street, curved them freely around inner greens.

4. MICHIGAN CENTER. Part of a new civic center being developed under urban renewal is this two-story, hexagonal headquarters for the School District of Pontiac, Mich. Designed by Eberle M. Smith Associates, the 25,000-square-foot, $500,000 structure will house all school administration, with two buildings (foreground) planned for expansion.

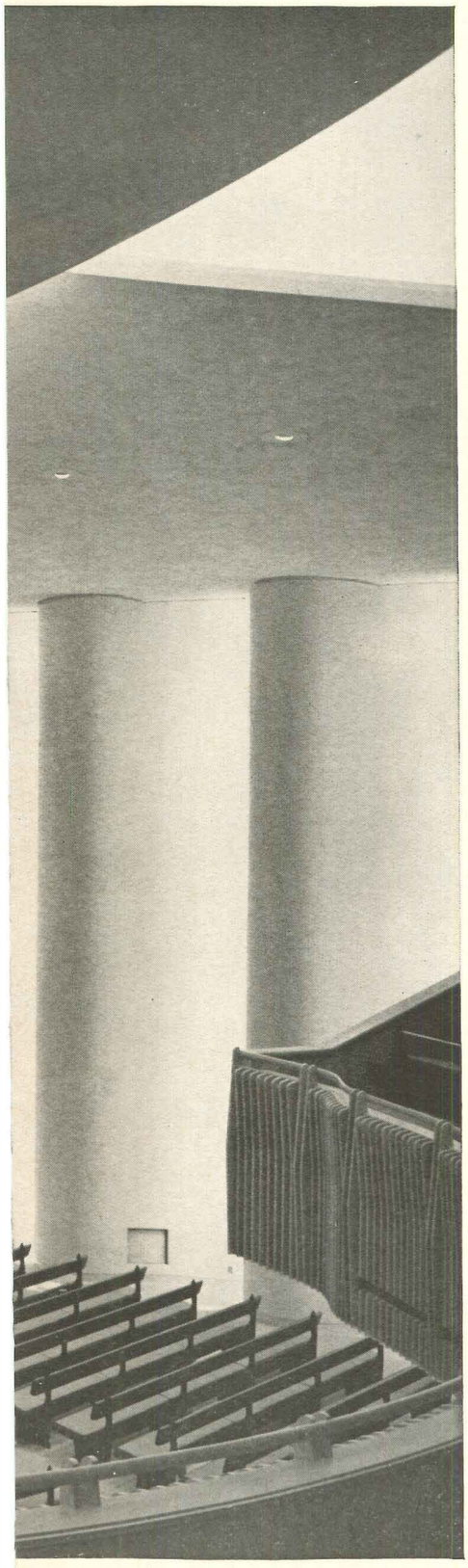
5. VIRGINIA OFFICES. Construction is underway on the first two buildings of the $50 million Crystal Plaza center in Arlington, Va. Designed by Architects Weihe, Black & Kerr, it will contain 3 million square feet of office and interior parking space, an auditorium, restaurants, and shops in a setting of gardens and pools. Owners are Charles E. Smith Co., developers, and Washington Brick & Terra Cotta Co.

continued on page 31

Creative use of lighting control in new Wichita church shows . . . How G-E do dramatic

Down the center of the huge fish-shaped ceiling slab of the First Methodist Church of Wichita, a row of nine spotlights points directly toward the floor. At the touch of a button a G-E Motor Master turns on the lights in sequence from the rear to the chancel. A second Motor Master turns them off. Additional 12-circuit Master-Selector Switches permit laying down a path of light just ahead of processionals and then picking it up right behind them.

Remote-Control Wiring can help you new things with mood lighting



THE FIRST METHODIST CHURCH of Wichita is one of the nation's truly magnificent contemporary sanctuaries. One reason for this: the power and majesty of its lighting. Another reason: modern lighting control made simple, flexible, and convenient with General Electric Remote-Control Wiring.

Simple remote-control stations in the narthex and in the chancel permit the selection of any one of five lighting moods at the touch of a push button. The change takes place over a period of slightly more than one minute due to the action of the General Electric Motor Masters, thus reducing any objections to sudden changes in lighting levels. Even while seated in the clergy seating area or while standing in the lectern or pulpit, the ministers have a last chance to use effective dimming or brightening of either chancel or nave lighting to assist them in delivering their messages. At each station, colored indicator lights show which mood is in effect.

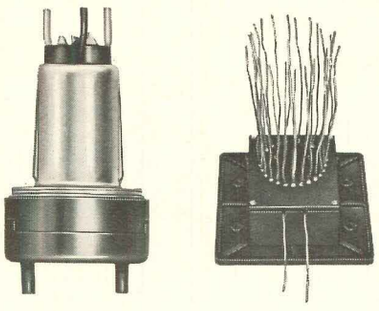
As Mr. Carl Green of Carl Green & Associates, consulting engineers for the installation, puts it, "The General Electric Remote-Control Wiring helps give the church the ultimate in mood lighting effects at only a fraction of the cost you would expect."

Instead of big, expensive switchboards there are neat, compact General Electric Motor Masters, relays and a 24-volt cross-connect or "patch" panel that permits a wide flexibility of the various lighting moods, as well as of control. At the touch of a mood switch a preselected Motor Master starts turning the desired circuits either ON or OFF, one at a time in rapid succession; and in order to handle the 47 mood lighting circuits, the last contact on the Motor Master starts a second Motor Master to control the remaining circuits. The last contact of this second Motor Master lights a certain color indicator at all control points to show which mood is in effect. All circuits are also controlled individually from 12-circuit manual Selector Switches, when desired.

Churches . . . country clubs . . . night-clubs — wherever you need the many moods of modern lighting under simple fingertip control — General Electric Remote-Control Wiring can make it safer, easier, less expensive.

For the complete story on modern lighting control, write for the Remote-Control Wiring Manual for architects and consulting engineers. General Electric Company, Wiring Device Department, Providence, Rhode Island 02907.

Architects: Glenn E. Benedick, AIA, Wichita
Consultant: Harold E. Wagoner, AIA, Philadelphia
Electrical Contractor: Wichita Electric Co., Inc., Wichita
Consulting Electrical Engineers: Carl Green & Associates, Wichita



The sanctuary building uses 100 relays for lighting and a total of 14 General Electric Motor Masters.

While the entire system may be controlled from this control room overlooking the sanctuary, other switches are placed throughout the church for the convenience of the minister, ushers, the organist, and the sound technician.

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Republic Type 304 ENDURO Stainless Steel was used for escalator interior panels, deck and skirt boards at the new Pan Am Building in New York. *Architects: Emery Roth & Sons. General contractors: Diesel Construction Company. Stainless fabricated by Flour City Architectural Iron Company, Minneapolis, Minnesota.*

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There is also exclusive new TEXTURE•STAINLESS* Steel—with a three-dimensional, nonrepetitive texture. Supplied in the natural color of the stainless or with depressed pattern areas colored. Sheets to 36 inches in width, 10 feet in length.

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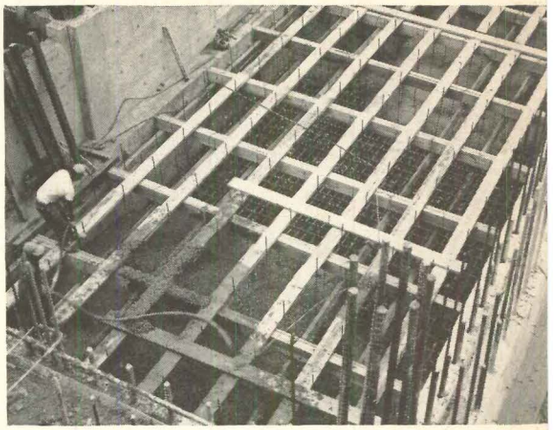
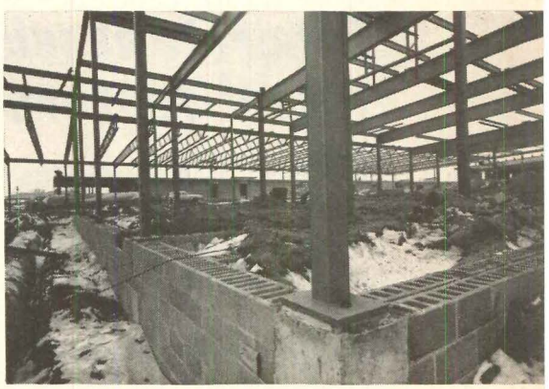
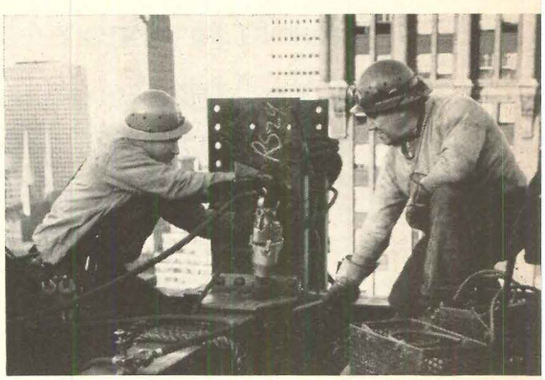


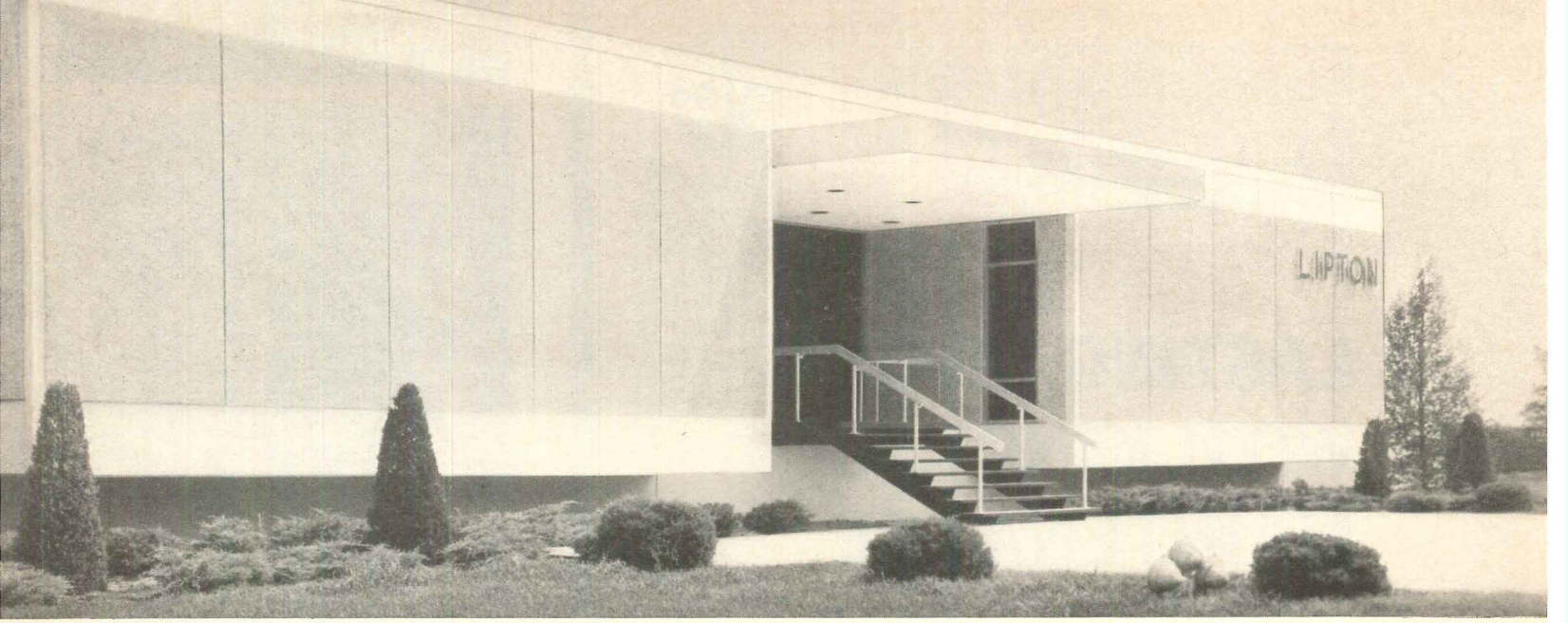
SAVED 100 TONS OF STEEL. Republic High Strength Re-Bars reduced steel requirements by an estimated 30% at Case Institute's new Olin Laboratory for Materials. Produced from new billet steel, these bars meet ASTM Specifications A-432 and A-431. All standard sizes including 14S and 18S are available. Send the coupon below for complete information.



SAVED 1/16 ALL AROUND. ¼-inch wall Republic ELECTRUNITE® High Strength Structural Steel Tubing replaced conventional 5/16-inch wall tubing originally specified for this school in Utica, Michigan. ELECTRUNITE costs no more, yet provides guaranteed minimum yield strength 36% over ASTM Specifications A-7 or A-36. Send for 52-page booklet.



SAVED 40% IN ERECTION COST. Six hundred thousand Republic High Strength Bolts were used for structural fastening at the new Pan Am Building. Installation was fast. And bolting delivers up to 40% more strength than riveting. Costs can be cut by as much as 40%. Send for brochure on Republic's new Heavy Head High Strength Structural Bolt Assemblies.



LIPTON WISH-BONE SALAD DRESSING PLANT, Independence, Mo. Exposed aggregate panels—80 in all—form walls of plant offices. Owner: THOMAS J. LIPTON, INC., Englewood Cliffs, N. J. Architects: A. M. KINNEY & ASSOCIATES, Cincinnati, Ohio. General Contractor: SHARP BROS. CONTRACTING CO. Masonry Contractor: W. B. ROYSE MASONRY CO., INC., Stilwell, Kans. Stone Setting: RALPH McCLAIN. Transit Mixed Concrete: STEWART SAND & MATERIAL CO. Precast Lightweight Concrete Roof Channels: CARTER-WATERS CORPORATION. "Incor" Concrete for Panels: READY MIXED CONCRETE COMPANY. Concrete Building Units: SLATON BLOCK CONCRETE PRODUCTS, INC. (all of Kansas City, Mo., unless specified otherwise)

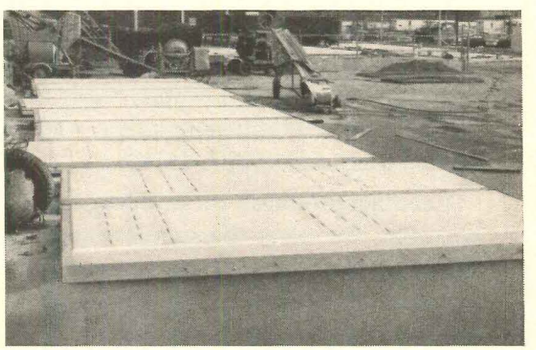
Concrete panels—precast with Incor®—featured in new Lipton plant

How to combine architectural distinction and rugged practicality? More often than not, modern concrete is the answer. For proof, consider Lipton's new $1.5-million Wish-Bone Salad Dressing Plant at Independence, Missouri.

The use of precast concrete panels offered decided advantages—speed of construction, economy, beauty, durability, fire-safety and a minimum of maintenance. And, to meet future expansion requirements, one side of the plant can be removed by lifting the panels out of their flanged frames and extended outward as far as desired.

All 260 panels in the Lipton plant were precast using "Incor"—America's *first* high early strength portland cement.

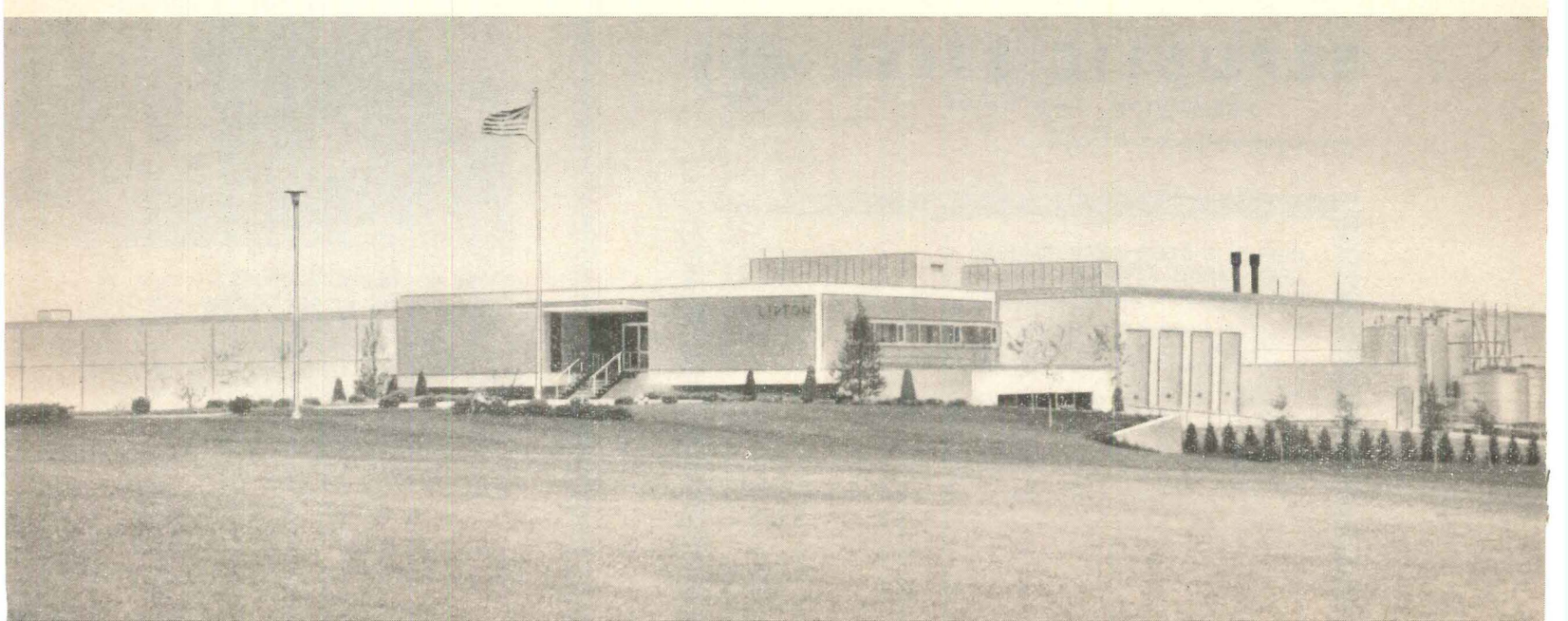
LONE STAR CEMENT CORPORATION, N. Y. 17, N. Y.



Reinforced concrete slabs—each 8 feet 4 inches high, 20 feet wide and 8 inches thick—are used for walls of manufacturing and warehouse sections. Slabs are laid horizontally tongue-and-groove fashion to form wall sections 25 feet high by 20 feet wide.

INCOR 24-HOUR CEMENT

Complete plant, including offices, manufacturing and warehouse sections, covers 100,000 square feet of floor space.



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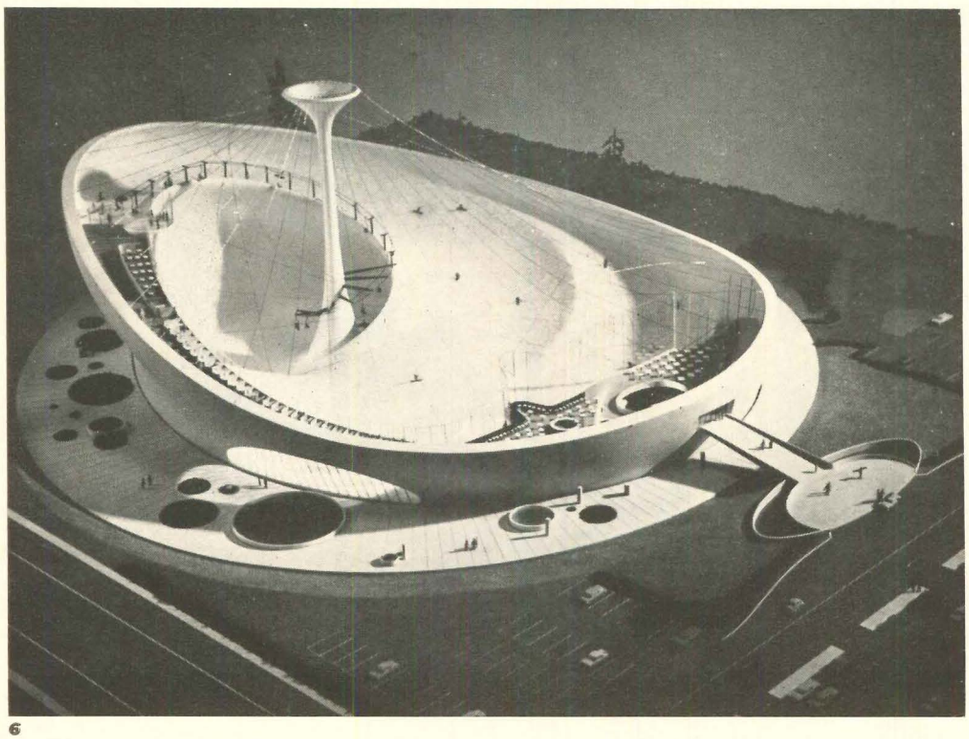

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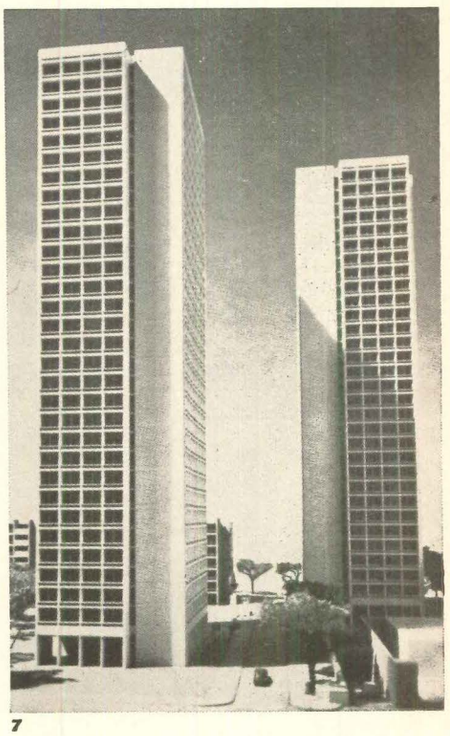

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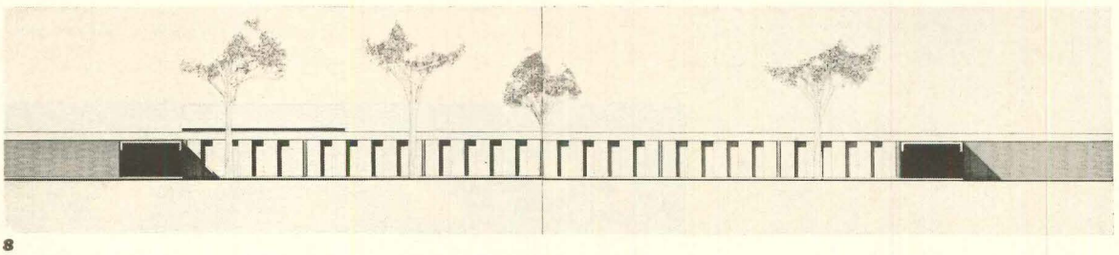

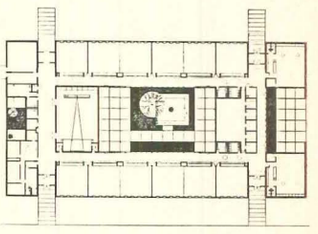

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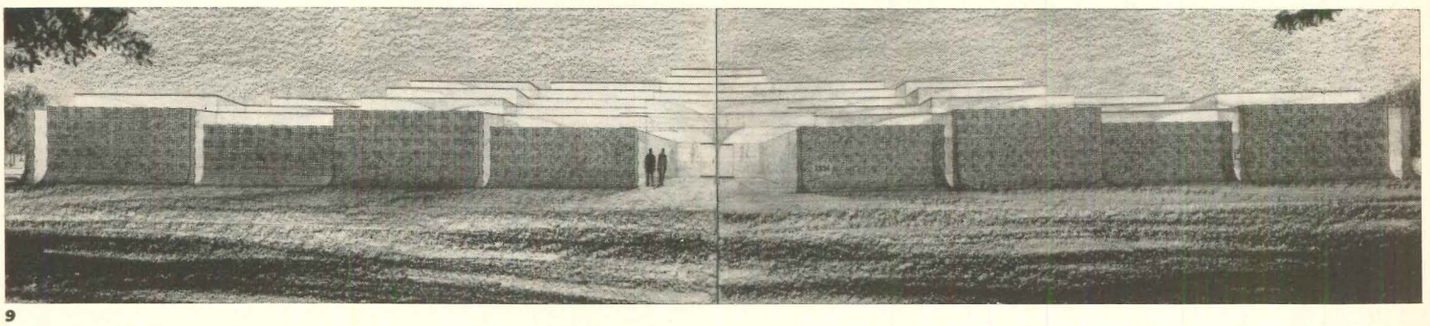


9

6. INDOOR SKIING. Someday Southern Californians may be skiing year-round in this huge "Ski-Land" arena, a 480 by 360 foot concrete ellipse carpeted with pulverized ice and maintained at 26 degrees. Under the main slope are lockers, kindergarten, snack bar, and the start of the lift that spirals to the top. Overlooking the scene are a 450-seat bar and restaurant, and spectator stands stepped up one side. A pylon rising 190 feet holds cables which will support a heat-reflecting roof. Developers Lombardo and Mascola have several sites under negotiation. Architects and engineers: Daniel, Mann, Johnson & Mendenhall. Probable cost: in the neighborhood of $3.5 million.

7. NEW YORK TOWERS. For New York University's "University Village" below Manhattan's Washington Square, Architect I. M. Pei & Associates have designed a pair of 30-story concrete towers containing 175 apartments each. One will house faculty families; the other, general middle-income tenants. Also being designed: low-rise apartments for faculty and students, a N.Y.U. "laboratory" school; parking for 300 cars.

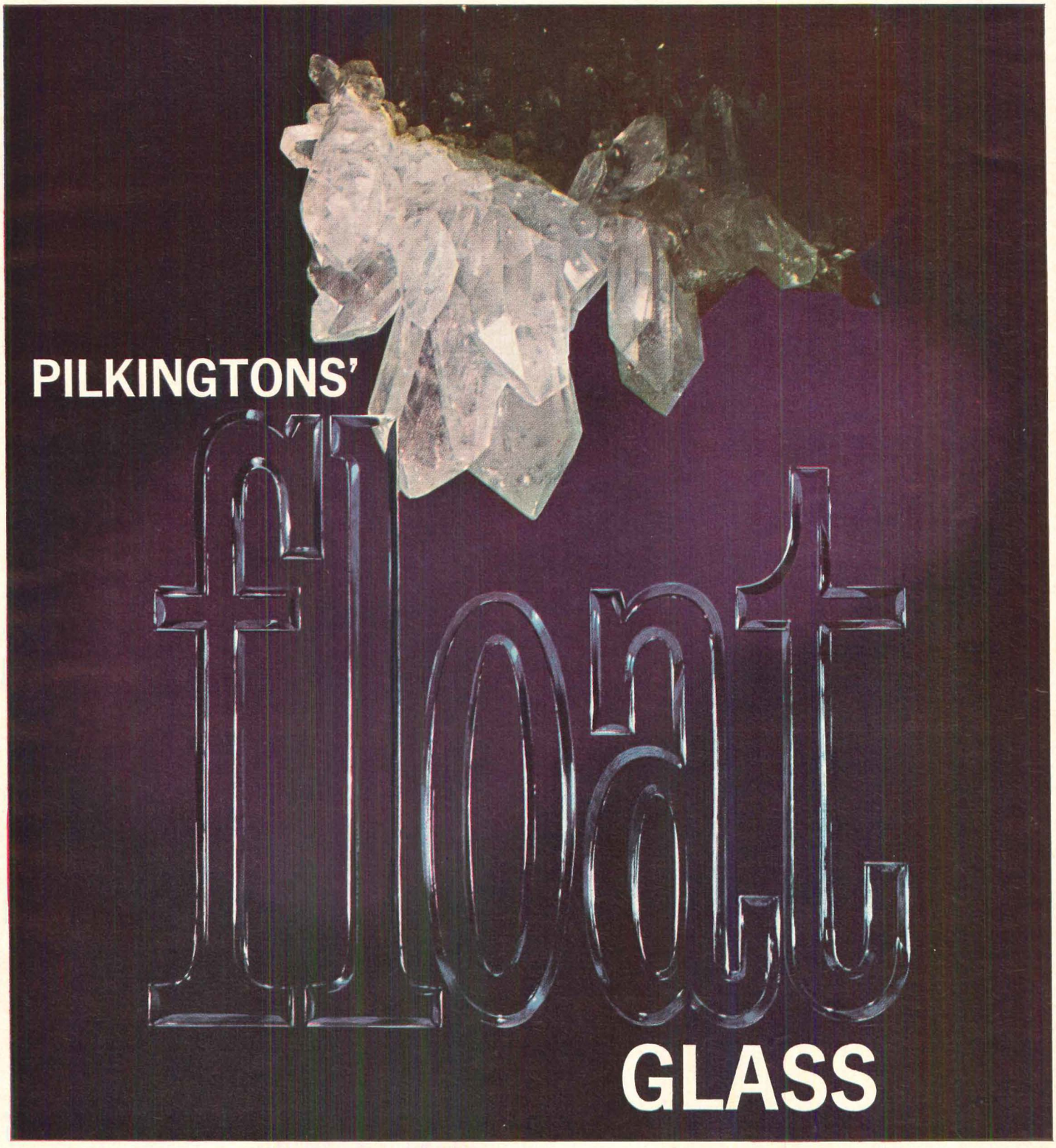
8. NEW HAVEN SCHOOL. Architect Eliot Noyes has designed the Dwight School for New Haven, Conn. as a prototype elementary school for city use. Behind staggered wall panels which admit light but shut off street views, classrooms open on a central court between multipurpose and resource rooms (plan, right). Administration and kindergarten units flank the ends. Associated architects are Schilling & Goldbecker of New Haven.

9. IBM IN JERSEY. Near an exit of the Garden State Parkway in Cranford, N.J., Mahony-Troast Construction Co. has started work on this 52,000-square-foot office and sales facility for International Business Machines. Architect Victor A. Lundy has designed the square structure as a "forest" of 81 square concrete "trees" varying in height up to a peak over a central fountain garden, and separated by clerestories for uniform interior daylight. Brick walls repeat the staggered checkerboard pattern of the roof.

continued on page 35

NEW BRILLIANCE! NEW CLARITY!

Pilkingtons' float glass outdates plate glass



Float is a Pilkington achievement. This revolutionary advance in glassmaking is a product of Pilkington research and development. For the first time all the best qualities of plate glass and sheet glass have been combined in a single product.

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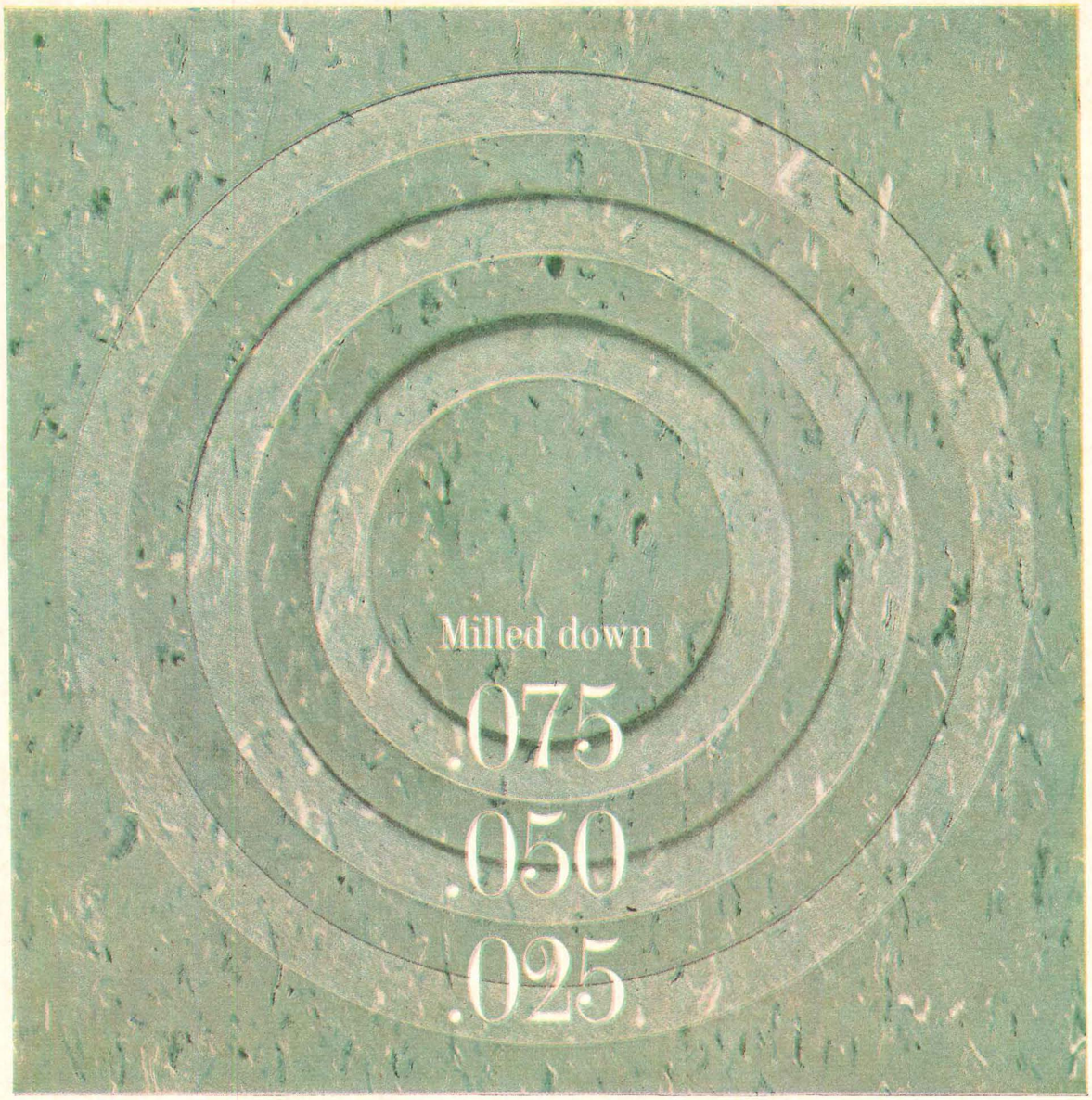

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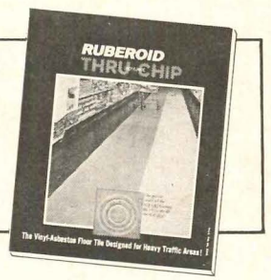

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FINE FLOORING

The RUBEROID Co., 733 Third Ave., N.Y.17, NY.

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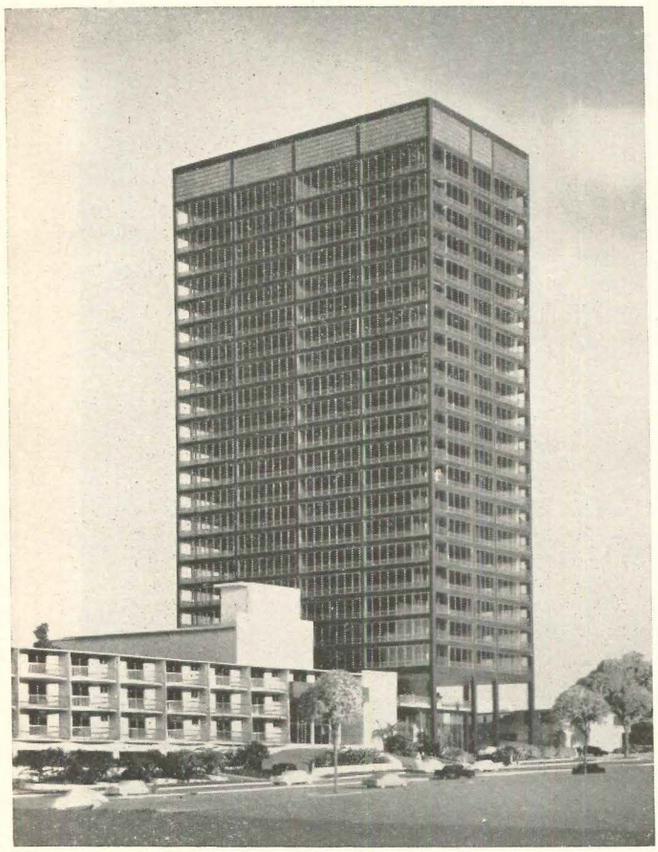

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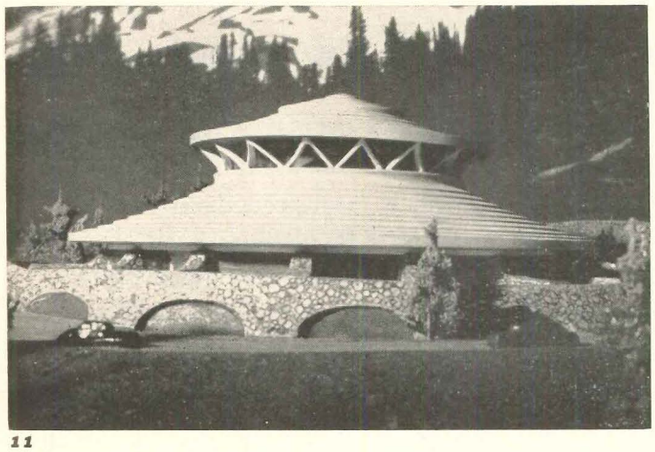

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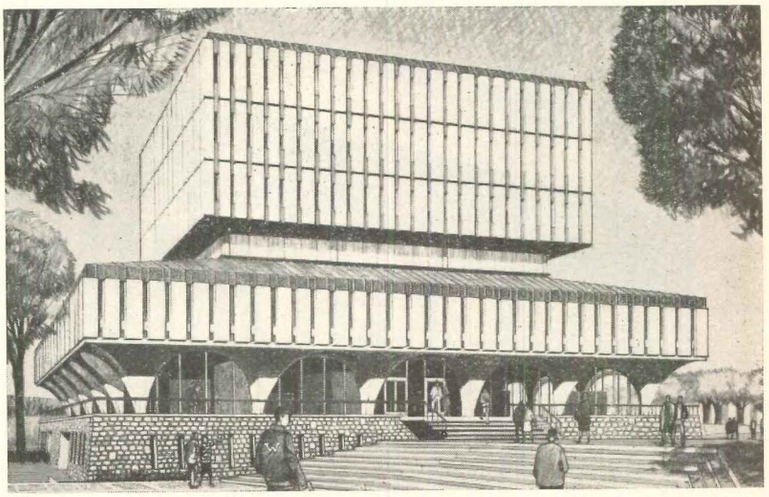

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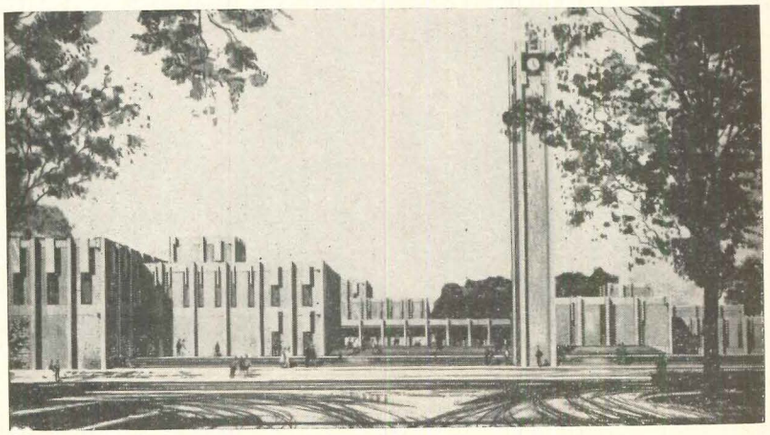

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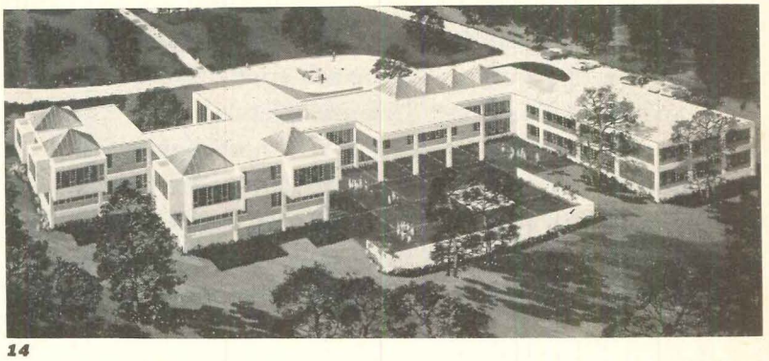

14

10. LOS ANGELES TOWER. Soon to go up on Wilshire Boulevard, the "Park Avenue of the West," is this 24-story, $5.5 million apartment house by Architects Kite & Overpeck for Grad-Western Co. Its 118 luxury units, above parking for 169 cars, will be sheathed in a bronze frame not unlike that of the real Park Avenue's Seagram building. Among the tenant attractions: closed-circuit TV for screening visitors, supervising children at the pool.

11. MT. RAINIER LODGE. The Hawaiian architectural firm of Wimberly, Whisenand, Allison & Tong is being "imported" to the mainland to design this $1.1 million ski lodge and summer visitors' center for the National Park Service at Mt. Rainier, Wash. The conical building, of precast framing members, will have a third floor winter entrance above Rainier's average 17 foot snow pack and will house restaurant, exhibit, and auditorium space.

12. CANADIAN LIBRARY. Focal point on the University of Waterloo's campus west of Toronto will be this $1.4 million Arts Library by Architects Shore, Moffat & Partners. First phase is three floors topped by a sloping roof. Structural and mechanical systems will accommodate up to seven more floors by 1971.

13. CAMPUS GATEWAY. Yet another stylistic departure for Skidmore, Owings & Merrill is this design for Northwestern University's new $2.5 million administration building in Evanston, Ill. The Rebecca Crown Memorial Center, largely donated by Chicago's Henry Crown, will consist of three faintly Gothic buildings and a 100-foot clock tower faced in limestone and grouped around a raised, brick-paved court above a 60-car garage.

14. SCHOOL FOR THE DEAF. In this new pre-primary building, designed by Architects Frederick G. Frost, Jr. & Associates for the New York School for the Deaf in Greenburgh, N. Y., each peak-roofed classroom will have two bay windows which can be used as small rest or play areas while regular instruction is going on. A 64-bed dormitory wing is to the right of a central dining hall. END

Creating Interesting Texture at Low Cost

You now can subtly vary the interplay of light and shadow on exterior walls, to achieve unusual beauty and textural interest. This architectural distinction is attained with *Contours CV*, a new, lightweight ceramic facing with incised and bas-relief pattern. That shown in the photo is "Sculptured Shadows." For this Phoenix, Arizona, medical center, Architect G. Collum combined flat and sculptured units.

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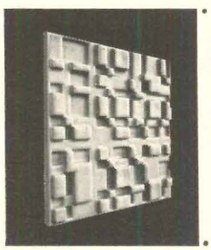

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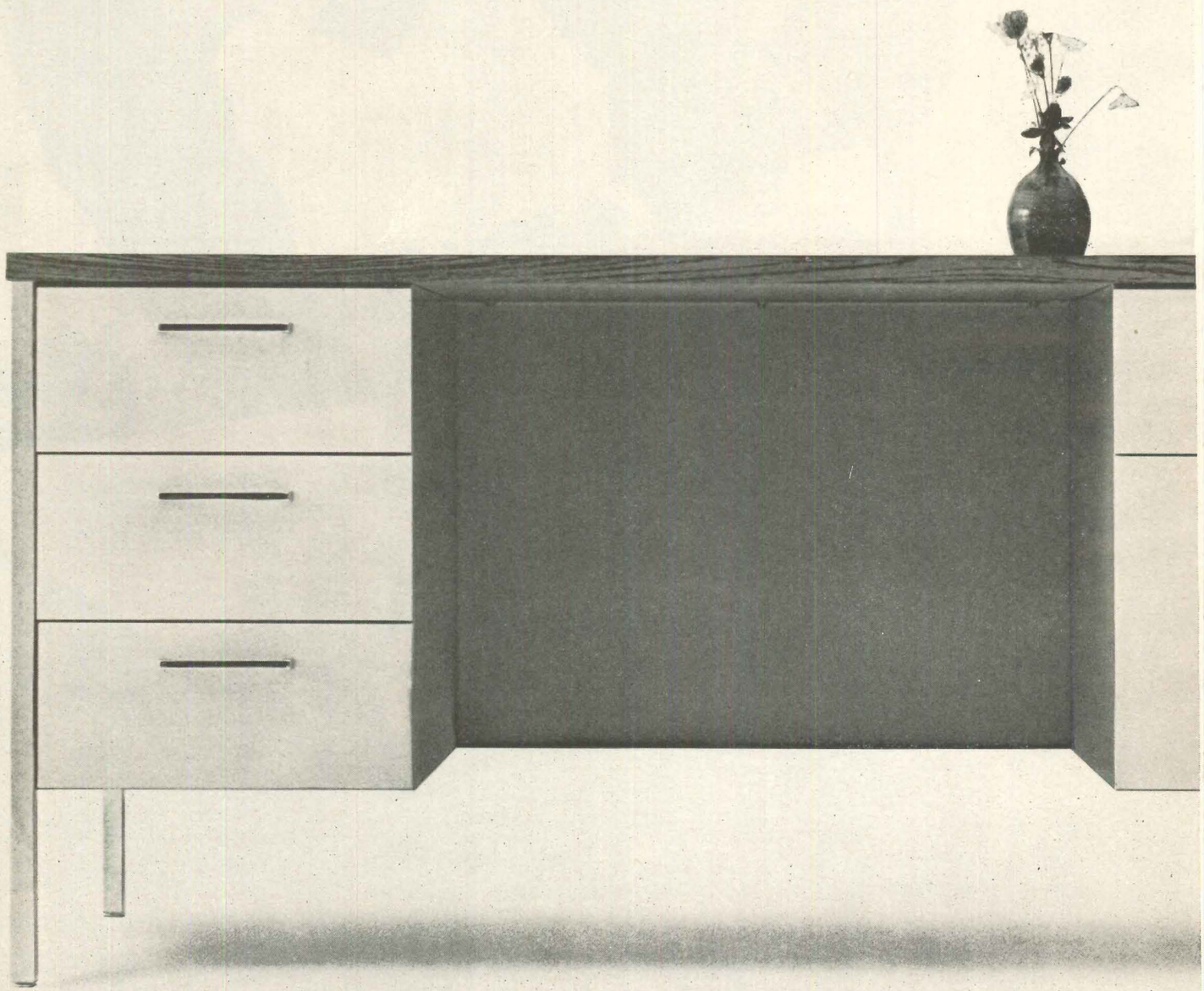
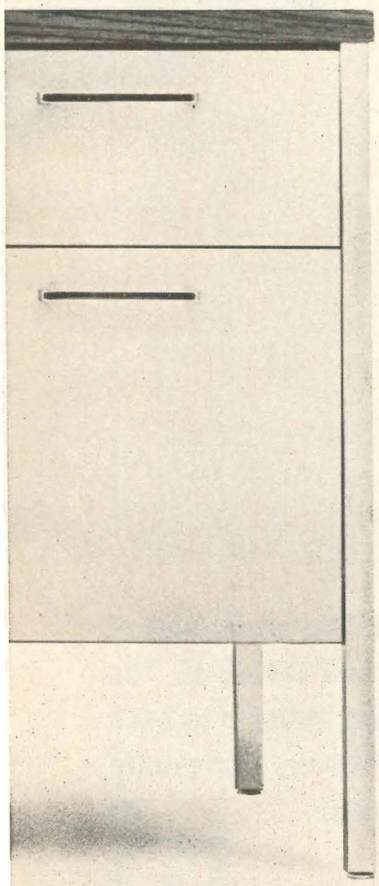
HEROES

Hurrahs and handshakes seem to go only to the stylists in the high-style arena of today's office furniture business. So it was with the stylists who created the brisk design clarity that became Corry Jamestown's award-winning DORIC line. Now we nominate a new set of heroes, the Corry Jamestown engineers who took DORIC and conjured up the practical refinements exposed on the next three pages.

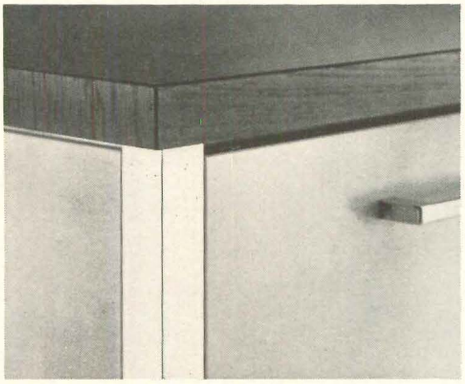
INTRODUCING DORIC II...

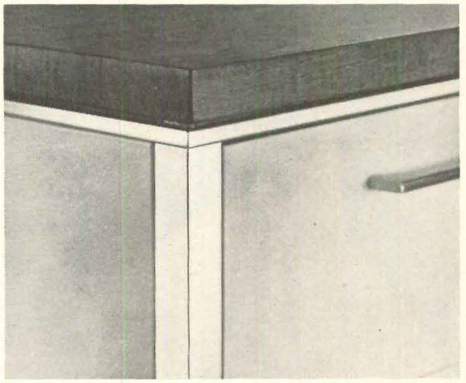


Only the expert eye can spot the refinements DORIC II brings to the DORIC styling concept. Spare sweep of line and plane—the total look—remains the same. Yet, never tampering with the graceful styling, those heroes in the Corry Jamestown engineering ranks changed a part here and there, applied a little engineering magic and gave us DORIC II. They added to function, subtracted from cost to make the beauty of DORIC practical for every corner of any office plan. We'd like to give them a medal. Take a close look at DORIC II. See if you don't agree.

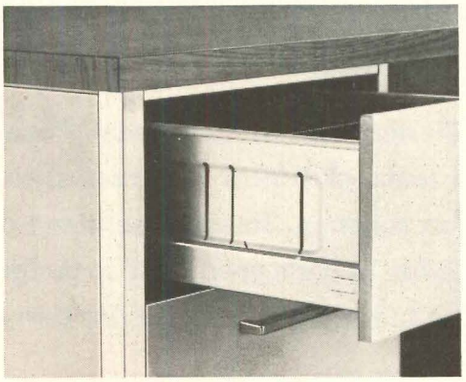


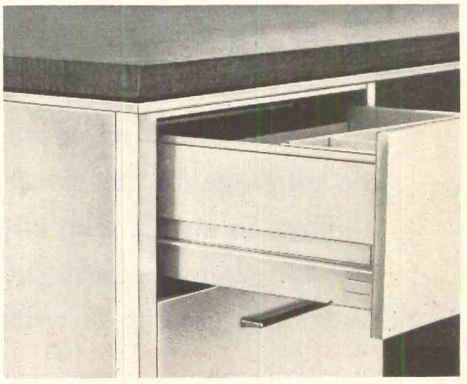
SHH! . . . THERE'S LESS TRIM ON DORIC II. NOT ENOUGH LESS TO SUBDUE THE BEAUTY, YOU CAN SEE IT STILL RETAINS THE DORIC APPEAL.





A BACK PANEL THAT NEED NOT BE HIDDEN AGAINST A WALL. IT IS DIFFICULT TO TELL THE DORIC II BACK PANEL FROM DORIC. STILL HAS THE CLEAN, FLUSH, MODERN LOOK, ALL THE WAY AROUND.





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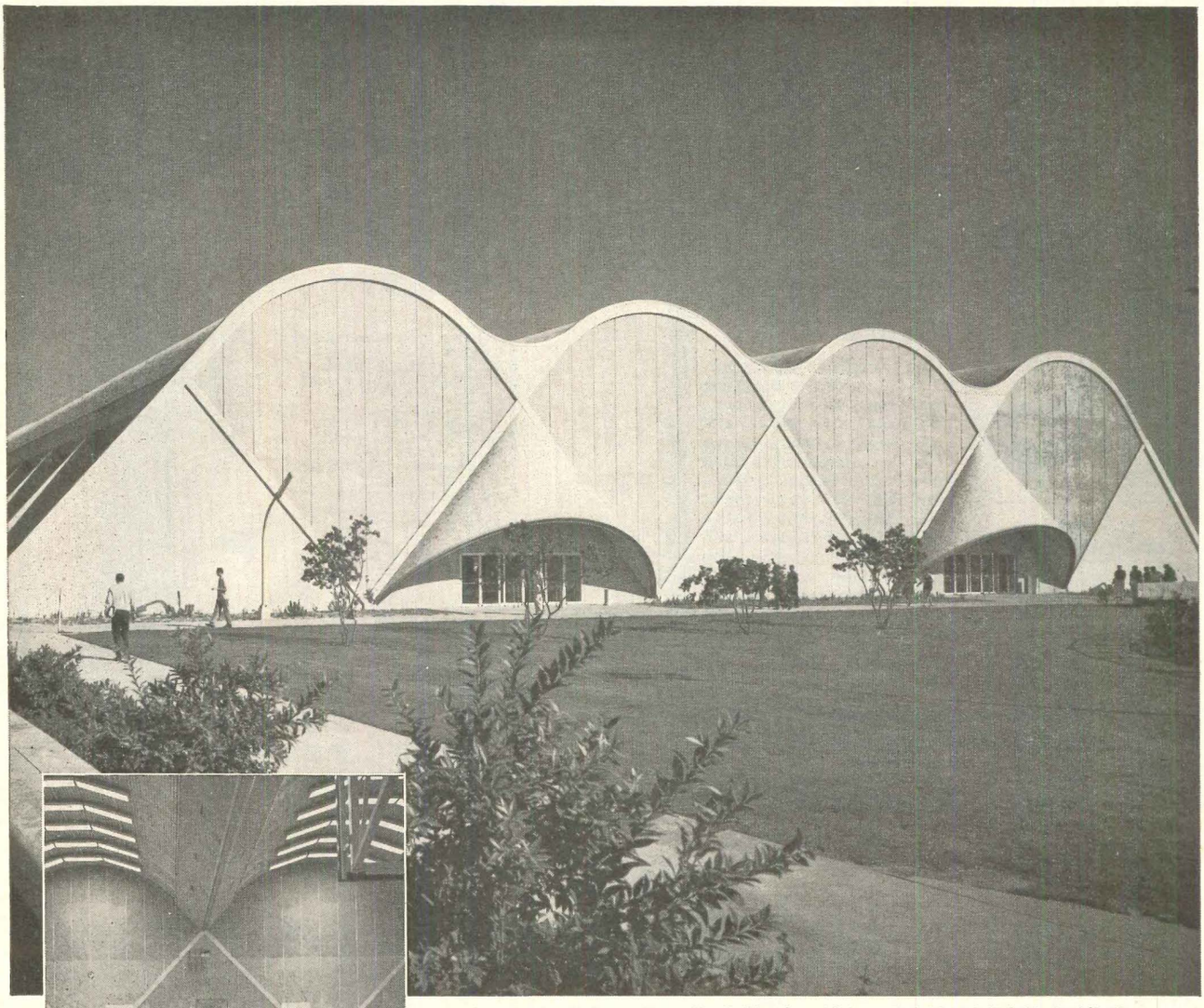

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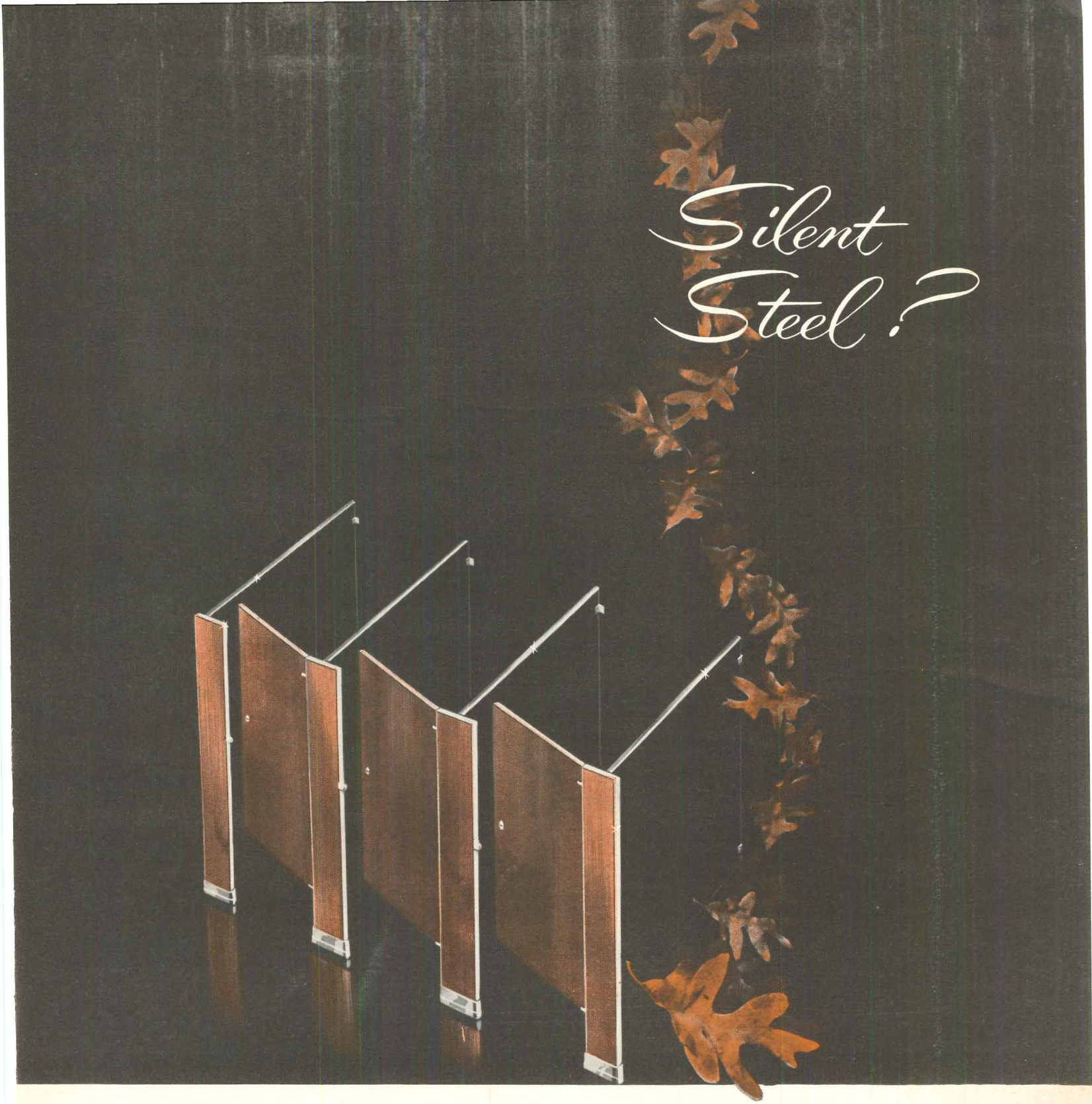

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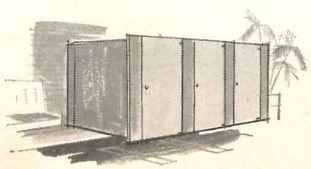
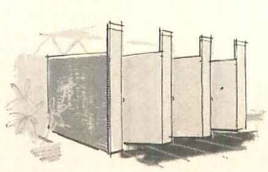
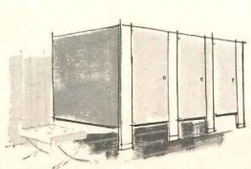


WALL SUPPORTED



CENTURY



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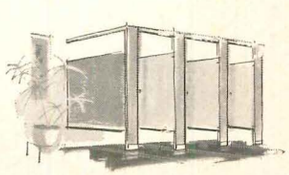

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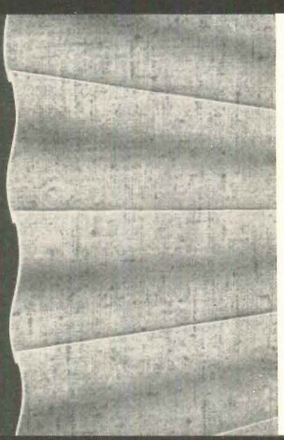

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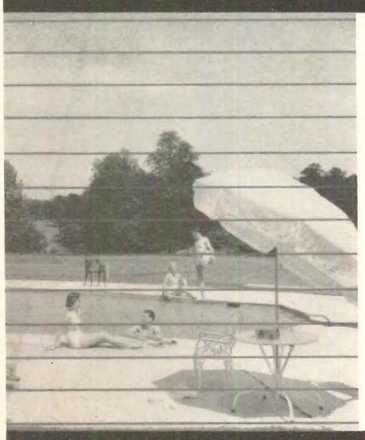

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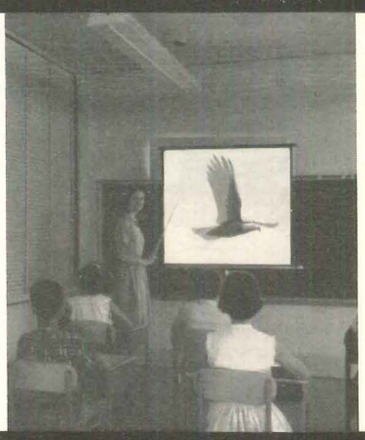

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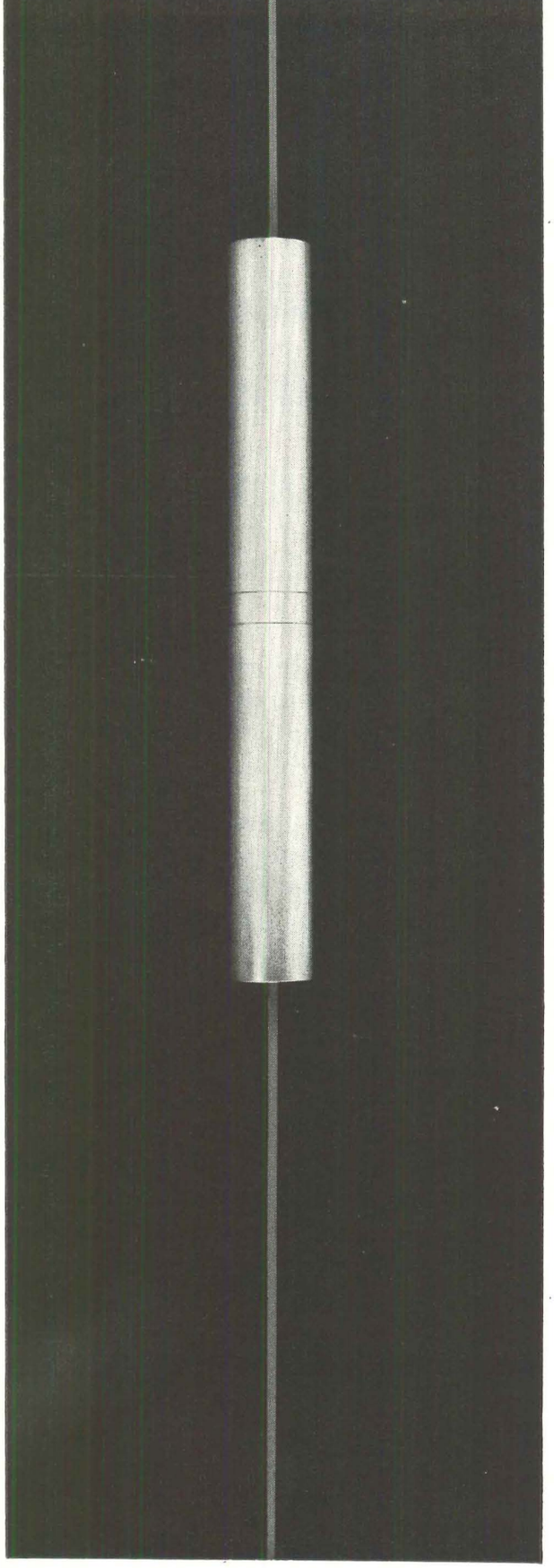
PLAN AHEAD. Provide for adequate yet attractive public telephone installations while you're still in the blueprint stage. Today's flexibility in color, materials, basic size and design allows you to plan public telephone installations that will reflect the same decor you designate for walls, floors and ceilings. Early planning makes it possible for our Public Telephone Consultants to analyze the telephone requirements of a particular building, and offer practical suggestions. Remember also that preplanned installations often eliminate the costs and delays of expensive afterthoughts.

ACCENT CONVENIENCE. Little comforts are an important consideration in planning any building for public use. Tenants, visitors, employees and casual traffic all require easily accessible and conveniently located public telephones. Our Consultants can help you select the proper locations in your particular building, based on its function, floor layout, and potential traffic patterns.

SPECIFY THE RIGHT NUMBER OF INSTALLATIONS. The logical number of public telephones can be predetermined for any building. In this area our Public Telephone Consultants are helpful, too—for they can predict with remarkable accuracy the number of installations your building will require.

BELL TELEPHONE SYSTEM



NEW . . . FROM McKINNEY . . . A hinge so slim, trim and clean-looking that it nearly hides itself. Acclaimed by architects to be the most beautiful design on the market. Available in popular sizes, finishes. For further information, write:

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Pittsburgh 33, Pennsylvania • In Canada:
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THERE'S A THING CALLED MONEY...

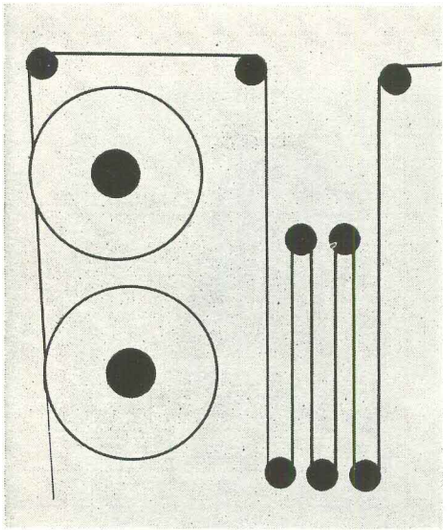
It's one man's medium of exchange, another man's poison—or, if you don't like it straight, root of all evil. To us, it's also an indicator of the presence (or absence) of a very important asset for businesspaper advertisers: *wantedness*.

When a man wants a publication enough to pay for it, the chances that he'll read it are bright. When he doesn't, it's anybody's guess. And in our book, *anybody's* guess as to whether or not your advertising is likely to be seen isn't much to put *your* money on.

If you, too, believe that money talks, a good place for your advertising to cash in on what it says is in the pages of publications that readers *pay for* . . . publications bearing this familiar symbol:

THE ASSOCIATED BUSINESS PUBLICATIONS ABP

The plus value of paid circulation is "wantedness"



THE CARE AND FEEDING OF 62,500 CHARACTERS

You and 62,500 other Architectural FORUM subscribers are now being computerized at a rate, coincidentally, of 62,500 characters per second.

Formerly all FORUM subscribers' names and addresses were manually processed and printed by means of metal stencils. Today these same records are being converted to magnetic tape and the information is being fed into two IBM 7070 computers at Time Inc.'s subscription fulfillment headquarters in Chicago.

In addition to reading the tape at the rate of 62,500 characters (numerals and letters) per second, the computers can also print a mailing strip with approximately 112 individual names and addresses per second—a series of perforated labels like the one you find pasted on the wrapper of your copy of FORUM each month.

Architectural FORUM's use of the most advanced electronic machinery for its circulation operation means one thing: greater efficiency and speed in the servicing of your own subscription.

As always, whenever you write FORUM about your subscription, (Subscription Service, 540 N. Michigan Ave., Chicago 11, Ill.) please enclose the address label from the wrapper on your magazine. This will insure that FORUM's computers will find your subscription record promptly and accurately.

FORUM

Architectural Forum
the magazine of building
published by Time Inc.

Hertzka & Knowles and Skidmore, Owings and Merrill, associated architects.

250,000 sq. ft. of super-tough Goodyear vinyl flooring cuts maintenance cost for Crown Zellerbach

To cover more than a quarter million sq. ft. in San Francisco's new Crown Zellerbach building, the architect chose Goodyear Vinyl Floor. Today, after three years of heavy foot traffic, the choice looks better than ever.

Goodyear Vinyl can actually pay for itself in maintenance savings! Because it is so tough and wear-resistant, it doesn't require wax. Machine cleaning and regular polishing with a commercial buffer are all it takes to maintain high-luster beauty.

You'll find all these qualities in new economy-priced DeLuxe True Vinyl Flooring by Goodyear. It's homogeneous. The solid vinyl quality—and the pattern—go all the way through.

Available in new multiple marbleized colors. In ⅛" gauge for commercial and heavy traffic use and in 1/16" for light traffic areas. For specifications, see your nearest Goodyear Floors Distributor, or write: Goodyear, Flooring Dept. L-8110, Akron 16, Ohio

GOODYEAR

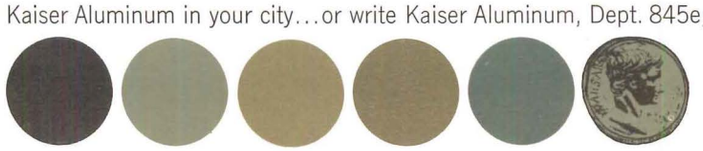
FLOORING PRODUCTS

Columbia-Gulf Transmission Co. headquarters, Houston/Architect: Office of Douglas Orr, F.A.I.A./Associate Architect: Office of George Pierce-Abel B. Pierce/Contractor: Linbeck Construction Corp./KALCOLOR® aluminum curtain wall: Fentron Industries, Inc.

THE ONSHORE BREEZE IS WELCOME AT COLUMBIA-GULF

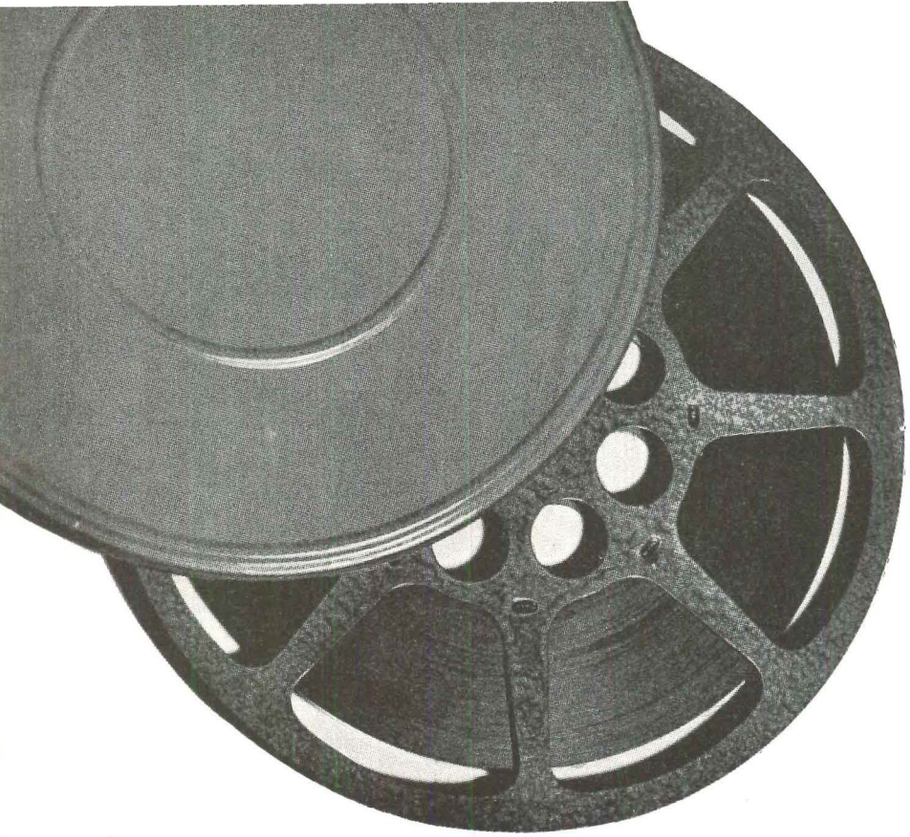
THESE MULLIONS ARE KALCOLOR® ANODIZED

A breeze from salty Gulf waters bears no ill to the smooth amber aluminum mullions of Columbia-Gulf Transmission Company's Houston headquarters. These mullions have the benefits of KALCOLOR anodizing: high resistance to corrosion, color uniformity, proven resistance to fading. KALCOLOR is the only anodized aluminum with a range of colors like those shown in circles below already proven in existing exteriors. Its dense coating stands up against atmospheric attack. Colors match consistently because they stem from the alloy (not dyes). Most important: years of severest exposures has proved every KALCOLOR shade colorfast against sun and salt. To locate virtually any architectural product, KALCOLOR anodized, call Kaiser Aluminum in your city...or write Kaiser Aluminum, Dept. 845e, Kaiser Center, Oakland 12, Calif.



COLOR IN ARCHITECTURE...ACHIEVED WITH ALUMINUM

KAISER ALUMINUM



It's yours for the asking...
Architectural FORUM's exciting film

THE NEW AGE OF ARCHITECTURE

In the next decade, America will spend over five hundred billion dollars for new buildings — equivalent in value to all the buildings standing in the U. S. today.

What kind of beauty are we going to buy with all that money? What kind of men will direct this phenomenal amount of construction? What will their responsibilities be to the U. S. landscape, its citizens and especially to those who live and work in the city?

In an extraordinary film, the editors of Architectural FORUM have brought together America's leading men of building—each filmed on location—and each expressing in his own words his ideas about aesthetics, the new methods, the new materials, and the new frontiers of science and technology which they feel will come to shape our new age of architecture.

The New Age of Architecture is a 42-minute documentary film in black and white. Honored by exhibition at the annual Edinburgh Film Festival, the film was described by The New York Times critic as "stimulating, provocative and unique." The film has also been highly endorsed by ACTION and the AIA.

The New Age of Architecture will find a wide audience among architects, architectural students, building manufacturers, as well as those who are engaged in and supply the building industry. It is also ideally suited as a major presentation for management meetings, building seminars, and for distributor and dealer meetings.

Copies may be obtained on loan or purchased at cost by writing Architectural FORUM, Room 1821, Rockefeller Center, New York 20, New York.

PAN AM BUILDING

Forum: Bravo! I was so impressed with Douglas Haskell's article "The Lost New York" (Nov. '63) that I immediately sent a check to renew my subscription. I can think of no finer tribute.

WALTER BEATHE
New York City

Forum: I have seen numerous other discussions of the Pan Am building—as well as critical comment on the other speculative buildings on Park Avenue—but you have put them all to shame by writing something realistic and enlightening. Bravo! It is such a piece as this which keeps FORUM head and shoulders above the others.

Your article recalled for me Aalto's recent scheme for development of the underused area behind Saarinen's station in Helsinki. If this ever gets built, it will show what might have been done here.

THOMAS G. KILLIAN
New York City

Forum: Interesting and profound; most hearty congratulations. I believe I would have substituted the word "concentration" for "congestion." Otherwise, I am like the Indian chief who saw the cloud from the atomic bomb explosion, turned to his subchiefs and said: "I wish I'd said that."

ERNEST M. FISHER
Leonia, N.J.

STOCK SCHOOL PLANS

Forum: Congratulations on your courageous and timely editorial concerning stock school plans in New York (Nov. '63). Since it provides many answers in a thought-provoking manner, I would like a dozen copies.

Massapequa, N.Y. HEINO L. KART
Chief Designer
George J. Dippell, Architect

Forum: In your editorial you noted that in many communities stock school plans failed to measure up to expectations. Please send me a list of these communities and a list of studies which have been done on the use of stock plans.

The Frederick County Planning and Zoning Commission is about to begin the development of a master school plan.

Frederick, Md. ROBERT W. WIRGAU
County Planner

TRANSPORTATION AND THE CITY

Forum: The October issue is tremendous! I found it to be the most rational and clearest statement yet on transportation and the city. Congratulations on a job done extremely well.

Washington, D.C. WILLIAM L. SLAYTON
Urban Renewal Commissioner

Forum: Congratulations on "Transportation and The City." When we acknowledge that the person we call "pedestrian" is the same person we find behind a steering wheel, perhaps then we can create an urban architecture that befits our time. I hope you will continue to give coverage to this important shaper of our present and future environment.

Ann Arbor ROBERT M. BECKLEY
Department of Architecture
The University of Michigan

Forum: The balanced, objective manner in which the many highly complex and controversial issues were presented deserves commendation—and emulation.

It might be well to point out that consideration of "community values" in the location of urban highways is required by federal law as well as by several of the states. The Federal Aid Highway Act of 1962 requires in all urban areas of 50,000 population or more ". . . a continuing, comprehensive transportation planning process carried on cooperatively by states and local communities . . ." by July 1, 1965. There is no doubt that in this instance legislative wisdom has surpassed the planners' and engineers' skill, but the charge is clear and unavoidable.

The San Francisco freeway-transit comparison is misleading to the extent that it implies that transit can, in general, provide the same peak-hour capacity as a freeway system at one-fifth the cost, using only one-quarter as much land, and with one-half the operating and maintenance costs. While this comparison may be meaningful for a very carefully selected section of one route (such as the crossing of San Francisco Bay), even the most ardent transit supporter would not argue that all the travel anticipated for the region's freeway system could be carried by rapid transit.

Evanston, Ill. PAUL W. SHULDINER
Associate Professor of Civil Engineering
DONALD S. BERRY
Professor of Civil Engineering
Northwestern University

Forum: Our staff is finding this material both stimulating and confounding! We would like to share it with our commissioners.

Detroit PAUL M. REID
Executive Director
Regional Planning Commission

Forum: "Transportation and the City" has led you to conclusions in the field of highway design which are akin to the conclusion that music can be composed and played on an electronic device.

M.I.T.'s digital terrain model can only assist the designer to estimate the costs of a large number of alternate locations. Since cost is but one of many factors, this tool is limited to assisting in a very limited area.

The graphic technique of mathematizing and computerizing 26 groups of muddy blots is truly a case of *reducto ad absurdem*. The human mind is capable of storing more factors than the computer and balancing and analyzing them more effectively than by overlaying 26 Rorschach tests on translucent paper.

The final solution you depict is strangely similar to the location of this highway chosen in 1958 by a group of old fashioned highway designers headed by one who still cannot understand "The Hierarchical Decomposition of Systems Which Have an Associated Linear Graph"—and hopes he never will.

New York City DONALD A. OSTROWER
Vollmer Associates
Engineers—Landscape Architects

Forum: "Transportation and the City" is a most interesting contribution to a rapidly growing literature.

Downsview, Ontario R. I. WOLFE
Department of Highways

Forum: Congratulations! You have stated beautifully what many of us are deeply concerned about. Even here in Hawaii, some of us have been leading a battle to delay construction of a new elevated freeway across our waterfront and oceanfront park—a freeway with no consideration of urban design problems.

Only by constantly stressing the need to integrate transportation planning with general land use planning can we hope to overcome the traditional practice of highways being superimposed on the community, with all other land uses scurrying to accommodate themselves as best they can to a sometimes irreconcilable situation.

Honolulu AARON LEVINE
Executive Vice-President
Oahu Development Conference

Forum: Please forward 75 reprints of "Transportation and the City."

Kansas City, Mo. ILUS W. DAVIS
Mayor

N. Y. STOCK EXCHANGE

Forum: On page 11 of the November FORUM, I note with horror a rendering of the mediocre crate that is apparently a suggestion for a new building to house the New York Stock Exchange. Good heavens, let us pray that something more distinguished than *that* will be devised for the western world's Mecca of free enterprise!

For years to come, countless inbound passengers will see this structure as one of the most prominent features of our famous downtown skyline. On this site then, of all places, can't imagination and beauty be tied together to express our brilliance instead of our pedestrianism?

FRANCIS BRENNAN
New York City

PENN STATION

Forum: Concerning the desecration of Penn Station (see *News*, page 9), did you ever read what Arnold Bennett wrote about it over half-a-century ago—in 1912?

". . . I behold for the first time the most majestic terminus in the world! . . . full of the noble qualities that fine and heroic

continued on page 48

continued from page 47

imagination alone can give. That there existed a railroad man poetic and audacious enough to want it, architects with genius powerful enough to create it, and a public with heart enough to love it—these things are for me a surer proof that the American is a great race than the existence of any quantities of wealthy universities, museums of classic art, associations for prison reform, or deep-delved safe deposit vaults crammed with bonds. Such monuments do not spring up by chance; it is a part of the slow flowering of a nation's secret spirit."

As you said editorially about five years ago, "The days when Alexander J. Cassatt and Charles Follim McKim could meet at lunch, and over a glass of claret design the Pennsylvania Station, are gone forever." But aren't we lucky it happened?

WILLARD G. MEYERS
Philadelphia

THE RESEARCH BATTLE

Forum: "Research for Building" (Sept. '63) was excellent. As you may know, the Center for Housing and Environmental Studies and Cornell have been deeply involved in this controversy. Everyone here feels that your article is the best capsule description of the situation and its history that they have seen.

Ithaca, N.Y.

BARCLAY G. JONES
Associate Professor
College of Architecture
Cornell University

CORRECTIONS: In the story on Manhattan's P. S. 199 (Nov. '63, page 81) the structural engineer was incorrectly listed as Henry Hecht. The correct credits: structural engineer, Henry Gorlin; mechanical enginer, Harold Hecht.

In the story on Mies' Berlin museum (Sept. '63), the Whitney Museum of American Art in Manhattan was incorrectly referred to as the Whitney Museum of Modern Art. Our apologies.

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for a
GREAT NEWSPAPER:
dazzling,
sculptured

Mo-Sai®

precast concrete
panels

Architect: Naess & Murphy, Chicago, Illinois / Contractor: Gust K. Newberg Construction Co., Miami, Florida

As colorful as the Miami sun – that's the new Miami Herald office and press building. Mo-Sai curtain wall, much of it in sculptured panel shapes and in various colored aggregates and matrixes, was chosen for its infinitely varied design possibilities, as well as for its economy and durability. Mo-Sai panels were anchored to the steel frame with clip angles and standard masonry angles.

Architect's dream. Roofer's nightmare.

When you come up with a roof design that swoops and soars dramatically, it can cause a roofer no end of problems.

But not when you specify Johns-Manville's new Last-O-Roof.

Last-O-Roof is a one-ply roofing that will literally bend over backward to accommodate any design concept. Just 55/1000 of an inch thick, it's 3 times lighter than usual smooth-surfaced roofing and 10 times lighter than gravel... yet will stand up to the elements longer than conventional roofing.

And since all components are completely compatible (thanks to a common polyisobutylene base),

THE SEPHARDIC TEMPLE, CEDARHURST, L. I., N. Y. ARCHITECT: BERTRAM L. BASSUK, AIA ASSOCIATED ARCHITECT: JULIUS STEIN, AIA

Last-O-Roof permits one-step application. Cold. Absolutely no on-site preparation is necessary. And that goes for the whole works: roofing membrane, flashing membrane, adhesive and color coating.

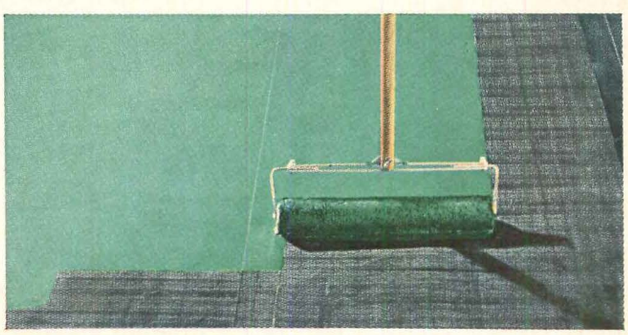
Speaking of color . . . as you can see in the photograph above, Last-O-Roof wears it beautifully. Gone are the days when color choice is limited to black.

For further information, call your local J-M dealer. Or write: Johns-Manville, Dept. AF, 22 East 40th Street, New York 16, New York.

Johns-Manville

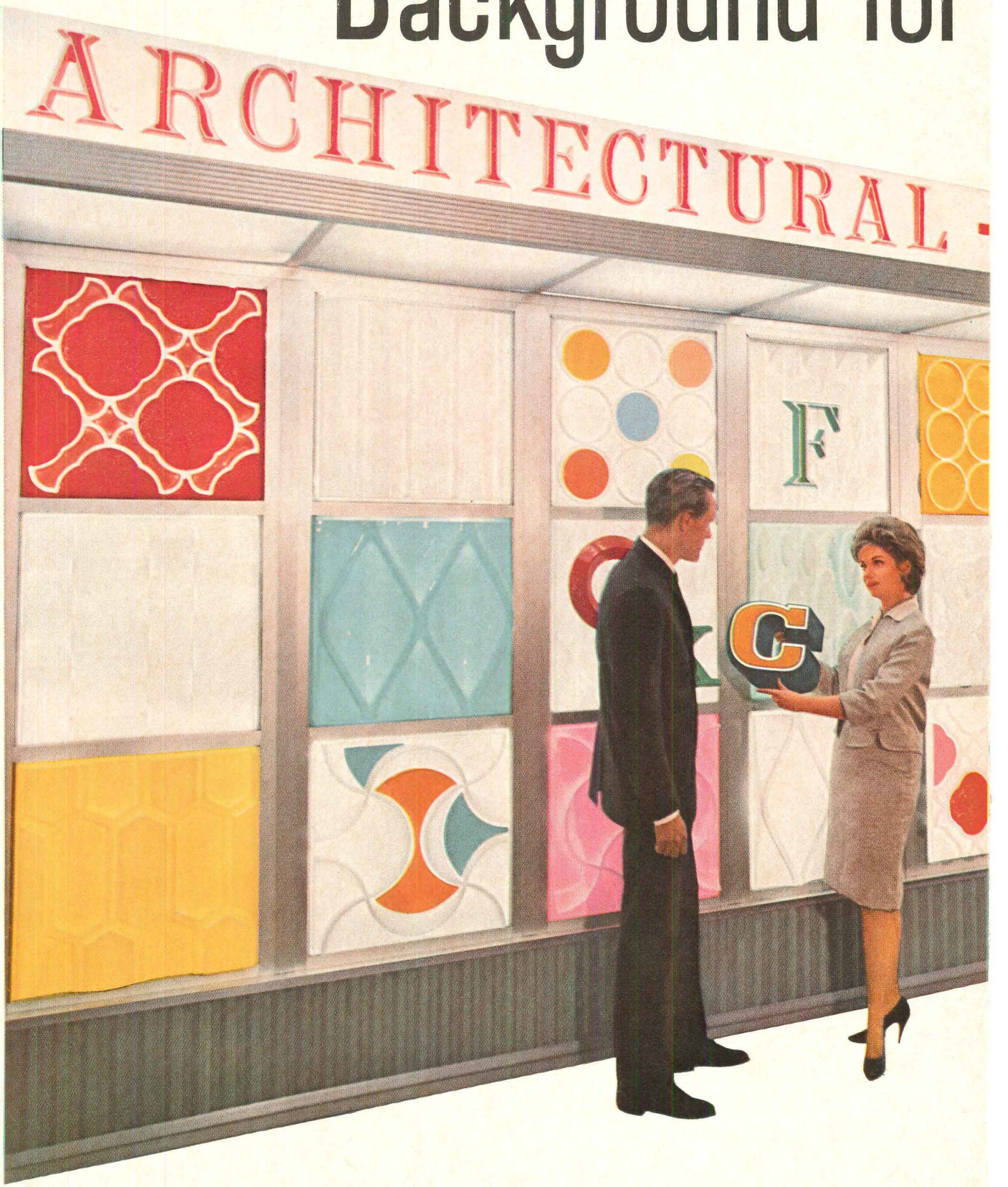
22 EAST 40TH STREET, NEW YORK 16, N.Y.

JOHNS-MANVILLE JM PRODUCTS

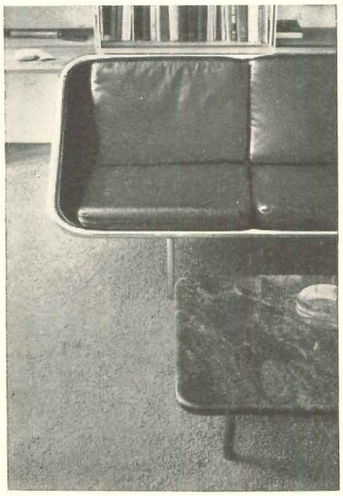


LAST-O-ROOF is as beautiful as it is functional. It can be green, white, or several other colors.

Background for



Sling sofa, "catenary" chairs, table lamp



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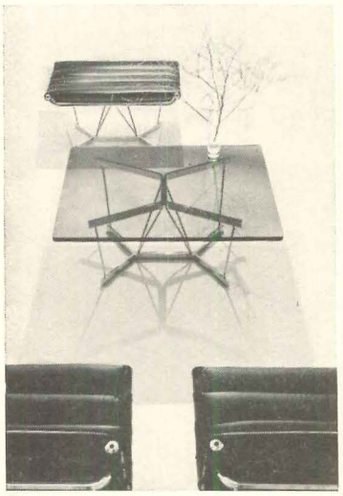

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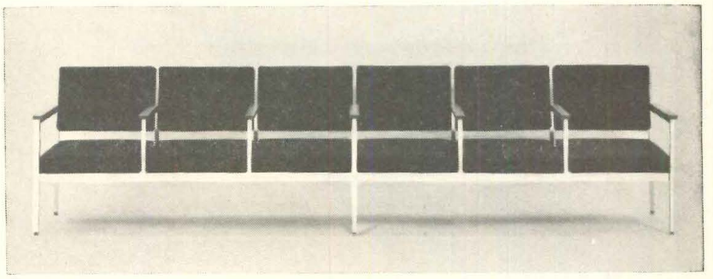

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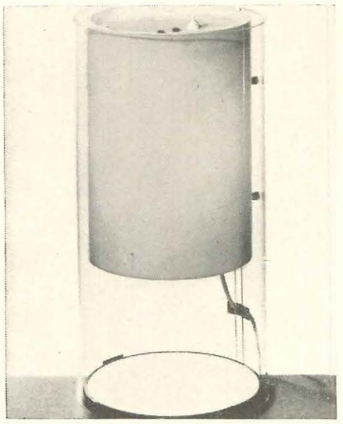

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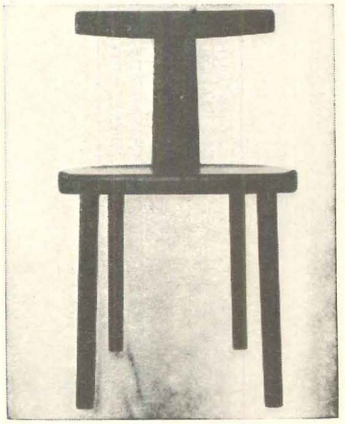

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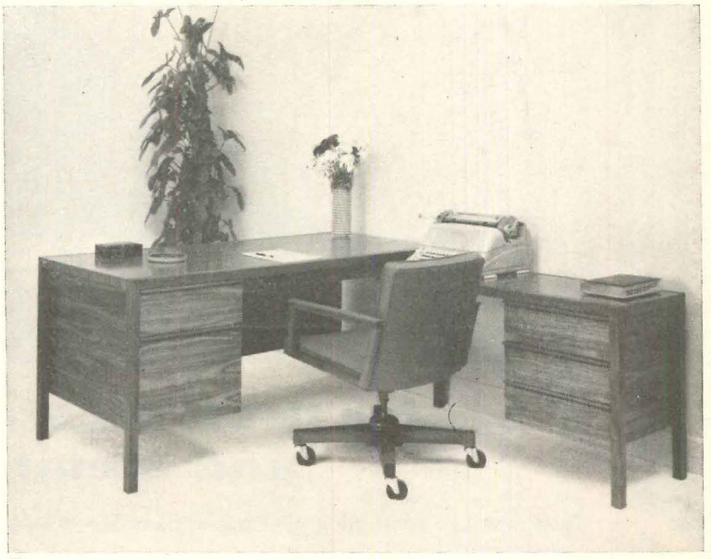

7

NEW MILLER GROUPS. Just introduced by Herman Miller, Inc. of Zeeland, Mich., are two new lines of steel furniture, both designed by George Nelson, and both employing epoxy adhesive to connect all joints. ***1.*** Two pieces are offered in the "Sling Sofa" group. The sofa itself, which has a hoop frame supported on a bright polished chrome base, comes in both three- and four-passenger widths. Upholstered in black or tan leather, their net costs are $1,028 and $1,338 respectively. The low table, topped in black granite, comes in two sizes costing $250 and $340 net. ***2,3.*** The "Catenary" group derives its name from the unusual suspension system of the chair: the foam cushions are supported by cables hung from the frame in a downward curve. The three pieces have similar, chrome-plated steel bases. The chair costs $379 net in leather but, like the ottoman, also comes in fabric. Net price for the ottoman, in leather: $292. The table comes with a top of either clear glass or amber plate and costs $249 or $285 accordingly.

4. ADD-ON SEATING. This reception room furniture, designed by Wayne Good for Harter Corp. of Sturgis, Mich., comes in three-seat units which can be locked together to form continuous seating. List: $240 per unit in vinyl.

5. CYLINDRICAL LAMP. This handsome table lamp, designed by John Petersen and available through International Contract Furnishings, Inc. of New York, hides its bulb in an opaque inner cylinder set within a clear outer cylinder, both of plastic. The bottom disc, white on one side and colored on the other, flips over easily to change the character of light. Net price: $42.50.

6. SOLID SIDE CHAIR. Also from ICF comes this severe wooden side chair, designed by Olavi Hanninen. Available in iroco, Bangkok teak, or painted birch (shown), it costs $44 to $79 net.

7. EXECUTIVE L. This L-shaped executive desk and swivel chair, designed by Norman Cherner for Robert Benjamin, Inc. of New York, are both made of walnut. The desk lists for $683, the chair for $185 plus cover yardage. END

new miller M-1 LENS PATTERN

. . . for INVISIBLE FRAME* . . . Frameless, and Metal Framed Doors

Now you can combine a pleasing appearance with high lighting efficiency. Featuring a new conical prismatic design, the Miller M-1 lens gives excellent lamp concealment with precise light control for low brightness and complete visual comfort. The M-1 is available in permanently clear acrylic plastic or a light stable grade polystyrene.

This interesting new lens pattern is available for three different door designs.

M-1 INVISIBLE FRAME DOOR is featured for use in the Miller Surfaceline and Versaline fixtures for surface or recessed mounting. This new door conceals or hides the metal frame . . . offers a clean rectangle of light with more light transmission from each fixture. The Miller M-1 Invisible Frame Door is completely self-supporting with positive metallic hinging and latching from either side.

M-1 FRAMELESS DOOR is offered exclusively in the Miller Grid-Line, a new line of fixtures designed specifically for mounting "in or on" grid-type ceilings. Complete absence of a metal door frame or visible hinges and latches means more light transmission from each ceiling opening plus enhanced lighted appearance.

M-1 LENS is also available for use in conventional steel framed doors with both the Miller Surfaceline and Versaline fixtures.

For complete specification, performance and ordering information on the new M-1 lens, write Dept. 113.

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THE miller COMPANY
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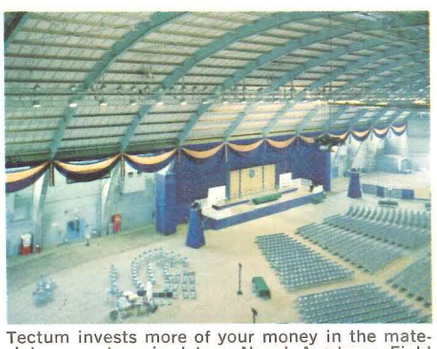

Tectum invests more of your money in the materials . . . less in labor. Naval Academy Field House, Annapolis, Architects: Harbeson, Hough, Livingston and Larson, Philadelphia; von Storch and Burkavage, Media, Pa.

These men are installing a structural roof deck. And insulation. And acoustical control. And a fire-resistant finished ceiling. All in one motion. With one material . . . Gold Bond Tectum. • Above a Tectum deck you simply add roofing; below you do nothing. Made with specially-treated, long-strand wood fibers, its porous composition gives it natural insulating and acoustical properties. It's attractively textured . . . no need to paint it unless you want color. Versatile, "value-engineered" Tectum saws like wood because it's made with wood. Architects and builders like it. So do decorators. • More than 500 million board feet of Tectum are now in use . . . in schools, churches, shopping centers, factories, institutions, motels, offices and homes. Get acquainted with the Gold Bond difference in Tectum. It could make a great difference in the cost of your next building.

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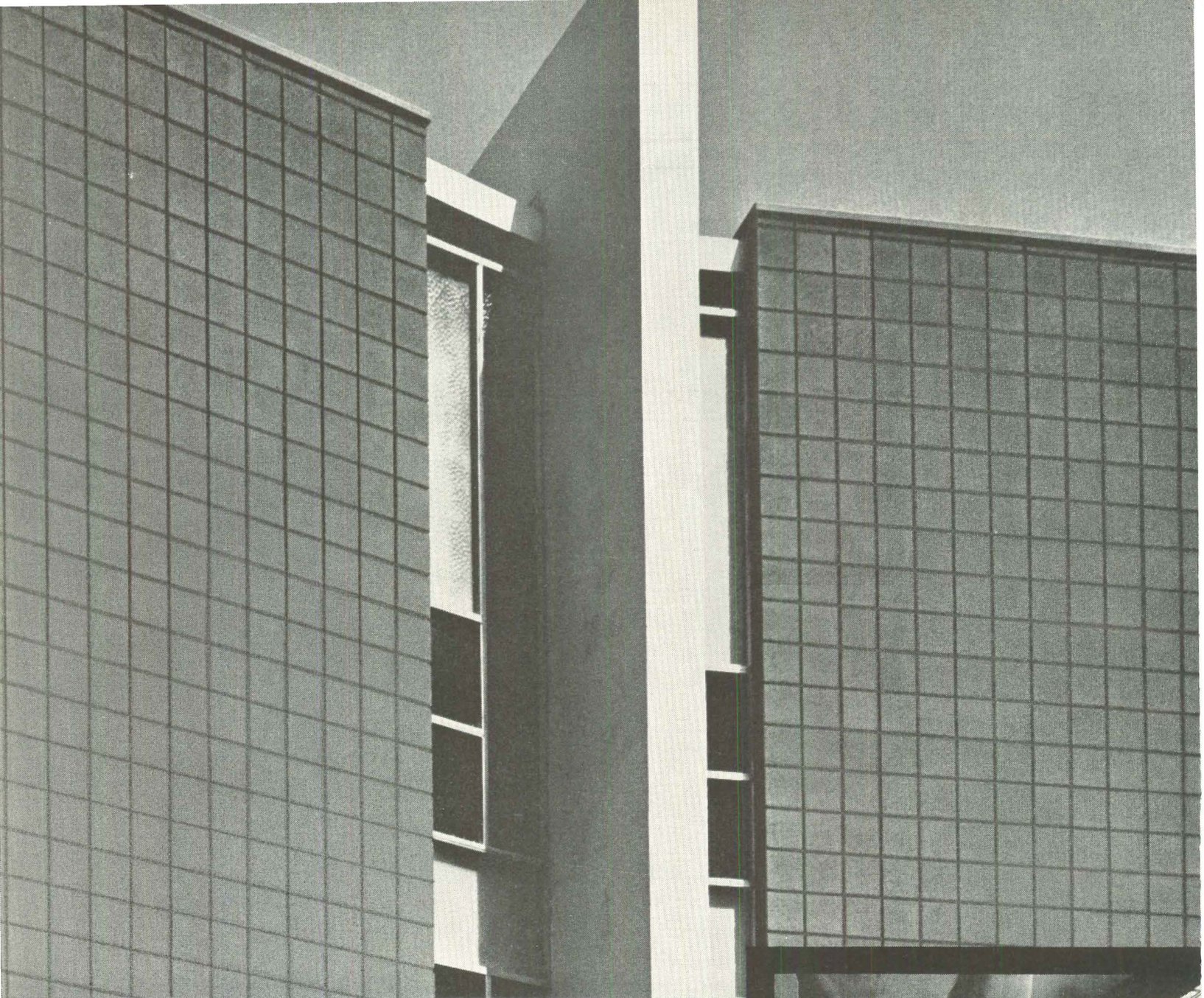

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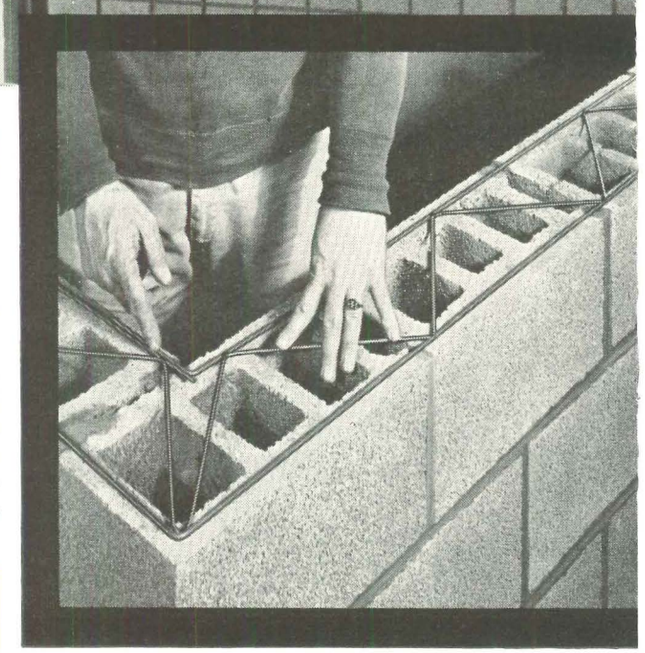

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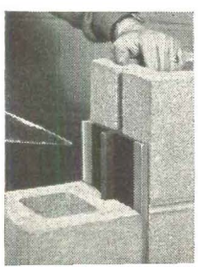

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A LAST MESSAGE FROM A FRIEND

When John F. Kennedy died on November 22nd, the arts in America, including architecture, lost the best friend they had had in the White House since Thomas Jefferson.

Less than a month before his death, President Kennedy delivered a brief address at Amherst College, at a ceremony honoring the memory of Robert Frost. The President's words had to do with the place of the artist in American society, and some of those who heard Mr. Kennedy at Amherst felt that those words were among the finest spoken by him since his inauguration.

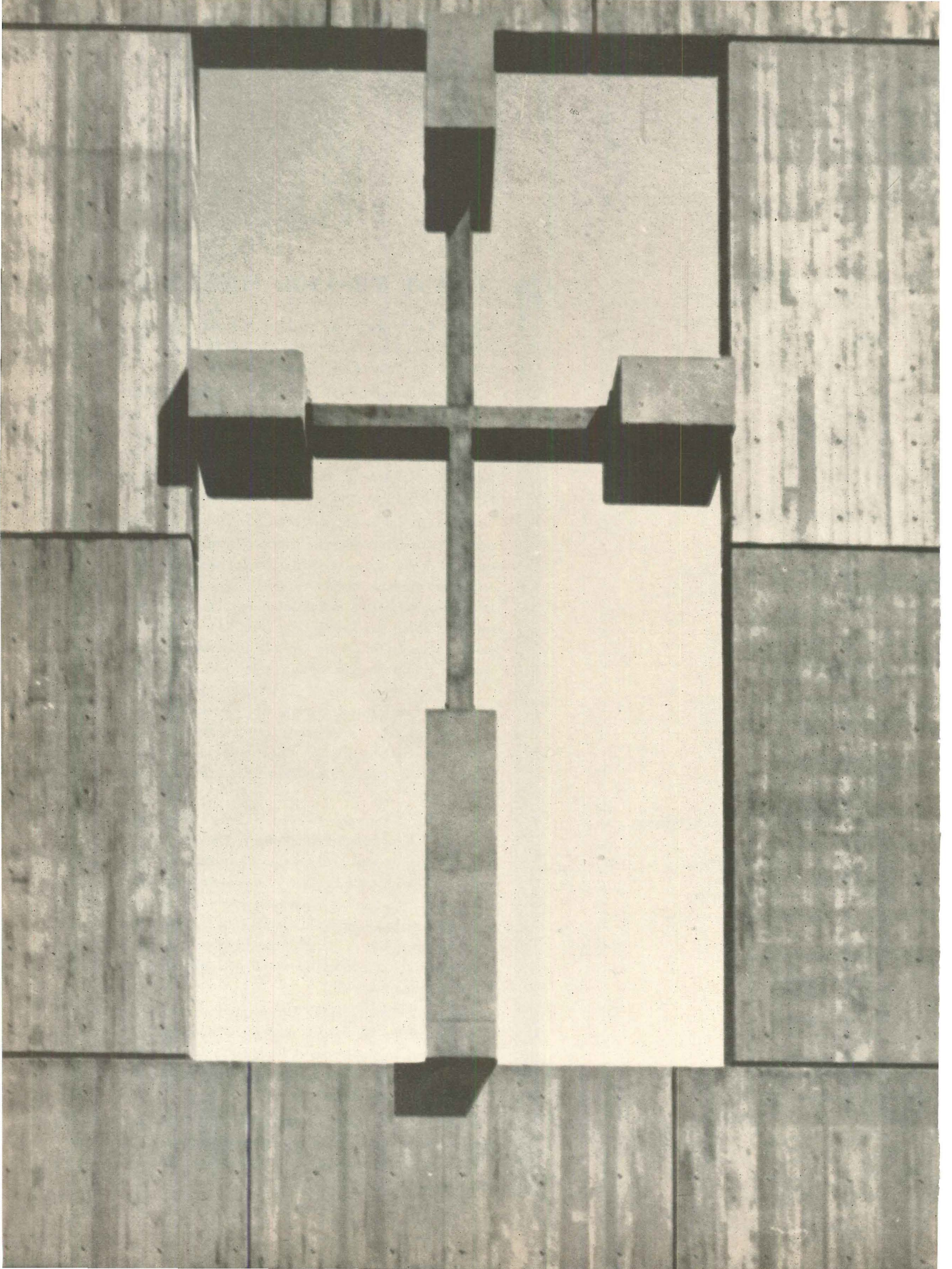
"The men who create power," said the President, "make an indispensable contribution to the nation's greatness. But the men who question power make a contribution just as indispensable . . . Art establishes the basic human truths . . . The artist . . . becomes the last champion of the individual mind and sensibility against an intrusive society and an officious state." One wonders what other chief of state, anywhere, has recently defended and upheld the artist against "an intrusive society and an officious state . . ."

The President continued: "The great artist is thus a solitary figure. He must often sail against the currents of his time. This is not a popular role . . . Yet, the artist's fidelity has strengthened the fiber of our national life . . . If art is to nourish the roots of our culture, society must set the artist free to follow his vision wherever it takes him."

He had no doubts about where the artist's vision might lead our country. "I look forward to an America which will not be afraid of grace and beauty," the President continued; "[an America] which will protect the beauty of our natural environment, which will preserve the great old American houses and squares and parks of our national past, and which will build handsome and balanced cities for our future . . . I look forward to an America which commands respect throughout the world not only for its strength but for its civilization as well."

And the President added: "In serving his vision of the truth the artist best serves his nation. And the nation which disdains the mission of art invites the fate of Robert Frost's hired man—'the fate of having nothing to look backward to with pride and nothing to look forward to with hope.' "

Thanks to the words and the works of John F. Kennedy, the artists and architects of this nation—and, indeed, all their fellow-Americans—have something to look backward to with pride and much to look forward to with hope.



AMERICA'S annual investment in religious buildings has passed the billion-dollar mark. The total to date is equally staggering: at last count, there were 319,670 houses of worship in the U.S., and new ones are dedicated daily.

They come in all shapes and sizes. Some are miniature Gothic cathedrals, others the very models of modernity; some are triumphs of structural ingenuity, others reliable A-frames; some are lavishly theatrical, while many have all the wall-to-wall comforts of a suburban split-level.

What most of them have in common, however, is irreverence, irrelevance, or a distressing combination of both.

That the 20th Century has failed to produce great religious architecture is not a new complaint. The Roman Catholic poet, Paul Claudel, writing during the Gothic and Romanesque revival at the end of World War I, found the churches of that day a "demonstration to all the world of sins and shortcomings; of weakness, poverty, timidity of faith and feeling, disgust with the supernatural, domination by conventions and formulæ, worldly luxury, avarice, boasting, sulkiness, pharisaism, and bombast."

Nor has the modern movement changed things much. "The most publicized modern churches," wrote the Canadian critic Peter Collins last year, "are essentially a reflection of their authors' faith in the primacy of personal sculptural originality."

The most common explanation for this state of affairs is the nature of our supposedly secular society. "Religion and architecture are both derived today from a culture of swarming contradictions," Dean Samuel H. Miller of Harvard Divinity School said at the 1962 National Conference on Church Architecture. "Under such conditions, I do not wonder that both religion and architecture fly off on lunatic tangents."

Recently, however, a convincing body of opinion has placed the blame on those most closely concerned with church building; namely, the architect and his churchly client. Peter Hammond, the British clergyman–critic, states it this way: "One cannot hope to design a satisfactory church unless one is prepared to face fairly and squarely the question of what a church is for: and the answer to this question is by no means so simple, or so universally recognized, as is commonly supposed." If we are to have a contemporary church architecture of meaning, says Hammond, who does not believe that we have one now, "the first and essential requirement is radical functional analysis."

Hammond's indictment is no less harsh than that of others, yet it is the one which offers the most hope. For the churches today are in the midst of a "radical analysis" of their own function in the modern world, a re-examination so sweeping that it is being called the 20th Century reformation. And contained within it are the seeds of an equally sweeping reformation in religious architecture.

The congregation: audience or actors?

The core of the current re-examination is a return to essentials. The churches are scrutinizing their liturgy, their theology, and the nature of their mission in the world with the aim of eliminating the superficial and anachronistic. In the process, they are finding that they have a good deal more in common than once suspected.

It is in the reform of the liturgy, the formal and public modes of worship, that the most striking architectural implications are to be found. There is growing agreement among the Christian churches that worship took a fundamentally wrong turn in the Middle Ages—and that the Protestant reformation, in many ways, kept to similar sidetracks. Church architecture obediently followed.

"For the early Church," Peter Hammond points out, "dogma and liturgy, theology and personal piety, were indis-

STRENGTH OR BANALITY? A NEW REFORMATION CHALLENGES CHURCH DESIGN

SHIN KOYAMA

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solubly linked." In the Middle Ages, however, "the prayer of the Church became formalized and clericalized . . . Popular devotion, unnourished by a liturgy which was celebrated in an unknown tongue, developed strange and novel forms. It became increasingly subjective and sentimental."

At the heart of the early Church liturgy was the Holy Eucharist, the communion service. It was, in the words of the Dominican father Gregory Dix, "the united joint action of the whole Church and not of the celebrant only. The prayer which the celebrant 'said' was not the predominant thing." But gradually, the clericalization of the Church divided the participants into actors and spectators. The celebrant performed the action while the congregation watched from afar, busying itself with private devotions.

The principal architectural result of all this was to push the altar up against one wall of the church, with the pews strung out in a long rectangle. Those in the rear pews were nearly out of sight and completely out of hearing of what was going on at the altar. It is instructive that most otherwise modern American churches follow the same basic arrangement.

Bringing the altar back to the people

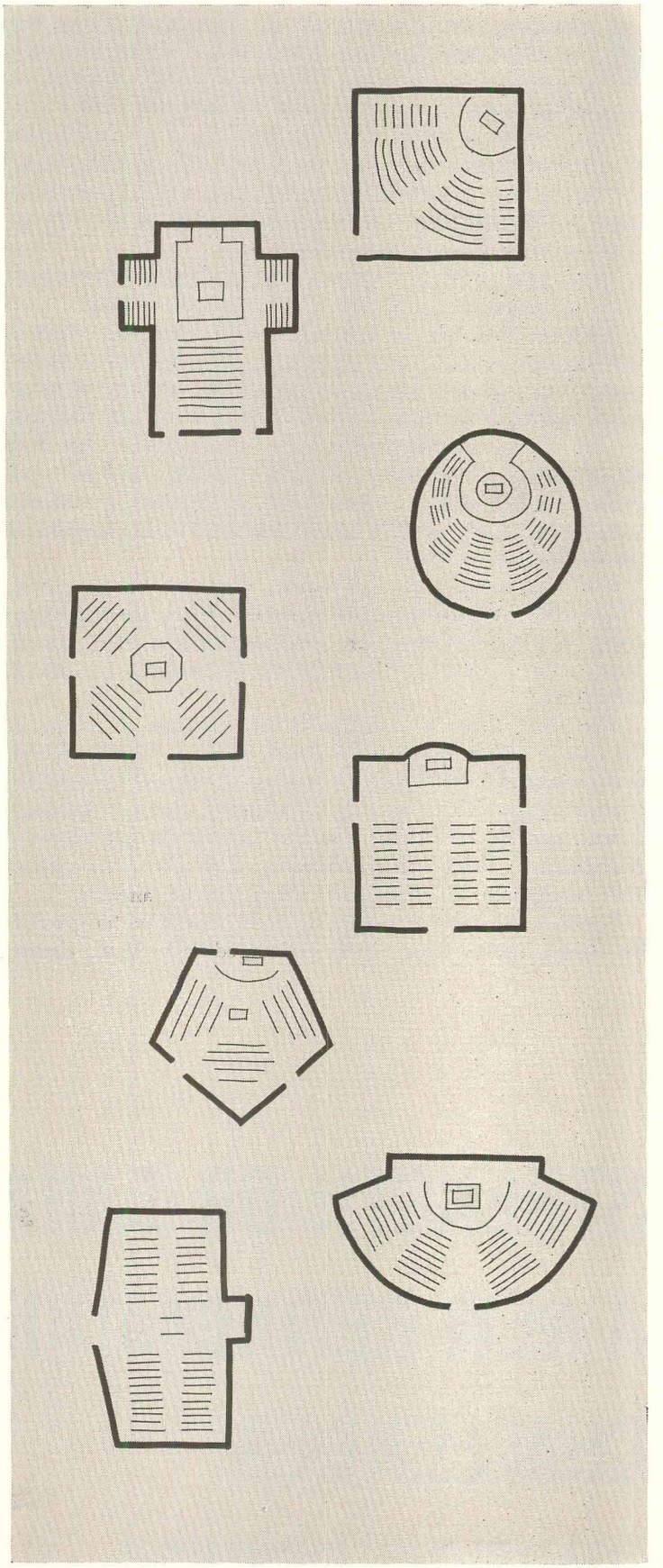
The movement for liturgical reform began some 45 years ago as isolated stirrings of dissatisfaction with the state of Christianity. It was nourished by a renewal of Biblical scholarship, which has thrown fresh light on the nature of the early Church. While by no means limited to Roman Catholicism, the movement is reaching its climax at the Second Vatican Council, which is turning the reforms into law for the largest of Christian denominations.

The movement has two aspects. One is to reassert the primacy of the liturgy over pietistic devotions. The second is to re-emphasize the *communality* of the liturgy, the fact that it consists of a series of joint actions in which clergy and laity each have separate but significant roles.

In the Roman Catholic and liturgically minded Protestant denominations, these ideas suggest some specific answers to Hammond's question of what a church is for:

- They suggest that a church is a place where certain common actions are taken by the assembled faithful.
- They suggest that, since the Eucharist is the most significant of these actions, the altar should be the unrivalled focal point of the church.
- They suggest that, since both clergy and laity are importantly involved in this action, the long medieval rectangle no longer makes much sense—that the altar should be taken off the east wall and moved closer to the people, and that the people should be clustered around it.
- And they suggest that devotional objects—statues, candles, paintings, and tapestries—should never be allowed to proliferate to the point where they distract from the liturgy.

There is danger, however, that an over-reliance on specific liturgical lessons could lead to a new orthodoxy of plan in Roman Catholic and ritualistic Protestant churches. Liturgical reform does not contain all of the answers for planning these churches, but it poses some essential questions to which architects must address themselves.



An array of alternatives to the long medieval rectangle: the common element is a suitably close relationship between altar and congregation.

Even the questions, of course, are by no means pertinent to all denominations. Despite the ecumenical movement, there are still substantial theological differences among Christian churches, and these differences call for distinct architectural expression. The less liturgical Protestant churches in particular suffer from a medieval hangover of form. Many American Protestant congregations, in the words of Clergyman Marvin Halverson, "worship in buildings that imply beliefs they do not hold and patterns of worship they do not practice."

The popular folly of the all-purpose plan

The differences can be illustrated by placing the Christian churches of America on a graduated scale, with Roman Catholics on one end and Christian Scientists on the other. To Catholics, the sacraments are inherently sacred, faith essentially involves mystery, and there is a definite distinction between clergy and people within their overall liturgical unity. As you move down the scale (or up, depending on the Church of your choice), the sacraments become more symbolic, the Scriptural Word of God assumes primacy, and the distinctions between clergy and people begin to disappear. When you reach the Christian Scientists, there are no sacraments or clergy at all. It is obvious folly to house these diverse beliefs in the same kind of building—but it is a folly widely practiced.

Any Protestant church in which ritual is less important than "the priesthood of all believers," for example, suggests a design with a high degree of spatial unity in the nave. Clergy and people can be joined in ways that even the most reform-minded Roman Catholic would not accept.

It also suggests a less fixed plan to accommodate flexible patterns of worship. "The direction in which we ought to move is toward worship spaces which do not have a single dominant focus, but in which the focus moves as the liturgy moves," Edward A. Sovik, a Minnesota architect who studied in a Protestant seminary before changing vocations, has said. "If the architect is worried about a room without a focus, he should consider the family living room where the focus changes from window, to piano, to fireplace. The presence of people accomplished the change."

It suggests that more attention be given to preaching and Scriptural readings than the mere provision of a box and a microphone in one corner of the sancturary. "We need ideas for preaching *spaces* that provide new possibilities for drama and movement," says Rev. Scott T. Ritenour, executive director of the National Council of Churches' Department of Church Building and Architecture. "Instead of a fixed and formal pulpit, perhaps there should be movable lecterns, allowing us to speak from behind the Holy Table, or beside it. Preaching must be a dialogue, not a lecture."

And finally, the design of such a church suggests greater emphasis on the spirit, the character of the building itself—an area in which the architect can get himself into a great deal of trouble.

Contemporary architecture would seem ideally suited to this task. Spirit and character are the very ingredients which make a building a work of architecture. Light and space, essential elements of the church, are among the architect's basic tools.

And yet the church presents a terrible temptation to contemporary architects to go all-out for instant magnificence, glossing over the seemingly simple questions of function. Often, says Peter Hammond, the church is regarded as "an opportunity to escape from the restraints of normal design procedure into the less exacting world of fantasy and individual self-expression." When this happens, venturesome form and structure can offer as serious a distraction to worship as bad devotional art.

Another source of trouble, paradoxically enough, is the peculiar fixation which modern architects have on the medieval cathedral. They seek originality, not by beginning at the roots of religious architecture, but by warping, twisting, and exaggerating Gothic and Baroque shapes and volumes in search of a "contemporary interpretation." Modern materials such as steel, concrete, and laminated wood are brought in "as converts to medievalism," as former Harvard Dean Joseph Hudnut once wrote in FORUM.

In fairness, it must be stated that the architects are often pushed in this direction by the inevitable requirement that the building "look like a church." Sometimes this still means that it should be a direct, if scaled-down, copy of an Italian basilica that the pastor saw on a pilgrimage. But nowadays it more often means that the building should have 1) a high roof, affording as awesome a volume as the budget allows; 2) a pointed top, presumably indicating the direction to which the faithful should aspire; and 3) colored glass in the windows. Otherwise, the architect is left reasonably free to "express the meaning which our Church has for the modern age," as his client is likely to put it.

There is nothing intrinsically wrong with these three hallmarks of the churchy look, but neither is there anything intrinsically sacred about them. A great volume can be more theatrical than anything else, and thus less than conducive to the communality which the liturgists seek. The pointed roof is, after all, a rather obvious way to indicate religious aspirations. And one might well argue for the purity of natural light over artificial tints.

It is not that these things should be discarded. It is that the religious reformation cries out for a searching, critical examination of every aspect of religious architecture, expunging all that is trite, showy, or sentimental. It might well begin with a return to some basic and unreformable Christian virtues which find surprising parallels in the doctrines of modern architecture itself.

The virtues of integrity, simplicity, and strength

There is, as a beginning, the virtue of integrity. It is this virtue which, more than anything else, argues against a false traditionalism, but it also has relevance to modern architectural excess. "Modern architecture is, certainly, an ethical art," wrote Hudnut. "From its beginnings its practitioners and philosophers have waged a valiant warfare against sham." This particular crusade has special pertinence to church design, as Protestant Theologian Paul Tillich has pointed out. "There is truth in every great work of art," said Dr. Tillich, "and if this art is dedicated to expressing our ultimate concern, then it should be not less but more honest than any other art."

There is also Christian poverty, which has more to do with

simplicity of approach than with the size of the budget. Material limitations "can be the result either of outward necessity or of inner intention," said the Swiss architect, Rainer Senn. "When a building is the product of this inner intention it need not appear . . . poverty-striken, but on the contrary can radiate the spirit of freedom, a power that transcends the material. The simplest materials are sufficient for a church."

Which brings us to the virtue of humility. For the architect, this means a clear recognition that the acts of worship are more important than the building in which they are housed. "There is no sacred shape, there is no sacred material, there is no sacred engineering," said the Venerable Darby Woods Betts at the 1963 church architecture conference. "In fact, there is no sacred architecture. There is only the sacred relationship between man and God that comes to an explosive climax inside the building." For the client, it means a recognition that sheer size and material splendor perhaps are not Christianity's best advertisements. Says Rev. Ritenour, "Our churches are too often merely status symbols."

Finally, there is the virtue of fortitude, which is assuming increasing importance as the churches face up to their role in the world. The civil rights movement, as no other recent event in America, has challenged them to practice what they preach—now. In many places it is no longer quite such a comfortable thing to be a convinced Christian, no matter how deep the foam rubber on the kneelers. Only a handful of American architects have given their buildings the strength necessary to express the uncompromising and demanding core of Christianity.

A proposal for "research and re-examination" in America

"The problem," said Architect Sovik once, "is to design churches which communicate with faithfulness and clarity and vigor the view of man, the world, the church, and God which the Christian community professes."

This is an admirable summary, but it is also a big order. It presumes, moreover, that the churches can communicate such a cosmic view to the architect in a way that is pertinent to the task at hand.

Despite the promise of the current reformation, this may be presuming too much. A great deal of work remains to be done in both the definition of the changes in liturgy and theology, and their application to the life and architecture of the faithful. (A great deal of time will also pass before they are fully accepted by some of the more conservative American church leaders.) Further, the re-examination must be extended to those faiths whose participation in the movement toward unity and reform has so far been somewhat limited.

Recently, a group of strategically placed American architects and churchmen have been meeting to see how the work might be begun. Among them are representatives of the National Council's Department of Church Building and Architecture, the Union of American Hebrew Congregations' Commission on Synagogue Administration, the Roman Catholic Liturgical Conference, and members of the American Institute of Architects' religious buildings committee.

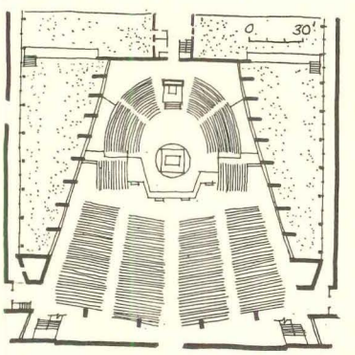
Early in their meetings, the group put together a statement of their feelings and objectives. "When we build religious buildings," it said, "we do not begin with architecture or the architect. We begin with what we believe about God and our reasonable response to building in our time and place. We must realize that we do not only worship *in* our religious buildings, but that we also worship *with* them. If we do not know what we believe, if we do not believe earnestly or deeply, if we are unable to give a reason for the faith that is in us, we cannot inform the architect or open him to inspiration."

The group's hope is that religious leaders, architects, artists, and a variety of others from anthropologists to Biblical scholars can somehow be brought together for a continuing study of the fundamental factors which influence religious architecture. Said Rev. Ritenour, chairman of the group: "We want to ask, what is the Church? What are its activities? How do its members worship? What do they want to proclaim by their lives and by their buildings? We want to generate both research and re-evaluation."

The fact that such a group exists is an enormously hopeful sign. The study it proposes would be an essential step in the reformation of American religious architecture—provided that American architects are willing to pay attention.

They might well look for example to the church-building career of the German architect Rudolph Schwarz. In his first works, Schwarz reduced religious architecture to its liturgical essentials. Each of his subsequent churches became a bit richer, until the last achieved something close to magnificence.

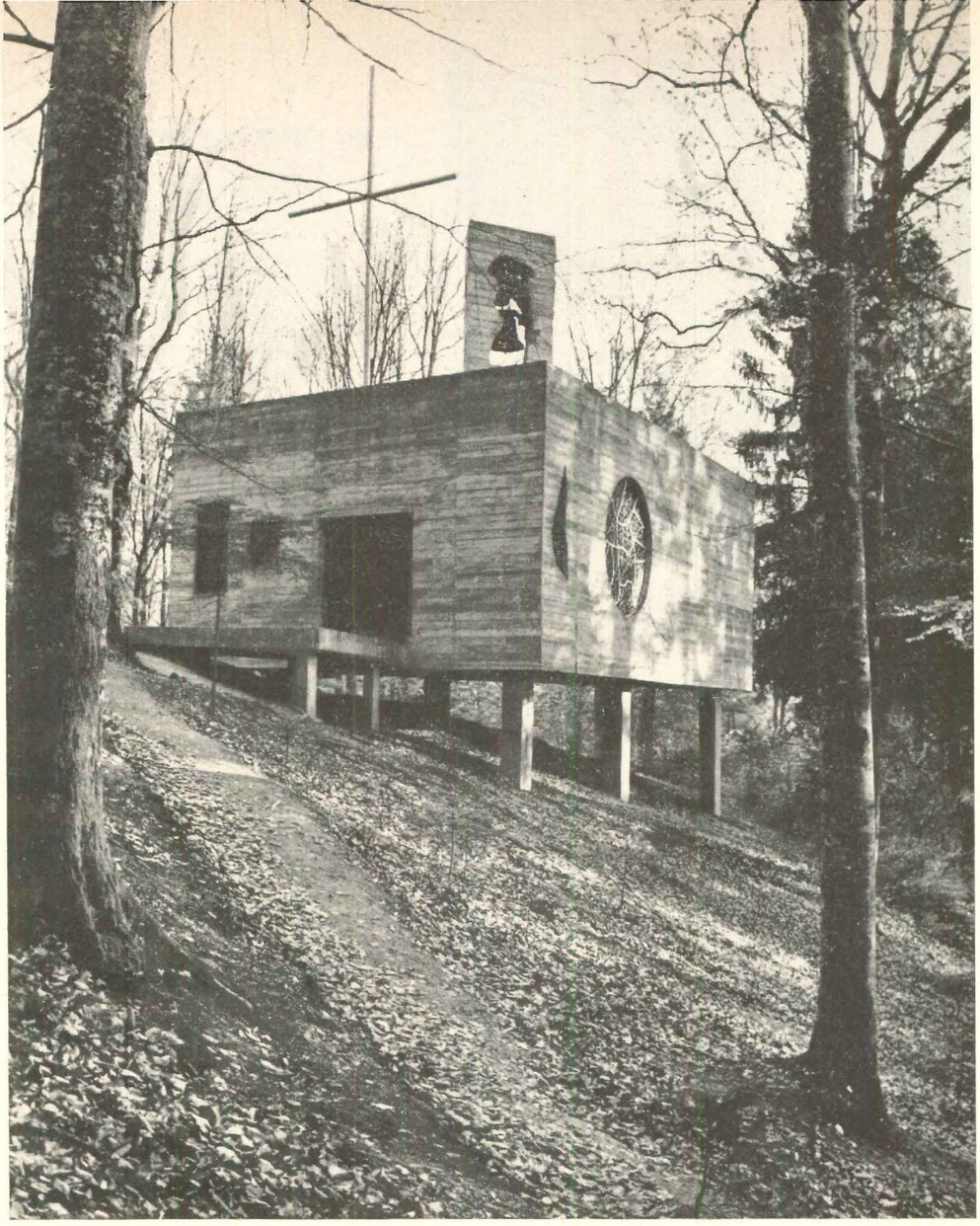
"There have been greater forms of church building than this one," said Schwarz of one of his early attempts, "but this is not the time for them. We cannot continue from where the last cathedrals left off. Instead we must enter into the simple things at the source of the Christian life. We must begin anew, and our new beginnings must be genuine."—Donald Canty.



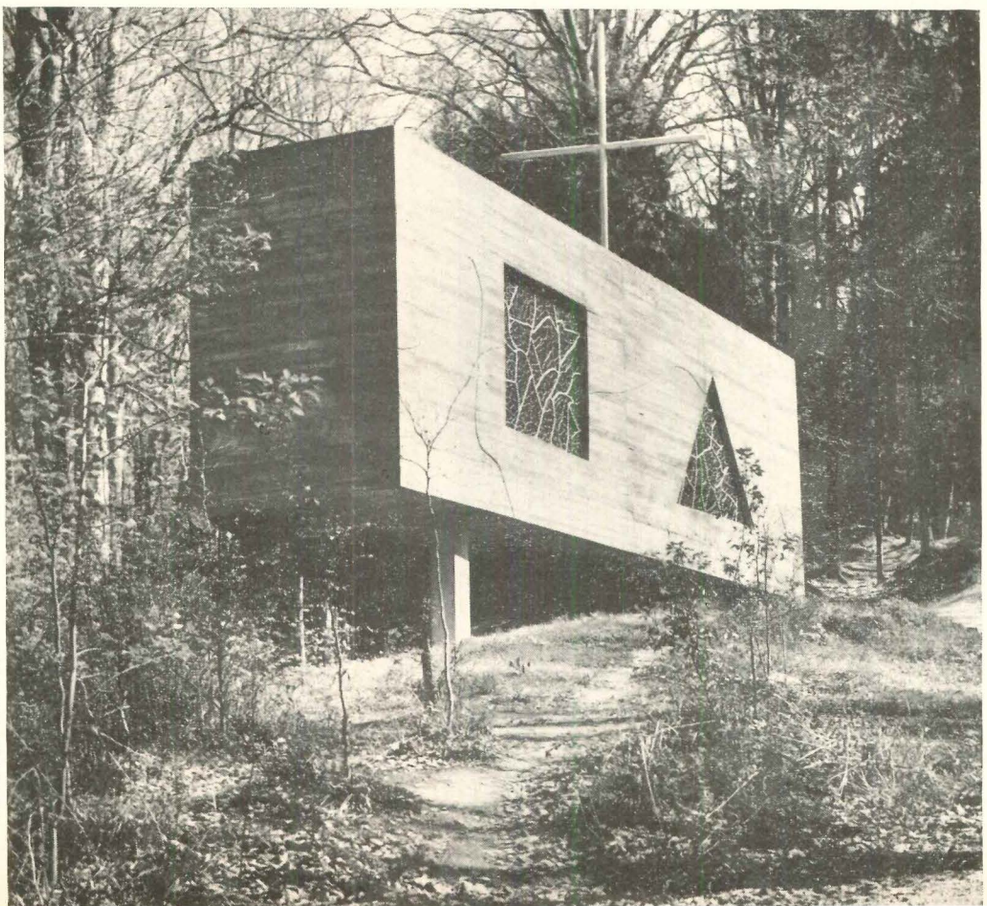
Marcel Breuer's widely famed St. John's Abbey in Collegeville, Minnesota, is perhaps the most relevant of major American churches to the current age of reform. The plan (left) is almost a diagram of the re-emphasized liturgy, adapted, of course, to the special requirements of a monastery. The form and materials of the church's balconied interior (right) proclaim the demands of faith with a raw strength that approaches defiance.

ERIC SUTHERLAND

On the following pages, seven churches which exemplify some of the virtues advocated above



The tiny chapel sits boldly on its concrete stems, scarcely disturbing the forest that surrounds it



PIERRE JOLY-VERA CARDOT

ROCK IN THE FOREST

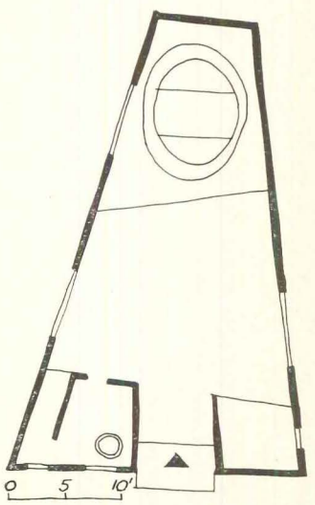
The design and construction of the Chapel of Saint Rouin in the Argonne Forest were in themselves acts of worship. The chapel was begun by the Rev. R. P. Rayssiguier, the young Dominican priest-architect who collaborated with Henri Matisse on the famous chapel at Vence. Father Rayssiguier died before the completion of Saint Rouin, however, his final illness aggravated by a winter's work outdoors on the building.

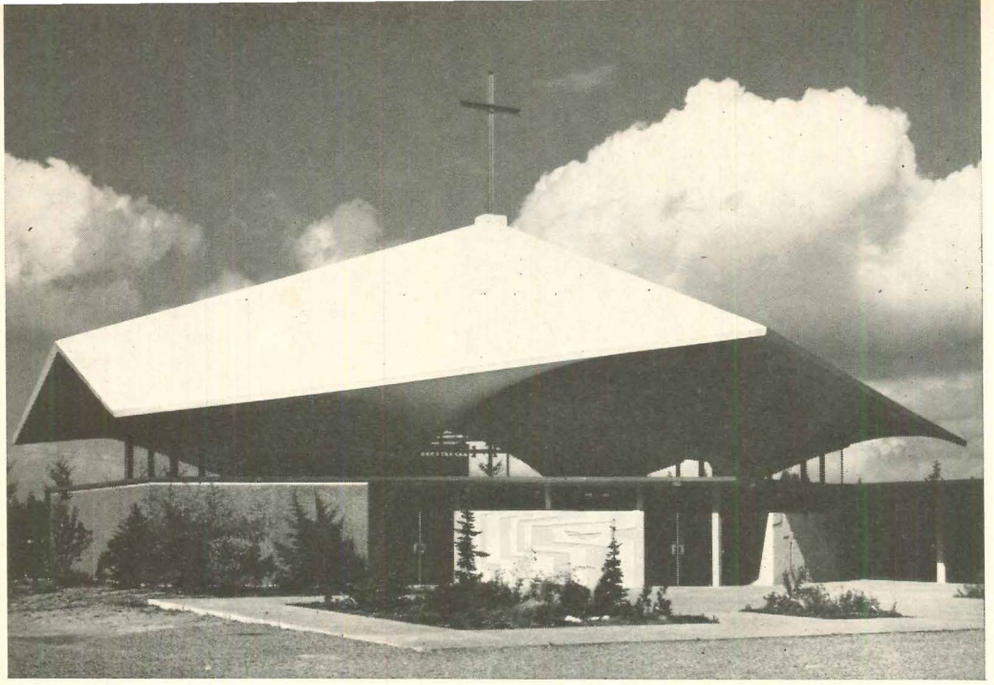
The chapel was finished by the sculptor Pierre Szekely, (who also executed the door and the wood cross above the altar) with the help of Kimie Bando, a 12-year old girl of Japanese descent who designed the stained glass window. The chapel, in fact, has the unity of a piece of sculpture; it looks as if it might have been carved from a single giant rock. It also bears the marks of Father Rayssiguier's admiration for Le Corbusier in its form, its rough concrete surfaces, and the pilotis on which it rests.

The chapel was built on the site of an ancient hermitage, near a stand of trees which once formed an outdoor cathedral for a cult devoted to worship in the open air. The curate of nearby Islettes intends to restore the green cathedral, and Saint Rouin will eventually serve as its secondary chapel.

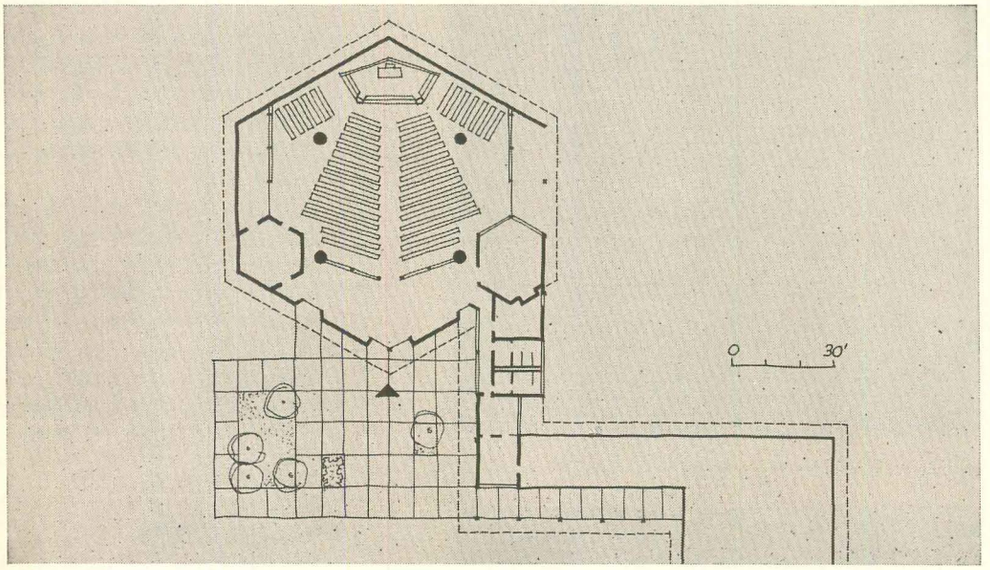
FACTS AND FIGURES

Chapel of Saint Rouin, Argonne Forest (near Islettes), France.
Owner: Roman Catholic parish of Islettes.
Architect: Rev. R. P. Rayssiguier, O. P. Sculptor: Pierre Szekely.
Stained glass: Kimie Bando.
Construction: Exposed reinforced concrete, pile foundations.





The folded white roof of Mercer Island Church is held well above its patterned concrete walls



Inside, the altar is the focal point, but the roof's central peak emphasizes the communality of worship

PHOTOS: HUGH N. STRATFORD

TENT ON THE HILLTOP

A hopeful augur for American religious architecture is the number of small Protestant churches being designed with some depth of thought to the ways they will be used. Thus, Mercer Island Presbyterian Church by Paul Thiry, on a hilltop overlooking Seattle, makes use of a hexagonal plan to achieve a close relationship between the congregation and the minister. The form of the church, moreover, reflects a desire that nature be part of both the building's design and the services within. It is a true "tent of worship"; the thin-shell roof, composed of 16 hyperbolic paraboloid segments on four interior columns, hovers over the church, with clear glass between it and the walls.

FACTS AND FIGURES

Mercer Island Presbyterian Church, Mercer Island, Wash.
Architect: Paul Thiry, F.A.I.A.
Engineers: Peter Hostmark (structural); James B. Notkin (mechanical); Beverly Travis (electrical).
General contractor: Strand, Inc.
Building area (sanctuary, choir room, fellowship room): 7,800 square feet.
Construction cost: $193,582.

NAVE IN THE ROUND

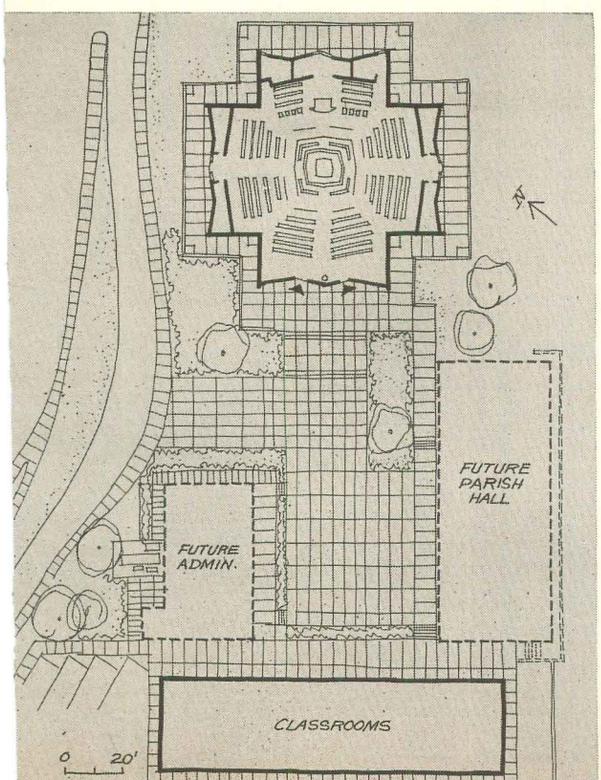
One result of liturgical reform has been a revival of what one clergyman has called "religion in the round," with the congregation clustered about a centralized altar. Actually, the plan of Trinity Lutheran Church in San Rafael, California, is more star-shaped than round, but the idea is the same: to emphasize that the congregation is "a community of believers," in the words of the architect, Donald Powers Smith. The pleated roof of Trinity Lutheran, framed by timber beams, crests directly above the sturdy concrete altar, giving it undisputed predominance. The exterior is modest, if somewhat busy; Smith chose not to compete in size with the hills that form its backdrop.

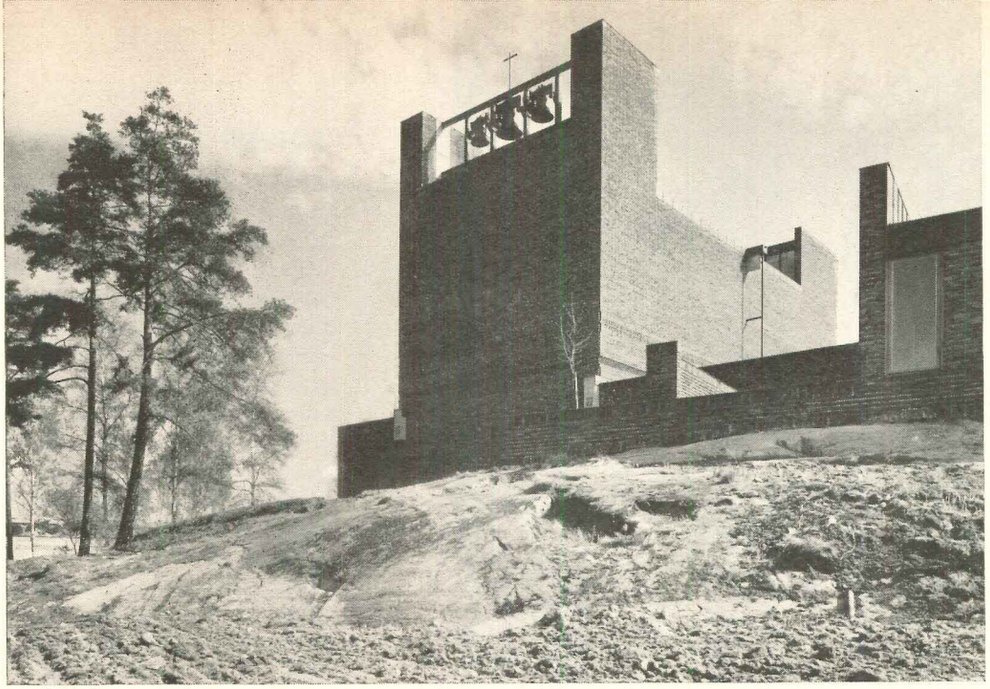
FACTS AND FIGURES

Trinity Lutheran Church, San Rafael Calif.
Architect: Donald Powers Smith.
Engineers: Isadore Thompson (structural); Ralston & Dwyer (mechanical and electrical). General contractors: Meinberger & Sons.
Building area: 4928 square feet.
Construction cost: $146,000.

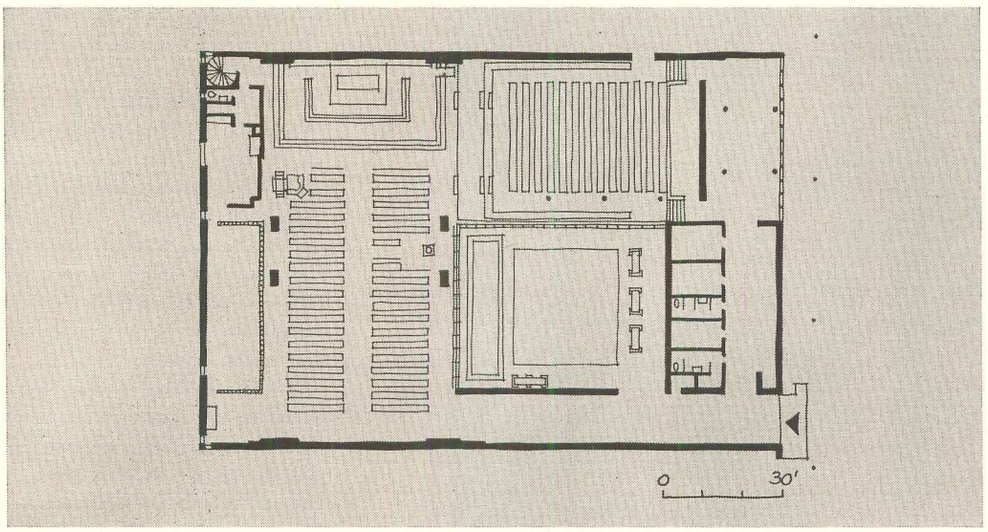
PHOTOS: (OPP.) ERNEST BRAUN

The altar-centered nave of Trinity Lutheran: the congregation considered itself a "family of the faithful, gathered around the Holy Table"

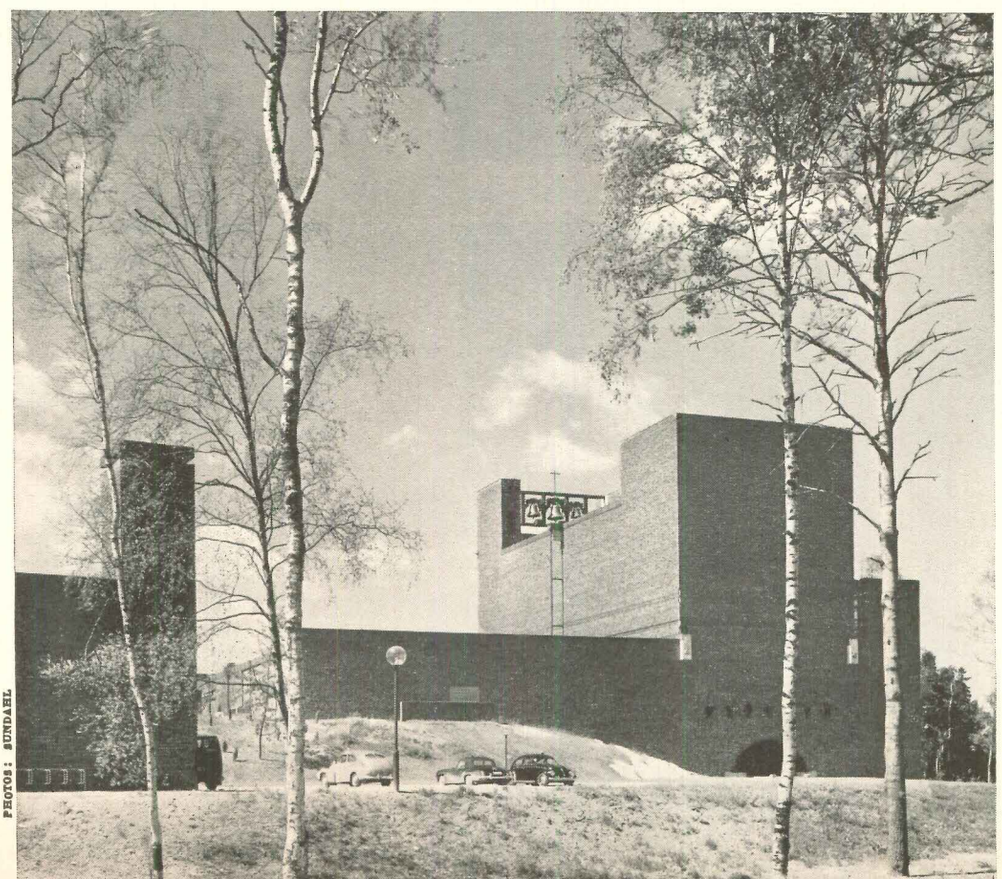




Altar wall of church extends upward into a broad bell tower; materials are brick, concrete, granite



Beside the church are a church hall, interior courtyard, and service rooms; nearby, social wings



PHOTOS: SUNDAHL

ANCHOR IN A PARISH

This church in a parish to the south of Stockholm, Sweden, recalls Martin Luther's injunction to his followers: "Go and build fortresses." Whatever the angle of approach used by the visitor, he beholds the church's massive shape immediately, and sometimes it appears to be behind a lower wall, at that. This wall is the considerable complex of parish house, registrar's offices, wedding chapel, meeting room, auditorium, etc. Architects Borgström and Lindroos took care to use the wall to screen out the principal approach road.

When the parishioner enters the church, however, the ruggedness gives way to the grace of simplicity. Ample cubage and adroit natural lighting help accomplish this feeling. From a skylight in the broad bell tower, and from a large window to one side (see photograph on facing page), daylight washes the brick wall behind the altar.

The church does not lack richness in finish, but it is a highly localized richness, such as a single round stained glass window cut in the back wall, facing the altar. Another example: the low side wall of thick roughcast glass. The architects state: "The relative importance of the church, as compared with the more profane buildings, has been indicated through a symbolic form, not based on utilitarian demands only."

The structural methods were highly contemporary. For instance, in the parish house, extensive use was made of precasting; also, the two long walls of the church itself are carried by powerful beams of prestressed concrete, cast in place. But there are loving touches from the past too. Where the long concrete beams penetrate the end walls of the church, the anchors for the prestressing reinforcings have been sealed with concrete sculpted in the signs of the four evangelists.

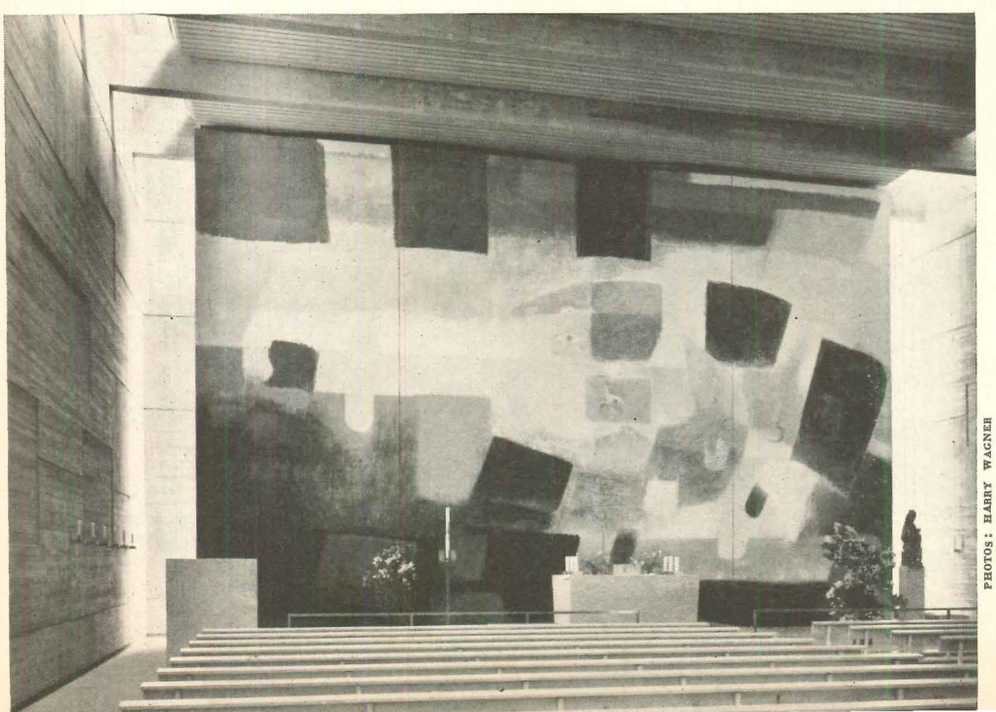
FACTS AND FIGURES

Söderledskyrkan Lutheran-Evangelical Church at Hökarängen, Sweden. Owner: Parish of Farsta. Architects: Hans Borgström and Bengt Lindroos.

Capacity of church: seats 500.

Construction: Precast concrete beams; brick loadbearing walls; roofs of precast and cast-in-place reinforced concrete.

Belltower is a structural symbol for church which stands within the churchyard wall; below, its altar



PHOTOS: HARRY WAGNER

TOWER IN THE TOWN

A wall encloses the churchyard in front of the new Maria Regina Martyrum church in West Berlin. On one end of the wall sit the immense elevated plaques which form the long sidewalls of the church itself; from another corner of this wall grows the bold bell tower (photograph, left). The emphasis is on strong, flat architectural gestures in a design so direct that it can be described by means of chopping motions of the palm of a hand.

This force is not merely the gesture of a brutalist architect; the design commemorates anguish. Maria Regina Martyrum was built to memorialize all the victims of persecution, from 1933 to 1945, under the Nazi regime. It stands in the heart of the modern West Berlin residential area, North Charlottenburg.

Entrance to the church proper is through the low-ceilinged crypt; a stairway leads upward (see plan, bottom). Indoors the church is almost as simple as its exterior, but with a generous measure of art and sculpture—mostly rather tense works—adding to the gravity.

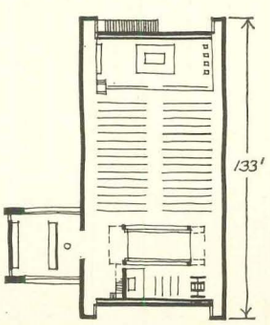
The daylighting is all indirect, reflected from exterior wall surfaces through long strip windows at the edges of the roof plane and end walls. At the dedication of Maria Regina Martyrum last May, which was attended by Catholic, Protestant and Jewish churchmen from all over Europe, Archbishop Bengsch said, "Only when we have faced the darkness, will it be given to us to step into the light."

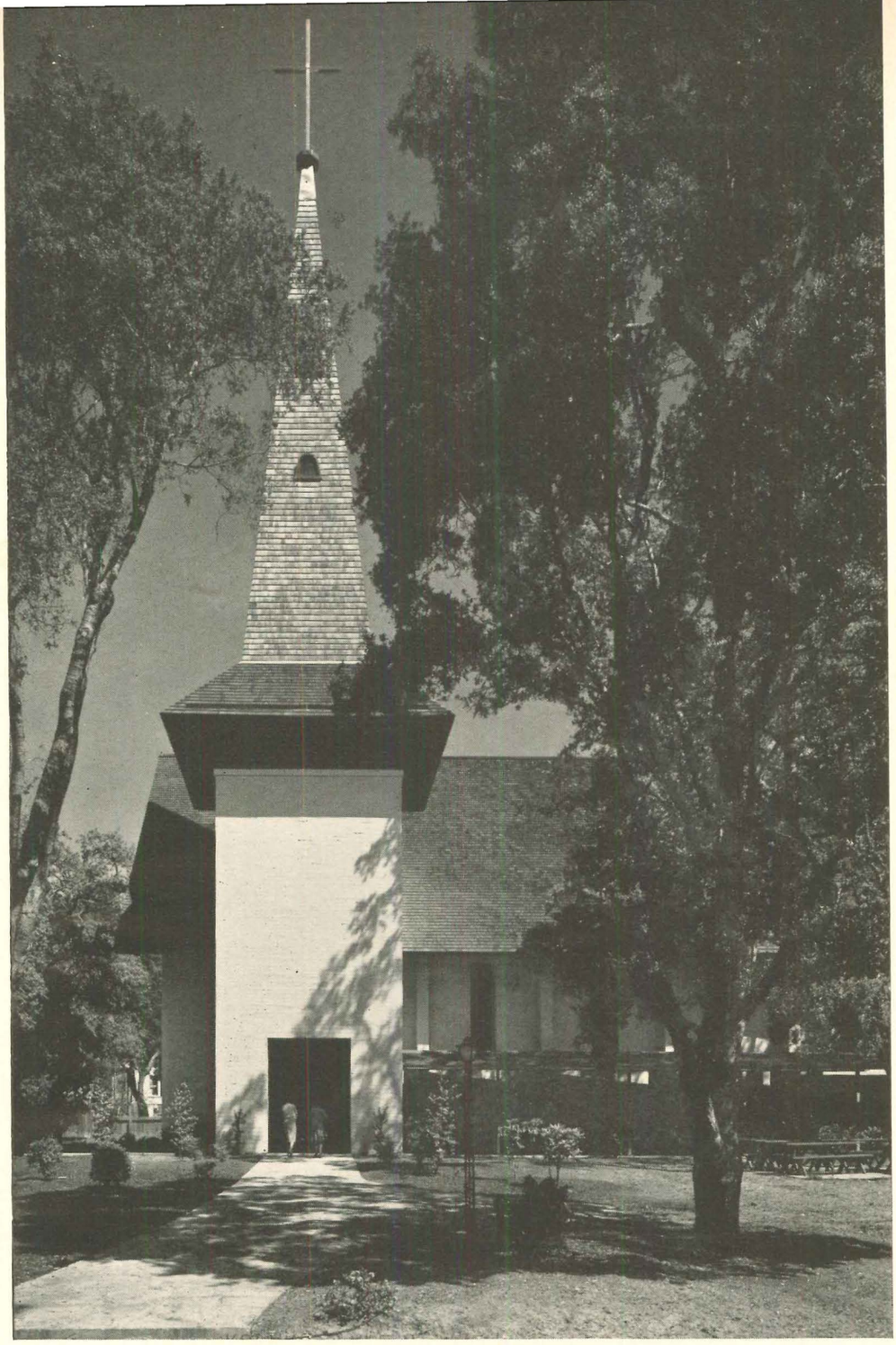
FACTS AND FIGURES

Maria Regina Martyrum Church, West Berlin, Germany. Owner: Roman Catholic Archdiocese of Berlin.

Architect: Hans Schädel

Construction: Exposed precast concrete walls; precast, prestressed concrete roof.





The spire of Woodside Village Church pops up above the trees. Below, the redwood and adobe nave

PHOTOS: ROGER STURTEVANT

SPIRE IN THE VILLAGE

The Village Church in the horsey Northern California exurb of Woodside has several antecedents: It is almost as plainspoken as some of the early American meetinghouses. It uses native materials—redwood and adobe—with the unselfconsciousness of the early California missions. And its slightly exaggerated, just-short-of-cute shape is reminiscent of some of the smaller Scandinavian churches.

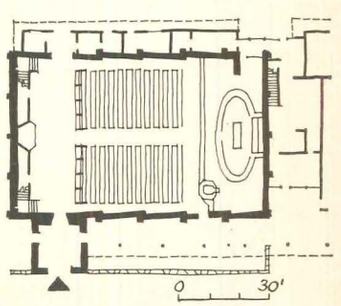
It is by no means a melange, however. The church is enclosed by two quietly assertive elements: the continuous whitewashed adobe walls, cut off so sharply at the top that they seem almost free standing; and the chocolate brown ceiling and framing members that trail off into darkness high above.

An alcove wall of cathedral glass floods the raised sanctuary with natural light, giving it due prominence. The altar is a plain table surrounded by an oval railing. It is slightly upstaged, however, by a shelf bearing six candles, raised still higher against the rear wall.

The pleasantly overscaled steeple rises a total of 120 feet, making the church easily the dominant object in the village despite the smallness of its area and site. There is justification: it is the only Protestant church in Woodside, attended by representatives of between 13 and 16 faiths on a given Sunday.

FACTS AND FIGURES

Woodside Village Church, Woodside, Calif.
Owner: Woodside Village Church; J. Hood Snavely, Pastor.
Architects: Wurster, Bernardi & Emmons; Ralph O. Butterfield, associate in charge. Engineers: Gilbert - Forsberg - Diekmann - Schmidt (structural); G. L. Gendler (mechanical and electrical). Landscape architect: Celia Mogensen. Acoustical consultant: Walter Soroka. General contractor: Arthur Brothers, Inc.
Building area (including classrooms): 9,400 square feet. Construction cost: $215,000.



LIGHT ON THE ALTAR

A church, says Architect Miguel Fisac, must "assist the faithful to approach God." His Church of the Coronation of Our Lady in Vitoria, Spain, leads the senses of the faithful in procession up the wide steps to the unadorned block of the altar, and to the slender Crucifix hanging from gleaming wires.

"To create an atmosphere of communion while attending Mass," says Fisac, "I have attempted to create a sort of plastic dynamism towards the altar." A pure white plaster wall begins at the entry, wraps around the congregation, and ends behind the altar. This smooth arc contrasts with the wall opposite, a flat plane of rough stone slotted by narrow windows. Overhead, the wood ceiling swoops first down, then steadily upward, reaching its high point above the altar.

There is virtually nothing in the church to distract the congregation from the raised apse (unless the large, arresting Crucifix could be considered a distraction). Light is poured upon it by a tall window, out of sight past the stone wall. The Blessed Sacrament chapel is to one side, in a grotto-like space formed by an indentation of this wall, and the confessionals and baptistry are at the rear, flanking the entry.

The exterior is a simple enclosure of the church's moving volume, a plain and irregular drum of stone. Beside it, however, is a tall belltower composed of six reinforced concrete piers and topped by a metal finial.

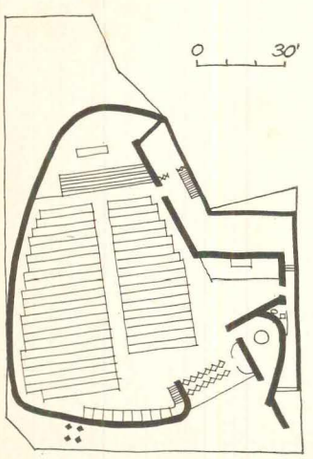
The sweeping, purposeful curve of the nave gives the somewhat blunt stone exterior its drum-like form

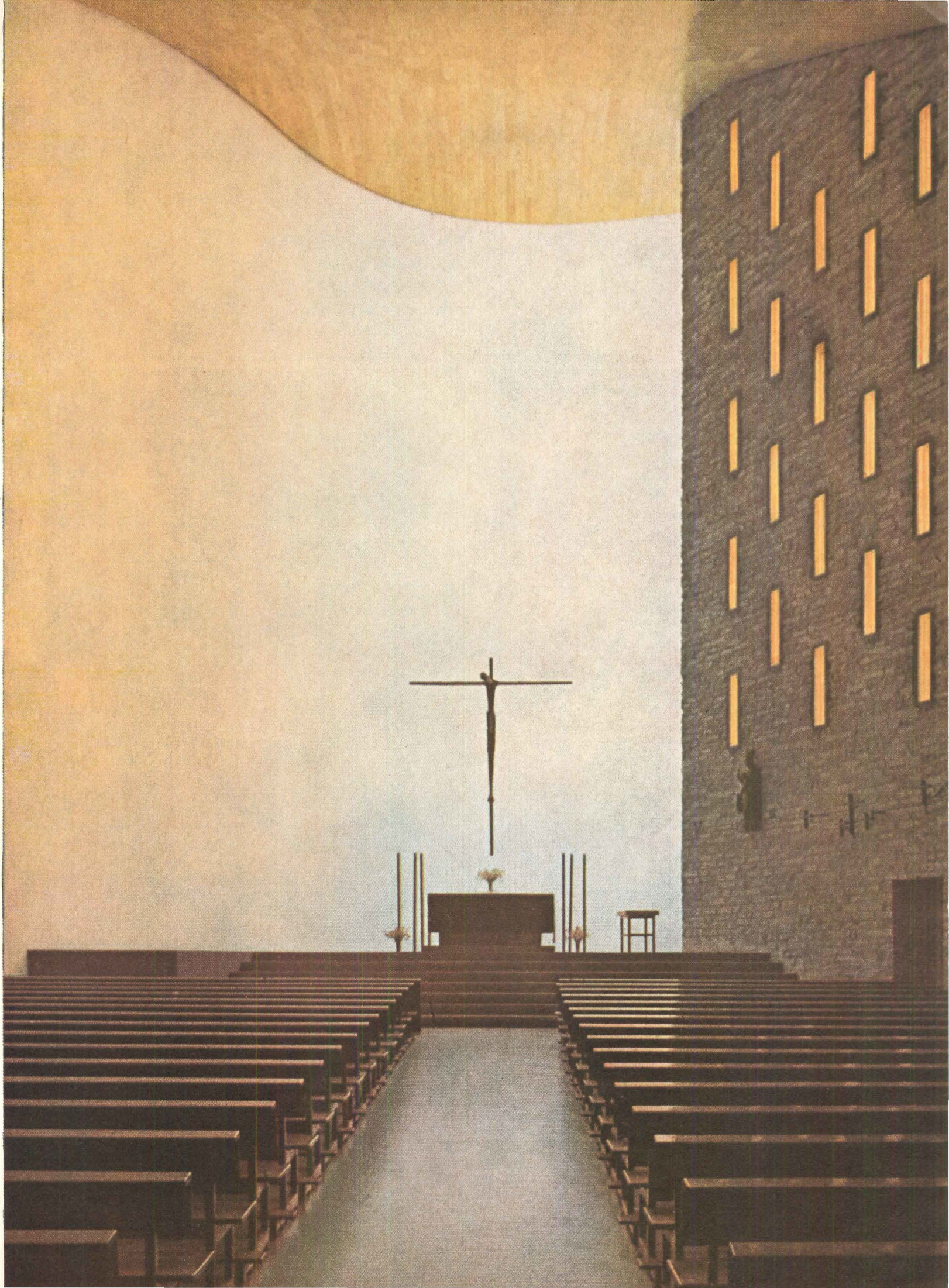
PHOTOS: A. S. KOCH

COLOR PHOTO: G. E. KIDDER SMITH FROM A FORTHCOMING BOOK ON EUROPEAN CHURCHES

FACTS AND FIGURES

Church of the Coronation of Our Lady, Vitoria, Spain.
Architect: Miguel Fisac. Sculpture: Pablo Serrano. Stained glass: Franciso Farreras.





New York's Regional Plan Assn. asked 5,600 residents what sort of region they wanted—and got all the right answers.

SUBURBANITES CAST THEIR VOTES FOR CITY PLANNING

When regional planners dream of going to heaven, they confidently expect heaven to look something like this: it will be a place inhabited almost exclusively by intelligent, civilized, and rich voters, who passionately support better public transportation, more and better-designed open space, regional planning organizations with substantial powers to control metropolitan zoning and to control the esthetic aspects of landscape and townscape as well. In addition, these intelligent, civilized and rich voters who inhabit the regional planners' heaven insist on paying higher taxes to make all those fine things come true.

Several weeks ago, heaven came startlingly close to earth. What happened was that New York's Regional Plan Assn., a research and advisory body to New York City and 17 surrounding counties, announced the results of a singular survey of 5,600 of the region's residents. Not only did the respondents indicate support for those dream-world items described above, but there were many other surprises which emerged from the results of the survey. These included, besides support for improved public transportation, open space and esthetic controls, a strong straw vote for clusters of industrial and commercial development near major transportation arteries, racially integrated housing, and some transfer of planning powers to a metropolitan-wide agency.

Is RPA taking own pulse?

RPA's initial intent was to establish with its survey some "Goals for the Region." Planners have long complained of a lack of community consensus prior to planning; it seems that planners rarely find out how people feel about their plans until after those plans are announced—and then the reaction is often frustrating. So RPA decided to pick a sample from the huge (6,900 sq. mi.), populous (16.1 million persons) New York region, and ask this sample what their goals were, and how to achieve them.

Realizing that it would be futile to stun the residents with a long, complicated questionnaire based on a non-existent knowledge of the problems under discussion, RPA proceeded first to educate its "sample." This education consisted of a five-week course in regional planning, through the use of well-written pamphlets and special television shows. The written literature was strongly biased, as might be expected. Example: "We are left with widespread ugliness . . . jerrybuilt stores, service offices, hamburger joints, and bars strung along highways . . ." And the literature had its own recommendations: "What would make better city communities . . . includes . . . economic opportunity for all, safety, good schools [and] housing . . . more openness, greenery and play spaces . . . better parking . . . controlling air and stream pollution . . . art and architecture as well as green spaces and river views . . . privacy . . . and a sense of belonging."

Admittedly, this sounds more like indoctrination than education, and RPA probably intended it that way. Whether or not such indoctrination destroys the objective value of the survey is another question. While it looks like RPA might not be doing anything more than taking its own pulse, Allen Barton, director of Columbia University's Bureau of Applied Social Research, which analyzed the survey results, rationalizes the unorthodox survey methods this way: "The entire population of the region will have to go through this opinion-forming process in the next few years when confronted with the problems of growth and change. The survey permits us to estimate the *potential* public opinion of the region's population, within certain limitations."

These limitations are a little severe, however, in several respects. First, the respondents were overwhelmingly upper-middle class suburbanites. Only 17 per cent of the sample were from New York City, whereas 53 per cent of the region's population lives in the city. And, whereas 30 per cent of the region's population earns less than $4,000, only 4 per cent of those in the survey were under that figure, and two-thirds of them earned over $10,000. And whereas 58 per cent of the region's population failed to finish high school (and only 18 per cent went to college), only 6 per cent of those in the survey failed to finish high school and 75 per cent have attended college. Finally, all the respondents were contacted through existing civic organizations, indicating some degree of interest in community problems.

RPA experienced great difficulties in gaining a more representative sample—low income, minority group families are not likely to consider questions of optimum regional growth when they are burdened by more immediate personal problems. Not being able to surmount these difficulties, RPA therefore stuck with what Barton has called the "educated and civically active segment of the public." Though the sample was admittedly unrepresentative of the population as a whole, this was, of course, offset by the fact that it *was* representative of the community leaders and shapers of opinion,

who presumably may have a major say about the region's future, as they have about its past.

Barton draws two principal conclusions from the RPA survey: "Though the great majority (of respondents) are suburban residents and very satisfied with living conditions as they find them, they are also willing to support changes in present development trends to meet impending problems. . . . Though most participants have relatively high positions and income and have backgrounds that would lead one to expect political conservatism, a large majority supported more state or federal involvement in metropolitan planning and more public investment and controls on development."

Policies for the future

Specifically, the participants in the survey favored the following:

▸ *Improved public transportation.* Almost all of the respondents "strongly" favored better public transportation, and 90 per cent backed a tri-state metropolitan agency in order 1) to coordinate automobile and public transportation; 2) to improve subway and Hudson River tube service; and 3) to arrange for better rail commutation to the suburbs. And 80 per cent favored state support for public transportation, 66 per cent wanted some federal support, and 57 per cent asked for municipal support. As for highways, 36 per cent of the participants were opposed to more highway construction, while 22 per cent favored it and 35 per cent would build highways only where they were absolutely needed. However, at present, 60 per cent of the respondents drive to work, and only 40 per cent use public transportation. The question arises whether a large percentage would use public transportation if it were faster and took them closer to their jobs. Some 40 per cent said yes, despite the fact that half of the participants who are commuters said they are "very satisfied" with their trip to work.

▸ *Concentration of jobs.* About 86 per cent of the participants favored locating jobs in centers large enough to provide economic support for public transportation. To affect this pattern of development, some 78 per cent recommended a change in local real estate taxation, substituting other local taxes for the property tax.

▸ *Working-class housing.* Over one-third of the sample indicated opposition to more industrial workers living in their community, and 30 per cent said they did not care—a rather ambiguous category which might reasonably be expected to side with the majority in any specific instance of making a decision about new facilities for industrial workers. About one-third favored housing for workers.

▸ *Integrated housing.* Only 36 per cent indicated that race and "living style" might be important in choosing neighbors. These participants said flatly that they preferred families of the same race, i.e. white, while 18 per cent said they would prefer neighbors with different incomes and of a different race, and another 28 per cent said they would prefer different races, but the same income characteristics. Sociologist Barton observes: "This looks as though people are now in transition from using race as a crucial basis for choosing neighbors to using moral values and similarity of economic status; and that as time goes on, race . . . will join religion as an irrelevancy in choice of neighbors."

▸ *Favored housing type and environment.* The ideal of RPA's survey sample is the detached, single-family house on its own lot, with its own private yard. Half the respondents have such houses on at least one-quarter of an acre. And some 80 per cent view the private backyard as vital for play space for children, and even more (90 per cent) see it as essential for a feeling of openness and sense of privacy. Almost none would accept a smaller backyard just because there might be a good-sized public park down the street. Front yards, on the other hand, are not nearly so sacred—half of the participants would even prefer less front yard, and another one-third would swap some front yard space for open space in a public park.

▸ *Relation to the city core.* Nearly 74 per cent of participants in the survey would be for federal or state aid to central cities, despite their predominantly suburban orientation. Two thirds go to Manhattan ten times or more each year (for shopping, the theater or other entertainment primarily), and almost all seem to support measures for cleaning up the air and water in central cities, as well as clearing slums and creating more park spaces.

▸ *Zoning and esthetic controls.* Over 80 per cent of the RPA sample backed "stronger controls to preserve trees and natural landscape in new developments," and over 50 per cent favored "some community control over the appearance of new buildings and renovations." A majority of respondents also favored "firm controls to preserve, or a large public investment to restore" the character of architecturally and historically distinctive buildings or areas, and 48 per cent would favor transferring some zoning powers to a metropolitan agency appointed by the three states.

Sociologist Barton sums up the RPA findings this way: "The participants came out strongly for improvement of public transportation, to be done by a tri-state authority, with funds from several levels. They favored control over industrial and commercial development to cluster it around public transportation access and major highway entrances. They would generally accept certain kinds of industry in their community, although they have deep reservations about accepting industrial workers. They would permit garden apartments and row houses in their suburban communities—even for low-income people—but they would generally not permit six-story or higher apartments. They want public controls and spending to protect trees, provide both local and regional parklands, to control building appearance, and to avoid air and water pollution. And, finally, they would accept the transfer of some real planning powers to county governments and to a tri-state agency. . . ."

Ferment in the suburbs

If nothing else, the RPA Goals project has stirred a great deal of ferment, both in the suburbs and older cities of the region. In Nassau County, Staten Island, Orange County and such towns as Pawling and Newburgh, N. Y., groups which worked on the Goals project are now developing further studies to sustain citizen interest in goals and problems. This opens the way to what RPA Executive Director John Keith calls "a new kind of planning . . . as RPA prepares a specific set of development policies for the next generation, citizen panels from all over the region can take part. . . ." END

NEW STATEHOUSE FOR NORTH CAROLINA

PHOTOS: © EZRA STOLLER ASSOCS.

When the sun shines brightly in Raleigh, North Carolina, the gleaming new building seen above almost dazzles the visitor with its white marble exterior. This first impression is fully justified by closer inspection, as the visitor enters through the stately colonnade. For North Carolina's new Statehouse, by Architect Edward Durell Stone, is indeed a dazzling performance by our foremost romanticist—about as successful a complex of great atriums and noble chambers as any architect has achieved in the U.S. recently.

To achieve it, the architect has combined many of the best elements found in classicism with virtuoso techniques of lighting and circulation. And in combining these elements (and adding a dash of showmanship), Stone has hit on a formula for a modern, democratic, govenmental style.

Moreover, it should be a formula popular with the tax-payers: for while Washington's dreary new Rayburn Office Building (for members of the House of Representatives) cost $30 per square foot to build, this happy and popular assembly building for the people's representatives cost only a little more than $22 a square foot—and suggests immense luxury at that!

The square building sits on a broad, 340-foot-wide podium of native granite, on axis with the existing Capitol (the block-long street which separates them will

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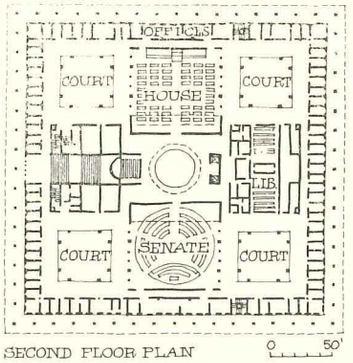
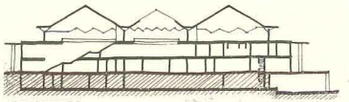
Exterior facing is of white marble, deeply scored in patterns reminiscent of classical fretting. The granite podium on which the building stands covers a 100-car garage and has two enormous, saucer-like fountains flanking the entrance.

The great rotunda is located at the exact center of the second floor. Above it, one of the building's five concrete pyramids (this one skylit at the peak) bathes the rotunda in light

PHOTOS: © EZRA STOLLER ASSOCS.



SECOND FLOOR PLAN 0 50'



SECTION

be developed as a mall). This podium lifts the three-story structure above its gently sloping two-block site and gives it a monumental, level setting. In addition, the podium covers a garage for 100 cars (as well as housing all mechanical equipment), thereby freeing the rest of the site for lawns.

The interior organization of the structure is both efficient and spectacular. Says Stone: "I am concerned more with spatial than with structural drama."

Stairway to the top

The public is carefully kept apart from the legislators. A single soaring, red-carpeted, imperially grand staircase (photo left, section above) leads visitors directly to the rotunda mezzanine (above) on the third and top floor. From here, the public is free to enter

A monumental, red-carpeted stair for visitors leads directly from the ground floor entrance to the third floor and the rotunda mezzane. Exhibit cases on this floor are located on both sides of stair.

The Senate, like the House, occupies a spacious two-story room topped by a concrete pyramid. Cantilevered galleries provide ample room for visitors at the sides, press at the rear

PHOTOS: © EZRA STOLLER ASSOCS.

House or Senate galleries, go to a large auditorium for public hearings, or stroll out onto generous roof gardens at the building's four corners.

On the first and second floors, two tiers of small (8 by 12 foot) offices for the legislators are strung along the perimeter. These offices face inward onto four delightfully landscaped and skylighted courts (photos, overleaf). Committee rooms are on the first floor, toward the center of the building.

The House and the Senate

The spacious legislative halls themselves (Senate above, House left) are located on the second floor along with a small, nondenominational—and fairly bland—chapel. At this level, the floor of the rotunda gives access to all three rooms.

Even for North Carolina, where building costs are low, the Statehouse's bare construction cost of $22.32 per square foot must be counted a considerable accomplishment. Says State Treasurer Edwin Gill: "We got an extraordinary amount of space for the cost." Three factors were primarily responsible: extremely simple finishes (the concrete block walls enclosing both chambers are typical of the interiors), a simple structure of cast-in-place concrete, and contractors who, in bidding, undoubtedly figured their margins very closely for the prestige of getting the job.

Both chambers have red carpeting, furniture designed by the architect, and great brass chandeliers. Patterned ceiling picks up motif scored into much of the building's interior and exterior surfaces.

PHOTOS: © EZRA STOLLER ASSOCS.

Since 1903 the inadequacies (no offices, no meeting rooms, cramped legislative chambers) of the existing Capitol had been recognized. But prior to 1959 all proposed remedies had involved modifications of this handsome Greek Revival landmark and they had met justifiably strong opposition. In 1959 a seven-man commission of business leaders and legislators was established to select an architect and a site, and on it to erect a new building for the legislature. The commission picked Stone, in association with local architects Holloway–Reeves.

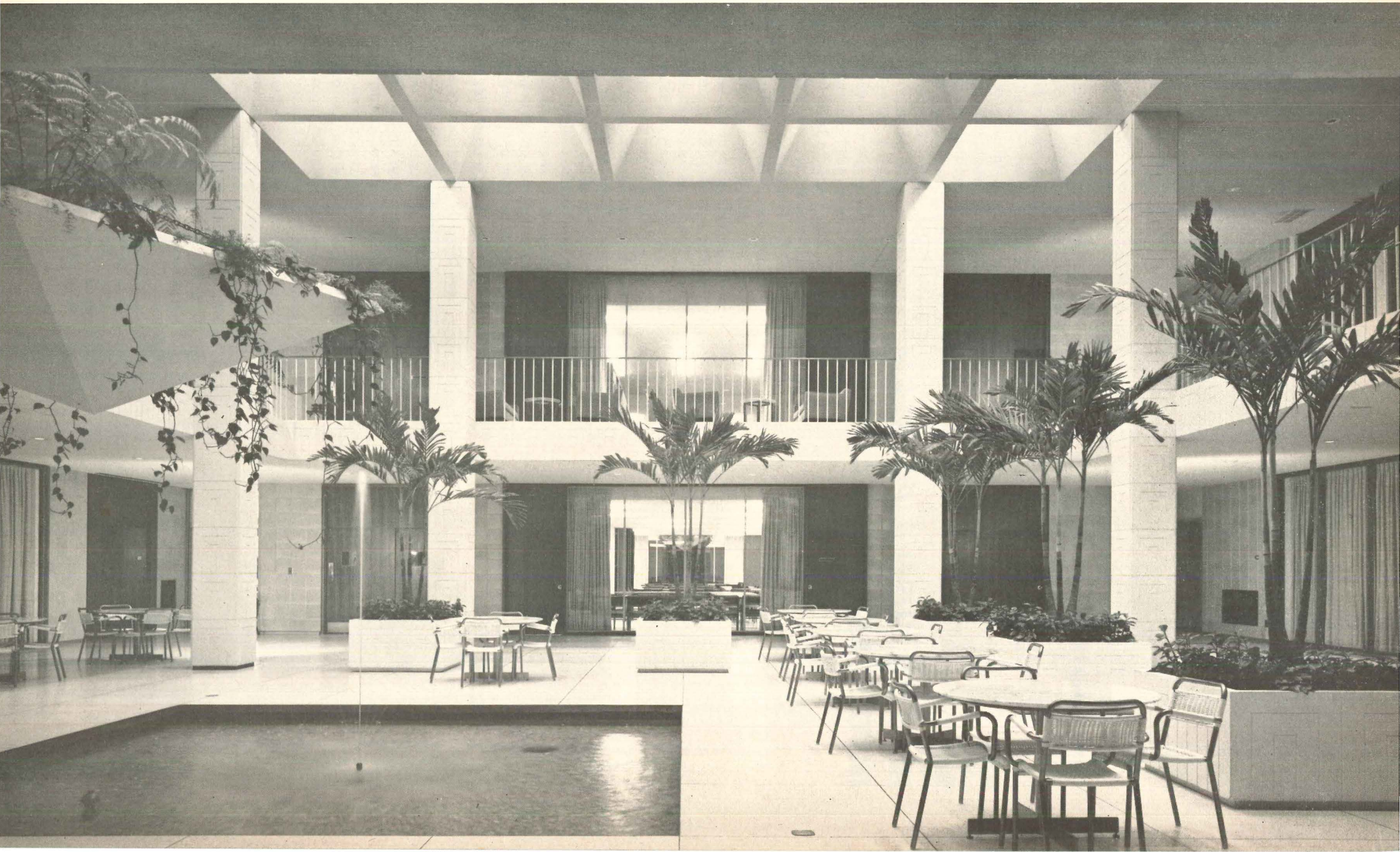
For North Carolina this structure marks a sharp departure from a long succession of uninspired public buildings. For Architect Stone, of course, the building is not a departure but, rather, a restatement of present goals: permanence, refinement of materials, spatial drama, and, in plan, the elimination of corridors by the use of great interior courts.

Stone is fond of saying that it takes a good client to make a good building. As clients, the people of North Carolina are entitled to take a bow.

FACTS AND FIGURES

North Carolina State Legislative Building, Raleigh, N.C.
Architect: Edward Durell Stone. Associated architects: Holloway-Reeves. Landscape architects: Edward D. Stone, Jr. and Richard C. Bell. Structural engineers: Watson Engineering. General Contractor: Rea Construction Co.
Building area: 206,050 square feet. Total project cost: $6.2 million (land, $890,000; construction, $4.6 million; furnishings & equipment, $430,000; landscaping, $75,000; architects' fees, $240,000).
Financing: $4.5 million by bond issue, the remainder by direct appropriation. END

The two-story interior courts are the building's greatest delight. Full of the tinkling music of water, they are bathed in light from plastic bubbles above a deeply coffered ceiling



What it takes to be a client:

3.

HOW TO TURN A PROBLEM INTO A SET OF PLANS

This is a bewildering time in which to build. Technology has given architects the ability to construct just about anything they choose to design, and architects seem to be trying just about everything at once. Behind this explosion of miscellany, moreover, are some differing opinions about the very definition of the term modern architecture.

To some architects the modern movement means nothing less than a totally new approach to the process of architecture, in which style as such is disregarded and design grows out of an investigation of the problem at hand. To others, modern architecture is itself a style; function is not to be ignored, but the main thing is to give the building a "compelling image."

Most architects stand somewhere in between the two extremes. They stand, to borrow a metaphor from a prominent architectural educator, somewhere in the midst of a diamond. The four corners of the diamond are esthetics (what the building should look and feel like), technology (how it can be built and its interior environment controlled), economics (the limitations of the budget), and function (what the building is to do). Each corner exerts a magnetic force on the architect, and his outlook largely depends on the degree of his response to the tugs of one over the others.

There is nothing in the rules to say that the client can't do a little tugging too, providing he knows what he is about. For the architect's place within the diamond, as we shall see, affects every step of the conceptual construction of the building, from early architect–client conferences, to development of the program, to its interpretation in schematic design, to the fixing of the design in preliminary plans and specifications, to the preparation of the final contract documents.

The right and wrong ways of tugging an architect

Last May, the British author and critic Nikolaus Pevsner told the American Institute of Architects' convention that the great ages of architecture have depended as much on knowledgeable clients as on the flowering of architectural genius. Today, Dr. Pevsner said, "clients tend to be too timid." They "take the architect's vision with rather less checking of the fulfillment of the brief than they ought to do."

Dr. Pevsner's declaration probably came as a surprise to a good many American architects. The giants may be able to treat their clients cavalierly; but some highly competent practitioners, unprotected by reputations for genius, get a good deal of shoving around in this country. For every architect who follows his "vision" to the disadvantage of the building's function, there are others who are pushed by the client into doing things they know are mistakes. "Architecture," said one of the

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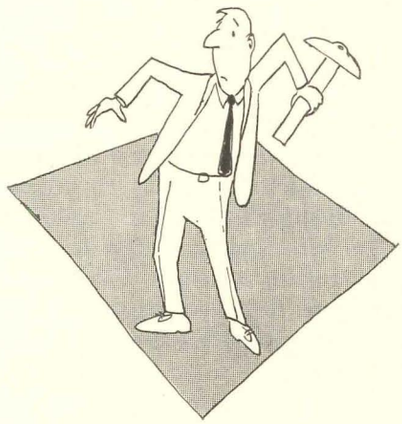
This is the third article in the FORUM *series on "What It Takes To Be a Client." Final subjects will be how to work with an architect during preparation of plans and specifications, during the selection of contractors, and during actual construction.*

profession's leaders a few years ago, "is 90 per cent client control."

The client must strike a rather delicate balance. On the one hand, he cannot let himself be "controlled" to the point where the building becomes no longer his, but solely the architect's. On the other, presuming that he has chosen an architect of some talent, he should not hamstring that talent to the point where he is no longer getting his money's worth in terms of design quality.



One clue to this balance lies in a recognition of what each party brings to the table when architect and client sit down to the process of programing and design. The client, first of all, brings the money to build the building, which is no small contribution. He should put it on the table, at least in the figurative sense, giving the architect a clear and firm idea of exactly what he wants to spend. More than one client has shortchanged himself by cannily setting aside a secret contingency fund, and thus imposing a needless limitation on both the architect and the building. Others have wasted their own time and the architect's by talking big at the outset, then spending small when the chips are down.

Nor should this full financial disclosure end with the construction budget. Most design decisions require that a three-way balance be struck among initial cost, eventual cost, and the cost of money. A high-priced doorknob may turn out to be a bargain if it will require less maintenance than a low-priced alternative over the life of the building. The savings in maintenance, on the other hand, may be more than offset by the cost to the client of keeping extra money tied up to buy dozens of high-priced doorknobs. The architect can help strike the balance, but only if he knows the client's complete financial picture.

The client also brings an unmatched knowledge of how *he* likes to run his business. Even though he may not be a reigning expert in his field, he knows better than anyone else what kind of routine, what kind of facilities, suit him best. He should not cling to these old patterns no matter what, but he should describe them thoroughly and defend them staunchly until something demonstrably better comes along.

Finally, business aside, he brings a set of individual tastes and reactions to such things as materials, colors, windows, even doorknobs. Some of his tastes may have to be sacrificed to the success of the building as a whole, but they should be unashamedly expressed and respectfully listened to. The fact that the client may not know much about architecture should not keep him from saying what he likes.

The architect, for his part, brings to the table the entire range of professional skills for which he was chosen—plus a few traits of mind that are especially helpful during the early design stage. He carries a mental catalog of materials, equipment, and structural systems which often enables him to make a quick judgment on whether a given idea is promising or impractical. He is also likely to have the ability to take lines and dimensions and intuitively translate them into spaces, predicting with some degree of accuracy how the spaces will look and feel.

Translation of this sort, in fact, is probably going on in the minds of both parties as they begin to discuss the building problem in detail. It is one reason why the concept of the building program—what Dr. Pevsner called the client's "brief"—is currently undergoing considerable change.

How to analyze function, measurable and otherwise

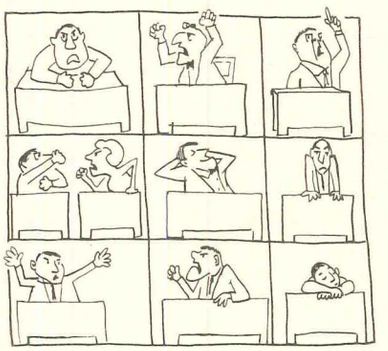
The program's basic purpose, of course, is to define the function of the building in detail. The changes in the programing process reflect an expansion of the concept of function itself. The traditional meaning of function was to accommodate the specific activities which the building must serve. The new concepts of function are no less real, but they are much more difficult to reduce to a numbered list on a sheet of paper.

For the sake of simplicity, take the example of a medium-size regional headquarters for an insurance company. The owner's measurable requirements include clerical lofts, executive offices, salesmen's bullpens, conference rooms, and public reception areas—all relatively easy for the client to list and the architect to convert into gross floor areas on the basis of head counts and employment projections.

But the architect is not simply providing working space, he is (or should be) providing a working environment. He needs to know a good deal, therefore, about the company's personnel policies. He needs to know how easy employees are to find, so that he and the company can decide how far to go in providing amenities that make the building itself a fringe benefit. He needs to know, to whatever extent is practical, the tastes and preferences of his invisible clients—those who will use the building—as well as those of the client–owners across the table.

The arrangement and appointments of offices inevitably will

proclaim the status of those who occupy them (the programing of a new building thus can touch off a crisis in office politics that makes a Latin-American palace revolt seem mild). The architect has to know a great deal more about the company hierarchy than the organization chart will tell him.



Finally, every aspect of the building will convey a message about the nature of the company. The client and architect should have a clear understanding of what this message is to be. Both must realize that the care with which the building is sited and designed in relation to its surroundings will speak volumes about the company's regard for the community.

An office building is a relatively elementary example of the need for depth and breadth in programing. Other types—hospitals, schools, factories, laboratories—call for a good deal of study before even the measureable requirements can be set down. Progress in health, in education, in industrial processes, in research has been so rapid that the client is almost always forced to make a complete re-examination of past procedures before he fixes future patterns of activity in a new building. It is generally a good idea if the architect is involved in that re-examination.

There are also those building types in which intangible function is far more important than it is in offices. A church is an obvious case in point (although the Churches are beginning to assert some rather specific requirements too—see pages 68–83). A school, less obviously, is another. It makes stringent measurable demands, but in the end it is the total quality of the school which will have the greatest impact, for good or ill, on the educational process (and the children) inside.

The role of the architect as a diagnostician

The architect, then, has a lot to learn about every new building situation. Each has his own way of going about it. Some firms employ staff experts in their fields of specialization (Daniel, Mann, Johnson & Mendenhall, who do a great deal of space-age work, have such nonarchitectural types as aerodynamicists and inertial guidance engineers on their permanent payroll). Some make a practice of wholesale interrogation of everyone in an organization, from shipping clerks to chairman of the board. Some are looking into the use of computers to sort the mass of program data involved in large, complicated projects.

And a growing number of architects are actually taking over the job of writing the program, completely reversing the old order of things. Texas Architect William Caudill, who likes to work this way, calls the program the "architectural diagnosis." What self-respecting doctor, he asks, would prescribe a remedy on the basis of what the patient thinks he needs, without making his own professional examination?

The diagnostic approach, which normally requires some adjustment of the basic fee schedule, effectively blurs the line between programing and design. Any broadening of the architect's involvement in programing, in fact, raises the question of whether such a line really exists.

Every time the range of problems is narrowed down by the architect or client, a design decision has been made. Whether pencil touches drawing paper, an act of design occurs whenever one problem is recognized as significant or another is set aside as irrelevant. Paul Rudolph, Yale's architectural dean, stated the point somewhat more poetically at the AIA convention. "The artist always ignores certain problems, addressing himself to a selected few," said Rudolph. "He proceeds to solve these so eloquently that everyone understands the statement and its truly glorious solution."

The client had better realize that all of this is going on as he and the architect confer. He needs to be conscious of the influence which even the earliest decisions will have on the eventual shape, the eventual utility, and, not least, the eventual cost of the building. Otherwise, he may be in for a shock when the architect walks in with the first drawings.

It is a difficult moment at best. The client has poured forth his wants and needs, the architect has probed and mulled, they

have reached verbal agreement on a general approach—and suddenly there it is, as specific as black lines on white paper (or in the even more specific form of a study model). Sometimes, of course, the client sees on the paper exactly what he

wanted, interpreted with more artistry than he could have imagined. But more often, the client looks at the drawings with a great deal of uncertainty and perhaps a tinge of panic. Is *this* what he and the architect have been talking about? Will he really like it when it's built?

At this point, recollection of a few simple points may help to ease the panic:

1. These are the first, not the final, drawings. They are simply an intermediate step in the continuing process of design.

2. This is a general scheme for the shape and arrangement of the building, not a complete design. The client should avoid getting caught up in details that immediately catch (or repel) his eye.

3. This is no time to be bashful. It is the client's turn to be the interrogator, asking the architect the whys and wherefores of every aspect of the design which troubles him. Questions are best resolved now, before changes become expensive. This is a bad time to hurry things. For once the schematic design is approved, the economic and technological corners of the architectural diamond assume increasing importance.

Preliminary plans and "probable statements"

The architect already will have checked the feasibility of the over-all scheme with his engineers, but now they must get down to the complicated details of how the building and its services are to be put together. Some general decisions will have been made about materials and equipment, but now the time has arrived for specific choices of major items. Dimensions are hardened, rough edges smoothed down, and the architect goes back to the client, this time carrying preliminary plans and outline specifications.

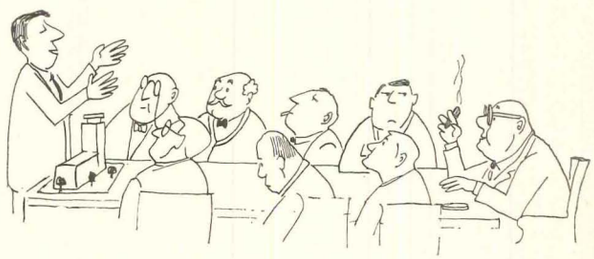
The ground rules call for the architect to submit a "statement of probable project construction cost," as the AIA tactfully puts it, with the schematic drawings, but it is necessarily general in nature. In the process of preliminary design, price tags are put on all major elements of the building, and some have to be modified or taken out altogether to meet the budget. The second estimate which accompanies the preliminaries gives the client a fairly clear idea of what he is getting for his money. But it is still only "probable." Any number of small changes (adding up to big money) can occur during production of the final plans and specifications, and no one can accurately predict what the competitive state of the building business will be when bids are taken.

The chances of both client and architect getting through the bidding process without trauma are in direct proportion to the time and care they have put into the process of programing and design. In these days of steadily rising construction costs, the client's best defense against budgetary disaster is a continuous, painstaking analysis of every element of the building. Every possible alternative must be explored if the client is to get the most out of his steadily dwindling construction dollar.

Paradoxically, this requires that the client spend money in order to save money. The spending part comes in design fees. If the client is to get the most out of the architect's analytical ability, he must be willing to pay a fee adequate to cover the amount of programing and design study which the problem demands. (It must also be adequate to cover a more-than-routine analysis by the architect's engineer consultants, whose work determines how so much of the construction dollar will be spent.) The savings in building costs will almost always be a healthy multiple of whatever extra time and money is invested in the preliminary stages.

If the client is sole owner of the building, the architect now goes back to the drawing board to prepare the contract documents—working drawings and specifications. If not, however, they may both be involved in one additional, extra-architectural step.

Increasingly, in the fields of institutional and even commercial buildings, the client himself is an agent. He is acting for a committee, a congregation, or a board which has financial responsibility for the building—and thus a final say in its design. Even if sole proprietor, he may need the approval of some hard-headed money lenders who will hold the building's mortgage.

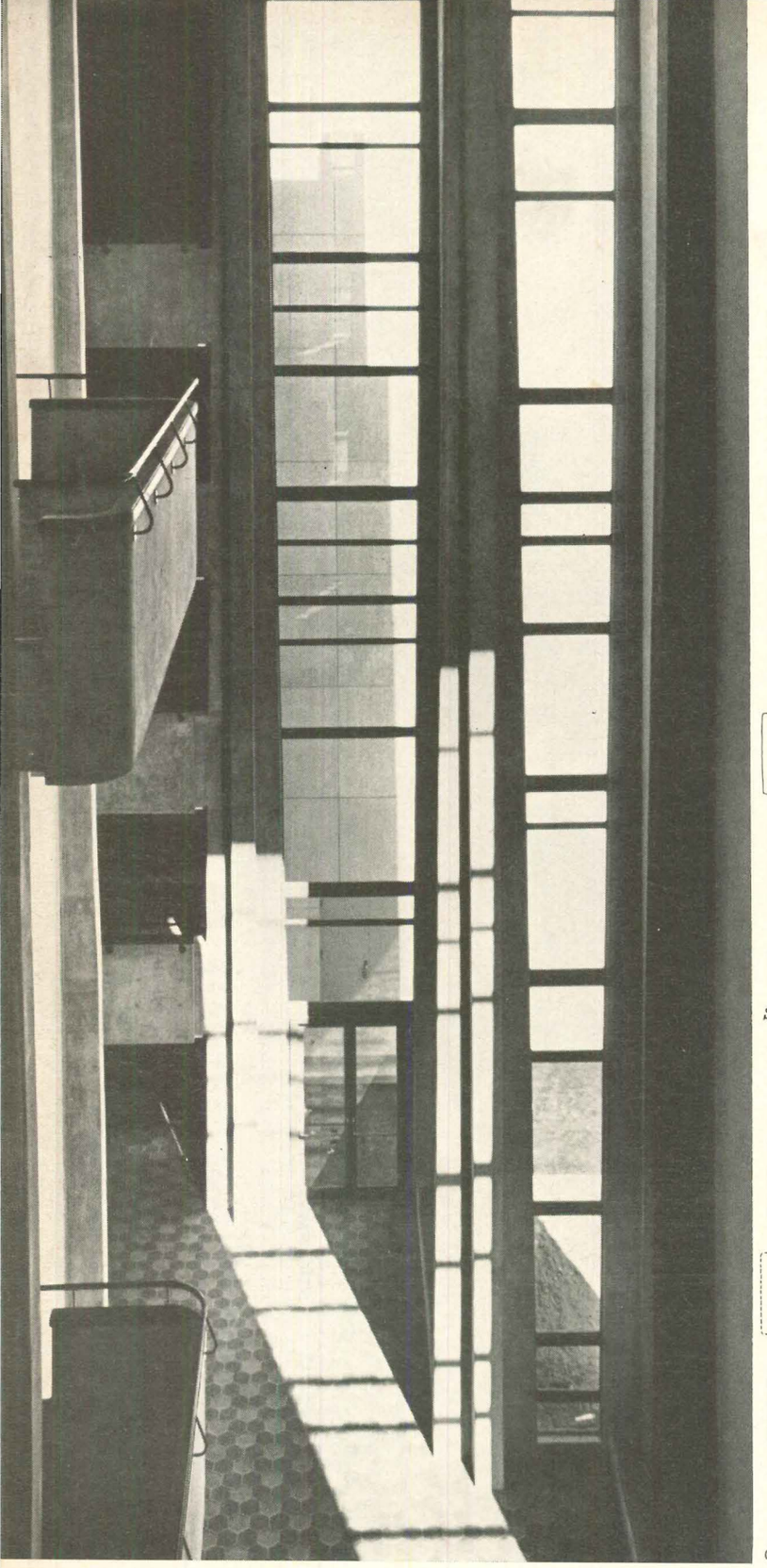


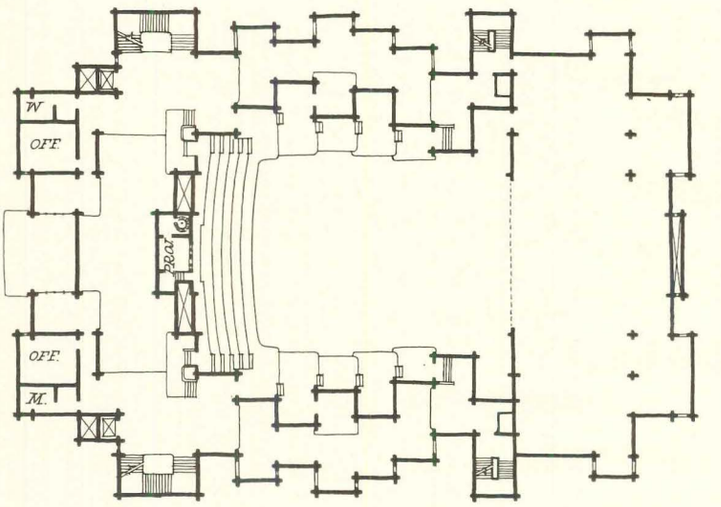
Most architects are in a good position to help obtain such approval. The architect is, after all, the one who knows the building best, and he probably has wide experience in the art of influencing boards and committees. He can also provide the materials for explaining the building to its corporate owners in graphic (and favorable) form. Some of these may be the same drawings and study models used in the process of preliminary design. For an elaborate presentation, however, additional drawings, large and detailed models, and perhaps even slide shows may be needed. If so, of course, the client should be prepared to meet the extra expense outside of the architect's basic fee.

Presuming that the presentation goes well, the building is now conceptually complete. The joint creation of architect and client has attained the reality of design. Now all that's left to do is see that it gets built that way. —Donald Canty

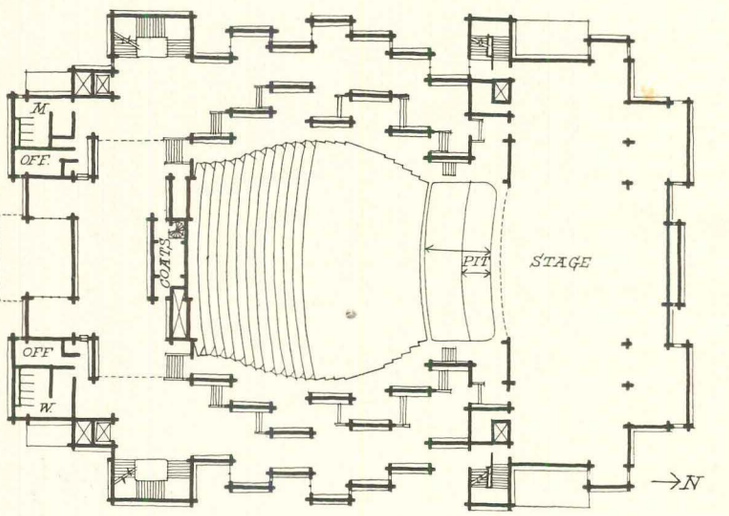
GEORGE CSERNA

MANY-FACETED STAGE FOR THE PERFORMING ARTS





SECOND FLOOR

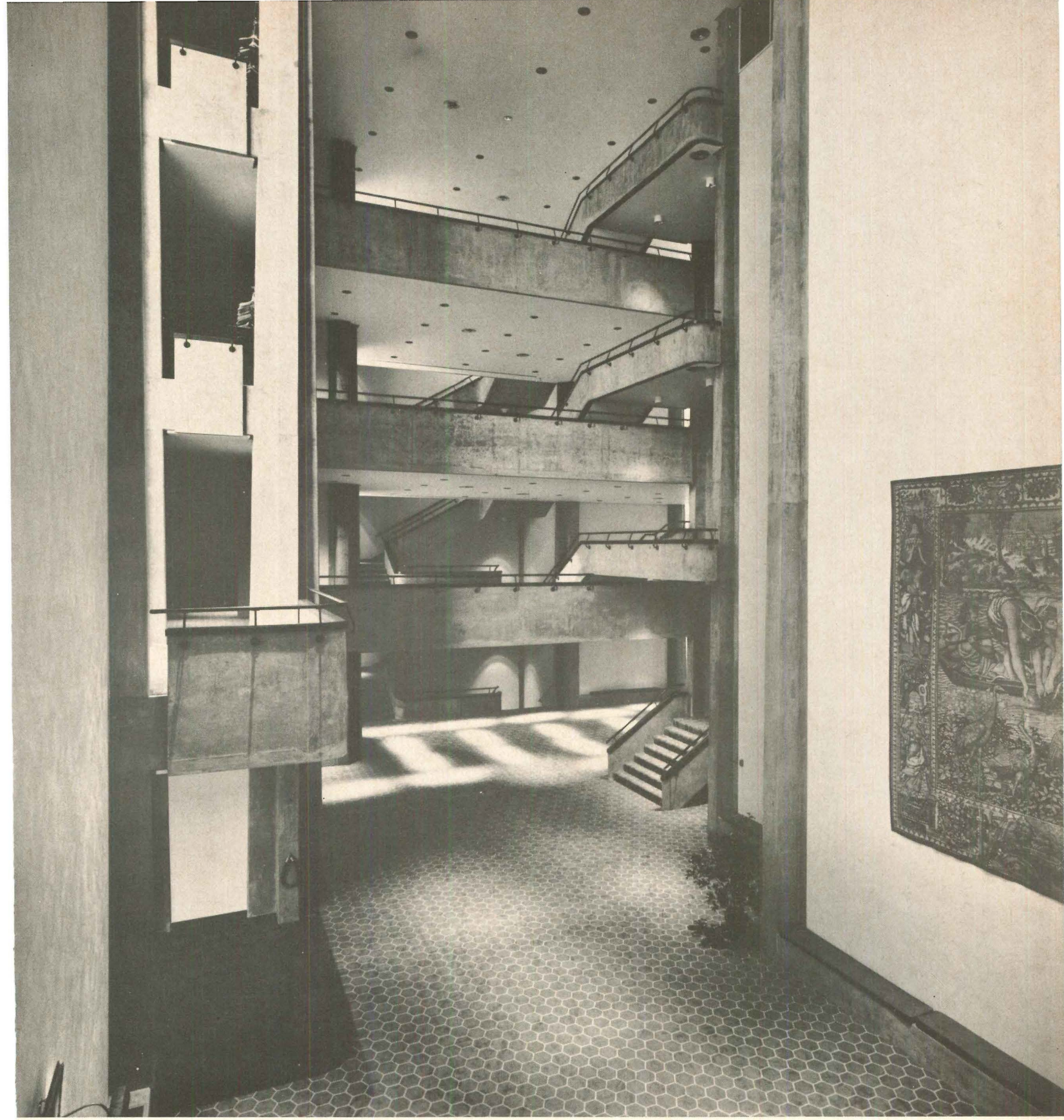


GROUND FLOOR

From mysterious side lobbies to a many-leveled grand foyer, Indianapolis' Clowes Hall makes high drama out of theater-going

The massive, moving forms shown on the preceding pages enclose a new prototype for a combination theater-and-concert hall. This prototype is Clowes Memorial Hall, a 2,200-seat structure that not only brings together people for many kinds of dramatic events, but that consciously heightens the larger drama of theater-going with sheer visual excitement.

Clowes Hall opened this fall on the neo-Gothic campus of Butler University in Indianapolis. To a recent visitor, its exterior suggested both an imaginative massing of Gothic towers, and the vertical, staggered "flats" used in stage sets. The complexity of the exteriors is fully justified by the

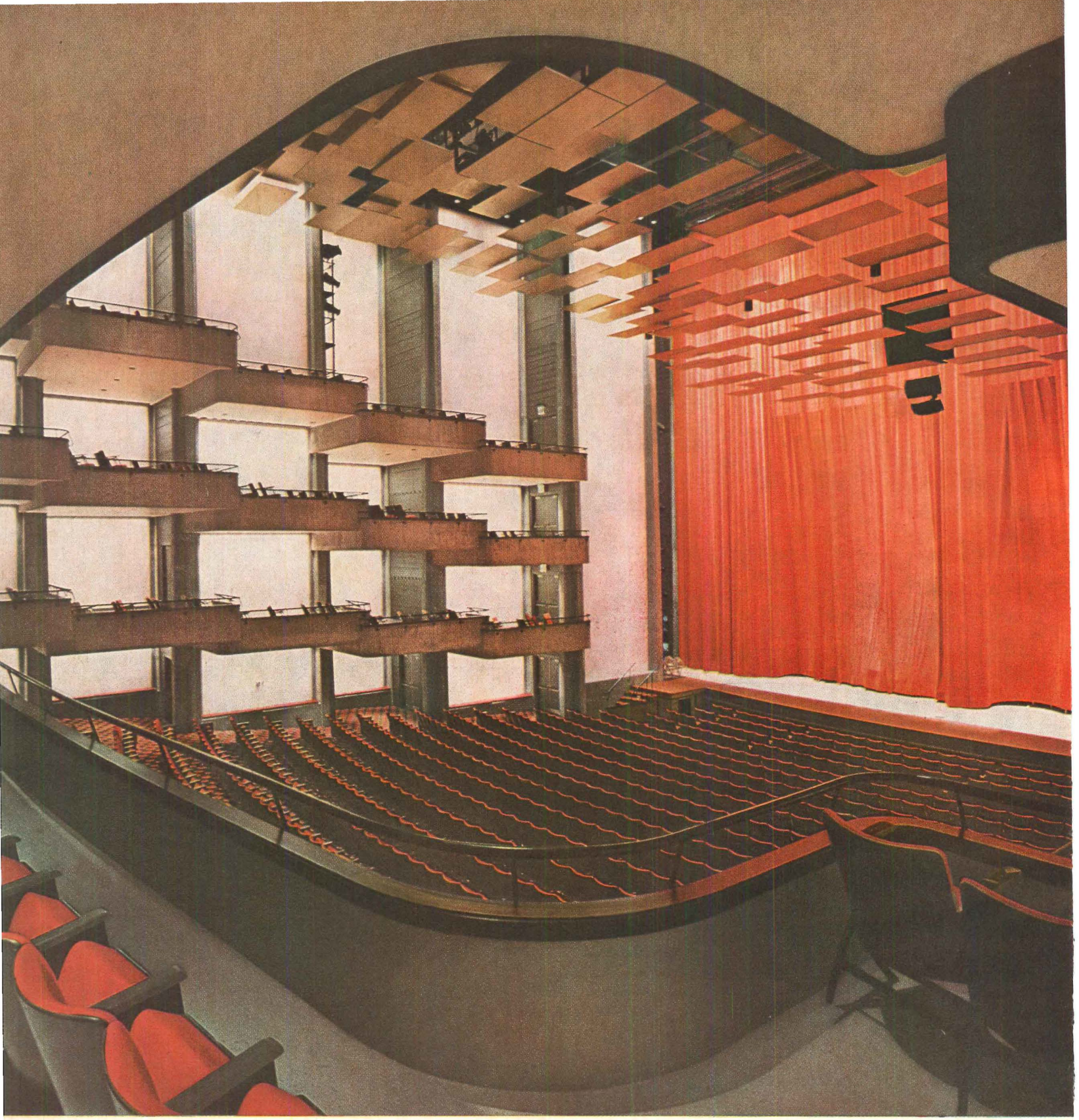


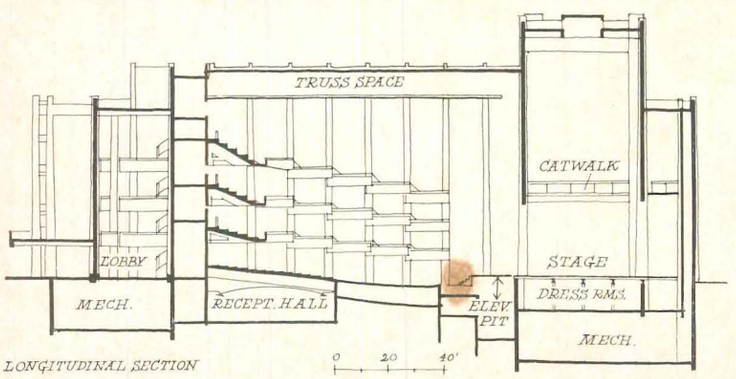
PHOTOS: GEORGE CSERNA

interior, a web of many intricately related spaces that add up to an accurate reflection of the building program. Clowes is the first real symphony hall built in Indianapolis. It can also book full-scale opera, traveling Broadway shows, ballet, comedy, films, as well as lectures, University convocations, and student drama groups. As Shakespearian Maurice Evans said to first nighters: "Everything seems to have been thought of here."

In Clowes Hall, in fact, Architects John Johansen and Evans Woollen and their consultants have thought of quite a lot. In a day of highly specialized design for each of the theater arts, it was a question whether it might not be too much to try to get all those arts under one roof. But for the growing number of cities that demand a modern cultural facility, yet cannot support a multibuilding "Lincoln Center," the attempt will surely prove instructive.

As primary determinants for their design, the architects took: 1) the acoustical requirements for symphony — a "shoe-box-shaped" hall with parallel sidewalls, high volume, and hard surfaces; 2) for opera and drama, the least possible distance for all seats (stage to back row orchestra here is only 113 feet); 3) Continental seating for more center seats, more leg room, and no interrupting aisles.





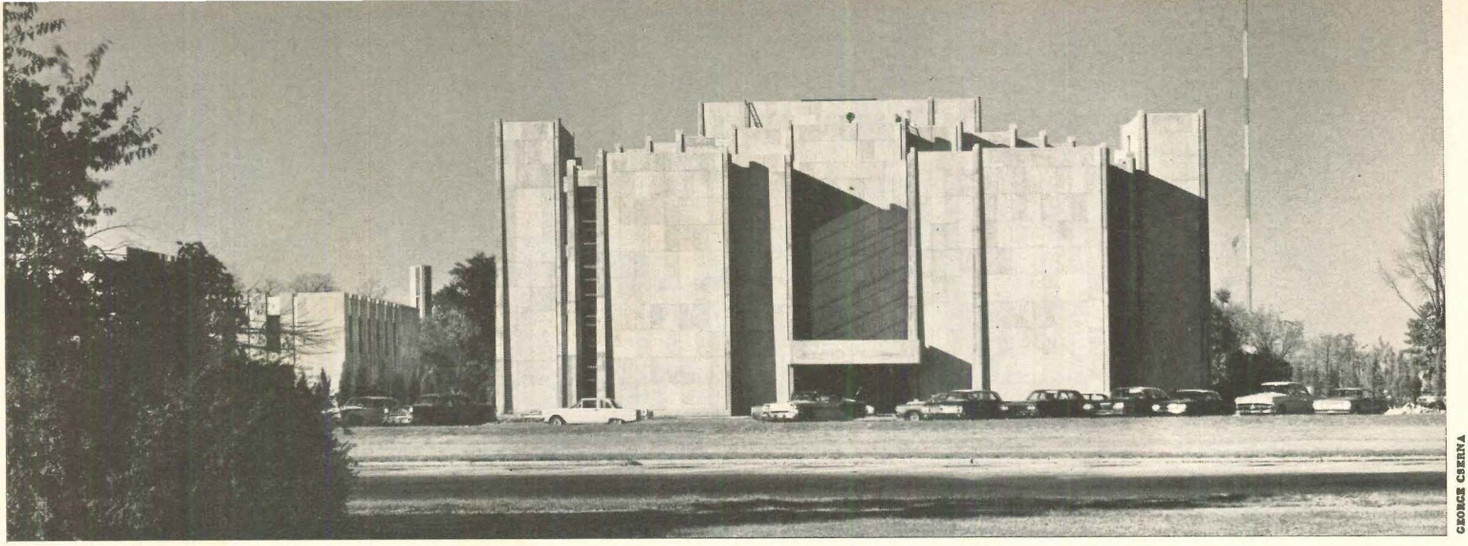
LONGITUDINAL SECTION

Since fire codes for Continental seating require side exits no more than 15 feet apart, the architects developed 15-foot sidewall elements (see plan). They arranged these in parallel for proper acoustics, placed them to allow seating to "belly" out in a circular shape for closeness to the stage, and staggered them to allow semiconcealed exits and vestibule space. Working from the inside out, these tall, flat elements became the main architectural motif, from which grew the building's outer shell, including the four big stair towers at the corners and the stage loft at the rear. The result is a unity-within-variety not found in many theater designs.

PHOTOS: GEORGE CSERNA

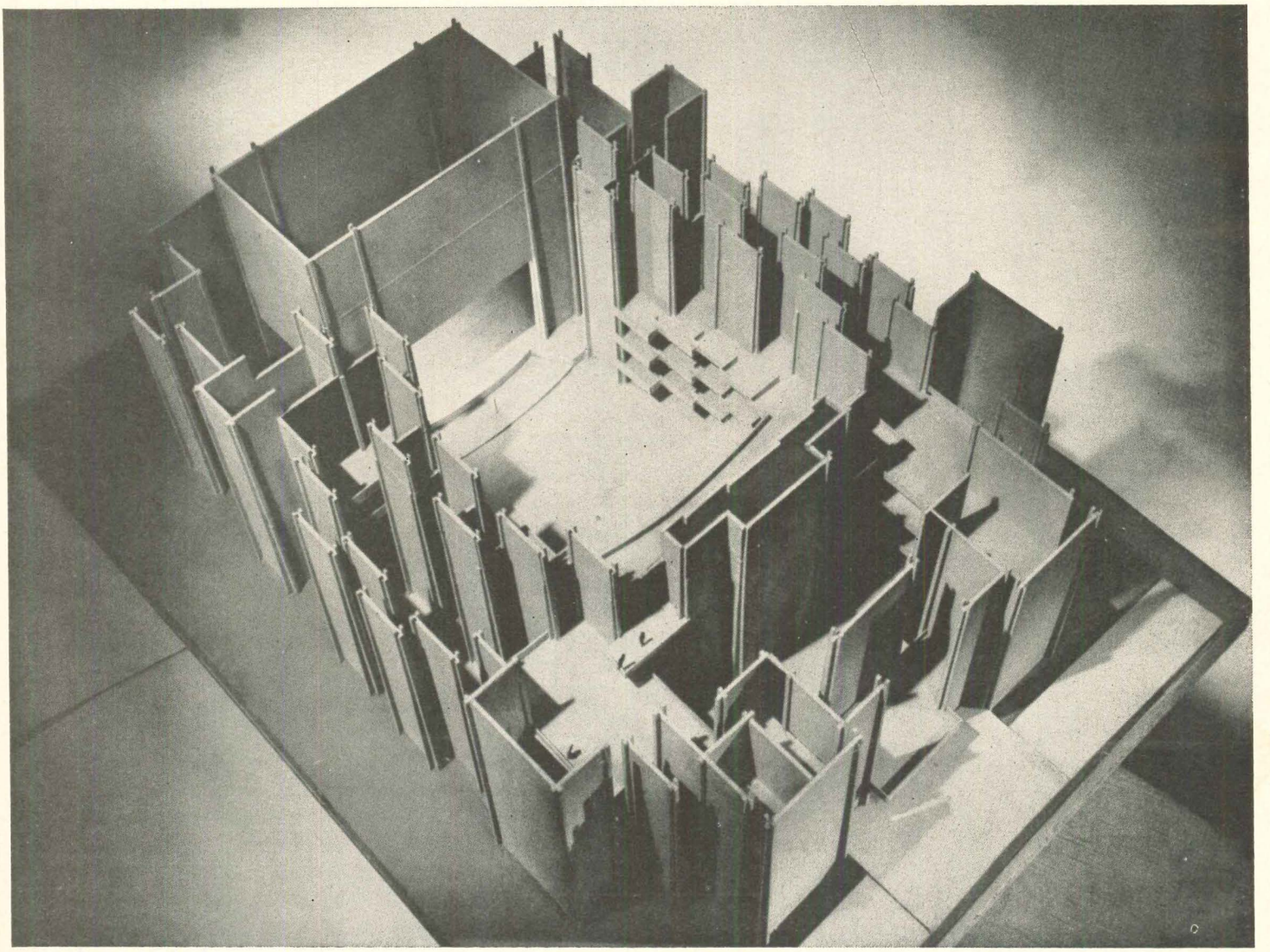
In the main hall (above), this modern functional–structural drama was strikingly embellished with tradition. Clowes is essentially a deep-dish European concert hall, with an intimacy not unlike that of Philadelphia's 110-year-old Academy of Music (which the architects especially admired). The classic color scheme of red, gold, and white is freshly and stunningly carried out. The great offset sidewall elements are separated by walnut panels expressing their function as doors; their front surfaces of hard white plaster, brilliantly washed by light, silhouette balconies continued as stepped-down boxes at the sides. (On both hall and lobby sides, the grade beams tying the sidewalls are nicely furnished with bench cushions for people who feel like sitting down. Total area of the lobbies, incidentally, is close to 24,000 square feet, providing 12 square feet per person—much more than normal.)

The acoustics of the new hall are splendid, most critics agree, though perhaps still a little sharp for those used to "mellow" sound (see pages 118-123). Apparently the "bumpy" sidewalls and the random, open spacing of the "clouds" (which are simply 3½-by-7-foot plywood panels gilded and hung by wires) is more successful than that of other halls, and can be further fine-tuned.



GEORGE CSERNA

Above: front view of Clowes Hall, across campus. Below: model shows system of staggered walls. Right: first-nighters in the grand foyer.



And the plywood-flat concert shell on stage is tight around the musicians, giving good control (it can also be adjusted, as well as flattened and pulled up into the stage loft by mechanical hoist).

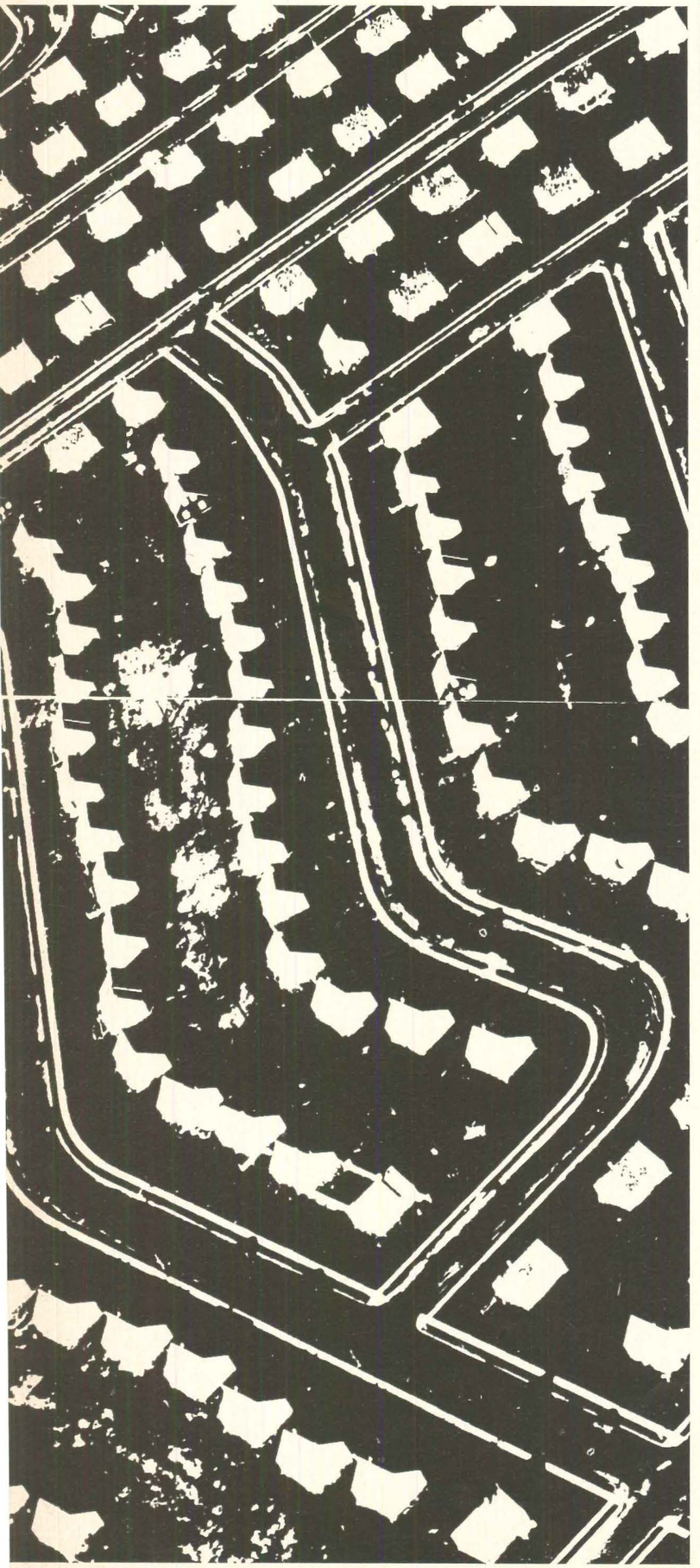
The orchestra pit is hydraulically operated and can be used as an elevator to store the first four rows of seats beneath their usual position, doubling the pit area for use during opera or ballet.

No less remarkable among its features is the fact that Clowes Hall—named for the late Dr. George Henry Alexander Clowes, research director of Indianapolis' Eli Lilly Co.—was built for $3.6 million, considerably less than many new halls of its size.

FACTS AND FIGURES

Clowes Memorial Hall, Butler University, Indianapolis, Ind.
Architects: John M. Johansen and Evans Woollen III, associated architects. Engineers: Fink, Roberts & Petrie, Inc. (structural), Fred S. Dubin Associates (mechanical). Consultants: Jean Rosenthal (stage), Bolt, Beranek & Newman (acoustics), Richard Kelly (house lighting), Ben Schlanger (seating). Contractor: George Bahre Co.
Construction: reinforced concrete, limestone-faced; steel truss roof. Building area: 83,444 square feet. Cost (excl. land, sitework): $3,628,-117. Furnishings and equipment: $360,940. Fees and expenses: $221,-792. Construction cost per square foot: $36.47.
Financing: by gifts from the Clowes Foundation and others. **END**

INDIANAPOLIS STAR PHOTO



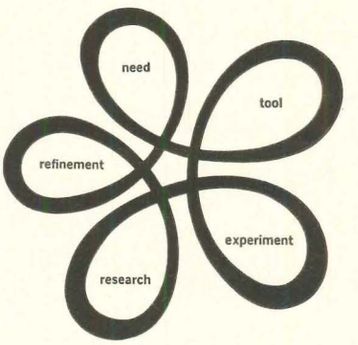
SHAPING A NEW PATTERN FOR URBAN LIVING

Frank Lloyd Wright once said, "Every house worth considering as a work of art must have a grammar of its own." In a remarkable book*, teacher – critic Serge Chermayeff and architect–mathematician Christopher Alexander have developed a grammar not only for a house but for a community. They have done this through a provocative marriage of science and art. Their approach, their methodology must stand as a pioneering effort to, in their words, "enable designers so to organize their task that artistic intuition and technical capacity can work together."

This, however, is just one purpose of the book, albeit the one which is perhaps the most vital in an age when "science and art appear to be wandering their separate ways like parted lovers who, in search of solace, take refuge in promiscuity." The other purpose, which is really the key objective of the book, is "to find a principle of organization that will create a physical environment in which urban man may once more find his life in equilibrium . . ."

In attempting to describe this principle, the authors have tried to tackle "head-on some problems in shaping man's physical environment, in the belief that if the special contemporary characteristics of the physical environment are recognized, even at this eleventh hour, the task of designing can be advanced in a forthright way and further erosion of the human habitat can be prevented."

The manner in which they have gone about this is most illustrative. First, they have recognized and delineated the problem, which is primarily one of establishing a principle and then giving it form. The principle is, basically, "that only through the restored opportunity for the firsthand experience that privacy gives can health and sanity be brought back to the world of the mass culture." Such firsthand experience is to be provided via a scientifically derived dwelling unit, which in turn can be fitted into a carefully calculated setting. (The authors claim to have scientifically determined that clusters of 20 units, at densities of 32,600 persons per sq. mi., or roughly the density of Brooklyn, is the human optimum.) Although the scientific method, including use of computers to establish vital interrelationships, is very much part of this process, the authors have considerations



of humanistic design foremost in mind: "We believe that any further attempt to design in the conventional way, without a careful fresh look at the problem, and the help of some defensible basic principle, will do little more than add another set of shapes to the growing catalogue of architectural millinery."

This, the authors are obviously unwilling to do. In fact, some of the most determined, and obviously heartfelt, writing in the whole book concerns the quality of design education, a subject on which Chermayeff is most expert. He says flatly that "The biggest obstacle to improved design standards is the obsolescence of the designers themselves," and says of schools that "in futile conservatism they maintain the tradition of trying to transform average students into universal men of the highest order — to graduate an annual horde of Leonardos. This makes pretentious pseudo artists out of fools and

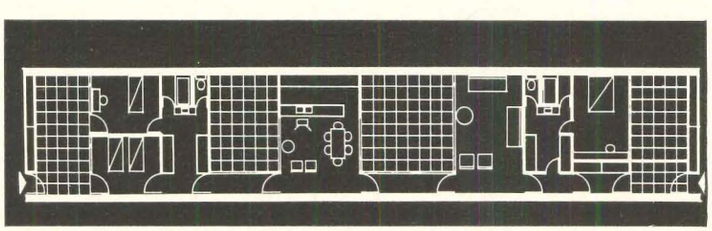
* Community and Privacy: Toward a New Architecture of Humanism. By Serge Chermayeff and Christopher Alexander. Published by Doubleday & Co. Garden City, N.Y. 236 pp. $5.95.

inhibits our best talent because they cannot be conveniently pigeonholed in a conventional manner . . . the definition of design itself remains ambivalent: is it an art, a profession, a business?" Partly, the authors say, it is a process, with a free-flowing developmental pattern (see diagram on opposite page).

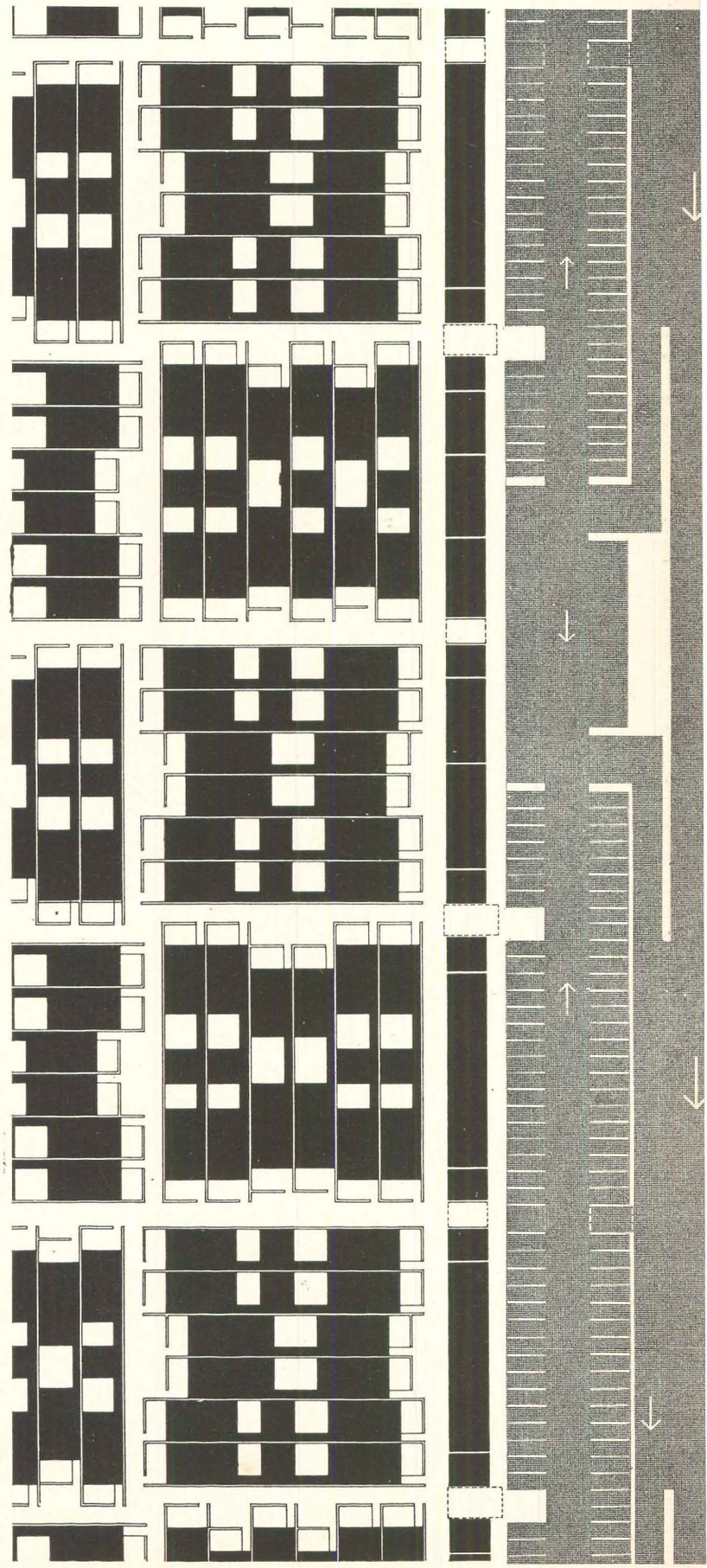
The authors are very much convinced that only through an amalgamation of art and science, as they themselves demonstrate, can the urban-suburban landscape be saved from further depredations. The horrors which have already accrued are fully described in the first half of the book and their argument is enchantingly supported with pages of quotes from a wide variety of persons, from John F. Kennedy to Gertrude Stein (e.g., on Oakland: "When you get there, there is no there, there."). Nature is vanishing, the city is dissolving and the suburb is a flop: "The pseudo country house sits uneasily in its shrunken countryside, neither quite cheek by jowl with its neighbor nor decently remote, its flanks unprotected from prying eyes and penetrating sounds. . . ." In some of their nicest writing, the authors contend that "The large and loud have overwhelmed the small and quiet," and that "overstimulation at the high, loud, fast end of the spectrum of experience, and deprivation at the low, quiet, slow end is robbing man of balanced variety . . ." In the midst of the argument occur illustrations, calculated to add emphasis, and to provide visual relief.

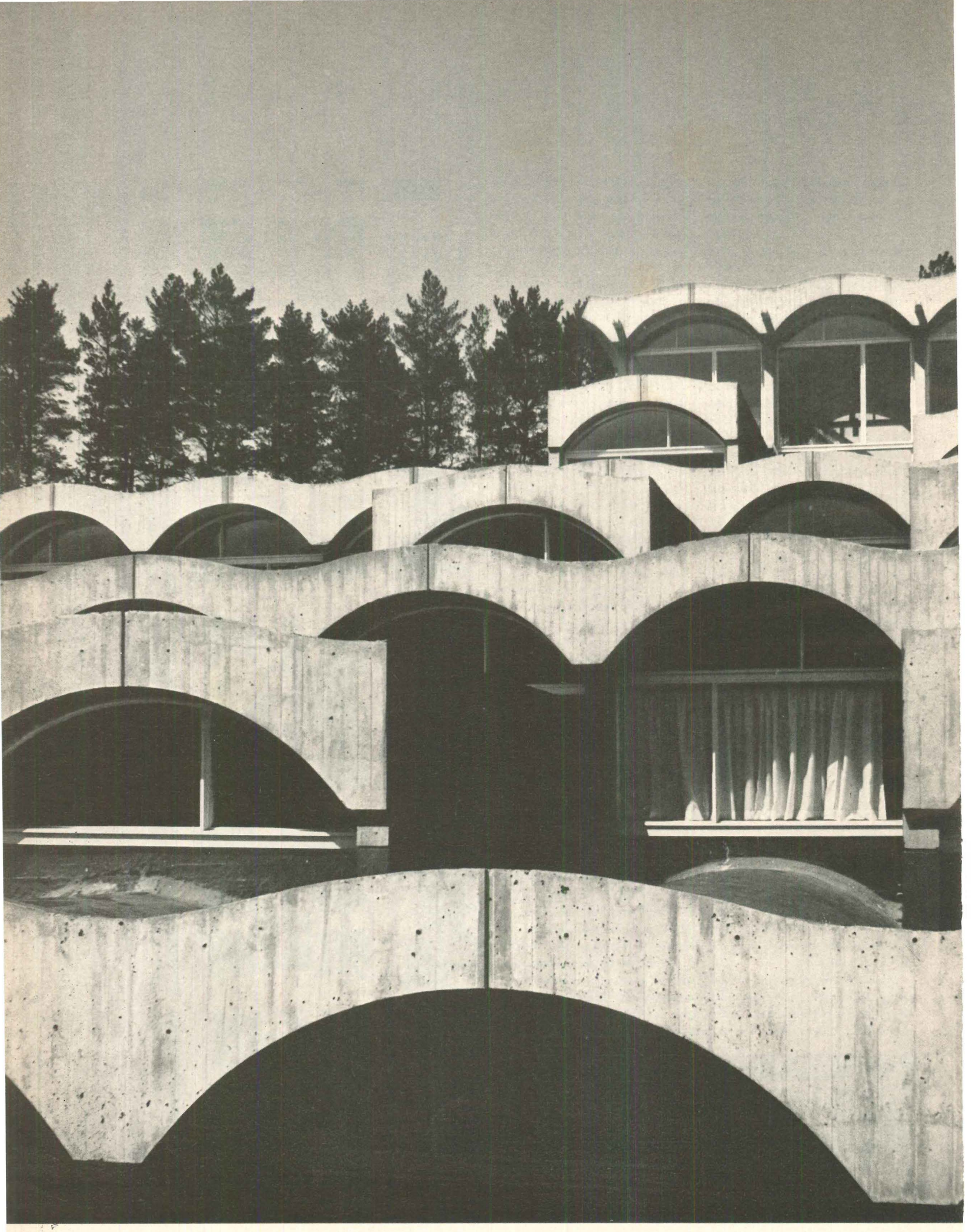
Much of this ground has been tilled considerably in the past, but the authors are at their best when they delineate the nature of their solution. They see it first as deriving from a hierarchical system of elements, from an "urban public" whole (e.g., the broad spaces in public ownership) to an "individual private" unit, which is basically that "innermost sanctum to which individuals may withdraw from their family." On the way to forming such a unit there is a great deal that is fresh and new. First the authors delineate 33 basic factors which must be incorporated into the dwelling and its immediate environment (e.g., noise control, parking, garbage disposal). Then these are grouped in clusters, and the clusters in turn juxtaposed to form a comprehensive, meaningful whole. Out of this, the authors derive a living pattern (illustrated in clusters at right, and individually at bottom) which is quite a bit different from the ordinary U.S. subdivision, as illustrated by Levittown, L.I. It is in fact, a very European solution, quite similar in form to units developed in Denmark, Germany, Great Britain, and other European countries.

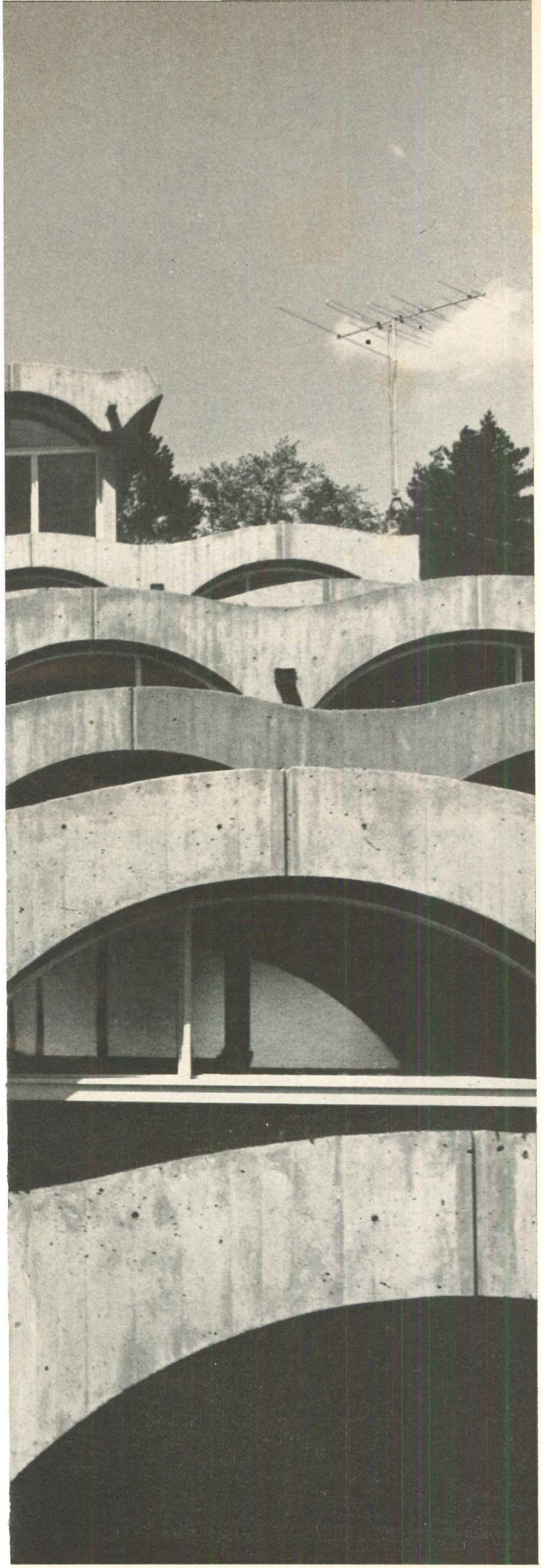
The authors, particularly mathematician – architect Alexander, used an IBM computer to derive their relationships. They point out that "design today has reached the stage where sheer inventiveness can no longer sustain it. To make adequate forms, one must be able to explore the relations between circumstances more fully than is done at present, so that the decision as to just where to apply precious and limited inventive power can be made." Their use of modern techniques, and of a scientific methodology, comprise what is undoubtedly the most meaningful lesson of this most meaningful book. —D.B.C.



Chermayeff and Alexander propose patio row houses as an answer to more familiar patterns (see opposite page). Each row house would be planned around a series of interior courts. Houses would be arranged in clusters of 20, at densities as high as 14 homes per acre.





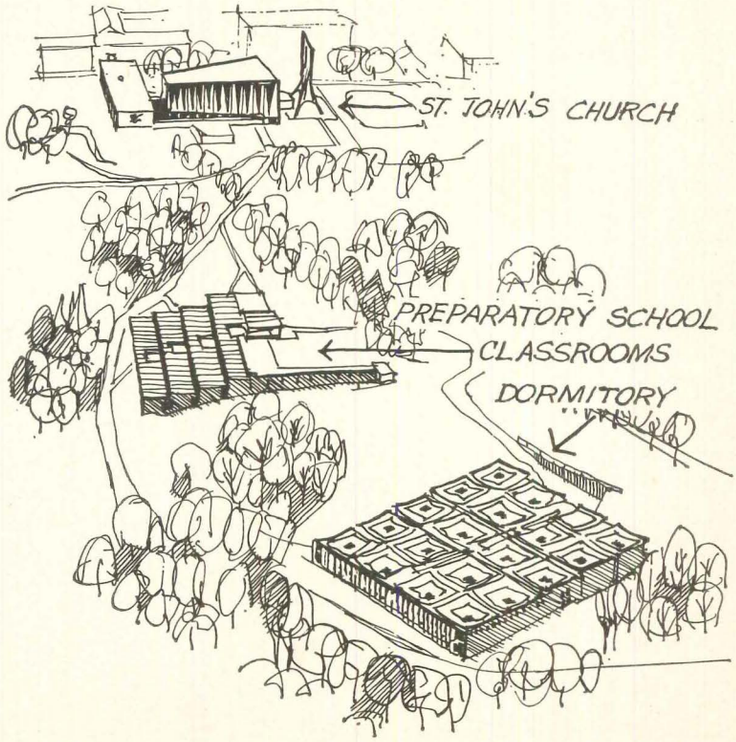


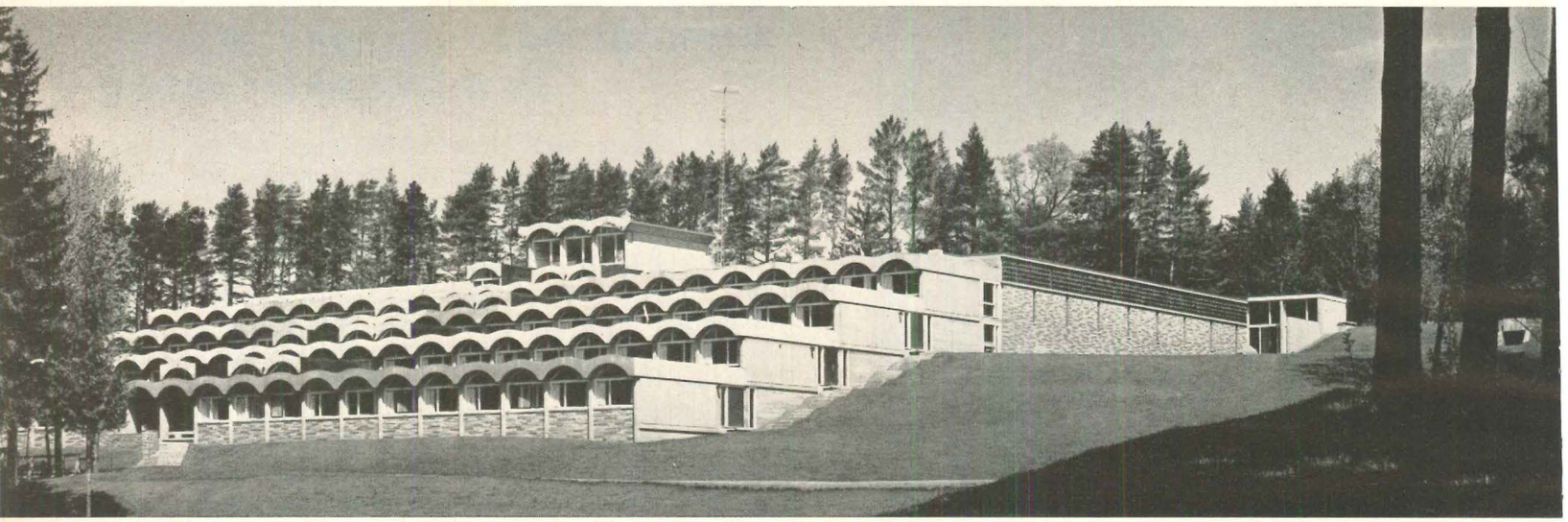
SHIN KOYAMA

MIDWEST PREPARATORY SCHOOL IN A MONASTIC MOOD

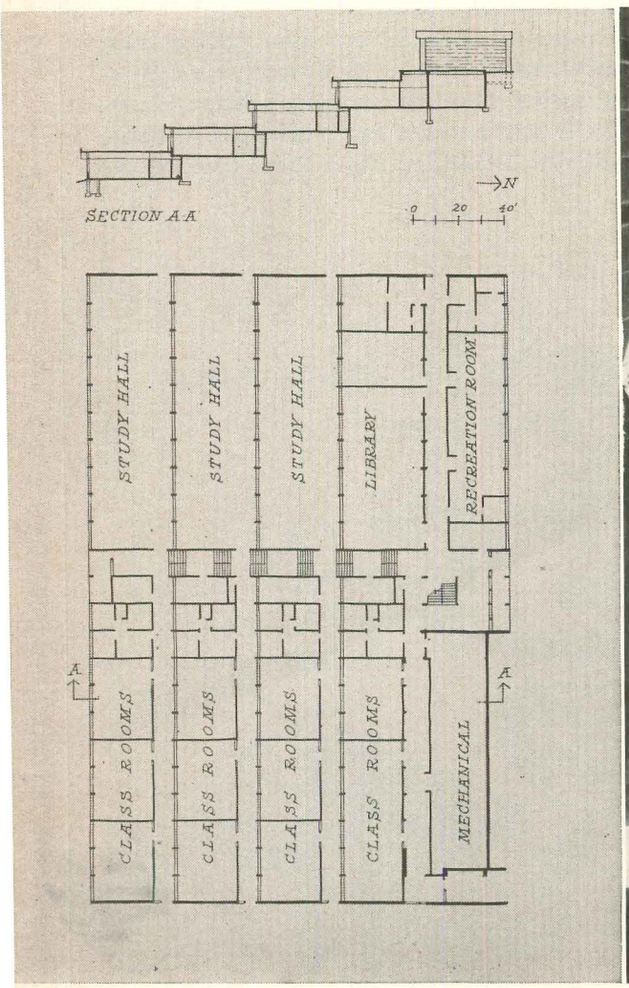
Side by side, set step-like into a Minnesota hillside, sit two new concrete structures for St. John's Preparatory School which rival any statuary as portraits of the strong-mindedness of the Benedictine Brothers who operate them. *Ora et Labora* —pray and work—has been a motto of this order of monks for 14 centuries; several years ago its contemporary architectural image was struck in the sinewy concrete buildings which Architect Marcel Breuer designed on the St. John's campus (FORUM, Nov. '61). In the bird's-eye sketch, below, the Breuer church appears at the top (see also page 73). Below it are the new buildings by architects Hanson and Michelson, a young local firm which has followed Breuer up with much the same bold character. Says Michelson, who worked for the New York architect supervising the construction of the church: "To insist on too much refinement is to invite the danger of polishing architecture away."

Both new buildings are concrete, but were poured into vastly different molds, shaped structurally to span very different sets of interior spaces. One building (left) houses classrooms and study halls and is roofed by a multitude of thin-shell concrete vaults which hover on the hillside, their broad





Classroom building, St. Bede's Hall, is designed to express a monastic (and modular) simplicity. Below is the view down the central stairway

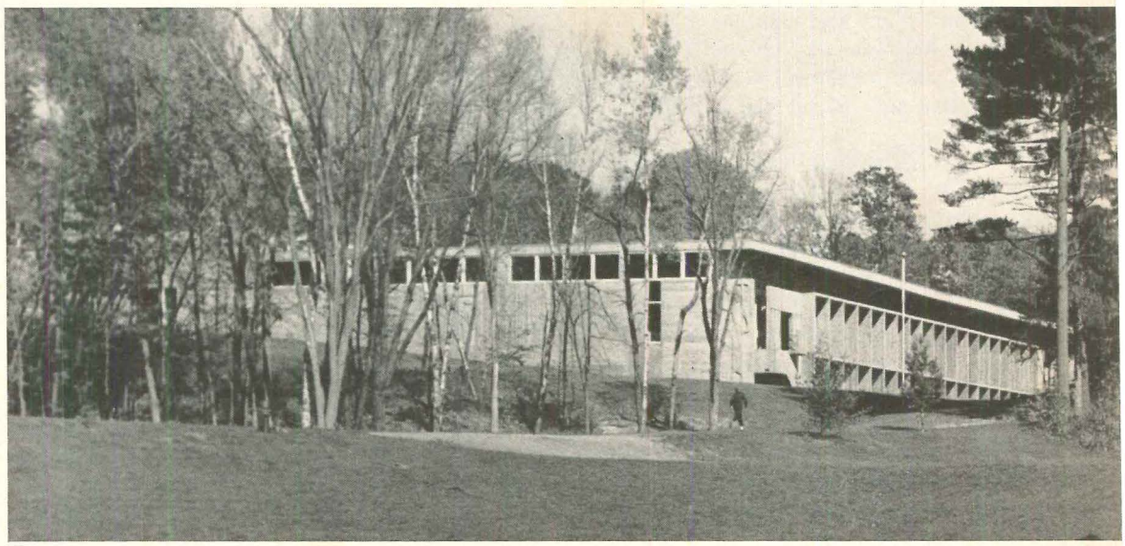


GLEN REINARDY

stiffening edges implying a much more archaic kind of vaulting. Under the shells (spanning 33 feet, 10 feet 8 inches wide—see opposite page) are small classrooms, intended to accommodate no more than 25 boys, in the traditional pattern of teaching still favored by the monks. Beside them are larger study halls. Although lined up in rows under the cameraderie of the rolling roof, these rooms are quite sequestered, and quiet; the rooms are stepped up the hill, not piled on top of each other (see section).

One Room Dormitory

The other building (right) houses emphatically dissimilar spaces. It is the boys' dwelling, and because the order of monks is dedicated to communal existence as well as lonely scholarship, the whole building is really one gigantic split-level room with partitions more implied than actual, and an immense sun screen to the south (picture, bottom right). Here 360 boys sleep among a grove of concrete trees which branch out to support the roof (see plans page 112); they are organized into groups of 60 by means of rows of lockers (designed by the architects, built by the monks) and each of these groups is further fenced off into sections of four beds. Eventually the building will house yet another 120 boys in a space now used as a gymnasium. It is a solution gregarious enough in its essence to make a certain amount of monastic order necessary for it to work. This is provided by posting prefect stations between groups of boys. Father Cuthbert Soukup, who is principal of the prep school, says that "the relationship of student to teacher is that of son to father"; each father here has a very big family. A further comment on the sturdy architectural finishes employed, and on the character of the clients, is



Dormitory, St. Michael's Hall, goes downhill in bigger steps than classrooms, ends in massive sunscreen, below

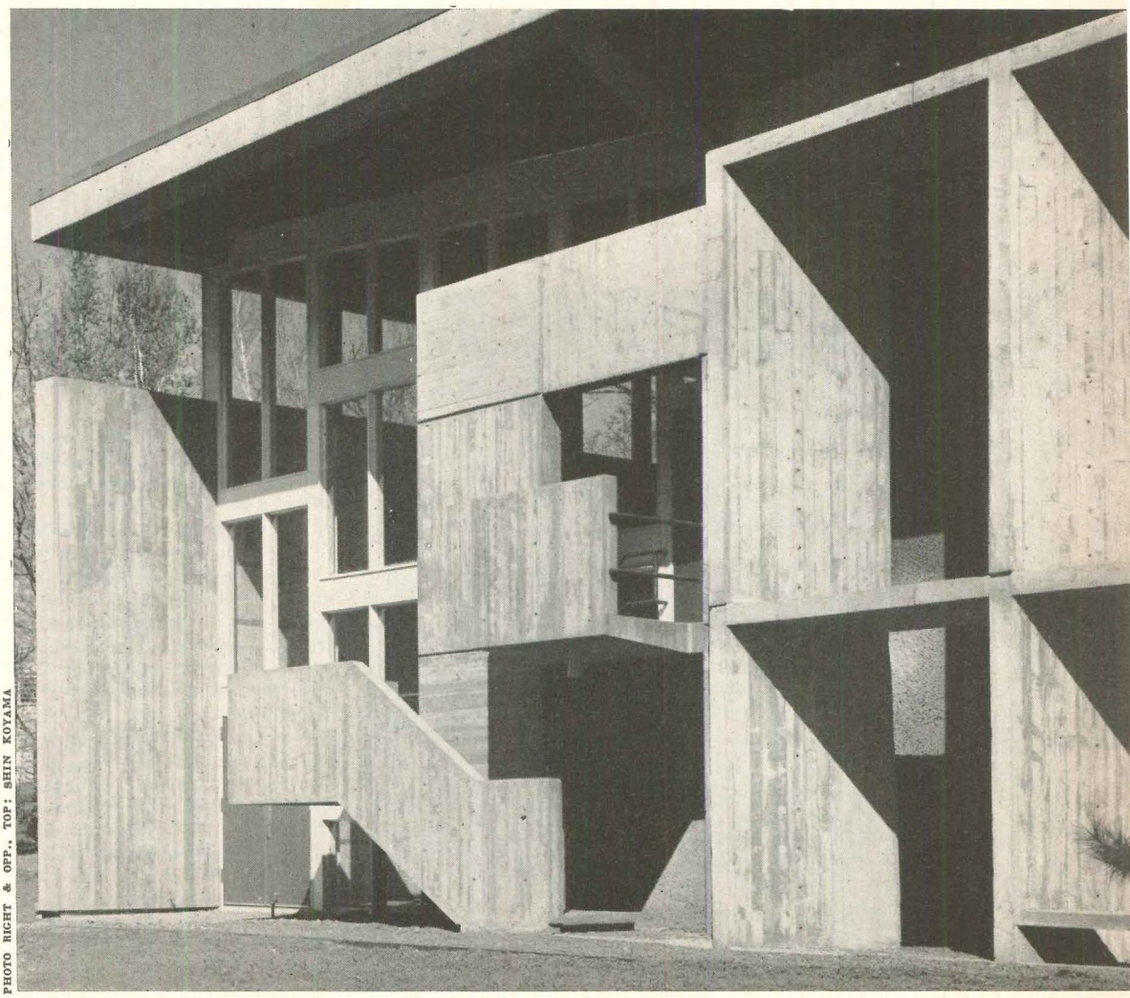
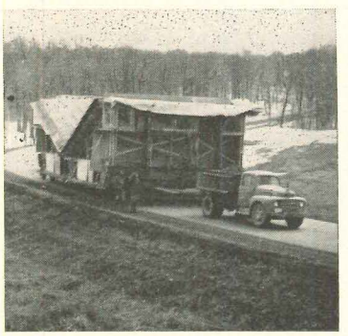


PHOTO RIGHT & OPP., TOP: SHIN KOYAMA

that there is just one full-time janitor to take care of both the classroom and dormitory buildings; the boys pitch in and help in the cleaning.

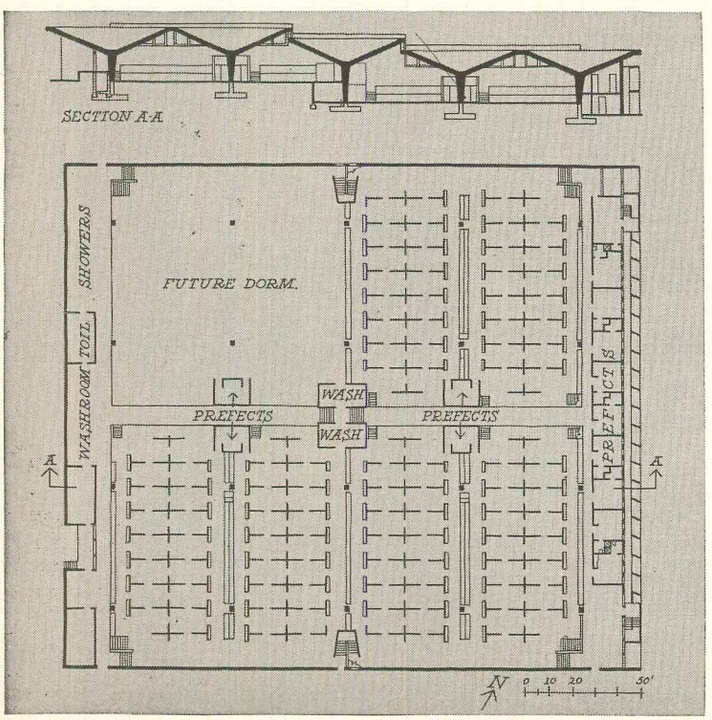
Time—that frequent fact of building life—was of the essence in completing these buildings, and was faced very successfully. Says Father Soukup: "The $1,895,700 project was completed, from drawing board to the day of occupancy, in the space of one year." Yet it was all apparently done with considerable care—starting with the first move, the picking of the site. The site had at once to be somewhat isolated from the college campus and monastery grounds, rustic enough to reflect the simplicity of the Benedictine order, but close enough to the other campus buildings to pick up their communal steam and water systems. (The sheltered south hillside which was picked, found favor, as well, because of that cold winter wind from Canada.) Reasons of



economy helped in the decision to build the structures in unfinished concrete. Then came the design, and the question of how to build, most particularly how to build the roofs.

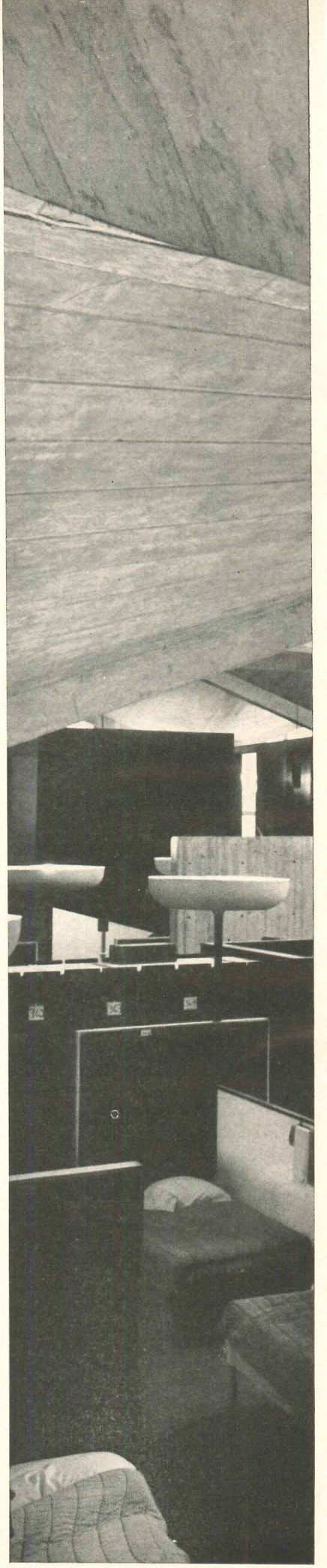
The answer in the relatively short-span classroom building was simple. Thirteen 36-foot-long segmental plywood forms were reused eight times to pour the barrel vaults over this wing. The dormitory spans (right) called for a more massive solution. Three large forms, also plywood, measuring 52 by 26 feet, were set on old B-26 bomber wheels for mobility (to be mounted on flexible steel framing with jacks under the pour), with gas heaters and electrical connections enclosed below. The small photograph, left, shows one of these being towed to the job. Each received half a bay, then was trundled over to take another. The splayed shape of the columns in this building (and the trapezoidal edge and ridge beams) was designed for easy removal of the forms. Walls are mainly concrete block, and where they are long, every second or third horizontal course is broken with a four-inch strip of local granite, which, the architects report, has eliminated shrinkage cracking.

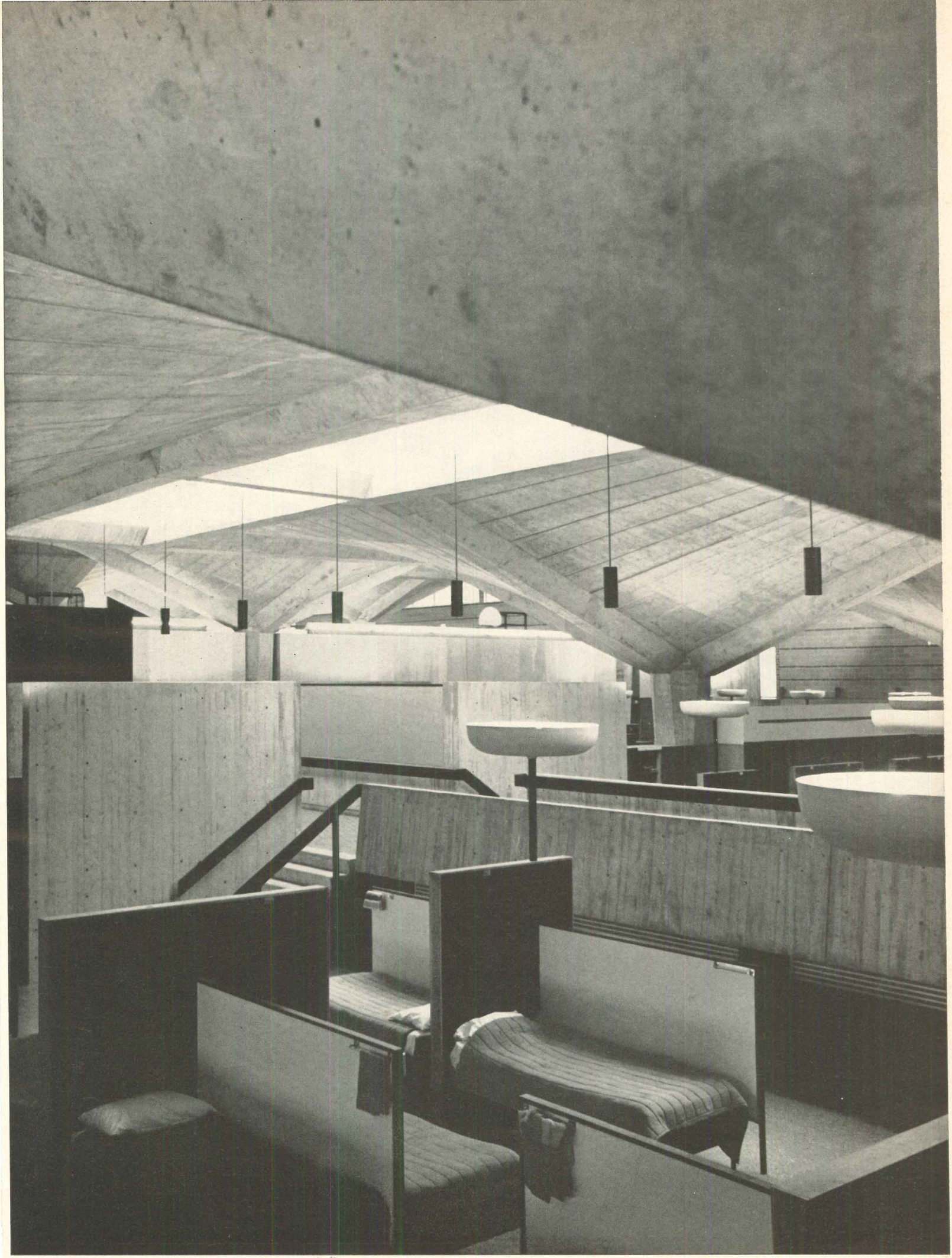
The prep school group is not yet completed, although it is completely designed. Yet to be inserted are a free-standing gymnasium at the bottom of the hill between the first two buildings, and some additional components within the classroom building. Architect Michelson describes his monastic clients, ". . . an owner with vision, clarity of thinking, and belief in tradition rather than in revival of traditional styles."



FACTS AND FIGURES

Dormitory building and classroom building for St. John's Preparatory School, Collegeville, Minnesota.
Owner: St. John's Abbey.
Architects: Hanson and Michelson (Valerius L. Michelson, partner in charge). Engineers: Johnston-Sahlman Co. (structural), Gausman and Moore, Inc. (mechanical and electrical). Landscape architect: Robert A. Phillips. Sculptor: Bronislaw Bak. General Contractor: McGough Construction Co., Inc.
Structure: reinforced concrete. Building area: 112,980 square feet. Construction costs: $1,794,504.56 plus $74,131.40, site development cost, plus $60,031.55, furnishings and equipment cost (not including classroom furniture), plus $114,217.25, architectural and engineering fees. Square foot cost: $15.88. Costs included footings and mechanical provisions for a future addition to classroom building.





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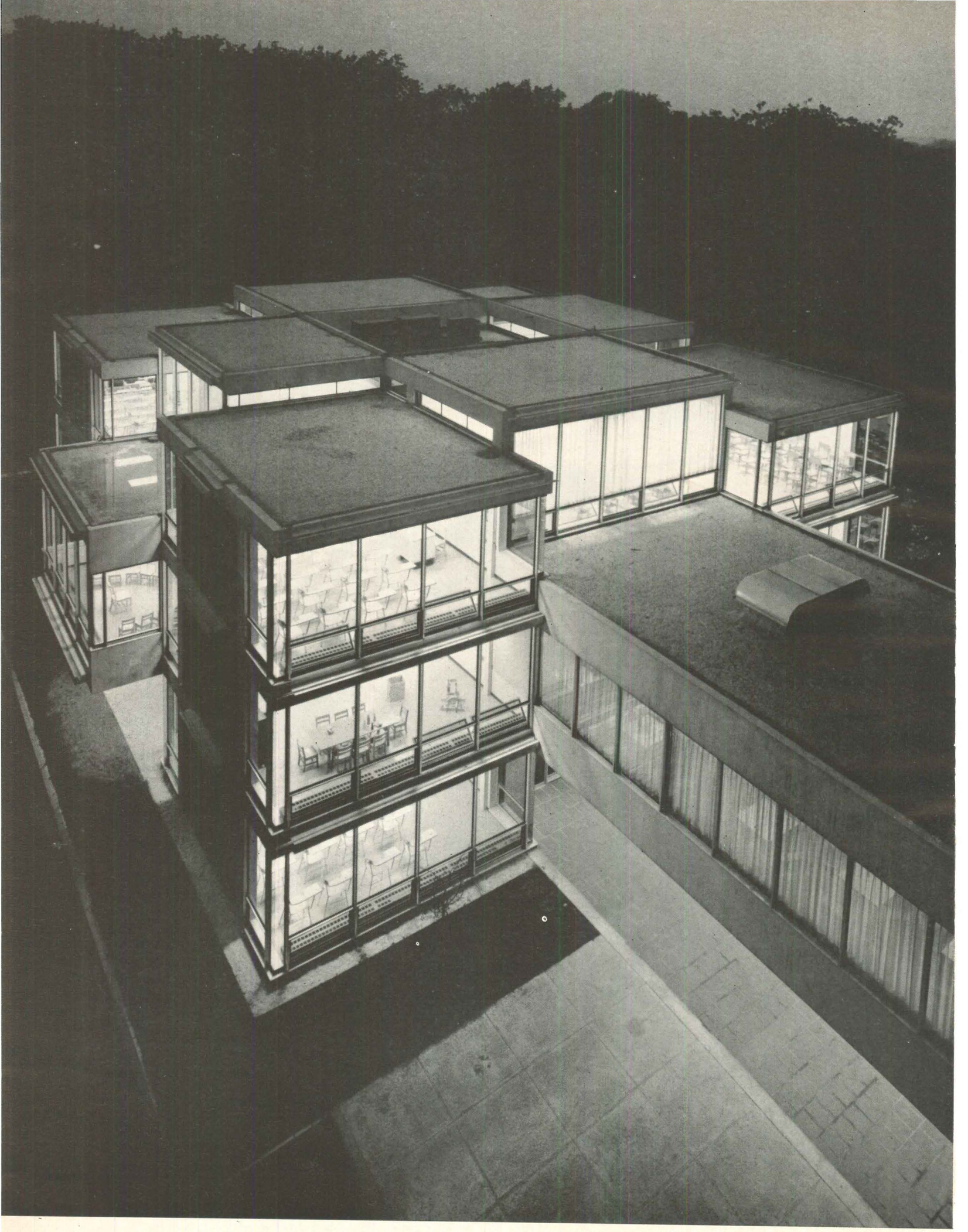


WELL BALANCED SUNDAY SCHOOL

When suburbs turn into towns, their land can become very scarce. When East Orange, N.J., turned from a suburb into a town, this land shortage began to affect every existing institution—including Temple Sharey Tefilo.

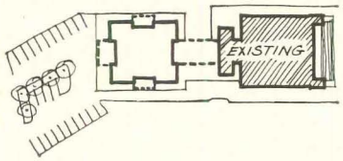
The temple trustees had to make a hard decision: They were already operating a Sunday school about two miles out from the center of town, where their temple stood, and they wanted to consolidate activities. Should the congregation follow the children out to a less land-pressed section, or was it possible to build a new Sunday school on the small site available next to the old temple?

It was the mayor of the city and other local officials who helped the trustees make up their minds: the officials pleaded that the temple (photo, below) stay put.

GEORGE VAN

It was too big a piece of the cultural fabric to see raveled off to a new suburb. But it was the architects who really had to solve the practical problem when the trustees agreed to stay. What most of the congregation (and the architects) wanted was a one-story Sunday school; what nobody wanted was a dull, routine city school.

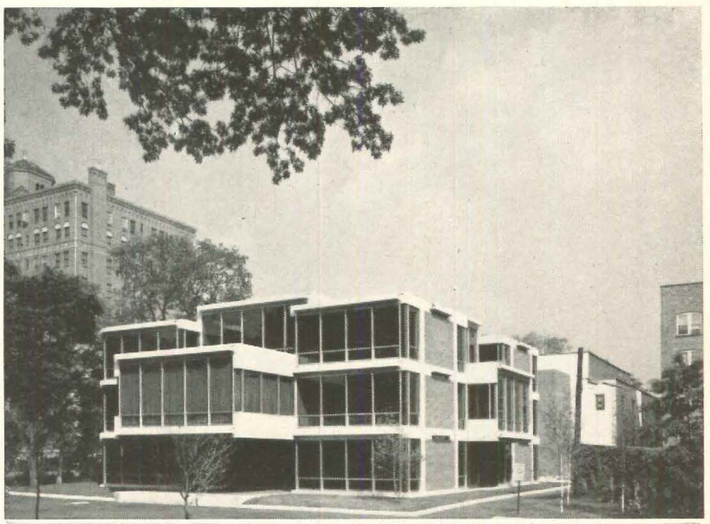
What the congregation — and most particularly their children— got was a graceful three-story "balancing act" of precast concrete beams, dark sun-reflecting glass, and exterior panels of brick. It sits in back of the old temple and saves enough area for a modest parking space. Indoors,

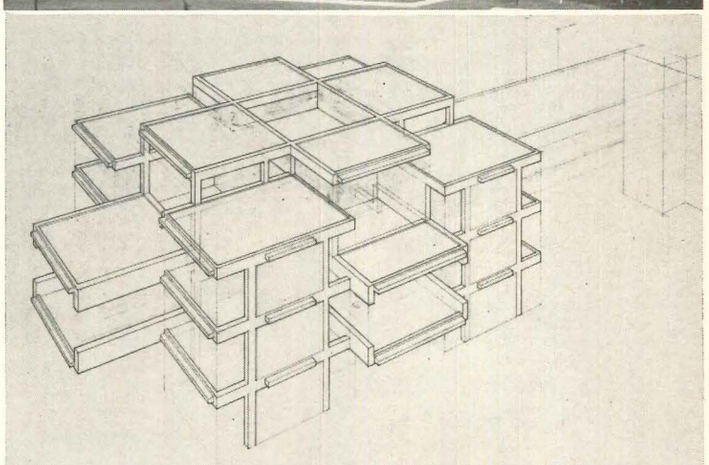


architects Davis, Brody and Wisniewski continued their structural theme, but with added subtlety: although the spaces for the 16 classrooms, library, audio-visual room and three lounges are not drastically different in floor area, the structural pattern of the design varies the rooms enough in their proportions, including height, to make a very pleasant set of differing spaces. Even more pronounced is the variation in daylighting. Some of this variation results from the manner in which the designers stacked the rooms on the supporting structure—in a way which makes some rooms higher than others. Where the roof rises, the opportunity arose also to notch small clerestory windows into some of the walls, and the opportunity was not neglected.

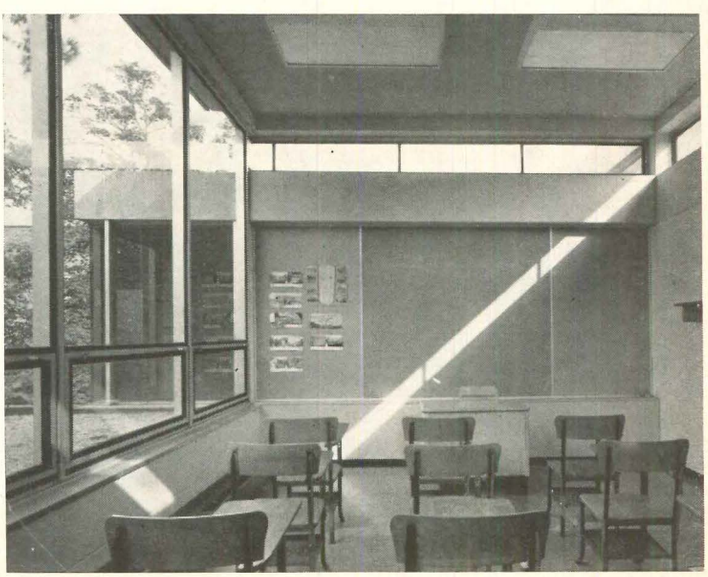
Few such opportunities were let slip in this scheme; it is an emphatically three dimensional concept, painstakingly worked out. Another example: where the structure permits — or, perhaps, *suggests*—parts of the ceilings in some rooms are also stepped up, within this interlocking stack of beams. The diagram to the right shows how the rooms stack; photographs on these and the next two pages indicate how thoroughly the slight variations in elevation were exploited in the basically symmetrical scheme.

The stray slant of sunlight entering the room, in the photograph to the right, is an indication of how well the intricate design has turned out. This is a building of structure and of space,





Offsetting classroom roofs, above, permitted clerestories shown below

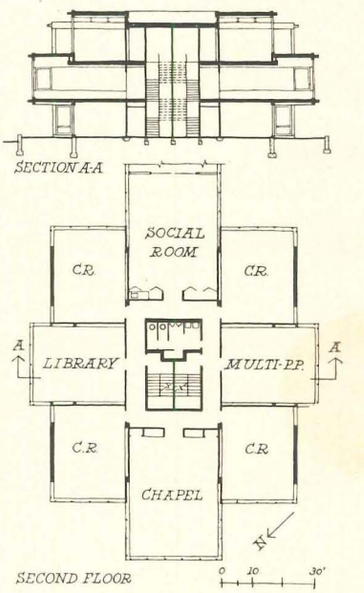


PHOTOS: DAVID HIRSCH

PHOTOS: DAVID HIRSCH

enlivened by the constantly changing quality of the daylight.

The temple is connected to the new building by a bridge, which also contains lounges. Under the bridge are entrances to both temple and school. The new building also houses administrative offices, and on its broadest cantilever sits a small chapel, a room warmly panelled in walnut wood, in contrast with the Spartan finish of the rest of the interiors. The detailing of the building is blunt but neat—light where it can be, sturdy where it must be, with all glass set in plastic gasketing.

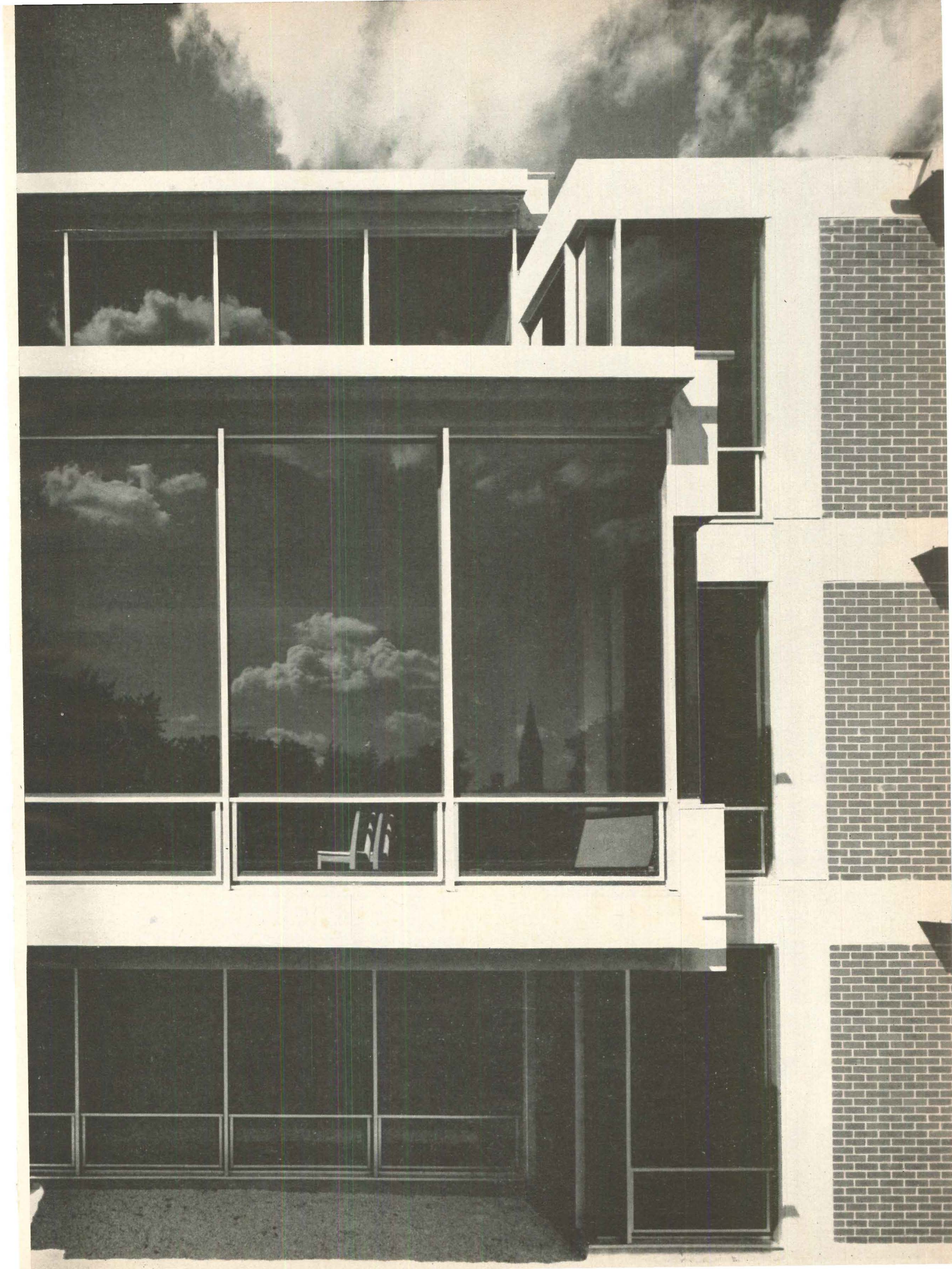


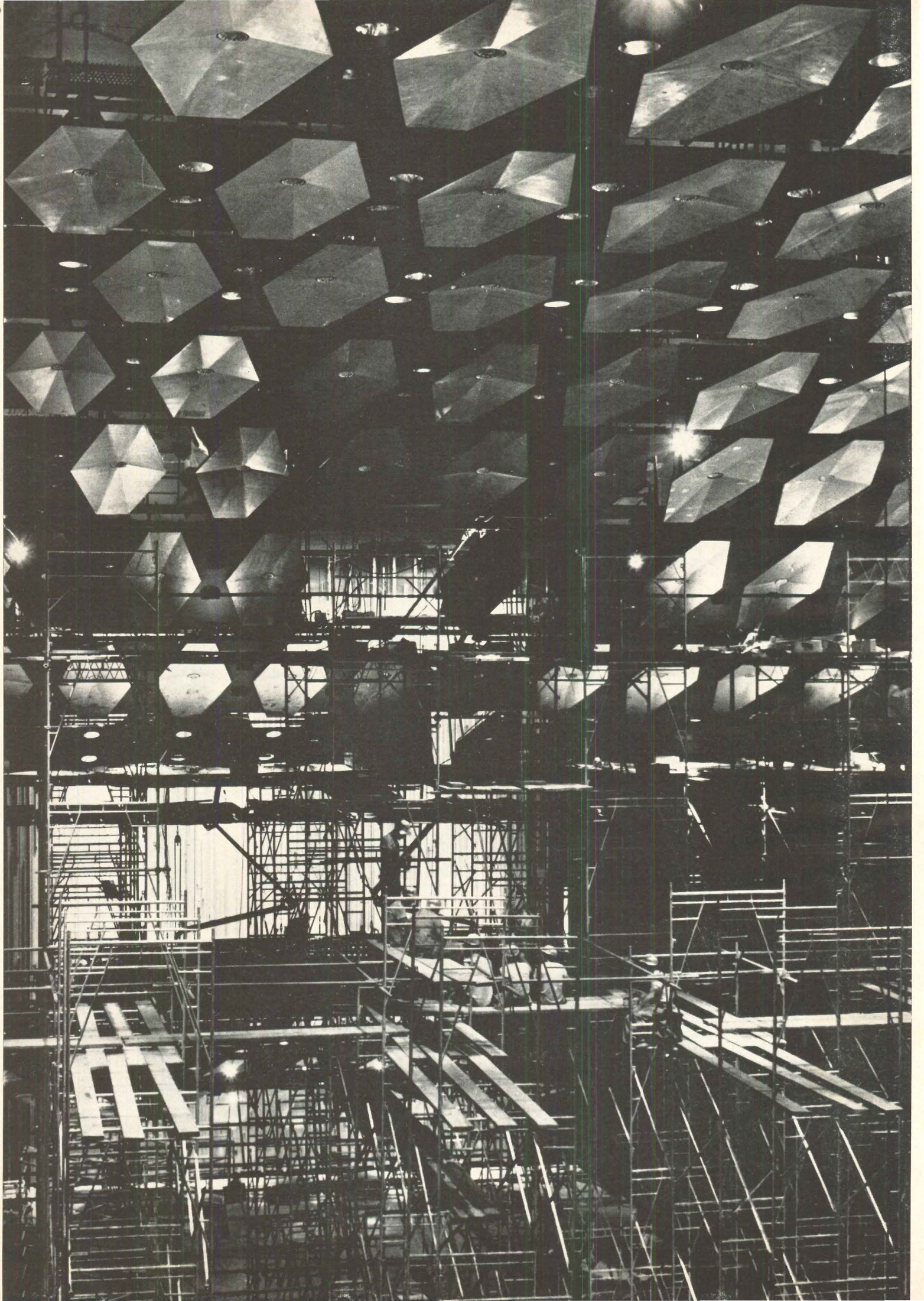
FACTS AND FIGURES

Temple Sharey Tefilo School, East Orange, N.J.

Architects: Davis, Brody & Wisniewski. Engineers: Goldreich, Page & Thropp (structural), Wald & Zigas (mechanical and electrical). Landscape architects: Coffey & Levine. General contractor: Max Drill, Inc.

Building area: 17,939 square feet. Costs: site development, $11,915; construction, $421,492; furnishing and equipment, $28,000; fees (8 per cent), $36,912.56; total, $498,319.56, or approximately $23.50 per square foot. Structure: precast reinforced concrete with brick infilling.





ACOUSTICS—WHAT HAPPENED AT PHILHARMONIC HALL?

By R. S. LANIER

After a feverish summer of remodeling (photos), New York's Philharmonic Hall emerged for its second season this fall with a new and deeper sound. Many of its sharpest critics seemed pacified, but the celebrated acoustical battle appeared to have reached more of a lull than a clear-cut victory; the changes may possibly have set back the acoustical quality of the hall in some respects while advancing it in others. Whatever the final consensus, the story has its lessons for architects, for music lovers—and for sponsors of new concert halls.

The original acoustical philosophy behind Philharmonic Hall, and its implementation, are given in considerable detail in "Music, Acoustics and Architecture" by Leo L. Beranek (*Books,* Feb. '63). Beranek's firm, Bolt, Beranek & Newman, were acoustical consultants throughout the design and building of the hall, with Beranek himself in charge.

There has been no quarrel with the designers' control of outside noise; by various sound-isolating devices, they have kept out completely the vibrations of Manhattan's notorious subways, aircraft, and traffic all around. Equally notable is the control and projection of sound from the concert shell on stage.

The main acoustical characteristics of the hall that enter this story are the reverberation time, probably the characteristic best known to laymen; the control of echoes; the balance between bass and treble tones; the degree to which music seemingly "envelops" the listener; and a quality called "acoustical intimacy," which was the subject of controversy among the various specialists involved.

It was the attempt to get acoustical intimacy throughout the hall that led to the use of the reflectors, or "clouds." These produced not only acoustical intimacy but—according to the committee of consultants called in to correct the hall's deficiencies—certain side effects that were harmful to other qualities, notably the balance between treble and bass. The realignment of the clouds (photos, drawings, overleaf), the major element of the $500,000 repair operation, did strengthen the bass, but left open a number of other questions.

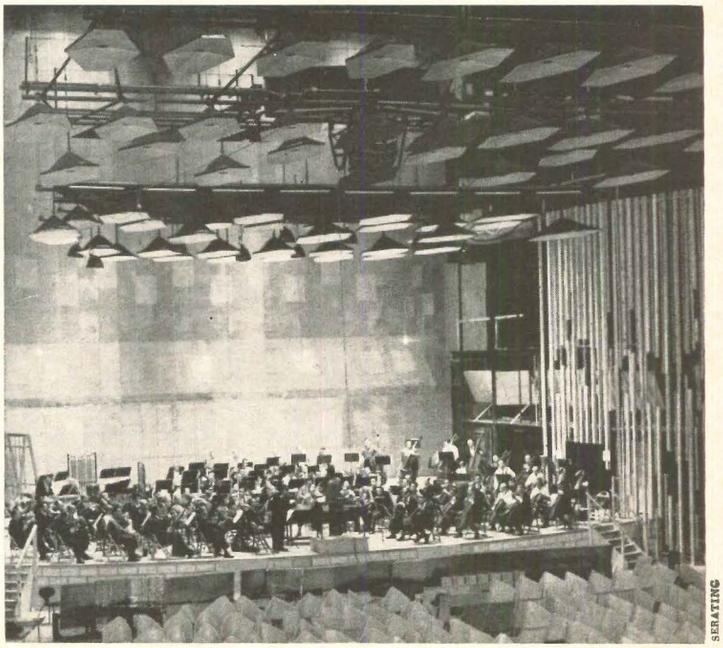
Mr. Lanier has written for many publications, technical and popular, on sound reproduction, psychoacoustics, and related subjects. He is also an amateur violinist with orchestral experience.

Some basics of hearing

Reverberation time is basic to acoustical quality in any hall. If the first reflection of a given sound from the hall's surfaces comes in less than about 50 milliseconds after the direct sound, and certain other conditions are met, the reverberation and the direct sound seem to merge. But if a strong reflection arrives more than 70 ms after the direct sound, an echo is distinctly heard.

The "reverberation time" of a space is the time it takes, after each sound stops, for the intensity of the resulting reverberation to fall 60 decibels, or to one-millionth of its first intensity. The quality of music in a concert hall is very sensitively related to the reverberation time. With a short reverberation time (less than 1.5 seconds) the music in most halls sounds dry and thin; as the time is increased to 1.7 to 1.9 seconds, the music takes on liveness and power. If the reverberation time is too long, however, each note in the music tends to be carried over to the succeeding one and the lines of the music are blurred.

If reverberation time were the whole of acoustical design, Philharmonic Hall would have been an unquestioned success. In effect, the management of Lincoln Center specified to the architect, Max Abramovitz, what the reverberation time was to be. It was to be no shorter than that of Boston's Symphony Hall, the most admired concert hall in the U.S. It



SERATING

Above: the hall during tuning week, with glass-fiber batts simulating audience absorption. Below: the "clouds" raised and the gaps filled in.

PHOTOS OPP. & BOTTOM RIGHT: STU-ART STUDIOS FOR MACNUTT ELECTRIC CO.

should be perhaps a trifle shorter, but certainly no longer, than that of the Grosser Musikvereinssaal in Vienna, one of the paragons among European concert halls.

The Boston hall has a reverberation time of about 1.8 seconds in the crucial mid-frequencies, 500 to 1,000 cycles per second; Vienna measures 2.05 in the same band. The designers of Philharmonic Hall carried out the assignment well: their time for the same band came in at a trifle over 2 seconds.

But duplicating the reverberation time of the Grosser Musikvereinssaal does not make it certain that you will get the brilliant, live tonal quality that makes the hall famous.

Moreover, there is a basic reason why the high quality of the renowned European and American halls of the late 19th century cannot be reproduced by a simple borrowing of design formulas. It is that most halls built in this country today must be much bigger than the really good European halls to satisfy the economic needs of the sponsors. There is a critical size, roughly 1,800–2,000 seats, below which excellent acoustical quality is relatively easy to produce. But above this the problems begin to sharpen and accumulate. The trouble in Philharmonic Hall, with 2,658 seats, vividly illustrates this fact.

The real villain-or-victim of the drama (both views are held) was the hall's "acoustical intimacy." It is a quality that depends on having the first installment of the reverberation arrive at the listener's ear no later than about 25 milliseconds after the direct sound.

Beranek, in his extensive survey of concert halls, found that acoustical intimacy was essential to the quality of all the halls given the highest marks by most conductors, musicians, and knowledgeable listeners. But intimacy could not be supplied in Philharmonic Hall in the same way as in the smaller European halls, or in Boston's Symphony Hall.

The Grosser Musikvereinssaal, for instance, is only 65 feet wide. This means that practically any seat in the hall is in a first reflection path from the side wall that is no more than 25 feet longer than the direct sound path from the stage.

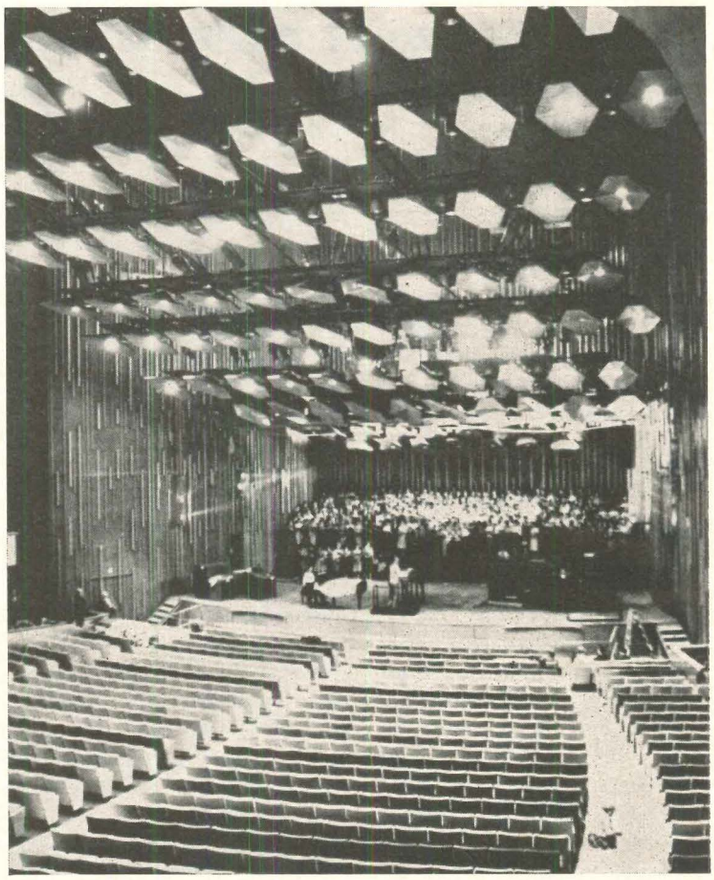
Boston's hall is about 75 feet wide, still within bounds. But, Philharmonic Hall has a maximum width of slightly over 100 feet. Furthermore, it has a fanning-out of the walls in the forward half that does not place early reflections from the walls advantageously for those in the front of the hall. The great width and the fan shape were used to get more seats in the hall, and to give each seat the space and orientation to the stage demanded by modern audiences. But such standards of size and comfort have made the job of the acoustician much more difficult.

The clouds that "failed"

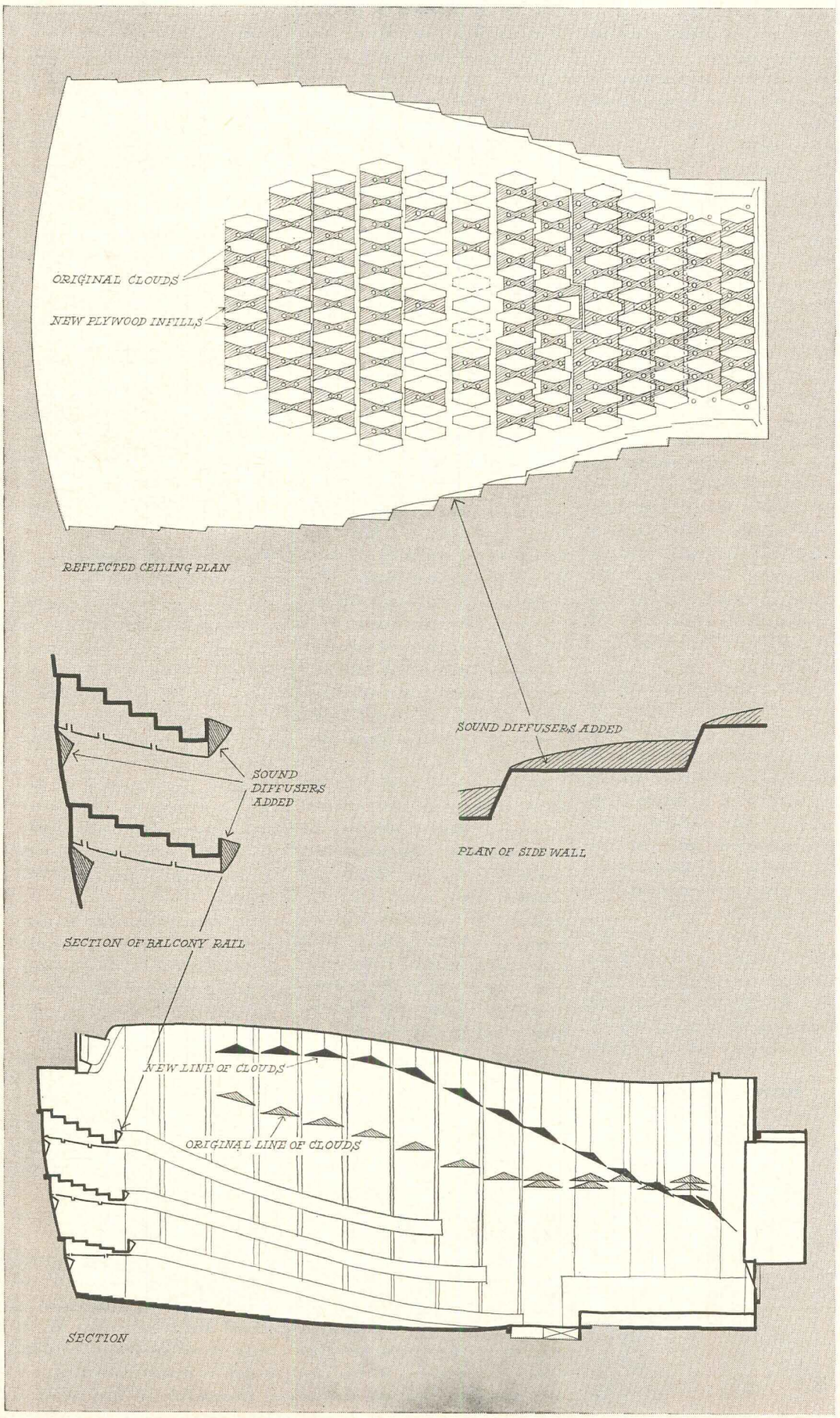
Beranek put the "clouds" into the design to get acoustical intimacy throughout the hall. These were hung well below the ceiling, to supply many short reflection paths for the seats in the front of the hall, and at the same time allow enough sound to go through to the ceiling so that the volume of the hall above the clouds would not be lost in the establishment of the proper reverberation time. Volume is the principal characteristic of the hall that *increases* the reverberation time. The amount of sound absorption at the surfaces of the hall is the main factor in *decreasing* the reverberation time. The audience is a principal element of the absorption. Given an audience of a certain size, the hall must have a certain volume to insure a long-enough reverberation time. A hall with a large seating area and a relatively low ceiling is likely to have a reverberation time too short for best results.

The spaced-out reflector idea has been used in a number of halls here and in Europe. In the Tanglewood Music Shed, at Lenox, Mass., in the new Grande Salle in Montreal, and in Clowes Hall in Indianapolis (see page 98), Bolt, Beranek & Newman used clouds with excellent results.

The adjustment of the clouds in



Philharmonic's ceiling before remodeling (above), and after (below)



Philharmonic Hall proved to be quite critical for other qualities besides acoustical intimacy. This fact started to become apparent during tuning week, the period at the end of May, 1962 when a committee of eminent musicians and musicologists sat in the hall to judge its acoustical quality and to guide fine-tuning adjustments. One of the things the committee asked for was a strengthening of short-path reflections from the stage so that certain instruments would be heard more clearly in the hall. This was supplied by increasing the number of clouds, in two stages: a number were added around the perimeter of those first installed; later, near the end of the week, a second layer of clouds was added two feet above.

Beefing up the bass

The committee also asked that the bass be strengthened. This was done by removing some plywood sheets in the space for the organ, directly at the back of the stage, that were being used to simulate the absorption by the organ (it was decided that the organ would not be so absorptive of bass, when installed). It was also done by adding a reflecting surface at the side of the stage, behind the double-bass players, and by other adjustments.

Selective absorption is one of the most important factors controlling the balance of sound in a hall. Thin wood panels with an air space behind them, for instance, tend to absorb energy from the bass but to reflect the high frequencies back into the hall; thus if there are too many such panels the music will be thin and lacking in "depth."

The committee also noted some echoes. An echo can be very disturbing, whether it is a single strong repeat, or the "flutter echo" that is generated when sound gets trapped between two parallel reflecting surfaces and bounces rapidly back and forth between them. A flutter can put a buzzy "tail" of noise on sharp, loud notes (staccato trumpet notes are particularly vulnerable). The echoes heard during tuning week were attacked with sound

absorbing material on surfaces at the rear of the hall.

Apparently the committee was reasonably well satisfied at the end of the week. This one week was not, however, to be depended on as the sole opportunity for adjusting the acoustics of the hall: Lincoln Center had announced that the acoustical consultants would study the results of their week over a period of a year, if necessary, and recommend any further adjustments that seemed desirable.

The critics attack

As everyone knows, the fanfare for the hall's opening was hardly over before its acoustical quality came under fire. Most of the music critics disliked it: they called it thin, strident, very weak in bass, plagued with echoes, altogether a mess. In a short time, jumping on the acoustics of Philharmonic Hall became the "in" sport of the New York musical world. Some people of unquestioned authority said that they liked much about it. But the noise from detractors seemed louder, including a steady barrage from the quarter that counted the most, the music critics of the press.

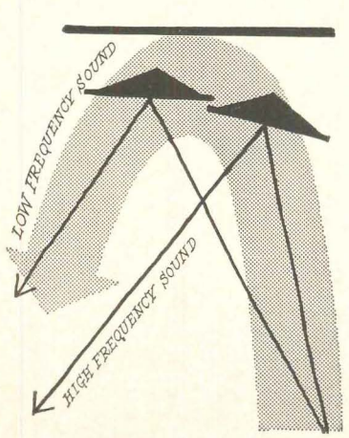
Given the public relations sensitivities of an enterprise like Lincoln Center, with the Philharmonic as the first jewel in its crown, one can well imagine that the management felt intense pressure to get the hall in order. They called in another committee of consultants. Chairman was V. O. Knudsen, one of the deans of American acousticians. Manfred Schroeder, a leading theoretician of acoustics at the Bell Telephone Laboratories, brought in the high skills of that organization in acoustical testing and research. The other members were Acoustical Consultants Paul Veneklasen of Los Angeles and Heinrich Keilholz of Hamburg, Germany.

What had happened between the end of tuning week and the opening of the hall? The effects of the second layer of clouds, which went in near the end of the week, could obviously not be evaluated over any long period prior to the opening; and the second layer of clouds, it is now generally agreed, was a principal cause of the hall's troubles.

Bolt, Beranek & Newman believe that the increased strength of the early reflected sound raised certain echoes to the point of being disturbing. They also feel that the bass weakness was the cumulative result of a number of factors. One was an interference effect of the separation between the two layers of clouds, and the uniformity of the step between successive rows of clouds. But perhaps more important, they say, was the ratio between the amount of sound reflected by the clouds and the reverberant sound, including that coming from the upper space. They believe that there is a psychoacoustic reaction very sensitive to this latter ratio; a small increase in the amount of the early reflected sound, or a decrease in the amount of the reverberant sound, can tip the character of the sound from full and solid to rather bright and bass-deficient.

BB&N recommended the removal of the second layer of clouds, and the respacing of the remaining ones as part of a detailed readjustment plan. But the committee took a different approach to the problem. Their recommendations were in line with a belief that acoustical intimacy may not be appropriate in a very large concert hall.

The weakness in the bass, they reported, came from a previously unfamiliar psychoacoustic reaction: the high frequencies from the instruments on stage, reflected by the clouds, traveled a shorter path to the listeners in the hall than the bass frequencies, which tended to go through the clouds (sketch) to the ceiling. (It is one of the long-established laws of acoustics that an object smaller than the wave length of a sound does not reflect that sound well; thus the very long waves of the bass simply moved through a barrier like that of the clouds.)



The result was that, in the reverberation, the major strength of the bass came in later than the treble. The ear interpreted this bass-delayed reverberation as a bass-deficient sound, the committee said.

Dr. Schroeder and his associates proved this quirk of the human hearing system by using a computer to generate signals that, projected through loudspeakers in the "dead" room at Bell Labs, produced an acoustical facsimile of a hall with reverberation. The relative timing of the treble and the bass in the reverberation could be varied and the results studied.

Another fault of the hall mentioned by many critics was a lack of a "sense of envelopment" by the music; it seemed to come from far away, down there on stage. This too was produced by the cloud arrangement, and by a lack of sound-diffusing elements on the sidewalls, the committee decided. If the first reflections a listener hears come from the ceiling, the music does not "envelop"; reflections must come from the sidewalls for this sensation to be produced. A computer-simulated model of a hall was used to prove this fact, too.

So, at the committee's recommendation, the clouds were raised and filled between with plywood, supplying what is in effect a nearly solid reflecting surface, much higher than the former level. Only 20 per cent of the surface is open to sound to help maintain the reverberation time.

With the higher reflecting surface, most listeners will now get their first reflections from the sidewalls, which the committee considered more important than acoustical intimacy. Those who sit fairly near a sidewall, or near the back of the hall, will still have acoustical intimacy, too; it is mainly the seats in the center and front of the hall that are affected by the change.

Other principal changes made at the request of the committee were: a lead-vinyl curtain that can be dropped in front of the organ to cut bass absorption by the organ structure; a more complete closing off of the area around the stage; and convex wood panels on the sidewalls. These were aimed at certain flutter echoes noted by a number of observers. Other, "repeat" echoes were damped by installing convex surfaces on the balcony faces, and the installation of sound-absorbing material on a large part of the rear wall. The changes (see drawings) were all calculated so that the reverberation time was not altered.

Some lessons learned

The major result of the changes was indeed, most observers agree, a considerable strengthening of the bass in the hall. Whether the changes recommended to the same end by Bolt, Beranek & Newman would have had a similar result is, of course, not a determinable factor at this stage of the game. The success of the similar reflectors at Tanglewood makes the layman wonder whether all the relevant factors were encompassed in the committee's findings.

One obvious moral of the story is that the science of acoustics is still far from perfect; rather, it is in a period of discovery, refinement, and extension. The experience in Philharmonic Hall, among its many other results, has stimulated a research project, under the direction of Dr. Knudsen, which will attack some major unsolved problems in the field. The hope is that the findings will help make the evaluation of acoustical quality less subjective than it has always been.

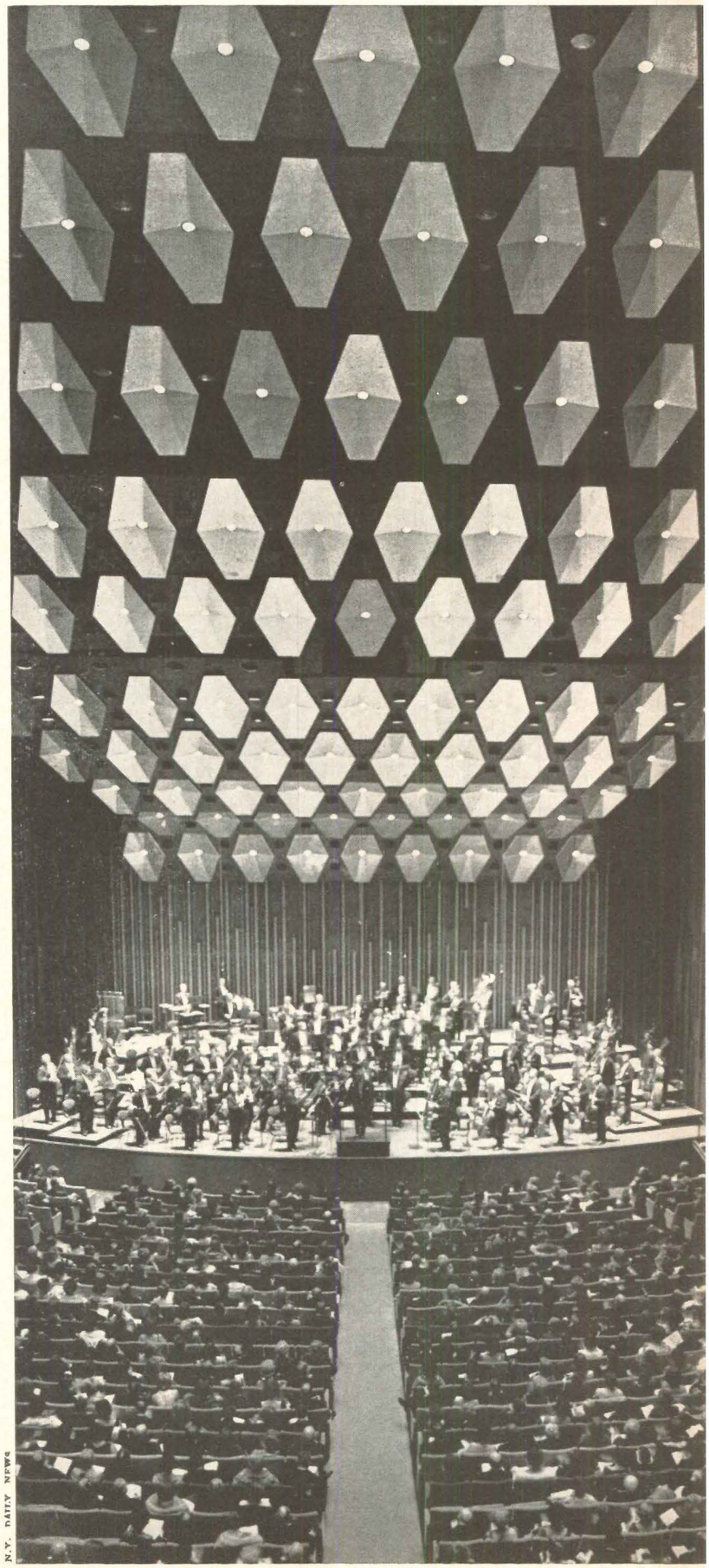
This notion of subjectivity leads directly to the last part of the story. The hall in which music is played has always been an integral factor in the quality of the sound—it cannot be neutral, like a loudspeaker or other piece of

sound-reproducing equipment. As fashions in music have changed, halls have changed too. If a hall is a little ahead of the fashion, or quite different from what most people are used to, it will need an "aging-in" period. Now that some of the smoke has cleared, it is apparent that any hall opened in New York that differed radically from Carnegie Hall was bound to have a rough time.

Carnegie Hall is loved by musicians and the public for its long role in the center of New York's musical life, but its acoustical quality is not put in the top rank by most competent observers. Carnegie is very solid in the bass, but it lacks enough brilliance for many listeners. As a noted violinist said, "listening in Carnegie is like listening with cotton in your ears."

Philharmonic Hall is very much the opposite. Those who like the sound—and many who dislike some features of it—agree that everything is open and brilliant, with the middle registers very strong, pure, and uncolored. An official of a recording company (who confessed that he already likes Philharmonic Hall better than Carnegie) explained the furor over the new hall this way: "People raised on Carnegie couldn't take the shock of hearing all that wide-open sound." Another highly experienced listener, concerned with the design of sound-reproducing equipment, said: "After you have heard a concert in Carnegie Hall you may decide that high fidelity has just about matched real sound. But after ten minutes in Philharmonic Hall you know that the sound from recordings is still far, far below the reality."

These remarks lead to two final thoughts. First, if you are building a concert hall and want instant acceptance, make it just like the one that was there before. And second, if you seek to improve on the past, prepare to suffer. But, after people have gotten used to the new musical experience you have to offer, you may wind up with one of the world's great concert halls. END



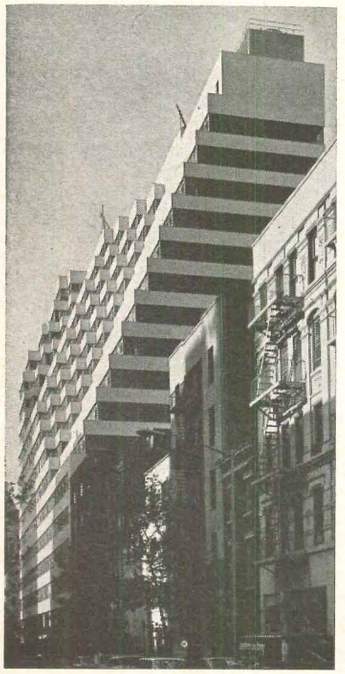
Editor Douglas Haskell is on temporary leave of absence to serve on the Pennsylvania Avenue Advisory Council in Washington. This month's comments are by FORUM'S *Managing Editor.*

BETTER THAN MERE CUBAGE

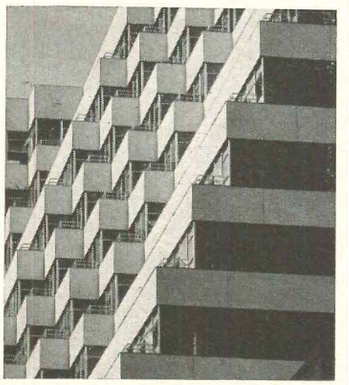
For years, people have been saying that it was impossible to design a good office building under New York's old zoning regulations—unless the building's owners were willing to sacrifice much of the cubage permitted within the zoning envelope.

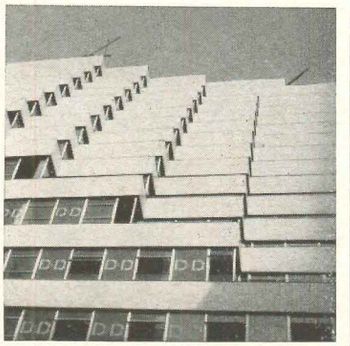
Well, it turns out that it isn't necessarily so. The *real* reason, it seems, for the junkiness of much of Manhattan's post World War II skyline is, quite simply, that the architects responsible either weren't good enough, or didn't try hard enough.

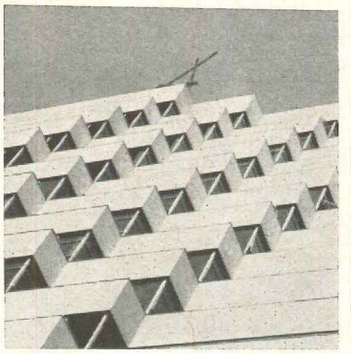
Proof of this rather harsh indictment may be found today at the corner of Third Avenue and 58th Street, New York 22, N.Y. Here a 17-story, 350,000-square-foot structure called the "Design and Decoration Building" is nearing completion (see below). At first glance, D & D looks discouragingly like most of the rest of our current cubage: it's a ziggurat, it's cheap; and it seems as undistinguished as all the other members of its tribe.



PHOTOS: RIGHT & NEAR TOP RIGHT: GEORGE CSERNA







At second glance—or, more specifically, from a couple of hundred feet to the East—this impression changes dramatically. All of a sudden, D & D becomes a marvellous play of cubes, planes, and volumes, all constantly changing in sunlight, in shade, and as you see the building from different vantage points. Your first reaction, of course, is that this is merely a happy accident, a case of the setback formula coming up with a piece of "automatic architecture," much in the way that that perennial, precocious orangutan may come up with a "Jackson Pollock" painting.

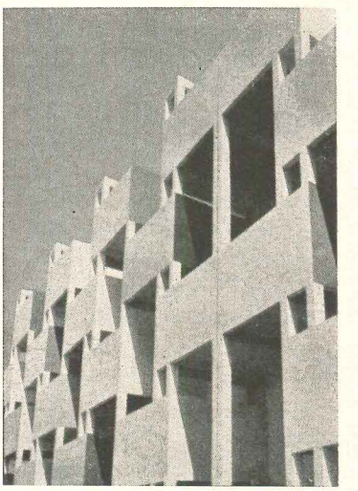
But a closer look demolishes that theory beyond a shadow of doubt: here is a very conscious effort to wrest from the old setback law a sophisticated architectural form. Whoever did this was obviously aware of a great many things—including, possibly, the experiments of the Futurists and the Constructivists, and of the current avant-garde preoccupations with cellular structures in Italy, India and elsewhere.

D & D's architects are David and Earl J. Levy, a father-and-son team. The Levys had never done a Manhattan office building before (more is the pity!) and when they were called in to design D & D, the program outlined by the owner, Aaron Diamond, was depressingly familiar: "We had to design a building that would give our client the greatest floor area possible under the old zoning law," says Earl Levy. "We felt strongly, from the earliest stages of planning, that a series of repetitive setbacks would lend unusual interest to an otherwise conventional structure. Here was an opportunity to carry the dormer-setback rule to extremes, to create a geometric play of surfaces that would be animated by light and shadow." When completed, the building will have cost between $13 and $15 a square foot. Nobody has come even close to producing architecture in Manhattan at that low a figure in a great many years.

Admittedly, one good ziggurat does not usher in a millennium, and the D & D Building isn't all *that* sensational. Having designed two good façades, the Levys seem to have dropped with exhaustion and to have left the rest of the building pretty much to chance. But before they gave up, they managed to prove that even under the hopelessly restrictive old zoning resolution (now being replaced) it was possible to achieve something better than mere cubage if one had sufficient talent and tenacity.

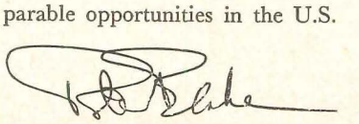
AMERICAN ARCHITECT IN PARIS

Some 4,000 miles due east of Third Avenue there stands a housing development remarkably similar in appearance to the D & D Building, and we were reminded of it as we were walking down 58th Street in the general direction of Casablanca. This development (top, right) was designed and built in the Morrocan port city more than a dozen years



ago by an American expatriate called Shadrach Woods (in collaboration with Georges Candilis). Woods has recently returned to the U.S. from his base of operations in Paris, where he is a partner in the firm of Candilis, Josic & Woods. He is currently teaching architecture at Washington University in St. Louis but expects to go back to Paris in the spring.

Woods may be the most remarkable of all the American architects now working abroad: after studying engineering at New York University and serving in the U.S. Coast Guard, he took off for Dublin after World War II to major in philosophy. From Dublin, Woods went to Paris and asked Le Corbusier for a job. Corbu thought Woods was someone else, and hired him to help supervise the construction of the monumental Marseilles apartment block. After that, Candilis and Woods opened their own office, which has now been joined by Alexy Josic. Their work has been very large in scale—the design of the French atomic energy town of Bagnols-Sur-Cèze, for example —and outstanding in quality: They won the competition for the new, 100,000-inhabitants town near Toulouse (FORUM, June '63), which the historian, Sigfried Giedion, considers a most significant innovation in urban design. It is too bad that men like Woods have not found comparable opportunities in the U.S.



PRECAST CONCRETE
for all-new community college

A variety of precast units play an important role in the buildings of new Big Bend Community College at Moses Lake, Wash. Huge, exposed aggregate panels with a cast-in diamond design form the gymnasium walls. Ribbed window panels form the walls of the administration and classroom buildings. And precast "Y" frames combine with a folded plate roof to cover the unusual inner courtyard.

LEHIGH EARLY STRENGTH CEMENT BENEFITS ALL MEMBERS OF THE TEAM

Columbia Sand and Gravel Inc. used Lehigh Early Strength Cement for all the precast units in the new college. Here, as in almost any concrete work, this cement provided important benefits for the precaster, contractor and architect alike. Quicker reuse of forms . . . with fewer forms required. Earlier availability of units. Assured on-time delivery for smoother planning.

Lehigh Portland Cement Company
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LEHIGH CEMENTS

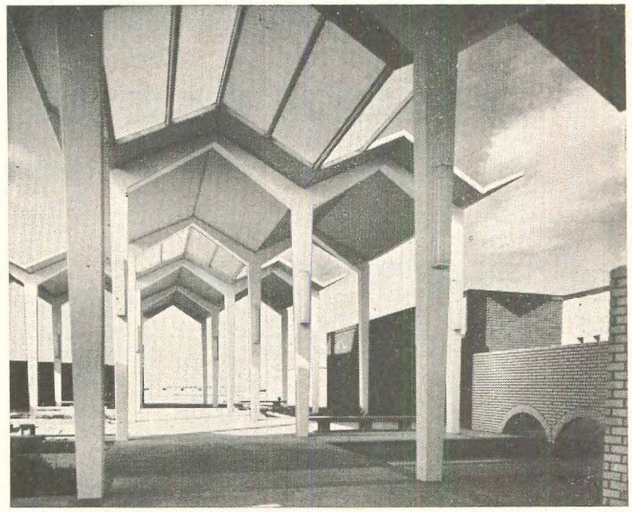
Architects: Donald Hollingbery, A.I.A.—Moses Lake, Wash.; Cowan & Paddock, A.I.A.—Yakima, Wash.

Structural Engineer: John P. Esvelt—Spokane, Wash.

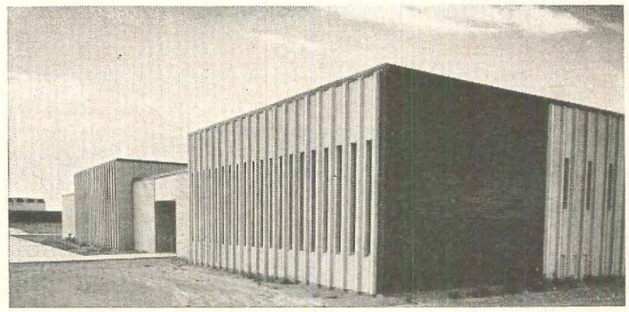
General Contractor: General Investment Co., C. Beedle—Longview, Wash.

Precasting Contractor: Columbia Sand & Gravel Inc.—Moses Lake, Wash.

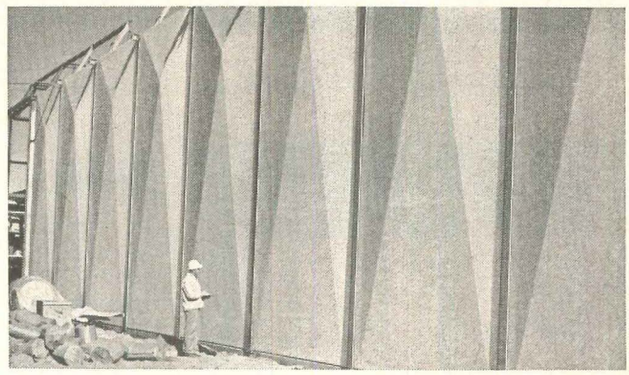
Ready Mix Supplier: Columbia Sand & Gravel Inc.—Moses Lake, Wash.



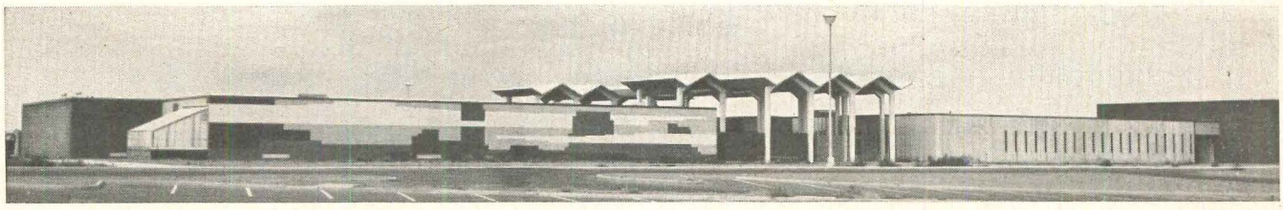
"Y" frames, 28′6″ high, support folded plate roof panels that are 30′ long, 8′ wide and 4″ thick. Together with inserted skylight sections, they form an interesting mall.



Walls of library-student union building (shown here) and the administration building are precast exposed aggregate ribbed panels. Panels are 13′ to 17′ high, 8″ thick including 4″ rib and are cast in 8′ sections. Note slots for windows and ventilation louvers.



The exposed aggregate units forming the gymnasium walls feature an unusual raised diamond design cast into each panel. Units are 6″ thick at the base; 8″ thick at highest point of design.

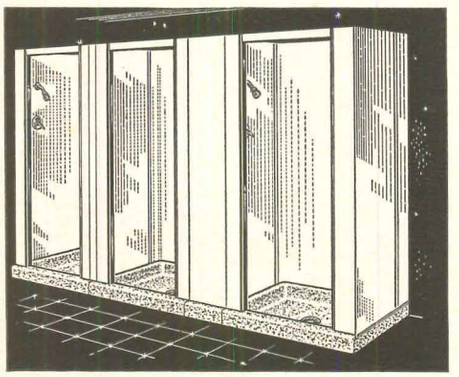


The central portion of the new campus. Mall connects administration and science buildings. Lehigh Early Strength Cement was used for all precast concrete and Lehigh Portland Cement for cast-in-place concrete.

QUICK FACTS FROM FIAT

...a handy guide in selecting the proper product for each application

SHOWER CABINETS



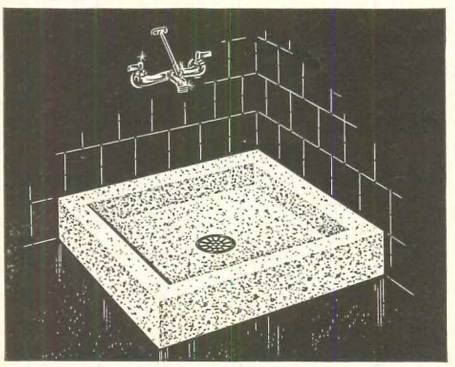
PRODUCT COMMANDER SHOWER

Sandwich panel, rigid wall construction. Installation costs drop because complete cabinet consists of only three factory-fabricated panels that "knife" together by means of double barrier joints attached. Wall panels quickly anchor to 6" deep PreCast terrazzo floor. Available 3 ways: all enamel; all stainless steel; stainless steel inside, baked-enamel outside.

APPLICATION INSTITUTIONS

For school dormitory or gymnasium, club or any other location that requires long, dependable service in spite of heavy traffic and rough use. Designed for individual or battery installation and adaptable to any floor layout. The **Commander** shower cabinet combines with coordinated dressing stalls also made by Fiat. Refer to Architectural File Sweet's $\frac{26C}{Fi}$.

MOP SERVICE BASIN



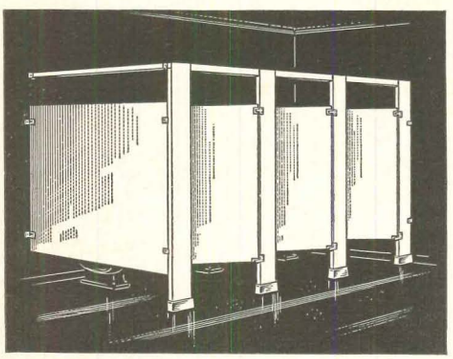
PRODUCT MOP SERVICE BASIN

PreCast terrazzo with compressive strength of 3,000 PSI produces a permanent unit that withstands rough use day-in, day-out. Tiling-in flange, cast integral, of galvanized-bonderized steel extends 1" above shoulder. High shoulders of basin confine water surge. Chrome plated, brass drain body cast integral. Stainless steel protective cap available as option.

APPLICATION COMMERCIAL BLDG.

To serve gravity draining of mop trucks and other liquid wastes in office buildings, schools, and public buildings. Permanently leakproof, it requires no sub-pan or double drain. One-piece construction makes quick easy installation. May be placed against wall, in a corner or recessed completely. Standard sizes: 24" x 24"; 36" x 36"; 36" x 24".

TOILET ENCLOSURES



PRODUCT TOILET ENCLOSURE

Duro headrail-braced model shown is the most simple and hence the least expensive toilet enclosure to install. It was deliberately designed to meet popular concepts of clean, modern design and yet was engineered to economize on details that do not detract from its appearance, nor lessen its performance or long-life.

TYPES AND APPLICATION

The Duro model is ideal for replacement, remodeling projects as well as new construction. No special reinforcement of floor, wall or ceiling required. Ceiling-hung and floor-braced models are also available with the "years-ahead" features that have earned a reputation for durability, low maintenance and easy installation.

See Sweet's $\frac{22B}{Fi}$ and $\frac{26C}{Fi}$ or write nearest Fiat office for literature.

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LOS ANGELES — City of Industry, Calif.
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"AS CHIEF ENGINEER, I CAN TELL YOU WHY WE DECIDED ON TOTAL ELECTRIC SPACE CONDITIONING FOR OUR NEW PLANT"

Russell H. Bush, Chief of Engineering for the Deering Milliken Service Corporation, reports on the advantages of using flameless electricity as the single source of energy for all heating, cooling, lighting, and processing in their new Spartanburg, South Carolina, paper plant

"When my department put together the specifications for our new Tetra Pak paper plant," explains Chief Engineer Russell Bush, "we needed a design that would give us both construction savings and operating economy, and would also allow us to make provision for any future expansion. We found total electric space conditioning to be the best answer.

"For example, by installing a total electric heating and cooling system, we were able to save approximately $7000 in initial costs alone. And as far as maintenance is concerned, we haven't put in a single hour on it since our plant opened last year!

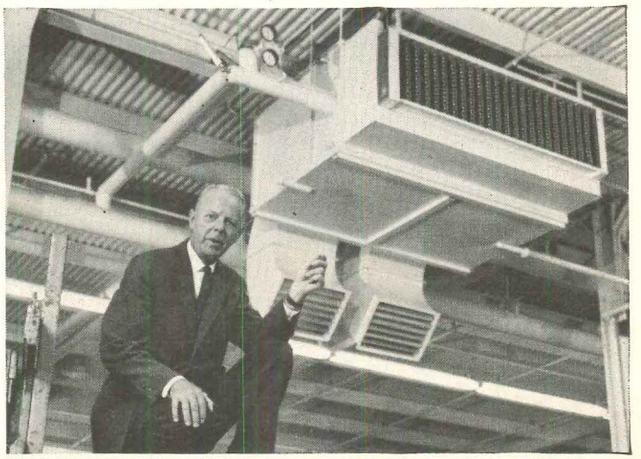
"In addition, the plastic-coated paper we manufacture here for food packaging is a new product which we expect to catch on fast. When it does, we'll have to expand. And this, of course, will be much simpler for us because our electric heating and cooling system permits complete flexibility and easy installation at a lower cost."

For architects and consulting engineers, total electric space conditioning is the modern method of combining heating, cooling and lighting into one efficient operation with a single source of energy. In many cases, for example, recommended lighting levels can provide a substantial part of the heat as well, and thus reduce the size and cost of heating equipment.

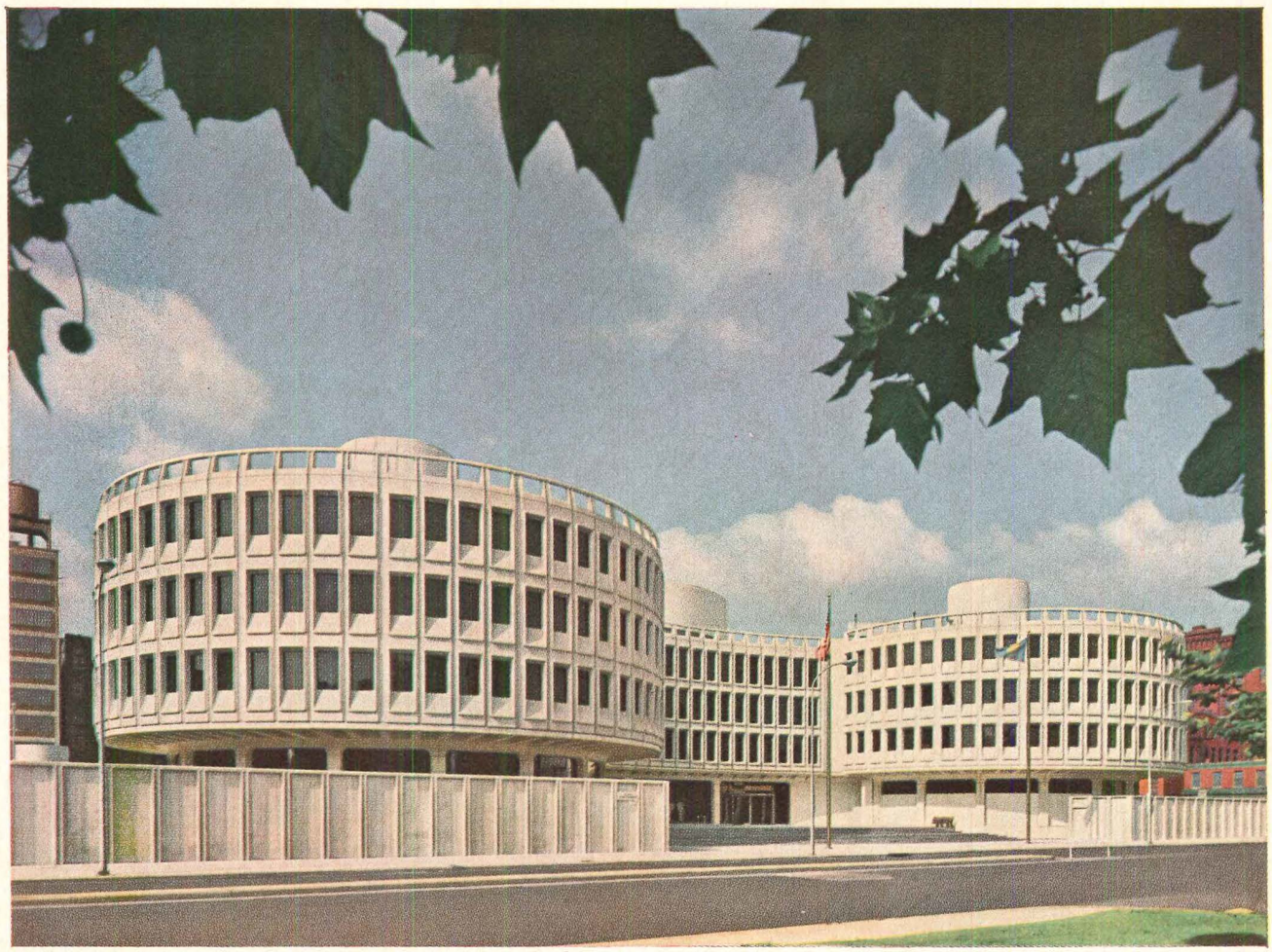
If you want to know how total electric space conditioning can help you in the design of industrial and commercial buildings, contact your local electric utility company. They will welcome the opportunity to work with you.

BUILD BETTER ELECTRICALLY

Edison Electric Institute, 750 Third Avenue, New York 17



COMBINATION ELECTRIC UNITS suspended from roof provide air conditioning in summer and have built-in resistance coils for winter heat. Chief Engineer Russell Bush points out their compactness.



Police Administration Building, Philadelphia. **Architects:** Geddes, Brecher, Qualls & Cunningham, Philadelphia. **Contractor:** Sovereign Construction Co., Ltd., Fort Lee, N. J. **Structural Engineer:** David Bloom, Philadelphia. **Consulting Engineer:** A. E. Komendant, New York. **Precast Concrete:** "Shokbeton" by Eastern Schokcrete Corporation, New York.

GEDDES, BRECHER, QUALLS & CUNNINGHAM selected precast concrete

for this curvilinear-form civic building which is part of Philadelphia's urban-renewal program. Cantilevered 12 feet out from the base, the three upper floors are enclosed with 5-feet-wide by 35-feet-high precast concrete panels made with ATLAS WHITE portland cement and exposed white-quartz aggregate. These concrete units also act as load-bearing structural members for the two upper floors and roof. The flanges of the panels form vertical ribs that house utility runs and mechanical services . . . and the sloping spandrel sections provide space for induction units on each floor. ■ Today, more architects are designing with precast concrete, because it lends itself to complex shapes and profiles, while performing heavy load-bearing duty . . . with savings in fabrication and erection time. Ask your local precast concrete manufacturer for specific information about white, tinted or exposed aggregate precast concrete units, or write Universal Atlas, 100 Park Avenue, New York 17, N.Y.

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This school cost less with ceramic tile

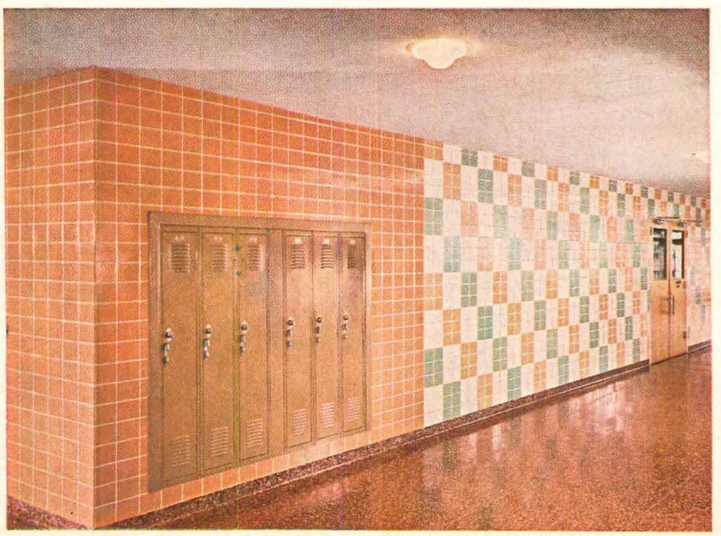
The new Waterloo, N.Y. High School contains 34,400 square feet of American Olean ceramic tile—including colorful tile murals on exterior and interior walls. Costly? Here are the facts: This school cost less—$1.65 per square foot less than the median cost of schools built in New York State during the same period. Proof that American Olean ceramic tile can save you money on school construction costs as well as insuring big savings on cleaning and maintenance year after year.

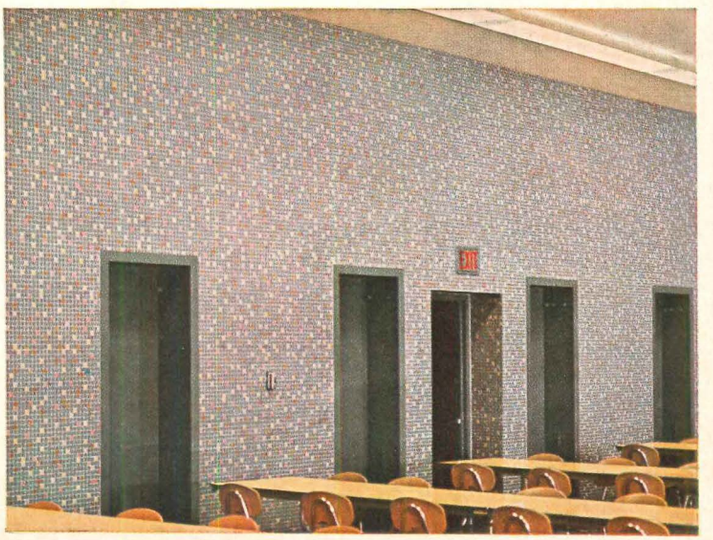
Write for informative Booklet 620, Ceramic Tile for Schools.

ABOVE—Main Entrance: exterior mural in ceramic mosaics, 1″ sqs., Cerulean, Dove Gray, Citrin, Topaz with figures in Ebony. Plate 479.
BOTTOM LEFT—Corridor Walls: 6″ x 4¼″ in 52 Daffodil and 32 Tan Glo. Design: 6″ x 4¼″, 59 Parchment, 45 Salt & Pepper and 56 Leaf Green. Plate 480.
BOTTOM RIGHT—Cafeteria Wall: ceramic mosaics 1″ sqs., Beryl, Apricot, Petal Pink, Haze, Topaz. Plate 481.
Architect: John C. Ehrlich. Tile Contractor: Stearns & Bergstrom Inc.

CERAMIC TILE
American Olean

AMERICAN OLEAN TILE COMPANY—EXECUTIVE OFFICES: 1809 CANNON AVE., LANSDALE, PA. A SUBSIDIARY OF NATIONAL GYPSUM COMPANY





PRISMAROUND*

the fixture that ballast men helped design

Ballasts burn out prematurely in most "wrap-around" luminaires because of overheating. The lamp-heat cannot escape.

Ballast manufacturers didn't like that. THEIR head scratching excited OUR brain waves. That's how PRISMAROUND was born.

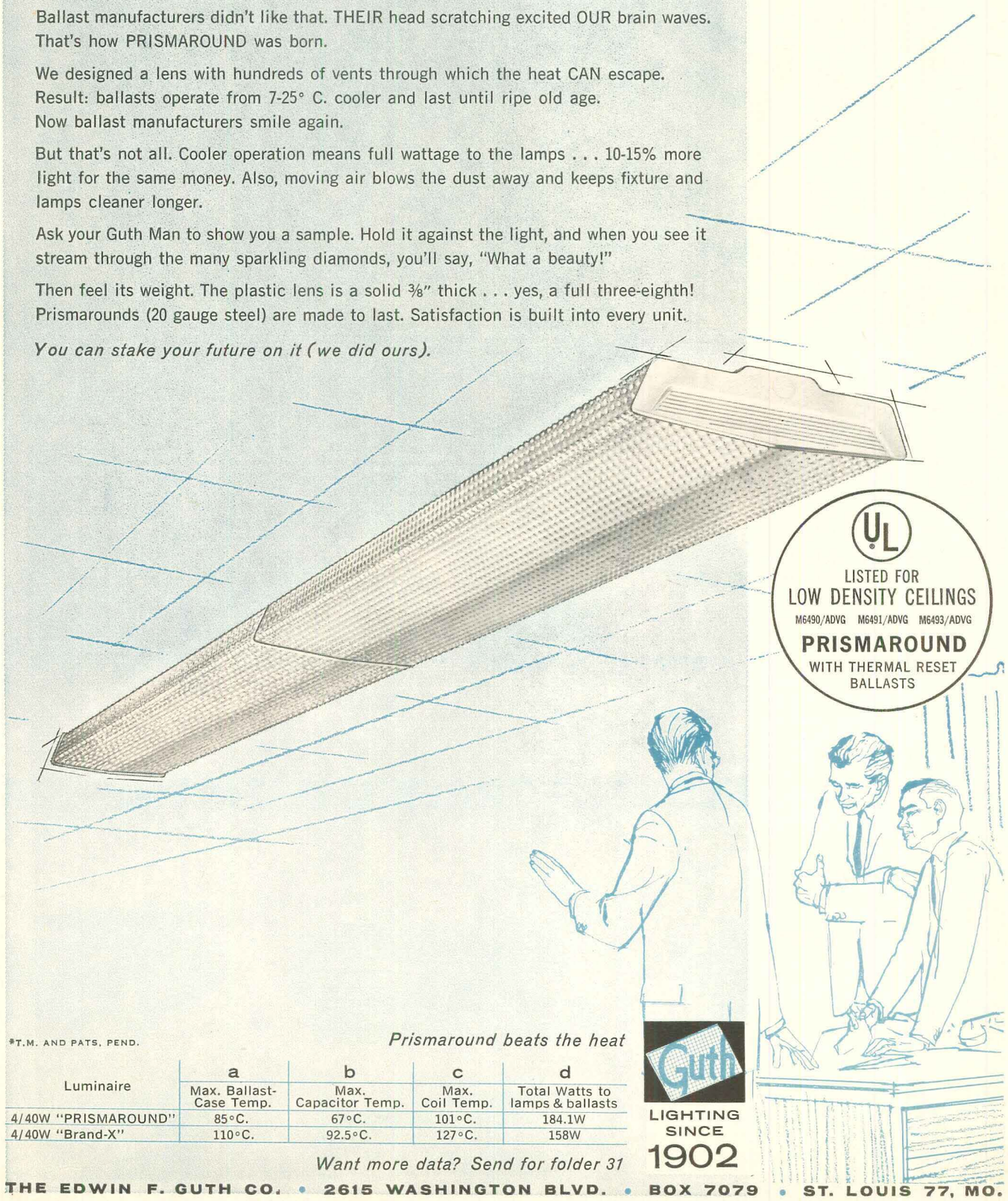
We designed a lens with hundreds of vents through which the heat CAN escape. Result: ballasts operate from 7-25° C. cooler and last until ripe old age. Now ballast manufacturers smile again.

But that's not all. Cooler operation means full wattage to the lamps . . . 10-15% more light for the same money. Also, moving air blows the dust away and keeps fixture and lamps cleaner longer.

Ask your Guth Man to show you a sample. Hold it against the light, and when you see it stream through the many sparkling diamonds, you'll say, "What a beauty!"

Then feel its weight. The plastic lens is a solid ⅜" thick . . . yes, a full three-eighth! Prismarounds (20 gauge steel) are made to last. Satisfaction is built into every unit.

You can stake your future on it (we did ours).



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M6490/ADVG M6491/ADVG M6493/ADVG
PRISMAROUND
WITH THERMAL RESET BALLASTS

*T.M. AND PATS. PEND.

Prismaround beats the heat

Luminaire	a Max. Ballast-Case Temp.	b Max. Capacitor Temp.	c Max. Coil Temp.	d Total Watts to lamps & ballasts
4/40W "PRISMAROUND"	85°C.	67°C.	101°C.	184.1W
4/40W "Brand-X"	110°C.	92.5°C.	127°C.	158W

Want more data? Send for folder 31

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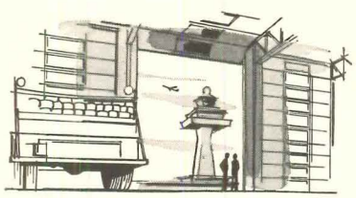
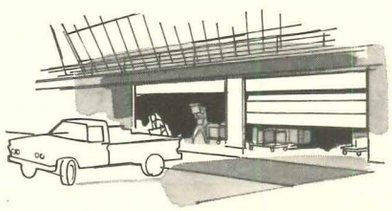
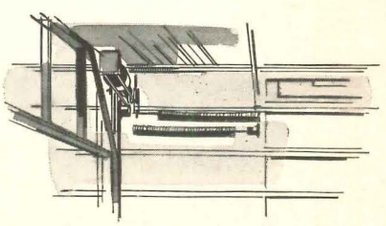


SPEED is imperative in responding to emergencies. Heavy steel "OVERHEAD DOORS" on Fire and Crash Building rise in 9 seconds *automatically,* at the touch of a button from main control tower.



RELIABILITY is key factor in all maintenance facilities required to keep the airport mobile. Special 19-ft. "OVERHEAD DOORS" deliver day-in, day-out dependability in Main Terminal Building.



AUTOMATIC CONCEPT of new "AUTO-MATE" door operators, engineered to meet jet-age requirements, provides the flexibility and control the architect sought throughout his design.

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Dulles International Airport, Washington, D. C. • Architects: Eero Saarinen & Associates, Hamden, Conn. Structural Consultants: Ammann & Whitney, New York City, N.Y. • Mechanical and Electrical Consultants: Burns and McDonnell, Kansas City, Mo. • Airport Consultants: Landrum & Brown, Cincinnati, Ohio. Planner: Ellery Husted, Washington, D.C. • Terminal Contractor: Corbetta Construction Co., New York City.

FLEXIBILITY OF THE "OVERHEAD DOOR"

At Dulles Airport, "Traffic" means much more than just people and planes. Traffic means a constant flow of air cargo *and* the ground vehicles to handle it. Traffic means a sizeable task force of fire and crash equipment *and* the maintenance crews to keep it "at the ready."

To solve these and many other problems in traffic flow, the architects called on the engineering experience and production facilities of Overhead Door Corp. Their confidence was well placed, judging by results. Already installed: 115 doors, 104 of them equipped with "AUTO-MATE" automatic operators, with more on order. Now, traffic flows smoothly, quickly, flexibly, with The "OVERHEAD DOOR." Installed side-by-side, and equipped with "AUTO-MATE" automatic operators, these doors become a movable wall. Opened as a group, they can give total access to an area. Opened individually, they can direct the flow of traffic, prevent pile-ups.

No limitations on materials—The "OVERHEAD DOOR" comes in aluminum, steel, and wood. With glass panels or without. Doors of any size or style to fit any opening.

THE "OVERHEAD DOOR" TRADE MARK

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General Office and Manufacturing Division: Hartford City, Ind. **Manufacturing Distributors:** Dallas, Texas; Portland, Oregon; Cortland, N.Y.; Hillside, New Jersey; Lewistown, Penn.; Nashua, New Hampshire. **In Canada:** Oakville, Ont.

Get details from your local distributor—he's listed under "OVERHEAD DOOR" in the white pages; or write to General Office above.

THE E. F. HAUSERMAN COMPANY
7302 Grant Avenue, Cleveland 5, Ohio
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Gentlemen: Please send me complete information on Co-ordinator Double-Wall and other Hauserman products and services.

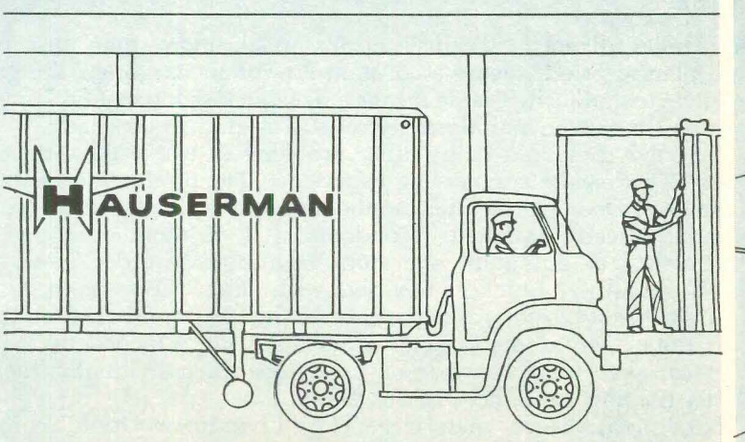
Name_____

Title_____

Company_____

Address_____

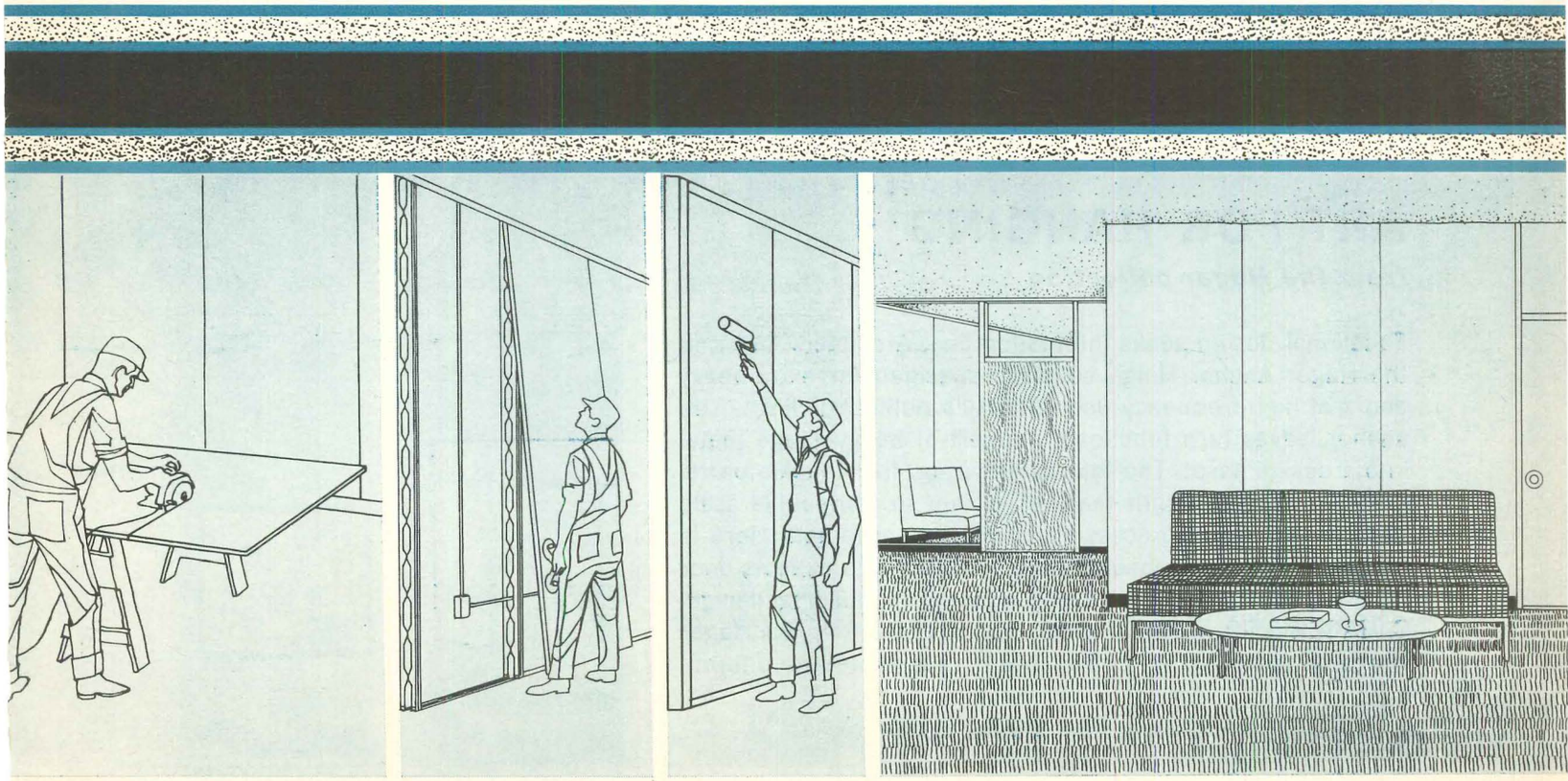
City_____ State_____ Zone_____



New Hauserman
Co-ordinator Double-Wall
Fitted and finished on site– the lowest cost metal movable wall

The unique new Hauserman Double-Wall system—*at a lower initial cost than has ever before been possible*—gives you the beauty and flexibility obtainable only with metal movable walls. ■ Double-Wall panels are delivered to your jobsite with baked-on prime coat—ready for cutting, fitting and assembly by Hauserman factory-trained crews. Panels snap into a highly versatile post which provides rigidity and support throughout the system. The post accepts panels on both sides to create a Double-Wall in fact as well as in name. On-site painting allows last minute color changes. All components are 100% reusable and may be rearranged whenever you wish. ■ Production standardization and the elimination of costly pre-engineering are the secrets of Double-Wall's exceptionally low cost. Its sound control rating is 43 db STC. It can be adapted to meet the most rigid fire code requirements. Access to wiring and utilities is quick and easy. And it is design-coordinated with Hauserman Signature and Delineator, the finest movable walls ever manufactured, or with Vaughan® Movable Walls, now installed by The E. F. Hauserman Company. ■ Installation and subsequent service are guaranteed under our Hausermanaged single contract responsibility. All Hauserman movable walls, as well as the complete Criterion line of acoustical ceilings, are available under the unique, capital conserving Lease-Wall plan.

HAUSERMAN



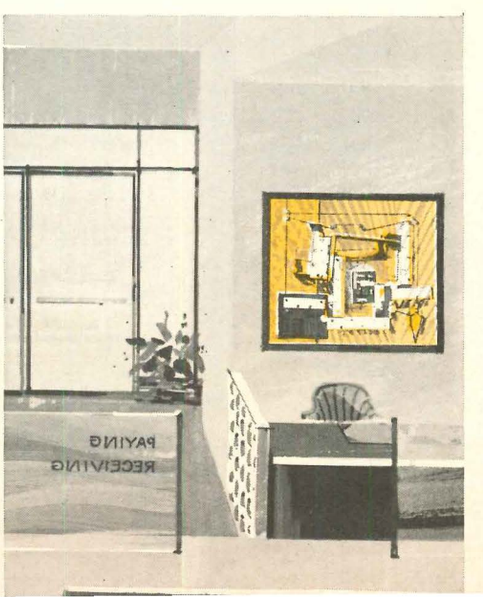
ART FOR HANGING

from the Hager collection

Functional design seeks interesting line. Architects find it in the Hager Anchor Hinge so often specified for extra-heavy doors of high-frequency use in today's public buildings. The anchor leaves turn functional support of heavy-gauge metal into a design asset. The four-ball-bearing, five-knuckle barrel (another extra strength feature) is kept to compatible scale through advanced processing by Hager craftsmen. Here is hinge artistry that appeals to the architect who expects door hardware to contribute to total concept in building design. C. HAGER & SONS HINGE MFG. CO., ST. LOUIS 4, MO. Hager Hinge Canada Ltd., 61 Laurel Street East, Waterloo, Ontario.

Hager

Everything Hinges on Hager®



"This is a great place to do business..."

Invincible counters and files say it so beautifully! Our all-new and colorful furniture/decorator catalog now shows you how, with useful suggestions galore.

Invincible METAL FURNITURE CO.
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Please send a copy of your new full color catalog.

NAME .....

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Humble Building, Houston, Texas
Owner: Humble Oil & Refining Company
Architect: Welton Becket Associates, Los Angeles, California
Contractor: W. S. Bellows Construction Corp., Houston, Texas
A winner of an "Office of the Year" award sponsored by *Administrative Management* magazine.

There is **"no equal"** to the quality and craftsmanship of

CONTROLLED AIR ENTRANCES*

When you specify entrances, there is "no equal" to International *Controlled Air Entrance** Revolving Doors. They are so beautiful, they consistently are the entrances to buildings winning "Office of the Year" awards sponsored by *Administrative Management* magazine. And with all their beauty, they are economical, too. Compared with other entrances, they often save enough on required capacity of heating and air conditioning equipment to pay for the entire entrance. That's because they are always open yet always closed. Open to people but closed to heat and cold. And year after year, they continue to save on heating and cooling costs.

* Trademark

CONTROLLED AIR ENTRANCE
ALWAYS OPEN ALWAYS CLOSED

Dare us to prove what we claim.
Write today for free 54-page book,
The Controlled Air Entrance,* based on an authoritative ASHRAE study of air infiltration.

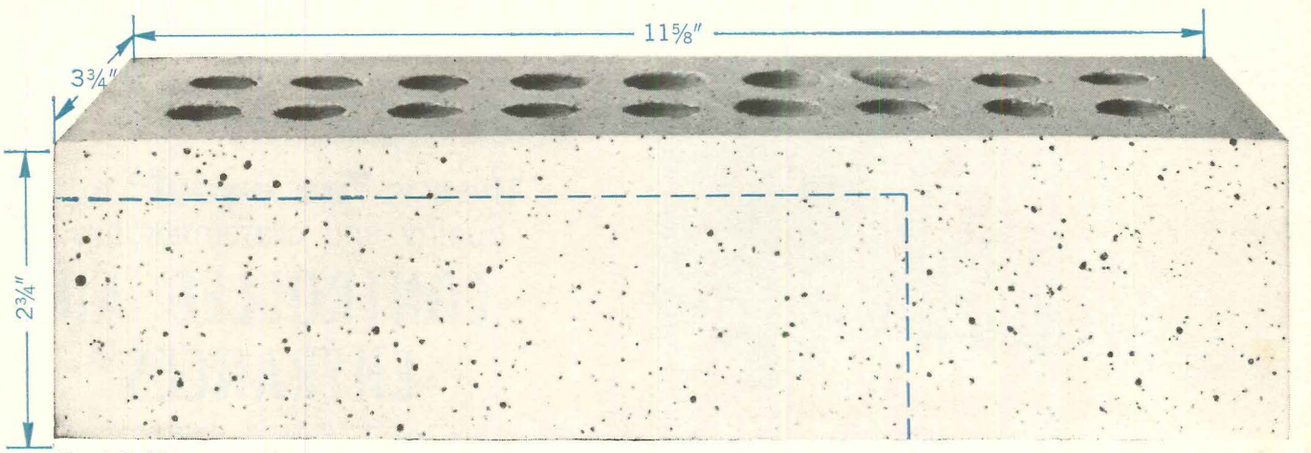
INTERNATIONAL STEEL COMPANY

1425 Edgar Street — Evansville 7, Indiana

a famous name

General Contractor:
Goodnor Construction Corporation,
Long Island City, New York

and a famous face

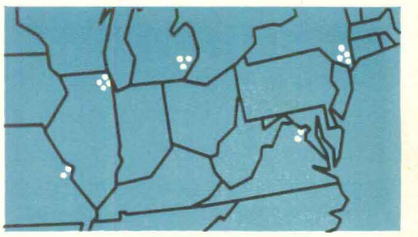


The dotted line represents a standard size brick (8"x2¼"x3¾")

team for merchandising impact!

The name, E. J. Korvette Department Stores. The face, HANLEY'S JUMBO NORMAN (11⅝" X 2¾" X 3¾") Duramic® Glazed Brick. Together they combine for stores that are both striking and economical.

Architects specified this size because it lays up faster . . . cuts costs. Architects specified this glazed brick shade (824 white with black speck) because of its clean white appearance . . . maintains its original color and is self-cleaning because of the impervious glazed surface. Use HANLEY on your next project.



Korvette Stores using
HANLEY Glazed Brick
from New York to St. Louis

HANLEY COMPANY
One Gateway Center, Pittsburgh 22, Pa.
Sales Offices: New York • Buffalo • Pittsburgh
Distributors: Nationwide and Canada

MISCO WIRE GLASS
Perfect Pattern for Modern Design

Sky Harbor Aiport, Phoenix, Arizona. Architects: Associated Airport Architects (Lescher & Mahoney, Ltd. and Weaver & Drover); Glass and glazing: Pittsburgh Plate Glass Company, Phoenix; General Contractor: Chanen Construction Company, Phoenix.

Acclaimed for outstanding design, the new Sky Harbor Air Terminal in Phoenix relies on Polished Misco as an effective windscreen for passenger protection and comfort while affording a fresh concept of wire glass design that adds beauty to function. With its distinctive diamond-shaped welded wire netting, Misco, Polished or obscure, offers proven breakage protection and serves as a recognized fire retardant. Available at better distributors of quality glass.

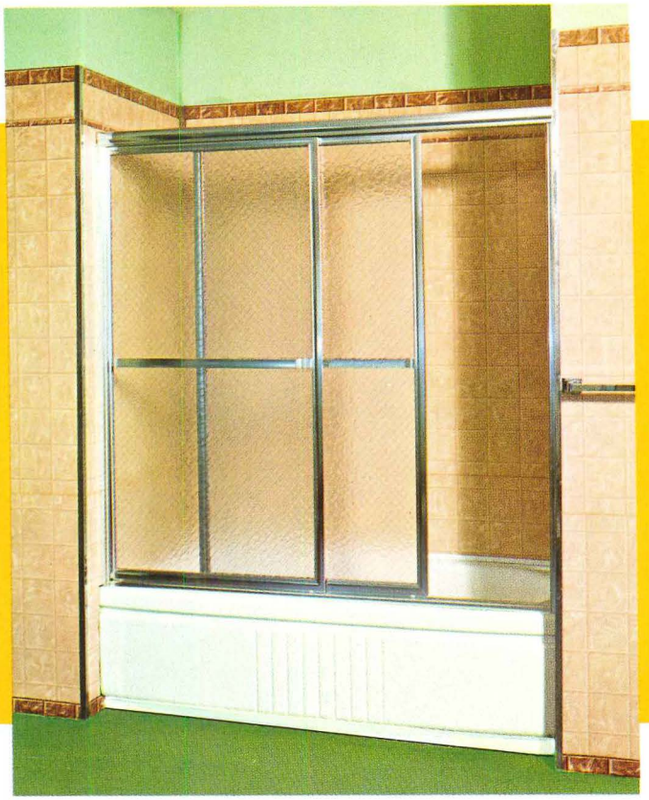
MISSISSIPPI GLASS COMPANY

88 Angelica Street, St. Louis, Mo. 63147

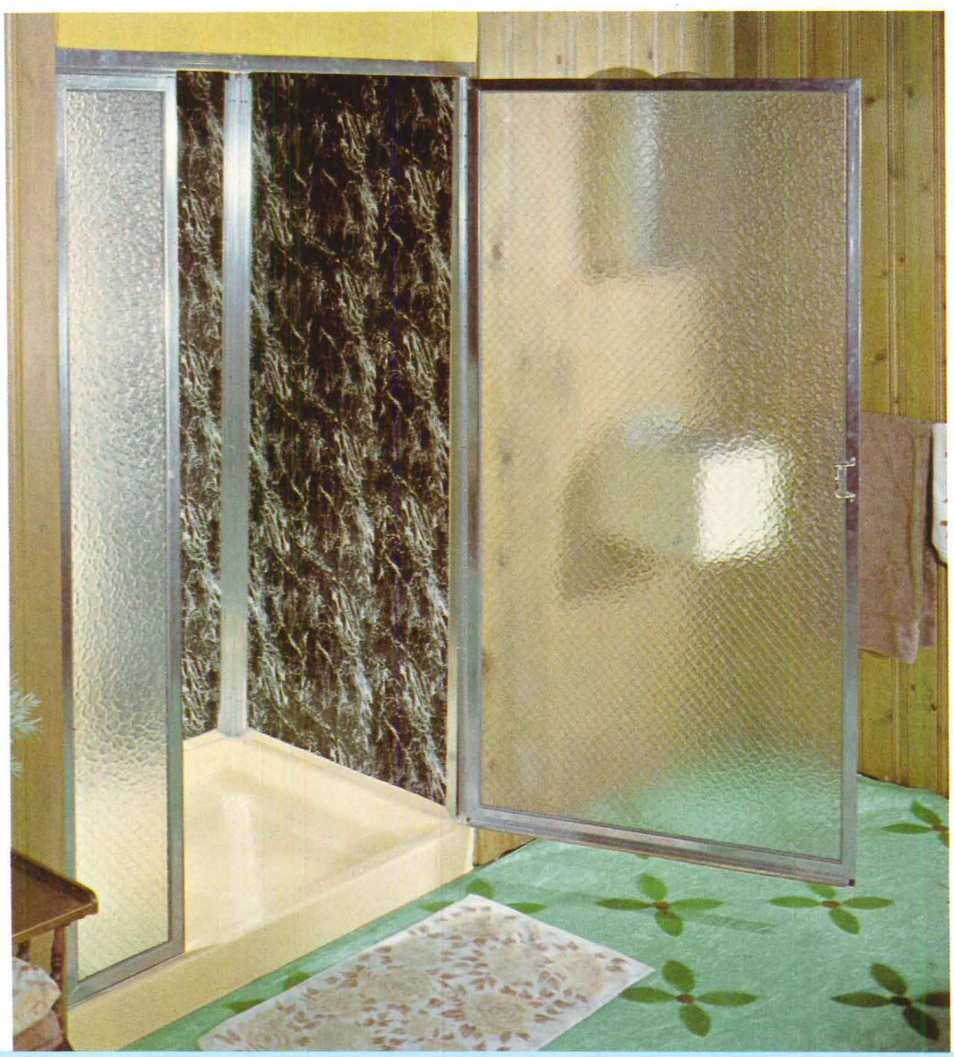
NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

NEW 7/32"
SPRAYLITE MISCO
TEAMS DECORATION with VISIBLE PROTECTION



Luxury and safety are twin features of this 7/32" Spraylite Misco installation by Theodore Efron Company, Chicago, shower door and tub enclosure manufacturer.



Today's bathrooms are not only more excitingly beautiful but safer, too, thanks to new FHA approved 7/32" Spraylite Misco. Handsome Spraylite glass, fortified with Misco, diamond-shaped welded wire, transforms tub enclosures and shower stalls into sheer elegance and luxury with assurance of proven impact resistance. The bright wire mesh, clearly visible as a sturdy web of steel, serves as a constant reminder of its safety features. Only wire glass gives you both . . . decoration and protection. Write for literature.

NEW CATALOG
Contains pattern descriptions, light distribution charts and transmission data. Send for your free copy today.

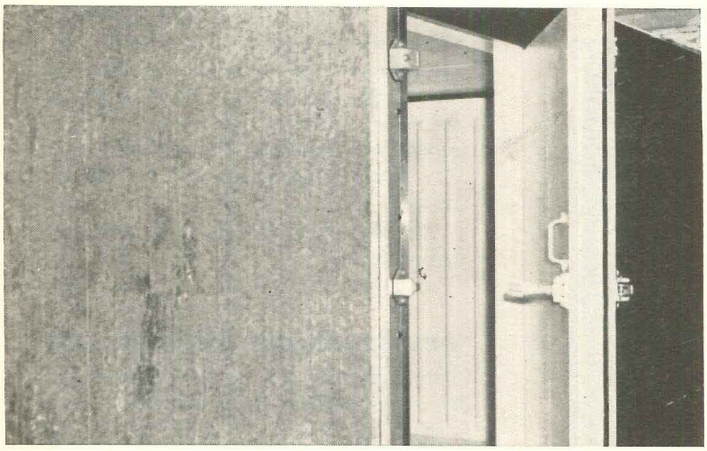
See our catalog in Sweet's (S)

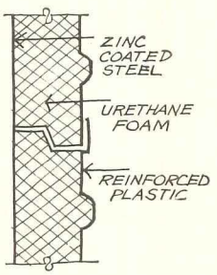
H #3-63

MISSISSIPPI GLASS COMPANY
88 Angelica Street, St. Louis, Mo. 63147
NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

Walls of sandwiched foam (below)
Plastic floors and grilles (page 153)





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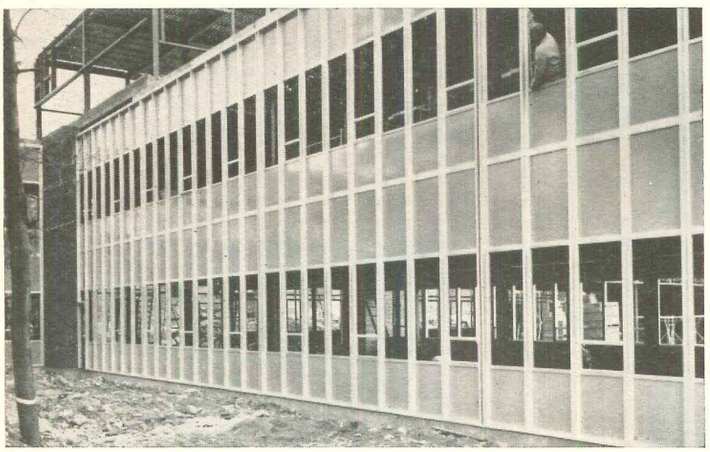

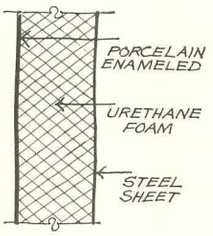

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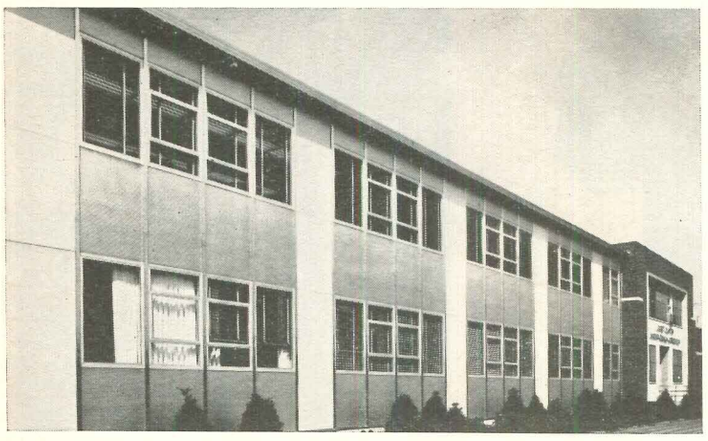

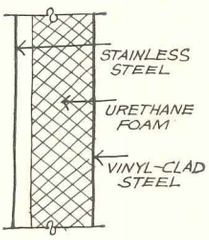

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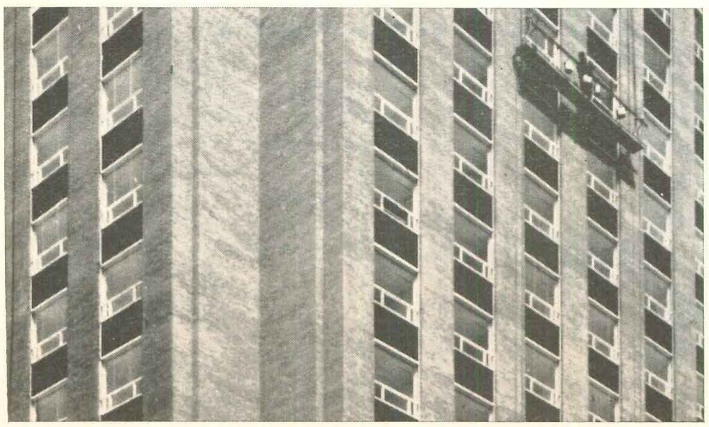
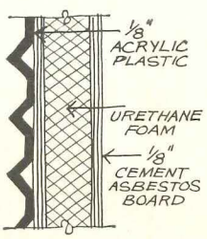




4

URETHANE CORE PANELS

Rigid urethane foam, either foamed in place or purchased as slabs, is coming into increasing use for wall panels of various kinds (photos, left). The basic qualities of urethane that make it desirable for such applications are high insulation value (K factor: about .15) and structural rigidity; this combination means that urethane-core panels can be made thinner and lighter than almost any other type now available. Another useful property is its strong adhesion to most materials when foamed in place. This adds to the strength of the panel, and may eventually lead to panels with pipes and wiring set in position in the foam core. Most urethane foam is rated as "fire retardant" or "self-extinguishing," but types carrying ASTM ratings of "nonburning" are also available.

Because of its insulating properties, urethane foam is ideal for freezer rooms. Foam Products Corp. makes "cool room" panels of 4-inch urethane bonded by foaming-in-place to zinc-coated steel on the outside and reinforced polyester inside (1). Urethane's moisture resistance minimizes the problem of condensation working into the insulation and freezing. Cost of these panels: $3 to $4 per square foot, installed.

Manufacturer: Foam Products Corp., Thomasville, Ga.

Another approach to freezers consists of two very thin acrylic-coated aluminum sheets bonded with epoxy resin to a 3- or 4-inch slab of Mobay Chemical's urethane board.

Manufacturer: Dade Service Corp., 2160 N.W. 23rd St., Miami, Fla. Urethane: Mobay Chemical Co., Pittsburgh 5, Pa.

Curtain wall panels of steel and Pittsburgh-Corning's "Foamthane" urethane board were installed by Michael Flynn Mfg. Co. for this research building (2). The outer skin is porcelainized steel; the inner skin, zinc-coated steel. With ¾-inch foam, the panels have a U factor of .173. Cost: approximately $3 to $5 for the complete curtain walls.

Manufacturer: Michael Flynn Mfg. Co., 700 East Godfrey Ave., Philadelphia. Urethane: Pittsburgh-Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.

Stainless steel with a decorative pattern forms the outer skin of these panels by American Bridge Division of U.S. Steel (3); the inner skin is vinyl-clad steel, which provides a finished interior surface. The 2⅝-inch core is foamed in place of Hooker Chemical's "Hetrofoam" urethane to conform to the decorative pattern. The size of the panels, 24 by 4 feet, contributed to savings in erection time.

Manufacturer: American Bridge Division, U.S. Steel Corp., Harrisburg, Pa. Urethane: Hooker Chemical Co., Niagara Falls, N.Y.

Acrylic plastic with an integral color and pattern is used as the outer skin of urethane

continued on page 150

continued from page 149

panels by Structural Plastics Corp. (4). Urethane board is bonded to the acrylic and to cement asbestos board for the inner skin. The panel, just over 1 inch thick, has a U value of .12 and costs about $2.75 per square foot, installed. The manufacturer can also supply panels with acrylic or vinyl inner surfaces.

Manufacturer: Structural Plastics Corp., Osseo, Minn.

POLYPROPYLENE WEATHERSTRIP

Polypropylene pile for weatherstripping has been introduced by Schlegel Manufacturing Co. Priced the same as the firm's woven wool materials, the new weatherstripping is said to have the advantages of greater durability and density and a better sliding surface for windows and doors.

Manufacturer: The Schlegel Manufacturing Co., 1555 Jefferson Rd., Rochester 23, N.Y.

NEW FIREPROOFING

A new spray-on fireproofing for steel, called *Albi-Clad,* is available where 1-hour fire ratings are required (tests now under way are expected to add higher ratings). Requiring no preparation of the surface, Albi-Clad is sprayed on 3/16 inch thick; it does not flake off, and color is integral (several colors are available). Suitable for interior or exterior applications, Albi-Clad expands into a foam insulation under the influence of heat. Cost: 40¢ to 55¢ per square foot, installed.

Manufacturer: Albi Mfg. Co., 98 East Main St., Rockville, Conn.

continued on page 153

what's so great about this floor?

feel it . . . it's textured!

that's good?

more than good. . . it's vinyl asbestos tile with fine chips of marble encased in textured translucent vinyl!

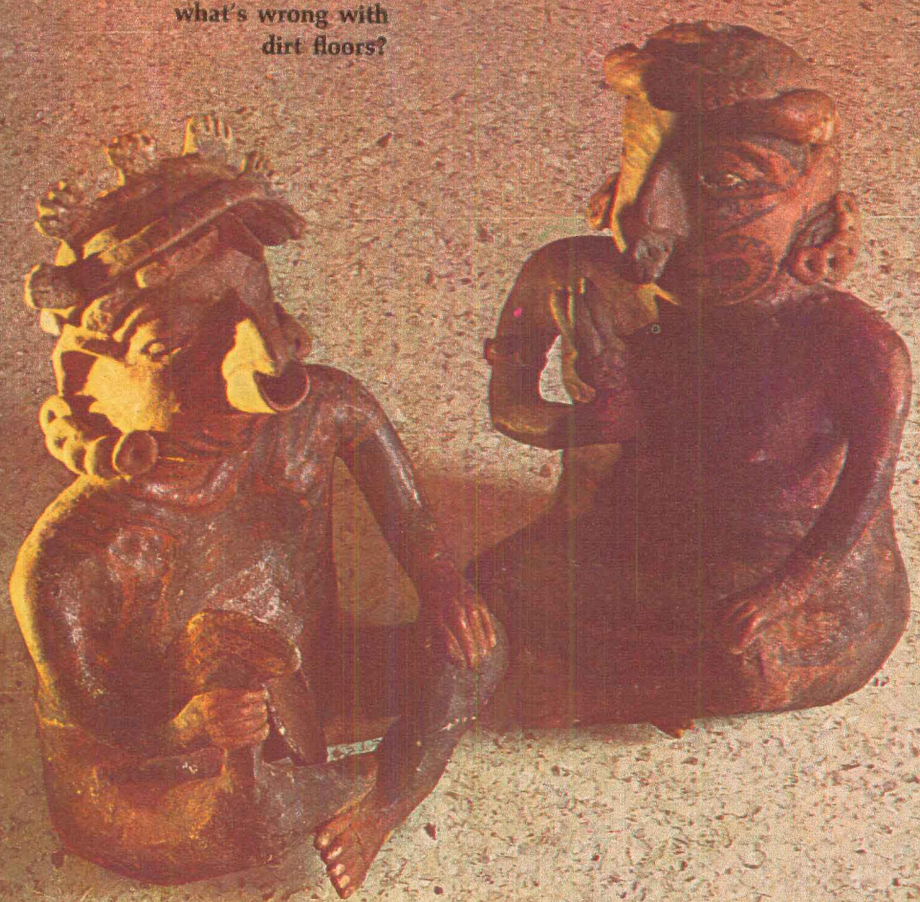
hmm . . . I guess texture helps conceal dents and scratch marks.

yes . . . and it's durable, too—just like all Vina-Lux floors.

what's it called?

Vina-Lux Pebbled Onyx. The man said you can put it down on any kind of floor . . . except dirt.

what's wrong with dirt floors?



an exclusive floor by **AZROCK®**

For samples, see your flooring contractor or write Azrock Floor Products, 506A Frost Building, San Antonio, Texas 78206

City of Atlanta, Ga. hangar for Eastern Airlines
Robert & Company Associates, architects-engineers

ALLIED

helps complete difficult aircraft hangar on time

2,450 tons fabricated and erected for City of Atlanta

This cantilever design hanger provides column-free elbow room for Eastern Airlines jets. Its nine trusses, suspended 168 feet, rest on compression blocks milled to virtually zero tolerance—an extremely difficult fabricating and erecting problem.

Only the very skilled and experienced can perform such work within a normal building schedule. Allied Structural Steel Company gets such results time after time.

Its four big plants get things done in a hurry. In this case, it was the Knoxville plant and Industrial Construction Division. On other jobs, two or more Allied plants may team up to provide correct sequence deliveries.

Ask for an Allied bid on your next structural steel job.

Design and build with structural steel. It's quickly available, goes up fast, fits exactly. It's your key to earlier completion, earlier income from your building.

FABRICATORS AND ERECTORS OF STRUCTURAL STEEL FOR BUILDINGS, BRIDGES AND RELATED STRUCTURES

Fabricating Plants:
Chicago, Illinois; Clinton, Iowa; Hammond, Indiana; Knoxville, Tennessee

Industrial Construction Division: Minneapolis, Minnesota; Chicago, Illinois

continued from page 150

MONOLITHIC FLOORING

Torginol *Duresque* is a new monolithic flooring with exceptional impact resistance and tensile strength. Made of colored resin chips imbedded in a clear fluid glaze, Duresque is suitable for interior or exterior applications (an additional subsurfacing is required for exterior use). Cost: 75¢ to $1 per square foot, installed.

Manufacturer: Torginol of America, Inc., 6115 Maywood Ave., Huntington Park, Calif.

MELAMINE FLOOR TILE

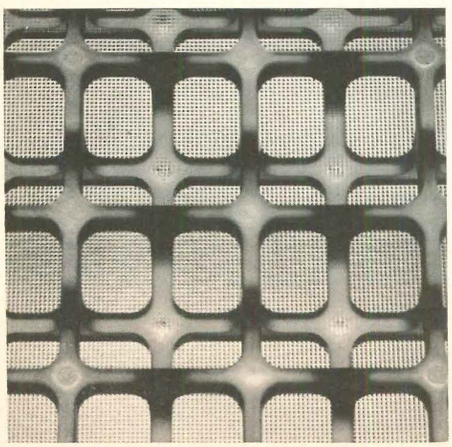
General Electric has announced a new floor tile called *Perma-Kleen,* a high-pressure laminate with a special surface called Poly-Merit. The tile, which offers for flooring a surface similar to the "counter-top" melamine laminates, is being marketed initially through manufacturers of "elevated" floor systems designed for easy access to underfloor services. Perma-Kleen tile has exceptional resistance to stains, cigarette burns, impact and abrasion, and can be kept clean by damp mopping, without any special cleaning agents or waxes. The laminate is .080 inch thick, comes in sizes up to 36 inches square, and can be bonded to any smooth-surfaced backing. Higher initial cost (10 per cent over the best vinyl) is offset by maintenance savings, according to G.E.

Manufacturer: General Electric Laminated Products Dept., Coshocton, Ohio.

ACRYLIC GRILLE

Arts for Architecture offers a new transparent acrylic plastic version of its pierced decorative block (*Products,* Aug. '58). The new two-layered grille has a grey-green tint, measures 24 inches square and 2½ inches thick, and can be used for either ceilings or walls, with or without backlighting. A white opaque styrene version is also available. Cost: $6 per square foot for acrylic, $5 for styrene.

Manufacturer: Arts for Architecture, Inc., 50 Rose Place, Garden City, N.Y.



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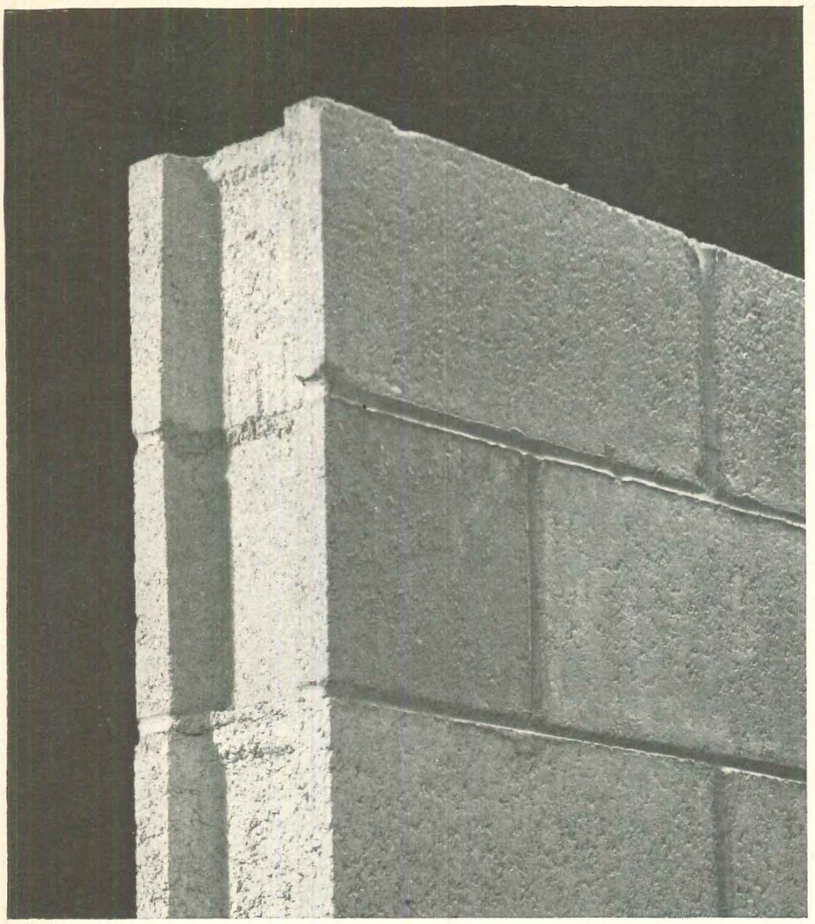
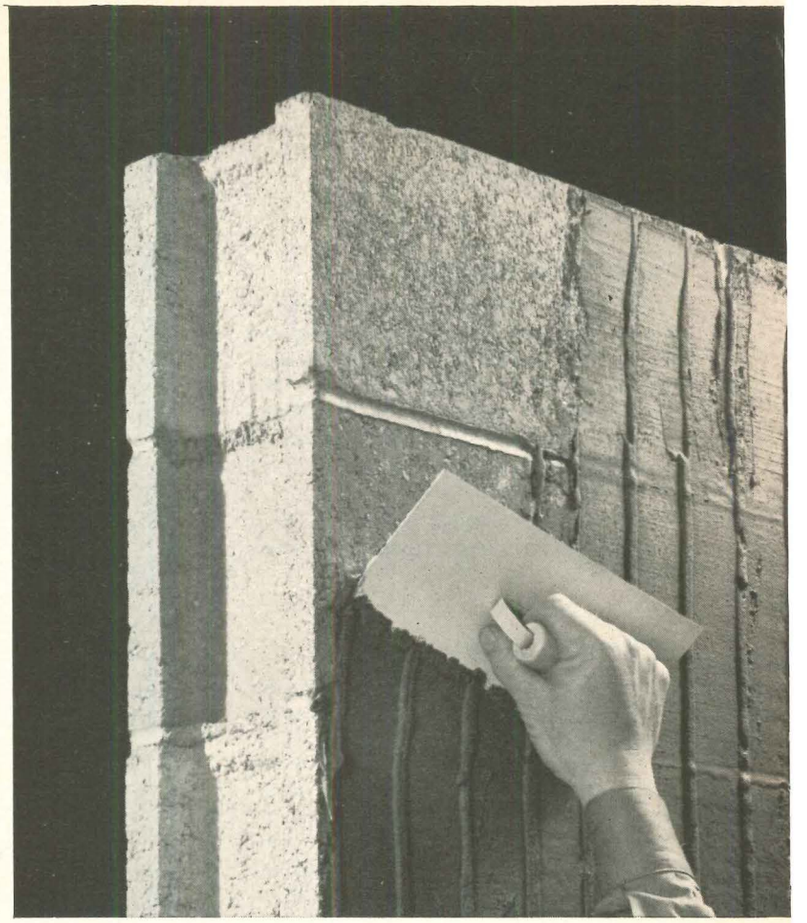
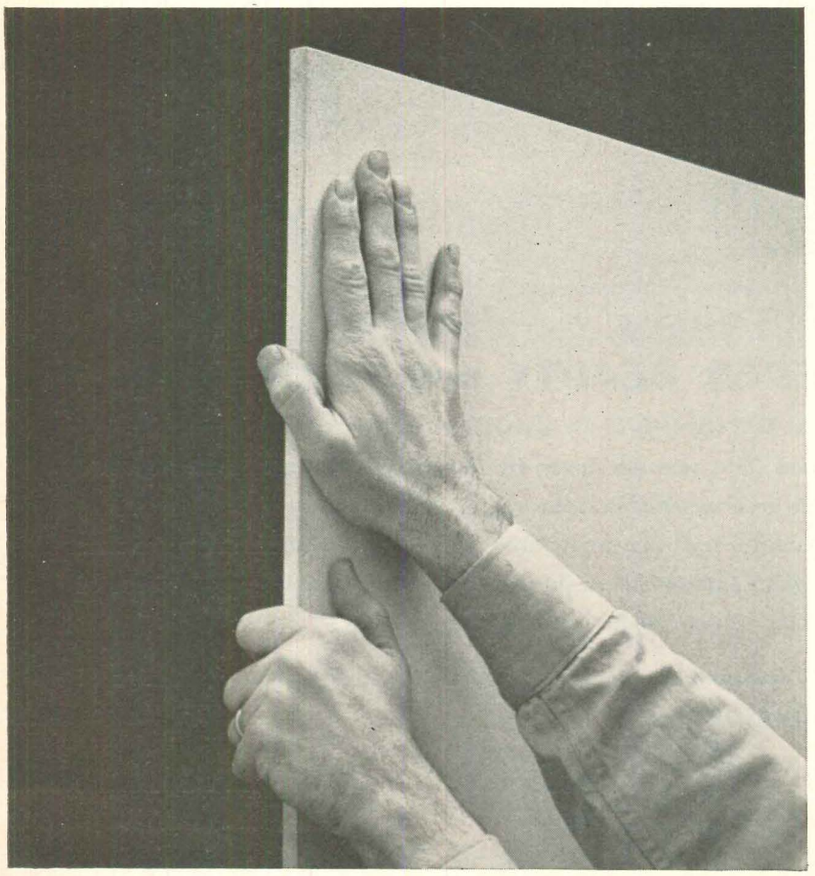


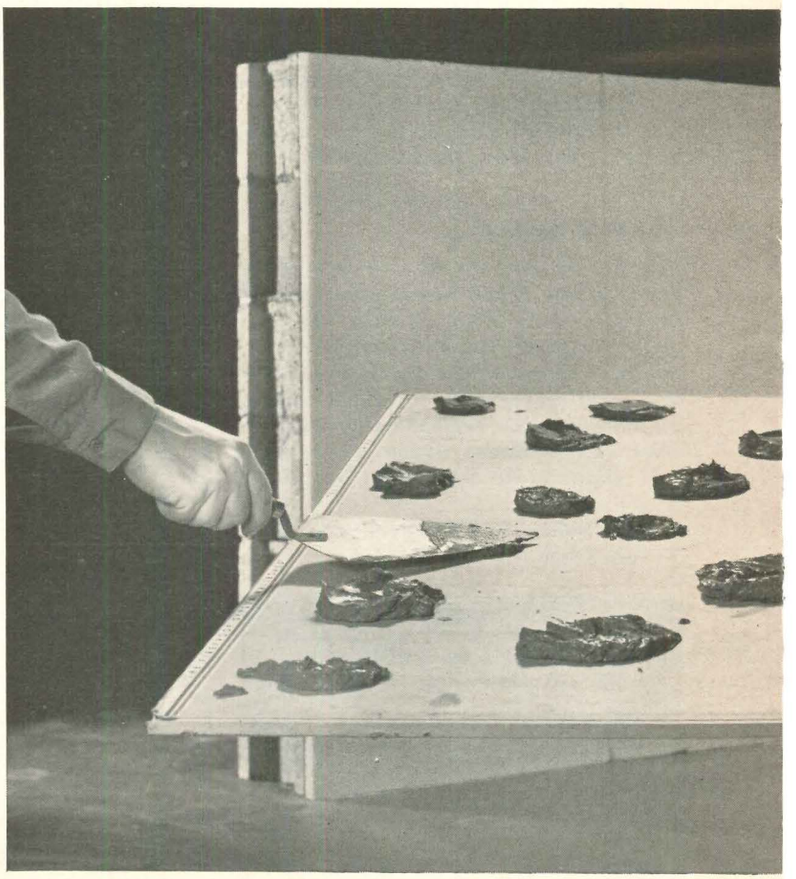
1. To insulate masonry walls *well:*



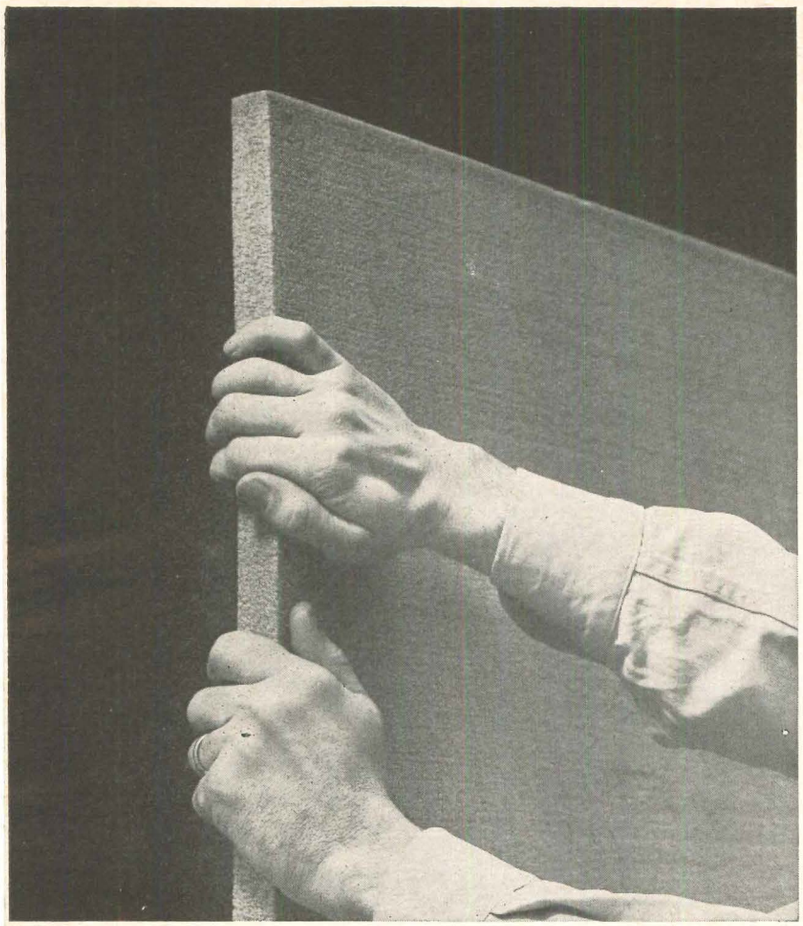
2. Start with Styrotac® bonding adhesive.



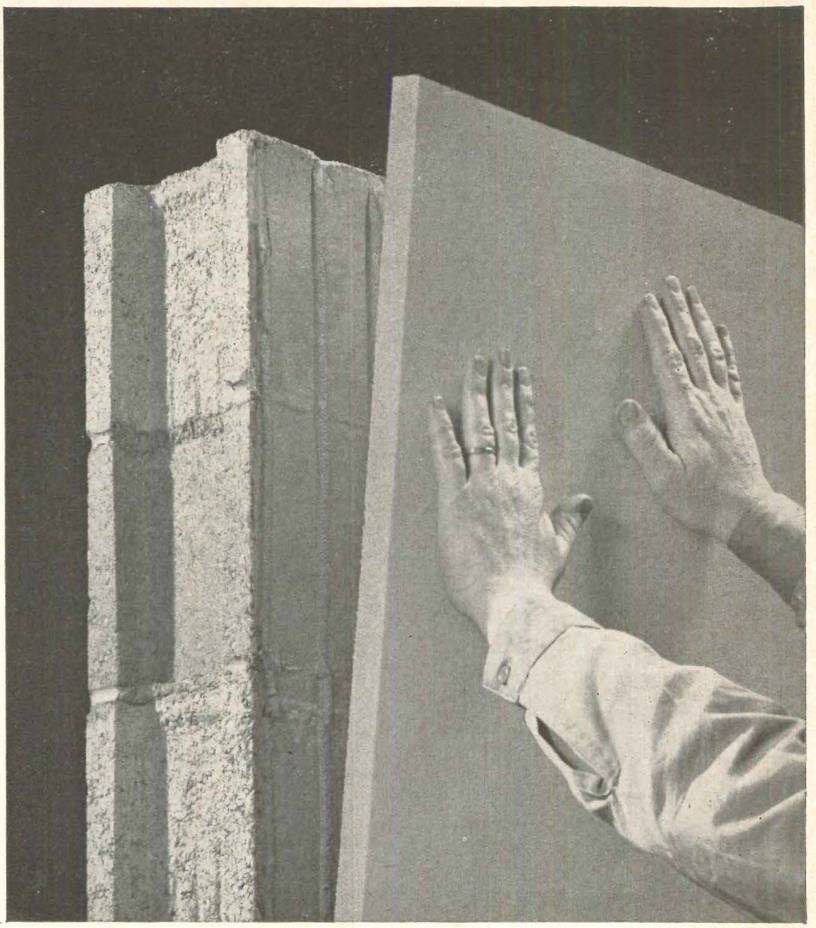
5. Take wallboard. (Forget the vapor barrier.)



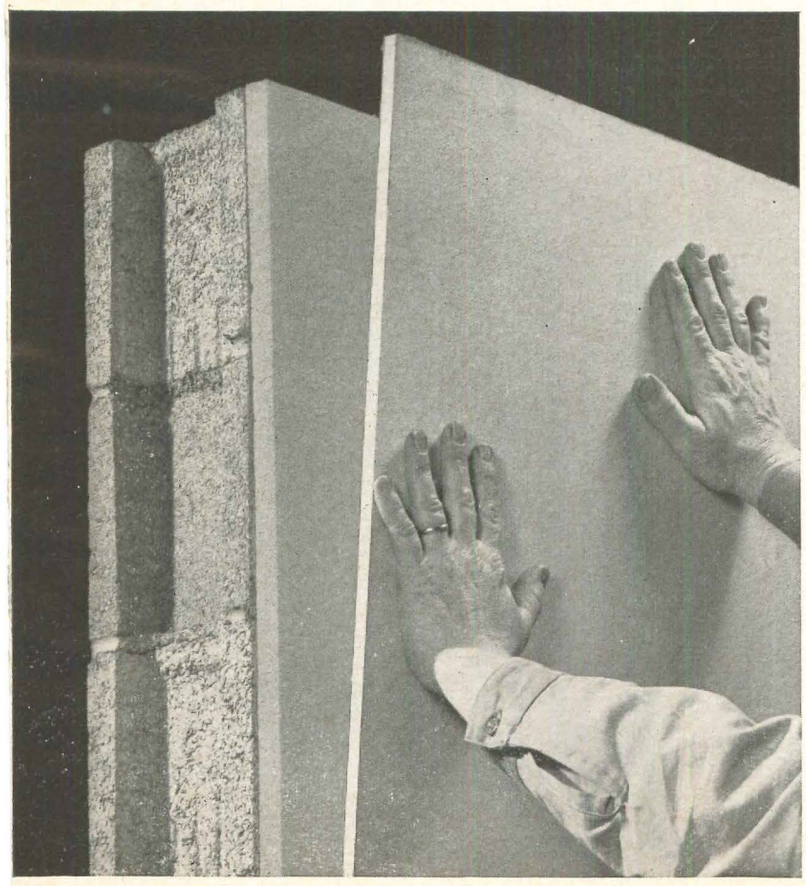
6. Styrotac goes on.



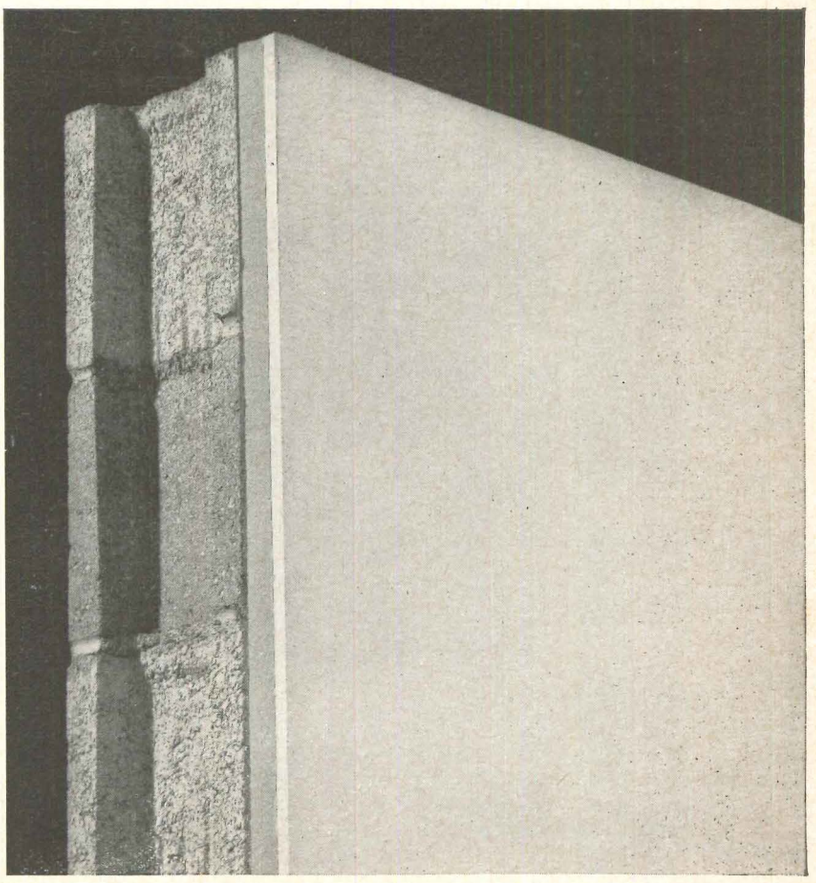
3. Specify Styrofoam® FR insulation board. It prevents moisture absorption and migration; keeps its low "k" factor (0.26!) ***permanently.***



4. Styrofoam FR is pressed into place.

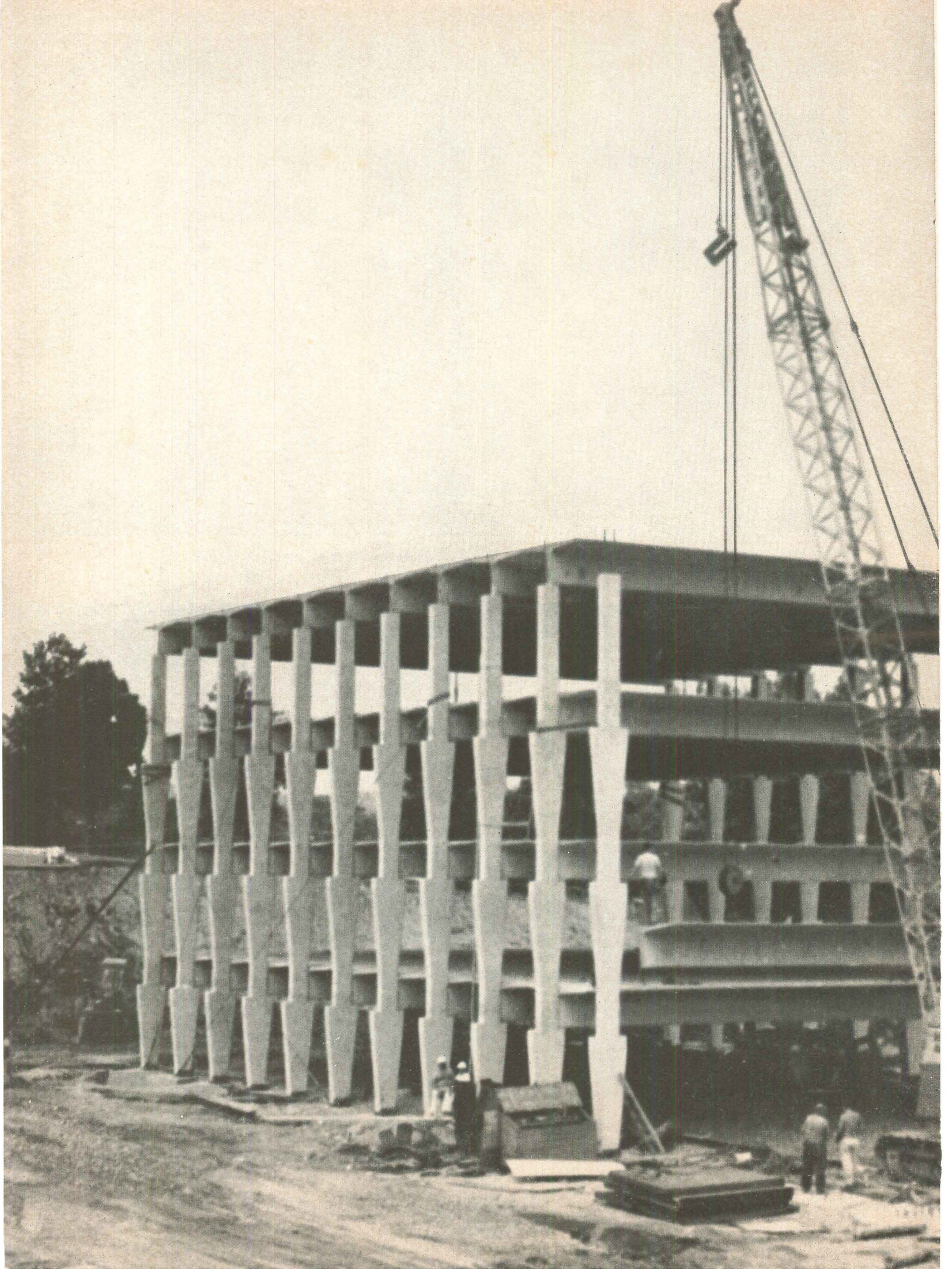


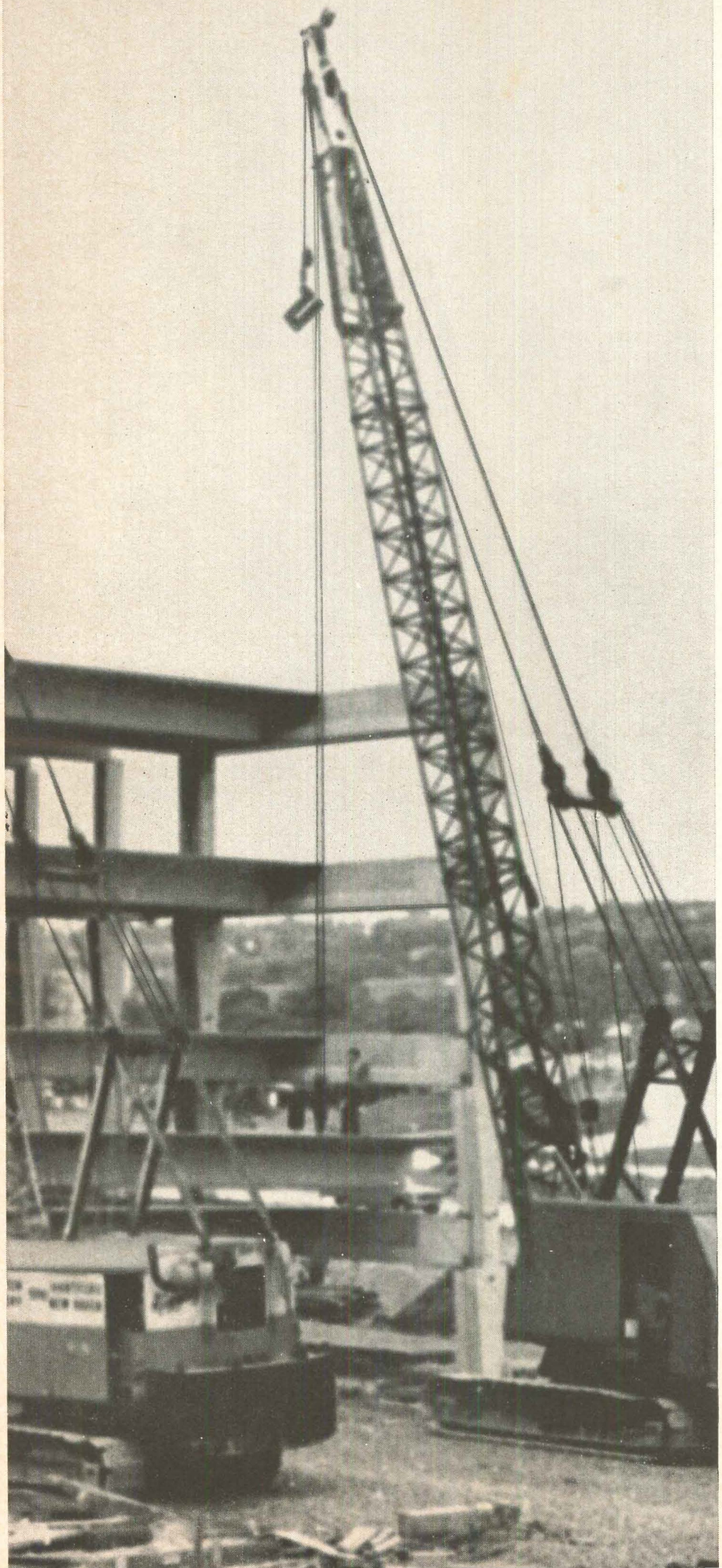
7. Wallboard goes up. Finished wall (8-in. cinder block, 1-in. Styrofoam FR) has U factor of 0.14.

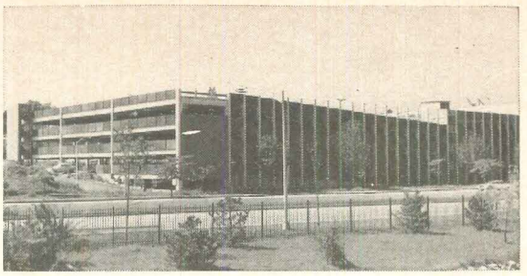


8. Want more data? Consult our catalog in Sweet's Architectural File, or write: The Dow Chemical Company, Plastics Sales Dept. 1003LH12, Midland, Mich.

DOW







The country's largest clear-span prestressed single-tee parking garage . . . 2,200-car capacity. Column-free, prestressed garages aren't outdated by automobile size changes—merely repaint the lines.

Owner: B. Altman & Co., White Plains, New York. General contractor: Turner Construction Company, New York City. Prestressed members fabricated by Blakeslee Prestress, a Division of C. W. Blakeslee & Sons, Inc., New Haven, Conn.

Parking garage capacity 20% greater with prestressed concrete slabs

The pretensioned single-tee slabs in the new B. Altman & Co. parking garage eliminated interior columns, except those required to support the ramp, and provided a clear span of 62′ for more usable floor space. As a result, 20% more cars can be parked in the same area.

Here's how it worked. The single-tee slabs, each 9′0″ wide and 36″ deep, were fabricated at the Blakeslee Prestress plant at New Haven, Conn., and trucked to the job site. Erection by two cranes was at the rate of 5,000 sq. ft. per day. This speed of erection is of great financial importance to owners. The contract was signed on July 1 and the first two bays were ready to produce income by October 11.

Prestressed Concrete Advantages—Longer clear spans are obtained through efficient use of concrete and high-tensile wire. The resultant structure is fireproof and maintenance costs are low. Erection and occupancy are completed in less time. Low dead weight, obtained by prestressing, is another great advantage of this type of concrete construction.

For complete information on USS American Super-Tens Stress-Relieved Strand or other construction products, write American Steel and Wire, Dept. 3408, Rockefeller Building, Cleveland, Ohio 44113.

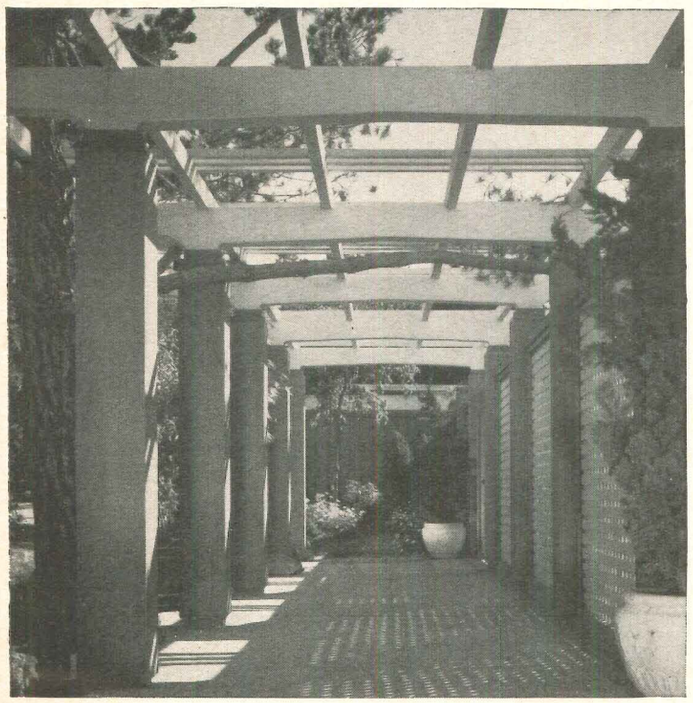
USS American Steel and Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel International (New York), Inc.

Tree and house demonstrate wood's naturally wonderful way with a site. Planked siding and decking, exposed overhangs, and weathered shingle roofing all contribute to this home's friendly feel for its rustic surroundings. Architects: Burde, Shaw & Associates, Carmel, California.

For domestic comfort in exciting form

use WOOD . . . and your imagination



Latticed walls, square columns, and arched and criss-crossing members of wood overhead form a sunny welcome for a walkway entrance to this contemporary home; show still more of wood's wealth of uses.

Be different with wood in structures for living. Work freely with its flexibility. Take advantage of its economies. Plan new daring with its versatility in roofing, siding, paneling, and flooring. Depend on its natural suitability to any site.

Outside, changing seasons treat wood beautifully. Inside, wood treats changing moods warmly. Its inherent sound-subduing qualities, insulating characteristics, and resilient strength all contribute to generations of comfortable residence. Wood's infinite grains, tones, and textures invite the use of other materials . . . make a house even more to come home to. For additional information on designing with wood, write:

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

nlma

find the better way with **wood**

A dining room of wood creates a tasteful setting with paneled walls, plank and beam ceiling, and complementing Spanish-style furniture. Note, too, the lattice-like wood doors for airy privacy.

Italic line indicates advertising agency

Allied Structural Steel Company 152
The Fensholt Advertising Agency

American Olean Tile Co. 138
Arndt. Preston. Chapin. Lamb & Keen, Inc.

American Steel & Wire Division (United States Steel Corp.) 156, 157
Batten, Barton, Durstine & Osborn, Inc.

American Telephone & Telegraph Co...40PE-9
N. W. Ayer & Son, Inc.

Armstrong Cork Company .....8, 17 thru 24
Batten, Barton, Durstine & Osborn, Inc.

Bell & Gossett Company 61
Donald L. Paus Advertising

Bestwall Gypsum Company 162
Thomas & David, Inc.

Bristol Silica Company 62 W-6
Tycer Advertising

B. Brody Seating Company 42
Mandabach & Simms

Certain-Teed Products Corp. 48
Thomas and David, Inc.

Chicago Hardware Foundry Co. 32
Wilson Advertising Service

Cole Steel Equipment Co., Inc. 12
Gordon, Weiss and Arbusto, Inc.

Columbia-Geneva Steel Div. U.S. Steel Corporation 62 W-1
Batten, Barton, Durstine & Osborn, Inc.

Concrete Joint Institute 42
Ross Llewellyn, Inc.

Corry Jamestown Mfg. Corp. 37, 38, 39, 40
Ketchum, Macleod & Grove, Inc.

Dover Corp., Elev. Div. 2, 3
Greenhaw & Rush, Inc.

Dow Chemical Company 154, 155
MacManus, John & Adams, Inc.

du Pont de Nemours & Co., E. I. 130, 131
Batten, Barton, Durstine & Osborn, Inc.

Dur-O-waL 66
Roche, Rickerd, Henri, Hurst, Inc.

Eastern Products Corporation 40 PE-8
The S. A. Levyne Company

Eastman Chemical Products, Inc. 52, 53
J. Walter Thompson Company

Edison Electric Institute 136
Compton Adv. Inc.

Ellison Bronze Co. 153
Griffith & Rowland

Fiat Metal Mfg. Co. 126
Christopher Advertising Counsel

Fibreboard Paper Products Corp. Pabco Gypsum Div. 62 W-5
Cunningham & Walsh, Inc.

General Electric Company 6
Young & Rubicam, Inc.

General Electric Co. Wiring Device Dept. 26, 27
Noyes & Company, Incorporated

Goodyear Tire & Rubber Company ..40 PE-12
Kudner Agency, Inc.

Guth Company, The Edwin F. 139
H. George Bloch, Inc.

Hager C. & Sons Hinge Mfg. Co......144
Batz-Hodgson-Neuwoehner, Inc.

Hanley Co., Inc. 146
The Albert P. Hill Co., Inc.

Haughton Elevator Co. 16A
Beeson-Richert, Inc.

The E. F. Hauserman Co. 142, 143
Meldrum & Fewsmith, Inc.

Haws Drinking Faucet Co. 150
Pacific Advertising Staff

Hillyard Chemical Company 41
Winius-Brandon Company

Hope's Windows, Inc. 135
The Moss-Chase Company

International Pipe and Ceramics Corp. .. 36
Hixson & Jorgensen, Inc. Adv.

International Steel Co. 145
Keller-Crescent Co.

Invincible Metal Furniture Co. 145
Klau-Van Pietersom-Dunlap, Inc.

I-XL Furniture Co., Inc. 58, 59
Aves Advertising, Inc.

Johns-Manville Corporation 50, 51, 54, 55
Cunningham & Walsh, Inc.

Kaiser Aluminum & Chemical Corp. ..40 PE-13
Young & Rubicam, Inc.

Kentile, Inc. .....Cover IV
Benton & Bowles, Inc.

Koppers Co., Inc. 40 PE-1, 2, 3, 4, 5, 6
Batten, Barton, Durstine & Osborn, Inc.

Lehigh Portland Cement Company 125
Lewis & Gilman, Incorporated

Lone Star Cement Corporation 30
Hazard Advertising Company, Inc.

McKinney Mfg. Co. 40 PE-10
W. S. Hill Company

The Miller Company 64
William Schaller, Co., Inc.

Minnesota Mining & Mfg. Co. 43, 44
Erwin Wasey, Ruthrauff & Ryan, Inc.

Mississippi Glass Co. 147, 148
Ralph Smith Advertising Agency

Mo-Sai Institute, Inc. 48, 49
David W. Evans & Associates

National Gypsum Company 65
Corbett Advertising, Inc.

National Lumber Manufacturers Assn. 158, 159
Van Sant, Dugdale & Co., Inc.

Omni, Div., of Aluminum Extrusions 32
Wm. John Upjohn Associates

Otis Elevator Company 127
G. M. Basford Co.

Overhead Door Corporation 140, 141
Fulton, Morrissey Co.

Owens-Corning Fiberglas Corp. 62 W-2, 3
McCann-Erickson, Inc.

Peerless Steel Equipmnt Co. 132
Norman A. Strang, Advertising

Conrad Pickel Studio, Inc. 32
Agency-Direct

Pilkington Brothers, Ltd. 33
Pritchard, Wood & Partners, Ltd.

Portland Cement Association .....Cover III
J. Walter Thompson Co.

Republic Steel Corp. 28, 29
Meldrum & Fewsmith, Inc.

Reznor Mfg. Co. 40 PE-11
Meek and Thomas, Inc.

Riverside Cement Co. 62 W-4
Carson/Roberts, Inc.

Ruberoid Company, The Floor Tile Division 34
Kastor, Hilton, Chesley, Clifford & Atherton, Inc.

Sanymetal Products Co., Inc., The ...40 PE-7
Belden, & Franz & Lehman, Inc.

Sloan Valve Company 4
Reincke, Meyer & Finn, Inc.

Spencer Turbine Co. 16
William Schaller Co., Inc.

Stem, Chester B., Inc., ...60
Robert E. House Advertising Consultants

Tile Council of America 128
Fuller & Smith & Ross, Inc.

Tyler, W. S., Co., The .....Cover II
The Griswold-Eshleman Co.

United States Plywood Corp. 133, 134
Kenyon & Eckhardt, Inc.

United States Steel Corp. (American Steel & Wire Division) ..156, 157
Batten, Barton, Durstine & Osborn, Inc.

United States Steel Corp. (Columbia-Geneva Steel Div.) 62 W-1
Batten, Barton, Durstine & Osborn, Inc.

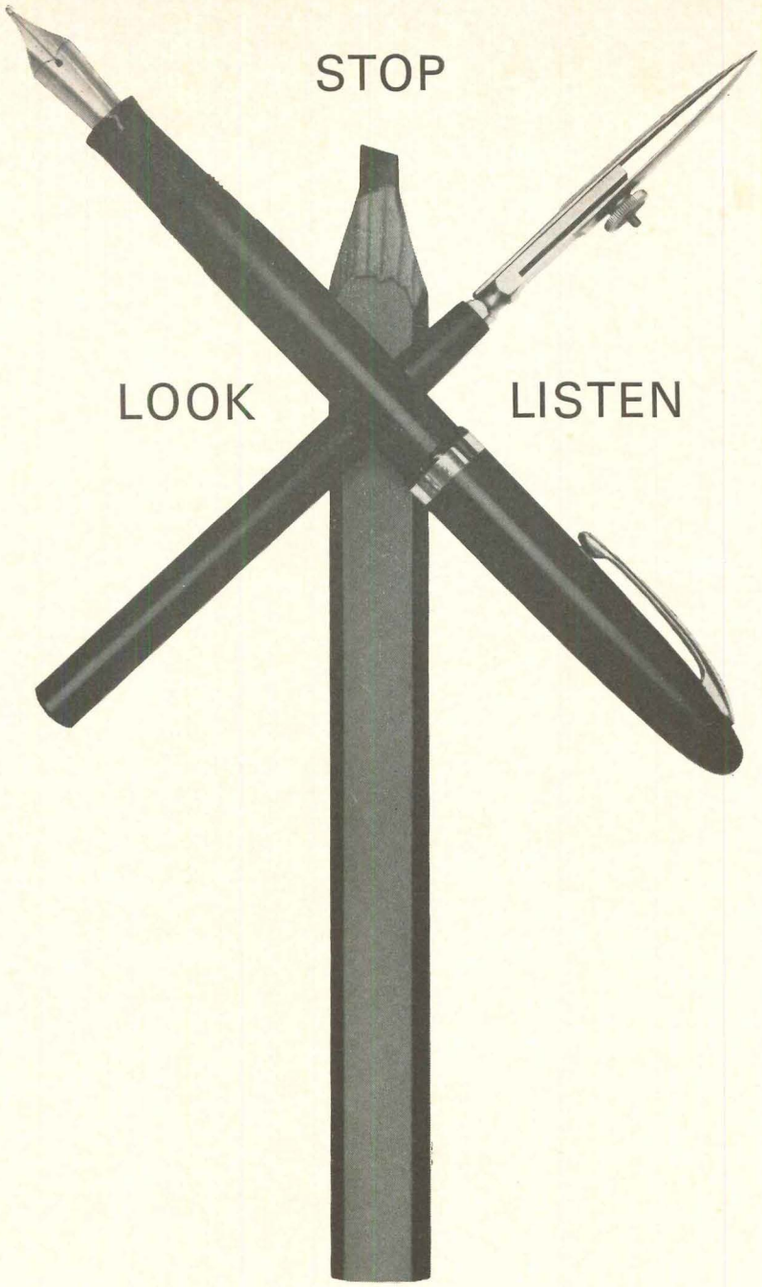
United States Steel Corp. 56, 57
Batten, Barton, Durstine & Osborn, Inc.

Universal Atlas Cement Co. (United States Steel Corp.) 137
Batten, Barton, Durstine & Osborn, Inc.

Uvalde Rock Asphalt Co. 151
Glenn Advertising, Inc.

Vogel-Peterson Co. 42
Ross Llewellyn, Inc.

Walcon Corporation 62
Gray & Kilgore, Inc.



For building product advertisers there's only one destination that counts: SALE. The route may seem devious and frustrating, especially if you set off in three separate directions—to reach architect/engineers, contractor/-subcontractors and client/owners—just to arrive safely at one SALE.

There is, however, an express line to all three of these building product customers. That line is Architectural FORUM. To get all three on board at the same time, FORUM carries regularly the three primary building topics which interest them most: the art of architecture, the technology of construction and the economics of building—interlocking one to the other.

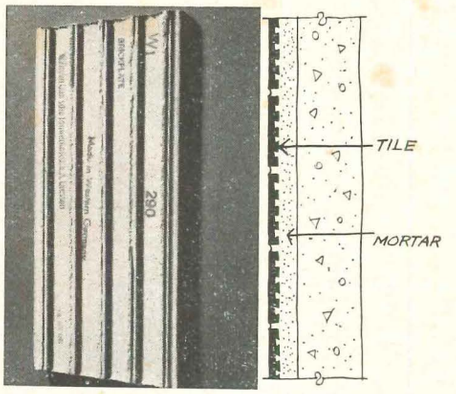
Because of this three-way editorial approach, FORUM is able to get all three buying prospects to stop, look, and listen* while you make your pitch.

FORUM's essential difference? One track to reach all three to make one sale.

*FORUM's "stop-look-listen" appeal with its 62,500 subscribers: Readex readership studies of FORUM prove that its editorial and advertising pages are of equal interest to architects, contractors and clients alike. This year's top rated article was of interest to 90% of FORUM's total audience; top rated advertisement of interest to 69%. FORUM has "stop-look-listen" appeal for award juries too: FORUM has received Industrial Marketing's top award for the best single issue of the year (January 1963).

FORUM: *essentially different—for readers... and for advertisers*

continued from page 153



IMPORTED CERAMIC

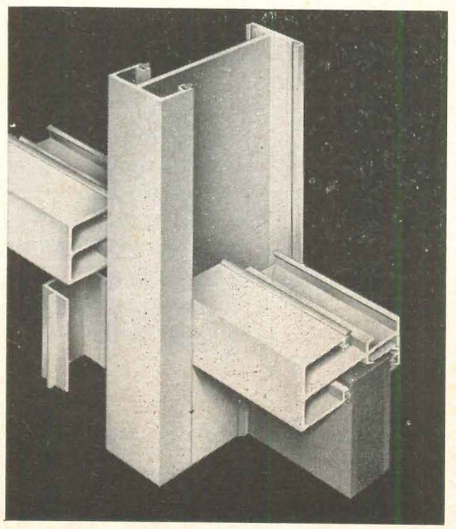
A ceramic surfacing with a unique dovetail back is now being imported from the German firm of Wilhelm Gail. Called *Brickplate,* the tile-like panels come in several patterns suitable for interior or exterior use; the dovetail backing (diagram) gives the extra strong attachment required for large vertical applications. Cost: $1.75 to $2.50 per square foot, installed.

Distributor: Gail International Corp., 582 Market St., San Francisco.

"STICK" WALL SYSTEM

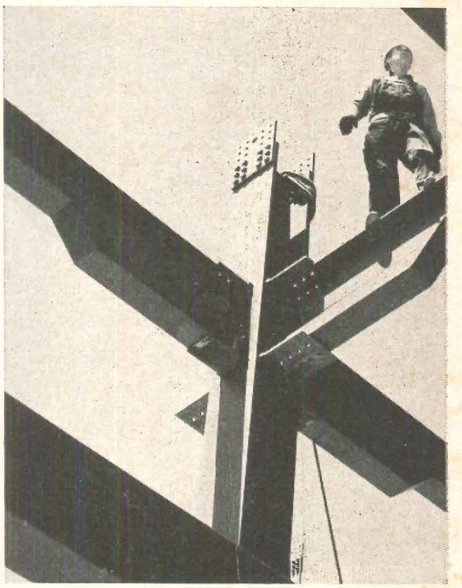
The Arcadia S-45 aluminum exterior wall system consists of a series of "stick" members 1¾" wide which can be joined with no screws or fasteners at all (diagrams). The basic units are a vertical mullion, a horizontal header, and a sill, plus snap-in glazing extrusions. The system takes any wall components (panels, windows, doors) from 3/16 inch to 1½ inch in thickness. It is weatherproof and has high wind resistance. Installation is fast and simple, with no shop drawings required. Cost: under $3.00 per square foot for a typical installation, including fixed panels and windows.

Manufacturer: Northrop Architectural Systems, 5022 Triggs St., Los Angeles 22.



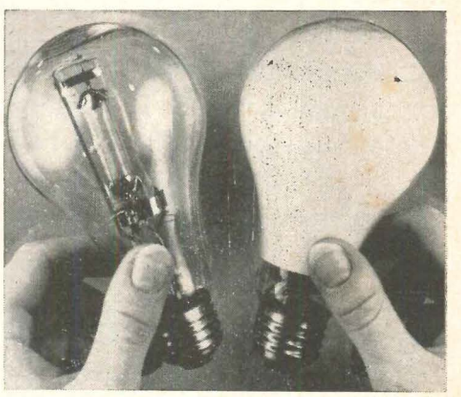
WELDED STEEL BEAMS

The San Francisco headquarters of Pacific Telephone & Telegraph Co. is the first building whose steel frame is made entirely of welded members from Kaiser Steel's new plant at Montebello, Calif. The new facility, using Kaiser's automatic continuous beam welding machinery, produces standard shapes as well as special ones such as the



"haunched" beams shown above, unsymmetrical sections, or beams composed of two grades of steel. The plant is also the first West Coast source of major structural steel.

Manufacturer: Kaiser Steel Corp., Montebello, Calif.



NEW MERCURY LAMP

General Electric has announced a new 100-watt mercury lamp the size of a regular household bulb, but which will last 13 times as long (10,000 hours) and produce about twice as much light. It comes in a clear version ($13.50), or color-improved ($14) for situations where the characteristic blue-green mercury color is undesirable.

Manufacturer: General Electric Large Lamp Dept., Nela Park, Cleveland. END

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

CAMPUS LIVING IN THE ROUND

Precast concrete curtain walls give space for 40 extra rooms

The new dormitory towers for men at the University of Pittsburgh adapt to the modern scene the traditional house system used in England for centuries. Here the "houses" are separate, self-contained units each 3 stories high, stacked one above the other in the circular towers. Each of the 1,868 resident students enjoys an outside room.

The towers are structural concrete throughout. Finished to match the limestone of the older University buildings, enclosing panels of precast concrete are just 5 inches thick, including sandwich insulation. They conserve 7,300 sq. ft. of floor space that would have been lost with conventional walls. Today, the versatility of modern concrete is stimulating a whole new trend in architectural design.

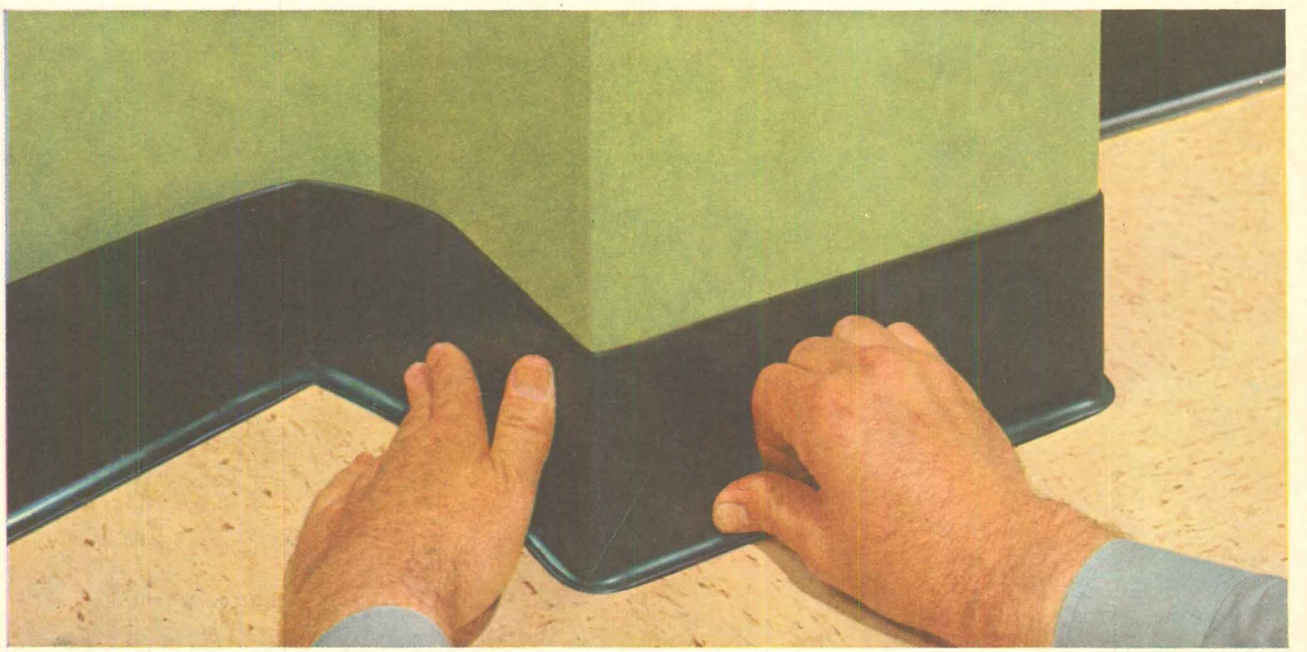
PORTLAND CEMENT ASSOCIATION An organization to improve and extend the uses of concrete

Men's Dormitory Units, University of Pittsburgh • Architects: Deeter & Ritchey, Pittsburgh • Structural Engineer: Martin C. Knabe, Inc., Pittsburgh • General Contractor: Dick Corporation, Pittsburgh

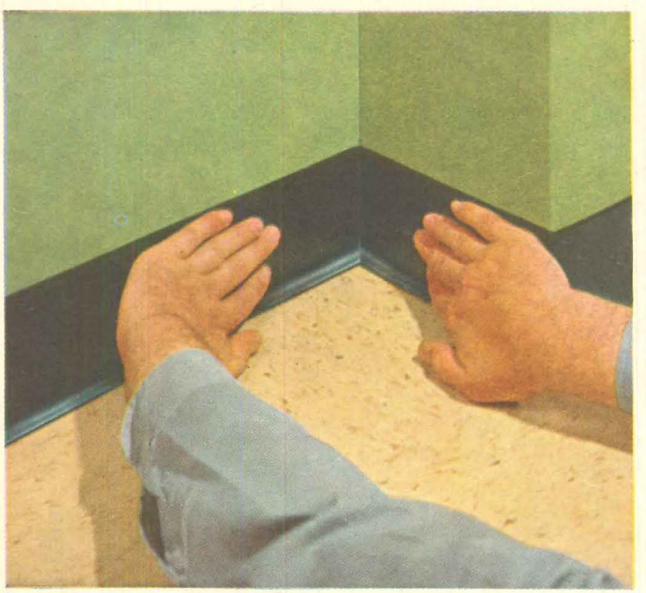
GOOD THINGS TO KNOW ABOUT

KENCOVE

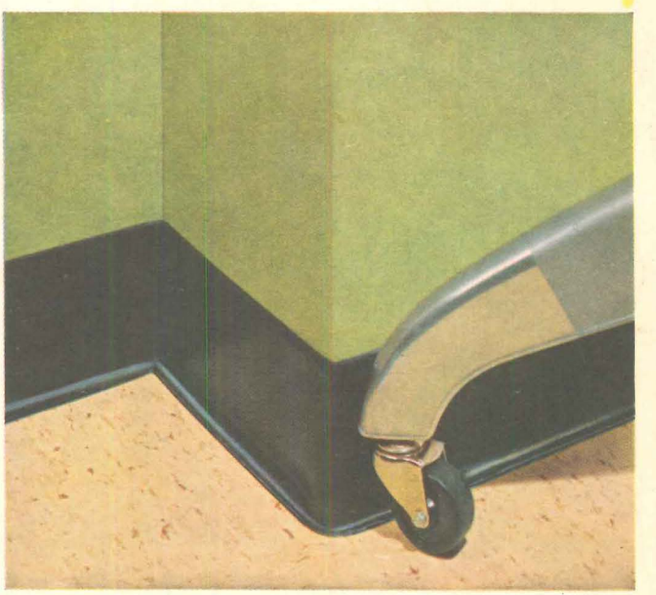
VINYL WALL BASE:



1. CORNERS CAN BE FORMED RIGHT ON THE JOB with KenCove's 48″ lengths. Eliminates unsightly seams of factory preformed corners.



2. MORE ATTRACTIVE INSIDE AND OUTSIDE CORNERS. Because base and corner are one piece, there's no danger of shade variation when you use KenCove® Vinyl.



3. CORNERS WON'T KICK OFF. KenCove corners are part of the base itself, not separate pieces. Ruggedly suited to stand up under accidental abuse.

NOTE: No shrinkage problem with KenCove Vinyl. Never needs painting. Easy to clean. Colors: 7; heights: 2½″, 4″, 6″; length: 48″.

KENTILE FLOORS