

INTERNATIONAL FORUM THE MAGAZINE OF BUILDING

MAY 1958

FORUM



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Department Store,
Alhambra, Calif.

Architect: Carl Maston,
Los Angeles

Floor shown: V-423 Autumn Haze



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PUBLISHER'S NOTE

Last month the editors published the fifth and last installment of their series "What it Takes to be a Client." This month, in response to reader demand, they have reprinted the entire series as a 24-page booklet. It is available at 50 cents a copy prepaid. Directed at



the inexperienced building client, the reprint tells him how to pick an architect, what to expect of him, how to work with him, how to deal with contractors, and how to behave during the construction process.

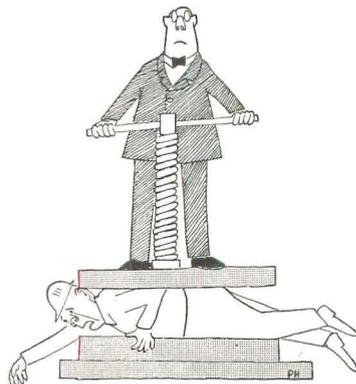
Among the magazines dealing with architecture and building, only FORUM would present a series of articles for clients, for only FORUM is read by clients as well as architects and contractors. In addition to some 13,000 architectural subscribers in the U.S. and Canada, FORUM's 63,000 circulation includes 23,000 clients of one kind or another. About 13,000 of these are building-minded men on the staffs of industrial companies, department stores, hotels, restaurant chains, utility companies, and such institutions as colleges, schools, hospitals, and churches; about 3,000 represent the building departments of local, state, and federal government agencies; some 3,000 are real estate owners, managers, and brokers; and close to 4,000 more are affiliated with building finance institutions and miscellaneous organizations.

Not every client subscription represents a different company or

institution, for among the bigger clients there are, of course, many multiple subscriptions to FORUM. For example, at far-flung American Telephone & Telegraph, the building industry's biggest client, 72 different people are subscribers. Other examples:

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FORUM is edited for such clients and its circulation among them is encouraged because the editors are convinced that quality architecture and quality building flourish when clients are informed. When they are not, the architect's job is often more difficult, and the design and building process is often delayed.



So, if you are a client and missed the original FORUM series on your part in the building partnership, the editors have a reprint for you. And, if you are an architect or contractor, the articles were also reprinted in your interest—perhaps you know a client or two who would benefit by reading what the editors said.—J.C.H., JR.

PIER LUIGI NERVI 78

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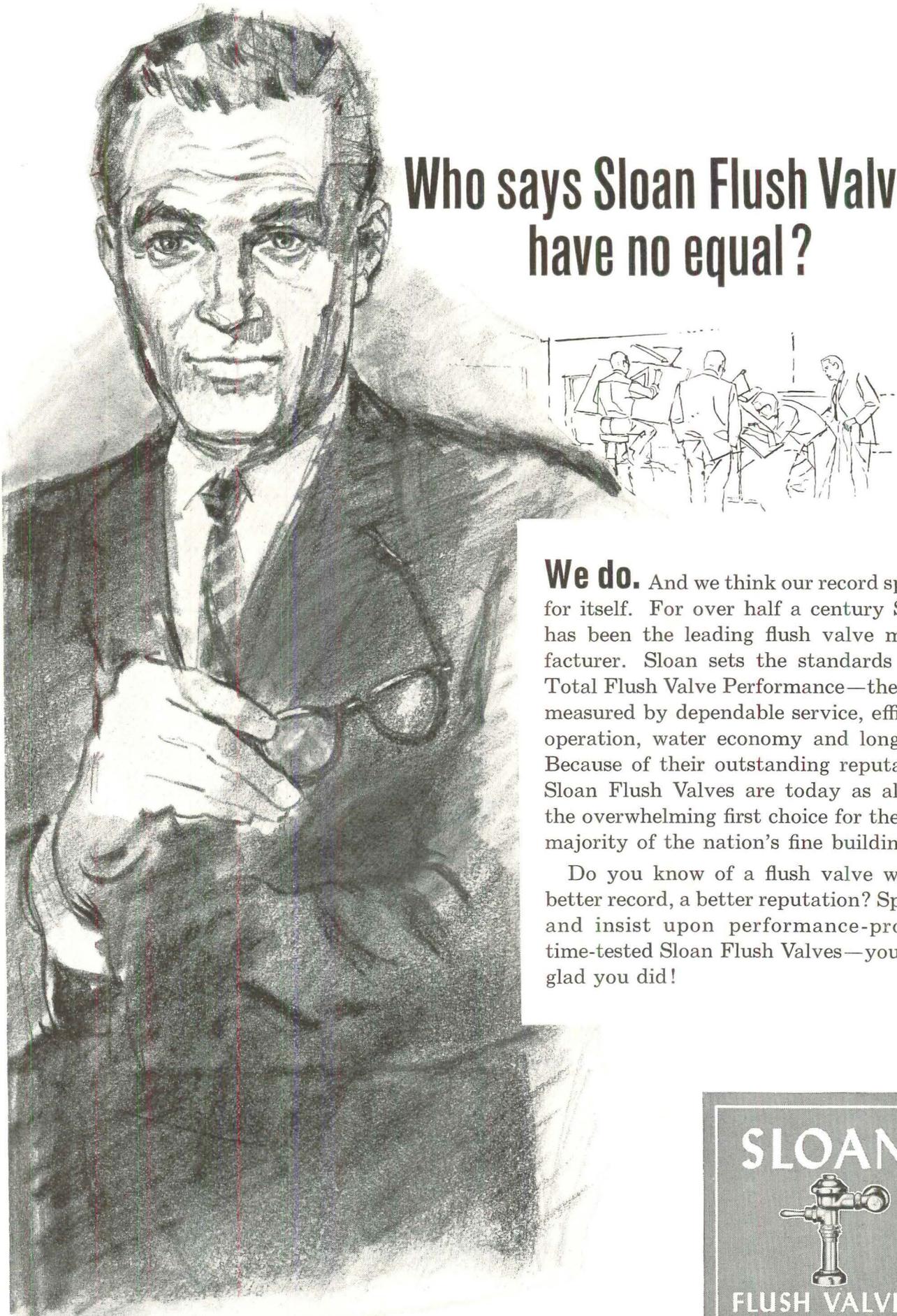
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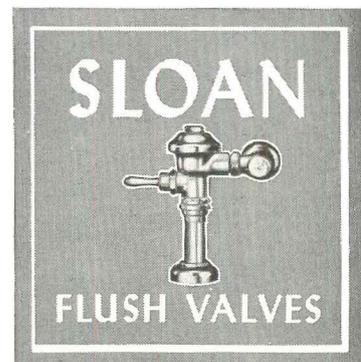
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ALASKA QUAKE DAMAGES ALL BUILDING TYPES

Data inconclusive; codes under debate

ANCHORAGE—In the wake of the Good Friday earthquake, which left more than 125 Alaskans dead or missing and damage estimated at upward of \$500 million, investigators from a number of building materials associations joined local officials in trying to determine which types of structures held up best and why. First reports were sketchy, at best, and seemed likely to remain so for some time.

According to Anchorage Building Inspector John Yates there was actually little pattern to the damage; it was greatest where the quake itself hit hardest, regardless of the type of construction. Nevertheless, he offered a tentative assessment. "Reinforced concrete buildings poured in place withstood the earthquake best," Yates declared. Steel frame construction with nonbearing curtain walls also performed well but concrete block buildings fared poorly, he reported. Lift slab type structures, Yates added, were a "complete failure." Wood frame build-



Shocks buckled the roof of a partially completed, prestressed concrete building

ings came through very well.

The American Plywood Association, among the first industry groups to get an investigating team on the spot, attributed the surprisingly low loss of life directly to Anchorage's rigid code, modeled after the 1961 revision of the Uniform Building Code of the International Conference of Building Officials. In citing what it termed the "superb performance" of residential construction, APA noted that for the greater Anchorage area, with a population of about 100,000, only 15 people were listed dead or missing, whereas in last summer's quake in Skopje, Yugoslavia, 1,070 of the city's 200,000 residents were killed.

While Alaskans pondered the awesome task of rebuilding their shattered economy (and received an immediate \$50 million grant from Congress), the Anchorage building department organized local architects and engineers into structural survey teams. Two new 14-story apartment buildings were promptly declared unsafe for occupancy and the city has asked the Corps of Engineers to determine whether the structures can be repaired or must be torn down. The year-old, five-story J. C. Penney Store was ordered demolished after its floors had collapsed and its heavy concrete curtain wall

panels had fallen off.

Almost none of the damaged property was covered by earthquake insurance since the FHA did not require it.

Following the disaster there was considerable talk in Anchorage about the city's building code, which requires "Seismic Zone 3"

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construction, the highest standard. "There may be need for some new basic design standards," said City Manager Robert Oldland, viewing the wreckage. Others disagreed, arguing that the code itself is adequate but that more stringent enforcement procedures may be necessary.

First quarter construction soars

WASHINGTON, D.C.—In step with the nation's surging economy, total U.S. construction volume rose a spectacular 11.2 per cent in the first quarter of 1964 over the comparable period last year. Heavy advances were recorded by hospitals and institutions

(37.3%), public service and administrative facilities (25%), apartments (21.3%), industrial buildings (18.7%), and hotels, motels, and dormitories (18.3%). The sole decline was registered by religious buildings, which fell off 7.7 per cent.

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NEW CONSTRUCTION EXPENDITURES, FIRST QUARTER 1964 AND 1963

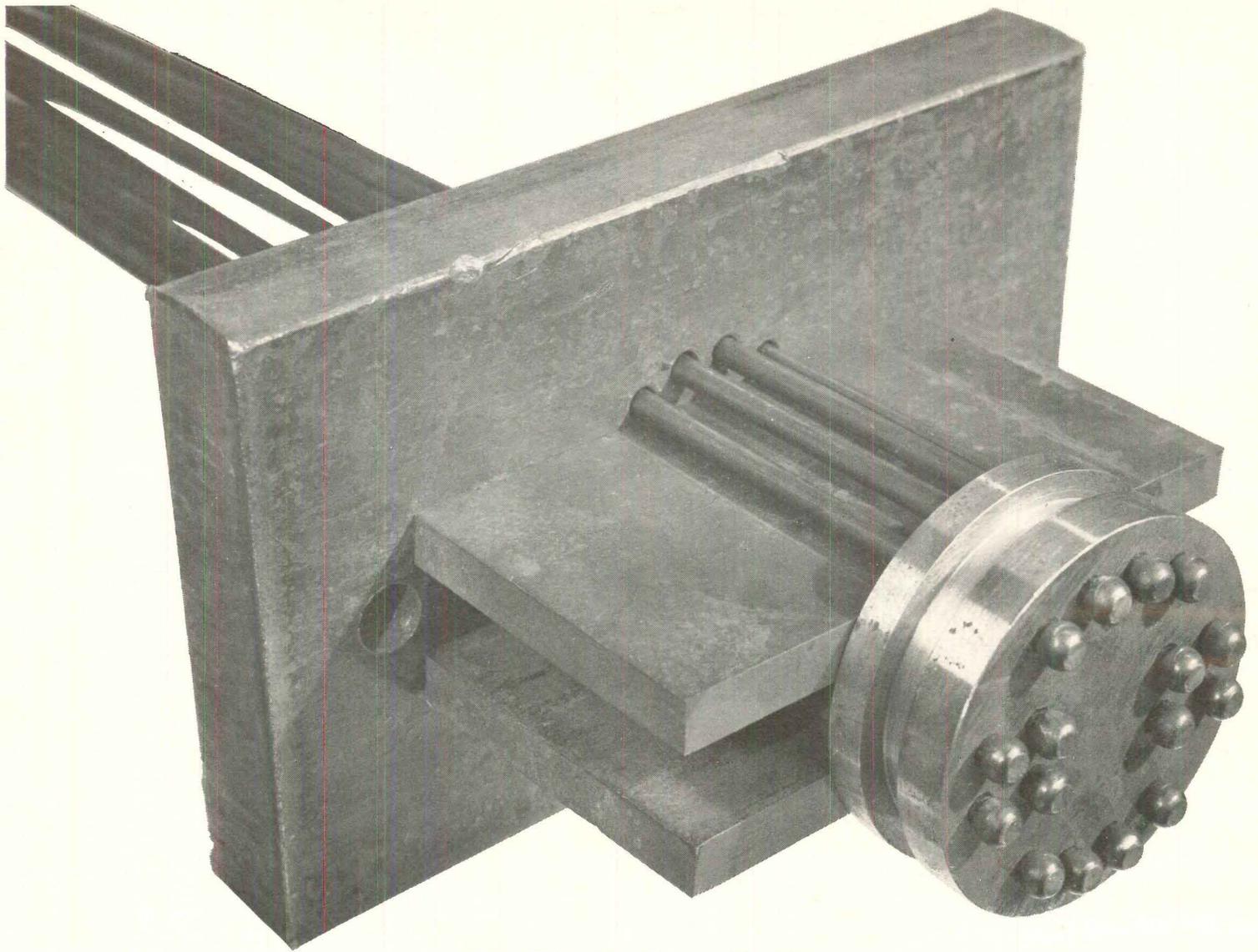
	1964			1963 Total	% Change in Totals
	(millions of dollars)				
	Private	Public	Total		
BUILDING CONSTRUCTION	\$4,849	\$1,693	\$6,542	\$5,668	15.4
Industrial	896	99	995	838	18.7
Office and warehouse	780	....	780	686	13.7
Store, restaurant, and garage	481	....	481	451	6.7
Religious	217	....	217	235	-7.7
Educational	162	716	878	822	6.8
Hospital and institutional	317	114	431	314	37.3
Social and recreational	139	42	181	160	13.1
Public administrative and service	....	180	180	144	25.0
Apartment	1,108	30	1,138	938	21.3
Hotel, motel, and dormitory	323	90	413	349	18.3
All other building	426	422	848	731	16.0
HOUSE CONSTRUCTION	3,875	70	3,945	3,705	6.5
ALL OTHER CONSTRUCTION	954	2,065	3,019	2,771	8.9
TOTAL CONSTRUCTION	\$9,678	\$3,828	\$13,506	\$12,144	11.2

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



Penney store (above), offices (below)





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UDALL AIDS FLLW LANDMARKS



RICHARD NICKEL

CHICAGO—Efforts to save Frank Lloyd Wright's famed Robie House received a major boost last month when Secretary of the Interior Stewart L. Udall formally designated the structure as a National Historic Landmark in a 20-minute ceremony at the site. The house thus became only the third building of the country's 452 national landmark sites to be so designated for reasons of architectural excellence (the others are James Wren's Christ Church in Alexandria, Va. and the old West Building at Pennsylvania's Dickinson College by Latrobe).

Robie House was given to the University of Chicago by Webb & Knapp in 1963, with the condition that the University maintain

the house if the estimated \$250,000 needed to restore it were raised. (Only \$42,000 has been donated so far.)

In presenting the bronze plaque to Mayor Richard J. Daley, Secretary Udall reported on the status of two other Wright landmarks, the Pope House in Falls Church, Va. (photo below) and the Imperial Hotel in Tokyo. The Secretary termed the Pope House,



HORIZON PRESS

which has been threatened by Virginia's Interstate Route 66, "my first, clean-cut victory over the highway engineers." Udall's formula: use federal highway funds to move the building to a suitable site (yet to be found), with Virginia contributing 10 per cent of the cost.

Secretary Udall also reported, however, that the rising cost of land in Tokyo has doomed the Imperial Hotel.

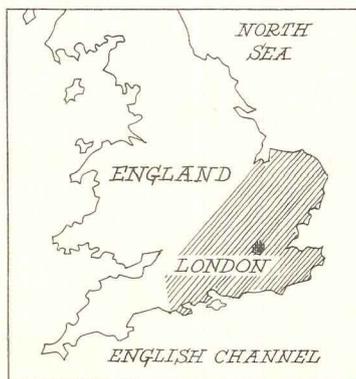
Britain Releases Vast Plan for Southeast of England

LONDON—After two and a half years of preparation, the British government last month published the Southeast Study, which was promptly dubbed "the biggest planning project in the free world." A comprehensive program for relieving congestion in Lon-

don, the study affects the entire southeastern portion of the country, where over one third of Britain's population is concentrated.

By 1981, government planners forecast, the area's population of 17 million will have grown one-fifth, or 3.5 million. The study's basic aim is to accommodate this growth without crowding London any further. Among the measures suggested:

- ▶ The development of three new cities (at Bletchley, Newbury, and Southampton-Portsmouth) to act as "countermagnets" to London.
- ▶ Major expansion of six cities: Ashford, Ipswich, Northampton, Peterborough, Swindon, and Stansted.
- ▶ Expansion of 12 other cities.



Increases in the population goals of existing "new towns."

▶ Doubling the width of the greenbelt around London.

The study raises two critical political questions. First, will the concentration of interest on the Southeast blunt efforts already underway to regenerate other areas of England, notably central Scot-

land and the Northeast? Second, will the promise of development prompt wild land speculation and profiteering? Anticipating both questions, the government promised to continue giving preferential treatment to new plants locating in the older areas, at the same time stating that speculation will not be permitted.

PLANNERS SWAP JOBS, IDEAS

BOSTON—"The major battlefront in the war against poverty is not Appalachia, but the urban slums." So said Boston Redevelopment Administrator Edward J. Logue in his keynote address to the 30th annual American Society of Planning Officials conference last month in Boston. But though the 1,800-odd planners and city officials present did address themselves to such major problems, the real keynote of the convention was jobs.

Most popular item on ASPO's opening-day agenda was the official "Job Market," a three-hour ritual in which planners sought new posts from among the more than 350 openings listed by the society. The body-snatching continued informally throughout the rest of the five-day conference in the Statler Hilton's crowded mezzanine (photo below). Said one prominent planner: "It's more like a labor union every year."

Obviously, planning is more of a seller's market than ever before. Said Dennis O'Harrow, ASPO's executive director: "The need for competent, experienced planning

personnel is critical—there are more jobs available than planners to fill them."

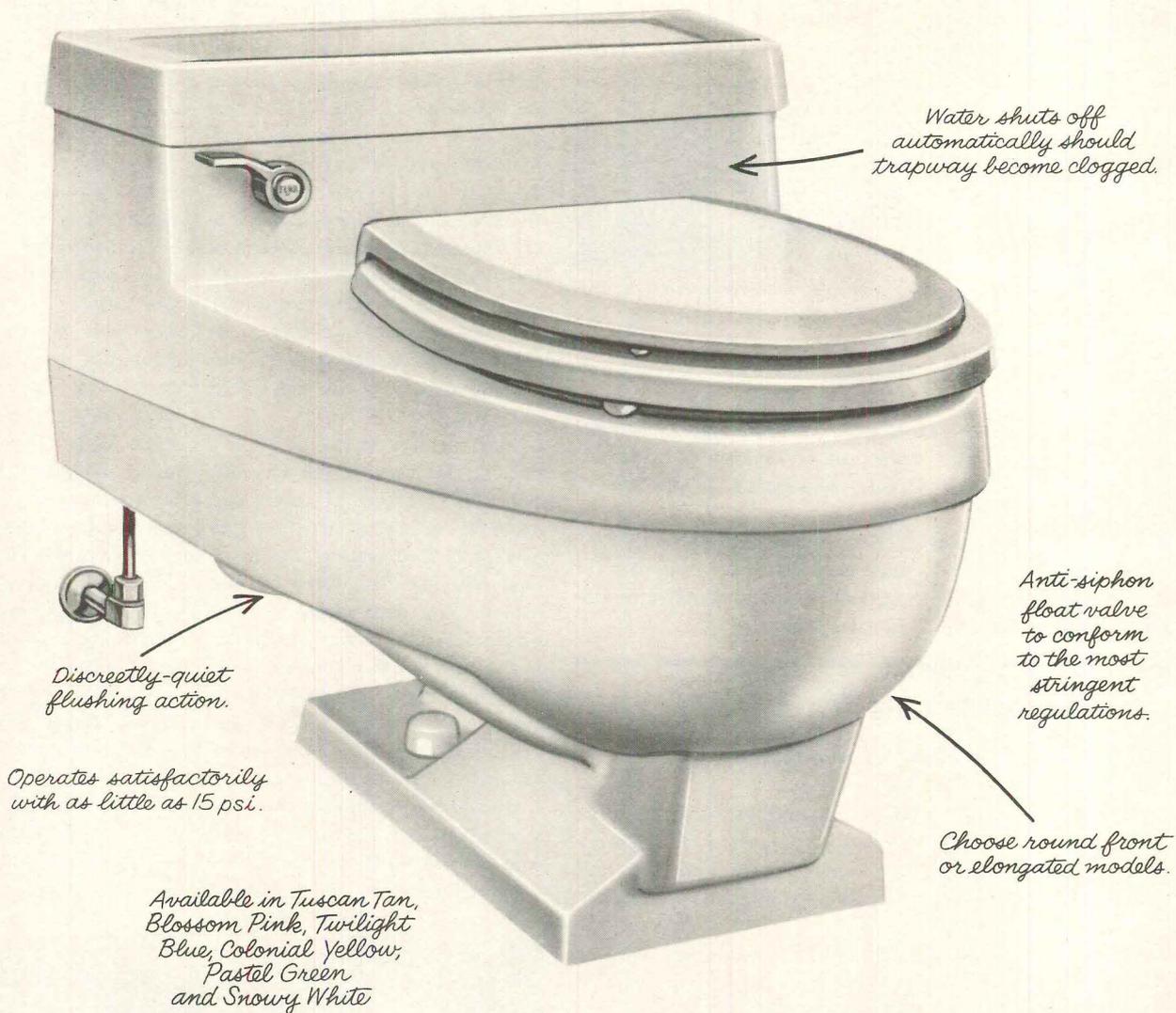
In the featured address, titled "Requiem for Zoning," Cornell Planning Chairman John R. Reps argued that zoning could no longer respond to, or control, the complexity of urban growth. It is, said Reps, "too permissive, too parochial, too unrelated to other regulatory systems, and too mechanical in application to meet the needs of metropolitan areas." In its place he advocated "a plan for community development and a comprehensive set of objectives and standards" on which all proposed development would be decided. The administrators of such a plan would have much larger discretionary powers than zoning boards do now.

Among other topics covered by the convention were planning for mental health, transportation, tax policy, new towns, and electronic data processing. Next year the planners will reconvene in Toronto to discuss more goals, techniques—and jobs.

continued on page 9



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JFK MEMORIALS MOVE FORWARD

J. F. COYNE



Library advisory committee meets at Boston site. Left to right: Kenzo Tange, Raymond Loewy, John Carl Warnecke, Hideo Sasaki, Louis I. Kahn, Senator Edward M. Kennedy, Paul Thiry, I.M. Pei, William Walton, George Nelson, Franco Albini, Sir Basil Spence, and Hugh Stubbins.

BOSTON, MASS.—The 18-man Kennedy Library Advisory Committee met last month with members of the Kennedy family in Boston (photo above) to inspect the site and nominate architects for the \$10 million project. The two-acre site, donated by Harvard University, is on the Boston side of the Charles River, next to the Business School.

In a press conference held at the conclusion of the weekend meeting, Attorney General Robert F. Kennedy revealed that the scope of the project has been enlarged and will now include archives, a museum, and a student institute. At present, the advisors believe the building will measure 180,000 square feet.

The problem of the site, apart from its smallness in view of the expanded program, is that it is cut off from the river by Storrow Drive. Advisor Paul Thiry is reported to have suggested that the

JFK Library site on Charles River



highway be relocated to swing around in back of the site, giving the Library a real river-front location.

The main business of the meeting, after it had been unanimously decided not to hold a competition, was the development of a list of nominees for the architectural commission. While the American advisors argued there should be no limitation of nationality, the foreign advisors maintained that the building should be designed by an American, and their viewpoint carried the day. A half dozen U.S. architects were reportedly nominated; their names are to be released in May.

Members of the Kennedy family will interview the nominees and pick one of them for the Library commission. The announcement is expected around the middle of June.

The architect who is finally selected will face a challenge from the late President. Among the handwritten instructions which John F. Kennedy left for him is this quotation from Pericles: "We do not imitate, for we are an example to others."

Washington site disputed
WASHINGTON, D.C. — Meanwhile, controversy continued in the capital over another big memorial, the John F. Kennedy Center for the Performing Arts, designed by Architect Edward Durell Stone. The main target of criticism is the Center's proposed

location on the Potomac River in the Foggy Bottom section of Washington. Opponents of the site, among them the *Washington Post's* architectural critic, Wolf Von Eckardt (see *People*), argue that the massive, two-block-long, 100-foot-high building would seal off views of the river from the Mall; and that a highway to be built right in front of the Center would block pedestrian access.

Von Eckardt's views are by no means unique. In a letter to Rep. Michael L. Kirwan (D., Ohio), chairman of the House Appropriations Subcommittee, American Society of Landscape Architects Executive Director Lynn M. F. Harriss urged reconsideration of the site. Wrote Harriss: "A building of such magnitude and splendor should have the benefit of a thorough study by the National Capital Planning Commission." The entire matter, added the Washington Chapter of the AIA, calls for "a thorough re-examination of the form and site of the Center."

Testifying before the subcommittee, Fine Arts Commission Chairman William Walton indicated that his commission would have preferred a different site. But, said Walton: "The way it is always presented to us is that if you upset the apple cart, there will be no Cultural Center. So, many citizens of this city remain quiet for fear of preventing the building of [the Center]."

By mid-April the criticism seemed to have become academic. The appropriations bill for the Center had passed the House, and had also cleared the Senate Appropriations Committee. The measure carries the full fed-

eral contribution for construction (\$15.5 million) plus an additional \$2.5 million to complete acquisition of the site. Said Roger L. Stevens, chairman of the Center's board of trustees and new Presidential arts advisor (see *People*): "There will be absolutely no change in the site." He predicted ground-breaking in the early fall.

Center for Long Island

EAST MEADOW, N.Y.—Nassau County officials last month revealed plans to build a huge John F. Kennedy Educational, Civic and Cultural Center on 186 acres of Long Island's abandoned Mitchel Field. The planning proposal for the seven-building complex, to cost \$45-49 million, was prepared by Architects Welton Becket & Associates under a contract with the county.

The project will include a 10,000 seat coliseum, a concert hall, a theater, a library, a social center, museums of art and science, and parking for 7,500 cars.

An acre in Britain

LONDON — Prime Minister Sir Alec Douglas-Home announced that his country would give the U.S. an acre of historic Runnymede, where Magna Carta was signed, as part of its tribute to the late President. A simple stone plinth will be erected on the site, 20 miles southwest of London.

Concert hall in Ireland

DUBLIN—Ireland plans to build a concert hall in Dublin as a memorial to President Kennedy. The building will house a small recital hall and an 1,800-seat auditorium. Site and architect's name have not yet been released.

BROUHAHA: BURHA VS. HOOHA

Irate housewives fight rehabilitation

BALTIMORE — Housewives in the Bolton Hill area are hopping mad over efforts by the Baltimore Urban Renewal and Housing Agency (BURHA) to rehabilitate their private homes. Led by Mrs. Sally Goodspeed, some 60 of them have banded together into the Home Owners in Opposition

to Housing Authoritarianism (HO-OHA) to fight the conservation program.

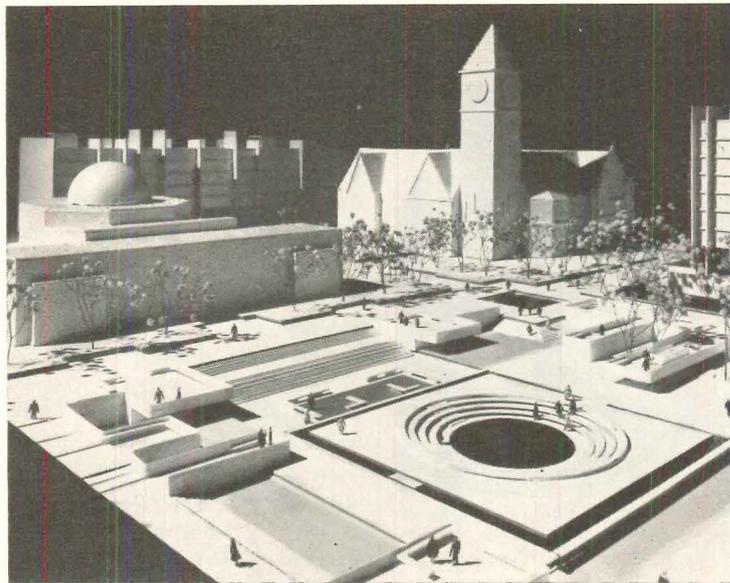
At issue is a city ordinance, passed in 1801, under which building inspectors have lately been justifying entry into the homes in search of violations. According to

continued on page 10

HOOHA these investigations constitute "unreasonable search" and as such are forbidden by the Fourth Amendment. Furthermore, HOOHA maintains, once the investigators are inside they write up outrageous lists of mandatory improvements, which are neither needed nor wanted and which force some homeowners into debt.

Mrs. Goodspeed's vigorous campaign of letter writing and radio and television appearances has gained HOOHA the support of several members of the City Council. One of them, Leon Rubenstein, has introduced an amendment which would make it more difficult for inspectors to obtain search warrants.

But HOOHA's cause is far from won. A new housing code, which Baltimore must pass if it is to continue receiving federal money for urban renewal, contains even more stringent requirements, says HOOHA (e.g., every surface that has ever been painted, even a brick wall, must be repainted). Sums up Mrs. Goodspeed bitterly: "We want the urban renewal agency out of our homes, our hair, and our lives."



COMPETITIONS IN PENNSYLVANIA

PITTSBURGH—The first prize of \$5,000 in Pittsburgh's Allegheny Public Square Competition (see *News*, Oct. '63) has been awarded to William Breger, Chairman of the Department of Architectural Design at Brooklyn's Pratt Institute.

The winning scheme (photo above) will become the focal point of the 79-acre, \$85 million

Allegheny Center urban renewal project. The 3-acre square will be bordered by high- and low-rise residential buildings and by two old structures which are to be preserved: the Buhl Planetarium (left) and the Carnegie Library and Music Hall (center).

The international competition, sponsored by the Urban Redevelopment Authority of Pittsburgh, was judged by a seven-man jury: Hideo Sasaki, Dahlen K. Ritchey, Gordon Bunshaft, John B. Parkin, and Hector Mestre, professional members; and H. J. Heinz and Adolph W. Schmidt, nonprofessional members. The jury had hoped to name five winners to participate in a second stage. But of the 305 entries only the Breger scheme was deemed worthy of an award. Breger, who was assisted by two Pratt students, James Terjesen and Warren Winter, will prepare working drawings and cost estimates.

PHILADELPHIA — The Fairmount Park Art Association has announced a national competition for design of a monumental fountain on the Benjamin Franklin Parkway. Jurors are I.M. Pei, Paul Rudolph, Jacques Lipchitz, Theodore Roszak, and Philip Price, president of the association. Top prize: \$12,500. Registration deadline: June 15. Inquiries: Norman N. Rice, Fountain Competition, Box 8366, Philadelphia 19101, Pa.

QUOTE . . . UNQUOTE

"The New York World's Fair seems to be a completely commercial enterprise . . . independent of a general artistic theme. In this order, an art pavilion could be an island of spiritual rest. It is regrettable that visitors may have to transfer back to the city to look for this particular excitement."—*N.Y. Municipal Art Society's President Giorgio Cavaglieri.*

"What has my personal taste got to do with the fair? They can put any kind of art they want into their buildings. I welcome any kind of art here as long as it's in good taste."—*N.Y. World's Fair President Robert Moses.*

"Town planning [should] be lifted to a new level. . . . Unless planning is made more creative and less of a humdrum municipal activity, it will not attract the brilliant minds that are so urgently needed."—*Professor-author Colin Buchanan.*

"While the attention and industry of our public policy have been focused through these postwar years on crises in Berlin, in Cuba and the Far East, America almost behind our backs has been taking on the physical appearance and the cultural atmosphere of a honky-tonk of continental proportions."—*Senator J. W. Fulbright.*

"Let us, while waiting for new monuments, preserve the ancient monuments."—*Victor Hugo.*

"Orchard Street . . . is one of the last pieces of color in New York. Of late, this town has given way to people who do mechanical drawing and call themselves architects although it is plain that most of their lives were spent in a plate-glass factory."—*N.Y. Herald Tribune Columnist Jimmy Breslin.*

"I'm glad not to be surrounded by modern architecture, which I find cold and inhuman. Who the hell needs all those windows? Architecture should be dedicated to keeping the outside out and the inside in."—*Sculptor Leonard Baskin.*



Curtain Rises on N.Y. State Theater

Last month marked the opening of the New York State Theater at Manhattan's Lincoln Center, the second of six buildings to be completed in the cultural complex. The \$19.3 million building was designed by Philip Johnson Associates to house resident companies in dance and operetta. The entrance promenade (above), which faces the already completed Philharmonic Hall, is 200 feet long and 60 feet wide. It will be used not only as a lobby, but as a place for official receptions and banquets. In the background: colossal marble enlargements of sculptures by the late Elie Nadelman.



PURVES DIES AT 66

EDMUND RANDOLPH PURVES, architect and former Executive Director of the American Institute of Architects, died last month in Washington, D.C. at the age of 66. His career included a distinguished record in both world wars, and a 20-year stint with AIA. For 11 of those years, between 1949 and 1960, Purves was Executive Director. During his stewardship, AIA membership grew 11,000 and the Institute's liaison with the federal government was strengthened. At the time of his death he was an associate in the firm of Chatelain, Gauger & Nolan, Washington architects and engineers.



DALÍ PLANS ENIGMAS

To cover some 11,500 square feet of blank exterior walls on its new Manhattan department store, now abuilding on Lexington Avenue and 58th Street, Alexander's picked famed surrealist painter SALVADOR DALÍ. His price: \$175,000, or \$15 per square foot. Dalí's

efforts in water color will be translated into 17 colored porcelain enamel panels, each 15 feet wide and 45 feet high. The subject matter? Said the irrepressible Dalí, "Every panel will be an enigma."

EBERHARD TO IAT

JOHN P. EBERHARD has been named Deputy Director of the Institute for Applied Technology at the National Bureau of Standards, U.S. Department of Commerce.



BRITAIN'S COTTON DEAD

JACK COTTON, flamboyant British developer and partner with the late Erwin Wolfson in Manhattan's huge Pan Am building, died in March in Nassau at the age of 61. Cotton, once an architect and until a year ago the chairman of City Center Properties, one of the world's richest development companies, sank \$25 million of equity money into Pan Am in the biggest single movement of funds from Britain to the U.S. since World War II. He lived to see Pan Am a financial, if not a critical, success, and its traffic problems less than predicted.

VON MOLTKE TO HARVARD

Architect-Planner WILHELM VON MOLTKE will become Professor of Urban Design at Harvard University on July 1. A former Chief Designer for the Philadelphia City Planning Commission, von Moltke has since 1961 been the major urban design consultant to the Venezuela Guayana Project being planned by the Harvard-M.I.T. Joint Center for Urban Studies.

STEVENS NEW ARTS ADVISOR

President Johnson last month appointed ROGER L. STEVENS his special advisor on the arts, and said he would shortly create a Presidential board to assist him. This confirmed earlier rumors that the Broadway producer and real estate broker would succeed to the post held previously by August Heckscher, who returned in February to his post as director of the 20th Century Fund. An able fund raiser, Stevens has been in charge of drumming up the \$30 million needed for the controversial Kennedy Center for the Performing Arts in Washington, D.C. (see page 9).

HONORS AND AWARDS

At the AIA Convention in St. Louis next month, five men will be awarded honorary membership for distinguished service to the profession: ANTHONY G. ADINOLFI, Manager of Planning, N.Y. State University Construction Fund; JOHN L. CAMERON, Chief, School Housing Section, U.S. Office of Education; S. C. HOLLISTER, Dean Emeritus of Cornell's College of Engineering; GEORGE McCUE, art critic, *St. Louis Post-Dispatch*; and HENRY LEE WILLET, Philadelphia stained-glass artist. AIA will also confer an honorary fellowship on British Architect E. MAXWELL FRY, who last month received the 1964 Gold Medal of the Royal Institute of British Architects.

Late this month, when Brandeis University bestows its eighth annual Creative Arts Awards, an added Special Award will go to R. BUCKMINSTER FULLER "for notable creative achievement."

Eleven critics, reporters, and editors in the visual and performing arts recently received fellowships from the Ford Foundation. Among them: ESTHER MCCOY, free-lance architectural writer from Santa Monica, who will travel in the U.S. to study work of young architects; and WOLF VON ECKARDT, also a free-lance architectural writer and weekly contributor to the *Washington Post*. Von Eckardt

plans to travel in the U.S., England, and Europe to compare current urban design in American cities with projects abroad.

This year's recipients of the Rome Prize Fellowships, awarded annually by the American Academy in Rome: in architecture, THEODORE LIEBMAN of Boston, ROBERT J. MITTLESTADT of New Haven, and CHARLES O. PERRY of San Francisco; in landscape architecture, DEAN A. JOHNSON of Ann Arbor, Mich. and RAYMOND T. SCHNADELBACH of Cambridge, Mass.; in sculpture, CHARLES A. WELLS, JR. of Northampton, Mass.; in painting, RAYMOND SAUNDERS of Philadelphia.

Five architects and engineers have been named as jurors in the 1964 Architectural Awards of Excellence Program sponsored by the American Institute of Steel Construction. They are: AIA President J. ROY CARROLL; LEO A. DALY, Omaha architect; PAUL WEDLINGER, New York consulting engineer; HENRY L. WRIGHT, Los Angeles architect and past AIA president; and PHILIP N. YOUTZ, Dean of the College of Architecture & Design at the University of Michigan. Awards will be made to structures using steel completed since Jan. 1, 1963. Submissions close June 30, 1964; details can be obtained from AISC, 101 Park Ave., New York.

The American Concrete Institute's \$1,000 student competition award has been won by C. J. SHAUGHNESSY, of Syracuse University. His design: a concrete sports arena.

The Silver Medal of the American Society of Planning Officials was presented last month to HARLAND BARTHOLOMEW, St. Louis planning consultant, at the Society's annual conference in Boston (see page 7).

A National Book Award has been given to "Man-Made America: Chaos or Control?" by CHRISTOPHER TUNNARD, Yale Professor of City Planning, and BORIS PUSHKAREV, Senior Planner of the Regional Plan Association of New York. *continued on page 12*

N. Y. FAIR OPENS: DRIZZLES, FIZZLES, AND DRAMA BY NIGHT



Billion-dollar show has some surprises

"... Moses called upon the Lord, And RCA, DuPont and Ford ..."

—Ogden Nash

NEW YORK—Last month on 646 acres of Flushing Meadows—sometime dump, ballfield, and second-hand World's Fair site—the promised land of Robert Moses opened on schedule and surprisingly complete. It had taken the last minute efforts of countless frantic designers and builders to do it, as well as construction labor at wages reported as high as \$700 a week.

The bone-chilling April rain, which kept down opening-day crowds and dampened civil rights demonstrators, also shrouded a good many architectural fizzles, some critics were quick to point out. But by nightfall the jumble of carnival shapes had misted over into a utility engineer's dream. Among the dancing fountains and sparkling lights (photo left) bloomed the Fair's unexpected, and only consistent, design motif: Architect Victor Lundy's big white, raspberry-shaped balloons above ten Brass Rail restaurants. The prize for electricity consumption, however, went easily to the Electric Power and Light pavilion, whose billion-candlepower beam (background) emerged to turn the cloud cover into a rosy blan-

A family phone booth draws a crowd.



ket over much of the Fair grounds.

For first-day visitors, there were a thousand sights to see. Scattered among well-publicized major pavilions (FORUM, Jan. '64) were such convenient minor delights as open-air restaurants under colored canvas sails, and big egg-shaped phone booths in which whole families could get together and talk into a loudspeaker with the folks back home. Animation was everywhere, from General Electric's huge revolving theaters to General Cigars' tiny, smoke-ring-puffing drum. Coca-Cola played its carillon; Pepsi showed off its "Tower of the Four Winds," a fanciful mobile of multicolored metal (photo below). And people walked, gawked, and, when legs gave out, rode Greyhound's powered rickshaws that swarmed around the Fair playing "Leave the Driving to Us" (bottom).

PHOTOS: J. ALEX LANGLEY



MAYNARD CLARK—TIME

Industry's toyland: "people walls" and giant cars



Though it does have a sprinkling of international exhibits, New York's "World's" Fair is largely a showcase for U.S. enterprise.

One lively design success on opening day was the International Business Machines pavilion, a forest of rusted steel trees sheltering mechanical puppet shows, and appearing to support a huge white egg above. Some 500 visitors at a time boarded a "people wall" (photo left), a set of inclined bleachers which was lifted into the egg for a 16-screen 13-minute film by Charles Eames, designer of the pavilion with Eero

Saarinen Associates, architects.

Like IBM, Chrysler's exhibit allowed visitors to wander in and out as they pleased, on five islands linked by walkways in a six-acre oval lake. Architect George Nelson designed a gigantic, whimsical car (below, center), a star-shaped theater, a huge walk-in engine with fanciful moving parts, and a mock rocket that shoots water out of its tail jets.

Near Chrysler is an 80-foot high Ferris wheel in the shape of a tire designed by Shreve, Lamb & Harmon (below).

continued on page 14





STATES AND NATIONS: SOME STANDOUTS

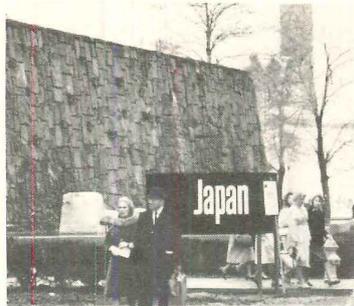
Among the biggest eye-catchers on opening day was the United States pavilion, Architect Charles Luckman's massive square doughnut on four supports, 330 feet on a side and 84 feet high with plastic walls of green, yellow, and blue. Visitors mounted eight pyramiding concrete staircases separated by moving stairs, up to a grand, two-story atrium open to the sky (photo above). On the lower exhibit floor they saw a movie and exhibits on America's "Challenge to Greatness"; on the upper level they were carried through a 15-minute "American Journey" projected on 130 different screens.

Most other major nations had declined to participate officially in New York's internationally unsanctioned Fair, but among those who did, three captured their share of the crowd. One was Denmark's building by Architect Erik Moller, an elegant display case of glass and laminated pine. Inside are exhibits of Danish products, two restaurants and bars, and photographs of Danish life suspended from the ceiling. Outside there is a miniature Tivoli Garden for children.

A sculpted stone façade by

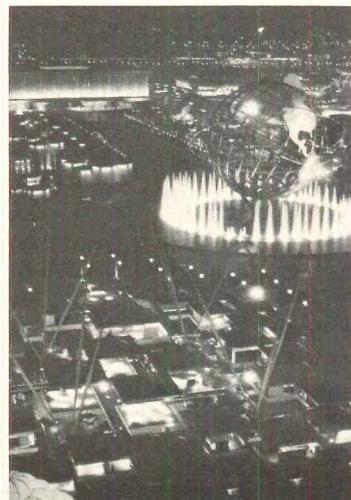
Masayuki Nagare is the highlight of the Japanese pavilion by Architect Kunio Mayekawa. A courtyard containing a modern Japanese garden separates the official and industrial display buildings; a restaurant building is nearby.

Architect Javier Carvajal's two-story Spanish pavilion with pre-cast concrete, modular walls offers a smooth contrast to the



rough-hewn beauty of Japan's. The modular motif is carried out in handsome displays inside.

New Jersey's pavilion (photo right) consists of a village of concrete pedestals set in a reflecting pool, each covered with vinyl-coated nylon canopies suspended from 85-foot booms. In the center, Architect Philip Sheridan Collins provided five islands for music and dance performances.



**N.Y.'s towering-tent:
High point of Fair**

New York's Fair may get its equivalent of the Eiffel Tower after all. During the dedication of the New York State pavilion (photos right), Fair President Robert Moses expressed hope that the building could remain after the Fair closes. Governor Nelson Rockefeller admitted that an extra \$500,000 had been spent on the foundations so that it could indeed be permanent.

This news intrigued the many observers who felt that New York's pavilion was architecturally as well as literally the high point of the Fair. On axis with the U.S. pavilion and the "Unisphere"—the Fair's official and much-criticized centerpiece donated by U.S. Steel—the tallest of New York's three observation towers rises 240 feet. The towers, big slip-formed concrete tubes supporting circular lookout platforms, are served by glass-enclosed outside elevators.

The main pavilion, called the "Tent of Tomorrow," consists of 16 similar towers 98 feet high which support the "world's largest prestressed cable suspension roof," a 305 foot by 225 foot ellipse roofed in bright red, blue, and orange plastic panels. Beneath it, the main floor is inlaid with a huge terrazzo map of the state, providing space for concerts, fashion shows and other special events as well as a tour information booth and a sidewalk cafe. Exhibits are arranged on an open mezzanine. Next door is a small circular theater (at left in large photo) displaying a 360-degree movie inside, and ten works of "pop" art on its outer wall.

At an estimated \$14.3 million in construction and operating costs, the New York pavilion is among the largest investments at the Fair. Architects were Philip Johnson & Associates; structural engineer, Lev Zetlin; contractor, Thompson-Starrett Constr. Co.

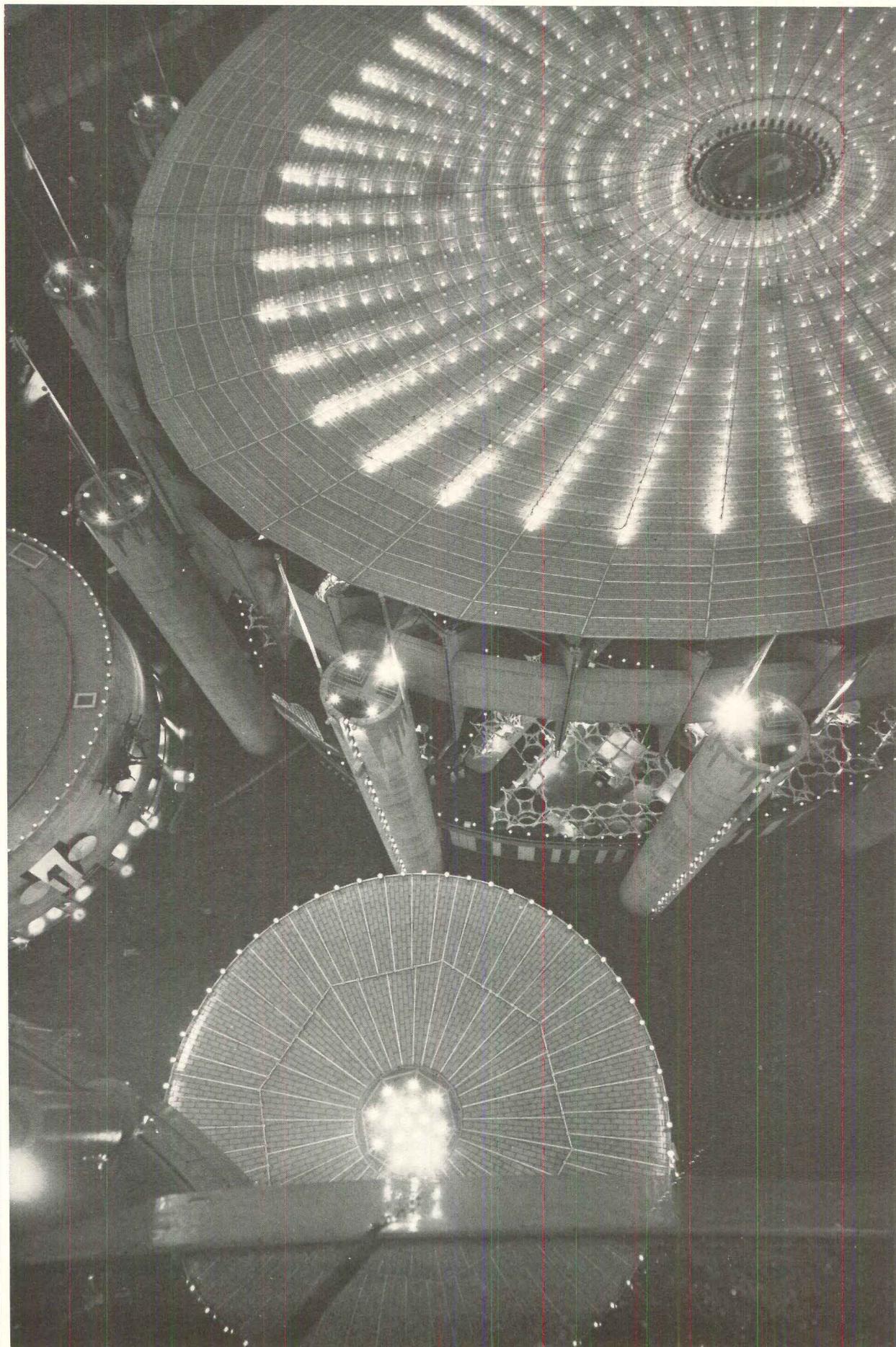
This is the first of several reports planned on various aspects of the World's Fair. Photographed for FORUM by J. Alex Langley.

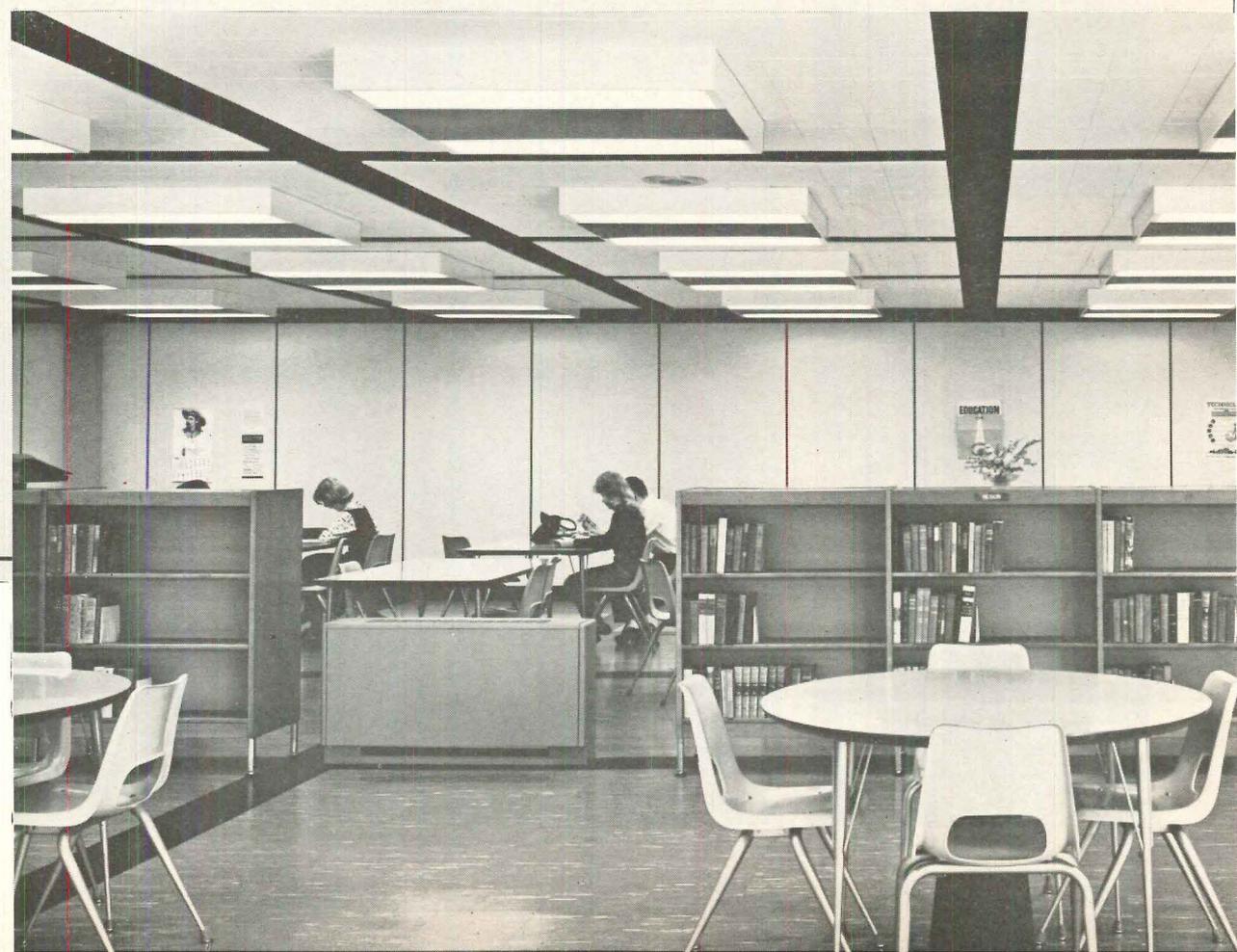
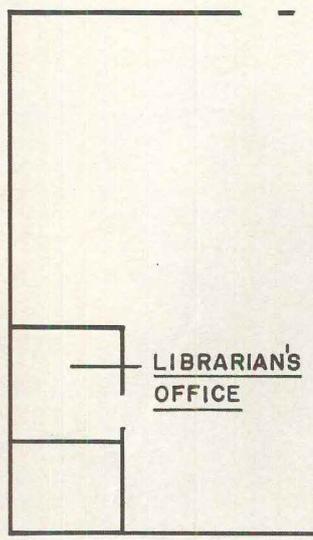
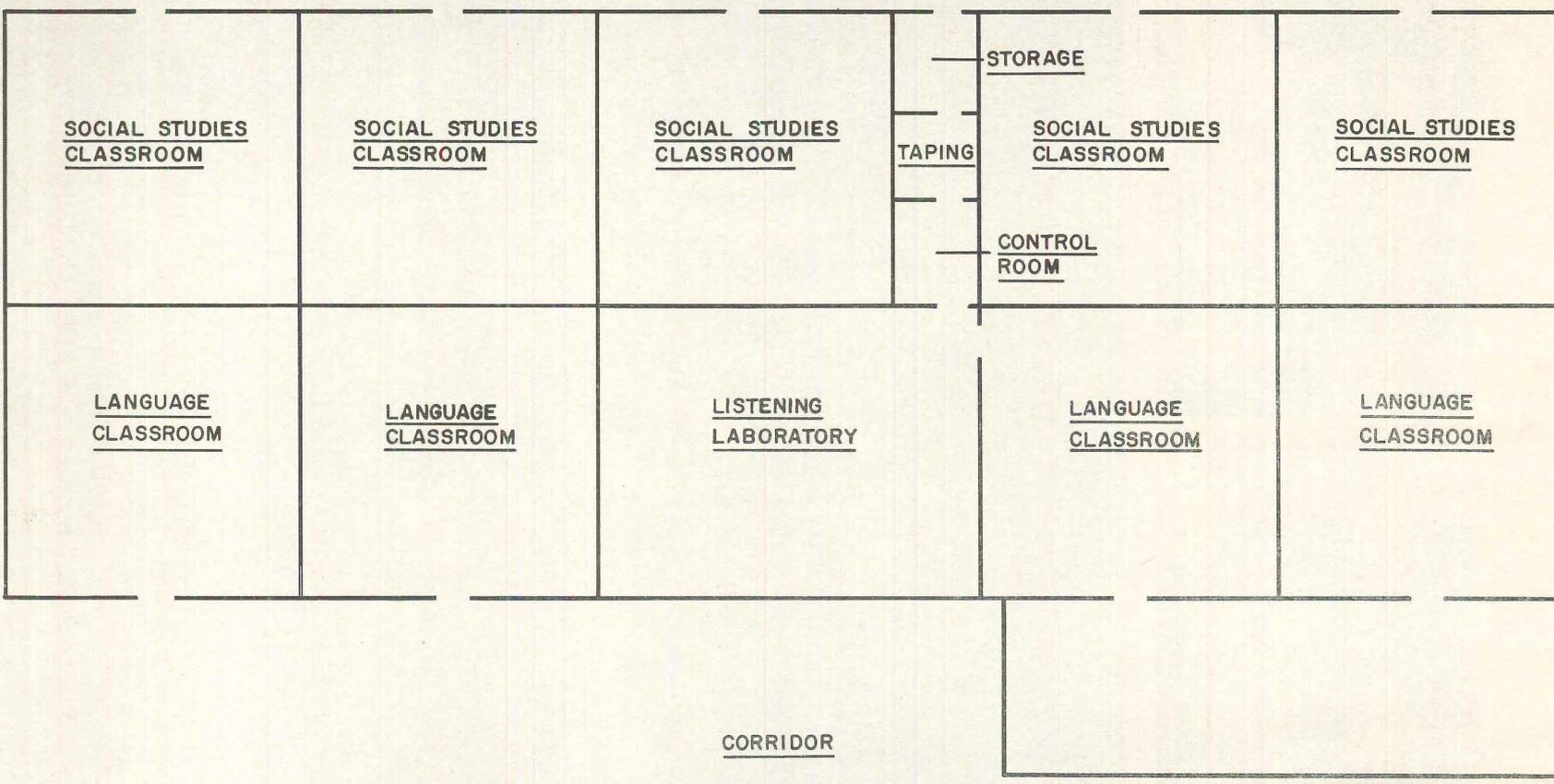
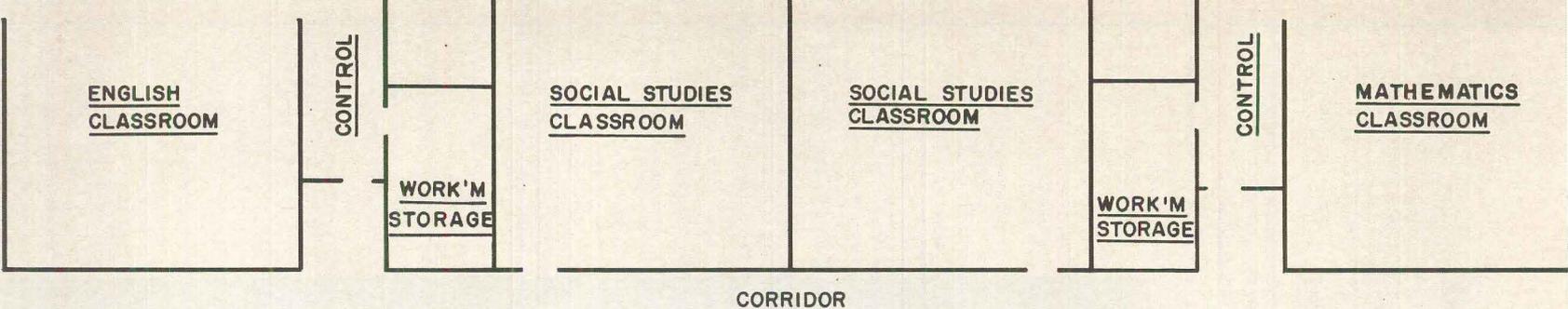


Booms of New Jersey pavilion frame New York State's lookout towers. At right: view down from top tower.



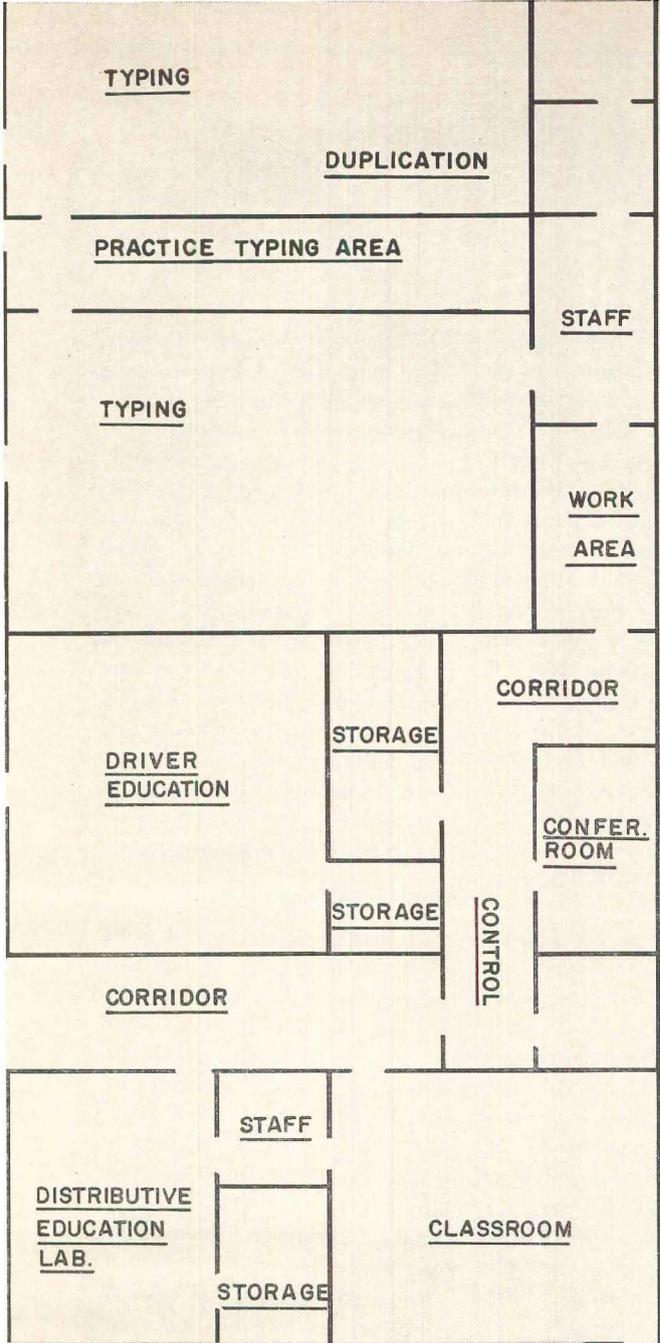
Lively structures on open mezzanine house exhibits (above). Spectators gather on "tent's" main floor (below).





▲ Movable partitions can be assembled on a grid in every 28' x 28' module of East Campus Project of the Pekin (Ill.) High School.

General Electric Remote Control Switching makes rearrangement of lighting control as flexible as the movable partitions in this library. ▶



Modern school features windowless classrooms

Lighting control depends on low-voltage General Electric Remote Control Wiring in movable partitions

In the big, square East Campus Project of the Pekin (Ill.) Community High School, classrooms, study halls, laboratories and corridors are formed by movable partitions that can be arranged in 28' x 28' modules.

Rooms depend on artificial light

Because artificial light is the only method of illumination in most of the modules, the lighting system must be as flexible as the partitions.

To solve the problem, all 4-wire, 120/208V feeder circuits are run in the attic space — and all switch legs are low-voltage General Electric Remote Control Wiring.

Changes in switch wiring made easy

The G-E Remote-Control Wiring can be disconnected and reconnected quickly and easily as changes in partitioning are made. The low-voltage wiring is fed from the remote control switches . . . through the door jambs . . . up through access panels in the ceiling . . . then to the relays which are permanently wired in each lighting fixture. This permits the partitions to be moved without disturbing the higher voltage lighting circuits in the ceiling.

Flexibility combines with low cost

Since G-E Remote-Control Wiring uses only 24 volts, it eliminates the need for conduit to all switch legs. And the simplified 120-volt runs saves the contractor layout and installation time.

For complete information about the many advantages of General Electric Remote-Control Wiring in all types of commercial/institutional/industrial buildings, write today for your copy of the new General Electric Manual of Lighting Control Concepts. General Electric Company, Wiring Device Department, Providence, R. I.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

100

BIGGEST
BUILDING
CONTRACTORS
IN THE U. S.

Sharing in the overall bounty of a record construction year, FORUM's 100 biggest building contractors put in place \$3.2 billion worth of new buildings during 1963, or 5.5 per cent of the \$62.5 billion total of U.S. construction. (Figures for the 100 biggest exclude dams, highways, bridges, and all foreign building.) Deducting \$19 billion worth of houses—a category which accounted for only 3 per cent of the 100 biggest's volume—their quota of the market jumps to 7.4 per cent.

With \$3.2 billion of construction put in place, this year's 100 top the 1962 total of \$3.1 billion. Moreover, they expect their business to increase by an average of 7.1 per cent for 1964.

This year's figures again show a distinct specialization by building type: 84 companies reported their highest percentage in one kind of building, and 52 contractors attributed at least 50 per cent of their volume to one of the seven categories shown in the tables. Twenty-six companies reported their greatest percentage in commercial office buildings; 22 did mostly multi-unit residential work — apartments, motels, and hotels. (One firm, LCC Inc. & Lloyd Construction Co. built only apartments.) Fourteen firms did their heaviest volume in industrial buildings. The other percentages reported were: educational (13); medical (7); and retail—stores, shopping centers, and restaurants —(2). Fifteen firms did their major work in the "other" category, which includes religious, social, recreational, and amusement buildings, one- and two-family houses, and miscellaneous.

Space-age buildings rise

Largely represented in the miscellaneous category are government-commissioned structures: missile facilities, including living and office areas and testing labs, and other military and defense work. Nine contractors did 15 per cent or more of their total volume in government work; this totaled 3.5 per cent of the overall volume of the 100 biggest. Other construction mentioned which made up 10 per cent or more of a firm's

volume included a civic center, power and sewage plants, and research laboratories. Eight of the 100 biggest contractors are responsible for two or more buildings at the New York World's Fair—Fuller, Gilbane, Turner, W. J. Barney, F.D. Rich, William L. Crow, Diesel, and Paul Tishman.

Twenty-five newcomers (asterisks in tables) made this year's list, compared to 28 in 1963. Of these, five did their highest volume in industrial buildings, five in residential work and four in educational facilities. One new arrival—Rust Engineering Co., a package builder constructing only industrial buildings — made the top volume category.

Not unexpectedly, the biggest contractors are most heavily concentrated in the most populous states. New York boasts 19, with New York City alone headquarters for 15 companies; California follows with 17. Twenty-six states including Hawaii can claim at least one of the 100 biggest.

If predictions for this year are realized, the contractors will maintain their present growth rate. Of the 97 companies which submitted estimates for 1964, 55 anticipate an increase in business, 37 expect a decline, and five foresee no change. With the exception of one company, Heftler Construction—which anticipates a healthy gain of 104 per cent—most of the estimates are under 50 per cent.

Although the 100 biggest exceed the 1962 total volume of \$3.1 billion by \$100 million, the 100th firm did \$13,017,850 worth of business — less than the cut-off point of \$14,630,000 for 1962. At the same time, the top volume firms (\$50 million or more) have grown in number from 11 in last year's survey to 16 this year. Further, the highest reported volume for 1963 was \$181 million, compared to \$137 million in 1962.

Contractors failures increase

This curiously inverse state of affairs is explained by C. I. Mehl, Director of Operations of the Associated General Contractors of America, who suggests that competition among general contractors has become stiffer as con-

struction has boomed. Further, Mehl notes that while contracting is an expanding business, the rate of contractor failures is high.

As was pointed out in FORUM last year (June '63), over 12,000 contracting firms have gone out of business in the last five years. And since 1950, profit margins in contracting have dropped 94 per cent, despite a 500 per cent rise in gross business. Moreover, for the first three months of 1963, contractor failures were fewer, but total dollar liabilities were greater. General building contractors were the hardest hit: 241 failed, suffering a total of \$48 million in losses.

Growth and competition

Thus the big, established firms which often appear on FORUM's list seem to be the ones which not only manage to survive from year to year, but also gross more in the process. In order to counter the fierce competition, some firms have broadened their activities to include real estate development, and could not separate their actual construction figures for FORUM's survey.

Reported volumes of several companies on the list represent only part of their total business, which also includes foreign work as well as dams, highways, bridges, and other nonbuilding items.

Traditionally absent from the 100 biggest list, the package builders are represented this year by two companies in addition to Rust Engineering: Kaiser Engineers and Wigton-Abbott. The three firms were able to separate their construction figures from design services and costs of heavy process equipment.

At least three firms would probably qualify for the list but were not included because of insufficient data—MacDonald Construction Co., Kesik, Inc., and Consolidated Engineering Co.

Two other contractors, Caristo Corp. and McCloskey & Co., following company policy, declined to break down their totals according to construction types.

FORUM will conclude this year's survey in the July issue with the 100 Biggest Building Clients.

Construction put in place

Type of construction as a per cent of 1963 total

Firm (home office)	Offices	Educational	Industrial	Residential†	Medical	Retail	Other††	Forecast '64 (%)
\$50,000,000 or more**								
Henry C. Beck Company (Dallas)	66	1	8	14	2	3	6	+11
Darin & Armstrong, Inc. (Detroit)	1	17	70	—	3	4	5	—8
Diesel Construction Co., Inc. (New York)	76	—	3	21	—	—	—	—27
George A. Fuller Company (New York)	43	10	13	5	8	3	18	—9
Gilbane Building Company (Providence)	6	7	31	41	4	—	11	+8
Haas & Haynie Corp. (San Francisco)	40	—	25	25	10	—	—	nc
HRH Construction Corporation (New York)	14	—	2	69	15	—	—	—4
Huber, Hunt & Nichols, Inc. (Indianapolis)	20	10	50	10	10	—	—	+5
J. A. Jones Construction Co. (Charlotte, N.C.)	20	8	24	—	12	2	34	+6
C. H. Leavell & Company (El Paso, Tex.)	37	—	35	1	1	—	26	+16
Malan Constr. Co. of Koppers Co., Inc. (New York)	—	—	13	—	22	1	64	na
Robert E. McKee General Contr., Inc. (El Paso, Tex.)	22	9	11	4	7	—	47	—36
John McShain, Inc. (Philadelphia)	15	10	8	5	57	—	5	+21
Gust K. Newberg Construction Co. (Chicago)	32	10	9	16	9	—	24	+1
*Rust Engineering Company (Pittsburgh)	—	—	100	—	—	—	—	+37
Turner Construction Company (New York)	44	7	20	7	2	1	19	nc
\$25,000,000 to \$50,000,000								
Barton-Malow Company (Detroit)	14	2	40	20	9	5	10	—2
Basic Construction Co. (Newport News, Va.)	46	3	19	6	17	—	9	+85
Blake Construction Co., Inc. (Washington, D.C.)	30	2	—	4	51	—	13	+5
Joseph P. Blitz, Inc. (New York)	—	4	—	78	8	—	10	—14
Blount Brothers Corporation (Montgomery, Ala.)	—	4	31	—	2	—	63	+20
Frank Brisco Company, Inc. (Newark, N.J.)	60	—	40	—	—	—	—	+50
Cahill Construction Co. (San Francisco)	19	5	16	53	2	1	4	+27
Caristo Construction Corp. (Brooklyn, N. Y.)	—	na	na	—	na	—	na	+17
Cauldwell-Wingate Company, Inc. (New York)	60	—	—	38	2	—	—	+21
H. L. Coble Construction Co. (Greensboro, N.C.)	11	37	19	18	8	3	4	+33
*Comet Construction Co., & Affiliates (New York)	8	—	—	92	—	—	—	+7
Crane Construction Company, Inc. (Chicago)	—	—	—	99	—	—	1	—22
Day & Zimmermann, Inc. (Philadelphia)	5	—	95	—	—	—	—	+3
Dinwiddie Construction Co. (San Francisco)	40	20	—	—	20	20	—	nc
Diversified Builders, Inc. (Paramount, Calif.)	20	5	30	45	—	—	—	+18
Martin K. Eby Construction Co., Inc. (Wichita, Kan.)	16	2	31	—	1	2	48	—12
Fruin-Colnon (St. Louis, Mo.)	24	15	34	12	—	—	15	nc
*Ernest W. Hahn Inc. (Hawthorne, Calif.)	10	—	10	5	—	75	—	+7
A. L. Jackson Company (Chicago)	58	—	32	—	10	—	—	—10
Kaiser Engineers (Oakland, Calif.)	1	—	69	—	30	—	—	—4
H. A. Lott Inc. (Houston)	7	35	—	4	13	5	36	—18
*Manhattan Construction Co. (Muskogee, Okla.)	3	10	5	21	40	10	11	+17
McCloskey & Co. (Philadelphia)	na	na	—	na	—	—	—	+22
C. L. Peck (Los Angeles)	30	—	20	—	—	—	50	—17
Perini Corporation (Framingham, Mass.)	47	12	13	13	3	2	10	—34
Ragnar Benson, Inc. (Chicago)	5	2	90	—	3	—	—	—14
F. D. Rich Company (Stamford, Conn.)	23	16	—	22	21	18	—	+11
Frank J. Rooney, Inc. (Miami)	9	7	11	62	—	1	10	+26
Stolte Inc. (Oakland, Calif.)	15	4	14	24	20	7	16	—2
Swinerton & Walberg Co. (San Francisco)	10	—	40	20	15	5	10	+2
*Chas. H. Tompkins Co. (Washington, D.C.)	16	1	1	2	1	1	78	—13
Robert L. Turchin, Inc. (Miami Beach)	4	—	1	90	—	5	—	—5
Arthur Venneri Company (Westfield, N. J.)	50	16	3	24	7	—	—	+3
Walsh Construction Company (New York)	65	—	32	—	3	—	—	—5
*Wigton-Abbott Corporation (Plainfield, N. J.)	10	—	30	—	—	—	60	+12

*Newcomers to list of 100 since 1963 survey

**Firms are listed alphabetically within ranges given

†Apartments, hotels, motels—does not include houses

††Other—religious, recreational, military, 1-2 family houses and misc.

nc=no change

na=not available (totals not broken down by building type)

Construction put in place

Type of construction as a per cent of 1963 total

Firm (home office)	Offices	Educational	Industrial	Residential†	Medical	Retail	Other††	Forecast '64 (%)
\$20,000,000 to \$25,000,000**								
Alcan Pacific Co. (Sacramento)	16	17	5	21	34	—	7	—26
W. S. Bellows Construction Co. (Houston)	74	2	24	—	—	—	—	—5
John W. Cowper Company, Inc. (Buffalo)	8	35	25	—	30	2	—	—11
DeMatteis Organizations (Elmont, N. Y.)	10	—	—	85	4	—	1	nc
George F. Driscoll Company (New York)	—	4	—	96	—	—	—	+1
Electronic & Missile Facilities, Inc. (Valley Stream, N. Y.)	20	—	—	—	—	—	80	—47
*MSI Corporation (Wheaton, Md.)	5	25	—	25	15	—	30	—4
*F. H. McGraw & Company (Hartford, Conn.)	45	—	30	20	5	—	—	—6
Miller-Davis Company (Kalamazoo, Mich.)	7	35	29	1	—	—	28	+29
William Simpson Construction Co. (Los Angeles)	75	—	10	—	15	—	—	—13
Twaits-Wittenberg Co. (Los Angeles)	63	8	—	14	—	1	14	+13
\$15,000,000 to \$20,000,000								
Aberthaw Construction Co. (Boston)	40	5	38	7	3	—	7	+33
Allen Bros. & O'Hara, Inc. (Memphis)	7	—	1	88	3	—	1	+41
*W. J. Barney Corporation (New York)	4	—	65	—	25	—	6	na
*Wm. L. Crow Construction Co. (New York)	—	—	45	—	25	10	20	+21
Crown Construction Company (Los Angeles)	—	45	—	35	20	—	—	+5
*Dillingham Corporation (Honolulu, Hawaii)	—	—	—	84	1	—	15	—37
Harmon Construction Co., Inc. (Oklahoma City)	46	34	—	7	2	11	—	—9
Heftler Construction Company (Beverly Hills)	1	—	—	49	—	—	50	+104
*Irwin & Leighton, Inc. (Philadelphia)	17	6	9	—	7	49	12	—14
Jewel Builders, Inc. (Columbus, Ohio)	—	—	—	75	—	—	25	+20
*LCC Inc. & Lloyds Construction Co. (Chicago)	—	—	—	100	—	—	—	—23
Lembke Construction Co., Inc. (Albuquerque)	20	30	15	—	—	—	35	—7
*George B. H. Macomber Co. (Boston)	12	42	15	6	25	—	—	—6
Mars Assoc. Inc. & Normel Constr. Corp. (New York)	5	80	—	—	—	15	—	—6
McNeil Construction Co. (Los Angeles)	75	5	20	—	—	—	—	+25
S. N. Nielsen Company (Chicago)	—	1	39	39	20	1	—	+15
*Olson Construction Company (Lincoln, Nebr.)	9	24	9	12	17	18	11	—25
*Piracci Construction Co., Inc. (Baltimore)	23	41	—	—	35	1	—	+10
Terminal Construction Corp. (Wood Ridge, N. J.)	2	10	10	46	—	2	30	+44
*Thatcher Construction Co., Inc. (New York)	—	—	35	—	30	—	35	+6
Paul Tishman Company, Inc. (New York)	20	—	—	60	8	—	12	+17
J. A. Utley Company (Royal Oak, Mich.)	4	1	56	—	15	—	24	+11
Williams & Burrows, Inc. (Belmont, Calif.)	5	7	23	35	3	3	24	+6
\$13,017,850 to 15,000,000								
*J. B. Allen & Co. (Santa Barbara, Calif.)	25	25	—	—	50	—	—	+14
Baltimore Contractors, Inc. (Baltimore)	—	85	14	—	—	—	1	+43
Brice Building (Birmingham, Ala.)	20	15	15	15	10	15	—	+4
M. J. Brock & Sons, Inc. (Los Angeles)	—	6	—	28	—	—	66	—5
Dick Corporation (Pittsburgh)	20	30	—	—	30	—	20	—10
Fusco-Amatruda Co. (New Haven, Conn.)	22	39	7	8	24	—	—	na
*Lasker-Goldman Corporation (New York)	—	—	—	—	56	—	44	+11
*B. J. Lucarelli & Co., Inc. (Newark, N. J.)	5	7	8	80	—	—	—	+7
Mahony-Troast Construction Co. (Clifton, N. J.)	6	1	40	—	31	19	3	+10
Mead & Mount Construction Co. (Denver)	7	5	—	—	87	1	—	—12
*Pickens Bond Construction Company (Little Rock, Ark.)	—	60	30	—	10	—	—	+7
*Eugene Simpson & Brother, Inc. (Alexandria, Va.)	30	10	20	15	10	10	5	+14
*Spaw-Glass Inc. (Houston)	16	21	6	33	14	4	6	+9
*Vappi & Company, Inc. (Cambridge, Mass.)	10	80	10	—	—	—	—	+15
*Howard S. Wright Construction Co. (Seattle)	19	—	39	—	30	12	—	+10

*Newcomers to list of 100 since 1963 survey

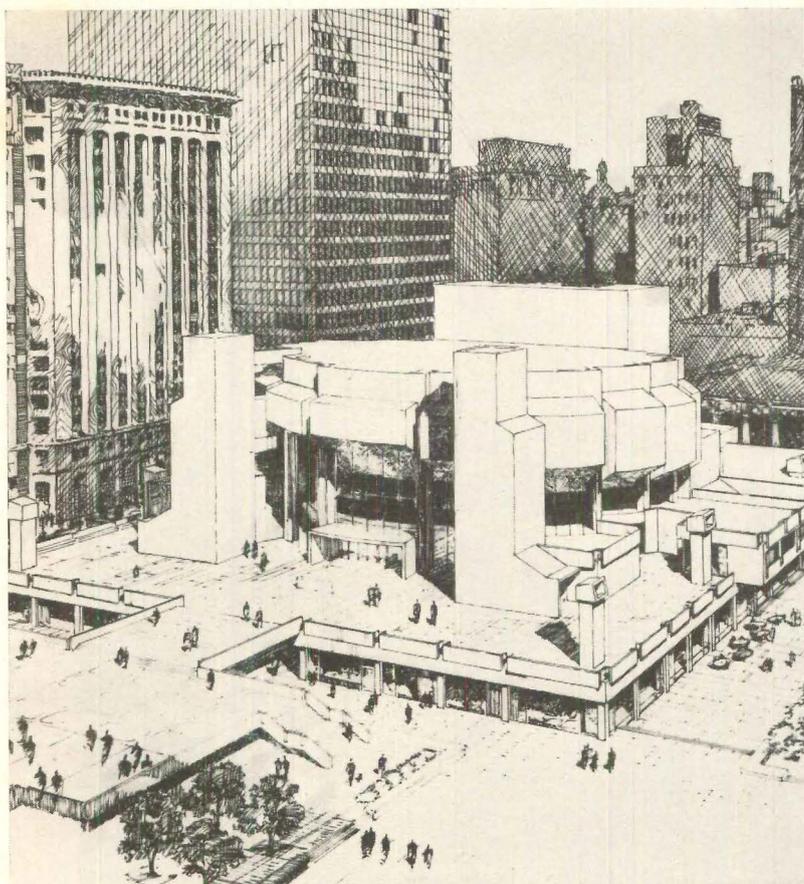
**Firms are listed alphabetically within ranges given

†Apartments, hotels, motels—does not include houses

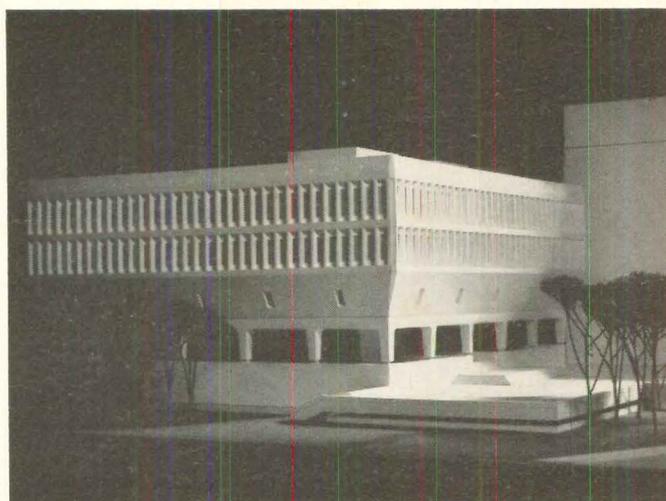
††Other—religious, recreational, military, 1-2 family houses and misc.

nc=no change

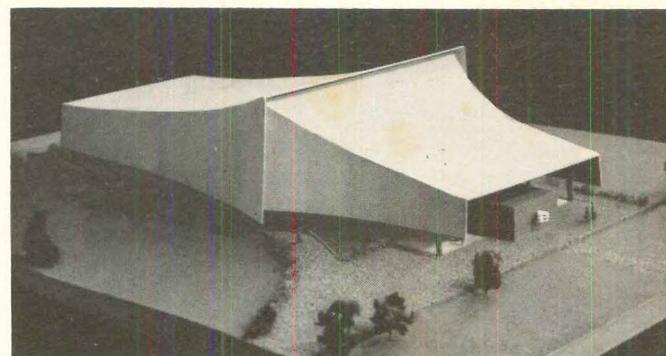
na=not available (totals not broken down by building type)



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1. DRAMA IN BALTIMORE. The centerpiece of Baltimore's Charles Center will be a new 1,500-seat legitimate theater by Architect John M. Johansen. Raised on a platform above street-level shops, the theater will be approached across wide terraces. The rugged exterior expresses the rough fan shape of the seating: sections crop out between piers. Four stair towers, a pair flanking the entrance, are to be exits to the terrace. Owner: Morris Mechanic.

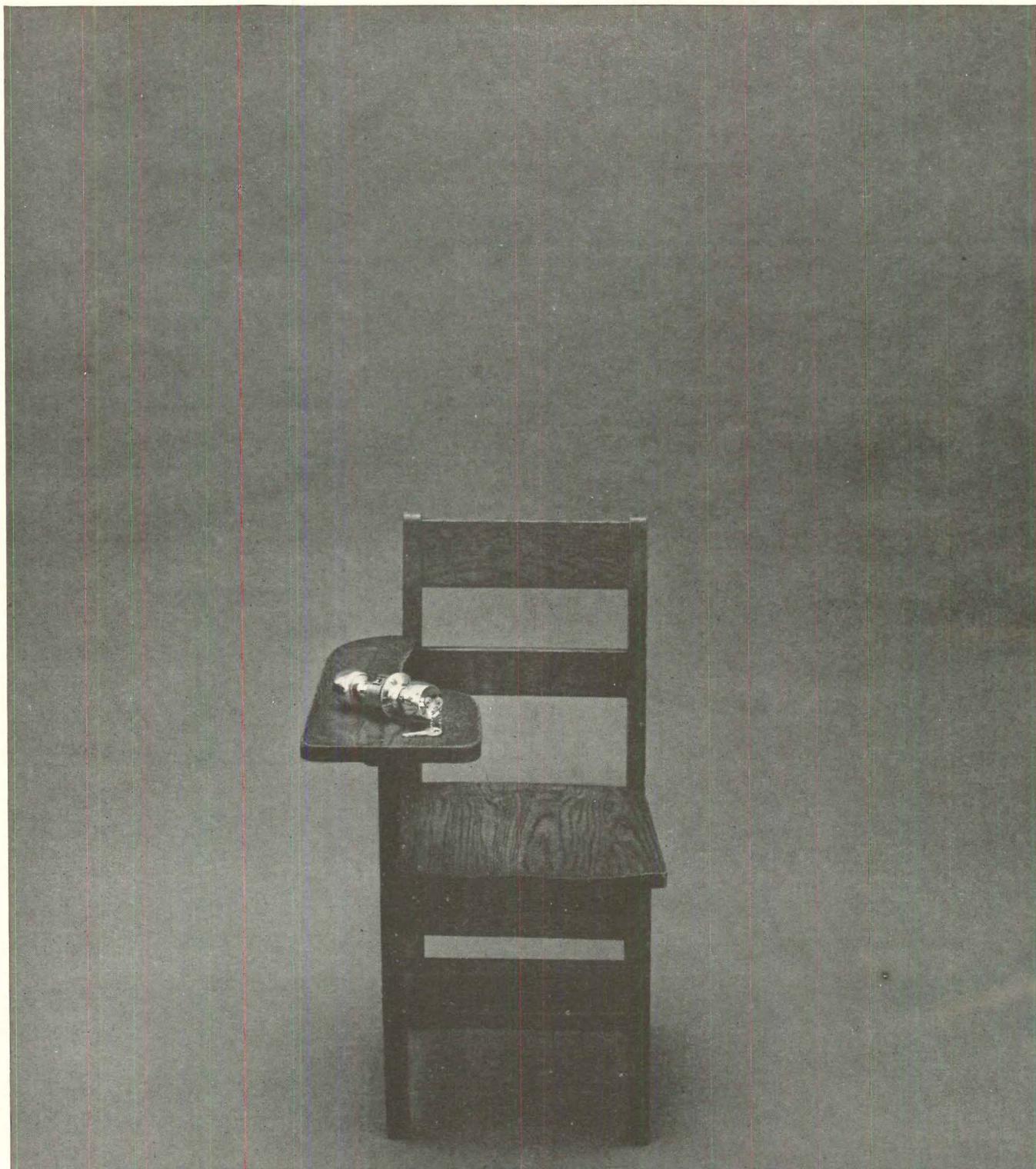
2. SCIENCE IN FLORIDA. As part of a \$93 million golden anniversary

program, the University of Miami in Coral Gables assigned priority (and about a third of the money) to the science center above and a medical center. The first science unit, by Caudill, Rowlett & Scott, will house the departments of zoology and chemistry, together with service facilities for the center. Services feed vertically through columns grouped in fours and horizontally through paired cross beams.

3. RESEARCH AT M.I.T. Helped by grants from several sources, M.I.T. is expanding its Alfred P.

Sloan School of Management with this new building for research in the social sciences and in management. Named for Grover M. Hermann, chairman of the board of the Martin Marietta Corp. and a benefactor of M.I.T., the new building will be four stories high, built of reinforced concrete. The nearly solid second floor will be a poured-in-place girder transmitting the upper floors' weight to the sturdy tapered columns below. Architects: Eduardo F. Catalano, associated with Robert C. Brannen and Paul S. Shimamoto.

4. MUSIC IN COLORADO. An inexpensive hall to replace the Aspen music tent is the goal set by the Music Associates of Aspen. They commissioned Herbert Bayer to develop the design, which will hold 1,300 people during festival concerts and cost in the neighborhood of \$300,000. The unusual shape, with its two-way flare, was determined by acoustical considerations. The structural frame will be a steel column and exposed truss system. Associate architects: Leon Brin, Frederick R. Bates. *continued on page 37*



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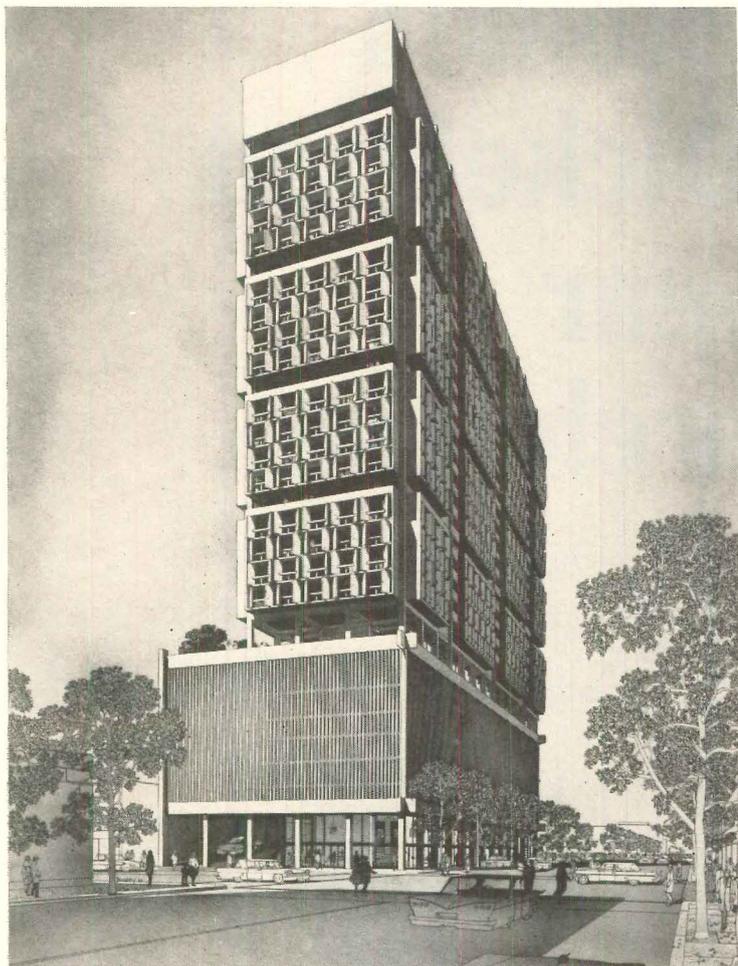
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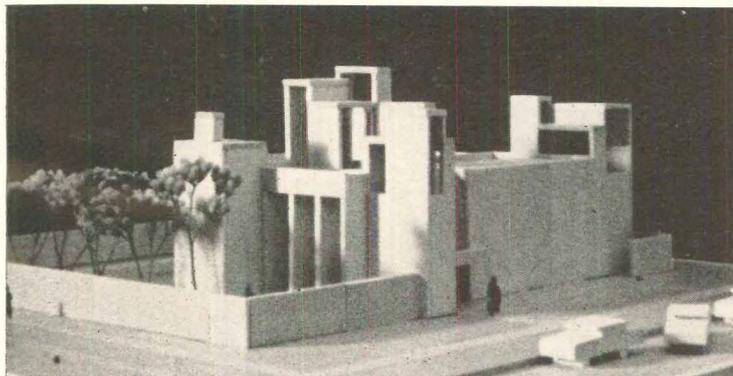
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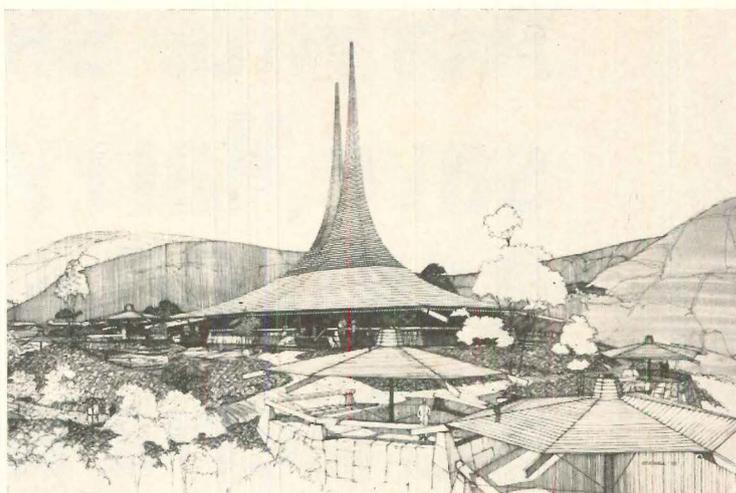


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5. APARTMENTS IN HOUSTON. Houston House, an \$8 million apartment building, will be one of Houston's tallest structures, stretching up 33 stories. The blocky base is an eight-level garage atop ground-floor stores, a lobby, and a sheltered promenade. Inside the patterned tower will be 403 apartments, those immediately above the garage to be duplexes with walled roof gardens. The Texas sun will be kept at bay by closely spaced steel fins striping the garage and precast concrete louvers fixed at angles on

the tower. Architects: Charles M. Goodman Associates and Irving R. Klein & Associates. Owner: The Lumbermens Co.

6. ILLINOIS HALL. The manipulation of space which marked Paul Rudolph's Art and Architecture Building at Yale also distinguishes this much smaller building for the Christian Science Organization at the University of Illinois in Urbana. Ostensibly it has two floors, a pale description of the many levels within. Behind the blank wall of fluted block and directly off the entrance is the



7



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tallest space, a meeting room lit by skylights.

7. LOS ANGELES RESTAURANT. Peaked witches' hats roof the restaurant planned for the new Los Angeles Zoo. Not only do they provide a lighthearted touch, but they also serve the very practical purpose of being readily seen from every corner of the zoo. The two spires above the restaurant are to be 104 feet tall; the smaller roofs shelter exhibits. Architects: Charles Luckman Associates.

8. CLEVELAND APARTMENTS. A tree-studded site in Cleveland,

once an estate overlooking a city park, will keep much of its natural quality despite two high-rise apartment buildings on a corner plot. Architect Don M. Hisaka's plan places most apartments within view of the park and a valley (top left). Also on the site will be split-level garages (foreground), a small motel, and two groups of townhouses. The apartment buildings, 16 stories high, will be strongly modeled of poured-in-place concrete and will contain 150 apartments. Developer: A. J. Brusino. *continued on page 39*

Acrylite® skydomes save Harry Dickelman \$3466.00 a year in Peoria warehouse.

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says Mr. Harry C. Dickelman,
President of the General
Warehouse & Transportation Co.,
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That comes to about \$1-a-foot savings. He's planning another warehouse — 100,000 sq. ft. —

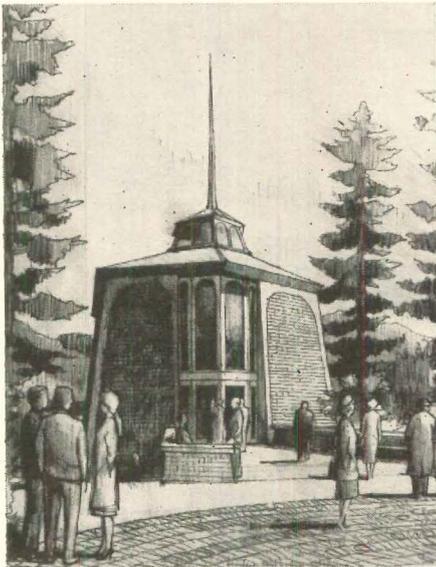
where he expects to save \$250,000 over the 50-year life of the building.

This case history is typical of the way Acrylite skydomes are cutting costs in industrial, commercial and educational buildings all over the country. Acrylite skydomes are made of tough acrylic plastic and durable aluminum. They're weatherproof, water-tight, shatter-resistant and virtually maintenance-free.

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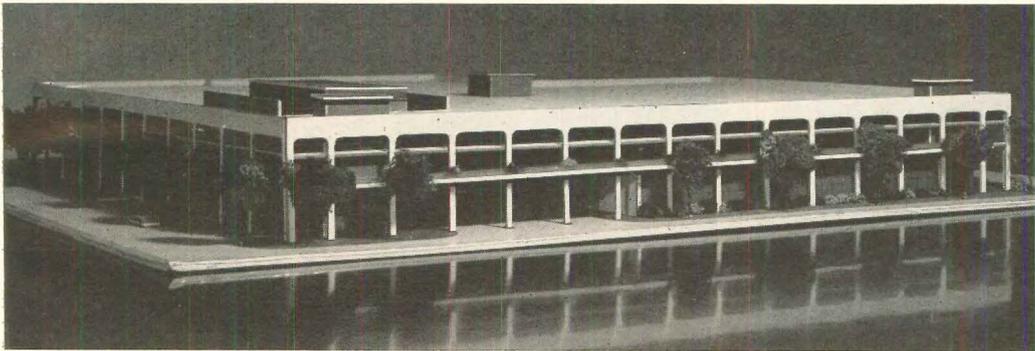




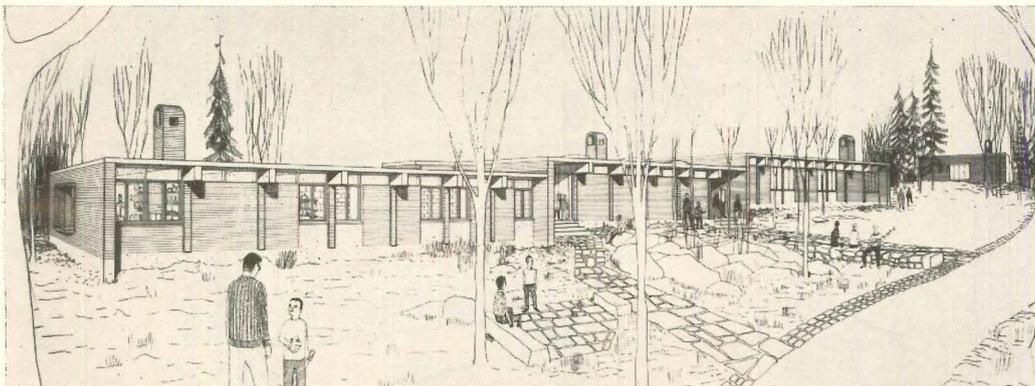
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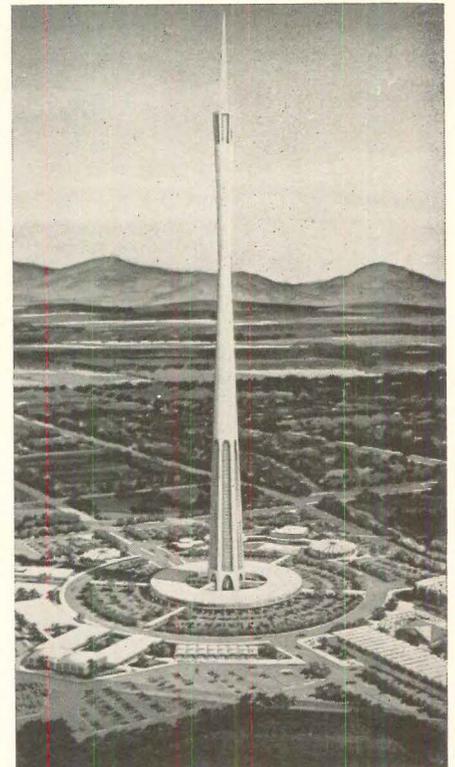
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9. CALIFORNIA CHURCH. This small, elegant chapel by Callister and Payne of Tiburon is the First Church of Christ Scientist in Mill Valley, Calif. It was designed as "an oasis for religious contemplation with much of the shingle-church-in-the-redwoods tradition." The auditorium will be lighted by clerestories beneath the spire, slit windows, and a chandelier.

10. SACRAMENTO SHOPS. Within a stone's throw of Capitol Mall, Sacramento's downtown redevelopment area, shoppers will be able to park, shop, and sample

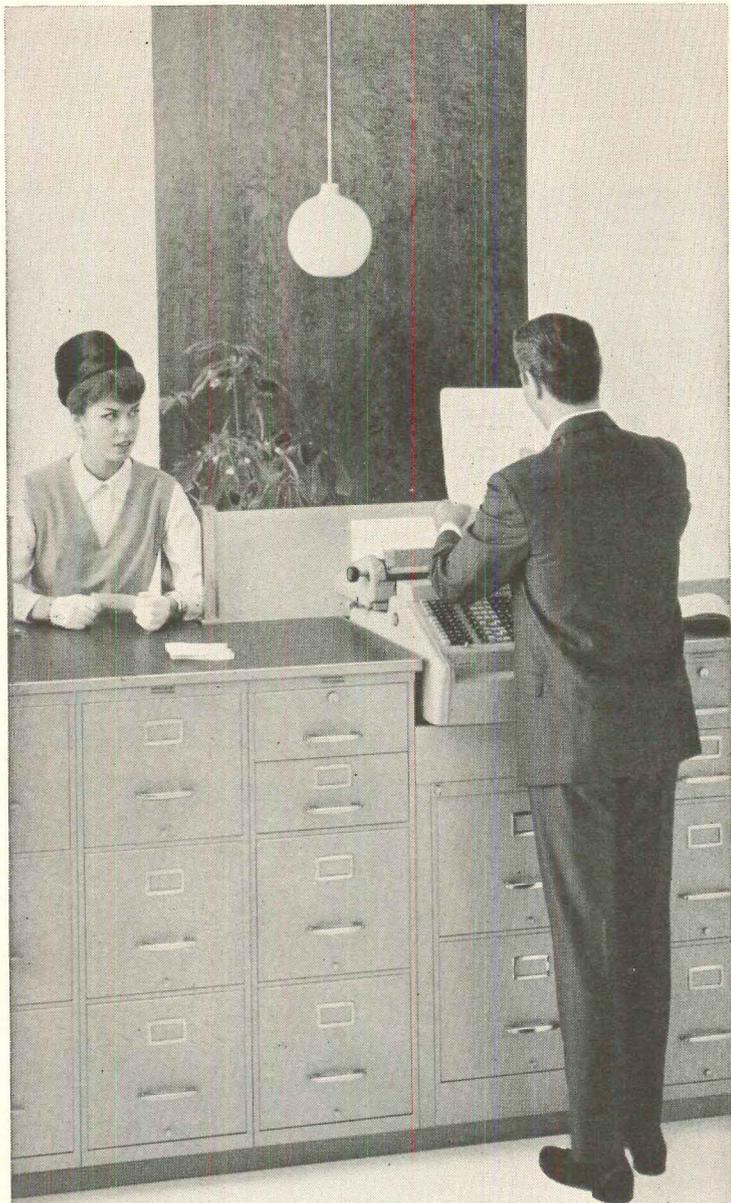
gourmet specialties, all in the same block. Leo A. Daly & Associates designed the Convenience Motor Shopping Center for Northern California Developers, Inc., parking 800 cars on three levels above an international restaurant and a supermarket.

11. NEW YORK SCHOOL. The Wiltwyck School, which is both a school and a treatment center for emotionally disturbed children, is planning a new campus in Yorktown, N.Y., one of the dormitories shown above. Architect Richard G. Stein specified the same simple

materials throughout—brick and concrete with precast roofs—yet achieved variety in each group.

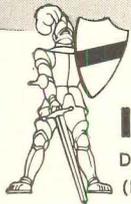
12. CAPITAL OFFICES. Instead of hiding "the largest privately owned office building in Washington" behind a classical temple, Morris Lapidus Associates' design gains a monumental character from a rhythmic façade of reinforced concrete. There are to be 12 floors of 54,550 square feet each and four more underground. Cost: \$28 million, including land. Owner: Northwestern Development Co. of Washington.

13. DENVER NEEDLE. A tower proposed for the outskirts of Denver would dwarf the Empire State Building, topping it by 230 feet, and provide spectacular views from lofty observation platforms and a restaurant. Structural Engineer Lultcho Boduroff plans to build the tower from elongated cones joined by a narrow neck of concrete strung with cables through the center shaft. Inside the bottom cone would be offices, a hotel and convention center. Developer: Towerland Leasing Corp. of Denver. **END**



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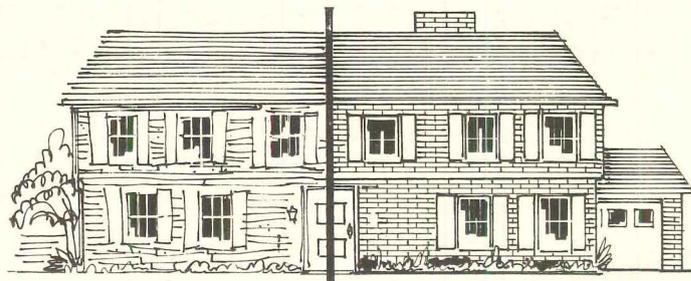


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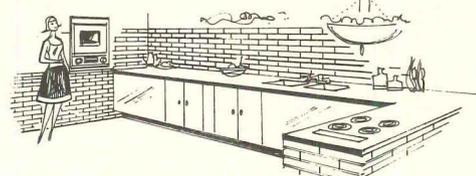
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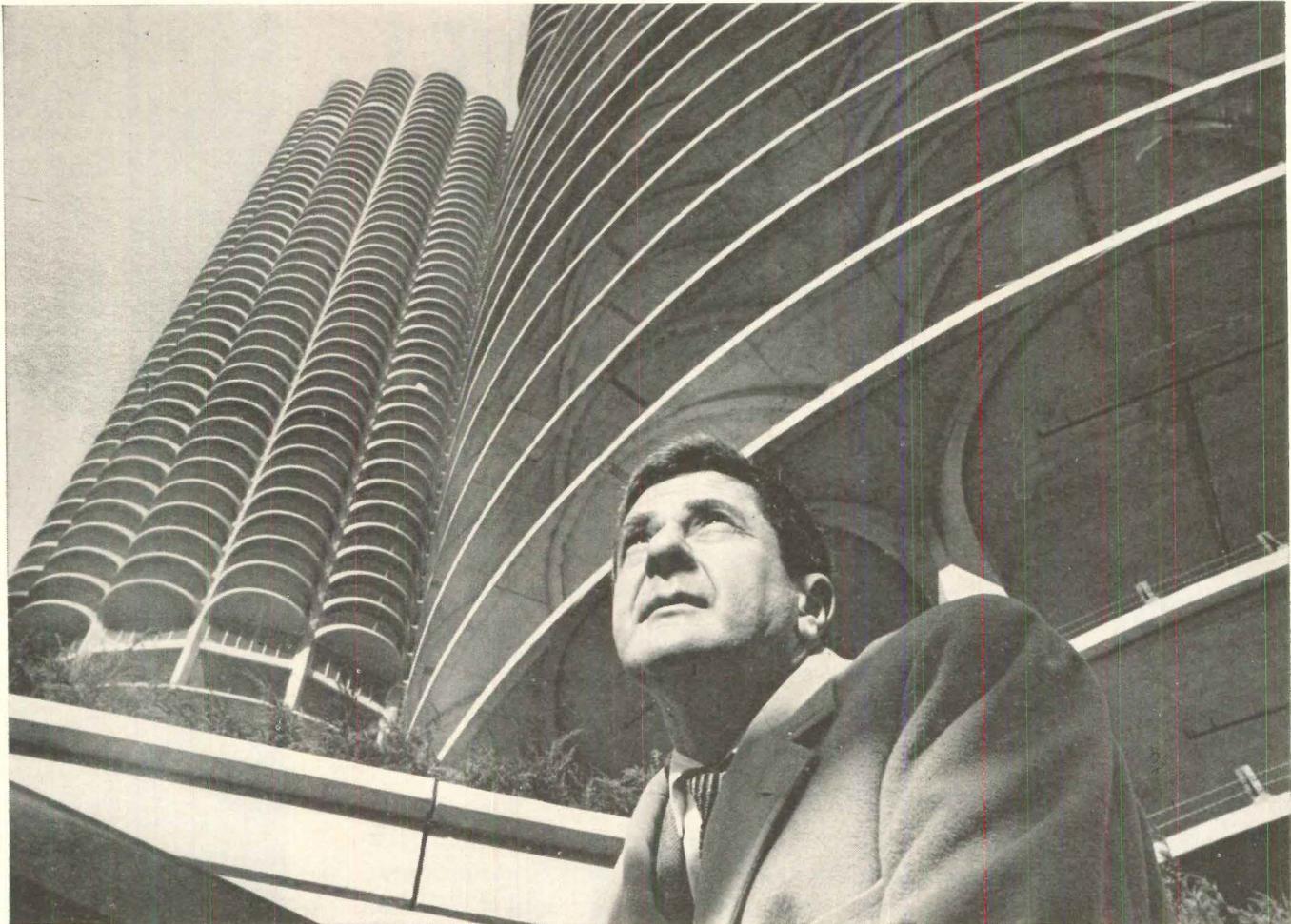
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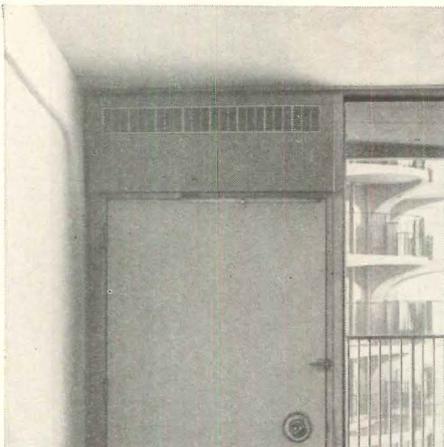
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How Bertrand Goldberg used General Electric Zoneline Air Conditioning to design Marina City "for the varying needs of the individual tenant."



Again demonstrating its flexibility, a Zoneline unit has been installed above a door in a typical Marina City apartment.

Bertrand Goldberg explains a step forward in apartment design: "Today we are designing as flexibly as possible for the varying needs of the individual tenant. In the past we've frequently forgotten that each tenant has needs and preferences which are different from his neighbor's."

This new approach to apartment design is exemplified in Mr. Goldberg's Marina City, a 60-story project in Chicago housing 896 families, recreation and shopping facilities and a 700-boat marina.

"At Marina City individual Zoneline air conditioning units for each room allow not only each tenant—but each room occupant—to enjoy exactly the temperature and air environment that he desires. The push of a button gives each room occupant his choice of hot or cold air, automatic or manually controlled and either

re-circulated or filtered outdoor air."

Goldberg is also enthusiastic about Zoneline because it can be used so unobtrusively that "it doesn't compromise the integrity of the architectural design."

In addition to Zoneline room air conditioning, Marina City features 117 three-ton and 117 five-ton G-E central air conditioning units. Using both room and central air conditioning in the same building is just one more example of how Zoneline's flexibility and custom design can make it an integral part of any architectural design. For details, write Air Conditioning Department, General Electric, Appliance Park, Louisville 1, Kentucky.

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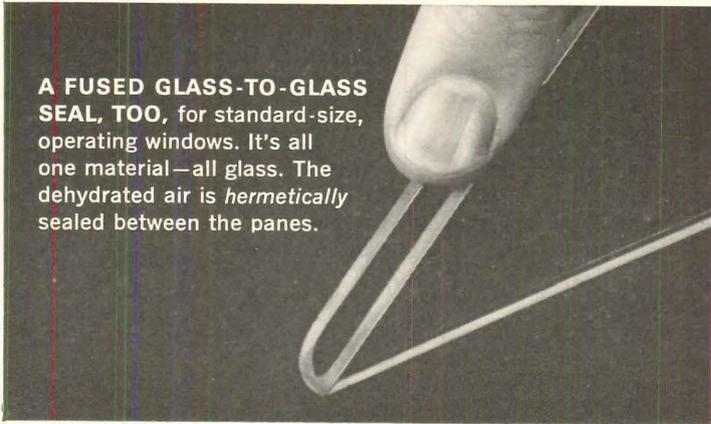
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A GREAT NAME IN GLASS

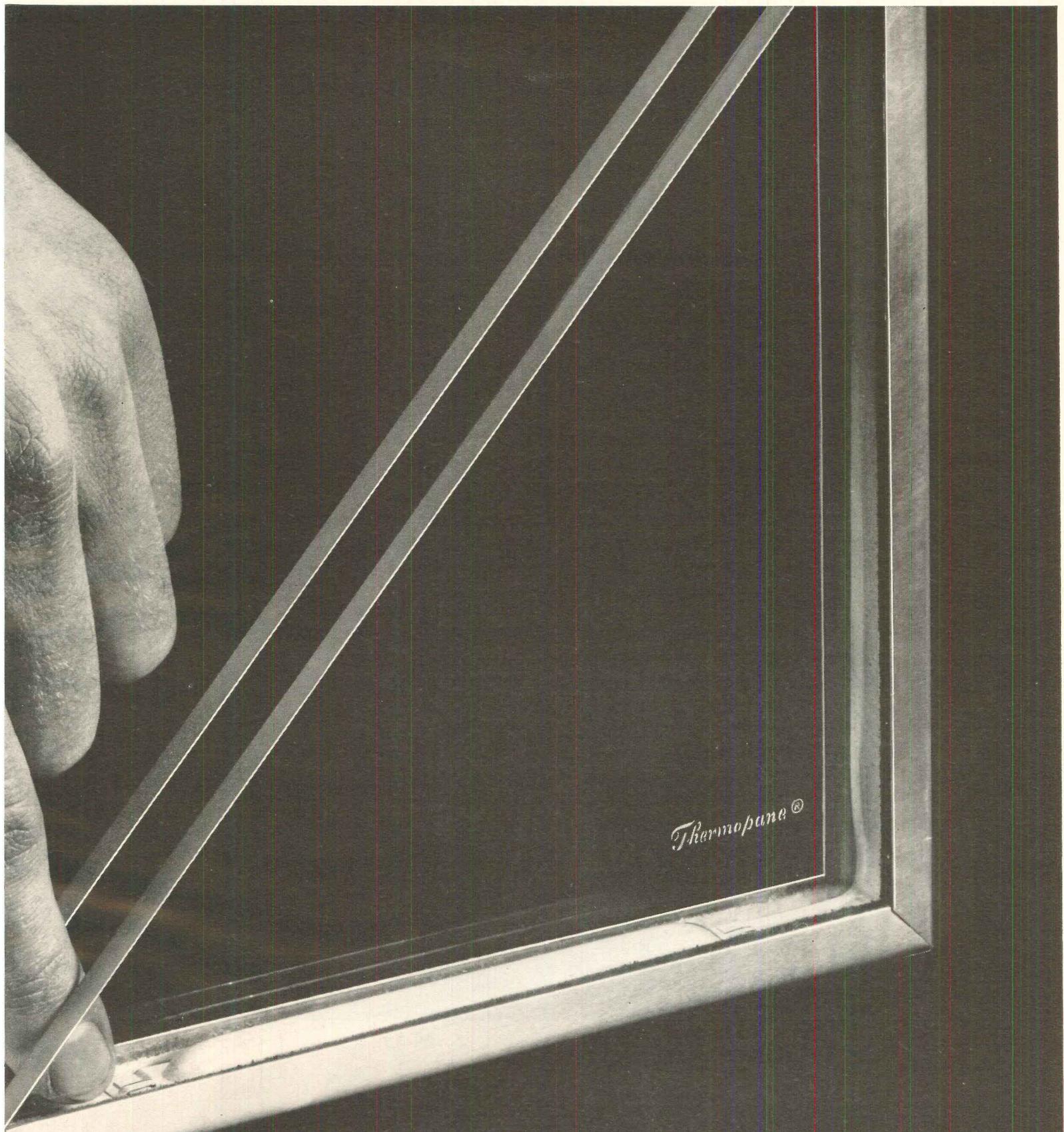
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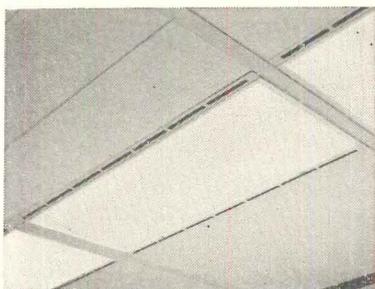


METAL-TO-GLASS SEAL

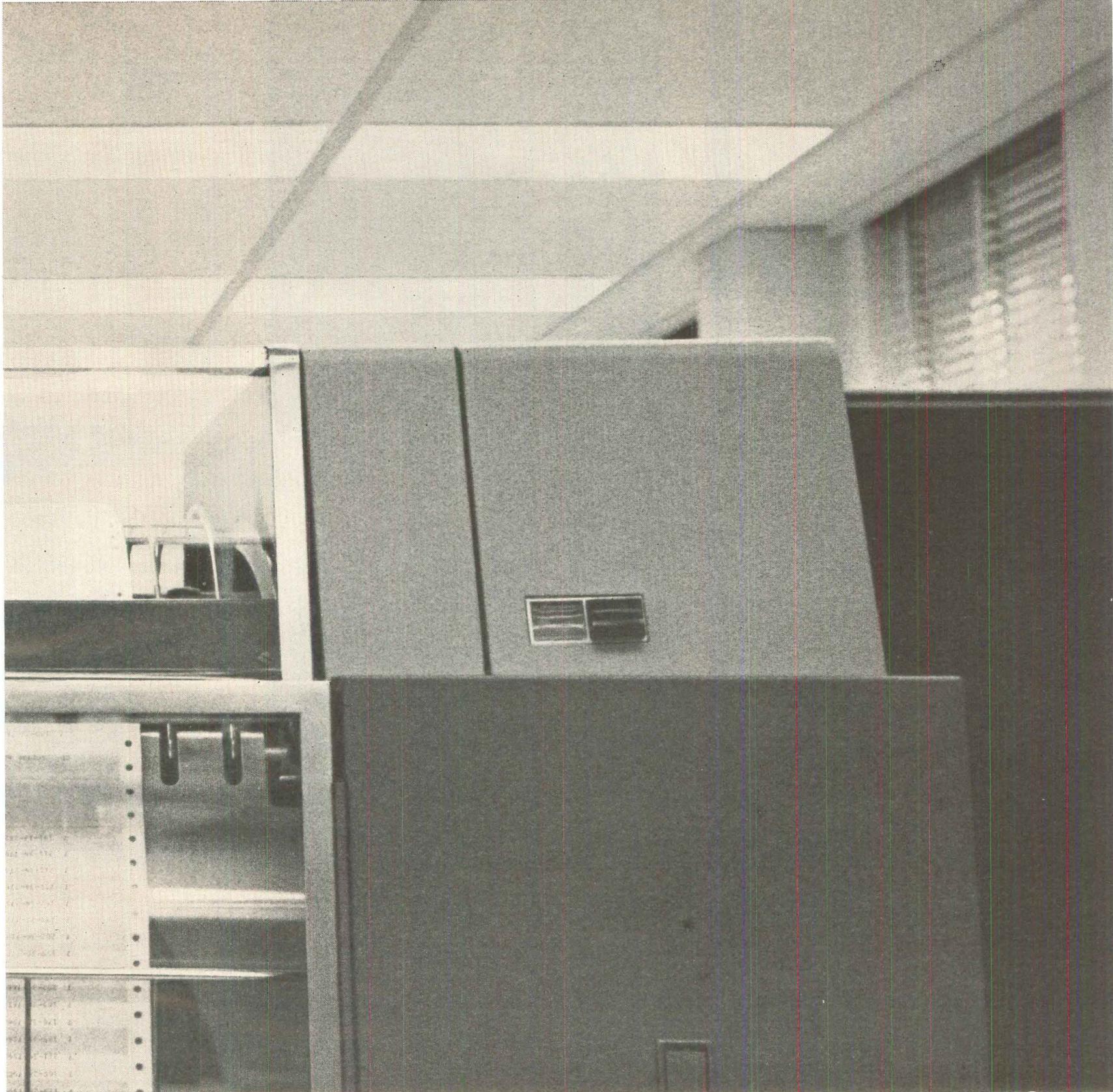
The dehydrated air space between the two panes in *Thermopane* is protected by a metal-to-glass seal which is bonded—not glued. No organic seal can stay so vaportight! To keep the air even drier, each unit has the exclusive dehumitube on the metal seal.



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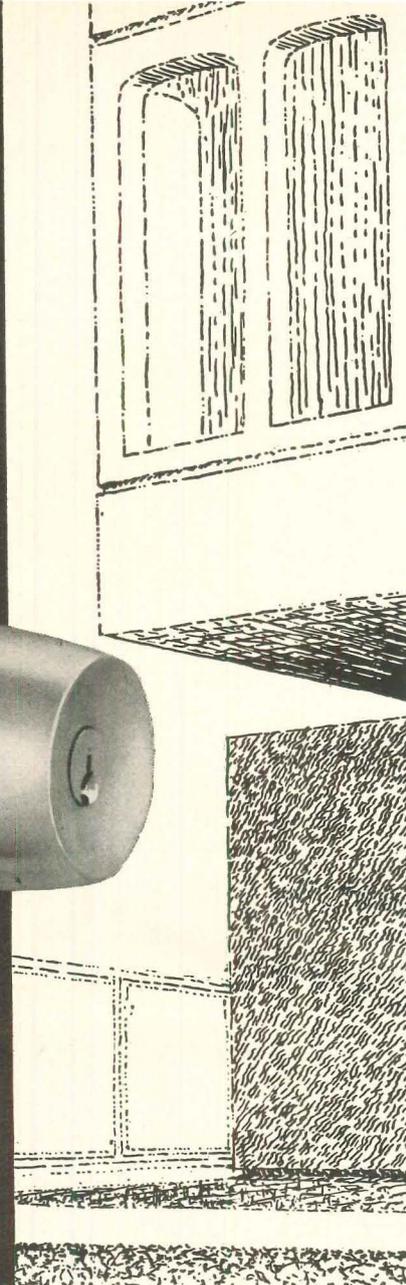
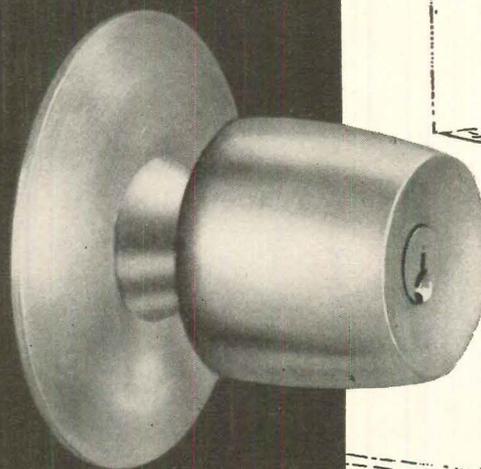
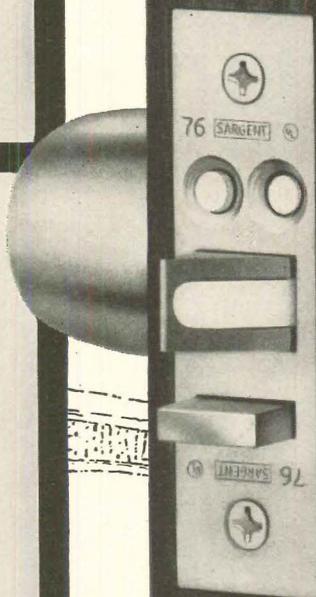
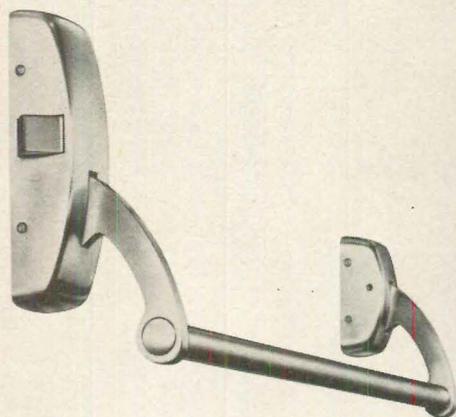
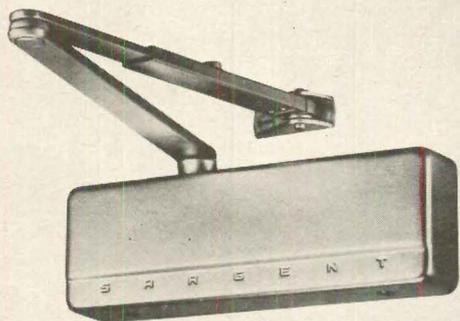


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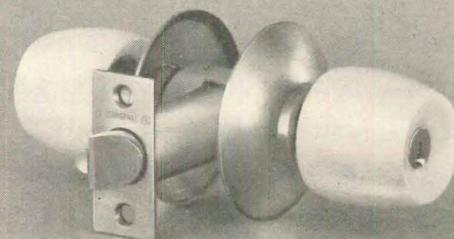
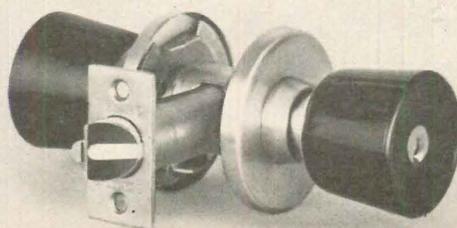
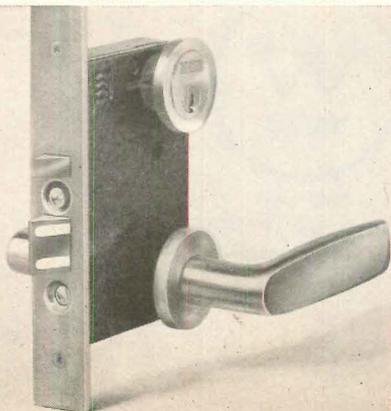
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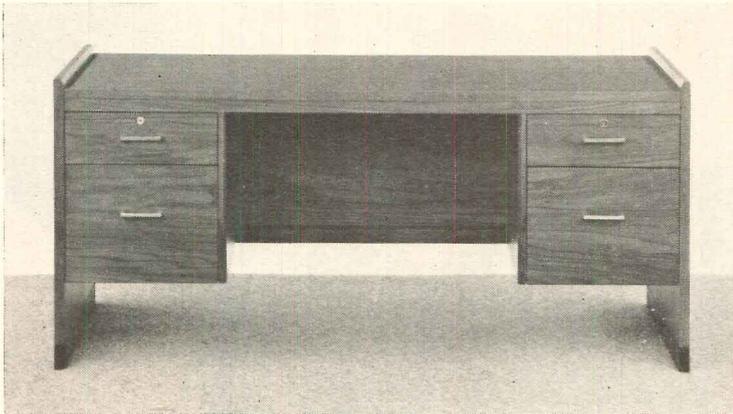
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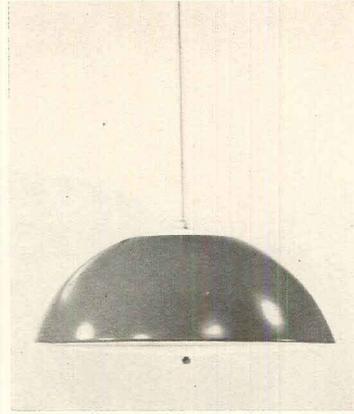
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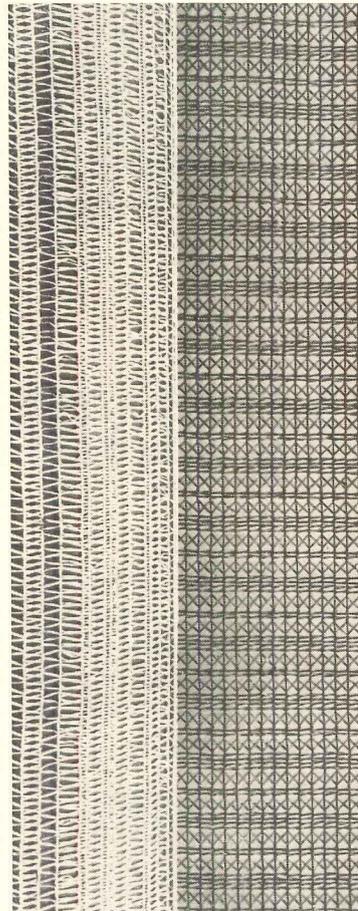
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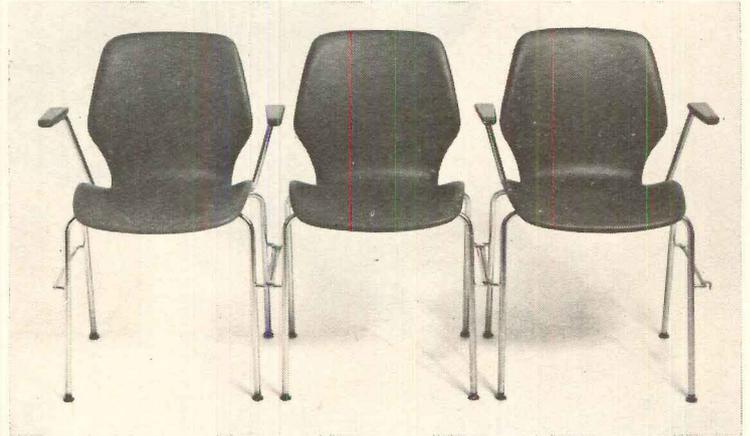
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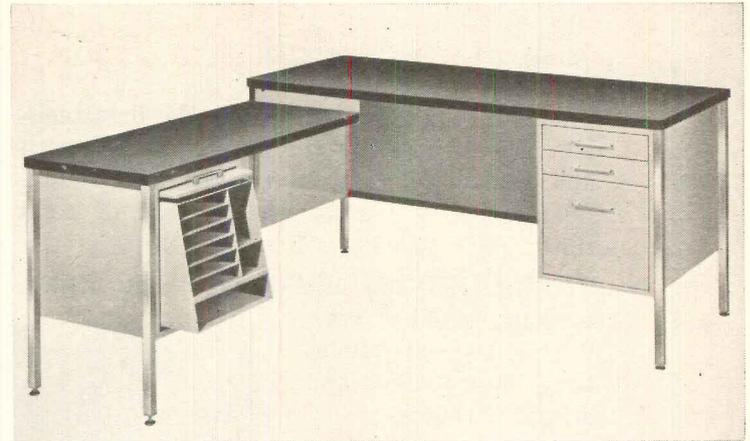
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1. WALNUT DESK. Chicago's La Salle St. lends its name to a new walnut group developed jointly by Marshall Field's contract division and the Domore Chair Co. of Elkhart, Ind. The collection's double-pedestal desk has a plastic top matched to the real wood's grain. Cost: \$334.50.

2. PADDED POSTURE. Jacob Epstein, chief designer for Cumberland Furniture Co.,* has remodeled the utilitarian posture chair into an imposing executive model which swivels, tilts, and adjusts to various girths. Seat, back, and

arms are padded in foam rubber. Cost in muslin: \$425.

3. DANISH LOUNGE. Moreddi Inc. of Long Beach, Calif. imports this lounge chair by Poul Norreklit of Denmark. It can stand "alone" or several chairs can be linked into sofas. Cost: \$440.

4. LARSEN CASEMENTS. Jack Lenor Larsen's new casements of Rovana mesh are white Filigree (left) and Interplay (right), which comes in glare-reducing black and bronze as well as white. Both casements are 50 inches wide and sell for \$6.75 a yard.

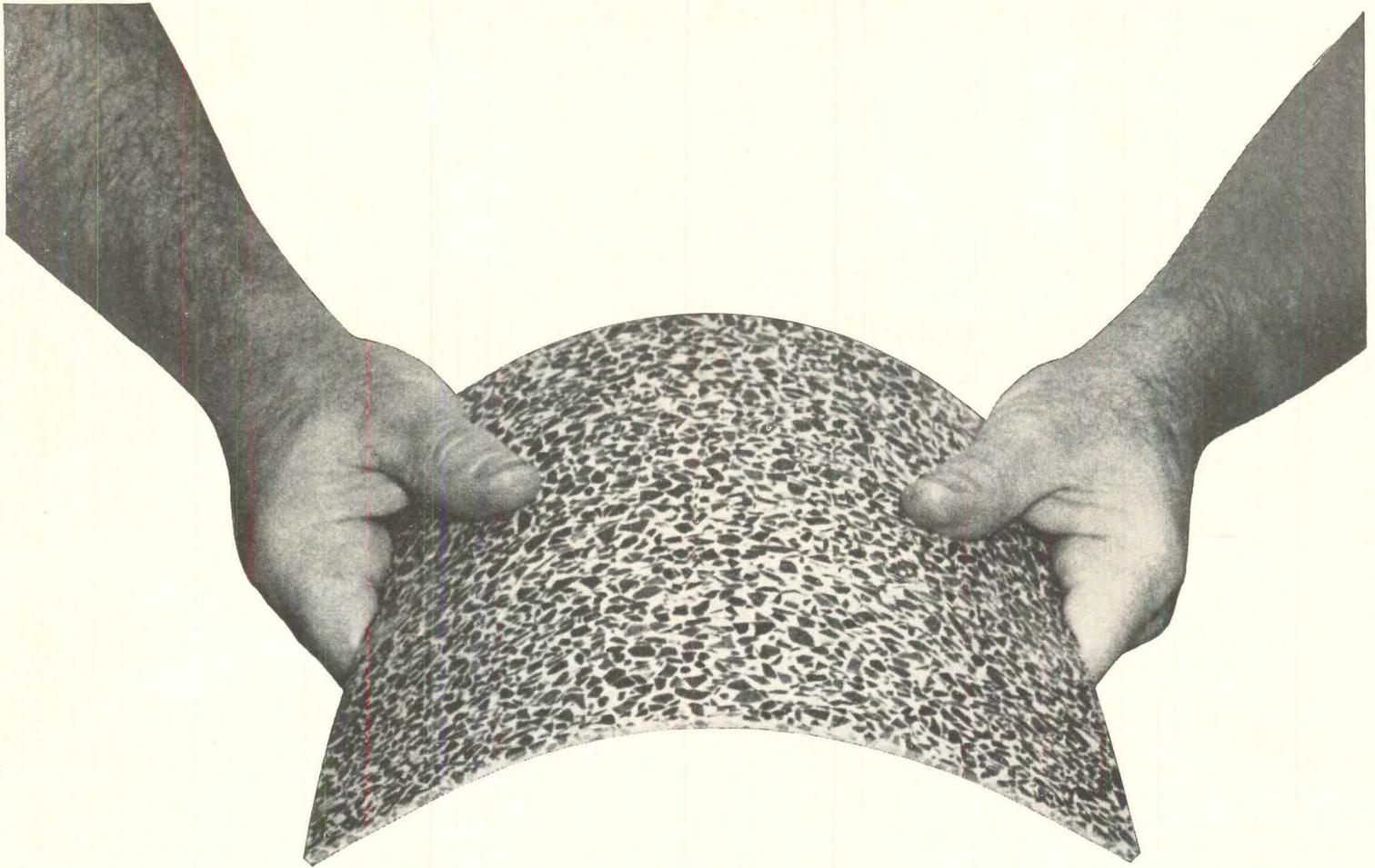
5. METAL DOME. Lightolier's new pendant lamp is an aluminum dome louvered at the top. Domes are 17 inches in diameter, finished in white or gray, and they cost about \$15 each.

6. EXECUTIVE SWIVEL. A great deal of swiveling luxury has been designed in this chair by Nicos Zographos for the Albano Contract Division. The leather bucket seat has a downy cushion, and the chair swivels on a polished stem. Cost in muslin: \$408 to \$438.

7. VERSATILE CHAIRS. The Scala chairs from Norway stack, link,

and on a different base, even swivel. Oivind Oversen designed them, and they are imported by Scandinavian Design. The shell is covered in heavy vinyl. Cost: \$89 with teak arms, \$68 without (middle chair).

8. SECRETARIAL DESK. One of Royalmetal's new "6000" collection, this secretarial desk has an accompanying typing return and a stationery compartment which retreats when not needed. Both are steel, finished in baked enamel, and topped with plastic. Cost: \$339 to \$371. END



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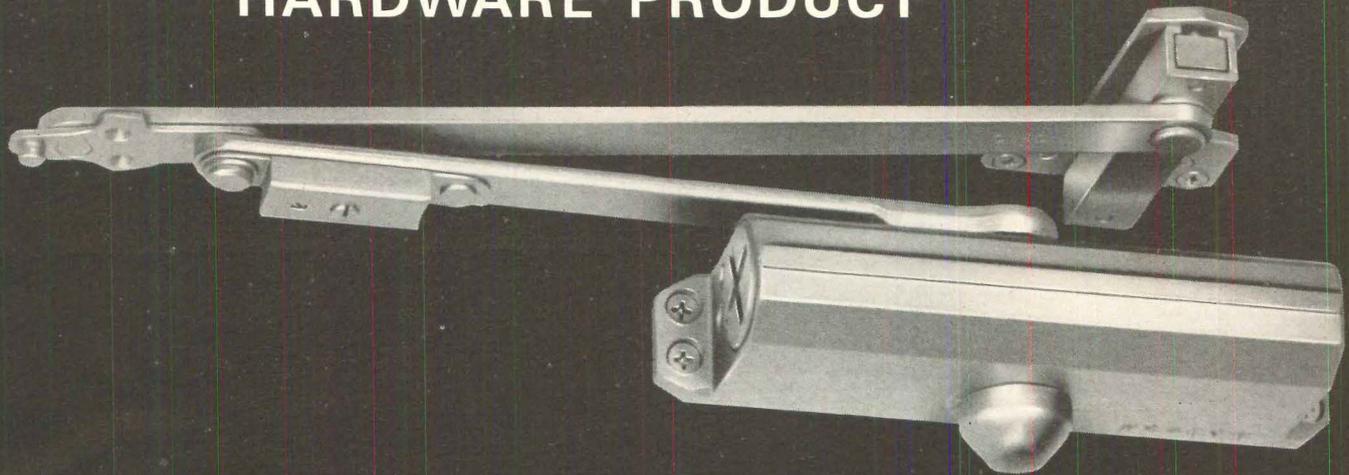
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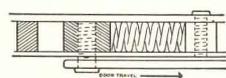
At almost full open, the arm engages a spring in the shock absorber mounted to the soffit plate. Opening momentum is absorbed.



(2) Stops the door



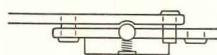
As the spring in the shock absorber is compressed, the door is stopped. There's no shock to the door, hinges or Uni-trol.



(3) Holds the door open



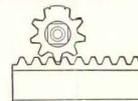
Spring loaded hardened steel ball in the holding mechanism is engaged by a recess in the Uni-trol fore-arm. The door is held open.



(4) Closes the door



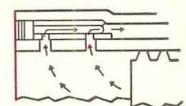
When released a dependable Norton spring-loaded rack-and-pinion mechanism supplies power to close the door.



(5) Regulates closing and latch speeds

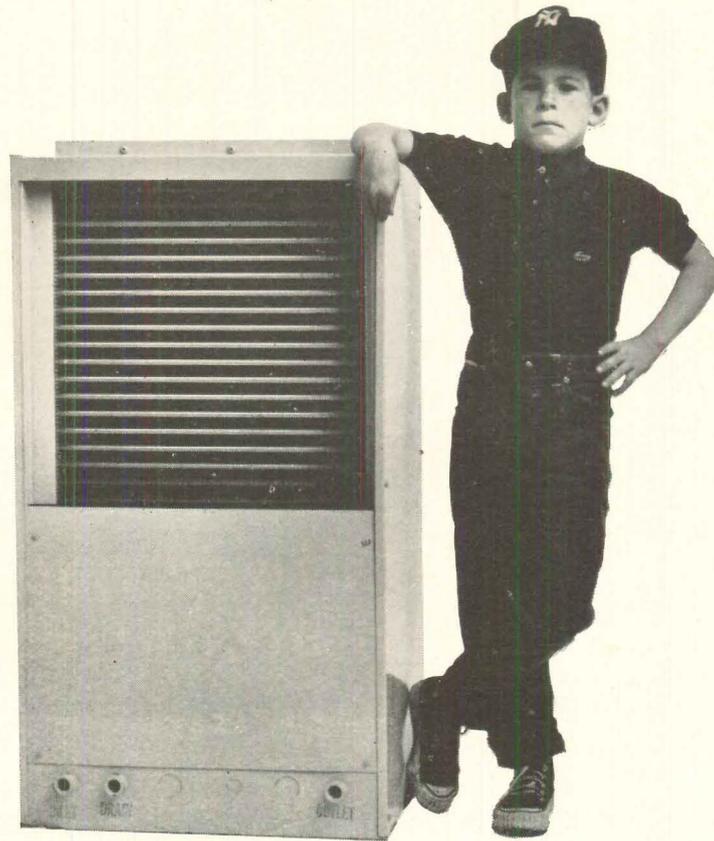


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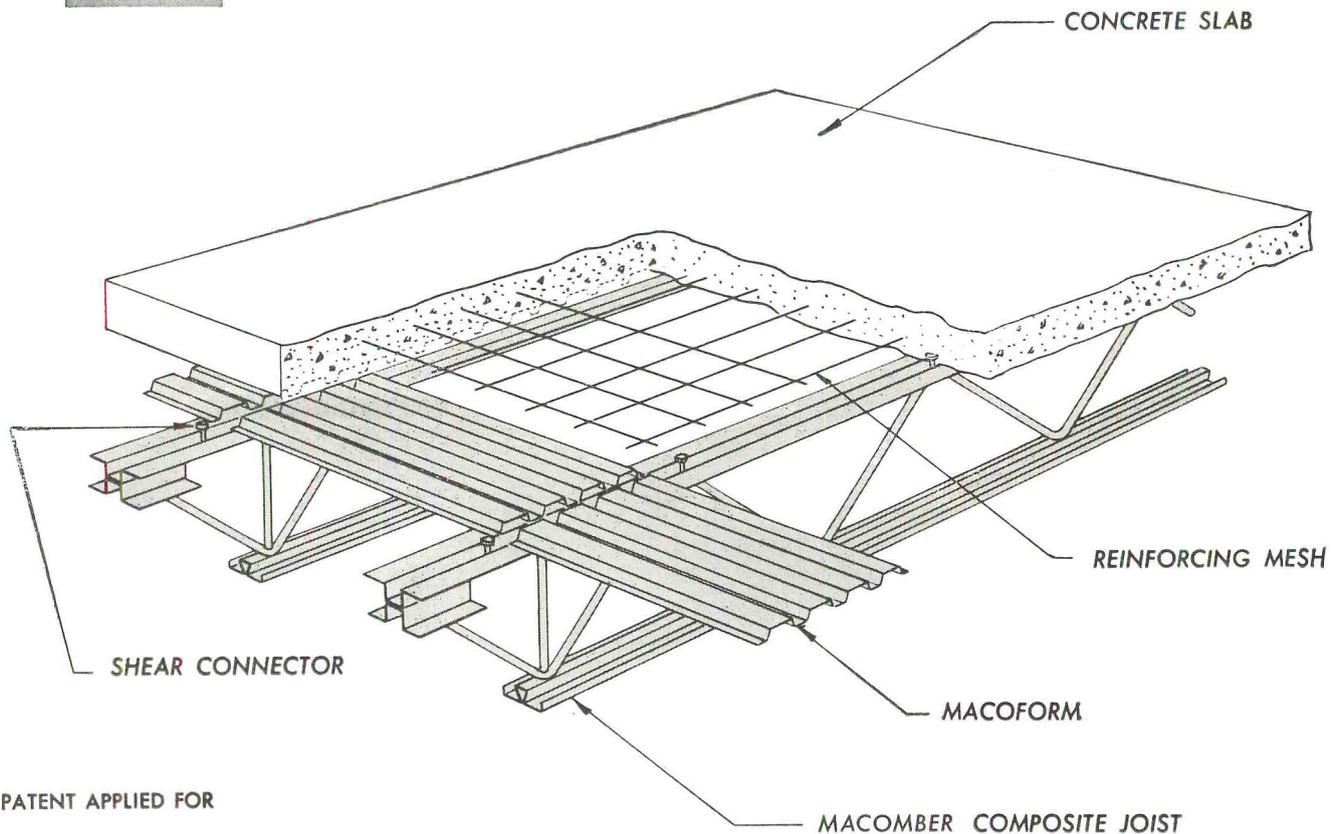


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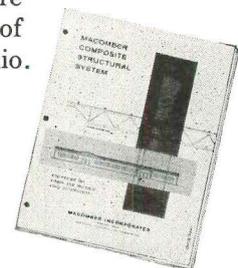
rigid unit than steel and concrete acting independently. Developed around a special open-web joist, the system permits longer spans with shallower depths, reducing height per floor. More efficient use of materials with a reduction in total dead weight and labor costs, result in decreased building costs.

The Macomber Composite System is another new custom steel product from the expanding world of Sharon Steel. For technical brochure write Macomber Inc., Subsidiary of Sharon Steel Corp., Canton 1, Ohio.

MACOMBER INCORPORATED

CANTON 1, OHIO

SUBSIDIARY OF SHARON STEEL CORPORATION





This school cost less with ceramic tile

More than 13,000 sq. ft. of American Olean ceramic tile were used in this New York state school—in corridors, shower rooms, lavatories, kitchen and on the building exterior which features a colorful tile mural.

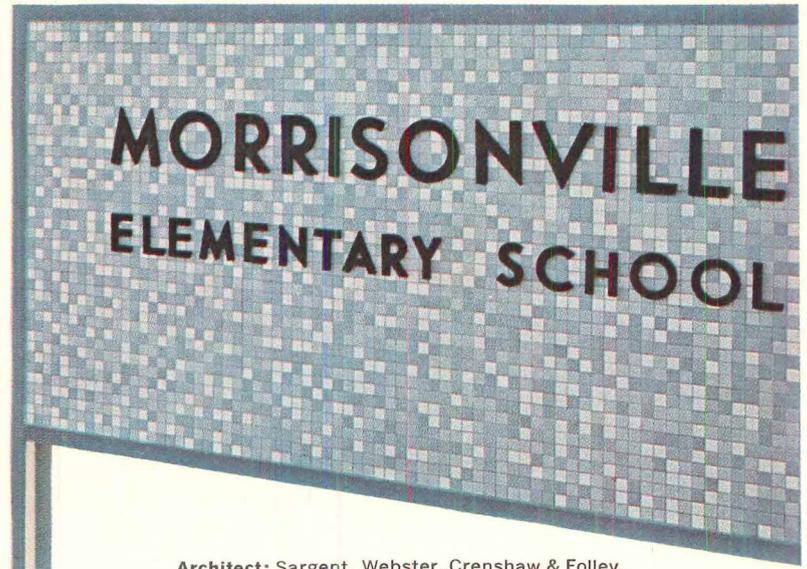
Expensive? Total construction cost per sq. ft. was only \$16.04—appreciably *below* the \$16.70 median for schools constructed in New York state during the same period.

This low cost is particularly significant since the extensive use of ceramic tile was accompanied by comparable high quality in other materials and systems used in the building.

Write for informative color booklet 620, "Ceramic Tile for Schools."

Exterior walls (above) are 1" x 1" ceramic mosaics in assorted colors with mural design in Cobalt and Emerald. Plate 508.

Corridor walls (below): 4¼" glazed tile in 345 Cr. Cobalt, 42 Aqua Mist, 97 Gardenia, 76 Sage Gray, 52 Daffodil. Plate 509.



Architect: Sargent, Webster, Crenshaw & Folley.
Tile Contractor: Louis DiFabbio & Bertoli.

CERAMIC TILE
American Olean

World's Fair—See American Olean tile in the House of Good Taste

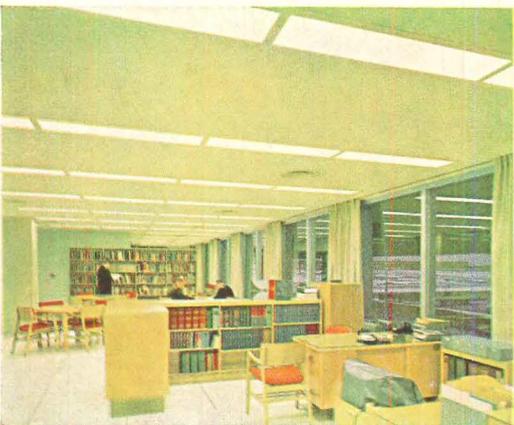
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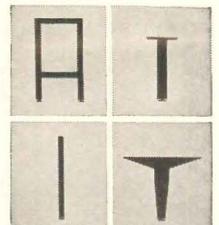
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WORLD TRADE CENTER

Forum: The need for a World Trade Center for New York City (March '64) is conceded by its opponents. Their concern is that its sheer size would require it to seek tenants [beyond those directly connected with trade].

Obviously, if the Port of New York Authority intends to go into competition with private owners, it has insurmountable advantages. It borrows at about two-thirds the cost. It has all of the financial support of the Port Authority's other profitable enterprises. It pays no income taxes. Moreover, it intends to pay about one-fifth as many dollars in lieu of city real estate taxes as the builders of a private enterprise would be required to pay.

The Governors of The Real Estate Board of New York believe that a World Trade Center is desirable for the city and that the Port Authority is the agency to create it. However, there is genuine concern on the part of the Board that the projected availability of as much as 10 million square feet of space may prove disruptive to the rental market. The Board hopes that the Port Authority will seriously concern itself with this precautionary note. The Board is prepared to make available to the Port Authority, as a public service, a group of its qualified members for consultation.

JAMES D. LANDAUER

*New York City President
The Real Estate Board of New York, Inc.*

Forum: In lower Manhattan it *does* matter how high up you go and where you do it. Isn't the skyline a landmark worth saving?

GERHARD J. GRAUPE

New York City Architect



Forum: Although Minoru Yamasaki has aligned himself with skillful technologists, he has turned his back to the vital continuum of appropriate design for its time and place.

Application of the messages between the lines of Vitruvius' and Palladio's instructions would give Yamasaki's work depth, literally, rather than the lottery selection of one of the 101-plus iconic exercises necessary to produce a new, novel, and nifty Gothic tracery in

marble chip concrete or slippery stainless steel.

DENIS C. SCHMIEDEKE

Dearborn, Mich. Architect

THE WAR AGAINST NOISE

Forum: I was delighted to read "FHA Joins the Tenants' War Against Noise" (Mar. '64). It was especially gratifying to see the emphasis on the tentative nature of the FHA impact isolation standards. We are not sure that everyone realizes how tentative these standards are but, as you pointed out, if the establishment of some sort of standards can increase the awareness of problems, we will have made some progress.

ROBERT B. NEWMAN

Cambridge, Mass. Bolt, Beranek & Newman

GROPIUS AND HARVARD

Forum: The Editor's Note "Love of Life—and Its Opposite" (March '64) was most gratifying. Editor Haskell summed up effectively the major movements in the design of our environment during the past generation.

There was just one statement which seems to need correction: "Gropius . . . had built up Harvard's School of Design." Gropius was but one of several foreign experts, including Marcel Breuer and Martin Wagner, who were given hospitality at Harvard by Dean Joseph Hudnut shortly after his original concept of a unified school of design had been established in Cambridge. Gropius contributed much to the method of teaching and to its quality in the Department of Architecture, which is but one of three parts of the School of Design. But it was Hudnut to whom the full credit for "building up" the School of Design must be given. At Harvard, he added the disciplines of landscape architecture and planning. It was Hudnut, too, who insisted upon the high standards for the Harvard School of Design.

ROBERT C. WEINBERG

*New York City President, Alumni Council
Harvard Graduate School of Design*

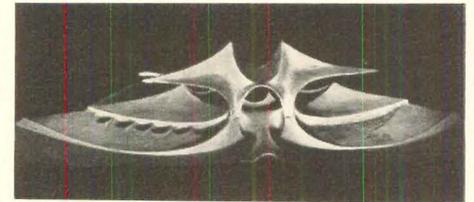
■ *In the brief, incomplete note, Hudnut was unjustly neglected; but Gropius was pre-eminent in bringing industrial-age design into architecture, and did this at Harvard—ED.*

POST-MODERN MUSEUM

Forum: Philip Johnson's design evolution must have generated the method by which he felt art objects should be effectively exhibited (Dumbarton Oaks Museum, March '64). One wonders if he communicated these concepts to the designer of the display devices. It is inconceivable that the architect would design a museum of transparent enclosure, curved surfaces, general lighting, and rich and competitive materials without having the ultimate answer to the problems of display firmly in mind.

WILLIAM F. FREEMAN, JR.

High Point, N.C. Architect



RIGHT SIDE UP

Forum: I would like to call to your attention the Spirit of St. Louis Airport Terminal in Missouri (*Projects*, March '64). You printed it upside down.

THOMAS E. GUTEKUNST

Allentown, Pa. Everett Associates

■ *No, it was printed right side up, as shown above, although some would like to invert it to get it airborne. The "big wings" at the bottom are actually molded earth forms—ED.*

YALE'S ARCHITECTURE

Forum: In writing about Yale's School of Art and Architecture (Feb. '64), you cited the methods of forming, pouring, and treating concrete in two of Yale's neighboring buildings, the Art Gallery and the New School of Art and Architecture. The comparison is not very fortunate. Louis Kahn's tetrahedral concrete floor and ceiling structure is a three-dimensional space frame, an advanced (ten years ago) application of this knowledge to concrete, while Rudolph's treatment is surfaced and decorative; breaking the homogeneous nature of the concrete has to be objectionable as to its effect on the soundness of the wall construction.

ADAM M. KAAS

New Haven, Conn. Architect

PARADISE DOWNTOWN

Forum: Senior Editor Dave Carlson and FORUM have rung the bell again—this time with "Downtown's Dramatic Comeback" (Feb. '64). It has taken a long time for people to realize that downtown is the economic core of our cities; that renewal cannot ignore the special downtown problems and still attempt to restore the outlying areas to vigor and health. You have dramatized this facet of urban renewal and placed it in its proper context. We would like reprints to distribute to our local renewal agencies.

Washington, D.C. WILLIAM L. SLAYTON

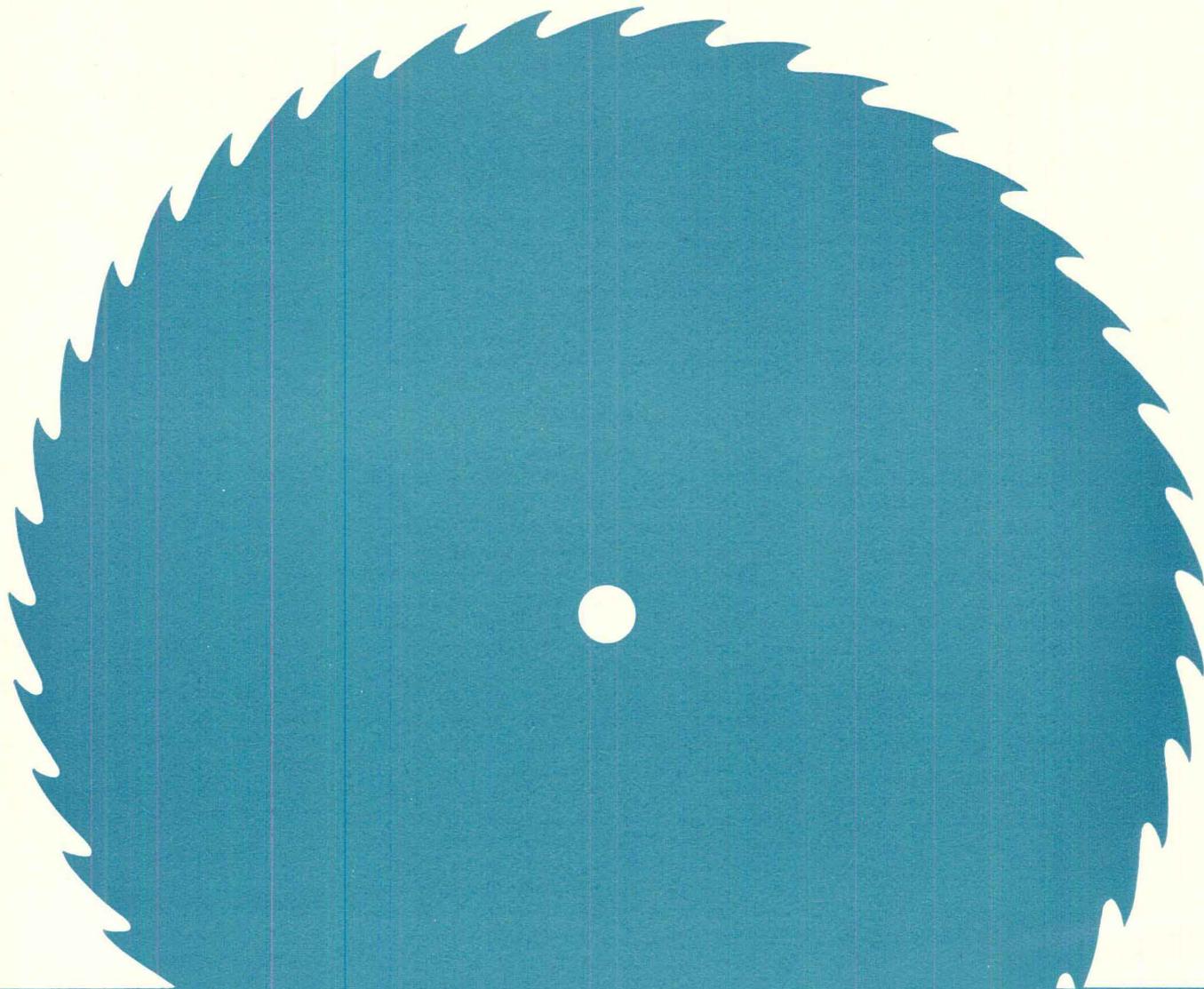
Urban Renewal Commissioner

Forum: In "Downtown's Dramatic Comeback" I note one aspect of the new downtowns will be "a pedestrian paradise."

Except in parts of California and the deep South, the American climate is not generally very kind to those who enjoy the out of doors. In summer our cities are apt to be very hot, humid, glaring.

Far worse is winter with its snow, ice patches and slush. Biting winds funnel and bellow between the tall buildings which cast their heavy, oppressive, dark shadows.

continued on page 63



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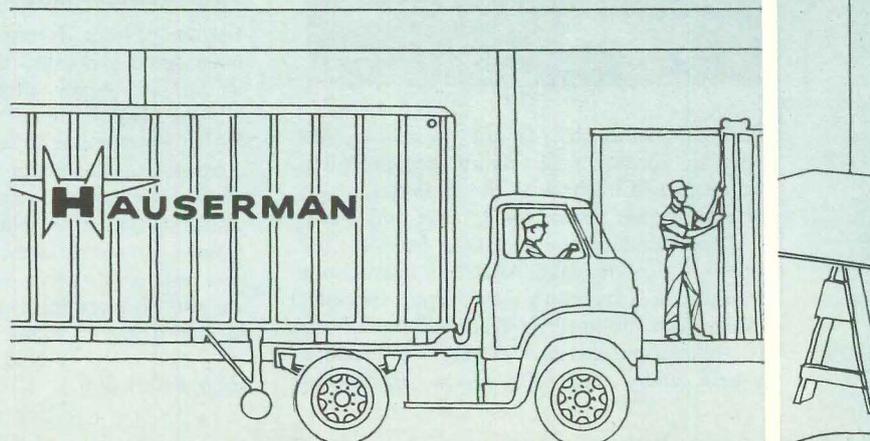
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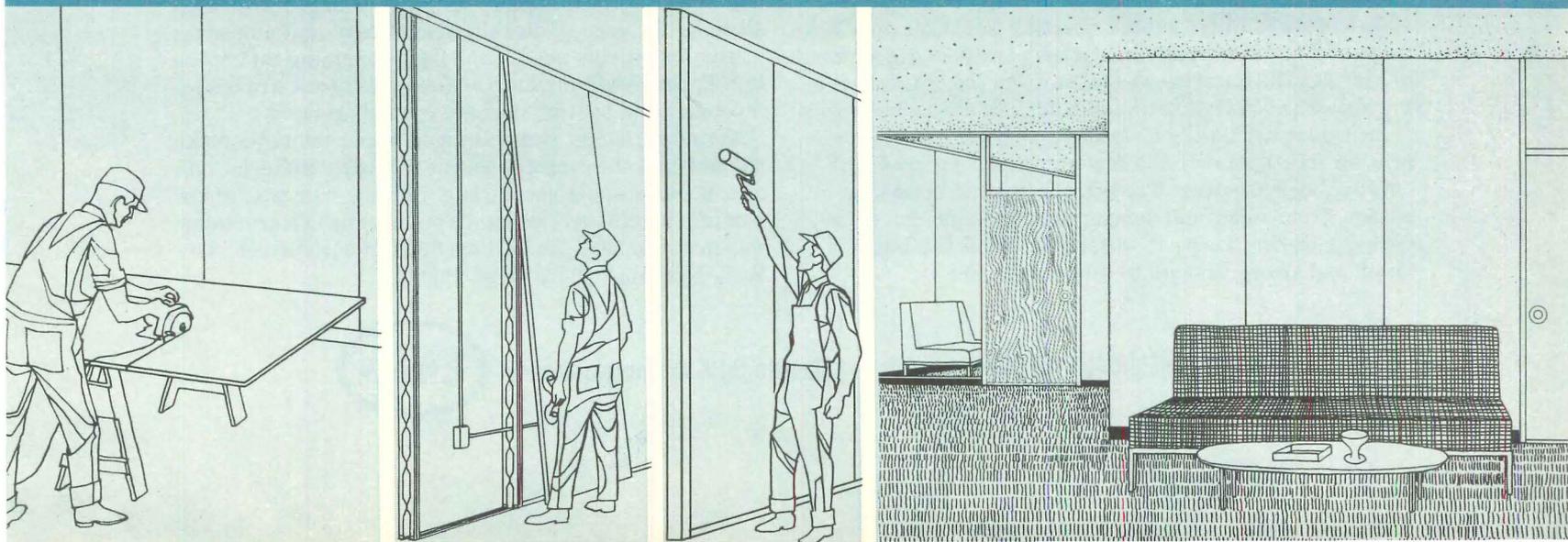
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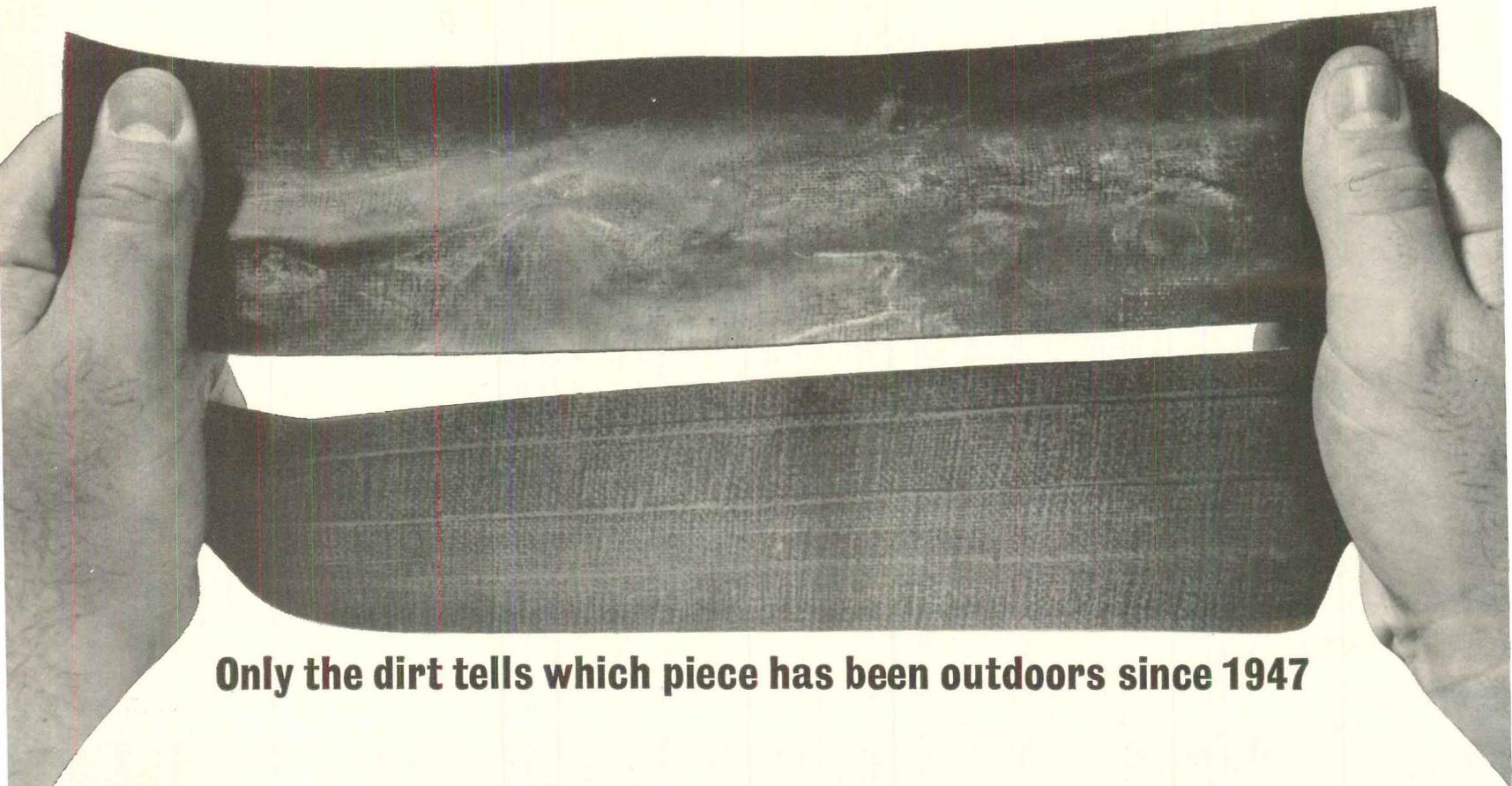
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Might we best leave the bitterly exposed street to sealed automobiles with their luxurious heating and cooling systems while the citizenry walks in sheltered, environmentally controlled, underground or ground-level galleries? The Place Ville Marie's underground shops appear to be a great success.

WHITNEY H. GORDON
Ph.D., Sociology

Muncie, Ind. Ball State Teachers College

CLIENT SERIES

Forum: The fourth article in your series "What it Takes to be a Client" (Feb. '64) is very well expressed and could possibly be developed into a client-relations pamphlet.
Charlotte, N.C. JAMES C. HEMPHILL, JR.
Chairman, AIA Committee on Specifications

■ A special reprint of all five articles in the series is now available at 50¢ a copy prepaid. Address requests to FORUM, Room 1939, Time & Life Building, New York 10020—ED.

MISSING CREDITS

Forum: In your news story about the Boston Architectural Center competition (March '64), credit for the winning design should be shared with our four associates: Robert Goodman, William L. Hall, Richard I. Krauss, and Robert O'Neill.
Cambridge, Mass. FLETCHER ASHLEY
Ashley, Myer & Associates

Forum: In the March issue ("Huntington Hartford: A Most Unusual Client") you stated that the Manhattan office building housing *Show* magazine was remodeled by Designer Melanie Kahane.

Actually Miss Kahane did the interior decorating work only; the architectural work was done by the firm of Casale & Nowell.

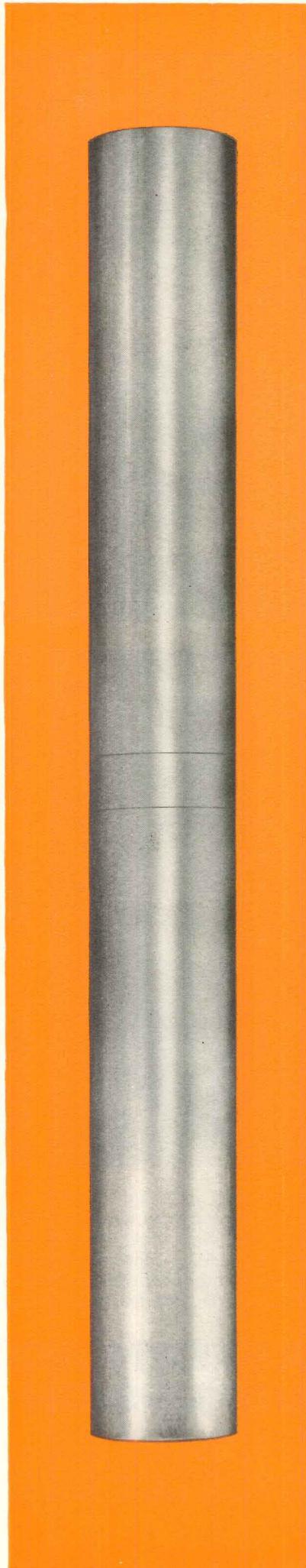
New York City ANNA LANG
Huntington Hartford Enterprises

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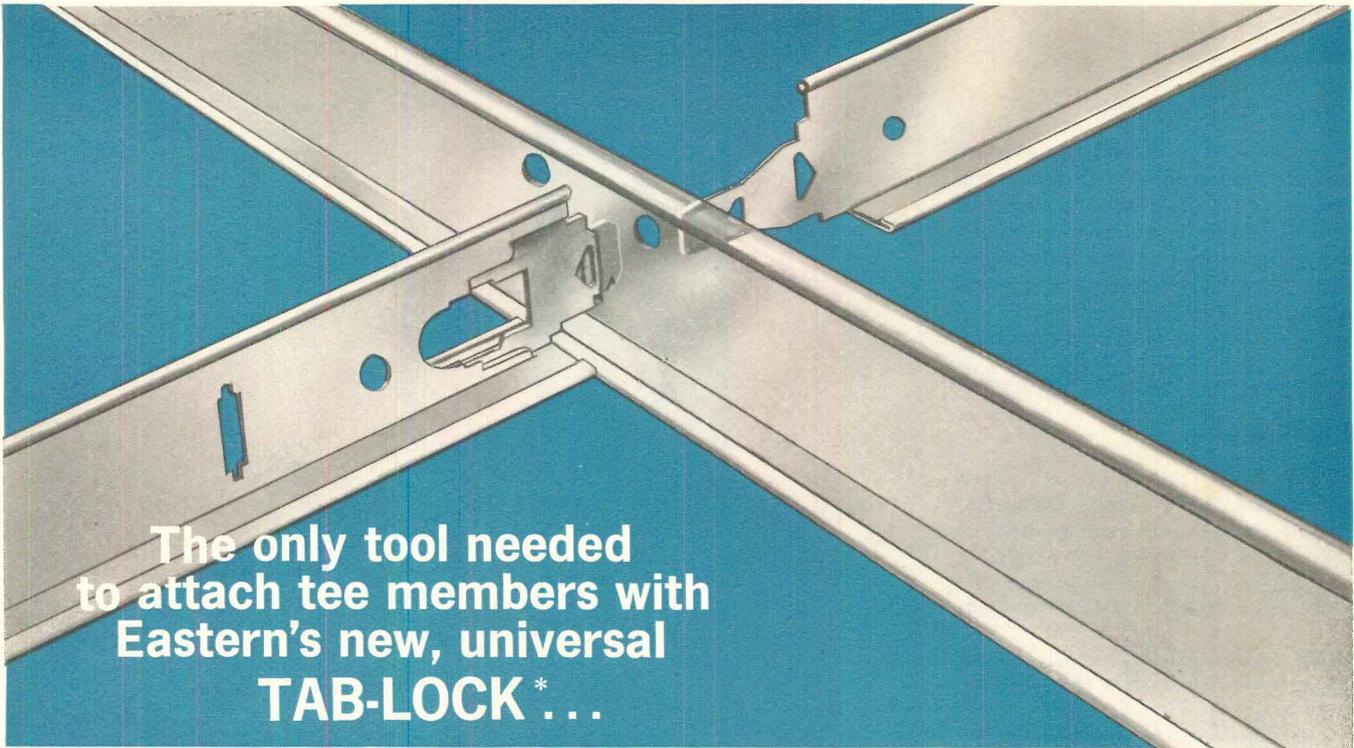
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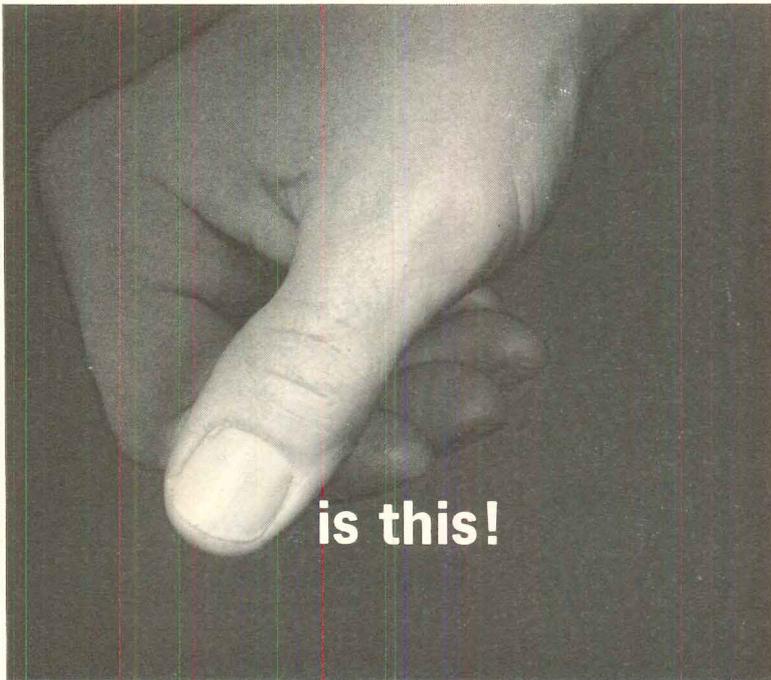
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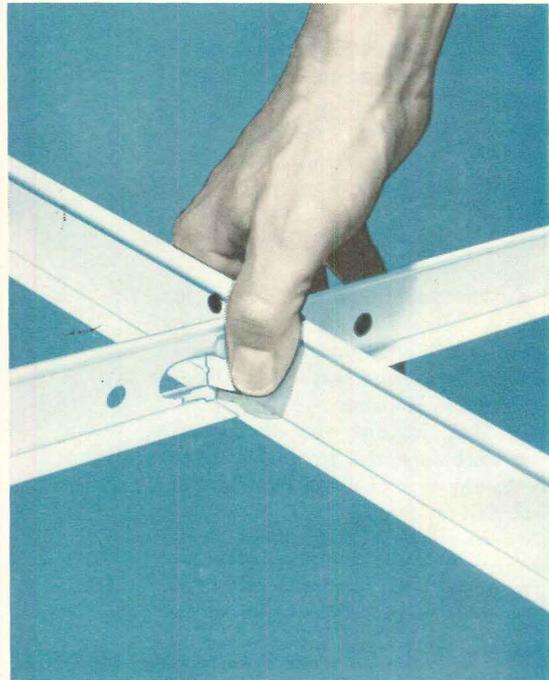
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In restraint of architectural practice. An architect who is licensed in one state and wants to practice in another often finds a highly irritating roadblock in his way. Paradoxically, the roadblock is the making of an organization dedicated to uniformity in licensing procedures among the states: the National Council of Architectural Registration Boards, somewhat unpopularly known as NCARB.

The Council is made up of members of state boards, and its major activity is the certification of an architect's worthiness to be licensed in a state other than his own. The system works like this: An architect licensed in State X has a project in State Y, which means he must be licensed there too. Instead of going to State Y to plead his case (and perhaps take its examination, if it differs from State X's), he applies for NCARB certification. The Council evaluates his education, experience, and professional references. If all is in order, it issues him a certificate which State Y accepts as a basis for licensing.

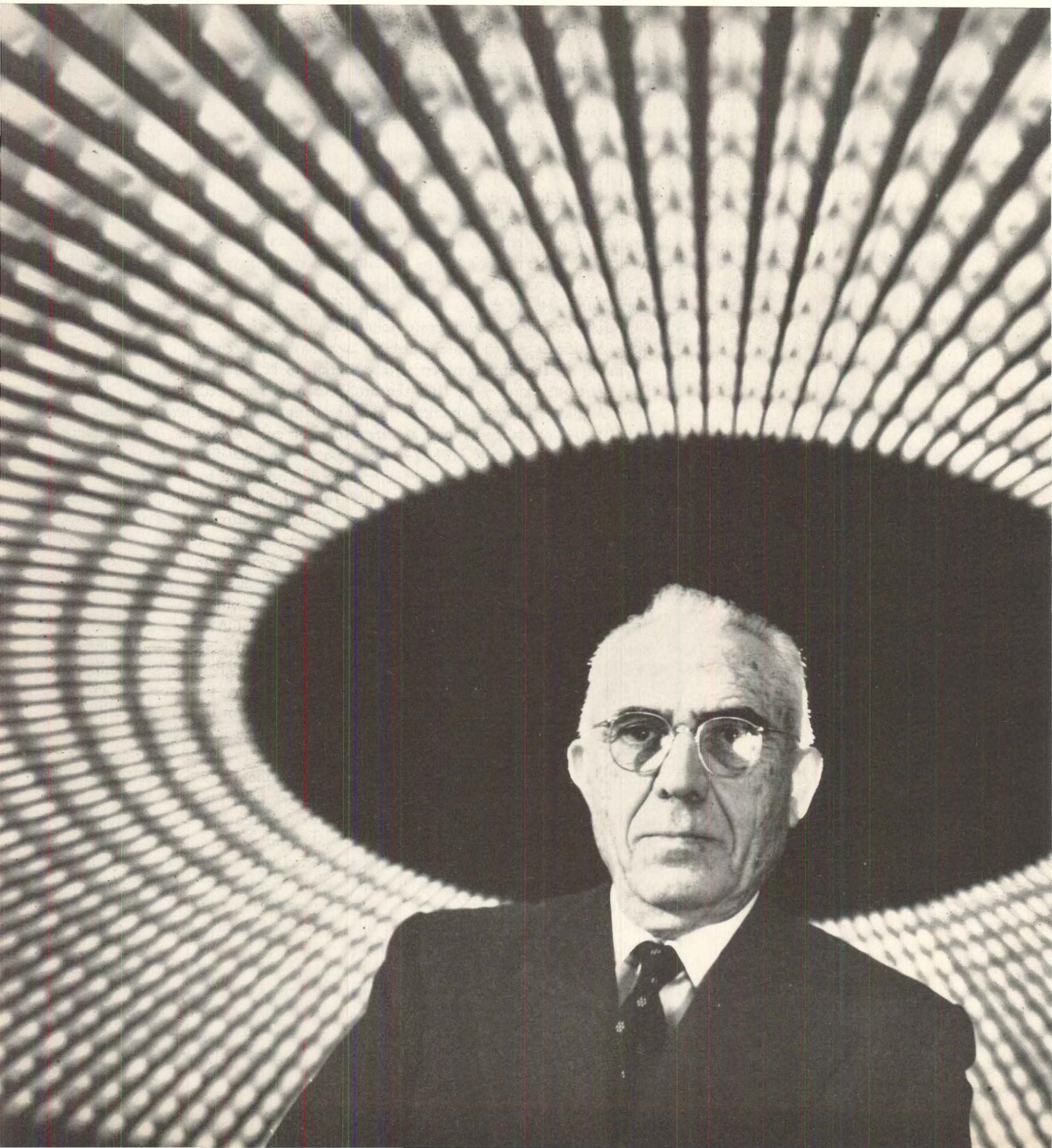
Unhappily, the time between an application to NCARB and certification by it can stretch out so long that the architect might as well forget the whole thing. A matter of many months is not at all unusual, and there are cases on record that have taken as long as three, four, or even five years. The architect either has to give up the project or associate with a local firm. The bewildered client is seriously inconvenienced for reasons he finds hard to understand.

How did this roadblock come to be? In part, it was an unfortunate side effect of NCARB's past accomplishments. The organization worked for decades to upgrade standards for the licensing of architects, and to make its certification mean something in the eyes of the state boards. Having done so, it felt obliged to give the boards rock-solid information on each applicant—and so its forms and procedures grew impossibly lengthy and cumbersome.

In part, it has been simply an administrative mess. NCARB has moved twice in the last five years—from Sheridan, Wyoming (of all places), to Oklahoma City to Washington—each time leaving most of its staff behind. Responsibility for evaluation of applicants has been largely the job of one person, the executive director. And while the architectural profession has grown in numbers and mobility, NCARB's staff until lately has stayed about the same size.

The architectural profession also has grown more vocal in its complaints, and finally the architects seem to be getting some results. NCARB's staff has been expanded; a management consultant has been hired (it would have been entertaining to watch his face the first week); the board of directors has pitched in to help with the backlog of evaluations built up during the two moves; and an NCARB committee has drafted an "accelerated procedure" which was to go before the directors last month. Some state boards, moreover, have been taking matters into their own hands: Eight western states now give the same architectural examination on the same day, and a group in New England is working on a similar plan.

Some see this concept of regional reciprocity as a workable alternative to NCARB certification, if it were to spread throughout the nation. One of these days the architectural profession might decide to look seriously for some such alternative, unless NCARB is willing to "accelerate" fast enough to catch up with the present-day realities of American architectural practice.



Next month, in St. Louis, the 1964 Gold Medal of The American Institute of Architects will be awarded to Italy's Pier Luigi Nervi (seen here under the concrete dome of the Olympic Sports Palace he built in Rome four years ago). To help celebrate the award of the AIA's highest honor to this great engineer, FORUM asked another creative engineer, Mario Salvadori, Professor of Civil Engineering and Architecture at Columbia, to write this appreciation of Nervi's importance to our time.

PIER LUIGI NERVI

The architectural needs of our culture are characterized by dimension and number.

The technology of our time has supplied the bare ingredients for their satisfaction.

But a new kind of man was needed for the task.

A man unawed by purely esthetic tenets and unwilling to accept nature as unsurpassable, but so deeply respectful of esthetics and nature as to accept their challenge and transcend them both; steeped in engineering, but not stunted by the routine of the physical sciences; imbued with mathematics, but unmesmerized by the theoretical results of complicated calculations.

A man capable of persistently striving towards the best achievable realities.

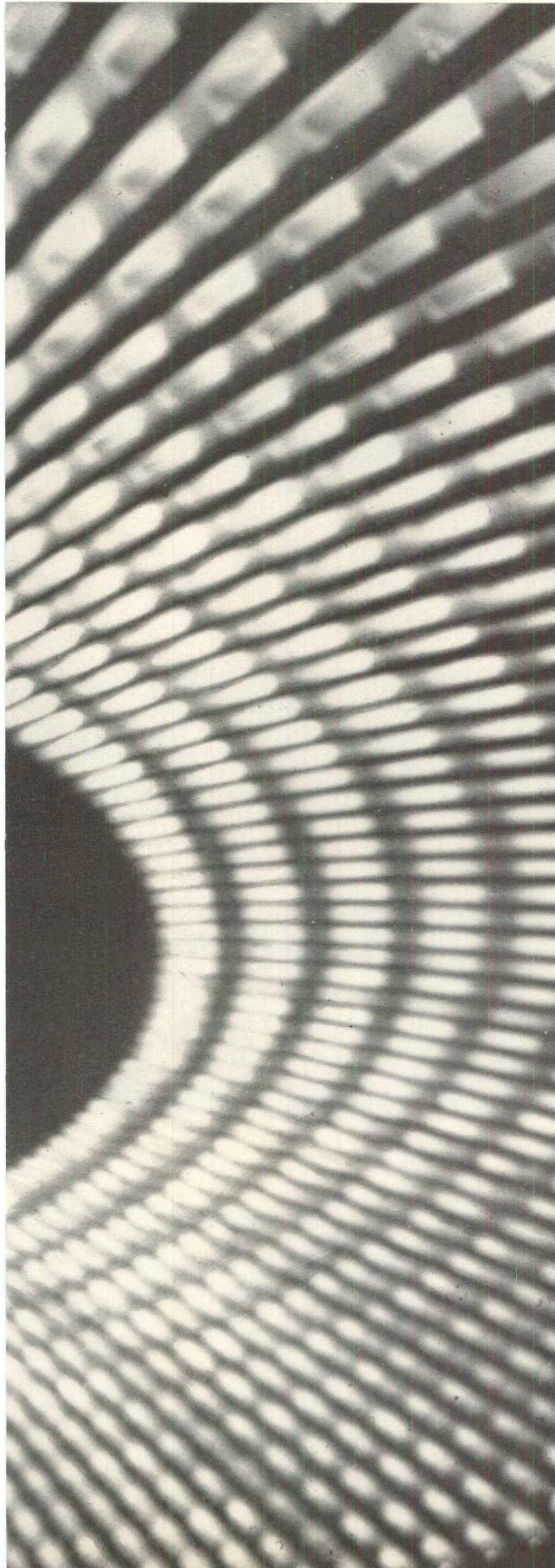
But even such a man would not be up to the appalling task unless he were practical enough to take upon himself the actual realization of his dream and to avoid lowering his standards through physical compromise; unless, as a poet of our time and a financier, he were capable of assessing the subtle influence of different kinds of money on different kinds of architecture; unless he were a leader of men, joyously driving them to the limit of sacrifice for the sake of integrity.

But even then this man would not be truly representative of our age if he were not ready to give of his time to the spreading of the word, so as to create a phalanx where he was a lonely figure; if he were not willing to use the fine art of persuasion to kindle in others the fires burning in him.

And this man would not be a truly modern man if he did not choose the world as his province.

Creators and lovers of architecture all over the world agree that Nervi is such a man, but Pier Luigi would deny it.

And this humility is the final stamp of his greatness.



M. KAUFFMAN-LIFE



BUILDINGS FOR BOOKS

— are they obsolete?

At left is the glorious core of Yale's Beinecke Library, a recent architectural essay into richness by that crown prince of industrial architecture, Gordon Bunshaft of Skidmore, Owings & Merrill. On this towering set of book shelves (with wider shelves attached for human traffic) are thousands of rare books, some of them ancient. The bindings' different colors and sheens, thicknesses and heights add up to the effect of an autumnal forest. If the visitor stands and looks at them the books seem to wink and glow, to entice him to open each one of them. It is, as it was intended to be, a beautiful display of the rich variousness of man's intellect, an affirmation of words uttered by the late Aldous Huxley: "Man's proper study is books." It is also a reminder that these basic, ordinary objects, books, are not only very obviously the intellectual legacy of countless generations of mankind, but are also much more than intellectual. To a greater degree than architecture itself, they are the portion of man which doesn't die. Will it always be so?

Not according to some

Sol Cornberg, the dean of today's electronics communications specialists, is dubious. Quoted by Alvin Toffler in the recent *Books and Mortarboards*, an Educational Facilities Laboratories publication, Cornberg explains that books "are inefficient. It's not that we don't like them, but they just aren't the best way to transmit information any more. We don't like the laborious problems of finding information in them. Furthermore, to serve a thousand students you need multiple copies. You need storage space for them. The weight of the books is reflected in the architectural costs. Floors, steel supports, foundations get heavier. Yet in a cabinet the size of my desk or a bit higher we can store 20,000 volumes on

microfilm. Nobody can tear a page out of them. They don't smell of old vellum or glue, but you can browse through them and sit there and read them."

If Mr. Cornberg is correct—and, technically, he is—there are a large number of wrong-headed communities, even universities, in the nation. For the United States today is undertaking an immense amount of library building. Total statistics are elusive, but the Department of Health, Education & Welfare believes that colleges alone are putting more than \$100 million into buildings for books this year. President Lyndon Johnson not long ago, and with obvious pleasure, signed a bill releasing \$135 million of federal funds to provide books and libraries for small towns and rural areas.

Many of the new libraries, particularly the university buildings, will include facilities for microfilming, of course. But none of them, to the knowledge of the experts FORUM has queried, is really a "library of the future." They all have *books*.

One reason, of course, is that the ultimate in mechanization is not cheap. Even the cost of reproducing from microfilm is still high. The rest of the elaborate apparatus involved in the science of "information retrieval" (the quick finding of that particular page whose nugget of knowledge is needed) is even higher, involving costly computers.

There is only one known library which at present comes close to epitomizing all of the automation which can be applied to the handling of printed knowledge. And not too much is known about the particulars of that library because it is in the Central Intelligence Agency's headquarters near Washington, D.C. (For a short, guarded description of its process, see overleaf.) Also in Washington, the Library of Congress is in the early throes of partial automation (see

Book stack of the new Beinecke Rare Books Library at Yale University is the largest and most carefully conditioned display case for books ever built. It stands as an independent building within the marble hall designed for it by Architects Skidmore, Owings & Merrill.

below). But even the machinery recommended to Congress by a consulting group of experts concentrates more on cataloguing and referencing than on the abolition of bound volumes. It will still be a library of books.

One reason for this moderate approach was pointed out by a Congressional consultant with an awesome return address: "Manager, Synthetic Intelligence Department, Thompson Ramo Woolridge Inc., RW Division, Canoga Park, Calif." The name attached to the title is Don R. Swanson, and the intelligence attached to the man himself is more sensible than awesome. He told an annual convention of the Special Libraries Association: "Too often automation is regarded as an end in itself, and the question of what can be done is confused with what needs to be done. A push-button library with a high-speed memory, electronic searching devices, and a desk-side console with television is frequently pictured for the future. Now, if we were to begin not with equipment but with a *requirement* for remote library interrogation and desk-side service, we might simply consider . . . a telephone at the users' desk, an extra reference librarian to answer the telephone, and a fast messenger service to link user to library. . . . The mechanized system has yet to be conceived whose end product or functional capability could not also be achieved more conventionally."

This is the language which most professional librarians are speaking at the moment—and because they are the clients, the architects are talking it too. There is but little prejudice implied; the librarians appear eager for as much electronic assistance as they can get in the routine clerical matter of handling books. They ask for book conveyors, too (the Denver Library was the first to equip its page boys with soft-wheeled roller skates to speed up part of the book-getting process).

But what librarians currently appear to want most urgently from architects is not machinery. Their request has little to do with mechanization or automation. It is

merely to make libraries pleasant places to be in, to browse, even to read in. Because of its stiff formality, the standard old high-ceilinged reading room, for example, is going out. Coming in to replace it are small, scattered rooms, nooks, and alcoves, decorated with one of the favorite devices of the best interior designers for any room—shelves of books.

None of this will be anything but good news to Robert Colborn, editor of the authoritative periodical *International Science and Technology*. Colborn, who apparently has a scientific approach to science itself (i.e., a measure of doubt), wrote in the April, 1964 issue of his magazine: "Information retrieval is one of the exasperating problems on which we look toward machines for rescue, and we are certainly getting closer to the time when a simple question will call forth a quick basketful of relevant documents.

"But what will happen, in an automated library, to the serendipity that every browser among documents has experienced, finding the right answer in the wrong document?"

Walnut: meat for the CIA

Manufactured by International Business Machines for the Central Intelligence Agency, WALNUT is a photographic-electronic library system which is almost incredibly quick. From a central depository of millions of printed or typed pages and photographs, the requested subject can be snatched—"retrieved" is the technical word—within five seconds.

There are no books as such. Instead there are numerous bins (photo) each of which holds 200 plastic cells loaded with film strips containing photo images reduced to about 1/1000 of their original area. These film strips are equivalent to approximately 3,000 average sized books. These can either be viewed on a screen, or printed out, without being removed from storage.

The catalog, or index, to this immense warehouse of condensed information is a magnetic file.

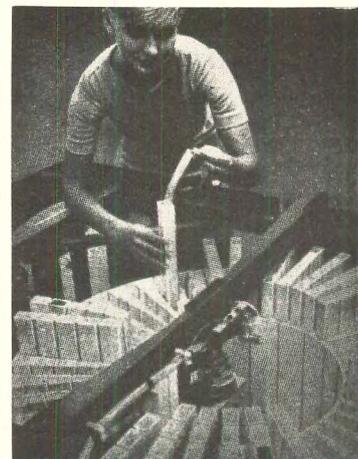
The user does not have to request specific pages, but merely subjects, using a vocabulary of "key scratch words." The search is made electronically and a list of index entries corresponding to the documents found for the key words is then printed and returned to the requester. He then cogitates (no time limit) and indicates his choices. A few more almost instantaneous electronic steps, plus a half second of printing time, and he has what he wanted. The WALNUT system, understandably expensive, is not being marketed elsewhere by IBM.

Automation for Congress

Less expensive in principle than the CIA system, but by no means cheap (\$50 million to \$70 million), is the suggested automation of certain processes in the Library of Congress. According to the report of an expert consulting committee, these processes do not include "the retrieval of the intellectual content of books by automatic methods", which they believe to be "not feasible for large collections." What will be accomplished, however, at the Library of Congress—if Congress itself wills it—is automation of bibliographic processing, catalog searching, and document retrieval.

If this recommendation is followed, an important step will have been taken toward the development of a national library system, because the great civic and university libraries will inevitably have to keep in step. Continues the report: "Ideally, an automated system should place the full resources of the library at the immediate disposal of the user. These resources should be more varied in nature and contain a much richer set of statistical and bibliographical data than it is practical to provide in conventional libraries. The services of reference librarians can be greatly extended in those areas where the fallibility and limit of human memory are a barrier to providing information that the user needs."—WALTER MCQUADE

continued on page 84



CIA's magic library

PHOTO OPF.: RONALD FAIRBRIDGE

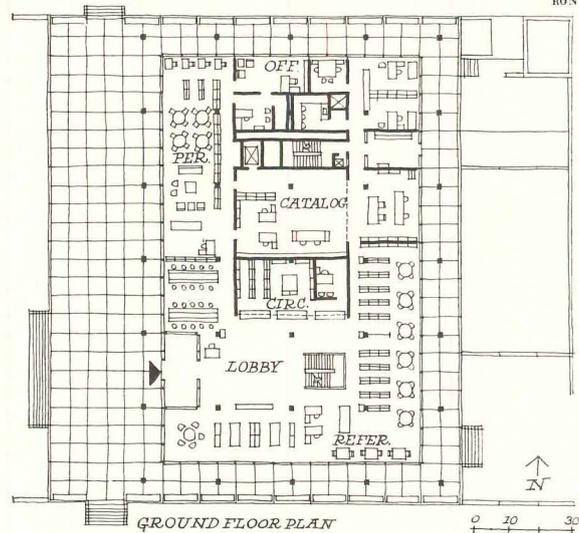
Colorado College's new library shows the kind of pleasant furnishings and small reading areas which more and more modern designs scatter among the book stacks and reference departments.





RONDAL PARTRIDGE

Façades of the library are reserved, narrowly windowed, but the bulk of the building is broken down into components, avoiding the massive character sought by yesterday's campus libraries. The glass-walled entry level (plan right, interior below) has departments such as catalogue, periodical index and periodicals, documents, and reference arranged about its periphery.



MILMOE



AN INWARD-LOOKING COLLEGE LIBRARY

"When you live next to Pike's Peak, you don't have to look at it all the time." So said Colorado College to the architects of its new library, the Chicago office of Skidmore, Owings & Merrill.

SOM took their client at his word. They designed the library as an inward-looking building, with narrow windows to the bright outside, broad access toward a central atrium in which the reading room rises two full stories to the roof (photo right). There is nothing dim or gloomy about this enclosed space; a large skylight filters quantities of clear Colorado daylight down from above.

The library, planned to house an eventual 300,000 volumes, holds 180,000 books at present, for a student body of about 1,200. Reader capacity is now 353, eventually will be enlarged to 525.

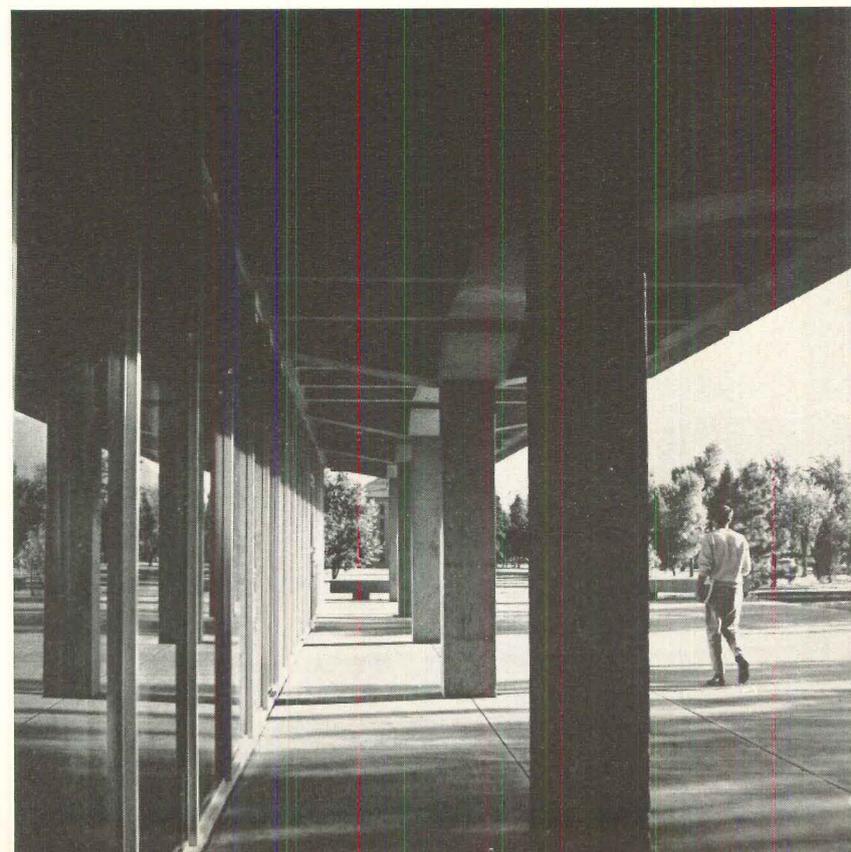
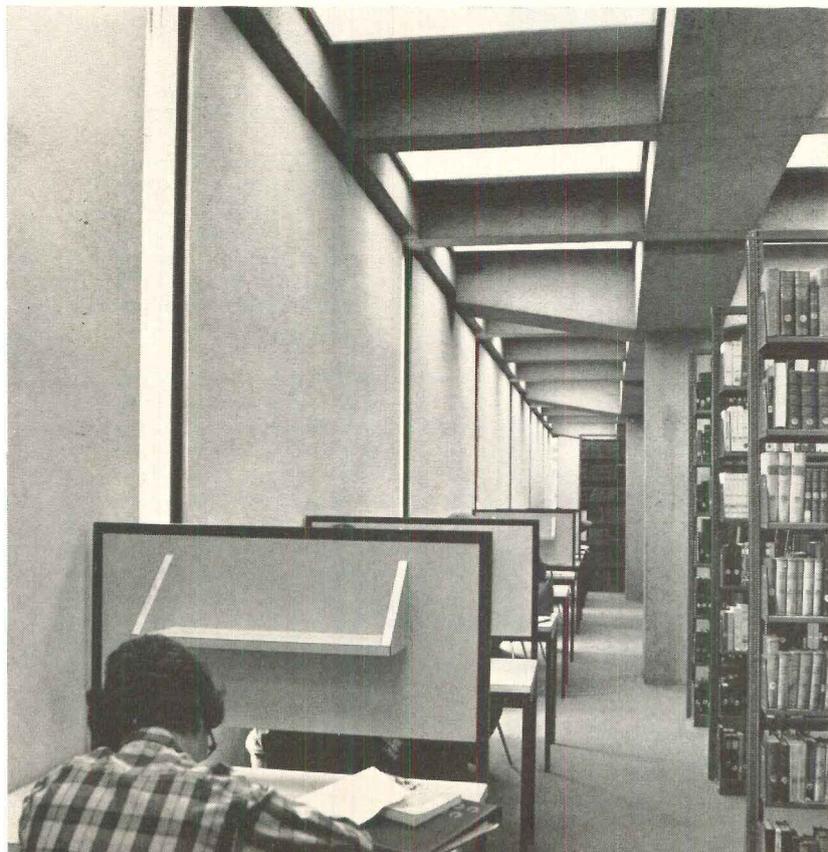
In addition to the rather formal atrium for reading, the building has the carrels which have become conventional for more secluded study. On the entrance level are the checkout desk (photo below, left) as well as administrative offices. Book stacks and reading spaces are on the upper two floors and a lower garden level. All floors except for service areas are carpeted; artificial lighting is set frankly into the concrete structural grid, which generally is left exposed.

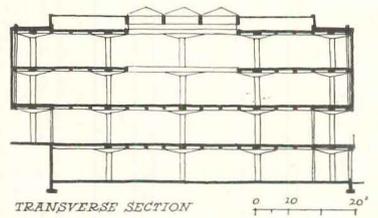
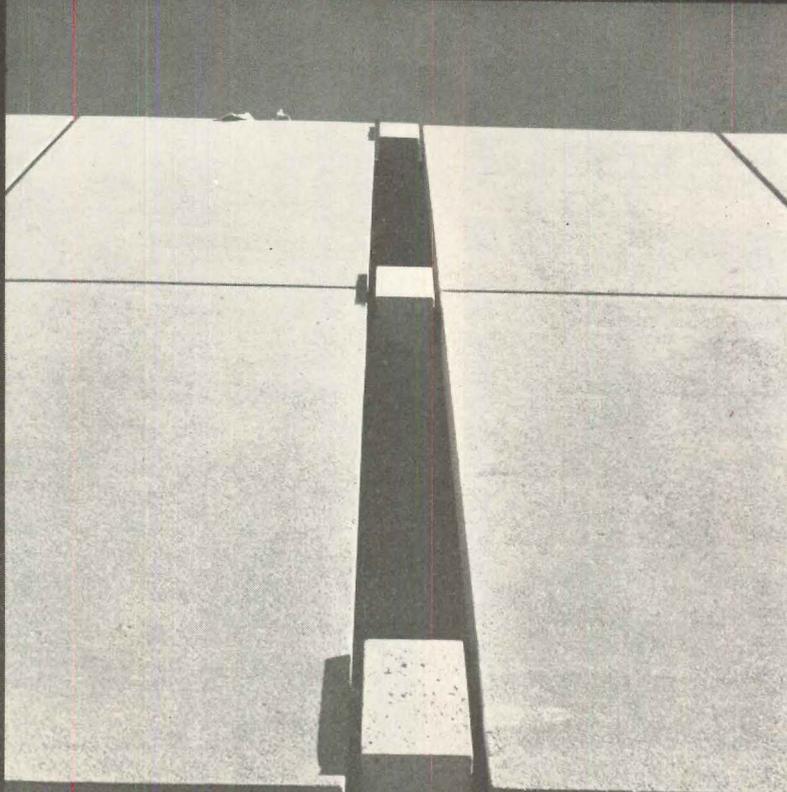
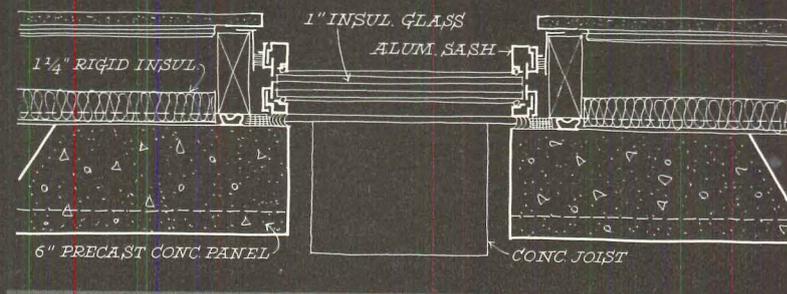
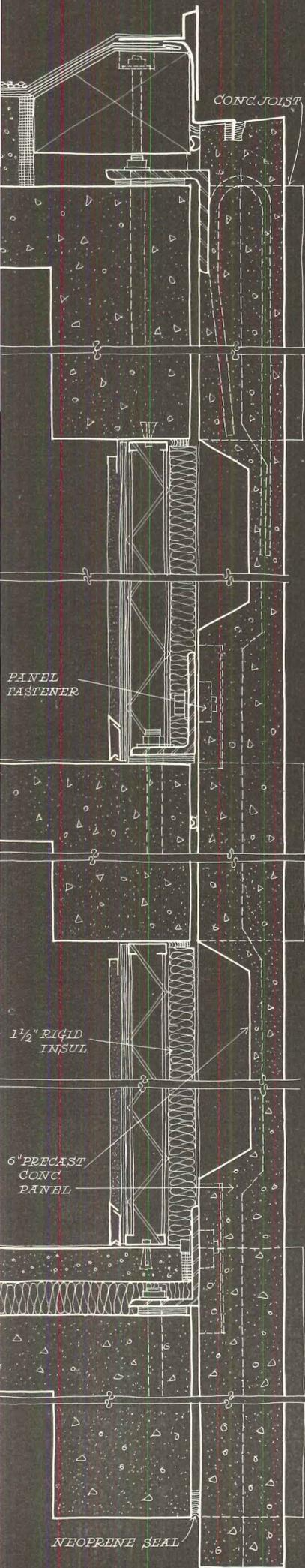
Also exposed are other concrete finishes, most notably the columns which hold up the building. These are sturdy in section, and are fairly widely spaced—the structural bay size is 22 feet 6 inches square.

Prominent in the minds of the designers of the new library was its environment. A large, undistinguished red granite building is adjacent, and so is a busy public street. The exterior walls for the new library were made from precast panels (details overleaf). The aggregate has a pinkish cast, which relates well to the granite of the older neighbor. Yet the smaller, neater windows of the new library also reduce the scale,



Atrium, a formal space by modern library standards, is lit by skylights. Below left, carrels in the stacks; right, the glass-shading colonnade.





so that the building fits well into the relatively small campus. The glass is gray, insulating, and set in aluminum; wire glass and diffusing plastic skylights cover the atrium.

The precast panels were trucked in from Utah to Colorado Springs and hoisted into place by cranes (photo left). Originally designed to spread unbroken across a full bay, each panel had to be halved to conform with road sizes between plant and building site. Their weather surfaces were cast over striated plywood, then acid-etched. The random graining of the plywood formed a directional but informal surface whose matte texture disguises any slight deformations. Structurally, the panels are straightforward, flat surfaces. SOM allowed for tolerances, but the maximum variation turned out to be only 1/4 inch.

FACTS AND FIGURES

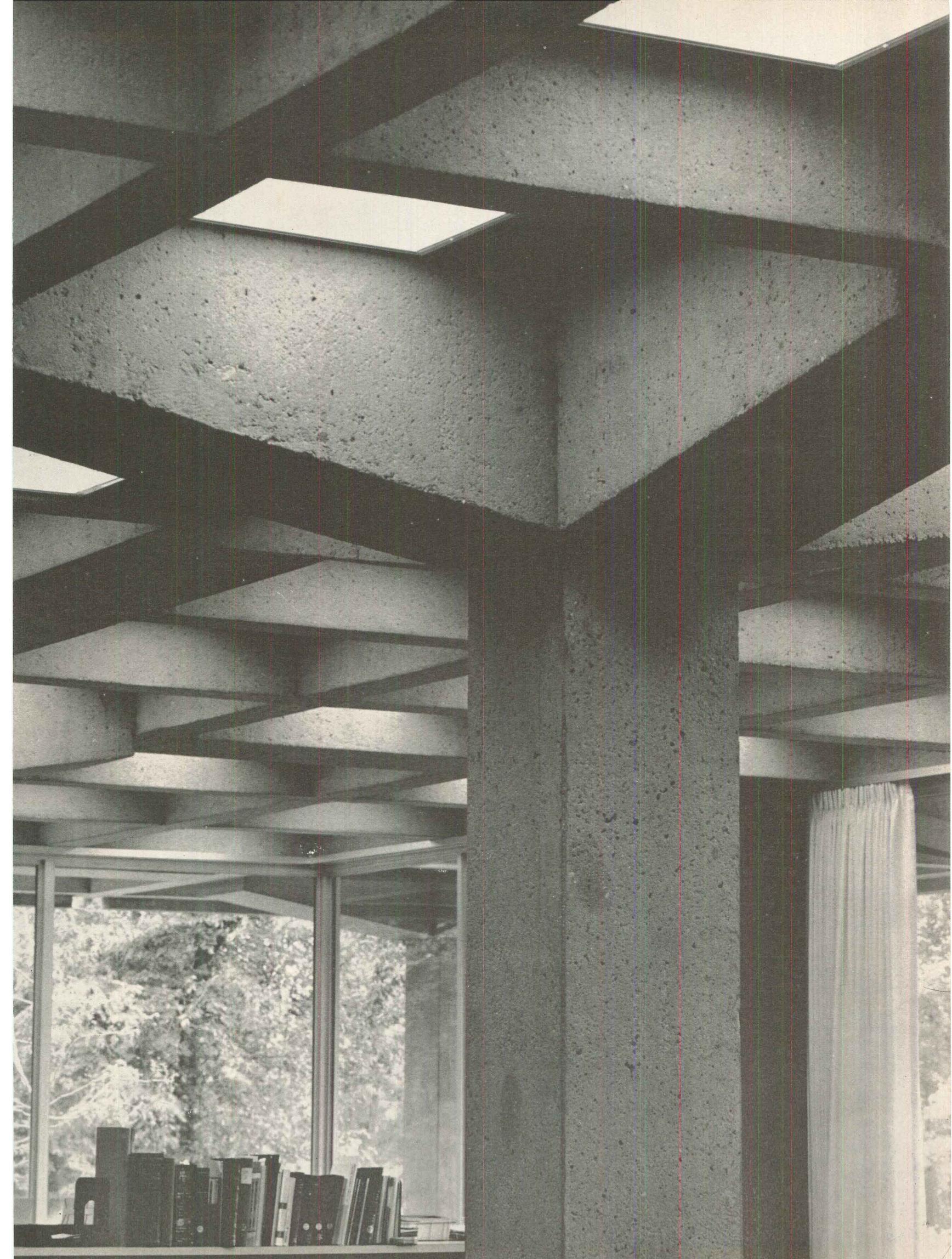
The Charles Leaming Tutt Library, The Colorado College, Colorado Springs, Colo.

Architects and engineers: Skidmore, Owings & Merrill of Chicago (design partner, Walter A. Netsch, Jr.; senior designer, Thomas J. Houha; project manager, Albert Lockett). **Lighting consultant:** John Draehenbuehl. **Library consultant:** Ralph E. Ellsworth. **General contractor:** Lembke Construction Co.

Construction features: Concrete structural members cast in place and sand-blast-finished. Precast concrete panel walls. Central heating, ventilating and air conditioning in garden-level equipment room supplies lower two floors; upper two floors supplied from rooftop plenum.

Cost breakdown: Construction cost, \$1,007,500 (including book stacks); outside utilities and landscaping, \$19,500. **Furnishings and carpeting:** \$117,500. **Floor area:** 52,333 square feet. **Cost per square foot:** \$24.50.

Financing: Charles Leaming Tutt.



NEW LIBRARY FOR AN OLD SCHOOL

In adding a small library to a huge Victorian building at the Westtown School, a private boarding school in Westtown, Pa., Architects Cope & Lippincott solved the problem of continuity in two ways. They specified the same red brick for the walls and black slate for the roof. They also echoed the steep roof slopes and the arched windows of the original building. The result is an addition that holds its own by being just about as busy as the original, and considerably brighter.

The older building, built in 1888, is more than 500 feet long, with dormitories for girls at one end and boys at the other, separated by a central block with common facilities. As remodeled in 1932, the center area accommodated the school's library on its first floor, with wooden shelves for 10,000 books. But by 1962 there were 18,000 books, many in basement stacks. With the remodeling of the first floor and the new addition, there is now room for 27,000 volumes and seating for 65 students.

The first floor of the addition has stack shelving under a 10-foot ceiling with study carrels lining the walls (see plan). The peaked roof provides a high ceiling for the main reading room in the center (photo right). Glare is muted by gray glass in the clerestory and by wide overhangs. Additional book stacks and study tables are in the basement of the new building; the wide stairwell was planned for easy supervision of both levels.

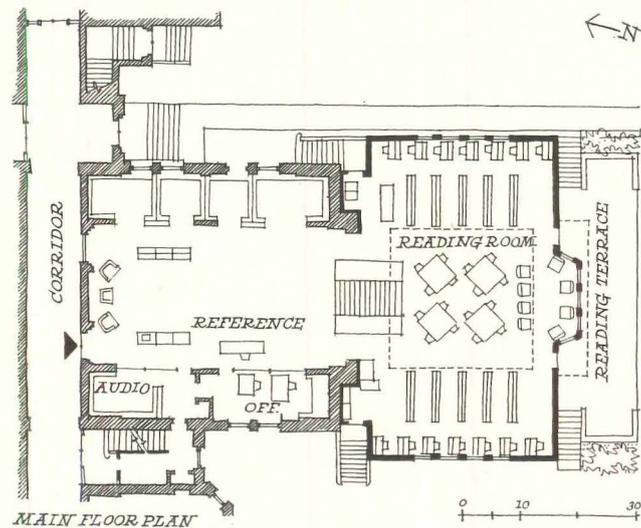
FACTS AND FIGURES

Westtown School Library, Westtown, Pa.

Architects: Cope & Lippincott (H. Mather Lippincott, Jr., partner-in-charge). **Engineers:** Isador Caplan (structural), Sharpless & Whiting (mechanical, electrical). **General contractor:** R. C. Ballinger Co.

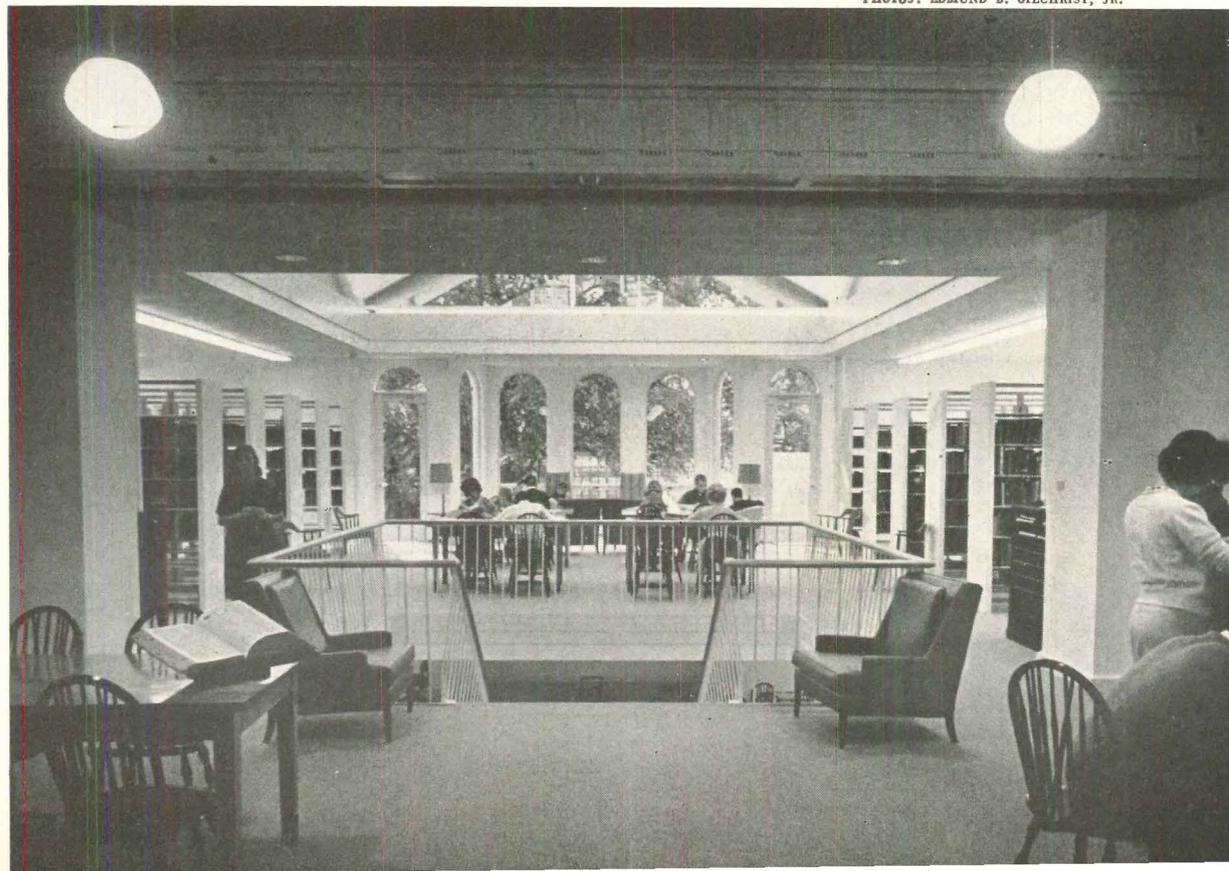
Construction features: Steel frame, brick walls, slate roof. **Floors:** wool carpeting and cork tile.

Construction cost: \$89,400, plus \$10,000 furnishings, equipment and carpeting, and \$8,600 fees. **Building area:** 5700 square feet (remodeled and new space). **Cost per square foot:** \$16.50.



The library added to the Westtown School (above) echoes the forms of the old building. Inside, space flows smoothly from the remodeled first floor (foreground, below) to the new reading room in the addition.

PHOTOS: EDMUND B. CILCHRIST, JR.



TRIM BRANCH LIBRARY FOR THE SUBURBS

This trim building is the first of several branch libraries planned for the Detroit suburb of Livonia. Named for Carl Sandburg, it was designed by Tarapata-MacMahon Associates, with a capacity of 30,000 volumes and 150 people, to serve a residential area approaching 50,000 population. To encourage people to drop in, the building is located for maximum visibility close by a shopping center, and has two entrances, one for pedestrians (photo right), the other in back, off a parking lot.

The steel-framed library is politely in scale with the houses nearby, as are the finish materials—walls are red brick, with a textured brick defining the bays which hold books. Additional stacks are lined up at right angles to the bays under a 9-foot ceiling. In the center, a roof of inverted pyramids opens up the reading areas, providing both a high ceiling (14 to 16 feet) and clerestory lighting. Additional daylight comes through narrow windows between and above the book bays and from the glazed east wall.

Steel-framed panels, faceted to echo the form of the raised ceiling, divide the children's reading area from the adults' (photo right). Spaces between panels allow adequate visibility and control.

A central charge-out desk (see plan) oversees both the reading areas and the two entrances. Behind this are washrooms, an ample work room with stacks for books being processed, and a community meeting and study room.

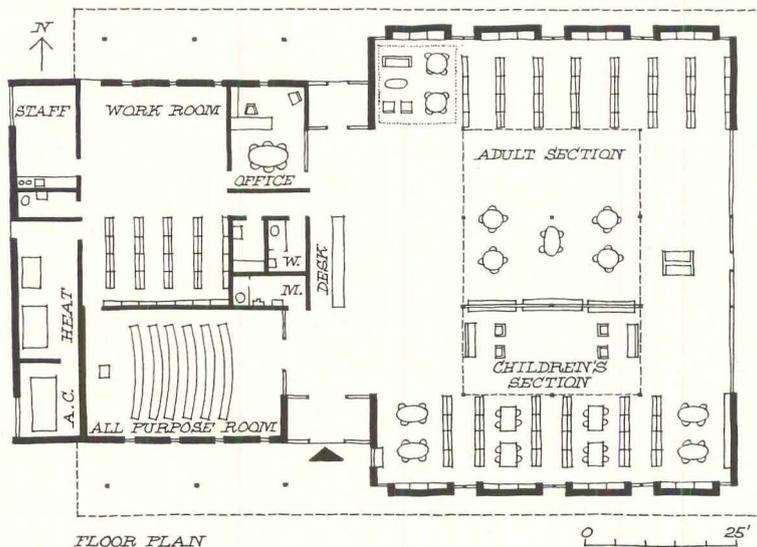
FACTS AND FIGURES

Carl Sandburg Branch Library, Seven Mile Rd., Livonia, Mich.

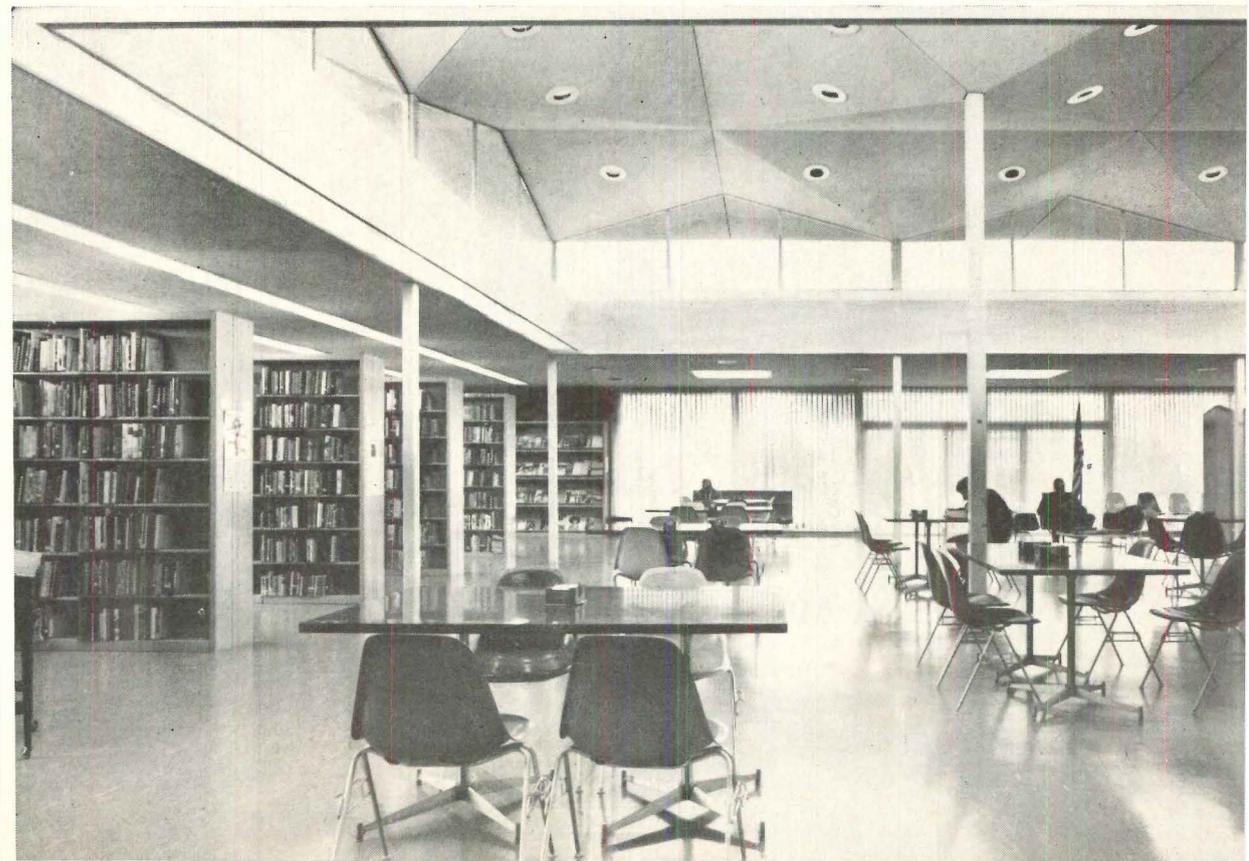
Architects and Engineers: Tarapata-MacMahon Associates, Inc. (Peter Tarapata, associate in charge). **andscape architects:** Johnson, Johnson & Roy, Inc. **Contractor:** Wallace Construction Co.

Construction features: steel frame, brick exterior walls. Clerestory roof: "X" frames with gypsum deck.

Construction cost: \$157,856, plus \$26,357 for land and sitework, \$9,000 for furnishings and equipment, \$10,860 for fees. **Building area:** 8600 square feet. **Cost per square foot:** \$18.36.



Different brick textures emphasize the service and reading parts of the Carl Sandburg Branch Library (above, plan left). The raised roof gives clerestory light to reading areas. Adult area is shown below.





NEW CAMPUS FOCUS IN PENNSYLVANIA

At a high point in the center of the campus, surrounded by a wild array of older building styles, Lafayette College's new library expresses modern moderation. The walls are soft gray cast brick with buff limestone spandrel and window trim; the roofs are copper, and, moreover, they are Mansards.

The interiors are restrained too, but confidently contemporary in finish and facilities. The construction is clear span, with very few interior columns, yielding unobstructed spaces as large as 45 feet by 99 feet. Floors throughout are carpeted for acoustics as well as comfort. Stack space for 320,000 books is intermixed with small reading areas, doing away with the usual "reading rooms." Study space is provided for 450 students, about a third of the all-male student body. Most of it is in deliberately small rooms; the largest seats only 40. Seven lounge-like "reading oases" have been arranged next to picture windows overlooking the campus.

The building will be able to grow gracefully—basically it consists of three similar three-story units, linked together; each is subdividable and a fourth unit can be added unobtrusively.

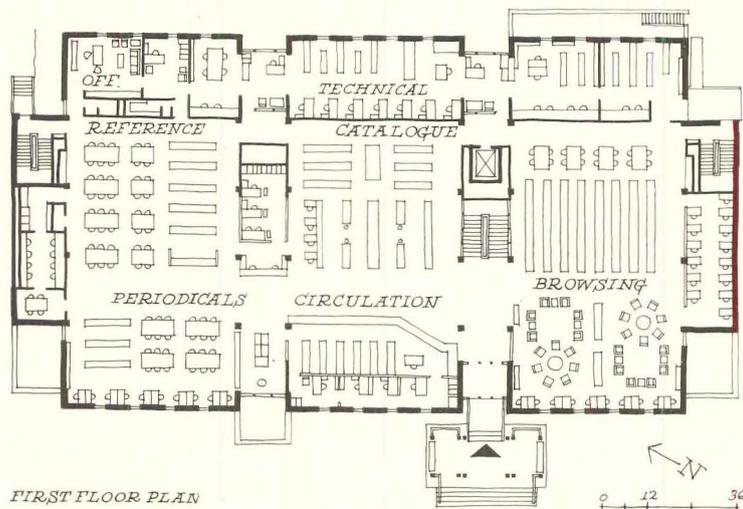
FACTS AND FIGURES

Lafayette College Library, Easton, Pa.
Architect: Vincent G. Kling (project architect, Donald P. Kriebel; team designer, A. Eugene Kohn). **Engineers:** Allabach and Rennis (structural), A. Ernest D'Ambly (mechanical, electrical). **Library consultant:** Keyes D. Metcalf. **General contractor:** Turner Construction Co.

Construction features: Reinforced concrete columns, beams, and floor slabs. Steel penthouse skeleton. Exterior walls: masonry units with gray stone aggregate; buff colored limestone spandrel trim. Building is completely air-conditioned, with supplemental fin-tube perimeter radiation.

Construction cost: \$1,844,602. Site development, \$46,902; furnishings and equipment, \$201,300. Building area, 57,957 square feet. Cost per square foot: \$27.51.

Financing: Donations to the college.



FIRST FLOOR PLAN

Porch of the library is a deliberate proclamation, in temple tones, that the main entrance is between the first two of the library's three similar units. The circulation desk (below) adjoins the entrance and the counter is cut back toward the entrance for greater visibility and control. On the facing page is one of those notches between the buildings' units which is not the main entrance. The railing guards a light well and sunken garden for a lounge on the buried level.

PHOTOS: LAWRENCE S. WILLIAMS, INC.



LOW VILLAGE OF ROOFS IN CONNECTICUT

A veritable village of roofs shelters the Weston Public Library in the village of Weston, Conn. There are six roofs in all, the highest over a balcony holding rarely used books above the librarian's desk (see plan). This high roof also provides opportunity for clerestory lighting on three sides.

The library is essentially one big room, except for the service and work areas. But it is a lively room indeed. Space is subdivided by ceiling heights which vary from 8 to 20 feet. The many low, offset walls of the exterior create special areas and reading nooks that give a feeling of seclusion, even though the librarian can supervise virtually every corner of the building from the main desk. The four sections of the adult library—reference, nonfiction, young adult, and fiction—are subdivided simply by book stacks of various heights. Only the children's library (lower photo) has partitions—and these are only 3 feet high. The library, serving some 4,500 villagers has a capacity of 12,000 volumes and seating for 40 children and adults.

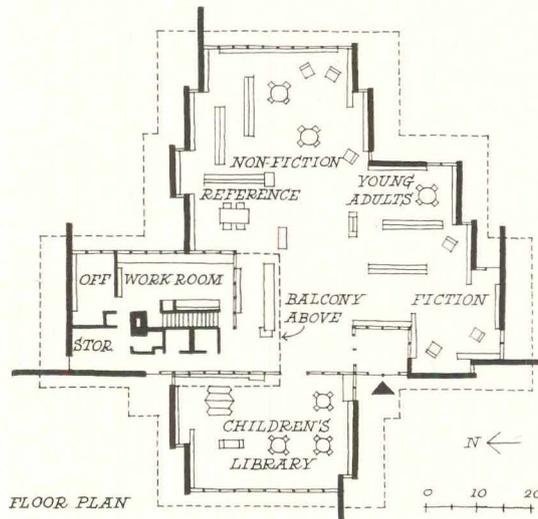
Architect Joseph Salerno provided enough window area so that, even on the dreariest days, artificial lighting is not needed. Glare on bright days is controlled by the wide overhangs and by extensions of the fieldstone walls which shield floor to ceiling glass. The stone was salvaged from an old wall which was on the meadow site.

FACTS AND FIGURES

Weston Public Library, Weston, Conn.
Architect: Joseph Salerno (Richard T. Kasal, job captain). **Engineers:** Wayman C. Wing (structural), John Altieri (mechanical, electrical). **General contractor:** A. F. Conte & Co.

Construction features: Folded-plate roofs with plywood stressed skins top and bottom; red cedar shingles. Fieldstone walls, glass in wood sash. Heat from ducts in perimeter grade beams rises up through spaces behind bookcases and out lighting coves. Floors: vinyl-asbestos tile on concrete slabs.

Construction cost: \$120,990, plus \$1,600 for sitework, \$10,075 for furnishings. **Building area:** 6,742 square feet enclosed. **Cost per square foot:** \$16.82.



To the left of the library entrance (above) is a wing housing the children's area (interior, below). Part of the balcony above the main desk is shown at the right. Large glass areas are used throughout.

PHOTOS: P. E. GUERRERO



SMALL-SCALE LIBRARY IN TENNESSEE

Economy of construction, ease of maintenance, and provision for expansion—three bedrock demands—were governing factors in the design for the Sequoyah Branch Library in Knoxville, Tenn. The building (named for a literary Indian who invented the Cherokee alphabet) also had to fit comfortably into the area it serves, a prosperous residential neighborhood of 5,000 people.

Architects Barber & McMurry picked a light tan brick for the walls, and a wood beam and deck roof. The client asked for a glass front; but because the building faced west, the architects demurred. Instead they placed glass panels flanking the entrance and high strip windows between the roof beams on both long walls (photo, right). Floor-to-ceiling glass was used on the north end wall. When and if more space is needed, the side walls will be extended north and the glass wall will be reused.

The main part of the library is a single, sizeable reading room with book shelves mounted on the load-bearing side walls (photo, right). The children's area is separated from the adult area by counter-high bookcases. A range of "A-frame" book shelving subdivides the adult area, which has both table seating and comfortable chairs. There is seating for 46, and capacity for 13,780 volumes.

Behind the charge-out desk near the entrance (see plan) is a staff room used for meetings.

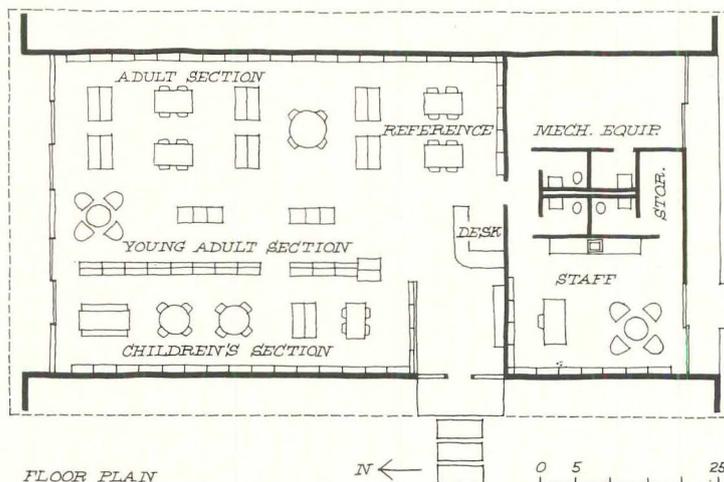
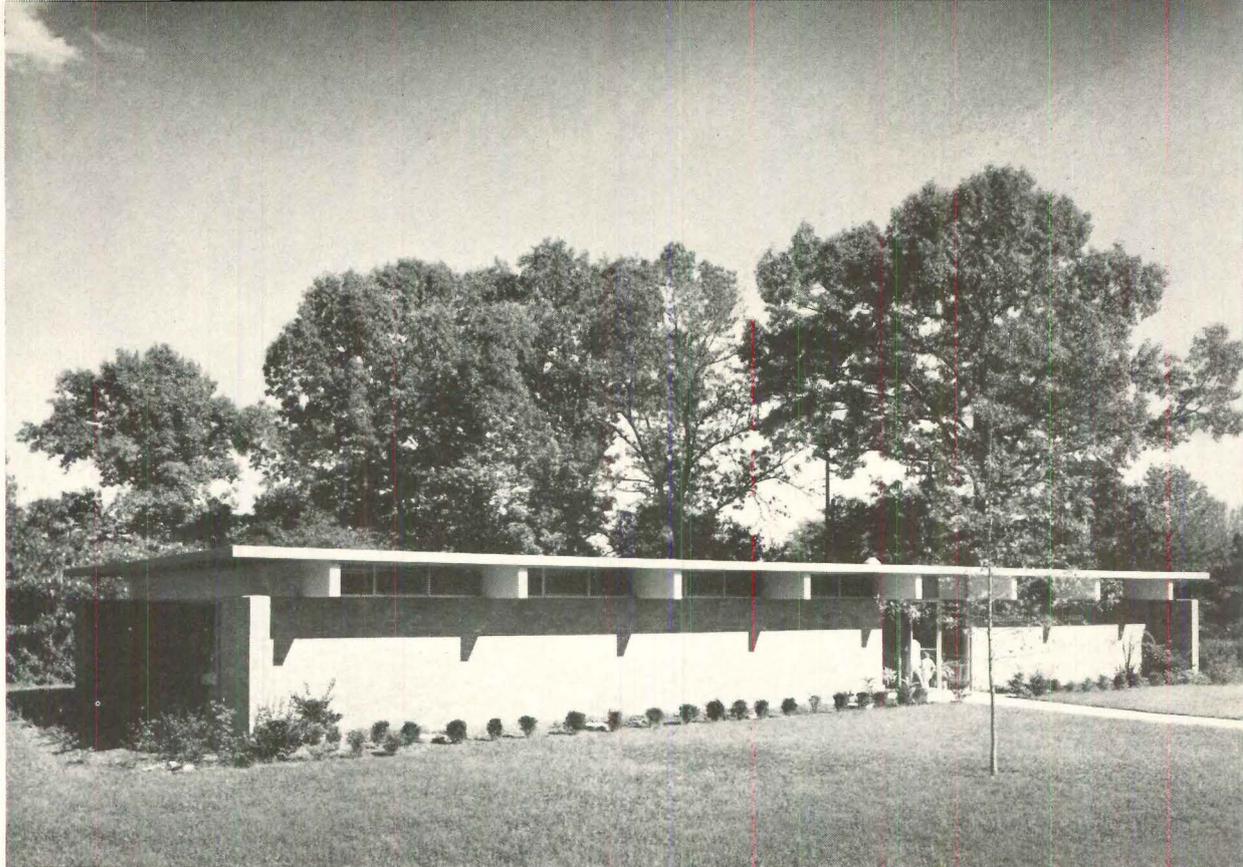
FACTS AND FIGURES

Sequoyah Branch Library, Knoxville, Tenn.

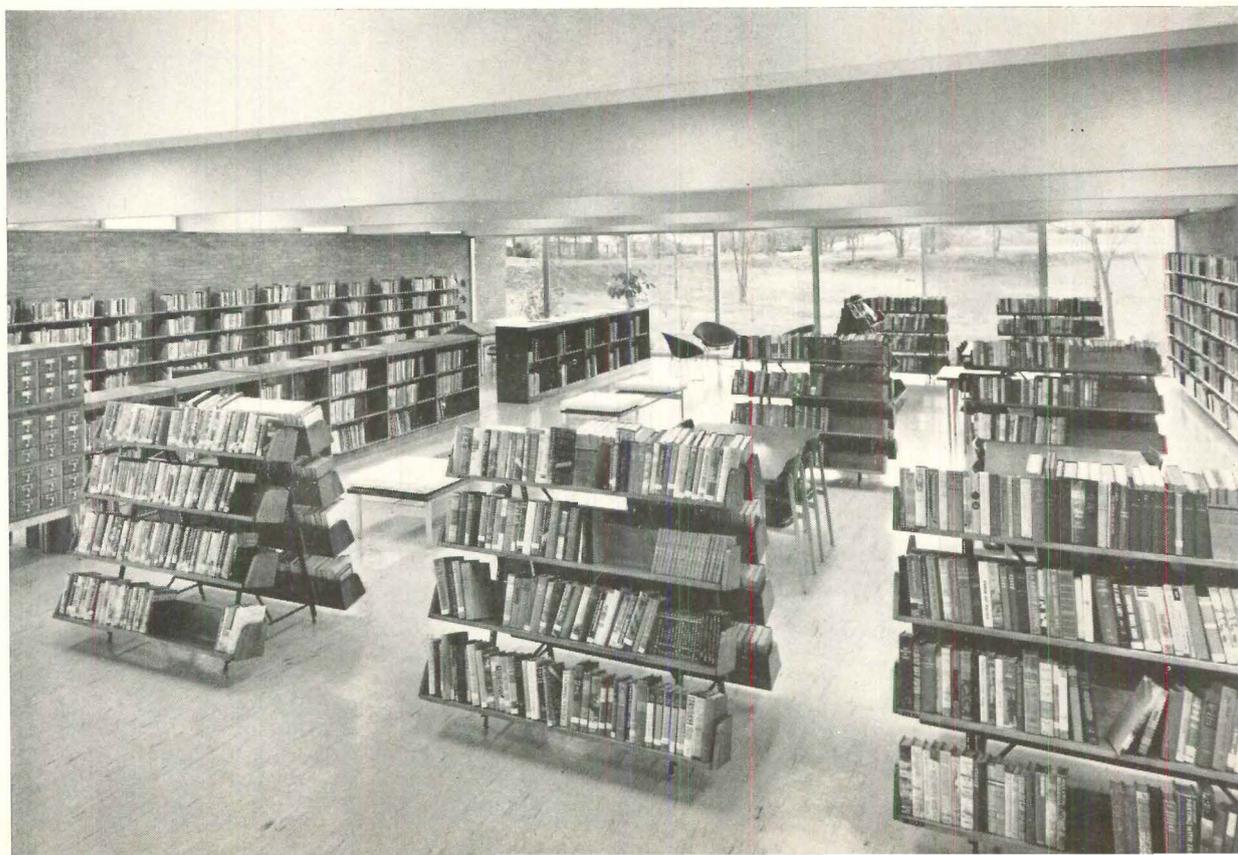
Architects and engineers: Barber & McMurry (Ben McMurry, Jr., associate-in-charge; W.A. Quickel, structural engineer; Chester E. McCallum, mechanical and electrical engineer). General contractor: Williams Construction Co.

Construction features: Load-bearing brick walls. Roof: laminated wood beams and plank deck. Floor: vinyl asbestos tile on concrete slab.

Construction cost: \$56,390, plus \$10,944 for furnishings and equipment, \$3,383 for fees. Building area: 3,900 square feet. Cost per square foot: \$14.46.



The low lines of the Sequoyah Branch Library (above) are at home with nearby houses. Books line both sides of the reading room, with lower shelves dividing the large interior space (below).





API



SYMBOLIC MONUMENT IN THE SOUTH

LeMoyne College in Memphis, Tenn., a Negro institution founded in 1870 by the American Missionary Association, has generally chosen the eminently respectable tone of Georgian for its buildings. But with this handsome—and muscular—modern library, LeMoyne at last steps forward into this century.

A statement of strength, the entire building is designed around a compassionate mural by Artist Ben Shahn, a major work 21 feet long executed in Italian mosaic tile (photo, bottom left). This glittering, glowing panel depicts a human figure sprawled over its length, and is emblazoned with a quotation from the 133rd Psalm which begins, "Behold, how good and pleasant it is for brethren to dwell together in unity . . ." The mural is set under a skylight in a large two-story room which is the heart of the design.

Designed to house about 75,000 volumes and 225 readers, the library also provides facilities for lectures, discussion groups, and private study. Square in plan, it has three equal structural bays along each face, with 7-foot perimeter cantilevers which define the interior space for the study carrels. From outside, these cantilevers make the heavy building appear to hover in layers separated by long glass windows.

FACTS AND FIGURES

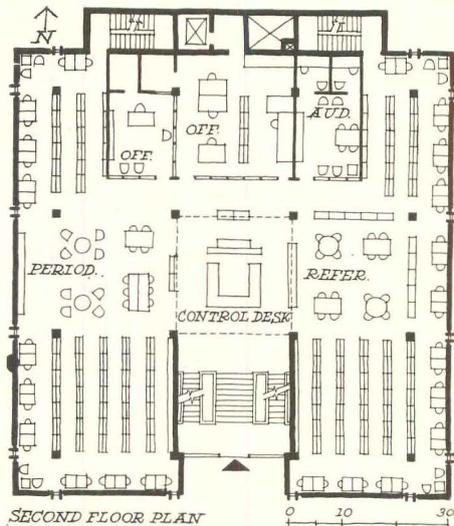
Hollis F. Price Library, LeMoyne College, Memphis, Tenn.

Architects: Gassner, Nathan, Brown. **Engineers:** Ellers & Reaves. **Library consultant:** Robert Severance. **General contractor:** F. T. Thayer, Jr.

Construction features: Reinforced concrete frame and coffered slabs (concrete left exposed and bush hammered); brick exterior walls; cast stone window frames and gray plate glass in aluminum frames. Air conditioned by conventional system.

Cost breakdown: Total project cost, \$300,067. Construction cost, \$253,073; furnishings and equipment, \$20,365; mural, \$10,913; fees, \$15,716. Floor area: 19,127 square feet. Construction cost per square foot: \$13.23.

Financing: Grants from United Church of Christ, United Negro College Fund, and other gifts.

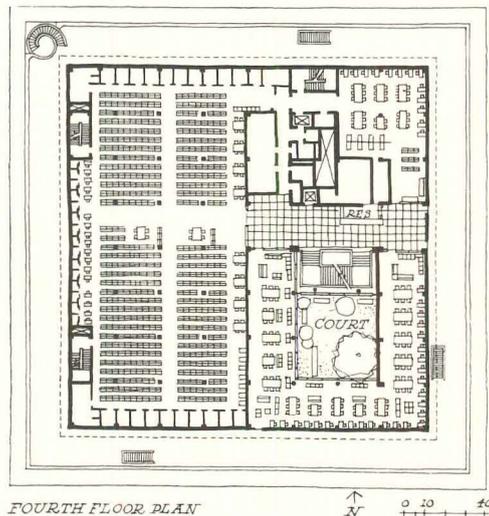
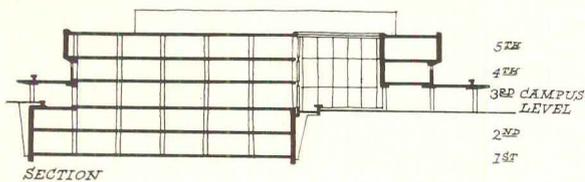


Open stacks and simple, utilitarian furniture share the areas around the large space on the top two levels. The Shahn mosaic (bottom photo, opposite) dominates both these big rooms. Double desks partitioned for individual study (below) line the edges of the building under the long window which knifes around the building uninterrupted by structural members.





No trucks need cross the quadrangle to deliver books; a tunnel takes care of that. The main circulation of the library itself is up and down the broad, terrazzo, glass-enclosed stairway which forms one wall of the interior courtyard seen below. The stairwell, continuing below grade, pulls considerable daylight into the second-floor lobby.



FOURTH FLOOR PLAN

HERB WEITMAN



NEW UNIVERSITY CORE IN MISSOURI

This is a big one: a library for 1,350,000 volumes and 1,700 readers, in addition to the numerous other special-use arms which such a formidable cultural instrument grows today.

Its architectural design was the subject of a competition announced by the client, Washington University of St. Louis, almost eight years ago. Six architectural firms were invited to compete, and Murphy & Mackey was selected. One of the reasons given for the selection was that the design paid respect to the elderly campus by diminishing the mass of the library, sinking it two levels into the ground and opening the ground-floor level with glass walls to the tree-scattered greensward of the site. These glass walls are nicely shaded by a deep overhang.

But it is mainly in the complicated interior that Murphy & Mackey have made their mark. Spaces were well scaled and fitted together (the module is 4 feet 4 inches, the bays 21 feet 8 inches square), and a garden court permits opening up some of the interior rooms.

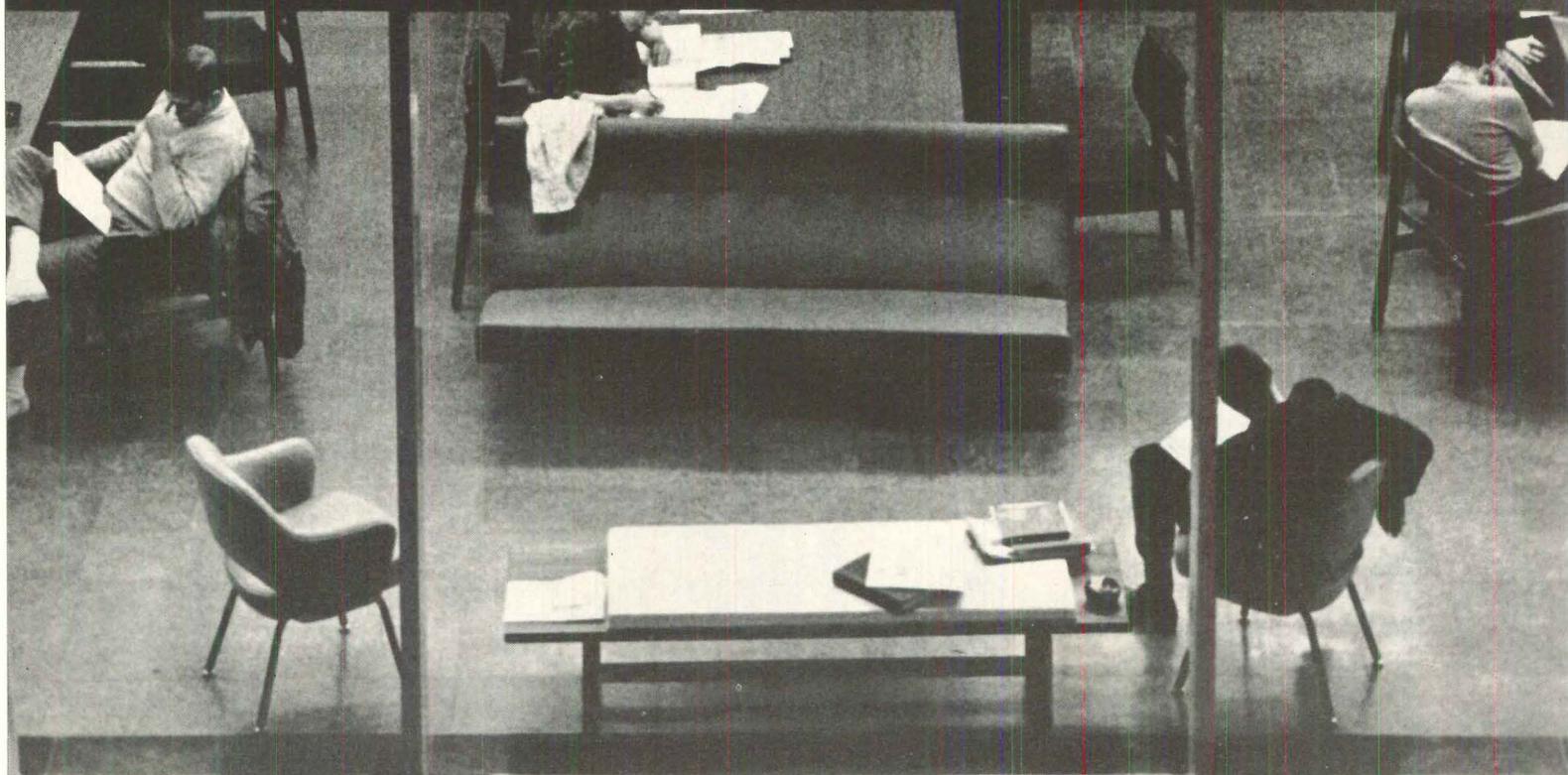
FACTS AND FIGURES

John M. Olin Library, Washington University, St. Louis, Mo.

Architects: Murphy & Mackey, Inc. (associate-in-charge, Theodore J. Wofford). **Engineers:** Neal J. Campbell (structural); Paul Lone & Associates, Fred S. Dubin Associates (mechanical, electrical). **Landscape architect:** William Roberts. **Library planning consultants:** Ralph Ellsworth and Keyes D. Metcalf. **Acoustical consultants:** Bolt, Beranek & Newman. **General contractor:** MacDonald Construction Co. **Construction features:** Reinforced concrete, flat slab construction. Exterior: concrete, granite, and limestone. Floors: terrazzo, cork, vinyl.

Cost breakdown: Total project cost, \$3,984,000. Construction cost, \$3,134,000; site development, \$20,000; furnishings and equipment, \$650,000; fees, \$180,000. Floor area: 180,000 square feet. Total cost per square foot: \$22.13.

Financing: Primarily by gifts from John M. Olin.





ACOUSTICS IN-THE-ROUND AT THE BERLIN PHILHARMONIC

BY R. S. LANIER

The development of an entirely new concept for a concert hall, one which radically changes the relationship between musicians and audience, is in itself an event. The execution of the concept in such a way that it is as successful acoustically as it is architecturally is a milestone.

Such is the case with the new home of the Berlin Philharmonic Orchestra, built a mere 150 yards from The Wall in a still-desolate area that was once the Tiergarten. It was designed by Hans Scharoun, President of the German Academy of Arts, an architect with a deep sense of dissatisfaction with the way most concert halls worked.

The normal placement of the orchestra in back of a proscenium at one end of the hall, Scharoun felt, blocked that audience from participating in the creative act on the stage. Only by having the audience close to the musicians, even surrounding them, could the two communicate as freely and intensely as they should.

The manifestation of these ideas is the dramatic space at left. The orchestra is indeed surrounded by listeners, but only 260 of the 2,200 seats are directly behind the musicians. The seats rise steeply all around in irregularly shaped sections which Scharoun aptly calls "vineyards"; they are much like row-planted plots of varying shapes and sizes on the sides of a hill. Not only does this arrangement transform the experience of listening, but it changes the very nature of the audience, Scharoun points out: the audience becomes less an oppressive mass and more an interestingly varied assembly, both to itself and to the musicians.

An acoustically risky plan

Early in the process of design, Scharoun took his vision to Lothar Cremer, Professor of physics and acoustics at the Technical University of Berlin and one of West Germany's most eminent acousticians. Cremer at first felt that the plan was acoustically risky; noth-

ing like it had ever been done, and the chances of coming a cropper were high. But Scharoun's missionary fervor won him over, and as they proceeded it became clear that the explosively varied space presented acoustical advantages as well as pitfalls.

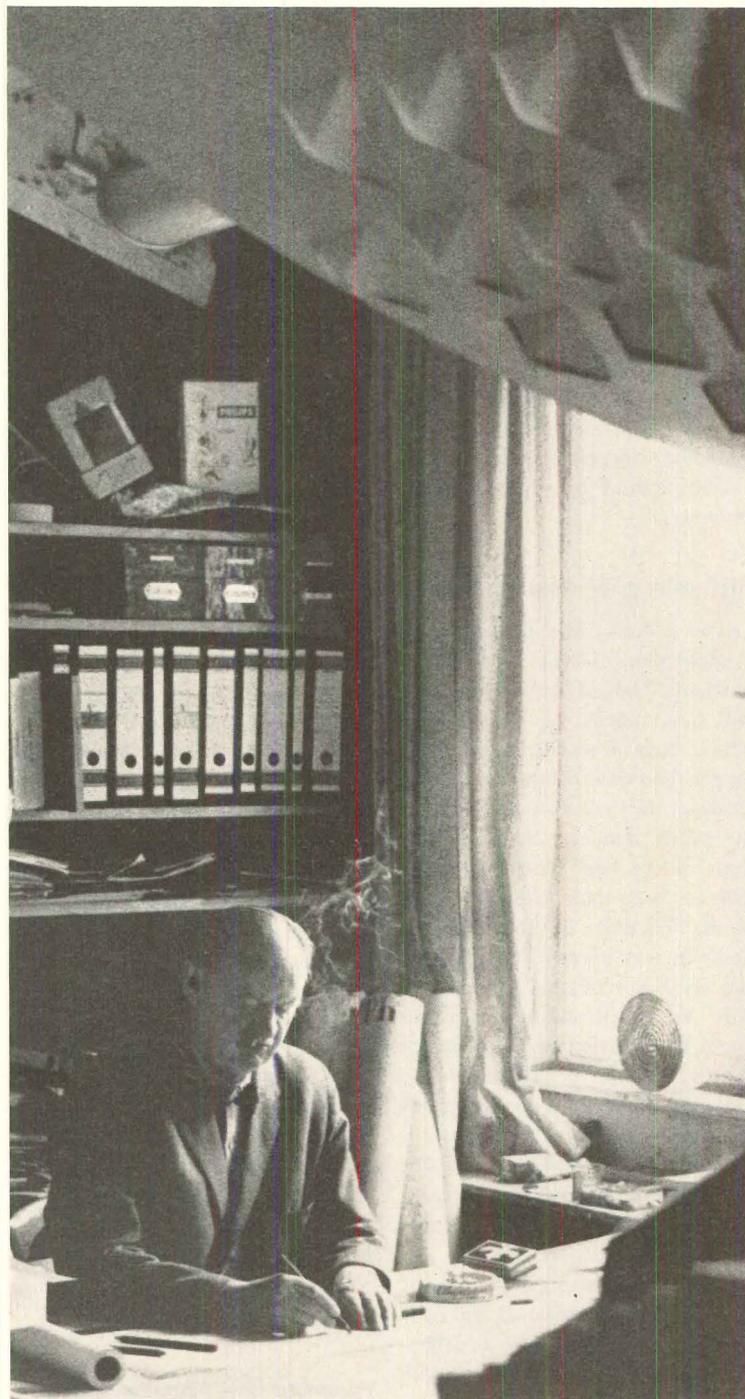
One advantage of having the audience all around the music is that, as the building finally turned out, no listener is more than about 115 feet away from the stage. In halls of the usual plan, and comparable seating capacity, some seats are likely to be at least 150 feet away. And every additional foot that separates a listener from the music makes it harder for the acoustician to supply sound that has immediacy and power.

Envelopment in reflections

Also, the vertical surfaces of the divisions and sub-walls of the various vineyards produce a large number of variously directed reflections of the sound throughout the listening area. This random, dispersed reflection from nearby vertical surfaces is thought to be a major factor in the production of a sense of envelopment by the music, and in giving it an intimate vivid quality.

Some of the inherent disadvantages of the plan stem from the lack of large reflecting surfaces surrounding the orchestra. A sound-reflecting enclosure which wraps around the musicians helps them to hear each other well enough for the closest collaboration. To give the musicians some reflections, Scharoun and Cremer put them down in a kind of vat with walls on three sides, low enough so that sound is not blocked off from the audience.

They also hung ten large reflectors, or "clouds" directly over the musicians to reflect back to them quickly part of the sound rising toward the ceiling. The clouds are doubly curved plywood panels, convex toward the floor, about 9 feet on a side, and hung some 35 feet above the musicians. A reflec-



MAX JACOBY; OPP.: HARRY CRONER

Hans Scharoun, architect and President of the German Academy of Arts, gave shape in his new hall for the Berlin Philharmonic Orchestra to his radical ideas about the relationship of listeners to musicians. Left: the first concert.

tion from them thus comes back to the orchestra about 70 milliseconds after the original sound is heard. This time-gap is short enough to merge the reflection with the original sound, reinforcing it, rather than standing out as a separate echo. Without the panels, the reflections from the ceiling nearly 70 feet away, which take about 140 ms for the round trip, would be heard as confusing echoes. Because of their shape, the clouds also spread their reflections to a considerable area in the audience, increasing the clarity and strength of the music for many listeners.

High ceiling for reverberation

The clouds, like those in the original plan of New York's Philharmonic Hall (FORUM, Dec. '63), will not reflect low bass tones which have a wave length much longer than their 9-foot dimension. Because they come from the ceiling rather than the clouds, reflections of the bass tones reach the listener later than those of treble tones. This delay in the bass reverberation was blamed, in part, for the weakness of the bass in the New York hall and helped bring about the decision to rearrange its clouds. Cremer, perhaps with the events in New York in mind, has remarked that such hanging reflectors properly spaced need not have ill effects if they are carefully integrated with other acoustical factors.

Next to the seating arrangement the height and shape of the ceiling are the most radical departures in the acoustical design. The great height was dictated by the need for a large interior volume despite the compact plan. And this in turn was determined by the wanted reverberation time—the time it takes the complex of echoes in the hall to die down to one millionth of its original intensity after a sound stops. (Control of reverberation time within a few tenths of a second, from about 1.6 seconds to a little over 2 seconds for a hall in which symphonic music is played, is essential—though not by itself sufficient—for acoustical excellence. If the rever-

beration time is too short, the music is apt to be too dry and thin; if too long, the music may be muddled.)

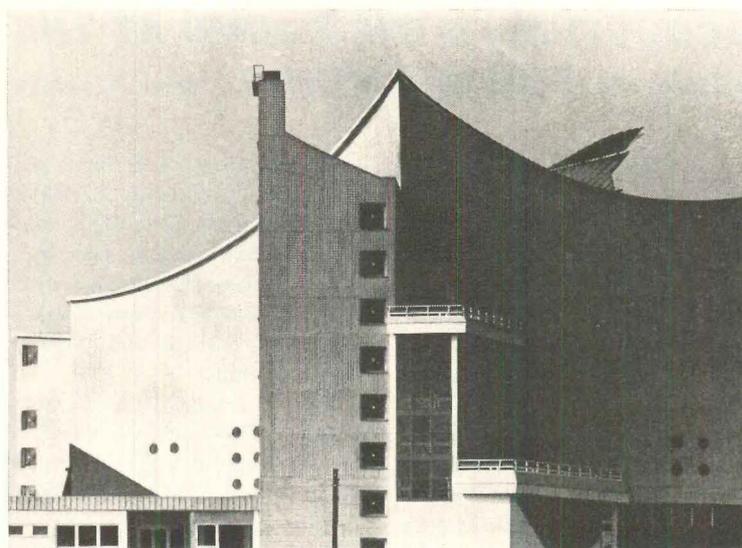
The volume of the room is the main factor in increasing the reverberation time. The absorption of the audience itself, the main element decreasing the reverberation time, is fixed. Thus a rough formula for reverberation time can be based on the volume per member of the audience. Cremer decided that he needed 11 cubic meters (385 cubic feet) for each listener. He was aiming, it appears, at a fairly long reverberation time because he wanted a full, rich sound well suited to the warm, "romantic" style of the orchestra.

Cremer has acknowledged that the ideal reverberation time is different for different styles of music: on the short side for swiftly rhythmic, linear music like that of the 18th century and for much 20th century music, which puts an emphasis on extreme clarity of line; considerably longer for the broad-scale, heavily orchestrated music of the middle and late 19th century. But he rejects variable reverberation time (produceable with a number of techniques, including sliding or turning panels that alter the sound absorbing capacity of surfaces in the hall) in favor of a fixed acoustic character, on which the musicians can base their performing style. The reverberation time of the finished hall turned out to be about 2.2 seconds in the vital mid-frequencies, somewhat longer than it is in most modern concert halls.

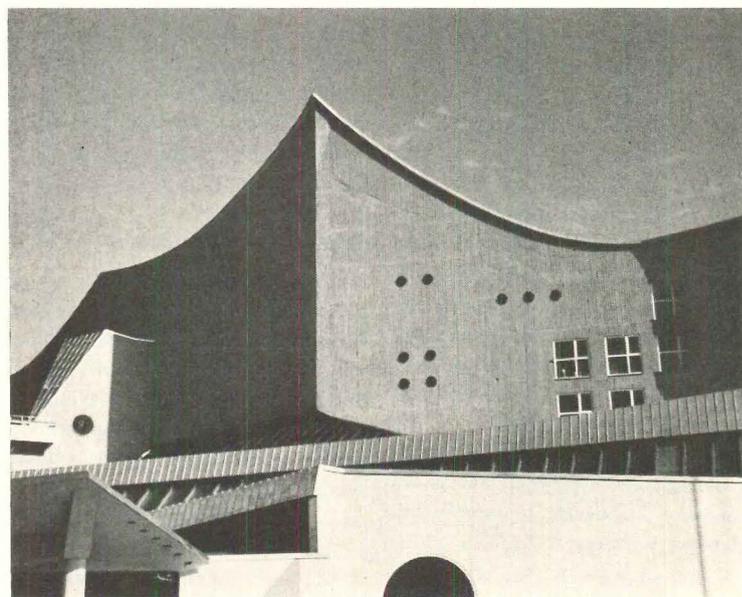
Pyramids trap booming sound

This decision to go for a warm, highly reverberant sound, strongly motivated by the traditions of the orchestra and of the Berlin audience, would not be regarded as necessarily the right one for other halls in other places. The cleaner, drier sound of many modern halls has often had similarly strong motivation, and reflects in part a swing in tastes, not yet general, toward the extreme clarity needed for 20th century music.

The time in any hall with hard surfaced walls tends to be longer



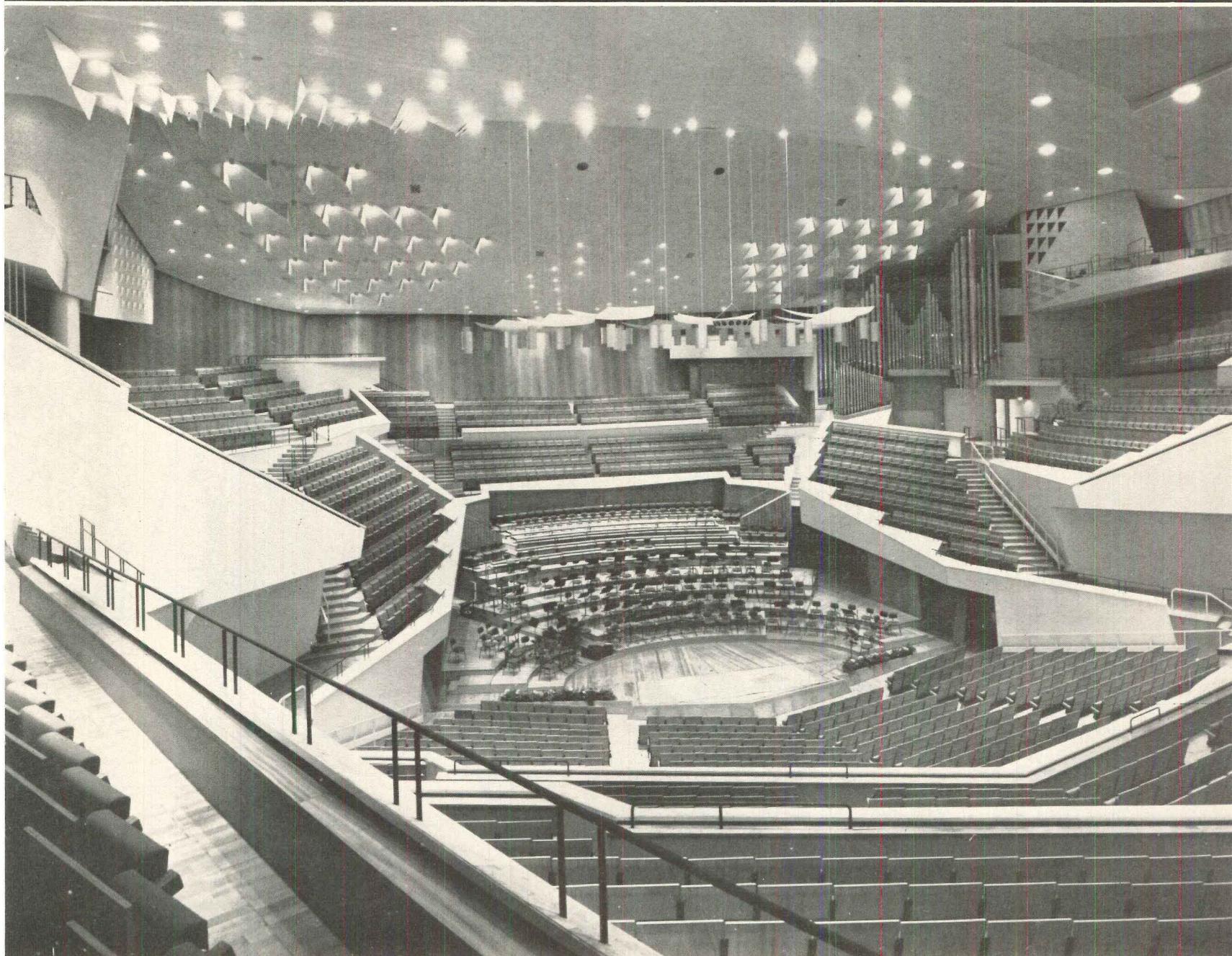
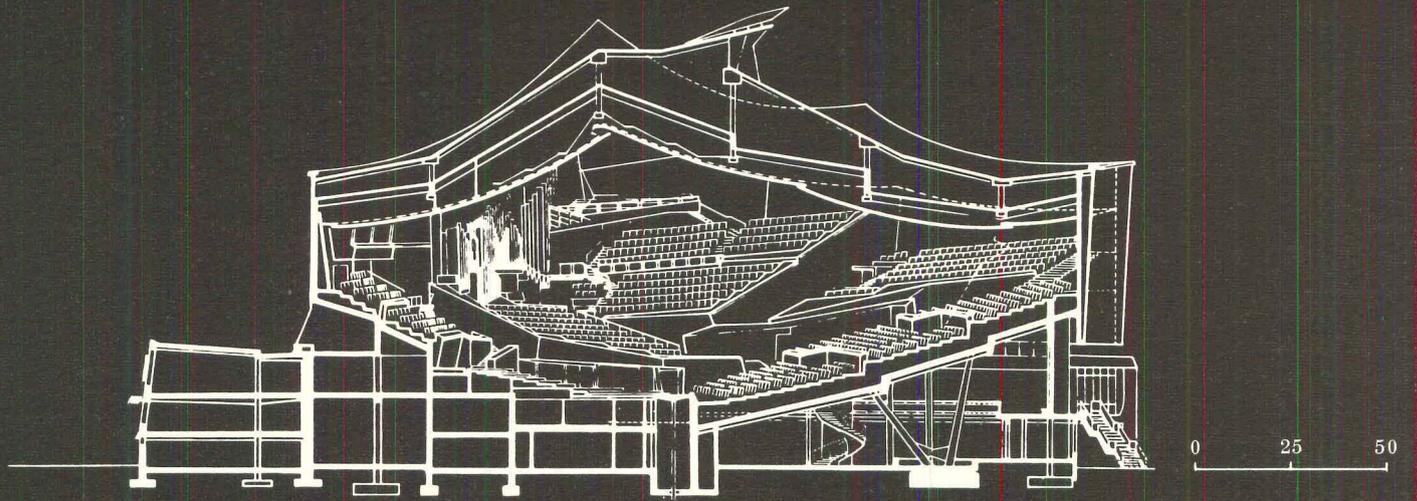
PHOTOS: MAX JACOBY; OPF.: REINHARD FRIEDRICH



Roof follows the tent-like ceiling line (section, top right) with a spacing between them of about 20 feet. Third skin, between the two, helps keep out overhead noise.



Orchestra "vat," in center at right, has low walls on three sides to reflect sound back to musicians. Above are the hanging "cloud" reflectors; audience rises steeply all around the musicians in irregular "vineyards" used to break up mass.



in the bass because the absorbing surfaces, the clothing of the audience and the upholstery of the seats, cannot absorb much energy in the low bass. The reverberation time in the bass should be longer than the mid-frequency time to give the hall "warmth," but if the bass time is too long, says Cremer, the hall will have a hollow, booming sound.

To avoid this quality in the Berlin hall Cremer used thin wood paneling on wall areas at the perimeter of the room, and about 135 pyramid-shaped bass absorbers in the ceiling (photos). Wood panels of the right weight and thickness over a shallow air space reflect middle and high frequencies back into the room but take energy from the bass by vibrating in step with it. The pyramids are Helmholtz resonators, enclosures with dimensions such that the enclosed volume of air vibrates strongly at bass frequencies, in effect trapping the bass energy.

Protection from outside noise

The intersecting convex curves of the tent-like ceiling also have the fully intended effect of helping disperse the sound evenly through the room. The roof, which reveals the tent-like form of the hall on the outside, is spaced some 20 feet from the ceiling. Between the two, in the truss space, is an intermediate slab. These three layers of structure form a particularly strong barrier to overhead noise: aircraft on the way to and from the Tempelhof Airport pass close above the building. The complex of lobbies and service rooms isolates the lower part of the listening room from street-level noise (two large throughways will cross near the hall) and the upper side-walls are double, with space between the shells, to carry the noise isolation to the roof line.

The entrance foyers and main lobby project under the end of the curved listening room, which lies above them like a balanced egg. Entrance to the hall itself is by a number of stairways up from the lobby. The ceiling of the lobby is covered with sound-absorbing material with the purpose, says Cremer, of inducing quiet behavior

on the part of those coming in: highly reverberant lobbies, he says, lead to whistling or singing.

Converting the doubters

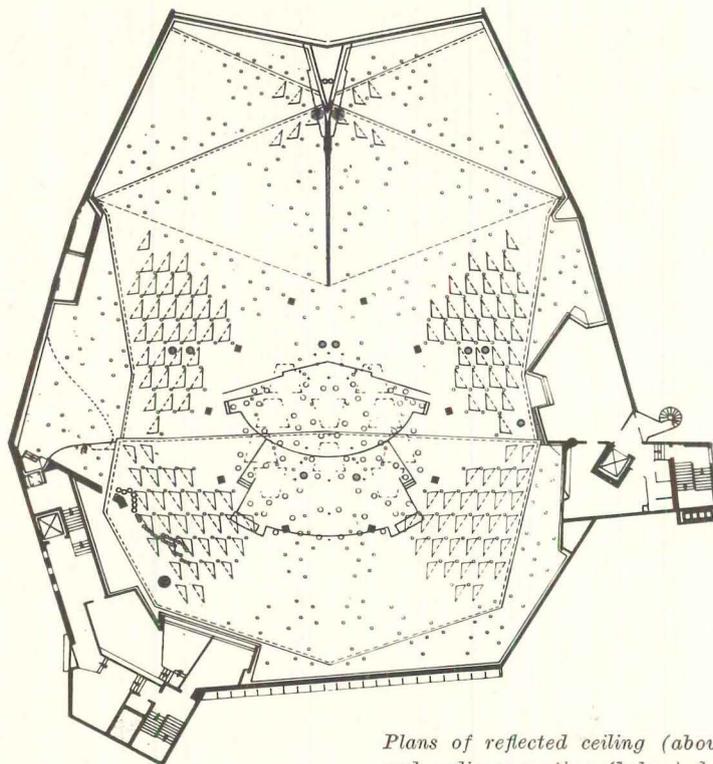
The payoff to Scharoun's and Cremer's efforts came at the opening of the hall last October. Even during construction, the building had stimulated a vast amount of comment from Berliners who had seen the widely publicized design (it won a city-sponsored competition) and watched it gradually take its unusual shape. Their early reactions ranged from weighty panegyrics on Scharoun's "soaring spirit" to dire predictions that the audience would not be able to find its seats, much less hear music from them.

The hall's trial-by-sound was thus the denouement of a thriller, with a whole city watching: would Scharoun and Cremer pull off their huge gamble, or would anticipation turn to distress at the sound of the hall? According to most judges, they did indeed pull it off. A majority of critics, musicians, and just plain listeners threw their auditory hats high in the air.

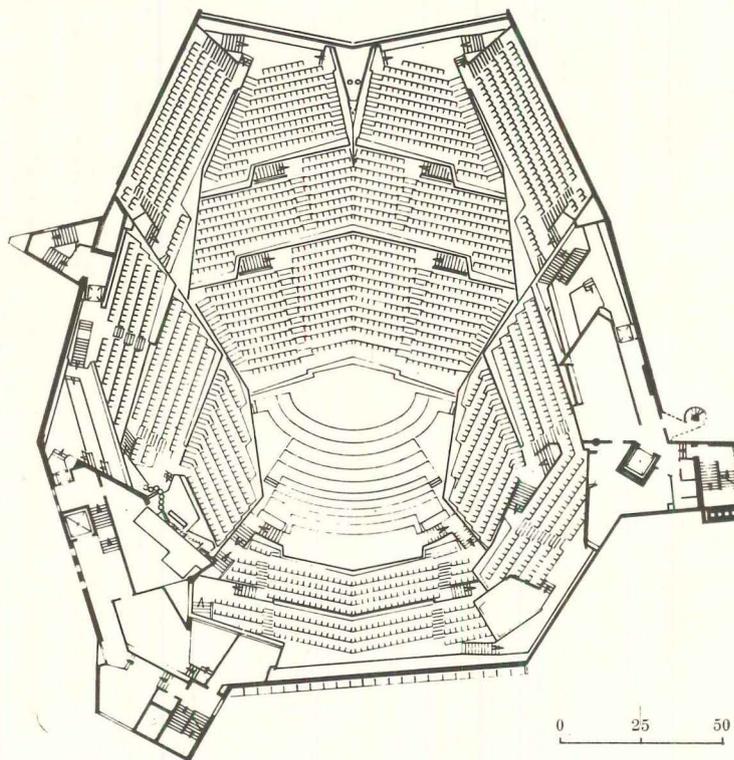
The most vivid summary of their reactions was contained in a *New Yorker* article by travel writer Joseph Wechsberg, a skilled violinist and sensitive listener. Wechsberg came as one of the doubters: when he studied the plans and saw the partially completed hall in the company of Scharoun two years ago, he feared that, like many of the new concert halls, it would be distastefully thin and sharp in its acoustical quality.

Wechsberg reports that he began to be won over as he went up the twisting stairway of the lobby, and was totally vanquished by the hall itself: "Scharoun's magnificent vision—first the music, then the audience around the music, and finally the landscape around the audience." When the orchestra began playing, he found the music warm and lyrical, all around him but still distinct.

Nearly every account of the hall's acoustics has been similarly rhapsodic, but there have been dissents. Two or three of the Berlin newspaper critics found that fast runs seemed muddled, with only



Plans of reflected ceiling (above) and audience seating (below) show the avoidance of parallel reflecting surfaces that would make echoes.



0 25 50



Right: highly varied "landscape," looking toward the rear of the hall, shows large and small groups in the audience all aligned toward musicians who occupy the center.



the first notes coming through distinctly. Listeners in some seats complained of a lack of balance in the sound, and those in others a lack of blending.

If there is muddling, it probably results from two factors, in the opinion of some acousticians: the weakness of the direct sound from the submerged stage, in some seats; and the relatively long reverberation time. As noted earlier, Cremer deliberately chose a long reverberation time to make the hall highly responsive to the 19th century romantic music of which Berliners are so fond. The music will come through clearly and distinctly despite a long reverberation—but only if the direct sound is strong. Some weakness in the direct sound is inherent in the music-in-the-middle idea, and although Cremer tried to overcome this difficulty, it apparently still exists in some seats.

There have also been reports that the musicians are not completely happy with the quality of the sound on stage. Considerable experimentation has been going on with the placement of the musicians, the height of the risers on which the various sections of the orchestra sit, and the reflecting surfaces around them. Cremer is considering an increase in the size of the clouds overhead to benefit both the musicians and the audience.

The dissents are murmurs in a chorus of praise, however, and the need for tinkering is not necessarily a black mark—given the present state of the art of acoustics, some adjustments after opening night are practically inescapable. The hall is a spectacular critical success, and the reasons for this fact, insofar as they can be determined, are instructive.

One is that Cremer was brought into the design process almost at the outset, and did his work well. He used the opportunities presented by Scharoun's concept, and attacked its potential difficulties, with great skill. He made particularly good use of the chance to achieve dispersed reflections throughout the audience. He tuned the hall to a warm, full sound that met the tastes of the

majority of the listening public more than half way. (He also undoubtedly had a bit of good luck, necessary in any acoustical enterprise and especially so where there are no long-tested patterns to follow.)

Another reason for the hall's acoustical triumph appears to be the sheer architectural force of Scharoun's design. It is hard to believe that in thinking of how his faceted hall would look and feel to the audience, he was not also thinking of how the music might sound when diffused among the vineyards. Architecture and acoustics seem to have been intuitively joined in Scharoun's original concept.

Audiences remain stubbornly subjective in their assessment of sound, and Scharoun has skillfully set them up to like what they hear. The winding stairways that lead up from the lobbies induce anticipation and exhilaration; the scattered sections of seating give a sense of intimacy; the entire "landscape" of the hall has an emotive grandeur; and the nearness to the source of the music is the climactic piece of applied psychology.

An end to rectangularity?

As Scharoun intended, many listeners did experience a high sense of participation in the art and technique of the musicians. Some said that the conductor no longer dominated the performance as he does in the traditional, hall, where he stands physically and emotionally between musicians and audience. In Scharoun's hall the conductor became a member of a working group, and the responses of the musicians to him became part of an exciting interchange that could be followed closely.

Scharoun's smashing of the rectangularity of much modern architecture, in fact, had a large segment of the Berlin intelligentsia on the hall's side from the time the design was first announced. As one opening night reviewer wrote, the building shows again that "to be a Berliner is to dare." END



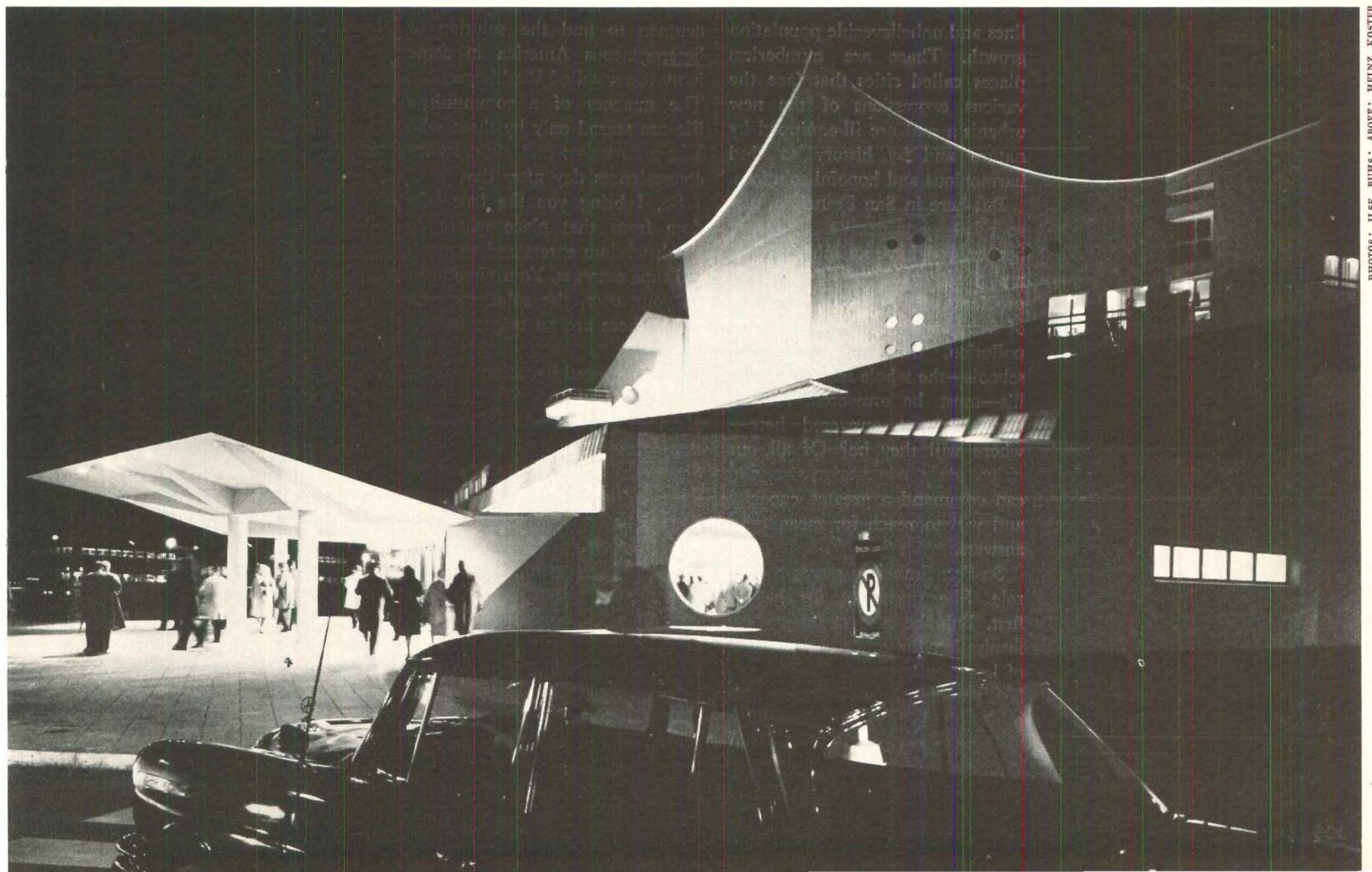
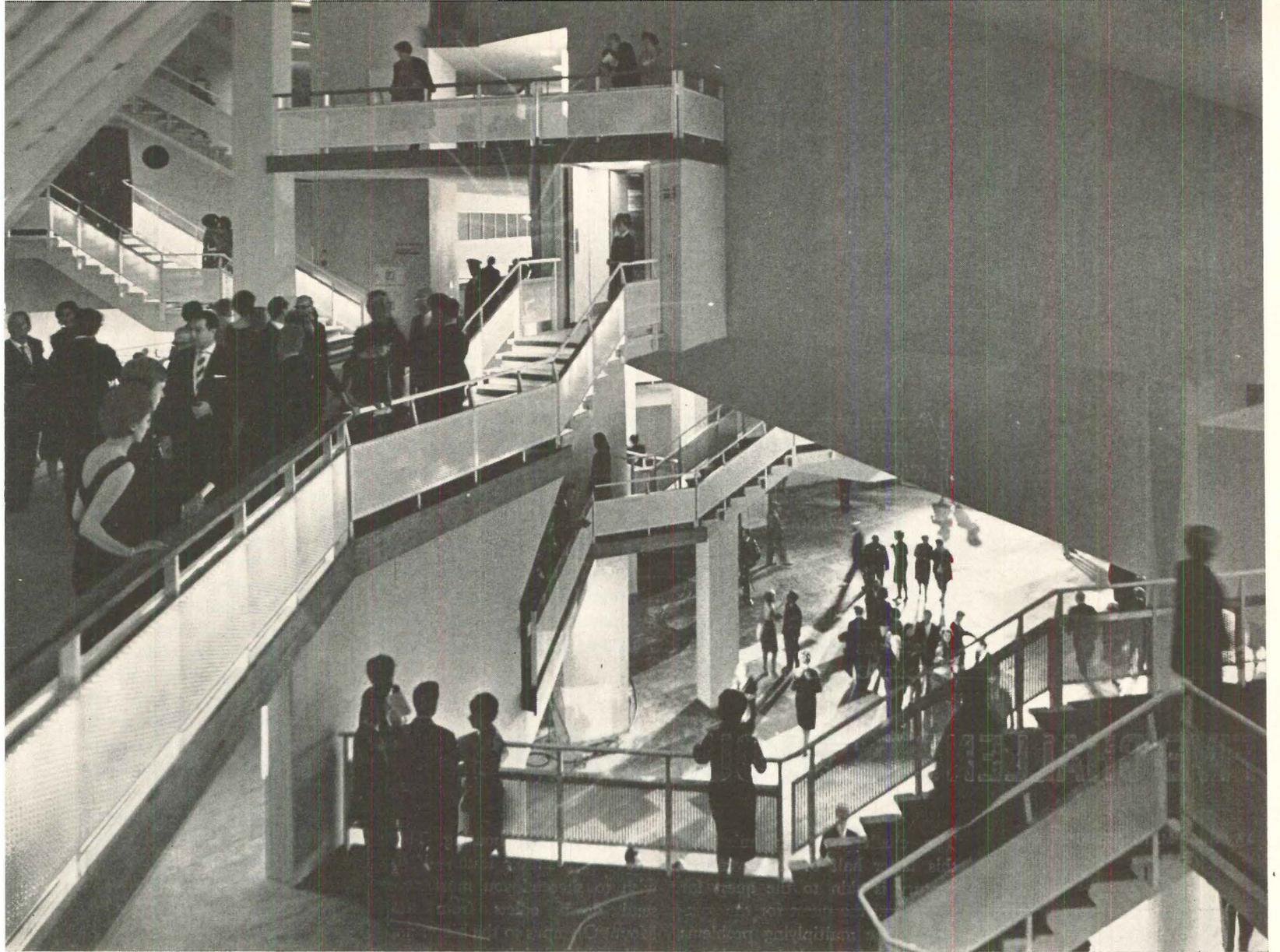
On various stairways, concert-goers move directly to the main auditorium from intermediate levels (above and opposite) and from the ground level shown in photograph below.



Complex of stairways from lobbies into hall, which some thought might prove confusing to audience, have turned out to be an inspiring introduction to the concert hall.

➤

Exterior on a concert night shows the entrance marquee and corner of peaked roof. Daring of hall endeared it to Berliners, who gave Scharoun a 15-minute ovation when he took his opening-night bow.



PHOTOS: ILSE BUHS; ABOVE: HEINZ KOSTER

A month ago, at the annual conference of the San Francisco Planning and Urban Renewal Association (SPUR), Philip M. Klutznick challenged all of us to grasp the opportunities of "galloping urbanism." Below are his remarks in their essentials.

As the wartime head of the federal Public Housing Authority and the developer of Park Forest, near Chicago, Mr. Klutznick has a long record of deep, personal involvement in the shaping of our skylines. Among other problems, he has tackled those of racial discrimination and of international cooperation—the latter as US ambassador to the United Nations Economic & Social Council in 1961-62.

FIVE CHALLENGES TO OUR CITIES

BY PHILIP M. KLUTZNICK

The challenge of urbanism in this latter half of the twentieth century is akin to the quest for peace and the quest for the solution to the multiplying problems of automation and the problems set in motion by lengthening life lines and unbelievable population growth. There are numberless places called cities that face the various expressions of the new urbanism and are ill-equipped by nature and by history to find harmonious and hopeful solutions.

But here in San Francisco, surrounded by unparalleled natural beauty, you have an inherent will and ability to cope with the new problems of today. The questions of fiscal sanity, transportation, air pollution, housing, recreation, schools—the whole lexicon of city ills—must be answered. And if they are not answered here—where will they be? Of all our cities, only our nation's capital can command a greater capacity and will to reach for meaningful answers.

So San Francisco serves a dual role. She must act for herself first. But she also stands as the inspiration for other communities of lesser endowment. If, God forbid, you fail, how then can these other cities hope to succeed?

Once in my earlier life I sat at the head of a federal agency con-

cerned with war housing. There I learned a simple lesson—if you wish to succeed you must never send down edicts from atop Mount Olympus to the hinterland.

No wise administrator can possess either the knowledge or the acumen to find the solution of heterogeneous America in some ivory tower called Washington. . . . The nuances of a community's life are sensed only by those who inhale its noises and curse its inconveniences day after day.

So, I bring you the true wisdom from that place where so much wisdom enters and so much red tape emerges. Your aims must be your own, the solutions your own. There are no magic formulae that have been contrived by artists of prestidigitation to ease your way into a prefabricated set of answers that need only an electronic impulse to put in execution. Many will try to understand the urban problems of San Francisco and others, maybe even some like me, will offer advice—much of it gratuitous; but when all is said and done the real analysis and the acceptable answers must come from San Francisco, its official leadership and its people.

Yet, there are some generalizations that can stand utterance or even repetition:

1. Everyone concedes that we are in the midst of the greatest trend toward urbanization since the beginning of time. I no longer use the astronomical figures of growth anywhere—least of all here in California where every normal figure is used as one part of a multiplication table.

The pressures of this trek to the cities violates nearly every known precedent. If we are to place any faith in the demographers, all this is but the beginning. There is a sensible rule of life that the solution of unprecedented problems usually requires unprecedented action. Yet despite such potentials there is little indication of a willingness to break through the cocoon of yesterday's prosaic and dull responses to the most exciting urban challenge of history.

2. Most cities look upon planning for this revolutionary tomorrow with about the same lackadaisical interest that was exhibited by most cities toward planning in the past.

I am not ready to blame the city fathers for this inadequate and outmoded approach. The average businessman looks upon planning for municipal regeneration as a luxury which can be dispensed with in view of increasing and unbearable real estate taxes.

I blame planners no less. Many of them are too timid to explore the beckoning new horizons. They draw a few lines and suggest a few new expressways or transit systems and call what they have done a new city plan. We must begin to appreciate planning as a desperate necessity if we are to

save our cities from an oncoming avalanche. No business survives in our highly competitive society without constantly thinking through its ultimate aims and its immediate objectives.

As a living machine, the city wears down and needs repairing—some of it becomes obsolete and requires replacement. We have hardly been bold enough to distinguish between the two. In some places urban renewal has barely begun before it has been hampered, hamstrung and even discarded. There have been mistakes. But, from error we can learn. Mistakes should not make us turn tail and run away.

But, if we have made any one mistake bigger than the rest, it is that we have not yet accepted the indispensability of long term bold and creative planning. Indeed we provide too little for even short term jobs. Any successful businessman can tell you how much he has plowed back into good long-term planning, plant updating and new product research. Yet, that same businessman rarely looks at the environment of his business success and his family's happiness in the same terms. We seem content to use and abuse our cities, but not our plants.

Here, then, is a role for the private sector: demand of your city officials that they treat your city with the same foresightedness that you treat your business. Demand that they make bold plans to meet existing and impending problems and that they spend what is needed to do so. Let us bring to this task some of the brightest minds we can capture. This is not waste of precious public money—it is unavoidable capital investment if San Francisco and cities like her are to rise above their own neglect. The true waste is in solutions which are pin pricks where surgery is necessary.

3. The motivation and the answers must be locally initiated, but not every problem can be solved through local enthusiasm alone.

I believe we are in the midst of a metropolitan metamorphosis. It could be that our present thinking on municipal transportation is adequate—I am full of doubt. It may be that our current views of how to handle air pollution will serve—I am exceedingly skeptical. Some people are tinkering with the fiscal techniques of municipal life with little gimmicks here and little gee-gaws there, while the ad valorem tax is losing its steam and is rapidly reaching a point of no return. It may be that joint city-county governments will solve some problems, but there is a hesitancy about honestly facing up to the need for metropolitan government. New plans for large-scale land development with government assistance have been announced, but how useful they may be without integration into total metropolitan plans is something else. Maybe some answers to large-scale developments can be found in the search for new techniques by which water, sanitation, electricity, telephone and other essentials of city life can be provided without miles upon miles of digging and planting of pipes and wires.

We have made enormous strides in security . . . through basic or pure research. The billions that have been spent to discover new ways to kill were, and are, essential so long as the world is divided. But, out of these vast necessary expenditures we should sense some lessons applicable to the problems of life in the world we are defending against death.

We are always extensively engaged in applied research which has an impact on our urban life.

We are improving our building materials, lightening the weights of construction elements, bringing certain comforts and luxuries into our homes both through mass production and new methods and materials.

But where are the stubborn problems of municipal growth, whether in transportation, government, air pollution, sanitation, or water supply, being exposed to concentrated pure and uninhibited research?

Pure research is always a gamble and always costly. Our entry into the atomic age was a multi-billion dollar gamble. Yet, it saved the United States from physical destruction, its people from political slavery, and it catapulted us to a position of world leadership. When we deplore the responsibilities we shoulder because of all this, let us consider what might have been had others attained the mastery of the atom. Today, we take for granted what in the early 1940's, less than a generation ago, was the largest single gamble ever undertaken by our government.

We must act with similar courage when the stakes are the survival of domestic living values. What clarion trumpet needs to be sounded to energize our people to demand courage and boldness to prepare our cities to meet the intensified onslaught of tomorrow's population? We have been resting too comfortably behind a Maginot line conceived for normal growth conditions and have not gambled sufficiently to create the tactics and the machinery to meet the blitzkrieg of geometric urban growth. If we mean to preserve and expand the beauty of San Francisco and its counterparts across the nation, the people must be aroused now to prod their officials into moving with the same valor with which they gambled with the development of the atom twenty years ago.

Sacramento and Washington must feel the urgency of our concern. They, too, must be bolstered in their courage to develop not "Maginot type" programs to cope only with backlogs and today, but imaginative programs that are fitting to a nuclear age. This demands not only the continuance of applied research, but a willingness to invest in pure and basic research without inhibition and with the realization that new breakthroughs for urban living may or may not be found.

I do not demean what we are doing today. I only suggest that the prospects of urban growth and change are so awe-inspiring that they demand a different measure of urgency, a higher degree of boldness.

4. Currently we are engaged in a continuing debate on what we have or have not done to the physical appearance of our cities. Some are disgusted with sterile glass blocks which seem to lack the warmth of even yesterday's slums. I am encouraged by this dialogue. We need to get excited about tomorrow's design for living. There is nothing like a healthy and honest controversy to stimulate public involvement. The private sector should encourage such examinations of what is taking place. Fortunately, buildings are not eternal. Our cities should not be rebuilt merely to satisfy the pages of architectural magazines—they must be built and rebuilt to meet the inner yearnings of the people.

A recent study of a New England community disclosed that a large per cent of the families living in an area scheduled for displacement by urban renewal didn't want to move. They pre-

ferred their commodious, reconditioned apartments or houses with relatively modest rents over the new glassed but crowded rooms at necessarily higher rent levels. The significant aspect of this conclusion is that it was reached by nonwhite families who could afford the new housing. To them the destruction of their predominantly nonwhite neighborhood was a price they were not willing to pay to get access to new modern housing which they felt did not meet their needs. This is at once a physical and a social problem which needs sympathetic understanding.

This does not argue against urban renewal and city updating. It does argue that our pat answers need careful re-examination.

Essentially this introduces the key question which so frequently gets lost in our headlong rush to use the bulldozer without adequate regard to what we provide in place of what we tear down. Some people attack this problem from purely the esthetic point of view and shout that our cities are losing their flavor as we move to stark simple design and an abundance of glass. I happen to appreciate modern design, but I am not the community. Inherent in the question of design is not only flavor but the perplexing challenge of people and their needs

We have not begun to tackle the task of equal opportunity in housing for the nonwhite; at the same time, we may be adding to human woes by other kinds of discrimination involving large families. People should have equal opportunity and freedom of choice to enjoy old and useable houses in certain kinds of neighborhoods if they wish. I am propounding the questions, not trying to answer them conclusively. This is the province of each community . . .

My objective is not to confuse or complicate an inordinately

complex question. It is merely to emphasize that this is no task for amateurs alone, nor is it one that the most proficient professionals can tackle without the support and understanding of an awakened community.

5. Each city now engaged in its own lifesaving ventures must resolve that the municipal plan and the public concern with the condition of the city plan must never again lapse into a state of passivity.

Urban renewal is a continuing process. Details change, even as times change, but urban renewal must remain alive, fresh and in constant movement. One generation has no moral right to bequeath to another a legacy of municipal neglect. Each succeeding generation has the obligation to make its city a better place than the one it inherited.

Urban renewal is not a hundred-yard dash with runners exhausted at the tape; it is a continuing relay with the baton changing hands but with the race never ending. Cities are the living machines for the great masses of Americans. They demand jealous care. They merit our constant understanding and our devoted attention—not just once, but through succeeding generations.

The failure to provide a department of housing and community development at the federal level represents an indefensible position in light of this urgent and continuing need. Any comprehensive view of accumulating urban demand suggests that even the best efforts of the city and state are not enough. When everything possible has been achieved at these two levels, there still will be a need for federal action in appropriate spheres. To generate uninhibited explorations into problems

like urban transportation, air pollution, and the rebuilding process itself, we would do well to dress the skeleton of need in the best government rig we can get.

Twentieth century life is rami-fied with unbelievable opportunities. Yesterday we would not have dared to dream of horizons that now appear over the next hill. This age of science, coupled with the determined leadership of free peoples, can succeed at anything if it has the determination and is prepared to pay the price. No broad human front is more deserving than the continuing demands of galloping urbanism. Here we can take the power of new ideas and transform the modern city to a virtual paradise. We can make a great and stirring contribution to a better world by lifting the harassment, the oppression and the disillusionments of today's urbanism, while preparing for an even greater city of tomorrow.

But, to do all this requires citizenship participation by business, labor, and the general community. All of us have a profound interest in what happens. None of us, or our children, can escape the good and the bad of what is done today to prepare for tomorrow. We must deepen our conviction and strengthen our commitments to good planning and better cities. We in the private sector must think so hard and run so swiftly that our public officials will begin to say to themselves what Ghandi is reputed to have said: "There go my people. I must catch them, for I am their leader."

Not since the industrial revolution have impending disaster and beckoning opportunity combined so uniquely to offer the people a role in determining the character of tomorrow's urbanism. Grasp this chance now—with fervor and with hope—for tomorrow may be too late.

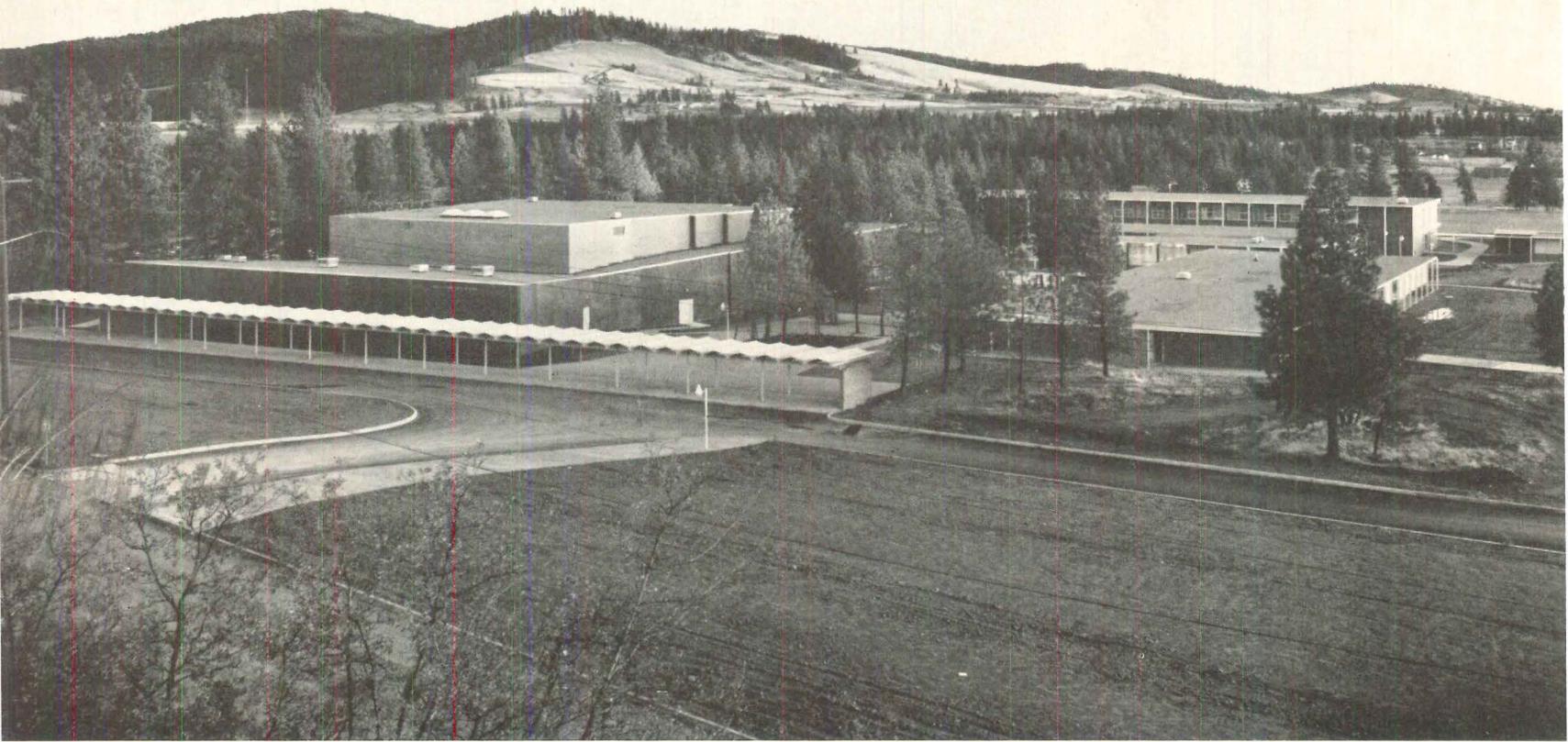
END

FOUR SCHOOLS

THE BEST THINKING
HAS BEEN DONE
IN SOLITUDE.
THE WORST HAS
BEEN DONE
IN TURMOIL

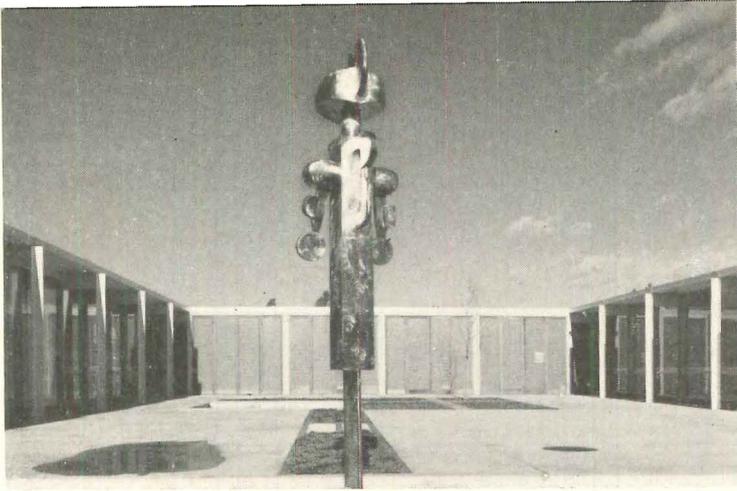
THERE IS
FAR MORE OPPORTUNITY
THAN THERE



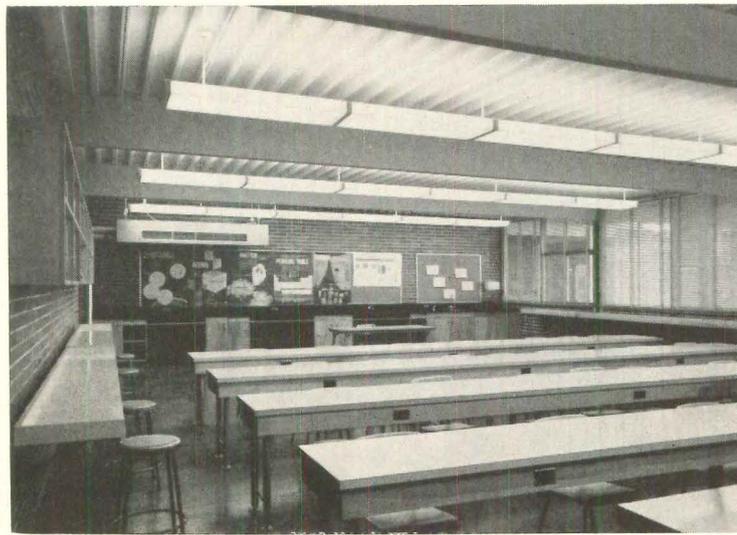


The nine buildings of Ferris High are spread among the trees of its 25-acre site, joined by covered walkways. Below: the two-story academic wing.





Metal Sculpture stands in the science building's sheltered inner court



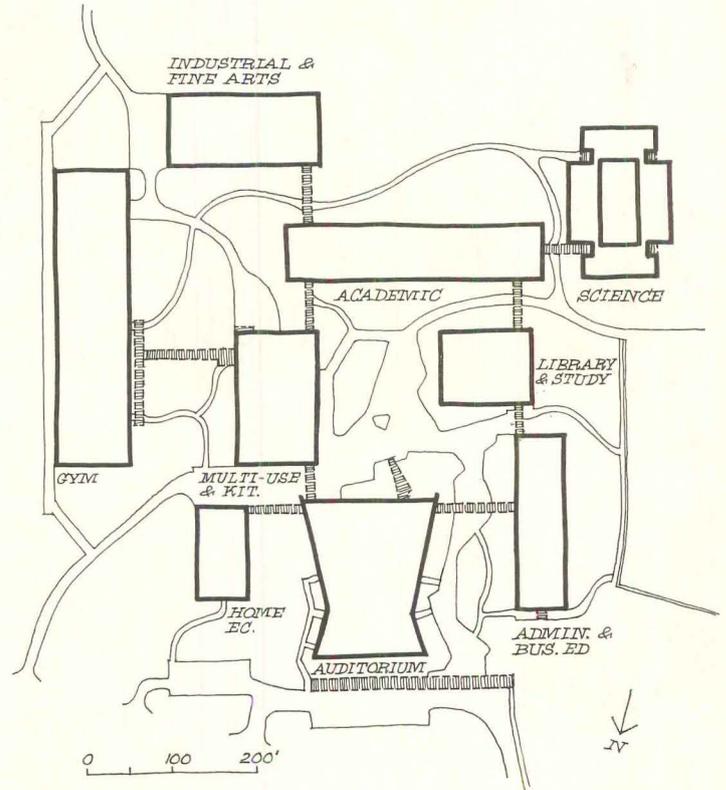
Science classroom is typical of the Ferris school's instruction spaces



Library and study hall are combined. Below: the 500-seat auditorium.



PHOTOS: CHAS. R. FEARSON



1. HIGH SCHOOL ON A WOODED CAMPUS

The most unusual elements of the 1,800-student Joel E. Ferris High School in Spokane, Wash. are its open, rather than its enclosed, spaces. Nine separate buildings are placed about the 25 acres of its rolling, pine-treed site, creating a pleasantly irregular (and easily controllable) series of informal courts.

Four of the buildings are for general use: a 900-seat auditorium; a multi-use "commons," including the cafeteria and boiler room; a combination library and study hall; and a field house with an indoor track. The other five are for instruction, and are divided by discipline: home economics, business education, industrial and fine arts, science and general academic subjects (English, mathematics, social studies, and languages). All are one story high except the auditorium and the academic building; the latter has two levels, making it the visual as well as functional "pivot" for the other classroom buildings.

Architects McClure & Adkison make an impressive case for Ferris High's campus plan. In addition to creating the courts, they point out, it minimizes the problems of

fire protection and future expansion. It also gives the students the stimulus of a gulp of fresh air between classes, permits each building to be shaped more precisely to its particular function, and, not least, gives each department a sense of identity.

The buildings all have structural steel frames and roof decks, and exterior walls are either textured precast concrete or brick. The school board and its architects found room in the budget for art, including stainless steel sculpture by Harold Belaz, Jr., of Spokane (top photo) and a colorful series of inspirational quotations on insulating plastic panels in the corridors (see page 115).

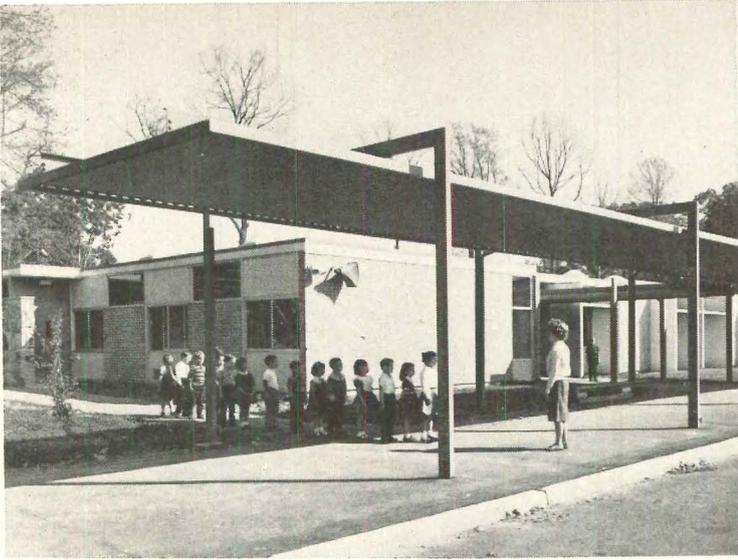
FACTS AND FIGURES

Joel E. Ferris High School, Spokane Wash.

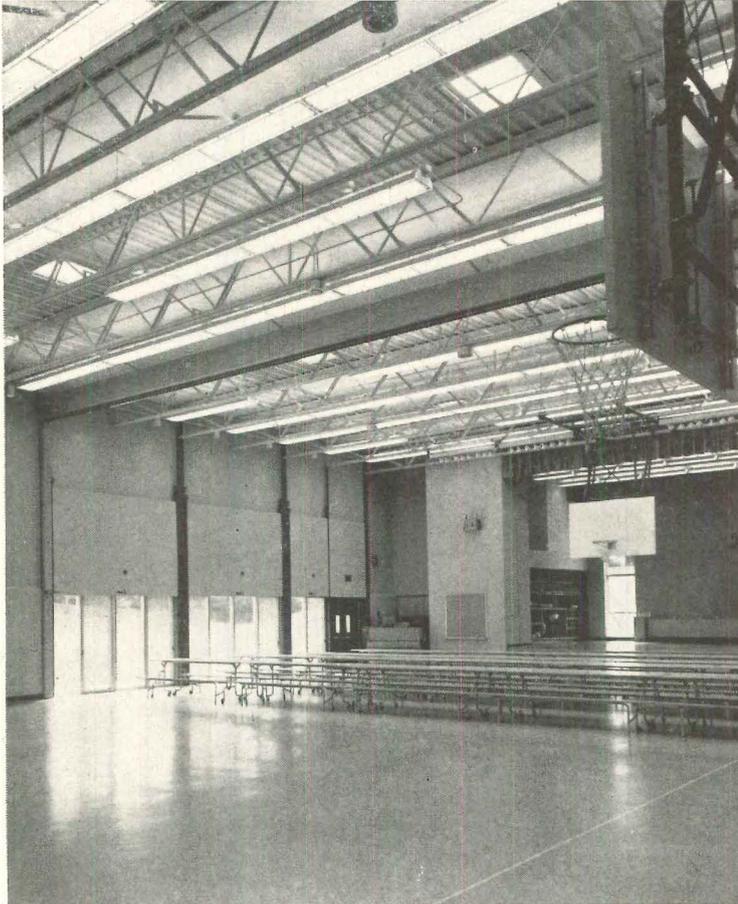
Architects: McClure & Adkison. Engineers: L. C. Campbell (structural), Lyle Marque & Associates (mechanical), Joseph M. Doyle & Associates (electrical). Landscape architect: Keith Hellstrom. Acoustical consultants: Robin M. Towne & Associates. General contractor: Selkirk Co.

Building area: 211,960 square feet. Construction cost: \$2,967,687. Cost per square foot: \$14. Cost per pupil: \$1,648.

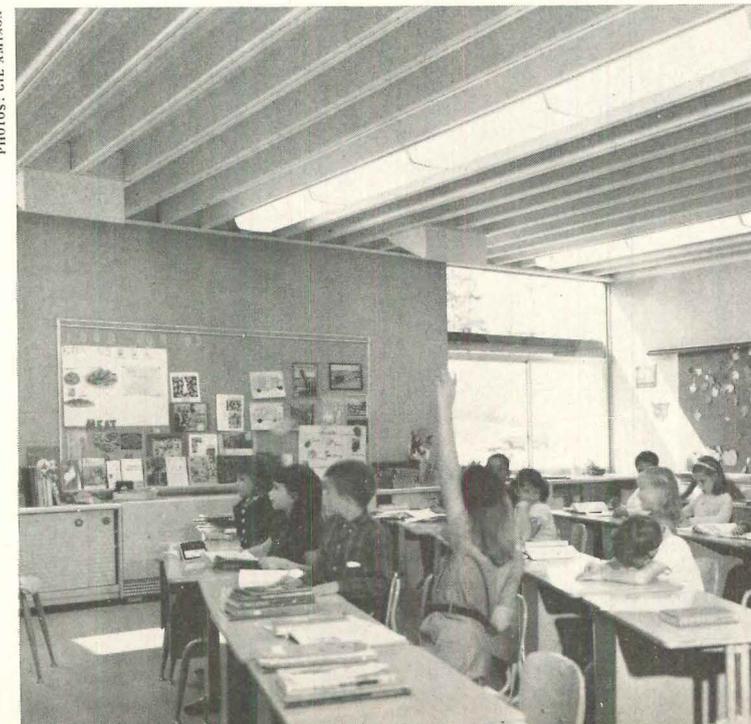




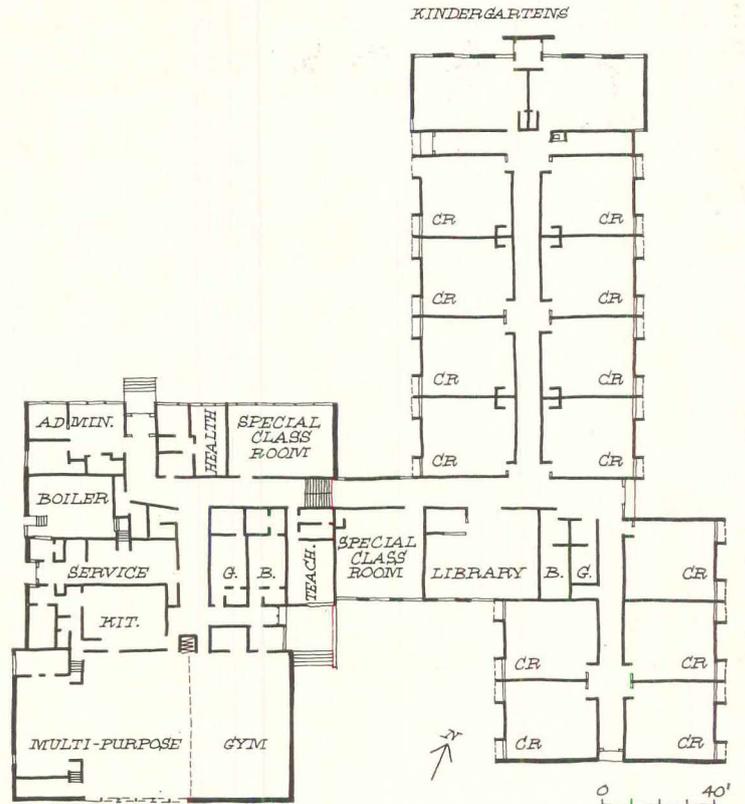
Pupils line up beside the kindergarten's cheerful checkerboard wall



Garage doors protect gymnasium windows. Below: a typical classroom.



PHOTOS: GIL AMIAGA



2. MODEST SCHOOL OF SOLID VIRTUES

The John F. Bermingham Elementary School in Oyster Bay, N.Y. introduces no startlingly new concepts of form or plan. It simply shows in ways both big and small how sure-handed today's school architecture has become.

Take the matter of classroom lighting, for example. The typical Bermingham classroom has, to begin with, two relatively small, clear-glass windows, in scale with the children and the homes they leave behind each day. They are protected from glare by what Architect Stanley Sharp calls "cheeks and eyebrows": vertical exterior piers joined by horizontal wood screens.

Above the screens are high windows of deeply tinted solar glass that brighten the rooms' upper reaches. The walls between pairs of high-low window units (which provide a bonus of extra tackboard space) are illuminated by plastic dome skylights.

The kindergartens also have high and low windows, but they alternate in checkerboard fashion and, facing north, need no protective screening. In both situations, the care with which the interiors are lighted gives the exterior walls

their cheerful patterns.

A smaller example of sure-handed practicality can be seen in the school's multipurpose room, which for budgetary reasons had to serve as gymnasium, auditorium, and cafeteria. To open this space to the playfield (photo opposite), the architects lined the wall with windows, then installed garage-type overhead doors to protect the glass and the players when the room becomes a gym.

The structure of Bermingham School is composed of load-bearing walls of concrete block and a steel roof deck that is just strong enough to span a classroom without secondary bracing.

FACTS AND FIGURES

John F. Bermingham Elementary School, Oyster Bay, L.I., N.Y.
 Architects: Ketchum & Sharp. Supervising architects: Sharp & Handren (Arthur D. Greenfield, job captain).
 Engineers: Severud-Elstad-Krueger Associates (structural), Cosentini Associates (mechanical and electrical).
 Landscape architect: Victor M. Villemain. General contractor: Kayfield Construction Corp.
 Building area: 34,570 square feet. Construction cost: \$769,268. Cost per square foot: \$21. Cost per pupil: \$1,480.





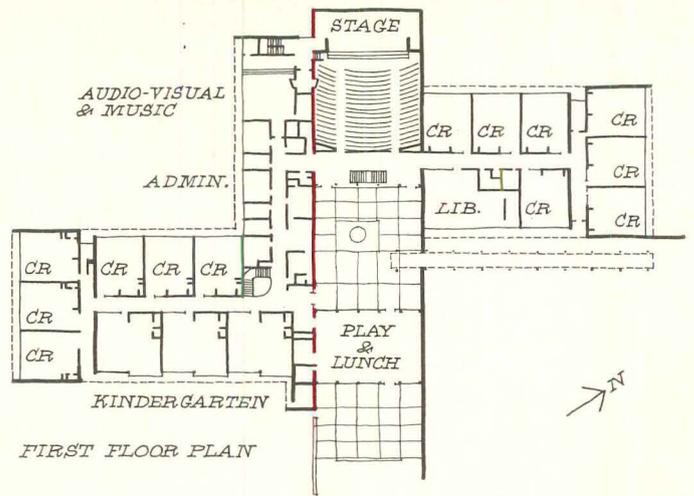
Main entrance to the Ward school is through this landscaped court.



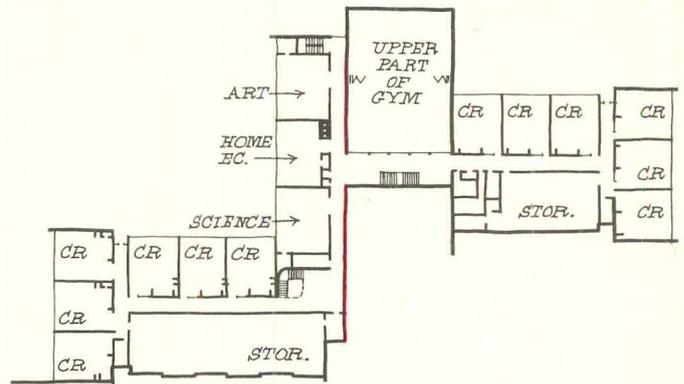
Corridor walls of classrooms are clear glass. Below: the lunch room.



PHOTOS: JOSEPH W. MOLITOR



FIRST FLOOR PLAN



LOWER FLOOR PLAN

3. LARGE SCHOOL SHAPED BY ITS SITE

The William B. Ward School in suburban New Rochelle, N.Y. treats its site with exceptional kindness. The rewards to both the building and the pupils have been generous.

The site was a deserving one—sloping and well-wooded. The first decision of the architects, Sherwood, Mills & Smith, was to use the slope for the building, and save the flat portions of the land for play areas. At the entrance level, atop the slope, the 850-student school seems a modest, one-story affair (photo, top left). Only from the opposite side—where there are two tiers of classrooms, and the auditoriums and gymnasiums are stacked three stories high—is its full size revealed (photo, opposite).

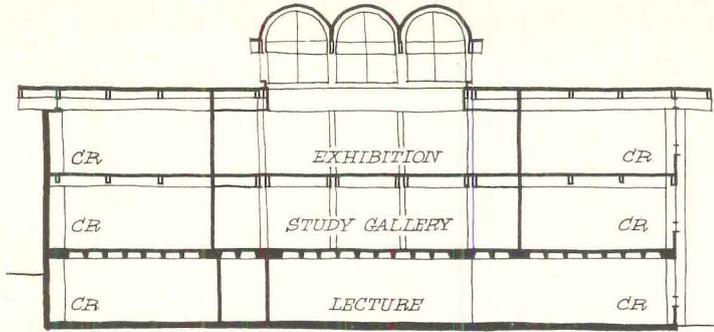
The second decision was to place the building near the center of the site so that its wings could divide the open areas into clearly defined outdoor spaces. For this reason, and to give each window in the school a good view of nature, the architects avoided "finger plans and similar mechanized layouts." Instead, the classroom wings—younger children to

the west, older ones to the east—sprout from either end of a central spine of common-use facilities.

The spine begins with a one-story, glass-walled lunch room that doubles as indoor play space in bad weather (photo, bottom left), and ends in the tall auditorium-gymnasium block. In between is the keynote of the school's happy relationship to the outdoors: an enclosed, thoroughly landscaped entrance court (photo, top left) with a fountain designed by Robert Cronbach. Most schools are entered through a lobby opening to long corridors; Ward is entered through a garden gate.

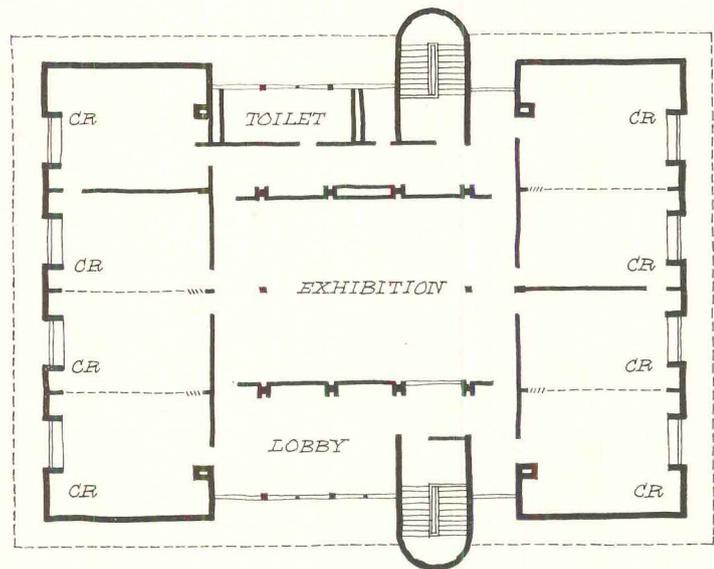
FACTS AND FIGURES

William B. Ward Elementary School, New Rochelle, N.Y.
 Architects: Sherwood, Mills & Smith (job captain, Richard Lathrop). Engineers: Fraioli, Blum, Yesselman (structural), Abrams & Moses (mechanical), Bernard F. Greene (electrical). Landscape architects: Ralph Eberlin; Robert Zion & Harold Breen. Interior designer: Elsie May Gross. General contractor: Mar Mes Construction Co.
 Building area: 78,180 square feet. Construction cost (excluding sitework): \$1,430,057. Cost per square foot: \$18.29. Cost per pupil: \$1,682.

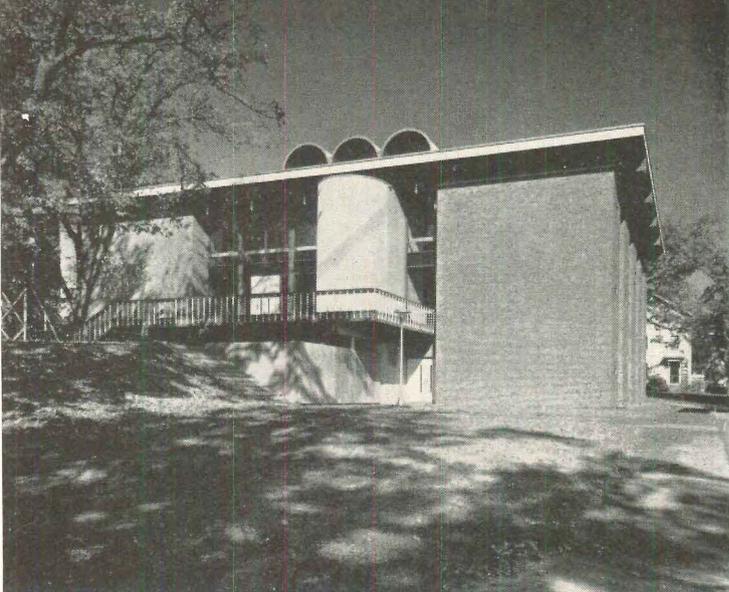


SECTION

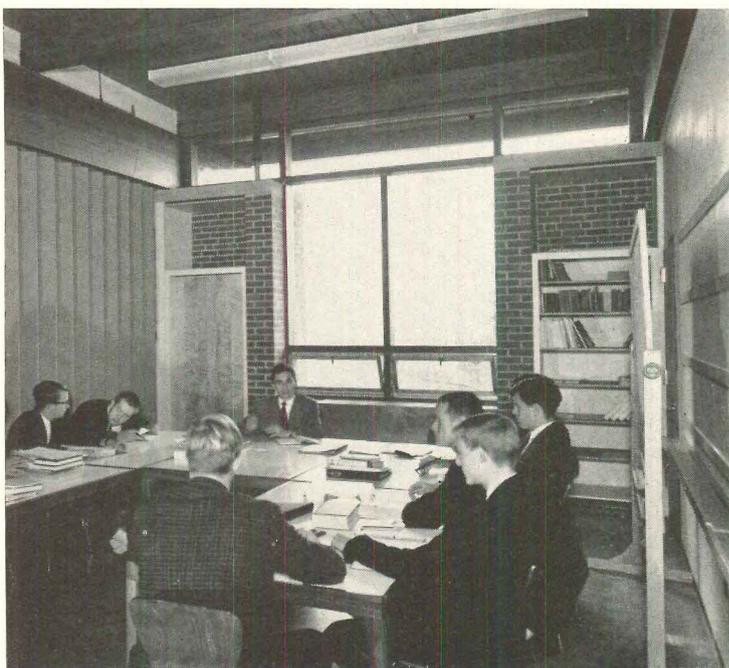
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TOP FLOOR PLAN



Stairwell protrudes onto entry deck of vaulted, three-story Friends Hall



Classrooms have tables instead of desks. Below: the "learning gallery."



PHOTOS: LOUIS REENS

4. PRIVATE SCHOOL OF FLUID SPACES

Friends Hall, serving the 9th to 12th grades of the Quaker-founded Moses Brown School in Providence, R.I., is a case study in educational integration and flexibility, full of fluid, handsome spaces. Its program evolved from a seminar held under a grant from the Ford Foundation's Educational Facilities Laboratories.

The seminar's theme was the close interrelationship of high school subjects, and the need to break down the educational walls between them. The walls of Friends Hall are not totally broken down, but The Architects Collaborative made sure they could be readily folded away.

Key to the plan is a large central space repeated on each of the three floors and expressed by the vaults of the roof. On the bottom floor, partly below grade, this space is a science lecture hall, to which biology, physics, and chemistry laboratories open through wide folding doors. On the main floor, it is a study gallery, containing carrels for 50 upperclassmen, flanked by the carpeted library on one side and four classrooms on the other. And on the top floor it is a wood-walled

"learning gallery," brightened by clerestories beneath the vaults, with four classrooms on each side. The big space is used here mainly for exhibitions, which various departments join in putting together.

Most of the 13 classrooms have folding party walls so that they can be linked in twos and threes for large-group instruction. None has desks: the students sit at large tables which can be rearranged at the instructors' will.

The compact and sturdy building has load-bearing, natural brick walls and exposed framing of laminated timbers. Twin Concrete stairwells protrude from its walls like great white cylinders.

FACTS AND FIGURES

Friends Hall, Moses Brown School, Providence, R. I.

Architects: The Architects Collaborative (John C. Harkness, partner in charge; Herbert Gallagher, associate in charge; Robert D. Turner, job captain). Engineers: Souza and True (structural), Fitzmeyer & Tocci (mechanical), Maguire Engineering (electrical). General contractor: O. Ahlborg & Sons, Inc.

Building area: 22,500 square feet. Construction cost: \$448,000. Cost per square foot: \$19.90. Cost per pupil: \$1,970. END



PSFS

The 32-story skyscraper-home of the Philadelphia Savings Fund Society was completed more than 30 years ago—four years ahead of the first Rockefeller Center buildings in New York. Yet, today, the PSFS Building seems entirely “modern.” It was and is an unqualified success—practically, financially, and esthetically. The recipe for this result: good architects, good clients, good materials, and good luck.* BY WILLIAM H. JORDY AND HENRY WRIGHT



Rearing its somber bulk above Market Street, the Philadelphia Savings Fund Society building (PSFS) seems handsomer today than when it was completed 32 years ago. On re-examination, most of the pioneering efforts to bring modern European architecture to the U.S. have a dated look; PSFS escaped this fate by transcending the limitations of its period. This was partly the result of a unique amalgam of architectural talents. It was partly the result of stubborn client resistance to a ribbon-window design more characteristic of the thirties—but much less appropriate to skyscraper proportions than that finally worked out. And it was partly fortuitous. This may be regrettable from the standpoint of those who would like to duplicate the building's success, but it is the key to the PSFS story.

Fortune, as often happens, operated through a chain of diverse personalities: A Tinker-to-Evers-to-Chance combination, every member of which was as essential as in a baseball double play. Without all three—James M. Willcox, president of PSFS, plus both of the architects, George Howe and William Lescaze—the building might not have been undertaken and certainly would not have turned out so well. Indeed, it is reported that the initial presentation of the design was interrupted by one member of the building committee announcing, "Gentlemen, this building will never be built!" Yet it was built, substantially as first presented, with Willcox leading his committee towards acceptance. He did so, as he later assured the press, not because it was "ultra-modern"—a quality he distrusted—but because it was "ultrapractical."

James M. Willcox was a positive, if enigmatic, client. Outwardly, he was so aloof that George Howe always referred to him as "Mr. Willcox" while addressing other executives of the bank by their given names. He rarely consulted his committee, reaching most decisions in private discussion with Howe. He had evidenced no previous interest in

modern architecture. On the contrary, he was a connoisseur of tradition, although not in the area of the visual arts. He was much traveled and among the few bank presidents of his time who were fluent in Latin. Proud of the institution over which he presided, he sought a monument worthy of it, yet was equally concerned with making a sound investment. This meant anticipating tenant needs so that PSFS would remain competitive with other office buildings for decades—as it has. An exacting client, he demanded statements of Howe's architectural philosophy as it applied to the building.

"As I have so often said to you, it behooves me first to become thoroughly convinced of the soundness and desirability of your idea before undertaking to impress it on the minds of others. . . . If the Fuller people [that is, the contractor, the George A. Fuller Co.] are correct in their view that this new style of architecture makes a back number of the styles that have preceded it, it is highly important that I should know this and become thoroughly convinced of it."

That a man of Willcox's years could have ventured into an enterprise so new to his experience is extraordinary. Only personal confidence could have brought it to fruition. Strong in his trusts and distrusts, Willcox trusted

Howe. As a final guarantee, it is reported that Willcox asked Howe to pledge his word "as a gentleman" that he was providing the Society with a respectable building and not simply seeking publicity for himself. "As a gentleman" Howe gave his word. The throw from Tinker to Evers was complete.

George Howe, whose conversion to modern architecture in the late twenties somewhat resembles Saul's conversion to Christianity, was a product of Groton, Harvard, and the *École des Beaux Arts*. Along the way, he married into a prominent Philadelphia family. He came to the city in 1913, and before long joined the architectural firm of Mellor & Meigs, which became Mellor, Meigs & Howe when its youngest partner had barely turned 30. Mellor, Meigs & Howe attained a national reputation for suburban houses, and especially for variations on French manorial buildings. In later life, Howe dismissed the suave eclecticism of this period as "Wall Street Pastorale." Yet even within this style he developed an interest in simplification, which grew into an interest in modern European architecture. "In 1928," he later said, "I delivered my last Jumbo, Anti-Economy Romantic Country House package." At 42 he courageously abandoned one of the most profitable practices in Philadelphia to strike out in a new direction.

Howe's association with PSFS began while he was still working with Mellor and Meigs. On two occasions, the firm developed pairs of branch offices, each of the pairs using a single design. All were designed by Howe, as the partners tended to work separately. Aside from the branch offices, he also designed a temporary neo-Colonial building on 12th Street at the rear of the site of the skyscraper. Opened in 1927 and closed in 1931, it was used to test the location before the Society ventured further.

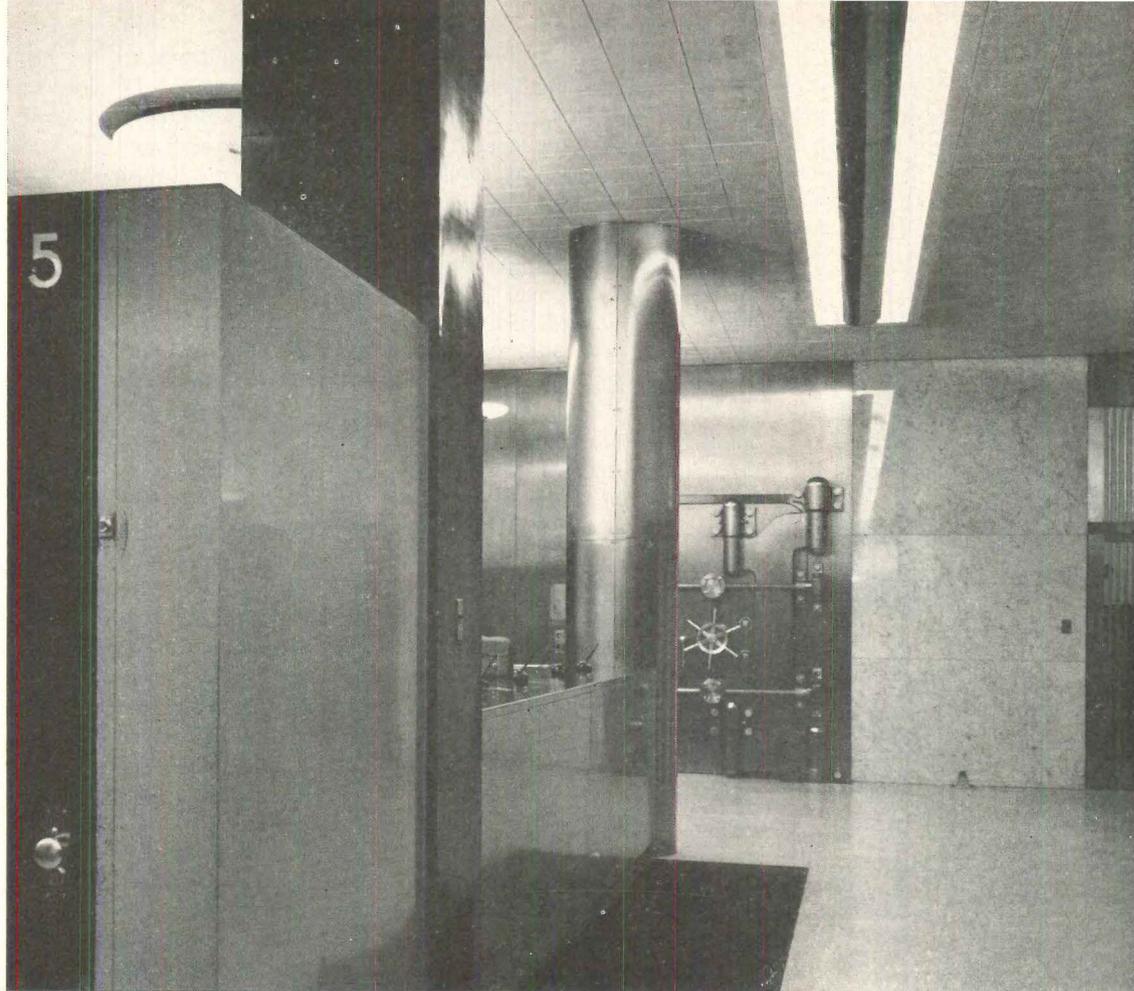
The big commission came to Mellor, Meigs & Howe as early as 1926. At this time Howe, with minor assistance from Meigs, proposed a vertical block, rising sheer from its corner through a three-storied banking room to the 15th floor, from which point a series of setbacks supporting globular lights culminated in a tower bearing a profusion of globes and

*This article is based upon a detailed analysis of the building made by William H. Jordy, and published in the May 1962 issue of the *Journal of the Society of Architectural Historians*. Mr. Jordy is Professor of Art at Brown University. His analysis of the building has been adapted by Henry Wright, former Managing Editor of *FORUM* and now an Associate Professor of Architecture at Columbia University.



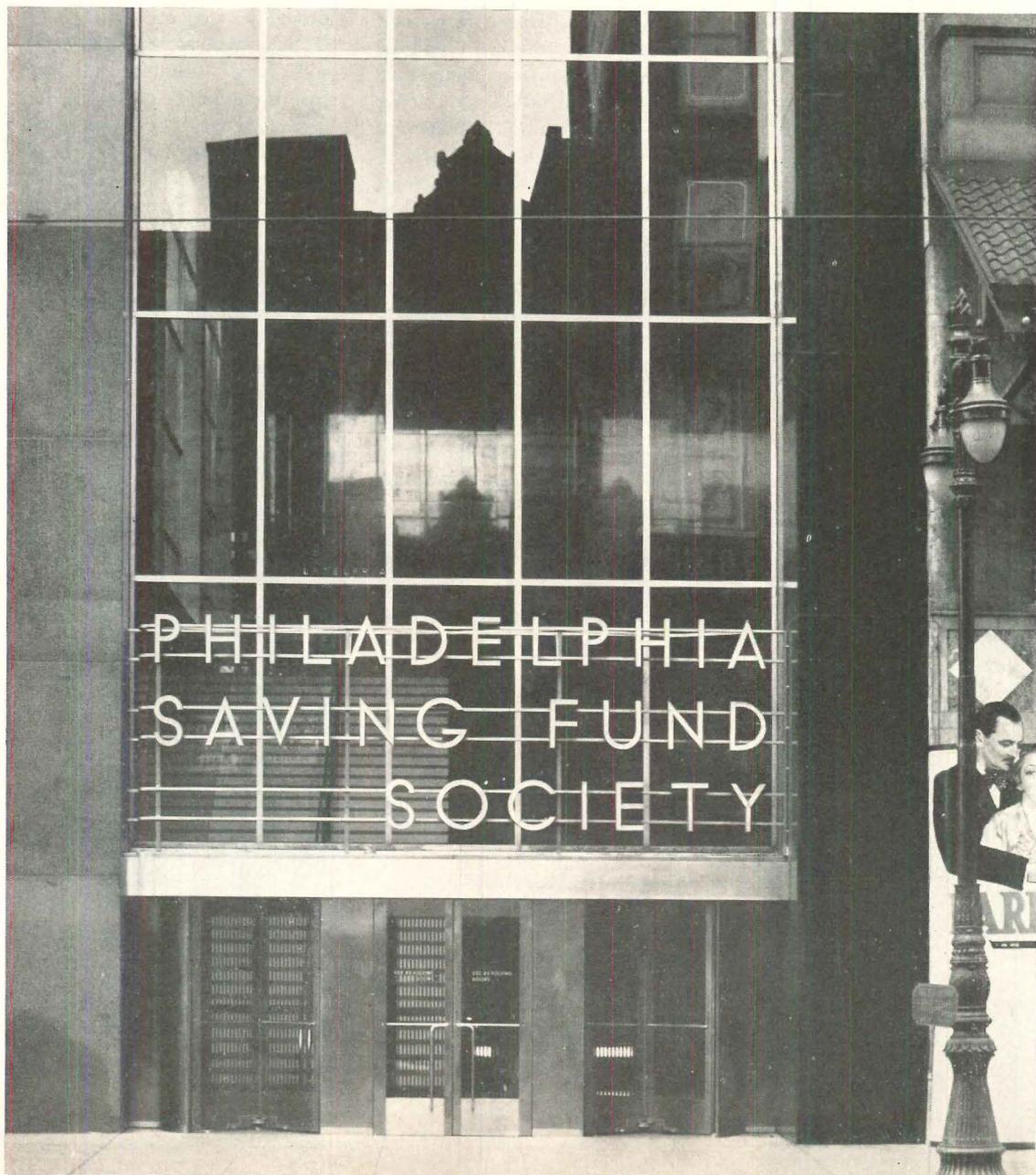
DARBY CAMERA

Safe-deposit vault and customers' cubicles are located on the third mezzanine. Modern details include stainless steel jacket for column; chaste air diffuser in suspended, acoustical tile ceiling; trim dwarf partitions surrounding coupon booths. Recessed strip lighting unit extends full length of corridor.



JOSEPH W. MOLLITOR

Lettering over bank entrance comes as close to looking "dated" as anything about the building, but only because it reflects avant garde graphics of its time. Balance of entrance might have been built yesterday. A picture almost identical to this one appeared on page 488 of the Dec. 1932 issue of FORUM.



human figures which might have been conceived to compete with the fantasy of the City Hall two blocks west.

This scheme was held in abeyance while PSFS tested the site with its temporary branch. By 1929, when the skyscraper project again moved forward, Howe had left Mellor & Meigs. Hence the Society asked both architects to submit proposals. Meig's proposal was traditional; Howe's was modern. Howe got the commission, although probably not for that reason. He submitted four schemes. Scheme two was the most progressive, the most elaborated, and probably the one he favored. Dated March 20, 1929, it was the seed of the eventual design (1).

Above the banking room, the office tower rose as a slab asymmetrically placed on the Market Street frontage in virtually the same position as in the executed building. Howe concealed the asymmetry by depressing the height of the store on the right-hand side of the bank, and centering the slab on the higher podium. Within it, columns rose four abreast, supported on a series of trusses which bridged the banking space, opening the center of the chamber and flanking it on either side with columns.

Another important respect in which this scheme anticipated final arrangements was in the location of the elevator "spine" to the rear of the site, with the entrance to the office tower on 12th Street. On the back of the building a stepped elevator tower, reflecting the progressive terminations of the elevator banks, was expressive to a fault. Equally ill-considered was a stair tower at the front with its vertical window running the full height of the building, recalling the thermometer tubes in front of city halls during community fund drives.

This scheme preceded by more than a month Howe's partnership with Lescaze. The partnership agreement, dated May 1, 1929, said in part:

"...Howe undertakes, in a general way, to assume the responsibility of establishing advantageous business connections, attending meetings and conferences, and conducting negotiations connected with the inception and execution of partnership business. Lescaze undertakes, in a general way, the responsibility for architectural designs, the conduct of

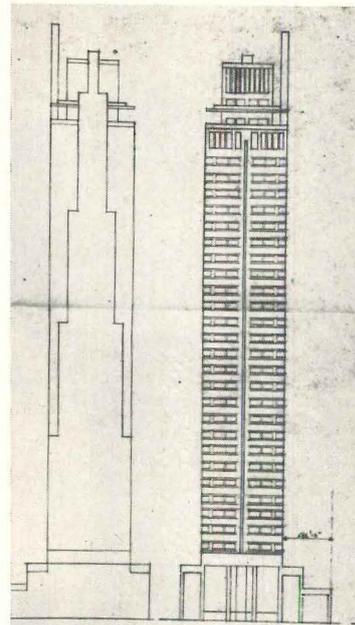
the office or offices, and supervision of building construction."

In the instance of PSFS, however, the scheme of March 20, the opinions of key men in the office during the partnership, and an examination of the work of the partners when they worked separately, all favor a free reading of the agreement. During the period of the partnership, Lescaze clearly assumed primary responsibility for the drafting room. It seems probable that most of the buildings credited to it were designed by him, although Howe continued to do some designing. And Lescaze decidedly assumed a strong role in the design of PSFS during the critical period of its formulation. Howe, on the other hand, was committed to the commission by a personal contract and seems to have played a continuing part in the design, besides having established some of its basic features before the "design partner" appeared on the scene.

William Lescaze, born in Geneva in 1896, was ten years younger than Howe. He had studied with Karl Moser in Zürich, and from him imbibed his strong belief in modern architecture. He left Europe, as he recalls, because of an interest in the "monumental," which led to Moser's suggestion that America might offer more promise for an ambitious young architect than postwar Europe. Finding no work in New York, he headed west for three years of drafting in Cleveland. In 1923, he opened his Manhattan office. The none-too-prosperous years which followed saw some interior design, a country house in Mt. Kisco, an entry in the League of Nations competition and a project for "The Future American Country House," complete with an airplane runway and hangar.

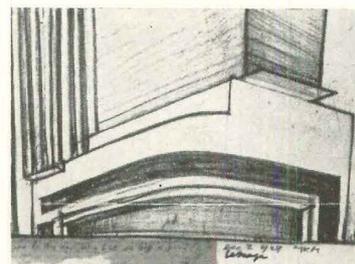
Lescaze met Howe through a young Philadelphia investment broker for whom he had designed a suite of offices. Shortly before the formation of the partnership, he received a commission for a nursery school building for the Oak Lane Country Day School, which he brought to the new firm, as Howe brought PSFS. The school was the first fruit of the new partnership, work on the skyscraper being delayed by the stockmarket crash until the end of 1929.

Lescaze's first drawing for PSFS was a sketch which shows very



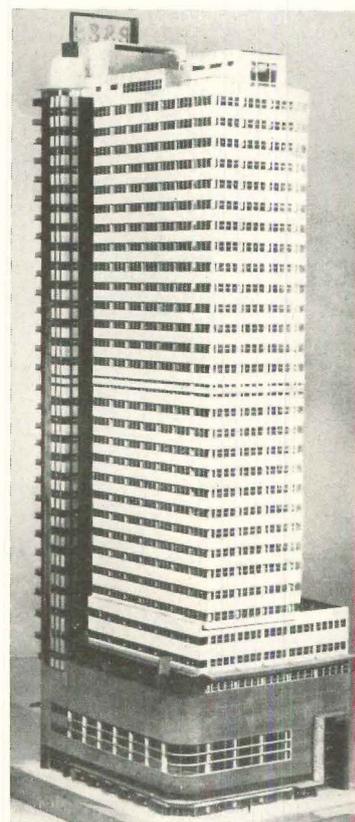
1.

COURTESY LOUIS MCALLISTER



2.

COURTESY WILLIAM LESCAZE



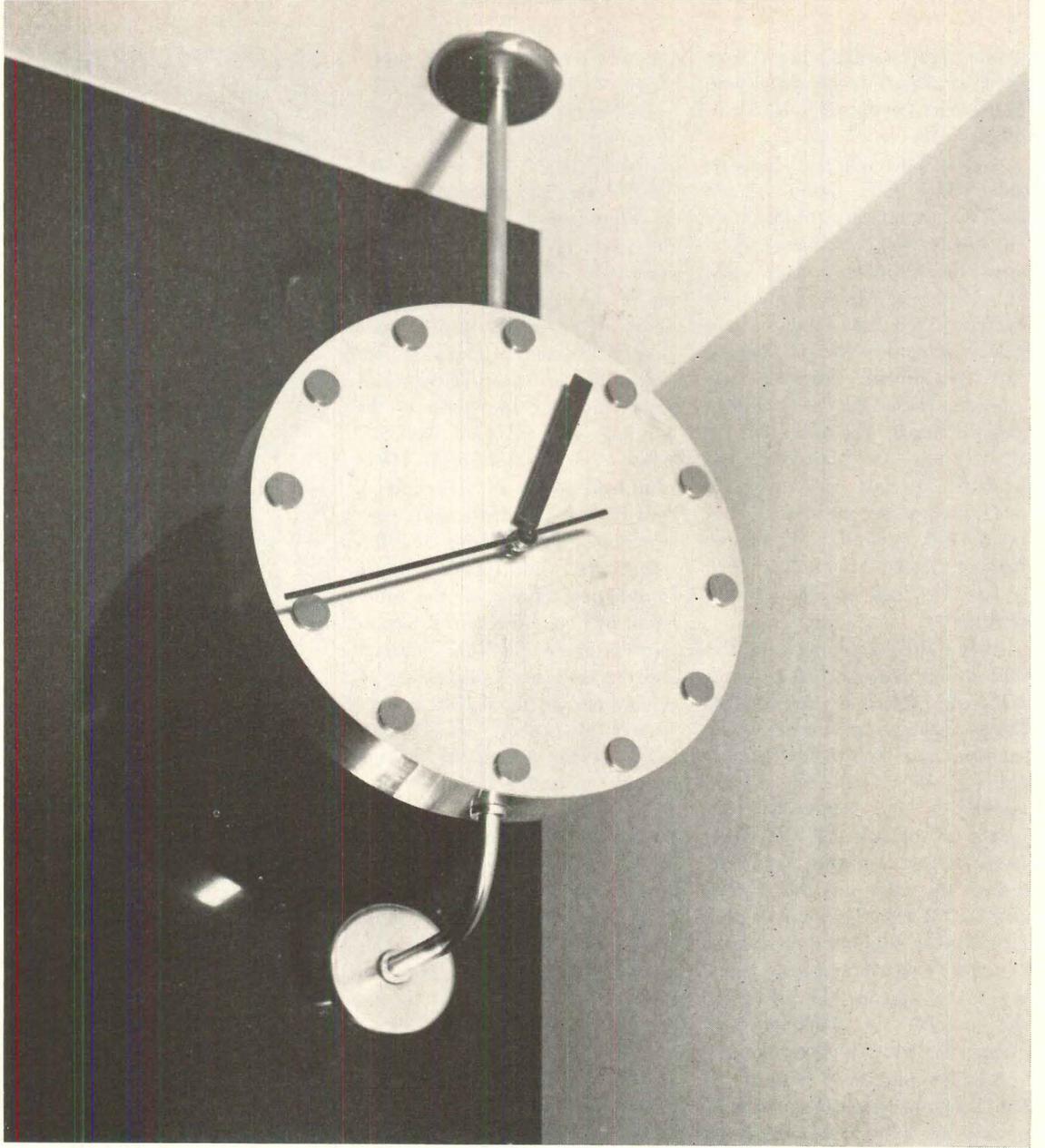
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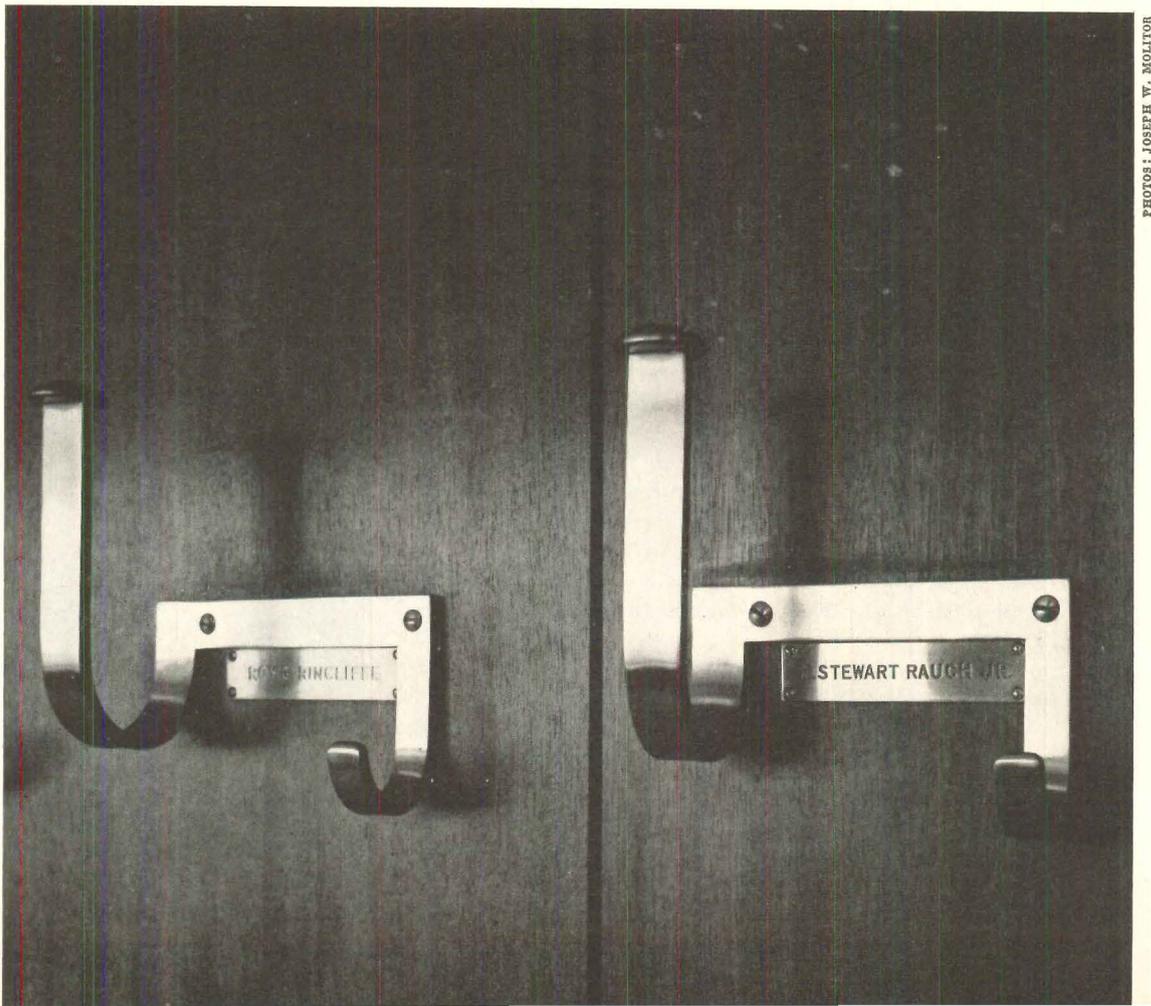
clearly how much his contribution had been needed (2). Howe's fear of asymmetry was brushed aside. To be sure, the program had been altered, since the architects were then working on the idea of an upstairs banking room not anticipated in the scheme of the previous March. But Lescaze obviously relished the dynamic possibilities of the off-center tower and peripheral entrances to the bank and offices, which he linked with a rounded corner reinforced by the horizontals of the shop and bank windows, the latter expressively fused with the bank entrance. The elevator spine was extended to the limits of the site, giving the tower a T-shaped plan. In a last-minute emendation, Lescaze interposed a projecting canopy between the office tower and its base. Pointless architecturally, this canopy is nevertheless the embryo of the commencement of the Market Street cantilevers, trade mark of the completed building.

Largely unchanged, Lescaze's design finally emerged in model form in July, 1930 (3). With this model, the second phase of the design, dominated by Lescaze, was essentially complete and, with one very important exception, so was the exterior design of the building. Fortunately, Willcox was not quite satisfied. His dissatisfaction resulted in the third major design decision—the first being Howe's substantial determination of the tower in relationship to the base and spine, the second, Lescaze's substantial determination of the base. Willcox insisted that the window treatment was too horizontal. How right he was! Although ribbon windows were visually satisfactory in lower buildings, the piling of cantilevers to skyscraper altitudes creates a monstrous layer cake, as the first blush of post-World-War-II skyscraper construction (following a hiatus of almost 20 years) revealed. A glance at any picture of the completed building, in comparison to one of the model, will show how much more effective are the one-way cantilevers actually employed than the two-way cantilevers and the absence of visible columns that the architects initially intended.

Willcox wanted "more verticality"; both of the partners vehemently opposed it. The issue arose as early as May, before construction of the model. It was Willcox's demand for verticality which



Clock in elevator lobby looks as good as, if not better than, many designed since. Slender minute hand contrasting with heavy hour hand was an inspired touch.



Handsome hat and coat hooks on paneled wall of top floor corridor were slightly disfigured by the later (and careless) addition of plates bearing names of board members.

PHOTOS: JOSEPH W. MOLLTON

called forth the first of Howe's philosophical letters, so typical of advanced architectural thinking of the period. In it, Howe argued that the "horizontal treatment" was "imposed by human intention, construction, and aspect alike." Today we would say that truth can be disavowed in art; it was Howe's "firm conviction that the truth must prevail sooner or later and that it is the designer's task not to deny it but to discover it and make the most of it." Alluding to his client's fears that the horizontal treatment was too much like that of a loft building, he argued that "the loft building has been more honest than monumental office buildings and herein lies its similarity to our design." With the architect's transmutation of functional, structural and economic honesty into "significant forms," the loft building would become architecture.

Willcox wryly commented that Howe might be able to persuade prospective tenants that they were not moving into a warehouse, but could the rental agents be equally persuasive? "I don't see why," he went on, "vertical could not be combined with horizontal lines as decoration, if they would relieve the monotony . . ."

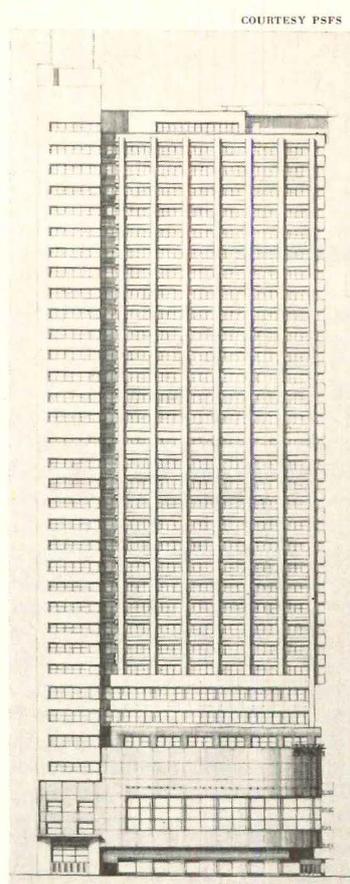
At the time, Willcox was recuperating from an illness, and he closed his response by saying that nothing further could be done until he returned to work. In the interval, the architects prepared the model with cantilevers on three sides. With it, Howe submitted a second essay-letter. This was a comprehensive explanation of the reasoning behind the entire design, but the question of cantilevering was included. This part of the discussion centered on practical objections to the presence of columns in the middle of rental space—a necessity with really "honest" ribbon-window design. Real estate advisors had argued — rather reasonably — that there might be tenant objection to this arrangement, and that an area of "wall" between separated windows allows for more flexible placement of partitions. R. J. Seltzer, the rental expert retained by PSFS, not only recommended elimination of the cantilevers, but also that the columns be set outside the line of the wall so as to produce an uninterrupted inside surface.

Reluctantly, almost a year after Lescaze had made his first sketch, and a year and a half after the

broad outlines of the building had been determined, the architects developed a series of schemes providing vertical emphasis. One of these was a throwback to the typical pier-and-window verticality of the twenties; another provided projecting columns across the Market Street "front" of the tower. Scheme three, which came closest to the final building, retained the cantilevered floors on this face but combined them with projecting columns on both of the sides (4). Along with this change, the fenestration of the spine became a series of horizontals, reversing the contrast which in the model had been accomplished with rather meaningless verticalism on the spine. A later improvement was to drop the side columns through two more floors, giving them visual support.

The projecting columns solved a number of esthetic problems along with the practical problem of office partitioning. The monotonous banding of the cantilevers was enlivened and endowed with a rhythm of light and shade as well as a highly visible, easily understood structural system. The cantilevering was more effective because there was less of it, while the column nearest the corner provided a visual anchor against which the projection of the floors could be measured. And in a more subtle sense, the visible columns on the exterior harmonized with, and explained the interior columns flanking the center of the banking room which were, in fact, their continuation. All in all, it was fortunate that Willcox did not accept Howe's justification of the cantilevering, but fortunate, too, that it was the architects and not the bankers who worked out the ultimate solution. PSFS is distinctly not a building designed by a committee.

The final step in the design process was the application of asymmetrical dynamism to the top of the building. Redesign of this element became urgent with the decision to provide building-wide air conditioning (PSFS was the second skyscraper in the U.S. to do so), and the consequent need for cooling towers. These were eventually screened within the triangular space formed by the two-way billboard bearing the initials PSFS in glowing neon. Accommodation of this dominating mass would have been difficult within any of the symmetrical schemes, while the desire to angle one of



4.



5.

COURTESY PSFS

JOSEPH W. MOLITOR

the signs for maximum visibility further suggested an asymmetrical approach. In the final solution, a corner solarium was depressed between the high-ceilinged board room facing Market Street and the executive dining room facing 12th. The precarious perch of the observation platform (now a TV relay station) atop the spine is counterweighted by the immense sign. It is curious that the success of this asymmetrical Acropolis of modern functionalism has not inspired other skyscraper designers.

"Ultrapractuality"—so designated by Willcox—thus dictated the unique massing of the building from bottom to top. There was, first, the decision to move the bank upstairs so as to leave the ground floor for shops (5). This was not done simply for rental income. The location, in a high-volume shopping area, had been chosen to attract the frugal, middle-class depositor on whom savings banks thrive. Whatever brought shoppers to the vicinity would therefore work to the bank's advantage. A ground-floor banking room would not generate shopping traffic and might even disperse it. Whether it was the bankers or the architects who first broached the possibility of the second-floor location, there is no doubt that the architects were enthusiastic about its possibilities and pressed for its adoption.

The second-floor banking room determined the base of the building: on the ground floor, a band of shop windows; above, the broad sweep of the curved glass wall, 30 feet high. The escalator to the bank is at one inside corner of the plot on Market Street; the lobby of the office tower is at the other inside corner on 12th Street. The idea of bringing in the banking customers at a corner of the building, and introducing them to the banking room at the center of one long side would probably have appealed only to architects imbued with the philosophy of asymmetrically arranged space, a dominant theory with modernists of the period.

The dynamism and asymmetry of the arrangement of the banking room hold for the entire building. Above the curved glass wall, sheer granite sheathing expresses the trusses spanning the banking chamber. Above this, the base is topped by three floors devoted to banking operations in a transition

continued on page 143

HOW TO BE SERIOUS ABOUT PRESERVATION

Last month this page was kissed goodbye by me, but here we are back again. My fellow editors have allowed me a word about what I regard as the immature historical preservation movement.

This opinion is not that of the magazine but strictly of a minority of one. All editors of all magazines that take part in serious architectural affairs have wept over the loss of Penn Station in New York, and have gloried in the battle that was put up for it. So perhaps all can afford to let just one voice question two things: first, was the architecture as good as all that? And, second, was the preservation effort really the best possible battle?

Americans are a good deal like sheep in wheeling together; a generation ago the Penn Station was considered a no-good, pompous exercise in sterile imitation of imperialist classicism. Today? Poetry! Is it not more balanced to say that regardless of obvious faults, Penn Station has had one virtue worth fighting for—at least this great concourse brought us into the city through a high, noble space, even though its handling was fake and derivative? And once architects decide to defend historical preservation, even though its values might be limited, why not be effective about it?

Back about 1930 I became so ashamed of participating in an ineffectual noise-making episode as not to want to repeat the like of it. I helped organize a protest meeting in New York because the Chicago World's Fair of 1933 was omitting Frank Lloyd Wright as an architect. We obtained some great speeches dripping scorn, and a witty chairing job by Alexander Woolcott; we got into the newspapers. Then the Fair excluded Wright, anyhow. And we had not really done our homework.

Effective preservation movements have to have more than emotion—they have to have a plan of operations and some solution to offer to the owners.

Now that Penn Station is coming down, perhaps preservationists will be ready to try better tactics in the case of Grand Central Station, still precariously standing though badly riddled. As architecture some think it is better than Penn Station was.

There is the one great advan-

tage, here, that two skirmishes have already been successfully conducted. First, in 1954 when the threat was that the fine Grand Central concourse would be torn down to make room for you know what skyscraper, FORUM not only quickly collected some 200 architects' signatures in protest, but also engaged in direct conversation with President Young's able first lieutenant, Thomas Deegan.

"But you don't have to tear down your fine concourse to build your tower" was the burden of that exchange—and I cannot be told that the signatures and the talk were without influence on the outcome. For the Central thereupon accepted the idea of Richard Roth that a tower be set *behind* the concourse, and thus saved the concourse, anyway for the time being.

There was a second round with other Central officers later, when these people would have spoiled the splendid 42nd Street waiting room, by hanging bowling alleys down from its fine high ceiling. All the scorn spilled in ink was doing no good against this, when architect Robert Weinberg discovered that in order to carry out its poor idea, the Central would need a legal variance. The AIA Chapter opposed the granting of this variance with vigorous effect, in a plea at the hearing, by President "Fritz" Woodbridge. The variance was denied by the Board of Standards and Appeals, and the courts upheld the denial. Again the situation was momentarily saved.

But this could not have been achieved by a protest march accompanied by banners. Woodbridge was using some first-class staff work.

This staff investigation established that so far as realty income is concerned the Central is not poor but rich, and *need* not throw its property into deleterious uses to earn a handsome profit.

I know of the labor involved in preparing such useful material, having helped work on this.

So did Victor Gruen. We ran a problem at Pratt Institute, out of which the boys came up with all sorts of solutions for the Central. These dealt with the idea of re-planning the monumental concourse so that a fine income could be secured—*without* turning the



J. ALEX LANGLEY; BELOW: GEORGE ADAMS JONES

concourse into the kind of cheap bazaar which it now is.

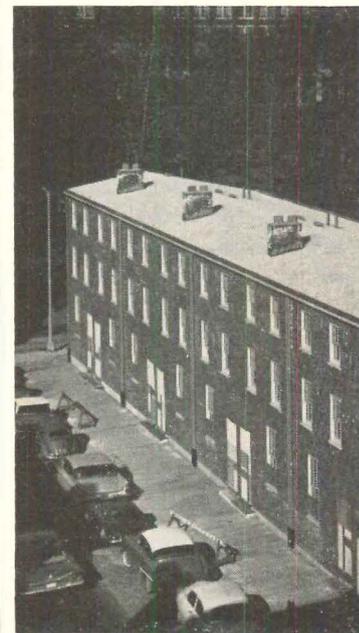
But we were also anxious to stimulate a comprehensive change of attitude by state and city toward transportation as well as taxation, so as to get the Central feeling much more cheerful in general, readier to give their terminal dignity. Of course, since that time the handling of the concourse has actually declined in taste, and the public is beginning to forget what a really fine concourse *could* be like.

So there is still a great deal to be done, and this against the possibility, already posed in an archi-

tectural magazine by a New York Central official, that the concourse *could* be torn down any day the officials felt like it. And this could happen despite the fact that the Central, independently of its rail-roading income, gets a fine income out of its local real estate operations. The company could fill America with wonder once again, and could profit by it, provided only that its faith could be restored in civic greatness.

If somebody wants to carry out an effective preservation campaign the rest of the way, on these premises, let's get organized to do a job of it.

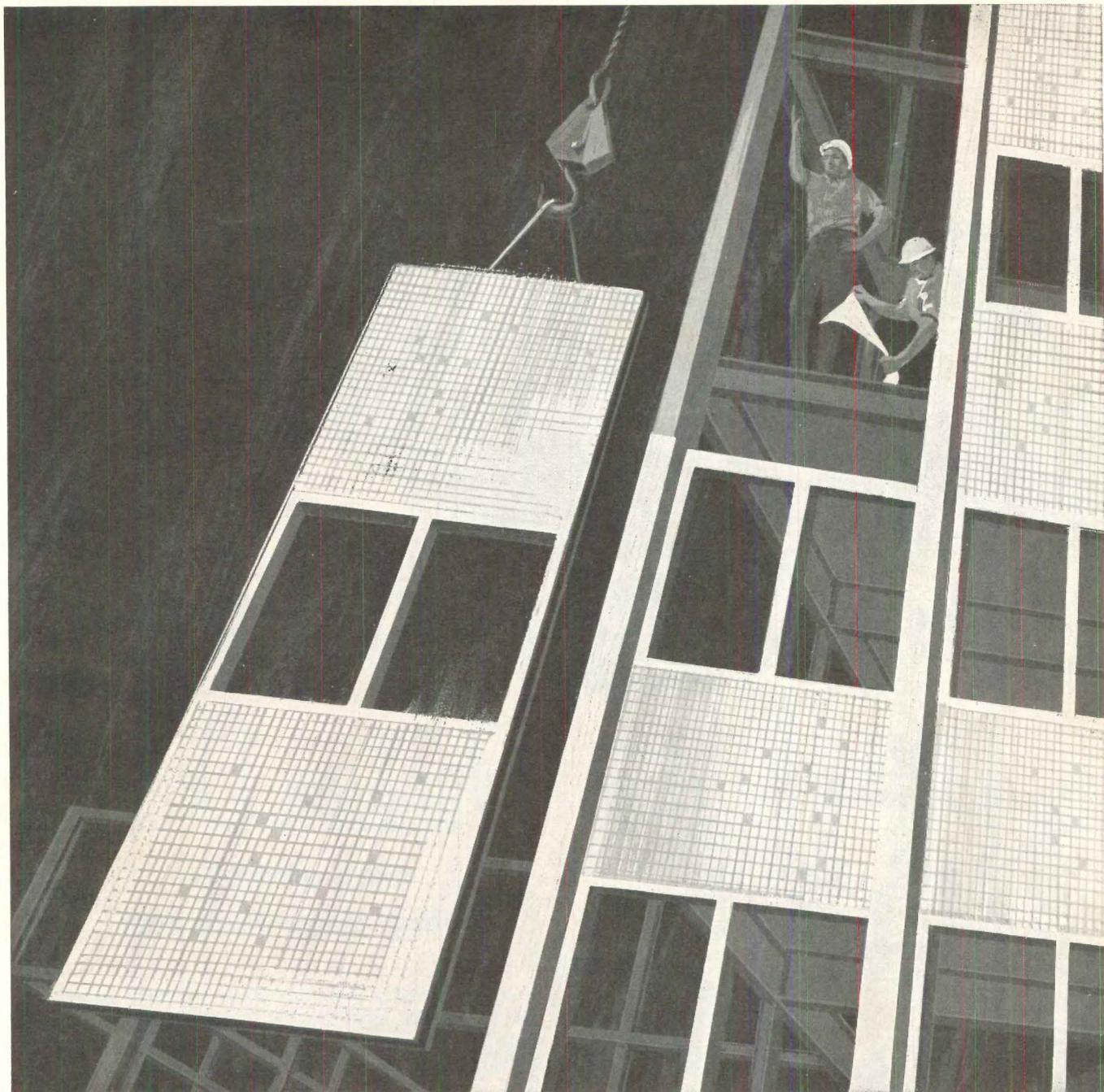
COLONIALISM ON A COUCH



In Philadelphia at a meeting sponsored by the Citizens Council on Planning I happened to mention the rage today for not only preserving Colonial architecture but demanding that architects in modern times must still dress their domestic buildings in it.

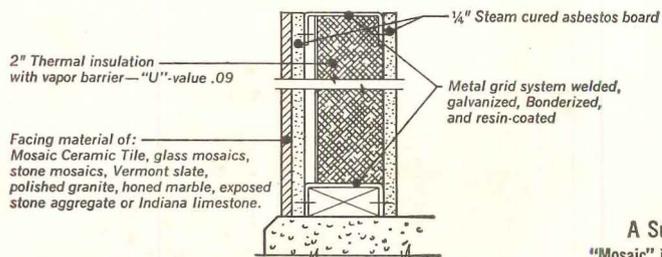
An editorial writer in the *Bulletin* responded that a gracious "way of life" was what was being perpetuated. I deny this. Let that writer really look around and he will see that those new "Colonial" fronts are being pasted over every way of life there is, and over every lack of it. While individuals should be free to live in whatever architecture they like, a public policy demanding Colonialism is an ostrich policy—and how sad this is!

Douglas Haskell



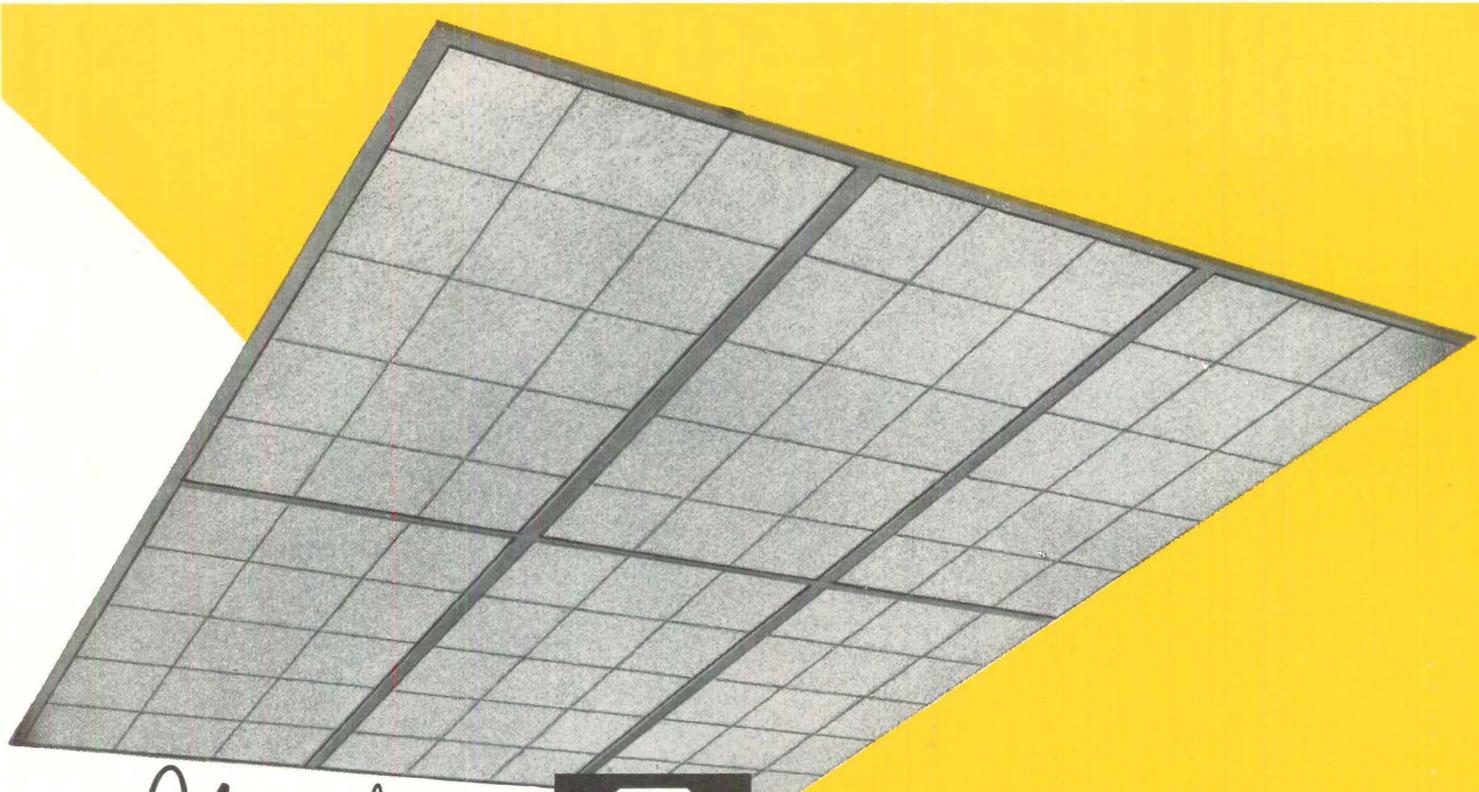
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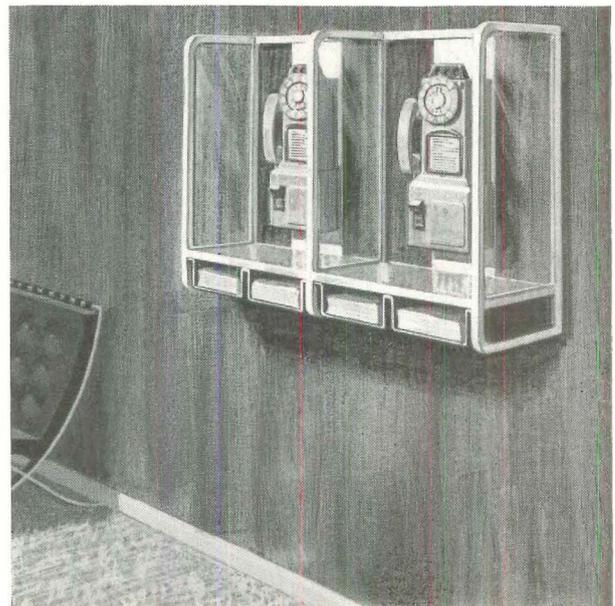
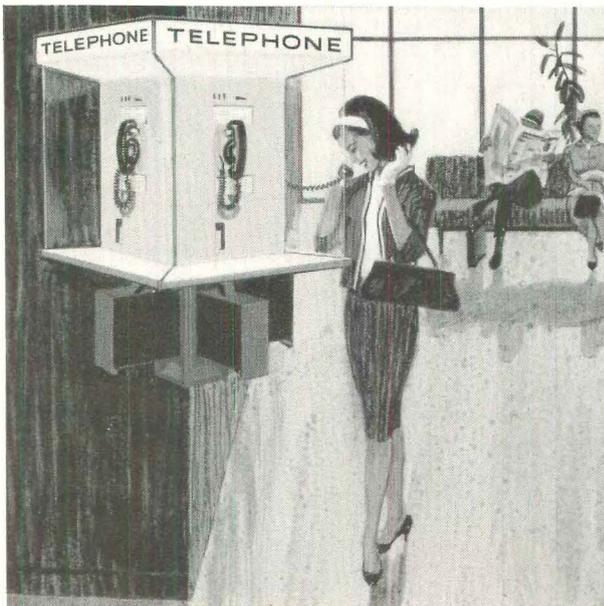
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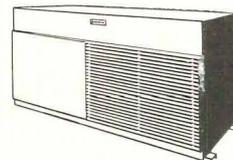
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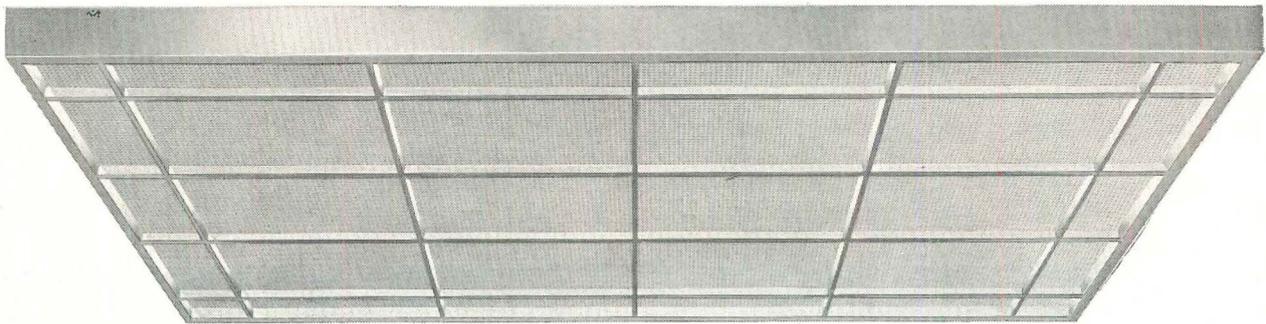
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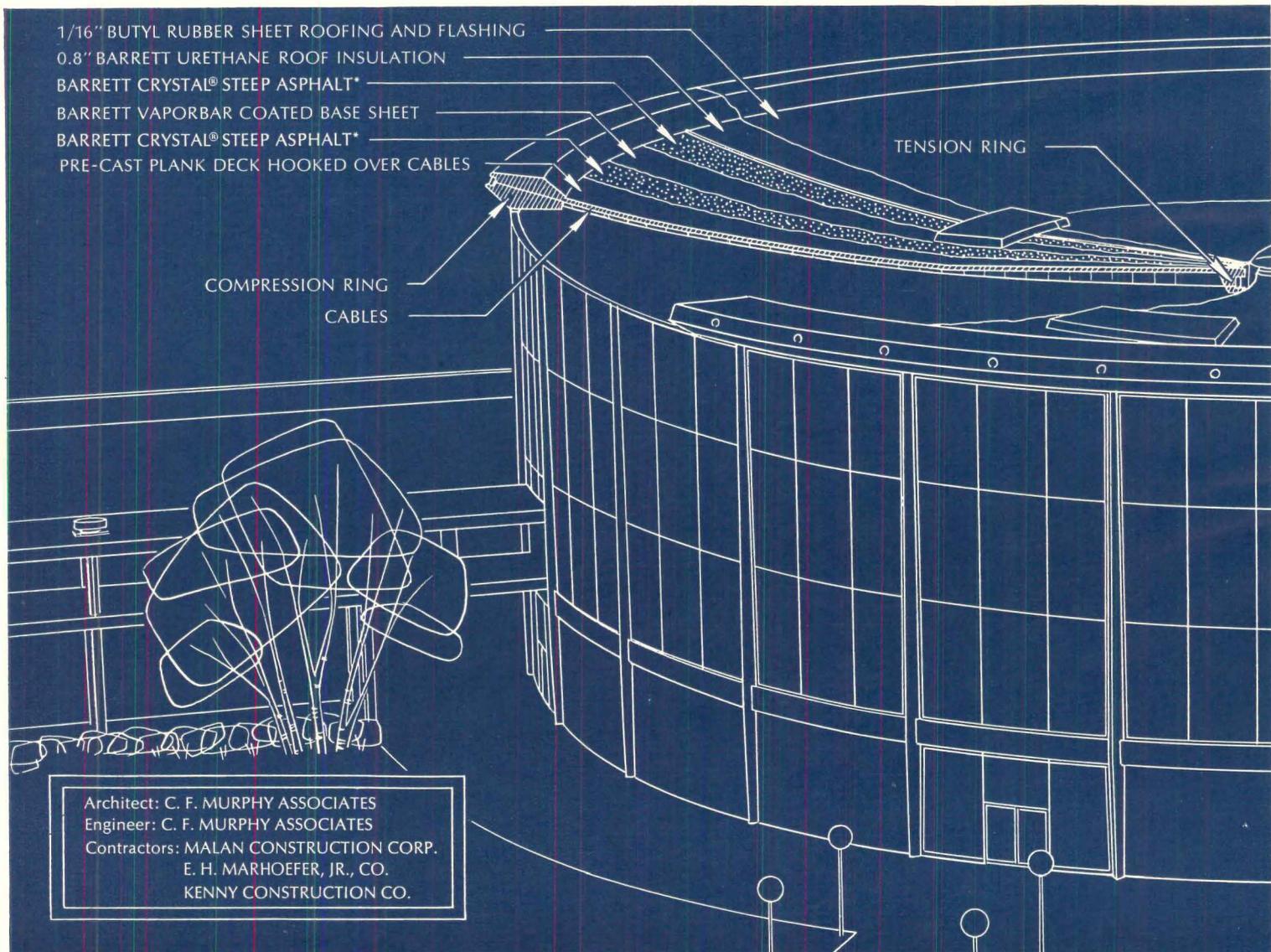
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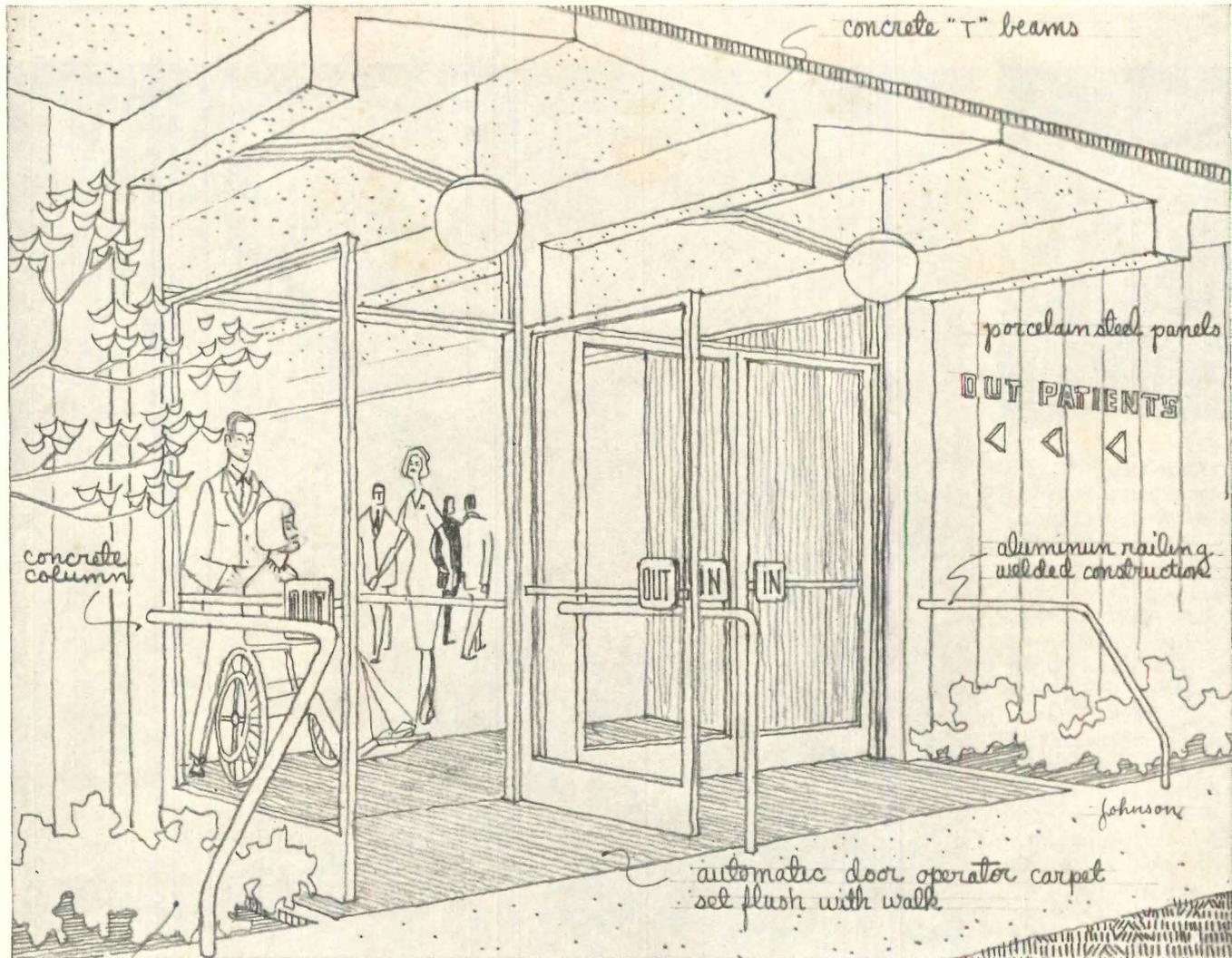
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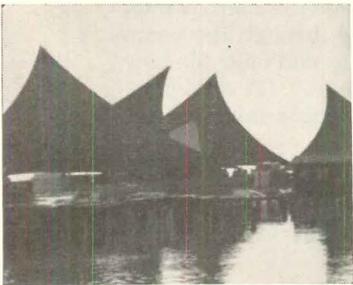


FAIR IN LAUSANNE. On filled land on the Lausanne end of Lake Geneva, the Swiss National Exposition (the first such since 1939) is a collection of festive buildings done by teams of Swiss architects under the careful supervision of Head Architect A. Camenzind. Attendance is expected to be about 16 million for the April 30–October 25 run.

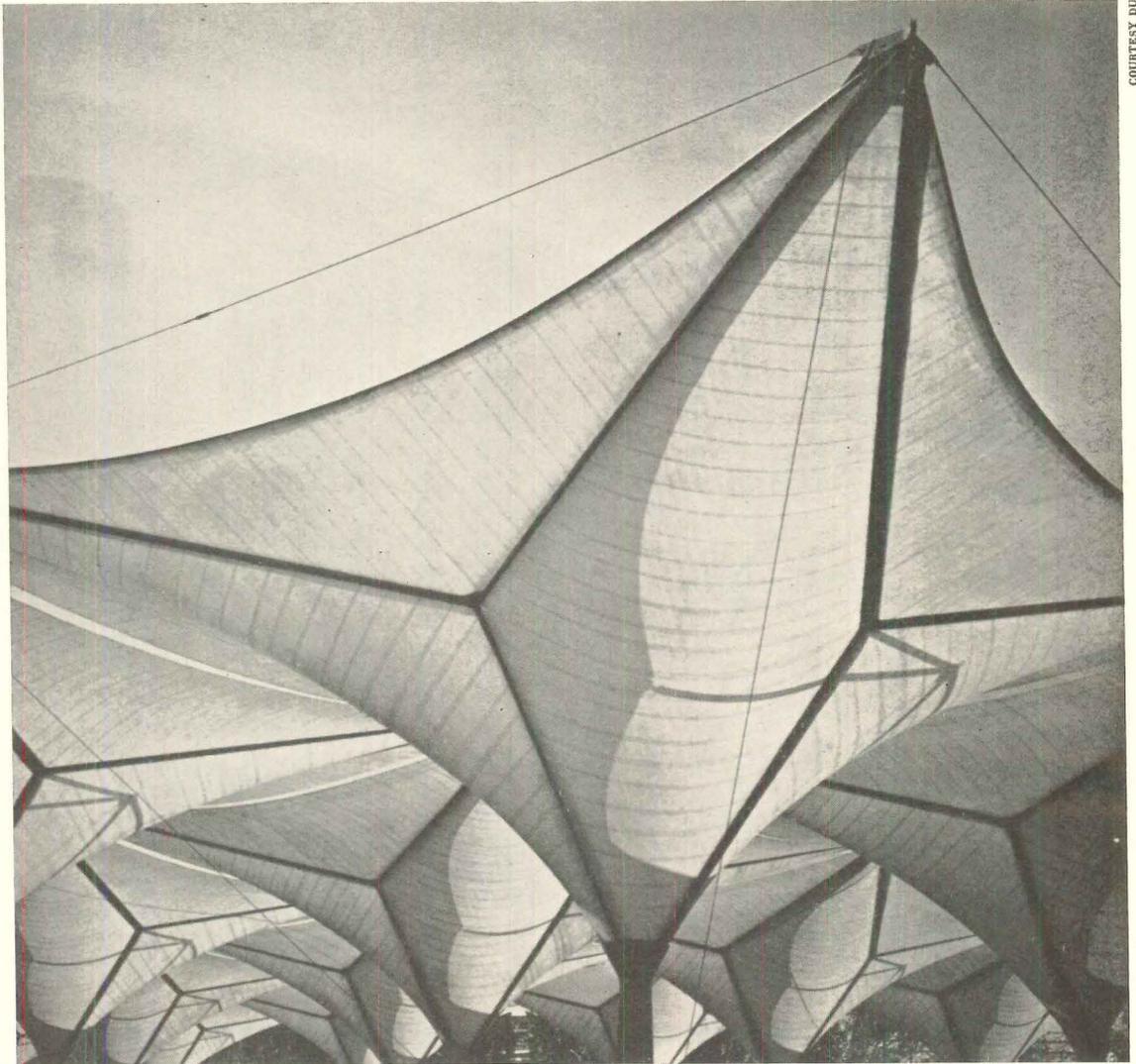
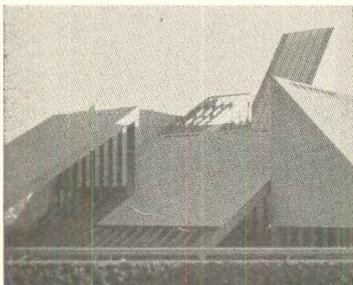
The giant glass fiber-reinforced polyester umbrellas, at right, cover the Trade Section (near the lake, in center of aerial view). Above is one of the canvas-covered steel tube "tinker toys" of the fan-shaped Industry and Crafts Section (center in aerial). The Port Section, below (extreme left in aerial), has fleets of restaurants under large, brightly colored sails. The main spine of the fair is composed of wood buildings like the one at the bottom, extolling the "Swiss Way" by showing aspects of life in modern Switzerland.

There are four other major sections as well, including a children's paradise and circus.

L. SINGY



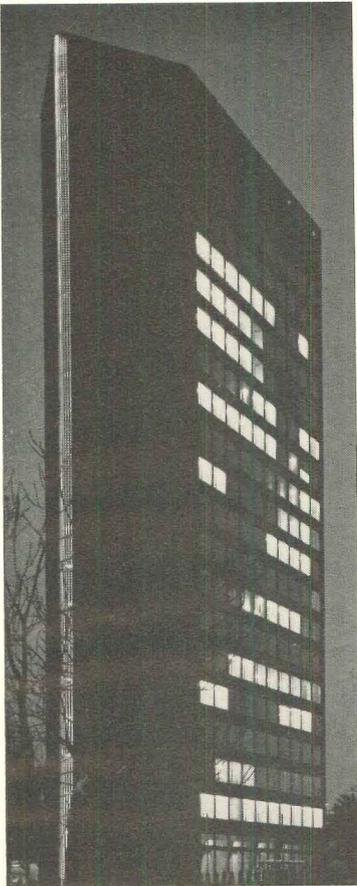
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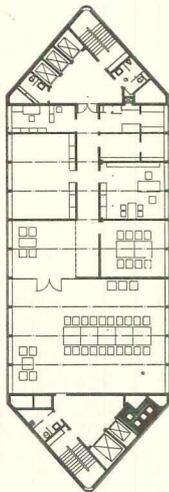
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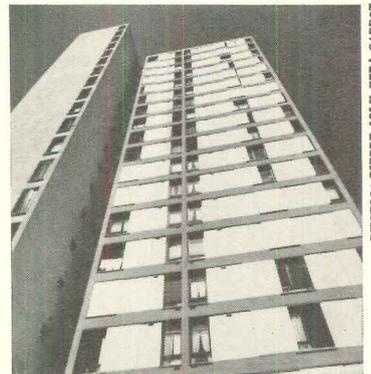


OFFICES IN BASEL. Corner offices are omitted completely in this 19-story office building for the Lonza Corporation in Basel, Switzerland; instead, vertical transportation and mechanical facilities are fitted neatly into its triangular ends (see plan). Narrow slits of glass are used in the apex of each triangle. The ends are sheathed in corrugated aluminum panels; the office walls have black anodized aluminum spandrels. Architects: Suter & Suter.



APARTMENTS IN MARSEILLES.

La Viste, a low cost, government subsidized housing development, has 720 apartments, all of which have sliding shutters for sun and light control (right). The shutters, painted the same white and gray of the outer stuccoed walls, leave the pattern of the façades to the tenant's whims. Architects Georges Candilis, Alexis Josic, Shadrach Woods and Louis Olmeta were selected for the project through a national competition.



PHOTOS: PIERRE JOLY-VERA CARDOY

OFFICES IN VIENNA. The Hoffmann-La Roche Inc. Building in Vienna provides an elegant, if severe, contrast to the adjacent baroque Belvedere Castle. Slender mullions set off the glass curtain wall of the reinforced concrete flat slab structure. Architects Georg Lippert & Associates have

topped off the building with a concrete "cornice," illuminated at night, that helps to hide the air-conditioning and elevator penthouses. The building occupies only 1/11 of its 54,000 square foot site, leaving the rest a landscaped area that includes flower gardens and a reflecting pool in front.

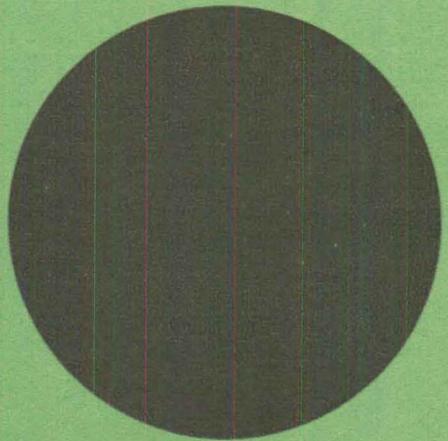
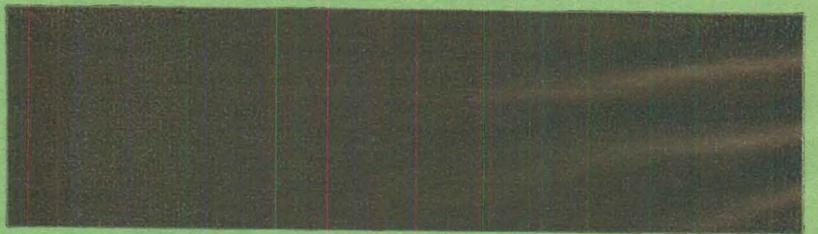
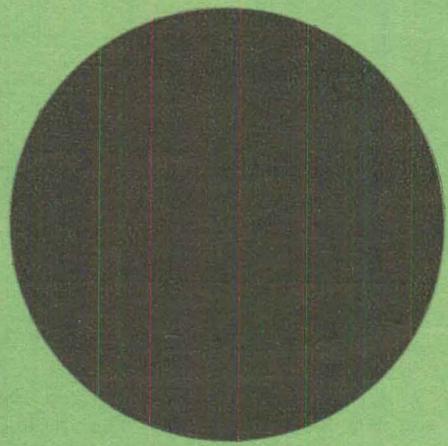


LIBRARY IN RANGOON. Religious symbolism imposed a rigorous program for this new Buddhist research library. The building had to be circular with 3 floors, 8 entrances, 24 windows, incorporating the images of 108 lotuses, and

built to last 2,500 years. American Architect Benjamin Polk used all the symbolic details, but refused to guarantee such a long life span for the structure, which is modern only in its use of reinforced concrete. **END**



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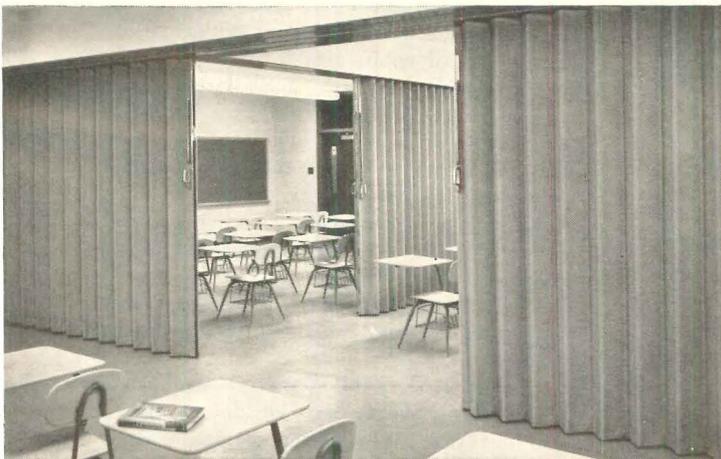
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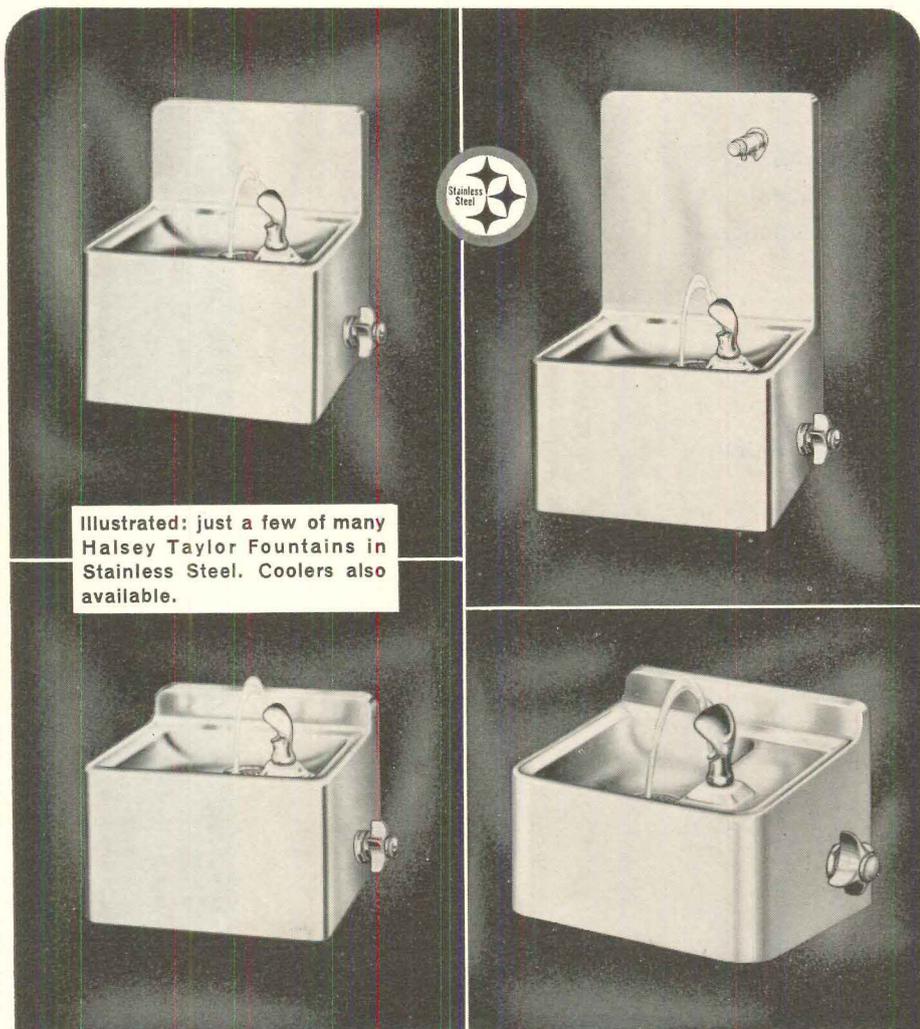
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CLUSTER DEVELOPMENT: By William H. Whyte. Published by American Conservation Association, 30 Rockefeller Plaza, New York, N.Y. 134 pp. 8½" x 11". Illus. \$6 hardbound, \$3 paperback.

For years, foresighted planners and architects have deplored the standard patterns of suburban housing developments as monotonous, inefficient, and appallingly wasteful and destructive of topography, trees, and open space. The alternative which they most frequently propose is "cluster" (plans, opposite), in which houses are grouped closer together and the "saved" land is opened for common space. This book will be a major addition to the cluster advocates' arsenal.

The key to the significance of this new work by business-scene observer Whyte (*Is Anybody Listening?*, *The Organization Man*) is in its publisher, the American Conservation Association, "a nonprofit organization devoted to the preservation of nature and the enjoyment of its values by the public." To quote from Laurance Rockefeller's introduction to *Cluster Development*: "Why, one might ask, should such an organization concern itself with development and housing problems? Historically, what conservationists have sought is *non-development*, and for them the developer and his bulldozers have seemed the natural foe. The time has come, however, for conservationists to take a much more positive interest in development. It is going to take place, and on a larger scale than ever before. But what will be its character?" Mr. Rockefeller goes on to point out two key facts: first, that "the crux of the outdoor recreation problem is in our urban areas. . . . Far away parks make a great contribution, but the basic need for outdoor recreation in the metropolitan areas cannot be met somewhere else." And second, "the use of private land [is] just as critical as the acquisition of public land."

Conservationists, by and large, have proved to be formidable thinkers. They are generally well aware of, but not discouraged by, the seemingly inexorable commercial forces that press against them, and they have amassed considerable influence and power of their own. If this book marks the enlistment of the conservationist powers in the fight for the beauty of the *man-made* environment, we may take hope for the future of the townscape.

The book has another special significance beyond the planning of single developments, and that is Mr. Whyte's introduction of what he calls the idea of "linkage."

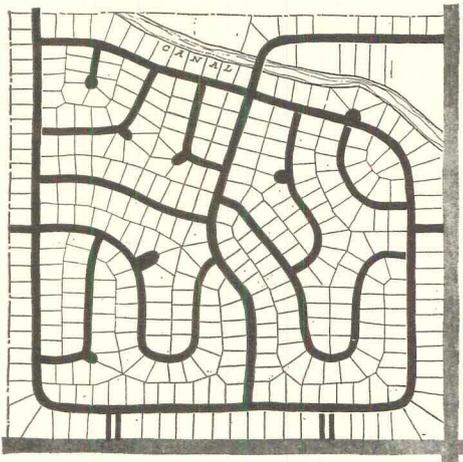
"We have been dealing with cluster developments one by one," he writes. "This is how most communities have been dealing with them too—as they come up, one by one . . . unless a further step is taken soon the result could be more sprawl.

"Cannot the separate spaces be linked together? Here is the great opportunity for cluster. The open space of a cluster subdivision may be functional in itself, but it

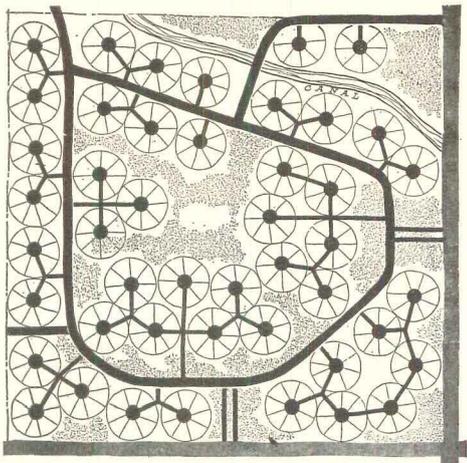
becomes far more so if it is tied in with open spaces—with community parks, with schools, and with the open spaces of other cluster developments.

"[This] does not, fortunately, require an interminable effort at a full master plan. Nature has already done a good bit of work along these lines, and the drainage network it has cut into the area can furnish the spine of an excellent plan. A stream . . . can have a great unifying effect."

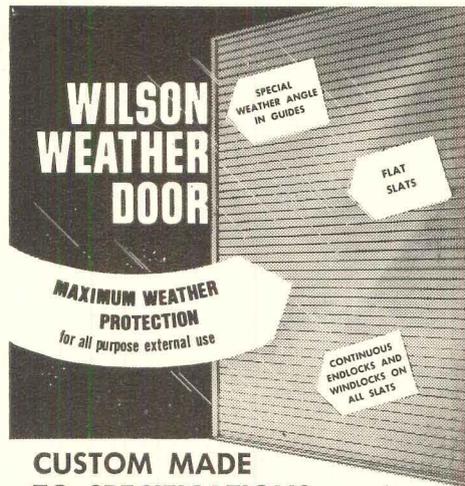
Santa Clara County, California, is cited as an example of an area with a series of creek courses that could be so used. "Most of these creeks fall under a variety of different kinds of ownership—golf courses, county parks, state highway rights of way, utilities, and town parks. The crux of the problem is to tie all these compatible spaces together by filling in the missing links. . . . Some of these portions could be provided by developers through cluster planning."



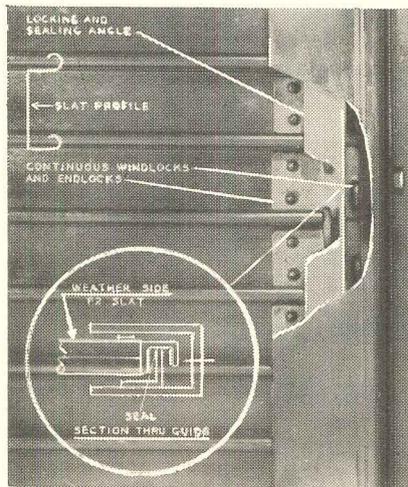
Standard subdivision (above) covers site; cluster plan (below) leaves open space. Drawings by Harman, O'Donnell & Henninger Assoc. for Urban Land Institute and NAHB.



Mr. Whyte goes so far as to say that the traditional concept of "greenbelts" should be reviewed: how well would they serve a majority of the people, he asks, and how
continued on page 164

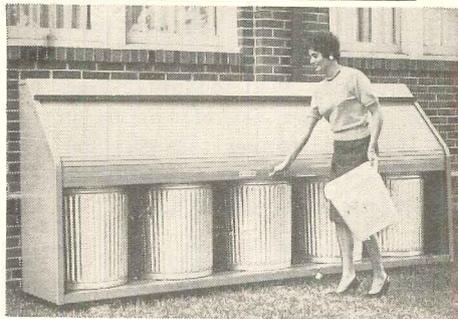


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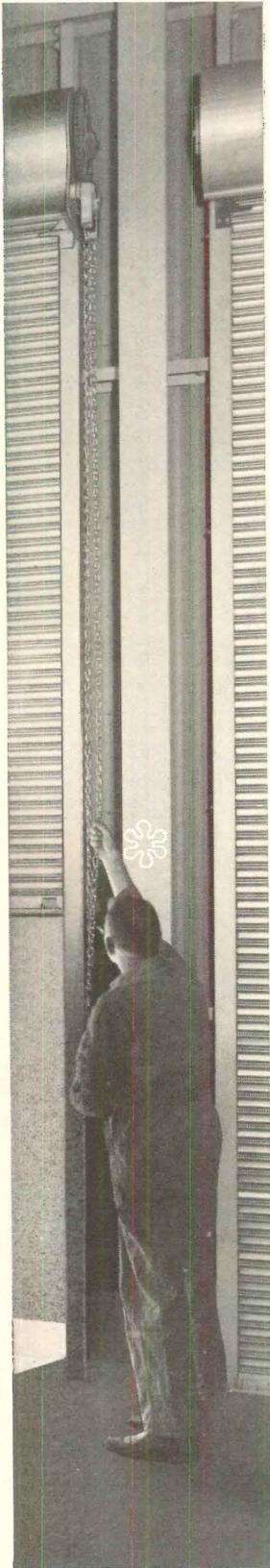
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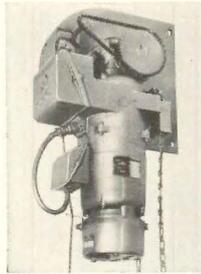
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difficult would it be to keep them under the pressures of expanding cities? He argues that linkage of smaller spaces is more feasible, more economical, and more effective in providing nearby open space for more people.

Being a realist, Mr. Whyte has included an instructive and grimly fascinating chapter of examples of "how far people can go against their own interest to resist something new." There are some case histories of developers who have maneuvered cluster plans successfully through the pitfalls of local objections, but most concern laudable schemes which have been killed by community distrust. Mr. Whyte shows how this understandable initial distrust, when fanned by a few diehards, can be solidified into total, irrational opposition.

The book also covers town houses, new towns (Mr. Whyte calls them "super-developments"), the economics of cluster housing, merchandising methods, legal precedents, and the mechanics of setting up a homeowners' association to control open land. It is the most comprehensive, and most readable, treatment of the subject to date. It makes clear that the difficulties are many, the pressures great, and the stakes—the choice between "slurbs" and pleasant countryside—high. But Mr. Whyte quotes the adage that "good esthetics make good economics"—and proves the point.

NEW BUILDING ON CAMPUS—Six designs for a College Communications Center. A report from Educational Facilities Laboratories, 477 Madison Ave., New York 22, N. Y. 62 pp. Illus. Available without charge from the sponsor.

The ubiquitous Educational Facilities Laboratories, in collaboration with Rensselaer Polytechnic Institute, sponsored an invitational competition among seven American architectural firms for the design of what is coming to be called a college communications building, a well-wired structure for the use of new educational techniques such as television. Winner: Perkins & Will of Chicago (drawing below). This booklet presents parts of all the submissions, which in general are less wiry and more massive in conception than might have been expected.

continued on page 167



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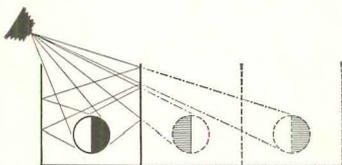


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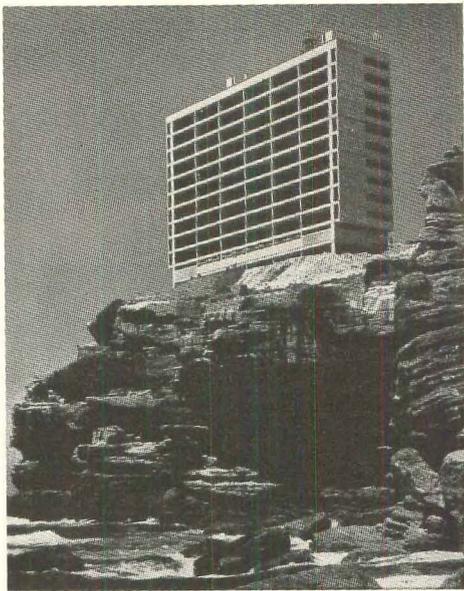
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HARRY SEIDLER: HOUSES, BUILDINGS AND PROJECTS, 1955-1963. Published by Horowitz Publications Inc., Sydney, Australia. U.S. Distributor: Wittenborn & Co., 1018 Madison Ave., New York, N. Y. 216 pp. 9 1/4" x 11 1/4". Illus. \$15.

Increasing attention is focusing on Australian Architect Harry Seidler, and this compilation of his latest work demonstrates why. Heretofore known primarily as a house architect, Seidler has become increasingly involved in larger projects—apartments (below), offices, and urban redevelopment schemes. This book, covering a number of these as well as a group of private homes, shows how Seidler has grown more adventurous as he has moved into designs of greater scale.



THE LAST REDWOODS. By Philip Hyde and Francois Leydet. Published by Sierra Club, Mills Tower, San Francisco, Calif. 131 pp. 10 1/2" x 13 3/4". Illus. \$17.50.

With poignant words and impressive photography, Authors Hyde and Leydet join with the Sierra Club, Secretary of the Interior Udall (who wrote the foreword), California nature lovers, and conservationists across the nation in the battle to save the noble trees of the West Coast. They have forged a formidable weapon.

Their book makes striking use of before-and-after photographs: glorious pictures of towering, sunlit forests are juxtaposed against sorry scenes of barren, logged-over wreckage. And, since the immediate skirmish is with the conservationists' current Enemy Number One, the highway builders, there are contrasts of quiet old roads ambling among the groves versus freeways slashing through denuded hillsides.

The text is as telling as the illustrations. In sections covering the beauty, majesty, and history of the trees (with the inevitable references to how old a given specimen was in Julius Caesar's time), the authors convey their own genuine affection to the readers. When they turn to past—and present—log-

ging operations, and to the highway "improvements" that destroy the very beauty they are supposed to bring closer to the motoring public, they convey their rage.

Perhaps the book's most significant point is that trees already in parks and preserves are not necessarily safe: the highway planners find it far easier to acquire rights of way through land already in the public domain. Nor does the close skirting of the groves themselves help much: destruction of

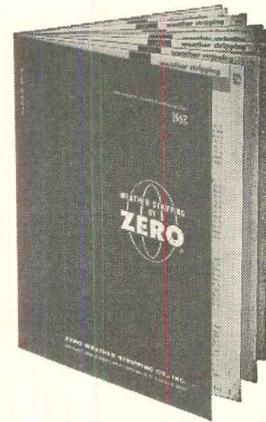
vegetation on privately owned watersheds above a redwood park can lead to floods that fell the trees as effectively as any chainsaw.

The Last Redwoods is assuredly a call to arms to conservationists across the country, but it is at the same time an exceptional piece of illustrated literature. The authors make clear that the cause of the giant trees, a priceless and irreplaceable part of our national heritage, is ultimately the concern

continued on page 169

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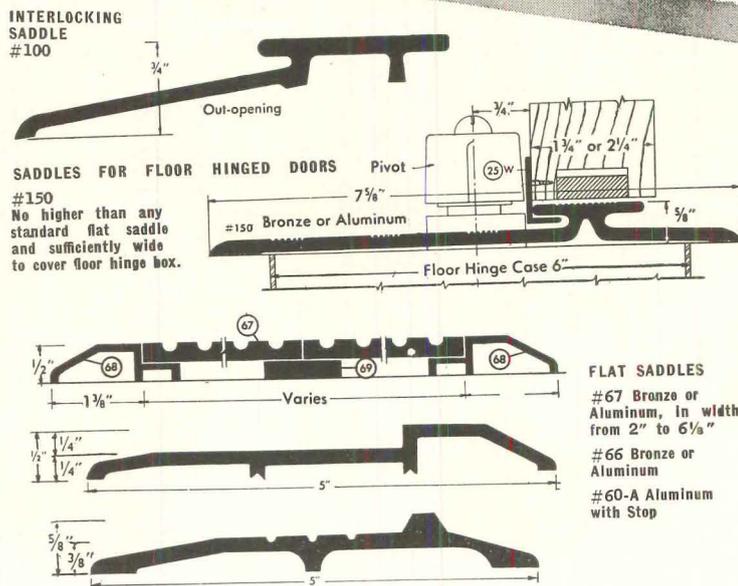
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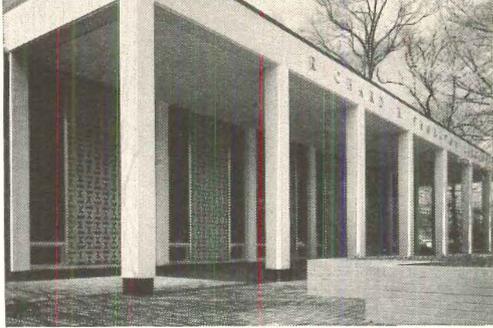
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of the entire nation, not merely of Californians. It is significant that Secretary Udall consented to write the foreword to this book; it is fortunately true that conservationists from coast to coast are and have been active in this cause, and the publication of this book should increase this nationwide interest and support.

SKID ROW IN AMERICAN CITIES. By Donald J. Bogue. Published by The Community and Family Study Center, University of Chicago, Chicago, Ill. 521 pp. 6"x9½". \$6.50.

"There is only one place left after Skid Row—the river." That has been the general view, but now that opinion is challenged by Dr. Donald J. Bogue, former professor at the University of Michigan and now in the University of Chicago's Department of Sociology. Bogue recommends that Skid Row be eliminated because it is "a large, unproductive drain on the municipal economy"; an initial benefit would be to free a large tract of valuable land for other uses.

This study concentrates on Chicago's Skid Row, but also looks at 45 other cities. It reports the findings of a research project "undertaken with the intent to supply much of the information and principles necessary to redevelop successfully Skid Row neighborhoods . . ." Since one of the first questions planners ask about Skid Row is "What kinds of persons are these men, and why are they here?," Bogue has delved at great length into the socio-psychological problems, based on heavy statistical research.

Actually, says Raymond M. Hilliar, director of the Cook County Department of Public Aid, "the outstanding value of Dr. Bogue's work is to show that Skid Row is made up of many types of people . . . the alcoholic derelicts constitute only a small group. The one common denominator of all the men is that they are very poor—for the most part permanently poor and without resources."

The cost of the study was borne by a grant from the Ford Foundation to the Social Science Division of the University of Chicago for a project entitled "Problems of Living in the Metropolis." Dr. Bogue concludes that the homeless men, with the aspirations and "the images which they have of themselves, are unmistakably favorable to rehabilitation."

EXPLORATIONS INTO URBAN STRUCTURE. By Melvin M. Webber, John W. Dyckman, Donald L. Foley, Albert Z. Guttenberg, William L. C. Wheaton, and Catherine Bauer Wurster. Published by University of Pennsylvania Press, 3436 Walnut St., Philadelphia 4, Pa. 246 pp. 6" x 9". Illus. \$650.

A collection of essays, some very technical, some concise and hardheaded. Chief among the latter is Wheaton's thoroughgoing analysis of investment decisions in the Philadelphia area, an exercise which should be read by every local public official before he begins blithely to program expansive developmental

schemes. Wheaton expresses nicely the futility of public actions controlling private decisions over a metropolitan area, and offers suggestions (e.g., a metropolitan area master plan suggesting channels of investment) calculated at least to prevent some of the blunders of the past—and present. Several of the other essays in this volume are, unfortunately, not so lucid; they illustrate, more than anything else, why so many planners justifiably feel they are shouting, alone, on a

wide and uninhabited prairie at midnight.

IMAGES OF AMERICAN LIVING. Four Centuries of Architecture and Furniture as Cultural Expression. By Alan Gowans. Published by J. B. Lippincott Co., E. Washington Square, Philadelphia 5, Pa. 498 pp. 7½"x10". Illus. \$16.50.

In his introduction, Dr. Alan Gowans writes ". . . it is as they express the evolution of civilization as a whole that American archi-

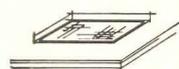
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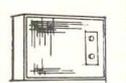
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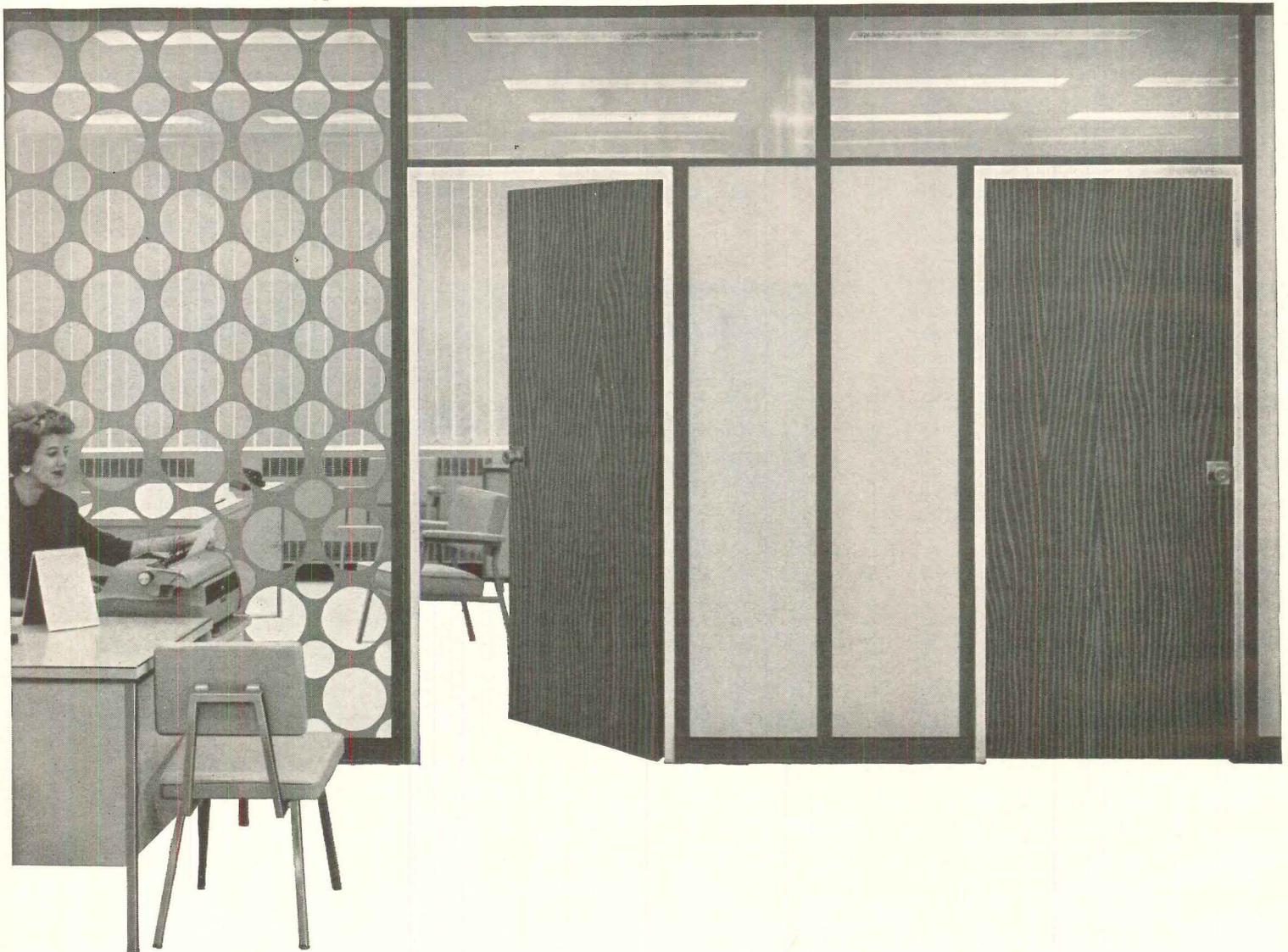
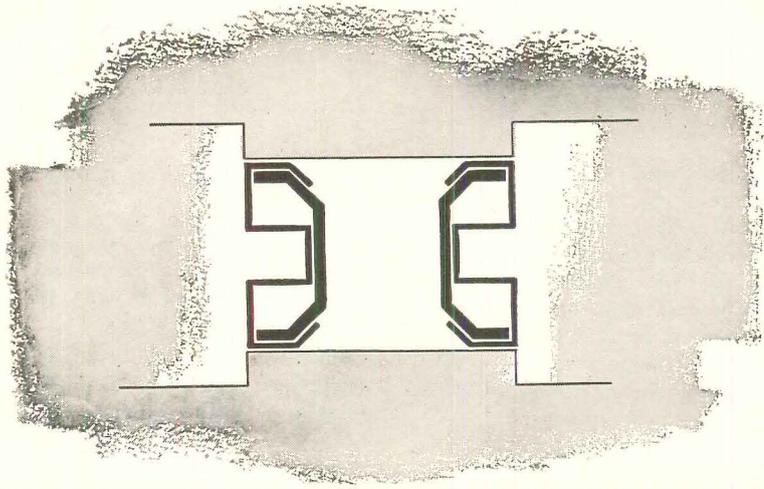
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ecture and furniture are most significant." It is somewhat doubtful that this premise could be proved; and the author simply tries to show how architectural and furniture design fit in with the feelings of a particular age, as best expressed in speeches and writings of various kinds, especially political.

Gowans is quite scornful of Colonial architecture and furniture (he calls the 17th century "Medieval America"), except for the work done in Virginia—almost entirely imported from England. "Folk" architecture, such as that of the Shakers, is mentioned only in notes.

The four styles of 18th century furniture (William and Mary, Queen Anne, Chippendale, and Adamesque-Federal) are compared to the four stages of development and decline of Greek Classical Art and Renaissance art. The comparison is not completely valid because of the influence of the Baroque period on the 18th century. The sections dealing with furniture are reasonably interesting and informative, in spite of a characteristic tendency towards repetition; but following the evolution of architectural forms during this century is well-nigh impossible because there are not adequate illustrations.

Starting with the Revolutionary period, Gowans forces his subject matter into chapters that work like procrustean beds, and one can trace neither a man's work, nor a particular style. Sprinkled liberally are long listings of architects' names with their birth and death dates, sometimes with mentions of some important buildings, but with rarely a mention, much less an illustration, of what the buildings looked like.

The Greek Revival of the early 19th century is treated as a logical development of previous architecture (which it was, to an extent), with only a vague reference to the important archeological discoveries of that time and the war for Greek independence, both of which played an important role in the interest in all things Hellenic.

Reading the recent past from the more distant past can be fun, but there are traps. About the High Victorian house in which Henry Ford grew up, Gowans says, "In the fierce independence of each piece in this parlor . . . from each other and from the whole, we may recognize a counterpart to the fierce resentment against 'interference' by anybody . . . displayed by the man who . . . [created] almost single-handed one of the greatest of American corporations."

The short section on modern architecture tells of the work of most of the "name" architects, while giving few examples of the "Victorian ornate," the gaudy shapes, and the dull, ugly buildings that are also part of our age. In contrast to the emphasis on furniture in the rest of the book, there is only one picture of 20th century furniture design. While deploring the economic considerations that shape much of our architecture, he scoffs at the dreamers—Fuller, Kahn, Soleri—who do not bow to "reality."

The book is not without merit. Chapter notes give a fine bibliography for anyone interested in learning about American architecture and furniture.—J.R.

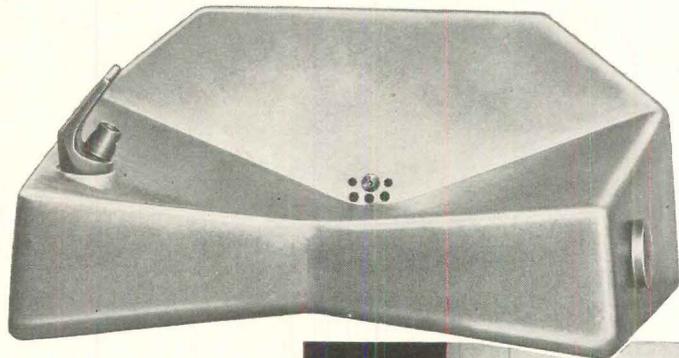
AMERICAN ARCHITECTURE AND OTHER WRITINGS. By Montgomery Schuyler. Edited by William H. Jordy and Ralph Coe. Published by Atheneum, New York. 328 pp. 7 1/4" x 4 1/4". Illus. \$2.45.

A paperback abridgement of the original Harvard University Press edition.

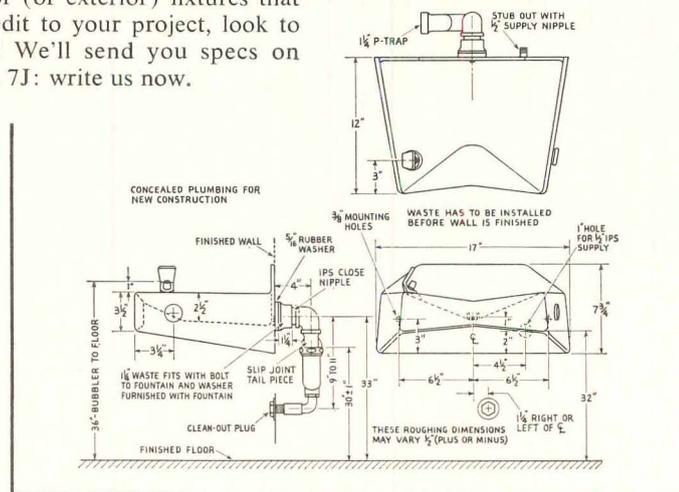
ARCHITECTURE: FORMES & FONCTIONS, 1963-64. Editions Anthony Krafft, Lausanne, Switzerland. U.S. Distributor: Wittenborn & Co., 1018 Madison Ave., New York, N. Y. 276 pp. 9 1/4" x 12".

The articles in the 10th Edition of this Swiss annual range from Ptolemaic architecture to automotive design; touch on Greece, India, Australia, New York, and of course Switzerland; treat of the techniques of tension structures, plastic building and seismic construction; and of many other things. END.

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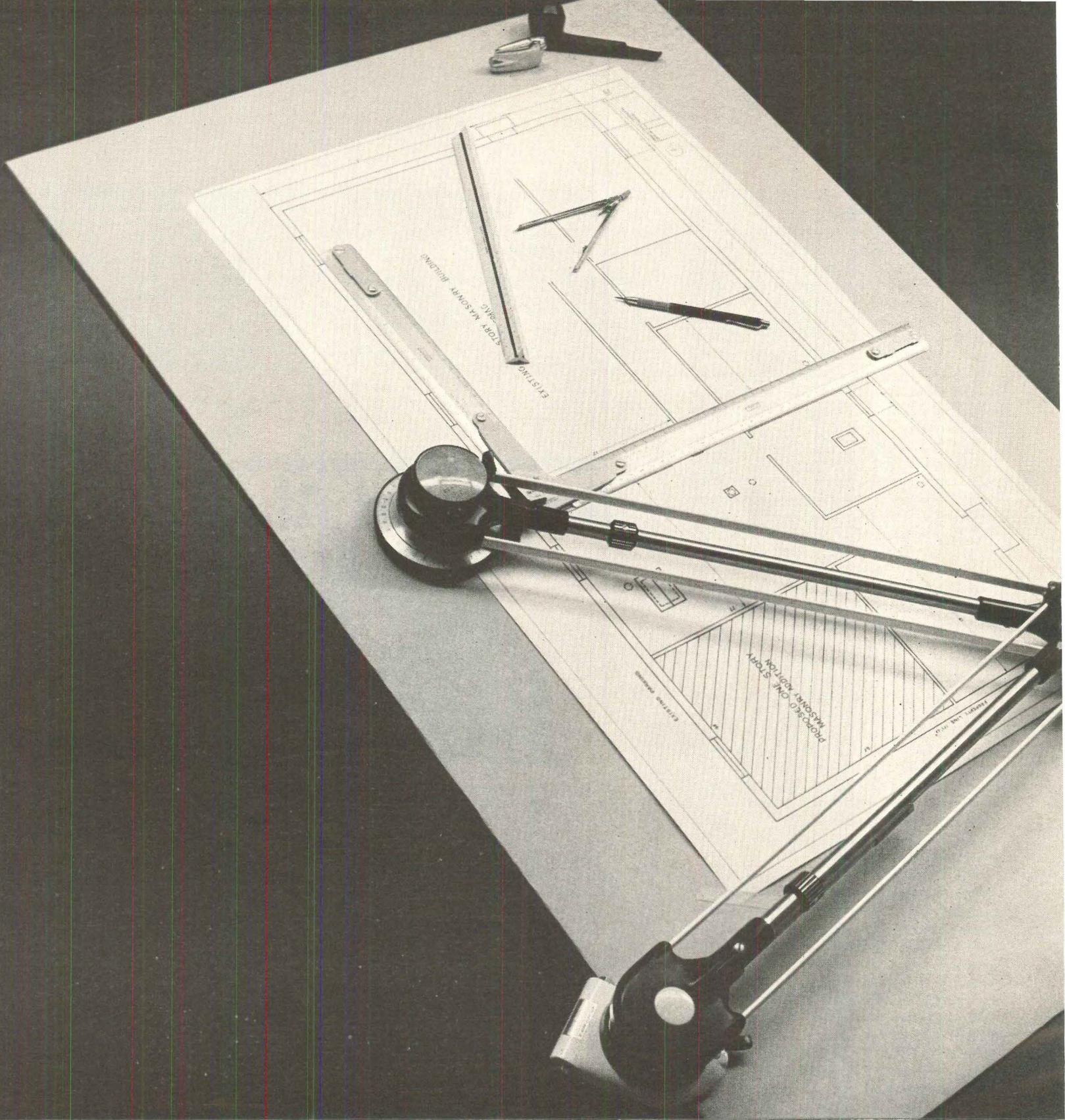
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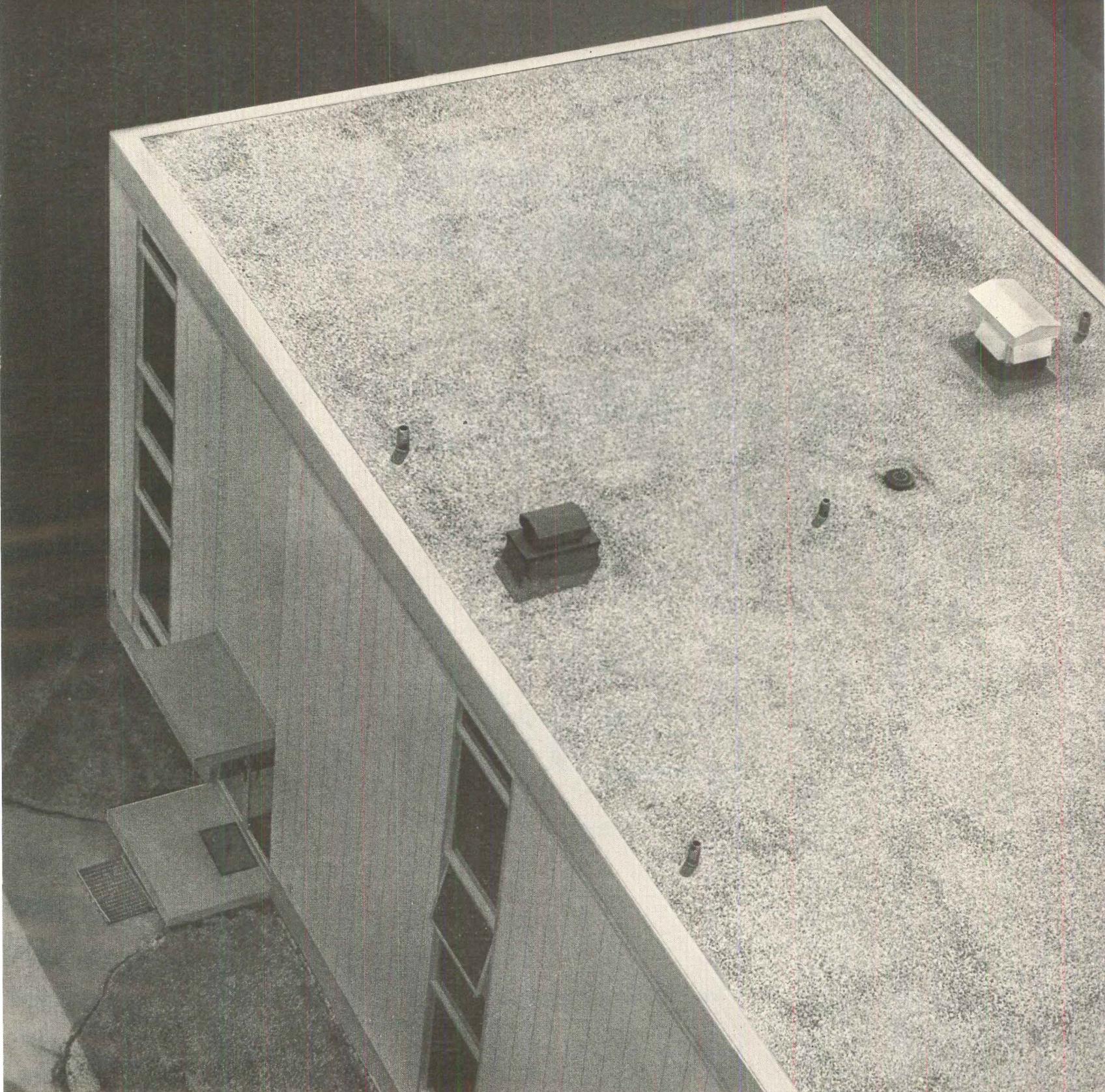
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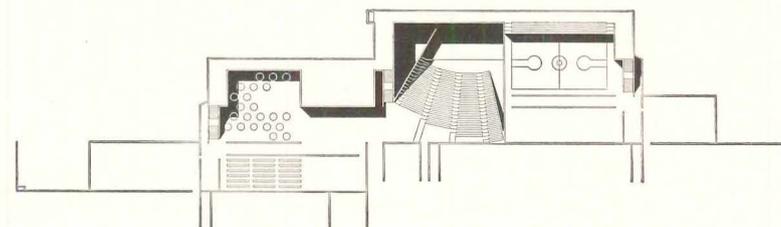
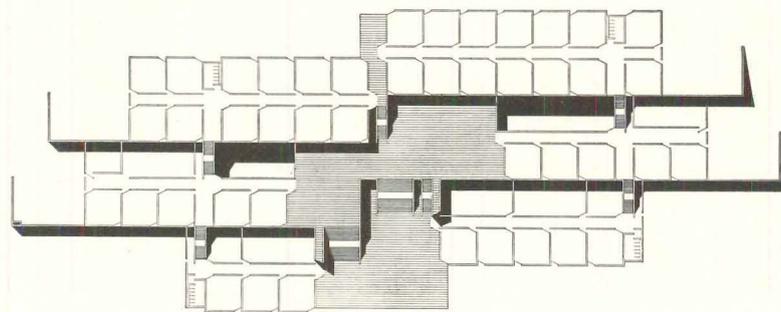
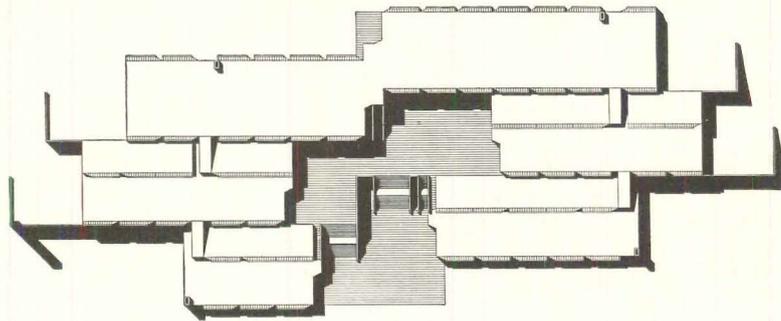
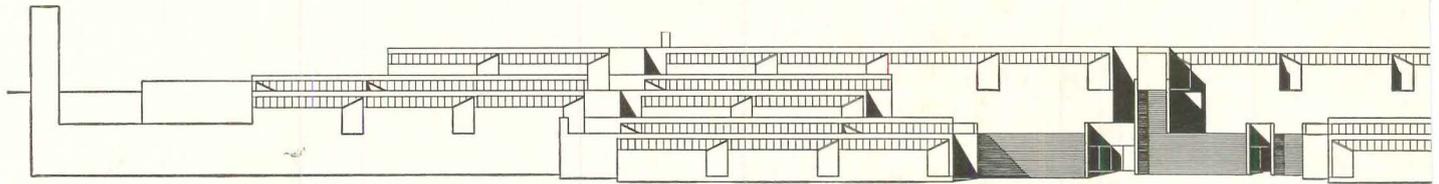
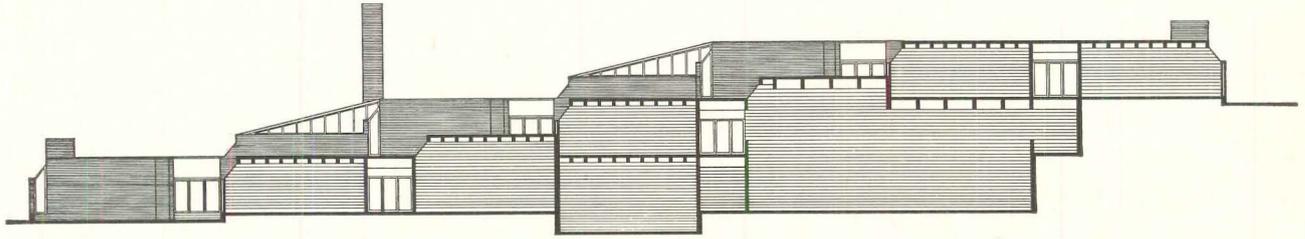
ture won't absorb water. No more roof blistering and cracking caused by water-soaked insulation. Remember its low "k" factor. Remember that roofers find it light in weight, easy to handle, fast and easy to install. And most important, remember that with Styrofoam RM roof insulation, heating and cooling costs remain constant for the life of the roof. And clients remain

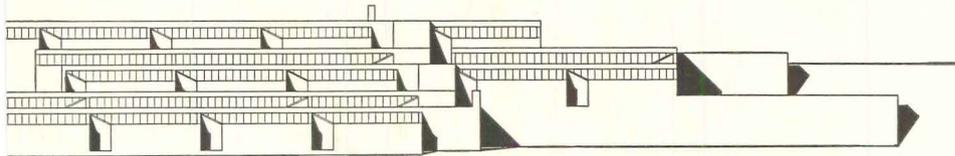
satisfied for at least that long.

Any questions? We'd be happy to send you all the data and specifications you need. Or see Sweet's Architectural File 8a/Dow. The Dow Chemical Company, Plastics Sales Department 1313LH5, Midland, Michigan. *Styrofoam is Dow's registered trademark for expanded polystyrene produced by an exclusive manufacturing process. Accept no substitutes...look for this trademark on all Styrofoam brand insulation board.*



Zonolite prototype building #7: A high school





Martin Price designs a high school.

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For example, Consulting Engineer Marvin M. Serot of New York City, who engineered this building, found that the installed cost of Zonolite Masonry Fill Insulation in this high school was \$1,903.

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So the true cost of the insulation to the client is about \$170 annually for 20 years.

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approx. installed costs per sq. ft. of wall	6" block	8" block	12" block
	or 2½" cavity	10¢	13¢

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There are other benefits, too. The cost of heating and cooling equipment is less because smaller units can be used. The building is much more

comfortable. It is also quieter, because of the insulation's sound absorption characteristics.

Additional facts worth investigating are contained in our Bulletin MF-83. Write Dept. AF-54, Zonolite, 135 South LaSalle Street, Chicago 3, Illinois.

*Reg. trade mark of Zonolite Division, W. R. Grace & Co.

ZONOLITE
 GRACE ZONOLITE DIVISION
 W. R. GRACE & CO.
 135 SO. LA SALLE ST., CHICAGO, ILL.

Design Conditions	Winter Heat Loss in BTU/Hr Assuming 70°F DB Indoor 0°F DB Outdoor		Summer Heat Gain in BTU/Hr Assuming 95°F DB, 75°F WB Outdoors 78°F DB, 50°RH Indoors			
	Without Masonry Fill	With Masonry Fill	Without Masonry Fill	With Masonry Fill		
Walls (above grade)	4" Face Brick Air Space 8" Concrete Block	4" Face Brick 2½" Fill 8" Concrete Block	495,000	187,000	120,000	45,000
Walls (below grade)	8" Poured Concrete		39,000	39,000	—	—
Roof	Roofing, 4" Concrete, 2" Insulation		600,000	600,000	345,000	345,000
Floor	4" Concrete on Grade		369,000	369,000	—	—
Glass: Solar & Transmission	¼" Clear, Single Plate		650,000	650,000	1,225,000	1,225,000
Ventilation	23,000 Cubic Feet per Minute		2,389,000	2,389,000	810,000	810,000
Lights	340 Kilowatt		—	—	1,150,000	1,150,000
People	1750		—	—	780,000	780,000
Totals			4,542,000	4,234,000	4,430,500	4,355,000
% Savings with Masonry Fill			$\frac{4,542,000 - 4,234,000}{4,542,000} \times 100 = 6.8\%$		$\frac{4,430,500 - 4,355,000}{4,430,500} \times 100 = 1.7\%$	

NOTES: FUEL: No. 6 oil @ 7.5¢ per gallon. DEGREE DAYS: 4989 per year.
 Total Loads Based on Maximum Simultaneous Usage.

A. Building: National Guard Armory,
Savannah, Ga.

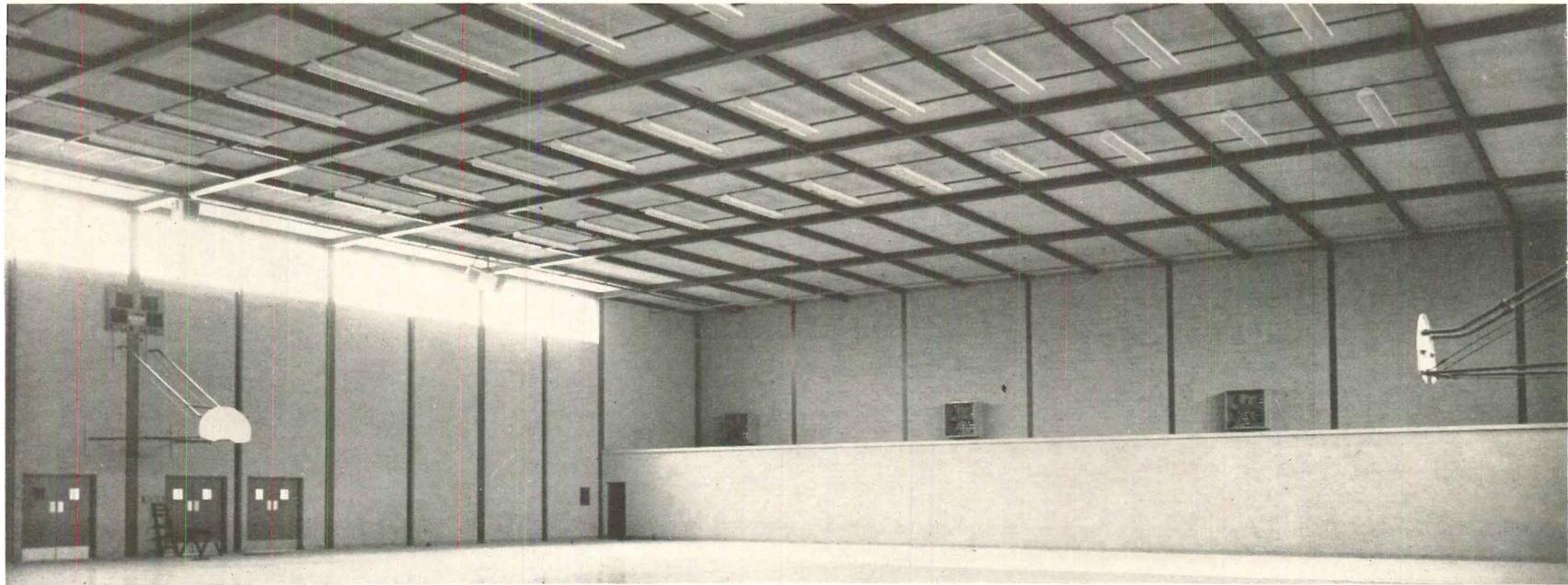
Architect: Thomas, Driscoll and
Hutton, Inc.

B. Building: Richgrove Veterans
Memorial, Richgrove, Calif.

Architect: Stuhr and Hicks

C. Building: Holland High School Field
House, Holland, Mich.

Architect: Suren Pilafian



A



B



C

The Gold Bond difference:
**Tectum offers six positive ways
to cut labor costs in recreational
building construction**



D



E

D. Building: Naval Academy Field House, Annapolis, Md.
Architects: Harbeson, Hough, Livingston and Larson; von Storch and Burkavage

E. Building: Delmar Field House, Houston, Texas.
Architect: Milton McGinty

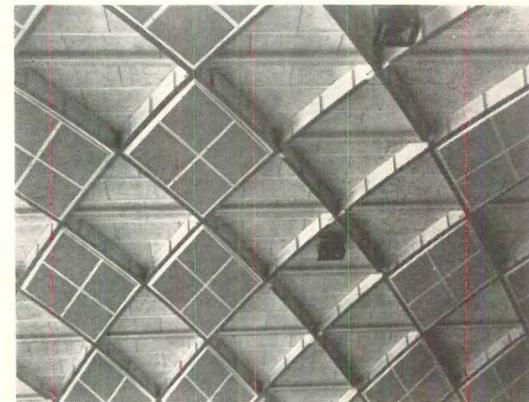
F. Building: Evandale Municipal Center, Cincinnati, Ohio.
Architect: Sullivan, Isaacs and Sullivan

G. Building: Dearborn Youth Center, Dearborn, Mich.
Architect: Harley, Ellington, Cowin and Stirton

H. Building: Mississippi Coliseum, Jackson, Miss.
Architect: Jones and Haas



F



G

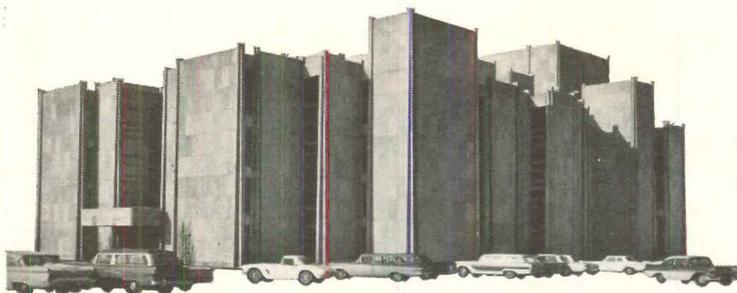


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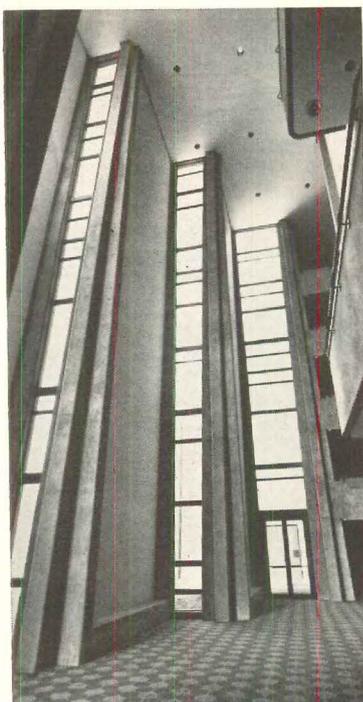
A Gold Bond Tectum roof deck is structural, insulative, sound absorbing and factory finished. Its naturally textured surface is an attractive off-white color. It complements any decorating scheme. Tectum reduces at least six labor costs: (1) Saves painting; a sizeable economy in labor. (2) Saves scaffolding and the cost of the paint. (3) Reduces the need for acoustical control as it carries NRC (noise reduction coefficient) ratings up to .85. No need to install acoustical control elements that take space—and add labor costs. Your field house can serve as an auditorium for special events and concerts. (4) As a structural sheathing with excellent insulating characteristics (U value of .15 for 3" planks) your insulating job is completed when the Tectum deck is erected. (5) And

lightweight Tectum is available in wide planks that cover 40% more area than similar materials. This really saves time. (6) Standard clips or grout provide safe, sure, speedy anchorage. Add them up. Tectum saves the labor involved in painting, scaffolding, insulation, acoustical control, laborious anchoring methods and covers 40% more area with each plank. And saves on the materials involved, too. Look around; you'll see Gold Bond Tectum roof decks in your community. If you need more specific information call your Gold Bond Tectum representative or write National Gypsum Co., Buffalo 25, New York. Dept. AF564.

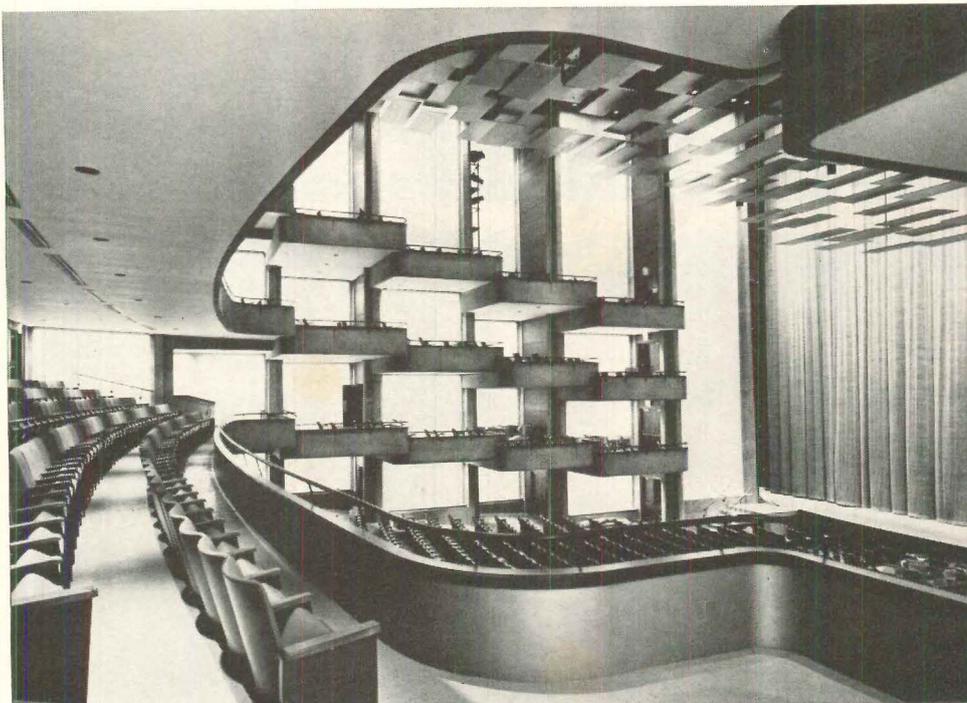




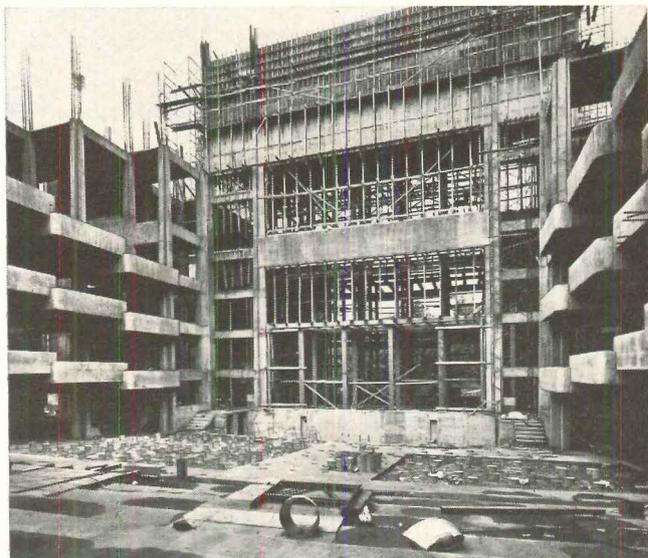
The exterior design of Clowes Memorial Hall features soaring concrete pylons and limestone walls which blend well with the Neo-Gothic campus of Butler University. The exterior dimensions are 168' wide by 225' deep.



(at left) The Grand Foyer and side lobbies show the extension of the concrete pylon effect to the interior. These areas are six stories high.



(at right) The main hall shows a further extension of the exposed unpainted concrete and its importance in the overall architectural effect. Note pylons in the background and the balcony sides. This main hall seats 2,200 people.



The basic structure of this hall is reinforced concrete. The stage house is nine stories high. The stage itself is 51' wide at the proscenium and has a depth of 62'.

CONCRETE PERFORMS for the Performing Arts

Clowes Memorial Hall was designed to satisfy the exacting requirements of each of the performing arts. Since its recent completion, it has been acclaimed as one of America's finest cultural and entertainment centers under one roof.

Concrete plays a major role in this new hall, both structurally and architecturally. Here, as in many new trend setting designs, the fine quality concrete was made with Lehigh Cement. Lehigh Portland Cement Company, Allentown, Pa.

Owner: Butler University, Indianapolis, Ind.

Associated Architects: John M. Johansen, New Canaan, Conn. and Evans Woollen, Indianapolis, Ind.

Structural Engineers: Fink, Roberts & Petrie, Inc., Indianapolis, Ind.

Contractor: George Bahre Company, Indianapolis, Ind.

Ready Mix Concrete: Heston Concrete Company, Indianapolis, Ind.

LEHIGH
CEMENTS

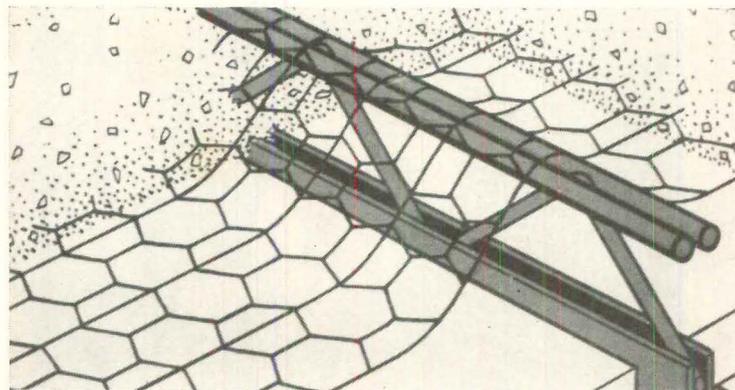
MONOLITHIC DECKS

A new product, the *Keydeck Subpurlin*, reinforces roof decks so that they work compositely. Keydeck subpurlins have open web trusses; deck materials such as concrete can flow through and around the webs to form a mechanical bond. With purlins, reinforcing mesh, and decking thus locked together, the roof deck behaves like a monolithic slab.

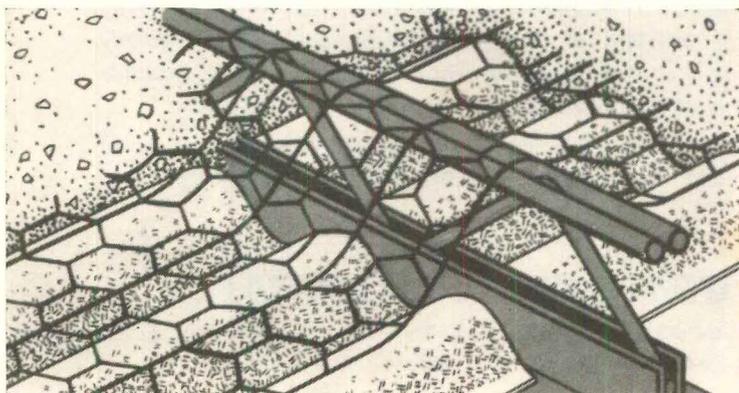
According to the manufacturer, Keystone Steel & Wire, this com-

posite deck carries greater loads than solid subpurlins, deflects less, and reduces the weight of the roof's reinforcing steel. The drawings show how Keydeck subpurlins work with gypsum or lightweight concrete over formboard (1), lightweight concrete over corrugated metal (2), and precast tile or slabs with a grout bond (3). The base price is slightly lower than that for solid subpurlins.

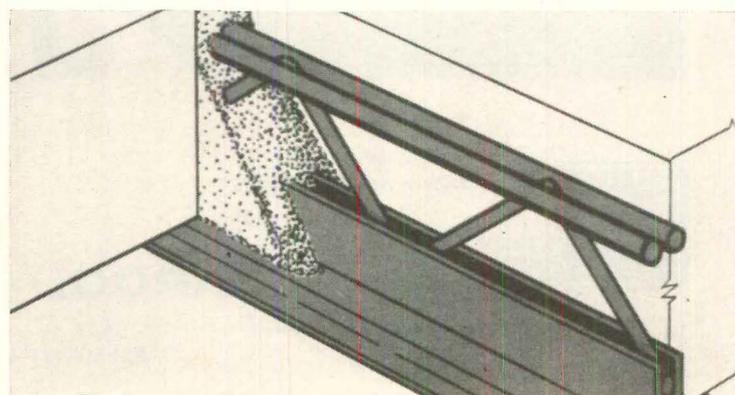
Manufacturer: Keystone Steel & Wire Co., Peoria 7, Ill.



1



2



3



CONCRETE REPAIRS

Repairing cracked concrete and restoring it to its original strength is a continuing maintenance problem. After three years of experimenting, a West Coast firm called Adhesive Engineering announced recently that it had a solution: a fast-setting epoxy injected under pressure into crevices. The technique works well, the company reports, not only on surface cracks, but also in filling fissures up to 4 feet deep.

Adhesive Engineering has developed its own epoxy formulas

and equipment, which it supplies to franchised contractors. Since the epoxy has a pot life of only five minutes (the cure takes place fast so that the crack doesn't have time to move) repairs are tricky and must be made by trained workmen using a special gun which feeds from two tanks and a mixing chamber.

Depending on the crack's size and the formula prescribed, repairs cost \$2 per foot and up.

Manufacturer: Adhesive Engineering, 1411 Industrial Rd., San Carlos, Calif.

CONSTRUCTION COMPUTERS

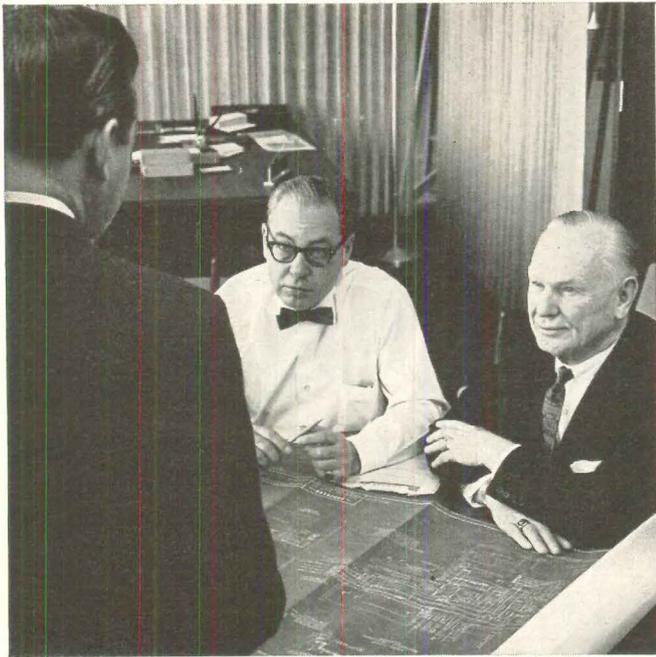
Sometime this summer IBM will offer a new package of computer programs for construction, developed from studies undertaken with the H. B. Zachry Co. of San Antonio and other contractors. The programs will be supplied free to owners or leasers of an IBM 1440 data-processing system. When it is equipped with two random access memory devices, this computer stores programs and information on as many as 20 separate construction projects of 2,000 activities each. The computer schedules work step

by step, accepts updated and modified orders, and reports on the projects' status.

The news about IBM's *Project Control System* is that the computer accepts data in two forms, the normal "arrow" and a new "precedence" diagram. The latter has the advantage of being a more direct method of scheduling, eliminating some duplicate steps necessary only to the computer's understanding of the problem.

Manufacturer: Data Processing Division, International Business Machines Corp., 112 E. Post Rd., White Plains, N.Y.

continued on page 182



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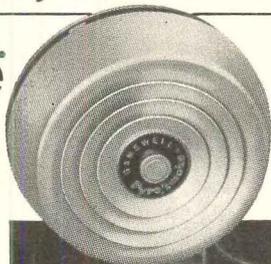
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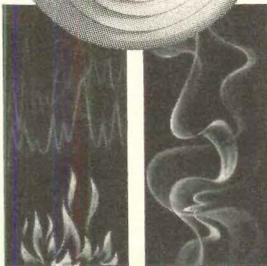
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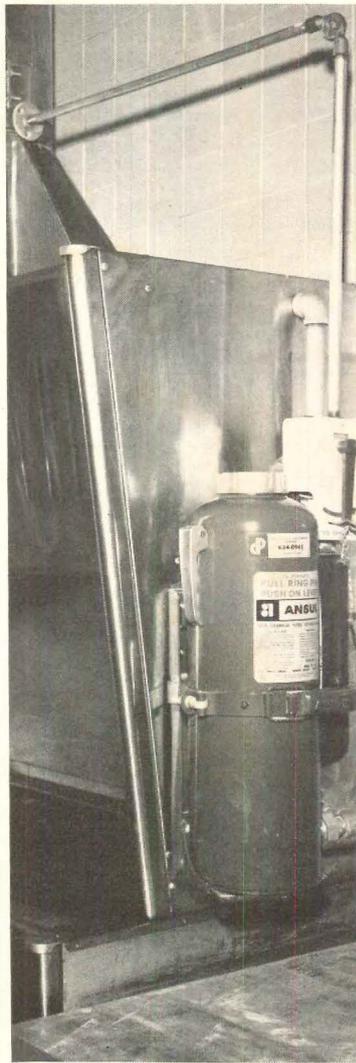


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STOVE EXTINGUISHER

The national devotion to charcoal broiled steaks and lobsters means more open fires in restaurants, hence a greater need than ever for efficient fire protection in stove hoods and ducts, the sources of most restaurant fires. Early this year Underwriters' Laboratories, Inc., approved an automatic fire extinguisher that snuffs out errant flames from the broiler. Since UL's listing, several companies have lowered fire insurance premiums for restaurants protected by the *Ansul R-101 System*.

Mounted outside the hood (see photo), the extinguisher is activated by a fusible link, and pipes dry sodium bicarbonate into the hood for discharge through three nozzles above the stove. The chemical quickly coats the inside, covering the greasy surfaces to prevent a flashback. (Unavoidably, it sifts down over the stove in the process, but cleanup takes an average of only 15 minutes, according to the manufacturer.)

The R-101 protects a hood 20 feet long and 4 feet wide and up to 40 feet of ductwork; bigger hoods require more systems. A single system, installed, costs \$400 to \$500, depending on the complexity of the piping.

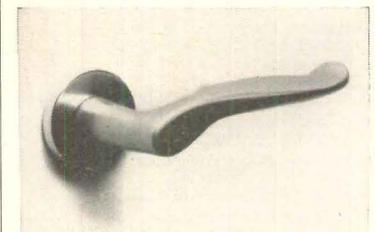
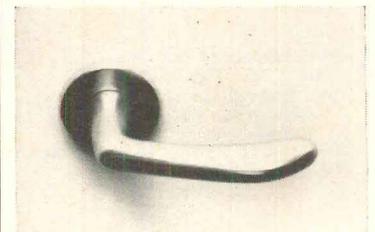
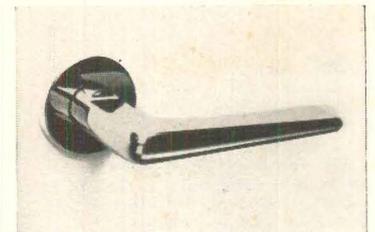
Manufacturer: Ansul Chemical Co., Marinette, Wis.

NEW LEVER HANDLES

For the past six years General Lock, Inc., has been the only U.S. source of German-made Zeiss Ikon hardware. While continuing to stock Zeiss Ikon cylinders, General Lock has now designed its own lever handles (photos), as well as companion cylinders and locks. An important feature of the new lever handles is that they do not "droop," as some levers do, but return at once to their horizontal position.

The top photograph shows the only lever General Lock makes in stainless steel (it is wrought rather than cast). The others shown (there are seven in all) are available in aluminum, brass, bronze, and white bronze. Prices run about \$10 per pair of straight lever handles and rosettes, a bit higher for the sculptured ones.

Manufacturer: General Lock, Inc., 536 So. Telegraph Rd., Pontiac, Mich.



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