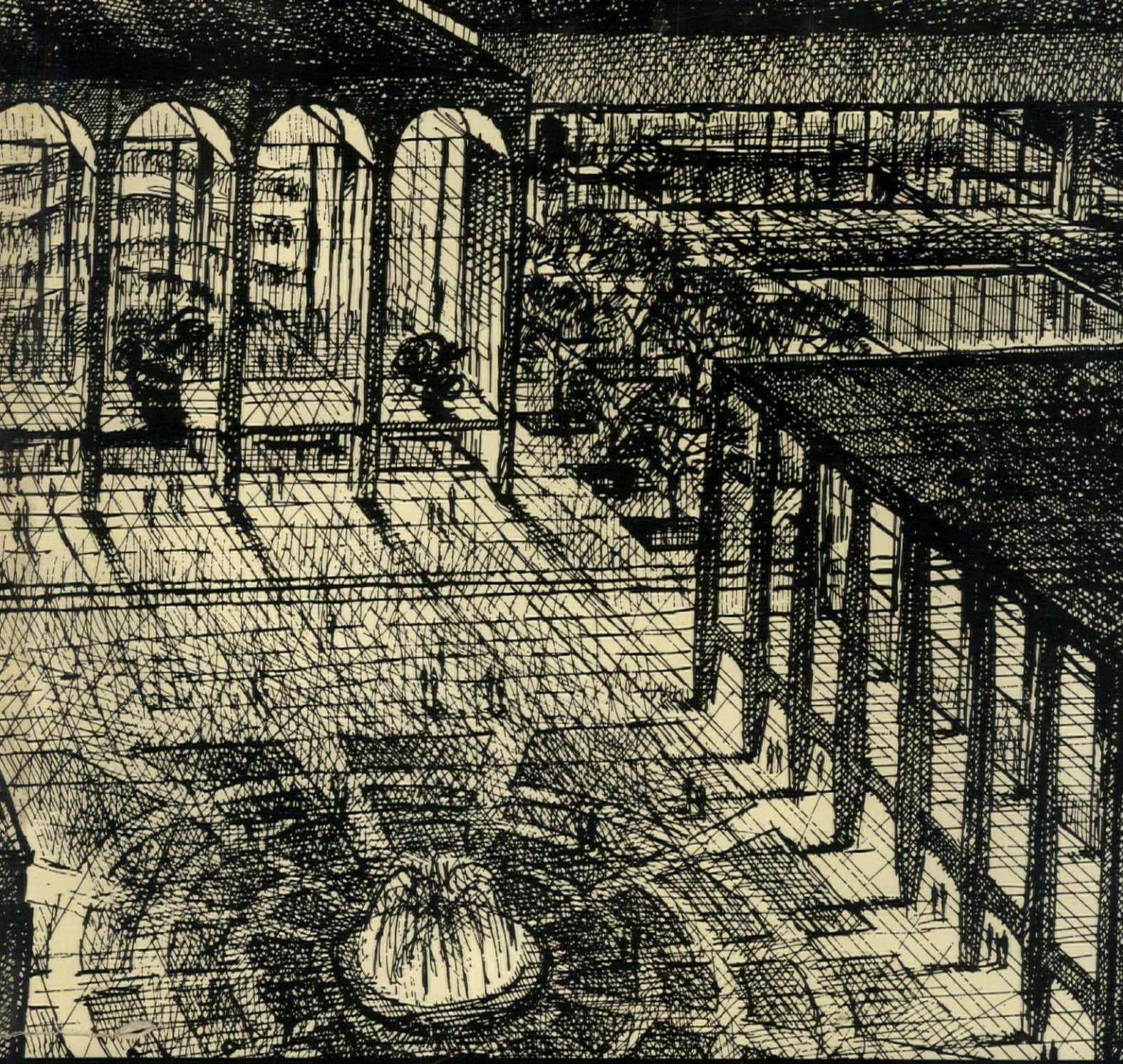


ARCHITECTURAL RECORD

2 FEBRUARY 1963 • TWO DOLLARS PER COPY

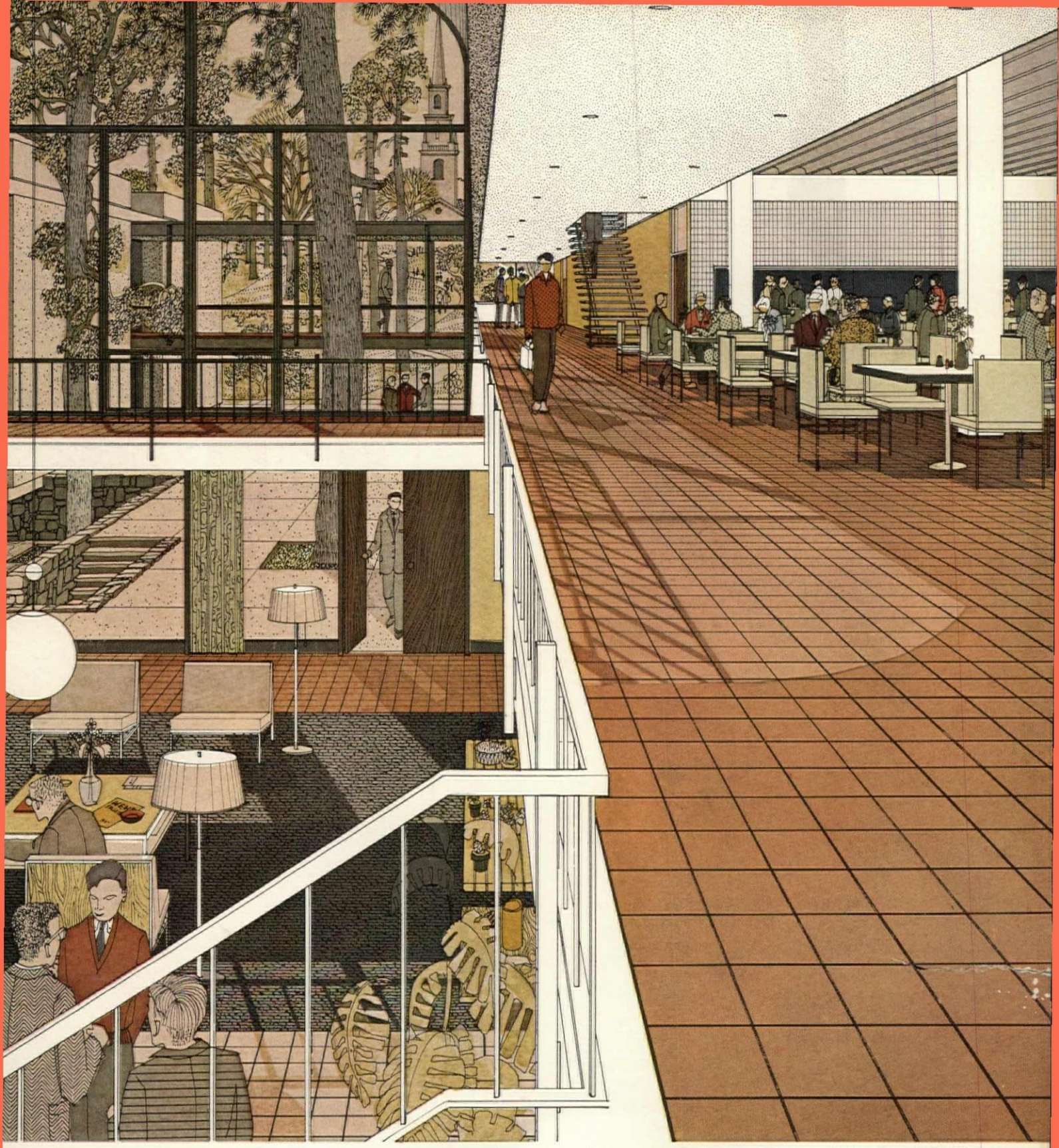
BUILDING TYPES STUDY: SCHOOLS

PLACE VILLE MARIE DESIGNED BY I. M. PEI

ARCHITECTURAL DRAWING FOR PRINTING PROCESSES

LEWIS MUMFORD: "THE UNIT OF URBAN ORDER"

FULL CONTENTS ON PAGES 4 & 5



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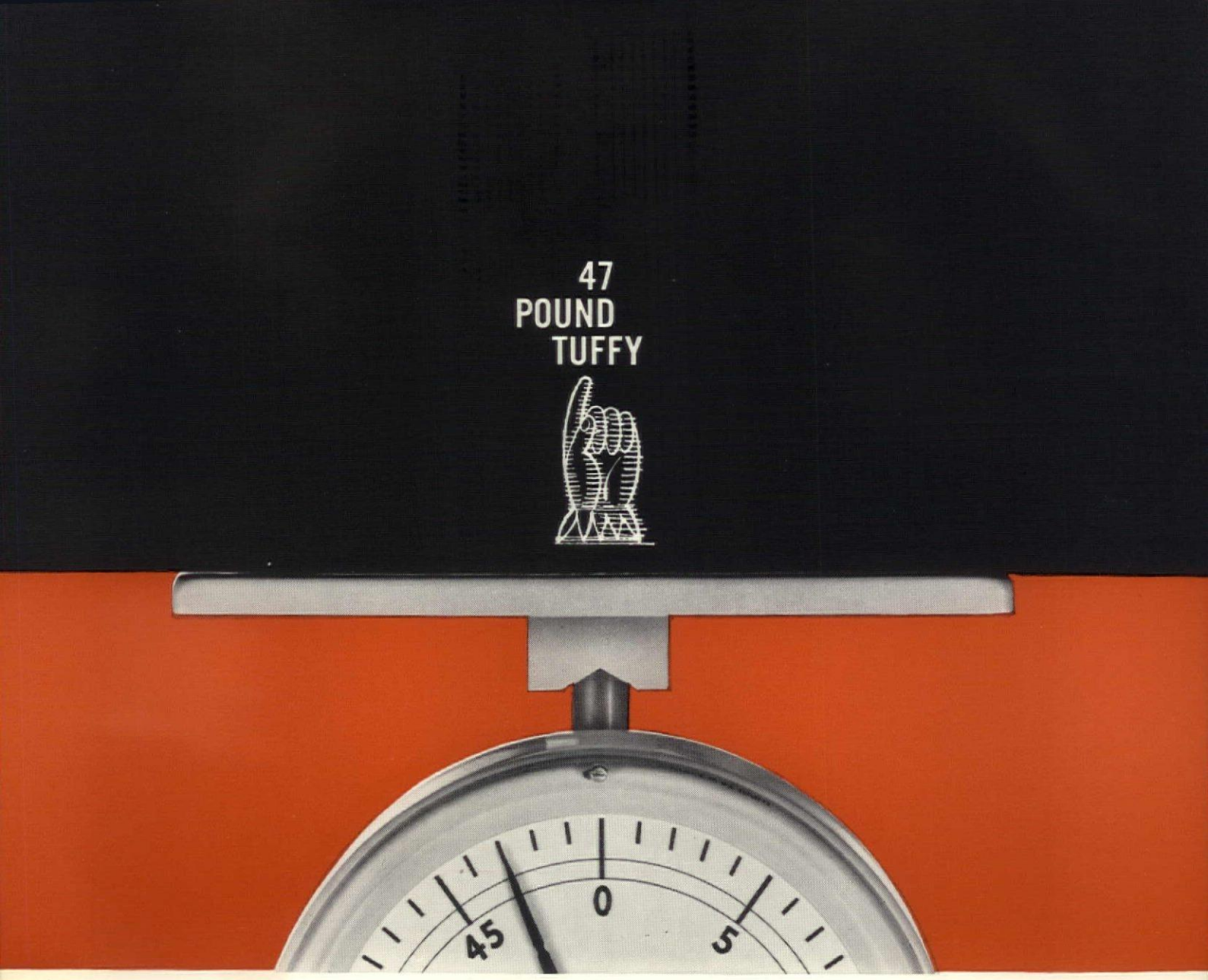

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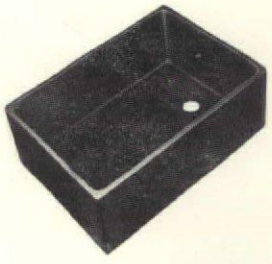

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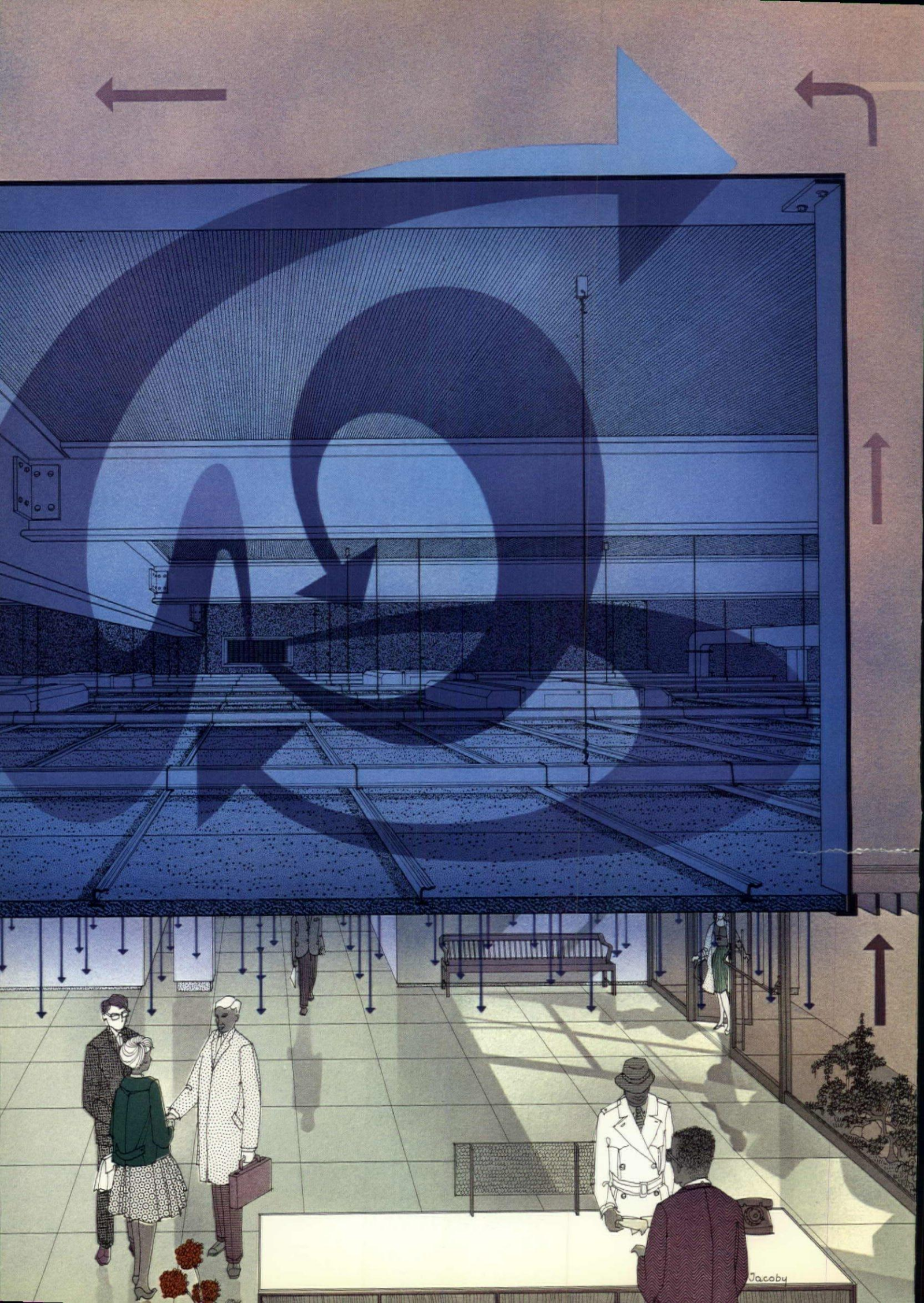
Jacoby

Tucson City Hall, Arizona. *Architects:* Friedman & Jobusch, Tucson. *Mechanical Engineer:* John Paul Jones, Tucson. *General Contractor:* The Ashton Co., Inc., Tucson. *Acoustical Cont.:* Babby Building Specialties, Inc., Tucson.

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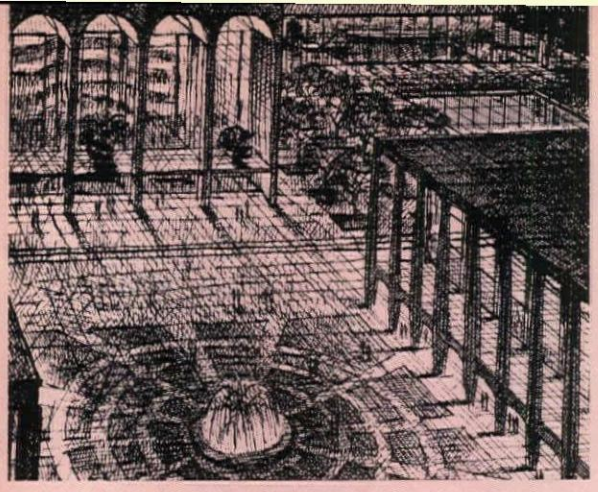
Armstrong CEILINGS / *acoustical fire-retardant ventilating*



Cover:

Perspective drawing of Lincoln Center, New York City, by Ara Derderian. Courtesy of "Town and Country"

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ARCHITECTURAL

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Architectural Engineering

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RECORD

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February 1963

Building Types Study 316: Schools

Not only more schools, but expansion and improvement of existing ones is big new need

Coming in the Record

ARCHITECTURE OF QUALITY

Too often, perhaps, the essential and inevitable concern of architects with pushing out the esthetic and technological frontiers of architecture, and the obligation of serious architectural journals to report on these developments, may seem to obscure the vast contributions to a better human environment of the many new buildings which are significant not for their innovations but for the high quality of architectural achievement represented in their architects' skillful solution of "typical" (but always unique!) client problems. To focus some special attention on such contributions, the RECORD *will group some examples from time to time in their own feature section—the first of these, next month, takes a look at some small office buildings which rank as such architecture of quality.*

BUILDING TYPES STUDY: HOSPITALS

With hospital construction at an all-time record in 1962, and prospects for a 13 per cent increase in 1963, according to Dodge economists, the Building Types Study next month will present another of the RECORD*'s series of analytical studies of hospital planning problems. A new report in the series from the U. S. Public Health Service, this one on new directions in nursery planning, leads off, and the study will also include analyses of some new general hospitals which embody important advances in planning.*

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KENTILE VINYL FLOORS

Horrors! A Handsome Garage

One of our editors, speaking in terms of architectural proprieties, said that Paul Rudolph should not have made an architectural assertion out of the New Haven Garage (page 145). In his classes at Columbia, he went on, he would tell students that a garage should speak modestly, if at all, that it is not a building type which rates high in the hierarchy of buildings. It is a necessity of our day, if it is a necessity, which should be visually suppressed, not expressed. Better still it should be put underground.

I reached back into the lower drawer of my desk, found my cynic's cap, and asked him if that wasn't a bit academic. What was Rudolph to do when his client, the City of New Haven, specifically instructed him to give the garage architectural prominence, eminence if possible, for the specific purpose of making it clear that downtown New Haven had a great big place to park, of luring shoppers off the New England Thruway, and in fact of inducing two department stores to relocate near the garage? Was he to refuse the commission, or ignore the instructions, or compromise his own artistic leanings? Or, for that matter, did the New Haven authorities have something on their side?

Well, there is no arguing with the complainant here when he contends that an architect has a real obligation to consider the visual totality of his city, to observe architectural proprieties. It did occur to me, however, that he had rather summarily dismissed the problem of the appearance of the garage in the contemporary scene. There probably are those—maybe in Detroit—who would contend that a downtown garage is a great thing for our society, for our cities, a veritable temple. Something bordering on that view was dominant in New Haven. In any case, the two-car garage in the suburban house is no longer around at the back; it is a prominent feature of the split-level façade.

When you think of what the automobile has done to the American scene, or scenery, the problem takes on seemingly impossible proportions. The parking lot, the parking garage, the used car lot, the filling station, the auto junk yard, the highway and its billboards, the elevated highway that cuts the city into pieces. Much more ubiquitous than the stable, the car barn or the freight marshalling yard. Whatever else the auto has done, it has not beautified our land.

Back to downtown: before we could really settle any question of how a garage should be expressed, or not expressed, we should have to decide on the place of the garage in the downtown center. Perhaps the garage should not be downtown at all, or perhaps only on the edge of downtown, as many have suggested. In trying to attract the auto to the downtown section, did New Haven make a mistake? Very likely, again on an academic basis. But if it did, there are plenty of other cities which have made, are still making, that mistake. If you want shoppers downtown, you must have cars downtown, and then you must have garages downtown. All very simple.

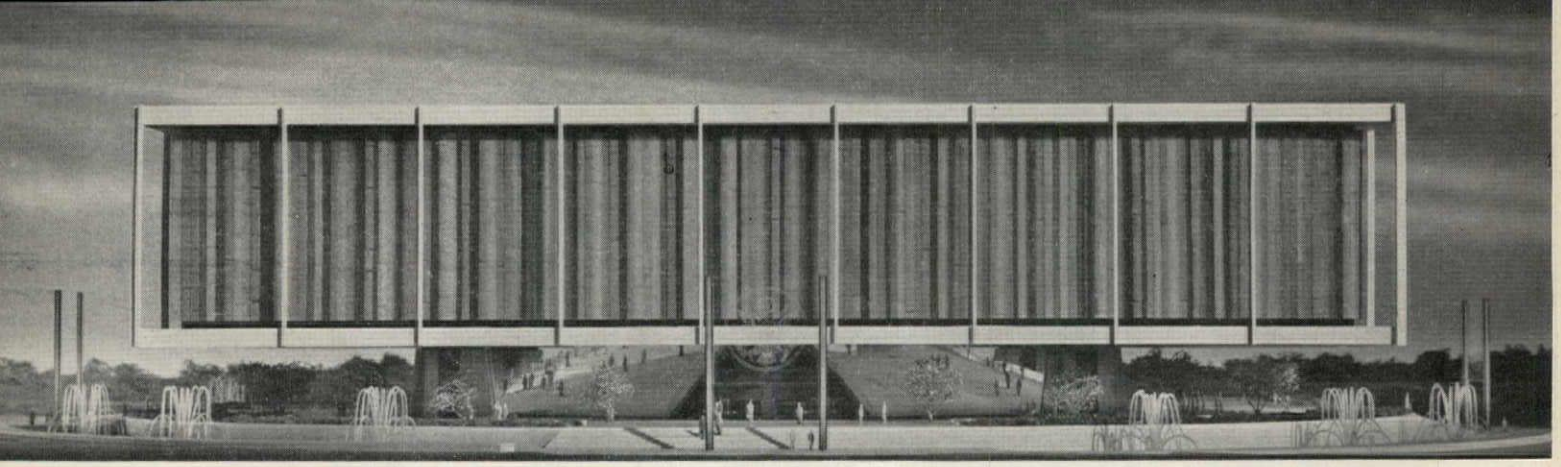
And then the garages will rise upward; the underground idea soon runs out. And then you must design them. And then you must suppress them, for a car park is not a function to be dignified by noteworthy architecture.

Well, if I haven't lost you by this time, I've lost myself. About all we can hang on to for sure is that a garage is a nuisance, any place.

To Hell's Kitchen with the garage.

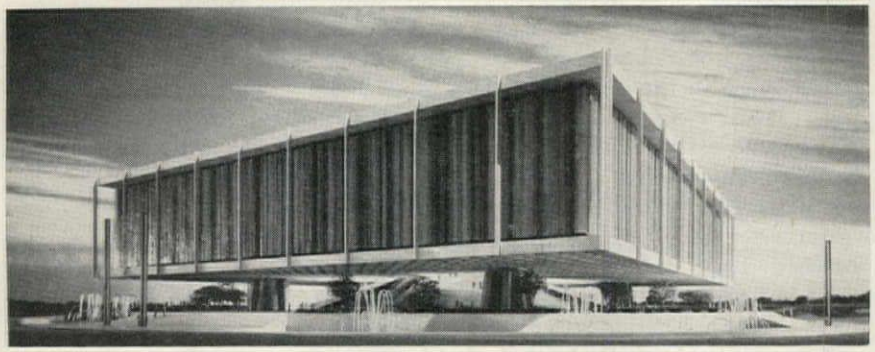
No, I'm afraid it's not that easy. Get the garage out beyond 10th Avenue and you still have to design it, or screen it with motel rooms or something. I'm afraid I could not join in any castigation of Paul Rudolph. Maybe one day we'll have all the answers. Meanwhile it's a very handsome garage.

—Emerson Goble

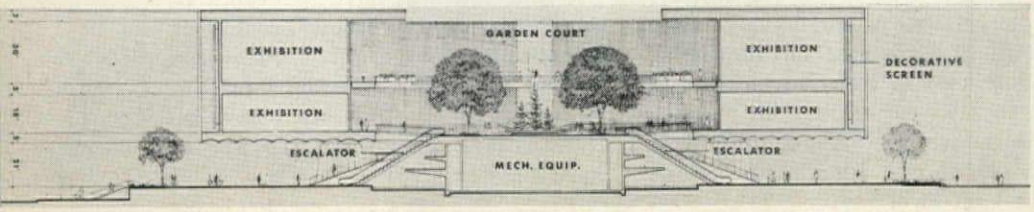


Architects, Charles Luckman Associates—design concept, Leon Deller; director of design, Richard Niblack

U. S. UNVEILS DESIGN FOR NEW YORK FAIR



Louis Checkman photos



A 330-foot-square building 66 feet high cantilevered 75 feet on all sides from four concrete pylons to support it 20 feet above ground level was revealed last month as the approved design for the Federal Pavilion to be built on a 4½-acre circular site at the New York World's Fair of 1964.

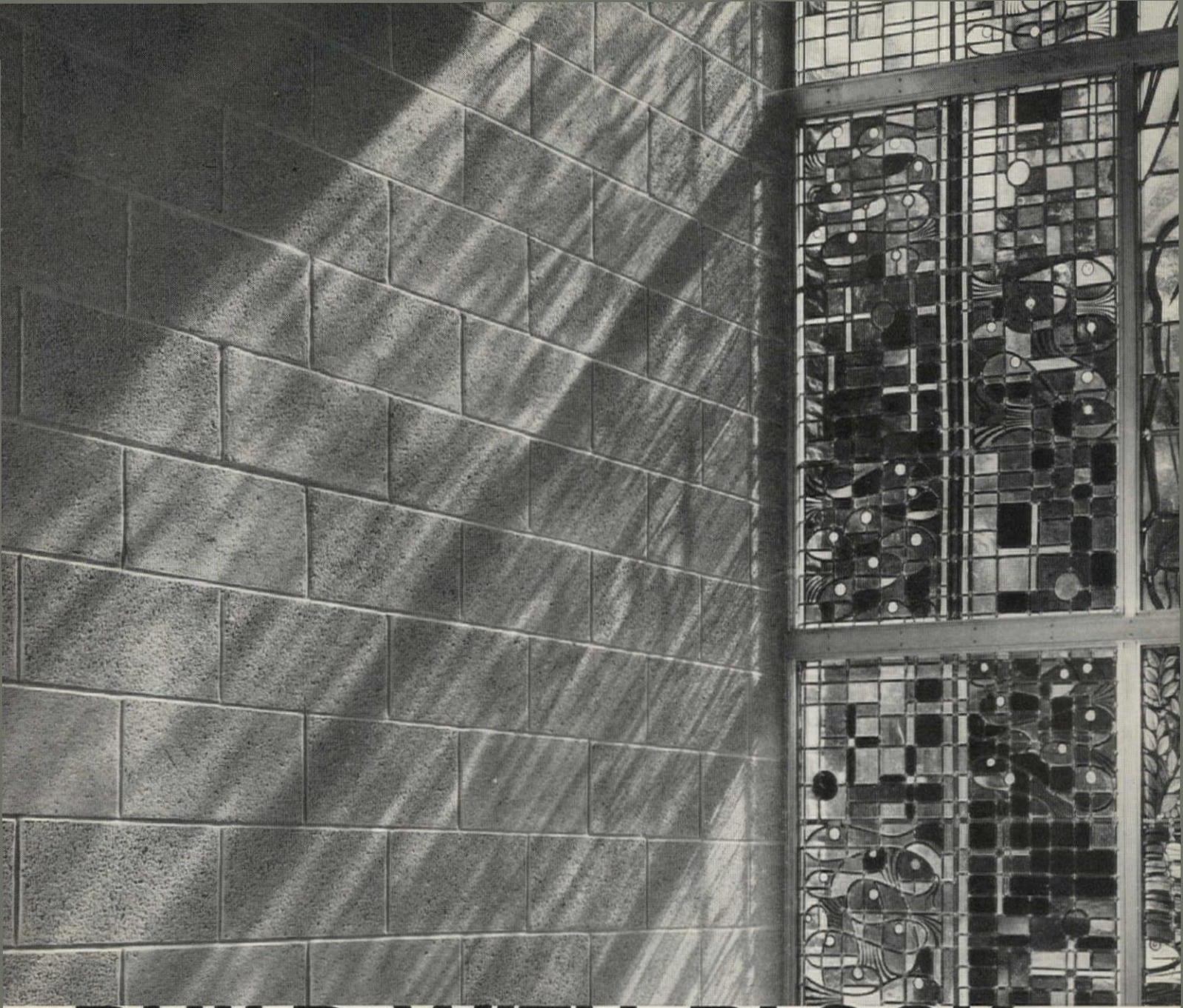
The building will surround an open garden court 170 feet square, which will serve as access point to all exhibit areas. Visitors will reach it by climbing a pyramid of steps or riding moving stairs or elevators from the plaza level. There will be two exhibit levels and a lower service level, providing a total of 150,000 square feet.

Four giant steel trusses, 174 feet long and 60 feet high, are carried by the pylons to form the pavilion's inner walls; and four even more gigantic trusses, 310 feet long and 60 feet high, form the outer walls.

Present plans call for enclosing the entire exterior with "translucent walls fabricated of thousands of pieces of colored glass" assembled like stained glass and installed as a series of panels probably set in metal frames. Inner walls would be enclosed with vertical wood slats.

The design was selected from 28 preliminary presentations submitted by Charles Luckman Associates, Los Angeles and New York architectural and engineering firm, and approved November 13 by "a group representing the U. S. Commission, Department of Commerce, and General Services Administration." Release was delayed because of the New York newspaper strike.

Severud, Elstad, Kruger Associates are the structural engineers; Slocum and Fuller, Inc., mechanical and electrical engineers; and Del E. Webb Corporation, prime contractor.



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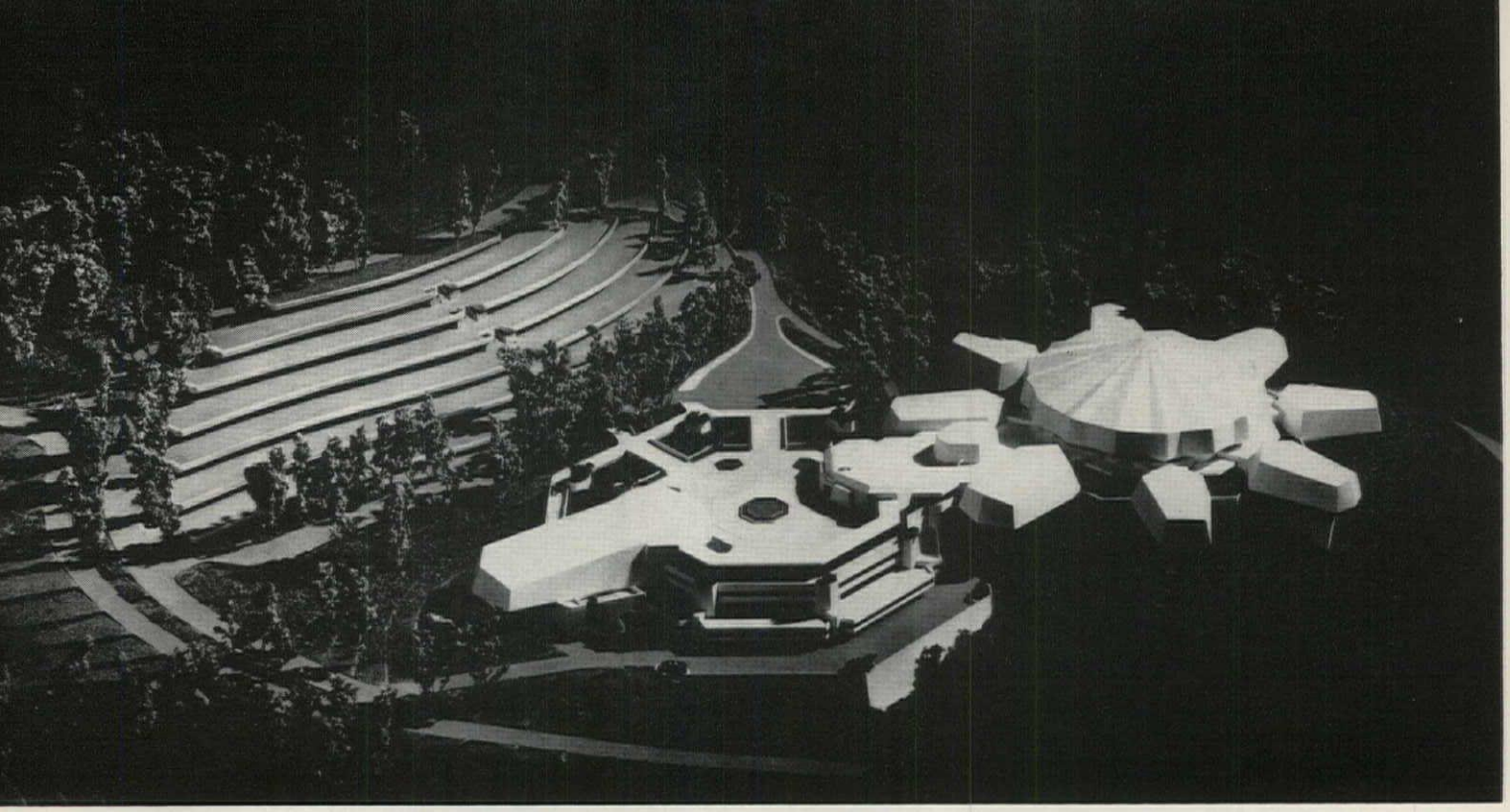
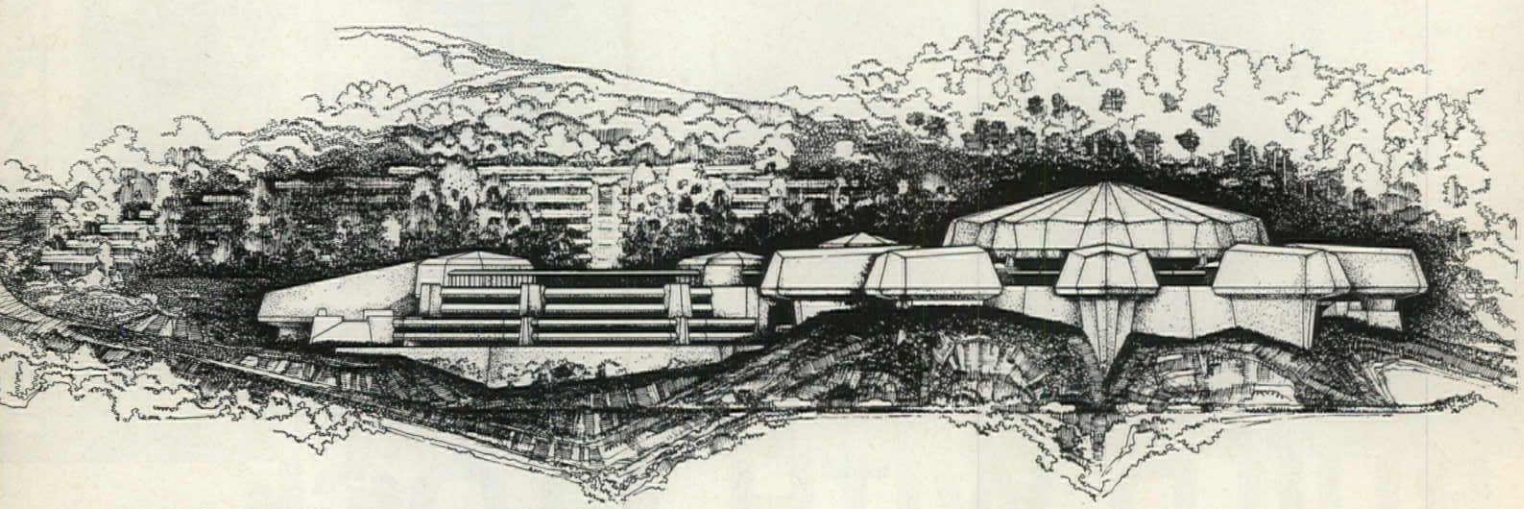
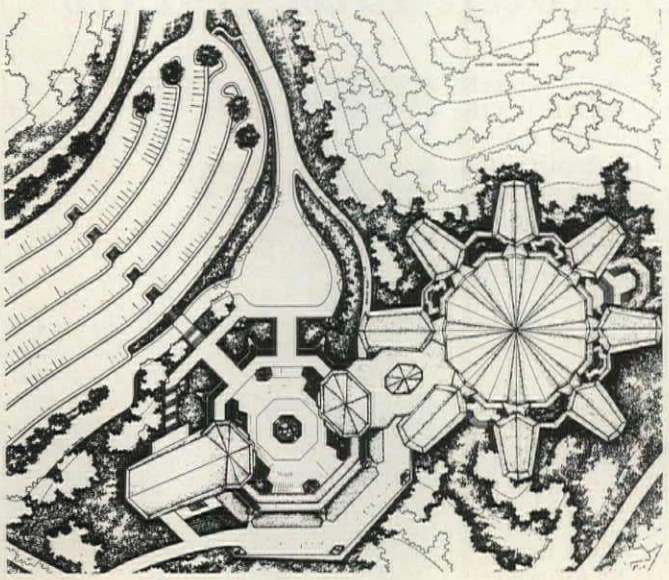


Winning design by Anshen and Allen for Lawrence Hall of Science

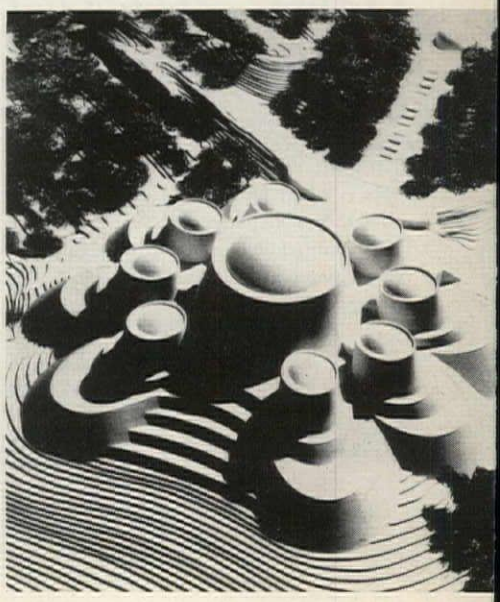


Anshen and Allen design: west elevation

Anshen and Allen design: roof plan



Entry of Eero Saarinen & Associates



ANSHEN AND ALLEN WIN CLOSED COMPETITION

Architects Anshen and Allen of San Francisco have won a closed architectural competition authorized last February by the University of California Regents for the design of the University's new Lawrence Hall of Science. The center, which will serve the nation through research in science education, will honor the late Dr. Ernest O. Lawrence, Nobel Laureate, inventor of the Cyclotron.

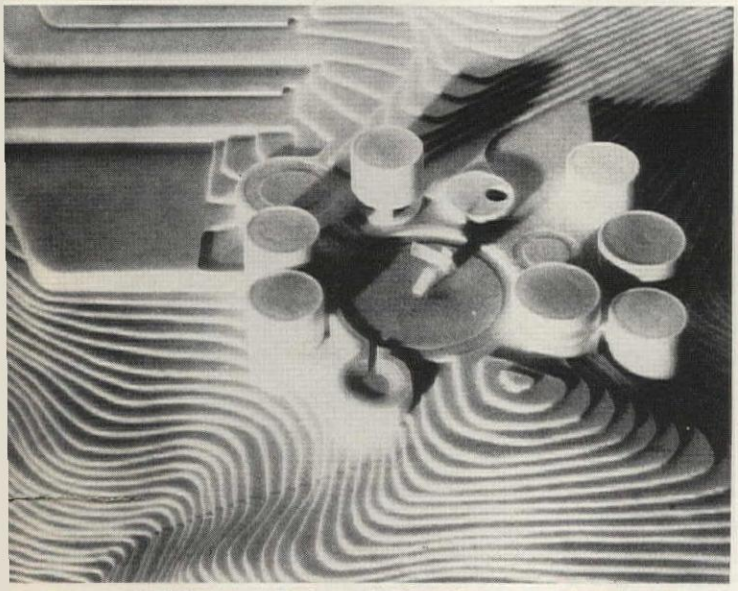
In addition to Anshen and Allen, competitors were Vernon DeMars, Berkeley; Louis I. Kahn, Philadelphia; Eero Saarinen & Associates, Hamden, Conn.; and Skidmore, Owings & Merrill, San Francisco.

Jury members for the competition were architects Pietro Belluschi, Richard M. Bennett and Clarence W. W. Mayhew; and University regents Donald H. McLaughlin and Edwin Pauley.

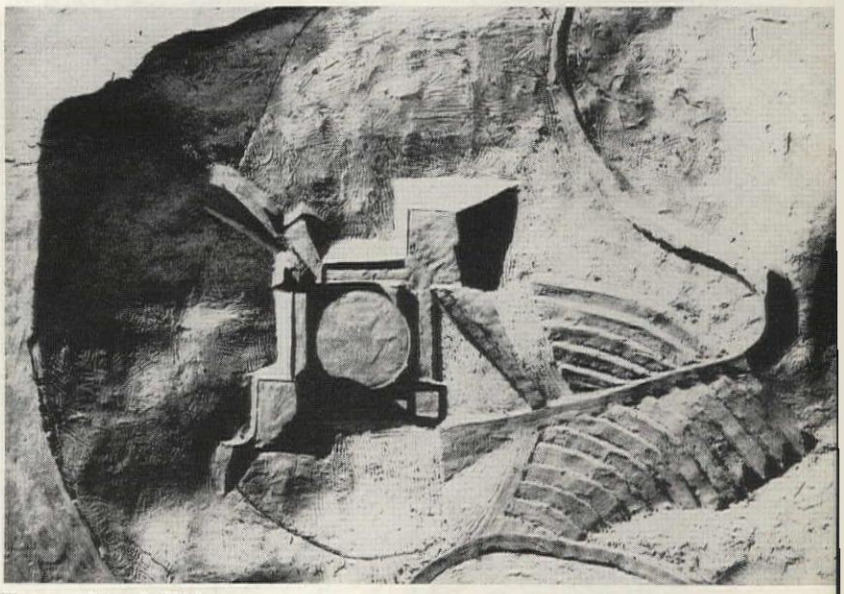
Initial activities of the center will be aimed primarily at improving instructional capabilities of high school and college science teachers and developing improved teaching methods and materials. Five major inter-related programs, as outlined by Dr. Harvey E. White, Hall of Science director, will aim for improved science education: (1) science teacher training; (2) programed teaching; (3) research and development of new visual aids and equipment; (4) production of television science films, experiments in television teaching techniques; (5) a science information center which will provide schools—and the public—with science information and materials.

Sited on Vista del Cerro in the Berkeley Hills, the Center will overlook the Lawrence Radiation Laboratory, Berkeley campus and the San Francisco Bay region. When fully completed, the project will include: the great 200-foot Planetary Space Hall; eight smaller halls for programed instruction; science education center beneath a central terrace, housing classrooms, labs, workshops, TV studios, offices, small auditorium, cafeteria; a 600-seat auditorium with rotating stage; science information center; and Lawrence Memorial Hall. Parking for 750 cars will be on a tiered slope east of the Hall of Science.

Construction on the $4 million first phase of the Lawrence Hall of Science is to begin late this year.

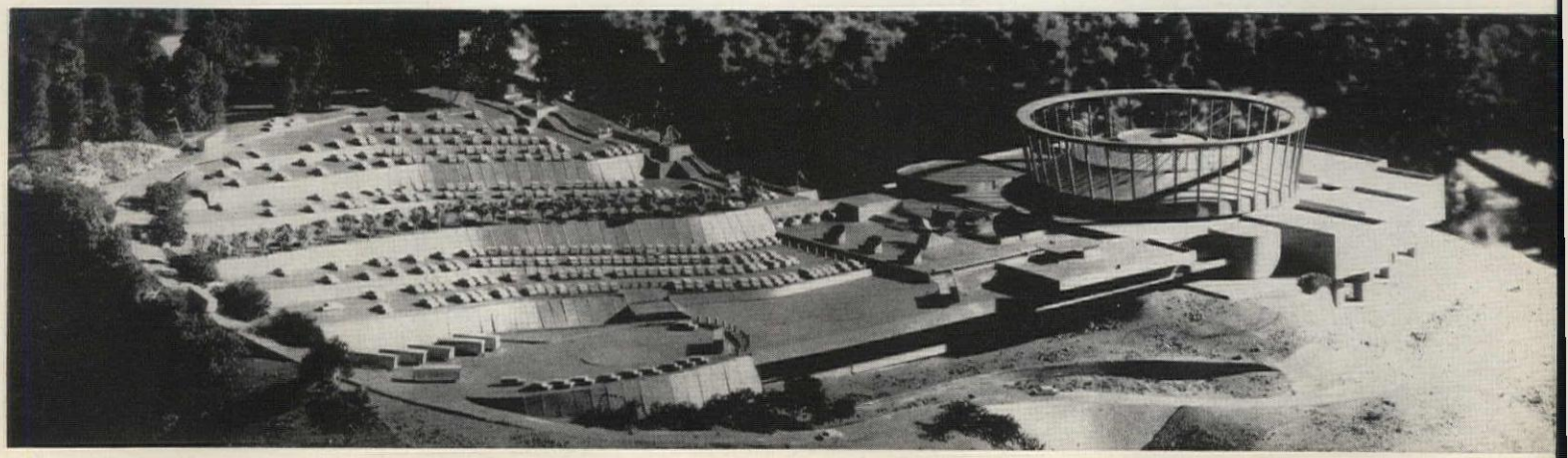


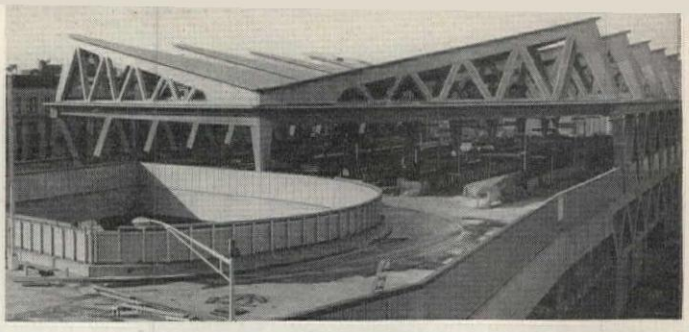
Entry of Skidmore, Owings & Merrill (San Francisco)

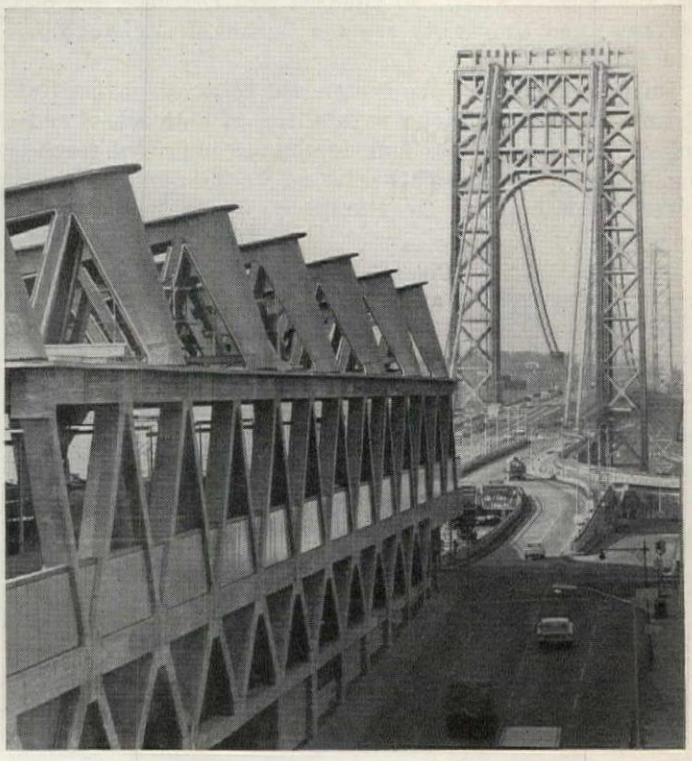


Entry of Louis Kahn

Entry of Vernon DeMars







NERVI'S BUS STATION OPENS IN NEW YORK

Dedication ceremonies were held last month for the new $14 million George Washington Bridge Bus Station, which is expected to provide for almost 2,000 buses and 50,000 passengers daily traveling between upper Manhattan and northern New Jersey.

The two-block-long, three-level bus station straddles the depressed 12-lane George Washington Bridge Expressway. Its third level, immediately below the roof, accommodates commuter buses; second level, main passenger concourse; lower level, long-haul buses and a passage to the New York City Subway System.

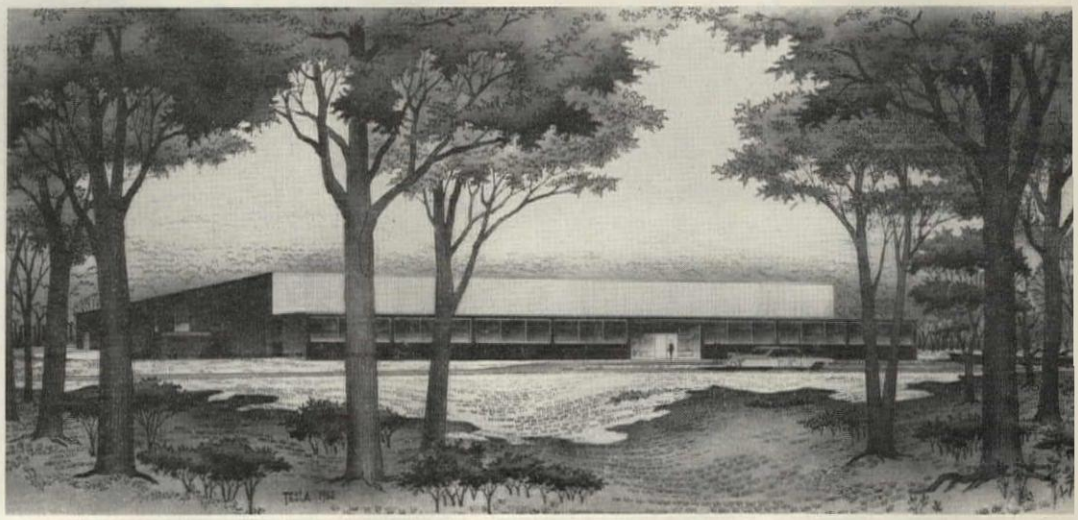
Conceptual engineering design of the structure was by noted Italian engineer, Dr. Pier Luigi Nervi. The Port Authority's engineering staff worked under the direction of chief engineer John M. Kyle; planning was by Port Development director Roger H. Gilman. Contractors were W. J. Barney Corp. with William L. Crow Construction Co.

The project's roof comprises 26 triangular sections, poured in place, 14 of which slope upward from a row of columns in the center of the building. Sides of the raised roof sections and bus station itself are exposed concrete structural members forming openings for ventilating bus platforms and expressway beneath. Open concrete trusses visually complement the steel cross bracing in the George Washington Bridge towers.

At the dedication, New York City Mayor Robert F. Wagner paid tribute to "Signor Nervi, who in this very functional but beautiful structure has added his name to those of many other world-famous architects whose genius is reflected in the great buildings and facilities in our city . . . New York City is becoming a living museum of modern architecture . . ."

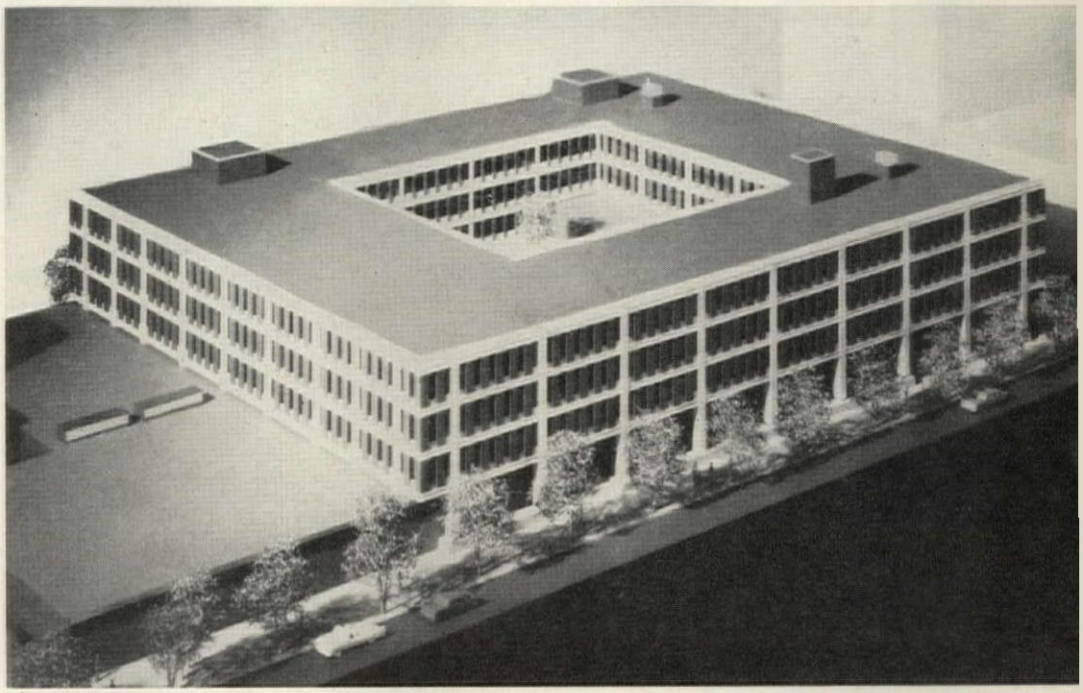
First Building for Industrial Park In Connecticut

Marcel Breuer designed the new Torrington Manufacturing Company's Machine Division Plant, the first planned for a new Industrial Park in Torrington, Conn. Set on a heavily-wooded site on Route 8, the 71,000-square-foot, one-story building will have a structural steel frame and a skin of porcelainized white aluminum, with black brick and glass on the front office section. The plant will be completed late this year.



New High School For New York City

Construction on a new academic high school for New York City's west side will begin this spring and completion is expected by mid-1965. Charles Luckman Associates are architects. The 42-classroom school will have 254,000 square feet of floor space and a 26,000-square-foot playground for an estimated 2,700 students. The four-story structure will have an exposed fireproof concrete frame and brick facing with abundant use of glass. An interior court, beginning at the second floor, will provide landscaping and a light, pleasant vista for classrooms and corridors. Plans call for a large boys' gymnasium equipped for basketball with folding bleacher seats for 900 spectators and two smaller gyms for girls.



School for Retarded To Have Residential Character

A total of 29 units planned in the character of a residential community are to comprise Woodbridge State School for 1,000 mentally retarded male and female residents in Woodbridge Township, N.J. Project includes 20 hexagonal cottages, a triangular, two-story hospital, buildings for recreation and food service. Associated architects are Vincent G. Kling and Diehl and Stein. Vogelback and Baumann are mechanical and electrical engineers; Severud-Elstad-Krueger and Associates, structural engineers.

Lawrence S. Williams, Inc.


THE BEST IDEAS
ARE MORE EXCITING
IN CONCRETE

CURVED PANELS OF PRECAST CONCRETE CAPTURE ADDED SPACE

...PROVIDE A SHINING NEW LANDMARK FOR FRANKLIN SQUARE

A straight line is the exception in Philadelphia's new all-concrete Police Administration Building. Designed for diagonal views, it overlooks one of the original town squares laid out by William Penn. And it's one of the first sights for visitors entering the city from the Benjamin Franklin Bridge.

For such an imposing structure, concrete was the natural choice. Precast concrete panels were readily designed to follow the curve of the circular plan . . . a plan which provides flexibility and unusually high usability of office space. Taking full advantage of concrete's great strength, all panels are working sections, 3 stories in height. They bear loads as well as enclose space.

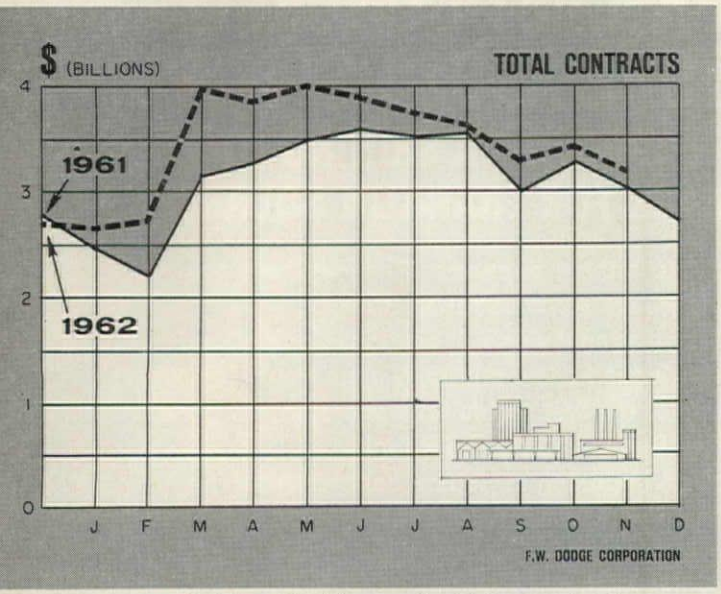
All exterior surfaces are finished with concrete containing white portland cement and white quartz. Even from a distance, the frosty sparkle adds dimension to the fresh beauty of this monument to civic progress.

For complete freedom of both form and finish, architects find concrete ideally suited for important buildings of all types.

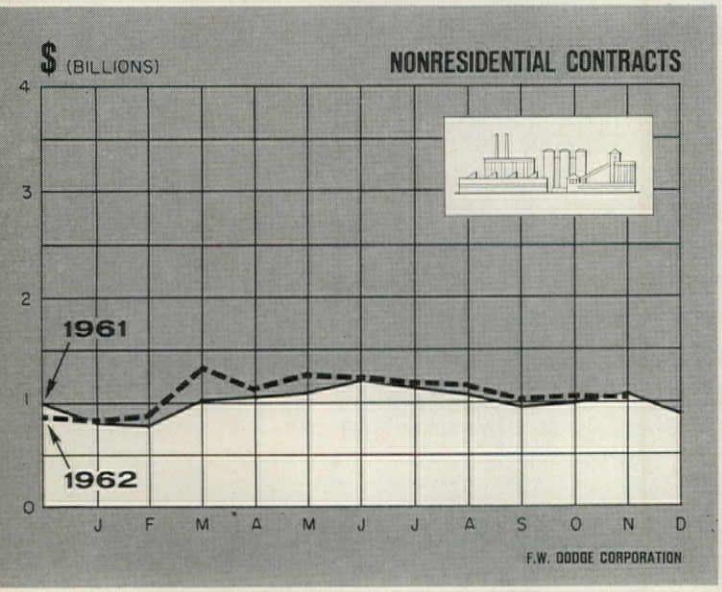
PORTLAND CEMENT ASSOCIATION

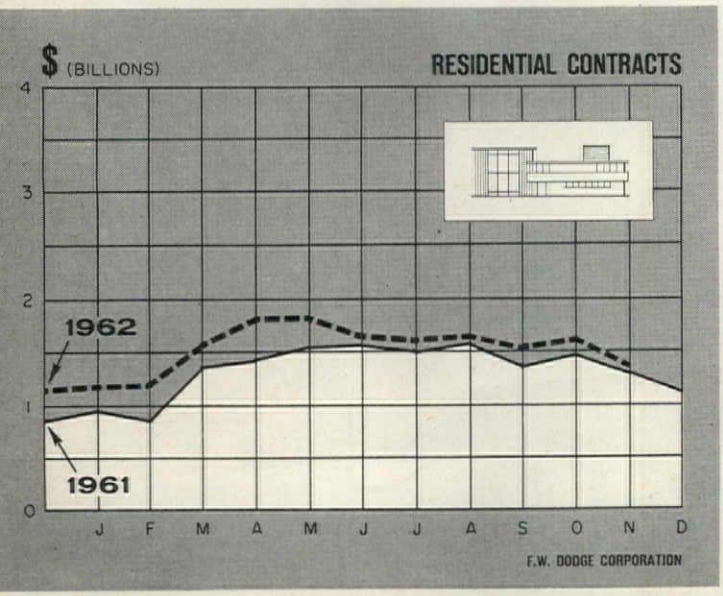
A national organization to improve and extend the uses of concrete

City of Philadelphia Police Administration Building, Philadelphia, Pennsylvania. Geddes, Brecher, Qualls, Cunningham, Architects. D. Bloom and A. E. Komendant, structural consultants.



Total contracts include residential, nonresidential, heavy engineering contracts





STORE BUILDING: ALL CAUGHT UP, BUT NOT FOR LONG

This article is based partly upon a recent research report by the McGraw-Hill Department of Economics

The postwar expansion in store building was impressive, and for good reason. There has been an equally impressive growth in the size of our consuming public, as well as a healthy, year-by-year improvement in their ability to buy. This basic upward trend in total consumer demand, coupled with two other important factors —a general shortage of retailing capacity right after the war, and a high concentration of existing store space in what soon turned out to be the wrong places—led to the dramatic rise in commercial building in the early fifties.

During the war, retailers (like most other businessmen) had to curtail new construction. At the time this was not much of a problem, since consumer goods were scarce and there was little need for additional space. Then, as consumer demand burst free of rationing, retailing capacity soon proved to be woefully inadequate. Storekeepers hastened to refurbish and expand; new stores began to blossom everywhere.

At the same time, more aggressive sellers found it profitable to follow the consumer out to the suburbs where he preferred to do much of his spending. Shopping centers of all sizes sprang up in suburban developments throughout the United States, and by 1961, according to one estimate, there were 5,500 of these self-contained store-universes doing 25 per cent of total retail sales (excluding autos), compared to less than 1 per cent in the late forties.

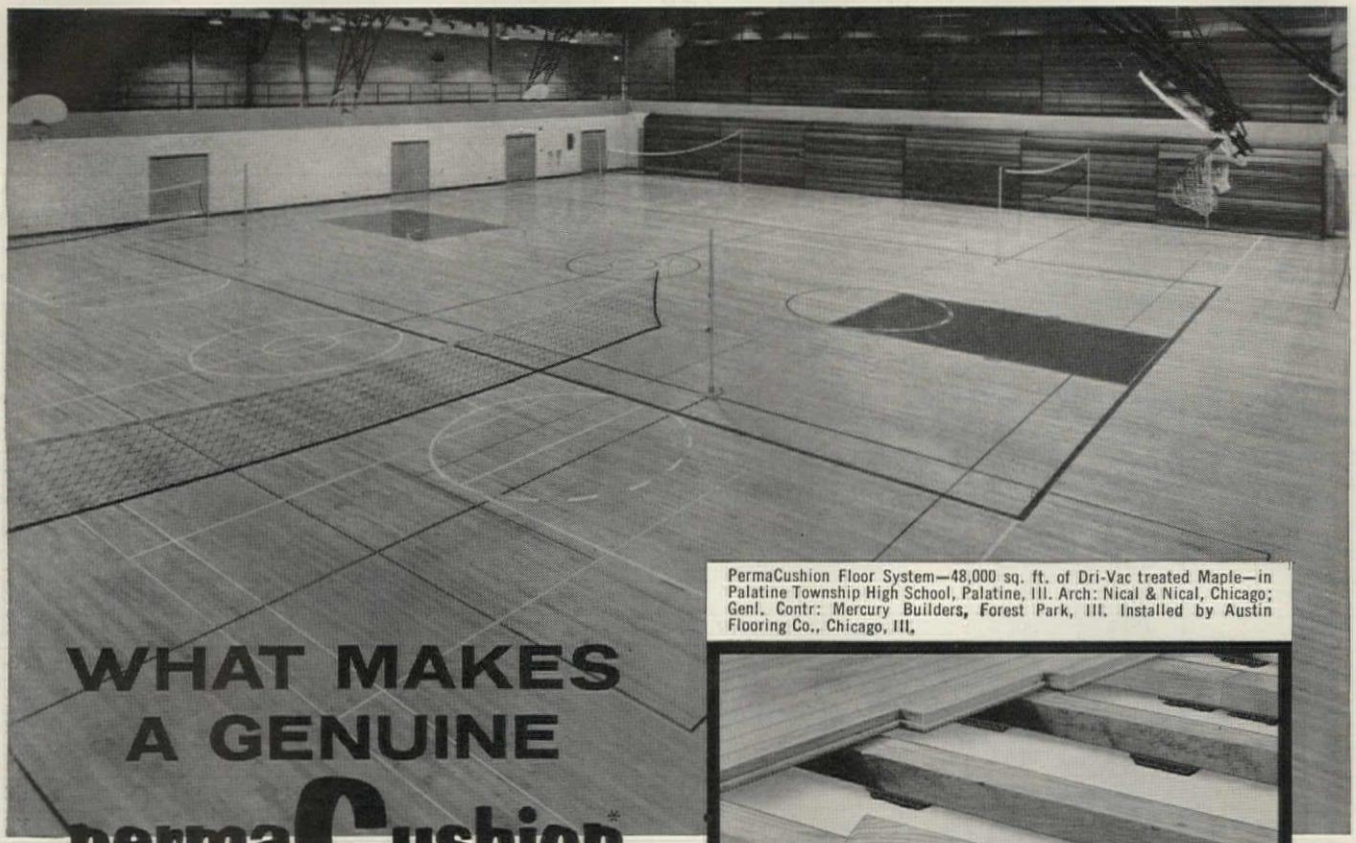
The catch-up and relocation phases of store building reached peak rates during the early part of the fifties. Over this period the average annual gain in retail construction volume exceeded 8 per cent. Then, as the backlog of store building needs was worked down, annual growth in new construction settled back to a more normal rate. By the mid-fifties, retail building had established a relationship with the volume of residential building which has held since that time as though the two were tied together (which in quite a real sense, they are).

Although the next year or two should show about the current 3 per cent annual growth in the volume of retail construction, there is good reason to expect an acceleration in the years which follow, boosting the annual increase to an average of something like 6 per cent for the decade ahead. The biggest single factor behind this resurgence in the demand for retail outlets is the anticipated growth in the rate of family formation and residential construction over these years. Now that we are beginning to see the high postwar birth rates reflected in current marriage rates, it is clear that expanding family formation will again put pressure on existing retail facilities.

Along with expansion and relocation of stores themselves, changing merchandising methods, with increasing emphasis on displays and packaging, have led to a need for more floor space per dollar of sale. In 1955, department stores averaged $100 of sales for every 102 square feet of floor space. By 1960 it took 122 square feet to produce the same sales volume.

At present, store space is being used at near capacity. The mounting pressures of retail demand should bring a wave of building which by 1970 will raise the annual volume to half again the current rate.

George A. Christie, Economist
F. W. Dodge Corporation
A McGraw-Hill Company



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RESILIENT PADS attached to the underside of sleepers Designed and compounded of water-proof, non-oxidizing, synthetic rubber, unaffected by heat or cold to provide the correct amount of resiliency. Each pad acts as a bellows, inducing continuous air circulation when floor is in use.

SLEEPERS of select Douglas Fir, cut to uniform four-foot lengths to prevent twisting and end joint separation. DRI-VAC treated with Woodlife to resist moisture, rot, termites, insect and fungi attack.

FLOORING milled from top-quality Northern Hard Maple, world's finest flooring material. Extra thick — $^{33}/_{32}$" — to provide strength and more wearing surface above the tongue, plus an additional area to resist compression.

POWERNAILING at an exact 45° angle, for *maximum* holding power, prevents splitting of flooring and hammer marks.

INSTALLATION authorized *only* by competent, experienced and reputable flooring contractors.

GUARANTEED materials, installation and performance by the contractor and the manufacturer. Double assurance for a trouble-free floor that lasts the life of the building.

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For more data, circle 6 on Inquiry Card

Construction Cost Indexes

Presented by Clyde Shute, Director of Statistical Policy, Construction News Div., F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assoc. Inc.

Labor and Materials: U.S. average 1926-1929 = 100

NEW YORK

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1949	243.7	240.8	242.8	246.6	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	274.9	271.8
1952	278.2	274.8	271.9	265.2	262.2
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
1956	310.8	302.2	320.1	328.6	324.5
1957	318.5	308.3	333.1	345.2	339.8
1958	328.0	315.1	348.6	365.4	357.3
1959	342.7	329.0	367.7	386.8	374.1
1960	351.6	337.2	377.7	395.8	380.6
1961	362.5	343.0	398.2	422.4	397.0
September 1962	378.4	356.2	421.8	449.7	419.6
October 1962	377.7	355.3	421.7	449.6	419.4
November 1962	377.7	355.3	421.7	449.6	419.4
	% increase over 1939				
November 1962	205.8	190.3	222.6	237.0	222.4

ATLANTA

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
1952	218.8	221.0	212.8	210.1	214.3
1953	223.0	224.6	221.3	221.8	223.0
1954	219.6	219.1	233.5	225.2	225.4
1955	225.3	225.1	229.0	231.5	231.8
1956	237.2	235.7	241.7	244.4	246.4
1957	241.2	239.0	248.7	252.1	254.7
1958	243.9	239.8	255.7	261.9	262.0
1959	252.2	247.7	266.1	272.7	273.1
1960	259.2	253.3	274.7	282.5	278.8
1961	256.7	249.7	275.8	284.5	275.8
September 1962	264.9	257.2	285.4	295.6	283.7
October 1962	266.3	259.6	286.6	295.8	284.3
November 1962	266.3	259.6	286.6	295.8	284.3
	% increase over 1939				
November 1962	208.6	212.4	201.4	203.7	200.2

ST. LOUIS

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.0	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
1956	288.7	280.3	287.9	299.2	293.3
1957	292.0	283.4	295.2	307.1	302.9
1958	297.0	278.9	304.9	318.4	313.8
1959	305.4	296.4	315.0	329.8	323.9
1960	311.4	301.0	322.2	337.2	329.2
1961	315.1	302.0	329.0	346.8	332.2
September 1962	324.4	309.7	343.5	362.3	343.7
October 1962	323.0	307.9	343.2	362.2	343.4
November 1962	321.6	306.1	342.9	362.0	343.0
	% increase over 1939				
November 1962	191.8	186.1	188.9	202.2	188.2

SAN FRANCISCO

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
1952	250.2	245.0	245.6	248.7	249.6
1953	255.2	257.2	256.6	261.0	259.7
1954	257.4	249.2	264.1	272.5	267.2
1955	268.0	259.0	275.0	284.4	279.6
1956	279.0	270.0	288.9	298.6	295.8
1957	286.3	274.4	302.9	315.2	310.7
1958	289.8	274.9	311.5	326.7	320.8
1959	299.2	284.4	322.7	338.1	330.1
1960	305.5	288.9	335.3	352.2	342.3
1961	308.7	290.2	345.1	362.9	350.2
September 1962	324.2	305.1	366.3	383.6	368.1
October 1962	323.5	304.2	366.1	383.4	367.3
November 1962	321.8	302.3	365.6	382.6	366.7
	% increase over 1939				
November 1962	204.7	204.4	211.4	213.9	214.8

Cost comparisons, as percentage differences, for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

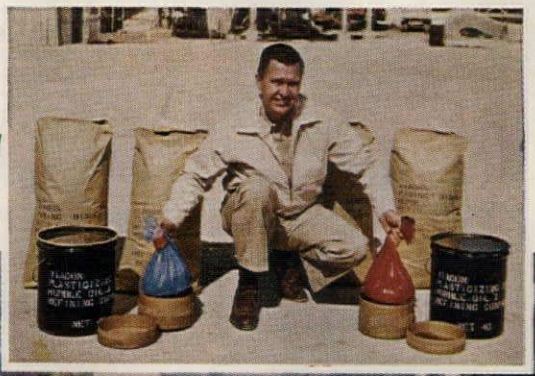
Conversely: costs in B are approximately 14 per cent lower than in A.

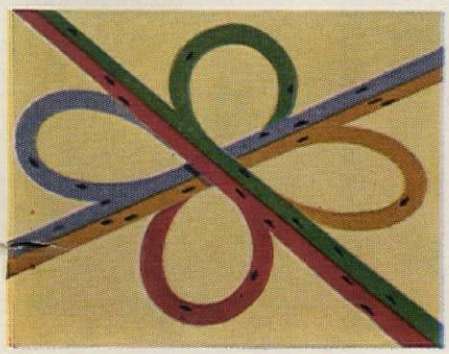
$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

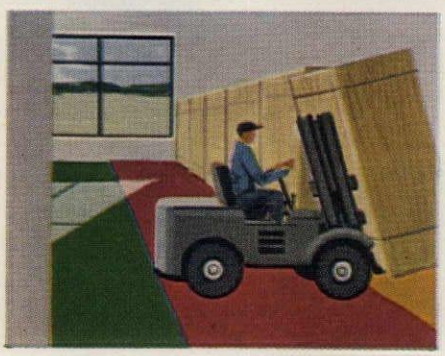
Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

Here's all you need to pave in COLOR!





Promotes highway safety



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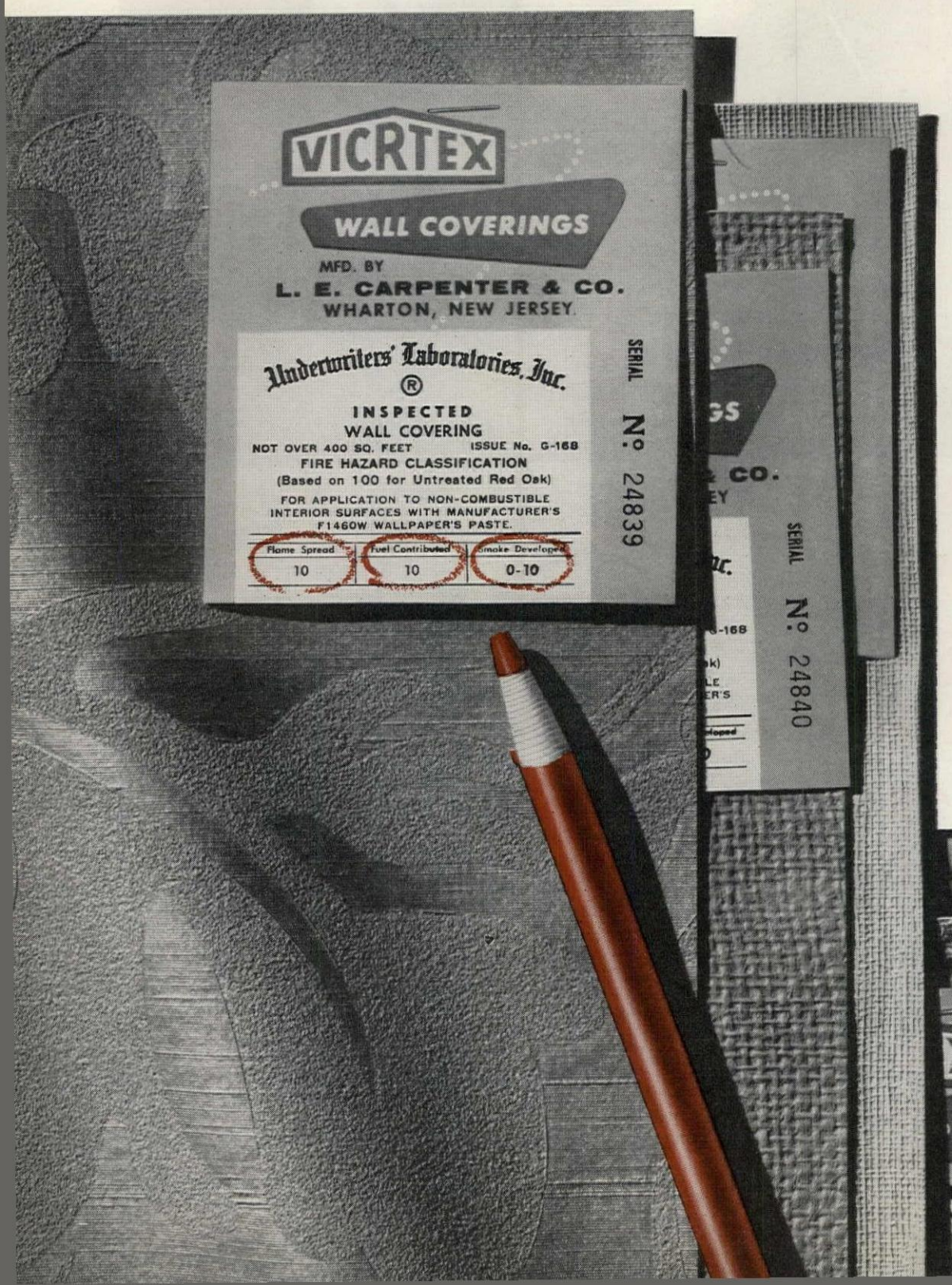
These U/L ratings prove you get more than just durable beauty with VICRTEX® V.E.F.* wallcoverings



(UL) and Gov't. tests verify these important fire retardant findings:

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*vinyl electronically fused

—Drawn for the RECORD *by Alan Dunn*

"We funneled them in all right—now, how do we funnel them out?"

$25,000 RUBEROID COMPETITION USES MANHATTAN URBAN RENEWAL PROJECT

The Fifth Annual $25,000 Ruberoid Design Competition this year challenges architects to seek a fresh design approach to middle-income living through solving the problem of a 16-acre waterfront East River Urban Renewal Project in New York City. Its use—approved by Mayor Robert F. Wagner—marks the first time a New York City urban renewal area will be the subject of a major national design competition.

As announced by the Mayor and Milton Mollen, chairman of the New York City Housing and Redevelopment Board, official cooperation will include consideration by the Board of the winning concept for use in final planning of the project. The Board has also agreed, provided necessary funds and approvals for carrying out the project are granted, to undertake to arrange for the employment of the winning architect on the project.

The five-block East River Urban Renewal area is bounded by East 106th St., Franklin D. Roosevelt Drive, East 111th St. and First Ave. in Manhattan. Located in a section of the city which contains a heavy proportion of low income housing, it has been designated by the City Planning Commission for renewal with middle income housing to improve economic balance in the community. The area itself contains relatively sparse residential occupancy and varied non-residential uses.

New housing is to be financed under provisions of the city's Limited Profit Housing Companies program. Entrants must base solutions on the requirements of that program, as well as the standards of sound urban renewal planning.

Members of the jury are: Chairman Albert Mayer, F.A.I.A., New York City; Harry Weese, A.I.A., Chicago; Milton Mollen; David A. Crane, A.I.A., director of Land Planning and Design, Boston Redevelopment Authority; Sir Leslie Martin, M.A., F.R.-I.B.A., Cambridge University; Lewis E. Kitchen, Lewis Kitchen Realty Company, Kansas City; and Herbert J. Gans, research associate professor of City Planning, University of Pennsylvania. B. Sumner Gruzen is professional adviser.

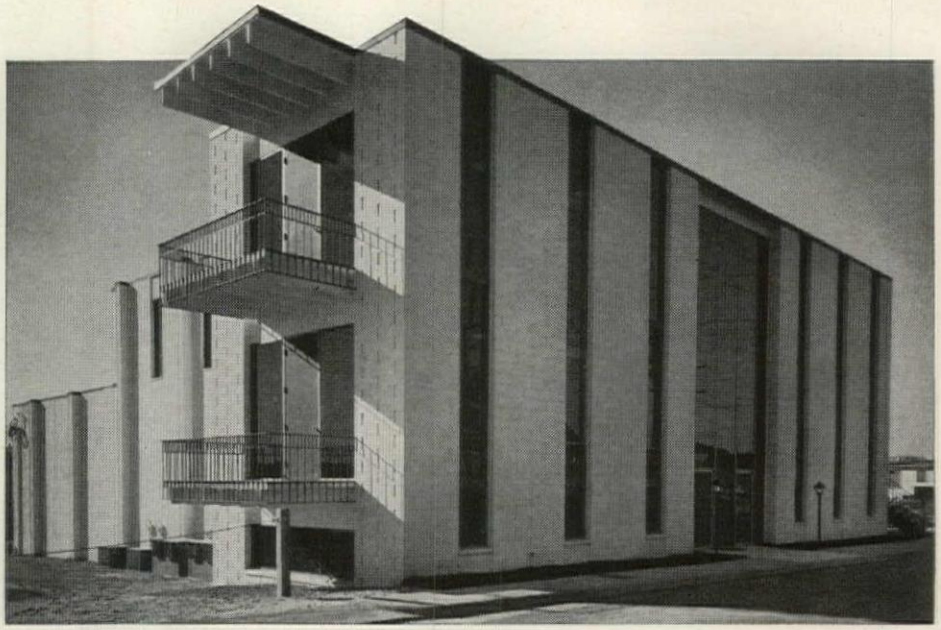
Eligible to enter the competition are registered architects of the U.S.A., architectural assistants to registered architects and students of schools which are members or associate members of the Association of Collegiate Schools of Architecture.

All contestants may compete for the following awards: Grand Prize of $10,000; Second Prize of $5,000; Third Prize of $2,500; and six Merit Awards of $500. Student awards are: $2,000 First Prize; $1,000 Second Prize; $500 Third Prize; and four $250 Merit Awards.

Submissions are to be addressed to The Ruberoid Co. and delivered to The Architectural League of New York, 115 East 40th St., New York 16, not later than 5 P.M., June 29, 1963. Results of the judging will be announced about the beginning of September. For further information and entry blanks, write The Ruberoid Co., P.O. Box 129, Dept. 203, New York 46, N.Y. The due date for entrants filing registration forms is prior to May 15, 1963.

This new office was designed to demonstrate the potentials of modern concrete by N. C. Products Corp. Note how cantilevered double tee prestressed units provide canopies for balconies. This firm uses Lehigh Portland Cement in the manufacture of their concrete pipe and prestressed units as well as their masonry units.

Owner: N. C. Products Corp., Raleigh, N.C.
Architect: Holloway-Reeves and Associates, Raleigh, N.C.
Contractor: Clancy Construction Company, Raleigh, N.C.



IMAGINATIVE CONCRETE MASONRY for commercial building

• This attractive commercial building is all concrete. Standard units combined with 2″ concrete block provide the architectural effect on the exterior. Inside office walls are stacked and running bond. Exposed double tee units for floors and roof complete the desired architectural effect of this modern, functional structure.

Architects everywhere are developing new and exciting designs with modern concrete masonry units. From standard units to the many special shapes, sizes and textures, today's strong lightweight units serve both structurally and decoratively in all types of buildings.

As plans and specifications take form on your next job, consult your local producer of concrete units. He can show you a wide variety of applications which may help you carry out your ideas. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS

The reception room unites exterior and interior by repeating the outside wall pattern. Terrazzo steps are also precast. Lighting fixtures suspended from the exposed tee ceiling give an unusual architectural effect.

First National Bank, Atlanta, Georgia. Architect: Francis P. Smith and Henry Howard Smith. Fixtures: Benjamin Division, Thomas Industries, Inc.

They want it to last, so they use glass

What's more disheartening than taking a prospect out to a building you've worked on only to find that the lighting has dimmed and the panels have yellowed and warped with age?

It's because your installations last only as long as the materials you use that we suggest you use glass for lighting. Glass never discolors. It cannot warp or wear away. In short, glass lasts.

Five, ten, even twenty years from now, there will still be 75 foot-candles cascading from every one of the 4,500 troffers used in this bank building.

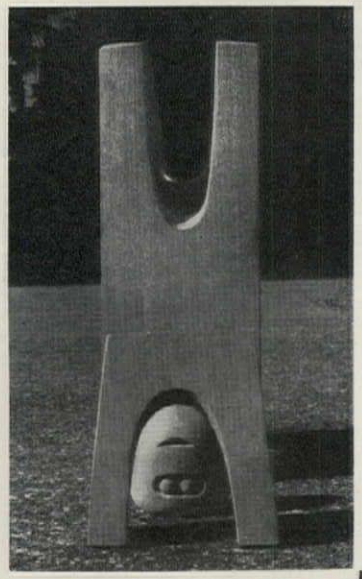
The glass used is our Pattern 70, a crystal glass with a hex pattern that spreads light evenly, bends glare-producing wayward waves down onto work areas.

By the way, you can get this same Pattern 70 in a special panel that grounds out radio interference from fluorescent lamps—a real benefit for any of your customers using sensitive electronic equipment.

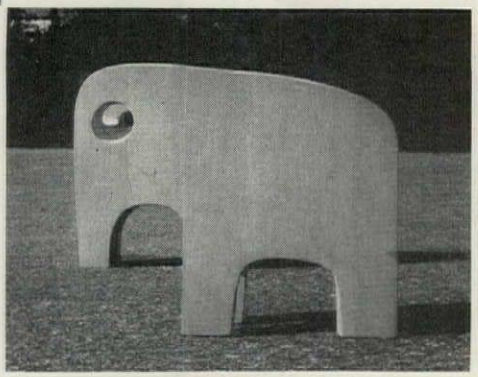
You can get complete specifications on both panels by writing to our Lighting Glassware Department, Corning Glass Works, 8523 Crystal Street, Corning, New York.

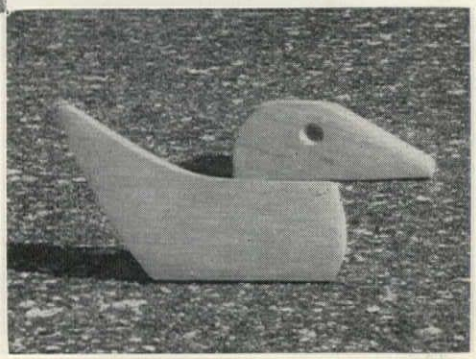
CORNING

For more data, circle 8 on Inquiry Card



ABSTRACT PLAY SCULPTURE DESIGNED TO REVEAL IMAGES





In "Sculpture Continuum; Playground Group," sculptor Oliver O'Connor Barrett has designed playground sculpture which makes inventive use of purely abstract forms to create representations of animals in a unique way. While the sculpture is an imaginative grouping of 13 forms for children to climb on, hide in or crawl under, the sculpture also allows the viewer to look from definite vantage points through a system of holes in the forms and to see, as the result of one form lining up with another, a giraffe, a man, an elephant, a rhinoceros and so on.

Mr. Barrett says of his playground group: "Whereas the trend of much contemporary art has moved from image to abstraction culminating in the totally non-objective, I have created a series of non-objective forms whose main purpose is to reveal images.

"It is called a *sculpture continuum* because of the unique way in which it unites forms through space. Its motivating principle, although of the greatest simplicity, is capable of an infinite variety of forms."

Photographs on this page are of a one-quarter scale wood model of the playground, the tallest single piece 3¼ feet high. Largest piece in the full scale version would be 13 feet tall, and viewing holes would be at a reasonable height for a person to stand and look through. Suitable materials for the finished group would be natural stone, concrete or fiberglass.

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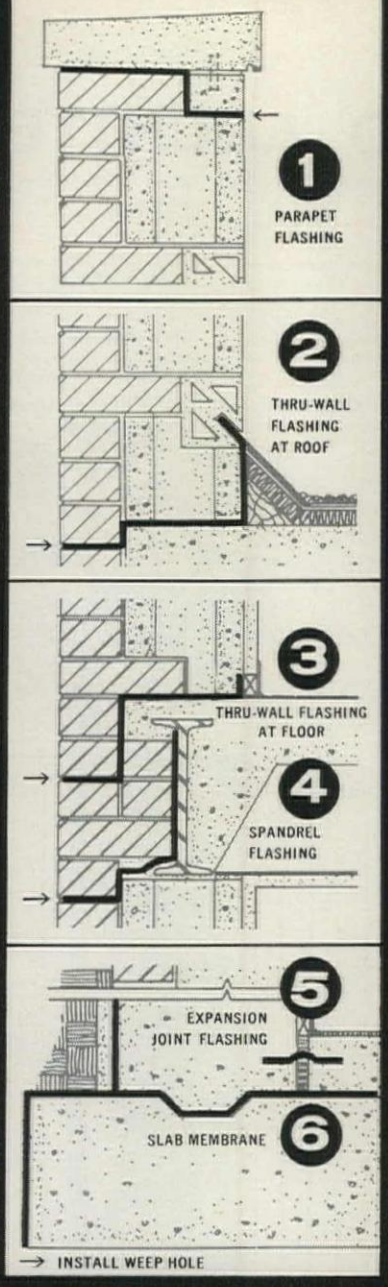

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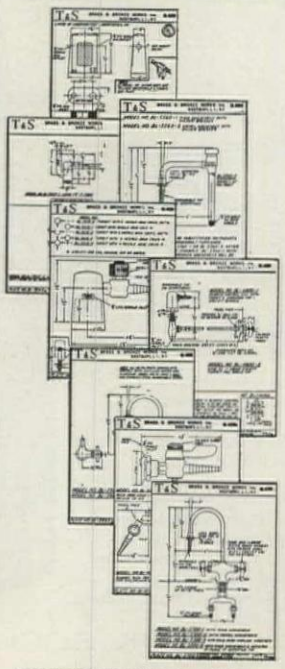

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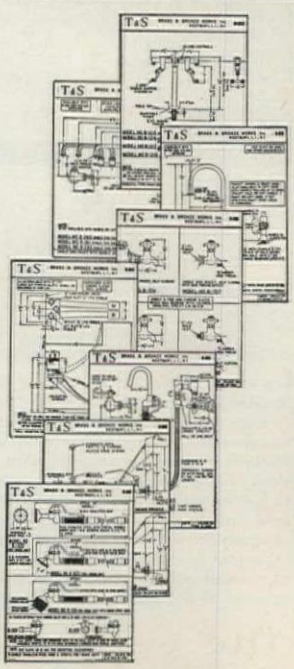

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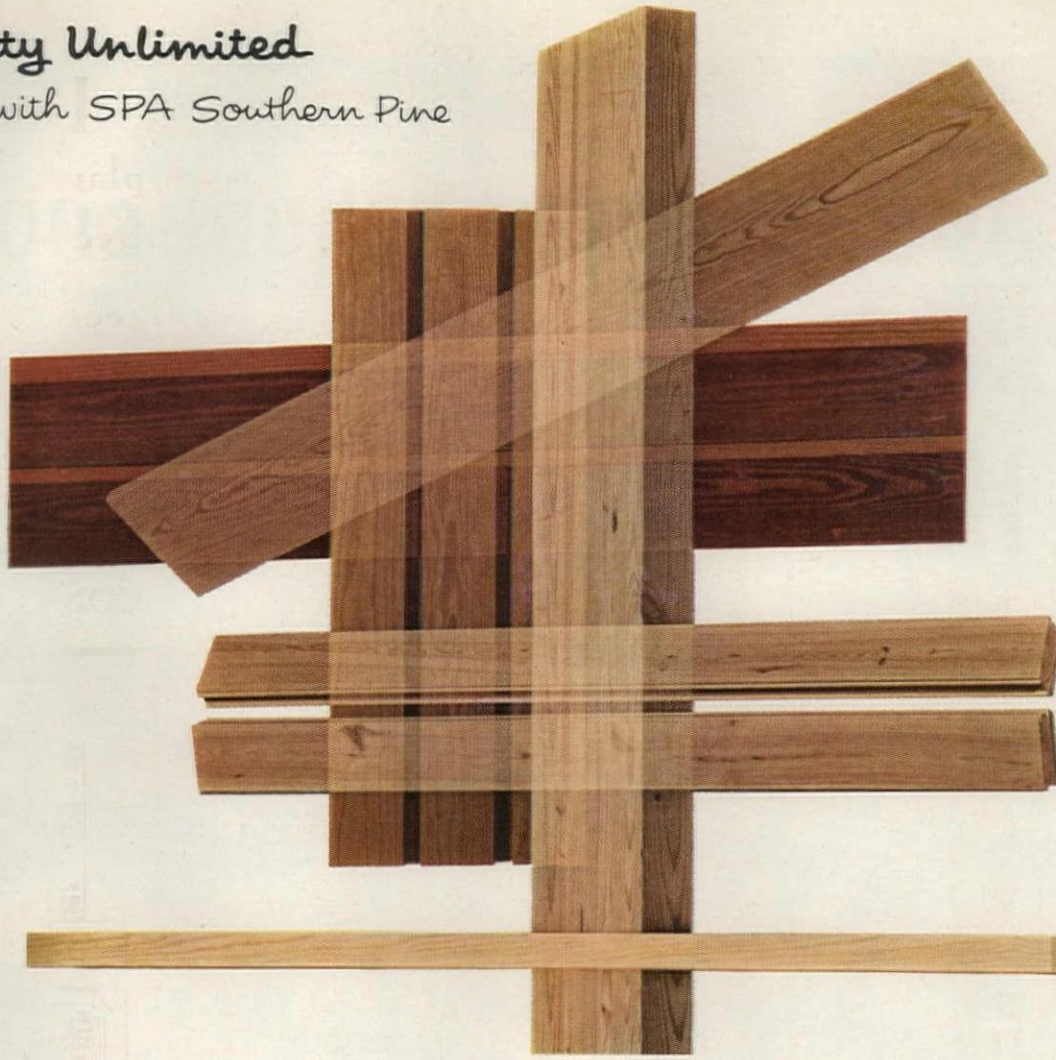

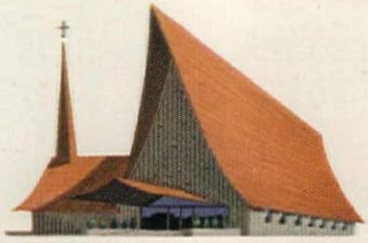

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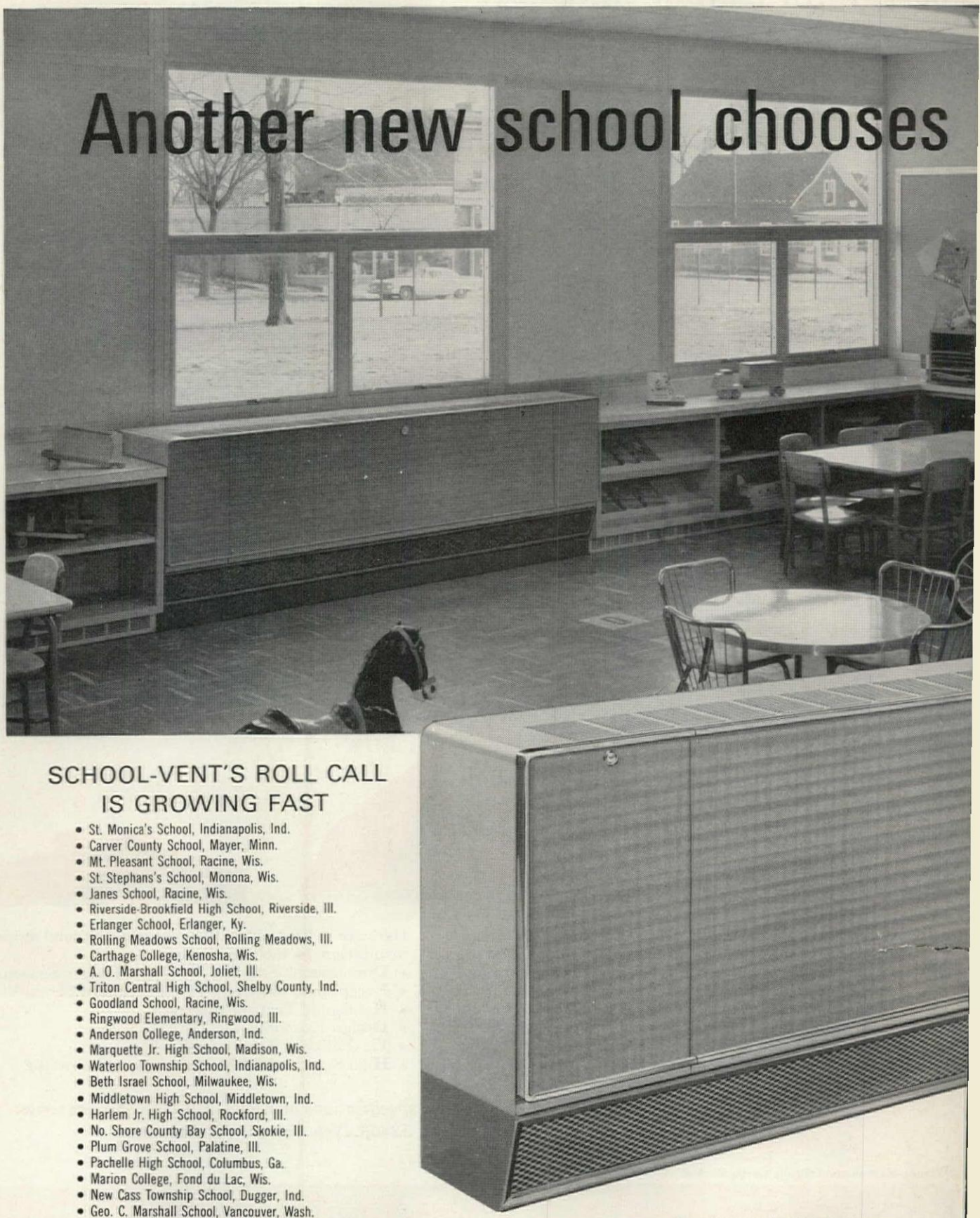

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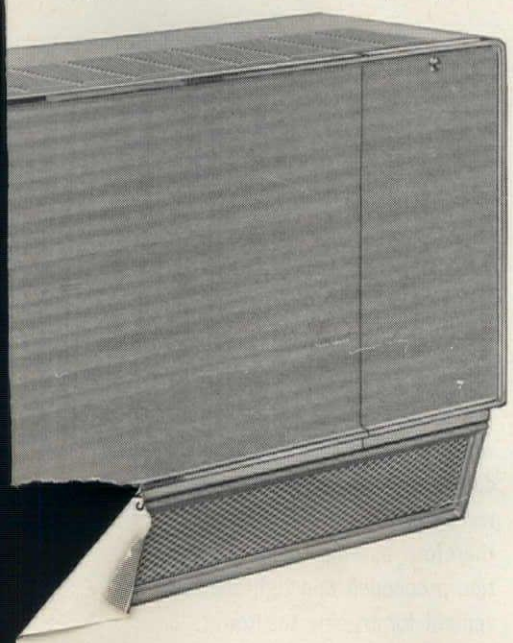

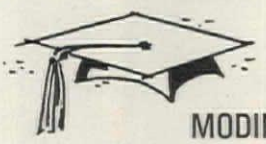

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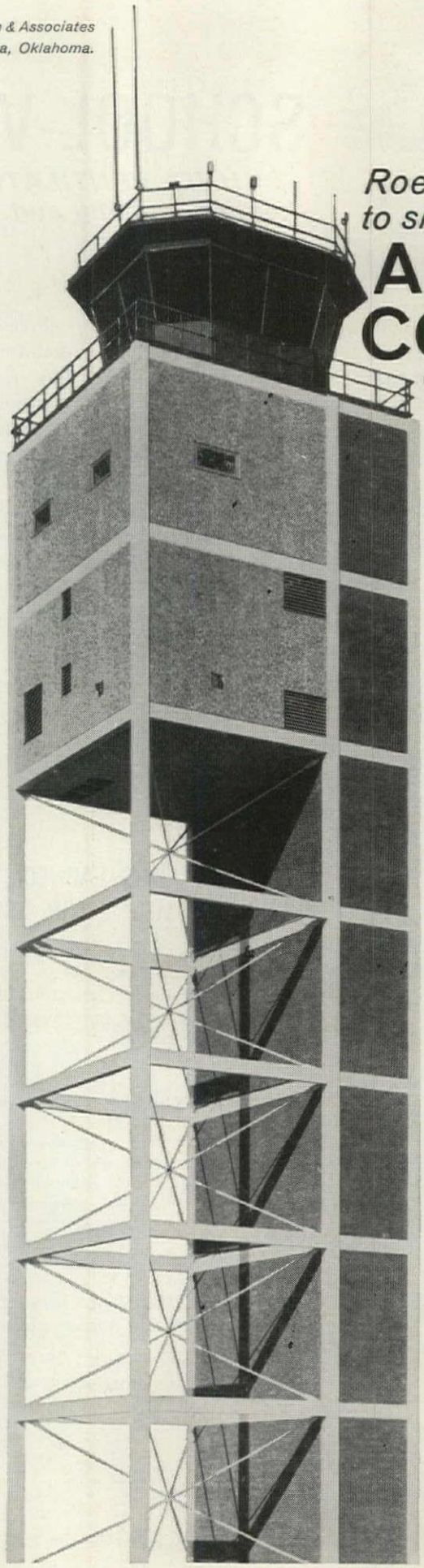

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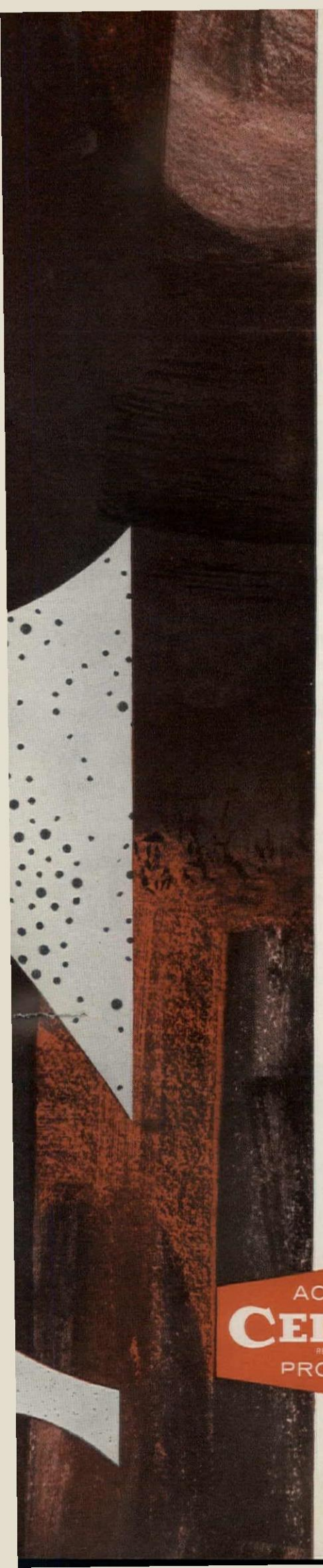

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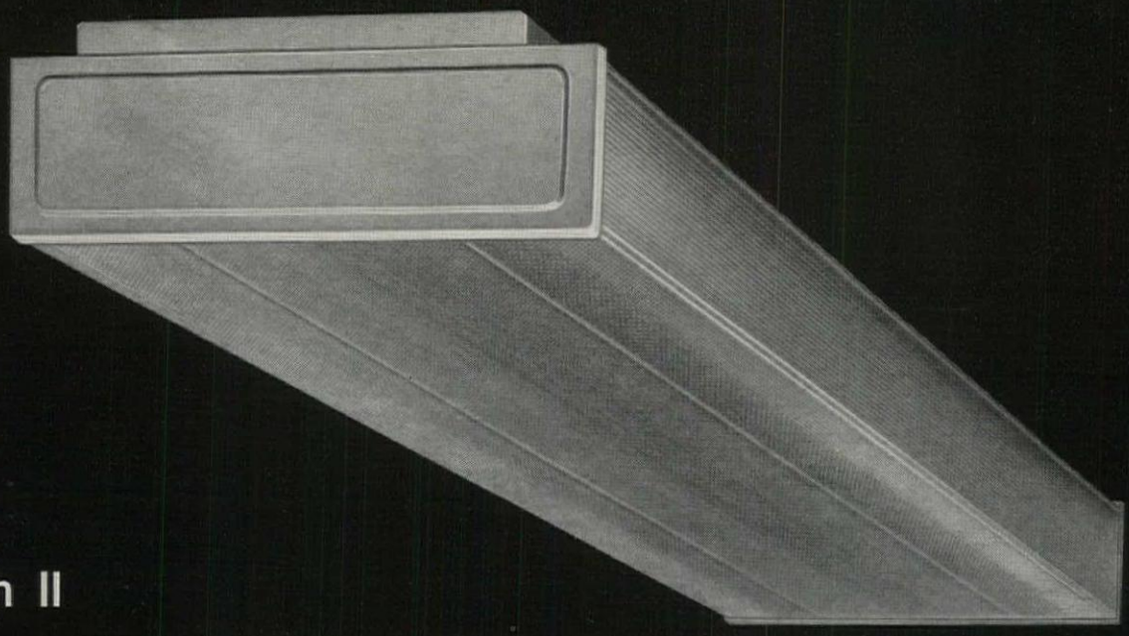

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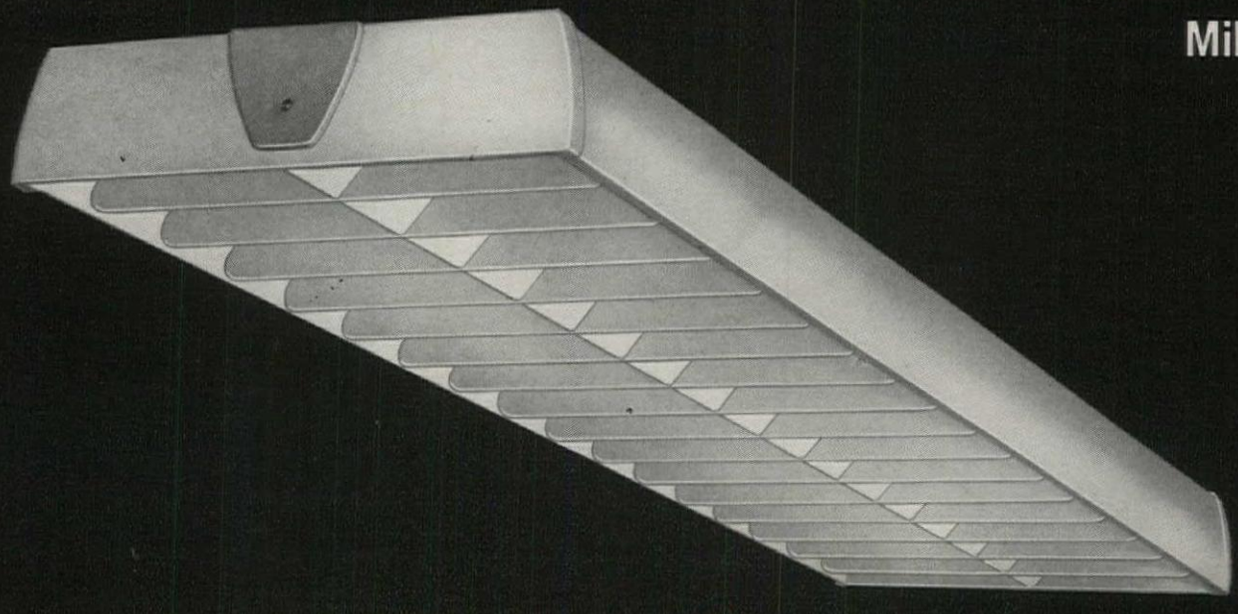
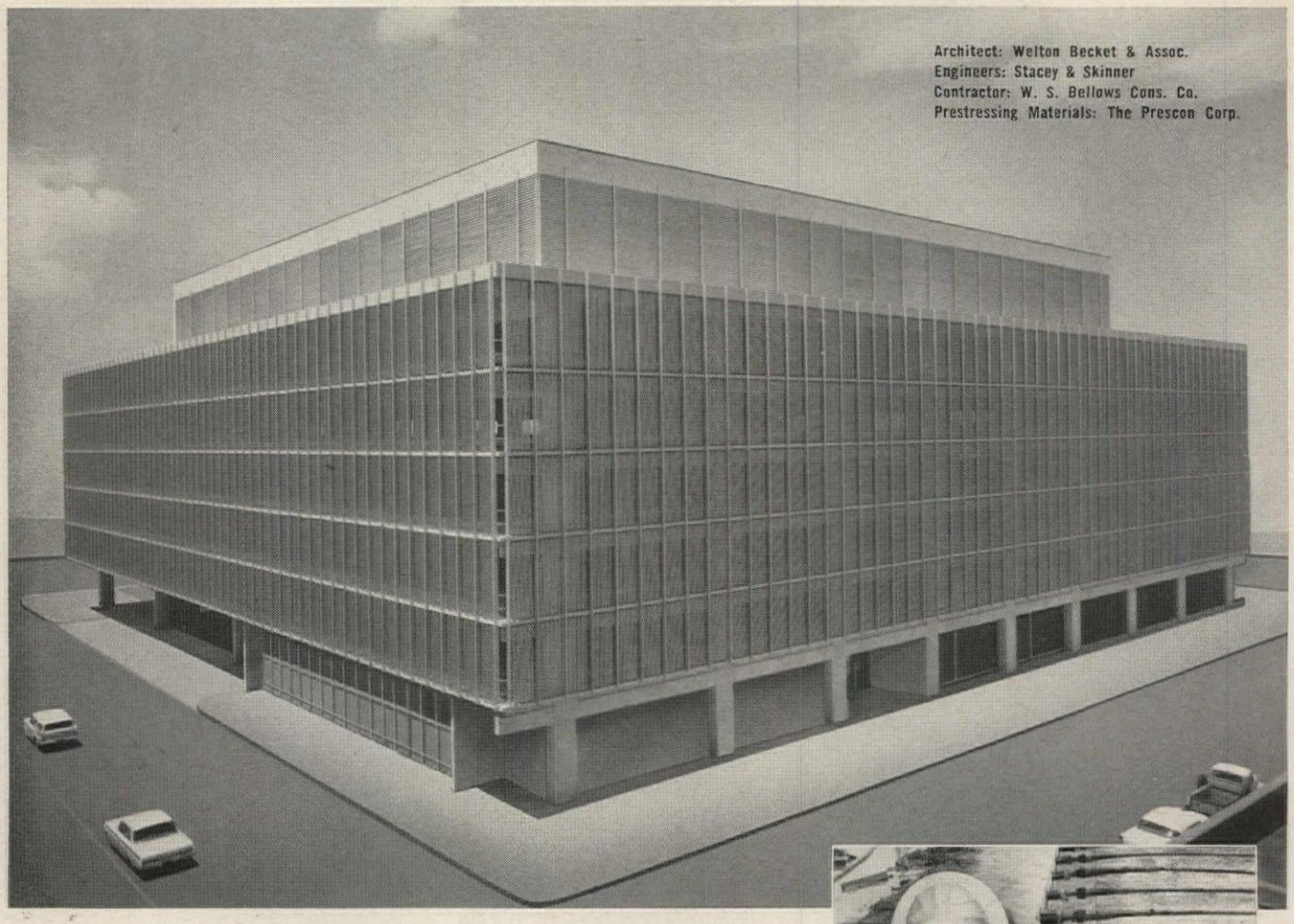


Milford



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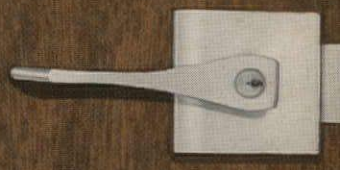

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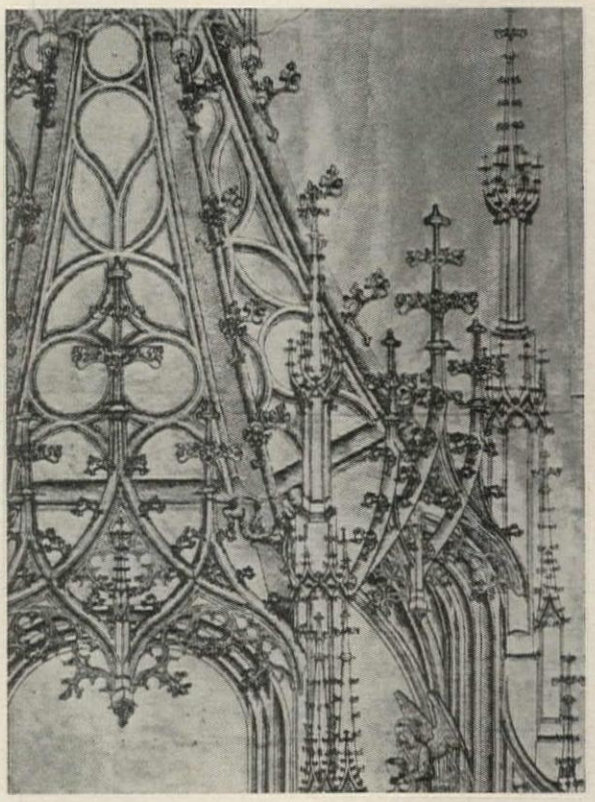


Drawing by Matthäus Böblinger
—from "Drawings by Architects"

Breuer

MARCEL BREUER 1921-1961. *Captions and introduction by Cranston Jones. Frederick A. Praeger, Publisher, 64 University Place, New York 3. 263 pp., illus. $17.50.*

A retrospective collection of an architect's work has more validity than simple convenience—though there is a great deal to be said for the convenience of a collection of Breuer's work. In addition, however, an opportunity to view a body of architecture ranging over a span of 40 years reveals relationships and values not immediately evident when one sees one building at a time in the architectural magazines and trusts to his memory for comparison with others. What is revealed in a chronological view of Breuer's buildings—moving backward in time, as here—is an astonishing consistency of quality. This is not to say that Breuer has failed to develop: there is a visable difference between, say, the 1934 Doldertal apartments and the 1961 St. John's Abbey. Nearly all of his designs—whether buildings or furniture—exhibit his readiness to experiment. Each experiment in turn exhibits the same assurance and finesse. The precocity mentioned by Mr. Jones as characterizing the early work, and the experience—Breuer has been prolific indeed—informing recent work both indicate a mind which can apparently analyze and synthesize simultaneously.

Mr. Jones's capable introduction discusses Breuer's background at the Bauhaus and his practice in Germany, England and the United States. It also analyzes his approaches to structure, space and materials, drawing heavily on Breuer's own words to define his attitudes.

The photographs—some of them in color—and drawings which illustrate the buildings are sufficiently numerous, and Mr. Jones's captions are helpful. Breuer's thoughts on architecture appear in passing throughout the book and at somewhat more length in an appendix.

Drawings

DRAWINGS BY ARCHITECTS. *Claudius Coulin. Reinhold Publishing Corp., 430 Park Ave., New York 22. 144 pp., illus. $12.75.*

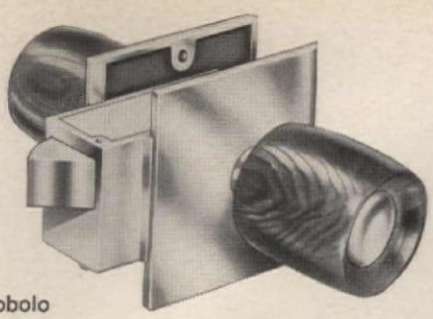
The only thing wrong with this collection of architectural drawings is that even 65 are not enough. This comment is not as churlish and ungrateful as it seems; it is rather the cry of a child when the sweets are all gone.

The fact is that the reader can spend hours in fascinated contemplation of the stylistic differences of periods ranging from Gothic through Renaissance and 19th century to the Sixties. Or of expression of personality from Honnecourt through Jones to Saarinen—not only through their approach to drawing, but in many cases through their handwriting as well. Or of the effect of various techniques: pen and wash, pencil on card, silverpoint, brush and ink, soft pencil on yellow lined paper.

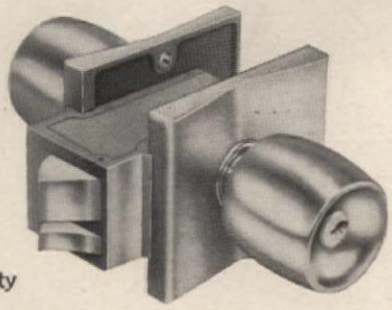
Mr. Coulin, apart from the considerable labor of assembling these drawings, has contributed only a brief introduction and captions identifying architect and building, the paper and drafting technique employed, and slight biographical information. Otherwise, he has sensibly left the drawings to speak for themselves.

The black-and-white reproductions are presented in an extra-large format. Most appear at actual size; others are almost that size.

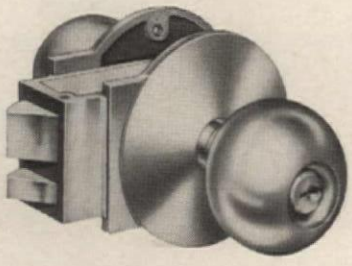
continued on page 56



Cocobolo

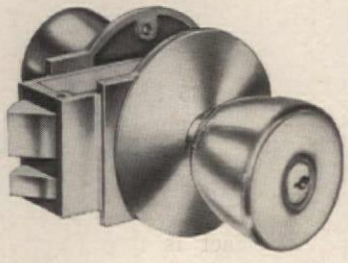


Unity

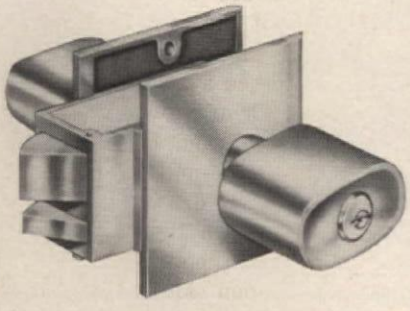


Mono

Moderalev



Mystic



Aero

Here are designs that help you use doorware *imaginatively*. And behind the good looks is good lockmaking. For these are Russwin Uniloc* Locksets..."unit construction" at its best. Completely factory-assembled (they "go on the door as they come out of the box"), Russwin Uniloc Locksets are built to last for the life of your building. See your Russwin supplier. Or write for literature to Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

RUSSWIN

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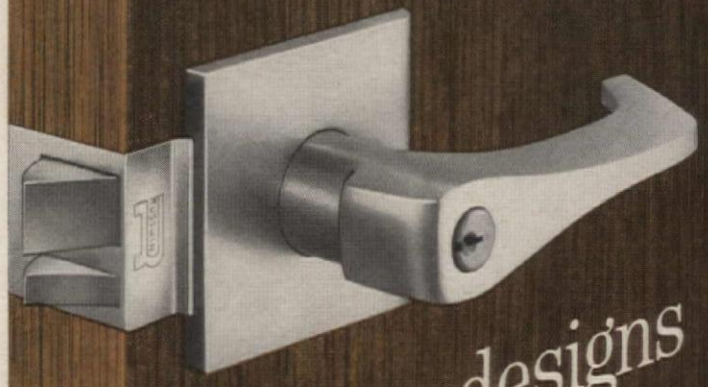
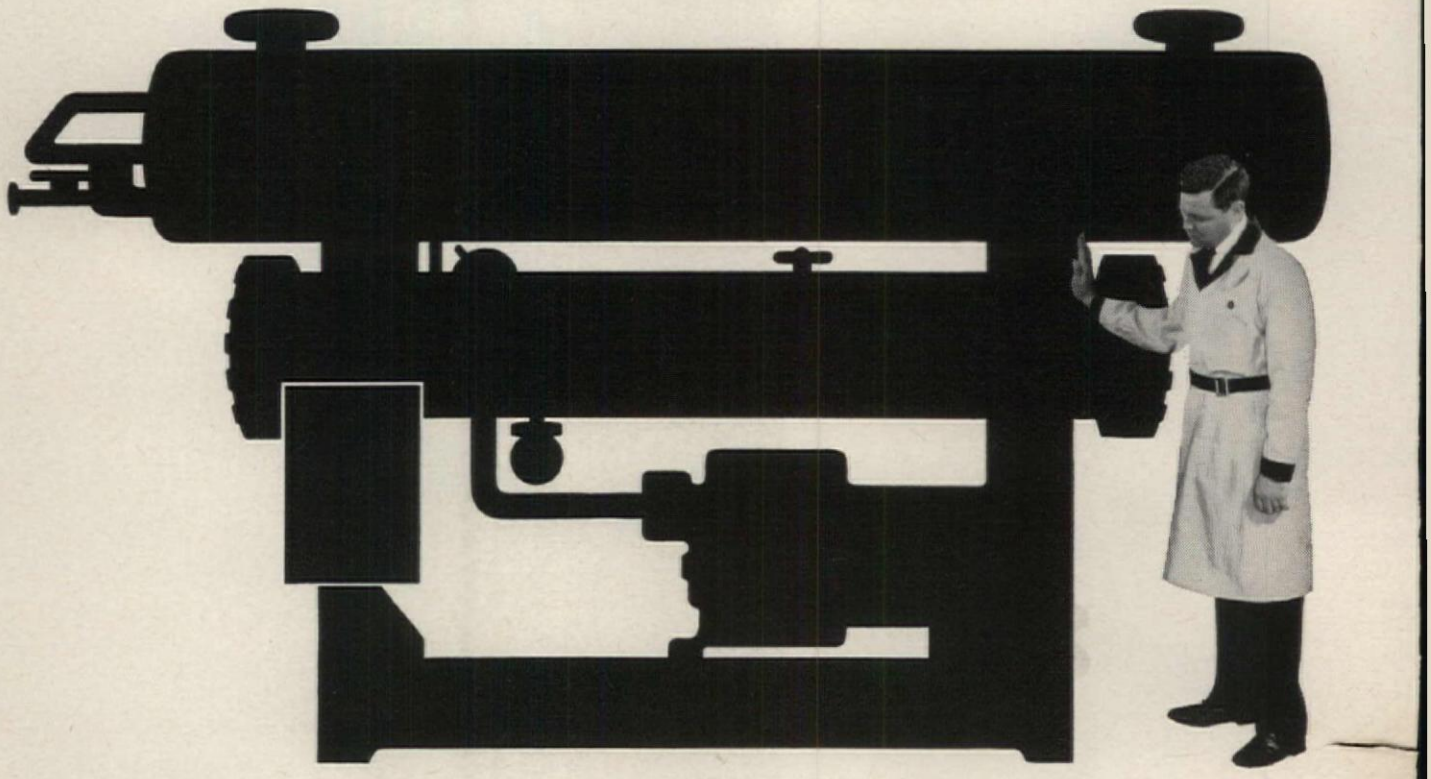


Uniloc designs by Russwin

Old 100 HP Chiller



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Every chiller in the new Chrysler Airtemp line has added features: a very precise and simple electric unloader by the originators of individual cylinder unloading; an elegant, mod-

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ern look; a rugged and durable design . . . neat "building block" construction for easy accessibility. All controls can be reached from a removable 4′ by 4′ front panel. Every chiller can be easily moved without fear of damage, for no fragile gauges or tubing have been allowed to protrude. Provision is made for rigging, but chances are the unit can be taken to the roof right in the building elevator!

Of course, we have been able to show and tell you about only the highlights of our revolutionary new line of chillers. For complete details and data, write to Chrysler Corporation, Airtemp Division, Department A-62, Post Office Box 1037, Dayton 1, Ohio.

AIRTEMP DIVISION CHRYSLER CORPORATION

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Bethlehem supplied 2,400 tons of steel reinforcing bars for the Hopkinson House Apartments in Philadelphia, including about 35 tons used in the rooftop swimming pool. Architect of the 35-story building: Stonorov & Haws, Garfankel & Marenberg. General contractor: R. N. Shoemaker Co.; concrete contractor: Robert G. Hoffer Company; steel fabricator: Bethlehem Steel Company.

Bethlehem reinforcing bars in rooftop swimming pool have a certified pedigree

When bundles of Bethlehem reinforcing bars arrive at a job site, they can easily be identified by the tags showing heat numbers. These numbers are matched with certified mill test reports furnished by Bethlehem. When you buy Bethlehem bars you are assured of composition, mechanical, and physical properties fully meeting all requirements of ASTM Billet-Steel Bar Specifications—a certified pedigree.

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Bar fabricating is our specialty, whether you need ten tons or ten thousand. For accurate fabrication, well-executed placing plans, and prompt delivery to your job site, order Bethlehem Billet-Steel Reinforcing Bars.

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Fluorescent lighting fixture by The Frink Corporation, Brooklyn, New York, has lighting shield formed by Dura Plastics of New York, Westport, Connecticut, from cast acrylic sheet made by **The Polycast Corporation,** Stamford, Connecticut.

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☐ Please send your lighting booklet.
☐ Please ask an acrylic-sheet manufacturer to contact me.

Name.....
Position.....
Company.....
Address.....
City.....State.....

For more data, circle 24 on Inquiry Card

Air diffusers within perforated metal ceiling panels, factory-assembled as modular units, enhance ceiling appearance . . . simplify and speed installation.

from BARBER-COLMAN

A new idea

Now diffuser size no longer limits design freedom or detracts from job appearance. New Barber-Colman unit features perforated metal face in modular sizes to meet your ceiling needs, regardless of cfm requirements.

New Barber-Colman SQT diffusers represent an entirely new concept in ceiling diffuser design. For the first time, standard diffusers—in sizes to meet any cfm requirement—are available mounted integrally with perforated metal ceiling panels in modular sizes to fit most exposed-grid ceiling suspension systems.

Here are some of the important advantages you get with these new units:

Easy installation—Modular units drop easily into place. Diffuser shell is supported by the ceiling grid and does not depend on supply duct or ceiling panel for support.

Maximum accessibility—Duct connections quickly made by access through any one of adjacent panels. Volume control adjusted through perforated panel face.

THE PRODUCERS' COUNCIL

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in diffuser design

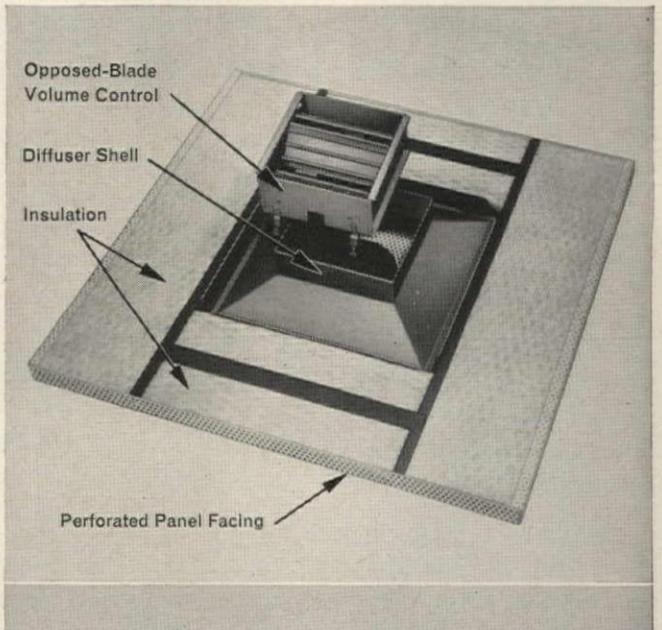
Engineered air distribution—Guaranteed efficient air pattern performance assures quiet, draft-free air delivery. Air pattern can be provided for one-, two-, three-, or four-way discharge without altering the outward appearance.

Inconspicuous appearance—Perforated metal face blends harmoniously with adjacent ceiling panels. Standard finishes include aluminum or off-white baked enamel.

Acoustical control—Thick fiber glass backing provides sound absorption characteristics equal or superior to that of the surrounding ceiling material.

For detailed information about this new idea in diffuser design, call your local Barber-Colman Air Distribution field office or write to:

BARBER-COLMAN COMPANY
Dept. B, 1104 Rock Street, Rockford, Illinois

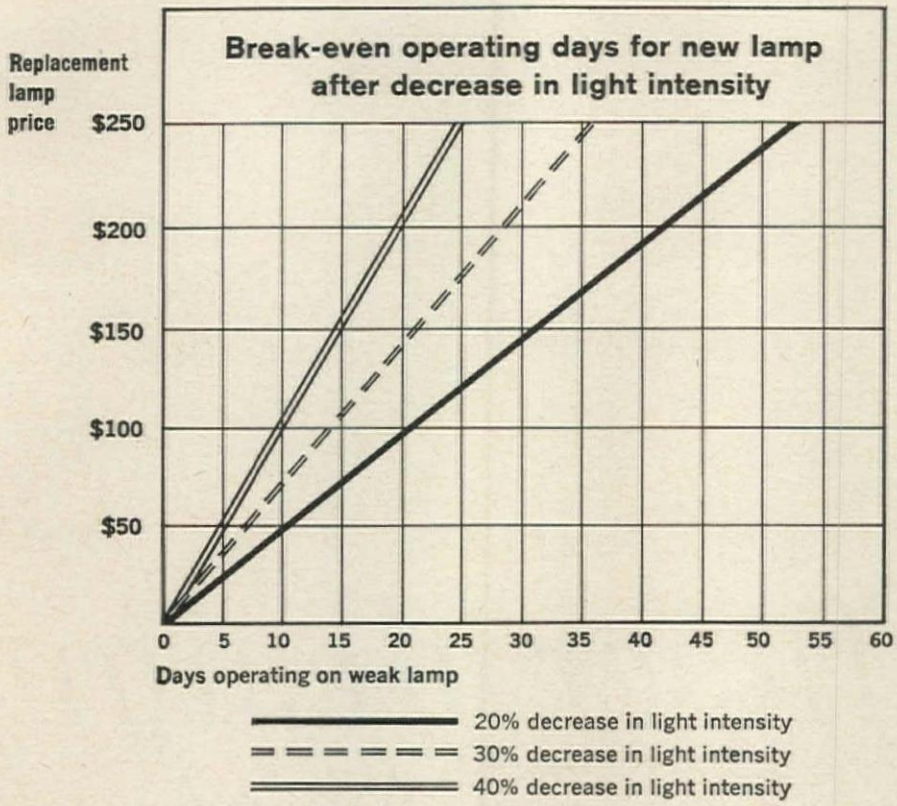


SQT modular diffusers are available in square or rectangular modular panel sizes from 12″ x 12″ to 24″ x 48″ in both supply and return models.

For more data, circle 25 on Inquiry Card

OZALID NEWSLETTER

NEW IDEAS TO HELP YOU WITH ENGINEERING REPRODUCTION AND DRAWING



Prompt replacement of weak printing lamps doesn't cost, it pays!

Operating a diazo machine with a *weak* printing lamp is like bailing water with a sieve. *You're* working, but the lamp *isn't*. Install new lamps and pay for them with the dollars you would have lost had you tried to get the last little flicker from your old lamp.

Sound incredible? Consider expensive operator time, lower machine output, below-par copy quality, and you see why money is lost. How big a loss? Check the solid line on the graph above. Run a machine for just 21 days with a lamp that's 20% off full strength, and you've let $100 slip through your fingers. And if lamp intensity falls off 30% or 40%, your losses are all the more serious.

Pushing a weak lamp is not sound economics. Eking the last bit of light from a lamp is a costly mistake that adversely affects the operation of a reproduction department or commercial shop.

Replace weak printing lamps promptly. *It pays.*

How do you know when the "break-even point" is reached?

Easiest way, of course, is to use a new test sheet which Ozalid supplies. This sheet, reproduced on your diazo machine, will show lamp efficiency. Merely compare the present machine speed necessary for a good print with the original speed at which a print of like quality was produced.

Copy the test sheet periodically on all your machines to keep abreast of the light intensity fall-off on each diazo printer. The Ozalid test sheet, and the instruction bulletin that comes with it, will help you determine proper replacement times.

Whose printing lamps are the best buy?

In all cases, the best possible lamp replacement will come from the original manufacturer of your machine. Here's why:

1. A manufacturer balances lamp and transformer for each machine model. Any imbalance caused by use of another lamp could result in shorter lamp life, fluctuating light intensity, or a burned out transformer.

2. The cooling system of a machine model is designed for use with a particular lamp to maintain lamp temperature at the optimum level for long life and even print quality.

The cardinal rule: Depend on the machine manufacturer for your lamp replacements. His lamp guarantee puts money in your pocket.

Ozalid announces new low prices on printing lamps!

Buying replacements could never be more attractive than it is right now! Even if your machines won't need replacements for a while, now would still be a good time to buy them. Keep spares on hand and hold machine down-time to a bare minimum.

Before it slips your mind, send in for that test sheet and instruction bulletin we spoke of earlier. Use it regularly to keep track of your machines' lamp intensity.

For your valuable test sheet and the companion bulletin just write to OZALID, Dept.141, Binghamton, New York.

Ozalid, *General Aniline & Film Corporation. In Canada: The Hughes-Owens Co. Ltd., Montreal*

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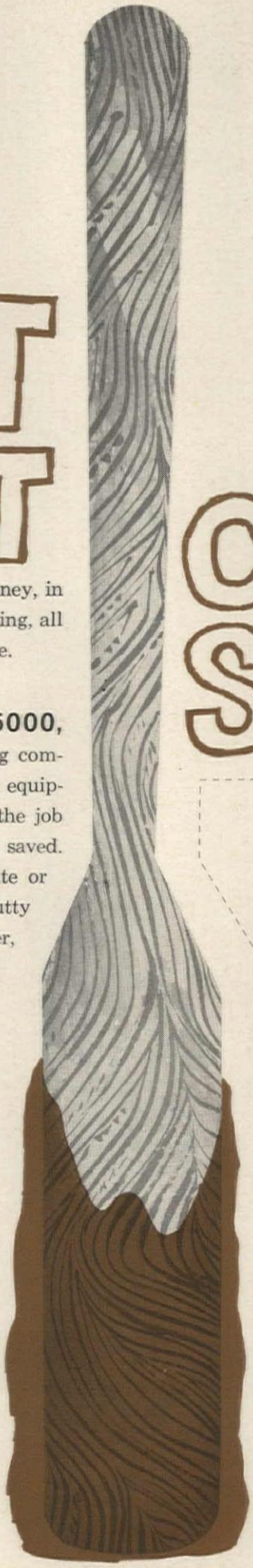
GET OUT OF STIR



Mixing calking materials on the job costs money, in extra equipment and wages. And careless mixing, all too frequently, can mean inferior performance.

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ONE-PART PRC RUBBER CALK 5000,

a new polysulfide-based (Thiokol*) calking compound ready for use as packaged. No mixing equipment is needed. Uncertainties of mixing on the job are eliminated. Man-hours and job time are saved. PRC Rubber Calk 5000 is available in white or gray, and is applied easily by calking gun, putty knife or spatula. It cures to firm, flexible rubber, which *retains* adhesion and elasticity in all weather to provide years of trouble-free service.

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HOW WESTINGHOUSE ELECTRIC WALKS CAN HELP YOU BUILD A

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Now you can glide shoppers with carts uphill or down safely, surely in multi-level shopping centers. The new Westinghouse Electric Walk has metal treads specially grooved for secure footing. And an automatic cart holding device for use on inclines.

The Walk starts level, finishes level . . . rigidly follows any contour up to 15°.

To find out more about this comfortable, convenient new idea for a new kind of shopping center, talk to your Westinghouse representative. Or write: Westinghouse Electric Corporation, Elevator Division, 150 Pacific Avenue, Jersey City, New Jersey.

You can be sure . . . if it's **Westinghouse**

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Required Reading

continued from page 44

Structure

STRUCTURE AND FORM IN MODERN ARCHITECTURE. *By Curt Siegel. Reinhold Publishing Corp., 430 Park Ave., New York 22. 308 pp., illus. $16.50.*

STRUCTURAL DECISIONS. *By H. Werner Rosenthal. Chapman & Hall, Ltd., 37 Essex Street, London W.C.2. 417 pp., illus. 75s. ($10.50)*

Both of these books present strong pleas for, and analyses of, "correctness" of structure. They both discuss a logical approach to structure as an integral component of architecture, and thus are appropriately reviewed together. In an era when structure is being featured as a strong element of architectural design, they should be greatly welcomed. First of all, they give the reader a "feeling" for structural behavior which is difficult, if not almost impossible, to derive from standard engineering treatises on structural design. Secondly (particularly Curt Siegel's book), they give rational guidelines to the appropriate use of structural systems in various sizes and shapes of buildings.

Siegel primarily is concerned that the structural form is appropriately incorporated into a building fabric. The book is profusely illustrated with line drawings which demonstrate logical use of structure as well as a collection of structural aberrations. Siegel's stated objective is to ". . . promote honesty and neatness in design [assisting in] opposing formalism and effect-mongering with integrity and quality."

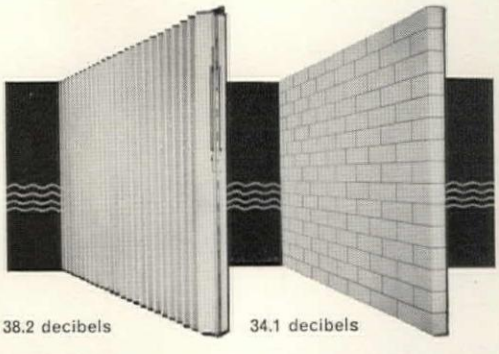
He divides his book into three main categories which encompass all of the structural forms in use today: (1) Skeleton Construction (with emphasis mainly on tall buildings), (2) V-shaped Supports (which include rigid frames as well as other V-legged frames), and (3) Space Structures. The numerous sketches indicate not only those aspects of structure which are illogical to the eye, but illustrate action of forces within structural systems exposing structural contortions to make "fake" structures stand up.

It is worth noting Seigel's philosophy in preparing his book:

continued on page 75

...each with better sound privacy* than you'd get from walls of 4" cinder block

● At a cost any school can afford, Soundmaster 240 operable walls can put to work the high-cost space that stands idle half the day. These expensive areas—auditorium, cafeteria, gymnasium and library—may be subdivided by Soundmasters in seconds to provide extra classrooms . . . each enjoying better sound privacy than a room closed off by permanent masonry walls of four-inch cinder block. Yet, the investment for Soundmaster 240 is only a fraction of the cost for building additional instruction space. And the original specialized areas remain intact. The stacked Modernfolds take only a few feet of wall space (or disappear entirely into pockets). Write for details on creating these extra classrooms, plus the many other ways that Modernfolds can stretch your building budget . . . by making space do double duty. Just fill out the coupon below.



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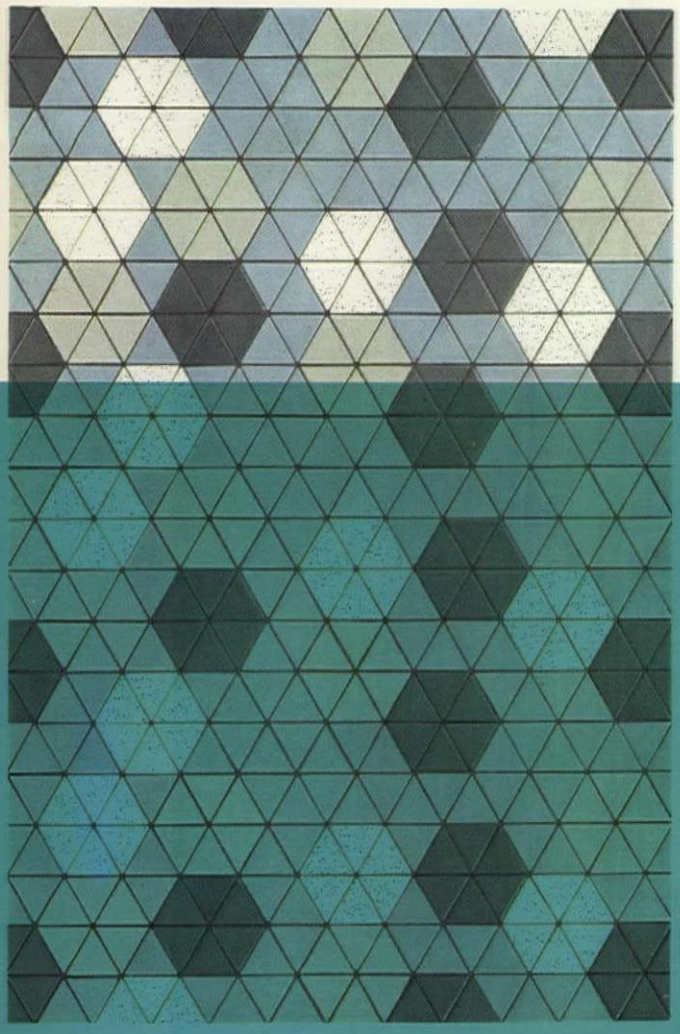

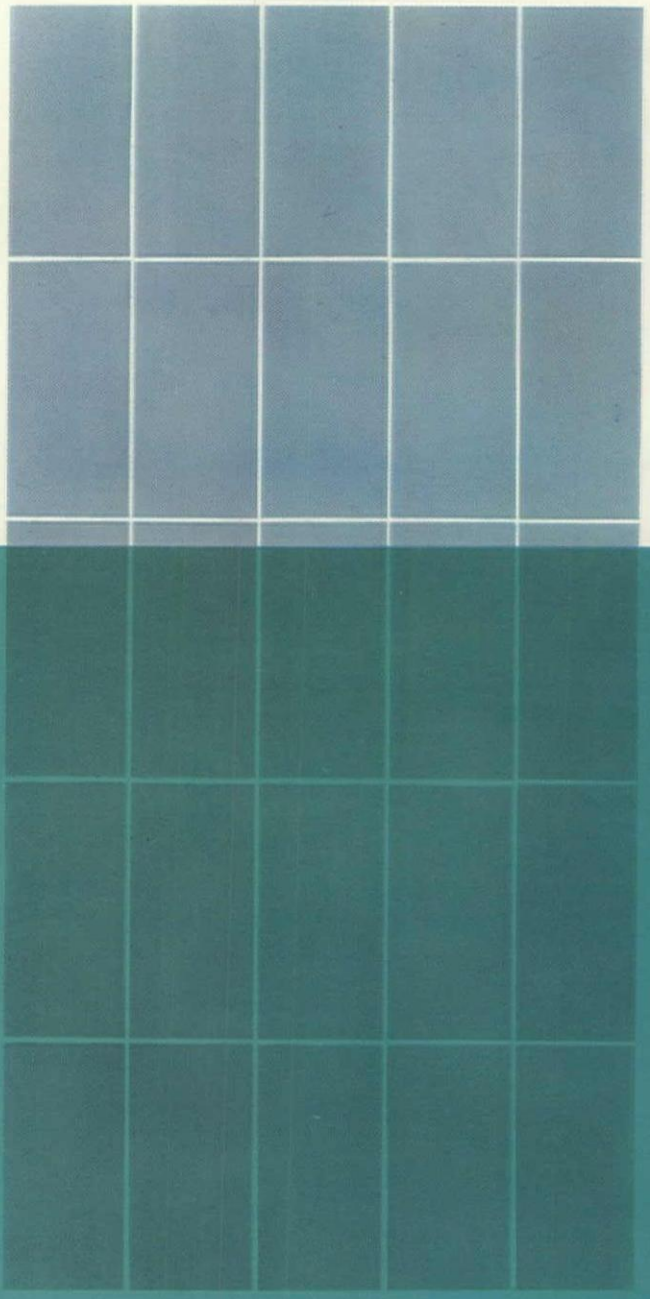

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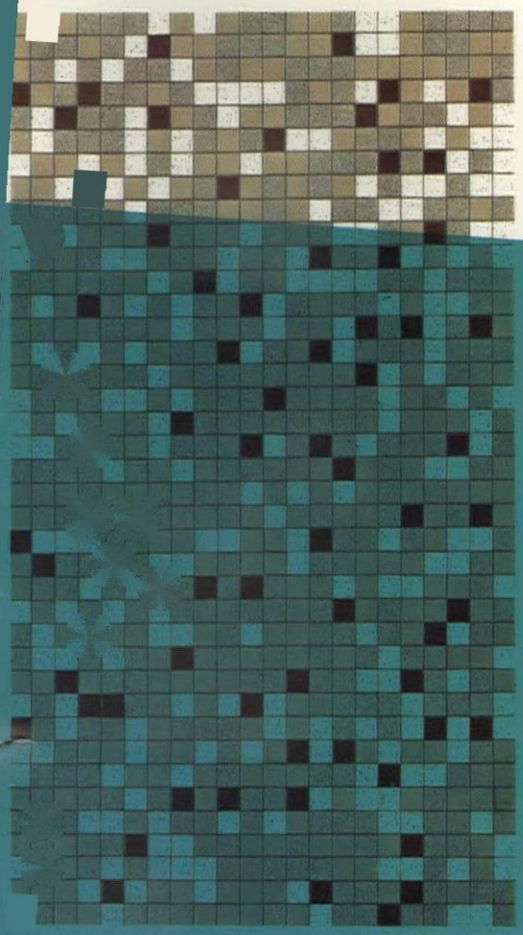

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The Clayton Inn Building, Clayton, Mo.
Architect: Bernard McMahon
Engineer: Louis Krasner
Contractor: C. Rallo Contracting Co., Inc.

LACLEDE SERIES "H" JOISTS SPEED NEW BUILDING CONSTRUCTION

The high strength of Laclede "H" Series open web steel joists has been employed effectively by architect Bernard McMahon in this multi-story office building in Clayton, Missouri.

These lightweight, versatile units permitted rapid erection and completion of structural floors, and played an important role in speeding the ultimate completion of the building. (All Laclede High Strength Joists are identified by a blue marking for fast and proper job-site identification.)

STEEL JOIST INSTITUTE MEMBER

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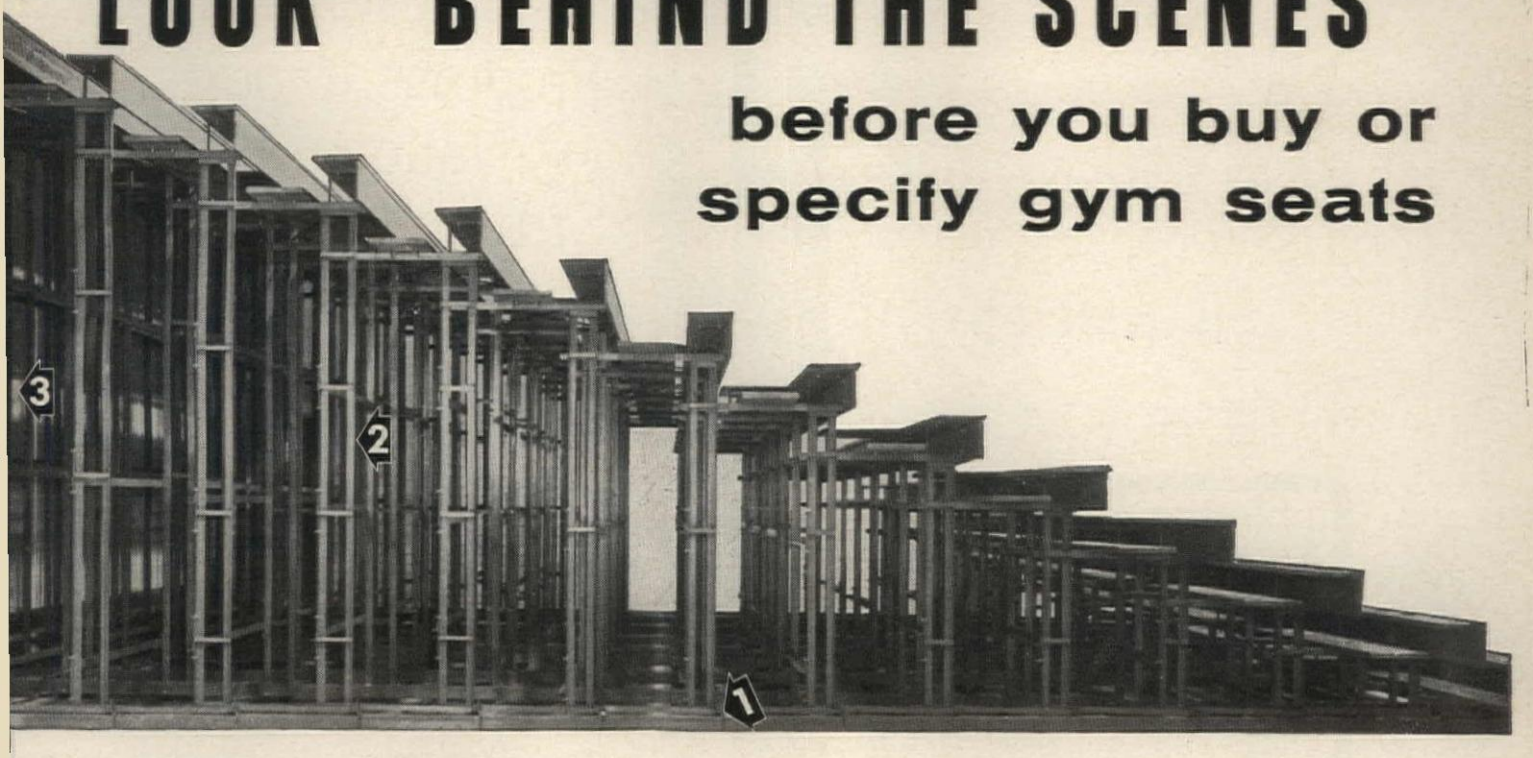
Why you should
LOOK "BEHIND THE SCENES"
before you buy or specify gym seats



Appearance and comfort are important in a retractable gym seat — and frankly, we think Safway has them all beat when it comes to BOTH. But it's what's *in back* that counts — in terms of safety, durability and ease of operation. Peek behind a rack of Safway Telescoping Gym Seats and you'll find additional "plus-values" like these:

1. "Row-locks" — a Safway exclusive — securely lock each row of supports to the adjacent row, giving you a firm base that eliminates lateral racking . . . prevent accidental closing or pinching . . . evenly distribute shock loads. Row-locks also provide smooth opening and closing action — in sequence — so you can *open or close* any desired number of rows, with one easy operation.

2. Rugged construction — by America's foremost builder of steel construction scaffolding. Eight steel angles, rigidly welded in pairs, provide four supports under every row for optimum load distribution. *Steel only* is used for primary support, and every row is braced to resist sway and lateral loads.

3. Simple telescoping design — with a minimum of moving parts and no jointed levers or cross-arms. Sections roll easily on self-lubricated wheels. Sliding members are separated by *nylon glides* to reduce friction. Also note that Safway's extra-large, non-marking wheels travel *separate* paths, reducing floor wear.

Let us help you plan your gym seating

Experienced Safway engineers will submit detailed recommendations on your seating requirements. No charge or obligation. Also write for free bulletin 162X.

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Low-cost Everwear-Safway backstops are immediately available in any of the following styles:

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- Backward fold
- Wall-braced swing-up
- Ceiling-suspended stationary
- Ceiling-suspended wall-braced
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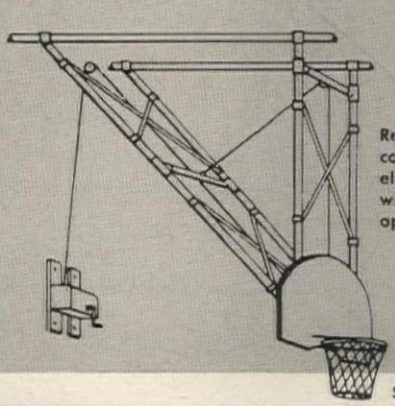

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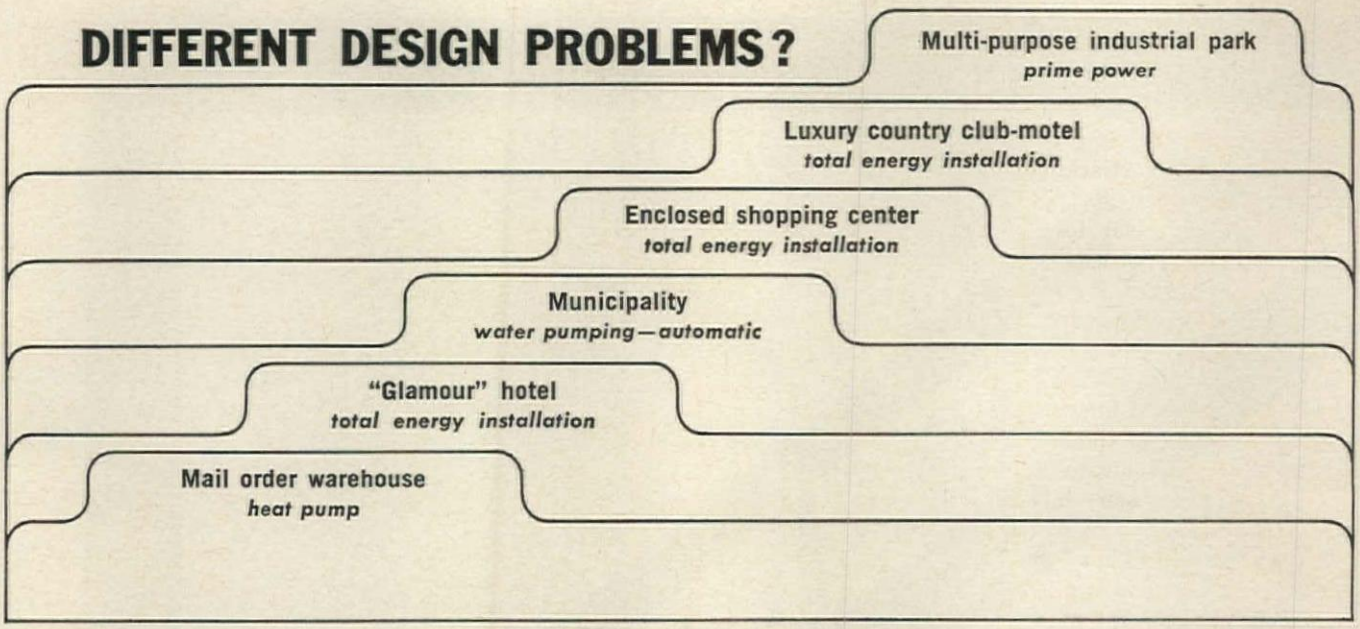

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Here, for example, is how one natural gas powered system works. Lane Bryant's mail order headquarters in Indianapolis, Indiana, is a single-story structure divided into two parts—a warehouse section of 210,000 square feet and an office section of 51,000 square feet.

Lighting, heating and air conditioning loads vary widely in different parts of the building. It includes space for receiving, marking, warehousing, packaging and post office facilities. The office section includes private and general offices, a computer room, dispensary, cafeteria and retail store.

A detailed analysis of initial, operating and maintenance costs—including depreciation, interest, etc. —for each possible system showed that a natural gas engine driven heat pump was more economical. The big difference: initial cost. Had a steam heating system been used, a complete air conditioning system would still have been required.

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This natural gas engine driven heat pump will deliver 2.20 times the amount of useful heat produced by a steam boiler for the equivalent amount of fuel. And it will deliver 1.38 times the heat output of a comparable electrically driven system.

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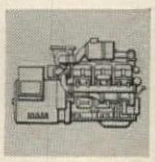

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Required Reading

continued from page 56

"Modern architecture is characterized by an excess of artistically unassimilated technology . . . An understanding of technical form presupposes technical knowledge; mere intuition is not enough. Even architectural forms, if influenced by technology, are not entirely intelligible without some technical initiation. The fact that technical knowledge is required to understand the world of architectural forms indicates an intrusion of cold reason into the sphere of esthetics."

In "Structural Decisions," Rosenthal starts with classical engineering concepts, such as moment of inertia and bending moment, but he has won a major victory in making these seemingly abstract concepts comprehensible to a non-engineer, and it is safe to say that his book will make these concepts more meaningful to engineers.

Rosenthal works with the more basic elements of structure—beams, columns, trusses, portal frames, and shows how their sizes are affected as loads and spacings are varied. He illustrates how some of the simplifying assumptions used in engineering design are employed, while also pointing out their limitations as related to known behavior. He concludes his book by investigating the behavior of space structures, continuity and rhythmical flow.

The significance of this book is ably pointed out in the foreword by Z. S. Makowski, well-known designer of space-frame structures and lecturer.

"[It is important to develop] a particular sense of being able to judge the problem . . . to note only the essential parts. There are not many people who know how to do this and there are very few books on structural analysis which teach how one is to get into this particular frame of mind . . . There is no doubt that this book belongs in this category."

Professor Curt Siegel teaches statics in the architectural department of the Stuttgart Technische Hochschule.

H. Werner Rosenthal is in private architectural practice and is visiting lecturer at the School of Architecture, The Polytechnic, London.

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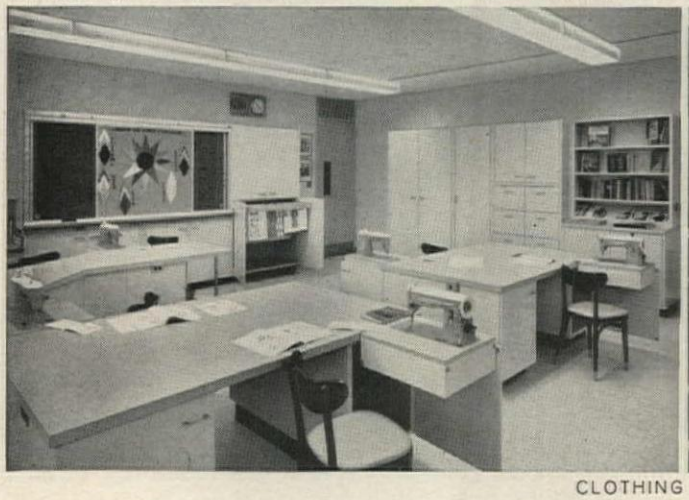

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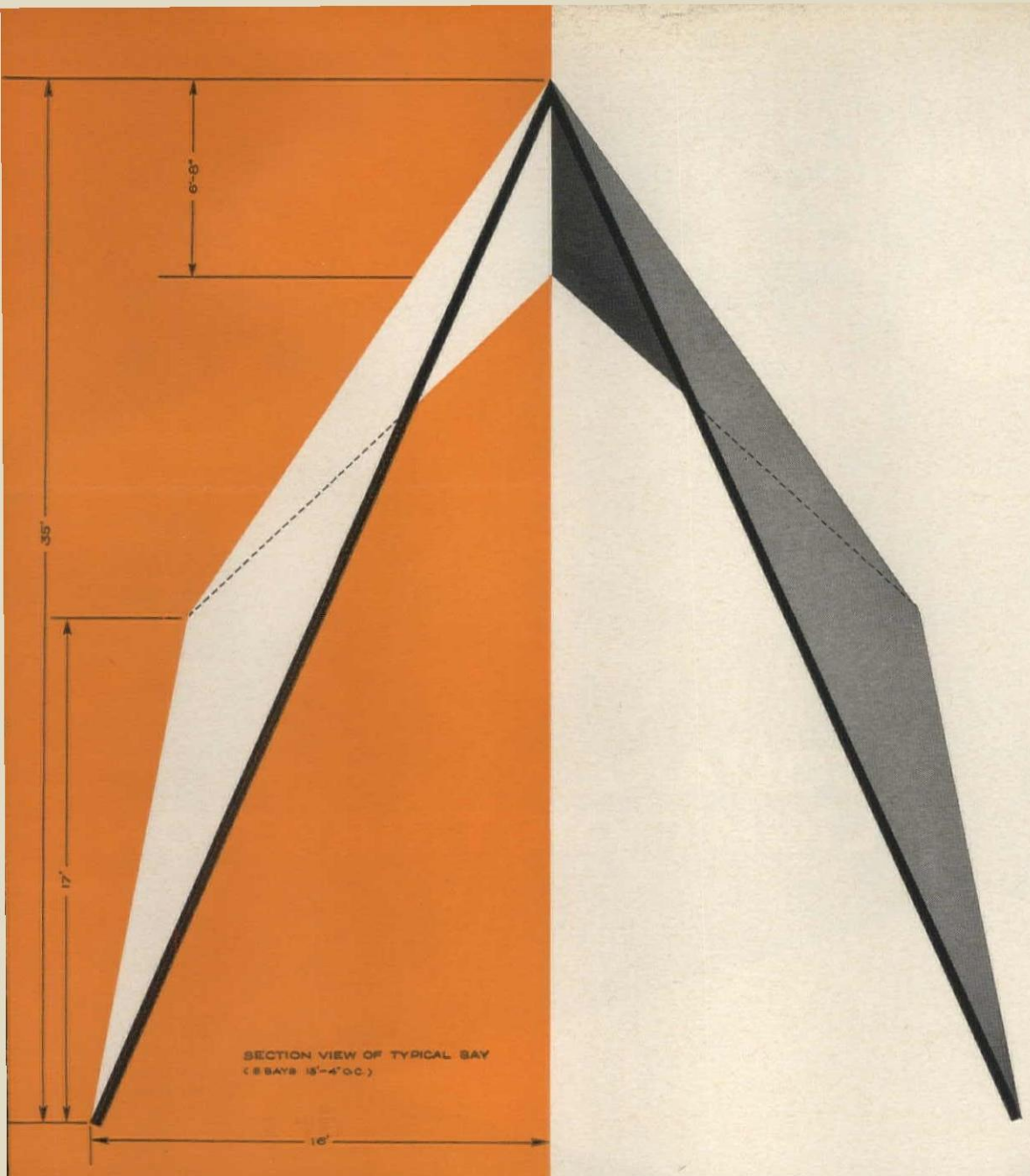

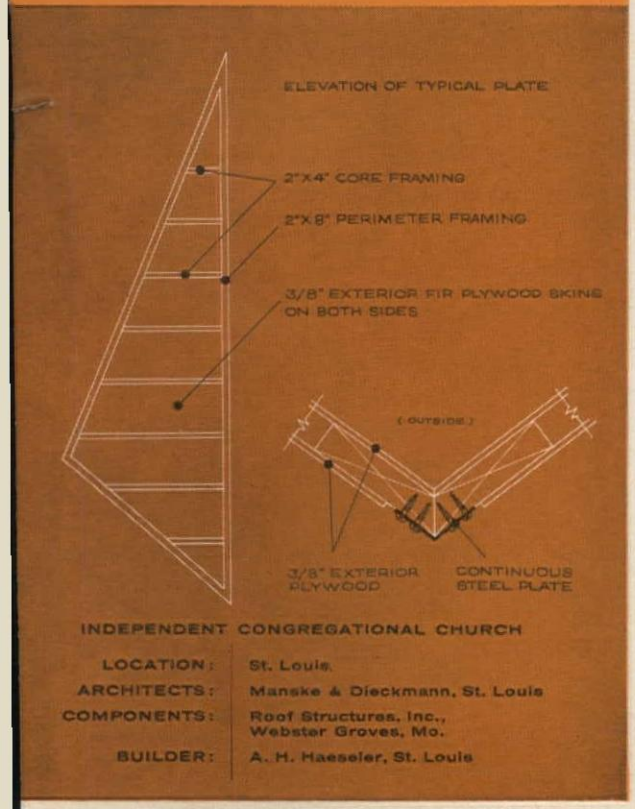

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Like all folded plates, the space plane acquires strength and rigidity from interaction of inclined plywood diaphragms. But its components may take shapes other than rectangular, to create more complex designs. Here they are triangular stressed skin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

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

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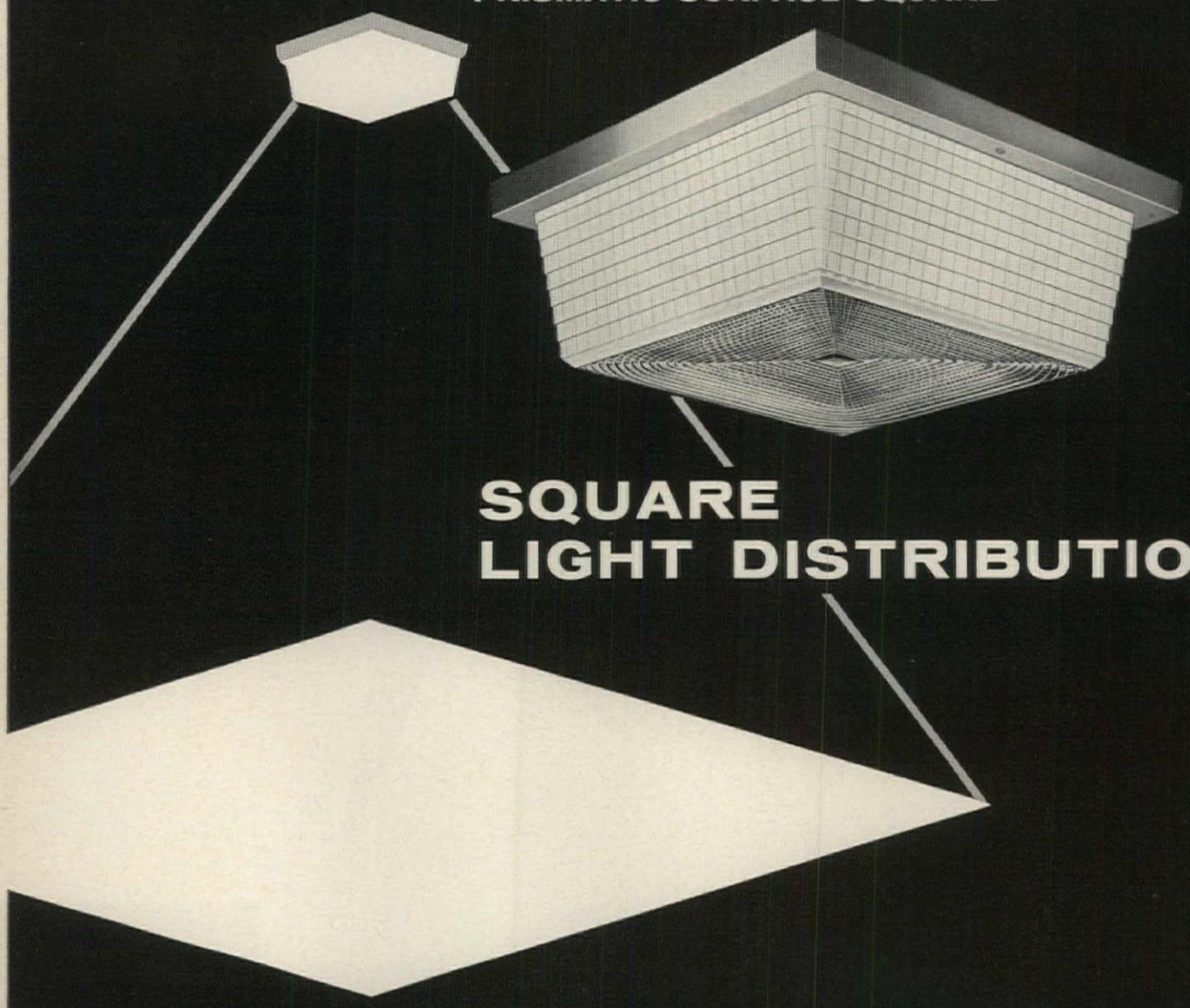

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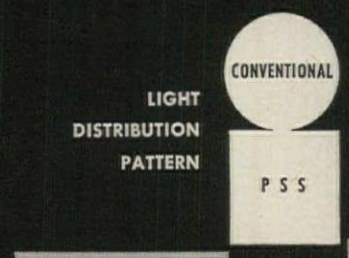

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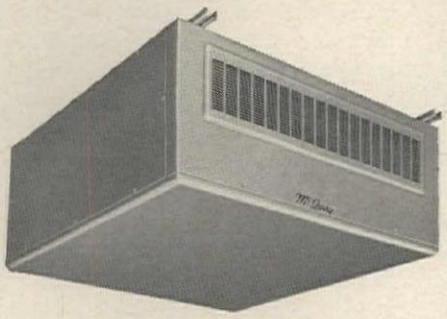

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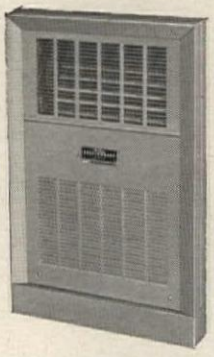

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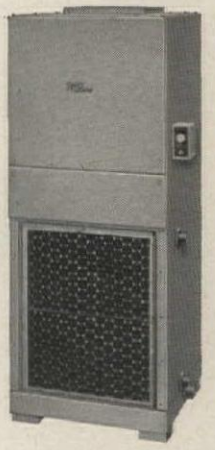

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EDUCATION NEWS: CREESE IS DEAN AT OREGON; OTHER APPOINTMENTS

Dr. Walter L. Creese, architectural historian and professor of architecture at the University of Illinois, has been named dean of the School of Architecture and Allied Arts at the University of Oregon. His appointment, subject to approval by the State Board of Higher Education, is effective July 1, 1963. Acting dean for the current year is Marion Dean Ross. At Illinois since 1958, Dr. Creese was visiting professor at Harvard during the summer of 1961.

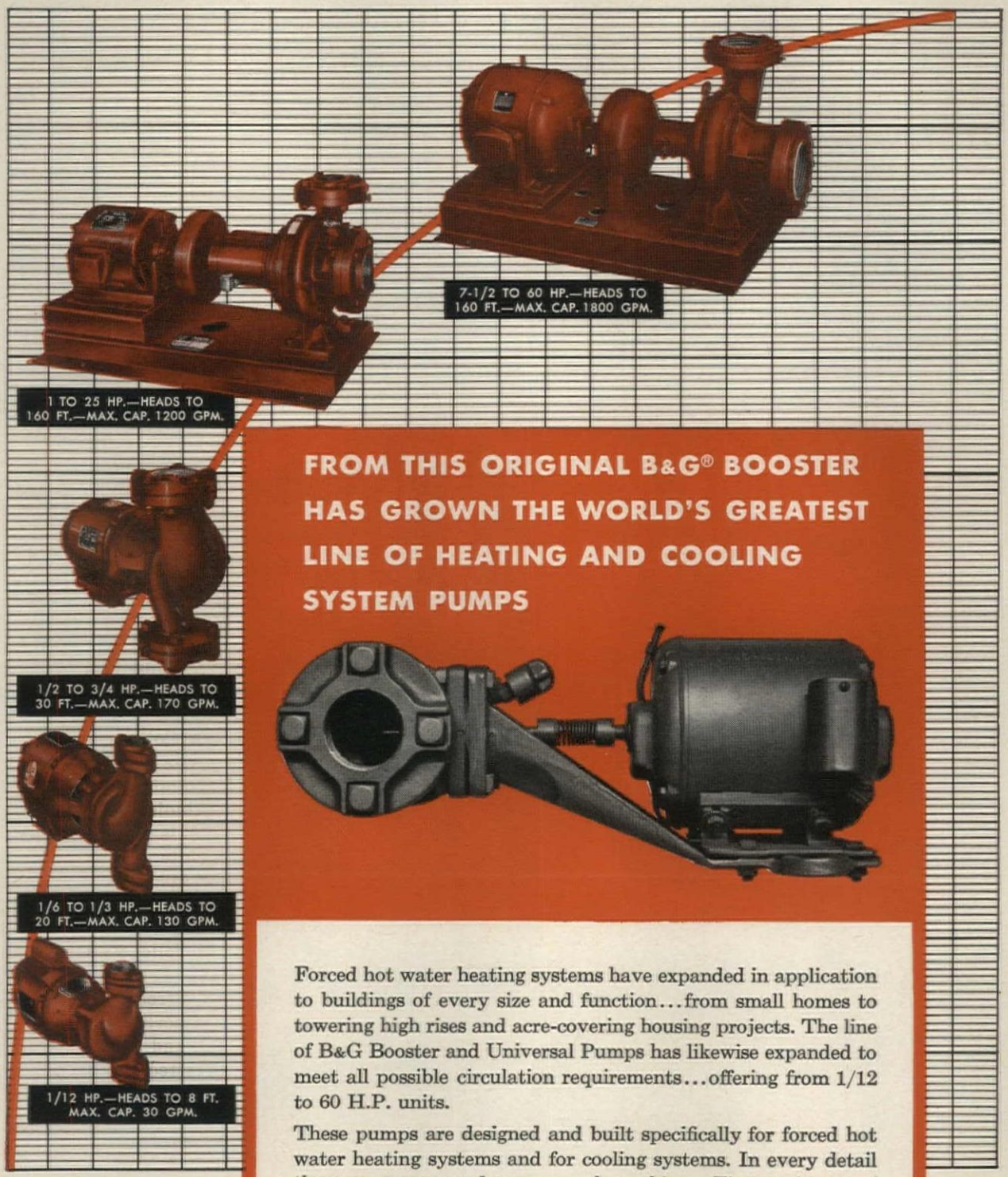
Peter Faller from the technische-Hochscule at Stuttgart, West Germany, has been appointed lecturer in architecture at the University of Virginia School of Architecture. **Donald H. Miller,** new assistant professor in city planning, was on the faculty of the University of California until 1960 when he was granted a research fellowship at the Stedebouwkunde of the Technological University of the Netherlands at Delft.

Robert Samuel Taylor, architect, on the faculty at Princeton since 1959, has been appointed Visiting Andrew Mellon Professor in Architecture in the College of Fine Arts, Carnegie Institute of Technology.

Dr. Donald S. Berry, professor of civil engineering at Northwestern University's Technological Institute, has been named new chairman of the civil engineering department. He replaces **Dr. John A. Logan,** who has been named president of Rose Polytechnic Institute, Terre Haute, Ind.

Jacques Collin, formerly of the Applied Arts School of France and Ohio University and on the University of Illinois architecture faculty since 1960, is now assistant professor of architecture at the University of Texas. Also named assistant professor of architecture is **Frank E. Whitson Jr.,** who has taught at Texas A & M College since 1960.

Willard Strode, architectural engineer, formerly with the University of Kansas and at present chairman of the architectural engineering division of the American Society for Engineering Education, has been appointed professor of architecture at Texas A & M College. Four other appointments at Texas A & M are: **Guillermo Vidaud,** a native of Cuba, who was a professor of architecture at Havana University before coming to the United States in 1961, as assistant professor; **Weldon C. Steward,** who worked with the firm of Perkins and Will, White Plains, N.Y., as assistant professor; **Steve M. Vaught,** formerly with several architectural firms in Texas, as instructor; and **David G. Woodcock,** in the past a design critic and lecturer at the University of Manchester, England, as instructor.



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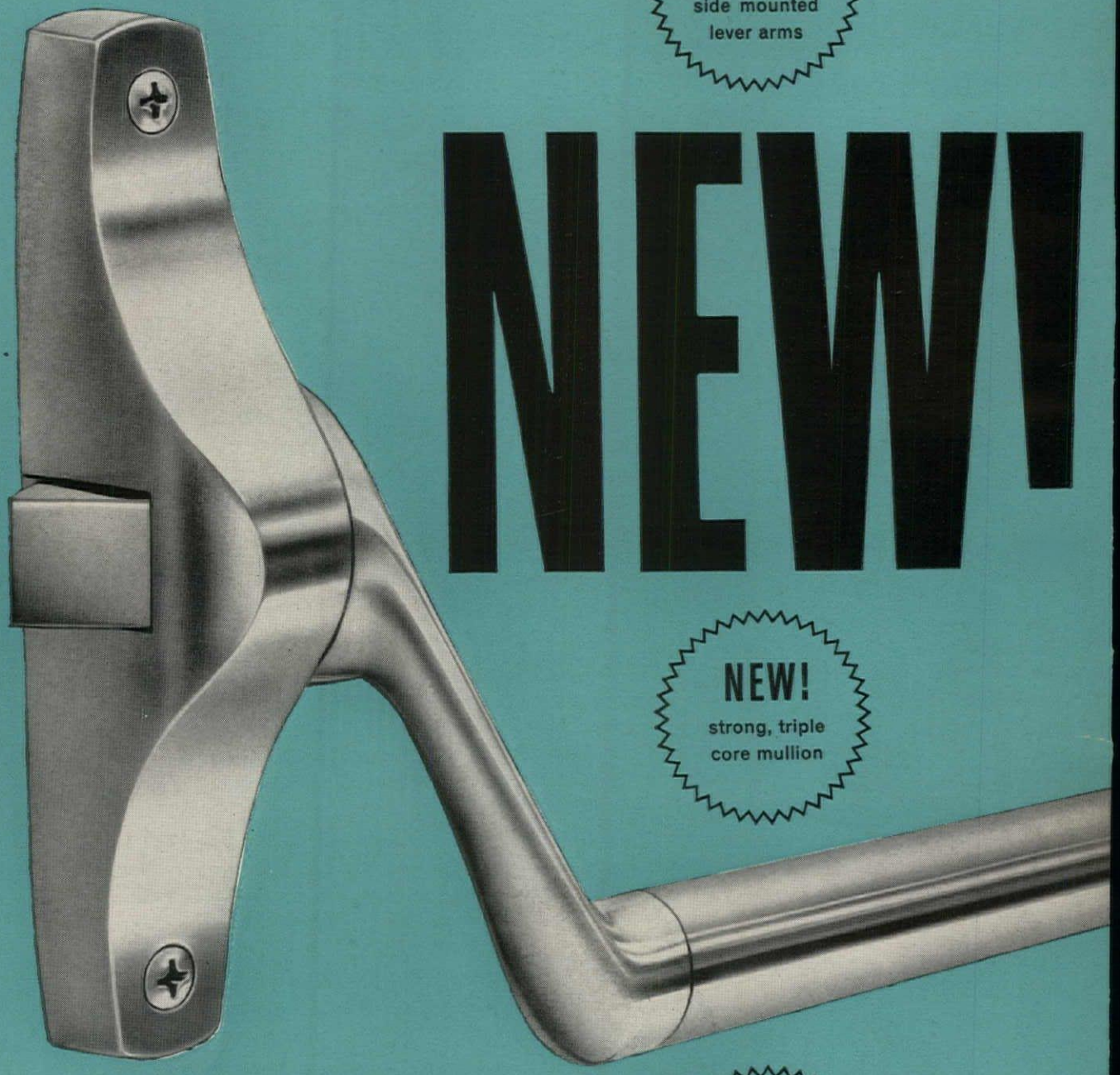

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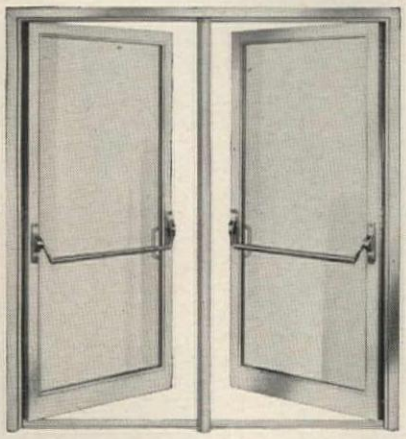

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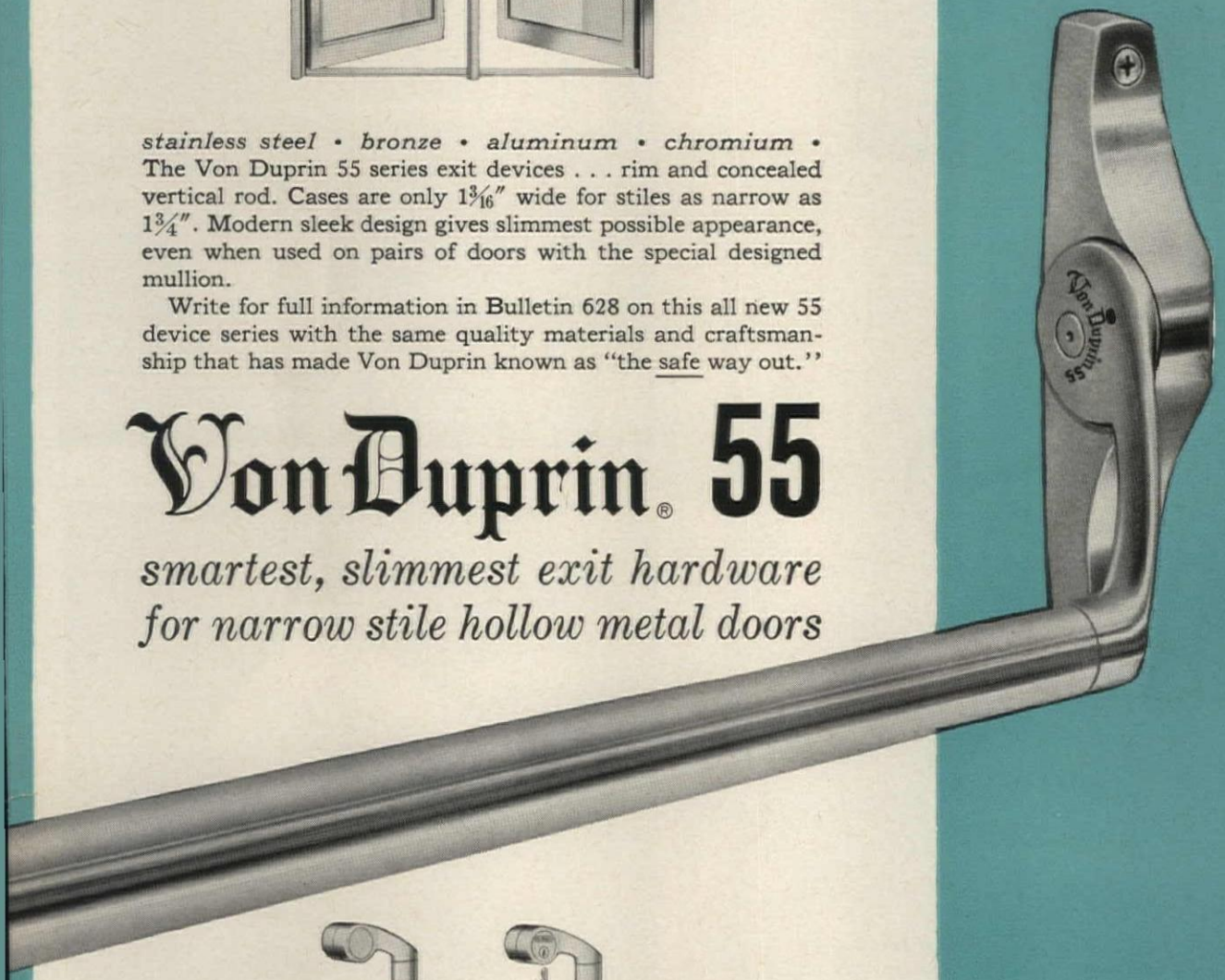

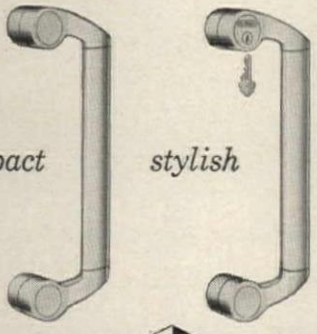

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5.

SOCIAL COMPLEXITY AND URBAN DESIGN

THE UNIT OF URBAN ORDER

The key to a fresh architectural image of the city as a whole lies in working toward an organic unit of urban order which will hold together its component parts through successive changes in function and purpose from generation to generation. While such an archetypal image can never be fully realized, this concept of the city as a whole, restated in contemporary terms, will help to define the character of each institutional structure.

In general outline, though not in dramatic architectural form, such a unit was first achieved in the British New Towns, for these were the first towns since the Middle Ages to attempt to incorporate in a unified whole all the necessary features of the social and natural environment. Contrary to prevalent opinion, England's two pioneer New Towns, originally called Garden Cities, built by private corporations under the restriction of limited dividends, have been an economic success. Though their growth was at first slow, it was sound. And in far more rapid fashion, the 15 British New Towns built since 1947 in accordance with Ebenezer Howard's principles, now with government aid, have been even more strikingly successful. In many of their factory precincts, and in some of their new town centers, they vie with Coventry, Rotterdam, and Vällingby in delineating the beginning of a fresh urban form. Already nearly 500,000 people live in these salubrious towns, planned to contain from 15,000 to 90,000 people each; and ultimately they will hold a million. In the past year, three more New Towns have been started in Britain.

Plainly Howard's method of nucleating and integrating urban functions, in units scaled to human needs and purposes to which bureaucratic and mechanical functions are subordinated, has proved viable even under a regime more or less committed to expanding these separate functions and profiting by their continued growth. The new quarters in existing cities that have achieved anything like a comparable gain in health, social diversity, family-centered amenity, and varied economic opportunity are those which, like the rebuilt Borough of Stepney in London, have followed most closely the New Town formula of mixture, balance and limitation of density.

Today the municipal corporation of Glasgow, which for long obstinately resisted the new idea of urban growth by colonization instead of the usual method of congestion and conglomeration, has reversed itself. Glasgow is now controlling its further population growth by building new towns; and its first full-size town, Cumbernauld, is now approaching completion. If there has been any flaw in this development it is only that it has proceeded so rap-

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". . . 19th century boulevard . . . has long been obsolete . . ."

Ewing Galloway

". . . but its latest specialized form,
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". . . the mistakes of monotransportation in urban areas . . ."

idly that the planners and architects—too often bound by obsolete standards imposed by the Ministry of Transport and local government authorities —have not been able to incorporate the results of past experiments and recent urban experience in their designs.

Now this organic principle of urban growth and organization does not apply only to that part of the population which can no longer be packed into the existing metropolitan centers. One of the great causes for the wholesale exodus now taking place into the suburbs is that those who can make a choice are no longer content to put up with depleted physical environment and the often degraded social conditions of our "great American cities." If the big cities hope to hold their population and continue to perform those special functions that depend upon large numbers of people, they themselves must have some of the spaciousness, the order, and the variety in their intimate, small-scale units that the New Town concept has brought into existence. Fortunately the method Howard initiated can be applied equally to the redevelopment of the existing metropolitan centers.

ALTERNATIVE URBAN PROGRAMS

Limitation of numbers and density, mixture of social and economic activities, internal balance, the interplay of usable open spaces with occupied spaces, the restoration of parks, gardens, and green walkways as integral parts of the urban environment—these are the keys to overcoming the congestion and disorganization of the big city and restoring its general habitability. So essential are these processes in creating new urban forms that many critics who parade as Howard's sworn enemies have nevertheless adopted his guiding principles under another name.

Thus in "Communitas," Paul and Percival Goodman, after shelving Howard respectfully as a bourgeois back number, restate a major part of his thesis as their own original contribution. Thus Le Corbusier, after contemptuously dismissing the British garden city, comes forth with his own "Vertical Garden City" as an alternative and uses the advanced mechanical facilities of a skyscraper to achieve the all-too-limited associations of a mere village. Thus again Dr. E. A. Gutkind, whose recent book on "The Twilight of Cities" spurns the Garden City and the New Town as an obsolete Victorian concept, projects as alternative a multitude of garden townlets, or infra-garden cities, as his way of handling regional dispersal.

Even Jane Jacobs, after characterizing Howard as a would-be destroyer of the city, proposes to restore the essential urban qualities that have been lost through over-congestion and over-expansion by dividing the metropolis into self-governing "districts," with their own local economic enterprises and social opportunities. Mrs. Jacobs' districts are designed not merely to welcome the diverse activities that Howard insisted on for the Garden City, but they turn out even to have the same suggested population, some 30,000. That number, incidentally, is the very size that Leonardo da Vinci hit upon when he proposed to the Duke of Milan to relieve the congestion and foul disorder of 16th-century Milan by designing 10 cities of 30,000 population each.

In short, Mrs. Jacobs atones for her sedulous ignorance of Howard's work by unconsciously becoming his disciple, at least for half his urban program. And for similar valid reasons the recent Royal Commission report on the government of London proposes to reorganize that unwieldy mass into semi-autonomous boroughs of approximately equal size, around 200,000, all co-operating within a larger regional framework. This gives support to Mrs. Jacobs' suggestion that 100,000 is perhaps the right size for a "district" in a big city like New York; but here again she touches on the upper limits of the actual New Towns!

No adequate image of the emerging city can be formed without reference both to the most enduring and valuable features of historic cities as well as to the fresh departures and fresh opportunities that our modern age, with its immense stores of knowledge, wealth and power, has opened up. Not least, we must carefully evaluate the many experiments in urban design made during the last century, from Ladbroke Grove (London) to the latest suburban shopping center.

Yet as a result of the ferment in planning thought that Howard started, we can now draw the following conclusions. First, the useful, manageable, visible, reproducible, and—not least important—humanly lovable city must range somewhere between 30,000 and 300,000 people. Beyond that size, if we are not to enter the realm of de-personalized mechanisms, the unit of organization becomes not the city but the region. Second, its own area and population must be limited in order to be able to set a limit to its component parts. The maintenance of diversity and balance between all essential urban functions, biological, economic and cultural, is the only effective means of controlling the insensate dynamism of separate institutions that, concerned solely with their own expansion, tend to separate themselves from the whole.

Like personalities and organisms, cities are devices for reducing the now otherwise limitless energies at our command to just those quantities that will promote a self-governing and self-developing mode of life. Localized oversize in any single institution, whether it is a business corporation, a hospital or a university, is a sign that the city has ceased to perform one of its most essential modern func-

Claire Kofsky

". . . the green walkway . . . must be restored as a separate system . . ."

Brown Brothers

". . . it requires time, not merely an individual lifetime, but many collective lifetimes . . ."

tions: the control of one-sided growth.

Thus the new conception of the city, as a balanced organization maintaining unity in diversity and continuity in change, is essential for controlling excessive quantities, whether of population or physical power. For having achieved the first glimpse of this organic principle of urban order, Ebenezer Howard will perhaps be remembered even longer than the "first" Greek town planner, Hippodamos. Though many historic cities embodied this idea, this is the first age in which it has come clearly into consciousness.

THE NEXT STEPS IN DESIGN

Those of us who are pursuing further the train of constructive thought that Howard so largely started and Raymond Unwin and Barry Parker first carried out, cannot be content with any present embodiments of their ideas, though we no doubt have a duty to defend them from libelous caricature and ignorant abuse. Still less do we wish to make the existing New Towns a standard pattern for all urban integration, duly codified by law. Such a stereotyping of the idea would eliminate the very richness and variety of concrete detail that is inherent in the notion of a city. For the city is nothing less than a collective personality whose character reflects its unique combination of geographic, economic, cultural and historic factors. As William Blake put it, "One law for the lion and the ox is oppression."

Admirable though the New Towns of Britain have proved, in contrast with the raucous disorder and standardized blight of so many metropolitan areas, no existing examples can be considered as final. Many rectifications and improvements remain to be made both in detail and in their general pattern. And meanwhile, some seemingly decisive innovations made elsewhere, like the American suburban shopping center and the specialized industrial park, have already disclosed their own grave liabilities, which stem mainly from their boasted detachment from the city. Apart from this, thanks to a century of historic investigation whose results have at last come to a head in the works of Pierre Lavedan, Ernst Egli and myself, the essential value of old forms can now be properly appreciated, and some of these forms, hitherto rejected as obstacles to "progress," can be preserved either to maintain continuity or to serve as a departure for further renovations. For much has recently been learned about the social nature of the city and the meaning of its diversity that suggests further revisions, adaptations and innovations. Some of Mrs. Jacobs' fresh observations on these matters deserve to be heeded, even by those who are not drawn to her planning proposals.

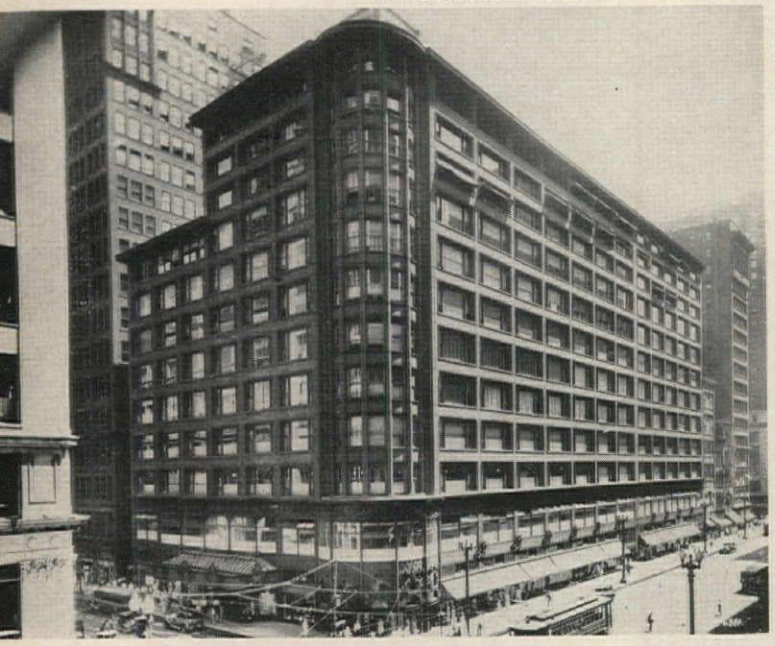
But first we must remove a current superstition. The notion that the form and content of the city must primarily serve its technology turns the true order upside down. Perhaps the primary function of the city today is that of bringing technology itself into line with human purpose, reducing speed, energy, quantification to amounts that are humanly assimilable and humanly valuable.

Along these lines there has been a considerable amount of fresh architectural and social invention, which awaits embodiment in the larger framework of the city. Thus the separation of fast-moving vehicles from the pedestrian—the Radburn principle, or more anciently, the Venice principle—not merely facilitates these two complementary modes of circulation, both still necessary, but releases building from the old uniform lot-and-block pattern. This makes it possible to plan superblocks and precincts and neighborhoods so as to serve a variety of functions related in space and form to the needs of the users, rather than to an arbitrary street pattern. That gives the architect in the city proper some of the freedom in composition that he has had only in the suburbs. So, too, the new pedestrian shopping mall, as in Coventry, Rotterdam, and Stevenage, has already demonstrated advantages that neither the old shopping avenue, nor the isolated suburban shopping center, wallowing in a sea of parking space, can provide.

Still other innovations call for critical assessment and doubtless for further modification or for alternative solutions. Some of them, like the urban greenbelt, the Radburn plan of a continuous internal park, or the Perry conception of the balanced neighborhood unit, have now been sufficiently tested to provide useful data for judgment. Not least the notion of a single ideal residential density calls for further reconsideration; for, even before the Architectural Review's polemic against "prairie planning," it had become clear, as I pointed out in 1953, that the British New Towns had been overspaced, and that the hygienic and recreational advantages of abundant open spaces must be integrated with the social and domestic needs for cohesion, intimacy, and spontaneous association, which demand somewhat higher densities and the preservation of the pedestrian scale.

For all their notable improvements, the over-all designs of the British New Towns are at last ready for detailed and discriminating criticism on the basis of their actual performance. One of the principal factors to be reconsidered is their density. As a result of a uniformly low residential coverage, under mandate of legislation, along with an overplenitude of wide roads and verges, to say nothing of the acres of playing fields demanded by education authorities, plus neighborhood greenbelts, which are actually more often wide wedges, the planners of New Towns have even forfeited the domestic convenience of the neighborhood unit itself. This space

Courtesy Museum of Modern Art, New York

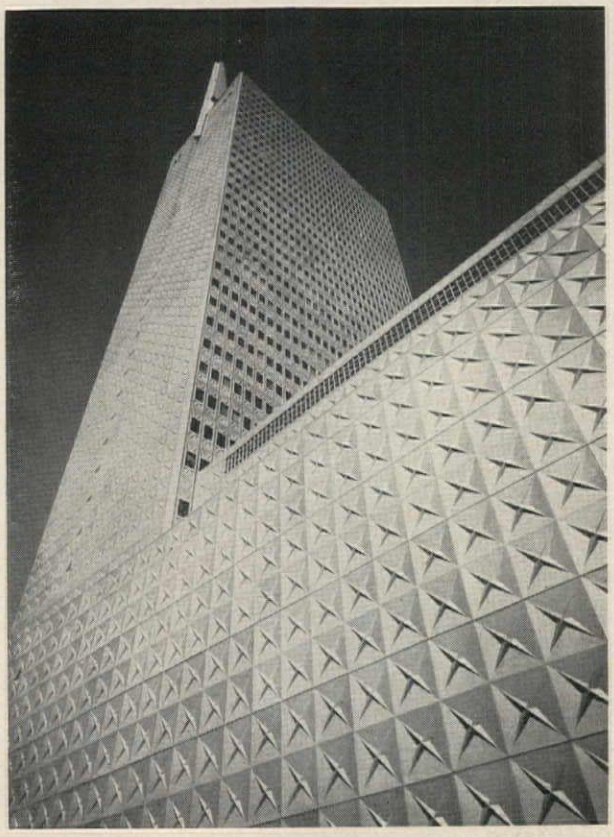


". . . part of what was modern 50 years ago is by now vitally historic . . ."

Moss Photo Service, Inc.

". . . the fashionable current model . . ."

Ulric Meisel



". . . what looks brightly modern only for the year in which it was built . . ."

wastage must be challenged even more severely in many current American projects, from new university campuses to the new project of El Dorado Hills near Sacramento, California, which has been conceived as a collection of semi-urban villages that more or less correspond, in fact, to Dr. Gutkind's ideal pattern. All this calls for more judicious criticism than it has yet received from any quarter in the light of a more social conception of the city.

Meanwhile many older inventions in planning call for fresh expression. The 19th-century boulevard or parkway, in which pedestrians and vehicles shared the same space, has long been obsolete, but its latest specialized form, the expressway, must be routed out of the city, if the city is to have a life of its own. Once the expressway enters the city, it undertakes an impossible task of canalizing into a few arteries what must be circulated through a far more complex system of arteries, veins, and capillaries: only the fullest use of the whole system, restored for general circulation, with public vehicles undertaking the major burden, will rectify the mistakes of monotransportation in urban areas. As for the discarded element in the boulevard—the green walkway—it must be restored as a separate system, detached from wheeled vehicles, as is now being done in the Society Hill district of Philadelphia. For the same reason, that other by-product of the boulevard, the sidewalk cafe—now ruined by the noise and fumes of motor traffic—must take refuge in tiny neighborhood parks, such as those in Central Athens, though they might easily survive as a socially enlivening feature in the interior of a superblock.

These many innovations and rectifications call for increasing integration in formal designs, which will set a new pattern for each part of the city. But to demand a clean-minted urban image from the work of a single architect, or even a single generation, is to misunderstand the essentially cumulative nature of the city. An organic image of the city requires for its actual fulfillment a dimension that no single generation can ever supply: it requires time, not merely an individual lifetime, but many collective lifetimes. Neither as a seemingly unchangeable spatial object outside of time, nor as a disposable container, good only for the brief period necessary for financial amortization, can the city perform its essential function. The now popular concept of the city as a disposable container, to be replaced at a profit every decade or every generation, in order to feed an expanding economy, denies the most valuable function of the city as an organ of social memory; namely its linking up the generations, its bringing into the present both the usable past and the desirable future.

No organic urban design for any larger urban area accordingly can be completed once and for all, like a Baroque city established by royal fiat, by wiping out all existing structures and replacing them by the fashionable current model. This futurist method would put the city at the mercy of five-year-old knowledge and five-year-old minds, and the resulting loss of memory is no less a serious impairment to the life of the city than the loss of memory in people whose brains have been injured by shock or senility. In a sense, then, there can be no single modern architectural form of the city. Part of what was modern 50 years ago is by now vitally historic and as worthy of sedulous preservation as any ancient building in so far as it still serves new uses, while other examples of what was once modern have long been obsolete and should be removed; indeed, what looks brightly modern only for the year in which it was built is usually out of date before it is finished.

MODERNITY AND CONTINUITY

In contrast to the position taken by Paul Ylvisacker and others, a more organic view of the city holds that the greater the inherent dynamism of science, technics, and finance, today, the greater need there is for a durable urban container. For as I pointed out in "The City in History," when the container changes as rapidly as the contents, neither can perform their necessary but complementary functions. Here at last we have, I believe, an essential key to sound urban and architectural design today: it must not merely welcome variety and complexity in all their forms, environmental, social, and personal, but it must deliberately leave a place for continued rectification, improvement, innovation and renewal. When soundly designed, such an urban form will be fulfilled, not spoiled, by the increment of each succeeding generation, as the medieval city was in fact improved by interpolating squares and buildings that mirrored the new spatial order of the Renaissance.

Now the cities of the past often overemphasized continuity. Their builders entombed life in all-too-massive permanent structures and in even more rigid routines that resisted growth and prevented the necessary modifications each generation must make. But the cities of today have just the opposite vice: while their neglected quarters fester, their favored "dynamic" areas are too ephemeral to foster human growth and cultural continuity. Once time and organic complexity are taken seriously as components of design, it is plain that the replacement of outworn areas is a delicate process; and while it must go on constantly in small measures, it must not be fatally limited to superficial reformations that do not interfere with any fresh larger designs. Among the many postwar plans for rebuilding half-ruined cities, those made for Manchester by its town surveyor, Rowland Nicholas, have stood out by reason of the fact that its proposals for the redesign of partly wrecked areas, filled with obsolete buildings

and wasteful streets, were conceived as a complex process in time: demolition and rebuilding were provided for in a series of stages, covering a period of 40 years. Such planning, which does justice to the future without forgetting the past, happily exemplifies an organic approach that can handle, and profit by, any degree of complexity and diversity.

This analysis perhaps clarifies the failure of Howard's concept of the Garden City or New Town to find at once an appropriate architectural expression. Our age tends to think of complexity in purely mechanical terms, and to reduce social and human relations to simplified abstract units that lend themselves easily to centralized direction and mechanical control. Hence the brilliantly sterile images that Le Corbusier and Mies van der Rohe projected, images that magnify power, suppress diversity, nullify choice, have swept across the planet as the new form of the city. This identification of modern form with uniform high-rise buildings, which one finds too often even in recent surveys of modern architecture, should be as outmoded as the bureaucratic animus to which it pays homage. Such over-simplification of form is now eating the heart out of our projects of urban renewal, and has had even more disastrous results in such new cities as Brasilia.

By contrast, a new image of the city which does justice to all its dimensions can be no simple overnight job: for it must include the form-shaping contributions of nature, of river, bay, hill, forest, vegetation, climate, as well as those of human history and culture, with the complex interplay of groups, corporations, organizations, institutions, personalities. Let us not then unduly regret our slowness in arriving at an expressive and unified form for the modern city.

The minds that are fully at home in all these dimensions of modern life are few, and in any quantity they have still to be formed. Certainly they are not yet being equipped and disciplined by our leading architectural and planning schools; nor are there enough leaders in business and government to provide them the opportunities they need. Yet once a more organic understanding is achieved of the complex interrelation of the city and its region, the urban and the rural aspects of environment, the small-scale unit and the large-scale unit, a new sense of form will spread through both architecture and city design. In both spheres, instead of creating closed and complete forms, there will be a deliberate attempt to provide space for further constructive effort and development.

SUMMARY

This series began with the obvious proposition that even our biggest and richest cities today fall short of the ideal possibilities that our age has opened up. We have not had the imagination nor the forethought to use the immense energies modern man now commands: our architects have frittered them away on constructive trivialities and superfluities that have often defaced the environment without improving the human condition or the architectural form. To counteract this miscarriage of effort, we looked about for a fresh image of the city, as conceived by the influential planners and architects of the last half century, Le Corbusier, Frank Lloyd Wright, and Raymond Unwin; and we found that the only model that did justice to the complexity of the city was that offered in purely diagrammatic form by Ebenezer Howard, the founder of two Garden Cities. Because the New Town principle was not invented during the last five years, the more fashionable academic minds regard it as obsolete and flirt with a formless "Megalopolis" as an ultimate form. Yet even the new towns that have been built on Howard's abstract principles have hardly as yet provided a fresh image, in terms of present day potentialities and the present needs of the emerging city.

Part of the reason for all these shortcomings became evident when we considered that organic complexity requires the dimension of time; and that even in the design of the British New Towns not sufficient time has yet elapsed to incorporate and integrate all that we know now about the nature of cities, and the value of the various urban inventions that have been produced during the last century. Thus we see that a truly modern design for a city must be one that allows for both its historic and social complexity, and for its continued renewal and reintegration in time. No single instantaneous image, which reflects the needs of a particular moment, can encompass the feelings and sentiments that bring the generations together in working partnership, binding the past that has never died to the future that is already in question.

This interpretation of urban form indicates that the same cultural factors underlie both the possibility of renewal in existing cities, however big, and the building of new towns, however small. As energy and productivity increase, a larger proportion will be available for the humanization of man; and this task, despite many ominous contrary indications today, is still the essential task of the city. Only those who seek to respond to this challenge will be able to give the city an adequate architectural form: a form that will bring within the range and grasp of every citizen the wider world on which his life and well-being depend.

PLACE VILLE MARIE

Seven acres in the heart of Montreal undergo redevelopment.
Result: distinguished architecture and a new city symbol

PLAZA AND TOWER COMBINE TO GIVE DOWNTOWN MONTREAL A BRIGHT NEW LOOK

Place Ville Marie, Montreal, Canada

ARCHITECTS AND PLANNERS:
I. M. Pei and Associates
Partner-in-Charge: Henry N. Cobb
City Planner: V. Pasciuto-Ponte
Project Manager: Donald H. Gorman

ASSOCIATE ARCHITECTS:
Affleck, Desbarats, Dimakopoulos, Lebensold, Michaud and Sise

DEVELOPERS: *Webb & Knapp (Canada) Ltd.*

OWNERS: *Trizec Corporation Ltd.*

STRUCTURAL ENGINEERS:
Brett-Ouellette-Plauer Associates

STRUCTURAL CONSULTANTS:
Severud-Elstad-Krueger Associates

MECHANICAL AND ELECTRICAL ENGINEERS:
James Keith & Associates

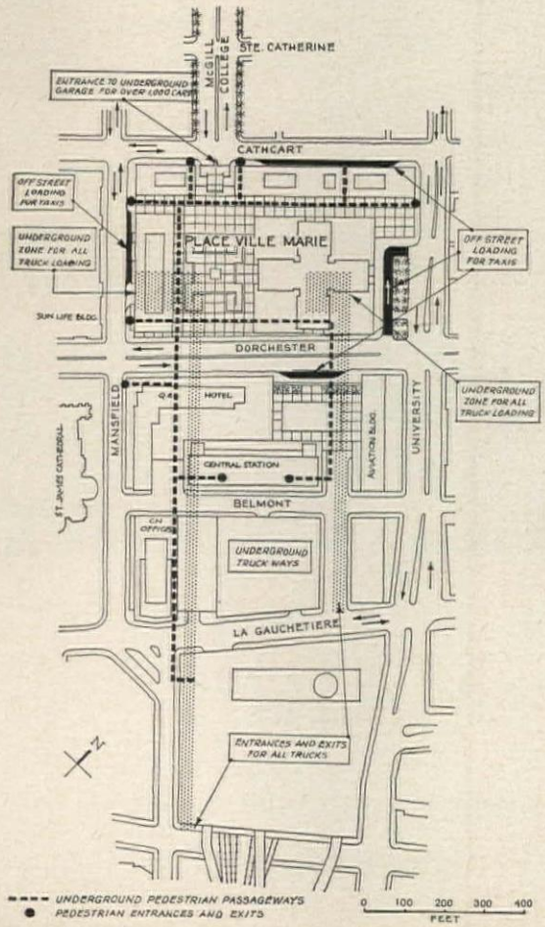
MECHANICAL AND ELECTRICAL CONSULTANTS:
Cosentini Associates

TRAFFIC AND PARKING CONSULTANT:
Edwards and Kelcey

ACOUSTICAL CONSULTANTS:
Bolt, Beranek & Newman, Inc.

LIGHTING CONSULTANT: *Richard Kelly*

GENERAL CONTRACTOR:
The Foundation Company of Canada Ltd.



Joseph W. Molitor photos

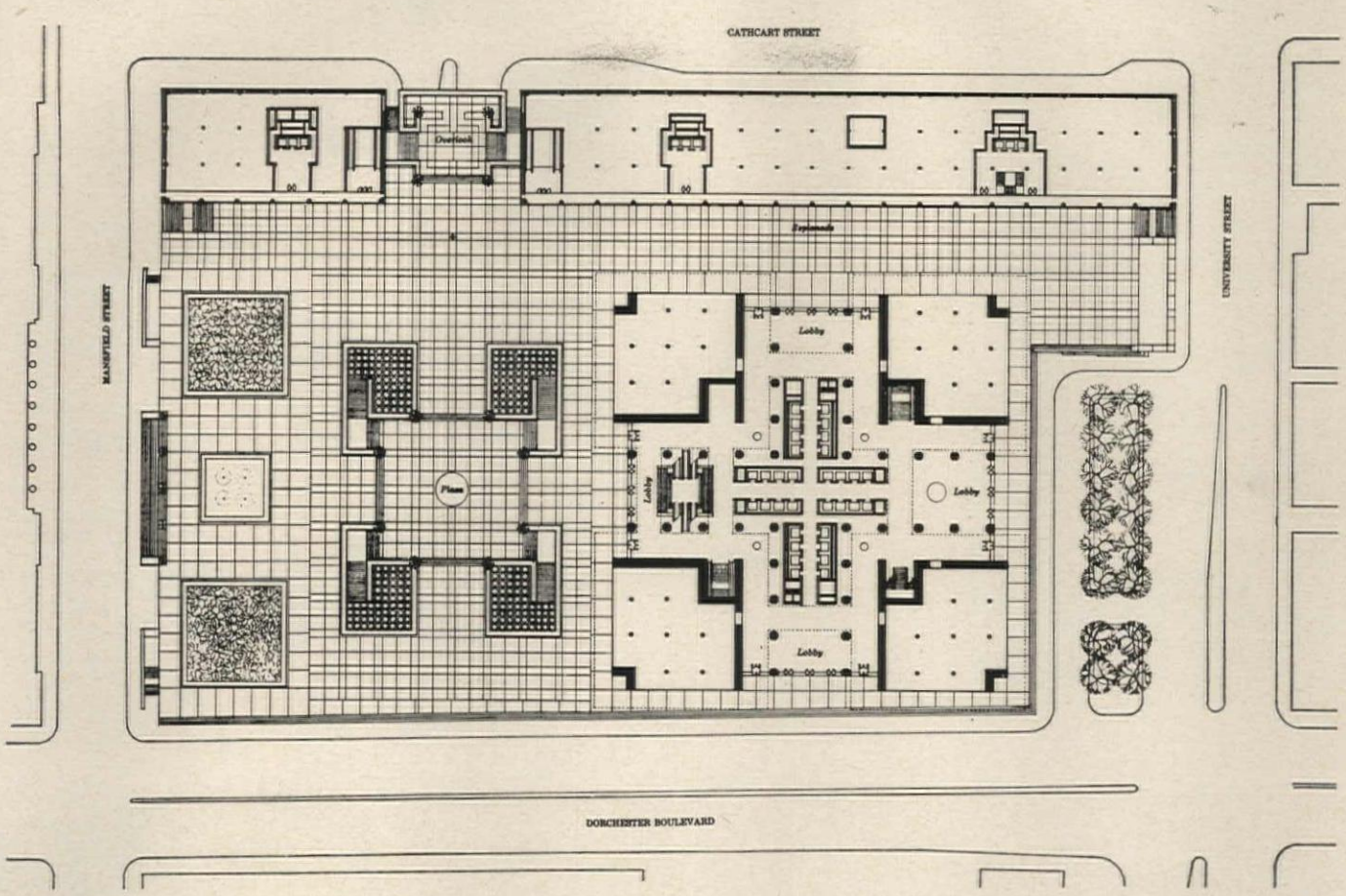
Place Ville Marie demonstrates that enlightened redevelopment can produce well designed architecture for business, woven skillfully into the downtown scene. The Place's buildings center on a highly unusual, three-dimensional plaza which assumes such importance in the concept that the 42-story office tower becomes an incident. The tower was designed to relate to the plaza; not vice versa.

This plaza is not just another of the currently fashionable tall-building platforms that chew random holes in city street patterns, but an enclosed, well defined space that works both laterally and vertically with a complex of buildings to enhance the central city. The plaza space is defined south and west by existing large buildings. At the northern boundary, two new four-story office buildings bound the space, work with the plaza, and flank an opening into McGill College Avenue, creating a vista reaching up the hill to McGill University and Mount Royal beyond. The office tower to the east is a major plaza element, with its shaft and spreading base consciously related to both plaza and city. The plaza pushes through and around the tower lobby to form a shopping esplanade at the north, and ends eastward as it merges into a new park.

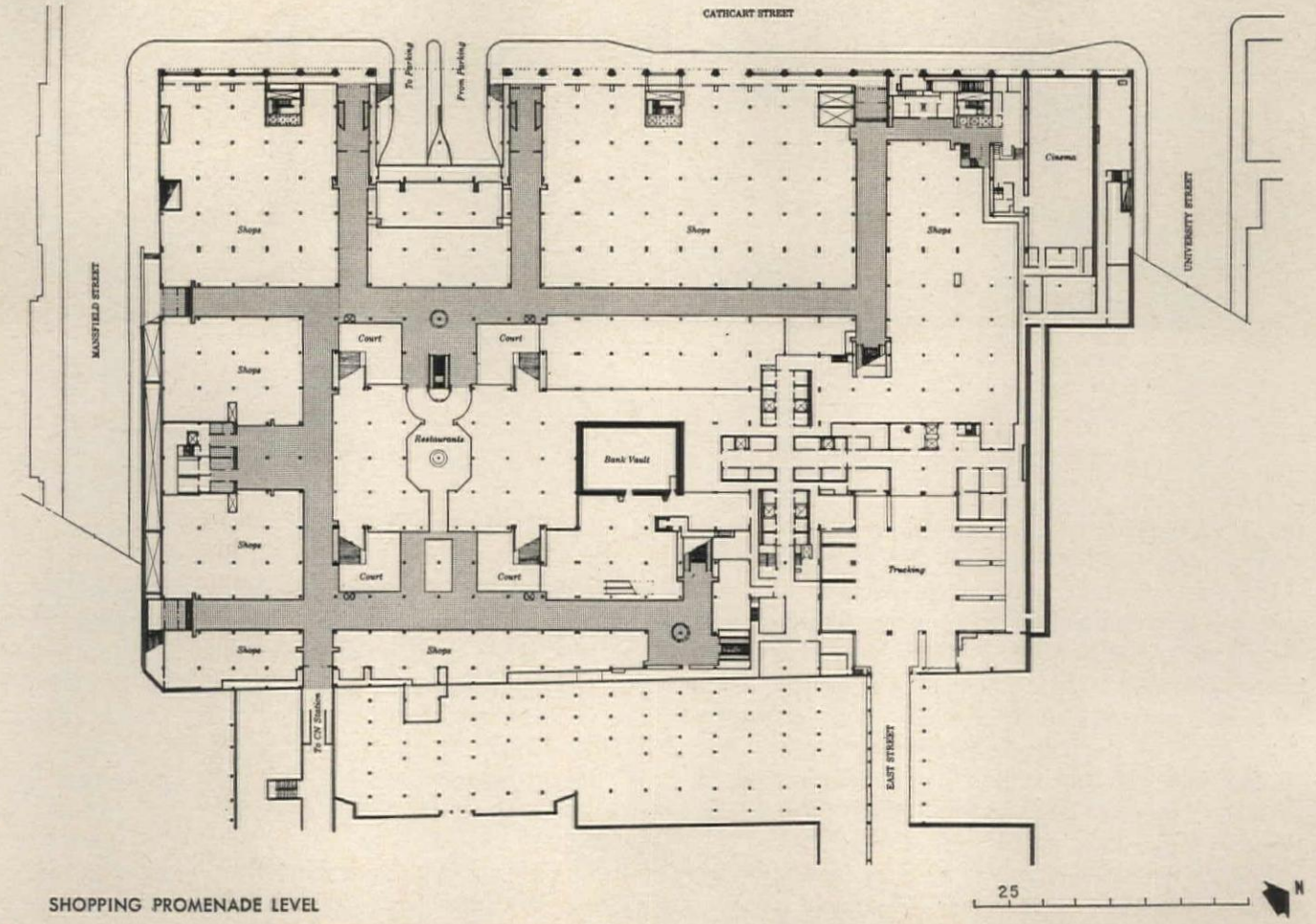
By means of four sunken courtyards, the plaza is

joined vertically—both visually and functionally—with the lower level shopping promenade and pedestrian link to nearby hotel and terminal. Designing the wells as a square central pattern emphasizes the plaza shape; corner locations would have weakened it. The wells bring visual relief to the broad paved expanse and create daylighted courtyards below. The lower level shopping area is especially well handled architecturally; a modular framework of aluminum and glass serves to tie the shops together, yet allows each great freedom of arrangement. The two levels below serve for parking and service; railway tracks are at the lowest level.

The tall office tower was an important consideration in the master plan for three adjoining blocks which Webb & Knapp of Canada hired architect I. M. Pei to make in 1956. This speculative plan, which cost Webb & Knapp $360,000, was approved in 1957 by the owner of the property, Canadian National Railways, which in turn leased the northernmost, seven-acre block to Webb & Knapp for development. For the master plan William Zeckendorf, Webb & Knapp president, asked the architects to provide "a complex of buildings related to each other and, at the same time, organically wed to the rest of Montreal," including an institutional type office



PLAZA LEVEL

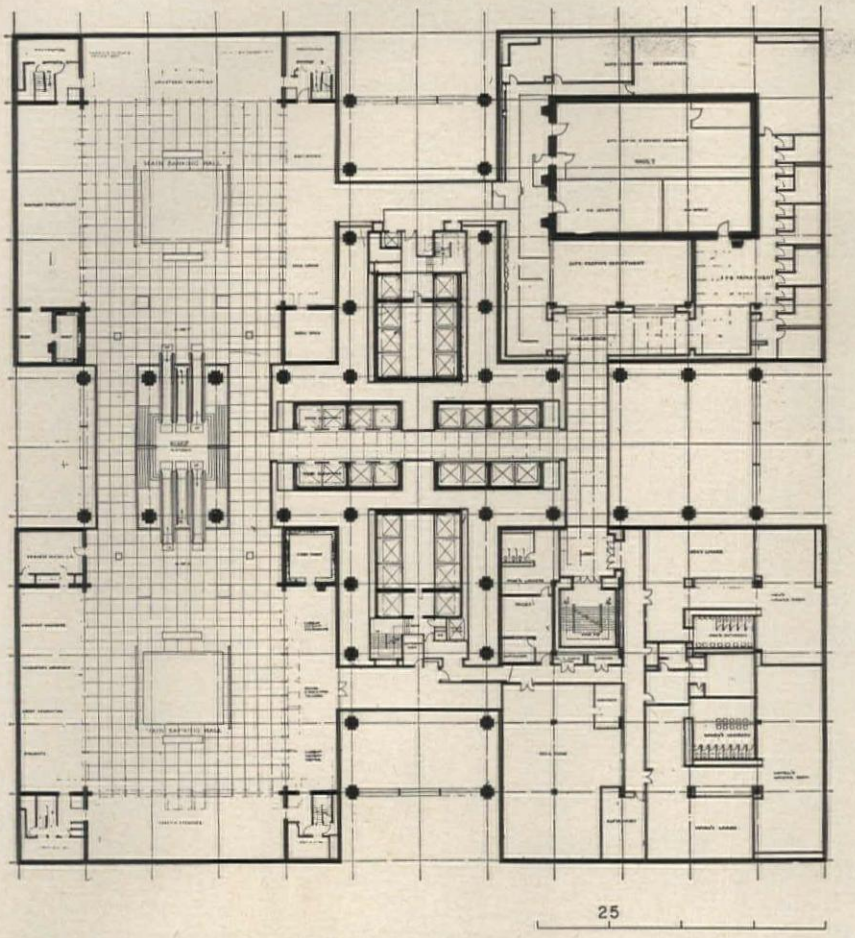


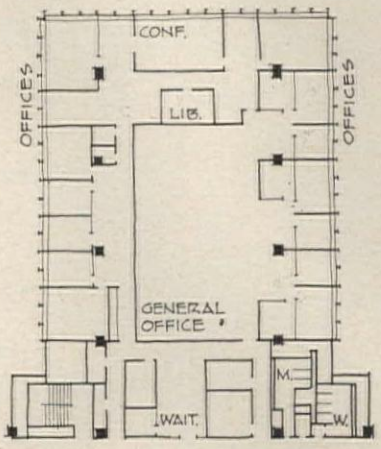
SHOPPING PROMENADE LEVEL

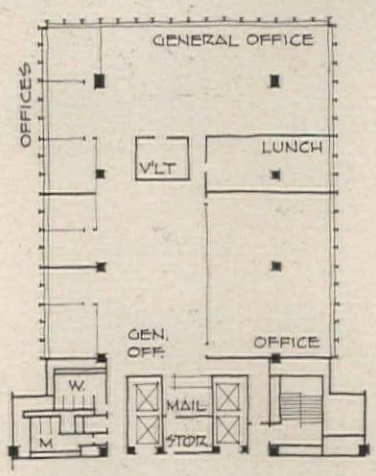
tower containing 1½ million square feet of space, with at least 35,000 square feet per floor.

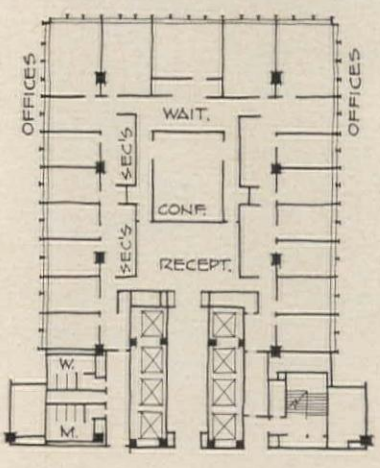
On the large site, it was possible to shape the building in Greek cross form for maximum daylighting and grace; otherwise it might have been a disastrous bulk of unlighted slabs, ungainly in proportion. As it stands, no office space is over 40 feet from daylight; and the 80-foot-wide wings, cantilevered 15 feet beyond the columns, can be planned in a variety of ways. The four small plans at right show several suggested layouts for the wings.

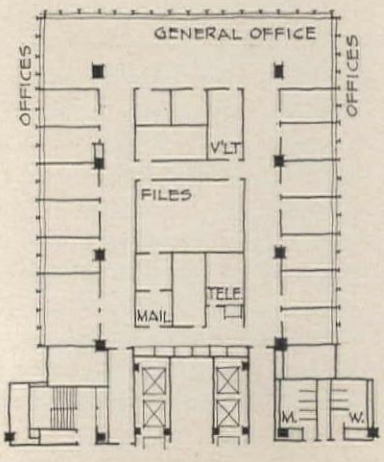
The 1957 master plan was made without benefit of tenants, but its general merit became apparent as development proceeded and the Royal Bank of Canada leased 20 per cent of the building for its new headquarters. They introduced the first specific requirements, causing a redesign of the base of the tower. Four quadrants, in the form of blank-walled, two-story boxes, were added, making an effective spreading base for the shaft. The main banking rooms and ancillary work spaces were located in these at second floor level, reached by electric stairways, with rental shops below, facing the plaza. The result is an architectural tour-de-force (plan right, photo above) that incorporates dramatic spatial effects, skillfully handled, yet leaves something to be











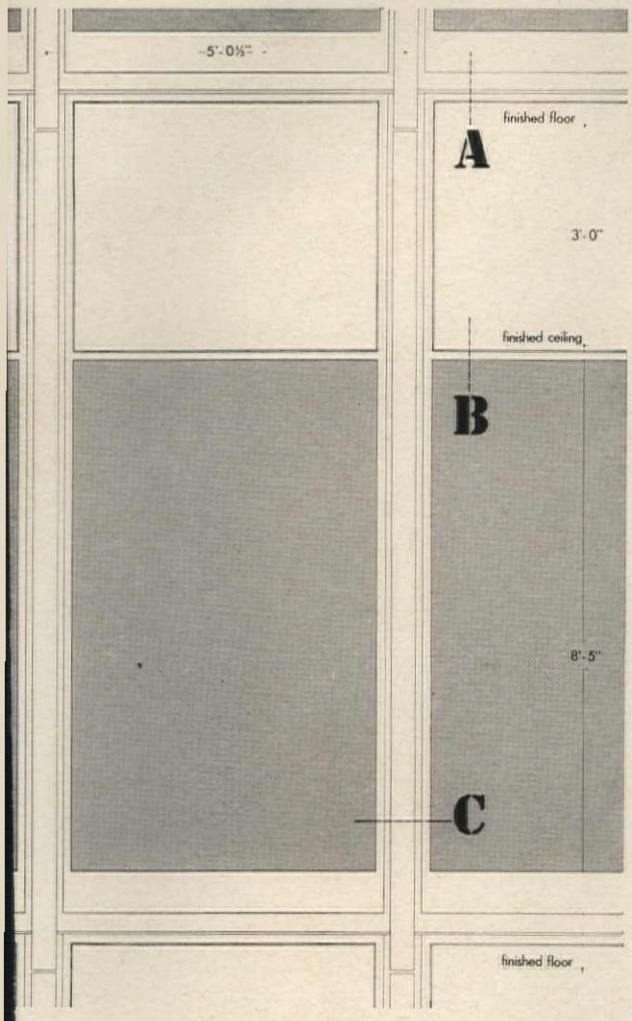
The plan of the main (or second floor) banking level of the Royal Bank of Canada is shown above. Connected to the lobby by six electric stairways, the bank occupies the four quadrants at the base of the tower. Two quadrants are connected to form a banking hall 122 by 302 feet; the remaining two quadrants contain the vault, safe deposit department, assembly hall, cafeteria, offices and work spaces. The bank's executive offices and head office are located on upper floors; executive dining and lounges occupy the east wing of the 41st floor. The bank leases the first seven floors of the tower

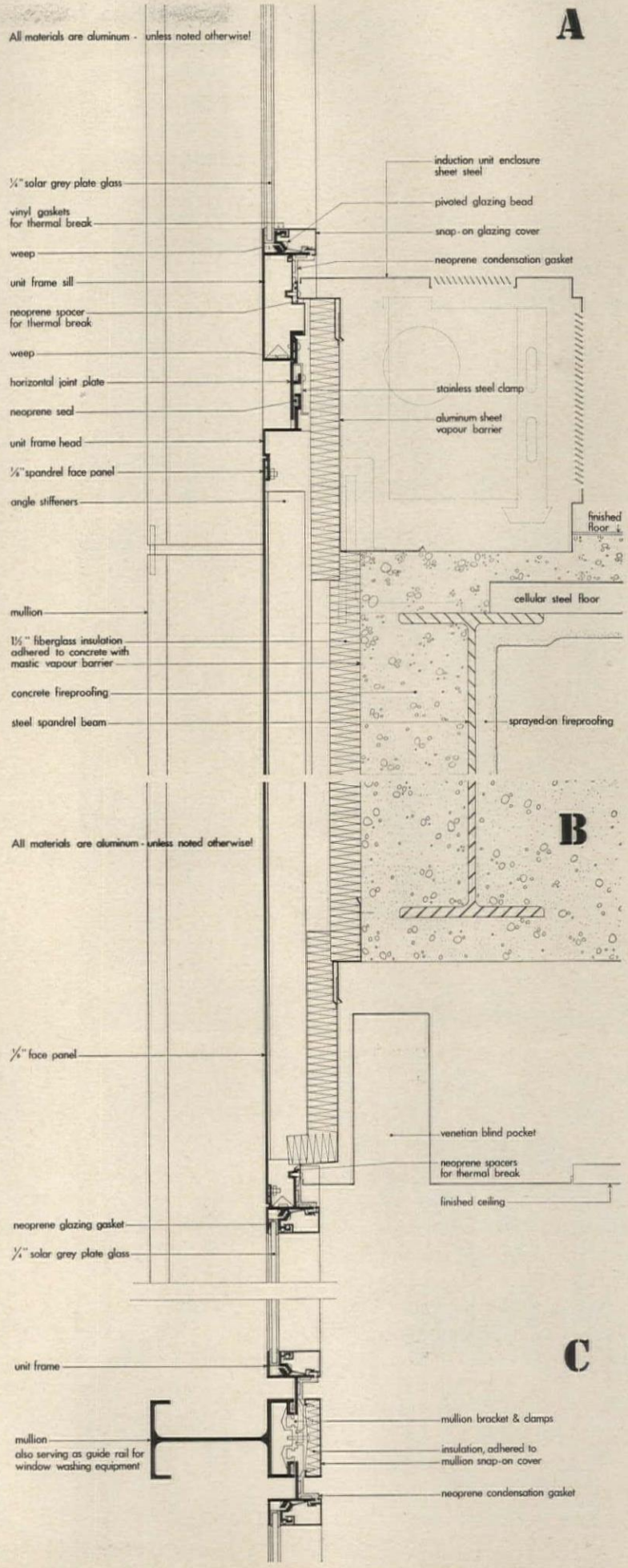
desired. The quadrants fill four otherwise awkward inside corners on the plaza and serve as a successful transitional base for the tower; and the four high lobbies slicing through the base manage to achieve the scale of both building and plaza. The way the two big banking rooms flow together yet are articulated by clerestory strips comes off in happy fashion. It is disappointing, however, to find that although all four quadrants assume equal importance on the exterior, two of them contain minor work areas (on two levels) and the vault inside, connected by narrow passages to the "show" areas. The banking rooms proper—forgetting the poor cousins—create

an elegant and impressive aura for banking; an effect enhanced by the bubble skylights.

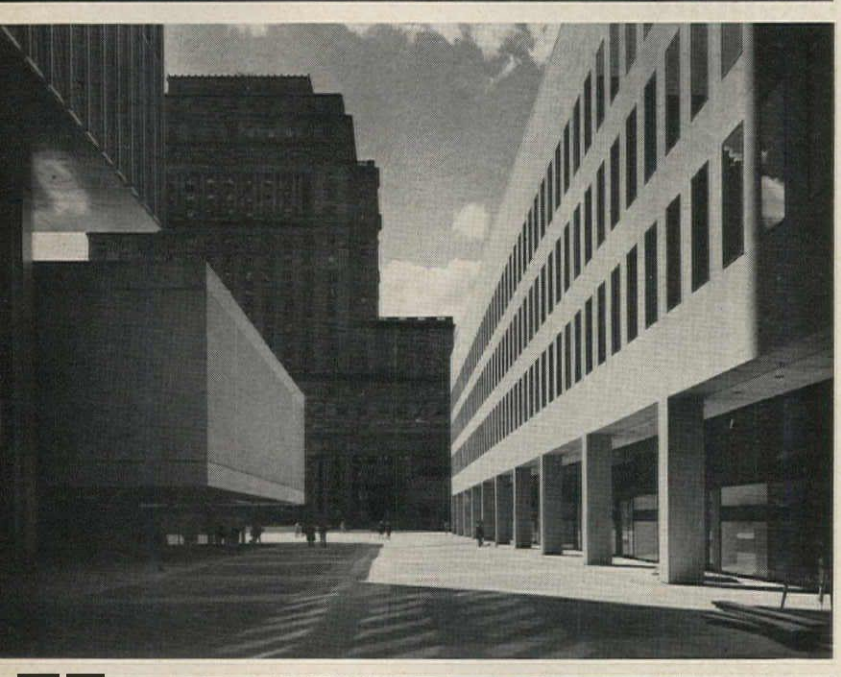
In the larger evaluation of Place Ville Marie, one is surely on firm ground in saying that it exemplifies urban redevelopment at its best, and proves that enlightened speculation can bring about distinguished architecture for business properly related to the city it mends. The credit for this venture belongs to the developer as well as the architect.

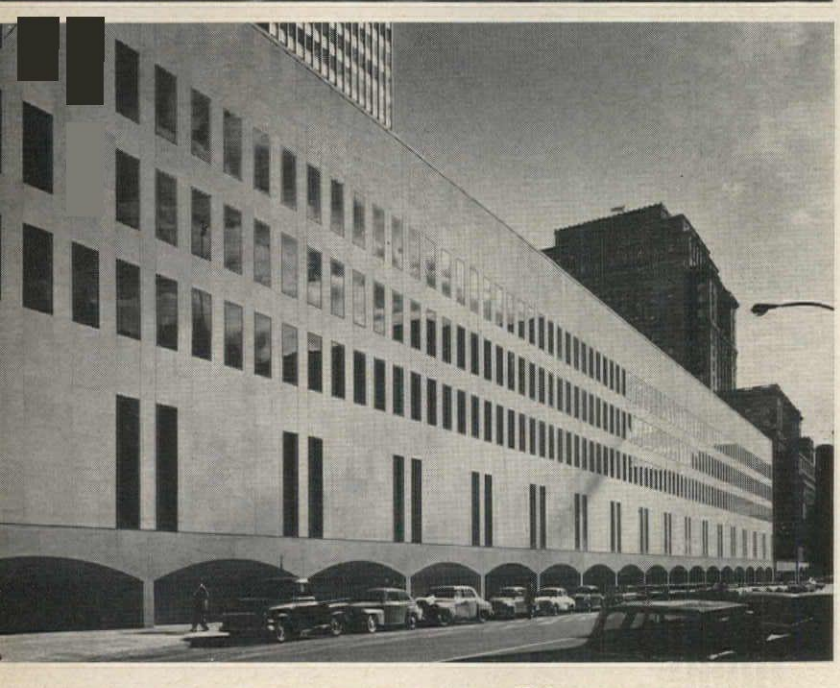
What can be said concerning its general character and that of the city? Montreal is known for its gaiety and friendliness; Place Ville Marie struck us as restrained, even formal in feeling. When questioned about this seeming conflict, the designer, architect Harry Cobb, cogently replied, "This is not a civic or institutional project, but a commercial one. It seeks through its appearance to dignify the activity to which it is devoted, and in so doing should add to the prestige of the entire central city." We will merely point out that the plaza will—several times during the year—be used for community activities, and let the point drop. In the bigger sense, however, Place Ville Marie seems destined to become permanently identified with Montreal, and to become a city symbol as much as have the Eiffel Tower or Rockefeller Center or the Houses of Parliament.





Strolling about the plaza, one is aware of the tower rising up nearby, but its bulk does not loom up threateningly, nor does it appear overwhelming. Its shape no doubt contributes to this effect, as does the curtain wall, shown here in detail. Except for the vertical lines of the mullion-guide rails, the wall is flat—gray glass and aluminum spandrels are flush—creating a subdued and pleasing surface. A special one-piece glazing gasket of neoprene was devised, which was applied to the glass before installation into the frames. Neoprene gaskets are also installed at jambs and sills



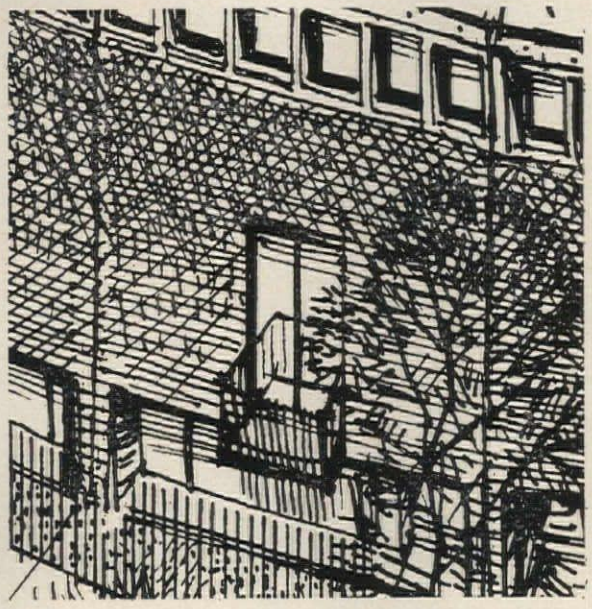


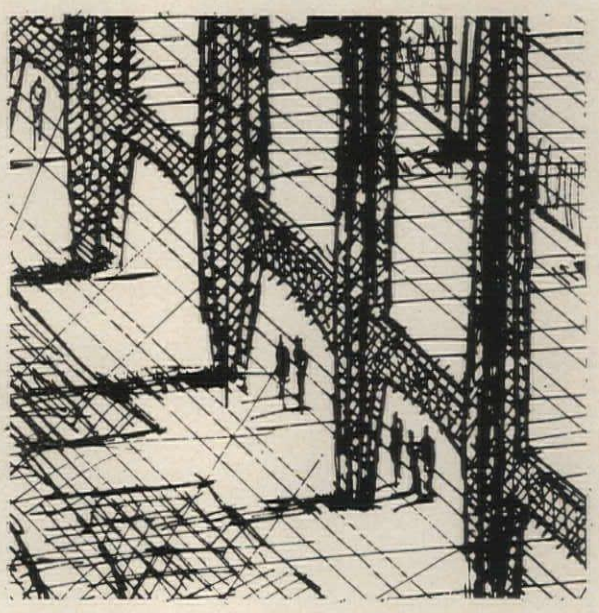
Top: View across the center of the plaza looking north along McGill College Avenue towards Mount Royal. This visual gateway will be maintained when the next building is built, replacing the old one labeled "Capitol." Widening of the avenue—provided for in the master plan—will strengthen this link to the city and the mountain

Center: Looking west along the shopping esplanade, one can see how the massive Sun Life Building across the street terminates the plaza in this direction, and how the stores at plaza level are recessed to create shopping arcades

Bottom: The termination of the project to the north. This facade plainly reads as three floors of offices, one floor of shops, and a lower level arcade for the sub-surface shopping promenades

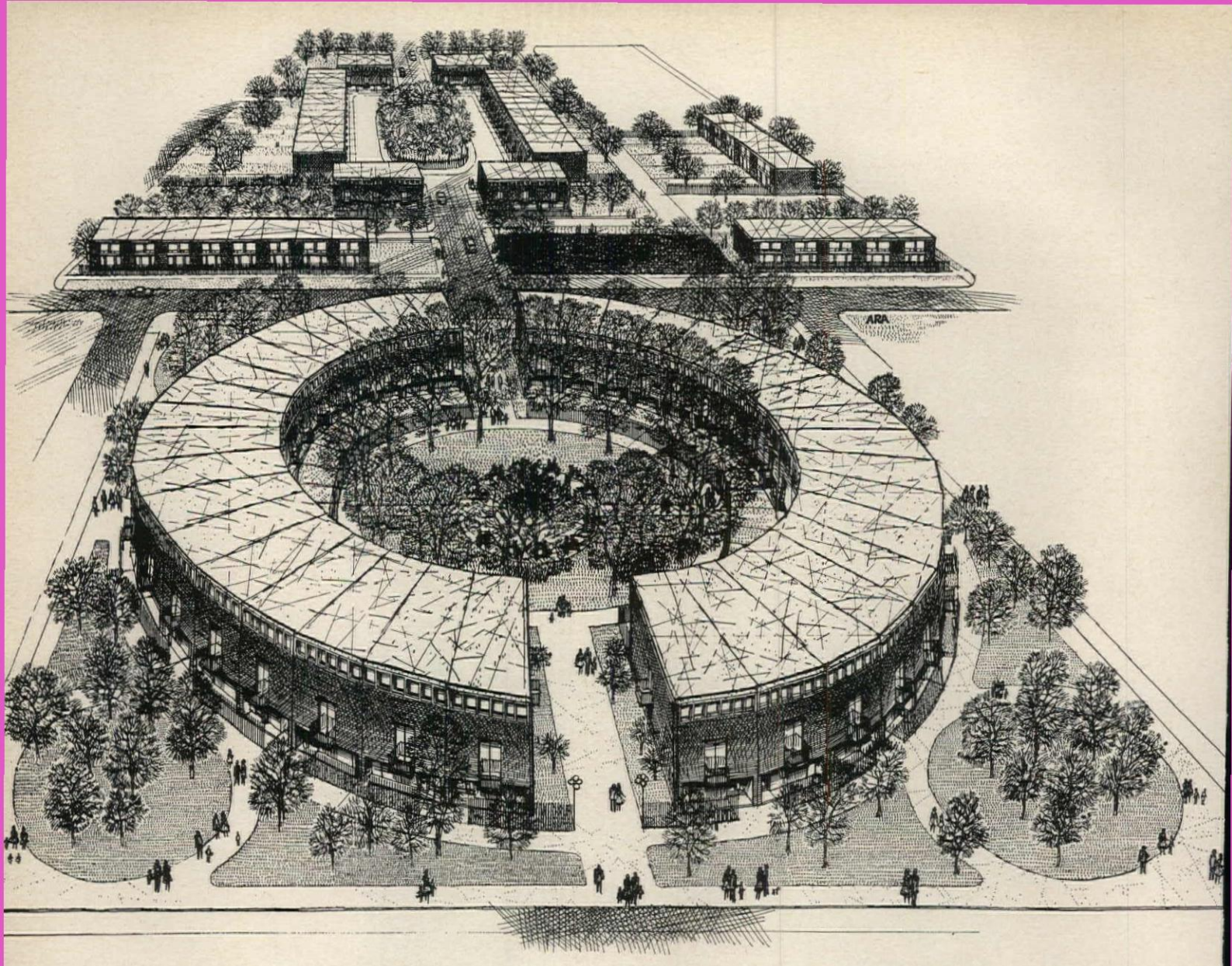
Portions of drawings by Ara Derderian shown full size



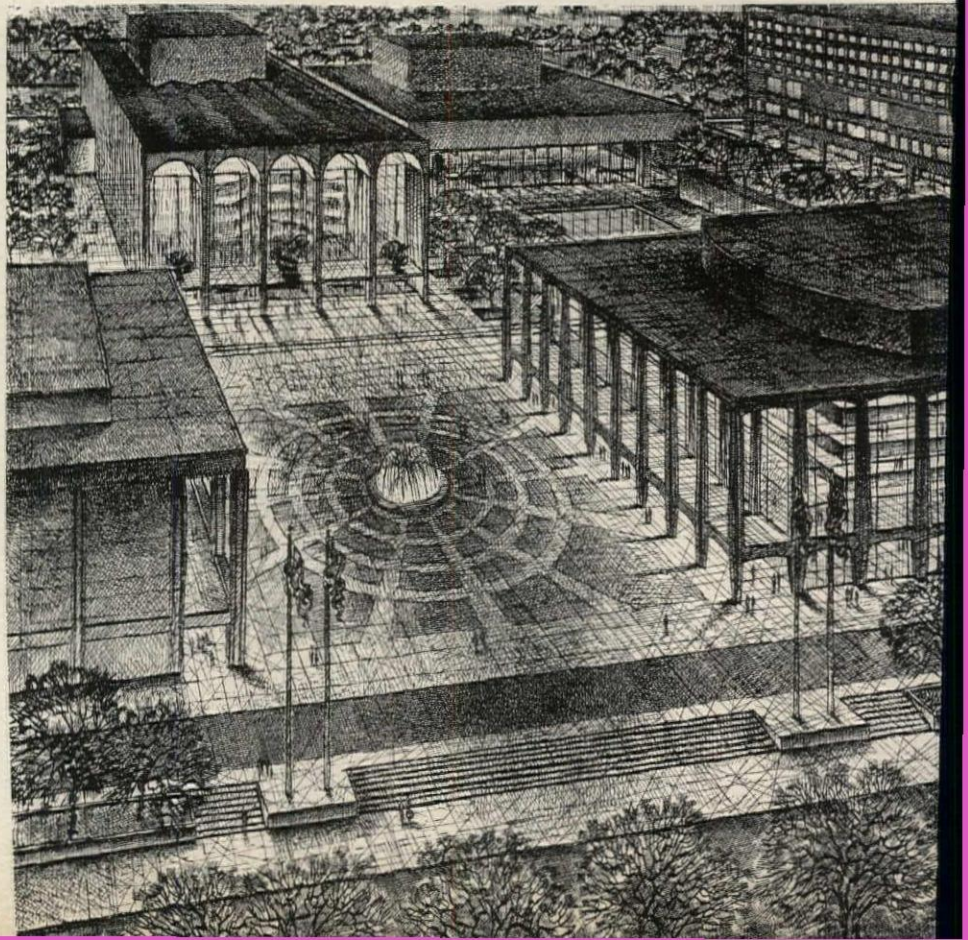


ARCHITECTURAL DRAWING FOR PRINTING PROCESSES

By Mildred F. Schmertz



Above: Drawing showing an early scheme designed by I. M. Pei for Webb & Knapp's Hyde Park, Chicago development. *Right*: Lincoln Center. Both drawings are by Ara Derderian. The degree of reduction in each can be seen by examining the full size portions on the preceding page. Line weights and cross hatching were made bold enough not to fuse into black or disappear in extreme reduction. Included in the Lincoln Center drawings are Philharmonic Hall by Max Abramovitz, the New York State Theater by Philip Johnson Associates, the Metropolitan Opera House by Wallace K. Harrison, the Vivian Beaumont Theater by Eero Saarinen and Associates, and the Juilliard School of Music by Pietro Belluschi and Catalano and Westerman

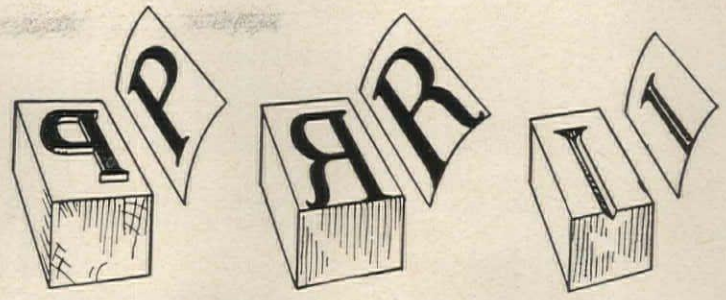


If drawing is the language of architecture, the means by which conceptions yet to be built are communicated and made real; if these conceptions must be duplicated many times and widely disseminated for architecture's sake; if the art of printing serves other languages well, then more architects should learn its secrets and begin to draw according to its demands.

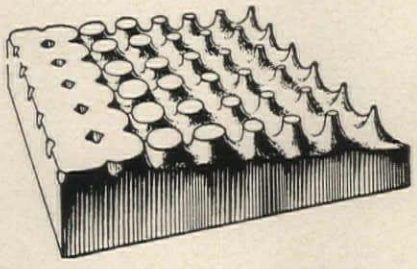
Like a medieval scribe, absorbed in the creation of a manuscript page, choosing to ignore Gutenberg's moveable type, and preferring to perfect his calligraphy, an architect will make a beautiful drawing to show a client, without giving a thought to its subsequent usefulness in a magazine, newspaper or brochure.

The disappointment he so often experiences when he sees his work in printed form could be avoided if he were to consider the published appearance of his drawing while he is doing it, making it compatible with the available printing process and the specific size requirement in such a way that it would be *at its best in print*. A different version of the same basic drawing could of course be developed in another manner to be shown as an original to impress the client.

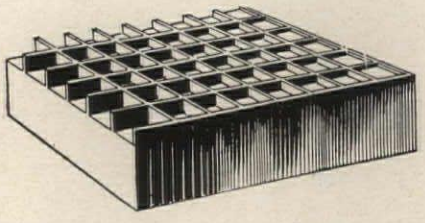
The architect will argue with good reason that neither he nor his staff has time to make one set of drawings to overwhelm the client, another set to look just right in a brochure, and hopefully a third to suit the specific requirement of a professional magazine about to do a feature story on the project. He will then put all his effort, time and money into one set of originals for the client, and hope that, if necessary, they can be reproduced some way. And of course if money is no object they *can* be reproduced, in the manner best suited to them, beautifully, in all the original colors or black and white, in a handsome size on splendid paper. As a general rule, however, drawings which are too expensive to reproduce, don't get reproduced. Although Frank Lloyd Wright survived to his 90th year, he didn't live long enough to see his colored pencil renderings properly printed. The luxurious book, "Frank Lloyd Wright Drawings for a Living Architecture," financed by the Bear Run Foundation and the Edgar J. Kaufmann Charitable Foundation, appeared shortly after his death and finally did graphic



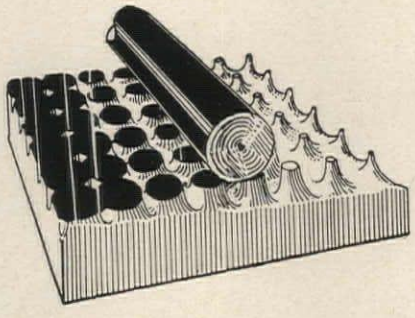
The essentials of the three basic methods of printing are shown above. In letterpress, *(left)*, ink is received by the raised surface and transferred to paper. In planography, the major commercial application of which is photo-offset lithography, the ink is applied to the entire surface, but because the surface is specially treated with strong light and photochemicals, the result is a plate which is receptive to ink where it is supposed to print, and receptive only to water where it is not supposed to print. This process is diagramed in the center drawing. In the gravure or intaglio process *(right)*, ink is transferred to paper forced by pressure into a depressed surface containing ink



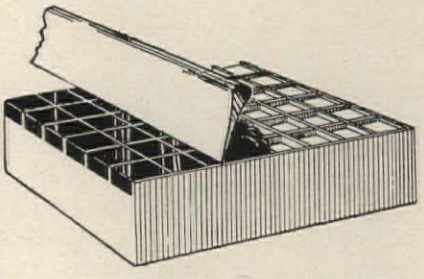
Relief halftone (enlarged)



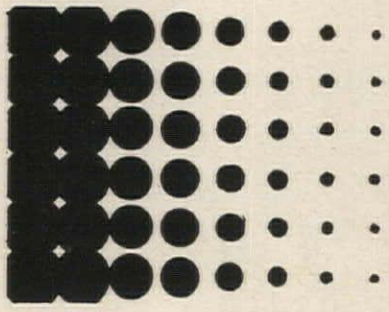
Gravure plate (enlarged)

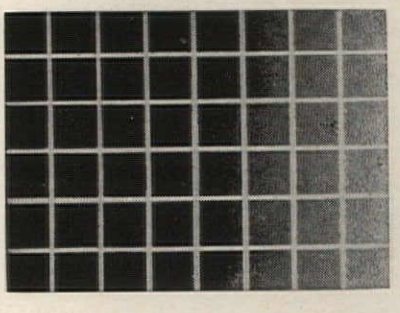


Rolling ink onto the surface areas of a relief halftone plate

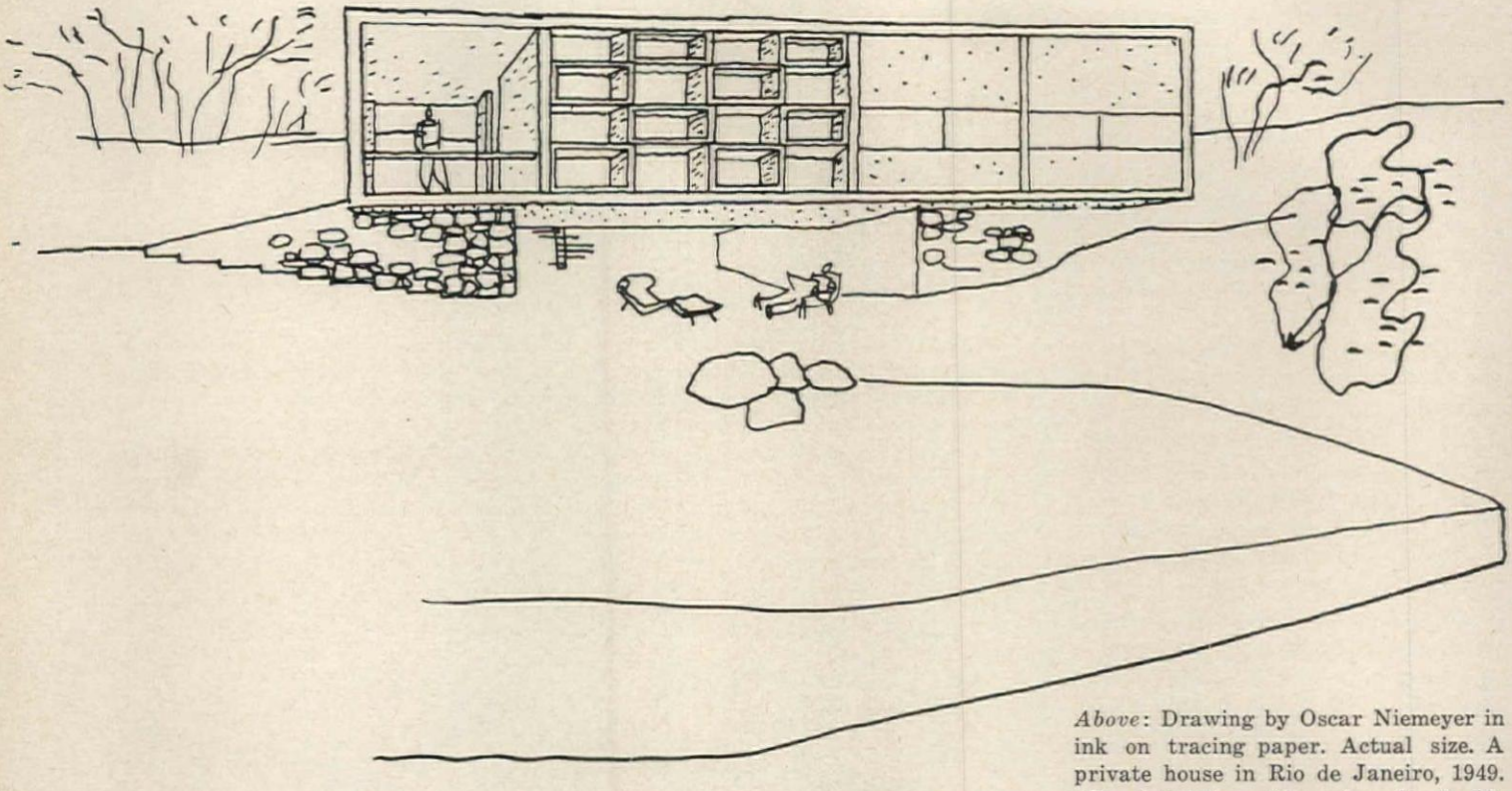


Flooding ink into the depressed gravure cups, then scraping surface areas clean





The relief engraving prints only from ink on raised areas; the gravure plate prints only from ink in its depressed areas. The relief dots vary in size; the gravure "ink cups" are of uniform size, but of varying depth. The shallowest carry barely enough ink to soil the topmost fibers of the paper, or none at all. The deepest carry enough ink to soak the paper to the point where the squares run together. Copy to be reproduced is transformed to dots or "ink cups" in the engraving process by the use of screens. (Drawings and captions of printing processes from "Printing and Promotion Handbook" by Daniel Melcher and Nancy Larrick, published by McGraw-Hill Book Company)



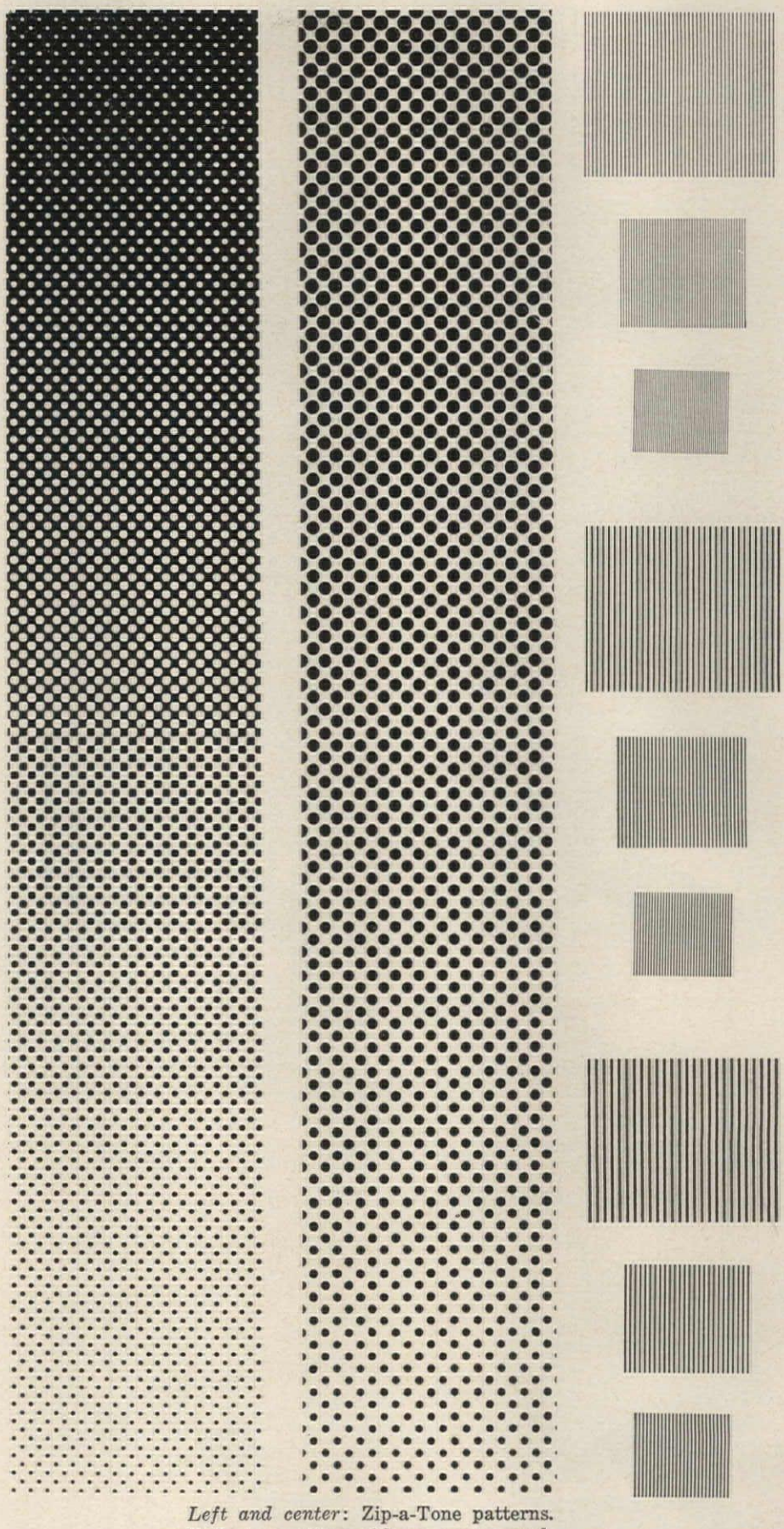
Above: Drawing by Oscar Niemeyer in ink on tracing paper. Actual size. A private house in Rio de Janeiro, 1949. (Reprinted from "Drawings by Architects" by Claudius Coulin. Reinhold Publishing Company, New York.) *Below*: Drawing by Gordon Cullen showing use of shading tints with ink. (Reproduced from "Townscape" by Gordon Cullen. Reinhold Publishing Company, New York.) Both drawings reproduced equally well by line cut

justice to his masterly hand.

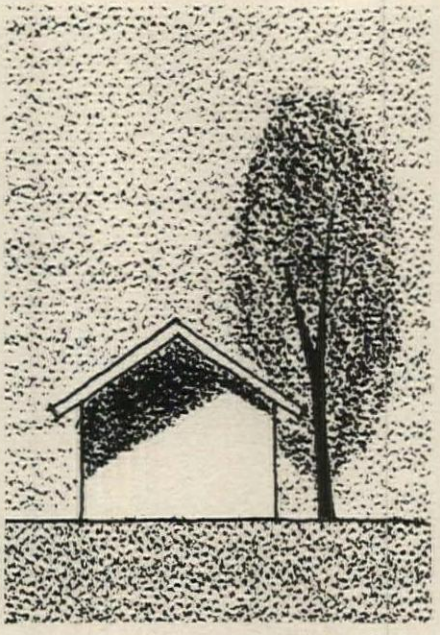
There are three simple ways out of the dilemma of how to draw for both client and printer, while trying to save time and money. The first way is to do as many architects do and make use of a good tempera and wash renderer. These artists, while working in full color to please the client, carefully control their tones in terms of the gray scale, so that their productions reproduce fairly well in an 8- by 10-inch black and white photograph which is then made into a halftone. Photographs of this type of drawing are usually included in press releases and appear in the newspapers and the news sections of the professional magazines. Unless exceptionally well done, these drawings lack character and quality in printed form and have very little vitality on the page.

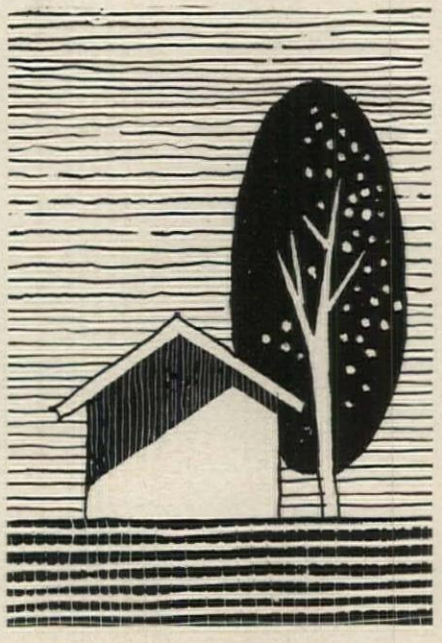
Drawing for halftone engravings will be discussed more fully in a subsequent article. The methods described here are all intended for line engravings. In halftones the entire drawing including the lightest and darkest tones is screened into a series of dots. It is possible for the engraver to drop out the light tones to read white and intensify the darkest tones to read black, but each of these steps is progressively more expensive. In line cuts blacks are black and whites are white and grays are made by patterns of black. Line cuts are generally simpler and cheaper to make. Techniques suitable for halftone reproduction are: line and wash drawings, pencil studies, wash drawings and tempera techniques. Those suitable for line cuts, all of which are demonstrated in this article, are: pen and ink line drawings, brush drawings in ink, lithographic crayon on Ross board, scratchboard drawings, and pen and ink line drawings with shading tints added.

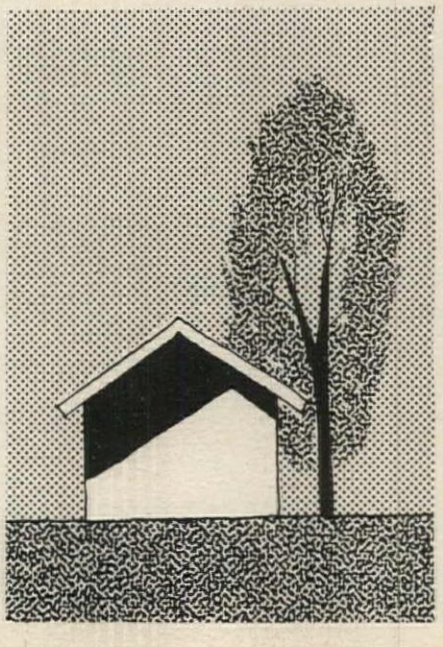
The second way to draw for both client and printer is to do what very few architects do: make an *adaptable* black and white drawing, one which at the original size is handsome enough to show the client, but which is drawn with sufficient strength and separation of line to look well at a number of different reduction sizes. Ideally, a drawing should be twice final reproduction size or at most, three times. The book, brochure or magazine presentation of a project, however, may not be offered to the architect until sev-



Left and center: Zip-a-Tone patterns. Full size portions of large screen graduated tones. *Right*: Three commonly used Zip-a-Tone patterns shown full size and reduced one third and one half. Note that further reduction of the top pattern would cause it to disappear







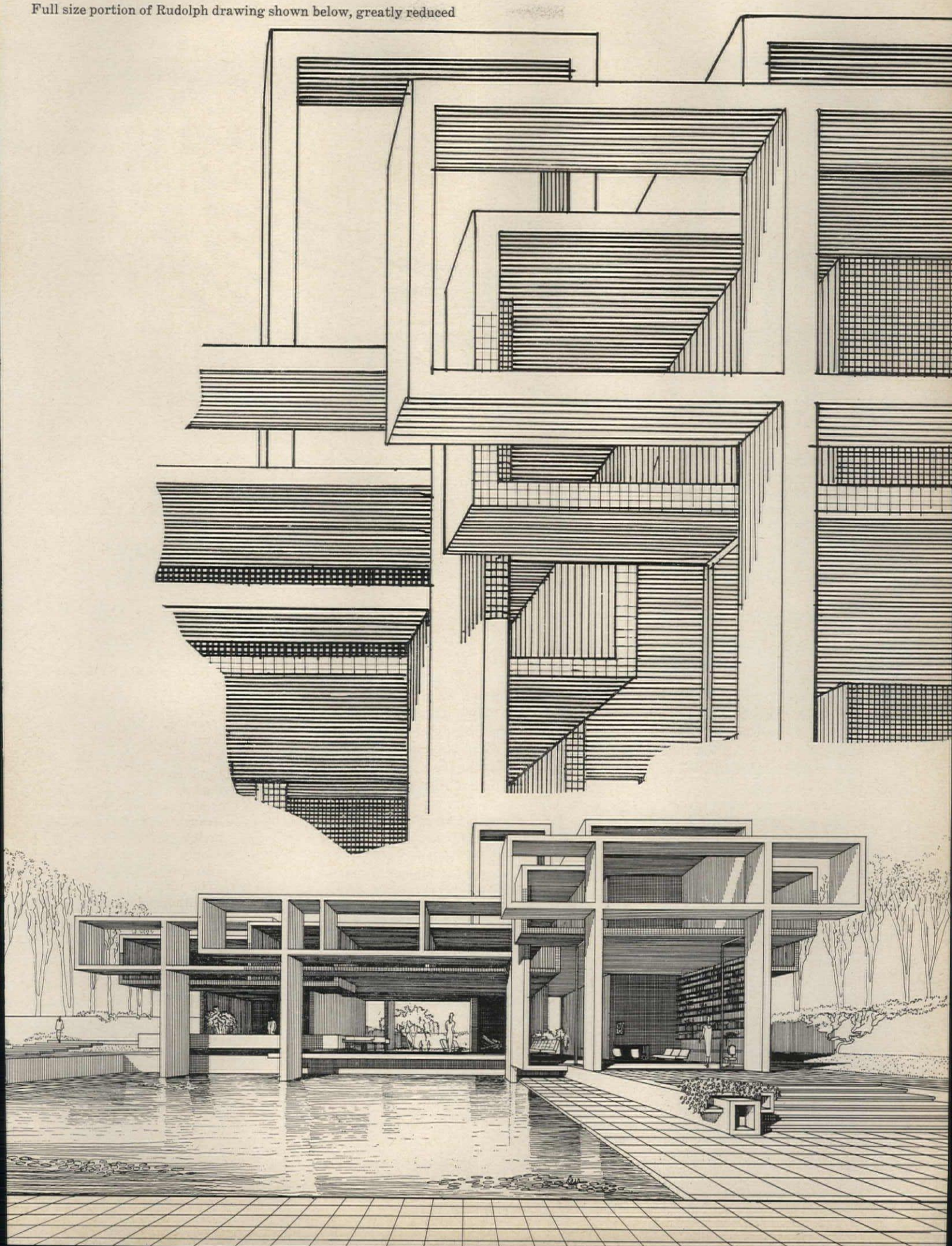
eral months or years after he has completed the presentation drawings, and he can rarely be asked to make another set according to strict size specifications. (If he *is* drawing for a specific printing job, he should ask the responsible person, whether it be the editor, art director or printer, for an approximation of the final printed size. There is no excuse for furnishing an out-size drawing in these circumstances.)

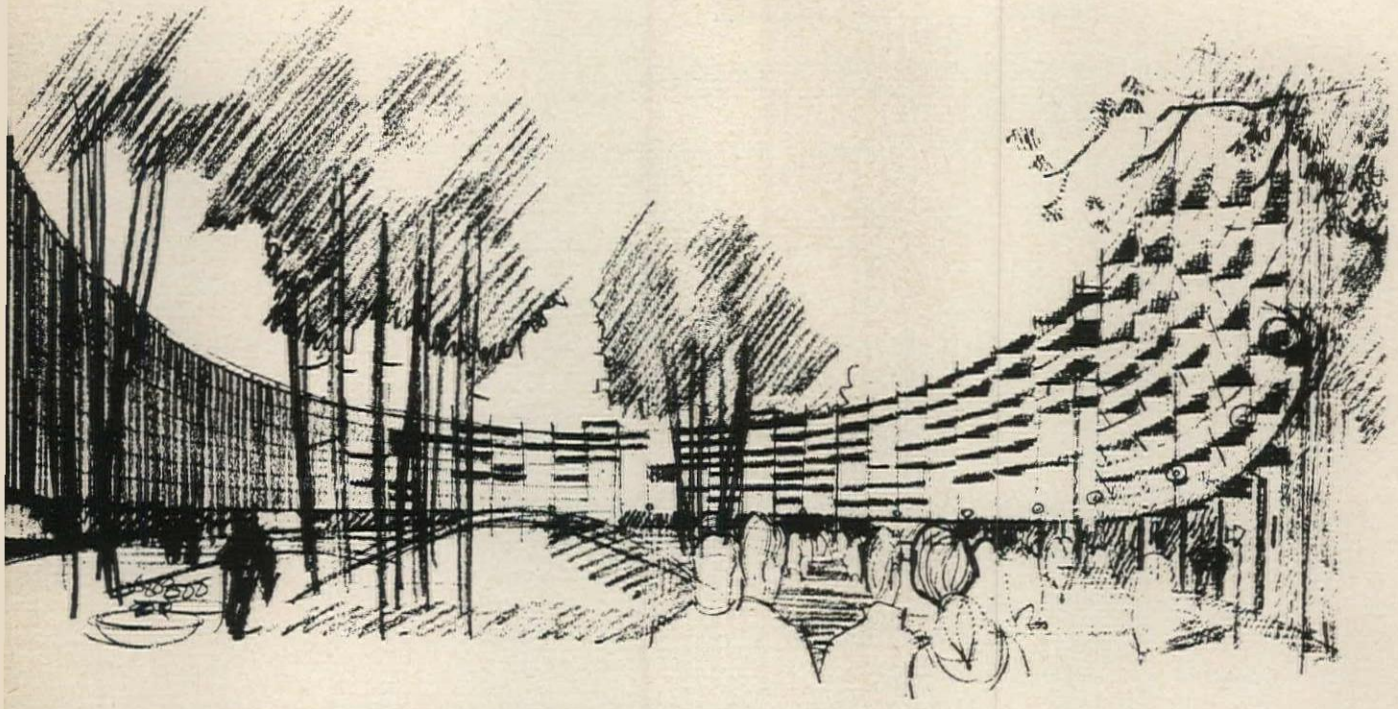
Paul Rudolph's drawing technique is extremely successful from the point of view of art directors, engravers and printers. He has mastered the change of scale involved in reproducing his drawings and understands the basic graphic processes. His clients see immense drawings in black ink on tracing paper, yards long. The line weights, cross hatching and lettering sizes have been carefully studied through a reducing glass, however, and these bold perspectives, elevations and plans look extremely well even when printed quite small. Note the full size and reduced portion of a Rudolph drawing on page 143.

The drawing of Lincoln Center, and the drawing of I. M. Pei's early proposal for townhouses as part of Webb & Knapp's Hyde Park Redevelopment Project in Chicago, both by Ara Derderian, have been included as examples of the adaptable style. Portions of the Lincoln Center draw-

The six different methods shown *(left)* are rarely used by architects, probably because opaque paper or board is required, and architects prefer to prepare their drawings as a process of successive tracings on translucent paper, and don't often transfer them to cardboard. It is also possible that these techniques are familiar only to commercial artists and newspaper cartoonists, but not to architects. The first three examples show uses of lithographic crayon and Ross board. Ross board is available in many textures which transform the strokes made by a lithographic crayon into various dot or line patterns which read as gray but are reproduced as line. The fourth example is of scratch board which offers a white clay like surface which permits white lines to be scratched into a continuous layer of black ink. The surface also takes ink lines well. The bottom drawings *(left and right)* show Singletone and Doubletone paper manufactured by Craftint, which are impregnated with shading tints made visible by brushing on special chemicals

Full size portion of Rudolph drawing shown below, greatly reduced





Drawing for a presentation booklet for the Gehag Redevelopment, West Berlin. The Architects Collaborative International Ltd., Architects

ing are shown reduced one fourth on the cover, full size on page 137, and greatly reduced on page 138. Even at this great reduction the line weights hold their relation to each other and don't break down.

If the strong heavy drawing techniques of the adaptable style are unsuited to the gifts or inclinations of the architect or his staff, the third basic way to persuade the client, yet satisfy the printer, is for the architect to show the client whatever kind of original rendering he thinks will sell the job, but at the same time produce another suitable for printing by one of the many quick drawing techniques. At some stage while large presentation drawings are being prepared, photostats should be made of them as a basis of another set to be drawn for printing. The photostats should reduce the drawings to twice the size they are expected to appear in print. Assuming that they will be reproduced by line cut rather than by halftone, the drawings should be done in ink and shaded by Zip-a-Tone or Craftint. Craftint shading tones are available not only as a pressure sensitive applique similar to Zip-a-Tone and useful where regular edges are required, but in chemical form imprinted on special drawing paper, invisible until transparent chemicals are applied to create a vignetted wash effect. The Craftint Manufacturing Company makes two papers: Singletone, providing one invisible dot or line pattern; and Doubletone, providing two. Both papers offer a broad choice of patterns. After the black and white drawing is made on the special paper, the tone or tones are brought out by the application of a chemical for each.

Ross boards have a range of patterns which can be varied by the surface pressure of a lithographic crayon. All shading tone patterns should be selected with care to be sure that they will not fill in when reduced, thus turning them into blacks.

© *Ezra Stoller photos*

PAUL RUDOLPH DESIGNS A PLACE TO PARK IN DOWNTOWN NEW HAVEN

Should a parking garage be an architectural *tour de force,* or should it be buried underground whenever possible or at best treated as a background building? Is a place to park cars fair game for form giving? A garage is not so considered in well planned urban complexes where cars are ideally parked in subterranean tiers. The business and political leaders of New Haven, however, wished to lure shoppers off the Connecticut Turnpike and away from the large suburban shopping centers by making it easy to park in the old commercial center at the city's heart. So that no one would miss the point, they planned to build a spectacular garage directly accessible from one of the turnpike auxiliary roads. In their minds it was never to be a mere utilitarian structure, but rather a symbol of civic and commercial rejuvenation. So they hired Paul Rudolph who obliged them with an uncompromising work of art.

The Temple Street Parking Garage now spans two blocks, but is is Rudolph's hope that it will eventually be extended 1,000 feet across the Oak Street Connector. The building is a work of sculpture in the round, with both long facades identical, and in a perfect world would stand free in space; but fortunately for the political and financial success of the Church Street Redevelopment Project, to which the garage is the key, almost one half of the long Church Street facade has been made invisible by the addition of a new department store building for Malley's. This old New Haven store gave up its location on the New Haven Green to attach itself to the life giving garage. Macy's is planning to plug into the garage with a new store which will seal off the rest of the Church Street facade. Rudolph's sculpture will soon become a well modeled high relief, visible on one long side and the two short ends. The addition of these two stores, however, was by no means an unhappy surprise, indeed the parking level clearances were planned to accommodate department store floor levels. Malley's second floor entrance which connects with the garage has become its main entrance and the store now advertises completely

OWNER: *City of New Haven, Conn., Honorable Richard C. Lee, the Mayor; New Haven Parking Authority, Roy A. Michaels, chairman*
ARCHITECT: *Paul Rudolph*
STRUCTURAL ENGINEER: *Henry Pfisterer*
MECHANICAL ENGINEER: *Jerome Mueller*
PARKING ECONOMICS CONSULTANTS: *Wilbur Smith & Associates*
GRAPHIC DESIGN CONSULTANT: *Alvin Eisenman*
PARKING CONSULTANTS: *E. A. Barton & Associates*
GENERAL CONTRACTOR: *The Fusco-Amatruda Company*

View from corner of Crown and Temple Streets near New Haven Green. The building is 118 feet wide and 726 feet long spanning a street to stretch across two city blocks to the edge of the Oak Street Connector which joins the Connecticut Turnpike. There is direct access to one of the garage's entrance and exit ramps from the connector. The garage will add 1,500 parking spaces to the 5,200 already available in downtown New Haven

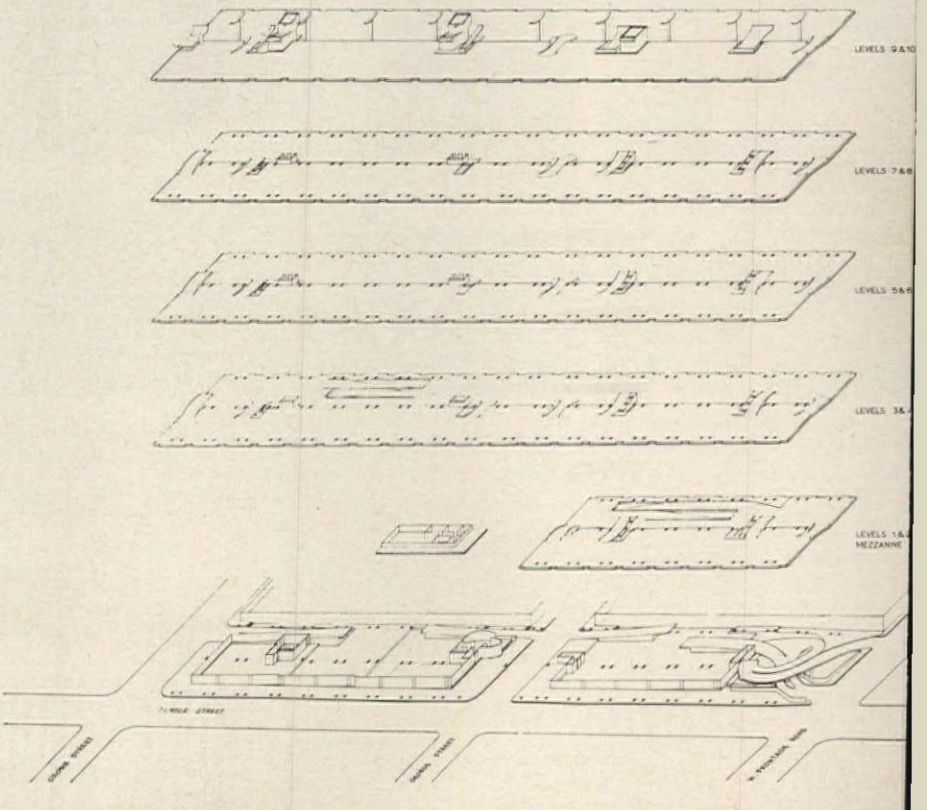
sheltered shopping. According to William McGrath, executive director of the New Haven Parking Authority, one of the Macy's negotiators said to Mayor Lee: "Congratulations on that garage . . . the chief reason we are coming to New Haven is to tie into that structure." Macy's coming to New Haven is believed to assure the success of the entire downtown development project.

In the face of this commercial jubilation it may seem only a plaintive esthetic cry to state that what is now left of the long Church Street facade, which can be seen from a distance, suggests that the garage deserves to be extended over the Oak Street Connector so that the two remarkable long facades can be seen near and far by those in approaching cars.

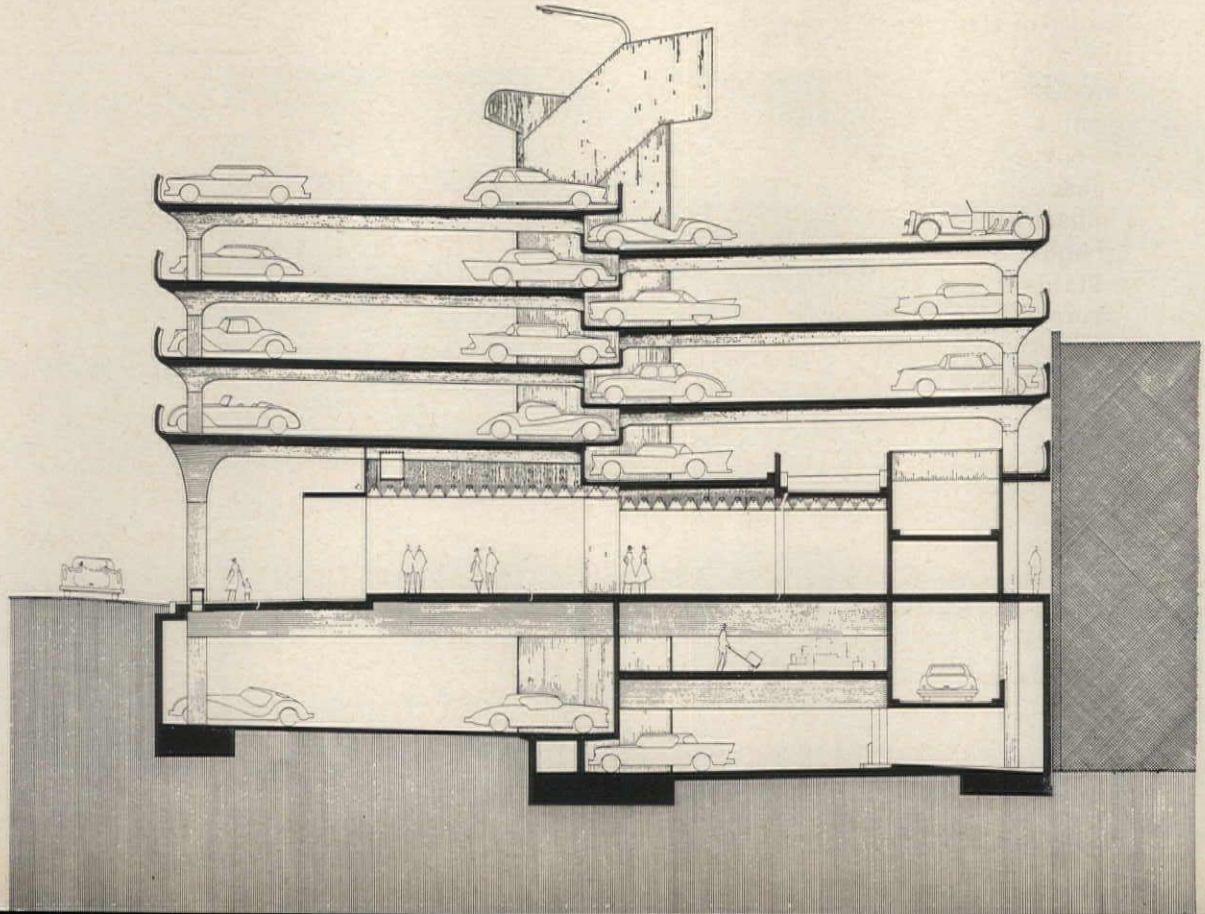
The structure of the garage is simple post and beam, and the curved forms do not act as vaults, but rather as transitions between columns, column caps and ceiling, or between columns, cantilevered beams and ceiling or spandrel. Because of the dominant horizontals Rudolph used double columns to emphasize verticality and created vertical shadows by projecting alternate panels.

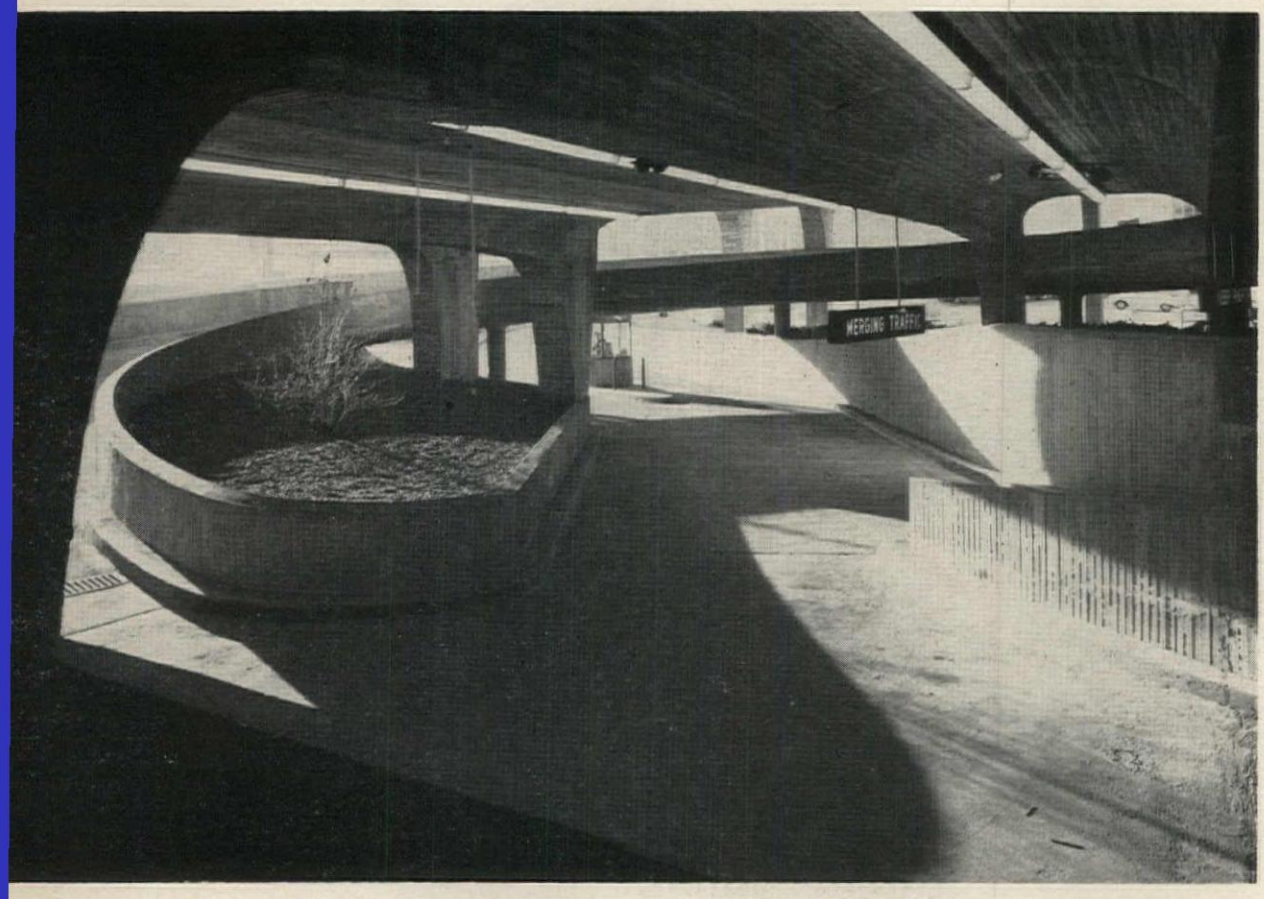
Rudolph believes that curved forms are more expressive of concrete as a continuous material. His use of thin striations cast by the narrow spaces between the forming boards, serves to articulate the curves much in the manner that shadows caught by fluted columns enhance the apprehension of their roundness. The striations also make stains less visible. At present he favors poured-in-place concrete over precasting, and in the case of the garage, preliminary studies revealed that due to variable conditions at ramp levels, there wasn't sufficient duplication of elements to make precasting feasible, a lot of special forms being required. Since he believes that the esthetic of poured-in-place concrete is derived from its natural textural qualities, Rudolph insisted that all surfaces of the garage be quite rough, but he would have liked them even more so, for after all "Chandigarh is rougher still."

Rudolph insisted that concrete be used wherever possible even for such fittings as handrails and lamposts which would normally be of metal. Beyond the lamposts, which New Haven citizens call the twin cobras, is one of the penthouses which contains the elevator machinery and a great air intake fan

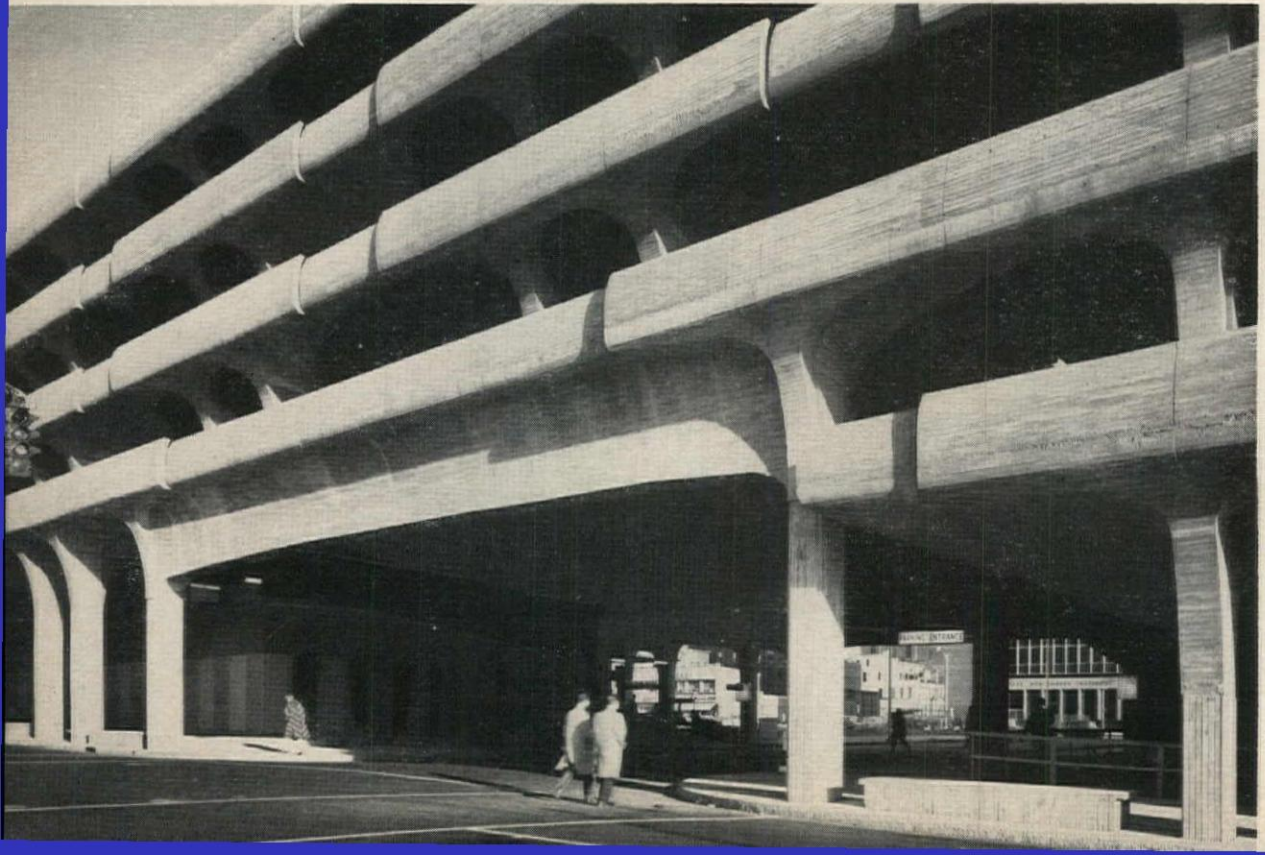


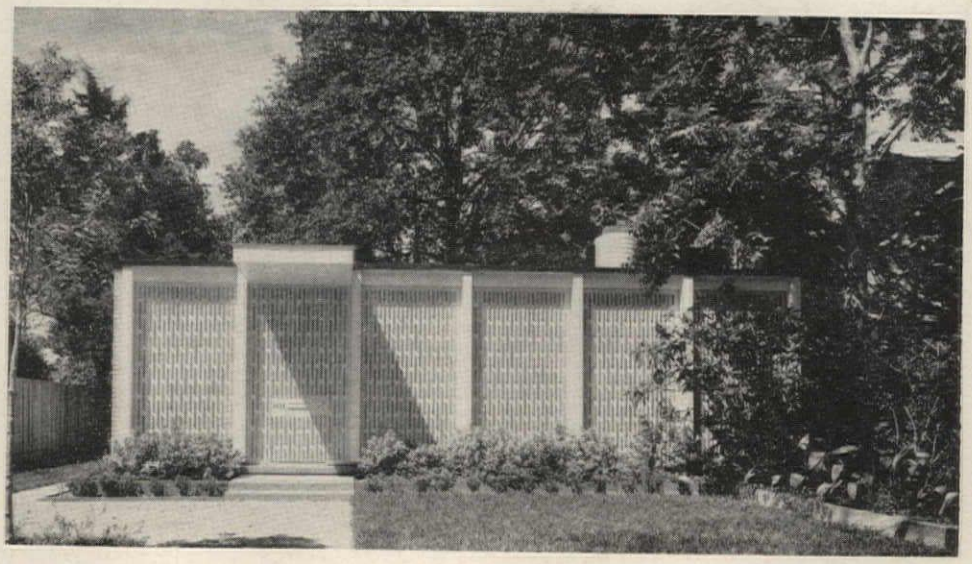
Rough striated texture is used throughout garage. The double columns are 10 feet apart allowing space for one car. Each pair of them is spaced at 28 feet intervals to allow room for three cars. Columns span 53 feet in the opposite direction. This extra long span places the column beyond the front door of the automobile. (See section below)





Above: Ramps joining access road from Oak Street Connector. Traffic indicators are controlled by an electronic device responsive to sound waves generated by the presence of cars. When certain levels are filled it directs motorists to other levels. These signs in response to signals convert an up ramp to a down ramp, or an in ramp to an out ramp. The device counts the number of cars in the garage at any moment and the amount of time each car is parked, providing a foolproof check on the day's receipts. Cars are handled by their owners. *Below:* The garage spans a major street. The bridge girders are of structural steel encased in concrete

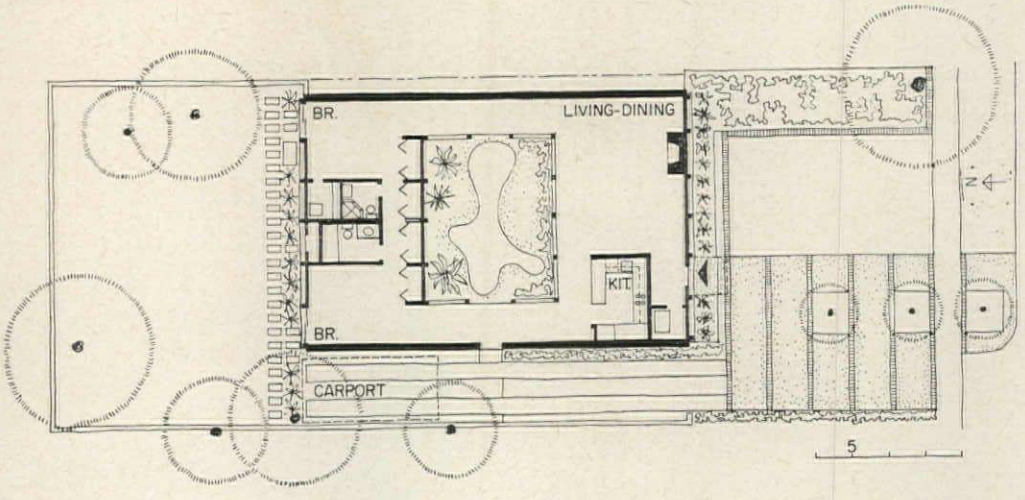




A NEAT TOWN HOUSE FOR $20,000

Ralph Anderson Jr. builds a sophisticated house with ample space and little money

Frank Lotz Miller photos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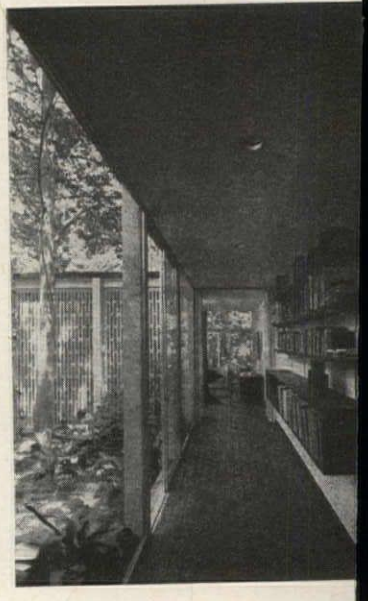


Patio House for Built-Up Neighborhood

This trim little house offers an unusual degree of spaciousness and privacy for a typical 50-foot-wide lot in a mature, built-up residential section. The scheme uses blank side walls and front, and focuses on a big walled-in rear garden. Placement of the house on the lot was set by several restrictions: the desire to save three oak trees in the middle of the property, and setback codes for placing garage, fences and front building lines.

Although planned as a bachelor house, the scheme is easily adaptable to the needs of a small family. Accommodations for guests, and plenty of room for entertaining were prime among the plan considerations. An unusual degree of privacy is gained for the bedroom and rear garden areas by using a blank wall for the rear of the patio. This patio wall and the facade are of plywood, with treated wood strips applied to make a subtly colorful mural pattern.

Side walls of the house are brick, painted white on the interior, to provide background for the owner's growing art collection. Other walls are wood studs and white gypsum board. The roof is built-up, with wood sheathing and joists, gypsum board ceilings. Floors are common brick, except baths which are vinyl. Recessed ceiling down-lights are used in most areas, plus an illuminated ceiling in the owner's bath.

The total enclosed area of the house is 1,592 square feet. Each half of the building has its own two-ton air-conditioning system. Batt-type thermal insulation is used.

The outdoor walks and terraces are of pebble concrete, and fences are wood random slat.

The house recently received an Award of Merit in "Texas Architecture 1961," sponsored by the Texas Society of Architects, and a Citation of Merit by the Houston Chapter of the A.I.A.

ARCHITECT AND OWNER: *Ralph A. Anderson Jr.*
LOCATION: *Houston, Texas*
ENGINEER: *Walter P. Moore*

One of the main factors in this small house's apparent spaciousness is the simplicity and consistency of finishes throughout, as can be noted in these photos of the master bedroom and hall, and the kitchen and living-dining area. A minimum of furniture and built-in lighting also play their part. The kitchen equipment includes a stainless-steel sink, recessed electric range, recessed refrigerator, plastic laminate counters, wood cabinets and a garbage disposer.

ORGANIZATION FOR EFFICIENT PRACTICE

7. Nolen-Swinburne and Associates

In order to continuously improve its increasingly complete and complex architectural services, Nolen-Swinburne has found that its organization must be continuously studied, redefined and redirected. Herbert H. Swinburne, a partner in the firm, describes the processes used and results to date

Most organizational charts are simply statistical tabulations. They describe visually the breakdown of an organization into its various components and show the relationship between these components. They also describe who is responsible for what, and this implies authority and delegation.

In setting up its own organizational chart in 1960, our firm wanted more than a statistical tabulation; rather the chart should be a statement of the ingredients required for a full professional service. The first organizational concept of the chart, then, was a statement of architectural services. Project Control was a system through which the partners assigned projects as they came into the office to one of two associates; each was then responsible for the projects assigned him, from beginning to end. The Design Division, which had always received heavy emphasis in the office, was the principal concern of our third associate and one of the partners.

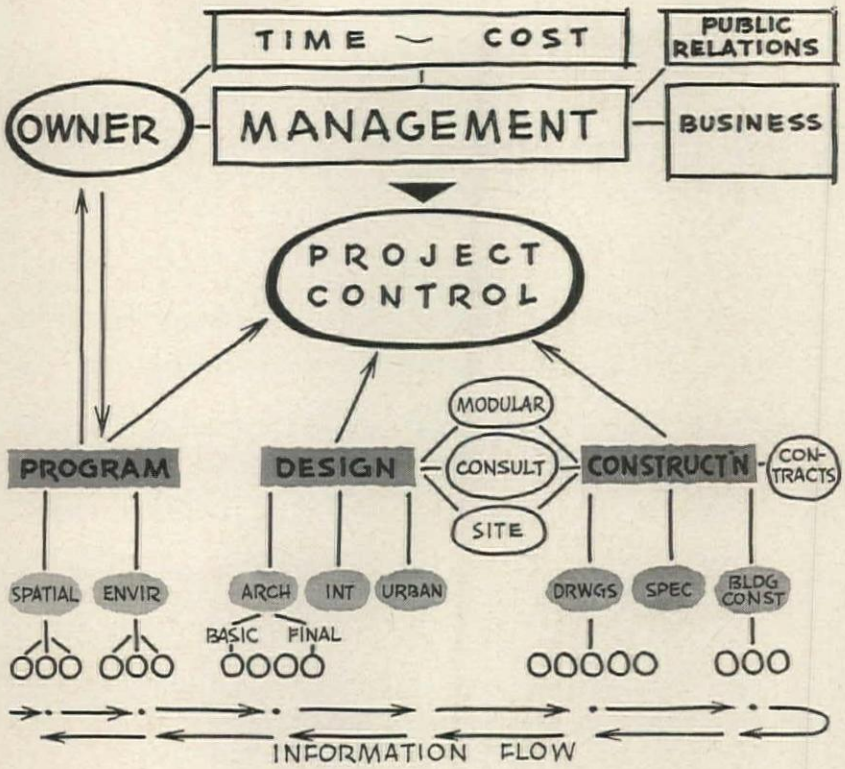
This early chart did point-up three things that began to receive the early attention of the office. First, it put research where it belonged in the office organization. "Research" has always been a difficult thing to define, perhaps because it is such a general word. There are many different kinds of research; and we don't always consider its proper position in the organization or to what division it is specifically related. Second was that of programing. In this first chart, programing seemed to be dangling, but at least it had been broken down into spatial and environmental programing. However, programming was not really the positive responsibility of any one person, and it just didn't get the unified attention it deserved. Third was the recognition given to Parkinson's laws; we had never seen an organization chart that did this. Yet we felt that these laws had their place here because we were dealing with men, ideas, time and money.

It may be helpful to follow a typical project through our office. The partners would assign a particular project to one of our associates. Although the partners, of course, were responsible for all work in all phases and always were answerable directly to the client, the project was assigned to an associate so he could speak for the office on that particular project. He was given full responsibility and power to make decisions without consultation with others. He was responsible for programing and cost control, and for seeing that all engineering consultants were engaged and coordinated. Work flowed through the Design Division where an attempt was made to wrap up a complete and total production package for that project, then to the Production Division where contract documents were prepared and bids received for the work. Finally, the building was built. All this was accomplished under the direction of the associate selected through Project Control.

All of these procedures were visually described in a Flow Chart, prepared for the office and the field. Work flowed from one group to the next, subject to a system of review and approval. The weakest link in the entire process was—and still is—the completion, in the Design Division, of a production package in which all design decisions have been made before beginning the final contract documents.

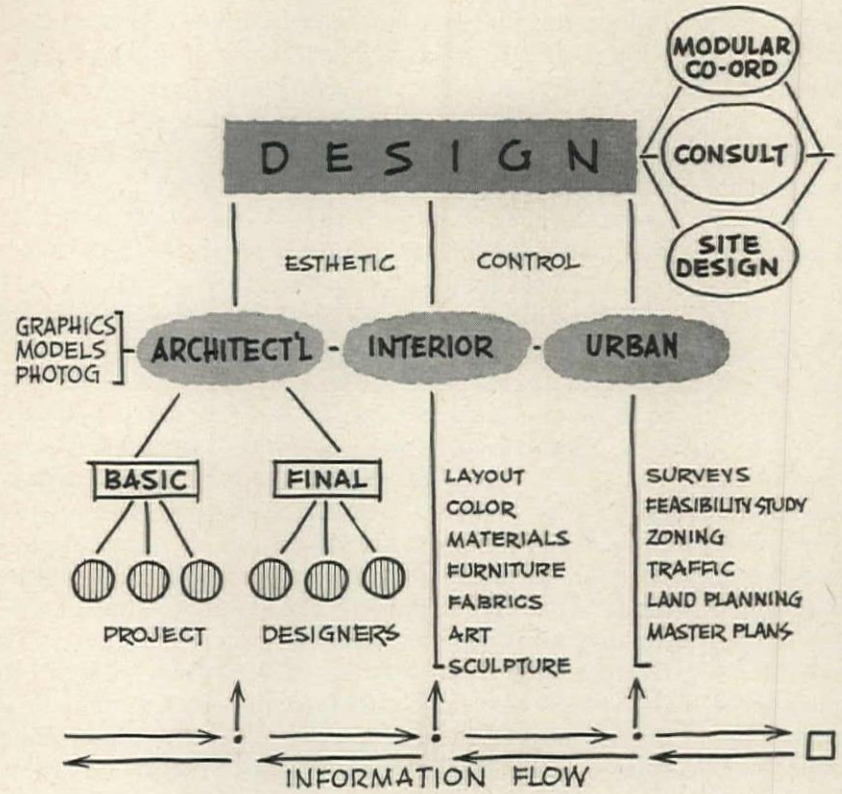
Concurrently with the development of the 1960 Organization Chart and the Flow Charts, we thought it necessary to take a look at the time distribution of the people in the office to see how their time related to all of the tasks required for a full architectural service. Separate task units of work were defined and then examined to see how much of each person's time was devoted to each task. The method was this: At the intersection of the task and the man on the chart, a circle was made that simply said a particular man was involved with a particular task. The circles came in four sizes, ranging from very little to a lot of attention. The chart also was arranged so that the circles showed not only *what* a man was doing, but what he *ought to be* doing.

If several projects at varying stages of completion were moving through the office simultaneously,



1. MANAGE

Called by Nolen-Swinburne, the "Whole Picture," this chart summarizes the main elements of the other three, more detailed, charts. As may be seen, the process starts with the client, and proceeds directly to programing, which along with the other major divisions of design and construction, is managed by project control section consisting of the partners and associates. Also evident is the importance given to time and cost, consultants, public relations, business functions



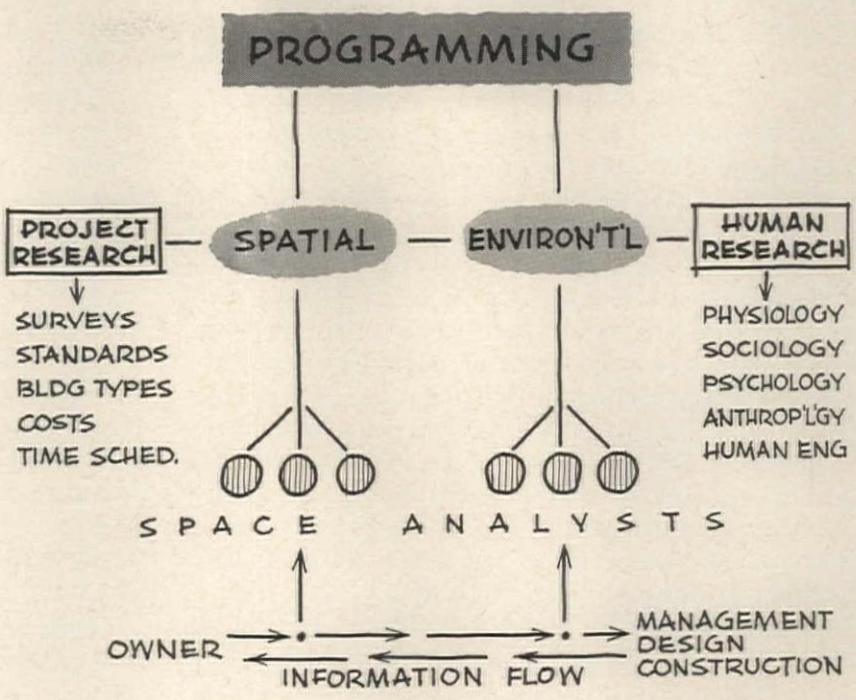
3. SOLVE

Design, to Nolen-Swinburne, is concerned with all of the elements of problem-solving required for the creation of buildings and their environment. Accordingly, the chart includes three major design areas, architectural, interiors and urban, and a goodly number of sub-areas. It will be noted that among the sub-areas are such topics as feasiblity studies and land planning, art and furnishings; also specialist-consultants are brought in at this stage when required

the chart showed that some people were concerned with too great a number of activities. These people were spread too thin. This raised a question: "Does a particular man's experience or interests justify circles in all tasks in which the chart shows him?" The chart showed, for instance, that too many people were involved in programing and project research; in fact, it showed so many things that it wasn't long before we decided that we should reorganize our office Organization Charts.

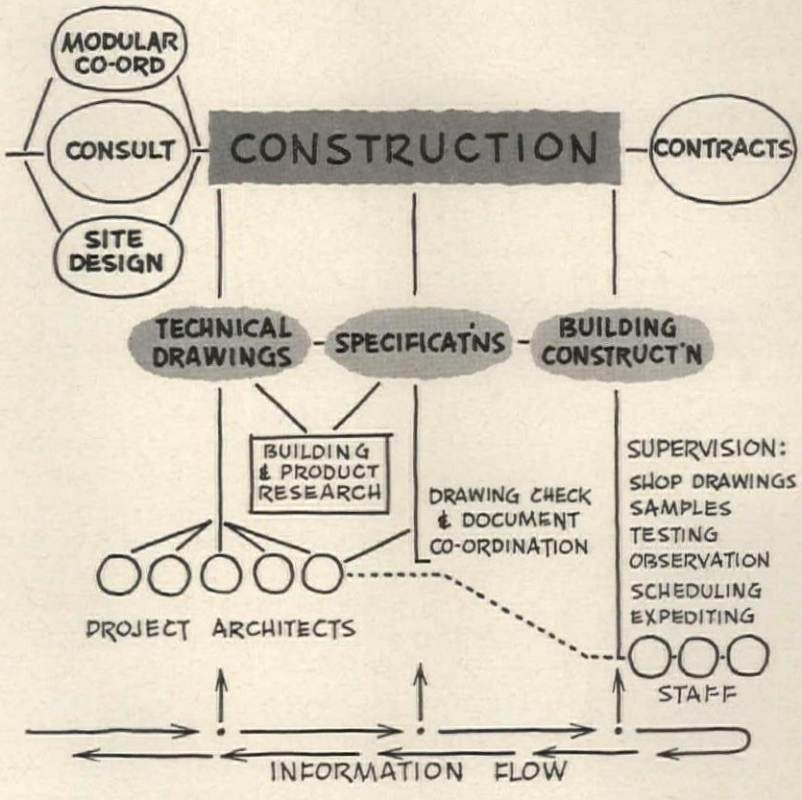
The charts did not reflect, accurately, our philosophy of professional services. We decided we had to define those services specifically, take a look at some of the things we were doing for our clients that were not in the existing charts, and then reorganize the *office*—as well as the *charts*—to fit our philosophy. The new charts we developed are shown here.

We felt that the new charts must relate both to the profession and to our clients. They were not to be wrapped around wishful thinking, nor the per



2. DEFINE

In the Nolen-Swinburne philosophy, architecture begins, unequivocally, with definition or programing. Shown in this chart are two types of programing, spatial and environmental accomplished by the firm, each closely related to research in its own area. Spatial programing is concerned with tangibles such as those shown in the chart, environmental with intangibles. All programing functions are closely related to management, design, construction, owners' needs



4. BUILD

In the Nolen-Swinburne organization, the production of working drawings and specifications are considered phases of construction. This follows from the conviction of the firm that definition of problems by programing, followed by problem-solving by design, leads—ideally—to a complete production package with the loose ends all neatly tied up. Though hard to achieve in practice, such a package would allow production to begin only after design decisions had been made

sonalities of people on our staff. The new charts had to work whether we had four people with us or 40; they had to be just as rational whether one project, or 10 projects, were moving through the office. Dollar value and the sheer size of numbers of any kind were not relevant; the questions were what constituted complete professional services, and how they should be directed to serve the needs of our clients.

So we developed a whole new series of charts that explained to our satisfaction how these things should be done. The charts are not final. They are in sketch form because we consider them to be fluid documents. As our definition of true professional services changes, or as these services expand, so will our thinking. As experience calls for other relationships and adjustments, we will make them.

We really developed four charts. The first is a summary chart (Figure 1, across page) that we call the "Whole Picture." This says our service begins with the owner and with concern for his building

needs and his budget; and that we will remember that time and costs are important to him. Through a system of Project Control, we manage the three principal divisions of professional services: Programing, Design and Construction. The owner, through a process of information flow, is continuously apprised of his interests as they move through these three divisions. In this chart, we state flatly that architecture does not begin with design, but with programing and understanding. All the activities connected with the production of contract documents and the supervision of the project are lumped together in this chart. Of course, the contractor constructs the building, but it is our responsibility to see that it is constructed as we conceived it.

The next three charts (really parts of a single chart) show the organizational structure of our firm in detail, beginning with programing.

In the programing chart (Figure 2, page 157), the needs of the client are defined before projects are passed on to the Design Division. Programing is of two kinds. First, Spatial Programing: the tangibles of sizes, relationships, functions and all the other realities. And second, Environmental Programing: the intangibles of people, how different personalities react in diverse ways to environment, the evasive qualities of moods and emotions, the ephemera of all the reasons for the building-in-use.

It is not always possible for a designer to know intimately the nuances of a client's personality and his needs. In such a case, programing must interpret for design. Design can create a visual expression that is magnificent architectural sculpture, but poor architecture. This happens when design refuses to recognize the requirements of the building-in-use, embracing many people and their composite interactions. Programing must prevent this from happening; it must define the total problem to be solved, not just the spaces to be enclosed. Information flow is the responsibility of the Programing Division, and they have to work at it 24 hours a day.

In Chart 2 may be seen two kinds of research, project and human, and how they relate to programing. The next chart (Figure 3, page 156) shows the organization of the Design Division; its responsibility is to solve all of the problems passed on to it by programing. These are much greater than the usual problems of architectural design, and include all interior spaces and the extension of space and conditions beyond the limits of the buildings themselves. Programing indicates that design must be executed with feeling for the human beings who will occupy the spaces; it also indicates the furniture and equipment needed to support the activities of these human beings. The operations and functions of the building must be united with the people who manipulate them, and this in a way that will answer all the problems of human engineering.

The real challenge in design is the creation of distinguished architecture, that joins together esthetic responsibility to programing responsibility.

The design chart also states that all consultants whose services will be necessary for the complete fruition of projects will be brought in at the design stages, and that the full value of their contributions to the problems will be recognized and incorporated into the final design. Graphics, models, and the full latitude of photography and visual symbols are to be combined with the English language in order to make the information flow between the architectural profession and the client (and the public-at-large) as meaningful as possible.

The Construction Division and the elements comprising it are neither novel nor different from those usually encountered. The construction chart (Figure 4, page 157) does show the proper place, however, for building and product research, which cannot properly be mixed with other types under the general heading of "Research." The chart says that with the use of our contract documents, we expect that the building will be built within our time schedules; and it is our job to see that this is done.

The first chart (Figure 1) is a restatement of the other three; it shows that management's function is to see that all operations merge and integrate into a smooth performance. In a sense, this chart is a bird's eye view of a complete professional service. The principles established in this chart do not depend on the sizes of projects nor the number of people in the office; rather, the chart illustrates a concept of the elements of architectural service that must be provided in order to produce predictable results in a highly competitive world.

In our office, each of the three associates heads one of the three main divisions; and the associates are united with the partners in Project Control. Since the preparation of the charts illustrated, our time distribution chart has taken on a completely new aspect. The firm's principals are not so thinly spread, nor scattered so widely as they used to be. Tasks for key personnel are fewer and lines of delegation are clearer and more precise.

One of the unexpected—but gratifying—results of the study of our organization has been an improvement in client relations. Very few people really understand what an architect does—just what services he performs. Before the beginning of a project, we carefully review these charts with our clients and apparently have succeeded in stimulating mutual understanding. Clients now seem to have more understanding of what we are after and a greater spirit of cooperation. We emphasize this further by giving clients copies of a dozen office forms that show how the charts are implemented. Each sequence of the charted operations has a check list; by means of these, as time intervals are ticked off, we are able to keep the flow of work through the office under tight control.

SCHOOLS

Not only more schools, but expansion and improvement of existing ones is a big new need

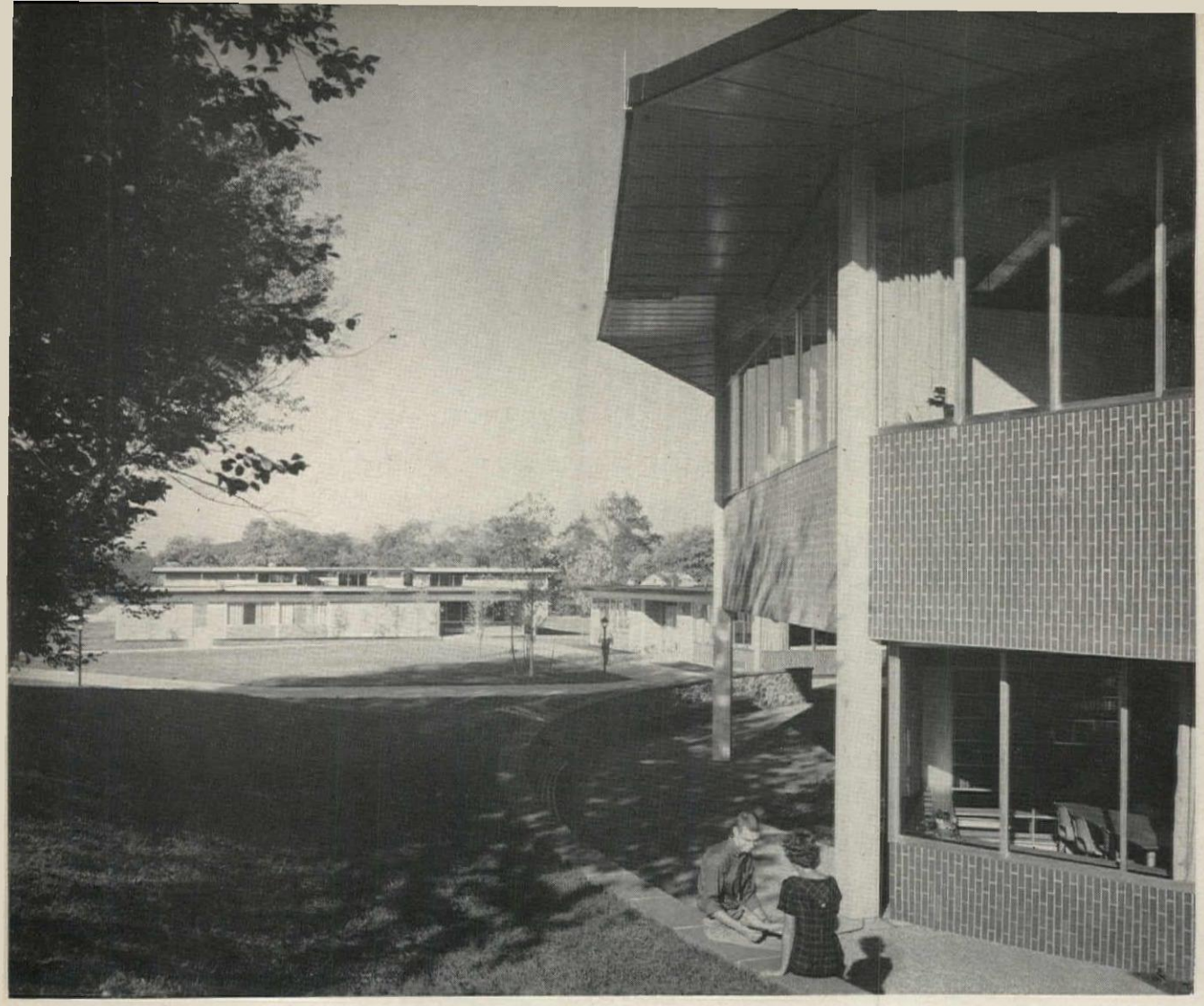
BUILDING TYPES
®
STUDY 316

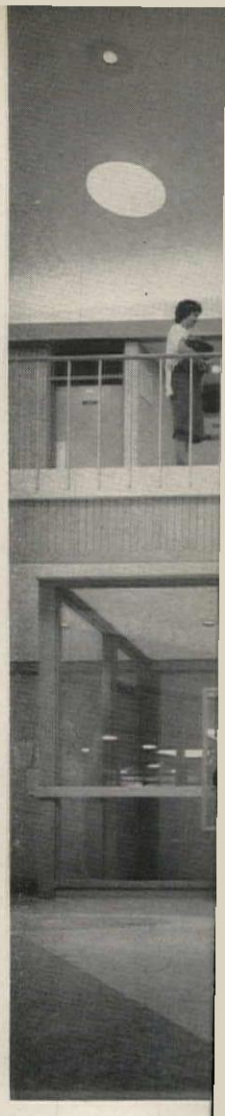
The Newark, Ohio, High School; Perkins & Will, Architects

Constantly expanding enrollment, and rapidly changing teaching ideas and equipment, add up to one of the biggest problems in the school design field: the plain fact that most schools run the risk of being inadequate by the time they are completed. A lot of thinking is going on about ways to plan against such obsolescence—ranging from the long-term ideal to temporary expedients. And new consideration is being given to the value of improving our sturdier but older existing school plants.

In this study, we have gathered a sampling of individual ways this problem has been solved with sound architectural planning and design. The schools range from those with adequate flexibility to cope with future needs all the way to portable classrooms and components. Some detailed data on developments of the latter, both here and abroad, are included in the Architectural Engineering section of this issue.

We would also like to call attention to the report on New York State's new program to combine needed additions to schools with fallout shelters. Lt. General F. W. Farrell, director of the New York State Civil Defense Commission states that: "Schools may receive up to $25 per planned shelter occupant, or one half the cost of the shelter construction, whichever is the lesser amount . . . it is conceivable that designing such shelters will become an increasingly important part of the architectural profession's operations."

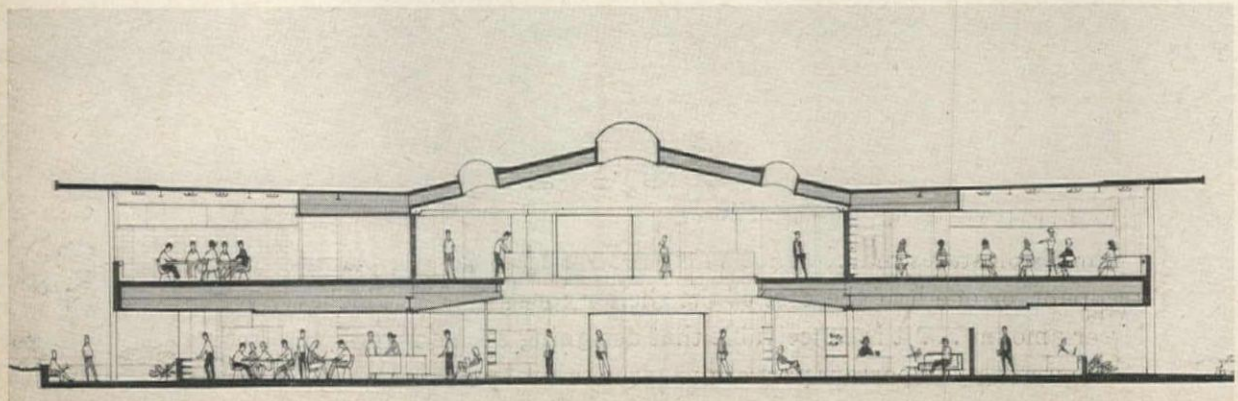




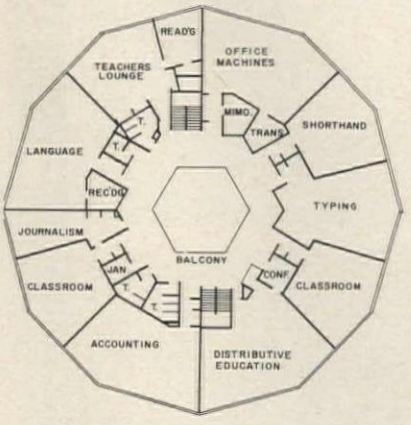
A SCHOOL PLANNED TO GROW WITH THE FUTURE

New teaching methods, overcrowding and the like, pose few problems to a new school planned to cope with them. This happily situated school—a 45-acre site, trees, views and rolling terrain—incorporates a great deal of such farsighted thinking. There are current facilities for some 1,800 students, with provisions for future expansion to accommodate at least 2,400. Constructed on a very flexible "little school" concept, the school now has three such units with a pupil capacity of 600 each. More units could easily be added. Common use and specialized areas are housed in separate buildings: music, gym, science the "hub" (*above*) and service. Each little schoo has its own dining area, with food supplied from main kitchen in the service building.

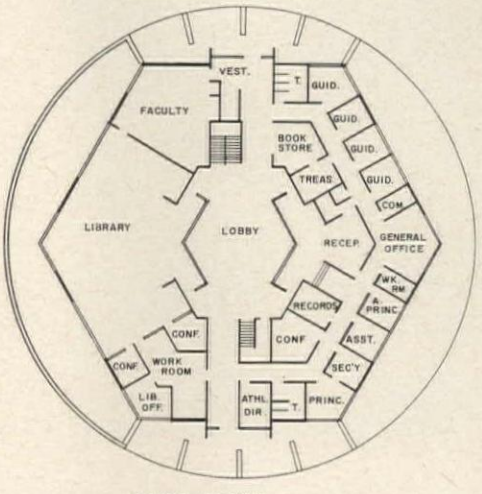
All the structures are framed in steel with ce ment-wood fiber roof decks and slab on grade. Ex teriors are brick, aluminum-framed windows. Parti tions are concrete block, brick and glazed tile. Floor are terrazzo and asphalt, vinyl, ceramic or quarr tile. Hot water heating is supplied from the servic building to unit ventilators in each room.



Hedrich-Blessing photos



SECOND FLOOR



FIRST FLOOR

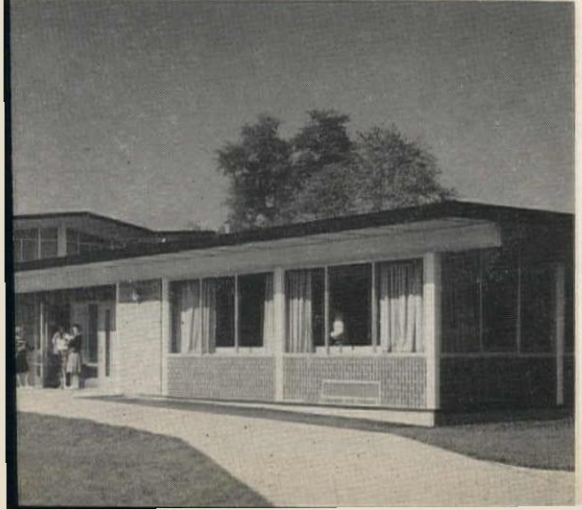
Administration Hub

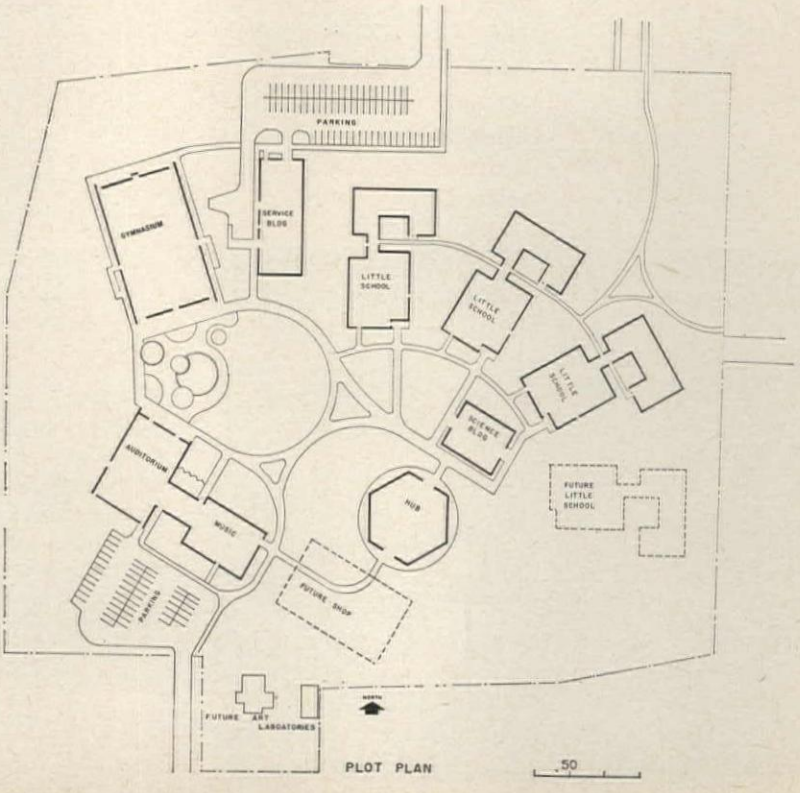
Newark High School, Newark, Ohio

ARCHITECTS: *Perkins & Will*

EDUCATIONAL CONSULTANTS: *Engelhardt, Engelhardt & Leggett*

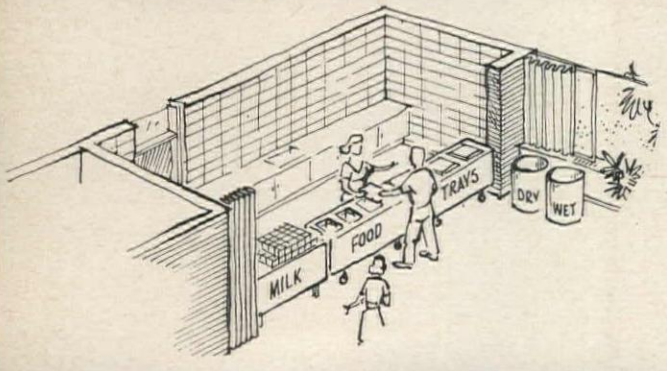
CONTRACTOR: *Knowlton Construction Co.*

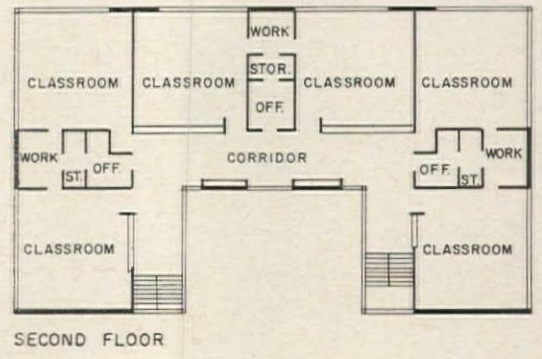




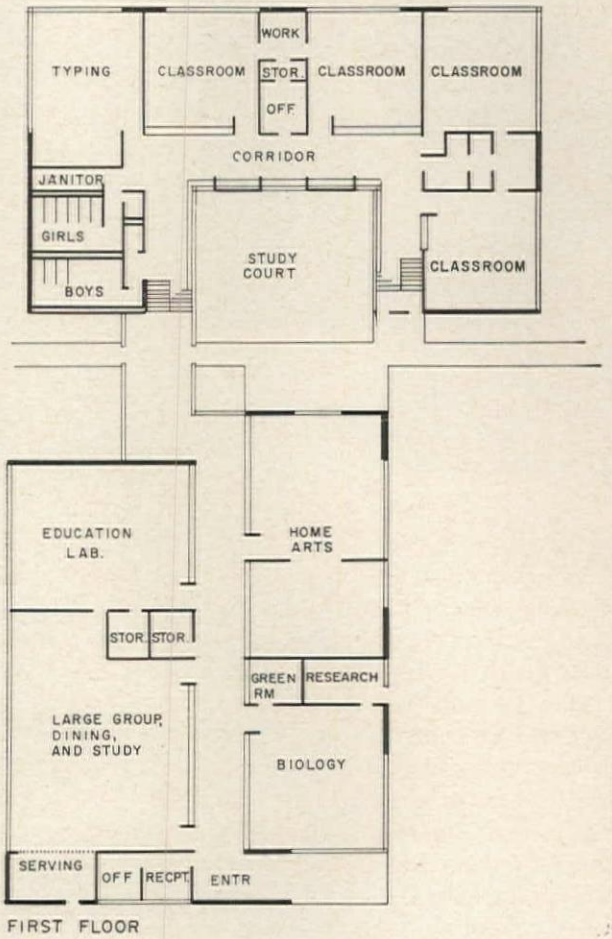
PLOT PLAN

Newark High School





SECOND FLOOR



FIRST FLOOR

Facilities of each little school include 10 classrooms for academic subjects, one typing room, one biology lab, one homemaking lab, a large room to be used for classes, lectures or as a general educational laboratory, a dining-study hall and a guidance space. New types of equipment, team-teaching, etc., could easily be used in the arrangement, as well as the more traditional methods. Each pair of classrooms is separated by a small office and a workroom, and as a unit can serve three teachers. Meals are trucked in on carts, which fit together to form a cafeteria counter as in the sketch at left. The main kitchen serves 21 schools

UPGRADING EXISTING SCHOOL FACILITIES

By Stanton Leggett; Engelhardt, Engelhardt and Leggett Educational Consultants

In Scarsdale, New York, the staff of the high school, the administration, educational consultants Engelhardt, Engelhardt and Leggett, and architects Perkins & Will, White Plains office, are wrestling with the problems of caring for increasing enrollments and, at the same time, making possible substantial shifts in educational technique.

The Scarsdale High School is a Gothic structure, built in successive additions since 1917 and varying from one story to four stories in height. By definition inflexible, it has proven to be tremendously flexible in the ability of the school plant to adapt itself to change. The secret is that in the older buildings with less "efficient" planning there is the luxury of space. Scarsdale High School has been remodeled constantly since its first unit was built in 1917.

With 1,430 students enrolled in 1960-61, the school plant was about at its desirable capacity as operated. Some areas were overcrowded and restricted in program because of the lack of space. Library, science, arts and crafts and music are examples. In other areas there was room for more students as, for example, in homemaking. With the high school operating at desirable capacity, the following areas needed additional space:

1. The library, with a seating capacity of only 90 students, should have had, under any minimum standards, space for at least 140 students. In addition, space was needed to add to the book collection and to encourage a program of individual use of the library in preparation for college.
2. The science facilities required additional reworking of old facilities and provision for the advanced placement courses or courses that, when successfully completed, carry college credit.
3. The arts and crafts area (with industrial arts) needed expansion of its shop facilities to overcome overcrowding of space and to widen its program.
4. The audio-visual department, serving the high school and the school system, was woefully lacking in space, in view of the technological revolution occurring in this area.
5. The instrumental music program shuttles between instrument storage in the fourth floor music tower and the pit of the auditorium for rehearsals.
6. There were various problems involved in the aging of the structures and mechanical systems of the high school that could not be ignored. These included the use of the original wing built in 1917, and the electrical, heating, fire alarm and other mechanical systems that need repair and replacement.

While the above problems were pressing in 1960-61 with 1,430 students enrolled, the prospective increase in enrollment to between 1,700 and 1,800 students would place additional burden for space.

To enlarge the high school in the traditional fashion to increase its capacity from about 1,400 to over 1,700 students would require the following spaces:

Twelve classrooms at 800 square feet each: 9,600 square feet;
Additional seating in library for 80 students at 30 square feet each: 2,400 square feet;
Auxiliary space for library and minimum audio-visual space: 3,000 square feet;
Two new science laboratories and advanced placement laboratory: 4,200 square feet;
Auxiliary space and storage for science laboratories: 1,000 square feet;
Large class, instruction space (minimum): 3,000 square feet

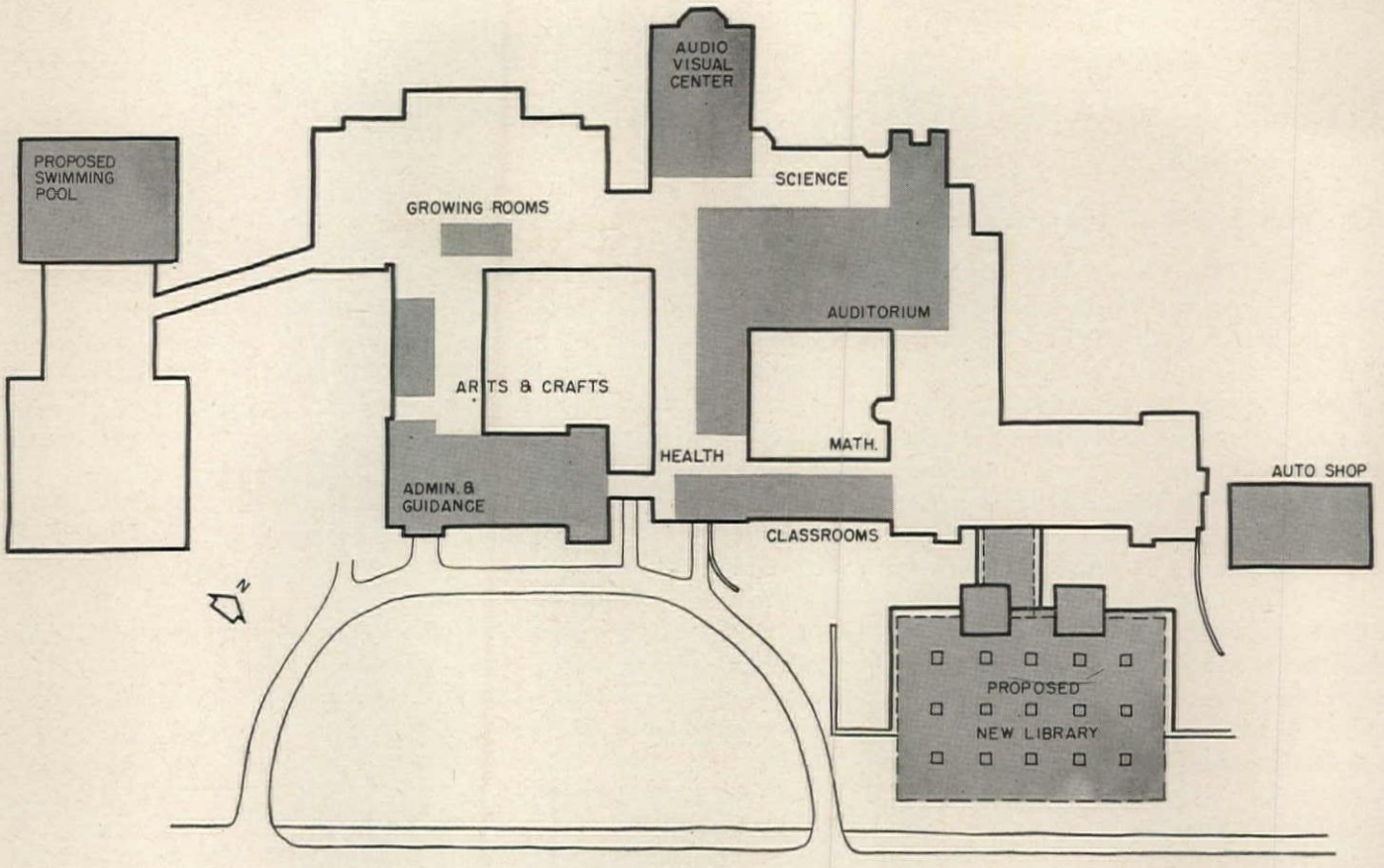
Total new space required:	*23,200 square feet*
Estimated Gross Area:	*35,600 square feet*

The difference between net and gross area is made of stairs, windows, wall thickness, toilets, service.

By significant changes in approach to the problem of housing the educational program, an addition of 32,000 square feet was proposed that provided a significant library for larger than the minimum space listed above, a most effective space for audio-visual materials and a lecture area where as many as 250 students could be instructed in a class or three of 75 students could be taught at one time. By rearranging spaces vacated in the existing building, and by changing the way in which classrooms were utilized, the expectant enrollment of 1,700 students could be housed in slightly less space than required in the traditional fashion.

The savings in space is an incidental by-product of a desire to provide for significant educational programs. At the heart of the proposal was the desire to provide space for independent work on the part of an increasingly larger percentage of the student body. Good schools have been doing this for years. The purpose of the proposed changes was to increase the percentage of students carrying on significant individualized work, to focus the interest of the school organization in this area in a systematic fashion, and to provide space that would contribute to the ability of the student to work independently.

Basically, the additional space for the forecast increased enrollment is expected to be found by increasing the use of classrooms from four to five periods a day to at least six, meaning that teachers



would no longer have a room for their own use but classrooms would be shared by teachers. In order for this sharing to be effective, all teachers would need a private place in which to work.

The educational consultants proposed that departmental centers be developed for each major curriculum area that would provide an office for the head of the department, seminar rooms, a small but effective departmental reference library, work space for department and storage. Adjacent to this would be the home base for teachers and a space in which students could pursue individual work. A prime consideration was that all possible modifications of space to meet these needs be accomplished by furniture so that classrooms would not be disturbed essentially by the transformation to other uses.

After considerable study by Perkins and Will, the architects, and a staff committee, whose work was supported in part by a grant from the Educational Facilities Laboratories, a tentative design for a prefabricated divider system that would provide the essential working space for faculty members was arrived at. This design is subject to further detailed development. It will be noted that a typical 600 square foot classroom would provide space for seven faculty members together with waiting space.

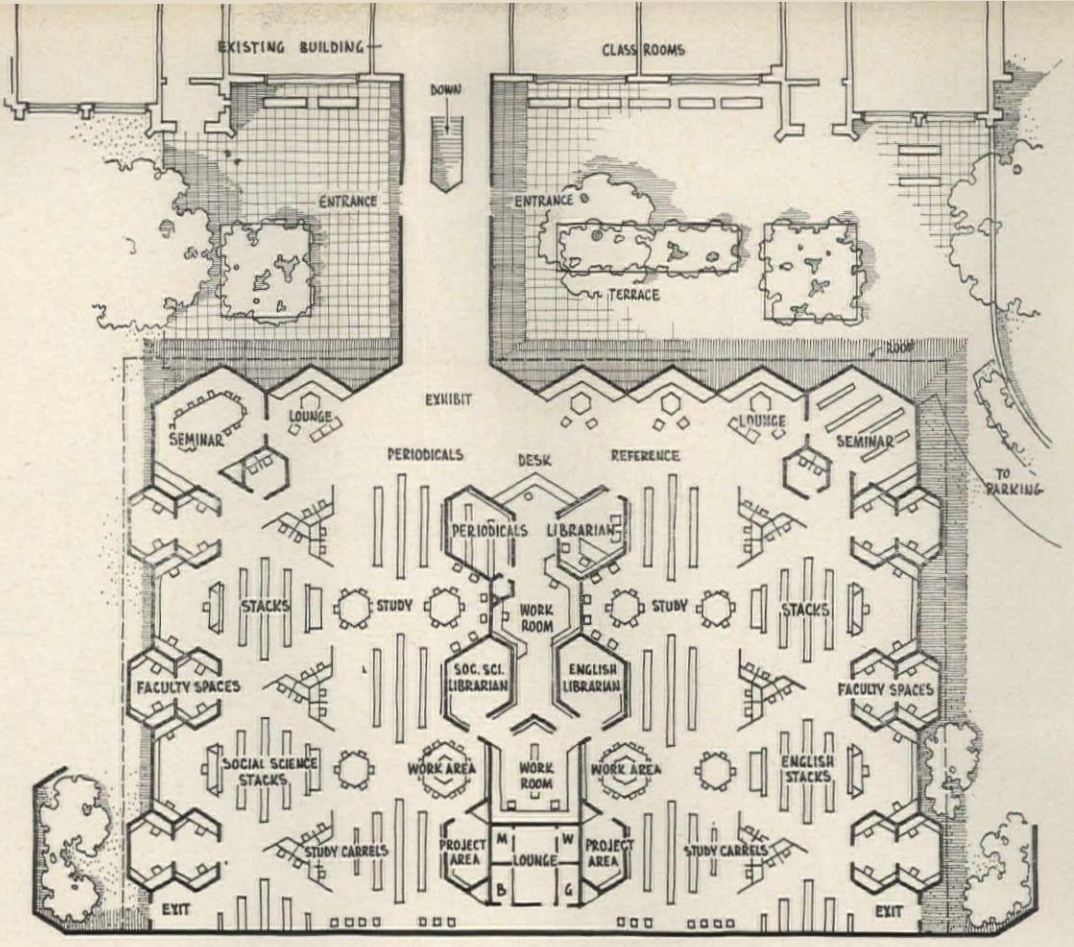
Because of the major use of the library as independent work space in English and social studies, the departmental centers, teacher work space and individual student work space were incorporated into the proposed library. The result is a library that will seat 20 per cent of the student body at one time, provide about 36 faculty work spaces, seminar classroom spaces, and the necessary auxiliary space for the library. Again, virtually all of the subdivision of the library is furniture.

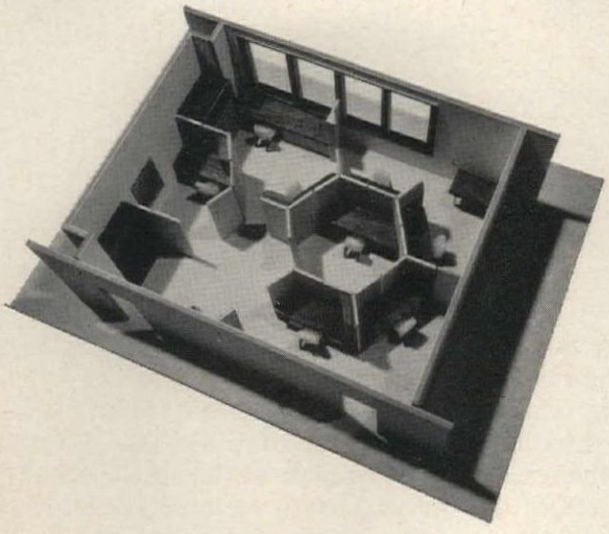
The existing library was proposed to be converted to two advanced laboratories, one for physical sciences and one for life sciences, as well as a large research and independent work space for the sciences. A large classroom adjacent to the library is reworked to provide for group instruction in general science and some use of television.

The music program, long accustomed to variations in size of groups taught, has been rehoused in part by developing backstage space for office, music library, storage and practice rooms. The auditorium floor has been changed to flatten the front, eliminate the pit, and to provide movable chairs for this area.

A major outcome of the proposed new library involves the location beneath it of an audio-visual materials center for the school system, including a TV originator studio. In this area is also located a simple lecture hall for 225 students which can be subdivided into two rooms for 50 students each and one for 125. This space is designed for rear projection directly from the audio-visual center.

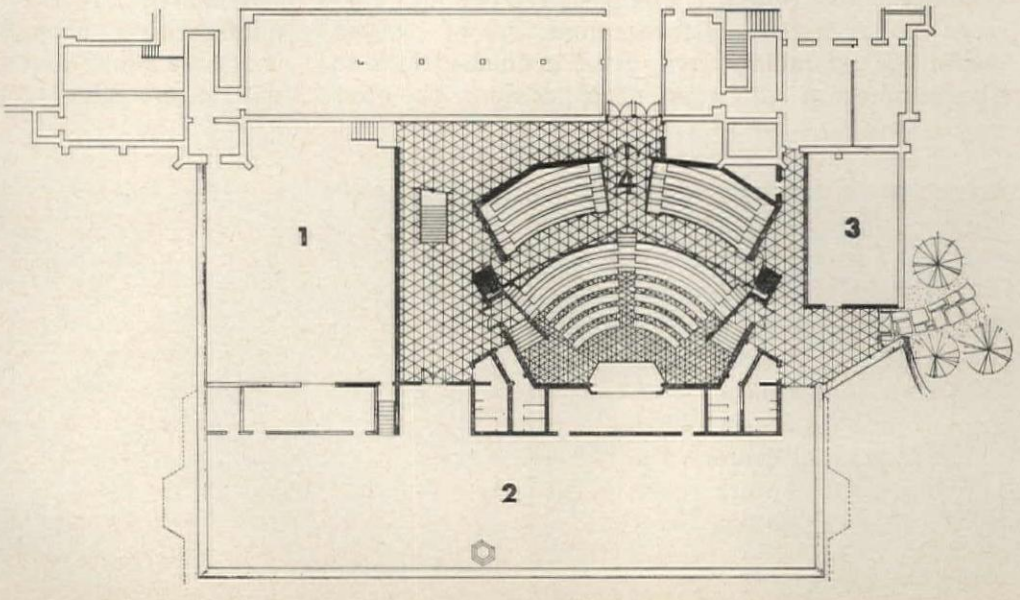
In summary, there were few disadvantages that the old building placed in the way of accomplishing today's and tomorrow's educational goals if sufficient time and ingenuity could be focused upon creative solutions to the problems. This suggests that continuing interest and study of the problems of older structures will pay handsome dividends.

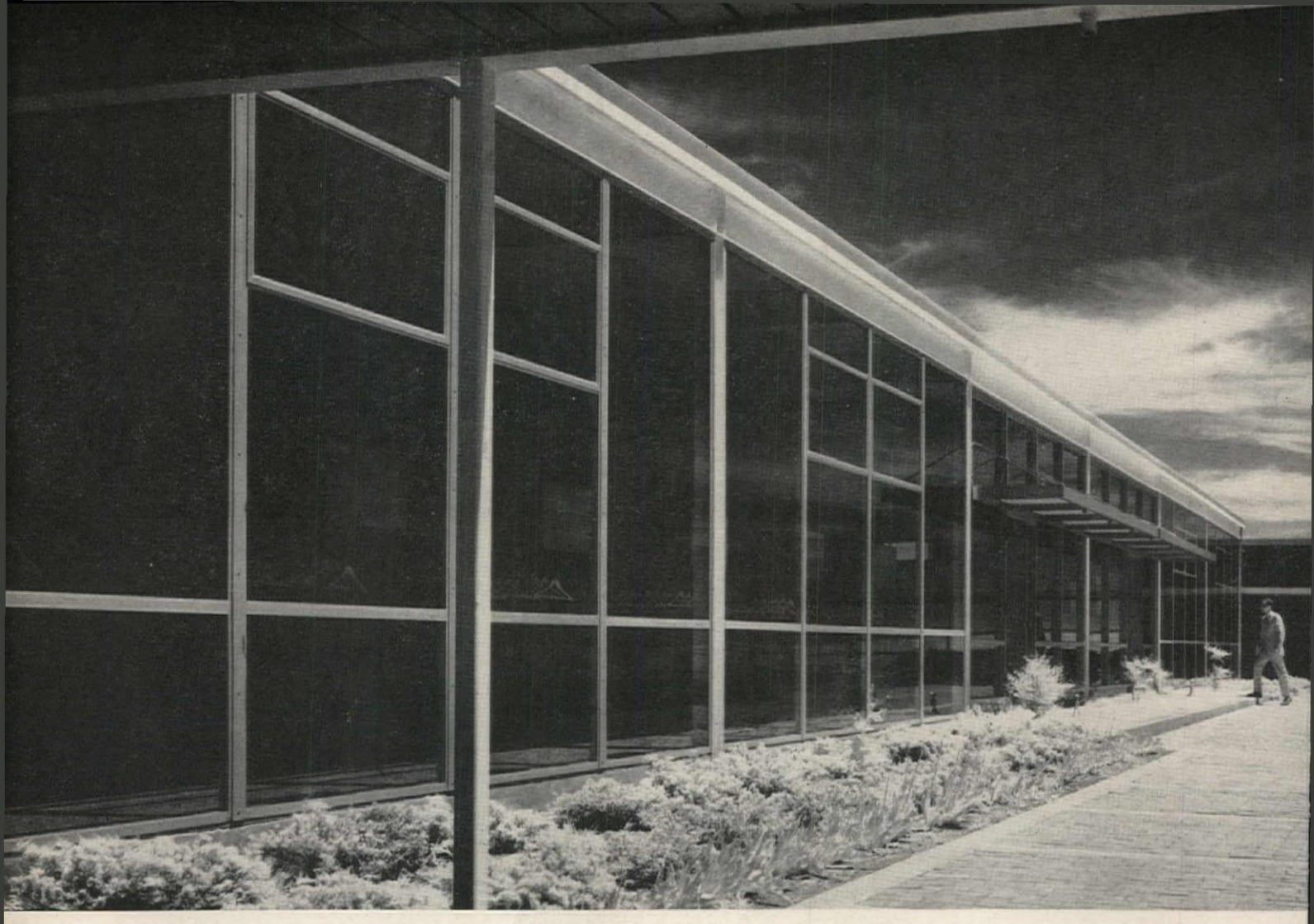




The diagram *(above left)* shows the long range revisions proposed for the Scarsdale High School to cope with more pupils and new methods. Major additions are a proposed library and a swimming pool. Other shaded areas indicate revisions in the existing structure noted in the text, such as adaptation of 1917 vintage classrooms for administrative offices *(left)*.

The proposed library *(main floor plan shown above)* is advised to incorporate facilities for new teaching methods. Its lower floor *(below)* has a T.V. studio (1), audio visual storage and repair center (2), mechanical equipment (3), and variable size group instruction spaces (4)



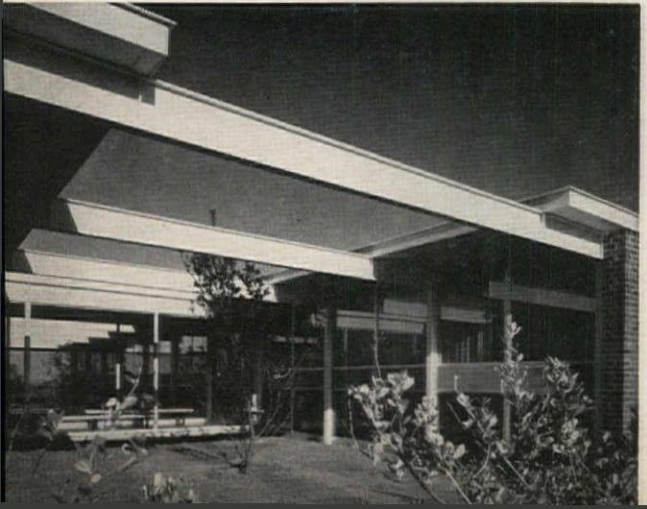


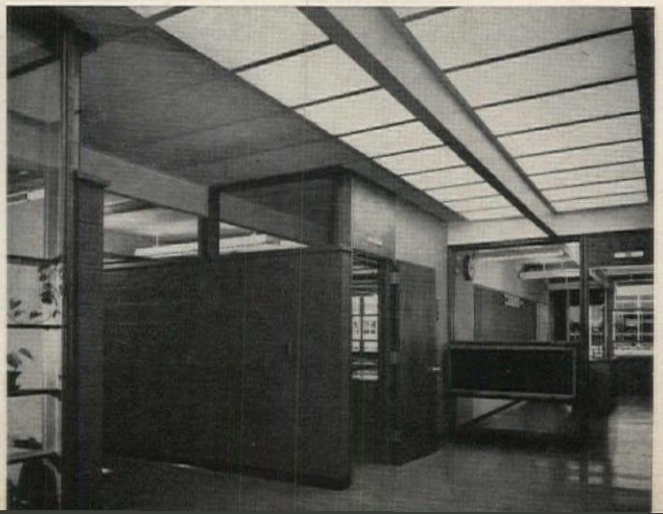
PAROCHIAL SCHOOL TO ADD "EXTRAS" LATER

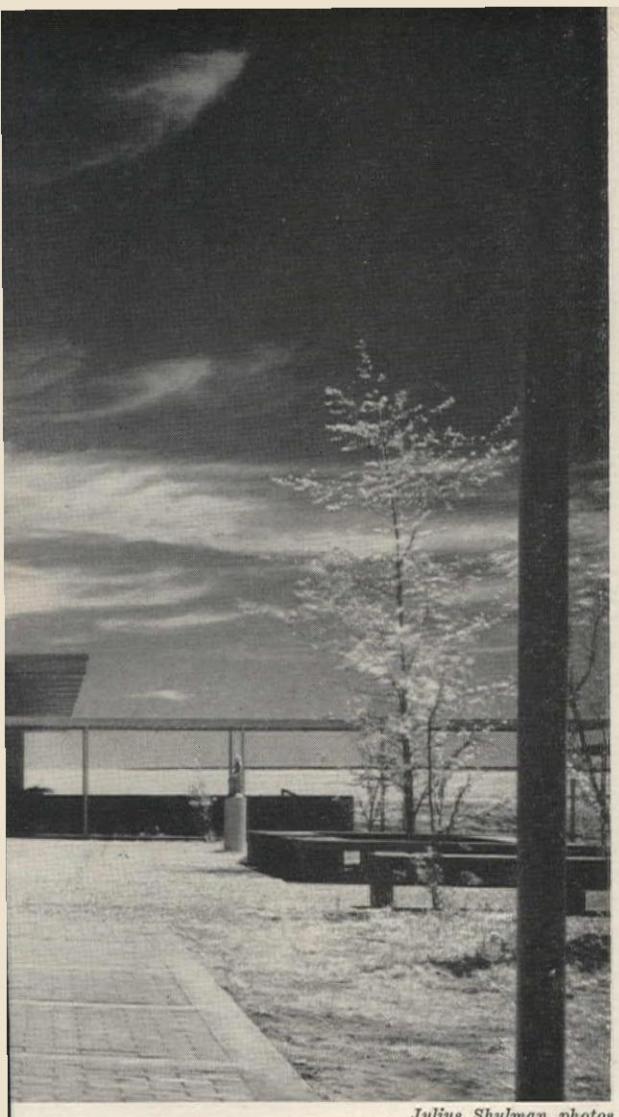
Basic educational needs for 650 pupils and three high school grades are supplied in this first stage of a parochial school ultimately to have a full program for 1,000 pupils.

The final complex, shown at right in plot plan and rendering includes the units to be added later: auditorium and multi-purpose unit in the central mall (*shown shaded*); and the chapel, rectory and convent shown in the left foreground. Use of covered walkways around the mall gives a finished look to the complex at all stages of expansion. The first stage includes 20 classrooms (divided between boys' and girls' sections), a gym, a cafeteria for 260, a "core" area (science labs, home economics, business practices and art), and quarters for the Christian Brothers who will teach boys at the school. Library and offices link the classroom sections (*detail plan, top right*).

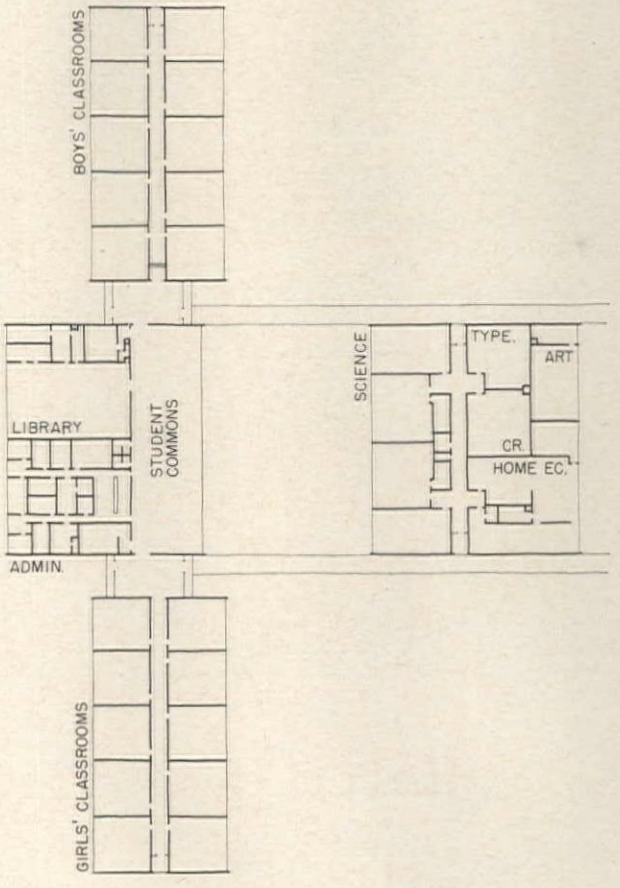
The structure is of exposed steel beams and columns, with an acoustical roof deck. Masonry cavity walls are generally used on all east and west walls, with glass curtain walls on the others.



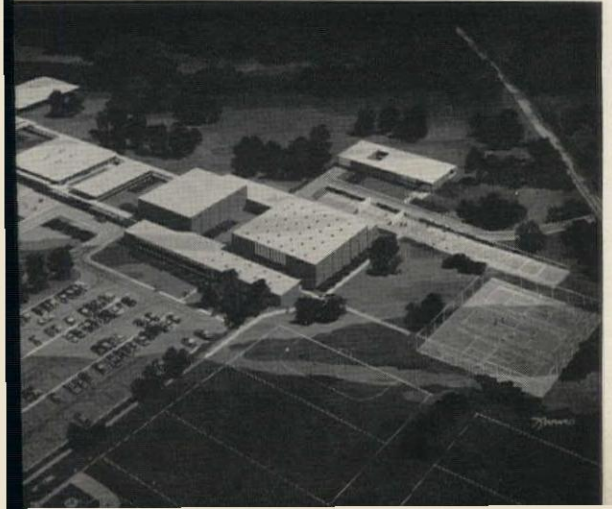


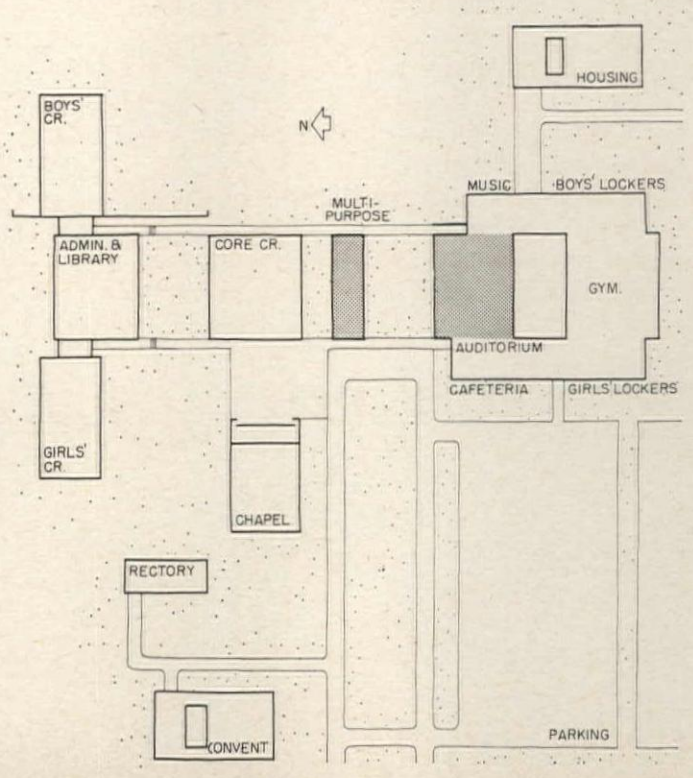


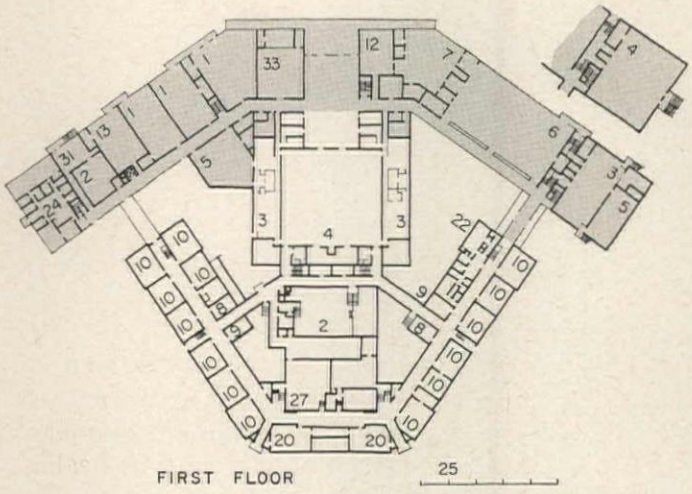
Julius Shulman photos

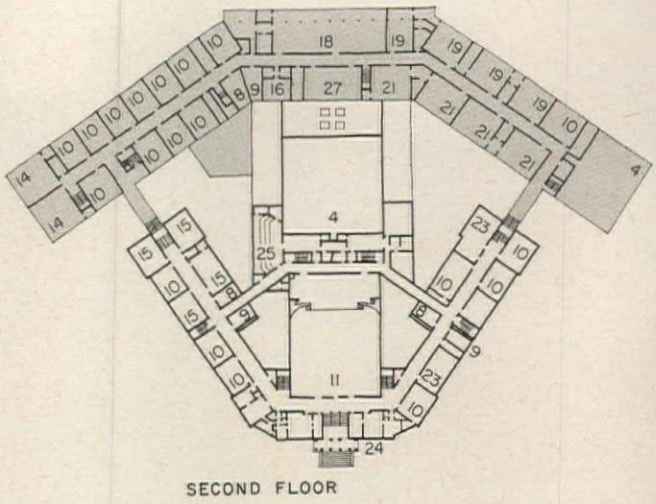


Bishop Kelley High School, Tulsa, Oklahoma
ARCHITECTS: *Murray-Jones-Murray*
ENGINEERS: *Netherton, Dollmeyer and Solnok*
LANDSCAPE: *Sasaki, Walker and Associates*
CONTRACTOR: *W. R. Grimshaw Co.*

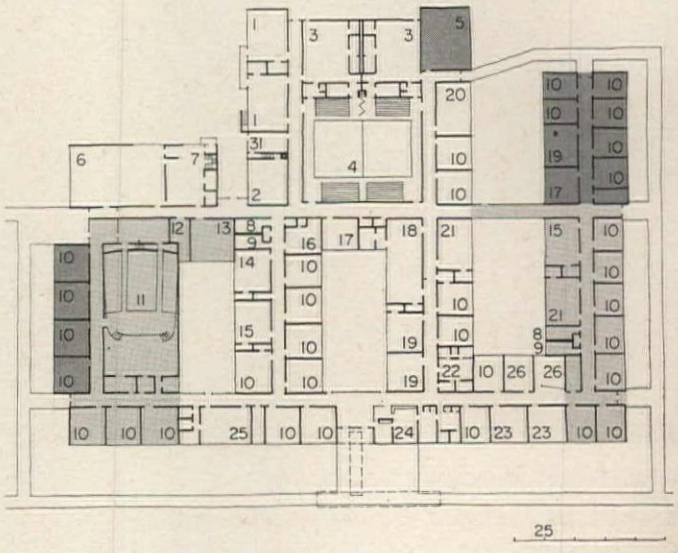


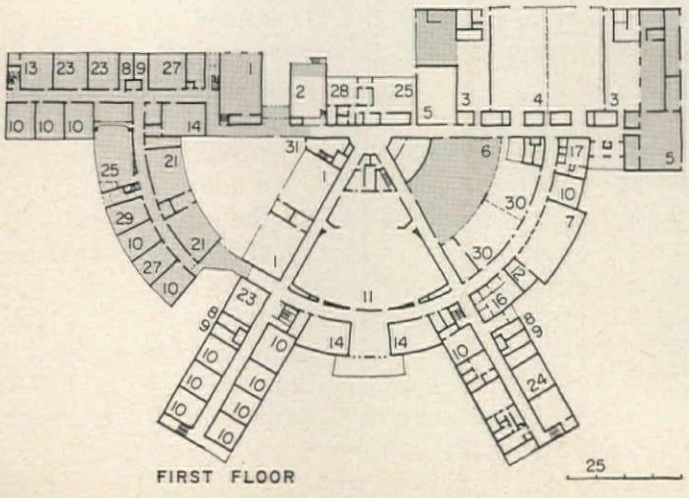


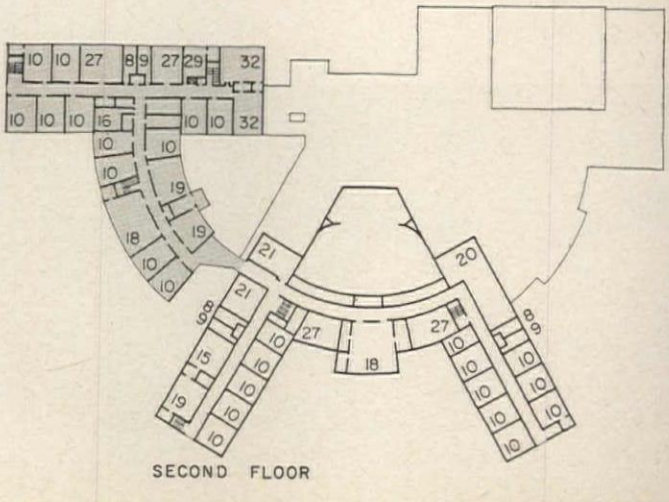




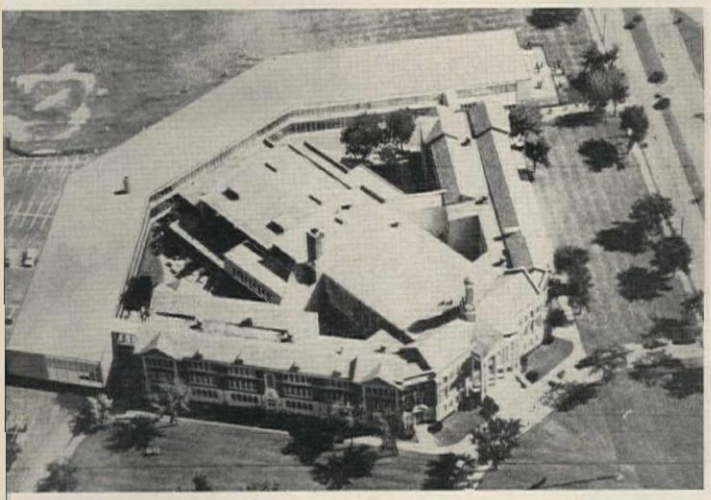
1. Shop
2. Boilers
3. Lockers
4. Gymnasium
5. Auxiliary gym
6. Cafeteria
7. Kitchen
8. Boys
9. Girls
10. Classrooms
11. Auditorium
12. Faculty dining
13. Mechanical drawing
14. Art
15. General Science
16. Teachers
17. Health Education
18. Library
19. Biology
20. Home Economics
21. Physics & Chemistry
22. Nurse
23. Typing
24. Administration
25. Music
26. Office
27. Study
28. Choral
29. Conference
30. Cafeteria-study
31. Custodian
32. Secretarial practice
33. Audio-visual



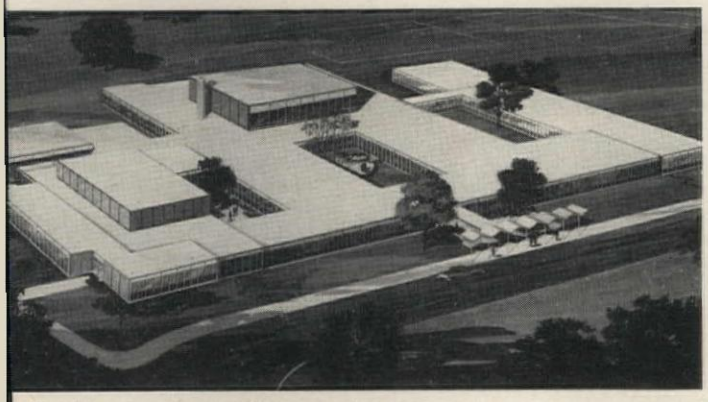




ADDITIONS PLANNED FOR OLD, NEW AND PROJECTED SCHOOLS



Bay Shore High School



Burlington Junior-Senior High School

Deer Park, New York, High School

ARCHITECTS: *Frederic P. Wiedersum Associates*

THE BAY SHORE HIGH SCHOOL in Bay Shore, New York, is now constructing a new "wrap-around" addition to double the capacity of the existing 1,000 pupil school built in 1939. The most interesting planning problem (and one frequently met in dealing with older schools) was to provide such an addition that would have access to all three wings of the existing plant, and function efficiently for a departmentalized program. The "wrap-around" concept for a two-story addition, creating two interior courts, neatly solves the problem.

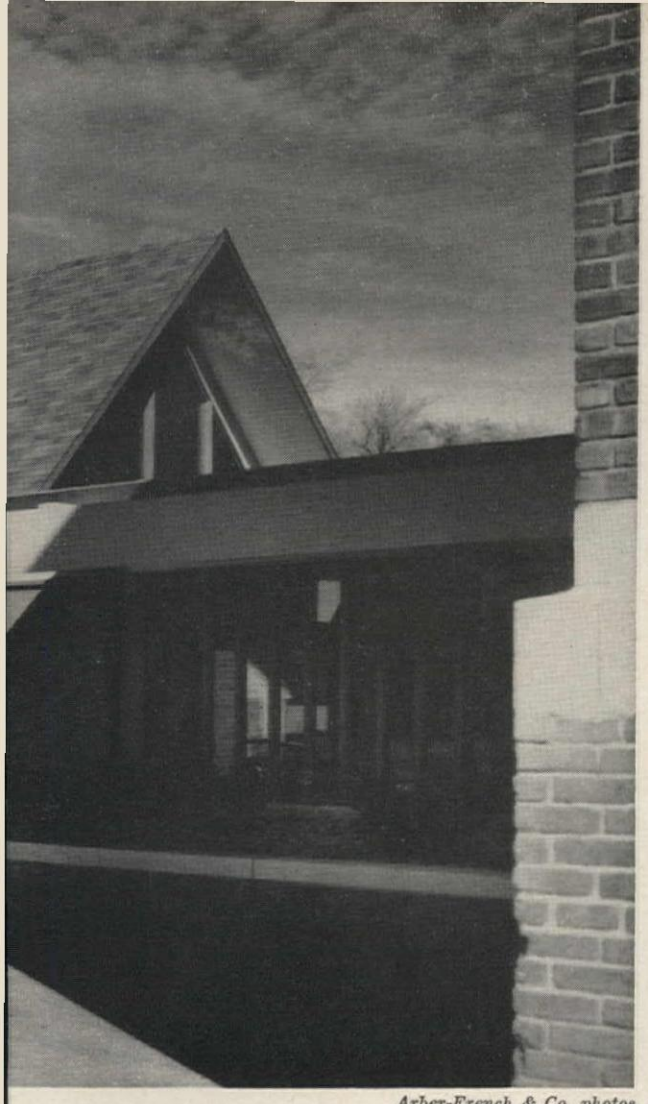
Some of the new facilities added are: offices, shops, cafeteria, seven science rooms and a new girls' gym. The structure is steel framed with masonry walls, concrete curtain walls. Wiesenfeld & Leon, structural engineers; Carl Linn and C. Dean Kent, mechanical engineers; Eberlin & Eberlin, site engineers.

THE BURLINGTON JUNIOR-SENIOR HIGH SCHOOL in Burlington, New Jersey, represents a long-range master plan for construction in three stages. The shaded areas represent the later additions on the plan. The initial capacity will be 695 pupils; 868 at the second stage; and 1,267 for the final phase. In contrast with many such schemes where supplementary facilities are simply added, this plan proposes a fairly complete plant at all stages, with rooms designed for conversion to other uses as initial "rooms" for various subjects expanded into "departments." This would include mechanical "roughing in" for the future needs. All wall panels were designed for reuse if moved. Kenneth J. Tomann, structural engineer; Joseph R. Loring Associates, mechanical engineers; Stelling, Lord-Wood and Van Suetendael, site engineers.

THE DEER PARK SENIOR HIGH SCHOOL was designed by the Wiedersum firm with the expectation that an addition would eventually be needed. The original structure, completed and occupied in September 1961, had a 1,000 pupil capacity. Subsequent enrollment projections showed that an addition for 1,000 more pupils would be needed in the near future. The projected new wing (to the east of the school as originally planned) includes classrooms, special rooms and a group instruction room; an interior court will be roofed for a big cafeteria, and the student activity room converted into a large dishwashing area. Clyde Alston, mechanical engineer; Maiman Associates, structural engineers.

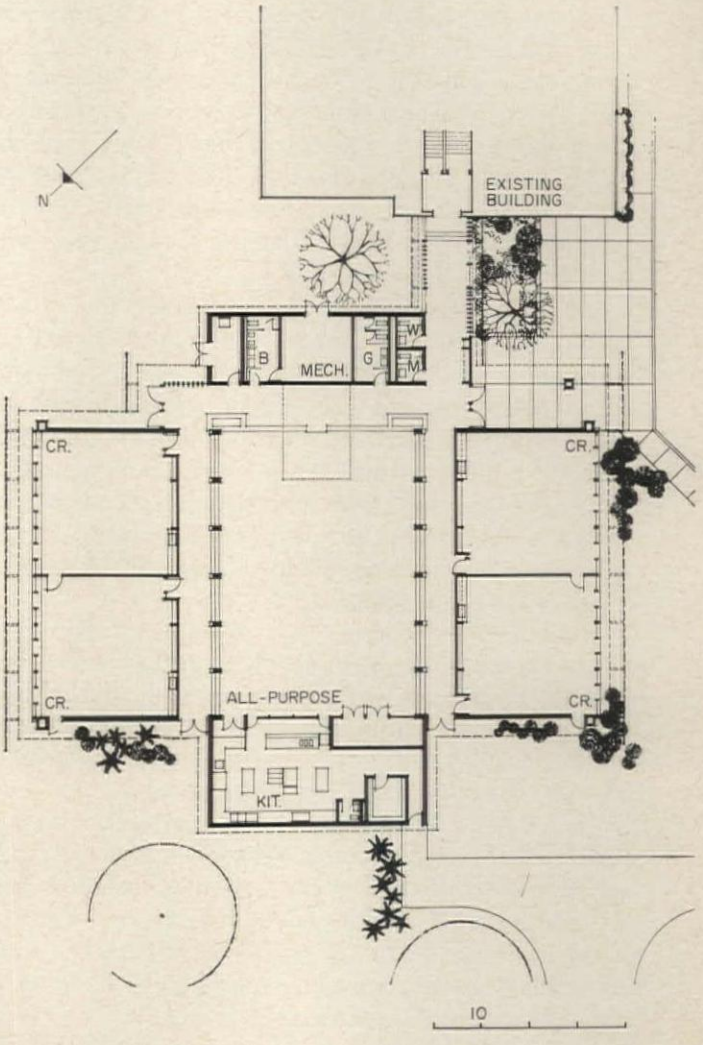
ADDITION USING COMPONENT PLYWOOD STRUCTURE

Designed to add much needed classroom and all-purpose space to an existing school building, this trim addition uses the Delta System plywood components for the structure and insulated stressed-skin roof panels. Use of components reportedly allowed much speedier construction (in very bad weather) and at a cost somewhat under prevailing costs for traditional construction. The general layout places classrooms under the wings of the frame, and the multi-use area in the high space under the tapered beams. This all-purpose room serves as lunch room, place of assembly and as an area for small game activities for the entire school. The room is at a lower level than the open corridors surrounding it, with steps which provide ready-made seating for informal instruction and discussion. The entire layout was also planned with a look forward to a time when a non-graded or team teaching program may be instituted. A retractable stage is provided for the room, recessed beneath the corridor floor. The classrooms are treated acoustically to reduce noise transference from the central area.



Arber-French & Co. photos

South Deerfield Grammar School
Deerfield, Massachusetts
ARCHITECTS: *Bednarski, Falconer, Stein*
MECHANICAL ENGINEERS: *Fred S. Dubin Associates*
CONTRACTOR: *M. I. O'Connor Inc.*



NEW YORK PLANS PROTECTION FOR CHILDREN

By Albert E. Sigal, Consulting Architect

New and experimental teaching environments planned as additions to New York schools, may greatly increase their effectiveness as fallout shelters under emergency conditions. Possibilities for special as well as conventional use of properly shielded environments have been developed in the early planning stages of the state's new program to design, build and demonstrate three prototype school fallout shelters.

At each of the three designated sites—one in Brooklyn, one at rural Cobleskill in central New York, and one at Cheektowaga, a suburb outside Buffalo—the state has clearly stressed *dual-use* as a practical part of providing shelter for pupils and staff, and has invited local educators to work with a state appointed architect to plan for their own needs.

At Cobleskill, a 75-acre hill plot with separate elementary and high schools, there is need at the high school of more gym and recreation space. In addition, the band, which presently practices in a room directly beneath the school library, would benefit from a separate space. The new high school facility would have access from the elementary school through a protected areaway.

At Brooklyn's Public School No. 261, four stories and a basement, with limited outside all-paved play yards, suggested use has included closed and open circuit television, counseling and remedial rooms for small group instruction, an added library unit with special materials, and even a research-experimental center for teacher training. Here, an extension of the space at sub-ground level would necessarily involve putting back as shielded roof that portion of the play yard affected.

More specialized needs have been set forth by administrators at the U-Crest School in Cheektowaga, one of the largest elementary schools in the state, where for some time, advanced audio-visual training has been used in the curriculum. Conception of the new facility as a complete audio-visual center to enlarge the school's program, and serve the more conventional needs of play-rehearsal, club activities, corrective exercises and the like, has been advanced. An audio-visual center would offer new techniques to control and modulate sheltered experience under emergency conditions with methods already established through educational use.

Each site and present school plant selected will help determine the location and character of its new structure. The rural setting at Cobleskill is steep; with a surface strata of limestone. Playfields were dug from the rock and leveled with sod from other areas, and though the new facility may cut a part from one of these, its sod will be replaced above the roof. Another exposed portion of the same roof may serve as floor for conventional future classrooms.

A prominent spot at the U-Crest School is a space between two classroom fingers, subsurface to an existing turf area to which the classrooms open, but which, like other outside areas, remains damp and inaccessible during the long periods of inclement weather. A roof shield as a common paved and drained all-year play surface, would have added plants, seating and equipment to improve its use and appearance. The location is central to the entire school, and would be served by generous hall-sized ramps from two sides.

The architect is also working with regional civil defense chiefs in each of the districts to integrate survival stores and equipment with the regular use facilities. A civil defense emergency plan will be developed to best serve each particular facility with its own age group and staff.

Costs, when developed, are expected to be reasonably comparable with average school construction. Closed environments in some instances have been shown to offer operational savings; but higher occupant loads during emergency conditions will require air-conditioning systems with increased ventilation and carefully adjusted air-ratio and humidity controls. Present sources of school utilities will be in use in the regular systems, with standby sources such as well water and storage, alternate sewage disposal, emergency generating equipment and fuel, and water-conserving plumbing.

The structural systems, though conventional, will give special attention to shielding, weight and span for pleasantly-scaled, easily divisible rooms.

Materials and finish colors will be chosen to offer interest and variation, with some surfaces kept black as settings to alternative foreground material to increase the feeling of depth. Others may be plain or textured, some changeable by illumination, and some of the movable partitions may be painted alternately front to back in order to increase interest as they change position.

A lighting system will combine reasonable levels of educational illumination with certain more dramatic components added for indirect and pin-point lighting, adjustable by rheostat.

These attempts, largely through the cooperation of local educators and civil defense officials, have signaled an encouraging change in the possibilities of environmental protection—attempts based upon techniques and systems with which the state of New York is vitally concerned.

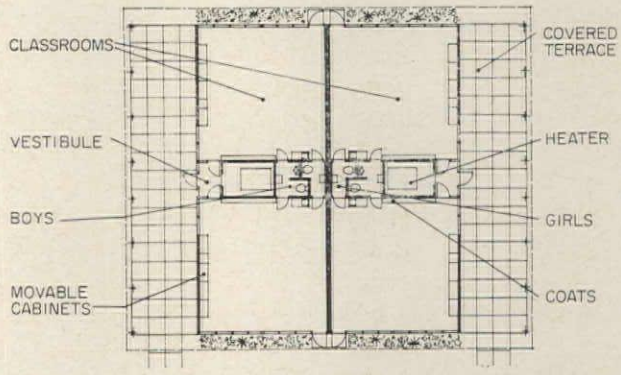
A PORTABLE SCHOOL THAT CAN BE MOVED INTACT

Sudden, and often unpredicted, population shifts are causing cities all over the country to relieve school overcrowding by the use of transportable classrooms. There is no denying their value as a speedy countermeasure to such problems. However, their use seldom proves as "temporary" as originally intended, and it is essential that they be well designed and constructed.

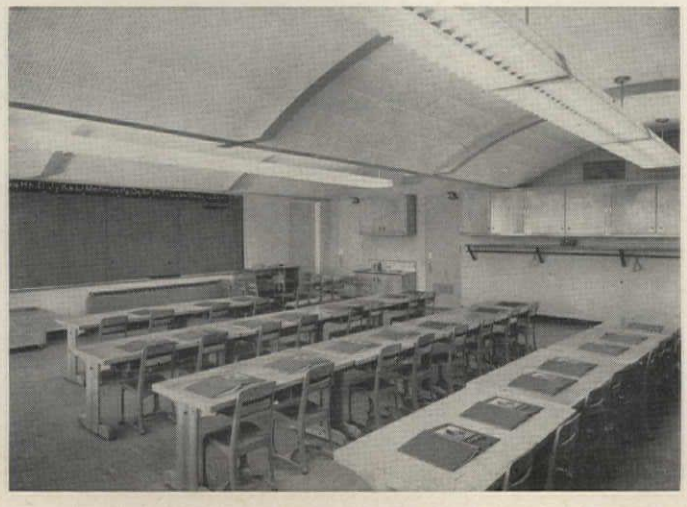
Dearborn, Michigan, faced with a sizable transient population, commissioned Eberle Smith to design this mobile two-classroom unit which can be jacked up, lowered on wood skids and hauled away intact. The unit is 30 by 68 feet, roofed by two stressed-skin plywood shells. The shells rest on laminated wood arches set on pipe columns. Exterior walls are insulated aluminum panels, wood sash. Floors are steel framed, with wood joists topped with plywood. Ceilings are acoustical tile.

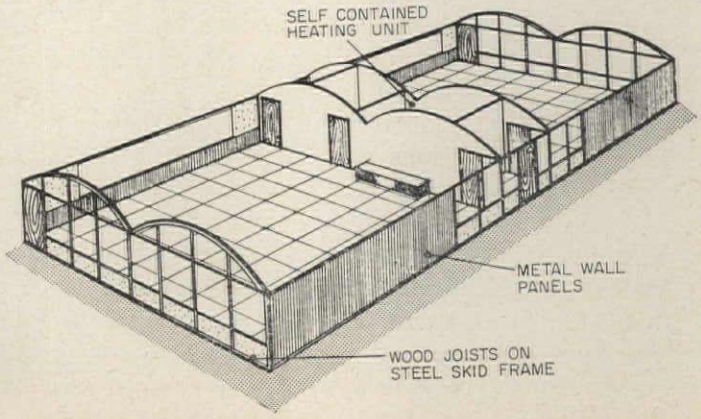
LOCATION: *Dearborn, Michigan*

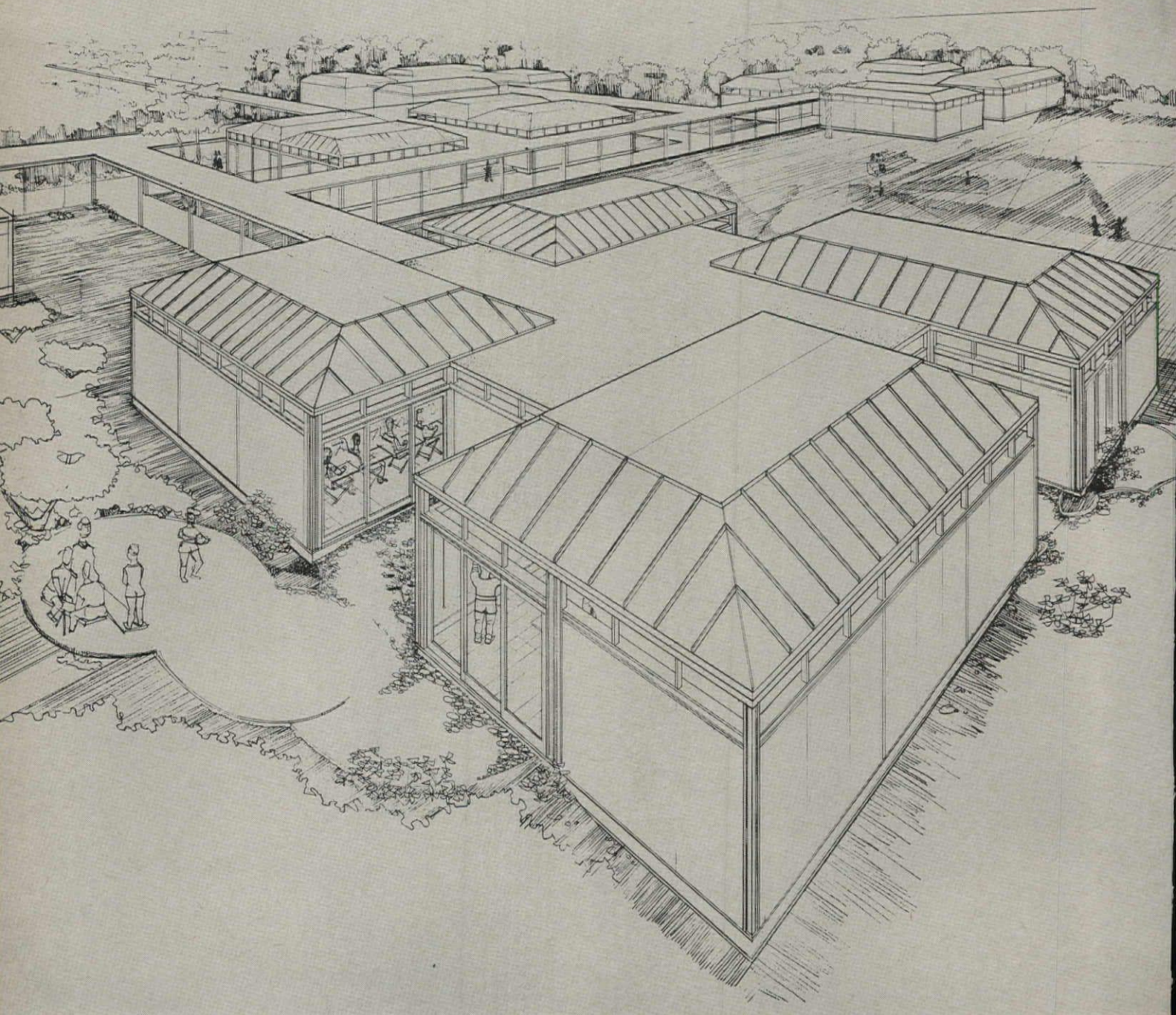
ARCHITECTS: *Eberle M. Smith Associates, Inc.*

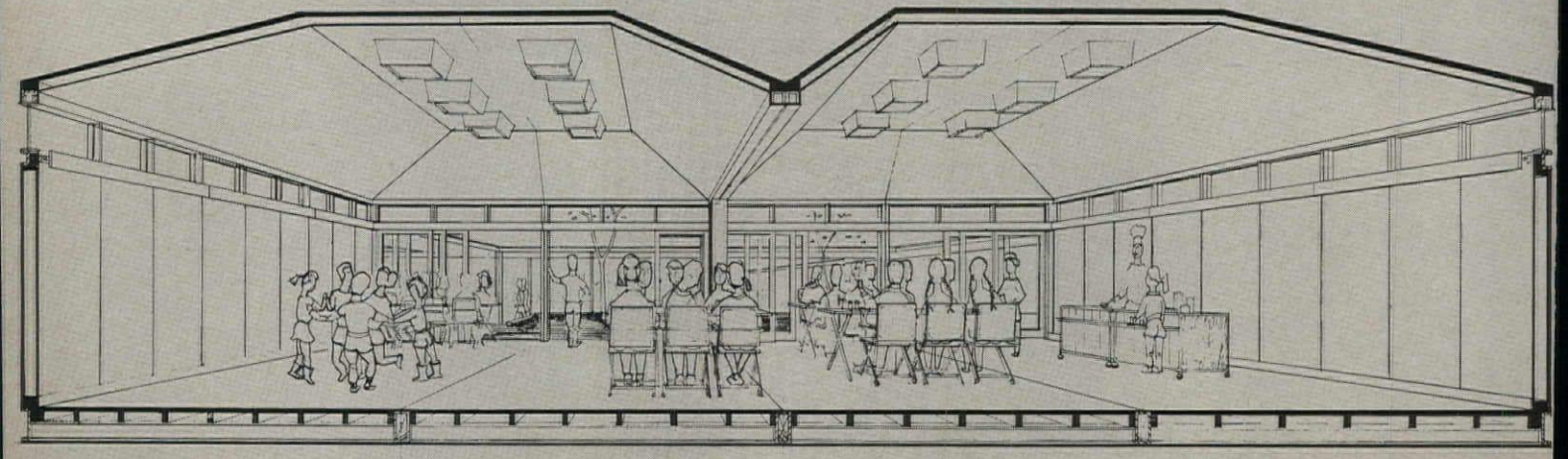


A four-classroom variation



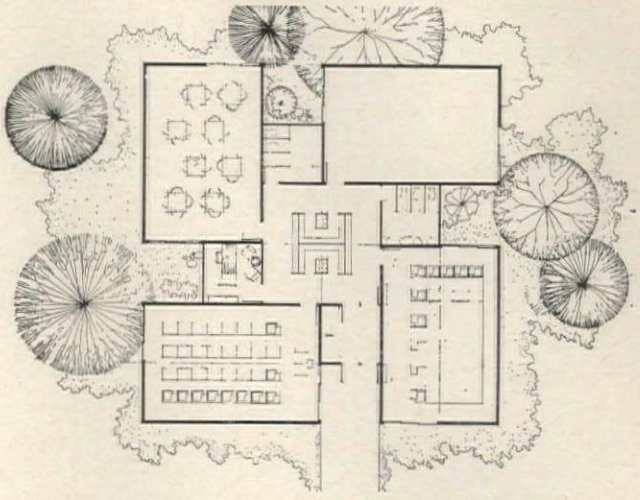






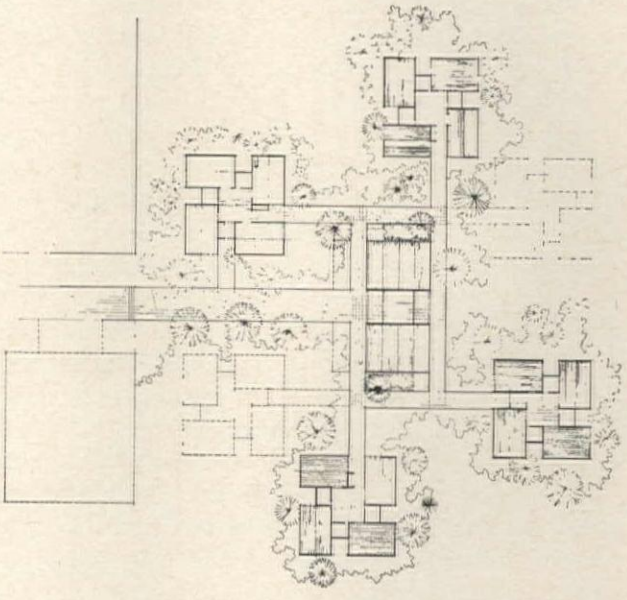
NEW JERSEY STUDIES A DEPLOYABLE SCHOOL

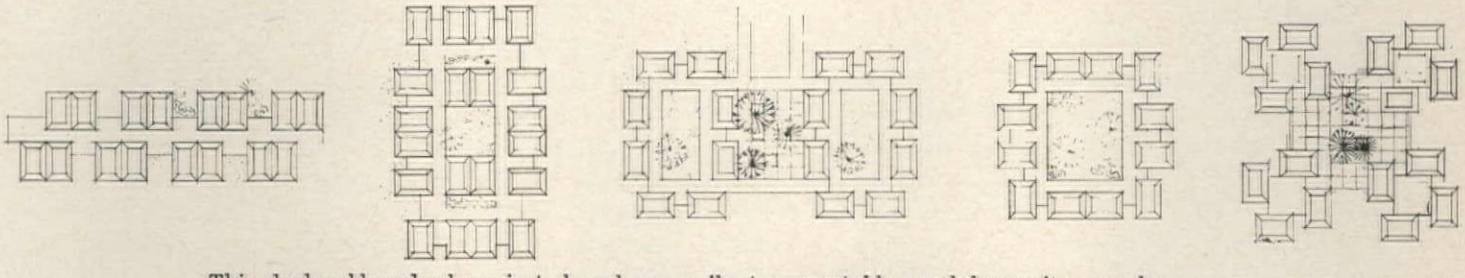
Elementary School Project
Sommerset County, New Jersey
ARCHITECT: *Robert Martin Engelbrecht*



For some 40 years, the Sommerset County school district has been largely rural, with little growth; high school grades have always been sent to another district. This stability has been changed by two recent happenings: (1) in 1964 high school grades can no longer be sent elsewhere; and (2) agricultural lands are being converted to residential usage. Research reveals a fairly definite growth pattern of a need for two to four classrooms per year. Alternate programs are now being investigated to provide these needed facilities. The first—to design a new school, raise a bond issue, and hope to build in 1964-65; meanwhile, doubling up and renting temporary space.

The alternate project, shown here, is to erect modular units as needed, with financing to be budgeted under capital improvement, negating the difficulty and expense of getting a bond issue approval. This scheme is based on a standard classroom 20 by 30 feet, designed to be trucked in half-sections. Other standardized, and also panelized, units form links for combinations; larger class spaces can be formed as shown at lower left.





This deployable school project, based on easily transportable, modular units, can be combined to form clusters of four classrooms *(top right)* or the many other arrangements shown here

A PORTABLE SCHOOL PROGRAM FOR PITTSBURGH

By John Pekruhn

Like all large American cities, Pittsburgh is faced with the problem of shifting populations. Regular school census-taking gives a general guide to school population growth and distribution, and lends itself to projection of future needs, but the many factors that influence grouping of children in neighborhoods make it well nigh impossible to plan very far into the future. Many large, adequate school plants are underpopulated as much as 50 per cent while others have to handle a vastly greater classroom load than they were designed for. One stop-gap currently being used by Pittsburgh includes temporarily transporting children out of their home neighborhoods to less populated schools. Obviously such a step can only be temporary in nature and some long range attacks on the problem needed to be made.

The Educational Facilities Laboratory of the Ford Foundation, concerned with the broad aspects of the problem in cities across America, and feeling that Pittsburgh (with its concentration of industry producing basic building materials) might be a good place for a solution to be found, made a grant to the Pittsburgh Board of Education for a study of the problem. Working with their Consulting Committee of Architects, (John Pekruhn, Dahlen Ritchey and Laurence Wolfe), the Board (one of whose members is architect Robert H. Burdett) decided to narrow their investigation of the problem to two approaches: (1) convertibility (taking a structure planned for some other purpose and making into a school); and (2) demountability (planning a structure that could be moved from one place to another with a minimum of cost and difficulty as the situation demanded). B. Kenneth Johnstone and Associates, Architects, then engaged in planning the Action-Housing-backed East Hills Project, was asked to explore the concept of convertibility in the housing units there. The consulting architects were asked to explore demountability, and the attacks on the problem being made by other cities.

The general approach of the Los Angeles Board of Education in building only 70 per cent of classroom capacity in permanent new buildings and making up the remaining 30 per cent with demountables seemed especially good. The demountables were of wood, two classrooms to a unit, with no mechanical facilities, built in situ in their first use and moved by professional house movers as required. The problems of this approach for Pittsburgh were overwhelming: The terrain with its steep, twisting, narrow streets precluded moving anything so big as a single unit. The bitter winters ruled out walking to toilet facilities in a permanent core building, and heating was a major factor in such a cold climate.

The trailer units used by Chicago were interesting but provided very cramped and limited educational space. The standardized industrial buildings employed by Philadelphia and St. Louis left much to be desired visually; such buildings, in some instances, might remain in one site as long as the permanent building.

Many standardized building systems were explored and discarded—mostly because the systems involved broke down, on moving, into a multiplicity of small parts and would require complete rebuilding with each move. The trailer systems were discarded because of the relative impermanence of the construction and the limitations in size of the spaces.

I was then asked to make a design study, with the hope that local industry might be persuaded to implement it. The following criteria was established by the Board of Education:

1. Units should be portable but not look so
2. Units should be architecturally pleasing
3. Structural and mechanical parts should be demountable with minimum disconnection or loss of material except foundations and lines of supply
4. Units should be completely self contained as to heating, ventilating, lighting and plumbing
5. Units should be durable enough to withstand extremes of vandalism, and be easily maintained
6. Units should be financially feasible

The study was organized around the use of three materials, steel, aluminum and concrete, and units were designed based on each. It was decided that a basic unit module of trailer size (8 feet wide) was the largest that could be hauled through Pittsburgh streets—yet presented a minimum of breakdown in removal. In addition, equipment was easily available —cranes, low-boy trailers, etc.—to handle units of this size. It was discovered that this was also a good size for the mechanical core to be contained in a single unit and transported intact.

The design for the steel unit was conceived as a trailer-like element (but with an all-steel chassis) 8 feet wide and 45 feet long. Four of these units (with open long sides temporarily braced during moving) made up a full size standard classroom, with additional spaces for cloakrooms and small group teaching spaces (since Pittsburgh is carrying on a large scale, long range, team teaching program). An additional two units provided toilets and more auxiliary spaces. The units lent themselves to many combinations in plan arrangement. Since Pittsburgh has found that the classroom lights burn a high percentage of the time anyway, the usual

long wall glass area requirement was relaxed. The walls were, in large part, prefabricated metal and polyurethane sandwiches, molded into prefabricated cases of various kinds (coats, books, supplies, etc.). It was proposed that the units be built in the factory with floors, walls, roofs complete in 8-foot slices and hauled, as trailers, to a site prepared with foundations and supply lines, etc., bolted together and hooked up. Demounting would simply reverse this.

The design for the aluminum unit was based on a similar module, but erected on a poured slab, with 8-feet-wide wall and roof panels. The structure was based on the M.I.T. folded-plate plastic sandwich studies, with aluminum replacing plastic as inner and outer layers, leaving the polyurethane as the center core. This would provide a relatively light, easily handled, strong structure. In plan organization, it could provide a greater degree of flexibility. However, without a floor system, it broke down on removal to another site to an undesirable multiplicity of parts.

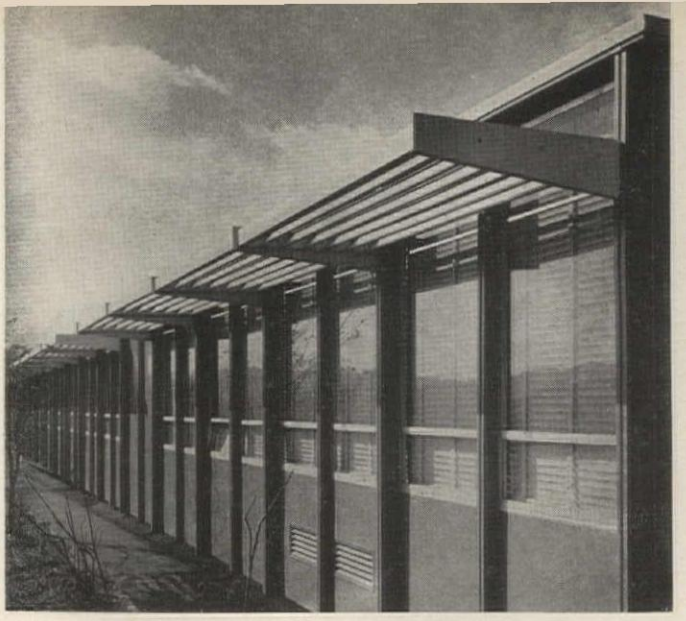
The design for the concrete unit also used the same basic module. However, the structure (based on earlier studies by Albert Henderson) had two parts for each unit—a top part with roof and top half of the walls, and a bottom part with floor and lower half of the walls. This involved window panels being removable in demounting. Large structural sections, easily handled by crane and low-boy trailers had all parts moving with them.

Interest in the project by the American Bridge Division of United States Steel, and United Precast Structures, led to further development.

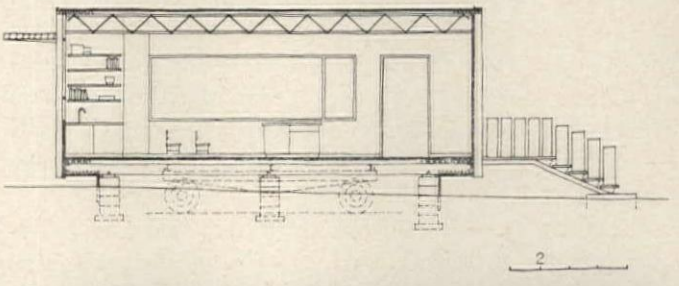
Because of the weight and cost of the rolled sections of the original steel design, American Bridge proposed a special open-web joist, with the same module and deck construction for floor and roof, but the length of a unit was shortened to provide a 30-foot-wide classroom. A mechanical core was concentrated in a single unit, used as the entry as well. The unit was to be welded together, with sides temporarily braced for moving by a trailer rig under it.

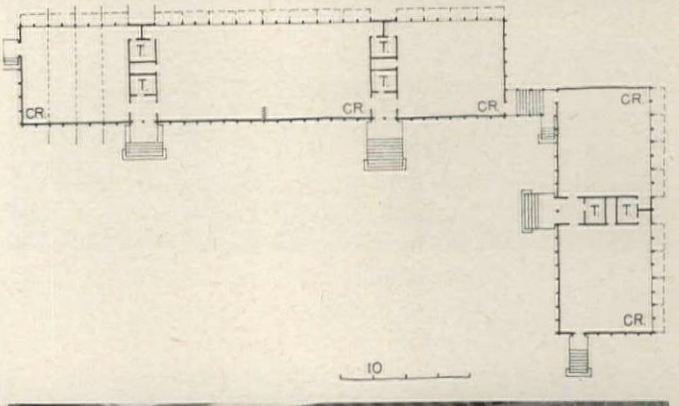
In the development of the concrete unit with United Precast, similar changes were made — unit length was shortened to provide only single classroom space with mechanical core concentrated in a single unit; the originally proposed columns, on 6-foot centers with 2-foot cantilever, to columns at either side (8 feet apart) of each unit; and the elimination of integral interior partitions in favor of separately mounted panels.

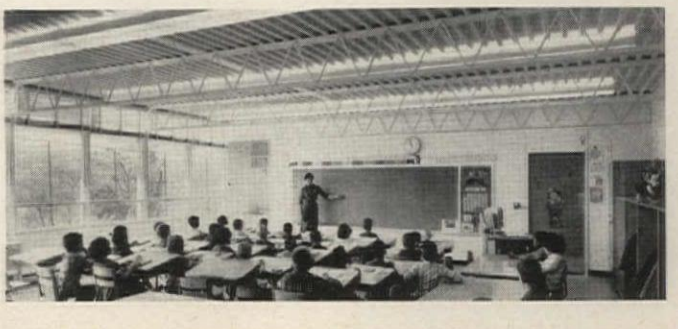
At this point, the Pittsburgh Board of Education brought the project to realization by commissioning the architects to design two buildings—a six-classroom building adjacent to the Philip Murray Elementary School employing the steel system developed, and a four-classroom building adjacent to the Homewood Elementary School with concrete.



Demountable steel classroom units for the Philip Murray Elementary School, Pittsburgh (see page 184 for details)







The site for the steel building was an existing black top playground with the stipulation that as much area be left intact as possible. This led to the L-shaped scheme with four classrooms grouped in one building, two in another (each group of two with its own mechanical and toilet facilities). The four-classroom grouping gave the opportunity for creating a very large classroom with a movable partition. Changes in grade led to the glass enclosed connecting link (which enables all classes to assemble in the big central double classroom without going out doors). Even stairs were detailed to come apart and adjust to new situations with a minimum of loss and difficulty. Carpeting is used to improve acoustics.

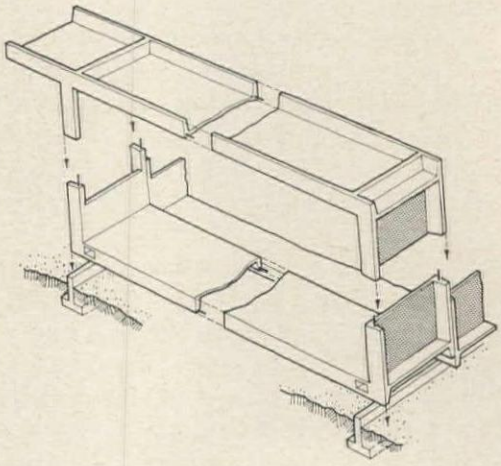
The site for the concrete building was somewhat restricted and immediately adjacent to the existing building. The heavy incidence of vandalism led to the organization of the buildings about a courtyard on which the glass areas open. The building poses a solid front to the outside with concrete paneled walls closing off a court with high gates permitting the only entry.

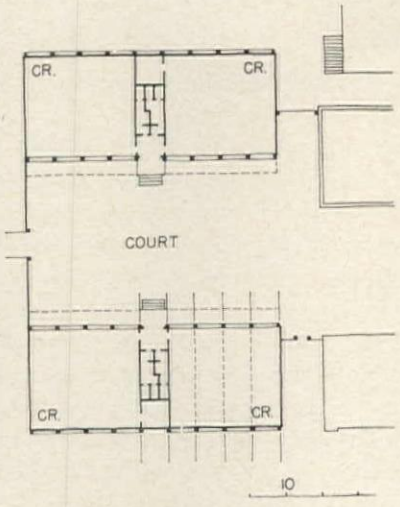
Working drawings were prepared and the buildings put out for bids. Both came in within estimates and construction contracts awarded.

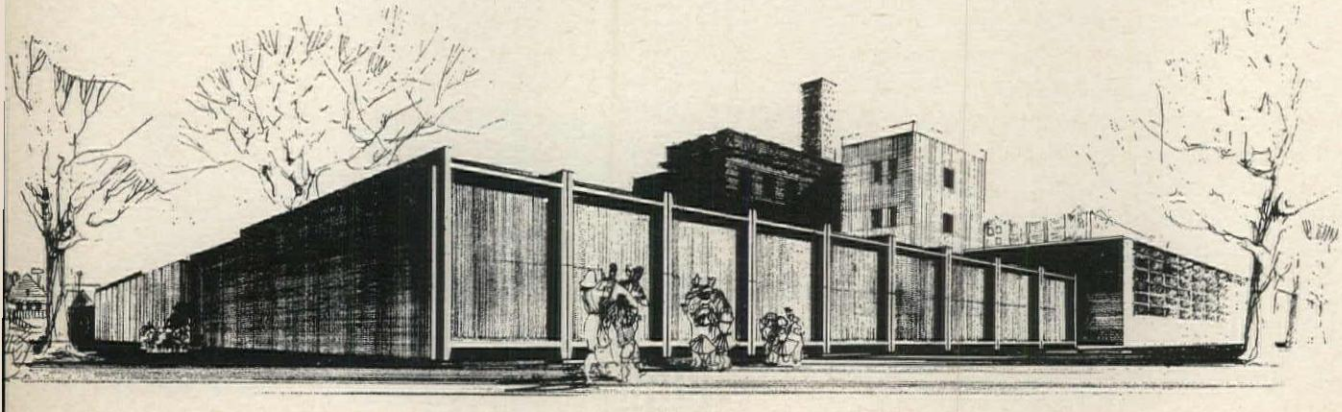
Because of transportation costs, (from the factory in Harrisburg, Pennsylvania), the steel units were not welded together at the factory, but transported to the site, (knocked down in floor, wall and roof units) and welded in situ. This building is completely finished and occupied.

The complication of integral mechanical parts, reinforcing, formwork, etc., led to many delays in the concrete school. It is now nearing completion.

Demountable classroom units in concrete for the Homewood Elementary School, Pittsburgh (see page 185 for more details)







Architectural Engineering

Seattle Monorail Evaluated

The University of Washington has prepared a comprehensive report on the monorail system installed in Seattle, in connection with the Century 21 Fair, which evaluated: (1) riding qualities, (2) effect of supporting piers on automobile traffic, and (3) potential cost for a 7½-mile double-track system using 10 two-car trains. In terms of roughness of ride, the Seattle monorail was judged to be somewhat superior to a modern railroad coach. Noise levels, inside and out, were roughly equivalent to those of a bus. Presence of 4-ft square columns did not increase the accident rate on an existing street. Cost of the 7½-mile system was estimated to about $18.6 million. Copies of the report may be obtained without charge from the Office of Transportation, Housing and Home Finance Agency, 1626 K St., N. W., Washington 25, D. C.

Tilt-up "Stone" Walls

Precast concrete walls have long been finished with various exposed aggregates and patterns for texture. Now Welton Becket and Associates, Architects-Engineers, are planning to embed large native stones in gray-brown, 21- by 25-ft concrete panels on the ground at the site, and then tip them up into place for a new Saks Fifth Avenue store in Phoenix, Arizona.

A Guide To Color

A color guide for use by illuminating engineers has been prepared by the Color Committee of the Illuminating Engineering Society and published in the December 1962 issue of their Journal. The Committee notes that logical decisions can help determine the dominant hue, value (lightness or darkness), chroma (strong chroma is clean color; weak chroma, grayed), and contrast, "but from there on the disposition of these colors, their harmonious relationships and their adaptation to . . . conditions in the room, depend on the inherent sense of color and good judgment of the person who puts them to use." A four-step procedure is given for determining value, color temperature, chroma and contrast. For example, value, they say, depends on how much light must be reflected from room surfaces. Selection of color temperature depends on exposure (north or south) of the room, temperature of the room, noise level, room size, surface textures, length of time occupants use the room, type of atmosphere, type of lamp bulbs.

Product Testing In France

Since 1945, France has had in operation a technical certification system for building products. Certification indicates only a favorable technical assessment, performed since 1948 by the Centre Scientifique et Technique du Bâtiment, of the suitability of a product concerning safety, habitability and durability of the building and rational utilization of labor and raw materials. Certification has no administrative value, implying neither an authorization nor a guarantee of reliability. Acceptance is granted or refused after a technical investigation that includes the following stages: (1) description of the object in a sufficiently comprehensive way; (2) investigations and research which generally include laboratory tests, larger scale tests under simulated conditions, site observations and surveys; (3) analysis and discussion of test results. The certification program was described by P. Roger head of France's C.S.T.B. at last year's C.I.B (International Council for Building Research, Studies and Documentation) Congress held in Cambridge, England. His paper is contained in the proceedings of the Congress, and was part of a group of papers on assessment and acceptance of new developments. Some other areas covered included trends in broad geographical areas, innovation and the operatives, how new developments arise, transmission of building information. The full proceedings, "Innovations in Building," 232 pages, illus., are available from American Elsevier Publishing Co., Inc., 52 Vanderbilt Avenue, New York 17, N. Y. $22.50.

This Month's AE Section

COMPONENT SYSTEMS FOR SCHOOLS

U. S. researchers feel British approach, developed over the last 15 years, has much to offer here. New U. S program aims to cut costs, while permitting individuality in flexible and expansible school buildings

Research on component systems for schools in this country is being conducted seriously by architects, educators, school districts, universities, a foundation and a number of manufacturers. Rapidly changing educational concepts, expanding and shifting populations, new materials and construction techniques, and building costs are factors leading architects and educators to consider seriously the development of component systems. Such systems, they believe, should enable good schools to be built quickly at low cost, which are capable of being rearranged with little effort, added on to or even moved to a new site if necessary.

While a proliferation of standardized components exists in the building field today, the new emphasis is on standardized, interchangeable components especially suited to the scale and most convenient module of school buildings, and the particular demands of teaching and housing children. And, the researchers point out, if this approach is to be successful, it must permit individuality of expression while realizing the advantages of mass production techniques.

Probably the earliest use of component systems for schools was in those employing standardized structural systems and standardized exterior wall and roof panels. But these systems frequently are not amenable to convenient rearrangement or portability of classroom space, although with some modification of components and details they may be made so.

The most encompassing project now under way is the School Construction Systems Development being conducted by the School Planning Laboratory of Stanford University, acting as Western Regional Center for Educational Facilities Laboratories, Inc., and the Department of Architecture of the University of California.

Grants totaling over $250,000 have been awarded by E. F. L. to the project which has a full-time staff of seven including four architects. Project coordinator is James D. Laurits, School of Education, Stanford University, and project architect is Ezra Ehrenkrantz, School of Architecture, University of California. And an advisory committee was formed of nationally known architects, educators and state officials of California.

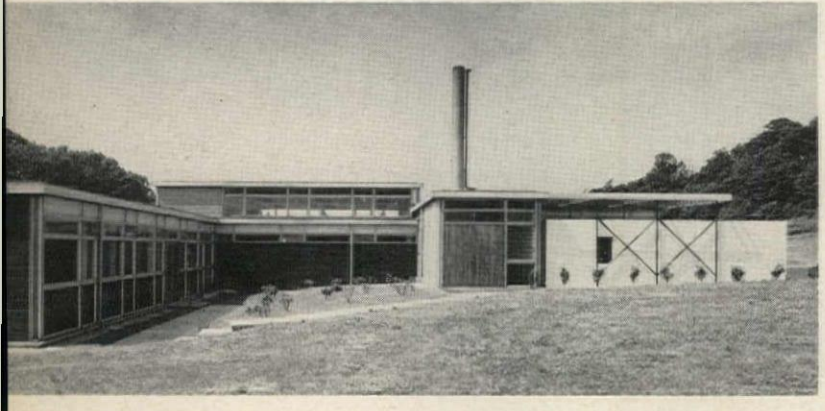
Objective of the School Construction Systems Development Project is to produce a system of components suitable for secondary schools in the United States.

The first major step to be taken will be the development of sets of performance specifications for structural, mechanical, lighting, electrical and interior partitions systems. These specifications will go into considerable detail on both educational and technical aspects of the buildings. This segment is scheduled for completion early this spring, and design of the whole building system by the end of 1963.

Project personnel are attempting to visit all major manufacturers of school building components plus other manufacturers who might be interested in submitting ideas, or designs and bids. Approximately 100 firms have now been consulted.

The School Planning Laboratory has determined that approximately 25 million dollars worth of schools (seven large high schools) is needed to provide a large enough market to interest industry in developing products specifically for the project. It is likely that all of the buildings of the pilot project will be located in California. It is intended that a "Public Agency" acting for a number of school districts will be formed

English C.L.A.S.P. system uses a light steel frame for one- to three-story buildings based on a planning module of 3 ft 4 in. This is Bramcote Hills Primary School, Nottingham



Spring-loaded wind bracing is used because of mining subsidence in Nottingham. Prefabricated timber roof is supported by pitched trusses. This is Bancroft Lane Infants School

which can advertise for bids for many schools at one time.

Once the low bidders on the schools (25 million dollar minimum) have been determined, work on actual components will begin. Each manufacturer must design and detail his components to be coordinated into the total system.

English Prefabricated Schools

The E. F. L. supported research closely parallels in concept the work down in England following World War II on prefabricated schools. Between 1955 and 1961 over 1,800 schools out of a total of over 3,500 in England and Wales were built either partly or wholly of prefabricated components. Over 500 were completely prefabricated, representing 15 per cent of all the schools constructed during that period.

Impetus to the components approach came mainly from three factors: cost of many schools was too high, many buildings were taking too long to build, and building labor was scarce. Because of the need for freedom of planning, the Ministry of Education decided that the use of standard plan arrangements was out of the question, and that the standardization of individual components was preferred by far.

The first prefabricated school building system was developed by architects on the staff of the Hertfordshire County Council in 1946. At that time the County estimated that in 15 years' time, 175 schools would have to be built. Last year their 200th prefabricated school was constructed.

In 1949, the Ministry of Education got into prefabricated developments and sponsored four systems.

Portable school in Switzerland is assembled from easily transported sections; facade is slanted for sun control. Architects: Stucy and Meuli of Zug, Switzerland

Development work on the well-known C.L.A.S.P. system was begun in 1956 by architects of the Nottingham County Council, and in 1957-1958, 11 schools were started. The easy-to-remember initials, C.L.A.S.P., have nothing to do with the technology of the system itself, but stand for Consortium of Local Authorities Special Program which was formed to enable the full economies of factory production methods to be realized. In 1958-1959, 31 projects were erected, having a value of $7 million. In 1962-1963 the program quadrupled this amount at $28 million.

Use of prefabricated systems in England has been growing even though shortages of traditional building materials no longer exist. The reason for this, according to Ezra Ehrenkrantz, is that these systems cope with varied design requirements and offer sufficient esthetic flexibility to be used by private architects as well as by the various country governments. Two C.L.A.S.P. buildings have won major international and national design awards.

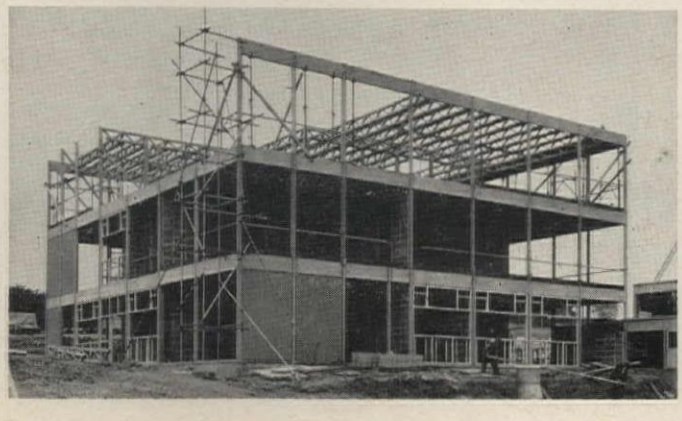
Another interesting note is that the government development prefabricated systems are subject only to a national code.

In England, an important savings is accomplished via the technique of bulk bidding. Competitive bids are taken for all standard components which will be used in a country's building program for a year or more. Hertfordshire County Council uses annual bids for all but the structural and mechanical systems. The manufacturers of these systems were chosen initially by competitive bids, but since firms spent considerable money in development, the County committed itself to their products over an extended period.

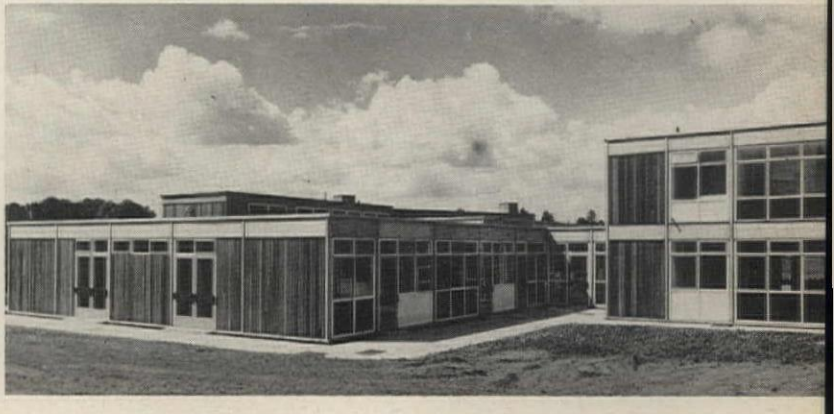
A most attractive aspect of the components approach is that the architect can save considerable time on detailed working drawings, allowing more time for planning and design.

Cost of the prefab schools in England has compared favorably with more conventional types, as long as the architects specified standard components—specials make the costs soar.

Laingspan System developed by the English Ministry of Education and a private manufacturer is framed by precast and prestressed members, suitable for buildings up to four stories

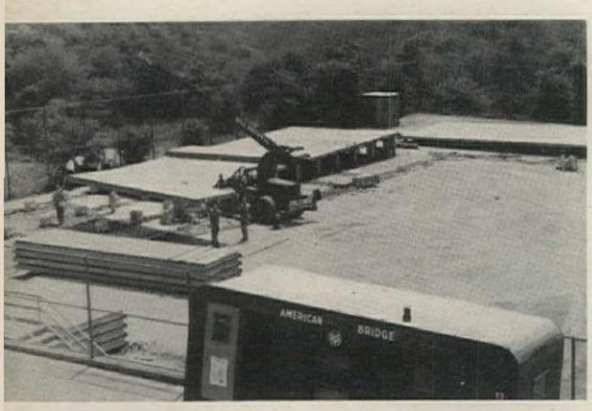


Finished example of Laingspan System is Polio Rehabilitation Center, Oxford. Planning module is 3 ft 4 in. Precast boundary beams are supplied in lengths of 6 ft 8 in. and 10 ft

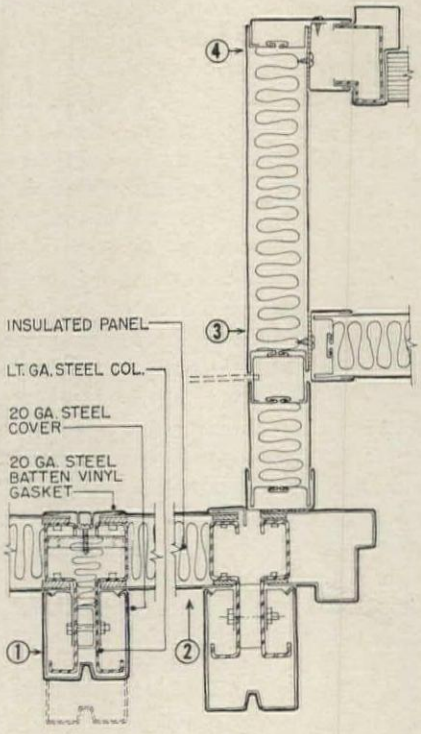


MATERIALS, SYSTEMS DIFFER IN FOUR DEPLOYABLE SCHOOLS

Two Pittsburgh schools, one in steel, the other concrete, come apart in 8-ft sections for portability. The M.I.T. "Instant Schoolhouse" used plastics liberally; it is designed to be expansible and demountable. Portable classrooms in Tacoma employed advanced techniques in plywood



Floor, wall and roof panels and framing were assembled conventionally, but the school comes apart in 8-ft sections



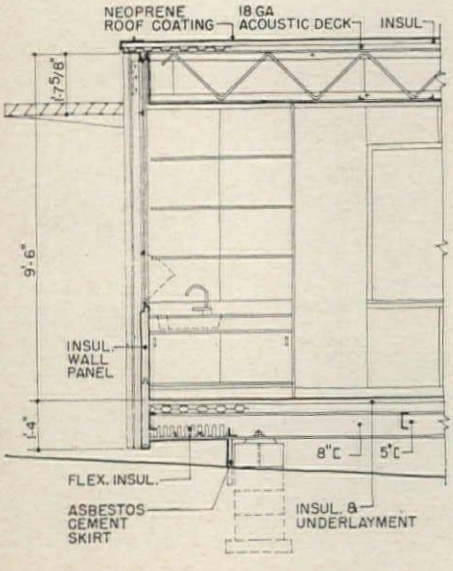
STEEL

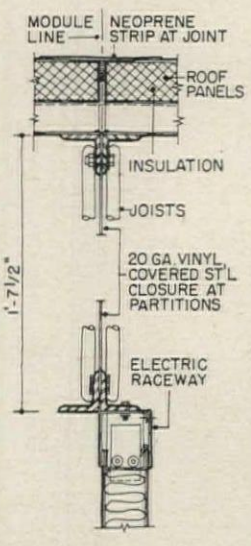
An existing *Ambridge** steel component system was adapted to make it portable in 8- by 28-ft sections for an addition to the Phillip Murray Elementary School in Pittsburgh. Light gage mullions are load-bearing and accept both exterior panels and interior partitions. Open web joists are doubled up and bolted together, as are the 8-in. floor channels, to allow disassembly. Heating, plumbing and lighting units stay in place. Site utilities are expendable.

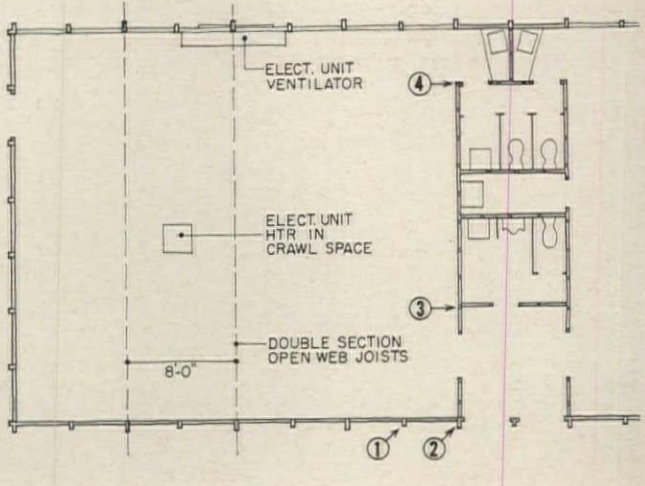
Floor framing sits atop concrete block footings. When the school is to be moved, an 8-ft section is simply jacked up, a low-boy run underneath and the section pulled away.

The school was designed by Pittsburgh architects John Pekruhn, Dahlen Ritchey, and Lawrence and Anthony Wolfe.

* American Bridge Division, United States Steel Corporation



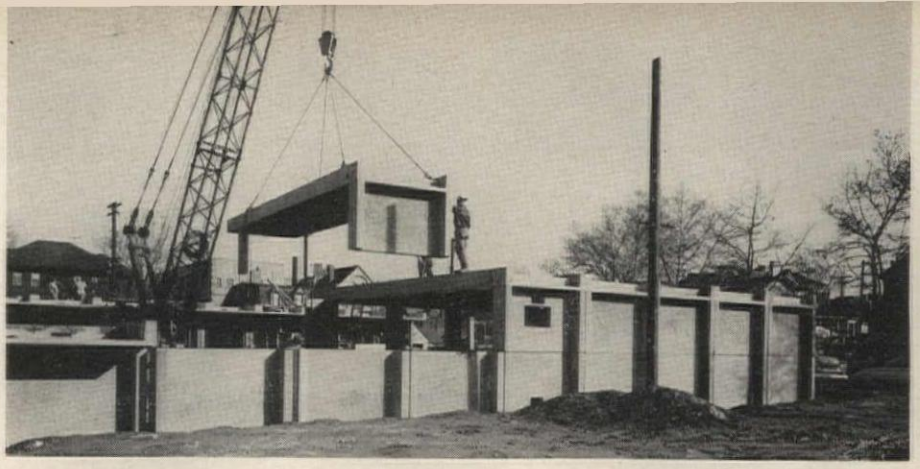


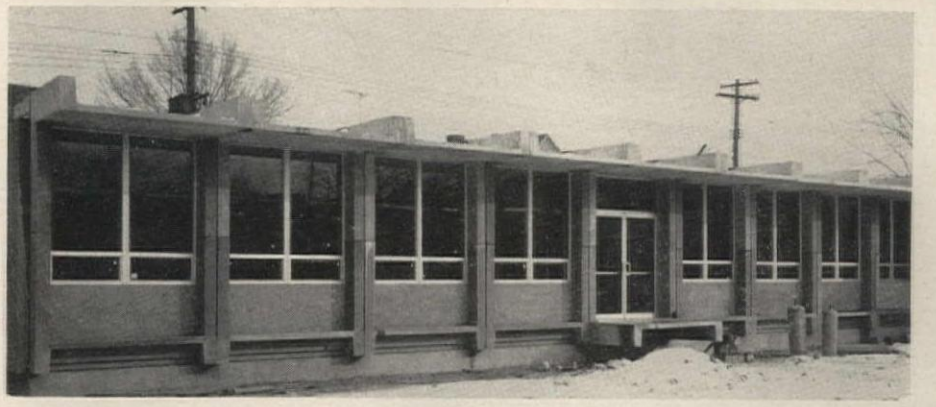


CONCRETE

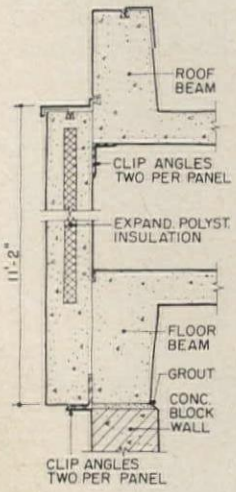
Precast concrete units comprising columns, slabs, beams and walls all in an integral piece form the transportable sections for a four classroom addition to Homewood Elementary School in Pittsburgh. It was designed by the same architects as for the steel school opposite. The units are assembled as if a table rightside up were stacked atop another table placed upside down. Main reasons for slicing the school in half were to make construction of steel forms less expensive, precasting more accurate, and handling of units on the job easier. This concept was developed by Albert Henderson of United Precast Structures in Pittsburgh.

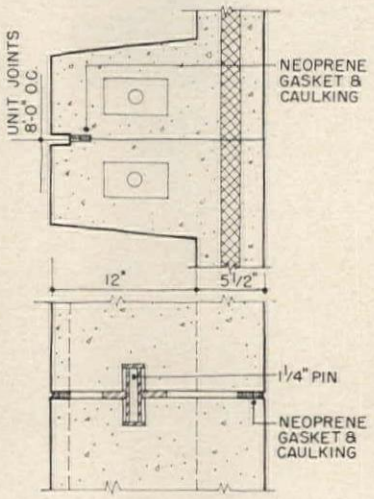
The perimeter is windowless to minimize damage from vandalism; windows face into a court.

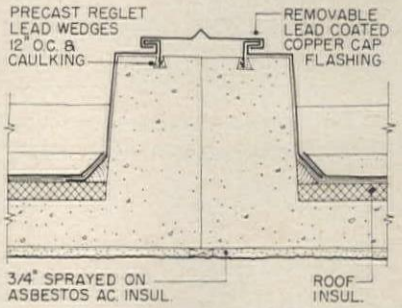




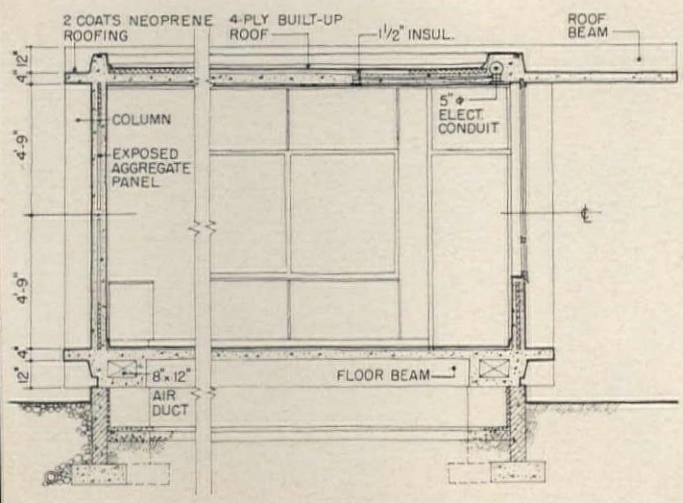
Transportable concrete school in Pittsburgh has precast units to form top and bottom of an 8-ft-wide section. With windows out, it comes apart the same way

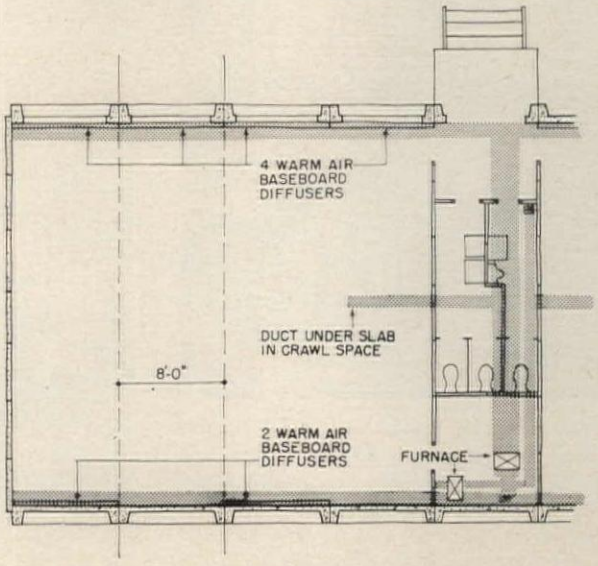


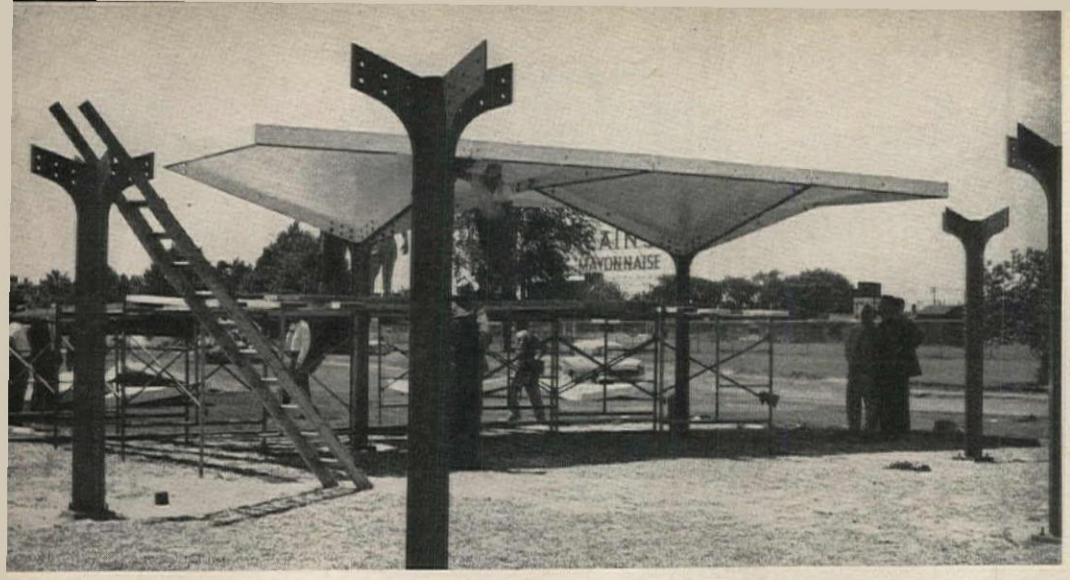




Left: Connection detail for end walls
Center: Detail of column seating
Above: Removable cap flashing detail
Below: Section and part plan







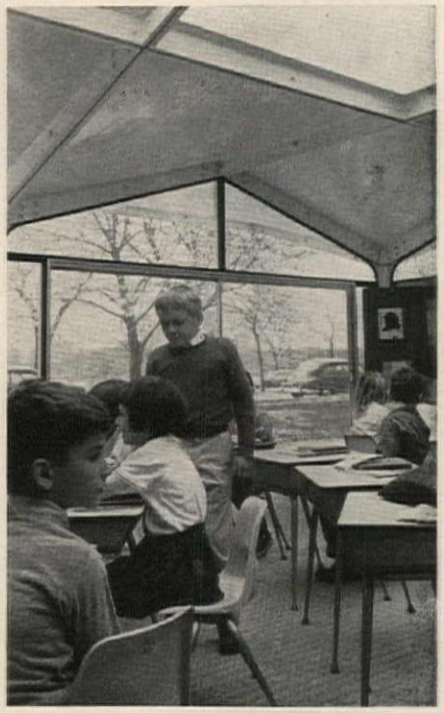
Top: Prototype classroom under construction. Flared column takes roof panels.
Bottom: Model photographs illustrate potential interior and exterior designs

M.I.T.-PLASTIC

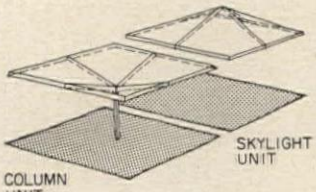
This demonstration deployable, expansible schoolroom system was developed jointly by the Departments of Architecture and Civil Engineering at M.I.T., and sponsored by Educational Facilities Laboratories, Inc.

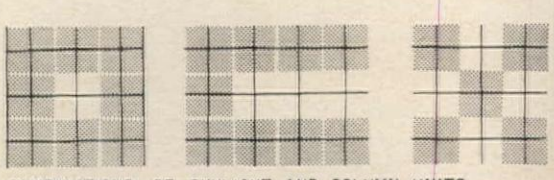
The umbrella-like roof panels were of plastic-plywood sandwich construction, mounted on steel pipe columns. The columns serve additionally as drains and, by virtue of four vertical fins, means for connecting wall components. Various sandwich constructions for the umbrellas are now under investigation by a national firm which intends to manufacture the basic system. Skylight units of translucent plastic were dropped in between column units.

On three of the four walls, aluminum-faced, plastic-core sandwich panels were fitted between columns, underneath a horizontal strip of gray glass. The fourth side had a specially designed storage wall. This wall encloses a self-contained heat pump. Shielded flourescent strips along the walls illuminate room surfaces and desks.



Demonstration model of M.I.T. classroom has exterior walls of glass and aluminum, plastic-core sandwich panels. One of the walls has built-in storage and encloses a self-contained heat pump





COMBINATIONS OF SKYLIGHT AND COLUMN UNITS

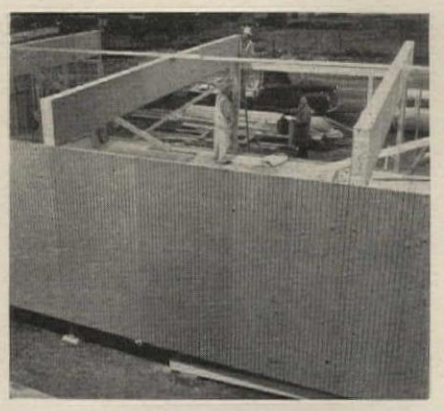
PLYWOOD

A portable system for a school district in Tacoma, Washington was developed by the Douglas Fir Plywood Association. Altogether three portable units were built, having almost identical design and floor plans, but varying in the construction techniques employed.

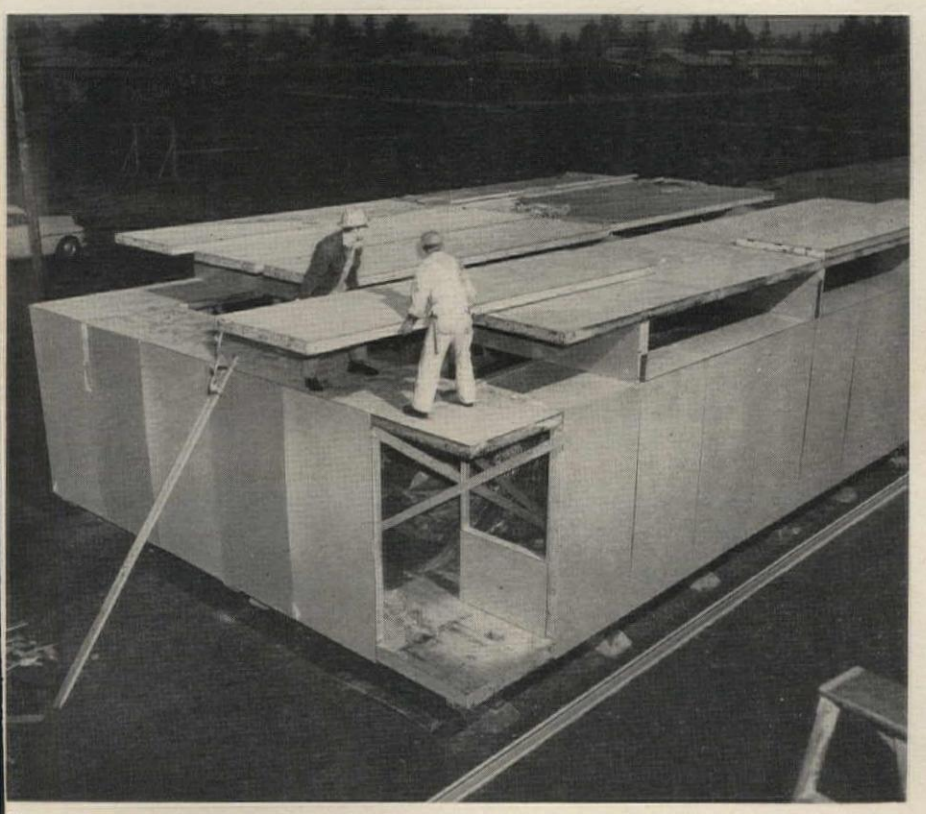
In the first, a 24- by 40-ft floor deck of ⅝-in. tongue-and-groove plywood sheets were laid. Then studs and framing for the wall sections were assembled on the floor deck. With plywood sheets locking the framing into a single, rigid wall, it was possible to erect one side of the building with two jacks. Nailed box beams were then set on the wall framing. A standard joist and plywood panel roof deck completed construction of the structure.

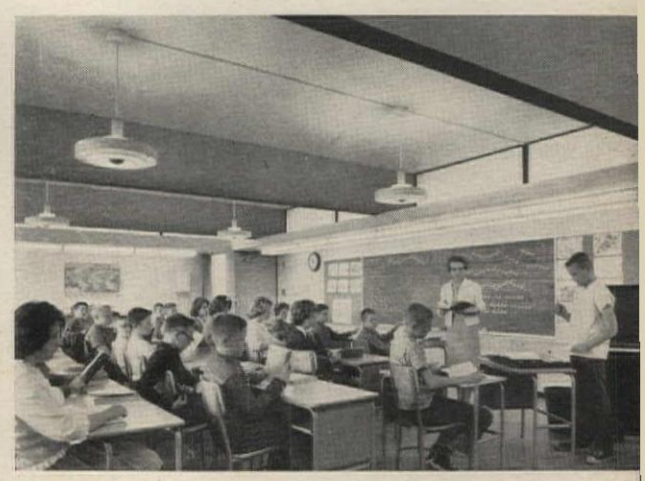
The second unit was constructed of plywood components which included box beams, stressed skin wall and roof panels.

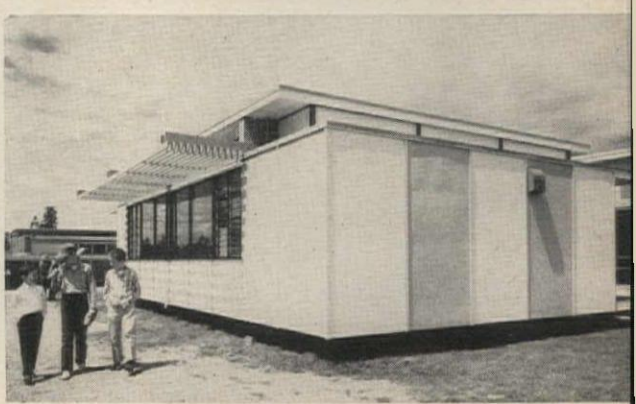
The third unit used component construction, but had several experimental siding and wall panels, finished with factory-applied plastic.



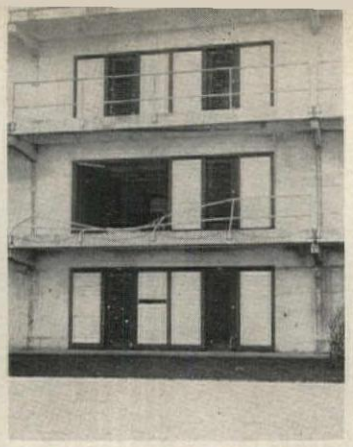
Site-fabricated design had wall framing assembled on top of floor deck. After box beams were placed a conventional plywood and joist roof deck was laid







Component-type construction framed a second design. Stressed skin panels formed walls and roof. Translucent plastic panels in clerestory gave spacious feeling


Loosely-anchored coverings were torn off. Debris damaged windows in housing. Lightly-framed arched hangar was destroyed


This light gage steel building was racked due to insufficient lateral bracing. Wind uprooted concrete footings of a nose hangar


Wind blew off siding and glazing of hangar. Wind also apparently caused uplift on roof; then unanchored hangar door fell out

HIGH WINDS MAKE "MISSILES" OF BUILDING PARTS AT GUAM

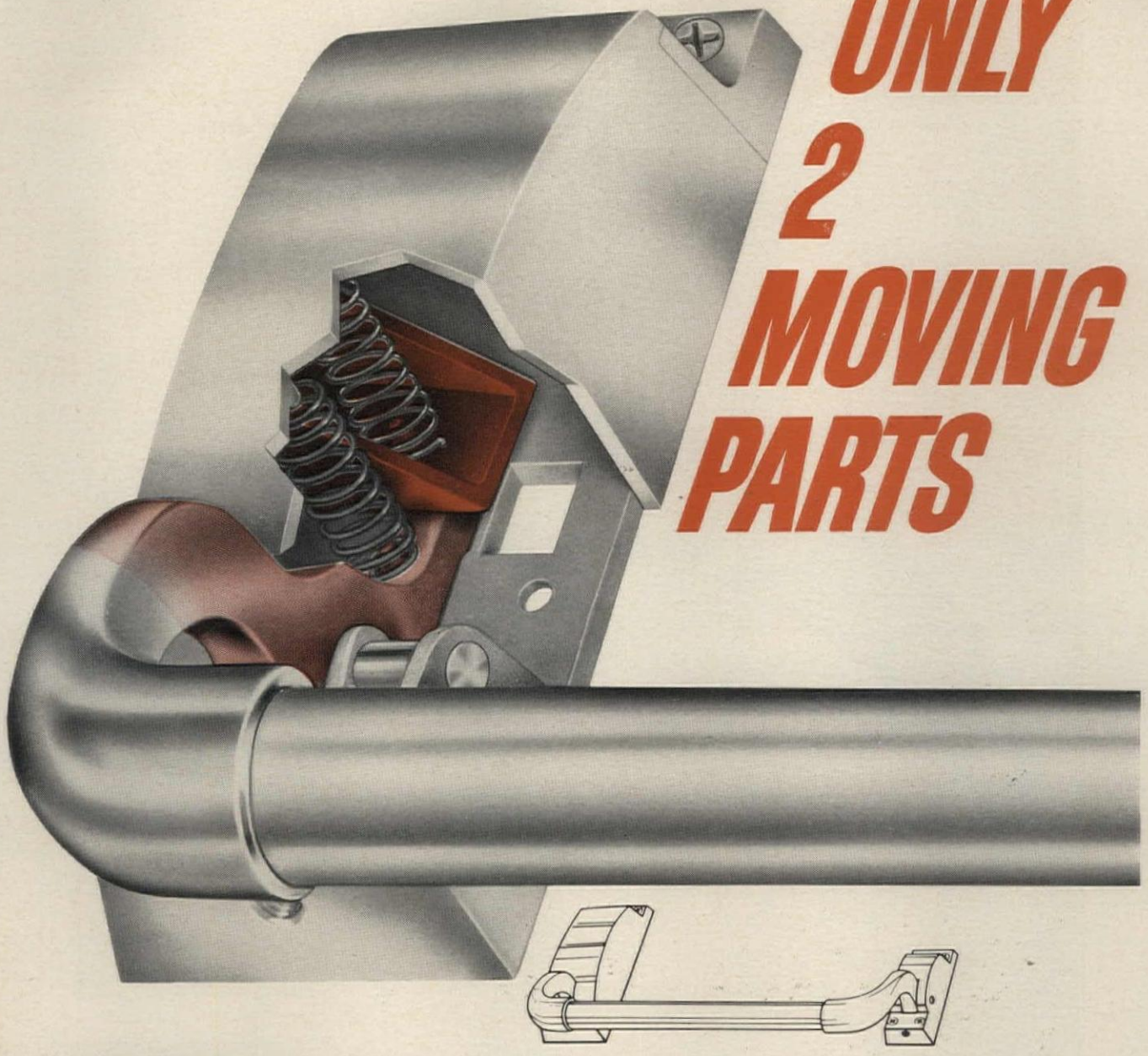
Wind speeds estimated to have been over 140 mph during Pacific typhoon Karen were responsible for damage to building construction on Guam ranging from torn off siding and roofing to collapse of lightly-framed structures.

One of the important conclusions drawn by a three-man survey team representing the Defense Department was that anchorage of metal roofing and siding, windows, doors, airplane hangar doors, louvers and shutters should be improved. Much of the damage sustained at Guam was due to parts of buildings blowing off and acting as flying "missiles." Concern was expressed by the inspection team for the potential damage capability of gravel pellets blown off built-up roofs.

Permanent-type construction suffered little damage except that due to debris. Lightly-framed buildings were often damaged severely, since they were not designed for hurricane-force winds.

The inspection team included Max Barth, chief, Technical Division, Directorate of Construction, Office of Assistant Secretary of Defense; Ezra Odley, consultant to BuDocks, U.S. Navy; and Edward Cohen, Ammann & Whitney.

WHY S&G EXIT DEVICES LAST LONGER...



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Heating and cooling have always before been handled as accessories which must be added to the fundamental building at the cost of extra space. The MAHONAIRE air ceiling concept now incorporates this into the basic structure itself in little or no additional space and at substantial savings over conventional ductwork systems. Costing little more than the basic structural elements themselves, MAHONAIRE can be installed for heating when the building is erected and can then be utilized at any later time for air-conditioning.

In addition to the cost savings in air distribution system materials, the savings resulting from building height reduction are substantial.

AIR DISTRIBUTION Mahonaire ceilings eliminate conventional ceiling diffusers and costly distribution ductwork. High aspiration of diffused air avoids cascading of delivered cold air or stratification of delivered hot air. Downward air directional control reduces dust or smudge streaking of the ceiling.

STRUCTURAL SUPPORT High strength-weight ratio of Mahonaire deck allows economical design. Long spanability eliminates intermediate supports and provides excellent surface for either support and bond of insulation and roofing or as a concrete form for roof construction.

RECESSED LIGHTING Standard lighting fixtures can be installed continuously or intermittently between the beam webs. Versatility of the Mahonaire concept provides a ready solution of specific lighting and modular layout requirements.

UTILITY RACEWAYS Cells can be used to carry signal lines, sprinkler systems and similar utilities.

SOUND CONTROL Economical sound absorbtion is achieved by inserting sound-absorbing material in the cells of the perforated Cel-Beam members.

FINISHED CEILING Flush surfaces or exposed beam effect can be used. The metal surfaces are virtually indestructible and require no maintenance other than normal periodic painting.

For more information write for new catalog AC-63.

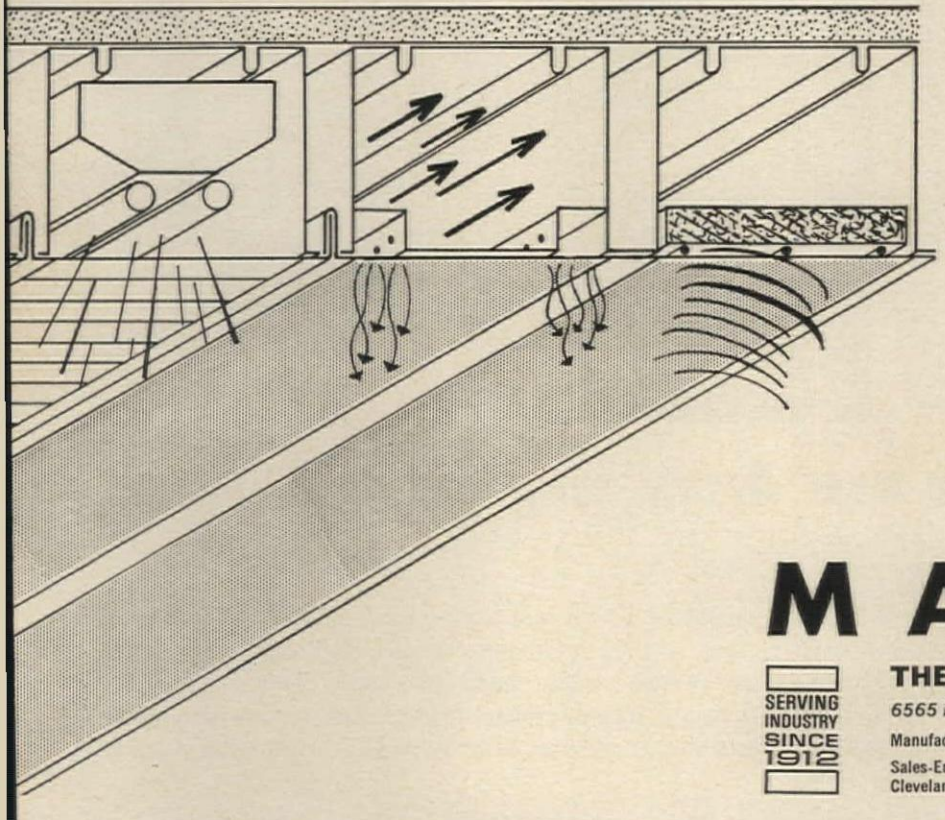
MAHONAIRE & Cel-Beam are trademarks of The R. C. Mahon Co.

This office building incorporates the MAHONAIRE concept. Within the 7½" cells used for structural support were incorporated air distribution, troffer lighting, sprinkler system and acoustical treatment.

A one-story school building in Southern Texas provides year-round conditioned air using the MAHONAIRE ceiling concept. Cost savings over a conventional system were substantial.

ARCHITECT: WYATT C. HEDRICK, HOUSTON, TEXAS

The MAHONAIRE concept in this engineering company office furnishes draft-free heated or cooled air and ventilation and provides recessed lighting in the attractive flush ceiling.



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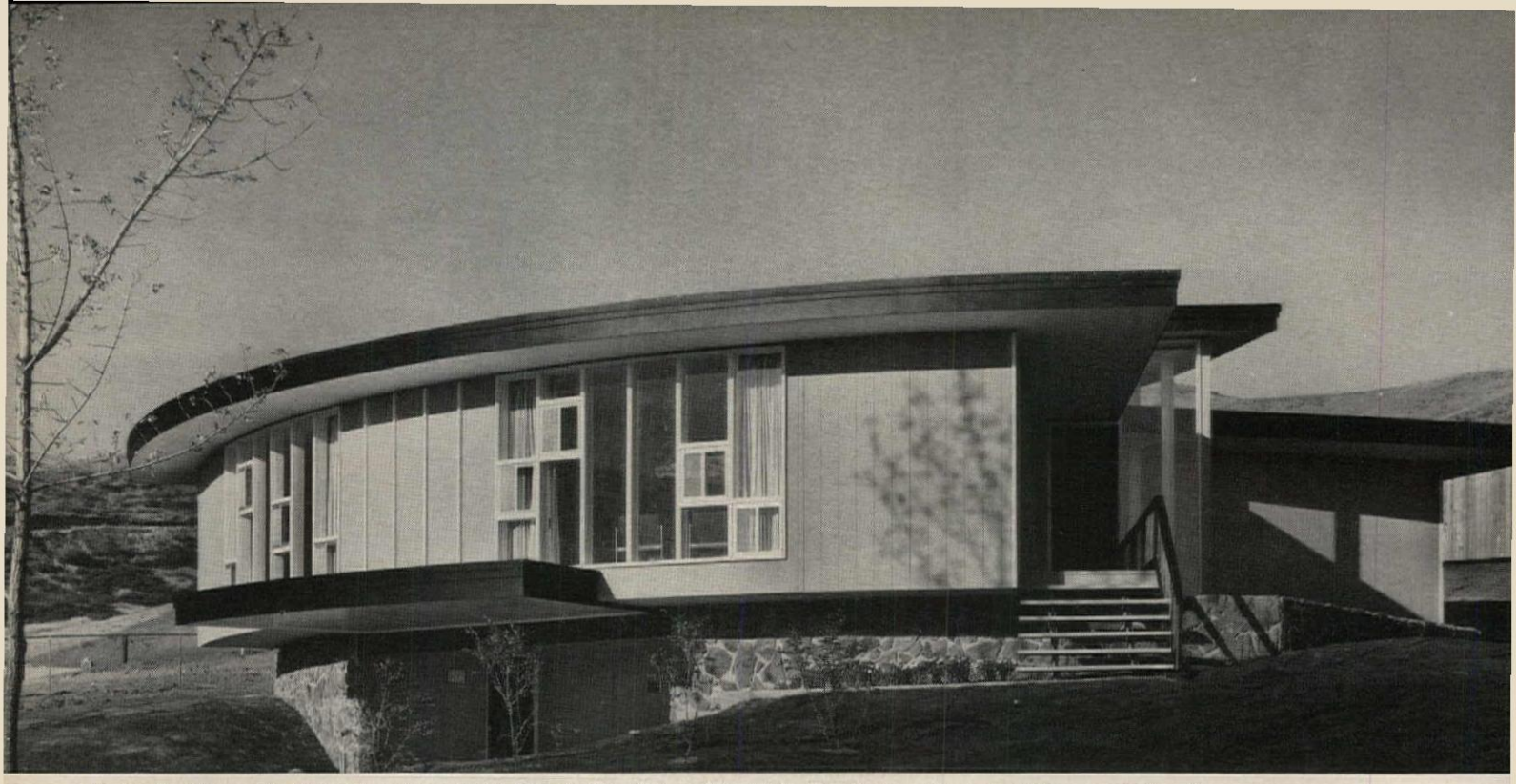
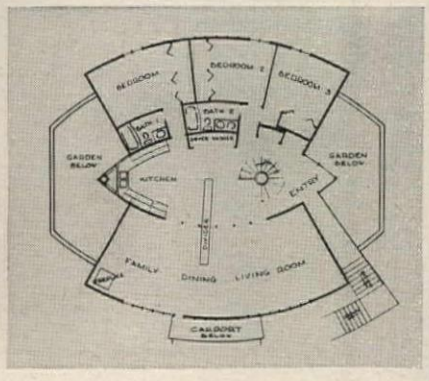
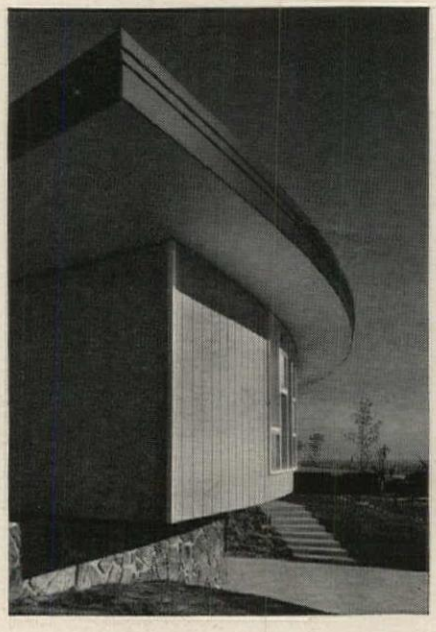
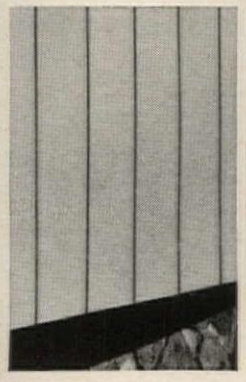


Butterfly House, Architect Lory Ice, Tri-L Const. Co., Green Mountain Development, west of Denver, Colorado

For significant new homes







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ADMIXTURES FOR ARCHITECTURAL CONCRETE

By Ralph W. Yeakel Jr.

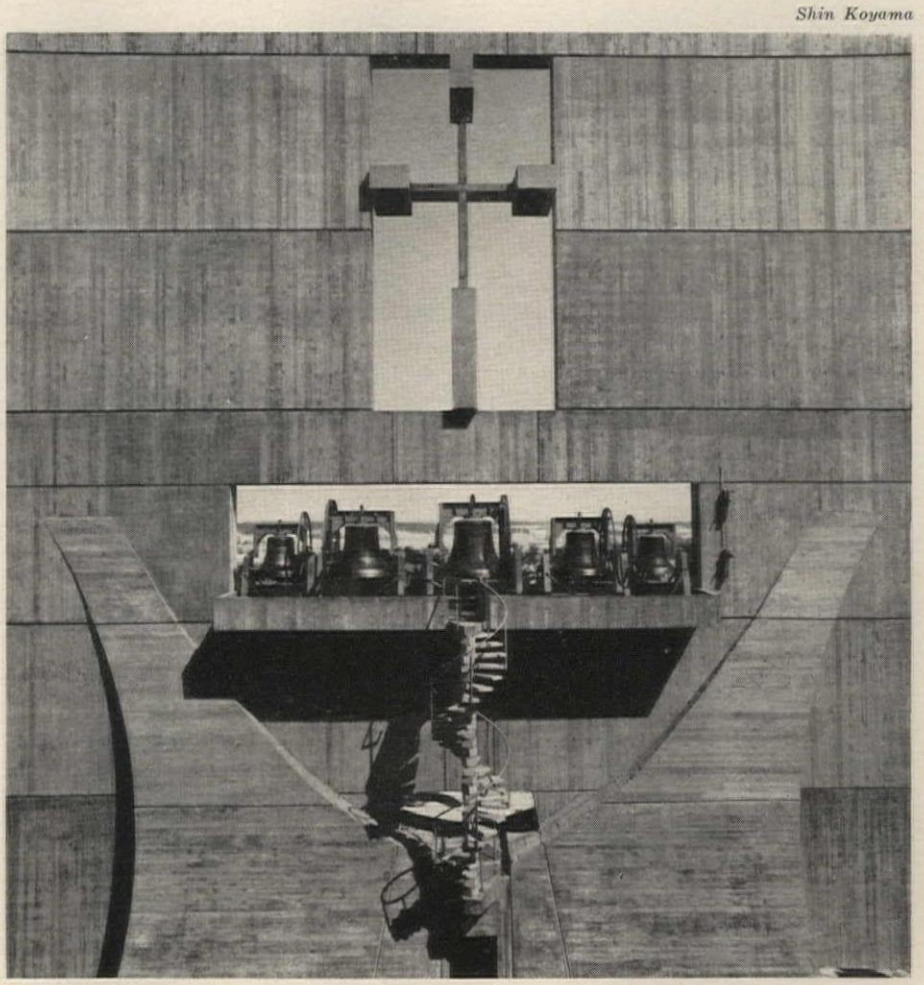
"Plain old concrete is good enough for me—and if I want better concrete, I'll just add a bag of cement." With these words, or sentiments closely akin, architects and builders used to dismiss admixtures for concrete. The formulations were suspected to be nothing more than calcium chloride in a fancy bag, and were lumped together as highly questionable "cure-all" items.

This was the past. Today, it is unlikely that any knowledgable architect, engineer or builder would consider placing architectural concrete without the use of an admixture. The question is no longer whether or not to use an admixture, but rather which type of admixture to use, and where to use it. The emergence of reinforced concrete as an architectural finish material and as a design element has created a demand for almost infinite variations in the characteristics of concrete. Intricate forms, exotic surface textures and unique placing conditions demand characteristics in the concrete mix that standard designs are not capable of satisfying. The use of an admixture is generally the only way of satisfying these requirements.

But what admixture, and under what circumstances? Basically, an admixture is defined by ASTM (Des. C-125) as: "A material other than water, aggregates and portland cement (including air-entraining portland cement and portland blast-furnace slag cement) that is used as an ingredient of concrete and is added to the batch immediately before or during its mixing." Although there are some 12 classifications of admixtures, most architects are concerned with the four types most closely related to architectural concrete: (1) water reducers, (2) air-entrainers, (3) retarders and (4) accelerators.

RALPH W. YEAKEL JR. is vice president of Shell Construction Co., Inc., Engineers and Constructors, New York, N. Y.

Shin Koyama



A lignosulfonate was used in concrete of Marcel Breuer's St. Johns Abbey to reduce water while permitting smooth flow of concrete into the texture of the form boards

Water-Reducing Agents

Reduction of water is probably the single most important factor in producing architectural concrete. Basically, water has two functions in a concrete mix: its presence is necessary for the hydration of the cement content, and it acts as a lubricating agent to permit the smooth flow of concrete into all the areas of the formwork. Of the total water content in any given mix, only about 45 per cent is actually required to hydrate the cement. The remainder is present simply to permit placing.

Unfortunately, this water is not neutral. It has further effects, all bad, on the concrete: *Compressive strengths* decrease as water increases. *Finishing* is difficult in direct proportion to the amount of water present; hence, architectural effects may suffer and construction costs go up. *Permeability* of the concrete is increased by the additional water present, since as this water gradually evaporates or is hydrated out, it leaves voids within the concrete in excess of, and larger than, those minute voids caused by

A water-reducing, retarding admixture was used in concrete at Eero Saarinen's T.W.A. terminal at Idlewild to permit finishing upon removal of counterforms, while the mass of the air-entrained concrete remained stiff enough to hold its shape. Concrete was placed in long bands, 6 ft wide, extending from the buttresses to tips of the cantilevers

air-entraining which are necessary to the concrete. With increased permeability, the weathering qualities of the surface concrete are reduced, thus reducing the life of the architectural finish.

Recent studies conducted at the Israel Institute of Technology (Technion) at Haifa by Dr. Ori Ishai have linked creep to evaporable moisture content.

Either of the two basic types of water-reducer will produce this effect. The most commonly used water-reducing admixture materials are lignosulfonic acids and salts of lignosulfonic acids. These acids, and their derivatives, form the basis of the most frequently used admixture, and according to the degree of modification, have other effects on concrete which will be discussed below.

Acting within the concrete, the lignosulfonates form a tightly bonded film, of almost sub-microscopic thickness, around the cement grains. This positive adsorption, by producing a negative charge of the cement particles, causes a sheath of water molecules to form about each particle, as well as a repulsion of the particles, one from the other. The combined effect of this is to disperse the cement grains throughout the mixture. This dispersal, caused by the breaking up of the flocculent clusters of cement grains, frees a certain amount of water from within the clusters for lubricating purposes. The freeing of this water for lubrication permits reducing the basic water in the mix by as much as 15 per cent. This 15 per cent reduction of total water actually results in a 25 per cent reduction of the lubricating water which is not required for hydration.

What this means practically is that although water is reduced to the point where slump would normally be considerably reduced, the workability of the concrete remains high, permitting an even flow of the material into every angle and corner of the formwork, and bonding fully around each reinforcing bar.

In the case of the lignosulfonates, the water reduction is accomplished in the mix design, with less water actually put into the mix at the start. In the case of the other principal water-reducing agents, the hydroxylated carboxylic acids, total mix water is not reduced, but water reduction depends on the admixture acting to drive out excess water through induced bleeding. It is questionable whether this is a desirable technique for architectural concrete because of finish problems, although the hydroxy carboxylic admixtures have been widely used in bridge piers and other industrial concrete applications.

Air-Entraining Agents

The entrainment of air in concrete in specific proportions is now an accepted practice in American construction. Air entrainment is vitally necessary wherever concrete is exposed to the freezing-thawing cycle.

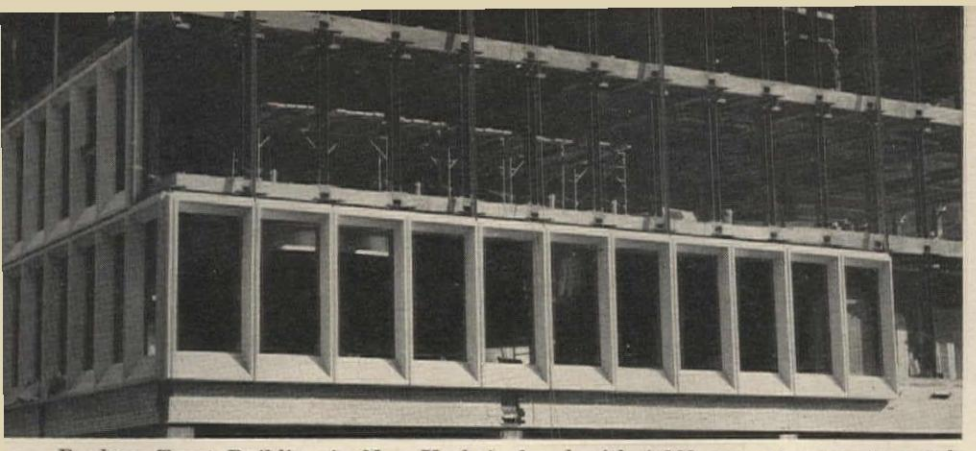
Specifically, air entraining is the development of dispersed air voids of 0.0004 to 0.04 in. diameter in the mix. These bubbles of air are surrounded by a thin, tough gelatinous film which preserves the bubble. The chemical groups into which air-entraining agents are divided are: salts of wood resins, salts of petroleum acids, fatty and resinous acids, salts of lignosulfonates, synthetic detergent derivatives, salts of proteinaceous material and organic salts of sulfonated hydrocarbons.

These materials become concentrated at the air-water interface, producing bubble formation during the mixing operation, delaying the dissolution of small bubbles, and causing the adhesion of the bubbles to the cement particles and to the aggregates used for the concrete.

The voids thus produced within the hydrated concrete, if properly sized and spaced, act as a series of expansion chambers during the freezing cycle, relieving the pressures which would otherwise result in spalling of the surface. This action provides a far better protection against frost action than the old standby, density, which was relied upon to produce impermeable concrete rather than a concrete which had the inherent physical capacity to resist expansion of moisture.

A second effect of air entrainment is the promotion of increased workability of the concrete through increased plasticity. Thus, water requirements can be further reduced below the levels permitted by water-reducers, with a reduction of about one gallon for each one per cent of air. While it cannot be denied that air entrainment results in a loss of strength, the loss is rarely more than 15 per cent compression and 10 per cent in flexural. Most architects and engineers are willing to accept this strength drop in return for the greatly increased weathering qualities of the concrete.

Air entrainment need not depend on the addition of an air-entraining agent to the concrete mix. There are air-entraining cements available, which have had an air-entraining agent ground into the cement during manufacture. While these cements are easy to use, and offer the convenience of not having to add the air-entraining agent in the mixing stage, there are two principal disadvantages: (1) the actual percentage of entrained air varies widely during a day's concreting operations, and (2) there is no way by which air content can be varied to meet field conditions. Due to variations in placing conditions, temperature and the moisture content of the



Bankers Trust Building in New York is faced with 1,660 precast concrete panels having an exposed quartz aggregate. The building was designed by Henry Dreyfuss; architects associated with the designer were Emery Roth & Sons

Use of a retarding admixture permits exposure of the quartz aggregate without damage to the structural concrete

aggregates, it may be necessary to change air percentage several times during the course of a long placing operation. If an air-entrained cement has been used, there is no way of making such changes.

Bleeding of the concrete is reduced by air entrainment, with the air bubbles acting as microscopic "dams" against movement of the water. Unless, however, water reduction of the basic mix has been accomplished, this decrease in bleeding may be a factor in further strength losses due to increased voids within the final concrete.

Variation of air content in the field, or in the basic design, is affected by a number of factors: the water-cement ratio; the content and fineness of the cement; characteristics of the aggregates; and the mixing operation, the temperature of the concrete, and the type of compaction used by the contractor. All of these factors support the practice of field control over air content, and demonstrate the obvious necessity of competent concrete technologists in the field—either contractor's men or testing laboratory personnel.

Retarders

While mass-concrete projects such as dams and bridge abutments of large section have relied for years on retardation, it has emerged only recently as an aid in architectural concrete work.

Retardation—that is, the artificial delaying of the hydration of the cement particles—is frequently necessary for one or more of the following reasons: (1) to reduce cracking caused by heat of hydration; (2) to delay premature stiffening during difficult placing operations where formwork is tricky or the reinforcing steel is closely spaced; (3) to offset high temperatures during hot weather placing; (4) to permit exposure of coarse aggregates so that specific textures can be obtained. Additionally, during certain concreting operations on shells, where counterforms are used, the surface of the concrete must be kept workable although the mass is stable, so that finishers may dress the surfaces after counterforms are moved up.

It should be stressed that although retardation will obviously have an effect on strength, this effect is short range. In general, retarded concrete will achieve the same 28-day strengths as concrete which does not have a retarder.

A classic example of the use of a retarding admixture which was also a water-reducing agent was in the concreting of the shell roof of Saarinen's T.W.A. Flight Center at New York International Airport. The contractor was faced with what appeared to be a contradiction: Since placing the concrete of the steeply-sloping shells required the use of counterforms, it was necessary for the concrete beneath the counterforms to remain plastic so that finishing operations could immediately follow removal of the counterform panels. At the same time, when the counterforms were removed and leapfrogged upward, the concrete had to be of sufficient density to resist the downward pressure of the concrete being placed above it without flowing outward.

The solution, developed cooperatively between builder, architect and admixture manufacturer, was a concrete mix of low water content (achieved through the water-reducing function of the admixture) given about 45 minutes of retardation. The shells were poured in long bands, each lift being about 6 ft. Working outward from the transition areas above the buttresses, the contractor placed concrete horizontally in a long band ending at the cantilevered tips. By the time the pour had reached the tips, the low-water-content concrete at the buttress area had attained sufficient internal density to permit removal of the counterform for finishing. At the same time, the surface was still sufficiently workable to permit smooth and efficient working of screeds and trowels. In this manner, each lift being vibrated into the one beneath, the concrete was brought uniformly and monolithically up to the crown of the shells. Since in this case both the water-reducing admixture (a lignosulfonate) and the air-entraining agent were added under close engineering control in the field, both the air content and the workability could be varied to meet individual placing conditions.

In the case of the admixture used on the T.W.A. concrete, the use of a retarding agent that was a modification of a standard water-reducing admixture enabled the builder to derive both effects from a single compound added to the mix. Cement content was reduced from 7.75 bags, as originally specified, to 6.0 bags, while strengths of the 4,000 psi design mix ran as high as 6,000 psi.

Retarding admixtures are highly useful in producing exposed-aggregate effects. Although limited in application, they are probably the cheapest solution to the problem. The other methods—grout injection into a form filled with rough aggregate, or bush-hammering by hand or pneumatic hammer—are expensive. Bush-hammering, additionally, opens thousands of tiny cracks which are potential sources of spalling. Retardation agents permit exposure of aggregates without damaging the base concrete.

On flat surfaces of slabs and stairs, the retarder is usually sprayed onto the surface of the concrete after it has been placed in the forms. Twelve to 18 hours later, after the mass of the concrete has taken its

initial set, the surface is still sufficiently plastic to permit brooming with a coarse bristle broom, or water-eroding with a jet-type nozzle at fairly high pressure.

The brooming probably produces a more even surface, with the cement paste and fine aggregates scoured away to a depth of between 3/32 in. and ⅛ in., exposing the coarse aggregate in a textured effect.

For columns and walls, the inner form surfaces may be coated with a retarding agent, and the same technique of broom or water used. In this case, it is best to strip the wall or column no later than the day following placing of the concrete. It is not wise to do this sooner because creep and shrinkage are much more pronounced when time of stripping is accelerated.

Retarding admixtures may also be used to counteract false-setting characteristics of certain cements. Under no circumstances should this be attempted without approval of the structural engineer, both as regards the retarding agent itself, and the procedure to be followed.

Accelerators

Agents added to concrete mixes to increase the rate of early strength development are probably the oldest and simplest form of admixture. Builders, probably more than architects, derive most advantages from acceleration of strength development. Early removal of formwork, reduction of curing period, compensation for the retarding effects of low temperatures during placing and initial setting, reduction of protection period, and the advancing of construction schedules are all practical advantages to be gained from the use of accelerators. The architect should, however, be basically familiar with the uses and types of accelerator so that he can intelligently review their proposed use by the contractor.

The most commonly used accelerator is calcium chloride, in amounts of between 2 and 3 per cent of cement weight, or an average of 18 lbs per yard of concrete.

American Concrete Institute studies of the use of calcium chloride give it credit for also developing a slight increase in workability and some slight reduction in bleeding. However, there is also a marked increase in shrinkage associated with the use of calcium chloride, and it is best to avoid use of the material in architectural concrete. Generally, calcium chloride is not a good substitute for the lignosulfonate or hydroxy carboxylic admixtures, and its use should be restricted to the accelerating function. During warmer months—although it may be desirable to speed the setting of concrete for any of the reasons listed above—use of calcium chloride as an accelerator is likely to cause such rapid stiffening that voiding or honeycombing may result, and finishing made more difficult. Again, this factor is more important in architectural or exposed concrete than in straightforward structural work.

A.C.I. studies further showed that although freezing and thawing durability is increased initially through the use of calcium chloride, this durability is reduced at later ages of the concrete. Again, this makes the material undesirable for use in architectural concrete.

Acceleration of strength development may also be achieved by increasing the cement content or the use of high early strength cements. In both cases, heat of hydration will be increased, with resultant effects on shrinkage and surface checking unless extremely careful water curing is maintained to protect the surface. Although these two methods avoid some of the other disadvantages of calcium chloride, they are still generally undesirable in architectural concrete work. With regard to acceleration, it can be generally stated that exposed finish architectural concrete work should be permitted the full curing and setting period, without the use of accelerators, and that problems of form reuse and finishing be solved by some manner other than acceleration of the setting time.

Beyond the four basic admixtures most widely used, there are many other classes. The principal ones are: damp-proofing and permeability-reducing admixtures, pozzolans, gas-forming admixtures, cementitious admixtures, grouting admixtures, coloring admixtures, expansion inhibitors. Further, there is a whole family of concrete aids which are not properly admixtures, such as curing materials, floor sealers, floor hardeners and bonding agents.

Of these, the only one of significance to most architects is the damp-proofing and permeability-reducing type of admixture. Basically, the permeability-reducing agents on the market will reduce the permeability of the concrete by reducing the rate of capillary transmission. Where leaking through a wall, generally a foundation wall, is the result of high external pressures forcing water through the cells of the concrete, the use of integral waterproofing admixtures will reduce this capillary flow. Generally, however, leakage is due to cracks in the concrete. All concrete has susceptibility to cracking, no matter how minute the crack may be. No integral admixture has the capacity to bridge a crack which develops after initial setting of the concrete. Application of an adequate external membrane waterproofing to the foundation is necessary to seal cracks.

Conclusion

The use of admixtures in concrete construction is legitimate, economic and feasible. In architectural concrete, there is general acceptance of admixtures as basic elements of the concrete mix design. In most cases, the cost of the admixture is more than compensated for by possible reductions in cement.

A major benefit to both architect and builder, and one which is not measurable in the actual concrete, is the competent field engineering services offered by reputable admixture manufacturers. It should be kept in mind that almost anyone can buy lignin or carboxylic by-products from industry, and start manufacturing admixtures in his garage or basement. It is completely possible that an admixture manufactured under such conditions could produce a desired effect in a concrete mix. The degree of success is, however, directly proportional to the technical competence of the manufacturer and his research and engineering staffs. Some manufacturers have research laboratory facilities which compare favorably with most university engineering research labs. These firms are able to bring technological abilities to bear on the architect's or contractor's specific problem, and, tailor a concrete mix design to specific requirements.

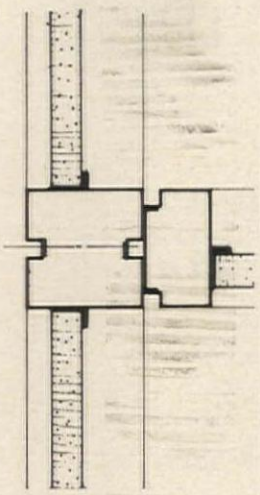
For more information circle selected item numbers on Reader Service Inquiry Card, pages 239–240

MODULAR PANELS USED FOR PORTABLE SCHOOLS

STEEL PANELS

Galvanized steel panels with mineral wool insulating cores are used with load-bearing mullions for schools that are both permanent and portable. The panels, 8 ft wide and 1-⅛ in. thick, are assembled using bar joists welded to clips mechanically fastened to the columns. Thus the structure is rigid and can be taken apart in sections for assembly at another site. Both interiors and exteriors have factory-applied vinyl base paint. *Columnar Products, 5735 Natural Bridge, St. Louis 20, Mo.*

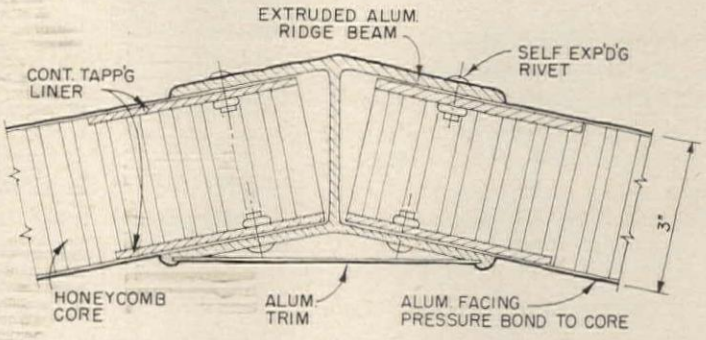
CIRCLE 300 ON INQUIRY CARD

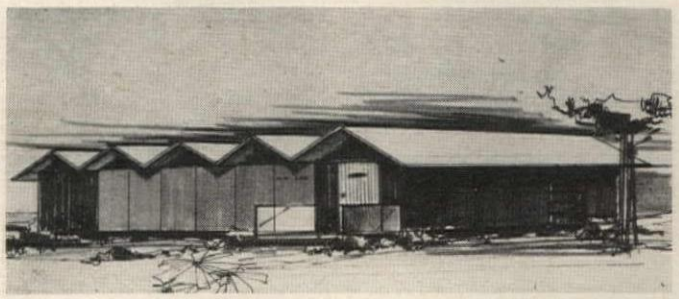


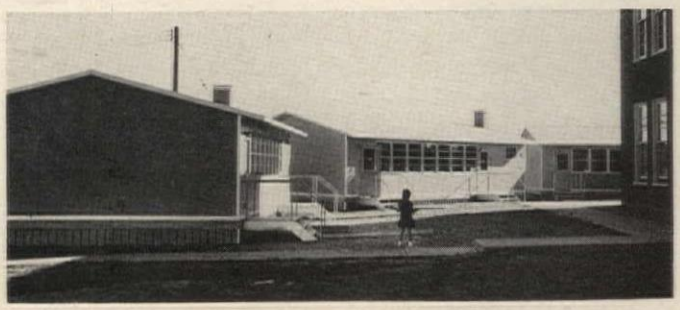
ALUMINUM PANELS

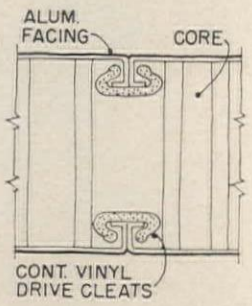
Sandwich panels with aluminum stressed skins laminated to plastic-impregnated kraft honeycomb cores are used for portable schools which sit on masonry piers. A removable metal skirt hides foundation piers and gives a permanent appearance. Each standard classroom measures 20 by 30 ft and can be moved in two sections, each 10 by 30 ft. The 3-in.-thick wall panels are connected by vinyl drive cleats; roof panels by an extruded ridge beam. Interiors and exteriors have baked-on acrylic enamel finishes. Natural aluminum finishes are used on doors, windows and trim. *Panelfab Products, Inc., 2000 N.E. 146th St., North Miami, Fla.*

CIRCLE 301 ON INQUIRY CARD









more products on page 206

Office Literature

For more information circle selected item numbers on Reader Service Inquiry Card, pages 239–240

SPECIALTY LIGHTING

(A.I.A. 31-F-2) Specialized lighting fixtures and equipment are listed in a 44-page product index. Included are theatrical and television instruments, custom fixtures, skylights, and several types of control systems. *Lighting & Electronics, Inc., 81 Prospect St., Brooklyn 1, N.Y.*

CIRCLE 400 ON INQUIRY CARD

PLASTIC SIGNS

(A.I.A. 24-C) Signs made of durable *Melamine* laminated plastic, available in a choice of 22 colors and woodgrain patterns, are illustrated in 12-page booklet. Color samples and a personal name plate are included. *Best Mfg. Co., P.O. Box 2126, Kansas City 42, Mo.**

CIRCLE 401 ON INQUIRY CARD

STAINLESS STEEL DATA

(A.I.A. 15-H-1) Stainless steel glazing and curtain wall applications are described in two architectural design data sheets, numbers 3 and 4. Detail drawings and photographs are shown. *Committee of Stainless Steel Producers, 633 Third Ave., New York 17, N.Y.*

CIRCLE 402 ON INQUIRY CARD

AGGREGATES

Specifications and property data on the use of *Perlite* lightweight concrete aggregate and plaster aggregate are given in separate four-page brochures. *Perlite Institute, Inc., 45 W. 45th St., New York 36, N.Y.**

CIRCLE 403 ON INQUIRY CARD

STRUCTURAL CALCULATIONS

A simplified system for structural calculations used in designing windows, mullions and similar building members is the subject of technical report, "Simplified Calculations and Design Techniques for Recurrent Beam Loadings." *Aluminum Co. of America, 728 Alcoa Bldg., Pittsburgh 19, Pa.*

CIRCLE 404 ON INQUIRY CARD

CARPET SAMPLER

Samples of two carpet grades recommended for schools and other heavy duty institutional uses are included in booklet giving advantages of carpeting in schools. *Bigelow-Sanford, Inc., 140 Madison Ave., New York 16, N.Y.*

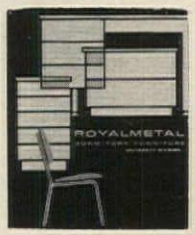
CIRCLE 405 ON INQUIRY CARD

FOLDING PARTITIONS

(A.I.A. 35-H-6) Illustrations of folding partitions used in gyms, auditoriums and classrooms are given in eight-page booklet. *Richards-Wilcox Mfg. Co., Aurora, Ill.**

CIRCLE 406 ON INQUIRY CARD

DORMITORY FURNITURE



Dormitory furniture, both built-in and free standing, is illustrated in 12-page booklet. Wood, metal and plastic laminate finishes are available. *Royalmetal Corp., One Park Ave., New York 16, N.Y.**

CIRCLE 407 ON INQUIRY CARD

AUDITORIUM SEATING

An information packet on auditoriums has time-saving charts on seating and row and aisle spacing. The charts are printed on glossy cardboard stock. *Irwin Seating Co., 1480 Buchanan, S.W., Grand Rapids, Mich.*

CIRCLE 408 ON INQUIRY CARD

LIGHTING TROFFERS

(A.I.A. 31-F-3) Illustrated 32-page catalog lists complete line of fluorescent lighting troffers. A fold-out front cover illustrates troffer types to make selection easier. *Lighting Products Inc., Highland Park, Ill.*

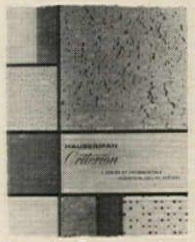
CIRCLE 409 ON INQUIRY CARD

FIRE RETARDANT WOOD

Brochure gives details on fire retardant wood, which is also pressure treated for rot and termite protection. *Cross, Austin & Ireland Lumber Co., 1246 Grand St., Brooklyn 11, N.Y.*

CIRCLE 410 ON INQUIRY CARD

ACOUSTICAL CEILINGS



(A.I.A. 39-B) *Criterion* acoustical ceilings are illustrated in a 32-page catalog. Included are fire and sound ratings and details about Hauserman's single contract for materials and installation. *The E. F. Hauserman Co., 5711 Grant Ave., Cleveland 5, Ohio**

CIRCLE 411 ON INQUIRY CARD

SLIDING GLASS DOORS

(A.I.A. 16-E) File folder gives details and specifications for *Monumental* aluminum sliding glass doors. Full size, half-size and 3-in. scale vellum tracings are included. *Daryl Products Corp., 7240 N.E. 4th Ave., Miami 38, Fla.**

CIRCLE 412 ON INQUIRY CARD

MARBLE COMPARTMENTS

(A.I.A. 35-H-6) *Stallpack* packaged marble toilet compartments are described in eight-page catalog which gives illustrations, specifications and hardware details. *Carthage Marble Corp., P. O. Box 718, Carthage, Mo.**

CIRCLE 413 ON INQUIRY CARD

INDUSTRIAL PANELS

(A.I.A. 26-A-9) *Filon* translucent glass-fiber and nylon reinforced panels for industrial use are described in an eight-page booklet. General specifications and construction details are included. *Joseph T. Ryerson & Son, Box 8000-A, Chicago 80, Ill.**

CIRCLE 414 ON INQUIRY CARD

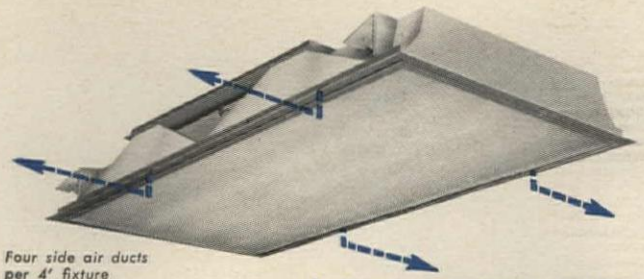
PROTECTIVE COATINGS

(A.I.A. 7-A, 7-B) Asphalt coatings for waterproofing, damproofing, weatherproofing and corrosion protection are described in eight-page booklet, ISR-4-63. *The Flintkote Co., 30 Rockefeller Plaza, New York 20, N.Y.**

CIRCLE 415 ON INQUIRY CARD

**Additional product information in Sweet's Architectural File*

more literature on page 226



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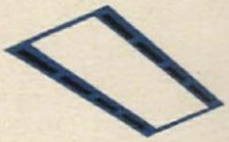
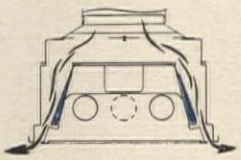
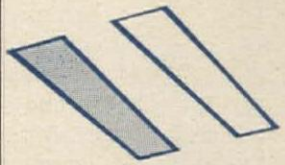
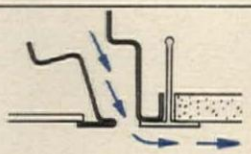
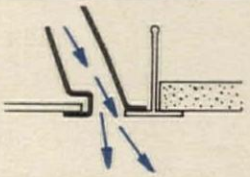
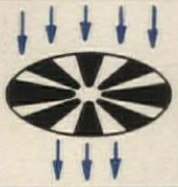
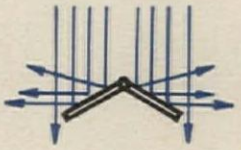
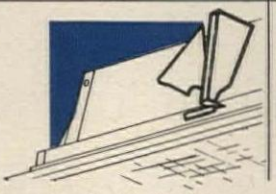
	LOOK FOR	TO AVOID
1 FULL LIGHTED AREA A *narrow*, continuous air flow opening and neatly tailored door create a clean ceiling, 15% greater lighted area.		
2 UNIFORM COLOR OF LIGHT *Isolated* air and lamp chambers in Triple Wall Construction avoid color difference between supply and return fixtures.		
3 EVEN AIR DISTRIBUTION *Extended* horizontal flow along the ceiling prevents drafts, achieves total room comfort.		
4 QUIET OPERATION *Whisper-soft* air-handling performance even when unit capacities are increased.		
5 PRECISE AIR CONTROL *Variable aperture* rotary plate valve permits accurate balancing for any room requirement.		
6 FASTEST INSTALLATION *Positive-action* Wing-Lok mounting devices and snap-on air components for *lowest installed cost.*		

LITECRAFT'S new LITE-FLO has taken the guess work out of specifying air-handling troffers.

LITE-FLO is the first air-handling troffer that has successfully combined exacting air control with fastest installation. It is the first air-handling troffer that assures an even flow of conditioned air while eliminating drafts even when unit capacities are increased. It is the first air-handling troffer that incorporates KNO-DRAFT® horizontal air discharge in combination with the finest features of lighting performance and appearance (Vertical distribution also available). It is the only air-handling troffer to provide four separate distribution chambers — two on each side of the troffer — for even air flow. It is the only air-handling troffer to combine all of the above with Triple Wall Construction, providing an important extra insulating air space.

To make it easy to specify and use, new LITE-FLO is engineered to fit easily and precisely into all basic ceiling constructions.

To suit it for many application requirements, LITE-FLO is available with any of five lenses and diffusers: Holophane Controlens 6150 and 6250, ½" Cubed Plastic Louvercomb, Dished Acrylic, Corning No. 70, and Prismatex.

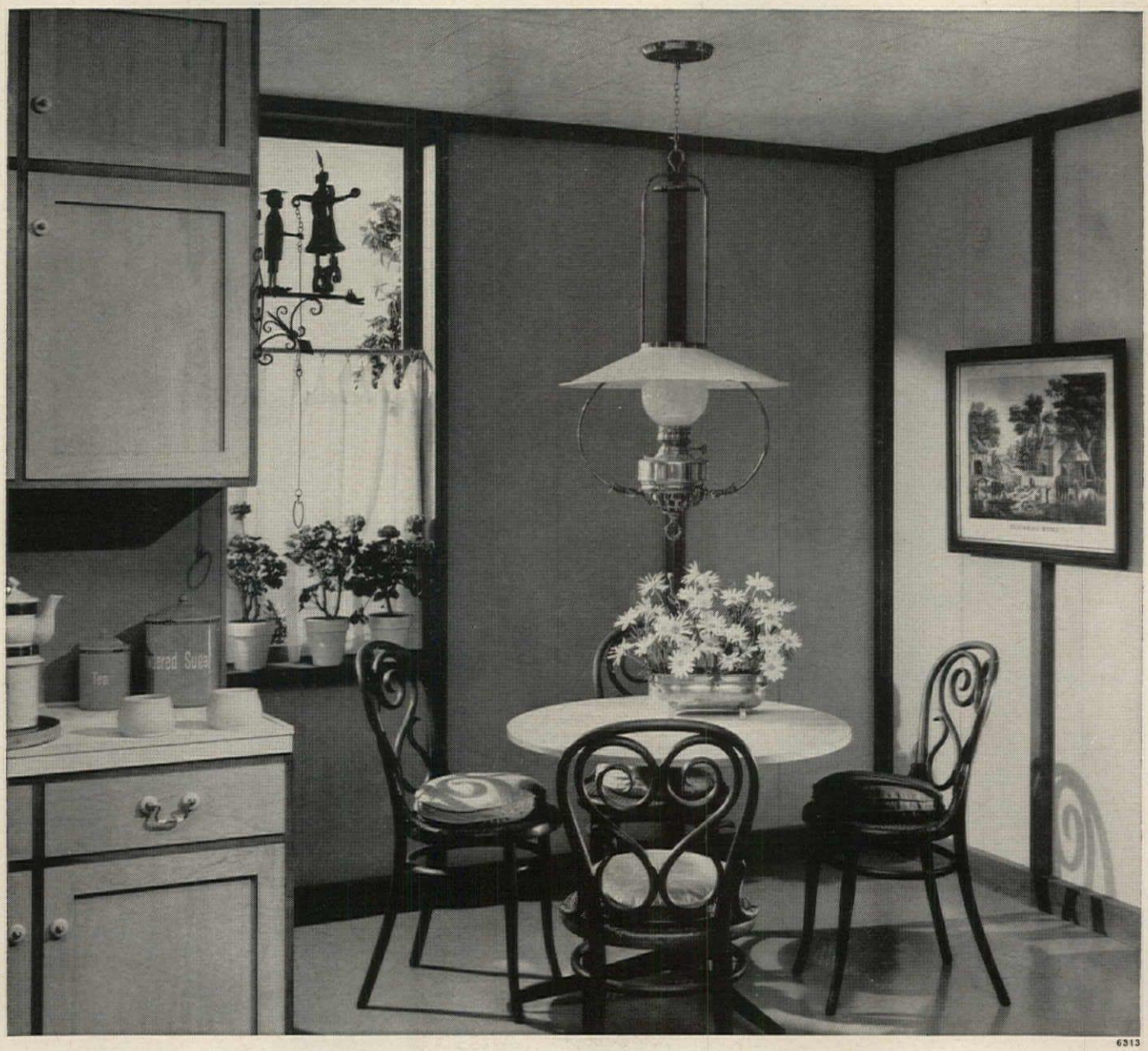
There is more to the LITE-FLO story. Years of engineering development . . . continuous consultation with contractors and manufacturers . . . careful field testing . . . all of these stand solidly behind every specification you write for LITE-FLO.

Contact your nearest LITECRAFT Sales Engineer or write Dept. AR-2 for booklet describing new LITE-FLO and other fine lighting equipment by LITECRAFT.

Lite-Flo™
BY
LITECRAFT
MANUFACTURING CORP
BROOKLYN, N. Y. • GLENDALE, CALIF. • PASSAIC, N. J.
General Offices: 100 DAYTON AVENUE • PASSAIC, NEW JERSEY
West Coast: 545 RODIER DRIVE • GLENDALE 1, CALIFORNIA
Affiliate: Finland House Lighting

LITE-FLO is a Registered Trademark of LITECRAFT Manufacturing Corp
KNO-DRAFT is a Registered Trademark of Connor Engineering Corporation

For more data, circle 78 on Inquiry Card



6313

Create home interiors that stay in style for years with beautiful wash-and-wear Marlite Paneling

With versatile Marlite paneling, you can create modern interiors in any room in the home that take years of wear with just minutes of care. Marlite's soilproof plastic finish is baked on at high temperatures most materials can't stand. Unlike many other wall coverings, Marlite shrugs off grease, stains, mars—even heat.

And the selection of Marlite colors and patterns is almost endless. You can choose from a complete array of beautiful colors, authentic Trendwood reproductions, distinctive marble and decorator patterns . . . all created exclusively for Marlite by American Color Trends to stay in style for years.

Get complete details from your building materials dealer, consult Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 205, Dover, Ohio.

Marlite® plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

MARLITE BRANCH OFFICES AND WAREHOUSES: 204 Permalume Place N.W., Atlanta 18, Georgia • 18 Moulton Street, Cambridge 38, Mass. • 4545 James Place, Melrose Park, Illinois (Chicago) • 8908 Chancellor Row, Dallas 7, Texas • 1657 Powell Street, Emeryville, California (Oakland) • 3050 Leonis Blvd., Los Angeles 58, California • 39 Windsor Avenue, Mineola, L. I. (New York) • 2440 Sixth Avenue So., Seattle 4, Washington

For more data, circle 79 on Inquiry Card

For more data, circle 80 on Inquiry Card

THIS ACOUSTICAL CEILING HEATS AND COOLS

Burgess-Manning/Inland radiant-acoustic ceilings **help to control comfort three ways in Scott Paper Company's new Executive Offices and Research and Engineering Center, a multi-million dollar complex located adjacent to Philadelphia International Airport. Ceiling panels provide trouble-free radiant heating, radiant cooling and sound control. ■ The architects specified radiant panel heating and cooling for offices and laboratories because of: (1) its high level of year 'round comfort, (2) its room-wide uniformity of temperature and freedom from drafts, and (3) its flexibility in layout and adaptation to lighting. ■ For a description of radiant heating and cooling principles, along with performance curves, design procedure and other data, see Sweet's, Architectural File, section 11a/In, or write for Catalog 250.**

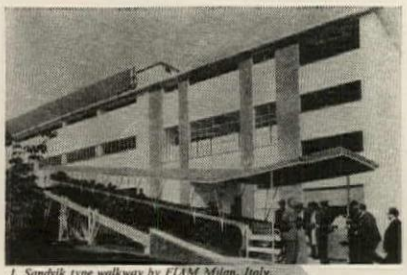
member of the INLAND steel family

Inland Steel Products Company *Engineered Products Division*

4111 W. BURNHAM STREET, MILWAUKEE 1, WISCONSIN

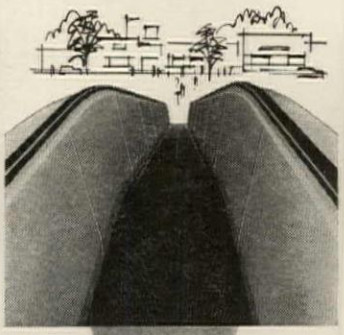
ALBANY, ATLANTA, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CINCINNATI, CLEVELAND, COLUMBUS, DALLAS, DENVER, DETROIT, FREMONT, CALIF., HOUSTON, INDIANAPOLIS, KANSAS CITY, MO., LOS ANGELES, NEW ORLEANS, NEW YORK, OMAHA, PHILADELPHIA, PITTSBURGH, SALT LAKE CITY, SAN FRANCISCO, SEATTLE, ST. LOUIS, ST. PAUL, TULSA

EP-31



1. Sandvik type walkway by FIAM Milan, Italy.

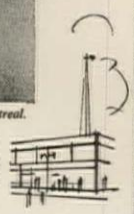
FOR EXHIBITIONS AND STADIA—PEDESTA-RIDE provides continuous horizontal multi-level "sidewalk" transportation with greater convenience, ease, and speed.



FOR OVERPASSES OR TRANSVERSE TRAFFIC—Where transportation is required between parking or service areas, across roadways or between stores and departments.

3. Mon Mart—Montreal.

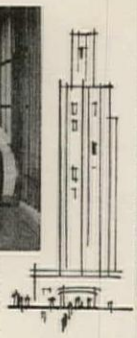
FOR MULTI-LEVEL SUPERMARKETS—"PEDESTA-RIDE'S" automatic braking system prevents "roll-away" of shopping carts on the inclines.

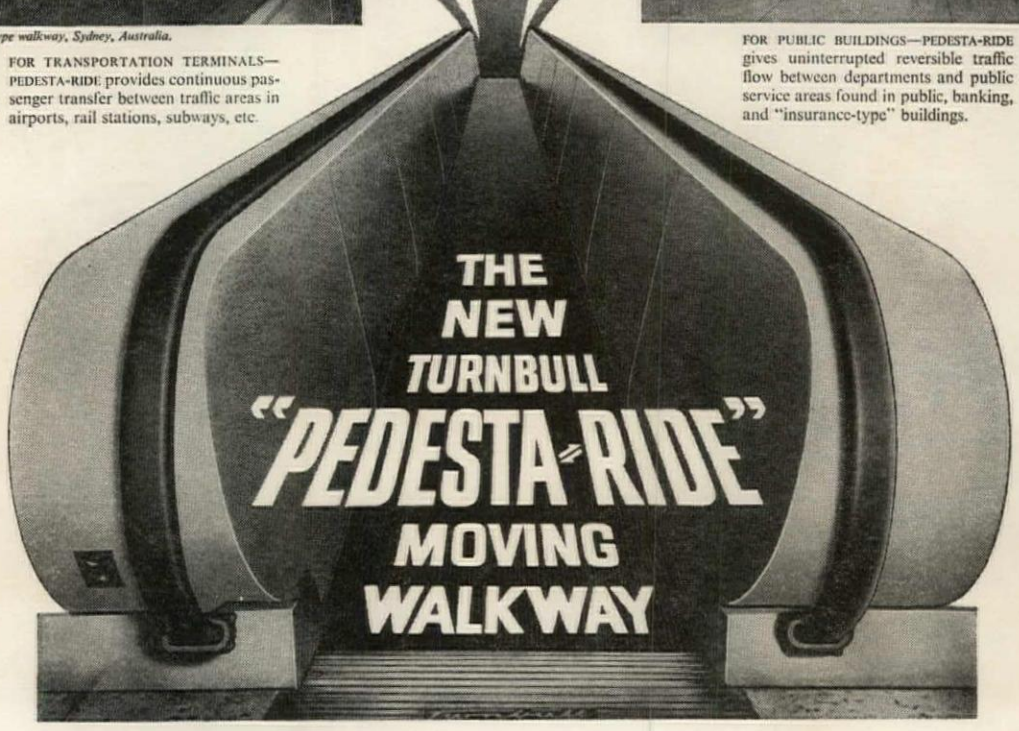


2. Sandvik type walkway, Sydney, Australia.

FOR TRANSPORTATION TERMINALS—PEDESTA-RIDE provides continuous passenger transfer between traffic areas in airports, rail stations, subways, etc.

FOR PUBLIC BUILDINGS—PEDESTA-RIDE gives uninterrupted reversible traffic flow between departments and public service areas found in public, banking, and "insurance-type" buildings.





THE NEW TURNBULL "PEDESTA-RIDE" MOVING WALKWAY

TURNBULL "PEDESTA-RIDE" Moving Walkway is the amazing new dimension of passenger transportation which opens a completely new concept of continuous pedestrian traffic flow: — a new concept of parking locations: and a new concept of how to get more merchandising space for your real estate investment anywhere. PEDESTA-RIDE obsoletes all current ideas of conventional pedestrian transportation.

PEDESTA-RIDE is the modern answer for safe, effortless traffic movement in transportation terminals, public buildings, exhibitions, or wherever people want to move from one place to another.

TURNBULL ELEVATOR, who manufacture PEDESTA-RIDE, are the exclusive users in North America, of the rubber-covered SANDVIK steel-band conveyor belting which has been proven in use, and made moving sidewalks practical, all over the world.

For information regarding PEDESTA-RIDE contact

TURNBULL ELEVATOR
INCORPORATED
243-44th ST., BROOKLYN 32, N.Y., SOUTH 8-1600

For more data, circle 81 on Inquiry Card

For more data, circle 82 on Inquiry Card

A touch of

BEAUTY

A world of

SECURITY

The trim, modern lines of this Ambassador mortise lock are fully matched by Lockwood's built-in rugged security and trouble free performance.

No holes mar the escutcheon plate which conceals the screw attachment underneath. Every inch of the Ambassador spells life-time appeal and dependable service, which explains why Lockwood makes the world's finest mortise lock.

Lockwood Ambassador Design Mortise Lock

LOCK UP WITH LOCKWOOD

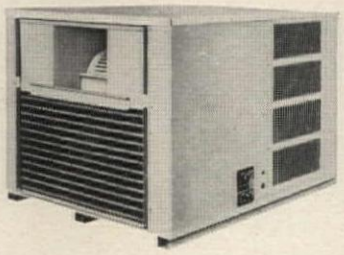
LOCKWOOD

LOCKWOOD HARDWARE MANUFACTURING COMPANY, FITCHBURG, MASS.

For more data, circle 83 on Inquiry Card

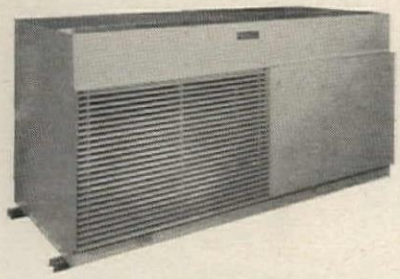
FOR COOLING — ADD-ON OR INDEPENDENT SYSTEMS

Package Cooling Units and Heat Pumps in a wide range of seven sizes, A.R.I. tested and rated. Low silhouette, insulated, weatherproof cabinet is approved for outdoor installation. ▶



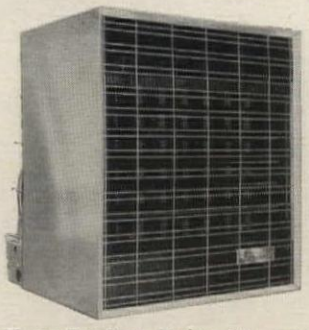
◀ **Summer Air Conditioning, Electric Powered,** air-cooled condensing units up to nominal 20 tons. A.R.I. rated capacities with unusually low operating cost. Top discharge, weatherproof. Five-year warranty.

Blower Coil Units, with evaporator, blower and filter may be used in either free discharge or ducted applications. A.R.I. capacities from 21,400 to 118,000 Btu./hr. ▼

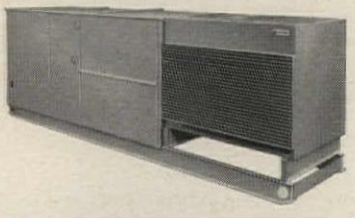


◀ **Gas Engine Condensing Unit,** air cooled, operates on natural or LP gas and 115 v. A.C. Very quiet and economical in operation. Designed for use with direct expansion cooling coils.

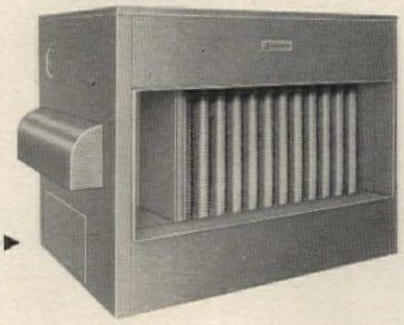
FOR COMMERCIAL-INDUSTRIAL HEATING



Skyliner Rooftop Units, for any combination of heating-cooling-ventilating. Factory-assembled, require no inside space. Heating is by natural, LP, mixed or manufactured gas; cooling may be either electric or gas engine powered. An ideal unit for modern single-story structures. ▼

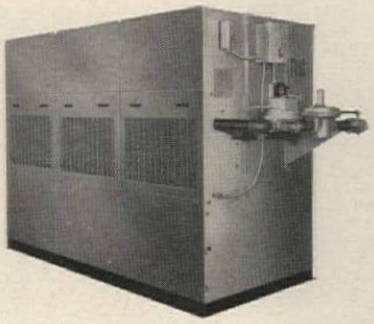


◀ **Gas-Fired Unit Heaters,** the Janitrol 67 Series, leader in design, with eleven models from 30,000 to 250,000 Btu./hr. inputs. Includes complete control system, and durable aluminized steel heat exchangers, with stainless steel optional.



Gas-Fired Duct Furnaces, ▶ weatherproof model shown, is designed for outdoor installation; also available in standard models. For heating circulated air or tempering make-up fresh air. Available with either aluminized or stainless steel heat exchangers.

Heavy Duty Gas-Fired Blower Heaters ▶ for either free discharge or central system use. Equipped with high capacity blowers and aluminized steel heat exchangers with inputs from 250,000 to 1,750,000 Btu./hr.



see our catalog in Sweet's

More Information? Detailed specifications and engineering information on all of these models are available from your local Janitrol representative. He's an expert in equipment utilization and ready to provide personal assistance. Give him a call, he's listed in the yellow pages. Or, you may write to the Product Application Manager at the factory in Columbus.

JANITROL® DIVISION
Midland-Ross Corporation • Columbus 16, Ohio M-R

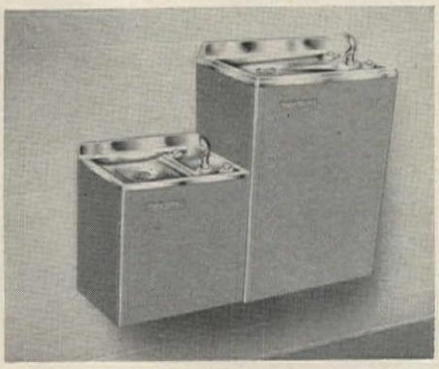
For more data, circle 84 on Inquiry Card

Product Reports

continued from page 195

BI-LEVEL WATER COOLER

A water cooler for children is available as an attachment on wall-mounted water coolers. The combination unit requires only one waste



connection, and the smaller unit is finished just like the parent unit. *The Halsey W. Taylor Co., Warren, Ohio*

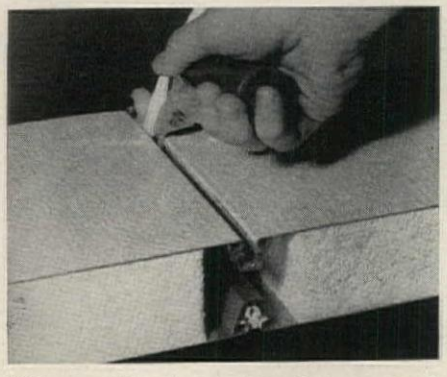
CIRCLE 302 ON INQUIRY CARD

PLASTIC SIGN LETTERS, DECORATIVE PANELS

Plastic sign letters and decorative panels for interiors and exteriors are produced in 40 coordinated colors. The letters come in 17 type faces, ranging in size from 4 in. to 4 ft high. Single letters can be made in two or three colors. There are 15 wall panel designs currently available. Letters and panels are made of Eastman Kodak's *Uvex*, a high impact cellulose acetate butyrate plastic sheet. *Spanex Products Corp., Hainesport Industrial Park, Mt. Holly, N. J.*

CIRCLE 303 ON INQUIRY CARD

"ZIPPERED" SEAMS



"Zippered" aluminum homes and commercial buildings are a possibility with Alcoa's *Snug Seam*, a time-saving joint system consisting of a pair of extruded aluminum shapes and mating neoprene extrusions which join adjacent building panels while eliminating exposed fastener heads. *Snug Seam* was developed as an economical method of joining *Alply* panels, in which polystyrene foam is sandwiched between sheets of aluminum (see picture), but it can also be adapted for assembling corrugated sheet wall or roof panels. *Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.*

CIRCLE 304 ON INQUIRY CARD

VALANCE COOLING SYSTEM

A packaged valance cooling system for hotels, restaurants, offices, etc. is both noiseless and draftless with no blowers or fans. A finned coil, enclosed in a decorative metal valance, is suspended from the ceiling. A room thermostat controls the opening of a motorized zone valve. *Edwards Engineering Corp., Pompton Plains, N.J.*

CIRCLE 305 ON INQUIRY CARD

more products on page 211

Modern Door Control by LCN "SMOOTHEE®" Door Closers

WASHINGTON SOLDIERS' HOME AND COLONY
ORTING, WASHINGTON

•

LCN CLOSERS, PRINCETON, ILLINOIS

Application Details on Opposite Page

Paul W. DeLaney & Associates, *Architects*

The heavenward spiral of wood shingles, laminated beams, and multi-toned planking makes the roof of the United Church in Rowayton, Connecticut, something spectacular. It demonstrates, too, the breath-taking wonders of wood's structural strength.

For inspired variations in church design

use WOOD . . . and your imagination

Wood pews, a rustic altar with a grated backdrop, a rough-sawn Cross, and a planked ceiling with free-standing arches naturally high lighted through the roof—all invite reverence inside the inspiring United Church.

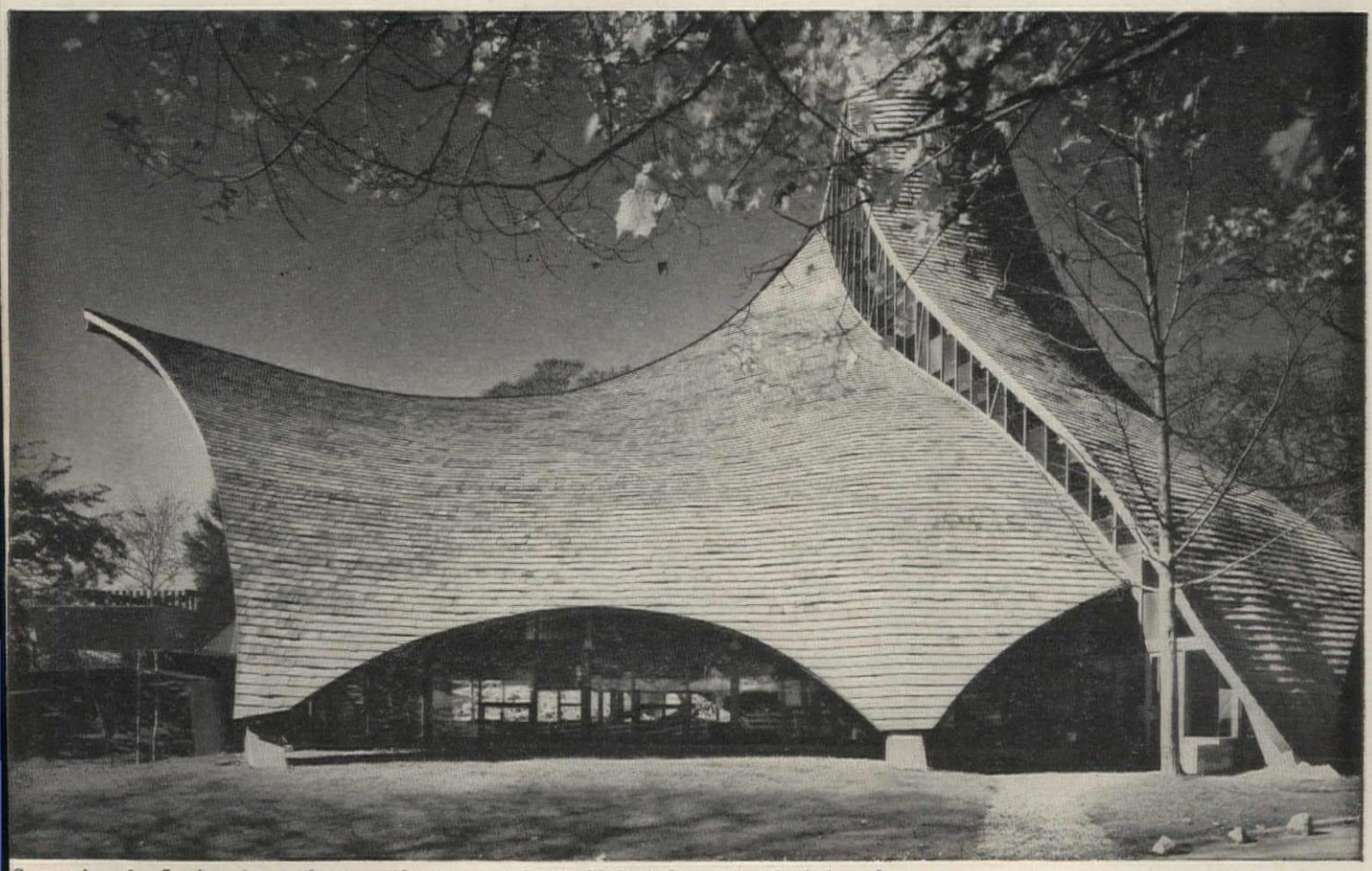
Wood performs near-miracles creating remarkable effects in churches of any creed. Economically, it works wonders with even the smallest budgets. Structurally, its inherent strength permits self-supporting ceilings over wide-open spaces . . . resiliency for flooring under tons of people. Acoustically, wood is always a sound choice . . . traditionally, it is preferred for places of worship.

The warmth of wood's many grains and tones and its compatibility with other materials provide still more flexibility in your planning . . . greater satisfaction in the results. Wood offers you the advantage of endless contemporary techniques, too, with the benefit of ageless values. For more data on designing with wood, write:

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

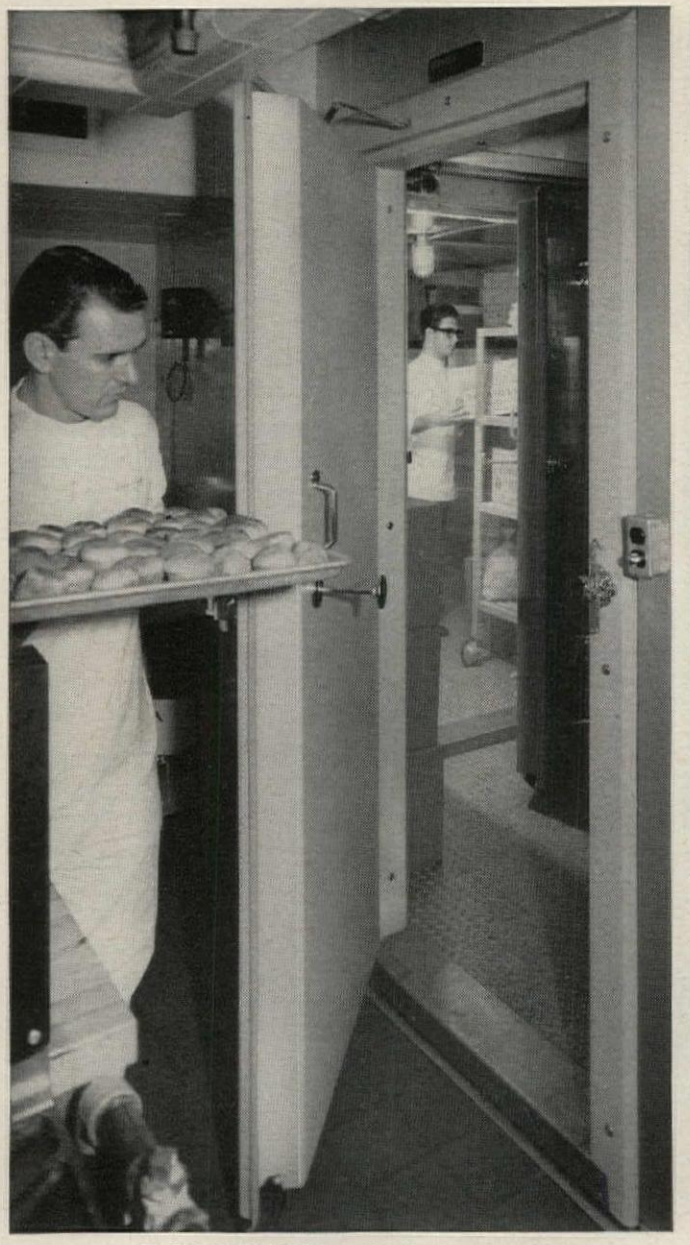
nlma

find the better way with **wood**

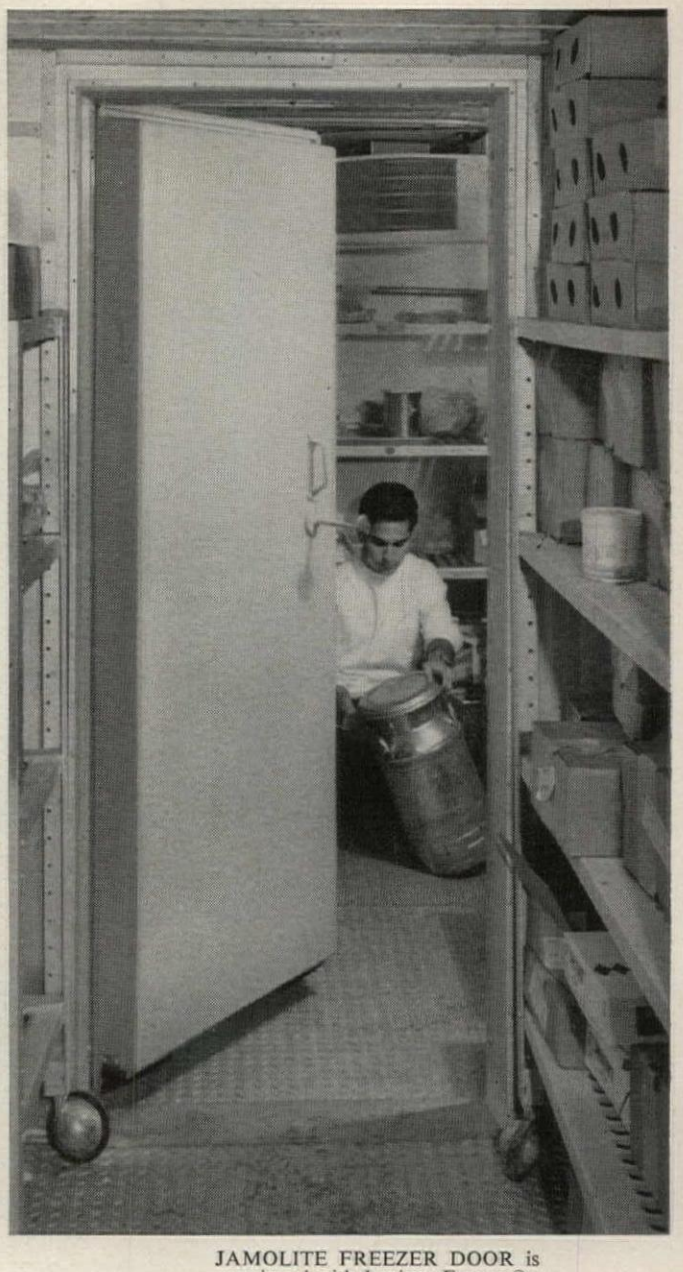


Suggesting the flowing shape of a magnificent sea shell, the United Church's shingled roof supported by sweeping laminated members, and complemented with glass and concrete, illustrates further the true nature of wood's beauty and adaptability. Architect: Joseph Salerno.

For more data, circle 86 on Inquiry Card



EASY OPENING Jamolite plastic doors facilitate rapid movement between kitchen area and cold room.



JAMOLITE FREEZER DOOR is equipped with Jamison Frostop® to prevent ice formation.

Jamolite® *Food Service Doors adopted by famous restaurant chain for top performance—smart appearance*

Many Howard Johnson restaurants have specified Jamison Jamolite cooler and freezer doors since shortly after their introduction as a new idea in food service doors.

At the Howard Johnson Restaurant, College Park, Md., Jamison Jamolite food service doors are making an important contribution to the efficient operation of this famous restaurant. Throughout the country, wherever restaurant or institutional food service operations require lightweight, attractive cooler or freezer doors, the specification is Jamolite.

These flush-fitting doors cannot warp. Installation is fast and easy. Foamed-in-place polyurethane insulation forms a permanent, rigid bond with the outer door shell. For complete details write for latest bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON

COLD STORAGE DOORS

For more data, circle 87 on Inquiry Card

Product Reports

continued from page 206

PRIVACY FENCE

WovenWall privacy fence is made of 14-gage wire welded into mesh fencing and vinyl-coated for beauty and durability. Coils of solid vinyl strips

can be woven into a variety of patterns. It is available in 50-ft lengths, in a choice of three heights and three colors. *Wickwire Bros., Inc., Cortland, N.Y.*

CIRCLE 306 ON INQUIRY CARD

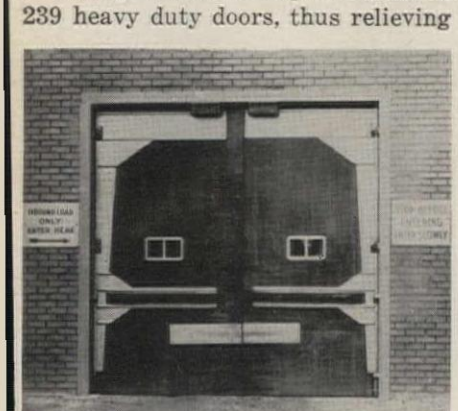
FIRE-RATED METAL ACOUSTICAL PAN

Rollform metal pan acoustical units have a three-hour, floor-ceiling assembly fire rating and a four-hour beam fire rating, thus providing fire protection without need for contact fireproofing or intermediate ceiling fire barriers. *Rollform Inc., P. O. Box 1065, Ann Arbor, Mich.*

CIRCLE 307 ON INQUIRY CARD

DOOR WITH RUBBER BUMPER

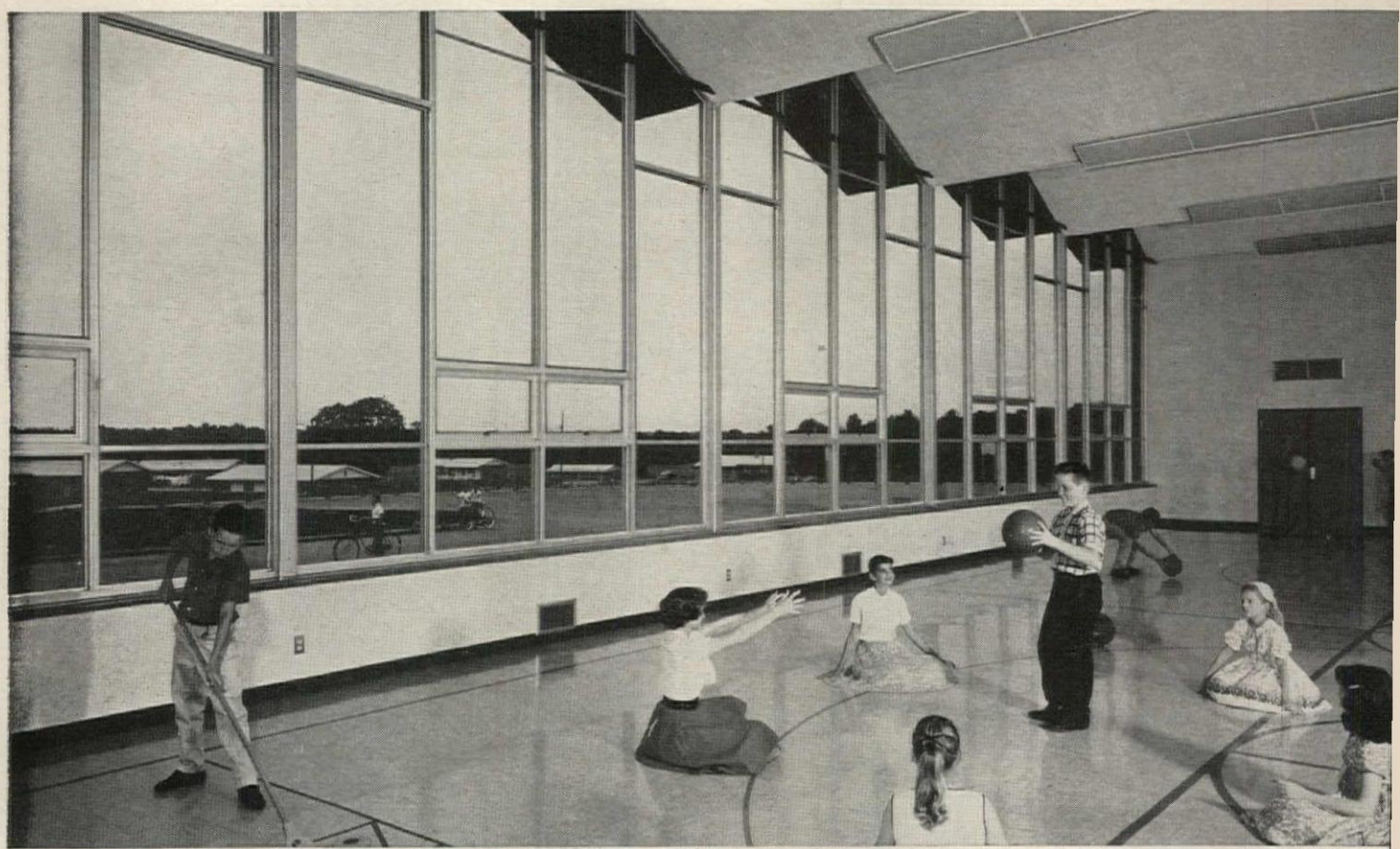
Four-in.-thick, steel-reinforced rubber bumpers absorb impact on Model 239 heavy duty doors, thus relieving



wear on the rest of the door surface. Windows, air seals and adjustable V-cam hinges are standard features. *W. B. McGuire Co., Inc., Box 265, Champlain, N.Y.*

CIRCLE 308 ON INQUIRY CARD

more products on page 214



Window wall in gymnasium is glazed with *Parallel-O-Grey* Plate Glass that has been heat tempered for extra strength. Orchard Hills Elementary School, Novi, Mich. Architects: Charles W. Lane & Assoc., Ann Arbor.

5 problem-solving materials for windows

THEY'RE ALL GLASS, but their characteristics are quite different. And they do different things for you. Some reduce sky glare and brightness. Some retard solar heat gain to increase comfort and effect heating and air-conditioning economies. One helps protect children from harm. Another muffles outside noise.

All let you have the kind of school most educators want . . . bright, cheerful, economical. With large window walls to let in free foot-candles of daylight . . . to give those inside a generous view of the sky, the trees, the "open world" around them. Learn how these five L·O·F glass products can help you plan a better school.

1. ¼" Parallel-O-Grey® Plate Glass excludes approximately 40% of the solar energy (heat) to reduce load on air conditioning. Neutral grey in color, it transmits about 44% of average daylight (illuminant C) as compared with a transmission of about 89% through regular ¼" plate glass. This lower light transmission results in reduction of glare and brightness, yet views through it are seen in their true colors. *Parallel-O-Grey* is *twin ground* and polished to minimize surface waviness that could cause distortion. It is also available in ¼" *Tuf-flex®* tempered plate glass for use in potential breakage areas such as gymnasiums and hallways.

2. 13/64" Parallel-O-Grey Plate Glass is *ground* and *polished*, resulting in qualities far superior to tinted sheet glass which is not ground and polished. Though plate glass, it costs less than ¼" *Parallel-O-Grey*. It excludes approximately 36.4% of the solar energy. Its neutral grey color—similar to ¼" *Parallel-O-Grey*—provides eye comfort. And colors of objects seen through it retain their true values. It transmits approximately 50% of average daylight to reduce glare and brightness.

3. L·O·F Heat Absorbing Plate Glass is pale bluish-green in color. It excludes more than 40% of the sun's radiant energy to keep interiors cooler. This lowers initial cost for air-conditioning equipment, and its cost of operation. Heat Absorbing plate transmits approximately 75% of the visual daylight, providing ample daylight for clear vision. It is also available in ¼" tempered glass form.

4. ¼" Parallel-O-Plate® Glass is untinted. Produced in the United States since 1954, this superb plate glass is achieved by a twin-grinding process in which both sides of the glass are ground simultaneously, then polished. Such precision results in the greatest uniformity of thickness, parallelism and flatness of surfaces, which provide

MADE IN U.S.A.

L·O·F GLASS

THE QUALITY MARK TO LOOK FOR

	¼" Clear Parallel-O-Plate Glass	¼" Parallel-O-Grey Plate Glass	¼" Heat Absorbing Plate Glass	13/64" Parallel-O-Grey Plate Glass	1" Thermopane with ¼" Parallel-O-Plate Glass	1" Thermopane with ¼" Parallel-O-Grey (outer pane)	1" Thermopane with ¼" Heat Absorbing (outer pane)
Total Solar Heat Excluded	16.6	40.4	40.7	36.4	27.2	50.5	50.8
Direct Transmittance Illuminant C (daylight)	89.1	44.2	74.7	50.0	79.9	39.6	66.9

Laboratory tests made in accordance with accepted standards show above direct-transmittance factors for the different types of glass.

more perfect reflections and maximum freedom from distortion. It is also available in ¼" *Tuf-flex* tempered glass.

5. Thermopane® Insulating Glass provides maximum comfort and air-conditioning economy when used in windows and sliding glass doors. Heat loss in winter is cut almost in half, as compared to single glazing. Drafts are reduced. Frost and fogging are minimized. Outside noise is muffled. *Thermopane* consists of two panes of glass with an insulating blanket of dry, clean air hermetically sealed between. For summer air-conditioning economy, *Parallel-O-Grey* or Heat Absorbing Plate Glass should be used as the outer pane.

For information on these L·O·F products, call your L·O·F Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write to Libbey·Owens·Ford, 811 Madison Avenue, Toledo 2, Ohio.

SPECIAL BOOK OFFER

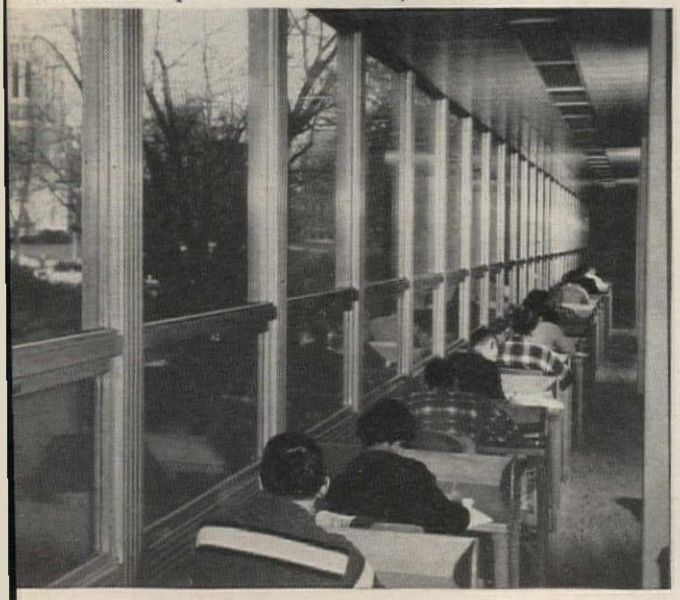
"Work Place for Learning" by Lawrence B. Perkins

A colorful, bountifully illustrated, 64-page, hard-cover book on school architecture by a noted authority. Available to school administrators, architects and other professional people for $2 from L·O·F by special arrangement with publisher. (At bookstores $4.) Send check to Libbey·Owens·Ford, 811 Madison Avenue, Toledo 2, Ohio.

Libbey·Owens·Ford

Toledo 2, Ohio

Students are comfortable next to *Thermopane* windows in library at Michigan State University.
Architects: Ralph C. Calder & Assoc., Detroit.



Tuf-flex tempered plate glass in Ridgebury School, Lyndhurst, Ohio.
Architects: Spahn & Barnes, Cleveland, Ohio.

For more data, circle 89 on Inquiry Card

Product Reports

continued from page 211

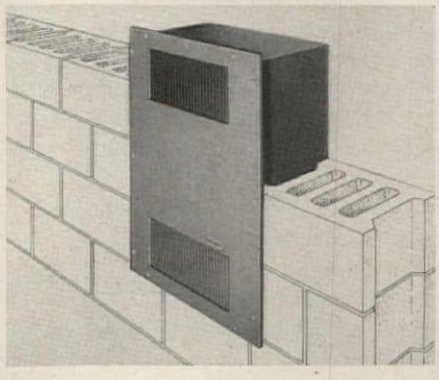
ONE-WAY MIRRORS FOR CURTAIN WALLS

Reflectovue one-way mirrors for curtain walls are said to reduce the problem of heat transmission through glass by reflecting most of the solar heat. The silver-tone glass gives about 31 per cent heat transmission and 20 per cent average light transmission. The laminated glass is produced in cooperation with Laminated Glass Corp. of Detroit. *Kinney Vacuum Div., 1325 Admiral Wilson Blvd., Camden 11, N.J.*

CIRCLE 309 ON INQUIRY CARD

FLUSH-MOUNTED TRANSFORMERS

Flush-mounted in-wall transformers have a shallow profile so they can be installed in concrete block walls without need for extra closets or floor



space. Quiet operation is achieved by floating core and coil on vibration absorbers. A louvered grill prevents tampering. *Hevi-Duty Electric Co., Box 563, Milwaukee 1, Wis.*

CIRCLE 310 ON INQUIRY CARD

PATIENT ROOM CONSOLE

Included in one compact *Consolight* patient room unit are reading light, night light, physicians' examining light, provisions for oxygen and vacuum system outlets, audio-visual nurses' call system, remote control radio and T.V. and service outlets. One set of lines can serve two consoles mounted back to back in adjoining rooms. The units are available with either 36 or 48 in. fluorescent lamps. *Pacific Associated Lighting Inc., 837-849 Folsom St., San Francisco, Calif.*

CIRCLE 311 ON INQUIRY CARD

more products on page 218

Now...use the 40% greater strength of

200-series Stainless Steel for lighter-weight, lower-cost design

The 200-Series stainless steels have a yield strength in the annealed condition that's 40% greater than corresponding 300-Series (18-8) stainless steels. This permits you to design for lighter weight by providing equivalent strength in thinner gages. In addition, since less material does the same job, and the price of 200 stainless is lower, you save substantially on material costs.

The corrosion resistance and fabricability of the 200's are excellent . . . in general on a par with the 300's. For full information on properties and uses, write for the new booklet, "200-Series Chromium-Nickel-Manganese Stainless Steels." Union Carbide Metals Company, Division of Union Carbide Corporation, 270 Park Ave., New York 17, New York.

UNION CARBIDE METALS

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For more data, circle 91 on Inquiry Card

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Actually, they're still around—but now you'll see only *one* to get *all* of the familiar products formerly sold by four separate Republic Divisions. And that *one* will be your expert on all Manufacturing Division Products. He will be calling on you more often than in the past.

The other four salesmen are still in the picture. They are now concentrating on another group of customers. The overall sales force hasn't shrunk. It's bigger than ever.

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All you really have to remember, though, is the name—and because bold type helps people remember things, we'll say it this way—**MANUFACTURING DIVISION.**

Got it? Good.

CALL OUR "MAN FROM MANUFACTURING" FOR THESE PRODUCTS: VISION-VENT® and GRID-VUE Window Walls... Residential and Commercial Steel Doors and Frames... Steel and Aluminum Windows... Steel Cabinets for Kitchens... Roof Drainage Products... Steel Storm Sash and Window Screen Frames... Metal Lath and Lintels... Partition Studs... Steel Lockers and Shop Equipment... Bookshelves, Wardrobes, and Special Cabinets... Steel Pipe and Corrugated Steel Drainage Pipe... Concrete Reinforcing Bars... TRUSSPAN Steel Buildings... Channels, Curb Bars... Steel Joists and Roofdeck... Welded Wire Fabric... Tie and Hanger Wire. ***You can get literature by writing Republic Steel Corporation, Manufacturing Division, Dept. AR-5015-C, Youngstown 5, Ohio.***

REPUBLIC STEEL
MANUFACTURING DIVISION
BERGER • CONTAINER • CULVERT • TRUSCON

For more data, circle 92 on Inquiry Card

Product Reports

continued from page 214

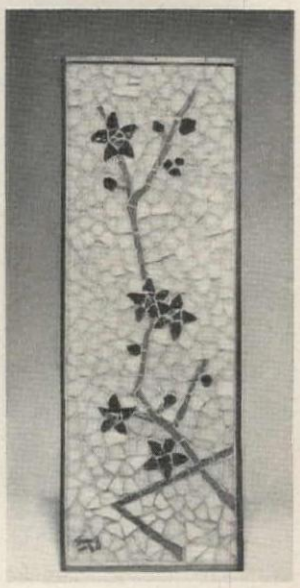
ACOUSTICAL PANEL WITH FIRE RATING

Protectone Acoustiform is a glass-mat laminate lay-in acoustical ceiling panel with a two-hour UL fire rating. The surface coating gives a finely textured pattern. The panel can absorb up to 90 per cent of the sound striking the surface and has a light reflection value of .81. *The Celotex Corp., 120 S. LaSalle St., Chicago 3, Ill.*

CIRCLE 312 ON INQUIRY CARD

CUSTOM-DESIGNED MOSAICS

Custom-designed mosaics with both oriental and western themes are made with Venetian glass tesserae, Byzantine smalti and, sometimes, glazed or unglazed porcelain tile. Usually tesserae are glued to fir plywood with a strong adhesive, grouted



with a non-shrinking cement so the panels can be shipped long distances. Shown is a small panel with background and branches of tesserae and red plum blossoms of Byzantine Smalti. *Tetsuya Kohchi, Mill Lane, Armonk, N.Y.*

CIRCLE 313 ON INQUIRY CARD

COMPACT AIR CONDITIONER

A compact, multi-zone air conditioner provides all-year air conditioning for up to 14 separate areas. There are five sizes, with 20 to 50 tons of cooling capacity. *The Trane Co., La Crosse, Wis.*

CIRCLE 314 ON INQUIRY CARD

more products on page 222

Owner and Builder, White Post Realty Corporation; Architect-Engineer, Crinnion and Crinnion; Mechanical Contractor, Acme Air Conditioning Co.

PROBLEM:

Provide year-round heating and cooling for bowlers at PEL-PARK LANES, Bronx, New York

SOLUTION:

YORK SUNLINE heat, cool,

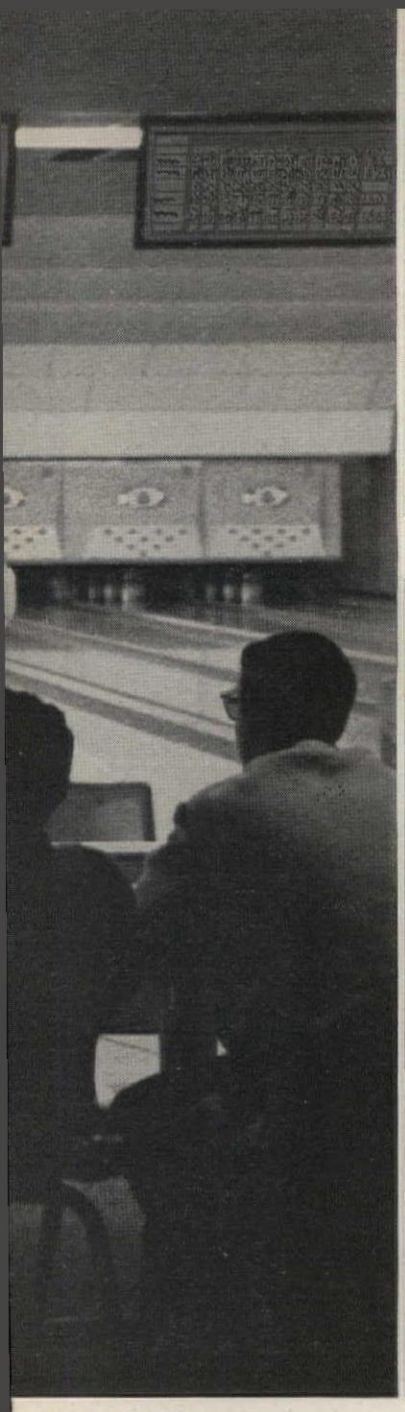
Here's a luxuriously appointed bowling alley where patrons enjoy ideal comfort in every season — at minimum cost to the owners.

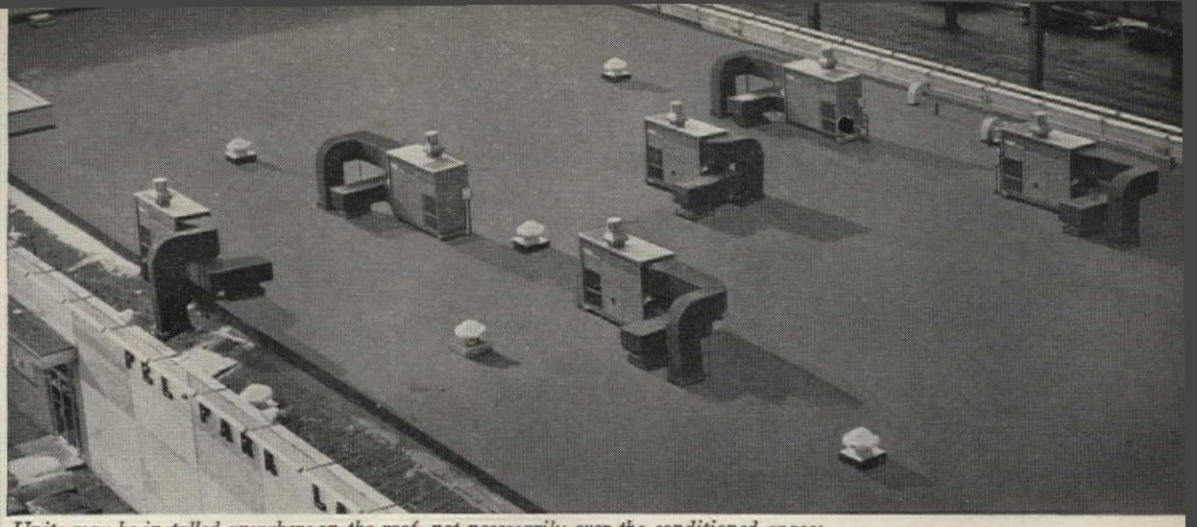
Six York SUNLINE Rooftop Air Conditioners provide both heating and cooling for the six zones in this modern building. Roof-mounted, these compact, all-in-one York units require no floor space, no engine room, no dropped ceilings to accommodate equipment. A simple duct system distributes the tempered air to ceiling diffusers in the various parts of the building.

All-season comfort! The York SUNLINE units provide gentle, even, automatic gas heating in cold weather . . . crisp, dry cooling in summer. A special feature of the York SUNLINE Rooftop Air Conditioner is low ambient cooling. The units continue to provide cooling when heavy occupancy raises the indoor temperature—even when the outside temperature is below freezing!

Operating cost is low. Because each zone at Pel-Park Lanes has its own York SUNLINE unit, only the areas in actual use are heated or cooled. The individually controlled units are shut down during periods of partial occupancy, resulting in greatly reduced costs. Only at peak periods are all six units in operation.

When you plan air conditioning for any single-story commercial or light industrial building . . . a store, shop or office . . . plan ahead with York! For over 75





Units may be installed anywhere on the roof, not necessarily over the conditioned space; may also be located on the ground, outside of building.

Each of the York SUNLINE Rooftop units provides heating or cooling for a specific zone; lounge, for example, is cooled or heated only when occupied during late afternoon or evening hours.

ROOFTOP AIR CONDITIONERS that ventilate... take no floor space!

years, York has set the pace in raising comfort standards for home, business and industry. For complete information on the York SUNLINE Rooftop Air Conditioner, see your nearby York Representative, or write York Corporation, York, Pennsylvania; in Canada, contact Shipley Company of Canada, Ltd., Rexdale Boulevard, Toronto, Can. **See the York SUNLINE units on display at the 16th International Heating and Air Conditioning Exposition, Coliseum, New York City, Feb. 11 through 14.**

YORK CORPORATION
Subsidiary of Borg-Warner Corp.
YORK, PENNSYLVANIA

THE QUALITY NAME IN AIR CONDITIONING AND REFRIGERATION

York BW BORG-WARNER

ANOTHER YORK SOLUTION!

Drive in air cooled comfort! Ask your car dealer for information on automobile air conditioning, powered by the famous York Compressor.

For more data, circle 94 on Inquiry Card

Product Reports

continued from page 218

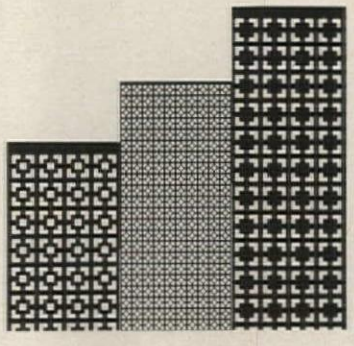
NEW SKYLIGHT SHAPES

Skydome skylights are available in a pyramid shaped dome and a dormer dome. Both shapes are made of acrylic with aluminum frames. *American Cyanamid Co., Bldg. Products Div., 5 Bay State Rd., Cambridge 38, Mass.*

CIRCLE 315 ON INQUIRY CARD

DECORATIVE GRILLS

Silicon-impregnated hardboard panels with plastic coating are available



in three filigree patterns in a variety of sizes. Moldings and hardware accessories are also available. *Panelboard Mfg. Co., Inc., Newark, N.J.*

CIRCLE 316 ON INQUIRY CARD

PRODUCT BRIEFS

Two-hour fire resistance rating has been given to gypsum wallboard floor and ceiling assembly. *Gypsum Assoc., 201 N. Wells St., Chicago 6, Ill.*

CIRCLE 317 ON INQUIRY CARD

Glass-fiber water cooler has one-piece cabinet, available in four colors. *Cordley & Hayes, 443 Park Ave. South, New York 16, N.Y.*

CIRCLE 318 ON INQUIRY CARD

Wrap-around waterproof wall for tub and shower enclosures has surfaces of *Micarta* and an inner core of polystyrene. *Westinghouse Electric Corp., Hampton, S.C.*

CIRCLE 319 ON INQUIRY CARD

Prime wood windows use extruded vinyl sash to provide an economical, high-quality window. *Malta Mfg. Co., Gahanna, Ohio*

CIRCLE 320 ON INQUIRY CARD

Vinyl-covered gypsum wallboard has a finish of 6 mils of colored vinyl covered with 2 mils of clear plastic. *U.S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.*

CIRCLE 321 ON INQUIRY CARD

Shown here are but a few of the many details of typical applications to be found in Revere's "Copper and Common Sense". . . a complete coverage of the use of sheet copper in building construction.

NOW— with the price of copper the lowest in years

You can't afford not to specify

SOLID REVERE COPPER

for all buildings

But the low price of copper is not the only factor. You also get these extra features with Revere Sheet Copper:

1—**SOLID COPPER** is flexible . . . readily formed to any desired shape.

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3—**SOLID COPPER** takes on a pleasing patina when aged.

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" . . . INSTALLATION TO BE MADE AS RECOMMENDED IN 'COPPER AND COMMON SENSE' "

Architects have found that not only does it pay to write Revere Copper into their building specifications, but to make doubly sure of trouble-free performance, many of them also include, "Installation to be made as recommended in 'Copper and Common Sense' by Revere." This "bible" of the building industry shows the tested and proved design principles and techniques of sheet metal construction.

COPY OF THIS 140-page Booklet (new 6th edition just out) and new "Copper Flashing" folder may be had by writing us on your firm's letterhead. Write: Dept. C-5, at address below.

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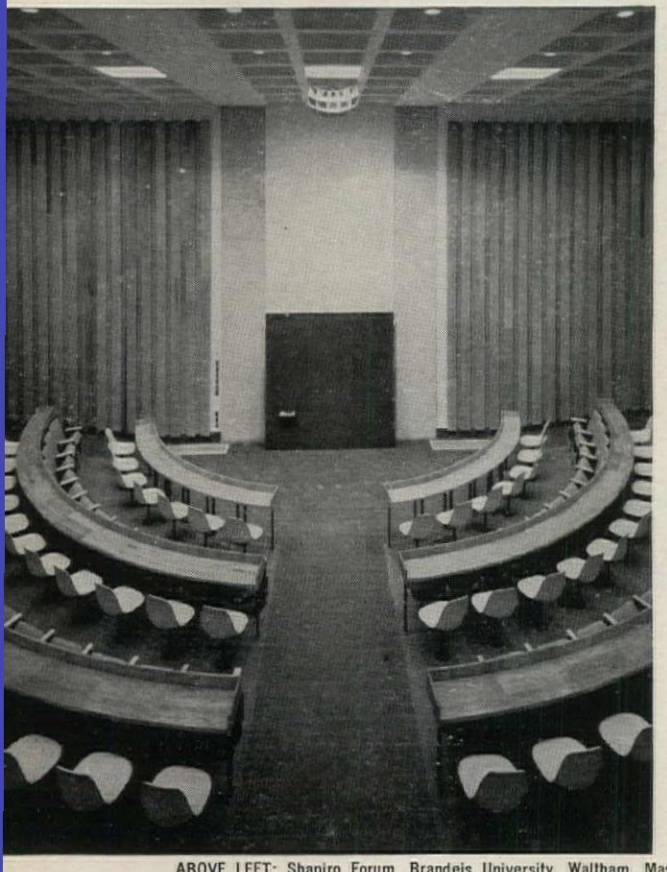
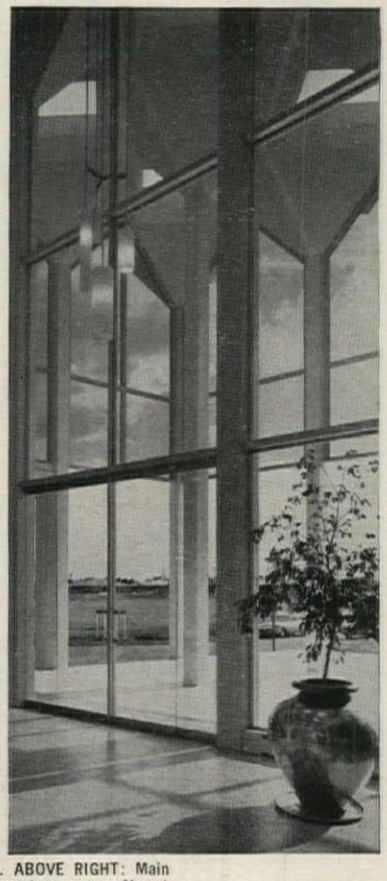
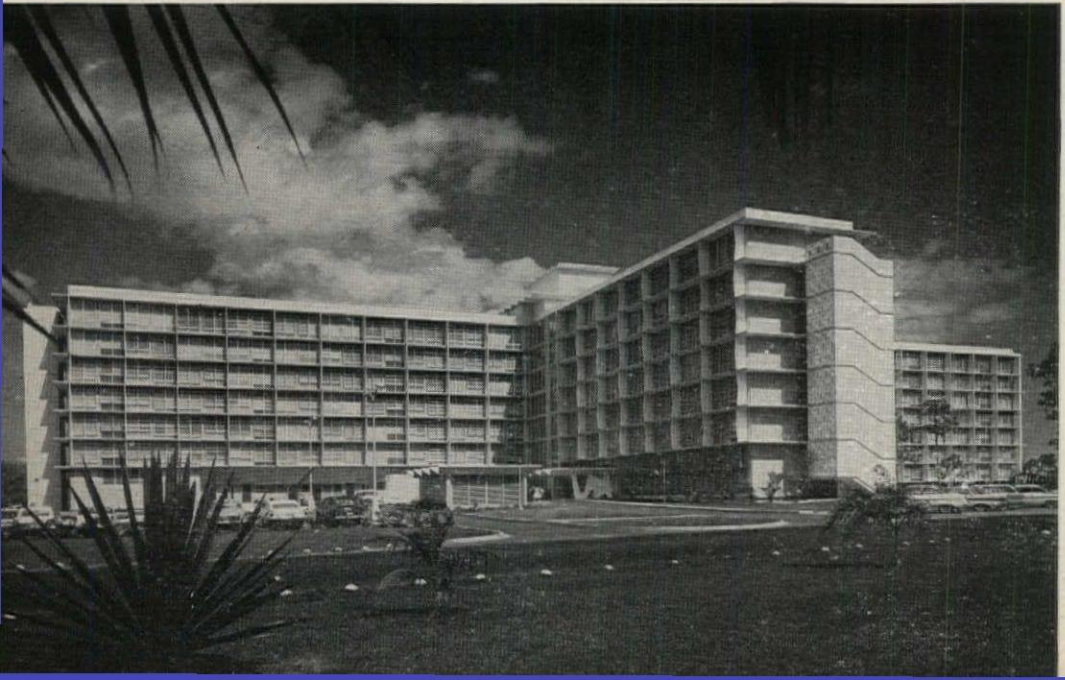
Harrelson Hall, North Carolina State College, Raleigh.





ABOVE LEFT: Shapiro Forum, Brandeis University, Waltham, Mass. ABOVE RIGHT: Main entrance, The Hockaday School, Dallas, Texas. BELOW: Student Dormitory, University of Miami.



On today's school jobs... the word for color is Devoe

It's no accident that some of the largest and most imposing schools and universities in the country proudly sport "school colors" in Devoe Paints.

For one reason, the architects who conceived these buildings know Devoe quality and performance. Equally important, they know the ability of the Man from Devoe to assist on the technical aspects of paint engineering . . . his ability to help assure the finishing touch that can make the building!

Architects and their color consultants, of course, start with a keen insight into the color harmonies as only they can see them. But here's where the Man from Devoe can come in. He'll help them achieve an exact color match from the Devoe Library of Colors® system, featuring over 1,000 colors ranging from the bold to the subtle. He can supply data on how interior or exterior paint will perform under varying circumstances. He can help them project costs of application and maintenance; even work out and supervise delivery schedules to the building site for maximum efficiency in paint application. (This is particularly important if construction is in another city several hundred miles away.)

Finally he can advise on special coatings for laboratories, gymnasium floors and other surfaces requiring exceptional protection from chemical elements, wear or other corrosive factors. It is the job of the Man from Devoe to serve the architects in his area . . . without cost or obligation. To find out about the infinite details the Man from Devoe can shoulder for you, call or write the Color Consultant Service of your nearest Devoe Office. Write us direct at Louisville, Ky., for a free "Rainbow Selection" of 300 colors from the Devoe Library of Colors. A real help when you're "doodling" with colors!

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For more data, circle 30 on Inquiry Card

Office Literature

continued from page 196

FIRE RATED CEILING GRID

(A.I.A. 39-B-1) Illustrated brochure gives details on two-component fire rated exposed steel grid for acoustical ceiling suspension systems. *Donn Products, Inc., 700 Bassett Rd., Westlake, Ohio.**

CIRCLE 416 ON INQUIRY CARD

DECORATIVE LIGHTS

(A.I.A. 31-F-23) The *Glowtex* line of modular lighting pendants for both residential and commercial use is illustrated in 20-page booklet. Ten colors, in 13 shapes, and 41 sizes are available. *Lightolier, 346 Claremont Ave., Jersey City 5, N. J.**

CIRCLE 417 ON INQUIRY CARD

ALUMINUM RAILING

(A.I.A. 14-D-2) Post bases and cinchrail aluminum railings are illustrated in 12-page booklet. Installation drawings are included. *Michel & Pfeffer Iron Works, Inc., 212 Shaw Rd., South San Francisco, Calif.**

CIRCLE 418 ON INQUIRY CARD

VERTICAL CONVEYORS

(A.I.A. 35-H-2) *Recordlift* vertical conveyors with magnetic memory control and interchange systems are described in Bulletin No. 152. *Standard Conveyor Co., North St. Paul 9, Minn.**

CIRCLE 419 ON INQUIRY CARD

PRECAST CONCRETE

Applications and advantages of precast concrete design are given in eight-page booklet. *Heikki K. Elo, Consulting Engineers, 711 Lehigh St., Easton, Pa.*

CIRCLE 420 ON INQUIRY CARD

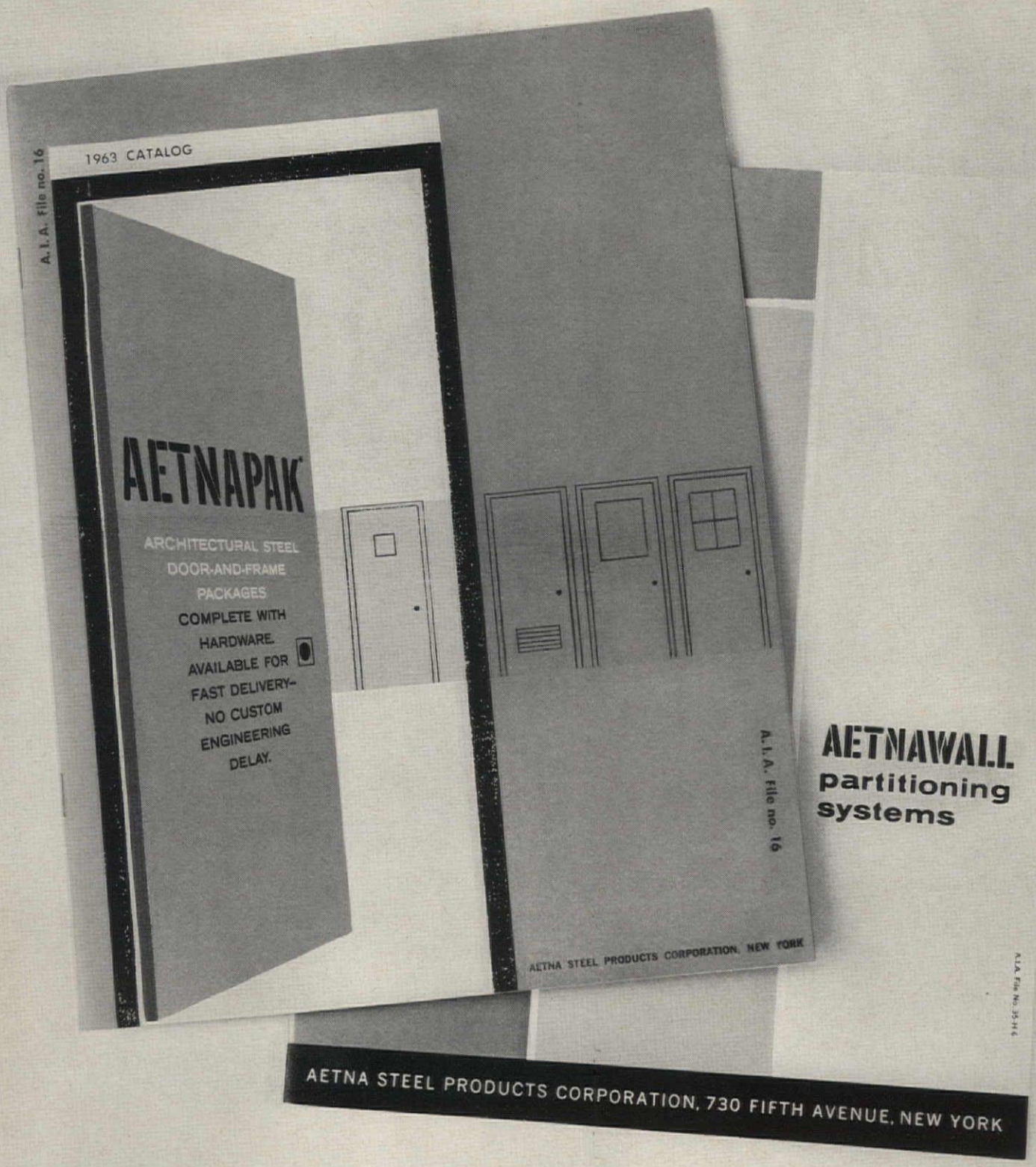
DRUG STORE LIGHTING

"Drug Store Lighting" is a 12-page, two-color booklet illustrating ways to light the various areas of drug stores. *Inquiry Bureau, General Electric Co., Nela Park, Cleveland 12, Ohio.*

CIRCLE 421 ON INQUIRY CARD

**Additional product information in Sweet's Architectural File*

more literature on page 230



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ETNAPAK®
itectural Steel
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Our insulation won't soak up a drop from inside.

Or out.

Roofmate FR stays dry permanently!

Not a drop of moisture can work up through Roofmate® FR roof insulation. Nor can outside water soak in and destroy the insulating efficiency of Roofmate FR. So it makes a premium-quality roof that costs your client no more to begin with, much less in the long run.

Each Roofmate FR polystyrene foam board is millions of non-interconnecting air cells. These give it a low "k" factor (0.26!), prevent moisture migration and water absorption.

No more wet, soggy insulation that fails its job. No more roof blistering and cracking caused by waterlogged insulation—not with permanently dry Roofmate FR.

Roofmate FR is easy and economical for any roofing contractor to install. It comes in thicknesses conforming to standard "C" factor requirements. Want more data and specifications? Just write us: The Dow Chemical Company, Plastics Sales Dept. 1000N2, Midland, Michigan.

DOW

For more data, circle 100 on Inquiry Card

Office Literature

continued from page 226

LITTLE THEATER DESIGN

"Little Theatres from Modest Spaces" is a 32-page reference manual based on the design practices of James Hull Miller, theater designer. Lighting and stagecraft details are included. *Hub Electric Co., Inc., 2255 W. Grand Ave., Chicago 12, Ill.*

CIRCLE 422 ON INQUIRY CARD

ALUMINUM WINDOW

Design data, mechanical factors, testing results and specifications for aluminum dual-glazed, horizontally pivoted window with Venetian blinds between panes are given in bulletin. *Amelco, 1676 Commerce Drive, Stow, Ohio*

CIRCLE 423 ON INQUIRY CARD

INSULATING GLASS

(A.I.A. 26-A) *Viking* dual-glazed insulating window is described in folder which includes specifications and technical data. *Peterson Window Corp., 700 Livernois, Ferndale, Mich.**

CIRCLE 424 ON INQUIRY CARD

FIRE DETECTION

Case histories of automatic fire detection and alarm systems feature schematic drawings, photographs and descriptions of a variety of buildings. *Notifier Corp., 3700 N. 56th St., Lincoln 4, Neb.**

CIRCLE 425 ON INQUIRY CARD

VAULTED ACOUSTIC PANELS

Brochure lists additions to the line of three-dimensional fiber glass acoustical panels. The new textured vault and inverted vault panels are painted white. *Johns-Manville, 22 E. 40th St., New York 16, N.Y.**

CIRCLE 426 ON INQUIRY CARD

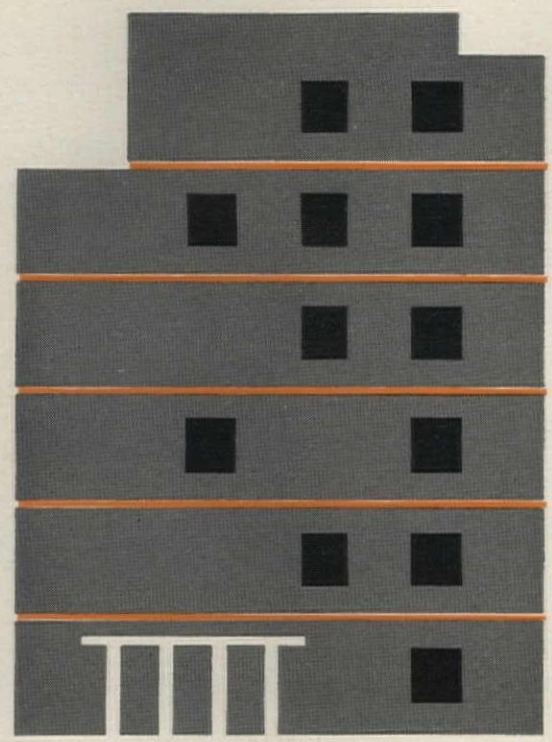
ENGINEERING MANUAL

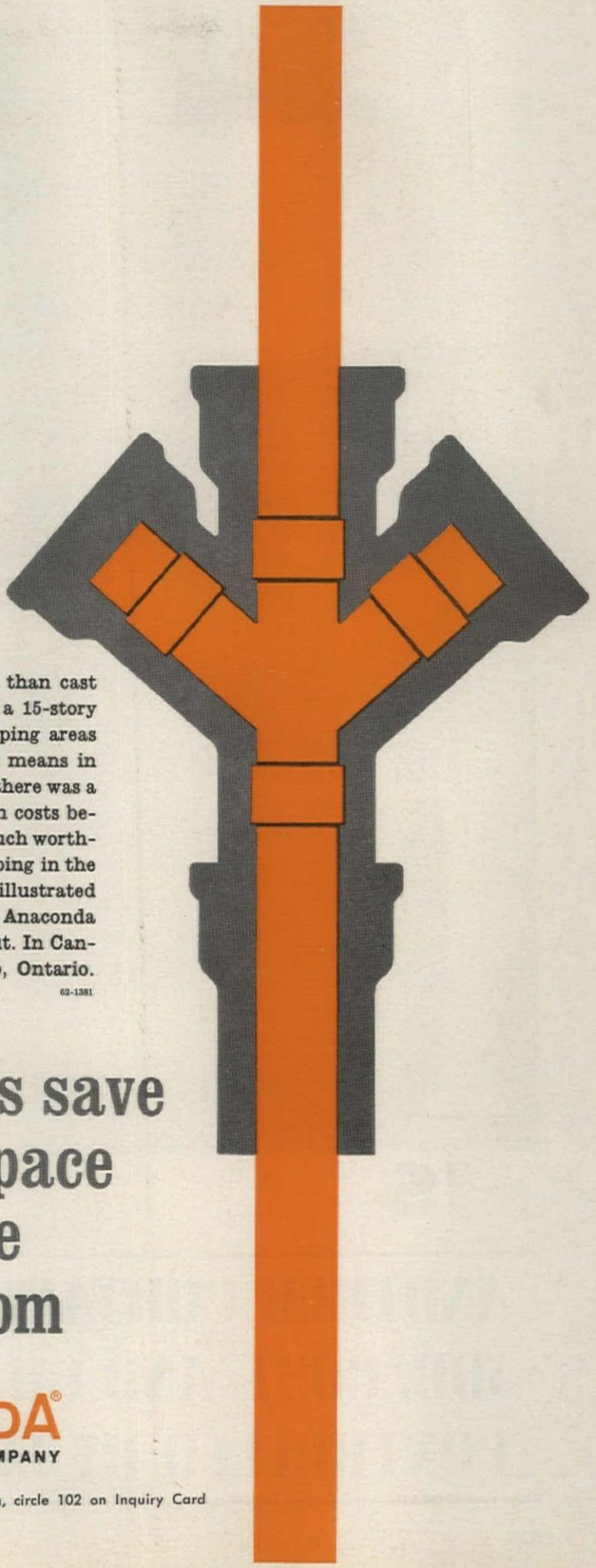
Manual gives engineering data on factory-built sewage lift stations and sewage treatment plants. *Smith & Loveless Div., Union Tank Car Co., P. O. Box 8884, Kansas City 15, Mo.*

CIRCLE 427 ON INQUIRY CARD

**Additional product information in Sweet's Architectural File*

more literature on page 234





Magic? No, copper piping! It installs in less space than cast iron. Specified for the sanitary drainage system in a 15-story hospital on the West Coast,* the space savings in piping areas amounted to 50,000 cubic feet. Think of what this means in reduction of all construction materials. In addition, there was a saving of approximately $40,000 in piping installation costs because copper handles easier, faster. You can pass on such worthwhile savings to your clients if you plan for copper piping in the blueprint stage. You're the key man. Send for illustrated brochure "Why It Pays to Specify Copper." Write Anaconda American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

62-1381

*Location and architects' names on request.

Hospital architects save 50,000 cu. ft. of space without losing one inch of usable room

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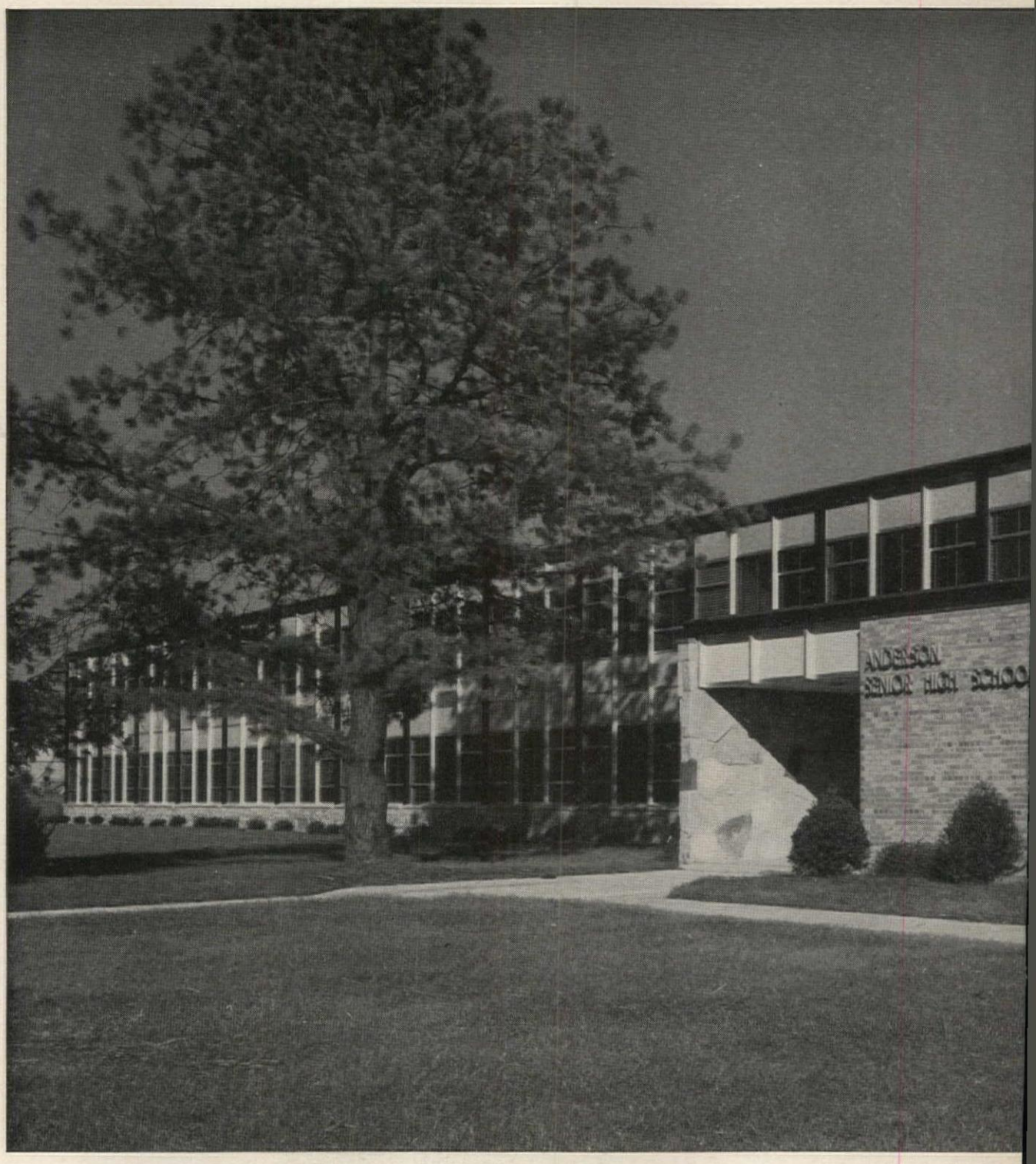

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Designed for imaginative use of colo
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form here a strikingly modern e
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new ideas for unique architectur
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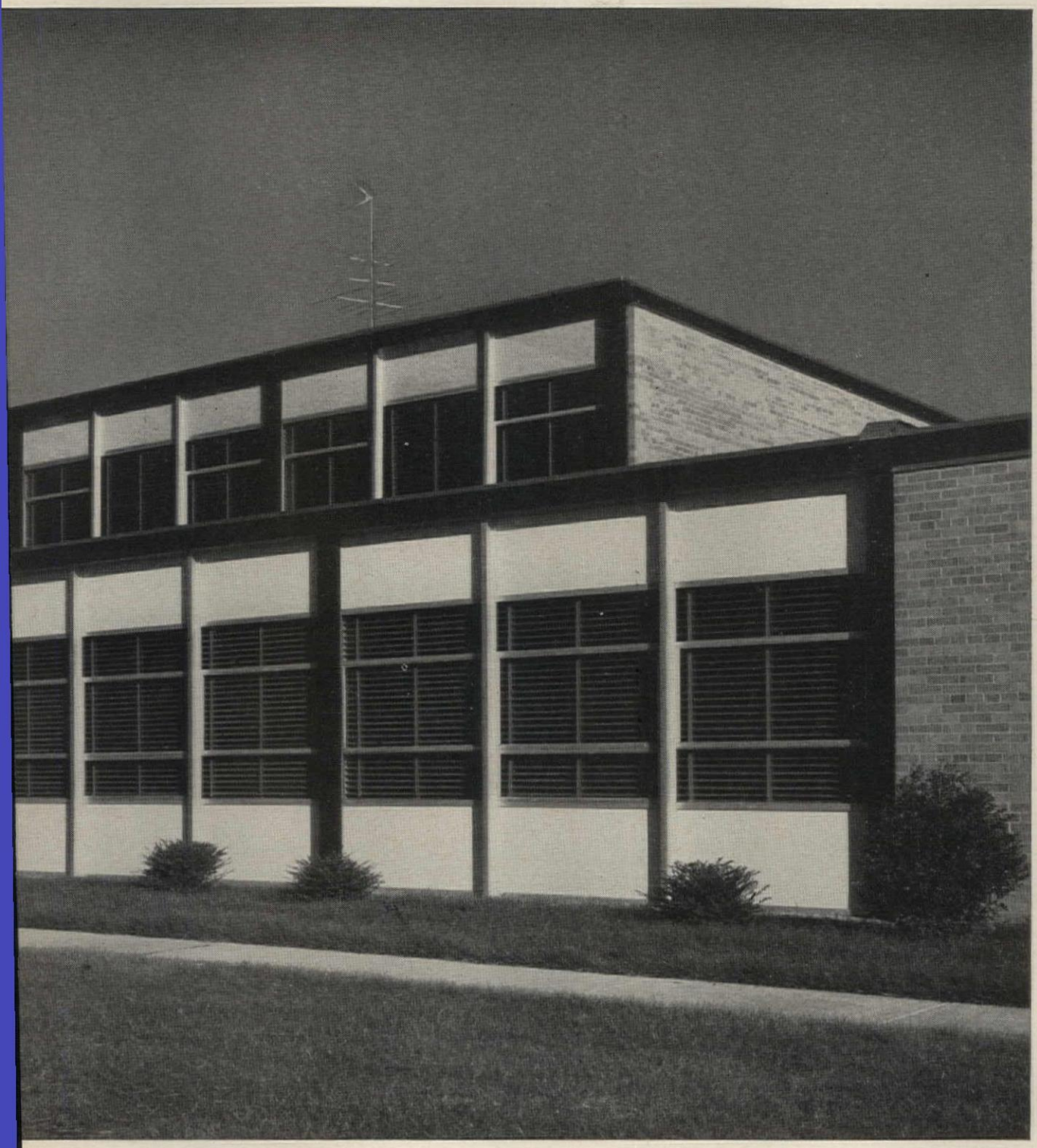

Anderson Senior High School, Forestville, Ohio; Architects: Garriot & Becker, Cincinnati, Ohio; Contractor: Knowlton Construction Co., Bellefontaine, Ohio.

r furnishing materials and direct-
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Include LUPTON aluminum curtain walls in your new school plans . . . there are so many good reasons to do so. For further LUPTON advantages, see SWEET's (sections 3 & 17) for our Curtain Wall and Window Catalogs. Talk with your local LUPTON man too . . . write us for details.

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For more data, circle 103 on Inquiry Card

Office Literature

continued from page 230

ACOUSTICAL CEILINGS

(A.I.A. 39-B) Illustrations and technical information on acoustical ceiling products, including woodfiber tile, mineral tile, *Pyro-Chem* noncombustible woodfiber tile and woodfiber roof deck, are given in 12-page catalog. *Simpson Timber Co., 2044 Washington Bldg., Seattle 1, Wash.**

CIRCLE 428 ON INQUIRY CARD

PIVOT WINDOWS

(A.I.A. 16-H) An eight-page, fold-out data sheet gives detailed section drawings and photographs of recent stainless steel pivot window installations in five buildings. *U. S. Steel Corp., 525 Wm. Penn Place, Pittsburgh 30, Pa.**

CIRCLE 429 ON INQUIRY CARD

LUMINOUS CEILINGS

Both floating and wall-to-wall luminous ceilings are described and illustrated in folder and data sheets. Heater panels and concealed ventilating fans are available. *Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis 36, Mo.*

CIRCLE 430 ON INQUIRY CARD

PRECAST CONCRETE

(A.I.A. 4-K) Detailed drawings show the use of precast concrete columns and beams and Flexicore precast concrete floor and roof slabs in the construction of an Ohio high school. *The Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio**

CIRCLE 431 ON INQUIRY CARD

BUSINESS FURNITURE

Furniture for business training classes is designed to simulate the actual conditions and postures to be encountered in the professional business world. Seating charts are included. *Cramer Posture Chair Co., Inc., 625 Adams St., Kansas City 5, Kan.*

CIRCLE 432 ON INQUIRY CARD

FLUORESCENT LIGHTING

Paralux fluorescent wall lighting fixtures are designed to blend with most commercial and residential applications. *Silvray Lighting, Inc., 100 W. Main St., Bound Brook, N.J.*

CIRCLE 433 ON INQUIRY CARD

FIRE DOORS

A detailed engineering manual has data and specification information on hollow metal doors and frames. Included are kalamein, fire, industrial and sound-insulating doors. Manual is printed on heavy stock and indexed for easy reference. *Pioneer Industries, 401 Washington Ave., Carlstadt, N.J.**

CIRCLE 434 ON INQUIRY CARD

PATTERNED GLASS

(A.I.A. 26-A-3-5-6) Catalog No. 63 has photographs, light distribution charts and transmission data for glass patterns available. Typical installations are shown. *Mississippi Glass Co., 88 Angelica St., St. Louis 7, Mo.**

CIRCLE 435 ON INQUIRY CARD

**Additional product information in Sweet's Architectural File*

Condensed from "Venturers of the Old Dominion," a 12-page case study of this daring new air-conditioned high school. Free copy on request.

SCHOOL COST DATA

Air Conditioning Case Study

KECOUGHTAN HIGH SCHOOL, HAMPTON, VIRGINIA

Near the site of the first free school in America — Hampton plans for an "adequate educational environment" in its new air-conditioned high school

● A spirit of enterprise such as possessed the early settlers of Virginia resides in the School Board of the City of Hampton.

There, in the oldest continuous English community in America, the city's third senior high school building is being erected. It is a space- and labor-saving structure with "windowless" but not entirely lightless classrooms, and with other well conceived features that make it a flexible laboratory for testing and developing the latest teaching methods: audio-visual instruction; educational television; language laboratories; programmed learning; team teaching; etc.

Kecoughtan High School (named after the original Indian village) will accommodate 1500 pupils. Its gross area is 178,000 sq. ft. The total building cost averages $11.56 per sq. ft.; $1,372 per pupil.

Because Hampton's climate imposes an overheating threat to classroom efficiency even during the nine-month school year—and with an eye toward future 12-month demands—the new school will have year-round air conditioning. The low-cost Nesbitt unit system was selected—at a total installed price of $2.36 per square foot of building.

Why not send for the complete cost study?

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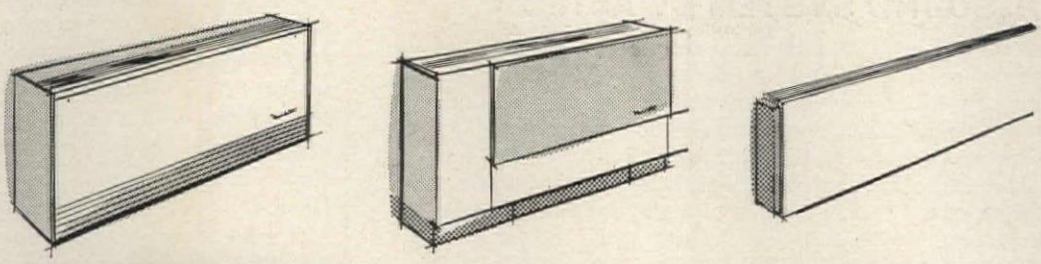
Norfolk, Virginia

Mechanical Engineer
M. J. Thompson, III
Newport News, Va.

General Contractor
Silas S. Kea & Sons
Ivor, Virginia

Mech. Contractor
Harris Heating & Plumbing Company
Richmond, Virginia

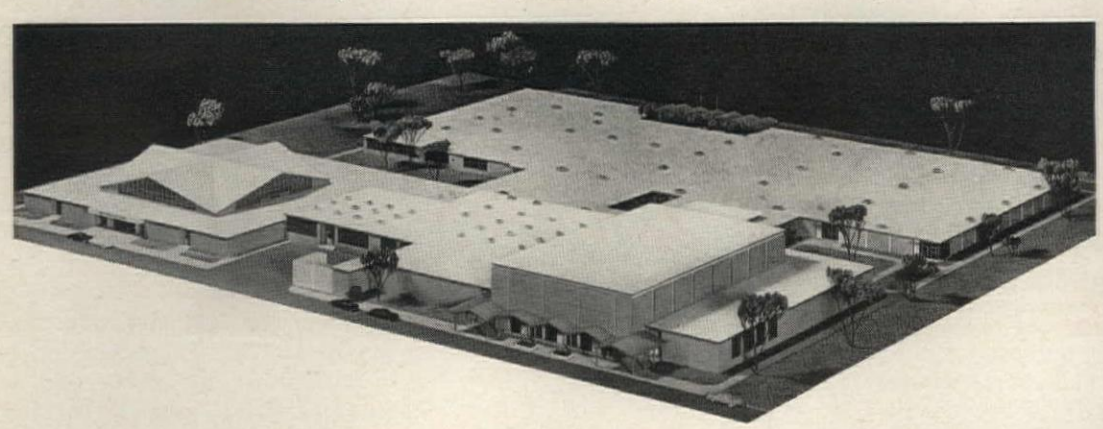


Nesbitt System of heating, ventilating and air conditioning at

$2.36

per square foot

Nesbitt Year-Round Syncretizers *will heat, ventilate and air condition the classrooms.*
Nesbitt Roommate II *air conditioners will be used in corridors, offices and similar spaces.*
Nesbitt Sill-line Radiation, *cabinet heaters, and large-capacity units are also provided.*



John J. Nesbitt, Inc., Philadelphia 36, Pa.
Offices in principal cities

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← For more data, circle 108 on Inquiry Card

For more data, circle 109 on Inquiry Card

HARVARD HAS SCHOLARSHIPS AVAILABLE

A number of scholarships and fellowships are available for architects in the Graduate School of Design, Harvard University for 1963-64:

Arthur W. Wheelwright Fellowship—$6,500 grant for travel and study abroad awarded annually to a graduate in architecture of the Graduate School of Design with professional experience and promise of high achievement. Nominations from the profession or eligible individuals are due no later than March 15

Walker Beale Scholarships—awards from $500 to $2,000 to "outstanding young men of great promise" who would otherwise be unable to attend the University

John Mead Howells Memorial Fellowship—awards from $1,000 to $2,000 to students in architecture

Edward H. Kendall Scholarships—$2,500 (may be divided in several awards) to graduates of approved schools of architecture who are candidates for the M. Arch. degree

Julia Armory Appleton Fellowship—$2,300 grant awarded annually to a Harvard graduate in architecture for travel and study abroad

University Scholarships—awards from $500 to $1,000 for students in architecture or landscape architecture

Uriel H. Crocker Scholarships—$2,900 award (which may be divided) for students in landscape architecture

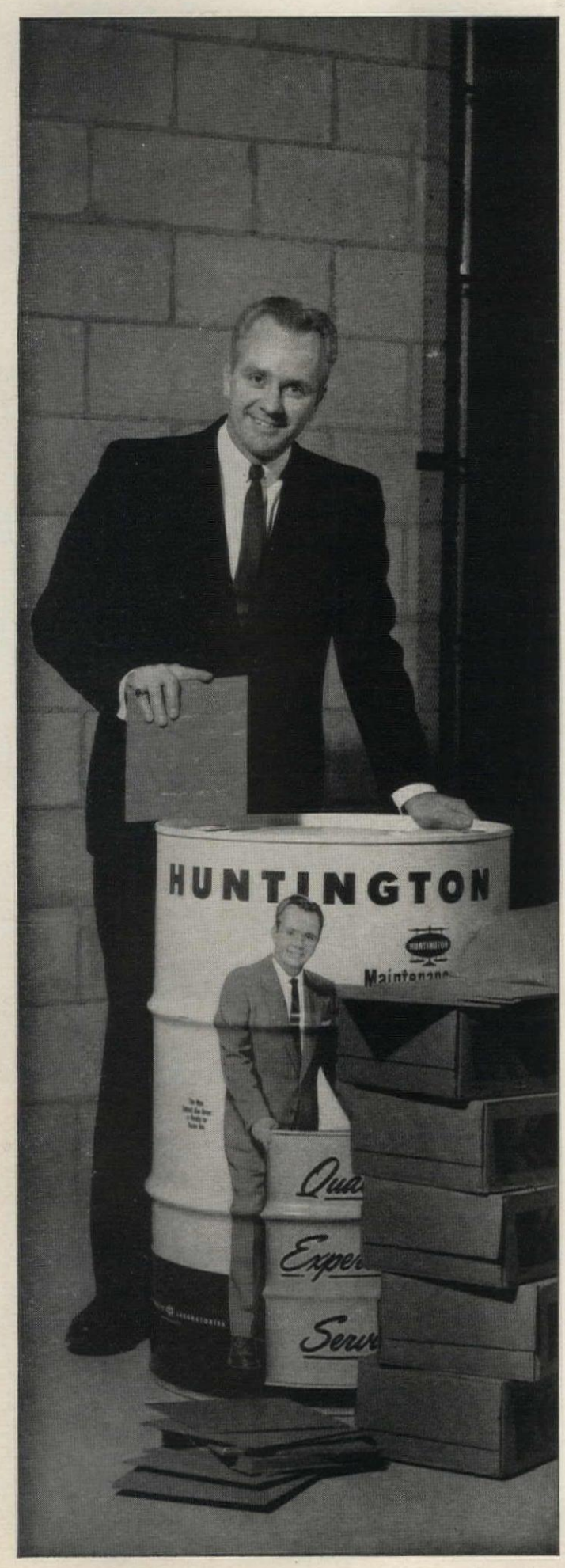
Francis Hathaway Cummings Scholarship—$600 for students in landscape architecture, graduates of Harvard College

Charles Eliot Travelling Fellowship—$3,000 award to a Master in Landscape Architecture of Harvard University for travel and study

Fabian Fall Memorial Scholarship—$700 for students in landscape architecture

Jacob Weidenman Prize—$2,900 award to a student enrolled in the Department of Landscape Architecture

Applications for scholarships must be received by February 15. For information and forms, write: Committee on Scholarships and Awards, Graduate School of Design, Robinson Hall, Harvard University, Cambridge 38, Mass.



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BARBER COLMAN

OVERdoor Division
BARBER-COLMAN COMPANY
Rockford, Illinois

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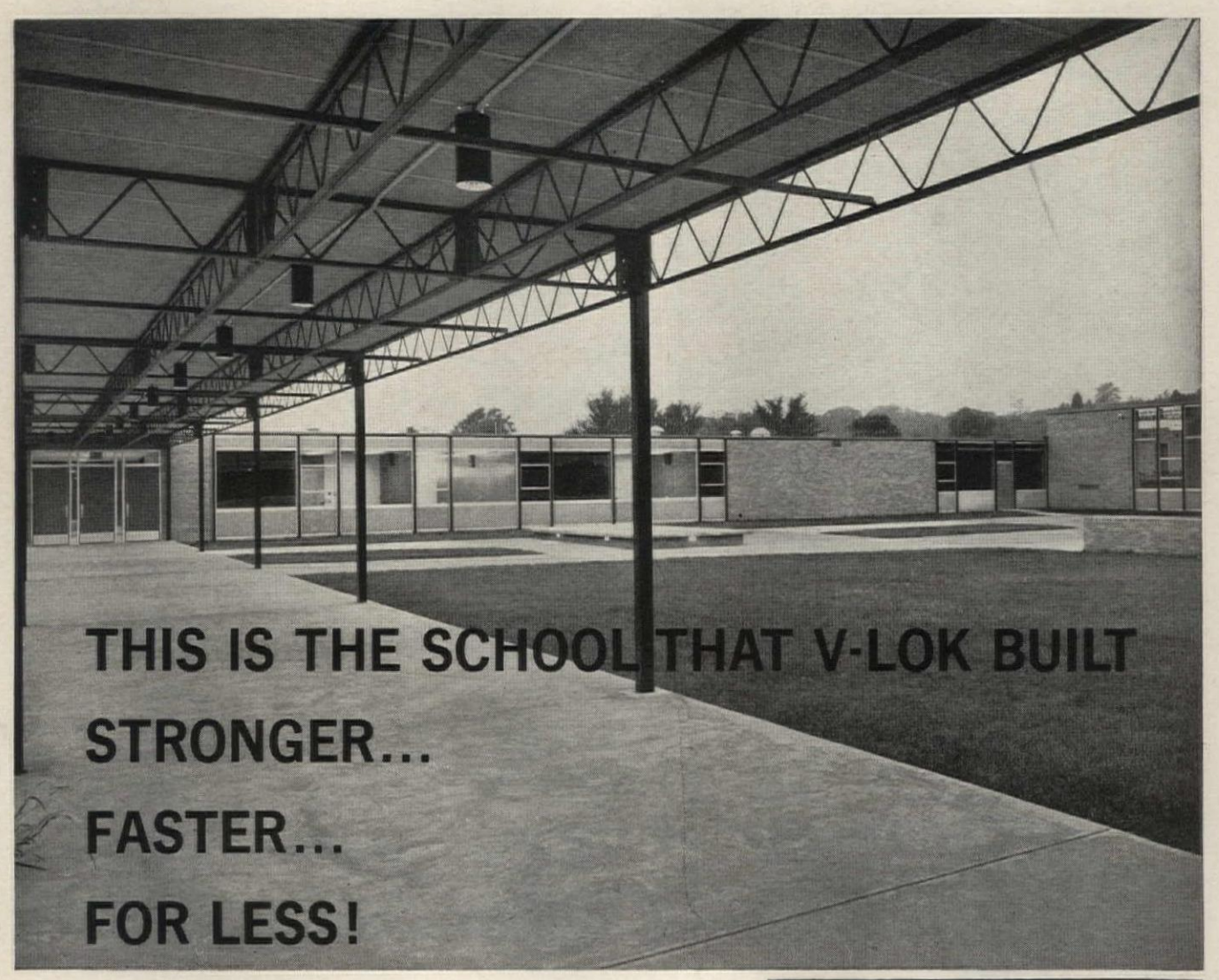

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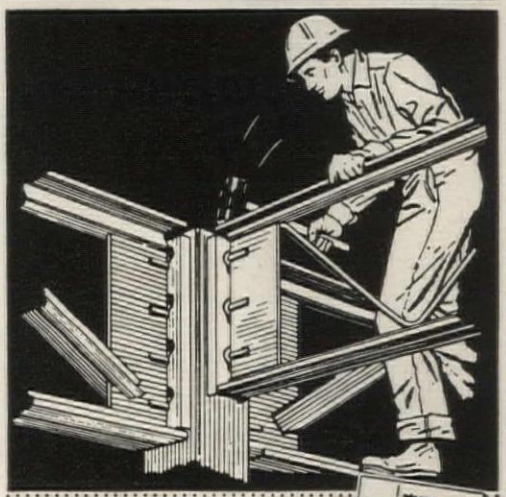

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You Can See Everything Except the Sprinklers with

LITECONTROL TEXTUR-GLO LOUVERS

There are no sprinklers apparent in the new showroom of Koerner Motors, Inc., Rochester, N.Y. They are above the Textur-Glo Vinyl Louvers of the Litecontrol Luminous Ceiling. Textur-Glo Louvers have been approved by the Underwriters' Laboratories for use under sprinklers without any limitation concerning spacing.

In this showroom the lightweight Textur-Glo Louvers give an average 200 footcandles in service, are low in brightness, light stable and provide 45° x 45° shielding. Light sources for the ceiling are Litecontrol No. 9818 HO-SC-High-Output (800 m.a.) single-lamp strip fixtures, mounted 16″ on centers.

Litecontrol can help you, too, with your lighting problems. Write for full information.

INSTALLATION: Koerner Motors, Inc., Rochester, N.Y.

AREA: Automobile Showroom

ARCHITECT: Cyril T. Tucker, Rochester, N.Y.

ELECTRICAL ENGINEER: Alexander A. Tseng, Rochester, N.Y.

ELECTRICAL CONTRACTOR: Horacek-Hayden, Inc., Rochester, N.Y.

DISTRIBUTOR: Rochester Electric Supply Co., Inc., Rochester, N.Y.

LITECONTROL DISTRICT SALES REPRESENTATIVE: James T. Crawford, 42 East Cavalier Road, Scottsville, N.Y.

LIGHTING SYSTEM: Litecontrol Luminous Ceiling using TEXTUR-GLO Vinyl Louvers, 2′ x 4′. No. 9818 HO-SC High-Output (800 m.a.) single-lamp strip fixtures 16″ on centers.

INTENSITY: Average, 200 footcandles in service.

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LIGHTING

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36 Pleasant Street, Watertown 72, Massachusetts

DESIGNERS AND MANUFACTURERS OF FLUORESCENT LIGHTING EQUIPMENT DISTRIBUTED ONLY THROUGH ACCREDITED WHOLESALERS

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ARCHITECTS IN THE NEWS: KLING, OBATA AND KUMP HONORED

Vincent G. Kling, F.A.I.A., of Philadelphia has won the Gold Medal of the Philadelphia Chapter, American Institute of Architects, for the outstanding building of 1962—the American Cyanamid Company's newly completed office headquarters at Wayne Township, N.J. (January 1963, page 14.) Jury members Lawrence B. Anderson of Boston, William J. Conklin and Sidney L. Katz of New York City made the selection from more than 70 buildings and designs at the annual exhibition of works by Philadelphia architects.

Gyo Obata of Hellmuth, Obata & Kassabaum, St. Louis, New York, Washington and San Francisco, has been named to the Academy of Achievement's Salute to Excellence, held in San Diego, Calif., Dec. 27-30. The citation calls special attention to his award-winning design of the recently consecrated Benedictine Church of the Priory of St. Mary and St. Louis in Creve Coeur, Mo. Architects previously honored by the Academy include Edward D. Stone and Louis I. Kahn.

Ernest J. Kump of Ernest J. Kump and Masten & Hurd, Palo Alto, Calif., has been named recipient of the first American Lumber Industry Award for wood design. The award was made by the National Lumber Manufacturers Association during its 1962 annual meeting in Miami Beach. Calling his work a reflection of "the finest ideals of architecture in wood structure design serving the esthetic, environmental and practical needs of the community and client, while fulfilling his own creative vision," the award was based primarily on architect Kump's design of the 39 structures comprising Foothill College, Los Altos, Calif. The buildings won the First Honor Award of the American Institute of Architects in 1962. (March 1962, page 14.)

Victor Gruen, senior partner in Victor Gruen Associates, New York, Chicago and Los Angeles, and **L. Verne Lacy,** senior partner in Lacy, Atherton & Davis, Wilkesbarre, Pa., have been appointed to the National Panel of Arbitrators of the American Arbitration Association. The nonprofit membership organization was founded in 1926 and is devoted to advancing the knowledge and use of voluntary arbitration. It maintains a National Panel of Arbitrators consisting of over 14,000 experts in all professions and trades to service labor-management, commercial and international trade disputes.

BUILDING PRODUCTS NEWS from Dow Corning

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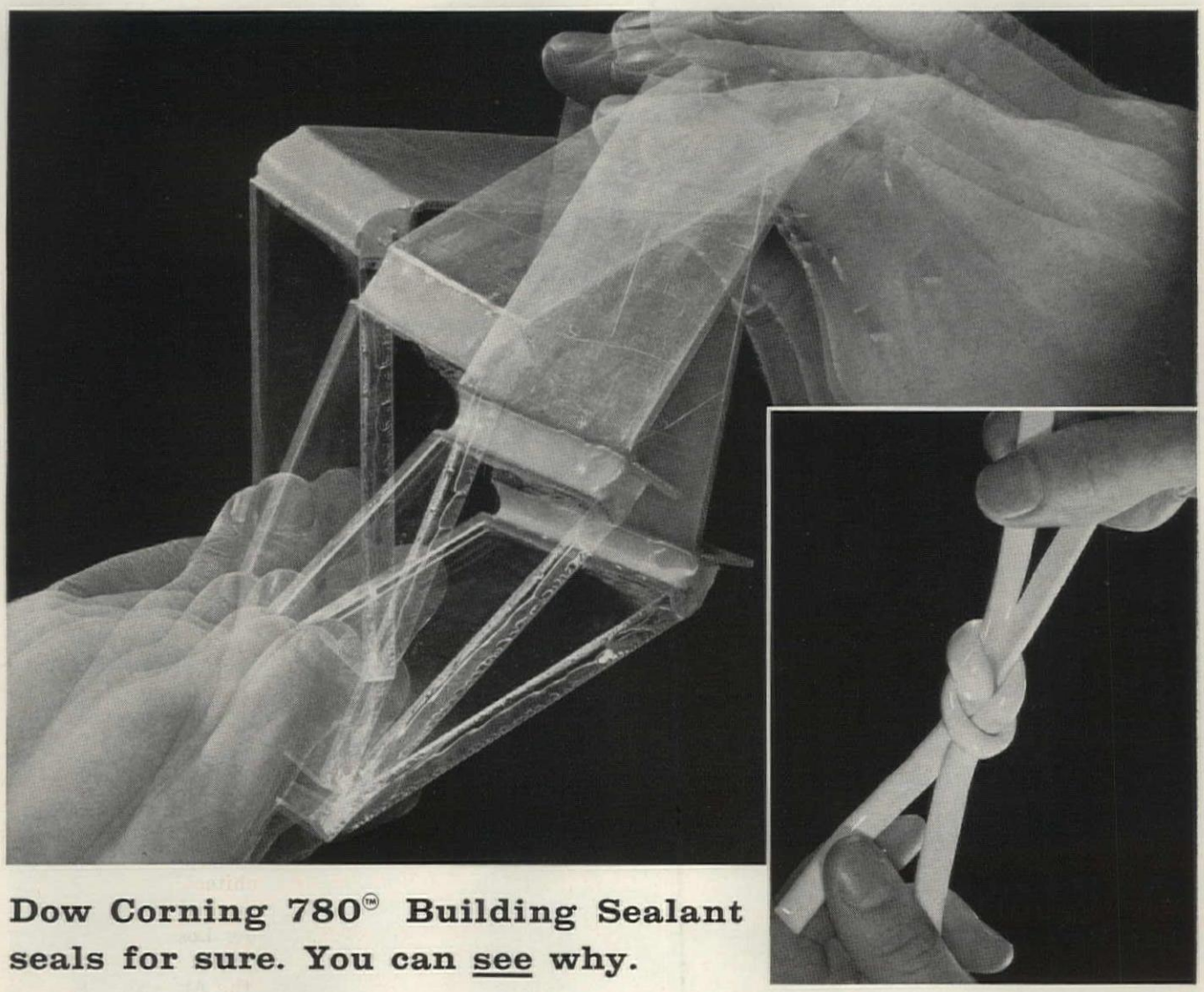

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No other building sealant approaches *silicone rubber* for retention of *flexibility and adhesion.* That's the basic reason 780 Building Sealant *permanently seals* any combination of structural materials under temperature conditions ranging from —80 to 350 F. Note glass to aluminum bond above.

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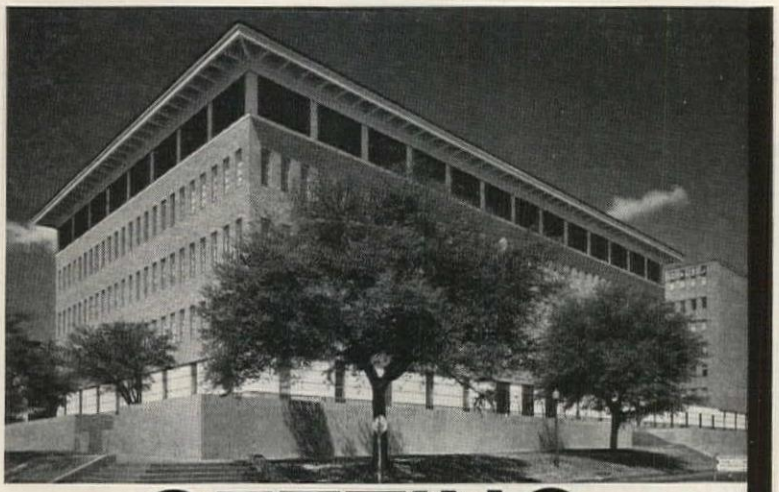
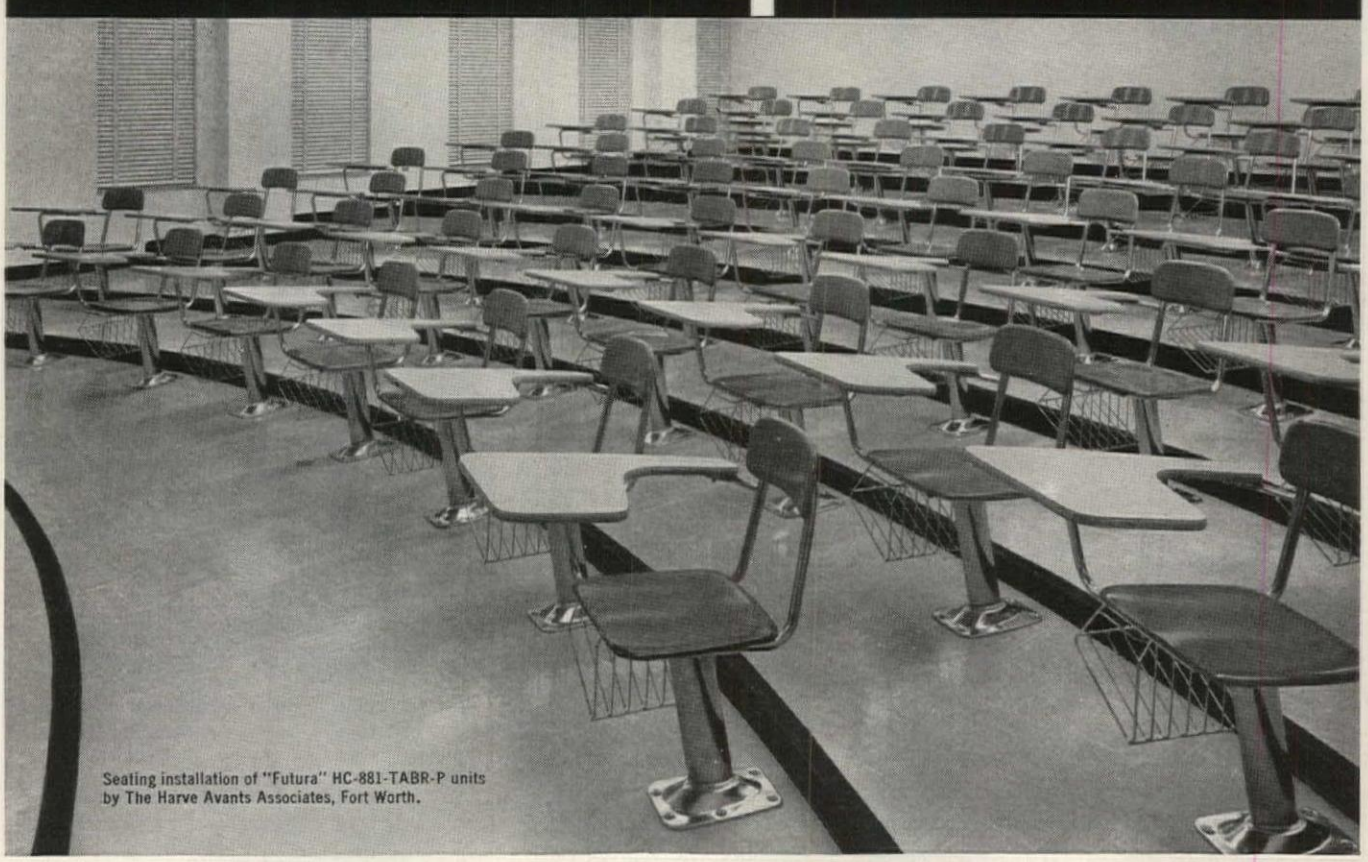
Architects: Page, Southerland & Page



"Futura" HC-880-TA-PP chair with seat, back, and tablet arm of **HEYWOODITE** high-density, thermo-setting, solid plastic. Also available with optional formed steel rod book rack.

SETTING: UNIVERSITY OF TEXAS

SEATING: HEYWOOD-WAKEFIELD



Seating installation of "Futura" HC-881-TABR-P units by The Harve Avants Associates, Fort Worth.

The architects certainly used a futuristic viewpoint in designing this new Business Administration and Economics Building. Instead of having faculty offices tucked in among the classrooms, they are completely separated by dual unit construction. Escalators between floors prevent Texas-size traffic jams when some 3200 students change classes. And in seating, too, you'll find practical innovation with more than 1500 new Heywood-Wakefield "Futura" units installed.

These ruggedly-built "Futura" units are particularly well-suited to college use. They feature seats and backs of **HEYWOODITE**®, the solid plastic that won't stain, won't burn, won't break. Roomy seats and large tablet arms offer maximum comfort and convenience. Clean-cut appearance harmonizes with the functional design of the classrooms to achieve a most productive study environment.

The "Futura" seating unit chosen by University of Texas officials is just one of the "Futura" models in the Heywood-Wakefield line of classroom seating equipment. For complete information on the comfort, economy, and styling of our many varieties of school furniture, see section $\frac{36d}{He}$ Sweet's Catalog; or write now for our complete portfolio.

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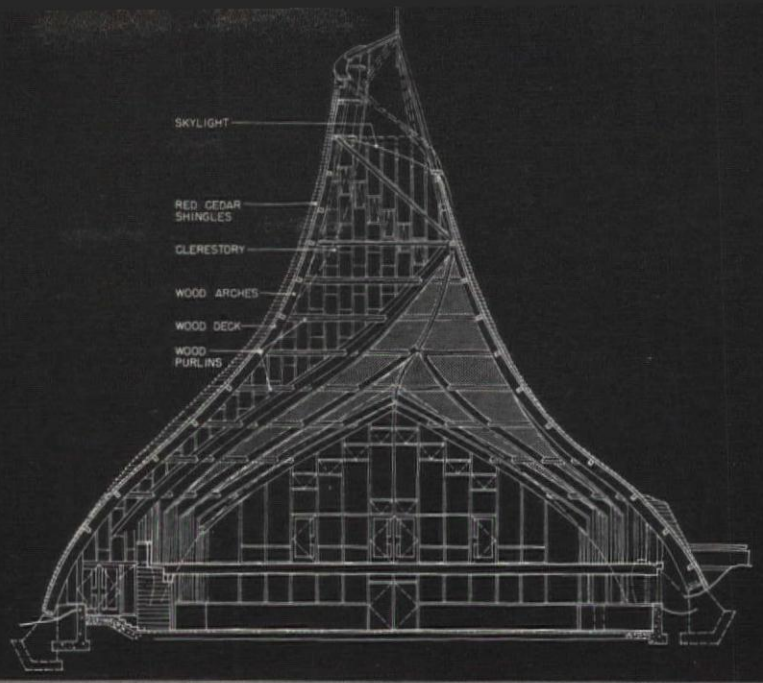

United Church of Rowayton, Conn. / Joseph Salerno, Architect

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The visible qualities of Red Cedar Shingles – texture, color, dimension – are only part of the story on this rugged material. Cedar shingles actually add strength rather than dead weight. Durable, light weight, storm and wind resistant, such a roof is virtually maintenance free and gains beauty with the years. For information about specifications and application, write: Red Cedar Shingle Bureau, 5510 White Building, Seattle 1, Washington. (In Canada: 550 Burrard St., Vancouver 1, B.C.) **RED CEDAR SHINGLES**

For more data, circle 119 on Inquiry Card

ENGINEERING NEWS: EDUCATOR AWARDS, I.E.S. AND A.S.H.R.A. HONORS

Dr. Harold Locke Hazen, dean of the graduate school at Massachusetts Institute of Technology, has received the Lamme Gold Medal for distinguished achievements in engineering teaching, research and administration. This is one of four of the nation's highest awards for engineering educators given in 1962. The George Westinghouse Award of $1,000 for outstanding contributions to teaching by a young faculty member was presented to **Dr. Paul M. Naghdi,** professor of engineering science, department of mechanical engineering, University of California. **Dr. Roy Bainer,** associate dean of the College of Engineering, University of California, was given the Vincent Bendix Award for outstanding research contributions by an engineering educator. **Dr. Michel Boudart,** professor of chemical engineering, University of California, received the $1,000 Curtis W. McGraw Research Award recognizing outstanding achievement by a young engineering teacher.

Eugene H. Rietzke, founder of the Capitol Radio Engineering Institute, has been honored by the nation's technical institutes. He received the James H. McGraw Award for outstanding contributions to technical institute education. The award is administered by the Technical Institute Division of the American Society for Engineering Education and is sponsored by the McGraw-Hill Book Company, Inc.

Dr. Samuel G. Hibben, former director of applied lighting for Westinghouse Lamp Division and past president of the Illuminating Engineering Society, has received one of the highest honors of the lighting profession, the I.E.S. Gold Medal Award. The award recognizes "meritorious achievement which has conspicuously furthered the profession, art or knowledge of illuminating engineering." Dr. Hibben is credited with the design of the first acceptable series of semi-indirect units for interior lighting and has pioneered in the development of specialized lamps for deep-sea divers and submarines and in the application of black light to research on plant growth, insect control, detection of infected teeth and use of ultra violet light for air purification and tissue sterilization. Among his lighting installations are flood-lighting of the Statue of Liberty, Washington Monument and the Holland Tunnel.

Carlyle M. Ashley, chief staff engineer of Carrier Corporation, Syracuse, N.Y., is the recipient of the F. Paul Anderson Medal, highest honor of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, for his "important contributions" to the profession.

SMOOTH GREEN

SMOOTH CORAL

SMOOTH GRAY

WEATHERED GREEN

SMOOTH BUFF

WEATHERED RED

WEATHERED BLACK

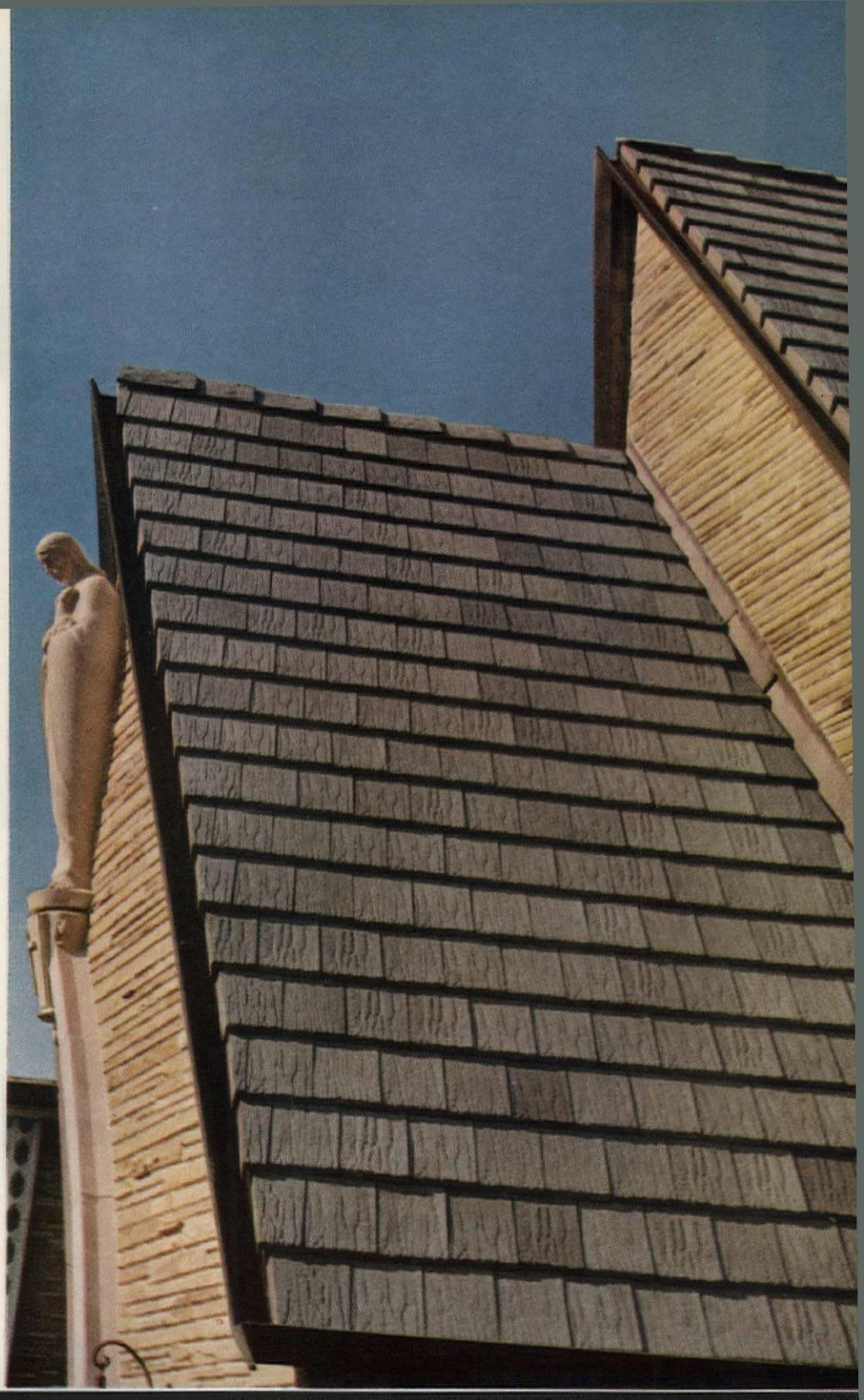
WEATHERED BROWN

SMOOTH WHITE

BLUE GLAZE ON DESIGNER PATTERN

YELLOW GLAZE ON SPANISH PATTERN

GREEN GLAZE ON DESIGNER PATTERN



Rowsey Memorial Chapel, Muskogee, Oklahoma—Archts.: Bennett & Crittenden, Dallas, Texas—Tile by Ludowici: Early American Gray Range

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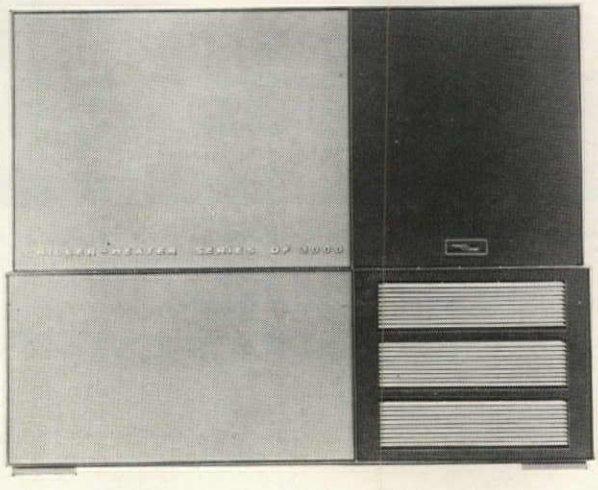
For more data, circle 121 on Inquiry Card

SEE SWEET'S FILE NO. 8f/Lu

A.I.A. FILE 12-E

The Courtland Medical Center, Milwaukee, Wisconsin • Architects: Maynard W. Meyer Associates • Mechanical Engineers: Ring and DuChateau

Medical Center heated by Gas...



Medical Center cooled by Gas!

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ELECTIONS AND APPOINTMENTS

John H. Fox, vice president of Honeywell Controls, Ltd., Toronto, is president of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. He succeeded **John Everetts Jr.** of Philadelphia. **Frank H. Faust,** General Electric Company, Tyler, Tex., is first vice president; **John E. Dube,** president of Alco Valve Company, St. Louis, is second vice president. Treasurer is **James W. May,** American Air Filter Company, Louisville.

William E. Bergman has been elected president of the New Orleans Chapter, American Institute of Architects. Other officers are: **Sidney J. Folse Jr.,** vice president; **H. M. Favrot Jr.,** secretary; **Phares A. Frantz,** treasurer; and **Stella Faget,** executive secretary. Elected to a three-year term on the executive committee is **Lemuel W. McCoy. Carl L. Olschner, August Perez III** and **Frederick V. von Osthoff** have been elected to a two-year term on the board of governors of the Louisiana Architects Association.

James Bennett Hughes has been appointed executive director of the Detroit Chapter, American Institute of Architects, Michigan Society of Architects and the Michigan Architectural Foundation.

Dr. Eric A. Walker, electrical engineer and president of Pennsylvania State University, has been re-elected president of Engineers Joint Council for 1963. **Louis R. Howson,** senior partner in Alvord, Burdick and Howson, Chicago, has been re-elected vice president. For the first time two additional vice presidents were elected: **Warren H. Chase,** vice-president, Ohio Bell Telephone Company; and **Rolland S. Stover,** president, R. S. Stover Company, Marshalltown, Iowa and Omaha, Neb.; **E. Lawrence Chandler** and **Leroy K. Wheelock** were named treasurer and secretary.

S. Elmer Chambers, past director of the Syracuse Society of Architects, has been elected president of the New York State Association of Architects. **Simeon Heller** of Flushing, L.I., **Allen Macomber** of Rochester and **Millard Whiteside** of White Plains were elected vice presidents. **Roger Sprоss,** New York, is secretary; **George J. Cavalieri,** treasurer.

Daniel F. Giroux, partner in Todd & Giroux Architects, is president of the Rochester Society of Architects, A.I.A. He succeeds **G. Carroll Madden.** Other officers are: **John G. Low,** first vice president; **Donald Walzer,** second vice president; **Ronald E. Sattelburg,** secretary; and **Paul Fox,** treasurer. **Carl F. W. Kaelber Jr.** is a member of the New York Council of the A.I.A. Directors are **Mrs. Florence E. Bishop, Michael Doran, Ronald Sattelburg.**

U. S. Courthouse and Federal Office Building, San Francisco, California. Architects and Engineers: Blanchard & Maher; Albert F. Roller; Sone Marraccini & Patterson; John Carl Warnecke. Contractors: (Joint Venturers) Roscoe-Ajax Construction Company, Inc., and Knickerbocker Construction Corporation.

25

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VERMONT BARNS REDESIGNED AS ART CENTER AND INN

Four white barns with hip form roofs, a group of red barns and a 150-year-old farmhouse have been renovated to comprise a new center for the fine and performing arts called The Silos, located on a 250-acre property in Wilmington, Vt. Opened this past summer, the art center, a year-round inn and colony where exhibits and performances coexist with seminar-learning groups, began to take shape in late 1961 when its founder Jacob Lippman had architect Herbert Vise of Cambridge, Mass., develop the renovation plan.

The largest barn, 160 by 40 feet, has two stories, the upper being used as an auditorium for musical performances, lectures, movies. The auditorium, whose natural acoustics are excellent, seats 900. The lower floor contains an art gallery and eight bedrooms, each with a private bath.

Three smaller barns each house four bedrooms and a living room. Upper rooms are opened through floor-to-ceiling glass under the gable ends, exposing the structure on the outside. Gable rafters are expressed and painted white, with rough-textured cork insulation between. Ground floor bedrooms re-use the barns' birch stalls on the walls.

The red barn group will eventually be a permanent headquarters for studios of photography, painting and sculpture.

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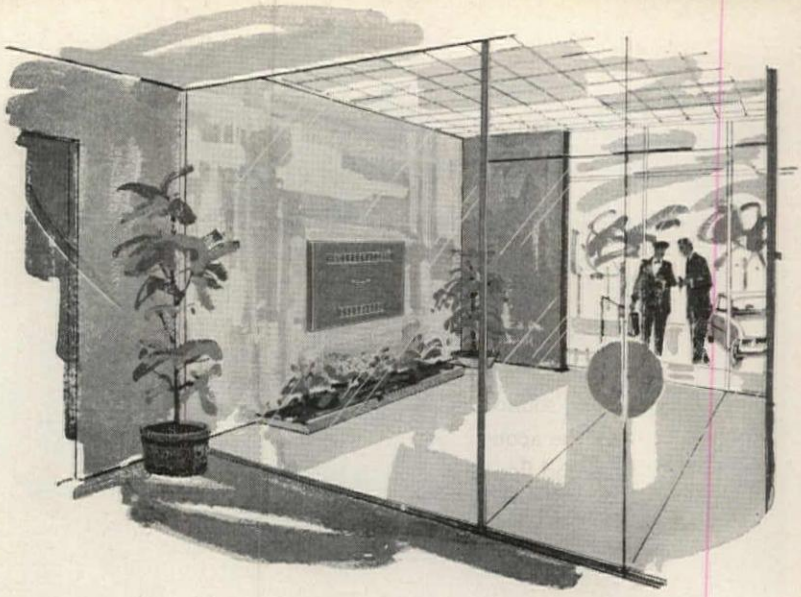

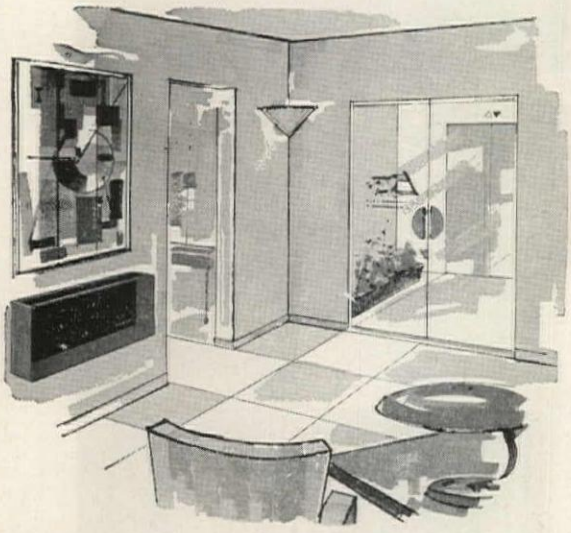

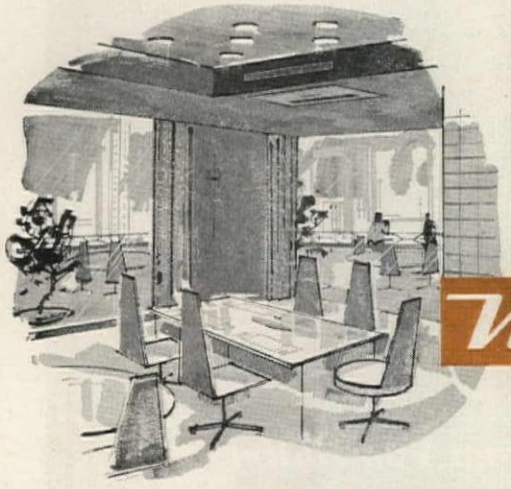

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Clopay engineers determined that a folding closure, to achieve maximum sound control, must be scientifically coordinated with the acoustical properties of the surrounding walls, ceilings and floors.

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There's a Clopay folding door to fit every architectural and sound controlling requirement, from the industry's finest, Monarch Acoustifold 1242, to the highly crafted Imperial Acoustifold 833. Clopay Acoustifold folding doors have been sound tested and rated with nine frequency tests by the latest Sound Transmission Class (STC) method based on specification ASTM E 90-61T and the previous specification ASTM E90-55.

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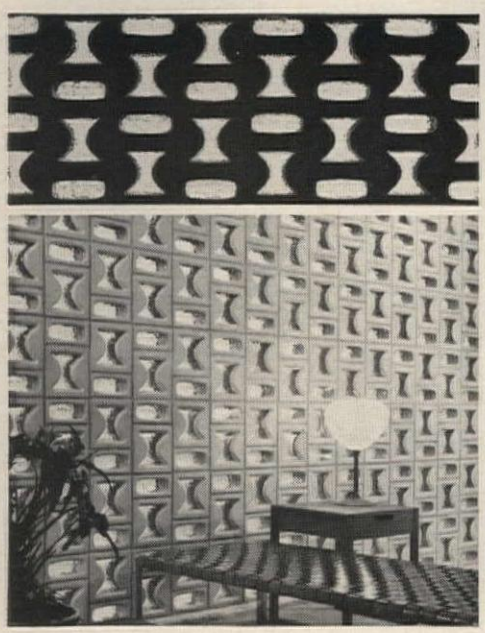

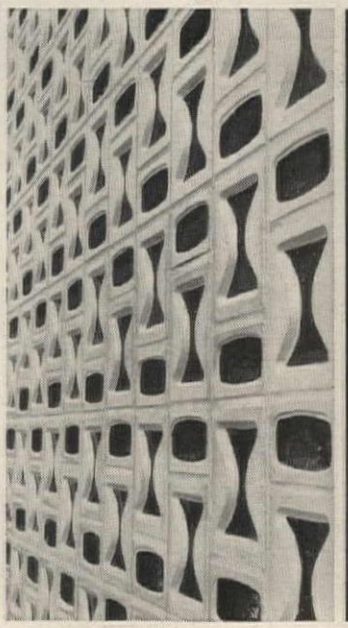

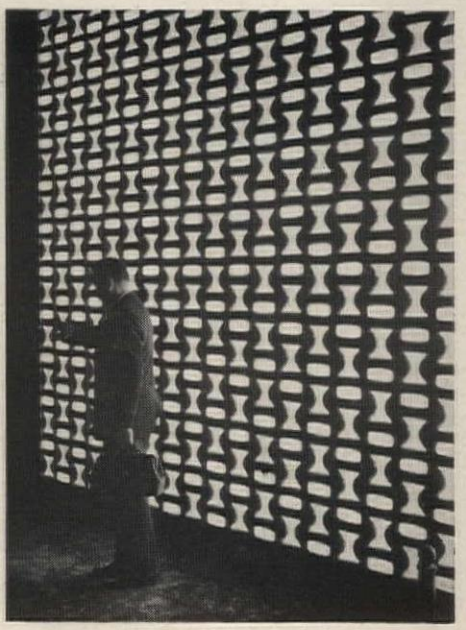

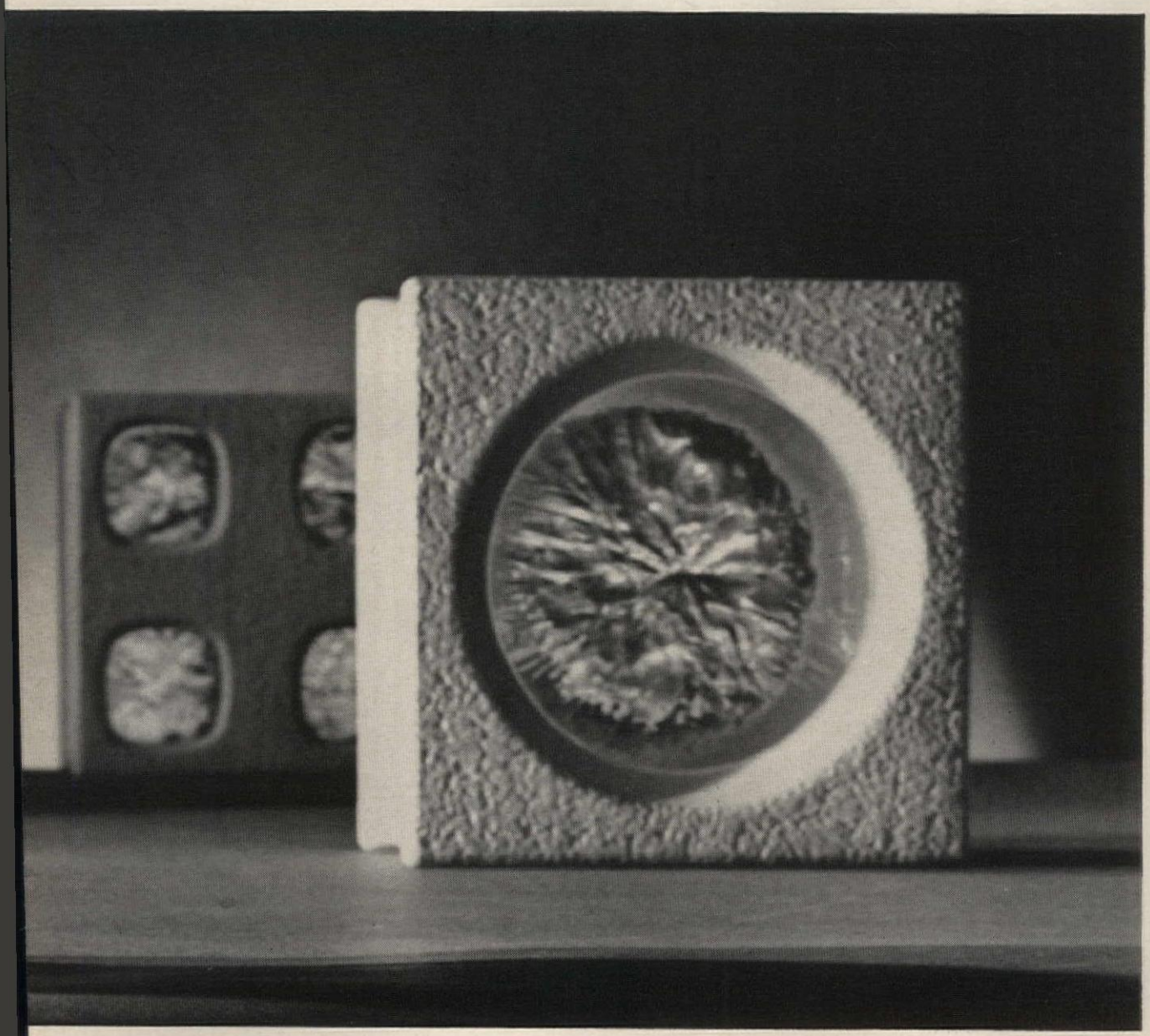

For more data, circle 133 on Inquiry Card

OKLAHOMA STATE, CLEMSON INITIATE NEW PROGRAMS

Two new programs have been initiated at Oklahoma State University —a graduate program in the bio-engineering aspects of water supply and pollution control engineering and an undergraduate and graduate program in construction engineering.

The bio-engineering program, which accepts both pre- and post-masters students, offers new courses in bio-engineering, courses in sanitary engineering, with electives in chemical engineering, organic and physical chemistry, biochemistry and micro-biology. The program aims at producing high-level research personnel and features a close research association between student and professor. Director of the program is Professor Anthony F. Gaudy Jr. in association with Professor Stanley E. Burrous.

The construction engineering program, initiated by an industrial grant to the University by A. Kavanaugh, president, Metropolitan Paving Company, Oklahoma City, is divided into undergraduate, graduate, research and extension curricula. Degrees granted will be Bachelor of Science in Civil Engineering, major construction engineering, Master of Science degree in Construction Engineering and Doctor of Philosophy in Construction Engineering. Professor R. L. Peurifoy, director of the program, is assisted by five members of the civil engineering faculty. Cooperating are faculty members of the School of Industrial Engineering, Business College, Economics School.

For information on the programs, data on scholarships, fellowships and assistantships, write Professor Jan J. Tuma, School of Civil Engineering, Oklahome State University, Stillwater, Okla.

The School of Architecture, Clemson College, Clemson, S.C., has added to its programs in architecture and in fine arts a new program in building construction. The five-year curriculum will lead to a Bachelor of Building Construction, effective in the 1962-63 academic year.

Endorsed and supported by the Clemson Architectural Foundation and the Carolinas Branch of the Association of General Contractors, the program requires the graduate to complete 180 credits: 67 in humanities; 33 in business and management; 58 in construction taught in the School of Architecture; and 22 in engineering and applied technology.

On the establishment of the new program, Dean Harlan E. McClure said, "Many problems now existing on the current construction scene could be obviated if this type of professional collaboration between architects and constructors were practiced on an educational level."

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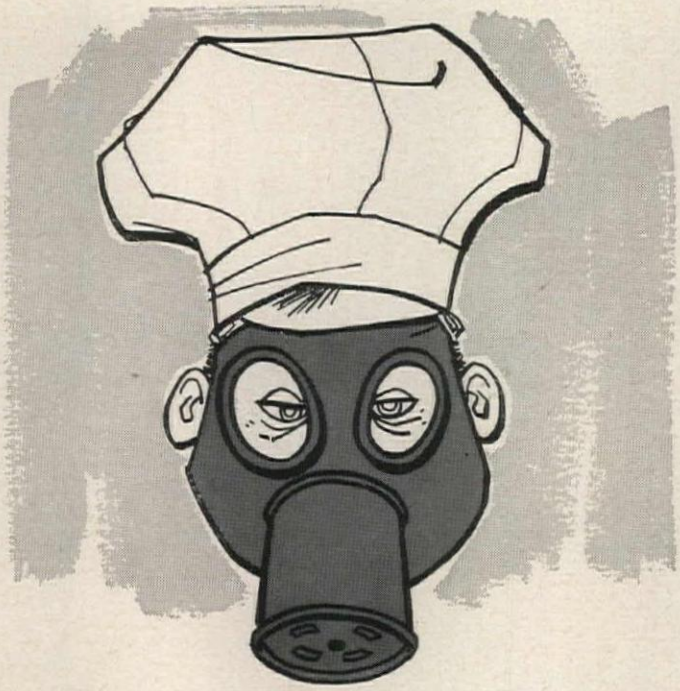

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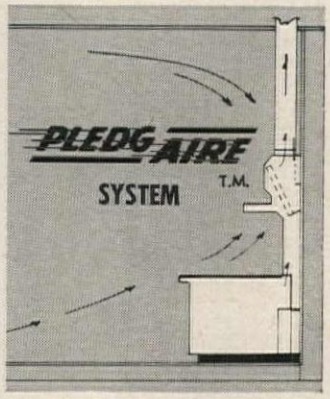

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On the Calendar

February

5-6 18th annual conference and exhibit, Reinforced Plastics Division of the Society of the Plastics Industry, Inc.—Edgewater Beach Hotel, Chicago

11-14 Semi-annual meeting and 16th International Heating and Air-Conditioning Exposition, American Society of Heating, Refrigerating and Air-Conditioning Engineers—Statler-Hilton Hotel and New York Coliseum, New York

16-20 American Association of School Administrators—Atlantic City

16-20 School Facilities Council, Inc.—Atlantic City

18-20 13th national conference, American Standards Association—Biltmore Hotel, New York

25-28 Environmental Engineering Conference and Exhibition, American Society of Civil Engineers—Atlanta

26ff 19th annual technical conference, Society of Plastics Engineers, sponsored by Southern California Section; through March 1—Statler-Hilton and Biltmore Hotels, Los Angeles

March

4-7 1963 annual convention, American Concrete Institute—Biltmore Hotel, Atlanta

4-7 44th annual convention, Associated General Contractors of America—New York City

4-8 Joint Annual Conference on Church Architecture, sponsored by the Department of Church Building and Architecture, National Council of Churches of Christ in the U.S.A. and the Church Architectural Guild of America—Olympic Hotel, Seattle

Office Notes

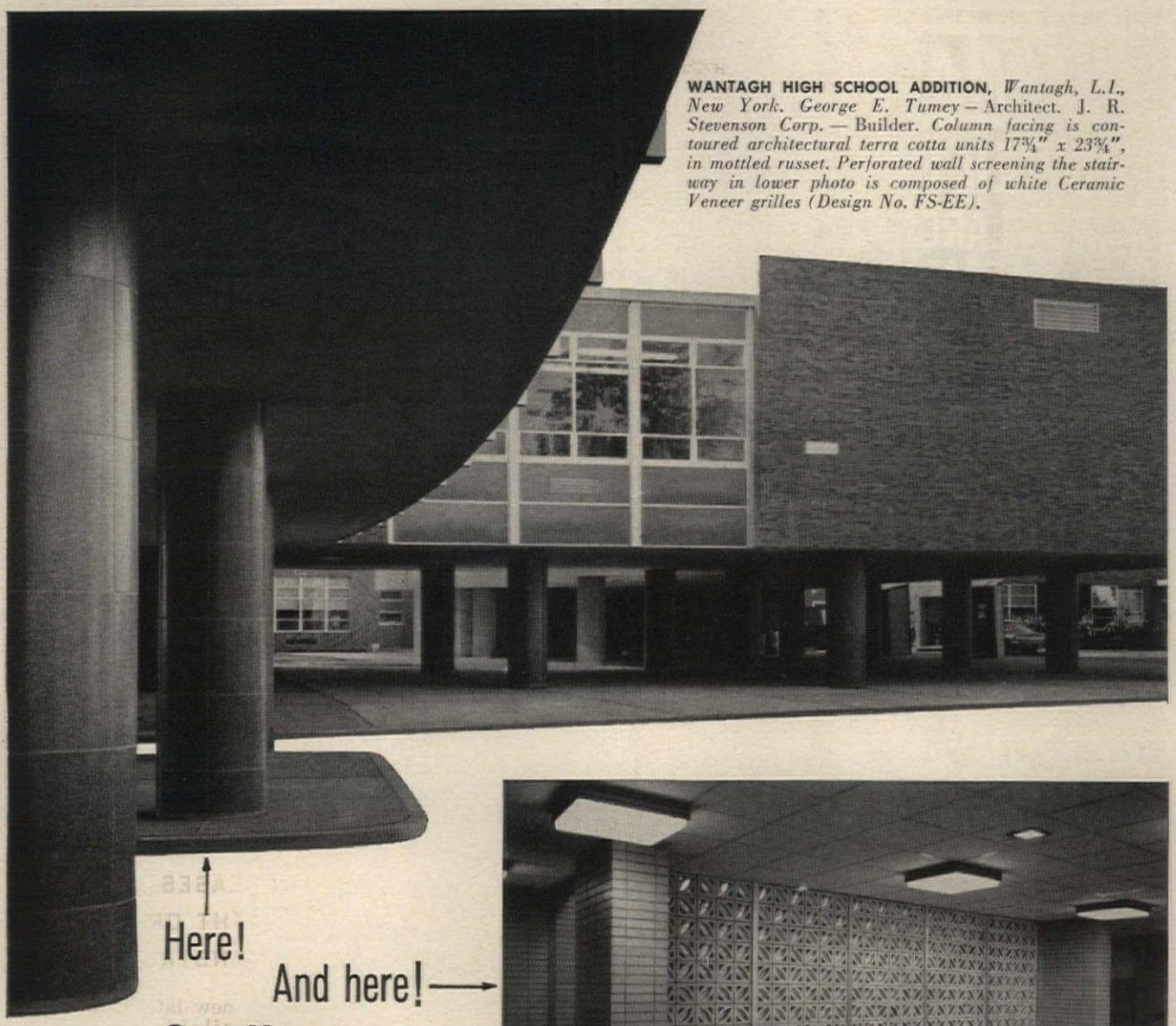
Offices Opened

Thomas B. Corgan, architect, and **Albert L. Balestiere,** engineer, of Corgan & Balestiere have opened offices at 1221 Midtown Tower, Rochester, N.Y.

New Firms, Firm Changes

David C. Martin has been elected vice president of the architectural

continued on page 270



WANTAGH HIGH SCHOOL ADDITION, *Wantagh, L.I., New York. George E. Tumey* — Architect. J. R. *Stevenson Corp.* — Builder. *Column facing is contoured architectural terra cotta units 17¾" x 23¾", in mottled russet. Perforated wall screening the stairway in lower photo is composed of white Ceramic Veneer grilles (Design No. FS-EE).*

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You'll never need to curb architectural expression if you keep the unrivalled versatility of Ceramic Veneer in mind. It enables you to select precisely the right color, texture and form. It offers you twelve distinctive grille designs for solar screens, perforated facades, or room dividers. Grilles can also be custom-made to your own design. In Ceramic Veneer you can specify polychrome panels, ornamental sculpture, or bas-relief. Units can be made large or small, for interiors or exteriors. Quality, appearance, permanence and low cost maintenance, are important advantages your client receives when you solve creative problems with Ceramic Veneer. Detailed information will be sent on request.

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Ceco takes full responsibility for erecting and removing Steelforms and centering, coordinating the work with other construction trades for fast completion. This is a valuable, economical service, backed by 50 years' experience. No wonder architects are specifying and contractors using Ceco.

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Ceco Adjustable Steelforms were used to create rigid concrete joist slabs in the Davis Building, Tampa, Florida.
Mark Hampton, architect
Russello & Barker, engineers
Dewitt, Furnell & Spicer, Inc., contractor

Office building for Old Security Life Insurance Company, Kansas City, Missouri, constructed with Ceco Flangeforms.
Kivett & Myers, architects
Sharp Brothers Construction Co., contractor

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Typical forming for monolithic Ceco concrete joist and beam construction is seen in this construction view of the Terminal Building at O'Hare International Airport, Chicago. These are Flangeforms, ready for concrete pour.

Naess & Murphy, architects
Consolidated Construction Co., contractor

Special use of Ceco Longform Service resulted in this "beamed" ceiling in Jacksonville, Florida, Junior High School.

Reynolds, Smith & Hill, architects and engineers
Parker Construction Co., contractor

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State Office Building, Milwaukee
Hotel America, Houston
Federal Office Buildings 8, 10A and 10B, Washington, D.C.
Veterans Administration Hospital, Cleveland
Petroleum Club Building, Tulsa
Smithsonian Institution, Washington, D.C.
IBM Building, Armonk, New York
Lincoln Center Garages, New York City

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Office Notes

continued from page 266

and engineering firm of Hammel and Green, Inc., St. Paul, Minn.

Masao Kinoshita has been appointed an associate with Sasaki, Walker and Associates, Inc., Watertown, Mass. Senior staff appointments include: **John Adelberg, Katherine DeMay, James E. Robinson III, Richard F. Galehouse** and **Richard H. Rogers.**

George Agron, a director of the San Francisco architectural firm of Stone, Marraccini and Patterson, has been named contract and planning research officer of the firm.

The West Coast office of Dalton-Dalton Associates, Architects-Engineers, Cleveland, has had its name changed. Formerly Facility Engineering Limited, the name is now **Dalton-Dalton Associates.**

Leonard L. Hunter has been appointed executive vice president and partner, John Carl Warnecke and Associates, San Francisco.

Alfred Malkin, consulting electrical engineer, and John Hosking, consulting mechanical engineer, have formed the partnership of **Malkin and Hosking,** 1500 Stanley St., Montreal, P.Q.

The name of the New York firm, Urbahn & Brayton, Architects, has been changed to **The Office of Max O. Urbahn, Architects.** The change follows the retirement of Richard M. Brayton.

Frank C. Gilson, former architect-supervisor in the Division of School Buildings and Grounds, New York State Education Department, has rejoined the Carl W. and Robert T. Clark, Architects, Syracuse.

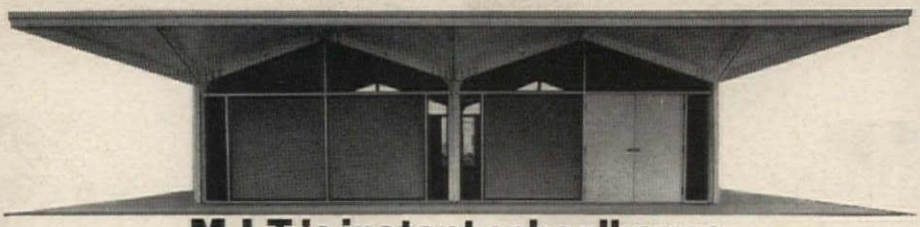
Edwin F. Bliss, formerly architect for the Akron public schools, is now associated with Harry A. Brooker, 706 Crosby St., Akron 2, Ohio.

Franklin J. Duane is now a partner of the firm of Duane and Lawrence Architects, 1211-A Connecticut Ave., N.W., Washington 6, D.C.

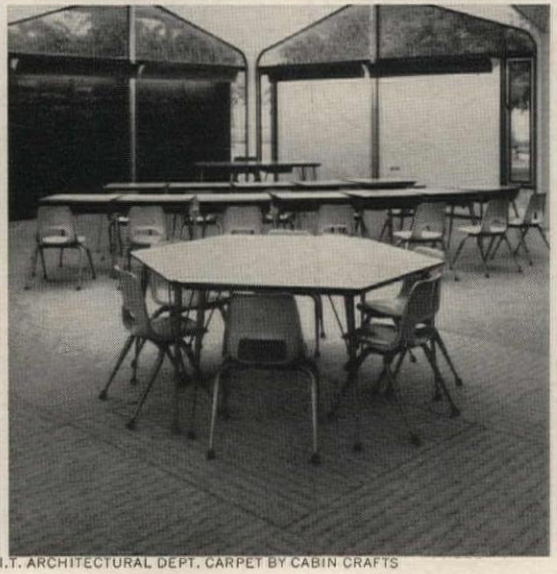
Vincent R. Bonfanti has left Kenneth Lind & Associates to establish his own architectural firm at 11959 Rivera Road, Santa Fe Springs, Calif.

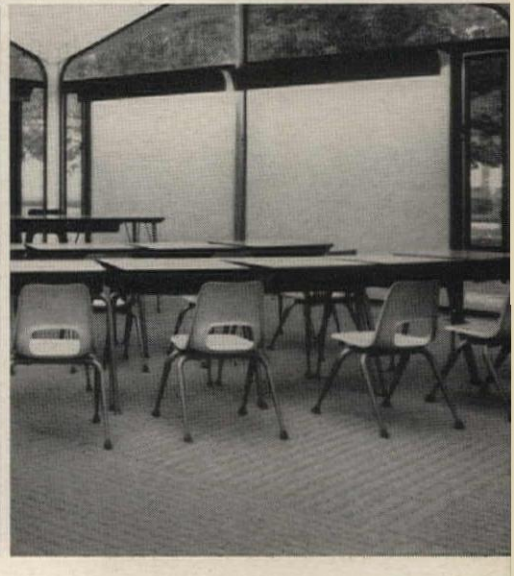
Bolt, Beranek and Newman, Inc., Cambridge, and Helmut Mueller, Munich, Germany, have formed a new German company to answer the growing Common Market need for

continued on page 274



M.I.T.'s instant schoolhouse





ARCHITECT: M.I.T. ARCHITECTURAL DEPT. CARPET BY CABIN CRAFTS

Complete with walls, roof, lighting, air conditioning, teaching aids and carpet made with Acrilan®

What is the function of a pre-fab schoolroom? M.I.T. believes that with the increasing population shifts, education has to shift accordingly. In a new area, if the kids can't go to school—because there isn't any—school has to come to the kids. Now, M.I.T. shows how a complete school can be shipped, pre-fab and ready to set up. Included in the M.I.T. school package: 4-foot mobile squares of carpeting—made with Acrilan acrylic fiber in the pile.

In a lot of schools throughout the country, carpeting is considered safer, better looking, better acoustically than hard flooring. It has a better psychological effect on youngsters' behavior, it is cheaper and easier to maintain than hard flooring. And carpet made with Acrilan is about the most colorful, most practical, easiest to clean kind of carpet you can put on a school floor or any other floor.

If you're thinking of putting carpeting in a school, here's a good rule: Trust the big red Acrilan "A." For more information contact School Carpet Department, Chemstrand, 350 Fifth Avenue, New York 1, N.Y.

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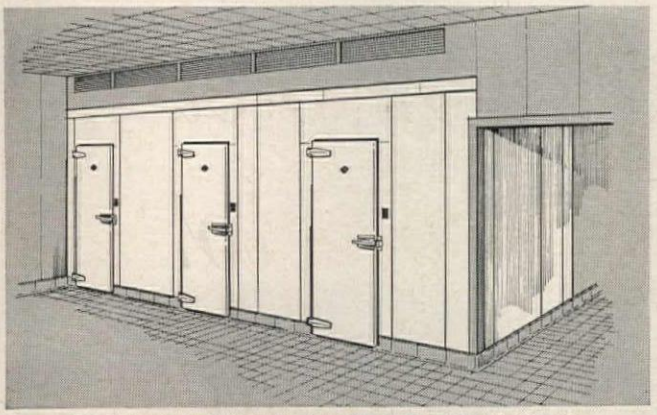

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Specifications prepared by **Toole and Angerame, Architects,** 238 Washington Ave., Albany, N.Y.

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Speed-Lok Fastener designed and patented by Bally for exclusive use on Bally Walk-Ins. Makes assembly accurate and fast . . . easy to add sections any time to increase size . . . equally easy to disassemble for relocation.

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Self-contained refrigeration systems combine balanced capacity condensing units and refrigeration coils. Mounted and hermetically sealed with necessary controls on small wall panel. Simplifies installation. Four-hour factory test assures quiet, efficient, trouble-free operation.

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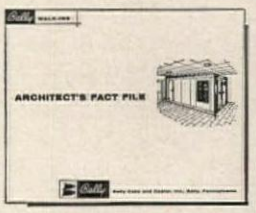

See Sweet's File, Section 25a/Ba

Bally Case and Cooler, Inc.
Bally, Pennsylvania

Write Dept. AR for FREE Book

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For "Start-to-Finish" responsibility, specify

AUTOMATIC TUBE SYSTEMS

BY

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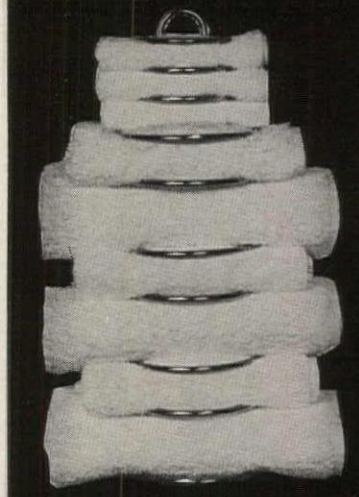
Standard Conveyor takes full responsibility for your automatic tube system from start to finish. Standard Conveyor has over 40 years of experience in the pneumatic tube business.

Call your local Standard Conveyor representative . . . he's listed in the Yellow Pages of major cities under PNEUMATIC TUBES. Or, call our main office listed below for information.

Standard Conveyor COMPANY

312-B Second St., North St. Paul 9, Minn., Telephone: SPring 7-1355

For more data, circle 146 on Inquiry Card



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NOW AVAILABLE! Attractive, new VANITY TOWEL HOLDER! Accommodates any number or combination of towels! Write for details.

HOTEL - MOTEL OWNERS SAVE UP TO 50% WITH PLAZA TOWEL HOLDERS!

After an owner takes possession, he is still interested in cost-saving efficiency . . . more than 100,000 Plaza Towel Holders now in use in hotels and motels across the country testify to the positive savings they guarantee!

Designed by a motel owner, Plaza Towel Holders hold each towel separately . . . eliminate spilling and handling . . . save laundry, space, and labor. Guests are guaranteed clean towels . . . use towels only as needed. **Present users report savings even up to 50% on towel costs!**

WRITE US DIRECT for illustrated literature and full details . . . 3 sizes available—or see our **Sweet's Architectural File** listing.

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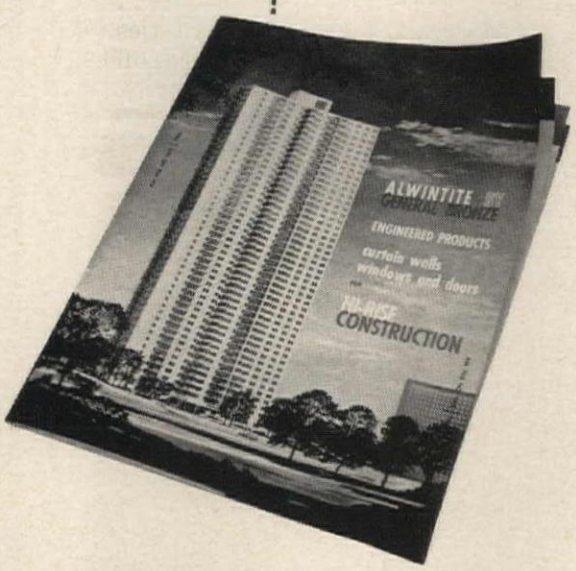
How to buy General Bronze Reliability and Quality at low budget costs

Use the Completely Revolutionized Alwintite Window Line



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City .....Zone .....State .....

Agents: Our new product development plan has opened a few new territories for expansion. Apply by letter.

Office Notes

continued from page 270

technical competence in acoustics, vibrations and related fields. The firm's name is **Mueller-BBN.**

William R. Brockway has been named an associate member of the Baton Rouge architectural firm of Bodman, Murrell, Landry and Webb.

The firm of **McWilliams & Kessler** succeeds the former San Francisco-Los Angeles architectural firm of Choy & McWilliams. Partners are John McWilliams and Theodore Kessler. Offices are located at 38 Mason St., San Francisco, Calif.

Howard L. Dutkin has joined the North Miami, Fla. firm of M. Tony Sherman & Associates, Architects & Engineers, as an associate.

William Gardner A.I.A. and Thomas J. Lucas Jr. have formed a partnership under the firm name of **Paulsen, Gardner & Associates Architects.** The address is 1565 N. Woodward, Bloomfield Hills, Mich.

Thomas C. Tufts and **John E. Wenzel** have become members of the Cleveland firm of Conrad & Simpson—Architects.

Irving Rector has joined Burke, Kober & Nicolais, Los Angeles architectural and engineering firm, as director of school planning and design.

Paul Howland Van Wert, formerly director of facilities planning for Sylvania Electric Products Inc., Williamsport, Pa., has joined Cabot, Cabot & Forbes Associates Inc., architects, engineers and site planners of Boston, as president.

Andrew Sakos has rejoined Cerf Ross Associates, Architects as an associate, in charge of production. The Dallas firm, in addition to the appointment, announces the reorganization of its practice of architecture in the field of design, planning, consultation, research.

Terry T. Murakami and Robert S. Burns, former associates in the firm of Johnston-Campanella, A.I.A. & Associates, Renton, Wash., are now full partners in the newly created architectural firm of **Johnston-Campanella and Company.**

Ernest A. Jacobs has joined the Los Angeles architectural firm of Rochlin & Baran A.I.A. & Associates.

William Merci has become head

continued on page 278

What's wrong with this new washroom? Scott found 4 big design mistakes.

At first glance it looks great. Neat, clean, up-to-date. But there's more to a washroom than handsome fixtures. Scott's trained consultants found four planning errors in this layout:

- Mirrors are best located away from washbasins. That way people don't brush loose hair into sinks, and clog them. And successive users aren't kept waiting.
- The Scott towel dispenser should be located between the sink and the exit for a more efficient traffic pattern.
- The waste receptacle should be located between the towel dispenser and the exit, so people aren't kept waiting while each user dries his hands.
- Uncovered wall-hung waste receptacles increase maintenance efficiency, discourage litter, speed traffic flow.

For the washrooms in your buildings, remember: 1) Scott fixtures give your clients years of value, dispensing the nation's finest paper products; 2) Scott's unique Washroom Advisory Service is always available to you, free of charge. Write for our 16-page washroom planning booklet, or call your local Scott office. Scott Paper Company, Philadelphia 13, Pennsylvania.

SCOTT MAKES IT BETTER FOR YOU

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SEVEN WAYS OF SAYING...

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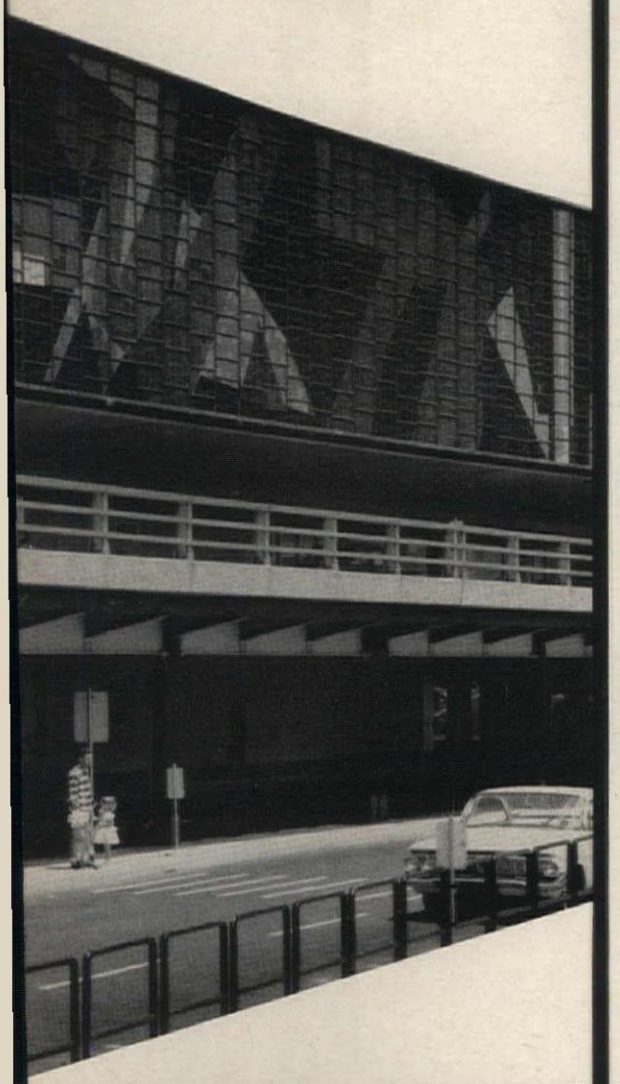
American Airlines Terminal, Idlewild Airport
Architects: Kahn and Jacobs
Photographer: Joseph Molitor

for selling architects and engineers

Editorial values are the source of all magazine advertising values. Ask to see "Stimulus," the Architectural Record editorial story.



1 Architectural Record delivers your advertising to more architect subscribers—and more engineer subscribers—than any other architectural magazine.

20,314 architects and 10,954 engineers pay to read Architectural Record.[1] (And there are over three "pass-along" readers per copy.)[2]

2 The Record assures top verifiable coverage of your architect and engineer planned building market.

You cover—**by paid subscription alone!**—over 92% of the total dollar volume of all architect-planned non-residential building, and 85% of the residential—a fact documented by **Dodge Reports.**[3]

3 The Record's renewal rate is the highest in its field by far.

Reflecting an editorial content that is closely attuned to the interests of readers, Record's renewal rate is 12 per cent higher than that of the second magazine.[1]

4 The Record brings you its unequaled architect and engineer subscriber audience at the lowest cost per page per 1,000.

11 per cent lower than the second-place magazine.[4]

5 Your prospects have outstanding confidence in what they read in the Record.

The best place to inspire confidence in your prospects is in the magazine that inspires confidence in its readers. Architects and engineers say they place greatest confidence in the Record for sound and accurate coverage of significant developments in building design and technology.[5]

6 Architects and engineers prefer the Record.

Architects and engineers have voted Architectural Record their preferred architectural magazine in 167 out of 184 studies **sponsored by building product manufacturers and their advertising agencies.**[6]

7 In the Record you're in building's busiest magazine marketplace.

Each month architects and engineers look to the Record's advertising pages for the most complete selection of building products available in any magazine.

For sixteen years in a row more building product advertisers have placed more advertising pages in Architectural Record than in any other architectural magazine.

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Architectural Record

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"stimulus to creative architectural and engineering design"

1. Source: June 1962 ABC Publisher's Statement.
2. Estimate: Continuing Readership Research (1962).
3. Ask for Record's "Market Coverage" folder.
4. June 1962 ABC Publisher's Statements and rate cards.
5. Source: 1961 and 1962 Surveys: New Castle Products, Inc., Adams-Rite Mfg. Co., Ceco Steel Products Corp., Carthage Marble Co.
6. Ask for "Summary of Preference Studies."

Office Notes

continued from page 274

of the new interior design department of Hellmuth, Obata & Kassabaum Inc., Architects, St. Louis.

Lyn E. Graziani and **Gordon R. Lotts** are new associates in the firm of Eberle M. Smith Associates Inc., Architects and Engineers, Detroit. A change in firm officers has been made, **Lyndon Welch** named first vice president and **Lloyd H. Wright** named treasurer.

Peter Schuyler Van Bloem is now an associate with the Office of Alfred Shaknis, A.I.A., Architects, Glen Head, N.Y.

Mario J. Romanach, associate professor of architecture at the University of Pennsylvania, has joined the firm of Kelly & Gruzen, Architects-Engineers, New York City. Mr. Romanach came to the United States from Cuba in 1959 to teach architectural design, has been critic at the Harvard Graduate School of Design and on the faculty at Cornell University School of Architecture. He was the first appointed director of the Havana Metropolitan Area Planning Office.

Six new associates have been appointed in the firm of Caudill, Rowlett & Scott, Houston architects, planners and engineers. They are: **Robert H. Sohn, William Travis Steely, Robert A. Wright, James M. Hughes, Robert E. Ray and Joel M. Walker.**

New Addresses

Lawrence L. Anglin, Architect, 3014 Corrine Drive, Orlando, Fla.

Burde and Shaw, A.I.A., Architects and Associates, Post Office Box #5366, Carmel, Calif.

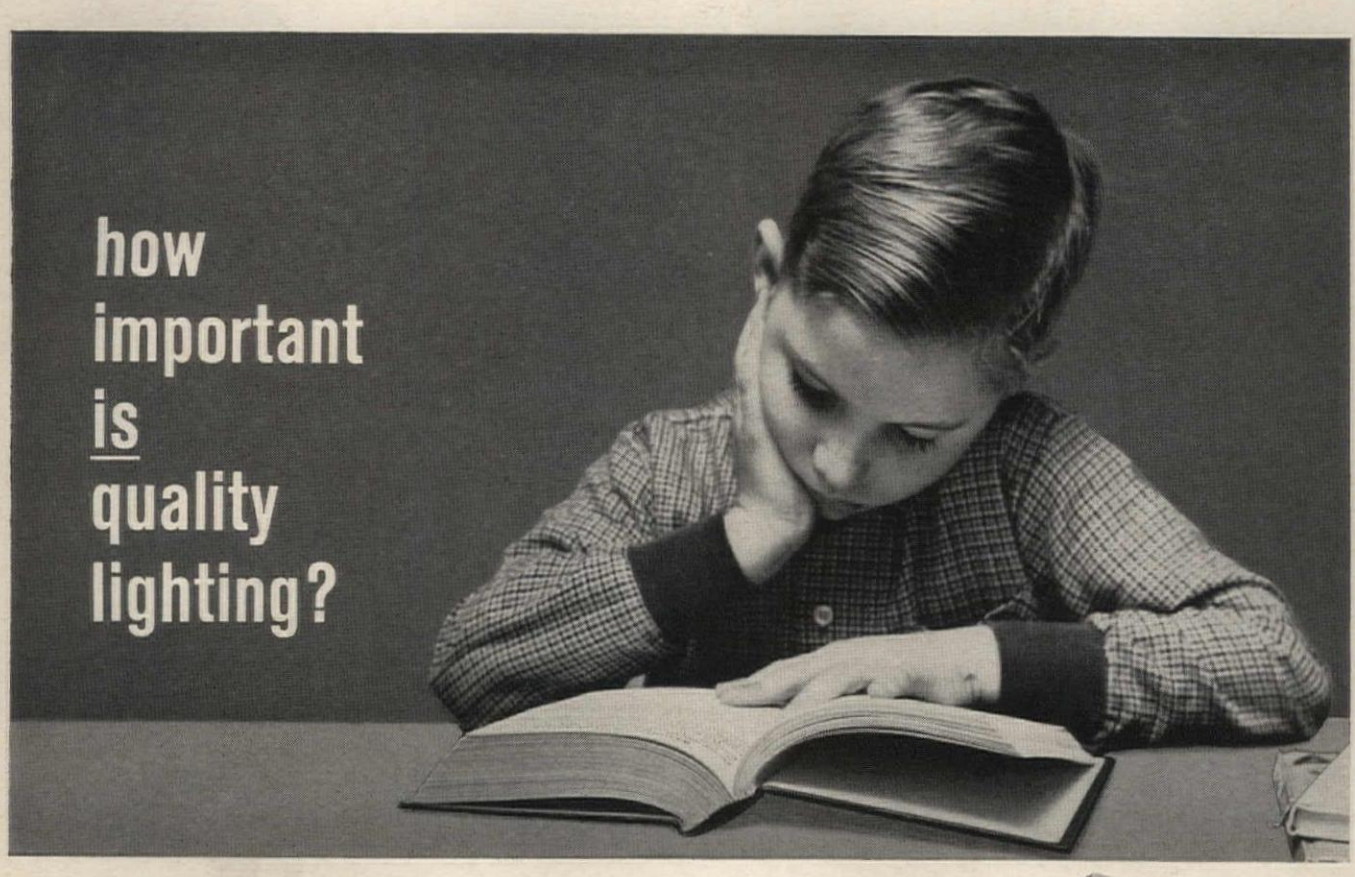
Diehl and Stein, Architects, Suite 122-24, 20 Nassau Bldg., 2-4 Chambers St., Princeton, N.J.

Richard C. Guthridge, 2 West 45th St., New York City 36.

Eastern office of I.S.D. Inc., Interior Space Design, a division of Perkins & Will, Architects, 485 Lexington Ave., New York 17.

Rose, Beaton & Corsbie, New York architect-engineer firm, new White Plains, N.Y. office at 95 Church St.

Scott Whitnah Consulting Engineer Inc., Post Office Box #23, Minnetonka Beach, Minnesota.



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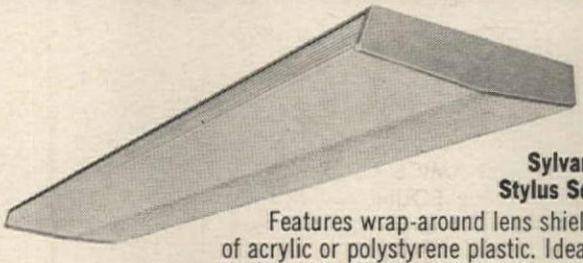

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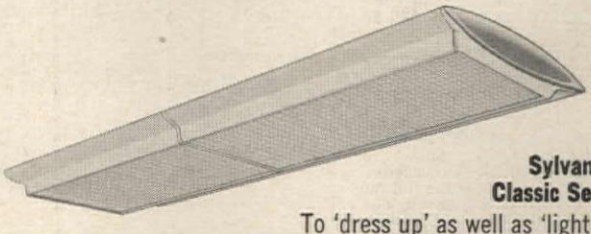

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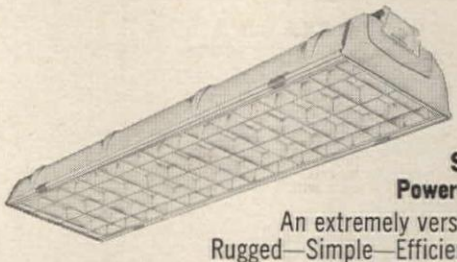

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For descriptive and specification information on Sylvania fixtures, see Sweet's Architectural File or write direct.

For more data, circle 153 on Inquiry Card

How the Dodge Reporter helped solve this University's housing problem—fast.

Jacksonville University Dormitories, Jacksonville, Florida
Architects: Reynolds, Smith and Hills
Contractor: Wesley of Florida, Inc.

Flat concrete plate and steel column structure, and lift-slab method of construction, helped speed these dormitories to early completion. Each dormitory, one for men and the other for women, provides housing for 120 students. A one-story connecting unit provides lounge facilities and three faculty apartments. Typical double-occupancy bedroom-study area has built-in-beds, wardrobes and desks. Each dormitory also has its own lounge-snack bar, linen and custodial areas. All facilities are air-conditioned, with individual room controls. Exterior walls are concrete and masonry, with aluminum casement windows. Interior partitions are metal studs and plaster.

Jacksonville University needed more dormitory space, and they needed it in a hurry. Until the completion of two dormitories, limited housing facilities forced the University to reject almost 1000 applications in a single year.

These two dorms, designed by Reynolds, Smith and Hills, are the first step in a long-range expansion plan. Construction was begun early in 1962 and completed in time for the fall semester of the same year. Structure is flat concrete plates with steel columns. Lift-slab construction was used.

"Dodge Reports were very helpful in getting the job done fast," says Ivan H. Smith, a partner at Reynolds, Smith and Hills. "We needed specialized equipment, specialized materials. We had to know about the latest advances in these respective fields. The Dodge Reporter was a great help in making our needs known to contractors and material suppliers. They knew what we needed, so traffic during the bidding period was smoother than it would have been otherwise.

"We have found it's good business to keep the Dodge Reporter constantly posted on our needs."

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DODGE REPORTS

CONSTRUCTION NEWS SERVICE
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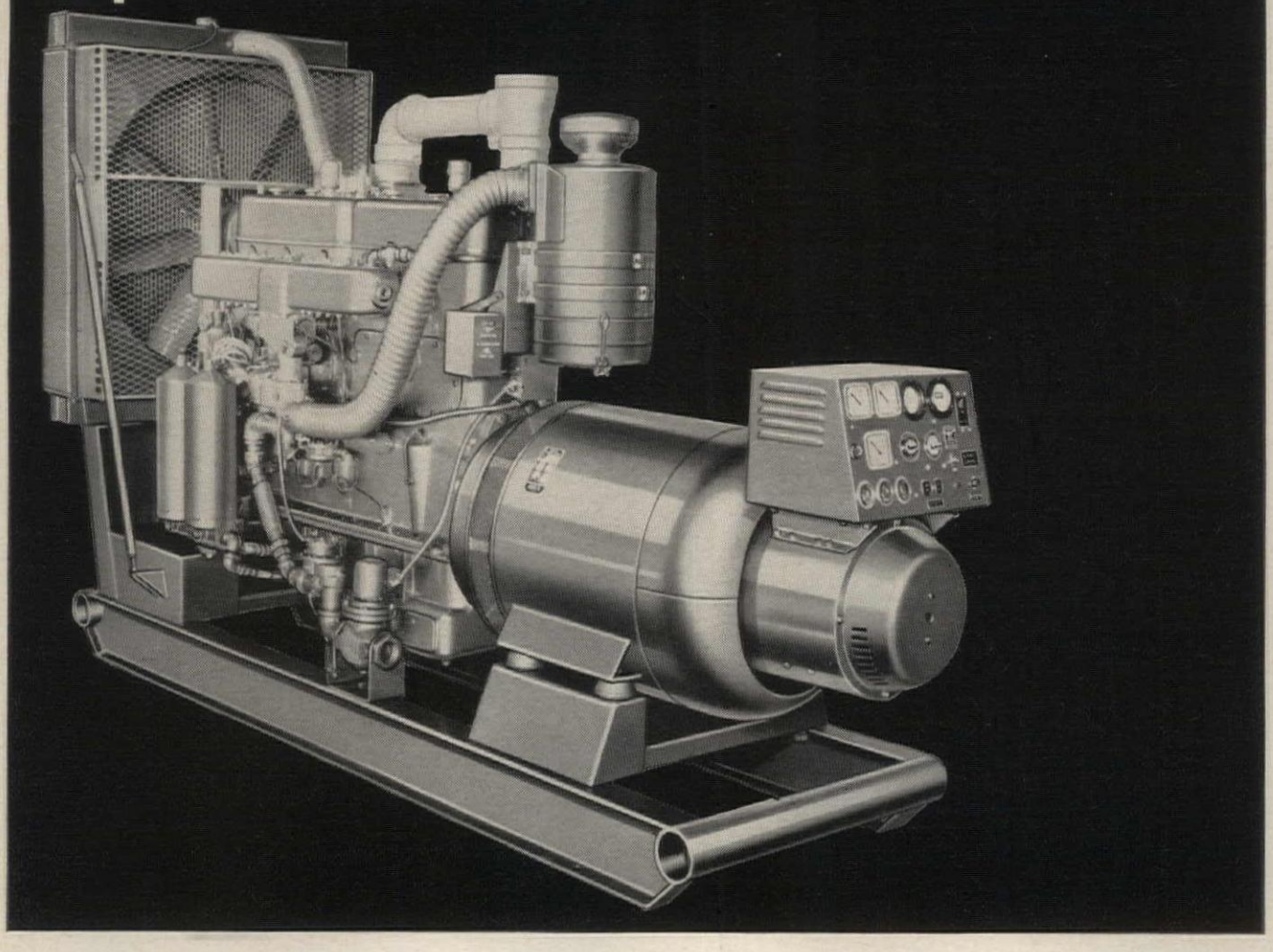
What puts 170,000 watts on the line in case of power failure?



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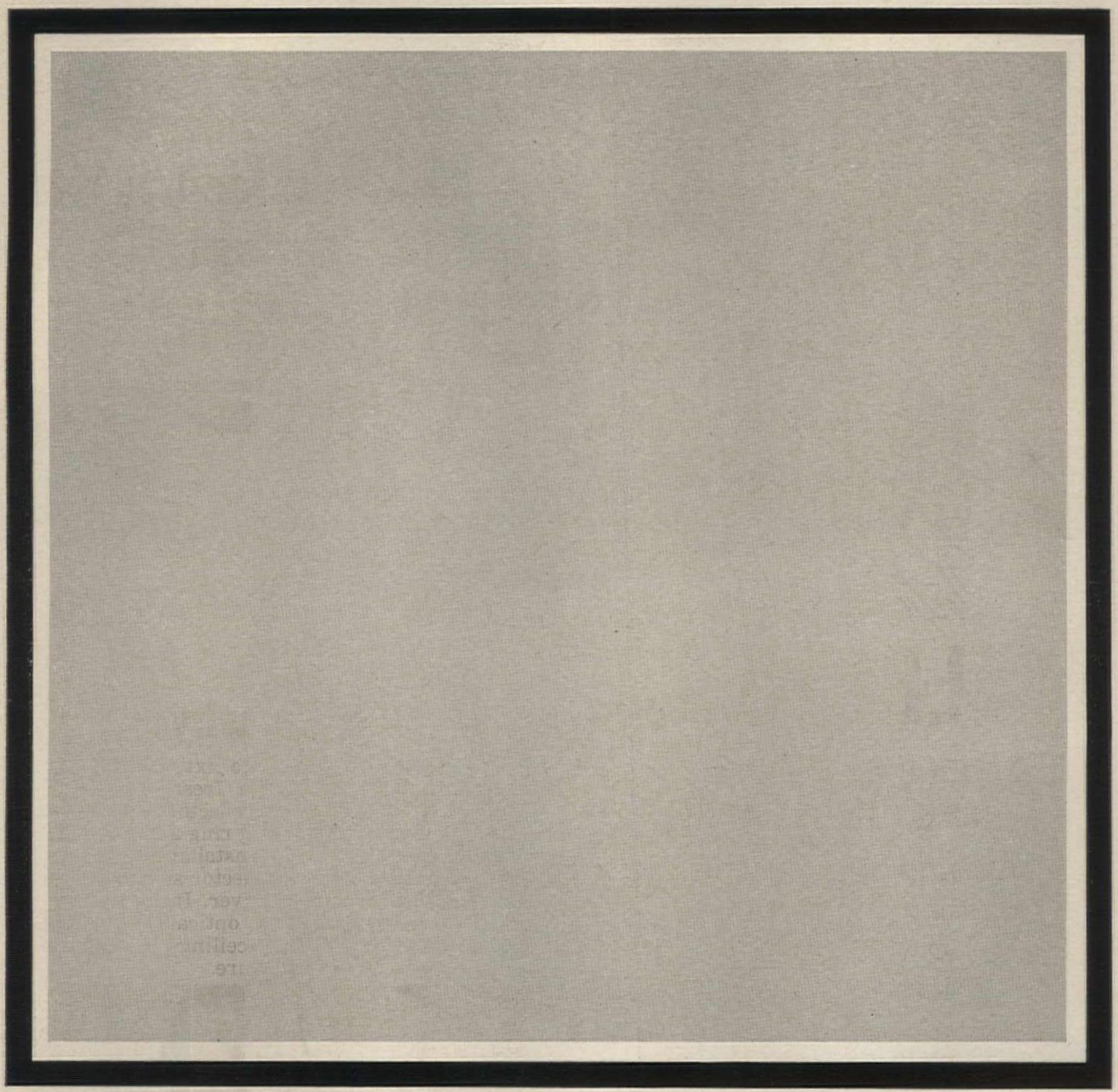

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See all the shiny, massive, expensive, power-devouring equipment? See all the personnel that must be paid, fed and negotiated with? See all the linens that must be bought, washed, ironed, folded — and replaced? See all the costly linen-storage space — space that's so badly needed for a new lab, extra rooms or whatall?

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"Record Houses" has won widespread recognition as America's most influential house publication—a fountainhead of the finest and most highly publicized new house designs.

"Record Houses of 1963" will focus on notable new achievements in U. S. residential architecture—including the finest architect-planned houses of the year.

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Among the highlights:

- *The Best Architect-Designed Houses of 1963.* Multi-page presentations of each of 20 houses which win for their architects Architectural Record's coveted *Annual Award of Excellence for House Design.* These houses represent all major regions of the U. S., cover a broad spectrum of structure, style and cost.
- *The Grand Alliance.* Demonstration of how architect-builder collaboration achieves high quality and more saleable design in tract housing.
- *Design for Comfort and Efficiency.* New approaches to perennial problem areas of house planning, including the kitchen.
- *Comparative Cost Calculator.* Handy guide to estimating the cost of building each Record house locally.
- *Progress in Products.* Editorial roundup of quality residential products—*plus* timely advertising messages from America's most quality-minded building product manufacturers.

Stimulating and useful throughout, "Record Houses of 1963" will be the house issue of the year for architects, engineers and their clients.

"Record Houses" comes to you as part of your subscription to Architectural Record. The house building and buying public will find it on sale at leading bookstores.

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In 1962, for the first time, "Record Houses" was distributed to leading builders as well as to Architectural Record subscribers.

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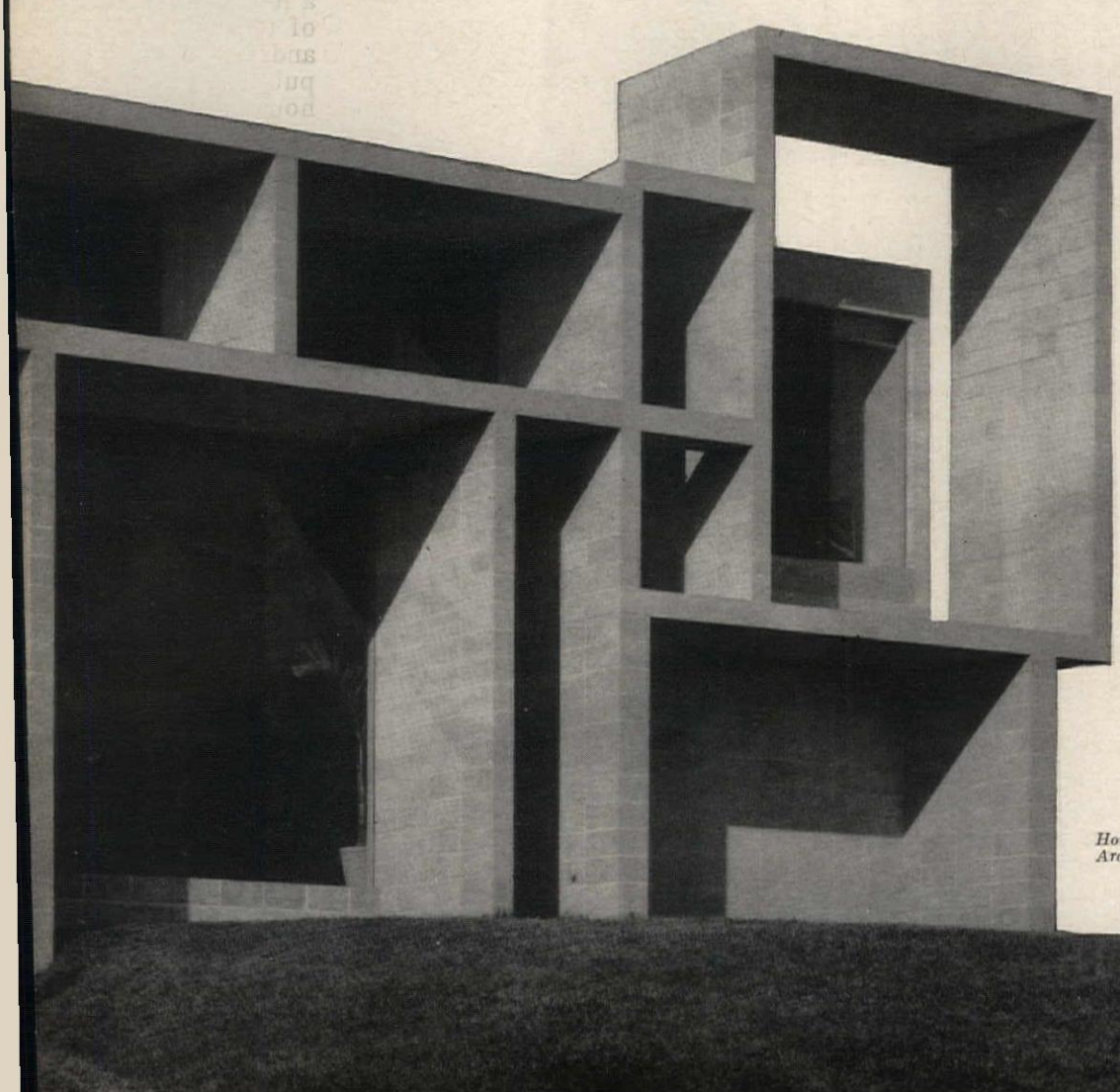
Because of the enthusiastic reaction of builders to "Record Houses," and the growing stake of builders in more sophisticated and marketable house design, "Record Houses of 1963" will again bring the finest examples of architect planning to the nation's 20,000 top builders.



House for Arthur W. Milam, St. Johns County, Fla. Architect: Paul Rudolph; Photo: Joseph Molitor

Record Houses of 1963

"standard of quality house design"

Architectural Record

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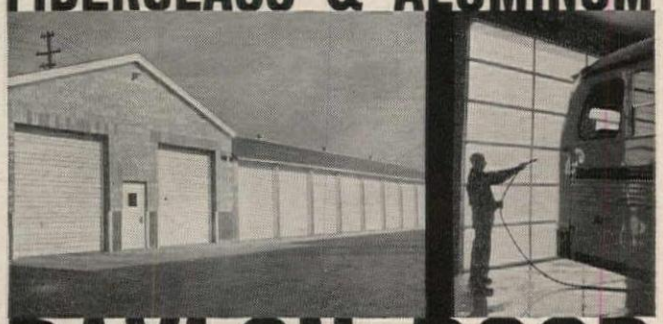
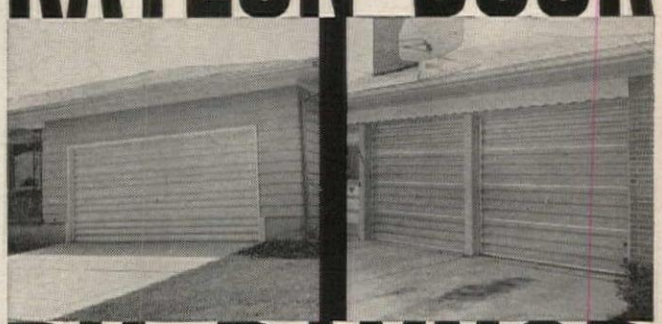


RAYLON DOOR



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SEE OUR CATALOG IN SWEET'S

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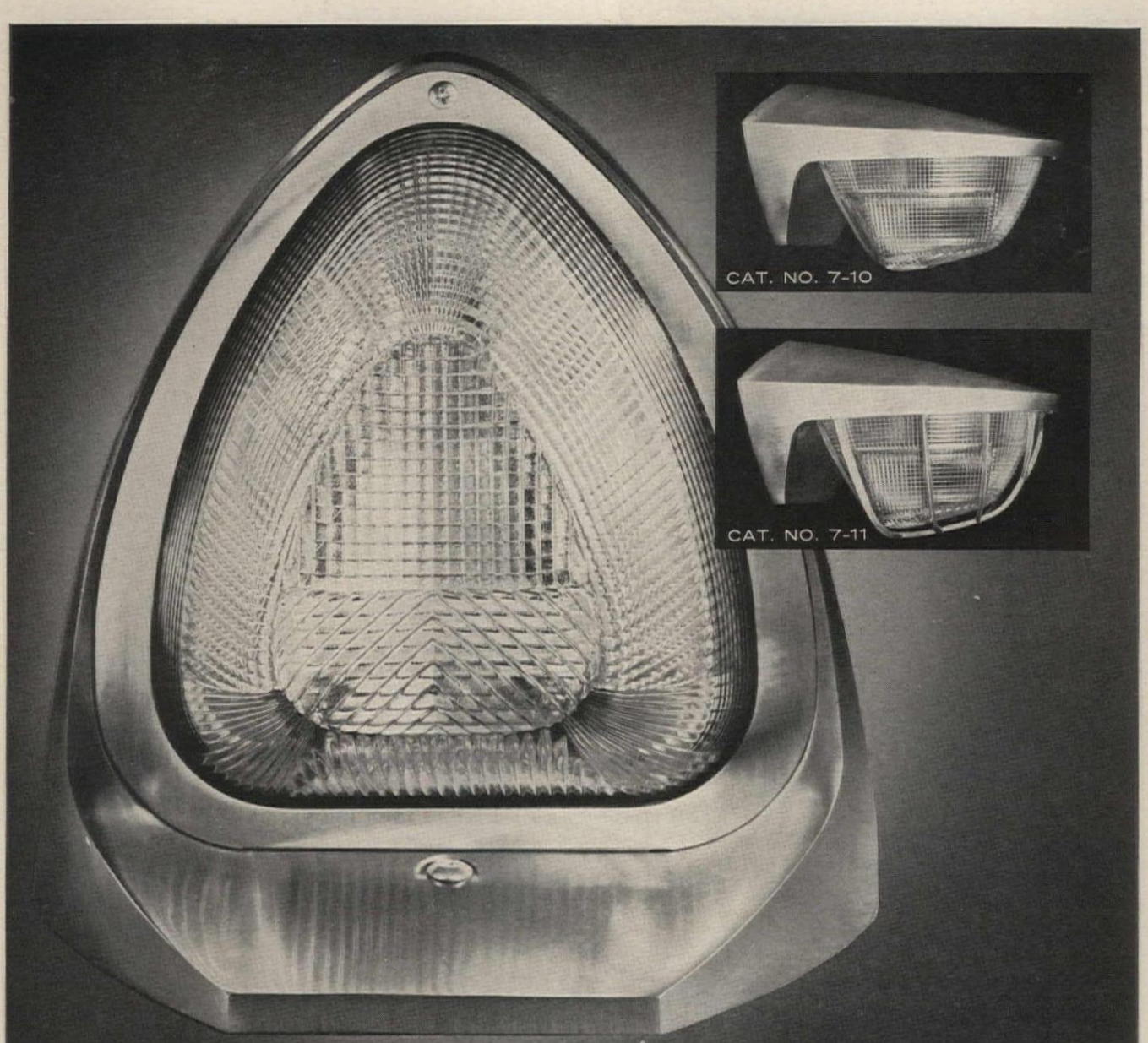

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Index to Advertising

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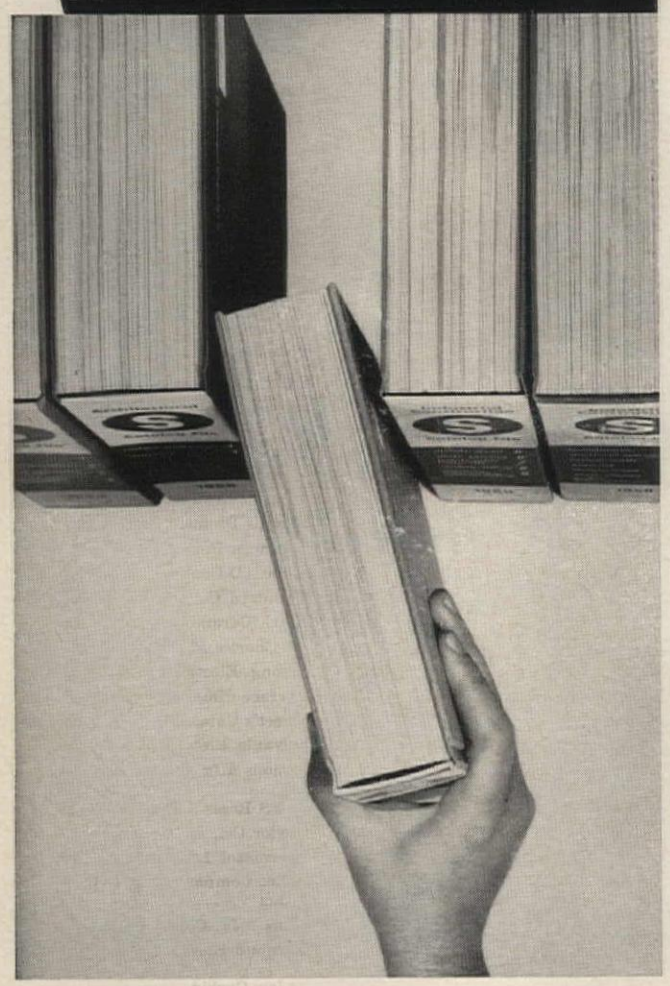

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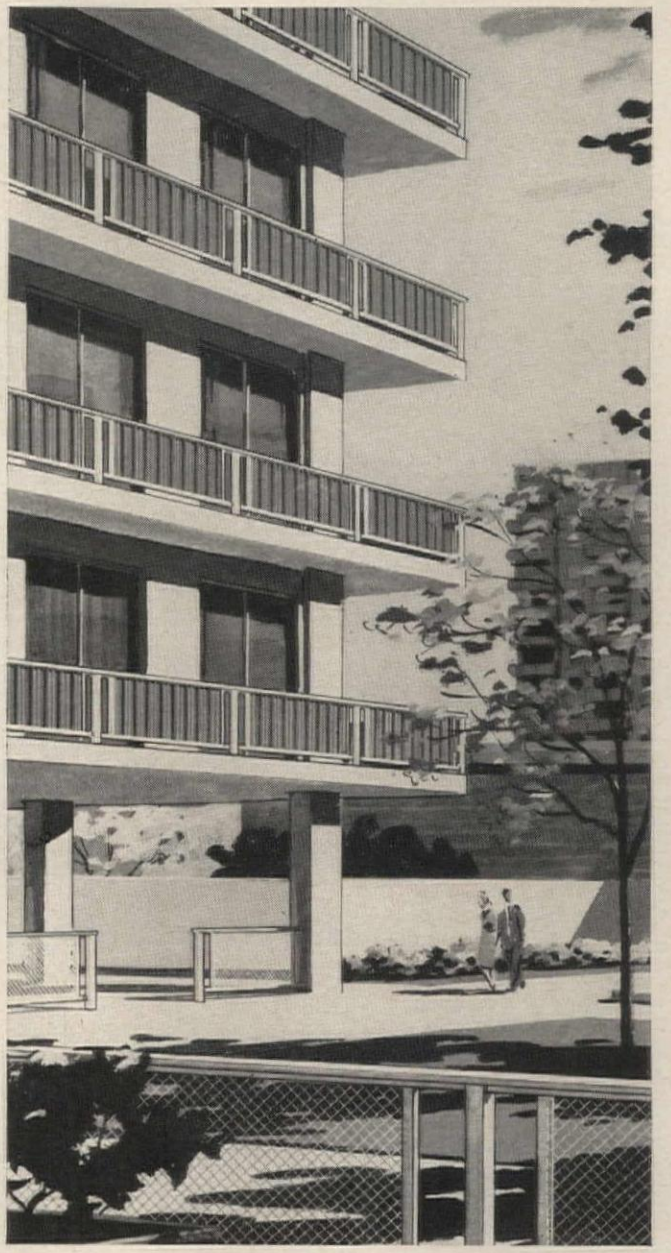

Beautyrail surrounds the balconies; Modernmesh Rail protects the grounds.

NEW BALCONY RAIL

Anchor's new all-aluminum railings rise to any height for lasting beauty . . . in apartment buildings, motels, terminals . . . anywhere safety or appearance is a factor. Colorweld-paneled Beautyrail, bright and light Modernmesh Rail, and smartly-spaced Picket Rail . . . each complements many designs, all provide unusual flexibility in metal railing. And every one is made of rust-proof Reynolds Aluminum, constructed by Anchor Post Products for positive protection, no maintenance, and valuable popular appeal. Anchor's national network of skilled erectors provides quick and efficient installation, too.

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For more data, circle 161 on Inquiry Card

Clean Room, Robins Air Force Base, Georgia.
John H. Watson, Chief Designer;
David B. Gaines, Architectural Engineer;
Leon Leonard, Mechanical Engineer.

Seven special benefits that make Armstrong sheet vinyl Corlon an ideal floor in this Clean Room

The picture on the opposite page shows a floor of Armstrong Tessera Vinyl Corlon in a Clean Room at Robins Air Force Base, Georgia. This room is typical of controlled environment enclosures used increasingly for precision manufacturing and assembly. In these interiors, cleanliness, temperature, and humidity must be rigidly controlled. Several Armstrong sheet vinyl floors meet the exacting requirements of Clean Rooms. Of these, Tessera Corlon is especially recommended and has proved successful in many installations. Here are some of the reasons why:

1. Seamlessness. Because it comes in rolls 6 ft. wide and up to 90 ft. long. Tessera can be installed with

a minimum of dirt-catching seams. In special cases, since vinyl is thermoplastic, the few seams can be closed by heat sealing.

2. Flash coving. Because it is tough and flexible, Tessera can be curved up the wall, eliminating crevices at the juncture of wall and floor. Thus, maintenance is easier because there are no traps for soil and other contamination. Where large quantities of water are used to flush away waste and foreign materials, liquid does not seep below the flooring.

3. Non-abrading. All interior surfaces in Clean Rooms must be virtually immune to dusting or flaking. Tessera has excellent abrasion resistance and, by most Clean Room standards, is non-dust-producing.

4. Resistant to chemicals. Tessera is completely resistant to grease, many chemicals, most dilute acids and alkali.

5. Withstands vigorous cleaning. Repeated cleaning of this rugged floor will not damage it or mar the colors.

6. Installation anywhere. Like most other types of Armstrong sheet vinyl Corlon, Tessera has the exclusive moisture-resistant Hydrocord Back, which permits installation at all grade levels—even below grade in direct contact with a concrete slab except where excessive alkali or hydrostatic pressure is present.

7. Pleasing to workers. The psychological atmosphere is important in areas where workers have to conform to elaborate cleanliness routines and intense precision work. Tessera is quiet and comfortable underfoot and has an attractive random design that never dominates the interior. It is available in a choice of pleasant colorings of varying light reflectance.

For more information on floors for Clean Rooms—or for any type of building—contact your Armstrong Architect-Builder Consultant. He can make available the services of the Armstrong Research and Development Center and the Armstrong Installation Specialists. Call him at your Armstrong District Office or write direct to Armstrong, 302 Rock Street, Lancaster, Pa.

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Armstrong VINYL FLOORS