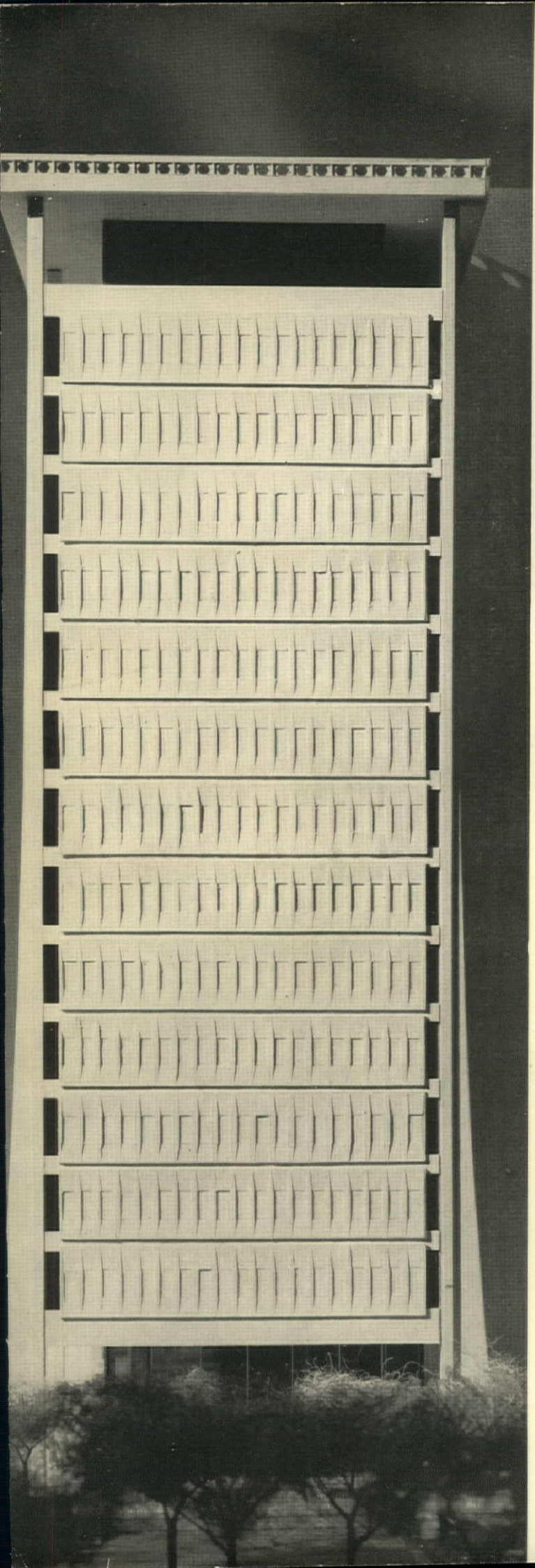


ARCHITECTURAL RECORD

7 *July 1961*

Building Types Study: Air Conditioned Schools

Six New Projects by Yamasaki

Skyscraper by Skidmore, Owings & Merrill

Full Contents on Pages 4 & 5



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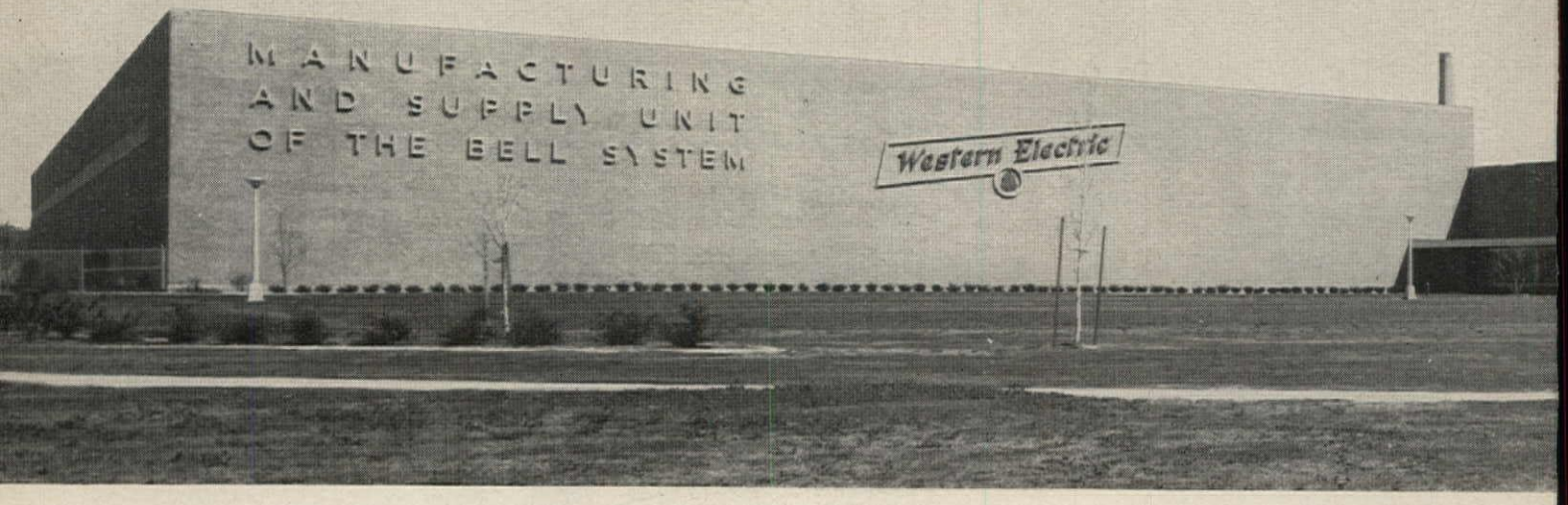
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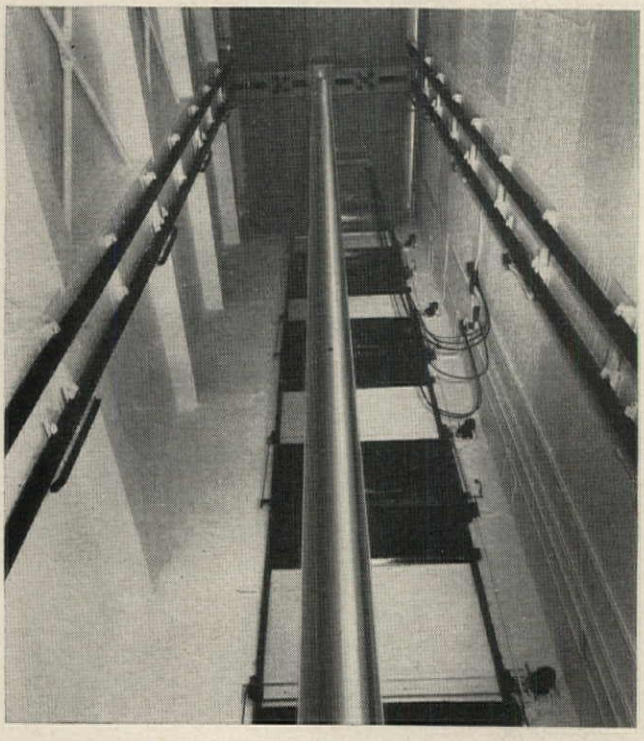
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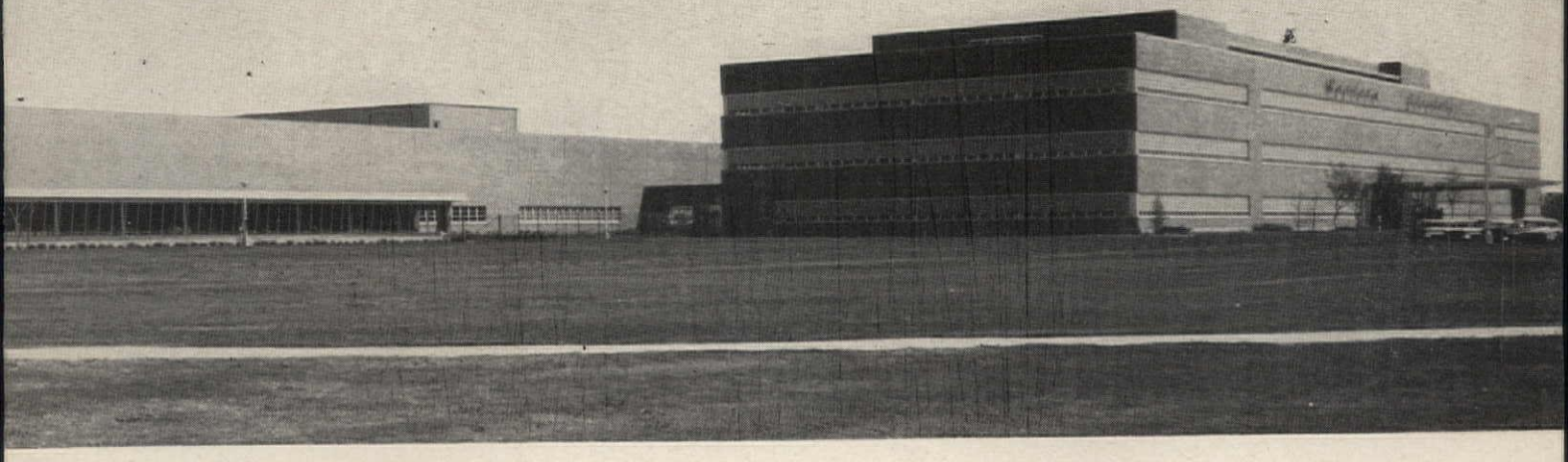
189 Rotary lifting and loading

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Architectural Engineering

AIR CONDITIONING FOR SCHOOLS 183

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The Means
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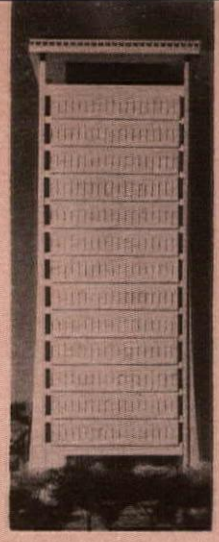
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Coming in the Record

SEATTLE INVESTS IN ARCHITECTURE

An exposition designed by architects with an architect serving as design coordinator and adviser to the commercial interests running the exposition will open next April in Seattle: and it expects to do very well, thank you, Mr. Moses. New York authorities, and anybody else who thinks architectural control isn't the prime route to architectural value (economic and functional as well as esthetic) will have something to learn from the Seattle experience. A major feature next month will feature design for "Century 21" and the story of how it happened.

WHAT EVERY ARCHITECT DESIGNS

The Building Types Study in August will present a review of opportunities and examples in a field that just about every architect in practice gets into at one time or another—small (or smallish) office buildings and banks. The buildings featured in this study—and others reviewed in making the selections—give impressive testimony to the high level of current architectural performance in the U.S.

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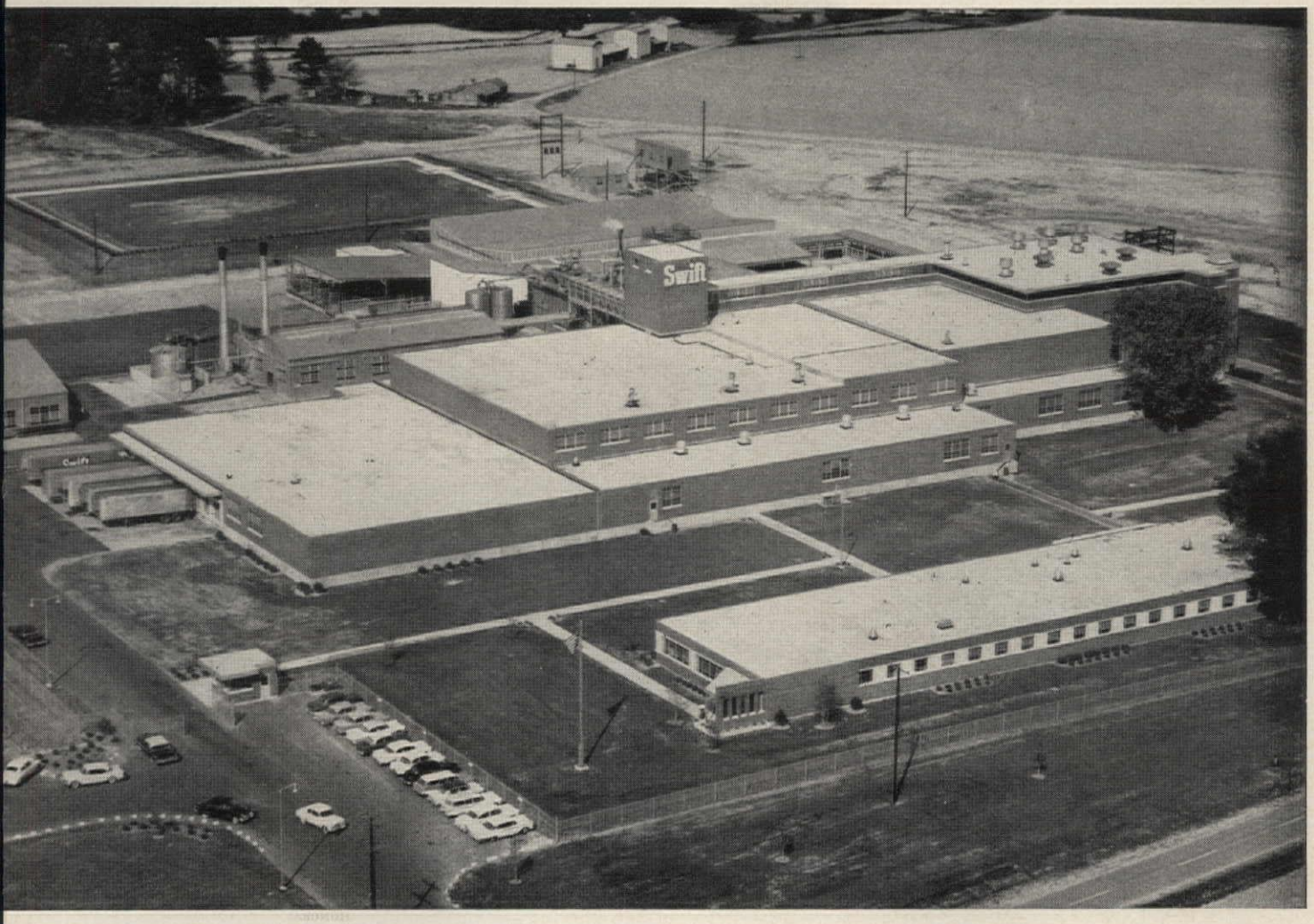
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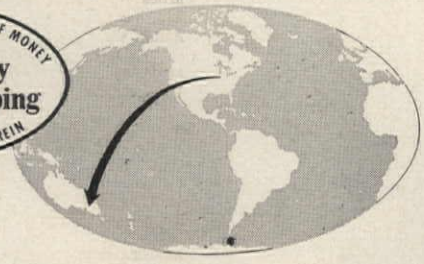


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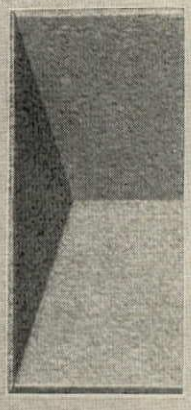
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(Right)
International Building, San Francisco; Anshen & Allen, Architects; precast concrete curtain wall panels (Mo-Sai) by P. Grassi-American Terrazzo Company; Structural Engineers, Gould & Degenkolb—Robert D. Dewell

(Left)
Photo-diagram of an International Building panel showing the 3-dimensional surface with inverted hip-roof design.

(Inset)
Architect's model of International Building.

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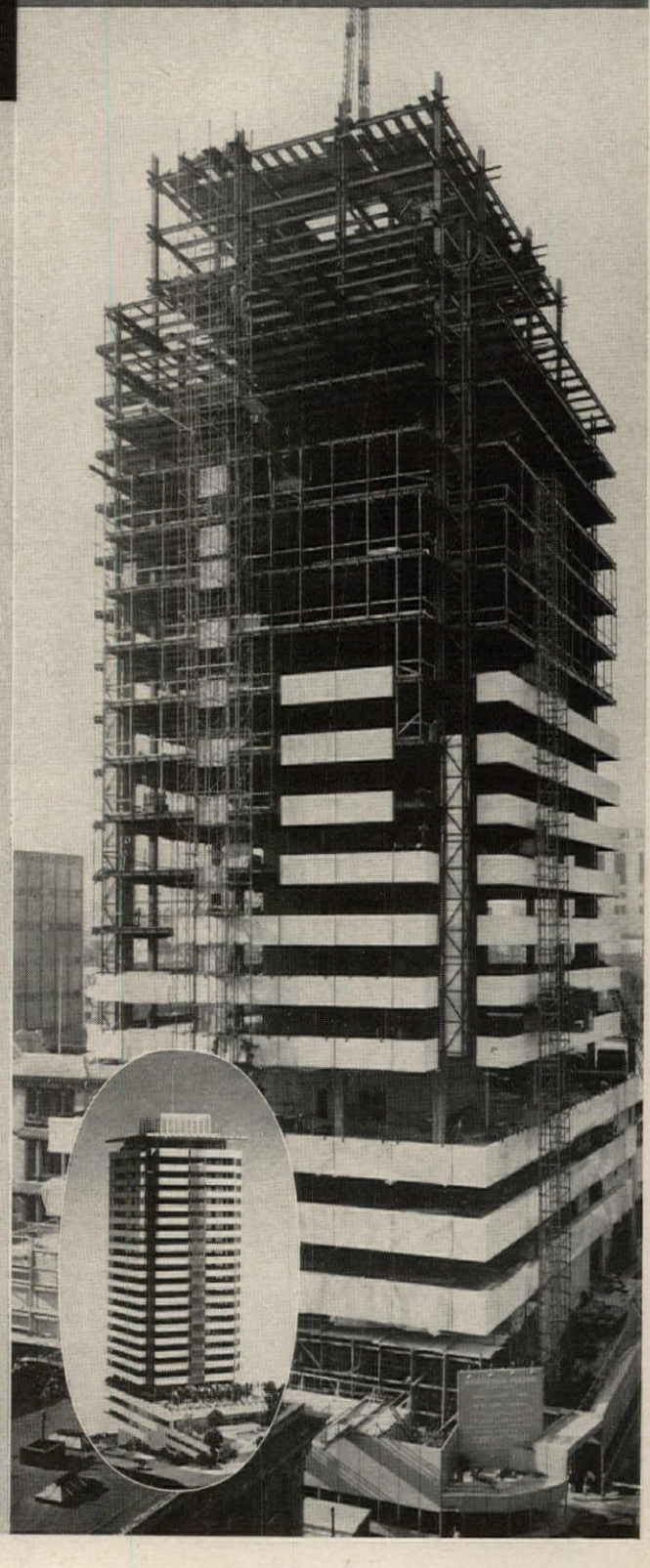
Additional Data on International Building

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Who Studies Buildings?

Architects do, of course. And their clients do. And some consultants in various fields. But America, where scientific and industrial research is relied on to solve every material and social and psychological problem, devotes scant attention to the study of buildings.

Research-minded America has lately been looking over its shoulder for any Russians that might be about. And the architectural profession as a group might look around for any Europeans or, say, Canadians who might be leading in building research. I had occasion recently in London to realize how far ahead the English are in the scientific effort to plan buildings for their purposes. The old cliché is that we in America study buildings by building them and seeing how they work, while the English study them in the paper stage first.

Before anybody writes me stiff letters about how much study goes into the problems of building design, building construction, building materials and products and systems, building codes and safety and fire protection, and building values and rentals and sales—well, I know something about those studies. I know also how seriously architects, individuals or organizations, study the purposes and requirements of schools, hospitals, housing, factories, office buildings and jai alai frontons. And I have sung the praises of the group at U.S. Public Health Service which has carried on the visions of Marshall Shaffer in the hospital field. I know too about studies—frequently amounting to genuine research—by various governmental bodies, of building types they themselves build.

Probably it is a compliment to the architectural profession that their clients have tended to trust architects to develop suitable buildings. Architects are assumed to know what goes on in buildings and what environmental conditions are required. And generally they know more about it than anybody else concerned, even though the client might raise his voice with his own wisdom.

Trouble is that the architect, surrounded by research, has none of his own. What he knows about building programming he has learned for himself—by reading, visiting buildings, observing mistakes of others, interviewing clients of other architects, and so on. He has only experience or opinion—his own or that of others—to guide his next decision. His knowledge is personal; it is not normally available to others. There is no research institute or foundation or university to which he can take a new idea. No way to test a forward-looking proposal except to compare it with an old one. The architect's intuition is often better developed than that of his wife, but he has to argue for it without benefit of researched support.

William Allen, the dean of the Architectural Association in London, shook his head over this lack in the United States, told of the activities of some 600 career researchers in England studying the problems of buildings. Most of them are in government, but they are not subservient to some building authority; they are free to do independent research. Allen and friend—Richard Llewelyn Davies, at University College, London—are both starting new assignments as deans, and both are insisting on some small beginning in true research in their schools, assuming the obligations of a university to advance a discipline as well as teach it.

I am sure that most American deans would join in recognizing this obligation, but true research in universities hasn't even come up to the batter's box. Foundations have given scattered grants to individuals who wanted to study native architecture in Bali, but that is about as far as we have gone toward building a body of knowledge about the problems architects are asked to solve.

—*Emerson Goble*

C.S.I. CONVENTION AGAIN STRESSES TECHNICAL GOALS



Past-president Glen Abplanalp turns over the gavel to incoming president James C. Bort



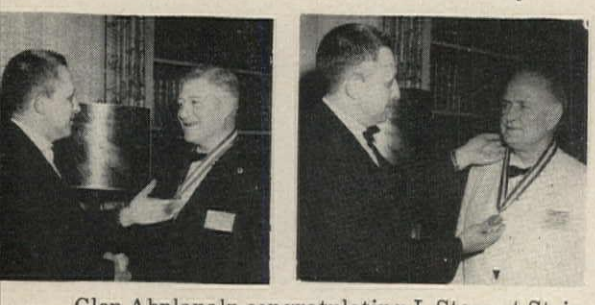
Convention planners and the host: left to right, Herbert F. Pendleton, convention chairman; Ronald S. Ryner, Executive Director; David F. M. Todd, N. Y. Chapter president



Regional Director Edwin A. Weed of New York congratulates national Secretary Harry Plummer, made a Fellow for service to C.S.I.



Glen Abplanalp invests Rolf T. Retz of Sacramento as a Fellow Carl Ebert stands by



Glen Abplanalp congratulating J. Stewart Stein of Chicago (left) and H. Griffith Edwards (right) on being made Fellows

At the fifth annual meeting of The Construction Specifications Institute in New York City, May 22-24, several developments indicated a more direct attack on technical matters and specification writing methods. Perhaps the most significant program offering was the unveiling of a new Manual of Practice for Specification Writing Methods. The purpose of this new guide is to help the specification writer take a more logical and orderly approach to the organization of specifications, while at the same time allowing a certain amount of flexibility for regional differences and the introduction of new materials. The guide and an accompanying sample outline of construction documents was prepared by Specification Methods Committee T-3, chaired by Rolf T. Retz of the Sacramento Chapter.

Also announced was the formation of a seven-man Technical Review Board which will be charged with the direction of CSI's technical program. Members include: James C. Bort, Chicago; Glen Abplanalp, New York; Robert G. Burkhardt, Chicago; Jack R. Lewis, San Diego; R. Redmond Coghlan, Los Angeles; Terrell R. Harper, Dallas; and Edgar A. Tyler, Cincinnati. In a new policy move, regional directors will assume certain administrative functions to allow more time for technical affairs at the national level.

New CSI officers are: president, James C. Bort, Chicago; vice presidents, Edwin T. Pairo, Washington D. C., H. Griffith Edwards, Atlanta, and Vincent G. Raney, San Francisco; secretary-treasurer, Harry C. Plummer, Washington, D. C.; regional directors, Winthrop M. Puffer, Boston; Edwin A. Weed, New York; Joseph L. Heacock, Jr., Philadelphia; James E. Wells, Atlanta; Albert G. Bear, New Orleans; Leslie M. Lowery, Detroit; John C. Anderson, Minneapolis; Kenneth M. Schaefer, St. Louis; R. Graham Jackson, Houston; Henry B. Baume, Denver; Jack R. Lewis, San Diego; Donald E. Paine, Olympia.

Three new associate directors are Livingston E.. Atkins, Charlotte; Joseph N. Lucas, Chicago; William P. Dunne, Dallas.

Members elected to fellowship are shown at left except for the late Harold R. Sleeper who was elected posthumously to fellowship for achievements in science of construction and education. —Robert E. Fischer



SPECIFICATION METHODS PANEL: Rolf T. Retz, Committee Chairman; Kenneth Helms, Donald Smith, T. D. Samuel, Samuel B. Freeland, Edgar Tyler, W. P. Vickers



TECHNICAL COMMITTEE OPERATIONS PANEL: J. R. Lewis, R. Harper, R. R. Coghlan, Jr., G. W. Duncan, H. Boisclair, R. Lane, W. Hagedohm, R. Whalley, and G. Lionakis



CO-ORDINATED RESPONSIBILITIES PANEL: Moderator, C. F. Ward, Jr.; A. Bustard, J. Steinmetz, M. Garber, L. Gilbert, J. Neilson, T. Lewis, and J. Milne

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The prime steel used in Eastern's Sparkle Panel is put through a multi-stage anti-corrosion process, then coated with a permanent refrigerator-type enamel. To retain Sparkle Panel's original lustre for life, only an occasional dusting is all that is ever needed.

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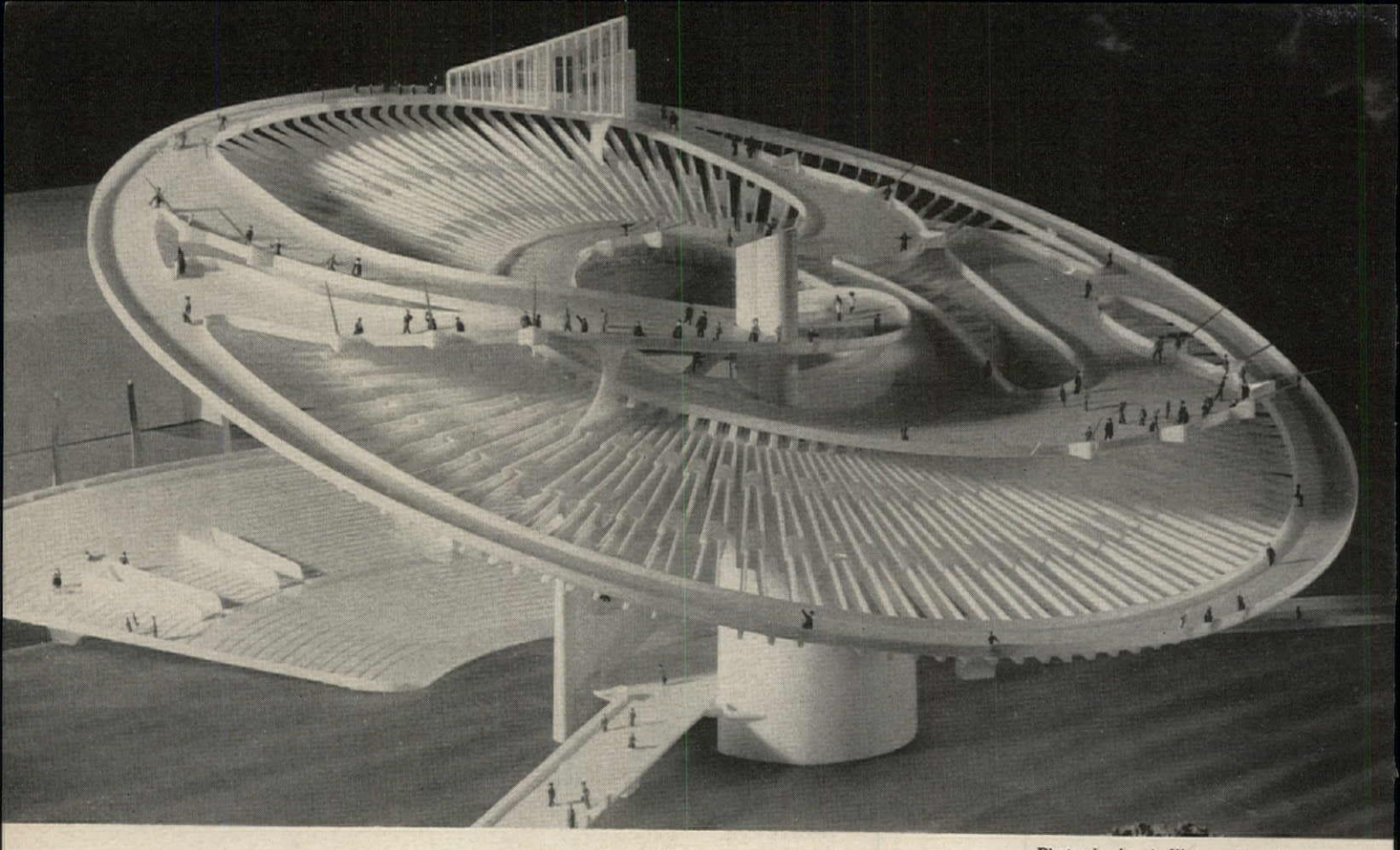
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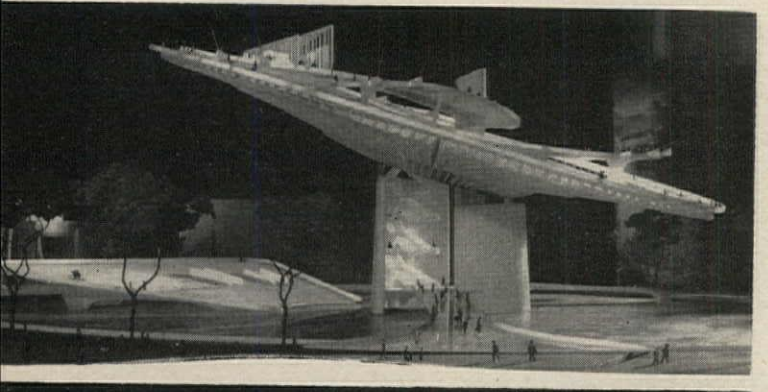
STREET _____

CITY _____ STATE _____



Photos by Joe A. Watson, New Haven, Conn.

RUDOLPH DESIGNS FOR THE NEW YORK FAIR





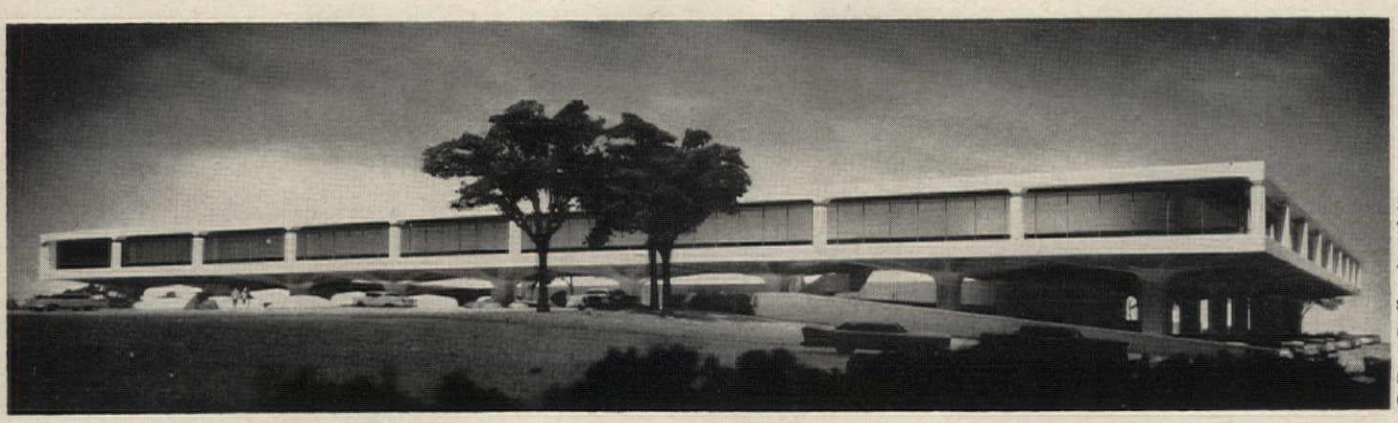
The Galaxon, a concrete "space park" designed by Paul Rudolph, head of the Department of Architecture at Yale University, has been announced by the Portland Cement Association as "a proposed project" for the 1964 New York World's Fair. Its cost is estimated at $4 million.

Commissioned by the P.C.A. as "a dramatic and imaginative design in concrete," the Galaxon consists of a giant, saucer-shaped platform tilted at an 18 deg angle to the earth and held high above it by two curved walls rising from a circular lagoon. The gleaming 300 ft diameter disc of reinforced concrete would hover in the air like some huge space ship.

Visitors would be lifted to the center of the "saucer" by escalators and elevators inside the curved supporting walls. From the central ring they would walk outward over curved ramps to a constantly moving sidewalk on the disc's outside perimeter. The sidewalk would rise and fall from the 160 ft high apex of the inclined disc, to a low point approximately 70 ft above the ground.

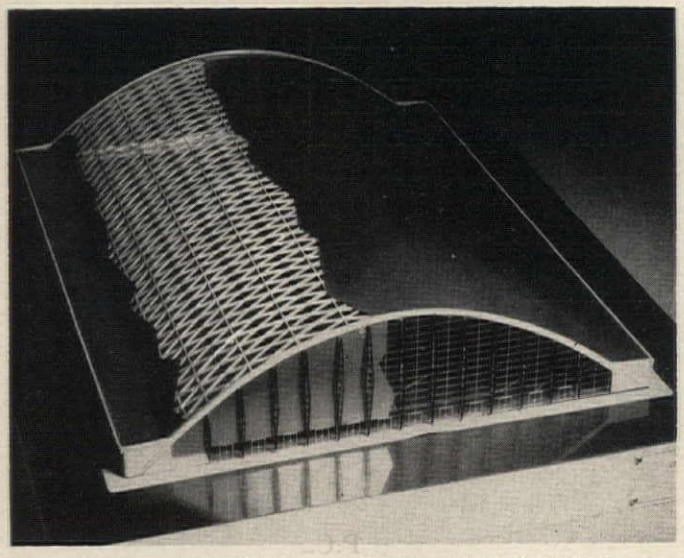
A stage is projected from one of its two supporting walls and a restaurant, planetary viewing station and other educational or recreational features could be located at points along its top surface to make it an entertainment center.

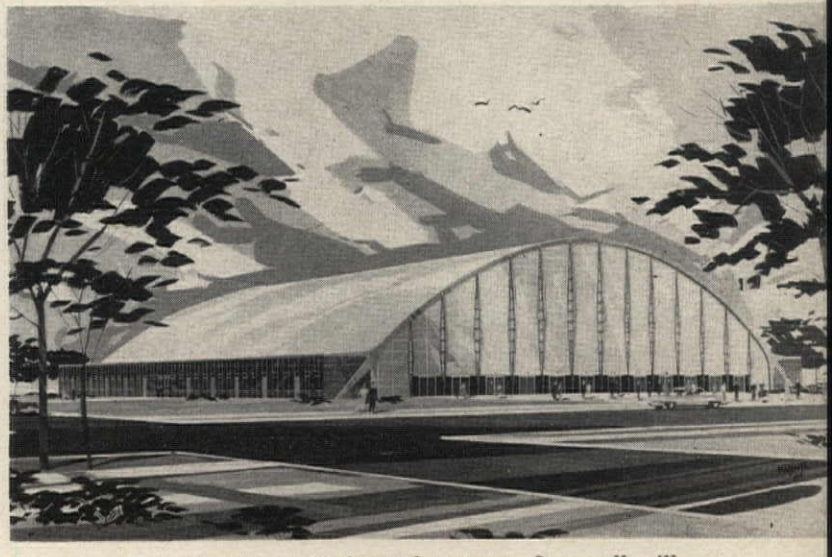
The Galaxon was among several designs displayed at an exhibition in New York of the use of concrete in so-called "visionary" architecture.



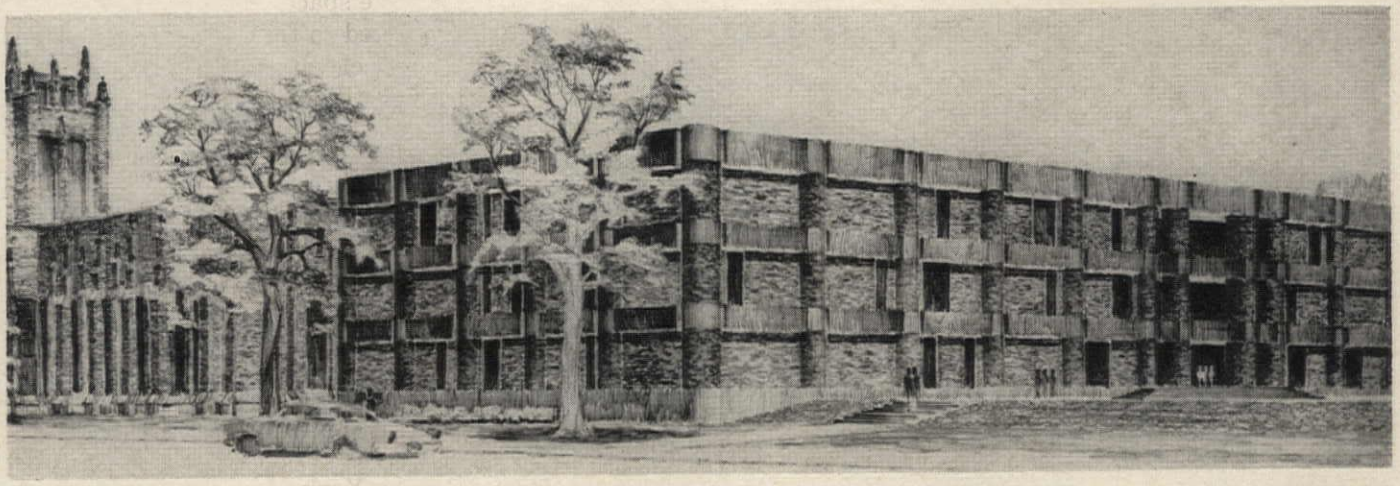
© Ezra Stoller Associates

The Emhart Manufacturing Company's new Administration and Research Building, Bloomfield, Conn., is to be completed in the fall, 1962. Architects are Skidmore, Owings & Merrill; contractor: George A. Fuller Co. Main floor is supported by concrete columns 42 ft apart, each flaring at top into a 42-ft sq section. These sections provide support for the main floor. Steel-walled lab facility is set down within the main floor. Underground parking is provided for some 300 cars





A new $1,500,000 field house at Dartmouth College is the second U.S. project of Italian engineer Pier Luigi Nervi. Covering slightly more than two acres, the structure's arched roof, which forms a lattice work of diamond-shaped reinforced concrete units, will rise to 62 ft at the center. One wall will be of glass; the other of red brick. Associated with Nervi on the project is the Boston firm of Campbell & Aldrich. Contractors will be Wexler Construction Co.

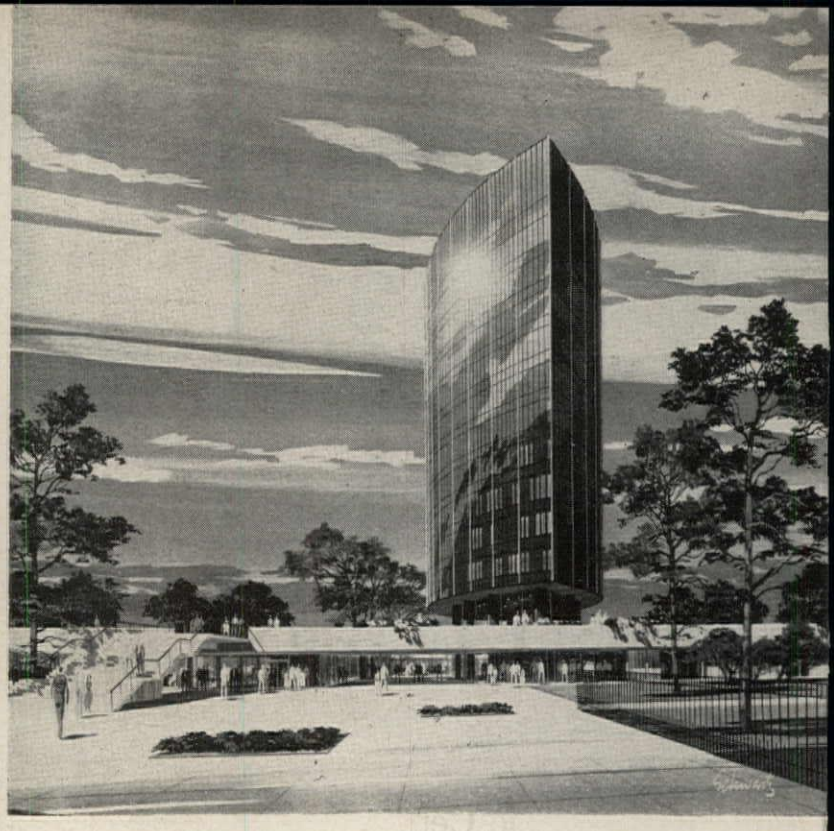


The first of several new science buildings planned for the Kline Science Center at Yale is this $3,500,000 Kline Geology Laboratory designed by Philip Johnson. To house all geology facilities under one roof, the three-story concrete and brick structure with two levels below ground will provide 100,000 sq ft of space. An unusual feature will be an indoor sedimentation tank about swimming-pool-size. Ground-breaking is expected to begin by the end of this year





Herbert Bruce Cross



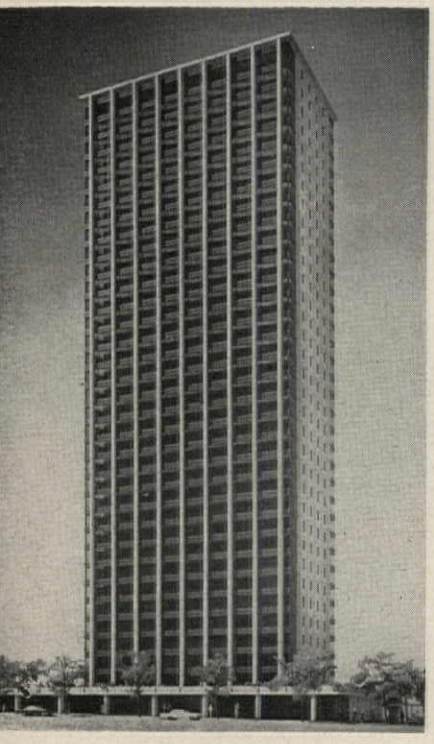
New Business Centers

(top) First phase of $20 million three-office building McCulloch Center to be developed across from Los Angeles International Airport is this 11-story tower which rests across a single story glass-enclosed base and restaurant; architect, Welton Becket and Associates. The two structures will be joined by a 200-ft-long walkway fronted by an open court. Construction is to begin in November

(above left) $25 million Occidental Center designed for downtown Los Angeles by William L. Pereira & Associates, will include the complete remodeling of Occidental Life Insurance Co.'s present 9-story building, construction of a new 9-story service building and a 5-story parking garage, and the ultimate erection of 25-story office tower. The project's initial phase (construction of service center, garage) is scheduled for completion January, 1963. Contractor is William Simpson

Part of Hartford, Conn.'s 12-acre $40 million downtown Constitution Plaza redevelopment is the 14-story Phoenix Mutual Building (above right) by Harrison and Abramovitz. In the shape of a pointed ellipse, the glass, metal and masonry tower is separated from streets by plaza areas and provides an enclosed ground floor courtyard, which is visible from the ground floor roof promenade

Louis Checkman





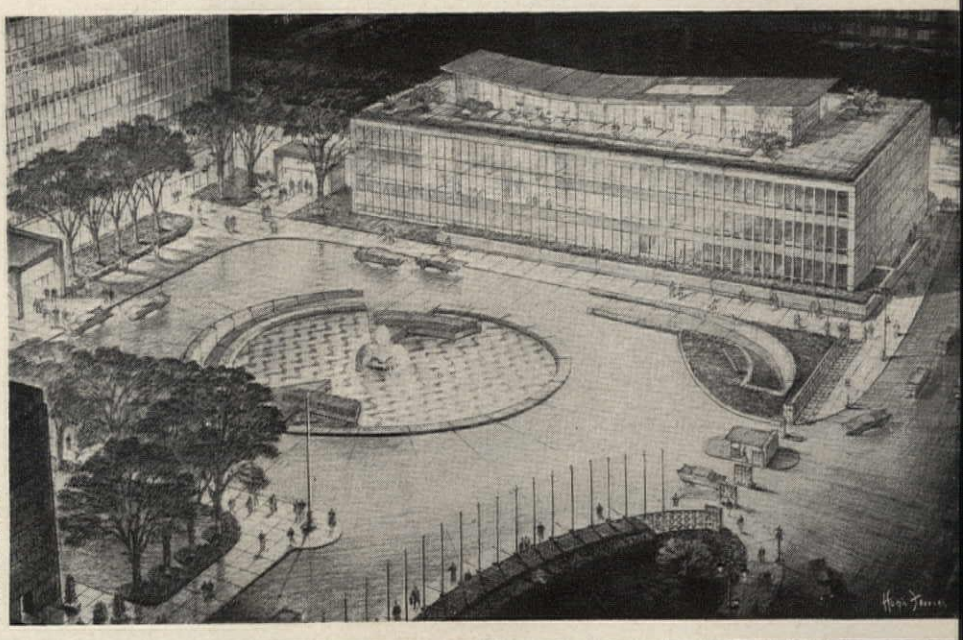
Apartment Projects for New York and Philadelphia

(left) Tower East, new 35-story Manhattan apartment building (four units on a floor) designed by Emery Roth & Sons, will rise without a set-back above 1-story base. Covering only 25 per cent of site, set back on all four sides, it will feature exterior concrete columns on east-west, concrete on north-south, and large glare-resistant glass expanses. Completion is scheduled for July 1962. Contractor is Tishman Realty & Const. Co., Inc.

(right) New construction in Philadelphia's Washington Square East (Society Hill) urban renewal project is $11,700,000 Hopkinson House, 33-story apartment building with 536 units. Stonorov & Haws are architects. R. M. Shoemaker Co. is general contractor. Completion is scheduled for October 1962. The contemporary grey brick and glass tower relates to area's Colonial character with touches of red brick and white marble on first floor

United Nations Library

View of the proposed new U.N. Library Building, designed by architects Harrison and Abramovitz. The library, to be built on the site of the present one, has been made possible by a grant of $6,200,000 from the Ford Foundation. Of modular construction, designed for utmost flexibility of space, the structure would have six stories above ground, three below. A glassed-in gallery leads to Secretariat Building. An auditorium, two stories high, would have stage on second basement level



United Nations

Orange Calif. Civic Center

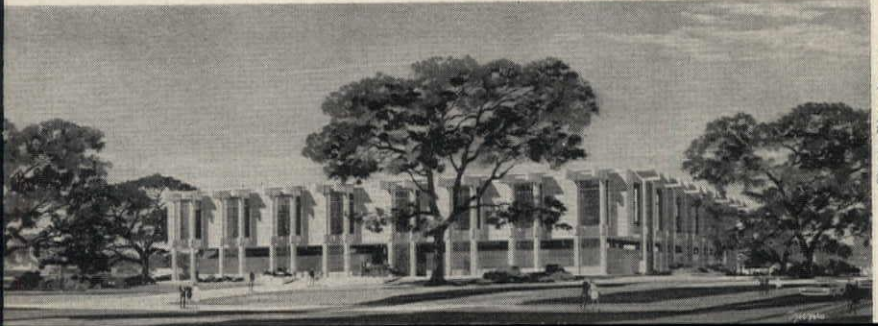
Planned, designed and engineered by Welton Becket and Associates to serve a 150,000 population expected to live in Orange, Calif. by 1980, this civic center would group all city functions together for maximum efficiency in a precast concrete arch structure reminiscent of the area's early Spanish history. The one-story, partial basement structure, on a 4.5 acre site, will contain approximately 54,000 sq ft. Completely furnished, it will cost an estimated $1,570,000. Expansion will be possible through addition of partial second floor





New Public Buildings

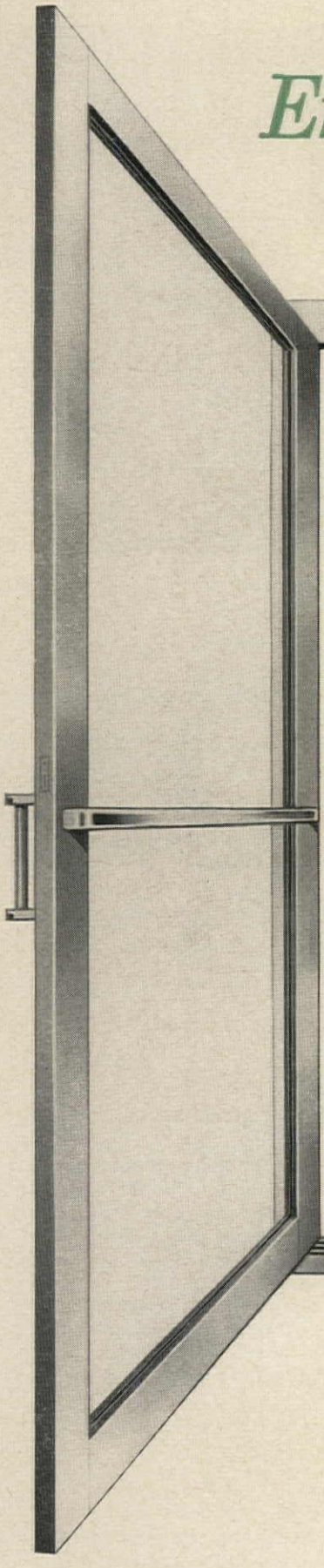
The new City-County Building planned for Indianapolis, Ind. has been designed by Allied Architects & Engineers, Inc., which includes Lennox, Matthews, Simms & Ford, and Vonnegut, Wright and Porteous, Inc. A 26-story tower for administrative offices, in glass and aluminum, will be flanked by five-story wings for Courts and Police, with Indiana limestone dominating the exteriors. Three-level underground parking provides for 625 cars



Evon Streetman

The Jackson County Courthouse, Marianna, Fla., designed by Barrett, Daffin & Bishop with associate Jim Bullard, surrounds fixed core of vaults and mechanical spaces with service agencies around them. Outer public circulation ring surrounds the enclosed space and is in a protected colonade formed by the over-hanging second floor. Bids on this project are expected to be taken in early fall

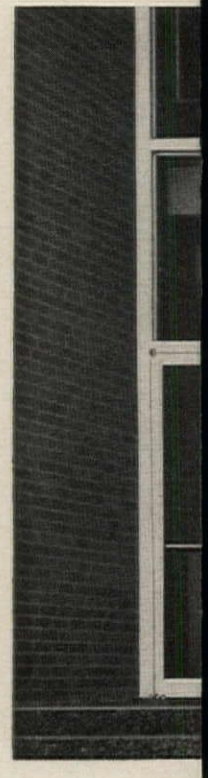
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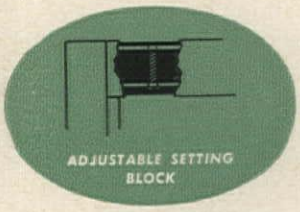
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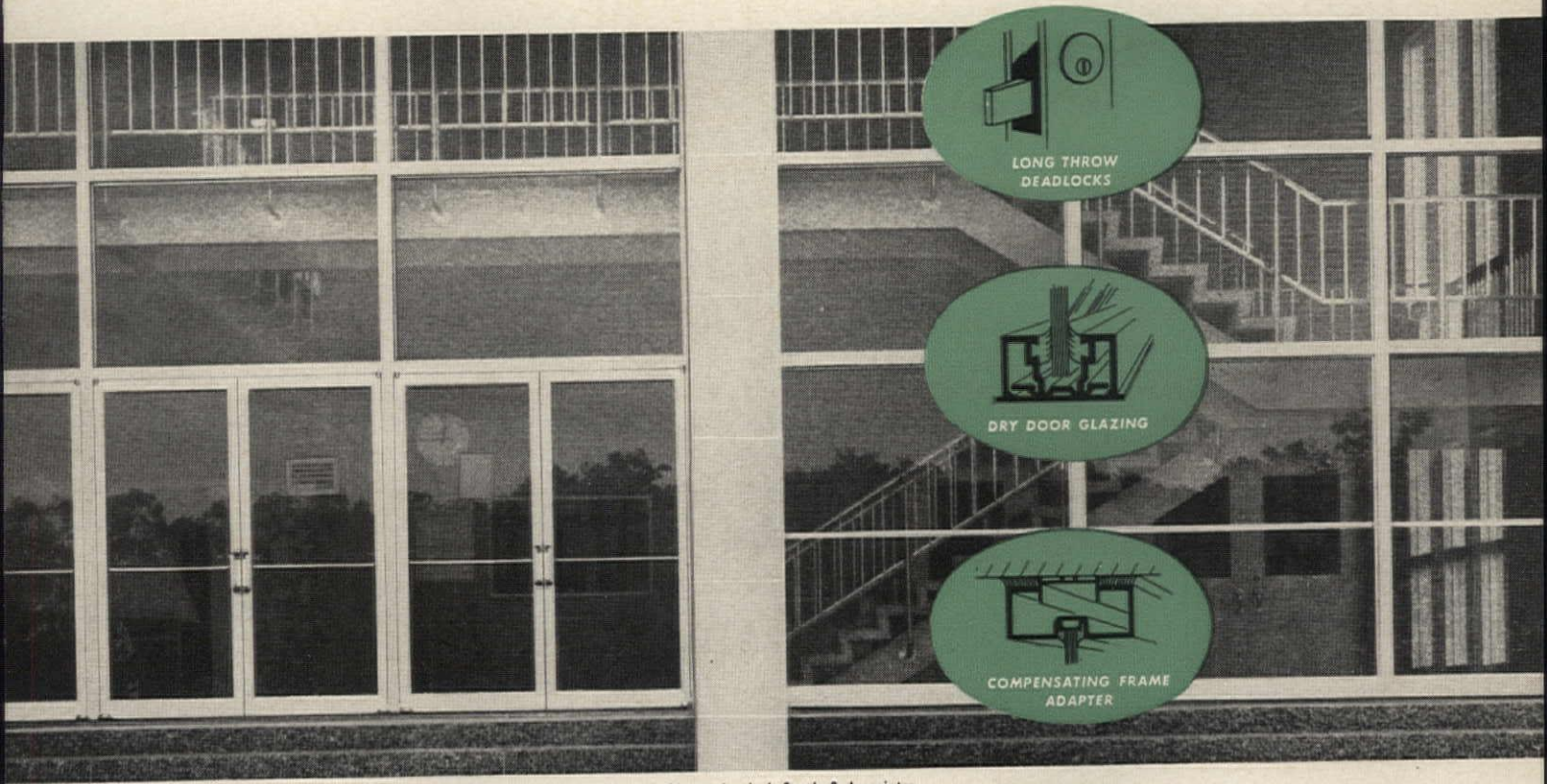
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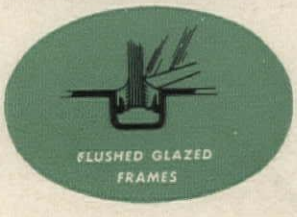




Entrance, Intramural Sports Building • Michigan State University, East Lansing, Mich. • *Architects:* Lewis J. Sarvis & Associates

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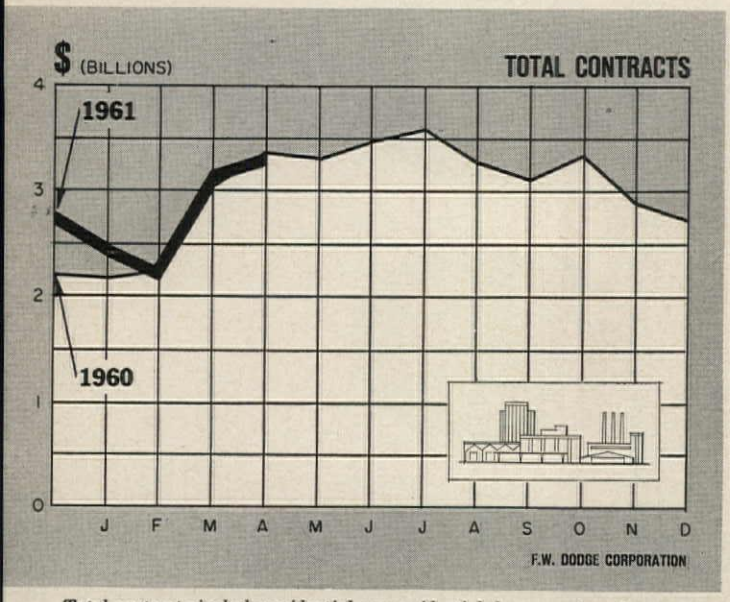




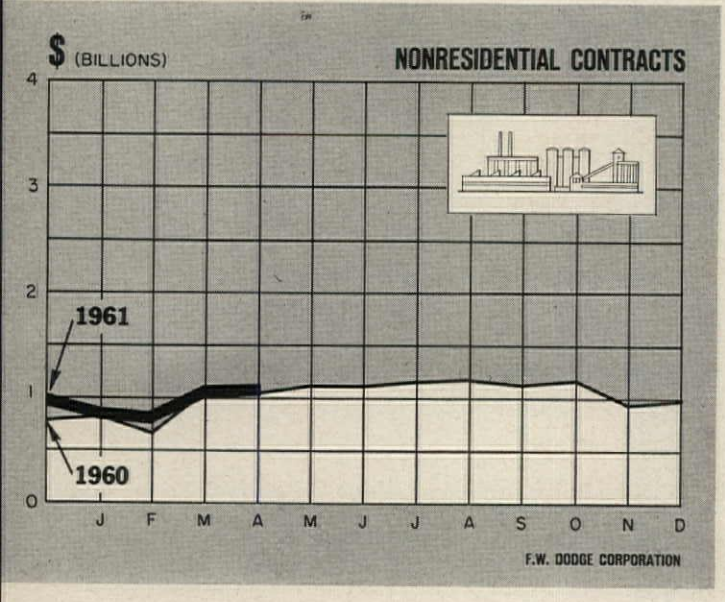
CUPPLES PRODUCTS CORPORATION

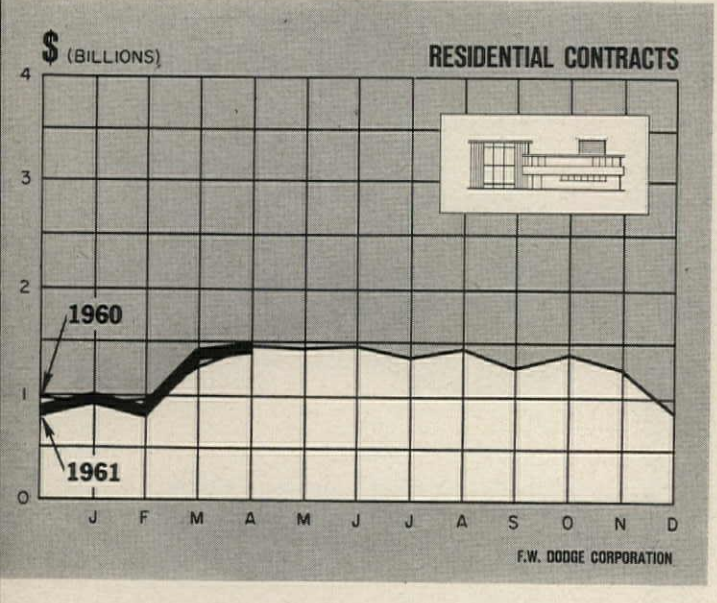
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ECONOMY MOVES UPWARD

THE ECONOMY continues to work its way upward out of the reluctant recession of 1961. In many respects, it wasn't much of a recession, having been fairly mild and fairly short. There were some people who hardly knew that a recession existed. And paradoxically, the total number of people working reached a new all-time record for the month in February 1961, at the very bottom of this peculiar recession. On the other hand, it was a genuine recession in the sense that unemployment rose, production fell off, and profits turned dismal. There's no question now that recovery is under way, but there are a couple of related questions being asked: how enthusiastic will the recovery be, and how long will it last?

GUESSES on these questions range from the starry-eyed school, who look for a boom with Gross National Product at a rate of $530 billion or more by year-end, to the deep purple school who question whether there will be any further recovery at all. The optimists base their reasoning on the propensity of some past business upturns to speed up as business and the public were overwhelmed by a wave of good feeling. The pessimists point to the relatively short time that elapsed between the 1958 recession and the latest one, and cite continuing unemployment and weakness in certain lines as an argument that a renewed recession is not far off.

MOST RESPECTABLE opinion, however, takes neither of these views. The standard forecast calls for a steady but not runaway continuation of the upturn through the rest of 1961 and on into next year. There is general agreement that unemployment will stay a little too high for comfort, and some major industries will hardly set new records in 1961—among them steel, autos and homebuilding. There is, however, something to be said for a modest recovery—it is more likely to be of long duration, with less danger of boom-and-bust. On the whole, it looks as though we can relax and enjoy a couple of pretty good years—economically, that is. There doesn't seem to be much chance of similar glad tidings on the international front, unfortunately.

SOME PARTS of the construction industry can well view the outlook through rose-colored glasses. Anyone connected with school building (aside from the downtrodden and unthanked members of Boards of Education) should be quite cheerful right now. Contracts for new schools in the first four months of 1961, as reported by Dodge, totaled nearly a billion dollars. This was a new-all-time record for the period, some seven per cent ahead of the corresponding period of last year. It is interesting to note that school contracts are up in most regions of the country, including the South; the only regions down are in the North Central part of the nation. Preliminary figures for May indicate that the gains over last year are not only continuing, but increasing in magnitude.

GEORGE CLINE SMITH
Vice president and chief economist
F. W. Dodge Corporation
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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
1930	127.0	126.7	124.1	128.0	123.6
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
Feb. 1961	357.9	341.7	386.9	407.9	386.4
March 1961	356.5	339.9	386.6	407.7	386.0
April 1961	357.4	340.2	387.9	409.5	387.8
	% increase over 1939				
April 1961	189.4	177.9	196.8	207.0	198.1

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
1930	82.1	80.9	84.5	86.1	83.6
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
Feb. 1961	259.1	252.0	276.5	285.2	278.8
March 1961	258.4	251.1	276.4	285.1	278.6
April 1961	256.8	250.1	275.2	284.0	277.6
	% increase over 1939				
April 1961	197.6	201.0	189.4	191.6	193.1

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
1930	108.9	108.3	112.4	115.3	111.3
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
Feb. 1961	313.0	300.7	326.1	343.1	330.7
March 1961	313.0	300.7	326.1	343.1	330.7
April 1961	313.6	300.9	326.2	343.3	331.0
	% increase over 1939				
April 1961	184.6	181.2	174.8	186.6	178.1

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
1930	90.8	86.8	100.6	104.9	100.4
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
Feb. 1961	300.6	281.7	337.0	355.2	343.2
March 1961	306.2	288.9	338.0	355.8	344.6
April 1961	306.9	289.6	338.9	355.8	344.6
	% increase over 1939				
April 1961	190.6	191.6	188.7	191.9	195.8

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.

There Is A Difference!



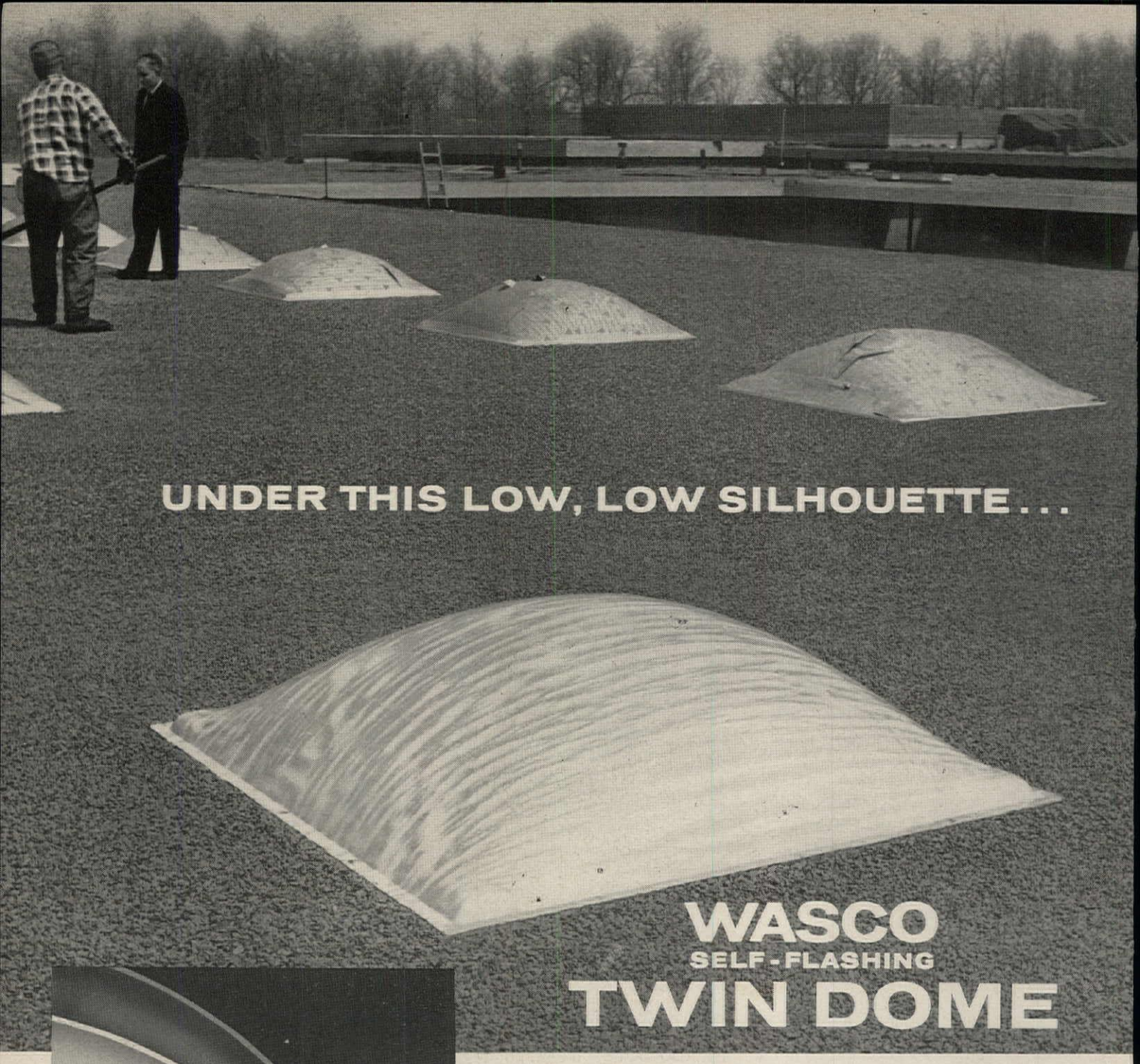
There **is** a difference in Toilet Partitions . . . and an important one! It's in the selection of quality materials, the solid construction, the functional design, and the highly-resistant finish that **stays** beautiful while the partitions are used . . . even abused! This difference is there . . . unseen, but inherent in all American Sanitary Partitions!

Only our many years of continued product research could develop such a functional, yet beautiful unit . . . offering the Double Economy of speedy, inexpensive installation and durable, dependable service. Be sure to specify American Sanitary Partitions on your next installation. You'll notice the difference immediately . . . and for years to come!

For additional information and specifications, refer to Sweets or write:

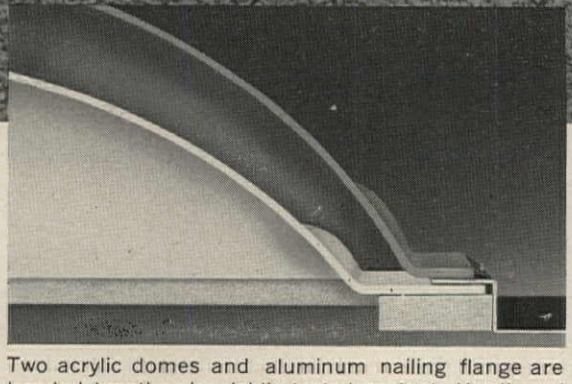
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Twin Dome is installed in 15 minutes. Continuous 3" flange is nailed to roof deck, covered with 4 alternating layers of mastic and roofing felt, plus hot tar, gravel.

NEW, IMPROVED! FIRST TOTALLY PROVEN DOME-WITHIN-DOME DAYLIGHTING DESIGN

The new Wasco Twin Dome is the first daylighting product of its kind with both inner and outer domes of shatterproof, weatherable Acrylite®. A field-proven polysulfide-base sealant ensures permanent compatible bonding of the two domes and an aluminum nailing flange. The uniform, hermetically sealed 1-inch dead-air space between the domes acts as a highly efficient thermal barrier and eliminates condensation. With its self-flashing design, the unit hugs the roof — permitting fast, economical, curb-free installation.

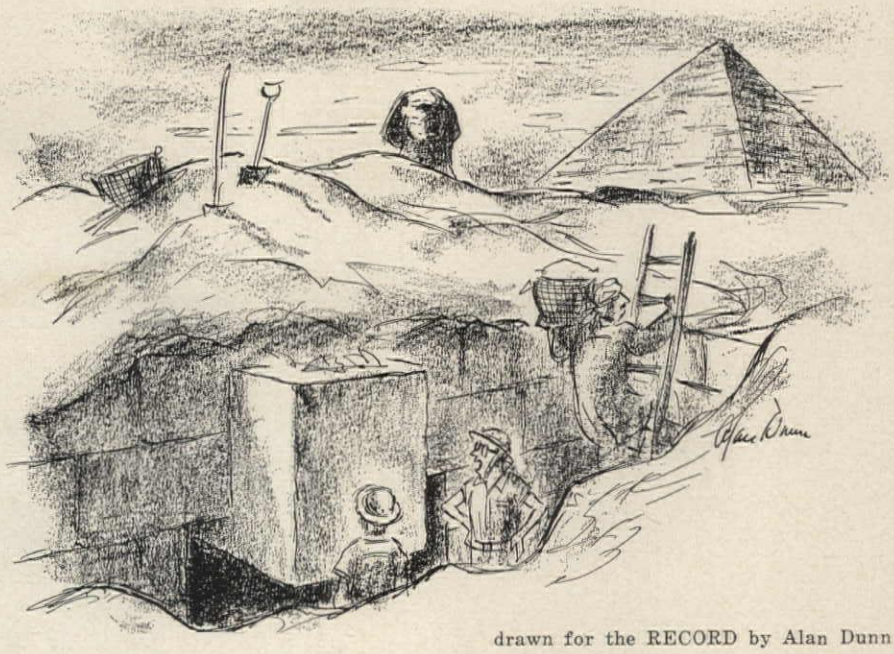
Choice of clear, white translucent or reflective inner and outer domes allows the architect to regulate light levels and heat gain. Twin Domes are also available in three curb-mounted models. Write for Wasco Twin Dome brochure with complete test, installation and specification data.

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drawn for the RECORD by Alan Dunn

"Well, for heaven's sake—brutalism!"

Perreault Appointed as A. I. A. Education Director

William Perreault, assistant professor of architecture at Cornell University, Ithaca, N.Y., has been appointed head of the Department of Education, Division of Member Services, of the American Institute of Architects.

The duties of the new education head will include those of liaison as official representative of the A.I.A. with the external educational groups and institutions and the professional organizations, such as the Association of Collegiate Schools of Architecture and National Architectural Accrediting Boards.

Mr. Perreault will act as counsel to the external organizations on scholarship matters, and to the membership on the selection of speakers and the planning of educational programs for sessions of the A.I.A. In general, he will carry forward activities to implement the objectives of the Institute in architectural education at the college level, the architect-in-training level, and the professional education level.

Having received his architectural degree from Cornell in 1951, Mr. Perreault practiced for five years with Roy Larson, F.A.I.A., of Philadelphia. He has continued with some private practice after joining Cornell and has acted in the capacity of consultant on rehabilitation of the old student union project of the University.

Leon Is Named to Head Architecture at Detroit

Bruno Leon has been appointed chairman of the University of Detroit department of architecture.

His varied educational background and experience began in 1937 when he entered Henry Ford Trade School. After graduating with a degree in architecture from the School of Design of North Carolina State College, he spent a year with the Buckminster Fuller Research Foundation, Raleigh, N.C. For four years he worked in the offices of I. M. Pei and Associates, New York, and with Pietro Belluschi and Eduard Catalano, Cambridge, Mass., during this time teaching in the department of architecture at M.I.T. He is at present a member of the faculty of the University of Illinois.

Mr. Leon has conducted research in the application of conoids to architectural structures.

New York Chapter A.I.A. Makes Annual Awards

Gordon Bunshaft, a partner in the firm of Skidmore, Owings & Merrill, has been awarded the Medal of Honor this year by the New York Chapter of the American Institute of Architects.

The Medal, the Chapter's highest award, was presented to Mr. Bunshaft at the Chapter's annual meeting in honor of his distinguished contributions to architectural design.

Also honored was Othmar H. Ammann, of the firm of Ammann & Whitney, who received the Chapter's 1961 Award of Merit for his distinguished engineering work in large bridge construction. His work includes the George Washington Bridge, Triborough Bridge, Whitestone Bridge, Throgs Neck Bridge and the Narrows Bridge.

The jury was composed of Percival Goodman, Olindo Grossi, Francis Keally, I. M. Pei, Thorne Sherwood, G. E. Kidder Smith and Frederick J. Woodbridge.

In the A.I.A. annual Architectural Journalism Competition, Walter McQuade received, in the magazine category, a $250 prize for a highly informative series of articles on architecture which appeared in *The Nation*. Honorable mentions went to *Time* Magazine for the continuing interest it has displayed in architecture, and to Thomas W. Ennis of *The New York Times* for two feature articles making the point that good architecture is good business.

A $1000 scholarship award was presented to George Eisen, senior at Abraham Lincoln High School, Brooklyn, who will begin his architectural studies this fall at Syracuse University. The scholarship is offered by the Plastering Institute of Greater New York and is administered by the Chapter.

Frederick J. Woodbridge was reelected president of the chapter for another year.

continued on page 26

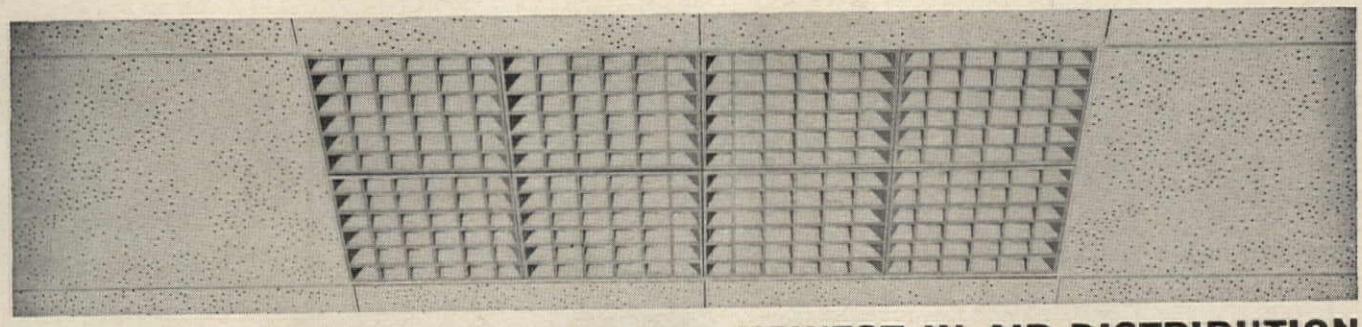


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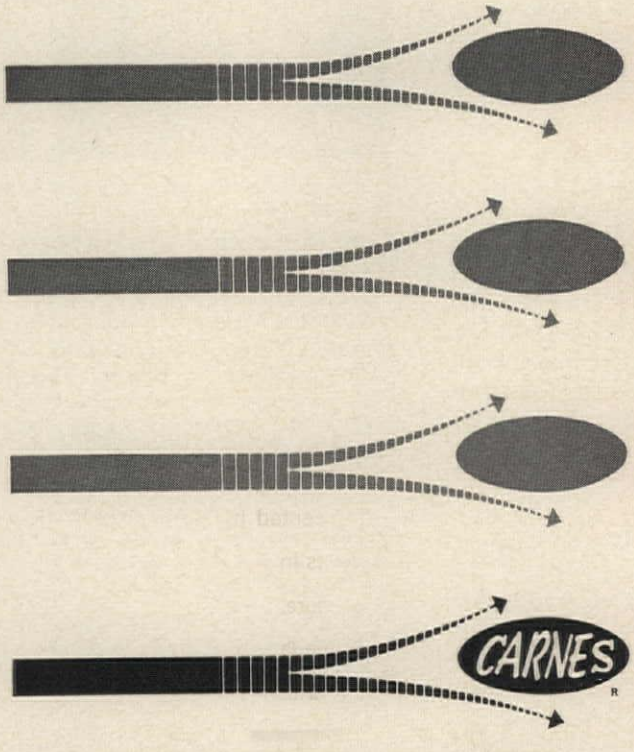
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Meetings and Miscellany

continued from page 23

First Round Winners Named: Red Rock Hill Competition

The winners of the first round in the Diamond Heights Red Rock Hill Competition have been announced. From them the San Francisco Redevelopment-Agency will choose five as a pool from which redevelopment-proposers can choose architects and design with which they wish to work and submit a proposal.

The winners, listed in order of receipt of entries, are: Berman & Kogan, Los Angeles; Stephen G. Oppenheim, Kurt W. Rheinfurth, Tad Kublicki, Hollywood; Herbert True Wheeler, Donald F. Leach, San Francisco; A. N. Contopoulos, Russell Cifford, Albert R. Seyranian, Karl E. Treffinger, Paul A. Wilson, San Francisco; Reid Rockwell Banwell & Tarics, Rai Y. Okamoto, Royston, Hanamoto & Mayes, San Francisco; Jan Lubicz-Nycz, John Karfo, in association with Mario Ciampi & Paul W. Reiter; San Francisco; James K. Levorsen, B. Clyde Cohen, San Francisco; Sim Van Der Ryn, Charles M. Davis, Charles D. Hanf, Berkeley; George Anselevicius, Roger Montgomery, Fumihiko Maki, Constantine Michaelides, William Roberts, St. Louis; William Eng, Norman Day, Charles Gordon, Tad M. Janowski, Carl Nelson, Champaign, Illinois.

Purves Receives Fitzpatrick Award

The annual F. Stuart Fitzpatrick Memorial Award has been given to Edmund Randolph Purves, F.A.I.A., former Executive Director of the American Institute of Architects and now Consulting Director, in recognition of his "outstanding individual achievement in the unification of the building industry."

In acceping the award during the Building Research Institute's spring conference in Washington, D.C., Mr. Purves paid tribute to the achievements of Mr. Fitzpatrick who for 25 years was manager of the Construction and Civic Development Department of the U.S. Chamber of Commerce and played a pioneering role in the founding and growth of the Building Research Institute.

The award was created last year through the donations of more than 100 building industry associations to acknowledge a debt of appreciation to the memory of Mr. Fitzpatrick. It is administered annually by an advisory committee comprising representatives of five building industry organizations—BRI, Producers' Council, Associated General Contractors, National Association of Home Builders, and A. I. A.

Winners Announced in Literature for Engineers

Nine manufacturers and three trade associations received, during the annual May meeting of the Consulting Engineers Council, awards for outstanding product literature directed toward the consulting engineer in the First Engineers' Technical and Product Literature Competition.

Top awards in the four classes went to: Wire Reinforcement Institute for its "Building Design Handbook"; Ramset Fastening System, Winchester-Western Division, Olin Mathieson Chemical Corporation for its "Power-Driven Fastener Handbook"; The Dow Chemical Company for its brochure "Progressive Concept in Thin Shell Contruction"; and Inland Steel Products Company for its space advertising campaign directed to consulting engineers.

The competition, a project of the Joint Committee of the Consulting Engineers Council and the Producers' Council, was initiated in recognition of the importance of product information in the construction industry and the need for manufacturer's product literature that meets specialized requirements.

A total of 254 entries were considered, representing 113 manufacturers and trade associations. On the Jury of Awards were: LeRoy H. Nettnin, jury chairman and co-chairman of the C.E.C.-P.C. Joint Committee; Hueston M. Smith, president, Consulting Engineers Council; William J. Campbell, president, Illinois Association of Consulting Engineers; Earl A. Krueger, president, Consulting Engineers Institute of Wisconsin; and J. Donald Kroeker, chairman, C.E.C. Public Relations Committee.

Other award winners were: American Iron and Steel Institute, National Concrete Masonry Association, Lennox Industries, Inc., General Electric Company, Crouse-Hinds Company, Ranney Method Water Supplies, Inc., Smith & Loveless, Division-Union Tank Car Company and Granco Steel Products Company.



(left to right) West Coast architect Gardner Dailey, Mrs. Edward Durell Stone, Mrs. Dailey (the former Lucile Downey) and Mr. Stone celebrate the occasion of the Daileys' marriage at a reception held at the Stone architectural office in New York

National Preservation Trust To Hold Annual Meeting

The 15th annual meeting and preservation conference of the National Trust for Historic Preservation will be held October 12-16 in New York City, with headquarters at the Waldorf-Astoria Hotel. Hotel reservation cards, programs and detailed registration blanks will be mailed to the membership after Labor Day.



Eight outstanding students out of 45 in the 1961 graduating class of Columbia University's school of architecture received $2500 William Kinne Fellows Memorial Traveling Fellowships for graduate study abroad and publishable research. They are (standing left to right): James L. Groom, Princeton, N.J.; Theodore W. Litzenberger, Emmaus, Pa.; Arthur Pettorino, Brooklyn, N.Y.; Luellen Fields, Greenwich, Conn.; Peter Amato, Yonkers, N.Y.; David E. Glasser, New York City; and Herbert M. Mark, Seattle, Wash. James Falick, New York City, was not present. Seated (left to right) are Faculty Selection Committee members: Edward J. Romieniec, associate professor; Percival Goodman, associate professor; James G. Vanderpool, associate dean; Charles R. Colbert, dean; and assistant dean Kenneth A. Smith

more news on page 88



BORDEN ARCHITECTURAL DECOR PANELS

Now Borden brings a new building component to the architect—durable light-weight aluminum panels which can be custom-styled in an infinite variety of forms and designs. For example, the extruded type shown here can be had with design punchings of squares, circles, ovals or combinations of curves and straight lines.

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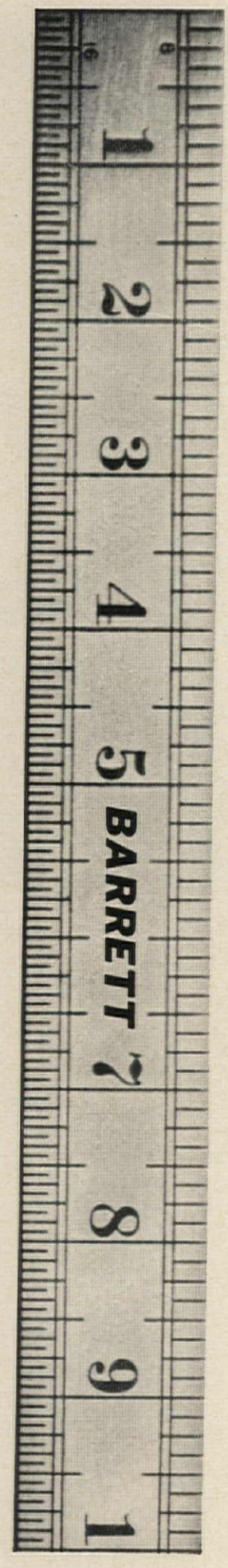
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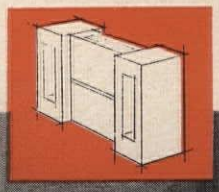
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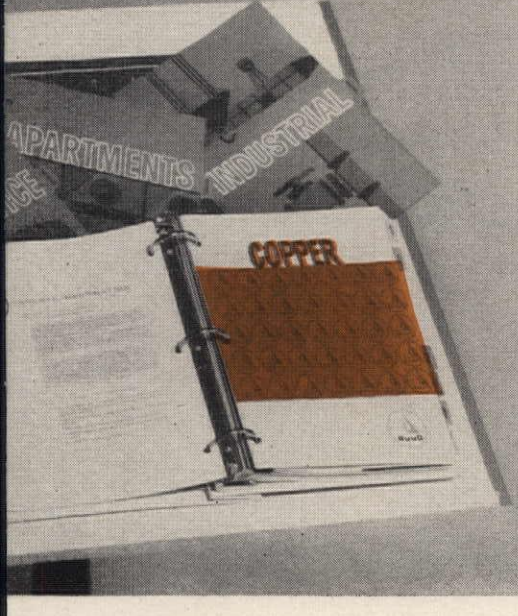
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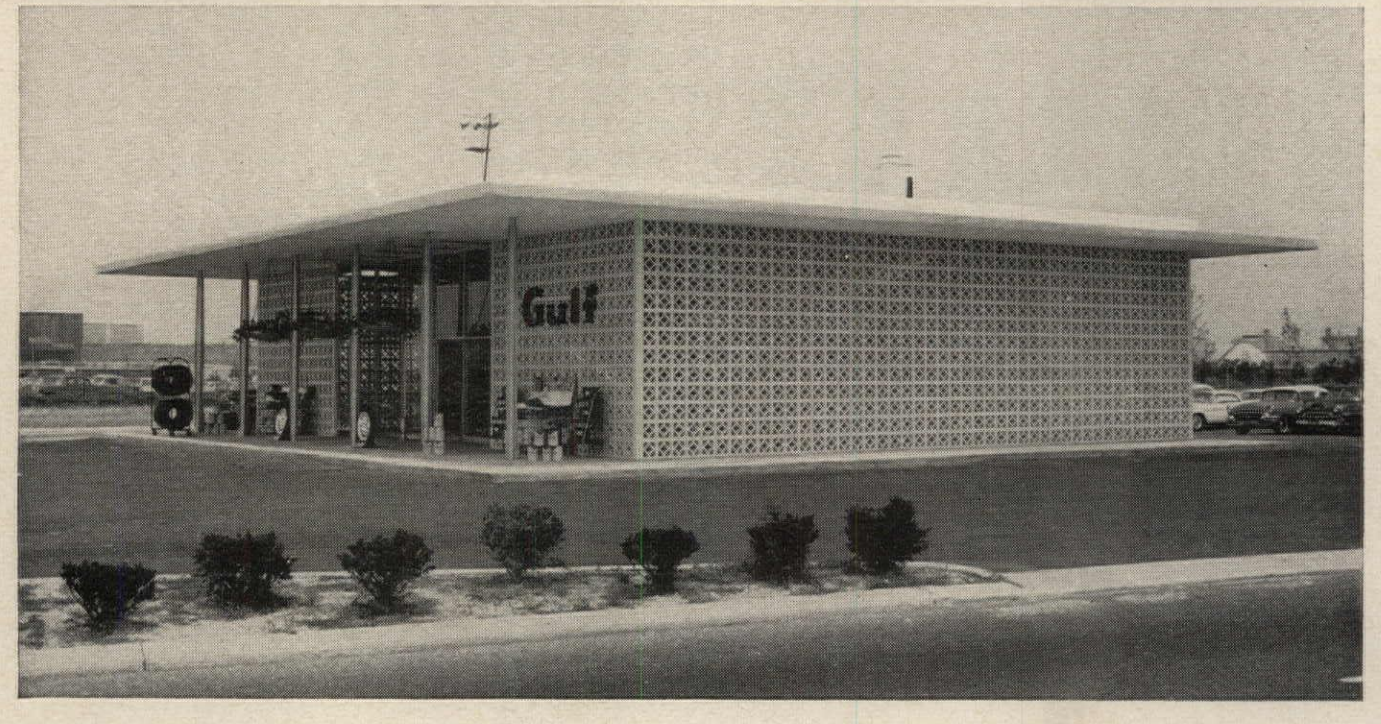
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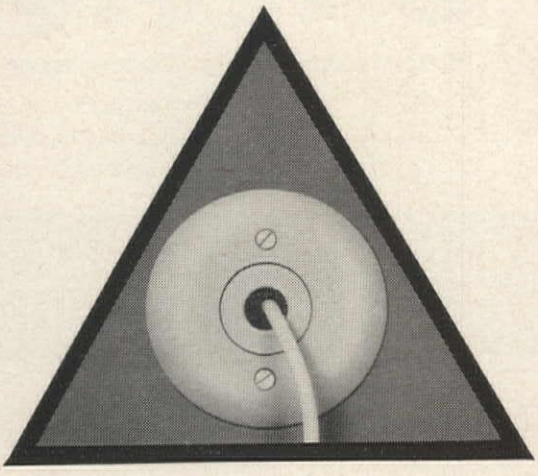
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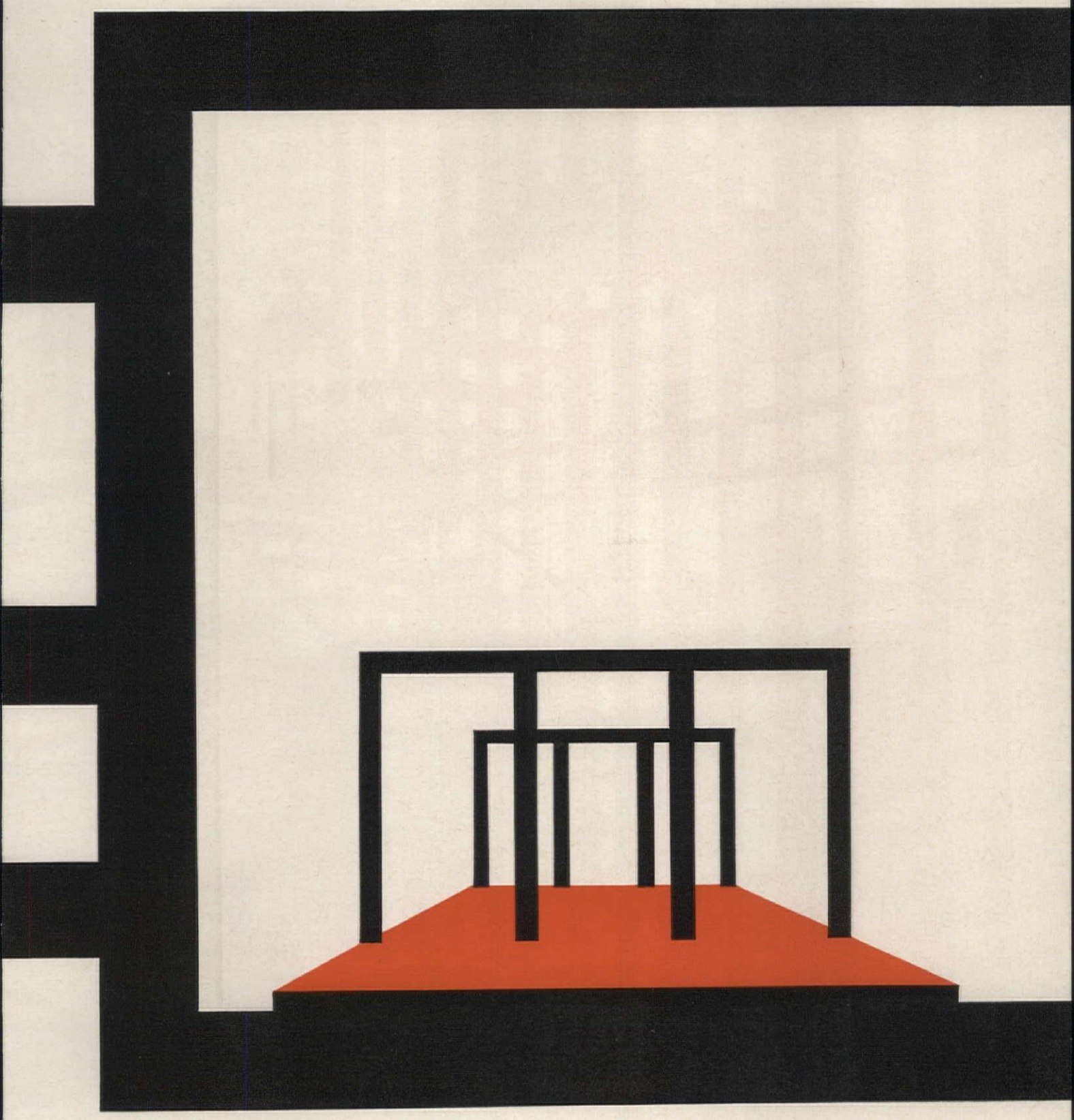
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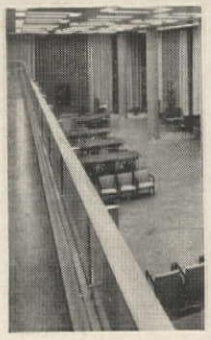
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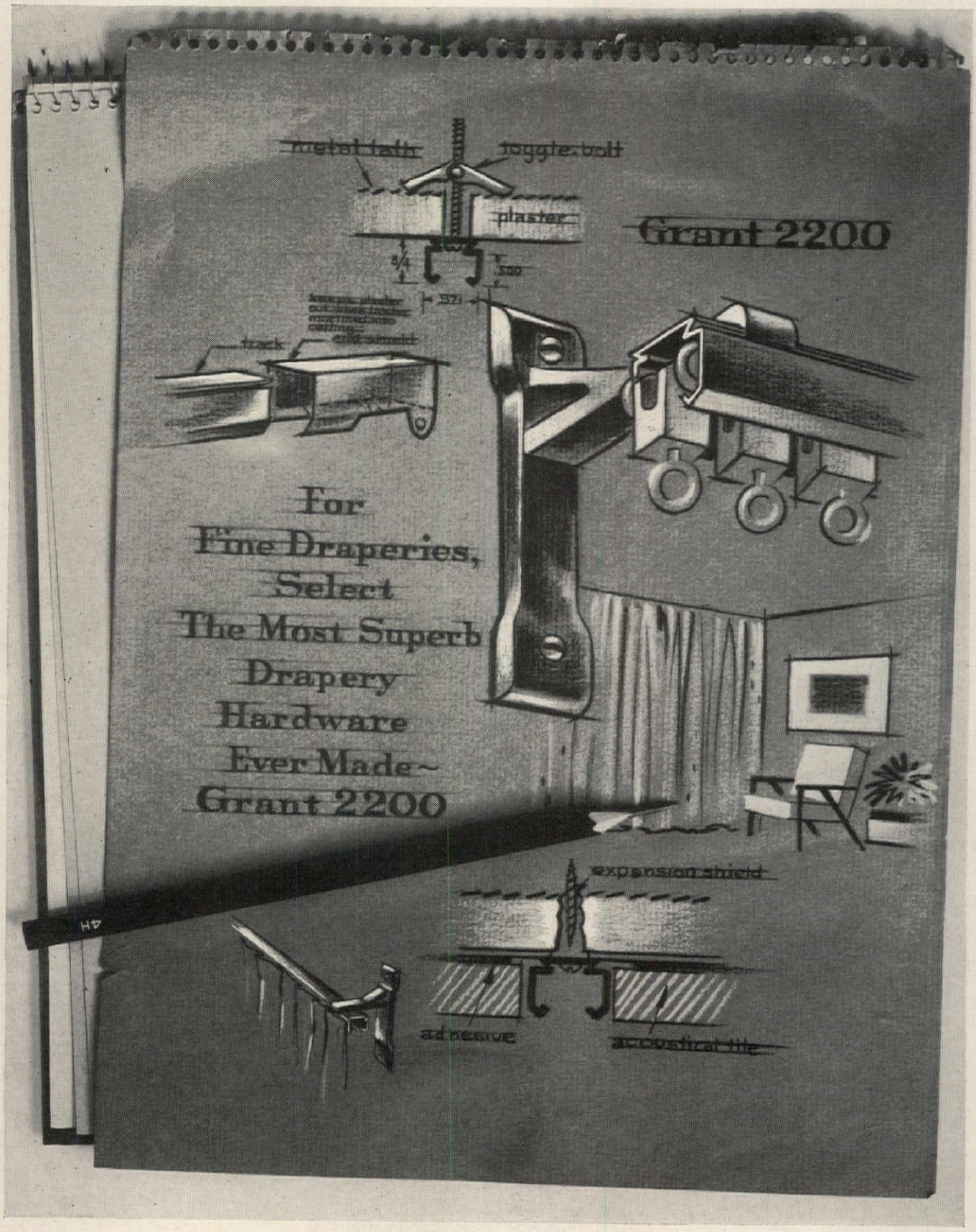
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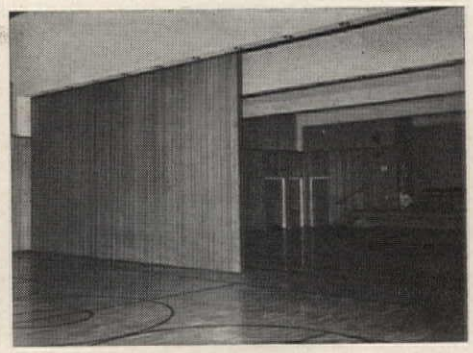
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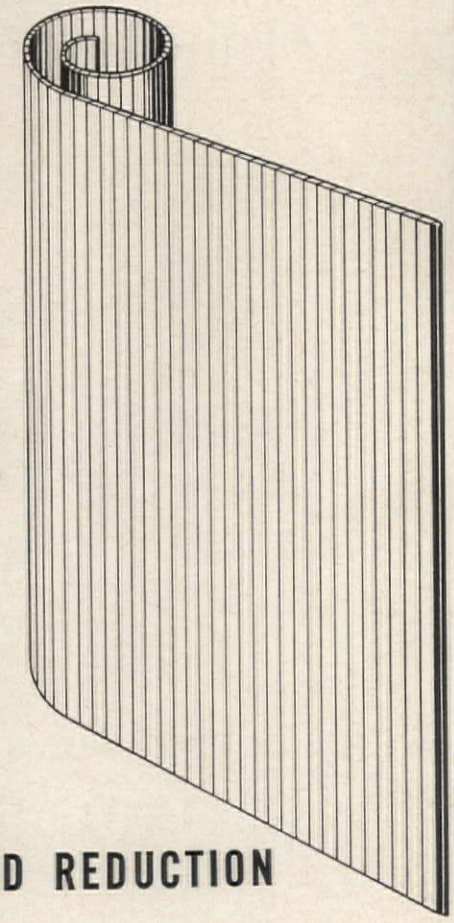
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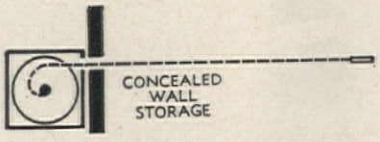
Coil-Wal

DIVIDES SPACE



MULTIPLIES UTILITY

SOUND REDUCTION UP TO 45 db.



Construction: Vertical, 1″ x 2″ tongue and groove, solid wood slats of Douglas fir articulated on horizontal airplane cables at optimum intervals.

Weight: Less than 3 pounds per square foot.

Finish: Slats are kiln dried and treated at the factory to prevent moisture absorption and insure dimensional stability. Finished in varnish, stain or paint to specification.

Acoustical Qualities: Vertical slats and grooves greatly reduce echoes within the partitioned area. The wall itself presents an effective sound barrier, reducing transmission to a level satisfactory for all normal purposes.

Controls: Coil-Wal may be operated manually by direct push-pull, by crank, or by a combination of push-pull-crank—or may be motor driven with local or remote controls.

Consider these exclusive Coil-Wal features: solid wood slats on multiple airplane cables, fitting together snugly on tongue-and-groove joints—coils (like a roll desk top placed on edge) into small vertical storage box—light weight (less than 3 lbs./sq. ft.), supported on light-weight traverse track—requires no structural reinforcement even in old buildings—can be installed for great strength with or without floor guide—can follow simple or compound curve or turn corner—permits hinged access door when wall is in use. New, double Coil-Wal with sound-deadening air space provides maximum sound control where needed. Coil-Wal costs far less than conventional frame and fabric types. Can be operated manually or with power. Practically no size limits—installations 30 feet high and 150 feet long are in satisfactory use. Available in a variety of woods, factory prefinished, or beautiful impervious laminates in faithfully reproduced wood grains.

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6137

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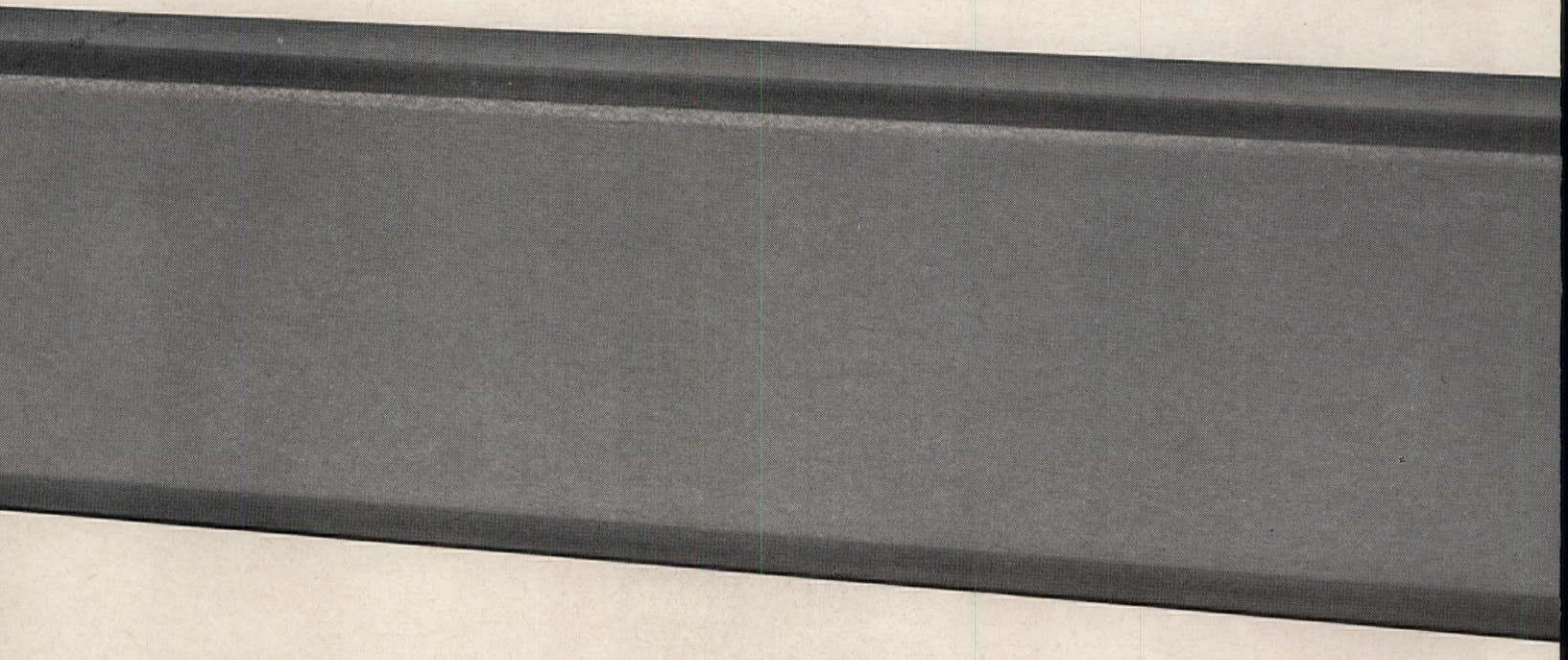
Park Avenue looking south from 57th Street

NEW YORK DISCOVERS that traffic congestion either ends at curbside or extends into building lobbies—*depending upon the kind of elevatoring used.* Why? *Because there is more to completely automatic elevatoring than simply leaving the operator out of the car!* Any elevator installation that fails to provide complete automation for all of the constantly changing, widely varying traffic patterns that occur throughout the day and night—*invites curtailed service, long waits and traffic congestion.* This applies in a like degree to the greatest skyscraper and the smallest commercial or institutional building. How do tenants and visitors react? After all, they are people. They react in a like manner to elevator service. And a building's reputation soon reflects their reactions. The mark of a CLASS "A" building—*large or small*—is completely automatic AUTOTRONIC® elevatoring. It accurately predicts and delivers a magnificent performance. Since 1950, more than 1,100 new and modernized buildings across the United States and Canada have contracted for AUTOTRONIC elevatoring by OTIS—the world's finest!

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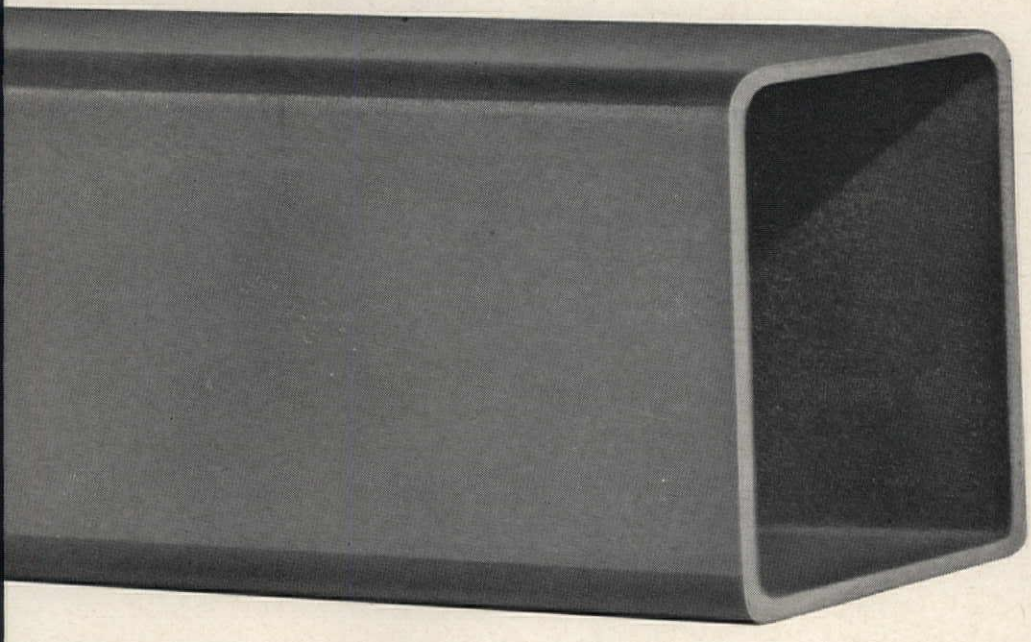
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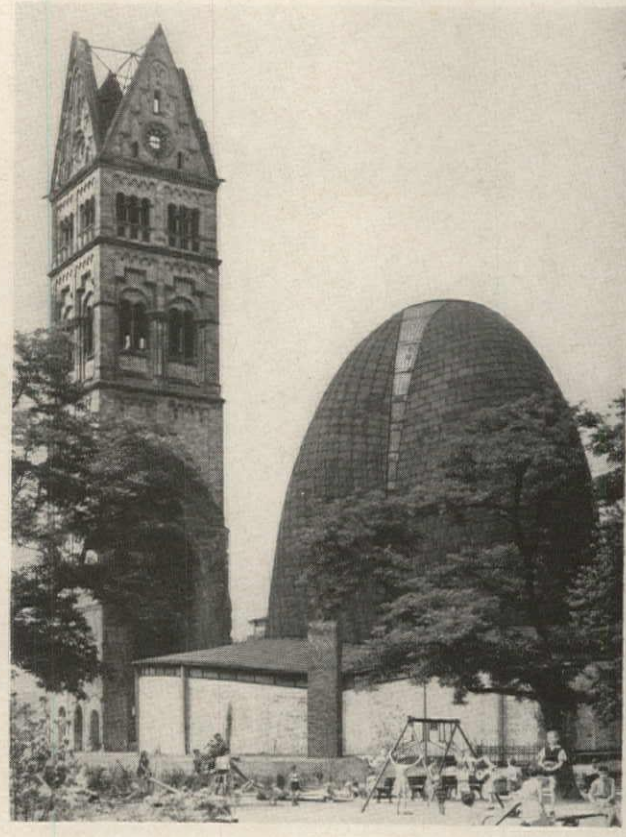
USS National Hollow Structural Tubing is made of hot-rolled carbon steel. This product has a tensile strength of up to 80,000 psi, and a minimum yield strength of 33,000 or 36,000 psi—maximum strength at minimum cost. It conforms to the chemical and mechanical properties of ASTM A-7 and A-36 specifications. Because of the hollow design, you obtain maximum strength with minimum weight. It's compact, easy to handle and maintain. It is a highly efficient structural member especially in compression and where subjected to bending movements in more than one direction.

USS National Hollow Structural Tubing comes in a wide range of stock sizes: 1″ x 1″ to 10″ x 10″ for squares, up to 32″ perimeter for rectangles, and in lengths 36 to 42 feet. For more detailed technical information, send the coupon.

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St. Rochus Church, Dusseldorf, Germany
Paul Schneider-Esleben, architect
—from *The New Architecture of Europe*

The Architect as Tourist

THE NEW ARCHITECTURE OF EUROPE. *By G. E. Kidder Smith. Meridian Books, The World Publishing Company, 2231 W. 110th St., Cleveland 2, Ohio. 361 pp., illus. $1.95 (paperbound).*

Any architect contemplating a European tour would be well-advised to obtain Mr. Kidder Smith's book beforehand, and to save room in his baggage for it when he leaves. It is expressly designed as a guide to postwar European building, and, despite its being termed in the subtitle as an "appraisal," Mr. Kidder Smith does not pretend that it is a survey in depth.

There may, of course, be some minor complaints about omissions; although (unfortunately) the buildings are not dated, few of them appear to have been built prior to 1950. This means that there is still a gap in architectural guidebooks: the tourist must still dig to learn the whereabouts of, say, an early Perret building or an early Corbu. But this is certainly not Mr. Kidder Smith's fault.

He has covered 200-odd buildings in text and photographs, and has mentioned almost as many again in peripheral comments. The regions reported include Austria, the Benelux nations, England, Ireland, France, Germany, Greece, Italy, Scandinavia, Spain and Portugal, and Switzerland. Most considerately, the author has included addresses of buildings and architects.

In short, as useful to the architect-tourist as wash-and-dry shirts or dramamine.

The Ideal City

MOTOPIA. *A Study in the Evolution of Urban Landscape. By G. A. Jellicoe. Frederick A. Praeger, Inc., 64 University Place, New York 3. 168 pp., illus. $9.50.*

"Motopia," as one might suppose, is a portmanteau word in which both motor cars and utopia figure. Designed for a location in London's Green Belt, Motopia's most notable characteristic is its roof-top roads. The town is, in effect, one building based on a large grid; apartments occupy straight terraces (under main roads) and circuses (under traffic "roundabouts"). All ground space is thus left free for trees and pedestrians, and for some buildings —schools, churches, and stores. Mr. Jellicoe's only claim for the validity of Motopia—aside from its being logical, practical, relatively inexpensive, and unlikely to be built—is that in formulating the ideal one is apt to throw some light on the actual.

Quite as interesting as Motopia are the photographs which illustrate the "Evolution of Urban Landscape." These are chosen from any and almost all periods of history to demonstrate earlier attitudes toward the "biological landscape" or the "town center."

The Shrinking Land

THE SQUEEZE: *Cities Without Space. By Edward Higbee. William Morrow & Co., 425 Fourth Ave., New York 16. 348 pp. $5.95.*

A reviewer on one of the New York dailies regularly refers to one class of literature—not always with enthusiasm—as the "whither-are-we-drifting" school. However tired one may be of hearing our national failings dissected with shock and

continued on page 68

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THE AESTHETIC APPEAL OF THIS PEDIATRIC CLINIC in New Orleans is due in large part to the architect's effective use of redwood and glass to make the building a pleasant and attractive place for small patients and their mothers.

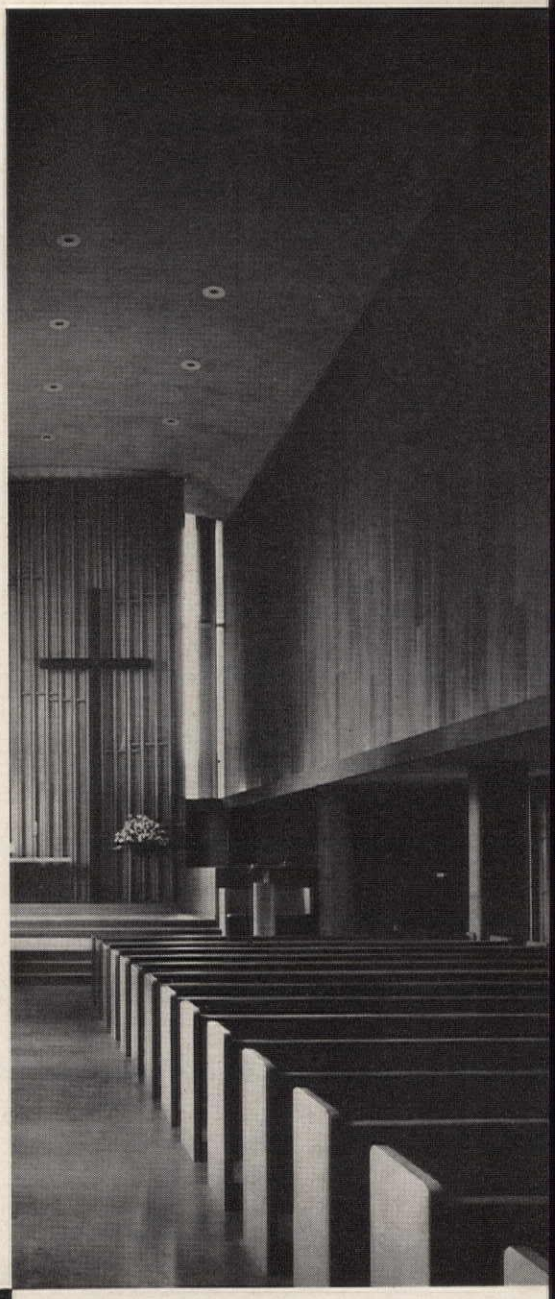
Architect: Charles Colbert, A. I. A.

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THE APSIDAL WALL OF REDWOOD provides a decorative but unobtrusive background for the altar in this handsome church. And because redwood has the feeling of warmth so desirable for church structures, it was also used for paneling.

Architect: Carlton A. Steiner, A. I. A.

OFFICE, SCHOOL and CHURCH

all more inviting... thanks to Redwood

These three buildings demonstrate how redwood gives the architect the freedom of expression he needs to avoid the cold, austere "institutional look." Unlike other, less versatile materials, redwood has an unaffected beauty that blends with its setting, naturally and beautifully. If you do not have an up-dated copy of "The Architect's Redwood File," write Dept. A-5 on your business letterhead.



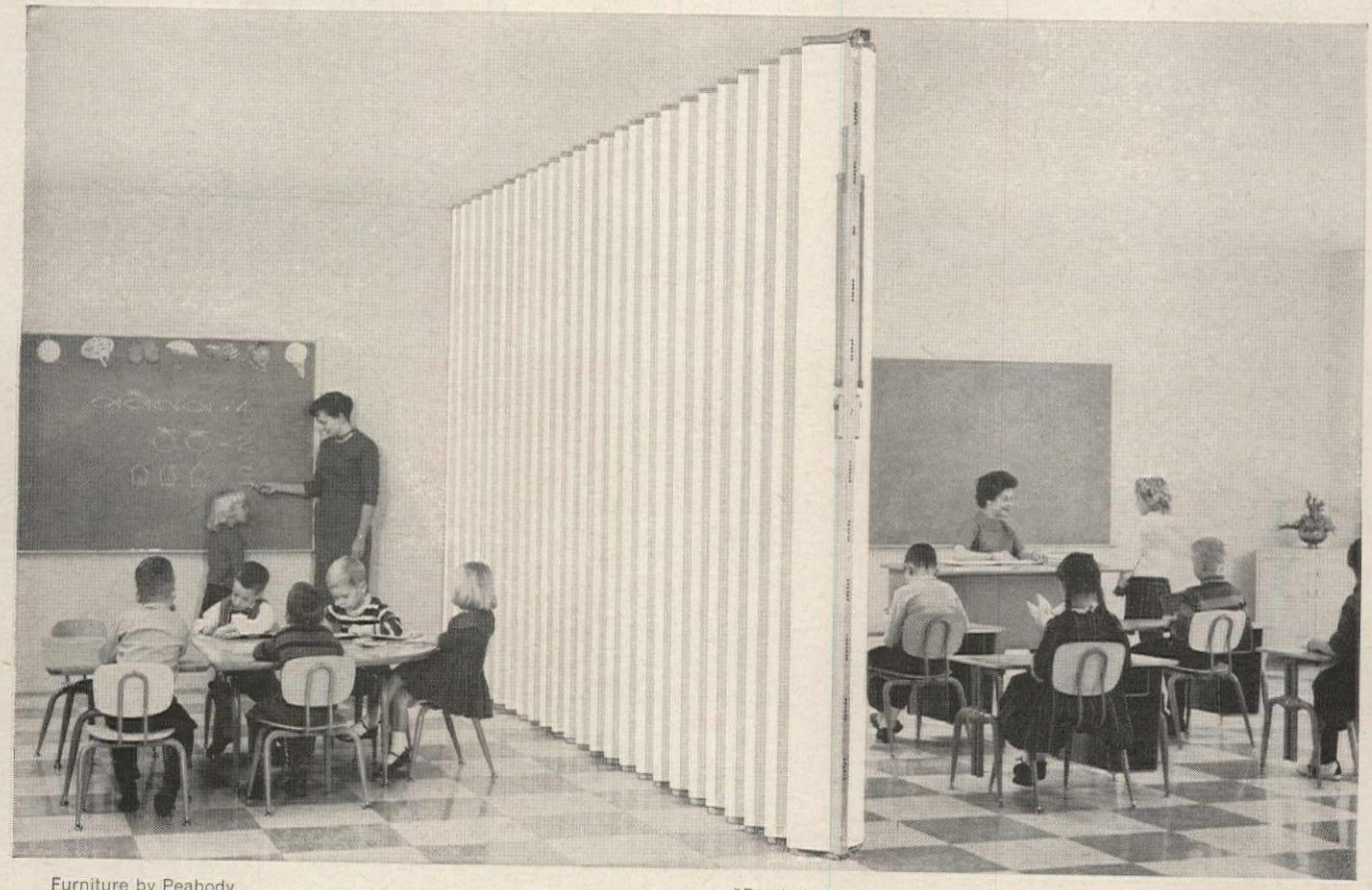
THIS AWARD-WINNING SCHOOL is but one of many such buildings constructed almost entirely of redwood. Budget-conscious school boards and architects have a high regard for redwood's proven record of low maintenance costs as well as for its simple, natural beauty.

Architect: John Lyon Reid, A. I. A.

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In addition, no other partition matches Modernfold heavy-duty construction . . . the massive steel and fabric strength that pays you a dividend of longer, trouble-free service. With no maintenance cost. But compare the facts for yourself. The chart at the right shows construction and sound ratings (in decibels) for the best model offered by each of the four largest partition manufacturers. Just look:

Partition	"240"	"A"	"B"	"C"
*Sound Reduction 125/4000 cps av.	37.4	32.4	31.8	27.9
354/4000 cps av. (Industry Standard)	41.8	35.8	36.4	33.0
Acoustic Panels	steel 5⅜″ wide, wt. 1 lb./sq. ft.	uses cardboard	steel, 2¾″ wide, wt. ½ lb./sq. ft.	uses cardboard
Sealer Strips	8	8	4	4
Foam-Lined Jamb-Seal	yes	yes	no	no
Air Release	yes	no	no	no
Pull-In Latch	yes	yes	no	no
Best Fabric Weight—Outside Covering Only	45 oz. per lin. yd.	45 oz. per lin. yd.	18 oz. per lin. yd.	27 oz. per lin. yd.
Top Row Horizontal Hinge Plate Depth	8½″	3″	(vertical)	1½″

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ARE A GREAT SUCCESS

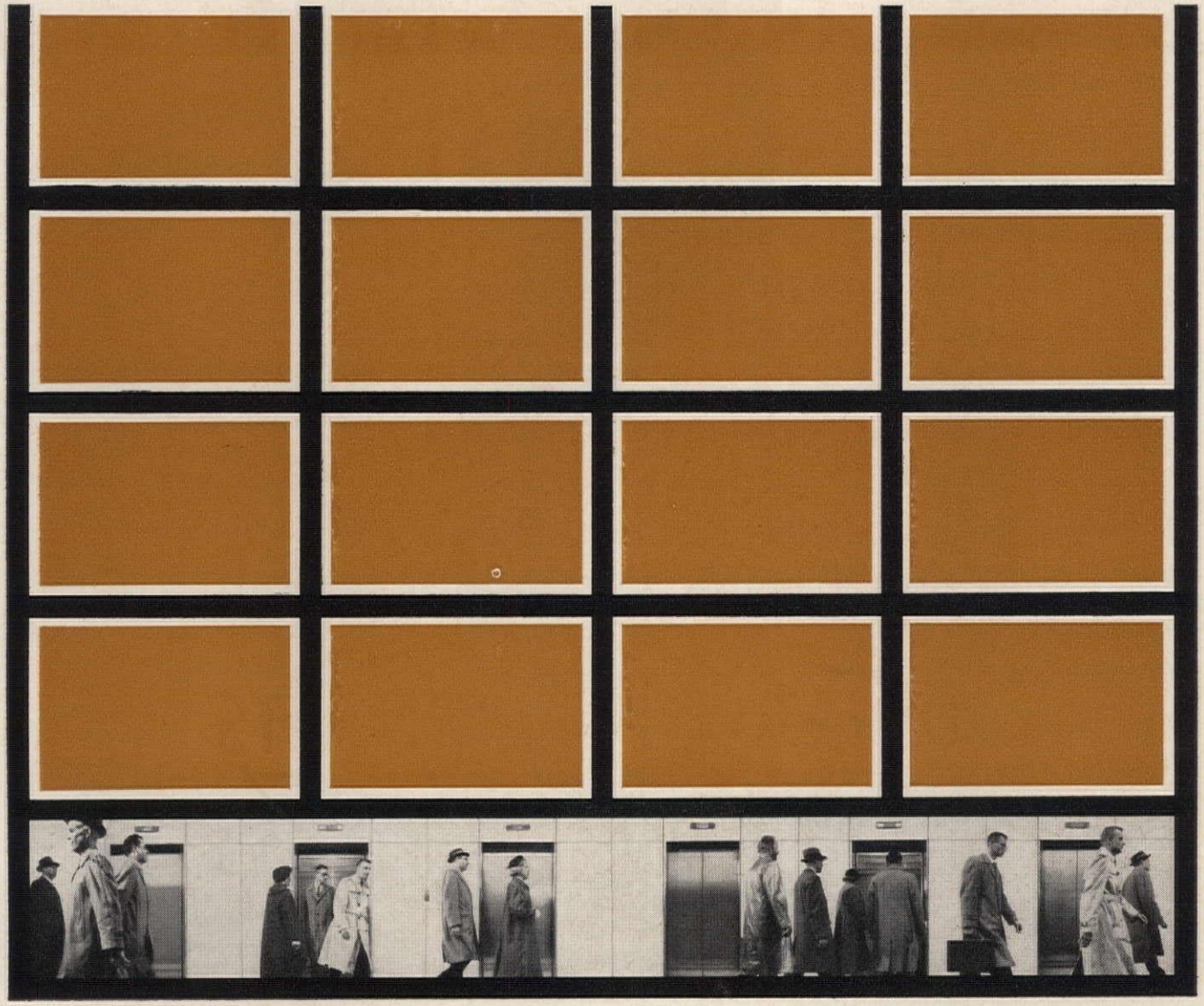
- Ownership/management has more than a half century of experience in this and allied fields.
- Doors, pilasters and panels have interlocking die drawn molding on **all** sides with welded and ground corners.
- And, face plates of **DOORS AND PILASTERS ARE WELDED TOGETHER AT INTERVALS on entire perimiters to form integral units** which will withstand severest abuse without loosening, racking or sagging.
- All hardware is of heavy die cast zinc alloy, chrome plated. Brass hardware also available.
- Hinges are of the **concealed** gravity type with stainless steel working parts, operating in a **self-lubricating** bronze bushing and with DuPont Zytel nylon cams.
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- Every part is pre-drilled which insures low cost erection.
- **In other words — GLOBAL** has **every feature** it should have to be the **FINEST QUALITY TOILET COMPARTMENT, AT A MODERATE COST."**

See SWEETS 22b/GL and send for large sized detail and specification sheets.

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666 Fifth Avenue, New York, is proof...
the wait for elevators
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by a radically new elevator system...
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the elevator that's always there for you!

The Westinghouse Selectomatic Mark IV doesn't waste time nesting at the top of the building...makes no needless trips to the top or bottom... but waits in-between for the nearest call and answers it, whether it's an up call or a down call. This means you don't wait for it... it waits for you! It's the first basic new development in elevators in 16 years... the most dramatic advance in elevator service since the Selectomatic supervisory control system was introduced by Westinghouse in 1945.

Unlike any other elevator system ever designed, new Westinghouse Selectomatic Mark IV does not run on a timed dispatch cycle – but in direct response to traffic demand. Each car independently scans the entire building...watches calls and other cars... and decides in a fraction of a second where to go to give the fastest service ever achieved. These new cars, from any point in the building, can go up or down to answer calls, reversing direction when necessary. This principle of individual initiative applies for all traffic conditions. When the demand is heavy, cars mobilize themselves for heavy action. When demand is light, only those cars needed run. Cars make more efficient trips with fewer stops per trip. The result is faster service for all passengers.

■ Eight thousand passengers a day proved Westinghouse Selectomatic Mark IV cuts average waiting time 30.6% . . . makes more trips with fewer stops per trip than any other elevator system.

■ The test was made on all the cars of the intermediate-rise bank of elevators at the Tishman Building, 666 Fifth Avenue, New York City. The new Selectomatic Mark IV control system was installed alongside the Selectomatic with Automatic Traffic Pattern, by far the most efficient elevator system in general use today. Cars operated on one system for a week, then on the other for a week, and so on for the test period.

■ Measured were waiting time on corridor calls, number of stops made on each trip and the number of passengers entering and leaving the building – traffic information necessary for a statistically valid comparison of the two systems. To provide scientifically accurate data, recording meters were used and other instruments specifically designed for measurement of elevator traffic.

■ The mountain of data now available on Selectomatic Mark IV, and the observations of the building management, prove that elevator service was never so good, anywhere.



"We are impressed with the performance of the new Selectomatic Mark IV. Elevator service is always an important influence on tenant satisfaction. It becomes a critical factor when there's as much interfloor traffic as we have at 666—our largest building. This new elevator system expedites interfloor traffic so well that we've had nothing but compliments from our tenants. In fact, they've gone out of their way to express their satisfaction with the service. It's certainly a pleasure to have what can be a big problem so nicely taken care of. But then, this is the kind of advanced engineering we've come to expect from Westinghouse."



Norman Tishman

Norman Tishman, President
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continued from page 52

The Shrinking . . .

horror, the tale of "Cities Without Space" can probably bear repeating, and repeating, and repeating.

"The Squeeze" of the title hinges on the immutable fact that once open space is gone, it's gone for good; and that though this may be sad even if the space is well used, it is disastrous if it is badly used. Mr. Higbee, a geographer and agronomist, is at his best when discussing our often negligent gobbling of cropland for building, and when describing the rational approach to land use practiced by farmers—a rationality, if not an approach, which might be emulated by cities.

A Symposium on the City

THE FUTURE METROPOLIS. *Edited by Lloyd Rodwin. George Braziller, Inc., 215 Park Ave. South, New York 3. 253 pp. $5.*

This collection of papers has been contributed by a group including urban planners, political scientists, a social historian, an artist, an economist and a philosopher. The essays cover a wide range of urban and suburban problems and possibilities: urban form, and its symbolic and expressive functions; the social and political implications of the city, and the implications that technology holds for it; governmental control—or guidance—of public and private capital investment; and the uses of utopia.

The writers do not always speak from the same point of view—one may appear to be basing his observations on the swollen metropolis of Europe or North America, another on the new and growing city of developing Asia or South America. But the qualities they share unify the collection: they all approach the city with a lack of sentimentality—pro or con—too seldom found in this field; and they approach it with an optimism described by Mr. Rodwin and Kevin Lynch in the introduction—"None of the difficulties raised is considered insuperable. In general, the metropolis is regarded as creating fundamental opportunities for higher incomes, a greater variety and a wider choice of modes of living, a way of life that could be more stimulating, more enlightened, and more conducive to innovations."

Few of the questions, if any, besetting our cities have been answered, but some of them have been defined.

Medieval Building

THE CATHEDRAL BUILDERS. *By Jean Gimpel; translated by Carl F. Barnes Jr. Grove Press, Inc., 64 University Place, New York 3. 192 pp., illus. $1.35 (paperbound).*

A brief and readable account of the professional aspects of Gothic construction, this book draws chiefly on contemporary sources of information about the builders' organizations, finances, social and spiritual motivations, and their legendary (or mythical) trade secrets. The illustrations are charming, and, for a book of this price and size, generous.

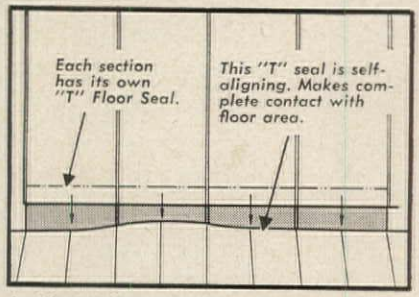
more books on page 76

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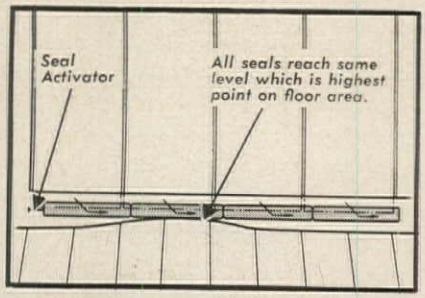
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NEW "T" FLOOR SEAL ON TORJESEN FOLDING PARTITIONS *Effects 100% Closure Regardless of Floor Contour!*

Each section of a Torjesen Partition has its own "T" floor seal. *An electro-pneumatic activated unit in the bottom does the job!* Regardless of high or low floor points, each panel is held rigidly in 100% contact with the floor making the entire partition immovable.

**The new "T" Floor Seal is now standard equipment on all Torjesen Folding Partitions at no extra cost!*



OLD TYPE FLOOR SEAL NOW IN GENERAL USE *Cannot Effect 100% Closure Unless Entire Floor is Dead Level!*

The drawing at right shows this. When the partition is closed the seal in the first door section is triggered and in turn activates each following door section seal. They all reach the same level which is the highest point on the floor area. Any irregularity in floor contour will cause the rest of the panels to hang loosely thus affecting the rigidity of the entire partition.

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Affiliates: BAR-RAY PRODUCTS, INC. • X-Ray Accessories and Radiation Protection
CAPITAL CUBICLE CO., INC. • Hospital Cubicles and Track



Kachina Theatre, Scottsdale, Arizona. Contracted by B. F. Shearer, Los Angeles. Carpet design by R. L. Lemanski. Architect, Ray Parrish. (Design shown in ⅛ actual size.)

Because *this* theatre is in Arizona—famous for its Hopi magic dolls. Because the doll design is bold enough to catch the eyes of theatre-goers hurrying through the lobby. Bright enough to chime in with their cheerful "evening out" mood. *And* its authenticity appeals to pride in local traditions. The deep-colored design also hides footprints in heavy traffic areas. The pile is tightly woven too—to *wear* well, *feel* quietly luxurious. All in all, another uniquely handsome Gulistan carpet, uniquely suited to its purpose and its locale.

***Every* commercial carpeting job** has uniquely different requirements. Gulistan not only has the most experience but . . . the *best* facilities to meet all of them. That's why Gulistan handles so many important carpeting jobs. Jobs like the world's first atomic surface ship, or New York's newest, most spectacular restaurant.

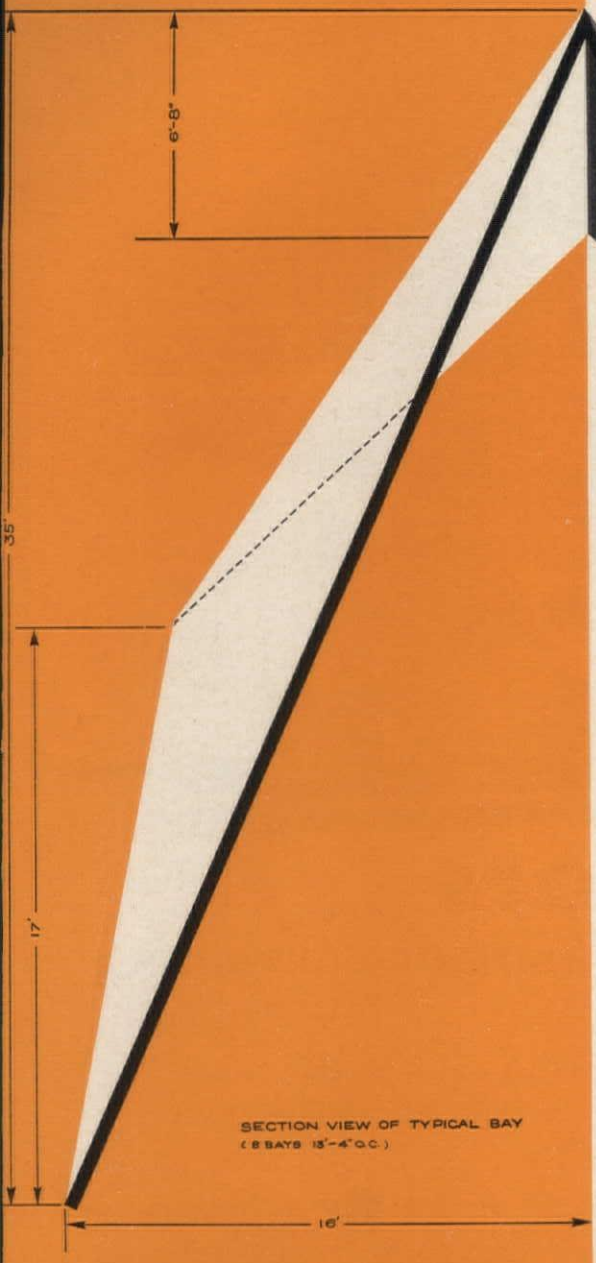
Remember: whether it's plain or fancy . . . ready made or custom made . . . you can get what you want from

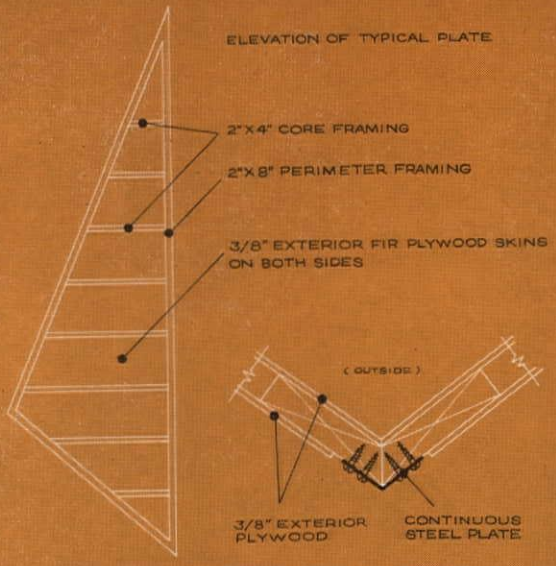
GULISTAN® CARPET

There are Gulistan contract carpet specialists in all major cities..."at your service" to discuss any floor covering problem, large or small.
Or write: Commercial Department AR-7, A. & M. Karagheusian, Inc., 295 Fifth Avenue, New York 16, N. Y.

the most exciting ideas take shape in fir plywood







INDEPENDENT CONGREGATIONAL CHURCH

LOCATION:	St. Louis
ARCHITECTS:	Manske & Dieckmann, St. Louis
COMPONENTS:	Roof Structures, Inc., Webster Groves, Mo.
BUILDER:	A. H. Haeseler, St. Louis

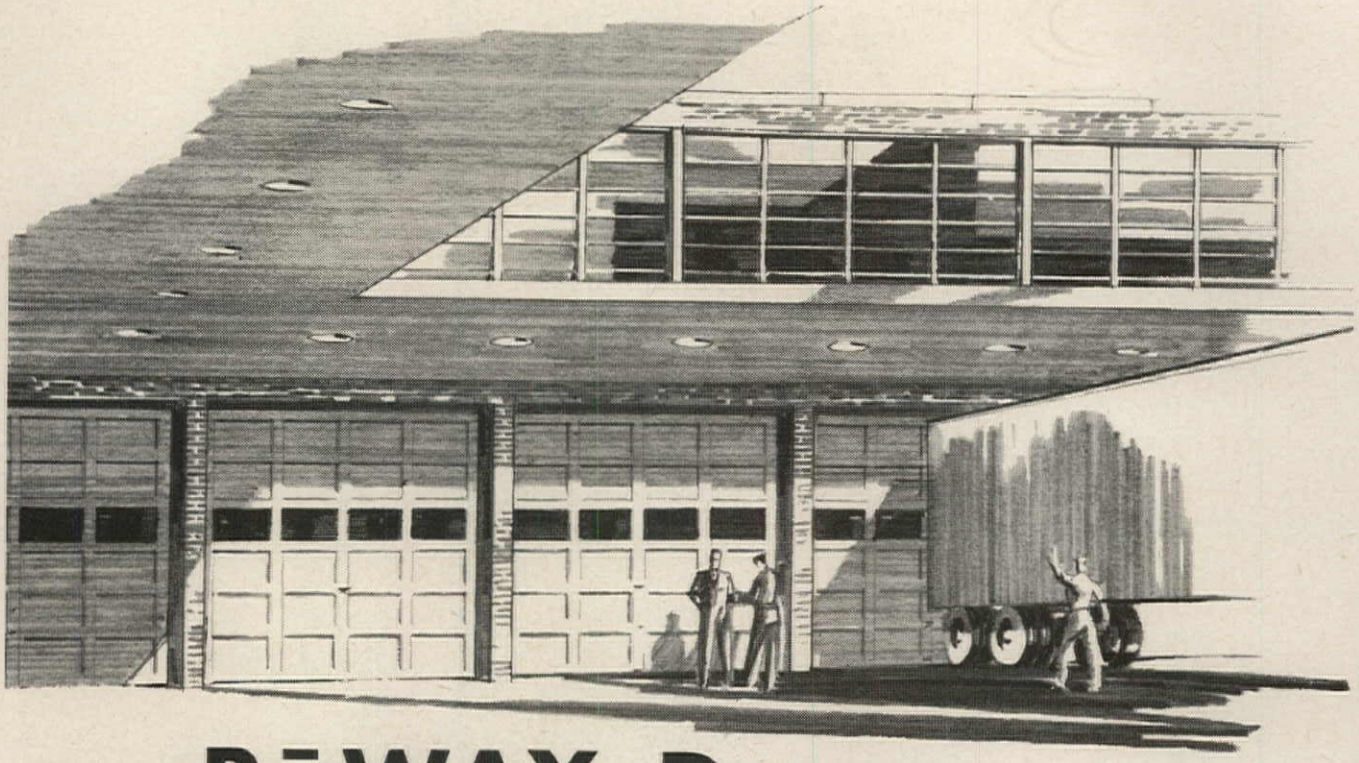
THE NINE SOARING PINNACLES of this church, recalling the boldness of Gothic arches, are a vigorous expression of advancing plywood technology. The roof is a space plane, a step beyond the folded plate with more versatility than any other clear-span technique using wood.

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.

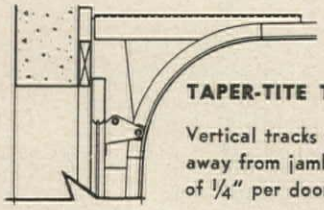
For basic fir plywood design data, write (USA only) Douglas Fir Plywood Assn., Tacoma 2, Wash.

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ALWAYS SPECIFY BY
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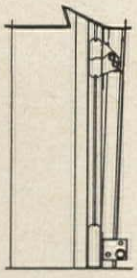
RōWAY Doors

COMBINE DESIGN BEAUTY WITH WEATHERTIGHT CONVENIENCE



TAPER-TITE TRACK

Vertical tracks taper away from jambs at a pitch of 1/4" per door section.



SEAL-A-MATIC HINGES

Seal-A-Matic hinges of graduated height guide the closing door firmly against jambs and — for opening — free the door from jambs for easy, frictionless lifting operation.

Your commercial and industrial clients gain important advantages when you specify RoWay Overhead Commercial Doors.

First, the modern, trim design of RoWay Doors adapts handsomely to any contemporary building. Lasting good appearance is assured by Masonite Dorlux panels guaranteed for the life of the door. Second, these fine doors are completely weathertight to seal out snow, rain and dust. BECAUSE ROWAY DOORS ARE COMPLETELY FABRICATED IN ONE PLANT, you're assured of strict quality control in the manufacture of all components. All-under-one-roof fabrication also makes possible "power-metered" springs which are custom-wound according to the exact weight of each door. For your next job, work with client-pleasing RoWay Doors.

there's a RōWay for every Doorway!

Find Your Nearest Distributor In The 'Yellow Pages'

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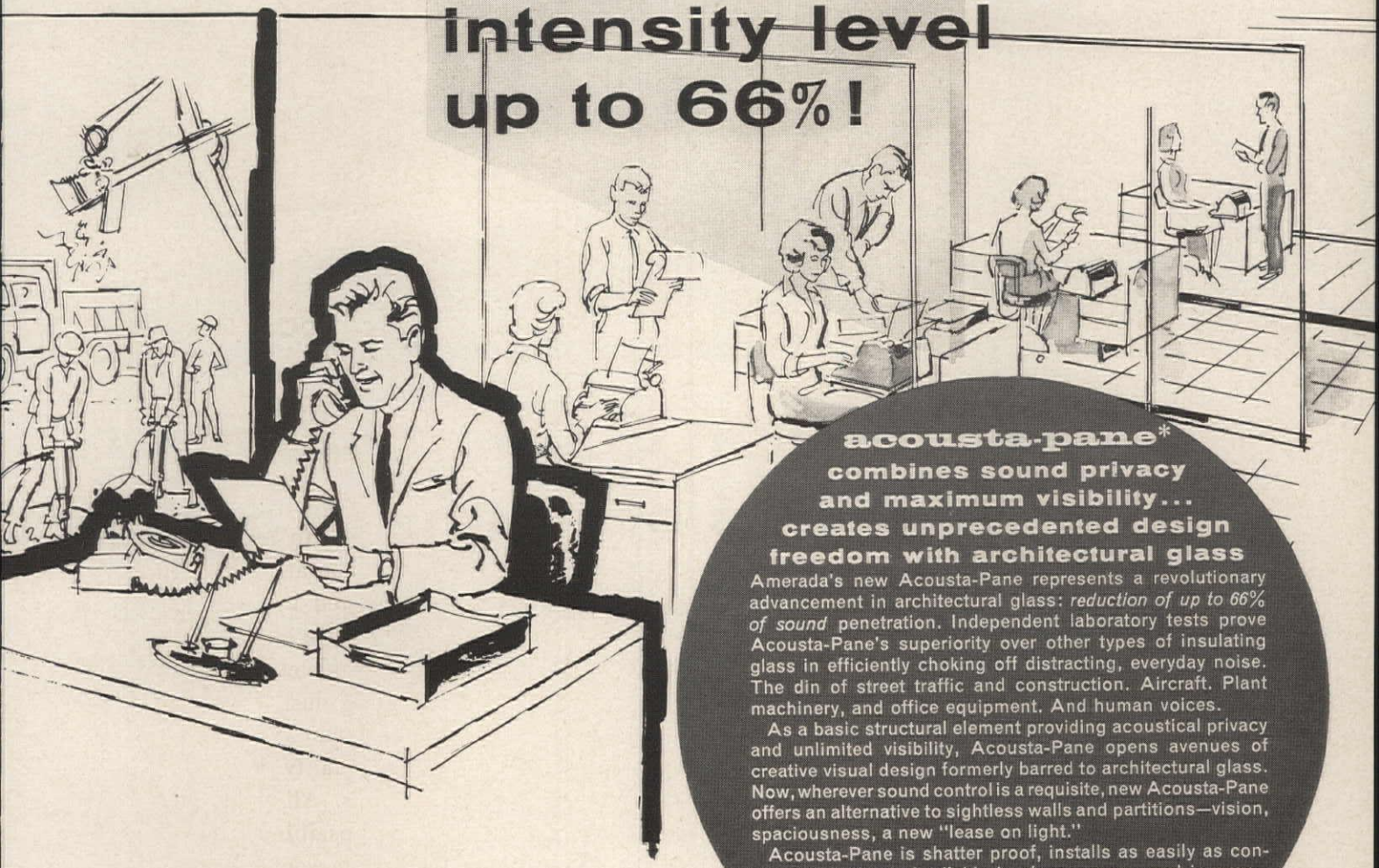
RoWay OVERHEAD DOORS

ROWE MANUFACTURING COMPANY

Dept. AR-7 • 1025 Holton Street • Galesburg, Illinois

now glass controls sound!

new acousta-pane* reduces noise intensity level up to 66%!



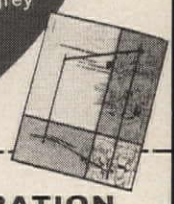
acousta-pane* combines sound privacy and maximum visibility... creates unprecedented design freedom with architectural glass

Amerada's new Acousta-Pane represents a revolutionary advancement in architectural glass: *reduction of up to 66% of sound* penetration. Independent laboratory tests prove Acousta-Pane's superiority over other types of insulating glass in efficiently choking off distracting, everyday noise. The din of street traffic and construction. Aircraft. Plant machinery, and office equipment. And human voices.

As a basic structural element providing acoustical privacy and unlimited visibility, Acousta-Pane opens avenues of creative visual design formerly barred to architectural glass. Now, wherever sound control is a requisite, new Acousta-Pane offers an alternative to sightless walls and partitions—vision, spaciousness, a new "lease on light."

Acousta-Pane is shatter proof, installs as easily as conventional glass. Available in clear, opaque and in grey or blue tint.

Send for our free brochure on this dramatic new concept of sound control.



amerada
GLASS CORPORATION

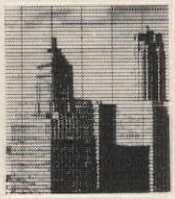
Beauty and *function* . . . *tomorrow's glass today!*

Other Unique Amerada Products Available at Leading Glass Distributor Outlets



Twi-Lite*

Greyed laminated safety glass reduces solar energy 30-40% more efficiently than clear glass, eliminates need for costly shading devices.



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Hundreds of minute louvers between 2 hermetically-sealed glass panes screen out heat and glare without obstructing visibility.

* TRADE MARK

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Gentlemen:
Please send me your free color brochure on new Acousta-Pane at no obligation.

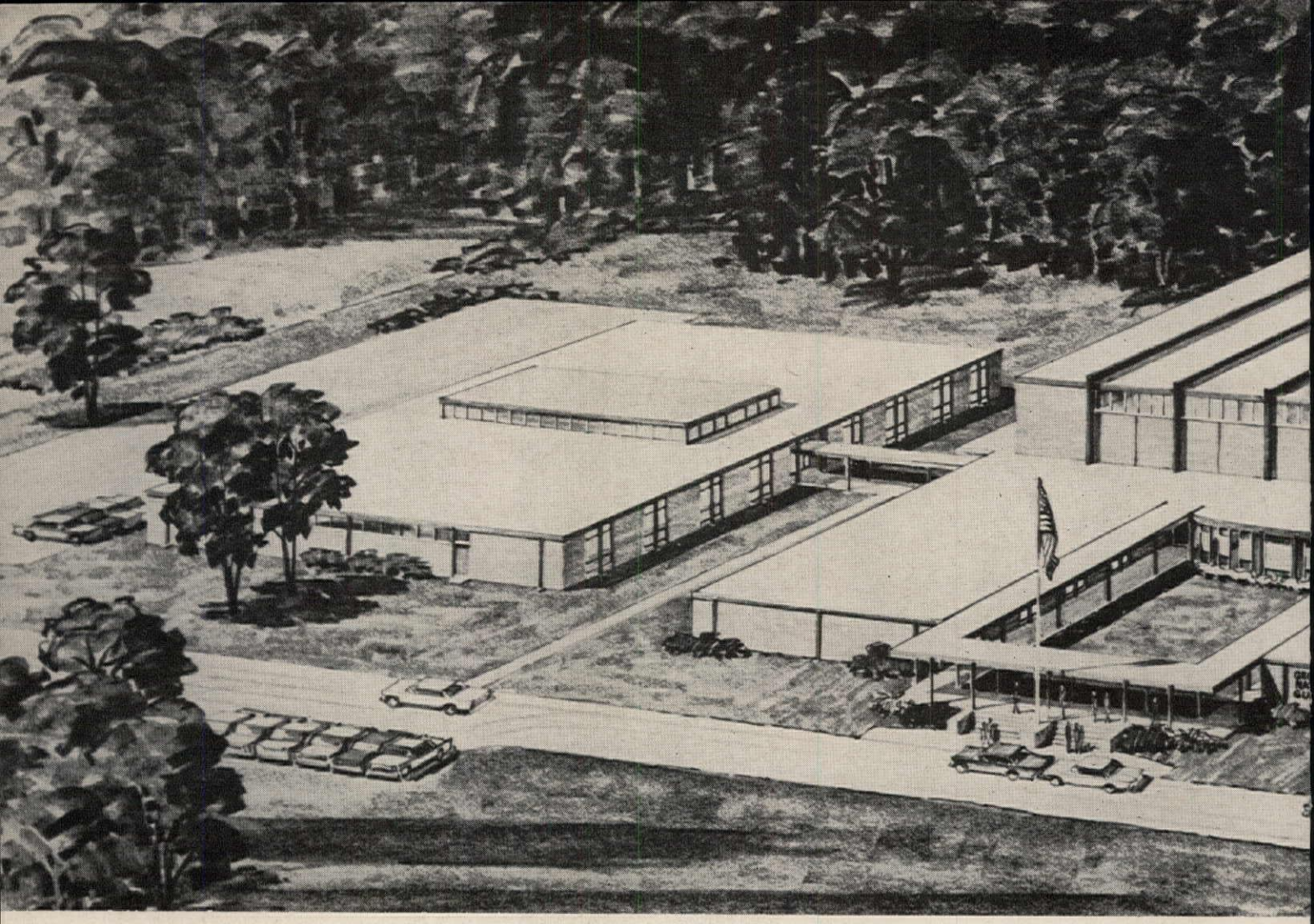
NAME_____

FIRM_____

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CITY & STATE_____

Include information on ☐ Twi-Lite ☐ Comfor-Lite



Plastic design of Georgia armory cuts weight of steel frame 15 per cent

Rigid-frame bents spanning 120 feet set new U. S. record for longest plastic-designed clear span

The Georgia National Guard Armory in Savannah, scheduled for completion late this summer, includes three steel-framed buildings linked by covered walkways. The central structure contains two headquarters and administration wings, and a column-free drill hall which will seat 5,000 when used as a sports arena. The two flanking buildings are each large enough to hold four company-size units.

Frames are outside of buildings

Seven 120-ft-long, rigid-frame bents, 20 feet center-to-center, span the drill hall. Clear height is 30 feet. Each of the 15-ton bents was fabricated from 33 WF 152 lb sections, giving a depth-span ratio of 1:44. Eight-inch purlins are framed into the bottom of the wide-flange sections, to expose the major portion of the frame outside the building.

The architects also derived an aesthetic as well as a functional use of the steel frame in the flanking buildings by exposing the columns. These support 12-inch channels which act as a fascia, and 12-inch light beams which frame the roof.

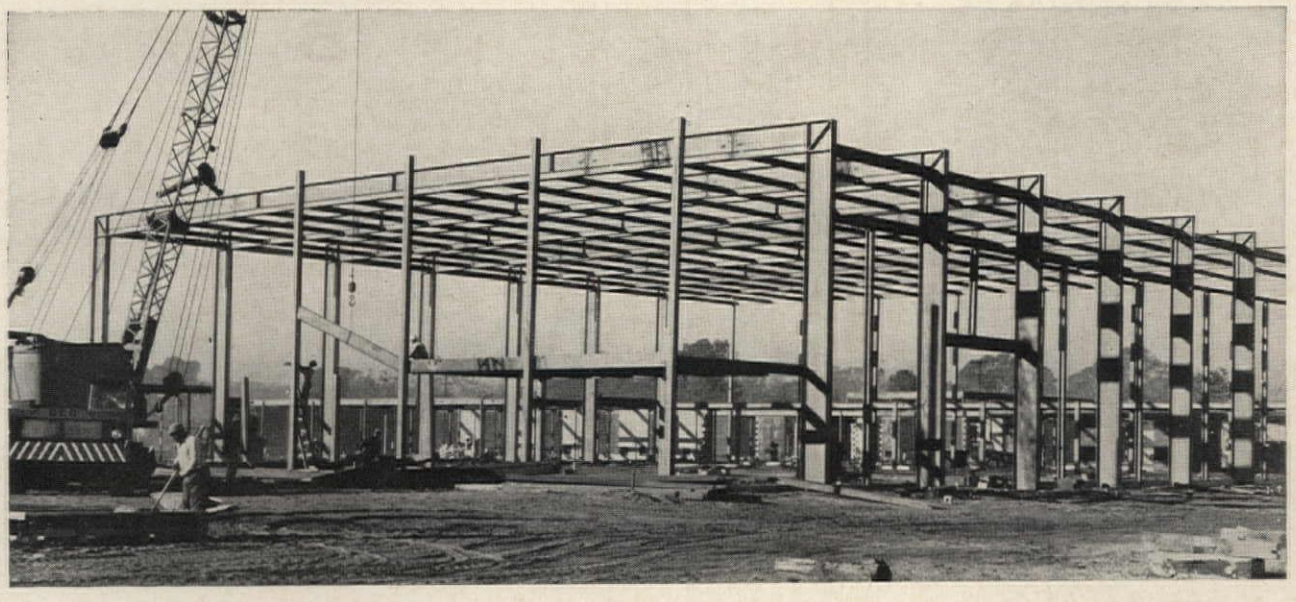
15 per cent savings in steel

By using plastic design, the architects were able to reduce by 15 per cent the amount of structural steel needed to frame the buildings, as compared with the requirements necessary under the elastic method.

Steel design by the plastic method is a new development in design technique, and generally results in a more efficient structure with less steel required to achieve the same strength. It also saves on the cost of engineering, since it demands less engineering time on the part of the designers.

If you would like a copy of a 10-page AISC booklet on "Supplementary Rules for Plastic Design and Fabrication and Rolled Beam Properties for Plastic Design," write to us at Bethlehem, Pa.

Steel is used extensively throughout the Georgia National Guard Armory, not only as a structural system, but also as frames for windows, canopies, and glass curtain walls. *Architects and Engineers:* Thomas-Driscoll-Hutton. *General Contractor:* Hugh Jackson. *Steel Fabricator:* Owen Steel Company. *Steel Erector:* Steel Erectors, Inc. The major portion of the 310 tons of structural and miscellaneous steel was supplied by Bethlehem.



Light weight of plastic-designed steel frame minimized difficulties created by poor subsoil conditions and led to economies in foundation construction.

Steel *for Strength ... Economy ... Versatility*

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

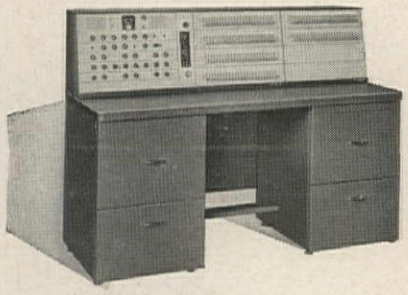
BETHLEHEM STEEL

BETHLEHEM STEEL

SPECIFY

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Sound Systems



available for every requirement



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designed and built so you can SPECIFY WITH CONFIDENCE

Engineered and built by pioneers in communications, RAULAND Sound Systems are available for unlimited applications. There is a complete choice of program facilities and features, including multiple microphone use, emergency or evacuation announce, remote control, etc.

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School, Industrial and Institutional systems can be designed to your exact requirements from standard panels, to RAULAND'S traditional high engineering standards.

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Our new Manual of School System Specifications is available to consulting engineers. Includes general and typical specs; covers classroom speaker assemblies, call switches, microphones, auditorium systems, etc.



Rauland Ask on your letterhead for this unique engineering help.

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Required Reading

continued from page 68

Received and Noted

INTERIORS BOOK OF RESTAURANTS. *By William Wilson Atkin and Joan Adler. Whitney Library of Design, 18 E. 50th St., New York 22. 215 pp., illus. $15.*

Though the authors cover the more mundane aspects of restaurant planning such as kitchens and ventilation, they are really interested in helping the designer and the restaurateur establish an atmosphere appropriate, and tempting, to the prospective clientele. Very handsome photographs, too few plans.

FOOD SERVICE IN INDUSTRY AND INSTITUTIONS. *By John W. Stokes. Wm. C. Brown Company, Dubuque, Iowa. 261 pp., illus. $8.*

This book does contain information on planning and equipment which could be helpful to the architect; but, since it is primarily intended for administrators, he will need some patience in separating wheat from chaff.

THE CONSULTING ENGINEER. *By C. Maxwell Stanley. John Wiley & Sons, Inc., 440 Park Ave. South, New York 16. 258 pp., $5.95.*

Although practicing engineers may find some interest in Mr. Stanley's information on the structure of the profession, this book is likely to be of more help to engineers contemplating the establishment of a consulting practice and to clients wondering what services they may or may not expect from their engineers.

SIMPLIFIED ENGINEERING FOR ARCHITECTS AND BUILDERS. *By Harry Parker. John Wiley & Sons, Inc., 440 Park Ave. South, New York 16. 325 pp., illus. $7.*

The third edition of a book first issued in 1938, *Simplified Engineering* has been largely rewritten and a considerable amount of material has been added.

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architectural aluminum
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SLIDING WINDOWS

Monumental stock and custom types. All sash operate and bypass for window cleaning from interior. Strength of section allows heights to 6'6". The leader in the field for weather-tight performance and beauty of sight lines.

glide
SLIDING DOORS

Monumental stock and custom types. Glazed with 3/16" to 1" thick glass. Double sill, flush with floor, leak-proof even in complex multiple track and wall pocket units. Stainless steel rollers and track. Transom units available as integral part of door framing. Screens may be used on interior or exterior as required.

PANAVIEW®
SLIDING DOORS

PANAVIEW stock door units employ the finest construction features of the GLIDE door series at competitive prices. Double weather-stripped, alumilited, and available in panels with single or 5/8" insulated glass.

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The most economical window wall available. Infinite variety is achieved by mulling and stacking PANASEAL windows in any combination. Ideal for schools and commercial buildings. PANASEAL windows also available for residential use.

GRIDWALL
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Engineered for greater strength by integrating 1" narrow stiles with ½" plate glass, GRIDWALL offers the most appealing entrance door on the market. Cylinder lock, housed in push and pull plates of charcoal bronze finish, simultaneously throws a concealed bolt into threshold and head of door frame for maximum security. A complete line of mullion framing for flush glazing is available.

write for brochures and details
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CONTRAST

In design, the ordinary makes the exceptional conspicuous.

GRIDWALL CURTAINWALLS ARE OUTSTANDING BY COMPARISON.

A manual containing comprehensive GRIDWALL details, specifications and test data is available on request.

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NEW

EASY-ON-THE-BUDGET BEAUTYREST DORM LOUNGE

Only with the Simmons Dorm Lounge will students enjoy such homelike, one-room living at such a modest cost. Only Simmons can give students the sitting and sleeping comfort of Beautyrest®. And as always, you benefit from the economy made possible only with long-lasting Simmons construction.

Special patented steel frame construction permits easy rolling of the Beautyrest Dorm Lounge—pull it out for sleeping...out even further for convenient bedmaking. No floor scuffing—legs lift off floor as you move bed. Durable No-Sag springs support famous Beautyrest mattress—guaranteed for ten years of day and night sitting and sleeping service. Bedding box attaches to steel frame. Entire unit may be anchored to wall to qualify as a built-in.





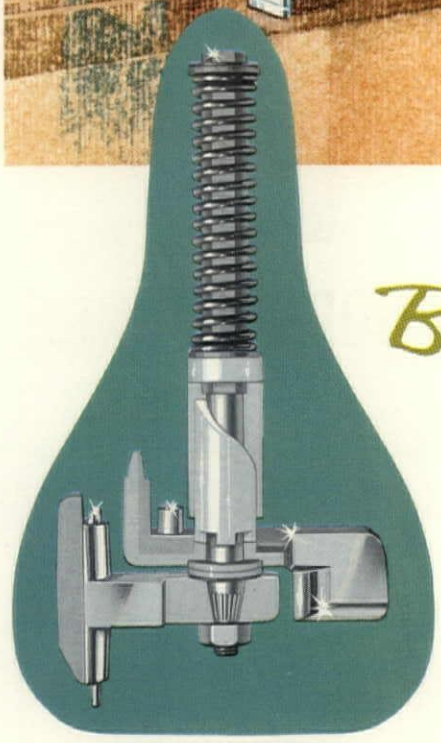


Simmons offers a variety of sofa-bed styles—for every room requirement.

SIMMONS COMPANY
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Merchandise Mart • Chicago 54, Illinois
DISPLAY ROOMS: Chicago • New York • Atlanta • Columbus
Dallas • San Francisco • Los Angeles





Wholly concealed bottom hinge is engineered so that door does not rise or lower when opened. Weight of door is fully supported on Zytel bearing, not on cam . . . a million test openings without wear. Opposing journalized Zytel cam units assure accurate and positive preselected door positioning.



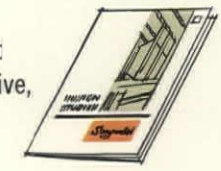
Nameplate identifies every compartment

EXCLUSIVE ENGINEERING OF *Bottom* HINGE MEANS *Top* PERFORMANCE

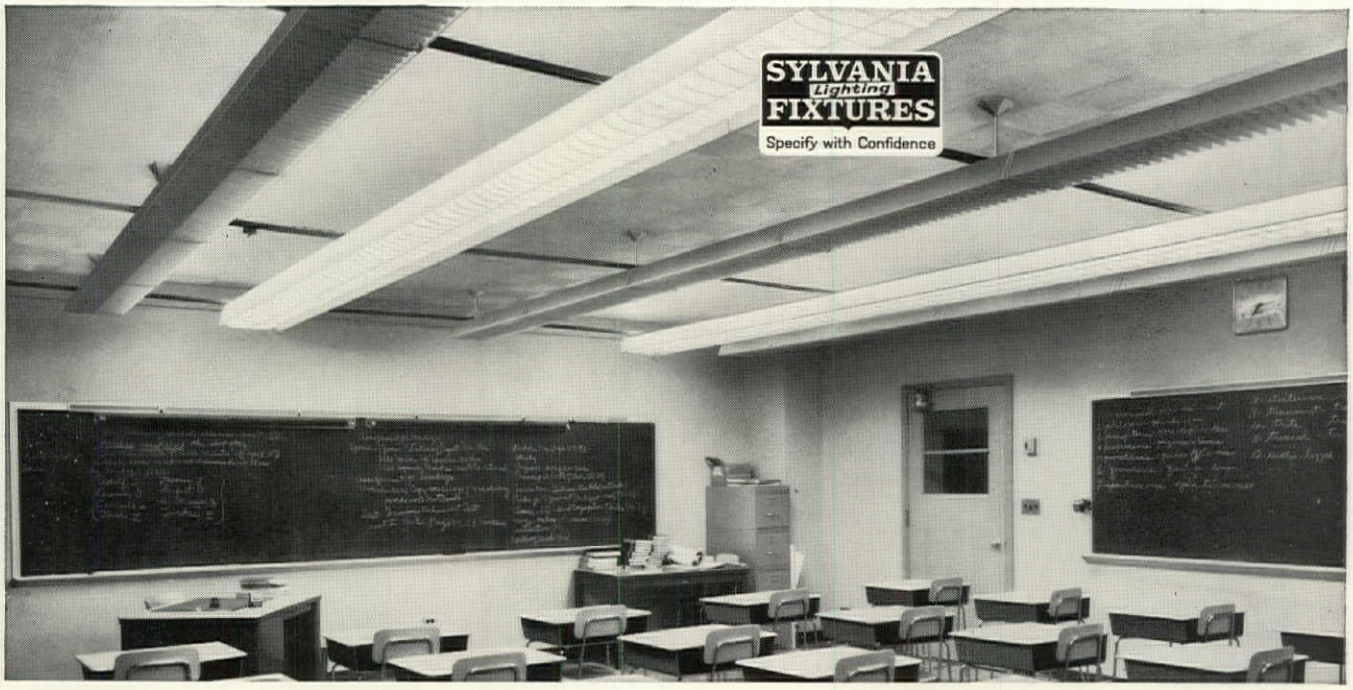
Why is a hinge so important? Simply because no other compartment component gets as much wear. Door hinges are the real key to long life and low maintenance.

Sanymetal hinges are fully recessed and flush to facilitate cleaning, factory installed for economical compartment installation, engineered for exceptionally long tamper-proof life and along with Sanymetal's integral hinge brackets present the most beautiful appearance.

These are the reasons for Sanymetal's highest quality at lowest in-place cost. If you would like the new imaginative, full-color "Design Studies" just call your Sanymetal representative or write direct.



Sanymetal®
world's leading
producers of toilet partitions
1721 Urbana Road, Cleveland 12, Ohio



SYLVANIA'S SCOTT FIXTURE

Passes Final Exam at Lancaster High School!

School authorities at Lancaster High School, Lancaster, New York, conducted a unique test recently to determine for themselves if Sylvania's SCOTT Lighting Fixture performed as well as claimed.

Three rows of conventional fixtures with normal spacing and mounting height were installed in one of the classrooms. *Two* rows of High Output SCOTT Fixtures were mounted in the same room.

LOOK AT THE GRADES OF THIS LIGHTING EXAMINATION!

Sylvania's SCOTT Fixture		Conventional Lighting Fixture
6 (8′ length)	No. of units	9 (8′ length)
2	No. of rows	3
1470 watts	Power consumed	1656 watts
104,400	Total lumen output	104,400
60 footcandles	Averaged *measured* quantity of illumination	47 footcandles

The lighting performance of each set of fixtures was then measured independently.

The result: *Two* rows of SCOTT Fixtures outperformed *three* rows of conventional fixtures in every practical way. The SCOTT provided more overall illumination. The use of fewer fixtures resulted in lower initial cost, operating cost and maintenance cost. (See table.)

The esthetic advantages of the SCOTT were shown in the same test. The majority of the room occupants definitely preferred the lighting and appearance of the SCOTT.

The SCOTT, with its economy, performance, attractiveness and choice of white or eye-rest green shielding, has proved the ideal fixture for many schools.

Full descriptive and technical information will gladly be sent on request.

SYLVANIA LIGHTING PRODUCTS
A Division of SYLVANIA ELECTRIC PRODUCTS INC.
One 48th Street, Wheeling, West Virginia

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SUBSIDIARY OF
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GENERAL SYSTEM

JAMOLITE® gains highest honors in college installations





LIGHTWEIGHT JAMOLITE doors open and close easier, help to speed operations, promote safety.



▲ BRIGHT, CLEAN SURFACES. Jamolite doors have hard, gleaming surfaces that are easy to clean, easy to keep clean.

EFFICIENT INSULATION. 4″ of foamed-in-place polyurethane in both cooler and freezer doors. Freezer door (background) has Frostop® to prevent icing. ▶





IMPROVES APPEARANCE. Flush-fitting Jamolite doors, available in white and four colors, harmonize with any interior.

● In a number of colleges and institutions all-plastic Jamolite doors are demonstrating outstanding advantages over heavier and thicker wood and metal doors. More and more today, Jamolite is being specified in food service installations for improved appearance, unmatched efficiency, easier mounting. For data write to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON

COLD STORAGE DOORS

MODERN DESIGN

USES WEST COAST LUMBER

WEST COAST DOUGLAS FIR • WEST COAST HEMLOCK
WESTERN RED CEDAR • SITKA SPRUCE • WHITE FIR

"How can we give a row-housing development the character of individual homes . . . economically?" was the design problem. The answer reached by these architects was the liberal use of imagination . . . with practical West Coast Lumber as the primary building material. This award-winning project at the University of Washington is one of the year's best examples of lumber's design and color versatility in the creation of a warm family feeling in a series of housing units.

Located on a site of 32,000 square feet, the two and three-story structures house a total of 39 family living units. Careful site planning eliminates vehicle traffic inside the development to insure safe play areas for children. Automobile parking is planned for the perimeter of the area. Two and three-bedroom units are entered at the ground level with the bedrooms on the second floor. One-bedroom units on the third floor are accessible by a network of bridges and balconies.

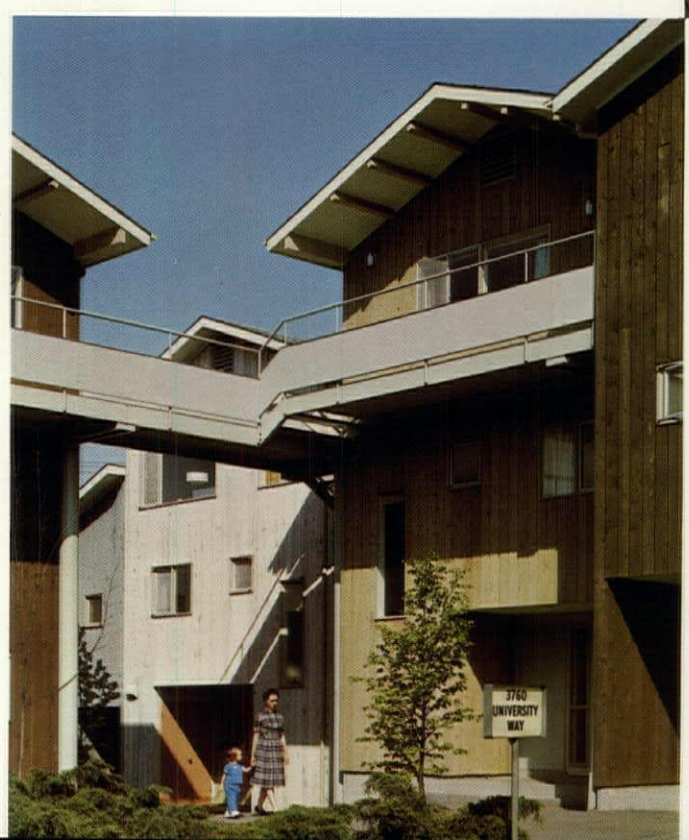
The variation in roof lines and the off-setting of units one from another defines each "private house."

The entire development was built on a framework of standard sizes of West Coast Douglas Fir—4″ x 4″, 2″ x 4″, 2″ x 8″ and 2″ x 10″. A 2-hour fire-resistant rated wall, composed of 4″ x 4″ framing covered with two thicknesses of $\frac{5}{8}$″ sheetrock, extends vertically to separate each three-apartment unit.

Exterior siding of 1″ x 8″ Western Red Cedar stained a variety of colors gives further expression of individuality and warmth.

This is another example of the use of high performance West Coast Lumber to meet a specific objective economically. Complete information on sizes, grades and supply is available in your community . . . call your local lumber dealer.

Architects: Bassetti & Morse, A. I. A.







New... "Buildings for Business", full color, 12-page booklet full of design ideas.
Write for your copy today...

WEST COAST LUMBERMEN'S ASSOCIATION

1410 S.W. MORRISON STREET, PORTLAND 5, OREGON

only this lock can provide MAXIMUM SECURITY

FOR NARROW-STILE GLASS DOORS



CHECK YOUR SPECIFICATIONS NOW. SEE IF YOU HAVE PROVIDED ADEQUATE BUILDING SECURITY.

AN ORDINARY LOCK, when adapted to a modern glass door, has a very short bolt. Since the conventional sliding bolt is thrown and retracted horizontally, it cannot be longer than the width of the narrow stile. By slightly prying the door away from its jamb, enterprising burglars can slip this short bolt out of its strike and the door will spring open.

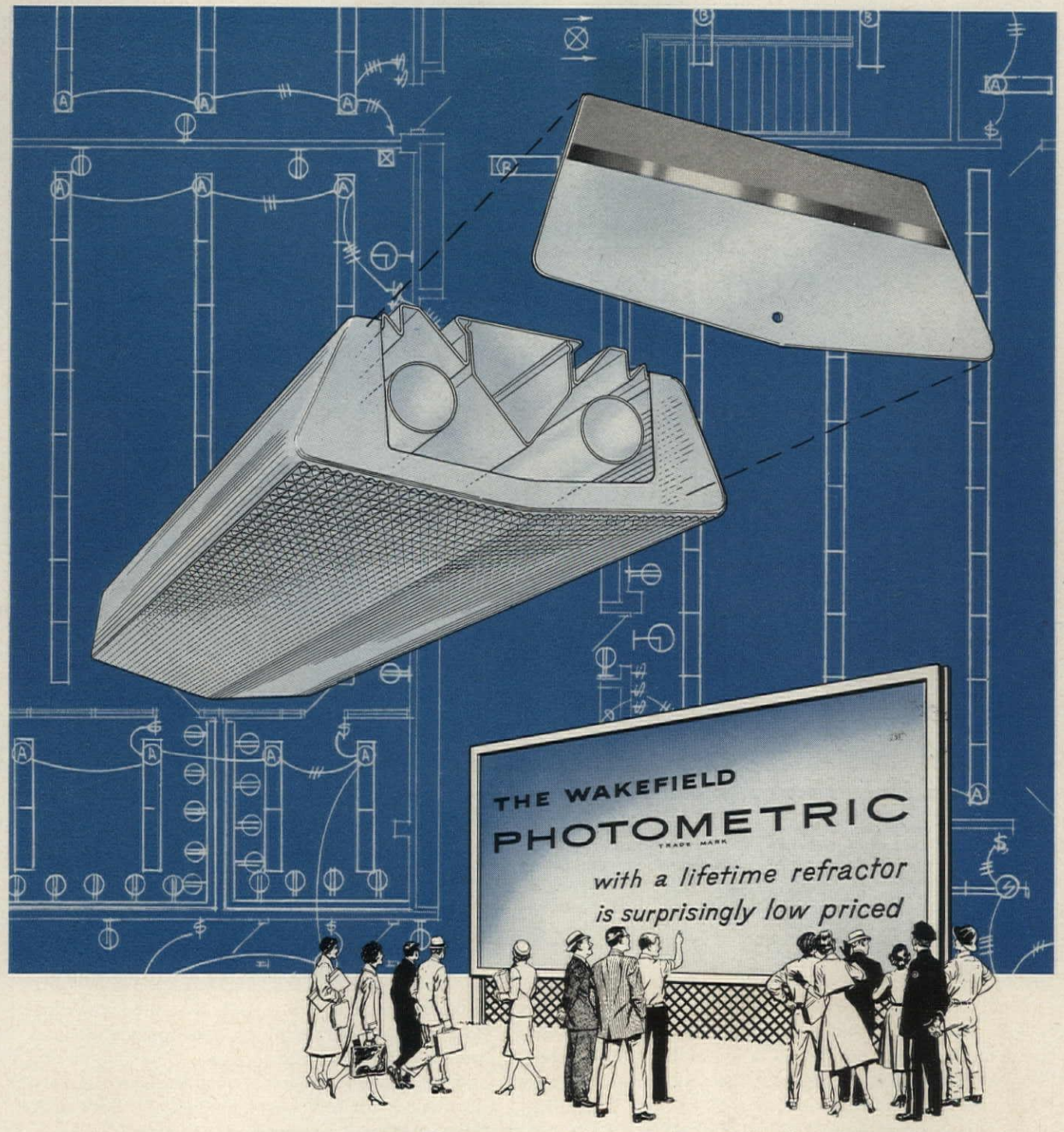
THE ADAMS RITE MAXIMUM SECURITY lock, however, is designed specifically for narrow-stile doors. It uses an exclusive, patented, swinging action that permits a much longer bolt than the ordinary lock. The bolt is housed vertically in its retracted position and swings upward into its horizontal MAXIMUM SECURITY position. The MS bolt is actually a bar of laminated steel, three inches long. As much of this huge bolt is retained within the stile as is projected into the jamb, making forced entry impossible without complete destruction of the door channel.

SPECIFY THE ADAMS RITE MS LOCK for all narrow-stile, swinging glass doors. Whether it's a single door or a pair of doors, ADAMS RITE has an MS lock designed especially to provide MAXIMUM SECURITY and long range, trouble-free operation.

WRITE TODAY for an illustrated brochure that explains the need for MAXIMUM SECURITY

SEE OUR CATALOG IN SWEET'S OR WRITE FOR COPY

ADAMS RITE
MANUFACTURING COMPANY
540 West Chevy Chase Drive, Glendale 4, California



The Photometric is a finely engineered, handsomely styled unit with a number of good features, not the least of which is an attractively low price.

For this low price you get an injection molded acrylic refractor, which will give a lifetime of use without developing any discoloration. This is important. Other features are important too. For example, the over-all depth of the unit: less than 4". And the absence of shadow-forming, opaque metal between units. But to get the whole story your best bet is to send for our "spec" sheet which illustrates and describes the Photometric in detail.

Comes in 4' and 8' units. Styrene refractor also available at a still lower price.

W

WAKEFIELD CORPORATION

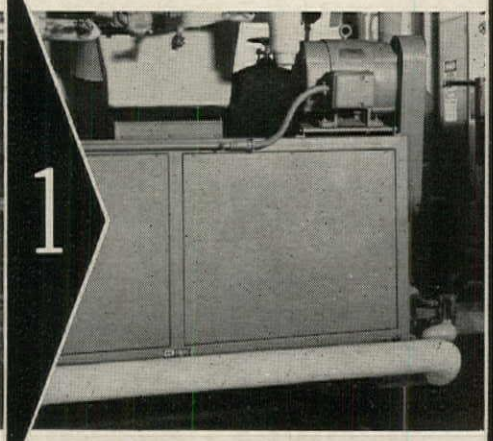
Wakefield Lighting Division—Vermilion, Ohio
Wakefield Southwest Co.—Oklahoma City, Okla.
Wakefield Lighting Limited—London, Ontario

AAF keeps white-roor

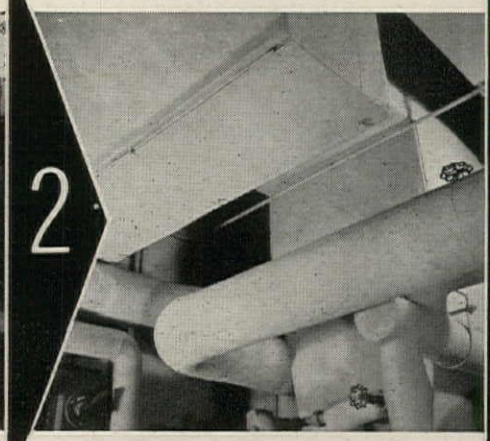
3-step air system demonstrates AAF's capability for complete air engineering



AIR FROM C. P. CLARE GENERAL OFFICE (already cleaned by AAF Electro-Matic precipitator) is cleaned again by AAF Electro-PL filters before it enters the air conditioning unit serving the white room.



AAF KENNARD/NELSON HIGH-PRESSURE AIR CONDITIONING UNIT controls white room humidity and maintains a temperature of 72° at all times. (To offset heat from manufacturing processes, the air is changed completely every three minutes.)



AIR ACTUALLY ENTERING WHITE ROOM is filtered by AAF high-efficiency Type F filters enclosed in the duct running from the outlet of the air conditioning unit to the white room.

White room operations involving the assembly of electrical relays demand ultra-clean air and rigidly controlled temperature and humidity. The planners of the new addition at C. P. Clare Co., Chicago, determined that their white room should have a complete air system all its own. Logically, they turned to AAF.

Result: white-room air to white-room standards —99.97% dust-free, constant 72° temperature and accurately controlled humidity.

AAF is the one company that provides all the major components for completely conditioned air. And, just as important, AAF offers the knowledge and experience to coordinate their functioning into one custom-engineered system.

Booklet 518 describes the complete line of American Air Filter component products. If you would like a free copy, address Richard W. Smith, American Air Filter Company, Inc., 389 Central Avenue, Louisville, Kentucky. In Canada, address: American Air Filter of Canada, Ltd., 400 Stinson Blvd., Montreal 9, Quebec.

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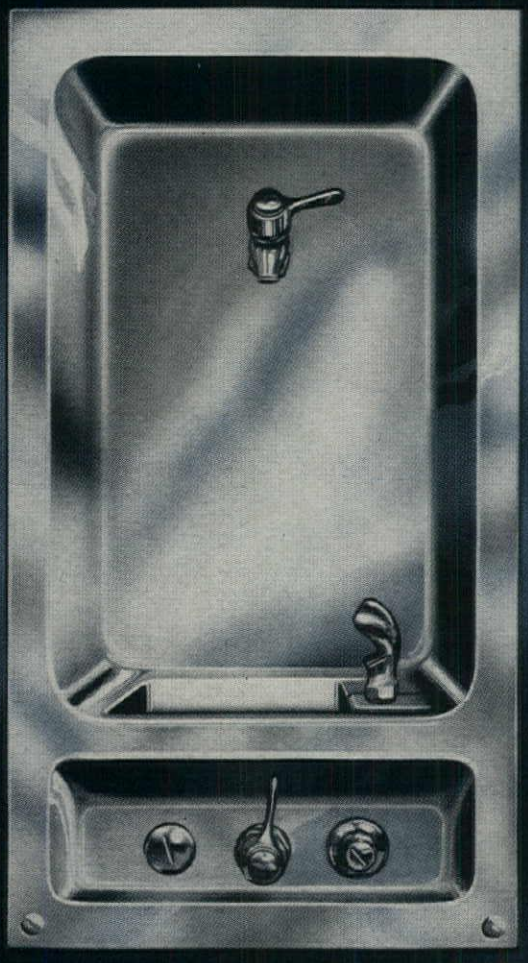


Architects: Rapp & Rapp, Chicago; Consulting Engineers: J. P. Bazzoni & Co., Chicago.

AAF products for complete air engineering

AIR CLEANING: (Atmospheric Dust) *AAF electronic air cleaners,* automatic air filters, *unit filters,* engine & compressor filters. (Process Dust) electrostatic precipitators, wet-type collectors, dry-type collectors, fabric arresters. AIR CONDITIONING, HEATING & VENTILATING: Herman Nelson air conditioning unit ventilators, unit ventilators, portable heaters; Kennard/Nelson dual-duct air conditioning units, multi-zone air conditioning units, *packaged central station air handling units,* sprayed-coil dehumidifiers, fan-coil units, packaged liquid chillers, cooling towers, evaporative condensers, direct-expansion coils, water coils, steam coils, unit blowers, industrial exhausters, centrifugal fans, unit heaters, radiation products; Illinois traps, valves, specialties, heating systems and controls.

● *Italics denote products used in C. P. Clare white room.*



The gleaming beauty of stainless steel provides the modern touch

Stainless Steel, the modern metal of the sixties, is used in this smartly-styled recess fountain by Halsey Taylor.

It is highly favored for installations in foyers, corridors and offices, providing the lifetime beauty and service of stainless steel and the dependability and health-safety of Halsey Taylor design.

The Halsey W. Taylor Co., Warren, Ohio



Here is another Halsey Taylor Stainless Steel wall-type..a semi-recessed unit.

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The Record Reports

Felt and Architects Cited by Municipal Art Society

James Felt, chairman of New York City's Planning Commission, was awarded the Municipal Art Society's Medal of Honor at the Society's 69th annual meeting on May 8. The medal is awarded from time to time, not every year, to a person who has rendered signal service in strengthening esthetic qualities of life in the city. It was last given in 1959 to Robert Moses. Previous recipients include Albert S. Bard, Robert Dowling, Michael L. Radoslovich and George McAneny.

The medal, presented by Morris Ketchum Jr., chairman of the 1961 Awards Committee, read: "To James Felt, whose far-reaching vision and perseverance have produced the framework on which a finer city of the future will take form."

Two architectural firms were among four recipients of Municipal Art Society Certificates of Merit in recognition of having raised the esthetic standards of city living. They were: Skidmore, Owings & Merrill, "for their design of the broad plaza and spacious arcades at the base of the Union Carbide Building, Park Avenue" and Mayer, Whittlesey & Glass, "for their design of the delightful playground and neighborhood gathering place for the James Weldon Johnson Community Center, Jefferson Houses, East Harlem, N.Y."

Others receiving Certificates of Merit were: Reginald G. Welch, Transit Authority engineer, "for design and specifications of the handsome and practical new subway cars"; and Robert Sowers, artist, "for the originality and public importance of his monumental stained glass mural on the American Airlines Terminal façade, Idlewild.

The Municipal Art Society, founded almost 70 years ago by a small group of public spirited citizens, has carried on programs for beautifying the city through tree plantings, the preservation of park space and increase of park facilities, encouraging a high quality of design and the use of the visual arts in public buildings, and the preservation of historic and architecturally valuable structures.

more news on page 101



NEW!

Von Duprin 77 color-styled exit devices

● Now you can choose from six striking colors on tough vinyl fabrics that are permanently applied to the new 77 exit devices. You can color-coordinate your interior decor with these warm lustrous colors on either bronze or chromium finish devices.

Color is available on the entire line—rim, mortise lock and vertical rod exit devices. Further, you specify color application . . . on cases as illustrated; on crossbars only; a combination of both. The 77 line without color is equally stunning.

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Report by Engineering Firm on Economics of a Glass-Walled Skyscraper

Study predicts Thermopane® insulating glass in L·O·F Building will pay for itself in 3½ years

The new Libbey·Owens·Ford Building in Toledo, Ohio, is not just a "glass showcase for a glassmaker". It is a practical, economical building.

This 120-foot-square, 15-story, air-conditioned office structure was completed in early 1960. It provides 12 office floors, a ground lobby floor, an underground floor for service operations, and two upper floors for air-conditioning machinery.

Because it is a very new and outstanding example of office building architecture . . . because its designers were given broad scope in its creation . . . considerable interest has been focused on its operating results.

Guy B. Panero Engineers, the air-conditioning and heating engineers on the structure, have completed an analysis that shows how the air-conditioning and heating costs are affected by the glass used.

Vision glass 77% of wall area

Vision glass in the L·O·F Building comprises 77% of the gross wall area. Walls are oriented approximately 30° counterclockwise from the cardinal directions. *Thermopane*, with vertical Venetian blinds, is used in all vision areas above the ground floor.

$55,200 saved on air-conditioning equipment

For this building, the outer pane of *Thermopane* is *Parallel-O-Grey*® and the inner pane is *Parallel-O-Plate*® glass. Calculations by Guy B. Panero Engineers show that the use of *Thermopane*, as compared with a single pane of *Parallel-O-Grey* plate, reduced the air-conditioning requirement by 92 tons. This lowered the initial cost of air-conditioning equipment by an estimated $55,200.

Saves $7,220 annually on operating costs

They next found that operating costs on the same comparison should bring an annual reduction of $2,190 for air-conditioning and $5,030 in heating costs. This combined saving of $7,220 plus the $55,200 would pay for the premium cost of *Thermopane* in 3½ years.

These studies also compared the *additional* capital cost of insulating glass at an investment of 3 per cent, and that of single glazing of *Parallel-O-Grey plus* the extra cost of the air-conditioning equipment it would require. The comparison has shown that it would be more economical to glaze the building with *Parallel-O-Grey Thermopane*.

The same comparison could have applied equally if the building had been glazed with *Heat Absorbing Thermopane* instead of *Parallel-O-Grey Thermopane*. They are about equal in solar radiation reduction.

Additional advantages

Guy B. Panero Engineers also found many other advantages not calculated in dollars during their detailed study. During cold weather, for instance, personnel may work comfortably closer to *Thermopane* than single glass. In effect, this provides more usable floor area.

Appreciable outdoor sound reduction may add to efficiency. And through the use of *Thermopane*, possible complications of temperature control, architectural layouts, space conditions and louder air-circulating equipment noise levels are avoided.

Without the use of *Parallel-O-Grey Thermopane*, they concluded it would have been practically impossible to have these advantages which exist in the L·O·F Building—small, compact air-conditioning units in each room, reduced ductwork space in the ceilings, and minimum space for the air-conditioning equipment.



Tenants Samborn, Steketee, Otis and Evans report more efficient use of drafting-room space due to comfort provided by Thermopane insulating glass.



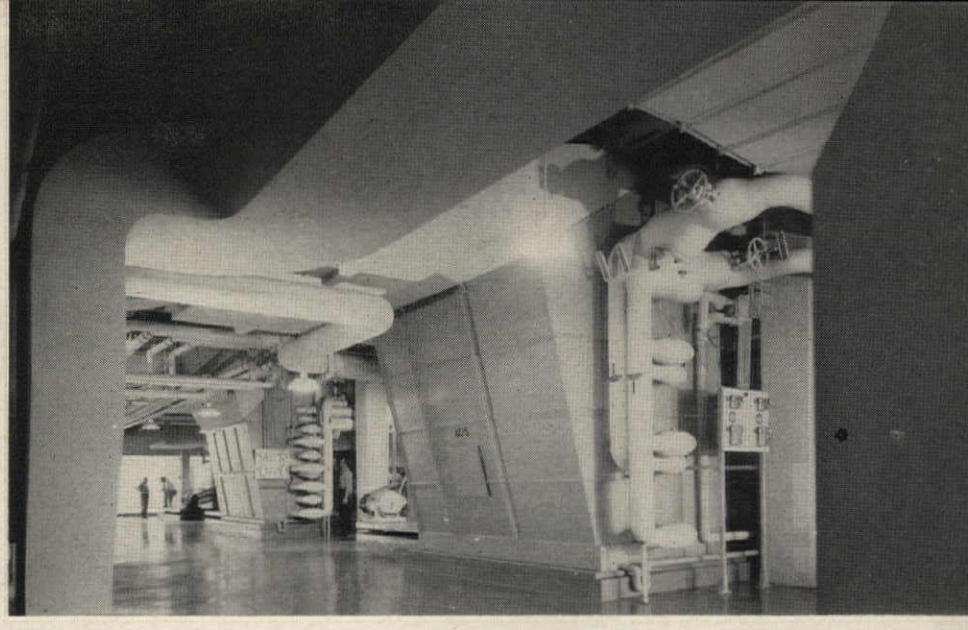
L·O·F Building, Toledo, Ohio. Architects: Skidmore, Owings & Merrill. Structural Engineers: Severud-Elstad-Krueger Associates. Mechanical Engineers: Guy B. Panero Engineers. General Contractors: George A. Fuller Company.

One of the air-conditioning and heating specialists in the office of Guy B. Panero Engineers states that "in reality it would not have been economically practical to air condition this particular building properly by means of conventional units, had single glazing been used".

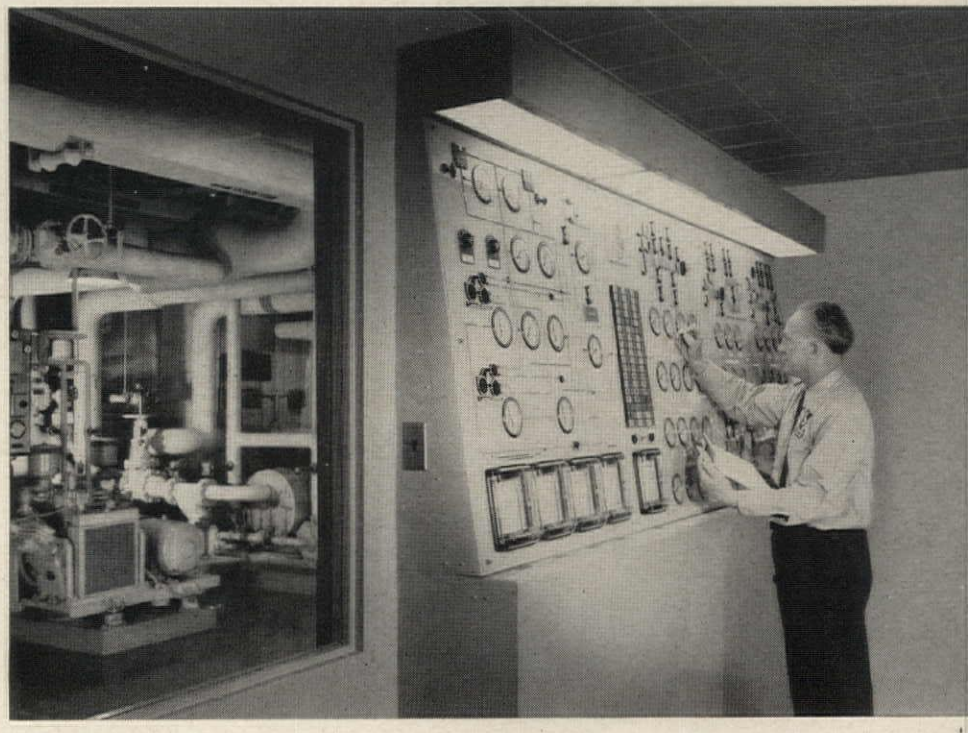
Complete analysis available

In arriving at these conclusions, the engineers made a detailed study of the factors that determine glass performance and its effect on air conditioning and heating. The complete study is available to architects and engineers who wish to make a study of their own designs. Use coupon.

As predicted by the designers, overall performance of the air-conditioning and heating systems in the L·O·F Building has been extremely successful. The *Thermopane* glazing has resulted in savings for the building management. It also has afforded many comforts, controls and environmental benefits for those who use the building daily. This attractive new building, which has won praise from its tenants and the occupants, has functioned superbly to fulfill all the requirements of its builders.



Air-conditioning and ventilating equipment inhales and exhales as much as 200,000 cu. ft. of air per minute.



Master control board tells at a glance how equipment is functioning anywhere in the building.

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Please send me complete report on L•O•F Building, showing how findings were determined.

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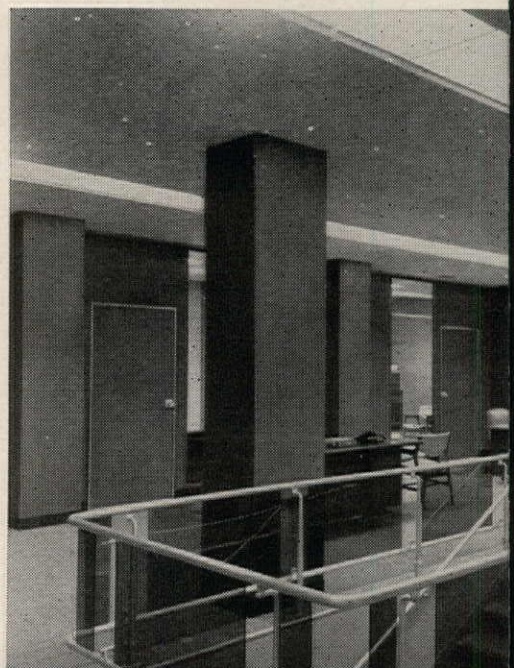
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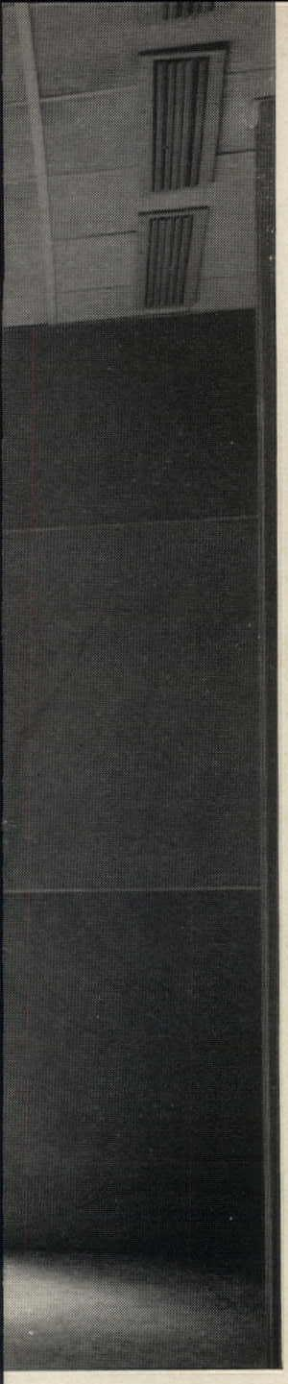
Deep-baffled downlights in lobby create interesting floor effect and echo outdoor lighting pattern.

NEW ADDITION—Eight-lamp 40-watt 4′ x 4′ recessed Day-Brite MOBILEX® fixtures deliver 100-110 footcandles, create inviting atmosphere for customers in main banking area.



OLD BUILDING—MOBILEX® in long rows give a feeling of spaciousness, offset columns that contrast with adjacent main banking area.







First National Bank of Florence, Ala. Architect: *Northington, Smith & Kranert;* Electrical Engineer: *Hazzard, McRoy & Cone;* Contractor: *Verbon Jones Electric Co.*

How Day-Brite helped the First National Bank of Florence blend something old with something new

The modern new addition to the First National Bank of Florence, Alabama, is an outstanding example of efficient, functional design. As is often the case, special problems arose when the older structure was remodeled to blend harmoniously with the addition.

Lighting, for example, had to match the new section in appearance and efficiency, yet fit the existing structural conditions of the old building. By specifying Day-Brite, remarkable results were achieved with standard fixtures. In addition to high-quality, low-glare illumination and a pleasing contemporary design, Day-Brite offered the necessary flexibility of installation.

Next time you're faced with a lighting problem, remodeling or otherwise, give yourself the added advantage of working with the "nation's largest." Phone your Day-Brite representative. *Day-Brite Lighting, Inc., 6260 N. Broadway, St. Louis 15, Mo., and Santa Clara, Calif. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ont.*

Write for FREE booklet on **Modernization and Relighting:** Day-Brite Lighting, Inc., 6260 N. Broadway, St. Louis 15, Mo.



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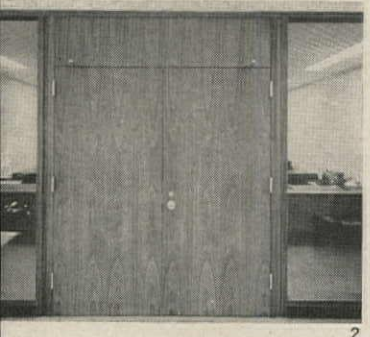


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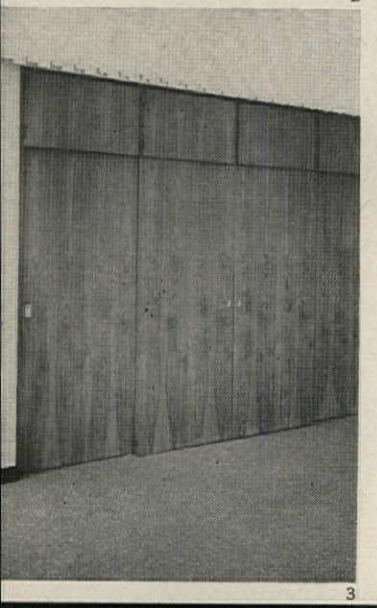
Why you'll find EGGERS specified for important building projects When it comes to paneling and solid core doors, leading architects rely on Eggers seventy-seven years of experience in producing custom matched architectural plywood. Highly skilled veneer selectors carefully match and mark each panel to the blueprint, insuring one continuous flowing grain pattern . . . even when doors, cabinets or drawers might interrupt the paneled wall. Table tops and other specialties may be developed with Eggers to blend with room decor. You can be sure that each job, regardless of size, will be painstakingly created to achieve just the effect you want. For your next school, church, hospital or commercial project, specify Eggers. Flitch samples of face veneer submitted on request.

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3



4

1. Front Lobby of Woodward Governor Co., Rockford, Ill. Architect: C. Edward Ware.

2, 3 and 4. North Avenue Federal Savings & Loan, Chicago, Ill. Architect: Naess & Murphy.

See Sweet's Arch. File-16/E9.

withstands the high-humidity highly-corrosive (chlorine) atmosphere of

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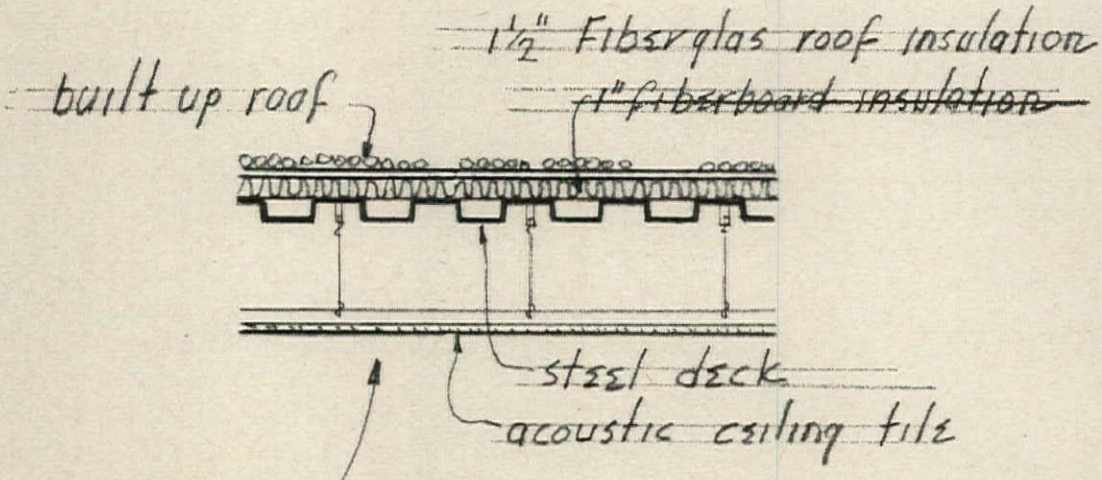


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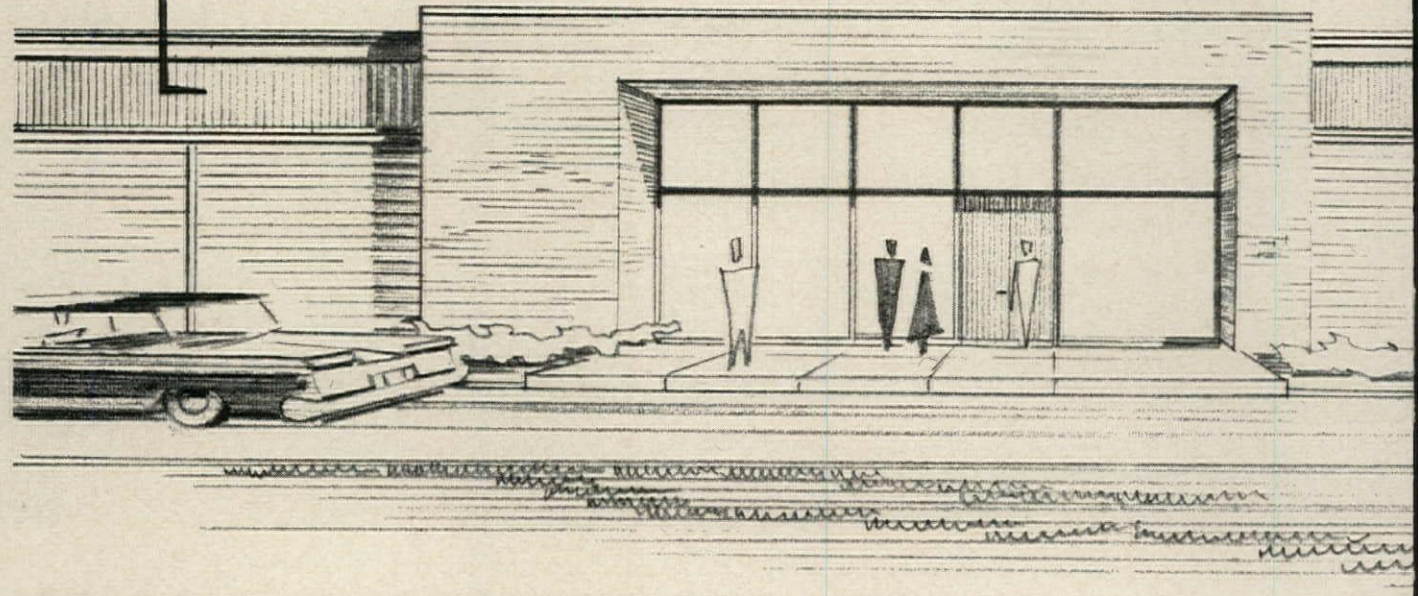
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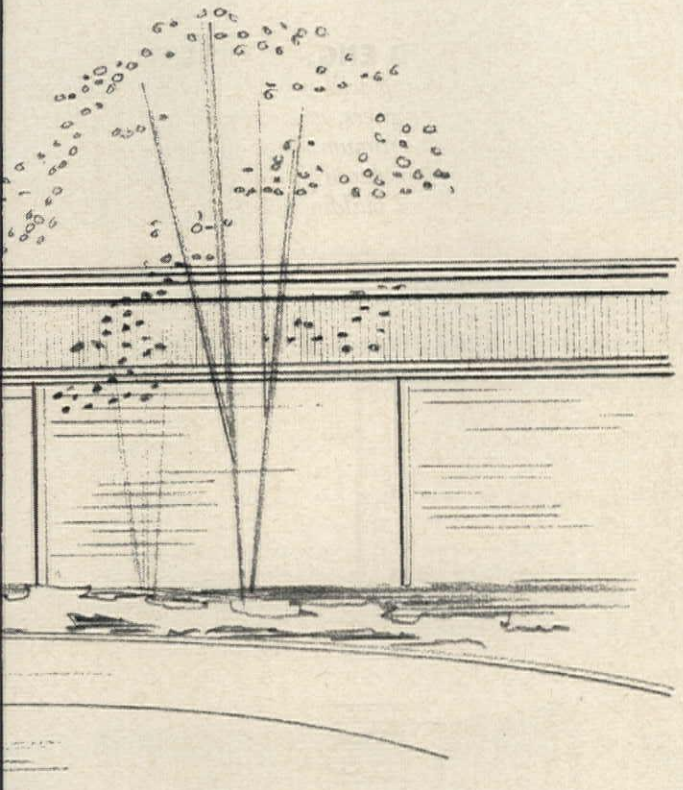
Plant and Research and Development Laboratory: Speidel Corporation, Industrial Division, Warwick, Rhode Island
Engineers and General Contractors: Bowerman Brothers, Providence, Rhode Island

$4,000 FOR ADDITIONAL INSULATION WILL BRING THESE ESTIMATED SAVINGS:

$12,000 ON MECHANICAL EQUIPMENT—Original specifications called for one-inch fiberboard roof insulation. A Dividend Engineering analysis forecast that increasing the thickness to one and one half inches of Fiberglas† Roof Insulation would produce optimum heat savings. The added efficiency made it possible to predict a $12,000 saving on the cooling equipment alone.

$1,800 PREDICTED SAVING IN ANNUAL OPERATING COSTS—$784 on power and water; $700 on financing; $316 on depreciation and insurance. Without a Dividend Engineering evaluation to point out the optimum "thermo-economic" performance of the roof, $1,800 would be wasted every year.

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Cost of Heating & Cooling Equipment	
Original Specifications	$32,000
Dividend Engineering Specifications	20,000
Predicted Saving	$12,000
Additional Insulation Cost (in place)	4,000
Net Initial Saving	$ 8,000
Projected Annual Operating Costs	
Original Specifications	$ 9,947
Dividend Engineering Specifications	8,147
Annual Saving	$ 1,800

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Whether heating or air conditioning . . .

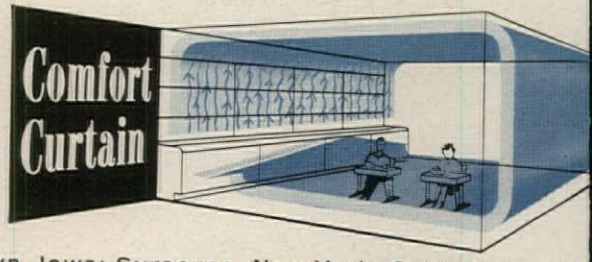
Why ventilate just half a classroom?



The ribbons tell the story! Uniform air distribution . . . the full length of the classroom . . . guarantees room-wide comfort

These children are demonstrating how Lennox COMFORT CURTAIN® provides an ideal climate throughout the entire classroom, rather than just a portion of it. The ribbons indicate how a "curtain" of conditioned air discharges quietly and evenly along the entire length of the exterior wall. Then it moves rapidly up to the ceiling and across to the far wall—well above the occupants—then softly down and through the occupied area in returning to the outer wall. This full perimeter distribution blends and circulates all the air in the room so that its movement measures only 25 to 40 ft. per min. in the occupied area—so gentle as to be unnoticed except for improved comfort. Lennox COMFORT CURTAIN blends and filters fresh outdoor air with heated air and recirculated air. Holds room temperature within ½° of thermostat setting. For complete information about a COMFORT CURTAIN system and its use with all types of heat sources, write LENNOX, 518 S. 12th Ave., Marshalltown, Iowa, or contact your nearest Lennox office.

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LENNOX®

Comfort Curtain® provides full room air circulation

Yet it cost less than $1.10 per sq. ft. to provide individually controlled fresh air ventilating and heating in each classroom of this school



High School—Reorganized School District R-3
Pleasant Hill, Missouri
Matthews and Hillman, Architect & Engineer

No central heating plant, with expensive duct or piping system, was needed in this building. Gas-fired units, in approved heater rooms located between each two classrooms, supply warm air to the COMFORT CURTAIN systems. Simple openings in the exterior walls admit fresh outside air to the equipment in each room. Prefinished wall duct sections, along the entire length of the outside wall in each room, provide the full perimeter air distribution that assures full-room air circulation. Simple structural requirements and ease of installation reduced both initial costs and over-all expenditures. "Day-Nite" thermostats in each room have "no-occupancy" settings to save fuel and make after-hours use of individual rooms economical. Modular design enables new units to be added economically with future building expansion.

The Record Reports

continued from page 88

Architectural Students Receive Awards at Auburn U.

Student scholastic awards in the department of architecture at Auburn University, Auburn, Ala. have been announced and are as follows:

American Institute of Architects' medal (given annually to the graduate who has the best overall scholastic record)—F. Carlisle Towery, Alexander City, Ala. Second place—Peter Warren Hahn, Washington, D.C.

Alpha Rho Chi medal (awarded annually to the student who has shown the greatest promise of leadership)—F. Carlisle Towery.

Chandler C. Yonge Scholarship (awarded annually to one third-year student for outstanding scholarship and ability in design)—Linda Margaret Leeger, Albany, Ga.

History of Architecture Award—William H. Byrd, Fairfield, Ala.

Three citations, Omicron Kappa Pi (for outstanding achievement and progress in interior design)—Reuben Ward Lariscy, Savannah, Ga.; William Michael Reed, Dothan, Ala.; Grant Lamar Smith, Moulton, Ala.

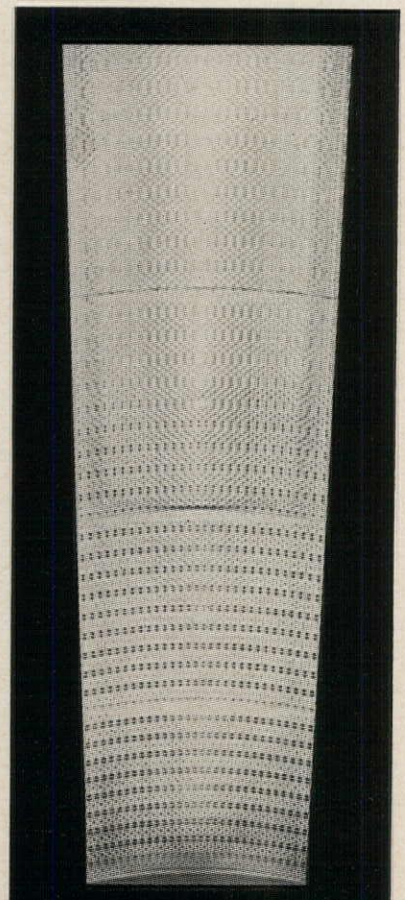
Universal Cast Stone Corporation scholarships (for outstanding excellency in design)—Raymond Murray Graves Jr., Seminary, Miss.; Dayton Eugene Egger, Starkville, Miss.; William H. Byrd, Fairfield, Ala.

Alfred University Confers Honorary Degree on Ade

The honorary degree of Doctor of Engineering was to be conferred upon Carl C. Ade, A.I.A., Rochester architect and engineer, by Alfred University, Alfred, N.Y., at the June 11th commencement exercises.

The designer of many buildings on the University campus and of schools and other public buildings throughout the state, Mr. Ade's honor recognized his "distinguished professional attainments and service to society". His association with Alfred University has covered nearly 30 years of the period since he established his own office in 1914.

more news on page 113



LITETITE—This unretouched view from directly under the troffer shows clearly the positive lack of light leak and frameless appearance of door frames.

Presenting

A NEW LITECONTROL TROFFER LINE

SERIES 9300RS, 9400RS,

NEW
LITECONTROL
TROFFERS
LIGHTEN TASKS AT THESE
BUILDINGS

•

POWER AUTHORITY OF NEW YORK
Reservoir Power Plant — also,
LEWISTON POWER PLANT
Niagara, New York
SUN OIL COMPANY
Owosso, Michigan
UNION MARKET NATIONAL BANK
West Watertown, Massachusetts
BANGOR STATE HOSPITAL
Bangor, Maine
UNIVERSITY OF NEBRASKA
Lincoln, Nebraska
HARVARD UNIVERSITY
Space Science Building
Cambridge, Massachusetts
GENESEE HOSPITAL
Rochester, New York
LINCOLN HIGH SCHOOL
Manitowoc, Wisconsin
NEW ENGLAND TELEPHONE & TELEGRAPH CO.
Boston, Massachusetts
NEW OSTEOPATHIC HOSPITAL
York, Pennsylvania
AMERICAN OPTICAL COMPANY
Southbridge, Massachusetts
EASTERN STATES COLLEGE
Richmond, Kentucky
COUNTY NATIONAL BANK
Osceola Mills, Pennsylvania
GILCHRIST STORE
Redstone Shopping Center
Stoneham, Massachusetts
PROFESSIONAL BUILDING
Winston-Salem, North Carolina

Consider these outstanding features:

Style plus Quality: The simple good looks of these troffers blend well into any type of interior. Narrow unobtrusive flanges. Very limited metal shows on door frame giving frameless appearance. 1′ x 4′ troffers show unbroken line of light in rows. Fixtures are die-formed, welded, rust-resistant, and finished baked white enamel with 0.89 reflectance.

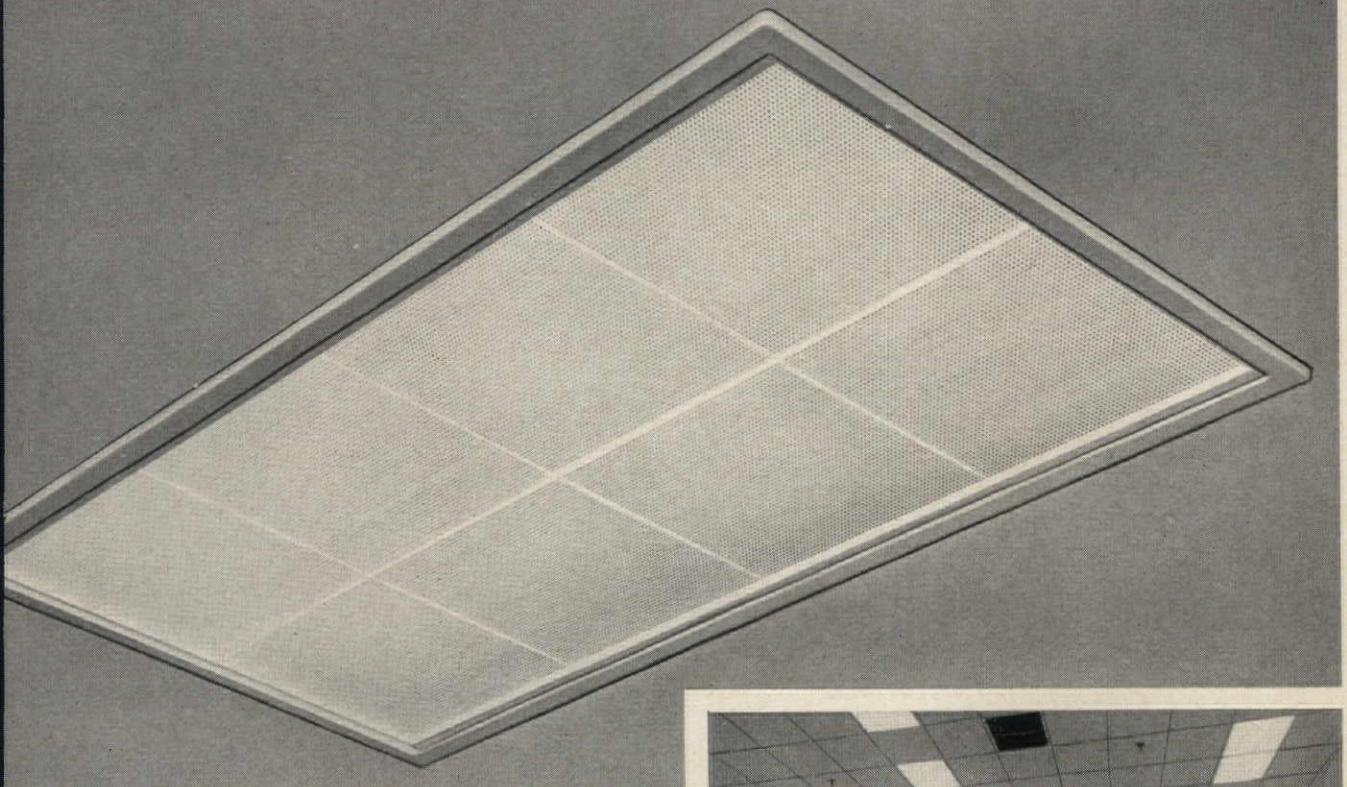
Variety of Design: 194 different troffers shown in Litecontrol catalog. For modular applications — 1′ x 2′, 1′ x 4′, 1′ x 8′, 2′ x 2′, 2′ x 4 and 4′ x 4′ sizes. Refer to sections B and F in catalog for more detailed information.

Easily Installed: Two basic housing designs will fit into every type of ceiling construction. Shallow ($4\frac{15}{16}''$) housing and side-mounted, easily adjustable brackets make fixtures a snap to install.

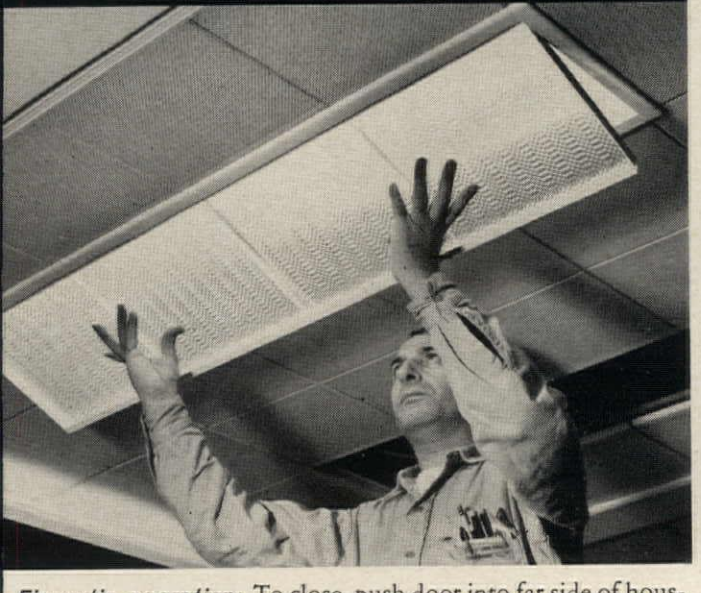
Easily Serviced: Die-formed Lite-Tite door eliminates catches and exposed hinges. Door operates at fingertip touch. All diffusers are interchangeable in the same door. Diffusers include: Holophane lenses #6250, #6150, #6025, #6010, #9022. Plexiglas Dish. Corning #70 Lens Panel. Corning Radiated-Radio-Interference Shielding #EC-70 Lens Panel. Plastic Grid Louvers. STYLUX Plastic Panel. Fiberglas Panel.

We suggest the efficient, modular design of Litecontrol Troffers can fulfill your needs in present or future specifications. For further information, please write address below.

NEW! with Holophane No. 6250 Lens



9500RS AND 9600RS



Fingertip operation: To close, push door into far side of housing, lift in and let drop into place. Door opens for servicing *just as easily* because there's no latch to catch.



Large Massachusetts department store chooses quality lighting, using Litecontrol #9400 series troffers with plastic grid louvers providing comfortable high level illumination for shoppers.

LITECONTROL
LIGHTING
LITECONTROL CORPORATION.
36 Pleasant Street, Watertown 72, Massachusetts

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

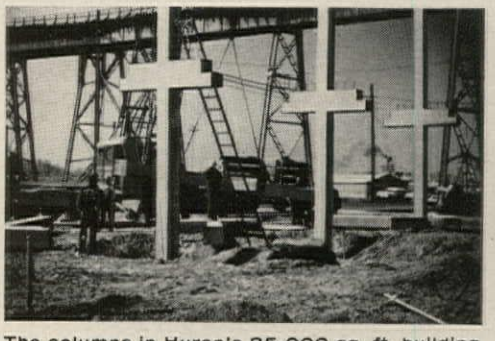
To get the best value for their money

HURON CHOSE PRECAST

Concrete Structurals By A-M



Architectural & Engineering Design by:
Herbert Fleischer, P.E.,
254 5th Ave., New York City



The columns in Huron's 25,000 sq. ft. building are 15" x 16" in cross section by 28'-5" high (two stories).

Economy, as well as speed of erection, were important considerations in the planning of this new office and laboratory addition of Huron Portland Cement Company at their Alpena, Michigan plant. That's why American-Marietta *precast* concrete structurals were chosen for the job.

The precast structural contract—including precast grade beams, columns, wall panels, beams, floor and roof slabs—was substantially completed 18 weeks after the date of its award.

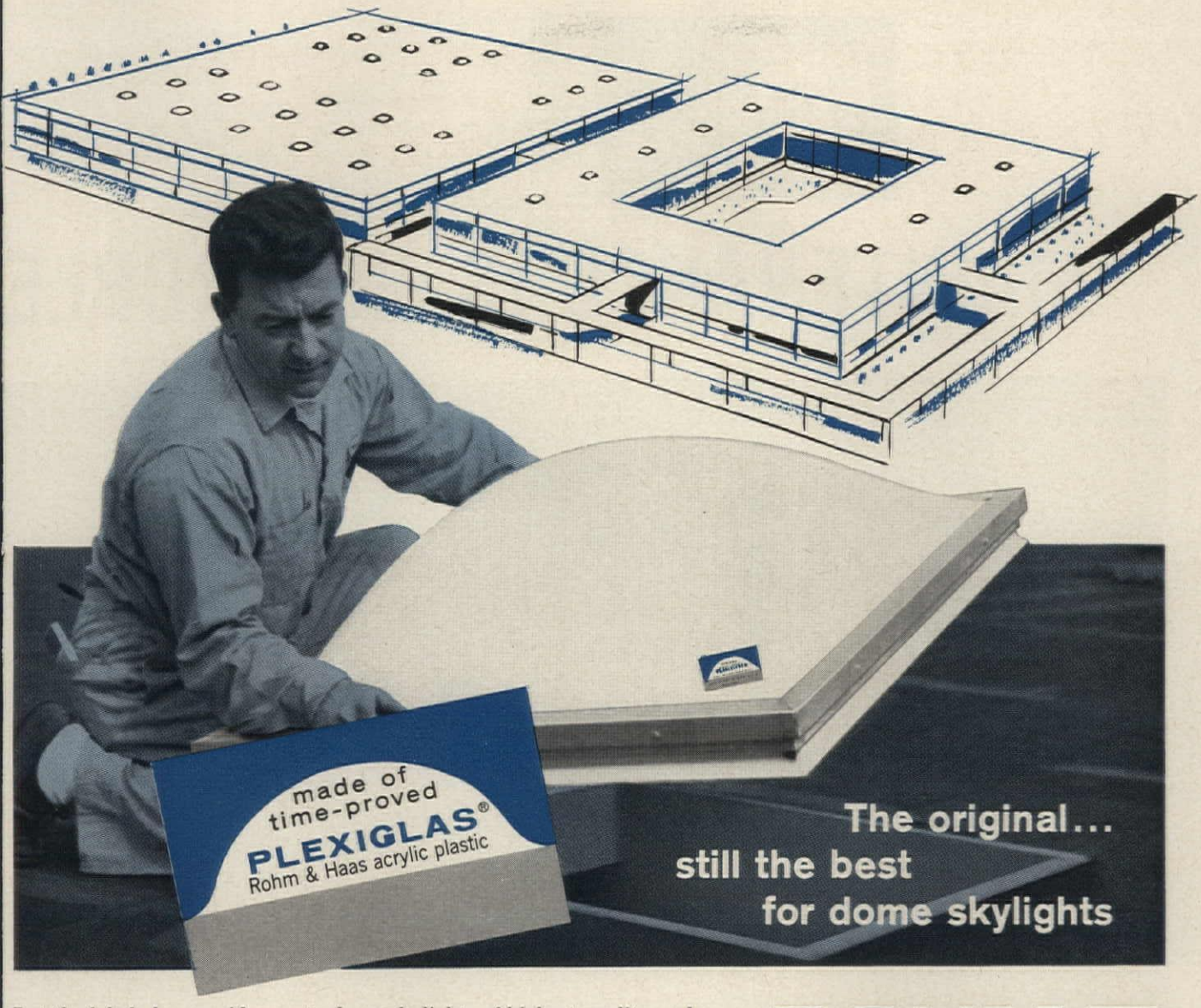
If you are planning the construction of industrial buildings and warehouses, schools, offices or apartment buildings it will pay you to investigate the many advantages of specifying American-Marietta *precast* concrete structurals. Write today for illustrated literature.



The American-Marietta wall panels are 6" thick solid panels with a broomed surface exterior finish.

A-M®

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600



Let the label above guide you to dome skylights of highest quality and dependability. It's the mark of PLEXIGLAS® . . . the acrylic plastic that assures completely successful performance in light transmittance, daylight control, heat-light ratio, surface brightness and outdoor stability. Domes of PLEXIGLAS have been *time-tested* through years of service on schools and industrial buildings throughout the nation.

Insist on domes of PLEXIGLAS—approved as dome material by the Building Officials Conference of America (Report No. 54-12A) and the International Conference of Building Officials (Report No. 1084.1). PLEXIGLAS, made only by Rohm & Haas, is used by the dome skylight manufacturers listed below.

ROHM & HAAS

PHILADELPHIA 5, PA.

In Canada: *Rohm & Haas Company of Canada, Ltd., West Hill, Ontario.*

PLEXIGLAS DOME SKYLIGHT MANUFACTURERS

CALIFORNIA
Skyco, Inc.
3210 Vanowen Blvd.
Burbank, Calif.

COLORADO
Plasticrafts, Inc.
2800 N. Speer Blvd.
Denver 11, Colorado

FLORIDA
Hill Fan Company
3395 N.W. 67th St.
Miami, Florida

INDIANA
Howe Engineering Co.
5800 E. Massachusetts Ave.
Indianapolis, Indiana

MASSACHUSETTS
E. Van Noorden Co.
100 Magazine St.
Boston 19, Mass.

OKLAHOMA
Plastic Engineering Co. of Tulsa
510 N. Sheridan
Tulsa 4, Oklahoma

OREGON
The Pam Company
1951 N.W. Wilson St.
Portland, Oregon

SOUTH CAROLINA
Mid-South Industries, Inc.
6000 Main St.
Columbia, So. Carolina

TEXAS
Naturalite, Inc.
5115 E. Grand Ave.
Dallas, Texas

TEXAS
Plasteco, Inc.
8721 Market St. Rd.
Houston 11, Texas

Southwestern Plastics Co.
6515 Rice Ave.
Houston 36, Texas

PLEXIGLAS

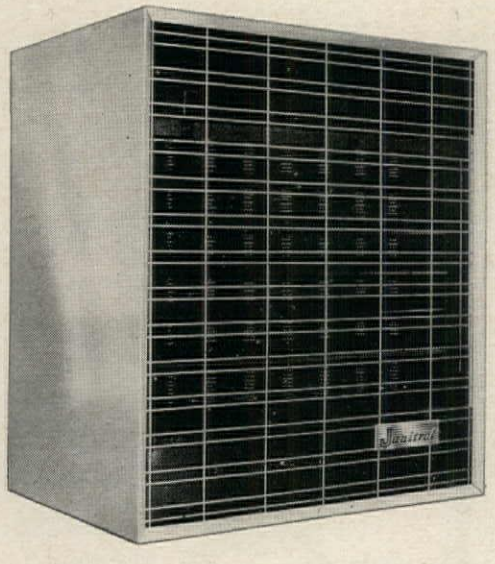
WHY 

RE-SPECIFIES JANITR

"MAINTENANCE IS NO PROBLE



Important Breakthrough in Unit Heater Styling and Engineerin



New JANITROL "67" Series

New outside! Beautifully proportioned, with crisp, clean-lined styling harmonize with any commercial-industrial installation requirement.
New inside! Loaded with important technological advancements to assu performance and reliability far ahead of any other unit heater on th market today.

SOME GOOD REASONS TO SPECIFY JANITROL "67" UNIT HEATER

- New improved fan design assures exceptionally low sound level.
- Delayed fan control — allows full utilization of fuel; eliminates cold blasts when unit comes on.
- Fully enclosed sides and bottom; finished in neutral Phoenix Beige baked enamel, with metallic gold grille.
- Prelubricated motor — continuous duty, rubber-cushioned.
- Adjustable Direct-A-Flow Louve are concealed.
- Complete gas shut-off in case pilot failure.
- Low Voltage thermostat
- Eleven sizes from 30,000 250,000 Btu/hr. inputs.
- Famous Multi-Thermex Heat E changer—over 3 million steel he exchanger tubes in use since 194 with less than ¼ of 1% replac ments for any cause!

NIT HEATERS AGAIN AND AGAIN...

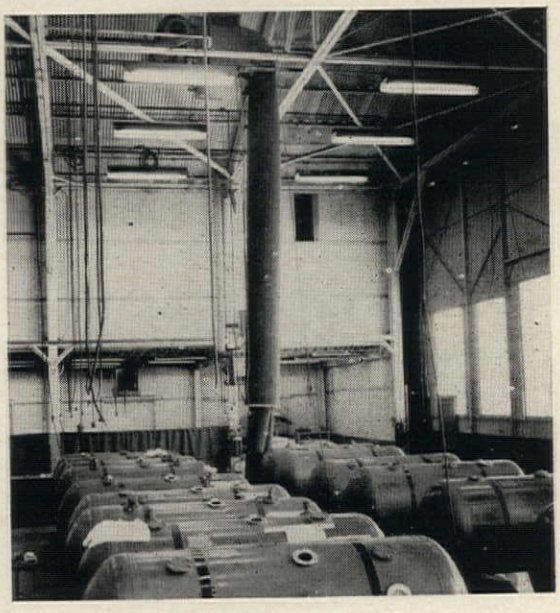
WITH JANITROL UNIT HEATERS"



Addition of 30 More JANITROL UNITS Brings Total to 179 at Temco's Garland, Texas Plant

The complete satisfaction you can expect by specifying Janitrol unit heaters for your commercial-industrial jobs is clearly reflected by Temco's outstanding (but not at all unusual) experience with Janitrol performance.

Janitrol first went to work for Temco Aircraft Corporation in 1946, when 100 Janitrol units were installed. Temco added 43 more Janitrol's in 1951-52 and six in '53, to keep pace with their growing Garland plant. Since 1953, 30 more Janitrol's have gone on the job as the plant has grown.



Says Temco: "Janitrol unit heaters have proven very satisfactory for us, and maintenance is no problem."

Among the features that make Janitrol your best specification is the exclusive Multi-Thermex Heat Exchanger. It is virtually indestructible. In fact, replacements for any cause have been less than ¼ of 1% in over three million heat exchanger tubes produced since 1940.

Today's new Janitrol gas unit heaters are even better than ever, with great new functional styling, and installation flexibility that enable you to "customize" commercial-industrial jobs to individual requirements at lowest cost. Get all the facts on the new Janitrol 67 Series unit heaters from your Janitrol representative.

In addition to space heating, Temco, like many other firms, has adapted Janitrol Unit heaters for use in manufacturing or processing. Here, a high velocity heater, located above the lighting fixtures, provides heat through a large fabric duct for use in curing aircraft fuel tanks that are being overhauled.

JANITROL®
Heating and air conditioning
COLUMBUS 16, OHIO (IN CANADA: MOFFATS LTD., TORONTO 15)

A DIVISION OF M-R MIDLAND-ROSS CORP.

ALSO MAKERS OF ***Surface*** INDUSTRIAL FURNACES AND ***Kathabar*** HUMIDITY CONTROL



Niagara-Mohawk Power Corporation, Huntley Station, Buffalo, New York.

Power company selects Abolite...

Gets easy-on-the-eyes lighting, and holds the line on costs



INSTALLATION DATA

Abolite HMFAU-2400 Alzak aluminum uplight fixtures with 1000 watt color-improved mercury lamps. Ceiling height 65', mounting height 55', spacing 18' x 24'. Average maintained footcandle level: 30.

Electrical Contractor: Buffalo Electric Co.

Engineers at this power plant wanted high bay lighting that combined comfort with low installation and maintenance costs. They got it by installing Abolite fixtures equipped with 1000 watt color-improved mercury lamps.

Though these fixtures are mounted 55 feet high, they provide comfortable, glareless 30 footcandle average light throughout the building. Light directed upward through the fixtures' open tops washes out dark ceiling shadows. 35° shielding of lamp virtually eliminates glare.

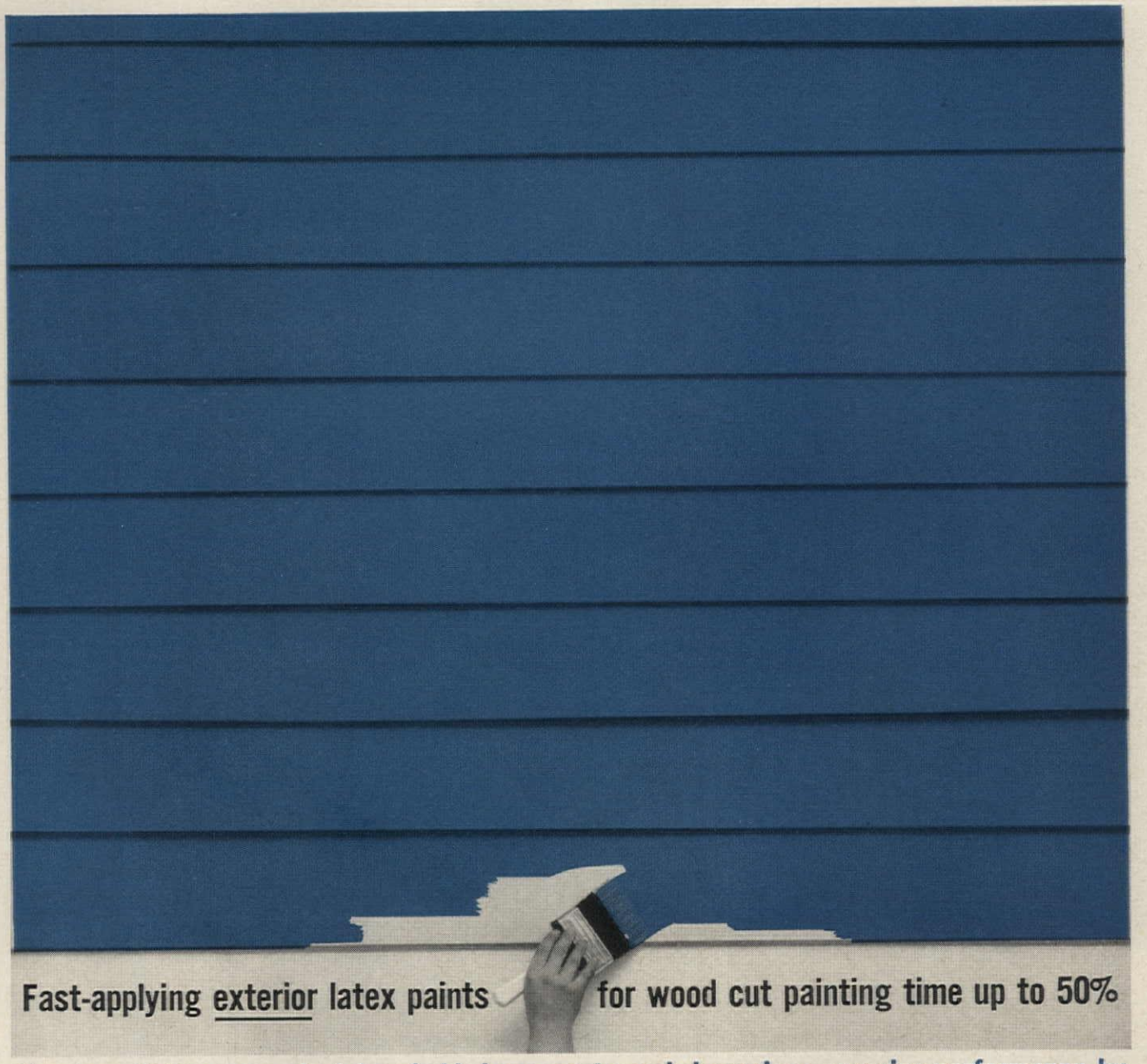
Most important, this system costs less to buy and maintain than a comparable fluorescent system because fewer fixtures are needed. Maintenance costs are less, too, because air circulating through Abolite's open-top fixtures sweeps them clean of dulling dust.

For high bay lighting that combines both comfort *and* economy, specify Abolite fixtures. The complete line includes RLM-approved Alzak aluminum and porcelain enamel fixtures for use with all kinds of mercury and incandescent lamps. Write for more information.

ABOLITE *Lighting*

THE JONES METAL PRODUCTS COMPANY

West Lafayette, Ohio



Fast-applying exterior latex paints for wood cut painting time up to 50%

You can tighten up schedules, hold down costs and depend on superior performance by specifying quality exterior latex paints. Exterior latex paints help trim schedules and cut costs because they flow smoothly... can be applied without brushout in about half the time required for most other paints. Foul weather delays are minimized because exterior latex paints are moisture-resistant in minutes. They dry completely within an hour with a tough, waterproof film that resists dust, fog, mildew, insect and storm damage. Extensive exposure tests on residential houses and commercial buildings made by major paint manufacturers have shown that exterior latex paints have equal or greater durability than all types of conventional paints. These tests were conducted over a seven-year period in all climatic areas. Available in a wide range of decorator colors, exterior latex paints can be used on previously painted or primed wood, brick, stucco, cement block and metal. If you would like further information on cost-saving exterior latex paints, for which Monsanto supplies the ingredient, Lytron® 680 latex, write to Monsanto Chemical Company, Plastics Division, Room 814, Springfield 2, Mass.

Monsanto®

MONSANTO DESIGNER IN **PLASTICS**

Crown Zellerbach's new building makes a striking addition

Exterior wall showing installation detail of PPG SOLEX and SPANDRELITE Glass.



lad in PPG GLASS

o San Francisco's skyline



e Crown Zellerbach Building is one of the st major projects using an all-glass facing be constructed in San Francisco. The ilding is 20 stories high and opens up a owded area on Market Street.

This light and airy building brings a new look to San Francisco's lower Market Street. The 20-story tower is sheathed completely in glass.

PPG SOLEX® heat-absorbing plate glass in the window areas allows plenty of light to get through but absorbs about 50% of direct solar radiation. The pleasing greenish tint is easy on the eyes. Glare is greatly reduced and air conditioning costs are lower because less solar heat enters the building.

In between the windows, PPG SPANDRELITE® Glass in soft color adds beauty to the exterior. This is a heat-strengthened glass, with ceramic color fused to the back. It is strong and durable . . . resists impact . . . its color lasts.

Entrances feature eight HERCULITE® doors with PITTCOMATIC® handle-operated door openers. The doors complete the open spacious feeling of the building. They are well-known for their sturdiness, strength and endurance. Your PPG architectural representative will give you specific data on any of these products. Or check the Pittsburgh Glass-Clad Curtain Wall Systems Catalog in Sweet's.

Pittsburgh Plate Glass Company

Paints · Glass · Chemicals · Fiber Glass
In Canada: Canadian Pittsburgh Industries Limited



PPG Rough Plate Glass partitions with a knurled finish provide light, airy privacy.



The board room is a bright and cheerful place to work because of the wide expanse of window area. SOLEX heat-absorbing glass used here absorbs about 50% of direct solar radiation and reduces glare.

ssociated Architects: Hertzka & Knowles and Skidmore, Owings & Merrill, San Francisco, California
ontractor: Haas & Haynie Corporation, San Francisco, California
lazed by: W. P. Fuller & Co., San Francisco, California

STEEL CONSTRUCTION IN AN 8-STORY APARTMENT BUILDING? YES AND IT SAVED $80,000

For the builders of new Hinman House in Evanston, Illinois, steel offered exceptional flexibility of design and a direct saving of $80,000 in construction costs. The 8-story building has 80 deluxe apartments. Typical floors are 68′ x 165′ and cubic footage totals 1,020,000.

"We saved in many ways," says Mr. Roy Schoenbrod, the architect. "Designed and bid both for steel and for concrete, the steel bid proved to be decidedly less expensive. What's more, during construction we observed that steel construction made the job easier for the pipe trades such as heating, air-conditioning, conduits and plumbing. Work went faster and labor costs were reduced considerably. This was our first experience with steel on a building of this size, but now that we've seen what it can do, we'll think of steel first from now on."

Use Steel for Modern Construction



STEEL CONSTRUCTION OFFERS design flexibility

. . . freeing the architect and engineer from patterns of the past . . . allowing unlimited play to creative imagination. In the practical solution of space design, large column-free areas are easily achieved. Cellular floors can be tack-welded to beams and girders providing built-in space-saving raceways for present and future power, phone and signal lines.

high strength with low weight

. . . reducing foundation costs due to excessive dead load . . . reducing floor heights which in turn save considerably on exterior wall surfaces while reducing the overall cubage required for the air-conditioning load.

and economy

. . . savings readily apparent when steel bids are compared with material other than steel. What's more such savings accrue regardless of size of building—from horizontally structured apartment houses or hospitals to vertically-reaching hotels or office buildings. Earlier occupancy, interest savings on construction loans, lower labor costs, all contribute to make steel by far your best actual and potential value for every construction dollar.

INLAND®

INLAND STEEL COMPANY

30 West Monroe Street • Chicago 3, Illinois

Wide Flange Beams · Steel Plates · Bearing Piles and Steel Sheet Piling · Ti-Co® Galvanized Sheets · 4-Way® Safety Plate · Enameling Iron · Sub-Purlins

The Record Reports

continued from page 101

Architecture Award Winners Announced at U. of Michigan

Six winners of architectural awards, fellowships and scholarships for the academic year 1961-62 at the University of Michigan are:

Richard G. Millman, Ann Arbor, 1951 U. of Mich. graduate in architecture, principal in the firm of Kainlauri, MacMullen, Millman Associates, Inc. of Ann Arbor—Alumni Scholarship of $3500 and teaching fellowship of $1500.

Mr. and Mrs. James A. (Linda Nordyke) Van Sweden, 1960 U. of Mich. graduates in architecture, presently working and studying in Delft, The Netherlands—$1500 Booth Traveling Fellowship in architecture to study the scale of Dutch cities in The Netherlands.

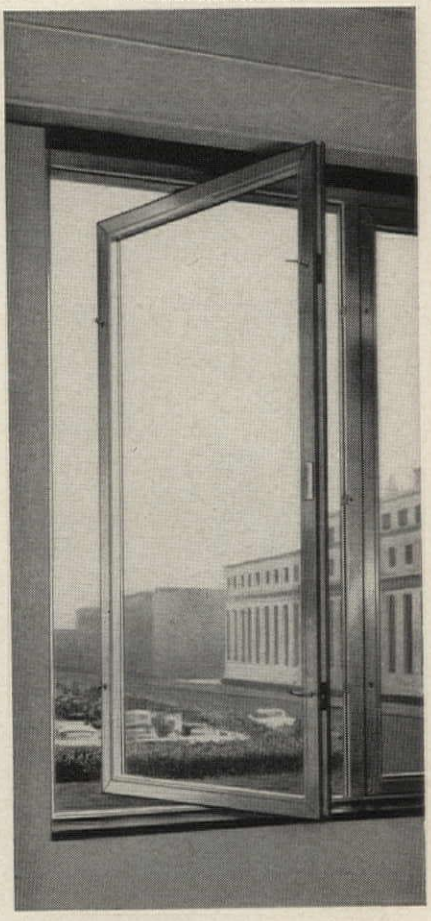
Clarence E. Bentley, Ann Arbor—$1000 newly established Daverman Merit Award in Architecture given annually to an outstanding senior student for graduate work in a specialized area of architecture. Instituted by the J. & G. Daverman Co., architects, engineers and planners of Grand Rapids in the interest of raising the professional level of the architectural field, the criteria for selecting the award winner is promise of and ability to make an outstanding contribution to the profession.

William John Steer, Trowbridge, England, under the sponsorship of the English Speaking Union taking graduate study at Michigan after completion of his study at Northern Polytechnic School of London—Albert Kahn Graduate Fellowship of $1000 and a teaching fellowship of $1080.

Brian R. Binning, Wellington, New Zealand, 1959 graduate of the U. of New Zealand, at present traveling in Europe; and Turhan A. Beygo, Istanbul, Turkey, who received his master's degree in architecture from the Technical University of Istanbul in 1956, served for three years as assistant on the faculty and is now enrolled in the department of architecture as a post graduate student in city planning—teaching fellowships of $1500 each.

more news on page 262

reversible window



ELEGANCE

Conceived in the consummate skill of a knowing hand . . . designed with a feel for fashion and a flair for elegance. This is the incomparable new Series A315 . . . reversible window by the master craftsmen of Albro. Some noteworthy features:

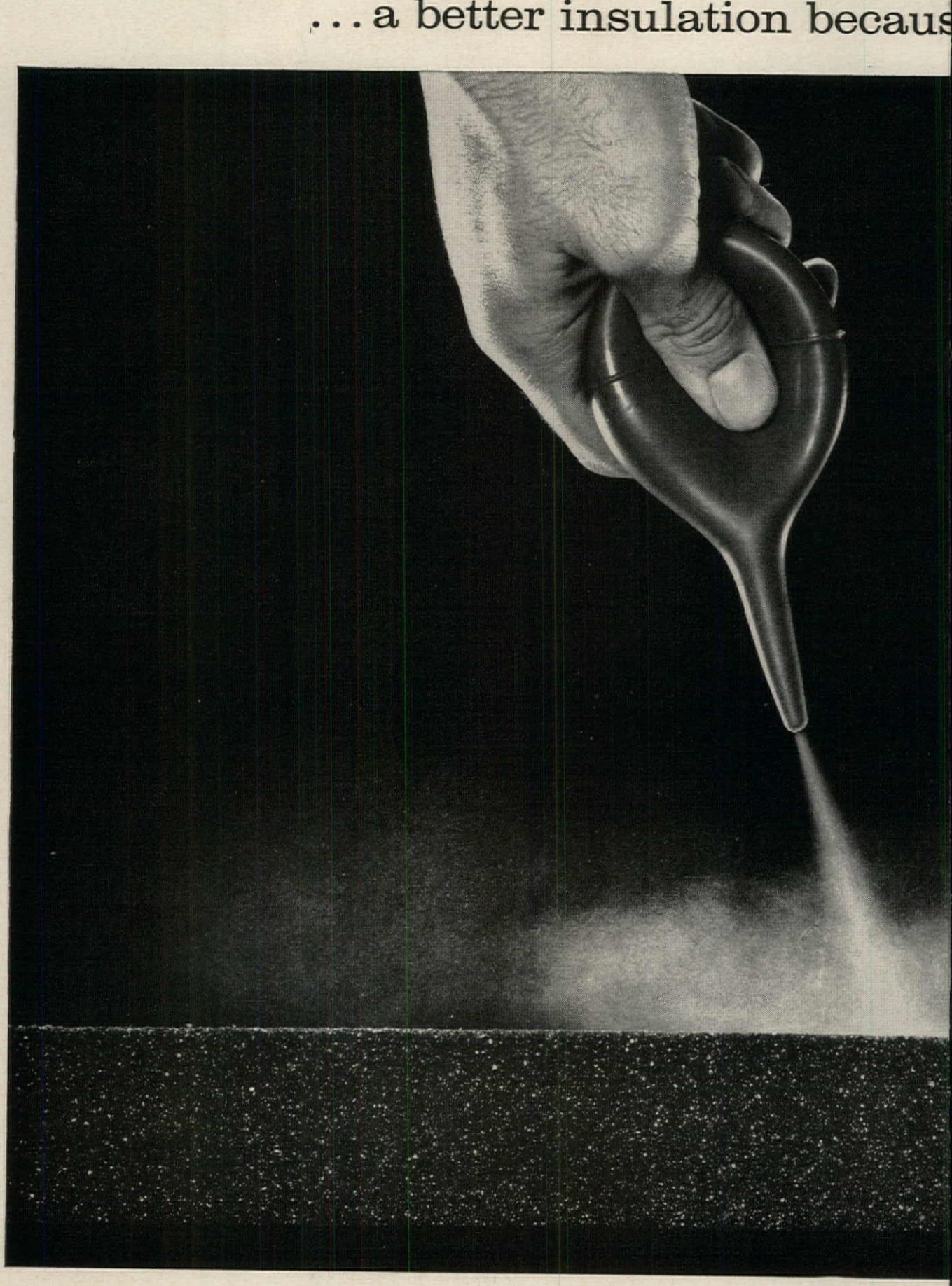
- trim, modern styling
- choice of aluminum or bronze
- mechanical and alumilite finishes
- custom quality
- easily installed, sash removable from inside
- for commercial, institutional, monumental structures
- backed by rigid performance tests and . . .
- more than three decades of creativity in metals

See it in Sweets or write

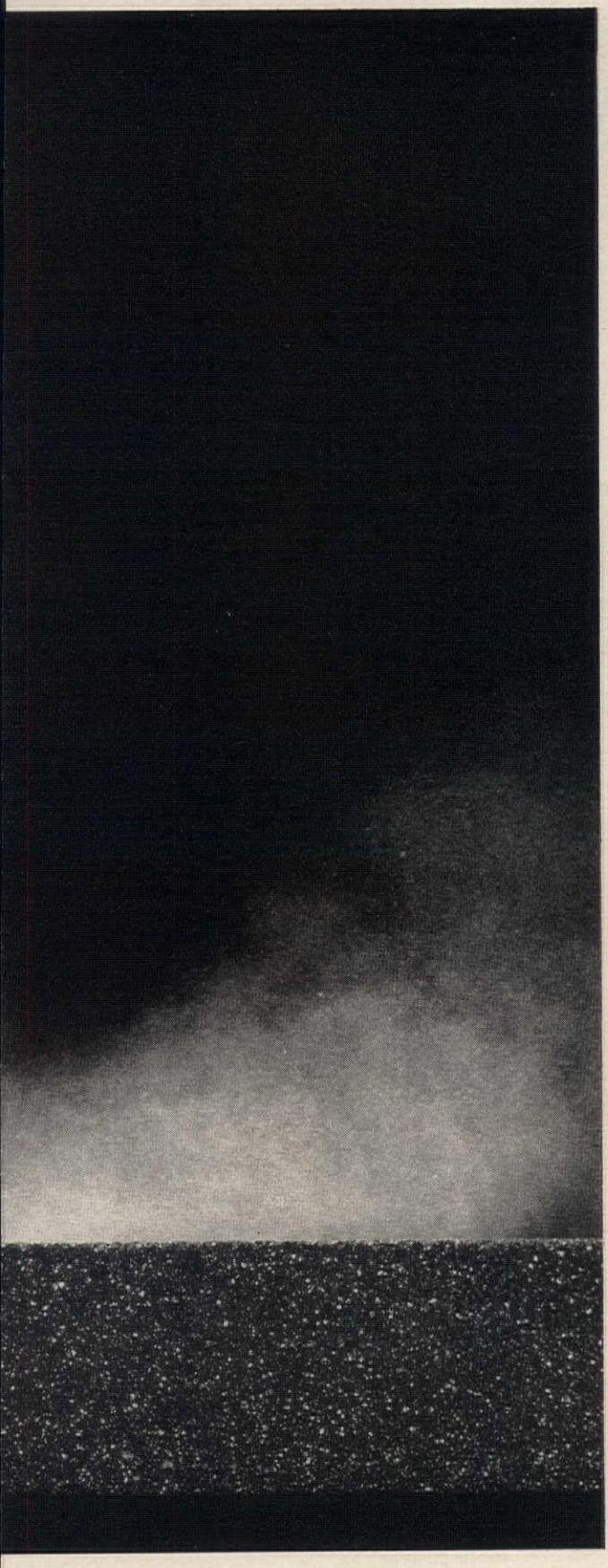
ALBRO METAL PRODUCTS CORP.
944 Longfellow Avenue
New York 59, New York

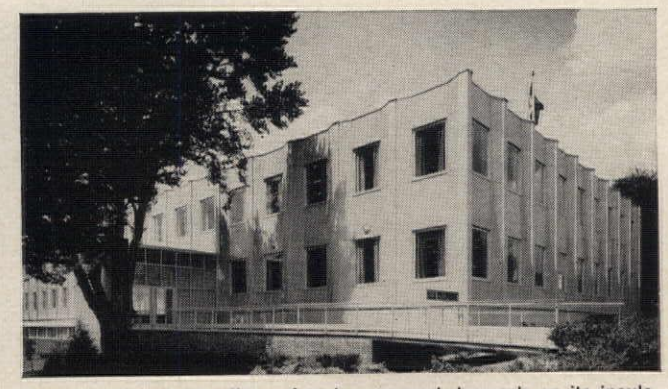
FOAMGLAS® Insulation . . . a bette

. . . a better insulation becaus



building material because it's **vaporproof**
it's cellular glass

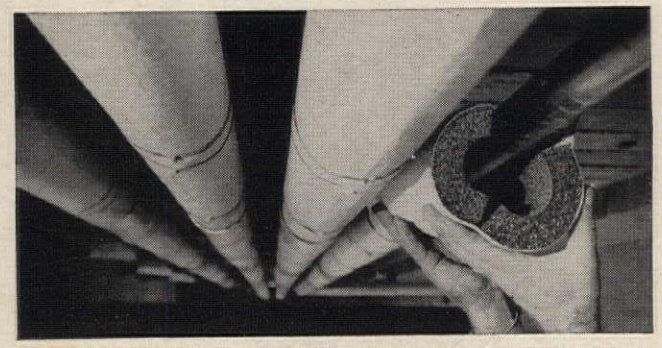




An unusual curtain wall panel makes unusual demands on its insulation. FOAMGLAS complements this Bell Telephone design, Conshohocken, Pa., where panels are projected to create vertical accents in depth. The cellular glass insulation stays impervious to vapor and water, maintaining its high compressive strength, firmness, rigidity and dimensional stability.



Over 82,000 sq. ft. of FOAMGLAS insulates these glass spandrel panels at the Connecticut General Life Insurance Building, Bloomington, Conn. Fabricated right on the job, FOAMGLAS protects the steel from air and moisture damage while it serves as the backing for the metal flashing that rings the building.



FOAMGLAS Stay-Dry Pipe Insulation provides the important benefits of FOAMGLAS for all building service lines; iced water, chilled water, low-pressure steam or dual temperature runs. In addition to the vapor and moisture protection, the insulation is fireproof, will not slump or sag, and will not compress around saddle supports.

No extra vapor seals are necessary with FOAMGLAS. It forms its own vapor barrier. That means a dependable seal against both moisture migration through the insulation and condensation within it.

Write for information on the complete line of FOAMGLAS products, and how they can work in your toughest applications. Address: Pittsburgh Corning Corporation, Dept B-71, One Gateway Center, Pittsburgh 22, Pa. In Canada: 3333 Cavendish Blvd., Montreal, Quebec.

PITTSBURGH
CORNING

New Crown Zellerbach Building

San Francisco



Modular Design Provides Maximum Flexibility of Office Space Layout

Hertzka & Knowles and
Skidmore, Owings & Merrill
Associated Architects

Haas and Haynie
General Contractor

McClenahan Company
Heating, Plumbing, Air Conditioning

AEROFIN INSTALLED

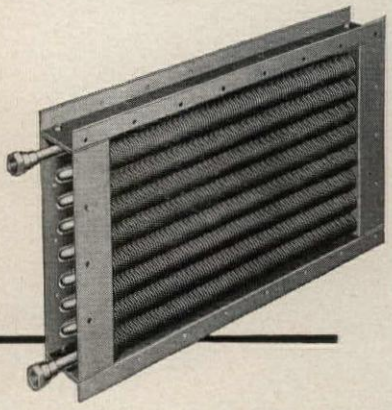


Type C Water Coils used for both heating and cooling

Modern smooth-fin design of Aerofin coils permits ample heat-exchange capacity in limited space—permits the use of high velocities without turbulence or excessive resistance.

Aerofin performance data are laboratory and field proved. You can safely specify Aerofin coils at full published ratings.

More than 300 hot water reheat coils throughout the building provide zone heating



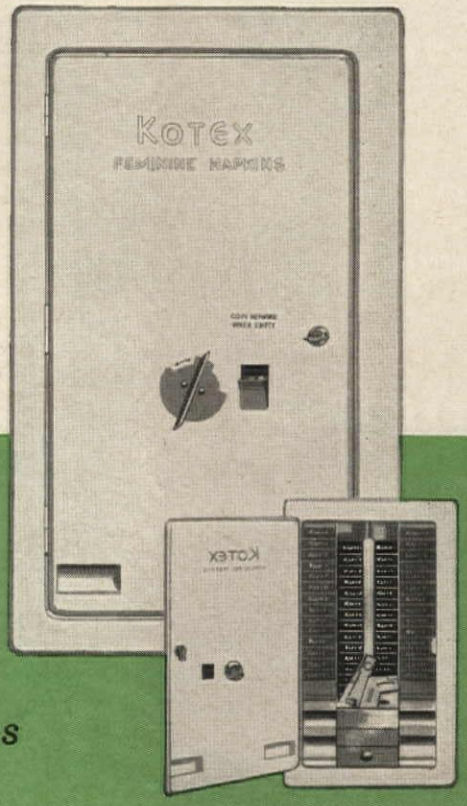
AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

Aerofin is sold only by manufacturers of fan system apparatus.
List on request.

ENGINEERING OFFICES IN PRINCIPAL CITIES





The ultimate in built-in convenience...

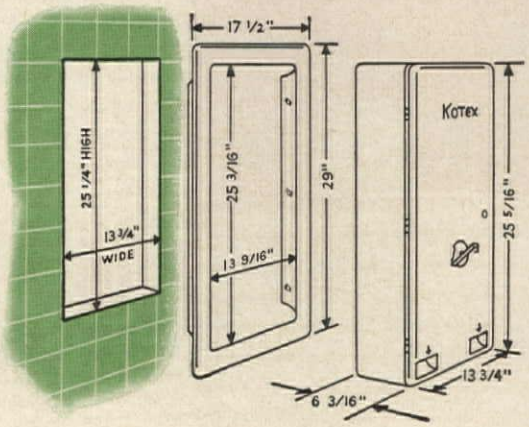
RECESSED VENDORS

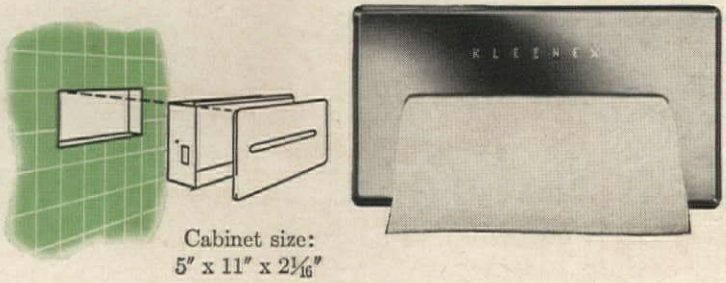
for KOTEX *feminine napkins*

To keep pace with the latest architectural designs, Kimberly-Clark has styled a brand new recessed dispenser for Kotex feminine napkins for rest room use in schools, offices, stores; industrial and public buildings. This unobtrusive, built-in vendor holds 63 individually boxed napkins. 33 vend from a single loading, 30 are held in storage.

These streamlined, sturdy, pilfer-proof vendors add a much appreciated service to any public building. They are available with either a five-cent or ten-cent coin mechanism.

Available in durable white enamel, satin chrome, gleaming polished chrome and stainless steel. Matching frame for recessed installation. (Other vendors that can be surface mounted are also available.)





Cabinet size:
5" x 11" x 2 1/16"

RECESSED DISPENSER FOR KLEENEX TISSUES

Holds full box of Kleenex 200's. Dispenses one tissue at a time. Mirror-chrome finish. Holes in back and side make it easy to fasten to studding.

For further details on how these attractive new recessed dispensers for Kotex napkins and Kleenex tissues can fit into your plans, see Sweet's Architectural File Cat., Section 27e/Ki. or write to Kimberly-Clark Corp., Dept. AR-71, Neenah, Wisconsin.

KOTEX and KLEENEX are trademarks of KIMBERLY-CLARK CORPORATION

KIMBERLY-CLARK CORPORATION NEENAH, WISCONSIN


The best
ideas
are more
exciting
in
concrete

Tallest apartments in the world... Concrete makes possible their unique design

Marina City in downtown Chicago brings a significant advance in the architecture of high-density living. Its twin towers, rising a full 60 stories, are entirely of concrete—the only material permitting exact execution of the architect's concepts.

The circular plan creates not only a striking exterior effect, but a new livability. Apartments, fanning out from a central service core of reinforced concrete, achieve a privacy and spaciousness unrealized in conventional design.

This "vertical community" includes an auditorium dramatically designed with a concrete shell roof. A 10-story commercial building forms a modern backdrop for the broad street-level plaza. And on the river below are special facilities for 700 boats.

Today, to give full expression to their most exciting ideas, more and more architects are turning to versatile concrete.

PORTLAND CEMENT ASSOCIATION

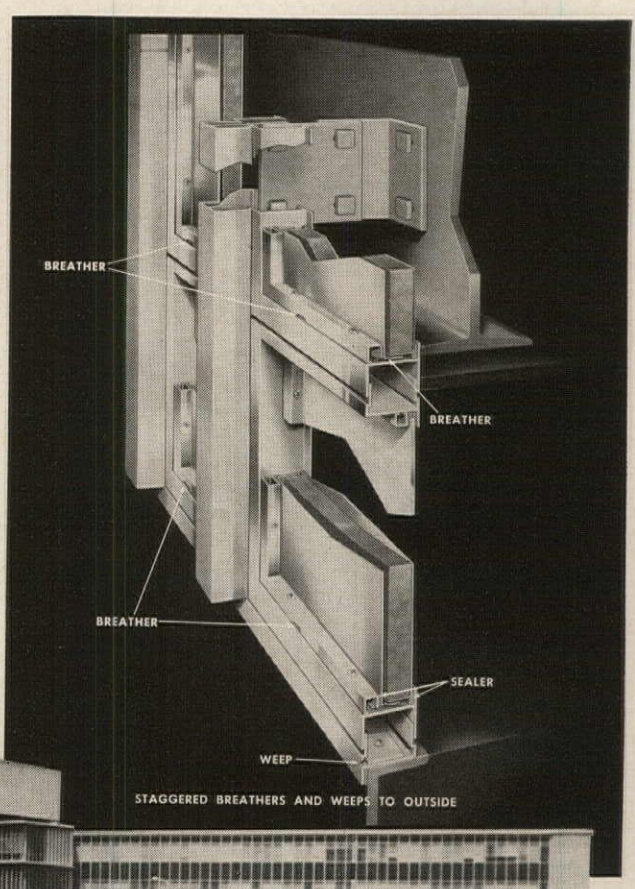
A national organization to improve and extend the uses of concrete



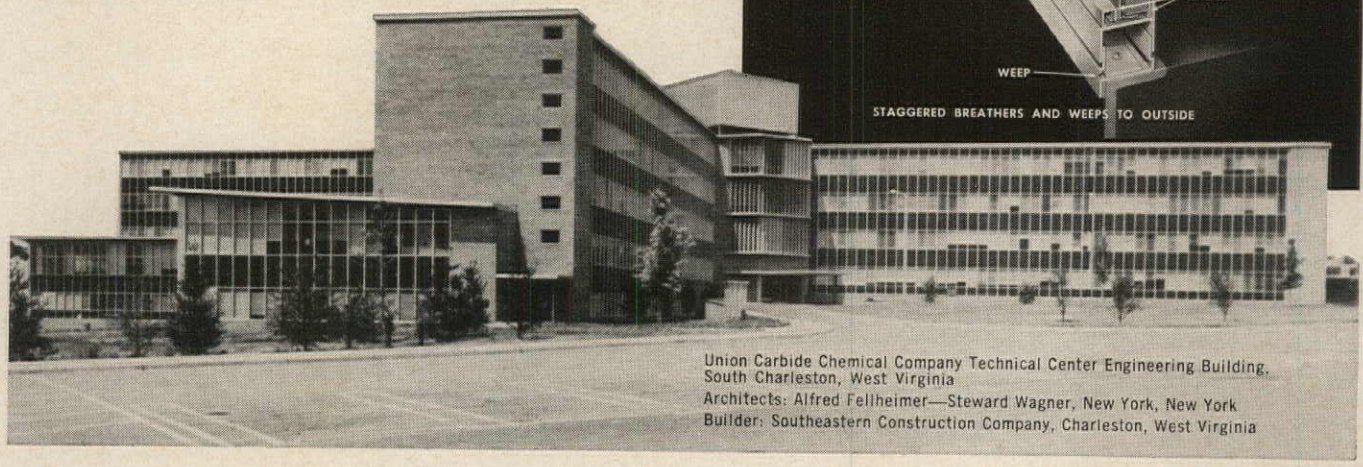
896 apartments — each with penthouse privacy. Rooms widen out toward broad windows and individual balconies. High-speed elevators put even top floor residents just a minute away from their own shopping center, indoor swimming pool and bowling alley.

Sponsor: Building Service Employees International Union and Marina City Building Corporation, William L. McFetridge, President. Architect: Bertrand Goldberg Associates. Contractor: James McHugh Construction Company.

This Series AV250 Bayley Vertical Curtain-Wall System, with 2½" deep mullion, accommodates any arrangement of insulating panels, glass or Bayley Aluminum — ventilated or fixed — Window units having channel frames, mounted directly into the sub-frame. Selection of types and depths of vertical mullions also available.



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Union Carbide Chemical Company Technical Center Engineering Building, South Charleston, West Virginia
Architects: Alfred Fellheimer—Steward Wagner, New York, New York
Builder: Southeastern Construction Company, Charleston, West Virginia

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The Series AV250, used in this attractive Union Carbide Chemical Company Building, is one of TEN Bayley **pre-engineered** Curtain-Wall Systems . . . available in aluminum or steel and in depths of 1½" to 7½". Flexibility of these designs permits originality of wall treatment for individualized building appearance. By being pre-engineered, they more fully meet all functional requirements and facilitate your problems of holding to a budget. By working with Bayley, you gain the extra benefits of a financially responsible organization with complete manufacturing and erection facilities; and experienced curtain-wall engineering assistance available to you upon request. Write or call Bayley on your current or contemplated projects.

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Bradley Washfountains speed washroom traffic flow... end disease transmission with foot operation . . . and pinch pennies like a Scrooge, saving installation costs, water, space, and maintenance man-hours. But to gain these advantages you must include them in your preliminary planning. Draw the circle first—Begin with Bradley!

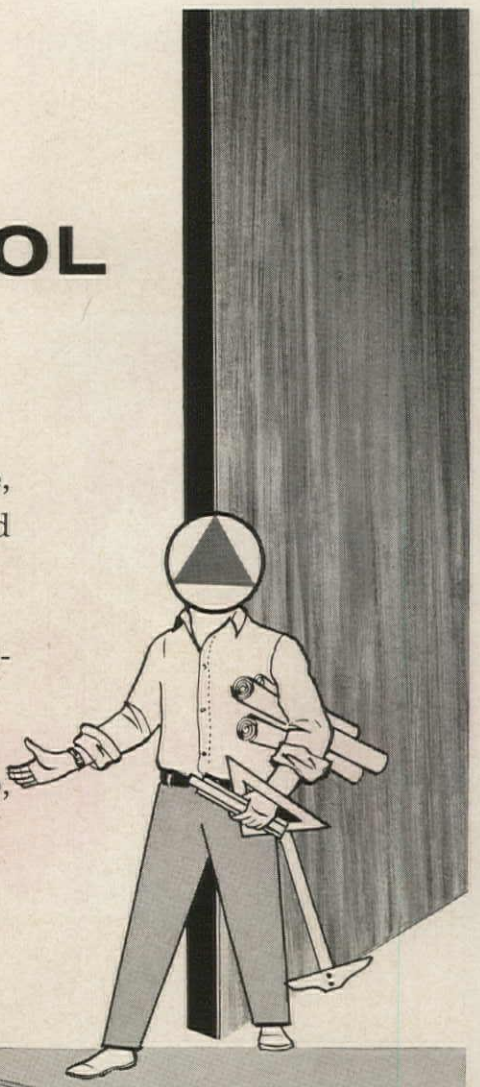
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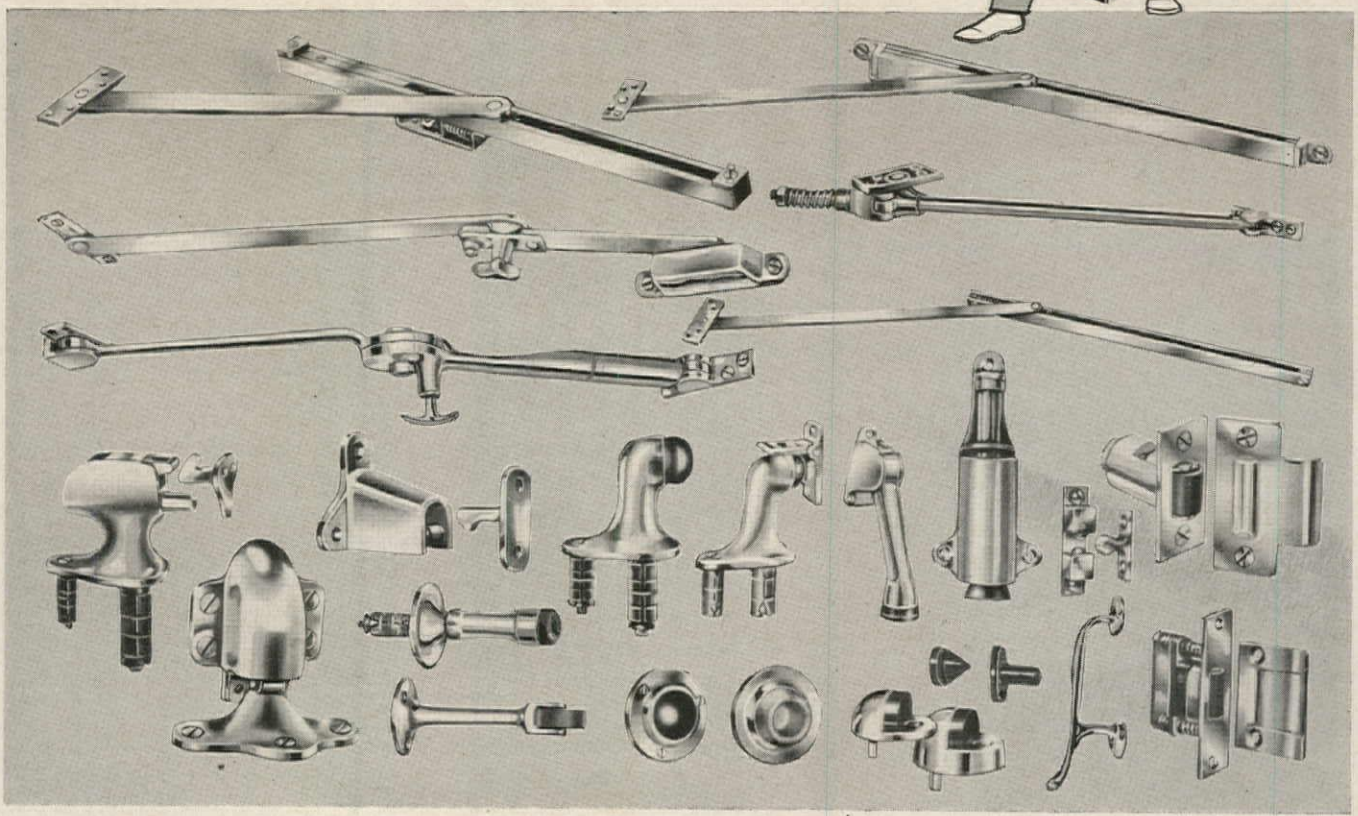


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Refacing with Alcoa Sol-Dec is money in the bank

Depositors flocked in and rental income jumped when the owner took an old building in downtown Oakland, Calif., remodeled it—inside and out—for Central Valley National Bank. For the facade, the architect chose Alcoa * Sol-Dec Screen to get a contemporary look at reasonable cost—(savings, plus interest from maintenance-free aluminum).

Beautiful as it is practical, lightweight Alcoa Sol-Dec Screen spruces up an old-timer quickly and economically. It's an efficient solar screen, reducing glare and air-conditioning load. Application is simplicity itself: two extruded aluminum shapes and a clip. Yet Alcoa Sol-Dec Screen offers you design flexibility from many basic patterns. You order direct from Alcoa: standard or custom aluminum panelettes, in 11 Alcoa Alumalure® colors.

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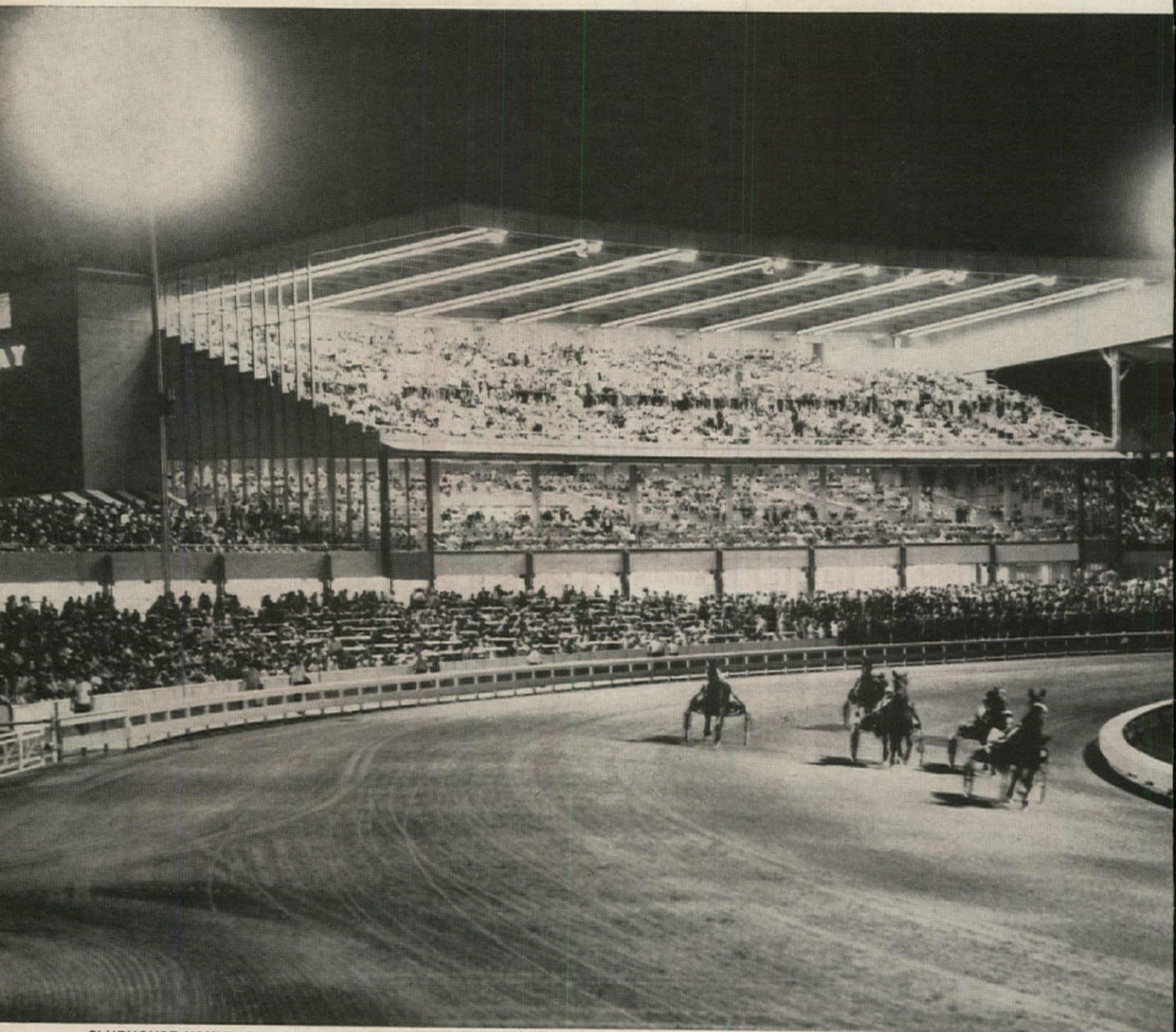
OWNER: R. W. Breuner, Oakland, Calif.
TENANT: Central Valley National Bank, Oakland, Calif.
ARCHITECT: Confer, Willis & Anderson, Oakland, Calif.
GENERAL CONTRACTOR: Christensen & Lyons, Oakland, Calif.
SOL-DEC SCREEN SUBCONTRACTOR: Pan American Steel Co., Oakland, Calif.

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ALCOA ALUMINUM

THE ARCHITECT'S METAL

WHO LOOKS AT THE ROOF?



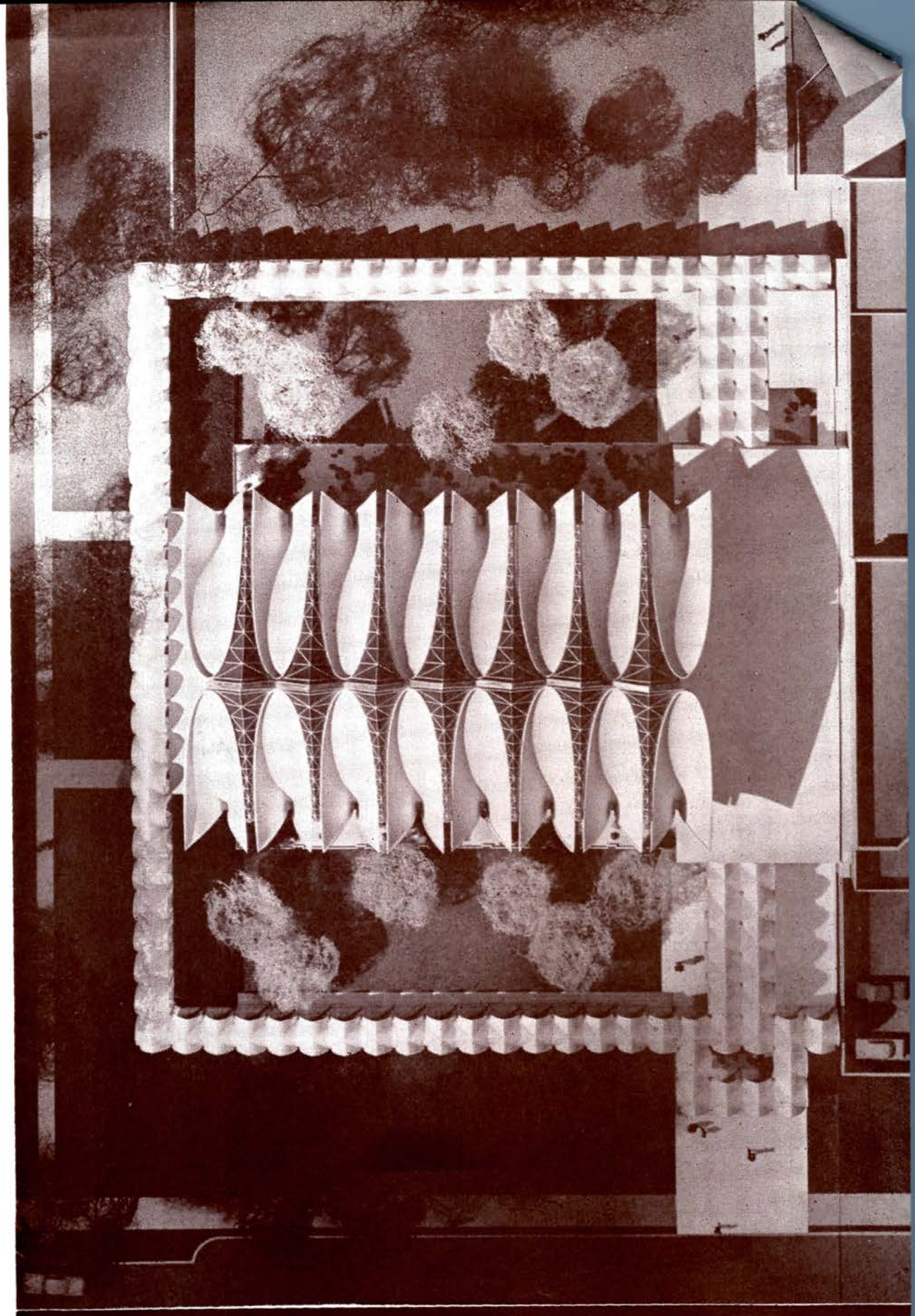
CLUBHOUSE, YONKERS RACEWAY, YONKERS, N. Y.
Architect: Lionel K. Levy
Roofing Contractor: Munder-Sobel & Kraus Corp.
Ruberoid Specifications: Special Bitumen Spec. 202A, 203A

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ARCHITECTURAL RECORD JULY 1961



Six New Projects by

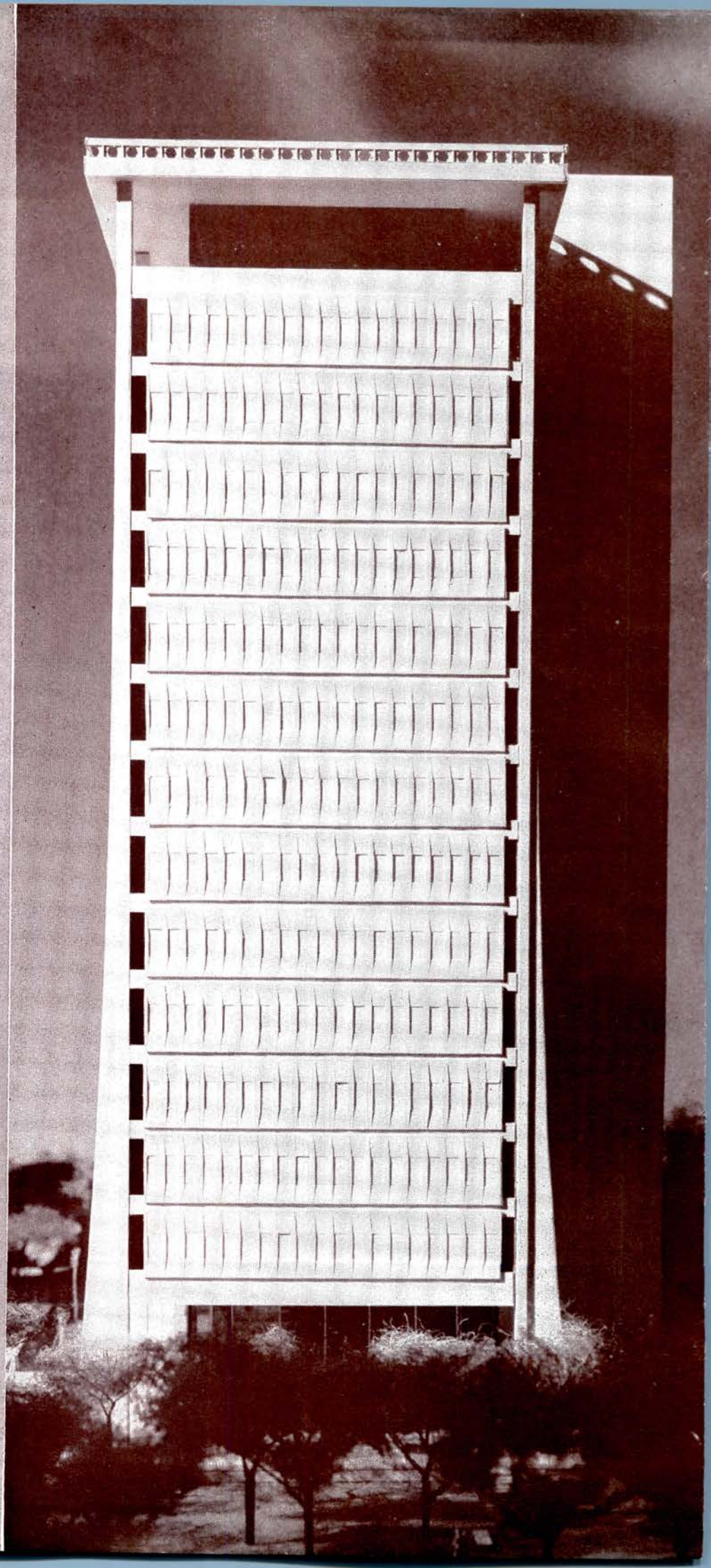
YAMASAKI

The Humanist Architecture of Minoru Yamasaki

At the root of Yamasaki's design philosophy lies the belief that buildings should be friendly rather than impressive or awe-inspiring; that architecture should reflect the dignity and individuality of man—express the ideals and aspirations of our whole society.

The concept of such an architecture, and its necessary qualities were discussed by Yamasaki on a recent "Voice of America" radio program. The quotes spotted through these 16 pages—printed on tint blocks—have been excerpted from Yamasaki's speech.

"An architecture to implement our way of life and one which is representative of it, must recognize those human characteristics we cherish most: love, gentility, joy, serenity, beauty, and hope."



Six New Yamasaki Projects

BEHAVIORAL SCIENCES BUILDING, HARVARD UNIVERSITY

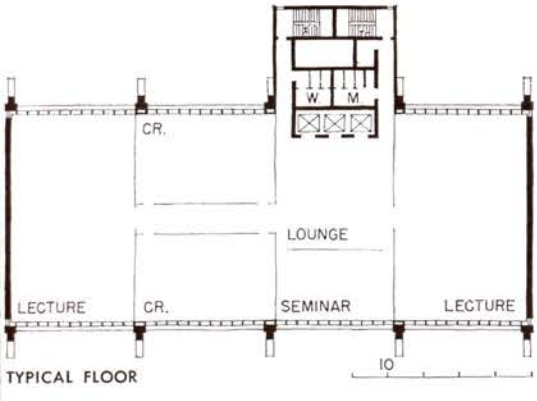
This glistening white, 15-story tower will be one of Harvard's first high-rise buildings, following president Pusey's decision —in the face of difficulties in increasing the university's land area—to "go up in the air" to meet space needs.

The design properly assumes an individual character, since the site is physically removed from the old Harvard yard. The gracefully tapering columns will be *in situ* concrete covered with white glass chips, blown upon a rolled-on coating of epoxy or polyester adhesive. The 34 by 7 ft precast spandrel girders and end wall panels will have surfaces of exposed white quartz aggregate. An unencumbered roof garden interestingly terminates the design.

The structural frame consists of the poured columns, precast, prestressed spandrel girders, and a floor system of precast, prestressed beams 60 ft in length. Poured floor slabs will serve to tie the entire structure together laterally.

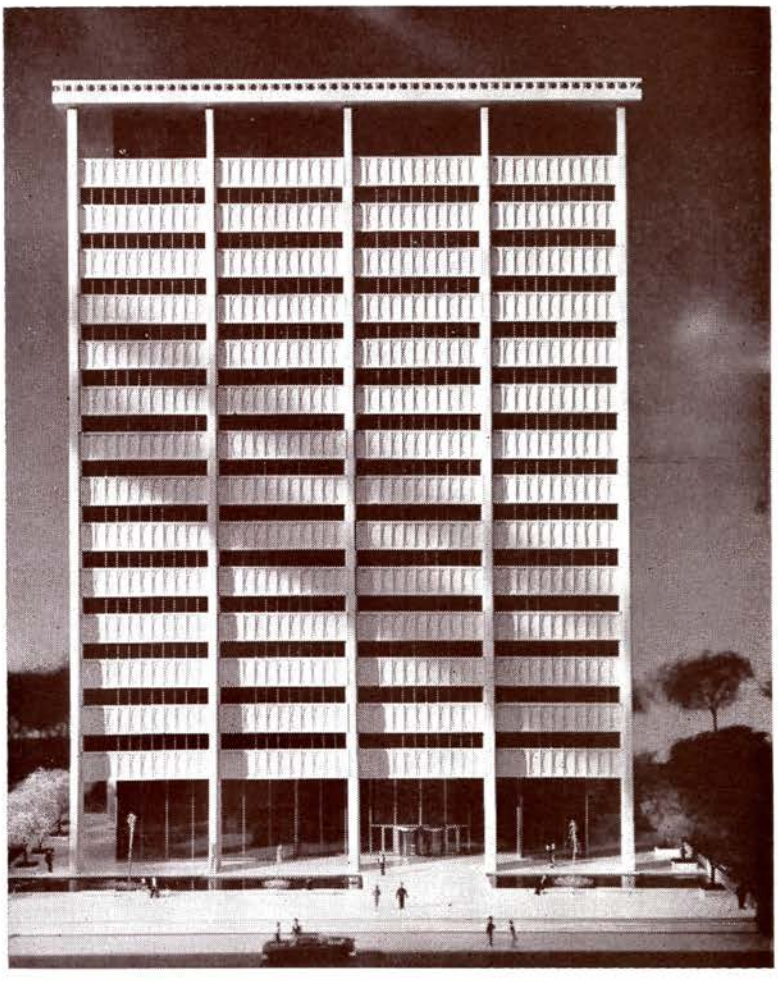
The typical floors—each 60 by 144 ft of space beautifully free of columns—can be subdivided on a 3 ft modular pattern to provide exceptional flexibility in meeting both present and future needs for the various departments in the building.

ARCHITECT: *Minoru Yamasaki and Associates;* STRUCTURAL ENGINEERS: *Worthington, Skilling, Helle, and Jackson.*



TYPICAL FLOOR

All photographs by Baltazar Korab






HOOD
WORK TABLE
SUPPLY PIPES & UTILITIES
DRAINAGE

"The only way to eliminate the architectural confusion of today is to examine and consider the kind of architecture we must have—beyond that which provides such basic necessities as structural stability, utility, and compatibility with the economics of the particular project and situation. Without the discipline and inspiration a clear understanding of purpose can provide, we shall be unable to accomplish the gigantic job of framing modern man in an appropriate environment. Throughout history the architecture of a particular society has reflected the beliefs and way of life of that society. In like fashion, an architecture for our society should be totally consistent with our way of life and ideals. Although its obvious purpose is to house the complex activities of modern man, its more positive attribute is to elevate the spirit of humanity and sympathetically express its ideals."

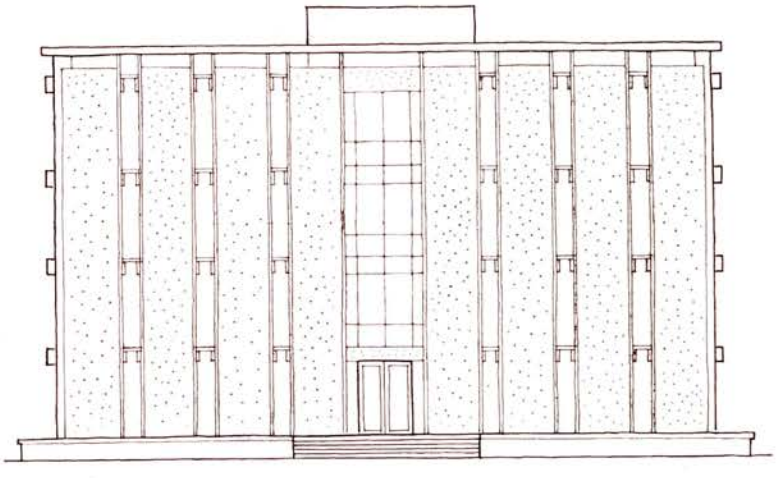
Six New Yamasaki Projects

ENGINEERING LABORATORY, HARVARD UNIVERSITY

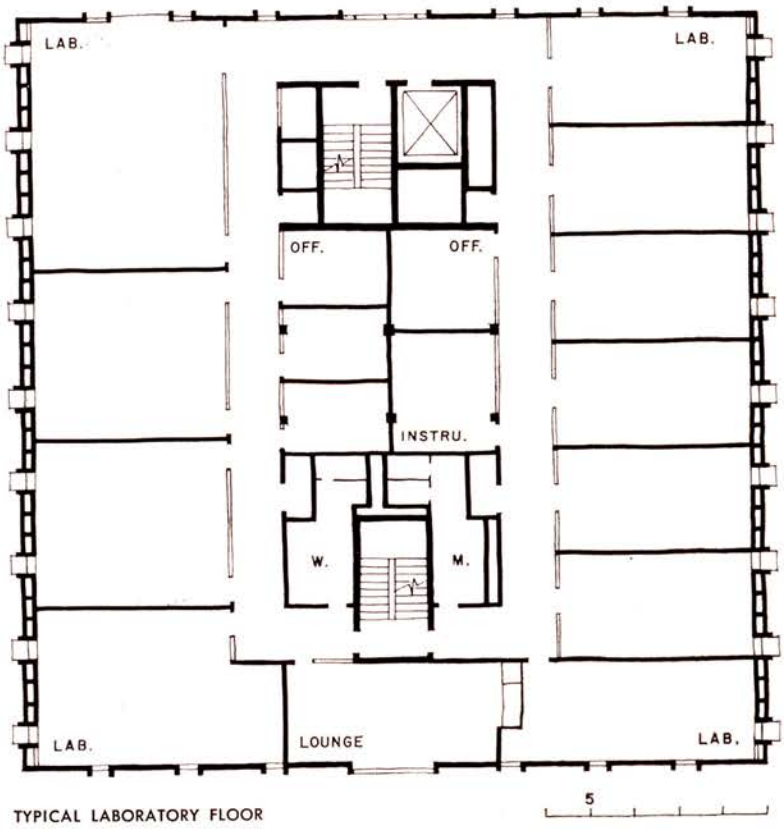
The present, prestressed elements that compose this ingenious building serve as finish, as structure, and as chases for exhaust stacks and utilities runs. Architect Yamasaki explains, "The exterior wall has 2 ft 6 in. windows spaced at 10 ft on centers, between which are three precast duct shafts. The user can thus place a hood where desired and vent it to the roof through the structural shape. This is economical of exterior wall space, locates windows in good relationship to aisles, and—due to the small window area—makes possible better control of temperatures. The system also provides the flexibility in use necessary for the future."

As the cross section at left will show, the precast, prestressed floor members are arranged to relate to the bench module. Floor members are spaced 2 ft 6 in. on centers, with benches and work areas assumed at 10 ft centers. This scheme—with lighting tubes in alternate runs—provides light above the work and over the aisles, with the runs between serving for supply, piping, electrical and drainage lines. Exterior wall panels will have an exposed white aggregate surface.

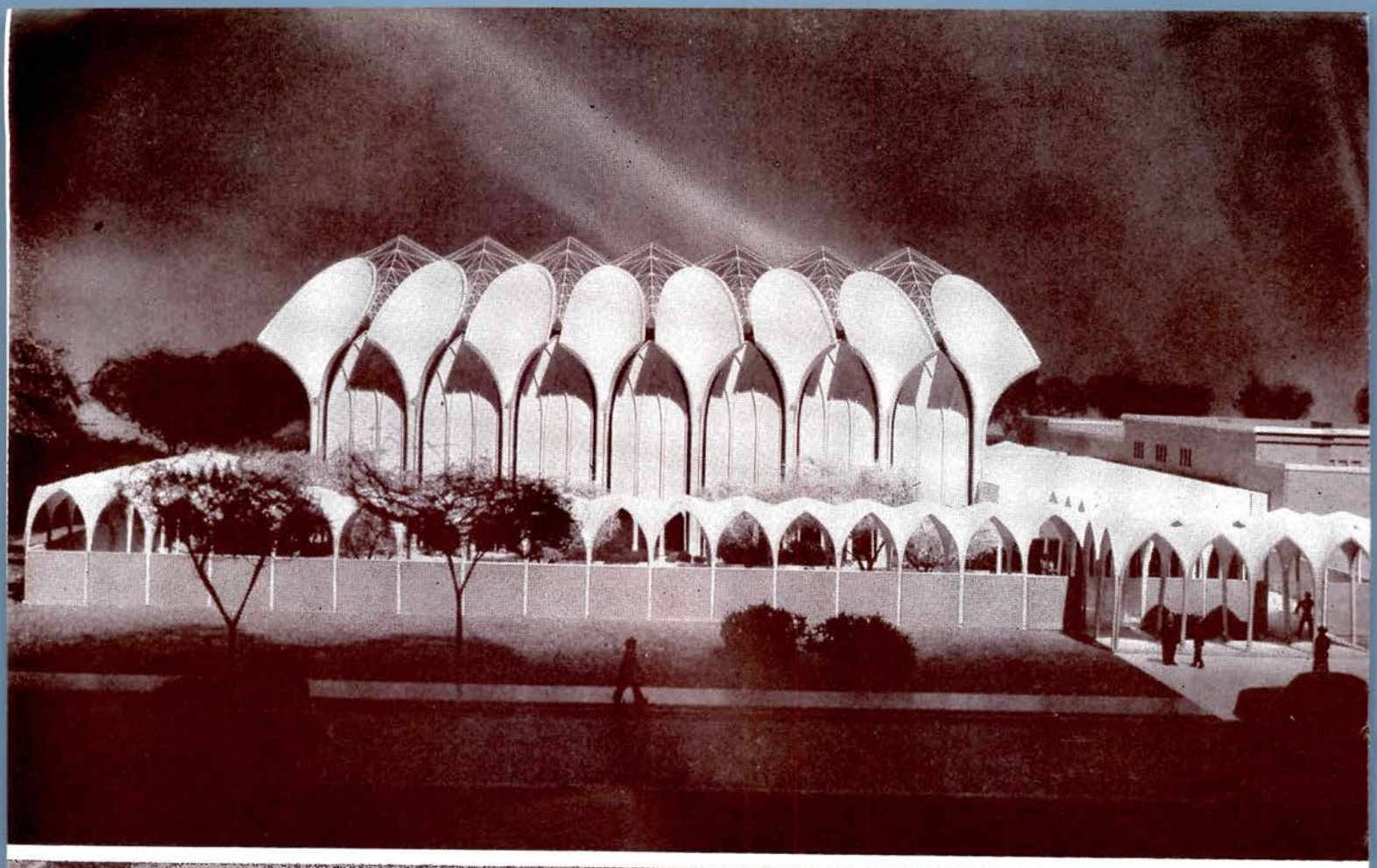
ARCHITECT: *Minoru Yamasaki and Associates;* STRUCTURAL ENGINEERS: *Worthington, Skilling, Helle, and Jackson.*

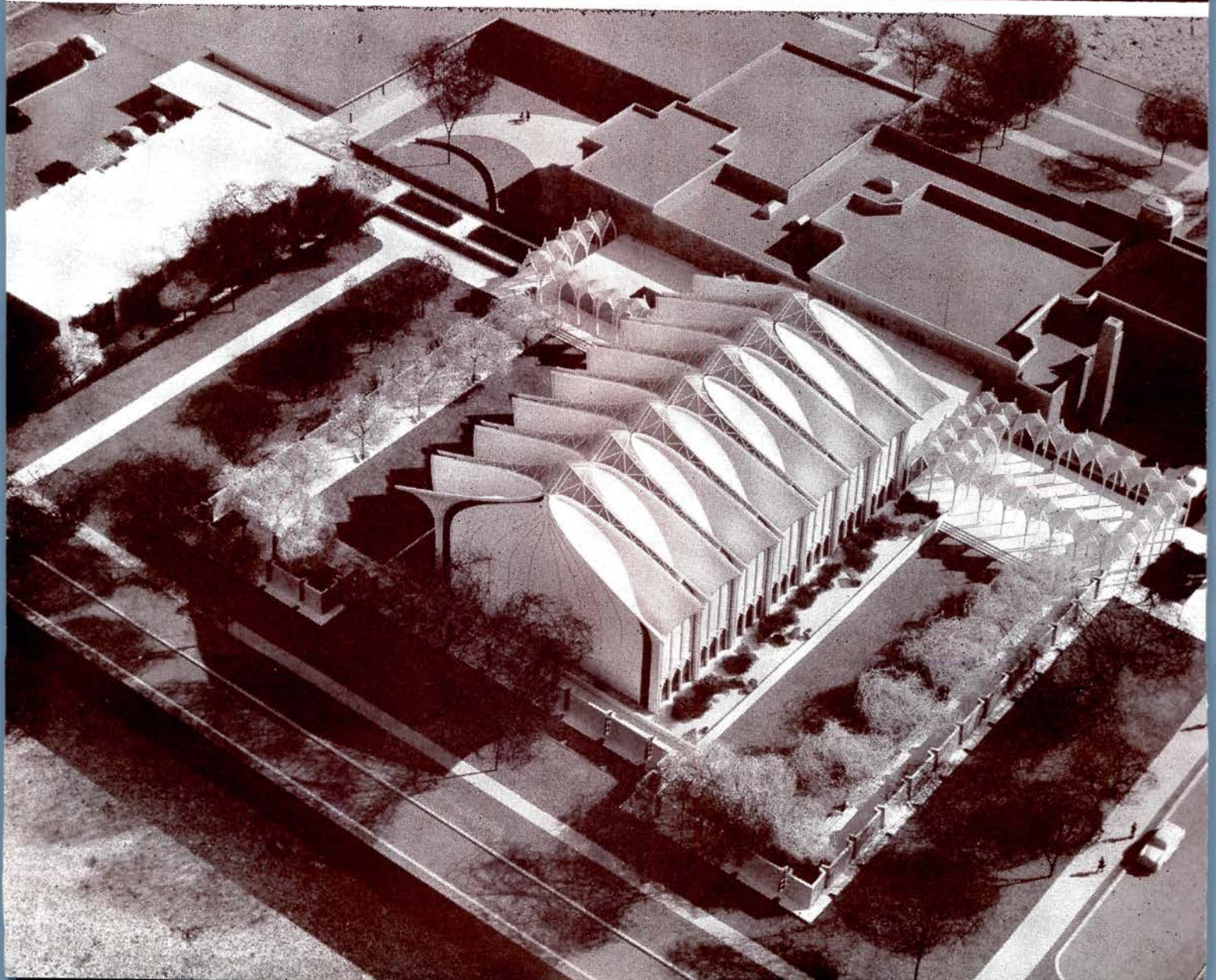


FRONT ELEVATION



TYPICAL LABORATORY FLOOR





"Buildings for our society should not be objects that awe and impress, but should be an integral part of an environment that enhances our way of life and serves as a thoughtful background for our activities. The elements of mysticism and power basic to cathedrals and palaces are incongruous today; have little place in free mankind's world.

"A building too strong or brutal tends to overpower man and give him a sense of insecurity. A monument to the ego of an owner or architect is contradictory to the principle that each man who uses the building should maintain—and have enhanced—his sense of individual dignity and strength. The only strength we need in developing our architecture is the strength of our inner convictions in our purpose."

Six New Yamasaki Projects

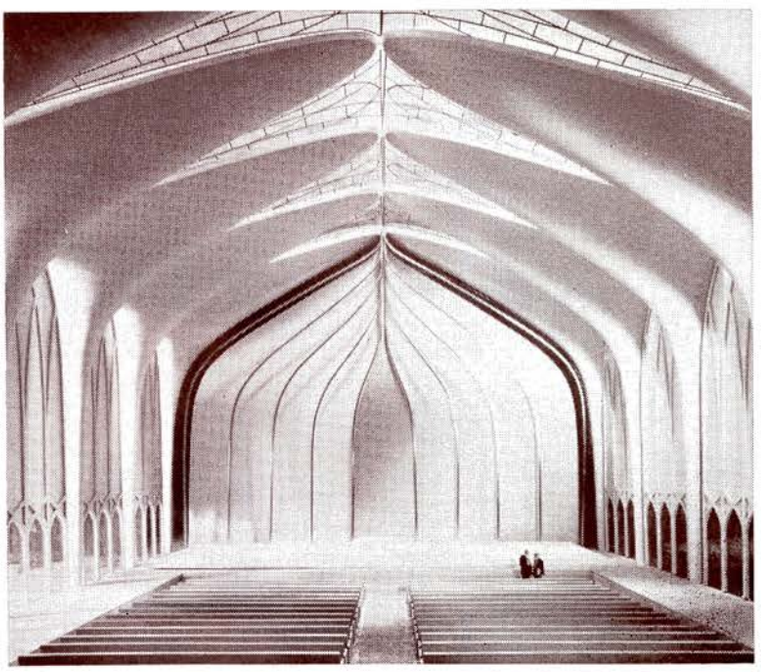
SYNAGOGUE— NORTH SHORE CONGREGATION ISRAEL, GLENCOE, ILLINOIS

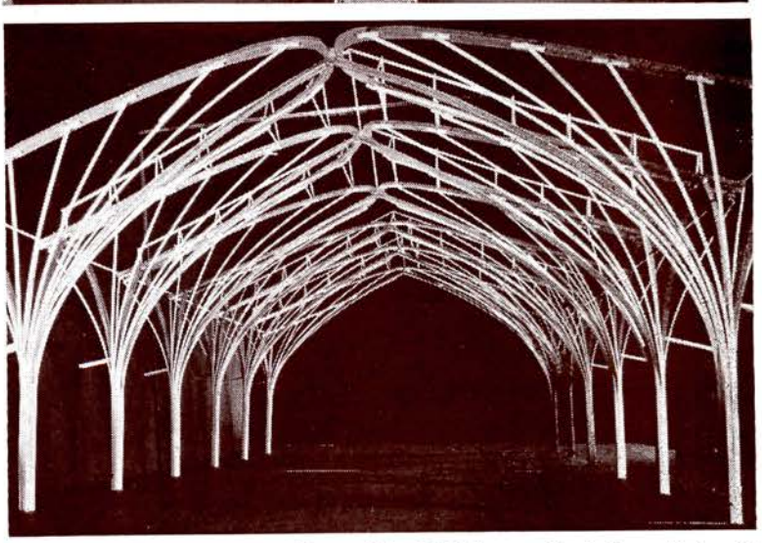
In explaining his concept for the sanctuary that forms the heart of this total religious facility (which also includes educational, social, and administrative areas) architect Yamasaki says, "Attending the High Holy Service helped give me an insight into the needs of the congregation. A feeling of height and upward striving seemed mandatory for the sanctuary, so the design endeavors—through its design elements—to give a sense of uplift. Also, by means of the skylights and the side lights an interlacing of daylighting and vaulting further enhances that quality.

"To give the large space (50 ft high, 80 ft wide, 126 ft long) proper scale, we felt it should be broken up. The vaulted forms alternating with the glass serve to divide the space and enrich it without ornament."

The expansion necessary for the High Holy Days is provided in two ways. The main sanctuary contains side platforms, level with the bema, which provide—when not used for seating—a sense of spaciousness. In addition, the large lobby (called a Memorial Hall) can be opened to the sanctuary. Thus the normal seating for 800 can be increased to 1800.

ARCHITECT: *Minoru Yamasaki and Associates;* STRUCTURAL ENGINEERS: *Worthington, Skilling, Helle, and Jackson;* LANDSCAPE ARCHITECT *Lawrence Halprin.*





The sanctuary structure will consist of 16 fan vault shells which will be locked together at outside walls and roof peak. The interstices contain double glazing of translucent amber glass, with artificial lighting between. The double layer of obscure glass should eliminate sun problems. To avoid appearing structural, the precast side wall panels will be secured to the main vaulting at top and bottom only. The end walls —too large to be precast—will be united and will also be secured to the structure in a similar fashion



"The concept of an architecture for all people instead of a select few is possible only through adherence to a humanist philosophy—one that is consistent with our ideals. To achieve this high purpose in architecture we must strive to: enhance life through *beauty* and *delight;* reflect the *nobility* to which man aspires; provide—through *order*—a background of *serenity* for today's feverish activity; be *truthful* in expression of structure and purpose; *scale* architecture to frame man happily in his environment; understand and advance today's industrialized *technology* for the benefit of society.

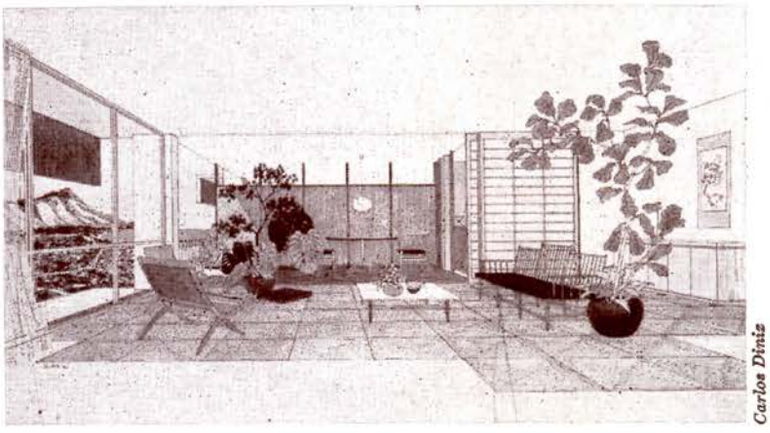
"Many of the qualities basic to older architectures—good proportion, elegance of detail, and nobility—exist in distinguished, historic European buildings. Although these qualities must be translated into our idiom, we can be inspired by and learn much from European examples. However, in the understanding of serenity and scale, I believe we must turn to Japanese architecture."

Six New Yamasaki Projects

QUEEN EMMA GARDENS, HONOLULU, HAWAII

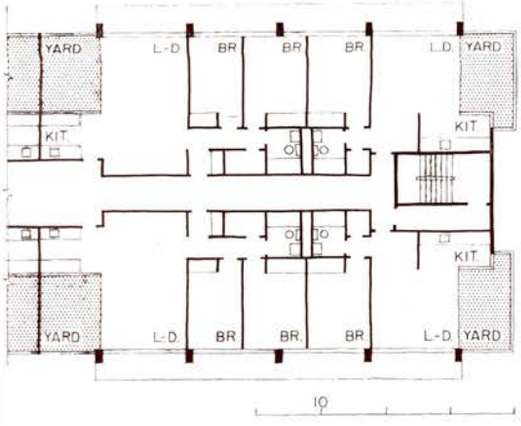
This urban redevelopment project—on 8.3 acres in downtown Honolulu—was conceived, in the words of the developers, "to accomplish more than the rehabilitation of a blighted area, but to foster a spirit that will be felt beyond the project to help in revitalizing the heart of a city." The project will provide a total of 580 apartments in two 21-story buildings, one 12-story building, and 44 2-story town houses. The difference in the sizes and shapes of the buildings makes for variety and visual interest, and permits 80 per cent of the site to be landscaped.





Carlos Diniz

PORTION OF TYPICAL HIGH-RISE FLOOR



At left, the plan shows one- and two-bedroom living units typical of the high-rise buildings. Note that each apartment has its own recessed lanai (protected terrace), in every case directly accessible to the kitchen for outdoor dining, and also available from the living room by means of large, floor-to-ceiling sliding glass doors



Six New Yamasaki Projects

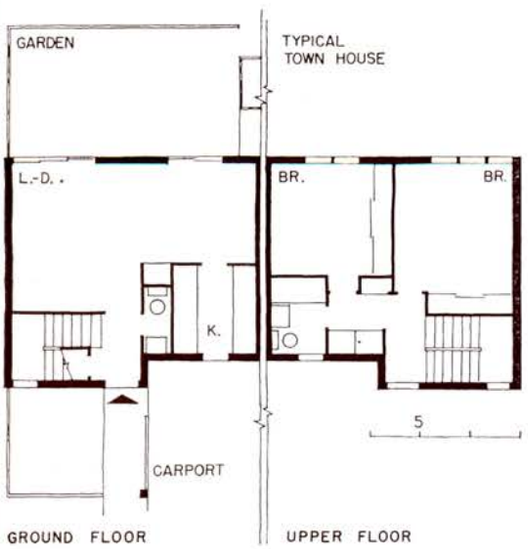
QUEEN EMMA GARDENS, HONOLULU, HAWAII

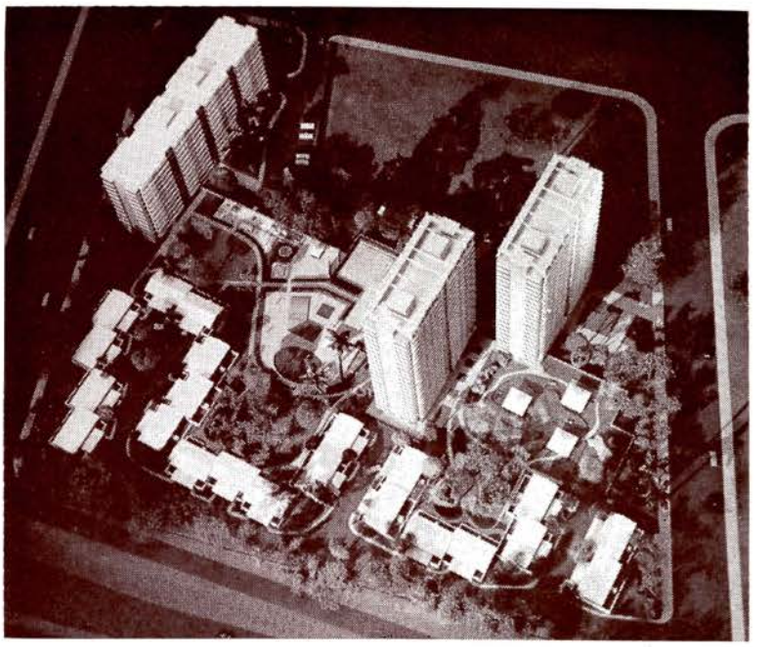
The site is bounded on all sides by major highways, so the design focuses inward to the gardens and outdoor recreational facilities. Access will be confined to controlled private roads and the lobbies of the high-rise buildings.

The two high-rise (21-story) units are located nearest the downtown area for convenience; all buildings are oriented for protection from the prevailing trade winds; all apartments will receive some desirable sun, but will be shaded from the heat and glare of the afternoon sun by overhangs. The design provides that no apartment can look directly into another except across an intervening space of 300 ft.

Taking advantage of the natural slope, the two-level, underground garage will provide a stall for every living unit. The roof of the parking facility will be developed as a garden. For recreation, there will be a large swimming pool, a wading pool, tropical gardens, and a series of playgrounds for three age groups.

ARCHITECT: *Minoru Yamasaki and Associates;* STRUCTURAL ENGINEERS: *Alfred A. Yee and Associates;* SITE PLANNERS, CIVIL ENGINEERS AND LANDSCAPE ARCHITECTS: *Harland Bartholomew and Associates;* REDEVELOPMENT AND HOUSING CONSULTANT: *Nathaniel Keith;* DEVELOPERS: *E. E. Black Co., Ltd., and Castle and Cook.*



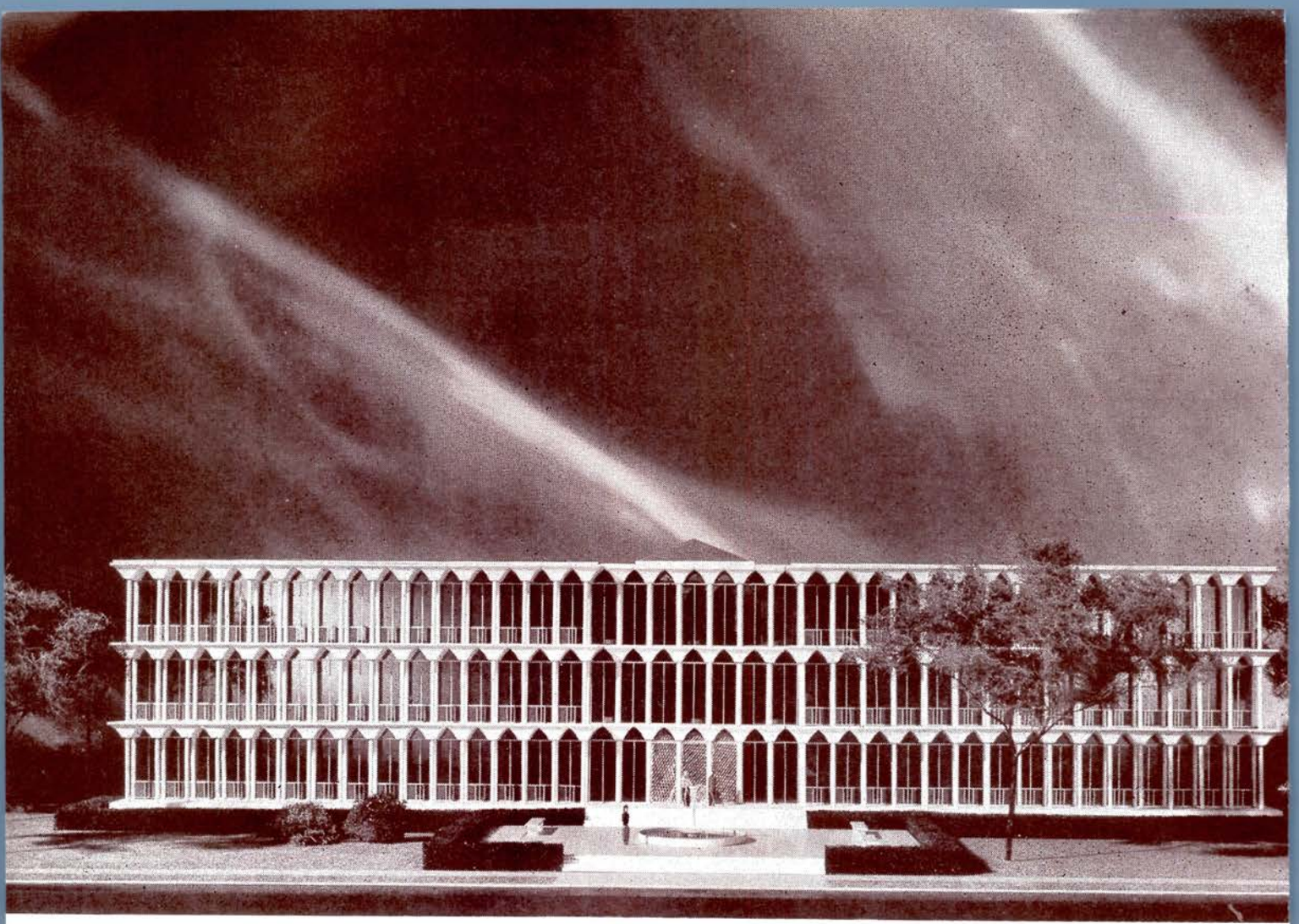


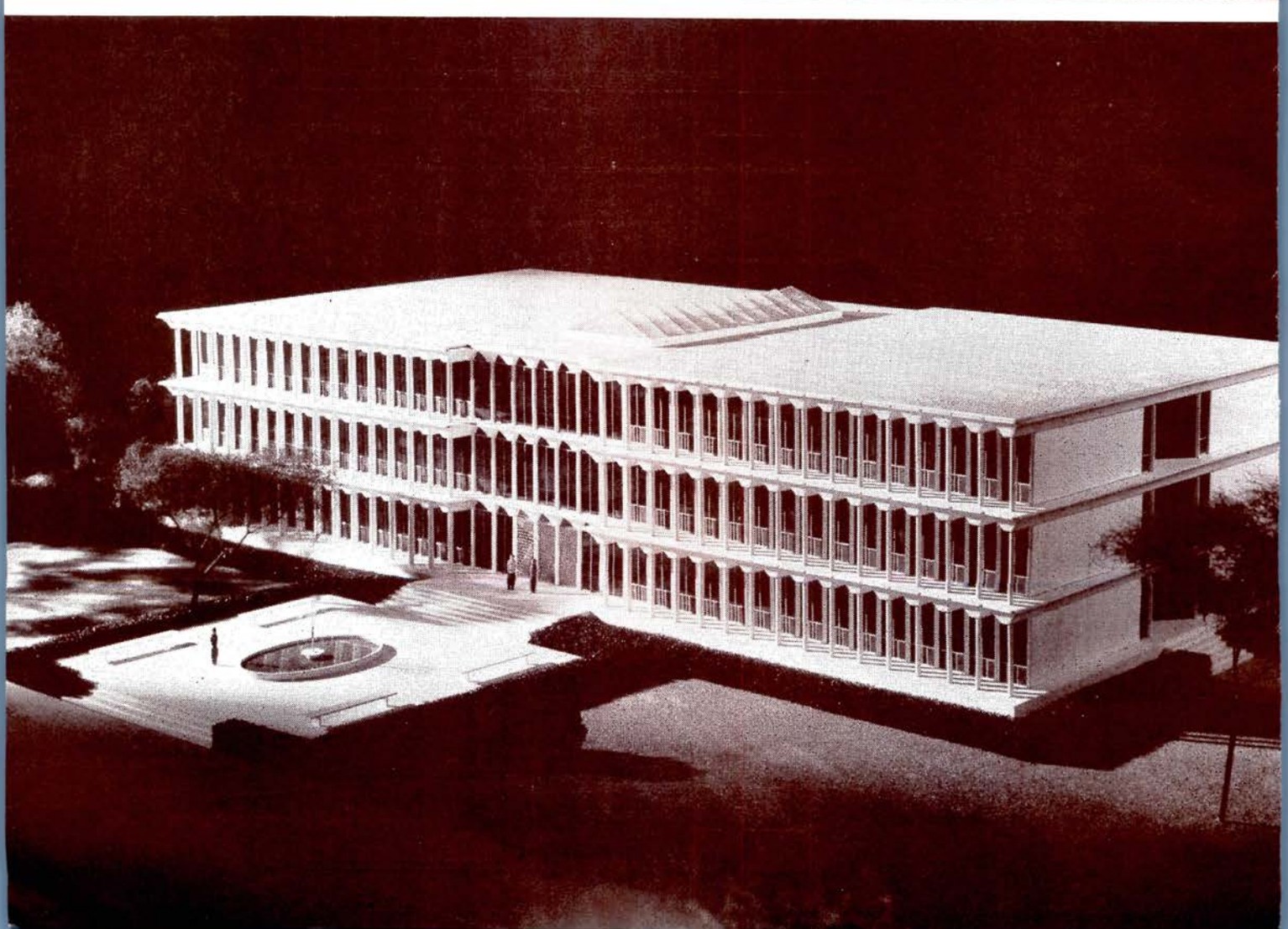


Carlos Diniz

The three tea houses, above, will border a stream with circulating water and occasional quiet pools, and will be equipped so residents may hold family barbecues or larger social gatherings there.

Each two-story town house—see plan at left—will have a carport giving direct access to the kitchen, an entrance garden, and an enclosed "backyard" garden for dining, lounging, or gardening. According to preliminary estimates, the town houses will rent for about $220





"A significant degree of serenity is essential in our future environment. The chaos brought on by political turmoil, by traffic, by the population explosion, and by the tremendous impact of the machine, demands that man —if he is to retain his sanity—must have a serene backgound. But with serenity we must have delight; the delight of interesting silhouettes, of waterplay, of variety in outdoor and indoor spatial experiences. But serenity —physical manifestation of the belief that man can live in quiet dignity— must unify the whole."

Six New Yamasaki Projects

LIBRARY BUILDING, BUTLER UNIVERSITY, INDIANAPOLIS, IND.

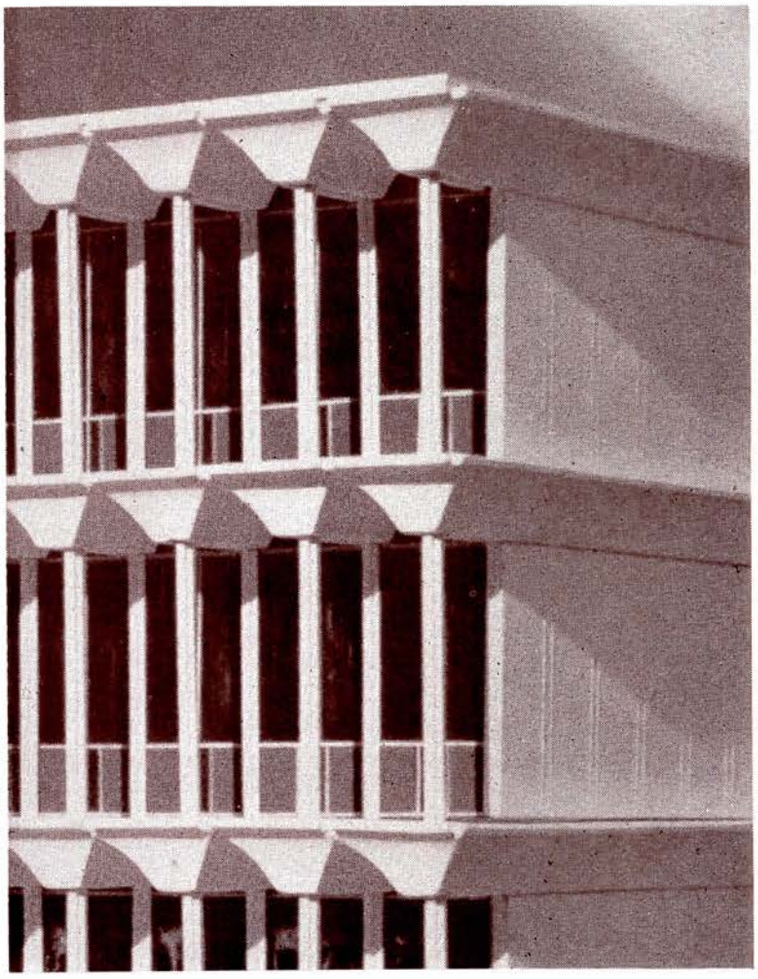
This design, conceived to symbolize the library as the educational center of a university, is notable for its visual appeal, dignity, and appropriate scale.

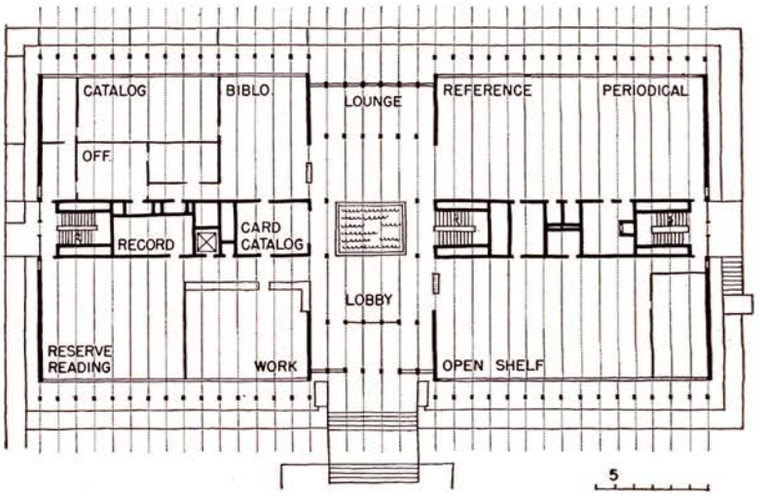
Architect Yamasaki explains, "The building is based on a 5 ft module, which is also the module of the library shelving. The central entrance lobby—3 stories high and skylighted—offers spatial relief from the low reading rooms and provides the dignity necessary to the symbolic concept of the university library.

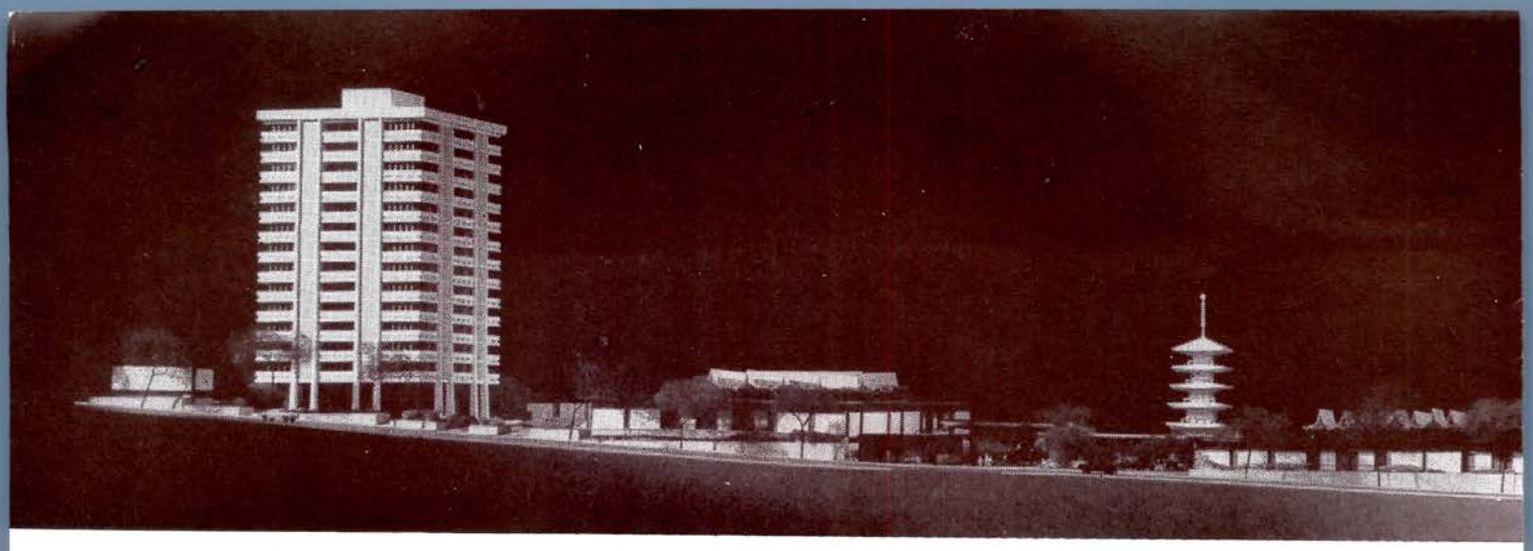
"The V-shaped floor and roof beams, and also the columns, are precast and prestressed; are tied together by the poured-in-place core elements. The columns will have an aggregate surface, while the vaults will be plain concrete. Interior lighting will be flush with the bottom ribs of the vaults and will line with the columns.

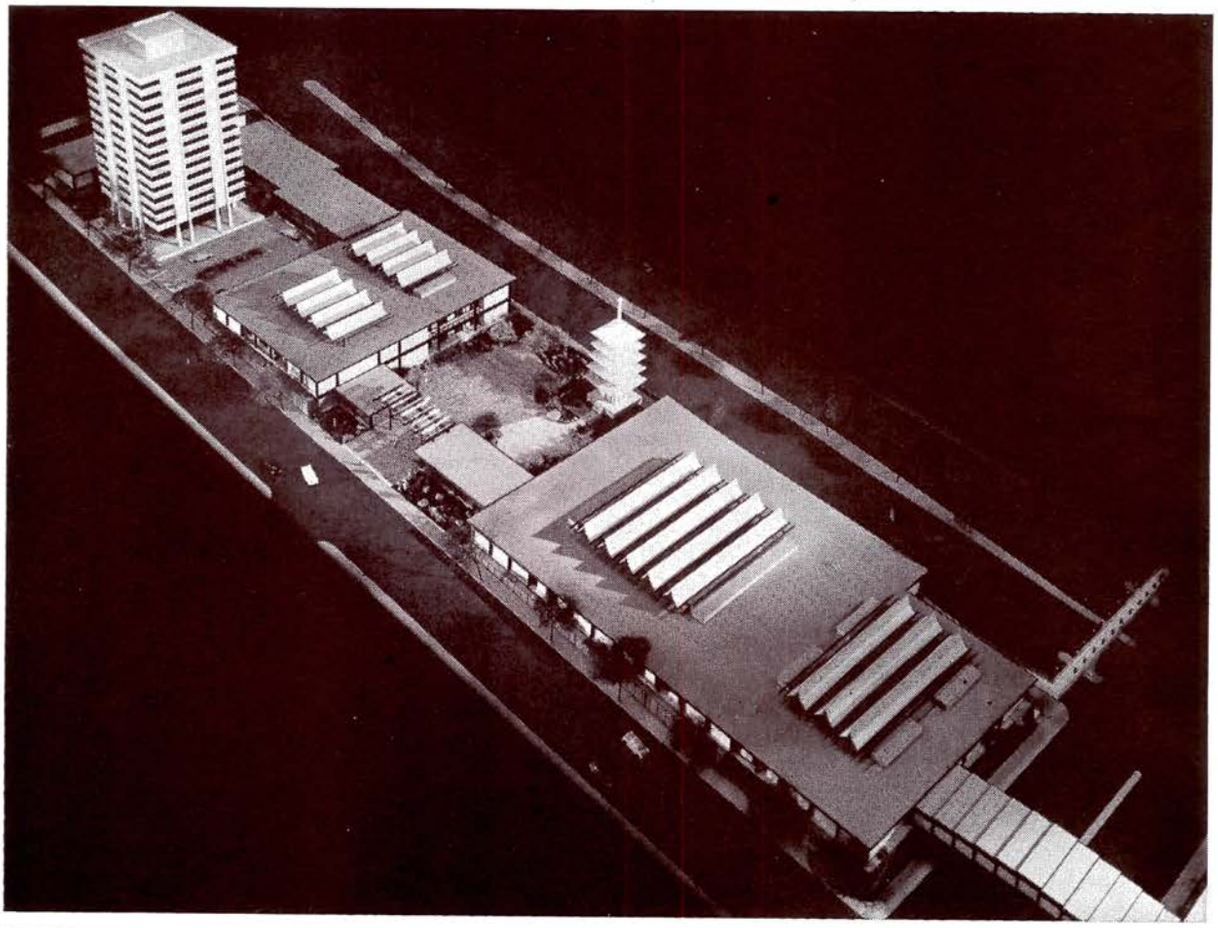
"It was early agreed with the university and the library consultant that the building should be one that need not be expanded in the future. Too often a building is designed for expansion with one end unfinished, then the program changes in such a fashion as to leave the unfinished end in perpetuity. To avoid such a catastrophe, it was decided that expansion could take place through special purpose libraries which would be incorporated into their related departments in the future."

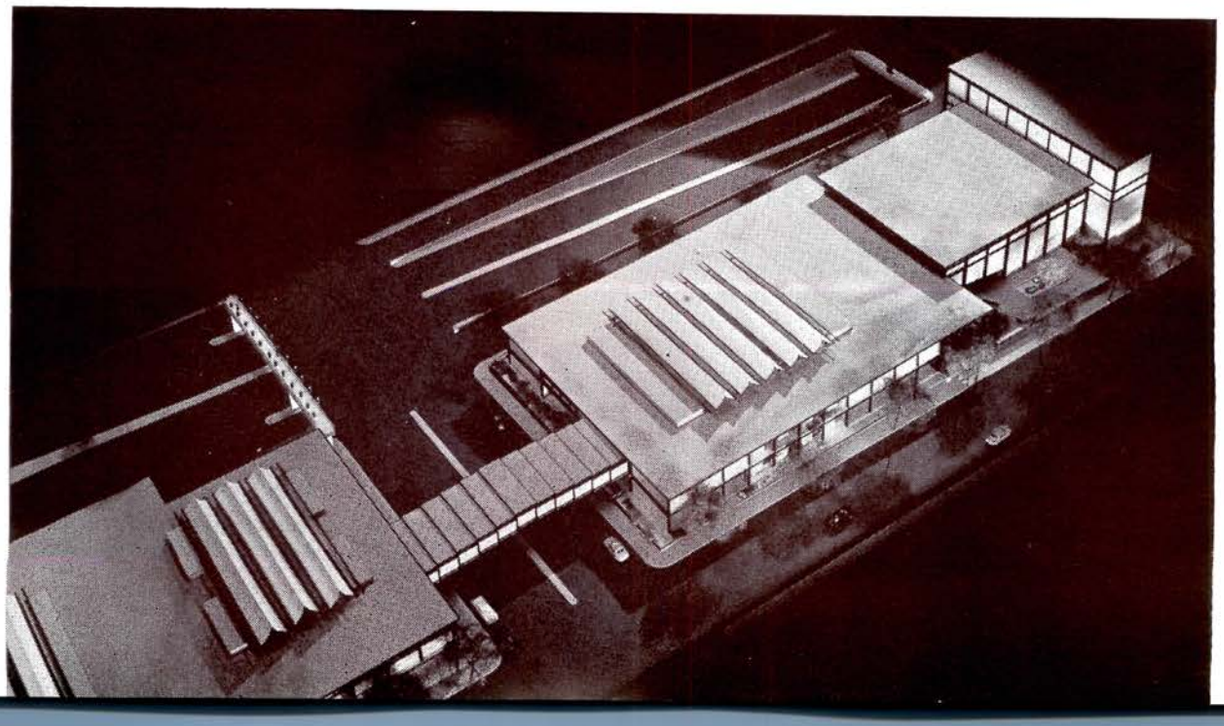
ARCHITECT: *Minoru Yamasaki and Associates;* STRUCTURAL ENGINEERS: *Worthington, Skilling, Helle, and Jackson:* LIBRARY CONSULTANT: *Dr. Fred Wagman.*













Six New Yamasaki Projects

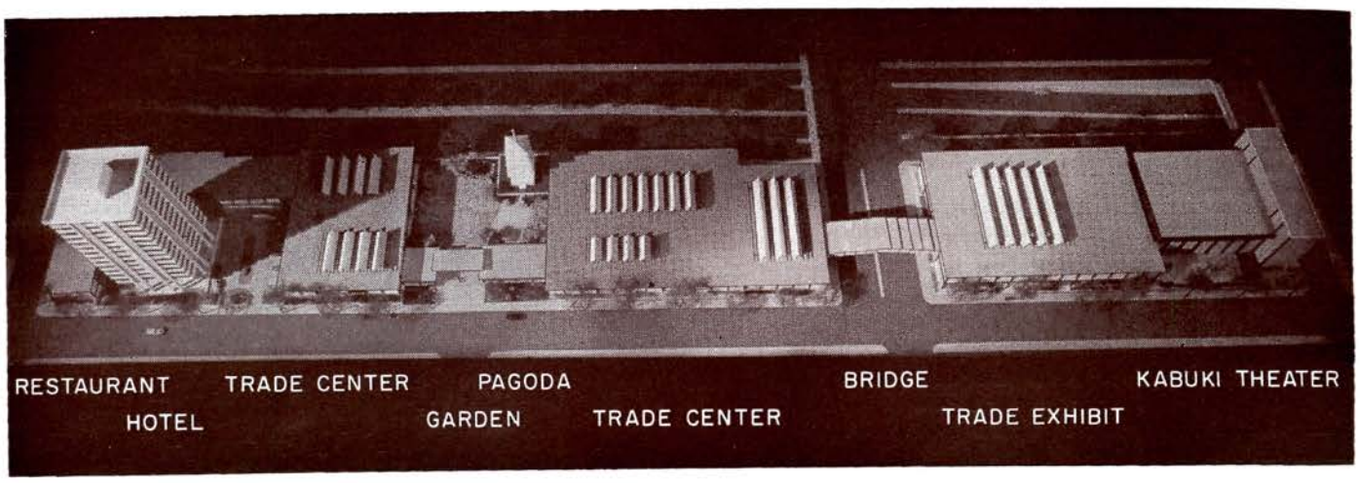
JAPANESE CULTURAL CENTER, SAN FRANCISCO, CAL.

This redevelopment project—which will cover three blocks in San Francisco—will close one cross street and bridge the other. Of the design's delightful, American-oriental flavor, architect Yamasaki understates, "We tried to design a simple and straightforward construction system which would appear somewhat Japanese."

Reading from left to right in the model photos the elements are: a high-rise hotel with adjoining restaurant at ground floor level, shops and exhibit areas, the entrance plaza with its Japanese garden and pagoda, additional shops and industrial exhibits on either end of the Webster Street bridge, and at far right a Japanese theater which will feature Kabuki and Noh plays, as well as Japanese films. An 850-car parking garage will occupy the entire three-block area below street level. The hotel will have 150 rooms, a portion of which will be Japanese type, with tatami floors and sunken baths.

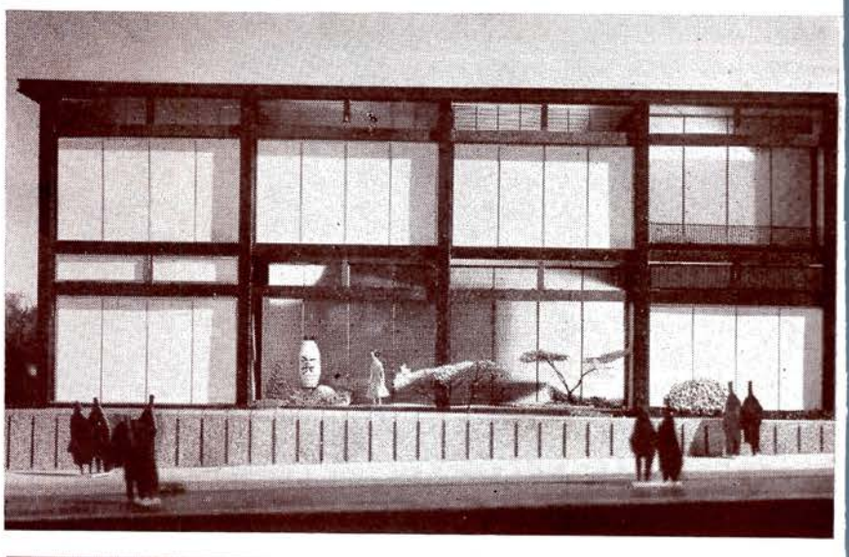
DESIGN ARCHITECT: *Minoru Yamasaki and Associates;* ARCHITECTS FOR WORKING DRAWINGS AND SUPERVISION: *Takenaka and Associates (San Francisco office of Takenaka Komuten, Osaka), and Van Bourg / Nakamura and Associates;* STRUCTURAL ENGINEERS: *Worthington, Skilling, Helle, and Jackson;* MECHANICAL AND ELECTRICAL ENGINEERS: *Buonaccorsi and Murray;* DEVELOPER: *Masayuki Tokioka and Paul Broman (National–Braemar, Inc.)*

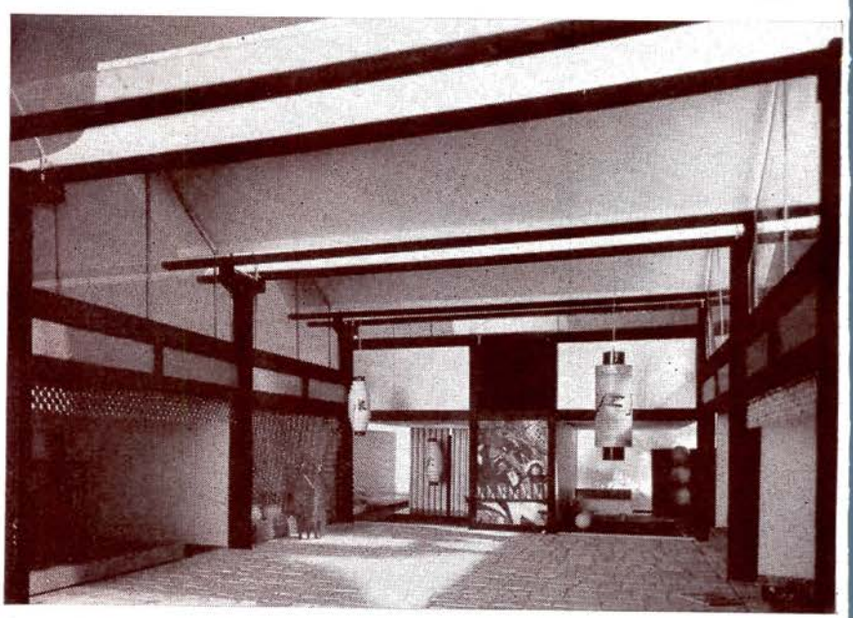
"I am aware of the impracticability of trying to house 20th-century civilization within the framework of traditional Japanese architecture. Materials, scale, and structure are inappropriate for the demands of our time. The discipline of total simplicity would be impossible for us. Yet the complete emotional satisfaction of my many experiences in Japanese architecture convinces me that there is a great deal we can learn there."



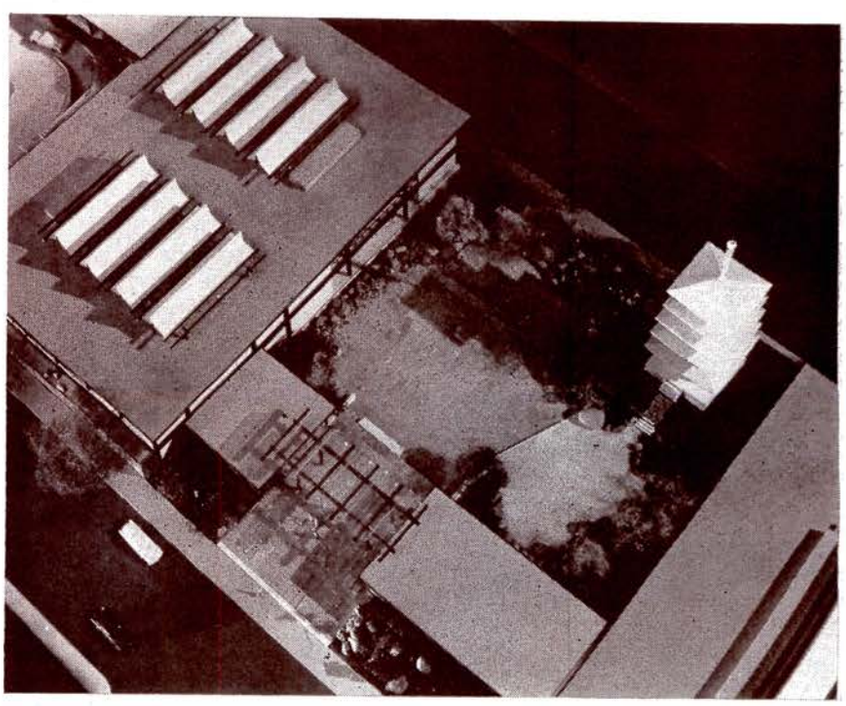
Six New Yamasaki Projects

JAPANESE CULTURAL CENTER, SAN FRANCISCO, CAL.

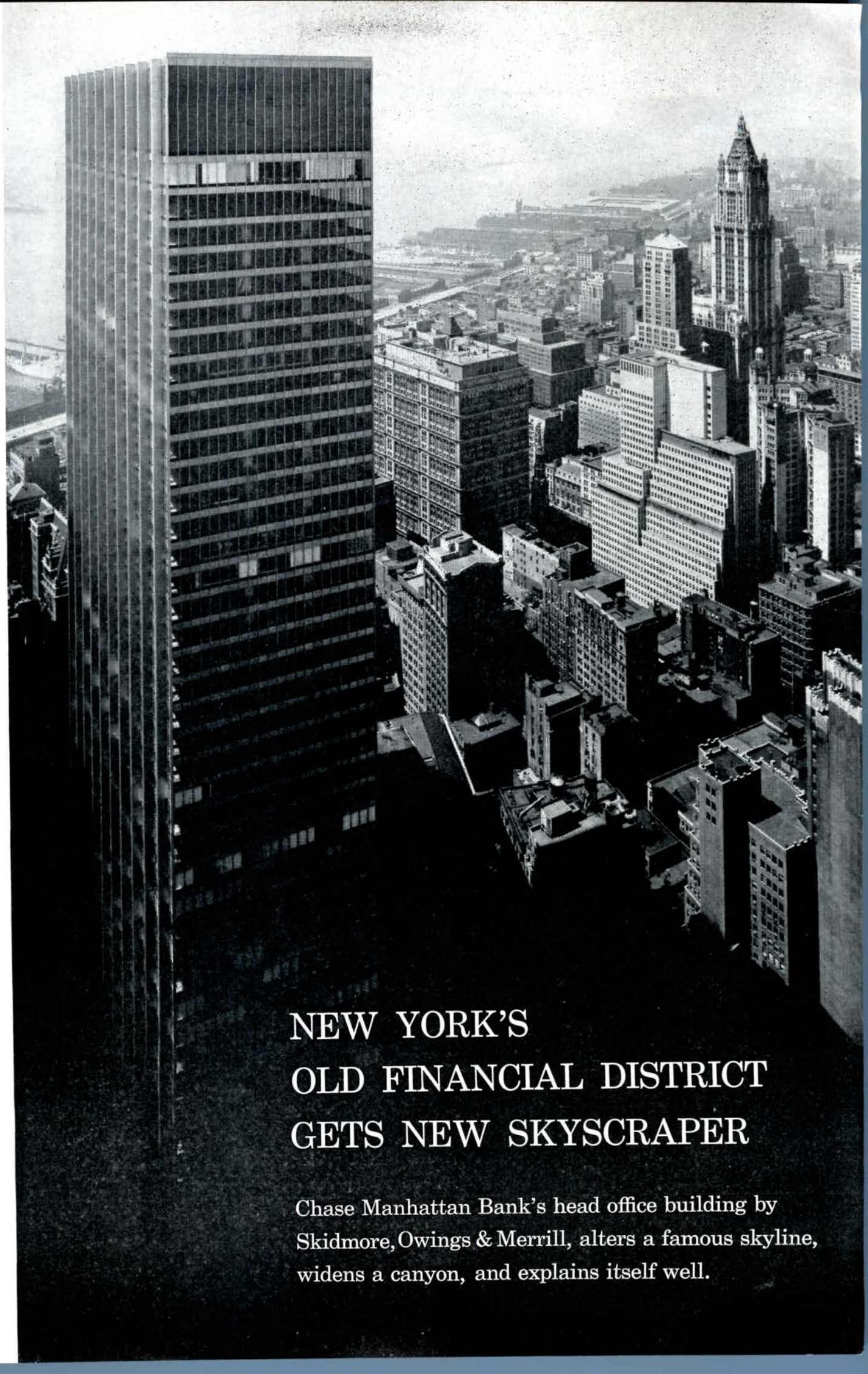




TRADE CENTER SHOPS: There will be a total of approximately 130 shops of varying sizes in the trade and exhibit areas. They will sell a variety of large and small merchandise, all produced in Japan. Not unlike a bazaar, the shops will be arranged about a series of skylighted shopping arcades, which will feature occasional kiosks and gardens, and will be illuminated in festive style by gaily colored Japanese lanterns. An industrial museum will form part of the trade group



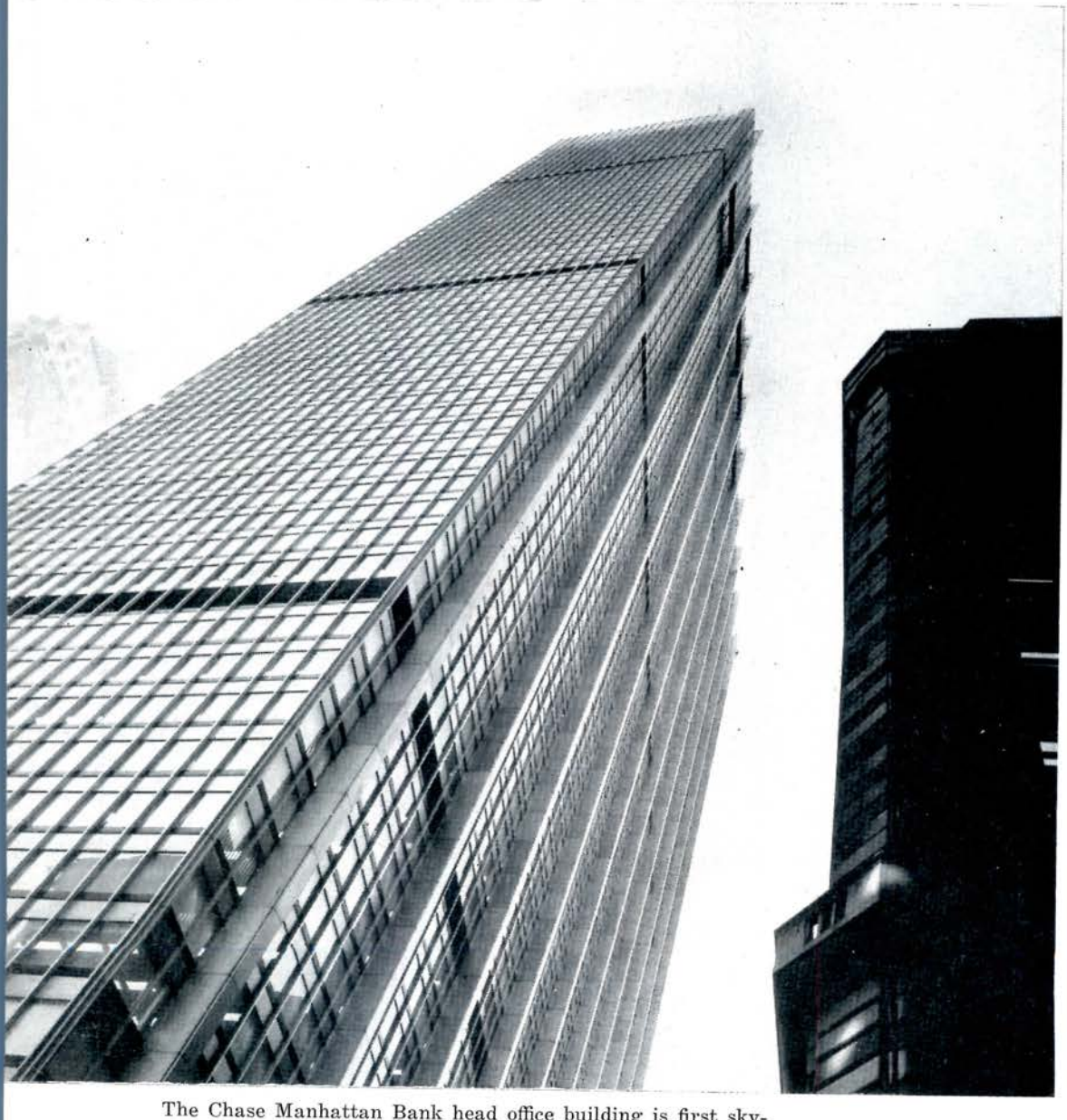
ENTRANCE PLAZA: The main entrance plaza for the center will be a Japanese garden containing a large paved area, a pagoda, and also a raised platform to accommodate Japanese type entertainment by native Japanese performers during festival days. The many festivals during the year in Japan could be celebrated here, and their eastern pageantry would add color to the life of San Francisco



NEW YORK'S OLD FINANCIAL DISTRICT GETS NEW SKYSCRAPER

Chase Manhattan Bank's head office building by Skidmore, Owings & Merrill, alters a famous skyline, widens a canyon, and explains itself well.

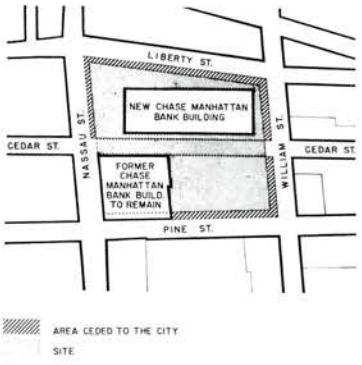




The Chase Manhattan Bank head office building is first skyscraper to the south of Brooklyn Bridge as seen in photo at top of page. Photo made from depth of Wall Street area canyon shows exterior columns which allow uninterrupted interior wall surface

Chase Manhattan Bank Head Office Building

OWNER: *Chase Manhattan Bank*
LOCATION: *No. 1 Chase Manhattan Plaza, New York City*
ARCHITECT-ENGINEERS: *Skidmore, Owings & Merrill*
J. Walter Severinghaus, partner in charge
Gordon Bunshaft, partner in charge of design
Allan Labie, project manager
Jacques E. Guiton, project designer
CONSULTANTS: *Moran, Proctor, Mueser & Rutledge, foundation engineers*
Weiskopf & Pickworth, structural engineers
Jaros, Baum & Bolles, mechanical engineers
Meyer, Strong & Jones, electrical and elevator engineers
Bolt, Beranek & Newman, acoustical engineers
Howard L. Post, kitchen
INTERIOR DESIGN AND FURNISHINGS: *Skidmore, Owings & Merrill*
Davis B. Allen, chief designer
Ward Bennett, consultant on furniture and furnishings
Chermayeff & Geismar Associates, consultants on graphics
GENERAL CONTRACTOR: *Turner Construction Company*
FOUNDATIONS CONTRACTOR: *The Foundation Company, George M. Brewster and Son, Inc. and Joseph Miele Construction Company, Inc. (joint venture)*



A superblock was created for Chase Manhattan through the cooperation of the city of New York which turned over to the bank the street which separated its two blocks, in return for sidewalk area shown in plan. The former Chase Manhattan building shown in plan has been sold to another bank and will remain. Completion of plaza formed by the new and old buildings awaits demolition of other buildings along Pine Street

Some admirers of the lower Manhattan skyline to whom the buildings are slender fingers in a magical silhouette exciting by day or night, in sunshine or fog, are asking if that thick stub which now thrusts upward asserting itself among its delicate neighboring verticals really had to be that way. It did. Although the proportions of the Chase Manhattan Bank's new office headquarters may disturb skyline watchers in Brooklyn Heights, on the Staten Island ferry and in high places uptown looking downtown, there is so much practical economic good sense in this particular skyscraper form and it offers such advantages to its occupants and to its immediate neighborhood, that its shape is well justified. Occupants enjoy a generous amount of continuous floor space and uninterrupted window perimeter; downtown office workers can take advantage of the open plaza slightly above street level resulting from only partial use of the site made possible by the slab-shaped tower.

The Chase Manhattan office building's shape, good for its particular canyon in the Wall Street area, is the result of unrelenting design logic on the part of Skidmore, Owings and Merrill. According to architect Walter Severinghaus, SOM's partner in charge of the Chase job, "it doesn't take a giveaway program to produce a plaza . . . by an enlightened approach you can make the good thing pay its way." The architects made a number of studies to prove to Chase Manhattan executives that all their head office banking facilities should be concentrated in a single building on their two-block site with rental floors into which the Chase operation could eventually expand. SOM recommended an exchange whereby the intersecting street would be given by the city to Chase Manhattan in return for the full sidewalk perimeter on three sides of the two integrated blocks plus approximately one half of the sidewalk perimeter on the fourth side. The city was thus enabled to widen the streets surrounding the newly formed super

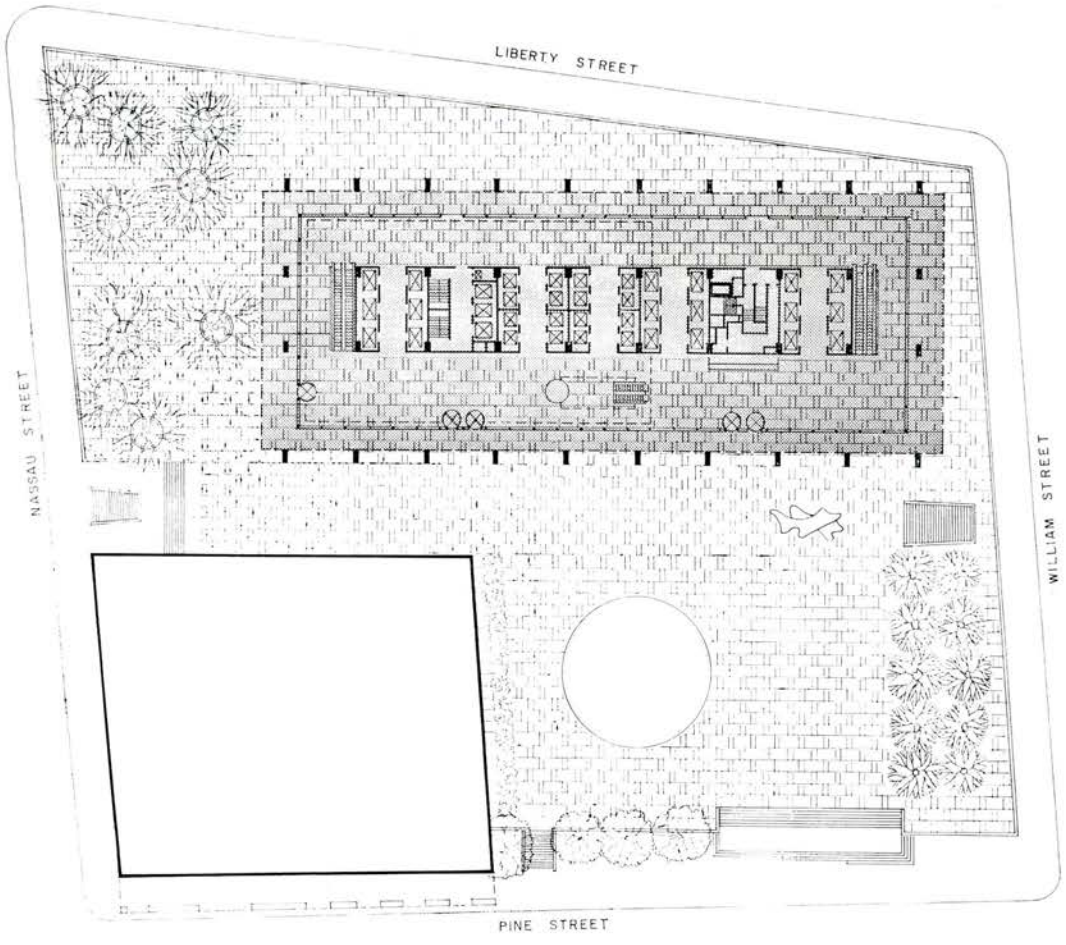
text continued on page 147





Top photo shows model of Pine Street plaza as it will appear when completed. Shown directly above is the smaller Nassau Street space, not yet finished

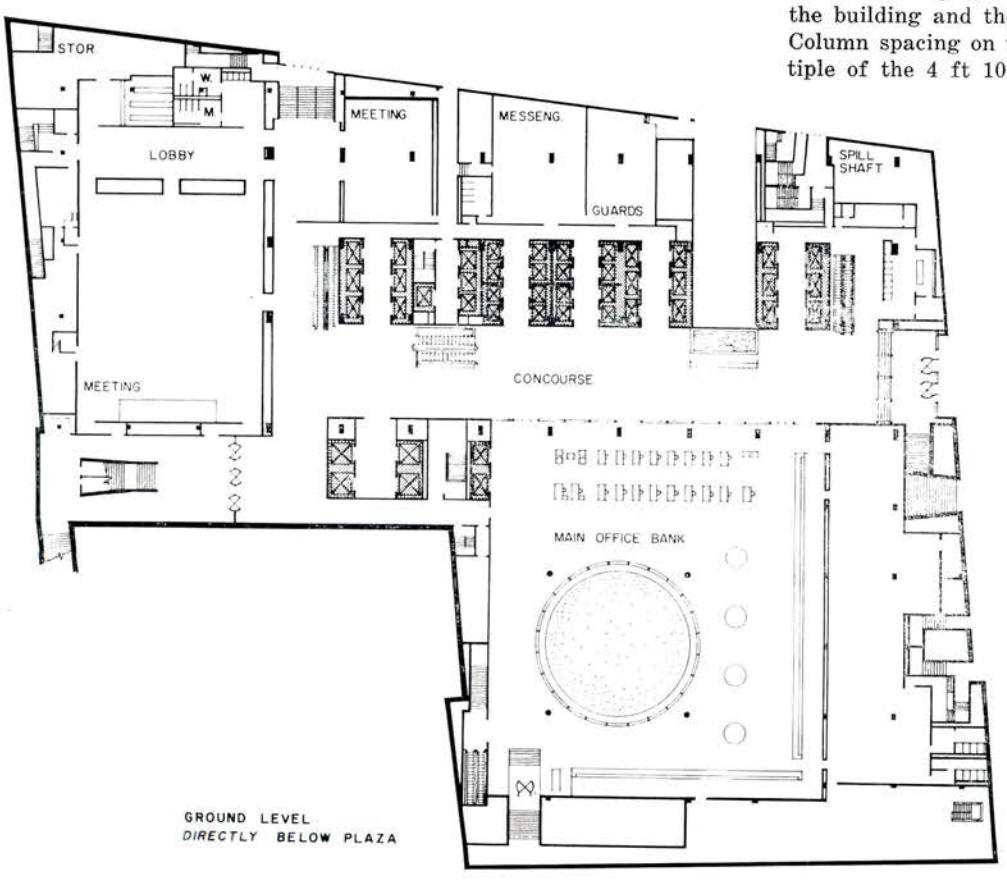
All photographs by Alexandre Georges



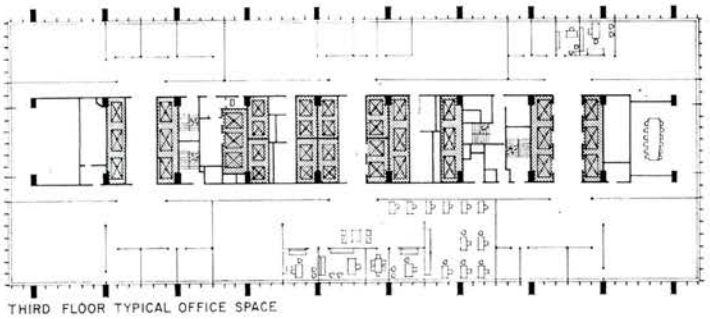
PLAZA LEVEL

10

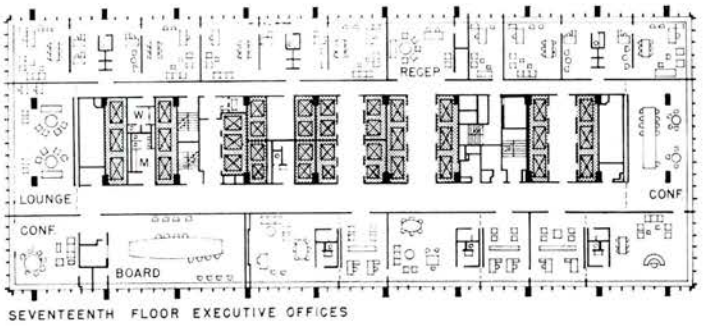
To obtain maximum width for office and pool areas, and to offer the flexibility and utility of space unbroken by free standing or projecting columns, column spacing on the short axis was made as wide as possible while maintaining a reasonable girder depth, and columns were placed on the exterior of the building and the interior of the elevator and duct core. Column spacing on the long axis is 29 ft based upon a multiple of the 4 ft 10 in. module imposed upon the structure



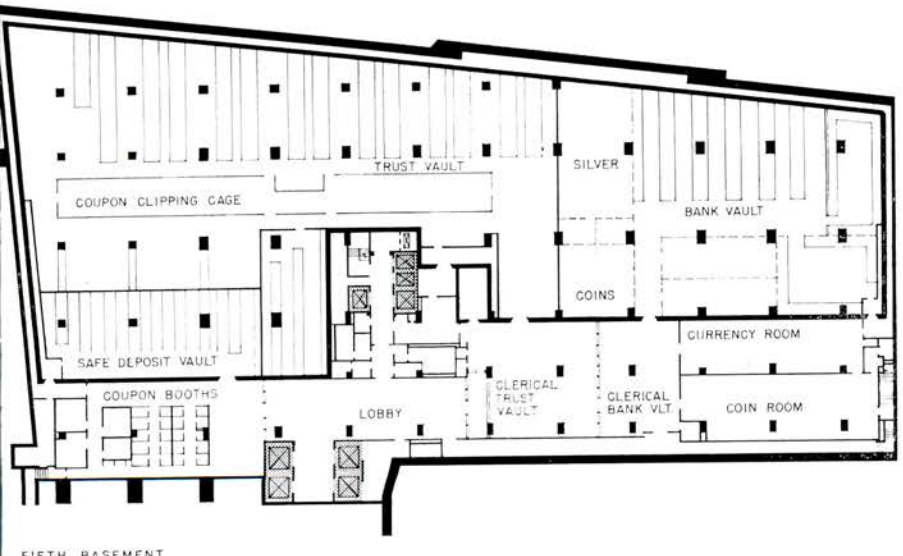
GROUND LEVEL
DIRECTLY BELOW PLAZA



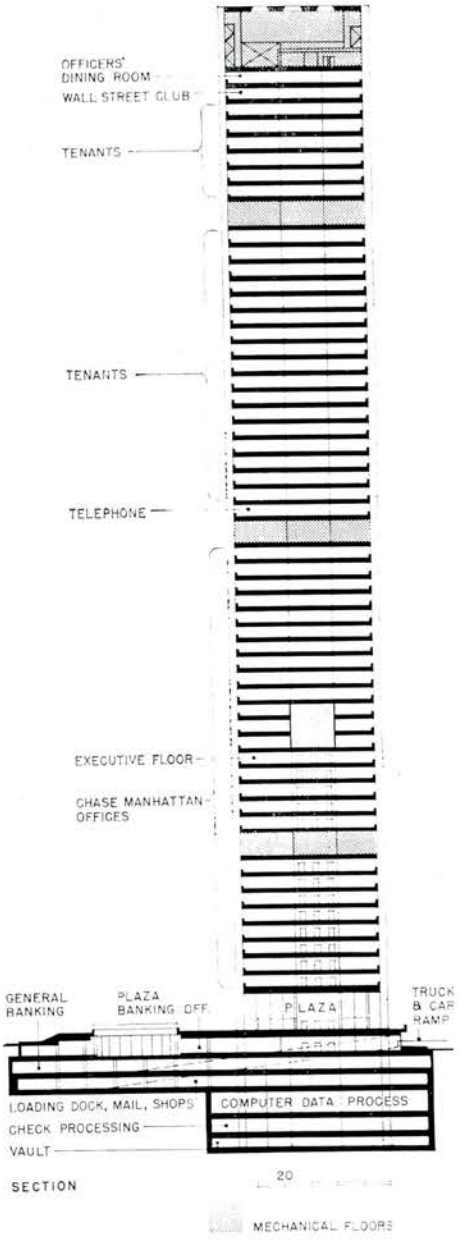
THIRD FLOOR TYPICAL OFFICE SPACE



SEVENTEENTH FLOOR EXECUTIVE OFFICES



FIFTH BASEMENT



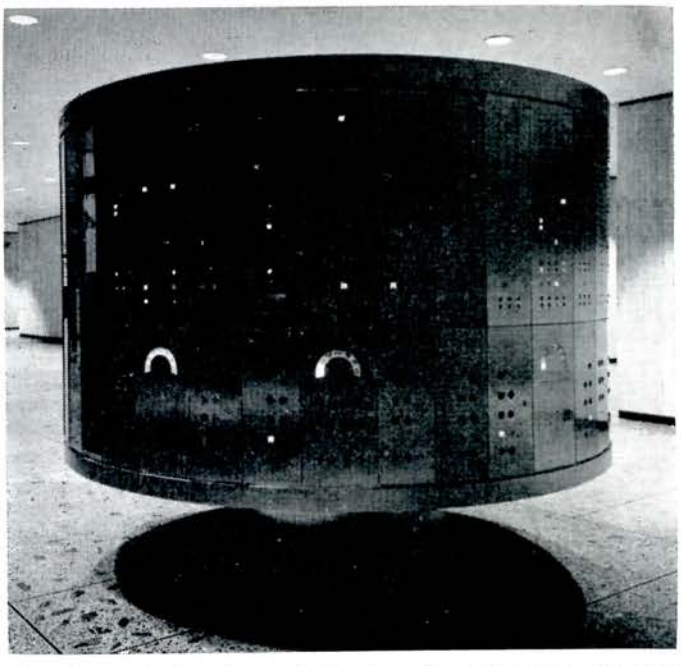
SECTION

To achieve centralized control the executive offices are on the 17th floor, a mid-point, with thirteen Chase Manhattan floors above and twelve below. The 17th floor is a breakpoint in the elevator system and is served by three banks of elevators. The executives of Chase who have denied themselves great views by accepting the 17th floor, are compensated at lunch in their 60th floor dining room which offers a superb harbor panorama. Floors leased to tenants are prime rental space. In order to keep duct sizes within reason, the Chase skyscraper has been considered as three buildings of 600,000 square feet, each with its own air handling unit



Main lobby floor. Cantilevered mezzanine is equivalent of traditional bank platform





Circular control center on lobby floor for automatic elevators

block. In terms of sq-ft ground area the city got a little more than it gave. (See plot plan page 143).

By taking advantage of the zoning law which permits a tower of unlimited height to occupy only 25 per cent of the land, and persuading the city to allow the Chase almost 30 per cent coverage, a massive building without setbacks was conceived in a generous plaza. It was demonstrable to Chase Manhattan that a long narrow form, which could be framed in its short dimension with three spans, the two center columns defining the elevator and duct core, and the two perimeter columns projecting outside, would provide an uninterrupted flexible interior offering practical work pool and office areas which could be easily organized for maximum efficiency. All floor space would have prime rental value because of its proximity to the window wall. It was possible to prove that if the space needed by Chase had been tucked into a ziggurat, occupying one full block at its base with setbacks as required, smaller area less efficient tower floors would have been needed. The intrinsic cost of the ziggurat (more roofs, more lineal feet of cornice, more corners, less modular duplication of materials, structure and mechanical services) would have compared unfavorably to the uninterrupted tower scheme finally selected.

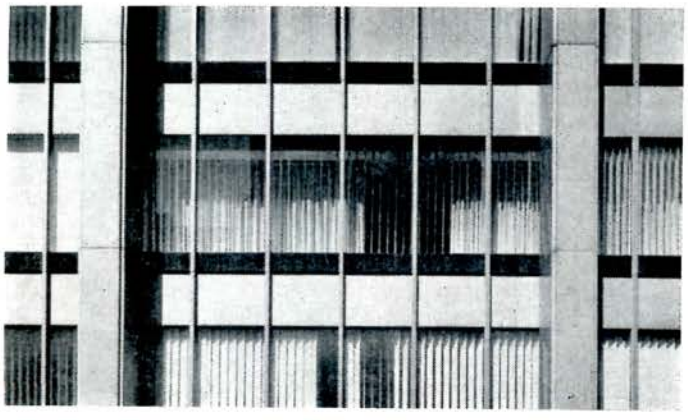


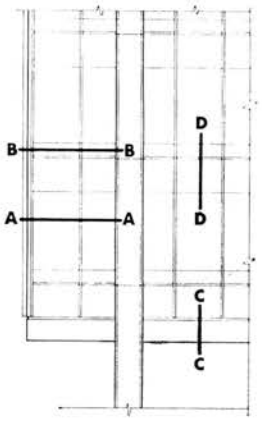
Bank platform. Buildings seen through window wall at right will be torn down to create projected plaza

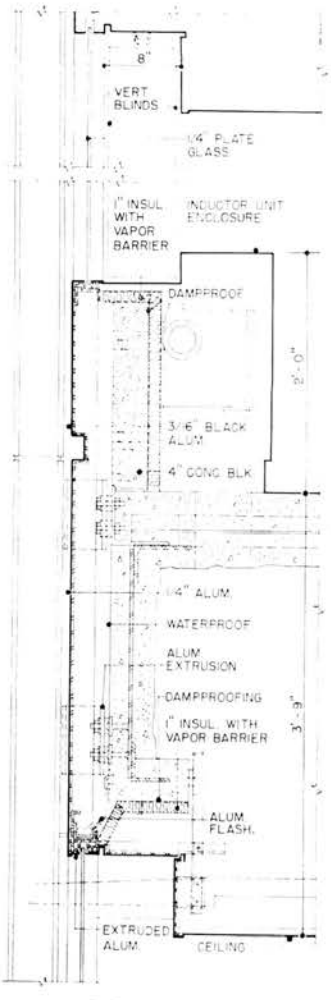
Chase Manhattan required widely spread factory type space in addition to office area for check handling, tabulating and other services performed by hundreds of small machines attended by individual operators. This unattractive operation which will eventually be automated is hidden underground on the fourth and fifth levels below the plaza. In all, twelve acres of underground floor space have been created under the superblock; "not much on the farm," said George Champion, chairman of the board of directors of the Chase Manhattan Bank, "but quite a piece down here in Wall street."

The plaza, no extravagant gesture but a great prize earned by sensible planning, will not be finished until 1962.

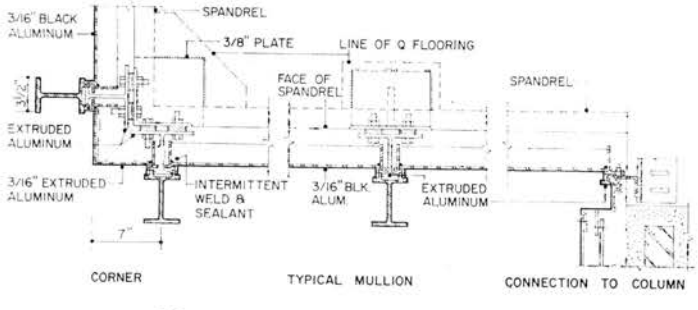
Chase Manhattan Head Office Building: Curtain Wall Details



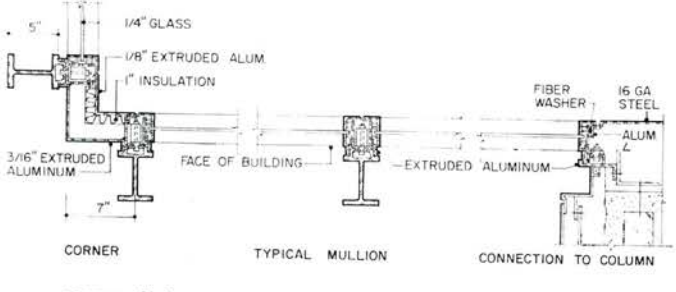




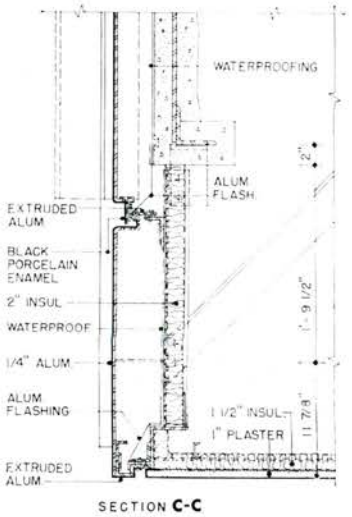
SECTION **D-D**



SECTION **B-B** (BELOW SILL)



SECTION **A-A** (ABOVE SILL)



SECTION **C-C**



Executive lounge. Executive spaces are enhanced by paintings and sculpture selected for the Chase Manhattan Bank's collection by a distinguished committee of art experts



Reception area in executive suite. Executive secretaries sit beyond cabinets which have been made high enough to conceal them from the seated visitor, increasing privacy



David Rockefeller's office. Painting, sculpture are from his personal collection

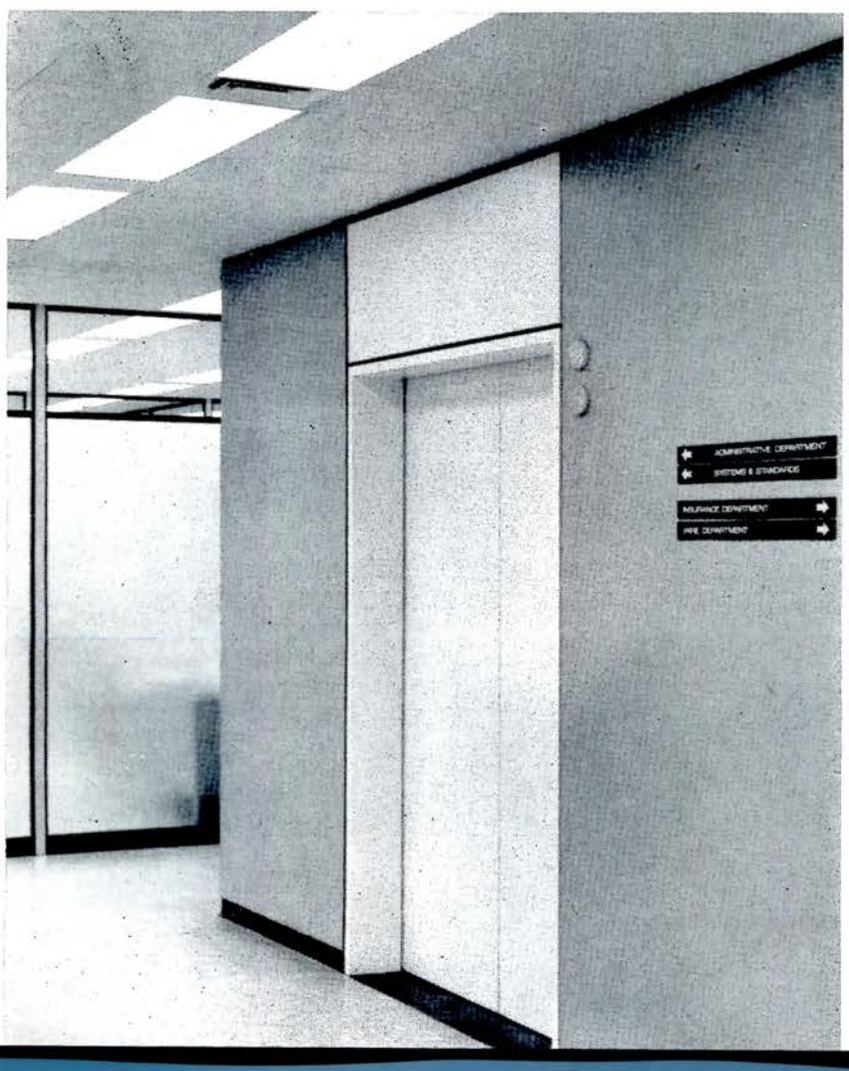


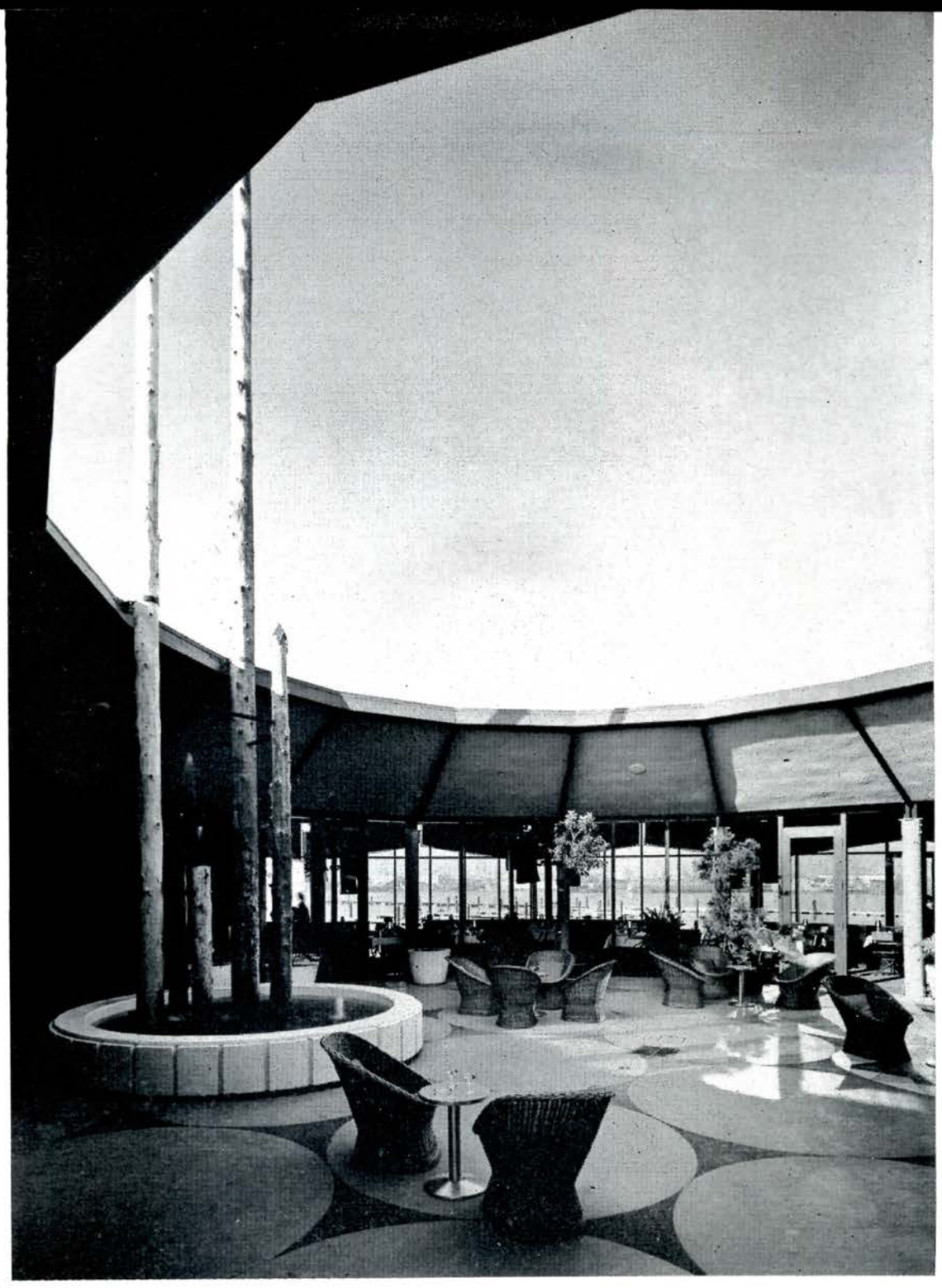
Executive lounge on 60th floor adjacent to private dining room

Chase Manhattan Head Office Building: Ceiling and Partitions



Depth of girders due to wide spans made the continuously luminous suspended ceiling, variants of which have been used successfully in other SOM jobs, impossible at Chase. Ceiling reflectors used here are not stock size. They were specially made at an increased width to reduce surface brightness and glare. Square units between lighting fixtures permit diffusers for return or supply air, or are blank. Partitions cross on the blank spaces





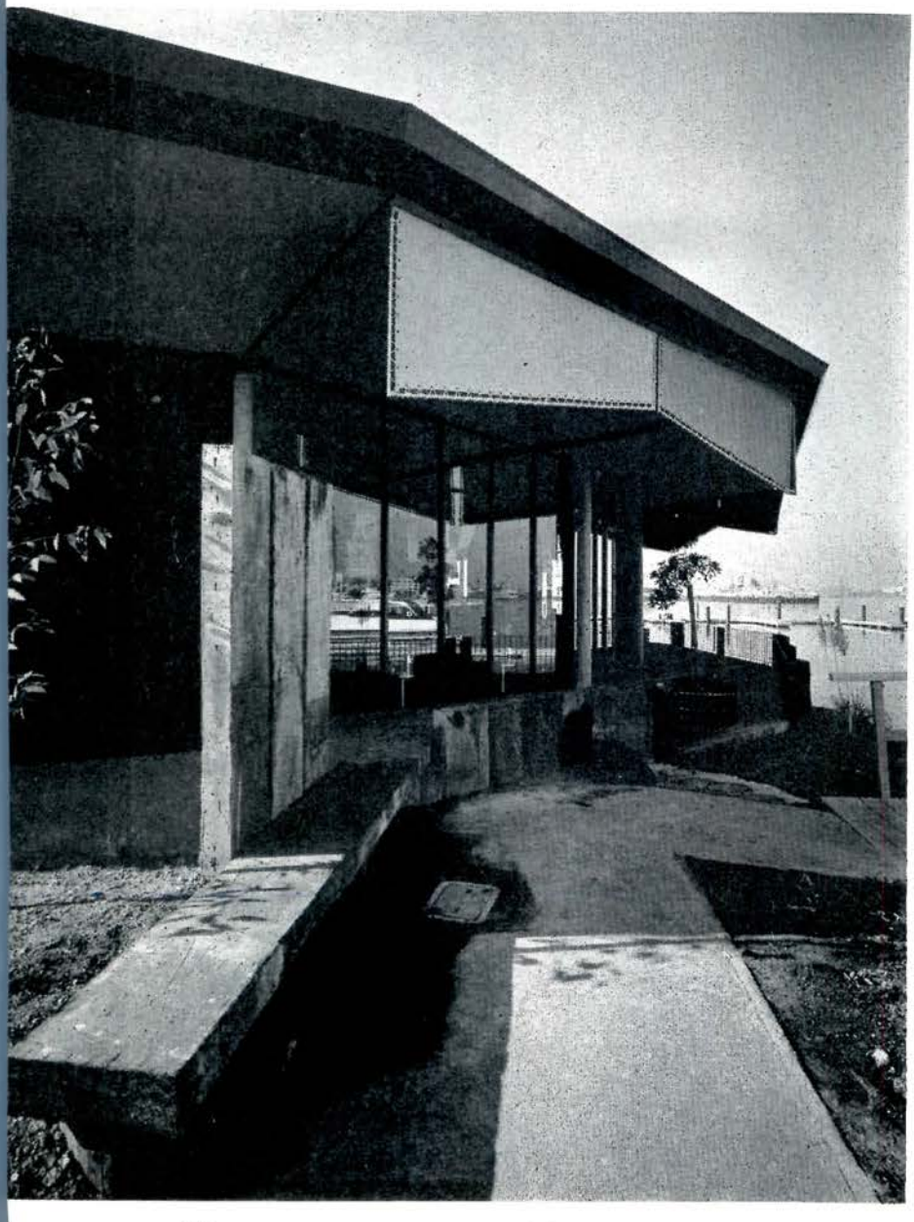
Roger Sturtevant photos

WATERFRONT RESTAURANT

The Galleon Restaurant
LOCATION: *Pacific Marina, Alameda, California*
OWNER: *Pacific Bridge Construction Company*
ARCHITECTS: *Campbell & Wong, Worley K. Wong, Architect*
LANDSCAPE ARCHITECTS: *Royston, Hanamoto and Mayes*
ENGINEER: *Pacific Bridge Company*
MECHANICAL, ELECTRICAL AND HEATING ENGINEER: *Daniel Yanow*
INTERIORS: *Peter Rocchia*
CONTRACTOR: *Pacific Bridge Construction Company*
GRAPHIC ARTS: *David Osborn and Charles Woods*



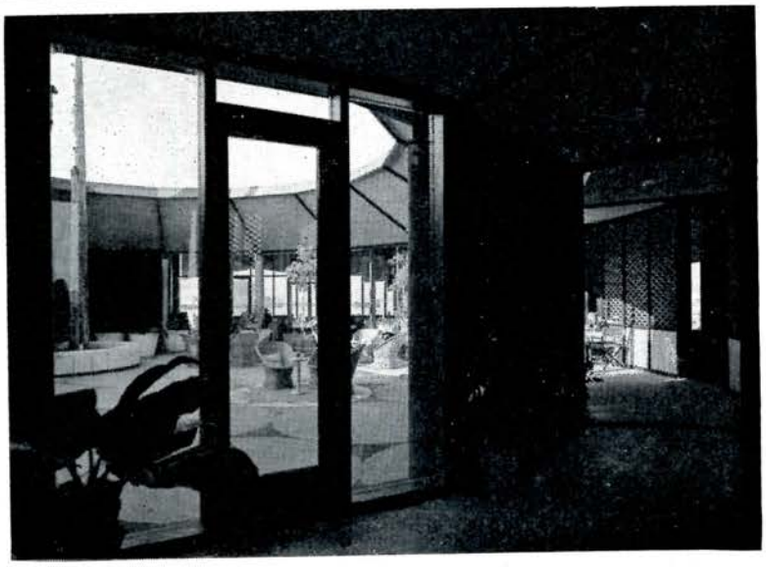


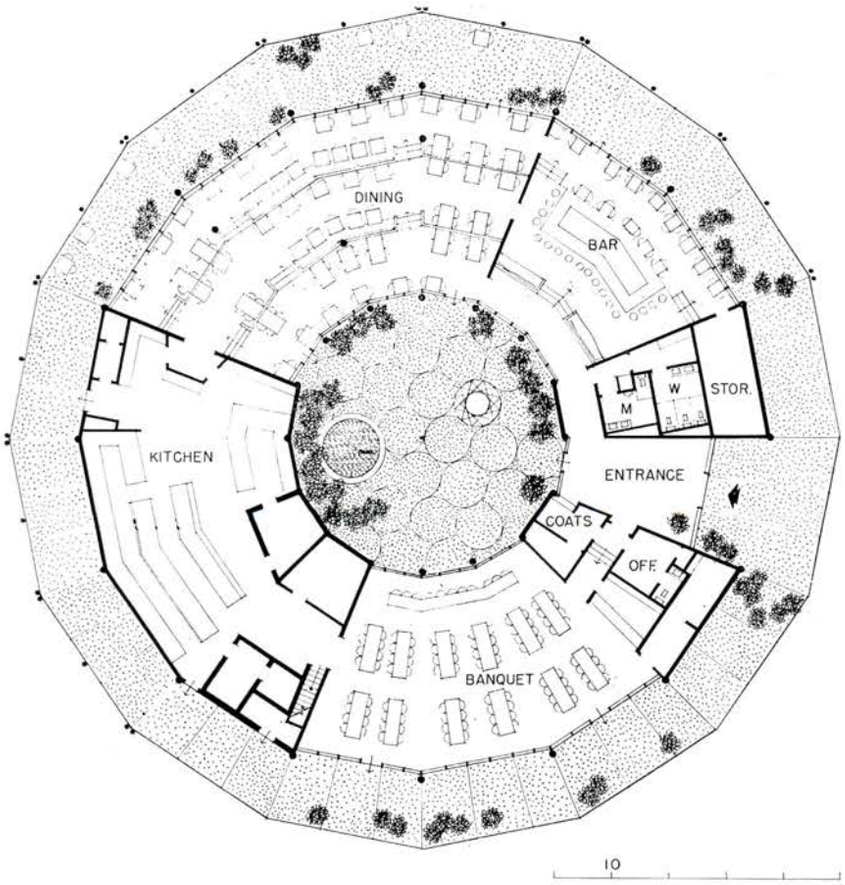


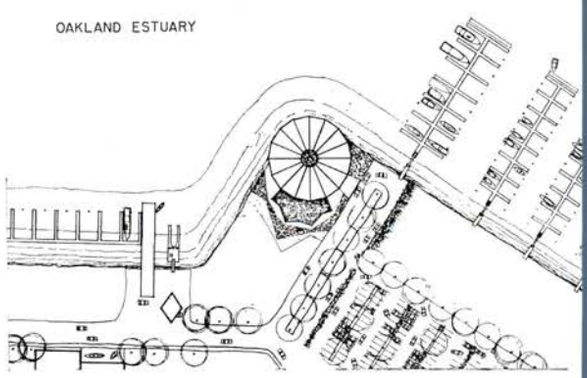
Waterfront Restaurant: The Galleon

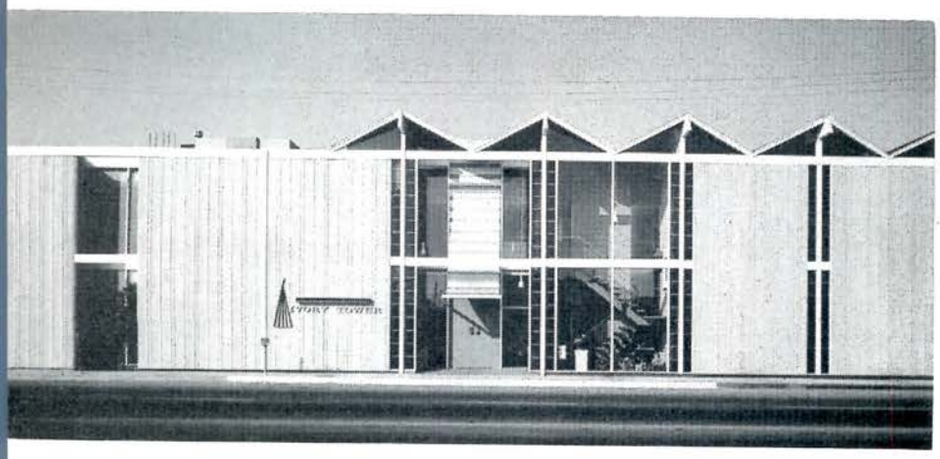
With a sophisticated use of simple materials and a skillful interweaving of the elegant and the rough, this waterfront restaurant on the Alameda estuary off the east side of San Francisco Bay invites the clientele it wants and at the same time fits right into the environment of its site. Its circular plan gives diners and bar patrons a 135 degree view of the estuary and its continual activity and of the Oakland hills, and provides a landscaped interior court, sunny but sheltered from wind, for dining. Since most of the building's walls are of glass panels, there is a high degree of transparency: from the banquet room on the side away from the water, it is possible to look through the court and over the dining room to the small boat docks beyond, at which patrons may moor their boats after crossing the Bay from other sections of the area. The building not only rests on wooden piles driven into the tidelands but makes use of exposed piling as columns to support the steel roof trusses; piles are also used as the dominant elements in the fountain in the court, and as posts for the old timbers which form the fence next to the parking lot. The entrance, lobby, bar and dining room, however, are finished with elegance: redwood stained black-brown, natural red tile grille, gold acoustical plaster ceiling, bright orange carpet and green, gold and olive chairs. Flags symbolize the seven seas and five oceans. Dining tables are on three tiers so that the view to the water is unimpaired. A 12-ft cantilevered deck outside is used on warm windless days.






DINING
BAR
M
W
STOR.
KITCHEN
ENTRANCE
COATS
OFF.
BANQUET
10


OAKLAND ESTUARY

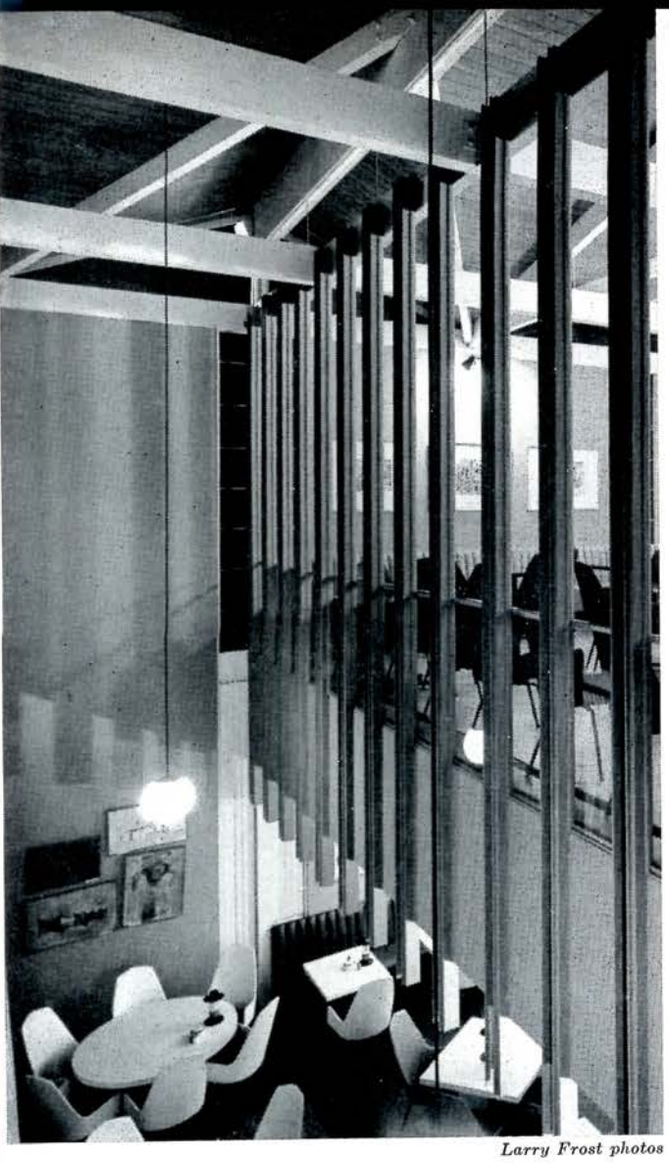


The Ivory Tower Restaurant and Art Gallery
LOCATION: *Santa Monica, California*
OWNER: *John M. Stahl*
ARCHITECTS: *Richard L. Dorman & Associates; Sidney M. Drasnin, architect in charge*
STRUCTURAL ENGINEER: *Albert A. Erkel & Associates*
ELECTRICAL ENGINEER: *Norman Levenson & Associates*
AIR CONDITIONING ENGINEERS: *David H. Baer Company, Inc.*
KITCHEN CONSULTANTS: *Eng-Skell Company*
GENERAL CONTRACTOR: *Jack H. MacDonald Company, Inc.*



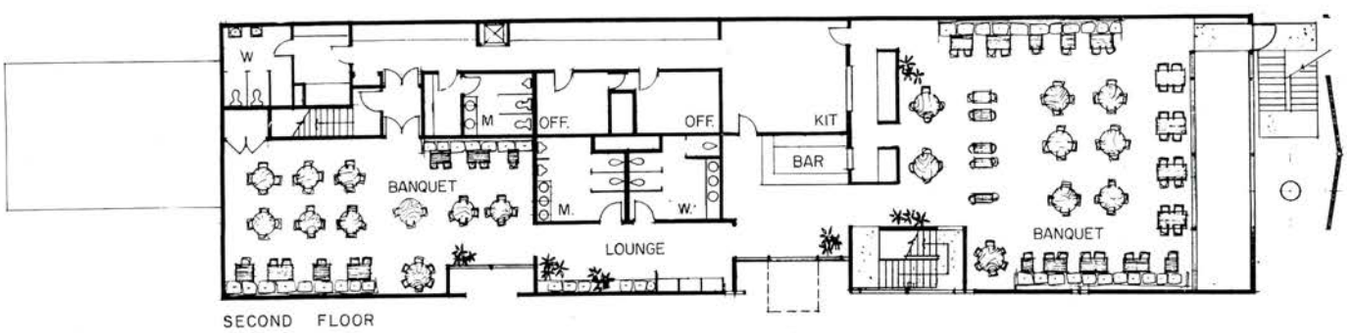
RESTAURANT WITH ART DISPLAY

The restraint with which the exterior is handled and the boldness with which color is used on the interior have won several awards (national and regional) for this restaurant. Its striking entrance tells the premise of its design: the long narrow site and the owner's space requirement (10,000 sq ft) made a two-story solution inevitable. Dining areas are on two floors, connected by a stair whose lines complement the building's rectilinear facing. The dramatic solution lets one of the upstairs banquet rooms (which have their own food preparation and scullery facilities) overhang the public dining room below, its glass panelled walls permitting views down to the lower floor and, from below, up into the banquet room. Total seating capacity is 350, with the majority in the upstairs rooms. Art displays are in the entrance lobby and all dining rooms. The building is wood-framed; its exterior walls are stained redwood siding and painted stucco, both off-white; blue glass strips mark the bays along the street front. The doorway is painted red. Behind the stair is a gold plaster wall.

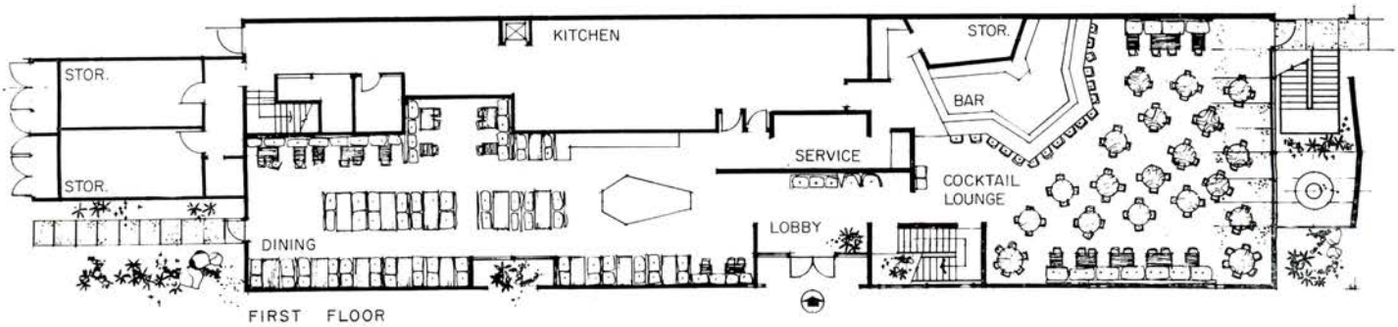




Larry Frost photos



SECOND FLOOR

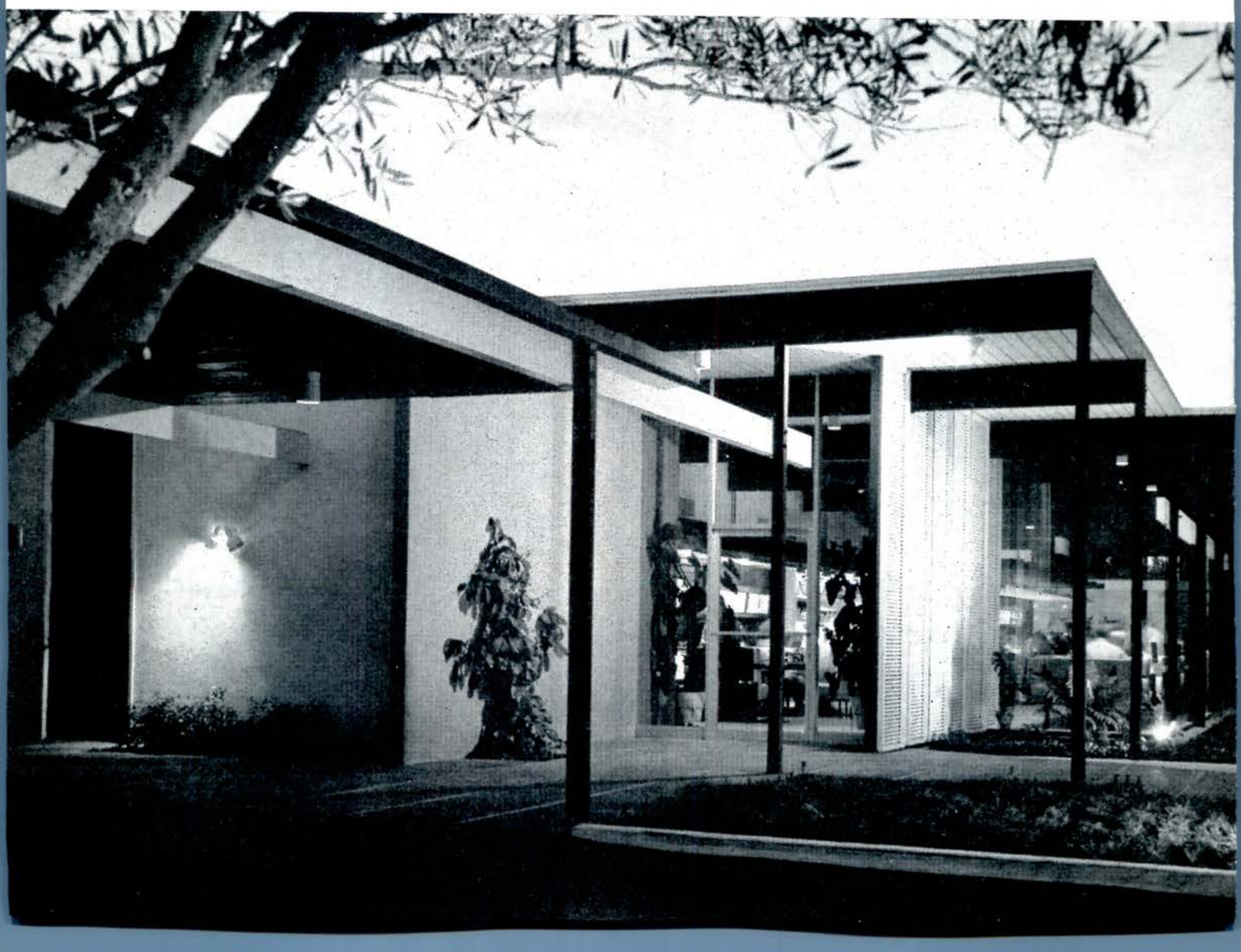


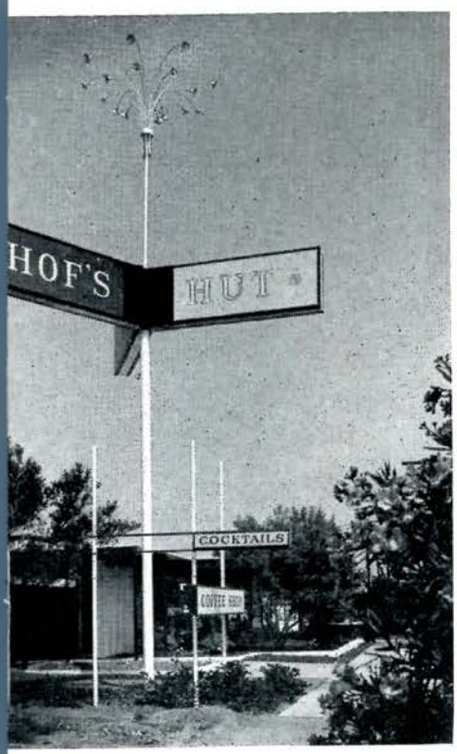
FIRST FLOOR

COFFEE SHOP — RESTAURANT ON A THOROUGHFARE

NAME: *Hof's Hut Restaurant*
LOCATION: *Long Beach, California*
ARCHITECTS: *Killingsworth, Brady & Smith*
DECORATOR: *Stan Young for Frank Bros.*
GENERAL CONTRACTOR: *John Halas*

Since Hof's Hut caters especially to families, the dining room is located immediately off the lobby, its windows overlooking the major thoroughfare on which the building is located. The bar, an important part of the operation, is in a semi-isolated location to separate it from the "family trade" in the dining room. Landscaping is used to enhance both of these facilities: the dining room will eventually be shielded from the traffic of the boulevard by already-planted shrubs and trees; the full-length clear glass panels in the bar open onto small planting areas which add spaciousness to the room. The building is set back from the street and handsomely landscaped. Behind and at the side are parking areas. The streetside sign pylon carrying the name of the restaurant was designed by the architect. The pylon rotates slowly and the starburst at the top has small lights at its tips which flicker at night.



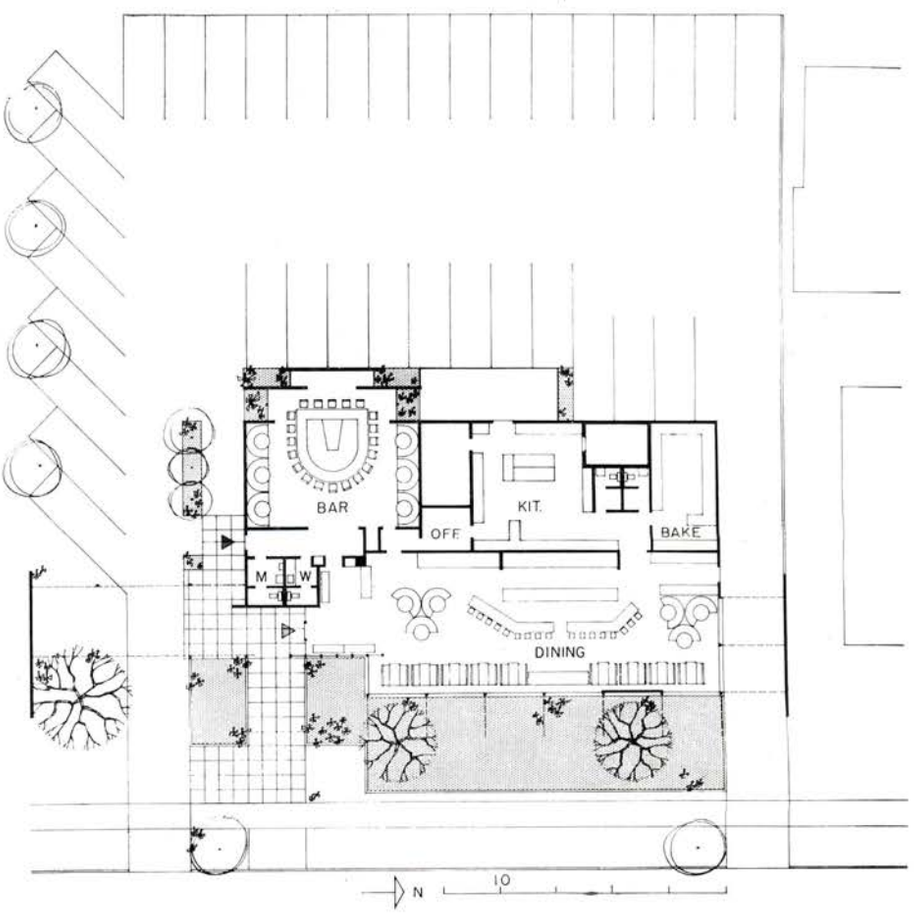








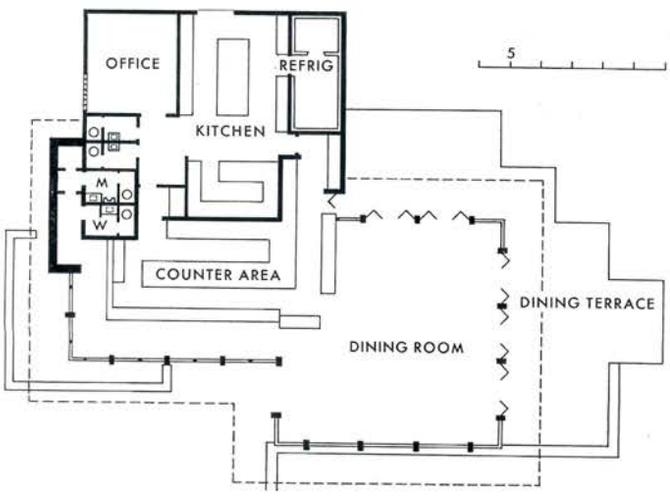
Marvin Rand photos





R. Wenkam photos

RESTAURANT NEAR WAIKIKI BEACH



The Snack Shop

LOCATION: *Honolulu, Hawaii*

OWNER: *John R. McIntosh*

ARCHITECTS: *Vladimir Ossipoff and Associates; Thomas O. Wells, in charge of design*

STRUCTURAL ENGINEERS: *Park and Yee*

LANDSCAPE ARCHITECT: *Mansfield P. Claflin*

GENERAL CONTRACTOR: *South Pacific Contracting Company*



The Snack Shop is a family-style restaurant on the Kalakaua Avenue near the grounds of the Royal Hawaiian Hotel; its dining room and terrace open onto the hotel's gardens. Part of a chain of restaurants by the same name, the Honolulu unit is designed to emphasize the friendly informality traditional with the other units. The low roof with its broad flat eaves is a dominant element in achieving the residential scale appropriate both to the restaurant and to its particular location. Walls are as open as possible to take advantage of trade winds; corners are column-free to permit interior spaces to flow uninterruptedly to the garden beyond.



Julius Shulman

"PITCHED ROOF" FULFILLS HOME CODE

OWNER: *Augustus C. P. Bakos, M.D.*
LOCATION: *Los Angeles, California*
ARCHITECT: *Thornton M. Abell*
STRUCTURAL ENGINEERS: *Hillman & Nowell*
MECHANICAL ENGINEER: *J. S. Hamel*
CONTRACTOR: *H. P. Marks & Sons*
INTERIOR DESIGNER: *John Smith*
LANDSCAPE ARCHITECT: *Robert H. Forrey*

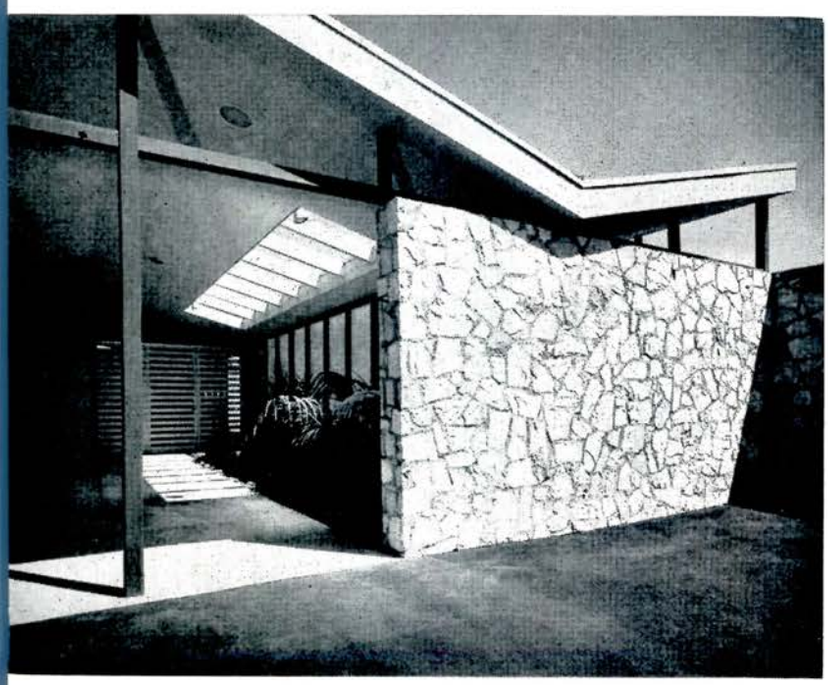
The Bakos House

The series of repeating pitched planes forming the dramatic roof of this house are the direct outgrowth of deed restrictions: a 3-in-12 pitch roof was definitely required. The roof bays, together with the supporting steel post and beam frame, were also used to define the living areas within.

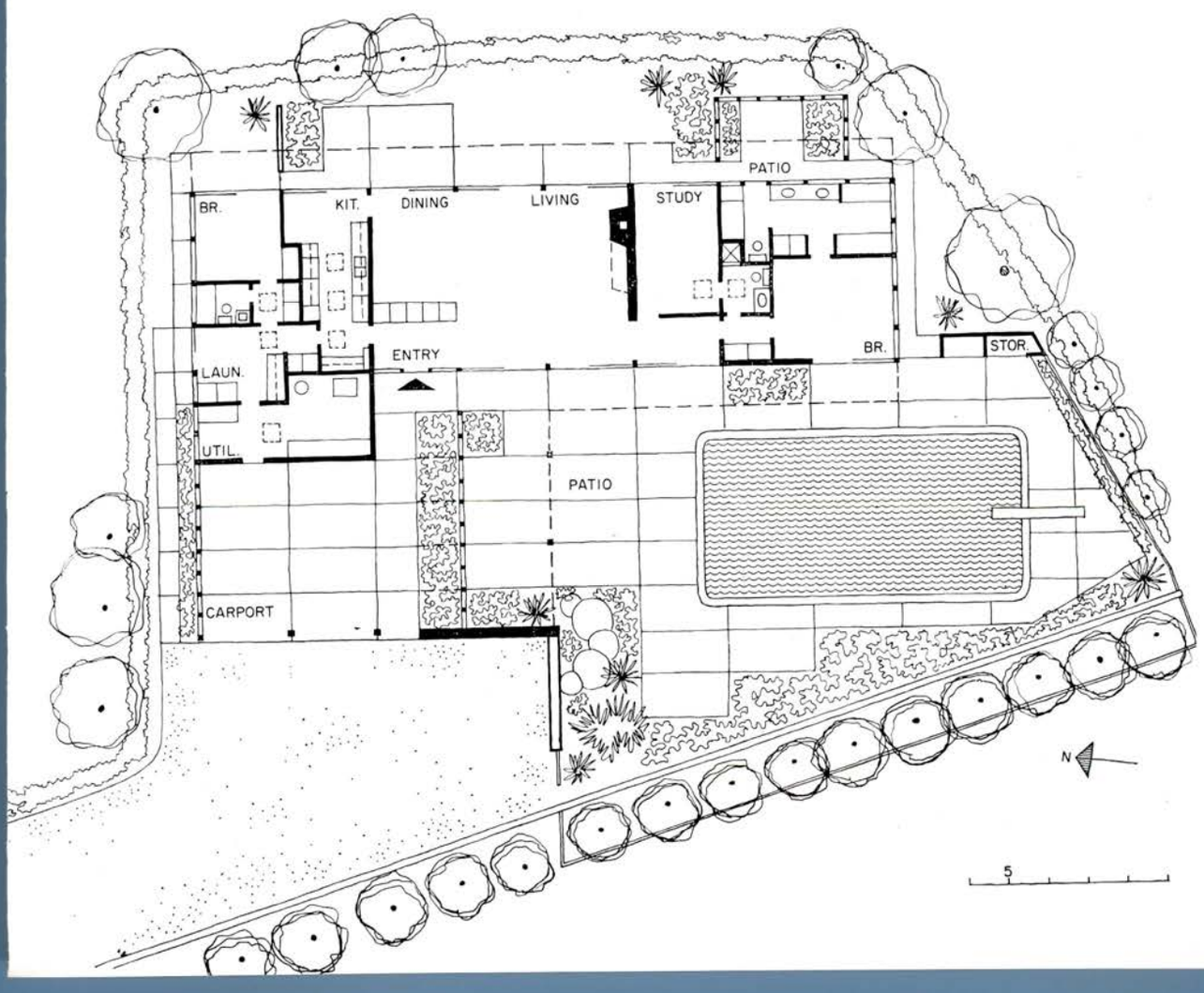
The house is a luxurious one, built on a plateau cut into the side of a wide canyon. The pool side of the house is given complete privacy, and protection from afternoon sun, by a 45-degree slope at the edge of the property.

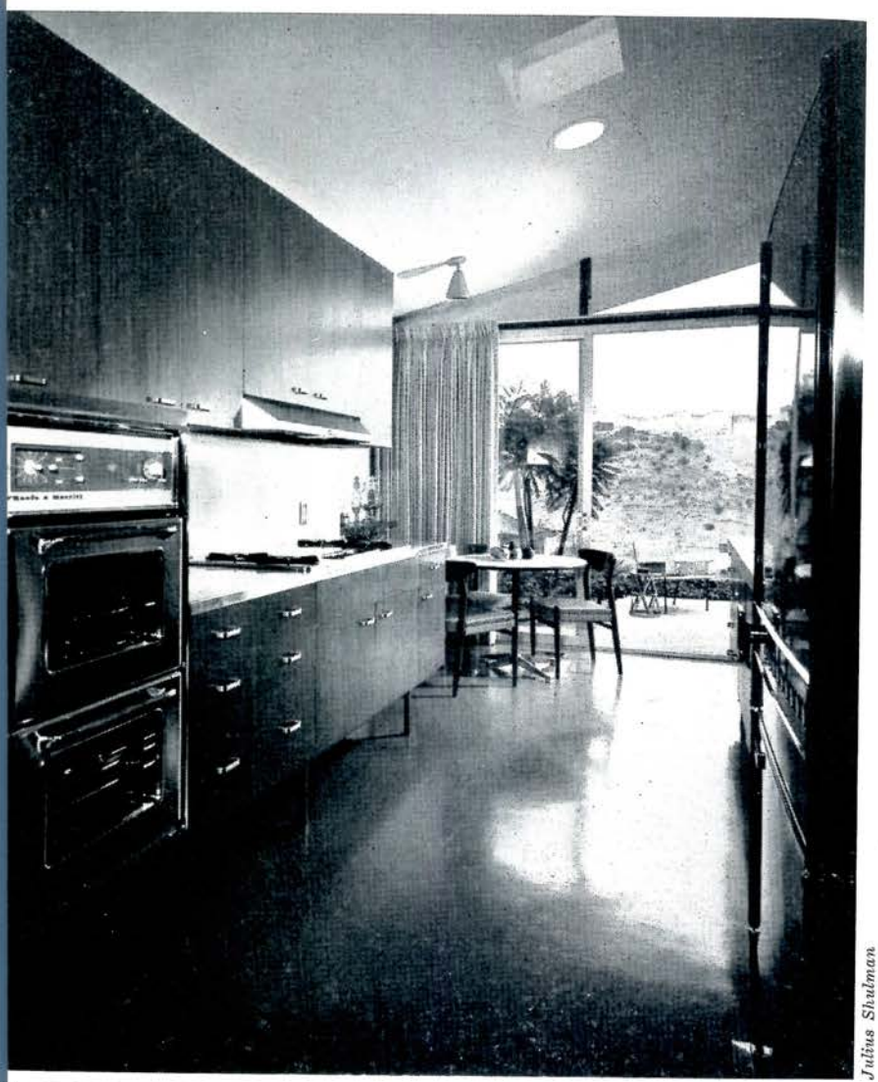
The plan provides such amenities as a spacious entrance and motor court, with parking space for guests' cars; a sheltered outdoor entertaining area with barbecue located next to the pool; and a sun-bathing patio enclosed by a plastic screen, adjoining the master bath and dressing room.

Aside from the local stone used for fireplace and garden walls, all enclosures are made by filler-panels: glass set in sliding aluminum frames with fixed glass above; and wood frame panels of plaster and hardboard, with glass louvers above the 8-ft line. The roof is surfaced with composition and gravel, and its soffits are exterior plaster. Interior ceilings are acoustic plaster. Flooring varies with areas: vinyl in service rooms, ceramic tile in baths, terrazzo in living areas, carpet in owner's bedroom. Exterior paving is pebble concrete. The master bath has a sunken tub, travertine counters, and plastic sliding panels to divide it from the dressing area. The house is air conditioned. Cost was about $61,000.



Julius Shulman





Julius Shulman



The Bakos House

Definition of the interior spaces by the roof planes may be clearly noted in the adjoining photos. The kitchen (top) has mahogany cabinets and built-in equipment. Counters are stainless steel or unglazed ceramic tile. There is a dining area at one end, and a work bar at the other. Under the bar counter are two trucks for serving drinks and meals. A laundry and workshop-storage room are between the kitchen and carport.

A complex storage wall separates entry from living-dining area, and contains: coats, radio and recording equipment, film projection equipment and dining service

SCHOOLS

BUILDING TYPES STUDY 296

®

In the quest for better school environment, we present two budget schools by Hugh Stubbins and a survey of developments in the trend to air conditioning.

THE CASE FOR CONTROLLED ENVIRONMENT

By Harold B. Gores,

President, Educational Facilities Laboratories, Inc.

The controversy is about over. A few short years ago when controlled environment was still associated in the public mind with air-conditioned Texas Cadillacs, people were not especially disturbed that in the spring of the year many a schoolboy was learning the multiplication tables while scratching his heat rash. But that was way back in the 1950's when the test of the goodness of a schoolhouse was how long it would last and how cheaply it could be maintained.

Nowadays people have come to regard the schoolhouse as the new arsenal of national defense where the maximum possession of decency and knowledge by each and every pupil is its chief weapon in trade. If this be the case, then how the schoolhouse performs—how it encourages and speeds learning—takes precedence over how indestructible it is and whether it will live out its days in janitorial ease.

Now that the schoolhouse has more work to do than the ancient custom has previously assigned to it, there are compelling reasons for designing schools with controlled environments.

1. The Year-round School

An increasing number of children desire to press on with their education during the summer months. A schoolhouse designed as space to be mechanically heated in the winter months and cooled by nature in the spring and autumn was adequate for the 9-month schools of our agrarian past. But year-round use requires a better system than nature's to control the temperature, humidity, noise, and the dust of late spring, the long summer, and early fall. If learning is to be maximum, the young scholar needs to be protected from the enervating and distracting discomforts of an environment left to harsh and fickle nature.

2. The Community-centered School

The schoolhouse that is used only a thousand hours a year is especially wasteful for our big cities. Most urban renewal programs, into which billions of Federal dollars will eventually be poured, will try to revitalize our central cities by first revitalizing their interior neighborhoods. The key facility for neighborhood renewal in depressed areas is the schoolhouse, owned by everybody and serving everybody; the young by day, six days a week, and in the evening and on Saturdays, persons of all ages who will gather at the school for educational, recreational or civic purpose. Because this facility will be working 4000 hours a year, comfort of the occupants is as necessary to productive use as it is in any industrial or commercial property.

3. The School of New Design

Newly emerging ways of grouping children for instruction are forcing the redesign of interior space. The conventional arrangement of equal-sized classrooms coupled together like the coaches of a train is unsuited to educational programs calling for independent study, seminars, and large-group instruction. As the teaming of teachers becomes more prevalent, the demand for interior space that is clustered rather than row-on-row will increase. The newer schools already provide for "zones of space"—say four or five or six classrooms clustered around a common resource center. This zoning of space in clusters in the round, a rearrangement that is also occurring in the design of hospitals, churches, and even banks, lends itself to the concept of large-area climate control as distinguished from the current practice of ventilation box-by-box. And when schools increase their use of operable walls, allowing spaces to flow together and, in turn, be subdivided according to what is being taught—and how—the reasonableness, and indeed the economy, of controlling whole zones of space is apparent.

4. The School that Graces the Land

In the beginning, the early air-conditioners took the conventional schoolhouse design and merely reduced its perimeter, knocking out a substantial amount of glass at the same time. The result (with the truly distinguished exception of the Belaire School in San Angelo, circa 1953) was a big compact box, indistinguishable in appearance from our better warehouses. In the brutality of their glasslessness and bland geometry these early monuments to refrigeration and, as someone has said, our edifice complex produced something quite unlovely. But now we have some air-conditioned schools which will grace the land and sit lightly upon it. In McPherson, Kansas, for example, John Shaver, architect, has brought back the roof—in one section a gentle curve, in another section, folded plates—to give this compacted high school a grace that overcomes the lack of statement induced by its perimeter.

In sum: The school you build today will still be standing well into the 21st century. In the course of its life, education will change and therefore the building will have to change. There is every indication that education will move in the direction of freeing the individual student from the fetters of uniform, lock-step grouping. And the 1000-hour schoolhouse will come to be regarded as a cultural anachronism, a luxury which our beleaguered big cities especially can ill afford. Controlling the environment of the new school—or the old one for that matter—makes just as much sense for the school board as it does for any other corporate body concerned with the productivity of the occupants.



WOOD FRAMES A NEAT BUDGET SCHOOL

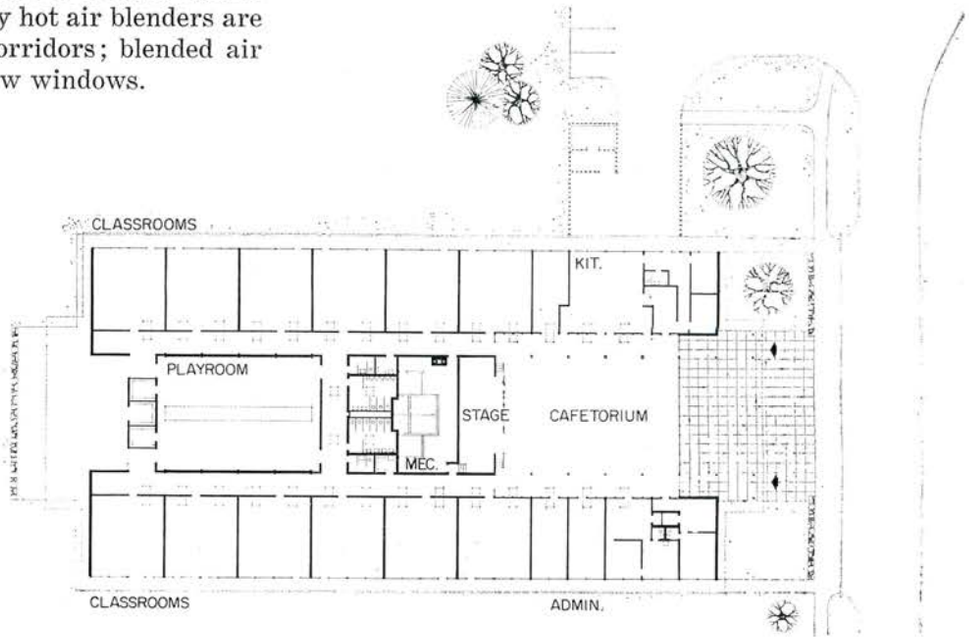
Winthrop Elementary School, Hamilton, Massachusetts. Hugh Stubbins & Associates, Architects. Goldberg & LeMessurier, Structural Engineers. Fred S. Dubin & Associates, Mechanical Engineers. Frasca Construction Co., Contractor

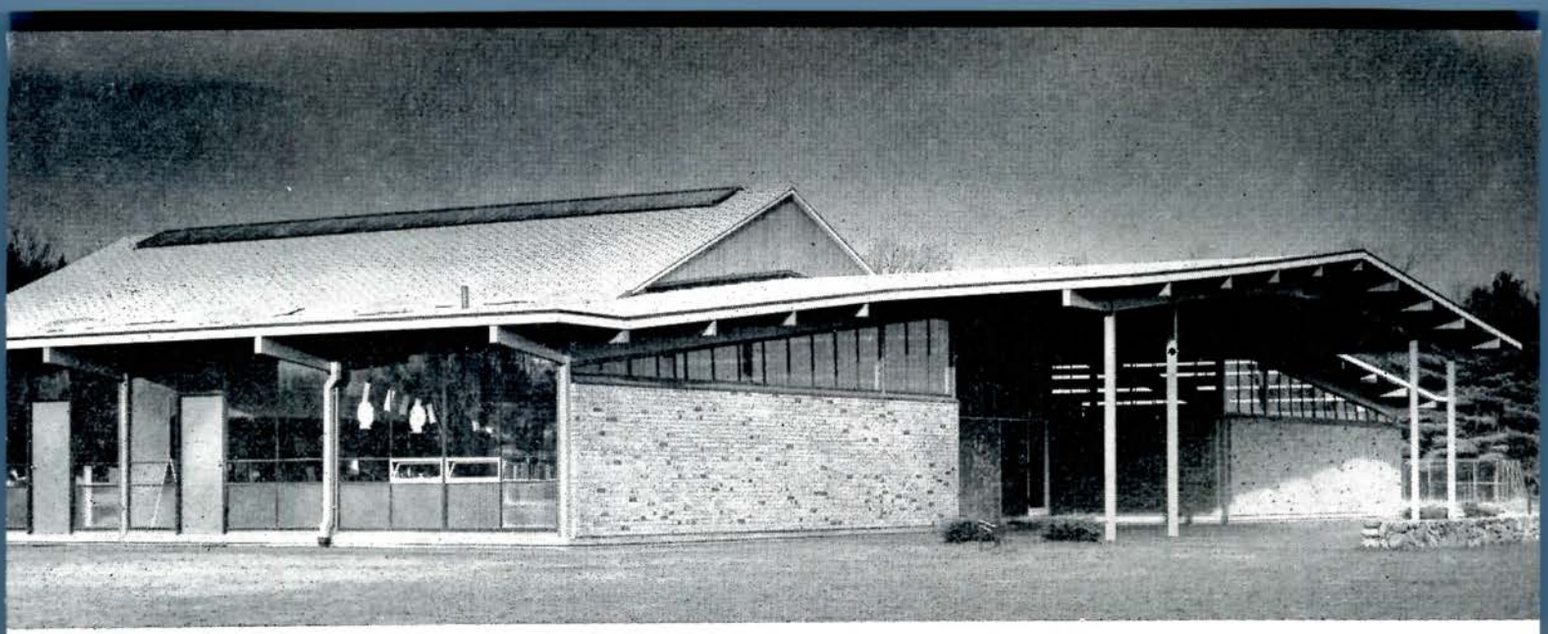


Amidst the constant search for schools with a more pleasant teaching environment at a reasonable cost, this compact, warm-textured school stands as a good example.

Planned for a more or less traditional teaching program, the scheme uses a rectangular plan (under one roof) with 12 classrooms located along the perimeter of the all-purpose-utility-gymnasium core. The cafetorium aisles double as circulating space. Facilities are designed to handle the addition of six additional classrooms. The total cost was $453,810, which dictated stringent use of areas.

The frame is of laminated wood, with exterior walls of brick, interiors of plaster. Plastic domes supplement daylight. Hi-velocity hot air blenders are in duct trenches beneath the corridors; blended air is fed to continuous grilles below windows.



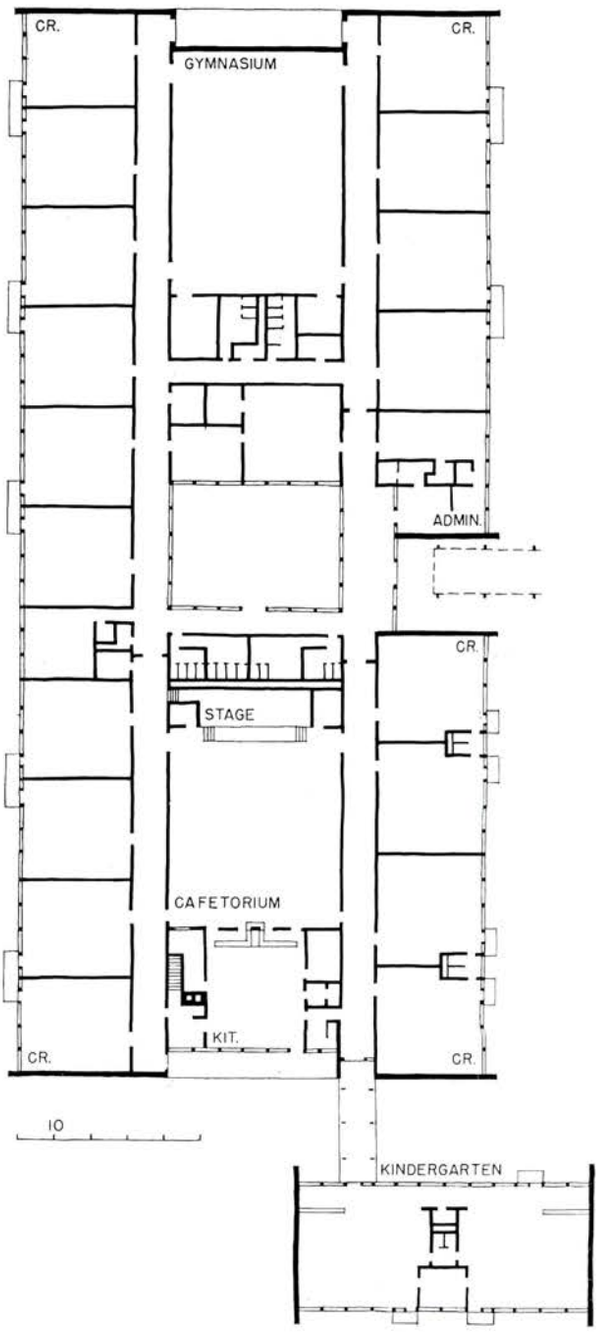




Joseph W. Molitor



COURTS ENHANCE ENVIRONMENT OF LOW COST SCHOOL



South Elementary School, Andover, Massachusetts. Hugh Stubbins & Associates, Architects. Goldberg & LeMessurier, Structural Engineers. R. G. Vanderweil, Mechanical Engineers. Chambers & Moriece, Site and Utility Consultants. Morris & Son Construction Co., Contractor

An entrance garden and central court add much to the pleasantness of this trim steel-framed school. Mr. Stubbins states that, "The court has proven to be a psychological boon as well as admitting daylight to the interior library. This small opening relieves the regularity of the in-line arrangement."

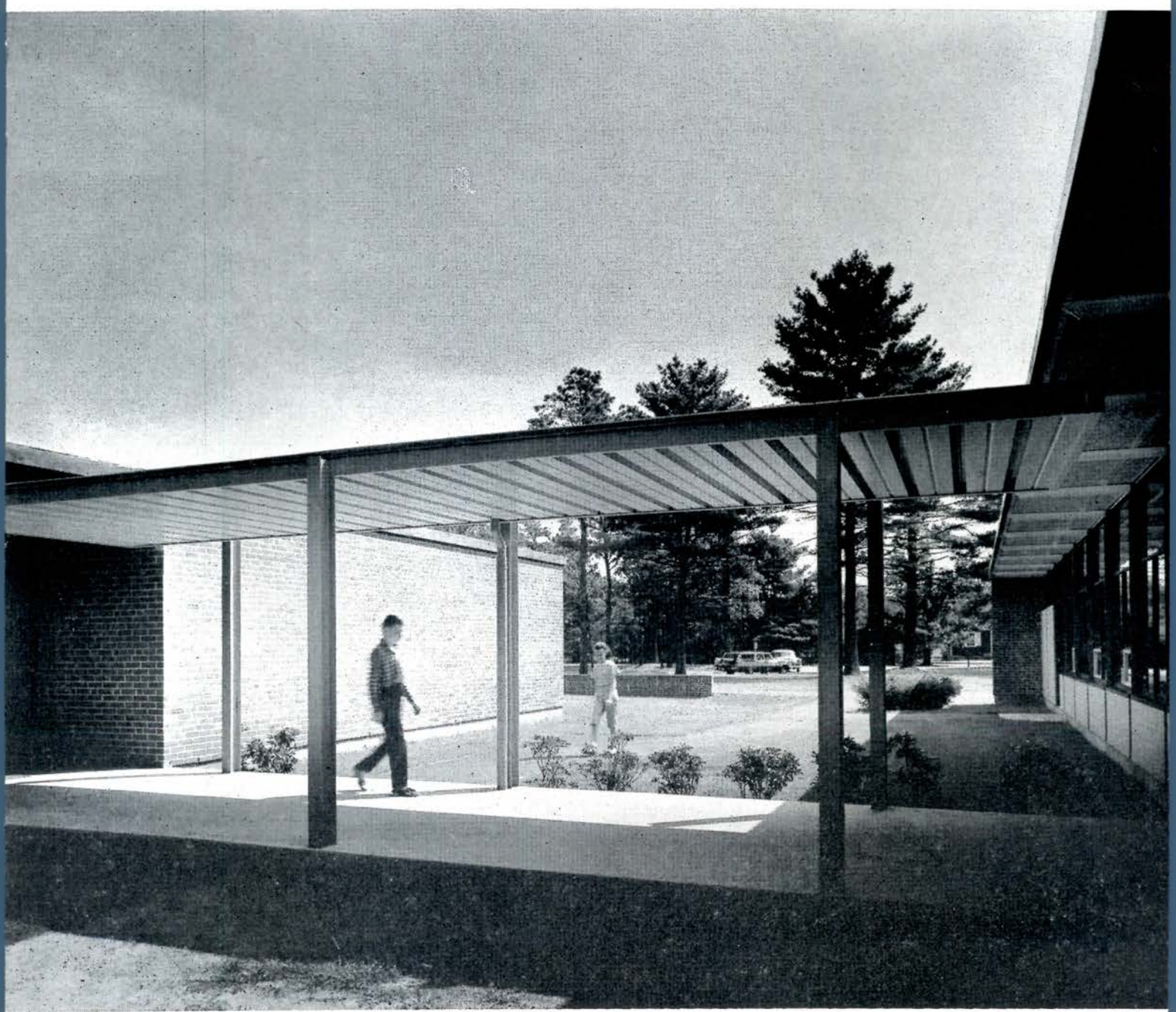
The school has a rectangular plan with 18 exterior classrooms and interior gymnasium, court, library, and cafetorium. Kindergarten units are separated from the main unit; the kindergarteners are said to have developed a special pride in their own "little school".

The site is large, low, level and partially wooded. Economy was a key factor of the program; and yet, because of the large area the school serves, all facilities had to be included. Total cost was $639,043.

The frame is of steel columns and bar joists. Exterior walls are surfaced with brick, interior walls with glazed brick. Floors are asphalt or ceramic tile. Ceilings are insulating board.







Joseph W. Molitor

THE IMPACT OF AIR CONDITIONING ON SCHOOL PLANNING

By Henry Wright, Architectural Consultant

The advent of school air conditioning seems destined to have the same kind of impact on educational buildings as did the adoption of the one-story school in the mid-Forties. The likelihood of such an upheaval is being greeted with mixed emotions. As in many another controversy, some of the protagonists have tended to speak first and reflect later.

Many architects and educators have reacted to the threat to the naturalistic, "child-oriented" approach which air conditioning seems to present. In their readiness to decry the "soulless box," these doughty warriors seem unaware that they may be deserted by their armies: the rank-and-file teachers, parents and students who will ultimately decide what amenities, if any, are worth sacrificing to achieve better temperature control in hot weather.

Fortunately for everyone, this lady-or-tiger choice may never need to be made. Architects, despite a tendency to sometimes adopt untenable theoretical positions, are in the end remarkably ingenious craftsmen. The fallacy in the "soulless box" concept is the assumption that school designers—under whatever pressures for economy, better control of environment, and the like—will ever be content to build mere boxes. They will not. But it is just as fallacious to assume that they will continue to treat windows in the traditional way once the function of the window is simplified to that of pure and simple outlook. With air conditioning, it is no longer necessary to compromise the multiple functions of breeze-ventilation, daylight and visual connection with the outdoors.

Indeed, even a cursory review of the schools actually being built with air conditioning will reveal that the design-changes it is bringing about are many and subtle. Take, for example, the Mount Vernon High School, by Architects Sherwood, Mills and Smith. By no means a windowless box, this school nevertheless has a degree of "compactness" reflecting the influence of air conditioning. The arrangement of the classrooms around a large court, divided in two on the second floor level by the connecting library, might have been used in a non-air conditioned school. This arrangement, however, would probably have resulted in noise problems when the windows were opened for ventilation. With air conditioning, there need be no fear that use of the court will create such difficulties.

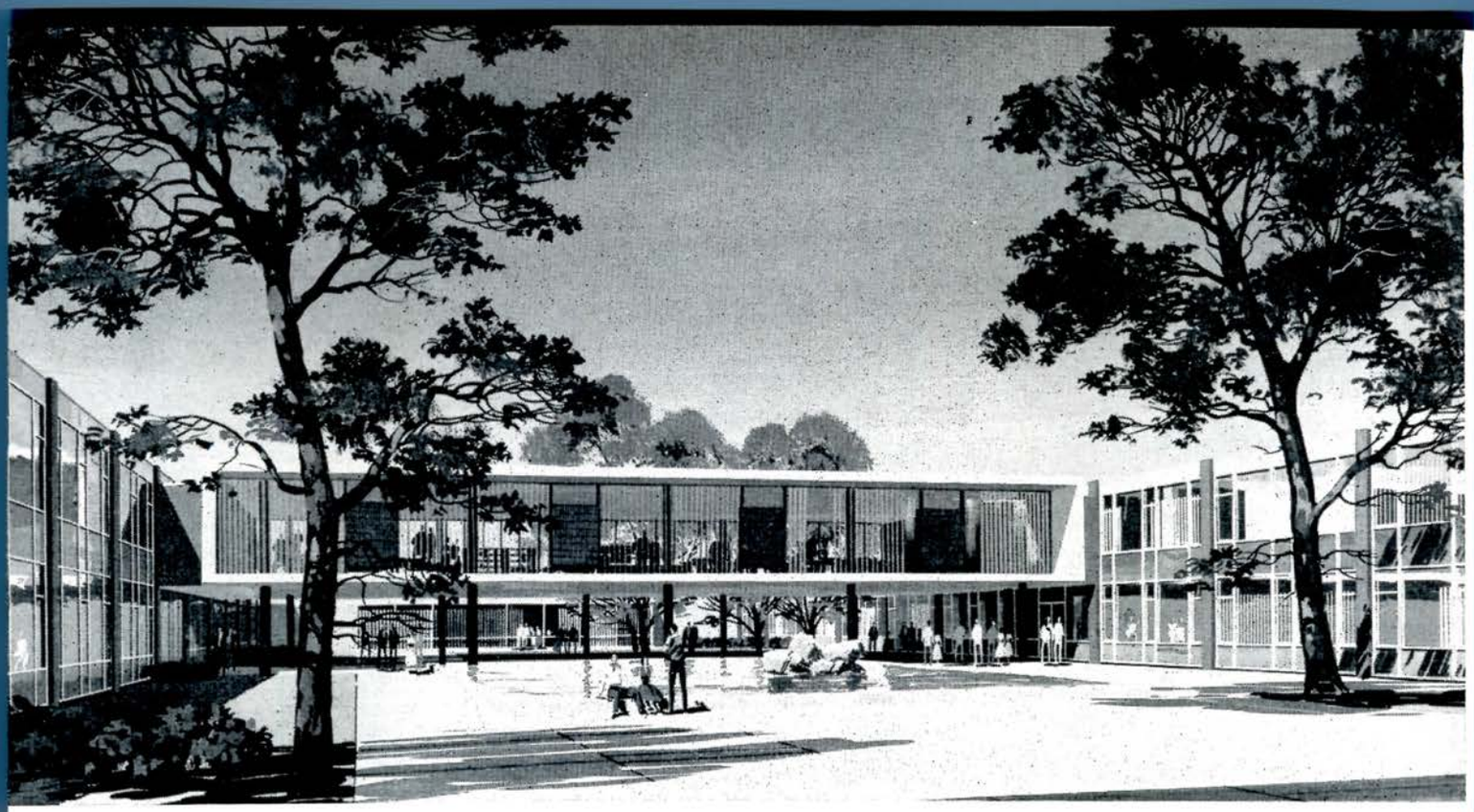
Moreover, while it is true that most of the teaching areas have generous windows, there are some rooms, such as the teaching auditorium, band practice rooms, and some of the administrative offices, which are windowless. Air conditioning has also made possible the creation of numerous smaller windowless spaces, such as offices for teachers adjacent to the classrooms. What may be even more significant is that considerable portion of the corridor space has been given continuous windows looking out on the court, eliminating the windowless corridor which has, unfortunately, typified much school planning.

The method of air conditioning used in the school employs chilled water, rather than air, to convey "cold" to the rooms via unit ventilators. Brises-soleils are provided to shield the classroom windows from the east and west sun and reduce the air conditioning load.

If there are questions to be raised regarding the design of this school, they have to do with things like the use of too much glass, too dispersed an arrangement of classrooms, and an overly extended circulation pattern. It is a walk of more than a thousand feet from one corner of the complex to the other. It is unlikely that any business organization would approve such an arrangement of an office building even for a view of a landscaped parking area or suburban parkway. One of the great advantages commercial organizations have found in air conditioning is the convenient communication among employes resulting from large, freely divisible areas.

On the other hand, it must certainly be admitted that many large air conditioned schools in the Southwest have carried windowlessness and "compacting" too far. Some of these schools have been remarkably low in cost, but in most cases little effort has been made to exploit the opportunities for outlook inherent in the plan. Almost always it has been evident that with conscious effort—and some expenditure—these opportunities might have been multiplied.

continued on page 170

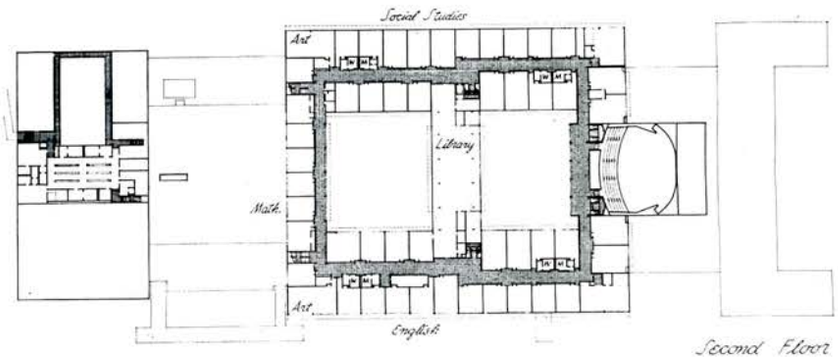


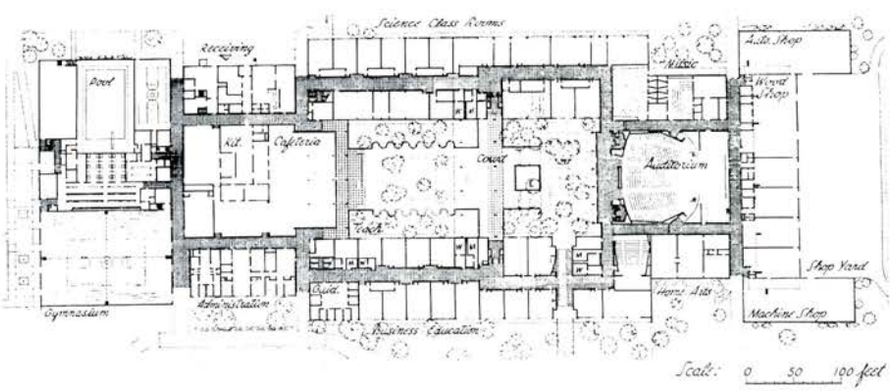
Mt. Vernon High School

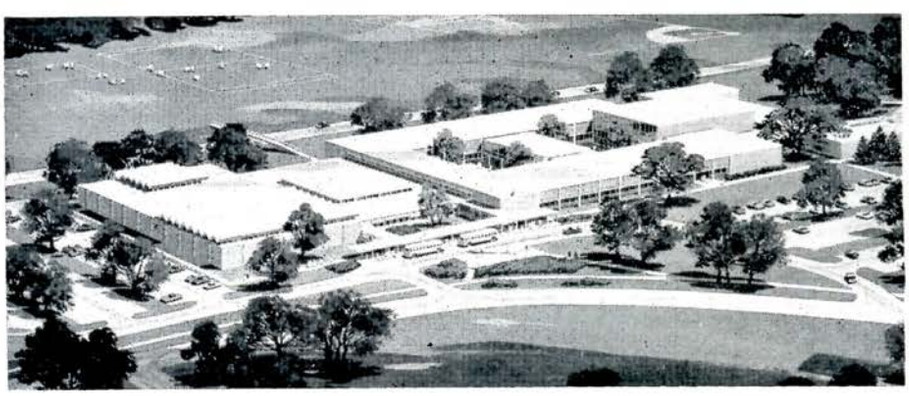
Mt. Vernon, New York. Sherwood, Mills and Smith, Architects. Arthur Peyser, Supervising Architect. Friaoli, Blum & Yesselman, Structural Engineers. Abrams & Moses, Mechanical Engineers. Bernard F. Greene, Electrical Engineer. Robert Zion, Harold Breen, Site Planners. Henry H. Rothman, Food Service Consultant

This school integrates an academic and vocational curricula in one school. This was done to help reduce costs in the over-all building program by avoiding duplication of such facilities as cafeteria, auditorium and gym. Now under construction, the estimated cost is $7,500,000.

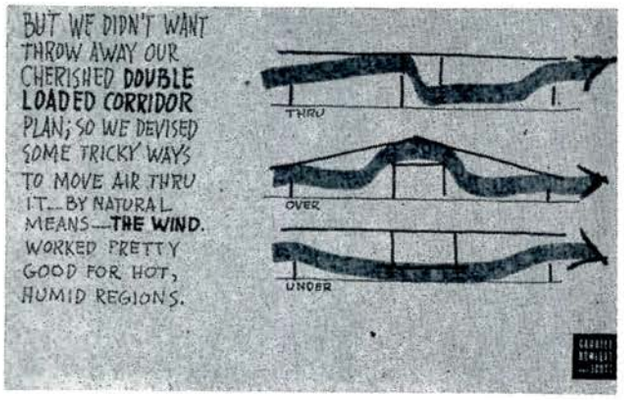
With regard to the air conditioning, Lester W. Smith, the Architectural Partner-in-charge, states: "We feel that a school should be air conditioned without having the plan and the amenities of the spaces sacrificed. For this reason, we have not used the loft type design which minimizes the air conditioning load. Every room in the Mt. Vernon school has enough windows to allow for a pleasant outlook and natural daylight. The only concession was reduction in the height of the window tops, and sun shields." The building is steel frame, surfaced with brick and limestone. Unit ventilators provide heat, cooling and ventilation.

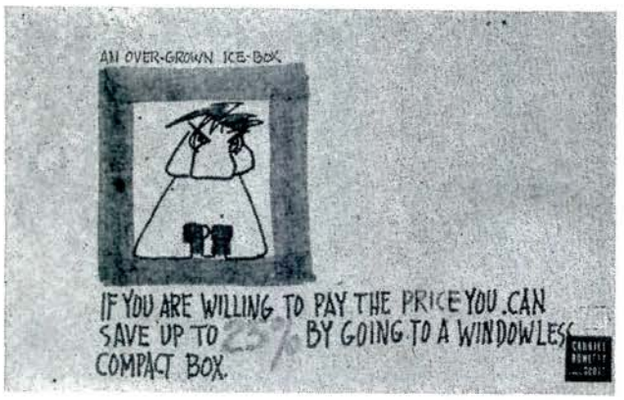


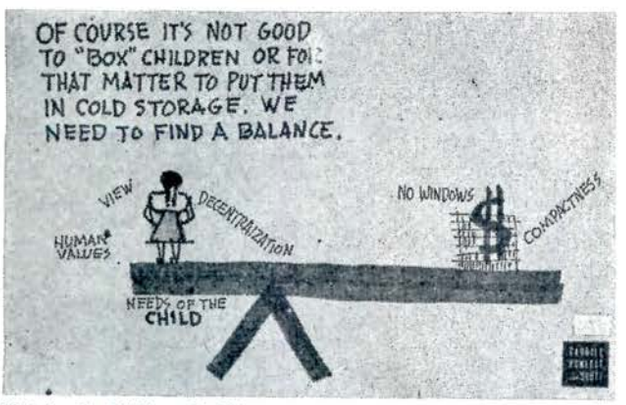












Sketches by William Caudill

What has been lost sight of is that the windowless or largely windowless *classroom* need not result in a windowless *building*. It is the windowless classroom (or some windowless rooms), along with mechanical cooling, which make possible a more compact plan, cost savings, and savings in land. These often more than make up for the cost of air conditioning equipment. Windowless classrooms also make more convenient the use of audio-visual equipment (but air conditioning can solve room-darkening problems in windowed rooms as well). There is nothing about the use of windowless classrooms which makes the use of windows in corridors, cafeterias and other areas where students congregate, taboo. It would be hard to devise a plan in which windows, if they are wanted, could not be provided in a substantial proportion of the classrooms as well. John Lyon Reid's Hillsdale School—prototype for the compact, air conditioned schoolhouse—has window-walls in all of the perimeter classrooms. Corner rooms have two window walls. Many air conditioned school buildings which follow the Hillsdale pattern do not, however, have windows on the perimeter. They offer almost no opportunities for a view of the outdoors or even a check on changes in the weather.

The prevalence of this nothing-or-all approach has given rise to the misapprehension that windows and school air conditioning—or, at least, economical school air conditioning—are as antipathetic as oil and water. This, of course, is not so. The elimination of windows is *one way* to reduce air conditioning loads and save money on construction and mechanical equipment; knowledgeable design is another. A good place to begin is with the elimination of the foolish use of glass. Most architects, today, will admit that most other architects have been guilty of such overindulgence. Other factors requiring re-examination are heat-excluding roof construction, and the possibility of two-story instead of one-story school buildings.

The real challenge of school air conditioning is this: air conditioning, in most cases, makes possible schools with year 'round climate control at a cost no higher than the type of non-air conditioned schools now being built, *whether or not windows are largely or wholly eliminated.* Re-evaluation of the wall-to-wall glass concept is overdue in any event but it is compactness rather than windowlessness that effects the major economies which result from school air conditioning. Money is also saved by the elimination of the many complexities connected with breeze ventilation. The effect on school design of such basic changes has only begun. Architects are only beginning to explore the possibilities and new freedoms which air conditioning offers. I am confident that the next ten years of school building development will demonstrate the soundness of these assertions and result in a great improvement in the kind of learning environment we are providing our children.



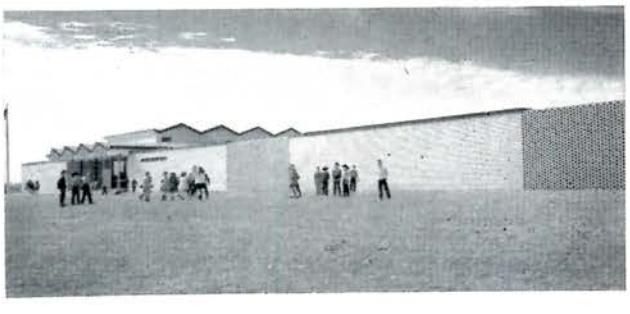
MINIMIZED WINDOWS FOR A TEXAS SCHOOL

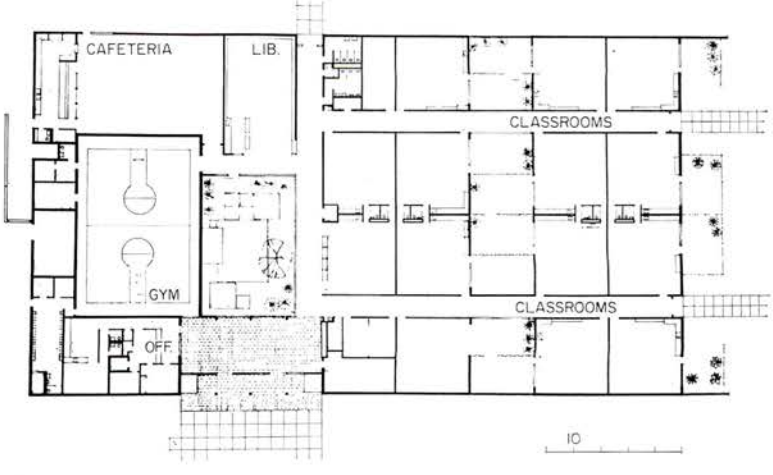
John Ireland Elementary School, Odessa, Texas. Peters and Fields, Architects. W. R. Grimshaw Co., Contractor. C. M. Hardy & Associates, Structural Engineer. Zumwalt and Vinther, Mechanical Engineer.

This steel and brick school, designed so that air conditioning could be included in the original construction, or be added at a later date, strikes a point somewhere between the all-glass, extended scheme and the compact windowless plan. Rooms have minimum outside windows opening onto private courts, and are designed to help solve some of the climatic problems of the area: wide temperature ranges, severe glare, infrequent moisture and dust control.

It was finally decided for the present to air condition only the administration area and an enclosed experimental classroom, until other key schools in the system could be provided with like facilities. Unit ventilators are used; a water chiller to complete the system will be added for about $10,000, bringing cost to $323,826, or $10.17 a sq ft.







SCHOOL WITH HEAT PUMP, FIXED GLASS

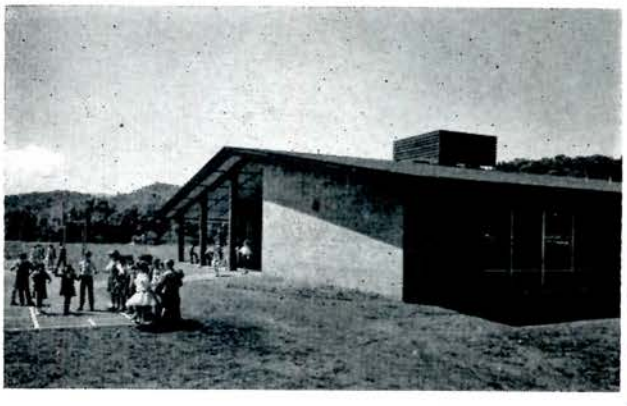
Kenwood School, Kenwood, Sonoma County, California. Reid Rockwell Banwell & Tarics, Architects. R.S. Banwell, Partner in Charge. Donald F. Walters, Job Captain. Kasin, Guttman & Associates, Mechanical Engineers. A. S. Malayan, Electrical Engineer

This very pleasant little elementary school was constructed at a total project cost of $174,000, of which the building cost was $138,000 or $13.58 a sq ft. The concrete block building is 10,185 sq ft in area and contains six classrooms, one kindergarten room, and a small administrative office suite. Year-round air conditioning is supplied by a heat pump system. There are no operable windows, as the heat pump system provides complete ventilation. Each classroom is provided with sliding metal doors which permit activities to be carried to the out-of-doors in good weather.

Of the school, John Lyon Reid states: "Although the climate is moderate and extremely pleasant, there are times in the year when temperatures are high enough to justify air conditioning. This has been considered an unnecessary luxury by most school districts in the past, but air conditioning equipment is now becoming so simple, so reliable and so economical that it warrants careful consideration. In this school, there are eight compressor units; one for each classroom and two for administration and kindergarten.

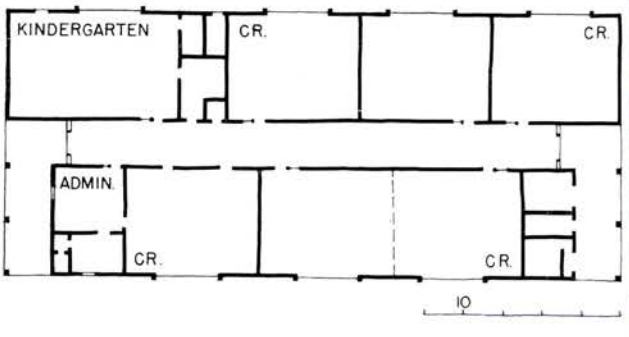
"This school has prompted our office to take a careful look at air conditioning. We believe it will be the rule rather than the exception in a few years."





Roger Sturtevant





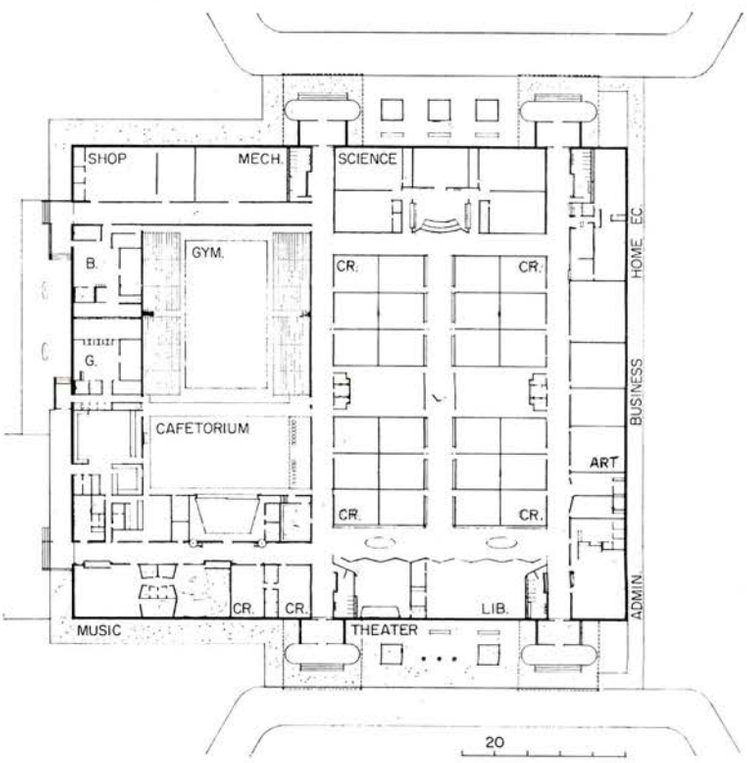


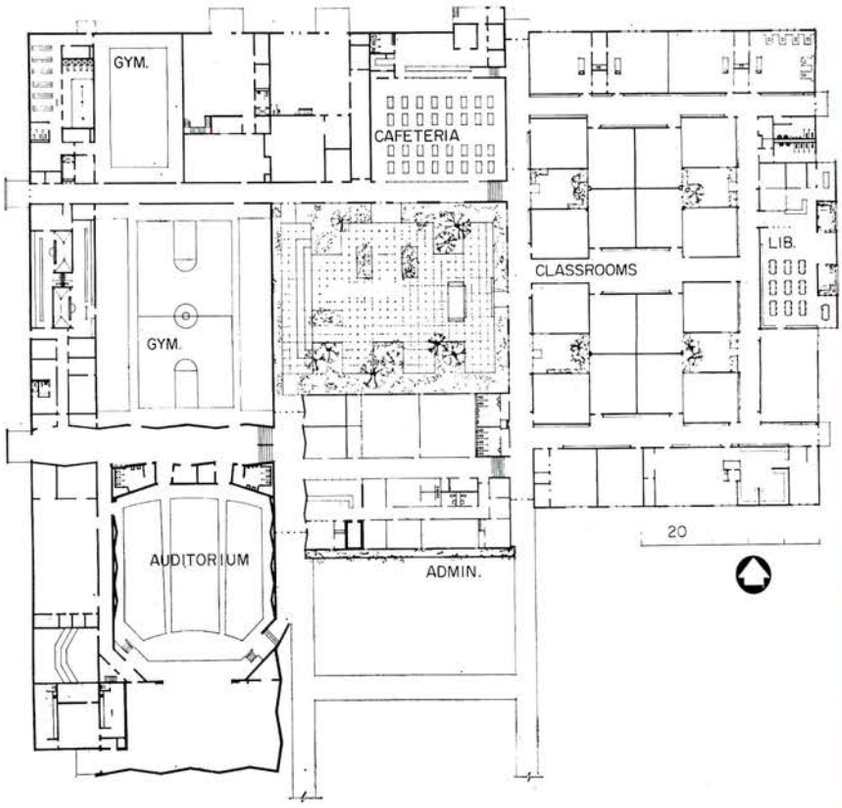
A COMPACT WINDOWLESS HIGH SCHOOL

South Park High School, Beaumont, Texas. Golemon & Rolfe, Architects and Engineers. Walter P. Moore, Structural Engineer. Bishop & Walker, Landscape Architect. Thad Dederick Construction Co., Inc., Contractor

This Texas school is a good example of the case for the totally air conditioned, compact and windowless school. A chilled water system is used. The plan also provides for a master-teacher educational program. The architects explain their approach as follows:

"The South Park School is a compact planning concept, the goal being a plan to increase the educational aspects and decrease the cost of a school building. The advantages of a compact plan are numerous—some we imagined and others were brought to our attention by educators and administrators. The air conditioning and planning interrelate by providing controlled temperature ventilation to interior rooms of a scheme with a comparatively low amount of exterior wall which eliminates high heat loss materials such as glass. Since many rooms in any compact plan will be inside, it was assumed the balance could be windowless." The structure has steel frame, brick exteriors, structural tile interiors.

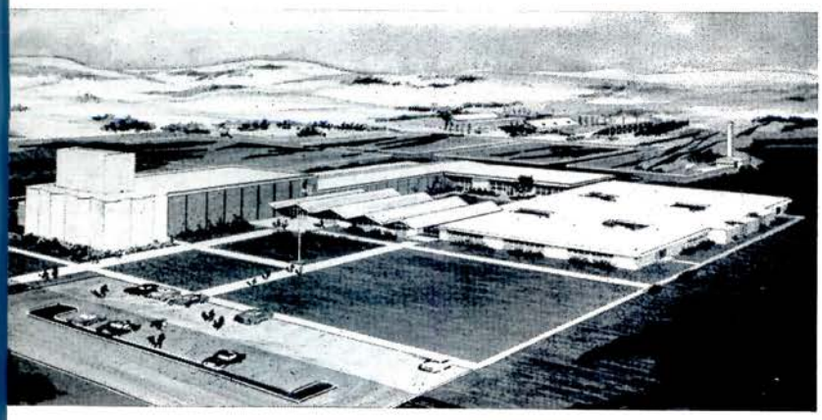




COURTS DAYLIGHT INSIDE CLASSROOMS

Fort Stockton High School, Fort Stockton, Texas. Groos, Clift & Ball, Architects. Yandel, Cowan & Love, Mechanical Engineers. R. S. Smith, Consulting Structural Engineer. Pahl Bonner, Consulting Acoustical Engineer

This air conditioned high school, built in the plains region of Texas, is designed to also provide community services for the town of Fort Stockton. For example, the auditorium, seating 960 people, is to serve for much of the community entertainment, not only on a school and local talent level, but for traveling professional groups, from concerts to plays.



The school was designed for a student load of 750, with auditorium, gym, cafeteria and administration adequate to permit future expansion of classroom, lecture, and laboratory facilities. After studying the alternatives, a relatively compact plan was decided upon, with courts provided to give daylight and a garden "view area" to interior rooms and spaces. Service and utility lines were considerably decreased by the compact arrangement. Materials were chosen that had a good insulating value: one story walls are clay face brick backed by a lightweight hollow core concrete block, totaling eight inches in thickness; the taller walls are twelve inches thick. The roof is gypsum decking, insulated by 3-in. glass fiber battens. The auditorium ceiling is gypsum plaster and classroom ceilings are suspended 1-in. glass fiber. The structure is a rigid steel frame.

Five different schemes were studied for heating, cooling and ventilation. The system adopted provides only heat and ventilation to shops, gym, and storage rooms. All other areas are air conditioned by a chilled water system using gas absorption refrigeration and, of course, electrical energy for fan blowers and air handling units. Cost of construction is estimated to be $1,422,402 or $12.35 a sq ft.







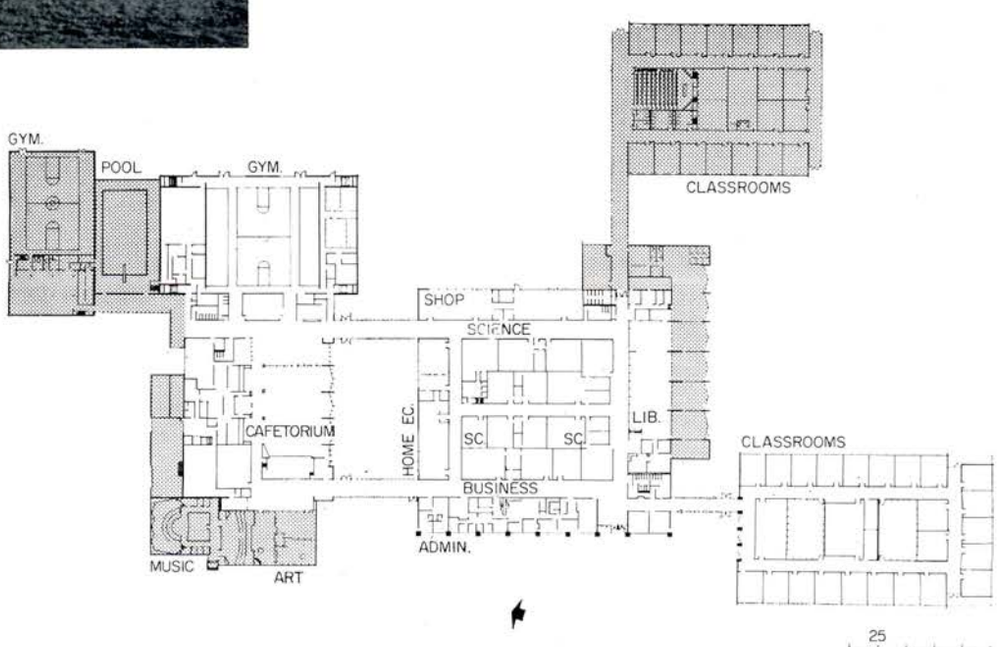
Bill Hedrich, Hedrich-Blessing

EXPANSION PLANS FOR A HIGH SCHOOL

Homewood-Flossmoor High School, Flossmoor, Illinois. Perkins & Will, Architects. Edward Gray Corporation, General Contractor

The modified campus plan of this school was designed to be built in two stages: the first section was built with partial air conditioning which included a few classrooms, the library and the administrative offices; the partial air conditioning proved so valuable, especially with their summer school program and for community activities, that the new additions (gray on plan) which are now under way will be totally air conditioned.

The architects state that they "found that by locating utilities in the basement, tunnels and ceilings, the classrooms could be made remarkably free for educational use. With fire-resistant construction throughout, and an automatic sprinkler system to protect such vulnerable areas as the stage, storage spaces, and shops, the school was made fire-safe. Materials and finishes used in the construction were chosen to insure a long, maintenance-free life. Hence, brick and stone were used extensively for outside walls, concrete block for partitions, vinyl asbestos for corridors and other heavily travelled areas, and glass wherever it would serve a useful purpose. The combination heating and ventilation system, fueled with either oil or gas, is adaptable to air cooling of the center building thus assuring comfort throughout the year."







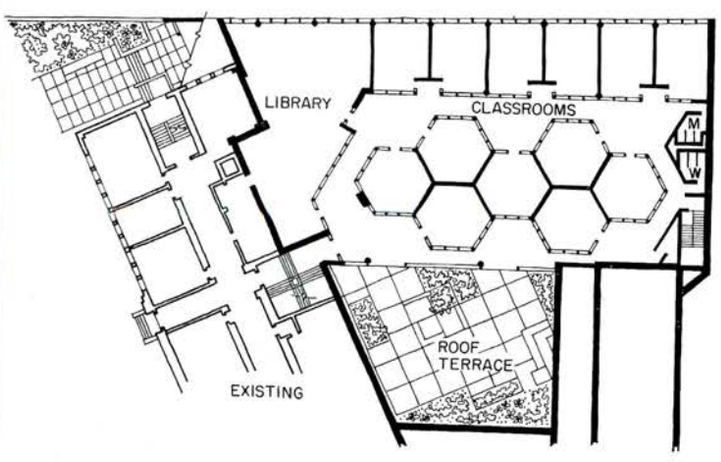
Bill Hedrich, Hedrich-Blessing

SCHOOL ADDITION TO A TEMPLE

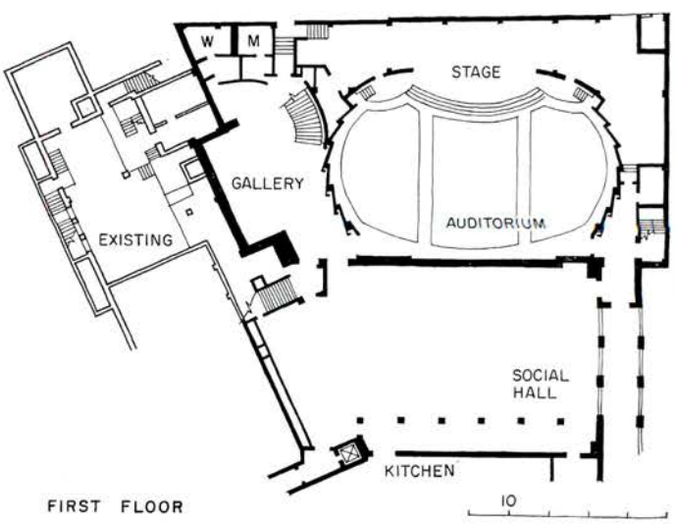
Education Addition to the Temple of Congregation Tigereth Israel, Cleveland, Ohio. Michael M. Kane and Perkins and Will, Architects. Dunlop and Johnson, Contractors. Howard Bennett & Associates, Mechanical Engineers

This educational building, recently added to The Temple, has some things in common with more usual types of schools and some other aspects peculiarly its own. According to rabbinical law, facilities for teaching are fully as important as the sanctuary in a Jewish temple. So this building was constructed to house complete facilities needed to bring the capacity of the educational space up to a total of 1600 young people. Of the new building, the architects say, "the three stories are molded into an ell of the existing structure. Traffic flow was designed to permit required interrelationships between the old and new parts. The auditorium was placed on the same level as the existing social hall to permit their use together. The same air conditioning unit, using hot or chilled water, serves both areas, and has a simple switch to control either or both areas."

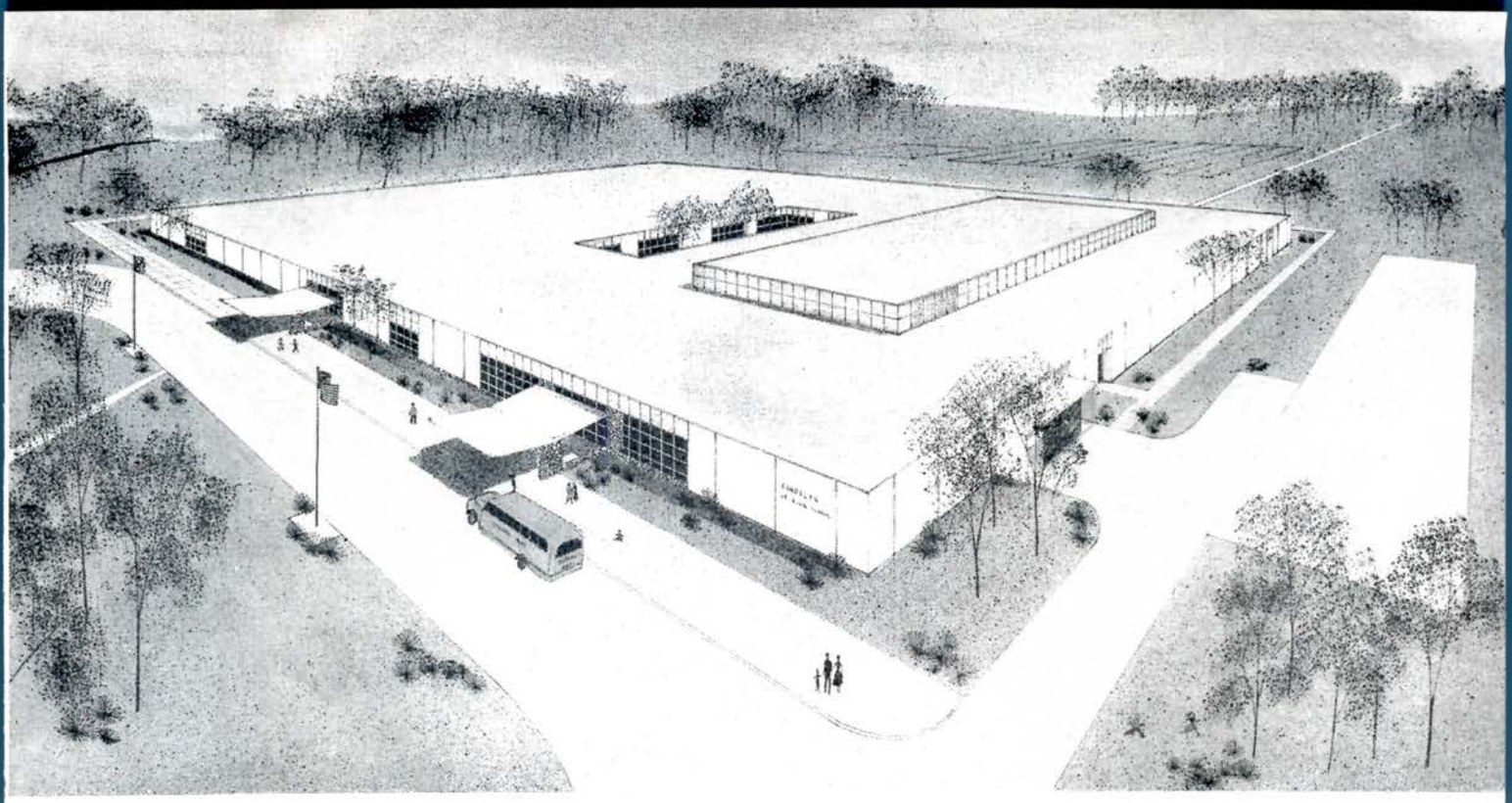
On the foyer level are located the nursery, a lounge, music room, arts and crafts room, storage and projection booth. On the third floor are seven hexagon-shaped interior classrooms and six additional classrooms along the north exterior wall; a library on this floor, because of its year-around use, has its own self contained packaged air conditioning unit.



THIRD FLOOR



FIRST FLOOR



A FLEXIBLE SCHEME FOR TWO SCHOOLS

Randolph Junior High School and Parkland Junior High School, Montgomery County, Maryland. Rhees Burket, Architect. Beall & LeMay, Structural Engineers. H. Walton Redmile & Associates, Mechanical and Electrical Engineers

The scheme shown here, which is designed for air conditioning and some of the latest educational ideas and equipment, will form the basis for two new schools for Montgomery County, Maryland. Now in the working drawing stage, each will have modifications to handle differences of the two sites.

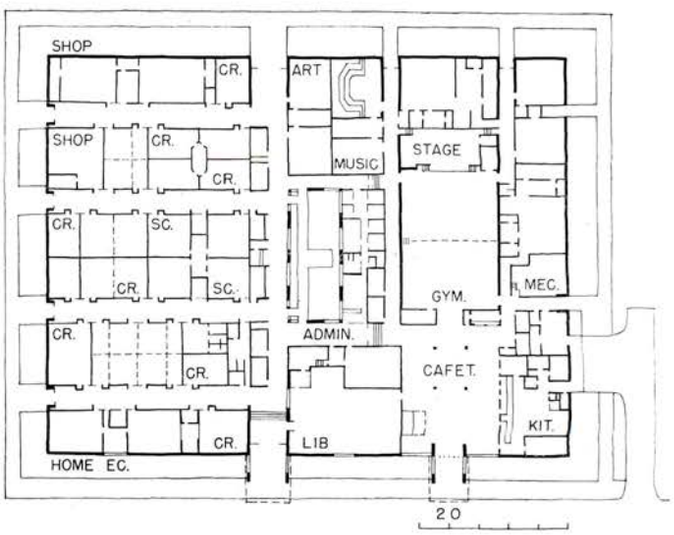
The plan provides for the flexibility and variable spaces needed for a team teaching program. The extensive use of presently available, and possibly future types of audio-visual aids was also taken into strong consideration. The architect states this as follows:

"We are interested in the following—

1. That the buildings should immediately provide for three kinds of instructional space not found or feasible in the conventional school buildings; these are, large-group instructional spaces, small-group discussion spaces, and individual study provision.
2. That these spaces be malleable and capable of being adjusted in size to suit educational needs to the end that they be used fully and economically.
3. That provision must be made in the building for the installation of all sorts of mechanical instructional aids as may be developed and found desirable.
4. That the practical immediate planning must provide for the traditional pattern of education as well, so that the transition may be made easily."

"Both we and other architects, who have worked on the problem of accommodating such use with flexible multi-use space, have found the compact plan with a number of interior rooms to result. To provide satisfactory comfort conditions, conditioned ventilation becomes essential."

The structure is of steel columns and bar joists, with exteriors of brick and porcelain enamel panels. Interior walls are painted masonry block and moveable partitions. The roof is lightweight insulating concrete. There is a central system for heating, ventilating and cooling, with oil-fired boilers and a water cooled centrifugal chiller. Air circulation uses two separately controlled air streams.



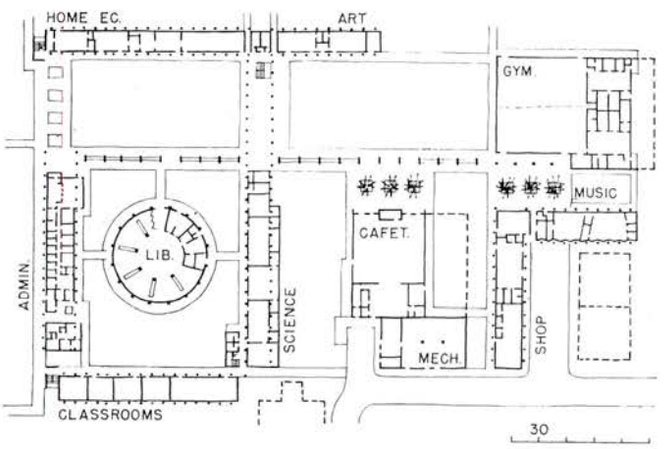
CENTRAL SYSTEM FOR A CAMPUS PLAN

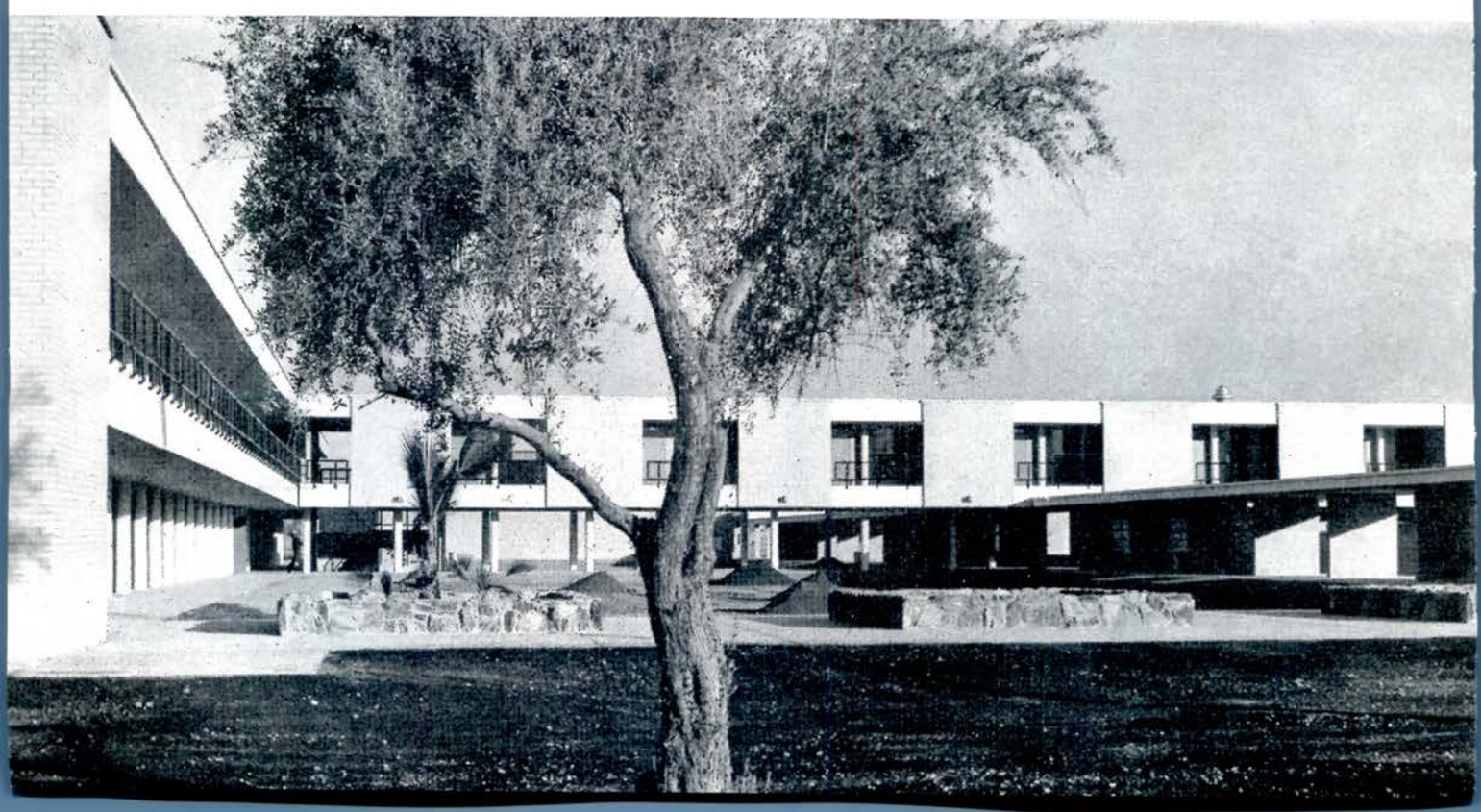
Central High School, Phoenix, Arizona. John Sing Tang and Associates, Architects. William Hamlyn and Dick Hamlyn (for addition), Structural Engineers. Lowry & Sorenson and Bake, Moody & Frederickson (for addition), Mechanical Engineers. David Demaree, Electrical Engineer.

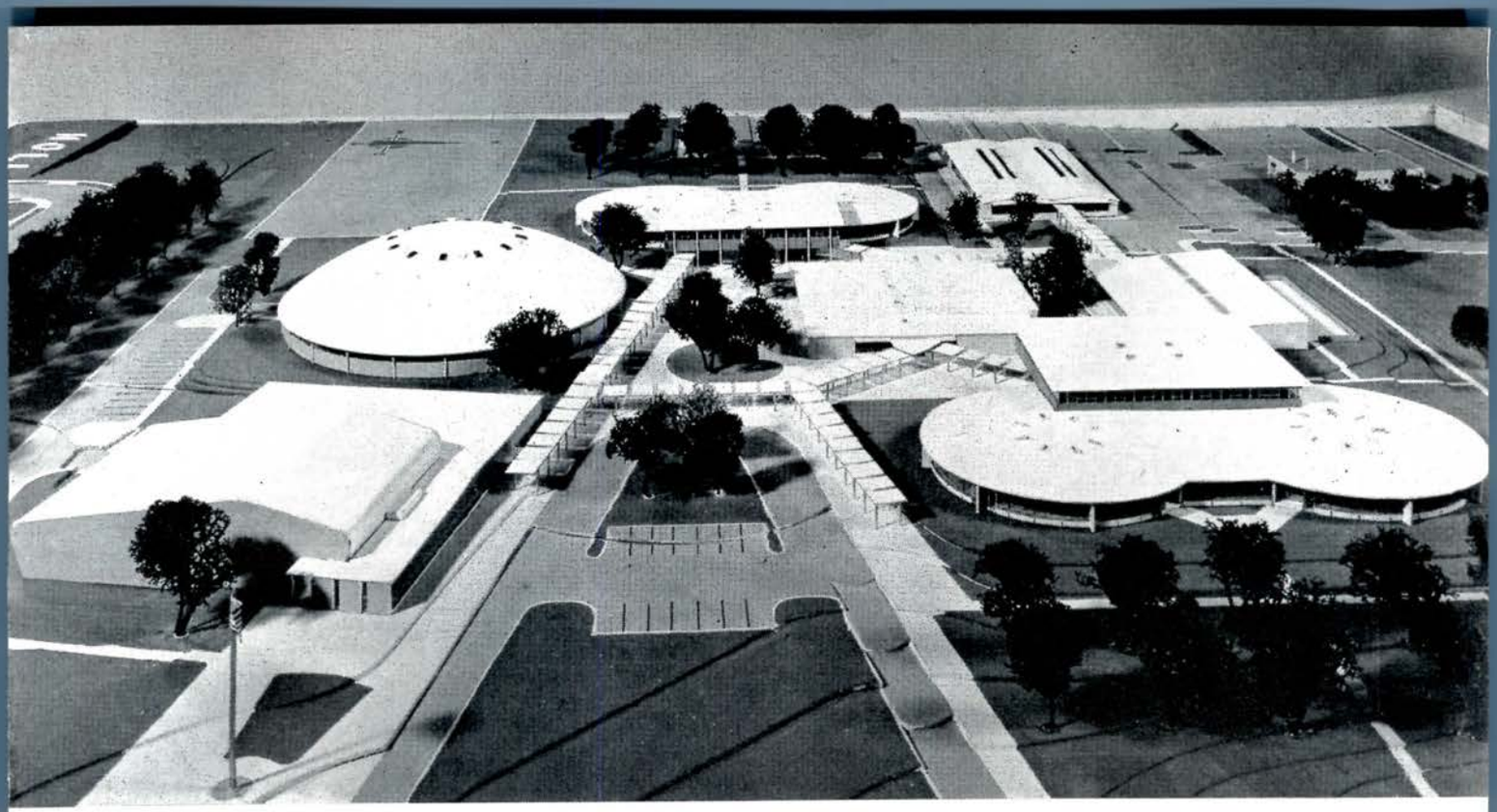


Air conditioning for the entire plant was stipulated in the program for this large high school. Other requirements included fireproof construction, provision for expansion, earthquake reinforcement—and a very tight budget. The first phase comprised 46 classrooms, cafeteria, gymnasium, bookstore, library, administration and health building, and boiler plant. All was to suit an eventual enrollment of 2,500 students, with the initial plant to serve about half that number, and provisions to expand the boiler plant equipment and cafeteria dining room. The first addition has been recently made.

This was achieved for a total cost of $2,020,292 (or $13.77 per sq ft) for the initial fully equipped school (excluding only land and site improvements). The air conditioning system is a central station type with chilled or hot water circulated through tunnels to air-handling units in each building. High-velocity, double-duct systems are in classroom units. Window area is somewhat minimized and ceilings are 9½ ft to reduce the air conditioning load.







Studio 4

PARTIAL CONDITIONING TO BE EXPANDED

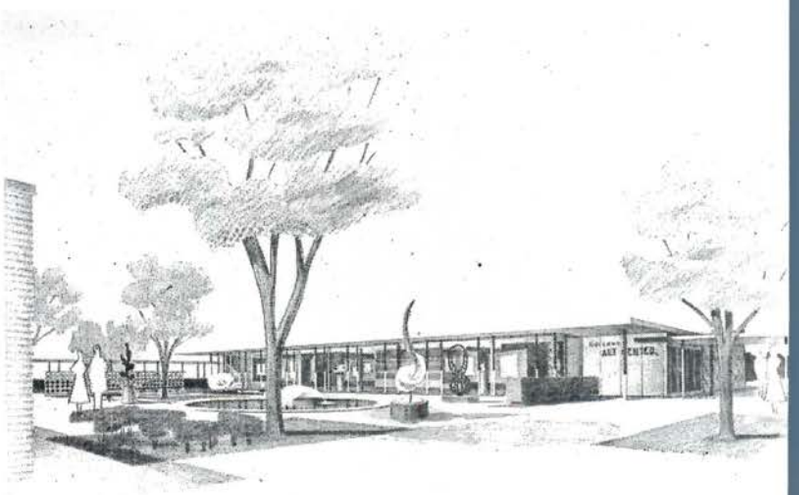
Holland Senior High School, Holland, Michigan. Suren Pilafian, Architect. Donald H. Sieg, Assisting Architect in Charge. Hyde and Bobbio, Inc., Mechanical and Electrical Engineers. Richard H. McClurg, Civil Engineers. Arthur Read, Building Consultant

The eight buildings comprising this high school are laid out as a campus "especially designed to provide both the personalized educational opportunities of a small school and the specialized facilities possible only in a large school". As can be noted in the plot plan, classrooms are grouped, and have instructional areas convertible into spaces of varying sizes. Each unit is for about 300 students, with total enrollment of about 1500.

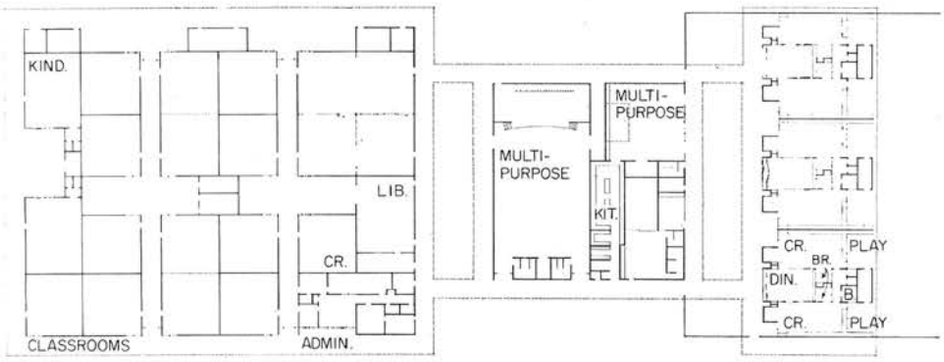
At the outset, the two buildings designed also for community use will be totally air conditioned. These include the auditorium and art center (sketch lower right). All buildings except the field house provide for air conditioning at a later date. The first installations have a central unit for each building, with separate cooling towers, compressor chiller and multi-zone fan unit.

Construction, now under way, is of steel and laminated wood frame, with exterior walls of insulated pre-cast concrete panels and porcelainized aluminum. Interiors are block curtain walls, moveable wood panel partitions and liquid tile. There is space for a closed-circuit TV studio in the auditorium, with conduit in each building. Estimated cost is $2,102,500, or $13.56 per sq ft.





SCHOOL AND MENTALLY RETARDED UNIT

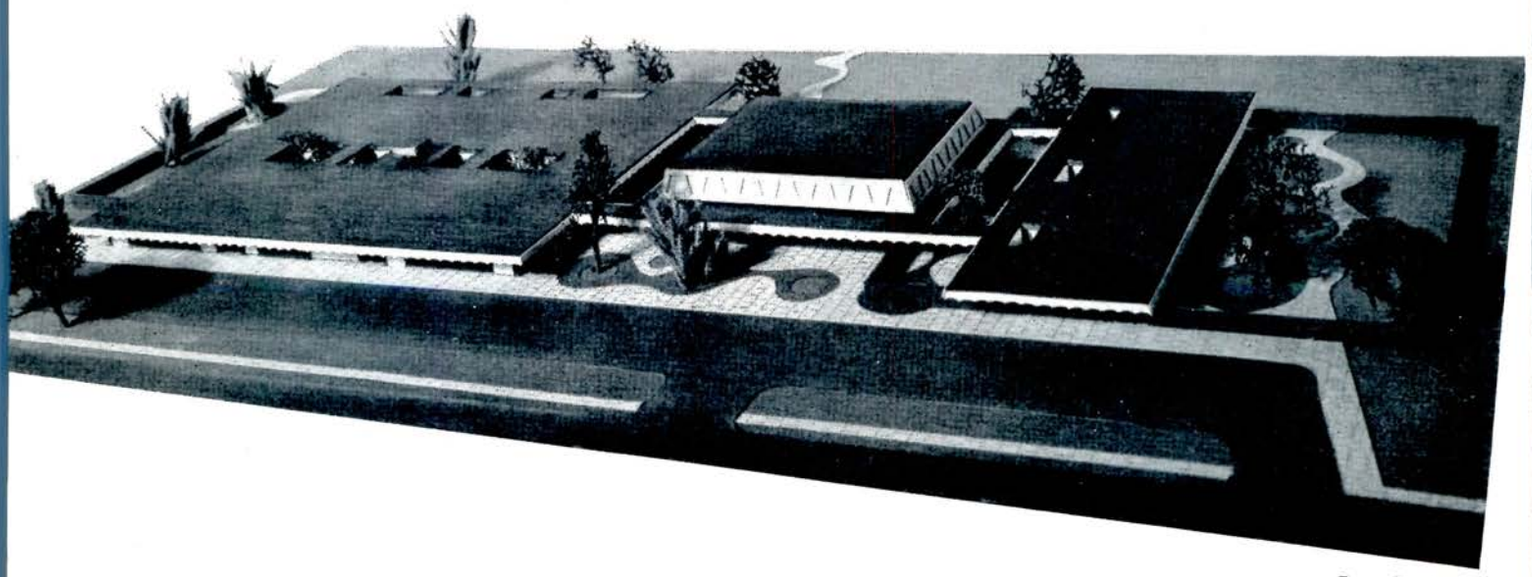


Origin L. Mowry School, Irvington, California. Falk and Booth, Architects and Engineers. Coddington Co., Mechanical and Electrical Engineer

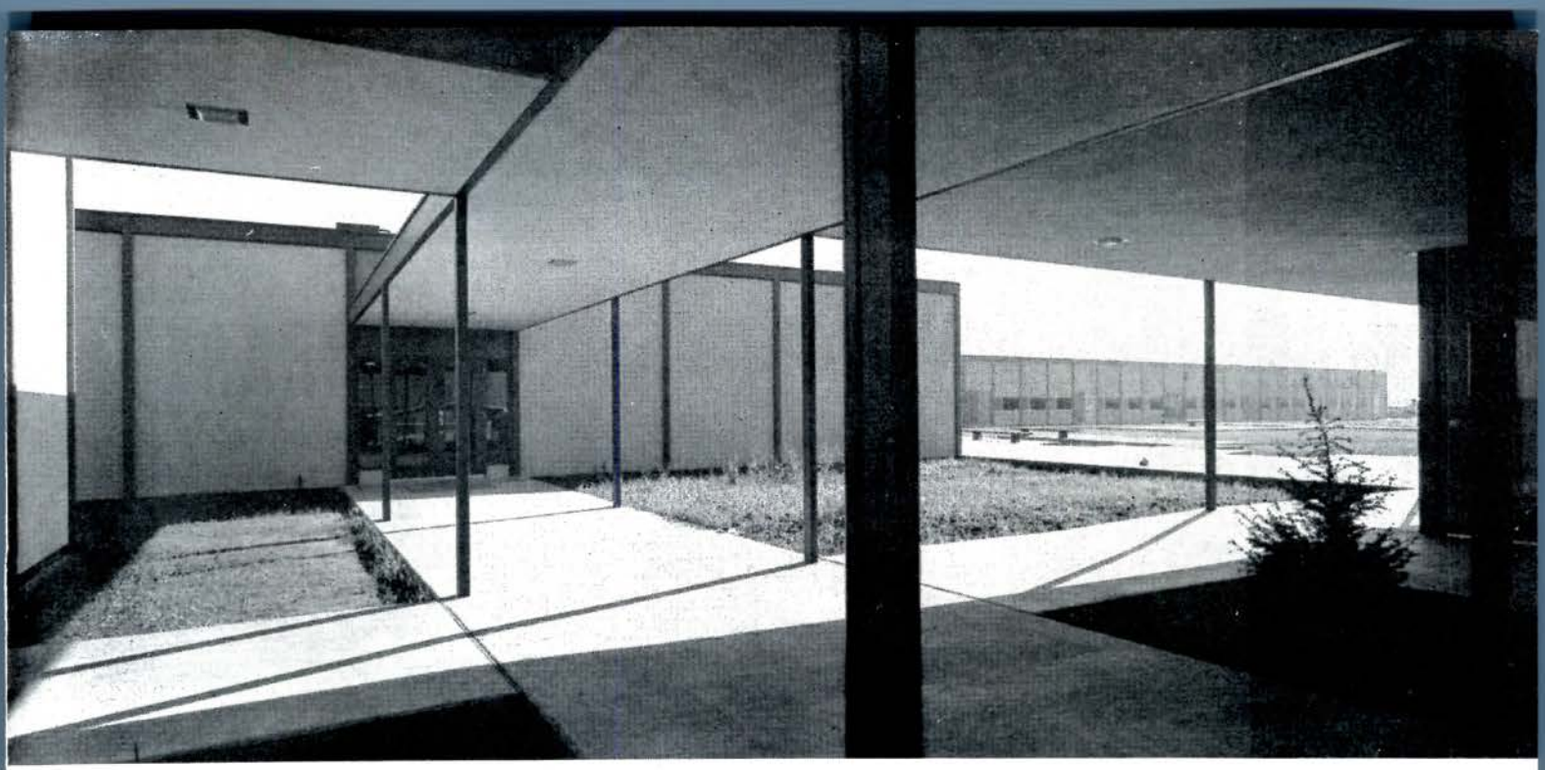
The overall scheme of this school, now on the boards, is designed to be built in two stages. The first increment will include 18 classrooms, a library, two kindergartens, an administration unit, and the first section of a severely mentally retarded unit which will include one double classroom and auxiliaries. To be added later will be a multi-use room and two further sections for the mentally retarded school.

The architects state, "this school is being designed and built under the California State Aid Program, so is quite limited as far as the amount of money that can be spent on it. Because of the hot climate in the area, it was desired by the District that the school be air conditioned. In order to incorporate this, it was necessary to make the school compact. At the same time, relationship with the outside from all the classroom areas was desired and each classroom has been planned with some view to the outside through windows. The library has its own enclosed courtyard and with kindergarten its own covered play area court. The classrooms are placed back to back and double-loaded between them. The air conditioning units are ceiling mounted and individually controlled. The kindergarten has a radiant floor panel slab as well as ceiling mounted air conditioning units.

"The construction is wood frame and the exterior is stucco. Fenestration consists of individually controlled aluminum jalousies mounted directly outside the glass in the lower panels and screen in the upper panels; this allows the upper jalousies to be opened for ventilation and the lower ones for light."

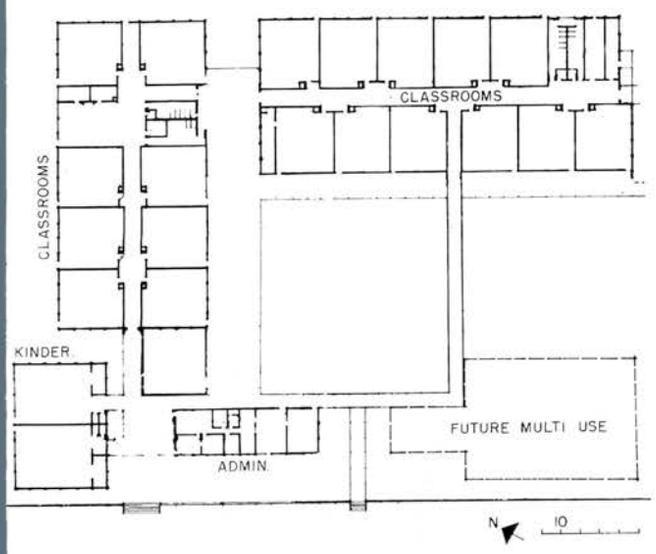


Roger Sturtevant



HEAT PUMPS FOR EACH CLASSROOM

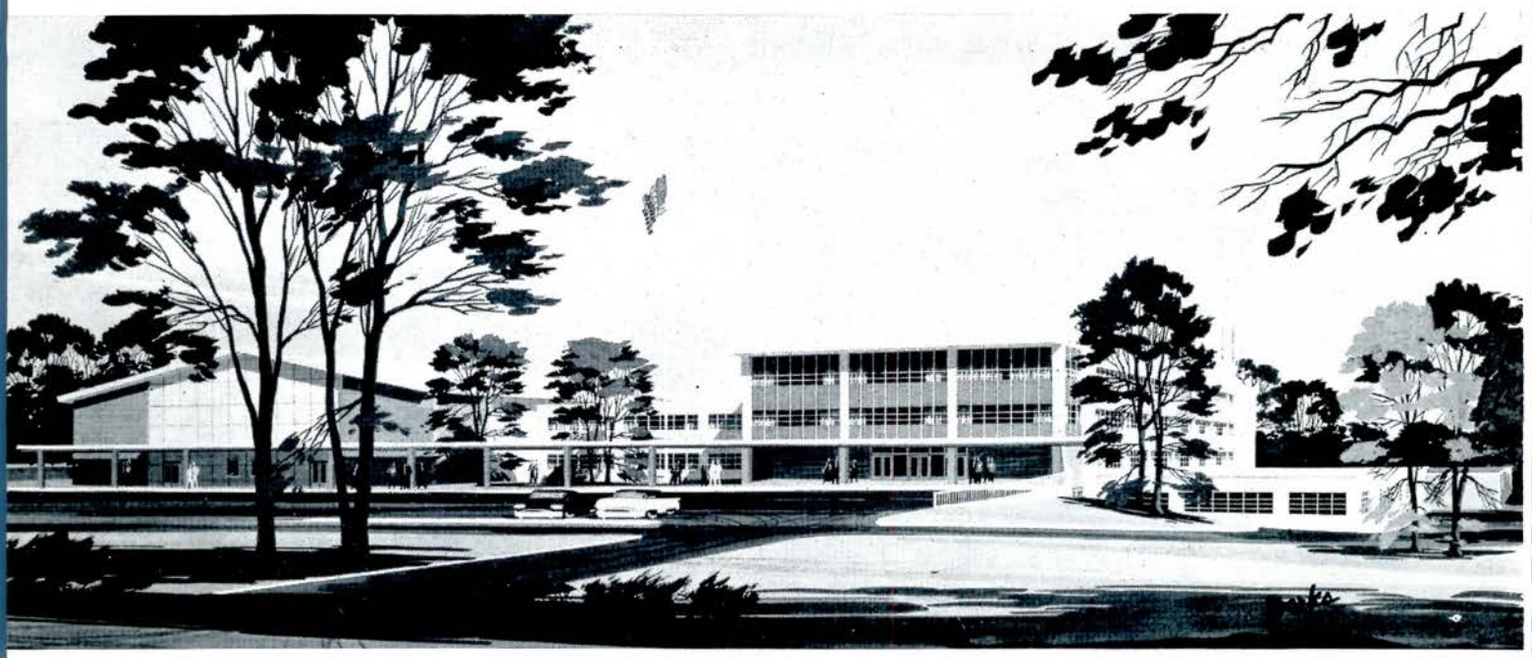
Alexander Rose School, Milpitas, California. Van Bourg/ Nakamura & Associates, Architects. Haluk Akol, Structural Engineer. Kasin, Guttman & Associates, Mechanical Engineers. Schwartz & Lindheim, Electrical Engineer. Tito Patri, Landscape Architect. O. G. Long, Contractor



This K-6 school for 750 pupils is expressly designed for expansion, and uses individual room packaged air-to-air heat pumps for air conditioning. A State Aid school, it is the second phase of a 3-phase program on the site. The third phase will add multi-use facilities. Included here are 18 classrooms, 2 kindergartens, 2 special instruction rooms, library, administration and health units, storage and utilities in four buildings clustered around a landscaped, outdoor assembly and small group activity courtyard. Cost of construction was $210,993, or $12.87 per sq ft.

The structure is pre-stressed, prefabricated concrete block exterior wall panels and steel columns, wood frame interior walls and roof. Floors are concrete slab on engineered fill. Luminous and acoustical plastic ceilings are used throughout. Wall coverings are plywood and plastic; floors are vinyl-asbestos (to be added in classrooms).





PLAN TO POPULARIZE SUMMER SCHOOL

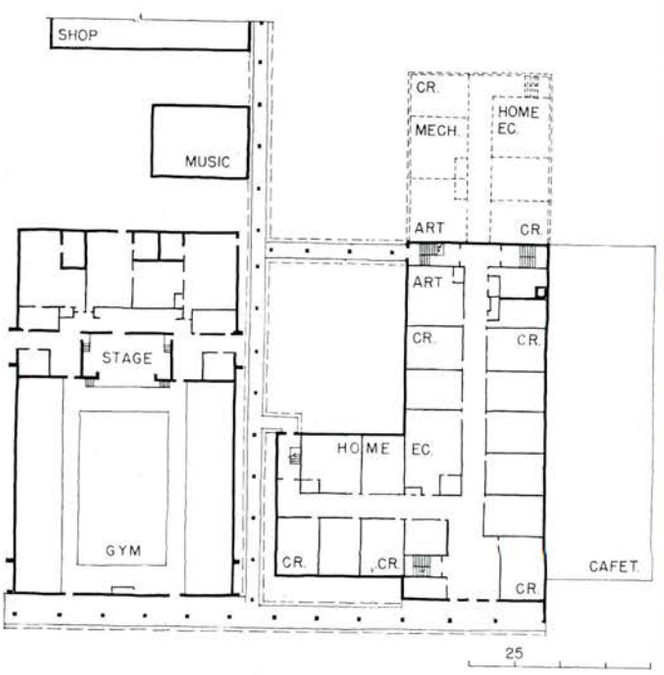
Westport Road High School, Jefferson County, Kentucky. Hartstern, Louis & Henry, Architects. E. R. Ronald & Associates, Consulting Engineers. Sullivan & Cozart, Contractors

A summer school plan, where tuition would be charged, prompted the design of this school with air conditioning. The summer program would be for students with learning difficulties, and for the "highly motivated" pupils. The school Superintendent, Richard Van Hoose, states that, "We feel that the comfort added by air conditioning would be a big inducement for students to attend summer school and a big factor in determining how much they get out of it."

According to the architects, design differences due to air conditioning are mainly three items: 1—the short sides of the classrooms are turned to window walls and corridors; 2—exterior windows are 4′-1″ in height; 3—the floor to floor dimension is kept to 10 ft, with a ceiling height of 9′-6″.

The school is now under construction, and will be built in two phases. Estimated cost of the first phase is $1,864,279. For 1344 pupils, the estimated cost per pupil is $1,387. A second phase of construction will raise the capacity to 2750 pupils.

The structural frame is of concrete columns and beams, with exterior walls of pebbled concrete. Interiors are masonry block and glazed tile. The roof is built-up tar and gravel. Floor coverings include asphalt, vinyl, quarry and ceramic tile. Air conditioning is a hot and chilled water system.



AIR CONDITIONING FOR SCHOOLS

by William B. Foxhall

The Need

"Thermal comfort is not a luxury. It is a requirement for the physically and mentally effective use of a classroom." . . . *California School Official*

"Summer school enrollment has more than doubled since moving into an air conditioned building." . . . *Texas Assistant Principal*

"We could reduce the cost of new construction by about forty per cent during the next ten years by going on the quarter plan to use our buildings twelve months out of the year." . . . *Illinois School Superintendent*

"Ever since Sputnik I . . . education has become more than a cultural symbol—it has become the keystone of our survival. Freedom-loving people can remain strong and free only if the quality of their education is the very best." . . . *Pennsylvania Manufacturer*

The Means

"Heat removal (by ventilation) is one blessing we bestow by law in every schoolroom in the land where codes apply. We do this mainly to allow active students to work in thermal balance with their surroundings. It is the widespread provision for ventilation (already a cooling device) that makes school cooling with refrigeration relatively easy." . . . *New York Engineer*

"There are about as many systems and variations of systems for air conditioning as there are for heating. Systems using unit ventilators or central air supply; combined or separate heating and cooling arrangements; conventional or radiant floors or ceilings; all can be assessed and rated for a particular job by chart analysis." . . . *Connecticut Consultant*

"There is no one absolute best or cheapest system for the ideal thermal environment in schools. Of primary importance in selection of a system for a particular school is the site. Land cost, size, latitude, geology, orientation, neighborhood and microclimatology are factors to be considered." . . . *New York Architect*

The Cost

"Well-known demonstrations that compact building design and other economies can bring the air conditioned school well within accustomed budget figures have been amply confirmed without resorting to windowless boxes." . . . *New York Architect*

"Keynote of economy at McPherson school is handling balanced arena and classroom loads on an either-or basis with a single machine." . . . *Kansas Engineer*

The Future

Regardless of the technical feasibility and educational value of air conditioning, it will be met by political resistance in many communities. But changing demands for adaptable space and the design freedom which air conditioning allows have already resulted in ingenious plans for the future. Oak Grove and other studies point the way.

THE NEED

"Proper conditioning of school buildings must involve the balanced integration of at least five basic building design factors: spatial, thermal, visual, sonic, and esthetic. Upon the successful integration of these five factors depend the educational usefulness of the plant and the efficiency and economy of its operation." So said Charles D. Gibson, chief of the Bureau of School Planning, California State Department of Education, in a recent policy statement regarding the thermal environment as a factor in school building design.

"The thermal factor in school design . . . in some ways is more critical than any of the others. . . . From the moment of birth to the moment of death one is in a constant state of adjustment to his thermal environment.

"Thermal comfort is not a luxury. It is a physical and mental requirement for the effective use of a classroom. Schoolroom discomfort means inattention, restlessness, poor behavior habits and a minimum of ability to maintain sustained attention to any mental task.

"The complete thermal conditioning of school buildings is becoming increasingly important due to their greater year-round use. . . .

"Often, by the addition of . . . refrigeration air conditioning, the cost of the total building can be reduced. Savings effected in the amount of window area, a more compact building mass, etc., can more than offset the additional cost of the best air-conditioning system known."

Dr. Gibson's conclusion: "If school district officials determine that air conditioning should have a priority over various other features of a school plan, and if their architect can provide this air conditioning within the current unit cost schedule approved for the allocation of monies from the state school building loan fund, the California State Department of Education will encourage and approve the installation of air conditioning in state-aided schools as well as in non-state-aided schools."

What Teachers Think

A school teacher and a school superintendent presented the case for air conditioning public schools at a seminar on improving the learning environment sponsored by Carrier Corporation in June 1960. Very briefly, here are some of their findings in two surveys:

Eva G. McDonald, teacher in the public school system at Alton, Ill., became interested in the effect of air conditioning on the classroom environment when the Eunice Smith School, completely air conditioned, was finished in 1957. She had the experience of changing from an uncontrolled to a pleasant climate and back to an uncontrolled one again. In some respects the second move provided even sharper contrast than the first.

To check her own reactions with those of others, she interviewed some 150 teachers, administrators, supervisors, board members and interested city personnel connected with air conditioned schools in San Angelo, Texas, and Hobbs, N. M. and Roswell, N. M., as well as in Alton.

She asked the teachers to fill out a questionnaire, then add information which was pertinent. Table 1 is a summary of answers.

Miss McDonald's own conclusions were confirmed by the responses of other teachers: "If we are less tired and more agreeable it is obvious that we can do better work." More than 95 per cent of the teachers testify to this reaction.

"When the temperature is high and the children are uncomfortable, especially in elementary grades where the student's attention span is shorter, it is difficult to introduce new material. We usually wait for cooler temperature or try to finish all new material before hot weather starts." But with air conditioning, 92 per cent of the teachers feel they can start a new unit of work at any time.

Many teachers are reluctant to state the effect of a good classroom environment on improving the grades achieved by students because of the difficulty of comparison with those in non-air-conditioned buildings. Yet as shown in Table 1, most are convinced that students do better work in an air conditioned room.

Not only is schoolwork itself improved, but in cities where summer school is taught in air conditioned buildings, the number volunteering has increased substantially. In San Angelo, Mr. George S. Faulkner, assistant principal in charge of summer school, reports that enrollment has more than doubled since moving into an air conditioned building. In Alton, Ill., the enrollment in 1956 was 189. In 1958 with an air conditioned building, it jumped to 306, and in 1959 to 367.

These are the major benefits to students and teachers. There are some fringe benefits such as elimination of flying insects, although, says Miss McDonald, you might not

TABLE 1: EFFECTS OF SCHOOL AIR CONDITIONING ON TEACHERS AND STUDENTS

Effect on:	Per Cent Reporting Effect as: None	Little	Moderate	Much
TEACHER ATTITUDES AND WORK PATTERNS				
Less fatigue	0	2	9	88
More agreeable	1	2	22	73
More time for teaching	4	10	15	66
Less restricted in introducing new material	3	5	8	84
Less need to rearrange classroom schedule	4	3	14	73
STUDENT PERFORMANCE				
Improved grades	6	16	45	28
Greater facility in learning new subjects and skills	5	11	34	50
Willingness to do more research	5	6	14	38
Greater ability to concentrate	3	2	8	85
More effective use of study time	3	3	22	59
More effective use of skills already learned	5	18	29	30
STUDENT ATTITUDES AND BEHAVIOR				
Less tension	1	4	28	66
Greater creativeness	7	15	36	27
Greater willingness to accept suggestions	8	11	32	36
More neatness in preparation of papers	4	17	26	37
Less fatigue	0	2	11	86
Less drowsiness	0	4	6	90

consider them fringe if you had ever seen a room full of students in an uproar over five wasps.

What Superintendents Think

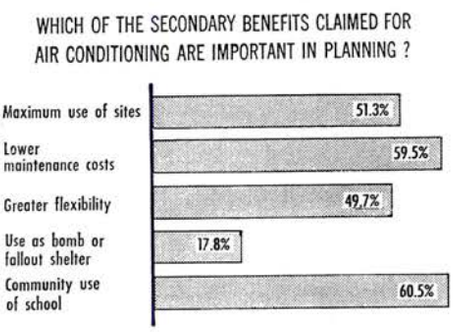
Paul A. Miller, Superintendent of Schools, Syracuse, N. Y., a city with 216,000 population and 30,000 public school pupils reported the cost studies (AR 11/60, p. 190) which resulted in construction of the air conditioned Clary school in Syracuse. To find out what others thought, he asked school superintendents across the country to give detailed opinions on the subject of facilities and costs by means of a mail questionnaire. The fact that more than 300 responded during their busy season indicates their deep interest.

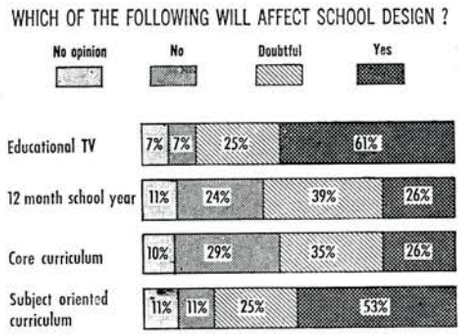
More than half of the superintendents who replied list maximum use of sites among important considerations. Note also the importance of reducing maintenance costs and community use of schools revealed in the charts at right.

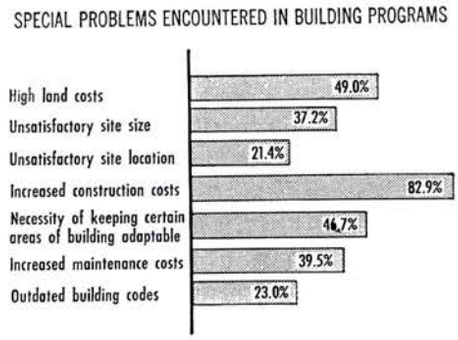
The School Administrator's Role

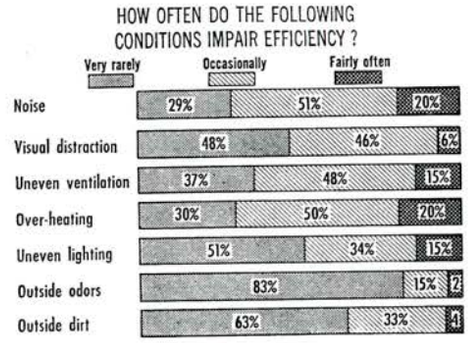
A group discussion at the 1960 conference of the American Association of School Administrators on what school administrators can and should do about school air conditioning was planned in cooperation with School Facilities Council.

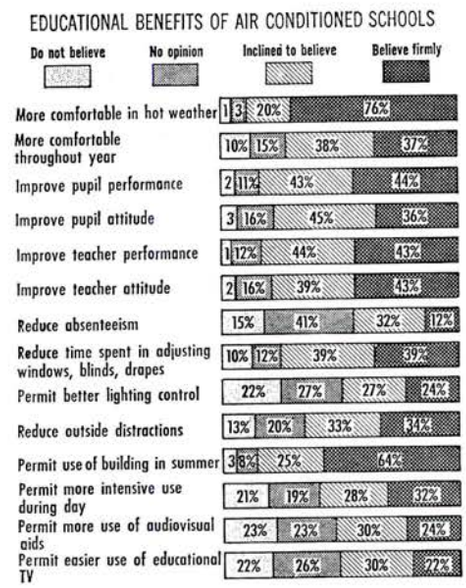
Dean Smiley, director of the Educational Council for Foreign Medical Graduates, Evanston, Ill., speaking to the group on the effect of temperature on student health and efficiency said: The human body is constantly producing heat. In a hot environment, blood vessels of the skin dilate, lowering blood pressure and/or increasing heart rate. Above about 81F, a clothed person visibly sweats, becomes inattentive and restless. Teachers will teach better and pupils will learn better if they can throw off bodily heat at a normal rate—neither too fast nor too slow. Whether the very considerable health and educational values to the teacher and to the pupils justify the expense of air conditioning will depend upon many factors including: (a) the extent of utilization of the classroom throughout the year; (b) the number of days in the year on which cooling is normally required; (c) local conditions affecting cost of installation and operation; (d) the financial status of the local school system.

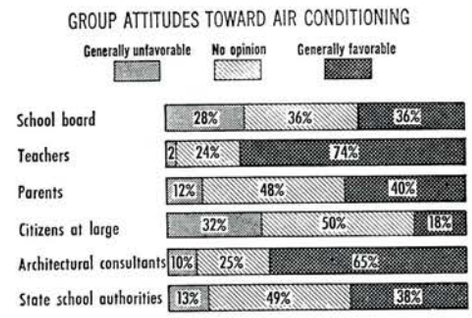












Charts show response of a survey of 300 school superintendents by Paul Miller of Syracuse. Survey was reported at a seminar on improving the learning environment sponsored by Carrier Corp. Note that 70 per cent believe overheating impairs efficiency occasionally or often

Dr. James B. Johnson, superintendent, school district 11, Alton, Ill., told the group of developments leading to the construction of Eunice Smith school, with complete air conditioning; which was privately endowed by Mrs. Pascal Hatch, sister of Eunice Smith, daughter of one of the founders of the Owens-Illinois Glass Company, for whom this school was named.

Dr. Johnson pointed out that the evaluation of air conditioning as a factor in school environment must be measured by the judgment of the teachers, the staff, the counselors, and the administrators. These judgments are based on many years of experience and seem valid although not statistically conclusive:

(1) Attendance at the Eunice Smith school is "a little bit better" than in the rest of the school system during warm months.

(2) Achievement at the Eunice Smith school compares favorably with that in the rest of the school district.

Some factual conclusions are:

(1) The teachers are happier.

(2) Students and teachers do better work in warm months.

About 90 per cent of the students enrolled in summer school, Dr. Johnson explained, are there because they are following an enriched academic or vocational program. "As a result of summer school, we have been able to offer two years of chemistry, two years of physics, a fifth year of high school mathematics and many extra courses in history and English.

THE NEED
continued

"Until we air conditioned the Eunice Smith school, about 225 to 250 students enrolled in the summer. More than 450 students attended the summer school in 1959 at the high school level. I cannot prove what their achievement would have been in a non-air-conditioned building, but during the six weeks students were enrolled in a rapid reading program they averaged one-half year's advancement on the reading chart."

Potential 40% Saving

These programs, however, Dr. Johnson said, do not point to the real advantage of air conditioning the schools of America. "We are short of classrooms. We are spending millions of dollars each year to build more classrooms. We use them 75 per cent of the time. By tradition we have accepted the theory that under normal procedures we will have three months vacation during the summer. This plan was established when parents needed their children at home to work on farms. Today that need has passed.

"We could easily divide our pupils into four groups and alternate the groups in such a way that three would be in session in the fall; three in the winter; three in the spring; and three in the summer. One group would be assigned to vacation while three groups would be in school. This would give each child nine months of school each year and make it possible to use our buildings twelve months out of the year. All we need to do to accomplish this feat is to air condition the building and to sell the idea to the public, business and industry.

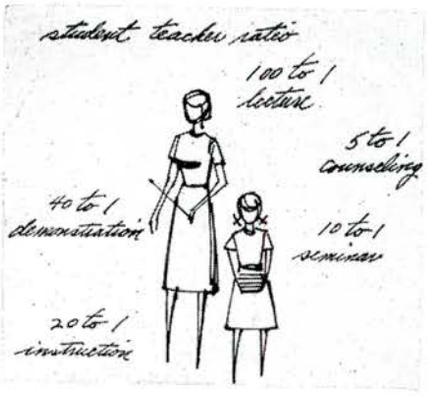
"We could reduce the cost of new construction by about 40 per cent during the next ten years by going on the quarter plan. The cost of air conditioning would be very small as compared with the construction of new buildings."

A dramatic change is taking place in education. Ever since Sputnik I brought to the world the reality of the space age, education has become more than a cultural symbol—it has become the keystone of our survival.

Cold War and Revolution

There has been a growing awareness that freedom-loving people can remain strong and free only if the quality of their education is the very best —and nothing less. There has been a consequent demand for a re-evaluation of our educational system and its processes. So says the non-commercial Publication 106 of John J. Nesbitt, Inc. on the changing patterns of education and the contribution of air conditioning.

Almost every present-day practice in education is now being reviewed in a new light; for example, the concept of the number of pupils per teacher. Although many states have regulations that base classroom design on the concept of 25 to 30 pupils per classroom, educators have found that the *task* really determines the optimum number of students. For some tasks the best student-teacher ratio may be as low as one to one—on the other extreme, the correct ratio may be as high as 350 to 1. When the historical student-teacher ratio is discarded, it becomes obvious that use will dictate the size and shape of future classrooms. The real need is for flexibility of size and shape to best accommodate the various tasks. (This and the intermittent blackout requirements of new audio-visual techniques impose a demand upon school architecture, in the fulfillment of which air conditioning may provide a ready—indeed a necessary—tool.)



Now that child labor laws have reduced the opportunity for students to work during the summer months, a period of enforced idleness may often become a potential breeding ground for delinquency.

At a time when the specialization and complexity of modern technology impose a requirement for more learning, it becomes even more difficult to justify the idleness of students during the summer months.

Support for more summer use also arises from the economic needs of many teachers who may have a strong incentive to seek employment in industry where they can work and be paid for twelve months. A solution to the present teacher shortage may be found in the better remuneration that is made possible by summer sessions in one form or another.

Need for Winter Cooling

Heat removal is not exclusively a summer problem in schools. The contributions of heat and humidity by pupils (400 to 600 Btu per hr each), lights and equipment (3400 Btu per kilowatt), and sun (up to 250 Btu per hr per sq ft of glass in December) are such that classrooms may require cooling even when outdoor temperatures are below freezing. Outdoor air properly introduced into the classroom is cold enough to provide the needed cooling only during the coldest portion of the nine month term. The proper temperature for learning will generally fall in the range of 70 to 75 F. Whenever the outdoor temperature is above 60 F, the thermal environment most conductive to learning cannot be maintained by the introduction of outdoor air into the classroom.

Table 2 shows that there is a significant percentage of time during the normal nine month term when learning is seriously hampered by an improper environment. Air conditioning provides the key to maximum learning productivity regardless of the outdoor temperature.

TABLE 2. PER CENT OF 9-MONTH SCHOOL YEAR WHEN OUTDOOR TEMPERATURE EXCEEDS 60 DEGREES F

City	%	City	%	City	%
Atlanta	47.2	Denver	36.1	New York	36.1
Baltimore	38.0	Indianapolis	36.1	Pittsburgh	36.1
Boston	25.0	Kansas City	47.2	St. Louis	45.0
Chicago	30.0	Los Angeles	88.0	San Francisco	69.4
Cleveland	36.1	Miami	97.0	Syracuse	25.0
Dallas	58.3	Minneapolis	25.0	Washington	40.0

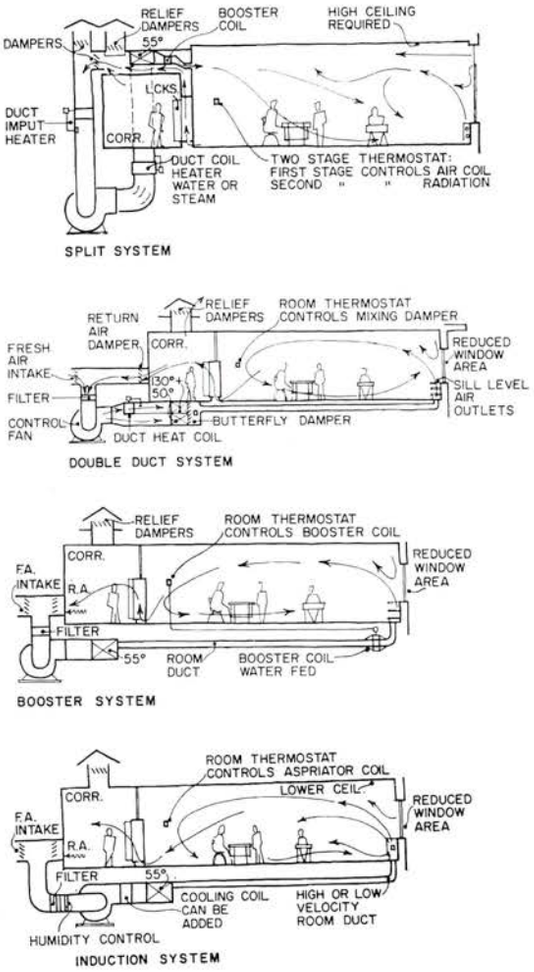
THE MEANS

Heat removal is the one criterion universally recognized by codes and practice everywhere as the essential characteristic of systems for school environment control. A room full of active, young bodies needs "fresh" air; and by well-meaning fiat, that is the single blessing we bestow by law in every schoolroom in the land where codes apply. Whether we know it or not, we do this mainly to remove heat and allow those active students to work in thermal balance with their surroundings.

All heating systems, then, are actually devices to control the cooling rate of food-burning bodies held at 98.6 F in balance with some lower temperature. When this balance is held without thermal stress—no sweating or shivering—we have removed at least one excuse for the inefficient performance of scholastic tasks. It is the widespread provision for ventilation (already a cooling device) that makes school cooling with refrigeration relatively easy.

There are about as many systems and variations of systems for air conditioning as there are for heating. The chart below was drawn up by James S. Minges, consulting engineer of West Hartford, Conn., as column headings for a rating and selection guide for school heating systems. The items listed at left below the headings would cover about ten factors of comfort, cost, and flexibility; and the column blanks provide space for a scoring system. It should be emphasized that systems cannot be rated on a basis of absolute merit but only as their characteristics are suitable for requirements of a particular job. Headings are reproduced by permission from the March, 1960, issue of *Air Conditioning, Heating and Ventilating*. With some adaptation, they could be used for year-'round systems. Here they serve to show variety and adaptability of systems as follows:

Unit ventilators. These are devices which provide for direct, through-wall admission of outside air in variable amounts. They are integral cabinets containing thermostatically controlled fans, heating-cooling coils, and dampers which vary the proportion of outside air in a constant total circulation. The minimum amount of outside air may be set by code or by engineering decision. A common recommendation is a minimum of 25 per cent of a total circulation of 30 cfm per pupil. This, of course, applies to other systems as well as to unit ventilators. For slab on ground construction, the unit ventilator is especially (but by no means exclusively) adaptable. Units are manufactured in a variety of decorative cabinets which are modular with bookcase and storage units for under-window installation. They are also available for overhead or other locations. School custodians should be cautioned that regular maintenance will avoid clogged filters, noisy fans, or inoperable dampers. Where heating-cooling coils are centrally supplied with chilled *or* hot water without modulation, zoning and control for rapid diurnal changeover may be complex or impractical. In most climates, however, and where glass is not excessive, changeover occurs during a seasonal interim measured in days, when outside air can reasonably handle the cooling load. When chilled water is supplied to cooling coils, provision must be made to dispose of condensation. This and replacing undersize coils will add to the cost of converting older systems designed for heating only.



Schematic sketches of four variations of central air systems for school heating and cooling

Central air systems. Systems B, C, and E, below, and the four more detailed schematics above represent variations of systems in which both outside and recirculated air are handled through ductwork serving centrally located fans. Edward H. Wells, chief engineer of Sargent-Webster-Crenshaw & Folley, architects and engineers of Syracuse, N. Y., who prepared the four schematics, describes the variations as follows: (1) Split System: Central fan plus window radiation. (B, below.) This system has been in use in school buildings for many years. In many cases the state code regulations re-

TYPE	A UNIT VENTILATOR SEPARATE EXHAUST			B CENTRAL AIR - CORRIDOR WALL HIGH AIR SUPPLY			C CENTRAL AIR - EXTERIOR WALL SILL AIR SUPPLY			D CONVECTOR - SEPARATE EXHAUST			E RADIANT AIR - SPLIT			F RADIANT CEILING - SEPARATE EXHAUST			G RADIANT FLOOR - SEPARATE EXHAUST		
DIAGRAM																					
HEATING	UNIT VENTILATOR - EACH SPACE			CENTRAL SYSTEM - COIL OR FURNACE			CENTRAL SYSTEM - COIL OR FURNACE			CONVECTOR - EACH SPACE			CENTRAL SYSTEM - COIL OR FURNACE			PIPING OR WIRING IN CEILING & WALL CONV.			HOT WATER PIPING IN FL. SLAB & WALL CONV.		
HEATING LOCATION IN CLASSROOM	EXTERIOR WALL - CONTINUOUS SILL AIR SUPPLY			CORRIDOR WALL - HIGH AIR SUPPLY			EXTERIOR WALL - CONTINUOUS LOW SILL AIR SUPPLY			EXTERIOR WALL - CONTINUOUS			EXTERIOR WALL - CONTINUOUS AIR SUPPLY & FLOOR SLAB			CEILING & CONTINUOUS CONVECTORS EXTERIOR WALL			FLOOR SLAB & CONTINUOUS CONVECTORS EXTERIOR WALL		
VENTILATING	SEPARATE EXHAUST			CENTRAL FAN-COMBINED HEATING & VENTILATING			CENTRAL FAN-COMBINED HEATING & VENTILATING			SEPARATE EXHAUST			CENTRAL FAN-COMBINED HEATING & VENTILATING			SEPARATE EXHAUST			SEPARATE EXHAUST		
EXHAUST OR RETURN LOCATION IN CLASSROOM	CORRIDOR WALL - HIGH (EXHAUST)			EXTERIOR WALL - LOW (RETURN)			CORRIDOR WALL - HIGH OR LOW (RETURN)			CORRIDOR WALL HIGH (EXHAUST)			CORRIDOR WALL HIGH OR LOW (RETURN)			CORRIDOR WALL HIGH (EXHAUST)			CORRIDOR WALL HIGH (EXHAUST)		
SYSTEM NUMBER	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-2	C-3	D-1	D-2	D-3	E-1	E-2	E-3	F-1	F-2	F-3	G-1	G-2	G-3
ITEM HEAT SOURCE	STEAM BOILER	H.W. BOILER	ELEC.	STEAM BOILER	H.W. BOILER	D.F. FURN.	STEAM BOILER	H.W. BOILER	D.F. FURN.	STEAM BOILER	H.W. BOILER	ELEC.	STEAM BOILER	H.W. BOILER	D.F. FURN.	STEAM BOILER	H.W. BOILER	ELEC.	STEAM BOILER	H.W. BOILER	ELEC.
1																					
2																					

THE MEANS
continued

quired 11-ft 6-in. ceilings and the air could be introduced from high on the corridor side of the classroom.

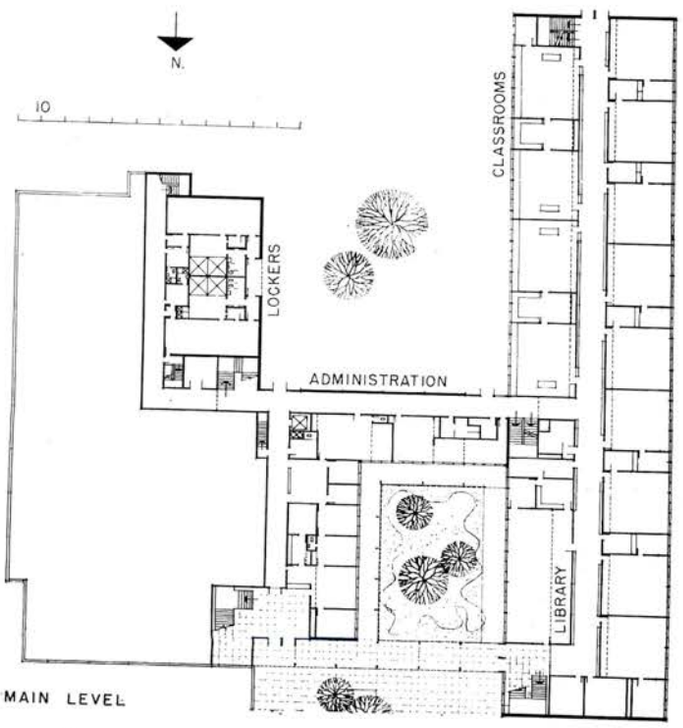
(2) Double Duct System: Central fan all-air system. (C, in chart.) This system introduces all the air at the exterior wall to prevent cold walls and distributes through the classroom as indicated. Return and outside air, in proportions varied with outside temperature, are supplied to a central fan. Supply air is delivered at two temperatures—50 F and 130 F (plus or minus a few degrees). Room thermostats control mixing dampers on hot and cold ducts to supply the required room temperature. In most cases the heating coil in the system was supplied from a steam system. (3) Hot Water Reheat Booster System: This system supplies air to the classroom in the same manner as (2) but has proved to be a more economical and controllable system because of the use of a booster coil for each classroom. This coil, fed by hot water, is the basic reason for the economy of the system. Air at 55 F in the supply duct is obtained by mixing return and outside air in quantities controlled by the outside temperature.

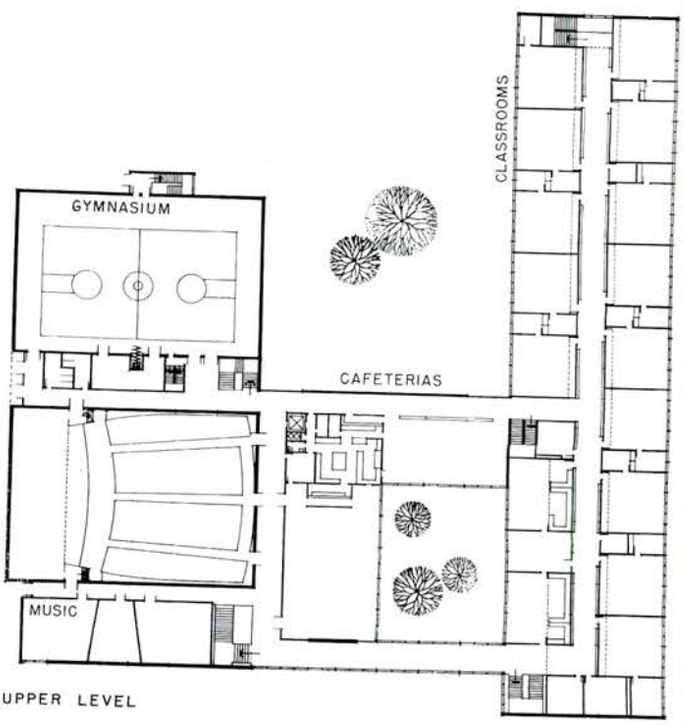
(4) Induction System: This system, says Mr. Wells, "is a variation of the h.w. reheat system and is the system we would use to air condition classrooms. Development of the system logically followed the other air systems previously used. Induction units mix primary air with classroom air in a ratio of one to one, making it possible to accomplish air conditioning with approximately the same size system and at the same cost (other than refrigeration) as previous all-air systems."

Example

The well-known demonstration by Pederson, Huber, Hares and Glavin showing that the compact design of the F. Ware Clary Junior High School in Syracuse could include central refrigerated air conditioning within the budget figures of a conventional extended design without air conditioning (AR 11/60 p. 190) has been amply confirmed in another new Syracuse school. The Hurlbut W. Smith Junior High School, illus-







The Hurlbut W. Smith Junior High School in Syracuse, N. Y., was designed by architects Sargent-Webster-Crenshaw & Folley with an induction system for central air supply and reheat, easily convertible to full air conditioning by addition of refrigeration and coils in main supply ducts. Moderate window area with gray glass and white marble facing on exposed walls cut solar loads. Designed for 800 students, this building has 39 classrooms including science, art, and home economics rooms, plus laboratories, music rooms and shops. Each classroom has a separate workroom space. Two cafeterias can serve 400 per shift. Gym has folding partition. Auditorium seats 830. Building is steel frame with nailable steel studs except for lower level of west wing which is concrete. Exterior is brick and stone. Details at right show, top to bottom: Classroom ducting, typical unit connections, fan-coil units, and central fan room

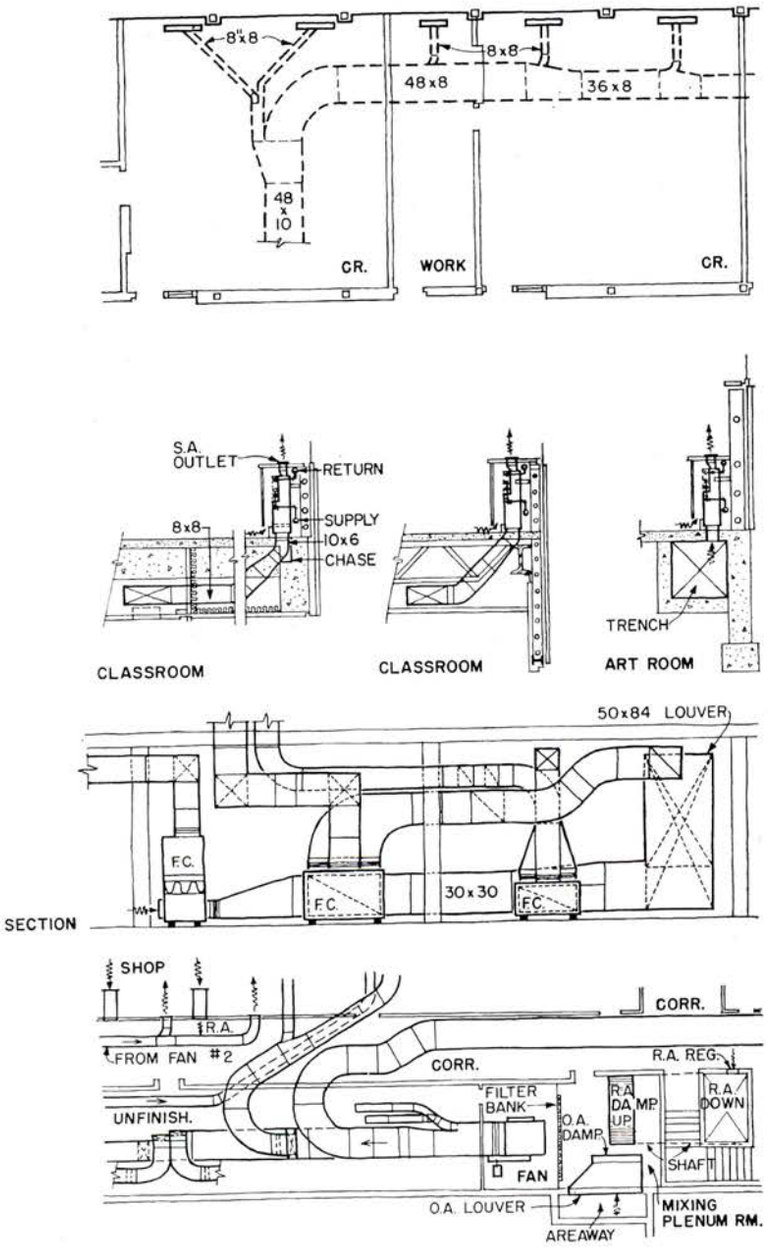
trated below, is a tri-level arrangement of conventional exterior classrooms with moderate window area. Architects Sargent-Webster-Crenshaw & Folley took advantage of site contours to create inexpensive ground-level utility space under the west classroom wing. Here the fans, plenums and distribution ductwork of a central air induction system are installed with minimum demands upon the teaching space above. Here, too, the simple addition of compressors and coils would readily convert the entire system to air conditioning.

Cost of the Clary school, with air conditioning, was $15.90 per square foot. Cost of the Smith school would be $14.15 per sq ft *including* an estimated 65 cents per sq ft for the addition of refrigeration equipment to completely air condition the school.

The Smith central air system is designed to deliver mixed outside and return air at 55 F to room units which aspirate a portion of room air through hot water coils for a total delivery at sill height of tempered air at design temperature. Units in each room are thermostatically controlled.

Air is returned through corridors from which it enters a central shaft. This shaft terminates in an underfloor duct leading to an up-facing louvered damper raised three feet above the floor of a mixing chamber adjoining the fan room on the ground floor. An outside air damper opens into the mixing chamber through an outside wall served by an areaway. This scheme is shown in bottom sketch below. Return and outside air dampers are thermostatically controlled to deliver from 20 per cent to 100 per cent outside air at 55 F mixture temperature through a central filter bank wall to the fan room.

A separate system of three floor-mounted fan-coil units serves offices, gym and cafeteria with forced warm air. Section diagram of these units is shown second from bottom in sketches below.



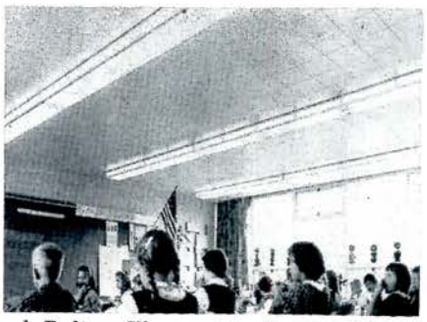
Other Systems

As Milo Folley, architect partner of the SWC&F firm points out, there is no one absolute best or cheapest system for the ideal thermal environment in schools. Of primary importance in selection of a system for a particular school is the site. Land cost, size, latitude, geology, orientation, neighborhood and microclimatology are factors to be considered. If physically identical sites are available on the north and south facing slopes of the same hill, this *could* make a difference in selecting one system or another. One does not blast a fan room out of solid rock nor pour a slab on quicksand. There may be merit in a crawl space that is convertible as a fall-out shelter and mechanical space. In the considerable SWC&F experience in school design are the sonorous names of Batavia, Bolivar, Lansing, Indian River, Massena, and Upson. These names represent almost as many different systems for heating and ventilating—and in many of them more than one system is represented, with partial air conditioning in some areas, radiant floors or ceilings in others, especially for primary grades, and provision for conversion to full air conditioning for most.

Returning, then, to discussion of variations in systems for air conditioning schools, the following have also been used:

Through-wall heat pumps. These devices are an extension of the concept of the well known window air conditioner. They are manufactured in various capacities for either ducted or direct, under-sill delivery of proportioned outside and recirculated air. They are especially adaptable for locations where winter and summer loads are in reasonable balance, and they can greatly reduce piping and radiation costs where the school layout is extended or of the campus type with relatively small cluster





(Left) Dual system at Thornridge High School, Dolton, Ill., provides h. w. radiation at window wall and year-round air supply through hung ceiling of perforated gypsum. (Right) Ceiling at elementary school in Port Jefferson, N. Y., combines piped radiant heat supply and removal with acoustical treatment and air supply through perforated metal pans

THE MEANS
continued

units. A low electric or gas rate is a basic criterion for selection of this system. Availability of competent maintenance personnel is also an advantage in handling the multiplicity of separate operating machines.

Radiant Floors. While the radiant warm floor has been found to be an advantage in kindergarten and primary grades, it is not readily adaptable to year-round cooling or ventilation. Warm air radiant floors vented at the perimeter have been successful in providing air circulation, but separate provisions must be made for cooling.

Radiant Ceilings. Radiant cooling and wide area air supply are feasible when the ceiling is used as the heat and air source and sink. There are proprietary constructions for ceilings available which also provide for acoustical and lighting treatment. One such system, used by Samuelson and Sandquist in the Thornridge High School, Dolton, Illinois, is a dual system; hot water radiation at all window walls and a warm or cool ceiling air system in which tempered air is delivered to a plenum created over each room by a dropped ceiling of gypsum acoustic tile. About 20 per cent of the tile are slotted all the way through so that air is delivered to the room over a wide area at low velocity. The school is planned to be completely air cooled by the installation of chilling units in existing central air supply rooms.

Another adaptable ceiling system, such as the one installed at the Port Jefferson Elementary school in Port Jefferson, Long Island (Daniel Perry, architect) combines heating, cooling, ventilation, lighting and acoustical treatment by means of an overhead plenum containing piping for delivery of hot or chilled water, electrical supply, air supply and return, and acoustic blanket. The ceiling surface is formed of snap-on perforated panels. Lighting is either modular width or extended below ceiling surface. There are other ceiling systems using various slotted or perforated air delivery arrangements either in conjunction with or independent of the lighting system. When they are well designed, they work very well, and the radiant component on both heating and cooling offers potential for ideal comfort.

THE COST

An analysis of the cost of five proposed means of air conditioning the McPherson, Kans., High School was made jointly by James H. Cleary, engineer on the staff of Shaver and Company, designers of the school, and several members of the engineering staff of John J. Nesbitt, Inc. Their report summarizes the approximate annual owning and operating costs for five different complete year-round heating, ventilating and air conditioning systems for this building, illustrated on the page opposite.

TABLE 3. COST SUMMARY OF PRELIMINARY STUDY

(This study compares the first costs and operating costs of five different air conditioning systems for the McPherson School)

System	(1) Elec. Boiler Chiller	(2) Gas Boiler Sep. Chiller	(3) Well Water Heat Pump	(4) Air Source Heat Pump	(5) Elec. Res. Pkg. Cool
First Cost	244,800	248,550	237,000	280,000	234,650
Total Fixed Cost	908	1,243	210	4,056	2,850
Total Heating Cost	7,606	1,997	3,398	3,307	7,030
Total Cooling Cost	749	749	786	616	1,175
Total Maintenance Cost	700	2,850	1,800	3,900	2,600
TOTAL ANNUAL COST 9 MOS. SCH. YR.	9,963	6,839	6,194	11,879	13,655
ANNUAL COST DIFF. 9 MOS. SCH. YR.	3,769	645	—	5,685	7,461
TOTAL ANNUAL COST 12 MONTH YEAR	10,583	7,459	6,888	12,508	14,539
ANNUAL COST DIFF. 12 MONTH YEAR	3,695	571	—	5,620	7,651

The five systems studied are shown as column headings in Table 3. Four of these systems employ a central two-pipe hot and chilled water system supplying year-round unit ventilators to provide heating, ventilating, outdoor air cooling, and refrigerated summer air conditioning on an individual room basis in classroom wing, and hot water or electric resistance heating of the arena wing using conventional unit ventilators, unit heaters, or gravity heating equipment where applicable.

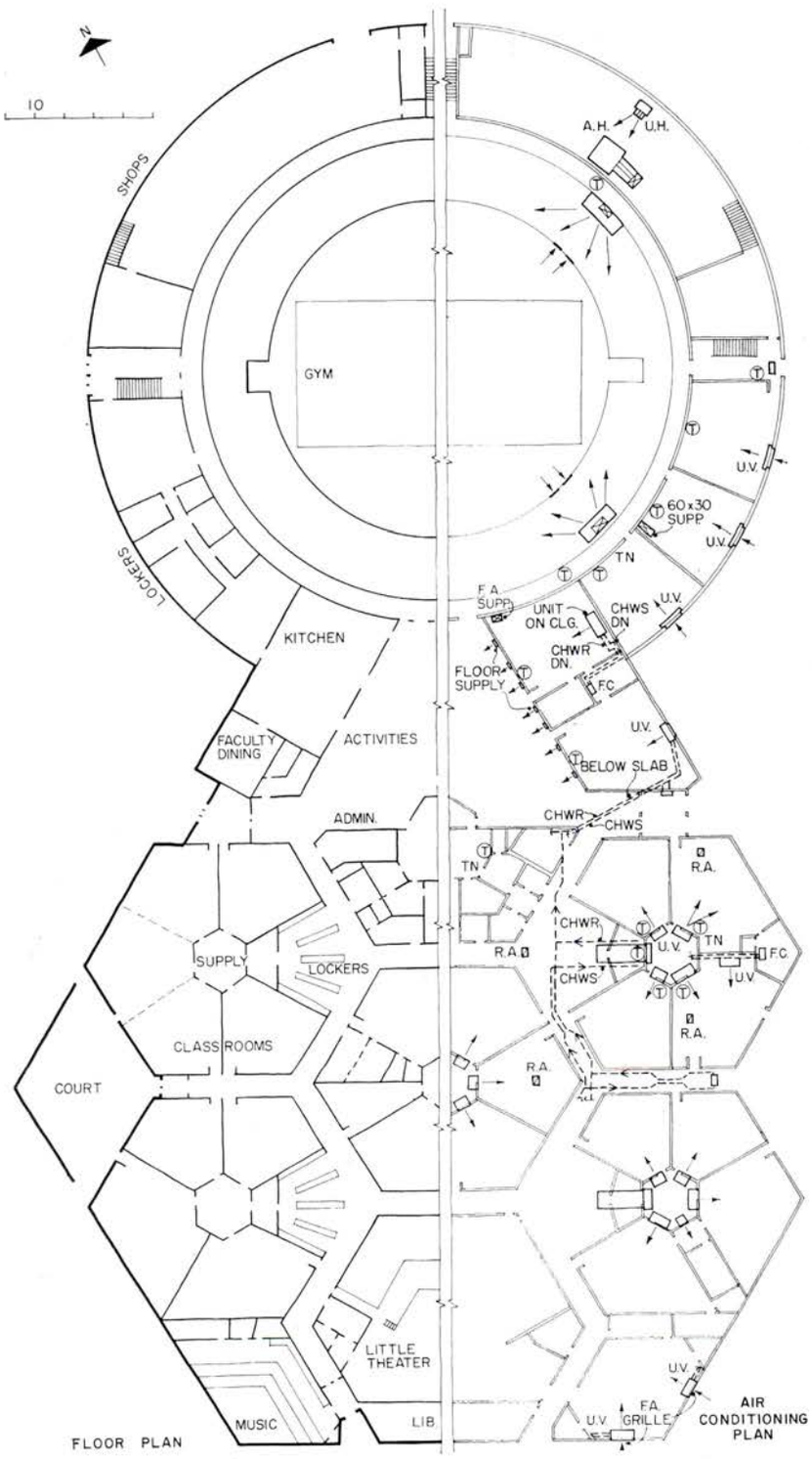
The fifth system uses commercial package units for minimum ventilation and refrigeration cooling of instructional areas, plus resistance heating in the classroom wing and electric unit ventilators with resistance heat in the arena wing.

Systems one through four offer the option of providing summer air conditioning for the arena itself at any time chilled water is not required in the classroom wing.

The study is a comparative estimate only, and for this particular

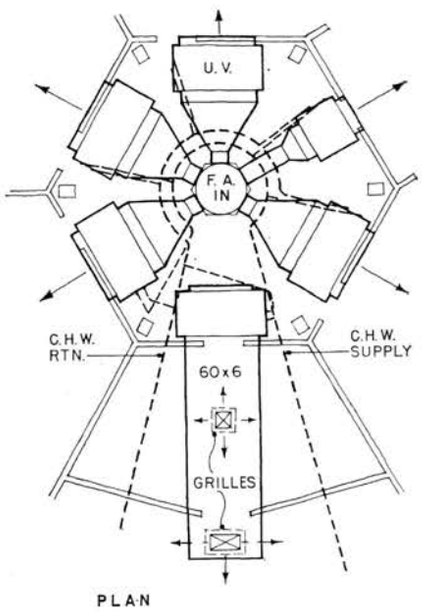


McPherson, Kansas, Senior High School by Shaver & Co. is scheduled for completion in 1962. Hexagonal groups of classrooms are served by clusters of six unit ventilators with single air supply through folded roof as shown below. Little theater, offices, and activities areas have ducted central air systems. Cooling by 150-ton chiller handles either classroom wing or gym. Hot water supply to all units is reset down to 80 F as outdoor temperature rises. Ventilators can supply 100 per cent outside air to handle all cooling loads while air is 60 F or less. Above 60 F outside, chilled water is circulated to ventilator coils while solenoids shut off supply to unit heaters in arena perimeter to avoid condensation. Valving idles water circulation in either gym or classrooms to keep chiller load halved

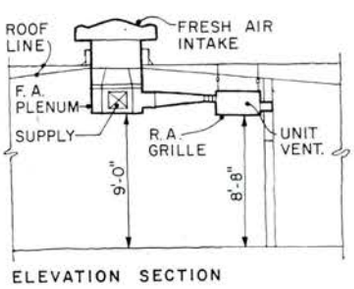


FLOOR PLAN

AIR CONDITIONING PLAN



PLAN



ELEVATION SECTION

LEGEND FOR AIR CONDITIONING PLAN

CHWS — —	CHILLED HOT WATER SUPPLY		DIRECTION OF THROW
CHWR — —	CHILLED HOT WATER RETURN	Ⓣ TN	DAY-NIGHT THERMOSTAT
	SUPPLY DUCT		R.A. DUCT

THE COST
continued

school and location. It is based on many assumptions believed to be realistic. The engineers emphasize however that these assumptions were made during preliminary stages and no prediction of actual installation or operating cost of the final design is intended.

All of the systems except number 5 are capable of cooling with outdoor air, without running refrigeration equipment up to approximately 60 F outdoors and can supply six to eight air changes per hour of outdoor air if necessary.

All of the systems are zoned to permit one or a few selected rooms to be heated during the cold season if desired, or cooled during the warm weather without heating or cooling the entire building.

The McPherson feasibility study is based on a heating season of 4,677 degree days. Load calculations have been based on roof and wall coefficients of .10. Winter design temperatures are taken as −10 F for night, and O F for day; summer design is 100 F DB, 75 WB outside, 80 F DB, 67 WB inside. Gross daytime winter load including ventilation at 7½ cfm per occupant minimum is 2.428 million Btu per hr, less 567 MBtuh credits for internal gains. Summer cooling load, including ventilation at 10 cfm per occupant, is 145 tons at design conditions.

Electric rates are calculated at one cent per KW; gas rates on a sliding scale from 1.25 to .30 per MCF at 980 Btu per cu ft.

The well-water heat pump analysis is based on the availability of 500 gpm of 58-deg. water, sand free and of a mineral content suitable for use without treatment. All first cost estimates include labor, material and overhead for erection in place complete for each system.

The most economical system on an over-all basis would have been the well-water heat pump. It turned out, however, that ground water conditions were not suitable for a heat pump on the basis calculated. With attractive rate concessions from the gas company, a gas boiler for heating and centrifugal compressor for cooling were ultimately selected. Smaller, separate systems were provided for little theater and offices.

Keynote of economy in the McPherson system is the fact that an evenly divided load totalling 300 tons in the arena and classrooms combined is handled on an either-or basis by a 150-ton machine.

Total cost estimate for the project, including site work, equipment, and fees was $1,681,320, an average of about $13.50 per sq ft of enclosed space. Actual bids received averaged $12.80 per sq ft. Accepted bid was $11.79.

Another cost study of initial and operating costs of four Phoenix, Arizona, high schools has been made by A. W. Mitchell, business manager of the Phoenix Union High School and College System. All four schools are open plan and completely air conditioned by gas fired central absorption systems. Table 4 is a summary of this study. Rather high maintenance costs for labor and parts in 1959 reflect a one-time charge for anti-corrosion painting of piping and an inventory of stand-by spare parts. Systems used for heating, ventilating and cooling were double duct.

TABLE 4. SUMMARY OF INITIAL COSTS & OPERATING EXPENSES TO AIR CONDITION FOUR PHOENIX HIGH SCHOOLS DURING 1959

School	Bldg. Area, Sq. Ft.	Heating Equip.	Cooling Equip.	Maint. Labor	Maint. Parts	Days Used	Cooling Fuel Cost	Cost Per Student/Year	Cost Per Student/Day
Camelback	134,947	$394,690	$120,000	$ 966.66*	$35.21*	80	$4,653.46	$2.08	$.026
S. Mountain	123,257	$343,440	$120,000	$1126.48*	$35.21*	55	$2,443.75	$1.32	$.024
C. Hayden	113,955	$250,000	$ 75,000	$ 794.50*	$35.21*	72	$3,961.40	$1.51	$.021
Central	99,852	$326,000	$ 80,000	$ 639.90*	$35.21*	82	$4,467.94	$2.05	$.025
Average								$1.74	$.024
Total			$395,000	$3527.54*	$140.84*		$15,526.55		

* *non-recurring anti-corrosion and inventory expense*

THE FUTURE

The future of air conditioning in schools will depend on the interaction of three factors: political, technical, and educational.

Regardless of the technical feasibility and educational value of air conditioning, it will be met by political resistance in many communities. Where there are several existing non-air-conditioned schools, the parents of pupils who are obliged to attend them may react against expenditure of tax money to air condition for other peoples' children.

One of the urgent needs, then, is for development of equipment which can readily and inexpensively adapt existing systems of all kinds to air conditioning. Much has already been done in this direction, but the problem is by no means completely solved.

High velocity systems, heat pumps, solar and electronic cooling devices, and other technical advances are already on the minds and drawing boards of designers. The demand for adaptable educational space and the increasing freedom of design which air conditioning allows have met already with some ingenious solutions.

The Adaptable School

The Adaptable School, a prototype design for a K-6 elementary school in New York City, was developed by H. Seymour Howard, Jr., A.I.A., Associate Professor, School of Architecture, Pratt Institute, Brooklyn, N. Y., with the help of graduate students Michael Brill, Jeffrey Cook, Bill Bedford and Ned Connell. It is proposed as an answer to three problems posed by Herbert Landry and Michael Radoslovich, F.A.I.A., of the N. Y. City Board of Education as part of a study sponsored by Educational Facilities Laboratories.

I. The first problem is how to

provide adaptable space. Team teaching, non-graded classes, television teaching, language and other teaching machines, all require repeated changes in layout and size of rooms.

II. The second problem is convertibility. Many New York City school buildings still in good condition are no longer needed because the children are no longer there. It would be a great advantage if the plan of these buildings approached that of an open loft, the more easily to be converted and sold.

III. The third problem arises in growing neighborhoods where temporary classrooms are needed. For this the ideal solution would be prefabricated classrooms which could be added to an existing school and removed for re-use when permanent facilities are available or when a temporary surplus of children disappears. Because the sites available in New York are so small, these prefabricated, demountable classrooms must be made fireproof for multistory construction.

All three of these problems can be solved by the Adaptable School using spaced-slab construction, shown at right.

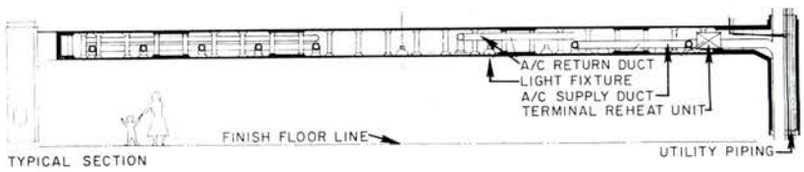
By constructing a concrete slab made up of two surfaces, three feet apart, all mechanical supplies and returns can be placed in the hollow between them. With the relatively large depth (necessary to give an adequate if uncomfortable crawl space), a clear span of 72 ft across the building is not impractical. The floor and ceiling are tied together by little posts and by the spandrel at the exterior wall.

This spaced slab would be prefabricated in 12-foot by 24-foot sections, weighing about 25,000 lb each. Six sections would be fastened together and to the two columns to form a bay.

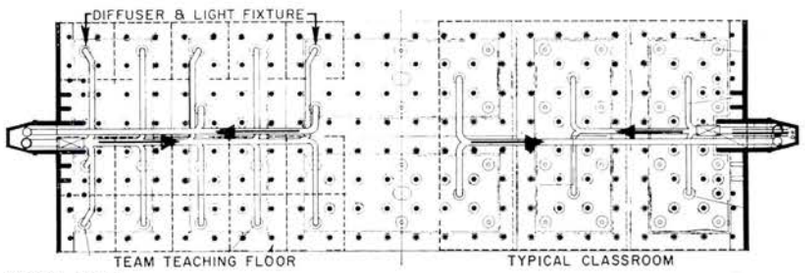
All mechanical risers would be placed in the hollow columns, the horizonal runs in the hollow, spaced slabs. Circular holes in the ceiling are provided for lighting fixtures and diffusers. Electrical connections could be made anywhere by drilling a small hole through floor or ceiling.

Air-conditioning would be essential. The system proposed is primary air with terminal reheat. If complete control for many small rooms were required, terminal reheat elements could be placed in the supply outlets of each room.





TYPICAL SECTION

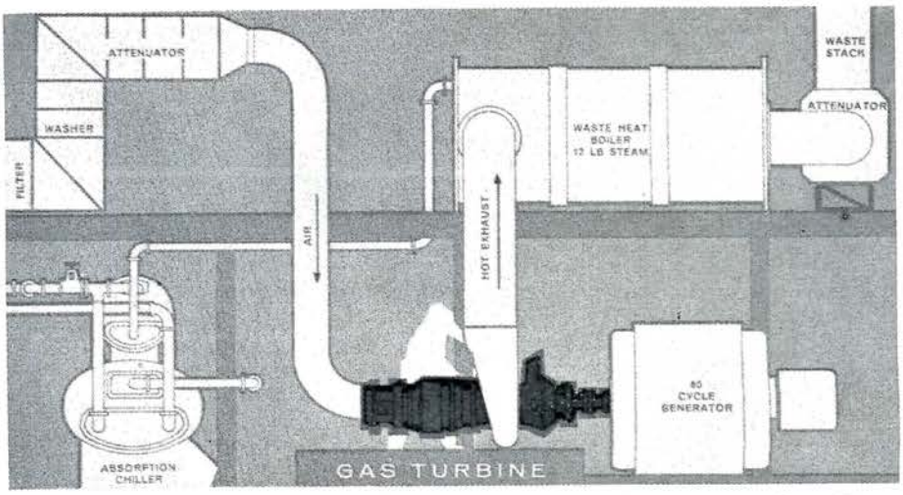


TYPICAL PLAN

The Adaptable School planned at Pratt Institute, meets today's challenge and future needs of a changing metropolis. Prefabricated, spaced-slab construction allows clear 72-ft span for moveable partitions, crawl access to mechanical and electrical systems, easy addition or removal of wings as needs change, and convertibility to non-school uses

Golemon & Rolfe, architects and engineers of Houston, Texas, following a well known study (AR 11/60 p. 188) comparing costs for a conventional non-air-conditioned and a compact air conditioned school in Bellaire, Texas, have projected figures of that study to show the feasibility of combining the gas turbine with school requirements for air conditioning and power. Their report shows that a 23 hundred-student, air conditioned, compact school with natural gas as its only source of power can be built and operated for approximately 16 per cent less than a conventional school of the same size without air conditioning.

Economies of this arrangement derive from the use of waste heat from the power generating turbine to operate heating and air conditioning systems. One variant is shown in the illustration below. Other arrangements are shown in the full report available from AGA.



The gas turbine, a dependable and efficient machine, can effect savings where direct output for power and salvageable exhaust heat demand are in balance

THE FUTURE

continued

Pilot Study

The Oak Grove Junior High School in Pinellas County Florida, a well known example (AR 11/60 p. 190) of the feasibility of building an air conditioned compact school within the budget figures of conventional non-air-conditioned design, will be used in a detailed scientific evaluation of its educational and operational characteristics. It will be measured directly against the non-air-conditioned Pinellas Park Junior High School, a campus design of comparable floor area and teaching capacity.

James Yates Bruce, A.I.A., of Bruce & Parrish who designed the Oak Grove school, describes how the experiment in Pinellas County posed a number of interesting problems for the architect and engineer:

"Like most schools in Florida, Pinellas Park Junior High is a cluster of several buildings connected by open air walks. Gross building area is 66,468 sq ft. Net educational area is 47,880 sq ft. Total cost of the school is $812,846—about $12.20 per sq ft. Cost of the heating installation is 67 cents per sq ft. Gas-fired residential furnaces are used to heat adjoining classrooms.

"The air-conditioned Oak Grove Junior High School, completed in January, 1961, consists of one compact building measuring 66,175 sq ft, with a net educational area of 49,159 sq ft. Total cost of the school was $790,350—about $11.90 per sq ft. This includes the cost of the air conditioning and heating installation at $1.60 per sq ft with central equipment sized to handle future addition of 8 classrooms. Heating capacity for Pinellas Park will have to be added for each pair of future rooms.

"While 100 per cent cost comparison is impossible, the air-conditioned school offers slightly more educational space for a slightly lower price.

"Our task was to match given conditions of a specific floor area. Most important of all, we had to overcome the differential of an estimated $60,000 between the cost of a heating installation only and a combined heating and air conditioning system.

"With gas offered at 8 cents per therm year-round, calculations showed that energy costs for gas-engine-driven compressors would be lower than with electric-driven at the going rates, averaging 1⅔ to 1¾ cents per KWH. Although first costs for electric compressors were less by a few hundred dollars, two 60-ton gas-engine driven condenser-chillers were chosen because of the expected lower energy costs.

"Most of the savings in construction were achieved in: (1) compact block design and (2) arrangement of classrooms.

"Among the most interesting cost-saving features are two-foot chases between classrooms (2 ft 4 in. would have been more convenient). These chases contain utility, heating, and electric lines. Chases terminate in louvered access openings at outside walls. All services and outside air to unit ventilators enter the classroom through slots in the chase wall, thereby reducing the length of branch lines and eliminating the need for underground piping or ducts."

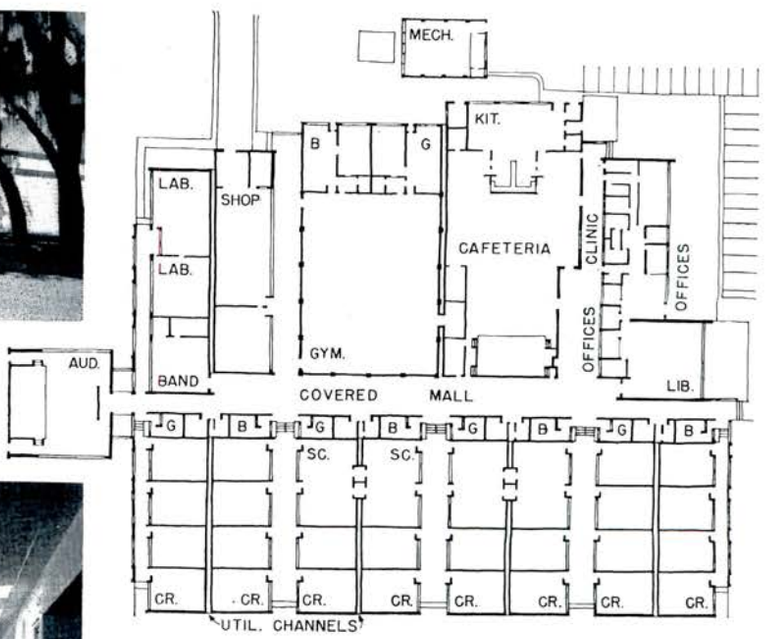
Guide to the Future

There is probably no school in the United States that will be more closely observed in the next two years than Oak Grove Junior High. A $57,000 grant has been received from the U. S. Department of Health, Education and Welfare to study various operating features of this school and its twin, Pinellas Park Junior High. Supervising the tests will be Floyd T. Christian, Pinellas County Superintendent of Schools. The three main areas to be studied are the operational, educational and psychological.

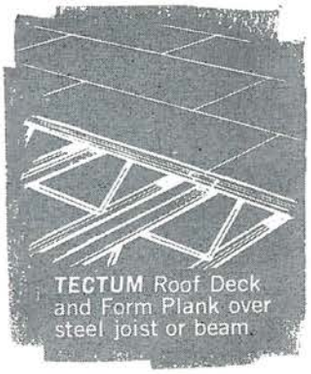


Wm. Amick photos

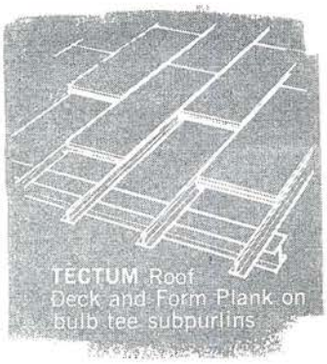




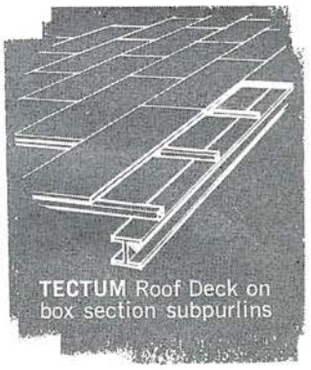
Oak Grove Junior High School, by Bruce & Parrish, in Pinellas County, Florida, is a fully air conditioned compact design. To reduce cooling load, short end of each room faces either a corridor or covered passageway along outside wall protected by concrete sun screen. Utility channels between rooms are louvered to outside. Daylight is admitted through skylights in corridors. Henry Wright was a consultant



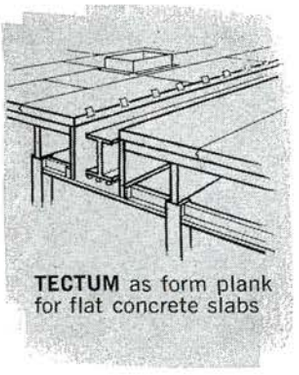
TECTUM Roof Deck and Form Plank over steel joist or beam



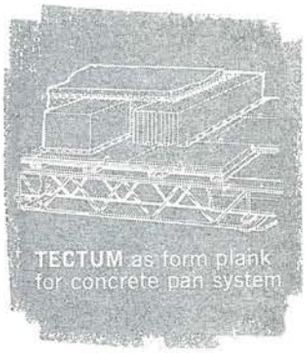
TECTUM Roof Deck and Form Plank on bulb tee subpurlins



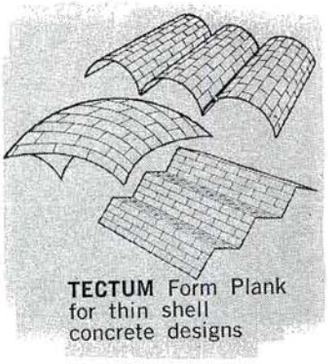
TECTUM Roof Deck on box section subpurlins



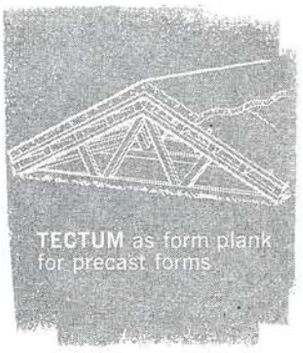
TECTUM as form plank for flat concrete slabs



TECTUM as form plank for concrete pan system



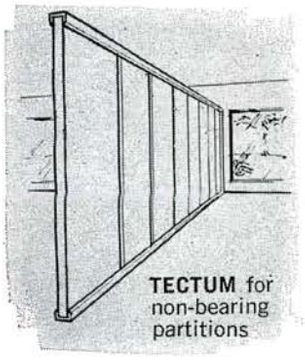
TECTUM Form Plank for thin shell concrete designs



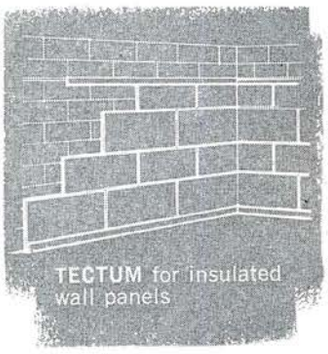
TECTUM as form plank for precast forms



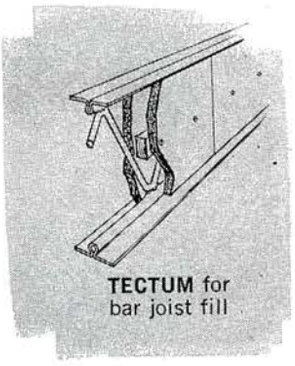
TECTUM for acoustical ceilings



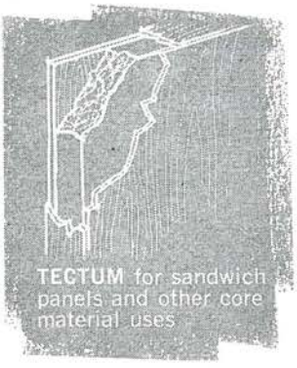
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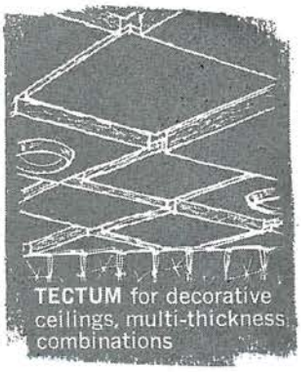
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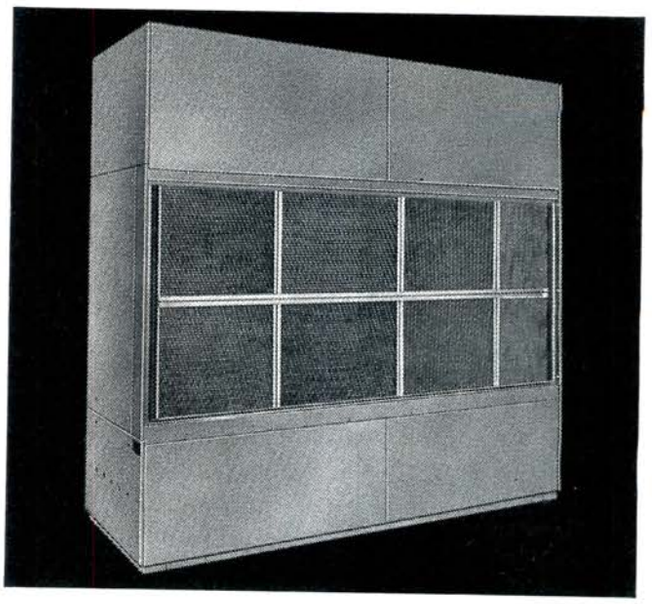
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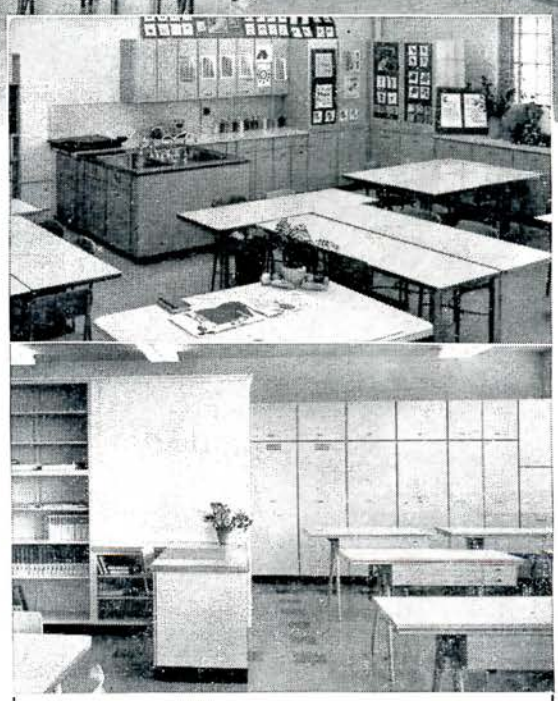
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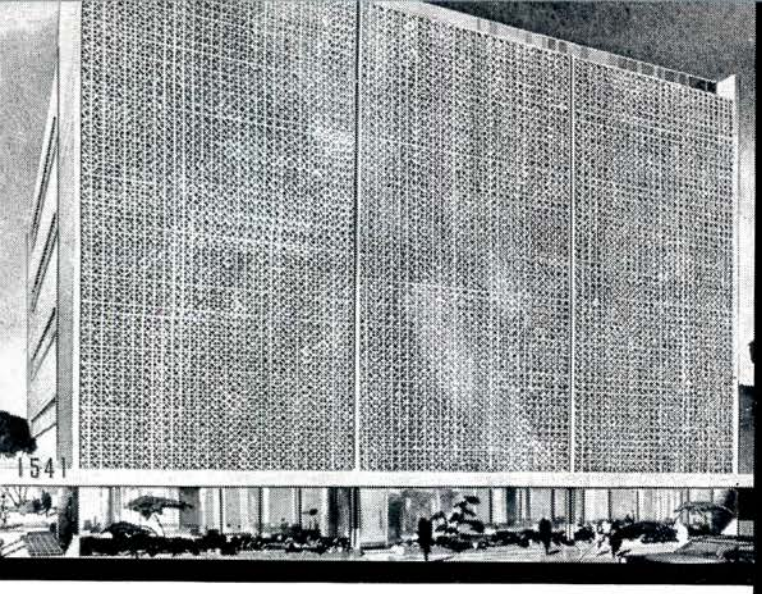
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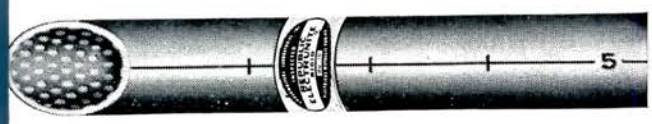
Hawthorne Square Housing Project, Philadelphia, Pa.
Architects: Carroll, Grisdale and Van Alen
Electrical Contractor: Keystone Engineering Corp.



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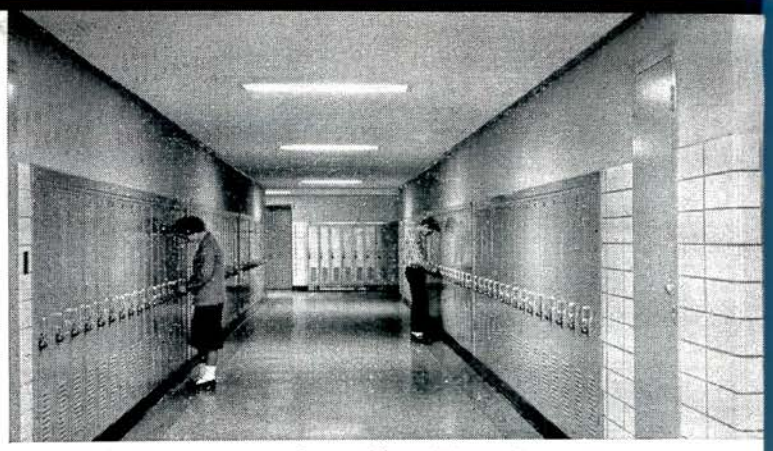
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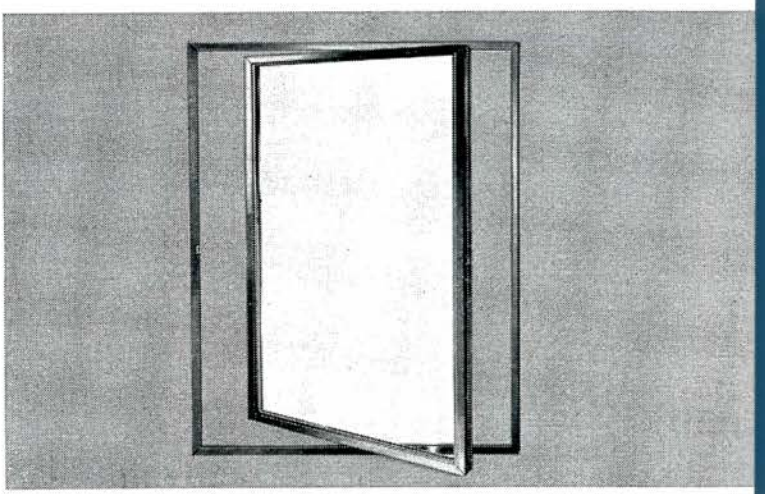
Design expansion room for tomorrow's electrical loads at today's installed costs. Specify Republic ELECTRUNITE E.M.T. for quality. For full information see your Republic representative or send coupon.

REPUBLIC STEEL

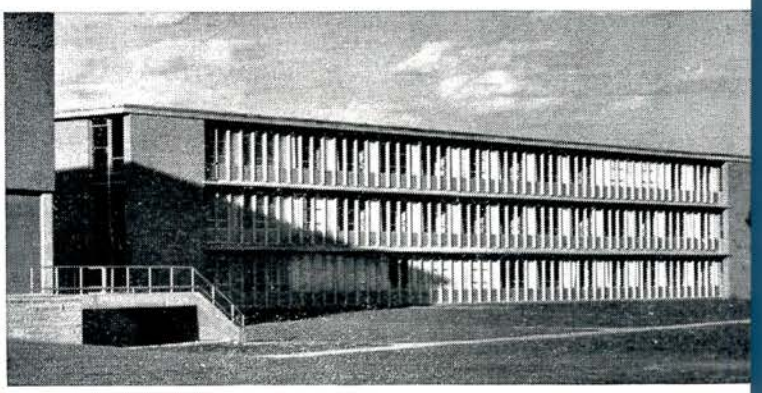
REPUBLIC HAS THE FEEL FOR MODERN STEEL



REPUBLIC RECESSED STEEL LOCKERS fit into wall permitting maximum traffic area. Flush installation eliminates sharp corners, makes cleaning and maintenance easier, faster, and more economical. Write for information.



TRUSCON VERTICALLY PIVOTED ALUMINUM WINDOW is ideal for air-conditioned buildings. Window is double weather-stripped around the entire vent perimeter. It rotates a full 360 degrees and locks automatically in reverse position, permitting simple, safe cleaning from the inside. For complete information send coupon.



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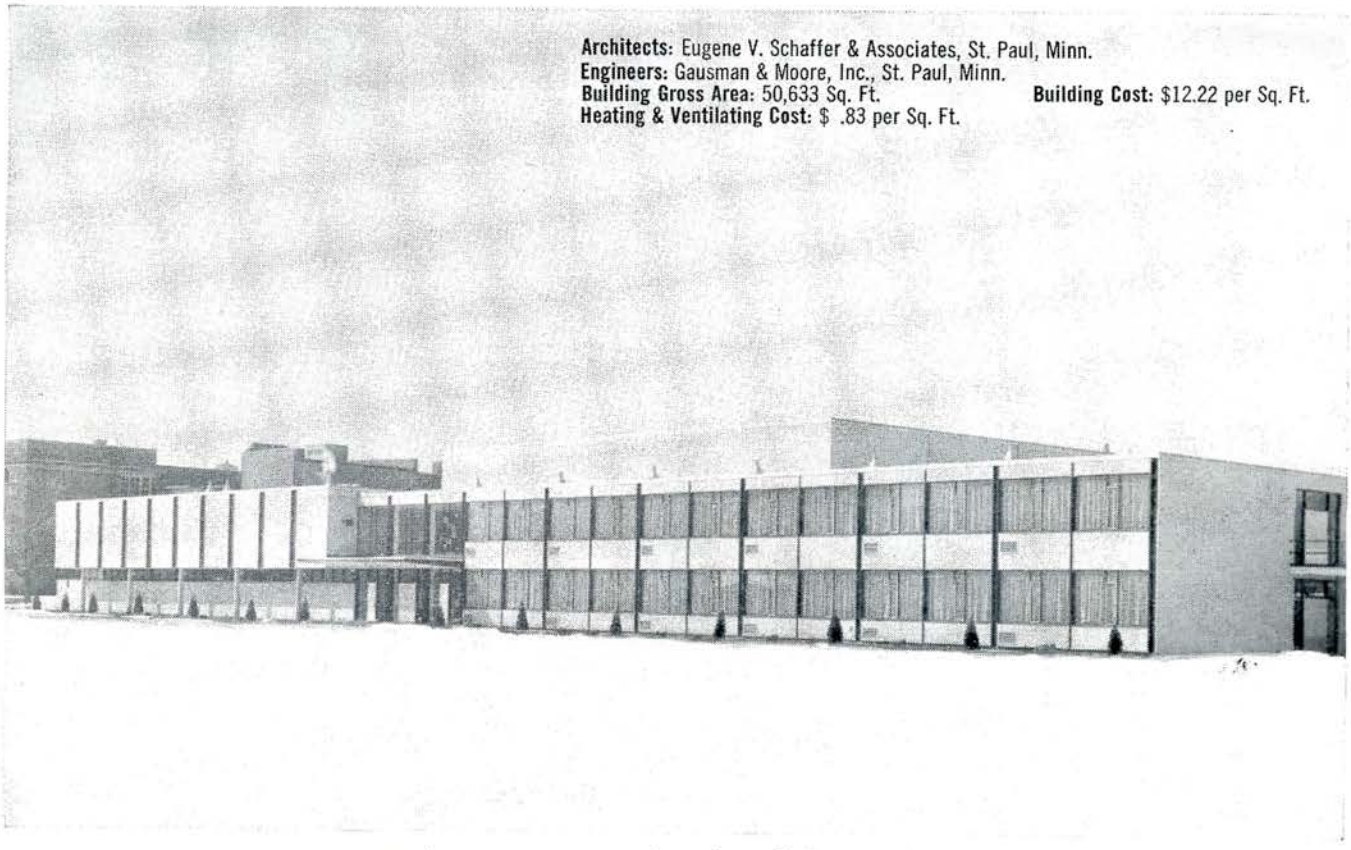
- ☐ Republic ELECTRUNITE® E.M.T.
- ☐ Republic Steel Lockers
- ☐ Truscon Vertically Pivoted Windows
- ☐ Truscon VISION-VENT® Curtain Walls

Name_____ Title_____

Firm_____

Address_____

City_____ Zone____ State_____



Architects: Eugene V. Schaffer & Associates, St. Paul, Minn.
Engineers: Gausman & Moore, Inc., St. Paul, Minn.
Building Gross Area: 50,633 Sq. Ft. **Building Cost:** $12.22 per Sq. Ft.
Heating & Ventilating Cost: $ .83 per Sq. Ft.

room-by-room and school-by-school...

NORMAN SCHOOLROOM HEATING AND VENTILATING SYSTEMS

cut construction costs...and reduce operating expenses

83c PER SQ. FT. installed, provides thrifty, efficient gas heat plus automatic forced air ventilation in the De LaSalle High School Addition, Minneapolis, Minnesota.

By specifying a Norman Schoolroom Heating and Ventilating System for each individual classroom, the planners of the all-modern De LaSalle High School Addition, Minneapolis, Minnesota, were able to reduce heating and ventilating costs to a mere 83¢ per square foot.

No separate building was necessary to house a central heating plant . . . no tunnels or trenches for ducts or pipes . . . no unsightly chimney . . . no oversizing of boilers or pipes for future expansion. As the school grows additional Norman Systems can be added.

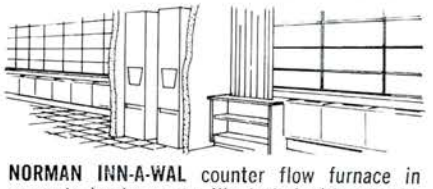
In one low cost package, the Norman Gas-Fired, Forced Air Perimeter Schoolroom System provides complete classroom comfort for each individual room. Fresh outdoor air is automatically blended with recirculated room air to heat and ventilate, with scientific air distribution through perimeter diffusers in Util-i-Duct bookshelf sections. Additional Norman gas-fired units can be installed in non-classroom areas.

Automatic temperature setback with recirculation of room air during unoccupied periods (80% of the school year) keeps fuel bills at a minimum. Servicing is simplified and any maintenance can be quickly and economically performed.

Write today for comprehensive Manual on HVS Horizontal or Inn-A-Wal Counter Flow models.



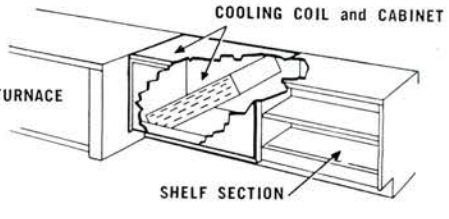
NORMAN ENCLOSED HVS compact horizontal unit illustrated with Util-i-Duct bookshelf sections



NORMAN INN-A-WAL counter flow furnace in separate heater room, illustrated with economical Wall-i-Duct sections

AIR CONDITIONING

may be included at the time of installation or anytime in the future.



Norman® PRODUCTS CO. 1152 Chesapeake Ave., Columbus 12, Ohio

THIN TERRAZZO TOPPINGS

by Ray E. Cumrine, Associate, Ketchum and Sharp, Architects, New York

One of the newer applications of modern chemicals in building materials is in the installation of terrazzo floors. Chemicals are used either to bond conventional cement terrazzo toppings to concrete slabs, or to serve as binders in non-conventional toppings. In either case, the most obvious difference between these newer floors (commonly known as thin-set terrazzo) and conventional ones is the elimination of the underbed (which generally is from 1- to 2-in. thick). Also some of the chemical matrix toppings may be as thin as ⅛ to ⅜ in. Reasons for these differences are the high tensile and flexural strengths of the chemical matrices and the high bond strength of chemical adhesives when conventional cement terrazzo toppings are applied directly to the concrete slab.

Thin-set terrazzo should not be confused with monolithic terrazzo used widely in the southern parts of the country, in which the terrazzo topping is placed over fresh concrete slabs on grade.

Thin-set terrazzo may be placed without the underbed in one of three methods:

1) The first is most nearly like conventional terrazzo application. A terrazzo topping ⅝-in. thick of Portland cement and marble chips is bonded to the cured concrete slab with a chemical adhesive.

2) In the second type an emulsion, or some other admixture, is combined with Portland cement as a matrix to impart higher tensile and flexural strength.

3) The third system departs the most from conventional practice. In this method a synthetic resin or polymer alone serves as the matrix in the terrazzo.

Cement Terrazzo Topping

When a conventional terrazzo topping is used (i.e., Portland cement binder and no admixture), the normal kind of attention is required for the topping such as proper water-cement ratio and curing, but in addition, care must be taken in prepar-



With epoxy terrazzo, resin-curing agent is added to sand and marble chips. To assure a workable mixture some chips are sprinkled on after trowelling



Photos Courtesy CIBA Products Corp.

Trowelling of epoxy terrazzo mix in conventional manner is customary



Divider strips are bonded to the sub floor with an epoxy resin-based adhesive

ing the slab surface to receive the adhesive. For the interface membrane (adhesive) to be effective, it must have the ability to absorb the differential movement between the structural slab and the topping. Epoxy, neoprene, polysulfide and vinyl adhesives are used most frequently. The thickness of topping and size of marble chips possible will be the same as that for conventional terrazzo. Dividing strips are required as with conventional terrazzo.

Admixtures with Cement Terrazzo

When an emulsion or similar admixture is used in Portland cement terrazzo, the topping has a higher tensile and flexural strength than conventional terrazzo, but not as great as that of synthetic resin or polymer matrix terrazzo. The admixtures generally are acrylic or vinyl emulsions. This type of terrazzo is usually placed ¼- to ⅝-in. thick. For better bond to the structural slab, a bonding interface is recommended. To achieve maximum strength over substrates subject to movement, a glass fiber reinforcing fabric is placed over the interface before the terrazzo is installed. While dividing strips in general are not deemed necessary by manufacturers, they are recommended for locations where the structural substrate is subject to unusual stresses, at corners projecting into the space where terrazzo is used, at doors or similar openings. The dividing strips are bonded to the substrate with an adhesive prior to pouring the terrazzo.

The Chemical Matrix

When a synthetic resin (epoxy) or polymer (neoprene) is used as the terrazzo matrix, the cured topping has an extremely high tensile strength. These mixes can be feathered to thin edges and generally the surface is slip-resistant. Because of the high strength in these sections, this type of terrazzo can be placed to a ⅛- to ⅜-in. thickness, except for neoprene terrazzo which is generally placed to a ⅜- to ⅝-in. thickness. With the thinner types of chemical matrix terrazzos, the smaller sizes of marble chips must be used, although sizes up to No. 2 can be seeded on the surface.

For floors subject to acid spillage which is deleterious to marble, these chips can be replaced by a graded silicate sand creating a different type of flooring, with many advantages for problem areas (see Epoxy Industrial Floors, ARCHITECTURAL RECORD, January, 1961.)

While dividing strips are not required with chemical matrix terrazzos, they are recommended for the same locations described above for the Portland cement admixture type.

A factor in the use of epoxy-resins is that they have a definite "pot life" and dividing strips can serve to mark off areas of reasonable pour. The dividing strips are glued to the floor slab with a synthetic adhesive.

Another word of caution about epoxy matrices—they will not cure on wet substrates or at temperatures below 50 F.

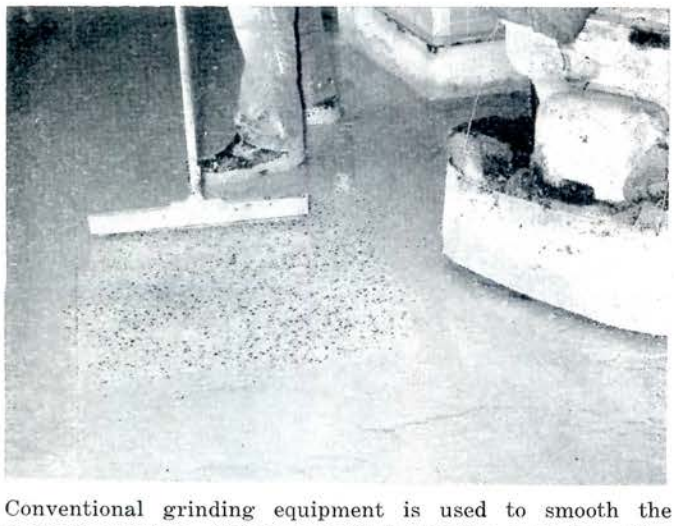
As mentioned previously, the most obvious characteristic of the thin-set terrazzos is the elimination of the underbed. While this means that floor slabs can be lighter in weight, perhaps the most practical advantage of this is that the structural slab need not be depressed (or fill need not be added) when the terrazzo is adjacent to a different flooring material—tile, for example.

Another advantage of thin-set terrazzo is the reduction in installation time—down to as little as two days.

The principal disadvantages of thin-set terrazzo generally have been connected with workmanship. With increased use, however, installers have become more proficient. Strict compliance with the chemical suppliers recommendations are required to insure satisfactory performance.

Costs of thin-set terrazzo range from below that of conventional cement terrazzo to slightly above, depending on the number of dividing strips that are used.

The terrazzo toppings which have chemical matrices or chemical additives with Portland cement tend to be free from dusting. Because the marble chips are the weakest component of the terrazzo, a surface treatment is recommended for complete protection. For synthetic resin or polymer types, most manufacturers recommend the use of a resin. For other thin-set types in which Portland cement is the binder, the same surface treatment materials (or an acrylic emulsion) may be used as are recommended for a conventional cement terrazzo.



Conventional grinding equipment is used to smooth the trowelled surface. This is usually begun the next day after the pour when the floor has had sufficient time to cure



In this installation terrazzo was extended 6 in. up glazed-tile wall. Epoxies were used as an adhesive to hold the terrazzo to the hard ceramics

STEEL-LINED FOLDING PARTITION IS SOUND BARRIER

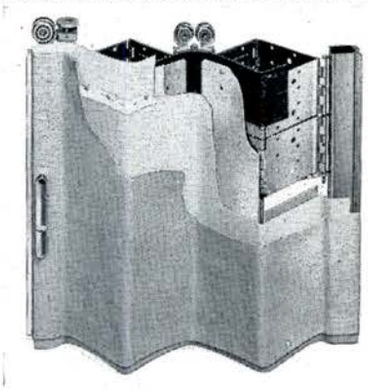
"A folding partition with the sound insulating characteristics of a solid masonry wall," is the manufacturer's description of new *Modernfold Soundmaster 240*. This steel-lined folding partition has an average sound attenuation of 41.8 decibels in the frequency range, 345 to 4000 cps. (See table.) Space divided by a *Soundmaster 240* makes normal speech on one side inaudible on the other. Price of *Soundmaster 240* is said to be about one-half that of wide-panel, folding-wall partitions.

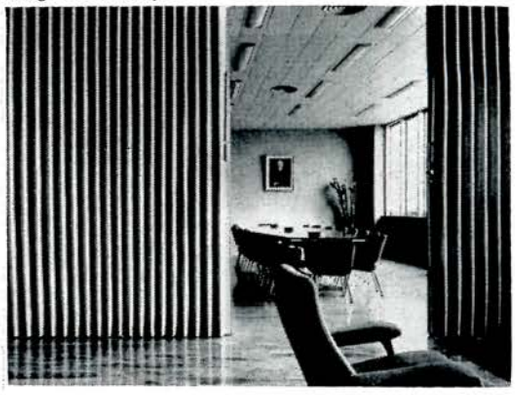
Single partitions are available up to 25 ft high by 60 ft wide. But there is no limit to the width of an installation because any number of partitions can be installed. Sound reduction is accomplished by twelve separate layers of material. Two of these are 24-gage steel plates measuring 5⅜ in. wide attached through felt interlining to steel backing which is hinged for accordion action. All four horizontal edges of the partition are double insulated by four inner sealer strips of felt combined with four double-coated rubber and fabric seals. Where partitions join,

SOUND TESTS[1] OF MODERNFOLD SOUNDMASTER 240

Item Tested	Frequency, CPS										
	125	177	250	354	500	707	1000	2000	4000	Average 1, 125-4000	Average 2, 354-4000
	Transmission Loss, Db										
Single	21	33	33	37	36	37	38	50	53	37.4	41.8
Double, 15" O.C.	30	47	39	54	49	54	52	59	58	49.0	54.3

[1] *By Geiger and Hamme Laboratories*
Ave. (1): 9-Frequency Average (125-4000) per A.S.T.M. E-90-55
Ave. (2): 6-Frequency Average (354-4000) per Folding Door Industry





foam rubber is used as an insulator. Double hinged backing rows are 8¼ in. deep. Four-wheeled steel trolley units have steel ball bearings, run in an 11-gage steel track. Load bearing pins of steel alloy eliminate sagging, and a pull-in latch facilitates partition closing. When not in use, a *Soundmaster 240* with a width of 20 ft can be stacked in 32¾ in. Partitions are covered in *Modernfold's Nuca-Tex* vinyl in a wide range of colors and fabrics. *New Castle Products, Inc., New Castle, Pa.*

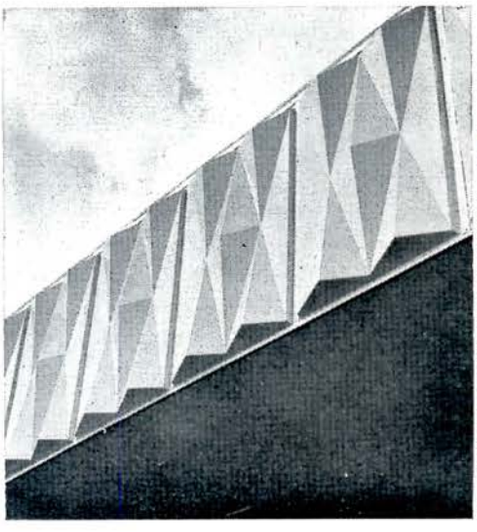
MOLDED PLASTIC FACADE

The 1100 ft of gleaming white *Tenite* butyrate panels which adorn the fascia of a new $1,300,000 shopping center in Bristol, Connecticut mark the first time such panels have been used in a project of such magnitude. The concept originated with Rossetti & Mileto, Connecticut architects. When they approached plastics fabricator Frank Lyman Associates of Wolcott, Conn., they showed Mr. Lyman a photo of a white prism-shaped cement block of a style used in Italian architecture. "Think you can make plastic panels in this design?" they asked him. Lyman could and he would. His vacuum forming machine could accommodate panels of the required 4 by 6 ft and 4 by 3 ft dimensions, and he had an expert mold maker in his shop. Lyman chose *Tenite* butyrate because of its vacuum forming properties, dimensional stability, and high resistance to impact and weathering.

The angular, three-dimensional molds were formed of hard wood treated with epoxy; the panels vacuum formed from 100-gage sheet and mounted on 3 by 4-in. wood studs. Since they were installed, no trouble has been experienced, notwithstanding their exposure to winter temperatures ranging from minus 30 F to 65 F, and to wind velocities as high as 60 mph.

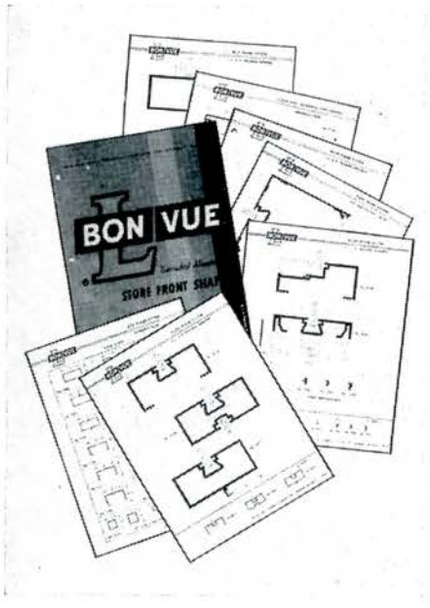
Rossetti & Mileto have since commissioned another design for another new shopping center, the Colonial Plaza, in Waterbury, Conn. The Waterbury 4 by 4 ft panels will be backlighted to take advantage of butyrate's light diffusion properties. They are mounted on steel angles and attached with free rivets for floating action. *Eastman Chemical Products, Inc., 260 Madison Ave., New York 16, N. Y.*

more products on page 212





Office Literature



Store Front Shapes
Detailed cross-section drawings of 68 Bon-Vue extruded aluminum store front shapes are shown in drawings on loose-leaf sheets in a stiff-cover folder. Box frame, flush frame and sash systems are reproduced. Additional drawings are of head, jamb and sill covers, division bars and expansion joint framing in quarter and full scale. *The William L. Bonnell Co., Inc., Newnan, Ga.*

Manual on Home Insulation
"Home Insulations," a 24-page booklet, contains design data for insulating air conditioned homes, methods of estimating heating and cooling equipment loads and costs. *Dept. 1-BL-1230B, Owens-Corning Fiberglas Corp., Toledo 1, Ohio.**

Industrial Lighting
A new 16-page booklet, "Lighting for Industry", explains in non-technical language why higher lighting levels are recommended for industries. New recommended foot candle levels, based on research at the University of Michigan, are tabulated. Quality factors in plant lighting are explained. Booklet is available at 25 cents per copy. *Better Light Better Sight Bureau, 750 Third Ave., New York 17, N. Y.*

Welded Steel Tubing Handbook
A comprehensive manual on welded steel tubing, including the latest engineering and design data for architects and engineers, is entitled, "Handbook of Welded Steel Tubing". Fabrication section includes joining methods and requirements for bending, swaging, flanging, etc. More than 140 pages of data are completely indexed. Handbook is priced at $10.00. *Welded Steel Tube Institute, Inc., Hanna Bldg., Cleveland, Ohio.*

Electric Heating for Schools
Application of electric heating to the *Lennox Comfort Curtain* system of classroom heating is described and illustrated in a six-page brochure. Equipment for heat pump heating and cooling, electric resistance heating, and additive cooling with provisions for zone control are described. *Lennox Industries, Inc., Marshalltown, Iowa.*

X-Ray Protection Standards
Medical x-ray protection up to three million volts with structural and shielding specifications are set forth in Handbook 76, National Bureau of Standards, 52-pages, prepared by a subcommittee of the National Committee on Radiation Protection and Measurement. Handbook contains data pertaining to manufacture, installation and use of x-ray equipment. Available at 25 cents. *Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.*

Circuit Breakers
A 50-page color-coded catalog describes a complete line of circuit breakers with general descriptions and application data, tables of current rating, motor starting duties, and control circuit data are included. *Mears Controls, Inc., P. O. Box 3798, Portland 8, Ore.*

Language Laboratory Planning
A 12-page booklet on planning language laboratories for high schools, colleges and universities discusses the cost and design of several types and sizes of various language laboratories. *Educational Electronics Division, Thompson Ramo Woodridge, Inc., Englewood Cliffs, N. J.*

Corrugated Steel Sheets
Sectional properties of corrugated steel sheets are described in a 24-page booklet which includes information on development and protection of corrugated steel sheets and their use in building construction. Sectional properties for several standard patterns are tabulated. *American Iron and Steel Institute, 150 East 47th St., New York 17, N.Y.*

Mechanical Tubing
Properties of mechanical tubing and structural pipe are set forth in a loose leaf folder including tables of columnar strength, weight, allowable loads and capacities. *Tex-Tube, Inc., P. O. Box 7705, 1503 North Post Oak Road, Houston 7, Texas*

Metal Screens and Gratings
(A.I.A. 14-R) A 16-page two-color catalog covers metal gratings for walks, drains, steps and decorative screens. Sections cover basic types, how to specify, safe load tables, and application technology of steel and aluminum forms. *Borden Metal Products, Elizabeth, N. J.**

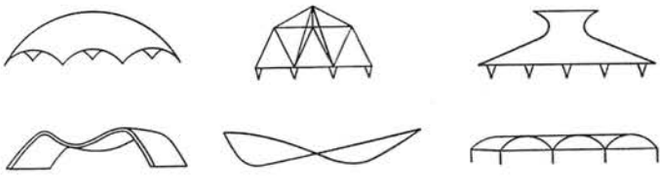
Masonry School Construction
A 26-page illustrated brochure covers design cost and construction of school buildings using masonry walls. Site selection, architectural relations, school design, cost comparison and available masonry wall types are described and illustrated. *The Allied Masonry Council, c/o Henry J. Kaufman & Assocs., 1419 H Street, N.W., Washington 5, D. C.*

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



® gives you a free hand in roof design

Whatever your concept of shelter surface...from flat...to curve ...to the most advanced geometric design...Flintkote Monoform can do! Here is the most versatile method of roof application ever developed. The Sealzit gun shown above applies special Monoform compounds simultaneously with chopped reinforcing glass fibres, forming a monolithic protective membrane that is resilient, tough, highly weather resistant. Whatever structure you may now have in the design stage, it should have a Monoform roof—and be sure to let the Flintkote Monoform system help free your hand in future roof designs!



The Sealzit gun is manufactured under the following U.S. Patents: 2,787,314; 2,933,125 and 2,813,751. Other U.S. patents pending. Patented in Canada. World-wide patents pending.

*A TRADE MARK OF THE FLINTKOTE COMPANY †U.S. PATENT APPLIED FOR

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I am an ☐ *Architect* ☐ *Roofer* ☐ *Contractor*
☐ *Builder, Other*_____



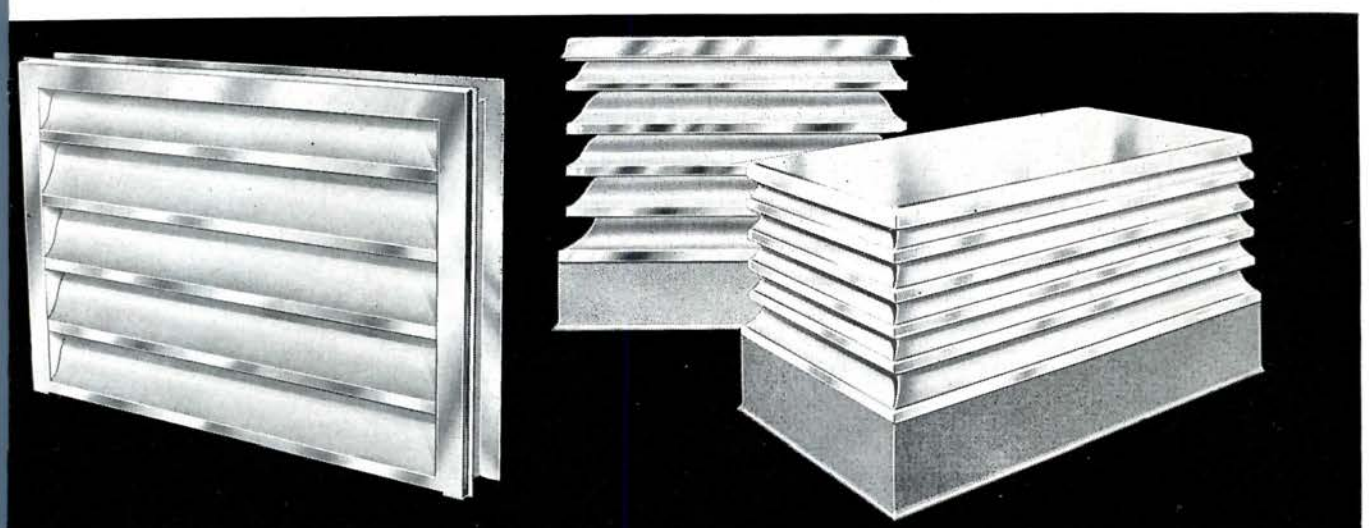
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OXLS and PXLS*?

(*pronounced oxels and poxels*)

designed by TITUS®

* A SECRET CODE? No, not at all. *"Oxel" is the name that our most creative and enterprising representatives have affectionately attached to* TITUS EXTRUDED ALUMINUM OUTSIDE LOUVERS. *"Poxel" is the name they have given to* TITUS EXTRUDED ALUMINUM LOUVER PENTHOUSES. The names actually originated from identifying symbols we gave our catalogs on these products. But now everyone's talking "oxels and poxels". That's fine with us. A little humor in business is good. And after all, it is so much easier and faster to write or say "oxels and poxels" instead of TITUS EXTRUDED ALUMINUM OUTSIDE LOUVERS AND LOUVER PENTHOUSES.



MADE OF QUALITY, ARCHITECTURALLY-DESIGNED EXTRUSIONS FROM TITUS' OWN EXTRUSION PRESSES

In *"oxels"* TITUS offers today's finest, most modern line of architecturally designed *extruded aluminum Outside Louvers*. They are rugged, weatherproof . . . and can be installed in any exterior wall opening where a continuous flow of supply air or exhaust air is desired. Available in many louver designs, in 1½", 2" and 4" sizes, in any length. Furnished with aluminum bird or bug screens on back or exterior face of louver if desired.

In *"poxels"* Titus offers the ultimate in clean-cut-looking, rugged, weatherproof, *extruded aluminum Louver Penthouses*. They are the ideal air or exhaust unit for handling ventilation through the roof. Available in square and rectangular shapes . . . in any size specified. Their all-aluminum design practically eliminates maintenance as no frequent paintings or protective coatings are needed.

FREE LITERATURE

MAIL COUPON

TITUS MFG. CORP., WATERLOO, IOWA Branch Mfg. Plants—Hialeah, Florida; Terrell, Texas

Please send new literature on Titus' complete line of
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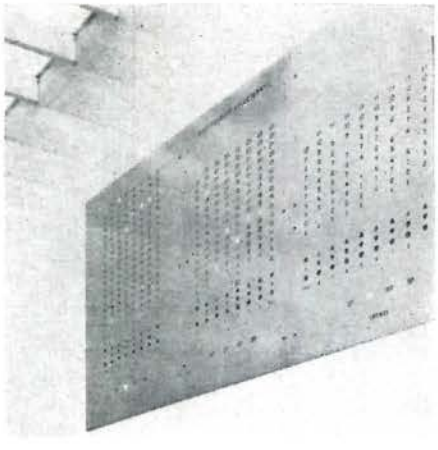
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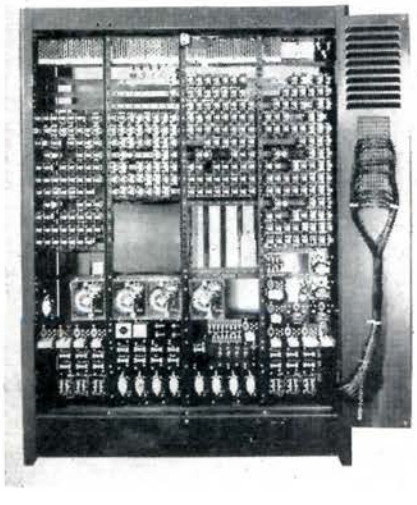
Product Reports

continued from page 203

Automatic Elevator Control System
An automatic control system which reduces average waiting time for elevators by as much as 30 per cent is the new Westinghouse *Selectomatic Mark IV*, demonstrated at a pilot installation in the Tishman Building, 666 Fifth Avenue, New York City. This new system can adjust rapidly to different traffic conditions. It is particularly suited for all types of large buildings with heavy and erratic traffic.

The *Selectomatic Mark IV* is programmed to respond instantly to any traffic demand regardless of location or direction. It is controlled by an electronic scanning device and an electronic computer. The sensing device records every traffic demand, the length of time the demand has been registered, and the load of individual cars. This information is fed into the

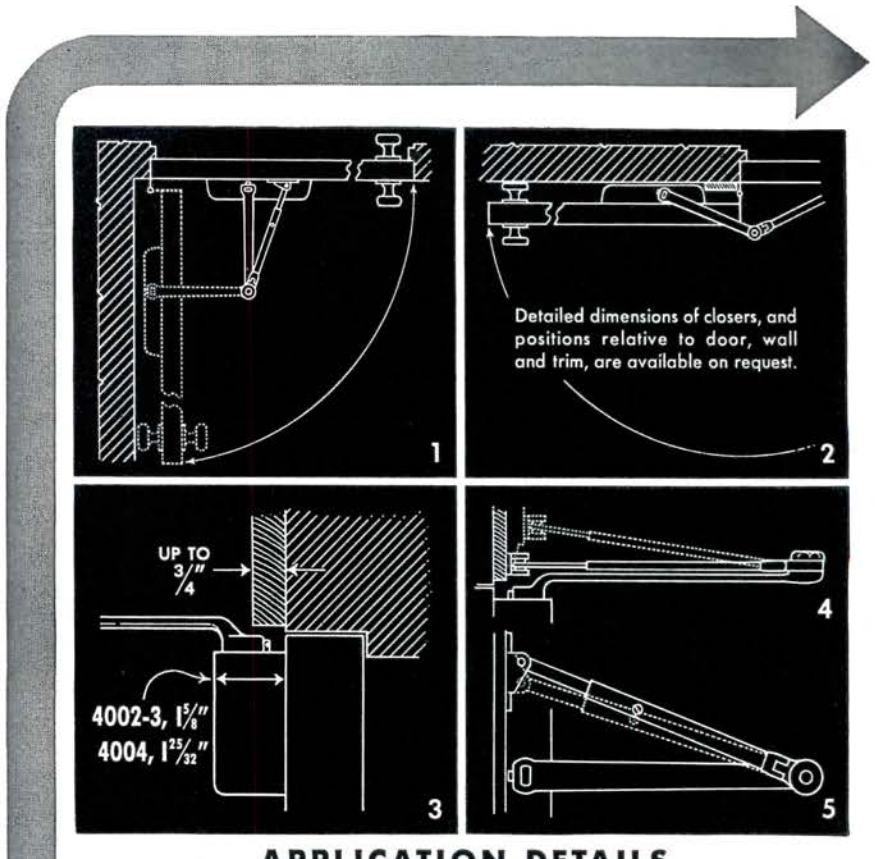




computing device, which dispatches the cars to answer calls according to the demand existing at the particular moment. Cars reverse at any floor if there is no demand beyond that floor. A car can travel down to answer an up-call; or up to answer a down-call. This automatic reversal without unnecessary travel to terminals is called demand reversal.

Should a flurry of down-calls exist, a car is immediately dispatched to respond to the highest down-call, regardless of its location. When a second car becomes available, it scans the existing down-calls and is dispatched to the floor which is the center of the down traffic. Should still another car become available for dispatching, it too will scan for the mid-point of the remaining traffic. This continues as long as the traffic demand exists. The system works just as efficiently when a flurry of up-calls exists, giving uniform and quick service to the lower and upper floors. *Elevator Division, Westinghouse Electric Corp., 50 Pacific Ave., Jersey City, N. J.*

more products on page 216



APPLICATION DETAILS

for the Modern LCN "Smoothee" Exposed Door Closer Shown on Opposite Page

As Demonstrated in Drawings Above:

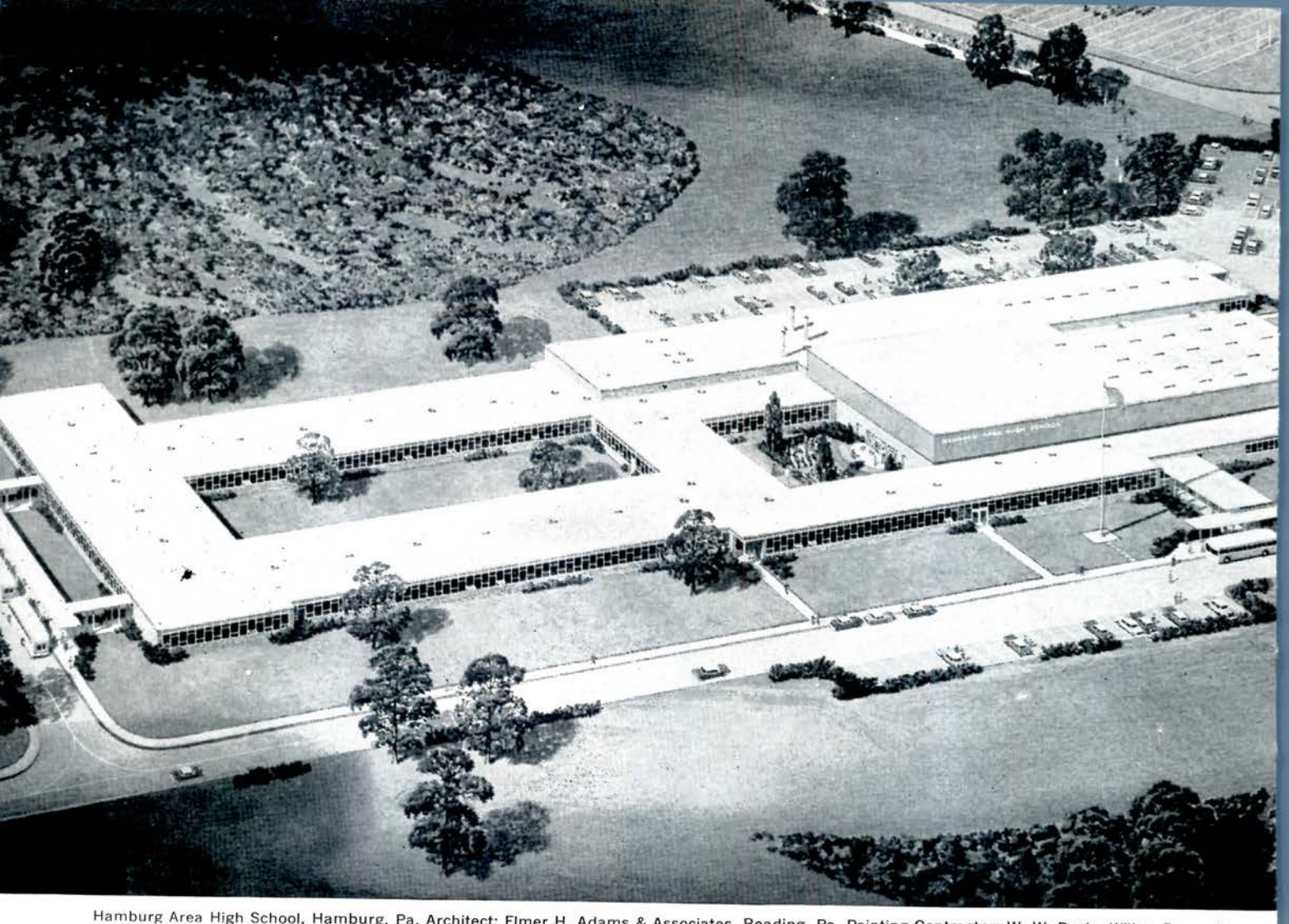
1. The LCN "Smoothee" takes less space than most doorknobs between door and wall.
2. Degree of door opening possible depends mostly on type of trim and size of butt used.
3. Arm of LCN "Smoothee" is curved to avoid conflict with almost any conventional trim.
4. Joints in arm and shoe make it easy to vary the height of shoe as needed for beveled trim.
5. Power of closer is increased or decreased by simply reversing position of shoe.

Complete Catalog on Request—No Obligation or See Sweet's 1961, Sec. 18e/Lc

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Canada: LCN Closers of Canada, Ltd., P. O. Box 100, Port Credit, Ontario


Modern Door Control by LCN "SMOOTHEE®" Door Closers
OFFICES OF TELETYPE CORPORATION, SKOKIE, ILLINOIS
Childs & Smith, Architects-Engineers
LCN CLOSERS, INC., PRINCETON, ILLINOIS
Application Details on Opposite Page



Hamburg Area High School, Hamburg, Pa. Architect: Elmer H. Adams & Associates, Reading, Pa. Painting Contractor: W. W. Davis, Wilkes-Barre, Pa.

The man from DEVOE can help your new school off to a bright start, too!

Illustrating the many ways a MAN FROM DEVOE can help you in design and planning is the Hamburg Area High School, Hamburg, Pa., now under construction.

This new school, with a rated capacity of 1243 pupils, includes an auditorium seating 1066, plus a 3-teacher station gymnasium. All corridors will have Terrazzo floors and glazed tile wainscots. The interior and the exterior of the building will wear 1200 gallons of quality Devoe Paints: Bloxfil, Vinyl Wonder-Tones, One-Coat Velour Satin Eggshell Enamel, Super All-Weather House Paint, Woodseal, and Varnishes.

Costs, including built-in equipment and extensive site work, runs to $16.01 per square foot, or $1714 per pupil, for a total of $2,131,457 construction costs.

Donald J. Monk, a MAN FROM DEVOE helped the architect develop the color scheme for the school. Recommended attractive yet long-lasting colors requiring only minimum maintenance. Assured perfect color matching and mixing by making available the new Devoe Library of Colors system. This Devoe service offers the architect a choice of 1086 colors. Enables him to duplicate the identical color in interior and exterior finishes.

The MAN FROM DEVOE in your area offers you a wealth of architectural services, all without cost or obligation. For his services, write: Devoe Color Consultation Service, Devoe & Raynolds Company, Inc., Louisville, Kentucky.

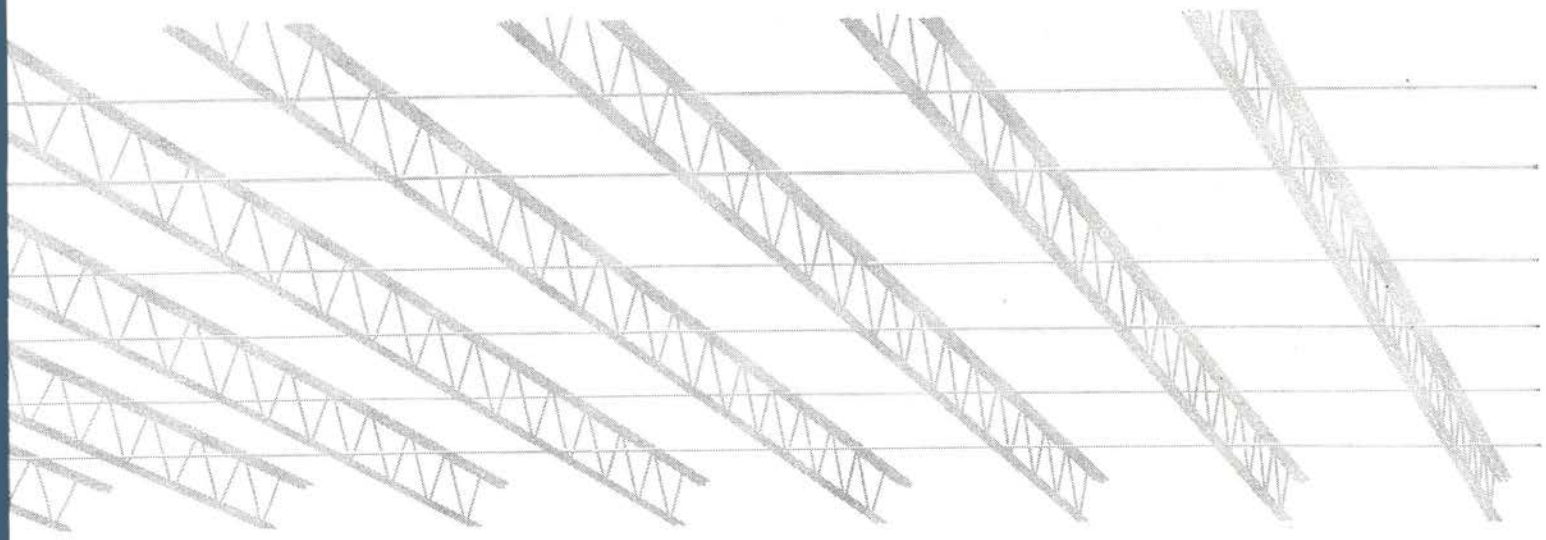
Donald J. Monk, the MAN FROM DEVOE headquartered in Philadelphia. The MAN FROM DEVOE in your area has the full-time job of helping you and your fellow-architects . . . in color planning, in analyzing costs, usage, climate and maintenance conditions, and traffic, and in building you a color reference library. All without cost or obligation. Put him to work for you on your next industrial, institutional, commercial, or residential project.



DEVOE PAINT **DEVOE** **DEVOE & RAYNOLDS COMPANY, INC.**

A subsidiary of Merritt-Chapman & Scott Corp.

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WHAT HAPPENED TO ALL THE POSTS ?





JOISTOLOGY* ELIMINATED THEM!

In the modern school or warehouse the fewer interior supporting posts or columns, the better. Clear, unobstructed floor space means more light, flexibility and storage area.

Designers, engineers and builders have found open web steel joists the practical way to span large open areas and still keep them open. These steel joists can bear heavy loads without intermediate support, with complete safety. What's more, they're lightweight, even in the largest sizes and spans, low in cost, and extremely easy to install. They adapt themselves readily to a variety of architectural styles.

Learn more about these handy structural members. Write to the Steel Joist Institute for descriptive literature on design, performance and applications.

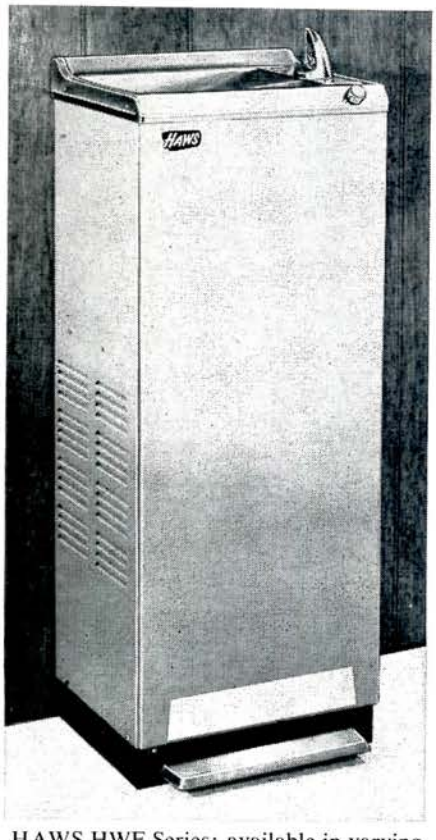
***Joist-ol-o-gy, N.** (As Webster *should have* defined it.) The art or science of designing and building more economical structures through the use of open web steel joists. 6106

STEEL JOIST INSTITUTE APPROVED

Steel

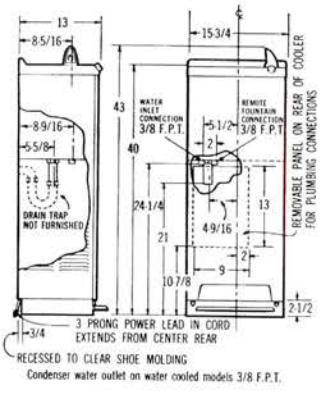
Another in a series of advertisements placed in the public interest by the STEEL JOIST INSTITUTE, DuPont Circle Bldg., Washington 6, D.C.

THE NEATEST WATER COOLER OF THEM ALL!...IT'S HAWS NEW "WALL-FLUSH" MODEL!

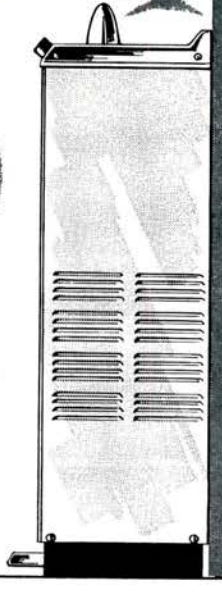


HAWS HWF Series: available in varying capacities to meet your traffic needs.

Smart styling? Surely! But *more* than that, you can now streamline interiors with this trim floor model cooler that fits snug to the wall. That's right: no waste space. Just like a "built-in"—neat, trim, clean; this HAWS design has you (the Architect) in mind. Cool, refreshing water dispensed through a perfectly styled cooler. And it's by HAWS!



Neater, cleaner!
No waste space!
FLUSH-TO-WALL!



Send for detailed spec sheets on these HAWS "HWF Series" models. They can be another plus-feature *for your next project. And see the complete water cooler line in HAWS comprehensive catalog.*

HAWS ELECTRIC WATER COOLERS

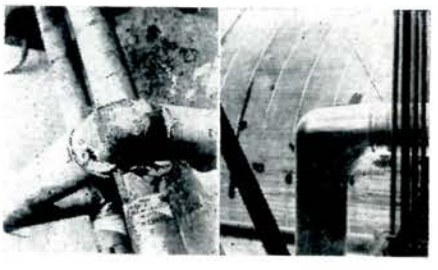
Products of HAWS DRINKING FAUCET COMPANY
1441 Fourth Street, Berkeley 10, California
Export Dept: 19 Columbus Ave., San Francisco 11, California

Product Reports

continued from page 212

Aluminum Jackets Protect Pipe Ells
An aluminum jacket to protect insulated pipe ells, *Gasco Humped Elbow*, has been designed to solve the costly problem of ell joint cracking. Cracks, which inevitably appear because of pipe expansion and contraction, seriously impair the efficiency of insulation as the elements, moisture in particular complete the disintegration.

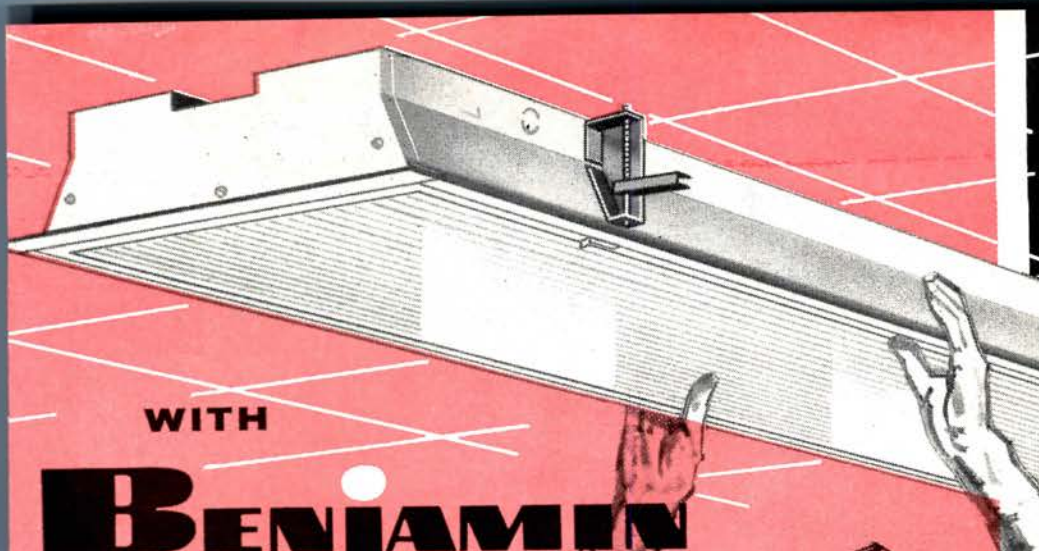
The product is designed for commercial and industrial applications



wherever piping is insulated. The contour of the hump at the vertex of the bend permits *Gasco* aluminum jackets to cover 109 combinations of pipe sizes and insulation thicknesses from a selection of only 13 manufactured sizes. The 13 sizes fit any ell from 3-in. OD through 12.81-in. OD, either long or short radius, screwed or socket welded. The two-piece elbow jackets can be attached by metal bands, screws or rivets in less than 5 minutes each. They are equally easy to detach for inspection purposes. *General Aluminum Supply Company, 1515 Eastern Avenue, Kansas City 26, Mo.*

Cast Aluminum Screen and Service
Cast metal products and specialized metal casting services for architects, now on the market under the *Hands* trademark, include the new *Aluma-Sol* solar screen system. This product, is made of cast aluminum by a new production process. It is available from standard parts in any design combination specified by the architect or designer. The **Hands** Co. custom casting service handles any kind of casting project, from a single sculpture to a production job. *Hands Co., Division of H & S Metal Products Co., 4519 Whiteside St., Los Angeles 63, Calif.*

more products on page 220



installation time cut 52%

WITH

BENJAMIN

SHALLOW-LINE TROFFERS

On job after job Benjamin Shallow-Line troffers have effected tremendous savings in installation cost; reducing installation time as much as 52%. Examine the many labor-saving features shown here such as the exclusive swivel-bar mechanism which eliminates cumbersome overhead yokes and the necessity to line-up housings with yokes.

Benjamin has the one line with a complete choice of lamp types and diffusers.
5 basic sizes: 1′ x 4′, 2′ x 4′, 2′ x 8′, 1′ x 8′ and 2′ x 2′.

1. swivel bar:

Quick adjustment can be made to align troffers in seconds with either hand or power screw driver.

2. drop-in-hinge:

No screws to tighten . . . no adjustment required. Installs on either side of housing.

3. tab-lock latch:

No tools required for permanent rattle-free fastening.

BONUS FEATURES

SNAP-IN SOCKET plate one-piece assembly snaps in or out without aid of tools.

FUSED FOR SAFETY: cartridge fuses protect equipment against overload.

ONLY 4⅛" DEEP for greater structural freedom between floors.

ONE PIECE HOUSING for added strength . . . no sections to fit together eliminates extra labor costs.

ALL THESE EXCLUSIVE FEATURES
PLUS FAMOUS BENJAMIN CRAFTSMANSHIP
ARE WHY THERE ARE MORE SATISFIED CUSTOMERS
WITH SHALLOW-LINE TROFFERS







THOMAS INDUSTRIES INC.
BENJAMIN DIVISION
207 East Broadway, Louisville 2, Kentucky
The World's Largest Single Source of Lighting for Commerce, Industry and Home.

THOMAS INDUSTRIES INC.
BENJAMIN LIGHTING DIVISION, DEPT. BAR-7
207 E. Broadway, Louisville 2, Ky.

☐ Please send me complete information on Shallow-Line Troffers.

☐ Please have your Lighting Engineer call.

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FIRM_____

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CITY_____ ZONE____ STATE_____

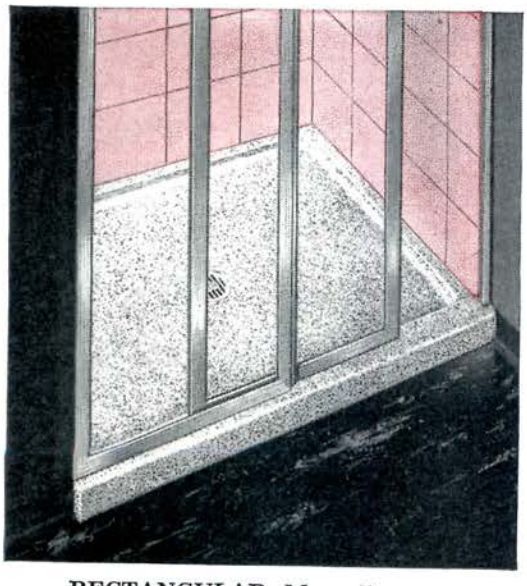
FIAT®

PRECAST TERRAZZO SHOWER FLOORS

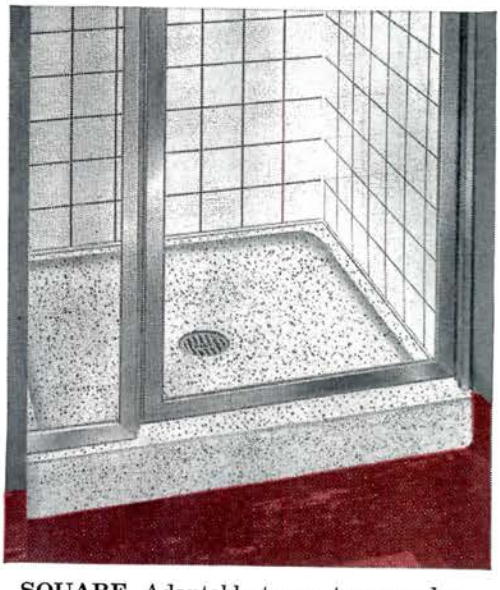


stop leaks! stop

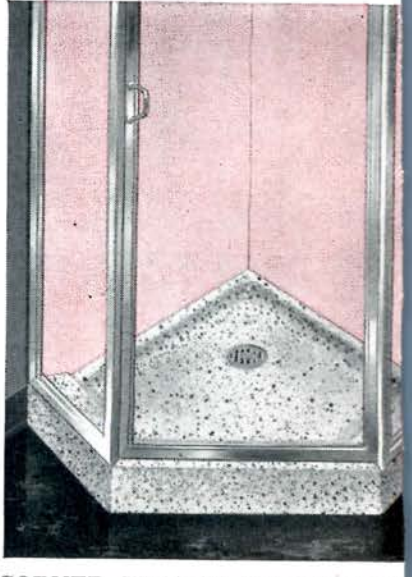
3 BASIC MODELS—11 STANDARD SIZES MEET EVERY NEED



RECTANGULAR—More elbow room and more luxurious appearance provided by this new, popular shower shape. Combine with stock sliding door for sales power.



SQUARE—Adaptable to most every plan or remodeling job. A fast, foolproof installation that adds beauty to the bath. FIAT enclosure increases appeal.



CORNER—Here's an economical way add half-a-bath in new building or Space saving corner model helps build full bath in half bath space.

Since 1922 . . . First in Showers / *Packaged Showers • Doors • Floors • Toilet Room Partitions*



call-backs!

FIAT PRE-CAST SHOWER FLOORS INSTALL IN MINUTES INSTEAD OF HOURS—ARE LEAK-PROOF FOR A LIFETIME!

Now, you can build-in more quality at less cost with a PreCast FIAT Floor. Simply slides into place—eliminates sub-pan, mortar and tile. Made of lustrous Terrazzo, the FIAT Floor guarantees a lifetime of sparkling beauty.

Permanently leakproof saving you the risk of costly call-backs. Over 2,000,000 FIAT Floors in use assure you of 100% customer satisfaction. Send letter today for facts and figures on FIAT—the shower floor that gives you more!

WHEREVER YOU ARE, YOU'RE NEVER FAR FROM ONE OF 5 FIAT FACTORIES

NEW YORK
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Sold and installed by Plumbing Contractors—Distributed by leading Plumbing Wholesalers everywhere. Write for details.

FIAT METAL MANUFACTURING CO., 9301 Belmont Avenue, Franklin Park, Ill.

CIRCLGRID 45

LIGHT CONTROLLING VINYL LOUVERS

- Unique cellular design for rigidity and lightness—weighs only 3½ oz./sq. ft.
- 500 Circular openings/sq. ft. for circulation of cooling air
- Approved for installation under sprinklers
- Emits up to 25% more light than other louvers
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PATENT APPLIED FOR IN U.S.A. AND FOREIGN COUNTRIES



Approved by building codes of most major cities

PHOENIX, ARIZONA



Office Area—Circlgrid Ceiling Total Area—10,000 Sq. Ft. Commission of Arizona

DETROIT, MICHIGAN



Circlgrid Luminous Ceiling installed in retail store

ERIE, PA.



Circlgrid Luminous Ceilings cover 11,000 Sq. Ft. at Hamot Hospital's new addition.

CIRCLGRID goes where quality counts

Using the entire ceiling to enhance interiors gives the architect a new design horizon. Circlgrid light controlling louvers provide a pleasing permanent design that transforms the entire area into an efficient light source—eliminates glare concentrations common to conventional unit lighting. May we refer you to Circlgrid installations near you for your study?

SEE OUR CATALOG IN SWEET'S — OR WRITE FOR COPY

Write for sample and test data

Address Box 655, Erie, Pa.

circlvac plastics

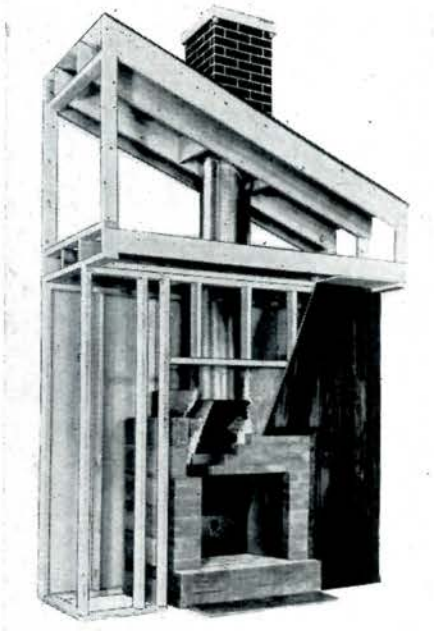
Division—The Wilson Research Corp.

Product Reports

continued from page 216

Masonry-Style Fireplace

The new *Heatilator 500 Series* fireplace is designed to meet the need for a low cost, easy-to-install, yet trouble-free masonry fireplace. There is no limit to face and mantel designs with the 500 Series fireplace. It can project into the room or be flush with the wall; located in a corner or inside

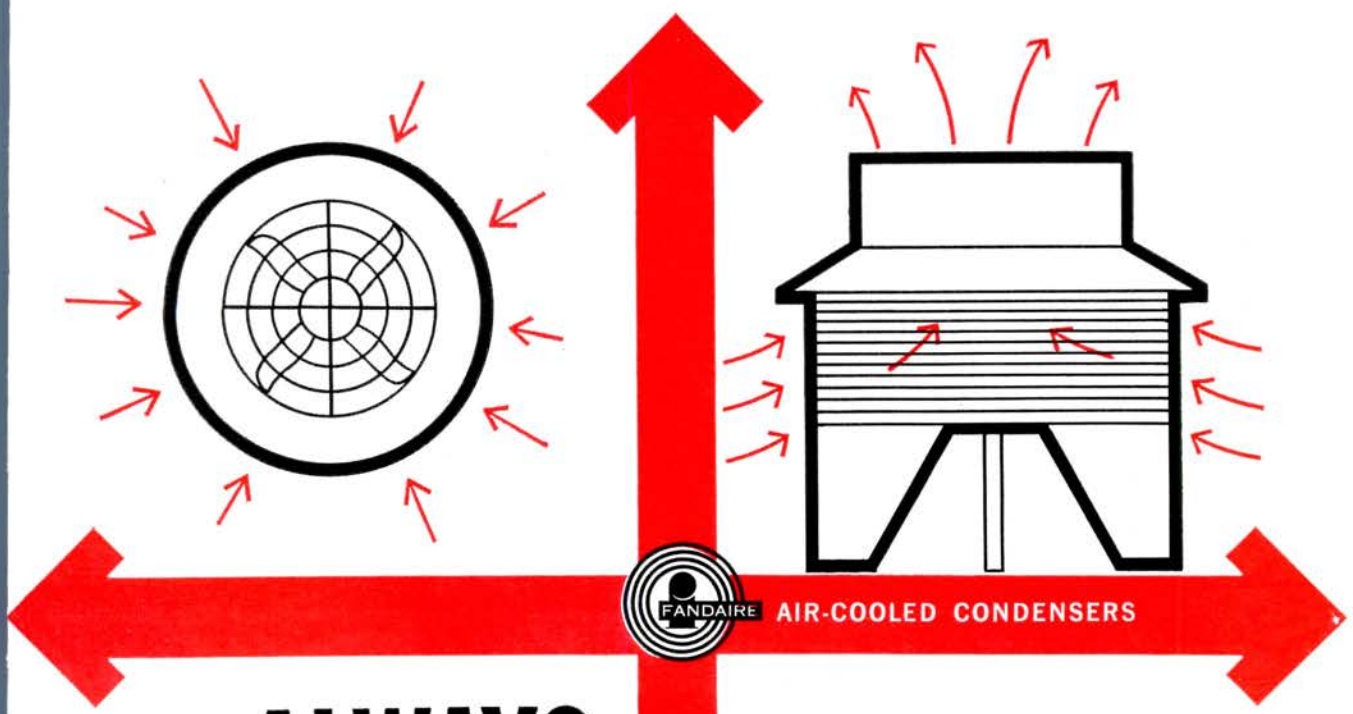


wall. Factory-engineered parts, complete from hearth to house-top, include a steel fireplace form, intermediate chimney sections, and exterior chimney housing, designed for easy installation and guaranteed fireplace operation. All the builder need do is lay a standard firebrick hearth, enclose the fireplace form in concrete block, erect the prefabricated chimney with exterior housing and apply the decorative masonry desired. *Vega Industries, Inc., Syracuse 5, N. Y.*

Nurse's Call System

A new nurse's call system for nursing homes and small hospitals, provides for dual signaling for emergency and general calls, using both audible and visible means. *Noti-Call* components are modular to permit adaptation to any size or type of installation. *Notifier Corp., 3700 North 56th St., Lincoln, Neb.*

more products on page 226



ALWAYS FACED RIGHT

SET FANDAIRE ANYWHERE

REGARDLESS OF WIND DIRECTION

Fandaire's original circular design has basic exclusive features that are making this air-cooled condenser the new standard of the industry. There are good reasons why: this modern low silhouette condenser is engineered around the high heat-dissipating Yuba fintube. Every spiral is surrounded by swiftly moving cool air from every direction. Although Fandaire's heavier fin construction assures higher heat transfer efficiency, the entire unit weighs at least one-third less than ordinary condensers.

Fandaire's circular design eliminates return bends and allows a true counterflow arrangement – coolest gases meeting the coolest air. Cool air is drawn in from all sides, not off the hot roof . . . hot air is expelled up and out. The entire unit can be positioned where needed, without guy wires or extra bracing. Piping and installation savings can be considerable.

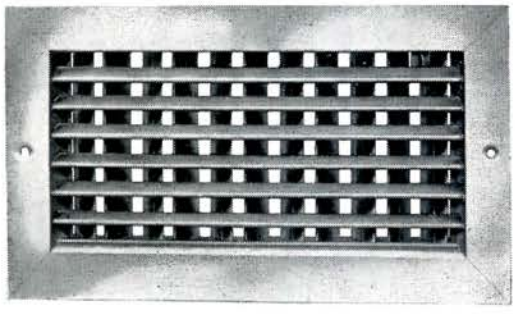
Built for industrial, commercial and home installation – from 3 to 120 tons, single or multiple units. Get full details today.

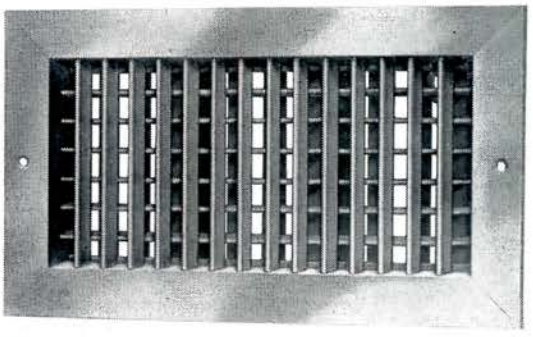
YUBA

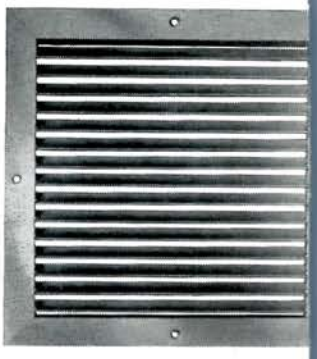
specialists in circular air-cooled condensers and condensing units

YUBA FANDAIRE DIVISION
Tulsa, Oklahoma

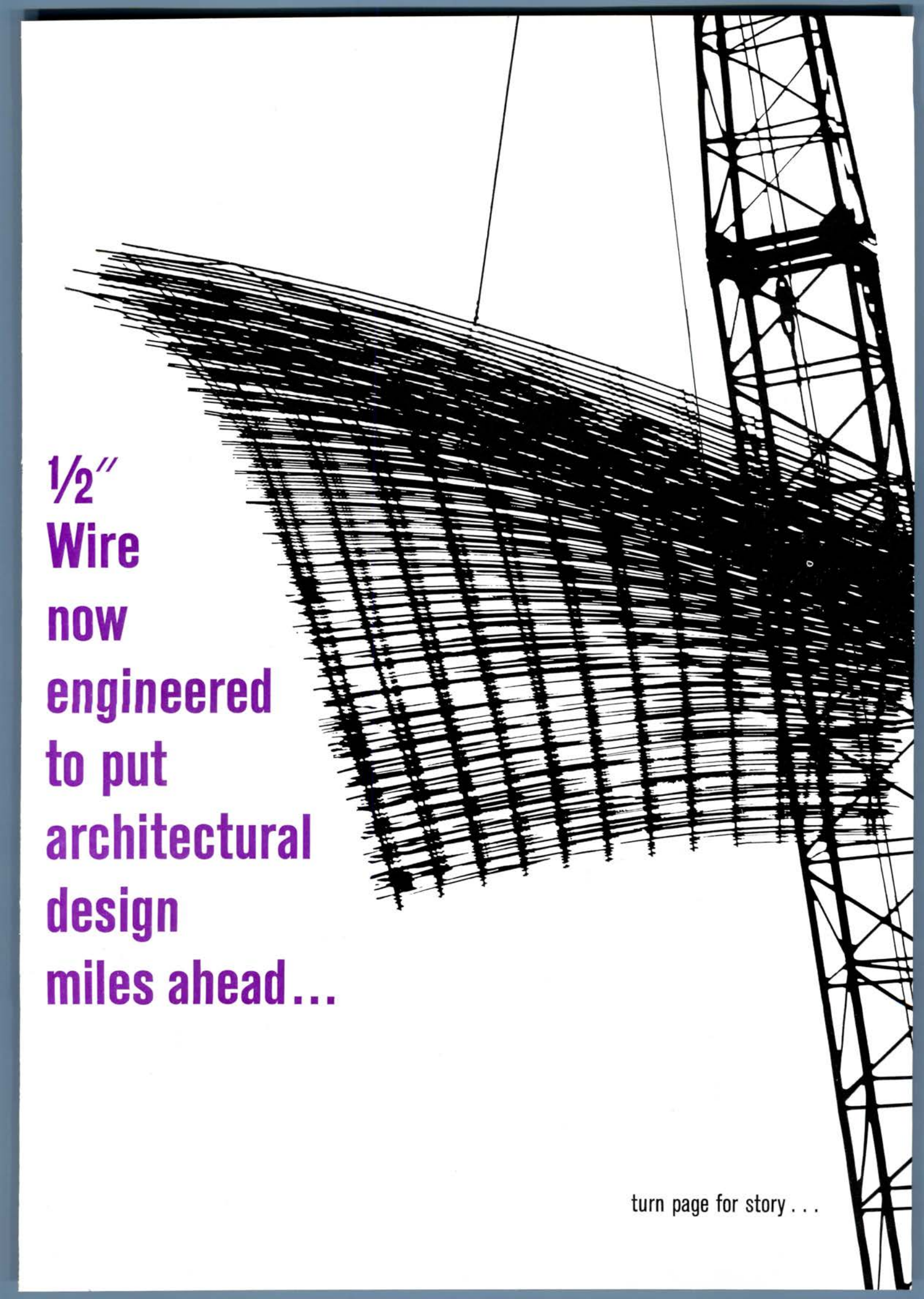
YUBA CONSOLIDATED INDUSTRIES, INC.







PRESENTING A COMPLETE NEW LINE



½″ Wire now engineered to put architectural design miles ahead...

turn page for story . . .

Now . . . extra-heavy ½″ USS American
for design versatility and lowe

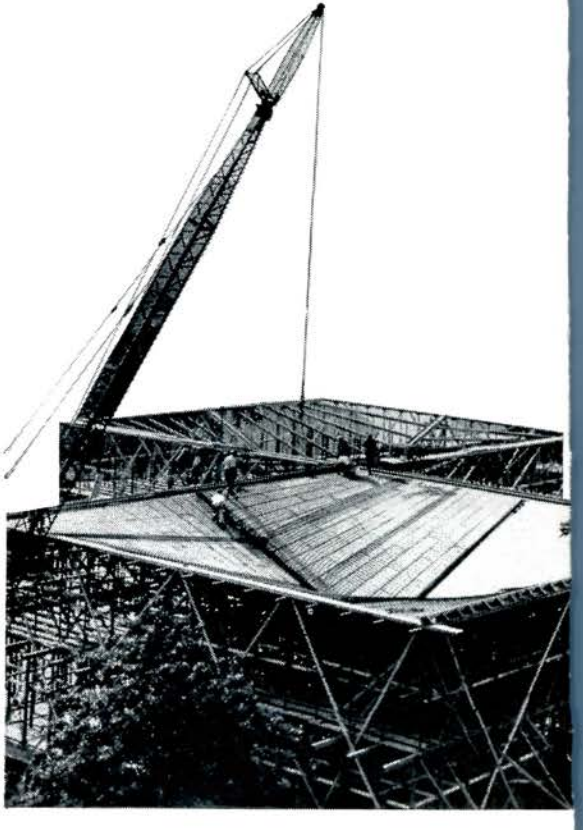


IN THIN-SHELL HYPERBOLIC PARABOLOID ROOF, SAVES 6 DAYS' CONSTRUCTION TIME.

The thin-shell roof of the new library at Hunter College consists of six 60-ft. square inverted concrete umbrellas. They are joined at the edges to form a roof 120 ft. wide by 180 ft. long. Each umbrella is divided into four hyperbolic-paraboloidal quadrants.

Steel reinforcement for the "inside-out" umbrellas was provided by USS American Structural Welded Wire Fabric. Each umbrella used twelve 31′ x 10½′ Welded Wire Fabric mats.

Installation was easily and speedily made by a small crew. When the concrete work was completed it was found that the use of pre-fabricated steel fabric had actually saved labor and material . . . and construction time had been cut by six days!



Structural Welded Wire Fabric cost concrete reinforcement



IN THIN FLAT-PLATE FLOOR SLABS, SAVES 15 WORKING DAYS

This handsome 12-story apartment building at 209-223 East 53rd Street in New York City was the first to be constructed with heavy welded wire fabric for reinforcement of thin flat-plate concrete floor slabs. Flat slab floor framing was selected because: (1) the thin (5½″) flat-plate slab with its smooth surfaces unbroken by offsets for beams and girders, offers more ceiling height, and (2) it permits flexibility of partitioning and trims plastering and decorating costs.

Structural Welded Wire Fabric was selected to reinforce the slabs because the machine prefabrication of high yield strength steel wires offered: (1) Reduction in time and cost of handling 10′ x 20′ prefabricated wire fabric mats as opposed to placing and tying individual reinforcing members—a savings of 1½ days to 2 days per 140′ x 60′ floors . . . and with fewer lathers. (2) Assurance that steel will be placed where required. (3) Positive mechanical anchorage in the concrete to assure crack control. **USS American Structural Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. This assures correct placement and distribution of the steel. The wires are drawn to the very close tolerance of plus or minus 0.003″.**

The new high tensile strength (75,000 psi minimum) and high yield strength (60,000 psi minimum) of USS American Structural Welded Wire Fabric permitted a higher working stress for fabric than would have been allowed by the building laws of the City of New York for hot-rolled bars.



See next page . . .

USS **American Steel and Wire Division of United States Steel**

Here's why job-tailored USS American Structural Welded Wire Fabric is your best concrete reinforcement

You can now get USS American Structural Welded Wire Fabric with ½" diameter wires spaced as close as 2" on centers in both directions! These new areas of steel, plus the many time-tested advantages of Welded Wire Fabric, make it the best structural reinforcement for all types of construction.

1. USS American Structural Welded Wire Fabric is made from **cold-drawn** high tensile steel wire. This wire is carefully produced to conform to the requirements of ASTM Specifications A82-58T. The minimum tensile strength is 75,000 psi and the minimum yield, as defined in the specifications, is 80% of the tensile or 60,000 psi. Actually, the cold drawn steel wire has no yield point in the conventional sense of plastic stretch at a constant load. Yield occurs gradually with increasing load beyond the 60,000 psi minimum. This physical advantage of cold-drawn wire makes it **the ideal concrete reinforcement.**

2. USS American Structural Welded Wire Fabric is completely machine prefabricated by electrically welding all intersections to conform to ASTM specifications. This high-strength connection assures positive mechanical anchorage in the concrete.

3. USS American Structural Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. The wires may not vary more than ¼" center-to-center than the specified spacings. This assures correct placement and distribution of the steel. **Wires are drawn to the very close tolerance of plus or minus 0.003".**

4. USS American Structural Welded Wire Fabric requires very little on-the-job tying. Large prefabricated sheets are shipped to the job and placed as a unit. This eliminates thousands of ties and results in important savings.

For more information on the advantages and applications of American Structural Welded Wire Fabric, get in touch with our nearest Sales Office or contact American Steel and Wire, Dept. 1177, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

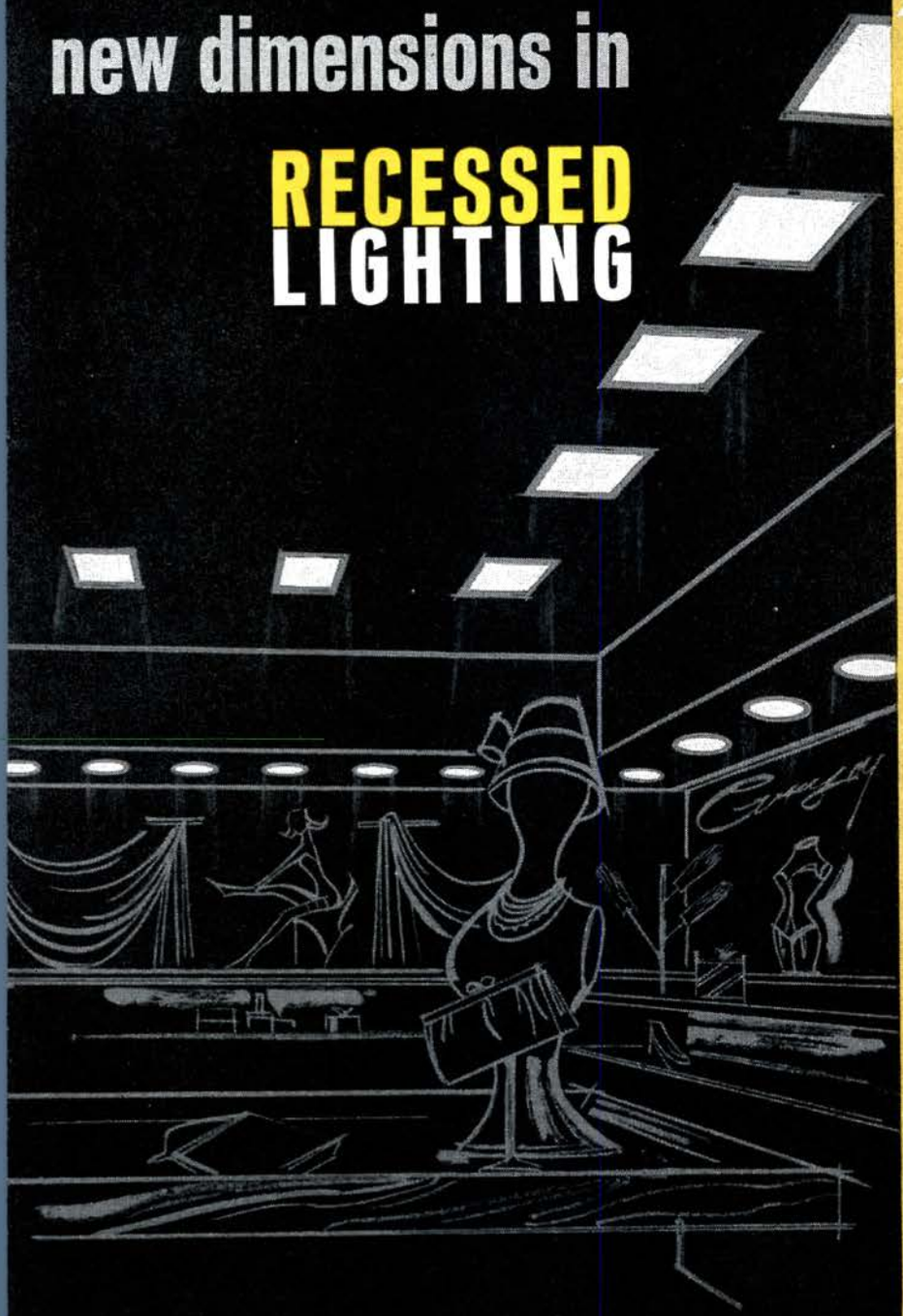
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MOE
LIGHT

new dimensions in RECESSED LIGHTING

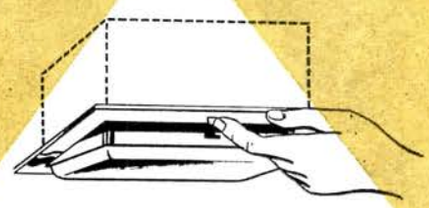




No Light Leak Frame and Trim
Reflector interlocks inside trim eliminating all light leaks. Trim need never be removed from ceiling.



Full Reflector
One piece—full size. Reflects maximum light. Alzak or Polspec finish.



Push Latch
Releases glass easily without tools for relamping and cleaning.



Installs Quick and Easy
Housing completely assembled. No screws or nails needed with self-locking bar hangers and finger-tip adjustment.

FEATURE ENGINEERED FOR EXACTING ARCHITECTURAL SPECIFICATIONS

Moe Light is the new dimension in Recessed Lighting, as they have 65 variations in type, trim and glass, which permit complete architectural flexibility. They have been engineered and laboratory tested for maximum illumination efficiency and job-tested for simplified installation.

Examine the features shown here . . . then add the additional advantages of prewired housings for all electrical codes . . . commercial units with Alzak reflectors and 14-gauge steel . . . competitive prices . . . these all combine to assure your specifying the best, when you choose Moe Light. Now you can secure *all your recessed lighting* needs from *one source*, Moe Light. Consult with a representative for complete details.

SEE SWEET'S 1961 ARCHITECTURAL FILE FOR COMPLETE SPECIFICATIONS



***FREE!* NEW TECHNICAL CATALOG**
Specifications, coefficient and candle power tables, section and plan views, trim details. Complete technical data on the entire new line.

MOE LIGHT

THOMAS INDUSTRIES INC.
MOE LIGHT DIVISION
207 East Broadway, Louisville 2, Kentucky

The World's Largest Single Source of Lighting for Home, Industry and Commerce.

THOMAS INDUSTRIES INC.
Moe Light Division, Dept. MAR-7
207 E. Broadway, Louisville 2, Ky.

☐ Please have your sales representative call.

☐ Please send me your new free catalog of MOE Light Recessed Fixtures.

Name_____

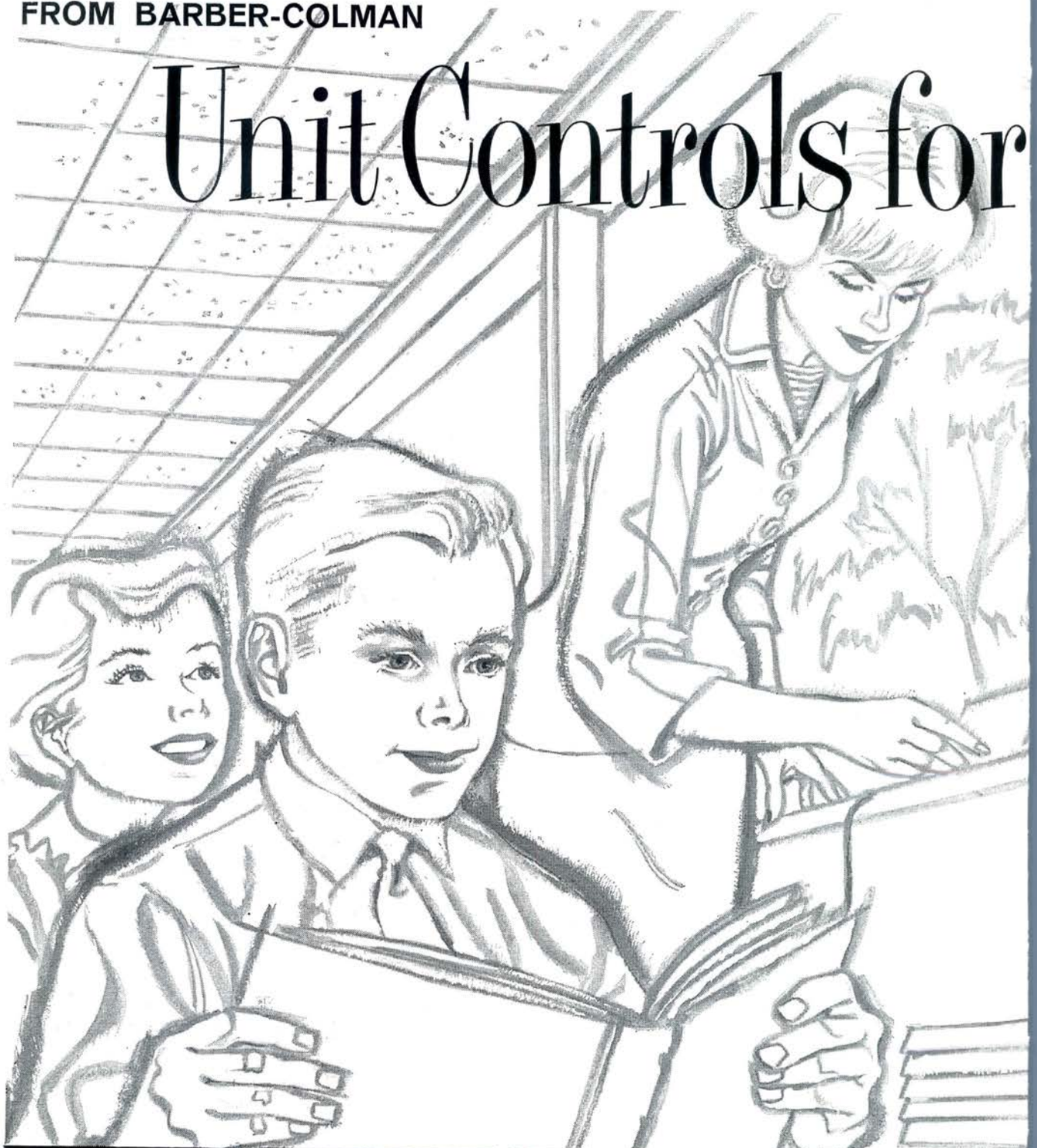
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FROM BARBER-COLMAN

Unit Controls for





Use electricity that's already provided for the unit ventilator.



. . . to operate reliable Barber-Colman electric controls.

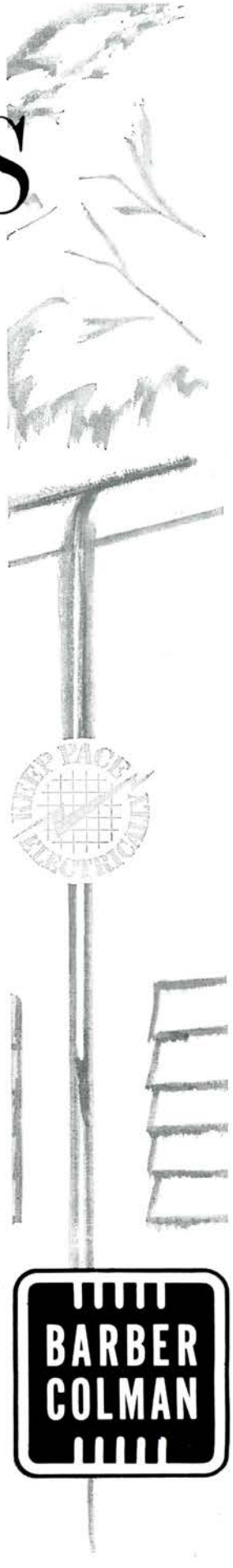


Send for free Booklet F-9975 about classroom climate control.



Ask to hear the new Barber-Colman slide film: "The Sampling Chamber Story."

Unit Ventilators



. . . what they are . . . why they are better . . . how they reduce costs and best meet future requirements for expansion

For many new schools, as well as additions and remodeling jobs, unit ventilators have been specified to provide individual and independent heating and ventilating of each classroom . . . and in a growing number of cases, year-around air conditioning which can be included at the time of installation or added later.

The numerous benefits of this individual classroom climate conditioning are insured by Barber-Colman packaged electric controls developed specifically for the application.

No wall thermostat

First of all, Barber-Colman Company has taken the room thermostat off the wall and located it in a "sampling chamber" inside the unit ventilator enclosure. This proven concept checks the temperature of the room air five to six times as fast as any other system and corrects almost instantly for the slightest deviation. There are no drafts or wide fluctuations to cause discomfort and inattention or to aid and abet the common cold.

Mounting of the room thermostat inside the unit ventilator enclosure also eliminates the cost of extra wiring or piping necessary to install a thermostat on the wall. The temperature setting can be changed just as it can with a wall thermostat.

Lower costs

There are two basic types of control systems offered for unit ventilators. One employs an electrical circuit and electric motor operators to actuate the dampers which control temperature and air flow. The other type of system is operated by compressed air.

It makes good sense and saves money to utilize the electrical power that exists in each unit ventilator, as opposed to adding, at considerable cost, a completely separate compressed air piping system.

Maintenance costs are lower, too. Barber-Colman thermostats have no moving parts —and the motor operators provide the same high reliability you have come to associate with an electric motor.

What about school additions?

Is your school planned for future enlargement? With the packaged Barber-Colman controls, additions present no problems. The contractor simply connects the controls to the electrical wiring to create a complete "system" for each room.

Also, if you install unit ventilators designed for year-around air conditioning at a later date, Barber-Colman controls can be modified to handle the air conditioning at a much lower cost than can other types.

Summation of the case

Barber-Colman packaged electric controls are designed specifically and solely for unit ventilator installations—and have been thoroughly proven in thousands of classrooms throughout the country. They are your best buy because:

1. They provide a complete and independent control system for each unit ventilator, carry out fully the concept of *unitized* classroom climate conditioning.
2. They cost less to install because they use electricity which is already there and because they do not require a wall thermostat.
3. They provide faster response, more uniform temperatures, and freedom from drafts with the exclusive sampling chamber which continuously checks the room air temperature.
4. They require less maintenance than nonelectric systems.
5. They can be factory-mounted by the unit ventilator manufacturer to further save on installation costs.
6. They reduce the cost of additions to the school because they do not have to be connected to a central system.
7. They can be converted over for year-around air conditioning control at lower cost than other systems.

For full details, consult your local Barber-Colman Automatic Controls Field Office or write to the address below.

BARBER-COLMAN COMPANY

Dept. S, 1304 Rock Street, Rockford, Illinois

DUKANE

Medallion

LANGUAGE LABORATORY SYSTEMS
PROVIDE AN UNMATCHED COMBINATION OF FEATURES FOR THE ULTIMATE IN LANGUAGE TEACHING AND LEARNING EFFICIENCY



PERFORMANCE—Advanced transistorized circuitry provides high fidelity quality at "tape-saving" speed of 3¾ i.p.s. Matched components assure superior voice fidelity.
FLEXIBILITY—Single teacher can program several levels of language instruction simultaneously. Entire class, groups or individuals can be contacted, monitored or recorded without interruption to other classroom programming. Simplified intercom.
INTERCHANGEABILITY—All components provide plug-in convenience for simplified installation, replacement or inspection.

INSTRUCTOR'S CONSOLE

- Fingertip control of 25 to 50 student positions.
- Five master programs originated from built-in equipment.
- Drawer-housed tape recorders increase desk top working surface.

STUDENT POSITIONS

- Compact, handsomely styled modules feature sturdy construction.
- Compact design permits more positions per row and more positions per classroom.
- Electronic System Panel offers plug-in convenience. All sub panels feature plug-in convenience.
- Basic audio-passive positions can be easily expanded to audio-active or audio-active-compare positions.
- Tape decks feature easier load and student control.
- Multi-position microphone offers new flexibility.
- Fire-resistant acoustical partitions provide greater safety, minimize classroom noise.
- Human engineered controls within easy sight and reach of student operator.

THE DUKANE "MEDALLION" BUILDING-BLOCK SYSTEM CUTS ADD-ON COSTS TO A MINIMUM.

FROM THIS.....TO THIS!



DUKANE engineering has cut the add-on cost barrier. The instructor's console is easily expandable from 25 to 50 positions. Student audio-passive, audio-active and audio-active-compare positions are easily interchanged utilizing existing wiring. Student position modules are available in increments of one and two position styles. These modules can be easily fastened together in odd or even numbered rows according to classroom dimensional requirements.

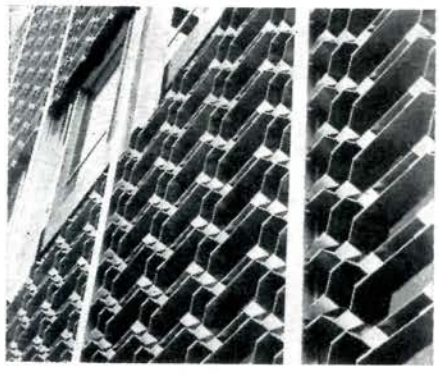


Write for new literature available

DUKANE CORPORATION
DEPT. AR71 ST. CHARLES, ILLINOIS

Product Reports

continued from page 226



Decorative Solar Screen
C/S Octalinear Grille, for solar and vision screening, room and space dividing, and decorative grille applications, offers variation of pattern designs and a wide choice of finishes. Aluminum screen can be positioned in either a vertical or horizontal plane to shield any type window, roof, or wall. Or it can be used to screen unenclosed areas. Units can be used in bell towers, cooling towers, or as decorative space dividers. Finishes include mill finish, clear or colored anodize finishes, a wide range of vinyl and epoxy base color coatings, and porcelain enamel finishes. The basic standard screen design is the 4-in. *Octalinear* pattern with 4-in. deep cell walls in a plain mill finish. There are, however, many possible variations in pattern, cell depth, wall thickness, and finish to suit an architect's requirements. *Construction Specialties, Inc., 55 Winans Ave., Cranford, N. J. or West Grant St., Escondido, Calif.*

Sound Control Insulation
Fiberglas blankets faced with an impervious septum in batts 96 in. by 1½-in. thick, are placed back to back between studs before dry wall or lath and plaster are applied to provide insulation against sound. This treatment is said to reduce sound level approximately 83 per cent compared to a conventional 2 by 4 stud wall. To insure isolation efficiency, a vertical saw cut must be made in each partition stud beginning 6 in. from the top to within 6 in. from the bottom. This is done to prevent sound being transferred through the wood members of the wall. *Owens-Corning Fiberglas Corp., Toledo, Ohio.*

more products on page 238



DRIP-FREE Unitized Construction

Unretouched photograph

This cut-away view illustrates how the improved **"SOLID-FIL"** development completely encapsulates internal ballast components leaving no voids . . . forming integrated ***UNITIZED CONSTRUCTION***.

- **DRIP-FREE**
- **QUIETER**
- **MORE EFFICIENT HEAT DISSIPATION**
- **GREATER SAFETY**

CBM CERTIFIED by ETL

Advance Transformer Co. brings the lighting industry another outstanding development in Fluorescent Lamp Ballast design. This design incorporates the principle of *Unitized Ballast Construction* . . . ballast housing, core and coil, capacitor and the improved **"SOLID-FIL"** development, combined with an exclusive method of controlled pressure filling, offer DRIP-FREE *Unitized Construction.*

The Advance **"SOLID-FIL"** development differs from other types of solid fill materials in that it retains a pliable consistency and will not become brittle with age or heat, permitting retention of its excellent thermal and sound deadening characteristics. Accelerated heat tests far above those experienced in an actual lighting installation, *proved conclusively no deterioration or drippage* of the Advance **"SOLID-FIL"** development.

The new Advance **"SOLID-FIL"** ballasts assure quieter operation, more efficient heat dissipation, greater safety and drip-free operation.

"The Heart of the Lighting Industry"



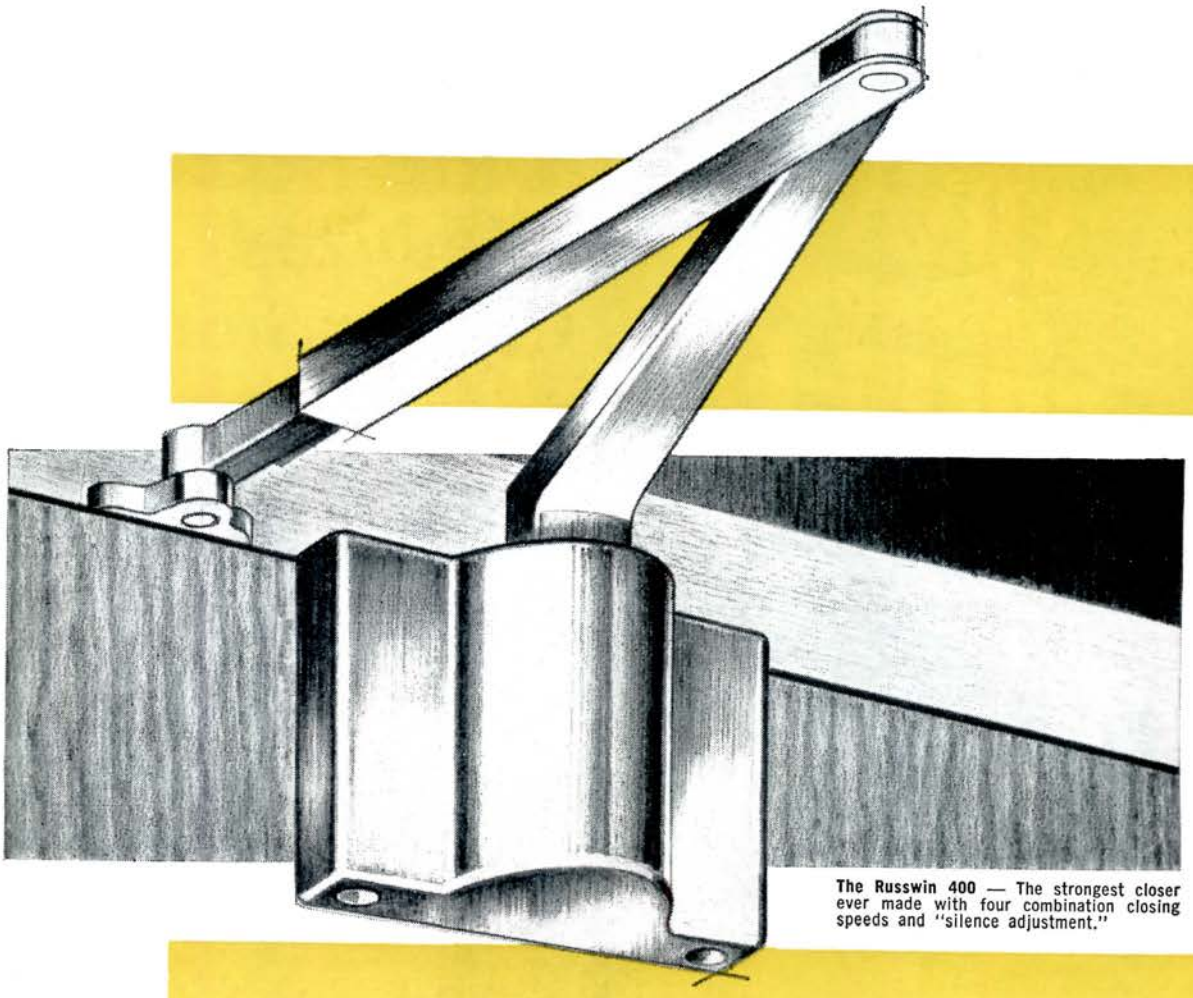
ADVANCE®

CBM CERTIFIED by ETL

WORLD'S LARGEST EXCLUSIVE MANUFACTURER OF FLUORESCENT LAMP BALLASTS

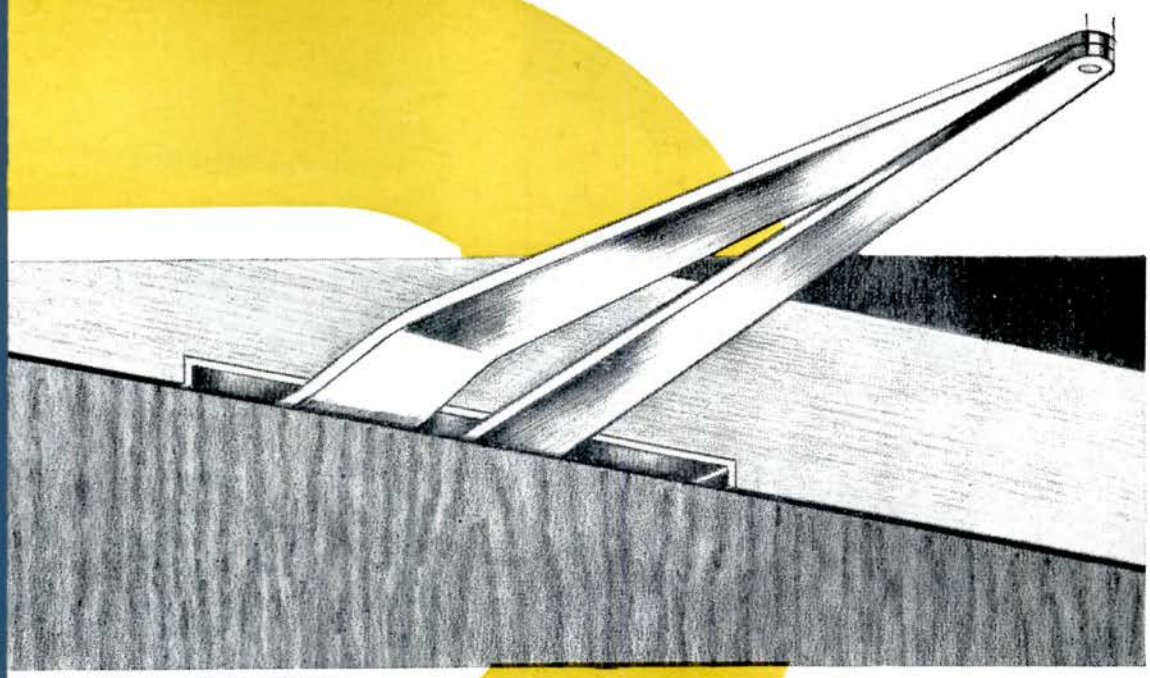
TRANSFORMER CO.

2950 NO. WESTERN AVE. CHICAGO 18, ILL. U.S.A.



The Russwin 400 — The strongest closer ever made with four combination closing speeds and "silence adjustment."

the russwin "R"... what



Russwin Top-Railer — Made to "400" dards. Can be surface-mounted or con- ed in top-rail.

t means on door closers

The Russwin "R" assures (1) creative styling — smart, modern, functional; (2) Russwin quality — quality that speaks for itself; (3) freedom of choice: there's a Russwin door closer — lockset, exit bolt, or *whatever* doorware you need — for any door, in any building. Russell & Erwin Division, The American Hardware Corporation, New Britain, Connecticut.

RUSSWIN

Kinnear Motor Operated **Rolling Doors...**



a feature of Theo. Hamm Brewing Company's

Automated Loading Dock



Here again, Kinnear Rolling Doors play a key role in *modern efficiency at its best!*

The 23 power-operated Kinnear Rolling Doors you see above are controlled independently from a master switch.

Conveyors ending just inside each door deliver pallets holding cases of beer to the loading dock. The door can then be opened by remote control. A fork truck picks up the pallets, travels onto dock levelers (at right, top photo) and loads the pallets on the waiting truck.

(Empty cases on pallets are returned to other conveyors through doorways installed higher above the dock level.)

By opening straight upward and coiling compactly over the doorway Kinnear Rolling Doors permit conveyors to come within *inches* of the door. Doors can be placed as close together as desired, with control switches at each door if preferred.

(Auxiliary chains, for door operation in case of power failure, are stored in the hood of each door.)

A rugged, all-metal curtain protects each opening when the Kinnear Rolling Door is closed — a positive barrier to trespassers, vandals, wind, and weather, *plus added protection against fire.*

Your needs may be vastly different; but *wherever you need* doors, you need the advantages of Kinnear Rolling Doors.

The KINNEAR Manufacturing Company

FACTORIES:
1860-80 Fields Avenue
Columbus 16, Ohio
1742 Yosemite Avenue
San Francisco 24, Calif.

Offices and Agents in All Principal Cities

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

Product Reports

continued from page 234



Fluted Glass Partitions
Inside offices have the benefit of outside light when the walls are Modern's *Ful-Lite* wall. Corridors and offices borrow light from each other, yet privacy is assured with the fluted glass. *Ful-Lite* can be used in combination with any of Modern's other wall surfaces. *Modern Partitions, Inc., Holland, Mich.*



Cork Pegged Planks in Random Widths
A new flooring style, random width, pegged plank floor of cork, has been designed to meet the growing trend to early American decor, combines warmth, resilience, quietness, and rich appearance with Kentile's exclusive polyurethane finish that makes cork easy to clean. *Custom Cork Pegged Planks* are available in light, medium and dark random tones, in widths of 4, 6, and 8-in. and in 36-in. lengths. *Kentile, Inc., Brooklyn, N. Y., South Plainfield, N. J., Chicago, Ill. and Torrance, Calif.*

more products on page 242



IF THE NEW GYM FLOOR BECOMES SLIPPERY,

WHOSE REPUTATION WILL SUFFER?

Stop floor problems before they begin by specifying a floor maintenance program!

Only a year old, but the gym floor looks as if it has been around for at least ten years. Why? Maintenance products that weren't quite right couldn't save the new look. But try and prove to others that poor maintenance is at fault. Other possibilities are usually mulled over first. The wood floor was incorrectly installed. And so on . . . ad infinitum!

This is why Huntington suggests that you specify a complete floor maintenance program for all the floors in the new building. And specify this complete program before the building is constructed; before people who are not experts ruin the floors. Our representative, the Man Behind the Huntington Drum, will be happy to assist you at no obligation. He has had much experience solving (and preventing) floor maintenance problems. And the wide range of Huntington maintenance products for all types of floors has been tested by both time and highly-skilled laboratory technicians. Look for our representative's name, address and telephone number on the back of our insert in Sweet's Catalog, or write us.

see our catalog in Sweet's or write for copy

Please send the following:

- ☐ Your folder with complete floor maintenance specifications and descriptions of Huntington floor care products
- ☐ The new Huntington Gym Floor Manual
- ☐ Have your representative contact me.

NAME _____ TITLE _____

Tear out this coupon and attach it to your firm letterhead for more information.



Where research leads to better products . . . **HUNTINGTON**

HUNTINGTON LABORATORIES • HUNTINGTON, INDIANA • Philadelphia 35, Pennsylvania • *In Canada:* Toronto 2, Ontario

Only star performers in this arena

Because of the persistence of business and civic leaders, skillful engineering, and close cooperation of material suppliers, Pittsburgh can now boast of the world's largest dome and the only one that *moves*. The dome is as high as a 12-story building, 415 feet in diameter, and it's supported by a 1,400-ton steel tripod that holds the eight-leaved roof like a hand holding the top of a cap. Six of the eight leaves are free to roll back and let in a view of the sky. For theatrical performances, a section of 2,100 seats can be raised hydraulically to uncover a 114′ by 130′ stage . . . another first.

On the opposite page are three examples of how careful planning and quality building materials from Koppers helped the Public Auditorium Authority insure permanence and star performance from its world-famous Arena. They show how Koppers products can also give *you* greater design flexibility because they protect the basic construction materials. And this greater flexibility and permanence are frequently possible with lower initial costs and lower maintenance cost.

Architects: Mitchell & Ritchey, Pittsburgh, Pa. *Owner:* Public Auditorium Authority of Pittsburgh and Allegheny County. *Executive Director:* Edward Fraher. *Resident Consulting Engineer and Superintendent of Construction:* H. Rey Helvenston, Pittsburgh, Pa.





Sound traps keep the fans quiet

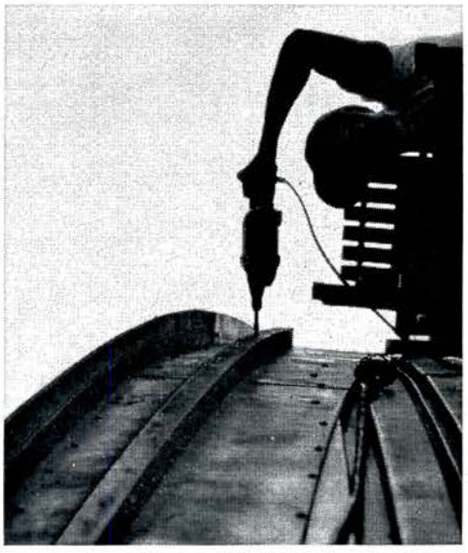
The auditorium's powerful ventilating system moves 130,000 cubic feet of air per minute—and to stifle the roar of the high-powered fans, the engineers installed 118 AIRCOUSTATS,® designed and manufactured by Koppers. The AIRCOUSTATS are located in the ductwork of air intakes and in the 24 huge metal pylons which discharge heated or cooled air into the auditorium. AIRCOUSTATS' scientific sound-trap design muffles all frequencies of fan noise—but doesn't block the smooth passage of air. AIRCOUSTATS are economical. They're easy to install in new or existing ductwork and are permanent, trouble-free, sturdy, dust-free, and fireproof. For more information on completely *quiet* air circulation, check the coupon.

Pressure-treated wood provides light, strong, permanent anchor

Wood—one of the *oldest* construction materials, proved to be the *best* material for the vertical nailing strips that anchor the dome's stainless steel sheets. Wood is light, yet is strong enough to hold screws that attach the batten assemblies and prevent blow-off of the stainless steel sheets. Wood also provides insulation and prevents condensation within the blanket insulation. To make this wood as permanent as the roof itself, the 90,000 lineal feet of 2-by-2's were pressure-treated by Koppers. A chemical preservative was forced deep into the wood fibers where it gives permanent protection against moisture and decay.

In addition, WOLMANIZED® pressure-treated lumber was used in the promenade deck expansion joints. NON-COM* fire-protected wood was used to attach corkboard insulation for damping the vibration of the air-handling equipment. Check the coupon for information about wood that is pressure-treated for permanence.

*Koppers Trademark



Coal-Tar Waterproofing Pitch protects rooms under exposed promenade deck

An open, 50-ft.-wide walkway with a view of the Golden Triangle encircles the base of the dome. Thousands will walk on this promenade deck, which serves as a roof for exhibit and meeting rooms below. To keep this section absolutely dry at all times, workmen applied a coat of Koppers Coal-Tar Pitch over the reinforced concrete base. Then, after a layer of rigid insulation, came five more applications of Coal-Tar Pitch with alternate layers of tar-saturated fabric and felt. Over this waterproofing, the patterned concrete walking surface was placed. The multi-ply membrane under the concrete walking surface prevents water penetration, spalling of concrete, and rusting of reinforcing steel. In fact, Coal-Tar Pitch is such a waterproof material that it is often used on roofs that are permanently flooded. Check the coupon for details on Koppers Coal-Tar Pitch for Built-Up Roofs and waterproofing.



These Koppers products for the building and construction industry bear directly on the problem of keeping quality up and costs down. They are either permanent in themselves or give permanence to other materials.

BITUMASTIC® PROTECTIVE COATINGS FOR STEEL, CONCRETE AND MASONRY

COLOR ON ALUMINUM

CREOSOTE FOR PRESSURE TREATMENT OF WOOD

DYLITE® BUILDING PANELS

NON-COM FIRE PROTECTED LUMBER

PAVEMENT SEALERS AND ROAD TARS

PENACOLITE® WATERPROOF ADHESIVES

PRESSURE-TREATED WOOD PRODUCTS
- Bridge Timbers
- Fence and Guardrail Posts
- Foundation Piling
- Poles for Pole-type Buildings
- Utility Poles and Crossarms
- WOLMANIZED® Lumber
- Wood Decking

ROOFING, WATERPROOFING, AND DAMPPROOFING
- Coal-Tar Emulsions
- Coal-Tar Pitch Built-Up Roofing
- Polyethylene Film
- Waterproofing Pitch

SOUND CONTROL
- AIRCOUSTAT®—Sound Traps
- Industrial Sound Control
- Soundproof Rooms

To: Earl F. Bennett, Mgr.-Architectural Sales
Koppers Company, Inc., Room 1322
Koppers Building, Pittsburgh 19, Pa.

Please send additional information about:

☐ Pressure-treated Wood
☐ AIRCOUSTAT® Sound Traps
☐ Coal-Tar Pitch Built-Up Roofing 2-3

Name_____

Job Title_____

Company_____

Address_____

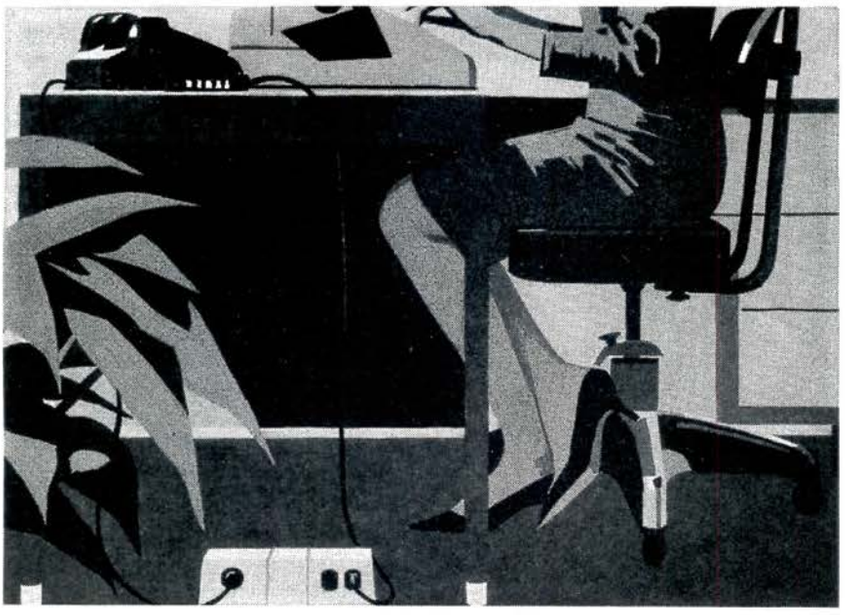
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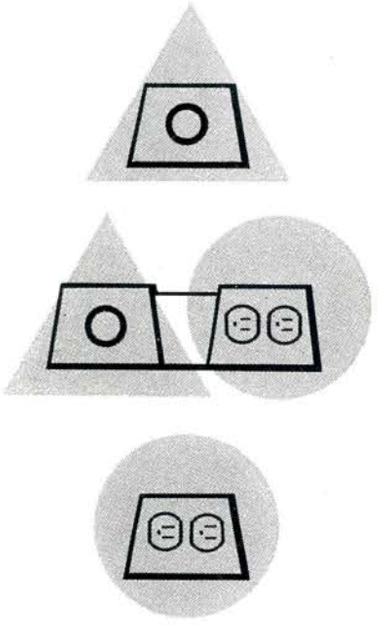
State_____

KOPPERS

KOPPERS ®

Divisions:
Chemicals & Dyestuffs
Engineering & Construction
Gas & Coke • Metal Products
Plastics • Tar Products
Wood Preserving
International





NOW SHOWING:

ONLY THE HANDSOME POWER AND TELEPHONE SERVICE FITTINGS **...by COPE**

All distribution wiring and duct is under the floor. All that's visible is the attractively tapered shape and low silhouette of the Dreyfuss-designed service fitting—specially styled for modern office interiors. Made by Cope in a choice of brushed aluminum or satin brass finish to complement every decor . . . meet every service requirement.

Cope Service Fittings are easy to install, easy to relocate if office lay-out or occupancy is changed. Simple removal of both front and back plate by a single screw exposes the entire inside area of the fitting for service or repair.

Yet Cope Service Fittings cost no more. The complete line is available for use with Cope Underfloor Duct and Headerduct Systems. They can also be adapted to other underfloor systems. Why not discuss your requirements with a Cope representative—or write direct for additional information. FORMERLY SPANG—NOW MADE BY COPE, THE LEADING MANUFACTURER OF CABLE SUPPORTING SYSTEMS.

COPE DIVISION ROME CABLE CORPORATION
Collegeville, Pennsylvania Dept. O
A CHOICE OF WIRE AND CABLE SUPPORTING SYSTEMS

Product Reports

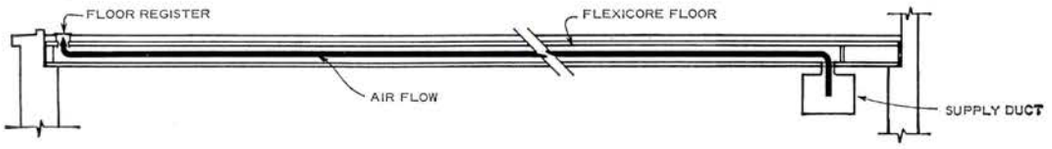
continued from page 238

Tile-Like Epoxy Coating for Walls
A new monolithic tile-like epoxy coating called *Tile-X* provides an easy-to-clean coating over porous walls such as haydite and concrete block, brick, plaster, and wood. In attractive solid colors or in fancy web effects, *Tile-X* eliminates pores and pockets that exist in grouting between tiles. It provides an inexpensive, on-the-job finish immune to fungus, grease, oil, water, alkali, and acid. Application is approximately ⅓ the cost of tile. *Steelcote Mfg. Co., 3418 Gratiot St., St. Louis 3, Mo.*

Low-Profile Furnace
To install a furnace in a closet with raised floor, mount a cooling coil above, and still have room enough to service both assemblies through a conventional height door, Lennox engineers recently developed the new *GH61* series up-flow gas furnace which is 54¼-in. high and 4-in. shorter than its predecessor. The A-coil cooling evaporator which mates with these new furnaces allows ductwork to be taken off from the plenum as low as 61 in. from the closet floor. Another innovation in one model of this series is the use of a permanent split capacitor motor in the direct drive blower. These high efficiency, low-current motors are equipped with a four-tap speed controller and two-position switch which can be connected for quick selection of two of the four available speeds, one for air conditioning and the other for heating. *Lennox Industries Inc., Marshalltown, Iowa.*

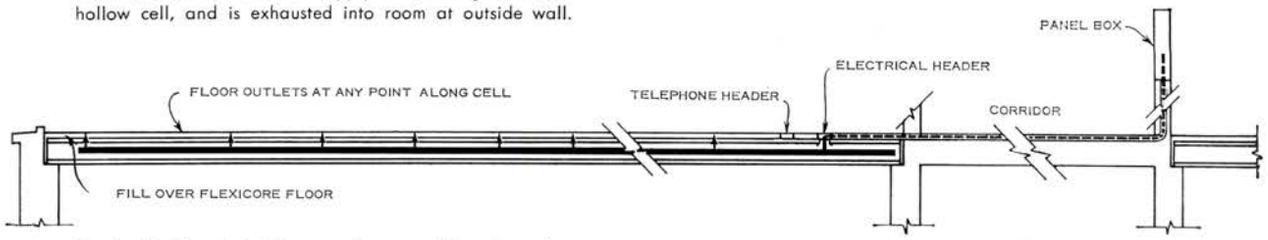
Continous Filament Nylon Carpet
Futurity, continuous filament bulk nylon carpet, is "an entirely new achievement in carpet texture and color, made possible by an exclusive, new manufacturing technique." *Futurity* is a random loop pile, deeply textured Gulistan carpet in monochromatic contrasting tones giving a surface appearance which lies between a solid color and a tweed. *Futurity* has a color line of 14, is made in 12- and 15-ft widths. *A. & M. Karagheusian, Inc., 295 Fifth Ave., New York 16, N. Y.*

more products on page 254

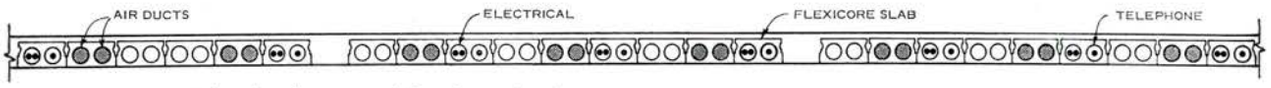


Ask for Flexicore Facts No. 82

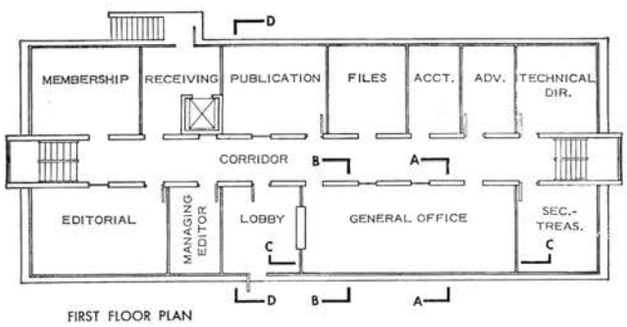
Section AA. At American Concrete Institute in Detroit, warm or cool air flows from supply duct, through Flexicore hollow cell, and is exhausted into room at outside wall.



Section BB. Electrical wiring runs from panel box, through header, then through Flexicore hollow cell to floor outlet. Similar system is provided for telephone.

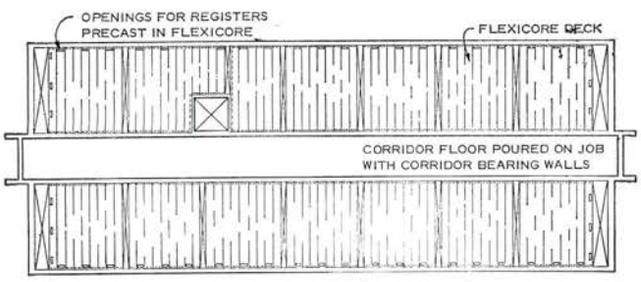


Section CC. Selected cells are used for electrical, telephone, and for air ducts. Electrical fittings by Conduflor Corp., Cleveland.

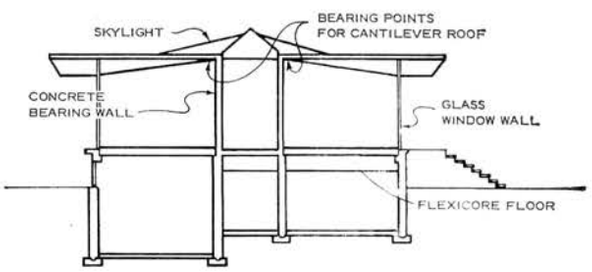


FIRST FLOOR PLAN

HOW TO USE CELLULAR CONCRETE DECKS FOR ELECTRICAL AND AIR DISTRIBUTION



First Floor Framing. Corridor floor was cast in place with corridor bearing walls. Flexicore clear-spans from corridor walls to outside walls.



Section DD. Corridor walls are sole support for roof.

Minoru Yamasaki & Associates, Architects, Birmingham, Michigan



Hollow cells in Flexicore precast, fireproof floors are used for electrical and telephone wiring, and as air ducts for warm air heating, air conditioning and ventilating at American Concrete Institute Headquarters, Detroit.

For more information on this project, ask for Flexicore Facts No. 82. Write The Flexicore Co., Inc., Dayton, Ohio, the Flexicore Manufacturers Association, 297 S. High St., Columbus 15, Ohio or look under "Flexicore" in the white pages of your telephone book.

flexicore®
PRECAST CONCRETE DECKS



LIFETIME GOOD LOOKS — Scheduled for completion by mid-1961, New York's United Engineering Center will provide 260,000 square feet gross area for 18 engineering bodies. Exterior of Nickel Stainless Steel and glass will always be easy to maintain. Architects: Shreve, Lamb & Harmon Associates. General Contractor: Turner Construction Company. Nickel Stainless Steel fabricator: Moynahan Bronze Company.

Why engineers choose Nickel Stainless Steel for their own United Engineering Center

Engineers and architects know how well Nickel Stainless resists pitting and corrosion . . . how its high strength-to-weight ratio allows reduction of gauge thickness—without loss of strength—to make it competitive in cost with less durable architectural metals.

They know, too, that because it is solid metal—corrosion-resisting all the way through—Nickel Stainless holds its beauty even in industrial atmospheres. Its surface stays so smooth that rainfall alone helps keep it clean.

These reasons explain why window frames, louvers, mullions and column covers will be made of Type 302 Nickel Stainless. And they also explain why Nickel Stainless was chosen in combination with masonry and glass to achieve striking effects for lobby and entrances.

Now is the time to include Nickel Stainless Steel in *your* plans. Inco will be glad to assist you in every possible way. As a *starter, send* for the booklet, "Architectural Uses of the Stainless Steels." It's free on request, and will make a valuable addition to your reference files.

The International Nickel Company, Inc.
67 Wall Street INCO **New York 5, N. Y.**

Inco Nickel

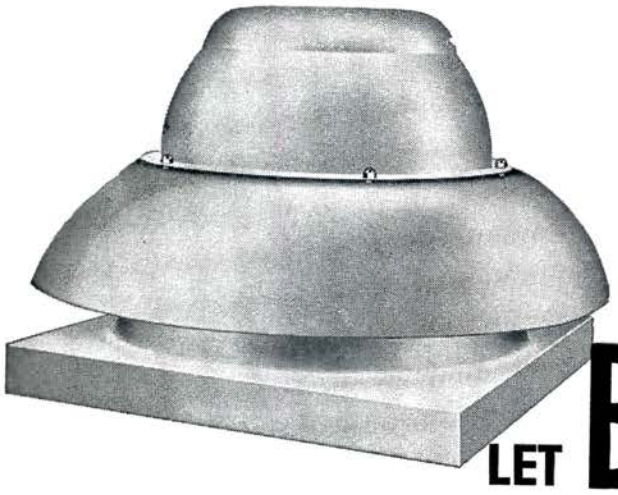
Nickel makes stainless steel perform better longer



Olin Aluminum "thinks"—that's why Lightolier thought of Olin first.

The 40,000 lighting fixtures (count 'em) that grace the new Chase Manhattan building in New York shed light on a lot of things. One is the fact that the manufacturer, Lightolier, called on Olin Aluminum's technical staff for assistance in creating a special lighting fixture. More and more designers and fabricators in aluminum are doing the same thing. As a major producer of aluminum, from its primary source, Olin Aluminum is staffed to help you create a specific aluminum product. Skilled specialists working with designers and fabricators can choose the exact alloy for perfect forming and finishing. They can, through their extensive knowledge of aluminum production problems advise on new applications, manufacturing and marketing techniques, costs – and more often than not contribute materially to design as well. Whistler once said he "mixed his colors for painting with brains." That's what Olin offers along with its vast aluminum resources: brains. Your local Olin Aluminum Sales Office or Distributor can bring this technical know-how to your problem. Quickly.

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391 Standard Models To Choose From PLUS Complete Facilities To Design And Manufacture Special Ventilators

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LO-HYT GRAVITY	Gravity	AS REQUIRED	18	18	Downward
MONITOR	Gravity	MADE TO ORDER		1	Upward
MONOVENT (Ridge)	Gravity	48 to 5,184	15	15	Upward
REVOLVING	Gravity	123 to 10,931	17	17	Sideward
STANDARD GRAVITY	Gravity	35 to 24,890	19	19	Upward
THERMAVENT	Gravity	MADE TO ORDER		2	Upward
CENTRIFLOW	Power	65 to 36,430	56	184	Downward
FREE EXHAUST FAN	Power	5,000 to 75,550	7	17	Upward
FREE FLOW FAN	Power	1,040 to 99,050	15	35	Upward
LOW TYPE	Power	337 to 47,400	15	60	Downward
STANDARD FAN	Power	685 to 15,000	10	10	Upward

There is a type of Burt Ventilator to meet any ventilating problem that Roof Ventilators can solve. Burt's specialized engineering, equipment and craftsmanship—from 60 years of designing and building ventilators—is your assurance of complete satisfaction. Cost economies are assured from almost 400 *standard* models that are quickly available.
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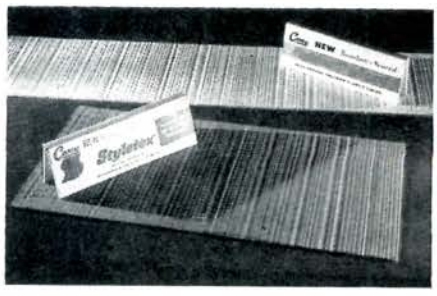
MEMBER AIR MOVING & CONDITIONING ASSOCIATION, INC.

Product Reports

continued from page 242

Random-Scored Siding

Styletex, a color-styled, textured asbestos siding, has been given a random-scored look by means of a new striated texture. Available in a variety of pastel and deeper colors and



white, *Styletex* sidings can be applied as regular 12 by 24-in. sidewall shingles of 9⅓ by 48-in. clapboard. Colors are protected by an organic resin that gives a hard, lustrous finish which will not chip or peel and is resistant to sun-fading. *The Philip Carey Manufacturing Co., 320 South Wayne Ave., Cincinnati 15, Ohio.*

Airless Spray Vinyl Coating

A new *Tygon* protective coating designed for use with airless spray equipment, has the same basic corrosion-resistant properties of conventional *Tygon* top coat. In airless spray applications continuous passes can be used to build virtually any desired thickness in one coat, without sags and with savings over conventional methods ranging from 30 to 50 per cent. Other advantages claimed for the new *AV Series* are a dried film free from pin holes, longer shelf life, and improved chemical resistance. *Coatings & Linings Division, The U. S. Stoneware Co., Akron 9, Ohio.*

Literature Requested

Head of the Materials Engineering and Specifications Branch for the construction of passenger and cargo ships for the Maritime Administration wants literature on building materials. Suppliers please send literature to: *Frank Grafton, Assistant Chief, Division of Engineering, Maritime Administration, 4th & G Sts. N.W., Washington 25, D. C.*

A ROOF IS A ROOF IS A ROOF . . .

○ FORM ▽ COLOR □ FUNCTION

Or less fancifully, "the cover of any building" in Webster's routine definition of this somewhat commonplace word. And for the great bulk of residential construction in recent years, roofs have been just that—reasonably protective, wholly commonplace. But architects are of course aware that they can be much more, as is notably the case when Follansbee Terne is specified. For this time-tested metal permits the roof area itself to become a major design component, permits both form and color to unite with functional integrity in a lasting guarantee of client satisfaction. Whether architect or prospective builder, we should be very happy to send you detailed substantiation.



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Follansbee is the world's pioneer producer of seamless terne roofing

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don't make me a garbage collector!

If you must handle soggy garbage even dream kitchens can turn into *nightmares!*

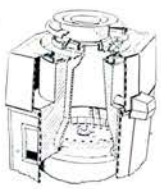
For my new home, I insist on a new, beautiful In-Sink-Erator disposer*. Unlike others, In-Sink-Erator prevents jams thanks to exclusive, patented, automatic reversing feature. It swishes garbage down the drain never to be seen, smelled, or touched again . . . a good reason to specify, even with septic systems.

Write for full information, or a personal demonstration by an In-Sink-Erator representative. Address Dept. AR-761, In-Sink-Erator Manufacturing Company, 1225 14th St., Racine, Wis.

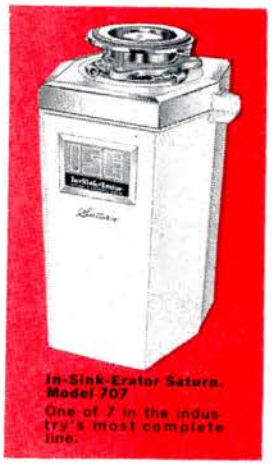
*An overwhelming majority of delegates to the Women's Conference on Housing voted the garbage disposer the most wanted appliance of all.



Unlike other disposers, In-Sink-Erator prevents jams thanks to exclusive, patented automatic reversing feature. Doubles shredder life. Self-cleaning.



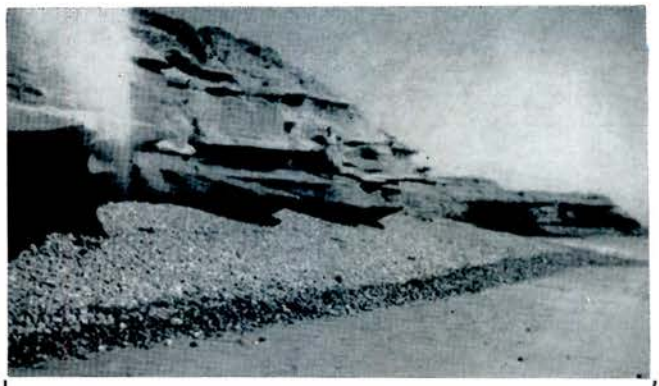
In-Sink-Erator's exclusive sound-absorbent liner permanently blankets interior of unit . . . smothers sounds! That's why it's quieter than any other.



In-Sink-Erator Saturn, Model 707
One of 7 in the industry's most complete line.

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This remarkable time-and-labor saving treatment is as effective indoors as out. No special skill is needed to apply it. No complicated machinery or equipment. And it meets ASTM specifications C-156 and C-309.

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The man to contact for specifications and additional information is your local West representative, or mail coupon below. West Chemical Products, Inc., 42-16 West Street, Long Island City 1, N. Y. In Canada: West Chemical Products, Ltd., 5621-23 Casgrain Ave., Montreal, P. Q.

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FLOOR PRODUCTS DIVISION

West Chemical Products, Inc.
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☐ Please send me further information on West Concrete Floor Treatment

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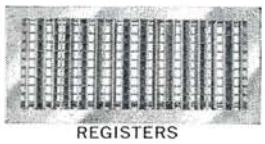


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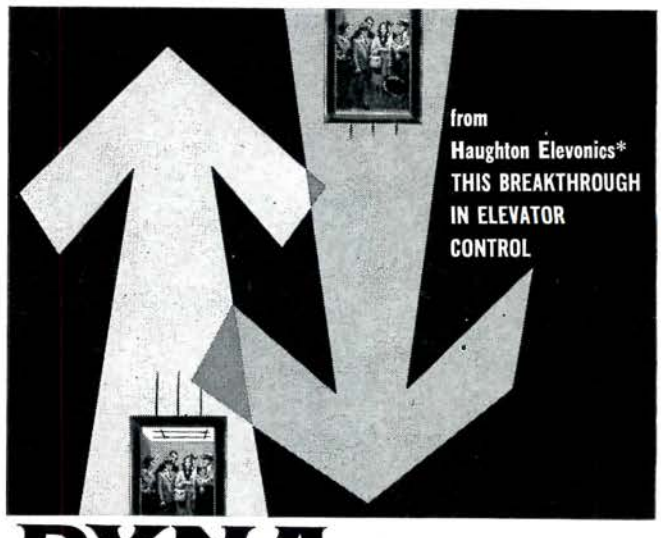
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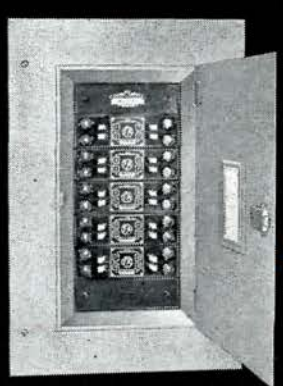
ARCHITECTS: Hills, Gilbertson & Hayes, Minneapolis
ENGINEERS: Orr-Schelen, Inc., Minneapolis
ELECTRICAL CONTRACTOR: D-H-W Electric Co., Minot

Addition to ST. JOSEPH HOSPITAL, MINOT, N. D.

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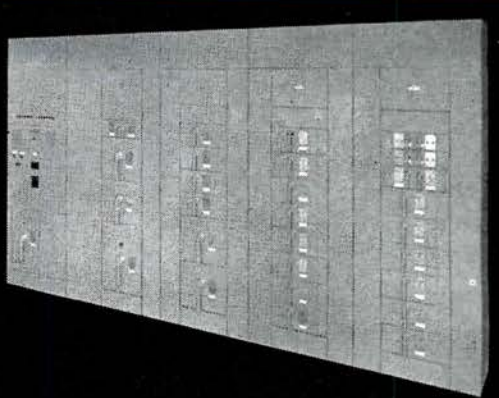
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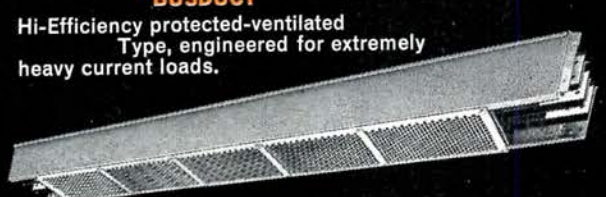


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For complete information on Pittsburgh Doors, see Sweet's 16a, 16d or write for our Pittsburgh Door catalogs today. Pittsburgh Plate Glass Company, Room 1211, 632 Fort Duquesne Blvd., Pittsburgh 22, Pennsylvania.

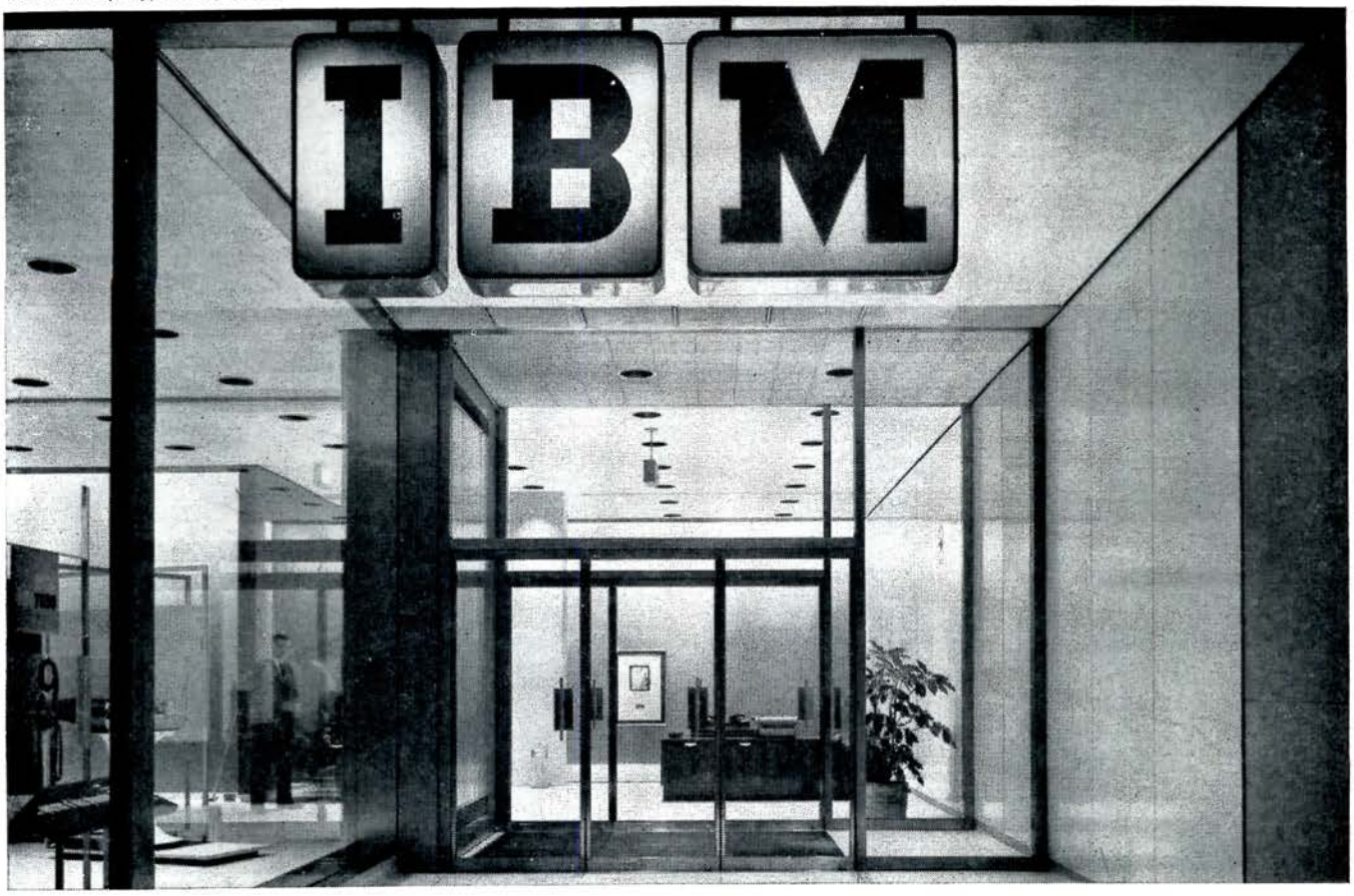
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TUBELITE DOORS installed in a PPG Open-Vision front—Harris' Super Market, Waycross, Georgia. PPG's heavy-duty, high-traffic Tubelite entrances have concealed channel type anchors which keep frame seams to a hair line. Door frames have an exclusive interlocking feature that insures rigidity. For shopper convenience, doors are mat operated by PPG's Pittcomatic automatic door opener. Contractor: Business, Inc., Waycross, Georgia.

WEST TENSION DOORS add style and beauty to the entrance of the I.B.M. Corporation Office Building, Chicago, Ill. Narrow stiles of West doors give that pencil line look without sacrificing strength. Their ½" thick glass held under compression in the metal frame makes a completely solid unit that won't sag or rack. Architects: Eliot Noyes & Associates, New Canaan, Conn. Associate Architects: McClurg, Shoemaker & McClurg, Chicago, Ill. Glazed by Cadillac Glass Company, Chicago, Ill. Contractor: B. W. Handler Construction Company, Chicago, Ill.





HERCULITE DOORS set in bronze Herculite door frame assemblies and sidelights—First National Bank of Topeka, Topeka, Kansas. Herculite tempered plate glass doors will last a building's lifetime without maintenance. These doors are handle operated by Pittcomatic—PPG's exclusive automatic door opener. Architects: Kiene & Bradley, Topeka, Kansas. Contractor: M. W. Watson, Topeka, Kansas.

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4. Cut **maintenance** costs . . . by reducing overload on waste disposal systems and septic fields

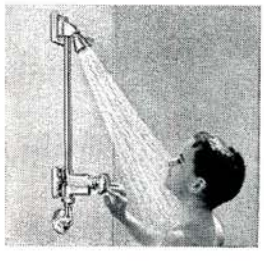
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EASY-PUSH showers and fittings are available in a variety of models. All are self-closing, non-dripping, non-hammering and have renewable operating units. All are vandal proof. And all are the same high quality you'd expect from a Speakman product. Mail coupon today for full information.



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The Record Reports

On the Calendar

July

9-21 First seminar (of three) on atomic shelter and survival in the nuclear age; theme: "Planning Aspects of Atomic Shelter"—Pennsylvania State University, University Park, Pa.

10-12 62nd annual meeting, American Society of Landscape Architects—Harvest House Hotel, Boulder, Colo.

17-28 23rd M.I.T. Special Summer Program on City and Regional Planning—Massachusetts Institute of Technology, Cambridge, Mass.

23ff Second seminar (of three) on atomic shelter and survival; theme: "Structural Engineering Aspects of Atomic Shelter"; through Aug. 4—Pennsylvania State University, University Park, Pa.

August

10-13 National convention, Catholic Art Association, held in conjunction with the Architects' Seminar at the University of Notre Dame; theme: "Achieving Sacred Space"—University of Notre Dame, South Bend, Ind.

13-18 Third Seminar (final of three in areas of atomic shelter and survival) sponsored by Pennsylvania State University; theme: "Survival in the Nuclear Age—Executive Management"—Pennsylvania State University, University Park, Pa.

16-17 Australian Building Research Congress—Monash University, Victoria

17-19 Third annual convention, Society of American Registered Architects — Conrad-Hilton Hotel, Chicago

21-31 United Nations Conference on New Sources of Energy; aim: to study new ways of harnessing age-old energy sources—Rome

26-29 Fourth national conference, American Craftsmen's Council; theme: "Creative Research

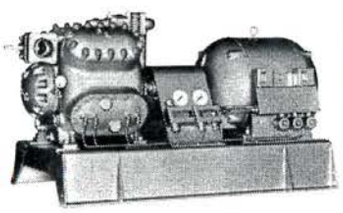
continued on page 266

M-PAK*

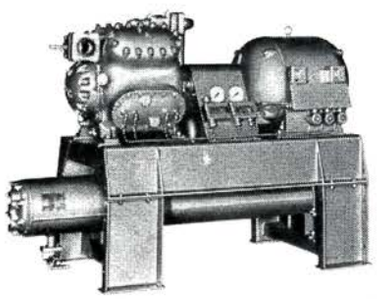
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*Modular Packages

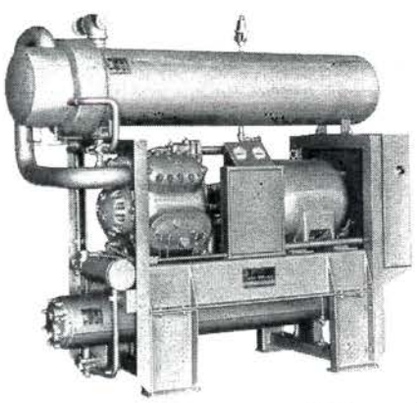




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B&G Motor Compressor plus B&G Condenser and base becomes a B&G Condensing Unit.



B&G Condensing Unit plus B&G Evaporator and Control System becomes a B&G Package Liquid Cooler.

In its M-Pak Modular Packages, B&G presents a new advance in efficiency designing of air conditioning and refrigeration equipment. M-Pak units are built around five basic sizes of open-type compressors. Factory-stocked motors, condensers, evaporators and controls can be added to these basic units to make a comprehensive line of "packages" of from 7½ to 150 tons.

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All major components of M-Pak units are designed, manufactured, and guaranteed by B&G...*one* responsibility for the entire package. This, we believe, is an exclusive feature.

B&G also makes a complete line of refrigeration and air conditioning evaporators, condensers and centrifugal pumps—with many commonly used sizes available for immediate shipment from factory stock.

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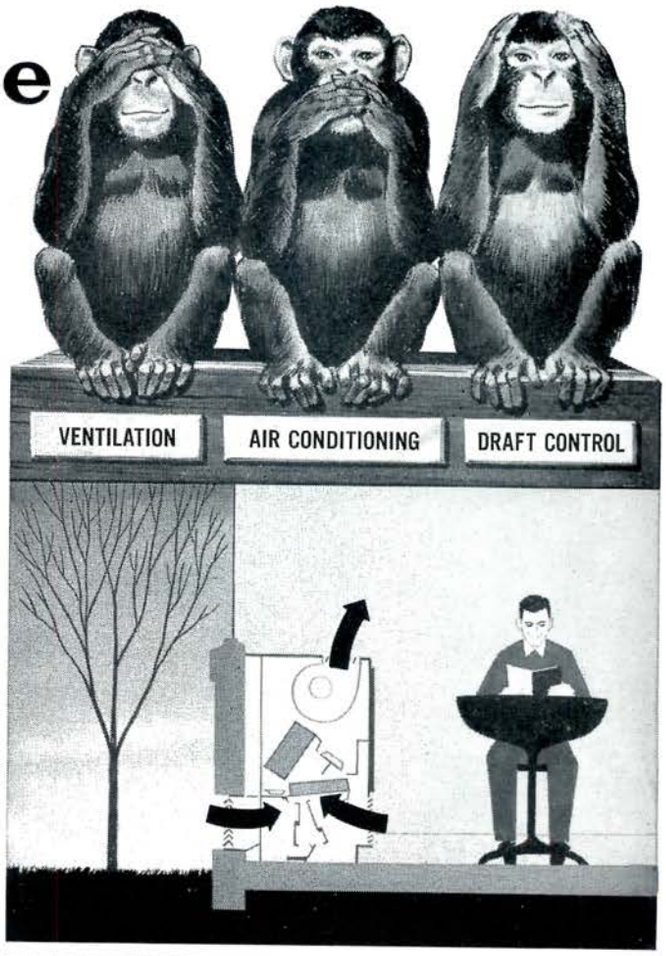
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Does your school ai

meet these



1 Does it offer ventilation cooling?—*The system you select should provide direct access to outdoor air on an individual room basis. Cool, tempered outdoor air is essential to combat overheating—a constant classroom thermal problem. Accurate ventilation cooling also requires a system designed to supply up to 100% outdoor air.*



2 Does it have an efficient draft control system?—*Cold downdrafts along window areas seriously reduce heating efficiency and endanger the health of students sitting near windows. Your school's system should include a positive draft control system that doesn't add unnecessary heat to the classroom. It should also be compatible with year-round air conditioning.*



3 Does it provide for air conditioning?—*Year-round air conditioning has proven to be both practical and economical for schools everywhere. Air conditioning reduces school construction costs, makes the education program more flexible, and increases "take home" learning. Individual room control and ventilation cooling—found only in unit ventilation systems—are as important for school air conditioning as for heating and ventilating only.*

system

basic requirements?

Herman Nelson unit ventilator research first developed all three—ventilation cooling, Draft/Stop, year-round air conditioning

IN 1917, Herman Nelson introduced the first practical classroom unit ventilator. This opened the door to ventilation cooling with individual room control, overcoming objections to costly central systems with complicated ductwork and inefficient ventilation control.

Next came Herman Nelson DRAFT|STOP, the first successful system for controlling cold window downdrafts, and the *only* system designed to capture and re-use drafts as a source of air supply. What's more, DRAFT|STOP is the only method of window downdraft control *completely compatible* with year-round air conditioning.

Over five years ago Herman Nelson introduced HerNel-Cool, the first air conditioning unit ventilator. HerNel-Cool units offer warm weather individual room climate control. They can be installed now for heating and ventilating only, and air conditioning can be inexpensively added at any time in the future. Write for more information: Herman Nelson School Air Systems Division, American Air Filter Company, Inc., 215 Central Avenue, Louisville, Kentucky.

Herman Nelson AAF
SCHOOL AIR SYSTEMS DIVISION



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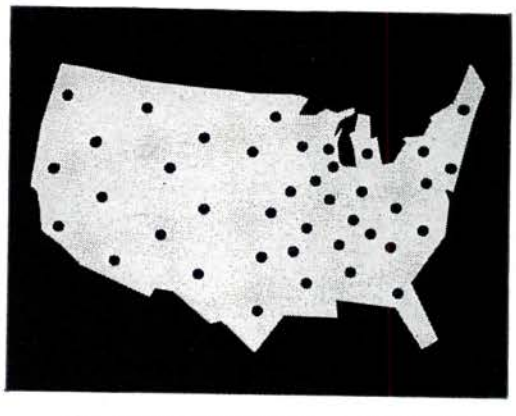
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Factory trained installation men . . . craftsmen who are specialists in the installation of overhead type doors, assuring lasting satisfaction to you and your client.



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Builders of A Complete Line of Residential, Commercial and Industrial Type Doors

The Record Reports

continued from page 260

in the Crafts"—University of Washington, Seattle, Wash.

September

10-15 Engineering Seminar on Structural Aspects of Architectural Engineering—Pennsylvania State University, University Park, Pa.

25-28 Fall meeting, American Welding Society—Adolphus Hotel, Dallas

Office Notes

New Firms, Firm Changes

A new firm has been established by John Chornyak, Architect, 257 Green River Road, Greenfield, Mass.

Carl W. Ernst Jr., A.I.A., is now an associate in the firm of Chatelain, Gauger and Nolan, Architects and Engineers, of 1632 K St., N.W., Washington, D.C.

The name of the firm of Ratcliff and Ratcliff, Architects, Berkeley, California has been changed to Ratcliff-Slama-Cadwalader, Architects. The new partnership includes Robert W. Ratcliff, A.I.A., Murray A. Slama and Burns Cadwalader.

James B. Godwin announces the continuing professional practice of landscape architecture and planning under the new firm name of James B. Godwin & Associates. The address is 910 Odd Fellows Building, Raleigh, N.C.

Harry B. Rutkins, A.I.A., has been appointed an associate of the firm of Eggers and Higgins, Architects. He first joined the firm in 1945 and for the past five years has served as chairman of the Legislative Committee of the New York Association of Architects.

Francis J. Hayes, A.I.A., and Cam F. Bracke, A.I.A., announce the formation of a partnership for the practice of architecture under the firm name of Bracke & Hayes—Architects. The address is Bankers Life Building, Moline, Ill.

A new partner in the firm of Hamilton & Goody, Architects, 238 Main Street, Cambridge, Mass., is John M. Clancy. The firm name is now Hamilton, Goody & Clancy, Architects.

continued on page 270

AVAILABLE NOW!



NOW FOR THE FIRST TIME IN HISTORY

2½ x 5 FT. LOUVER PANEL

Luxury lighting at definitely lower installation costs. Designed for today's popular 10 x 10 building module, American's new 30 x 60" louver is readily adaptable to any module.

Now you can offer your customers more lighting . . . better lighting . . . with substantial savings in installation costs! With American's new and exclusive 2½x5-ft. louvers, less structural work is needed because each louver covers a larger area than others providing larger areas of uninterrupted light.

These oversize louvers are of sturdy, deep-cell styrene construction and present 45° x 45° shielding. With less structural work and supporting trim needed, they're ideal for continuous runs and offer a wide variety of installation patterns. Specify American's new 2½x5-ft. louvers for suspended ceilings, in particular . . . in new or remodeled construction. Here's the modern glare-free way to adequately illuminate large areas at lower cost than ever before thought possible!

Other louver sizes—
1 foot x 4 feet •
2 feet x 4 feet in
42° - 45° and 55°
Shielding.

PLEASE SEND FREE SAMPLE KIT

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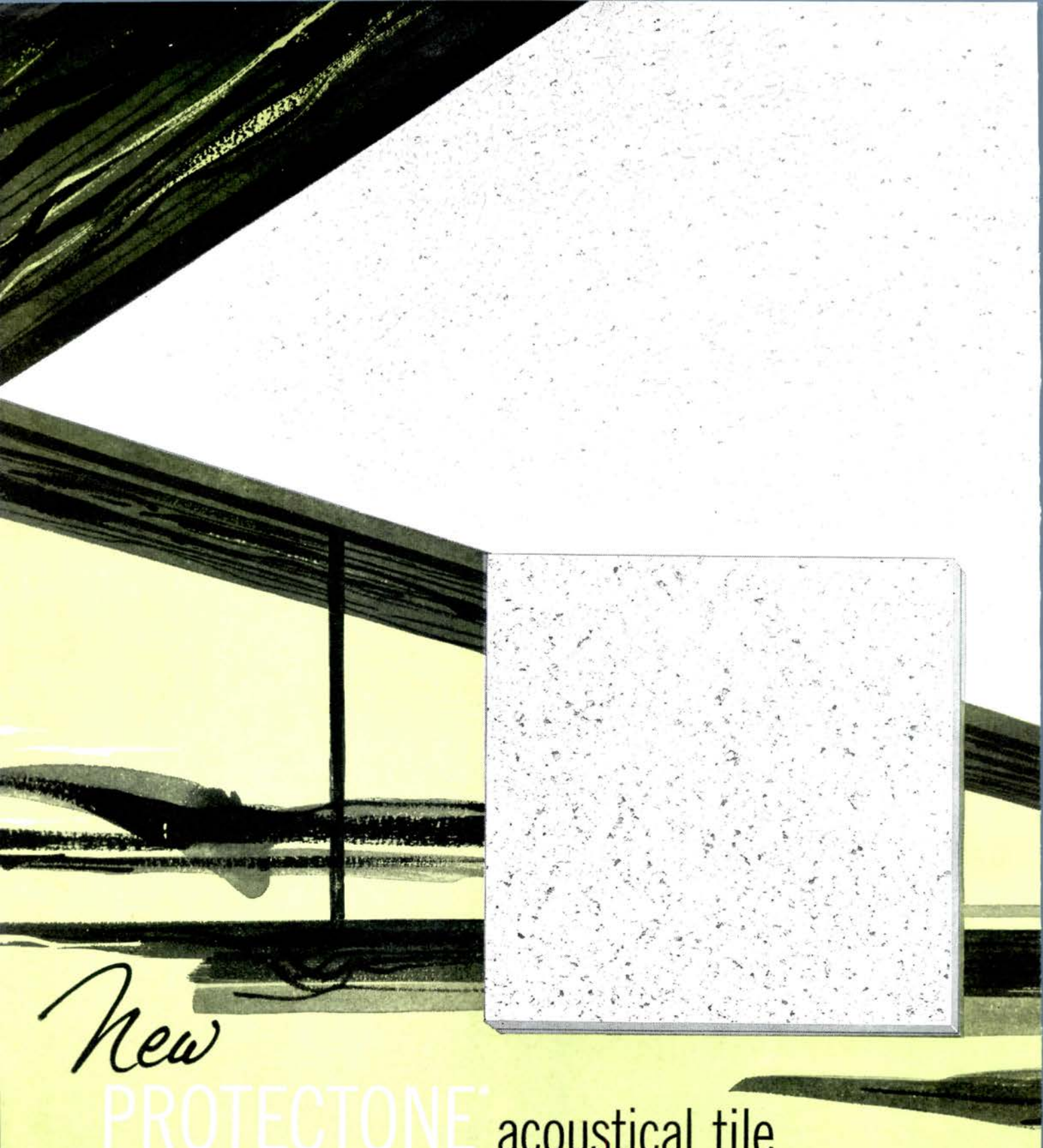
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american louver company

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CHICAGO 30, ILLINOIS



New

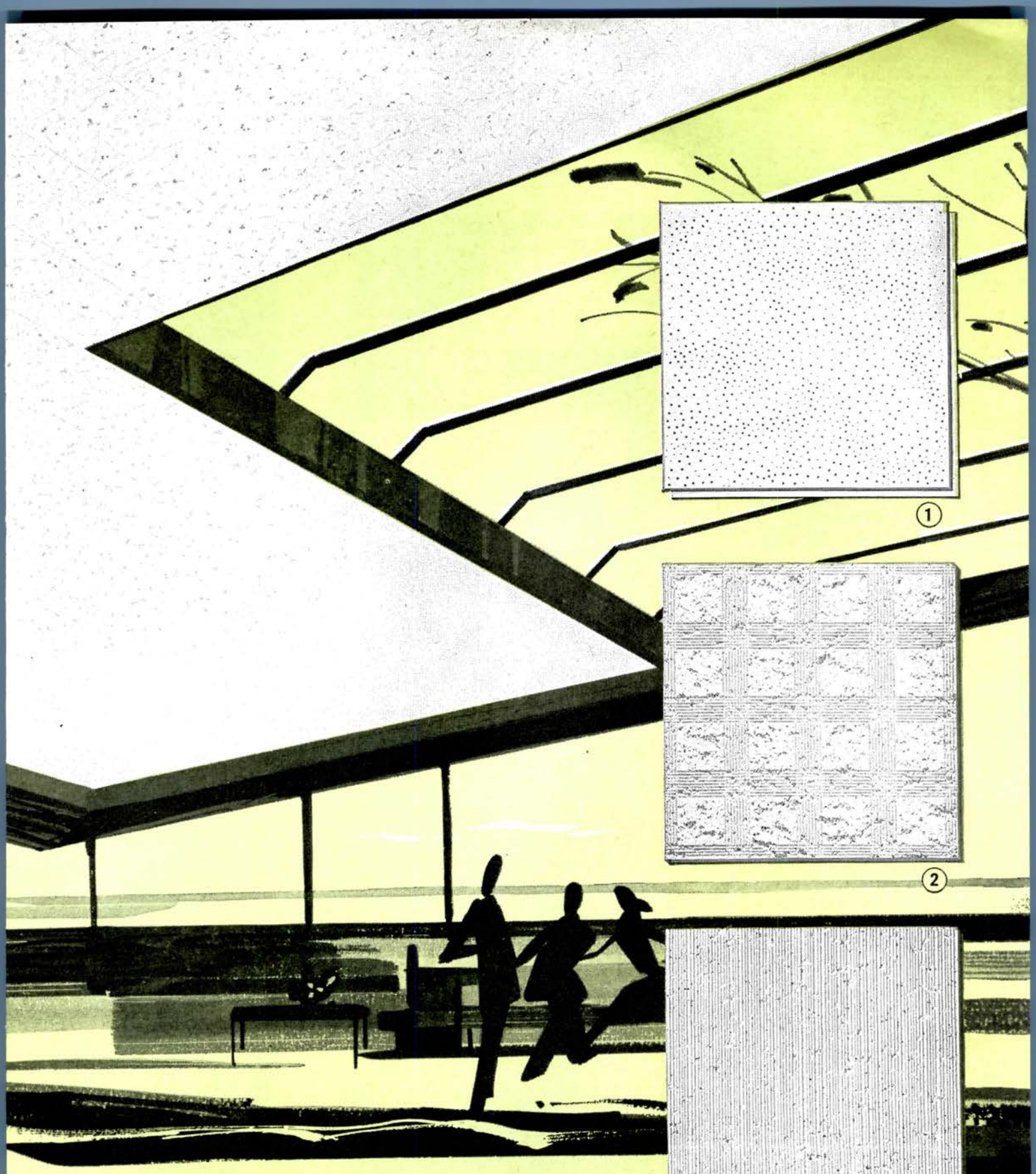
PROTECTONE* acoustical tile

A family of design-inspiring UL FIRE-RATED ceilings by CELOTEX

Widely varied in texture, pattern, and tonal effect . . . offering a choice of fire-rated acoustical ceiling assemblies...all with high sound absorption...these new PROTECTONE mineral fiber tile designs invite fresh new approaches.

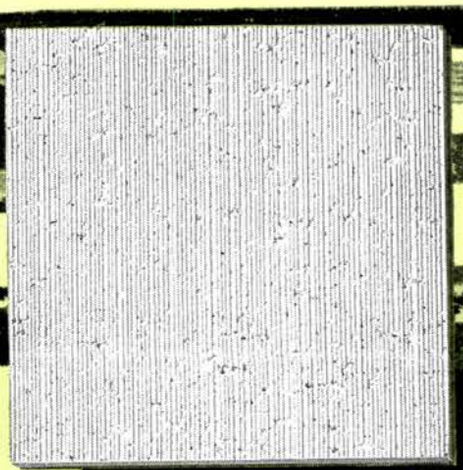
SHOWN ABOVE . . . exclusive with Celotex . . . new Natural-Fissured PROTECTONE mineral fiber tile . . . for 2-HOUR UL fire-rated ceiling assembly (including concrete deck over bar joists). All the traditional beauty and authentic character that only natural travertine fissuring provides. Square edge, kerfed for concealed H&T suspension system. (Also for 1-hr. UL fire-rated wood deck assembly.)

*Trade Mark



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3

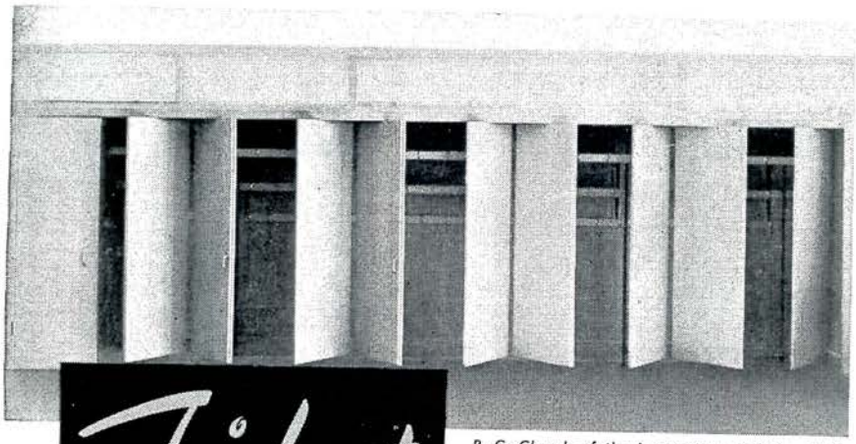
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SOUND CONDITIONING PRODUCTS

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In Canada: Dominion Sound Equipments, Limited, Montreal, Que.

OTHER UL FIRE-RATED PROTECTONE PRODUCTS

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SCHOOL
WARDROBES

R. C. Church of the Incarnation, Bellaire, N. Y.
Wm. J. Boegel, Arch.

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MORE
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LESS
SPACE

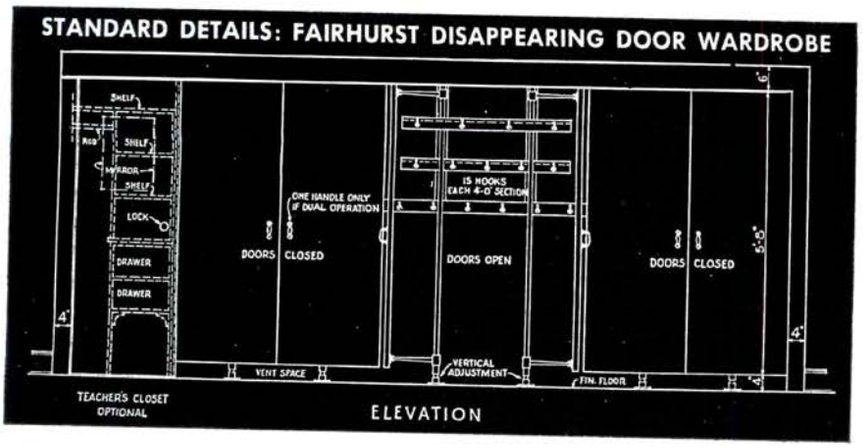
Here is a proved way to gain precious classroom space for the primary job of instruction. The FAIRHURST Wardrobe is specifically designed to occupy **less** room than other types while providing a greater amount of effective storage space.

Only 2′ deep, a single wardrobe unit 4′ wide accommodates 15 pupils. The secret lies in Fairhurst's patented disappearing door feature: opened, the doors are completely out of the way at the ends of each compartment. These may be fitted with continuous blackboard and chalk rail if desired.

Sturdy pivot arms and center shaft do away with the need for floor tracks or guides. These are so positioned that there is no obstruction when entering or leaving the wardrobe. Closed, the doors project no more than 1½″ beyond wardrobe face; while operating, doors extend no more than 8″ into aisle space.

Individual Fairhurst Wardrobes have given trouble-free service for upwards of 30 years. For details and free catalog, write Dept. AR — no obligation, of course.

John T. Fairhurst Co., Inc.
42 West 45th Street New York 36, N. Y.



The Record Reports

continued from page 266

Donald E. Ferry, formerly Hospital Architect for the State of Illinois, and Earl W. Henderson Jr., previously an associate with W. C. Muchow, Associates, of Denver, Colo., have formed an architectural firm, Ferry and Henderson, Architects, in Springfield, Ill.

Upshur and Riley, A.I.A., Architects-Engineers of Columbia, S.C., announce the change of the firm name to Upshur, Riley and Bultman, A.I.A., Architects-Engineers. Partners in the firm are Robert I. Upshur, C. Anderson Riley and Phelps H. Bultman.

A. W. McKelvey has been appointed executive vice president and member of the board of directors of George Vernon Russell and Associates-Architects and Engineers of Los Angeles and San Francisco.

The architectural firm of Carl C. Bankemper & Associates has been formed, with offices and complete facilities at 319 Scott St., Covington, Ky.

New Addresses

Fordyce & Hamby Associates, architects, 717 Fifth Ave., New York City.

Kemp, Bunch & Jackson, Architects, 1320 Coast Line Building, Jacksonville 2, Fla.

W. C. Muchow Associates, Architects, 3911 E. Exposition, Denver 9, Colo.

Oeming & Waters, Architects, 407 N. Hamilton, Saginaw, Mich.

Edward J. Parnum, A.I.A. Registered Architect, 121 No. Broad St., Philadelphia 7, Pa.

E. N. Turano, Architects & Planners, 850 Third Ave., New York 22.

Urban & Calabretta, Architects, The Physicians Building, 683 E. Broad St., Columbus 15, O.

Harry Weese & Associates, architects and engineers, 140 E. Ontario St., Chicago 11, Ill.

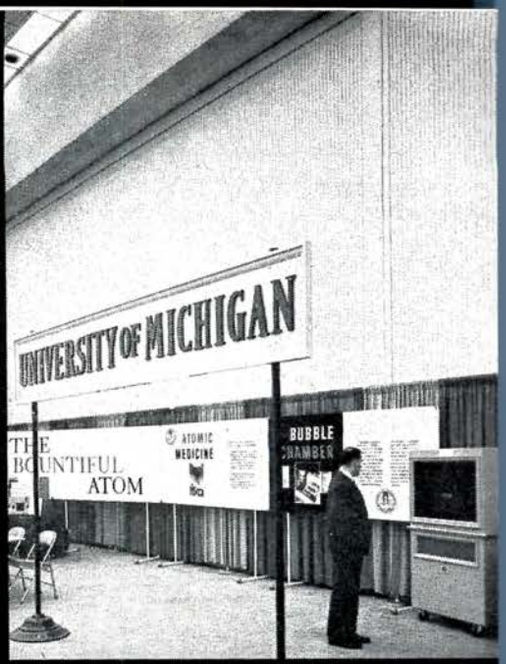
Elections

Bradford N. Clark, partner of the architectural firm Eggers and Higgins, was re-elected president of the New York Building Congress at the 40th annual meeting held in May.

continued on page 278







ROOFS
Keystone Lamp Manufacturing Co., Slatington, Pa. has lightweight, insulating concrete over Slabform.

FLOORS
Installing Slabform over steel open-web joists on the 25th floor of Houston's Lincoln Liberty Life Center.

DOORS
Huge doors constructed partly of Slabform partition off the main exhibition hall of Detroit's Cobo Hall.

Bethlehem Steel Slabform is so versatile

For full details on Slabform, call the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa. Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

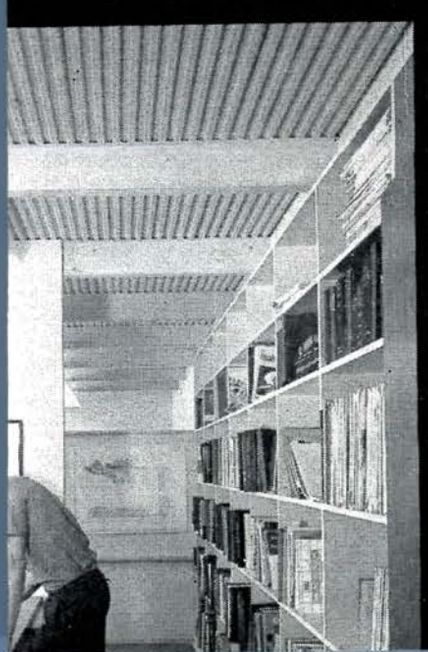
Steel

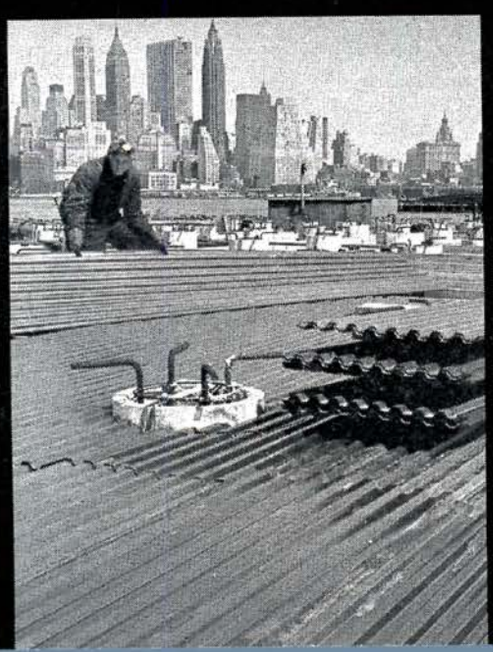
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. . . Economy
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EXPOSED CEILINGS
Sprayed with an acoustical material, exposed Slabform makes an attractive ceiling in offices for Charles Potter, Jr., Alison Lee, Architects, Greenville, S. C.

GENERAL
Strong Slabform is ideal for general construction work of all kinds, as in Pier No. 7 in New York Harbor.

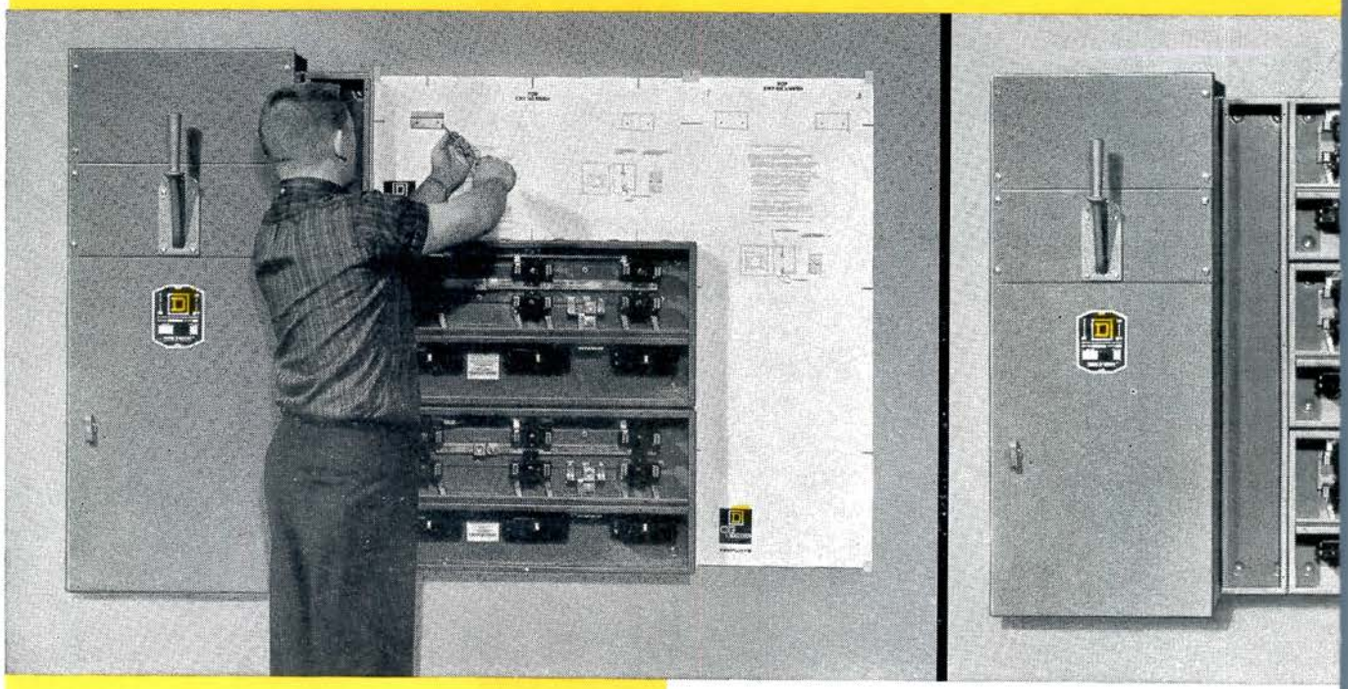
FORMWORK
So even are Slabform's corrugations that it makes an ideal concrete form with attractive results, as in this wall at Allentown Fairgrounds, Allentown, Pa.







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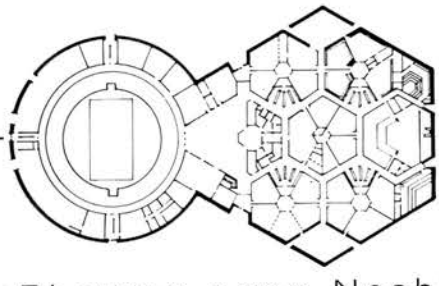
AVAILABILITY—All E-Z STACK devices can be ordered by catalog number from authorized Square D Distributors *as they are needed.* Individually cartoned, the final decision as to the meter arrangement and size of the circuit breaker disconnect for each apartment

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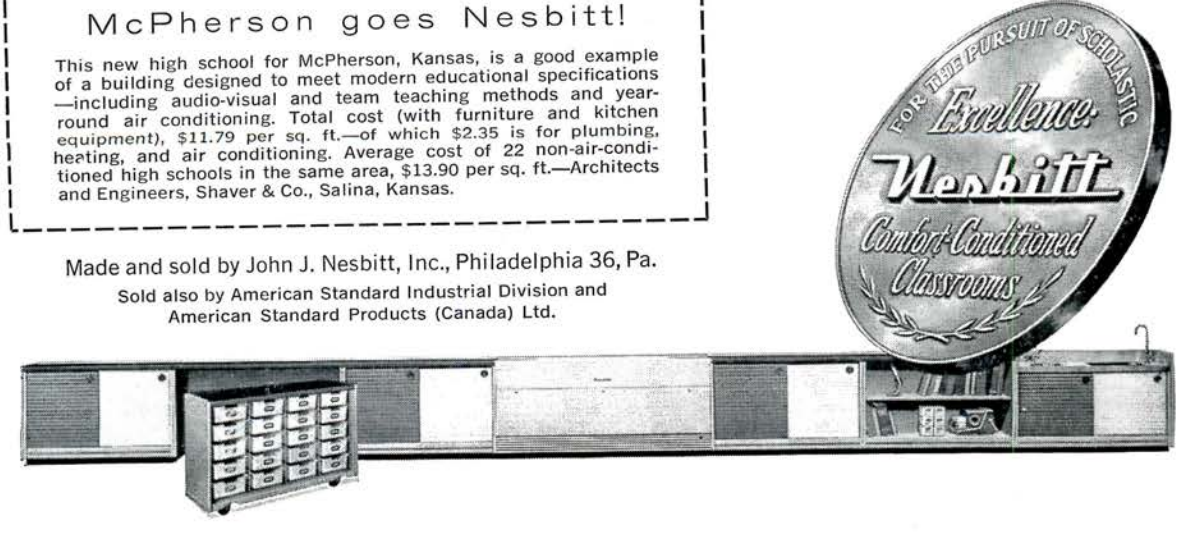
McPherson goes Nesbitt!

This new high school for McPherson, Kansas, is a good example of a building designed to meet modern educational specifications —including audio-visual and team teaching methods and year-round air conditioning. Total cost (with furniture and kitchen equipment), $11.79 per sq. ft.—of which $2.35 is for plumbing, heating, and air conditioning. Average cost of 22 non-air-conditioned high schools in the same area, $13.90 per sq. ft.—Architects and Engineers, Shaver & Co., Salina, Kansas.

Made and sold by John J. Nesbitt, Inc., Philadelphia 36, Pa.

Sold also by American Standard Industrial Division and American Standard Products (Canada) Ltd.

We shall be glad to send you the complete story on Nesbitt year-round air conditioning for schools



continued from page 270

Other officers elected to serve were: as vice presidents and directors, Francis L. Cronin, president, C. H. Cronin, Inc.; R. C. Daly, president, George A. Fuller Company; Charles Haines, partner, Voorhees, Walker, Smith, Smith & Haines; Eugene E. Hult, consultant, Archdiocesan Building Commission; and John M. Kyle, chief engineer, The Port of New York Authority; as secretary and director, Jeremiah Burns, president, Jeremiah Burns, Inc.; re-elected treasurer and director, P. L. Douglas, president, Otis Elevator Company; re-elected as chairman of the finance committee and director, Peter J. Brennan, president, Building and Construction Trades Council.

Row Heads Yale Graduate City Planning Program

Arthur Tracy Row Jr., assistant executive director of the Philadelphia City Planning Commission, has been named director of Yale University's graduate program in city planning. Mr. Row has also been appointed professor of city planning in the Yale School of Art and Architecture. Both appointments were effective July 1.

A native of Cambridge, Mass., Mr. Row received his A.B. degree in 1940 in government from Harvard University where he also received a Master of City Planning degree in 1948. In that year he became planning director of the Portland, Me., City Planning Board where he not only established a continuing planning program but prepared urban redevelopment legislation.

He became assistant director of the Detroit, Mich., Metropolitan Area Traffic Study in 1953. There he prepared the model expressway plan for Detroit. As assistant executive director of Philadelphia's City Planning Commission since 1955, Mr. Row prepared a comprehensive plan for the city and its Center City development plan. From 1956 to 1959 he also served as lecturer in the department of city planning, University of Pennsylvania.

Soil Mechanics Fellowship Granted to Northwestern U.

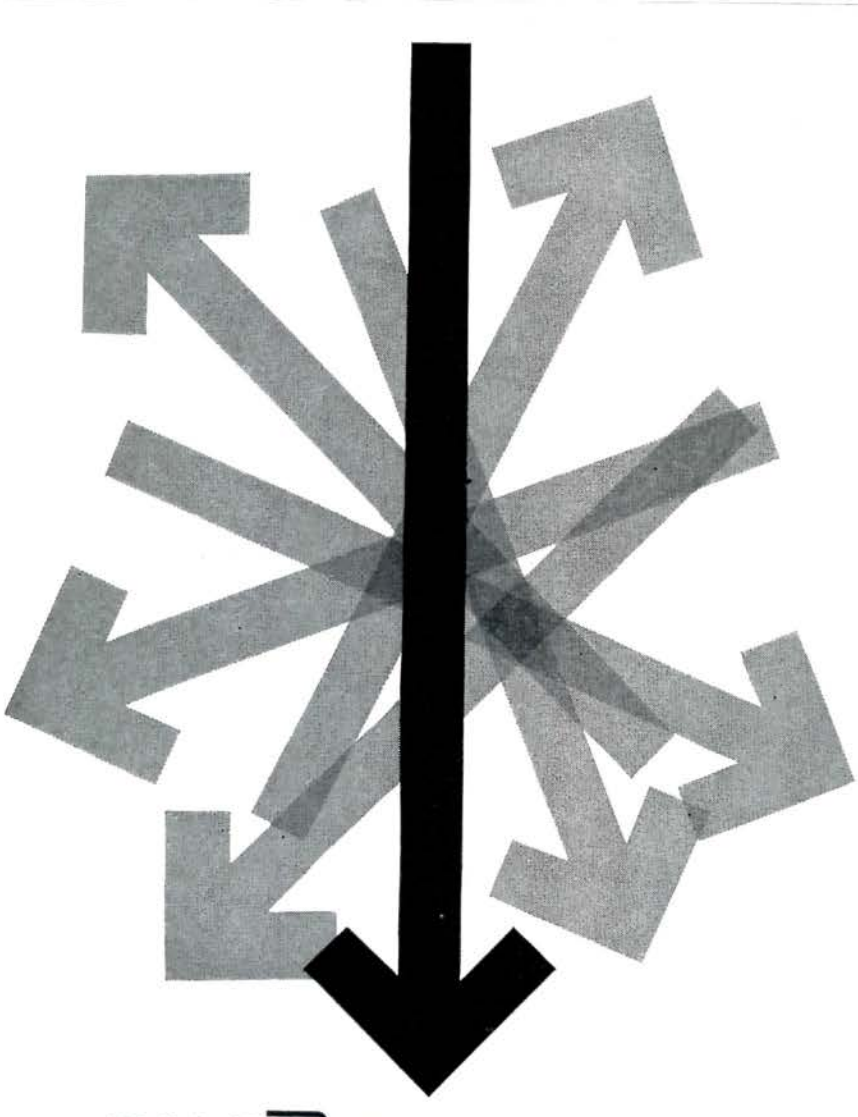
A $3000 fellowship for a top graduate student specializing in soil mechanics has been granted to Northwestern University by Soil Testing Services, Inc. of Chicago. Jorj Osterberg, professor of civil engineering, directs the school's soil mechanics program.

In making the unrestricted grant, John P. Gnaedinger, president of Soil Testing Services, pointed out that there is a great need for qualified engineers in this field. He believes the most effective way of enabling interested men to take graduate is through fellowships.

The consulting firm feels that consulting engineers and other business organizations have an obligation to support higher education, for the benefit of the students, educational institutions and the economy.

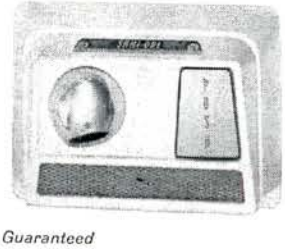
The firm has close ties with Northwestern, since president Gnaedinger and five employes are graduates of the school.

more news on page 288

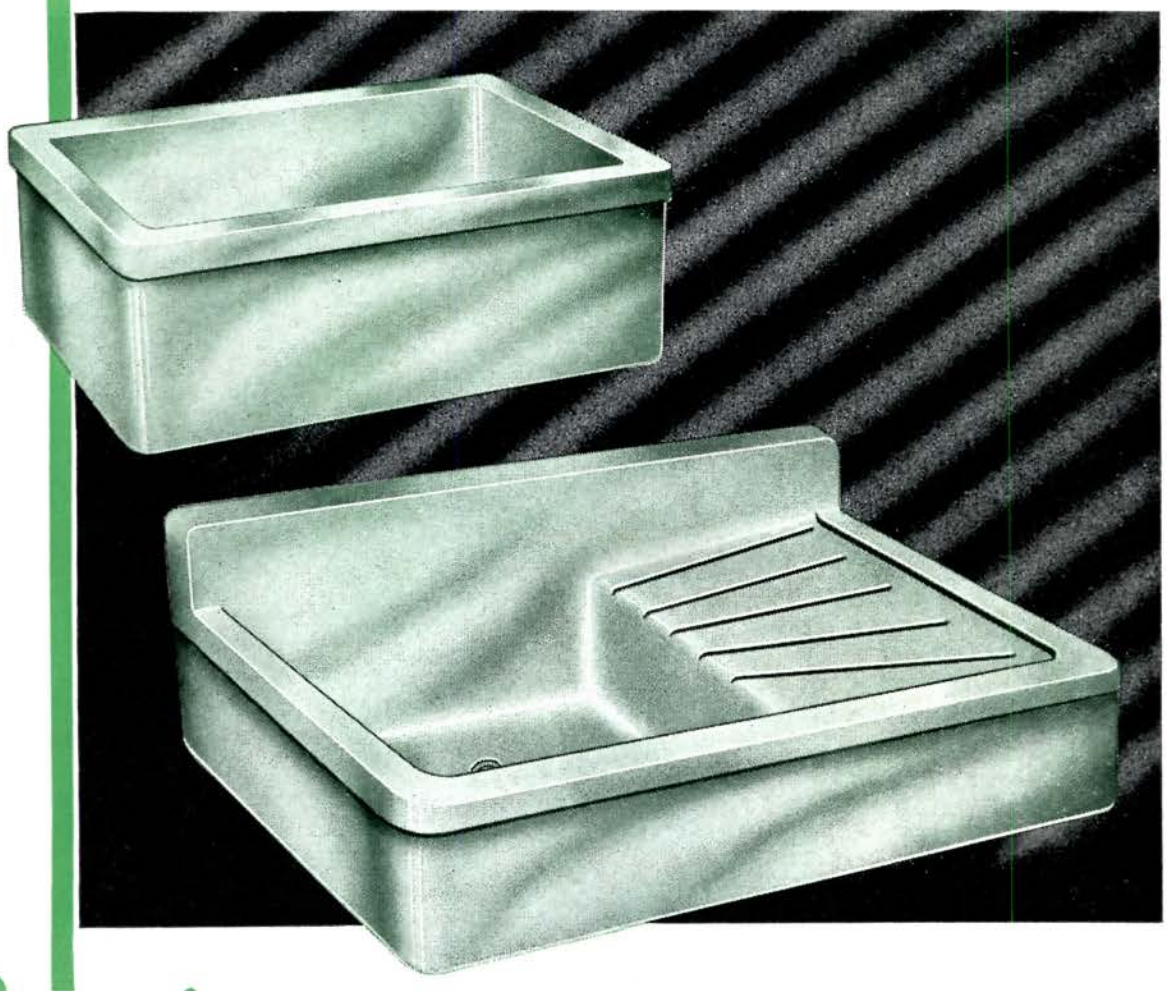


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All made from the one material which requires no corrosion guide — no warning sign "don't put sulphuric and chromic acids here" — for these incomparable porcelain laboratory sinks will handle any corrosive, weak or strong, hot or cold — and without time limit.

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- Wide range of styles: bank type, cornice or ceiling height; solid or glazed.
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Important to you: Movable VAUGHAN WALLS are installed only by licensed erectors, trained by Vaughan Interior Walls, Inc. They *stock all components.* Quick starts assured—often 24 to 48 hours after ordering; no need to keep parts inventory for partition changes.

See your U.S.G. representative, or mail coupon. In Canada, contact Canadian Gypsum Company, Ltd., Toronto and Montreal.

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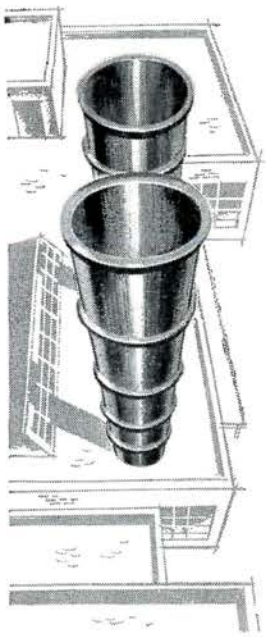
For complete information, write Pratt & Lambert Architectural Service Department, 3301 38th Ave., Long Island City 1, N.Y., 4900 S. Kilbourn Ave., Chicago 32, Ill., 75 Tonawanda St., Buffalo 7, N.Y., 254 Courtwright St., Fort Erie, Ontario.

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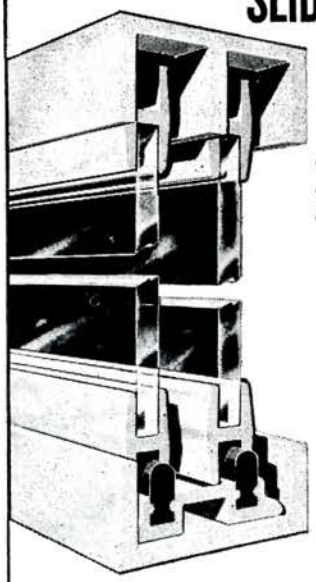
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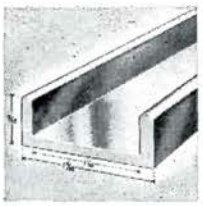
#700 ALUMINUM TRACK ASSEMBLY FOR ¼" SLIDING GLASS DOORS



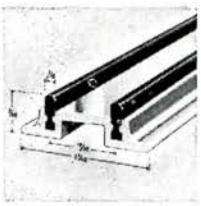
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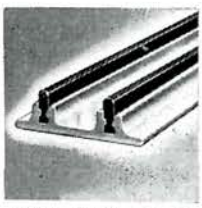
#700 E-Z Glide Aluminum Track Assembly is the modern concept of effortless and noiseless sliding of large ¼" glass doors. Readily adaptable to all size panels. Versatility and interchangeability of component parts adapts the #700 Assembly to a wide variety of installations with a minimum of stock. Doors are instantly removable by raising slightly. Mashed fingers and glass breakage due to free travel are eliminated. Friction coefficient of 0.16 is sufficient to considerably lessen travel of panel after moving force has ceased.



#710 track base provides for track removal for easy cleaning. Available in 4, 6, 8 and 12 foot lengths.



#720 track for by-passing doors. Drops into #710 track base or used alone. In 4, 6, 8 and 12 foot lengths.



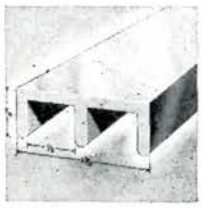
#721 track for by-passing doors. Surface installation is easy. Drilled at 6" intervals. In 4, 6, 8 and 12 foot lengths.



#722 track for ¼" by-passing doors. Provides own facia. May be mounted various ways. In 4, 6, 8 and 12 foot lengths.



#723 track fits into #710 base. For use with #743 shoe and #752 rollers, where rolling action is desired.



#730 upper guide or side channel. Provides own handsome facia top and sides. In 4, 6, 8 and 12 foot lengths.



#740 reversible shoe with #750 fibre glide. Provides stable support and finished edge. In 4, 6, 8 and 12 foot lengths.



#760 rubber T-guide press fits into #740 shoe and glides freely into #730 upper guide.



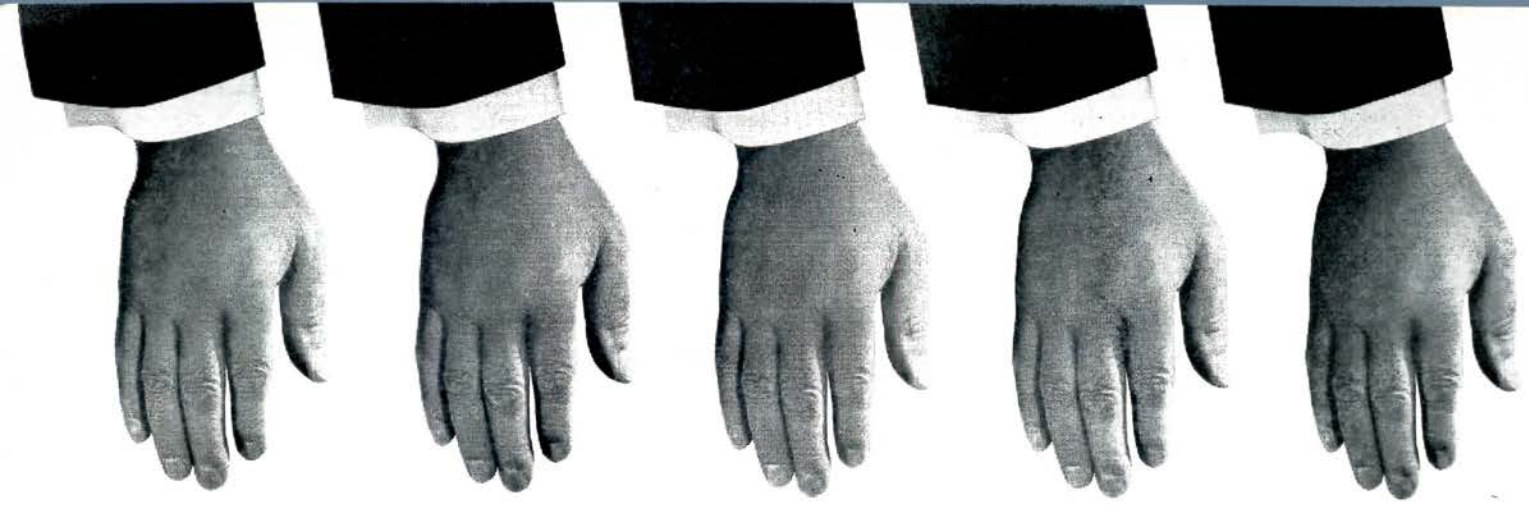
#770 rubber U-guide, #771 clip guide press fits over top of glass. #780 rubber bumper press fits into side jams.

SEE SWEET'S CATALOG For the complete EPCO line under Architectural File No. 18g-En and Light Construction File No. 7a-En.

FREE 20-PAGE CATALOG on the complete EPCO line of Magnetic and Friction Catches, E-Z Glide track and guides, and drawer and door pulls will be sent on request.



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P.O. BOX 118, FLINT, MICH. PH. CEdar 9-8689



ALFRED SHAW'S OTHER RIGHT HAND

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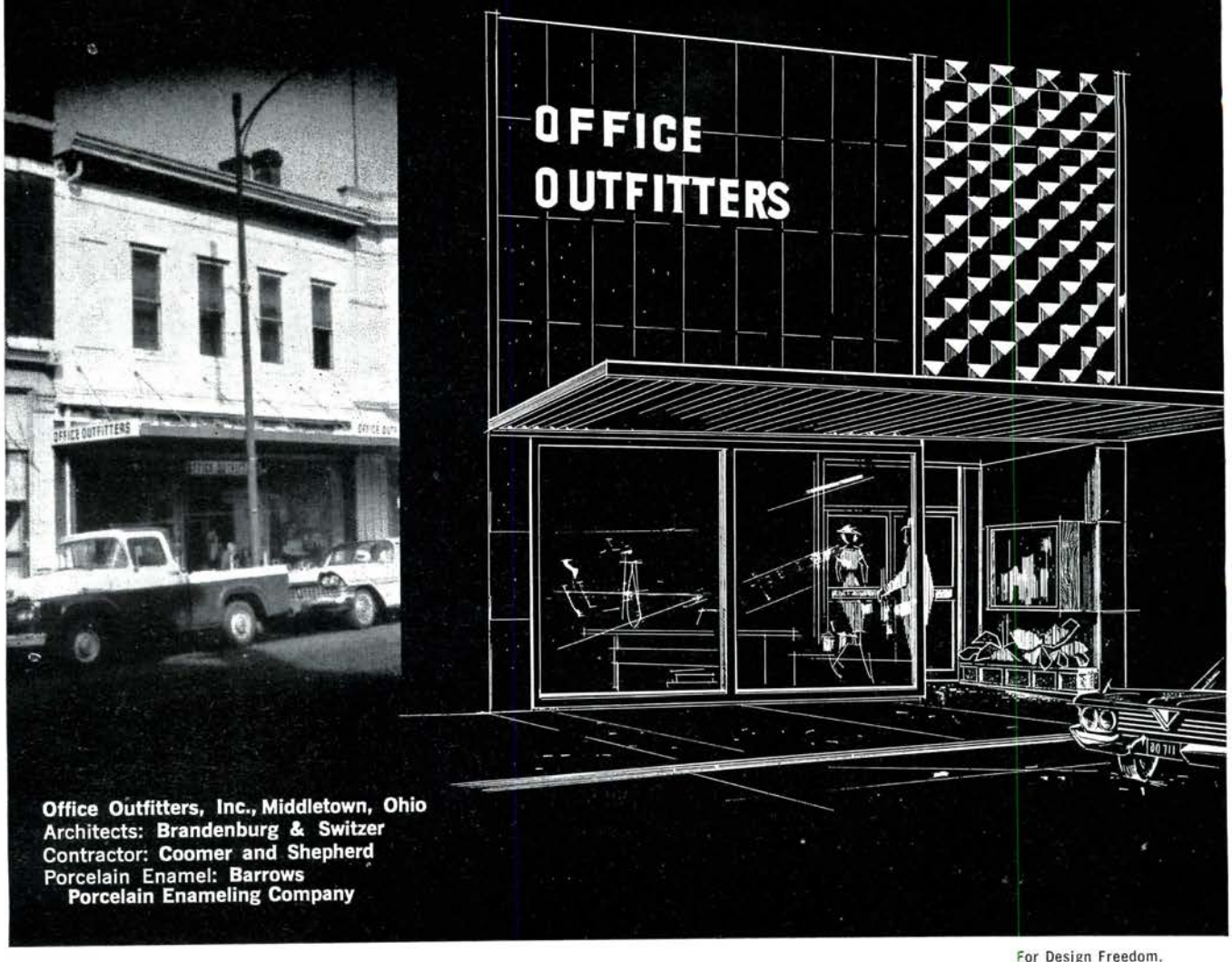
For the completeness and usefulness of the Sweet's Files in your office you can thank the manufacturers who make their catalogs instantly accessible in the Files.



SWEET'S CATALOG SERVICE, DIVISION OF F. W. DODGE CORPORATION, 119 WEST 40TH STREET, NEW YORK 18, NEW YORK

New steels are born at Armco

"NEW" BUILDINGS FROM OLD with porcelain enamel and stainless steel



Office Outfitters, Inc., Middletown, Ohio
Architects: **Brandenburg & Switzer**
Contractor: **Coomer and Shepherd**
Porcelain Enamel: **Barrows Porcelain Enameling Company**

For Design Freedom, Beauty and Economy

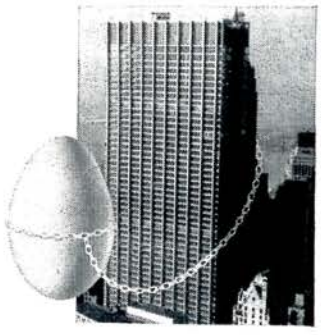
In remodeling this out-dated structure, inside and out, architects Brandenburg and Switzer have skillfully created for their clients a modern, customer-attracting building. By effectively using stainless steel and porcelain enamel, they have converted an obsolete-looking store into modern architecture. In addition, by selecting these architectural metals, they are assured their design will retain its attractive appearance for many years with practically no maintenance.

In *your* remodeling work, make full use of the design freedom as well as the efficiency and economy of Armco Enameling Iron and Armco Stainless Steel. Light weight, rigid panels of porcelain enamel expand your design horizon to include both form and color, simplify attachment and erection problems. Stainless steel provides mullions, windows, signs, grillwork, column covers, and entrances that retain their new look for years—won't tarnish or wear with age. And equally important, both materials give your clients maximum value per dollar at low overall cost.

Let us send you more information on the properties of porcelain enamel on Armco Enameling Iron and Armco Stainless Steel, and their application in new construction as well as remodeling.

Armco Division, Armco Steel Corporation, 3181 Curtis Street, Middletown, Ohio.

ARMCO **Armco Division**



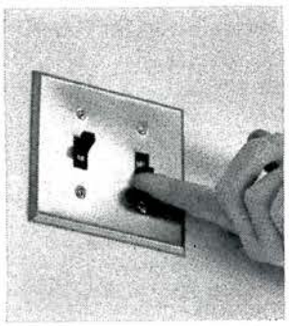
For a better way
to take care of
your nest egg...
The Chase Manhattan Bank

General Electric switches
chosen for



Giant among giants — equipped with G-E wiring devices. 1 Chase Manhattan Plaza is new symbol of strength in New York's financial district. It towers 60 stories above ground, with six working levels underground — is city's sixth highest building.

Architects: Skidmore, Owings & Merrill. *General Contractor:* Turner Construction Company. *Electrical Engineers:* Meyer, Strong & Jones. *Electrical Contractors:* Fischbach & Moore, Inc. and L. K. Comstock & Company, Inc. (joint venture).

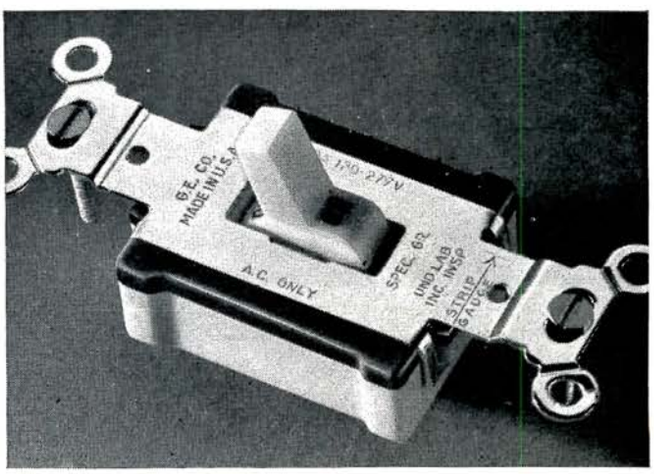


For a better way
to take care of
your electricity...
G-E wiring devices

and outlets
Chase Manhattan Plaza



-E quiet-type switches, grounding outlets and inter-angeable devices were selected to meet engineering ecifications for building, by Fischbach & Moore, Inc. nd L. K. Comstock & Company, Inc. Mr. Roy Cascio, ssistant Project Engineer, is shown here in the firms' eld office on the 34th floor.



Popular GE5451 20A, 120/277V AC switch, one of devices used in new skyscraper, is famous for dependable, quiet action that *stays* quiet for life of the switch. It has no rubber "bumpers" to harden with age. Four other exclusive features make this a top-quality AC switch for commercial buildings.

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Gentlemen: Please send us useful information on G-E Specification Grade Wiring Devices.

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continued from page 278

Tokyo Architects Wins $250,000 Seattle Fountain Competition

Two young Tokyo architects, winners of the $250,000 Seattle international fountain design competition, are now in the United States developing their fountain, which is being built by the City of Seattle for the Century 21 Exposition opening April 21, 1962. They are Hideki Shimizu and Kazuyuki Matsushita, both designers in the Tokyo firm of Tasisei Construction Company.

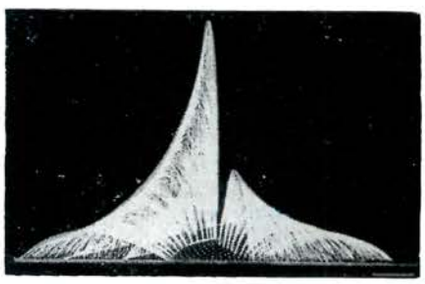
The design was selected from 265 entries from 11 nations, and in the final jurying won from four other teams of architects and sculptors from Paris, California and Michigan.

The jury was composed of architect Nathaniel A. Owings of San Francisco; sculptor Bernard Rosenthal, New York; landscape architect Garrett Eckbo, Pasadena; H. Peter Oberlander, professor of architecture at the University of British Columbia. Ex-officio jurors were Paul Thiry, F.A.I.A., Seattle, architect for Century 21 Exposition and the Civic Center; Fred B. McCoy, Seattle city building superintendent; and J. Lister Holmes, F.A.I.A., Seattle, competition professional advisor.

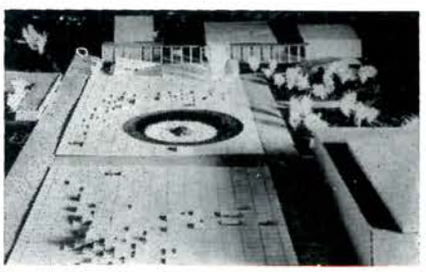
The winning design was chosen for a quality described by landscape architect Eckbo as "a true breakthrough in imaginative frontiers in the use of water."

Patterns of sculptured water will be played in different forms. The water will rise from a "bowl" 100 ft across, a ceramic circle with a glittering white-chip surface, which will rest on a large granite plaza of varying levels. The plaza is extremely simple; the water designs, reaching heights up to 100 ft, are complex.

The water will be controlled by an electronic tape which can produce repeating patterns or be improvised by a manual keyboard, operated in a mechanism housed in a sub-surface chamber. Colored lighting will be coordinated with water patterning.



Sculptured water will rise to 100 ft from International Fountain of Seattle 21 Exposition, 1962. Designed by Tokyo's Hideki Shimizu and Kazuyuki Matsushita, the fountain will be situated on granite plaza of varying levels



On the exposition site, the fountain plaza will be surrounded by world fair and Civic Center buildings. Professor Oberlander pointed out that by its simplicity, the plaza is "superior urban form, unifying the temporary and permanent buildings; not competing with the exciting architectural content surrounding it."

more news on page 292

BECKLEY · CARDY

SIMPLEX units

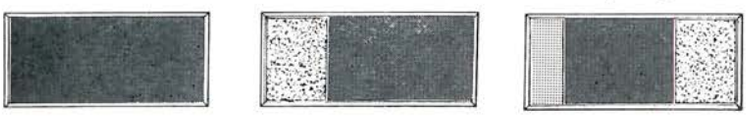


with HANGING STRIPS for raising and lowering for different age groups

CUSTOM-BUILT

to your instructional needs

with chalkboard, corkboard or pegboard



— one material or any combination

A practical solution to diversified chalkboard and mounting problems. You plan each unit according to your requirements. A simple sketch with dimensions and materials indicated is all we need.

Your units are built in our factory and delivered to you ready to hang and use. All materials of proven, durable quality. Aluminum trims and chalk troughs are expertly fitted.

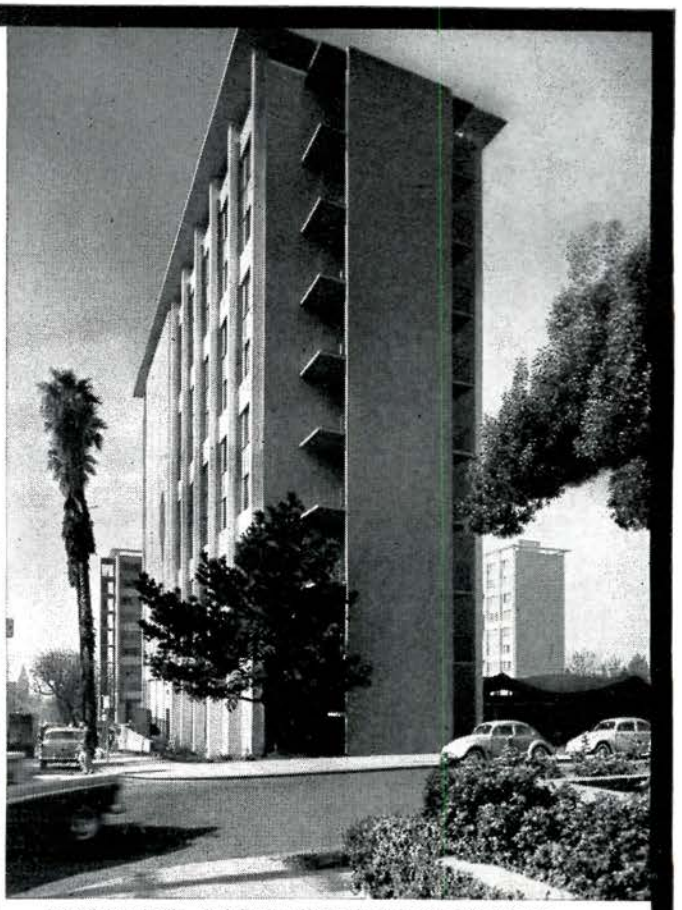
Beckley-Cardy

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Greater Design Flexibility makes

REINFORCED CONCRETE

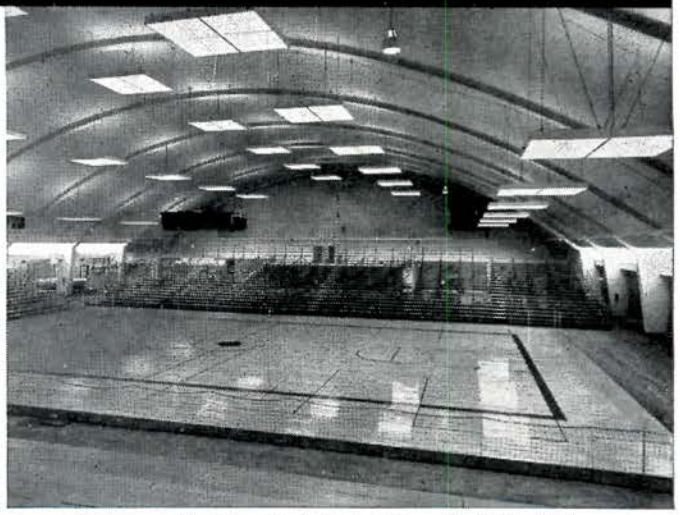
both Contemporary and Functional





Residence Halls, and Dining Halls, University of California
Architect: Warneke & Warneke, San Francisco & Oakland
Structural Engineer: Isadore Thompson, San Francisco
General Contractor: Dinwiddie Construction Co., San Francisco





Field House, Northern Illinois State College, DeKalb, Illinois
Architects & Engineers: Perkins & Will, Chicago, Illinois
General Contractor: J. L. Simmons Co., Inc., Chicago, Illinois

The great difference in these building designs emphasizes the unlimited flexibility possible with reinforced concrete. Curve it . . . arch it . . . make it square . . . make it round—only reinforced concrete can give you such complete freedom for achieving structural beauty while meeting all functional requirements. Before you build, it will pay you to investigate the many design and economic advantages of this versatile construction material.

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HURLBUT W. SMITH JUNIOR HIGH SCHOOL, SYRACUSE, NEW YORK

Designed for 800 students, this school consists of 39 classrooms, including science rooms, art rooms, home economics classrooms and laboratories, music rooms and shops. Each classroom has a separate workroom space. Also provided is a library, administrative office, health and guidance facilities, two cafeterias, a large gymnasium and separate locker rooms for boys and girl The auditorium seats 830. Service areas include a kitche boiler room and general storage. Dimensions: area—123,9(sq. ft.; cubage—1,792,762 cu. ft. ***Architects and Engineers*** **Sargent, Webster, Crenshaw & Folley, A.I.A., Syracuse, New Yor**

Another new school selects...

NEW CARRIER HEATING AND VENTILATING SYSTEM THAT PROVIDES 8 ADVANTAGES YET COSTS LESS

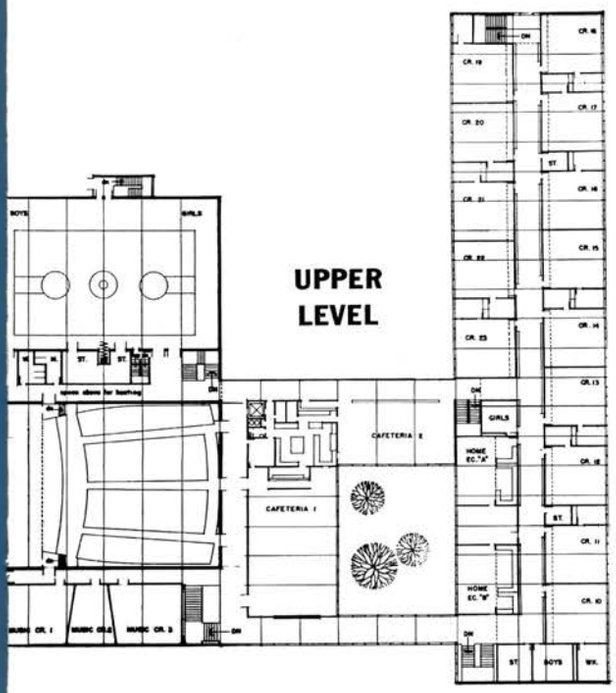
This modern junior high school provides another excellent example of how any new school can enjoy a superior heating and ventilating system at less than the cost of ordinary unit ventilators. And this new kind of system is ready for immediate conversion to year-round air conditioning with the simple addition of packaged refrigeration equipment in the machine room.

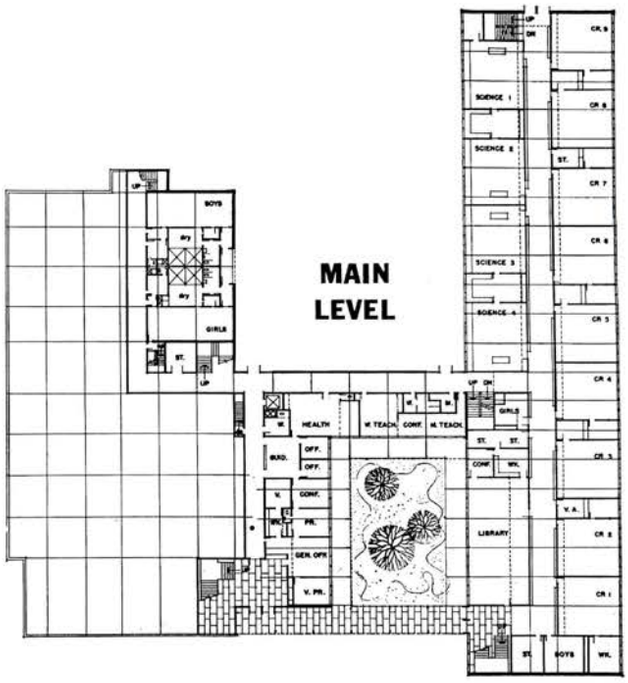
In their recent planning of new schools the architects considered unit ventilators and several popular central station systems. They carefully compared the performance characteristics, maintenance requirements, first cost and operating cost of each method. Their conclusion: The new Carrier Reheat Weathermaster* System provides the highest quality automatic heating and ventilation currently available to schools. It is the easiest to convert to complete year-round air conditioning. It costs 10% less, installed, than the next best method. And it costs less to oper ate and to maintain than other automatic systems

The eight important advantages of the Rehea Weathermaster System which led to these conclu sions are listed on the opposite page. They ar unique because these Carrier units are the only roon terminals which combine the performance benefit of the induction principle with either high or lov velocity air distribution and the superiorities in herent in all central station systems.

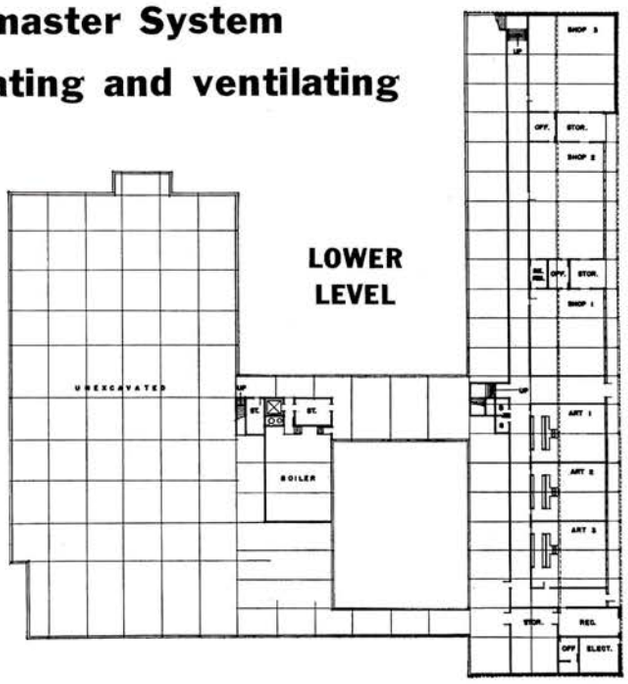
If you are designing a new school, it should b well worth your while to look into the Carrier Rehea Weathermaster System—either for heating and ven tilation only, or with an eye to future air conditioning The nearby Carrier office will be glad to give you complete facts on this advanced system. Or write t Carrier Air Conditioning Company, Syracuse 1, N.Y

*Reg. U.S. Pat. Off





nly the Carrier Reheat Weathermaster System ffers these 8 advantages for heating and ventilating



Positive ventilation and air circulation under all con-tions and seasons for improved odor dilution. Constant r volume from units.

Quieter operation—no fans or other moving equip-ent in classrooms, with all powered equipment located machine room for easy servicing.

Superior air filtering at central station—minimum ter maintenance.

No costly wall openings, subject to rain and wind akage, required in classrooms for ventilation air.

No operation of fans required for night and week-end eating, with gravity heating handling the load.

Individual temperature control in every room solves ning problems; air damper assures easy initial system alancing, requires no adjustments thereafter.

Valuable classroom floor and wall space is saved by e compact units; cabinet only eight inches deep.

8 Easily and economically converts to full-year-round air conditioning at any future date with simple addition of packaged water chilling machine in central apparatus room. No revision of classroom units, controls or air ducts required. Condensate drains not needed. Nominal conversion cost about 65c per sq. ft., or less.

Carrier Air Conditioning Company

continued from page 288

Architects, Builders Discuss Housing in Today's Market

Six leading architects and 45 home builders of south Florida were brought together recently to exchange views about housing in today's market. "The New Look in Residential Housing and Home Financing" was the theme of the Miami meeting which was sponsored by E. Albert Pallot, president of Biscayne Federal Savings and Loan Association.

Declaring that the savings institution intended to cooperate to the fullest extent with President Kennedy's request for lower mortgate interest rates and costs, Mr. Pallot stated his belief that liberalized financing would help sales, but that in the long run the product offered by the builder would determine his success in the marketplace.

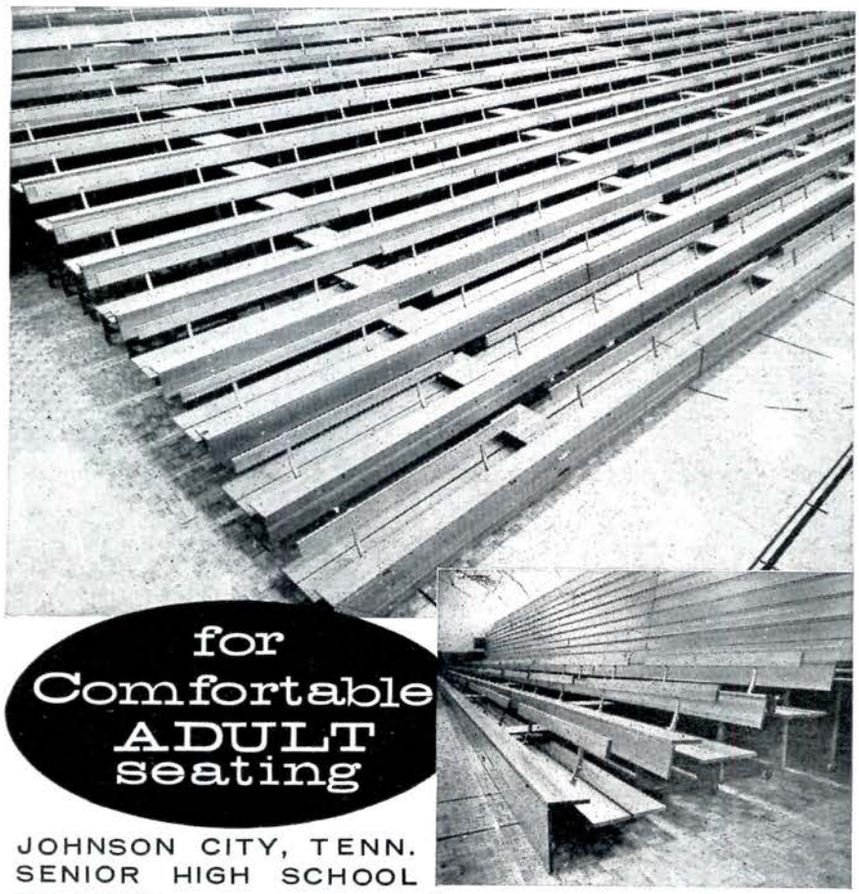
He emphasized that, in his opinion, it was time for financial institutions to demonstrate a greater interest in the type and quality of popular priced housing than in the past. He said, "Although architects are usually called in for the design of custom homes, there is no reason why their specialized knowledge cannot be used to produce a finer home for the lower priced buyer."

In introducing the architects to the builders, Mr. Pallot said it was the hope of Biscayne Federal, whose board of directors includes architect Robert Law Weed and engineer Chelsie J. Senerchia, to establish a group of consulting architects who would be available to aid builders in improving the design of popular priced homes. The full cost of this service would be borne by the savings institution. "This," said Mr. Pallot, "is the kind of contribution which a financial institution is ideally suited to make. It can benefit the entire community through the design and building of finer . . . homes . . ."

Some opinions expressed to the builders by the architects were: Verner Johnson, Polevitsky-Johnson & Associates—the community built is of equal or greater importance than the individual homes offered; Russell Pancoast, Pancoast-Ferendino-Skeels & Burnham—it is time to begin looking at other types of mass housing in addition to the standard one-family separate dwelling, now confined by the area's growth to a minimum-size lot with built-in lack of privacy—row houses and other building techniques now employed successfully elsewhere; Robert Fitch Smith—in the majority of cases it is the woman of the family who "rejects" a prospective new home and catering to her needs and desires is necessary; Robert M. Little, Robert M. Little & Associates—welcomed the interest of a financial institution in architect-builder cooperation as recognizing importance of good design.

Builders unanimously praised Mr. Pallot for a pioneering effort to bring architects and volume builders into a mutually-beneficial working relationship. Many cautiously noted that they would be in favor of architect-inspired design features if they could be achieved without having to increase prices. Agreement was general that product improvement in home building was both necessary and desirable and that architect-builder cooperation would aid in bringing this about.

more news on page 300



for Comfortable ADULT seating

JOHNSON CITY, TENN. SENIOR HIGH SCHOOL SELECTS . . .

BERLIN EZ-A-WAY Bleachers

Correct posture, comfortable, convenient are these EZ-A-WAY Folding Bleachers, described in more detail in the paragraphs to the right. Easily folded away, or prepared for occupancy, here is adult premium seating . . . opera style when seats and backrests are padded.

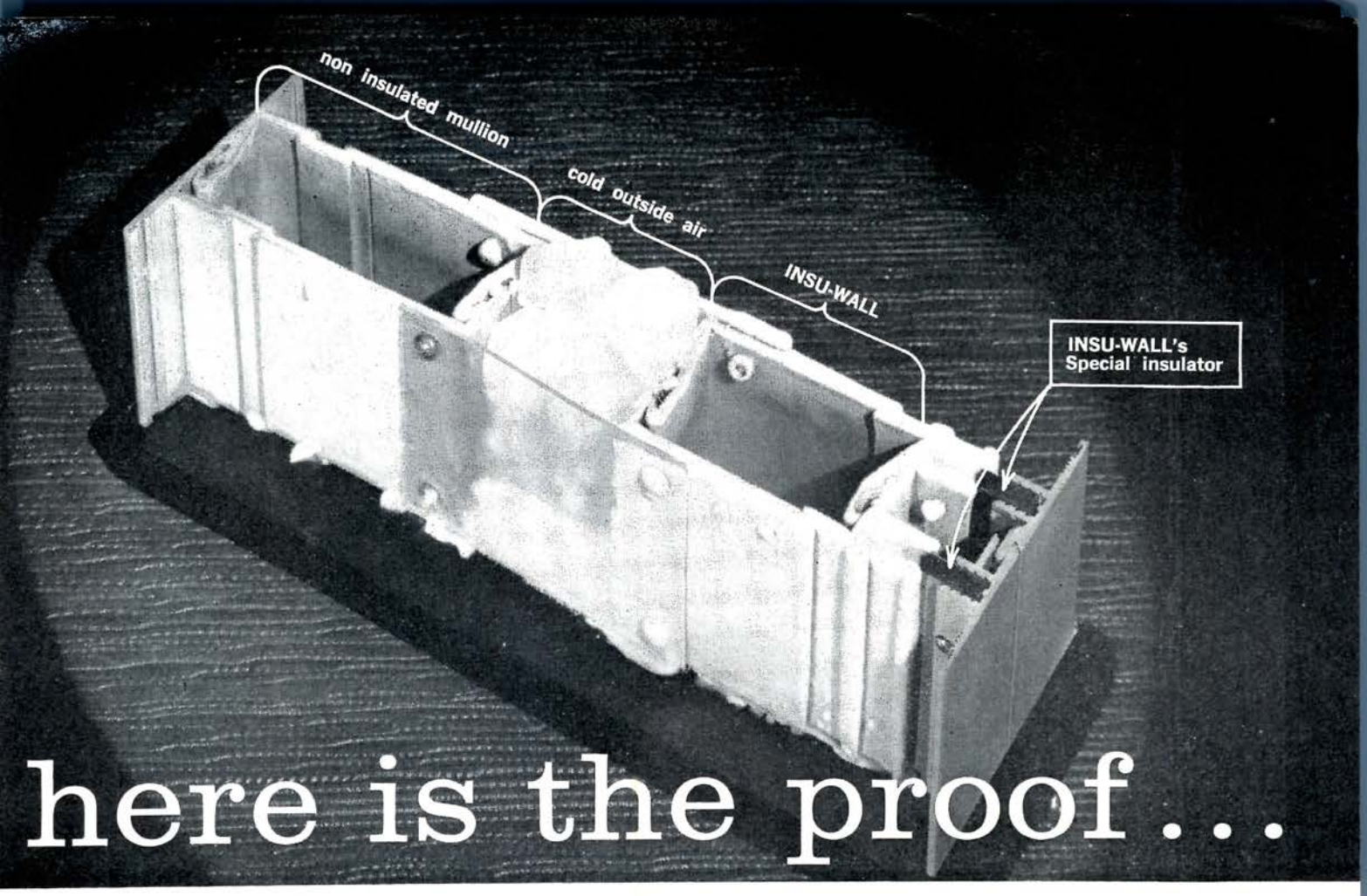
Like all EZ-A-WAY Folding Bleachers the Johnson City installation has the Berlin original construction features that have made them the preferred folding bleachers for gymnasiums everywhere.

WRITE for complete details of this type of seating . . . and engineering data for your gymnasium seating requirements.

- AVAILABLE - 30 & 32" back-to-back and 9, 10, or 11½" rise . . . with or without backs or pads
- BACKRESTS - are supported with strong "Aircraft" aluminum brackets . . . light weight for easy operation..
- PADS - for seats and backs are available in any color of cloth backed Vinyl fabric over foam rubber pads.
- OMEGA ELECTRIC DRIVE - for continuous automatic push button operation.

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BERLIN CHAPMAN CO.
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here is the proof...

look how new MARMET INSU-WALL finally licks the condensation, thermal conduction problem in aluminum curtain-wall

Two kinds of MARMET curtain wall mullions stand *face to face* in the photo above . . . exposed to some crushed dry ice . . . duplicating severely cold, outside air. The mullion section to the left is from regular non-insulated curtain-wall . . . the mullion section to the right from MARMET's new INSU-WALL. Notice the dark strips separating the inner wall metal from outside mullion areas. This is INSU-WALL's specially formulated insulator, acting as an almost complete barrier to thermal conduction.

Observe the dry condition of the *inner wall metal* on INSU-WALL . . . the complete absence of condensation or frost despite the sub-freezing temperatures to which the exterior metal is being subjected. This is an unretouched photo of the test demonstration kit now being shown by MARMET sales representatives. Although this offers remarkable proof of INSU-WALL's performance . . . review of independent laboratory tests, while less dramatic, is even *more* impressive.

New INSU-WALL retains the beauty and permanence of finish achieved with aluminum curtain wall . . . yet cuts heat losses through the high conduction factor of this metal by as much as 63%.

And just look at these

Key advantages in INSU-WALL

- Reduces heat loss through curtain wall metal in severe winter cold. Because the condensation problem does not exist with Insu-Wall, perimeter heating may be replaced with less expensive systems.
- Licks the problem of condensation forming on interior curtain wall metal . . . with attendant possible damage to plaster, wall paneling, carpeting, drapes and furnishings.
- Reduces air conditioning load by preventing heat transfer into building through sun heated curtain wall framing in warm climates or summer temperatures.
- Standard split mull assembly system requires no added installation time or added assembly labor on the site.

To see the test demonstration above, yourself, and get complete technical details . . . just call your local MARMET representative.

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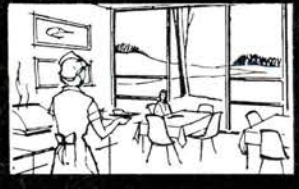


. T. Barnette Elementary School IN FAIRBANKS, ALASKA
Architect: Gray, Rogers, Graham & Osborne

the practical aluminum curtain wall grid for humidity condensation, heat loss, in or out!



AIR CONDITIONED OFFICES
Heat transfer into cool inside air is minimized as temperatures build up in the sun on large expanses of curtain wall metal.



HUMID CAFETERIAS and RESTAURANTS
By minimizing temperature differentials between aluminum surfaces and humid inside air, INSU-WALL eliminates the condensation problem arising from steam tables and adjacent kitchen areas.

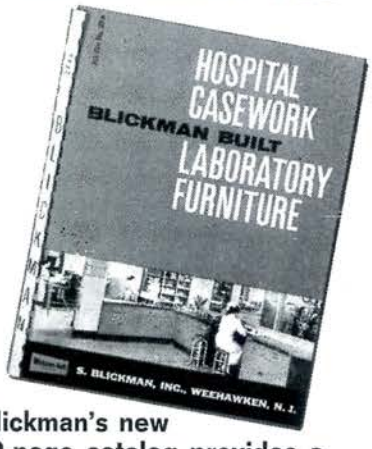


SCHOOLS and COLLEGES
School heating costs can be reduced by reducing the heat loss thru curtain wall used in school stairwells, entrance areas and corridor passages as well as classrooms.



INDOOR SWIMMING POOLS
In many cases, the esthetic effects of daylighted, curtain walled, swimming pools can be maintained without frost or heavy condensation.

specify BLICKMAN-BUILT® laboratory furniture and hospital casework!



Blickman's new 40-page catalog provides a quick-reference implement for basic planning of laboratory and hospital installations.

It includes specifications for **standard and specialized laboratory furniture, and fixtures**... PLUS details of Blickman's exclusive **CONFLEX*** construction. This new concept achieves maximum flexibility of door and drawer arrangements, without the use of tools ... and without loss of rigidity or structural soundness!

More than 75 years of manufacturing experience stand behind the famed Blickman-Built symbol. It identifies the finest in stainless and enameled steel equipment! * TRADEMARK

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Gentlemen:
Please rush my copy of your Hospital Casework and Laboratory Furniture catalog.
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address_____
city_____ state_____

The Record Reports

continued from page 292

A.S.C.E. Award Given Waldo G. Bowman

Waldo G. Bowman, editor-in-chief of *Engineering News-Record,* has been selected as "Metropolitan Civil Engineer of the Year" by the Metropolitan Section of the American Society of Civil Engineers. The award was presented at the group's annual meeting in May.

Mr. Bowman, with the magazine since 1925 and editor-in-chief for 21 years, is the first member of the technical press ever chosen for the award. His selection points up the importance to engineers of exchanging information about successful new design.

An engineer and author, Mr. Bowman has traveled widely to observe and write about construction projects. His latest extended trip, in 1960, took him across Southern Asia from Japan to Lebanon and to Egypt's Aswan Dam.

In his long activity in the A.S.C.E., Mr. Bowman has served as director from 1949 to 1951 and as vice president in 1958-59. He is a member of the executive committee of the U.S. Congress on Large Dams, the American Society for Testing Materials and the American Concrete Institute. He is the author of books about overseas engineering and building construction.

Stewardson Scholarship Awarded Solomon

Stuart B. Solomon of Carnegie Institute of Technology has been awarded the John Stewardson Memorial Scholarship for 1961, which carries the value of $2000 for travel study in Europe.

The jury in the competition consisted of Edmund Bacon, Vincent Kling and Herbert Swinburne.

Architect Awarded Honorary Degree at Wittenberg U.

George H. Ferrenz, a partner in the New York architectural firm of Ferenz and Taylor, was awarded an honorary doctor of fine arts degree at the June commencement exercises of Wittenberg University, Springfield, Ohio.

more news on page 304



THE TEMPLATE GROUP

by Leopold

The Template Group combines the high-styling and individuality of fine custom-built wood office furniture with moderate cost and durability to make it a practical choice for all offices.



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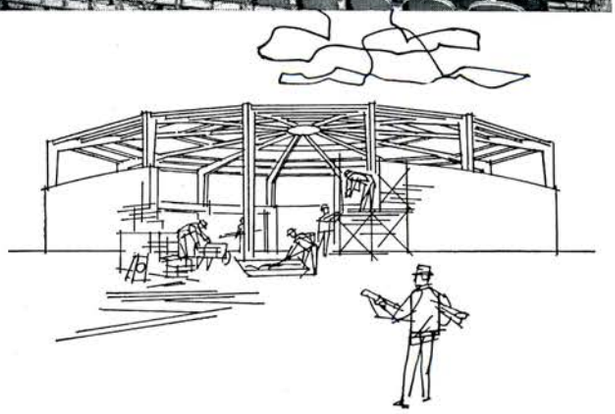
But architects *are* interested—in far larger numbers than you might imagine. The good and satisfying ways in which they have designed on the basic Butler structural, roof and wall systems are astonishingly diverse and individual. We at Butler encourage this association, and predict that it will grow at an accelerating speed in the near future.

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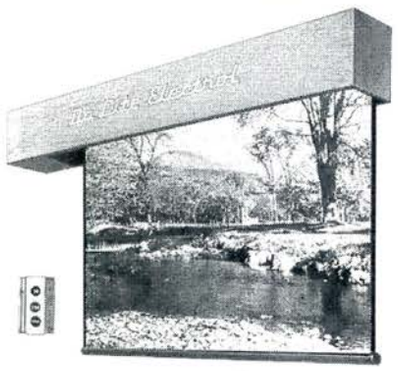
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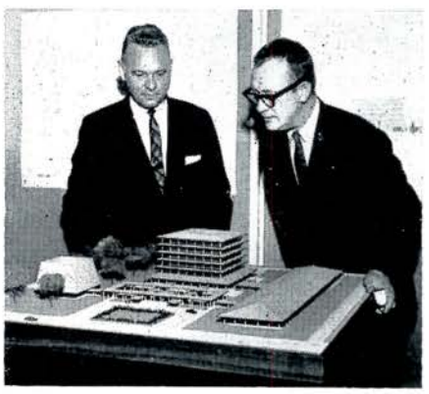
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Minneapolis Utility Sponsors Student Design Competition

For the second year a competition for Design III students in the school of architecture of the University of Minnesota has been sponsored by the Minneapolis Gas Company.

The 1961 design project was a multi-story government office building for the Republic of Liberia.

The planning behind the competition's inauguration in 1960 goes back several years. Prime mover in the program was Robert F. Calrow, 1938 graduate of the school of architecture, University of Minnesota, and an advertising man by profession. As assistant vice president in charge of advertising for Minneapolis Gas, he has long felt the need for gas utilities to establish closer ties with the architectural profession. This year he completed an eight-year term as national president of Alpha Rho Chi, professional architectural fraternity.



Mr. Calrow, Minneapolis Gas Co., and Prof. Rapson, Univ. of Minn., examine a winning design in gas company's architectural competition

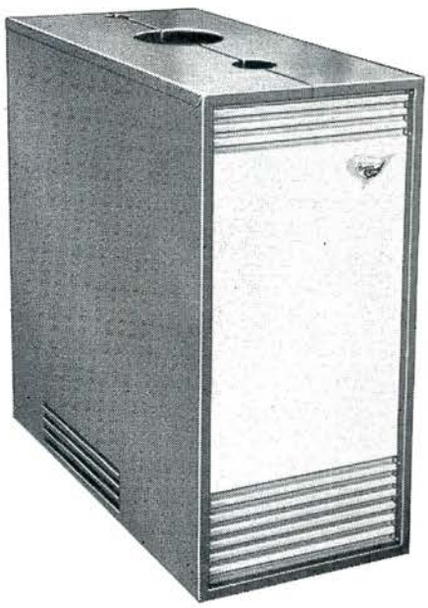
After extensive conferences with Ralph Rapson, head of the University's school of architecture and designer of Minneapolis' new Sir Tyrone Guthrie Repertory Theater, the competition was worked out and accepted by the board of regents.

1961 competition winners were: John C. Bulov, St. Paul; Edward B. Allen, Madison, Wis.; Larry J. Hurlbut, Watertown, S.D.; and Robert G. Currie, Blacksburg, Va.

The school of architecture faculty chose the design project and served as the awards jury.

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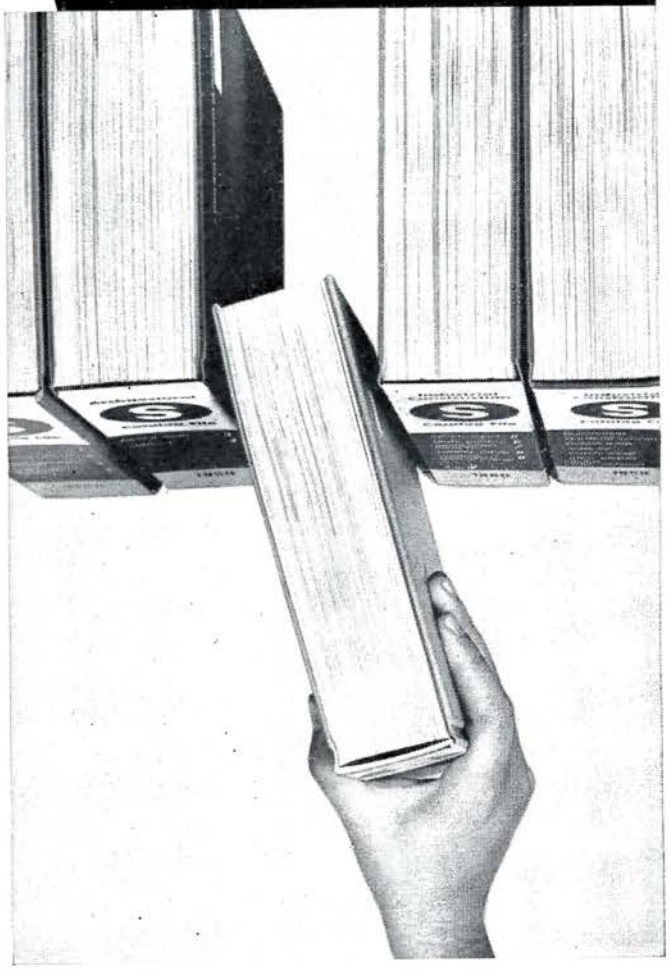
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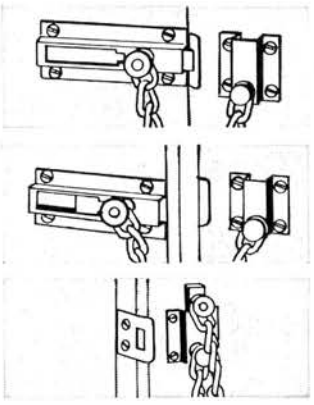
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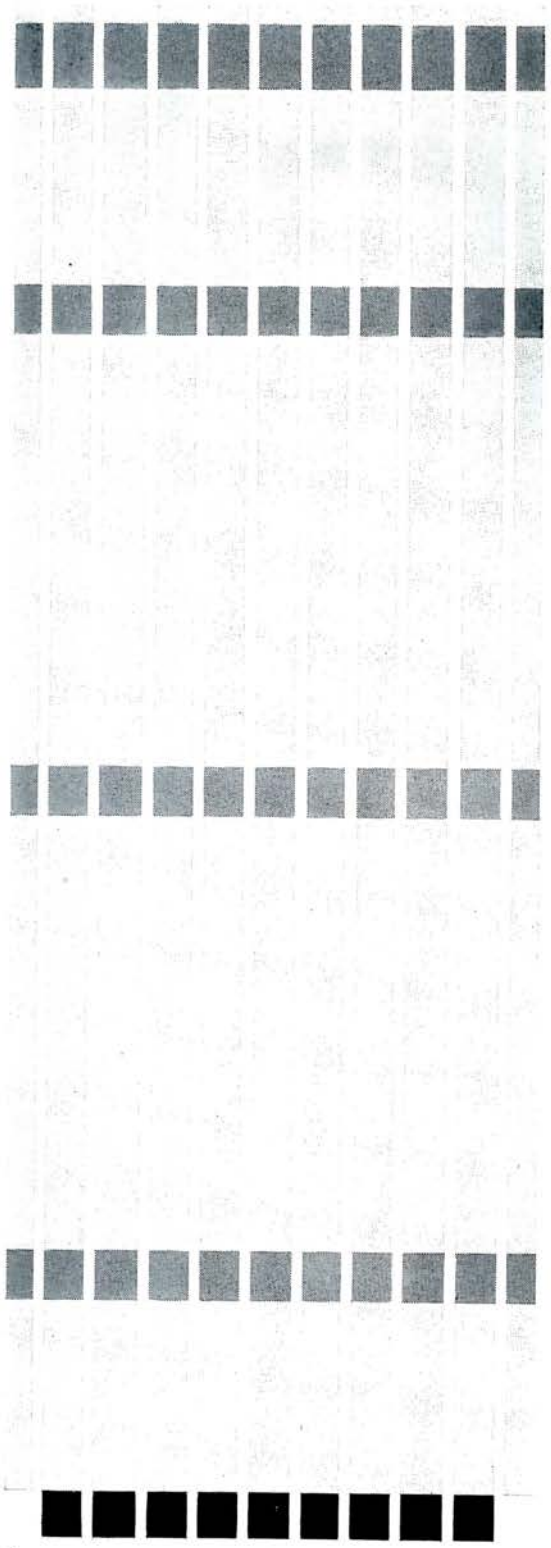
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