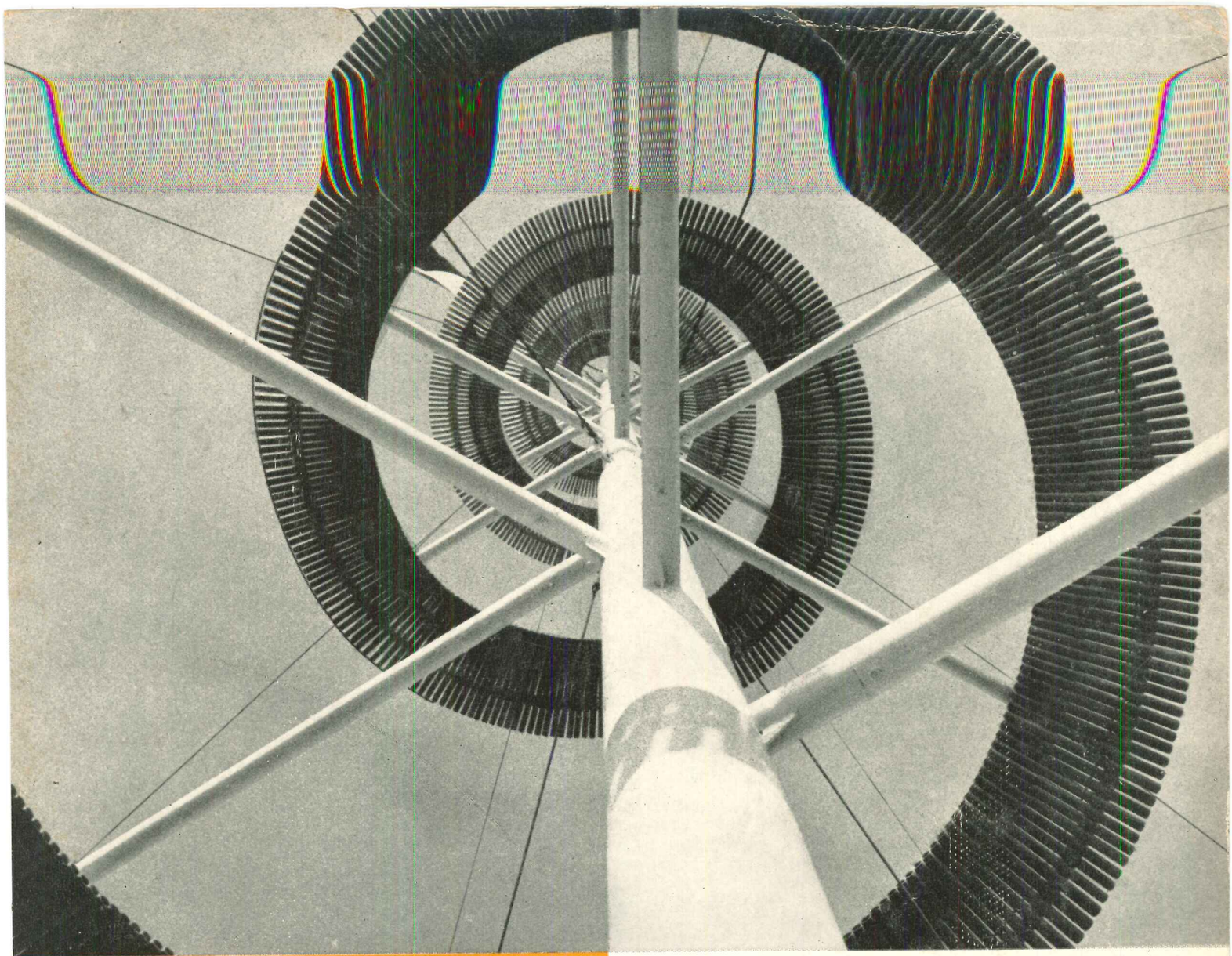

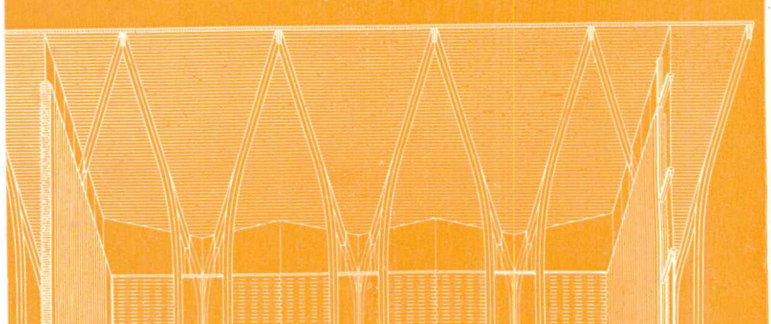

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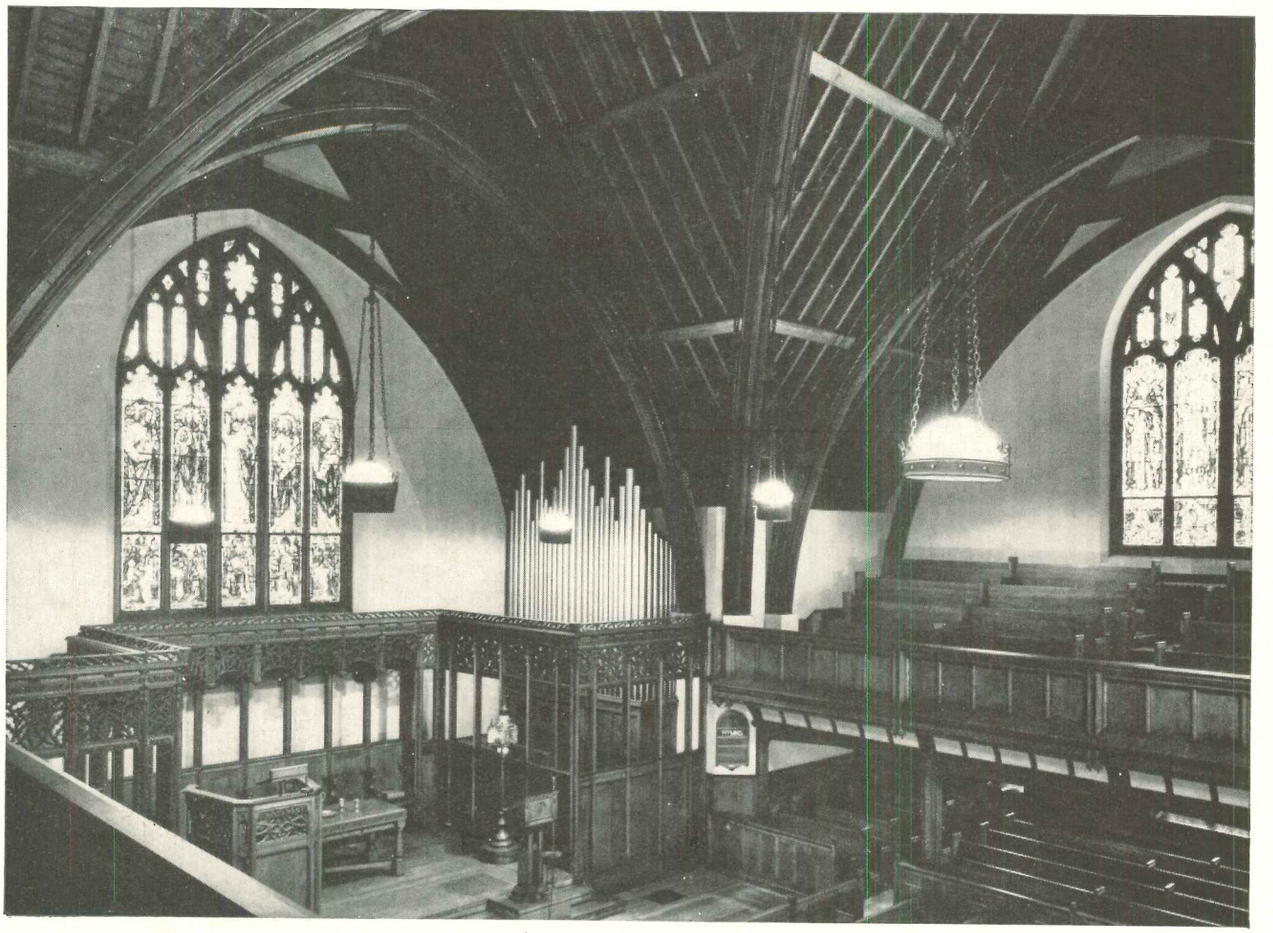

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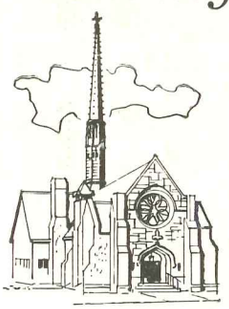

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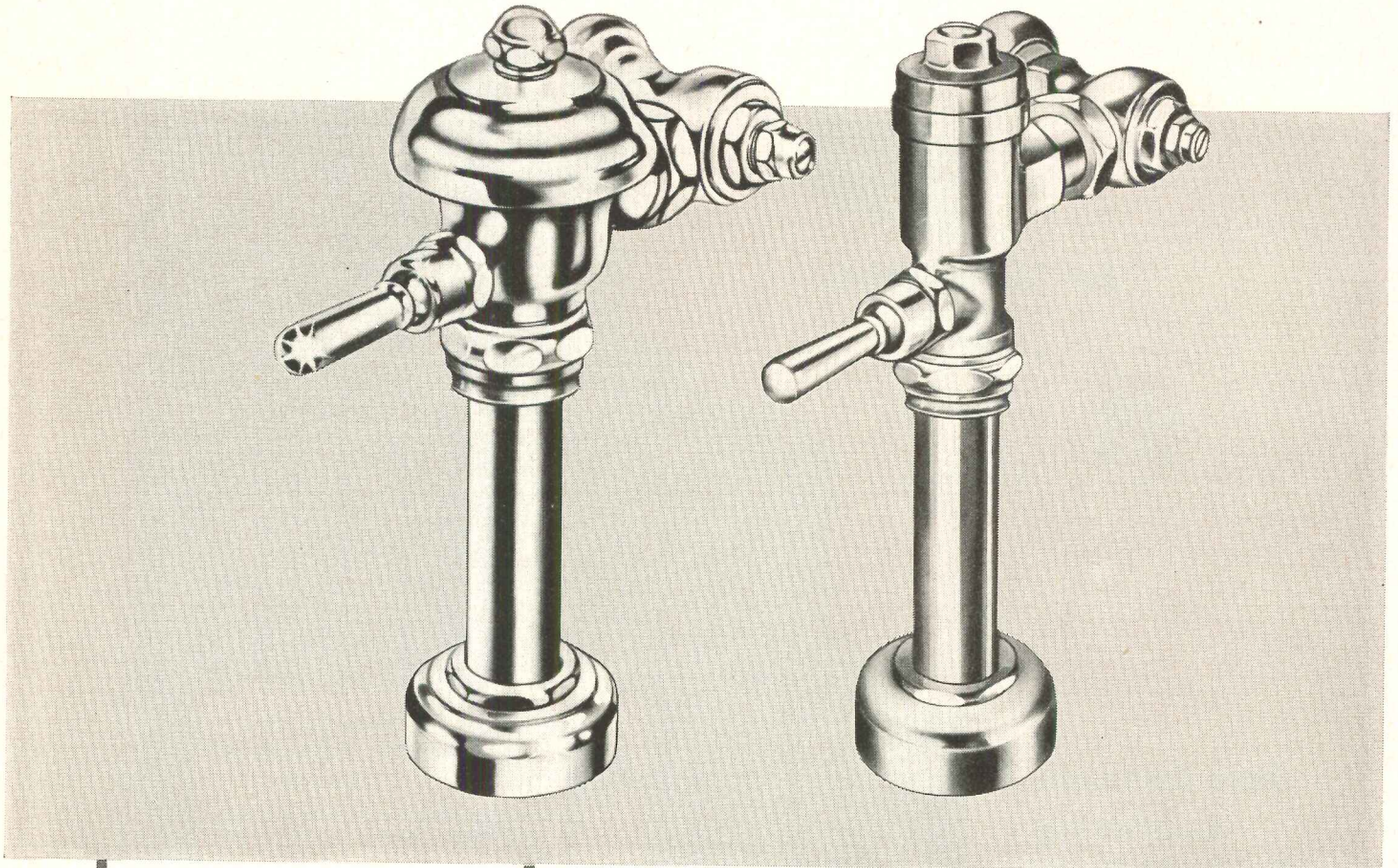

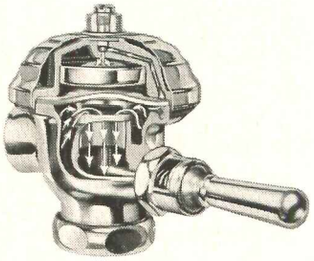

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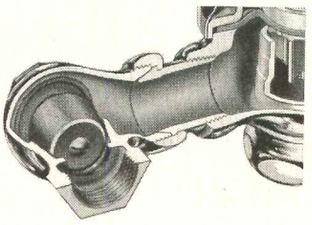

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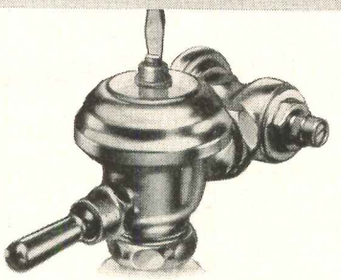

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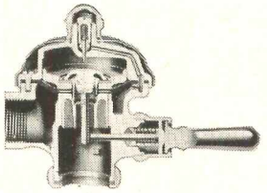

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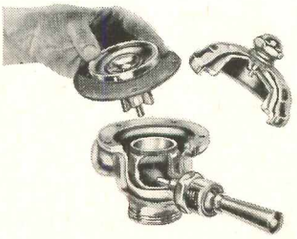

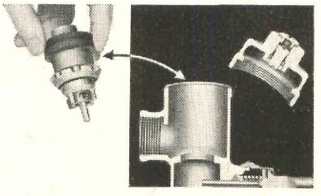

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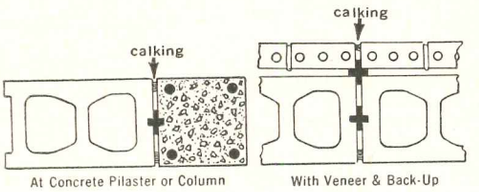

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Top: Eternal Spiral from the Brussels World's Fair. Victor Bourgeois, Architect. Magnum: Kryn Taconis photo. Bottom: Cross Section, Bee Ridge Presbyterian Church, Sarasota, Fla. Victor A. Lundy, Architect

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June 1958 Vol. 123 No. 6

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Coming in the Record

BUILDING TYPES STUDY: MULTI-FAMILY HOUSING

The July Building Types Study will cover both public and private housing. Included, in addition to several examples of recent good design in this field, will be three pertinent articles: Philosophy of Housing Design, by Harry Weese, A.I.A.; The Public Housing Problem, a roundup of reactions by architects to Harrison Salisbury's series of articles in *The New York Times*; and Accent on Better Living, by Thomas S. Holden.

CONTEMPORARY DESIGN IN JAPAN

An interesting July feature will be a group of eight buildings designed by Kenzo Tange, whose work is illustrative of how architects in Japan are working toward a Japanese expression for modern techniques and materials.

INDUSTRY BUYS ART—THE SEAGRAM BUILDING

A study of the new building by Mies van der Rohe and Philip Johnson, including an article by Arthur Drexler of the Museum of Modern Art tracing its development.

OTHER F. W. DODGE SERVICES: Dodge Reports—Dodge Construction Statistics—Sweet's Catalog Services—Dodge Books—Dodge Mailing Service—The Modern Hospital—The Nation's Schools—College and University Business—Hospital Purchasing File—Chicago Construction News—Daily Pacific Builder—Denver Daily Journal—Real Estate Record & Builders Guide.

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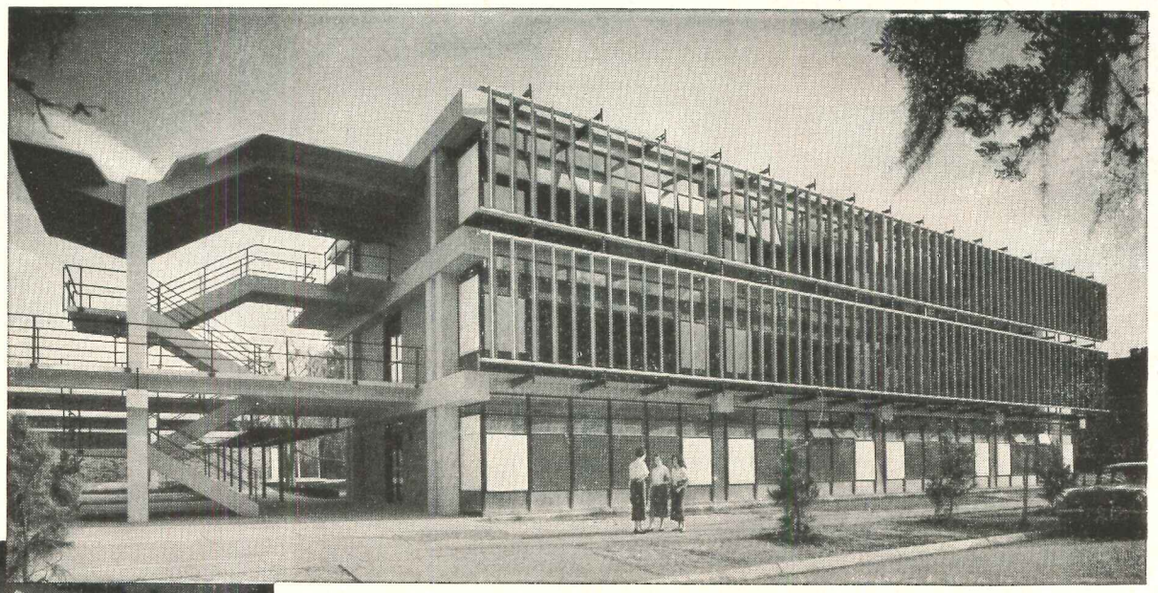

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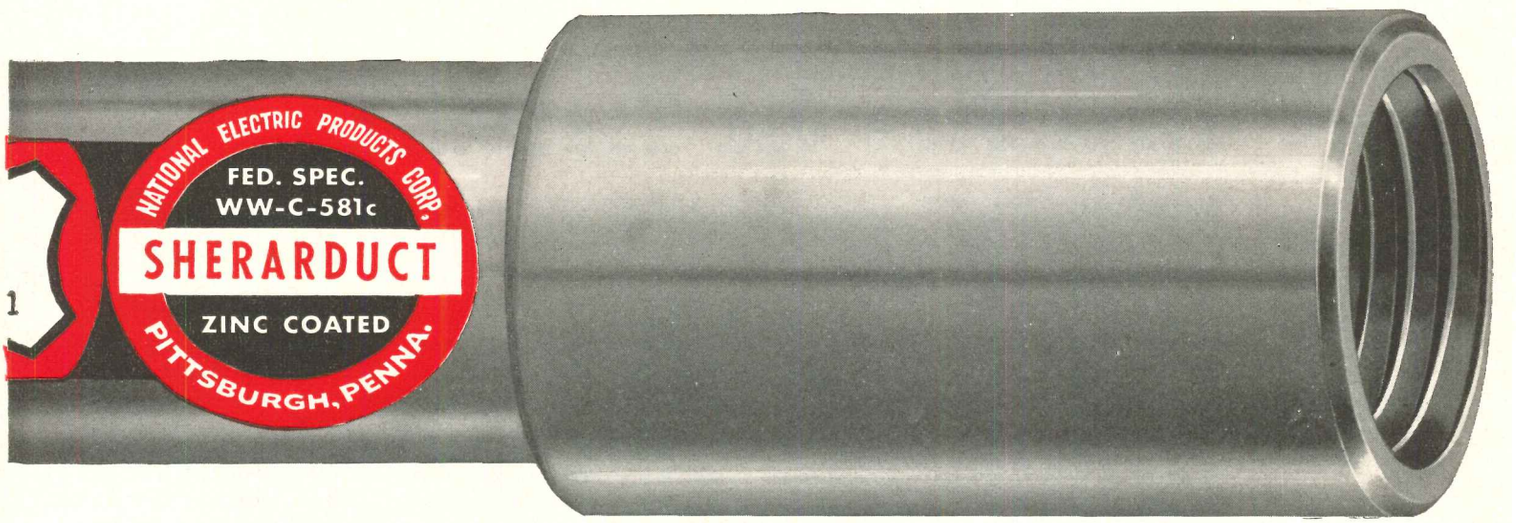

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Topping out the Guggenheim

Undeterred by the realities of this particular organic architecture ("structure and building are one . . . you can't pull it apart"), the construction workers at the Guggenheim Museum in New York last month raised a tree atop the last spiral of Frank Lloyd Wright's poem in concrete. It is not reported that Mr. Wright was present at this unique topping-out ceremony; but it seems safe to assume that if he had been he would have found an ancient tradition justified at long last.

Wanted: Architectural Diagnosis

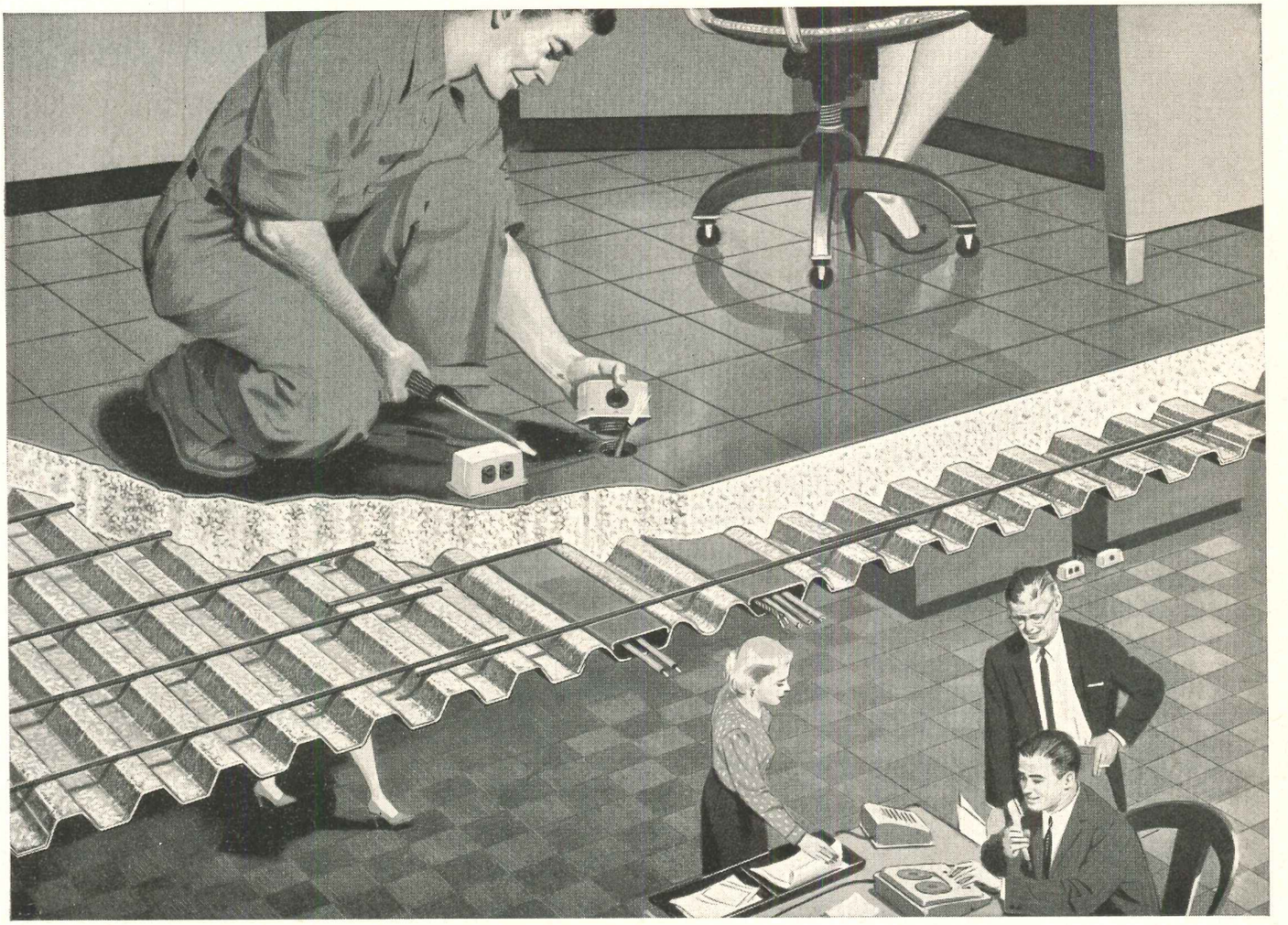
What is lacking most in the profession today is "architectural diagnosis," architect William Caudill told a recent meeting of the Wisconsin Chapter of the American Institute of Architects. "If we are to remain above the mess of this patent medicine age of building, we had better start stressing architectural diagnosis. . . . We had better make more effort to find out what our clients *need,* not necessarily what they want. There's a difference—a big difference. The salesman capitalizes on wants; the truly professional architect concerns himself with his client's *needs.* The analysis of these needs is today the most important phase of architectural practice." Mr. Caudill called it also the weakest part of today's architectural practice, though he noted that there were indications of progress by a few practitioners. "These days we are hearing more about 'programming.' I'm not sure that's the right word for us to use. It reeks too much of the mere listing of space needs. What I'm talking about is more than listing. It's really writing specifications for an architecture in terms of qualitative space as well as quantitative space." Although the schools are not yet training men in this area, architects must, Mr. Caudill insisted, learn to determine the problem as well as to solve it. "Architectural practice is destined for activities which will require less drawing and more thinking. . . . The skillful and creative designer as always will remain the key man in the architectural process because a great architecture results from the fusion of creativity with the skill of architectural composition and the technical knowledge of the day. But a new team member will emerge to work with the designer and make his architecture have greater significance. As the surgeon needs the diagnostician so will the designer need the architectural analyst."

Rudolph at Yale

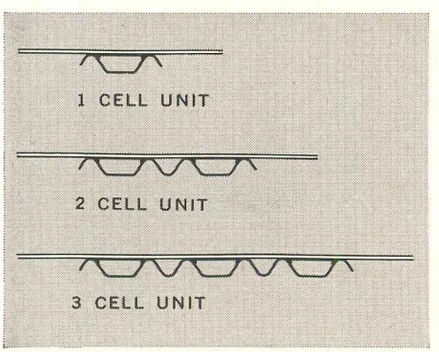
In a speech at his first "Alumni Day" as chairman of Yale's Department of Architecture, Paul Rudolph gave a straightforward and eloquent account of his purposes as an architectural educator. Remarking to begin with that architecture is at a point where action has outstripped ideas and theory, he said: "Many have asked why I should come to Yale. It is because I believe that action has indeed outstripped theory and that it is the unique task and responsibility of a great university such as Yale to study not only that which is known but, far more important, to pierce the unknown. My passion is to participate in this unending search. Theory must again overtake action." Mr. Rudolph listed four major areas of concern in which he said the effort would be pursued at Yale—"We must find ways of rendering our cities fit for humans, and develop the esthetics of change ("our first concern at Yale")." . . . "Secondly, we will search for more eloquent relationships between the conceptual aspects of building and techniques ("The unique forms inherent in any given material and the construction process must become more clear. . . . We have almost everything, including the industrialized structure which was such a romantic favorite of the theorist of the International Style, but we seldom know what to do with our wealth.")." . . . "Third on our list of forgotten fundamentals is the concern for visual perception ("An architect should be concerned with how a building looks in the rain, or on a summer day; its profile on a misty day, the different treatment required for that which is close at hand vs. that which is 20 stories removed, with angles of vision, symbolism and content.")." . . . "Fourth and last on our list will be a renewed concern with visual delight ("This is indeed the architect's prime responsibility, for other specialists can do everything else that he does and, quite often, much better.")."

Un-humanity and the Aged

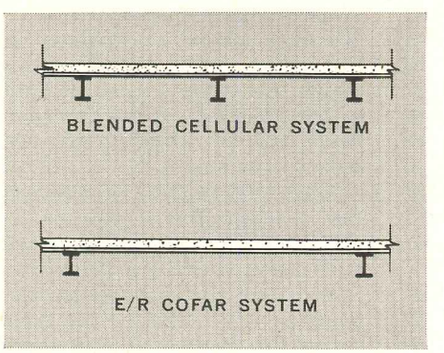
A Swedish architect named Bo Boustedt whose firm in Stockholm has done more than 40 projects in Sweden's community-centered program for housing the aged recently made a lecture tour of the U. S. under the auspices of the U. S. Public Health Service. He found nothing to praise in current U. S. efforts to provide for the elderly and one general word of condemnation for most of them—"un-human." Noting that in this country groups (religious, union etc.) most frequently are sponsors of projects for the aged, Mr. Boustedt remarks that "in U. S. you often have to move the old to this home that often is situated far away from their home communities. We think it is unhuman to move the old. Instead we try to keep the old in their own milieu. The home for the aged serves only the own local community or the section in the town where it is built. Of course we try to keep our old in their own homes as far as possible (with home-care, modernizing of old houses, economical security etc.). I have been told that our tendency to put the home for the aged in the center of the community or residential part of the town should be expensive with regard to the land-costs. The home for the aged, however, needs no large land, not much more than an ordinary apartment house. . . . In my opinion the home for the aged with its residential character should be situated in the residential center. This center is the shopping center. Here there is a lot of activity to look upon, and many visits by shopping friends and relatives to expect. Here is a stimulating milieu, not disturbing at all. When you in U. S. solve your homes for the aged by means of groups it means that a lot of people will be outside, perhaps they who are in most need of help. I have also noticed a tendency for monumental architecture in your homes for the aged. Long dominating façades. . . . The building must be scaled down to human size."



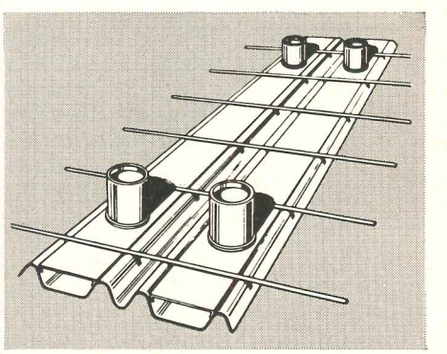
Electrical flexibility and wider spans with Granco's new Cofar®



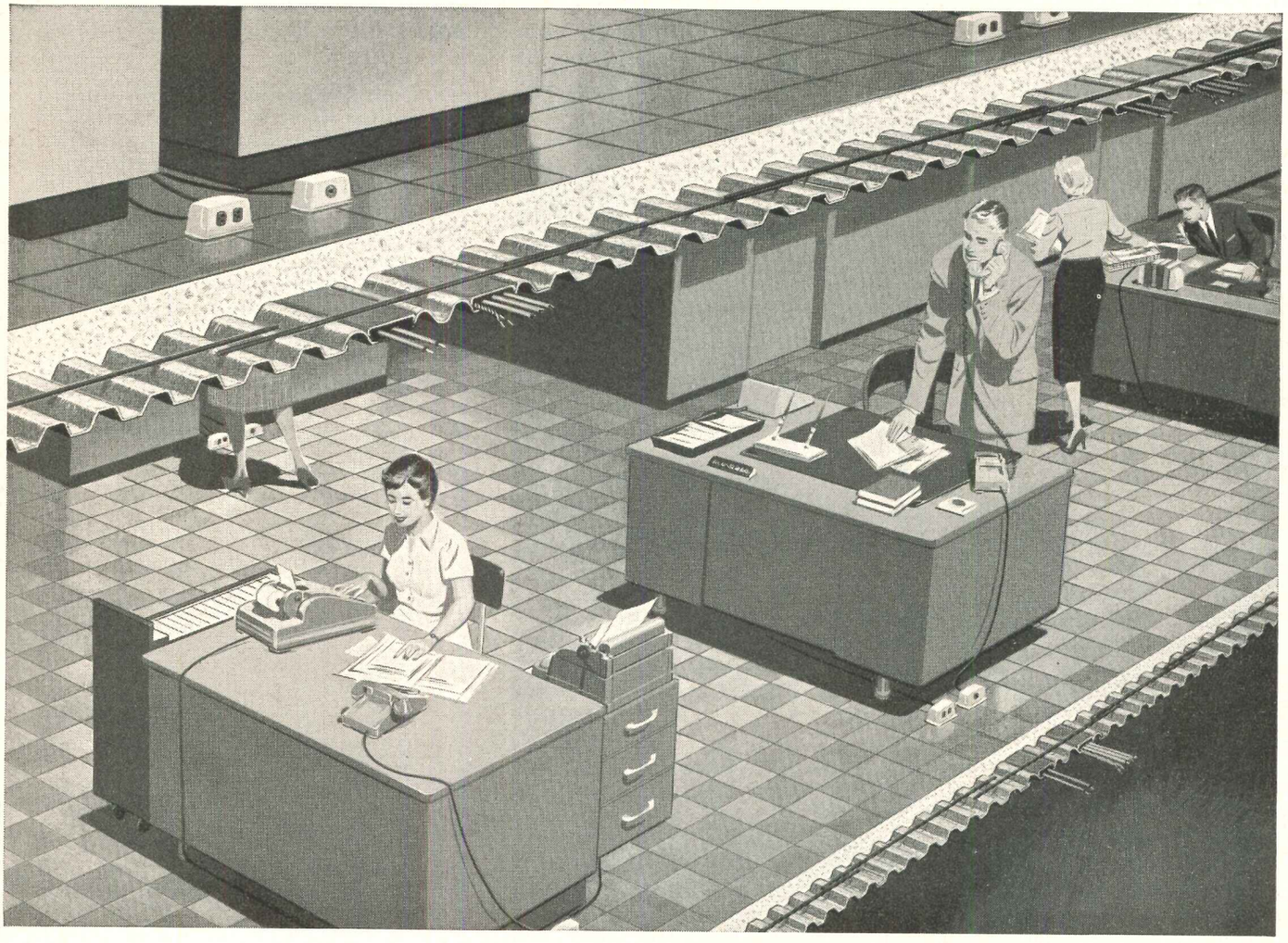
ELECTRICAL FLEXIBILITY. Electrical needs of today and tomorrow are easily satisfied by blending in one, two, or three cell E/R Cofar units with sections of standard Cofar.



LESS FRAMING. Cofar reinforced concrete construction permits wider spans, saves on structural framing costs, speeds up building completion and permits earlier occupancy by the owner.



PRE-SET INSERTS. Costly concrete drilling is eliminated by optional pre-set inserts. Install outlets after building is occupied! After-set inserts may also be used with E/R Cofar.



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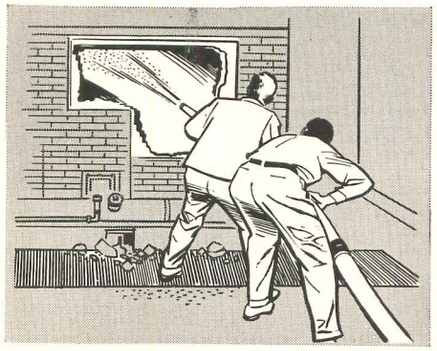
A low-cost, high-strength floor with complete electrical flexibility • No wasted fill • Eliminates conventional forms • Units easily handled and quickly placed • Provides immediate working platform.

New-pattern Cofar and E/R Cofar may now be ordered through Granco distributors from coast to coast. For more information, contact your local distributor or mail coupon below.

• *Visit Granco Booth #34, A.I.A. Convention!*



FIRE-RETARDANT. In a recent 2-hour UL fire test, Cofar became the first electrified cellular floor system (with header ducts and junction boxes in place) to earn a fire-retardant rating.

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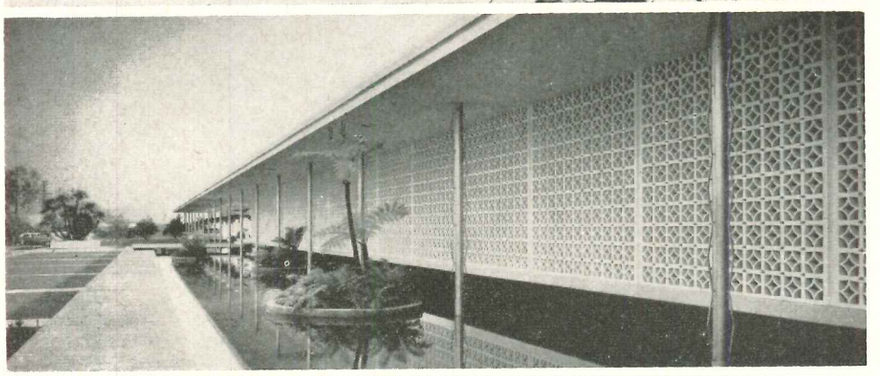
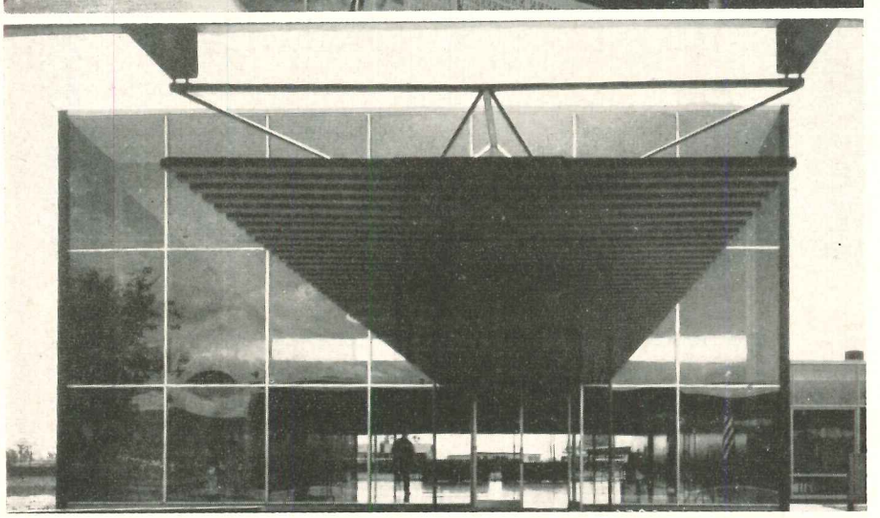
Buildings in the News





FOURTEEN BUILDINGS CITED

Five First Honor Awards and nine Awards of Merit have been selected in the tenth annual Honor Awards Program of the American Institute of Architects. Prof. Jean Labatut, director of Graduate Studies at Princeton University's School of Architecture, headed an all-architect jury whose other members were Igor B. Polevitzky, Miami; Frederick James MacKie, Houston; John Gaw Meem, Santa Fe; and Welton Becket, Los Angeles. There were 312 entries.

FIRST HONOR AWARDS

Home Office Building at Bloomfield, Conn., for Connecticut General Life Insurance Company. Architects: Skidmore, Owings & Merrill. General contractor: Turner Construction Company

Pharmaceutical Plant Headquarters at Pasadena, Cal., for The Stuart Company. Architect: Edward D. Stone. General contractor: Myers Brothers, Brummett & Demblon

Elementary School, Sonoma, Sonoma County, Cal. Architect: Mario J. Ciampi. General contractor: Herbert Crocker Company

Westmoor High School, Daly City, Cal. Architect: Mario J. Ciampi. General contractor: Theodore Meyer & Sons

Specialty Shop, Robinson's Palm Springs, Palm Springs, Cal. Architects: Pereira & Luckman. General contractor: Robinson & Wilson Inc.

IN A.I.A.'s TENTH HONOR AWARDS PROGRAM

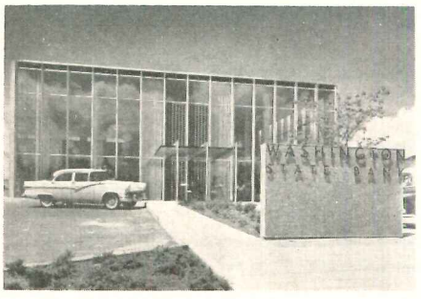
The jury listed these reasons for First Honor Award selections: "1. For rare and great quality of unity in the entire work from exterior space to interior space, and from the ensemble to the smallest details,—for unity achieved without monotony or extravagance. 2. For achieving an expression of strength without heaviness and lightness without weakness, resulting in definite elegance and refinement. 3. For well-controlled physical and psychological scale leading to meaning and character corresponding to the particular program. 4. For achieving esthetic quality by means of the structural elements becoming pleasing and decorative. 5. For exploring further the inexhaustible field of architectural composition—by showing originality and inventiveness."

The Awards of Merit were said to show these same qualities "only to a lesser degree or fragmentarily."

The jury regretted that there were not more examples of buildings, parking areas and landscape treatment expressed as an integral part of architecture; also that representation from various sections of the country was so uneven.

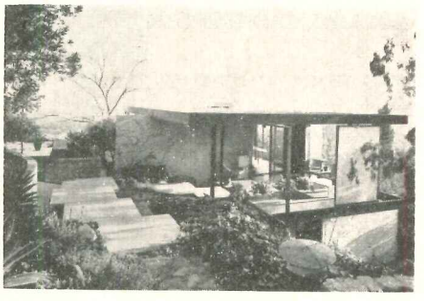
Presentations of certificates to architects and owners of award-winning buildings will be made at the annual convention of the A.I.A. next month at Cleveland; plaques for installation in the buildings also will be presented to top winners.

AWARDS OF MERIT

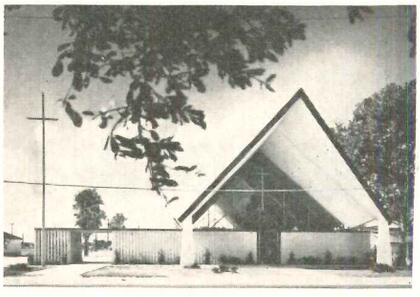


Washington State Bank, Bellevue Office, Bellevue, Wash. Architects: Mithun & Nesland; associate architects, Ridenour & Cochran. General contractor: Wick Construction Company

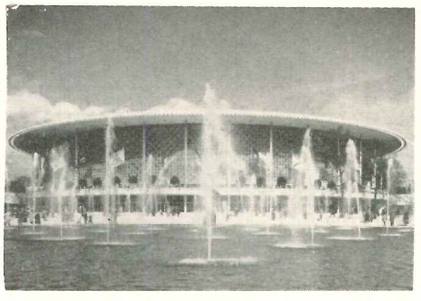
Cafeteria Building, Southeastern Louisiana College, Hammond, La. Architects: Desmond & Davis. General contractor: Frank Cucchiara



Studio at Pasadena, Cal. Architect: Thornton Ladd. Builder: S. O. Bennett

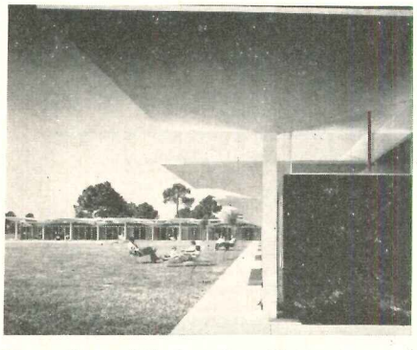


Immaculate Conception Church, Marrero, La. Architects: Curtis & Davis and Associated Architects & Engineers, Harrison Schouest. General contractor: Gervais F. Favrot Company Inc.



U. S. Pavilion, Universal and International Exposition, Brussels. Architect: Edward D. Stone. General contractor: Blaton-Aubert

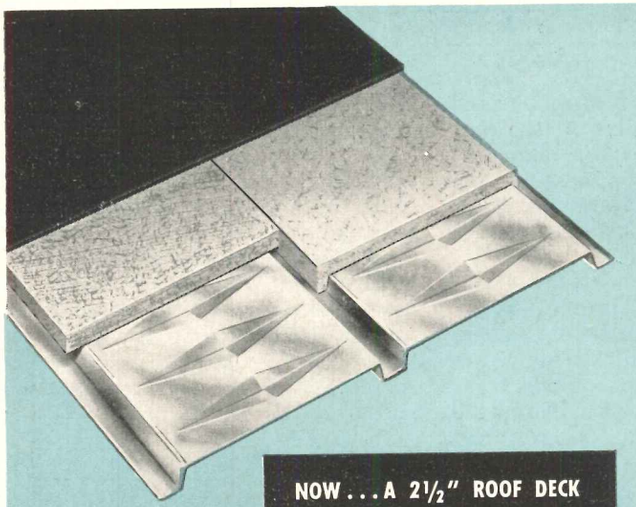
Beckman/Helipot Corporation Plant, Newport Beach, Cal. Architects: Pereira & Luckman. General contractor: M. J. Brock & Sons



Warm Mineral Springs Inn, Venice, Fla. Architect: Victor A. Lundy. General contractor: Spear Inc.

Union Service Center, Los Angeles, Architects: Smith & Williams. General contractor: Roulac Company

Residence at Beverly Hills, Cal., for Mr. and Mrs. Neil Lakenan. Architects: Richard Dorman & Associates; Associate Architect, Dan Morganelli. General contractor: owner



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DIAMONDECK
BY
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Less deflection means a more rigid roof deck, capable of carrying greater loads with complete safety. Eliminates the breaking of roof felts in cold weather when people walk on the roof or when heavy snow loads are present. See deflection figures on next page.

CONVENIENT CHANNEL LOCK CONSTRUCTION...

Easy, fast, erection is assured by channel lock construction. Gives continuity over all purlins. Diamondeck is designed to take up negative moments over all supports.

LOWER TOTAL COST...

Diamondeck costs less per square foot of load carrying capacity because the weight per square foot is less, the deflections are much less. The cost of field and maintenance painting are eliminated. Cost of lighting is less due to the permanent reflectivity from the use of hot-dip galvanized sheets.

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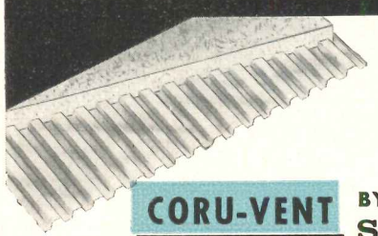
SPECIFICATIONS ON NEXT PAGE...SEE FOR YOURSELF WHY DIAMONDECK IS THE BEST ROOF DECK FOR YOUR NEXT BUILDING ⟶



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ROOF and FLOOR DECK with ROLLED-IN VENT OPENINGS

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HIGH TENSILE FORM DECK
BY SCHUMACHER

Coru-Vent Form Deck is a new material, designed by roofing engineers to provide a more useful, more practical, stronger roof deck. Its new flattened corrugated design assures maximum rigidity, less deflection, greater adaptability under all conditions.

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DIAMONDECK

Physical Properties

Depth Inches	Metal Gage	Metal Thickness	Wt. In Place	Moment of Inertia, I		Section Modulus S		K Where W = K/L²		Uniform Load	
				18" Section	1' Width	18" Section	1' Width	18" Section	1' Width	U = 1 Span	V = 2 Spans
1½	24	.024	1.46	.129	.086	.144	.096	2880	1920	.0000090	.00000375
	22	.030	1.78	.162	.108	.180	.120	3600	2400	.0000072	.00000300
	20	.036	2.09	.189	.126	.210	.140	4200	2800	.0000062	.00000255
	18	.048	2.73	.258	.172	.288	.192	5760	3840	.0000045	.00000187
2½	24	.024	1.57	.405	.270	.270	.180	5400	3600	.00000287	.00000120
	22	.030	1.91	.495	.330	.330	.220	6600	4400	.00000235	.00000100
	20	.036	2.25	.585	.390	.390	.260	7800	5200	.00000200	.00000083
	18	.048	2.93	.810	.540	.540	.360	10800	7200	.00000144	.00000060

Deflection Constants

		L	5'-0	5'-6	6'-0	6'-6	7'-0	7'-6	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0
		L^2	25.00	30.25	36.00	42.25	49.00	56.25	64.00	72.25	81.00	90.25	100.00	110.25	121.00	132.25	144.00
		L^4	625.0	915.0	1296.0	1785.0	2401.0	3164.0	4096.0	5220.0	6561.0	8145.0	10000.0	12155.0	14641.0	17490.0	20736.0
		L/20	.250	.275	.300	.325	.350	.375	.400	.425	.450	.475	.500	.525	.550	.575	.600
1½" Depth	24	UL^4	.00563	.00824	.01166	.01606	.	.	.	.	.	.	.	.	.	.	.
		VL^4	.00234	.00343	.00486	.00670	.	.	.	.	.	.	.	.	.	.	.
	22	UL^4	.00450	.00659	.00933	.01285	.01728	.02278	.	.	.	.	.	.	.	.	.
		VL^4	.00188	.00275	.00389	.00536	.00720	.00950	.01230	.	.	.	.	.	.	.	.
	20	UL^4	.00388	.00567	.00803	.01107	.01488	.01962	.02540	.	.	.	.	.	.	.	.
		VL^4	.00159	.00233	.00330	.00455	.00612	.00806	.01045	.	.	.	.	.	.	.	.
	18	UL^4	.00281	.00412	.00583	.00803	.01080	.01424	.01843	.02350	.03665	.04500	.	.	.	.	.
		VL^4	.00117	.00171	.00243	.00335	.00450	.00592	.00766	.00976	.01230	.01523	.01870	.	.	.	.
2½" Depth	24	UL^4	.00180	.00263	.00372	.00512	.00689	.00908	.01176	.01500	.01883	.02340	.	.	.	.	.
		VL^4	.00075	.00110	.00156	.00214	.00288	.00380	.00491	.00626	.00787	.00977	.	.	.	.	.
	22	UL^4	.00147	.00215	.00304	.00420	.00564	.00744	.00962	.01227	.01542	.01914	.02350	.02856	.	.	.
		VL^4	.00063	.00092	.00130	.00179	.00240	.00316	.00410	.00520	.00656	.00815	.01000	.01256	.	.	.
	20	UL^4	.00125	.00183	.00259	.00357	.00480	.00633	.00820	.01044	.01313	.01630	.02000	.02431	.02928	.03498	.
		VL^4	.00052	.00076	.00108	.00148	.00199	.00263	.00340	.00433	.00545	.00676	.00830	.01009	.01215	.01452	.
	18	UL^4	.00090	.00131	.00187	.00257	.00346	.00456	.00590	.00752	.00945	.01173	.01440	.01750	.02110	.02520	.02990
		VL^4	.00038	.00055	.00078	.00107	.00144	.00190	.00246	.00313	.00394	.00489	.00600	.00729	.00878	.01058	.01244

Deflection Formulae: Deflection D = WUL^4 for 1 Span; D = WVL^4 for 2 Spans.

DIAMONDECK

Loads per Square Foot, Uniformly Distributed

	Ga.	SPAN	5'-0	5'-6	6'-0	6'-6	7'-0	7'-6	8'-0	8'-6	9'-0	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0
1½" Depth	24	W(MOM)	77	63	53	45											
		W(2SD)			62	48											
	22	W(MOM)	96	79	67	56	49	43									
		W(2SD)				61	48	40									
	20	W(MOM)	112	92	78	66	57	50	44								
		W(2SD)			91	71	57	46	38								
	18	W(MOM)	154	126	107	90	78	68	60	53	47	42					
		W(2SD)			123	97	78	63	52	43	36	31					
2½" Depth	24	W(MOM)	144	119	100	85	74	64	56	50	44	40					
		W(2SD)	333	250	192	152	121	99	82	68	57	48					
	22	W(MOM)	176	145	122	104	90	78	69	61	54	49	44	40			
		W(2SD)						118	98	81	69	58	50	42			
	20	W(MOM)	208	170	144	123	107	92	81	72	64	57	52	47	43	40	
		W(2SD)								98	82	70	60	52	45	45	
	18	W(MOM)	288	238	200	170	147	128	112	100	89	80	72	65	59	54	50
		W(2SD)								136	114	97	83	72	62	54	48

In all discussions and tables, the following symbols are used: M = Bending moment in inch lbs., W = Uniform load in lbs. per sq. ft., L = Span in ft., f = maximum unit stress, = 30,000 psi, L/20 = deflection of 1/240 of span, D = deflection coefficient for load conditions as indicated W(MOM) = load per sq. ft. causing maximum permissible moment. W(2SD) is uniform load per sq. ft. on 2 adjacent spans continuous over center support. If single span load is required multiply W(2SD) figure by .416. UL^4 is coefficient for uniform load single simple span and VL^4 is same for uniform load over 2 continuous spans so that WUL^4 or WVL^4 = deflection.

CORU-VENT

Engineering Properties

Gage	Thickness	Sq. Ft. Weight	Depth	I	S	C	f (psi)	K	Deflection Coefficient U-1 Span	Deflection Coefficient V-2 Span
28	.015	.887	5/8"	.012	.039	5/16"	30,000	780	.0000646	.0000268
26	.019	1.020	5/8"	.016	.050	5/16"	30,000	1000	.0000485	.0000201
24	.024	1.300	5/8"	.020	.063	5/16"	30,000	1260	.0000388	.0000161

Deflection Factors

Gage	2'-0" Span		2'-6" Span		3'-0" Span		3'-6" Span		4'-0" Span		4'-6" Span	
	UL^4	VL^4	UL^4	VL^4	UL^4	VL^4	UL^4	VL^4	UL^4	VL^4	UL^4	VL^4
28	.001034	.000429	.00252	.00105	.00525	.00217	.00970	.00402	.01656	.00686	.02650	.01100
26	.000776	.000322	.00189	.00078	.00393	.00163	.00728	.00302	.01242	.00515	.01990	.00824
24	.000621	.000258	.00151	.00063	.00314	.00131	.00582	.00241	.00993	.00412	.01590	.00680

Square Foot Loads

Gage	2'-0" Span			2'-6" Span			3'-0" Span			3'-6" Span			4'-0" Span			4'-6" Span		
	W(M)	W 1	W 2	W(M)	W 1	W 2	W(M)	W 1	W 2	W(M)	W 1	W 2	W(M)	W 1	W 2	W(M)	W 1	W 2
28	195	98	233	125	50	118	87	29	70	64	18	43	49	12	30	38	8	20
26	250	129	311	160	66	160	111	38	92	81	24	58	62	16	39	49	11	27
24	315	161	388	202	82	200	140	48	114	102	30	72	79	20	48	62	14	33

I = Moment of Inertia of section 1'-0" wide. S = Section Modulus of same, C = Distance from extreme fiber to neutral axis. K = 20000S and for conditions where M = 1/8WL², M being the Moment in Ft. lbs., L = Span in ft. and W = Load in lbs. per sq. ft. uniformly distributed and W = K ÷ L², U = A deflection constant for single simply supported span so that deflection = UL^4. V = similar deflection constant for 2 Spans continuous over center support so that deflection = VL^4. WM is uniform sq. ft. load on simple span causing 30,000 psi stress, W 1 is uniform sq. ft. load causing deflection of 1/240 span on simple span and W 2 is similar load on 2 Spans continuous over center support.

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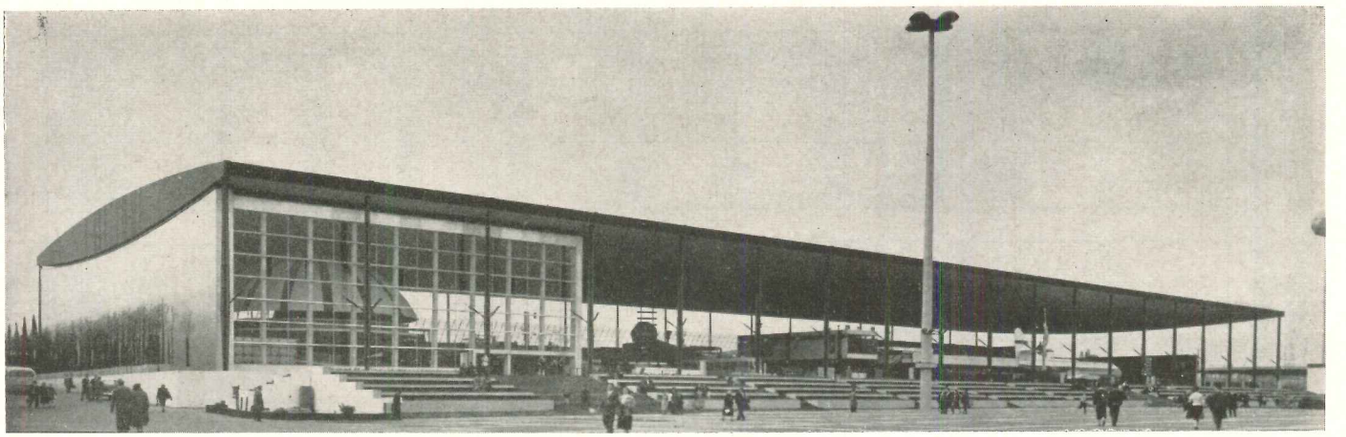
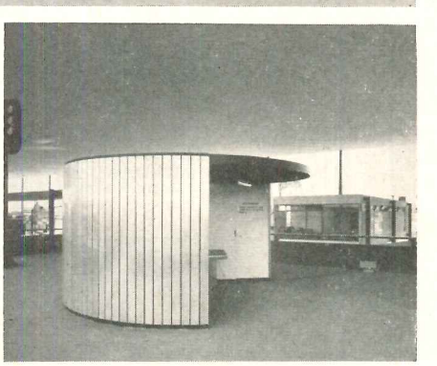


REYNOLDS AWARD, IN THE YEAR OF THE FAIR, GOES TO BRUSSELS' TRANSPORTATION PAVILION

The second edition of the Reynolds Memorial Award, annually presented to "the most significant contribution to the use of aluminum, esthetically or structurally, in the building field," was given this year to a team of six Belgian architects, designers of the all-aluminum Transportation Building at the Brussels World's Fair. The six who share the $25,000 prize: T. Hoet-Segers, F. Hoet-Segers, H. Montoies, R. Courtois, J. Goossens-Bara and R. Moens de Hase, all of Brussels.

Commented jury member Nervi: "In effect the finesse of the posts, the expressiveness of the form in double parabola of the trusses and covering, and the feeling of elegance which forms the most remarkable characteristic of this work, has been possible only as a result of the original solution of the tie-rods in permanent tension which connect the posts and trusses. This solution resolves in a most elegant way the difficult problem of permitting the thermic expansion and to preserve the necessary stability in either transverse or longitudinal direction."

Members of the jury: seated, left to right—Richard J. Neutra, F.A.I.A., Los Angeles; Arthur Loomis Harmon, F.A.I.A., New York City; Pier Luigi Nervi, Rome; standing—Richard M. Bennett, F.A.I.A., Chicago; J. Roy Carroll Jr., F.A.I.A., Philadelphia



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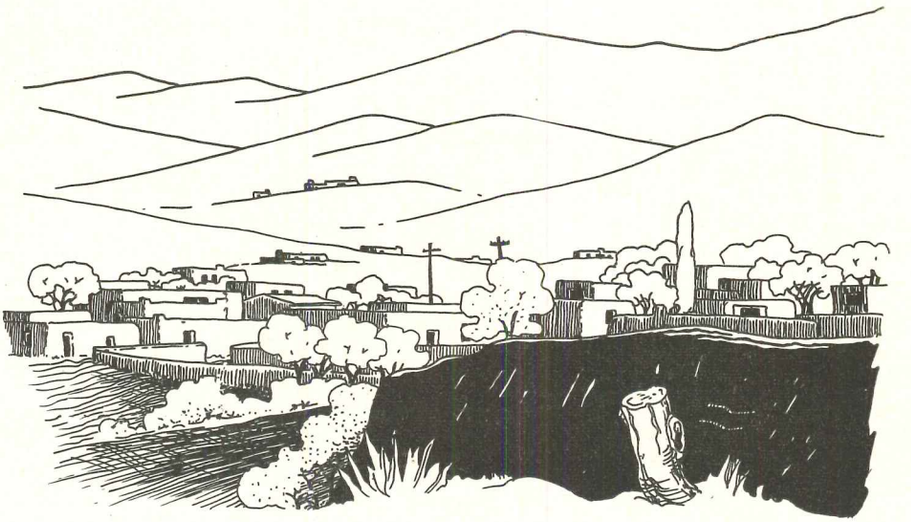
Do you know the answers to <u>these</u> important problems?

1. **Is it true that WHITE PAINT indoors, and MIRRORS, have no more reflectivity to heat rays than a heavy coating of BLACK PAINT?** (20, 22)
2. **What causes timber rot, peeling paint, wet and cracked plaster, rust?** (16, 35)
3. **Is it true the average family creates 152 lbs. vapor (76 qts. water) a week; each person breathes and perspires 3 lbs. vapor per day?** (16, 35)
4. **Should you ever ventilate <u>below</u> insulation?** (11)
5. **How good an insulation is an ordinary air space?** (18, 25, 26, 27, 29)
6. **Is it true that HEAT RAYS HAVE NO TEMPERATURE?** (19, 21)
7. **Do metals in air spaces absorb, reflect and emit less or more heat rays than wood, plaster, brick, paper?** (20, 22)
8. **Which has the greatest and which has the least heat ray absorptivity:—asbestos, ice, aluminum, paper, rock or wood?** (22)
9. **Are there more invisible rays than visible rays?** (18, 19)
10. **Are there <u>any</u> DEAD AIR CELLS in insulations with respect to heat flow?** (28)
11. **Since metals are good conductors of heat, why are they exceptional insulators against heat flow?** (18, 20)



Can the special character of a cherished place be preserved by law? Fifteen U.S. cities so far have voted to make the attempt, among them Santa Fe. In the following report, Librarian Thetford LeViness of the State Capitol at Santa Fe reports on some of the arguments which preceded adoption last fall of Santa Fe's architectural control ordinance. Drawings are by Irene von Horvath, A.I.A.

SANTA FE SEEKS PRESERVATION IN ARCHITECTURAL CONTROL

BY THETFORD LE VINESS

Santa Fe, oldest capital in the United States, has recently adopted an architectural controls ordinance. This law makes Pueblo-style architecture, named for the Indians who first used it, mandatory in certain historic areas of the city. The aldermen passed the measure unanimously, but not without a public protest hearing at which several architects and homeowners expressed many misgivings and some actual disapproval.

Generally speaking, business interests and cultural groups joined in support of the ordinance. Some of the city's architects and a few others opposed it.

Merchants, in a region which has practically no factory payrolls and is dependent almost entirely upon a multi-million-dollar tourist industry, saw the new law as a boon to profits. "People come to Santa Fe to see our historic landmarks," said a spokesman for the city's Chamber of Commerce, which heartily endorsed the measure. "They'd just as soon spend their vacations and their money elsewhere if we clutter up our old streets with the kind of modern buildings that may be seen in Oklahoma or Texas."

History-minded Santa Feans called attention to buildings like the Palace of the Governors, built in 1610-12, and to San Miguel mission, whose foundations, at least, date from c.1605 and are the oldest of any church in the nation. They pointed with pride to recent edifices modeled after the early structures—the art gallery of the Museum of New Mexico, the National Park Service headquarters, the First Presbyterian and Cristo Rey churches, and innumerable private homes in all portions of the city. They looked with disdain at the Desert Inn, a branch of a motel chain built within recent months in sharp angles and glass fronts near the old mission, and said, "There ought to be a law."

Now there is one. Proponents of the "style ordinance," as it is called, are convinced that it is a step in the right direction—that Pueblo-style housing best befits the city's Indian and Spanish heritage.

From Indian-Spanish beginnings until the middle of the 19th century, Santa Feans built their homes, churches, and commercial establishments of just one material—adobe. Large bricks of mud were made, dried in the sun, and laid with mortar to form walls. Round wooden rafters called *vigas* were placed horizontally in parallel rows as a framework for the roof—also of adobe. Windows were small; doorways had high sills to keep out the rain. It was an indigenous development, a folk architecture—of the earth, earthy.

"Anglos," as those of English descent in New Mexico are called, liked adobe construction and used it from pioneer days—with interesting variations. Clay bricks were brought in on the first freight trains. These formed the copings of many adobe houses and gave to the building arts another style—called "modified Pueblo" or "Territorial."

Today, the people of Santa Fe—Indian, Spanish-speaking, and "Anglo"—still like Pueblo-style houses. Even when they build with other materials they often simulate this "adobe way." The result is a city with block after block of mud-colored façades, uneven roof lines, and protruding *vigas* which—to proponents of the ordinance at least—are as charming as they are functional.

"Voluntary" construction hasn't been enough, however. Museum officials restored the old palace to its former elegance, but many of the newer buildings on the plaza have

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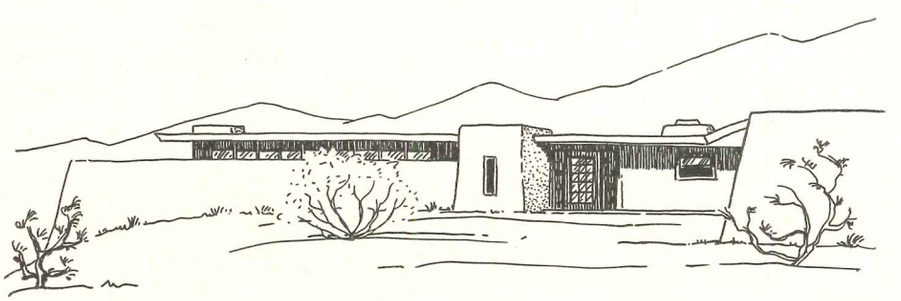

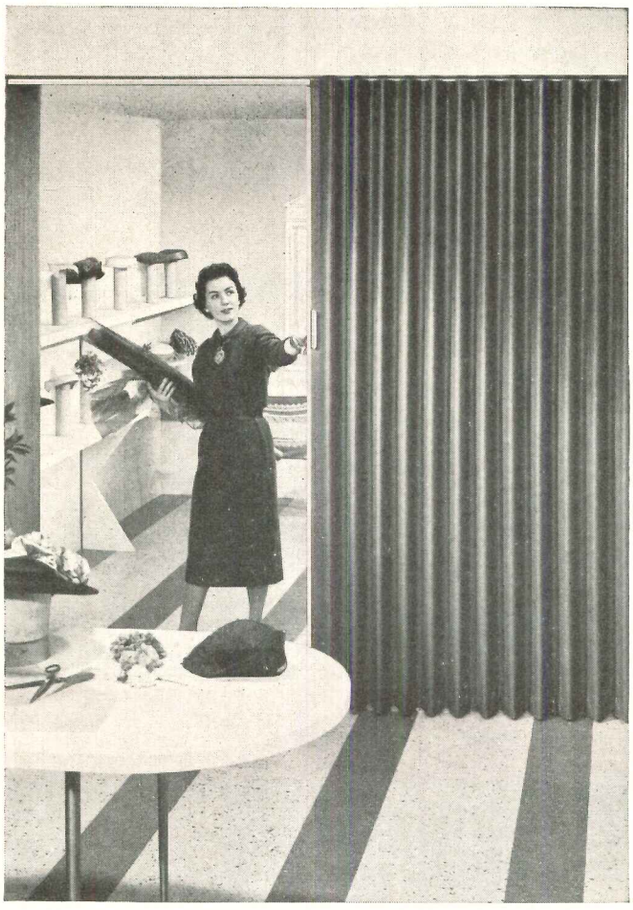

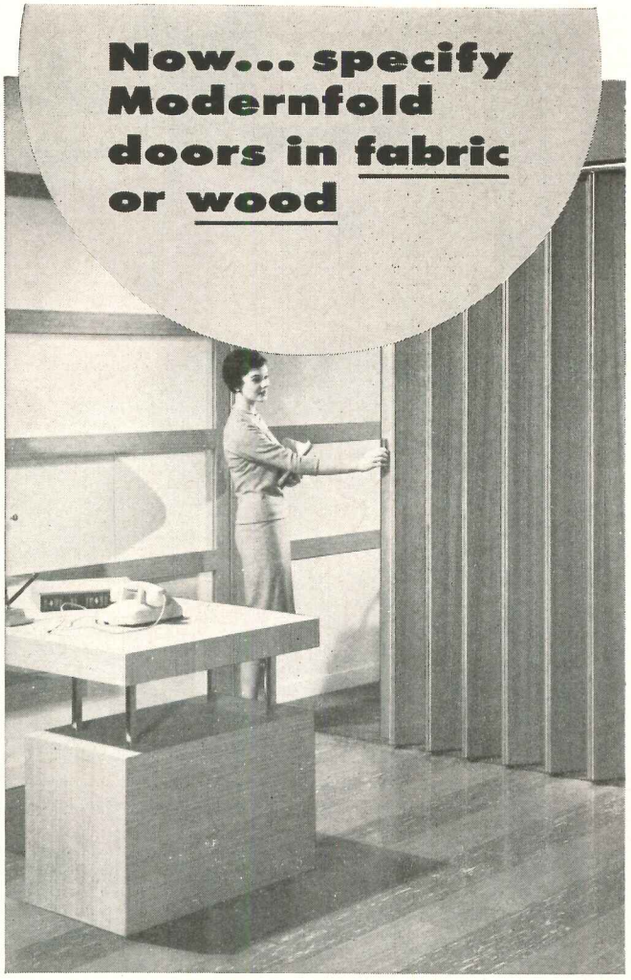

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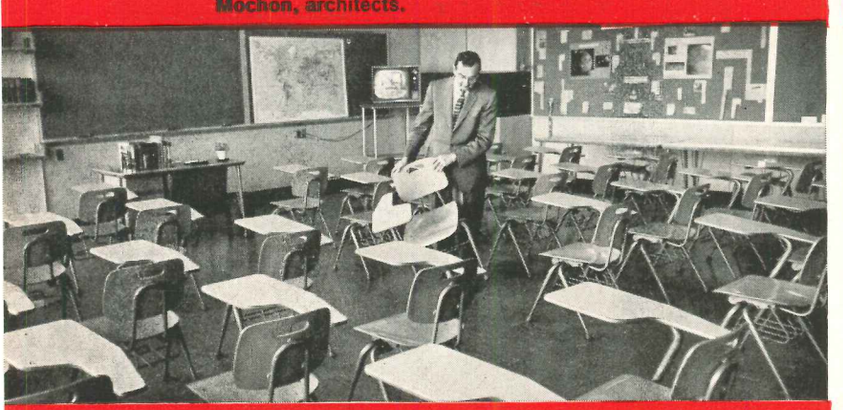
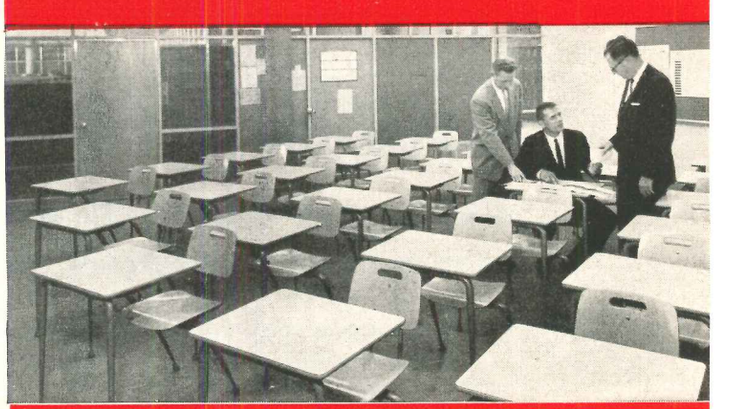
NORTH • John Dewey Jr. High School, West Allis, Wisconsin. Everald Kellog, Superintendent. Schutte-Phillips & Mochon, architects.

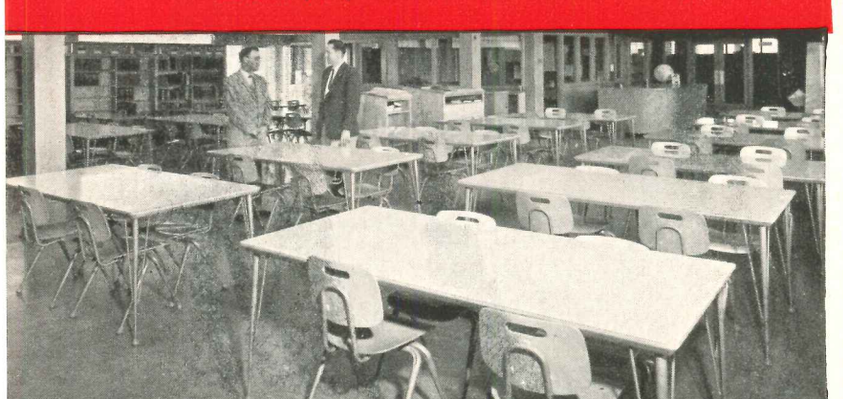
SOUTH • Moore Jr. High School, Tyler, Texas. Hollis A. Moore, Superintendent. Caudill Rowlett Scott, architects.



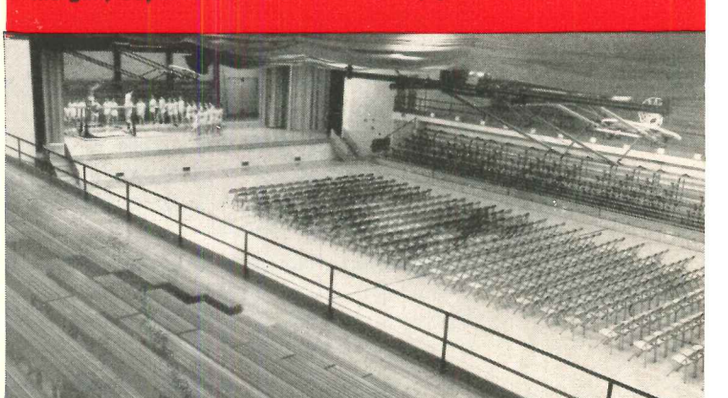
EAST • South High School, Hagerstown, Maryland. William M. Brish, Superintendent. McLeod and Ferrara, architects.



WEST • Westmoor High School, Daly City, California. E. A. Morgan, Superintendent. Mario J. Ciampi, architects.



LARGE CITY • Glendale Jr. High School, Salt Lake City, Utah. Dr. M. Lynn Bennion, Superintendent. Scott & Beecher, architects.



SMALLER CITY • Missoula County High School, Missoula, Montana. D. H. Beary, Principal. Brinkman & Lennon, architects and engineers.

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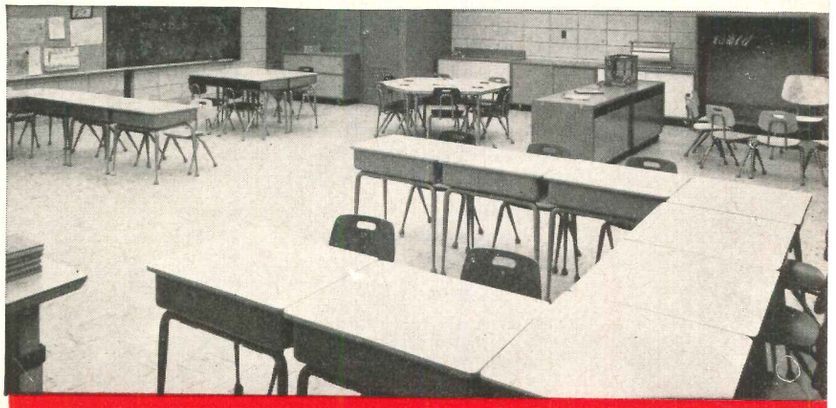
SUBURB • Royal View Elementary School, Willoughby, Ohio. J. B. Woodside, Superintendent. Spahn & Barnes, architects.



RURAL • The John Hugh Reynolds Elementary School, Morrilton, Arkansas. Paul G. Liddicoat, Superintendent. Ginocchio-Cromwell & Associates, architects.

Continued from preceding page

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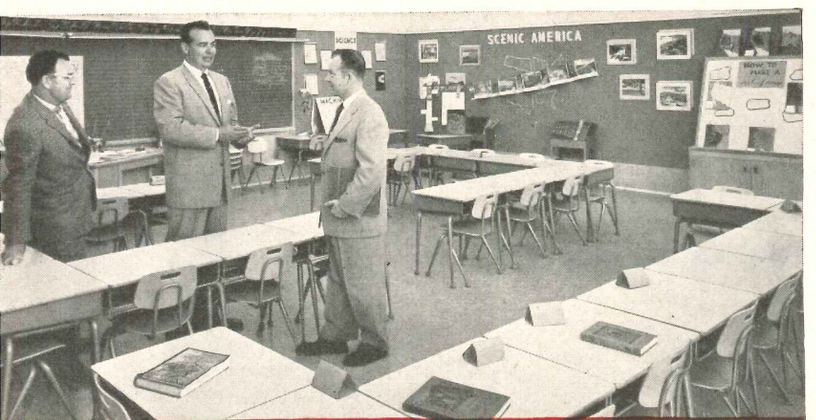

ELEMENTARY • Selby Grove School, Rivera, California. Eli R. Steed, Superintendent. Kistner, Wright & Wright, architects and engineers.

SECONDARY • Belleville Township High School and Junior College, Belleville, Illinois. Dr. Donald Matthews, Superintendent. The Frank F. Hilliker and Associates—Food Service Consultants, Charles King and Associates, architects.

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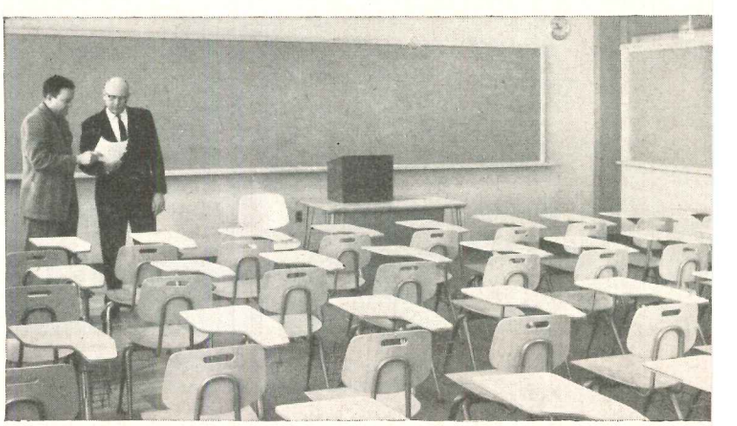
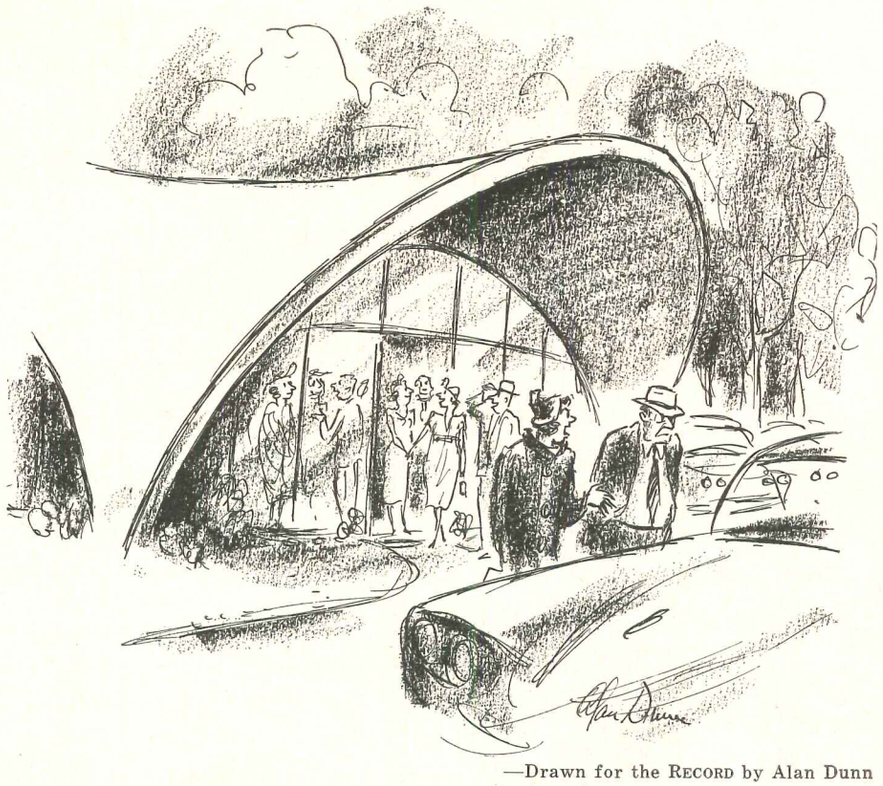


COLLEGE • Northern Illinois State Teachers College, DeKalb, Illinois. Z. H. Dorland, Business Manager. Frank Vaughan, Director of Purchases. Perkins and Will, architects.

Meetings and Miscellany



—Drawn for the RECORD by Alan Dunn

"The balance of forces in the space-frame—the mastery of the bending moment, of torque, of sheer, of creep—and all you could say was 'Hot dog!' "

A.I.A. Gold Medal to John Root

The American Institute of Architects' Gold Medal will be awarded this year to John Wellborn Root, of Chicago, the Institute has announced. The Medal, the highest honor the A.I.A. offers to architects in recognition of their service to the profession or to the Institute, will be presented at the annual convention, scheduled July 7-11 for Cleveland. The Institute also announces the selection of Viktor Schreckengost, Cleveland sculptor and ceramist, as recipient of the Fine Arts Medal, and of François Lorin, of Chartres, designer and executor of the stained glass window which the A.I.A. presented to Chartres Cathedral, to receive the Craftsmanship Medal. New York engineer Fred Severud has been awarded one of two new medals established this year—the Allied Professions Medal for achievement in the design professions related to architecture. The other new medal—the Industrial Arts Medal—goes to graphic artist Merle Armitage of Yucca Valley, Cal. The Edward C. Kemper Award will be presented to Edmund R. Purves, executive director of the A.I.A. At the same time, the Institute announced its list of Honorary Members for 1958: F. Moran McConihe, Commissioner of the Public Buildings Service, General Services Administration, and Deputy Commissioner Fred S. Poorman of PBS; John Douglas Forbes, editor of the *Journal* of the Society of Architectural Historians was made an honorary member in January of this year. Honorary Fellowship in the Institute has been extended to eight foreign architects: Alvar Aalto, Finland; Matsudo Gumpei, Japan; Hector Mardones-Restat, Chile; Pavel Abrossimov, U. S. S. R.; Augusto Guzman R., Peru; I. Caro De Castro Mello, Brazil; and Frederico Ugarte, Argentina. The eighth is Flemming Grut of Denmark, who was made an Honorary Fellow in May. Major points of the convention's program, as outlined by the A.I.A., include a keynote speech by Secretary of the Treasury Robert B. Anderson; an address "The Anthropologist Looks at Architecture" by Dr. Margaret Mead; an architectural keynote speech by Vincent G. Kling, Philadelphia architect; an address "The Western Reserve—Part of Our Heritage" by Harlan Hatcher, president of the University of Michigan; and seminars and panels on cost estimates, "where to find construction money," developing the building program, working with the homebuilder, urban planning, office organization, chapter affairs and "professional status." Institute business will include the election of officers—contests are scheduled for all major offices—and of four regional directors; for slate, see ARCHITECTURAL RECORD, April 1958, p. 21.

Pate heads Consulting Engineers

Charles C. Pate of Tulsa has been elected president of the Consulting Engineers Council, which held its second annual general meeting in San Francisco May 1-3. Mr. Pate succeeds Edward J. Wolff of Chicago. Among the important actions of the meeting were admission of two new member associations, Michigan and Houston; authorization of the Ethical Practices Committee to draft a very complete code of ethics for consulting engineers; and adoption of a new definition of "consulting engineer." Text of the definition is as follows: "A consulting engineer is a professional engineer who offers his services on a fee basis and who has no commercial affiliation to bias him. He is trained in the expert and judicious application of science and technology to the solution of engineering problems, and is one who, through special application, broad experience, proven ability and professional integrity, provides his client with technical advice of the highest quality, in the fields where he practices as an expert." There was discussion of such matters as the

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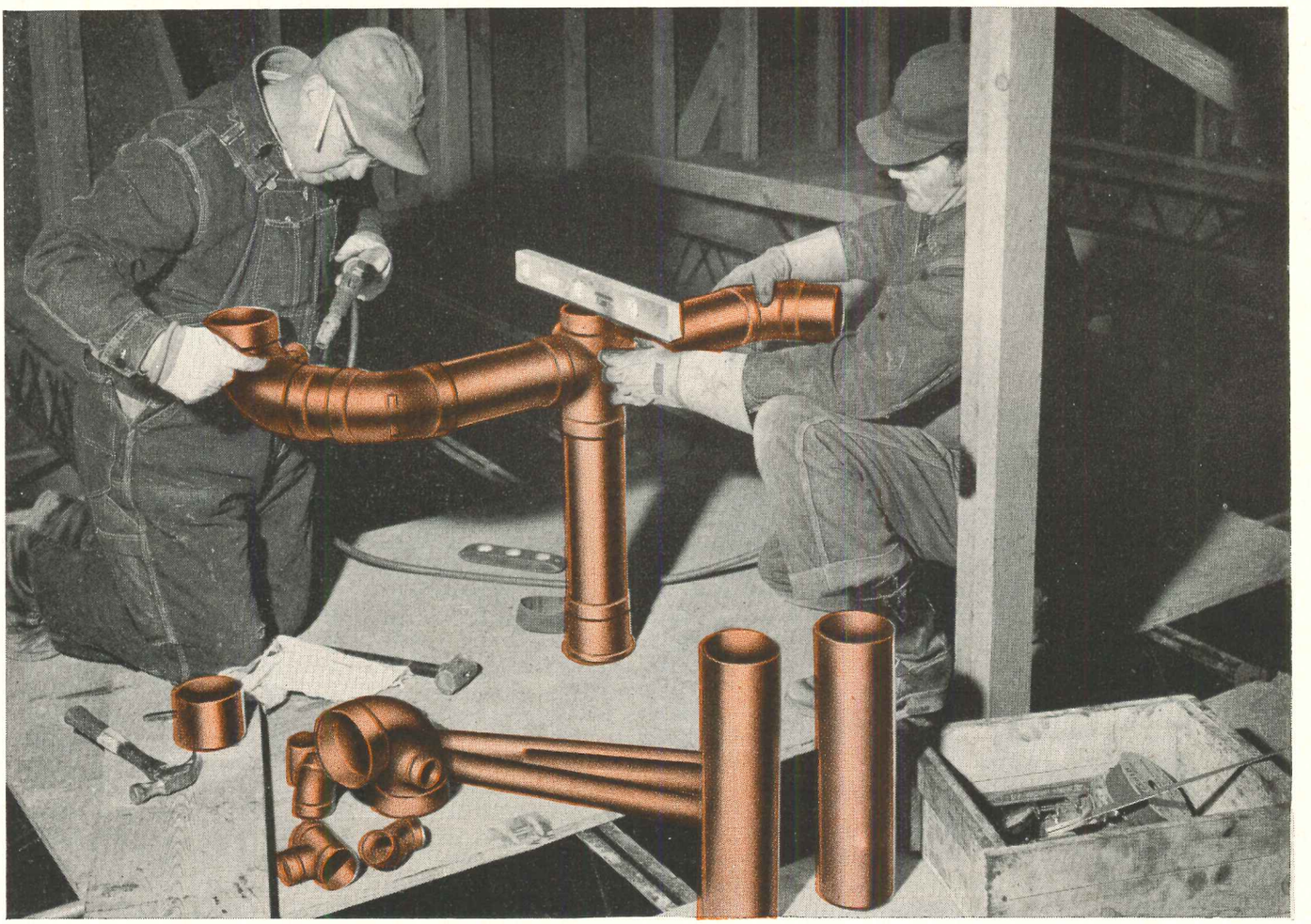

These two men are preparing a DWV prefabricated assembly for a multiple bath sanitary drainage system. With the variety of fittings available, the use of fittings especially designed for the job saves many joints in the fabrication. The strong, rigid assembly may be placed into position with a minimum number of connections needed to complete the installation. Contractors report DWV copper tube and fittings can be installed in half the time normally required when using cumbersome caulked or threaded piping materials.

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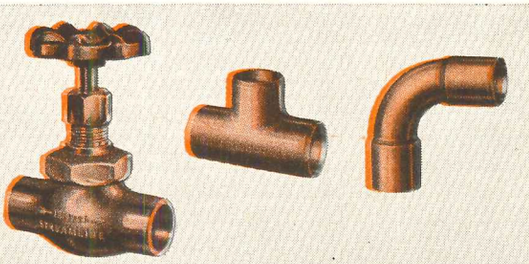
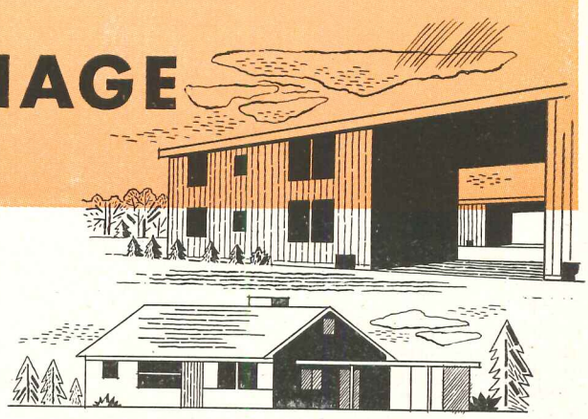


COPPER TUBE AND FITTINGS SANITARY DRAINAGE



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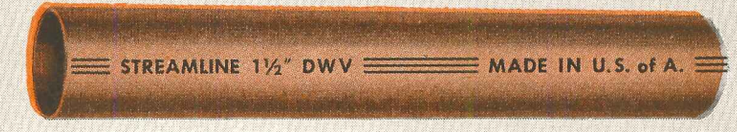

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corporate practice work of the "Committee on Engineering Laws" which the C.E.C. Corporate Practice Committee has been set up to watch; the brochure being prepared by the Public Relations Committee on the services of consulting engineers; the effort to form a national group for errors and omissions insurance; the work of the Documents Committee, which has a new architect-engineer form of contract now awaiting A.I.A. approval; and the work of officers of C.E.C. with various Washington agencies toward solving some common problems of consulting engineers on public work. C.E.C. will issue a yearbook and membership roster in the near future.

1958 Graham Fellows Announced

The Graham Foundation for Advanced Studies in the Fine Arts has announced the award of eight fellowships for 1958; the recipients: Eduardo Chillida, sculptor, Spain; Balkrishna V. Doshi, architect, India; Jose Guerrero, painter, U. S.; Thomas J. Houha, architect, U. S.; Norbert Kricke, sculptor, Germany; Wifredo Lam, painter, Cuba; Fumihiko Maki, architect, U. S.; and Lancelot Law Whyte, philosopher, England. Frederick J. Kiesler, U. S. architect, selected as a fellow last year but unable to participate, will be a member of the 1958 group. The Graham Foundation is the result of a legacy of the late Ernest R. Graham, partner of the Chicago architectural firm Graham, Anderson, Probst & White. It bestows grants of up to $10,000 a year for selected fellows "to engage in individual or group pursuits in advanced studies in architecture, painting, sculpture and related arts." Members of the 1958 Board of Advisors who selected this year's fellows were architect William E. Hartmann, Director of the Foundation; Sigfried Giedion, architectural critic; Daniel Catton Rich, director of the Art Institute of Chicago; James Johnson Sweeney, director of the Solomon R. Guggenheim Museum; Ludwig Mies van der Rohe, director of the Department of Architecture, Illinois Institute of Technology; and José Luis Sert, dean of the Graduate School of Design, Harvard University. John Ely Burchard, dean of the School of Humanities and Social Studies at Massachusetts Institute of Technology and consulting editor to ARCHITECTURAL RECORD, serves the board as a consultant. In September, the new fellows will conduct a seminar, under the direction of Dean Burchard, on various aspects of the arts; it will be held at the Foundation's headquarters, 216 East Superior Street, Chicago.

American architect in Palladian setting—literally Palladian, that is: Edward D. Stone on the porch of Palladio's Villa Malcontenta, near Venice, which he and Mrs. Stone took for the month of May; enjoying, Mr. Stone says, "evidence of an era of grace before the philosophy of the split-level subjugated man." . . . (Below) Graham Foundation advisers at recent meeting in Chicago—(left to right) William E. Hartmann of Skidmore, Owings & Merrill, Foundation director; Dr. Sigfried Giedion, presently of Harvard's Graduate School of Design; Daniel Catton Rich, director of the Art Institute of Chicago; James Johnson Sweeney, director of the

Solomon R. Guggenheim Museum of New York; Dr. Grace McCann Morley, director of the San Francisco Museum of Art; Ludwig Mies van der Rohe of Chicago; Dean José Luis Sert of Harvard's Graduate School of Design; and Dean John Ely Burchard, of the School of Social Studies and Humanities at M.I.T. . . . Newly elected officers (above right) of Consulting Engineers Council—(standing, left to right) Hueston M. Smith, St. Louis, secretary; Ralph M. Wescott, Los Angeles, second vice president; (seated, left to right) L. K. Crawford, Springfield, Ill., first vice president; B. M. Dornblatt, New Orleans, treasurer; Charles C. Pate, Tulsa, president; Edward J. Wolff, Chicago, past president. . . . (Right) Gumpei Matsuda, president of the Japanese architectural Association, and his partner, Shigeo Hirata, dining at the American Club in Tokyo with Tom Tredwell, advertising manager of ARCHITECTURAL RECORD, and Mrs. Tredwell. Messrs. Matsuda and Hirata, both Cornell graduates, are architects of Tokyo International Airport

Regionalism in New York?

"Is there any regional architecture in the New York area?" was the question at an Architectural League of New York forum recently. Each of the three panel members answered with a definite "no." The forum was held in connection with the League's Regional Residential Architecture Exhibit—19 architect-designed houses in the New York City region. Olindo Grossi, dean of the School of Architecture at Pratt Institute, was moderator. The panel members were Peter Blake, New York architect; Robert Martin Englebrecht, architecture editor, *Living for Young Homemakers;* and Charles Magruder, managing editor, *Progressive Architecture.* They all concluded, in general, that there is no New York regional architecture and, specifically, that the 19 houses exhibited could be anywhere in the country. Sibly Moholy-Nagy, of the School of Architecture at Pratt Institute, commenting from the floor, remarked that the houses on exhibit showed "regionalism of the Harvard school," an intellectual approach she said is exemplified by Gropius and Breuer.

The exclusive full random pattern of Armstrong Acoustical Formboard heightens interest in this ceiling while it muffles noise. Multipurpose room, Harlan Elementary School, Birmingham, Michigan. Architect: Smith, Tarapata, MacMahon, Inc., Birmingham. General Contractor: David Pettibone, Romeo. Deck Applicator: Rohn Fireproofing Company, Detroit.

New Armstrong Acoustical Formboard keeps roof costs down — offers attractive ceiling at the same time

HERE ARE the **three** major benefits you can obtain by specifying Armstrong Acoustical Formboard for your next poured-in-place roof deck job.

First, **noise control.** Second, **more interesting decorative ceiling effects.** Third, **low installation costs.**

The extra strong T&G joints of this new Armstrong Formboard eliminate the need and expense of supplemental splines or cross (joint) tees.

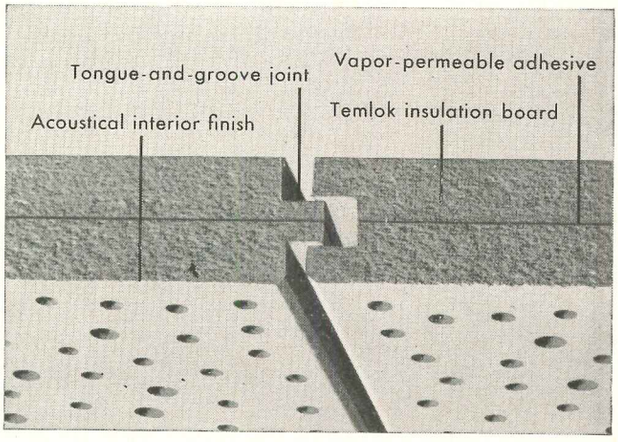
The elimination of these supporting members also makes possible a cleaner, undivided ceiling design.

Armstrong Acoustical Formboard is fabricated from two ½″ fiberboard panels. It is perforated in an attractive full random design and finished with two coats of factory-applied white paint.

It has an NRC specification range of .50-.60 and a Certified "C" value of 0.36 Btu at 75° mean temperature.

It is available in 24″ x 48″ x 1″ and 32″ x 24″ x 1″ sizes.

For complete details and specifications, refer to Sweet's Architectural File 2h/Ar, or write Armstrong Cork Company, 3806 Rock Street, Lancaster, Pennsylvania.



High strength of Armstrong Acoustical Formboard results from two-layer lamination. Vapor-permeable fiberboard and laminated adhesive allow free escape of moisture for slab curing. Special adhesive retains its strength when wet.

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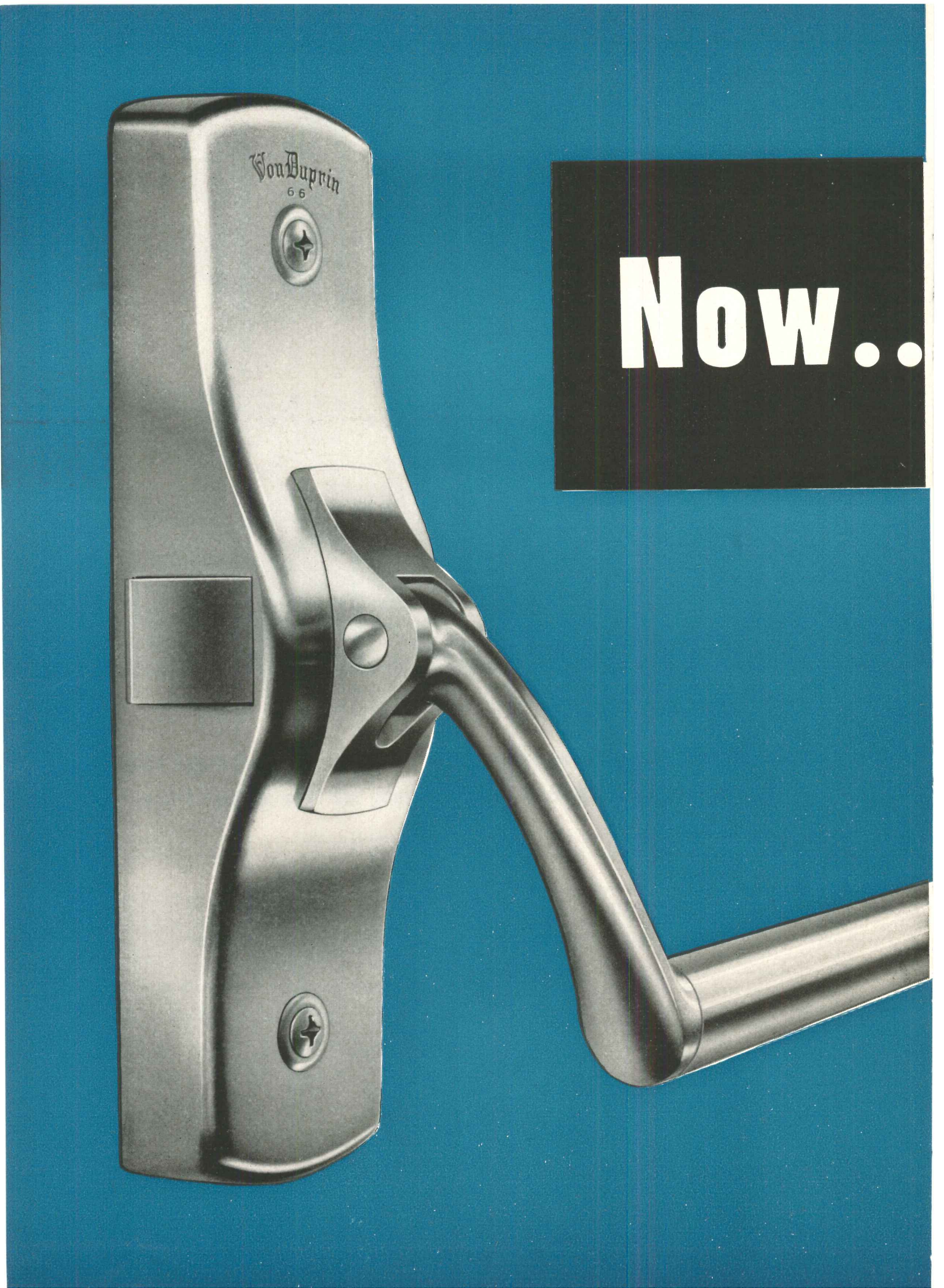
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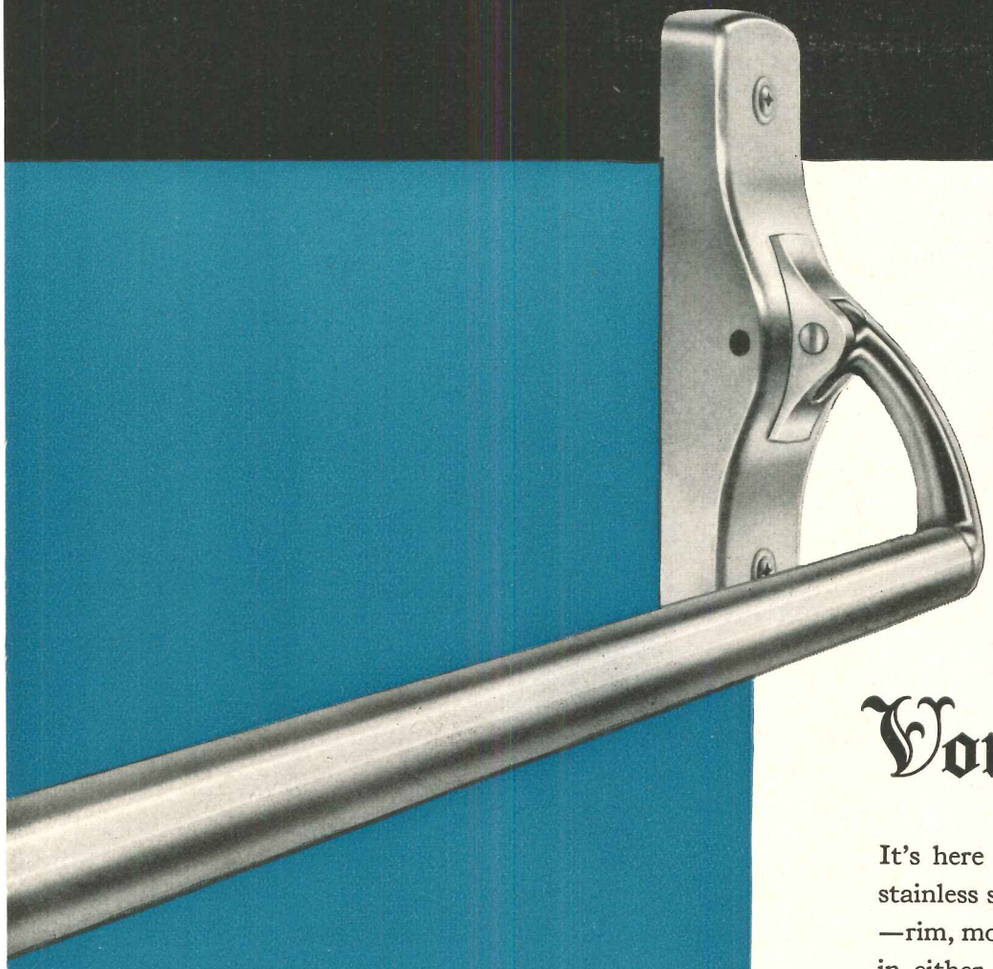

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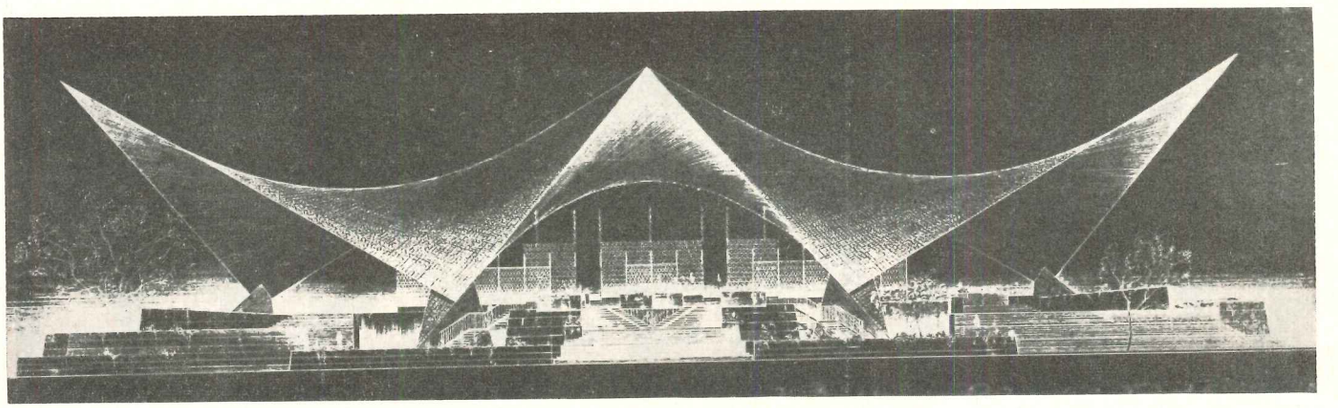
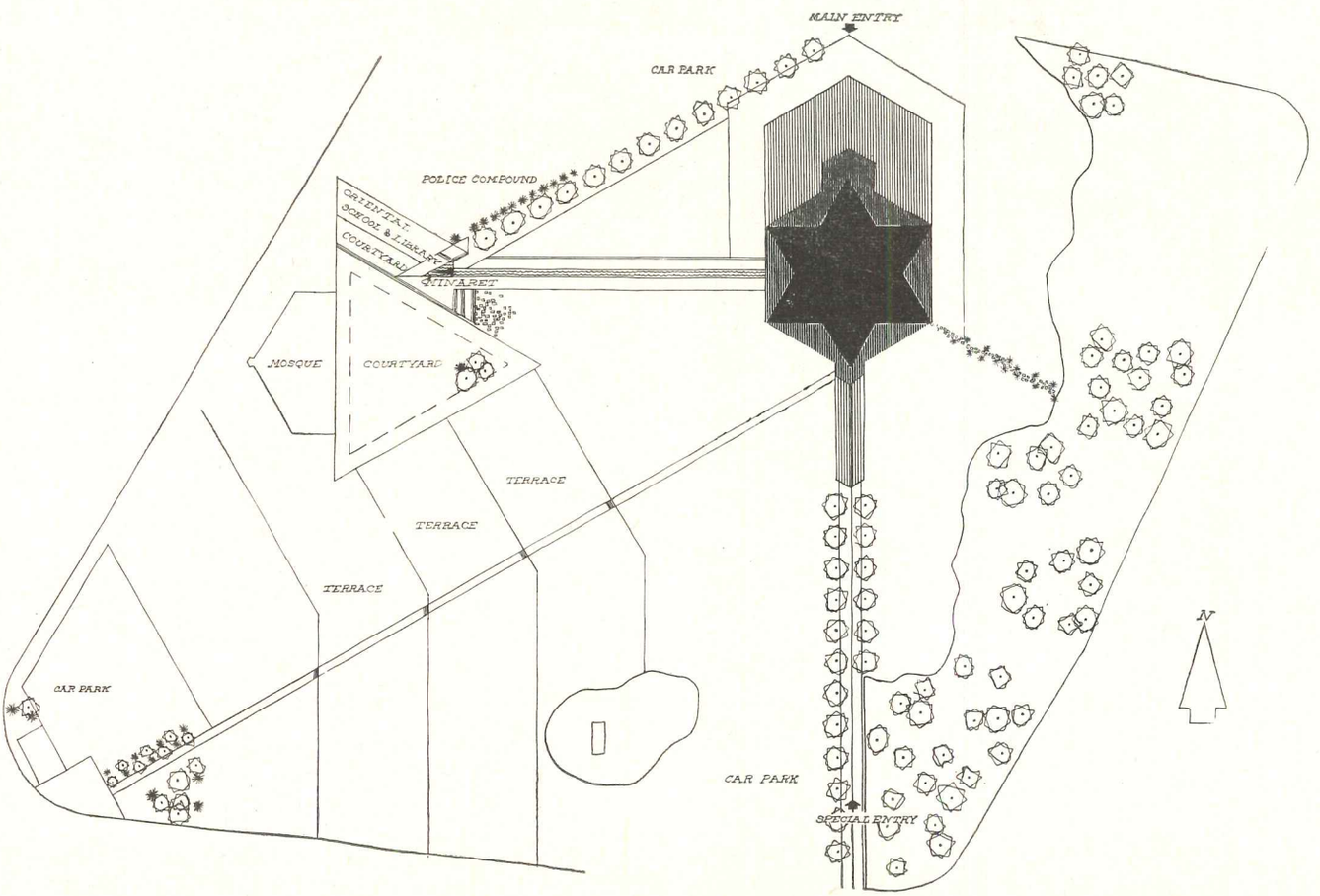


A MAUSOLEUM FOR JINNAH: LONDON FIRM TAKES FIRST PRIZE IN INTERNATIONAL COMPETITION

Winner in the international competition for a mausoleum to be built for the Pakistani hero Mohammed Ali Jinnah, announced February 24 in Paris, was the English firm Raglan Squire and Associates, which was awarded the first prize of 25,000 rupees (about $1190). The competition program called for a memorial to be built on the site of the sarcophagus of the Qaide-Azam Ali Jinnah, the founder of the Republic of Pakistan (Qaide-Azam can be translated as "Great Leader"), and was to incorporate the burial place of Liaqat Ali Khan, the country's first prime minister. It also called for a master plan of buildings to be built in the future: a mosque for 25,000 people, a restaurant, shops, police station, post office, guard house and rest rooms; for the present, only the mausoleum and the gardens will be executed.

Describing their approach to the design, the architects write: "From the beginning, our work on this project was motivated by the belief that the solution to the problem would be an idea, an idea which by its scale, simplicity and dominating form would express the stature, faith and strength of this very great leader. We believed at the outset that this idea, when it came, would appear as a fully developed architectural conception rather than the product of a long process of analysis. Insofar as we belive this, we believed that the answer we were looking for would be the result of personal inspiration rather than collective designing."

The inspiration, as it developed, was for a canopy of six hyperbolic paraboloids, which will shelter both tombs. Jinnah's sarcophagus will be raised on a marble slab in the center of a terraced series of concentric hexagons, and will be encircled by a pair of anodized aluminum grilles. Liaqat Ali Khan's tomb will be set outside this core, but will be dignified by gardens located in the eastern area of the site, to be known as the Qaide Millat gardens. The Qaide-



STANLEY *is a name I know*

The Port of New York Authority's new International Arrival Building at Idlewild — gateway to the United States for most air travelers from abroad.

Architects: **Skidmore, Owings and Merrill, Inc. Hardware supplied by Charles Kurzon, Inc.**

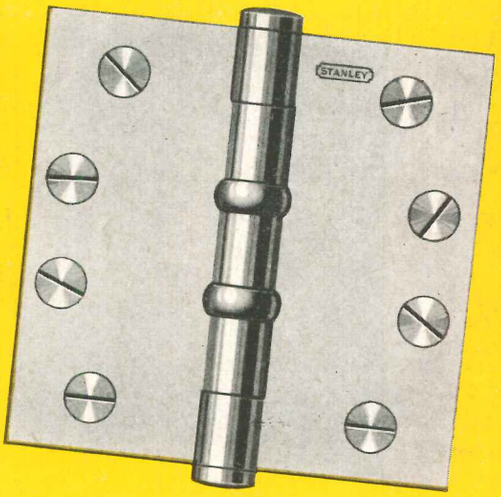
Why Stanley hardware was used at the N.Y. International Airport

The new International Arrival Building at Idlewild is designed to create the best possible first impression. It's modern, convenient, artistic — an inspiring sight to travelers getting their first glimpse of the United States.

This terminal is expected to welcome visitors for a long, long time. The hinges must last that long, too, with a minimum of maintenance.

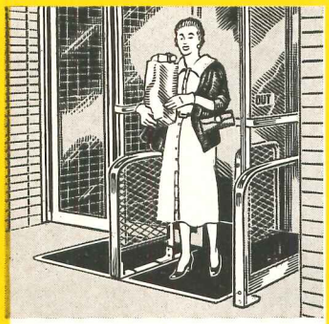
The nature of the installation called for stainless steel, ball bearing hinges, which will resist corrosion and swing the doors for generations of world travelers.

On all counts, Stanley hinges are expected to do a thoroughly satisfactory job for all the doors.

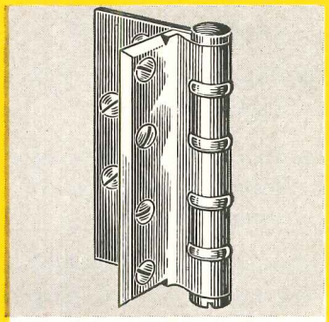


STSDBB193 stainless steel, ball bearing hinges, used on interior doors throughout the International Arrival Building.

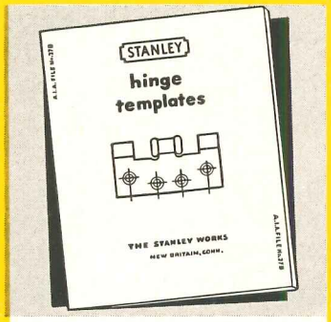
STANLEY IS THE NAME TO LOOK FOR ON QUALITY PRODUCTS LIKE THESE



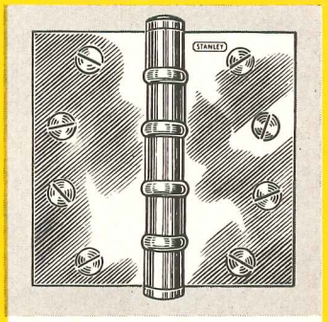
Stanley MAGIC-DOOR Controls offer a modern, helpful "automatic welcome" to passengers as they enter the terminal.



Stanley BB98 — a full-jeweled, ball bearing, half-mortise hinge for high-frequency hollow metal doors with channel iron jambs.



Stanley "Hinge Template" book — 43 pages containing all standard templates on hinges — a "must" for every consultant.



Stanley STSDBB199 hinges swing the heavy exterior doors noiselessly, will provide a lifetime of "care-free" service.

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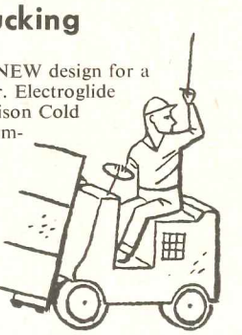

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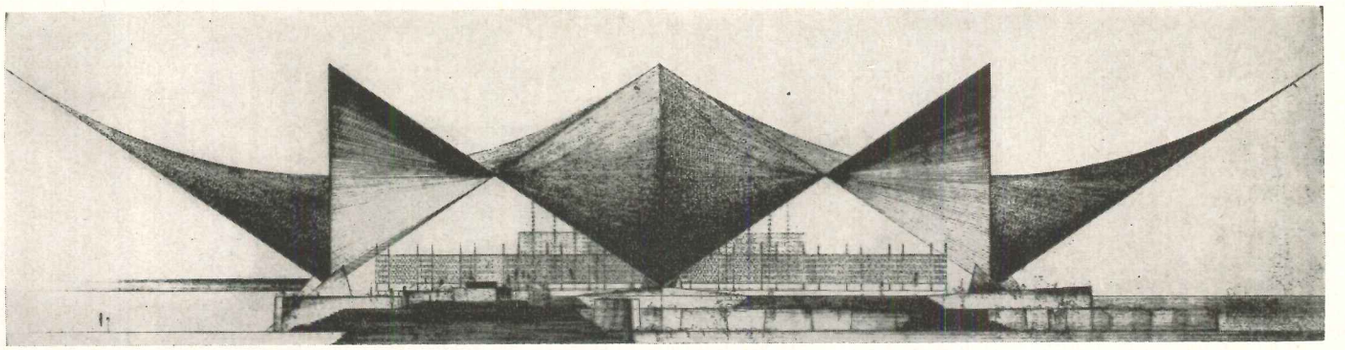


Jinnah Mausoleum

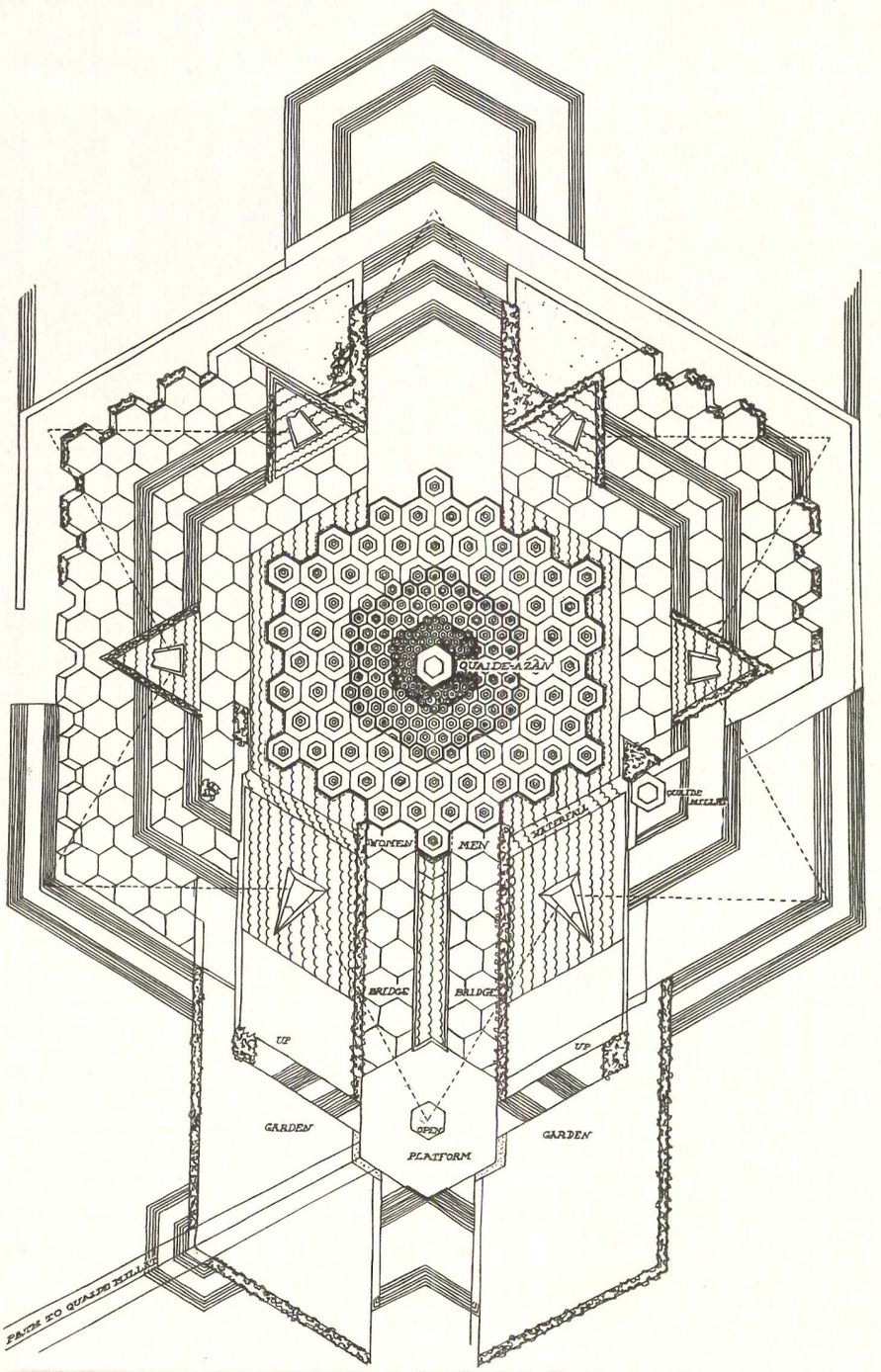
Azam grove will be set in an area to the southwest.

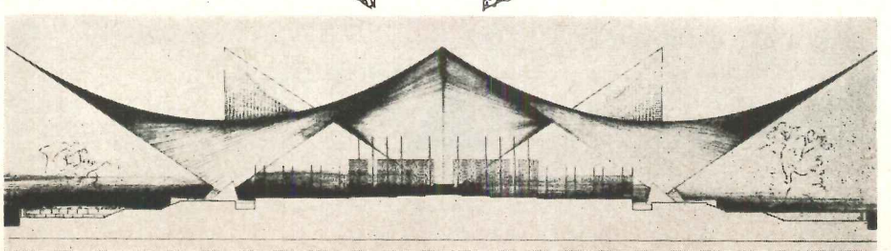
Water will also play an important part in the design, with large pools at two levels. A "high level" pool will be in effect a moat surrounding the tomb and will fall into lower pools at the main entrance; visitors approaching from the main entrance will cross a bridge to reach the tomb. A walk raised to the level of the tomb will make it possible to walk around the central structure. The canopy will be supported by triangular shaped abutments, four of them set in the higher pools, the other two set in lower pools on either side of the main entrance. The water from the higher pool will also fall into a trough which will connect the mosque's minaret with the mausoleum.

The structure of the canopy will be of 2½-in. concrete shells, with an exterior facing of gold-colored mosaics laid on a screed. The floor will be finished with hexagonal marble sections; retaining walls and pool facings will be stone.

Other awards in the competition, which was sponsored by the Central Committee of the Qaide-Azam Memorial Fund: two second prizes, each carrying awards of 7500 rupees (about $357), went to Pierre Dufau and Paul Herbe, both of Paris; three honorable mentions, carrying prizes of 3300 rupees (about $157), were given to the firm Andrault, Parat and de la Tour d'Auvergne of Paris, to Naqvi & Siddiqui of Karachi, and to Primakoff, Marett, Thariana & Ankolar, also of Karachi. Two other mentions, with no prize, were given to Flurin & Andry, Bienne, Switzerland, and to Mr. Meeking, London.

The international jury was composed of the Prime Minister of Pakistan, Eugène Beaudouin of France, Robert H. Matthew of Great Britain, Pier Luigi Nervi of Italy, Gio Ponti of Italy, and Georges Candilis, representing the International Union of Architects.





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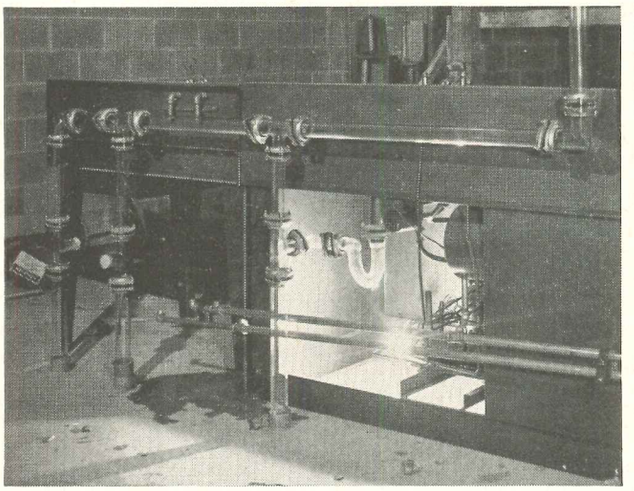

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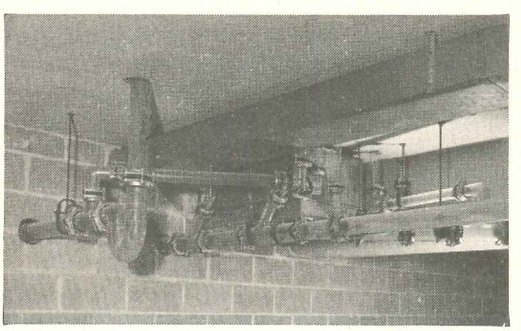

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Tile Design: Arthur J. Ambuter, Stylon Director of Design.

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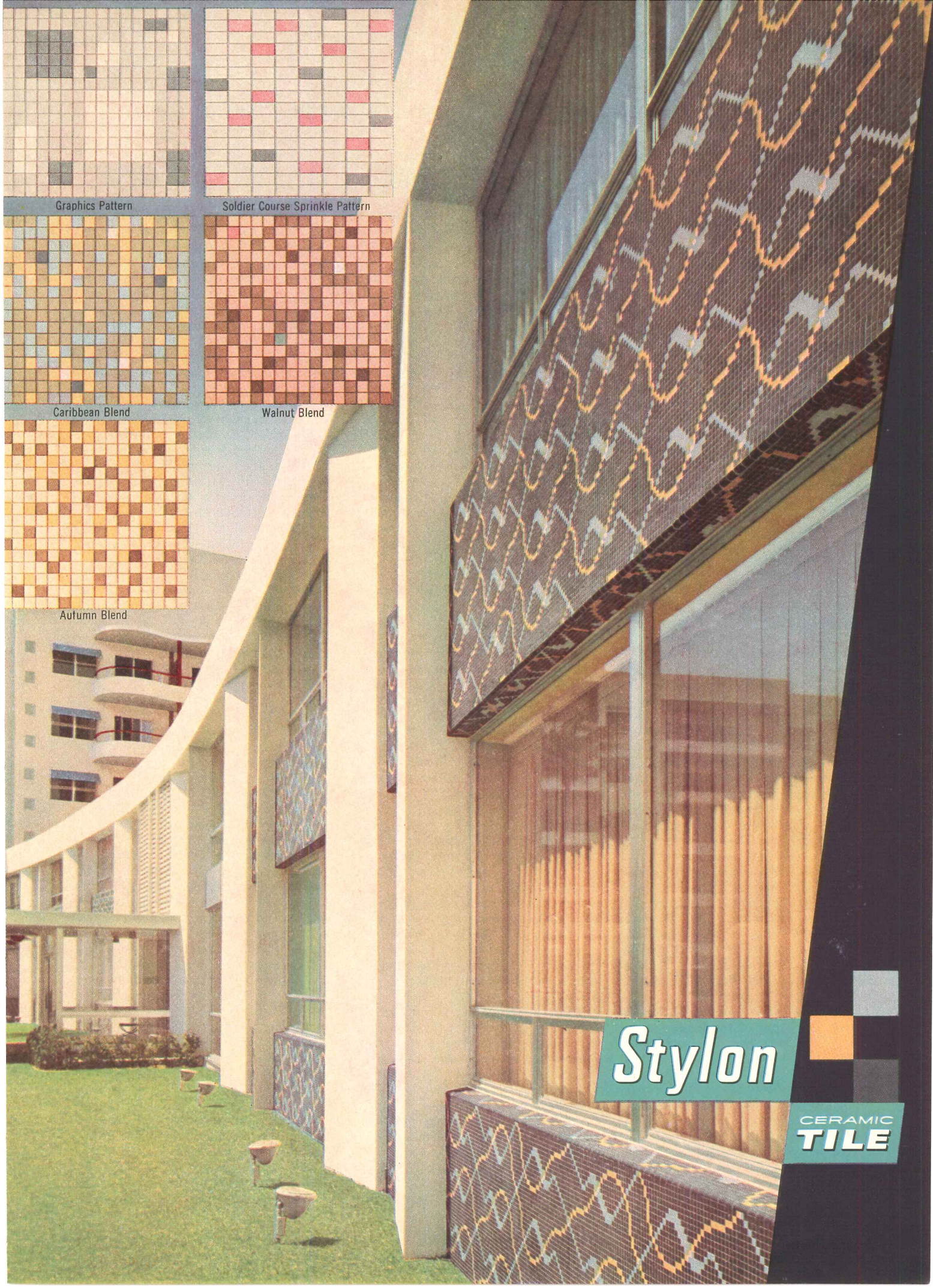
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A Washington Report by Ernest Mickel

BOOMING CONSTRUCTION SPECIFICATIONS INSTITUTE PUTS A NEW SPOTLIGHT ON SPECS

The phenomenal membership growth experienced by the Construction Specifications Institute in recent years can be laid to renewed interest in its pronounced objectives—better specifications—and a lot of hard work on the part of devoted members preaching the cause.

This organization had an unspectacular beginning a decade ago when a group of less than 30 men, mainly Federal government career employes, decided that better specifications would result and the writers' lot would be immeasurably improved if they could band together in their common interest.

The objectives as set out in the by-laws of 1948 were lengthy and comprehensive in the effort to include all desirable goals but they can be summed up in this excerpt, "To promote improved specification practices in the construction and allied industries; to gather, compile and analyze statistics and information relating to or useful in the conduct of such activities."

The early years of C.S.I. held little hope of the successes that materialized later. Directors traveled to Washington quarterly for brief evening meetings, there was no paid help and the organization ran mainly on the spirit of its small membership.

Early in 1956 there were seven chapters spread throughout the country and a roster of 825 members. As of April 30, 1958, the Institute had 2647 members in 25 chapters with four units organizing. The membership explosion in the intervening years resulted from a recognition of the benefits that could come from specifiers getting together to exchange experiences and the proselytizing of such men as Willard H. Barrows, New York, head of chapter development activities; J. Stewart Stein, A.I.A. Chicago, vice president and probable president succeeding the incumbent, Norman Hunter, A.I.A., Los Angeles; and Harry Plummer, C.S.I.'s secretary-treasurer.

In the opinion of Carl Ebert, Washington, D. C., one of the three founders of the Institute, the popularity which has produced an average of 100 applications for membership per month for the past six months stems from the work of these men and those similarly devoted to improvement in the quality of specifications.

The present membership is divided almost evenly between those with "active" and those with "associate" status. Active members, specification writers and architects, numbered 1310 on April 30; associate members, largely manufacturers' representatives, numbered 1324. There were 13 students. It is estimated that 70 per cent of those belonging to C.S.I. also are affiliated with the A.I.A.

A fourth classification is proposed and is being voted on by mail ballot at the present time. This is a "junior" category, taking in those specification writers in architectural offices who have worked less than two years, the experience required to qualify a man for active C.S.I. status. Under the proposed by-law change, junior status in C.S.I. could be held for only three years. At the end of that period, the member would have to transfer to active or associate status, or withdraw.

Dues are nominal: $12 annually for both active and associate members, $2 for students; a $6 assessment would be levied for the new junior members.

A major program of the C.S.I. for at least the next two years involves work on a number of programs assigned chapter by chapter. The subjects are cleared through the Institute's national technical committee and will result in publications looking toward more uniform specifications and a better literature for construction specification writers.

Following are some of the early chapter assignments:

Boston, structural steel; Central Arizona, masonry; Chicago, painting; Dallas, marble work; D. C. Metropolitan, bibliography, library of specification reference works, codes, etc. (part of the technical program); Detroit, laboratory tests, inspection, etc. (part of technical program); St. Louis, asphalt paving.

New York, nomenclature, preferred construction terms (part of technical program); Northern California, roofing; San Francisco, ceramic tile; Southern California, metal windows; San Diego, specifications section, and Wisconsin, earthwork.

Only the study on roofing has been completed at this time. The Institute last July published the special report on built-up roofings prepared by the Northern California chapter. Sections of the report on metal windows also have been published, although Part V of this, covering applicable provisions, shop drawings and scope of the work, are yet to come.

The material is published in the official magazine of the C.S.I., *The Construction Specifier*. This is a quarterly devoted to telling the story of the Institute and recording its accomplishments.

From the chapter efforts in carrying out their respective project assignments comes material helpful to the specifier. One of the purposes spelled out in the by-laws is "to engage in research and study of any and all problems and aspects of specification writing; to establish and maintain the Institute as a clearinghouse of unbiased technical information on specifications for the fabrication and installation of construction materials and equipment."

Mr. Plummer voiced a broader purpose when he said, "We must upgrade the competence of specification writers. We must provide them with up-to-the-minute information on construction methods and building materials suitable for their use."

Then he added, "This is not a cocktail organization. There is intense interest in well-planned programs."

C.S.I. held its first formal convention last year in connection with the centennial celebration of the American Institute of Architects in Washington, D. C. Its second annual session will be held in Cleveland, Ohio, this year just ahead of the A.I.A.'s 90th convention. It is being programmed for the general membership of C.S.I. on Saturday and Monday, July 5 and 7, with Sunday reserved for the Board of Directors meeting. Headquarters for the C.S.I. will be at the Carter Hotel.

The Board of Directors of the Construction Specifications Institute approved in February a new code of ethics developed by its ethics and rules committee. Here is that code:

1. Each member shall discharge his duties and responsibilities to his clients or employers in such a manner as to inspire respect and confidence.

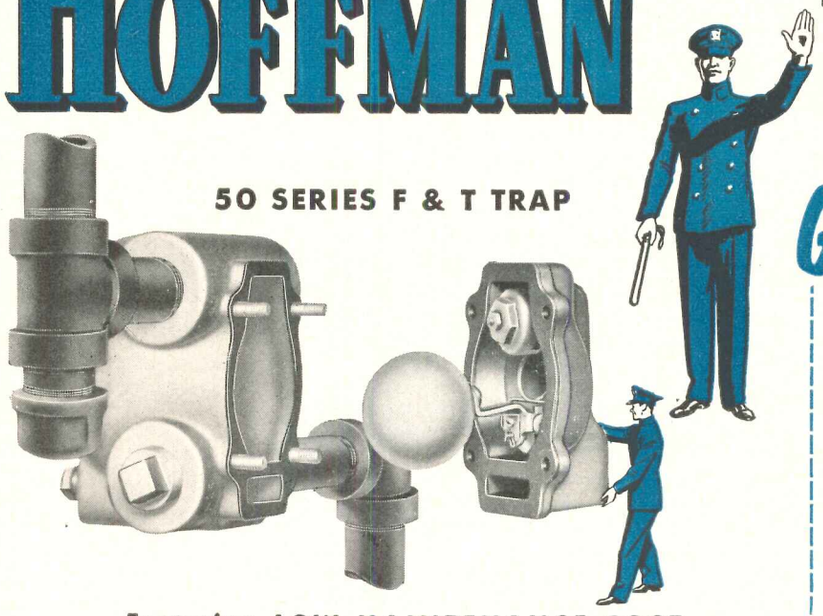
2. Each member shall cooperate in extending the effectiveness of the profession and the Institute by the interchange of information and experience with his fellow members as the opportunity presents itself.

3. Each member shall endeavor to write specifications that are thorough, clear and concise, and refrain from the use of loose, ambiguous or unenforceable, unfair requirements.

5. Each member shall specify materials, equipment, services and construction methods only on merit, without consideration for, or expectation of, personal gain or favors other than from his employer or his client.

continued on page 282

HOFFMAN TRAPS



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Hoffman engineers have anticipated steam requirements that demand less maintenance time and operating costs. Typical of Hoffman's complete line are the Traps illustrated, each with removable cover, pin and seat for quick inspection and cleaning.

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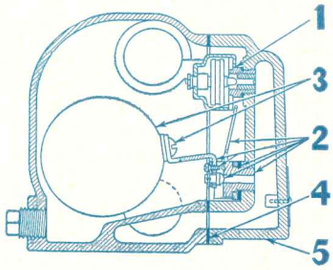

Float and Thermostatic Traps are so designed that all working parts of the trap are a part of the removable cover. Once installed there is no necessity for the breaking of any pipe connection for cleaning and repairing.

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3. Copper Float Ball Assembly
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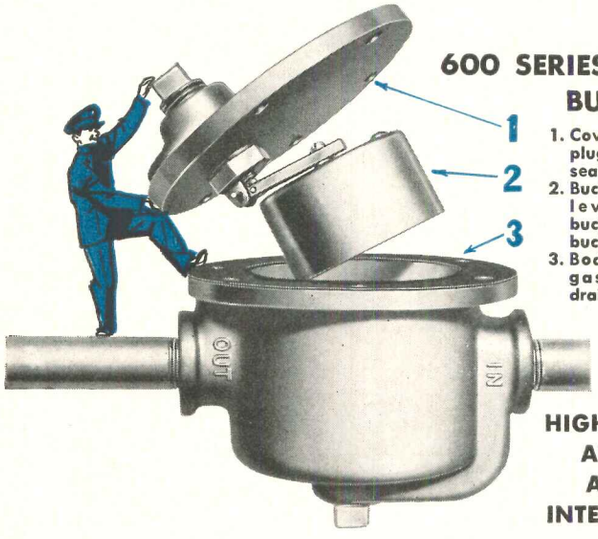

1. Cover assembly with plug, valve seat, valve seat holder.
2. Bucket assembly with lever, valve stem, bucket pin, lock nut and bucket.
3. Body assembly with gasket and bottom drain plug.

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Hoffman Bucket Traps operate intermittently and are ideal for draining condensate and air from steam lines or equipment where large quantities of air and condensate must be discharged. They are easily inspected, cleaned and serviced by merely removing the cover assembly.

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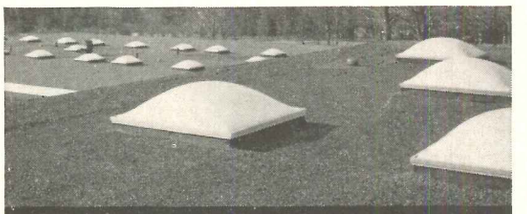
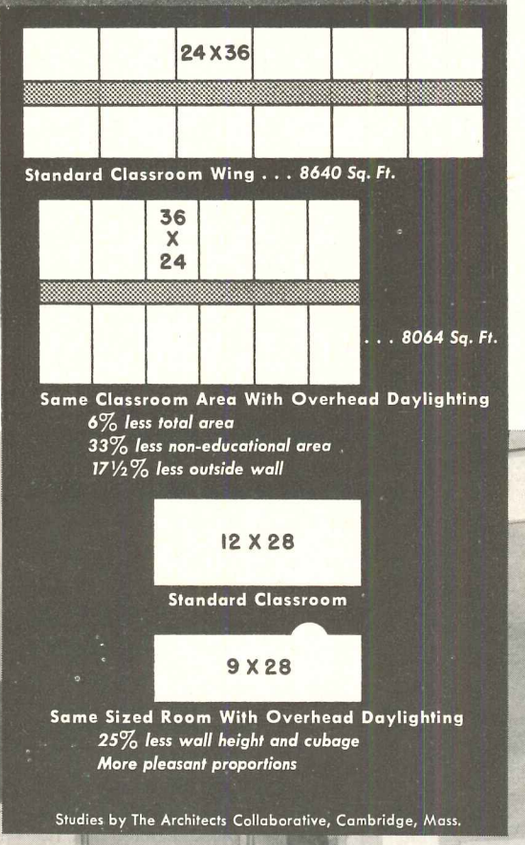
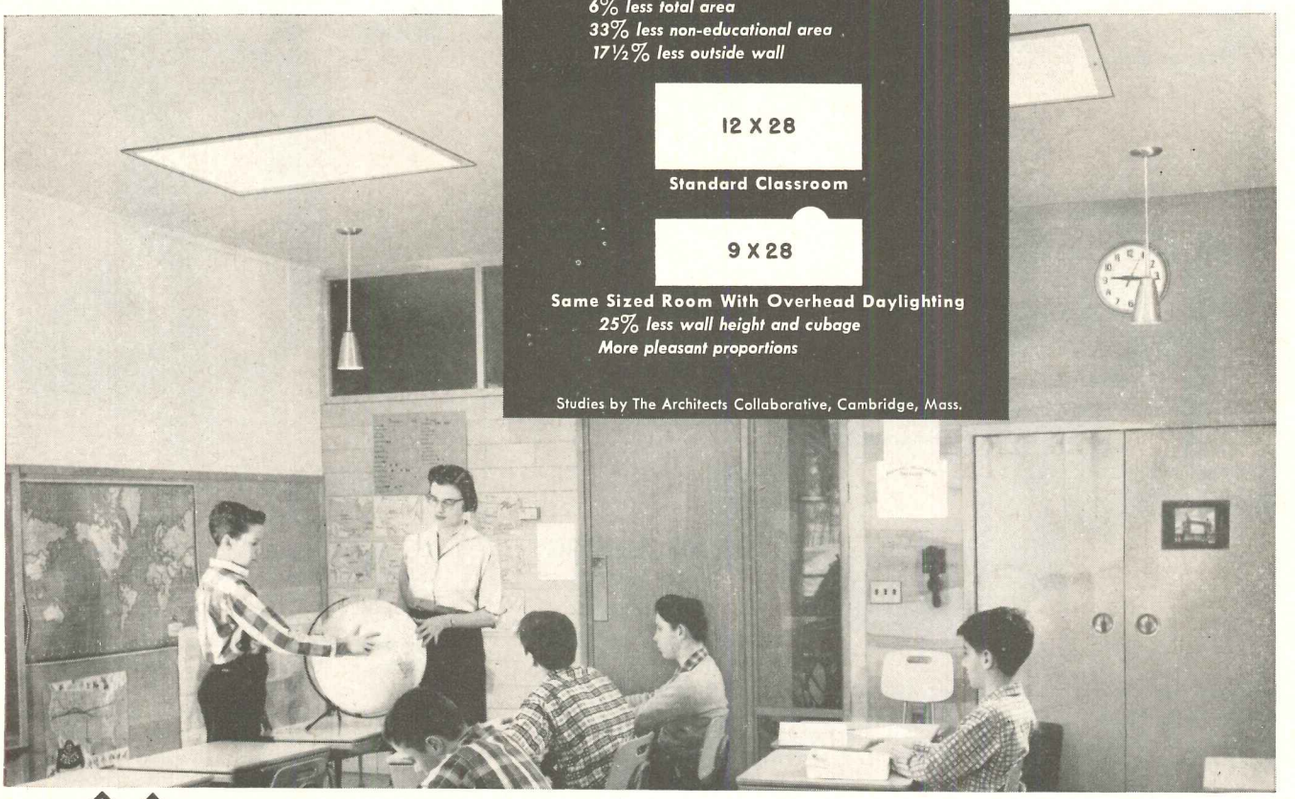




The Architects Collaborative specified, as a standard, Wascolite Skydomes® throughout the John Eliot Elementary School, Needham, Mass.



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News from Canada by John Caulfield Smith

BRITISH COMMONWEALTH'S LARGEST HOTEL OPENS IN MONTREAL

The 1216-room, 21-story Queen Elizabeth Hotel in Montreal, fifth year-round hotel to be built by Canadian National Railways and seventh to be operated as part of the Hilton Hotels International group, was opened in April with all the gay pomp and circumstance which have come to be associated with Hilton openings.

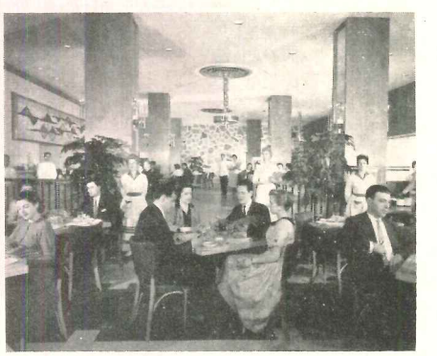
The hotel, which cost $24 million to build and furnish, was deliberately designed and equipped to handle large conventions and it is expected to bring some $10 million in convention money to Montreal annually; already booked, to 1967, are more than 200 conventions involving 135,000 delegates.

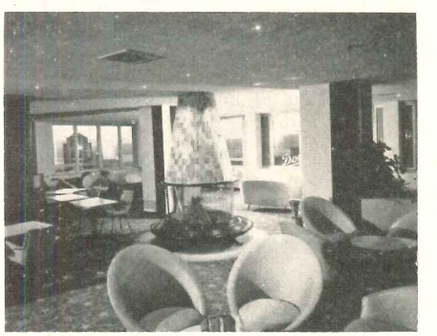
Its convention facilities are said to be capable of accommodating 85 per cent of the big conventions held in Canada and the United States. One entire floor, immediately above the main floor lobby, is devoted to banquet halls, private dining rooms and display galleries to cater to conventions. A broad staircase, moving stairs and a bank of eight elevators service the convention floor from the main lobby.

Rooms range from the standard double bedroom through studio bed-sitting rooms to a Royal Suite complete with maid's room; there are also family suites equipped with double-decker bunks for children (no charge for children under 14). The rooms incorporate two firsts in Canadian hotel service—dial telephone service and individual temperature control. The building is completely air conditioned.

For motoring guests, a lower-level registration area is provided—the guest can proceed directly to his room by elevator without going to the main floor lobby.

The hotel, which is part of a long-range development scheme of C.N.R. for a commercial center around Central Station, extends 350 ft along Dorchester Boulevard from Mansfield Street, and 300 ft south on Mansfield.





Top: "Le Café," the coffee shop off the main lobby. Above, "Le Panorama," the 21st-story lounge

Far left: the main lobby, with a 60-ft illuminated stained glass mural along one wall. Left: a typical bed-sitting room, with convertible sofas

ARCADIA'S NEWEST DESIGN...SERIES 102

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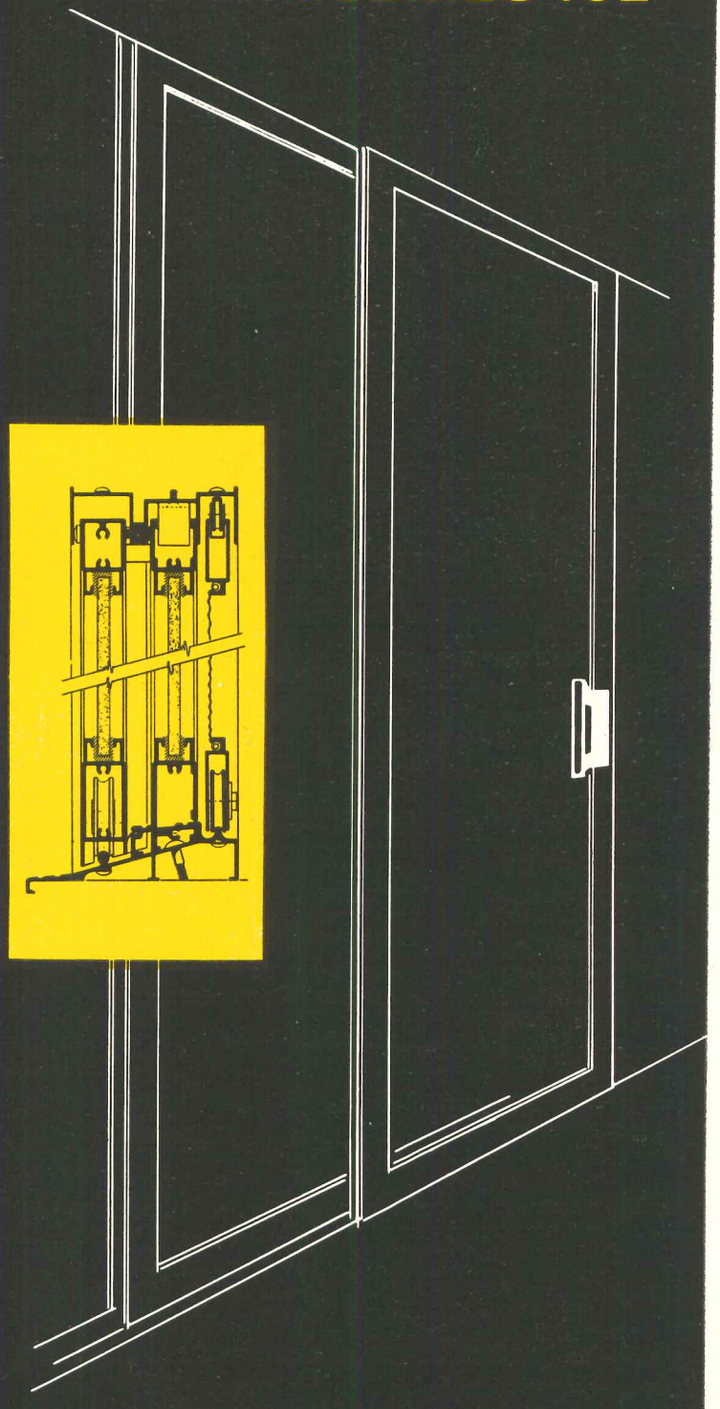

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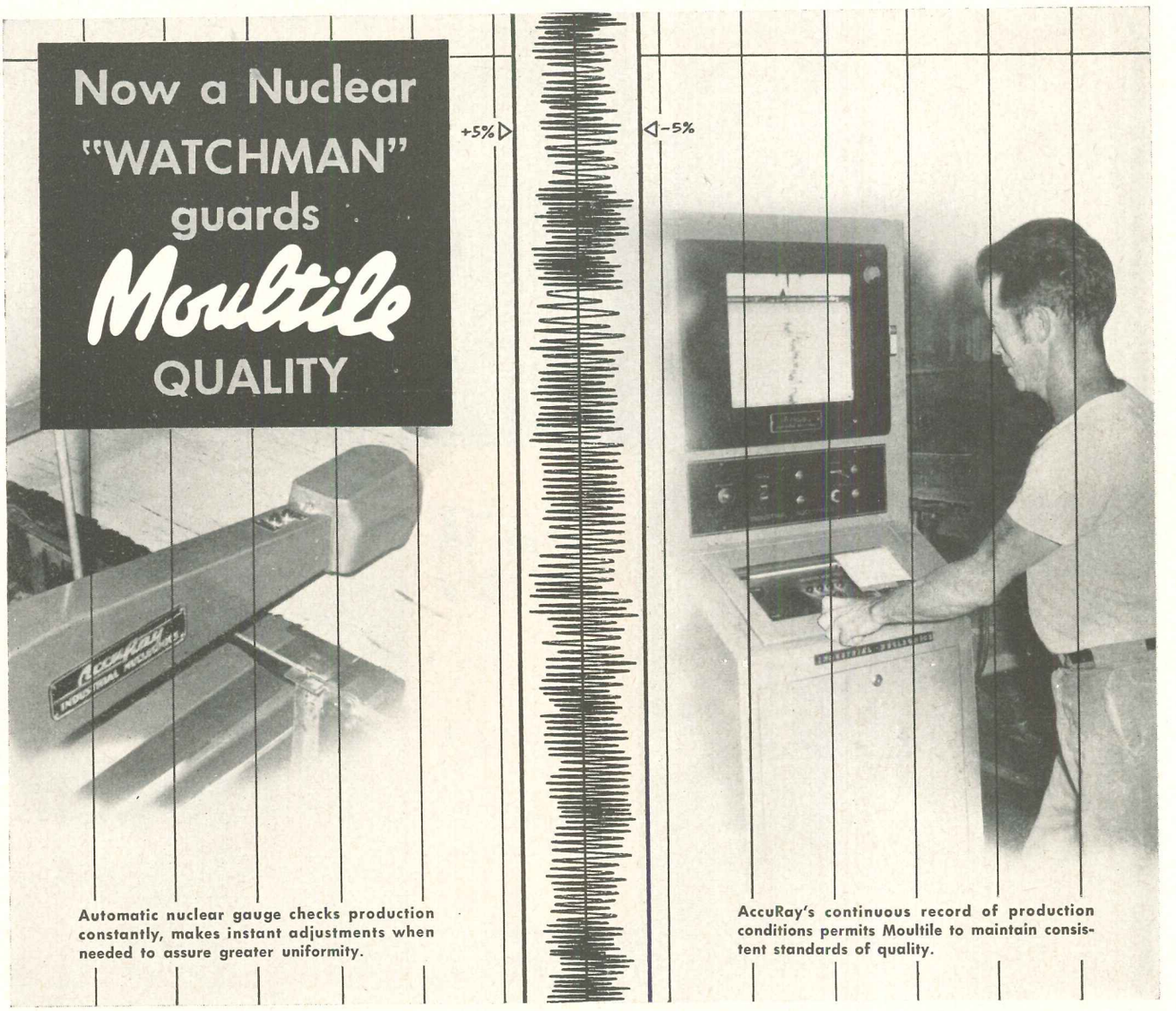

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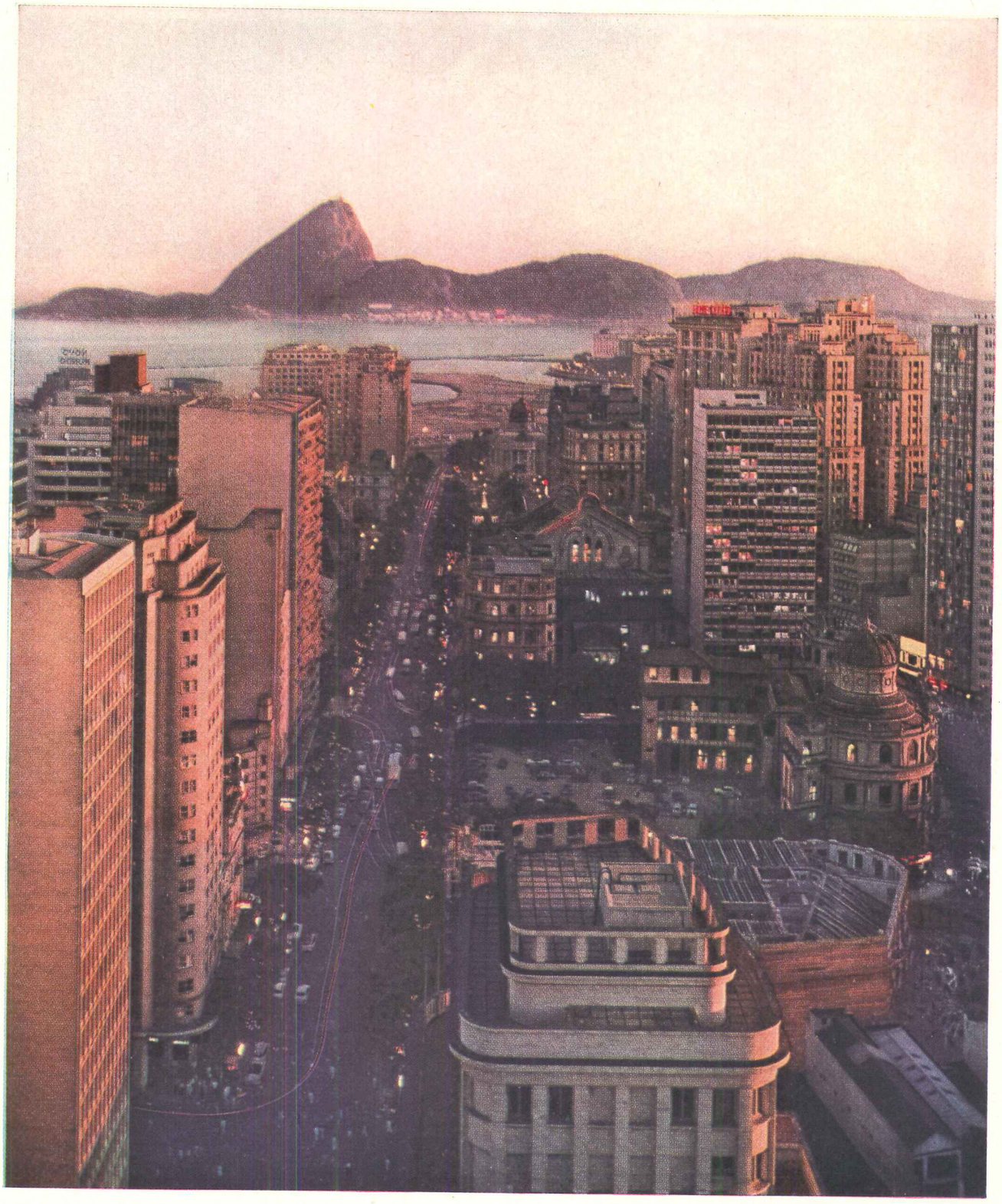

RIO DE JANEIRO *is known as the "Cidade Maravilhosa" (Marvelous City). It has enhanced its natural beauty with a distinguished Brazilian style of modern architecture that has aroused world-wide admiration. It is interesting to observe how Brazil judges the quality of a building. The proud slogan "Aqui ha Otis" (Otis is here) displayed on a building is accepted as meaning that everything else in the building is also of the highest standard. This tribute to our local company ELEVADORES OTIS S. A. and our modern plant at Santo André proclaims once again that OTIS is the world's word for elevator quality.*

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Public Relations Stressed as Concern of Architects

The architectural profession, in the opinion of Gerard Venne of Quebec City, president of the P.Q.A.A., should encourage better public relations and thereby underline the necessity for its professional services.

Three aspects of the situation must be considered, he says. First, there is the architect's performance of his professional services. Then comes his interest in his association and finally his collaboration with other civic and service organizations.

Great-West Life Assurance Company has a new building in Winnipeg; architects, Marani & Morris—associated architects, Moody & Moore. Estimated cost: $7 million

No architect should refuse a particular job because he does not find it important enough, Mr. Venne believes. "If we want the proper value of the profession to be appreciated," he says, "it is important that each and every one of its members accept all jobs, regardless of their size, and also that we work as hard towards a proper solution of the smallest project as we would for a bigger job."

On the subject of the architect's relationship to his professional organization, the Quebec president declares that not only does the association look after the administration and interests of its members, but it also supervises the dignity and honor of the profession. Members should take interest and pride in association activities and accept with pleasure tasks that may be assigned to them at certain periods.

He adds, "If the proportion of members interested in association affairs could be doubled, we would be assured of complete success."

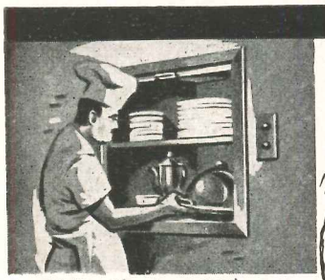
Mr. Venne feels that, due to his position in society, the architect must be active in civic affairs and service organizations. "He is a man whose professional relations and general knowledge should at all times be at the disposal of the public. Architecture is an art so closely interwoven with the community that the architect must help each time the occasion arises whether it be on civic, provincial or even national level."

If the profession would observe and enhance these points, Mr. Venne is confident that the resulting benefits would be immense.

Of Obsolescing Architecture: Chermayeff in Montreal

Today "even dog kennels are being built like monuments," declared Prof. Serge Chermayeff, observing in a recent speech that North America is

WHEN YOU SPECIFY dumbwaiters



Roto-Waiter (for two stops). Push-button call and dispatch from both levels.

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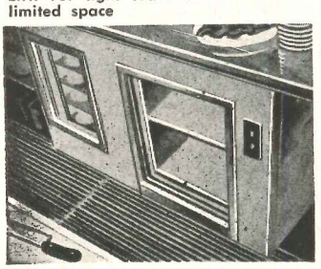

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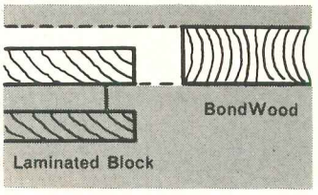

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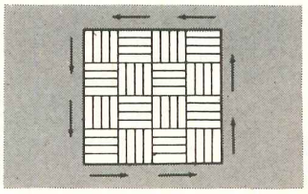

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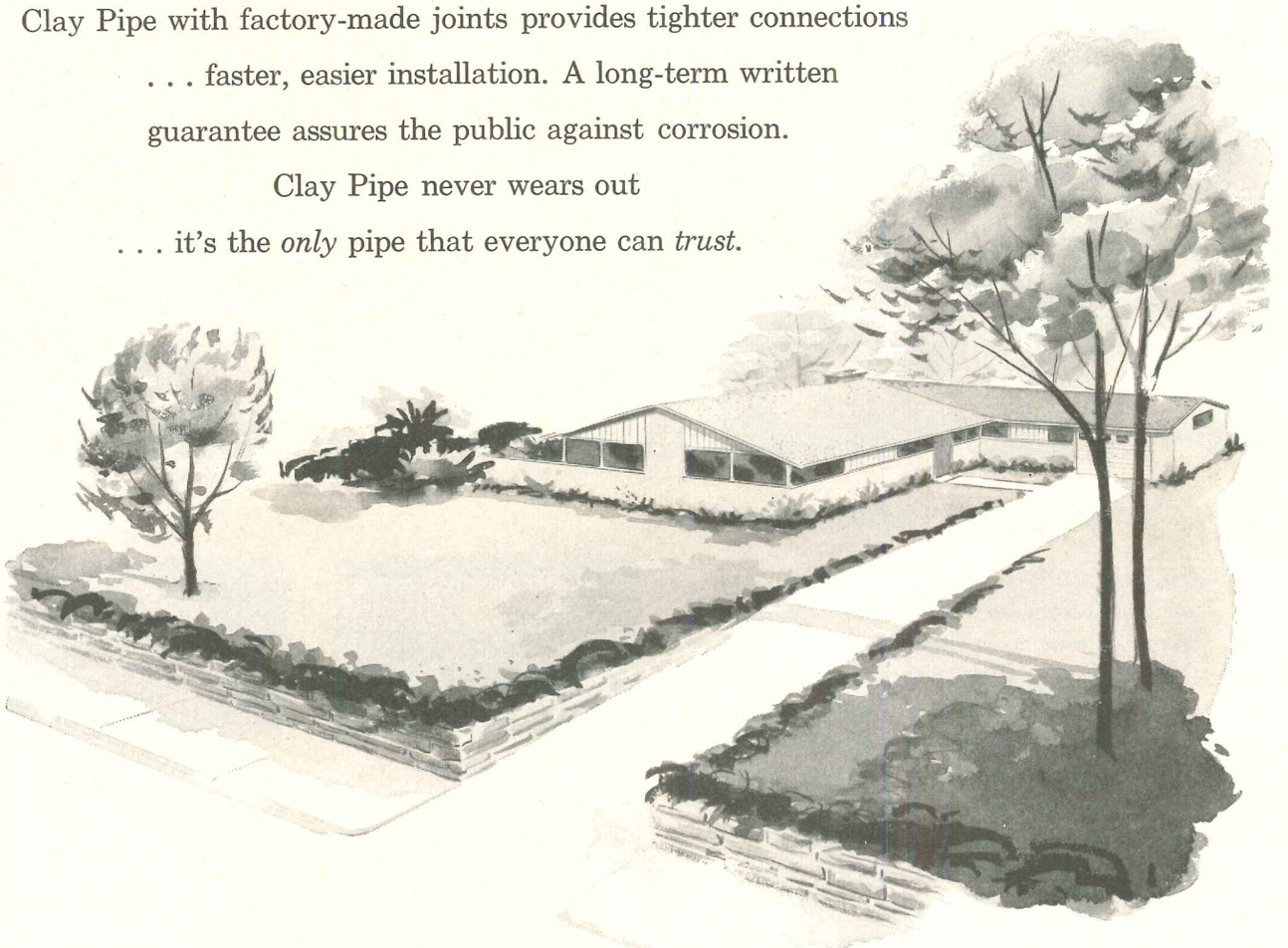

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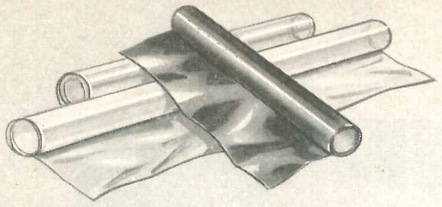

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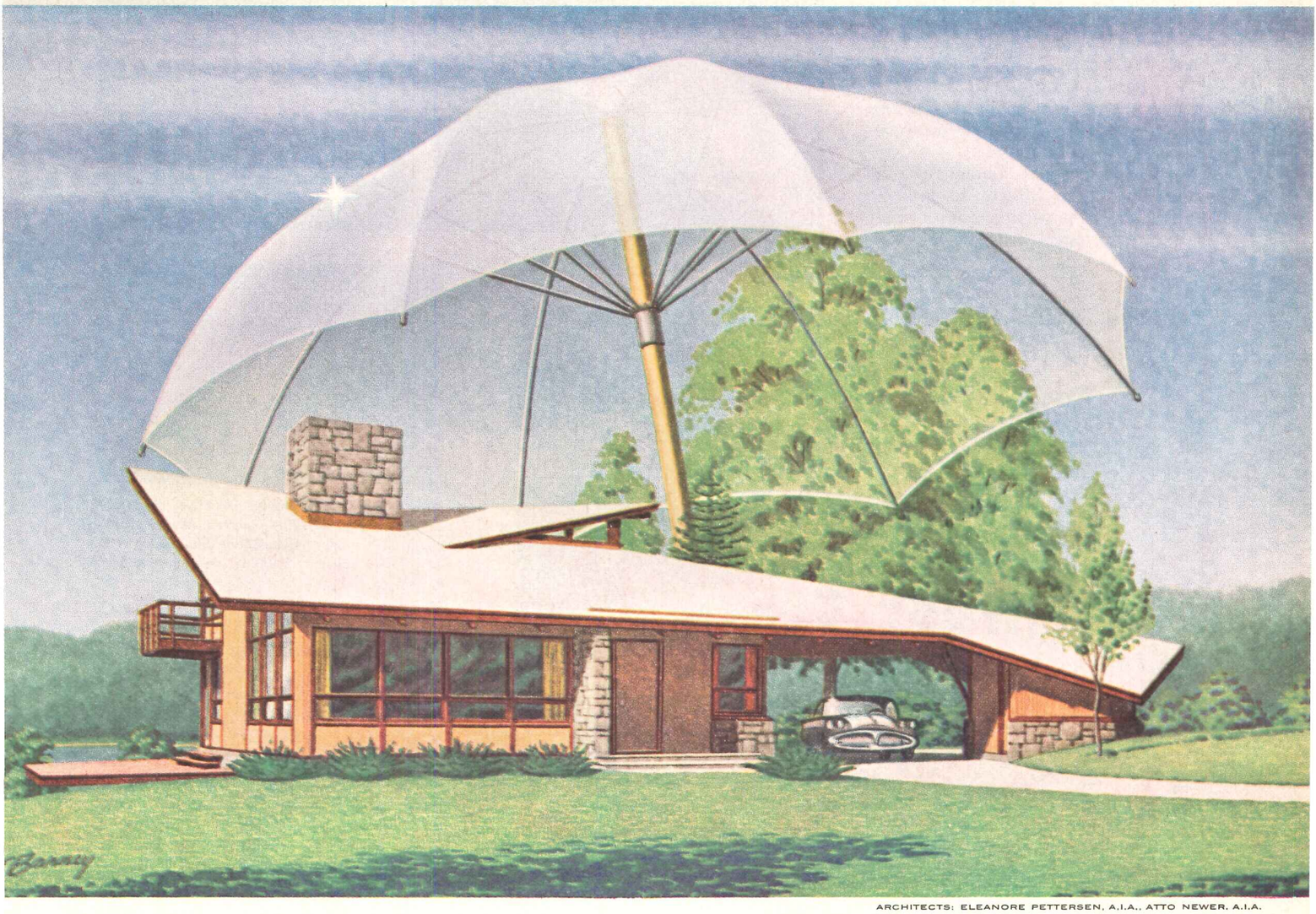

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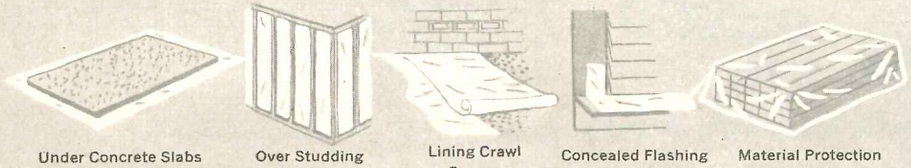

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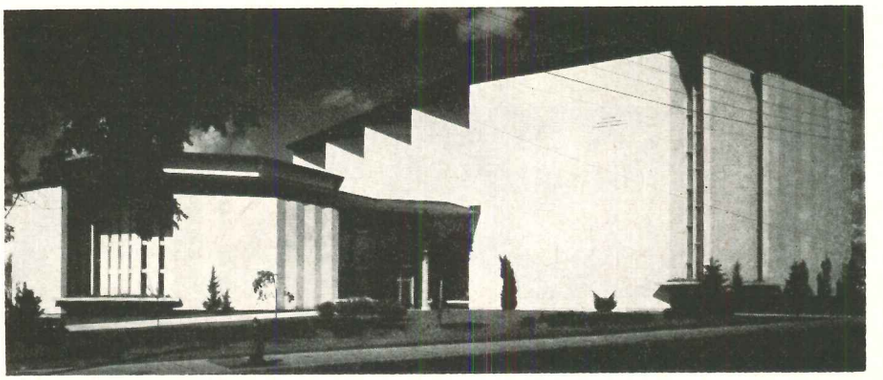
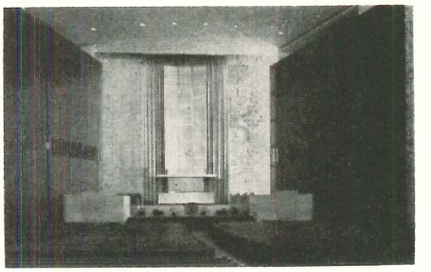
erecting too many buildings that will become obsolete in a few years.

Professor Chermayeff, a member of the staff of Harvard's Graduate School of Design, was speaking to a meeting of the Museum of Fine Arts, Montreal. He said today's architecture is being outmoded by a new period of high tensile metals and concrete technology which produces many startling shapes.

Cure for present tendencies, he added, is for architects to analyze needs and to pursue a course that takes advantage of new developments and does not perpetuate error.





Beth Tzedec Synagogue, Toronto, has seating capacity of 3000, serves also as educational center; cost, $2,500,000. Harry B. Kohl and Isador Markus were associated architects; Page & Steele, consulting architects and supervisors on job

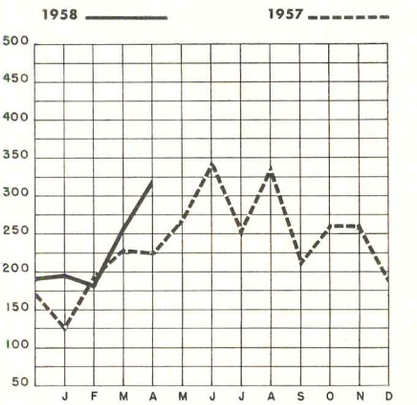
America is not particularly inventive, he said, but offers great opportunity for performance—the execution of other people's ideas.

Professor Chermayeff believes that suburban development is gradually being slowed by the desire of many people to "get back to the city where all the life is."

He said that people are getting tired of living in the country and with the necessity of commuting. "It is an interesting change from seemingly endless suburbanization," he concluded.

Contracts Awarded: Comparative Figures*

(in $ million)



*Compiled by the Editor and staff of *The Building Reporter*, from information collected by Maclean Building Reports

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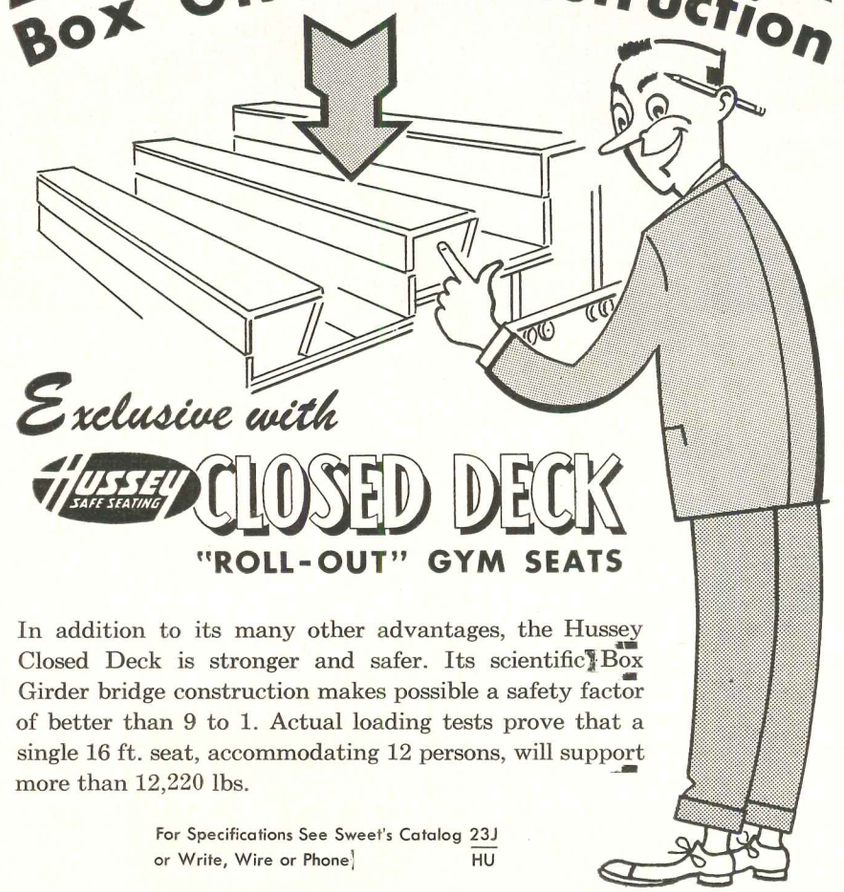
Box Girder Construction



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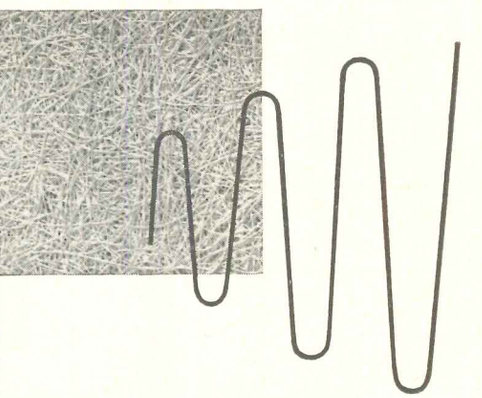
Textured Tectum gives a new approach to suspended, acoustical office ceilings



Building: Shell Oil Company, Tulsa, Oklahoma
Architect: McCune & McCune

For a new, fresh, natural wood appearance for office ceilings—for functional, good looks with excellent acoustical ratings—for low cost installation—have a look at this recent installation of Tectum suspended, acoustical ceiling panels at Shell Oil's new office building in Tulsa, Oklahoma. Rectangular 2' x 4' panels are quickly erected. The effect is both unusual and complementary to other materials in the room. Tectum is noncombustible and is available with or without a felt backing membrane. For new, smart appearance—for the efficient control of office din and confusion—for maintenance free satisfaction that is long-lived—see your Tectum representative at once. Tectum is now available in greater quantities than ever before. Ask for a complete file on Tectum for roof decks, sidewall and acoustical suspended ceiling usage, or see Sweets Architectural and Industrial Files.

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FHA Plans Major Survey on Performance of Housing

The Federal Housing Administration has announced its forthcoming survey of FHA home owners aimed at determining faults and failures in FHA-insured housing.

This will be the only study of its exact type ever undertaken. From its data can come a changed philosophy for the consideration of minimum property standard changes. The agency wants to test its present methods for judging correct areas for imposing these standards requirements and feels that a fair sample of home owner opinion, based on years of experience in a home, can aid it significantly in deciding on the proper problems for consideration.

FHA is going into the data collection program on the recommendation of the FHA advisory committee of the Building Research Advisory Board. According to FHA Commissioner Norman P. Mason, the survey will be conducted "to test our system of inspections and requirements so we can make adjustments as needed." To make the homes of the future more livable and marketable, he explained, the improvements suggested by the study will be incorporated into the minimum property standards.

"After all, the marketable house is the house that people want," Commissioner Mason asserted. "It is the result of good planning, good materials and good workmanship. We want long-lasting value and livability built into every home financed under the FHA plan and at the same time we want to find ways to reduce costs. Against any additional cost the new standards might impose, we must weigh the benefits carefully."

Results of the new survey cannot be expected to show up immediately in FHA's standards. The long-awaited publication of the revised requirements is expected at mid-year although its effective date will come some months later.

The survey of home owner experience is an entirely new technique and will require time for execution. The questionnaire was being prepared with extreme care, officials realizing that success or failure could depend upon its wording. At this writing those responsible for the project were considering investigations in the areas of structure and mechanical performance, not in architecture.

FHA and BRAB are parties to a contract which provides that the board assists the Federal agency in the evaluation of its problems and in programming the studies it undertakes. Ever since FHA has been in business, some 25 years, it has been turning up questions which need technical research before sound answers can be found.

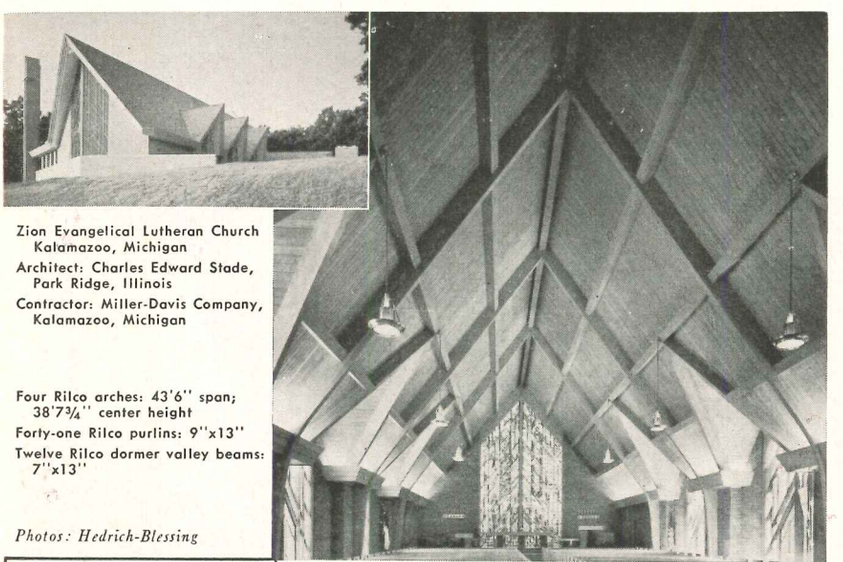
Commissioner Mason explained the BRAB role this way: "BRAB provides the coordinating function so badly needed to be sure we do not undertake studies already carried out or unnecessarily duplicate similar efforts. Through its wealth of experience, BRAB can also tell us the full background of supporting work which can help us in our approach."

The Technical Studies Programming Advisory Committee, considered the key to these good relationships between FHA's technical studies staff and the Board, is now one year old. It has more than proved its worth.

PHS Puts U. S. Hospital Needs at $10 Billion in Next Decade

The U. S. Public Health Service now has estimated that an expenditure of more than $10 billion for hospital

continued on page 282



Zion Evangelical Lutheran Church
Kalamazoo, Michigan
Architect: Charles Edward Stade, Park Ridge, Illinois
Contractor: Miller-Davis Company, Kalamazoo, Michigan

Four Rilco arches: 43'6" span; 38'7¾" center height
Forty-one Rilco purlins: 9"x13"
Twelve Rilco dormer valley beams: 7"x13"

Photos: Hedrich-Blessing

"HAPPY WITH COST ERECTION APPEARANCE"

". . . we were completely happy with the cost, the erection, the appearance and the grade of the Rilco laminated members in this church," writes the architect. The Rilco arches, purlins and dormer valley beams contributed greatly to the church's functional and aesthetic appeals, for the warmth and symbolism of wood helps raise man's thoughts from himself upward.

And there are other reasons why wood is especially suitable for churches: Laminated wood allows virtually complete design freedom—blends with any church style, any church concept—offers warmth, friendliness, reverence—plus economy and all-important fire-safety.

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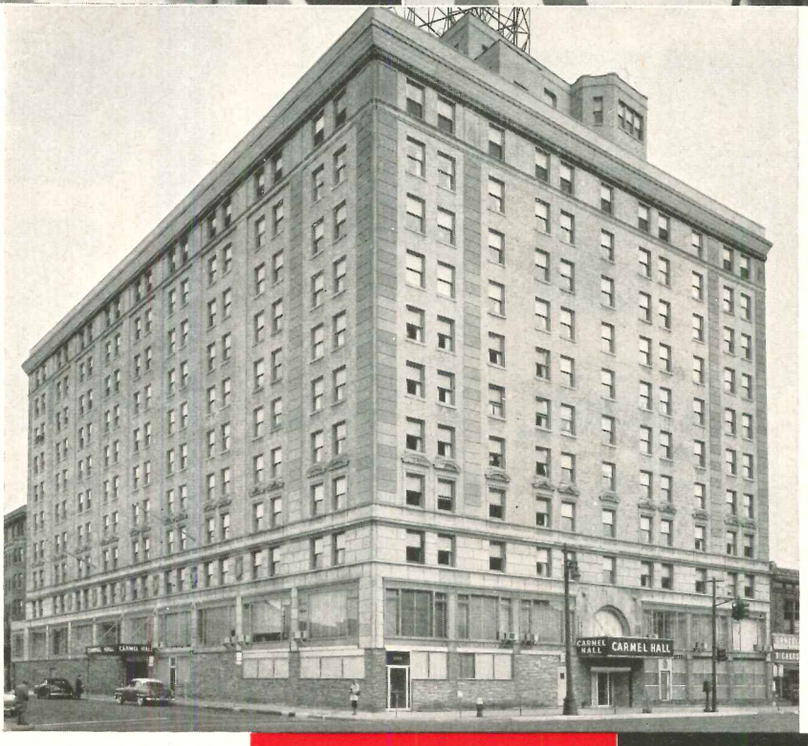

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Detroit, Michigan

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Architect:
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General Contractor:
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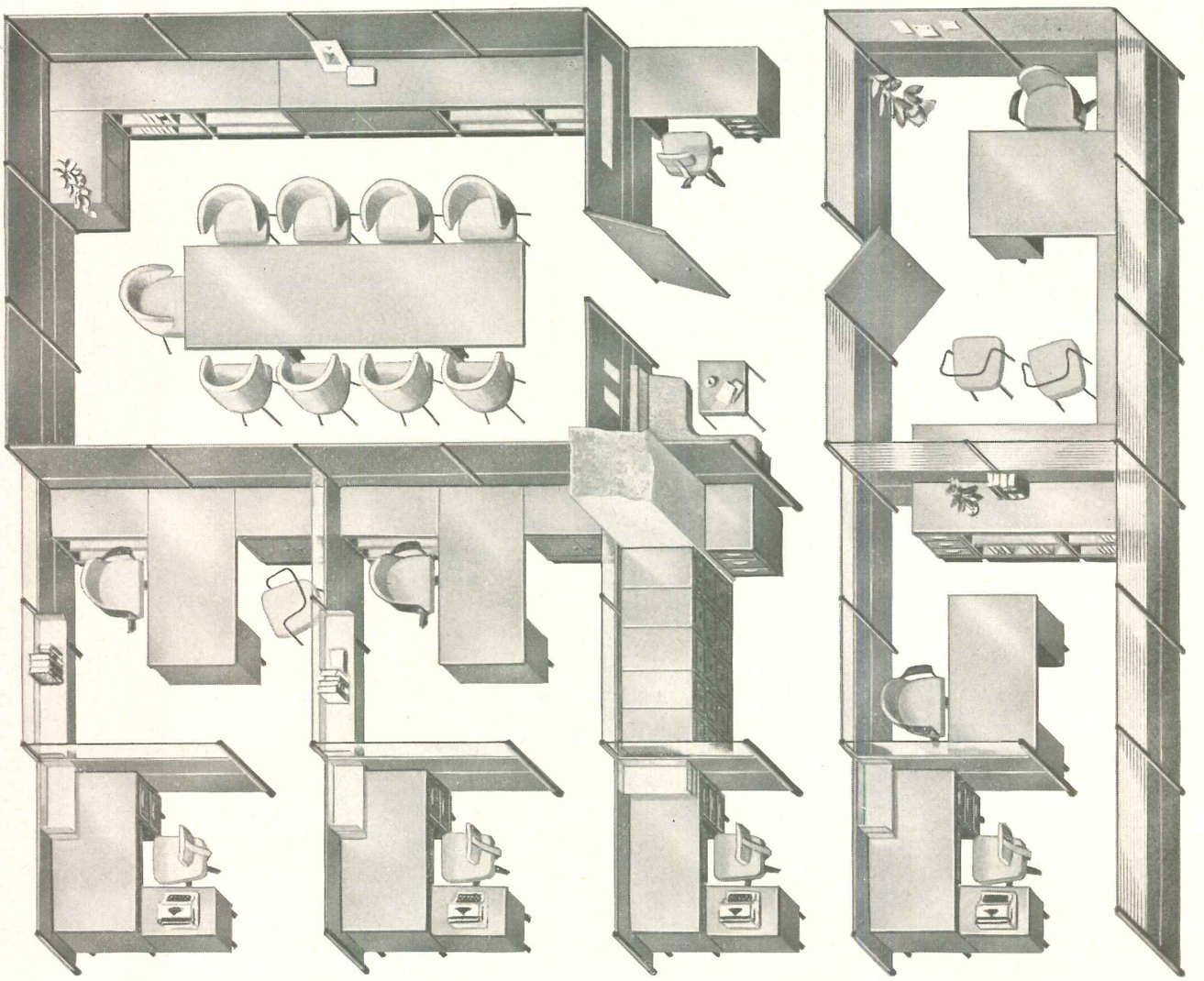

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MIDLAND BEACH, STATEN ISLAND, N. Y.
Michael L. Radoslovich—*Architect*
Carrannante and Illiano Constr. Co.
—*Masonry Contractor*
Mars Construction Co.—*Gen. Contractors*
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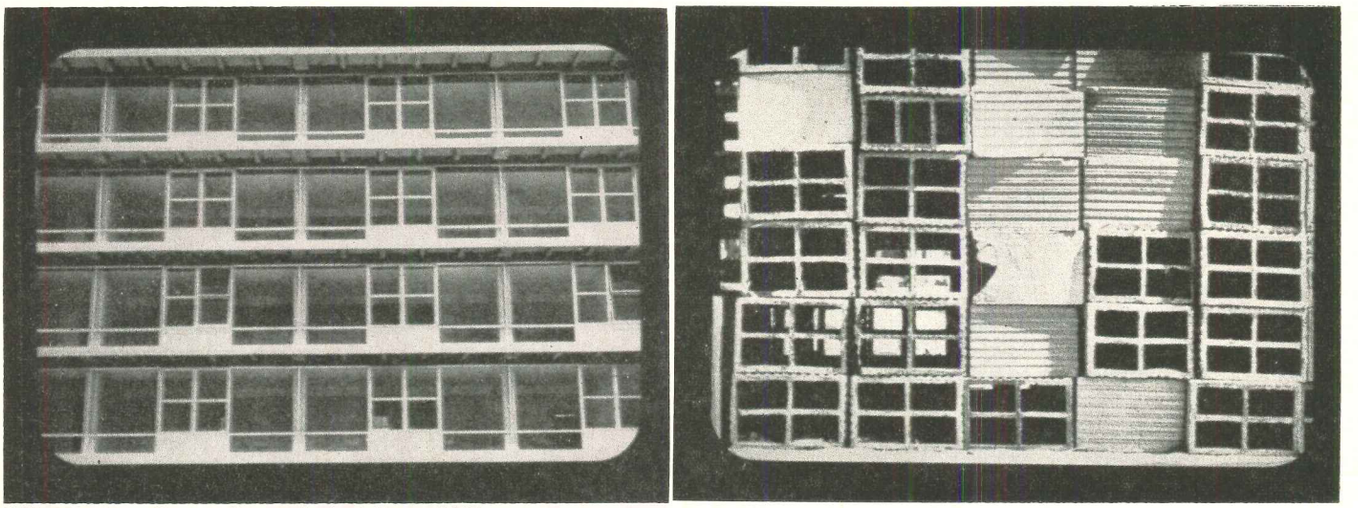

"What do we really see when we look at the world?"

THE SHAPES OF OUR TIME

By Charles W. Moore

Problems of Design. *By George Nelson. Whitney Publications (18 East 50th Street, New York 22), 1957. 205 pp., illus. $10.00.*

Readers who have enjoyed the witty, engagingly written, and sometimes important articles of George Nelson in *Interiors, Holiday, Architectural Forum,* and a number of other magazines will be delighted to discover that twenty-six of them have been gathered into a new volume. Thus arranged, they are as pleasant to read as ever, and in places as provocative. The book is divided, loosely, into six sections: "Problems of Design," which includes observations on education, obsolescence, vision, and the intramural difficulties of the industrial designer; "Art"; "Architecture," including skillful appreciations of Le Corbusier's Villa Savoye and Wright's two Taliesins; "Houses," with refreshing approaches to housekeeping, prefabrication, and vacations; "Planning," observations about Main Streets, so much to the point a decade ago, when they were written, that they are architects' common currency by now; and "Interiors," where the light touch is applied. Some of the articles discuss matters of central importance to anyone with eyes and a mind in the twentieth century; in others, the eyes and the mind romp off into pleasant conceits. The articles are well illustrated with pictures of practically everything from high tension wires to "September Morn," with one surprising omission: Mr. Nelson has modestly avoided more than a very occasional illustration of his own elegant work. This is a great pity.

Something else, of even more importance, is missing. In Nelson's words, "The insights of today's great-

continued on page 64

BACKGROUND FOR CITY PLANNING

Urban planning is, fortunately, with us to stay, and architects are finding themselves increasingly involved with it. A book such as this, therefore, might be invaluable to an architect or engineer because it is a survey of public policies with which urban planning is concerned.

Mr. Webster, who is director of the Bureau of Governmental Research and Services at the University of Washington, deals with the subject from the point of view of the political scientist and the lawyer. Zoning regulations, building codes, and architectural control ordinances are, of course, discussed thoroughly. The author also explores the implications behind the assumption that changing conditions may force a blurring of the now commonly accepted zoning divisions of land use.

Among the many other topics Mr. Webster explains in detail are: the legal basis of planning, physical planning and community development, plan implementation, and urban redevelopment and renewal. The footnote references are numerous and form in themselves an extensive bibliography for further reading on all subjects covered.

One or two of Mr. Webster's con-

continued on page 348

Urban Planning and Municipal Public Policy. *By Donald H. Webster. Harper & Brothers (New York), 1958. 572 pp. $8.00.*

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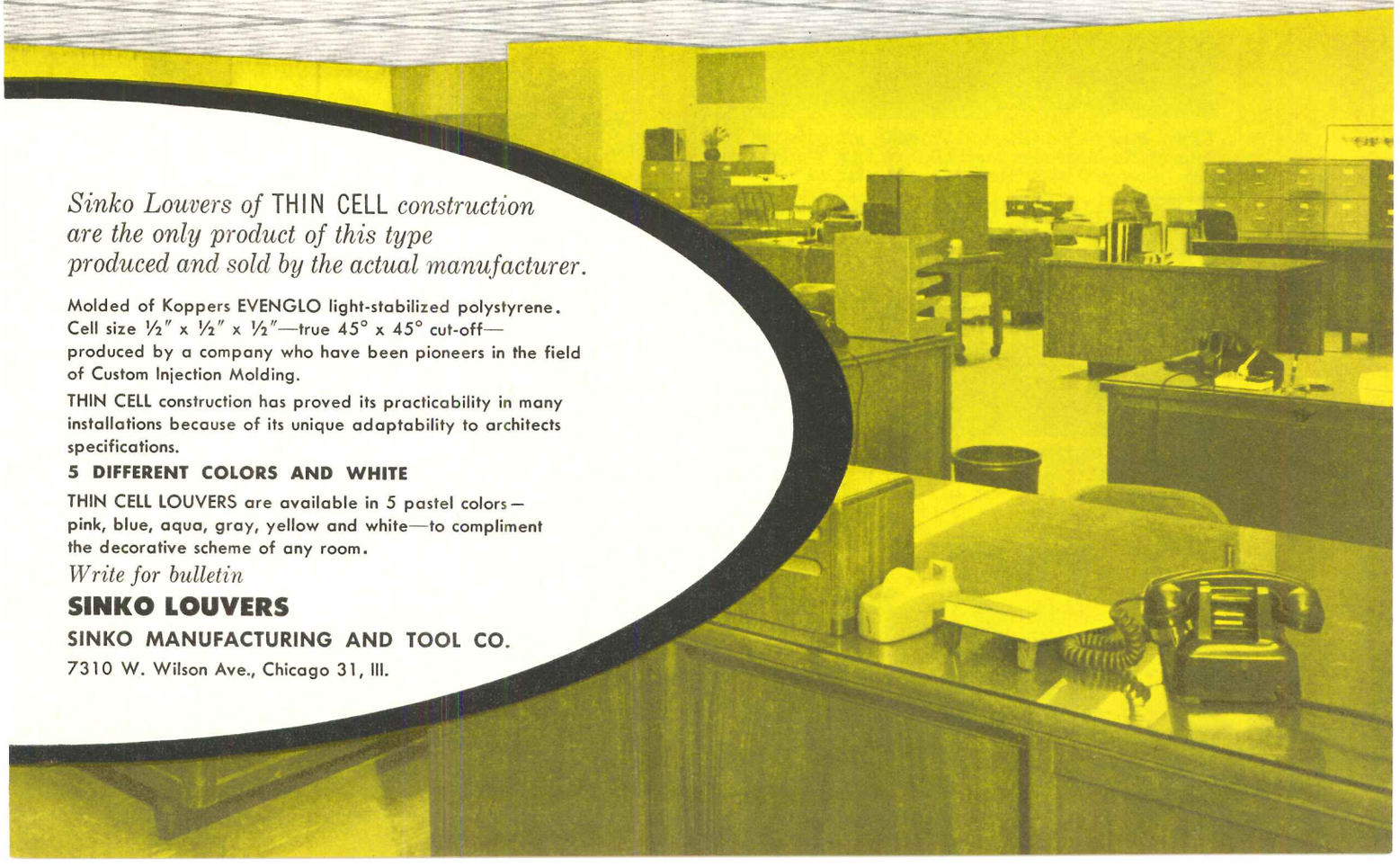
with dynamic THIN CELL *construction*



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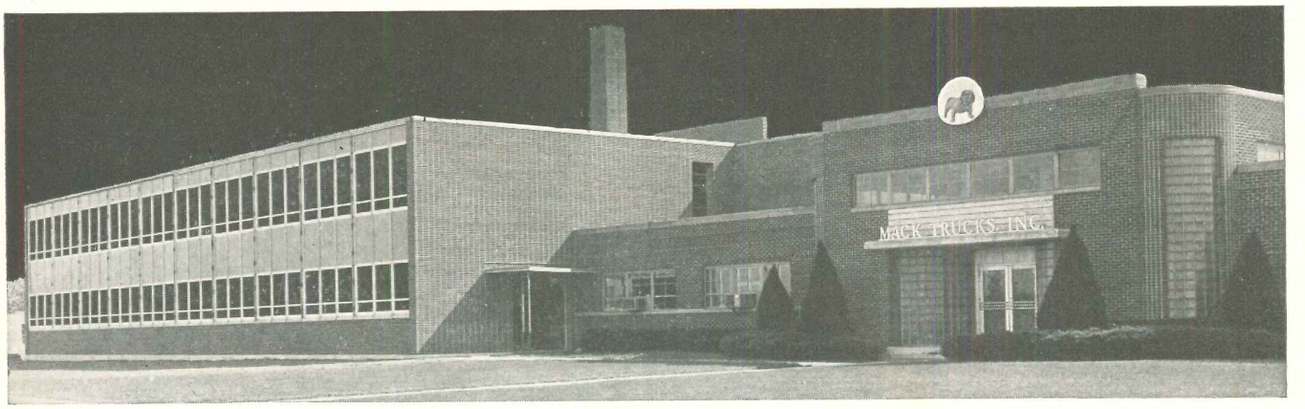
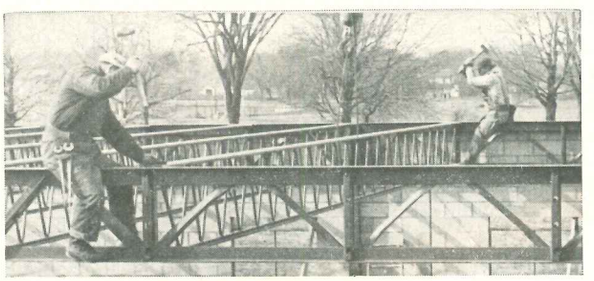


164,500 square foot addition to Mack Truck plant



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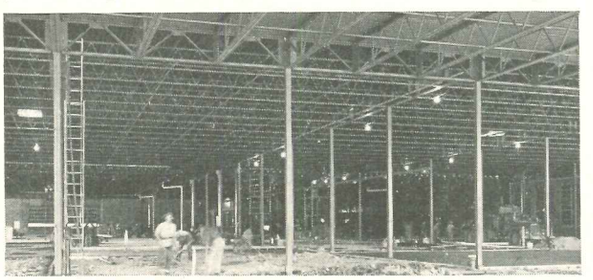

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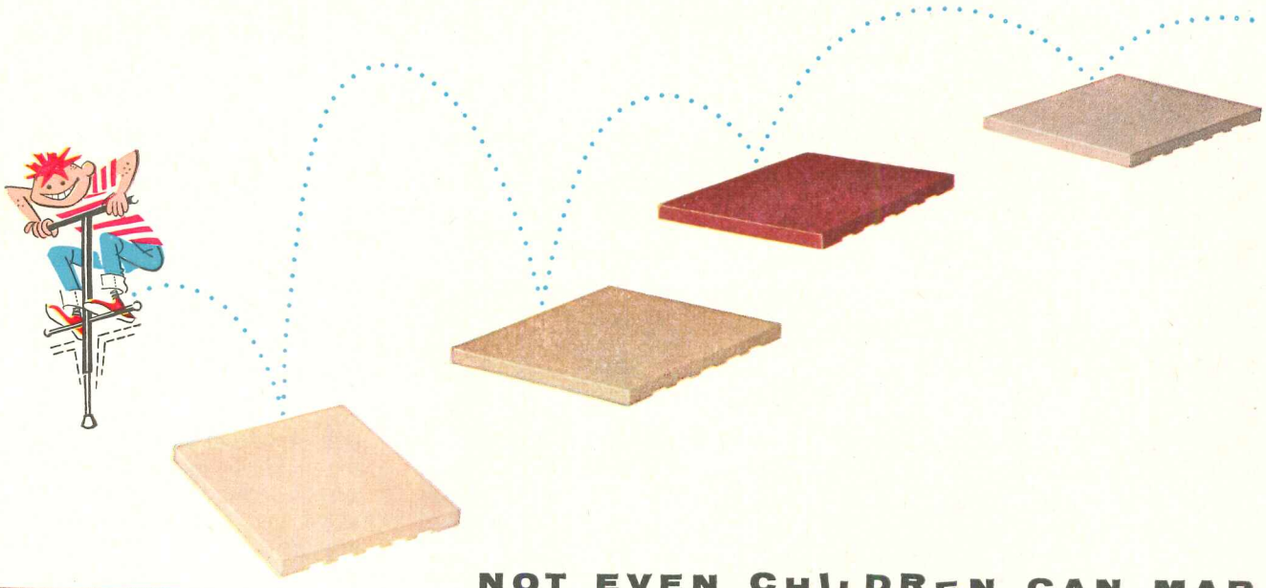

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LIVE BETTER ELECTRICALLY

Required Reading

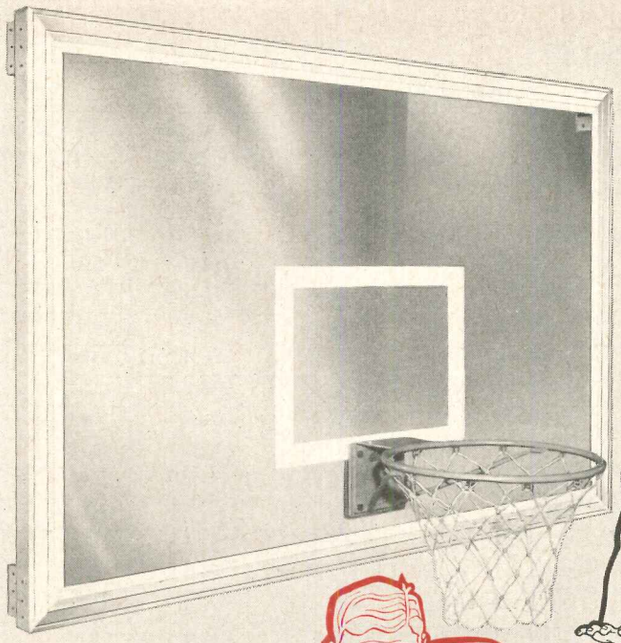
continued from page 60

est painters and sculptors cannot be other than profoundly disturbing." It would seem that the insights of one of today's best writer-philosopher-designers should be disturbing, too. And it is disappointing to realize, part way through *Problems of Design,* that somehow they are not. "It has been my own experience," Nelson writes, "that to begin to approach an awareness of the shapes of our time requires an extraordinary intellectual and emotional effort. Enlargement of his vision is one of the most difficult assignments an individual can assume. . . ." If he assumes the assignment, he can expect to arrive at a series of vantage points, some of them with frightening views. There is the vantage point, for instance, from which is evident the nightmare of endless suburban sprawl enveloping our countryside, or the adjacent vantage point from which William H. Whyte, for instance, in *The Organization Man,* notes the dissolution of individual initiative in the inhabitants of these new suburban stretches. "The destructive aspects of this change," Nelson notes, "might indicate reason for profound pessimism, were it not for the fact that destruction and creation—here we have another example of the contradiction in action—are only two sides of the same coin. One therefore has the free choice of identifying himself with either the decaying or the new and growing elements in the process and then basing his personal philosophy and actions on this choice." This sounds rather like the free choice which used to be available on ballots supplied by Adolf Hitler, with a big square marked "Ja" and a very small square marked "Nein." This is not supposed to disturb our modern man, however. "He accepts his role as a member of a synchronized, cooperative group and one of these days he will arrive at a new comprehension of the many possible constructive relationships between the individual and the group. He is, in other words, a prototype of the non-competitive man about whom the religious teachers have been talking since 2500 B.C. He is one of the meek who will inherit the earth." Come to think of it, this *is* disturbing.

Everything in an age does seem to share in the spirit of the age. Even the columns of text self-consciously arranged on these square pages avoid the exposure of the outer edges, where they would easily meet

continued on page 348

The best your money can buy!



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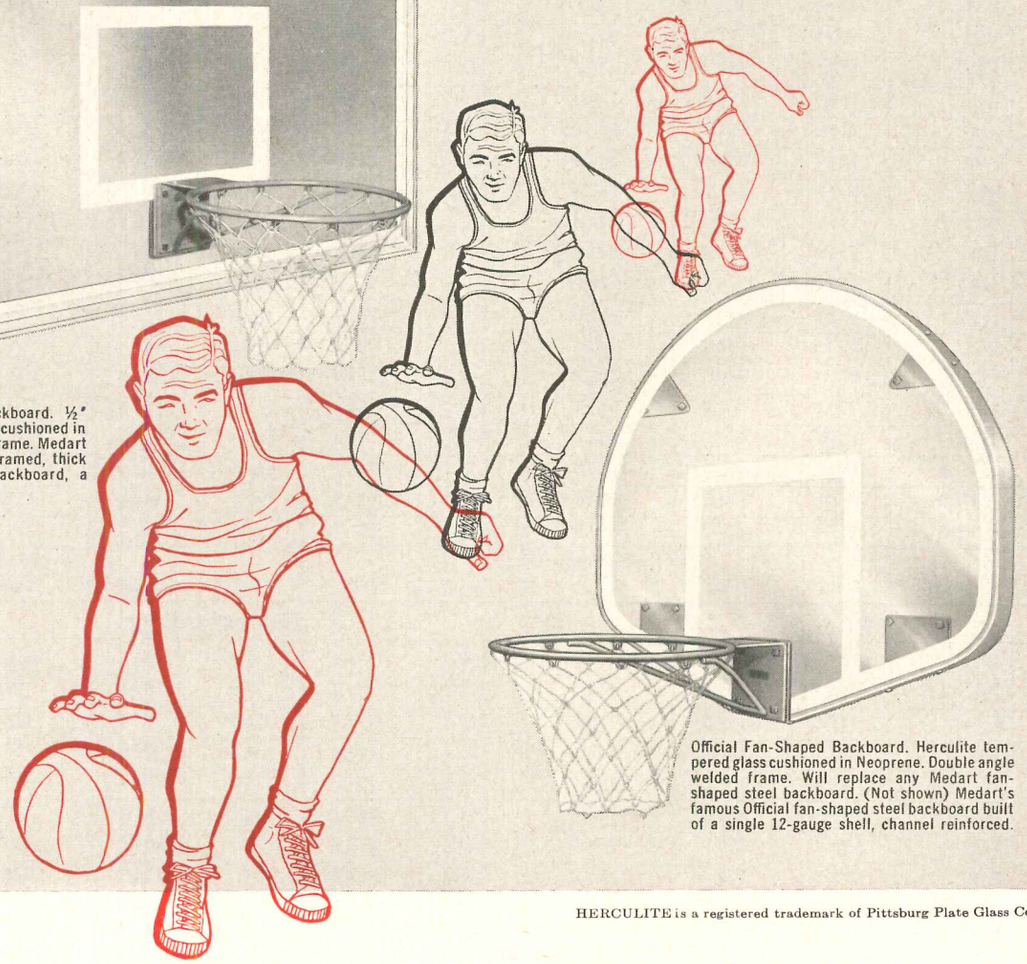

Official Fan-Shaped Backboard. Herculite tempered glass cushioned in Neoprene. Double angle welded frame. Will replace any Medart fan-shaped steel backboard. (Not shown) Medart's famous Official fan-shaped steel backboard built of a single 12-gauge shell, channel reinforced.

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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					ATLANTA				
	RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.		RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.	
PERIOD	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1	158.0
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8
1949	243.7	240.8	242.8	246.6	240.0	189.3	189.9	180.6	180.8	177.5
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0
1951	273.2	271.3	263.7	265.2	262.2	212.8	214.6	204.2	202.8	205.0
1952	278.2	274.8	271.9	274.9	271.8	218.8	221.0	212.8	210.1	214.3
1953	281.3	277.2	281.0	286.0	282.0	223.0	224.6	221.3	221.8	223.0
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	233.5	225.2	225.4
1955	293.1	286.0	300.0	308.3	302.4	225.3	225.1	229.0	231.5	231.8
1956	310.8	302.2	320.1	328.6	324.5	237.2	235.7	241.7	244.4	246.4
1957	318.5	308.3	333.1	345.2	339.8	241.2	239.0	248.7	252.1	254.7
Jan. 1958	321.5	310.1	339.2	352.9	347.8	244.0	240.7	254.1	259.4	260.4
Feb. 1958	320.9	309.3	339.4	353.3	348.1	242.6	238.9	253.8	259.2	260.0
Mar. 1958	320.1	308.5	338.4	352.5	347.3	241.6	237.9	252.5	258.2	259.0
	% increase over 1939					% increase over 1939				
Mar. 1958	159.2	152.0	158.9	164.2	166.9	180.0	186.3	165.5	165.1	173.5

	ST. LOUIS					SAN FRANCISCO				
1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.6	104.9	100.4
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6
1953	263.4	256.4	259.0	267.0	259.2	255.2	257.2	256.6	261.0	259.7
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5	267.2
1955	273.3	266.5	272.2	281.3	276.5	268.0	259.0	275.0	284.4	279.6
1956	288.7	280.3	287.9	299.2	293.3	279.0	270.0	288.9	298.6	295.8
1957	292.0	283.4	295.2	307.1	302.9	286.3	274.4	302.9	315.2	310.7
Jan. 1958	295.1	286.1	301.2	313.3	309.6	288.2	274.4	307.8	321.9	316.5
Feb. 1958	293.7	285.0	300.5	312.8	309.0	287.3	272.8	308.0	322.1	316.8
Mar. 1958	293.3	284.4	300.3	313.8	308.8	286.3	271.8	306.7	321.1	315.8
	% increase over 1939					% increase over 1939				
Mar. 1958	166.2	165.8	153.0	161.9	159.5	171.1	173.7	161.2	163.4	171.1

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.

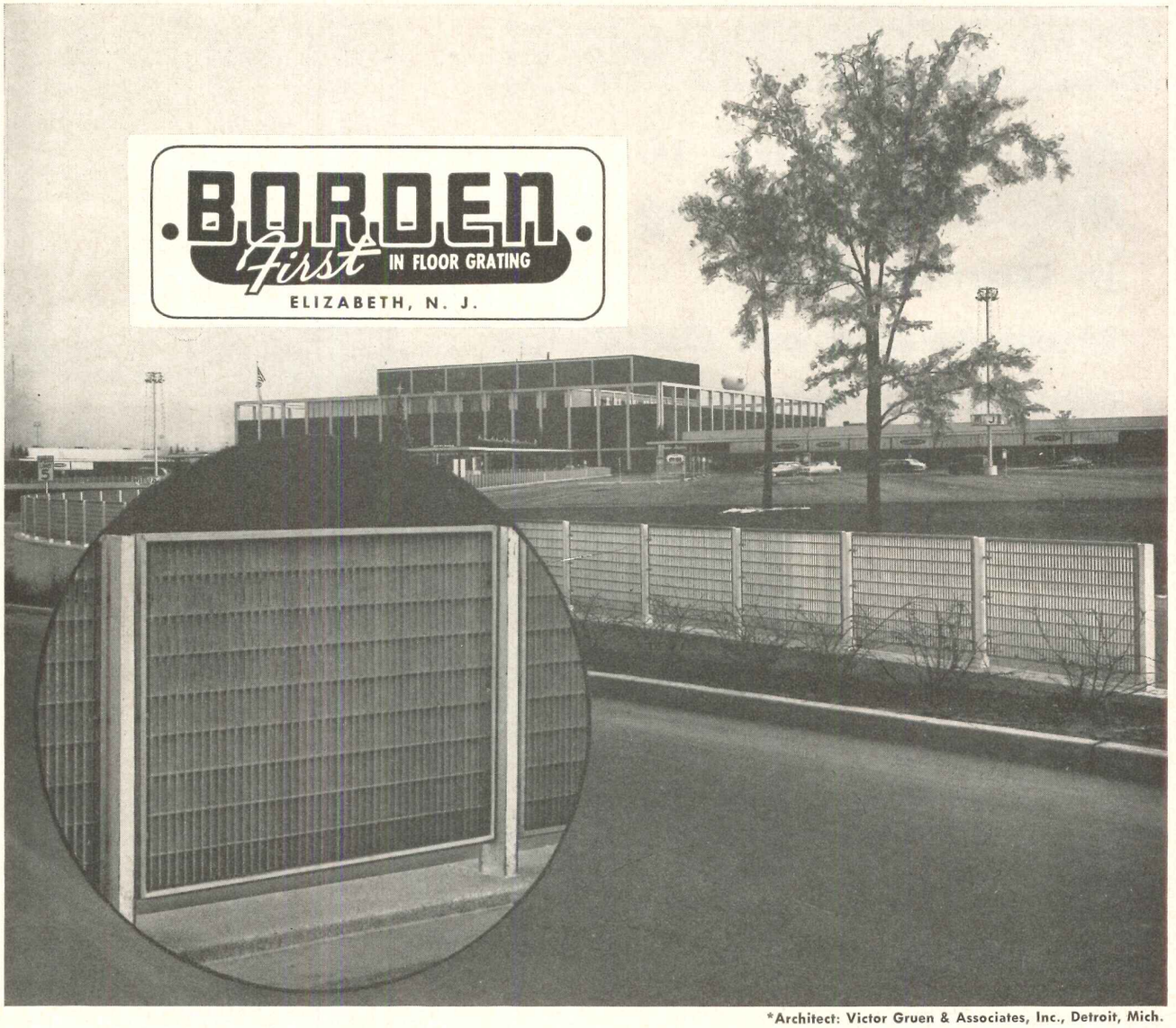
$$\frac{110-95}{95} = 0.158$$

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.



*Architect: Victor Gruen & Associates, Inc., Detroit, Mich.

NEW IDEA FOR FENCES — MAINTENANCE-FREE ALUMINUM GRATING

As shown above, Borden's pressure-locked Aluminum Grating has been used as fencing for the new J. L. Hudson Northland Shopping Center in Detroit, Mich.

The light weight aluminum grating forms a child-proof and maintenance-free fence. The alloys used were selected for their corrosive resistance and high strength.

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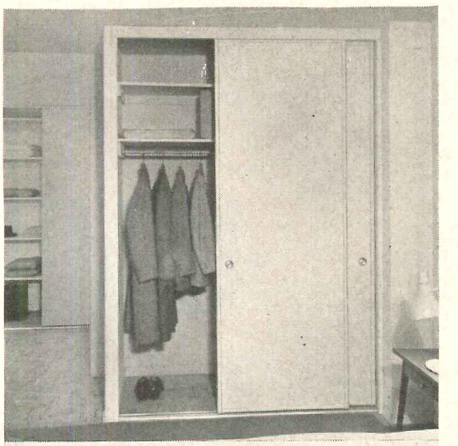
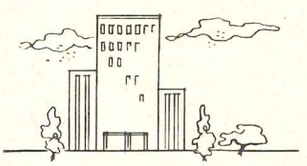
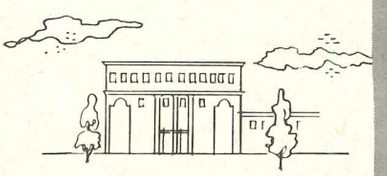
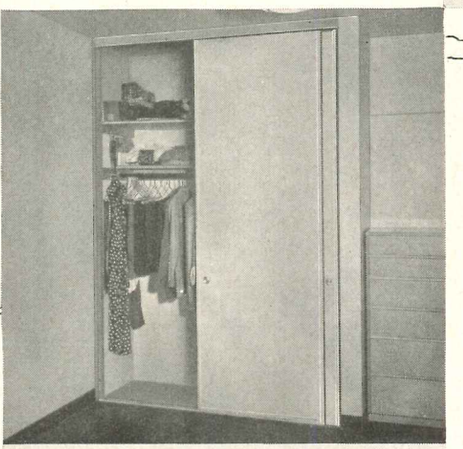


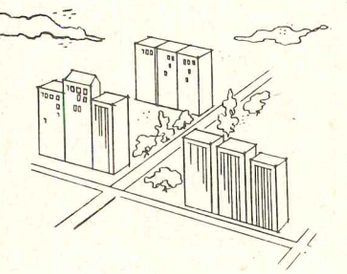
Here GLIDE-ALL Sliding Doors provide decorative panels for the generous storage areas in the bedrooms and halls of this apartment—one of hundreds in the Lake Meadows Multi-apartment project in Chicago. Arichitects: Skidmore Owings & Merrill. Contractors: Turner Construction Co.

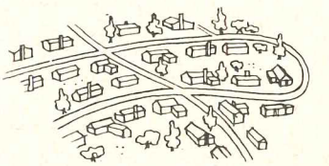






A compact wardrobe unit, one of hundreds in Butterfield Hall on the campus of Michigan State University. This is a typical example of GLIDE-ALL Door installations in many University dormitories across the country. Architect: Ralph R. Calder, Detroit, Michigan.





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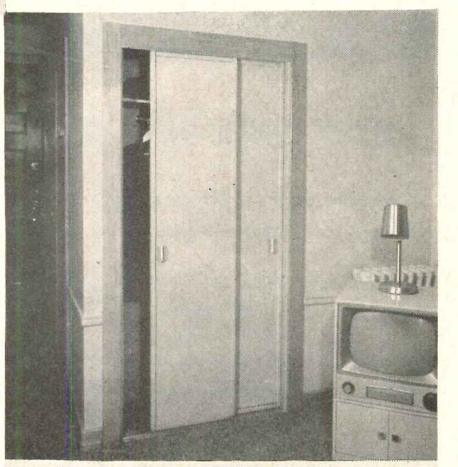

Wherever maximum closet space in a confined area is desireable, GLIDE-ALL Doors make it practical and economical—like in this example of a remodelled guest room in the Sheraton-Lincoln Hotel, Indianapolis, Indiana.

Get the complete details . . . see Sweets Files or write Plant nearest you.

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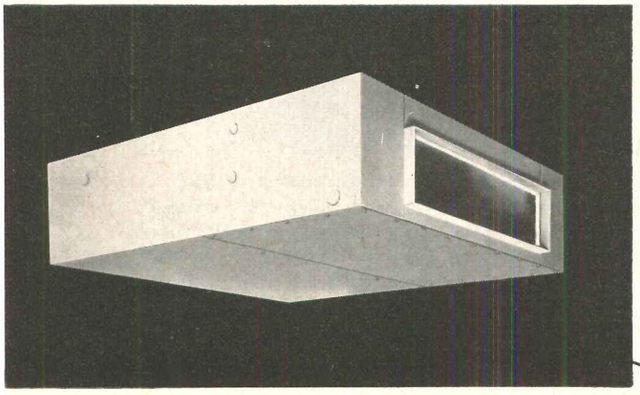
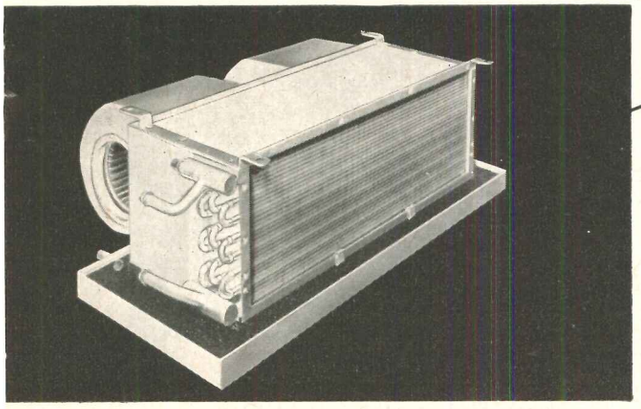
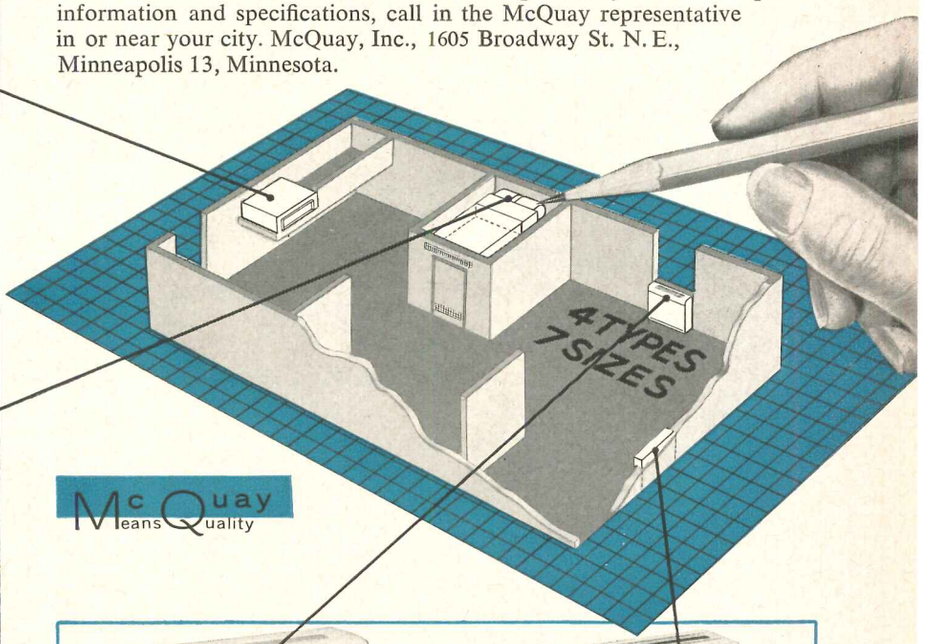
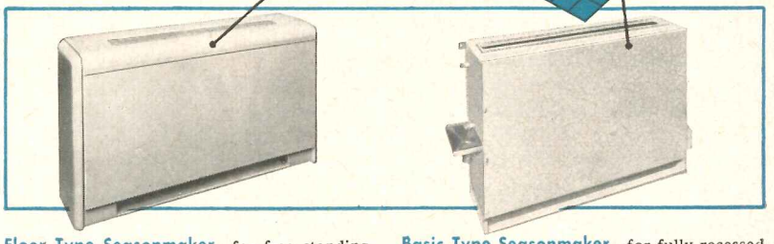


Ceiling Type Seasonmaker—for suspended mounting. 7 sizes, 200 to 2,000 c.f.m., ½ to 5-ton nominal cooling capacity. Thermally and acoustically insulated.



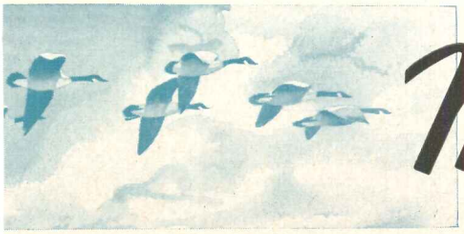
Hideaway Type Seasonmaker — for concealed, suspended mounting in closets, attics, or furred spaces. 7 sizes, 200 to 2,000 c.f.m., ½ to 5-ton nominal cooling capacity. Insulated drain pan.





Floor Type Seasonmaker—for free standing floor mounting. 4 sizes, 200 to 600 c.f.m., ½ to 2-ton nominal cooling capacity. Thermally and acoustically insulated. Choice of 3 air discharge grilles.

Basic Type Seasonmaker—for fully recessed built-in wall installations. 4 sizes, 200 to 600 c.f.m., ½ to 2-ton nominal cooling capacity. Thermally and acoustically insulated.



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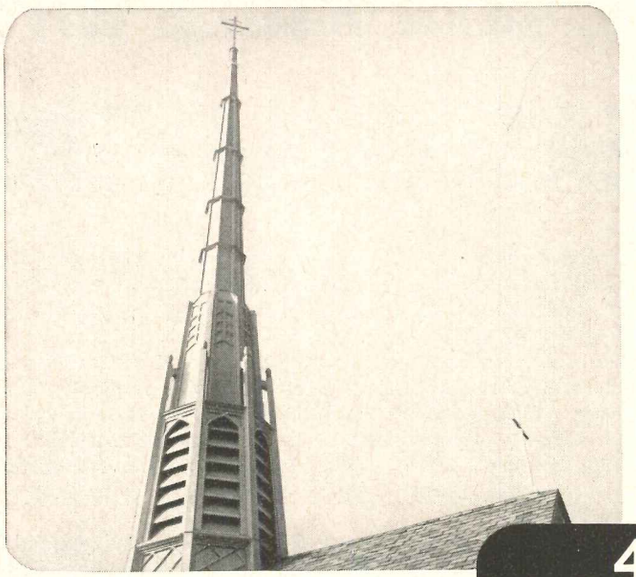

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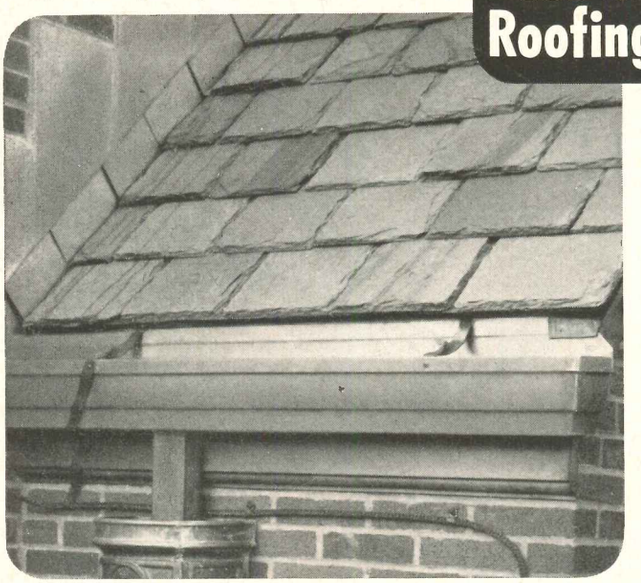
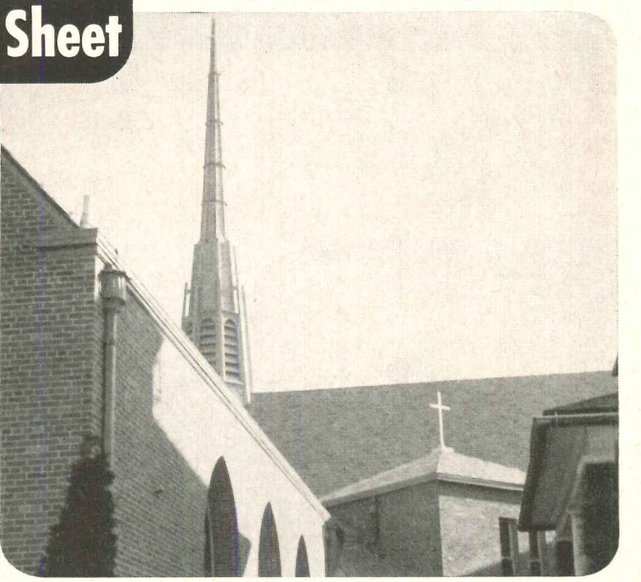
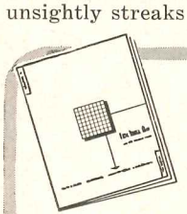


3 Keeps facades free of streaking . . .
Notice excellent condition of masonry and bricks next to Monel alloy coping, gutters, trim and downspout. Thanks to the corrosion resistance of Monel alloy, facades stay free of unsightly streaks despite years of exposure to the elements.



4 Looks good for the life of the building . . .
Here, you see how Monel sheet enhances the integrated design of steeple, roofing and accessories, highlights rest of church. Architect: Beatty & Berlenbach, Brooklyn, N. Y. Contractor: John Schneider Roofing Contractors, Inc., Brooklyn, N. Y.



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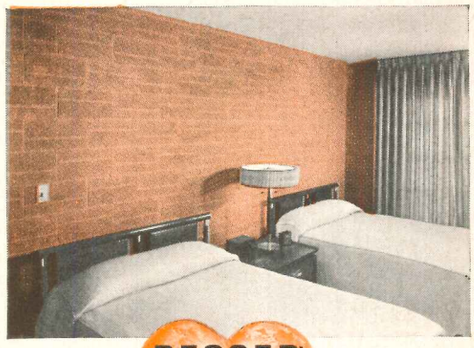

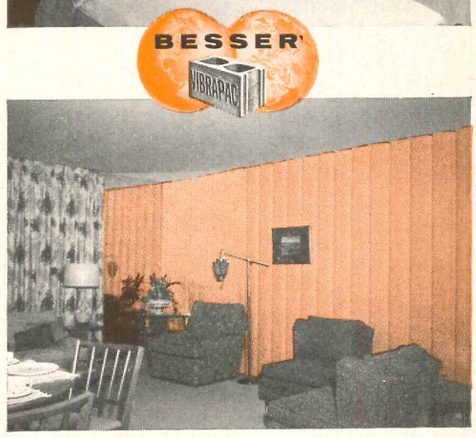

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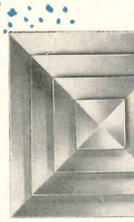

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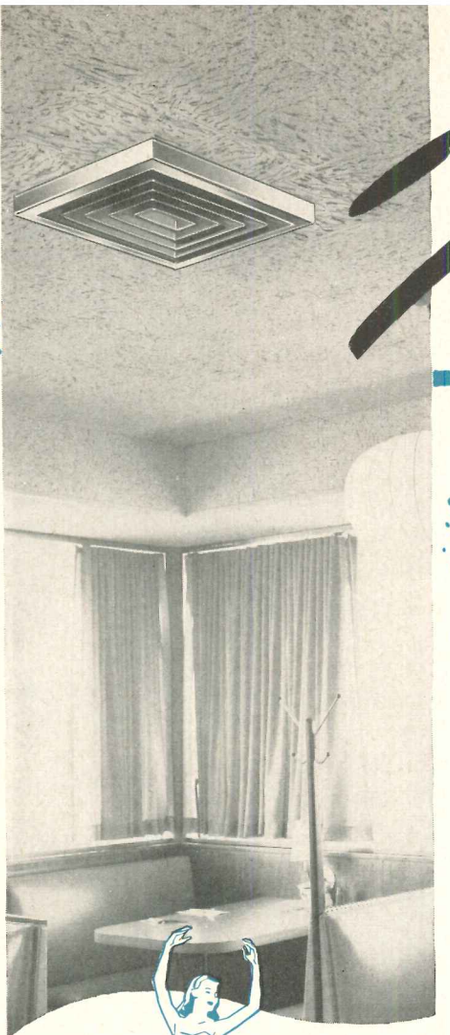

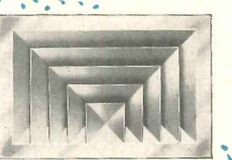

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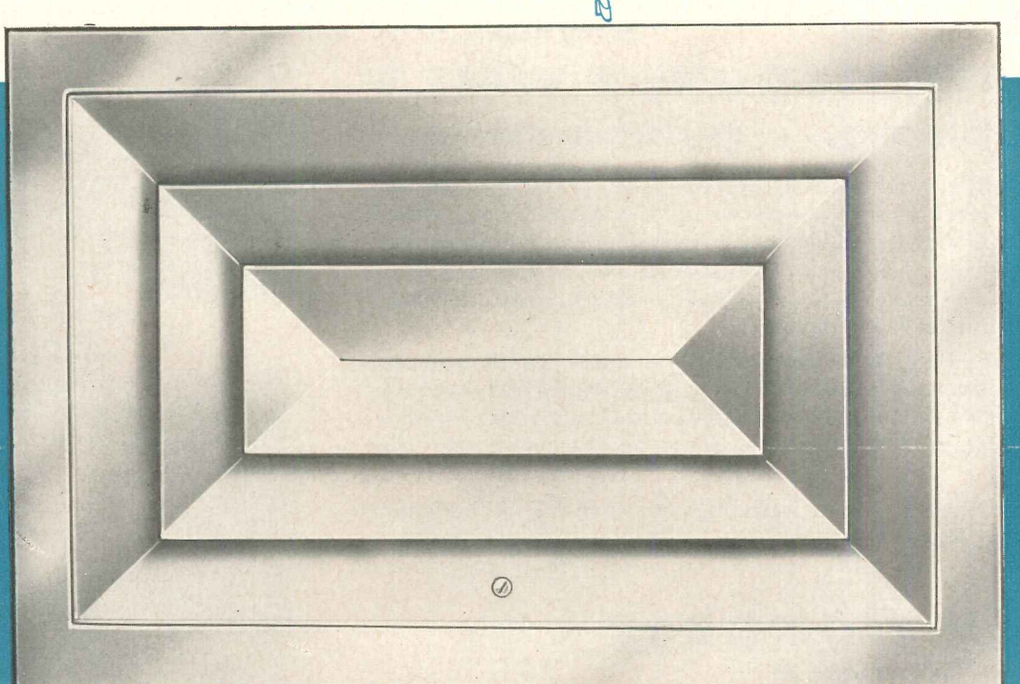

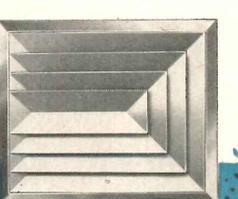

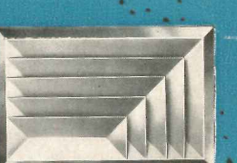

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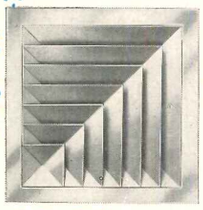

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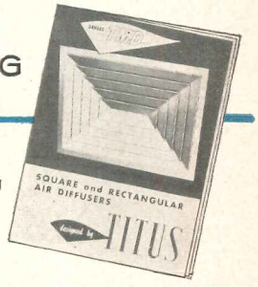

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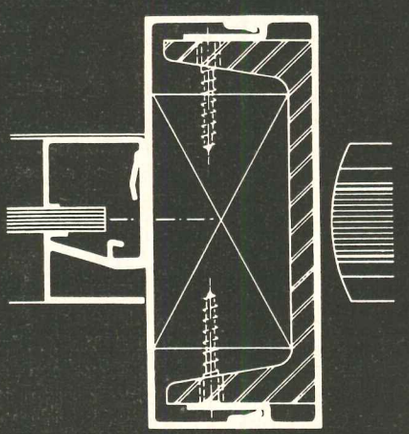
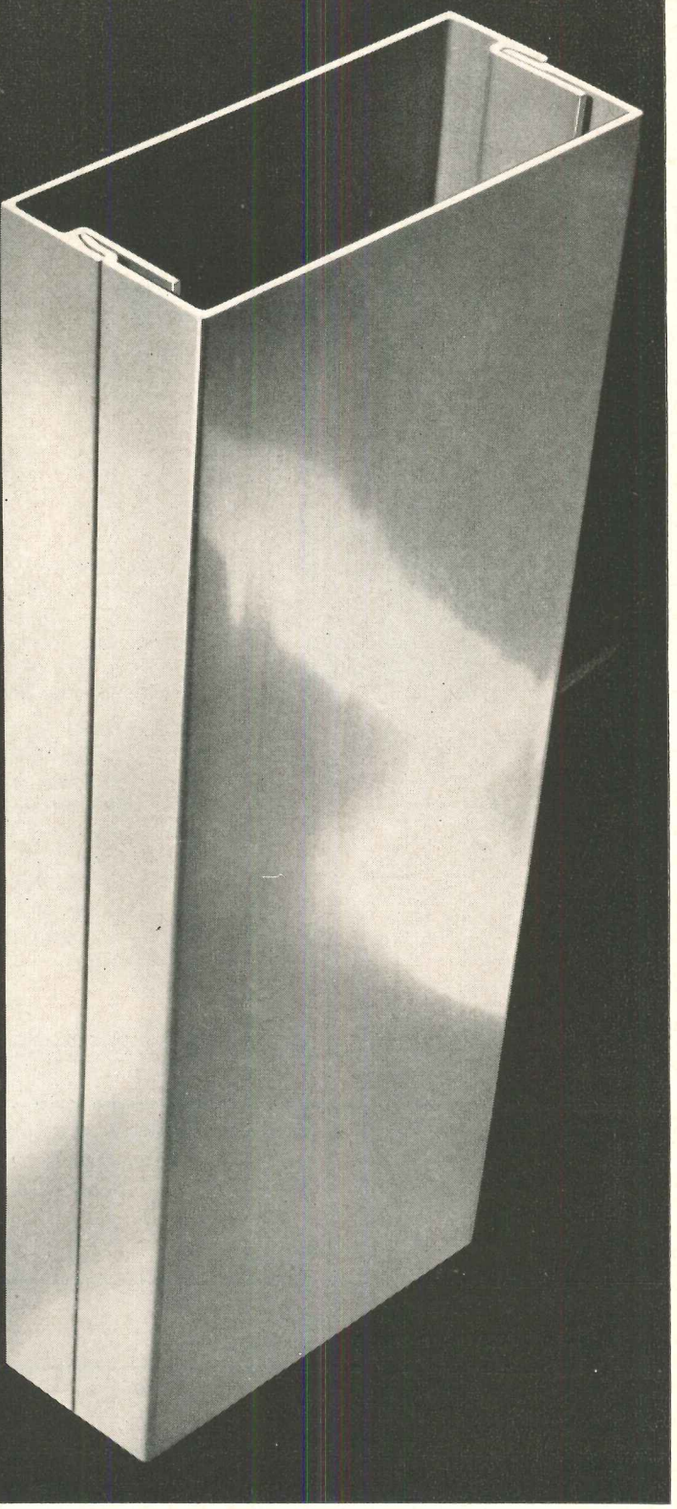
Here is grace, strength and beauty—combined with care to add genuine quality to your store front design. Every metal product in the PITTCO line is a distinctive form with an effective function. For details, see your PITTCO Store Front Representative, or refer to Sweet's Architectural File—Section 21.





75th ANNIVERSARY 1883–1958

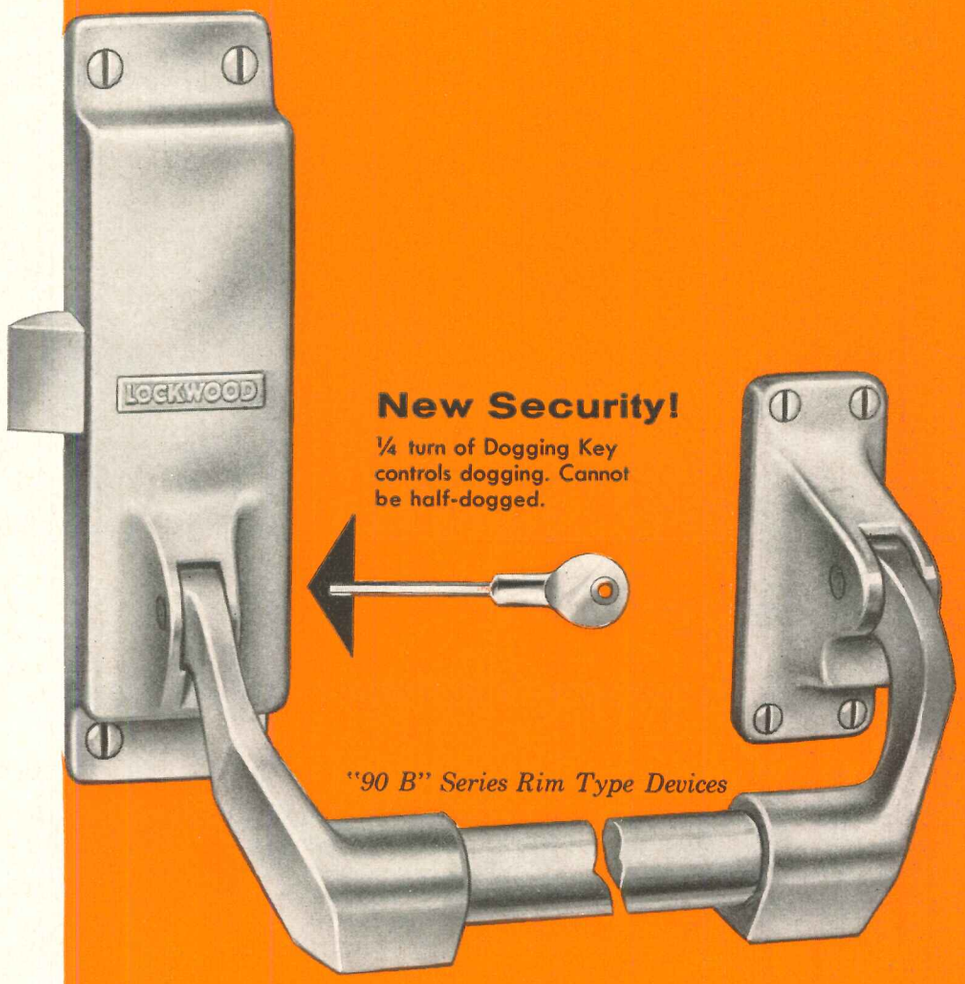
SYMBOL OF SERVICE FOR SEVENTY-FIVE YEARS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

FIRST JAMB-PROOF devices with FULL SECURITY

New Safety!
LOCKWOOD
LOCK 'N ROLL LATCH
actually "floats" with any light touch on crossbar



"90 B" Series Rim Type Devices

Safe exit . . . full security assured by

LOCKWOOD

Lockwood offers complete, new line of Rim, Mortise, Vertical and Concealed Devices, featuring . . .

- Over 20 different functions
- Neat, smooth case design: uniform dimensions and design
- Drop-forged arms for extra strength
- Crossbar adjusts to variations in door width — no rivets, no drilling
- New, streamlined outside trim
- Simplified installation
- Roller strikes, hold-back features available

While door is closed, projection of the new LOCK 'N ROLL LATCH is rigidly retained when crossbar is in its normal, fully raised position. Any light touch on crossbar immediately withdraws all support and the multi-pivoted latch rolls freely into the case.

From outside, when door is closed, the latch is deadlocked and inaccessible to end pressure.

Write for brochure illustrating in detail the many exclusive features of Lockwood panic devices.

LOCKWOOD HARDWARE MFG. CO., Fitchburg, Mass.

HAVANA RIVIERA...

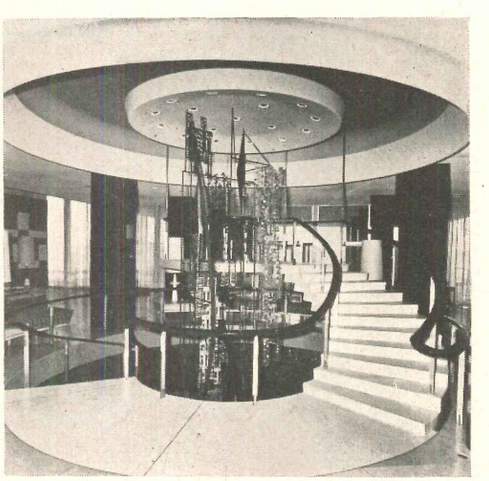
grace and permanency through extensive use of Penmetal products

One of the most imposing buildings on Havana's famed Malecon, the new Havana Riviera Hotel retains an air of elegance yet symbolizes a new and growing city.

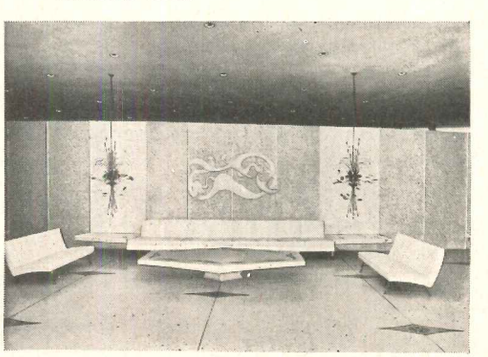
This unusual "Y" shaped structure has excellence of construction in keeping with its luxury. Interior partitions are built of Penmetal studs, track, base and Studlock clips for attachment of gypsum lath. Ceilings, which incorporate many sculptured forms, used metal lath . . . the strongest, safest plaster base possible.

To protect against corrosion, galvanized metal lath and cornerite were chosen. What's more, all corner bead is made of zinc of a special Penmetal analysis.

Havana Riviera is typical of many fine buildings, the world over, in specifying "Penmetal throughout." Why not do the same? For further details, send for a copy of *new* 28-page catalog 624-L.



Photos of interior illustrate how ceilings of Penmetal lath readily take any attractive form.



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General Sales Office: **40 Central Street, Boston 9, Mass.**

Plant: Parkersburg, W. Va.

District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, St. Louis, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

METAL MARK Penmetal 1869 OF QUALITY

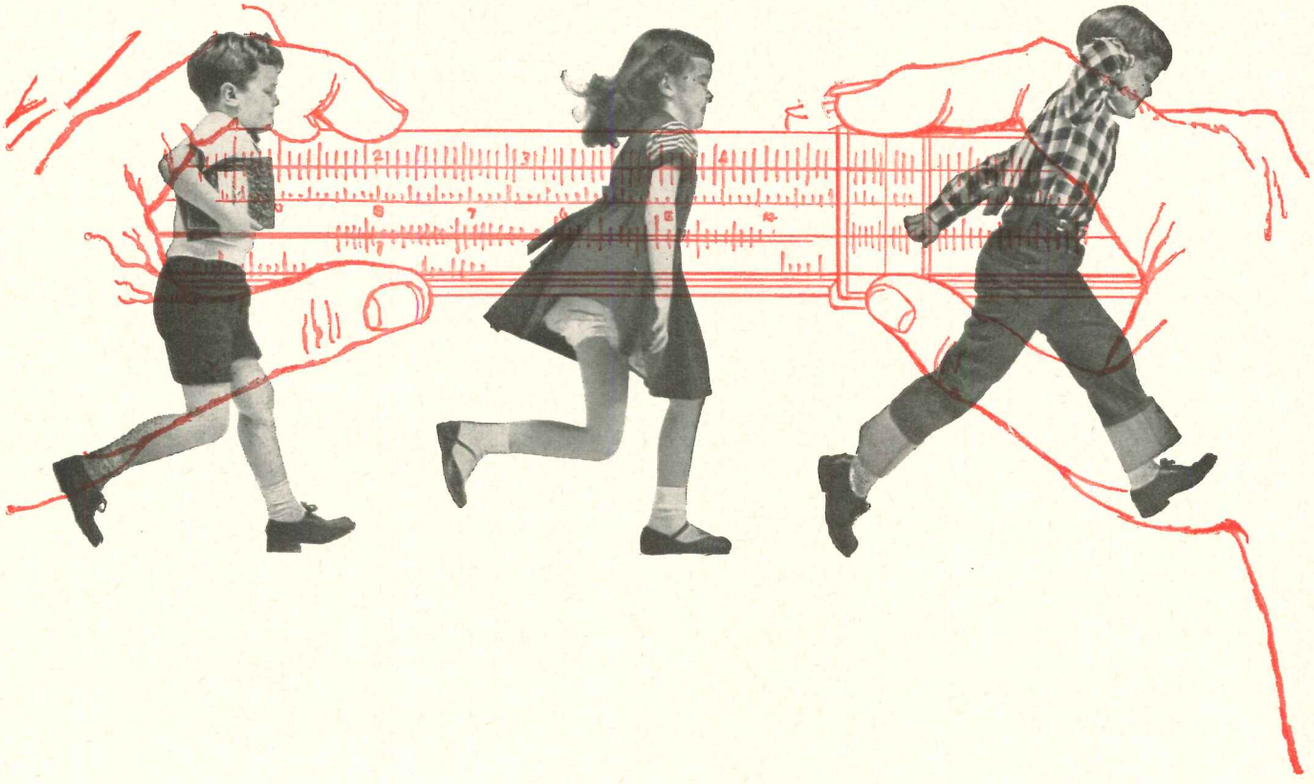
a name to remember

HAVANA RIVIERA:

Architects, Polevitsky, Johnson & Associates, Miami, Florida

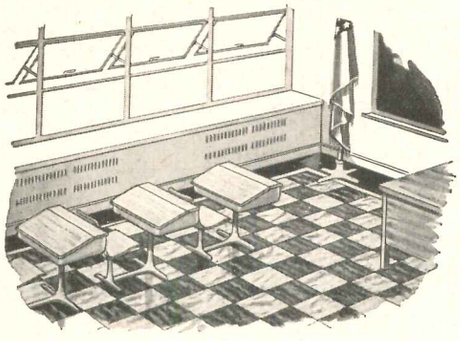
General Contractors, Feldman Building Corporation, Miami Beach, Florida

PM-176



what's the R. P. M. of a schoolboy?

A child is a whirlwind on two feet moving in a manner that's incalculable...and constant. It takes flooring with stamina . . . colors with staying power . . . to measure up to his activities. MATICO qualifies on every count . . . stands up to heaviest traffic year after year. MATICO colors are styled to camouflage soil, to stay bright and fresh, to clean easily and resist signs of wear. Hindsight proves your foresight, when you specify economical MATICO for important installations.



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Please send me free samples and full details about MATICO Tile Flooring.

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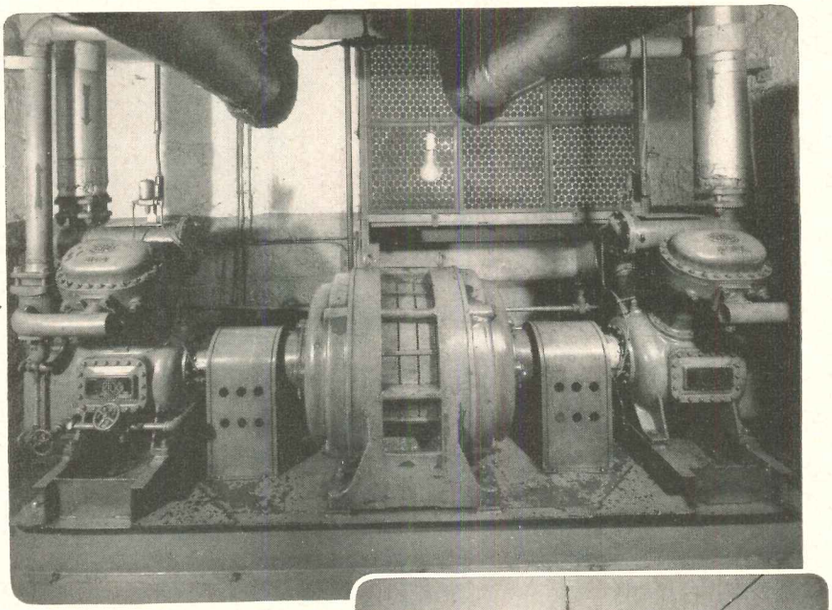
17 YEARS



TRADE FRICK MARK®

"ECLIPSE" COMPRESSORS AIR CONDITION TVA OFFICES

TVA OFFICES AT KNOXVILLE, TENN.

TENNESSEE VALLEY AUTHORITY
KNOXVILLE, TENNESSEE

Frick Company
Waynesboro
Pennsylvania

Gentlemen:

We have a Frick central air-conditioning system in our Old Post Office Building which was installed by your engineers in 1940. It consists of four compressors and two evaporative condensers.

As this equipment has been in continuous use throughout each year for seventeen years, we feel that it is time for a thorough check, and repairing or replacing of necessary parts.

To get a complete and competent check, and proper recommendations, we would like to have one of your staff engineers or field representatives examine our equipment and advise on necessary corrections; also to furnish any cost estimates.

If any of your factory personnel is planning on being in this area in the near future, we would appreciate their stopping here and making the inspection. In the event they do, would you advise us as to the date.

Very truly yours,

A. L. Boyd

A. L. Boyd
Eastern District Manager
Office Service Branch

Frick equipment is world renowned for being better-built, more economical, and giving a lifetime of dependable service.

What are your COOLING needs? If you want cool air, cold water, ice, extremely low temperatures, or refrigeration for quick freezing and processing—in any commercial or industrial sizes—call in a Frick representative at the planning stage for recommendations and estimates. They have the specialized knowledge and equipment to solve your cooling problems.

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA., U. S. A.

THIS WATER CLOSET

does not disturb your peace of mind

The famous Case "kitten quiet" time tested Non-Overflow One-Piece* water closet with the whispering flush . . . PRODUCED IN 48 DECORATOR COLORS AND SPARKLING BLACK AND WHITE. Case manufactures colored fixtures which correspond in color to the colored fixtures produced by leading complete-line manufacturers.

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BIGGER and BETTER BATHROOMS
Case
CASE MANUFACTURING CORP., BUFFALO 3, N. Y.

Ask your Case wholesaler or write:

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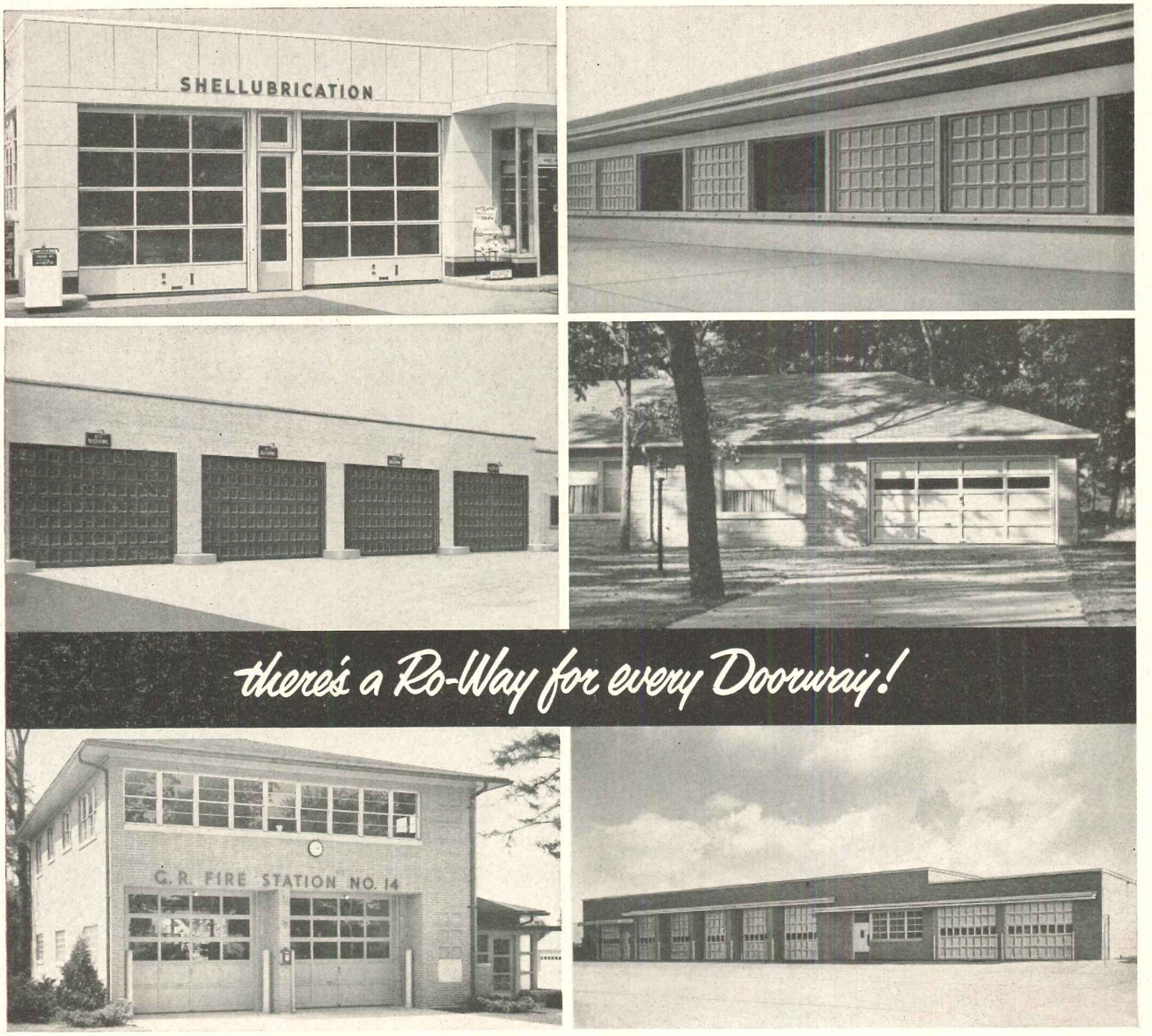
33 MAIN STREET, BUFFALO 3, NEW YORK



there's a Ro-Way for every Doorway!

Warehouse, service station, firehouse, factory, residential garage—you name the building and you'll find a handsome, rugged Ro-Way overhead type door to fit it.

Ro-Way doors are a leading choice of style-conscious, utility-minded architects. And no wonder. They're designed for smooth, easy, trouble-free operation, yet with an eye for attractive appearance as well . . . they're engineer-built of top quality materials . . . they're available in a wide range of styles and sizes.

And years of service are built into every Ro-Way door. Seasoned west coast woods. Masonite® Dorlux® panels. Taper-Tite track and Seal-A-Matic hinges for snug closure and instant opening. Ball bearing rollers for quiet operation. Big, Power-Metered springs tensioned to the weight of each door. Heavy duty hardware both Parkerized and painted, or galvanized, to prevent rust and corrosion. Rugged electric operators for fast, efficient dependable service.

So doesn't it make sense to specify Ro-Way overhead type doors for all your commercial, industrial and residential buildings? They're available in standard and special sizes to meet any design problem.

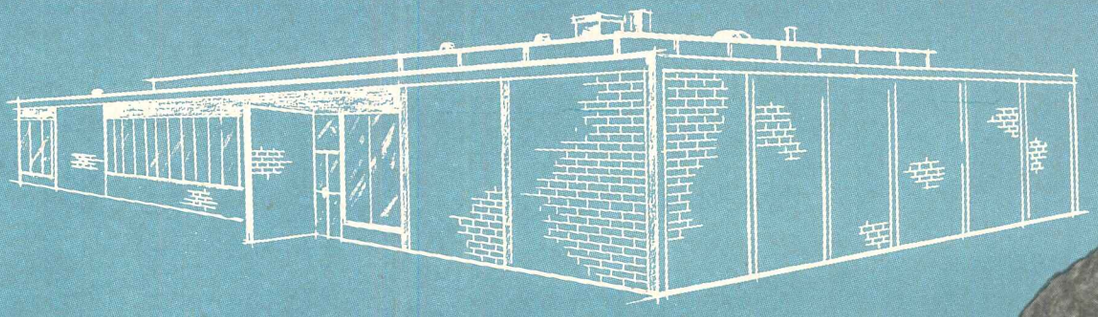
COMMERCIAL • INDUSTRIAL • RESIDENTIAL

SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE OR WRITE FOR COPY

Find Your Nearest Distributor In The 'Yellow Pages'

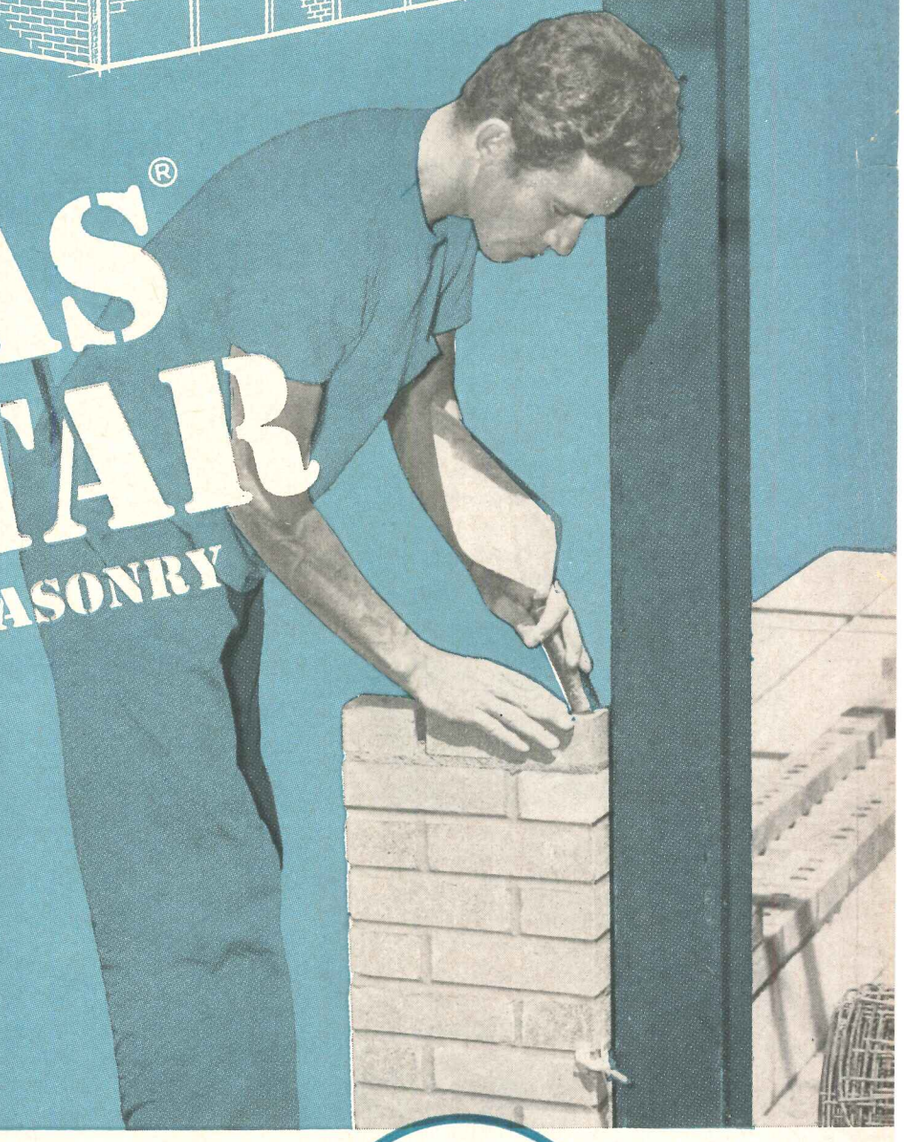
Rō-Way OVERHEAD TYPE DOORS

ROWE MANUFACTURING COMPANY 1298 Holton Street • Galesburg, Illinois



ATLAS® MORTAR

IMPROVES MASONRY



PROJECT: Office and warehouse,
Reinhard Bros. Co.
St. Louis Park, Minn.

ARCHITECT: David Griswold

MASONRY CONTRACTOR: Kraus-Anderson, Inc.
Minneapolis, Minn.

"... provides a more uniform, workable mortar,"

says R. J. Randolph, Mason Foreman
Kraus-Anderson, Inc.
Minneapolis, Minn.

- To produce serviceable, watertight masonry walls, the mortar mix must be plastic—and have adequate "board life."
- Masons on the job consistently confirm that ATLAS MORTAR cement *does retain* its workability—and gives higher yields.
- Quality-controlled manufacture of ATLAS MORTAR cement maintains high product standards, assuring uniform performance and appearance on every project.
  (*Complies with ASTM and Federal Specifications.*)

Write for your copy of "Build Better Masonry," Universal Atlas, 100 Park Avenue, New York 17, N. Y.

M-69

UNIVERSAL ATLAS CEMENTS

Universal Atlas Cement Company

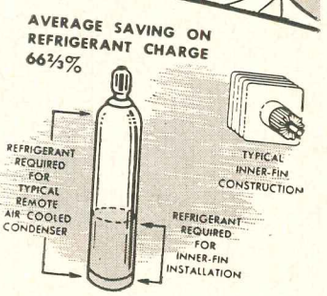
Subsidiary of United States Steel

USS TRADE MARK

OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*

What's NEW in Remote Air Cooled Condensers? *This*

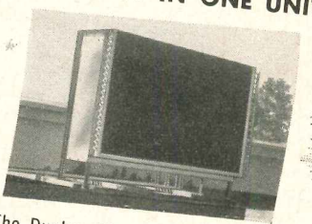
A REMOTE AIR COOLED CONDENSER THAT REQUIRES ONLY 1/3 OF THE REFRIGERANT CHARGE USED BY COMPETITIVE MODELS

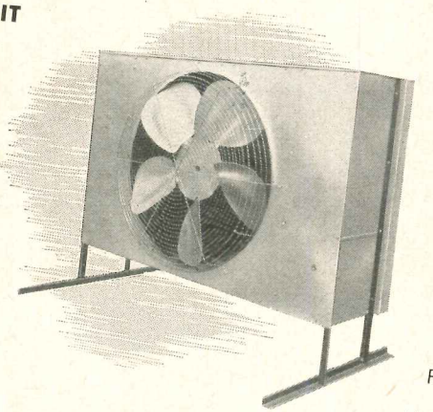


A RECENT 300 TON JOB SHOWED SAVINGS OF 1800 LBS. OF REFRIGERANT THROUGH USE OF THESE UNITS.

Yes, the Dunham-Bush 'BC' Remote Air Cooled Condensers with famous Inner-Fin construction mean savings of 67% in refrigerant charge. Additionally, they mean smaller receivers and minimum loss if the system charge is lost. In these expertly planned units, the exclusive Inner-Fin construction diminishes the internal volume of the coil while increasing the heat transfer coefficient. And higher heat transfer factors permit design of more compact units, saving valuable space in installation.

AS MUCH AS 53.5 TON CAPACITY IN ONE UNIT





The Dunham-Bush line of 'BC' Remote Air Cooled Condensers includes models in 13 sizes with capacities ranging from 2.2 tons to 53.5 tons, making possible use of a single unit for practically any job !

FOR ALL 'ROUND PROTECTION

Plastic vinyl paint is applied to all ferrous parts of unit casing and structure in three stages:
PRIMER—a polyvinyl plastic combined with zinc chromate.
INTERMEDIATE—a vinyl resin with high lead content.
FINISH—hard grey, all weather resistant plastic vinyl.
All interior surfaces of the unit casing are given an extra finish coat of plastic vinyl.

AND FOR MAINTAINING SATISFACTORY HEAD PRESSURES

at all ambients, Dunham-Bush engineers offer the 'PS' Pressure Stabilizer.
'PS' units can be mounted indoors near the compressor, facilitating the making of necessary adjustments. They are thoroughly factory tested and assembled, and require connection only to the refrigerant liquid and discharge lines. No extra piping or special loops required. Regulating valve gives smooth pressure control and eliminates wide pressure fluctuations inherent in other head control systems.

The name Dunham-Bush is synonymous with efficient, satisfactory service for all types of pressure and temperature conditions. For technical assistance, our engineering staff is at your service. For more information, contact us.

Dunham-Bush, Inc.

WEST HARTFORD 10 • CONNECTICUT • U. S. A.

DUNHAM-BUSH

WEST HARTFORD, CONNECTICUT • MICHIGAN CITY, INDIANA • MARSHALLTOWN, IOWA • RIVERSIDE, CALIFORNIA • UTICA, NEW YORK

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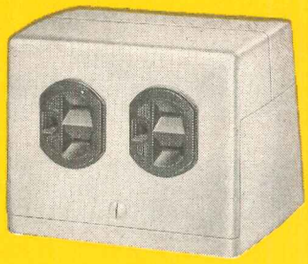
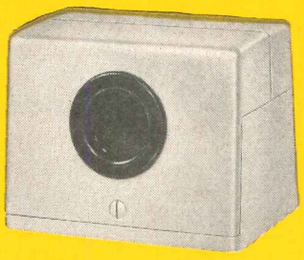
DUNHAM-BUSH, LTD. LONDON, ENGLAND

BRUNNER CORPORATION (CANADA) LTD. PORT HOPE, ONTARIO



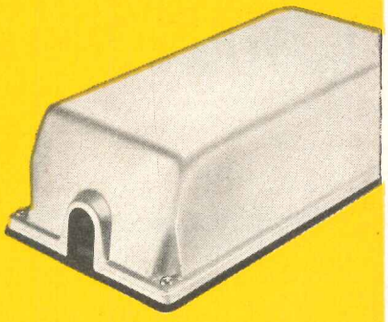
STANDARD POWER FITTING

Will accommodate all known receptacles up to 50 amps



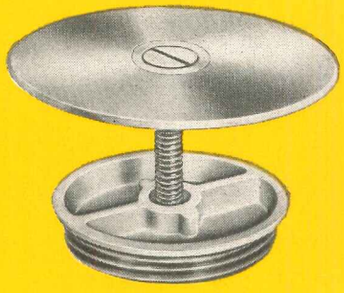
CUSTOM TELEPHONE FITTING

Will accommodate from one to three Western Electric 44-A terminal blocks

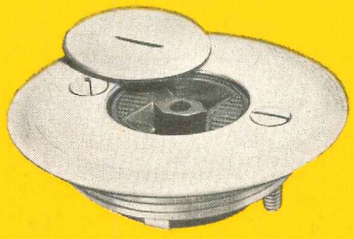


MULTIPLE TELEPHONE SERVICE FITTING

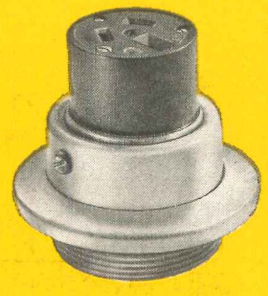
Will accommodate up to six Western Electric 44-A terminal blocks and one buzzer



ABANDONED OUTLET PLATE



FLUSH FLOOR SERVICE FITTING



STANDPIPE FITTING

THE BEST YOU CAN BUY!

SPANG SERVICE FITTINGS

NEWEST DESIGNS

All fittings are of engineered design to incorporate latest styling and easy-working features.

FAST INSTALLATION EASY ADJUSTMENT

Easy to wire. Extra-roomy design provides ample working area and space for excess wiring. Fittings adjust quickly into place.

COMPLETE LINE

There's a SPANG Service Fitting for every type outlet. Your choice of high-lustre brass or brushed aluminum.

INTERCHANGEABLE

SPANG Fittings are easily adapted to other underfloor duct systems. Exclusive SPANG Adapter assures fast installations.

LONG SERVICE LIFE

Once installed, SPANG Fittings can't twist or turn. Exclusive neoprene gasket seal makes fittings watertight.

MAKE SPANG YOUR FIRST CHOICE!

SPANG Standard Underfloor Duct and SPANG Industrial Duct for use with conventional slab construction, and SPANG Headerduct for use in cellular floor construction offer many time-saving advantages. Available through SPANG Distributors all across the country. Write for complete information.

SPANG-CHALFANT

DIVISION OF THE NATIONAL SUPPLY COMPANY

General Sales Office: 2 Gateway Center, Pittsburgh 30, Pa.

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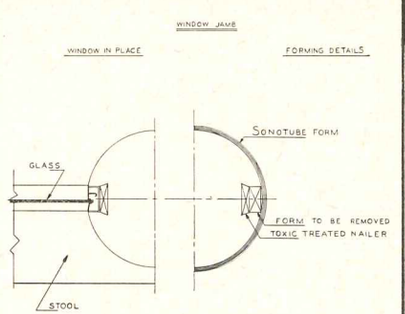
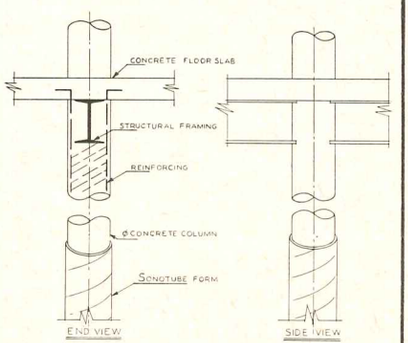
Combine pleasing interiors with practical construction

DETAILS
(not to scale)
Typical Window Jamb at Round Concrete Column



Typical Detail of Round Concrete Column with Structural Framing and Reinforced Concrete Slab.



. . . specify round columns of concrete formed with

SONOCO *Sonotube*® FIBRE FORMS

It's easy to turn a structural function into an architectural feature when you design round concrete columns into your buildings!

And when you specify Sonoco Sonotube Fibre Forms as formwork for the columns you are inviting lower bids from contractors.

Sonoco Sonotube Fibre Forms save time, money and labor . . . specify them for your next job.

Available in sizes from 2" to 48" I.D. in any length which can be shipped. Can be supplied in specified lengths or sawed to requirements on the job. Sonoco's "A" coated Sonotube is for finished columns.

See our catalog in Sweets

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
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SONOCO
Construction Products
SONOCO PRODUCTS COMPANY

2847

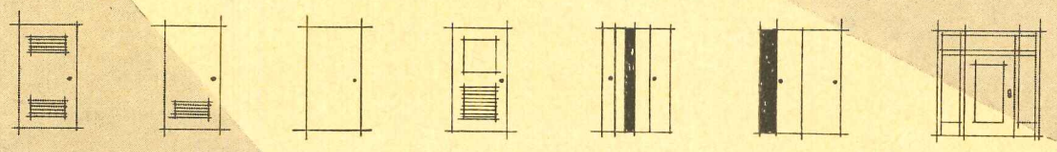
Amweld® KEYNOTES A WELL GROOMED OFFICE

ITALIC STYLING BY GF STUDIOS

The clean, modern design of Amweld steel doors and frames makes the most of entry openings—is flattering to any room. From America's most versatile line, architects can select door types and styles to suit the varied requirements of commercial, institutional and residential building.

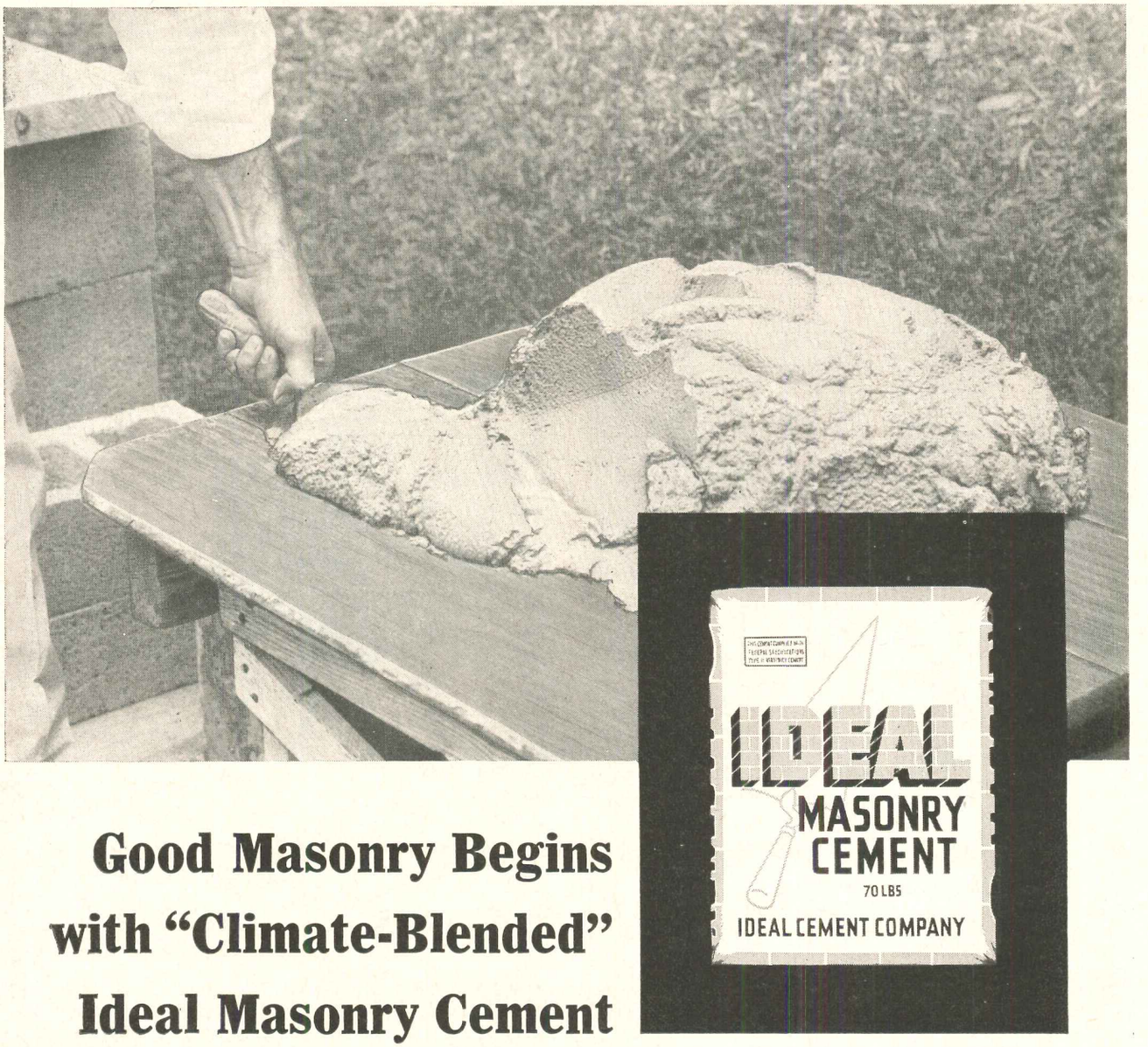
Doors and frames are smartly styled and sturdily built. Mass produced, they provide custom quality and appearance at standard door prices. For commercial buildings, schools, and similar high-frequency installations, specify Amweld's new Commercial Line. For other applications, Amweld's Commodity Line offers a variety of 1-⅜" and 1-¾" door and frame combinations. Matching folding and sliding closet door units are also available.

For complete information on Amweld's new line of Commercial Doors and Frames, Write for new catalog today.



AMWELD® BUILDING PRODUCTS

A Division of
The American Welding & Manufacturing Co.
340 Plant Street Niles, Ohio



Good Masonry Begins with "Climate-Blended" Ideal Masonry Cement

You can be assured, whether it is hot and dry or cool and moist, that "Climate-Blended" Ideal Masonry Cement will perform beautifully for every masonry job.

"Climate-Blended" Ideal Masonry Cement is manufactured by an Ideal plant right in the area where it will be used—is blended to provide maximum plasticity, strength, water repellence, and yield regardless of climate or weather conditions.

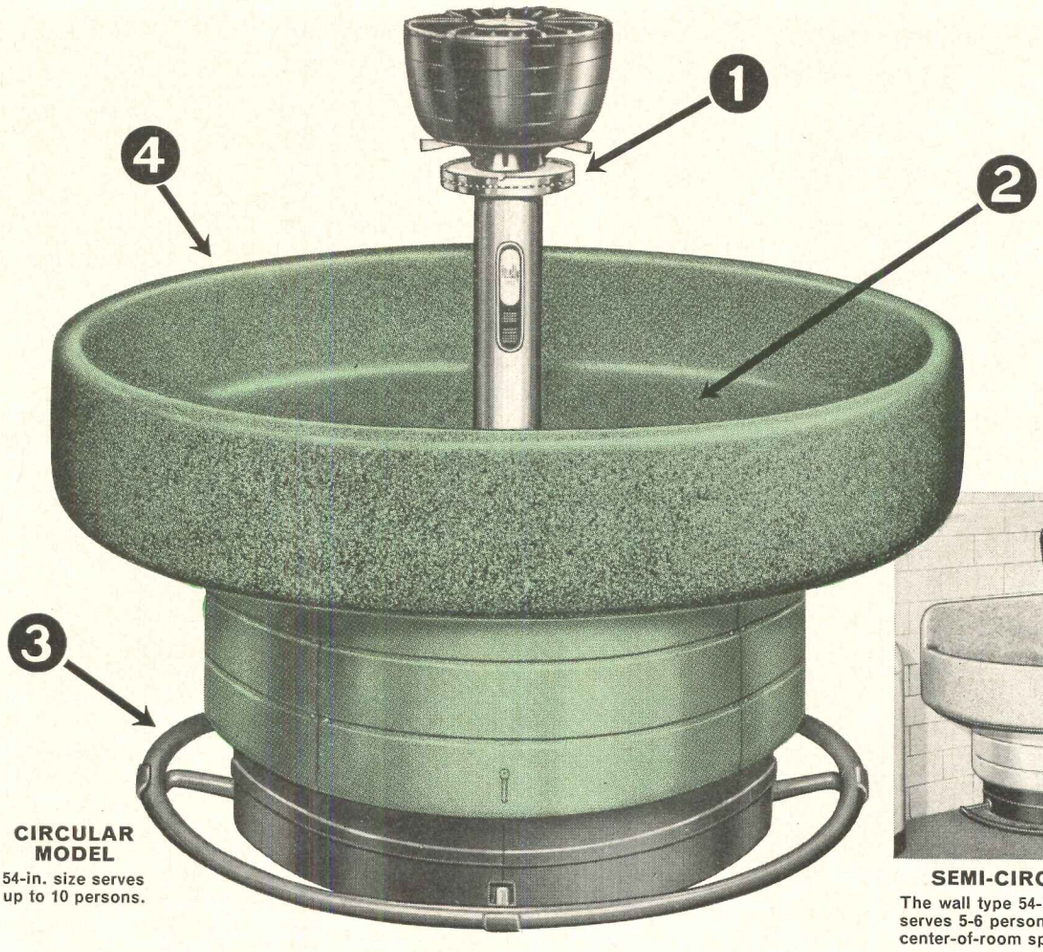
Always specify "Climate-Blended" Ideal Masonry Cement for masonry jobs—it is the cement that makes *good* masonry *BETTER*.

PORTLAND IDEAL CEMENT

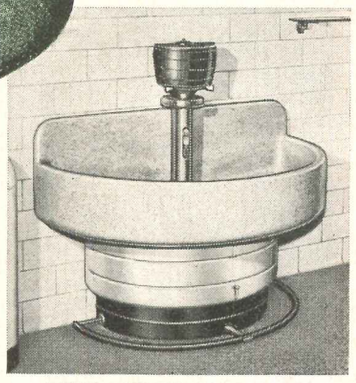
IDEAL CEMENT COMPANY

DENVER, COLORADO

15 Plants and 4 Terminals Serving Some of the Most Rapidly Growing Areas of the Nation.



CIRCULAR MODEL
54-in. size serves up to 10 persons.



SEMI-CIRCULAR MODEL
The wall type 54-in. semi-circular model serves 5-6 persons, is well suited where center-of-room space is not available.

BRADLEY WASHFOUNTAINS HAVE *all these advantages*

1. **CENTRAL SPRAYHEAD.** Placed below soap tray or dispenser, running water is supplied to all—no faucets to touch or maintain.
2. **SELF-FLUSHING BOWL.** Used water is flushed away, keeping bowl clean and sanitary looking.
3. **FOOT-CONTROL.** Eliminates infectious faucet contacts—cuts supply of tempered water immediately as the foot is removed from ring . . . no wasted water.
4. **BIG BOWL.** Right height and size to thoroughly wash hands and arms. Lip of bowl to floor: Standard installation, 31"; Juvenile height, 27".

PRECAST STONE, VITREOUS ENAMEL, STAINLESS STEEL

You can select the material you want—precast stone in tints to harmonize with modern walls and floors; stainless steel; and vitreous enamel in six colors—white, citron yellow, mint green, sun tan, sky blue, and forest green. Colors encourage washroom cleanliness.

Bradley Washfountains provide the most sanitary facilities, serve more in less space and at lower installation costs—for new as well as in your present buildings. For complete details on all models, write for our latest Catalog 5601 . . . BRADLEY WASHFOUNTAIN CO., 2227 W. Michigan St., Milwaukee 1, Wis.

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BRADLEY *washfountains*
Distributed Through Plumbing Wholesalers

54-in. diam. full-circular precast stone Washfountains serve 8-10 simultaneously.

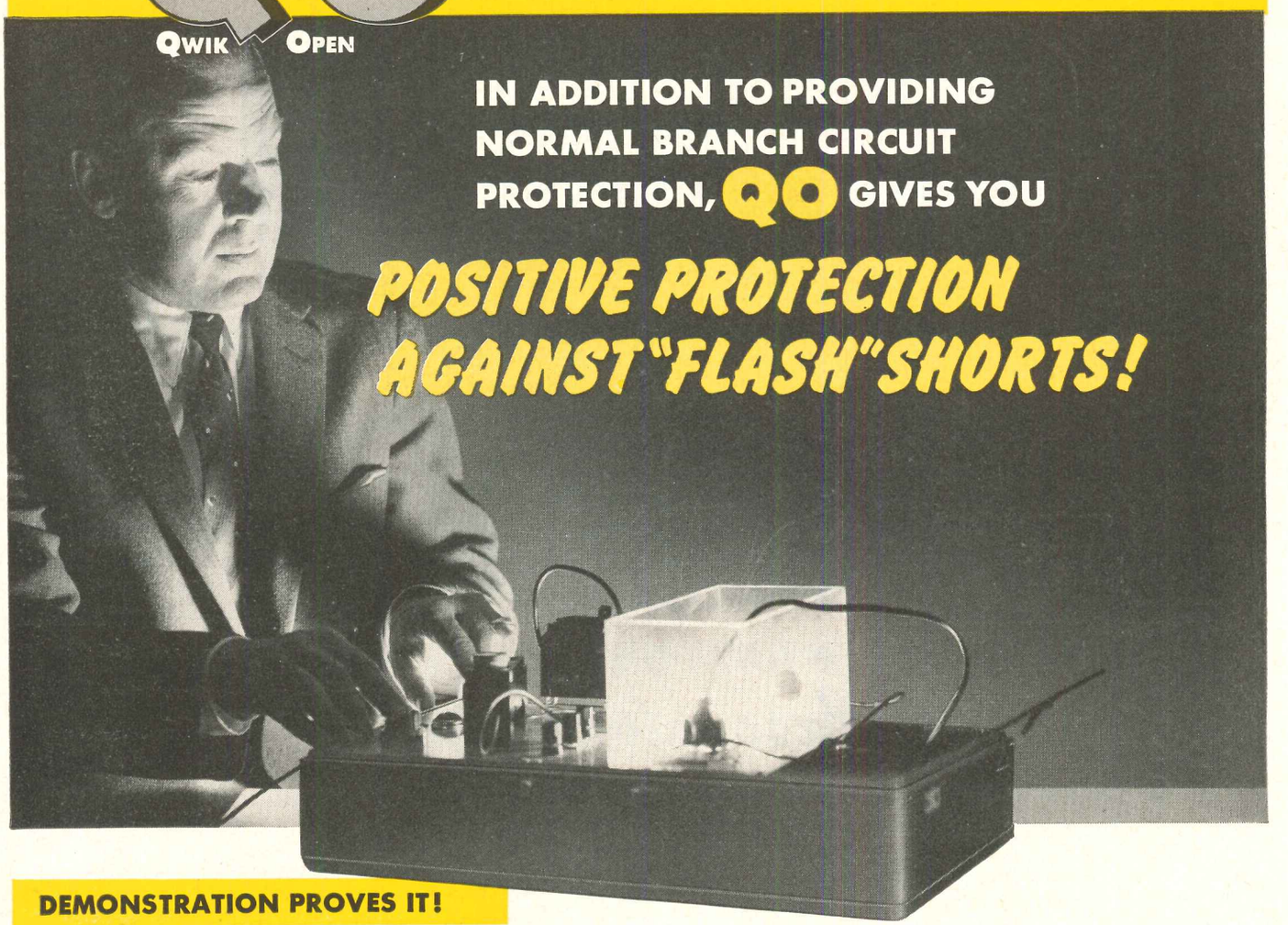
54-in. full-circular stainless steel Washfountains are preferred by some.

54-in. semi-circular wall type model, —also made in 36-in. diameter size.

Duo-Washfountains have foot-control and a sprayhead in place of faucets.

QO® —THE FINEST NOW IS EVEN

QWIK OPEN



IN ADDITION TO PROVIDING NORMAL BRANCH CIRCUIT PROTECTION, QO GIVES YOU

POSITIVE PROTECTION AGAINST "FLASH" SHORTS!

DEMONSTRATION PROVES IT!

Square D Field Engineers throughout the country are proving the superior performance of the **QO** breaker, using the demonstration kit shown above. It gives dramatic proof of positive protection against "flash" shorts. Mail the coupon on opposite page for the complete **QO** story. If you're of the "I'm from Missouri" clan—

MAKE A "DEMONSTRATION" DATE WITH YOUR SQUARE D FIELD ENGINEER!

• Conventional overcurrent protectors provide protection for branch wiring for both overload and short circuits, but do not open fast enough to protect the smaller extensions beyond the branch wiring from repeated arcing or "flash" shorts. Such shorts consist of relatively low values of current and often produce spectacular flashes.

Square D's **QO** breaker now gives you positive protection against "flash" shorts, in addition to its many other advantages. This added protection costs no more—why settle for less?

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT...NOW A PART OF THE SQUARE D LINE

SQUARE D COMPANY

BREAKER EVER BUILT BETTER...*and Here's Why —*

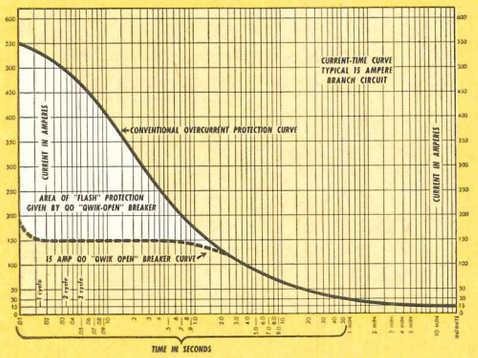
ACCIDENTAL "FLASH" SHORT

Accidental "flash" shorts occur by a slip—a screwdriver on a terminal, a fork in a toaster, a screw falling on a bus, a loose wire. The circuit should open instantly. With **QO** "Qwik-Open" breaker, the circuit opens *instantly* with the first flash, making the circuit safe.

FRAYED CORD "FLASH" SHORT

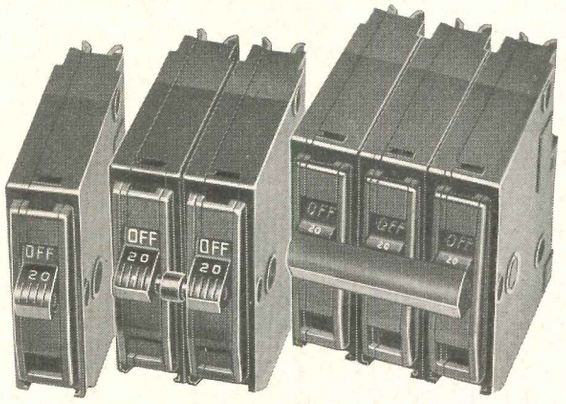
Stranded flexible cord "flashes" result principally from frayed cords. A few strands touch—the high resistance circuit gives off enough heat to burn through several strands. Further movement usually causes more strands to touch—another flash. With **QO** "Qwik-Open" breaker, the circuit opens *instantly* on the first flash. No known protection is faster.

TIME-CURRENT CURVE SHOWS QO PERFORMANCE



In the above chart, the **QO** curve illustrates the time-delay characteristic which eliminates nuisance tripping on momentary overloads and motor starts *plus* the extra protection over conventional protective devices which **QO** Qwik-Open breaker gives on the arcing "flash" shorts.

QO Gives Positive Protection Against Both Kinds of "Flash" Shorts!



1-POLE 15-50 Amps | 2-POLE 15-70 Amps | 3-POLE 15-50 Amps

And—You Don't Need a "Road Map" To Use Square D's QO Breakers!

NO GUESSWORK! There's just ONE ARRANGEMENT. 2-pole breakers go anywhere on the bus assembly. You don't need a wiring diagram to tell you where to put them. No limit on number of 2-pole breakers you can use. The same applies on 3-pole breakers for 3-phase jobs.

ONE FULL-SIZE BREAKER! Each pole in its own case and all poles are the same size. Double-pole breakers take only two single-pole spaces—3-pole breakers only three. No more.

LESS MONEY TIED UP IN STOCK! Only one kind of breaker for all load centers—no duplicate stocks. The same breaker for panelboards—no duplicate stocks.

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Company _____

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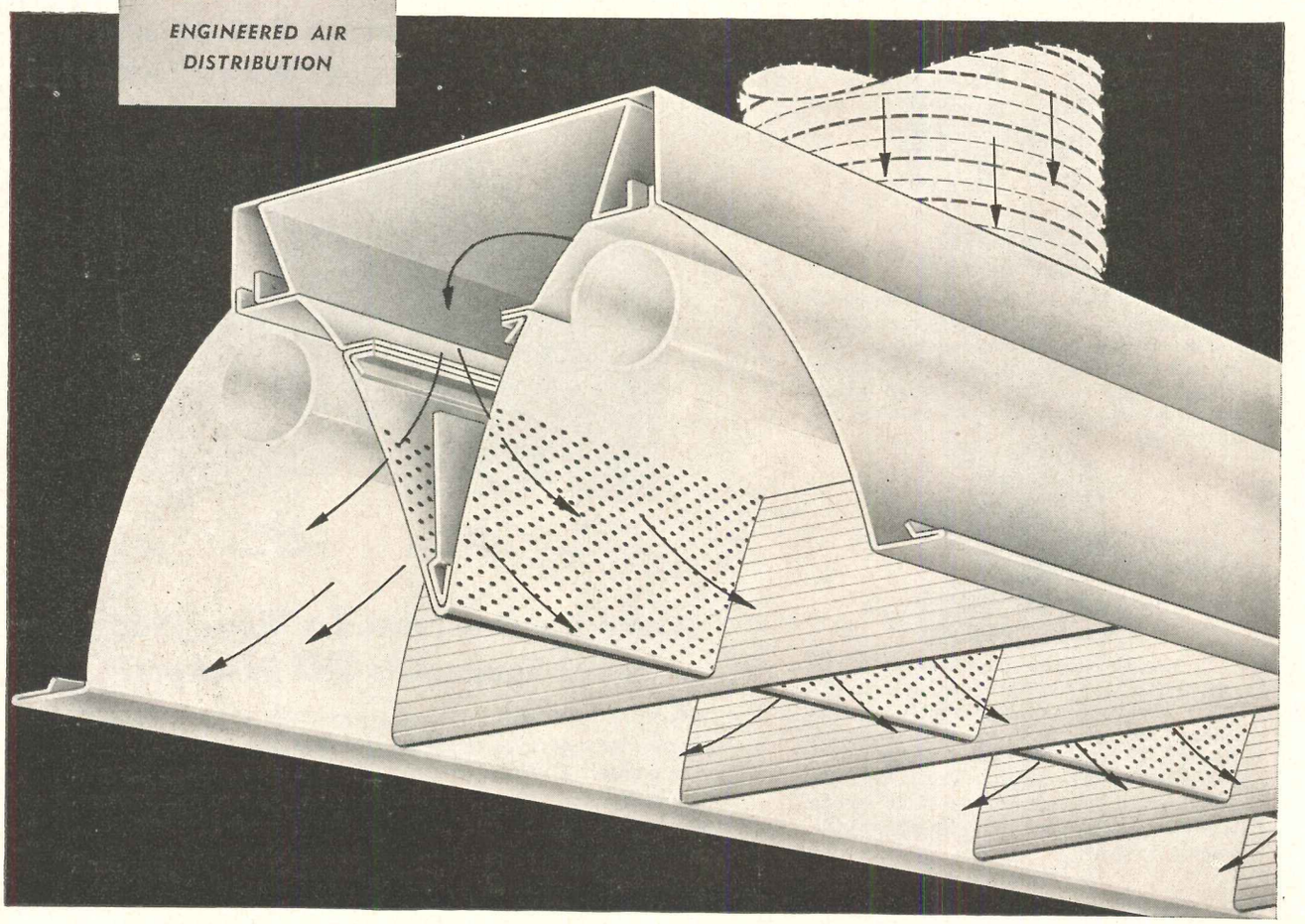
For engineered air distribution combined with high-comfort lighting

PARAFLO

by Day-Brite and Barber-Colman



If your plans call for a combination light and air distribution fixture, specify the new Paraflo. It's the one troffer combining precision-engineered air diffusion and high-comfort illumination in a single attractive unit. Developed jointly by Day-Brite Lighting, Inc., and Barber-Colman Company air distribution engineers, the Paraflo provides properly diffused air throughout the length of its exclusive center "V" louver. Controlled lateral deflection of the quiet, diffused air stream eliminates "waterfall" effect without ceiling smudge. The Barber-Colman air volume control is adjustable from below after installation for simplified system balancing. For more details on this newest and most efficient combination fixture, call your nearby Barber-Colman field office or write to . . .

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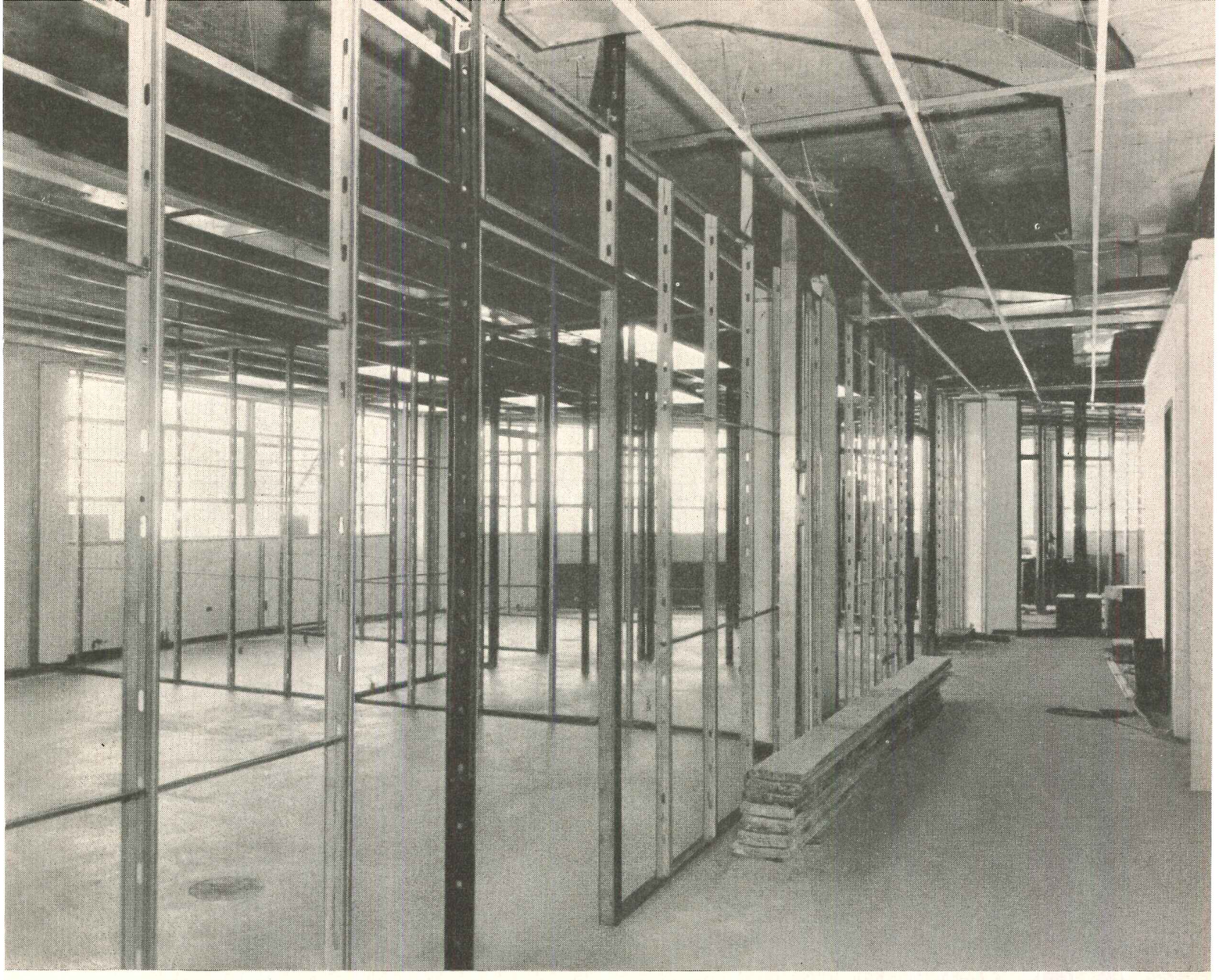

"STRONG. FIRE-RESISTANT. CORROSION-RESISTANT. THAT'S WHY WE USE WEIRZIN® IN OUR STUD SYSTEMS!"

says G. A. Stevenson, vice president of Penn Metal Company, Inc., Parkersburg, W. Va., maker of PERMALOCK nailable metal stud systems.

"Broadly speaking, our choice of Weirzin electrolytically zinc-coated steel is based on two factors: performance in our products and performance in our production lines.

"With Weirzin, of course, our stud systems have the strength, rigidity and high degree of fire resistance inherent in steel. And because Weirzin's zinc coating is completely integrated with the steel, we have the added assurance of a corrosion-free life for our systems.

"In our production lines, Weirzin goes smoothly through every operation—no flaking or peeling regardless of the severity of the fabrication stresses.

"Briefly, we feel that Weirzin has helped us to produce a quality product that gives our customers solid value at low cost."

Strong! Highly resistant to fire! Highly resistant to corrosion! Easy to fabricate! That's Weirzin electrolytically zinc-coated steel. For more information on Weirzin send for free booklet. Write Weirton Steel Company, Dept. 0-17, Weirton, West Virginia.

WEIRTON STEEL COMPANY

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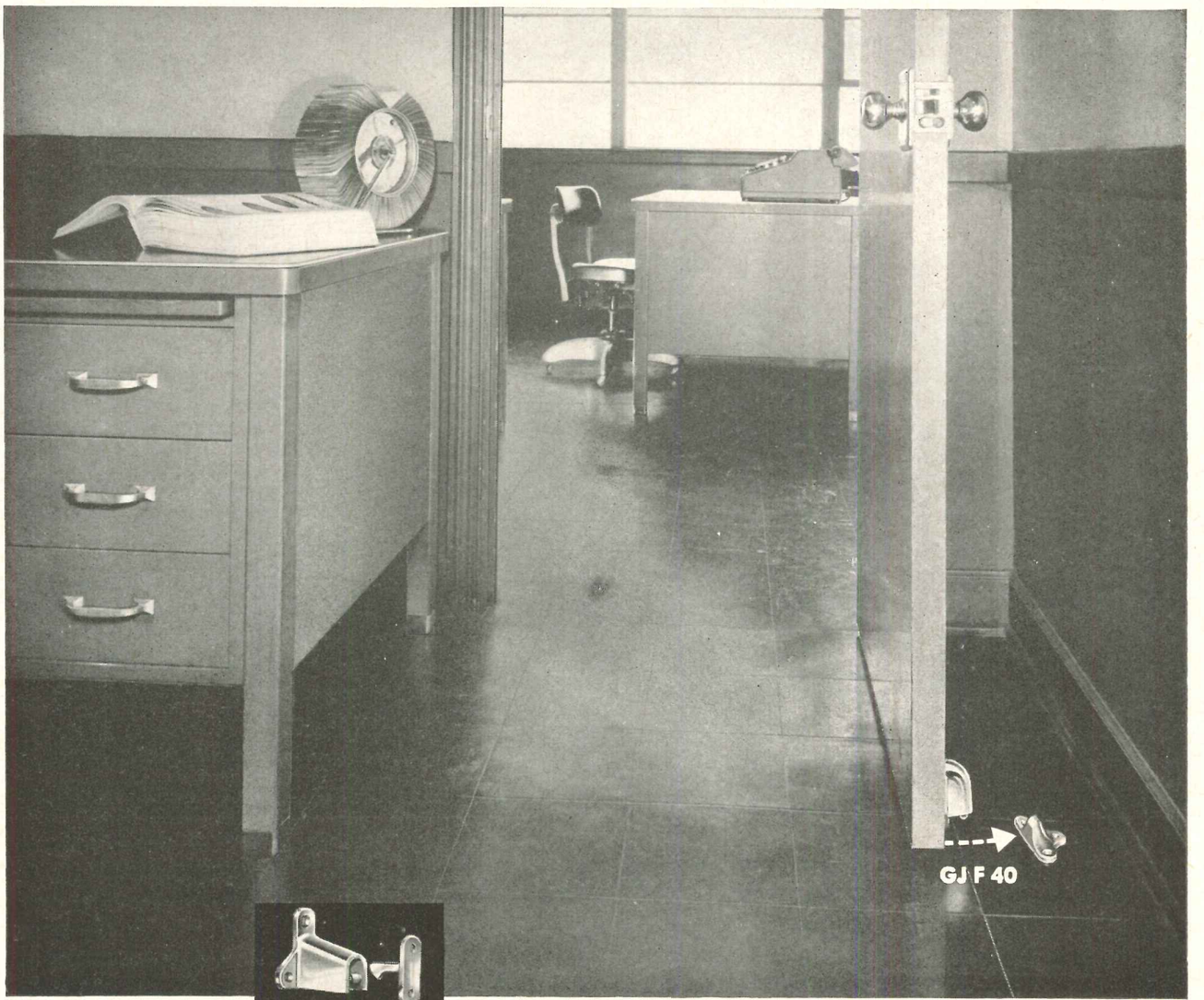
an ideal specification for efficient

OFFICE DOOR CONTROL



This ideal GJ specification for office doors is used in such outstanding office buildings as:

Socony Mobil Building, New York City Harrison and Abramovitz and John B. Peterkin — associated architects

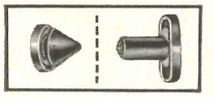
State Mutual Life Assurance Company of America, Worcester, Massachusetts. Hoyle, Doran and Berry, Boston, Mass. — architects

A & E and Research Buildings, Whiting, Ind. Holabird & Root & Burgee, Chicago, Illinois — architects

"shall have GLYNN·JOHNSON . . .

GJ F 40 FLOOR TYPE (or GJ W 40 wall mounted) COMBINATION DOOR STOP AND HOLDER." (This simple, fool-proof device engages silently and automatically to hold the door open. Releases with a firm pull. Especially recommended for doors opening more than 110°, or to meet budget limitations. All working parts are enclosed in a streamlined case for maximum durability.)

"THREE GJ 64 for metal frame (or GJ 65 for wood frame) RUBBER SILENCERS." (Form pneumatic air pockets to absorb shock or noise of closing and create constant latch tension . . . no door rattling.)



Also GJ shock absorbing overhead arm type door holders for entrance and other heavy duty doors.

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The compact arrangement of the Vogt automatic Tube-Ice machine renders obsolete the large, costly equipment formerly required. This results in substantial savings in first cost and maintenance.

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Only 13 minutes is needed to freeze, thaw and discharge "crushed" Tube-Ice and only 40 minutes for "cylinder" Tube-Ice.

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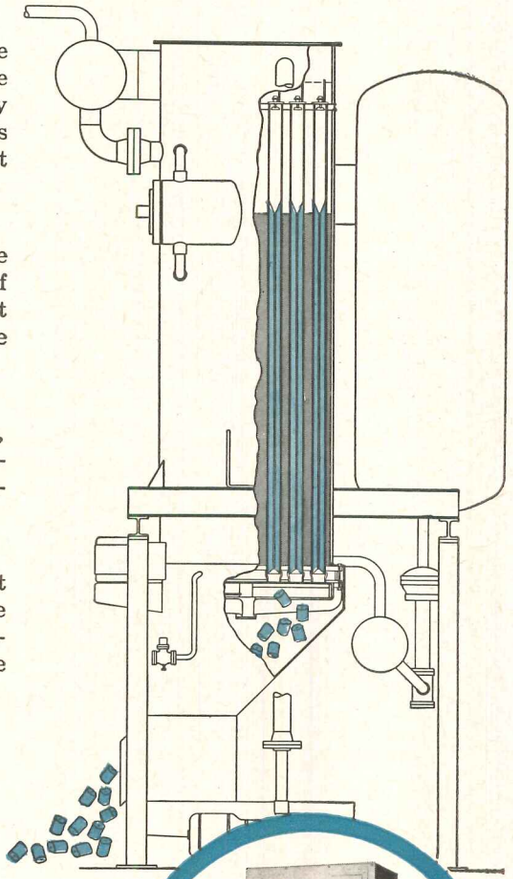

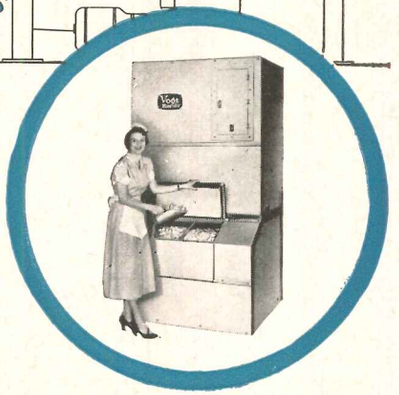

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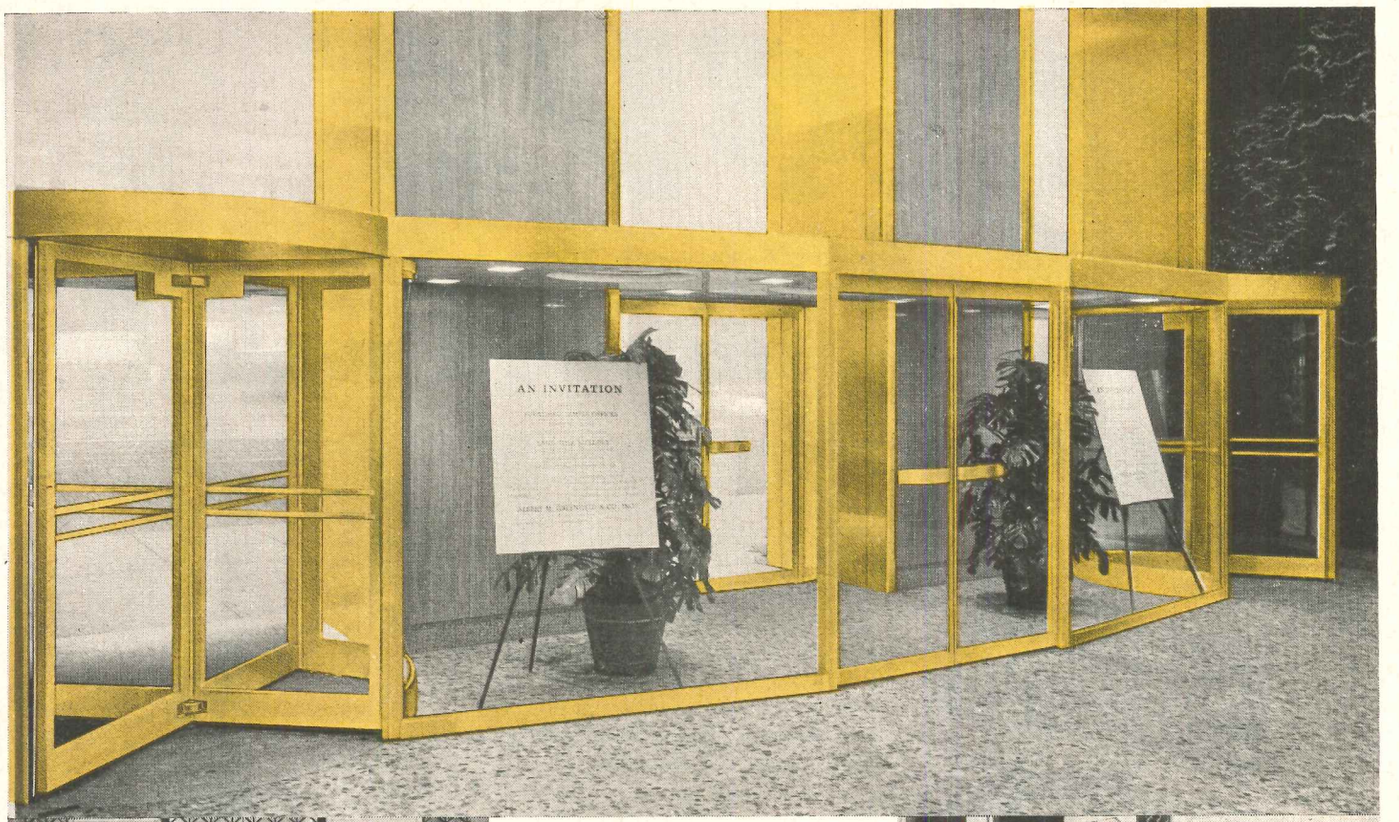
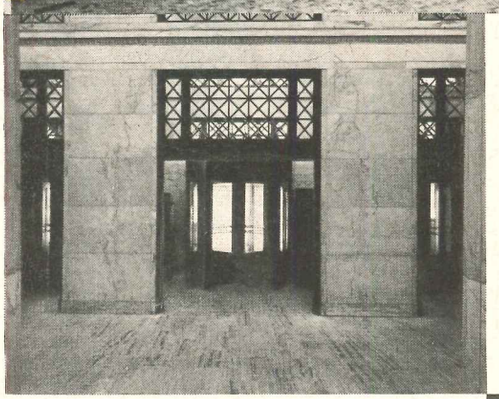
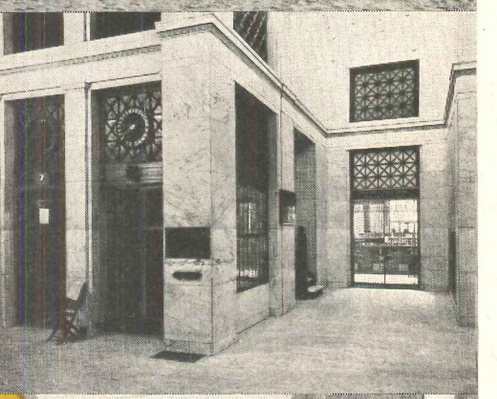


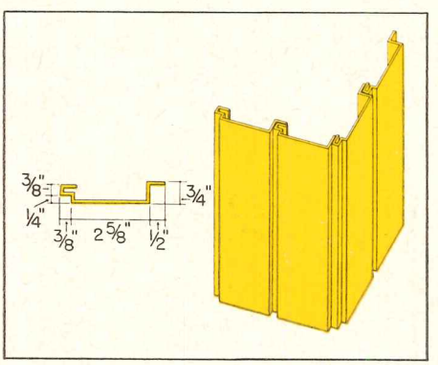


Remodeled Broad St. entrance of Land Title Bldg., Philadelphia, **above.** Bronze sheet and strip frame vestibules and door openings with warm, golden color to complement tans and browns of floor and marble veneer. Dark, closed-in original entrance, **left.**

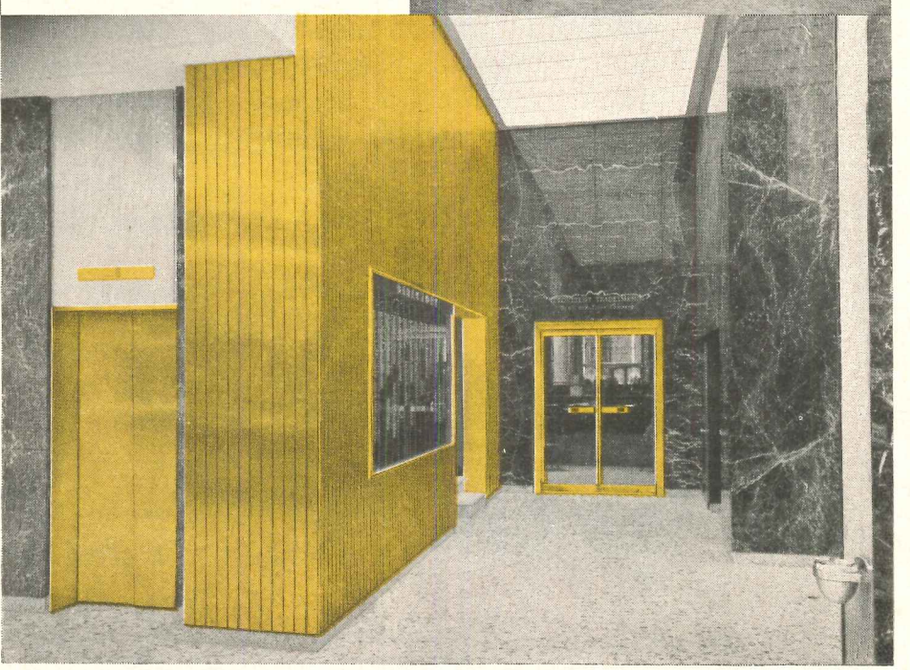
Below: Interlocking bronze extrusions with 3′′ exposed surfaces form smart, trim panels from floor to ceiling in the main lobby. See diagram below, left. **Right:** The same area as it looked before modernization.



Architects: Thalheimer & Weitz, Philadelphia.
Metal Fabricator: John G. Leise Metal Works, Philadelphia.
Elevator Entrances: W. S. Tyler Company, Cleveland.
Exterior Doors: Revolving Door and Entrance Division of International Steel Company, Evansville, Indiana.



Section and isometric of bronze extrusions used in wall at right. A metal sub-frame made possible perfect alignment of the shapes. All fastenings are concealed. This special shape was designed and detailed by the architects and the architectural metal fabricator.

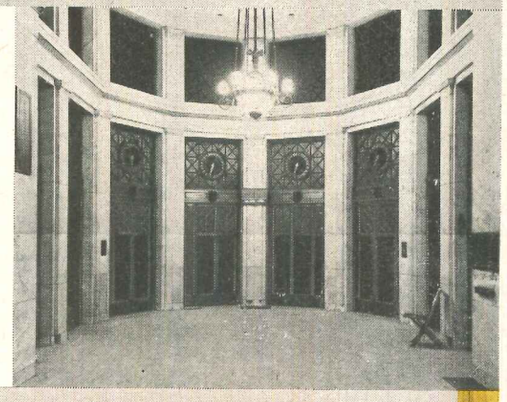


MODERNIZATION THAT GIVES CHARACTER TO A BUILDING REQUIRES GOOD DESIGN AND THE BEST MATERIAL

• VERSATILE ARCHITECTURAL BRONZE

Facade at Broad Street entrance, **above,** was opened and simplified. Bronze sheets surround new door openings, offering an interesting contrast in color and texture with granite masonry. **Left:** The original facade.

Below: In the elevator lobby, ceiling was lowered, details simplified. Wall paneling of interlocking bronze extrusions matches in color the bronze elevator doors. **Right:** Original lobby as it appeared just before modernization work started.



A highly favorable reception to the modernized entry is reported by Albert M. Greenfield & Co., rental agents, who write: "We are most pleased with the results achieved in architectural beauty, durability, and low material cost. All of this without impairing the exterior architecture of this long-famous landmark in the heart of Philadelphia." For information on Anaconda Architectural Metals address: Architectural Service, The American Brass Company, Waterbury 20, Conn.

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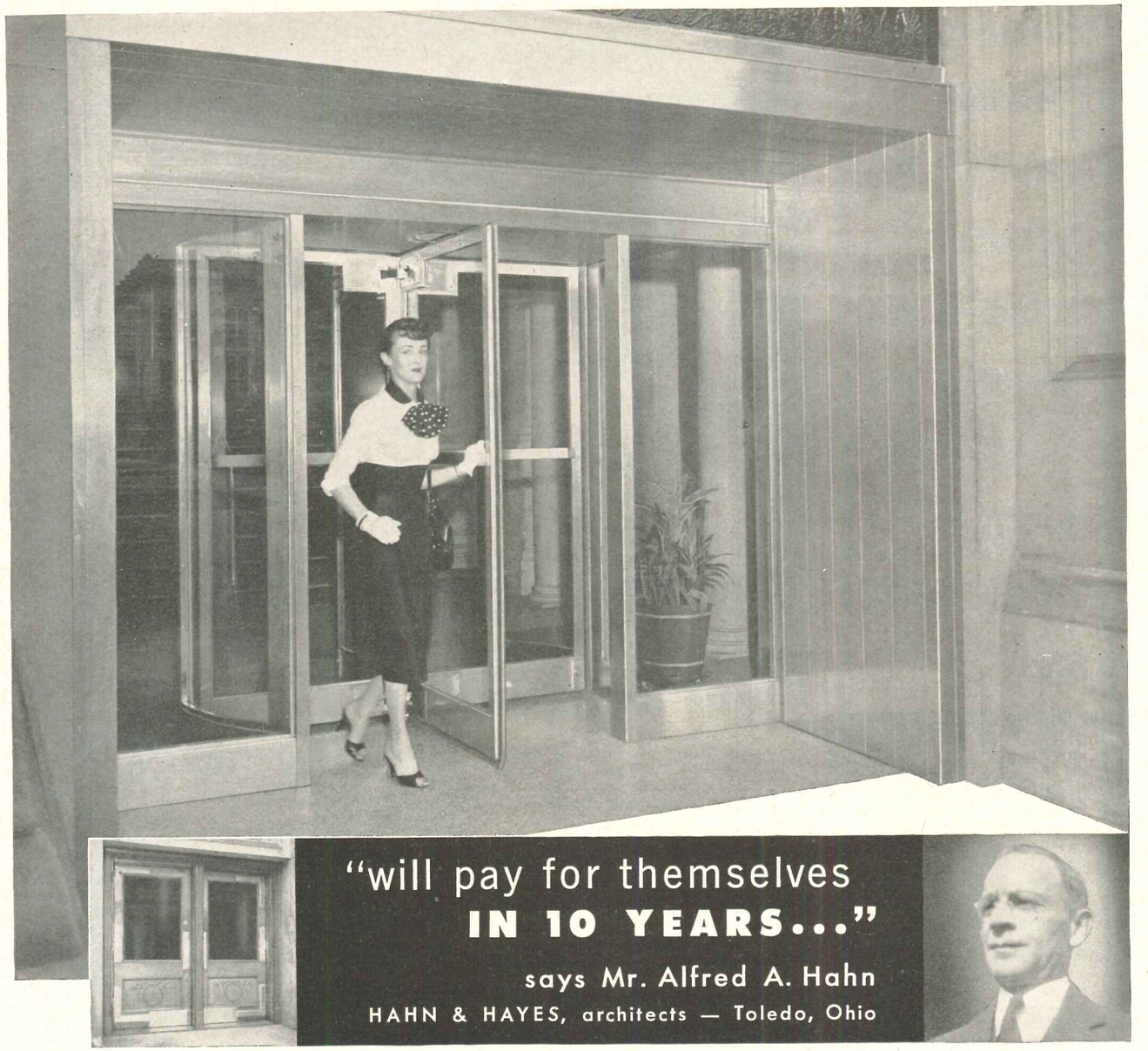

"will pay for themselves
IN 10 YEARS..."
says Mr. Alfred A. Hahn
HAHN & HAYES, architects — Toledo, Ohio

about the International Revolving Doors at the **LUCAS COUNTY COURTHOUSE** in Toledo, Ohio

"Even on an initial cost and installation basis, these doors represent a savings of 10 to 15% over comparable doors . . . and on a long-term basis, we estimate that they will save Lucas County about $6,000 yearly on heating costs alone.

"From the standpoint of design . . . always of interest to architects . . . the clean, modern lines of International Revolving Doors blend harmoniously with the building, and do not conflict with its historical expression.

"This installation has generated a great deal of comment among other architects and engineers in this area. And we at Hahn & Hayes regard this installation as a tribute to a highly modernization-minded County Commission, composed of members who possessed a great deal of discretion in making their selections."

Find out how "always open — always closed" International Revolving Doors can fit into modernization or new building plans you may have. Write for further information.

Send for a copy of International's "Modern Entrance Maintenance" manual . . . free on request sent on your letterhead.

Revolving Door Entrance Division

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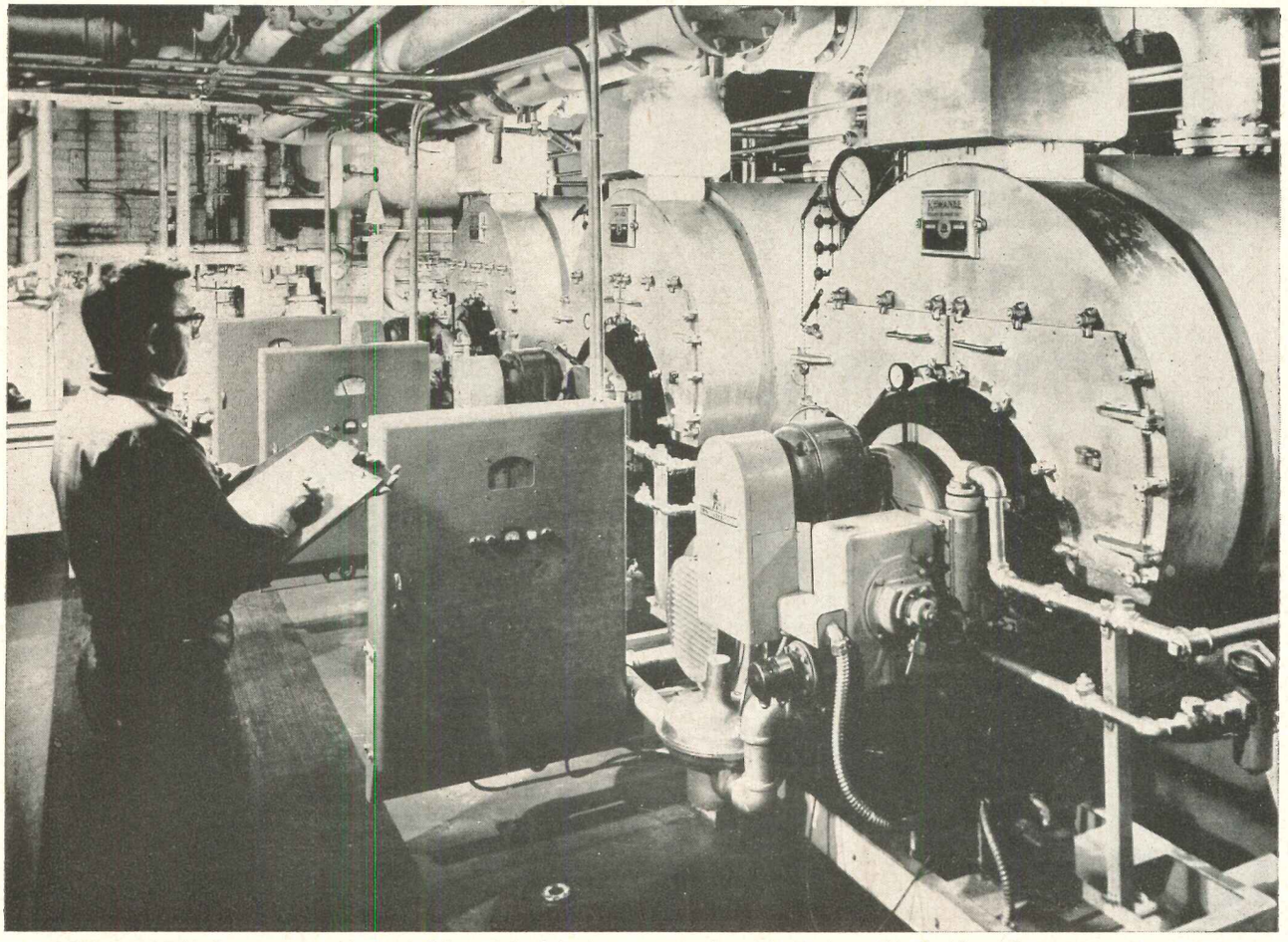
The smart way to modernize

. . . specify your heating plant in one package



This remodeled boiler room serves the two buildings of the Columbus Dispatch newspaper plant, Columbus, Ohio. Fuels can be quickly changed in these three Iron Fireman-Kewanee gas-oil boiler-burner units. Consulting Engineers, John Paul Jones, Cary & Millar, Cleveland; Architect, Dan A. Carmichael, Columbus; Heating Contractor, Limbach Co., Columbus.

Iron Fireman burner with boiler — engineered as a single unit

These famous boiler-burner units are the products of two great specialists—each in its own field. They are engineered for each other. Included in one catalog, they can be ordered by a single model number from one set of specifications.

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You can feel *safe* in specifying Iron Fireman equipment. These thoroughly engineered units are conservatively rated. The normal firing rate is a comfortable cruising speed—less strain, low maintenance, quiet operation, higher efficiency —and that big extra capacity is always standing by to pick up extra loads.

Compact and complete

These complete steam or hot water generating units require little more than service connections. Automatic controls, air and fuel systems are built in. No special boiler settings; low headroom; no high stack.

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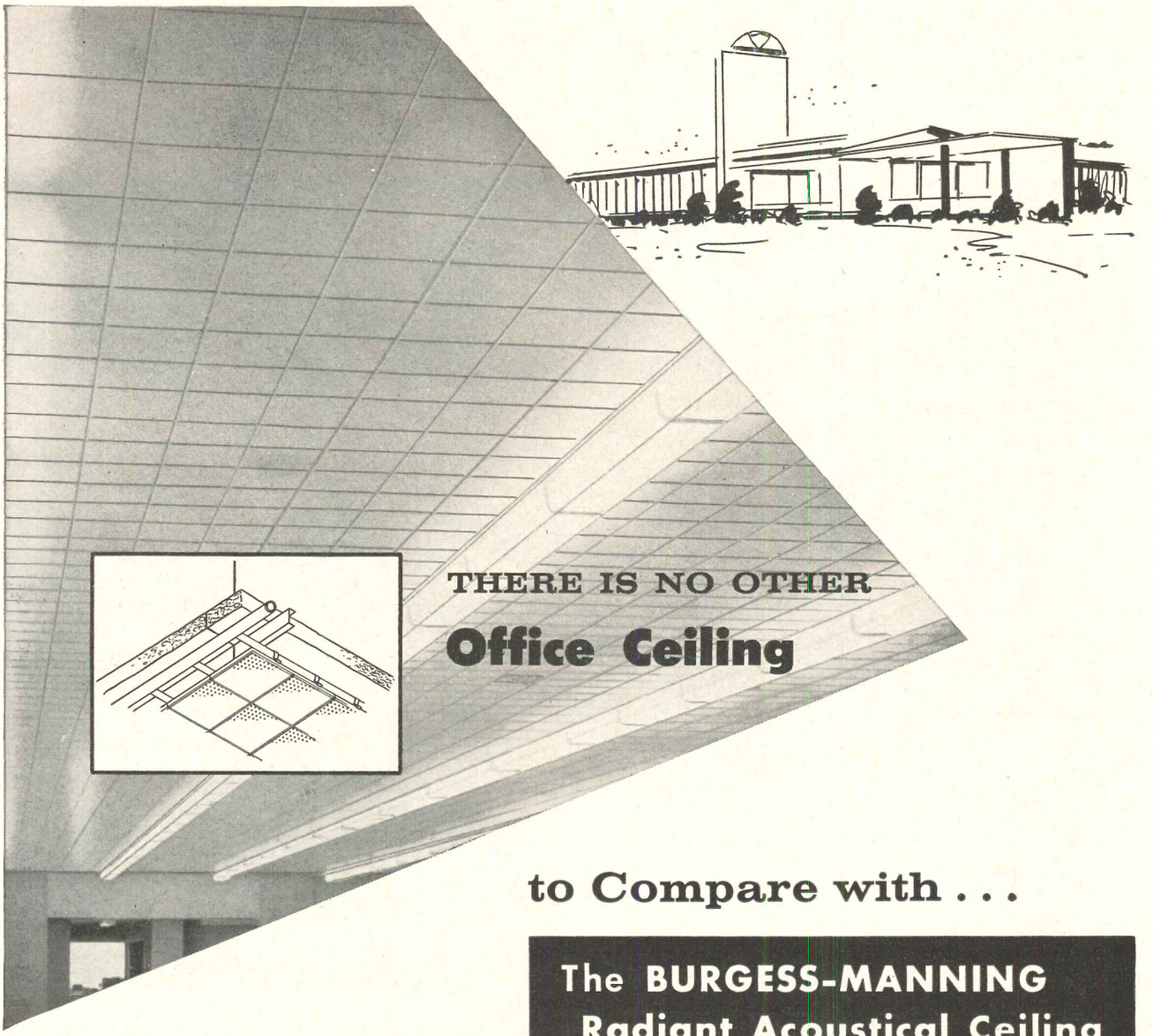

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It is the most modern concept in comfort conditioning. It is years past the experimental stage. Its performance has been proved by use in many types of buildings.

The Burgess-Manning Radiant Acoustical Ceiling is the ideal ceiling for any building where human comfort is a first consideration.

Combining thermal comfort conditioning and acoustical control in the same unit, this ceiling performs both functions with equal efficiency. It heats or cools by radiant energy, independent of air movement and does not produce drafts. Room temperatures are always practically uniform from floor to ceiling. With Burgess-Manning Radiant Heating and Cooling human comfort can be maintained with lower than average room temperatures. Where many people are working in the same room, its extreme uniformity of heating and cooling eliminates the hot and cold spots that cause dissatisfaction and complaints.

As economical as it is efficient, the Burgess-Manning Radiant Acoustical Ceiling introduces a new standard of comfort conditioning for commercial buildings.

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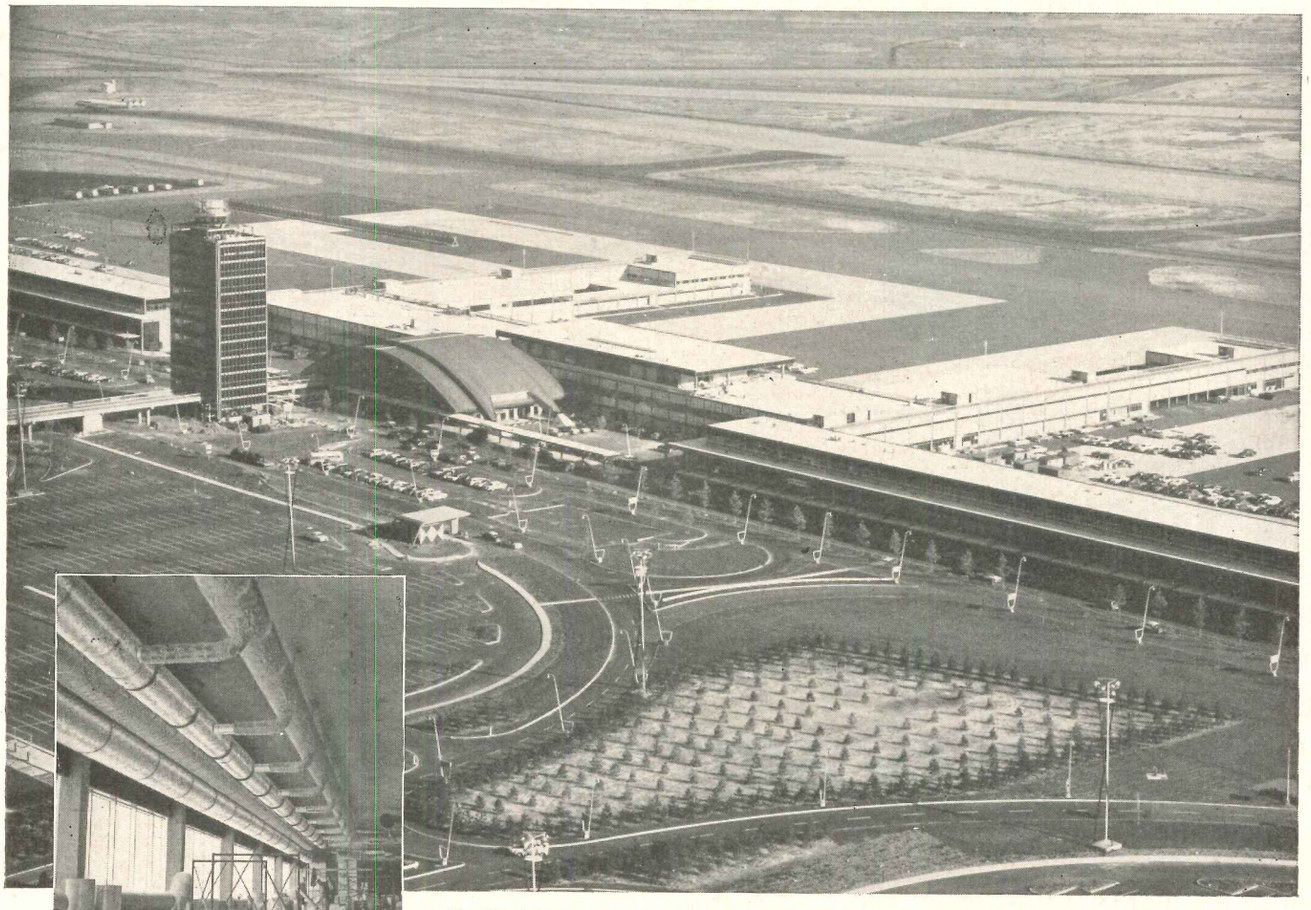
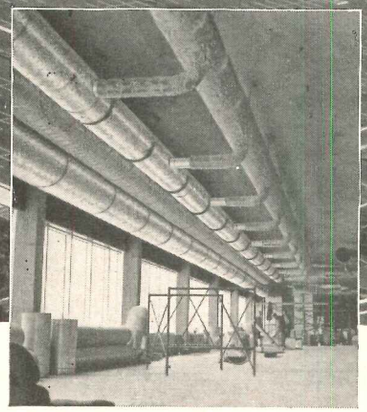
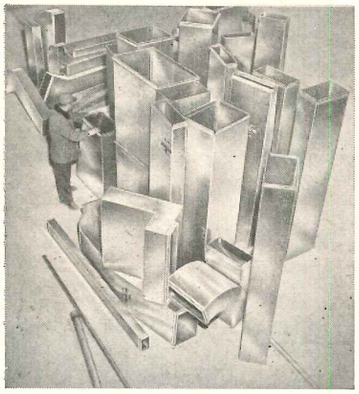


New York International Airport's new International Arrival Building, partially shown here, is air-conditioned by nine absorption machines located in a central heating and refrigeration plant and . . .



Building's system was designed to a static pressure of 8" water. SOFTITE Cop-R-Loy *used ranged from 16-gage for ducts over 18" in diameter to 22-gage for 8" or less.*

Because sections were made up in Alpine's shop with short lead time on an "as needed" basis, Wheeling's dependable delivery was a big advantage.



5 miles of high-velocity trunk lines made of Wheeling SOFTITE® COP-R-LOY® Sheets

Although it's only three stories tall, Idlewild Airport's new 3,200'-long International Arrival Building has the high-velocity air-distribution system normally associated with skyscrapers. It was selected to minimize the space requirements of trunk lines and ducts in the extremely long structure . . . and to assure the best possible year-round air-conditioning in every part of it.

Using almost 250 tons of Wheeling SOFTITE Cop-R-Loy Galvanized Sheets, the lines were fabricated by Alpine Sheet Metal & Ventilating Company, Long Island City. The company's president, Mr. Marty Langberg, says, "We knew this was going to be a tough job, so we worked extremely carefully and used SOFTITE Cop-R-Loy wherever possible to assure extra-long, trouble-free service from the system."

For full details on SOFTITE Cop-R-Loy's extra-long life, contact your nearby Wheeling warehouse or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.

ARCHITECT	Skidmore, Owings & Merrill
OWNER	Port of New York Authority
GEN. CONTRACTOR	Cauldwell-Wingate Co.
FABRICATOR	Alpine Sheet Metal & Ventilating Co.

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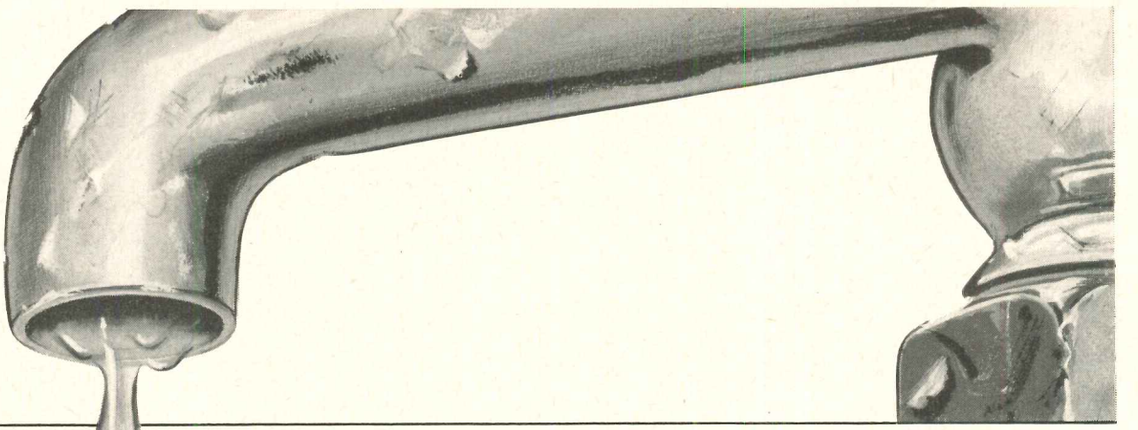


How much of your client's operating budget will drip down the drain?

More than you might think—unless you specify Crane Dial-ese controls, designed to cut down water loss and water heating bills

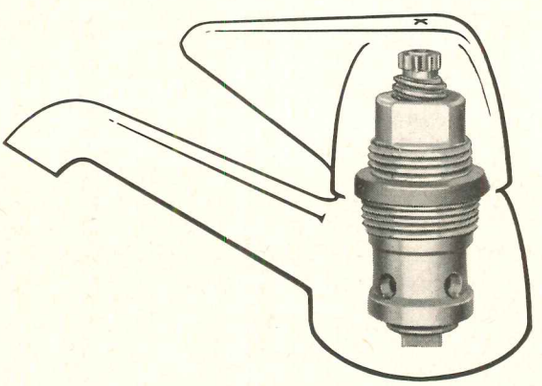
A drop of water a second, hour after hour, adds up to 2,300 gallons a year.

Multiply that by the number of faucets in your client's building, and you can see the incredible water waste that dripping can, and *does*, cause. And when it's *hot* water, there's big fuel waste, too!

Crane Dial-ese controls are designed to stop this constant waste. For one thing, a Dial-ese control shuts off easier and all the way because it closes *with* the water pressure—not against it. The water pressure helps instead of hindering the closing.

Dial-ese is designed to last longer, too. Stem threads are permanently lubricated at the factory—and sealed *inside* where water can't touch them. All working parts are in a single, simple cartridge that screws into the faucet. Replacement is quick and easy—just take out the old, put in the new.

All Crane fixtures (and *only* Crane fixtures) feature Dial-ese controls. Why not ask your Crane Branch or Crane Wholesaler for more details?



CRANE DIAL-ESE PERMITS STANDARDIZATION.
The same renewable unit fits all Dial-ese controls . . . lavatories, bathtubs, showers, sinks and laundry tubs.

CRANE

THE PREFERRED PLUMBING

CRANE CO. 836 S. Michigan Ave., Chicago 5 • VALVES • FITTINGS • PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

new Grady Memorial Hospital: guarded by the vital oils of pitch

Now the new Grady Memorial Hospital in Atlanta, Georgia, adds its name to the imposing list of great American hospitals that are Barrett-roofed.

Again, a new building which employs all the most modern construction techniques and materials relies on built-up roofing based on a long-established weatherproofing substance—coal-tar pitch. Pitch, with its vital oils, lasts for decades and is actually preserved by moisture—the destructive enemy of other bitumens.

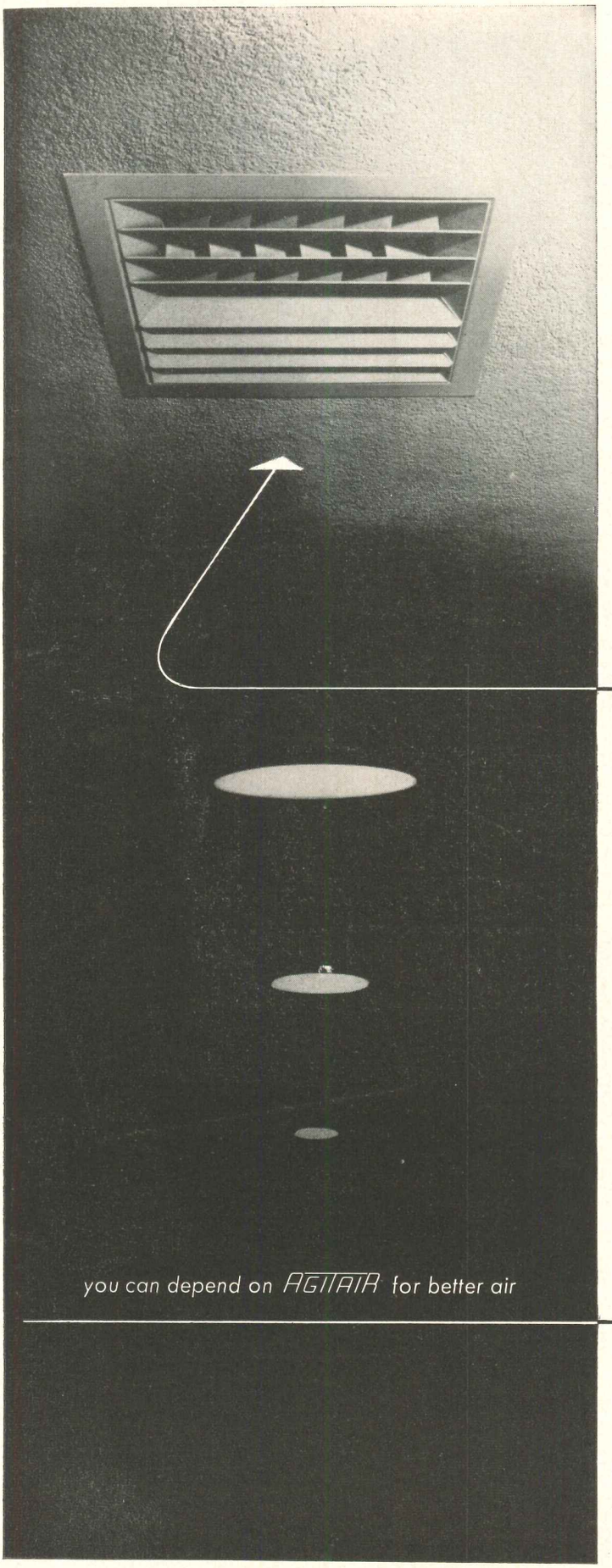
Laboratory tests show that other bitumens absorb from 2 to 17 times more water than pitch.

And pitch has long-lasting flexibility which allows small cracks to "heal" themselves and assures tight, uniform adherence to the face of the roof deck. Layers of pitch and roofing felt, armored with a slag or gravel surface, comprise the famous Barrett SPECIFICATION® Roof—the critical standard in built-up roofing for over 50 years. BARRETT DIVISION, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N.Y.
In Canada: The Barrett Co. Ltd., 5551 St. Hubert St., Montreal, P. Q.

Architect: Robert & Company Associates, Atlanta. General Contractor: Robert E. McKee General Contractors, Inc., Dallas, Texas. Barrett Roofer: G. G. Ray & Co., Charlotte, N. Carolina.

Allied Chemical

BARRETT ROOFS... they outlive the bond



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AIR DIFFUSERS with DIFFUSING VANES

Each AGITAIR square and rectangular air diffuser is custom designed to meet your requirements of air flow and interior treatment.

These AGITAIR diffusers have built-in diffusing vanes, scientifically arranged in unlimited louver patterns to provide certified 100% draftless air distribution from any ceiling or wall location.

AGITAIR Catalog R-107 shows you how to select the proper size and pattern for your job conditions.

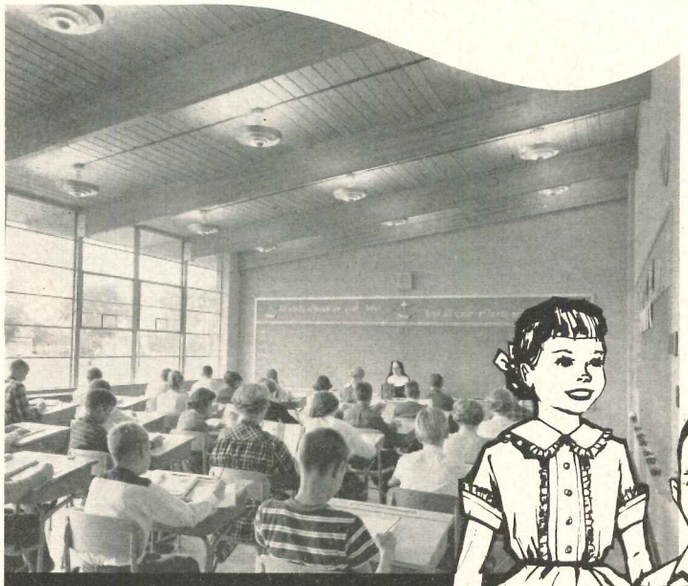
Write for your copy today.

AIR DEVICES INC.

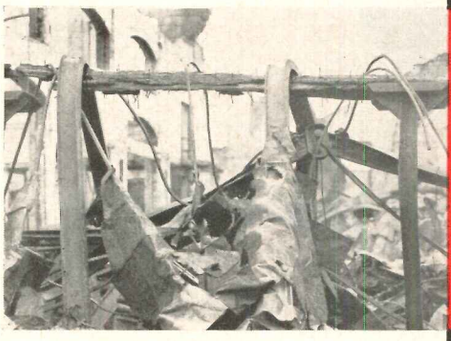
185 MADISON AVENUE, NEW YORK 16, N. Y.

air diffusers • filters • exhausters

UNIT leads trend setting pace to LOWER SCHOOL COSTS!



EXPOSED PLANK AND GLUED LAMINATED WOOD BEAM CEILING ACHIEVE STRONGER, MORE ECONOMICAL SCHOOL BUILDING CONSTRUCTION!



GLUED LAMINATED MEMBERS ARE FIRE SAFE!

Here's visual proof that glued laminated wood members are safer in case of fire. Glued laminated wood members transmit heat slowly, safely prolonging their load carrying capacity, thereby allowing sufficient time for evacuation of both inhabitants and equipment. Structural materials of exposed metal, because of their high heat conductance, collapse under intense heat causing complete loss of the building and its contents.

For the past quarter century, Unit Structures, Inc., has pioneered in the continuing development of functional, fire resistive schools through the use of soundly engineered, permanent glued laminated wood members.

Unit laminated construction leads the field in creating true school building economy . . . effectively reducing costs through simplified detailing, adaptability to modular dimensioning, faster erection. As a result, more and more architects are designing schools with dimensionally stable Southern Pine laminated structural members -- and specifying UNIT for dependable fabrication, expert finishing, speedy shipment.

Take advantage of the many cost saving ideas possible only with modern glued laminated construction -- the ideal method to frame classrooms, gymnasiums, assembly halls. Let our experienced planning staff assist you on your next school building project.

WRITE TODAY!

For your free copies of Unitecture, a periodic bulletin, containing simplified details of arch and beam connections, photographs of unusual and outstanding architecture and helpful design data on glued laminated construction.

UNIT STRUCTURES, Inc.

UNIT STRUCTURES, INC. PESHTIGO, WISCONSIN

GENERAL OFFICES: Peshtigo, Wisconsin
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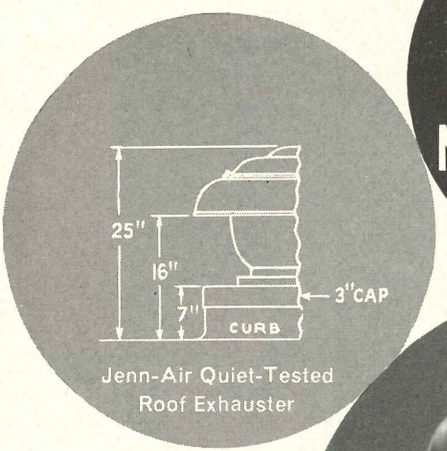
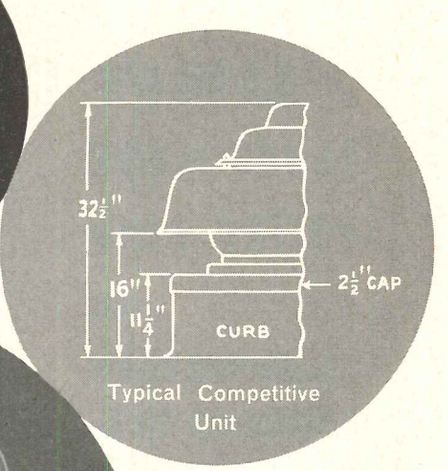
CHARTER MEMBER

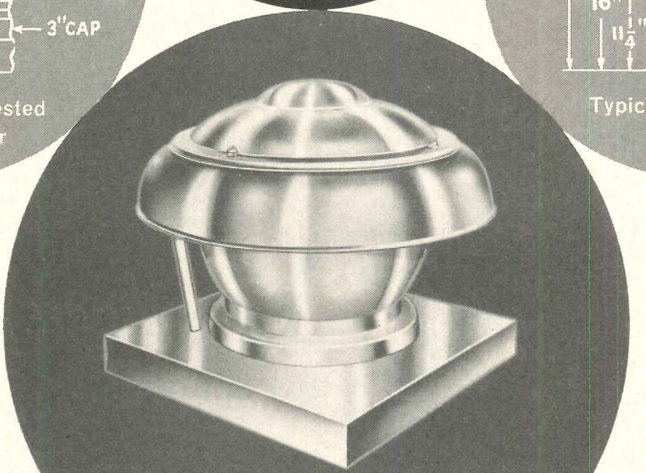
IMITATED... BUT NEVER DUPLICATED



Jenn-Air Quiet-Tested
Roof Exhauster



Typical Competitive
Unit



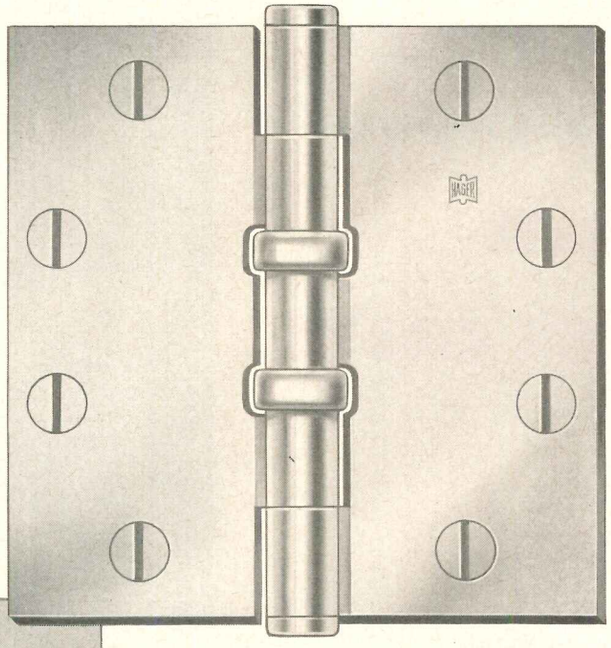
Jenn-Air Quiet-Tested
Centrifugal Roof Exhauster

ONLY JENN-AIR EXHAUSTERS OFFER TRUE LOW CONTOUR

The Big Difference is in the Installed Height

To conform with modern construction, low contour in exhausters is the accepted design among architects, engineers and building owners. And Jenn-Air, first to develop low contour spun aluminum exhausters, still engineers the lowest contour of all. Only true measurement of exhauster height is the distance from the roof level to the top of the exhauster. Jenn-Air Quiet-Tested units, when installed, stand 25 to 50% lower than others—yet meet specifications for a discharge height at least 16″ above roof level. This is achieved by Jenn-Air's exclusive method of nesting the motor below the discharge of the exhauster. Thus, the base of the exhauster itself supplies the additional height. In competitive models, with a discharge height of only 9½″, the curb base must be extended higher to attain the 16″ position. Result: overall, installed height of competitive so-called "low contour" exhausters runs 8″ to 10″ more than that of Jenn-Air. Have a Jenn-Air representative show you the "yard-stick test" . . . proof positive that only Jenn-Air Quiet-Tested exhausters offer *true* low contour.

JENN-AIR PRODUCTS COMPANY, INC.
1102 Stadium Drive, Indianapolis 7, Indiana



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conqueror of all challengers!

THE ORIGINAL *Luma-Sheen* FINISH
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BY HAGER

STANDARD BEARER TO THE HINGE INDUSTRY!

Since 1954, when Hager first introduced *Permanized* LUMA-SHEEN Finish–the *original* and *first true aluminum colored finish*–it's become the most widely acclaimed finish of the door hardware industry!

Other manufacturers have tried desperately to duplicate and imitate the superb excellence of LUMA-SHEEN. When they compromised quality . . . they failed!

TRUE TO ITS PURPOSE. . . LUMA-SHEEN Finish–first *of* the industry–today is still first *in* the industry, after four long years! Specifiers, Consultants and Builders recognize that *permanized* LUMA-SHEEN has a can't-be-copied Hager craftsmanship that *out-performs* and *out-matches* them all!

PROOF OF INTEGRITY AND ENDURANCE!

1954–The Industry's first and finest! LUMA-SHEEN Finish–the *only* electrolytically-coated True Aluminum Color that matched other aluminum door hardware and trim.

1958–Proved by installation in practically every conceivable situation! LUMA-SHEEN remains the only finish that retains original soft lustrous beauty . . . resists and withstands corrosion.

When you want it to stand up to the test of time–specify Hager LUMA-SHEEN (symbol LS) on that next job.

C. HAGER & SONS HINGE MFG. CO., ST. LOUIS 4, MO. ©1958

EVERYTHING HINGES ON HAGER®

More architects are learning that you can

ELIMINATE NEEDLESS COSTS and IMPROVE EQUIPMENT QUALITY

In 1958, the farsighted, *value-minded* school boards are walking off with the *real* "bargains" in classroom heating and ventilating comfort. To learn more about how you can get the most advanced hot water system *within your present budget* read below:

ECONOMY

Compared with the installed cost of some other systems, the Nesbitt Series Hot Water Wind-o-line system saves as much as 20% on construction, equipment and installation costs. Each classroom has its own Nesbitt Syncretizer for heating, ventilating and natural air cooling. And Nesbitt Wind-o-line fin-tube radiation extends along the sill to protect students sitting near windows against cold walls and window downdraft. Each student enjoys the full measure of thermal environment most conducive to optimum learning . . . whether he sits near the window or at the other side of the room.

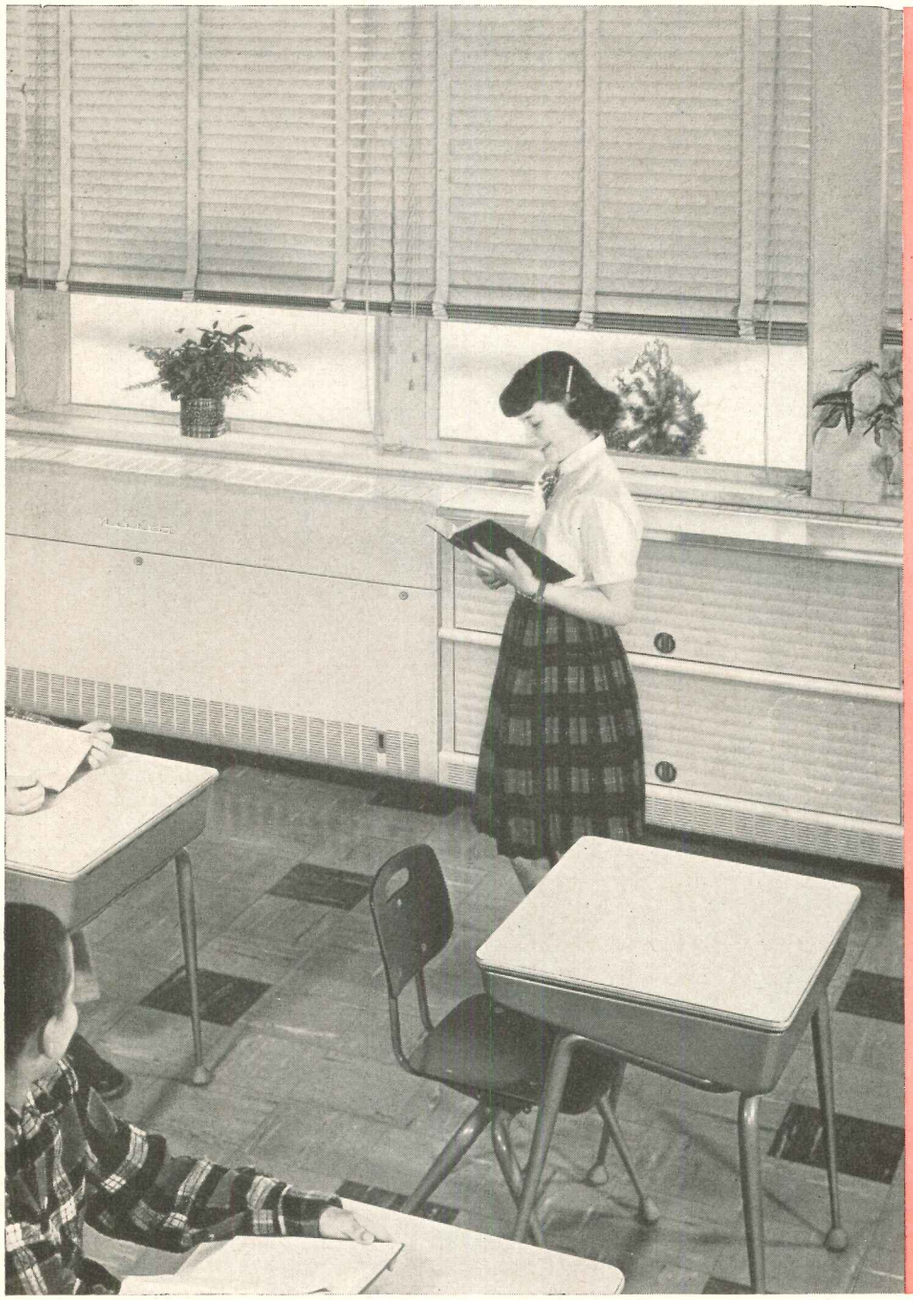
PERFORMANCE

No other unit ventilator provides *controlled* heating, ventilating and natural cooling as effectively as the Nesbitt Syncretizer. Add to this the advantages of Wind-o-line radiation and you have two-way Nesbitt protection against (1) excessive radiant loss of body heat and (2) chilling downdraft.

This unique *double* protection is your assurance of healthful, productive comfort—free of physical distraction—for every child in the room, wherever his seat is located. *Only the comfortable student can maintain maximum learning efficiency.*

QUALITY and VERSATILE DESIGN

The copper tubing of the Nesbitt Wind-o-line radiation does double duty by serving as the supply and return mains for the Nesbitt Syncretizer in each classroom. And that means *double* savings for you on pipes and coverings, and the elimination of expensive pipe trenches, mains and runouts. Because less hot water circulates, smaller and less costly pipes and pumps are needed. Piping within the Syncretizer units is factory-assembled, labor on the job is reduced. Gravity heating maintains overnight temperature, saving money on controls. Sum total of these economies: the best in *controlled* heating and



THESE SCHOOLS CUT COSTS... and *improved* quality

Heating and ventilating costs for 3 more Nesbitt equipped schools

In New York **$1.57 sq. ft.**

Myron Avenue Elementary School, Tonawanda, N.Y.
Architect: Fenno, Reynolds & McNeil, Tonawanda, N.Y.
Engineer: Jacobus & Babinski, Buffalo, N.Y.
Gross Area: 15,100 sq. ft.
Total Contract: $256,119.00
Heating & Ventilating: $23,681.00
Nesbitt Series Hot Water Wind-o-line System with Wind-o-line Radiation concealed by storage cabinets as shown at left

In Colorado **$1.48 sq. ft.**

Machebeuf High School, Denver, Colorado
Architect: John Connell, Deceased
R. James Noone, Denver, Colorado
Engineer: Marwi S. Wilson, Denver, Colorado
Capacity: 550 pupils
Gross Area: 48,390 sq. ft.
Total Contract: $523,200.00
Heating & Ventilating: $71,833.00
Nesbitt Series Hot Water Wind-o-line Radiation

In Maryland **$1.57 sq. ft.**

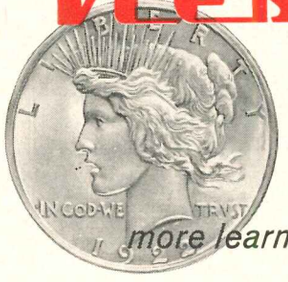
Stephen Knolls Elementary School, Montgomery Co., Maryland
Architect: Bailey & Patton, Rockville, Maryland
Engineer: Redmile, Corab & Wood, Washington, D.C.
Capacity: 450 pupils
Gross Area: 28,037 sq. ft.
Total Contract: $303,851.00
Heating Contract: $44,025.00
Nesbitt Series Hot Water Wind-o-line System eliminated pipe trenches—put all piping above floor for maintenance accessibility

ventilation for your school at a cost that's way down . . . with quality that's way up for every classroom.

SCHOOLS IN MODERATE CLIMATES

In parts of the country where daytime winter temperatures rarely fall below 20°F., Wind-o-line Radiation may not be necessary because outside window walls do not create special comfort problems. In such areas, Nesbitt offers the Mainline System. It offers the economies of the series piping arrangement without sacrificing quality.

Send for the big book, packed full of information on the value of *controlled* classroom ventilation, ***More Learning per School Dollar.***

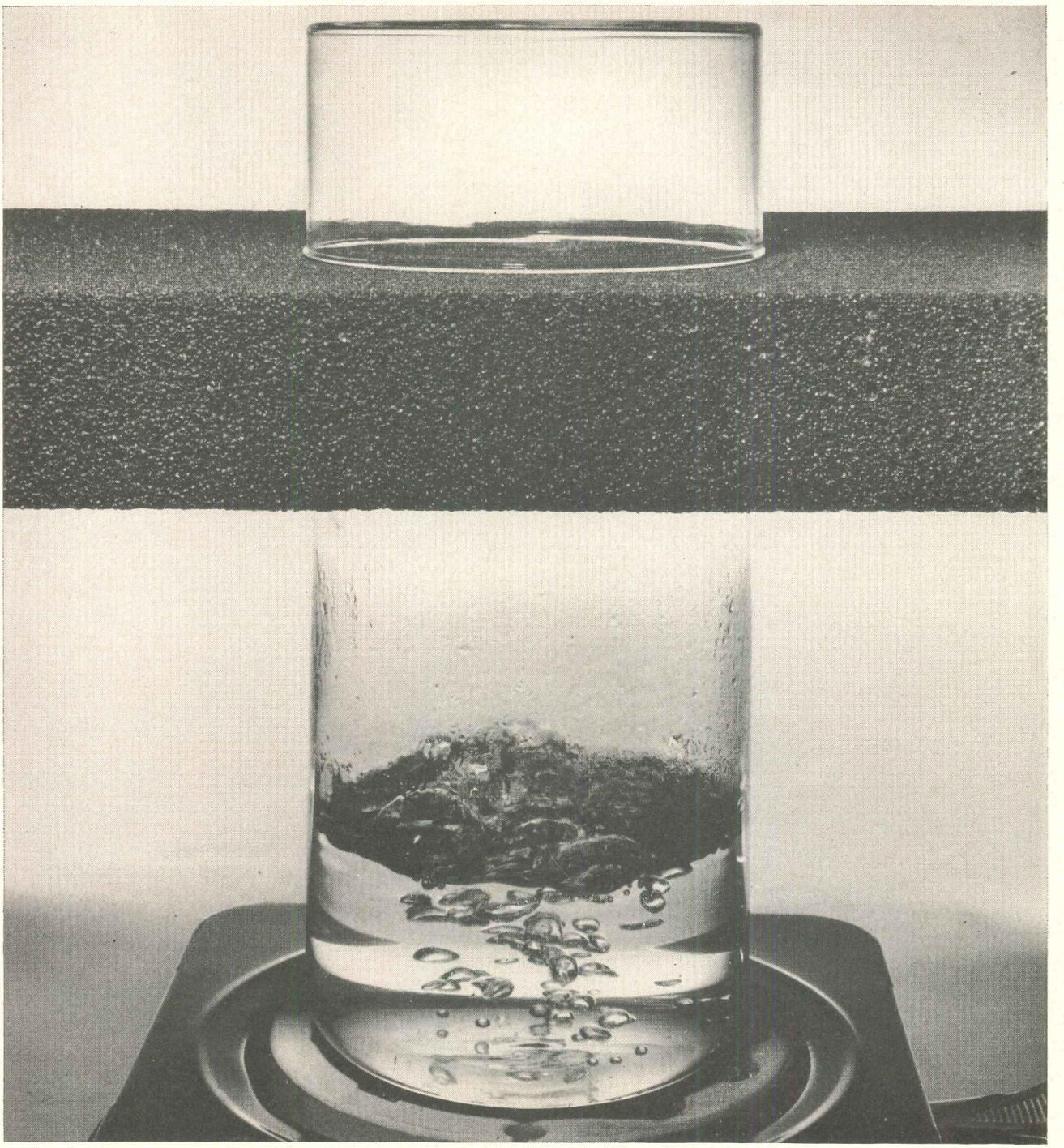


Nesbitt

THERMAL COMFORT ALL WAYS

more learning per school dollar

Made and sold by John J. Nesbitt, Inc., Philadelphia 36, Pa.
Sold also by American Blower Corporation and by American Standard Products (Canada) Ltd.



. . . always an insulation investment; never an insulating expense

FOAMGLAS® IS VAPOR-PROOF

Water vapor is the biggest threat to any insulation's thermal performance. It is present in nearly every situation requiring thermal insulation. Most insulations absorb vapor. When they do, the vapor can condense within the material . . . and turn the insulation into a conductor of heat. Eliminate this threat. Use Pittsburgh Corning FOAMGLAS. Its sealed glass cells can never absorb or transmit vapor (see above) . . . thus guaranteeing long lasting insulating value that never fades from its original high level. There's still more to this insulation investment story. FOAMGLAS is dimensionally stable . . . can't burn . . . unusually strong . . . acid-proof . . . vermin-proof . . . easy, economical to handle and install. Write for our latest literature. PC Glass Blocks are another outstanding building product of Pittsburgh Corning Corporation.

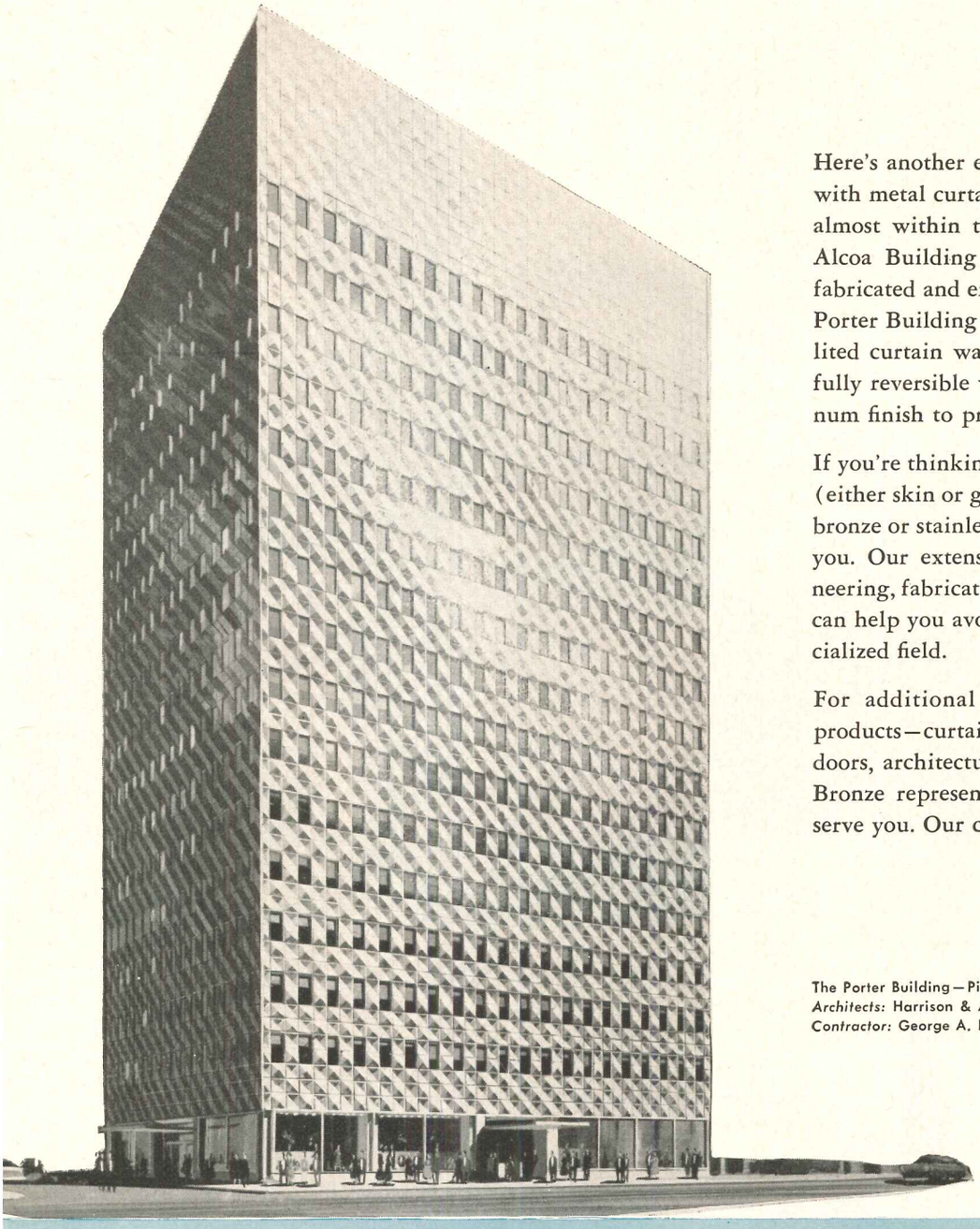
PITTSBURGH CORNING CORPORATION

Dept. B-68, One Gateway Center, Pittsburgh 22, Pa. • In Canada: 57 Bloor Street West, Toronto, Ontario

THE PORTER BUILDING...ANOTHER PITTSBURGH LANDMARK WITH

CURTAIN WALLS

by GENERAL BRONZE



Here's another example of a modern office building with metal curtain wall by General Bronze. Located almost within the shadows of Pittsburgh's famous Alcoa Building (with its aluminum curtain wall fabricated and erected by General Bronze), this new Porter Building makes use of 1026 dark gray alumilited curtain wall panels. Its 864 vertically pivoted fully reversible windows are in natural color aluminum finish to provide a pleasing color contrast.

If you're thinking of curtain walls for new buildings (either skin or grid and panel system) in aluminum, bronze or stainless steel, we can be of great service to you. Our extensive experience in designing, engineering, fabricating and erecting curtain wall systems can help you avoid costly pitfalls in this highly specialized field.

For additional information on General Bronze products—curtain wall systems, windows, revolving doors, architectural metalwork—call in the General Bronze representative. He is ready and anxious to serve you. Our catalogs are filed in Sweet's.

The Porter Building—Pittsburgh, Pa.
Architects: Harrison & Abramovitz
Contractor: George A. Fuller Co.

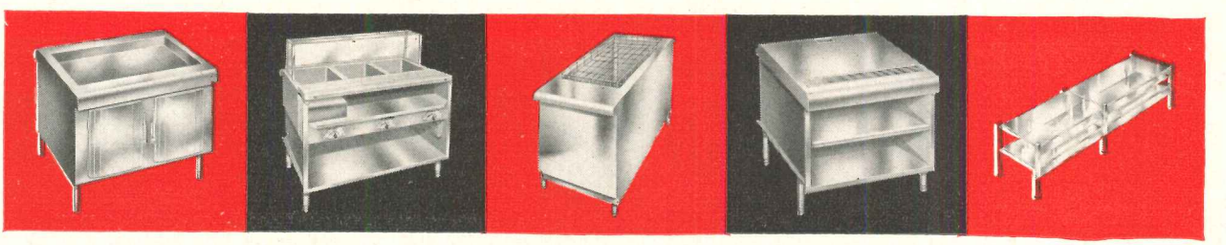
GENERAL BRONZE
CORPORATION · GARDEN CITY, N.Y.
SALES OFFICE: 100 PARK AVE., NEW YORK, N.Y.

PERMATITE DIVISION—Custom-built Windows, Curtain Walls, Architectural Metal Work and Revolving Doors. ALWINTITE DIVISION—Stock-size Aluminum Windows and Doors. BRACH MFG. CO. DIVISION—Radio, Television and Electronic Equipment. STEEL WELDMENTS, INC. DIVISION—Custom fabrication in Steel and Iron.

NOW! BASTIAN-BLESSING

From The World's Largest Manufacturer of Fountain and Counter Food-Service Equipment

CUSTOM MODULAR T.M. *cafeterias...*



Cold Pan Units | Hot Food Units | Lowerator Dispenser Stands | Urn Stands | Display Shelving

REVOLUTIONIZES CAFETERIA EQUIPMENT

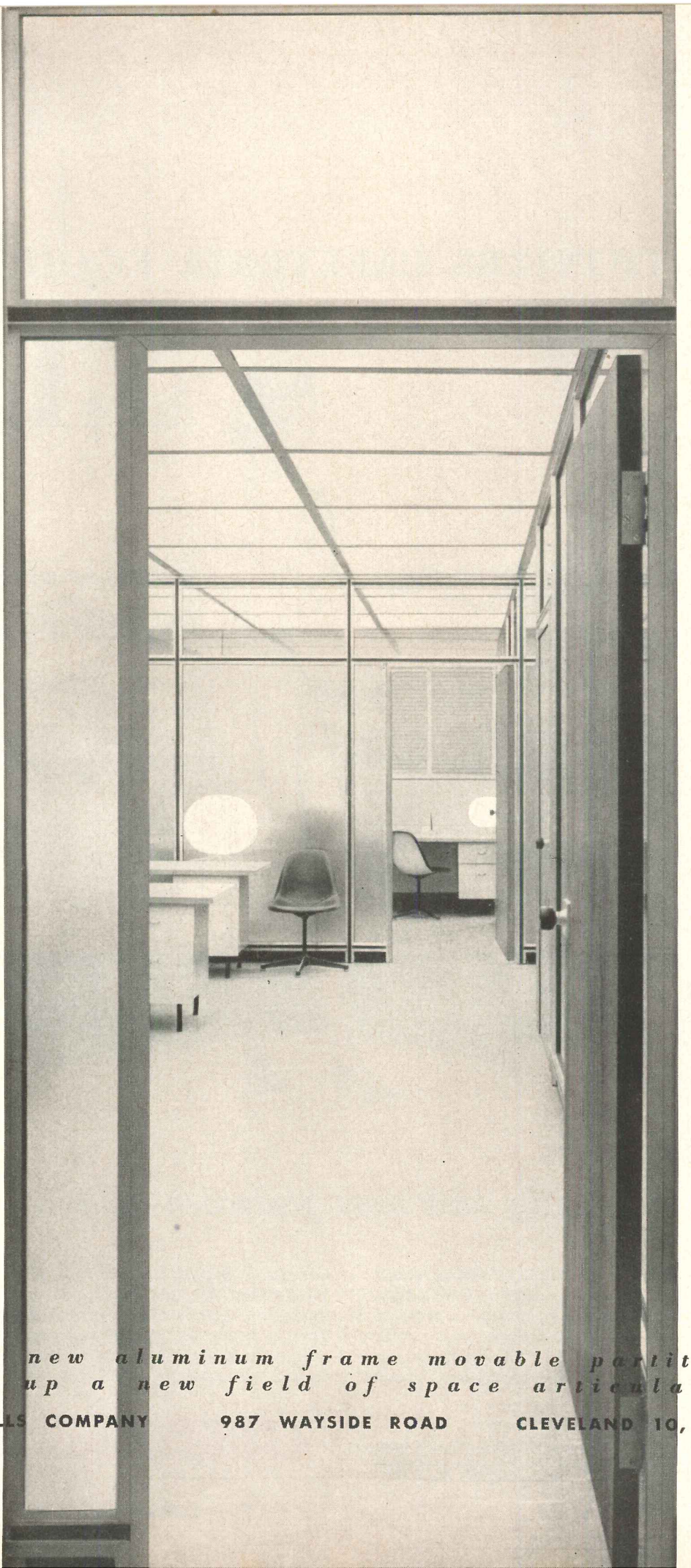
incomparable quality with mass-production economy

Now, Bastian-Blessing's ingenious *Custom-Modular* design principle means that you can have a cafeteria line incorporating every type of food-service unit you want . . . arranged in any sequence . . . to fit any size or shape area . . . with *seamless,* continuous, tailor-made 14 ga. stainless-steel top construction – and with your choice of *any* Formica, plastic laminate, or popular metal front—at a far lower cost than you'd expect. Materials, construction and easy-maintenance throughout these installations reflect Bastian-Blessing's 50 years of setting the highest standards for the food-fountain service industry. It is truly custom quality . . . without "custom" price penalty or time-consuming "custom" delays!

send for new catalog no. C-400 . . .

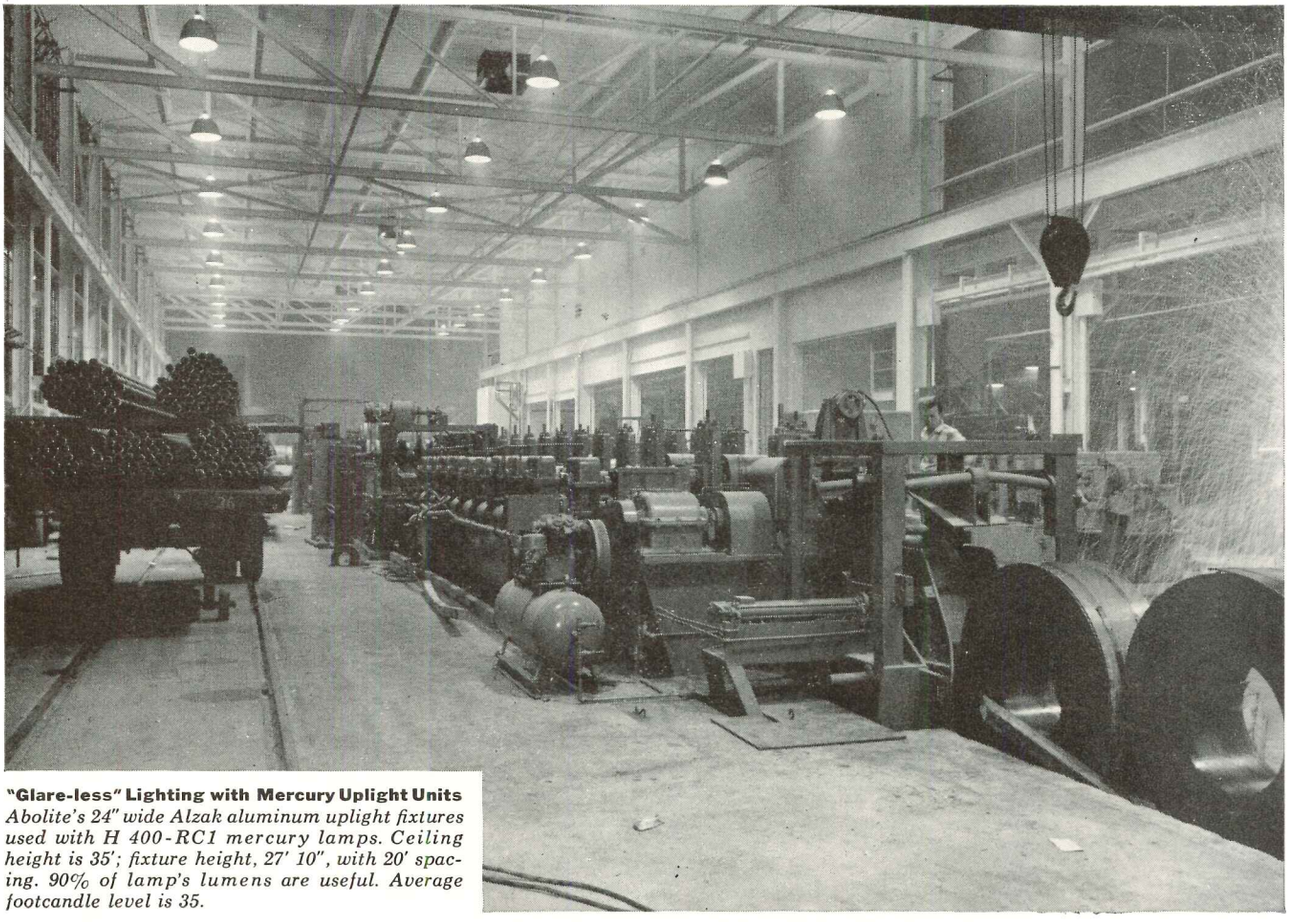
. . . showing revolutionary new *Custom-Modular* cafeteria food-service equipment. Write on your letterhead: The Bastian-Blessing Co., 4205 West Peterson Avenue, Chicago 46, Illinois, Dept. 4-F.

BASTIAN-BLESSING



mills new aluminum frame movable partitions
open up a new field of space articulation

THE MILLS COMPANY 987 WAYSIDE ROAD CLEVELAND 10, OHIO



"Glare-less" Lighting with Mercury Uplight Units
Abolite's 24" wide Alzak aluminum uplight fixtures used with H 400-RC1 mercury lamps. Ceiling height is 35'; fixture height, 27' 10", with 20' spacing. 90% of lamp's lumens are useful. Average footcandle level is 35.

Now Abolite brings "office type" eye comfort to...

INDUSTRIAL HIGH BAY LIGHTING

Abolite open-top units direct only a small amount of light (18%) upward, but it makes a big difference in eye comfort. Dark ceiling shadows are washed away—there's no sharp contrast of bright light against black background. And glare is reduced still more by 35° lamp shielding. As a result, eye fatigue is reduced—workers are more efficient.

Abolite's modern air-swept design also reduces maintenance costs because air circulating through the fixture sweeps it clean of dulling dust.

There are three Abolite uplight units for high bay lighting: 18" and 24" diameter Alzak aluminum fixtures for use with 400 and 1000 watt mercury lamps and 18" Alzak aluminum fixtures for 500 watt incandescent lamps (ideal for gymnasium lighting). For full information on these units, see Sweet's Industrial Construction File, 12i/AB.

ABOLITE Lighting

THE JONES METAL PRODUCTS COMPANY
West Lafayette, Ohio

New Medicenter Building reception walls and desk feature striped mahogany Marlite Plank and Block

"Marlite provides a smooth, easily-maintained surface in attractive colors and patterns"

says architect Juliet Peddle

"The new Medicenter Building, Terre Haute, Indiana, has five self-sufficient suites that include an office, waiting room, examination and consultation rooms. All interior walls are Marlite plastic-finished paneling. Six colors, three marble patterns, and six wood grains were used. The result is both attractive and efficient, and requires only a minimum of maintenance."

More and more architects are planning imaginative interiors with Marlite. This versatile paneling—dimensioned for standard modular sizes—fits right, looks right, goes up fast with minimum cost in place. And Marlite's baked melamine plastic finish resists heat, moisture, grime and stains. It wipes clean with a damp cloth; stays like new for years.

Get complete details from your building materials dealer, refer to Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 605, Dover, Ohio.

5807

that's the beauty of **Marlite®**

plastic-finished paneling

MARLITE IS ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

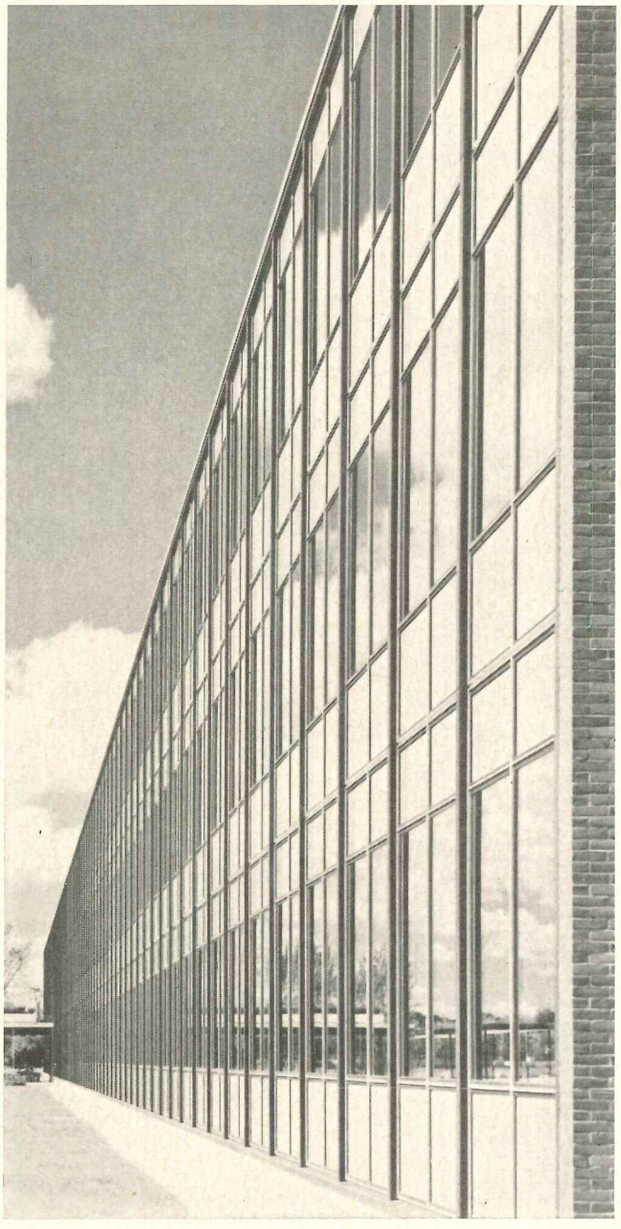
Marlite branch offices and warehouses: 204 Permalume Place, N.W., Atlanta 18, Georgia • 18 Moulton Street, Cambridge 38, Mass. 1925 No. Harlem Ave., Chicago 35, Illinois • 8908 Chancellor Row, Dallas 35, Texas • 1577 Rio Vista Ave., Los Angeles 23, Calif. • 2440 Sixth Avenue So., Seattle 4, Washington • Branch office: 101 Park Avenue, New York 17, N. Y.

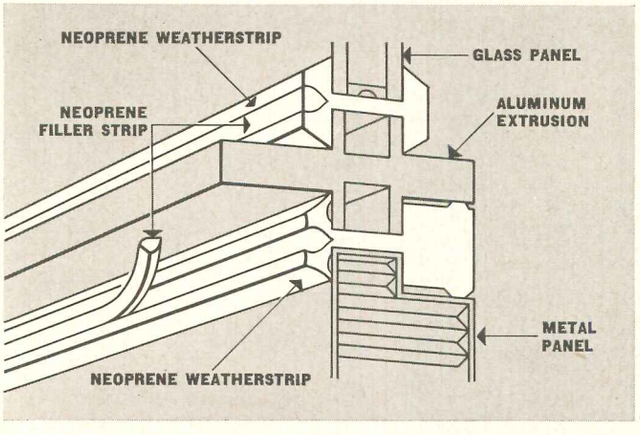
FIRST FIVE YEARS PROVE CURTAIN WALLS SEALED WITH NEOPRENE STAY WEATHERPROOF... TROUBLE-FREE

In 1953, more than 150,000 feet of neoprene stripping was used to seal many of the glass and metal curtain-wall panels in the General Motors Technical Center. Today, 5 years later, this neoprene weatherstripping is still air and water tight. What's more, these same sealing strips are expected to do their job for many years to come.

All over the country, seals of neoprene synthetic rubber are going hand-in-hand with good curtain-wall construction. Neoprene sealing strips won't crack or dry out, get hard, soft, or lose their sealing pressure . . . even after years of exposure to the elements. They can absorb vibration and dimensional changes of the panels over long periods of time without "setting" and losing their resilience. In addition, neoprene strips can be pre-formed to make installation of the metal and glass panels easier, quicker and neater.

Sealing strips of Du Pont neoprene can bring long-term dependability and economy to your curtain-wall projects. Send the coupon for a list of suppliers. You'll also receive a free copy of *The Du Pont Elastomers*, a booklet that reviews the properties of both neoprene and HYPALON®, Du Pont's newest synthetic rubber.





Neoprene strips are pre-shaped to fit the metal framing as well as the glass and metal panels. When inserted, a filler strip compresses the weatherstrip against sealing surfaces. Weatherstripping sustains 30 lb./in. pressure and also permits panels to be installed from inside or outside of building. Panels can be easily removed simply by "unzipping" the filler strip.

DU PONT
REG. U. S. PAT. OFF.

NEOPRENE

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

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*Firm*_____

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NATION ENDORSES

Pittsburgh Firm Announces New Metal Discovery

PITTSBURGH (AP) — A. M. Byers Co. put on the market today a new kind of wrought iron described as the most significant development in the history of the metal.

This description was given at a news conference yesterday by B. M. Byers, president of the Pittsburgh firm. It is the world's largest maker of wrought iron products.

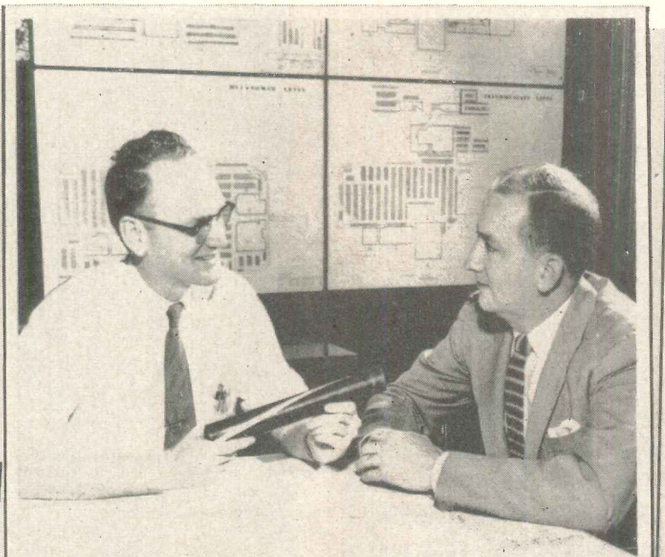
The improved product, known as 4-D wrought iron, is at least 25 per cent ... resistant to corrosion than ...

Firm Producing Corrosion-Proof Wrought Iron

A new 4-D wrought iron has been announced by the A. M. Byers Co., Pittsburgh, according to E. G. Sullivan, field service engineer here for the firm. Byers, largest producer of wrought iron, claims the new iron has greatly superior resistance against many kinds of corrosive forces, including ...

New Wrought Iron Produced

A new "4-D wrought iron" with 25 per cent increased corrosion resistance has been brought out of the laboratory and into production by the A. M. Byers Co., William F. Weber of Seattle, Byers field service engineer, said Sunday. Weber said 4-D wrought iron is immediately available ...



4-D PIPE — R. R. Kirkwood (left), Chief Mechanical Engineer for John Graham & Company, Seattle, checks piece of 4-D Wrought Iron Pipe now being produced by A. M. Byers Co. Looking on is Byers' Seattle Field Service Engineer, W. E. Weber.

A. M. Byers Claims Improved Wrought Iro Less Likely to Corrode

By a WALL STREET JOURNAL Staff Reporter

PITTSBURGH—A. M. Byers Co., a produ of wrought iron products, announced its me lurgists have come up with a new and proved version of standard wrought iron.

Called 4-D wrought iron, simply a market term used to distinguish it from the stand product, it is expected to "aid substantial in reducing losses stemming from mate failures caused by corrosion, B. M. Mye president, stated.

He said that standard wrought iron is ready "a bulwark in the fight against cor sion." Wrought iron pipe, for instance, is us in water, waste and drainage lines, locomot and diesel engine piping and underground s plane fueling lines, while flat rolled produ go into coal chutes, bridge decking, pier p tection plates, structural members and proc materials tanks.

A. S. Chalfant, vice president-sales, said t new product will go on the market imme ately. He added that the new product will s for the same prices as those for standa wrought iron.

A. M. Byers Announces Results Of Tests On New 4-D Wrought Iron

PITTSBURGH, Mar. 18. — Results of three tests new 4-D wrought iron have been announced by the etallurgical department of A. M. Byers Company, ttsburgh. The test data documents the announcement made by A. S. Chalfant, vice president of sales, a press conference in ttsburgh in February at new 4-D wrought iron at least 25% more cor-

gion is characterized by agitation and plentiful oxygen."

Test Conditions

Byers Improves Its Wrought Iron

Special to World-Telegram and Sun.

PITTSBURGH, Feb. 13.—A. M. Byers Co., producers of wrought iron products, announced its metallurgists have found a new and improved version of standard wrought iron.

Called 4-D wrought iron, as a marketing term used to distinguish it from the standard product, it is expected to "aid substantially" ...

Develop New Wrought Iron

PITTSBURGH, Feb. . M. Byers Co., a prod rought iron product ounced today its meta ave come up with a n nproved version of s rought iron.

Called 4-D wrough imply a marketing te o distinguish it fr tandard product, it is e o "aid substantially" i ng losses stemming fr

A. M. Byers Co Develops New Wrought Iron

Dow-Jones Service

PITTSBURGH, PA., Feb. 13 A. M. Byers Company, produc of wrought iron products, nounced its metallurgists ha come up with a new and proved version of stand wrought iron.

Called 4-D wrought iron, sim a marketing term used to dist guish it from the standard pr uct, it is expected to aid s stantially in reducing los stemming from material failu caused by corrosion, B. M. ers, president, stated.

A. S. Chalfant, vice preside sales, said the new product go on the market immedia He added that the new prod will sell for the same prices

Civil Engineer C. E. Drummond (left), examines 4-D Wrought Iron sponge ball with J. A. Cain, A. M. Byers Company southeastern division manager. Laboratory test results have shown the new metal to be much more corrosion resistant than standard wrought iron.

Developed By Byers

New Wrought Iron 25 Per Cent More Corrosion Resistan

250,000 Non-Rusting Fibers Per Square Inch In Product

By W. L. RUSSELL, Press Business Edito

Out of the laboratory and into production Byers Co. has come a new type of wrought i is credited with increasing corrosion resist much as 25 per cent.

The new 4-D is a result of 17 years of res

In addition to superior resistance to corro new iron has greater uniformity and improved ph mechanical properties.

This is attained by substantially increasing th tion of the base metal, stepping u phorous content and using a me

4-D WROUGHT IRON

M. Byers Co. Markets w Kind of Wrought Iron

BURGH (AP)—A. M. Byers on the market today a l of wrought iron de- is the most significant ent in the history of the

scription was given at a erence yesterday by B.

wrought iron, developed after 17 years of research, has greater uniformity and better physical and mechanical properties.

The key to manufacture of 4-D wrought iron is removal of more oxygen from the base metal—

Rykoskey, General Superintendent of Motive Baltimore & Ohio Railroad, gets a first hand rom R. G. Angell (left), A. M. Byers Co. Railroad Manager, on the increased corrosion resistance 4-D Wrought Iron. Byers recently announced a nprovement in wrought iron which makes the at least 25% more corrosion resistant than d wrought iron. Railroads are among the world's users of corrosion resistant wrought iron.

A. M. BYERS DEVELOP NEW WROUGHT IRO

PITTSBURGH, Feb. 13—(DJ A. M. Byers, Co., a producer o wrought iron products, announced its metallurgists have come up with a new and improved version of standard wrought iron.

Called 4-D wrought iron, simply a marketing term used to distinguish it from the standard product, it is expected to "aid substantially" in reducing losses stemming from material failures caused

Corrosion Resistance Raised in Wrought Iron

PITTSBURGH, Feb. 15 (AP) The A. M. Byers Company has announced development of an improved type of wrought iron highly resistant to corrosion.

Known as 4-D wroug the product is the re seventeen years of re the company said.

B. M. Byers, preside the new wrought iron by removin from the base refined iron—l purer state

'New' Wrought Iron Developed

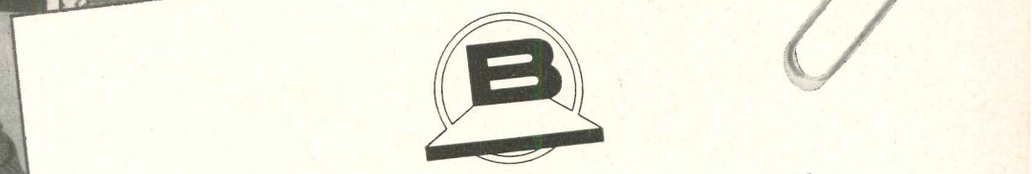
Production by A. M. Byers Company, Pittsburgh, Pa., of a new "4-D wrought iron" with 25 per cent increased

A. M. BYERS DEVELOPS NEW WROUGHT IRON

A. M. Byers Co., a producer of wrought iron products, announced its metallurgists have come up with a new and improved version of standard wrought iron. Called 4-D wrought iron, simply

4-D Wrought Iron Cuts Corrosion

Out of the labora



Here is news. It's about one of the most significant metallurgical advances of modern times: the increased corrosion resistance of new 4-D Wrought Iron. This improved metal provides longer service life at lower cost per year. You can get further details from the Byers representative or by writing direct: A. M. Byers Company, Clark Building, Pittsburgh 22, Penna.

J. Byers Making New Wrought Iron

ost significant development history of wrought iron — new 4-D wrought has just been announced Byers Company.

ess conference Tuesday in n, B. M. Byers, president irm which is the world's roducer of wrought iron told newsmen:

condensates.

According to E. P. Best, Byers chief metallurgist, the improved 4-D wrought iron was achieved by substantially increasing the deoxidation of the base metal; increasing the phosphorous content in relation to the other material components; and using fiberous material.

ought Iron More Resistant

rought iron whose corrosion re- is increased 25% over standard t iron is available. Marketed the name 4-D Wrought Iron, oduct is the result of 17 years earch, laboratory and in-service

improved wrought iron is made easing the extent of deoxidation base metal-iron, slightly increas-

uniform di fiber throug

Also beca the metal i standard wr mechanical

4-D wrou ing product offered at standard wr

Placed

A. S. Chalfan sales; stated tha is simply a ma to distinguish th from standard w be placed on th ately and would the Byers Comp

WROUGHT IRON IMPROVEMENT IS REPORTED

Out of the laboratory and into production has come "new 4-D Wrought Iron" with 25% increased corrosion resistance, A. D. Sheere, A. M. Byers Co. Pacific Coast manager, announces.

Mr. Sheere, of San Franc recently returned from Pittsb where he was given a previe the new material. He says Wrought Iron is immediately able—at no increase in price will save millions of dolla corrosion losses annually in Pacific Coast territory.

According to Mr. Sheere, 4-D Wrought Iron was achiev increasing the purity of the increasing its phosphorous co and using a more siliceous silicate. Wrought iron is a component material—refined mixed with iron silicate.

New Wrought Iron Is 25 Per Cent More Corrosion Resistant

A new type of wrought iron, developed in the laboratories of A. M. Byers Co., Pittsburgh, is now in production. It is credited with increasing corrosion resistance as much as 25 per cent. The new metal, known as "4-D" is the result of 17 years

Byers Develops New Wrought Iron

PITTSBURGH, Feb. 13. — A. Byers Co., a producer of wrou iron products, states its me urgists have come up with a and improved version of stand wrought iron.

Called 4-D wrought iron, sim a marketing term used to dis guish it from the standard p uct, it is expected to "aid subs tially" in reducing losses stemm from material failures caused corrosion, B. M. Myers, presi

Byers Improves Wrought Iron

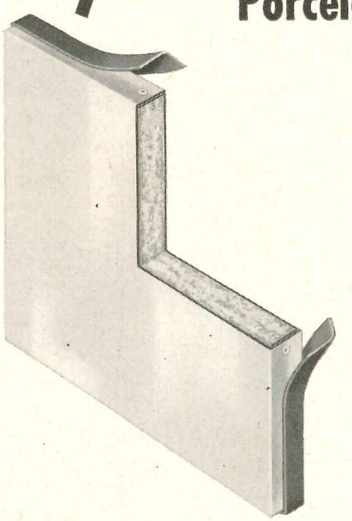
Special to the Herald Tribune

PITTSBURGH, Feb. 12.—A. M. Byers Co. announced today that it had developed a new kind of wrought iron, shown by tests to offer "greatly superior resistance" to corrosion.

Called "4-D," the improved wrought iron was achieved by substantially increasing the deoxidation of the base metal; increasing the phosphorous content in relation to other components, and using additional quantities of silicat

again . . . it's Erie-quality

Porcelain Enamel Curtain Wall Panels



The builders of another American showplace—DuPont Plaza—looked to Erie for the quality they demanded in their porcelain enamel curtain wall panels.

The Reasons

Construction—Pre-engineered panels of full 16 ga. steel, all-welded flange corners, and assembly with mechanical fasteners.

Durability—Protected on all face panel surfaces with "AA" rated weather-proof porcelain enamel. Internally insulated with age-proof material.

Color—Jewel-tones of permanent, fade-proof colors in lifetime porcelain enamel.

Economy—Fast erecting; maintenance-free finish; actual sq. ft. cost unmatched by less desirable materials.

Erie-quality merits its place in the finest projects, improves the most economical ones.

See us in Sweet's **3c/Er**

THE Erie **ENAMELING COMPANY**
Erie, Pennsylvania
Chicago • Philadelphia
Representatives in Principal Cities

COMPLETELY NEW!

SEAL AND HARDEN NEW CONCRETE FLOORS BETTER THAN EVER BEFORE . . .

TREMSEAL-20

REPLACES CHEMICAL HARDENERS — at lower cost!

Tremseal-20 is a radically new, amazingly superior seal for new concrete floors. A "synthetic elastomer," Tremseal-20 is markedly better than conventional magnesium fluorosilicate hardeners and oleo-resinous seals. It is the modern way to seal and harden concrete floors — *and at lower cost applied.*

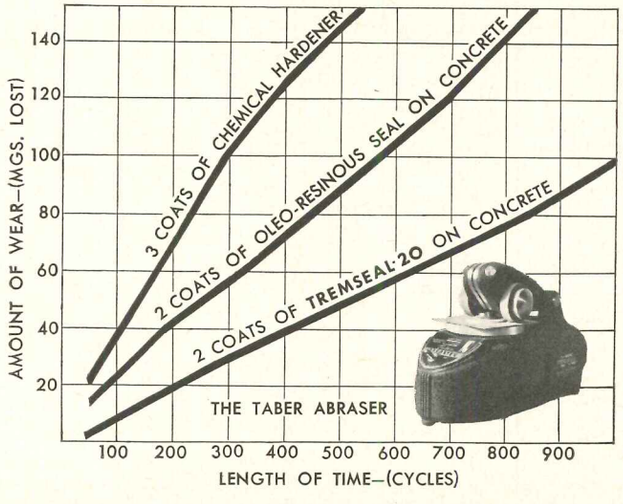
WEARS TWICE AS LONG AS CONVENTIONAL OLEO-RESINOUS SEALS!

An outstanding advantage of Tremseal-20 is enormously increased resistance to abrasion — it wears *twice as long* as older type seals (see chart). One coat of Tremseal-20 protects the floor during building construction — mortar, plaster and other debris is easily removed after other trades have finished work.

APPLY TO 7 DAY OLD CONCRETE — DRIES IN 3 HOURS!

Tremseal-20 can be applied to new floors only 7 days old, providing the immediate surface is thoroughly dry. It dries in 3 hours to a flint-like hardness. Tremseal-20 possesses remarkable adhesion even to smooth, hard-trowelled concrete. Ask your Tremco Man for a sample or write The Tremco Manufacturing Co., 8701 Kinsman Road, Cleveland 4, Ohio, or The Tremco Manufacturing Co. (Canada) Ltd., Leaside, Toronto.

This test was conducted in the presence of, and certified by Cosma Testing Laboratories, a leading independent laboratory. The Taber Abraser (lower right) was used on test panels treated with (1) chemical hardener (2) oleo-resinous seal and (3) Tremseal-20. Note Tremseal-20's obvious superiority in abrasion resistance.

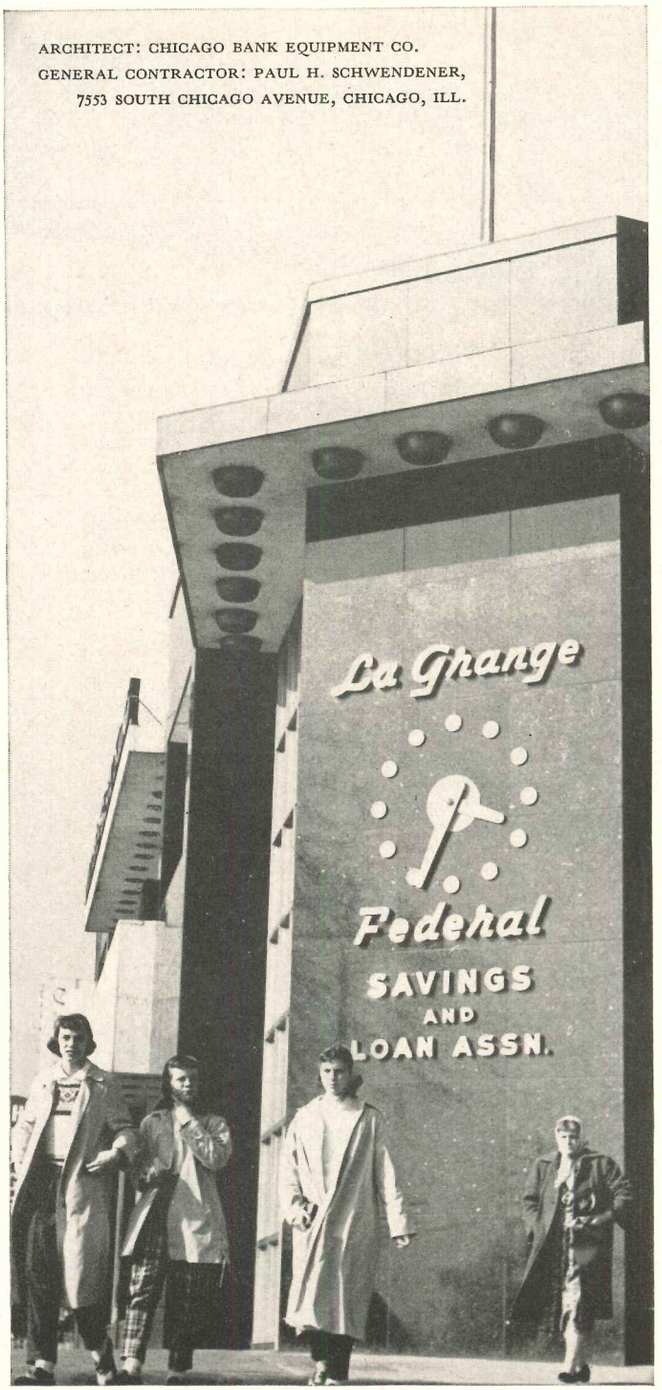


TREMCO

PRODUCTS AND METHODS FOR BUILDING MAINTENANCE & CONSTRUCTION

...now we're cooling

ARCHITECT: CHICAGO BANK EQUIPMENT CO.
GENERAL CONTRACTOR: PAUL H. SCHWENDENER,
7553 SOUTH CHICAGO AVENUE, CHICAGO, ILL.

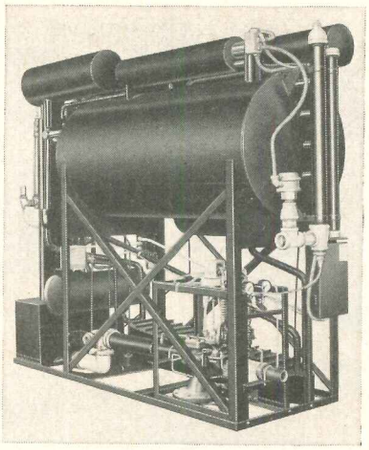


Specify Arkla-Servel Gas Air

With their new Arkla-Servel Gas Absorptive Cooler, the La Grange Federal Savings and Loan Association keeps customers cool in summer with the same compact system that keeps them warm in winter.

Before installing Gas, a complete study was made of available air conditioning systems. The Arkla-Servel unit—the only 25-ton absorptive cooler—was chosen because it is compact, easy to install, and costs are low for installation, operation and maintenance. No specially trained operating or maintenance personnel are required.

with GAS



Conditioning and you specify years of trouble-free comfort

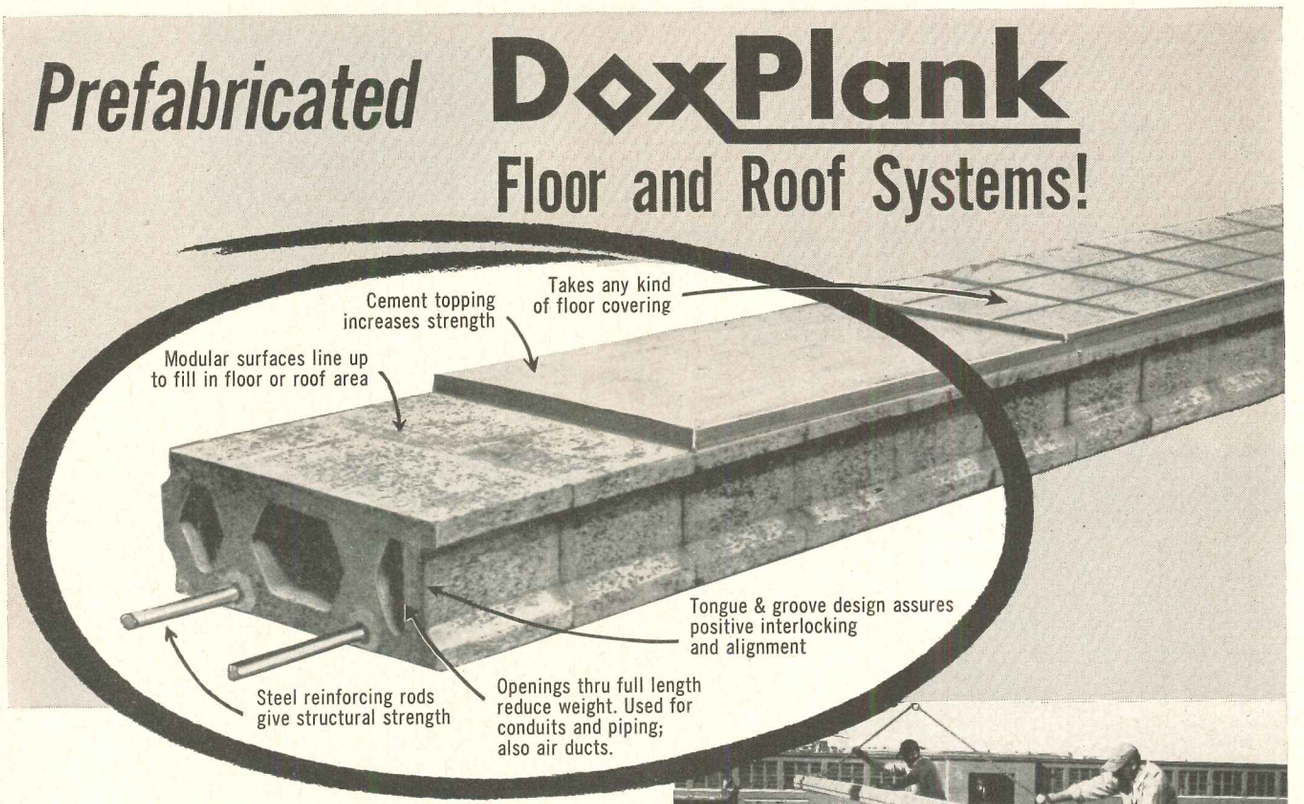
Only Gas gives these important advantages:

- high efficiency at all times—even during the light loads
- temperature control is constant
- modular adjustment of capacity (instant automatic adjustment to match actual cooling requirements)
- dependability of fuel service at all times

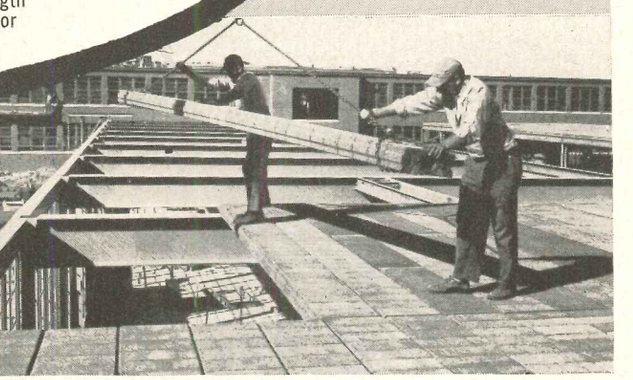
Gas absorptive cooling can put your commercial and industrial clients' heating plant on a year around paying basis. It utilizes low pressure steam to cool water, has no moving parts to wear out, and provides quiet, economical operation. What's more, it's vibration-free.

Take advantage of the consulting services provided by your Gas company. They have trained specialists who have been working with architects and engineers for years. They belong to your associations or affiliations and are familiar with your problems. Check the facts about Gas and you'll see modern Gas air conditioning out-performs all other fuels. *American Gas Association.*

Prefabricated DoxPlank Floor and Roof Systems!



High Speed "Time-Table" Construction is KEYED to LOWER BUILDING COSTS!



DoxPlank crane-hoisted to Time-Table scheduled position — laid in proper alignment in record time. Provides immediate working deck for following trades.

The tremendous increase in DOXPLANK installations is due to a new and practical simplification keyed to lowering building costs through saving TIME, LABOR and FIELD SUPERVISION.

These reinforced concrete planks are prefabricated to exact dimensions — delivered to jobsite on "TIME-TABLE" schedules and laid to meet "TIME-TABLE" planning to provide an immediate working deck for following trades.

Unlike poured concrete, DOXPLANK floor and roof construction is rarely hindered by weather — summer or winter. No delays due to mixing, pouring, setting or building and removing forms. Due to simplified high-speed installation costly field supervision is reduced to a minimum.

DOXPLANK installations conform to approved building practices — also army, navy and FHA requirements.

SEE OUR CATALOG IN SWEET'S

Consult with these members of The DoxPlank Manufacturing Association

Baltimore Concrete Plank Corp.
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Baltimore 21, Md., MUrdock 6-2100

Baltimore Concrete Plank Corp.
1214 Commercial Trust Building
Philadelphia 2, Pa., LOcust 8-2390

Cleveland Precast Floor & Roof Div. The Cleveland Builders Supply Co.
Reeves and Beyerle Road
Cleveland 5, Ohio, Phone VU 3-5456

Dox-Block System
106 Broadway Street
St. Paul Park, Minnesota

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135 South LaSalle St.
Chicago 3, Ill., RAndolph 6-2780

Dox System of Pennsylvania
Box 427
Portage, Pa., Portage 8503

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Knoxville, Tennessee

Maule Industries, Inc.
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64 Glenwood Place
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Plasticrete Corporation
Floor & Roof Div., 45 Skiff St.
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Schaefer Bros. Builders Supply Co., Inc.
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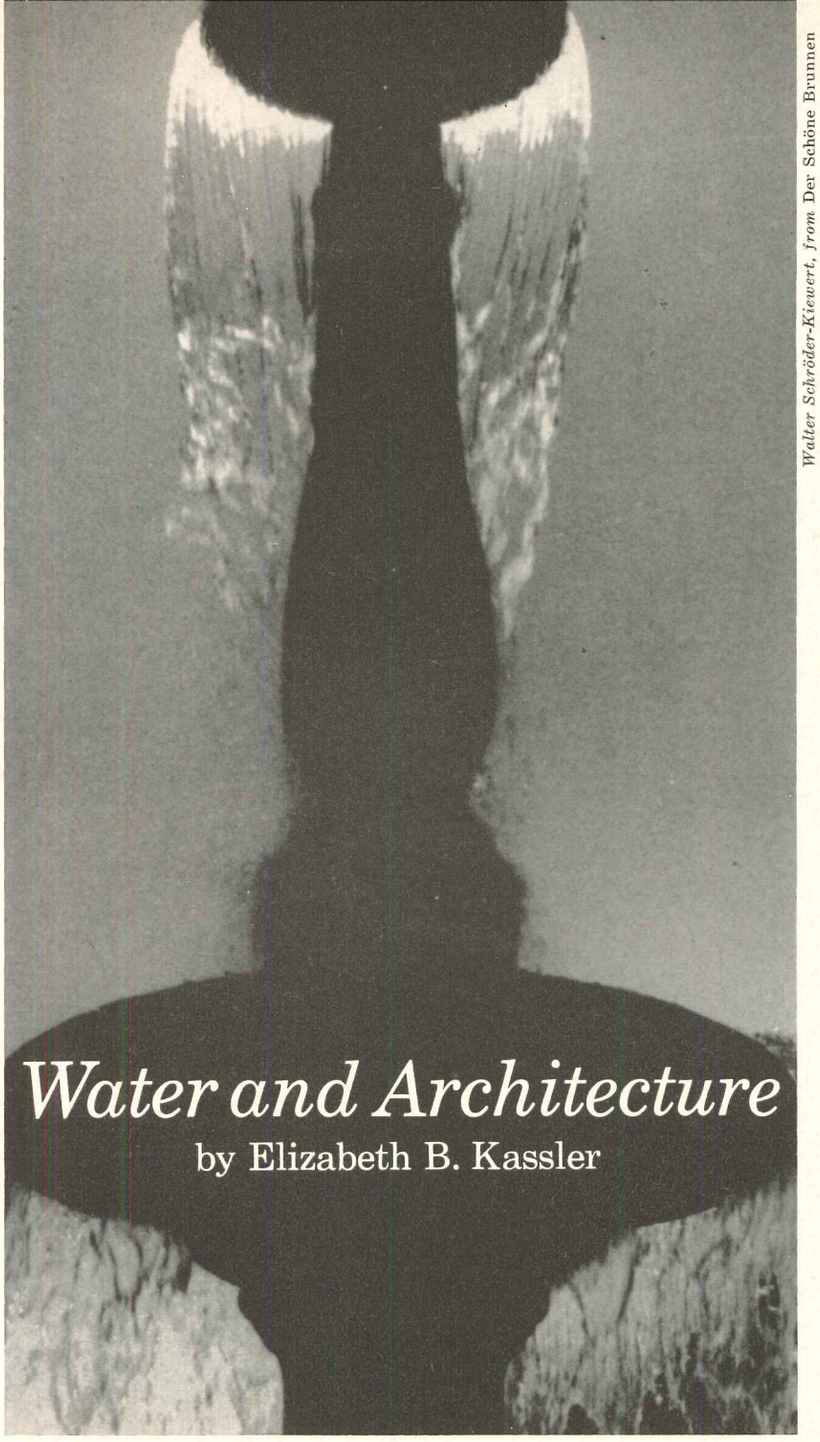
Rochester 11, N. Y., GEnesee 8-3460

Vander Heyden, Inc.
6633 West National Avenue
Milwaukee 14, Wisc.

ARCHITECTURAL RECORD JUNE 1958

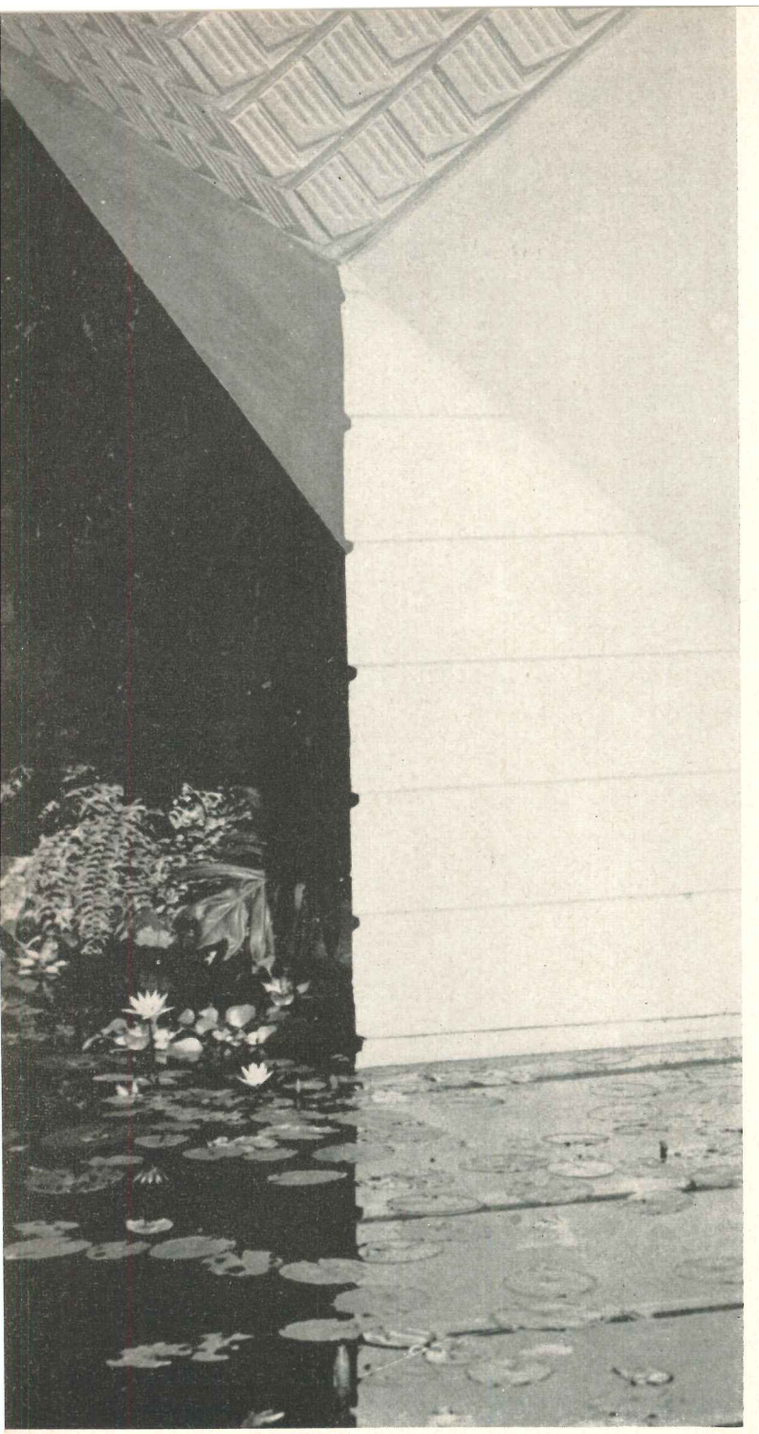


Walter Schröder-Kiewert, from Der Schöne Brunnen

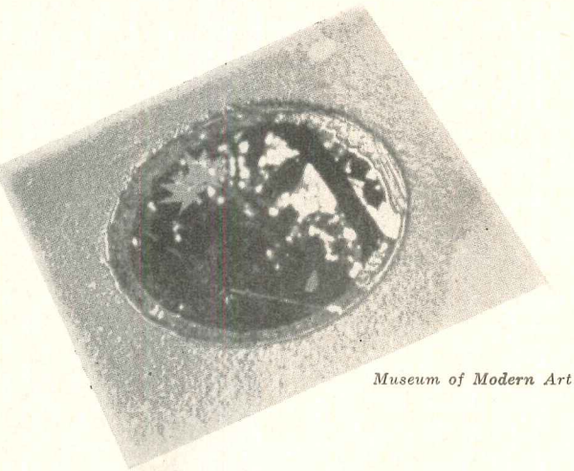
Water and Architecture

by Elizabeth B. Kassler

We seem to have lost—in our preoccupation with technology—the visual, sensual delights that water has historically added to architecture. Lying in a still pool, coursing rapidly in a stream, cascading in a fall or bursting skyward in a jet, water is part of the environment of building. Whether it is the art we have lost, or the notion, today when water is used as an architectural element it is usually done tentatively, even apologetically. But architecture seems trending toward more enrichment, also toward more interest in site development. Perhaps with some encouragement,—such as this beginning series—water may again add pleasure to our contemporary architecture.



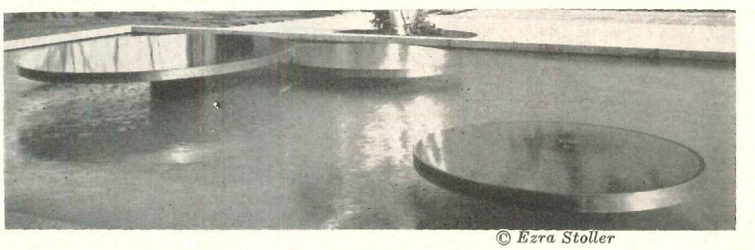
As reflected reeds look twice their height, so water-based piers assume strange new dimensions. Frank Lloyd Wright: Florida Southern College



Museum of Modern Art

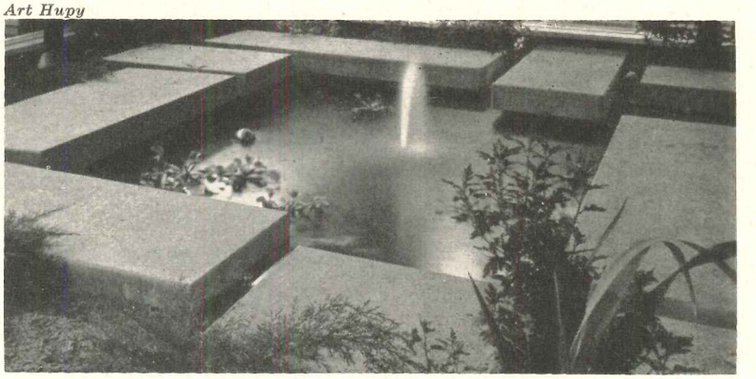
Japanese garden basin embracing two leaves and a disc of sky. If placed just under a roof overhang, such a basin would cast a circle of shifting, shimmering light upon the ceiling above

Below: fractured reflections in a trio of basins designed by the sculptor Noguchi. Fed by underwater nozzles, they are kept full to the brim or made to overflow into the shallow blue-tiled pool beneath. Basins are of reinforced concrete, lined with black waterproof paint and rimmed with ⅛" sheet bronze. Skidmore, Owings & Merrill architects and engineers: Connecticut General Life Insurance Company, Bloomfield, Conn.



© Ezra Stoller

Art Hupy



The cantilevered slabs which conceal the walls of this courtyard pool serve to free the water from all visible confinement. Eckbo, Royston & Williams, Landscape Architects. Bassetti & Morse architects: Benton County Public Utility Administration Building, Kennewich, Wash.

Right: Courtyard of the Madraseh, the Moslem theological seminary built around 1700 in Isfahan, Persia. The side-stepped canal emerges from under the great arched western porch to disappear under the porch at the east side, a distance of 200 feet

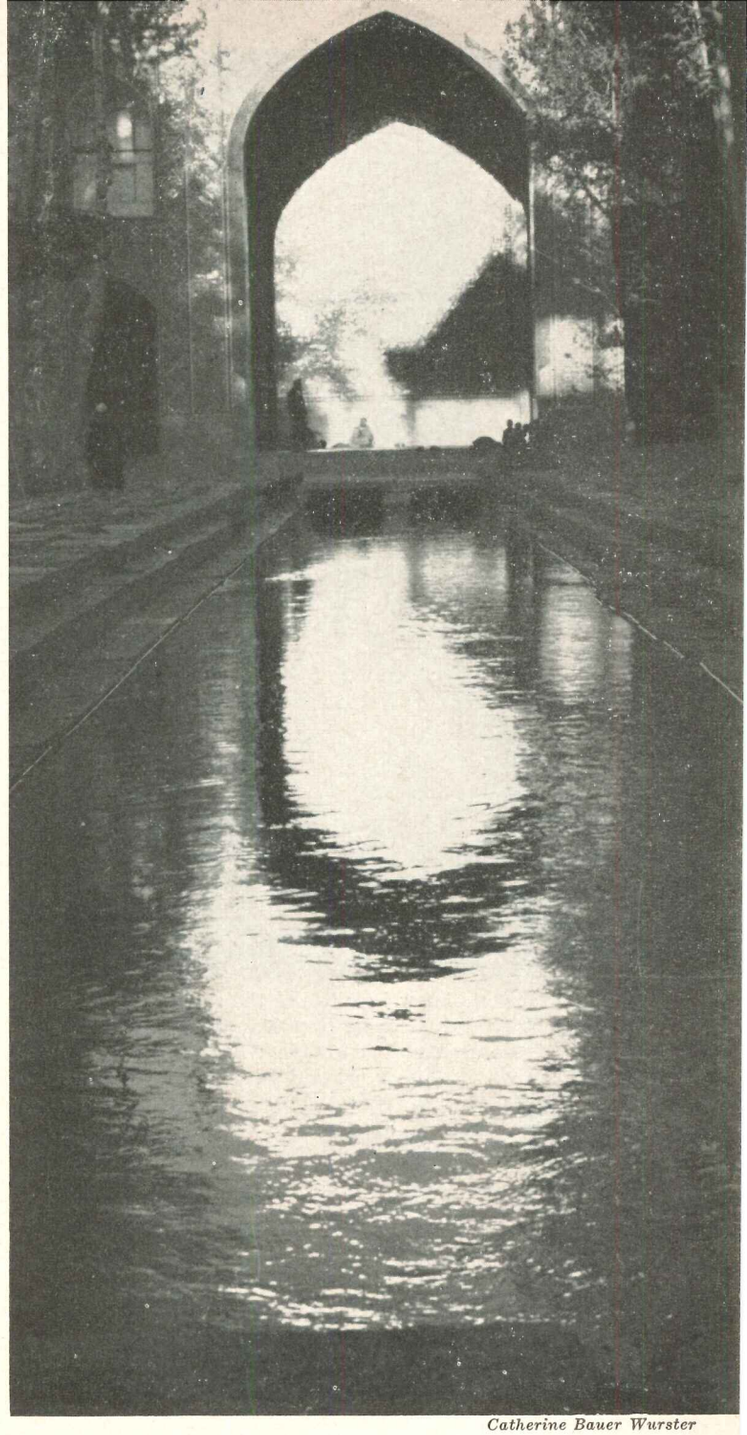
Still Waters

A reflecting pool is most persuasive when illusion seems one with actuality. Unless a mirror pond is filled to the very brim, even to overflowing, the strong horizontals of the coping will destroy the dream. Or the object can be set directly into the water like a reed, with no separate base to interrupt the continuity of verticals. . . . Design must take into account both the angles of reflection and the validity of the reflected scene, for mirrored images may otherwise come as an unpleasant surprise. A quiet pool in a small or deep interior court can multiply busy façades into dizziness and prove far less peaceful in practice than the live water of a fountain or runnel.

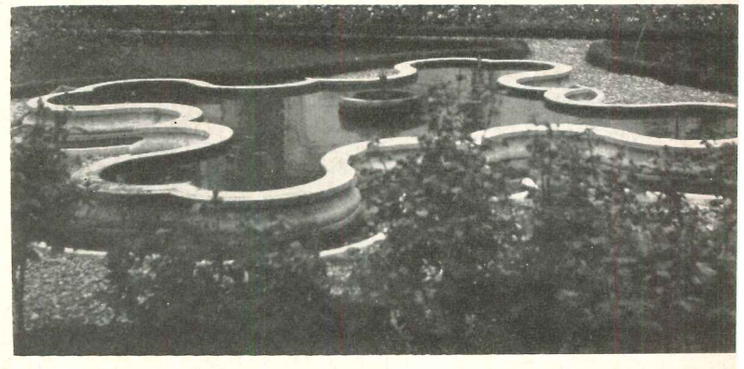
Water itself has neither beginning nor end, but precisely stated boundaries will make it seem finite. The Chinese tradition has been to curve a pond in such manner that its total shape and size remain elusive. No matter where one stands, some portion of the shore will be obscured by a promontory, another concealed by an island. Eighteenth century English romantics found this a sympathetic approach and happily converted the self-contained geometry of their fathers' pools and canals into approximations of nature's irregular ponds and meandering streams. . . . A certain pleasant ambiguity of dimension is possible even within the formal language of geometry, however, for overhanging floor slabs can serve to hide a pool's confining walls.

Sometimes it is the *flatness* of still water that will be its dominant trait, and its flat plane will join on equal footing with other planes of masonry or glass to become the basic formal element of an architectural composition.

Still waters double the known into the unknown and the unknowable. When mysterious depths bear the image of fact, the sheen of certainty, familiar worlds crack open to let Alice through the looking glass. As reflections fall away in the down view, clear water may show sand or pebbles, blue tile or shadowy caverns. Ruffled by a casual breeze, the surface again dominates, but changed now to a textured, glinting shimmer. And the night offers its own delights, when the moon "washes its soul" in the garden pond.



Catherine Bauer Wurster

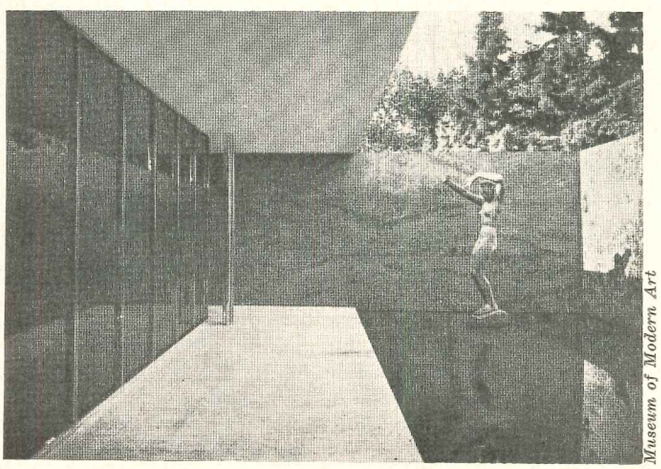


Understanding that mirror pools are best when full to overflowing, the Persians often surrounded them with a drip gutter, as in the Khalili gardens at Shiraz. Many of the great old gardens, in Persia as in India, have today little or no water, but pictures of brimful pools are in Donald Wilber's article on Persian gardens in the Feb. '57 ARCHITECTURAL RECORD

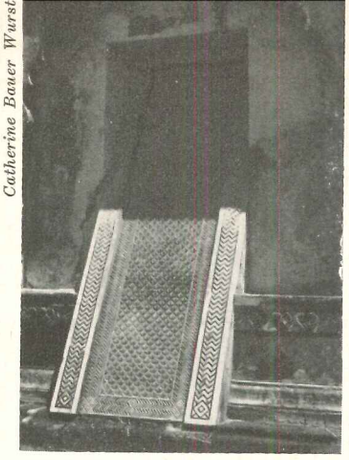
Sirén

Chinese architects knew how to use the flatness of water as a positive statement. Looking over Nan Hai, Pekin's "Southern Sea," from the Pavilion for the Welcoming of Perfumes, this view, says Professor Osvald Sirén in his *Gardens of China,* "opens over mirroring gray waters into the silent spaces of the world of dreams."

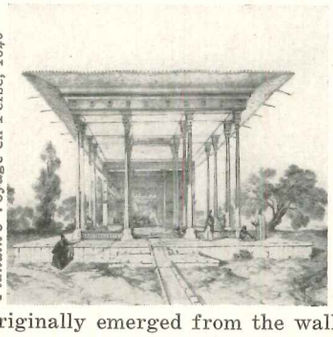
In his great Barcelona Pavilion of 1929, Mies van der Rohe used sheets of water in the same way that he used sheets of marble or glass. This pool, lined with black glass, became a flat, precisely rectangular plane similar in architectural character to the horizontal plane of the roof and the free, sharply differentiated wall-planes of travertine and green marble, onyx and green glass



Museum of Modern Art

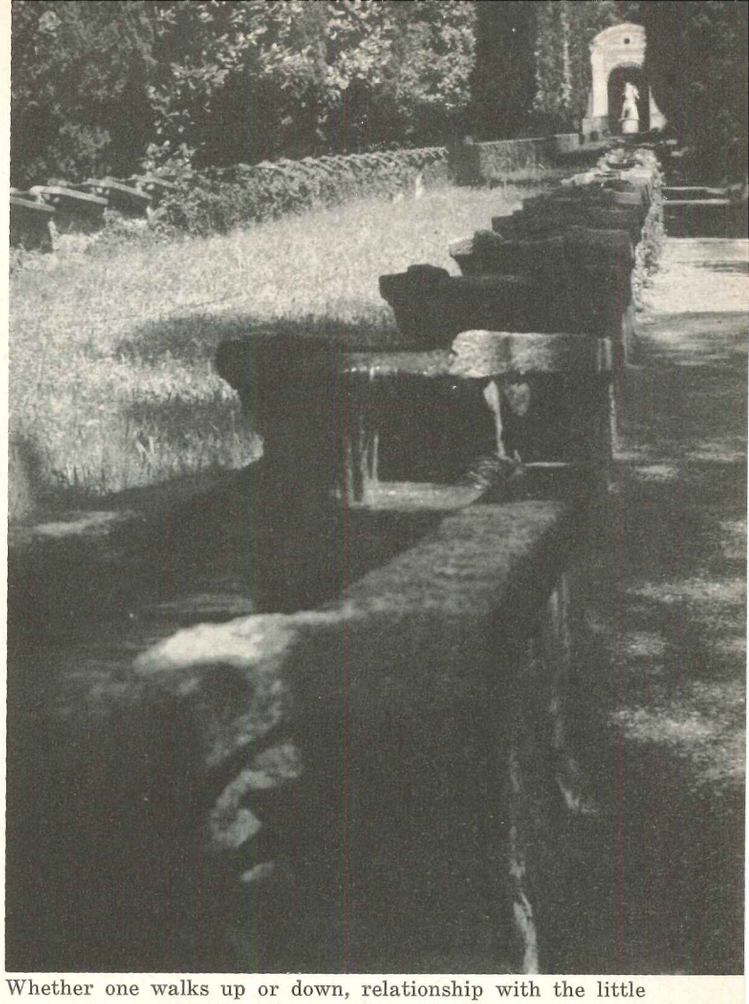


Catherine Bauer Wurst



Flandin's Voyage en Perse, 1840

Top: a stream originally emerged from the wall-slot to flow down the marble chute, carved to make the water churn and froth. Aurangabad, India. *Above:* typical Persian garden pavilion with water spurting from a fountain to slide down a carved chute and emerge as a narrow canal



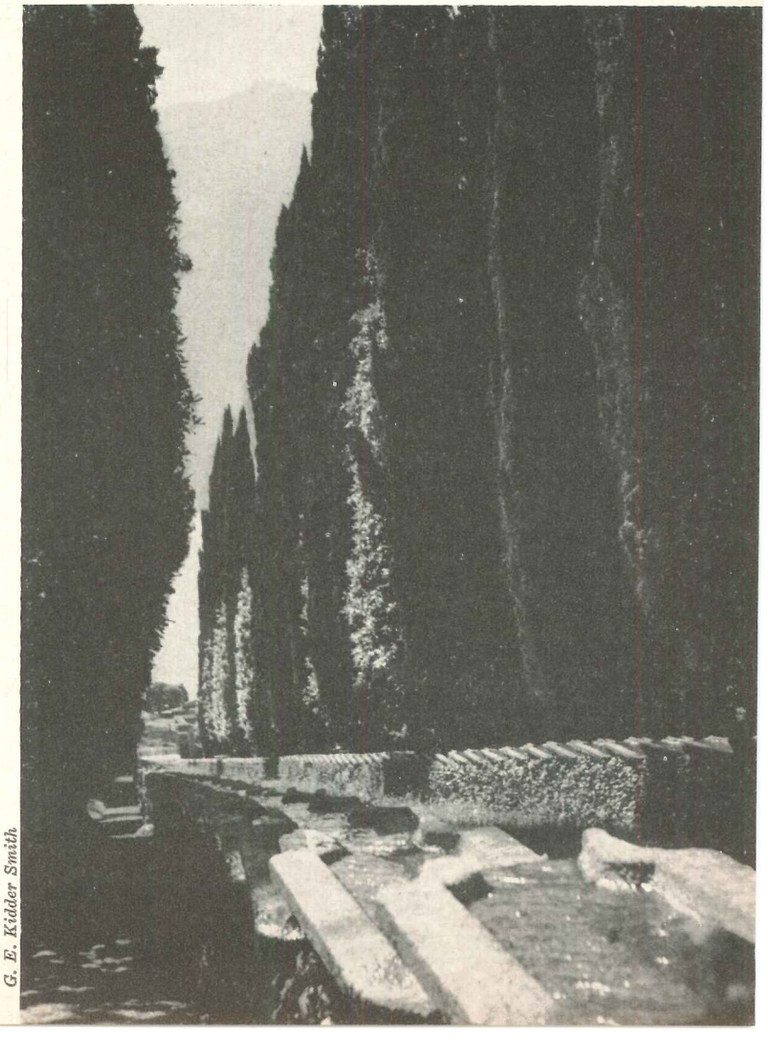
Whether one walks up or down, relationship with the little cascade is so close that the experience is disproportionately intense. Designed in 1568 by Pellegrino Pellegrini for the Villa d'Este at Cernobbio, Lake of Como

Stream and Fall

Water can pursue its natural law of gravity to add sound and movement to the three conventional dimensions of architecture. This is surely the living water, the water of life, ancient symbol of divine knowledge and immortality.

Moslem streams are ordered into straight and narrow channels, often run through the center of pleasure pavilions, erupting as fountains or tumbling down carved ramps as white water. Lined with white marble or blue tile, the channel becomes a strip of heaven on earth. . . . Such devices would, of course, be anathema to the Japanese, whose garden art is an attempt to capture the very essence of nature: also an ordering, but antithetical to the geometric approach. Though their waterfalls look like natural accidents, they are concocted according to rigid rules. Whether it be a Nuno-ochi, which falls like a white cloth sheet, an Ito-ochi, resembling a screen of white threads, or a Sayu-ochi, which falls to right and left, each follows tradition in the shape and arrangement of its stones.

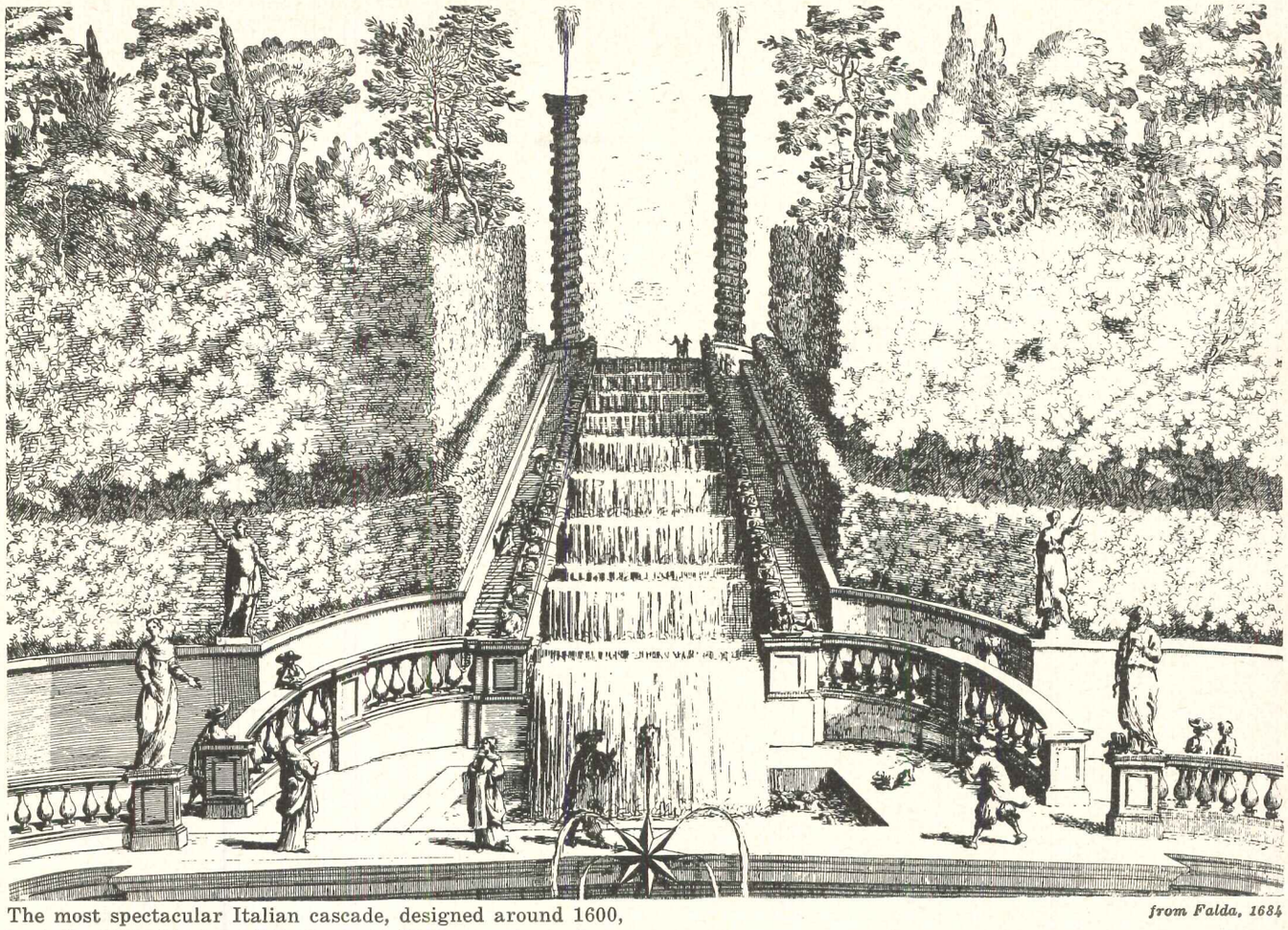
Europeans developed their own way with falling water: the frankly artificial, multi-level cascade. In the relatively modest 16th-century Italian masterpieces, slightly stepped channels, raised about knee-high, bisect ramped walkways to provide a strangely personal experience of fast flowing water. Baroque architects elaborated lustily upon this theme.



G. E. Kidder Smith

Cascade at the Villa Torlonia, Frascati. After 1621

Country Life

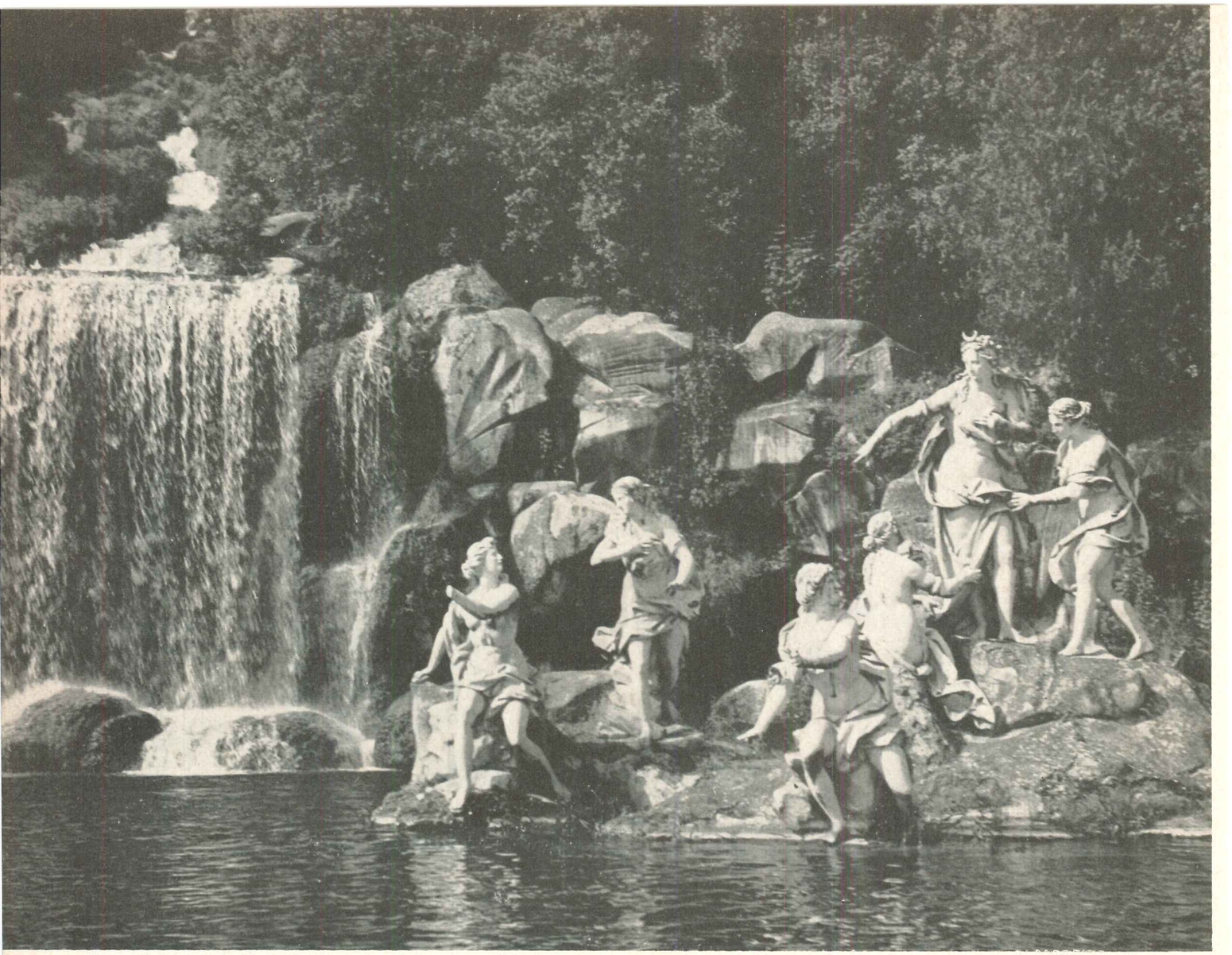


from Falda, 1684

The most spectacular Italian cascade, designed around 1600, is at the Villa Aldobrandini, Frascati. Water spurts up from two giant columns, runs down around their shafts in open spiral grooves, then spills down balustrades at either side of the main falls, which are broad, beautifully proportioned

Elizabeth Klein

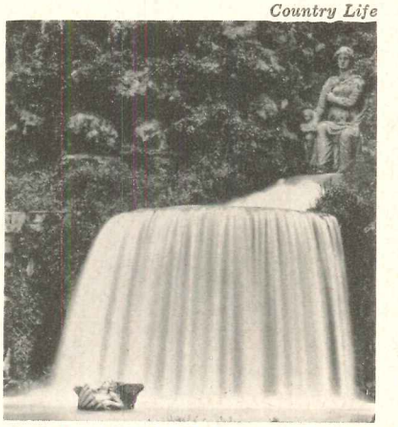
Right: late Baroque bravado designed by Guernieri around 1700 for the castle of Wilhelmshöhe at Kassel, Germany. The great cascade, only the top third of what was projected, is 35 feet wide and almost 800 feet long



Cascade and naiads at the Caserta Palace near Naples, designed for Charles III by Vanvitelli in 1752. A semi-naturalistic cascade with marble ladies spied in the act of disrobing for the bath. The taste in sculpture is debatable, but its free placing is pleasant to the modern eye

G. E. Kidder Smith

Country Life

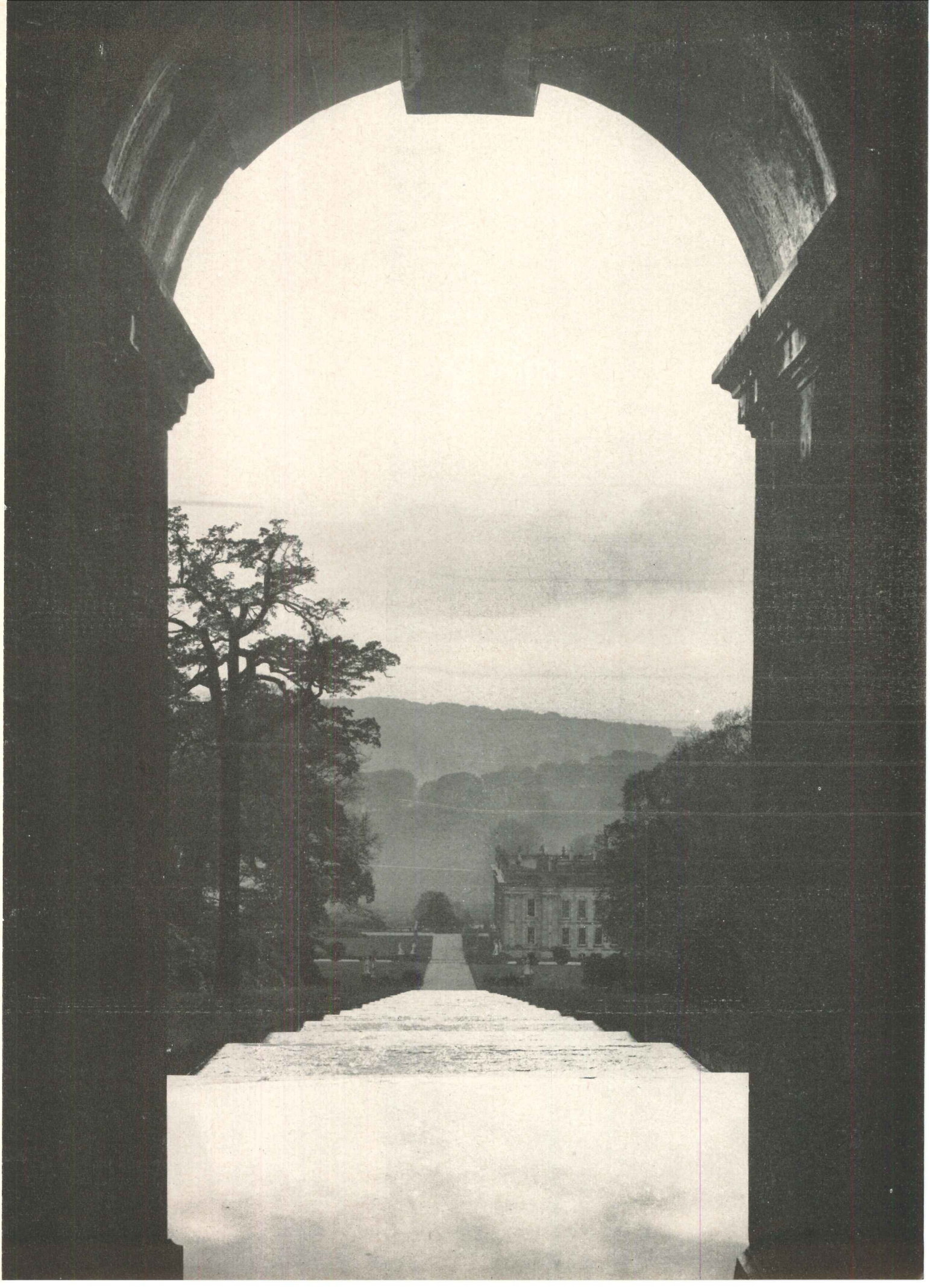


Queen of the Fountains, Villa d'Este, Tivoli. Mid-16th century. Its curious, unnerving scale is characteristic of Mannerism

The 18th century chastened the cascade with its more classic taste, then discarded it completely as an artifice quite out of place in the new order of the landscape garden.

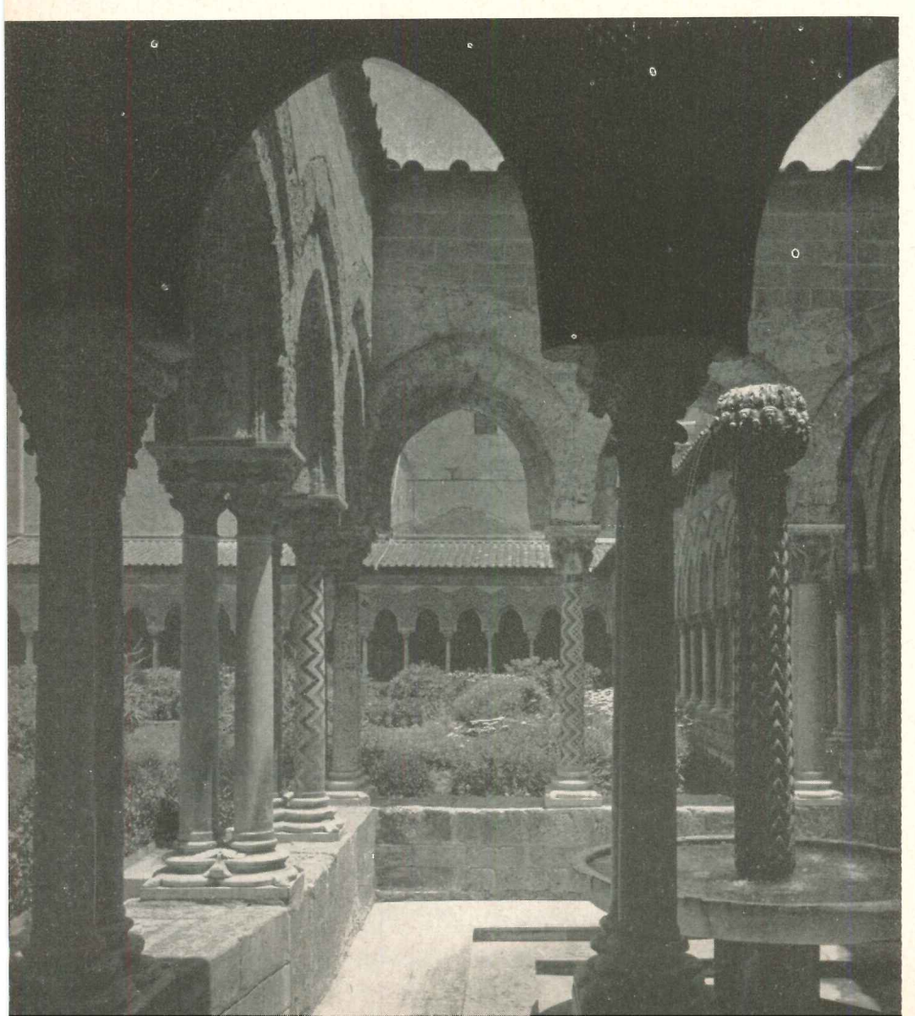
Falling water need not be a luxury, for the rain-fed gargoyle or roof-spout offers opportunities that have been neglected for centuries. The water channel, too, can play a practical, nonetheless romantic role as means of transportation. Launch a boat and be wafted effortlessly and at appropriate speeds through a Tunnel of Love—or a World's Fair.

Opposite page: delightful anachronism, this pleated ribbon of water set into the lawns of a relaxed "landscape garden." Built around 1700 at Chatsworth, the Derbyshire estate of the first Duke of Devonshire, it was originally part of a formal scheme, but allowed to remain when the grounds were "modernized" by Capability Brown in the mid-18th century



G. E. Kidder Smith

Sixteenth century street fountain in Berne, Switzerland. Bright with paint and flowers. Under each water-pipe is an iron frame for the support of pails and pitchers



A wreath of tiny heads caps a chevroned column to spew thin streams into the basin of the 12th century Benedictine cloisters at Monreale Cathedral, Palermo, Sicily. On the fountain's stepped surround the monks enjoyed a taste of Paradise. Moslem influence, obvious in the design of the arcades, is also evident in the love which has known to use so small an amount of water to so great an end

Catherine Bauer Wurster

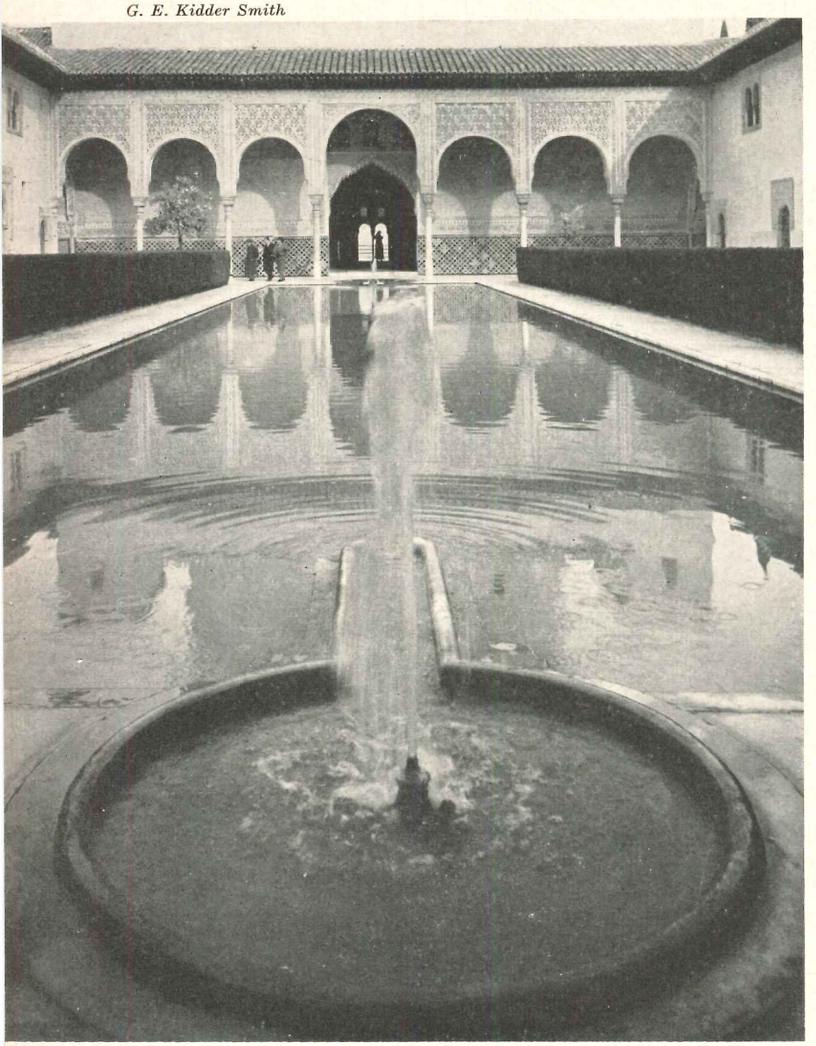
Fountain of the Organ in the great gardens of the Villa d'Este at Tivoli, near Rome. Mid-16th century. A fountain is inconceivable without the fall of water, whether as the positive medium of waterplay or merely as the collapse of an upward jet. Here lean sky-born jets are set in dynamic counter-pattern to broad cascading sheets, falling thick and white at the first, then thinning to a veil as they spread out at either side. Barely visible at the top is the facade of the Water Organ itself. Montaigne, after a visit in 1580, reported that water fell violently into a cave, forcing air out through pipes, while other water pushed a wheel with teeth arranged to play a tune on the organ keys. He was impressed by the mechanics, but complained of the one-tune repertory

The Jet

And last is the jet, defiant of gravity, lancing the sky to merge with light until it falls back with a splash and a splatter, exhausted. Not for the Chinese or the Japanese, this forcing of nature, but for the rest of us, an artifice venerable and delightful.

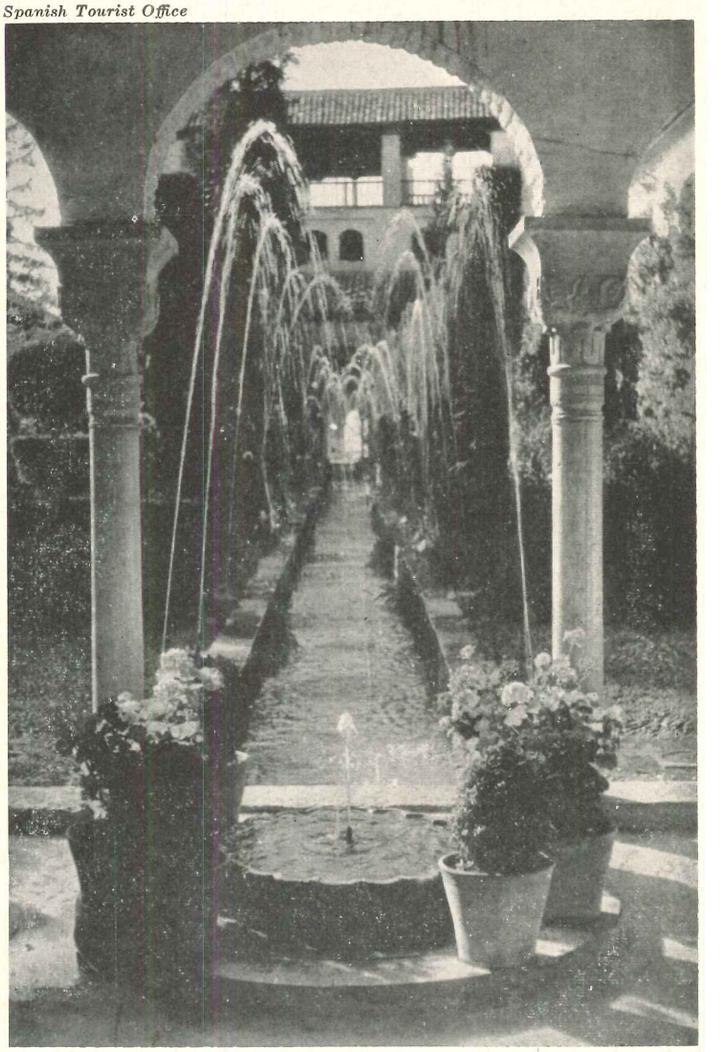
The medieval fountain was rarely adorned with jets, for the water was simply piped up to a level from which it could drop comfortably into pitchers or basin. As the normal source of household water in yesterday's Europe, the public fountain or well was the natural neighborhood gathering place—a civic role which the fountain still performs, for people like to linger by running water even when their business is elsewhere.

G. E. Kidder Smith

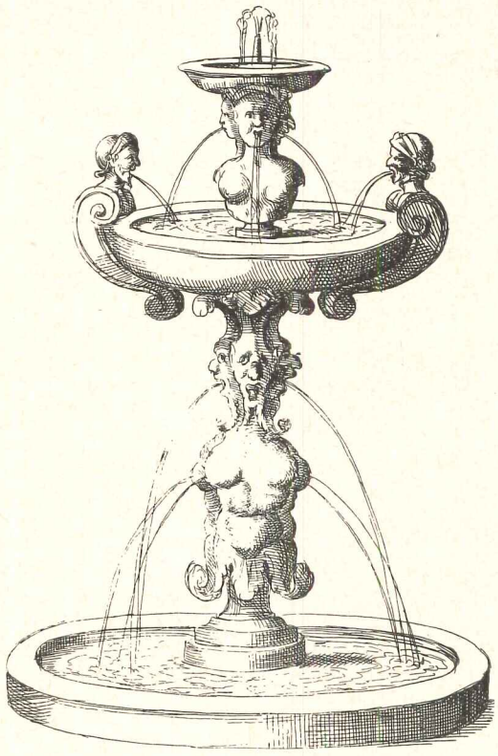


Court of Myrtles, Palace of the Alhambra, Granada, Spain, 14th century. This was the court of ablutions for an adjacent private mosque. Water bubbles up from marble fountains at either end to slide down little chutes into the pool. What little representation there was in Moslem fountains usually derives from the lotus, and the little Moorish basin, at its best when set down into the pavement, was often carved into an outsize flower. Spigots were frequently shaped as floating lotus buds

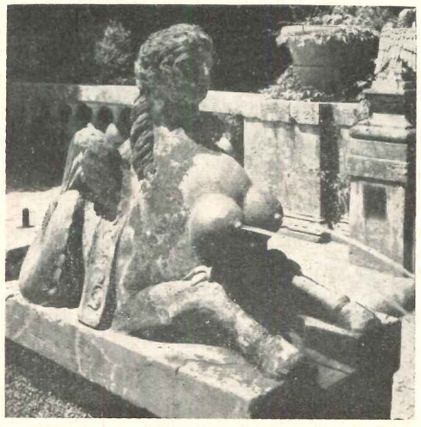
Spanish Tourist Office



Just above the Alhambra is the Generalife, built in the second half of the 13th century as the well-watered pleasure house of the Sultan of Granada. This main patio is bisected by a 3-foot marble channel with a shallow, low-jetted fountain basin at each end. Pairs of diagonal jets play against each other from either side of the canal to form a rain-bowed water-vault



Fountain design by Giovanni Maggi, 1618

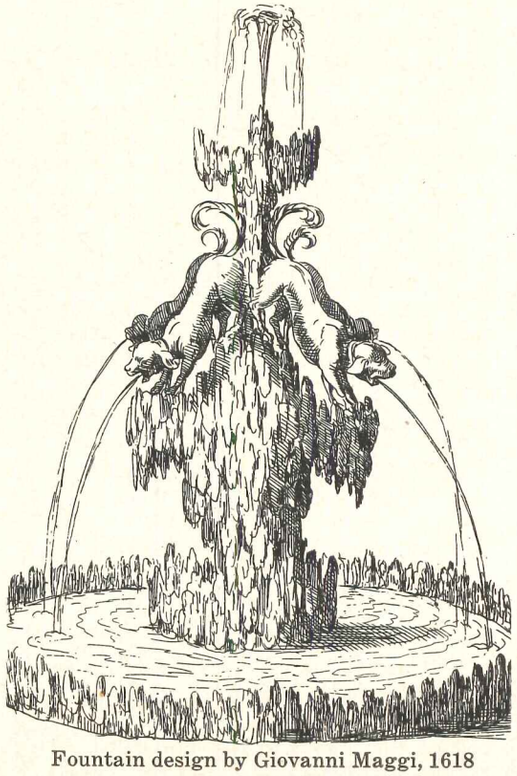


Above and below: Details of waterworks at the Villa d'Este, Tivoli, mid 16th century

A Moslem fountain is by contrast a private affair, flourishing within the confines of gardens and courtyards, often gracing interior rooms. For Moslems the fountain *is* the jet, single and vertical, issuing from inconspicuous nozzles that are usually centered in canals or low, shallow basins. Occasionally the theme is varied, but emphasis is always on the water itself and not, as with us, on elaborate stonework and sculpture.

That the Moslems have tended to avoid the western whimsy of the spewing mouth may be due less to their greater sense of propriety than to a religious scruple against representational art of any kind, for Mohammed had transmitted the Mosaic injunction against "any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water under the earth." Persians and Indians were relatively relaxed in their interpretation of the commandment, but even they were for the most part well content with the abstract sculpture that was their garden architecture.

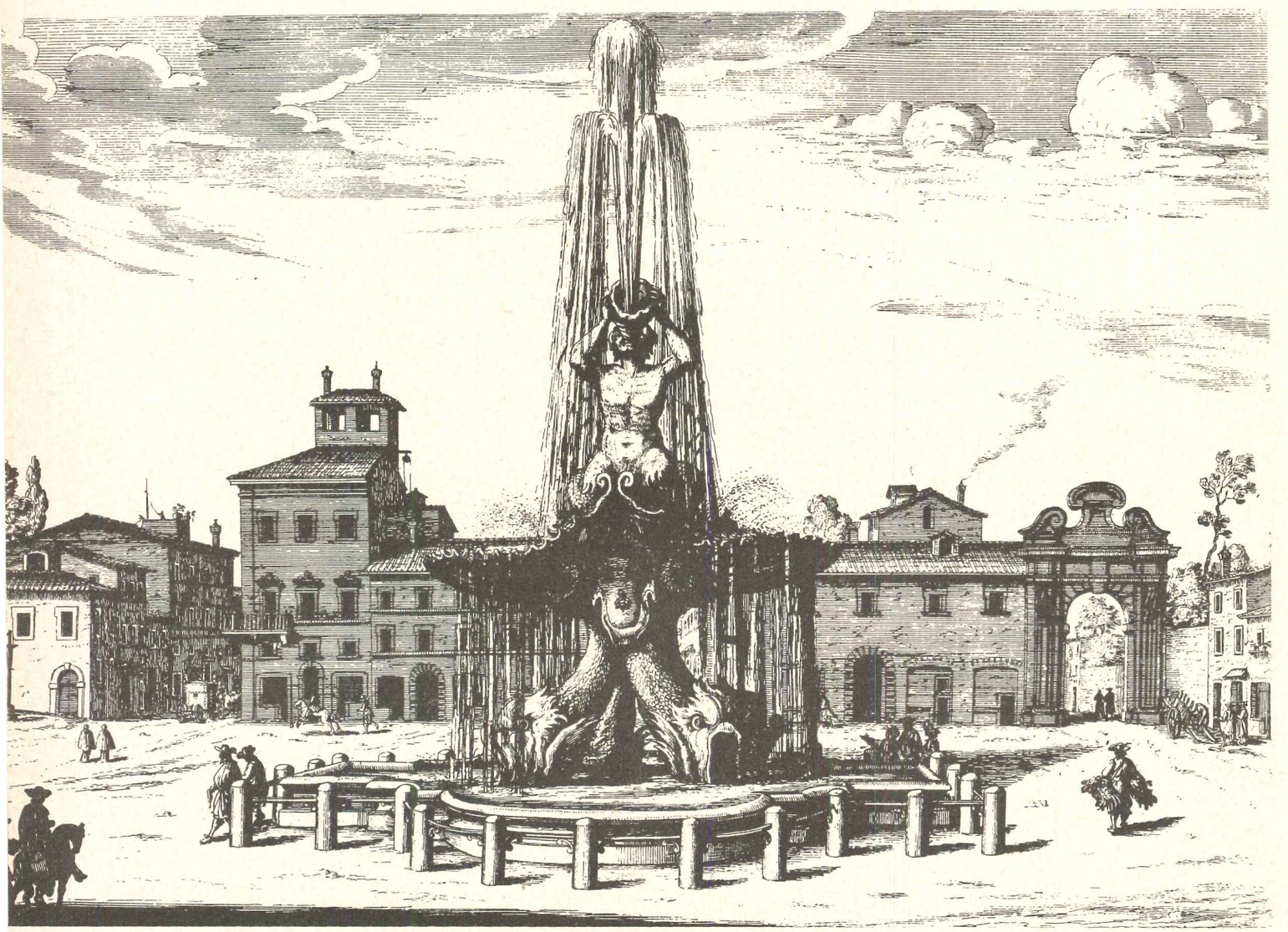
The issue of water from a sculptured mouth is a torturous conceit at best; yet it is probably the ancient Greeks with their lion-head roof spouts who started the whole thing and must therefore assume some responsibility—not only for the medieval gargoyle, but for all the spewing dogs, gargling dolphins, nursing mermothers and piddling putti that have adorned the fountains of the Renaissance, the post-Renaissance and the neo-Renaissance.



Fountain design by Giovanni Maggi, 1618

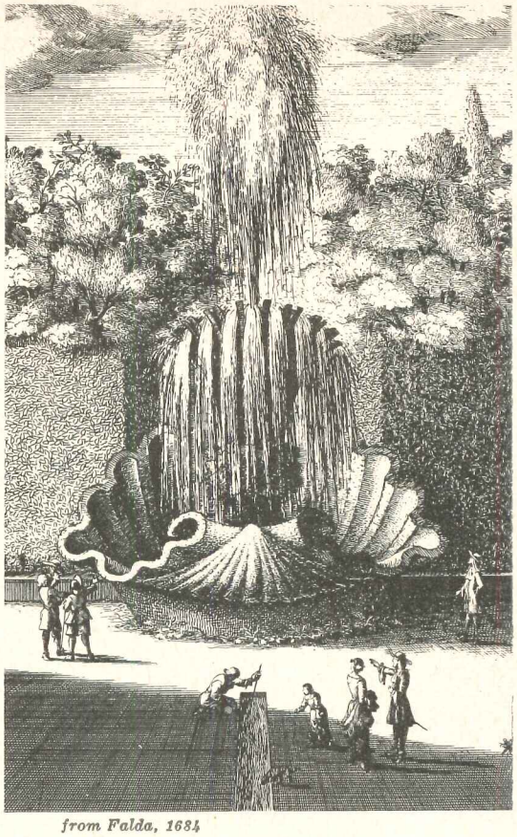
Gianlorenzo Bernini's curved colonnades embrace his twin triumphant fountains and their complementary obelisk. Piazza di San Pietro, Rome. After 1656

Bernini's great Triton Fountain in Rome. About 1640. Photographs do it less justice than this engraving from G. B. Falda's *Le Fontane di Roma,* published around 1684. Here it is shown in its contemporary setting and with its contemporary quota of water—far more than what is allowed it today. Rome is, of course, the classic example of the fountain-focused city. In her rarely perceptive book, *Rome and a Villa,* Eleanor Clark writes that the old quarters of the city "do not constitute an *outside* in our sense, but a great rich withinness, an interior, and running water is its open fire. Even a tourist can tell in a Roman street that he is in something and not outside of something as he would be in most cities. In Rome to go out is to go home."



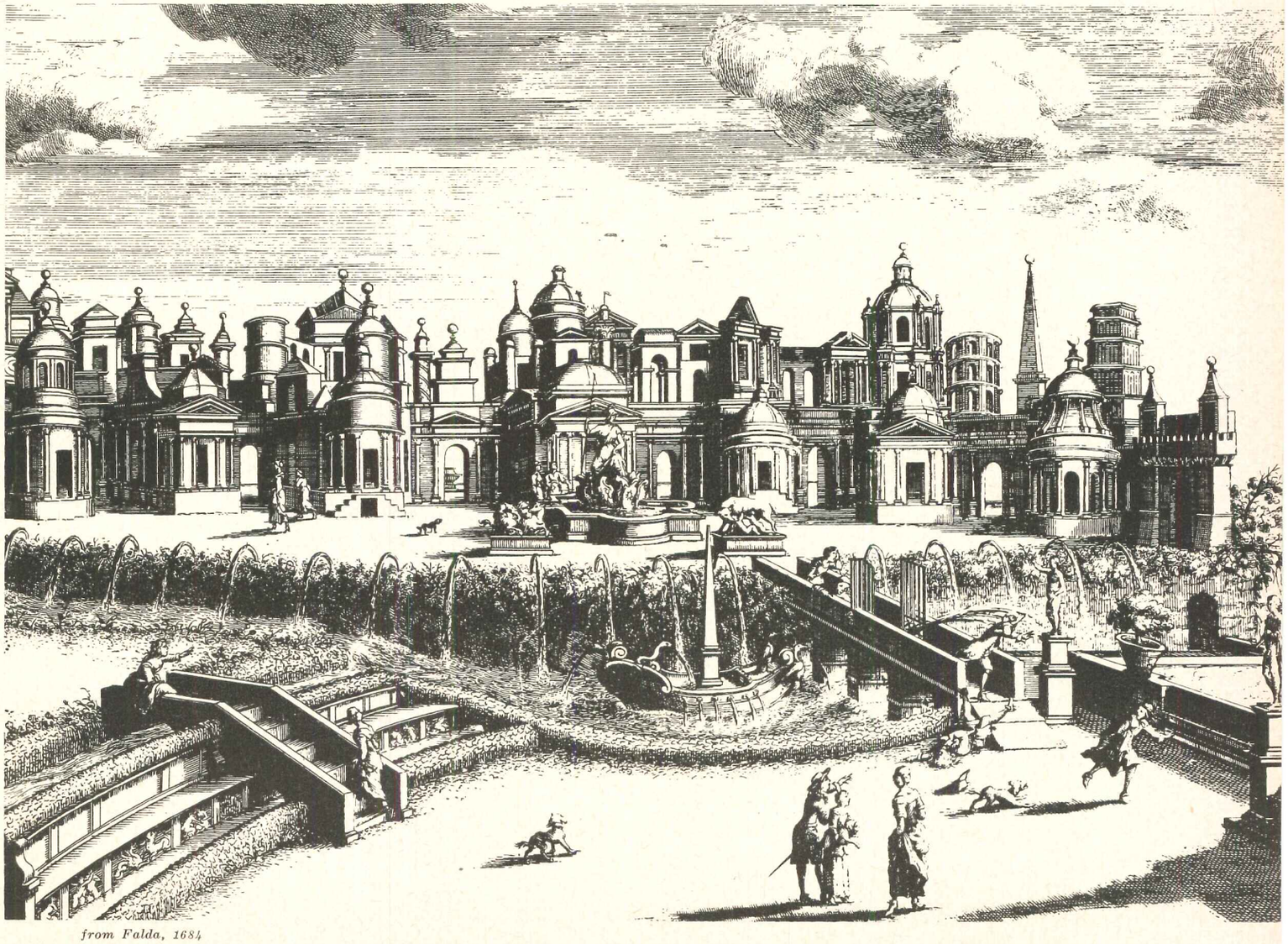
In Europe it was the Italians who were first and last masters of the art of the fountain, particularly in the 17th century, when Baroque architects met the challenge with characteristic vigor. Water was a sympathetic medium for the Baroque spirit, the natural embodiment of effects which they sought in painting and sculpture and architecture: dynamic movement, subtly shifting response to light, indefinable dimensions. So they married their sculpture to water, with the great Bernini officiating as high priest, and all agreed that it was a happy union of compatibles. . . . Versailles boasted larger, more elaborate waterworks than anything in Italy, but there the sculpture seems lifeless, irrelevant to the water, and the water itself somehow out of scale, too huge to grasp yet lost in the vast parterres.

Right: fountain of the Bicchierone, Villa d'Este, Tivoli



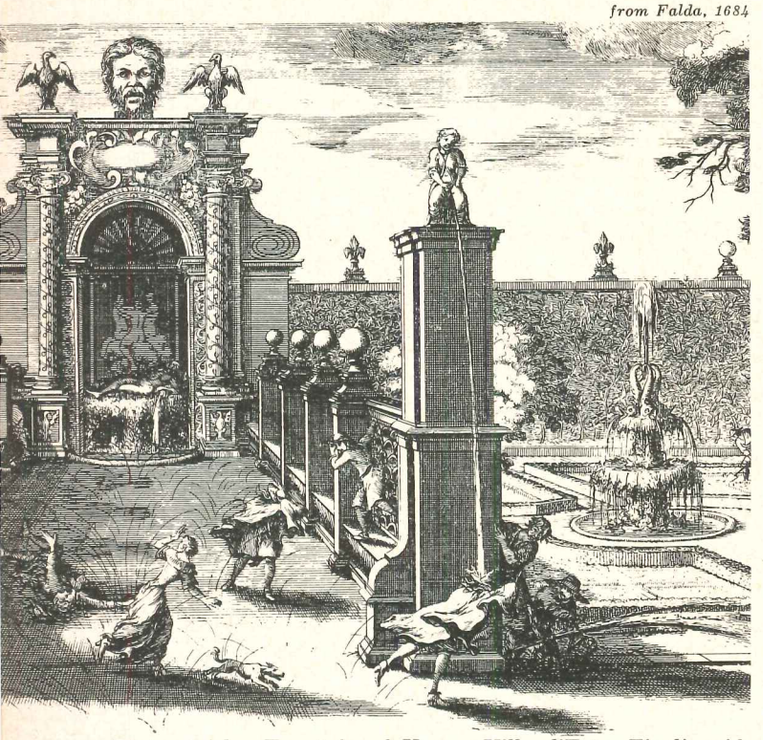
from Falda, 1684

Ancient Rome as reconstructed in miniature at the Villa d'Este, Tivoli, mid-16th century. Note the surprise jets on the footbridge and the stone, obelisk-laden boat



from Falda, 1684

from Falda, 1684

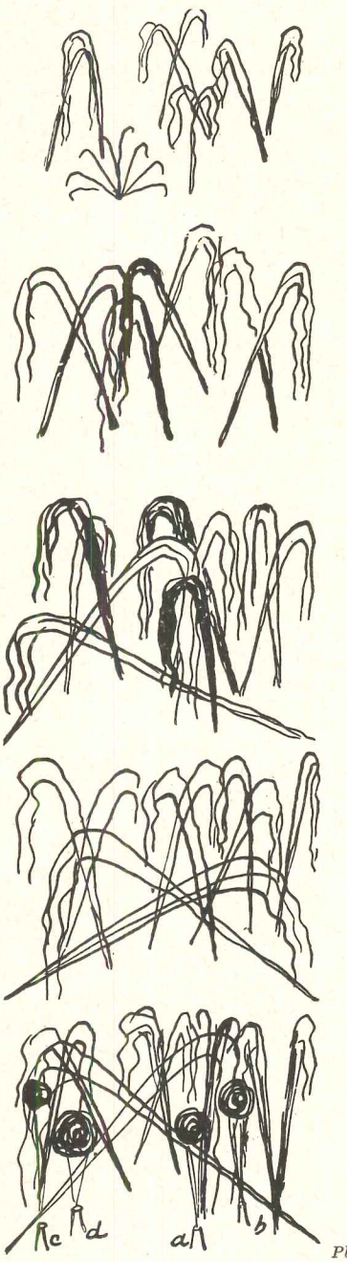


Water tricks. Fountain of Venus, Villa d'Este, Tivoli, mid-16th century

No one seems to know who first realized that groups of water-jets could be controlled in pressure and direction to make an ever-changing, potentially dramatic spectacle, or who first thought of synchronizing such waterplay with fireworks and music. But elaborate festivals of this kind did become a commonplace at the great courts of Renaissance Europe, and nowhere more extravagantly than at Versailles under Louis XIV. The art has not been lost. The Seine itself came alive for the 1937 Paris Exposition, while two years later Jean Labatut produced a series of splendid shows for the New York World's Fair. On a more modest scale but still within the tradition are Calder's dancing jets and the watery whirl of oddly jetted automata concocted for the California '52 State Fair.

The fun-lover compelled to apply thumb to nozzle would have enjoyed the broader opportunities of the Renaissance. Montaigne, reporting on his travels of 1580, was specially charmed by the elaborate water-tricks in the great new Italian gardens, and admired a garden at Augsburg where ladies innocently looking into a fishpond were surprised from beneath by strong jets which "remplissent les cotillons des dames et leurs cuisses de cette fraîcheur."

Soon no self-respecting garden was without its wet surprises. "Never," said the Duke of Würtemberg, "need a man ask for water if he sits on a bench. He will get it quickly enough." . . . It is said that the Soviet government today maintains two guards in the old gardens of the Peterhof whose sole job is to direct hidden jets at unwary visitors. . . . One world it is, the world of water.

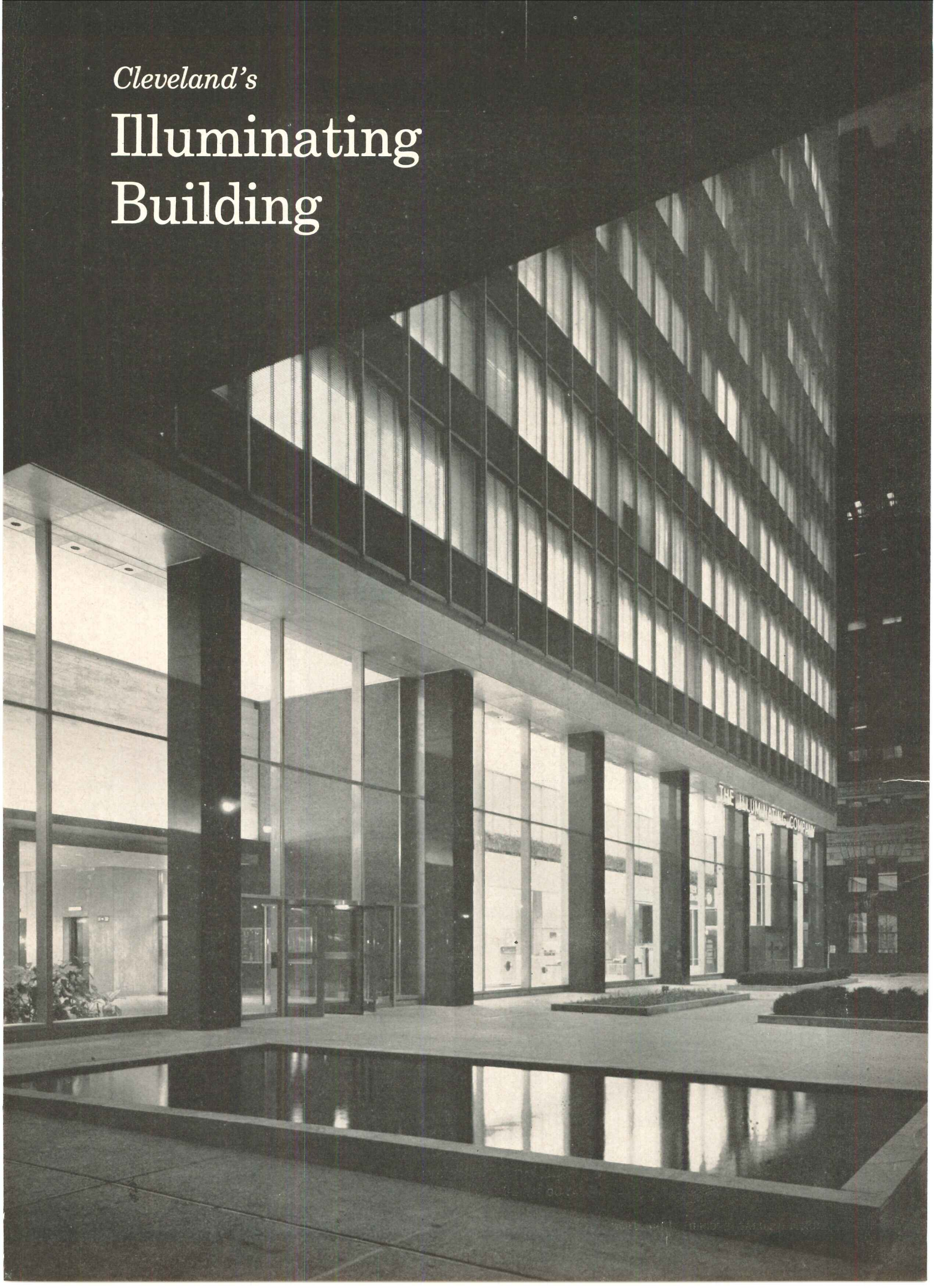


Plus

Cartoons for a scene from the Water Ballet devised by Alexander Calder for the pool of the Consolidated Edison Building at the 1939 New York World's Fair. The fourteen nozzles were controlled by timing devices. A similar Calder mobile now enlivens the lake at the General Motors Research Center

Cleveland's

Illuminating Building



Cleveland's

Illuminating Building

All photos by Bill Engdahl, Hedrich-Blessing

The Public Square

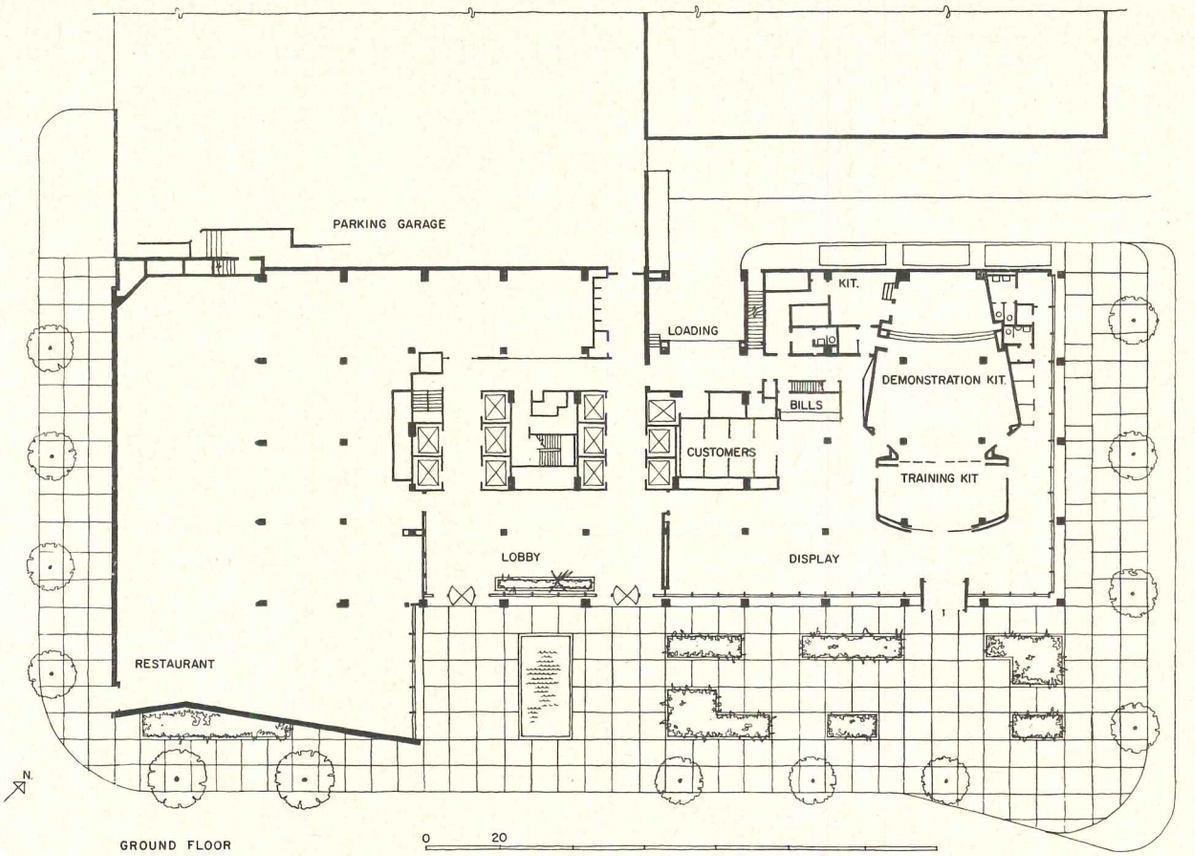
Carson & Lundin—Architects; McGeorge, Hargett & Associates—Mechanical, Electrical & Structural Engineers; Jaros, Baum & Bolles—Consulting Engineers; Charles Mayer—Consulting Structural Engineer; George A. Fuller Co.—Builder

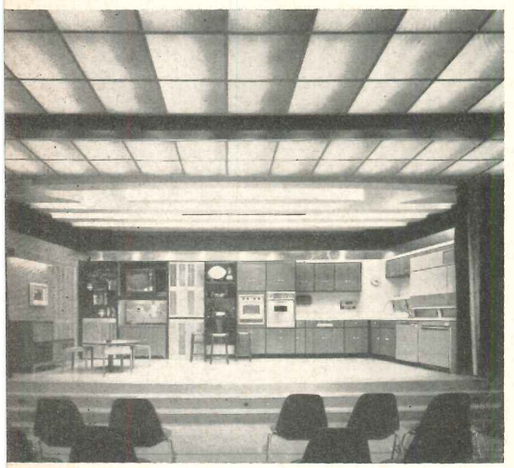
Cleveland—AIA Convention city for 1958—has a shiny new office building to show its visitors when they gather in July; the first such to be erected downtown in that city since the Terminal Group was completed in 1930. Located adjacent to, and facing partly on the Public Square, the 298 ft. Illuminating Building tower is only a short walk from convention headquarters.

The structure's clean lines, delicate aluminum gridwork and glass façades offer striking contrast to the stolid, traditional masonry all about, and may serve to stimulate further building of a contemporary character in the area.

Given a large plot, the architects were able to design the entire building around a typical floor plan that seemed to offer most in efficiency, amenity, rentability, etc. This plan—of 18,000 sq ft—was then stacked up for 22 stories to provide the 400,000 sq ft recommended by the real estate survey; all within a neat, uncluttered package. Parking for 450 cars is furnished by the owner's building at the rear; the city benefits from widened sidewalks and a 65 by 300 ft landscaped plaza.

55





The demonstration kitchen

As the ground floor plan shows, it was possible to bring the tower down back of the building line, widen sidewalks at both east and south, and provide a landscaped plaza as a base.

Since the new building replaced a parking lot, the owner built a garage at the rear (reached by ramp from the side street) which provides more parking than was displaced. The second building at the rear—housing additional Illuminating Co. offices—was connected to the new structure by a third-floor footbridge.

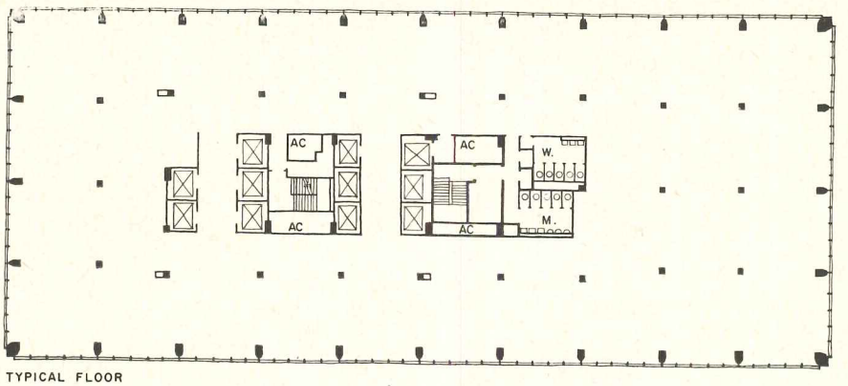
The ground floor area comprises three main elements: restaurant, lobby, and owner's area for display and demonstration. The lobby, right page, has walls of unpolished travertine except that the two side walls are Venetian mosaic in shades of blue. The floor is light beige terrazzo; the ceiling is smooth plaster.

The demonstration kitchen, left, features a revolving stage for effective presentations, and can be opened into or shut off from the adjacent training kitchen. The lighting for both areas is unusual. Above the ceiling of 24 in. honeycomb squares are 90 fixture boxes, each with 4 fluorescent tubes in 4 colors, controlled from two stations (front and rear) to provide 8 different lightings. There are also 170 incandescent floods—in pink, white and blue—dispersed over the ceiling area. Rheostats have been installed so that both incandescent and fluorescent lights can be dimmed separately or together, as required.

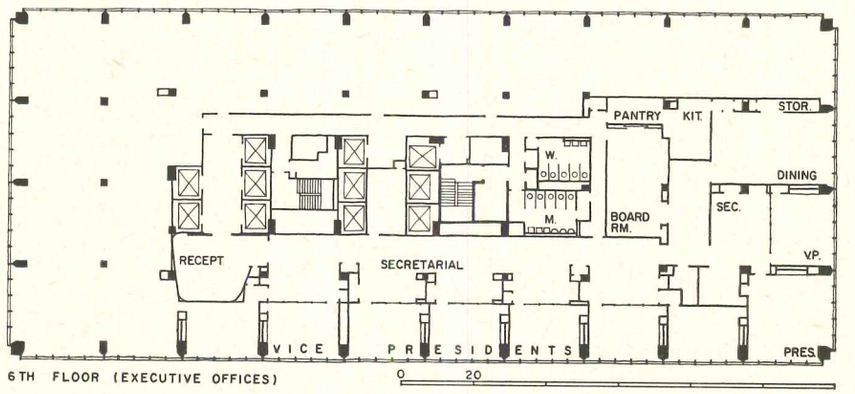
UNION SAVINGS

Cleveland's

Illuminating Building



TYPICAL FLOOR



6TH FLOOR (EXECUTIVE OFFICES)

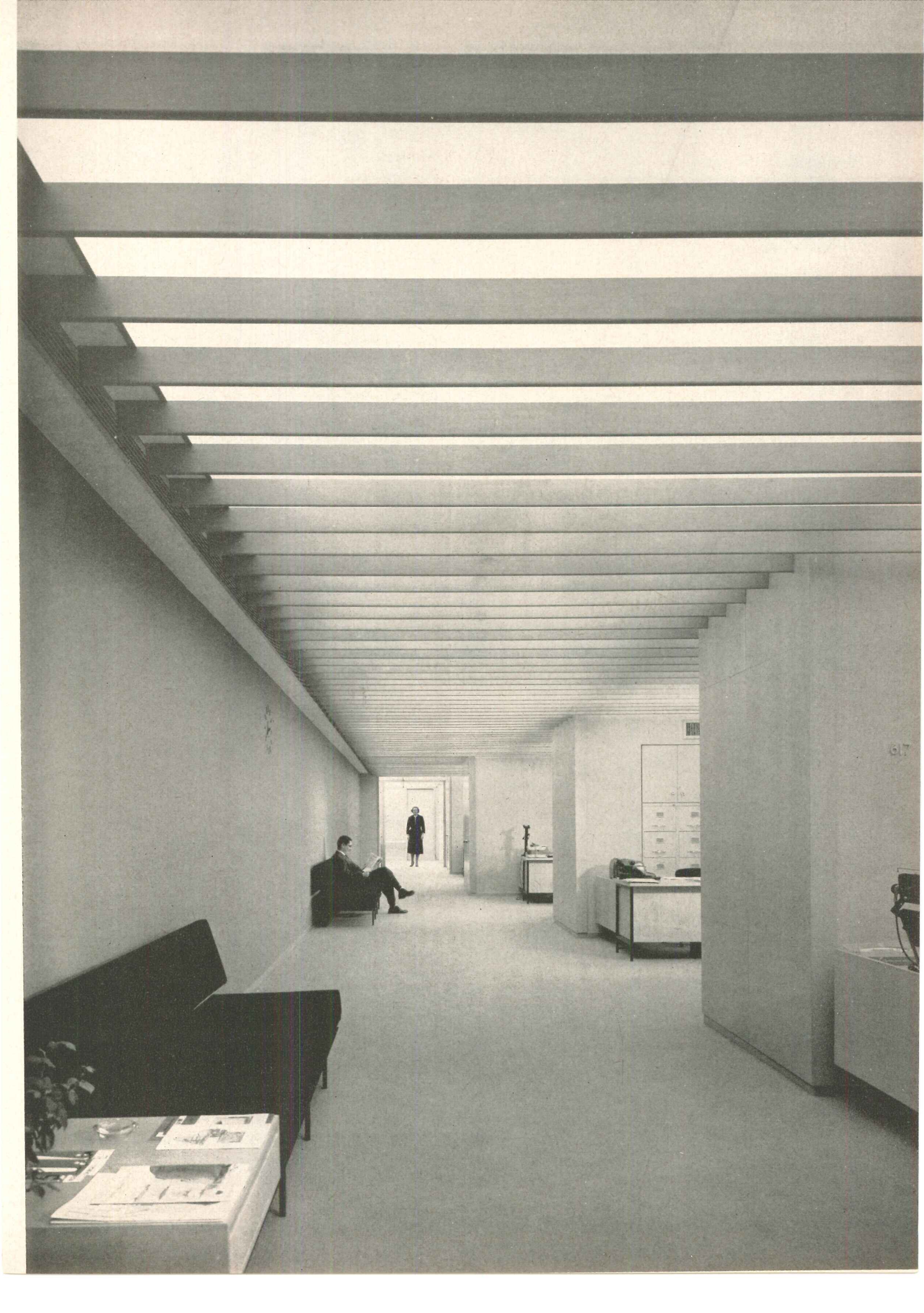
Typical general office

The typical floor plan is based in one direction on a 4 ft 4¾ in. module (5 of which make a bay) and in the other on a dimension from glass to core that will provide outer- plus inner-office plus corridor; or the foregoing plus an inner-corridor, if need be. Large open areas—often demanded—are provided at the ends of the plan. The rough column face is set back 2 ft, with the tapered enclosure ahead of it housing ducts and pipes.

The high velocity air-conditioning system is split between perimeter and core; the outer zone serving a 16 ft wide band.

The original design for the frame—of structural steel—was changed to concrete due to a steel shortage at construction time. For slenderness, columns for the first eight floors are composite, with concrete above. Lightweight concrete was made with an expanded Haydite aggregate; the mix developed a compressive strength of 3750 lbs per sq in. and a weight under 100 lbs per cu ft. The floors are concrete beam and slab, made of 3000 lb foamcrete weighing 75 lb per cu ft and containing embedded metal underfloor electric runways in the 4 in. topfill.

The foundation soil is water-soaked, clayey sand with bedrock 206 ft down—too deep for piles. Thus, the building was floated on a reinforced concrete mat placed 18 ft below the street. The mat is 54 in. thick and extends 4 ft beyond the building's perimeter. Settlement has been nominal as expected.



Cleveland's

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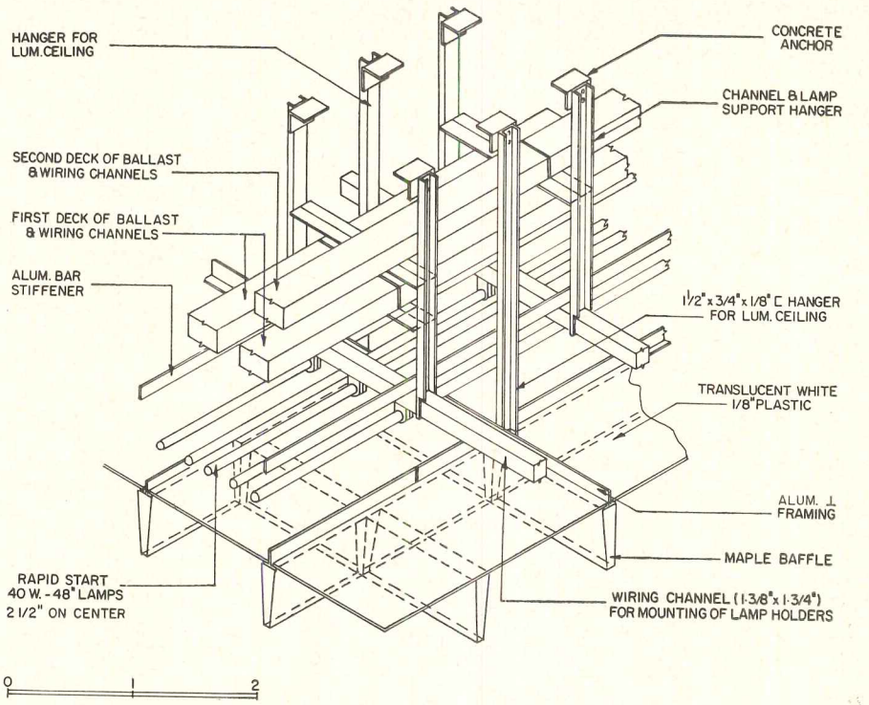
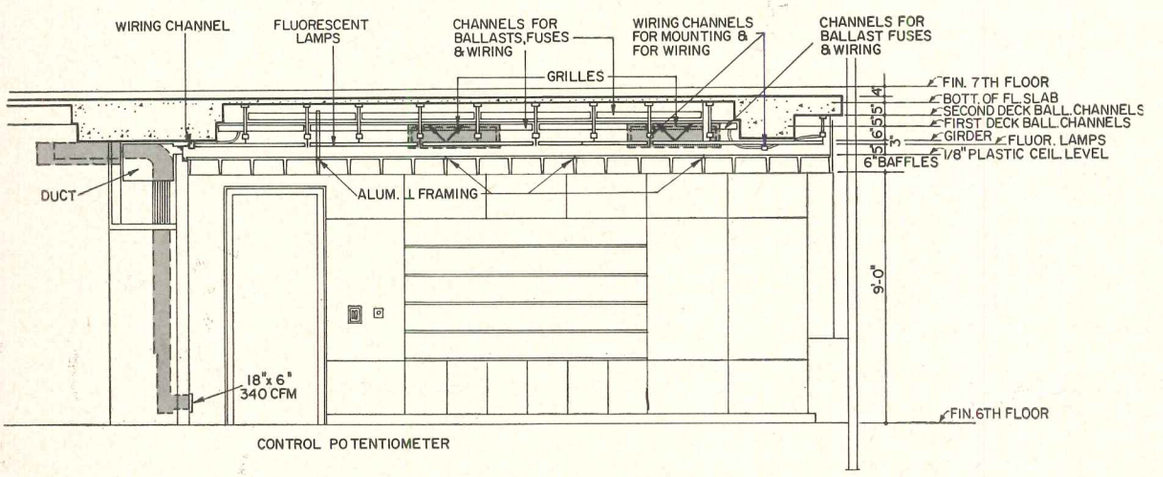
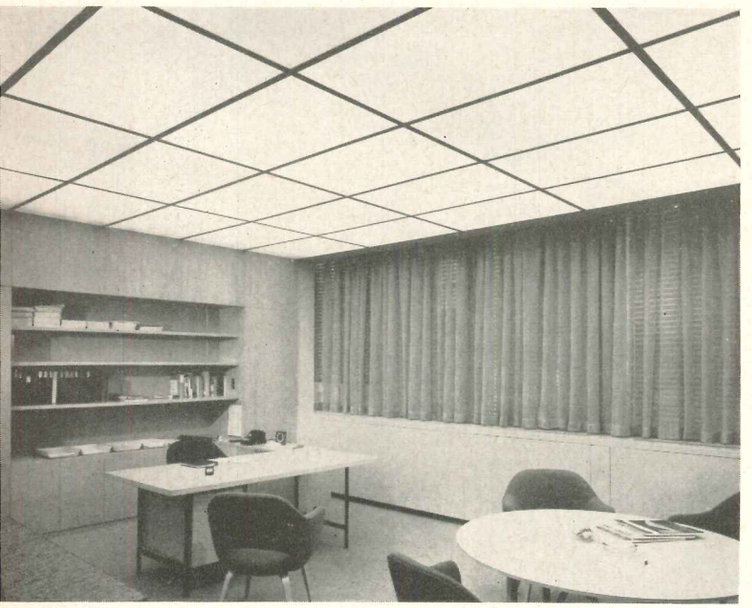




The sixth, or owner's executive floor, features both an unusual lighting installation and attractive interiors, designed by the architect. In the president's office (right page, top) 6 in. deep baffles of natural birch form 12 in. squares below the luminous plane of milky white plastic. Fluorescent tubes at 2½ in. o.c. provide—with the variable control—any intensity from 0 to 450 ft candles, as desired. The high intensity creates a heat load of 45 watts per sq ft, yet the baffles quite efficiently shield one's eyes from the overhead glare.

In the corridor and secretarial areas (picture on page 159) tubes placed 12 in. o.c. provides 100 ft candles and a heat load of 8 watts per sq ft, with birch baffles again providing effective cutoff and an interesting ceiling pattern.

The two pictures at bottom right show the sixth floor reception area. Note the sequence of lighting; from moderate to bright to intense—as one walks from reception area to private office.



Cleveland's

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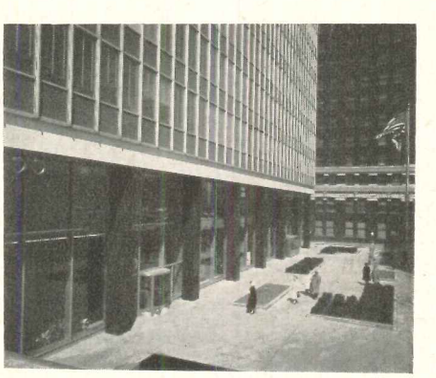
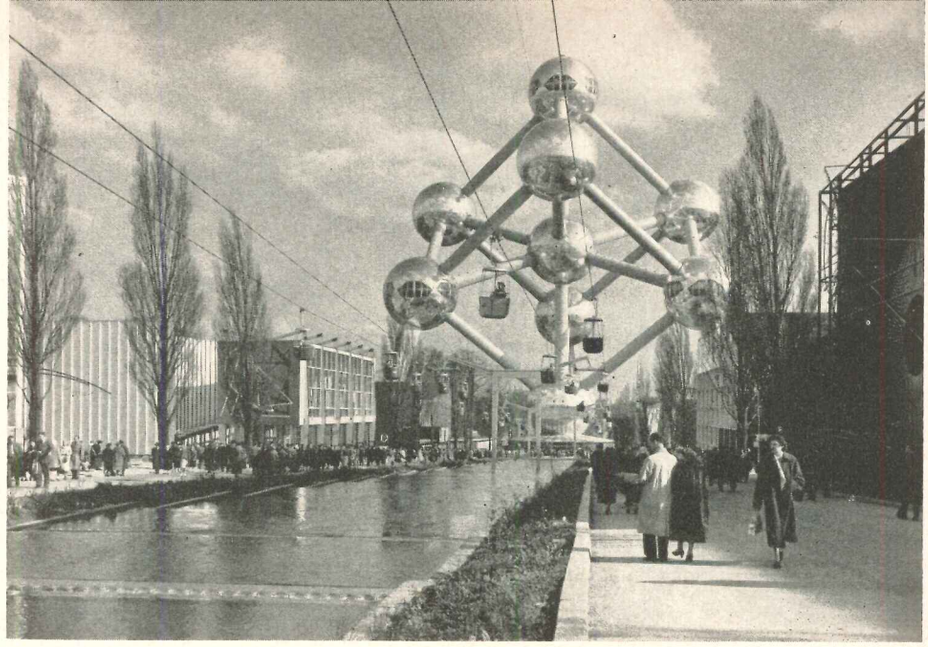


Note the variety of ceiling patterns and lighting installations characteristic of the sixth floor. Top, a typical vice president's office, in which light intensity can be adjusted to 100, 150, or 200 ft candles, as desired. Here, the tubes are spaced 6 in. o.c.

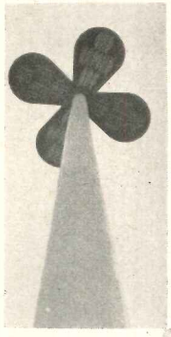
In the board room, center, shallow plastic domes 4 ft in diameter are backlighted for principal source, with a supplementary peripheral strip.

Enameled metal panels in orange-red, turquoise, and lemon yellow add a cheerful note of color in the dining room, bottom. The grid here is aluminum.



Architecture at Brussels:

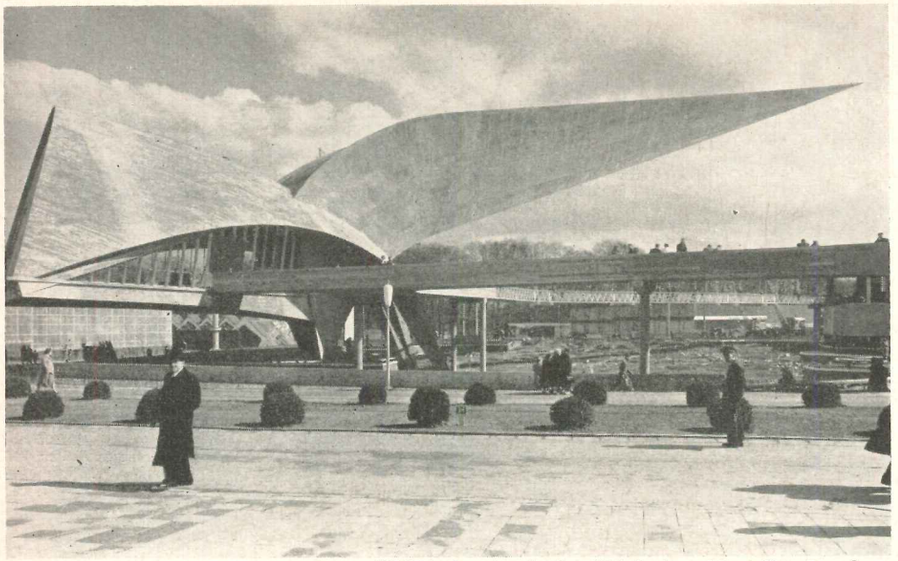
FESTIVAL OF STRUCTURE



For a quick course in the state of contemporary architecture, there's absolutely no substitute for the Brussels Universal and International Exposition of 1958. This is not to say the busy professional must look to Brussels to know the score (though a few millions of his clients may well discover it there); but knowing the possibilities of structure and the tendencies of current architecture is one thing and seeing them exemplified in the free and festive context of the Belgians' "Expo 58" is quite another.

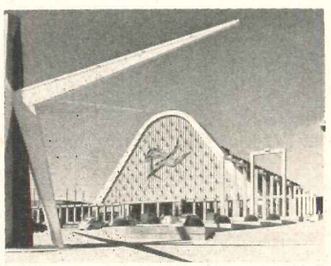
The freedom is an important point: for although the Belgians, under the leadership of M. van Goethem as chief architect of the Fair, controlled the overall site plan and rather closely regulated the development of the buildings within the Belgian section, architects of the 43 nations represented in the foreign section were subject to no design restrictions except those imposed by their own national clients.

Out of freedom, diversity; and this may be the most significant architectural news of the Fair. No international style to be jeered *or* cheered unites the architects of the world at Brussels, though of course there are many buildings which owe much to the International Style (and one—appropriately enough, the pavilion of West Germany—which is a later-day gem of that *genre*). Even the architecture of Communism, at Brussels, is various. The pavilions of the Soviet Union, Czechoslovakia, Hungary and Yugoslavia show no common architectural bond with "social realism" or any other artistic tenet of "proletarianism." They have all reached, but in different ways, for the mainstream of modern architectural thinking; coming late to this effort, they are a little downstream, almost quaintly modern; but they are no longer in a world of their own.

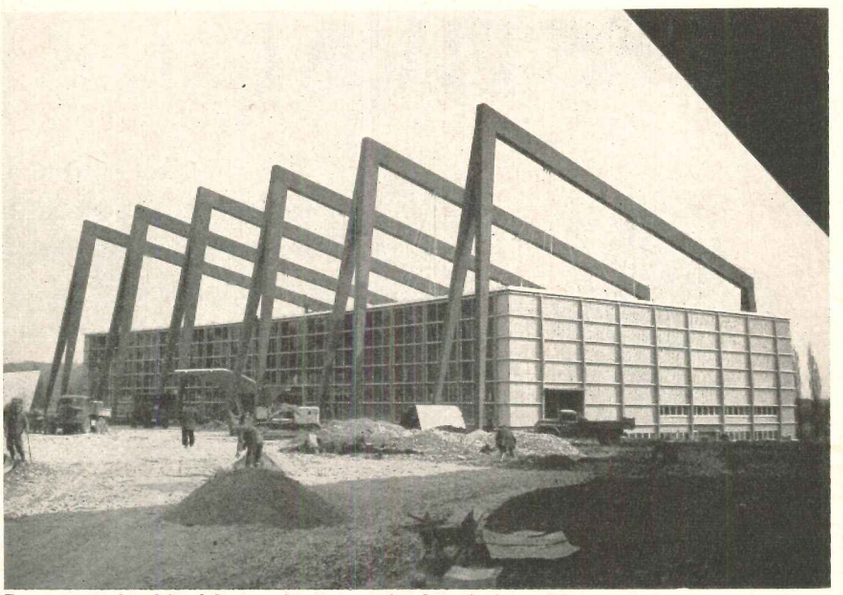


Civil Engineering Section (Belgian); architect, Van Dooselaere

FESTIVAL OF STRUCTURE

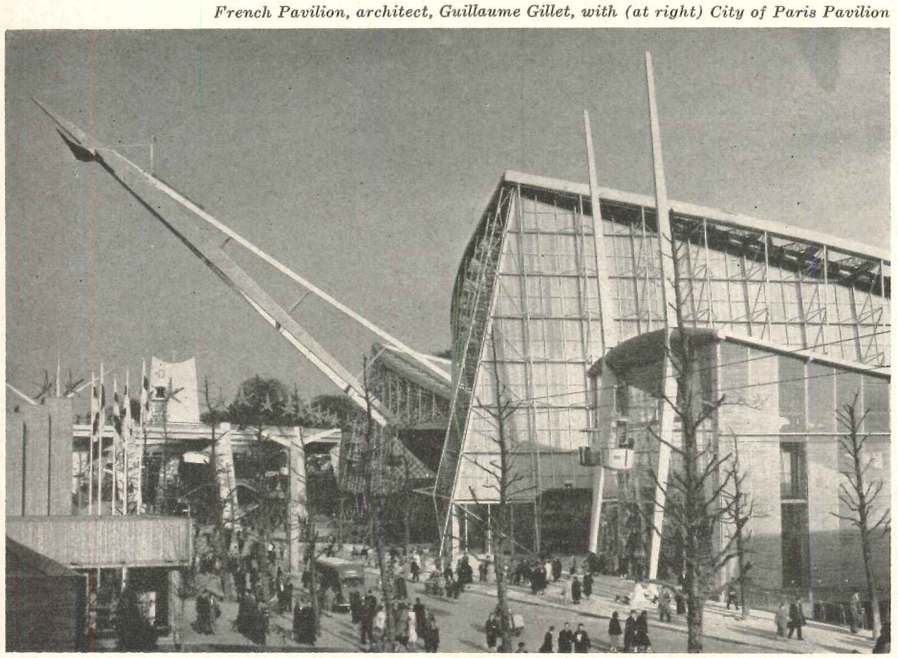


Main Reception Hall

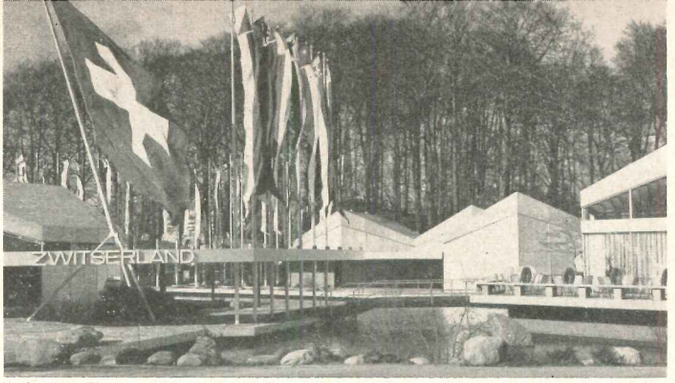


European Coal and Steel Community (International Section); architects, E. Delatte and R. Muquestieaux

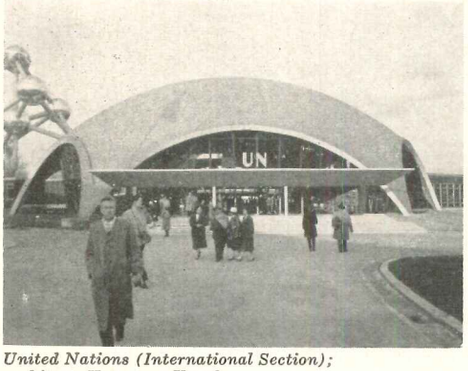
French Pavilion, architect, Guillaume Gillet, with (at right) City of Paris Pavilion



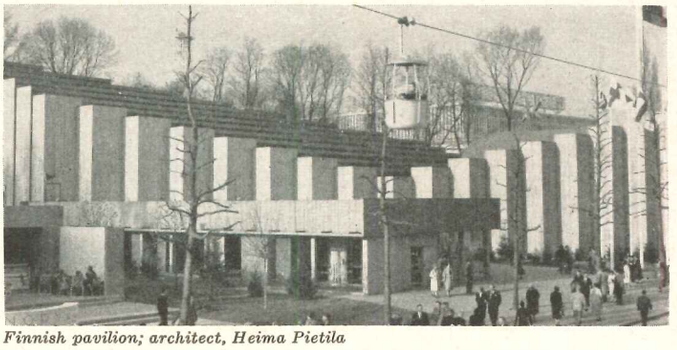
One of the most intriguing shapes at the Fair is the "arrow" of the Belgians' Civil Engineering Section. It is the 240-ft-long reinforced concrete mainstay calculated as a constant stress spar from which is suspended a 193-ft-long walkway between the main hall and a smaller suspended hall roofed with a reinforced concrete cupola. The structure makes possible an uninterrupted view of an enormous construction map of Belgium below the walkway. . . . The French Pavilion, far from finished when the Fair opened April 17, is one of the most daring structurally: the effort, foiled by soil problems which developed during construction, was to support the entire structure by the cantilever of the slanting mast.



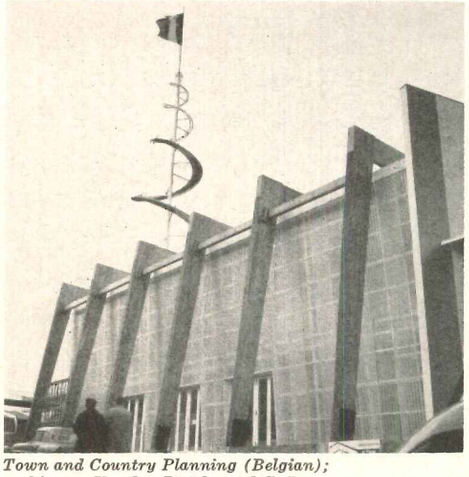
Swiss Pavilion; architects, P. Calame-Rosset; Werner Ganpenbein



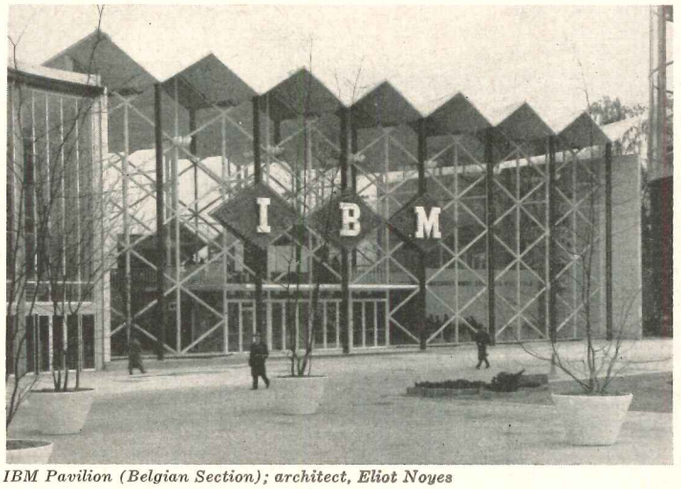
United Nations (International Section); architect, Hugo van Kuyck



Finnish pavilion; architect, Heima Pietila

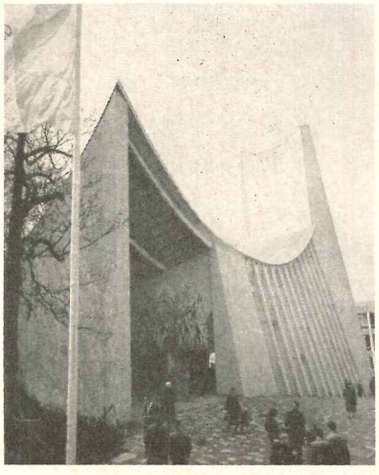


Town and Country Planning (Belgian); architects, Vanden Berghe and Goffaux

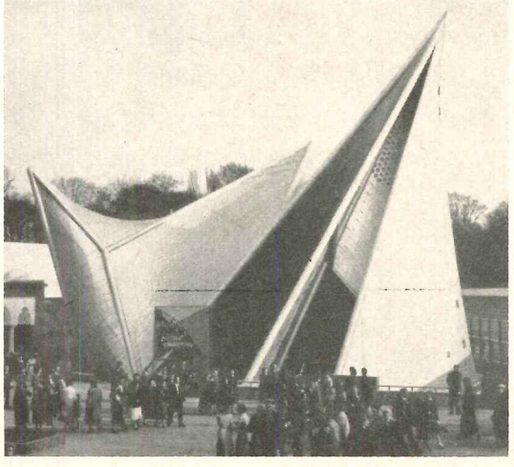


IBM Pavilion (Belgian Section); architect, Eliot Noyes

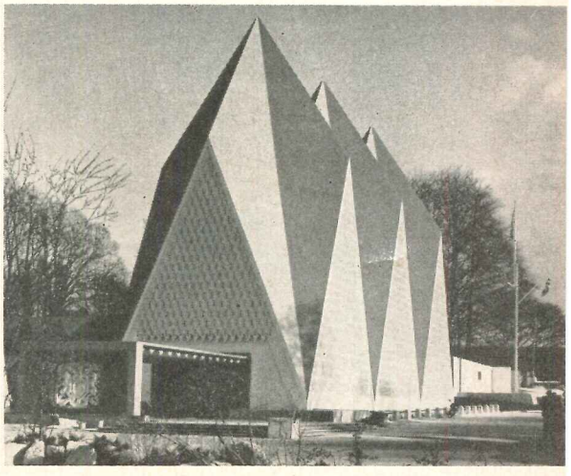
Vatican Pavilion (church portion); chief architect, Paul Rome



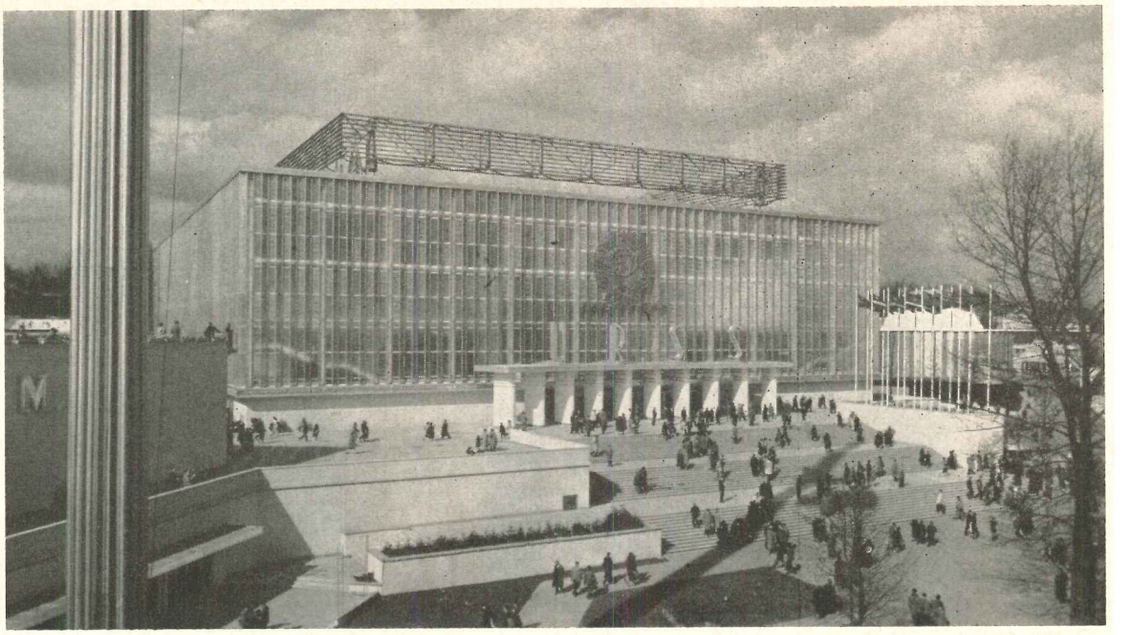
Phillips Pavilion; architect, Le Corbusier



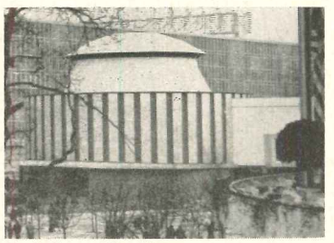
British Government Pavilion; architects, Howard V. Lobb and Partners



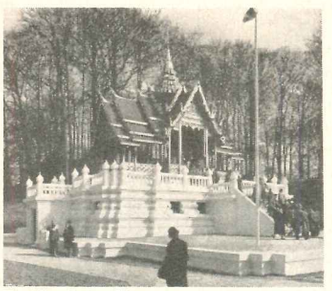
Soviet Pavilion; architects and engineers, V. Doubov, A. Boretski, Y. Ratskevitch, K. Vasilieva and Y. Abramov



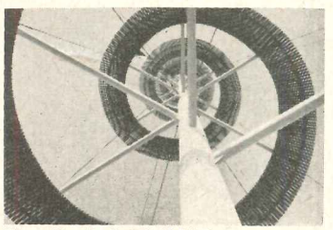
FESTIVAL OF STRUCTURE



Arab States Pavilion



Thailand Pavilion; architects, M. R. Mitraroon, Kasemsri, Binich Sampatisir, Lucien Coppe



Eternit spiral, 160 ft high; architect, Victor Bourgeois

What does unite the architects of Brussels is their common fascination with structural pyrotechnics: structure *as* architecture. This is *not* news; but as you look down on the scene from one of the speeding little cars of the telelift it seems entirely possible that this will be remembered as "the fair of the roofs." If the laurels were to the most spectacular roof, they would surely go to the French for their gallant (if slow of fulfillment) adventure in hyperbolic paraboloids. If they were to the most numerous category of structural type, the suspended roof would have it. If they were to a rectangular, absolutely flat roof with no addenda of any kind, there would hardly be a candidate. This is a Fair to look up at, and wherever you look there seem to be gyrations against the sky.

What does Brussels mean to contemporary architecture? Will it affect the future as some earlier fairs have done?

Stylistically it seems unlikely. The kind of impact which came from Chicago in 1893 emanated from a unity of direction and common motivation quite unlike the situation at Brussels, where the freedom in which the architects have worked has produced the widest variety of architectural expressions. Except for the familiar spectacle of structural exhibitionism, no single trend emerges; and of the diverse directions to be observed none could be unfamiliar to an architect who keeps reasonably abreast of developments. The architecture at the fair is stylistically a summary of what is, and everybody has seen it before. It ought to be added that this is not necessarily true of the general public, and it is likely that there will be some impact in that quarter, if only to introduce some ideas not heretofore familiar.

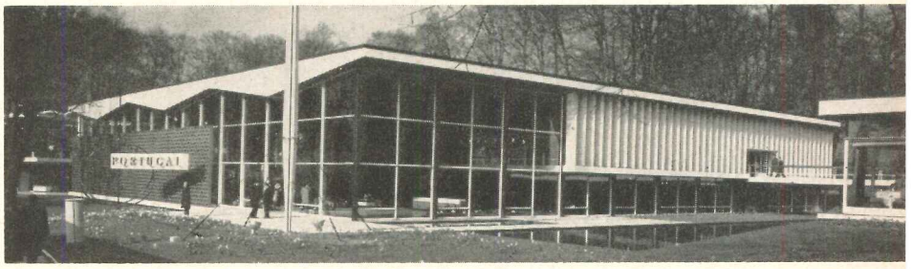
Hungarian Pavilion

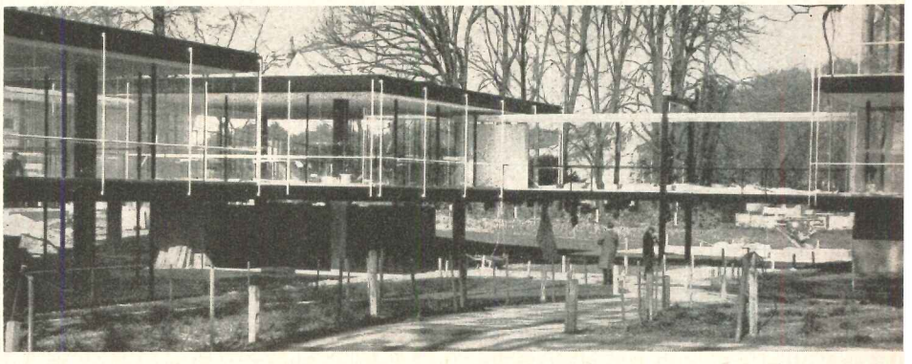
Czechoslovakian Pavilion; architect, Frantisek Cubr

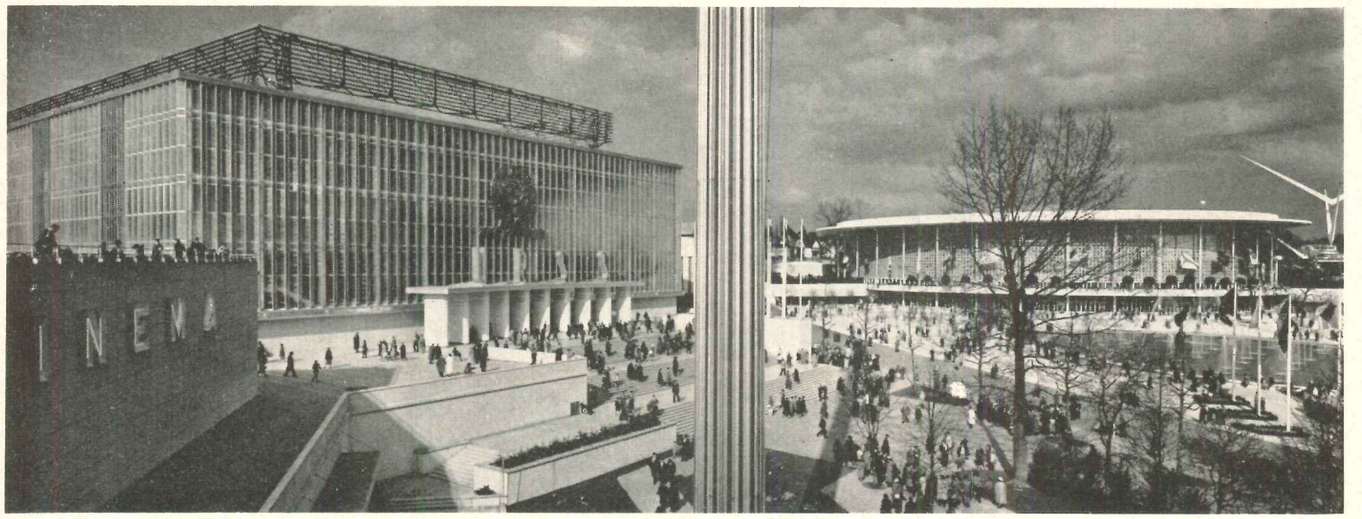
Yugoslavian Pavilion; architect, Vjenceslav Richter

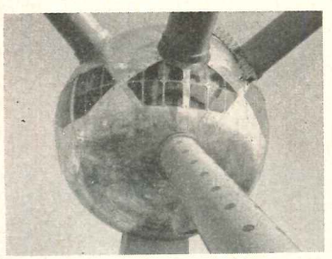
The Soviet Pavilion, prefabricated in Moscow and shipped to the site in sections, manages nonetheless to look monolithic: a great frosted glass rectangle which swallows up its site and seems unrelated to people on any scale less than that of the 40-ft statues which greet the visitor just inside the entrance lobby. But the most notable fact about the architecture of the chief Communist pavilions is its independence: it leaves polemics to the exhibits. . . . Three foreign pavilions in a familiar tradition: the West German one a series of stunningly detailed units of varying sizes and heights, an efficient and effective response to a hilly site.

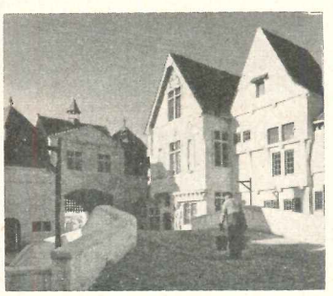
Below, Portugese Pavilion—architect Pedro Cid;
center, West German Pavilion—architect, Egon Eiermann;
bottom, Canadian Pavilion—architect, Charles Greenberg



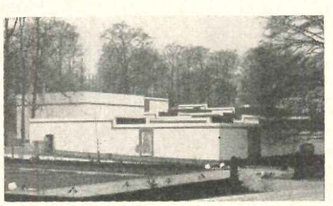








Houses of "Belgium 1900"



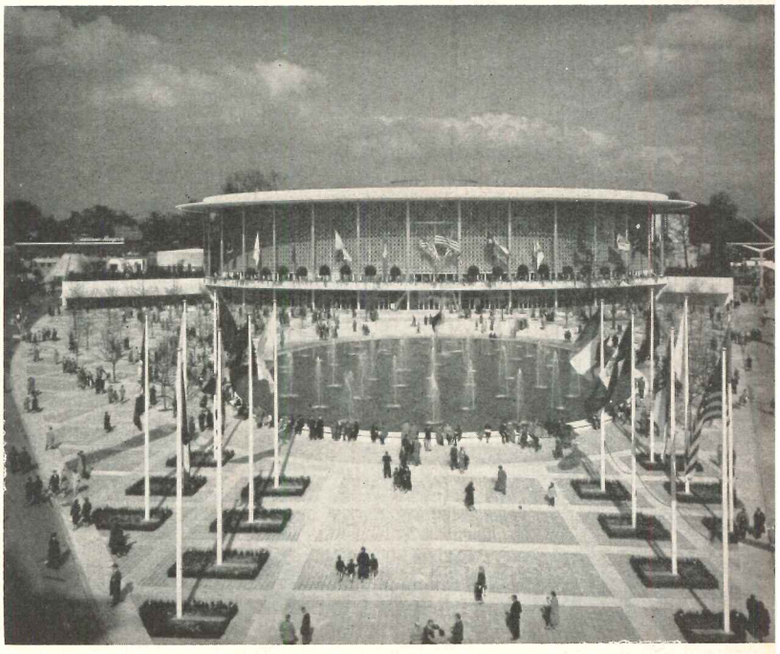
Italian Pavilion; architects, Belgioioso, Peresutti, Rogers, Gardella, Lucciehenti, Monaco, Perugini, Quaroni, Fourmanoit

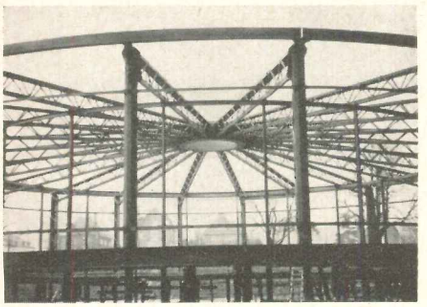
Nor does the area of site development seem to have produced any positive results this time. Although this was a matter in which the initial objectives were quite lofty, what officials have described as "the pressing necessity of making the most of all the space available without neglecting even the tiniest corner" has resulted in a site which seems generally crowded in spite of its park and garden areas. And the architects developing the individual sites seem to have proceeded on the whole as though they would have no neighbors. Again an exposition of what is rather than of what ought to be.

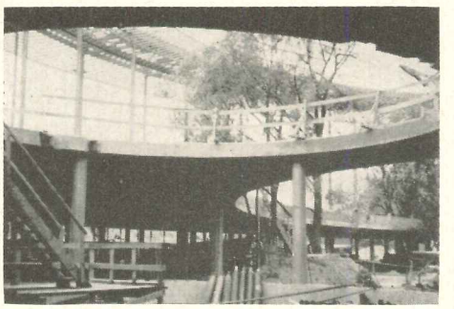
In the U. S. Pavilion architect Edward D. Stone has made up for a lot of everybody else's sins of omission and commission. Here *is* architecture and by far the handsomest building at the Fair. Its great plaza is not only a gift to its neighbors but, in this crowded setting, an invitation and welcome; and the building itself has an elegance and repose, an openness, which invite still further. By day and by night (and this is a building designed for both) it is—and proclaims, in contrast to the great closed-in Soviet rectangle across the way—an architecture of light, strength and freedom.

PHOTO CREDITS: page 163, Sergysels & Dietens, Wide World; page 164, Sergysels & Dietens, Magnum—Kryn Taconis, Sado; page 165, Black Star—Edo Koenig, Black Star—David Cairius, Sado; page 166, Wide World, Sergysels & Dietens, Magnum—Kryn Taconis; page 167, Pierre Baguet, R. Kayaert, Magnum—Kryn Taconis, Sergysels & Dietens; page 168, Raymond Badjou, Magnum—Kryn Taconis, Sergysels & Dietens, Pierre Baguet; page 169, Raymond Badjou; page 170, Ira Ignatius

The U. S. Pavilion itself may well be the most impressive exhibit at the Fair. With its setting of plaza, pool and fountains, its transparent walls of vinyl plastic laced with gold-painted steel supports and its great sheltering roof, it is serenely splendid and gracious.



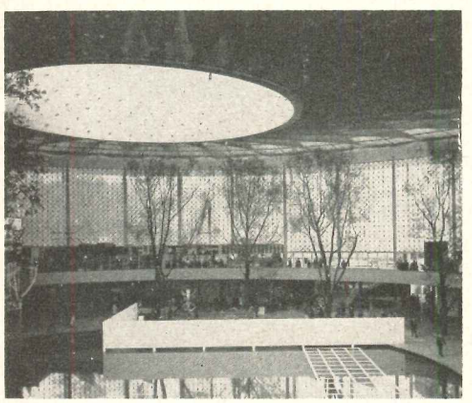


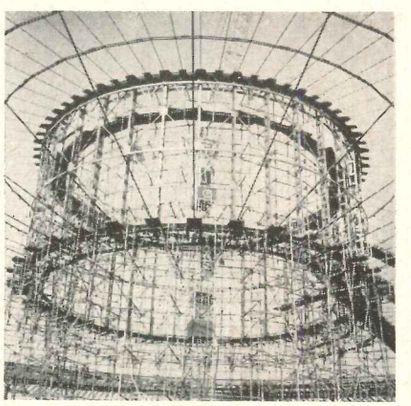


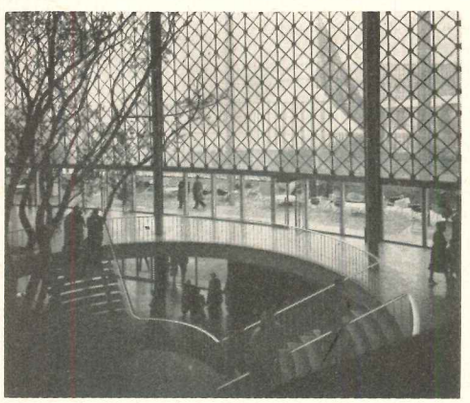
The roof of the U. S. Pavilion utilizes a bicycle-hub principle to achieve a clear span of 350 ft, making it the largest circular building in the world without interior columns. The hub is open to the sky above a central pool 133 ft in diameter; exhibition space surrounds the pool on two levels. Eleven willow trees found on the site have been preserved within the pavilion.

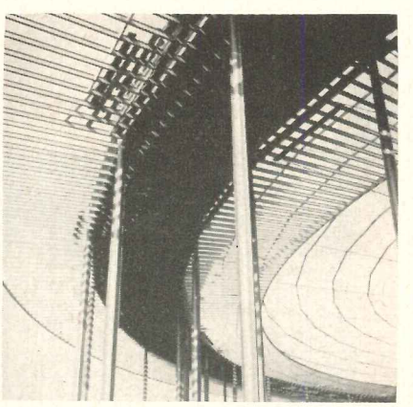
FESTIVAL OF STRUCTURE

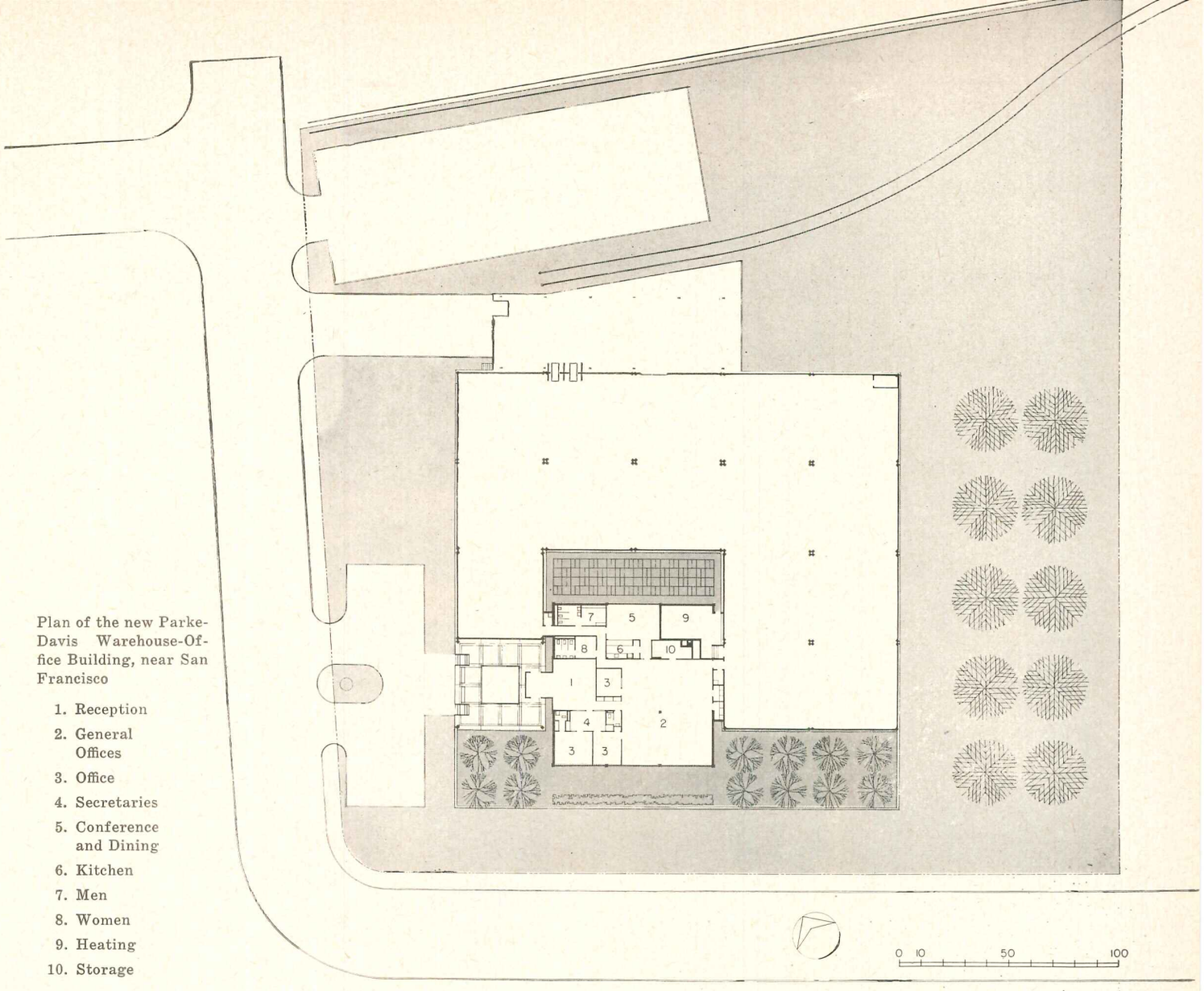
Exhibits strive to suggest that Americans love life and their country for many things besides riches and power, and on the whole this effort appears successful. But the design of the exhibits ignores the building as though it didn't exist: and indeed the dropped ceiling and partitions of the exhibit at the main entrance banish the great interior completely. Two major additions by the exhibit designer constitute architectural intrusions of his own—the ramp leading from the mezzanine to the pool (its use for the fashion shows was an afterthought) and the very ugly wall enclosing a small section of the central pool for sculpture displays. The building was designed before there was even a theme for the exhibits: this may be backwards; but it was the exhibit designer who knew what he had to work with.











Plan of the new Parke-Davis Warehouse-Office Building, near San Francisco

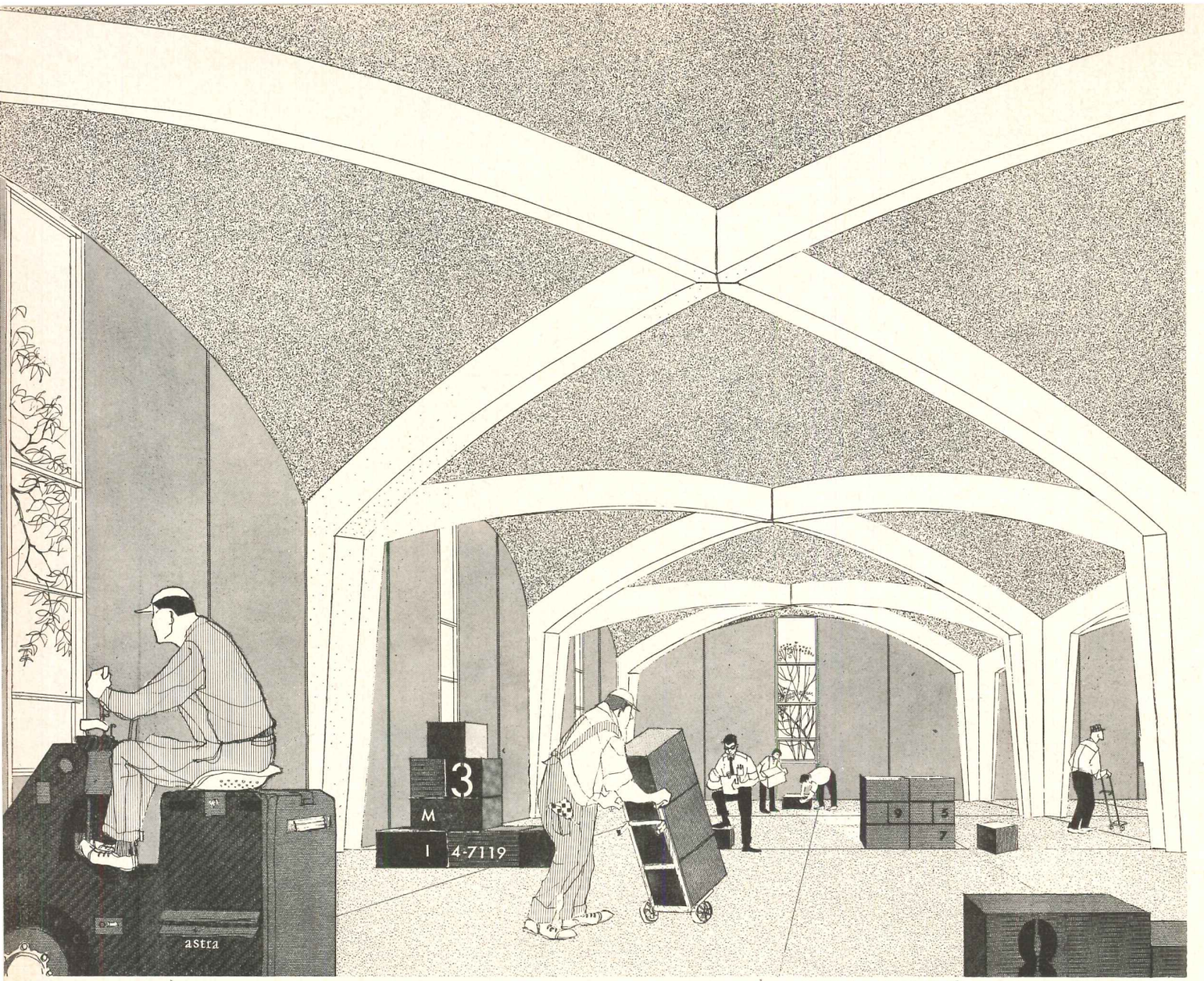
1. Reception
2. General Offices
3. Office
4. Secretaries
5. Conference and Dining
6. Kitchen
7. Men
8. Women
9. Heating
10. Storage

An Assembled Concrete Building

Architect Yamasaki Demonstrates How To Support and Enclose An Entire Building By Putting Together Only 4 Basic Pieces

Assembling a set of precast pieces to make a building is reminiscent of playing with a construction toy on the living room floor, except for the scale and odds. With construction becoming more industrialized such a process makes sense, for it reduces on-the-job building time and exploits to the full the triple advantages of precasting: close quality control; freedom of shape; and the reduction of formwork and centering. In this particular case, no centering will be required in the field.

Several examples in this building technique have appeared recently, both here and abroad. Concrete maestro Nervi's Olympic dome was so constructed, to name but one. There is every reason to suspect a trend toward the assembled concrete building. Yamasaki says, "Having gone through the casting of the



Drawn for Architectural Record by Astra Haner

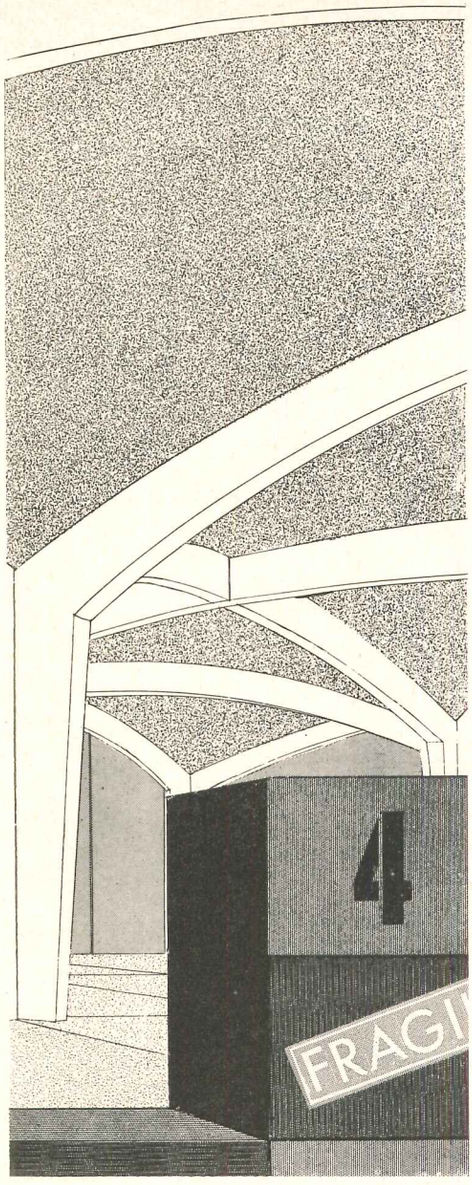
An Assembled Concrete Building (*continued*):

ACI building, and then seeing this job being produced, we are more confident than ever that this form of technology has unlimited future possibilities."

For the Parke-Davis project, the architect designed this combination of components for three reasons: to create an interesting silhouette against the sky; to provide an economical, fire-resisting structure to roof the required 40 ft square bays; and to achieve a "clean interior look" appropriate to the pharmaceutical products handled.

In assembling the building, only 4 basic components will be used: the L-shaped column and roof-support bent; the spherical-triangular roof shell; and wall panels of 2 sizes. The foundation and floor slab will be poured in place while the other elements are being precast. The rigid bent pieces—which are flat and thus easy to stack and handle—will be locked together diagonally to form the pattern of 40 ft square bays. The roof shell components—40 ft by 20 ft and 3½ in. thick—are being cast at the rate of two a day, and will be cut in half (parallel to the 40 ft dimension) to facilitate handling, storage and shipping.

In setting up the program, Parke-Davis requested a building that would have advertising value and provide a pleasant environment for the workers. To avoid the box-like appearance so common to warehouses, the architect gave this warehouse an interesting roof profile and wrapped it about the central office element, expressively bringing it forward toward the highway. The total result should appear strikingly different from its industrial neighbors.



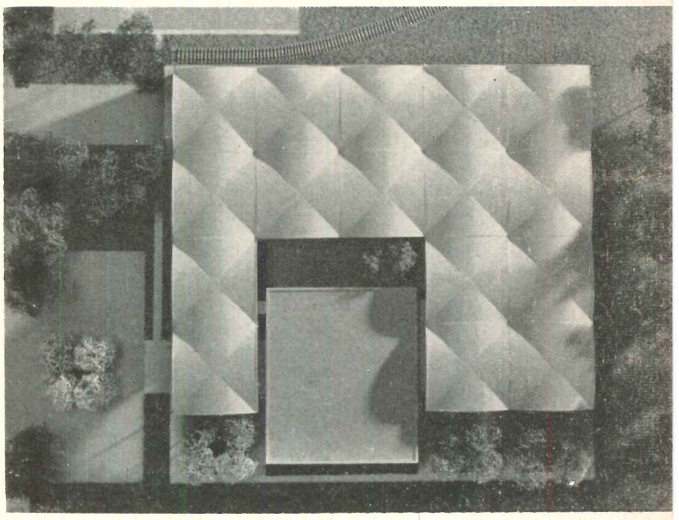
Parke-Davis Warehouse and Office Building
Menlo Park, California

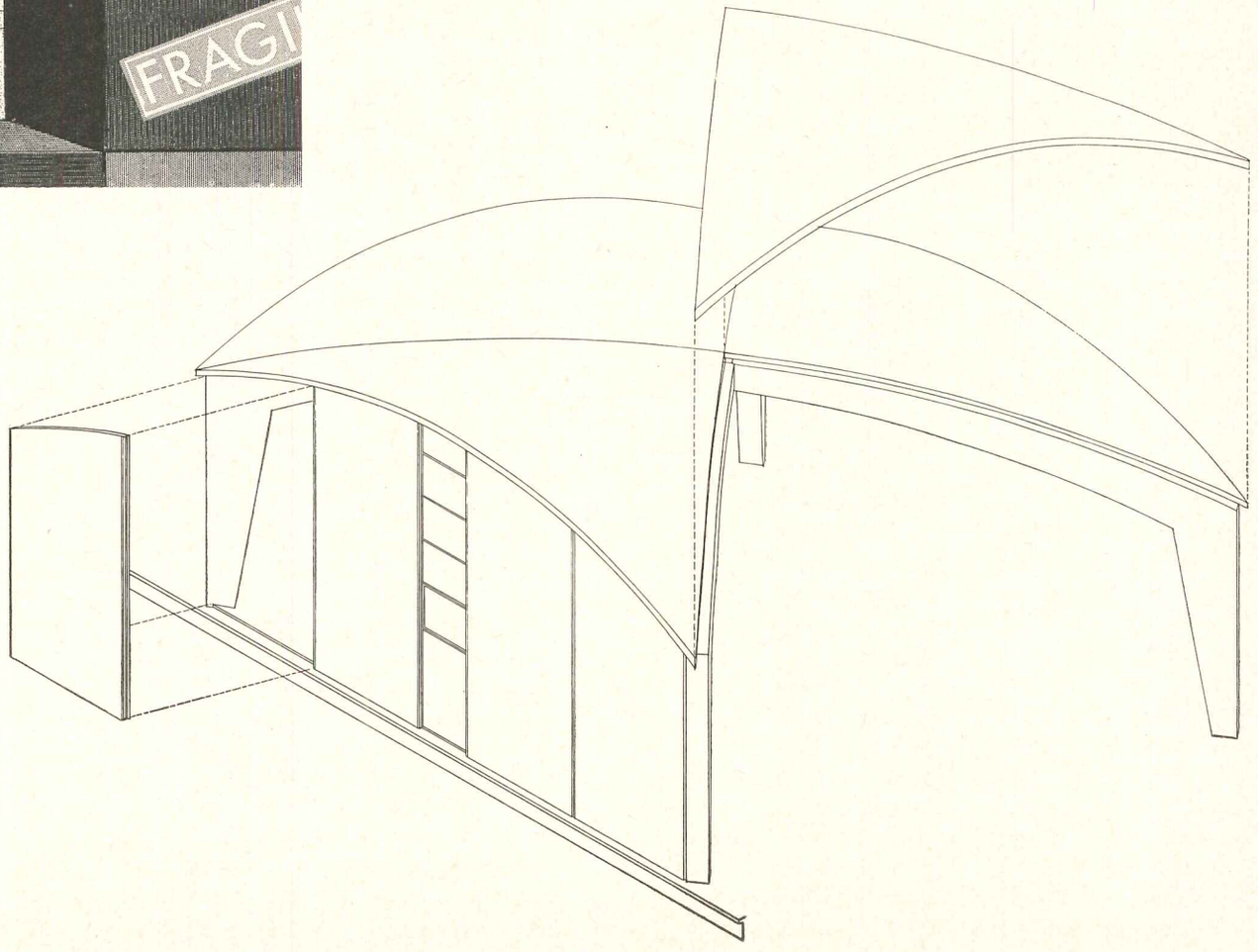
Yamasaki, Leinweber and Associates, Architects

Ammann & Whitney, Structural Engineers

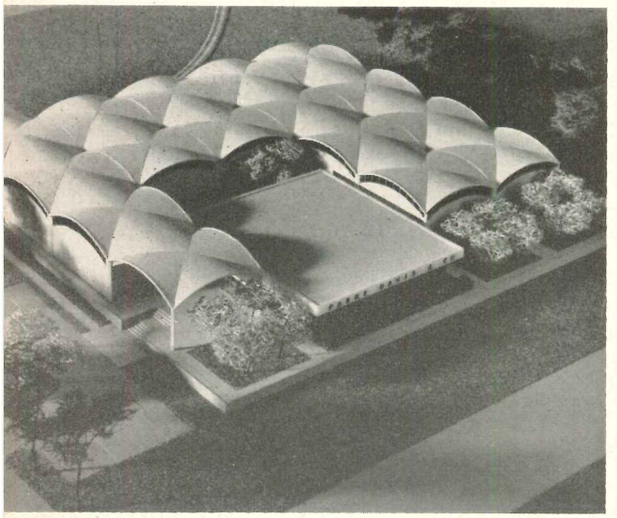
Knorr-Elliott Associates, Associated Architects

Williams & Burrows, Inc. General Contractors



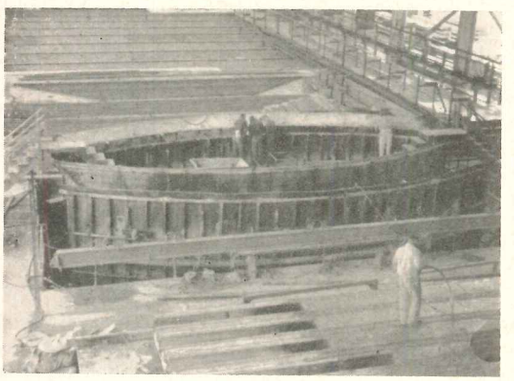


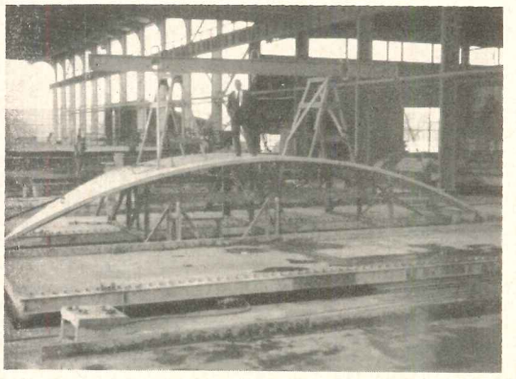
An Assembled Concrete Building: Parke-Davis, San Francisco

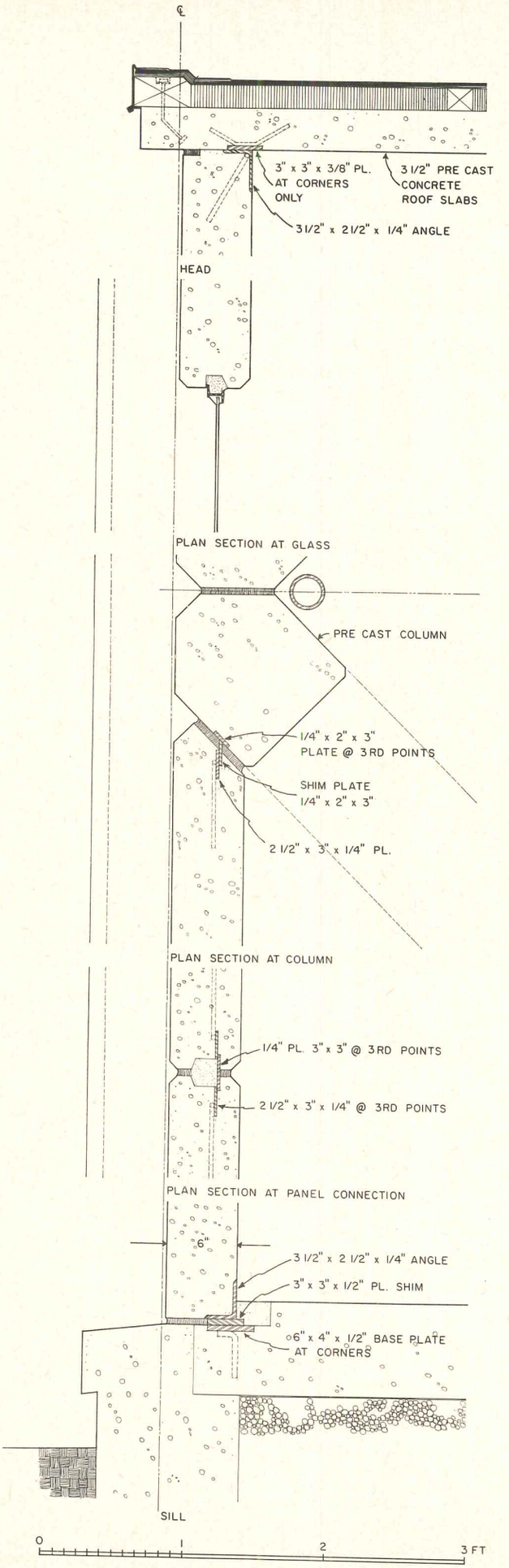


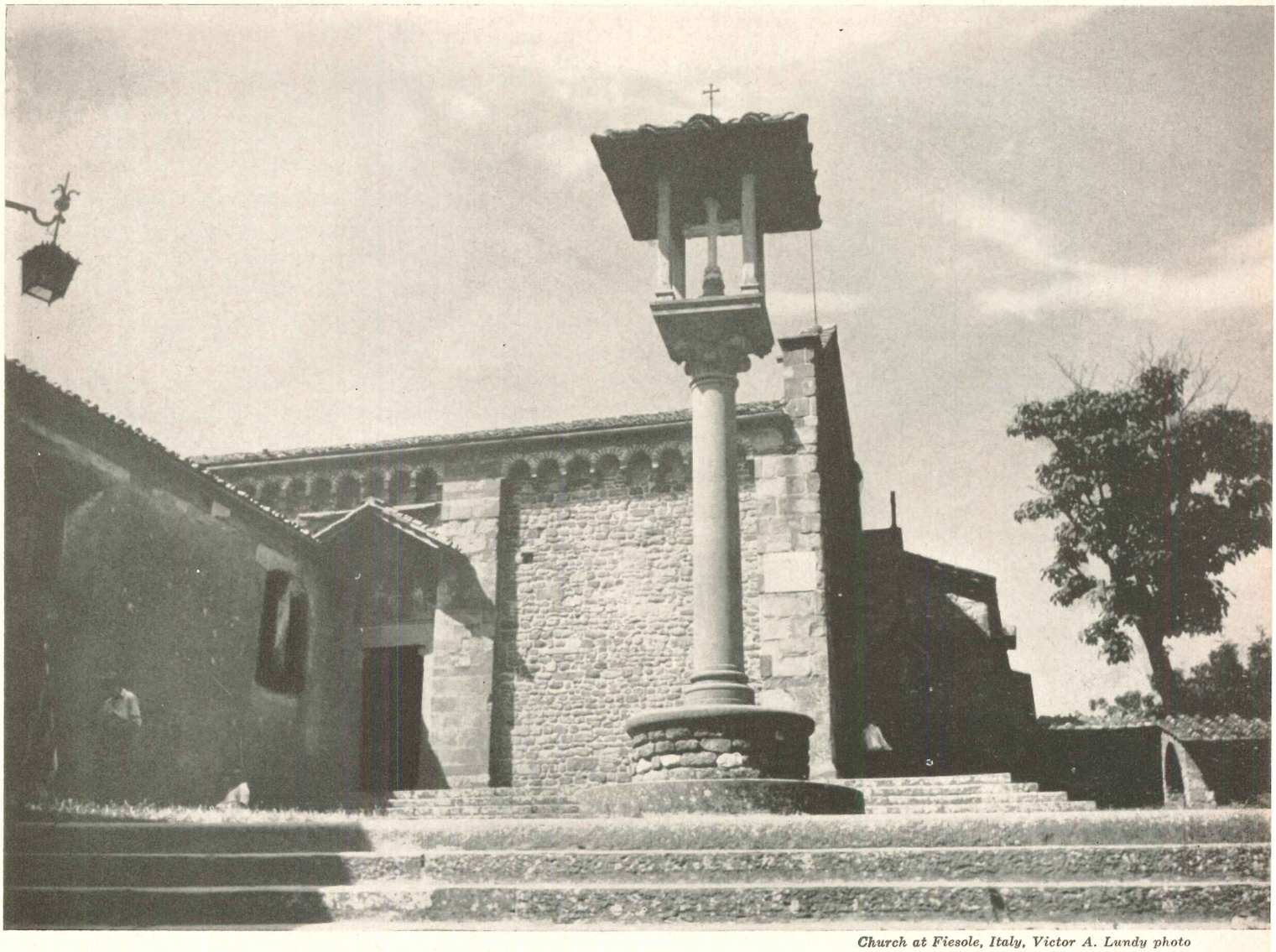
At right: detailed sections through a typical bay to show junctures at roof, wall, columns, floor

Below: top picture shows the two sets of forms open, with men setting reinforcement, inserts, etc. Forms are stripped in the morning, prepared through the day, and filled in the late afternoon. Bottom picture shows a roof panel on a tilt table rigged to simulate truck moving racks to test the location of lifting eyes and also the lifting rigging. The tilt table makes it possible to turn the casting from vertical to horizontal without strain.





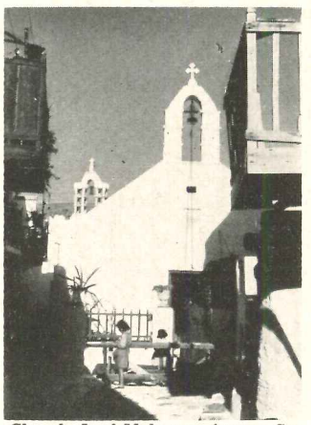




Church at Fiesole, Italy, Victor A. Lundy photo

RELIGIOUS BUILDINGS

More people, more communities, more religious buildings: the unprecedented challenge to today's architect is that so many of these new religious buildings will be built in new communities for new groups of people who want a contemporary expression of their faith which will stand not only as a symbol of community of faith—the ancient role of the church building—but, in new and wider significance, as a symbol to the community at large of that faith. Four of the seven buildings presented here are in rural and suburban areas; two are additions to existing plants, one on a spacious site, the other on a crowded city plot; and one is at the crossroads of life and death—a city hospital. Within its particular environment, each is a symbol —not by the pitch of its roof, the color of its glass or the materials which give it substance, but by the appeal it makes to the spirit in the quality of its outward form and inner space.



Church, I. of Mykonos, Aegean Sea

A Place For Worship

by Victor A. Lundy

Victor A. Lundy photos

Chartres Cathedral, France

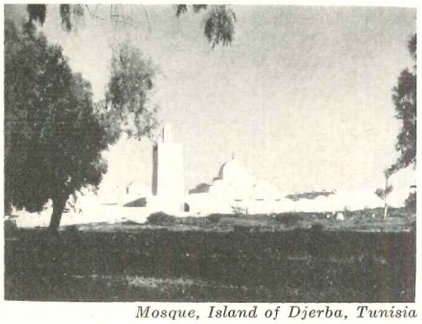
The design of the place of worship is a crystallization, a concentration in one ultimate statement, of the forces at work in the creation of any great work of art. But it is, perhaps more than any other branch of the arts, the great equalizer—the full demonstration that art is not and cannot be an exclusive thing. The designer of a church building cannot design for himself alone or for an elite group who think as he does. He must reach out to people in the realization that the building he designs is the means of conveying a message to people—not his message but God's.

People differ greatly in what they require and in what they want in a place of worship. Some need tradition or certain elements of it. The designer of the church building cannot turn his back on the past, for history and the church and people are not separable: the past is the heritage of faith, and a people's desire to see this expressed is right. A truly great church building must meet this desire, must in itself be a part of the ministry of the faith, must somehow express these things that are age-old and age-less. We need symbols in architecture; we need them especially in church architecture. A church should *look* like a church, inside and out, and when it does, it becomes such a symbol. It must look and be what it is without further explanation.

The place of worship is the one architectural problem to which all human beings react, about which all have some feeling, however vague, however strong. At some time every one of us has come face to face with death, has thought something about survival, has wondered about our place in the scheme of things. From this there is no escape in cynicism and snobbery. Nor does agnosticism, or even total ignorance, rule out some feeling about the place of worship.

Because the place of worship is a place for people, its qualities, however expressed, must be fundamental, continuing, enduring—imparting not only a sense of kinship with the present but a perception of the past and a vision of the future; and always pervaded with the relationship of God and man. How well the architect understands this, how fully he interprets it, will reveal what he himself really is. He cannot disguise himself in his work: if the place of worship is a sham or sheer theatrical perpetration, or if it is shallow or swaggering, its designer's nature is there for all to see.

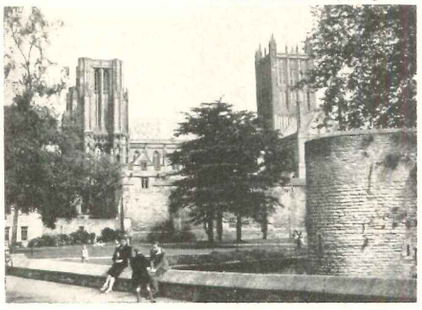
Each commission presents a different set of circumstances and for each one there is a close-to-best answer that is possible within the context of the determining conditions. For me the measure of the greatness of a building is how high the man who designed it has reached under the conditions which molded the building's program, how nearly he gives the best answer.



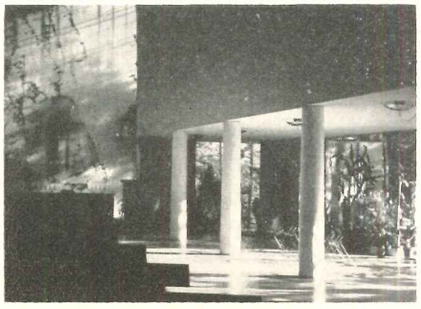
Mosque, Island of Djerba, Tunisia

Temple of Poseidon, Sunion, Greece

Wells Cathedral, England



Chapel, Abo, Finland, Eric Bryggman, architect



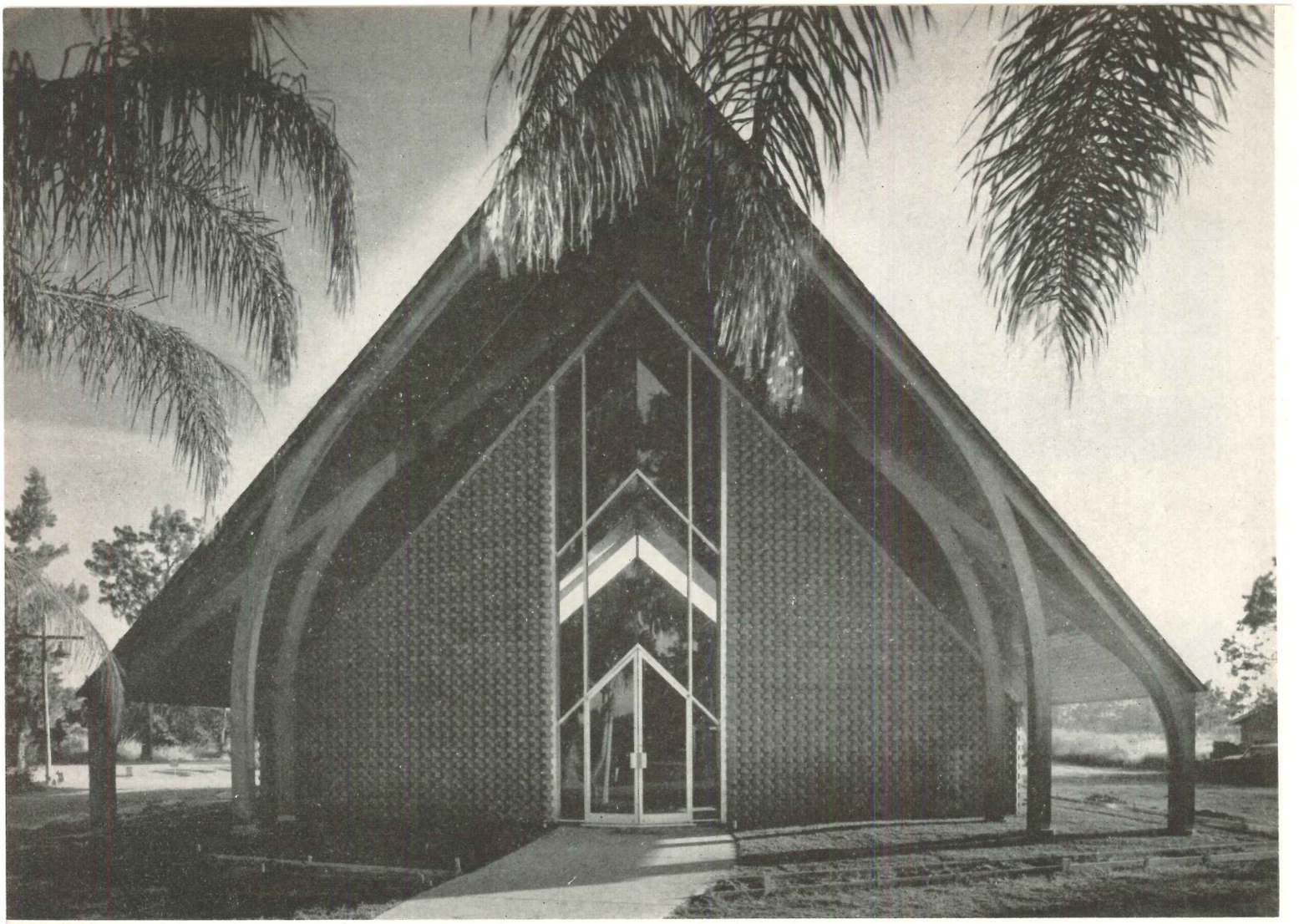
But how high he aspires, how high he reaches, will be affected by the degree to which he has developed his own philosophy, his conviction of life and of architecture from which his creative contribution will spring. If a man lacks a philosophy, he is lost, especially since he will be without that inner strength that can, for instance, sustain him, even protect him, from being crushed—however unintentionally on either part—by the very greatness of the giants of architecture. These great men can, and do, inspire and teach; but the force of their personalities and of their philosophies can also stifle those who are still learning or who have not yet worked out their own convictions.

For in the last analysis, it is only from within one's own self that one can create anything. Creation is a great adventure, and any suggestion of fear or cynicism or subservience is against this spirit of adventure and negates its very process.

The inescapable truth is that great architecture is creative architecture and that it results only when the creative source is free and unfettered, certain and directed; when the passionate experience that is creation, with its paradox of pain and joy, is not held back from its complete expression. Great art—and architecture—is involved inextricably with truth, with love, with the full passion of being. In the moment of revelation which is the essence of creation, the creator is crystallized into the reality of himself and he thinks and feels and creates with the "whole of his being".

Except for the architect who is in himself a "total" artist, it may take a team of creative artists today to produce the great work of architecture. But this can only happen when each individual on the team—in the church project this must include the man of religion as well as the architect and the engineers and the artists of various kinds—is free to give without restraint the very best of which he is capable. Great art and great architecture do not derive from negative ideas and actions, any more than they do from neutral ones. If we are to reach pinnacles of greatness in architecture there will always have to be an opening for the infinite individual genius that man can bring to his work and that can come from anywhere—that knows no one place, no one temperament, no one approach to design.

Great works of architecture, especially religious buildings, have this in common: they are born of conviction and their makers are men who are "believers" in the largest sense of the word—who know their own minds; who are optimists about the survival of man; in short, men who have faith, by whatever name they may call it, whatever form it may take; and who, because of their faith, move inevitably in a positive direction.



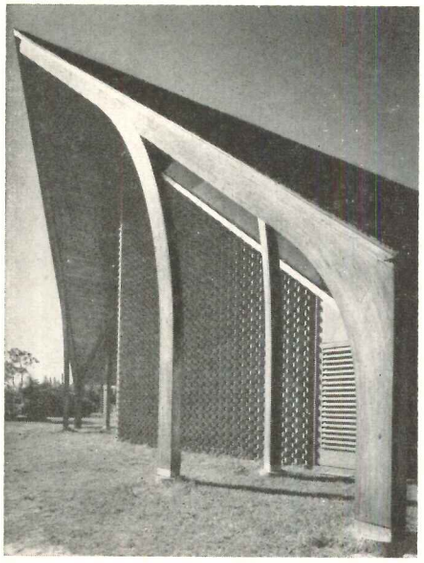
Bee Ridge Presbyterian Church, Sarasota, Florida

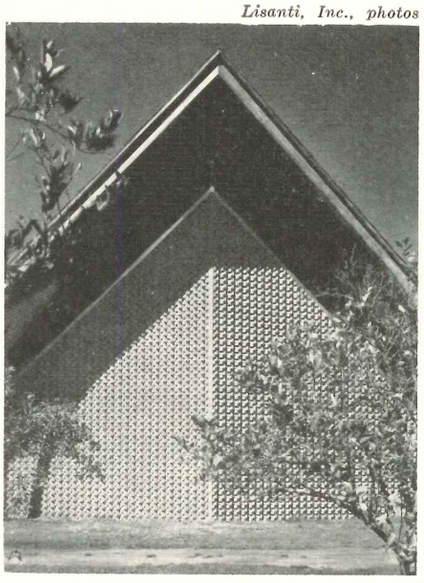
Victor A. Lundy, Architect

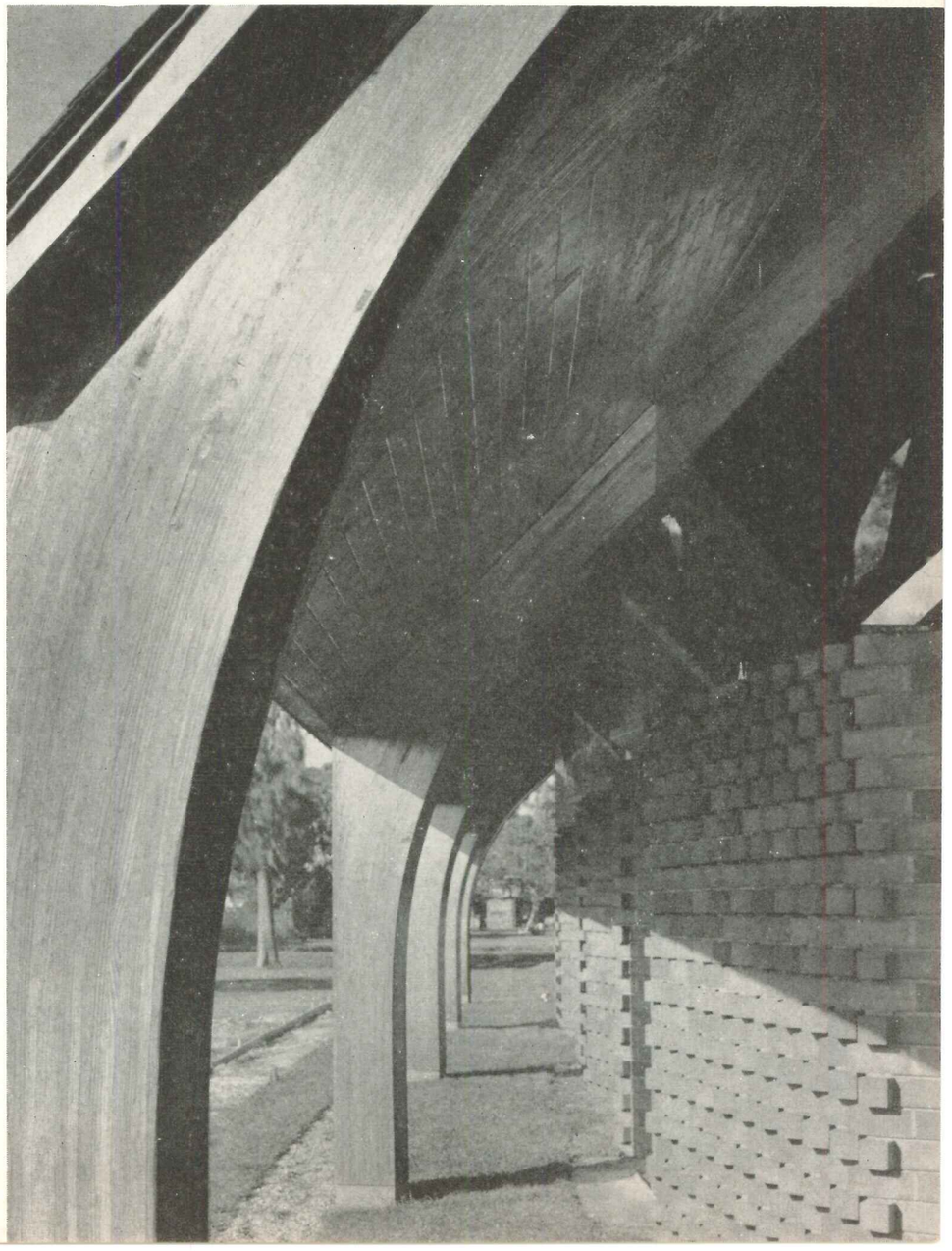
J. W. Harvey & Son, Contractor

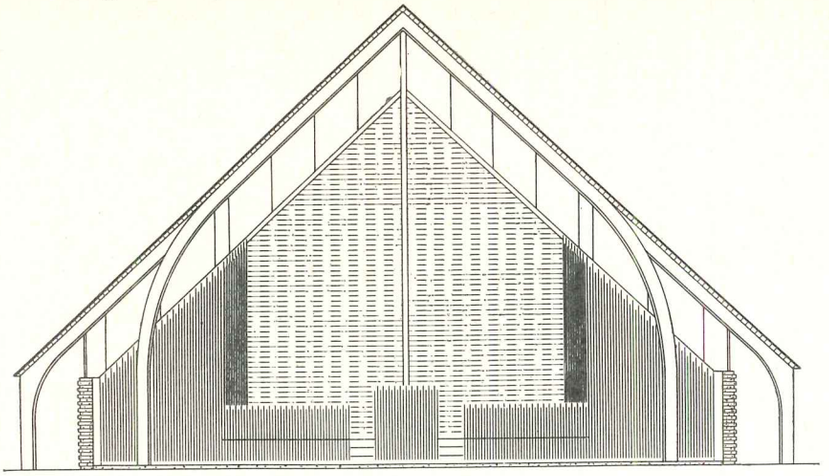
The laminated arches that frame this small country church do so in a free interpretation of the Gothic ribbed vault—and an even freer adaptation of the buttress—producing a space within that is richly evocative of the sense of worship and a form without that in simplicity and sheer beauty of line communicates the building's purpose to all who pass by. While these arches, in their criss-cross arrangement, are peculiarly responsive to the religious purpose, they are a practical solution to a number of problems: the church had to be built in stages, as money was available, and it may be expanded in the future, so the 18-ft bays were an easy way of building by increment; the criss-cross system provided inherent wind-bracing and made possible arch members of lighter section than with a parallel system; the wood decking laid across them serves as finished ceiling and as base for the roof shingles—an important economy with a total budget of only $50,000. The walls, of concrete corner block, locally made, are stacked criss-cross, for greater strength and to recall the pattern of the arches. Light and shadow continually alternate on the broken surface thus formed.

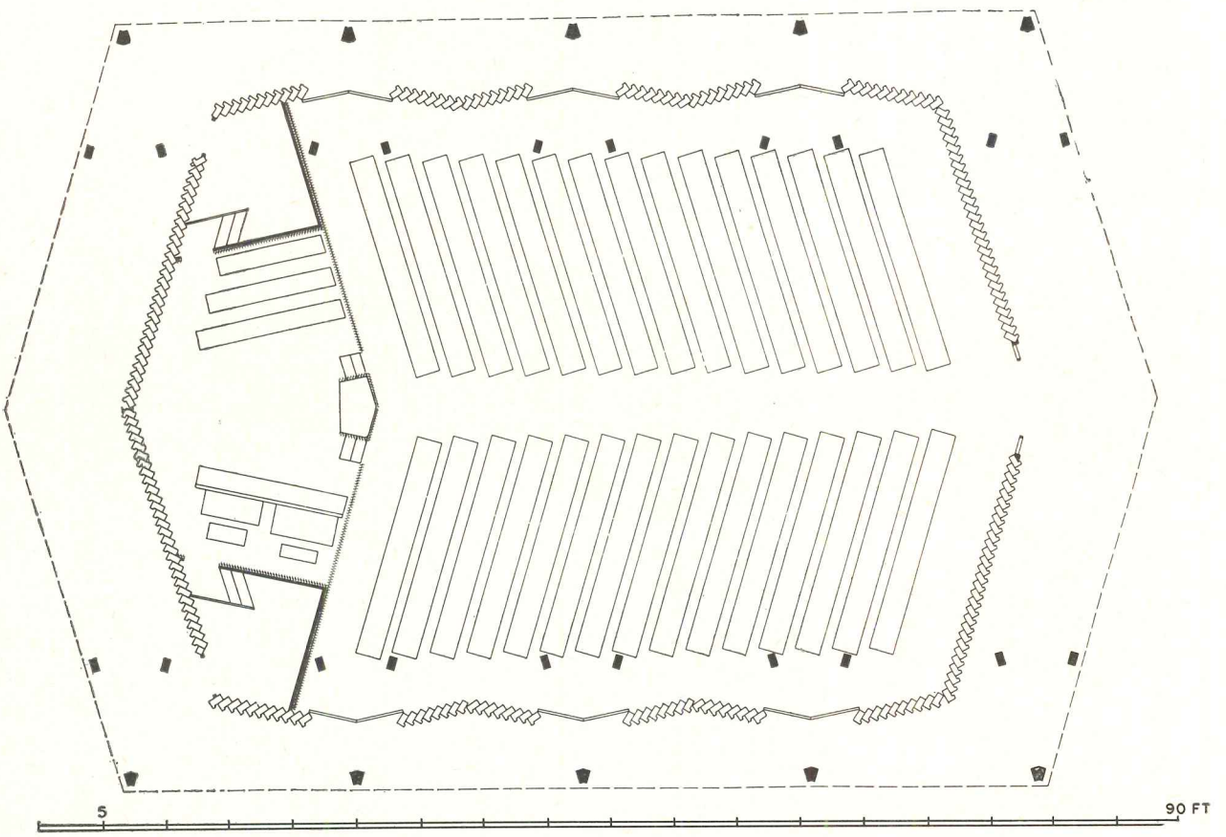
Lisanti, Inc., photos







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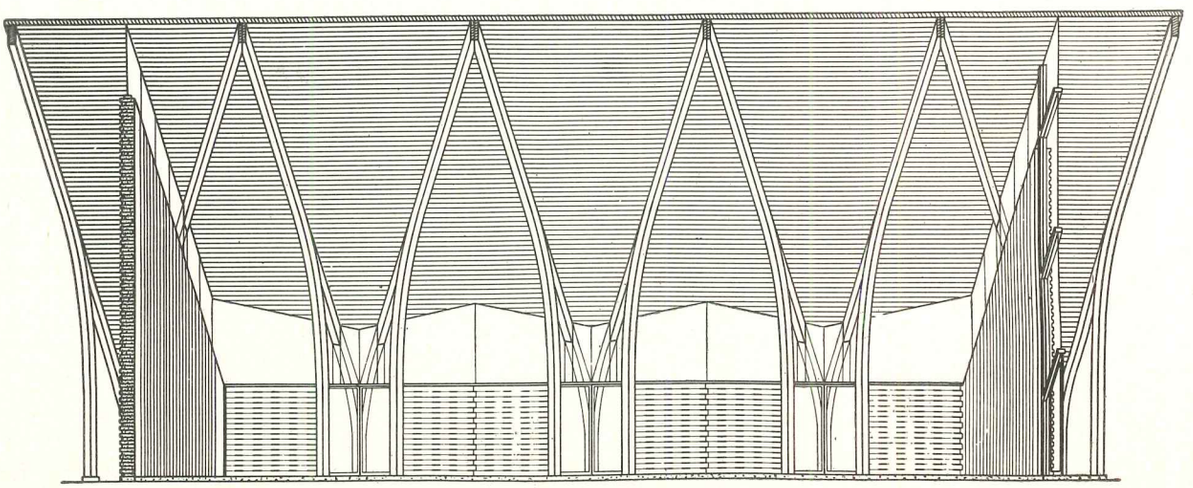
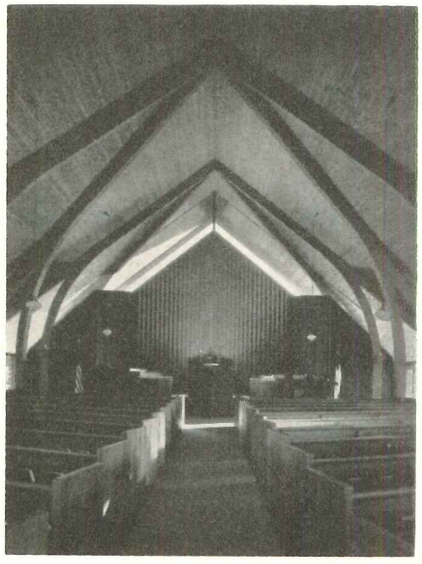
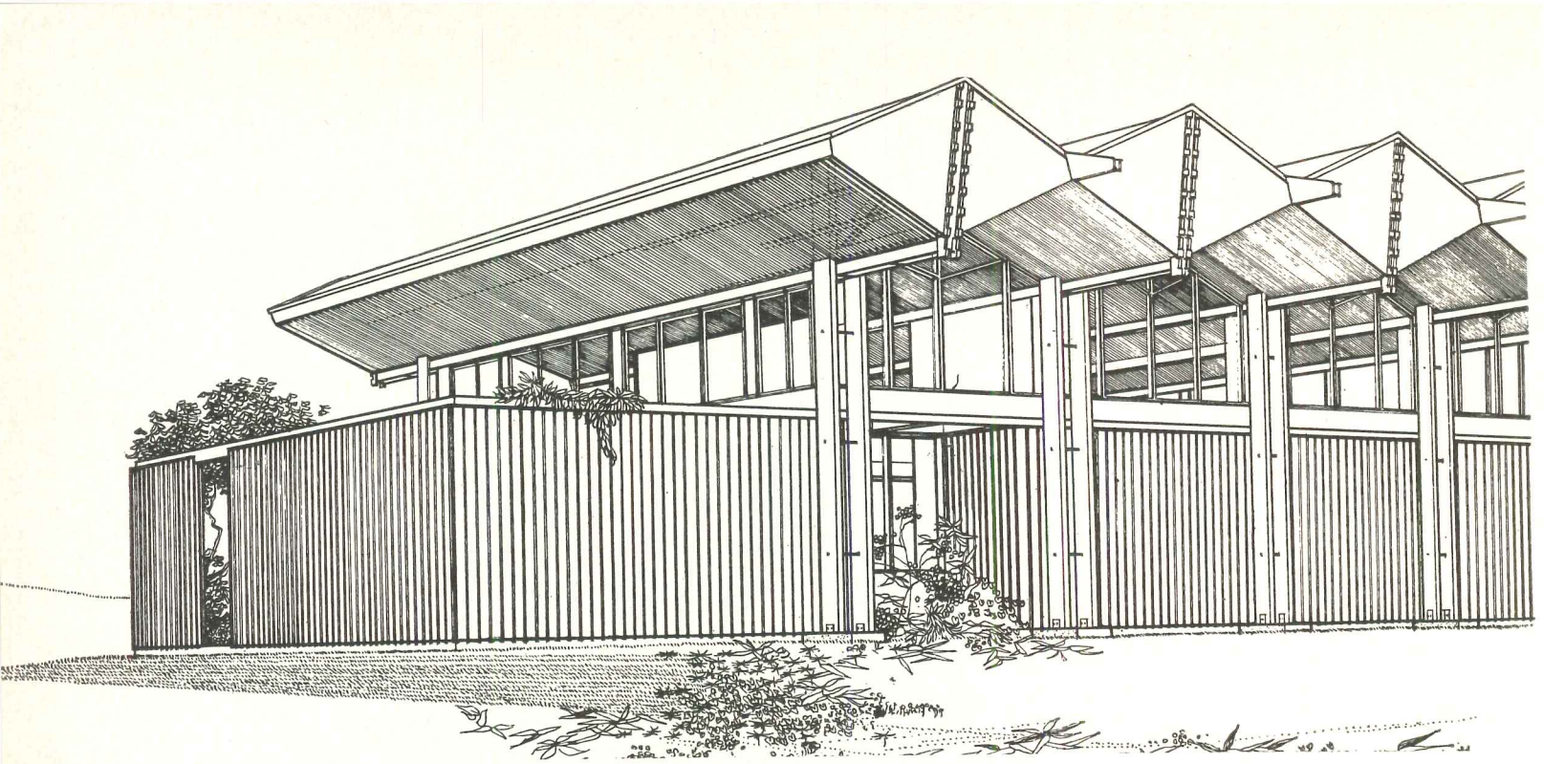




To emphasize the complete independence of structure and walls, the walls stop below the ceiling line and a band of clear glass, through which the buttresses pass, fills the space between. The nave seats 250 to 300 people. The floor is cork tile; the ceiling is white fir. Heating and cooling are by forced air in an underfloor perimeter system.

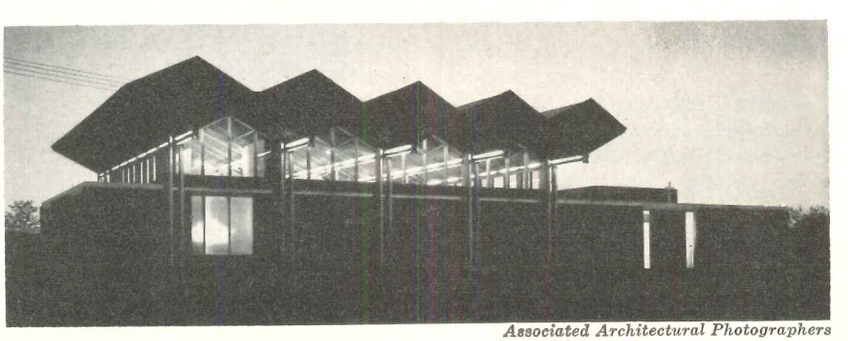


Faith Lutheran Church, Frayser, Tennessee

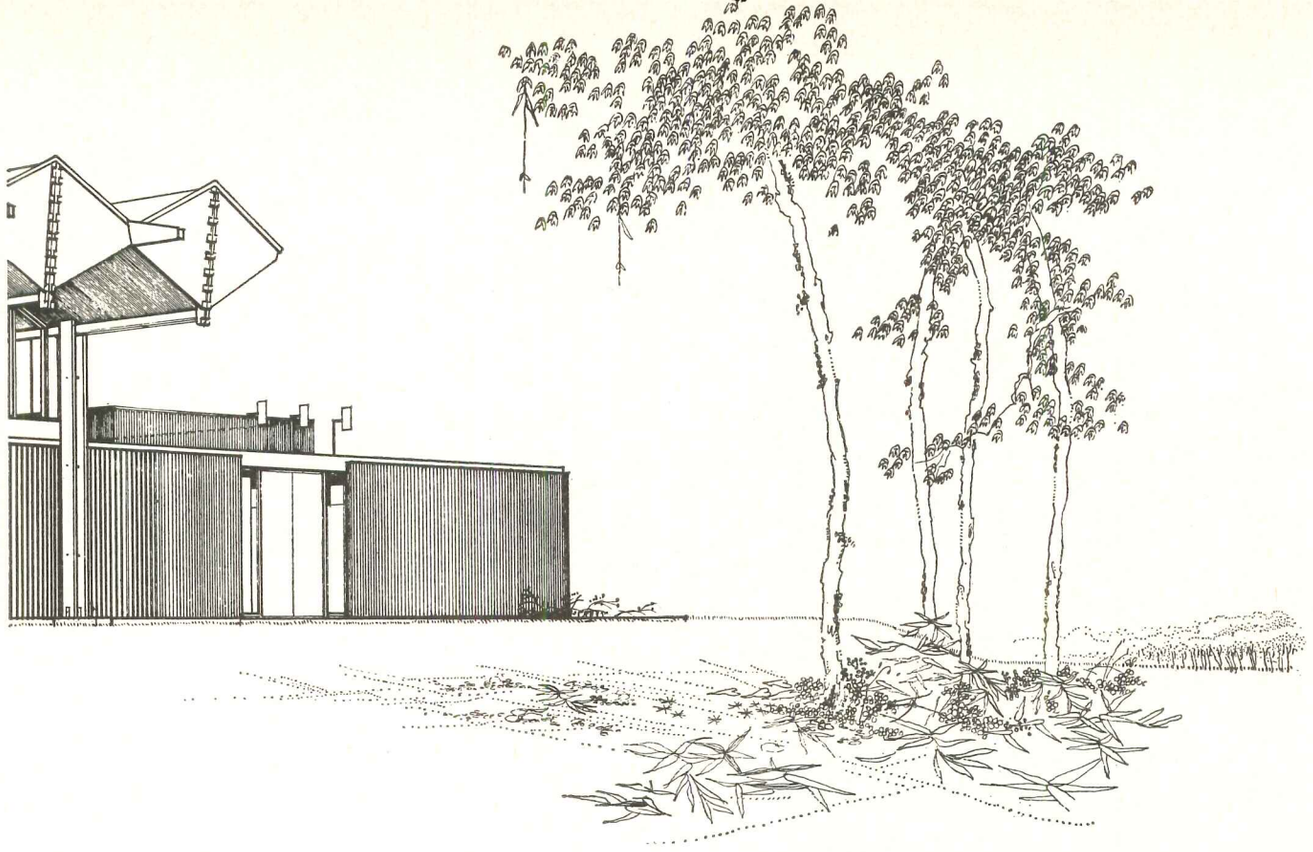
Robert Thomas Martin, Architect;
Francis Mah, William H. Gaskill,
Thomas B. Boaz, office associates

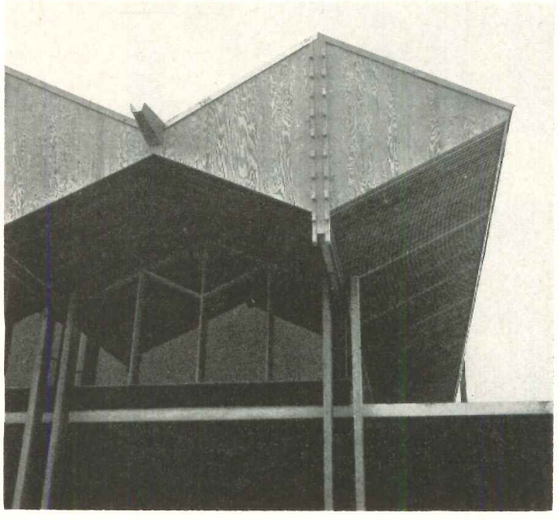
J. T. Kendrick, Contractor

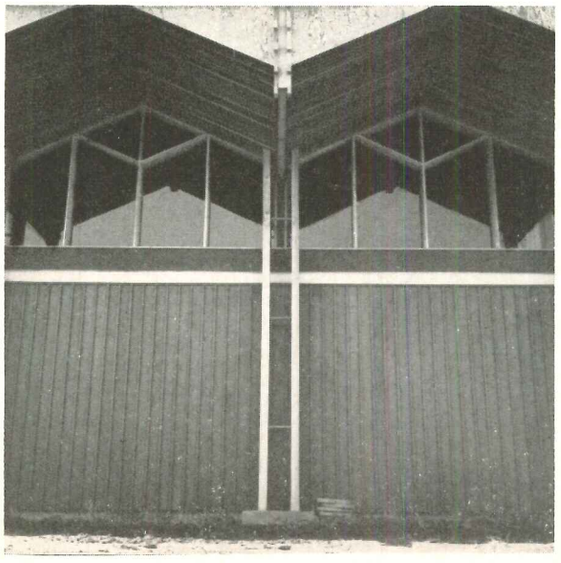
This small mission chapel for the American Lutheran Church at Frayser, Tenn., near Memphis, makes plain that even an exceedingly stringent budget—in this case, $30,000—need not preclude a building design which not only meets the congregation's needs but does so in a creative way. The simple wood structure of the nave is based on a conventional truss stiffened with diagonal bracing which carries the asphalt shingle roof on its exterior surface and an open wood grille on the interior which forms the ceiling. At the ends of the trusses the diamonds formed by the bracing are boxed with plywood; a simple dentillated strip covers the joint. The lightness of the structural system is emphasized by the slender wood columns which carry the boxed trusses and by the high clear glass windows, running to the line of the sinuate ceiling, above which the roof seems to hover. The materials of which the chapel is built—natural red cedar inside and out, burlap on the panels at each side of the altar—are simple and add warmth to its dignity.

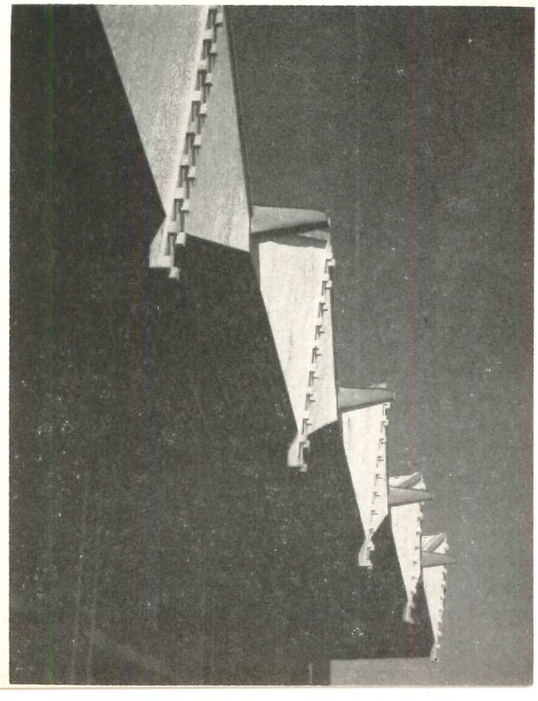


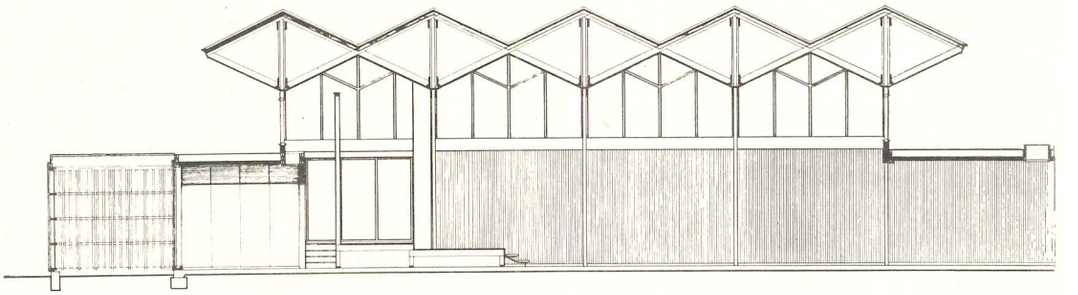
Associated Architectural Photographers

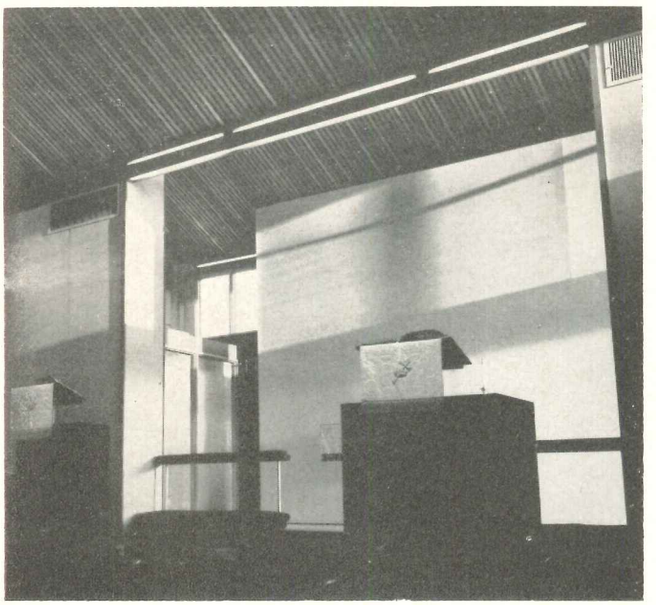


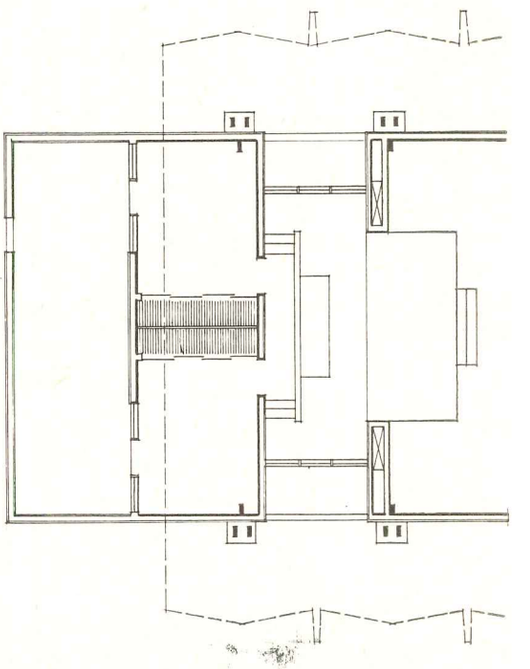


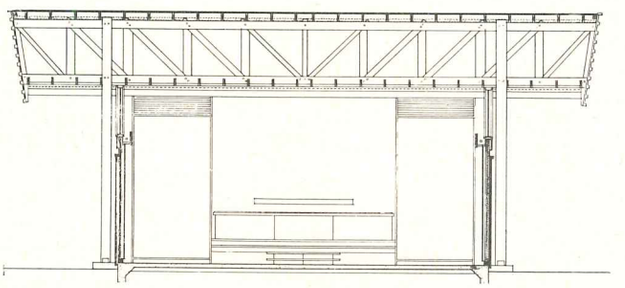


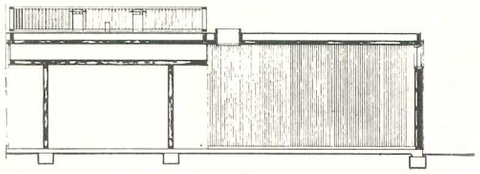


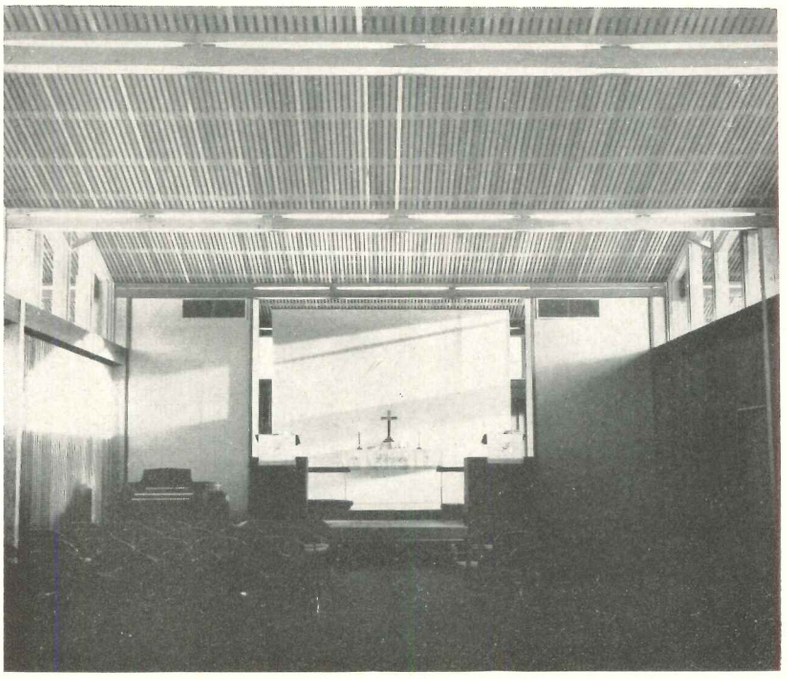


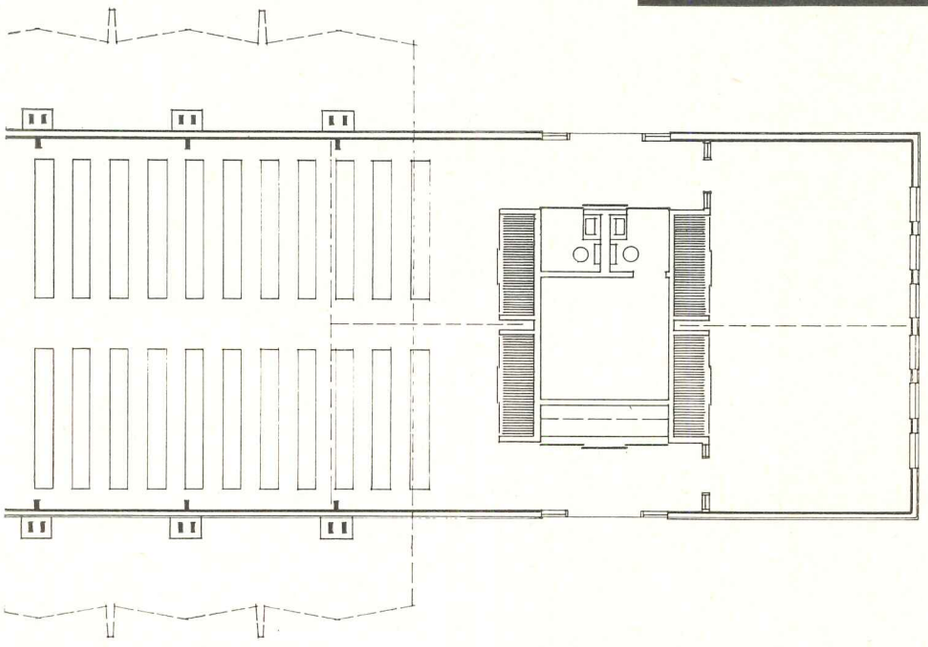




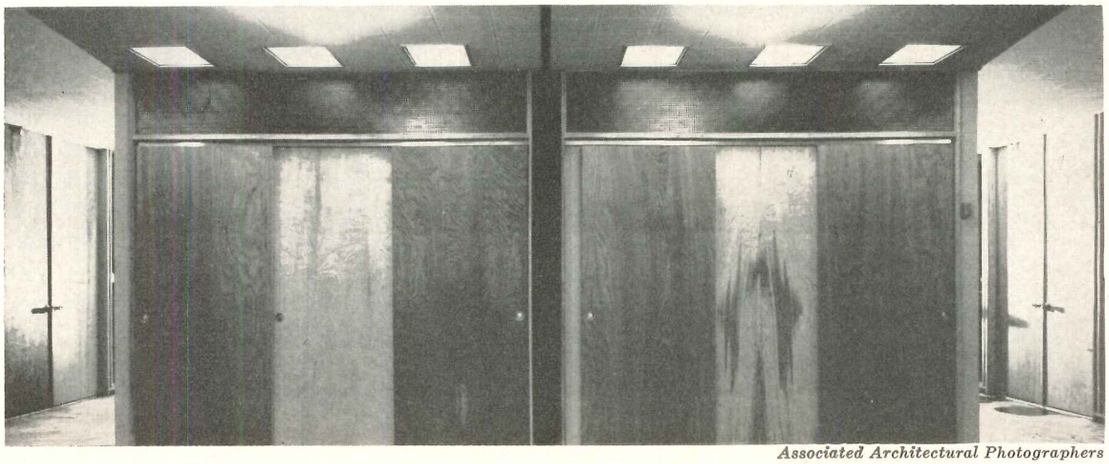








Nave daylighting, from clear glass windows protected by roof overhang, is less intense than at altar where light is strong and clear; night lighting is from a continuous fluorescent strip set along the length of the trusses. This first unit (church and educational buildings will be added later) provides chapel seating 250, overflow space which can be used for classrooms, dining room also usable for classes, and a sacristy and study which open onto a courtyard. Mechanical core, with light wells above, contains kitchenette, closets and heating and air conditioning equipment.



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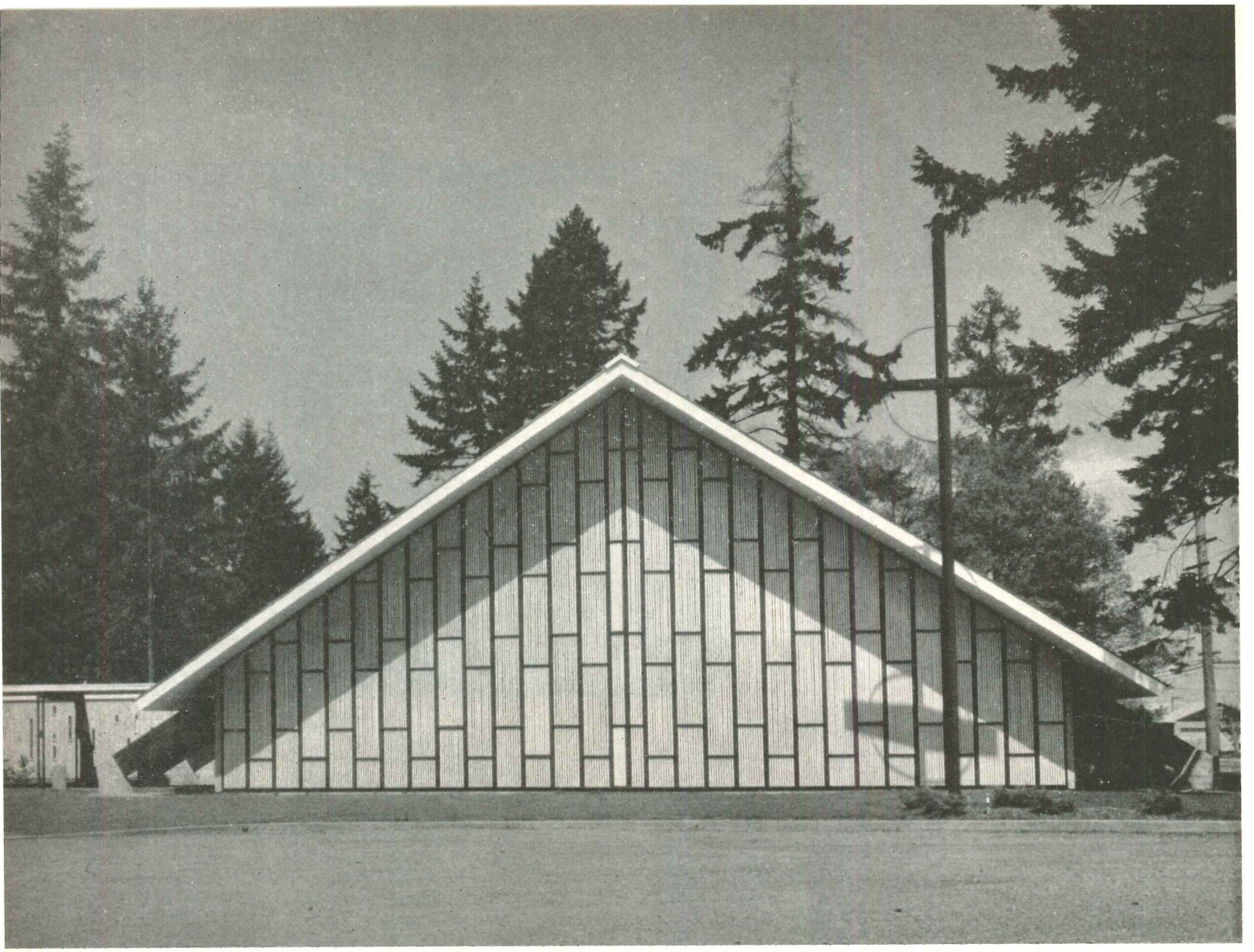


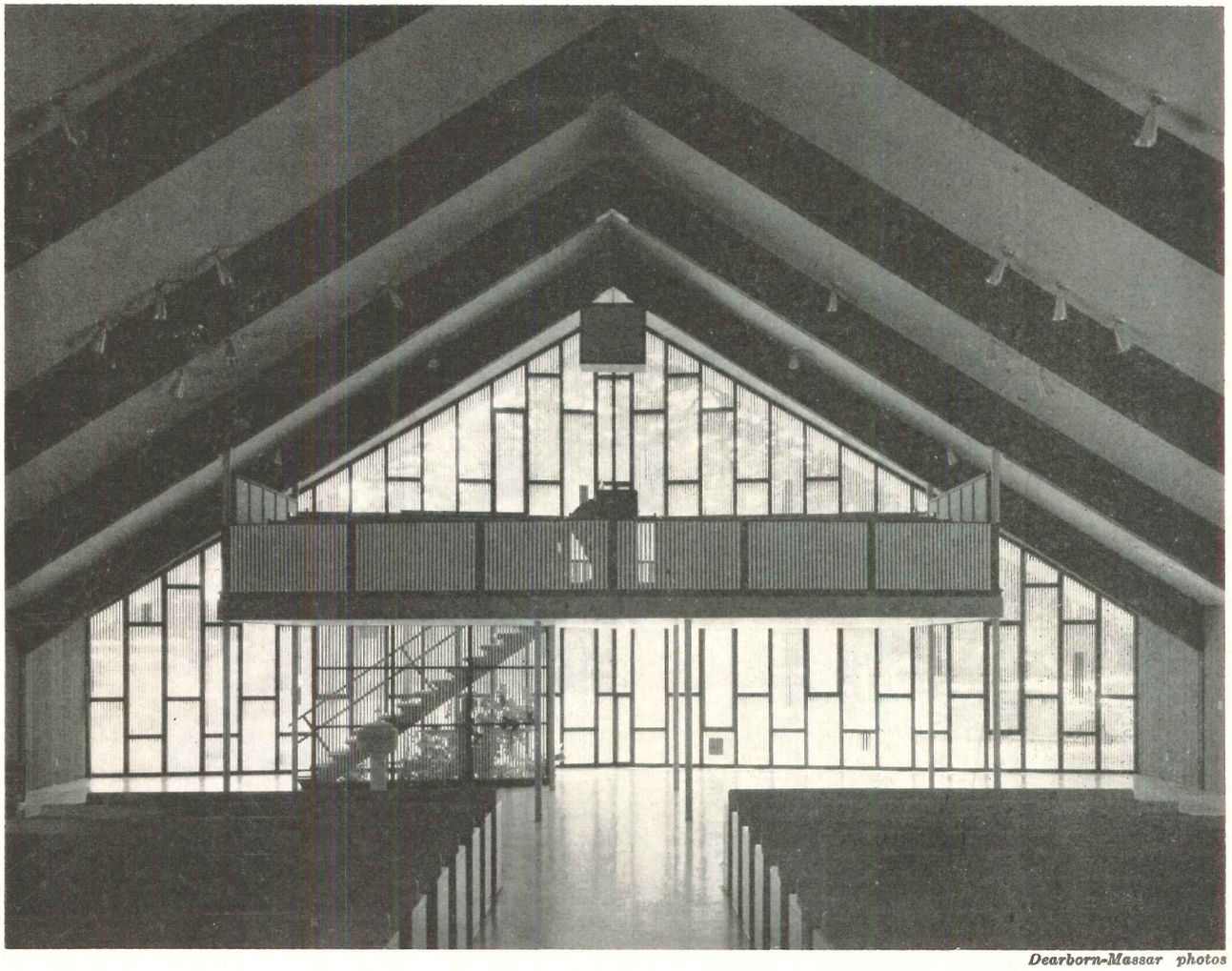
St. Mary's Episcopal Church, Tacoma, Washington

Robert Billsbrough Price, Architect

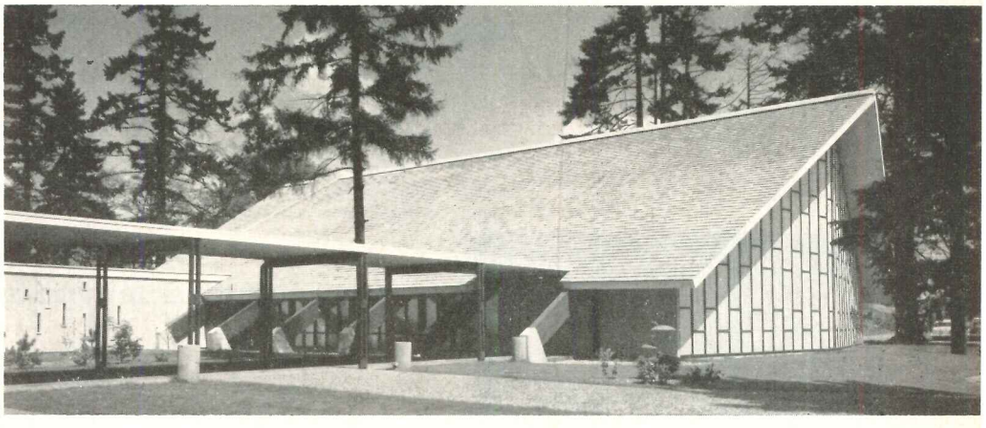
Worthen & Wing, Electrical and Mechanical Engineers

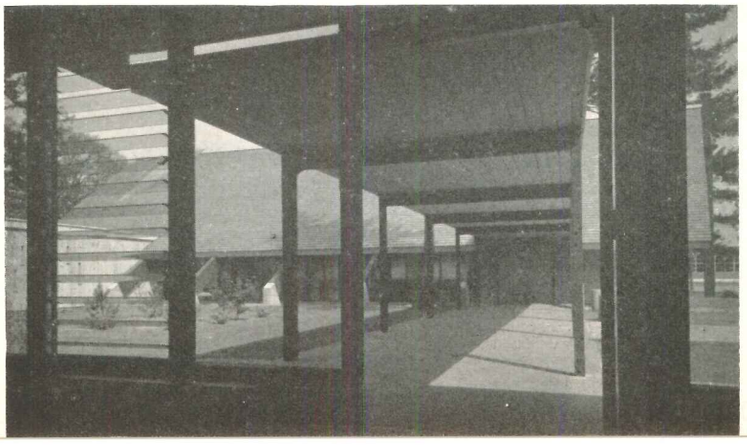
Korsmo Brothers, General Contractors

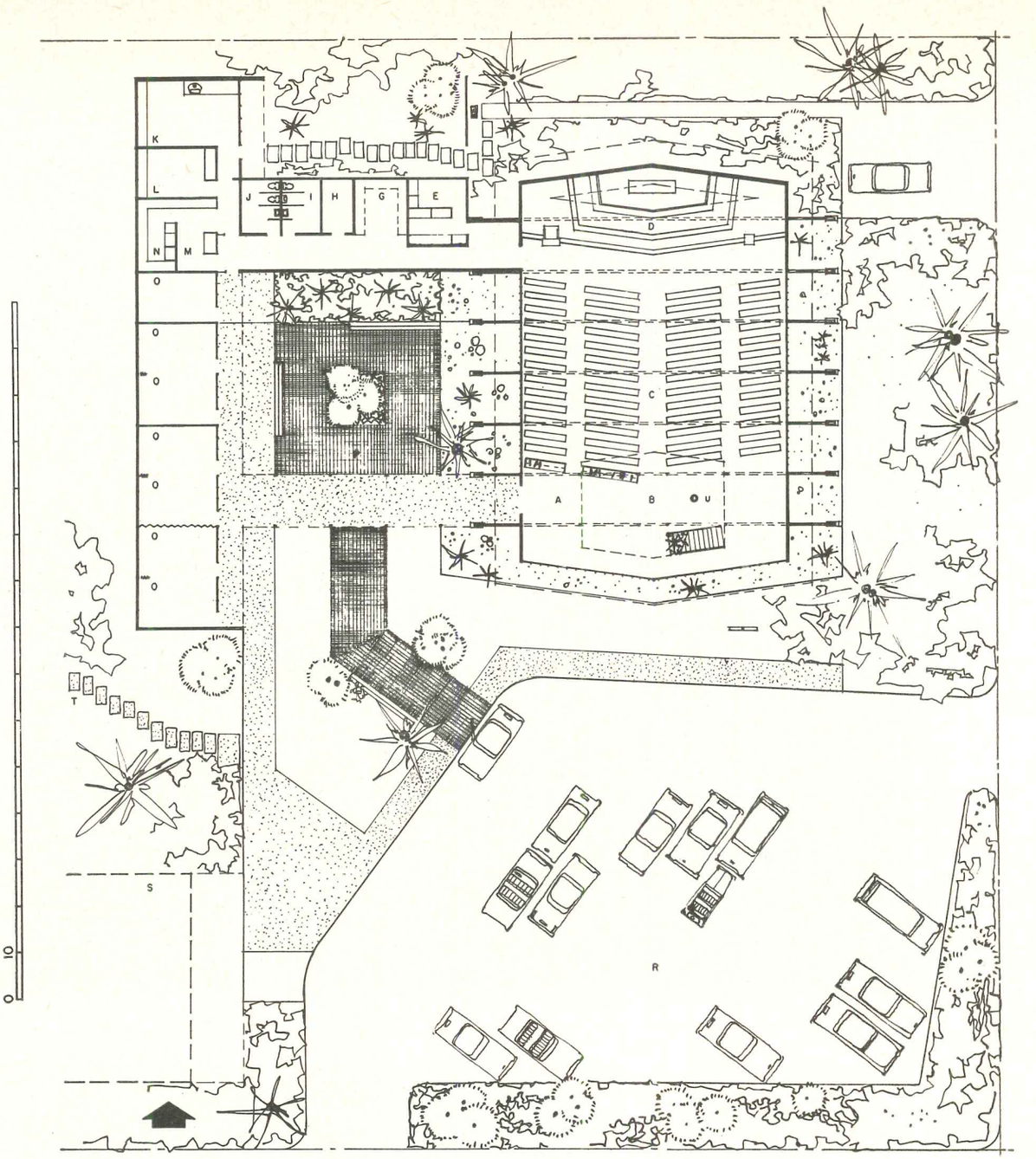
A special concern in many Episcopal churches today is that the altar, which is the central point in the worship service, should be central also in the church itself. The "church in the round", often suggested, offers many problems more difficult to resolve psychologically, perhaps, than architecturally. The original concept of St. Mary's was round, with a centrally placed altar; but the final rectangular plan, which avoids facing one section of the congregation with another, solves the problem of making the altar the dominant point in the church and of bringing the congregation closer to the altar itself. It does the first by raising the altar on a free, open platform, and the second by making the church unusually wide (56 ft) for its length (88 ft). The choir is in the rear of the church, a satisfactory solution both musically and liturgically, since it leaves the altar unchallenged for attention at the chancel end. The nave seats 400; the narthex provides for 125 more. The structural frame of laminated wood beams and columns makes possible a form and a space which, together with the materials used (principally resawn cedar, left natural), the soft blue color of the carpet and the natural daylight admitted through the two triangular skylights over the altar, produce the "atmosphere of reverence" so much sought and so seldom achieved in today's churches.



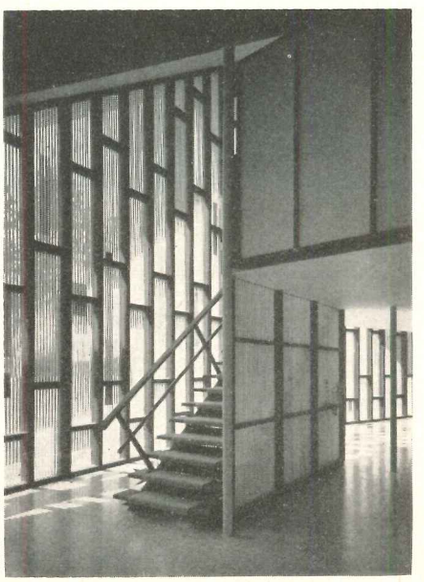
Dearborn-Massar photos

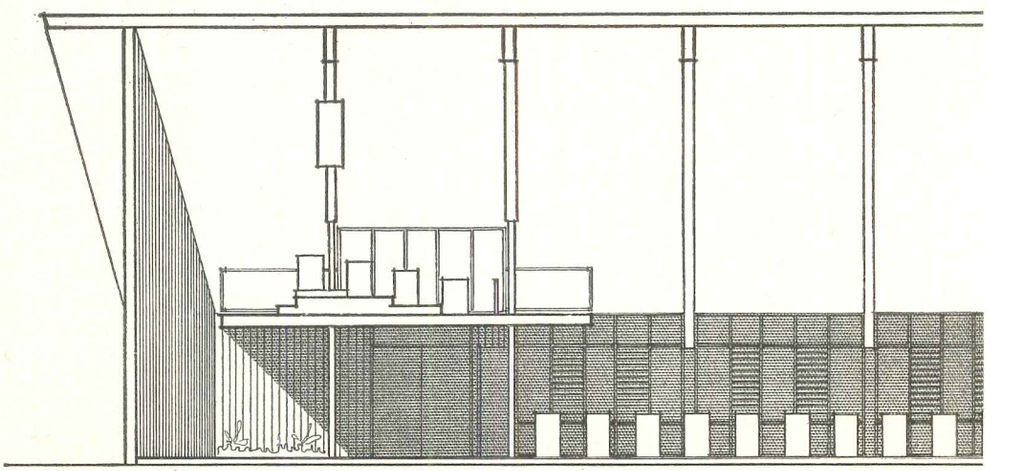


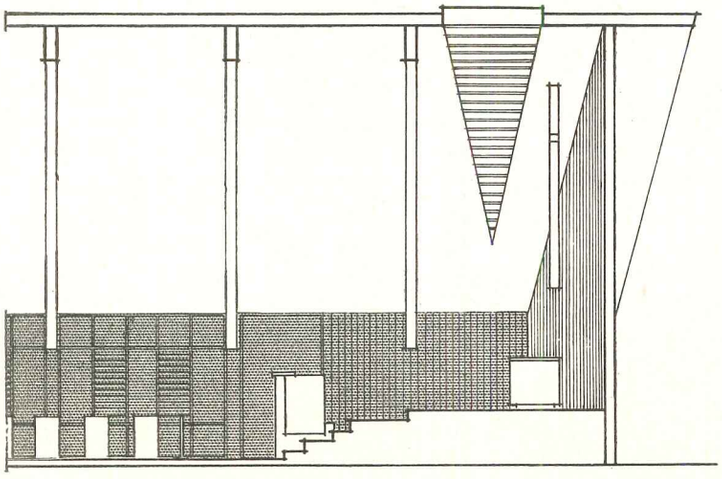


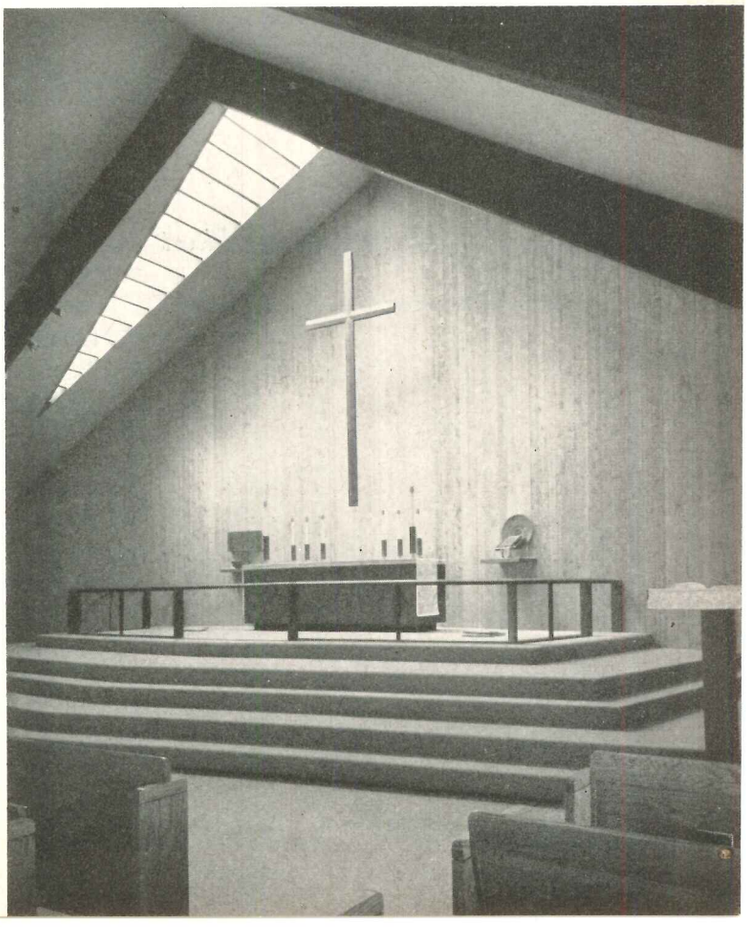


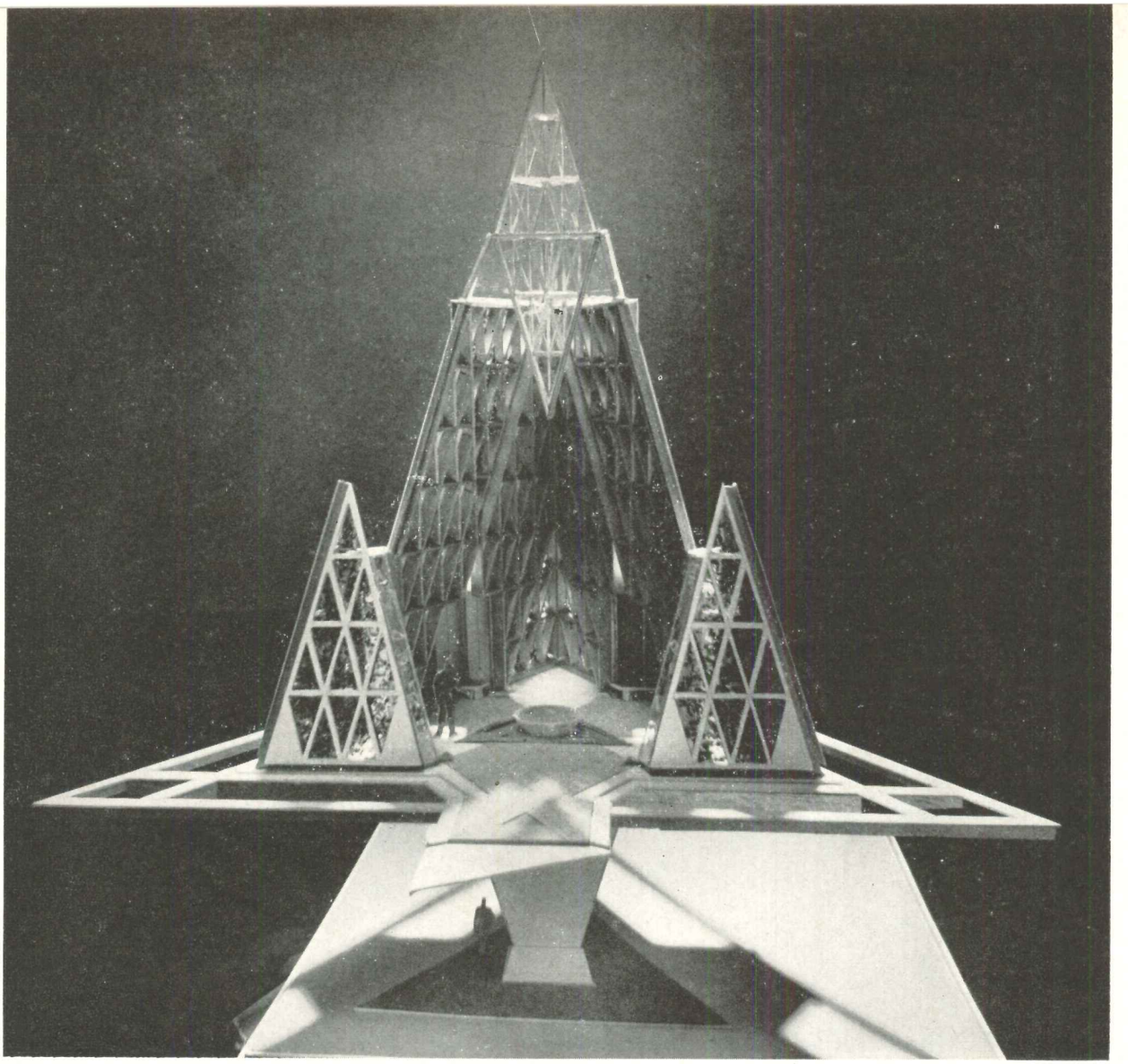
A Narthex
B Choir above
C Nave
D Chancel
E Clergy Sacristy
F Working Sacristy
G Robing
H Heat
I Men
J Women
K Vicar's Study
L Curate
M Office
N Work
O Classroom
P Court
R Parking
S Parish Hall
T To other Classrooms
U Baptismal Font









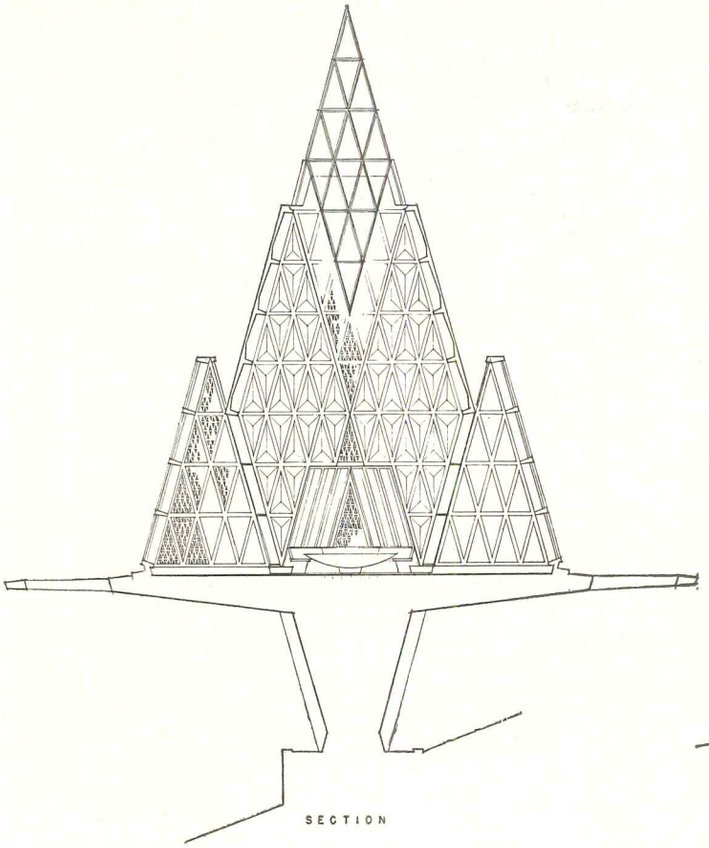


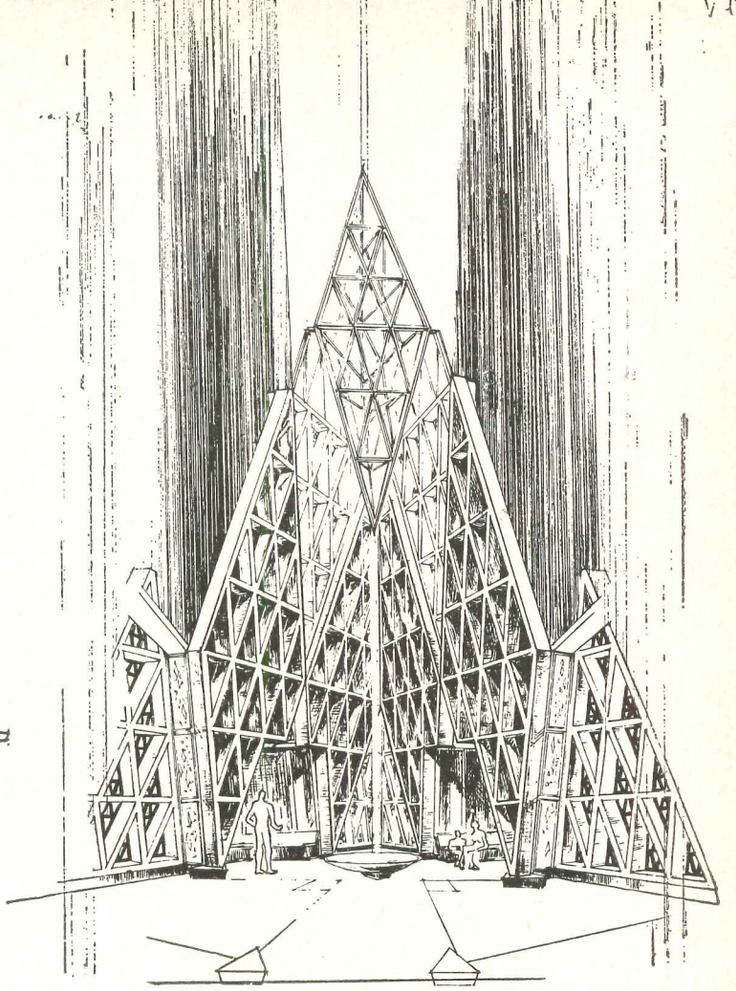
Non-Sectarian Chapel for a Mid-Western Hospital

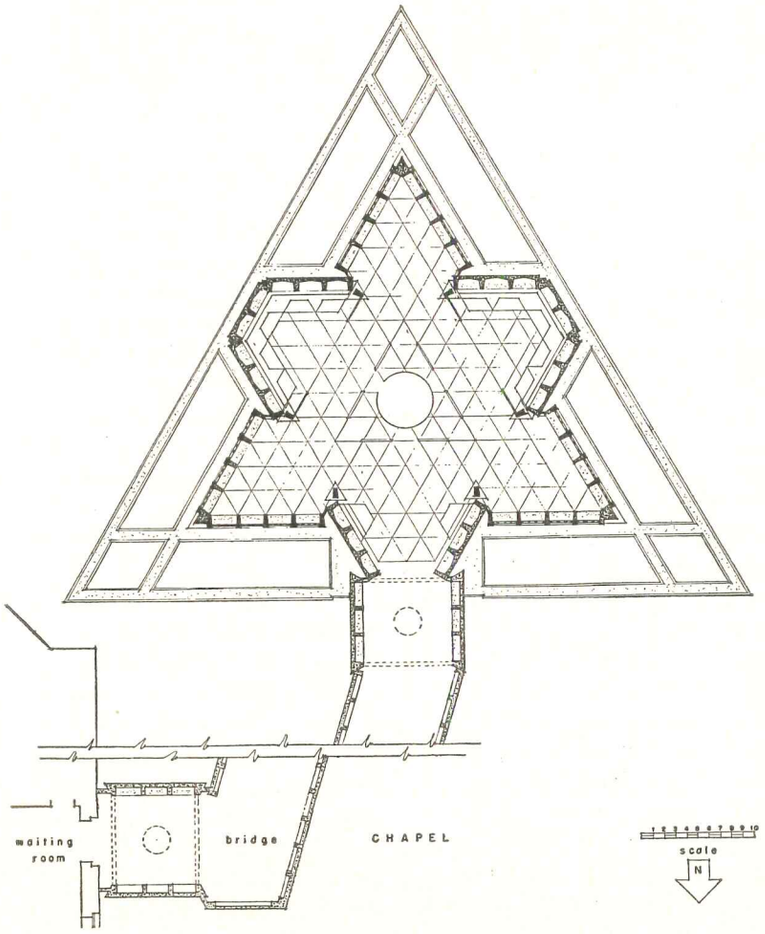
Henry Hill, Architect

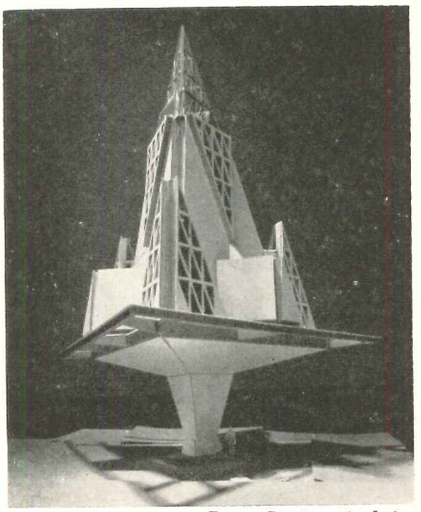
Isadore Thompson, Structural Engineer

The design for this gem-like chapel suggests a rich experience in form and light through the equipollence of structure, materials and color. To be completed later this year, the chapel is the gift of a resident of a midwestern city to the municipal hospital as a place for meditation, prayer and thanksgiving. A single phrase—"as a watch in the night"—from Psalm 90, which the donor had stipulated as the underlying concept for the design, suggested that the chapel express, and answer in the quality of space it would create, the human need for help, security and protection in time of crisis. Since the chapel is non-sectarian and no worship services will be conducted in it, there were no particular requirements of liturgy, no traditions, no symbols to regulate its solution, but it had to have a special and positive meaning for people of all beliefs and for those of no specific creed. Set on a pedestal 22 ft above grade, the chapel is on the same level as the entrance to the hospital so that it is easily accessible from the waiting room. The entire structure is based on triangles of integrally colored precast concrete elements in which are embedded panels of copper-colored glass one and one-eighth inches thick. The 30-ft glass, plastic and bronze lantern, whose top is 54 ft above floor level, is suspended from steel clamps.

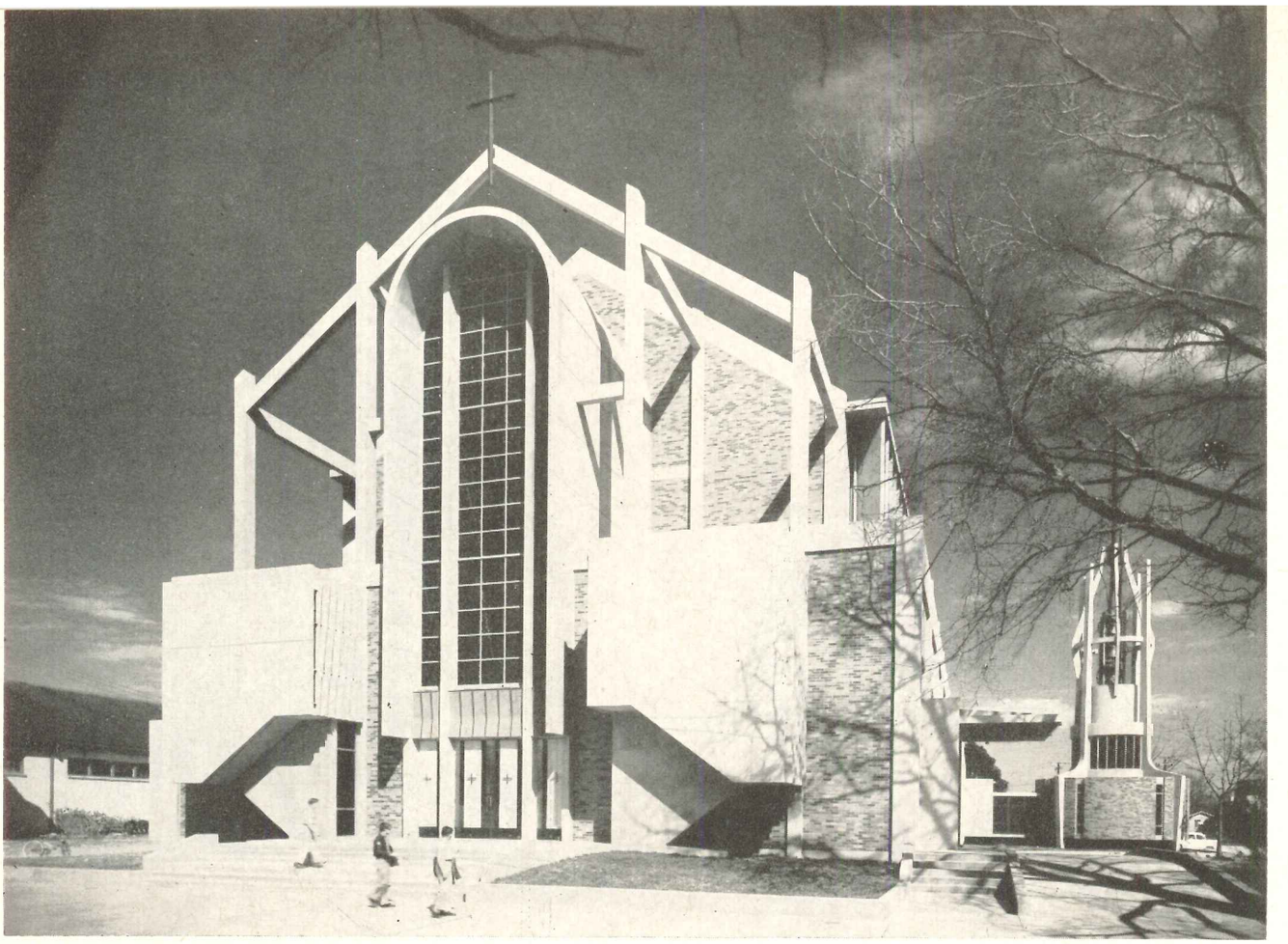








Roger Sturtevant photos

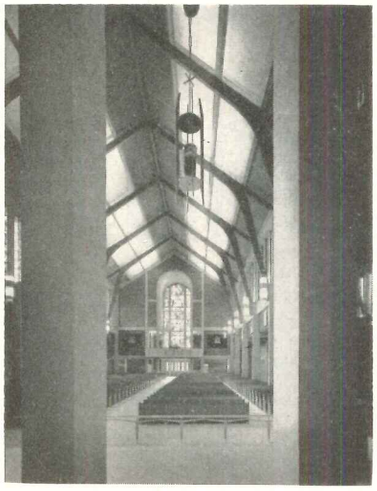


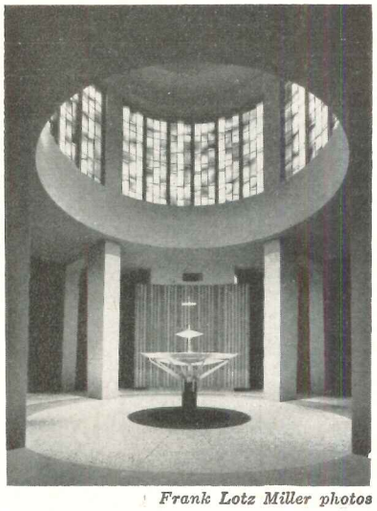
St. Catherine of Siena R. C. Church, New Orleans, Louisiana

Burk, LeBreton & Lamantia, Architects & Engineers

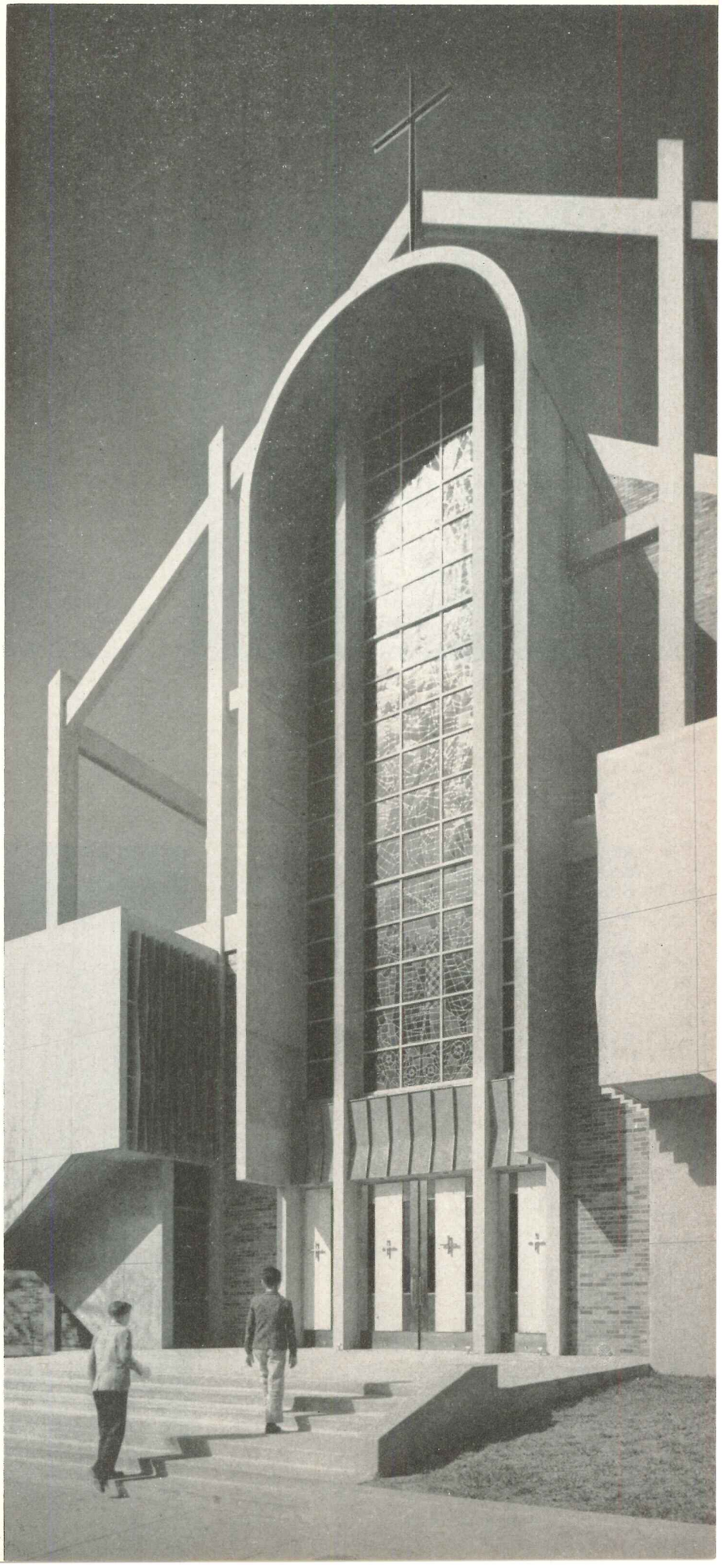
Lionel F. Favret Company, Inc., General Contractor

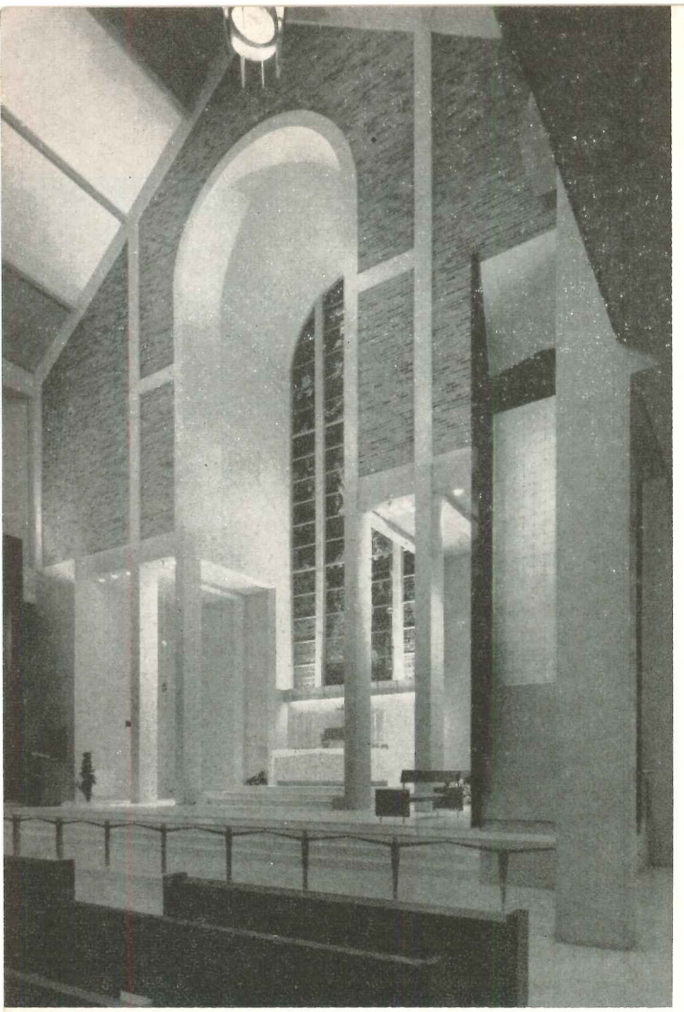
The strong architectural expression given to the exterior of this parish church in a suburb of New Orleans is in the direct tradition of the Catholic church whose buildings stand, more clearly, perhaps, than those of other religious groups, as symbols of the faith to the neighborhoods they serve. In St. Catherine's the architects wanted to disclose on the exterior the spatial feeling of the nave and at the same time express the way in which, by placing the choir stairs on the outside of the building and by minimizing the height of narthex and choir space, they had been able to solve the usual problem of wasted cubage at the end of the typical church. Hence the skeleton web of columns and beams on the west and east façades; hence, too, the masses—functional and decorative—of the choir stairs at either side of the doorway. The stained glass windows, derived as features of this church at the request of the parish pastor who had admired similar window location in a Romanesque Revival church in Chicago, are here given entirely individual treatment by recessing them in deep vaults at either end of the church. The church seats 1000, and is air conditioned. Its frame is reinforced concrete; exterior walls are of brick on the lower portion; along the sides precast concrete louvers alternate with stained glass. Laminated wood arches form the roof structure. Budgeted cost for church and baptistery was $500,000.

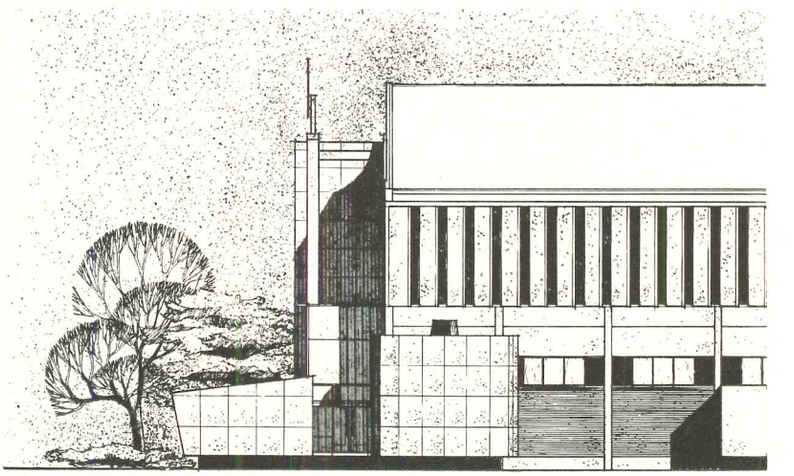




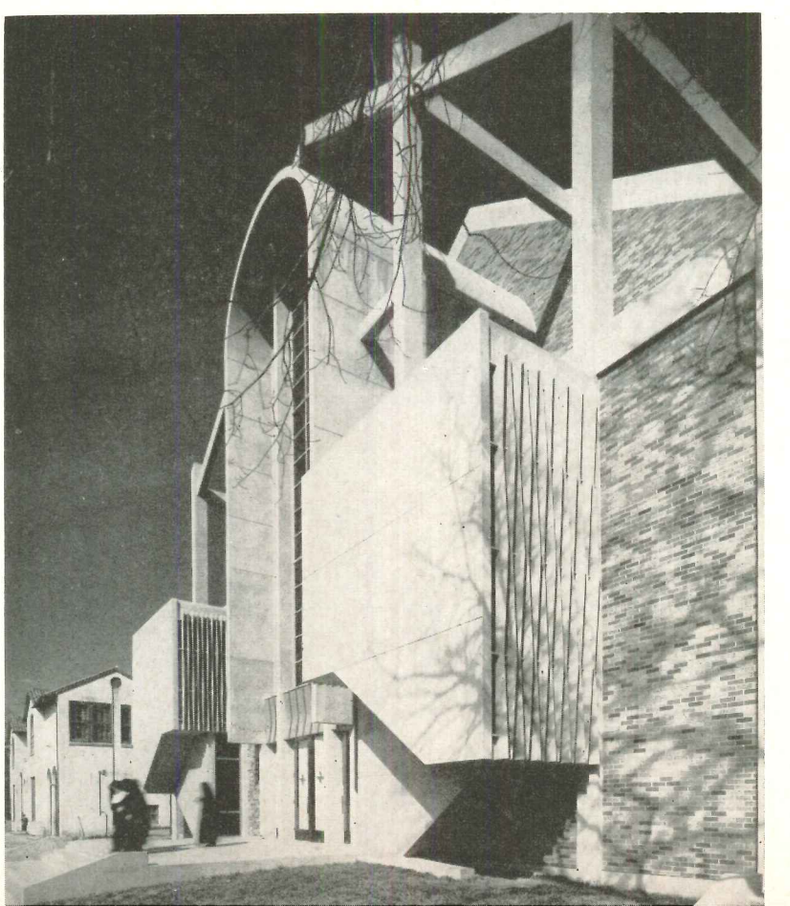
Frank Lotz Miller photos

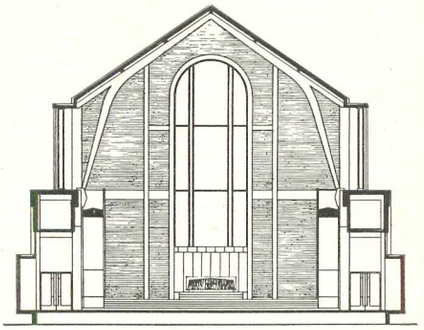


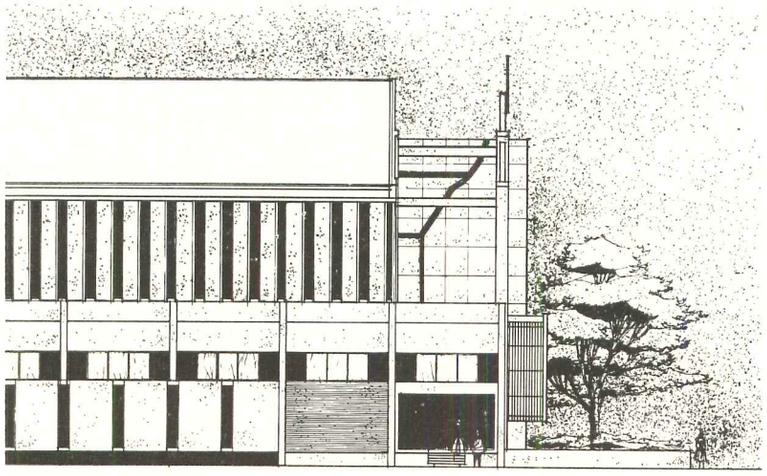


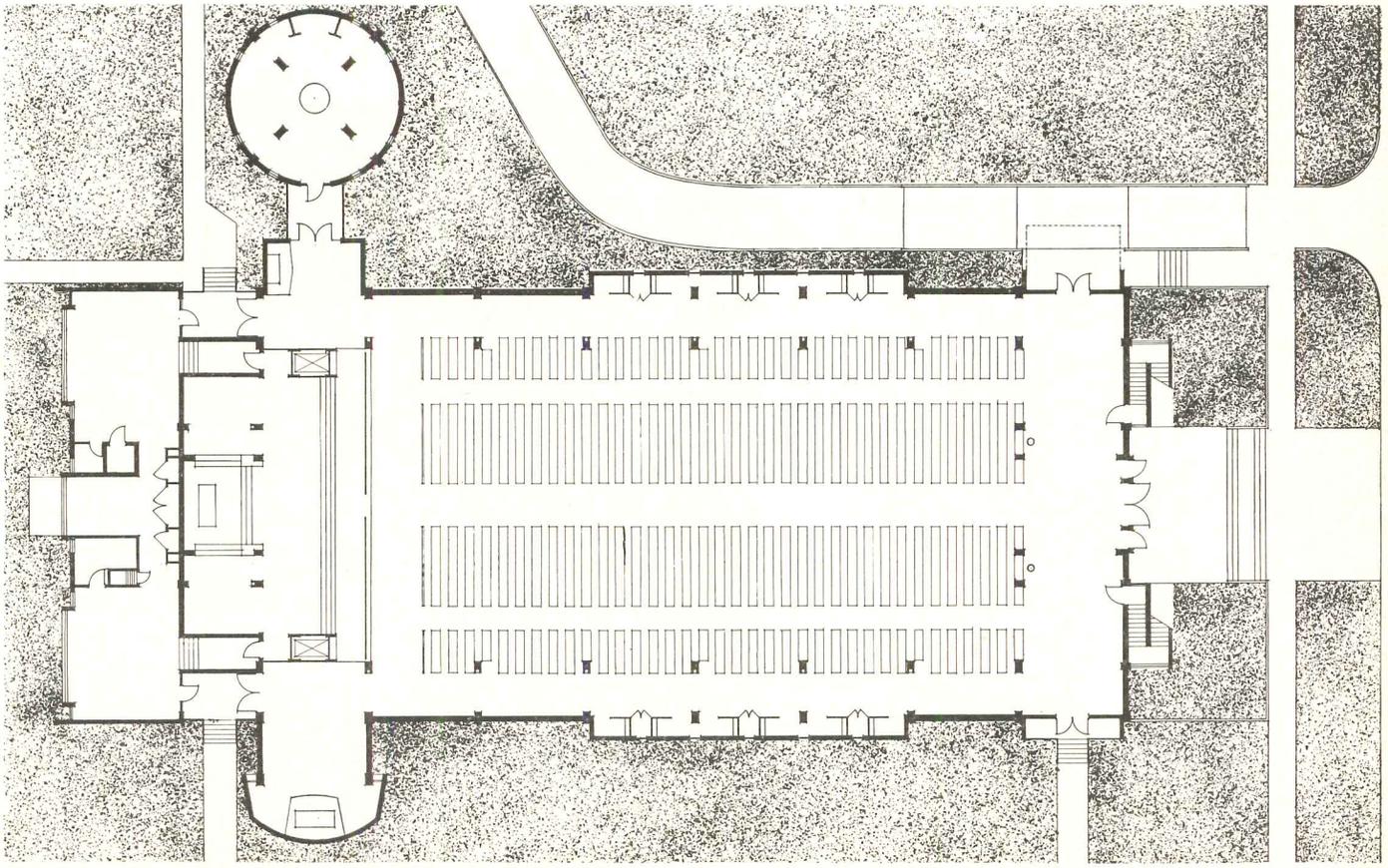


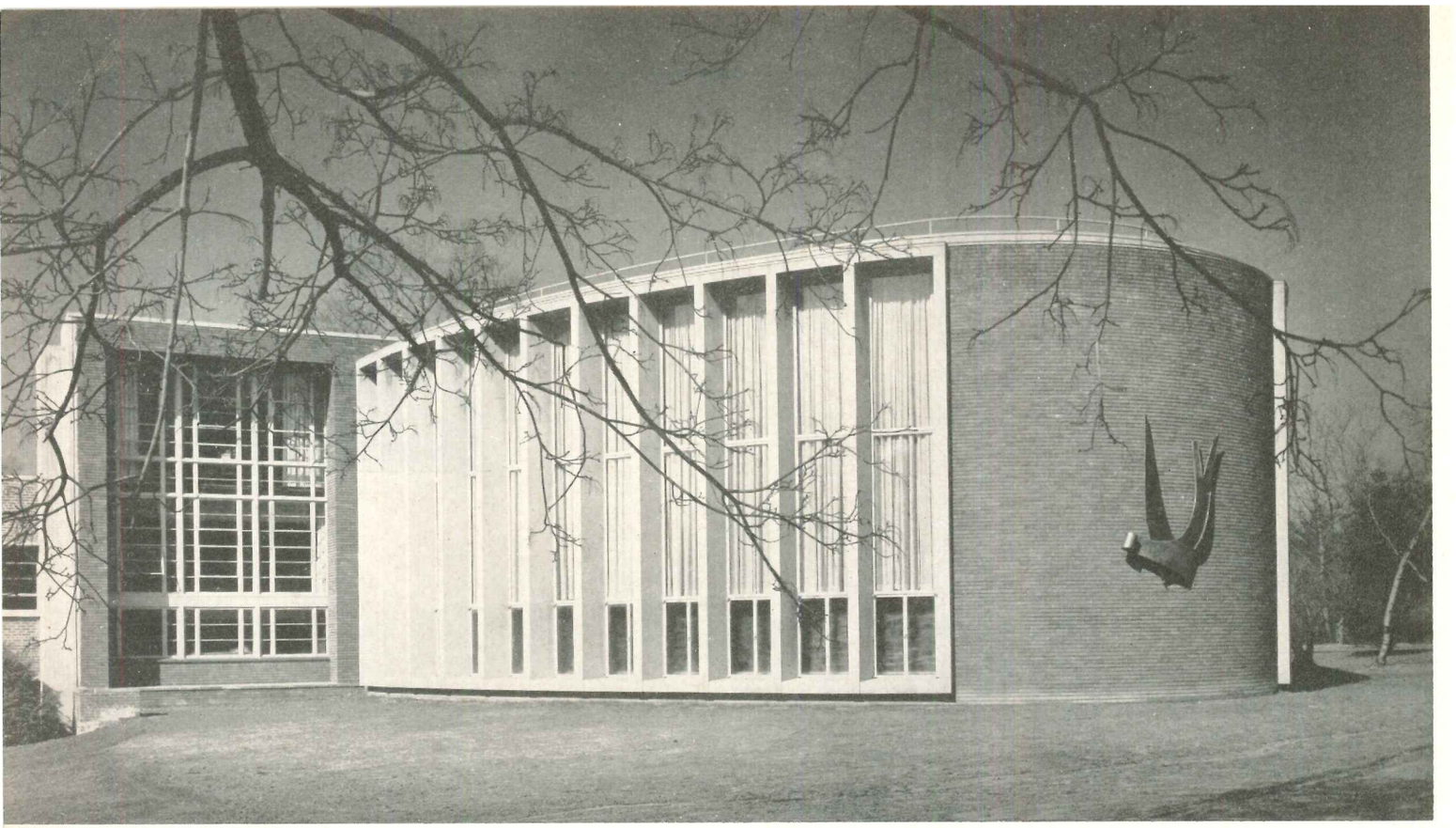
Altars (main and in chapel at side), rail, sedilia, tabernacle, baptismal font, stained glass (other than pictorial), and confessionals were all designed by the architects; Lin Emery designed tabernacle sculpture. Baptistery is in round building at side of church, visible from important artery. Of similar materials, it recalls skeletal web on façades.











Jewish Community Center, White Plains, New York

Fritz Nathan, Architect

Jacob Stern, Structural Engineer

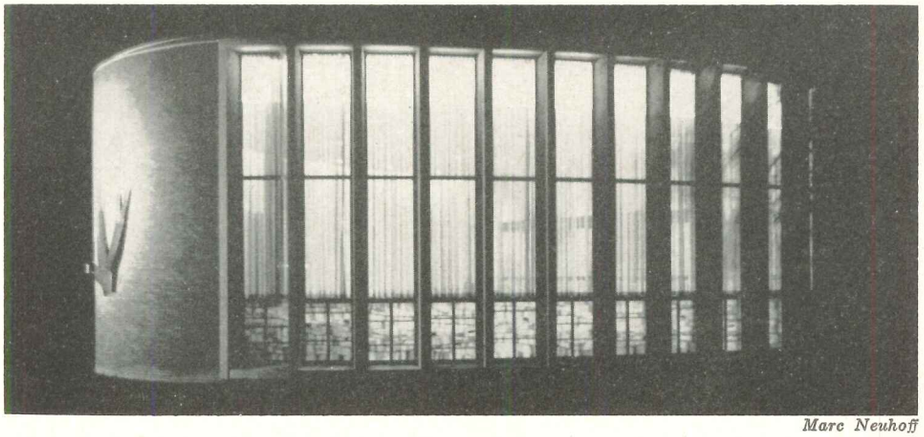
Herman Scherr, Mechanical Engineer

Walter Buschinsky, Lewis S. Goodfriend & Assoc., Acoustical Consultants

Rothman & Foerst, Kitchen Consultants

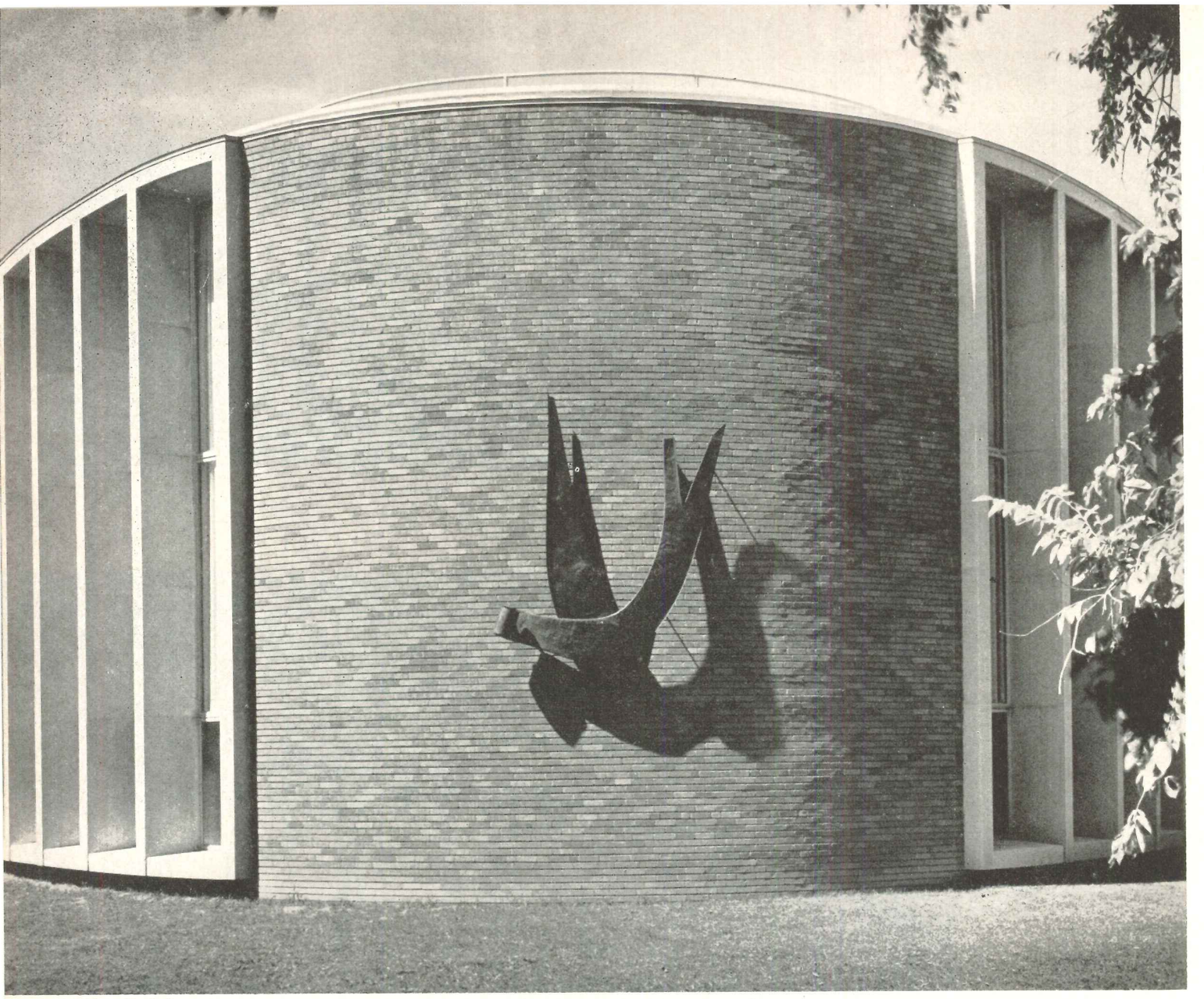
Plato Construction Company, General Contractors

A characteristic of the religious building project is that its overall plan can seldom be developed in one stage, and that additions to the first units—main worship building to educational plant or chapel, or vice versa—are made years later as population changes make enlargement necessary and feasible. Budget, locality, sentiment and symbolism make even more challenging the always difficult problem of the addition to existing buildings. The Jewish Community Center represents several stages of a building program (from 1927 to 1957) in which this problem has been handsomely solved. The new buildings—synagogue, social halls, offices and more classrooms—make up by far the larger part of the Center. The synagogue, itself, though small in comparison with the other units, is by its dignity, restraint and well-proportioned design the dominant element in the group. Its 300 seats, adequate except for high holy day services, can be augmented by sliding the partitions into the attic and basement which normally close off the adjoining social halls. The windows along the curved walls of the synagogue admit clear light above a band of stained glass by Robert Sowers; by night, lighting is indirect, so that the clear space of the room is undisturbed. Steel framing makes possible a clear span and therefore an uninterrupted view—from the farthest seat, even at the largest services—of the Ark and the pulpit which are raised to improve the sight line and to emphasize their spiritual significance in the service. The two traditional columns on either side of the Ark, Boaz and Jachin, are both symbolic and practical since they are load-bearing structural elements.

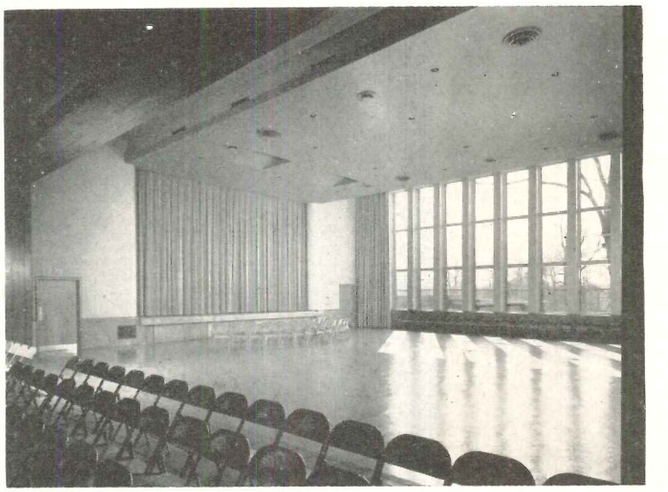


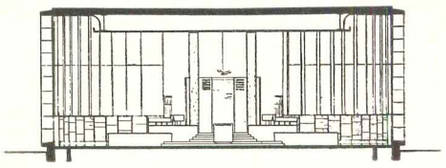
Marc Neuhoff

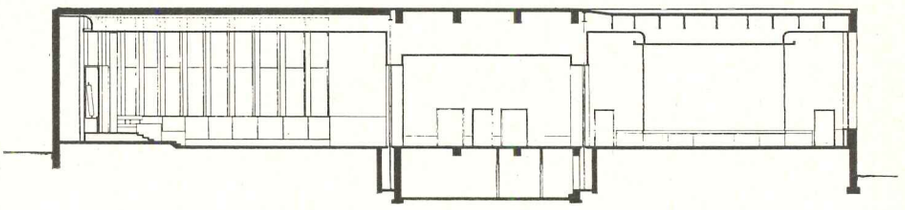
Photos © Ezra Stoller except as noted



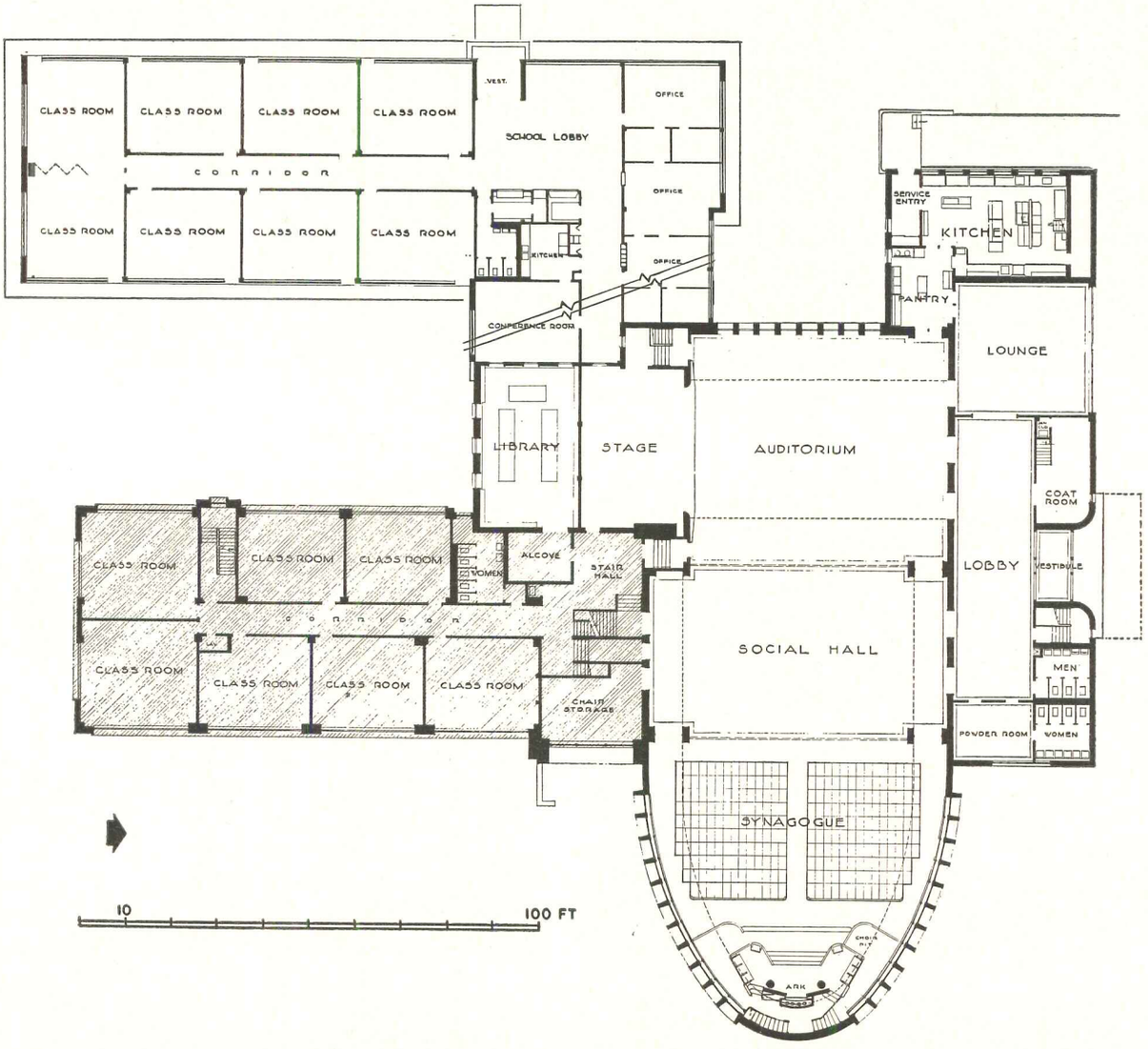
Marc Neuhof







Specially commissioned works of art enrich the Temple: the Eternal Light before the Ark is by Helen Beling; the Ark curtain was designed by William and Gertrude Wiesner; the Menorahs and lettering beside the Ark are by Ludwig Wolpert; sculpture is by Jose de Creeft (abstract on synagogue exterior) and Erna Weill.



Roberts

First Presbyterian Church, Boulder, Colorado

Hobart D. Wagener, Architect

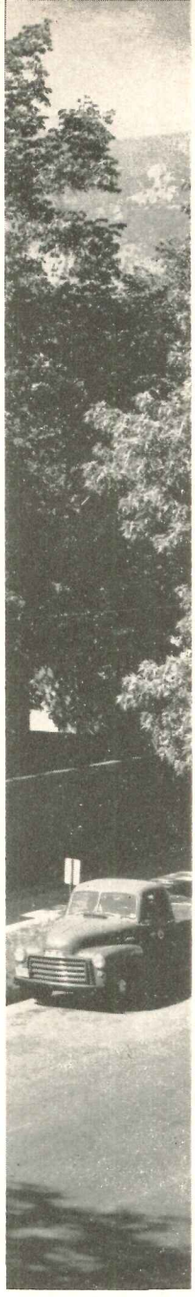
Ketchum & Konkel, Structural Engineers

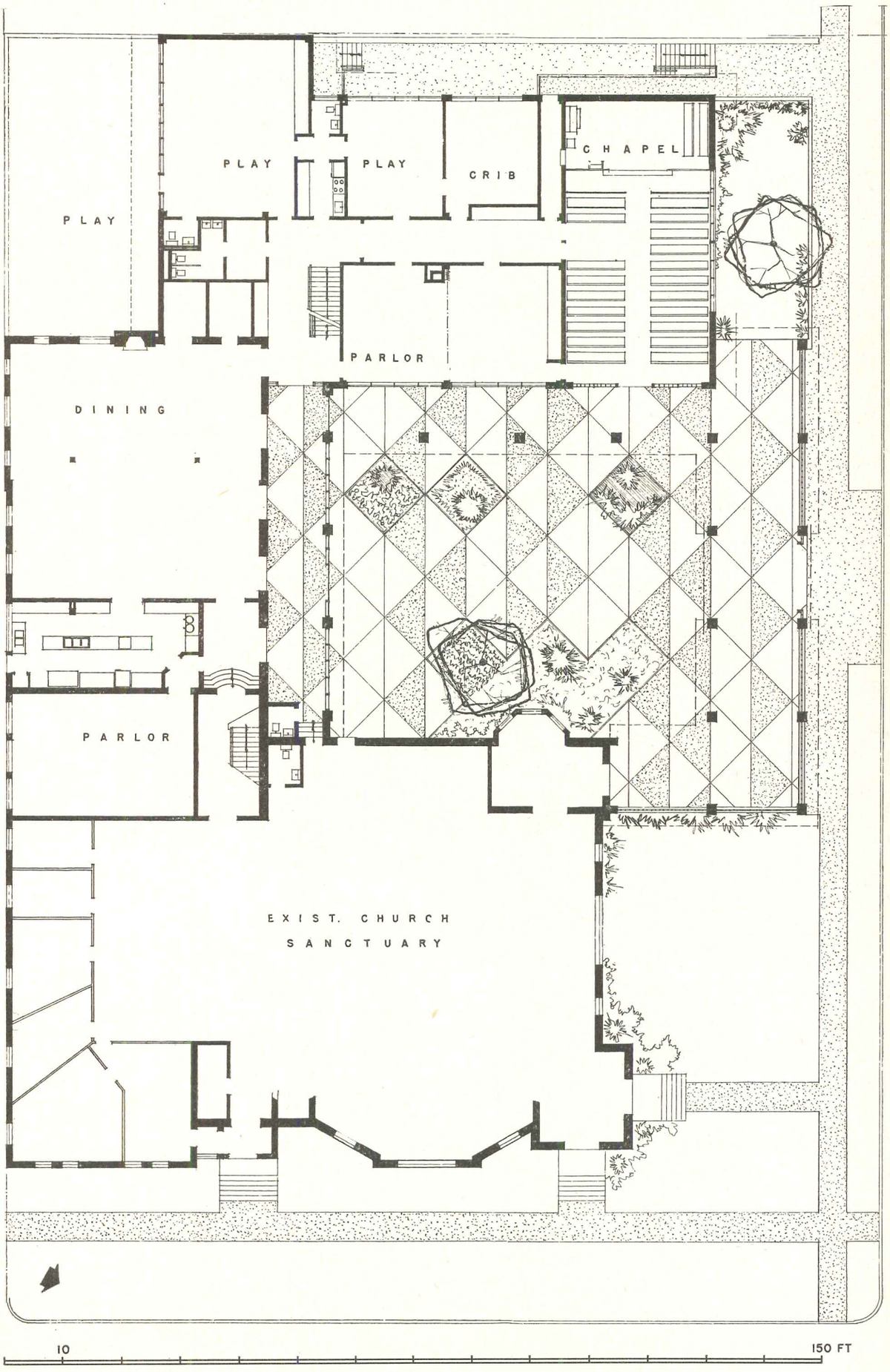
Stark & Konkel, Mechanical Engineers

Swanson-Rink & Assoc., Electrical Engineers

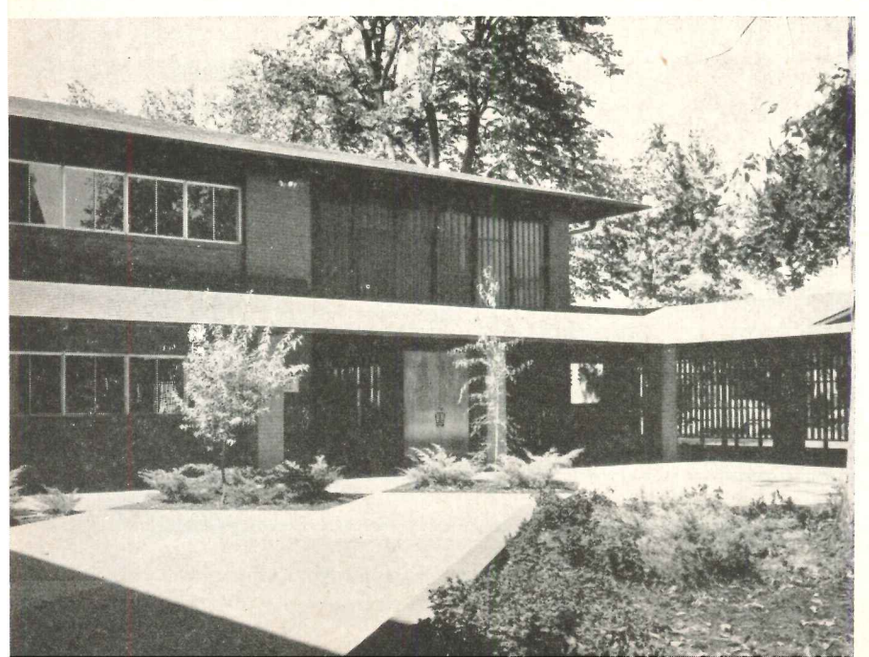
Wilkins Company, Inc., General Contractors

The problem here was to add a chapel and new educational facilities to an old church building of the red-brick-and-stone-trim period of 1870 and a somewhat more recent classroom unit rather than to move to a new site since the present location was a desirable one. The old church building, adequate for the present, will probably have to be replaced within the next 10 years, so the problem was further complicated by the need to design the new units with future expansion in mind as well as to tie them in with the existing structures. The arcade and the courtyard, an ecclesiastically traditional tie between parts of a religious compound, are the sensitively handled means used to relate the old and the new. The arcade with its open redwood screen serves as separation between the busy street and the quiet of the court, to which its gateway invites. The court, besides preserving several old trees on the property, makes a pleasant entrance to the chapel which is incorporated into the new educational building.

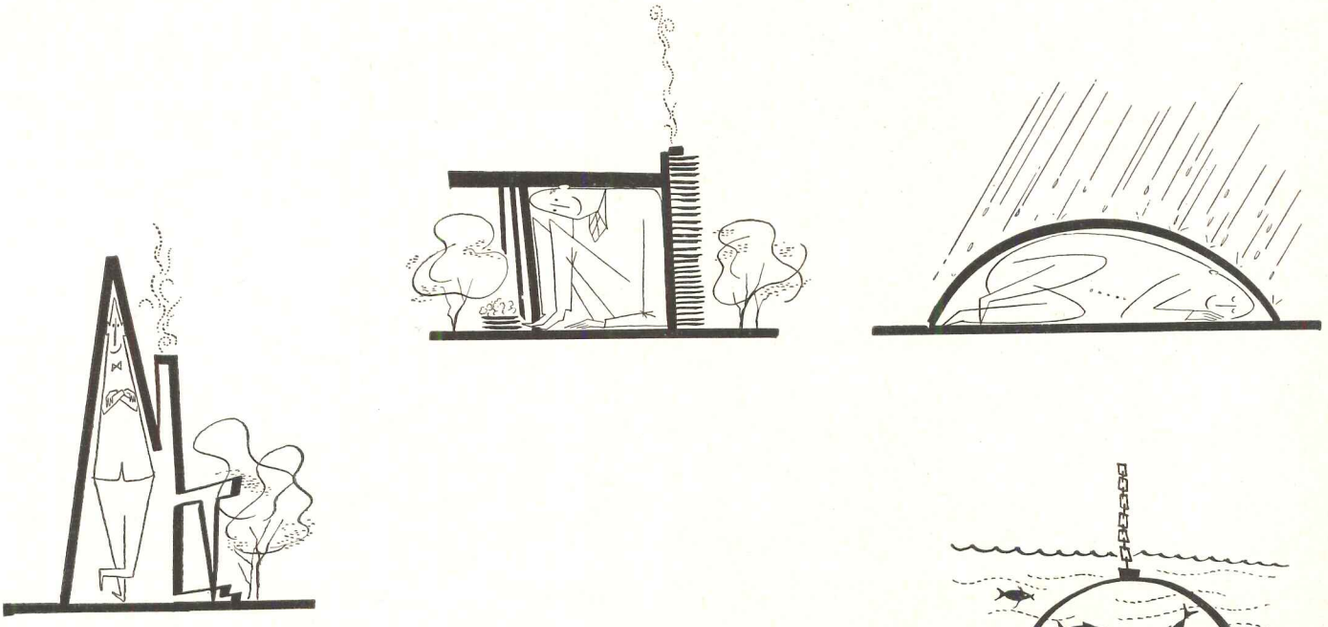



PLAY
PLAY
PLAY
CRIB
CHAPEL
PARLOR
DINING
PARLOR
EXIST. CHURCH
SANCTUARY
10
150 FT

Upper photos, Wayne Wright; lower, Betty Baldwin



The chapel, seating 120, is in daily and frequent use. The back wall of the chancel is of brick laid with a relief pattern of crosses. Cathedral glass in warm colors on the east wall of chapel throws golden light over red brick walls; glass over choir area is in nearly transparent shades of yellow, wine and blue. Full-length windows on the north open onto a landscaped court. The architect designed all chancel furniture.



"... the engineer can produce almost any kind of physical environment ..."

Drawings by Sol Ehrlich

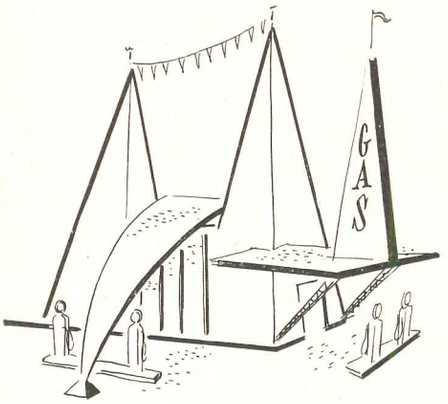
TECHNOLOGY MISAPPLIED

by Robert E. Fischer

There is little exaggeration in the statement that the engineer can produce almost any kind of physical environment that he may be asked to, whether it be enclosure of space, control of temperature and air quality, intensity of illumination, or exclusion of noise and enhancement of desired sounds. Conceivably, without too much stretch of the imagination, a roof could be built to cover a whole city. Comfortable temperatures could be provided in an enclosure of only membrane thickness which would keep out rain, snow, wind and dust. Right now, if you wanted to, you could read your favorite book under 1000 foot-candles of light. And for devotees of classical music, there are new concert halls that deliver music to your ears with almost unworldly clarity. For those who dislike walking as a mild form of exercise, there are moving sidewalks and stairways, and operatorless elevators, which, combined with other transportation could practically eliminate foot traffic.

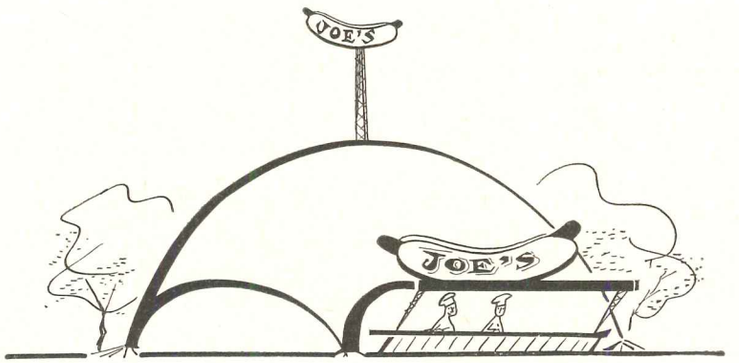
We have actually arrived, then—not in some futuristic tomorrow of the Sunday supplement—but now in an era when building technology literally makes almost anything theoretically possible. Provided it is wanted and the cost doesn't matter.

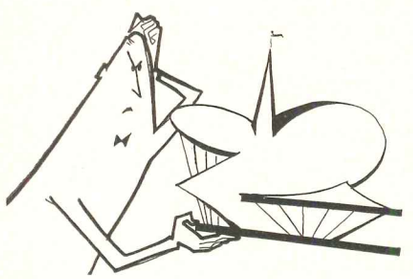
From a talk given at a recent conference sponsored by Armour Research Foundation, "Creative Trends in Structural Design."



Thin shells for gasoline stations

. . . and hot dog stands





". . . picking some arbitrary shape
and dropping it in the lap
of the engineer to make sure
it will stand up . . ."

". . . not particularly disturbed
even though a room leaks
if the *space* is right . . ."

One cannot fail to be conscious that creative architects working with creative engineers have used technology to achieve some memorable accomplishments. But how often —how very often—are architecture and engineering the joint victims of those familiar extremes in the misuse of technology and variations thereof. Either technology is picked up and overglorified as an architectural theme, or it is almost completely rejected—and there is a whole range of imperfect comprehension in between. A few examples will demonstrate:

The first type of technology misuse is found frequently in the selection of a structural envelope. A pure form, whether it be a warped surface, a catenary cable—or its reverse the parabolic arch—is used as the dominant visual element in a building without consideration of its appropriateness to the main function of the building. We are now seeing such abberations as hyperbolic paraboloids for houses, gasoline stations, and hot dog stands.

Then there is the other approach of picking a pure geometrical form, or perhaps some arbitrary shape, taking a piece of it that will serve as enclosure and then dropping it in the lap of the engineer to make sure that it will stand up and meet the building code.

Now moving a little away from what might be considered as intellectual approaches, there are those architects and engineers who don't want to be out of the swim, and so ostensibly their building designs are guided by the latest techniques; columns are shaped like moment diagrams; high velocity air conditioning is put in even though a lower velocity system might serve just as well; lighting systems using luminous ceilings which give absolutely uniform illumination are sometimes put in where it might be very desirable to have highlights and shadows.

A slightly different and unhappier version of this approach occurs when the designer reads a little literature and hears a few lectures on a new technical procedure, decides it is not too difficult, and then takes liberties to suit his own version. This has happened in flat slab design, for example—and failures have resulted.

In a different technical area, acoustical control, some people still think that sound can be broken up by stringing wires in every direction across the ceiling, which is nothing less than absurd. Careful attention to room shapes and choice of mate-

rials is absolutely necessary. In this same field, there is the problem of stopping noise transmission from one room to another. Here there is still considerable misunderstanding that fuzzy insulation, and the other porous materials such as tiles will do the trick. Well, they won't work in this case, but instead are effective in providing proper reverberation for control—that is, making a room less boomy—and in taking the sharp edge off noises such as the clacking of typewriters and the clacking of stenographers.

Now we come close to the opposite end of the technology misuse spectrum: complete disinterest in engineering techniques. Designers in this category are not particularly disturbed even though a room leaks when it rains, if the *feeling of the space* is right. Nor are they bothered if temperature of the room fluctuates rather widely. Nor if sunlight streams through a window to bake us awhile and then all of a sudden disappears. Undoubtedly there are variations on the above, but these are the principal types.

There are other problems in building design that have been brought on by technology, particularly in the realm of mechanization. Our economy is based on turning out large numbers of things in repetitive operations. This has been less true of building than other industries. But because of higher and higher costs, more and more standard components —not standard buildings mind you— must be produced to go into more and more individualized buildings.

This is what has happened to prestressed concrete in the United States. Economic pressures are directing prestressing into factory-type operations, with structural units poured in forms in long lines around pretensioned cables which are then cut apart like strips of taffy.

Unfortunately, there hasn't been careful enough guidance in this activity to encourage full exploitation of the inherent advantages of prestressing principles and the nature of concrete—although this is beginning to happen. Prestressed components, for the most part, look like and are put together like conventional steel framing. There's no reason why greater advantage shouldn't be taken of continuity, or why such a few types of structural units are turned out in a casting yard. A similar situation exists in regard to tilt-up concrete wall panels. Here is a bit of mechanization that has saved time and money. But most buildings of this type have been far from attractive—this method so far has merely served as inexpensive means of very durable construction. Somehow talented designers have to work out details to make them better looking.

It has been said that metals and glass reflect our times, and so these materials have been expressed abundantly. Such buildings bring a breath of fresh air to our cities. But what is more than upsetting, though, is that in some cases the mechanical engineer must go through all sorts of contortions to get in his ducts and pipes. This in itself is likely to make the system tough to control, but then in addition we also have to put up with idiosyncrasies of the weather, with the sun being alternately hid and then free from clouds. Air conditioning systems apparently have not been forced into such tight space yet that it hasn't been possible to rationalize the greater costs when a system is required to be designed this way. Somehow the added rentable area and additional stories gained always seem to amount to more than the extra cost for the air conditioning. The engineer must share the blame in this matter along with the architect. Many times he has not evaluated the newly developed systems sufficiently to explain to the architect and the client what taking away a foot here and there will mean to costs and operation.

Recently the architect has seemed to be a little more sympathetic to those aspects of engineering which have visual implications. Thus in the last ten years, acoustical design has become more widely appreciated—especially in those areas which have some connection with form. We have seen pretty wide acceptance of acoustical principles which call for shapes that best direct and diffuse sound. Given his "head," the acoustical consultant could start out from scratch and pick the shapes and the materials that meet certain criteria for good sound. In a school auditorium this might be simple, in a concert auditorium it would be a good deal more complex: who is absolutely sure at present what sort of sound is most desirable for music? It is doubtful that the acoustical consultant wants to determine exactly what an auditorium will look like. He has a wide variety of valid techniques, and as long as he isn't called upon to perform gymnastics to correct a basically bad shape—a hemisphere for example—he no doubt is more than pleased to have the architect set the pace. The hemisphere can be corrected acoustically, but then visually it's no longer a hemisphere.

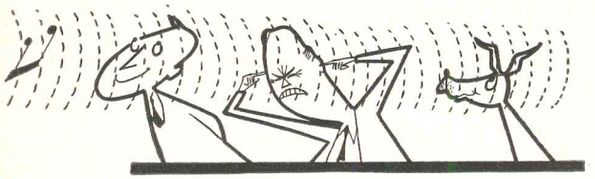
Another visual element in design is light, and somehow one would have thought that this would have become a very important part of the architect's vocabulary. Apparently there are instances in the past where the architect was rather expert at utilizing daylight to enhance the appearance of his buildings.

But now that we have almost unlimited sources of light, their use in buildings is not much above the level of trying to improve the fixture design. Even if the engineer were able to give the architect electroluminescence cheaply, so that whole surfaces could be bathed in light, one wonders whether at the present time there would be much improvement in lighting effects. Somehow with all our motivation research, "brain storming" and operational creativity which seem to be flourishing in commercial circles, we don't know yet what kind of light to provide to meet the many moods and activities of man. And even granting that there is a glimmer of knowledge in this direction, it seems almost impossible not only to get lighting installations to see what you want to see, but to provide a further positive effect of creating an atmosphere that corresponds to the activity, whether it be working on a drawing board—where you need some visual relief once in a while—or listening to Beethoven, on records or in the concert hall.

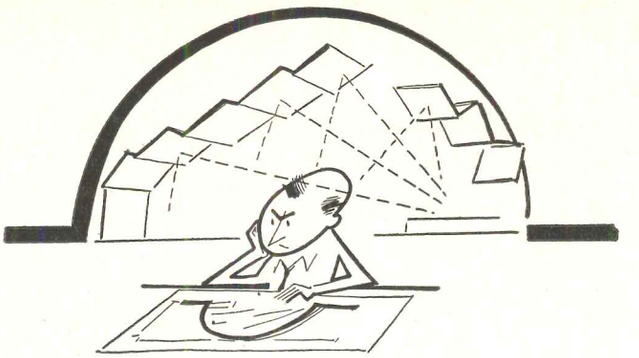
It would not be overstating the case to say that a good many architects simply assume, during the decisive stages of planning, that a space will be lighted to some accepted level of illumination. Then with a "magic" omnipresent source of light, the architect expects that surfaces and edges will automatically assume certain values of lightness and darkness, with everything turning out according to "plan." The lighting engineer, on the other hand, seldom has an understanding of the implications of modern architectural concepts. Frequently he is absorbed in techniques and physical phenomena, such as brightness contrast, just for their own sake.

Recently, ARCHITECTURAL RECORD sponsored an informal discussion among a dozen architects and lighting engineers. After it was over I asked one of the engineers for his comments on the affair. His thoughts are included here, because with only slight modification, they could apply to almost any type of engineering in the building field. This is what he said:

"The matter of communication between professions is one of the big



". . . who is absolutely sure what sort of sound is most desirable for music . . ."



"The hemisphere can be corrected acoustically, but then visually it's no longer a hemisphere."

problems. The words used to describe an environment or effect didn't mean the same thing to me as they did to those who practice architecture. On the other hand, I felt that we in the lighting profession were also guilty of not getting our ideas across to architects. I sensed that some of the architects were using our jargon, but when they began to elaborate on the language and materials we use in lighting, it was evident that they didn't have a thorough understanding of the subject.

"Each group had difficulty in rationalizing why they had chosen to use certain materials, designs and fixtures in a given case. When the next job comes along, I doubt very much whether those ideas would be very helpful in solving problems. We need more examples of good design, with an understanding of why they are good from both points of view.

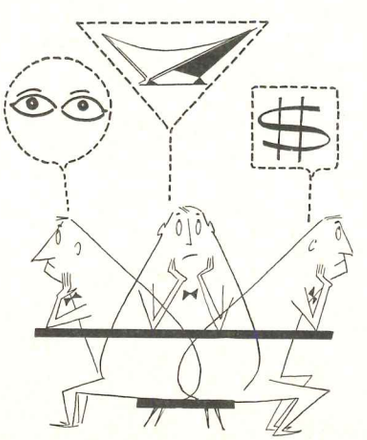
"Lighting equipment is frequently hidden because it is difficult for the architect to find fixtures that fill his needs. I certainly would like to see more architects design lighting equipment or build it in properly, so that it really becomes a part of the environment.

"Fixture designs are a real problem in our mass production era. It is difficult for the lighting engineer to design equipment to fit in the many situations faced by architects. Both groups can help by showing techniques where the lighting results can be provided without the machinery being a prominent part of the design."

Another engineer, this time Felix Samuely* of London, has a philosophy well worth considering in the relationship of engineering to architecture:

"Long span bridges are the only type of construction where other considerations are so subordinated to the structure that it is almost correct to say that what is structurally best is best for the whole bridge. This is what should distinguish the bridge engineer from the one who deals with other structures. The bridge engineer can start with an absolute picture of loads and deduce both shape and construction from it; the building engineer should look around all the time and make sure that what he produces is right in other respects. This is probably one of the greatest failings of a number of structural engineers—that they behave like bridge builders even when dealing with multistory buildings; that they consider their structure to be absolute; that they tend to recommend the cheapest structure although this may lead to a more expensive building, or, even if this is not the case, make the building as such uneconomical or unsightly.

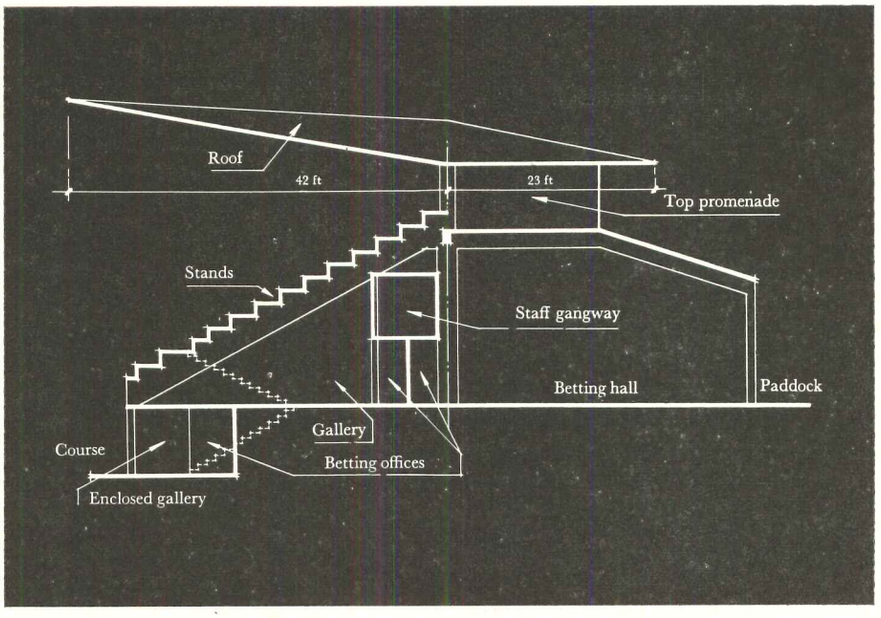
"Now a few words about the esthetic value of a structure in general, and the degree of functional expression possible in structure. Where structures are easy, even in relatively harassed times like the early Middle Ages, structure did not find its expression in the elevation of the building. Such simple houses as are left to us from the 12th Century do not base either elevation or inside treatment on the structure, and the fact that many more churches than houses remain to us from this period often misleads us into thinking that all medieval building was functional. Building a church of any magnitude was a structural feat, and to do anything but pure Gothic arches would have overtaxed the builders of that time or have made it impossible to carry out their intentions. We can learn from them for our own time that it is more likely that a structure becomes eminent in architectural treatment if it is in itself an extraordinary problem, while if other than structural considerations are more important it is likely that the structure would not be completely visible, or it may even disappear altogether. If a substantial bridge has anything but structural expression we should consider it universally ugly, but we do not often think of giving structural expression to a one or two-story house.

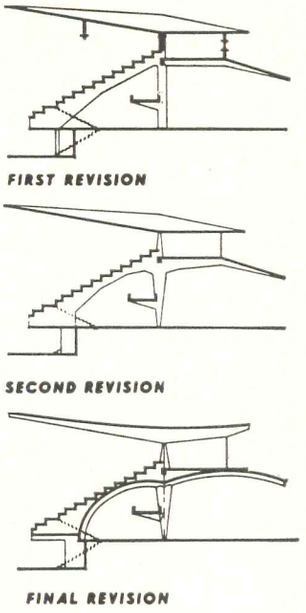


"Where an architect chooses to base the appearance of a building mainly or entirely on structure, the engineer's position and the possibilities for his contribution are fairly clear. He willl have to show the architect several possibilities, and in designing these he will be well advised to relax and forget any mathematics, although it is quite likely that later one or the other of the suggestions will have to be dropped for reasons of practicability. Personally, I have often found that a completely visual approach often leads more quickly to the right shape than any amount of analysis. The more types of construction that can be put forward the better, and if there is a difference in cost this should be pointed out."

Responsibility for how engineering techniques are going to be used belongs to the architect—we all hope to create better buildings in all respects. But this demands then that the engineer not only be familiar with all of the new developments so that he can assimilate them into his practice, but that he be armed with the sort of knowledge that will help the architect select the appropriate system from standpoints of appearance, function, sound construction and economy.

*Excerpts from, "The Structural Engineer and Architecture," AR, June 1957.





Madrid Racecourse: Eduardo Torroja

Seldom do our great engineers trace in retrospect the creative process which produces their finest work. Here Torroja offers just such an insight into the thought sequence by which the famed Zarzuela Hippodrome evolved from initial concept to final form—and a rare opportunity to view the building in all its aspects, from the construction and testing of the model to the soaring drama of the completed structure

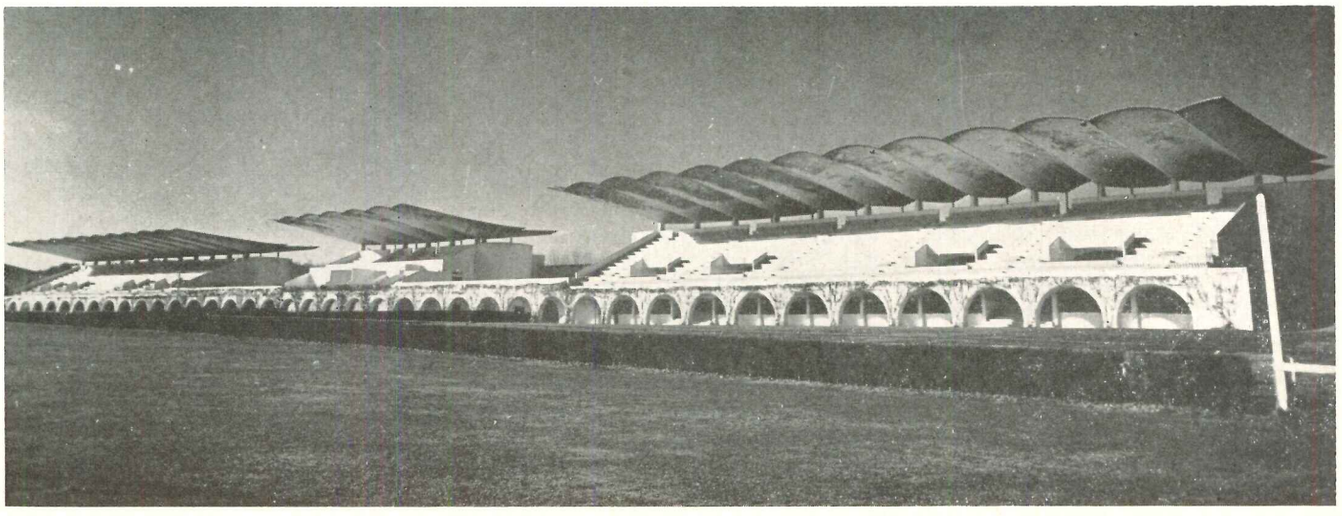
Excerpts from *The Structures of Eduardo Torroja: An Autobiography of Engineering Accomplishment* by Eduardo Torroja, with a foreword by Mario Salvadori. Copyright 1958, F. W. Dodge Corporation, New York

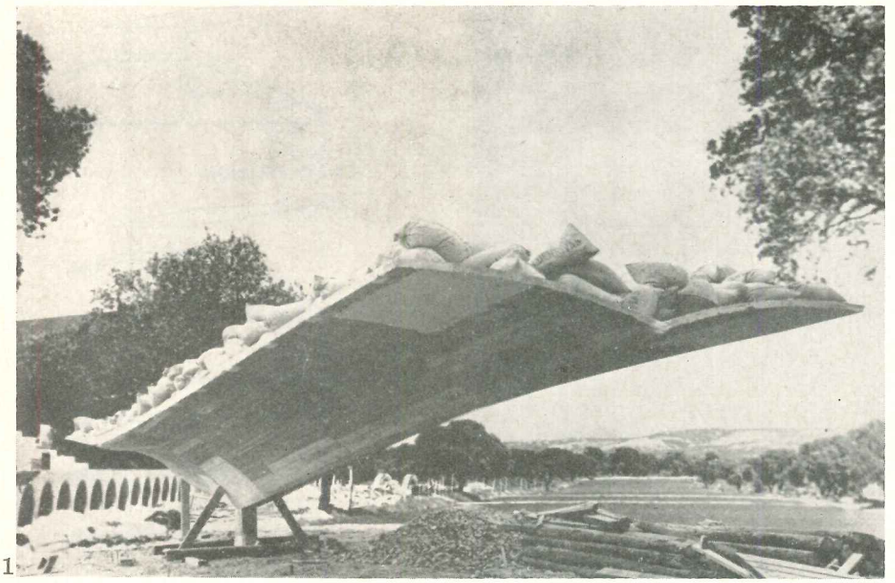
The functional requirements of the Zarzuela Hippodrome may be ascertained from the large cross section above: but, quite obviously, the first pattern was not very satisfactory. It is clear that the weight of the cantilevered roof over the stands will be greater than that of the counterweight over the top promenade. As the rear support will consequently be in tension it has to be a tie rather than a strut. The other support, which has to take the whole weight of the roof plus the load applied by the tie member, must thus serve as the main one. Because this support must be massive, there will be no difficulty in supporting the gangway on a structure cantilevered from it.

The weight of the roof over the betting hall will be largely offset by the tie member, and the load on its supporting columns will be slight. Therefore these columns can be omitted. On the race track side, supports are also unnecessary because the height between the track and the underside of the stands will accommodate a cantilevered beam.

Thus the initial plan developed into the first revision. On close inspection it becomes clear that a rigid attachment of the roof at the main support is not very useful because the roof has good stability under the vertical forces provided by the main support and the tie. On the other hand it is essential that the main support be rigidly fixed at the promenade level.

The cantilever roof of the betting





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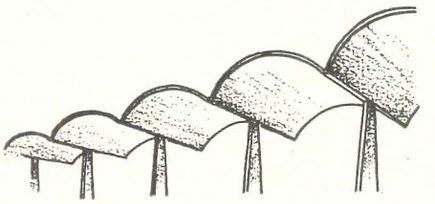
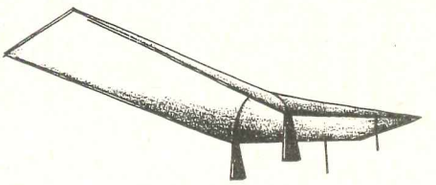
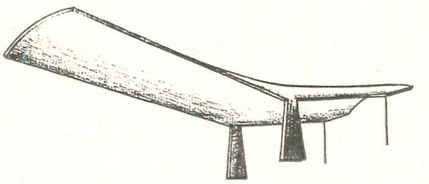


Arcade



Conoid



Hyperboloid

Madrid Racecourse

hall must be flat over the central portion to provide a floor for the promenade. Also its depth has to increase toward the main support where bending moments are highest.

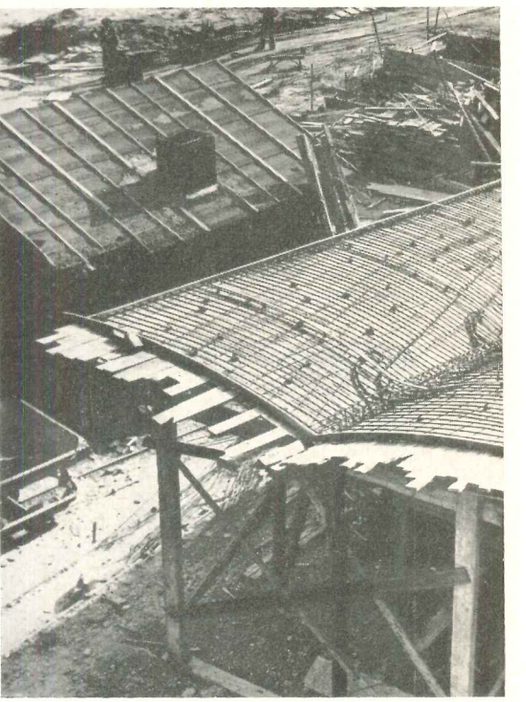
The main support, in turn, must resist these moments. Its full section could be extended to and fixed rigidly in the foundation in order to resist wind forces. However in such a structure the existence of two very rigid supports (the main one plus the bottom part of the stands) could restrain too severely the thermal expansion or shrinkage of the portal frame. Hence it seemed advisable to reduce the over-all rigidity of the main support without impairing its capacity to transmit horizontal shear to the promenade level. The provision of a flexible joint at the bottom of the support consequently seemed a natural, if not an essential, step.

Finally the scant height between the staff gangway and the structure supporting the stands made it necessary to reduce the depth of the latter as much as possible.

At this point the design (see second revision) was allowed to rest for a while. In the end, it was given a certain curvature of outline, which seemed so straightforward and suitable to the purpose that the imagination resisted any attempt at further improvements.

After having adopted curved outlines for the lower part of the structure, it seemed reasonable to give a curved form to the roof also. More was involved, however, than the mere running of an arch or vault from one support to the next as shown above. The main structural function of such vaults is that of arched cantilevers. And to meet the strength requirements, it is necessary that the height-span ratio of the vaults be greatest over the main supports and decrease towards the free edges. The resulting surface could well have been a conoid but for the objection that the conoid is not very attractive. It seemed preferable to choose some other form of curvature. Among the better known ones, none seemed more adaptable than the hyperboloid; hence the cantilevered vaults have the shape of hyperboloidal sectors.

And now the question arises: Is the invention of an especially adapted form to solve a specific problem strictly an imaginative process, or is it the result of logical reasoning based on technical training? I do not think it is either of the two, but rather both together. To me it seems clear that the imagination can operate successfully only in conjunction with the basic principles that a long experience of technical creative work leaves in our personality so that these may later subconsciously condition our intuitive thought. But basic principles are not enough in themselves to create, critically and deductively, a new form. For this to emerge, a spark of imagination is required.



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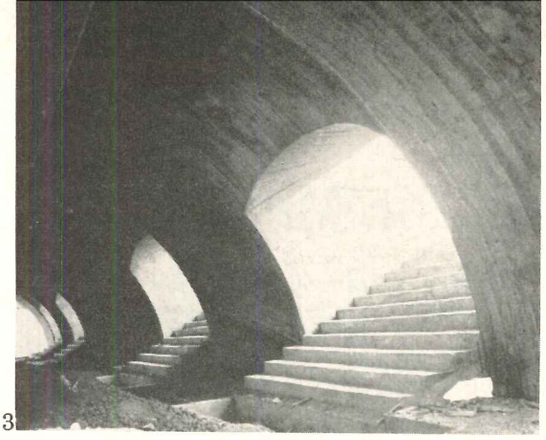

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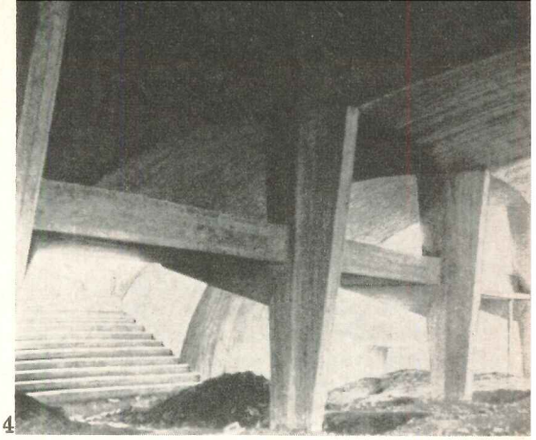

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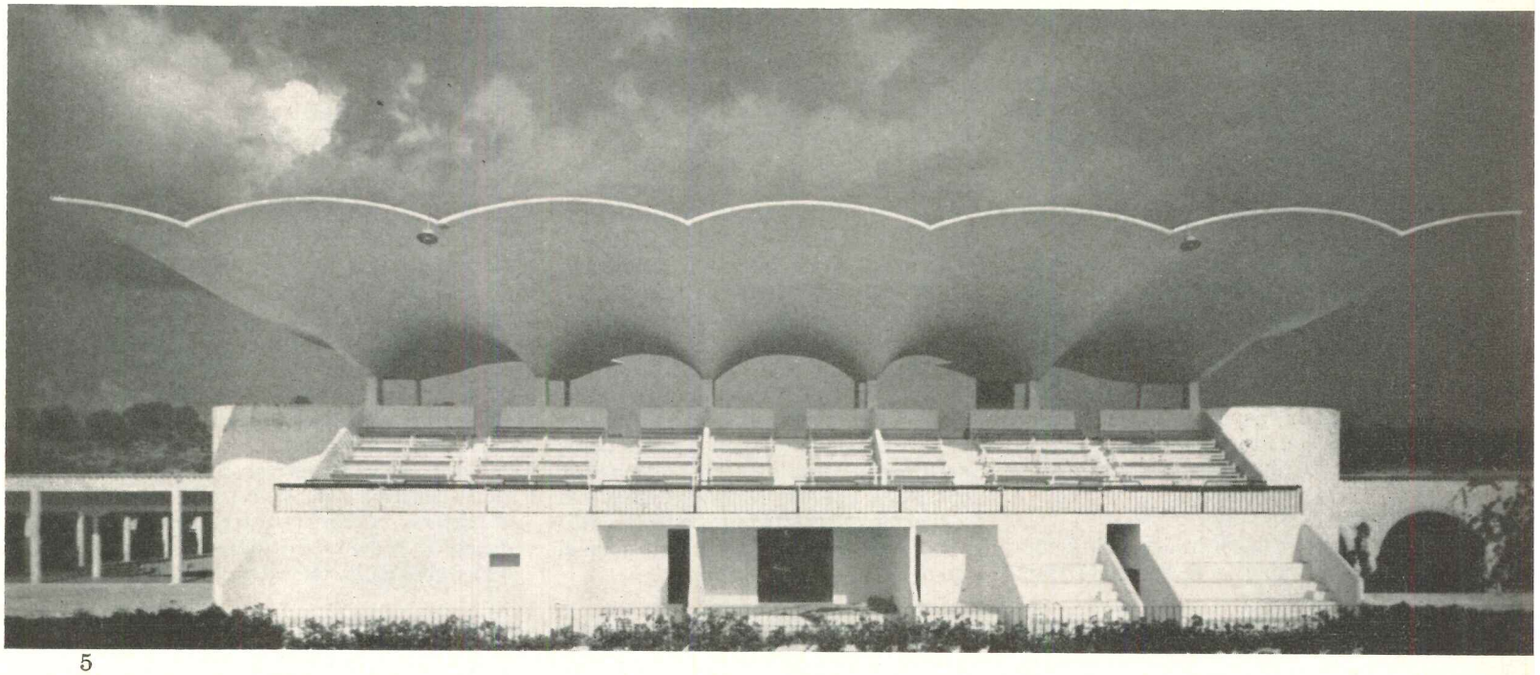

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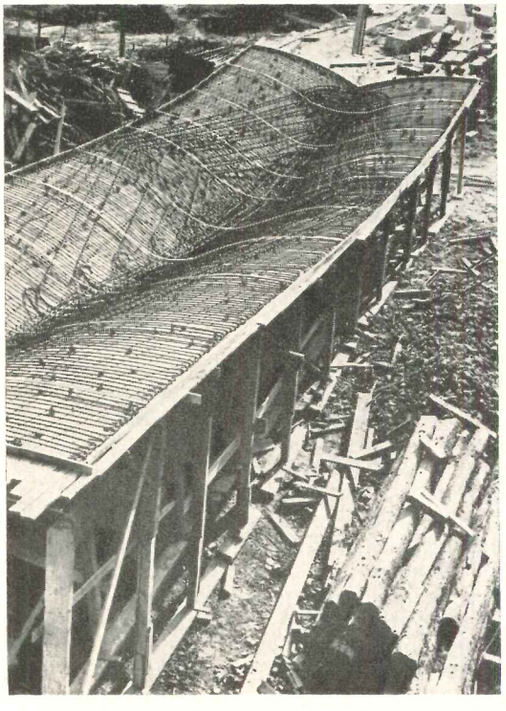
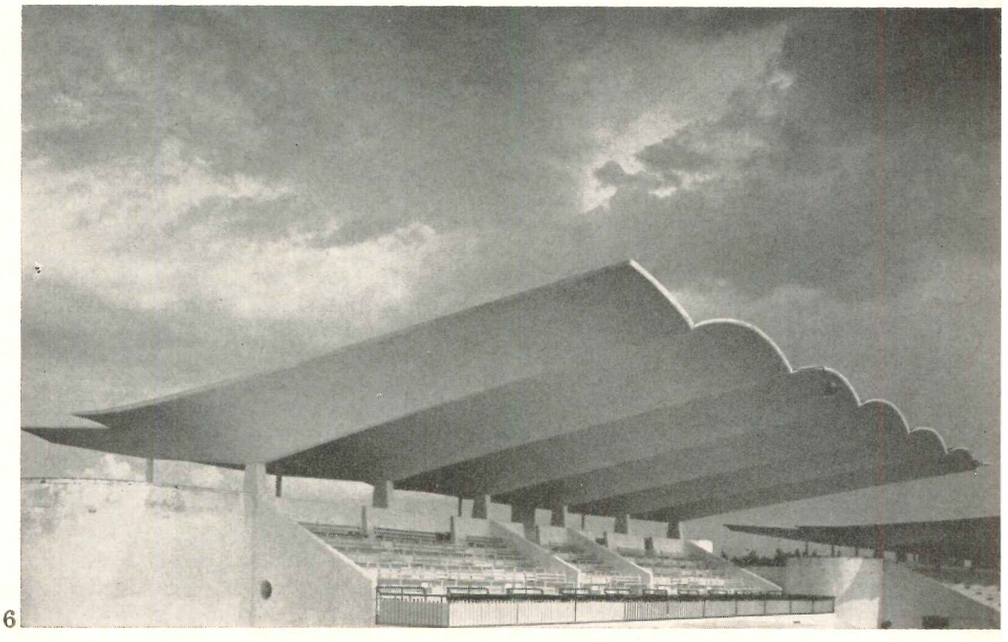


(1) A full-scale model built to test structural properties and construction procedures for the cantilevered vaults proved to be three times stronger than was necessary to meet predicted loads. *(2)* Reinforced echoes lines of stress in curved shell. To avoid danger of water seepage, joints occur along crown of lobes. *(3)* and *(4)* Interior views of gallery show main supports, stairs leading to stands. *(5) and (6)* Shells vary in thickness from 2 in. at the free edge to 5½ in. at the crown of the vaults over the main supports. Lower vaults are 2 in. thick throughout. Arcade which now appears to support lower part of stands (photo page 207) is false, was later added to the basic structure shown in these photos



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'Weatherstripping' for Metal Walls

At a recent conference, the spotlight that has been placed lately on curtain wall construction was narrowed to focus on a particuluar problem—sealing; and a particular solution to that problem—preformed resilient gaskets. The following report summarizes key points made in a discussion which covered topics ranging from the design and manufacture of preformed sealants to their application in the field

In spite of their relatively recent arrival on the building scene, preformed resilient gaskets have been making a strong bid for acceptance as one of the answers to the problem of sealing joints in metal walls. Several important curtain wall projects have been "weatherstripped" with resilient extrusions; several metal window manufacturers are using them in newly adopted "dry glazing" systems.

In an attempt to meet the resulting demand for information on preformed sealers, the Pawling Rubber Corporation recently sponsored a forum, moderated by Wayne Koppes, R.A., at which they were discussed in all their aspects—from design considerations to materials and manufacture to application at the site.

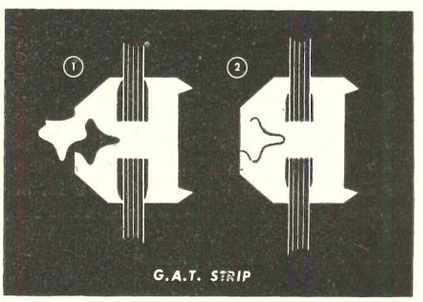
Sealing the Curtain Wall

Of all the problems in designing curtain walls, none is more acute than that of sealing the various materials into a weathertight skin. Because the thin metals used are highly susceptible to temperature variations, a curtain wall facing west may go through, in a single day, a wider temperature range than is encountered by a masonry wall during a yearly cycle. Unless the resulting expansion and contraction is handled without restraint, the panels may oilcan, the frame may warp, the glass may break—and the wall will certainly leak. The problem is to engineer a wall which will allow the various components to come and go freely, but will still keep the weather out.

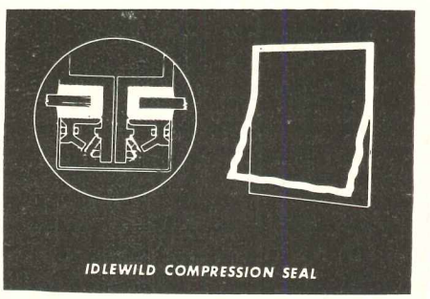
Weatherproofing a wall made up of panels and frames involves three sealing details: the non-working joint, the working joint and the glazing. The *non-working joint* occurs when two materials are sealed together without allowance for any relative movement between them. They are usually fastened mechanically, and because resiliency is not important, may be sealed with a non-drying caulking material.

The *working joint,* on the other hand, provides for relative movement, as in the horizontal and vertical joints between individual frames. The metal work for such joints may vary, but in all cases it is essential that they keep out upward-blown and gravity water during all stages of expansion and contraction.

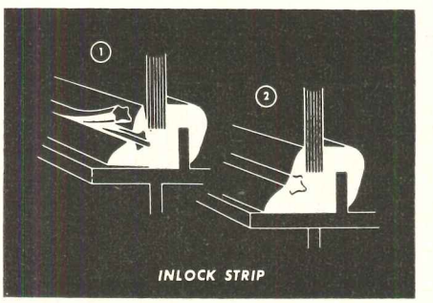
The *glazing detail* is the most complex of the three, since the glass in panels must be held in a continuous resilient setting which will cushion the glass against wind pressure and movement of the frame, and will withstand the heat and movement normal in a panel curtain wall.



Preformed channel developes pressure seal by positioning of integral locking wedge



Movable pressure stop adjusts to compress glass between "legs' of neoprene U channel



Rubber filler strip squeezed into continuous gasket develops desired compression seal

Sealing Methods Developed to Date

In the past few years, several successful sealing methods have been developed which use preformed materials. Essentially these fall into two broad categories: the *multiple method* in which the preformed material is used simply to position the panel while the actual sealing is accomplished through the use of auxiliary materials; and the *simple* or *compression* method in which the preformed material is used both to position the panel and to effect the seal. Because of its economies of fabrication and installation, the latter method will be discussed in greater detail here.

Although many variations are possible, the simplest principle of the compression seal involves an extruded U channel which is slipped over the edges of the panel or glass light. This assembly is then placed into the frame, and the seal effected by creating pressure between the panel or glass light and the extruded channel.

One of the earliest seals of this type was developed by architect Eero Saarinen and the Inland Division of General Motors for the wall of the G. M. Technical Center. An adaptation of an automotive strip, the *Inlock* strip was a continuous gasket dimensioned to fit full into the rabbet. It was installed with a special tool which lifted the lip of the gasket over the edge of the glass, and the pressure seal was developed by squeezing a rubber filler strip into a slot in the gasket.

The General American Transportation Company (G. A. T.) strip, a 70 durometer neoprene extrusion produced by Industrial Rubber and Dryden Rubber Co., operates in a similar manner, except that the locking wedge is an integral part of the basic strip itself.

Still another basic type depends on an external pressure stop to effect a seal. For the Arrivals Building at New York International Airport, Skidmore, Owings & Merrill developed a continuous channel that was made slightly smaller than the glass, and snapped on as the lights were unpacked. The aluminum extrusions were designed so that a pressure stop could be taken up to a point at which the glass light would be compressed between two ⅛ in. layers of neoprene. Serrated surfaces were provided on both the pressure stop and the rabbet to give a series of high pressure lines across the face of the gasket.

Another example, the Pawling Rubber Corporation's "wet" seal channel, supplements the pressure seal with a two-sided adhesive seal by carrying within itself a reservoir of mastic sealing compound that is forced out during application.

In general, other than arranging for the application of pressure, design considerations for extruded preformed channels differ little from those for other sealing methods. Sealing space need not exceed ¼ in. at the sill and 3/16 in. at jamb and head; and normal cross section dimensions for ¼ in. glass or panels are ⅛ or 3/16 in. leg thickness with ⅛ in. connecting web. The height of the channel leg is usually 1½ to 2 times the thickness of the glass or panel, but this dimension may be increased if trim area is desired or if it is necessary to accommodate movement of different materials in very large panels. Extreme wind load conditions may necessitate increasing the channel leg thickness to provide more resiliency.

The Site vs The Drawing Board

One of the potential drawbacks to the use of preformed sealants is the relatively limited range of joint dimensions over which they will function properly. A channel designed to develop an effective compression seal for a joint of a particular dimension may lose that effectiveness if the joint, as often happens, is actually larger or smaller. On a blueprint, a line or dimension indicating the location of an item on a building is fixed. On the job, the line may be a rough surface as much as several inches away from the location shown —and the variation must be absorbed in the joints between sections.

In the field, non-working joints are not usually critical because their tolerances are affected by shop-fabrication and not by field variations. However at working joints, which are normally expansion joints either horizontally or vertically, allowance must be made not only for shop fabrication tolerances and field variations, but also for expansion and contraction. The amount needed for expansion and contraction will, of course, vary with the size of the unit and the type of material. For vertical and horizontal variations, at least ¼ in. should be allowed; while an allowance of ⅛ in. (±1/16 in.) should be made for shop fabrication variations.

In the case of glazing joints, since glass is normally installed in a shop-assembled unit, the primary concern is with shop fabrication errors, for which the allowance should be ±1/16 in. In addition, variation in the cutting of the glass will be at least ±1/16 in. and possibly as much as ¼ in. The effects of dirt and debris which may enter the joint, and of slight twists or distortions of the frame members, must also be considered.

It is evident that if preformed sealants are to perform effectively, they must be designed to allow for these field variations, and the joints must be detailed in such a way that the gaskets can be properly compressed.

The Materials and Their Manufacture

Extrusion is the process of forcing a plastic material through a forming die to obtain a product of the desired shape—for example, toothpaste is extruded from a tube. Unlike molding, it is a "free forming" process in which the ultimate product shape depends on both the shape of the die and the expansion and contraction characteristics of the compound itself. Today, two basic materials, polyvinyl chloride and neoprene, are commonly used in extruding preformed sealing strips and channels.

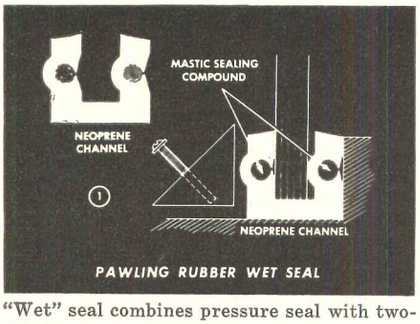
Polyvinyl chloride, a thermoplastic material, begins to cool and "set" immediately after being extruded, thus permitting the retention of quite complex detail in cross section design. Because there is no chemical change during this process, a reheating will effect its simple but efficient heat sealing characteristics.

Neoprene, on the other hand, is a thermo-setting material which requires vulcanization to effect a cure. As a result of the chemical change that takes place during this process, very complex cross section design and heat sealing are sacrificed, but good permanent elasticity is obtained instead.

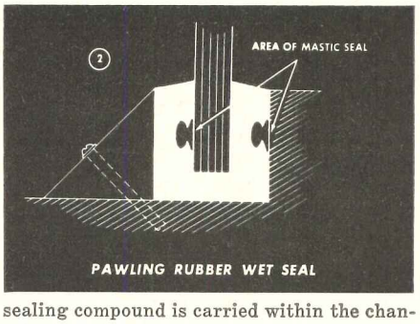
In certain types of glazing, where compression is not a factor, vinyl is very satisfactory. But in working joints or compression seal panel assembly and glazing, where pressure is the very essence of the seal, the vinyl compounds lack adequate compression set qualities and only neoprene has the necessary resiliency.

Most tolerances and construction variations can be accommodated by extruded neoprene channels through a combination of good cross section design and proper selection of hardness of stock. As a rule, harder compounds permit greater design flexibility but less desired initial deformation, while with softer compounds the reverse is true.

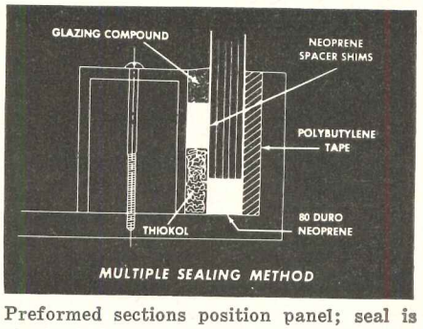
continued on page 240



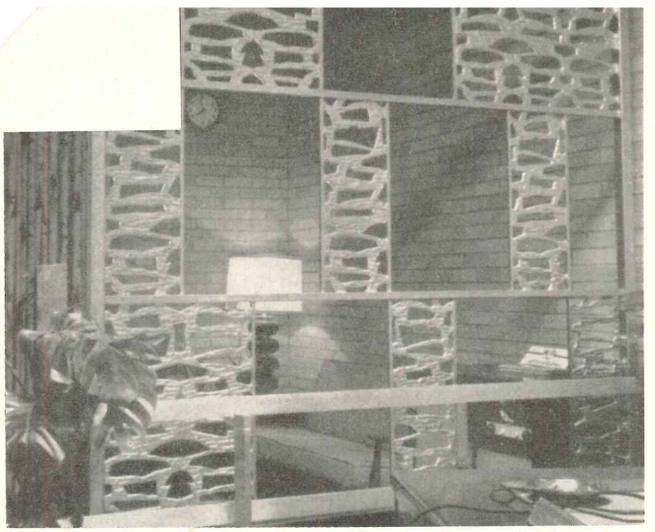
"Wet" seal combines pressure seal with two-sided adhesive seal. A reservoir of mastic



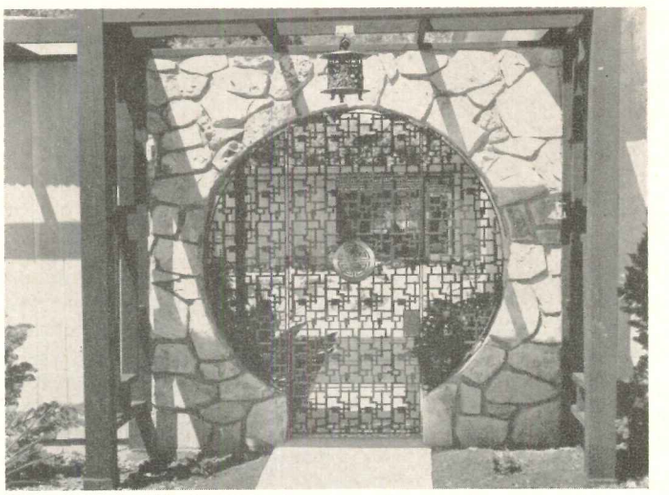
sealing compound is carried within the channel, forced out when pressure is applied



Preformed sections position panel; seal is obtained through auxiliary materials



Screen in "Casual" separates bank's reception and office areas



Moon gate in "De Stijl" lends privacy to an entrance court

A New Approach to Ornamental Metal

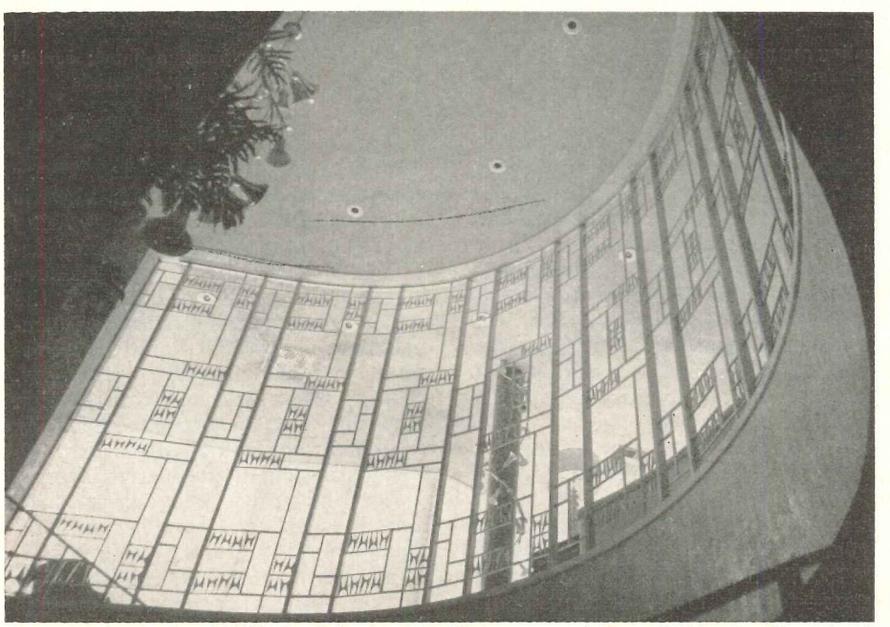
The growing trend towards dividing space by means more subtle than the solid wall has led, in many parts of the country, to an increased demand for wrought metal grilles and screens in patterns that will blend with and enhance the cleaner lines of contemporary architecture. One of the more noteworthy attempts to meet this demand is being made by a Fort Worth metal fabricator whose efforts to maintain high standards of design and workmanship in his ornamental iron products are backed up by a control program aimed at preventing duplication of designs in the same locale.

Designs in McKinley's contemporary series range from very open ones —such as the "Hourglass" pattern in which solid elements in a stylized hourglass shape are strung on slender metal rods—to the more tightly patterned "DeStijl" (above right). Most of them consist of relatively small units that lend themselves easily to combination in larger elements of widely varying sizes and shapes. Thus the same pattern may be used as a grille for wall or window openings, as a space divider, or even as an accent on an otherwise unrelieved wall.

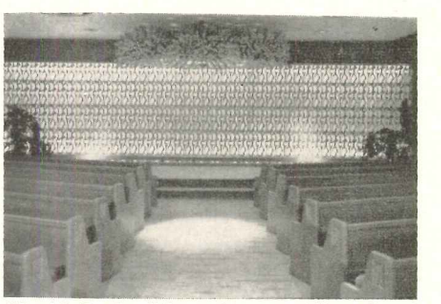
Arrangement of the elements in a particular installation is, of course, subject to the architect's specifications, as is the metal and finish used. Iron and steel, prime coated with zinc chromate, are standard for all designs, but patterns can also be executed in satin finished or polished aluminum, bronze or brass.

The control program mentioned previously is handled by maintaining a running file on all installations. *McKinley Designs* are offered for use only through registered architects and decorators, and orders for a given area are filled only if the design requested has not previously been used in that area. As company president DeWitt McKinley puts it, "It is our thinking that an architect using our 'Symmetry' design in an auditorium would not like to go around the corner and see the same design on a hamburger stand." *McKinley Designs, Div. of McKinley Iron Works, P.O. Box 790, Fort Worth, Texas*

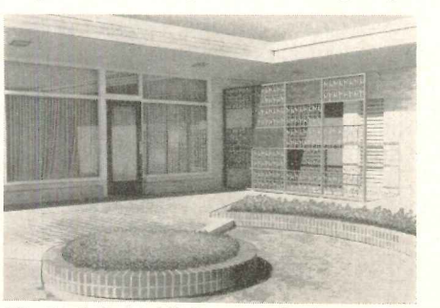
more products on page 248



Open, random-patterned "Butterfly" screen divides upper and lower lobbies in Miami hotel



"Sophistication" keynotes a wedding chapel



"Butterfly" highlights a school entrance

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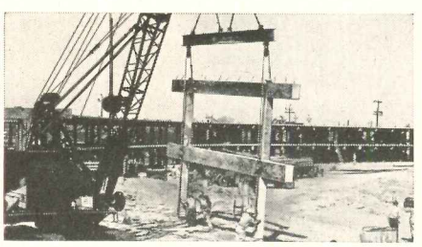
Precast Floors and Roof on Precast Frame

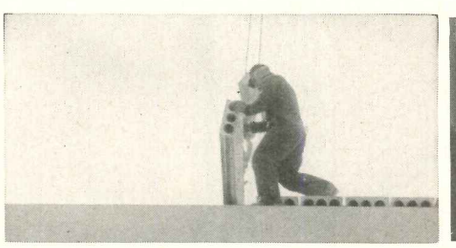
The new Seahorse Hotel in Galveston, Texas is unusual because it is all precast concrete. The frame is formed of 51 concrete bents cast on the site and erected as shown in the photo below, left.

The second floor and roof are 6″ x 16″ precast Flexicore units, which clear span an average of 13 feet between bents. The Flexicore slabs were left exposed for guest room and sun deck ceilings, and were cantilevered to provide covered walkways. Flexicore units are hollow-cast concrete slabs that can be designed for clear spans up to 26 feet for floors and 30 feet for roofs.

The Seahorse Hotel is owned by the Beach Corporation of Galveston. Thomas M. Price was the architect and R. L. Reid the structural engineer.

A six-page descriptive folder on this project showing plans, sections, and details is available to architects, engineers and contractors. Write or phone any of the manufacturers below or The Flexicore Co., Inc., Dayton, Ohio. Ask for Flexicore Facts No. 77.





Left: Erection of precast bent. Center: Flexicore slabs used for second floor and roof. Right: Flexicore exposed for guest room ceiling.

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USEFUL CURVES AND CURVED SURFACES: 31—Hyperbolic Paraboloid

By SEYMOUR HOWARD, *Architect, Associate Professor, Pratt Institute*

The hyperbolic paraboloid, a quadric surface, is shown here in isometric and orthogonal projection. It is a doubly curved surface and therefore not developable. However, since it is ruled surface, it can easily be formed or molded in a framework of straight members.

It can be generated in two ways:

1. A generating parabola (AOA in diagrams) is moved along another directrix parabola (BOB) in such a way that the successive positions of the plane of AOA are always parallel and the successive positions of the line AA are always parallel.

2. As a ruled surface: Given two straight lines (here 5′5′ and 5 5) lying in a horizontal plane, two vertical planes containing these straight lines. Move one of these lines, say 5′5′, called the generator, along the other (5 5), called the directrix, in such a way that its successive positions are always skew but always parallel to its initial position. Thus no plane can contain any two positions of the line 5′5′. These successive positions are the straight lines of one family, sometimes called a regulus. The other family is found by sliding the other straight line 5 5 along the line 5′5′.

The equation, with axes as shown:

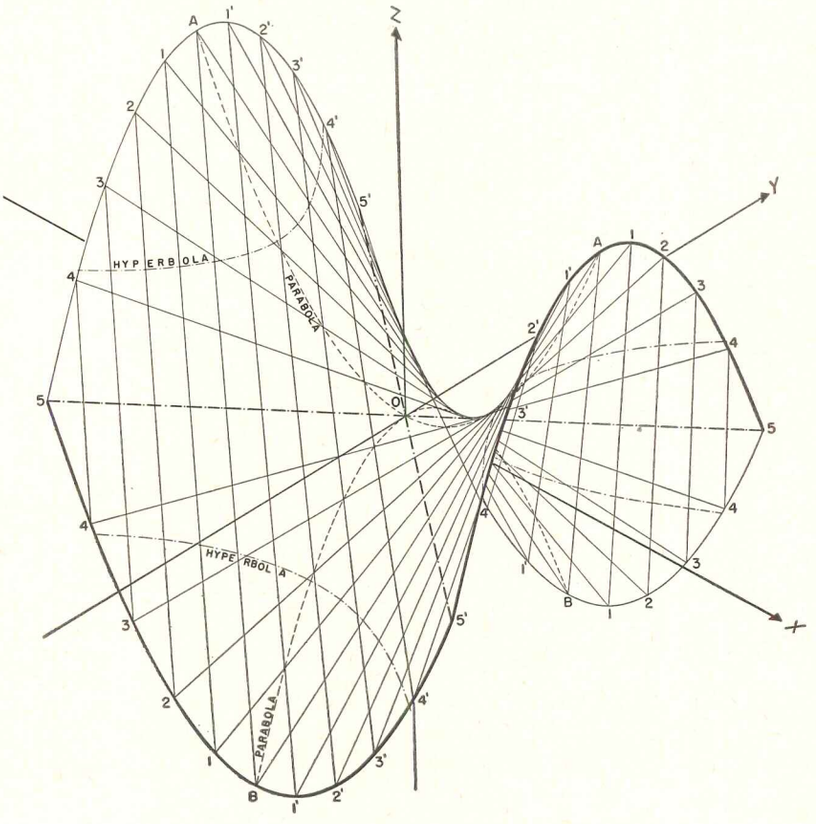
$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = \frac{z}{c}$$

(See below for the equations referred to the asymptotes as axes.)

All sections containing the z axis are parabolas. As such a section is rotated about the z axis, from one principal plane (the xz) to the other (the yz), the parabolas become wider and wider, but all with their centers of curvature above the xy plane, until at the sections containing 5 5 or 5′5′, the parabola becomes a straight line; as rotation continues, the parabolas have their centers of curvature below the xy plane, and become narrower until the section plane reaches the yz plane. All sections parallel to any given plane containing the z axis are identical parabolas (or a straight line).

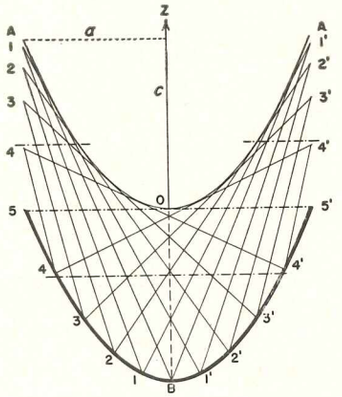
Every section parallel to the xy plane is a hyperbola. The lines 5′5′ and 5 5 are the asymptotes of all of these hyperbolas. Every section above the xy plane will be a hyperbola with its axis parallel to the x axis; every section below the xy plane has its axis parallel to the y axis. The hyperbolas at the same distance above and below the xy plane (i.e. when z = +d or −d) are conjugate. On the xy plane the hyperbola becomes the pair of straight lines 5′5′ and 5 5.

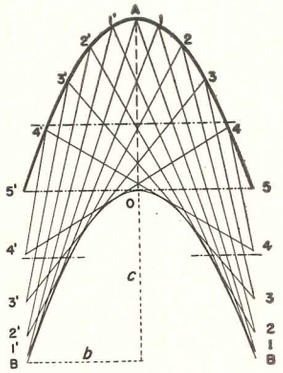
Every section which is not parallel to a plane containing the z axis is also a hyperbola (or a straight line). There are no elliptical or circular sections.



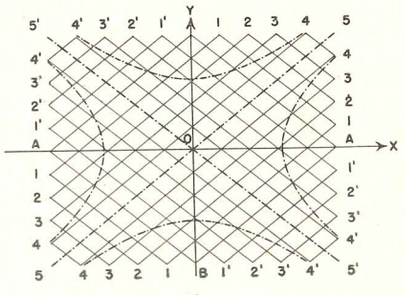
Isometric Projection

X Z-Plane





Y Z-Plane



Plan

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USEFUL CURVES AND CURVED SURFACES: 32—Hyperbolic Paraboloid

By SEYMOUR HOWARD, *Architect, Associate Professor, Pratt Institute*

(Continued from Sheet 31)

Every contour or visible edge in axonometric or orthogonal projection is a parabola.

A plane can be passed through any two straight lines of different families or reguli; no plane can be passed through two straight lines of the same family. Through any point on the surface pass only two straight lines, one from each family. The tangent plane at that point is defined by these two straight lines.

Note that the plan projection consists of two families of parallel lines, forming a network of identical rhombuses. When a = b, the rhombus becomes a square. Note also that, although the angle between two straight lines of different families is constant in plan, it varies on the surface. (Therefore the hyperbolic paraboloid cannot be a minimal surface, since two such straight lines are the asymptotic lines at the point. On a minimal surface asymptotic lines must meet everywhere at right angles.) The lines of curvature bisect the angles between the straight lines on the surface.

TO DRAW: Given the rectangular plan with the parabolas 5′A5, 5A5′, 5′B5 and 5B5′ as the sides, divide each side into the same number of spaces (here 10) and draw the diagonal straight lines connecting corresponding points. These are the plan projections of the straight line generators of the surface. See Sheet 31.

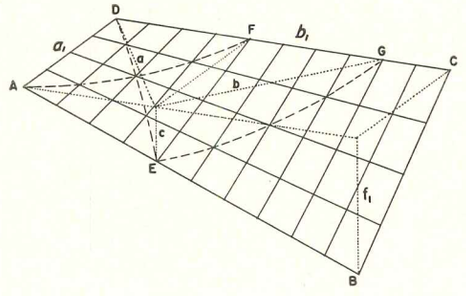
The numbered points can be used to construct the parabolas, in elevation, in isometric or other projection, following the method of Sheet 31. These points are equidistant from the xz or yz planes; they are not equidistant along the true length of the parabolas.

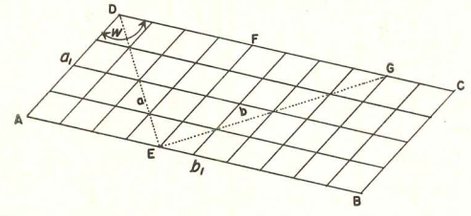
Draw the elevations (projections on the xz and yz planes) by establishing the height c of A above the xy plane and the equal height c of B below the xy plane. Join the corresponding points on the parabolas with straight lines. With the numbering system shown, for example, each point such as 2 is joined by two straight lines to the two nearest points also numbered 2, the point such as 2′ is joined to the nearest points numbered 2′. These straight lines will generate the surface.

In elevation the straight lines are tangents to the contour parabola AOA; this parabola is identical to the parabola 5B5′. In axonometric projection (here an isometric) the contour is also always a parabola, which can be drawn from the straight line tangents.

Warped Parallelogram

Axonometric projection





Plan

The hyperboloic paraboloid as a warped parallelogram. A surface which is a parallelogram in plan can be set so that three corners (here A, C and D) are all in one plane (here horizontal), and the fourth corner (B) is not in the plane (here lowered). Divide the sides into equal spaces and join the pairs of opposite sides by straight lines. The surface will be a portion of a hyperbolic paraboloid.[1]

Note 1. It is essential that the plan be a parallelogram. If this procedure is followed with a quadrilaterial with two pairs of adjacent sides of the same length, but with opposite sides not parallel (kite shaped), a portion of a hyperboloid of one sheet is generated. See later Time-Saver Standards for description.

Comparing this with the diagrams on Sheet 31, the lines AD and DC correspond to the lines 05 and 05′. The parabola DE corresponds to the parabola OB. The parabolas AF and EG correspond to the parabola AOA as it slides down OB; and their tangents are horizontal at the intersections with DE.

In writing the equation, the edges AD (length a_1) and DC (length b_1) are usually taken as axes, with the angle w between them. The equation is.

$$k\, x_1\, y_1 \sin w = z \quad \text{Where } k = \frac{f}{a_1 b_1 \sin w}$$

Note that, since $c = \frac{a_1}{b_1} f_1$, $k = \frac{c}{a_1^2 \sin w}$

This therefore corresponds to the equation $x_1 y_1 = a_1^2 \frac{z}{c}$ (see below). The area of the plan projection of the parallelogram is $a_1 b_1 \sin w$.

When the edges of the parallelogram, corresponding to the principal asymptotes of the hyperbolic paraboloid, are taken as the axes, care must be used to compare the constants used in the two types of equation. The difference is basically the same as that between the equation of a hyperbola referred to its center line and that referred to its asymptotes. (When z = c, the section of the hyperbolic paraboloid is the hyperbola whose parameters are a and b.)

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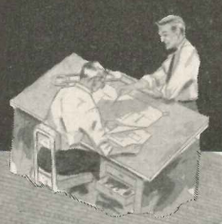

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USEFUL CURVES AND CURVED SURFACES: 33—Hyperbolic Paraboloid

By SEYMOUR HOWARD, *Architect, Associate Professor, Pratt Institute*

For the hyperbola, the two cases are:

1. The equilateral hyperbola (corresponding to rectangular hyperbolic paraboloid). In standard form, referred to x and y axes:

$$x^2 - y^2 = a^2 \text{ or } \frac{x^2}{a^2} - \frac{y^2}{a^2} = 1$$

Axes rotated through 45° to x_1 and y_1:

$$x_1 y_1 = a_1^2,$$

where

$$a_1 = \frac{a}{\sqrt{2}}$$

2. The general hyperbola. In standard form, referred to x and y axes:

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

Axes changed from rectangular to oblique and rotated to x_1 and y_1

$$x_1 y_1 = a^2_1$$

where

$$a_1 = \frac{\sqrt{a^2 + b^2}}{2}$$

Or, if w = angle between x_1 and y_1,

$$x_1 y_1 \sin w = \frac{ab}{2}$$

All equations referred to the asymptotes as axes can be checked by the fact that the area of the parallelogram made by the x_1 and y_1, coordinates of any point on a hyperbola is constant. This is shown shaded on the diagrams.

The values of the functions of the angle w are:

$$\tan \frac{w}{2} = \frac{b}{a} \qquad \tan w = \frac{2ab}{a^2 - b^2}$$

$$\sin \frac{w}{2} = \frac{b}{\sqrt{a^2 + b^2}} \qquad \sin w = \frac{2ab}{a^2 + b^2}$$

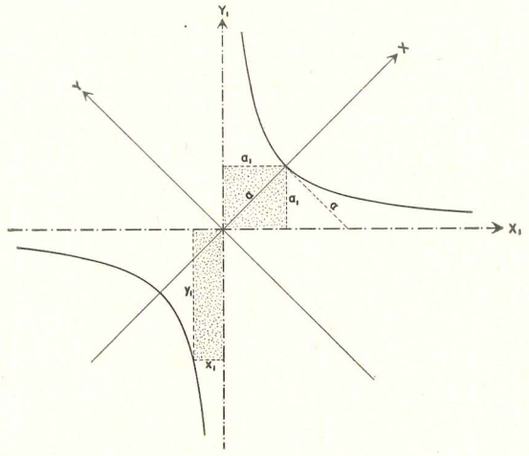
$$\cos \frac{w}{2} = \frac{a}{\sqrt{a^2 + b^2}} \qquad \cos w = \frac{a^2 - b^2}{a^2 + b^2}$$

The drawing of hyperbolas may be simplified by using one of these two methods instead of those shown on Sheet 6.

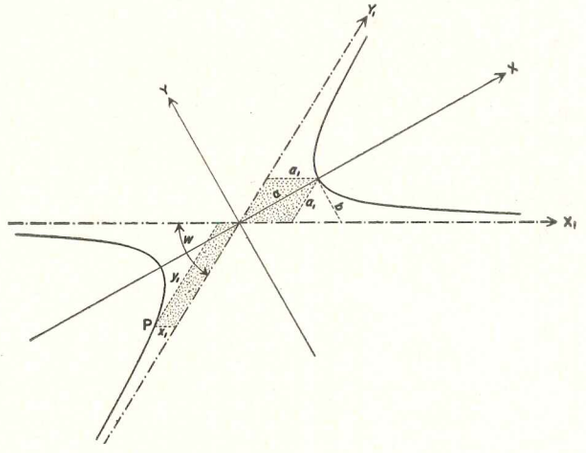
1. Secant or chord method. Given the two asymptotes as shown and any point P_1 (which may be the apex). Draw any secant line through P_1, cutting the asymptotes at A and B. Measure BP_2 equal to AP_1. P_2 is a point on the hyperbola. This process can be continued, using more lines through P_1 or through P_2.

2. Parallelogram method. Given the apex A_1 and the apex A_2 and one point P. Draw the axis through A_1 A_2. Draw PN perpendicular to the axis. Draw PB parallel to the axes and of length A_2N. Divide PB into any number of equal spaces (here four); divide PN into the same number of equal spaces. From A_1, draw lines to the points on PN; from A_2, draw lines to the points on PB. The intersections of corresponding lines are points on the hyperbola. (This is basically the same method as that shown on Sheet 3 for drawing the parabola.)

Two Cases For Hyperbola

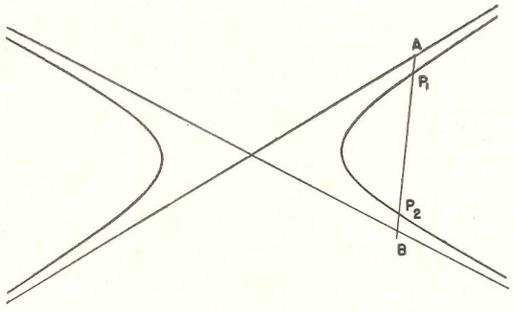


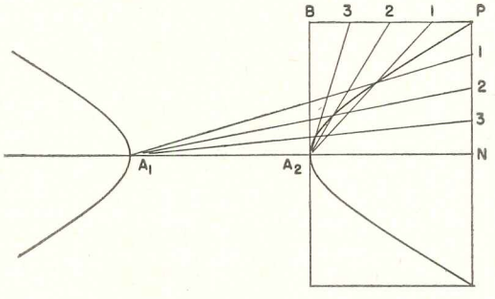
1



2

Drawing of Hyperbolas





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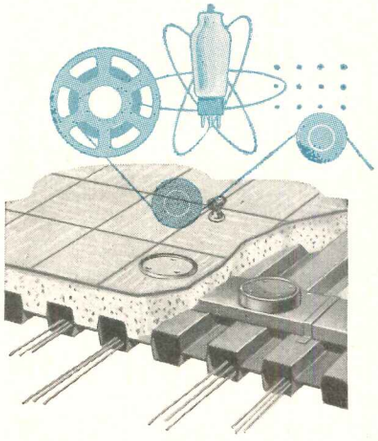

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C-8

continued from page 211

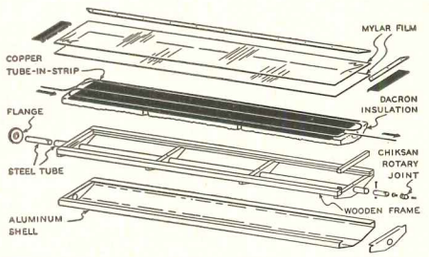
Solar House Uses Heat Pumps for Summer Cooling, Auxiliary Heating

The Solar House opened recently near Phoenix, Arizona, features a unique collection system, and an even more unique method of providing for summer cooling and auxiliary heating. Designed by Peter R. Lee, an undergraduate student at the University of Minnesota, the double-cored house was the winning entry in an international competition sponsored by the AFASE.

Its energy collection system consists of louvers mounted in parallel rows between the steel roof beams over the patios and central court. Two rows are used to heat domestic hot water; the remaining rows collect heat for the house and swimming pool.

The collectors themselves are aluminum shells stretched over wooden frames and insulated with Dacron batting. Blackened copper tubes set in blackened copper sheet are placed over the batting and double-glazed with transparent film. Solar heat absorbed by the copper collection surface is transferred to water circulating through the tubes. During the heating season, the collectors rotate to follow the sun; in the summer, they are turned aluminum side up to act as sunshades.

continued on page 230



Expanded Section Through Louver-Collector

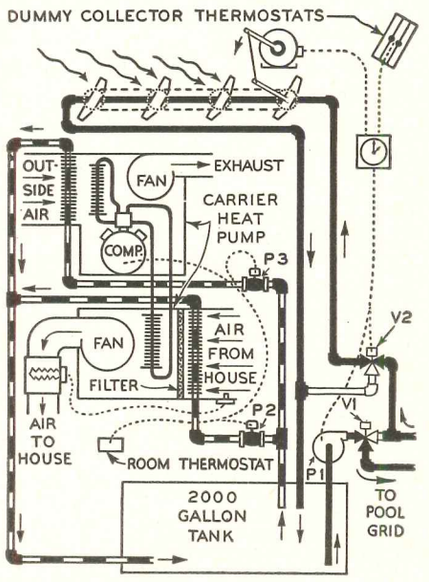
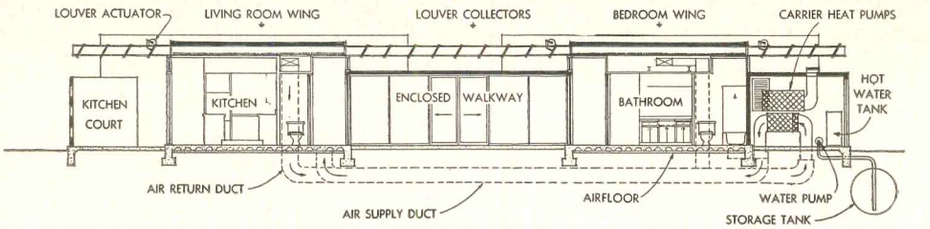
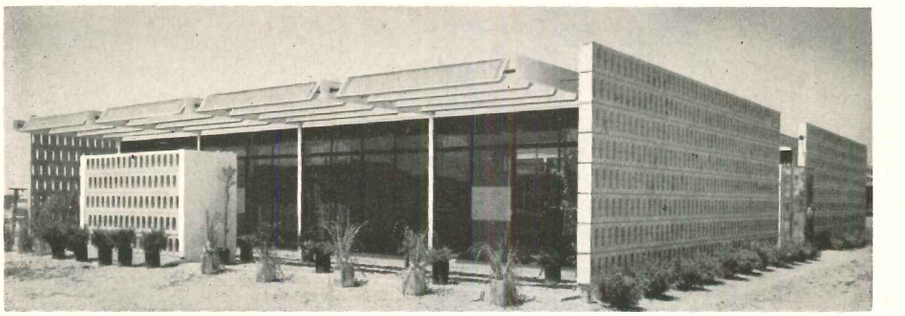
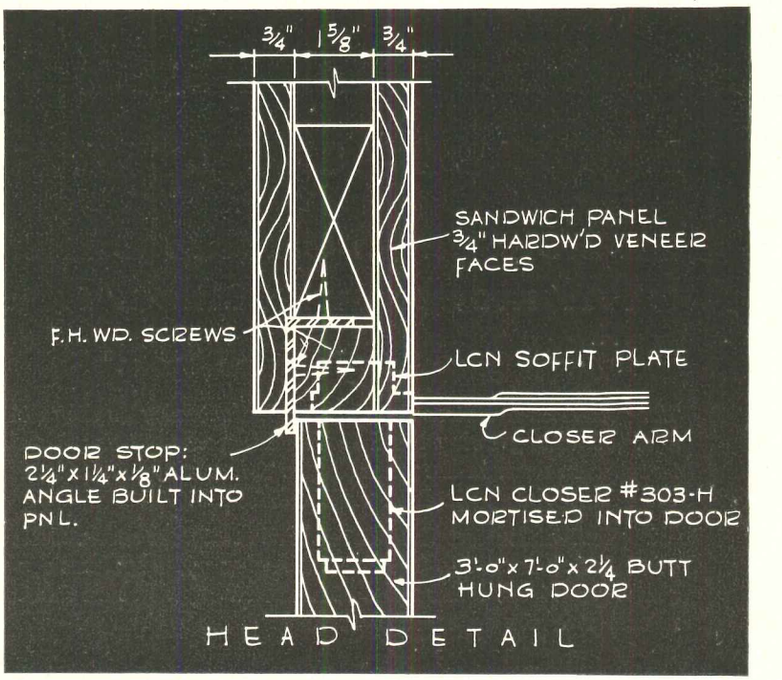


Diagram of Heating-Cooling System







CONSTRUCTION DETAILS

for LCN Closer Concealed-in-Door Shown on Opposite Page

The LCN Series 302-303 Closer's Main Points:

1. An ideal closer for many interior doors
2. Mechanism concealed within door; flat arm not prominent, and provides high closing power
3. Door is hung on regular butts
4. Closer is simple to install and to adjust
5. Hydraulic back-check protects walls, etc. on opening
6. Practically concealed control at little more than exposed closer cost

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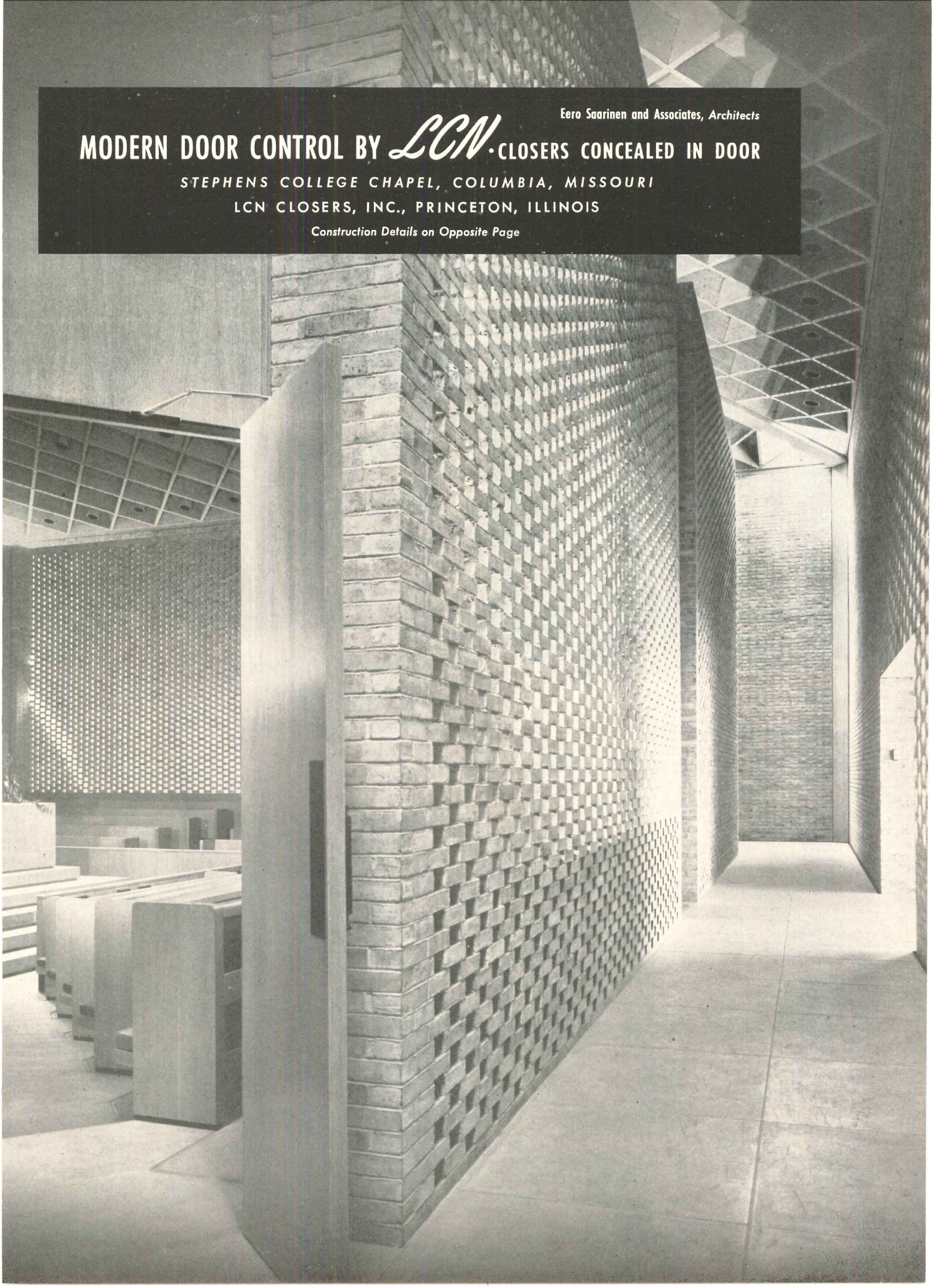
or See Sweet's 1958, Sec. 18e/La

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario



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MODERN DOOR CONTROL BY *LCN* · CLOSERS CONCEALED IN DOOR

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LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

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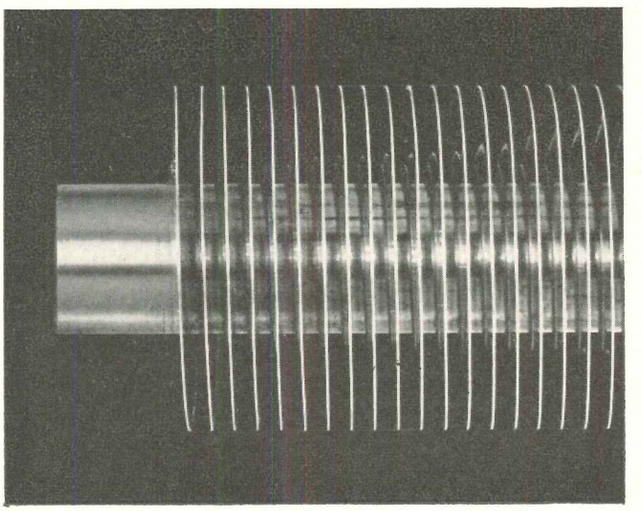

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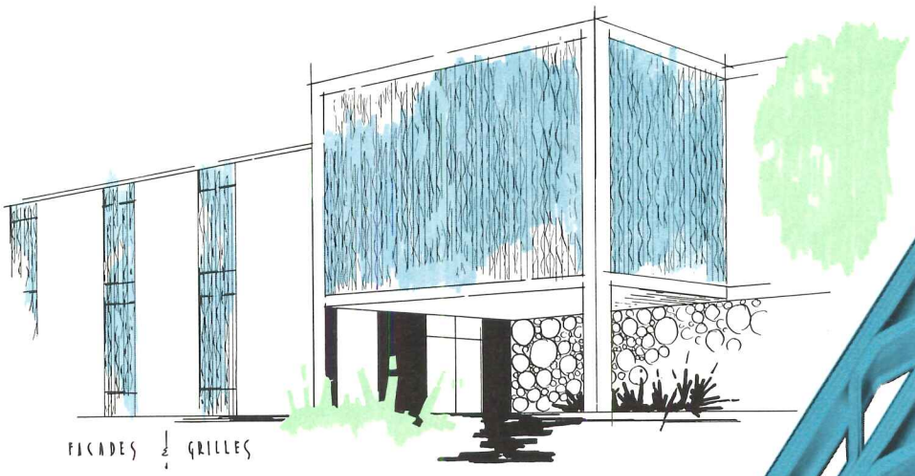
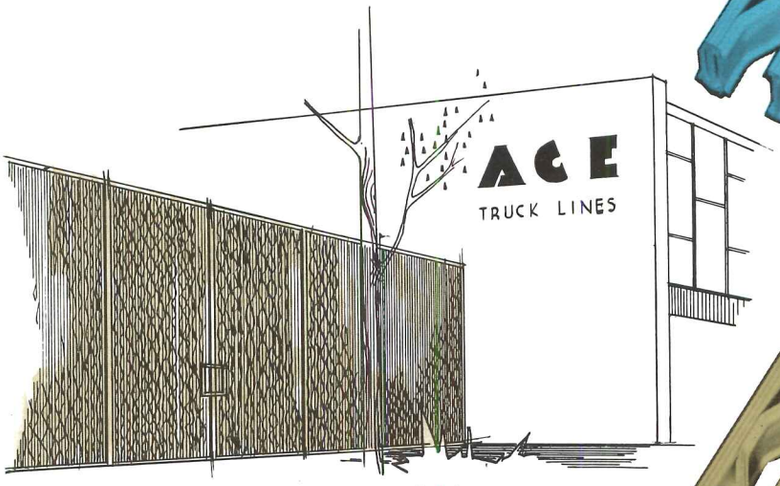
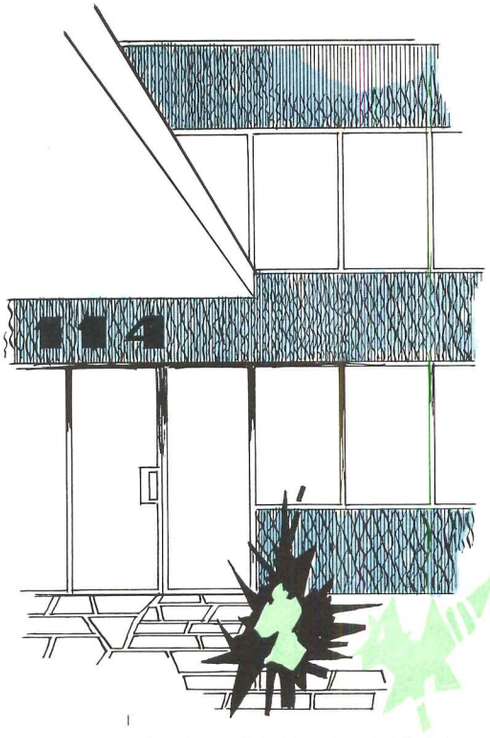


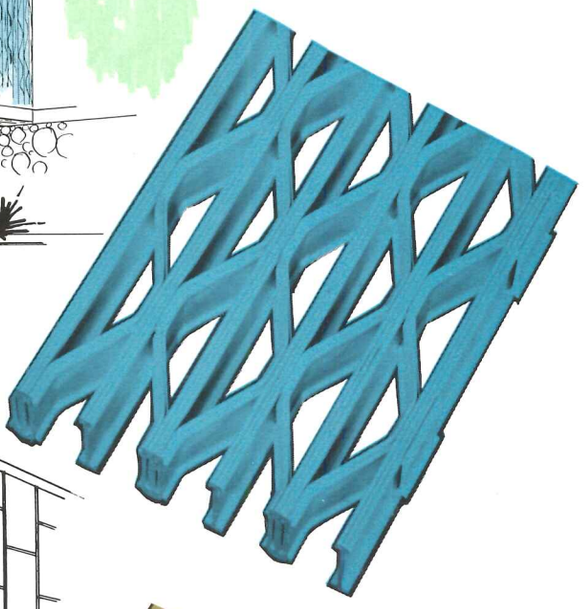
FACADES & GRILLES

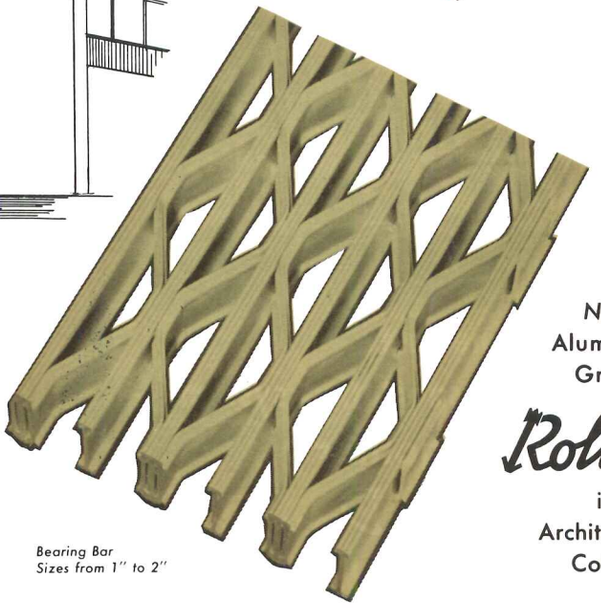


GATES, FENCES, ENCLOSURES



CURTAIN WALL FACINGS





Bearing Bar
Sizes from 1" to 2"

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Aluminum
Grille

Roll-Lock

in
Architectural
Colors

Roll-Lock is a new concept in grille design. Bars are economically roll locked together into solid, light weight, rattle-proof panels that are handsome and decorative for wall panels, column facings, sunshades, spandrels, gates, fences, etc. To blend with the new look in buildings the grilles are available in anodized architectural colors, including a natural aluminum gray. Write on your letterhead for free fileworthy catalog and desk sample.

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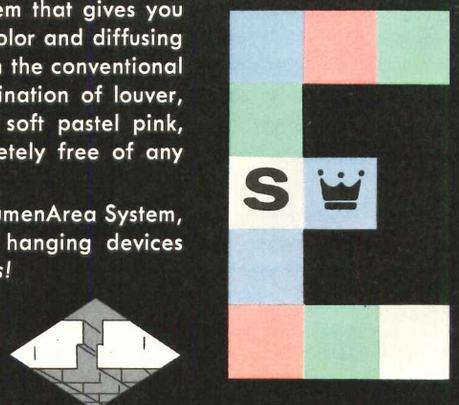

Dished plexiglas ceiling with perimeter of green "Polycube" Louvers helps give this office a distinctive appearance.

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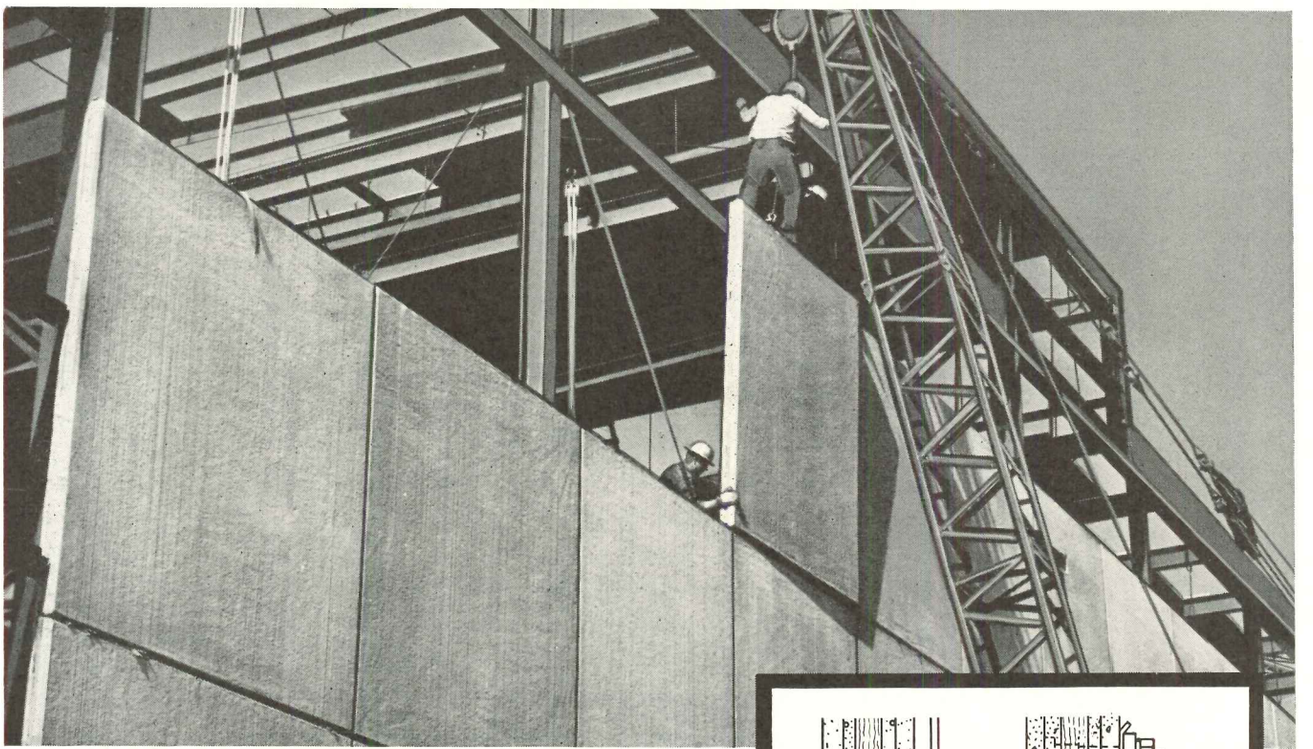
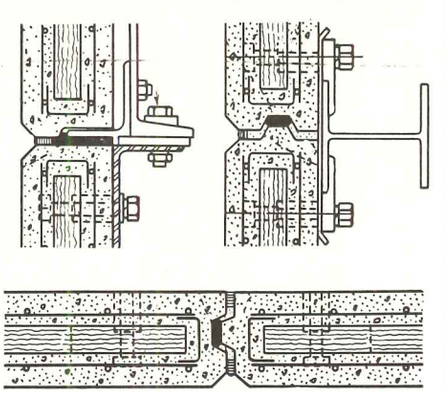
Rubatex insures water-tightness in precast Marietta sandwich wall



Marietta Concrete Corporation, Marietta, Ohio (one of the country's largest producers of concrete wall panels) has found RUBATEX to be the ideal weather-barrier seal for their precast concrete wall panel construction in many industrial and commercial structures . . . including the $3,000,000 Goodyear Research and Development Center; Sears Roebuck Shopping Center, Nashville, Tenn.; and the National Security Administration Building, Fort Meade, Md.—the world's largest building of concrete panel construction.

RUBATEX's unique closed cellular structure with inert nitrogen retained within the cells under pressure provides . . . high compressive strength and resiliency even at low temperatures . . . excellent insulation properties . . . zero moisture absorption . . . plus resistance to oxidation.

RUBATEX is soft, flexible, easy to work with and strips can be economically cut from sheet stock.



Prior to erection of precast wall panels, RUBATEX CLOSED CELLULAR RUBBER strips are cemented with a rubber adhesive in the horizontal and vertical tongue-and-groove joints forming a positive and permanent water-tight seal.

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SEAMLOC's thirty-three beautiful decorator colors meet the demands of almost any color scheme.

SEAMLOC carpet can be inlaid with slogans, trade marks or emblems without custom weaving.

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For further details and color samples see your nearest Seamloc dealer or write

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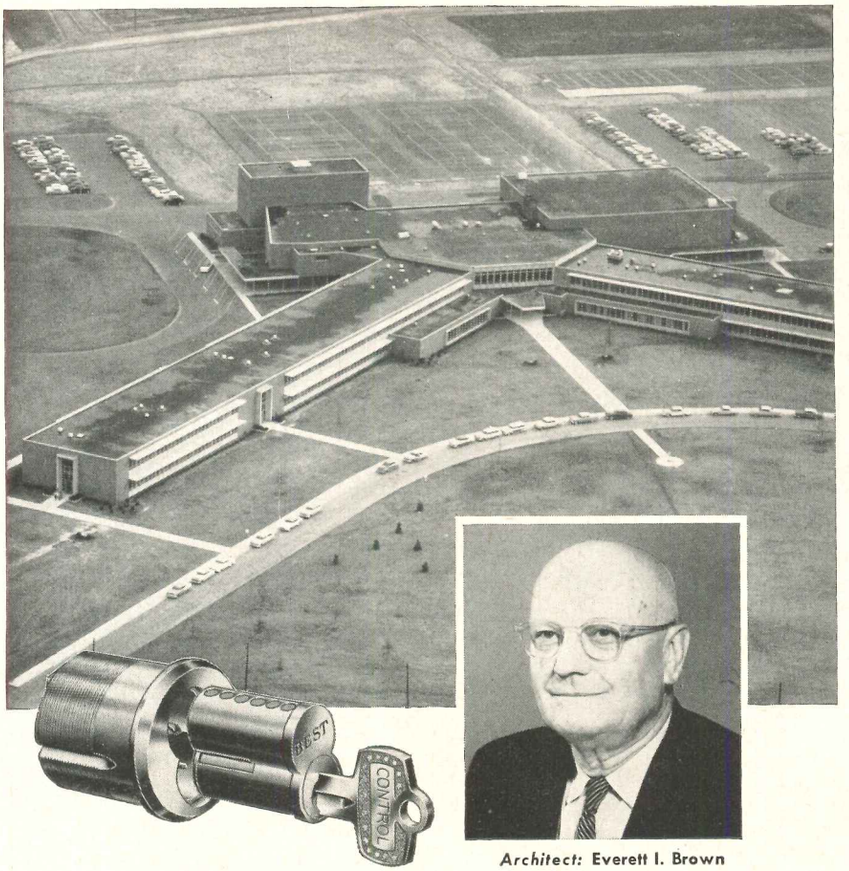

Architect: Everett I. Brown
Indianapolis, Indiana

SPECIFIED

In Indiana's New North Central High School— BEST® Locks with the *interchangeable core**

Handsome, new North Central High School, in Washington Township near Indianapolis, harmoniously blends design beauty with functional service. In planning the school's locking system, attention was focused not only on physical security and appearance, but also upon future maintenance ease and economy.

An all-BEST locking system was decided upon because it minimizes cost and time required for lock changes . . . also provides *one* simplified masterkey system throughout the school and *entire Township school system.* Future buildings can easily be added to this single masterkey system. The BEST system reduces total number of keys needed, allows instant, economical lock changes and assures maximum physical security.

*The *interchangeable* core is a patented, key-removable pin-tumbler lock which can be locked or unlocked with a regular operating key. This core may be removed with a special "Control Key" (used only to remove and replace cores), effecting instant change of locks. For complete details, see Sweet's Architectural File 18e/Be or write

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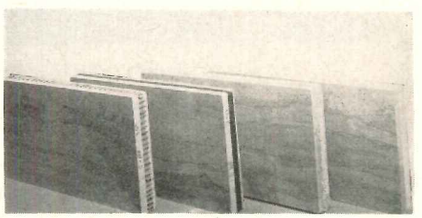
Technical Roundup

As shown in the heating-cooling system diagram below, water from an underground storage tank is pumped to the collectors via a grid embedded beneath the swimming pool, heated, and returned to the tank. When heat is called for, hot water from the tank is delivered to a coil in the intake side of the heat pump's indoor unit, and used to warm air which is then circulated through the house. If auxiliary heating is required, heated refrigerant replaces the hot water in the coil. For greater efficiency, a pre-heater coil on the pump's outdoor (compressor) unit uses water from the storage tank—too cool to heat the house, but still warmer than the outside air—to heat the refrigerant.

In summer, the heat pump is reversed, and cold refrigerant is supplied to the indoor unit to cool air entering the house. To reduce the compressor's power load, water from the storage tank, cooled by aeration in the swimming pool, is used to precool the air around the heat pump's external coil.



Research to Test Properties and Potential of Thin Marble Veneers

In an attempt to adapt thin (⅞ to 2 in.) marble veneers to present-day construction techniques, the National Association of Marble Producers is currently sponsoring a program of product research and development at the Armour Research Foundation.

The original objective of the program was to gather data on properties and uses of marble for compilation in an architectural handbook. The data on physical properties has now been nearly completed for all major marble producing areas, and work is well under way on the use of marble for curtain walls. The studies on both structural and non-structural panels cover (1) core materials for laminated sandwich panels, (2) suitable adhesives and (3) metal and fire resistant board interior facings, with supplementary investigations of sealants and panel framing systems.

The remainder of the study will be devoted to work on surface treatments and exterior veneers.

more roundup on page 234

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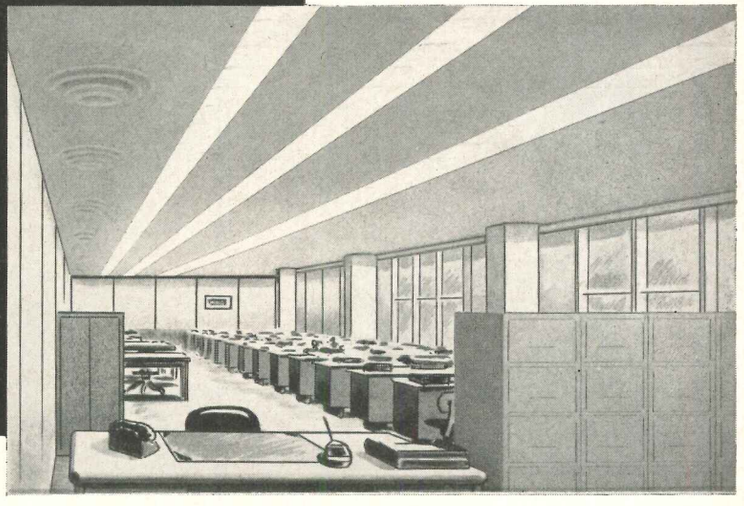

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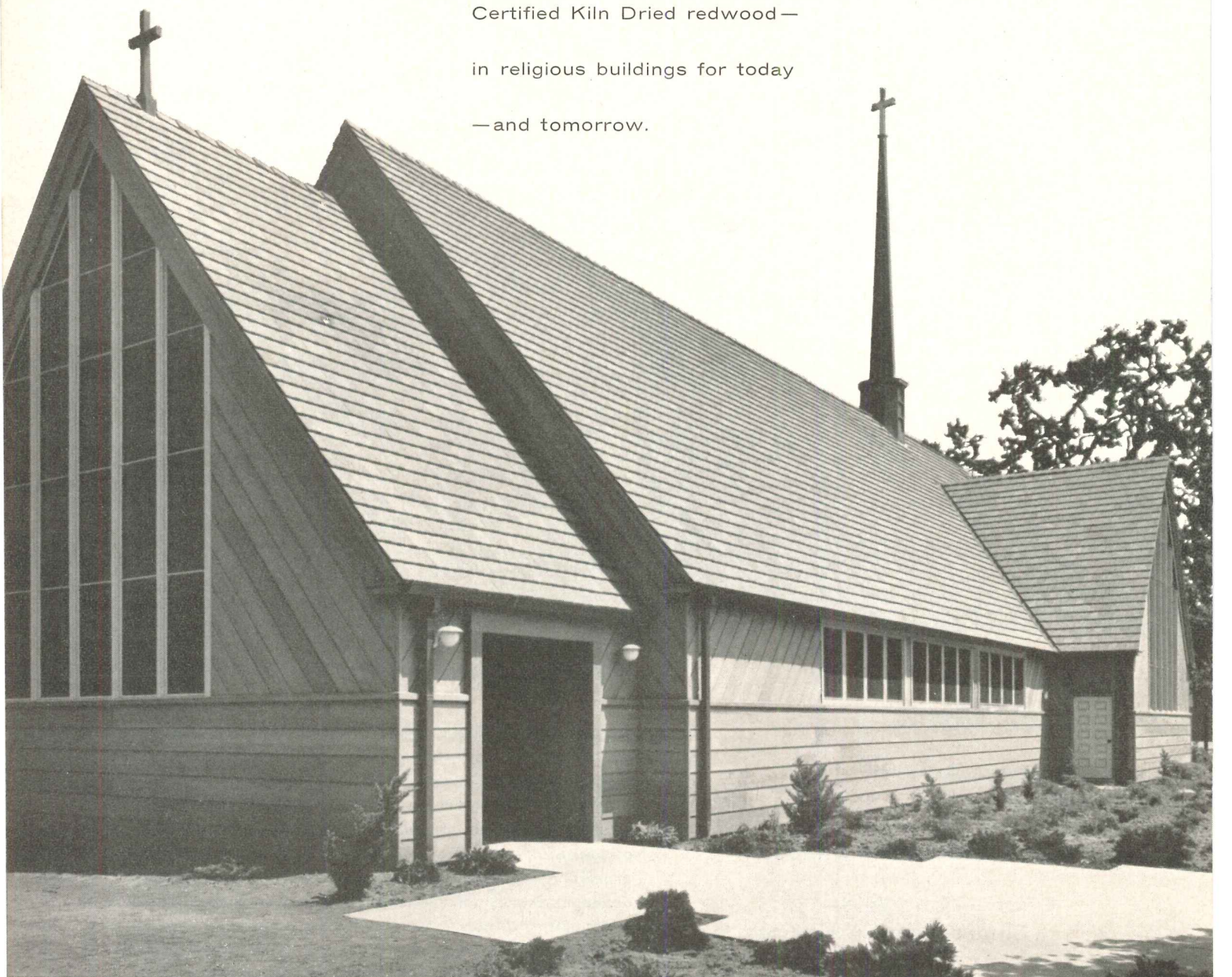

Kingsford Jones, Architect • William Siarell, Associate Designer

Photo: Lionel T. Berryhill

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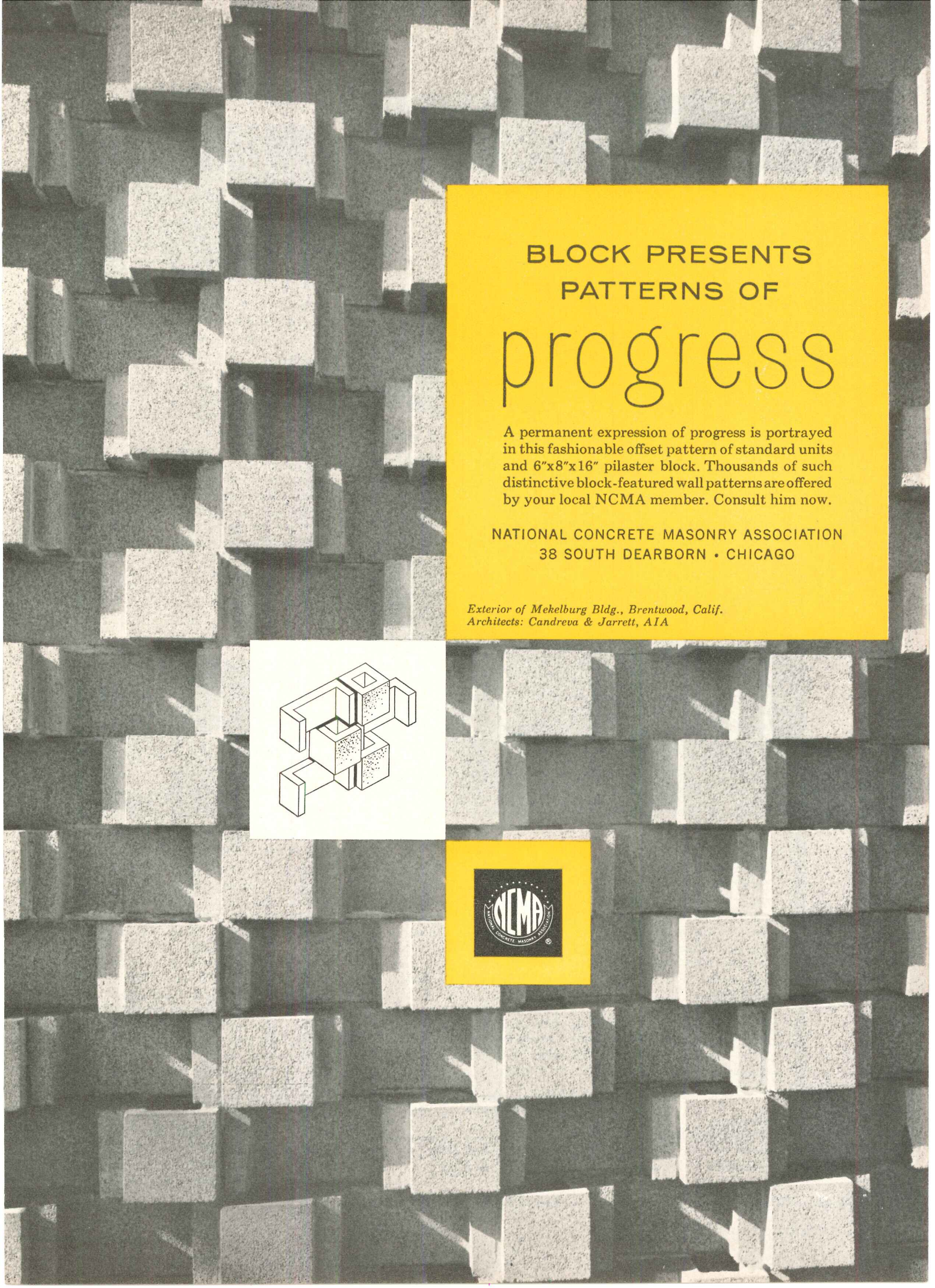

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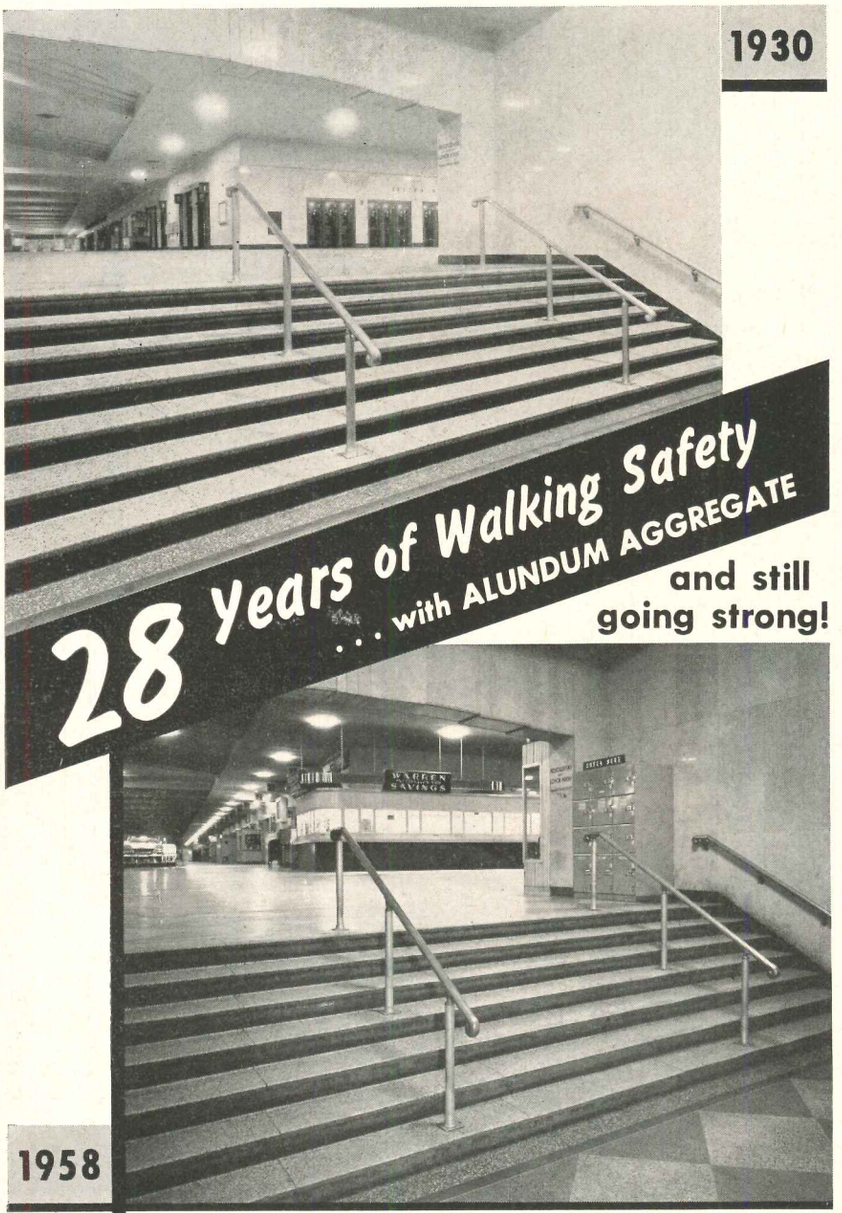
A permanent expression of progress is portrayed in this fashionable offset pattern of standard units and 6″x8″x16″ pilaster block. Thousands of such distinctive block-featured wall patterns are offered by your local NCMA member. Consult him now.

NATIONAL CONCRETE MASONRY ASSOCIATION
38 SOUTH DEARBORN • CHICAGO

Exterior of Mekelburg Bldg., Brentwood, Calif.
Architects: Candreva & Jarrett, AIA



Atlantic Avenue Entrance
South Station, Boston, Mass.

South Station, Boston is one of the country's busiest railroad terminals. Countless thousands upon thousands of travelers and commuters have gone in and out of this Atlantic Avenue entrance since these precast ALUNDUM Aggregate treads were made and installed 28 years ago by the DePaoli Mosaic Company. Their surface has not lost one iota of its non-slip effectiveness and wear has been insignificant as you can see by this unretouched photograph taken in April of this year.

The walking safety provided by these ALUNDUM terrazzo treads is just as positive in stormy weather when water and snow are tracked in from the street. And there are no grooves nor corrugations to cause tripping.

Catalog 1935R gives complete details about ALUNDUM Aggregate for terrazzo and cement — also in SWEETS.

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NON-SLIP FLOORS

NORTON COMPANY
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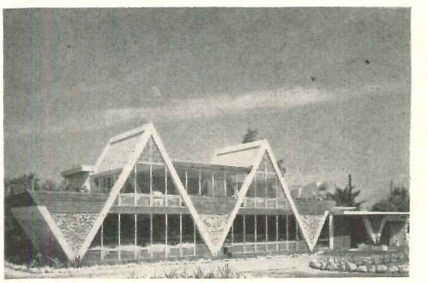
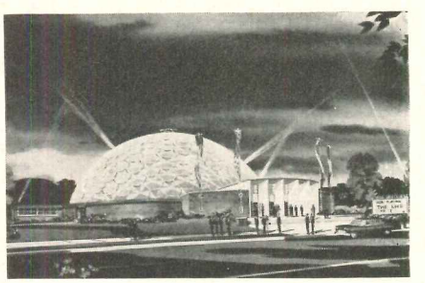
ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE

Technical Roundup



Prestressed Concrete Triangles Give Column-Free Restaurant Space

To meet the clients' request for a structure "out of this world in appearance, but in this world in cost," Architect John Edwin May, A.I.A., designed a highway restaurant framed by a series of concrete triangles. Prestressed concrete bents were leaned together and the resulting triangles tied by a second floor running through the center. The prestressed concrete beams supporting the second floor slab were welded to plates in the triangular bents, thus eliminating the need for columns below. The 5500 sq ft building rests on concrete pads and bearing plates at six points. The walls, all non-loadbearing, are filled in with *Kalwall*, glass, and rough coral rock.



Stressed-Skin Aluminum Dome to House 'Theater in the Round'

Since its introduction early last year, Kaiser Aluminum's stressed-skin dome has been used for projects ranging from auditoriums to banks to factories. Its latest use is as the core of a $500,000 "Casa Manana" project designed by A. George King & Associates for the Fort Worth Opera Association. The dome itself will be the key unit in a complex that will also include wings housing dressing rooms, offices, a property shop, and wardrobe and rehearsal areas. The circular stage, 32 ft in diameter, and an adjacent orchestra pit will be located in the center of the dome to allow an uninterrupted view from every seat. The stage will be removable and the pit can be covered to adapt the space to activities other than "theater in the round."

Sylvania Mohawk Fixtures get permanent library duty at University of Tennessee, Knoxville, Tenn. Architects and engineers on job: Barber & McMurry, Knoxville.

Sylvania Mohawk Fixtures . . .

the modern approach to surface-mounted lighting

No matter how low the ceiling—you can always find room for quality lighting with Sylvania's 3¾″-deep Mohawk. In long, lean rectangles or shallow square designs, these new fixtures have a clean and classic look about them that *is* tomorrow in good lighting.

In providing more than two dozen different lighting design combinations, with only a few standardized components, the Mohawk Series is one of the most complete fixture lines of its type today. It gives you a custom approach to lighting . . . choice of 2 standard widths, 2-, 4-, or 8-foot lengths, and 5 different types of shielding.

Ask your local Sylvania Fixture Specialist for his demonstration of the Mohawk's many short- and long-term cost-saving features. And write direct for FREE booklet V-100 with complete specification data.

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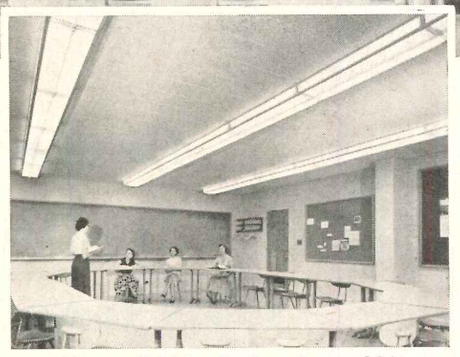
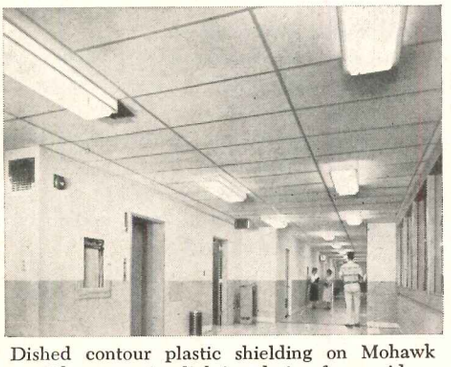
Dept. F20. Lighting Division—Fixtures
One 48th Street, Wheeling, W. Va.



Metal-louvered Mohawks (one-foot width) provide clean architectural design, with shielding needed for high footcandle levels, in new university classrooms.



Dished contour plastic shielding on Mohawk provides attractive lighting design for corridors, Installation by Broadway Electric Company, Knoxville.

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Best fixture value in every price range

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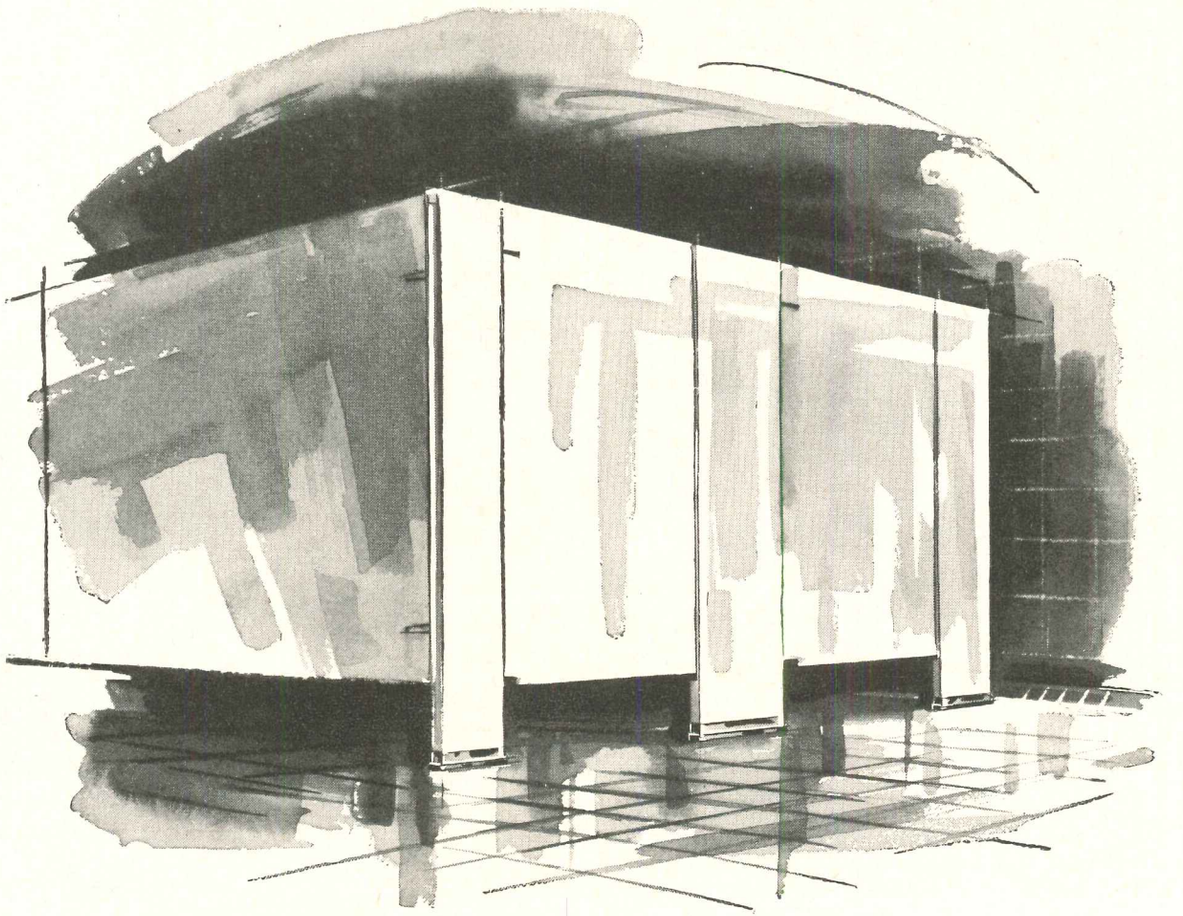


for your special jobs
. . . lustrous, lasting stainless steel toilet compartments by *Nicholson*

Construction features:

- panels and doors are 1″ thick . . . 2 sheets of 22 gauge stainless steel 18-8 type 302 with #4 satin finish.
- pilasters are 2 sheets of 18 gauge stainless steel 18-8 type 302 with #4 satin finish.
- formed edges are sealed with 20 gauge stainless steel continuous locking strips that are Heli-Arc welded.

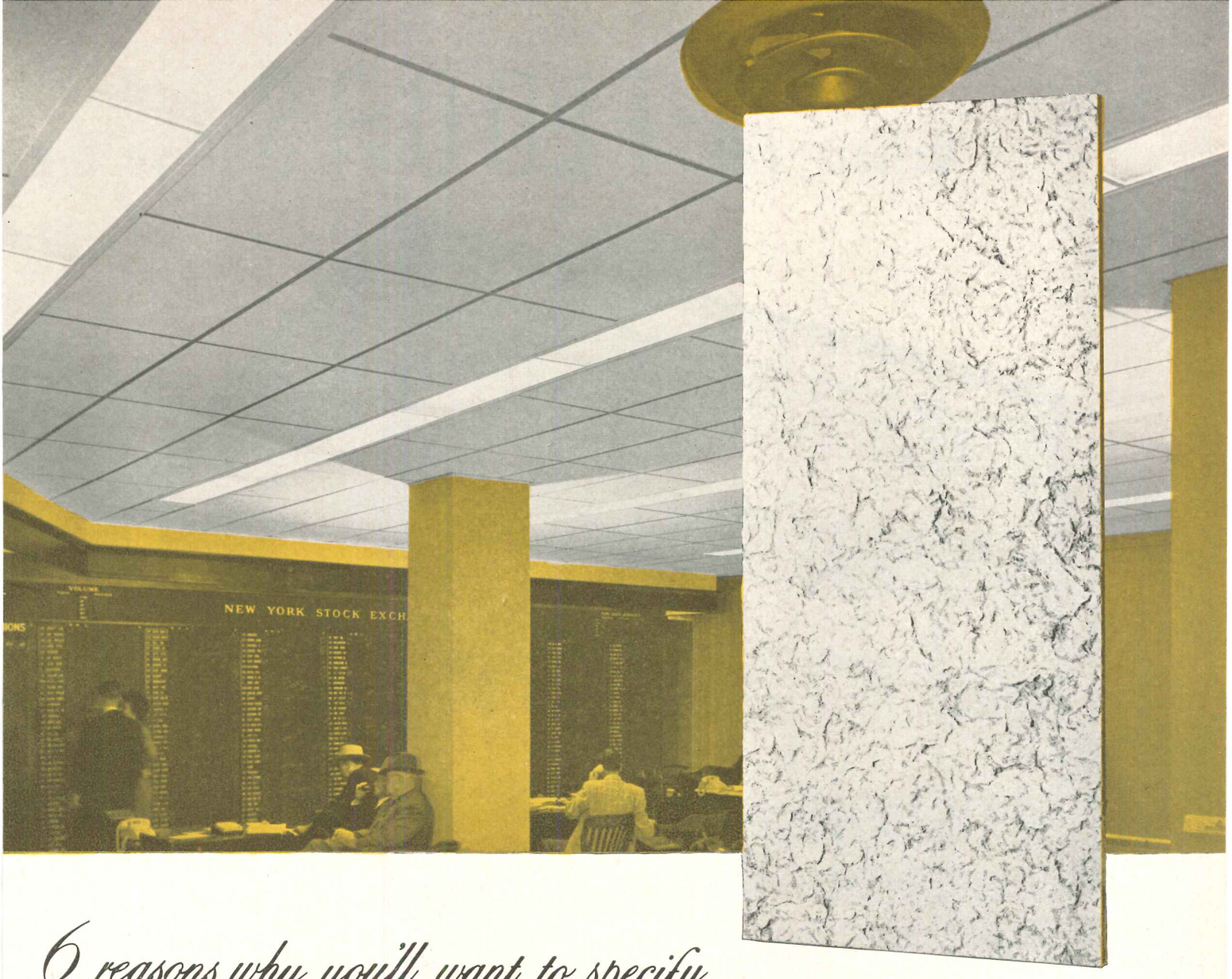
NICHOLSON
of Wilkes-Barre

Specify the best for the toilet compartments in your "special" jobs—specify stainless steel. It has the undeniable quality and appearance that belong with the job that's specified "best throughout".

Nicholson stainless steel toilet compartments *do* cost more than conventional ones . . . but they're better looking . . . last a lifetime . . . and are actually more economical over the long haul.

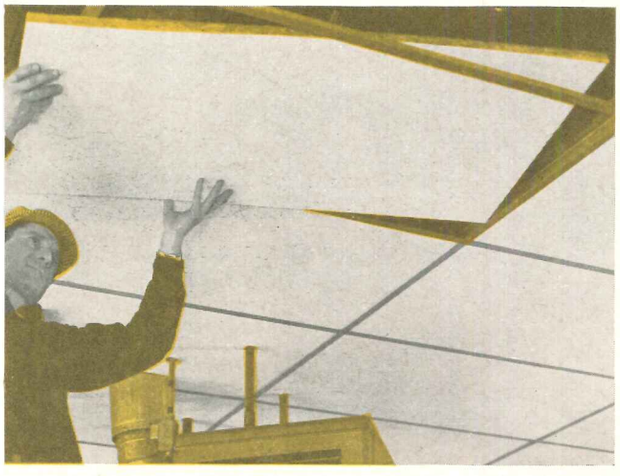
You can count on low installation costs when you use any Nicholson Toilet Compartment. They are designed and constructed for easy adjustment to location contours and for fast assembly.

Specify Nicholson . . . W. H. Nicholson and Company, 12 Oregon St., Wilkes-Barre, Pa. Sales and Engineering offices in 98 principal cities.



6 reasons why you'll want to specify

New Ultracoustic® Ceiling Board



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2. **INCOMBUSTIBILITY**—rated Class A according to Federal Specification SS-A-118b.
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4. **K FACTOR**—.23 Btu at 75° mean temperature.
5. **LIGHT REFLECTION**—85% average.
6. **RESILIENT TOUGHNESS**—dimensionally stable, yet bends without breaking. Easy to install. Easy to remove and replace for access to area above ceiling.

For complete data, see Sweet's File 11a/Gu, or write for 4-color AIA brochure today.

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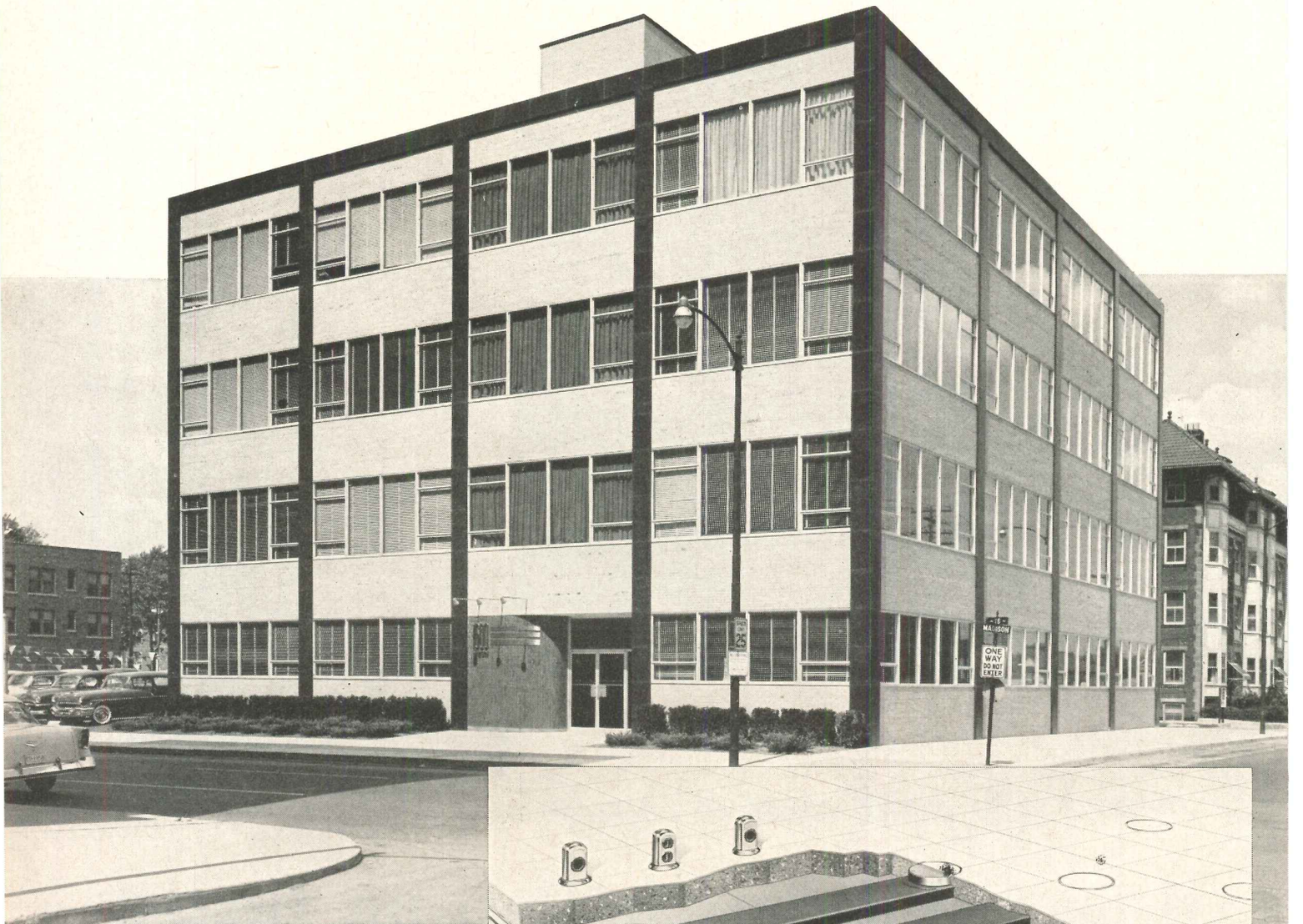
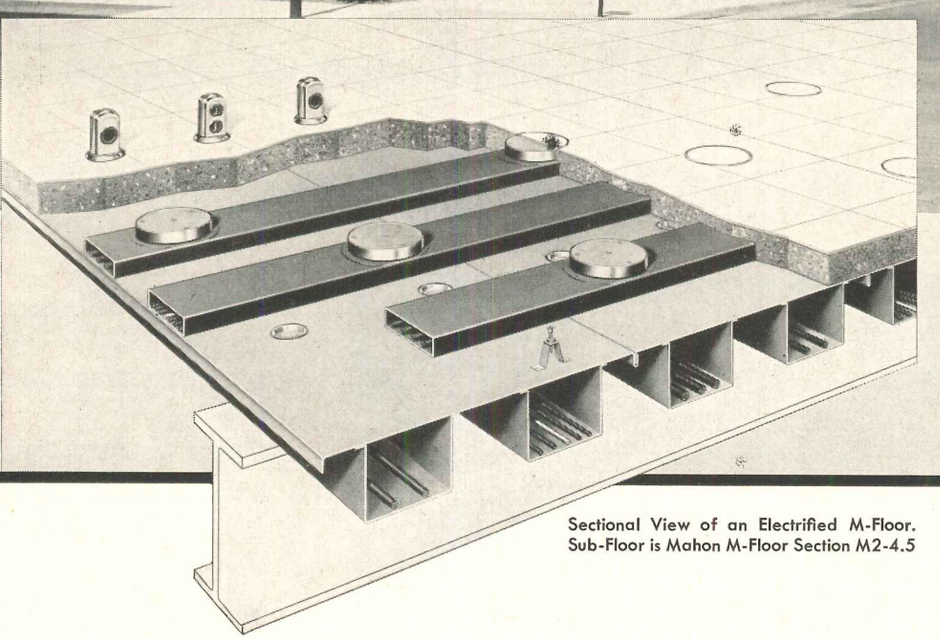
Thermal and acoustical glass fiber insulation • Pipe couplings and fittings • Molded glass fiber pipe insulation

Mahon M-FLOORS Give You



Mahon M-Floor Construction was employed throughout in this Modern Office Building for the Manhattan Building Company, Toledo, Ohio. Bellman, Gillett & Richards, Architects. Geo. W. Lathrop & Sons, Inc., Gen. Contrs.



Sectional View of an Electrified M-Floor. Sub-Floor is Mahon M-Floor Section M2-4.5

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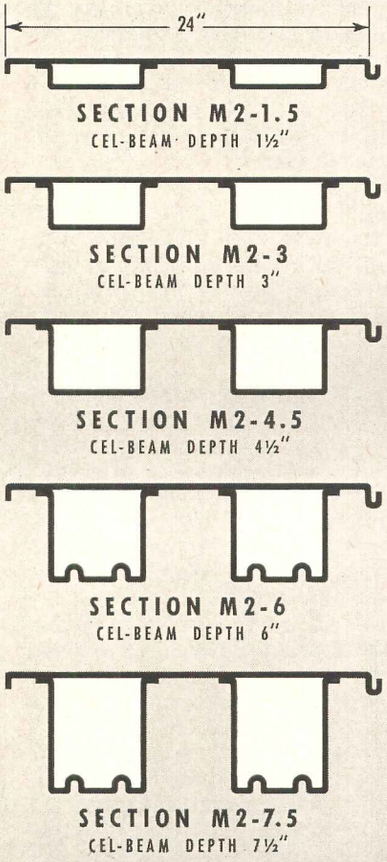
Electrical Raceways Under Every Sq. Ft. of Floor Surface—Provide Greater Raceway Capacity!

Deep M-Floor Sections on Longer Spans Save Structural Steel . . . Reduce the Over-all Weight of a Building

MAHON M-FLOOR SECTIONS



☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

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☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

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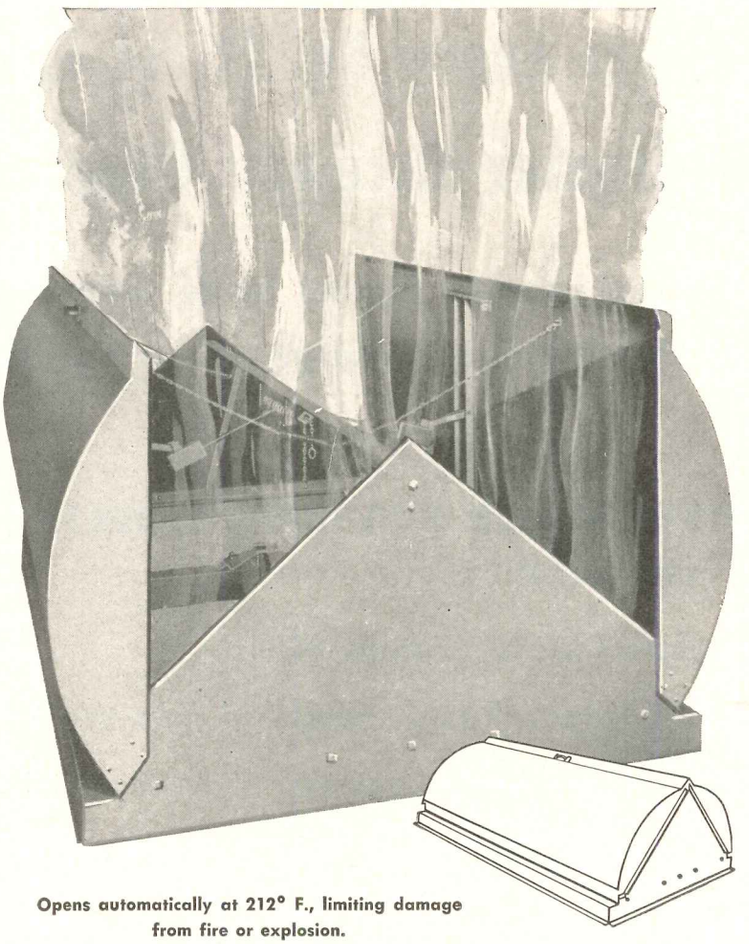


Opens automatically at 212° F., limiting damage from fire or explosion.

It's cheaper to burn up the sky than a plant!

When fire or explosion strikes a plant, Swartwout Pyrojectors open automatically . . . eject heat, flames, smoke through the roof instead of spreading them across the building. Pyrojector protection gives extra time for fire fighting equipment to arrive.

Pyrojectors are installed and operate entirely above roof level, yet extend only 28" above curb. Fusible link mechanism opens 28 square foot vent when temperature reaches 212° F. Can also be opened instantaneously with release chain or from roof. Well insulated and weather tight, Pyrojectors can be opened for extra ventilation in summer.

Find how you can design extra protection into every plant with Swartwout Pyrojectors. Write for complete information today.

The Swartwout Co.
Ventilation Engineering
18639 Euclid Avenue Cleveland 12, Ohio

Technical Roundup

'Weatherstripping'

continued from page 211

Specifying the Compression Seal

While rubber in compression would seem to have the best chance of meeting all the requirements for a permanently resilient glazing set and joint seal in modern curtain wall construction, all rubbers are not completely suitable. Some are effected by sunlight and weather; others are subject to cold flow or permanent deformation under load.

Neoprene, which has come to be almost synonymous with "preformed resilient gaskets," is similar to natural rubber in its high strength, abrasion resistance, flexibility and resilience, as well as its compression set characteristics. It differs from natural rubber in its outstanding weather resistance and its proven ability to give long term service in a variety of severe exposure conditions.

Like many other construction materials, it is available in a number of qualities, and should be purchased to specification. Standard ASTM testing methods for rubber products cover the following criteria for measuring the quality of preformed neoprene strips:

Hardness: A guide to the load deflection characteristics, usually measured on a durometer scale. (Low durometer materials are soft; high durometer materials, hard.)

Tensile strength: Generally (though not always) a guide to the quality of the compound. High tensile strength implies high quality.

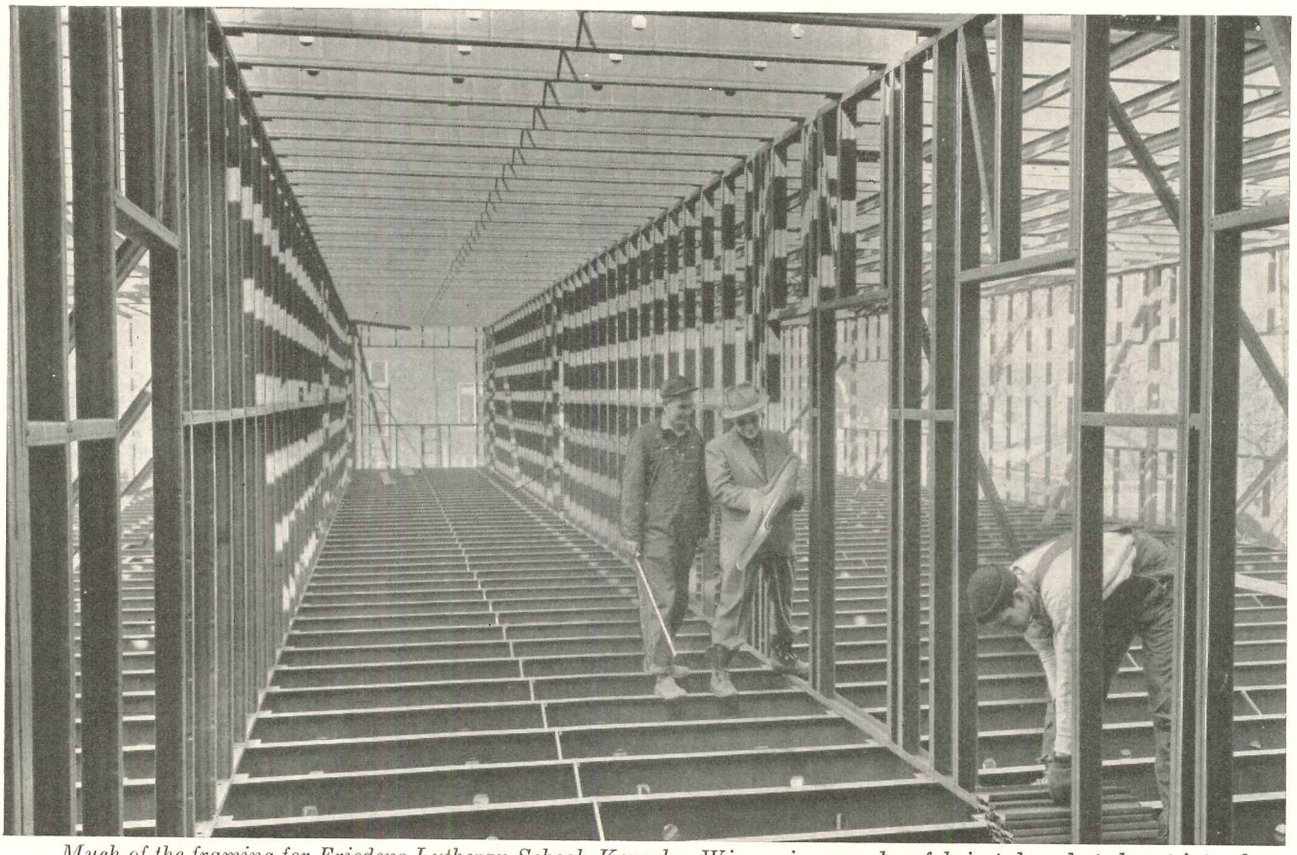
Accelerated aging tests: Indicate how the original physical properties are retained after long-term aging.

Compression set: Permanent retention of sealing pressure is directly associated with stress relaxation.

Low temperature flexibility: Standard tests methods are available.

Weather resistance: The test for exposure to ozone of an elastomer under stress is widely accepted.

Guest moderator Wayne Koppes, R. A., refereed the preceding exchange between an audience composed primarily of architects and builders, and a panel of speakers which included: A. P. DeVito, R. A., Skidmore, Owings & Merrill; Herbert F. Kleinhans, Manager Product Development, Pawling Rubber Corp.; R. H. Barton, Technical Advisor, Elastomers Div., E. I. du Pont de Nemours Co.; Norman S. Collyer, President, F. H. Sparks, Co.; and O. F. Wenzler, Manager Sales Technical Service, Libbey-Owens-Ford Glass Co.



Much of the framing for Friedens Lutheran School, Kenosha, Wisconsin, was shop fabricated ready to be set into place.

With Stran-Steel framing—

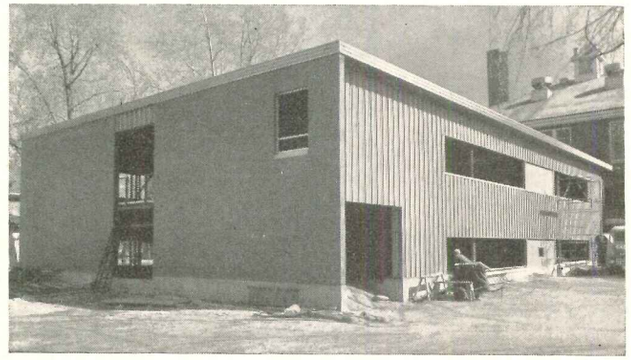
KENOSHA SCHOOL GOES UP FAST TO SAVE COSTS

In less than 1,600 man-hours, the 8-room addition to Friedens Lutheran School, Kenosha, Wisconsin, was closed in, ready for interior finishing, according to architect Walter Trapp, A.I.A.

"We selected Stran-Steel nailable joists, studs and wide flange beams partly because of flexibility, but principally because of speed of erection," Mr. Trapp states, "for fast erection means savings many ways. For instance, we can fasten channel runners directly to the joists. Then acoustical ceiling panels just snap into place. It's really easy and saves a lot. And by using the Stran-Steel lightweight framing system we were able to reduce foundation material and labor costs at least 20 percent."

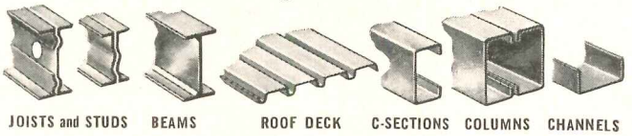
With a Stran-Steel building system you can stay ahead of construction crews by shop fabricating sections and delivering them to the site as needed. At the Friedens School all the non-bearing walls were pre-fabricated and dropped into place as the floors were completed. Plumbing and electrical work is simplified, too, because joists and studs are punched to receive piping and wiring.

Save your clients money by saving construction time. All-steel Stran-Steel components are easy to handle, easy to use. Structures go up fast. And the job you build with a Stran-Steel framing system is durable, fire-safe and flexible in design. Send the coupon for more facts.



Stran-Satin curtain walls helped speed erection of this 8-room addition to Friedens School.

Stran-Steel Architectural Products Mean Construction Savings For You



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From the advanced door research program of Roddis comes another development of importance to America's architects—

Roddis now makes available, for the first time in the industry, an all-wood, flush veneered, ¾ hour fire door. It's the new Golden Dowel C-label Fire Door!

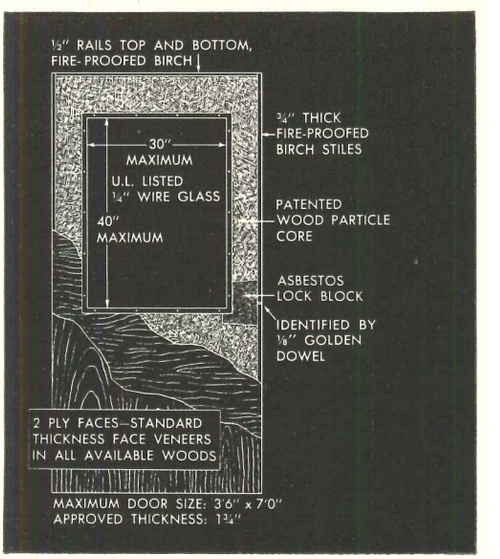
For use in interior walls of corridors, or for room partitions, this C-label door gives you all the richness and beauty of a wood veneered door . . . plus excellent fire protection . . . at a considerable savings over the more costly B-label door.

The core of this amazing new door is made by a *patented* Roddis process. Special, fire-proofed wood particles are bonded with a waterproof, thermo-setting resin under heat and pressure. Then each side is faced with two-ply veneer panels. This exclusive construction has earned the C-label classification from the Underwriters' Laboratories.

What's more, you can have larger light openings with the Golden Dowel C-label door than are possible with a B-label door. Vision openings up to 1,200 square inches have been approved by Underwriters for this new door. And Roddis will cut them and supply the complete panel assembly for you. (Standard sizes, 30″x40″, 30″x36″, 24″x36″, 18″x30″, 8″x12″, 10″x10″.)

You enhance your designs, assure protection and lower costs for your clients when you specify the new Roddis flush veneered, C-label Fire Door. And remember . . . the GOLDEN DOWEL means "guaranteed for the life of the installation".

For complete details and specifications send coupon below.



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from the prime-and-seal coat to the final finish coat

For maximum factory-to-installation protection, finer end results, you can specify your Roddis Doors *primed and sealed* at our factory before shipment. Roddis' new, automated production line applies a special synthetic resin sealer to the double-sanded, dust-free doors. After drying, the doors are sanded again to emerge with a tough, smooth undercoat that assures a perfect on-the-job finish application.

Completely pre-finished doors are also available. You can specify doors finished in color tones to match any of the 9 woods in the Roddis Craftwall paneling line . . . or to match your own color sample.

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High standards of workmanship and beauty over the years have established famous Roddis Doors as first choice among architects and builders. Choose from the most complete line of wood doors in the field . . .

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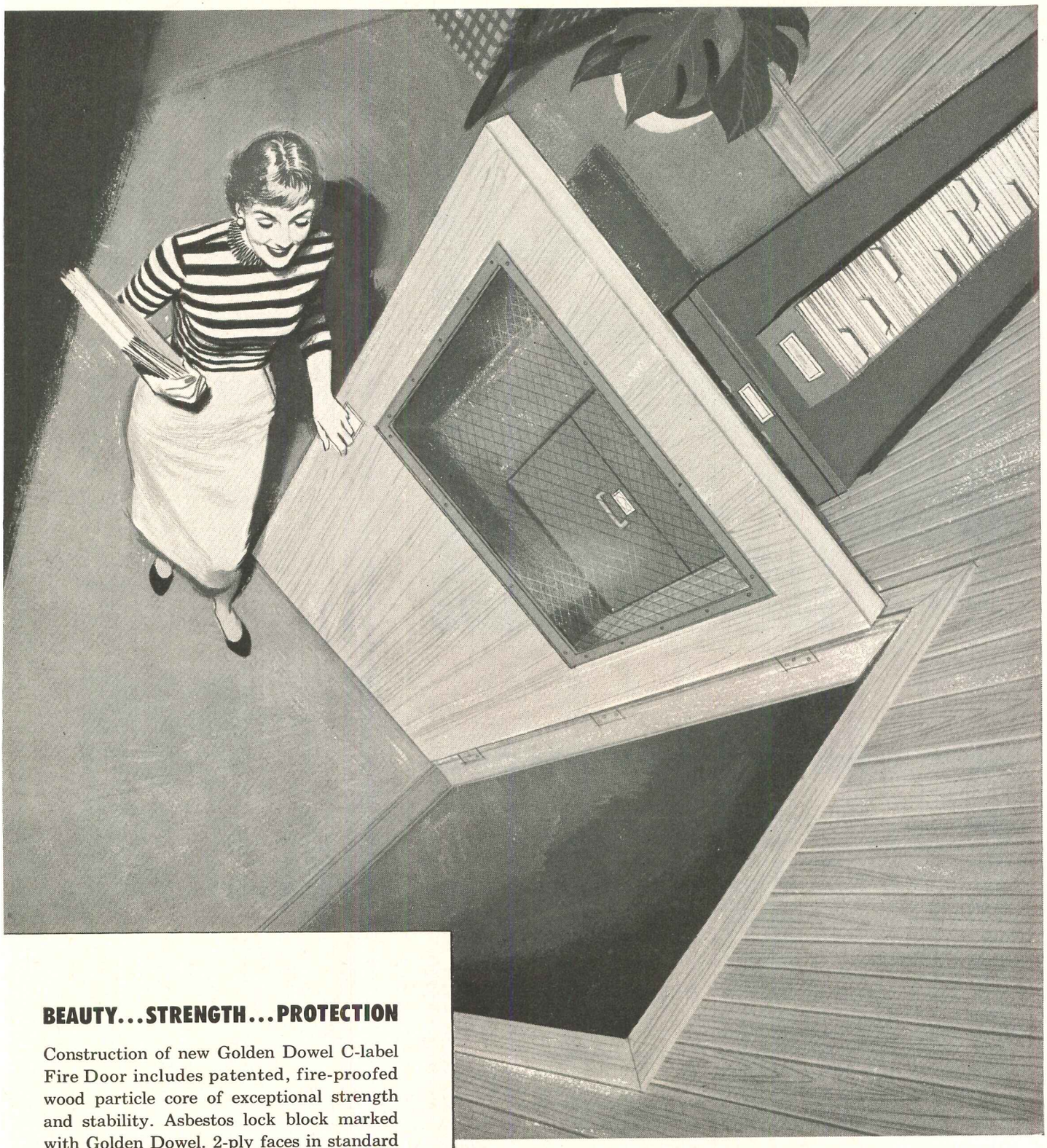

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Construction of new Golden Dowel C-label Fire Door includes patented, fire-proofed wood particle core of exceptional strength and stability. Asbestos lock block marked with Golden Dowel. 2-ply faces in standard thickness face veneers. Wide choice of first grade woods. Light openings up to 30″x40″. ¾ -hour protection approved by Underwriters' Laboratories.

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Marshfield, Wis.
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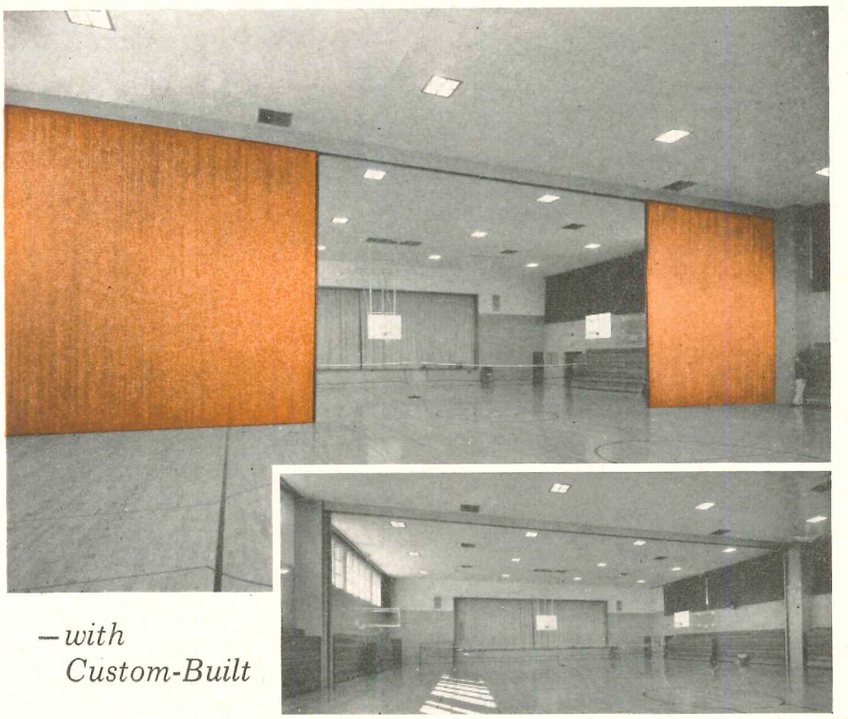
Big Gymnasiums and Halls Become 2 or More Rooms



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SIDE COILING PARTITIONS

Cookson Partitions solve gymnasium, auditorium and other big room division problems in the most practical way. Extremely durable and attractive, they are designed with complete flexibility to meet the need for frequent and easy changes in group and room area requirements.

Cookson Partitions give the feeling of permanent structural walls. They may be finished to accent or blend with any decorative plan, yet they roll quickly out of sight for full use of combined room areas. Many exclusive Cookson design and engineering features make this utility partition the most advanced of its type on the market today. Custom built for single openings up to 100′ wide, or double openings 200′ wide, 23′ high. Request Bulletin No. 603 for details.

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- ☐ Coil at one side only
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OF TRACK MOUNTING
- ☐ Under or within lintel
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- ☐ Beside lintel or beam

OF COIL BOX MOUNTING
- ☐ Inside wall
- ☐ Outside of wall

OF OPERATION
- ☐ Electric, remote push-button
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- ☐ Natural
- ☐ Stain
- ☐ Wax or varnish

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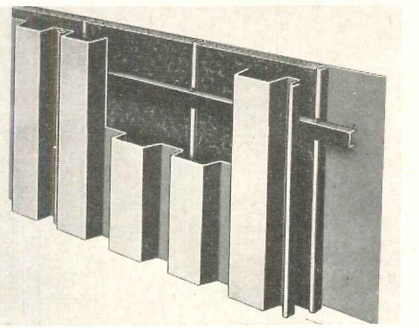
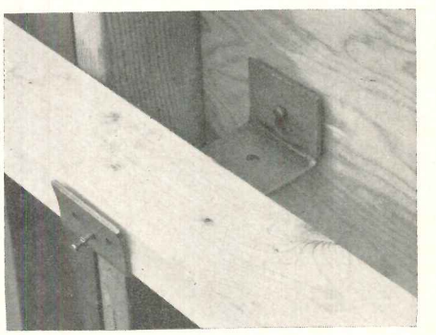
Product Reports



Insulated Curtain Wall Panel

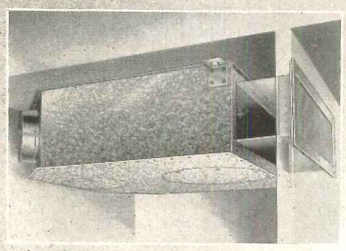
This wall panel is designed to be the basic unit of a quickly assembled, non-load bearing outside curtain wall for commercial or industrial buildings. Panels are made up of an interior steel panel, fiber insulation, and a steel or aluminum outer panel and the assembly is claimed equal to 25 in. of masonry wall construction in insulating value. The interior panels are of 18 or 20 gauge steel in 2 ft widths, ribbed 12 in. on center. The exterior panels are fluted and are of galvanized steel or leather grained aluminum. *Inland Steel Products Company, P.O. Box 393, Milwaukee 1, Wisconsin.*



One-Piece Concrete Form Fastener

A new fastening device for plywood concrete forms holds both form tie and waler in place and is reported to save 20 to 40 per cent of the time used in placing conventional forms. The *Ply-Tie* holder is a channel shape with a tear-drop slot in one arm for the head of a special form-tie, and the other arm designed to hold the waler. Tie holes are pre-drilled to a standard pattern, and studs tacked to the plywood with one of the 2 by 4's backing the joint. The *Ply-Tie* holder secures the form tie and holds the waler in place. Holders can be used for light, medium, or heavy construction by varying the spacing and thickness of studs and walers. *Trueforms, Inc., 414 Times Square Building, Seattle 1, Washington.*

more products on page 248



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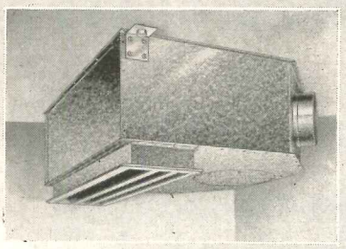

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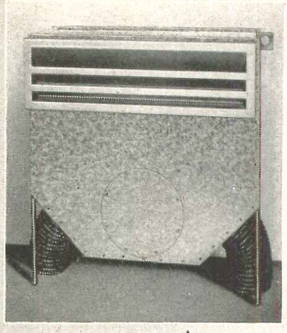

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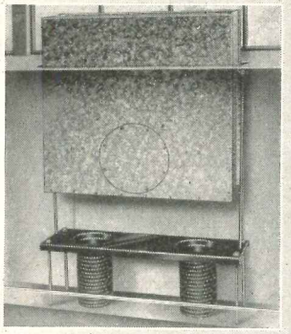

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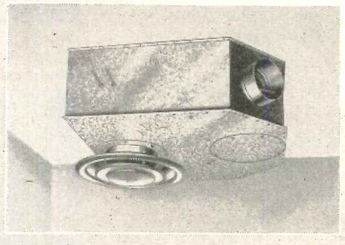

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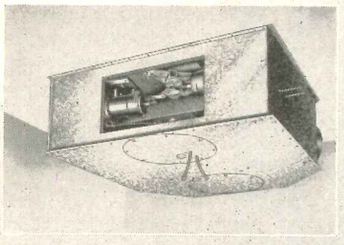
in six sizes
80-1500 cfm air delivery



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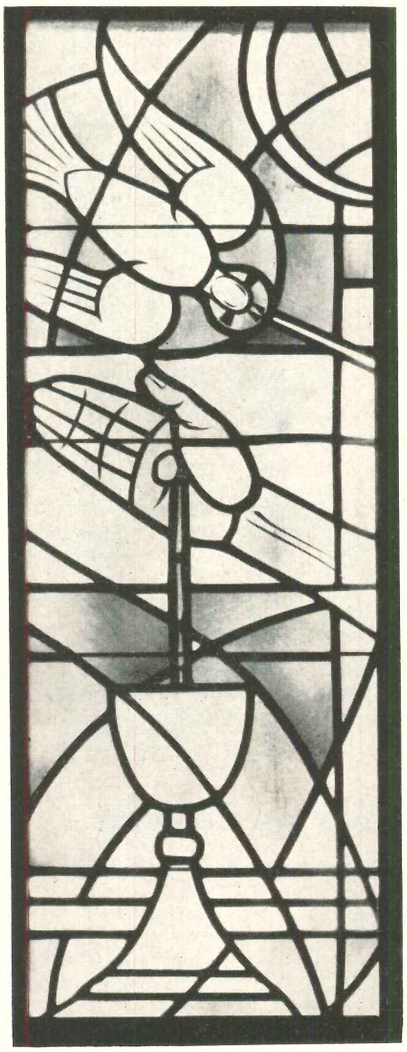

Crucifixion Window
Saint Patrick's Church, East St. Louis, Illinois
Architect: Paul Saunders, A. I. A.

IMAGINATIVE DESIGN
ACTIVE COLOR
CONTROLLED LIGHT
INTEGRATION OF EXTERIOR
Contemporary and Traditional
Dalles in Cement

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820 Wilmington
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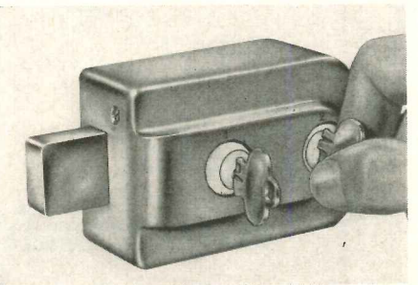
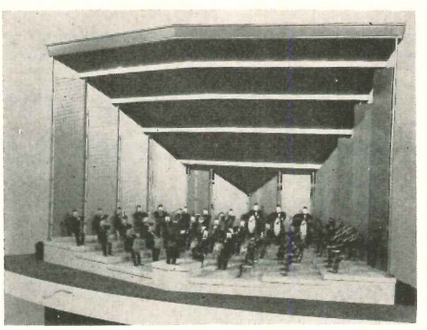
Product Reports

continued from page 212



Night Locking System

The *Sequel Lock* system uses a rim-type deadlock mechanism with two keys, one of which is used to throw the bolt, and at the same time release the other key which is then used to lock the next door in the sequence. This system thus insures that all doors in a building have been locked before the final exit door can be secured. It also enforces the complete unlocking sequence when opening up the building. If time records are required, the final lock in the series may be connected with a time recording lock. The lock is designed to be used with many types of doors and windows. *Safety Lock Corp., 236 North Franklin Street, Hempstead, New York*



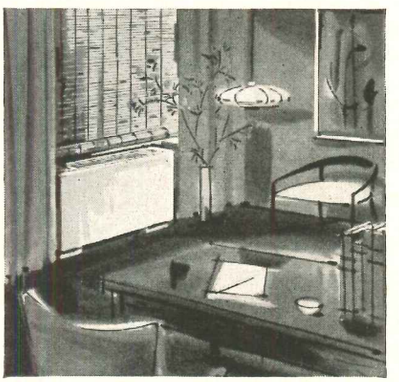
Aluminum Band Shell

This band shell made up of aluminum panels redirects and diffuses the sound of a band or orchestra so that the full musical tones reach all members of the audience and a minimum of amplifying equipment need be used. The roof is cantilever-supported from the rear and the side panels, made of 2 in. of plastic core covered by aluminum sheets, are supported on thin columns. Shell sizes are available to accommodate 40 to 120 musicians. A variety of lighting installations may be specified and side wings or other features may be added. *Overly Manufacturing Company, Greensburg, Pa.*

more products on page 254

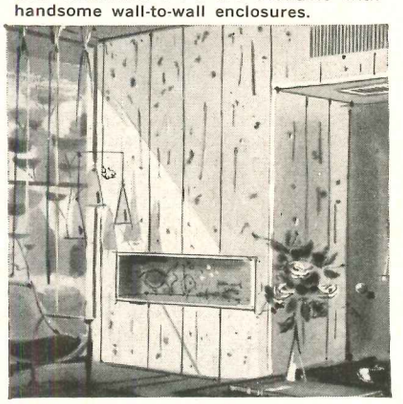
Handsome, compact room units like these complete the air-conditioning picture

York quality equipment in the utility area of your building – like the new packaged water chiller—calls for room units of equal quality, efficiency and economy. Here are just a few of a wide variety of York fan coil units that fill the bill perfectly.



Free-standing or furred-in floor units add functional good looks and interest to your room designs.

Wall-hung units eliminate many installation difficulties . . . are available with handsome wall-to-wall enclosures.



Ceiling-hung units occupy no rentable or productive space.

. . . York is the first manufacturer to offer all three units.

YORK CORPORATION
SUBSIDIARY OF BORG-WARNER CORPORATION

- **York offers the broadest range of capacities in the industry — 18 to 246 tons!**
- **Completely integrated design saves productive floor space, permits installation anywhere in the building!**
- **Exclusive mechanical features drastically cut costs of installation, operation and maintenance!**

York makes news again — with a series of packaged water chillers designed to solve problems for the architect while effecting significant savings for building management. Look at the extras engineered into these advanced units:

SAVINGS IN PRODUCTIVE FLOOR SPACE! The compact arrangement of integrated components — including all interconnected piping, and styled automatic control center — results in big space savings. And the unit's quiet, vibration-free operation means it can be located anywhere in your building. No special foundations or space-consuming structural supports are necessary.

SAVINGS IN OPERATING COSTS! Low-cost, trouble-free performance is assured with the York packaged water chiller. Exclusive Flooded Coolers and positive refrigerant feed control mean top efficiency over the entire range of load conditions. Automatic capacity controls save power by continuously adjusting output to prevailing load conditions — without supervision. York's wider selection of capacities means you can choose a unit to meet your needs precisely — without compromise.

SAVINGS IN MAINTENANCE COSTS! Another exclusive — capillary oil return, direct from chiller to compressor — eliminates a common hazard in packaged water chillers: unit failure due to interrupted oil flow under light loads. All key parts are exceptionally rugged; will resist corrosion and wear many years longer.

The new packaged water chiller is another product of York's tradition of designing with the *real cost* of air-conditioning in mind. The features listed above are just a few of the many that consultants and building owners will want explained in detail. Check your classified directory for the name and address of your local York sales representative . . . or write for Bulletin I-213. York Corporation, York, Pennsylvania.

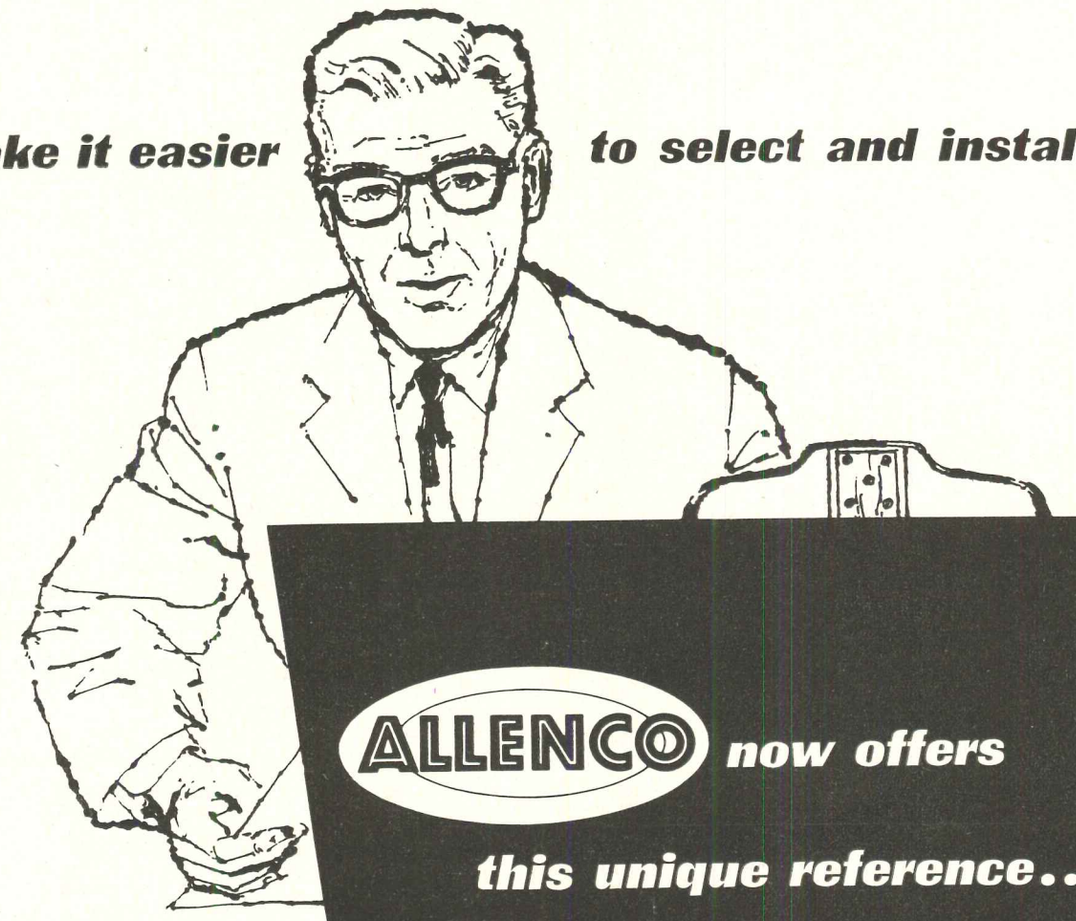
YORK CORPORATION

SUBSIDIARY OF BORG-WARNER CORPORATION

IN CANADA: CANADIAN ICE MACHINE COMPANY LTD., TORONTO

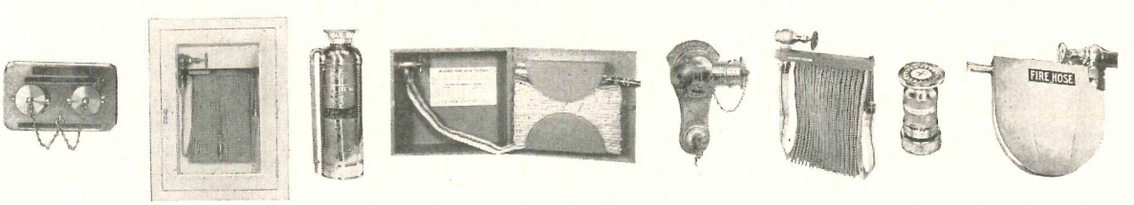
Millions Live Better with York

"to make it easier to select and install



ALLENCO now offers this unique reference...

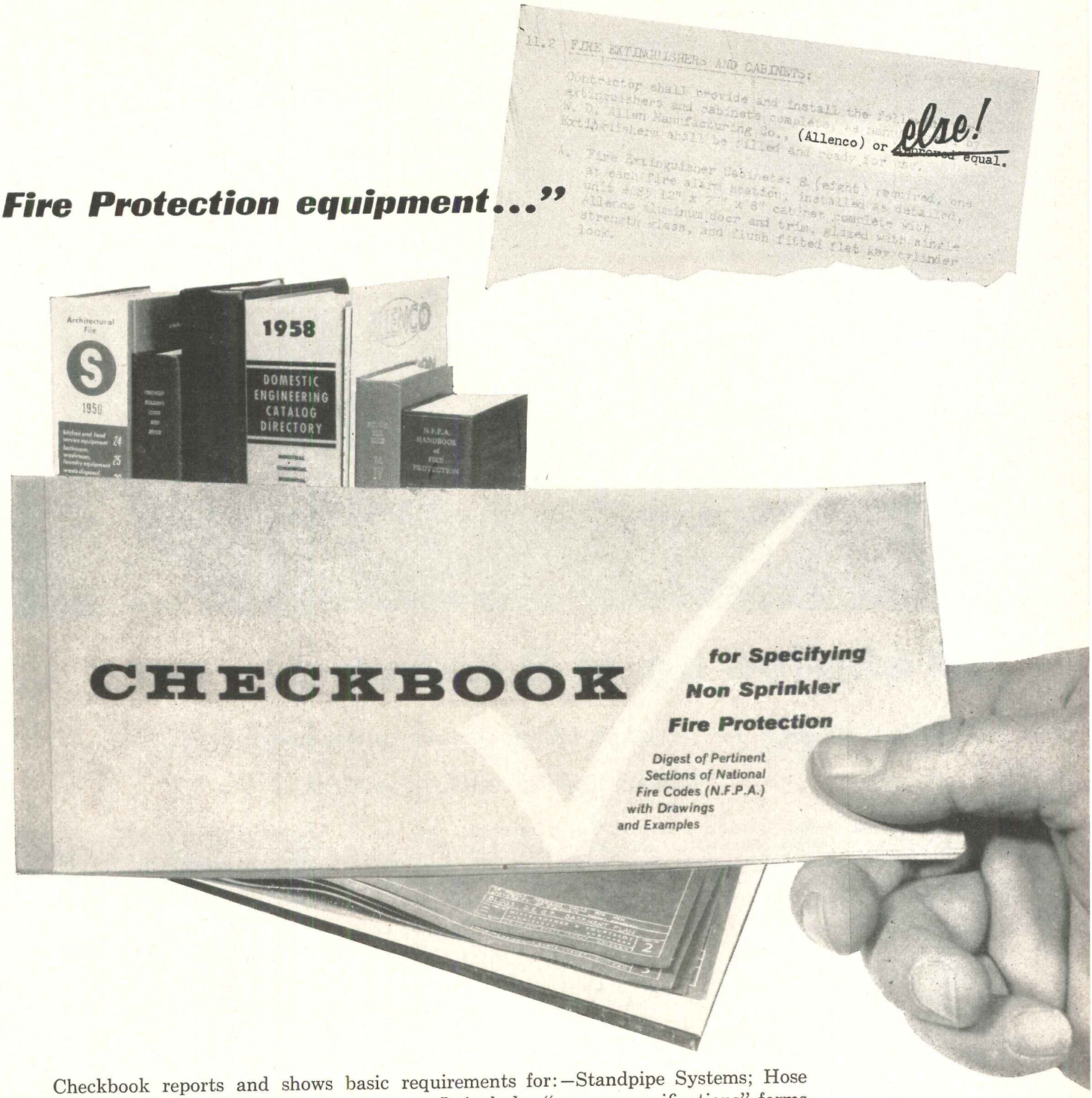
Checkbook has been prepared in response to many inquiries. It is a concise "pattern" or "key" for relating the wide range of fire protection factors. It is *not* a catalog.* For men who are not directly working on this part of construction, it helps maintain supervisory know-how.



Checkbook helps interpret and implement authorities' requirements... select and place equipment...avoid waste of space, time, cost...best serve designed appearance, occupant's use and safety.

*see Sweet's or Domestic Engineering catalog directory, Allenco catalog 150 (A.I.A. file 29e2) or new products data

Fire Protection equipment..."



Checkbook reports and shows basic requirements for:—Standpipe Systems; Hose Stations; Extinguishers; Exterior Centers. It includes "coupon specifications" forms for major items, which may simply be removed and filled-in for easier spec-writing. It also lists references for details digested here.

Checkbook is unique, practical, valuable. Your copy will be sent on request. Write or phone your Allenco Fieldman (listed in Yellow Pages) or direct to home office.

ALLENCO *Since 1887*

W. D. ALLEN Manufacturing Co.

Room 500 Allenco Bldg. 566 W. Lake St. Chicago 6

10 stories up at 8 below

Erection of USS AmBridge Steel Joists continued through Pittsburgh's coldest winter

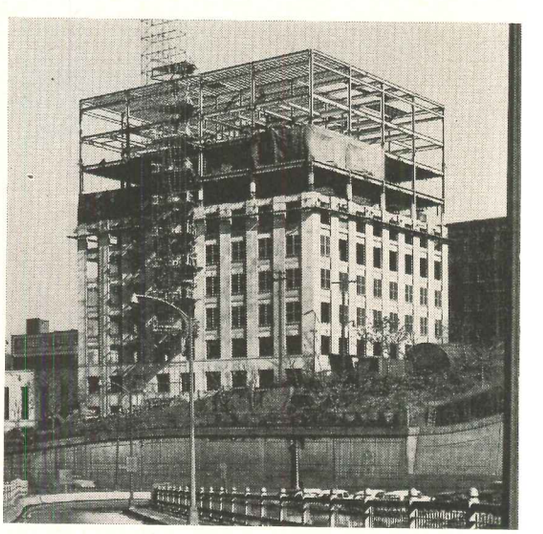
This picture was made on one of the coldest days in Pittsburgh last winter. It shows steel joists that will support the roof of Duquesne University's new 10-story steel-frame Hall of Law and Business building overlooking downtown Pittsburgh.

While most outside construction work in the Pittsburgh area came to a dead stop during the cold snap, *the placing of steel joists* went on as usual.

USS*AmBridge Steel Joists—standard and long-span—provide rigid, economical and lightweight construction suitable for any type of roof, ceiling and floor. The under-slung and open-web design provides for maximum head room and allows passage of pipes, ducts and conduits in any direction. Their ease and simplicity of erection cuts installation time, enabling you to get your structure under cover sooner. Once they have been erected and properly bridged, they immediately furnish a safe working platform for other trades.

In addition to their use in the 10-story classroom building, AmBridge* Steel Joists were also used to support the roof and stage floor of the Auditorium Annex. American Bridge also fabricated the steel frame for these structures. In all, 1,131 tons of steelwork was supplied for this job.

If you would like to know more about the time- and money-saving advantages of USS AmBridge Steel Joists, ask for a free copy of our 36-page catalog.



Duquesne University Law and Business Building, Pittsburgh, Pa.
Designed by William York Cocken, Architect, Pittsburgh, Pa. ▶

American Bridge
Division of USS United States Steel

*TRADEMARK

General Offices: 525 William Penn Place, Pittsburgh, Pa. Contracting Offices in: Ambridge · Atlanta · Baltimore · Birmingham
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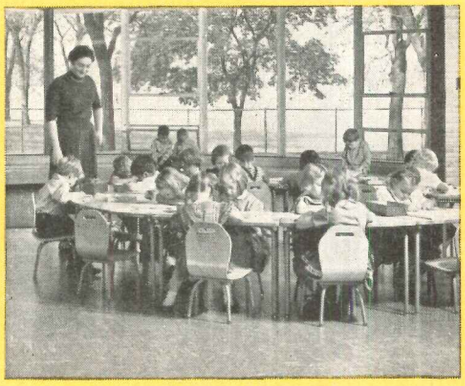
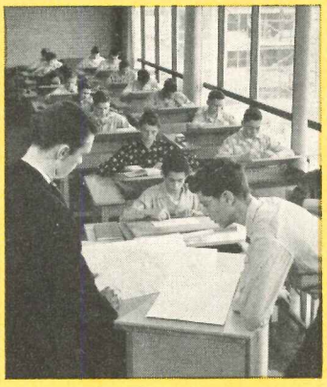
United States Steel Export Company, New York

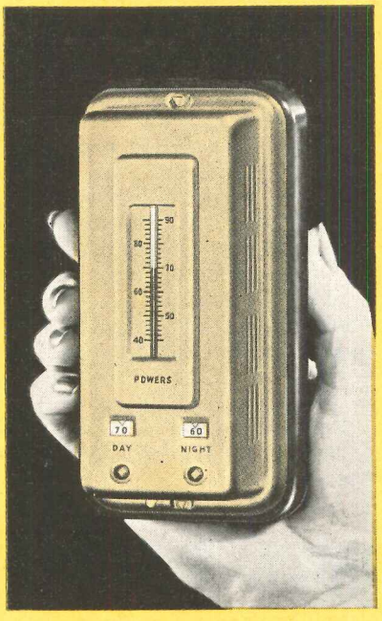
STEEL JOIST INSTITUTE MEMBER

Teachers and Students.... Administrators

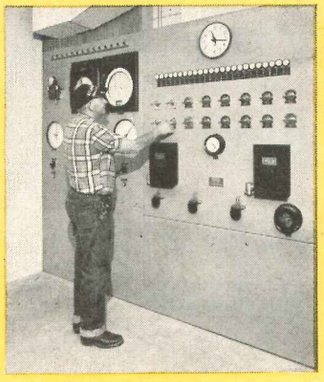




Engineers and Taxpayers

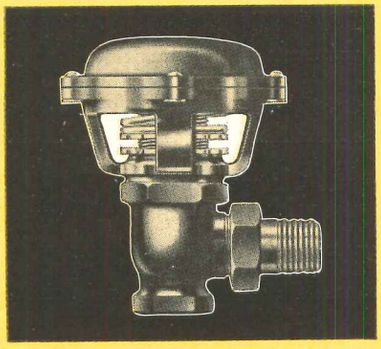


Powers DAY-NIGHT Thermostats are adjustable for normal temperature during occupancy and lower economical temperature during unoccupied periods.



All benefit.. from the comfort, fuel economy, and low cost maintenance of

POWERS Quality System of Temperature Control



Powers PACKLESS Control Valves prevent water leakage, banish packing maintenance and give better control due to reduced valve stem friction.

Powers Control helps reduce school costs. Economical DAY-NIGHT thermostats stop fuel losses due to wasted heat in unoccupied rooms and over-heating in occupied rooms.

Thermal Comfort for every school activity helps keep teachers happy, protects health of students and keeps them alert.

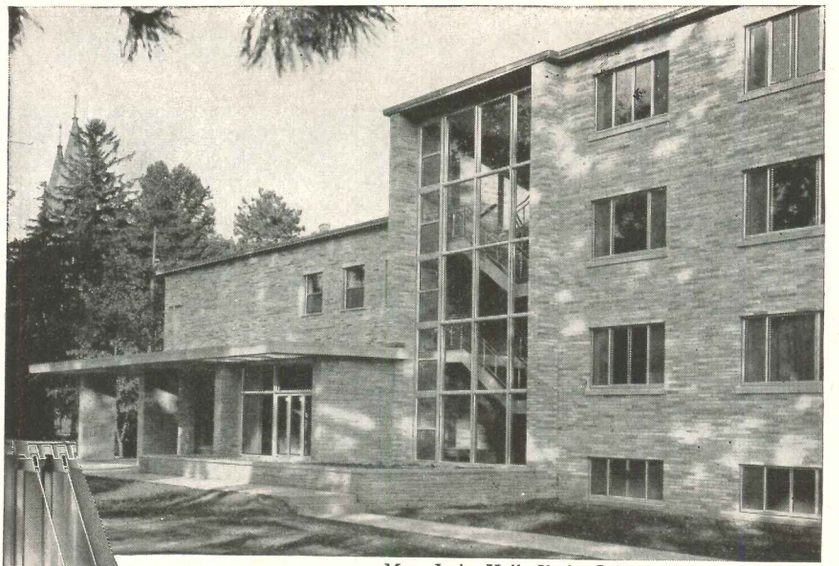
In your new school make sure taxpayers get the biggest return on their investment in accurate temperature control. Ask your architect or engineer to include a time-proven Powers Quality System of Control.

(c91)

THE POWERS REGULATOR COMPANY

SKOKIE, ILLINOIS | *Offices in chief cities in U.S.A. and Canada*

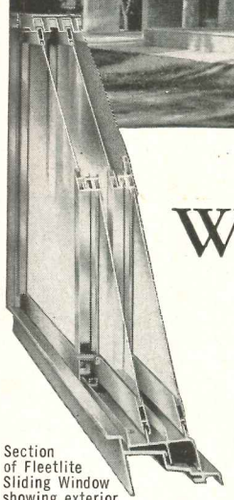
65 years of Automatic Temperature and Humidity Control



Mary Josita Hall, Clarke College, Dubuque, Iowa
Architects: Barry & Kay, Chicago, Illinois

When only the finest is adequate . . .

Architects specify Fleetlite Sliding Windows!



Section of Fleetlite Sliding Window showing exterior and interior sash, screen, and extruded aluminum frame.

Fleetlite windows offer unequaled economy and ease of maintenance. Self-storing double sash is safely cleaned from inside — provides added insulation to reduce heating and cooling costs. Windows are factory assembled and shipped ready for immediate installation.

Durability, Dependability and ease of operation make Fleetlite the preferred window for dormitories, hospitals and institutional buildings as well as the finest residences.

Picture Window Beauty Plus Sliding Window Convenience!

Combined Fleetlite picture and sliding windows make an attractive and practical unit, provide maximum light plus the benefits of controlled ventilation and double sash protection.

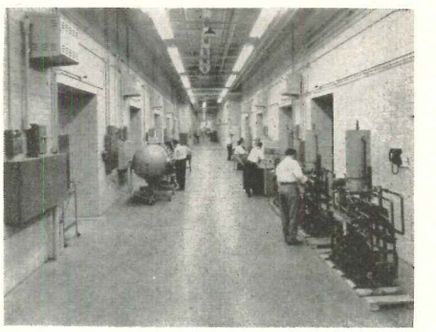
Fleetlite
AMERICA'S Finest WINDOW ®

Please send complete information on Fleetlite:

- ☐ Double Horizontal Sliding Windows
- ☐ Double, Double Hung Windows
- ☐ Sliding Doors and Picture Walls
- ☐ Jalousie Windows and Doors

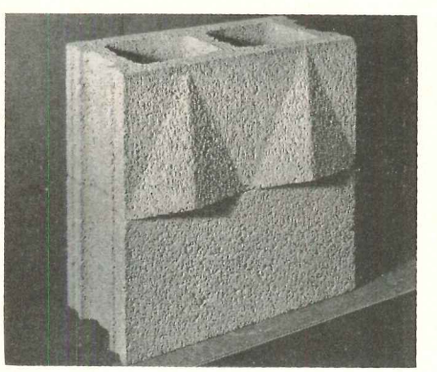
FLEET OF AMERICA, INC.
Dept. AR—68 2015 Walden Avenue, Buffalo 25, N. Y.

Product Reports



Movable Radiation Barrier

Weld-O-Bond No. 3111, a radiation-resistant adhesive, is used with solid concrete blocks to form a low-cost, effective radiation barrier that can be taken down and re-assembled elsewhere with no waste. This special adhesive is designed to be resistant to the deteriorating effects of radioactivity, to have good compressive and shear strength but not appreciable tensile strength, to permit the wall to be disassembled when the need arises without damaging the blocks. An additional requirement is that the adhesive be readily visible to aid in inspection of joints for possibly dangerous gaps in coverage. The material is said to fulfill these requirements satisfactorily after a year of use in a high-voltage accellorator factory test building. *California Stucco Products of New England, Inc., 169 Waverly St. Cambridge, Mass.*



Pattern Concrete Block

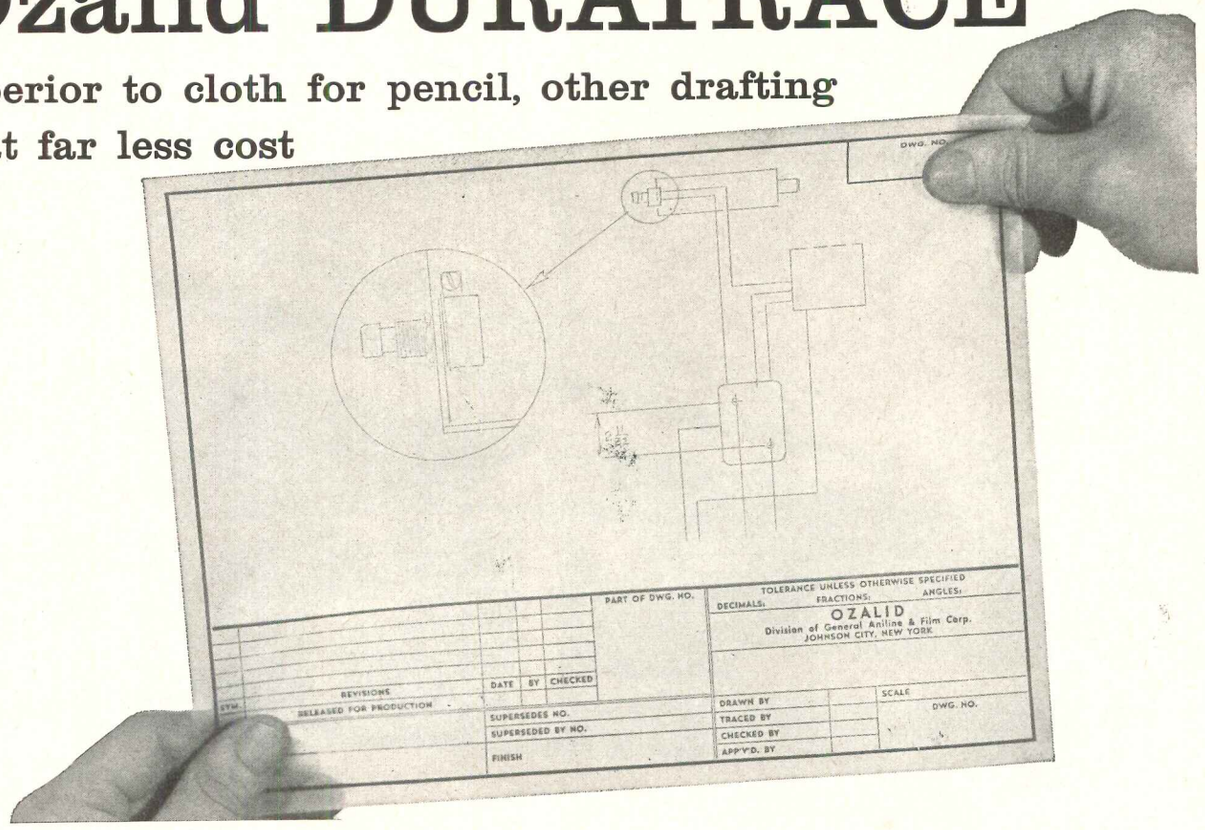
Hi-Lite block is based on the conventional 8 in. by 8 in. by 16 in. masonry unit and has single or double raised pyramid facing designs. This simple design unit is said to enable architects and builders to create many dramatic architectural effects and patterns. It can add texture and pattern to large unrelieved wall areas. *Besser Company, Alpena, Michigan,*

more products on page 260

A really NEW drawing material...

Ozalid DURATRACE®

superior to cloth for pencil, other drafting —at far less cost



Extremely durable, practically ageless—that's new Ozalid Duratrace drawing film. Duratrace can speed your drafting operations, insure greater accuracy and finer prints. It can be used under all climatic conditions and it will still maintain its exceptionally high-dimensional stability.

And Duratrace saves you money! Not only will it outperform the highest quality, moistureproof pencil tracing cloths in every respect—it actually costs 15% to 20% *less!*

HERE ARE A FEW OF ITS OUTSTANDING ADVANTAGES:

- **Makes drafting easier, improves accuracy**
  Duratrace has an exclusive new fiber-free matte surface that takes pencil better than any cloth available. It lets you use *hard* pencils for greater accuracy, cleaner drawings. It erases easily and quickly without smudging. And Duratrace lies *flat*, won't curl—even after being rolled for long periods.
- **Gives you better prints, faster**
  The very high translucency of Duratrace means faster copying in your whiteprint or blueprint machine—copies with maximum contrast. Duratrace won't stretch, melt or peel in your copying machine. Distortion of drawings is ended.
- **Stands up to roughest usage—indefinitely**
  Easy to handle and file, Duratrace resists wear and tear—is almost ageless! Its fold and tear strengths far exceed those of cloth, most other films. Duratrace can't fray, become "dog-eared," crack, chip, or turn brittle. It's nonyellowing . . . *really* waterproof; can be filed indefinitely, without deterioration!

Why not test this advanced new drawing material and discover for yourself its many advantages and applications? Just mail the coupon and you will receive free sample and price information.

OZALID®
Products for Design

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Please send me a free test sample of Ozalid DURATRACE. I understand there is no obligation.

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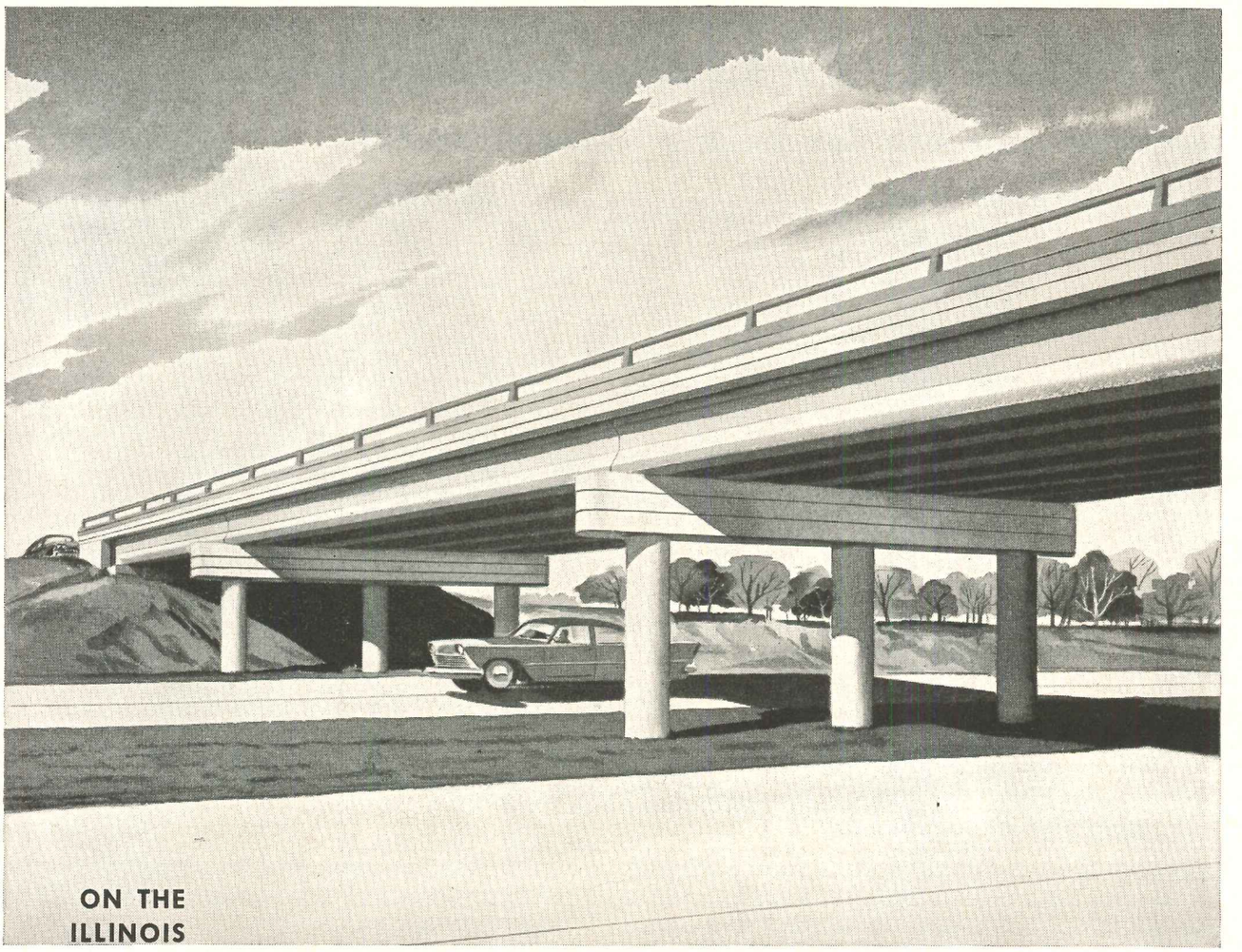
WHEN AMERICA BUILDS FOR ECONOMY . . . IT BUILDS WITH CONCRETE



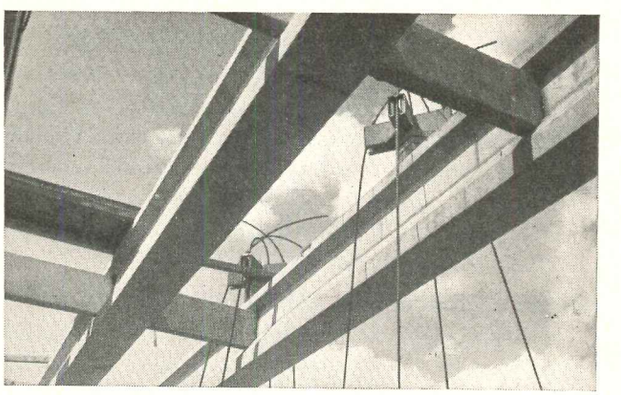
ON THE ILLINOIS TOLL HIGHWAYS . . . **precast, prestressed concrete for bridges will reduce costs $4,000,000**

A full-scale test bridge showed engineers new ways to cut costs. 218 more prestressed bridges will follow . . . at savings that make every fifth bridge free!

Engineers found big economy when they checked prestressed concrete for bridges on Illinois Toll Highways. They're cutting approximately $4,000,000 from original estimated costs—with no sacrifice of strength or durability.

This is a mass production job, the biggest yet of its kind. Designs are standardized. Prestressed stringers are being produced in casting yards to achieve top economy and uniformly high quality. All this enables contractors to meet road opening schedules with resultant financing economies.

Whether the job calls for hundreds of bridges or just a few, savings really add up with prestressed concrete. And savings are just starting! Maintenance costs will be the lowest known on any major bridge system. That's why you'll be seeing more such modern bridges as Interstate System construction moves ahead.

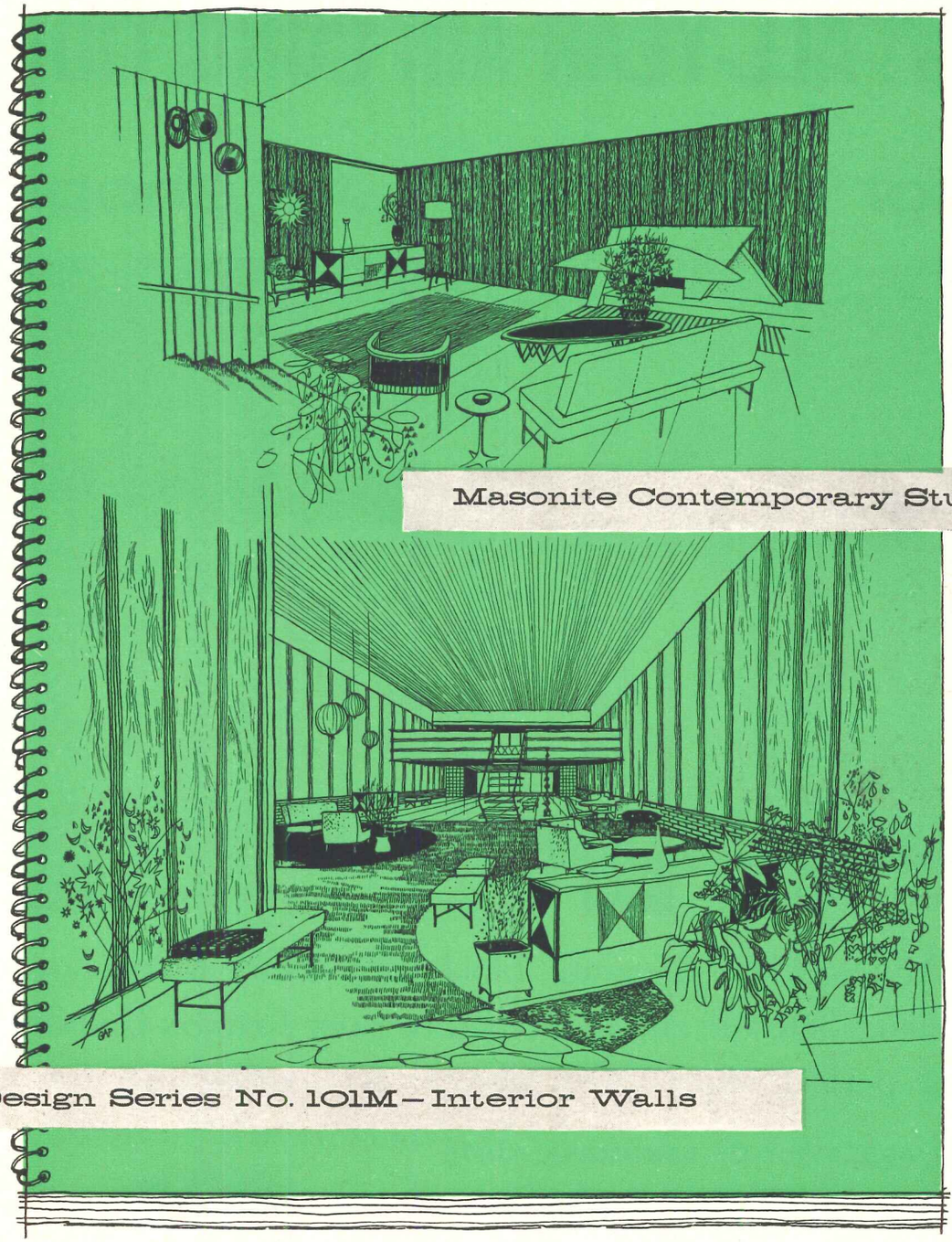


Beverly Road test bridge. Tests proved value of prestressed concrete for economical highway bridges.

FOR STRUCTURES... MODERN **concrete**

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete



The creative imagination will find in Masonite interior panels a combination of decorative appeal and long-time usefulness.

For example, in the residence above, Masonite® Seadrift® presents a texture of well-weathered driftwood. Interest is heightened by the planked effect of random-spaced vertical grooves. Paint it to blend with the over-all color scheme.

The showroom design in the lower sketch presents Misty Walnut, a Masonite hardboard panel with a wood-grain finish. Its effect is one of well-mannered luxury.

For current product information, consult Sweet's Architectural File, see a Masonite representative, or send the coupon.

MASONITE® Panel Products

® Masonite Corporation—manufacturer of quality panel products.

Masonite Corporation. Dept. AR-6, Box 777, Chicago 90, Illinois
In Canada: Masonite Corporation, Gatineau, Quebec

Please send me more information about Seadrift, Misty Walnut and other Masonite hardboard panels.

Name.....

Firm.....

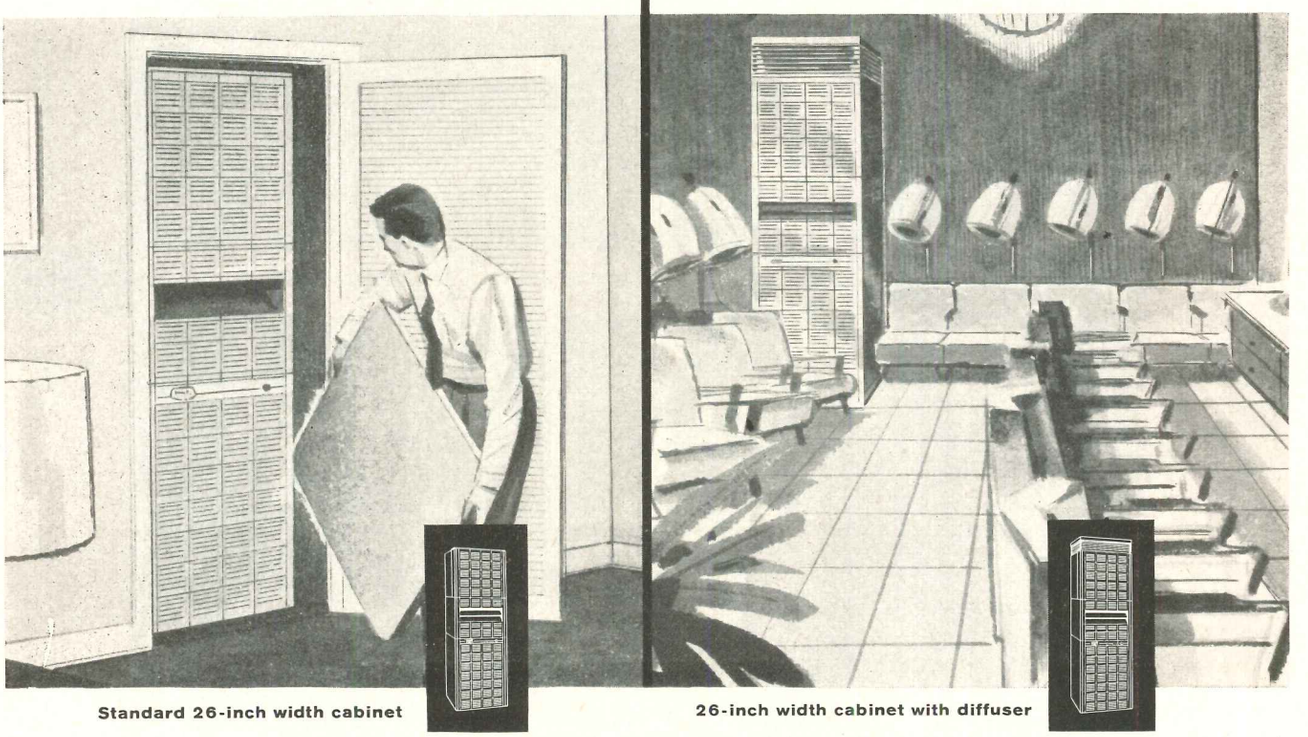
Address.....

City..... State.....

Zone..... County.....

NOW! ALL-YEAR AIR CONDITIONING

...for homes | ...for shops



Standard 26-inch width cabinet

26-inch width cabinet with diffuser

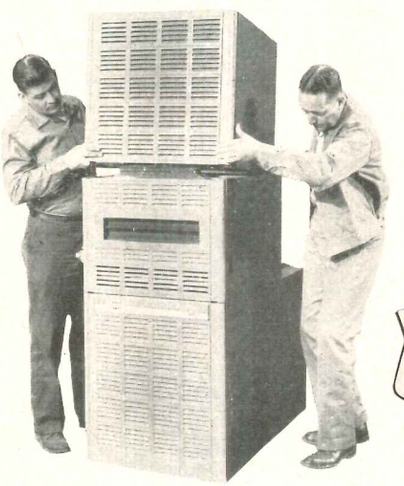
The LANDMARK—Separate "blocks of comfort" for cooling, heating, air handling! Selected and combined by your Lennox Comfort Craftsman for perfect, super-quiet, all-year air conditioning for any job!

FAST ASSEMBLY OF LANDMARK UNITS saves hours of installation time. Your Lennox Comfort Craftsman is factory-trained, factory-backed to handle your entire job.

COOLING UNIT ▸ is designed for unhampered air flow; capacities of two to 10 tons per section.

HEATING UNIT ▸ offers oil, gas or electric heating; capacities of 68,000 to 170,000 Btuh (gas, input) per section.

AIR HANDLING UNIT ▸ includes two-speed blower, cushioned on live rubber in a sound-conditioned cabinet; oversize Hammock Filter that cleans air of practically all dust and pollen. (Efficient Landmark Heat Pump systems are also available for perfect winter and summer comfort.)



LENNOX comfort craftsman

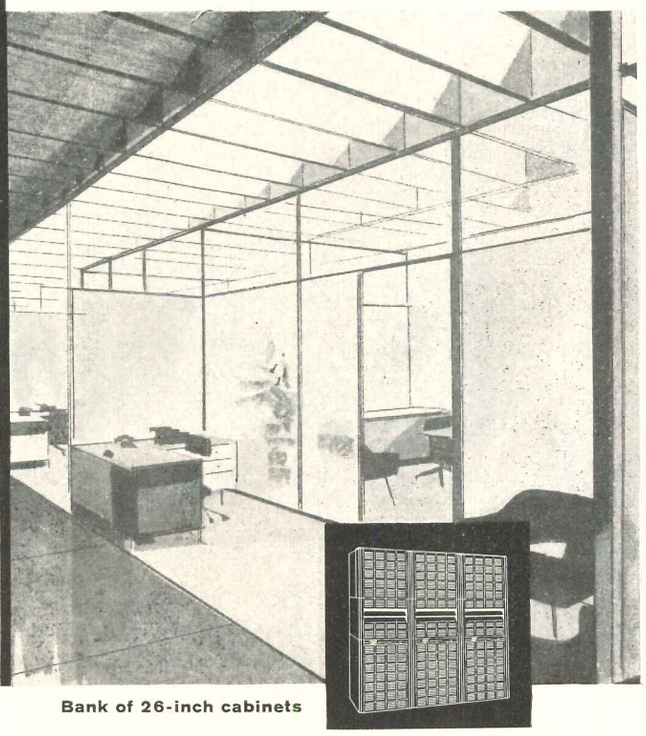
There are more than 5600 factory-trained Lennox Comfort Craftsmen, who work directly with Lennox to serve you better!

PRECISELY MADE-TO-MEASURE

...for stores

Standard 34-inch width cabinet

...for offices



Bank of 26-inch cabinets

Now, for the first time, you can specify heating and cooling that meets *exact* comfort requirements†—with the Landmark by Lennox! Simply tell your Lennox Comfort Craftsman what your needs are, and he will select the *one* right cooling unit, the *one* right heating unit, the *one* right air handling unit to do the job. Expertly assembled, these units form the Landmark—the only system that offers comfort made-to-measure; *the finest comfort system you can choose.*

Separate units, each designed to make the most of time-tested principles, go together to form forced warm air furnaces, air conditioners, or combination heating and air conditioning systems. Each of four cabinet widths can house cooling, heating and air handling equipment of different capacities. In addition to individual Landmark assemblies, banks of Landmarks may be assembled together, coordinated by "multiple interlock" controls, to provide greater capacities required to serve larger areas.

Operating costs are lower. Exclusive heat exchanger design wrings maximum heat out of fuel. Air travels in a straight line, in "slow motion," to pick up all the cooling it can hold—or all the heat in winter. Dangerous drafts are eliminated. Disturbing noises, too—*never has a comfort system been so quiet.*

To learn more about the Landmark, see your local Lennox Comfort Craftsman; Sweet's; or write Lennox, Dept. AR-86, Marshalltown, Iowa.

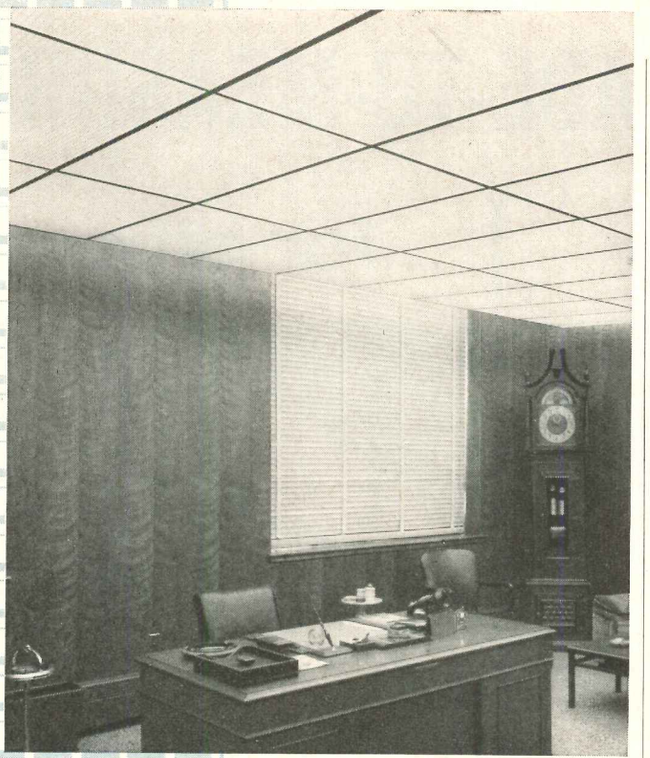
SEE OUR CATALOG
IN SWEET'S ARCHITECTURAL FILE
File No. 30b/Le

†Calculated heat loss, calculated heat gain, and CFM ventilation requirements.

LANDMARK TRADEMARK

by LENNOX®

© 1958 Lennox Industries Inc., Heating and Air Conditioning, founded 1895; Marshalltown and Des Moines, Ia.; Syracuse, N. Y.; Columbus, O.; Decatur, Ga.; Ft. Worth; Los Angeles; Salt Lake City. In Canada: Toronto, Montreal, Calgary, Vancouver, Winnipeg.



BE SURE!

Specify AMERICAN PLASTIC LOUVERS

THE OUTSTANDING LOUVER FOR ANY LIGHTING DESIGN.

American Plastic Louvers offer the maximum in conformability for any lighting plan, whether it be industrial, institutional, commercial or retail. In application they may be employed in individual fixtures, full ceiling installations or any modular pattern. Strong, light weight louvers eliminate the need for costly heavy ceiling construction.

FEATURES:

- Color-Stable.
- Restful shielding regardless of the light intensity involved.
- Light Weight—Specific gravity of only 1.05.
- Low Cost Maintenance — Easy to clean.
- Available in combination of sizes.

Only the exclusive process of the American Louver Company is covered by these patents:
USA Pat. No. 2,566,817
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Canadian No. 484,346
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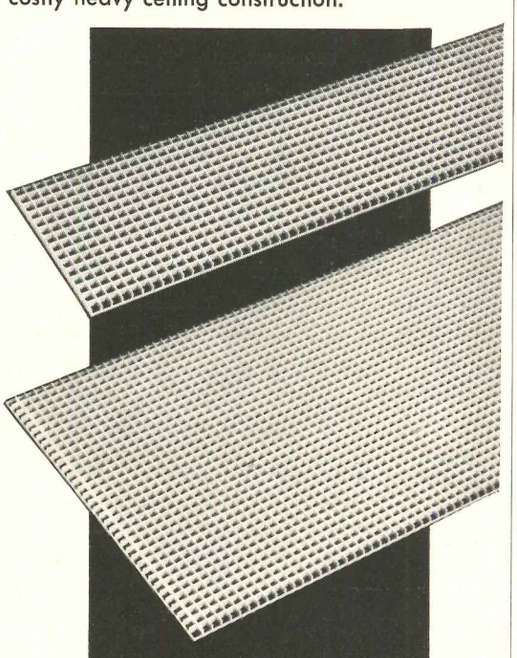

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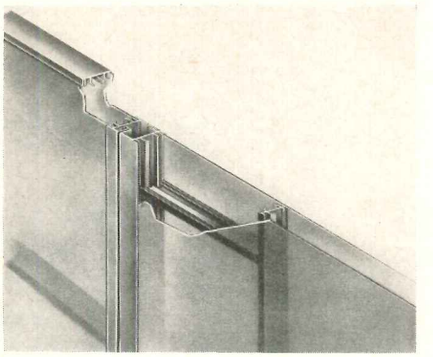
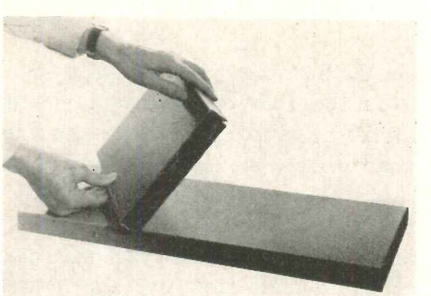
Product Reports



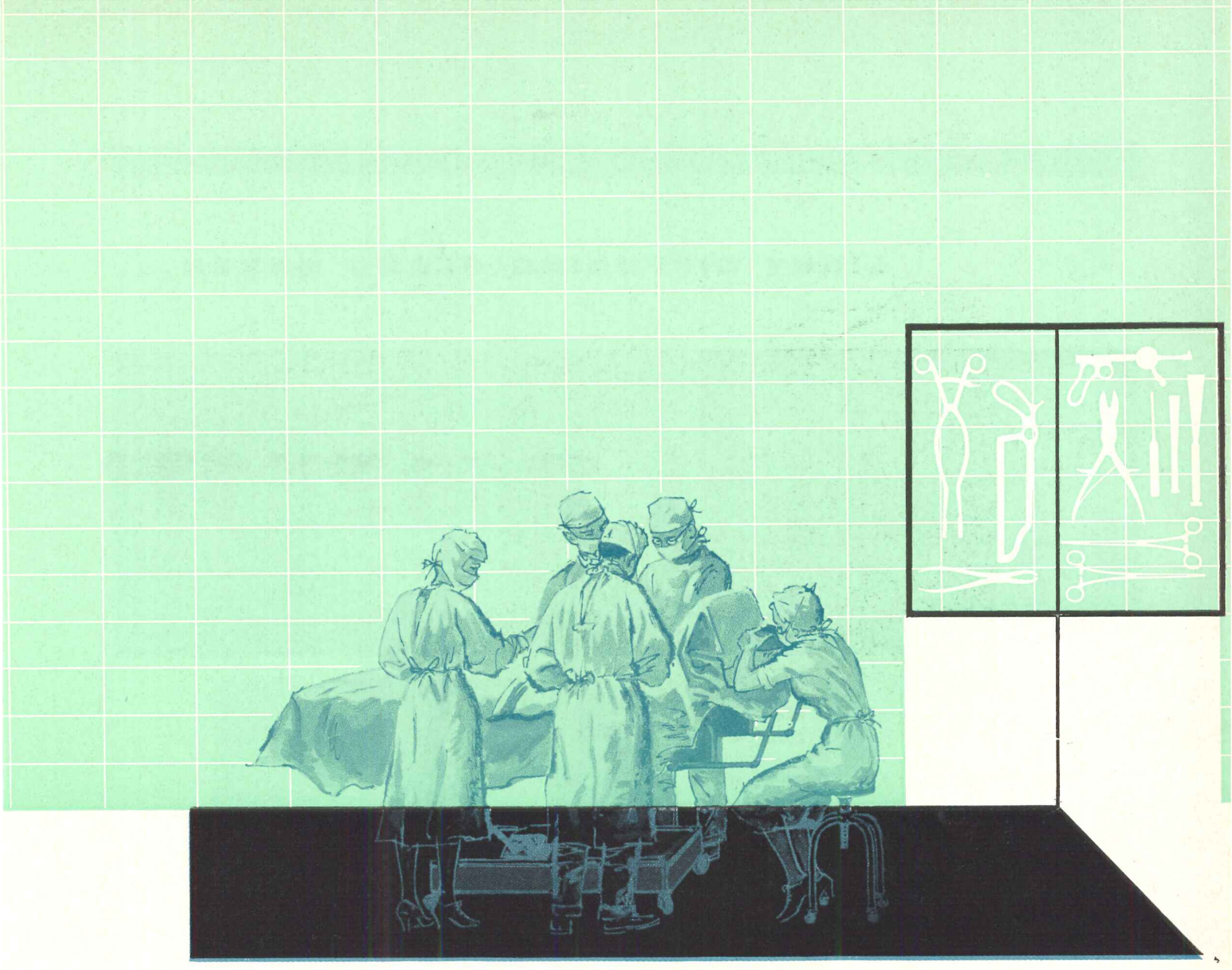
Aluminum-Fiberglass Plastic Panel

Sanpan wall panels are made up of an extruded aluminum grid, nominally 12 in. by 18 in., with a skin of fiberglass-reinforced polyester resin sheet plastic. Panels are 1½ in. or 3 in. thick and come in three types; type "A" in which the skin completely covers the panel, type "B" which has a protective lip around the edges, and type "C" which is similar to type "B" with the addition of a special interlocking joint for connection to the adjoining panel. Panel dimensions are either standard at 4 ft by 8, 10, 12, or 20 ft, or variable within the extremes given. *Panel Structures Inc., 45 Greenwood Ave., East Orange, N. J.*



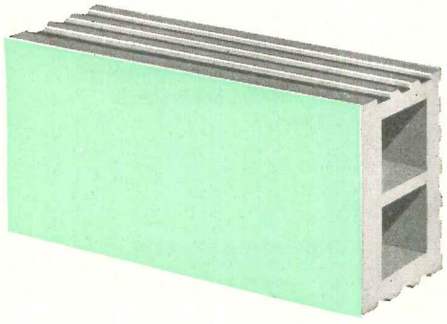
Porcelain-Aluminum Wall Panels

A new panel sandwich with a "leather grain finish" and 1⅝ in. of total thickness has been used in school construction recently. The panel has an outside surface of grain finish aluminum finished in porcelain enamel; a ⅜ in. air space maintained by stainless-steel clips; a 1 in. fiber glass core of 6 lb density with an asphalt coating; and a 16 gauge galvanized steel back pan. The whole assembly is fastened together as a rigid unit with the two surface pans separated at the flanges by a perimeter gasket. Condensation can escape through weep holes provided, the U value is said to be 66 in. *Ingram-Richardson Manufacturing Company, Beaver Falls, Pennsylvania*



The "8W" Series is shown above in modern stretcher stack-bond construction. These units as well as the sizes listed below can also be laid in conventional center bond for attractive interior layouts.

Completely functional, ocular green walls of Natco Ceramic Glaze Vitritile



SIZES AND SHAPES

Series	Shape Catalogs	Tile Face Size	Nominal Thickness
"8W"	8W-257	7¾" x 15¾"	2", 4"
"6T"	6T-657	5 1/16" x 11¾"	2", 4", 6", 8"
"4D"	4D-1255	5 1/16" x 7¾"	2", 4", 6", 8"

Now you can combine the ultimate in cleanliness with a range of smooth colorful surfaces that establish the precise brightness ratio most suitable for long hours of demanding visual work.

Natco Vitritile also allows you to achieve significant economies. Simple washing is all that's required for maximum cleanliness and sanitation. In addition, Natco Vitritile provides a sound fireproof structural unit with an attractive interior finish in one operation . . . at one cost.

Natco Ceramic Glaze Vitritile is available in a complete range of functional and decorative colors and in three face sizes to give you the most complete design and aesthetic freedom.

Write for General Catalog S-58 and the Facing Tile Institute Specifications Handbook for information on new dirt-resistant mortars.

NATCO
CORPORATION

GENERAL OFFICES: 327 Fifth Avenue, Pittsburgh 22, Pa.

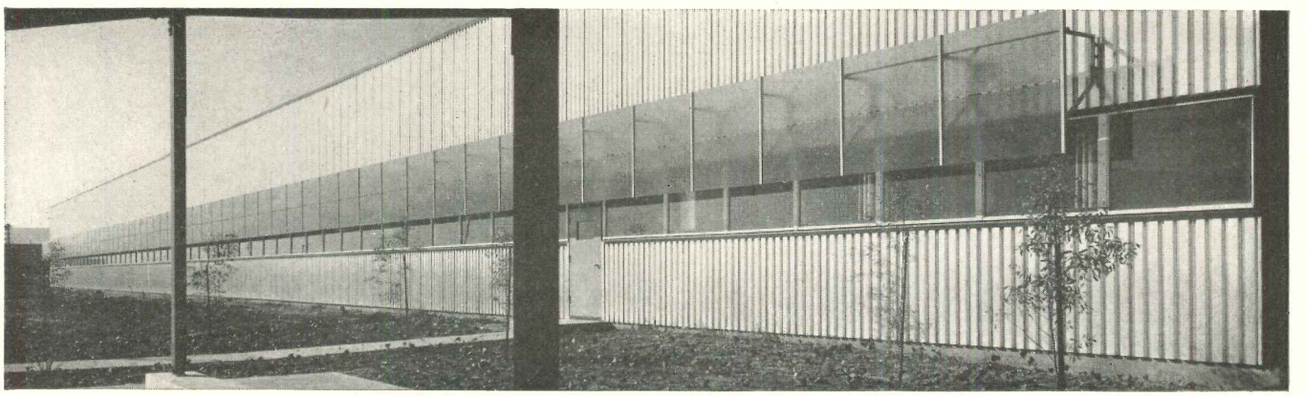
BRANCH SALES OFFICES: Boston • Chicago • Detroit • New York Philadelphia • Pittsburgh • Syracuse • Birmingham, Alabama Brazil, Indiana

IN CANADA: Natco Clay Products Ltd., Toronto

FTI STRUCTURAL FACING TILE INSTITUTE

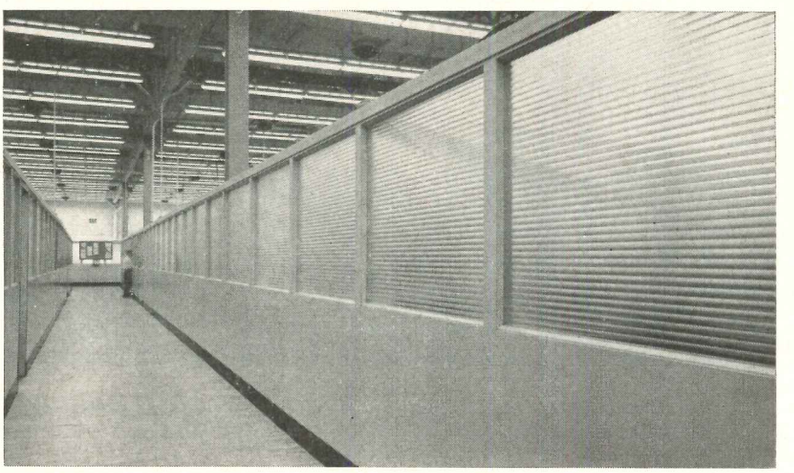
NATCO QUALITY CLAY PRODUCTS SINCE 1889

LIGHT DIFFUSING GLASS MAKES . . .



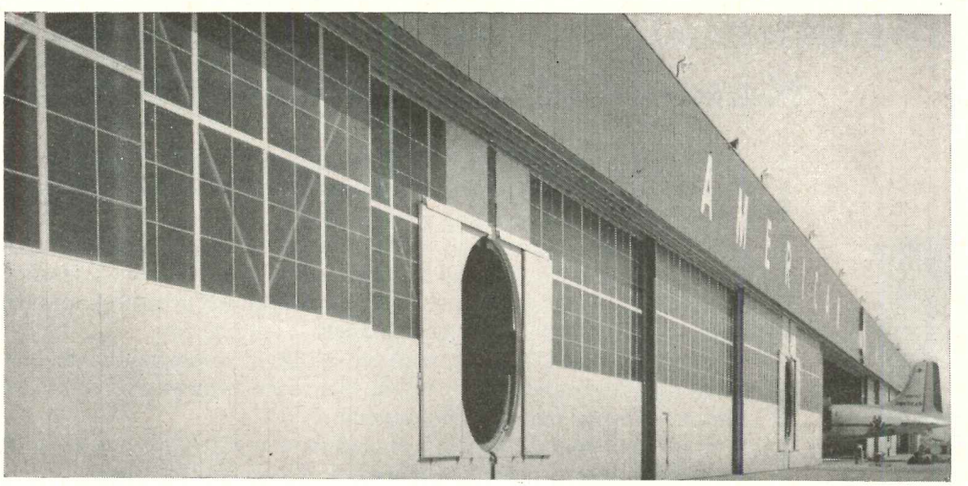
Architects: Marcel Breuer and Associates
Supervision: Craig Ellwood

A point of special architectural interest in the new Torrington Manufacturing Co. plant at Van Nuys, California is the sunshade of Coolite heat absorbing wire glass that spans the western elevation.



Complementing the spectacular new IBM offices in San Jose, California are these Hauserman partitions, glazed with lustrous Mississippi Broadlite glass.

Architect: John S. Bolles, San Francisco, Calif.
Partitions by: E. F. Hauserman Co., Cleveland, Ohio



1260 lights of ¼" Coolite Wire Glass provide better daylight with protection, while absorbing excess solar heat in expansive American Airlines Hangar at Los Angeles International Airport.

Architect: Quinton Engineers Ltd., Los Angeles, California
Glazing by: W. P. Fuller and Company, Los Angeles, California

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To make the most of daylight, use translucent, light diffusing glass by Mississippi. For utility, beauty and economy, unmatched by any other glazing medium, specify Mississippi Glass. Available in a wide variety of patterns, wired and unwired, at better distributors everywhere.

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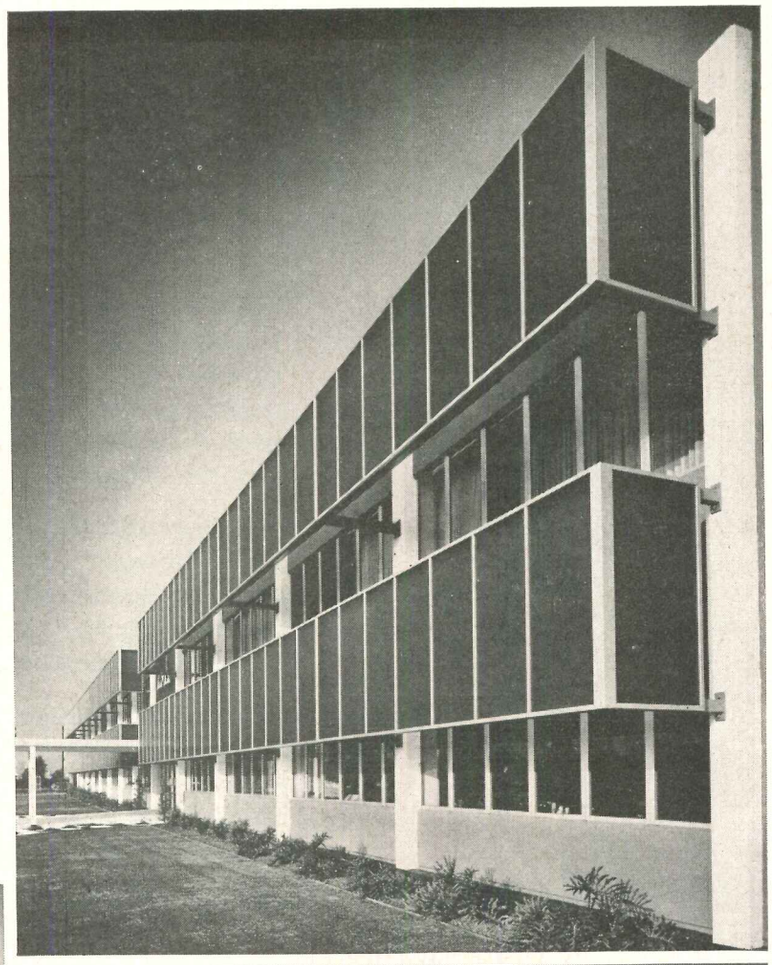
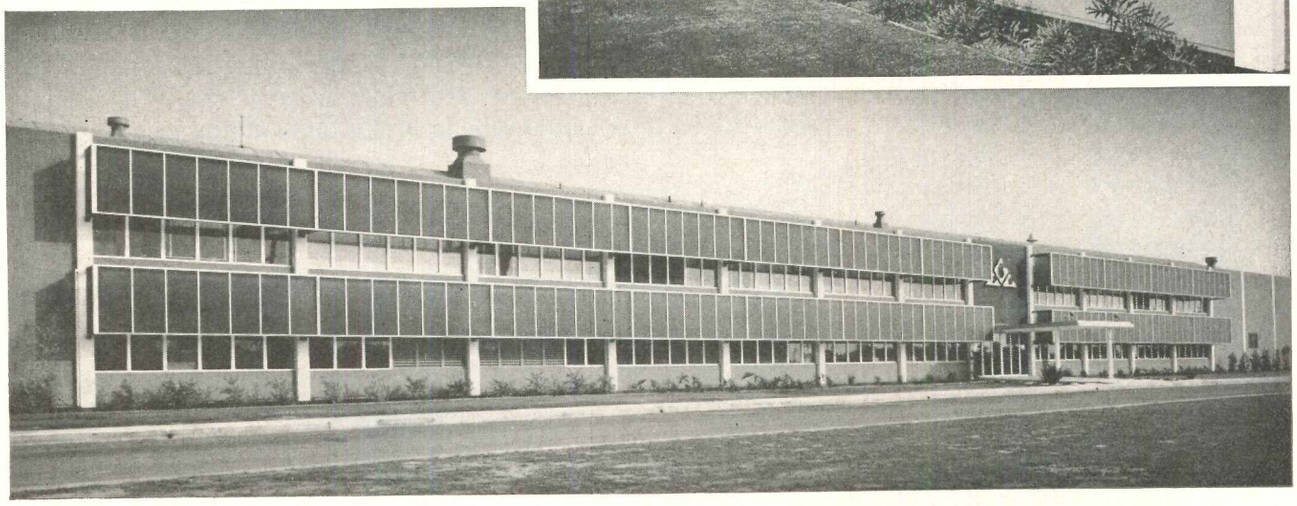
A place in the sun is especially desirable when heat absorbing blue-green Coolite Glass is there to help employees see better, feel better, work more comfortably. A brand new concept in "extended screen" glazing technique that combines beauty and utility.

Growers Container Corporation, Fullerton, Calif.
Architect: Falk and Booth, San Francisco, Calif.





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Watchmen signal the ADT Central Station while on patrol. Automatic sprinkler systems and heating plants are under constant ADT supervision. Waterflow alarm and Automatic Fire Alarm Systems *automatically* summon the fire department in case of fire.

For complete *Automatic* protection, certain Canco plants are guarded by a combination of ADT Burglar Alarm, Automatic Fire Protection and Heating Supervisory Services, providing a high degree of protection for property, profits and employees' jobs, *at lower cost.*

Whether your project is large or small, sprinklered or unsprinklered, there is an ADT Protection Service to meet your requirements. Phone our local sales office if we are listed in your directory; or write to our Executive Office.

Below: Canco plant at Blue Ash, Ohio, opened on October 31, 1957. Area 240,000 sq. ft. Capacity 200 million metal containers a year. Protected *automatically* by ADT Burglar Alarm, Sprinkler Supervisory, Waterflow Alarm and Heating Supervisory Services.

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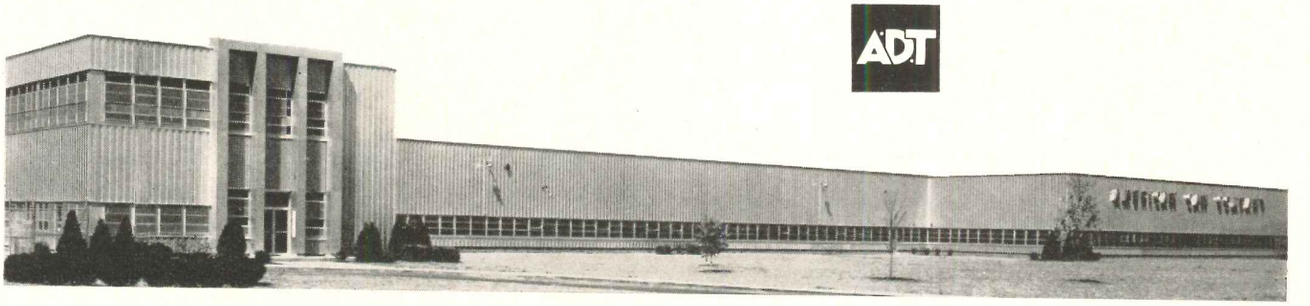
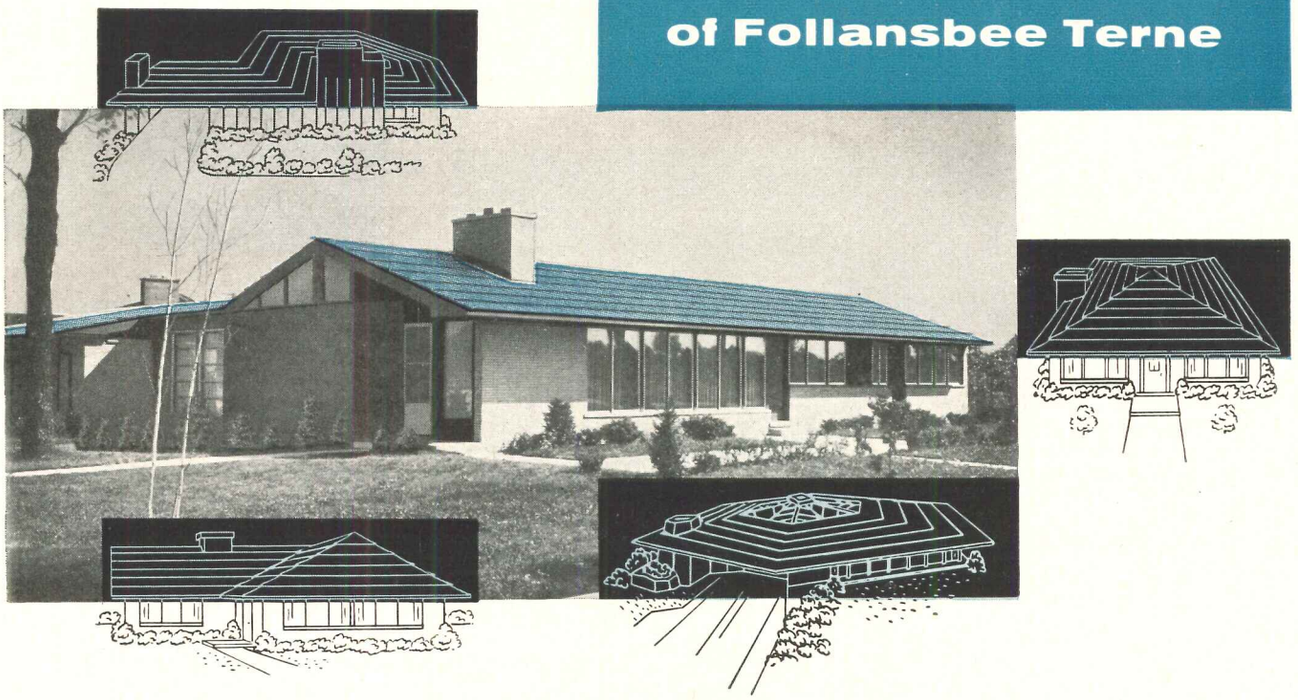


For the roof...

The Horizontal Shadow Line

A Bermuda Roof of Follansbee Terne



What is Follansbee TERNE?

As a word, *terne* means *three*. As a metal, Follansbee TERNE is the combination of three metals—steel, lead and tin. More properly, it is copper-bearing cold-rolled strip steel with a lead-tin coating. The coating is an alloy of 4 parts lead to one part tin. This makes TERNE's surface perfect for painting and soldering. Since TERNE is basically steel, its coefficient of expansion is lower than any other roofing metal; it is durable, fireproof and can be painted any color, any time.

Now it's possible to achieve both a *visual* and *physical* horizontal shadow line on the roof—with a Bermuda Roof of Follansbee TERNE.

The distance between the shadow line can be varied to create the desired effect . . . and the effect will change as the sun moves and the width of the shadow line changes.

The striking design of the Bermuda Roof can be adapted to all types of ranch designs and is finding widespread use in circular, triangular and hexagonal roofs.

In addition to being a lifetime material, (there are many installations of Terne in service for more than 100 years) Follansbee TERNE can and should be painted—a distinctive advantage for color-conscious home owners. It allows a complete change of the exterior color scheme at any time.

Follansbee Terne is carried in stock by Leading Sheet Metal Distributors Everywhere

FOLLANSBEE

STEEL CORPORATION

FOLLANSBEE, WEST VIRGINIA

Cold Rolled Strip • Terne Roll Roofing • Polished Blue Sheets and Coils

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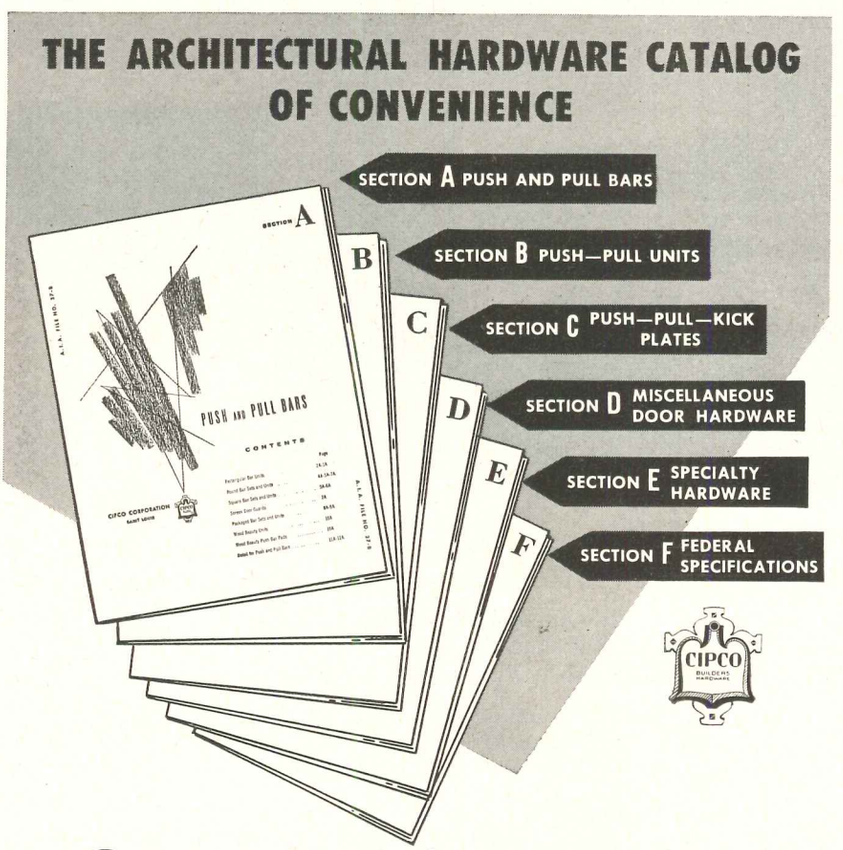
. . . in the event of armed conflict Treats in exhaustive detail methods recommended for protection of all types of cultural material from all known hazards. Methods of resisting the onslaught of blast, corrosive atmosphere, looters, insects and mold are discussed in relation to such memorabilia as paintings, cathedrals, and insect collections. A section is also devoted to the enabling resolutions and other documents pertaining to setting up this really complete study. UNESCO, Museums And Monuments VIII, as translated into English. Author, A. Noblecourt, 346 pp, 124 Figs., 137 plates, $7.50. *UNESCO Publications Center, 801 3rd Ave., New York 22, N. Y.*

A Special Report
. . . on Built-Up Roofings Discusses most of the common types of built-up roofs with their special features and uses with special emphasis given to the requirements of roofings in southern California. C.S.I. 12-B 57, 16 pp, $0.30. *Rolf T. Retz, 1429 Potrero Way, Sacramento 22, Calif.*



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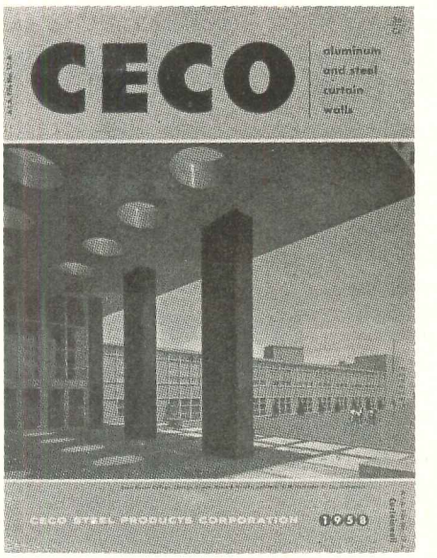

CECO Aluminum and Steel
. . . Curtain Walls (A.I.A. 17-A) Describes latest features of this company's curtain wall systems. Many installation details are given for typical panel arrangements, ventilation areas and fixed windows in single and multi-story construction using concrete, masonry or steel construction. Brochure #1069B, 24 pp. *Ceco Steel Products Corporation, 5601 West 26th St., Chicago 50, Illinois**

Thermal Resistance of Airspaces
. . . and Fibrous Insulations Bounded by Reflective Surfaces shows test methods and details results with tables and charts of experiments with many types of fibrous and reflective insulation materials. BMS 151, 22 pp, 20 cents. *Superintendant of Documents U. S. Government Printing Office, Washington 25, D. C.*

Bio-Climatic Science (A.I.A. 17-A) Illustrates sunshading problems and the automatic louvers used to solve them. 14 pp. *Universal Corporation, 6701 Denton Drive, Dallas, Texas.*

The Architects Estimator
Is a loose-leaf reference volume covering current building costs, including markups and contractor's profit and overhead. Tables and factors are included for material quantity calculations. Revised sheets keep the book up to date. A companion volume, *The Professional Construction Estimator,* is a labor and material time-and-money calculator. *Professional Publishing Company of Pasadena, P. O. Box 5205, Pasadena, California*

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 272

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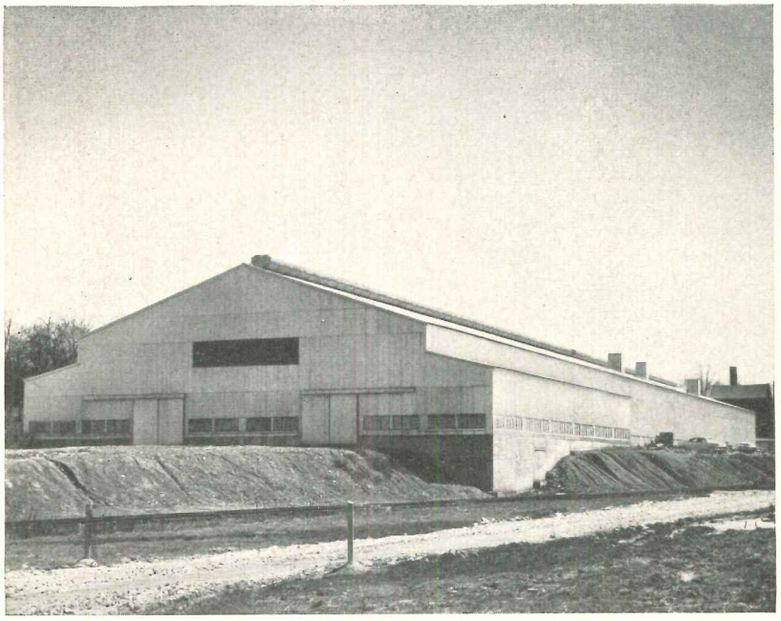
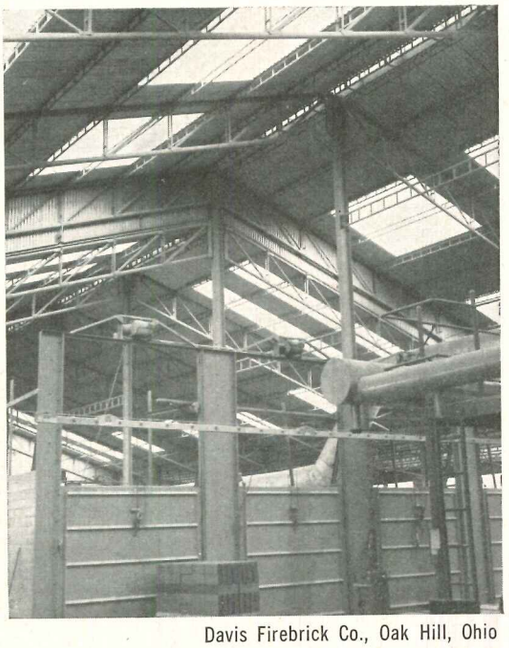


Cambria Clay Products Co., Jackson, Ohio



Davis Firebrick Co., Oak Hill, Ohio

Two plants with roofing, siding and flashing of Armco ALUMINIZED STEEL Type 2 illustrate the architectural advantages of this hot-dip aluminum-coated steel. It was specified for both structures because its combination of atmospheric corrosion resistance and strength assures lasting service at least cost.

* * *

For applications like these and for panels, roof decking, rolling doors, ventilators and other building components exposed to atmospheric corrosion, ALUMINIZED STEEL Type 2 offers economical durability.

PROVED DURABILITY

Exposure tests started 19 years ago show that in an industrial atmosphere the aluminum coating lasts at least 3 times as long as the coating on unpainted commercial galvanized sheets. The aluminum coating is still protecting the base steel.

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Besides its economical corrosion resistance, ALUMINIZED STEEL Type 2 offers other important advantages in building design:

The structural strength and high elastic modulus of steel.

Reflects about 80% of radiant heat; simplifies heating and air conditioning.

Resists fire and mechanical damage better than aluminum.

Let us send you complete information on Armco ALUMINIZED STEEL Type 2. Just fill out and mail the coupon or write to Armco Steel Corporation, 2198 Curtis Street, Middletown, Ohio.

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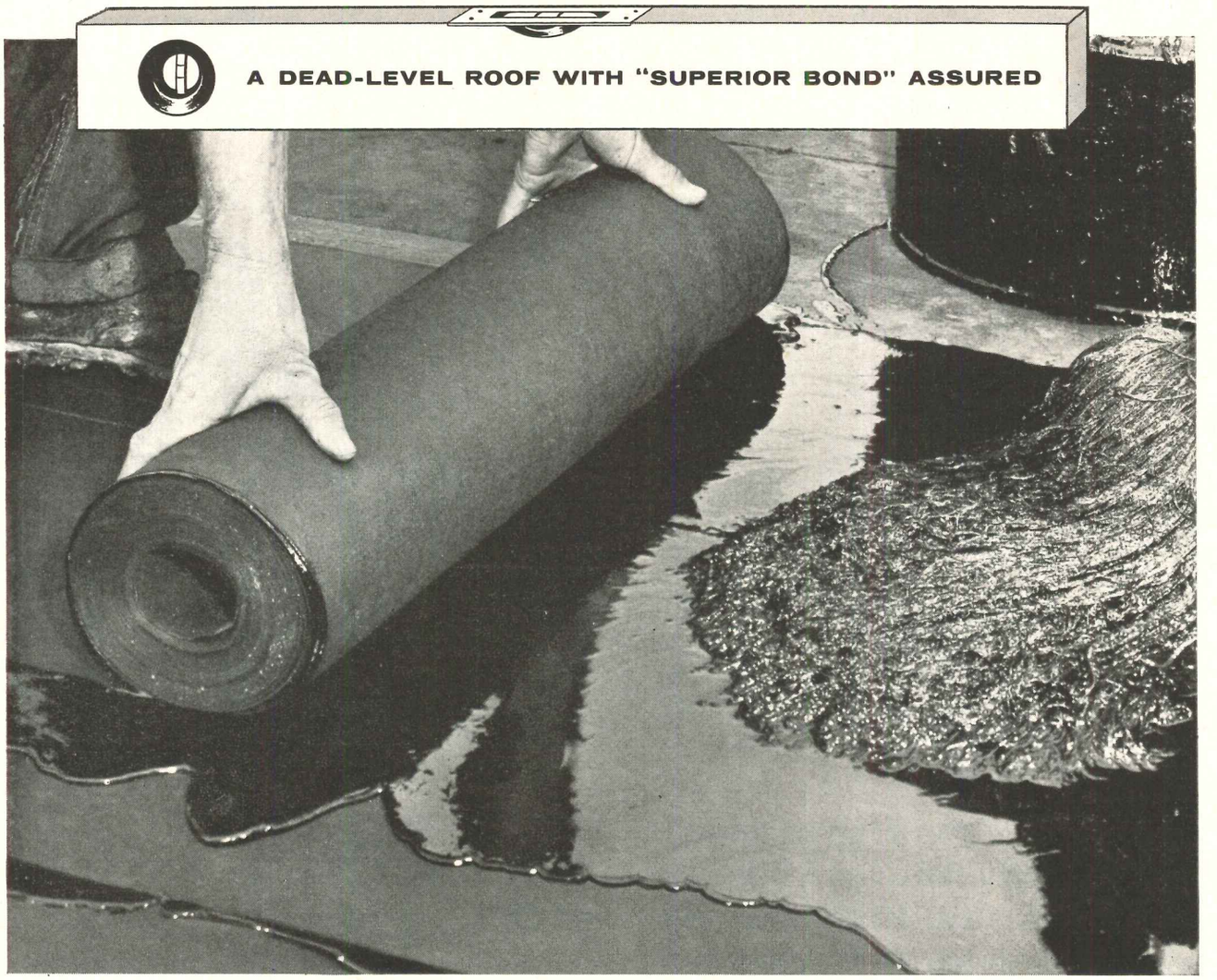

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pay off in longer roof life and maximum protection

AQUADAM ROOFS take their name from a superior cementing agent developed by Johns-Manville. This unique bitumen, Aquadam, possesses the best features of coal tar pitch and of asphalt without their weaknesses. It is the best bitumen on the market for roofs with inclines from dead-level to ½ inch per foot. It is used for both smooth-surfaced asbestos roofs and gravel- or slag-surfaced roofs.

The picture above shows how Aquadam spreads, wets and saturates the roofing felts uniformly. And, as the felts are mopped and broomed-in, the exceptional adhesiveness of Aquadam assures a thorough bonding together of the plies.

Besides this "superior bond," an Aquadam roof provides these other advantages: excellent self-healing properties; exceptional ability to expand and contract with normal deck movement; ability to withstand water when a downpour floods the roof; and proven weather resistance under wide-ranging climatic conditions.

To give your clients the best roof protection, specify Johns-Manville Aquadam Built-Up Roofs—and be sure. For a copy of booklet "J-M Aquadam Built-Up Roofs" write to: Johns-Manville, Box 158, New York 16, New York. In Canada, write 568 Lakeshore Road East, Port Credit, Ontario.

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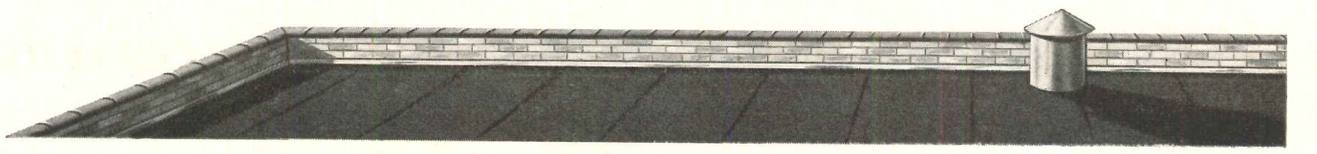

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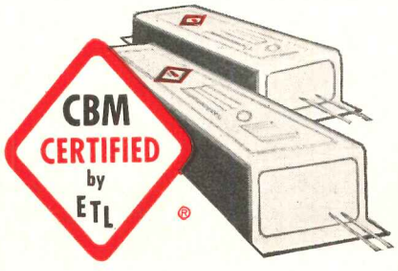

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Eight leading manufacturers now make up the association of

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Participation in CBM is open to any manufacturer who wishes to qualify

CBM-6-U

New! The Andersen Strutwall...

TRADEMARK OF ANDERSEN CORPORATION

a modular component that joins window and wall!

Factory assembly gives tighter, trouble-free fit; saves labor; simplifies and speeds construction!

Here's a great advance in fenestration. A new building component that makes a quality window an integral part of the house frame. Offers tremendous advantages to architects everywhere.

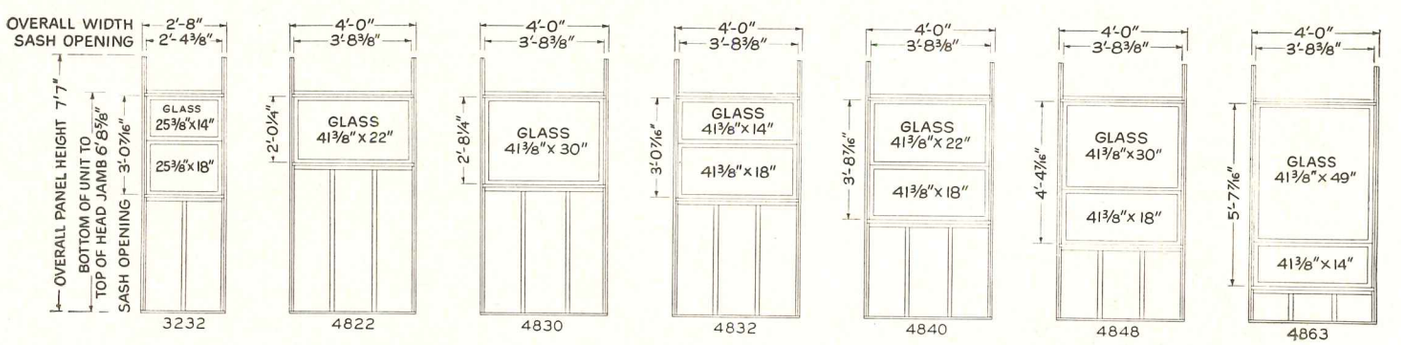
Precision factory assembly of load-bearing side struts, nailers and lower jack studs gives the new Andersen Strutwall unusual resistance to racking. Provides the tightest possible joining of window and wall. Cuts framing and installation two-thirds—from around 22 steps to 7.

To install the new Strutwall, the two load-bearing struts are cut to fit the header construction used. The component is nailed to adjacent studs, tilted up with the wall. Such simplicity practically eliminates the chance of carpentry errors—and callbacks.

There are even bigger advantages in mullions and larger openings. New Strutwalls are simply butted against each other. Because there's structural support at 4-foot intervals, nothing heavier than two 2 x 6 headers are needed in single story construction.

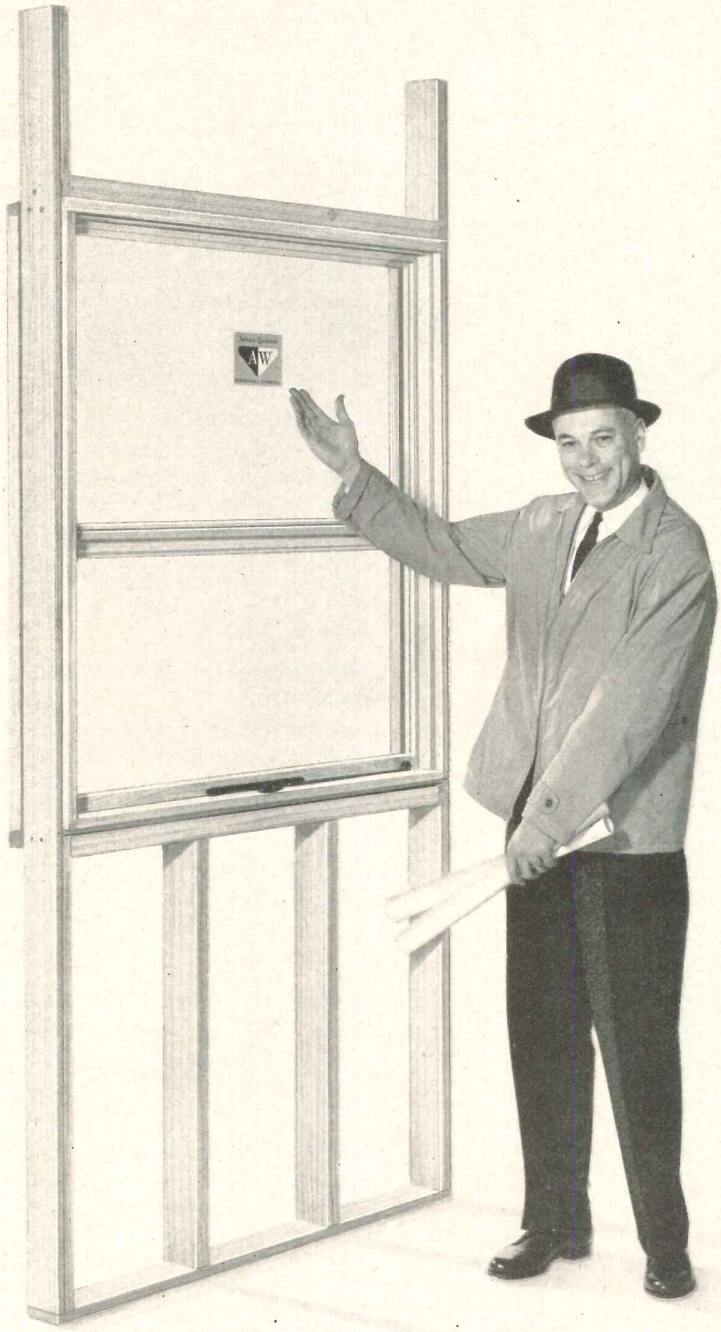
The new Andersen Strutwall fits any type of frame construction—including panel systems. It's been perfected and proved by field tests all over the country.

The Strutwall is sold throughout the United States and Canada. For more information or specification data, write Andersen Corporation, Bayport, Minnesota.



Available in 7 sizes, 2 styles! Andersen makes seven sizes of the new Strutwalls, two sizes of Strutwall door frames. Window components include both famous Beauty-Line* and Flexivent® styles.

*Patent pending.



Andersen Windowalls

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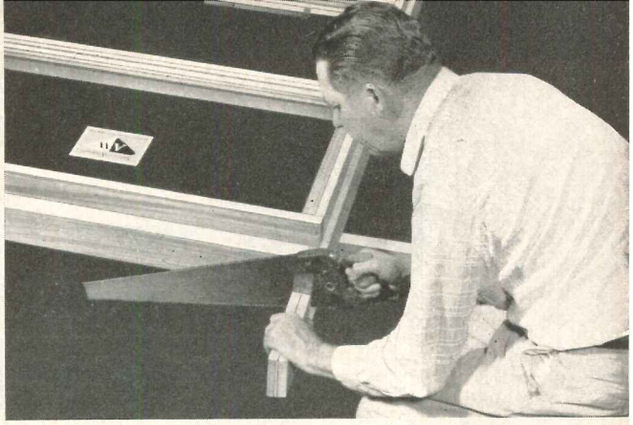
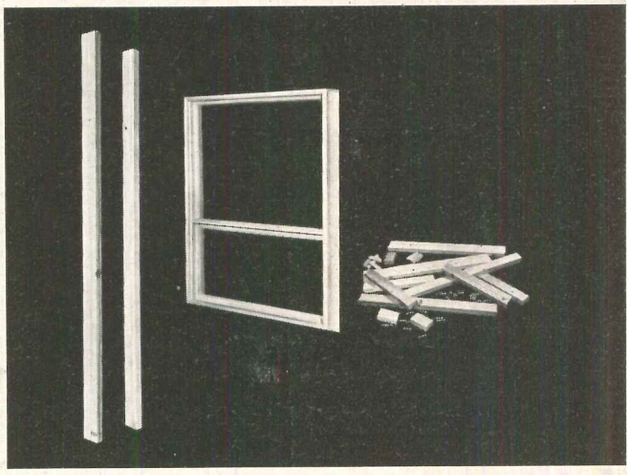
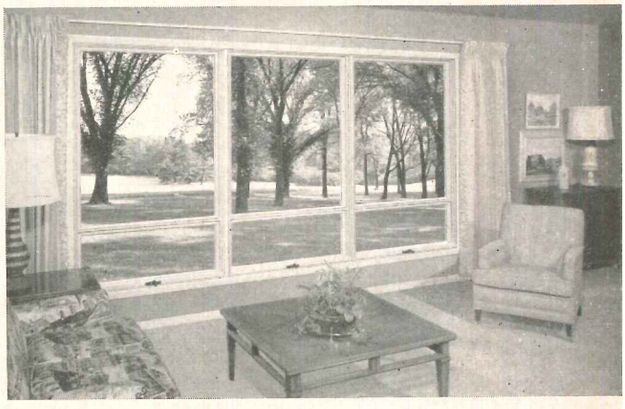


Simple, error-proof construction! Just cut two load-bearing struts to fit header construction. Nail Strutwall to adjacent studs, tilt up with the wall. This cuts installation steps two-thirds. Practically eliminates chance of carpentry errors and callbacks.



Saves materials, costs less installed! New Andersen Strutwall eliminates the two long cripples on the left, requires two 2x6's instead of heavier headers in multiple openings. Builders report a good saving in total installed costs—even when figured against inferior conventional windows.

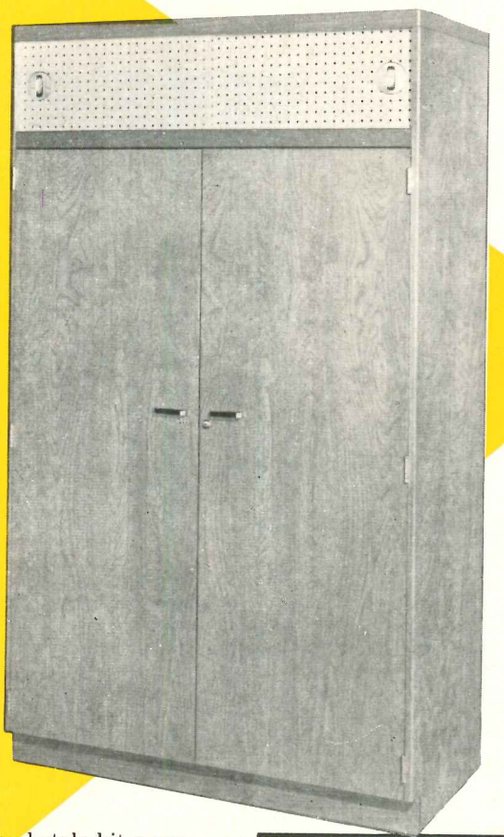


Fits tighter, looks better! Because all parts of the Strutwall are nailed and glued at the factory, you get unusual resistance to racking —the tightest possible joining of window and wall. Famous Beauty-Line and Flexivent styles add beauty and sales appeal to your homes.

HIGH, wide & handsome...

Educators

new 7-foot high units for secondary grades



Adaptability and style hit a new high in Educators 7-foot storage units. Full length beautifully finished Birch End Panels and Fronts are topped off with matching Birch or colorful Pegboard Doors and new smoothly contoured Tops.

Seven different models with interior arrangements functionally designed for secondary grades, make these units useful as they are attractive.

Write today for information and specifications.

Interior arrangement of Teachers' Storage Unit No. 111

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Office Literature

Von Duprin 66 Exit Devices

(A.I.A. 27-C) Catalogs the styles, accessories and critical dimensions of this line of panic-bar devices, together with drawings of important details. Bulletin 581, 8 pp. *Vonnegut Hardware Co., Von Duprin Division, Indianapolis 9, Indiana**

Kesko RDH Aluminum Windows

. . . and *Keswall* Two leaflets show details of, respectively, reversable double-hung monumental series windows, and aluminum framing and finish sections for curtain wall construction. *Kesko Products Division of Tusco Corp., Bristol, Indiana.*

Lupton Catalog

Gives complete technical data and specifications for the full line of metal windows and doors including reference sketches and scale drawings of installation details. 40 pp, catalog 580, *Michael Flynn Manufacturing Co., 700 East Godfrey Ave., Philadelphia 24, Pa.**

Performance of Small-Pipe Warm-Air

. . . *Perimeter Heating Systems* describes experiments with this type of heating in a single-story house with full basement, comparing heated and unseated basements. 35 pp, $1.00. Engineering Experiment Station Bulletin No. 445, *Engineering Publications Office, 114 Civil Engineering Hall, University of Illinois, Urbana, Ill.*

Sportslighting for Night Football

Shows lighting layouts based on I.E.S. recommendations for football fields. Bulletin 2701, 7 pp. *Crouse-Hinds Co., Syracuse 1, N. Y.*

Four Silicone Booklets

CDS-129, Lists the major silicone products and some of their uses. CDS-118, Aids in specifying silicone masonry water repellants. CDS-120, Discusses masonry water repellants. C-14, Lists suppliers of these repellants. *Silicone Products Dept., General Electric Co., Waterford, New York **

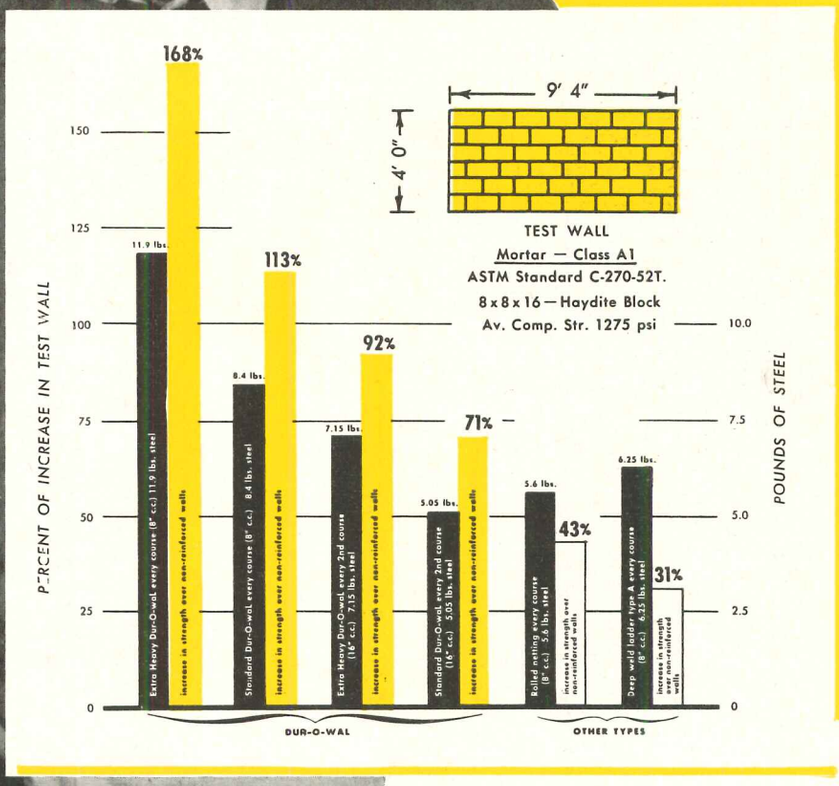
Larsen Bonding Agents

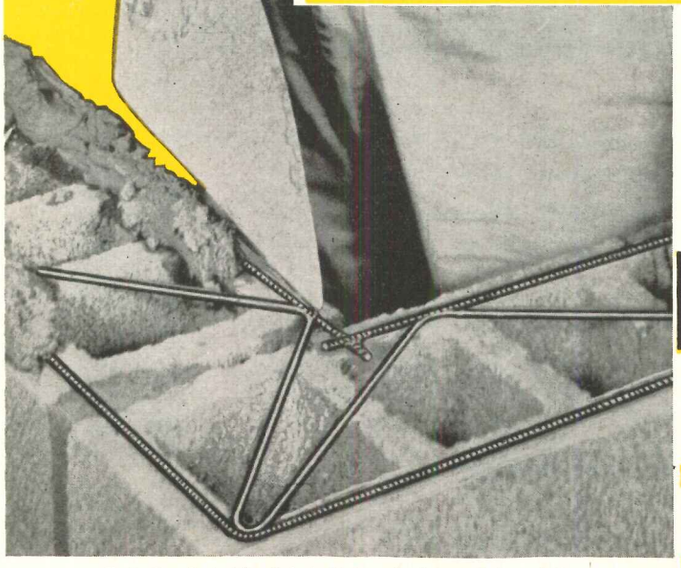
Discusses the uses, application methods and advantages of bonding agents for use in applying new concrete or plaster to older concrete, brick or other like material. 7 pp. *Larson Products Corporation, Box 5756, Bethesda 14, Maryland*

** Additional product information in Sweet's Architectural File, 1958*

more literature on page 278

Test Results Prove that DUR-O-WAL is your Most Economical and Effective Steel Masonry Reinforcement





Tests Conducted by Toledo University Research Foundation

Dur-O-waL with patented trussed design out-performs other reinforcings two to one . . . reduces lineal foot requirements by half . . . cuts building costs. Every pound of high tensile steel in Dur-O-waL works twice as hard because the exclusive trussed design and superior bonding characteristics make every inch work together as a unit. Test results prove why building experts insist on Dur-O-waL . . . the steel masonry reinforcement that exceeds ASTM specifications . . . by far your best and most economical buy.

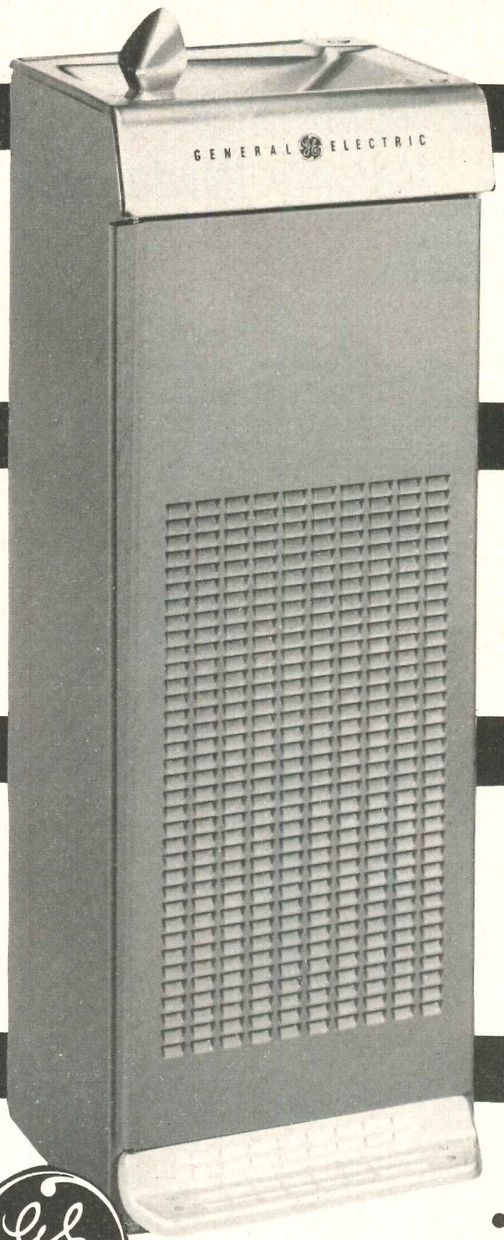
Research findings available on request.

DUR-O-WAL®

Rigid Backbone of Steel For Every Masonry Wall

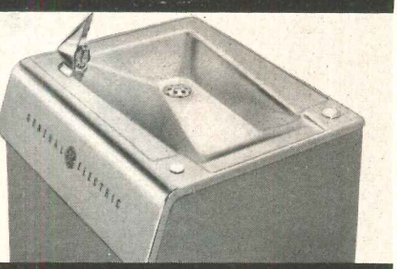
Dur-O-waL Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-waL Prod., Inc., Box 628, **SYRACUSE, N. Y.** Dur-O-waL Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-waL Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.** Dur-O-waL of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-waL Prod. of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-waL of Colorado, 29th and Court St., **PUEBLO, COLORADO** Dur-O-waL Inc., 165 Utah Street, **TOLEDO, OHIO**

Make sure you get all these features... specify GENERAL ELECTRIC WATER COOLERS



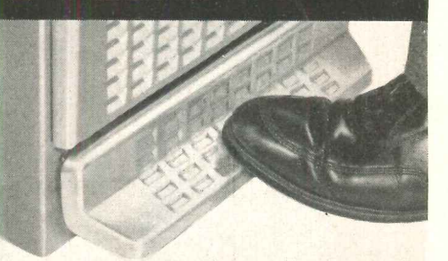
ANTI-SPLASH BASIN

Prevents splashing, spilling, splattering of bubbler stream. Stainless steel—easy to clean.



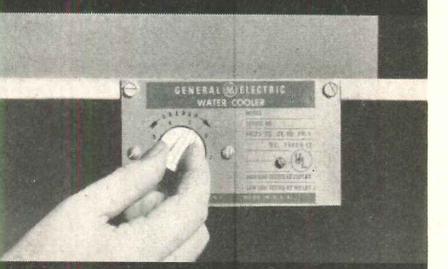
NO-GROPE PEDAL

Full width design permits water control from any point in front of cooler. Special design prevents scuffed shoes, stubbed toes.



TEMPERATURE DIAL

Just dial the water temperature you like best. Eight different settings offer wide selection.



PLUS

- ADJUSTABLE BUBBLER
- HANDSOME STYLING
- SPACE-SAVING DESIGN
- 5-YEAR PROTECTION PLAN

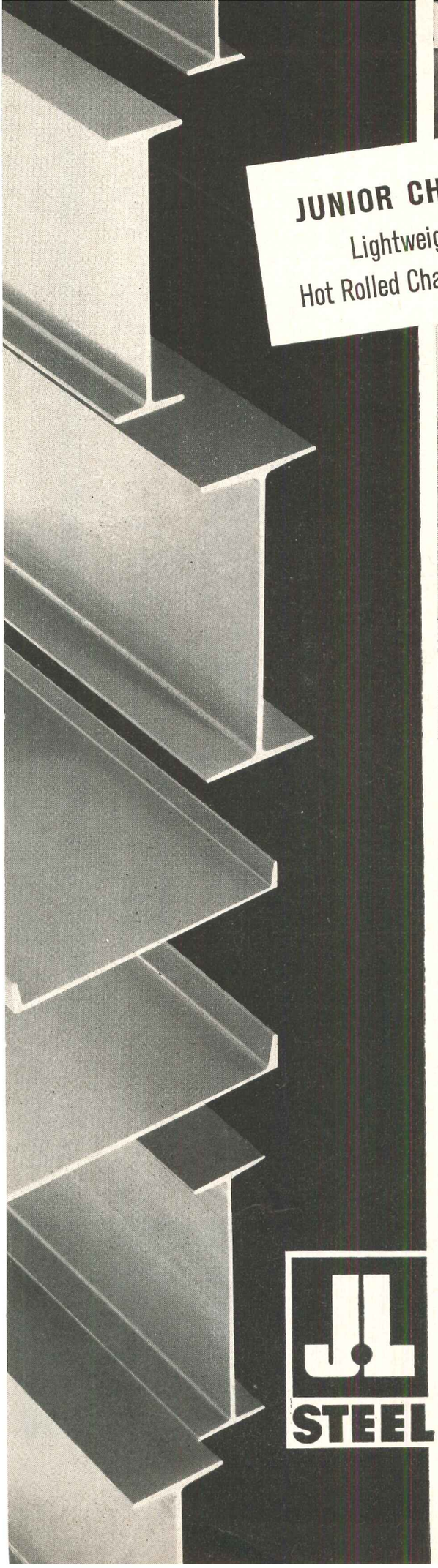
ASK ABOUT Hot and Cold Combinations, pressure and bottle types—also refrigerated compartment models.

How many water coolers do you need and where should they be located for best results?

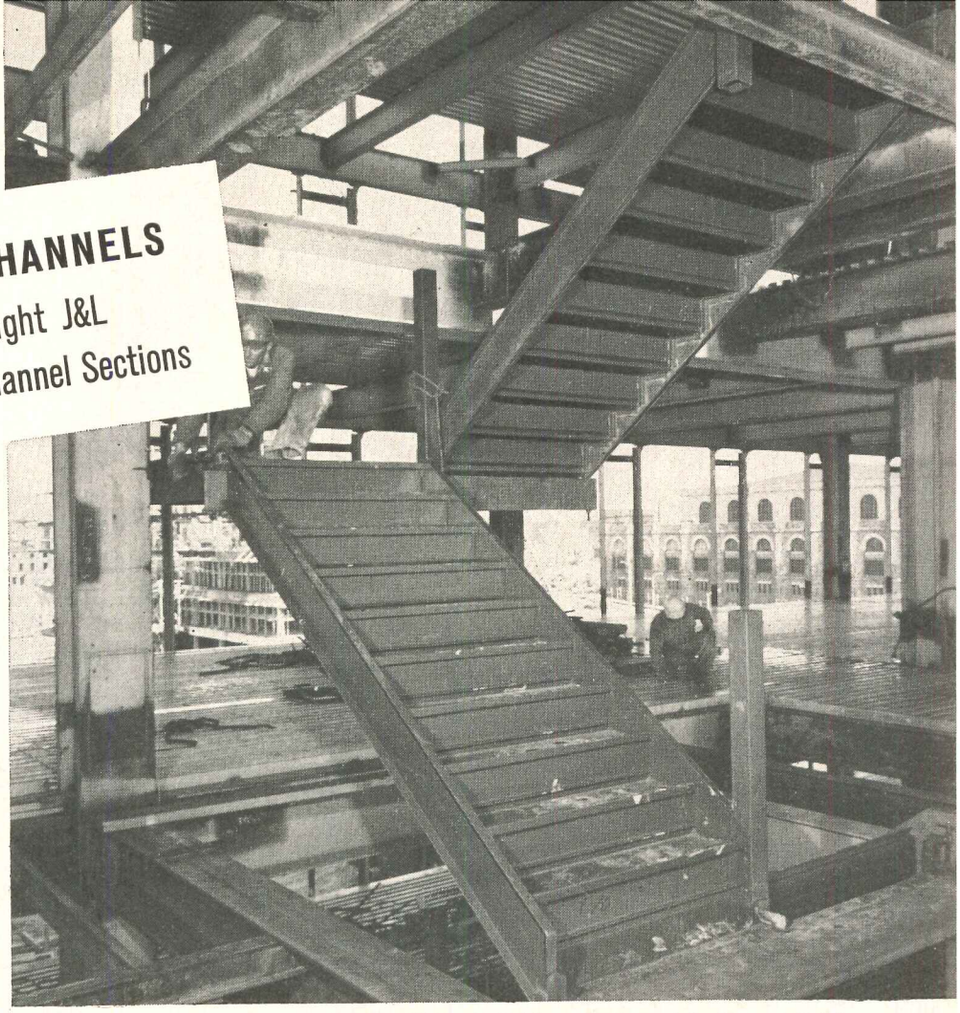
G-E Water Coolers are available in 14 different models with capacities from 2.85 to 21.5 gallons per hour. Call your local G-E Water Cooler dealer or write to General Electric Co., Air Conditioning Department, 5 Lawrence St., Bloomfield, N. J.

Progress Is Our Most Important Product

GENERAL ELECTRIC



JUNIOR CHANNELS
Lightweight J&L
Hot Rolled Channel Sections



Potomac Iron Works is using 10" Junior Channels (8.4# per foot) as stair stringers in this 15-story Baltimore, Maryland, state office building with 12-gauge J&L hot rolled sheet steel as risers. General contractor: Blake Construction Company, Washington, D. C. Architects: Fisher, Nes, Campbell & Associates, Baltimore.

"Clean edges and uniformity of Junior Channels speed stair fabrication"

. . . states leading architectural metal fabricator

"We have standardized on Junior Channels for stair stringers. They permit us to prefabricate stairs to exact dimensions with a minimum of waste," reports Mr. Milton M. Mulitz, president of the Potomac Iron Works, Inc., Hyattsville, Maryland.

Potomac Iron produced and installed 92 flights of stairs in this 15-story Maryland State Office Building and the adjacent six story Maryland State Roads building in Baltimore. Potomac Iron manufactures over 5,000 prefabricated stair units yearly for residential, apartment and commercial construction.

"Junior Channels are stronger than formed plate channels of equal depth. Yet their minimum steel weight speeds handling and fabrication," says Mr. Mulitz.

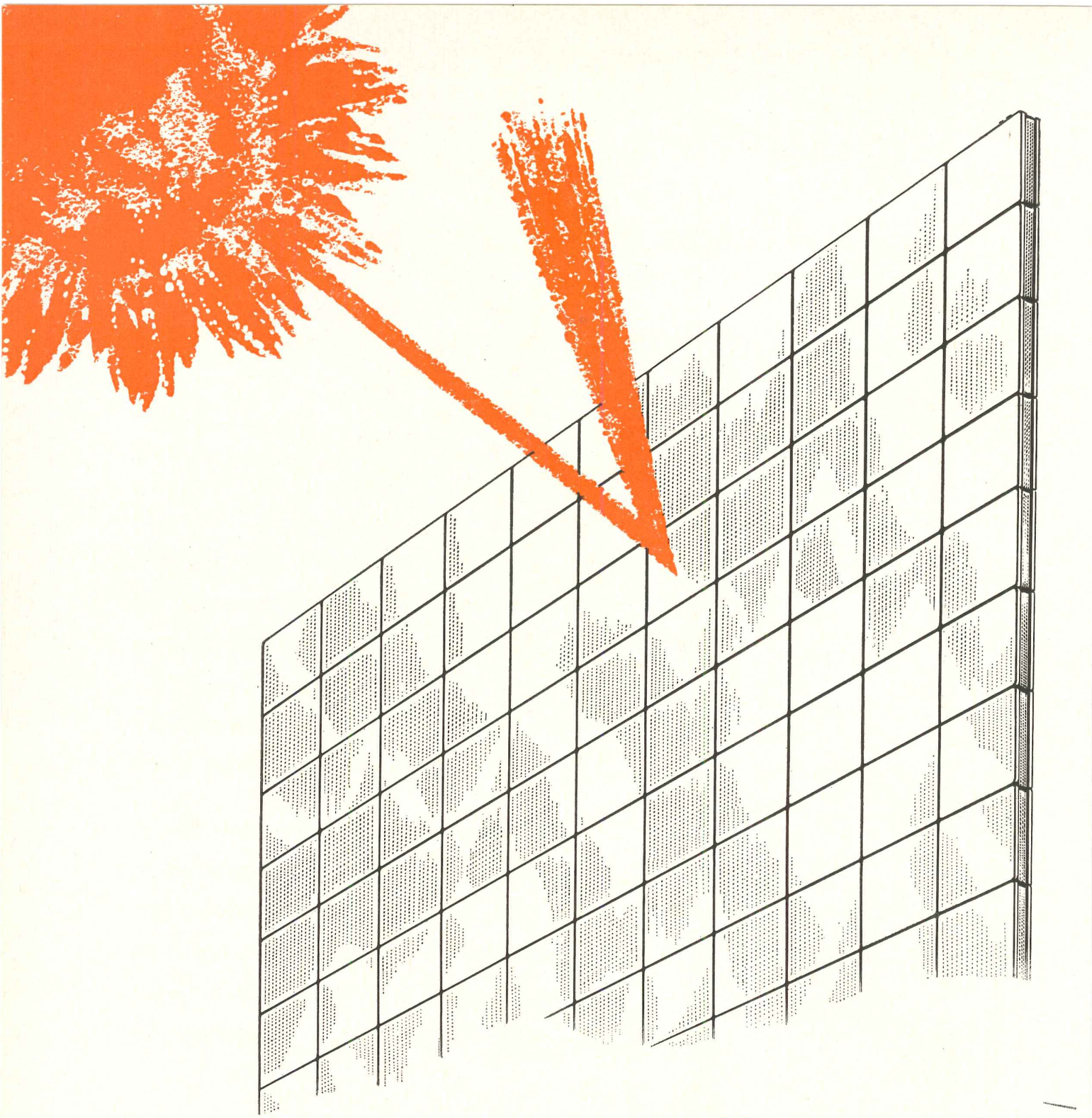
Junior Channels, hot rolled sections, are ideally designed for stairway stringers. Straight line simplicity and narrow flanges make possible their use with or without ornamental trim moldings and other modifications.

Write today for design data on Junior Channels, available in three sizes: 10"-6.5#; 10"-8.4#; and 12"-10.6# per foot. Write to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

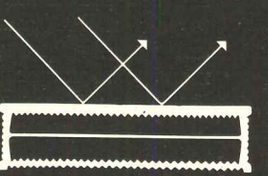
J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA



PRISMS REFLECT SUMMER SUN . . .
yet readily transmit cool ground-reflected light, weak Winter sun.

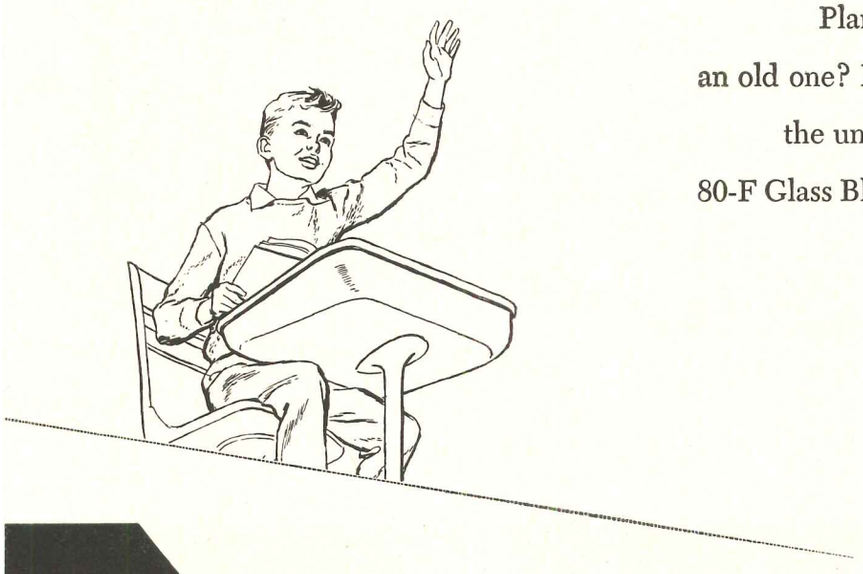


OWENS-ILLINOIS TOPLITE ROOF PANELS, incorporating the same solar heat control benefits, are available for horizontal use to transmit cool daylight through the roof.

NEW . . . at last, a glass that reflects the hot sun

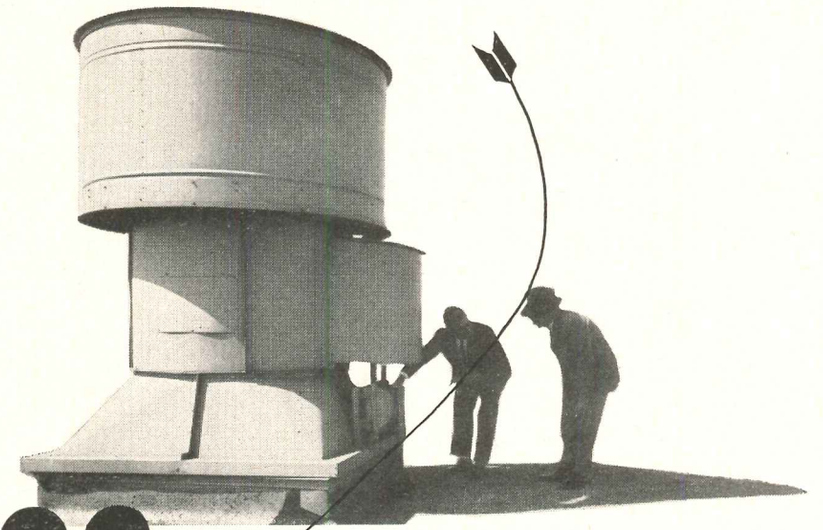
This is new Owens-Illinois 80-F Glass Block. Its specially designed prisms reflect hot sunlight, transmit cool light rays. 80-F is the new way to keep classroom temperatures at comfortable levels . . . to assure maximum student attentiveness, minimum teacher fatigue.

Planning to build a new school? Remodel an old one? Before you start, be sure to investigate the unique benefits offered by Owens-Illinois 80-F Glass Block. For full information, write Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AR-6, Toledo 1, Ohio.



GLASS BLOCK AND TOPLITE PANELS
TWO (O) PRODUCTS

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO



36 Burt Free Exhaust Fan Ventilators Rout Heat and Fumes Fast in TRUE TEMPER®'S New Saybrook Forge Plant

Designed and built by The Austin Company, Cleveland, Ohio, True Temper's multi-million-dollar Saybrook Forge Plant uses eighteen 54″ and eighteen 42″ Burt Free Exhaust Fan ventilators to provide a two-minute air change dependably and economically . . . The entire discharge in Burt Free Exhaust Fan ventilators is vertically upward, with no internal baffles to impede the full flow of air. This highly efficient design provides power capacities of 41,700 cfm for each 54″ ventilator and 24,000 cfm for each 42″ unit . . . Fresh air at low cost is available for your plants, too, from Burt's complete line. There's a type and size for every ventilating need.

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Write for Burt Data Book SPV-101G. It supplies quick data on Burt's complete line of modern Roof Ventilators.

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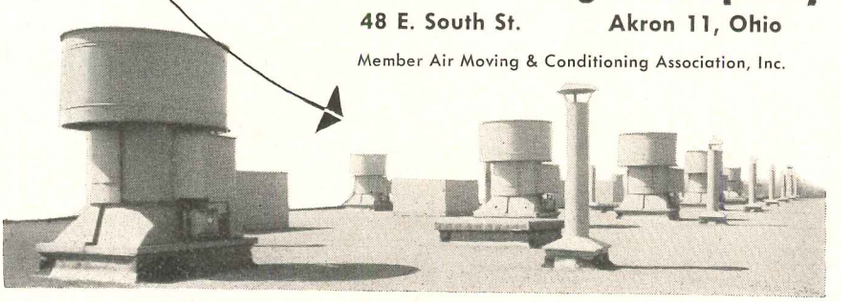


Office Literature

Corrugated Asbestos Transite

(A.I.A. 12-F-2) Describes varying applications and details methods of fastening, sealing and flashing this material. 31 pp. *Johns-Manville, 22 East 40th St., New York 16, New York* *

Alkyd-Latex Paint Color Book

Illustrates 100 paint colors on 3 in. by 4¾ in. chips, indexed, tabbed, and printed with color name, number, and formula. *RTU Book, Luminall Paints, Chicago 9, Illinois*

Monarch Wall Veneer Panels

Describes a porcelain enamel-Masonite-metal sheet sandwich together with details of joints and suggested specifications. 2 pp. *Davidson Enamel Products, Inc., 1125 East Kibby Street, Lima, Ohio* *

Bleachers

Describes construction features, capacities and dimensions of a large selection of folding bleachers, backstops, grandstands and chair stands. 12 pp. *Bleacher Division, Berlin Chapman Co., Berlin, Wisconsin* *

Calcore Catalog (A.I.A. 17-A)

Illustrates a variety of porcelain-faced curtain wall panels in several combinations of honeycomb, Fiberglas or Foamglas insulation and galvanized or porcelain back. 7 pp. *Architectural Porcelain Div., Caloric Appliance Corp., Topton, Pennsylvania* *

Specifications for Post-Tensioned

. . . *Prestressed Concrete* is a complete specification for design stress, design detail and construction. 3 pp. 35 cents. *Publication Office, Prestressed Concrete Institute, 3132 N.E. Ninth St., Fort Lauderdale, Florida*

Insulated Concrete Data File (A.I.A. No. 4-E-13 and 37-B-2)

Is a specification file made up of individual sheets showing how insulating concrete is applied to various types of roof decks or used in roof construction. *Zonolite Company, 135 S. LaSalle St., Chicago 3, Ill.**

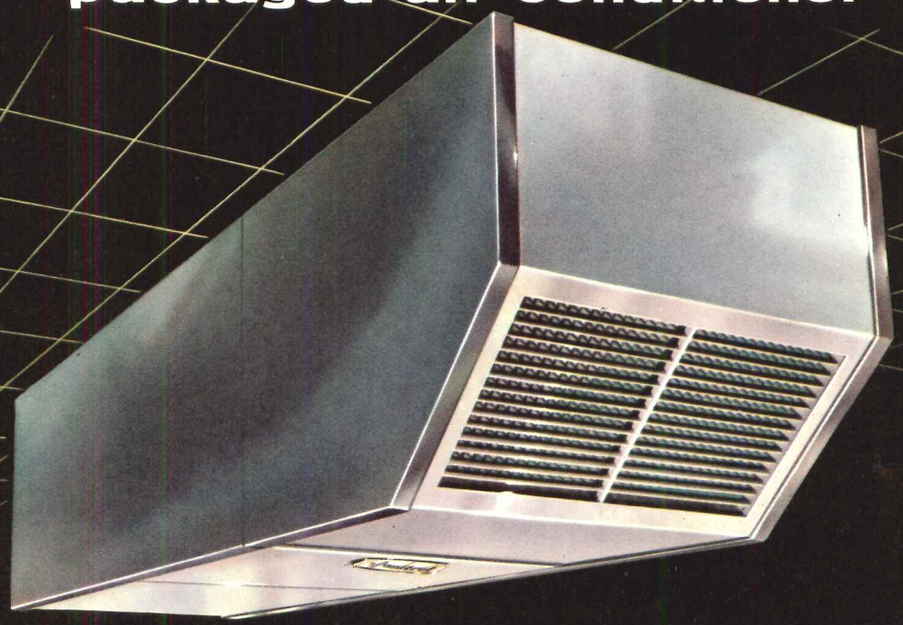
Zurn Thinline System

(A.I.A. 29-H-8) Describes a group of fittings supporting wall-type fixtures and taking as little as 8 in. inside the wall. Manual 60, 24 pp. *Zurn Industries Inc., Plumbing Products Division, Erie, Penna.*

* *Additional product information in Sweet's Architectural File, 1958*

the quality tells... the quality sells

new JANITROL AIR COOLED packaged air conditioner



Flexible and compact—
fastens to ceiling or
stands upright on floor...
adaptable for duct system.

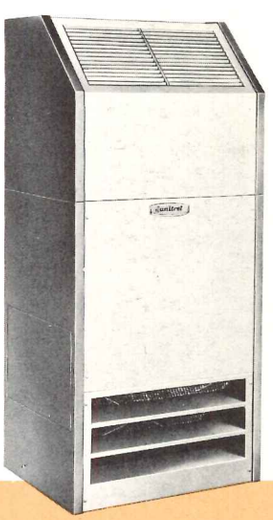
Easy solution to a wide range of residential and commercial cooling problems . . .

new JANITROL COMPACK

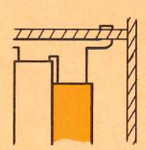
"packaged" waterless cooling conditioner

This versatile new cooling conditioner lends itself to an exciting variety of cooling applications . . . meets your need for maximum cooling efficiency in little or no floor space at all!

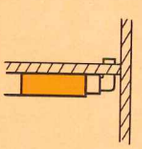
It is designed for free air discharge or use with a duct system . . . may be suspended overhead or positioned on the floor. *Waterless* operation assures quieter, thriftier operation—establishes a new concept of cooling performance. The complete refrigeration assembly is housed in a remote air-cooled unit that's engineered for comfort-cooling with outside air temperatures to 125° F.



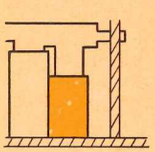
For your next residential or commercial job, provide controlled, high-efficiency cooling free from objectionable noise and drafts with the Janitrol Compack . . . one of Janitrol's complete line of conditioners for cooling and heating-cooling applications. Ask your Janitrol representative for full details.



Janitrol "Compack" in parallel with warm-air "up-flow" furnace completes a year 'round comfort system.

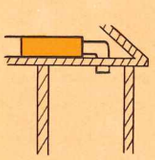


In basements with low headroom, "Compack" saves space—may be suspended from joists and utilize existing warm air ducts through a by-pass system.



Janitrol "Compack" blower coil unit with up-flow furnace in first floor closet or utility room.

"Compack" installed overhead in an office. Whisper-quiet, it never intrudes to disturb busy people.



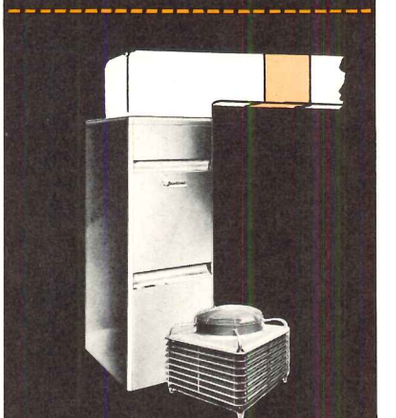
Janitrol "Compack" in attic—cools entire house through small ducts feeding diffusers near ceiling of rooms below.

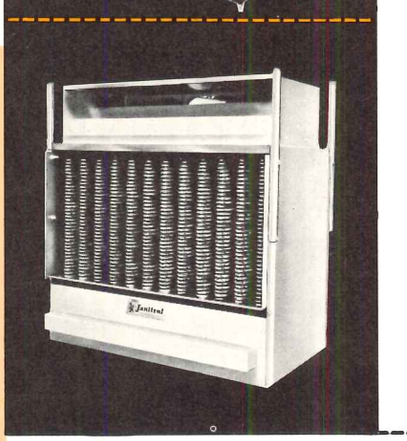
"Compack" feeding a duct system in modern store. Several "Compack" units can be combined to meet a variety of cooling needs—provide zone control where desired.

"Compack" installed upright on the floor in restaurant. Draftless, free-air discharge.

ARCHITECTS, ENGINEERS AND CONTRACTORS INFORMATION SERVICE

Write today for complete specifications on Janitrol cooling and heating in buildings of every type. There's no obligation.





JANITROL WIN-SUM-MATIC

Year 'round conditioner

Combines thrifty gas heating, waterless cooling in little as 3-3/5 sq. ft. of floor space. Famous 20 year warranted Dura-Tube heat exchangers. Unique by-pass gives correct air flow for heating and cooling without seasonal adjustments. Air cooled Pride O' Yard unit is low, sleek, efficient . . . ADD-ON cooling option—install for heating only, add cooling later. Upflow and downflow models, 80,000 to 200,000 btu./hr. (to 120,000 on down flow) heating, 22,000 to 76,000 btu./hr. cooling capacities*.

SRA add-on cooling

Adapts most any warm air furnace for thrifty, efficient central cooling. Cooling coil mounts in duct, beautiful air cooled Pride O' Yard unit goes outside. Powerful, quiet performance with outside temperatures to 125° F. Easy to install. Waterless operation eliminates plumbing, sewage, water supply problems. 22,000 to 76,000 btu./hr. Capacities*.

Gas-fired Duct furnaces

Designed for installation in a duct where the air is circulated by a separate blower. Especially adaptable for industrial heating applications in combination with cooling. DUCT Series 55 in five sizes from 85,000 to 225,000 btu./hr. Series 75 in sizes 200,000 and 300,000 btu./hr. may be combined to provide unlimited capacity range.

CAPACITIES*

SRA-7—22,000 btu.
SRA-9—35,000 btu.
A-401 and 403—47,500 btu.
SRA-11—58,500 btu.
A-603—76,000 btu.

*95° F. Dry Bulb air entering condenser, 80° F. Dry Bulb, 67° F. Wet Bulb air entering evaporator, approximately 400 CFM per 12,000 btu.

JANITROL®

HEATING AND AIR CONDITIONING DIVISION

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Also Makers of Surface Industrial Furnaces, Kathabar Humidity Conditioning, Janitrol Residential Heating and Cooling Equipment

ALUMINUM Ualco® WINDOWS

Curtain Walls

By the World's Largest Manufacturer of Aluminum Windows

Stately and clean of line, this studio-office building was "prefabricated."

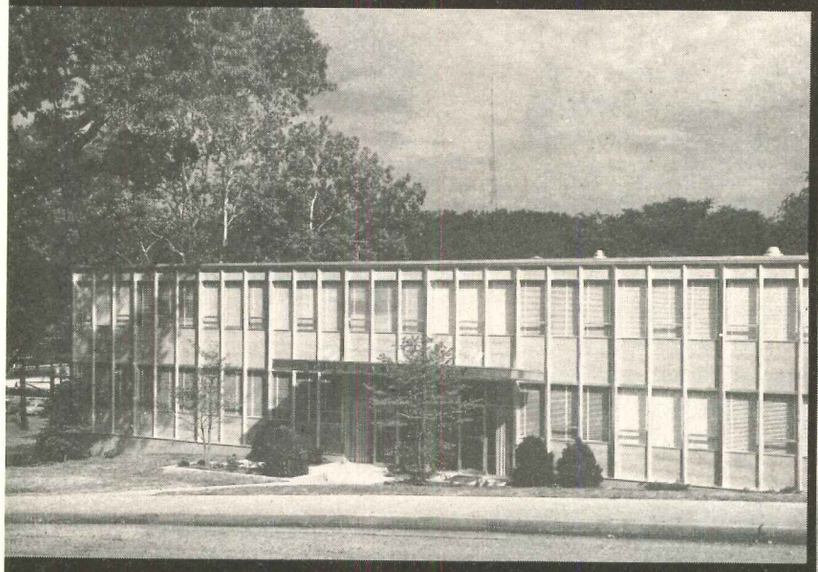
Factory prepared, two-story Ualco Curtain Wall units were erected quickly, economically.

Tall, covered mullions, big hopper-vented windows, and pink-marble panels add up to dignified beauty, easy to maintain.

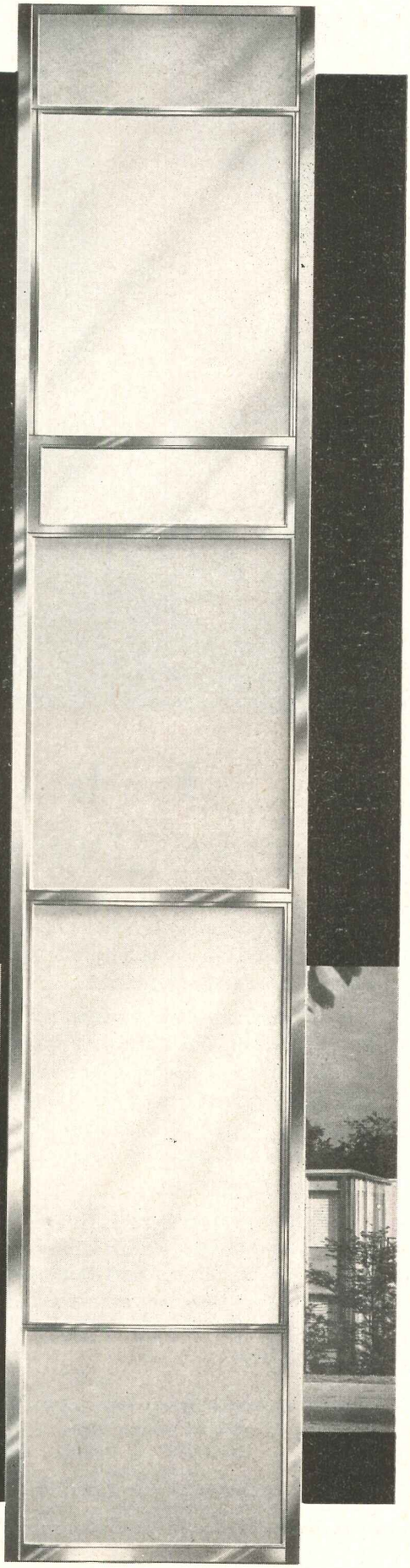
Specify Ualco Curtain Wall — four series, with awning or intermediate projected windows.

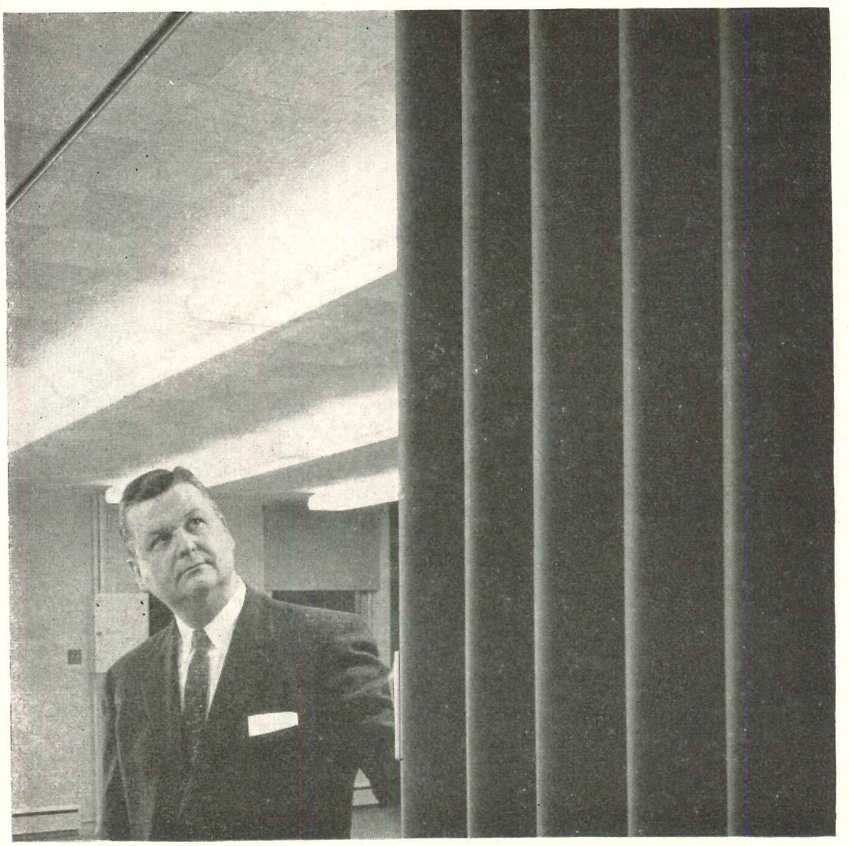
Southern Sash

Sales & Supply Co., Inc. Sheffield, Ala.



WBIR Radio-TV, Knoxville, Tenn. Architects, Painter, Weeks & McCarty, Knoxville. Contractor, Emory and Richards





For Beauty
specify FOLDOOR *because . . .*

. . . the exclusive design of the new Multi-X FOLDOOR incorporates a hidden safeguard for the lasting beauty of your room divider or folding door.

You can forget about unsightly wrinkles or sagging folds in the fabric of your Multi-X FOLDOOR. The fabric is fastened to the frame in the *valley* of the fold, by a special free-floating self-aligning clip or hook, positioned by the frame hinge pin. That way, the fabric is always stretched taut over the frame, whether flexed open or closed—insuring straight, graceful volutes at all times.

This *free-floating, self-aligning fabric-fastener* is one of many hidden advantages of FOLDOOR—the only *complete* line of fabric-covered folding partitions and doors. It will pay you to investigate these advantages. Call your nearest FOLDOOR distributor—listed under "Doors" in the yellow pages—or write us direct.

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INSTALLING DISTRIBUTORS IN ALL PRINCIPAL CITIES

SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE OR WRITE FOR COPY

HOLCOMB & HOKE
FOLDOOR
FOLDING PARTITIONS AND DOORS

Washington Topics

continued from page 56

and other health facilities will be required in the next 10 years. This sizeable outlay is needed because of population increases, modernization needs, and the replacement of obsolete structures. PHS said that half the amount will be required just to replace those hospital patient care units that have been operating for 50 years or longer.

This estimated dollar requirement anticipates a rate more than three times the expenditures during the first decade of the Hill-Burton hospital construction program.

Recognizing that this goal could be quite difficult of attainment, Health, Education, and Welfare Department spokesmen have been stressing increasingly the desirability of taking a new approach to the use of present facilities and the design of future hospitals.

What Kind of Hospitals?

Aims C. McGuinness, special assistant to the HEW Secretary for health and medical affairs, expressed this view when he said that he could not stress too strongly "the need we have for increasing our efforts to keep people out of hospital beds; the need we have for making the most intelligent use of the plants we now have; and for our future hospitals, the need for determined and imaginative approach to the design and operation of accommodations best suited to the patients to be served."

PHS has based several of its research projects on these apparent needs. These are concerned with what it calls graduated or selective care

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C.S.I. Boom *continued from page 40*

6. Each member shall refrain from disclosing the interest or business affairs of any client or employer without his knowledge and consent.

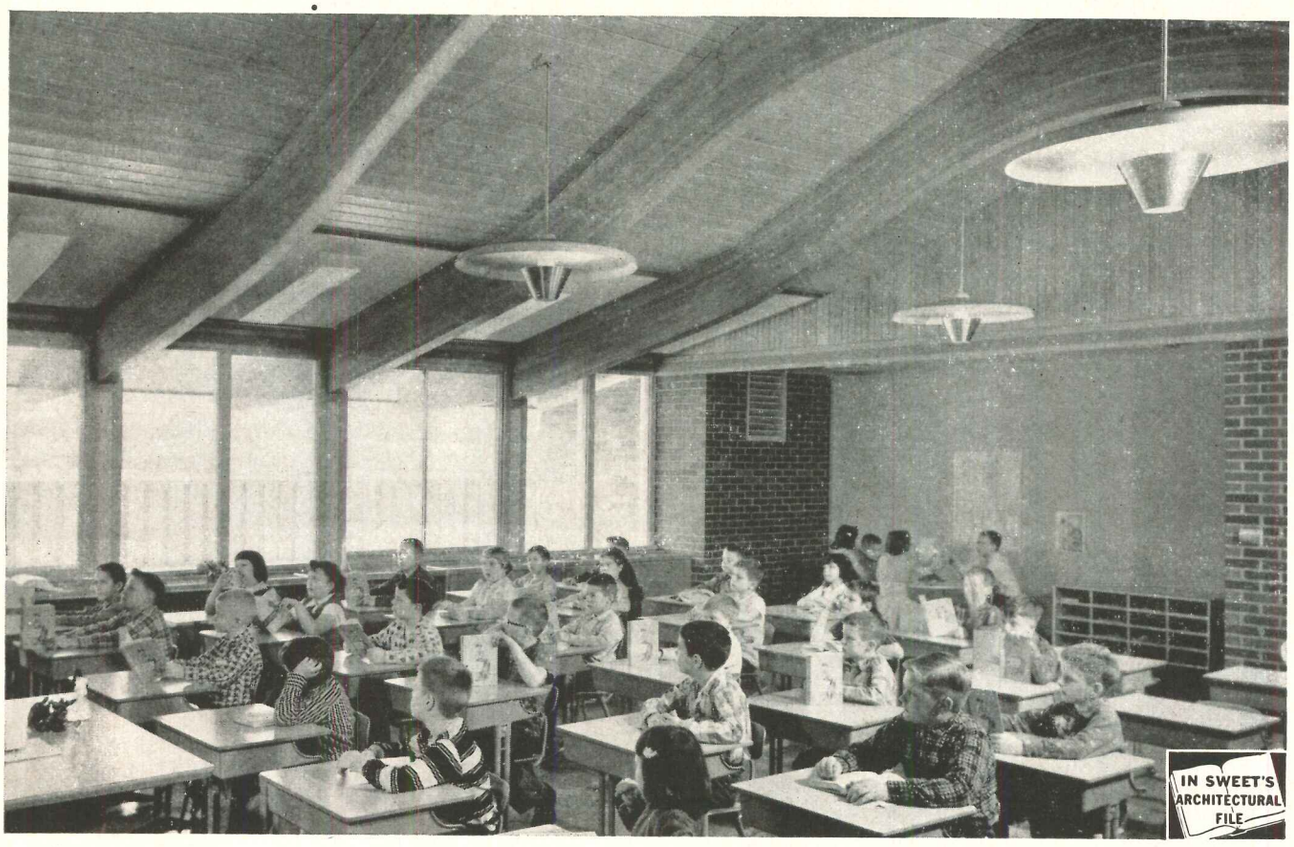
7. Each member shall uphold the principle of appropriate and adequate compensation to those engaged in specification writing and refuse knowingly to compete on basis of compensation.

8. Associate members shall pledge themselves never to misrepresent their products in any manner, either as to composition, quality or use, and to assist their fellow members in maintaining the high standards of service set forth in this Code of Ethics.

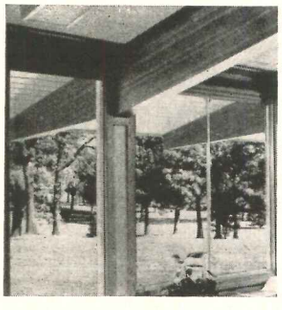
Lennox Research School, Des Moines, Iowa, is a development and research project of Lennox Industries, Inc. Outside dimensions of the split level two-room unit are 46′ x 71′-10″.

JOB DATA: **Space provided:** Two classrooms each 28′ x 30′, 10′ x 71′ corridor, three toilet areas. **Exterior walls:** brick, glass and wood. **Interior walls:** brick and wood paneling. **Heating and ventilation:** Lennox Comfort Curtain system featuring forced air with automatically controlled dampers to mix fresh and recirculated air. **Lighting:** Low voltage fluorescent lighting balanced with incandescent fixtures. **Floors:** quarry tile in entry, asphalt tile in classrooms. **Roof surface:** asphalt shingles over 2″x6″ tongue-and-groove sheathing. **Ceiling:** acoustical tile in corridors; exposed timber sheathing in classrooms. **Cost** per square foot: $15.00

Architects: Perkins and Will, Chicago. Contractor: Lovejoy Construction Company, Des Moines



Advanced School Architecture



Cantilevered glulam beams extend the roof to form a canopy which protects the window areas from the sun. Classrooms receive natural light from three sides.

...with glulam beams by Timber Structures, Inc.

Natural beauty . . . pleasant atmosphere . . . complete safety . . . easy maintenance . . . and economical construction all are combined in this practical research laboratory of modern school design.

Along with advanced heating and lighting, the school features clear span interiors, with the roof supported by handsome double curved glulam beams. These were chosen to obtain a soft flow of sweeping space from wall to wall. Spaced at six feet, they provide interiors that are warm and light in feeling, with desired center height and ground-hugging eave lines. Cantilevering six feet beyond the sidewalls, they support a canopy which shields the large windows from direct exposure to the sun.

Other applications of glulam timber members by Timber Structures, Inc. include girders, arches and trusses for classrooms, gymnasiums, libraries, auditoriums, field houses and vocational shops. Outstanding examples of these applications are contained in the illustrated brochure, "Timber Framing for Modern Schools". Get your copy from your Timber Structures representative, or write us for it.

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Offices in Ramsey, N. J.; New York City; Boston; Philadelphia; West Hartford; Cleveland; Charlotte; Chicago; Centerline, Mich.; Kansas City; St. Louis; Minneapolis; Des Moines; Wichita; Memphis; Dallas; Houston; Birmingham; Beverly Hills, California; Seattle; Spokane; Denver.

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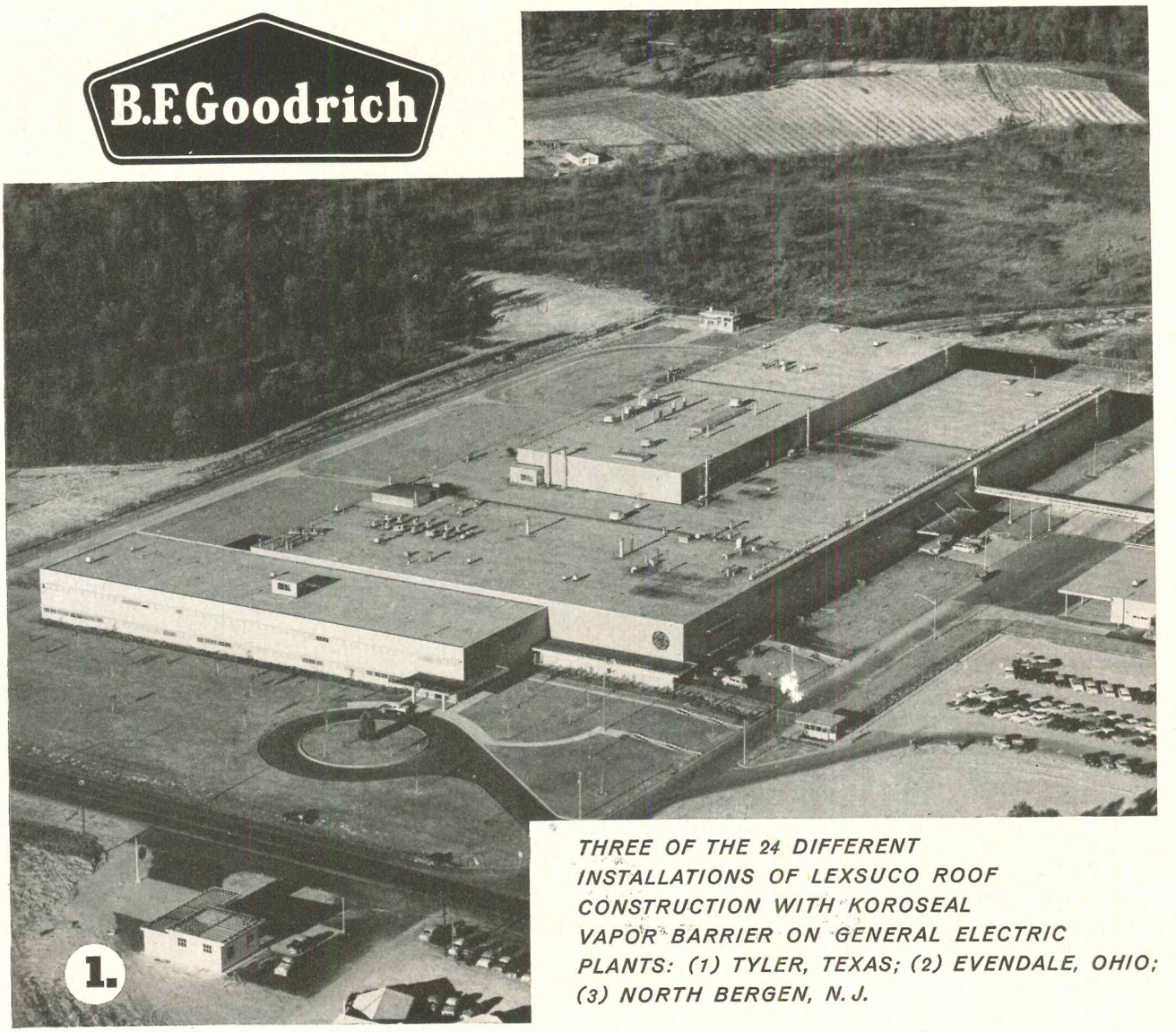
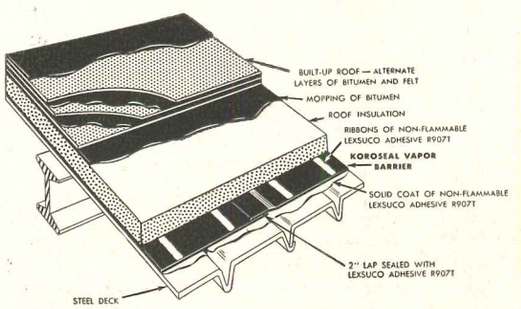


THREE OF THE 24 DIFFERENT INSTALLATIONS OF LEXSUCO ROOF CONSTRUCTION WITH KOROSEAL VAPOR BARRIER ON GENERAL ELECTRIC PLANTS: (1) TYLER, TEXAS; (2) EVENDALE, OHIO; (3) NORTH BERGEN, N.J.

This customer has used more than

Lexsuco roof construction with



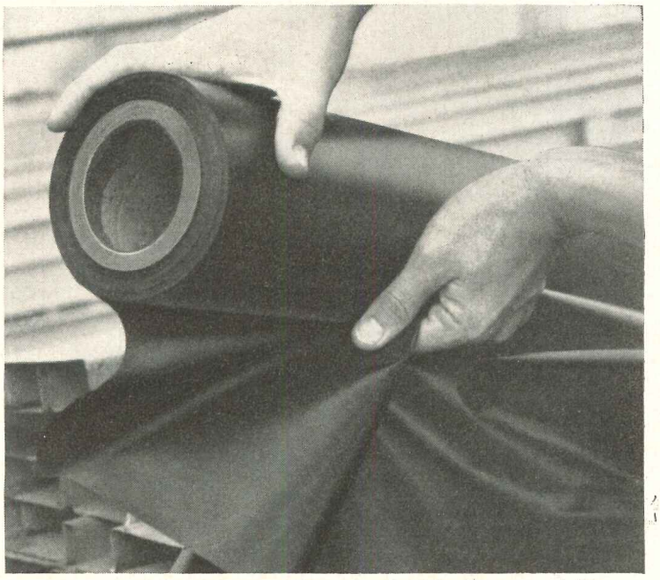
Typical Lexsuco roof construction with Koroseal vapor barrier

MORE and more of America's leading companies are making wide-spread use of Lexsuco roof constructions with fire-retardant Koroseal vapor barrier and non-flammable Lexsuco adhesive R907T. This construction assures these major benefits: (1) a fire retardant construction with Factory Mutual Class 1 rating; (2) maximum vapor barrier protection; (3) dependable securement; and (4) fast, economical installation.

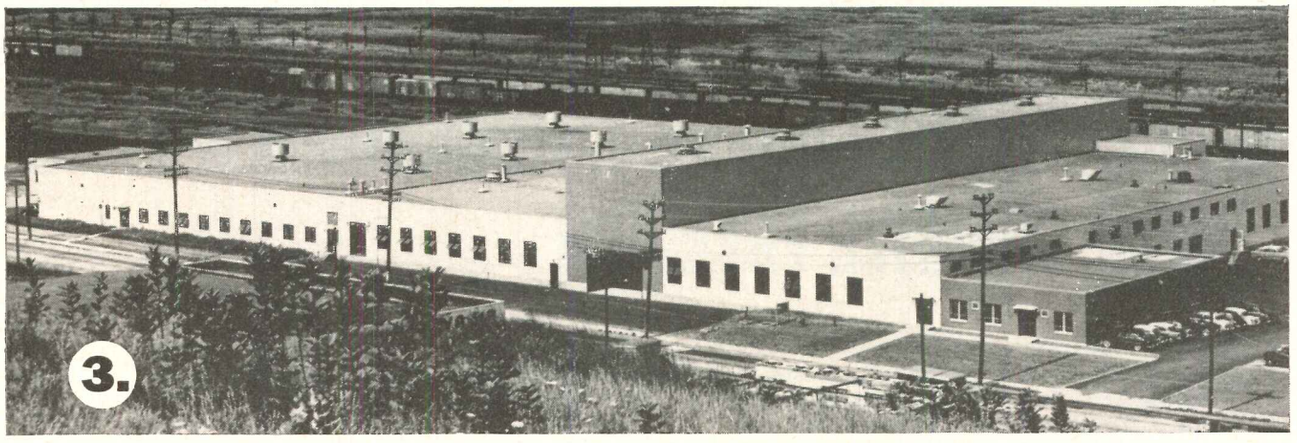
Unlike ordinary roofing materials, Lexsuco Roof Constructions with Koroseal Vapor Barrier can't feed a fire. There's no asphalt between roof deck and insulation to give off flammable gases. Conventional asphaltic materials are replaced by the fire-retardant Lexsuco system.

Koroseal has proved itself as a vapor barrier. It eliminates

2.



B.F.Goodrich Koroseal Vapor Barrier *is a specially compounded fire retardant vinyl material.*



3.

2 million square feet of

Koroseal® vapor barrier

moisture migration from within the building, stops pitch drippage and helps retain maximum insulation value.

This remarkable fire-resistant construction is quick and easy to install. No matter what size roofing job you have, here's the way to cut installation costs and protect your building from fire. Koroseal Vapor Barrier is a specially compounded fire retardant material made by *B.F.Goodrich Industrial Products Company, Marietta, Ohio.*

Mail this coupon for detailed information:

LEXSUCO INC
Dept. AR-6
Box 326, Solon, Ohio

Please send me informative folder on the Lexsuco system of roof construction.

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Company_____

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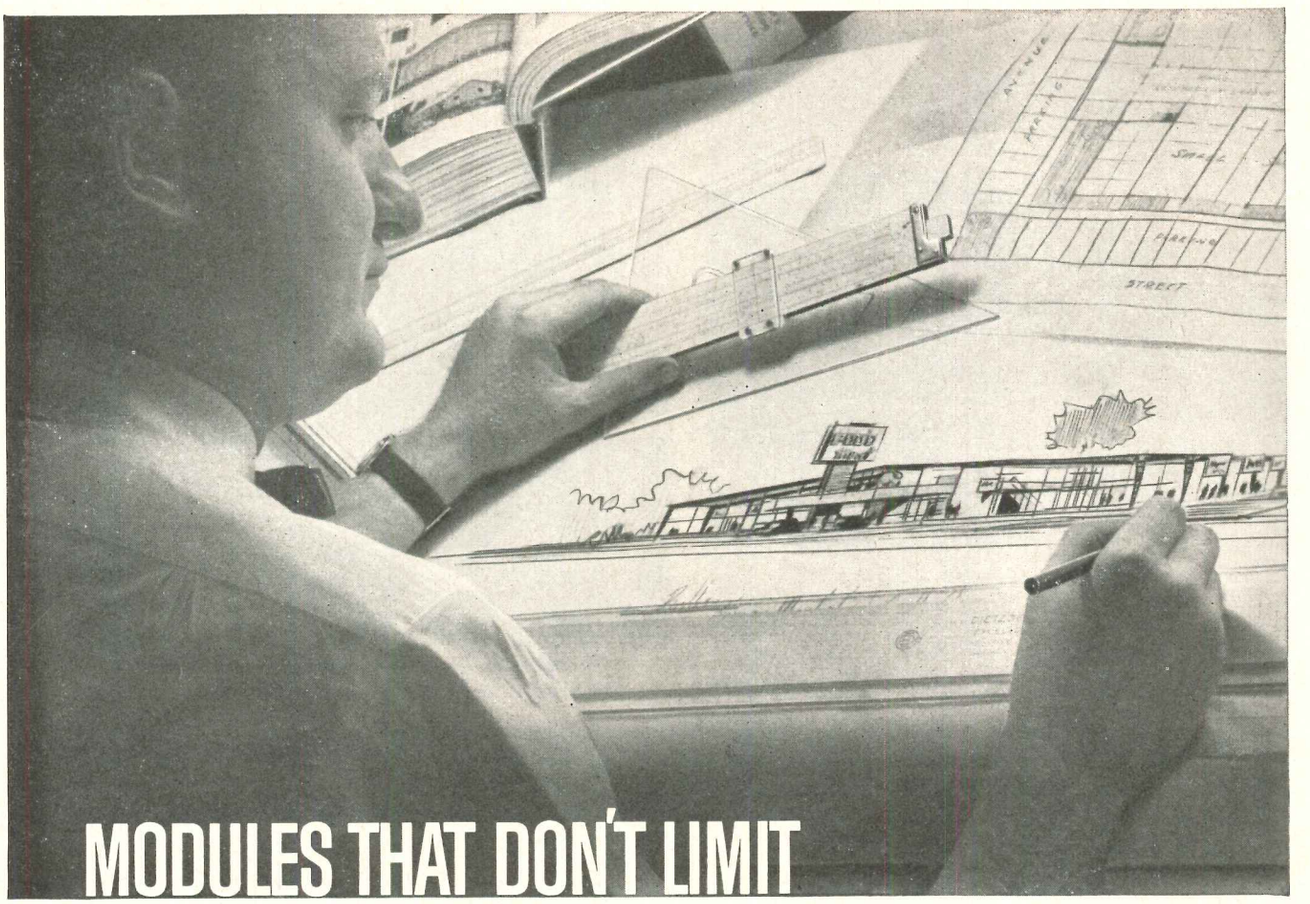
B.F.Goodrich Koroseal flexible material



MODULES THAT DON'T LIMIT YOUR CREATIVE FREEDOM

Here is a refreshing new approach to modular construction. It is a system of building that gives you, the architect, control over both the structural form of the building and the finished appearance. It is the Butler Building System.

In the Butler Building System, the module is a unit of space—a building bay. This bay is comprised of pre-engineered, mass-produced, load-bearing structural components, and die-formed, tight-fitting metal roof panels. It is available in a wide variety of heights, widths, lengths and roof slopes. Use of the Butler bay module reduces drafting room time, and brings to the construction site the economical control of quality attainable only on the production line.

Your design initiative is given free rein. By manipulating the structural members . . . by specifying double pitch or butterfly shapes, complete rigid frames or cantilevered construction, canopies or lean-tos . . . by combining various sizes and roof pitches, building lengthwise or laterally—you can dictate the structural form of the building.

But more than that, with the Butler modular system of construction, you also dictate the finished appearance. Since walls are non-load bearing, you have unrestricted freedom in your choice of wall material. Emphasis can be on design and protective characteristics.

No other modular system opens so wide the door to creative imagination. In no other modular system is the end product so clearly your trademark . . . so decidedly a tribute to your individuality.

Why don't you get the whole story from your Butler Builder? He's listed in the Yellow Pages of your phone book under "Buildings" or "Steel Buildings." Ask to see the color film, "Architectural Opportunities with the Butler Building System."

see our catalog in Sweet's or write for copy

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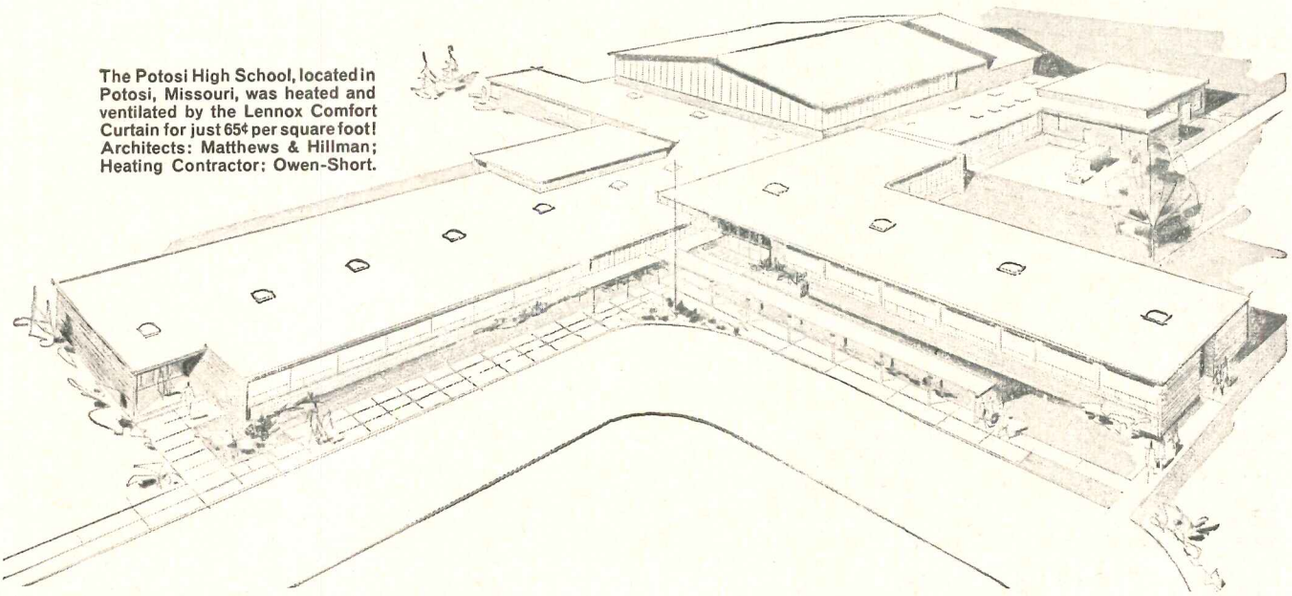
Potosi school gets the finest in fresh air heating and ventilating—installed complete with automatic controls—for just 65¢ per square foot!



The Potosi High School, located in Potosi, Missouri, was heated and ventilated by the Lennox Comfort Curtain for just 65¢ per square foot! Architects: Matthews & Hillman; Heating Contractor: Owen-Short.

New Lennox Comfort Curtain System automatically draws in fresh air from outside . . . warms, cleans and circulates air quietly and evenly throughout the classroom!

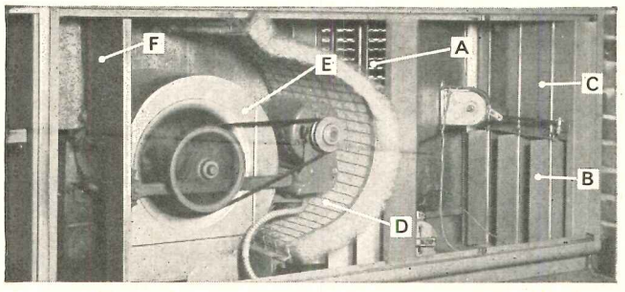
Hard to believe, isn't it?—that after all these years a new and better fresh air heating and ventilating system can be installed *for a fraction of the cost* of systems used previously. Yet it's true! 65¢ per square foot was the *complete* cost of the Lennox Comfort Curtain System in the Potosi, Missouri High School. Including fully automatic controls, ductwork, labor—everything!

Of course, 65¢ per square foot is unusually low, even for the Comfort Curtain. But costs of $1.03 in Indiana, $1.15 in Montana, and $1.12 in South Dakota are *usual and typical* of the amazing savings offered by the Lennox Comfort Curtain.

How is this possible? The Lennox Comfort Curtain System applies to schools the sound, tested principles of warm air heating. It eliminates expensive pipes, boilers and chimneys. Moreover, it saves hundreds of dollars per classroom per year *every* year it is in use. Fuel is consumed only when heat is required, maintenance is amazingly simple and low-cost. Yet—and this is important—the Lennox Comfort Curtain System does a far better job than costlier systems used previously.

It provides a full, even flow of air throughout the entire length of the exposed classroom wall. It is amazingly quiet. And it holds room temperatures to a variance of six-tenths of one degree, circulates air continuously for perfect distribution, introduces a continuous supply of fresh air into the daytime heating cycle, and provides *tons* of needed fresh air cooling without the cost of refrigeration!

Get full information on this new low-cost system of classroom heating and ventilating. Send coupon below for free booklet, today!



Lennox Air Processing Unit introduces fresh air in adjustable volumes (A); transmits warm air (B) from adjacent or remote heating unit; continuously recirculates indoor air (C); filters air clean (D). Lennox' exclusive floating blower (E) and acoustical lining (F) assure a degree of quietness never before achieved.

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Lennox Industries Inc., Dept. AR-83
1701 E. Euclid Ave., Des Moines 5, Iowa

Gentlemen: Please send me your free booklet on the Comfort Curtain system of classroom heating and ventilating.

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NEW BENDIX "WEATHERMAN"...

functional flair for your building designs

Bendix' new "Weatherman"*, for accurate and instant reporting of just how the weather is outside, is a natural eye catcher. It's adaptable to a variety of buildings such as airports, banks, schools, TV stations, and many others where this public service can be a "built-in" feature. It is also adaptable to existing structures. Weather conditions are indicated on large and colorful dials, showing outdoor temperature, relative humidity, rainfall, atmospheric pressure, wind speed, and wind direction.

With the exception of the barometric pressure unit, each indicator is actuated by a remote (rooftop) transmitter and is connected to the transmitter by electric cable. "Weatherman" indicators and transmitters can also be obtained as individual units.

The "Weatherman" is made by Bendix Friez, makers of weather-data instruments for more than eighty years. For further information and installation data, write to Bendix Friez, 1320 Taylor Avenue, Baltimore 4, Maryland.

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Washington Topics

tailored to the immediate needs of the individual patient.

It is obvious that PHS is thinking more and more in terms of hospitals designed on a zoned basis; with special areas for special services. Five types of care demanding their own special facilities have been described as intensive care, intermediate care, self-care, long-term care, and a home-care program.

Few hospitals are organized this way. HEW is trying to get a more accurate count of those plants embracing graduate care programs. Some 7000 hospitals are involved in a current agency survey to determine the extent to which they may have such programs, or if they have instituted a selective care program at all.

Deep Underground Shelters Studied With Manhattan as Prototype

Engineering studies which indicated excavation in solid rock 800 ft below Manhattan Island could produce enough shelter space to house the entire daytime population of Manhattan for 90 days were described last month in testimony before the House Government Operations subcommittee. Cost of such a project was estimated at between $2.5 and $2.8 billion, or $680 per person to be housed.

The studies, intended as a prototype investigation of the feasibility of constructing underground shelters deep below major American cities, were conducted for the Federal Civil Defense Administration by Guy B. Panero, Engineers, of New York, continuing a survey begun earlier by the Rand Corporation.

FCDA engineers in the Battle Creek, Mich., headquarters had just received the Panero report early last month and would not comment until they had had time for thorough study.

As described before the subcommittee by Benjamin Taylor, FCDA's director of engineering and research development, the study indicated that multiple entrances strategically placed would make it possible to reach shelter from anywhere in Manhattan in a maximum of 25 minutes after warning.

A method of excavation involving a new concept in major earth work is proposed by the Panero report for the project, according to Mr. Taylor. Only pilot bores would be made directly from the surface, these to

WHY STEEL JOISTS ARE RIGHT FOR SCHOOLS

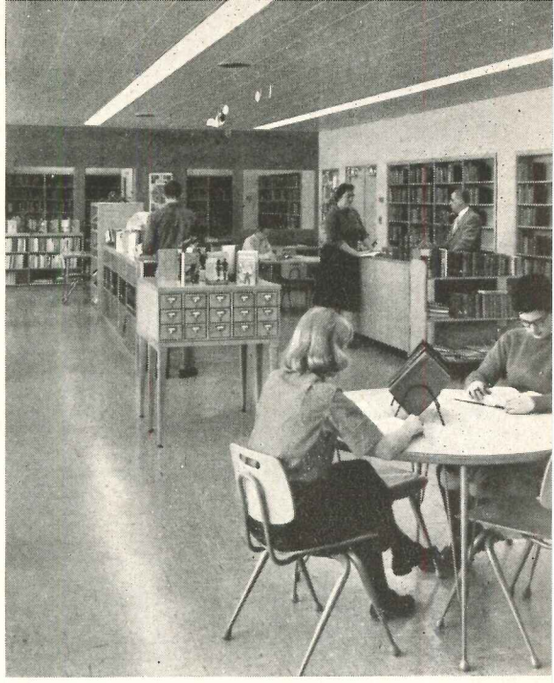
All three of these new Michigan schools have Bethlehem steel joists in their construction. Here's why:

Fast, economical construction—Bethlehem joists arrive at the job site fully fabricated and tagged, ready for immediate placing. No delays to construction schedules; no costly labor in placing them—two men can easily handle smaller sizes; a simple derrick lifts the larger joists.

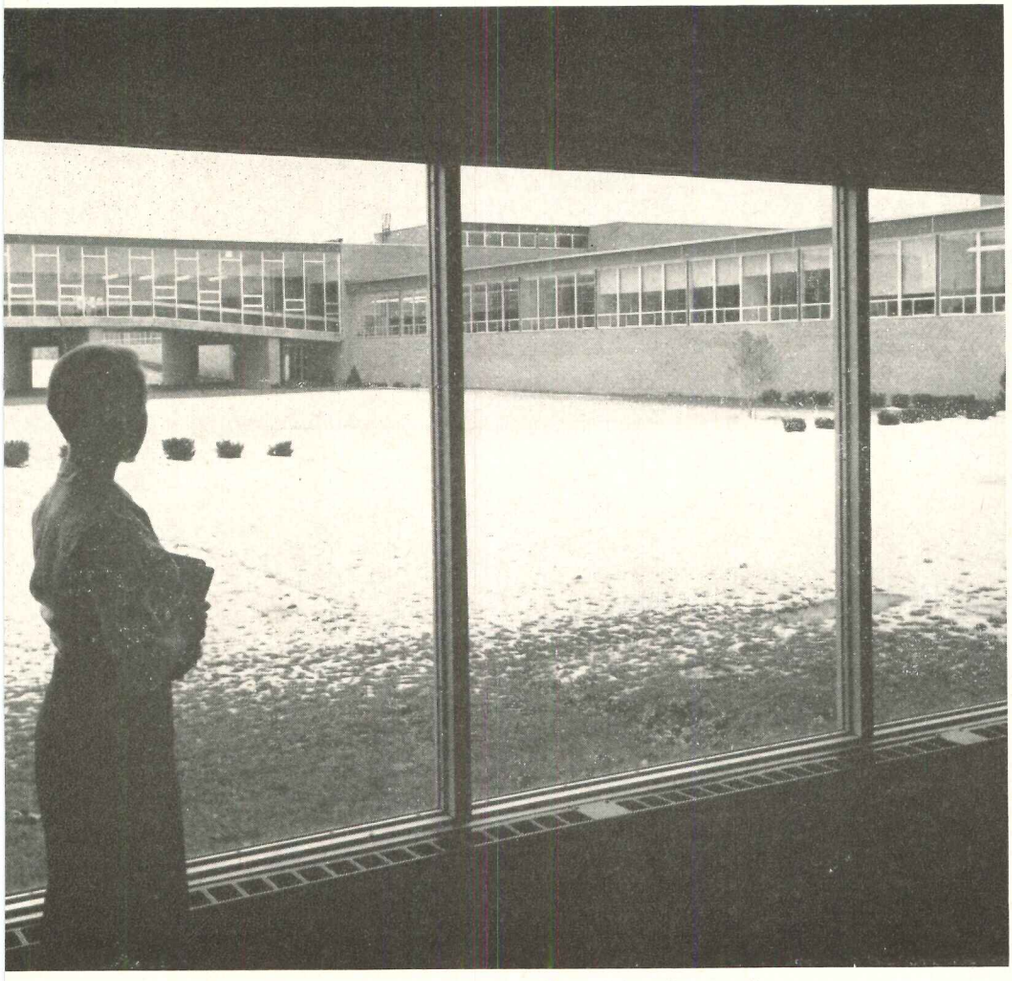
Fire-resistance—Steel joists in combination with floor slab and plaster ceiling form a barrier with up to four hours' fire-resistance.

Low maintenance—Steel joists won't warp, sag or shrink, which helps hold maintenance costs down. Sagging floors and cracked ceilings are eliminated.

Our catalog gives full details of these and other advantages gained from joist construction, as well as complete engineering information. Details are also listed in Sweet's catalog of building products.



Royal Oak Clarence M. Kimball High School. Architect: O'Dell, Hewlett & Luckenbach; general contractor: O. W. Burke Co.; steel fabricator: DeCroupet Iron Works.



East Lansing Senior High School. Architect: Warren Holmes Co.; general contractor: Ward W. Ross, Inc.; steel fabricator: Copco Steel & Engineering Co.

Dearborn High School. Architect: Eberle M. Smith Associates, Inc.; general contractor: A. W. Kutsche & Co.; steel fabricator: Copco Steel & Engr. Co.

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Today the Overhead Door Corporation produces The "OVERHEAD DOOR" in sizes to fit all standard door openings . . . and is pleased to cooperate on doors of unusual sizes and special problems. Architects and contractors need only call on us for our special services.

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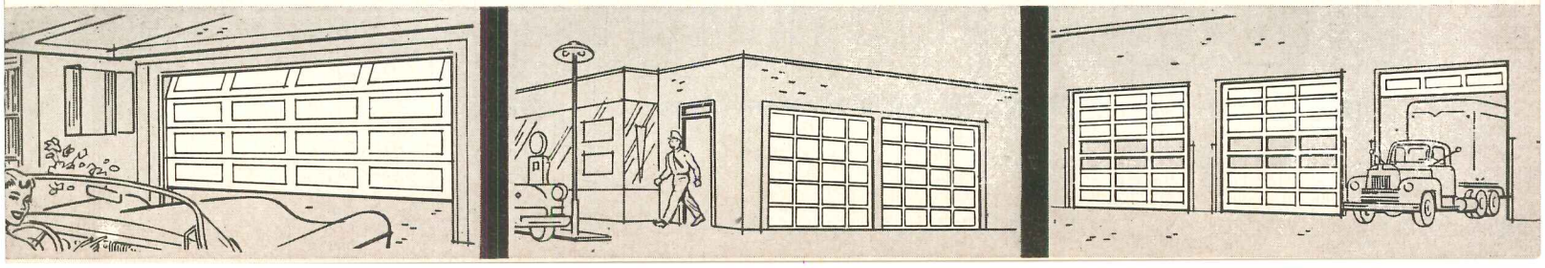

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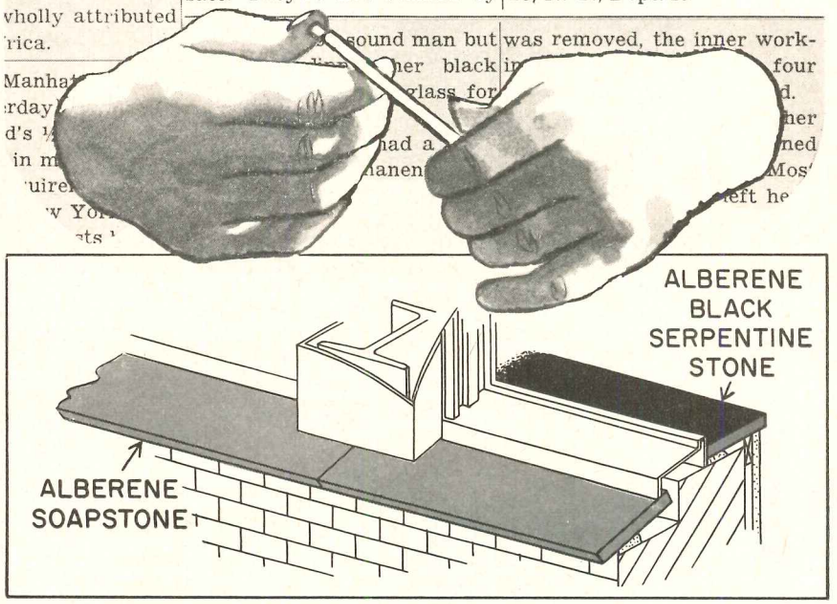
Alberene Stone's low absorbency rate, its fine grain and absence of stratification prevent window sills from spalling and splitting in freezing weather.

Alberene Black Serpentine Stone window stools are chemically resistant. Their all-silicate mineral components prevent discoloration by metallic rust or window sash condensate. They're not stained by salt, grease, oil, fruit juice or alcohol — which simply add lustre when wiped dry.

Architects are offered a color range from silvery gray to dark gray; green to black; and jet black. Also economical slab thicknesses of ⅞" to 1¼".

For full information and technical assistance address: Alberene Stone Corporation, 386 Fourth Avenue, New York 16, N. Y., Dept. R.



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Washington Topics

permit the lowering of machinery and equipment. The digging would then progress from the inside out, with the rock removed on conveyor systems through long tunnels reaching to the surrounding rivers, where the material would be loaded on barges and taken out to sea for disposal.

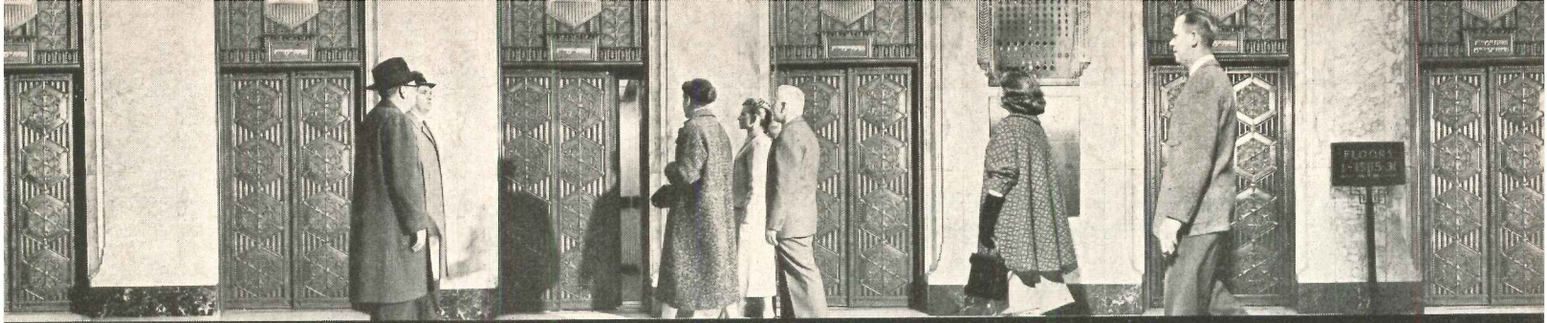
Pressed for an estimate of construction time, Mr. Taylor said he thought two or three years could see completion if enough effort were put on the project. He also noted that thought had been given to excavating under the other New York boroughs and eventually connecting the whole system of shelters for commuting.

The subcommittee was not enthusiastic. Mr. Taylor had said FCDA is not advocating the project but Rep. Chet Holifield (D-Calif.), subcommittee chairman, and some of his colleagues, thought publication of the Panero study would hold the entire civil defense program up to ridicule. "Why engage in such a fantastic study when we must approach the best solution for the greatest number of people?" he asked.

In defense, Mr. Taylor explained that FCDA feels it has gotten "a wealth of information" on geological formations "under our big cities." Again stressing that the Federal government is not advocating such a program at this time, Mr. Taylor said he felt the geological knowledge gained had justified the expense (he testified FCDA had paid the Panero firm $18,000). He believes the data accumulated for New York would be applicable to many large American cities.

Mr. Taylor's testimony was the most spectacular development at the hearings, which had been called to secure information for Congress on results of the "Plumb Bob" test series at Frenchman's Flats, Nov., last year. A great deal of the technical data resulting from these investigations was placed in the subcommittee's voluminous and growing record in civil defense matters. But many other facets of the general shelter problem, such as administration and financing, found their way into the May discussions.

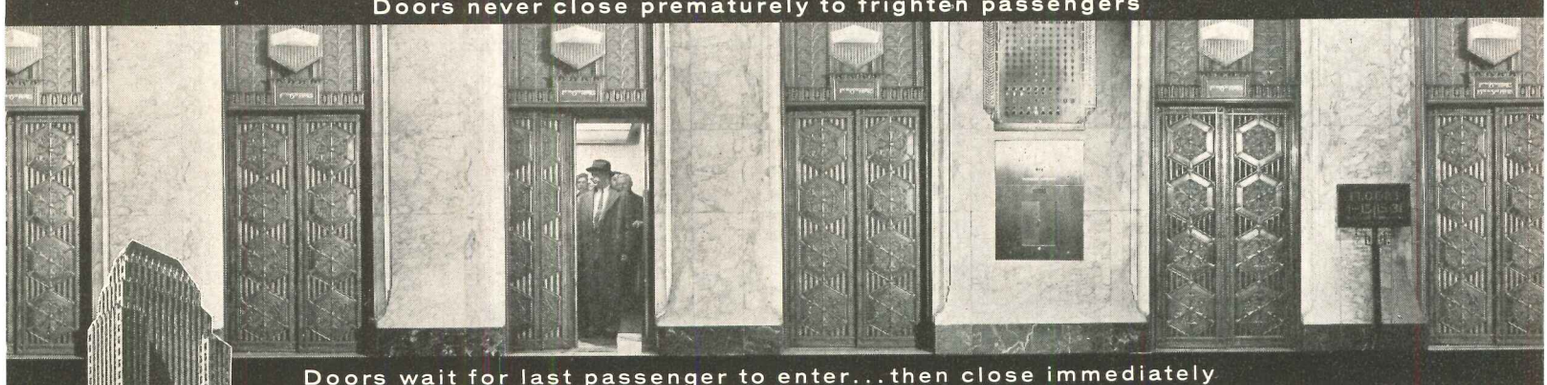
Spokesmen told of the agency's national civil defense program being based on a new aiming area concept. Emphasis is placed on planning of shelters to withstand 30 psi and to concentrate on fall-out protection for total populations in the target areas.



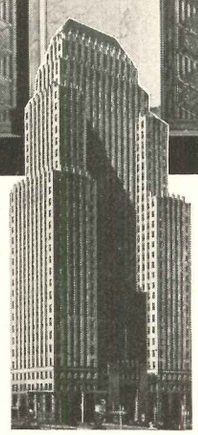
Elevator doors open automatically as car arrives

Doors stay fully opened as passengers enter

Doors never close prematurely to frighten passengers



Doors wait for last passenger to enter...then close immediately



THE KOPPERS BUILDING IN PITTSBURGH, PENNA. modernized its elevators which were installed in 1929 with Selectomatic *operatorless* elevators and Traffic Sentinel controlled doors. When in Pittsburgh, test ride these remarkably *smooth* Westinghouse elevators—and observe Traffic Sentinel in action.

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WESTINGHOUSE OPERATORLESS ELEVATORS WITH TRAFFIC SENTINEL® CONTROLLED DOORS PROVIDE AN AMAZING ANSWER

When Koppers Company, Inc. decided to modernize its Westinghouse elevator system to cope with increasing building traffic demands, they again selected Westinghouse equipment for their 12 elevators. The modernization provided for the newest Westinghouse Selectomatic *operatorless* elevators, as well as electronically controlled Traffic Sentinel doors.

Why *operatorless* elevators?—because operating costs are cut as much as *$7,000 per car per year*.

Why Traffic Sentinel Doors?—because these are the most courteous elevator doors in the world. They work *for* passengers, not against them. They never "snap" at or frighten people. Door opening and closing is controlled entirely by passenger movement. Doors remain open only as long as necessary—and close only when threshold is free and clear. It's all done electronically with Traffic Sentinel's "seeing eye."

If you're planning to modernize your present elevator system to meet today's heavier passenger traffic demands, the people to talk to are in your nearest Westinghouse Elevator Division office. They'll help you with any elevatoring problem relating to modernization or new building installations.

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

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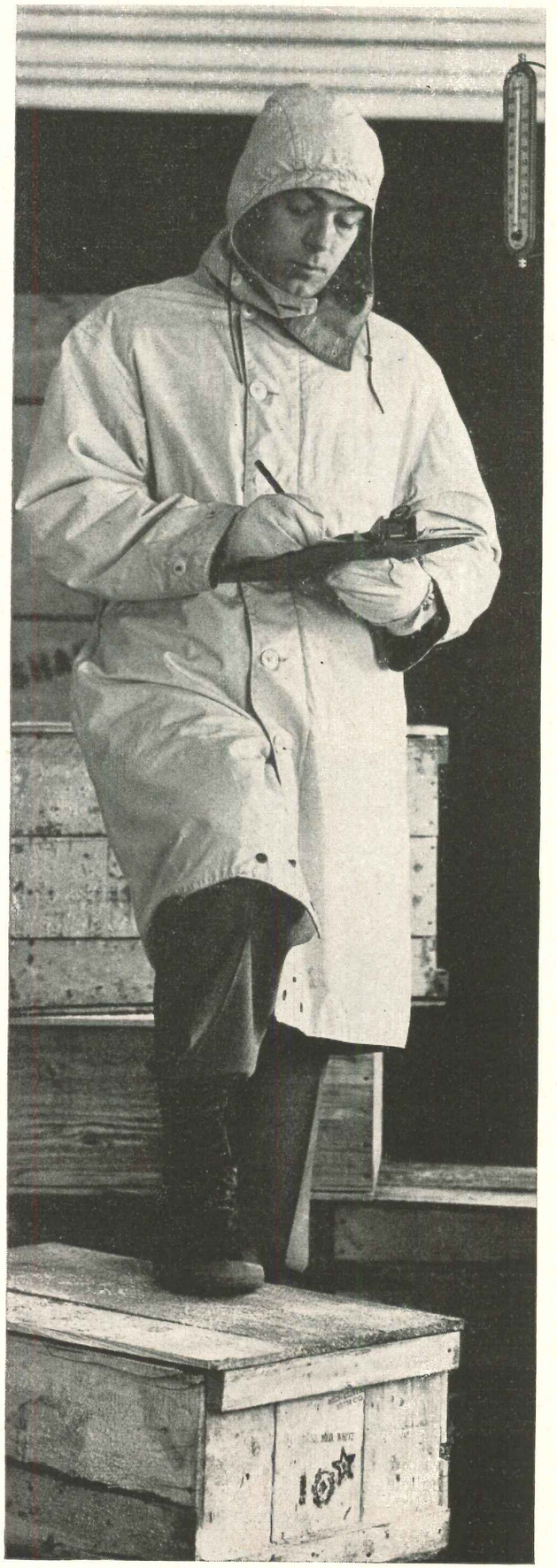

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Ten years ago, a newcomer in the field . . . today, the most copied insulation on the market. That's the performance record established by Styrofoam* in the low-temperature rooms of leading companies throughout the United States and Canada. And now . . . architects and builders are taking advantage of Styrofoam in "comfort" applications, too.

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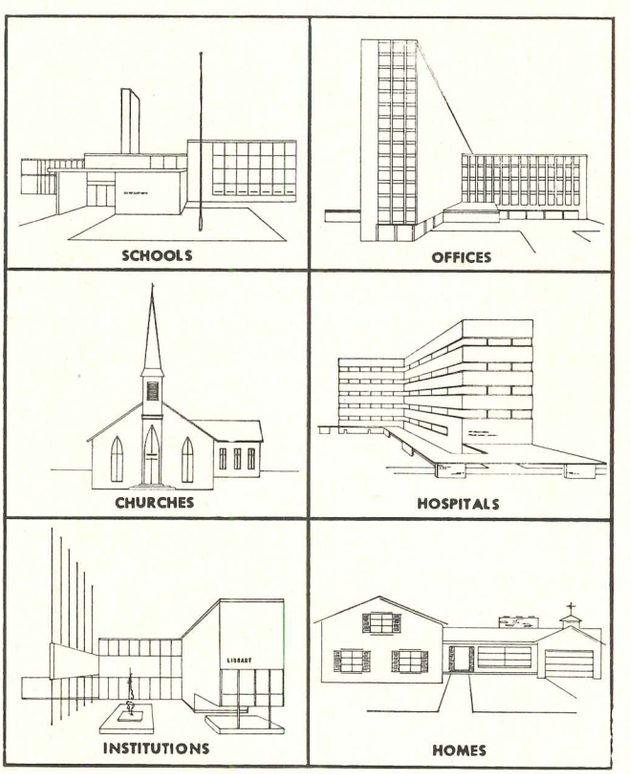

Styrofoam holds the right temperature in freezer room or front office

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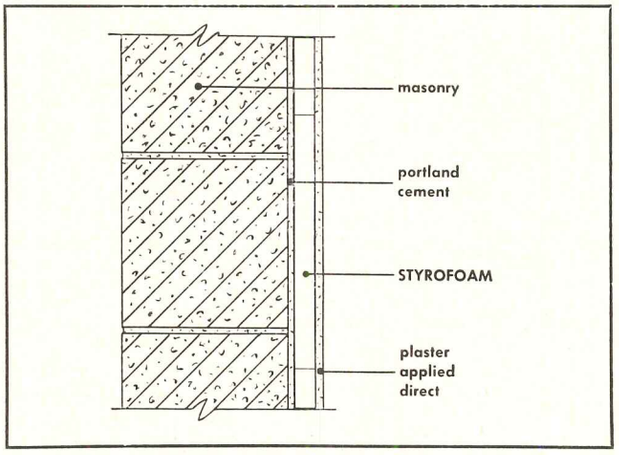
doesn't attract insects, vermin and rodents. In addition, Styrofoam is lightweight, clean and easy to handle. This remarkable combination of properties makes Styrofoam a superior insulation for churches, schools, offices and homes as well as for cold storage rooms.



New construction method substantially cuts costs in masonry construction by eliminating furring and lathing—assures a warm, dry interior. Styrofoam is adhered to brick or concrete block wall with Portland cement mortar. Plaster keys directly to Styrofoam. For more information, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastic Sales Department 1919G.

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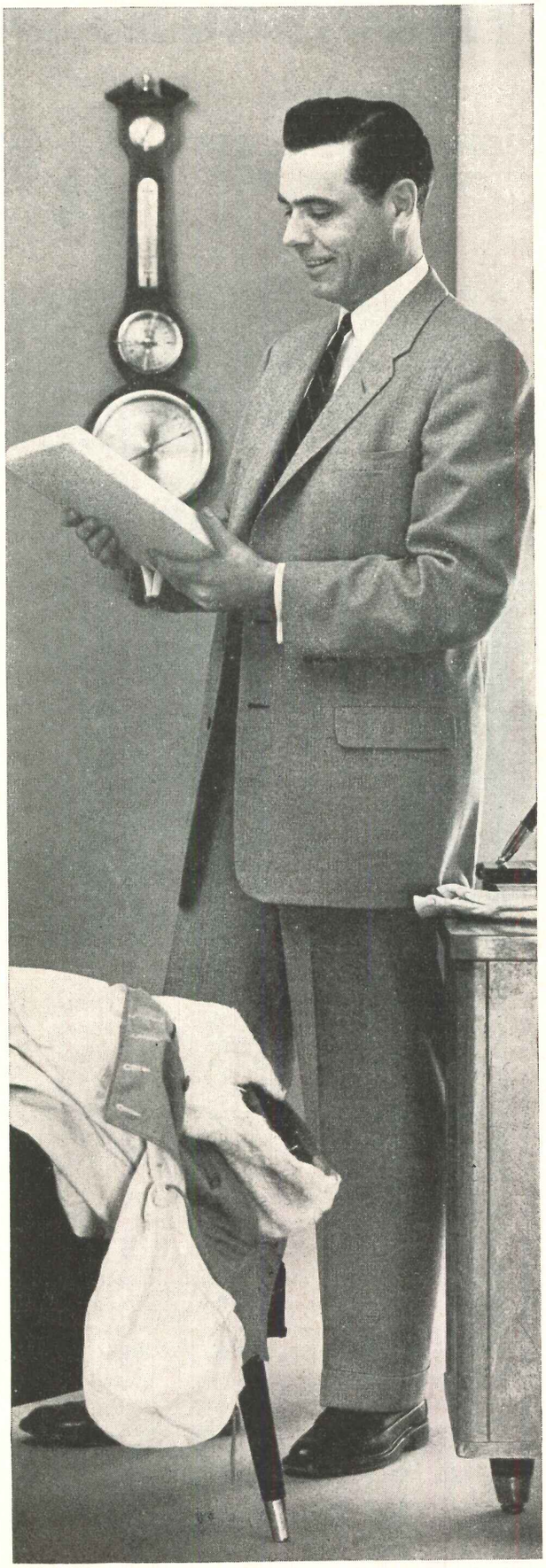
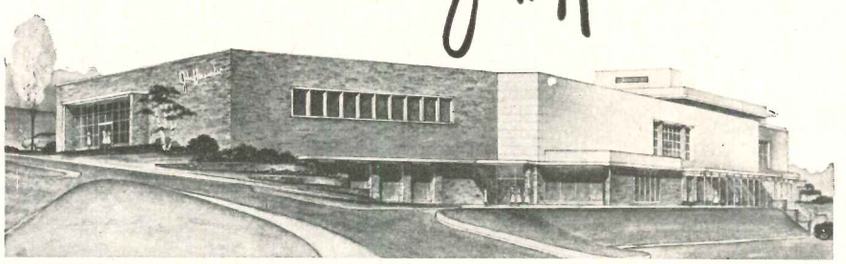


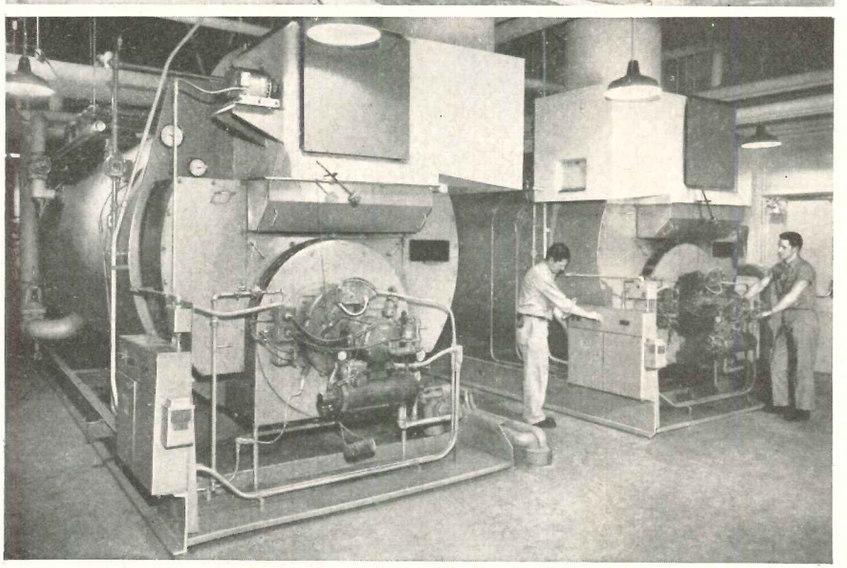
because it has lifetime insulating efficiency, unyielding resistance to moisture

FITZGIBBONS BOILERS

serving
JOHN WANAMAKER
JENKINTOWN, PA.

John Wanamaker





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Installed on the roof to reduce construction costs, the design of these two boilers permits even greater economies in efficient operation and low maintenance because of their completely water jacketed combustion chambers, automatic operation, ease of service and quality construction.

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FB131

Washington Topics

Special emphasis is being placed on improved fall-out shelters which could be so built that they could be converted quickly and at less cost to blast type shelters.

Explained were temporary basement fall-out shelters constructed simply from bags and boxes filled with sand with an adequate earth cover placed on a tarpaulin on the floor of the room above; combination shelter and storage areas under garden houses and garages away from the house; underground group shelters for up to 250 persons serving dual purposes (instruction, cafeteria, library, etc., and shelter) in connection with schools, and the vast underground garages which could shelter thousands of persons and many cars. It has even been suggested that shelters be incorporated in large fills necessary for the Interstate Highway System construction. Officials said they think the big highway program and shelter efforts can blend to a limited extent.

FCDA is contracting for design of a multi-story underground type for schools. One prototype has been completed through the planning stage in this field and several other types will be designed.

The record shows clearly that the administrative agencies feel they are capable of giving sufficient technical assistance for an immediate start on a vast shelter construction program. Gerald Gallagher, assistant administrator of FCDA, said: "We are ready to provide guidance in the design and in the construction of shelters throughout the country to give a high level of protection to the people. We can design and build effective shelters at this time."

This agency first proposed a nationwide effort in a report to the White House in December of 1956. This has been under study since and "a definite program will emerge in due time," Mr. Gallagher told the subcommittee.

The subject could be vitally affected by the President's plan to combine the responsibilities of the FCDA with those of the Office of Defense Mobilization. He has sent a reorganization plan to Capitol Hill which would accomplish this effective July 1 if it is not disapproved meanwhile by either the Senate or the House. This Plan No. 1 of 1958 would create a new office of Defense and Civilian Mobilization in the place of the present ODM and FCDA.

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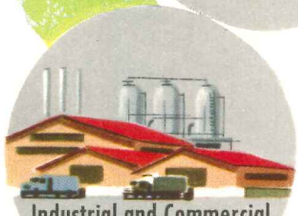
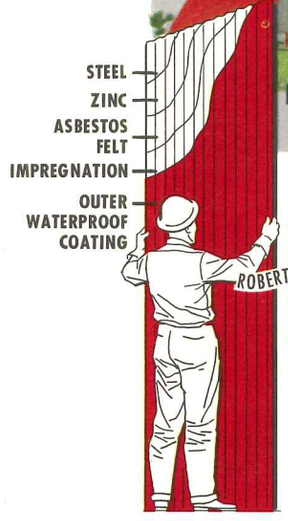
Schools



Industrial and Commercial Buildings

Institutions



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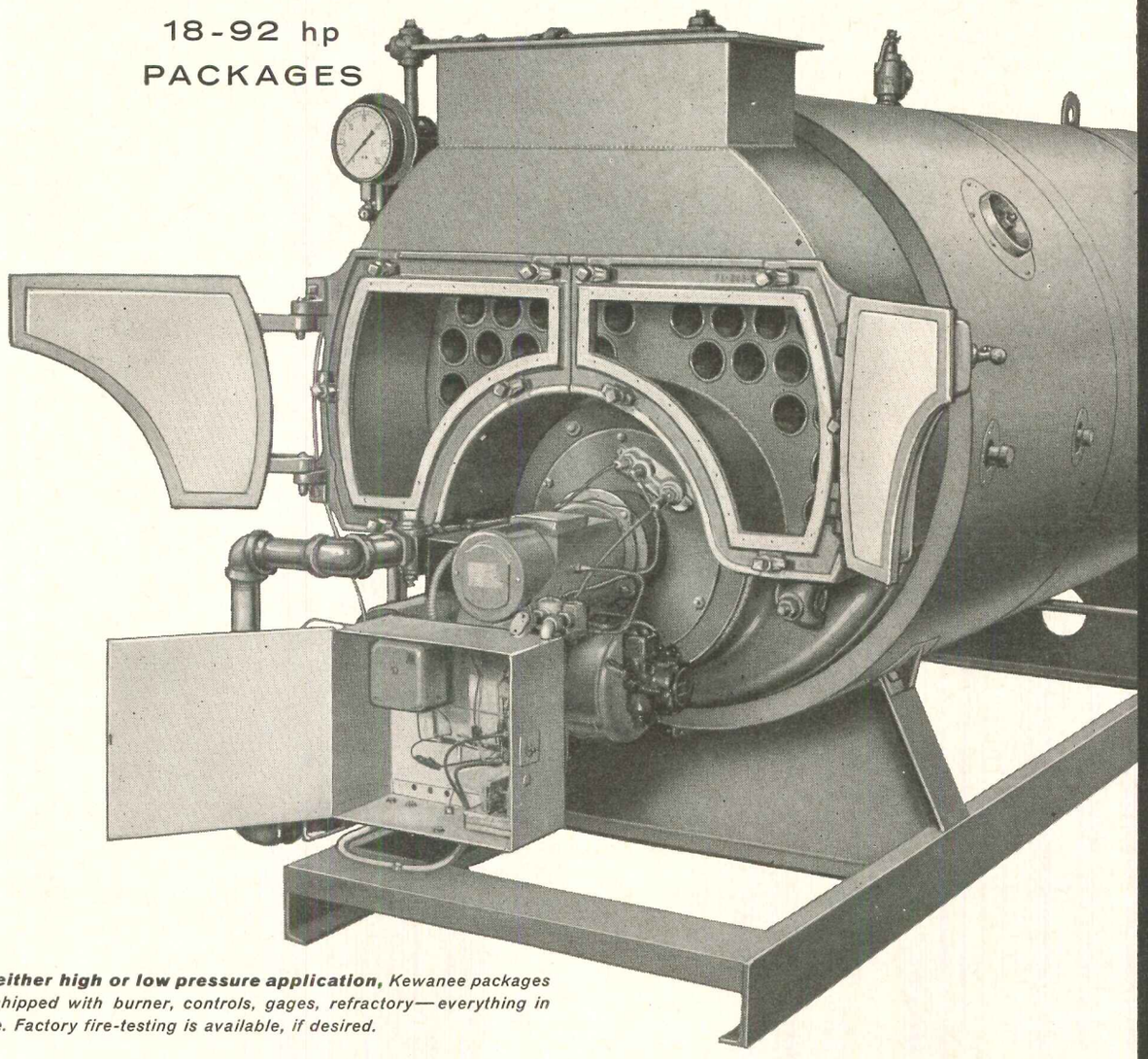

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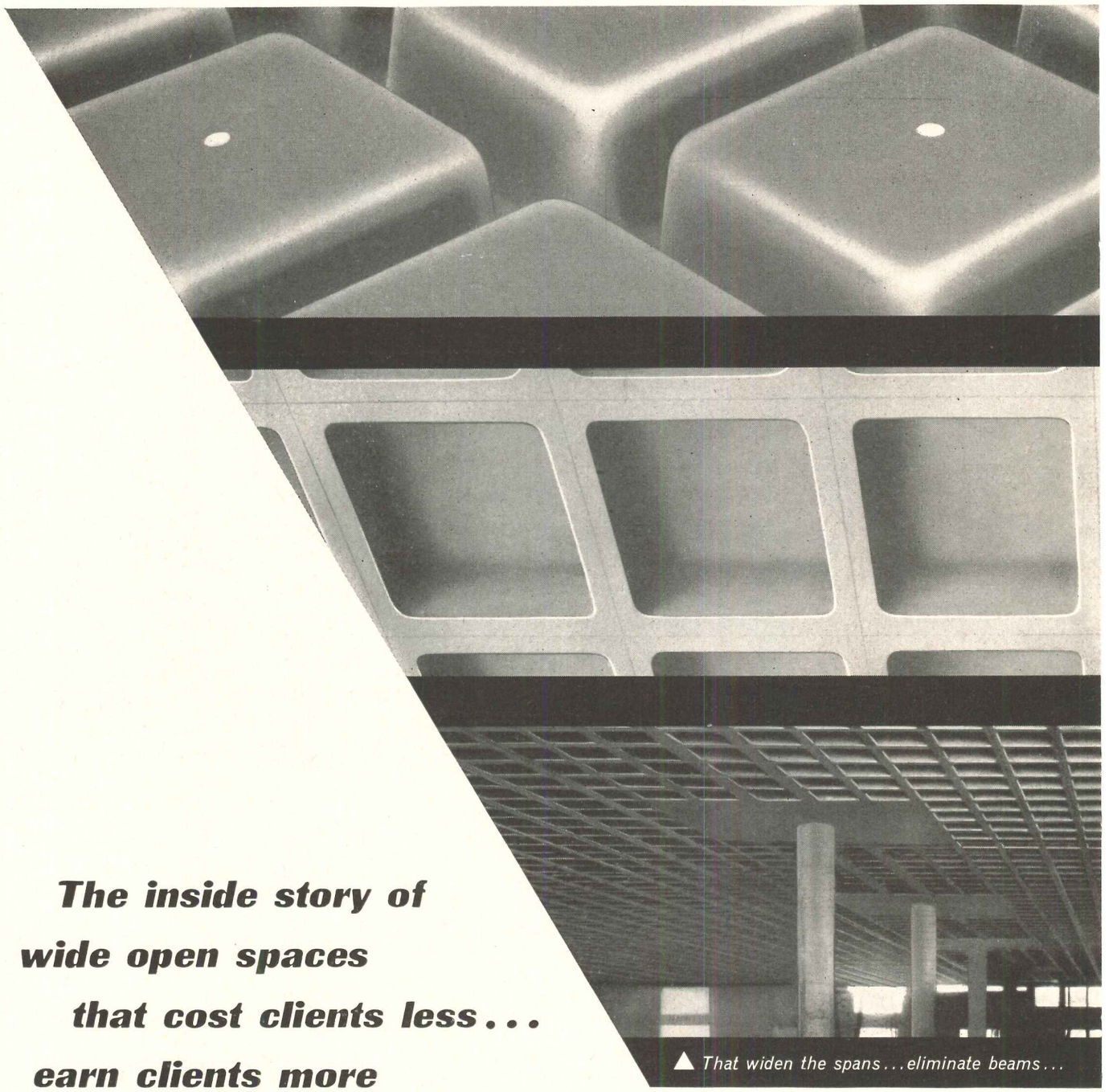
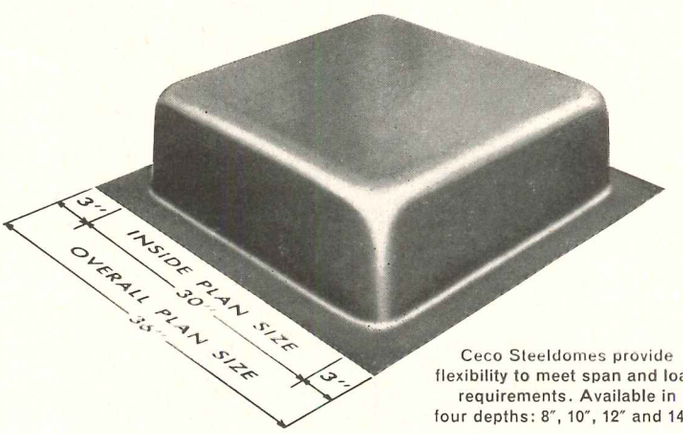


▲ *That widen the spans . . . eliminate beams . . .*

The inside story of wide open spaces that cost clients less . . . earn clients more



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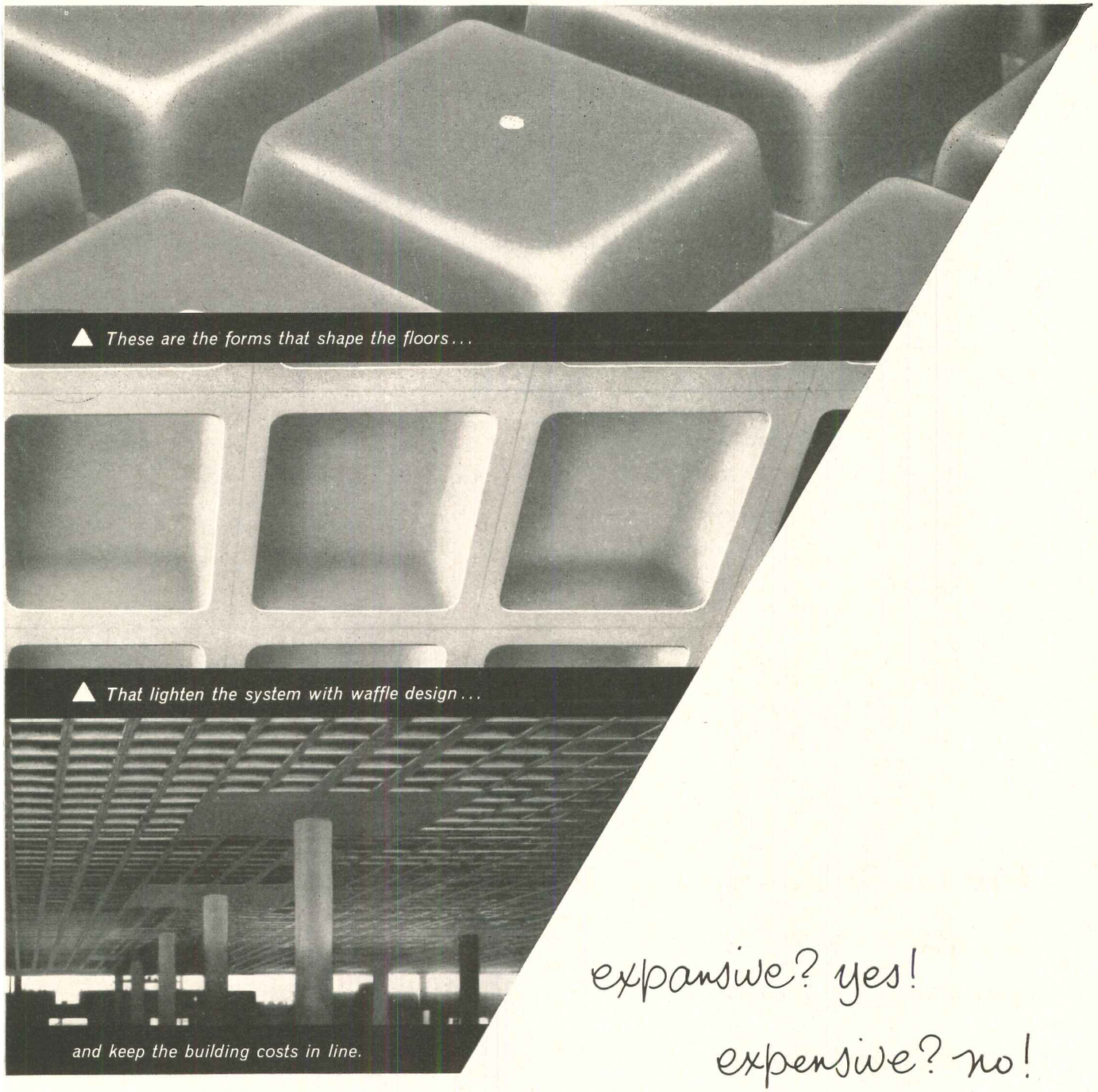

expansive? yes!

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Savings in material and time are assured by the two-way design. And there is no higher quality concrete finish than provided by Ceco Steeldomes removed by compressed air. Ceco Steel Products Corporation. Sales offices, warehouses and fabricating plants in principal cities. General offices: 5601 West 26th Street, Chicago 50, Illinois.

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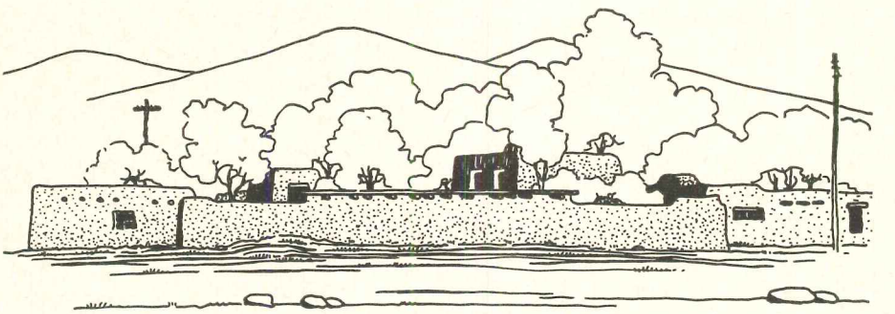
continued from page 20

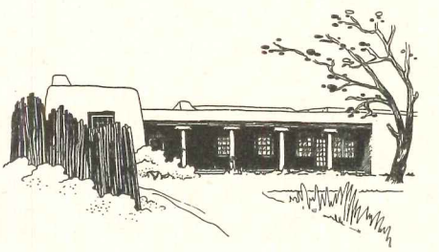
false fronts and are bad imitations in other respects. Some stores have added simply false *viga*-ends to plain brick buildings, then plastered over the front and painted it a mud color. The F. W. Woolworth Company conformed by erecting the only 10¢-store in its chain without a red sign across the façade, but its large plate-glass windows are out of focus with Pueblo tradition. On the other hand, the First National Bank Building, put up diagonally across from the old palace since World War II, harmonizes almost completely and is one of



the best examples of Pueblo-style architecture put to functional use.

It is this "happenstance" sort of development that the City Council hopes to correct by the new architectural controls ordinance. Early in 1956 a City Planning Commission set up a "Committee to Preserve the Character of Santa Fe." It consisted of Oliver La Farge, well-known novelist and authority on American Indian problems, and Irene von Horvath, an architect who has worked in the New York area. Both Mr. La Farge and Miss von Horvath have chosen Santa Fe as a place to live primarily because of its unusual architecture and historic character. Their first report to the Planning Commission, largely the work of Mr. La Farge, stated the problem succinctly. The following are excerpts from this report:

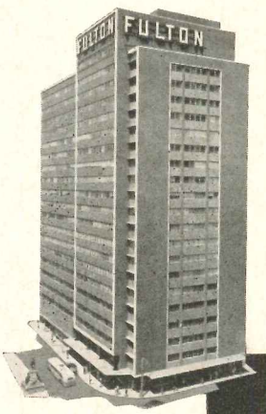
"The work of this committee explicitly deals with historical, associational, and distinctive values, but if the program developed is sound, and is put into effect, its end result should be highly practical. . . . Mere preservation is not enough. Santa Fe's character developed out of authenticity. Its people built in a certain way. Without consciously aiming at an effect, they gave its streets certain qualities, including architectural unity, an appearance quite unlike that of the streets of any other American town—qualities of color, design, and composition that drew artists from far and near, charm, peace and relaxation. Much of this original, unselfconscious, authentic quality has been destroyed, to be replaced by synthetic imitations that do not imitate; hustle; noise; congestion; and the less desirable aspects of small-



FULTON NATIONAL BANK

Atlanta, Georgia

ARCHITECT:
Wyatt C. Hedrick



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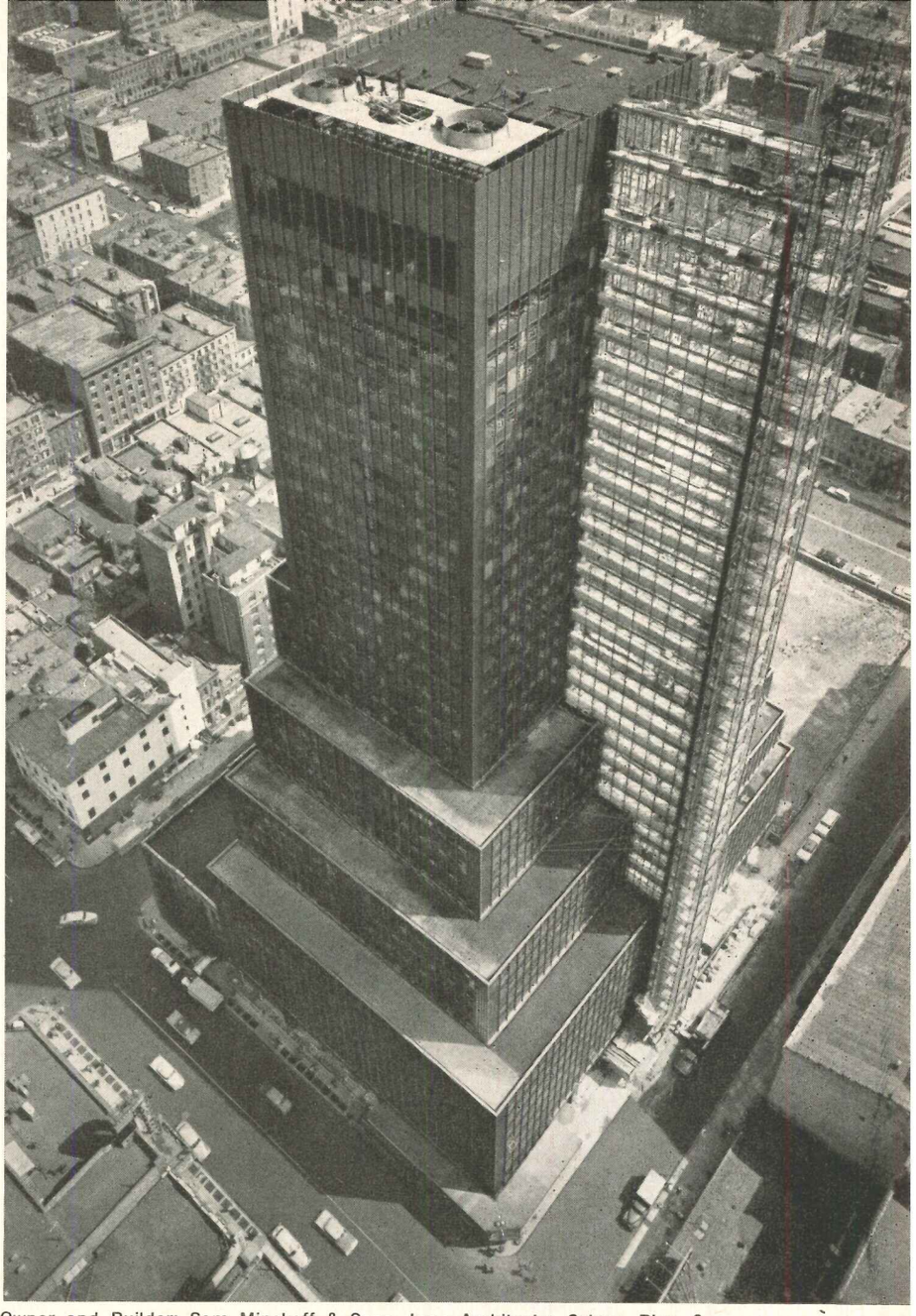

Owner and Builder: Sam Minskoff & Sons, Inc.; Architects: Sylvan Bien & Robert L. Bien; Structural Engineers: Weinberger, Frieman, Leichtman & Quinn.

This stunning new office building at Lexington Avenue and East 51st Street is New York's first multi-storied structure clad in gold-anodized metal curtain walls. The 6500-ton steel framework for its 34 stories was erected in comparative quiet, with thousands of Bethlehem High-Strength Bolts used in joining its structural members.

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Windows can be washed in one-half or less the time normally required. Even windows designed for washing from the inside are cleaned more quickly with Cleveland Tramrail. The washer need not walk from office to office, carry buckets and materials, move desks, chairs and overcome other obstacles. Instead, he propels himself from window to window with no hurdles in the way.

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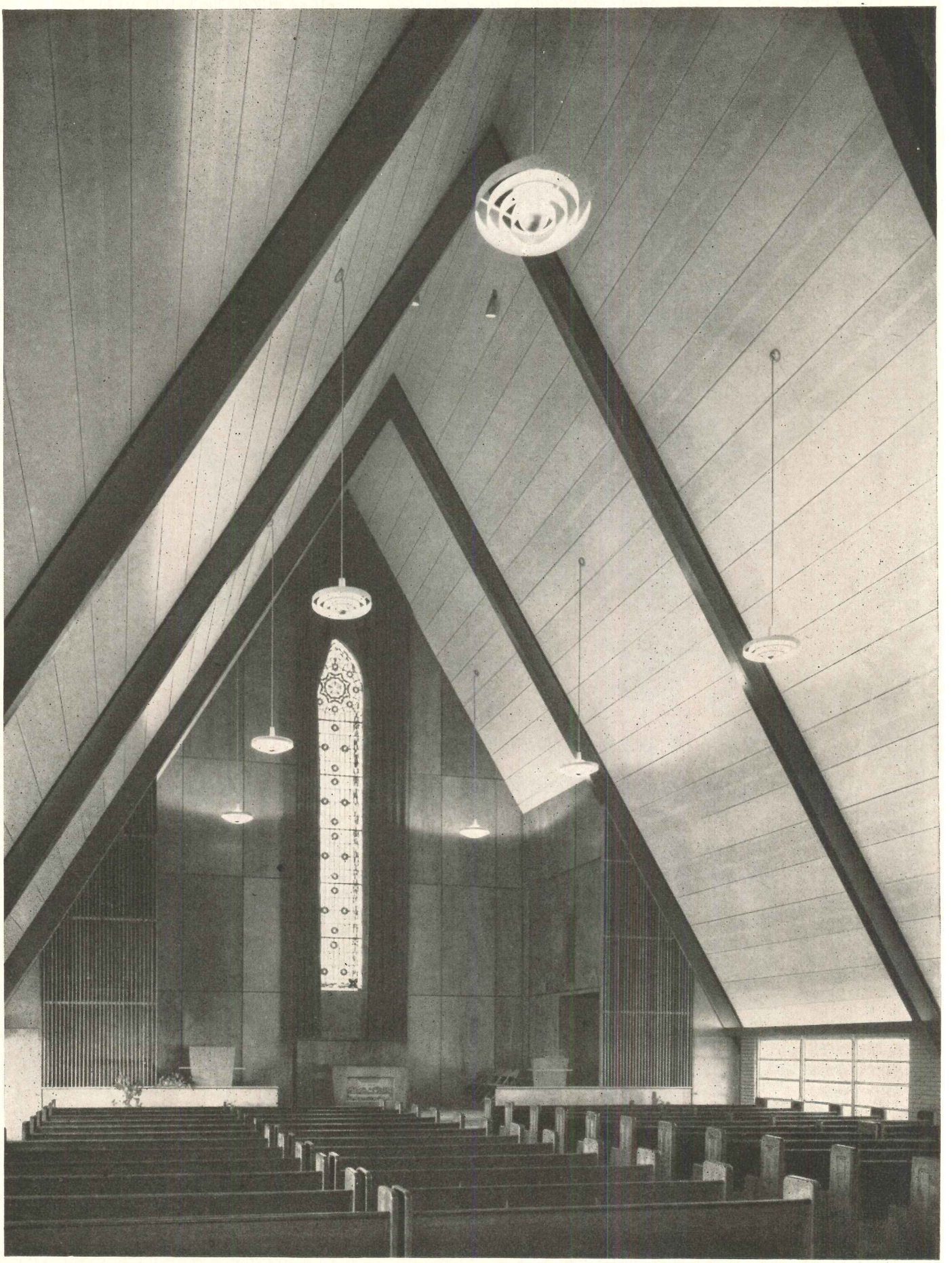

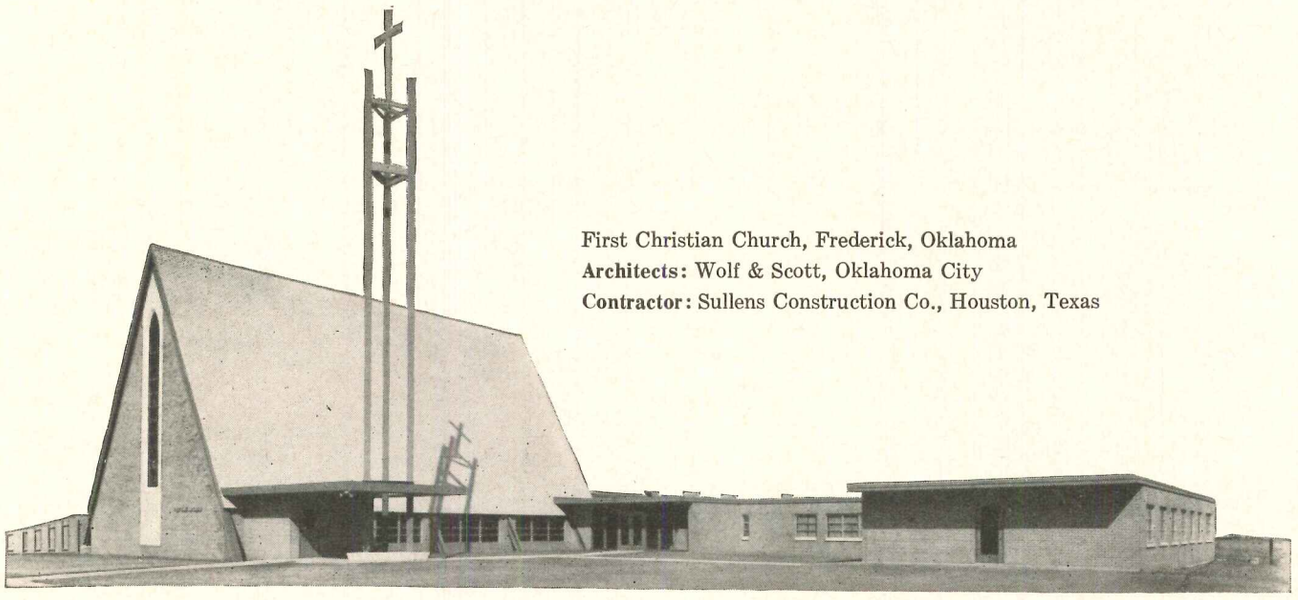

First Christian Church, Frederick, Oklahoma
Architects: Wolf & Scott, Oklahoma City
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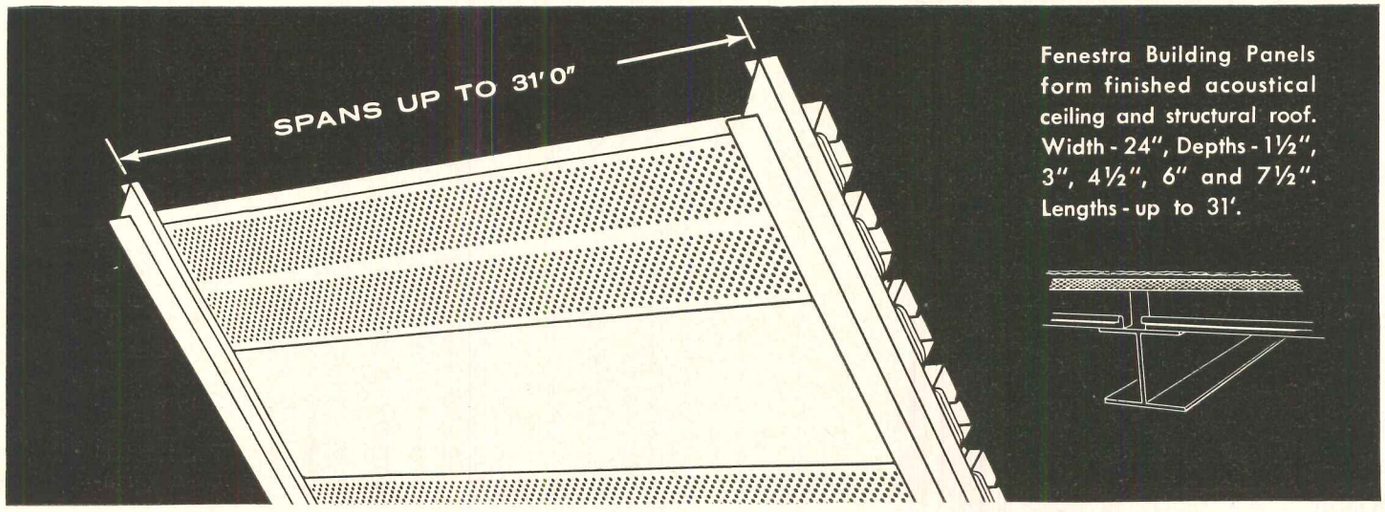
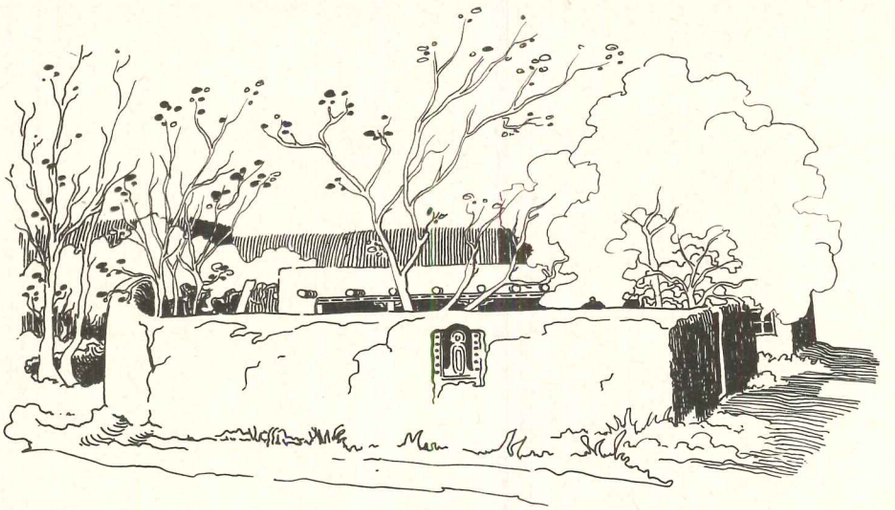


town growth such as masses of overhead wires, jarring signs and billboards, and repulsive commercial constructions."

The other committee member, Miss von Horvath, saw the problem as chiefly one of esthetics. During the course of the debate over the ordinance, she said:

"In this country, where a person may choose his religion, his profession, his politics, his very way of life, it does not seem unreasonable to make it possible for him to choose the character of his environment and have it remain as he chose it. Zoning is a step in that direction, but zoning does not usually concern itself with quality and harmony within an area. 'You cannot legislate good taste' is a remark frequently quoted by some; others fear monotony; still others insist that an owner must be allowed to do with his property as he wishes, that any restrictions would be undemocratic.



"With adjustment for the unforeseen, there is no doubt that adequate legislation for harmony is possible. The belief that the exteriors of buildings are private rather than public is bound to vanish as density of population increases. As for monotony, one may as well express concern over monotony in nature. . . .

"There is then the possibility of taking certain qualities in architectural expression and adopting them for one's surroundings without fear of monotony. There are materials and colors and certain basic principles which have shown an amazing recurrence and compatibility with the human race throughout the world over thousands of years, particularly in arid countries. We are fortunate indeed that they happen to exist in Santa Fe and give it a character as distinctive as its history."

The "private rather than public" angle is attacked also by Mrs. Ina Sizer Cassidy, a writer and long-time Santa Fe resident who led the two-year fight for the style ordinance. She deplores the fact that if no restrictive law had been passed, a stainless steel skyscraper could have been built right across the street from the old palace. "In architecture," says Mrs. Cassidy, "there is a third party involved—the public, who are faced permanently with the sight of the building conceived. This public has the right to be heard."

For purposes of clarity, "Pueblo style" is generic for all adobe and simulated adobe construction, whether it be modeled after the true pueblo, the early mission, the "Territorial" building, or other reasonable varia-

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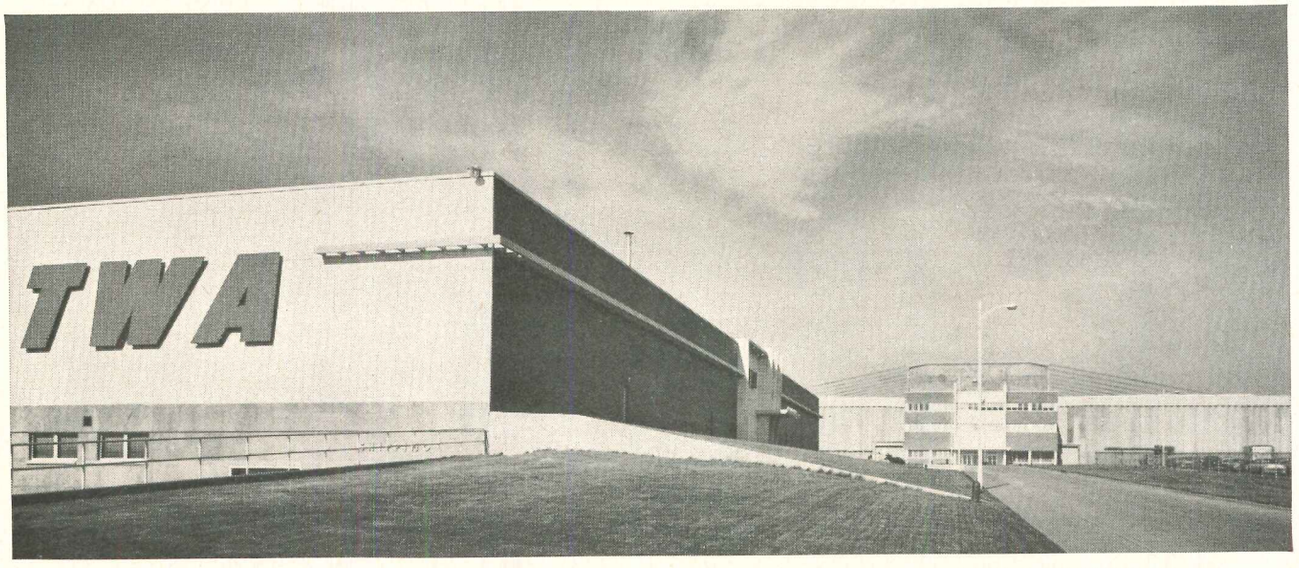

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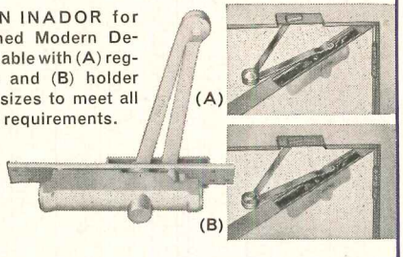
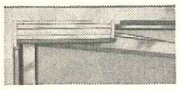
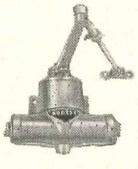
Complete Norton Line Meets Every Door Closer Need

NORTON INADOR for Streamlined Modern Design available with (A) regular arm and (B) holder arm...4 sizes to meet all standard requirements.

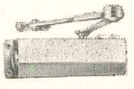




NORTON 750: New corner design with concealed arms for all type doors, particularly narrow rail doors.



Norton Surface-type Closers are available for all installations where concealment is not essential.



NORTON 703E: Compact surface mounted type...first closer with extruded aluminum alloy shell.

An engine for an airliner or a door closer for the plant which overhauls that engine, both must have one quality in common—dependability—to be acceptable to Trans World Airlines. With that thought in mind, the engineers specified *Norton Surface-Mounted Door Closers* for buildings at Trans World Airlines' new $18,750,000 overhaul base on Kansas City's Mid-Continent International Airport.

The door closers used here by TWA are the modern counterparts of Norton Door Closers still in daily use after serving continuously 20 to 30 years and longer. Other Norton models are available as shown at the left, to serve virtually every door closer need with equal dependability. See the new Norton catalog #57 for full descriptions of the complete line, including important new models. Write for it today.

NORTON® DOOR CLOSERS

Dept. AR-68 • Berrien Springs, Michigan

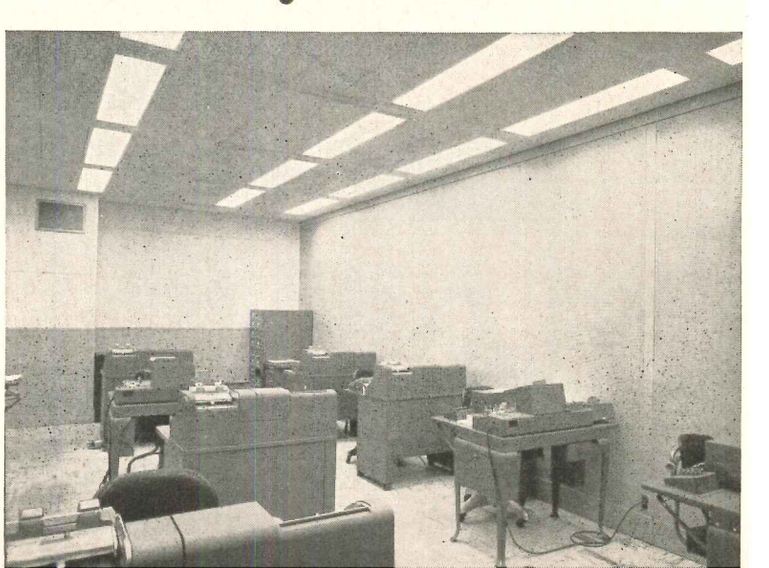
Selected over 12

These lighting fixtures can be moved as easily as the office partitions.
Day-Brite Recessed Troffers are interchangeable with acoustical ceiling tiles, permit complete flexibility.

PROOF! No "or equal" can match Day-Brite!

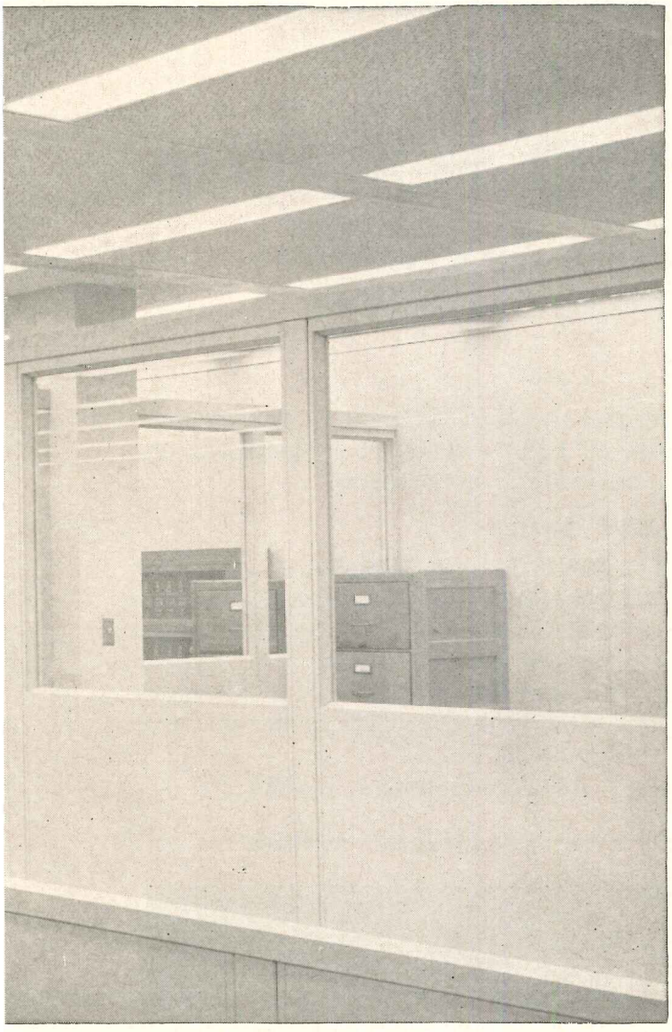
Twelve different competitive fixtures were installed on a test basis in the new home of the South Carolina Electric and Gas Co. The architect and client each compared the fixtures *independently*, and both chose Day-Brite Troffers for the entire job.

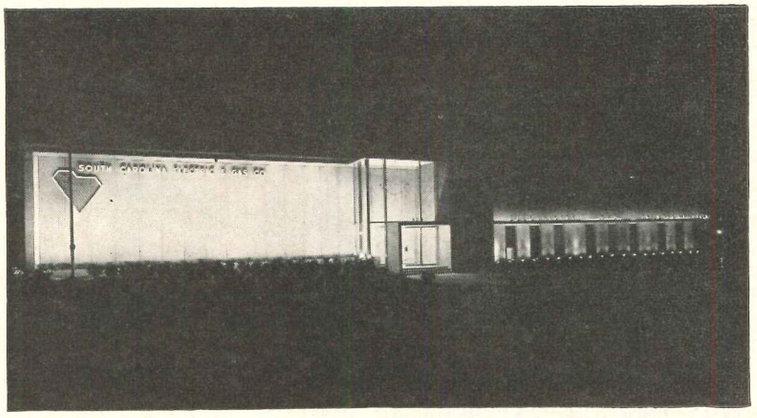
Make your own comparison. Call your Day-Brite representative, listed in the Yellow Pages, for a demonstration. Compare Day-Brite fixtures side-by-side with any other fixtures at any price. Check features and value. Prove to your own satisfaction that Day-Brite fixtures have no "or equals."



Additional light where it is needed!
Extra row of Day-Brite Troffers above business machines (next to wall) provide 85 footcandles at work level.

competitive fixtures!





South Carolina Electric and Gas Co., Columbia, South Carolina.
HEYWARD S. SINGLEY, F.A.I.A., *Architect-Engineer;*
DUNN ELECTRIC CO., *Electrical Contractor.*

How Modular Lighting by Day-Brite helps Architects LOWER CONSTRUCTION COSTS

In keeping with contemporary architectural trends, Day-Brite recessed fixtures are shallower and lighter, yet stronger. They take less space, can be mounted end-to-end or side-by-side, offer greater freedom of design.

Interchangeable with acoustical ceiling panels, they enable you to take full advantage of all the economies made possible by modular construction.

For more information on how Day-Brite equipment can help you coordinate lighting with ceilings in appearance, function and assembly, write for your copy of free booklet: "*Modular Lighting for Modular Measure.*"

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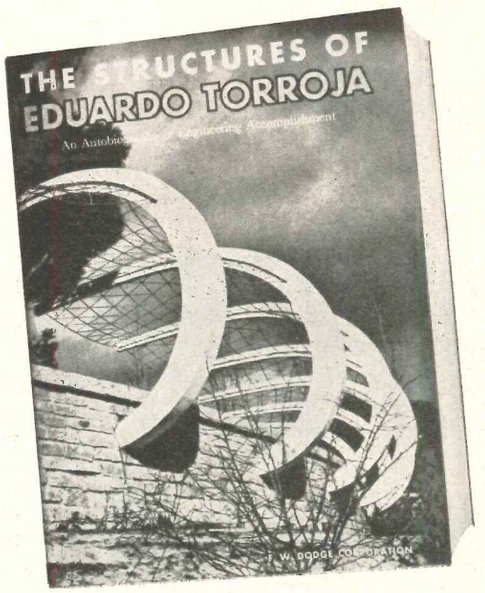


just published . . .

THE STRUCTURES OF EDUARDO TORROJA

an autobiography of
engineering accomplishment

For the first time, Eduardo Torroja describes and explains the major accomplishments of his career, and reveals with candor his unusual building philosophy. From his hundreds of works he has selected 30 of the most significant. Torroja explains this:

"I feel that these exemplify best what I was searching for, and what I finally achieved."

The 30 structures shown are of many types — bridges, viaducts, dams, hangars, sports arenas, factories, churches. Many of them are of reinforced concrete — for Torroja's most unusual engineering feats are in prestressed and post-tensioned concrete — but wood, brick, and steel are used as well. All of them bear the strong mark of Torroja's brilliant design, sound engineering, and delicate sense of beauty.

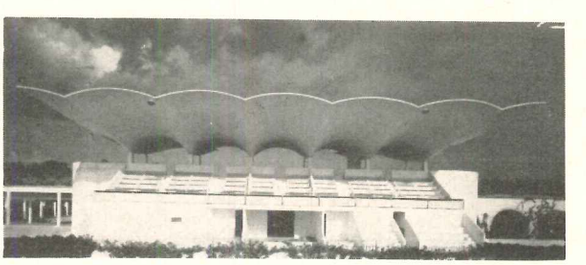
ABOUT THIS BOOK

Written by Torroja himself, it follows his reasoning during the design of each of the 30 structures. Engineering details are given. In some cases, alternate designs which were later discarded are shown. The excellent photographs show models, projects under construction, details, and completed projects. The book contains a total of 275 illustrations.

209 pages, 7 x 9¾", clothbound, only $8.50

EDUARDO TORROJA was a pioneer in 1933, and he is a leader in design today. He is an architect, an engineer, and a teacher of structural engineering. He created, and directs, the Technical Institute of Construction and Cement at Costillares, Spain.

Inevitably, Torroja's works are compared with those of Pier Luigi Nervi. Like Nervi, Torroja is mathematically oriented, and steeped in theory of structures. Both know when to resort to experiment and model analysis. Torroja is also very much a humanist, with a flair for beautiful forms and lines, as the structures in this book will reveal to you.



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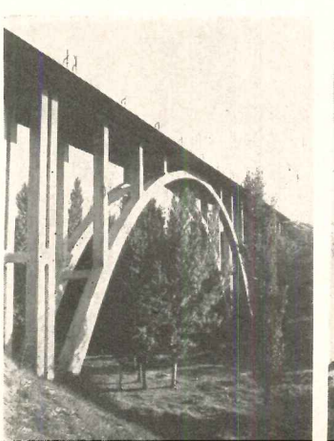

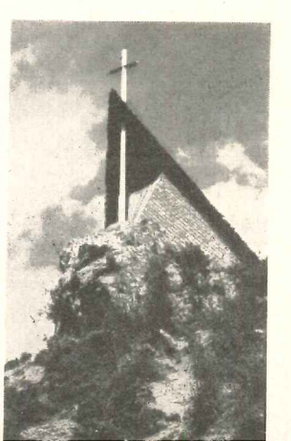

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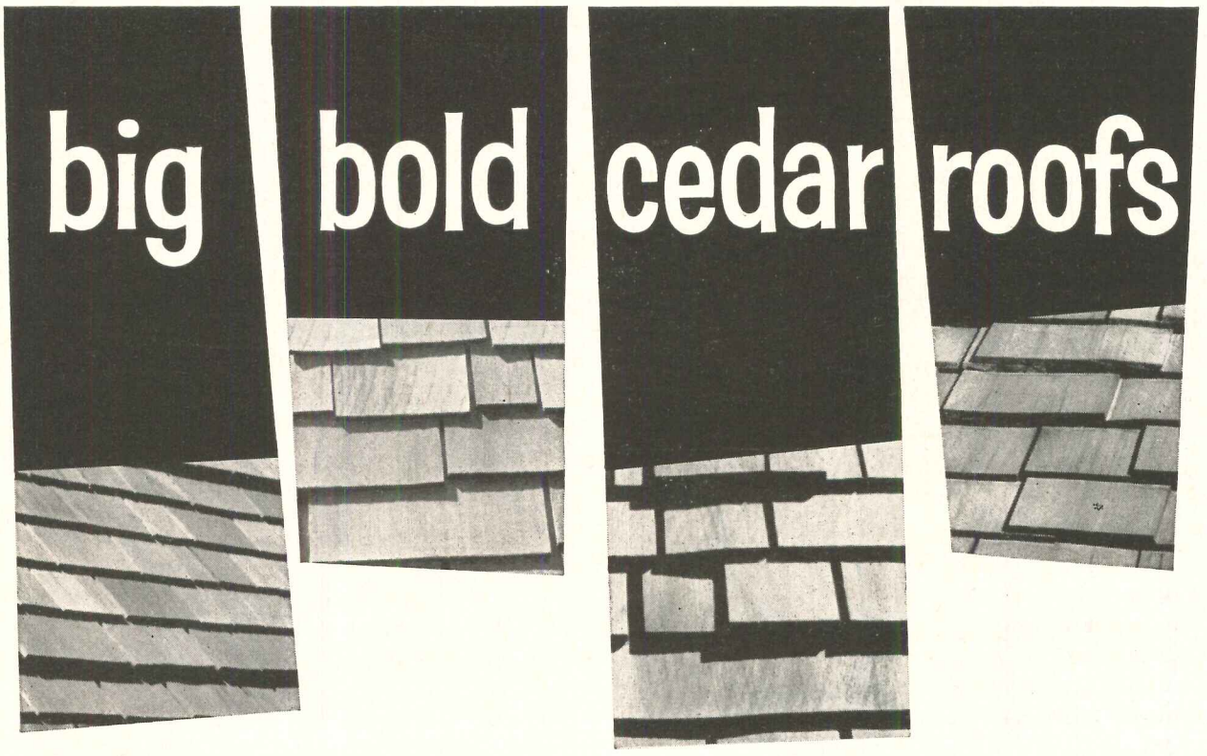

The qualities of cedar shingle roofing transcend passing fancy. Custom home designs—*of any period*—are characterized by expansive roof areas, distinctive roof textures, important roof pitches. The versatility and integrity of natural materials—notably cedar shingles for exteriors—afford the designer limitless scope, infinite expression.

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RED CEDAR SHINGLE BUREAU

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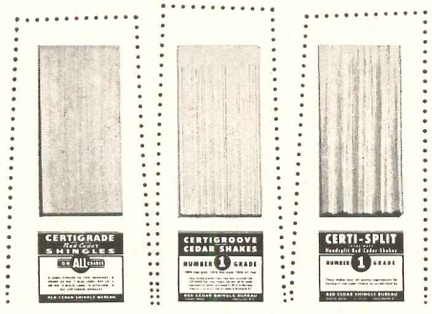
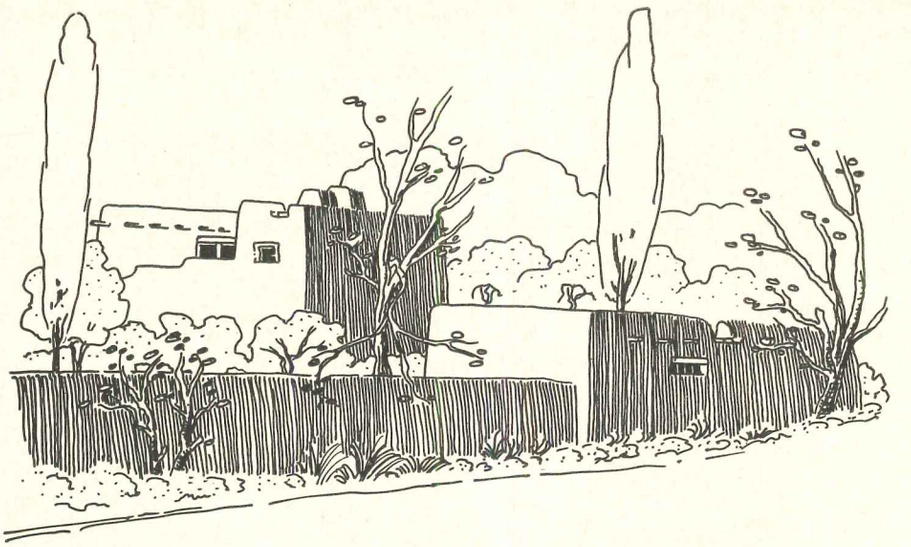


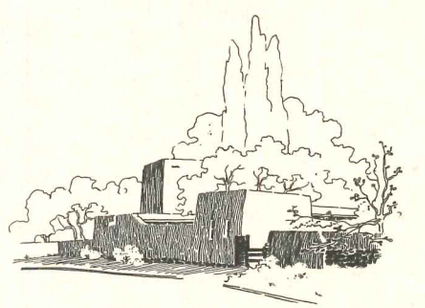
tions. The ordinance affects new buildings and the remodeling of old ones in areas of Santa Fe which have historic significance. These include the plaza with its old palace; and the Barrio Analco, a district which contains the old church and many fine residences which are all of 200 years old. New structures or those repaired in such areas must conform to Pueblo style, in outward appearance at least. Complete freedom of expression is allowed so long as the exterior fronts of the building meet the terms of the law.



Of home owners in the historic zone who express themselves at all, the majority favor the ordinance. There is well-thought-out opposition, however. Virginia Gray, a ceramist who has recently designed her own non-conforming house in a region now restricted, says that matters of taste can't be legislated. Miss Gray continues:

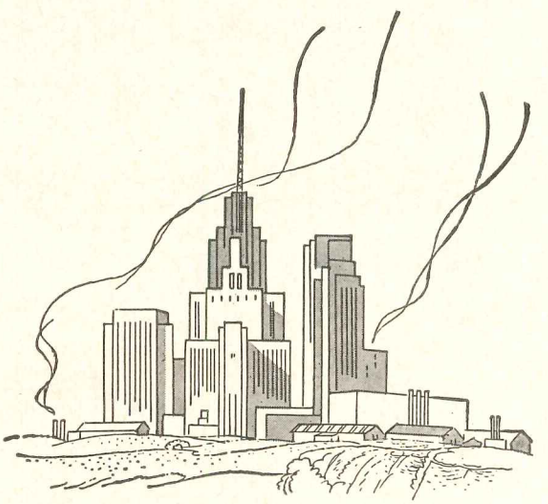
"I feel that an ordinance regulating the architectural style of buildings in the city is contrary to the democratic principles of this country. Individuals should be free to do with their own property what is pleasing or attractive to them. No one has the right to dictate by law what is essentially a matter of personal taste.

"It's as if it were decided that only one kind of tree would be allowed to grow—poplars, for instance. But many kinds of trees flourish and there is much enjoyment in their variety. Who is to judge whether a poplar or a willow is a better tree?"



Aurora Lucero-White Lea lives in the historic zone within a few blocks of Miss Gray, and disagrees. Mrs. Lea, author of several books and articles on New Mexico folklore, says:

"In the creation of a pattern for building for an area the situation is the first consideration. The architect should utilize all the advantages and build around them. In the Southwest, especially in Santa Fe, we are blessed with scenic splendor. The pattern for building then should be one that emphasizes this factor. The sprawling adobe with all of its possible varia-



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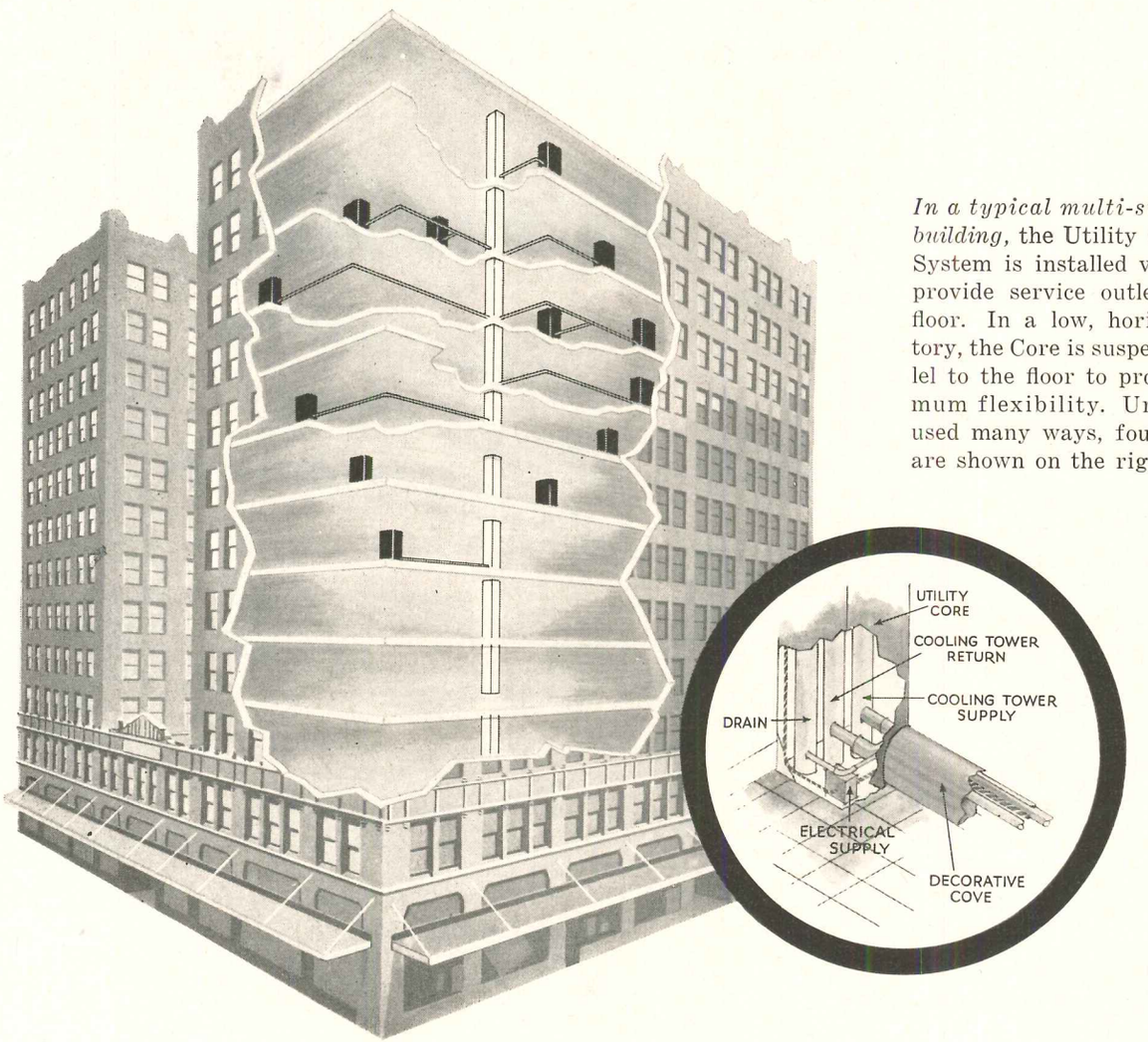
The Carrier Multi-Weathermaker System...

A NEW LOW-COST WAY TO

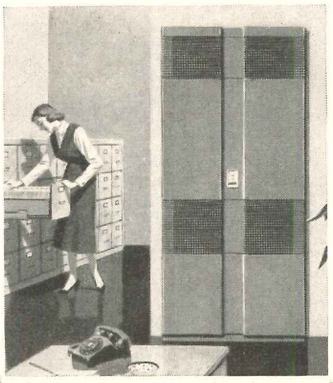
The Carrier Multi-Weathermaker* System is a unique, new concept of air conditioning so flexible it can be adapted to any commercial or industrial building. Three main factors contribute to its flexibility—a Master Plan, Utility Core and self-contained Weathermaker units. Where funds are limited, the System can be installed in critical areas first, then expanded to include other areas later. Or the entire System can be installed at one time. Either way, there's no disruption of normal routine. The questions and answers here describe the System's advantages in some detail. For complete details, call your Carrier dealer, listed in the Classified Directory. Or write for the booklet, "Carrier Multi-Weathermaker System." Carrier Corporation, Syracuse, New York.



In a typical multi-story office building, the Utility Core of the System is installed vertically to provide service outlets to each floor. In a low, horizontal factory, the Core is suspended parallel to the floor to provide maximum flexibility. Units can be used many ways, four of which are shown on the right.

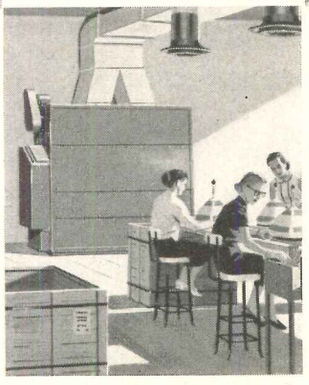
AIR CONDITION A BUILDING!

For individual offices, the Carrier Multi-Weathermaker System can economically air condition each office. Individual Weathermaker units, connected to inexpensive ducts, do the job. Units can be recessed in a wall or storage area.

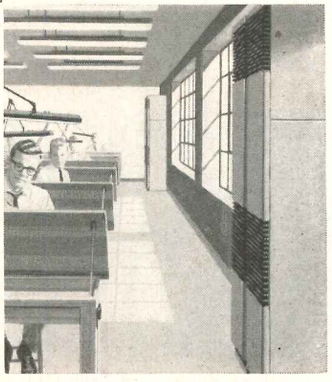


For a whole floor of a building, a Carrier Multi-Weathermaker System can air condition the entire space with a number of units. Each individual Weathermaker has all the components necessary to cool, dehumidify, filter and circulate the air.

For an open production area of a plant, a high-capacity Carrier Commercial Weathermaker using special ductwork can spot-cool an assembly line. In the System, you can air condition other plant areas with smaller air or water cooled Weathermakers.



For an engineering-drafting room, quiet Carrier Weathermakers can discharge draft-free air without any ductwork. The Multi-Weathermaker System permits air conditioning in one area while the System is shut off elsewhere.



Q. What makes this System new and unique?

A. The Master Plan, which co-ordinates installation of individual Weathermaker units in one integrated System – not a hodgepodge of unrelated "packaged installations."

Q. How is the Master Plan applied to an average office building?

A. First, a survey determines the cooling capacity required to air condition the building. Then, zone by zone, the Plan pinpoints the location of individual Weathermaker units required to handle the load. In addition, to simplify the installation of utilities from cooling tower to Weathermakers, the Plan provides a unique central Utility Core that houses the cooling tower supply and return piping, drain piping and electrical service. These utilities are sized to service all of the Weathermakers that will ultimately become part of the Multi-Weathermaker System.

Q. How many Utility Cores are required in a building?

A. In an average building, usually one. In larger buildings, several are required.

Q. How does the System's flexibility apply to installation and financing?

A. If financing is available, the System can be installed all at once. Otherwise, it can be installed in predetermined sections step-by-step – an area, a floor or several offices at a time. In this way, financing can be conveniently spread over a period of years.

Q. Does "low-cost" apply both to installation and operation?

A. Yes. Here's why: Weathermaker units are relatively low in cost and inexpensive to install. They operate only when needed, so operating costs are strictly controlled. They're as easy to turn on and off as an electric light, so the expense of hiring an operating engineer is usually eliminated. Because of Carrier quality, service expense is minimum. And the System offers substantial tax advantages.

Q. How quickly can a System be installed?

A. That depends on the building. And whether you want to install it all at once or step by step. In general, it's fast. All work can be done during regular hours without interrupting routine. And once the Utility Core is installed, individual units may be moved about and connected wherever they are needed to meet a temporarily increased heat load.

Q. What does a Weathermaker unit look like?

A. We've shown four here in commercial and industrial installations. More are shown in the 24-page booklet on the System. We'll be glad to send you this on request. We think you'll find it interesting and helpful.

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WHAT ARCHITECTS SHOULD KNOW ABOUT

West Coast Hemlock

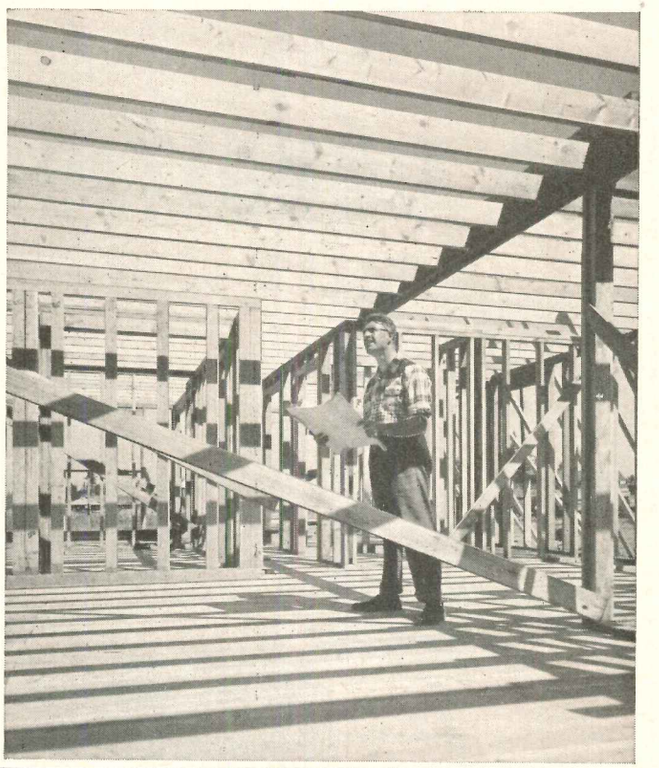
● In the forests of the Pacific Northwest, Hemlock grows under almost ideal conditions. Temperatures are even, moisture is plentiful.

The result—West Coast Hemlock, a *superior* species of Hemlock that produces a high quality, multi-purpose lumber product.

Architects like West Coast Hemlock because it combines exceptional building values with outstanding beauty. It is stiff and strong, easy to work, and holds nails securely. It has a beautiful light color which takes paint and natural finishes well.

Weyerhaeuser 4-Square West Coast Hemlock is produced in a wide range of items for framing, sheathing, flooring, moulding, trim, paneling, and in a variety of siding patterns.

When you investigate all the qualities of this "ability" wood, you'll find that West Coast Hemlock Lumber represents one of the top building values you can give your clients today. Ask your Weyerhaeuser 4-Square Lumber Dealer for full details, or write for literature.



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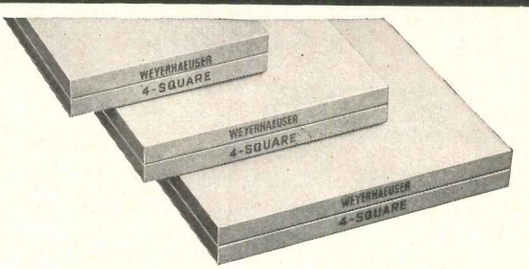
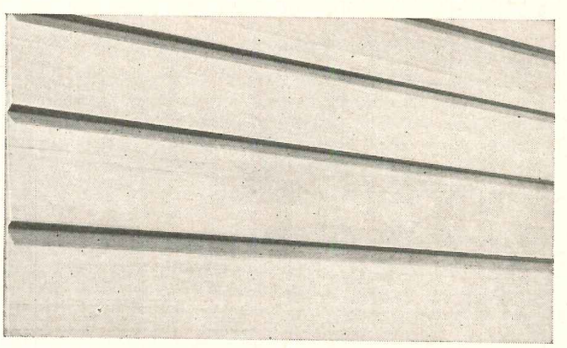


BOARDS—Seasoned before surfacing to size. Available in grades and sizes for many uses.



SIDING—Durable 4-Square Hemlock is available in a variety of patterns and grades.

Basically better because...

IT'S KILN-DRIED

You can rely on Weyerhaeuser 4-Square trademarked West Coast Hemlock because it has been properly seasoned by scientifically controlled drying methods.

Also, West Coast Hemlock has earned the name "ability" wood because of its wide usability, wearability, and workability. Here are just a few of the popular specialty uses for this versatile product: shelving, furniture, cabinets, ironing boards, paneling, food containers, cold storage plants, kitchen work surfaces. Since West Coast Hemlock actually toughens with age, it is excellent for flooring; and, of course, it is ideal for all framing needs.

Make it a point to ask your Weyerhaeuser 4-Square Lumber Dealer for complete information on West Coast Hemlock. You will find that it will perform well for a wide variety of your construction needs.

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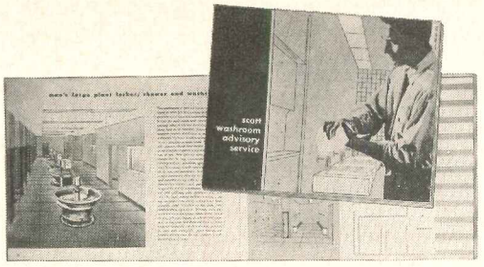


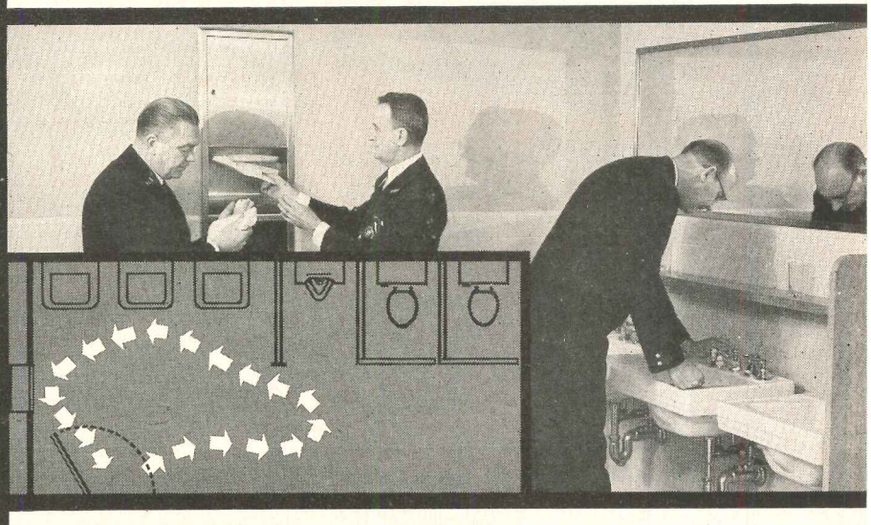
Send for this Free Booklet!

...tells how to improve washroom efficiency, appearance with the help of **Scott's Washroom Advisory Service**

Facts, illustrations, diagrams, ideas! Everything you want to know about modern facilities and cheerful, efficient washrooms. It's all in this free booklet on Scott's Washroom Advisory Service. Send for it today. No charge or obligation, of course.

For "quick changes" and ideas on how to improve washrooms NOW, see Scott's 14-minute film on washroom planning! Just mail the coupon.

About 225 employees use the cheerful, efficient washroom-lounge facilities, part of which are shown here in the ladies' lounge. "The entire bank was re-done," says Mr. Henderson, "and of course the washrooms had to be as modern and well-planned as the rest of the project. That's why Scott's suggestions were welcomed. Scott Washroom Advisory Service worked with the architect. Results: excellent!"



Guards' washroom: recessed cabinets, off-the-floor equipment, tile walls and floor, modern lighting, scientifically planned soap supply, smooth traffic flow to washbowls, towels, disposal, exit. In short, this room—and 16 other washrooms serving 8 floors—embodies a great many of the principles of Scott's Washroom Advisory Service. (There is no charge or obligation for anyone calling on this service.)

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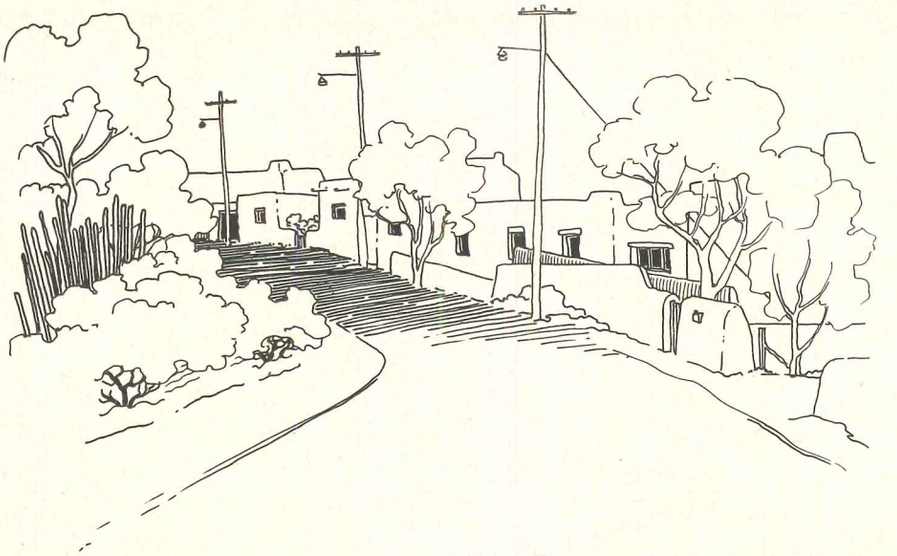
tions seems to fill the bill, with its patios and portales for outdoor living, its creamy thick white walls to serve as backgrounds for gaily hued serapes and lovely paintings, its fireplaces for beauty and comfort. There is a feeling of warmth and spaciousness in an adobe house that cannot be achieved in any other medium of architecture; there is a feeling of friendliness and charm."

Some Santa Fe architects don't like the measure, and a few believe that it strikes at the roots of the building profession as a creative art.



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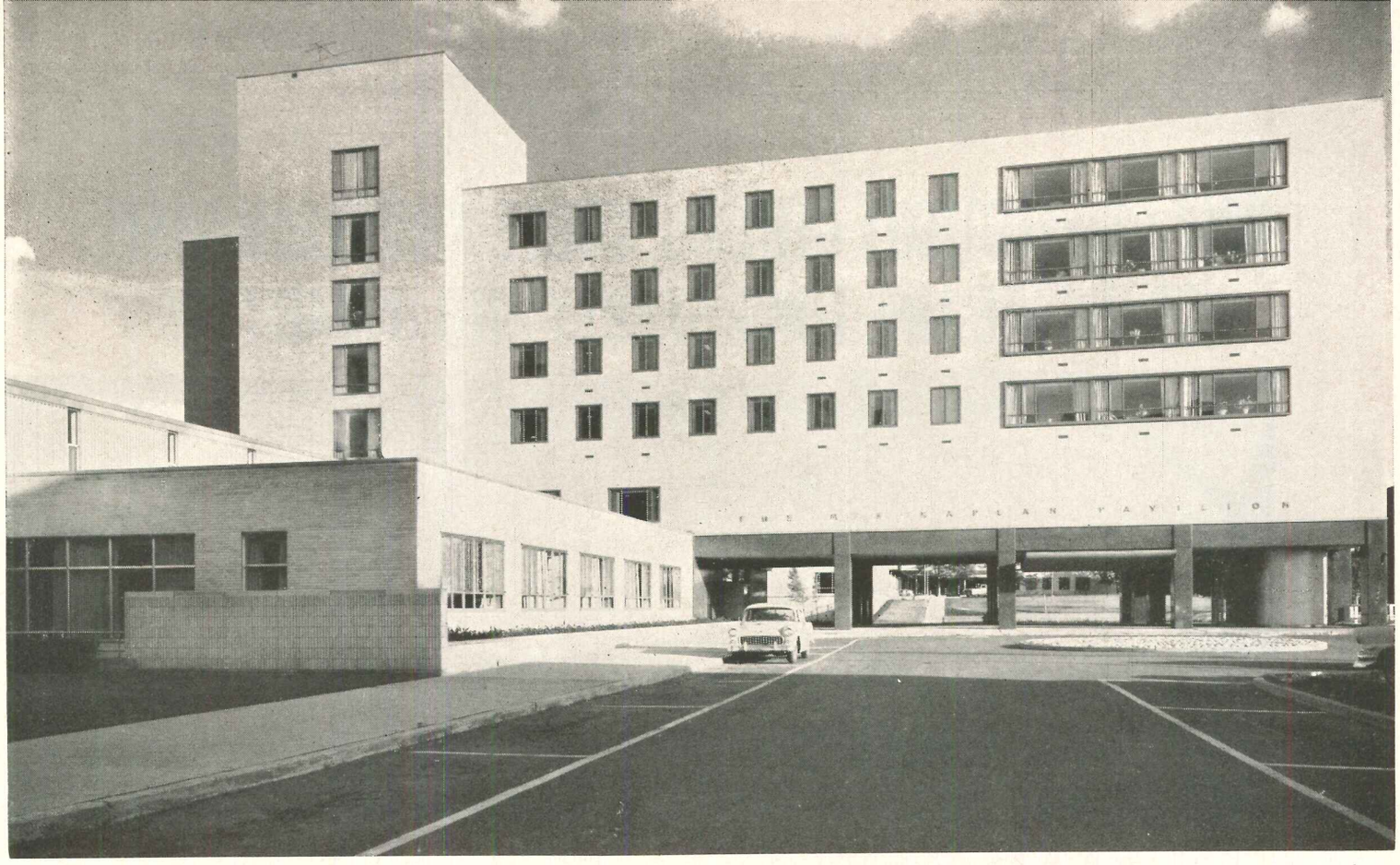
John Conron, who heads the Southwest Design Council, issued a formal statement just before the final vote was taken. It presents the opposition point of view rather thoroughly, and excerpts follow:

"To say that a city which has taken 300 years to develop should develop no further is certainly presumptuous. The long history from the first Spanish intrusion upon the peaceful (and sometimes not so peaceful) Indian Pueblos, through the invasion by the United States, and later a short-lived Confederate invasion, down to the present-day invasion by tourists shows in its buildings, in its street patterns, in its whole 'city-

scape.' Its many ages show through not only these outward signs but also through the way of life of its citizens.

"The attempt to preserve charm and character by legal restriction of the outward appearance of the buildings, in the form of a 'style ordinance,' has, I feel, the damaging effect of reducing the city to eclectic mediocrity. The large group of supporters of the ordinance seem unaware of the true meaning of architecture as an art form, or of the history of architectural 'style' development. They fear that modern architects are unable to develop an architecture using modern materials, in conjunction with still existing older materials, which will be able to house functionally the needs of a client in a manner compatible with Santa Fe. They fear that Santa Fe is unable to grow and to change gracefully. But like it or not, change it must, just as it did when the 'Anglos' arrived in



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The illustration:

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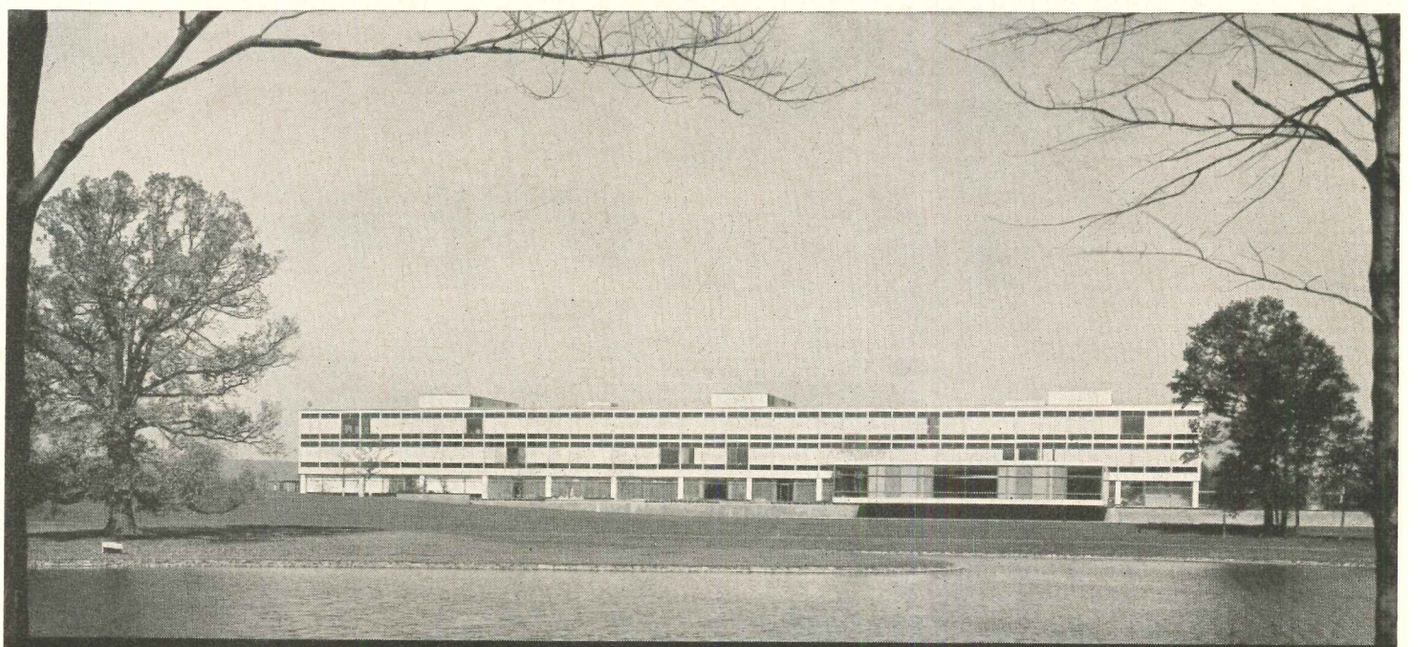

Home Office Building: Connecticut General Life Insurance Co., Bloomfield, Conn. Engineers: Weiskopf & Pickworth (Structural); Syska & Hennessy, Inc. (Mechanical & Electrical)
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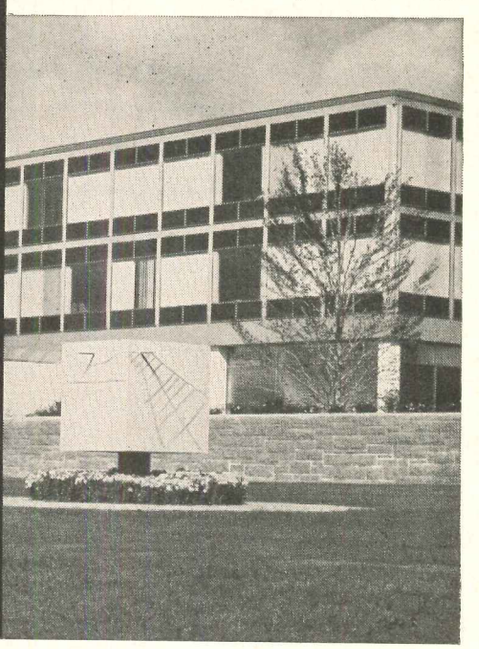

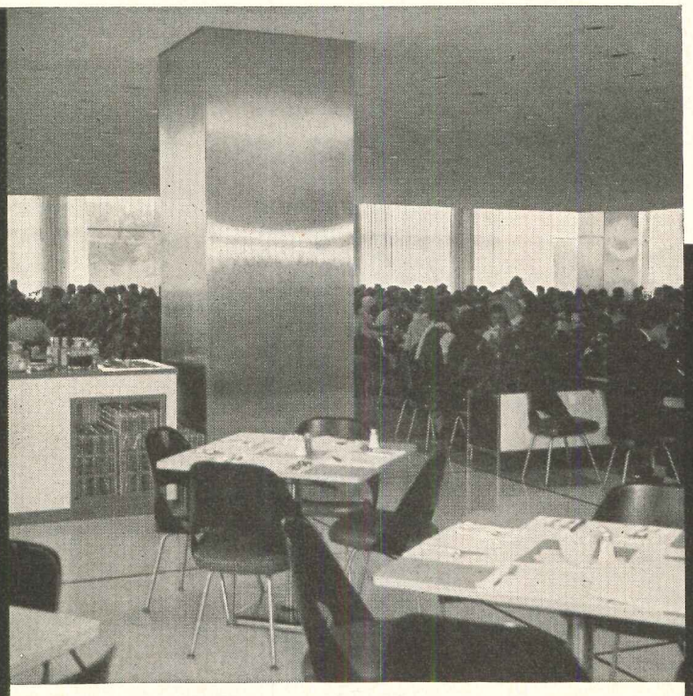

STAINLESS STEEL ADDS STYLE AND CHEER to the 800-seat dining room. Table and chair supports, column covers, and food-handling equipment of stainless steel assure attractive clean surroundings. All food-preparation and food-service equipment in the kitchen and counter pick-up areas are fabricated of stainless steel for peak sanitation and attractiveness. Dishwashing facilities are stainless steel, too, to resist corrosion and abrasion.

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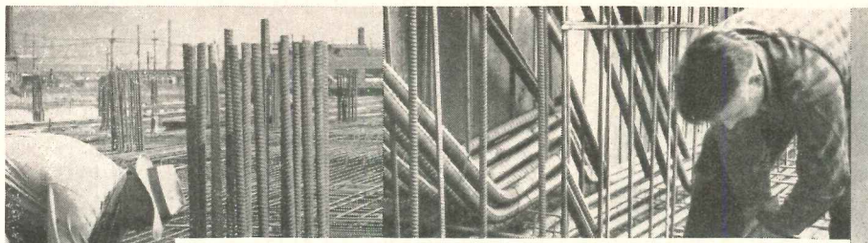

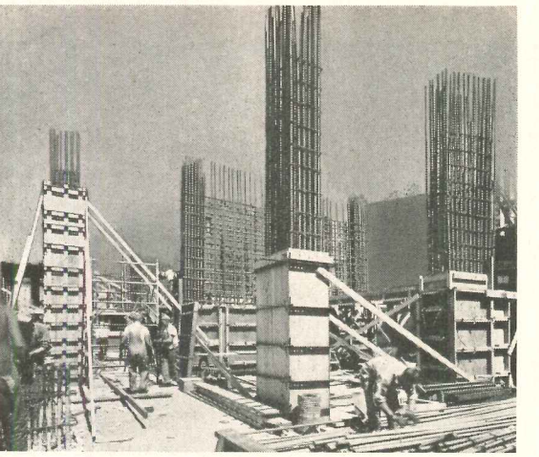

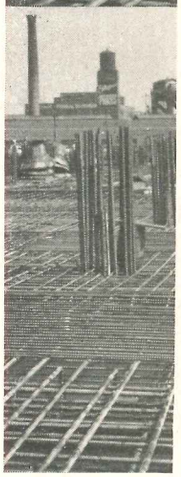

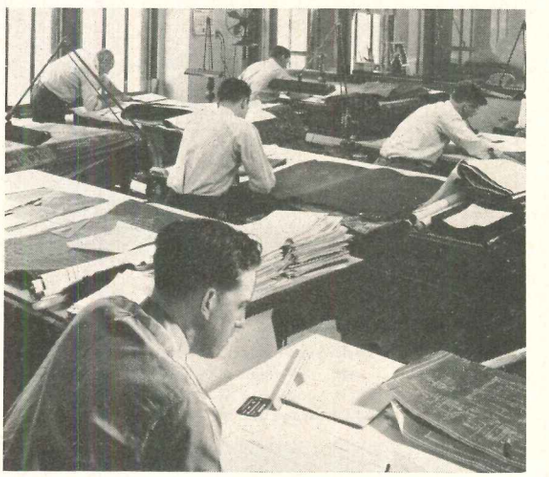

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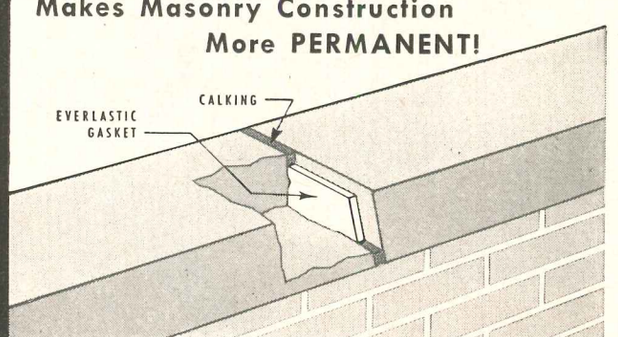

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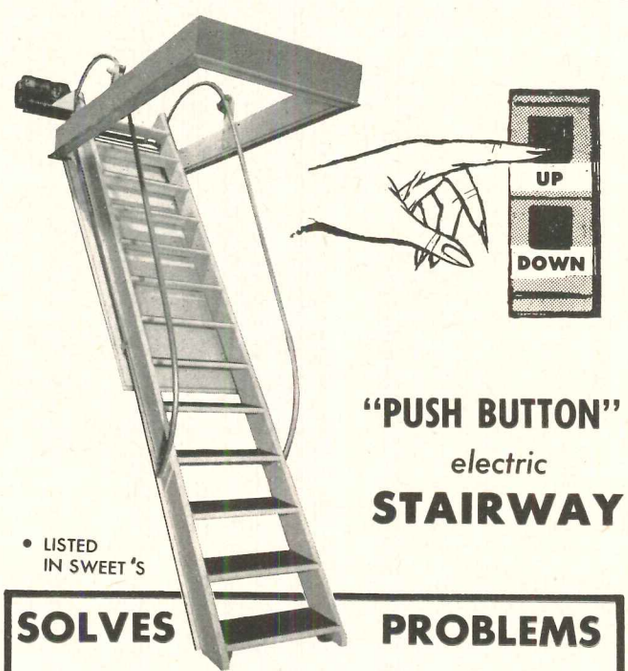

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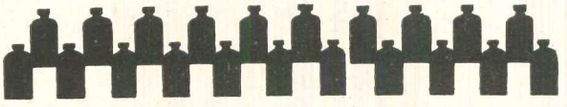

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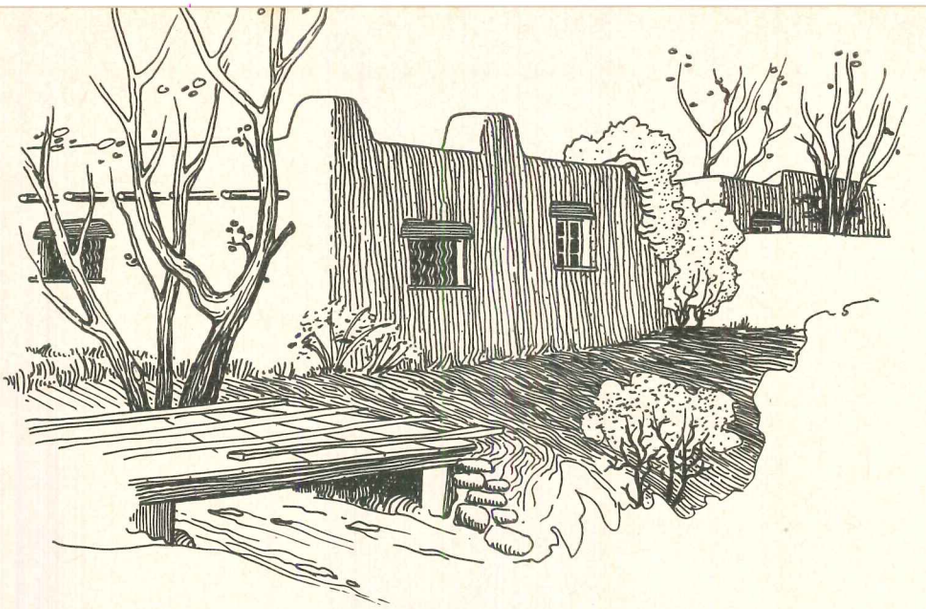


the mid 1800's, built Fort Marcy and developed the now well-accepted 'Territorial style.'

"A correct building solution is not the application of a few typical 'style details' to the exterior of conventional house plans; it is a solution based upon the clients' needs and desires, the actual site and orientation, with a full appreciation of the local climate. The solution then could take on a form dictated by all these conditions as interpreted by the skill of the architect.

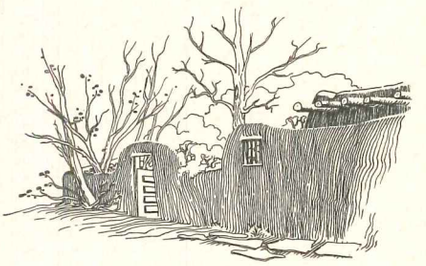
"Some of the buildings will be better than others, there will be some successes and some failures. This is inevitable, as witnessed by any architectural period in history, but the end results will be a progression based upon a continuing tradition rather than a stagnant copy of one or two isolated historical periods."

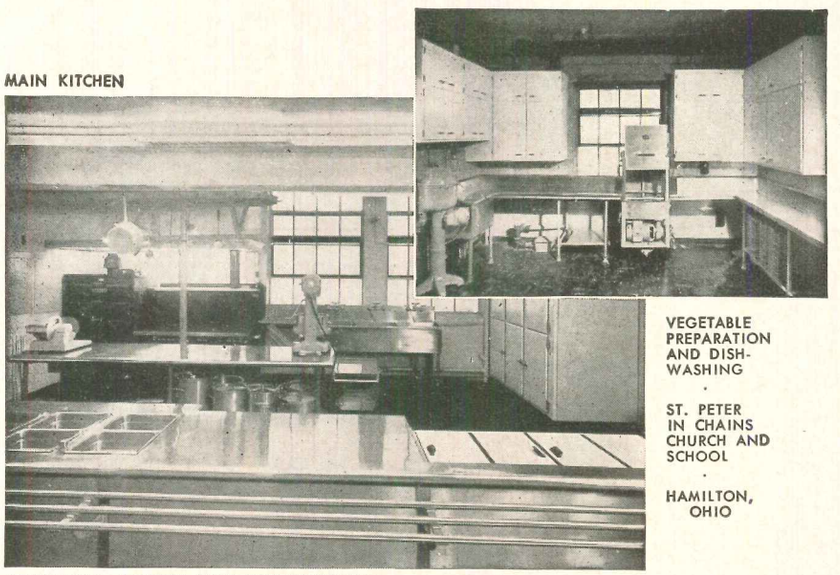
Robert E. Plettenberg, another Santa Fe architect who opposed the measure, was, like Miss von Horvath, chiefly concerned with esthetics. He also placed his views on record before the City Council voted. He said:

"Architecture is an art, born in man's mind, composed to provide shelter for the physical being and an environment for the spiritual self. The architect's palette now, as in the past, is made up of available materials, techniques, craftsmanship and climatic and sociological factors. Building for contemporary man must constantly keep in balance the economic factors of building on one side and man's desire for the ultimate in esthetic achievement on the other.

"Considerations affecting New Mexico building today are the same as in the past in general but differ in the specific. It is these specific differences that must be recognized. To imitate the simple buildings of the past results in unsatisfactory shelter for the complicated life we experience today; to imitate in a watered-down type of solution results in sham, unflattering to the people of the past as well as the society of today.

"We certainly must recognize and revere the fine architectural examples of the past; preserve them where





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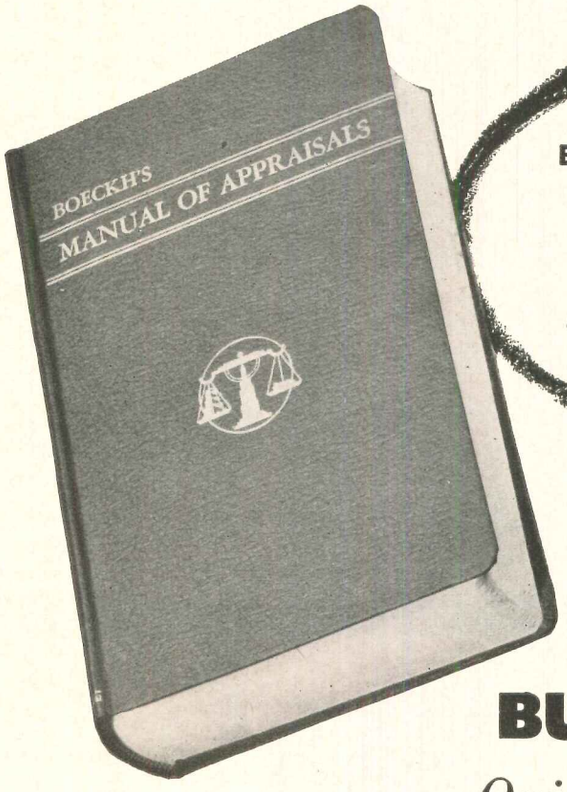

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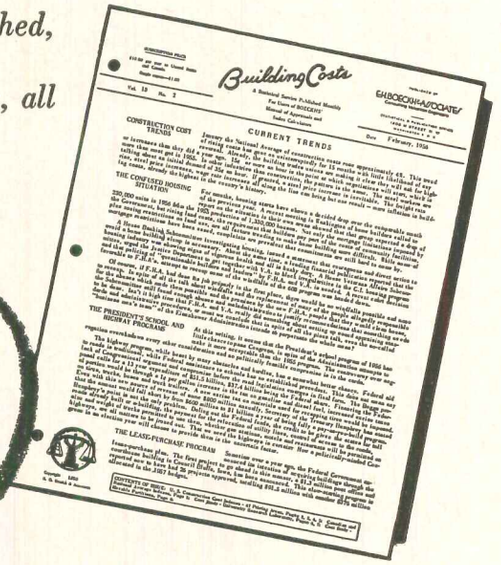

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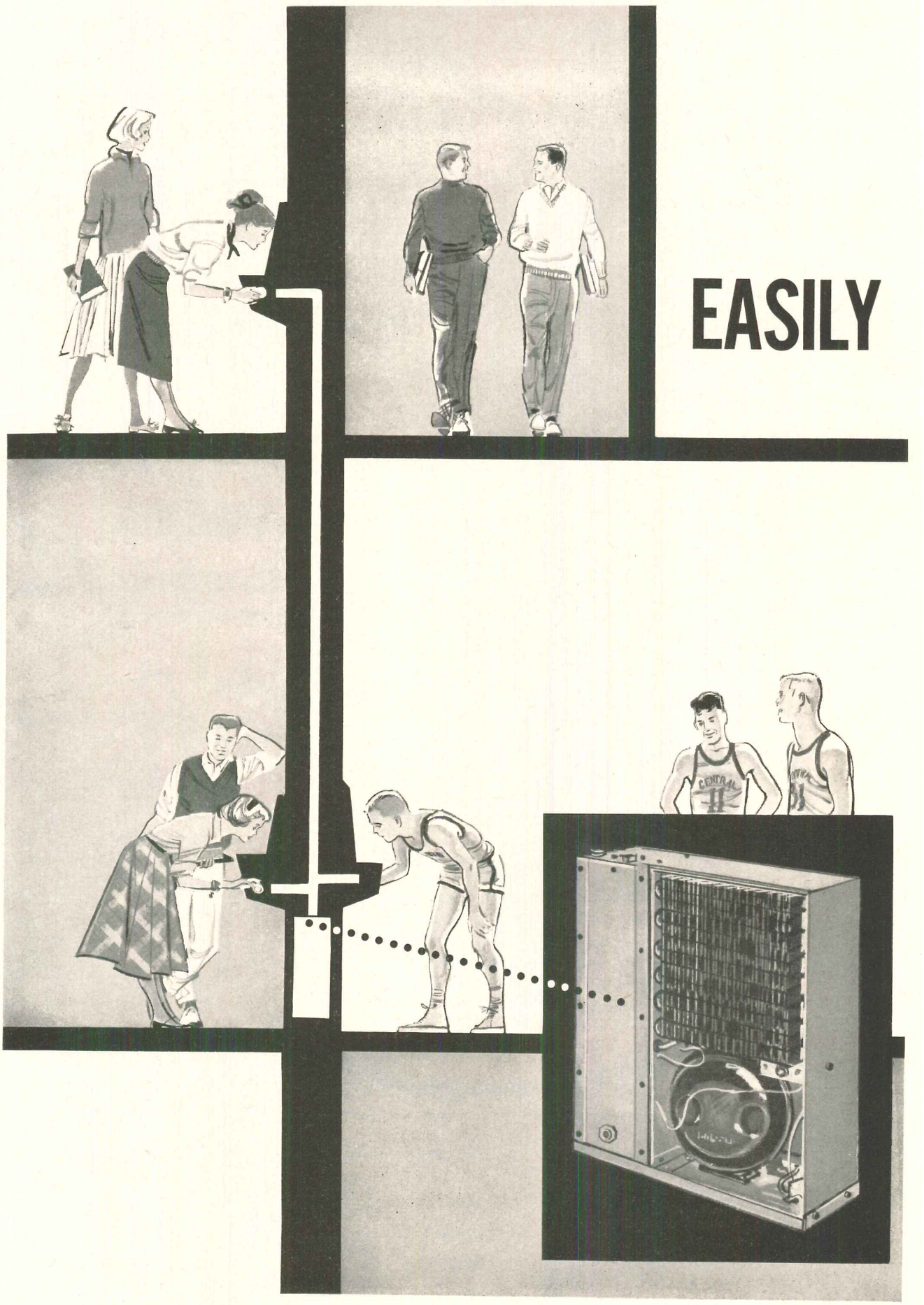
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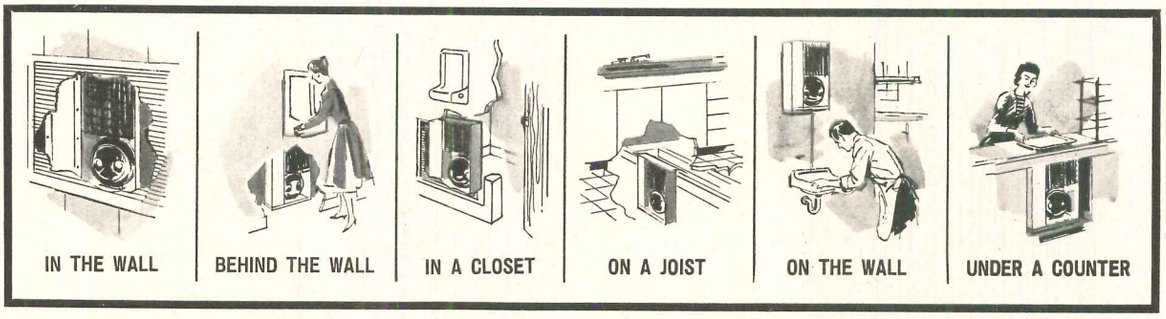

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by LeCorbusier

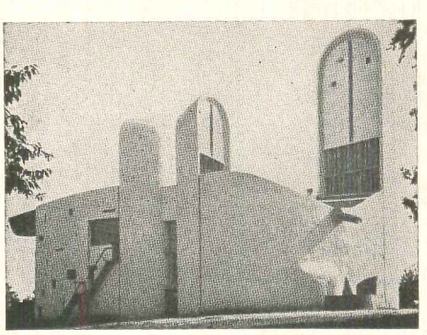
The chapel of Notre Dame du Haut is one of the truly revolutionary religious buildings of our time. This book is LeCorbusier's own account and explanation of it.

The building is presented in its three facets: First as a sacred place of worship. Second, it is shown as a work of art, with variegated and surprising perspectives, and the subtle beauty of its wall structures made brilliantly clear. Third, it is shown as a practical exercise in architecture and construction.

In this book LeCorbusier presents his own sketches, his notes, and over 100 photographs, most of them never before published. The notations and computations are in his own handwriting, and the sketches are reproduced directly from the originals. The narrative is also LeCorbusier's.

However, text is kept to a minimum. The excellent photographs and drawings are allowed to speak for themselves. They show the site, the ruins of the previous chapel, construction, and the completed chapel, interior and exterior. The architect guides you to understand the construction details and the practical matters of the project. But, in the final analysis, you must appraise this revolutionary chapel yourself. From the photographs, plans, notes, and comments, you must judge, and decide; as LeCorbusier states:

"Let Ronchamp bear me witness: five years work, all isolated on the hill . . ."



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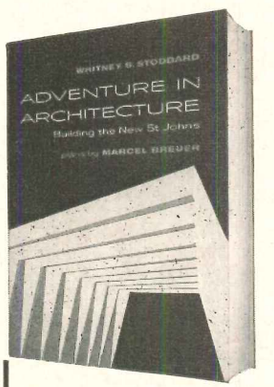

ADVENTURE IN ARCHITECTURE

by Whitney S. Stoddard

The story of the rebuilding and expansion of the extraordinary St. John's monastery in Minnesota. The client is the Benedictine order of monks, dating from the 6th century A.D. The architect is Marcel Breuer.

In 1951, 100-year-old St. John's decided that it should have a logical master plan for its next hundred years. It also had pressing immediate building problems. In this exciting book you will read how the monks and their architect solved these problems.

The most important thing was that Marcel Breuer was selected as the architect. For he and the building committee established a rapport which almost guaranteed a superior and truly ingenious result. Theirs was a model of architect-client relations. The master plan they drew is comprehensive, long-reaching, and yet flexible.

ADVENTURE IN ARCHITECTURE tells you the story of the new plan, from its inception through completion of the living quarters, right up until construction of the new church starts. In reading this book you will feel the interplay between the building committee and Breuer, and discover how he expressed in contemporary architecture the unique and traditional building requirements of a Benedictine monastery.

The photographs are noteworthy. They show the existing St. John's, other Benedictine monasteries, the new living quarters, and models of the projected church, bell banner, and chapter house. In addition, drawings and plans are shown of the present installation and each consecutive stage of the master plan.

Whitney S. Stoddard, Professor of the History of Art at Williams College, received his Ph.D. from Harvard in 1941. He has held a Carnegie grant, the Harvard-Sachs fellowship, and an advanced research Fulbright.

128 pages, 8½ x 11"
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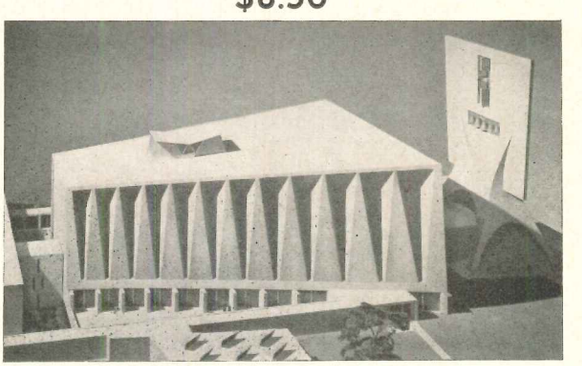

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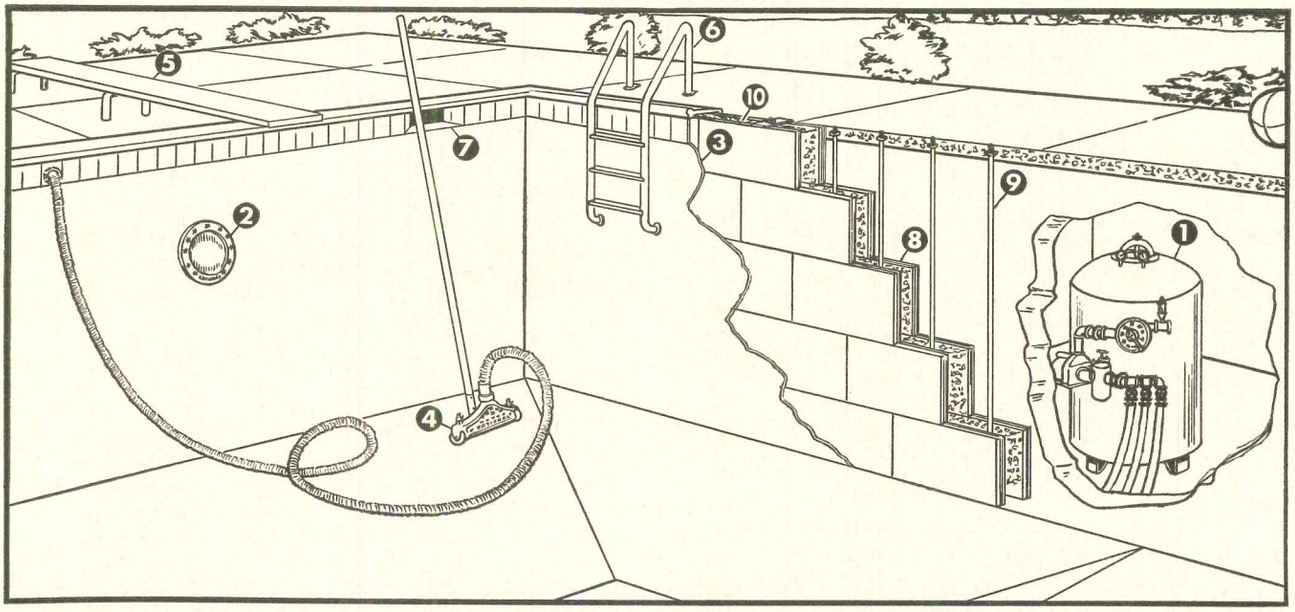

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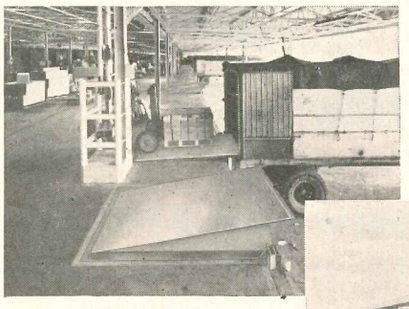

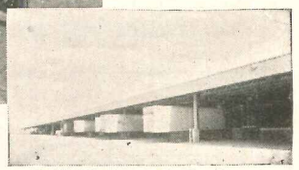

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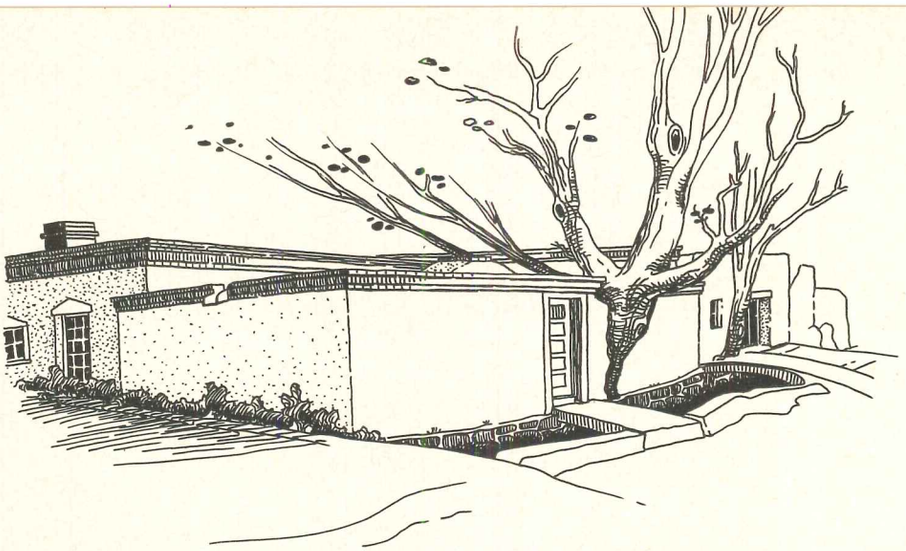
possible, restore them if necessary, but build proudly today for today. If we are sensitive enough to the true quality of the historical architecture and continue this integrity in our building of today the result will be not unlike those ancient buildings, and yet will be able to stand among them free of deceit and false imitation."

Perhaps the whole effort was summed up best by John Gaw Meem, also a Santa Fe architect and chairman of the Old Santa Fe Association, which backed the measure. Mr. Meem has worked in Pueblo-style architecture with both feeling and success for a full generation, and he endorsed the proposal at a forum sponsored by the Southwest Design Council. Mr. Meem cited instances in history where styles of architecture have been restricted for purposes of "spiritual intent," and said:



"The ordinance is basically a conservation measure. . . . Much of our city is possessed of extraordinary charm and individuality. Some are permanent like our incomparable sunshine, gracious landscapes, and historical legacy of the mixing of three civilizations. Others are fragile . . . and could be lost: our folkways, our seventeenth-century street patterns, and above all our traditional . . . architecture. The latter is especially vulnerable in spite of the tenacity with which it has held its own through the centuries and adapted itself to three very different cultures —beginning over a thousand years ago when the Pueblo Indians established the basic forms. . . .

"But can it survive? Modern architecture, by so much of which one is thrilled, is tremendously influenced by prefabricated machine products, whose use inevitably leads to sameness and monotony.

"This is seen throughout the world. What it is doing to the ancient cities of Europe is described by Lewis Mumford, eminent architectural critic, in the September 28th issue of *The New Yorker*. If London and Rome are having trouble with this dominating sameness, how long do you think little Santa Fe can retain its unique and delightful character? Perhaps if design were left entirely in the hands of sensitive people it could be done, but we know from experience how improbable this would be, given present-day economic pressures. Without restrictions we would soon be overwhelmed, to our loss and that of countless visitors who enjoy our architectural differentness and on whom depends so much of our prosperity."

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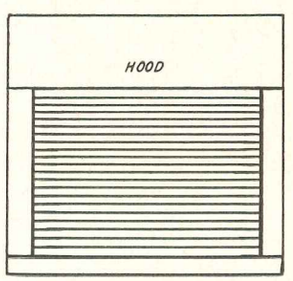
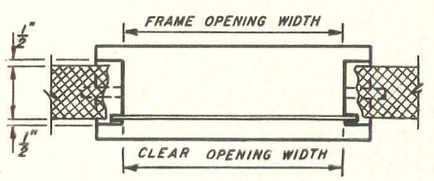


DINING ROOM ELEVATION



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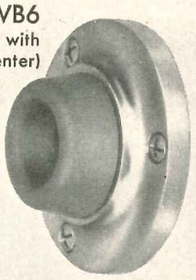
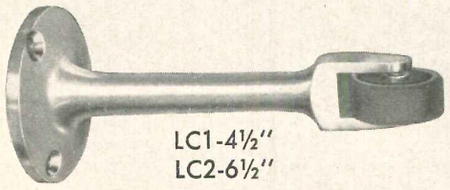
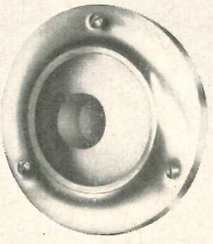
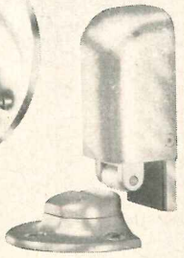


WB6
(WB5 with solid center)



LC1-4½"
LC2-6½"





3507
(solid center 3508)

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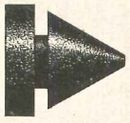

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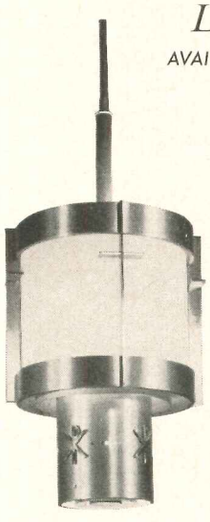

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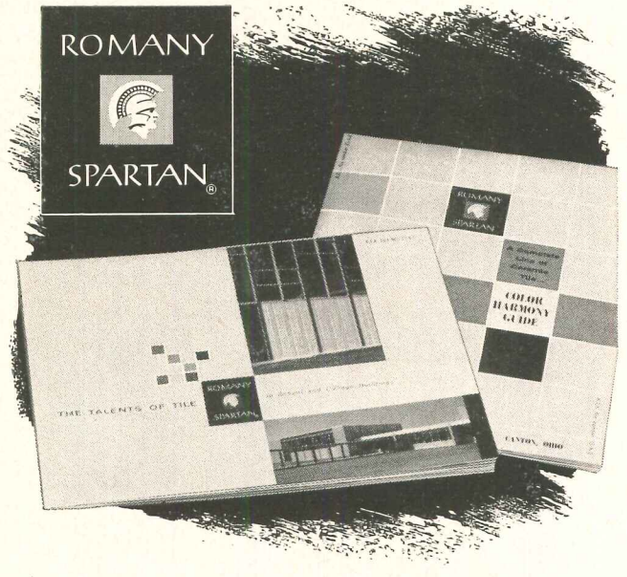

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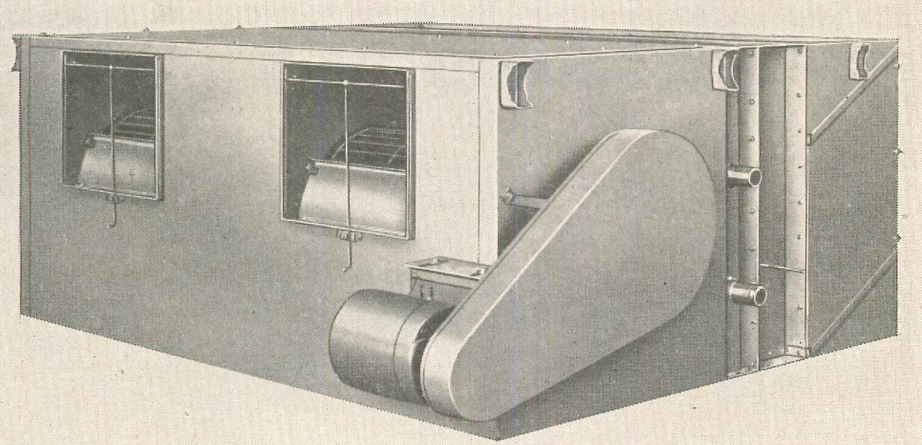

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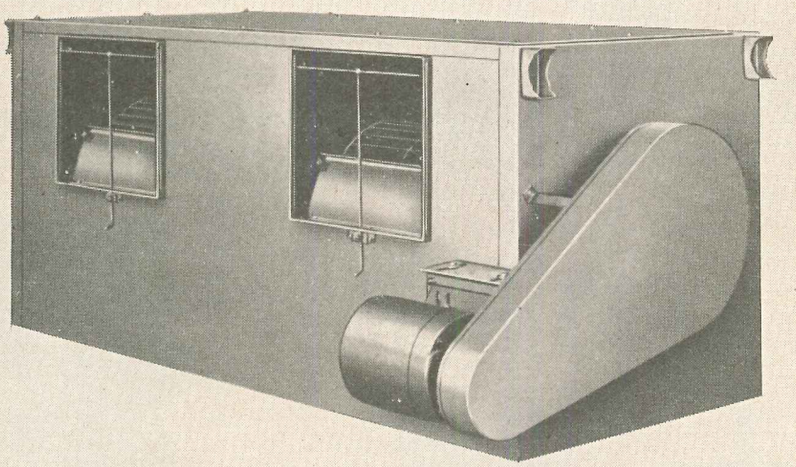

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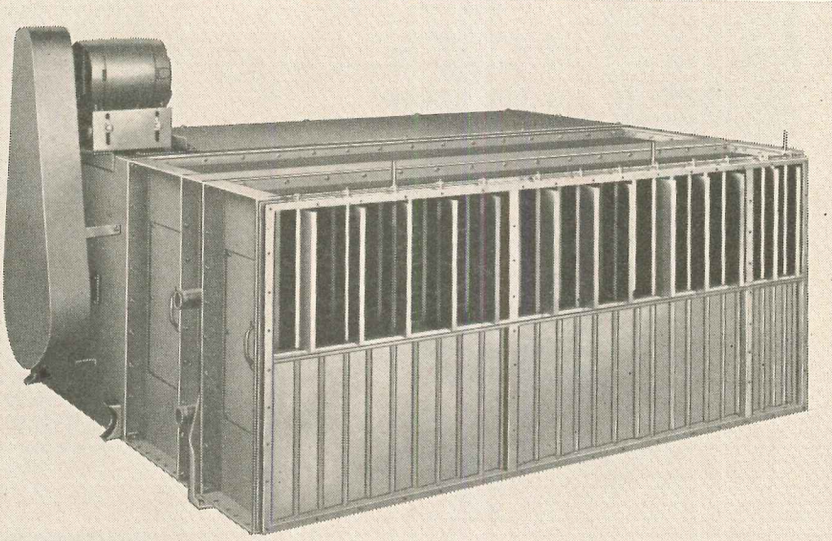

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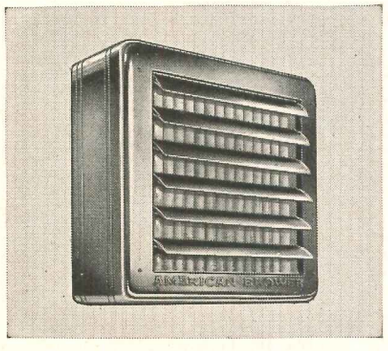

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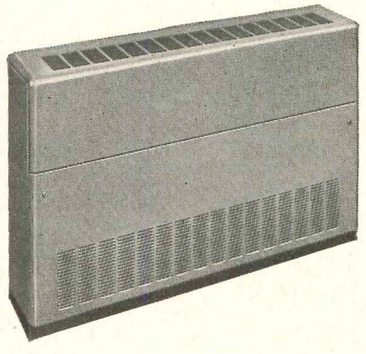

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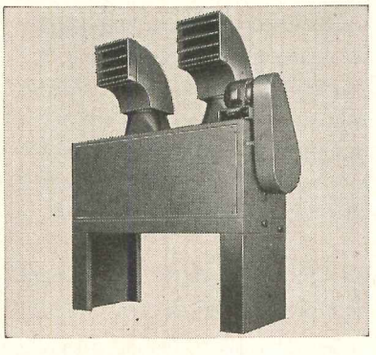

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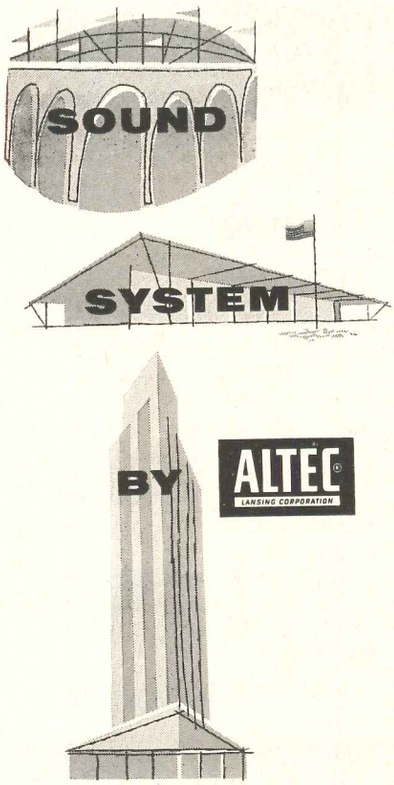

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The Record Reports

On the Calendar

June

4 20th Century Design; the first exhibition in this country of an extensive selection of objects from the Museum's design collection—Museum of Modern Art, 11 West 53rd Street, New York City

6-22 Seventh Annual Boston Arts Festival—Public Garden, Boston

9-12 National Conference on Materials Handling, the first to be sponsored by the American Society of Mechanical Engineers since 1949—Public Auditorium, Cleveland

9-12 Eighth National Materials Handling Exposition—Public Auditorium, Cleveland

10-14 51st Annual Assembly, Royal Architectural Institute of Canada—Queen Elizabeth Hotel, Montreal

11-14 Annual Meeting, National Society of Professional Engineers—Chase and Park Plaza Hotels, St. Louis

22-27 12th Annual Meeting, Forest Products Research Society—Madison, Wis.

22-27 Annual Meeting, American Society for Testing Materials—Hotel Statler, Boston

22-28 International Design Conference in Aspen—Aspen, Colo.

22-28 National Convention (second of three in 1958), American Society of Civil Engineers—Portland, Ore.

23-25 "Social Gerontology and Its Applications;" 11th Annual Conference on Aging—University of Michigan, Ann Arbor, Mich.

23-25 Joint Meeting of the American Society of Heating and Air-Conditioning Engineers and the American Society of Refrigerating Engineers—Hotel Leamington, Minneapolis

23ff The Dwelling House: An Emerging Technology; Special Summer Program presented jointly by the Department of Architecture and the Course in Building Engineering and Construction of the Department of Civil and Sanitary Engineering; through July 2—Massachusetts Institute of Technology, Cambridge, Mass.

27ff Exhibition of contemporary Danish architecture—The Octagon, Washington, D. C.

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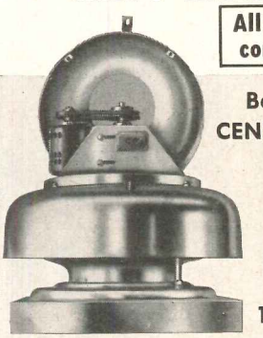
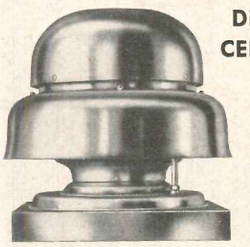
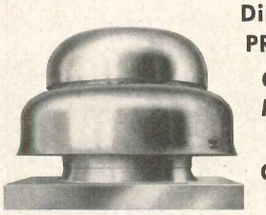


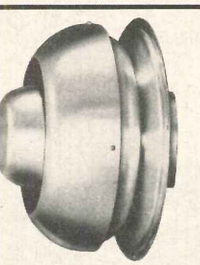
Belt drive CENTRIFUGAL
COOK Model CB
Capacities to 13,939 cfm



Direct drive CENTRIFUGAL
COOK Model CD
Capacities to 10,263 cfm



Direct drive PROPELLER
COOK Model FD
Capacities to 4,020 cfm



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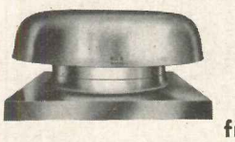

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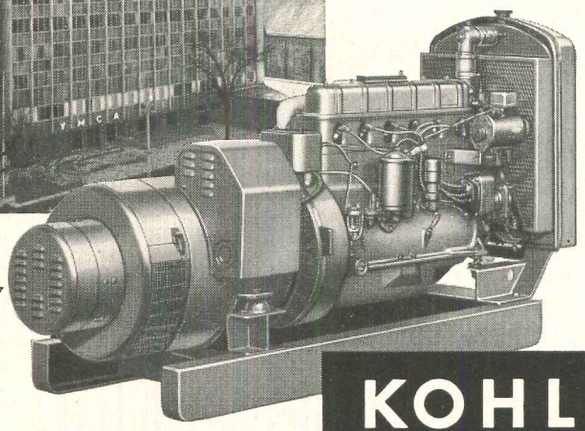

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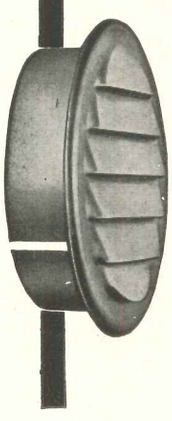

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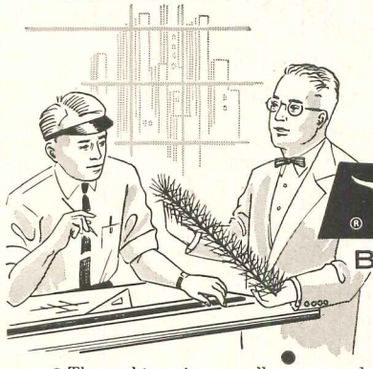

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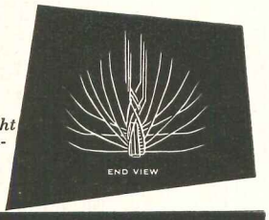

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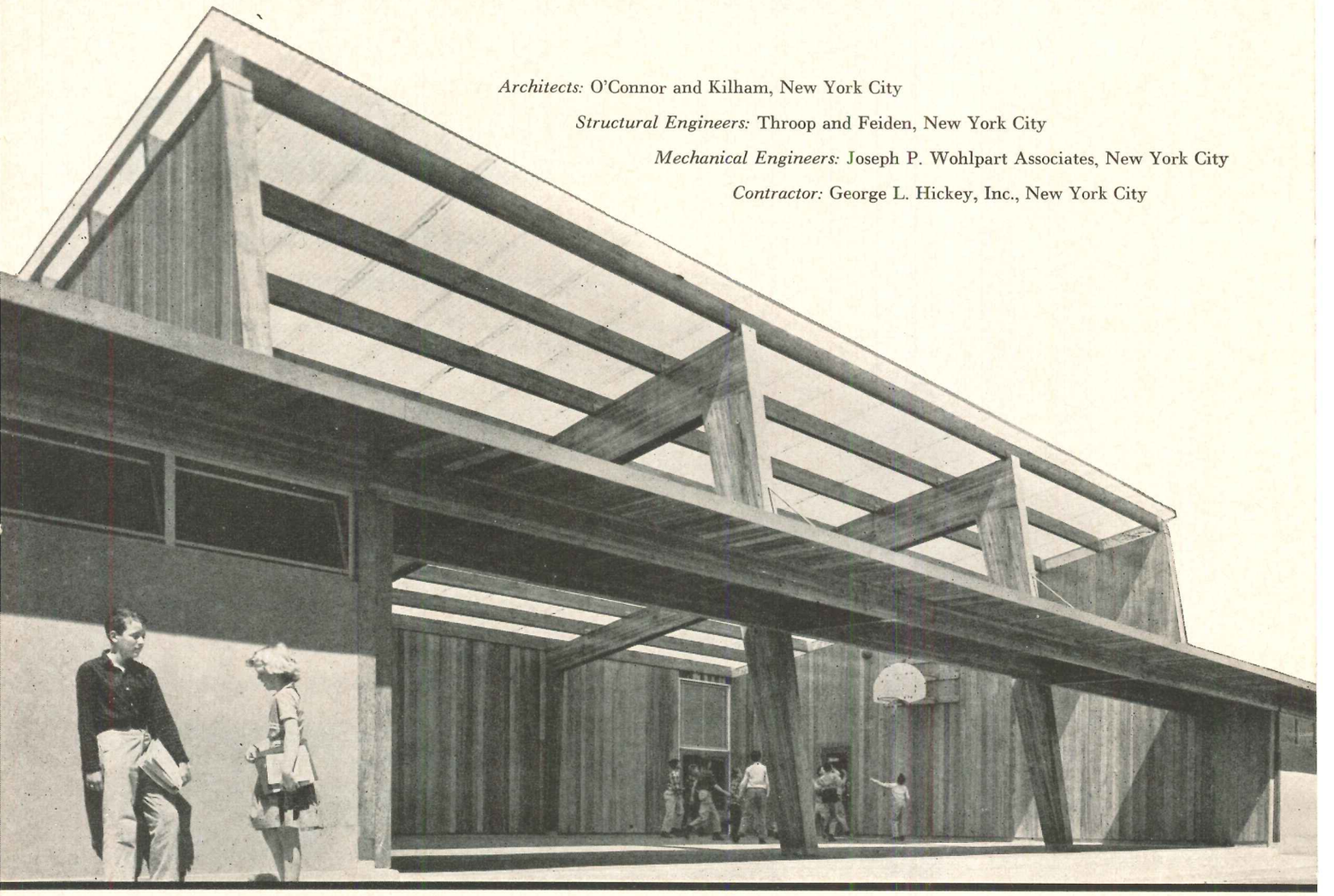

Architects: O'Connor and Kilham, New York City

Structural Engineers: Throop and Feiden, New York City

Mechanical Engineers: Joseph P. Wohlpart Associates, New York City

Contractor: George L. Hickey, Inc., New York City

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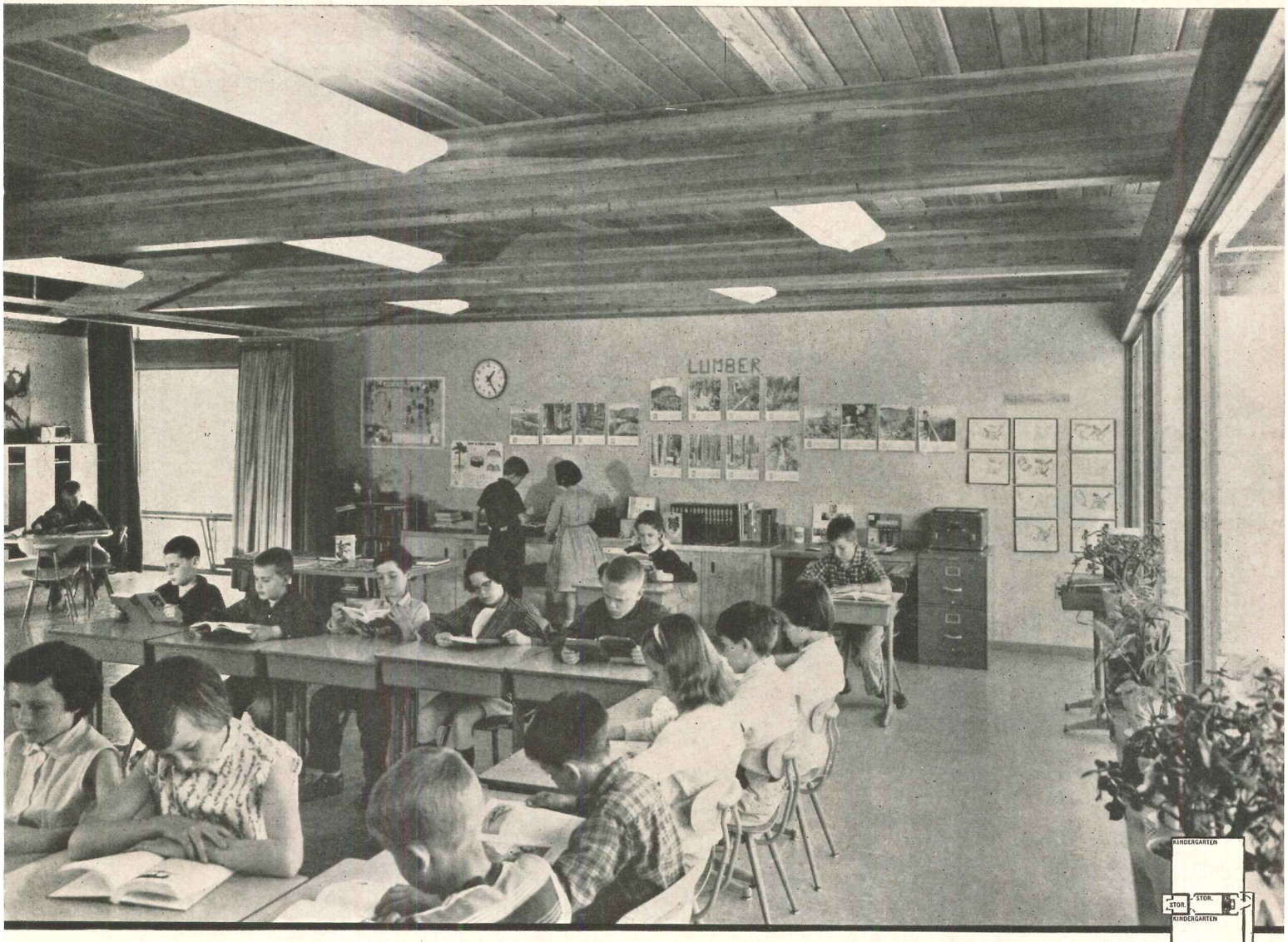
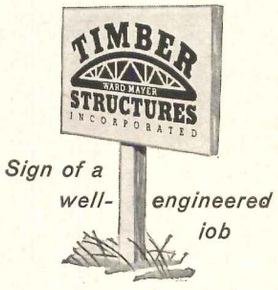


Left: Play area shelters students while waiting to board buses.

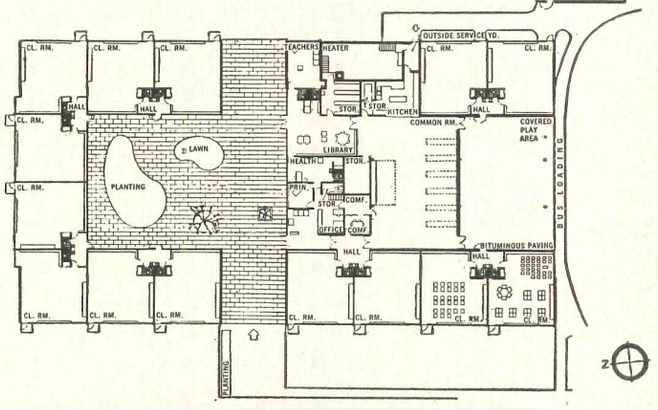
Above: Typical classroom of 938 square feet. Each classroom has its own outside entrance.

Right: School is built around a paved courtyard, with U-shaped covered walkways joining the two wings. Kindergarten has its own separate wing at the top.

Below: Common Room serves as both auditorium and cafeteria. Kitchen is adjoining at the far end.



Sign of a well-engineered job



JOB DATA

Exterior Walls: Brick, with concrete block in service area, cypress siding for playroom.

Interior Walls: Plastic coated coverings in classrooms, Common Room and halls.

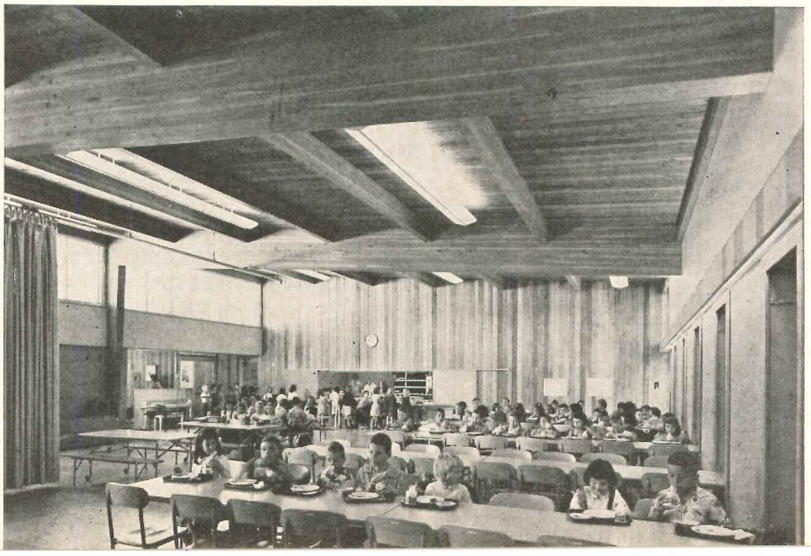
Heating: Hot water radiant panel system, zoned and thermostatically controlled.

Ventilation: Exhaust fans in classrooms, toilet rooms and kitchen. Tempered air supply units in Common Room.

Lighting: Semi-indirect fluorescent fixtures.

Floors: Vinyl asbestos tiles on concrete slab over insulated concrete fill and moisture barrier.

Roof Surface: Translucent corrugated panels over playroom and covered walks. Built-up tar and felt with white graveled surface over remainder of building.



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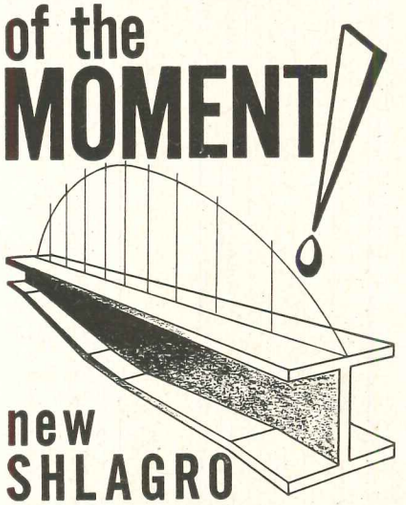

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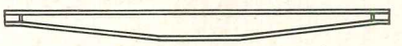

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The Record Reports

29ff "Landscape Architecture in the Modern World"; Joint Meeting of the American Society of Landscape Architects and the International Federation of Landscape Architects; through July 4—Hotel Shoreham, Washington, D. C.

30ff Annual Convention, National Education Association; through July 4—Cleveland

July

5-7 National Convention, Construction Specifications Institute—Carter Hotel, Cleveland

7-11 90th Annual Convention, American Institute of Architects—Cleveland Hotel, Cleveland

20-28 Fifth Congress, International Union of Architects; theme, "Construction and Reconstruction of Towns, 1945-57—Moscow

Office Notes

Firm Changes

Richard M. Adler has resigned from his position as Airport Architect for The Port of New York Authority to enter private practice in partnership with Peter S. Hopf, A.I.A. Mr. Adler was assigned to the Terminal City project at New York International Airport. Mr. Hopf is a former member of the Port Authority staff who designed two of the individual airline terminal facilities at the airport. The newly-formed firm will be called Hopf & Adler, Architects, with offices at 118-20 Queens Blvd., Forest Hills, New York City, N. Y.

W. Stanly Gordon and H. Lamar Drake announce the formation of a partnership for the practice of architecture under the name of Gordon and Drake, Architects, A.I.A., with offices at 1531 Alford Place, Jacksonville, Fla.

Eugene L. Freerks and Robert H. Sperl have been named vice presidents of Hammel and Green, Inc. The Minnesota architectural firm has offices at 1932½ University Ave., St. Paul.

Kelly & Gruzen, Architects and Engineers, has appointed P. L. Griffith as an associate in the firm. Mr. Griffith is an engineer and management consultant. Kelly & Gruzen has offices in New York, Newark, and Boston.

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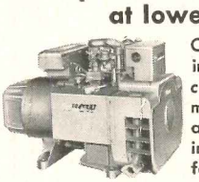

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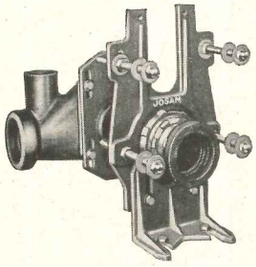

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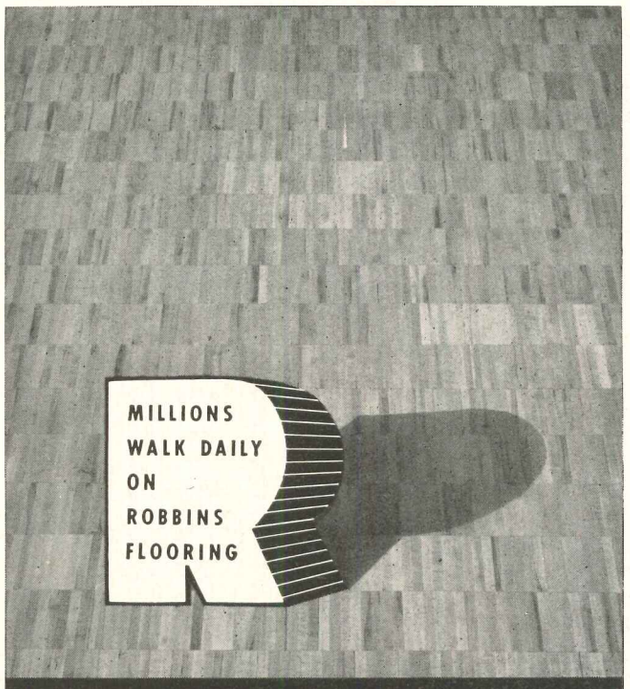

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1. INTRODUCTION
2. EARTHWORK
   Excavation • Compaction • Earthmoving
3. REINFORCED CONCRETE WORK
   Form fabrication • Form erection • Placing reinforcing steel • Placing concrete • Concrete finishing
4. STRUCTURAL STEEL WORK
   Steel erection with welded, bolted, and riveted connections. Types: Commercial buildings, Mill type buildings, Multi-storied buildings
5. MASONRY WORK
   Brick • Clay tile • Glazed tile • Concrete blocks • Stone veneer • Ledgestone • Flagstone • Terra cotta
6. CARPENTRY
   Rough carpentry • Finish carpentry

APPENDIX
Estimate form sheets for each type of operation

COMPLETE INDEX

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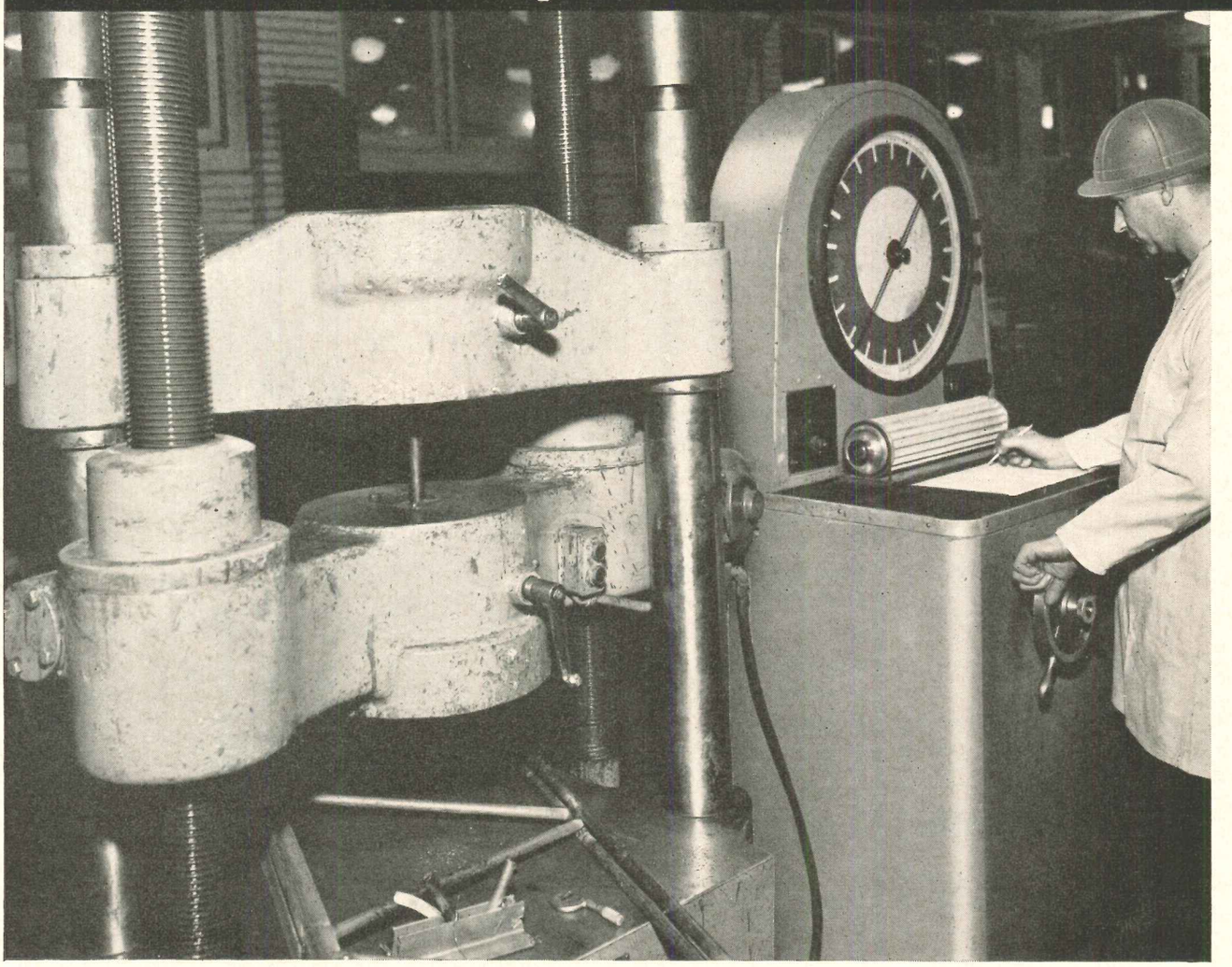

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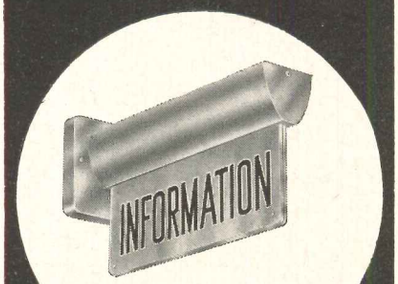

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The Record Reports

Ernest J. Kump has formed a partnership with Stanley M. Smith, A.I.A., and Arthur B. Sweetser. The new firm will continue to practice architecture under the name of The Office of Ernest J. Kump, with offices in Palo Alto, Calif. The firm's temporary address is P.O. Box 467, pending the completion this summer of its new office building at 321 Lytton Ave.

Donald H. Lutes, A.I.A., and John M. Amundson have announced the formation of a partnership for the practice of architecture and community planning. Offices will be in the United States National Bank Bldg., Springfield, Ore.

Carter H. Manny, Jr., Thomas J. Mulig, A.I.A., Charles F. Murphy, Jr., A.I.A., and Charles G. Rummel have been named partners in the architectural-engineering firm of Naess and Murphy, 80 E. Jackson Blvd., Chicago, Ill.

The architectural firm of O'Leary and Terasawa, formerly known as Absmeier, O'Leary and Terasawa, will continue in general practice in its offices at 1898 Crenshaw Blvd., Los Angeles, Calif.

Perkins & Will, architects-engineers with offices in Chicago and White Plains, New York, has named Charles W. Brubaker, A.I.A., and George A. Hutchinson, Jr., A.I.A., partners in the office at 309 West Jackson Blvd., Chicago 6, Ill.

Williams D. Bailey, engineer, has been admitted to partnership in the firm of Seelye Stevenson Value & Knecht, Consulting Engineers. Mr. Bailey, formerly an associate of the firm, will continue to act as Manager of the Highway Engineering Division. The firm is located at 101 Park Ave., New York 17, N. Y.

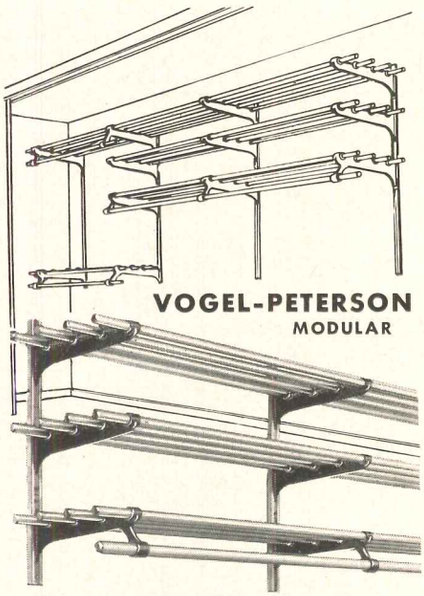
Emerson C. Smith & Associates, communications engineers, has announced its affiliation with Law & Wilson, Architects and Engineers, Honolulu, Hawaii.

New Addresses

Koslen & Ross—Architects, 16828 Kinsman Rd., Shaker Heights 20, Ohio.

Beck, Simon & Mantel, Structural Engineers, 921 Bergen Ave., Jersey City 6, N. J.

Skidmore, Owings & Merrill (Chicago office), Inland Steel Bldg., 30 W. Monroe St., Chicago, Ill.



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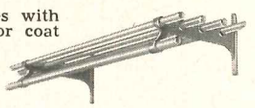
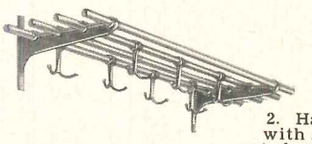
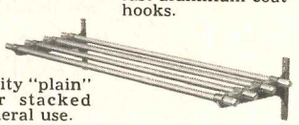


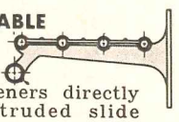


2. Hat shelves with staggered cast aluminum coat hooks.



3. Hat or utility "plain" shelves for stacked tiers for general use.

RIGID OR ADJUSTABLE MOUNTING



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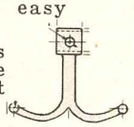

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In a Variety of Forms—"Electro-Sheet" is furnished to manufacturers who bond it to high-grade building papers and fabrics, or coat it with asphaltic compounds. The finished products are available in long lengths, and widths to 60". For names of manufacturers, write: The American Brass Co., Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

5648

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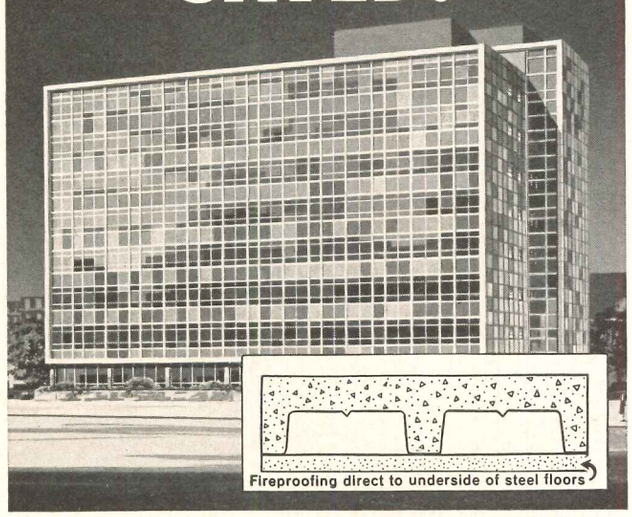

New Onondaga County Bldg., Syracuse, N.Y. • Arch: H. A. & F. C. King, Syracuse • Gen. Contr.: W. E. O'Neill Const. Co., Syracuse and Chicago • Plast. Contr.: Henderson-Johnson Co., Syracuse and Youngstown, Ohio.

ZONOLITE®

• Cuts Days Off Construction Time
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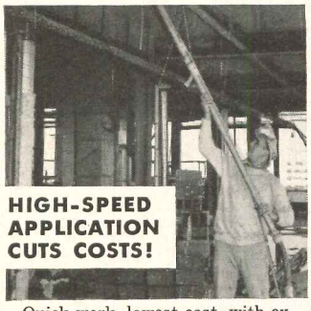
Zonolite's revolutionary new technique of direct-to-steel plastic fireproofing was used throughout the new Onondaga County Building—cut days off construction time—provided sound-conditioning—afforded highest fire ratings—and saved ceiling height, thus reducing dead weight and material costs.



Quick work, lowest cost, with extension pipe applicator. At Onondaga County Bldg., undersides of steel floor were fireproofed throughout with Zonolite direct-to-steel fireproofing.

Perfect For Modern Schools, Hospitals, Office Buildings

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Send me booklet PA-41 on Zonolite plaster, acoustical and fireproofing systems.

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Are your sales keeping pace

Now is a good time to sell architects and engineers whose plans and specifications control 92% of the strongest religious building market in history. And again in 1958 Architectural Record is your right magazine medium.

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In 1957 religious projects reached a record $700 millions, over 6% of *all* nonresidential building.

For 1958 F. W. Dodge Corporation has estimated further gains in church building—*and long-term prospects are among the brightest in the building field.*

Reasons include population increase, population movement, and steep growth in church income—*but most basic is the upsurge in U. S. church-mindedness.*

In 1940 there were 64 million church members constituting 49% of the U. S. population. By 1956 church membership had soared to 103 million, or 62% of the population!

Current estimates point to 22 million more church members (and potential income contributors) over the next ten years—an increase that should spur the construction of over 70,000 new churches, synagogues and related facilities at a cost of no less than $7 billion by 1965.

Why Architectural Record is your right magazine medium in the church building market.

In the past five years Architectural Record has published 75% more editorial pages on religious building design than any other architectural magazine.

This reflects Architectural Record's close editorial attention both to building planning trends as revealed by *Dodge*

Architectural Record

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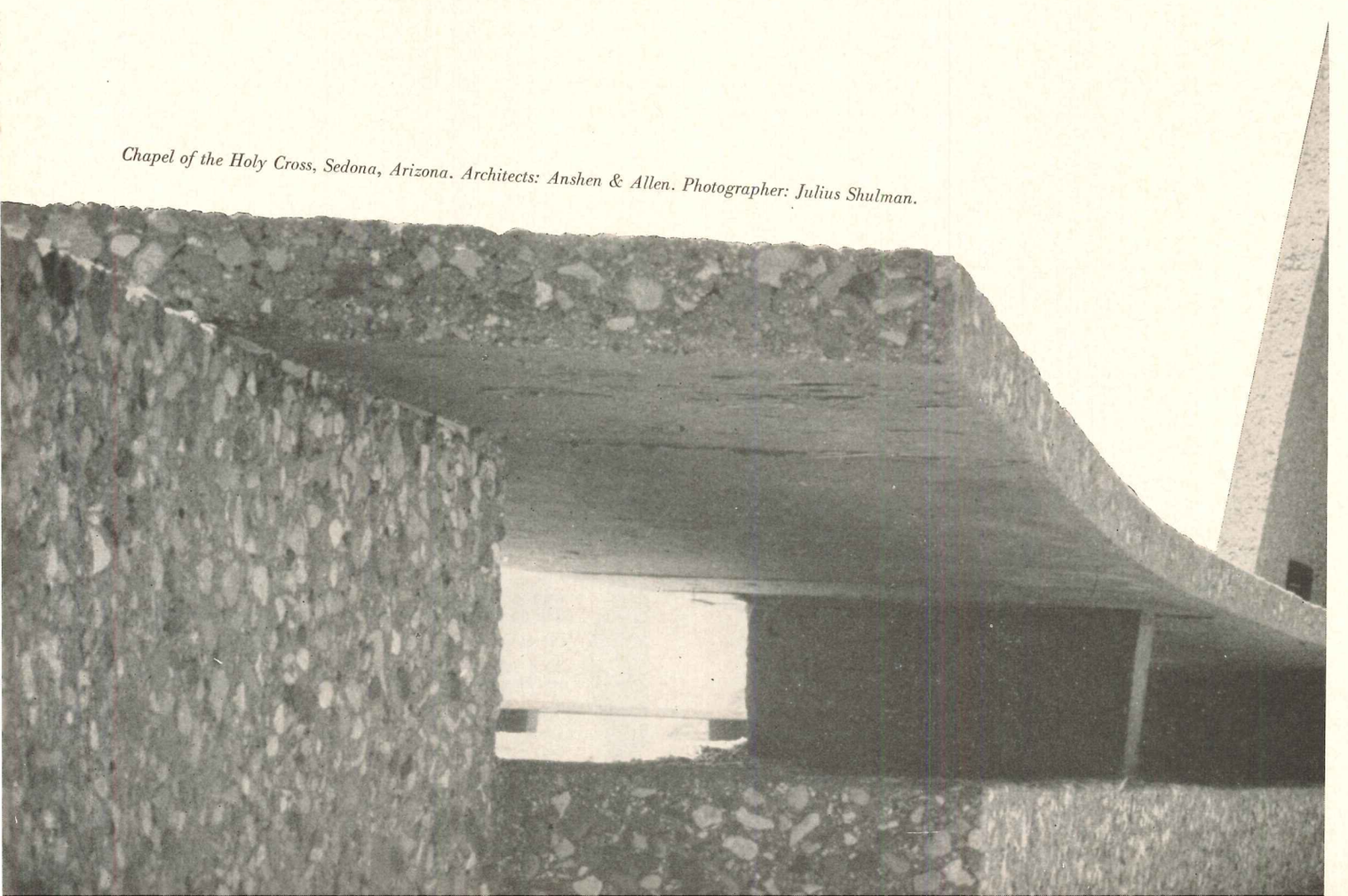
an F. W. DODGE CORPORATION publication

Chapel of the Holy Cross, Sedona, Arizona. Architects: Anshen & Allen. Photographer: Julius Shulman.



with church building?

Reports and to the *continually researched interest** of its readers in religious buildings.

More than any other magazine in its field Architectural Record has focused on the expanding functions of the church as a community educational, recreational and social center—on new uses of mechanical and other types of equipment needed for this expanded activity . . . and, most important, on the bold experimentation of architects and engineers seeking better ways to express traditional values of worship in architectural terms meaningful for our day.

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2. Largest architect—and engineer—circulation.
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4. Architect and engineer preference as revealed in 111 out of 121 studies SPONSORED BY BUILDING PRODUCT MANUFACTURERS AND ADVERTISING AGENCIES.
5. Advertising leadership—by a margin of 72% more advertising pages than the second magazine in the field (3 months, 1958).

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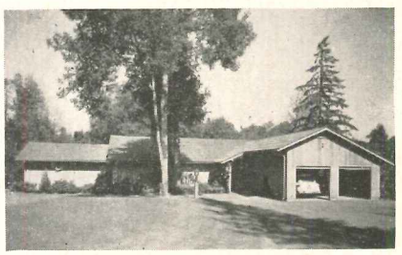

House in Portland, Oregon, Builder: J. Jerold Norman, Architect: Richard Marlitt, Portland. Cabot's Creosote Stain on exterior siding. Photograph: Courtesy West Coast Lumberman's Association.

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Required Reading

continued from page 64

the reader's eye, and seek the security of the bindings. Instead of seeking such security ourselves, we might stand ready to act on whatever our individual consciences demand, once we see what our enlarged vision enables us to see. We have still the right to do more than glide quietly with the spirit of the times. Mr. Nelson will not seem to encourage us to exercise this right, but he is pleasant stimulation while we prepare ourselves.

continued from page 60

clusions may make an architect raise his eyebrows. For instance, he praises New York City buildings resulting from the 1916 ordinance because "their upper stories taper off, providing greater opportunities for ornamentation."

On the whole, however, he shows a healthy awareness of the necessities of contemporary architecture. Thus, in speaking of building codes, he says, "It should be the aim of both policy and administration to provide needed protection without penalizing good design, without restricting advances in methods of construction, and without prejudicing the use of new materials."

Also, in connection with a particularly controversial aspect of zoning, Mr. Webster remarks, "The arguments that esthetic values can best be promoted by education and cooperation rather than by legislation have been quite persuasive." An architect himself is often the best "educator," and this book would give him useful background for the task.—*P. C. F.*

Urban Renewal

This 96-page, beautifully illustrated book is a report of a study of a 20-block area in New York City. A detailed analysis of present conditions is followed by plans for rehabilitation and renewal. The study was financed in part by the federal Housing and Home Finance Agency. *New York City Planning Commission, 2 Lafayette St., New York 7, N. Y.*

Directory Of International

. . . *Scholarships in the Arts* is a 120-page booklet that lists awards for study abroad offered by government and private organizations throughout the world in architecture, creative writing, dance, design, music, painting and sculpture, and theater arts. There is a detailed index to fields and countries. *Institute of International Education, 1 East 67th St., New York 21, N. Y.*

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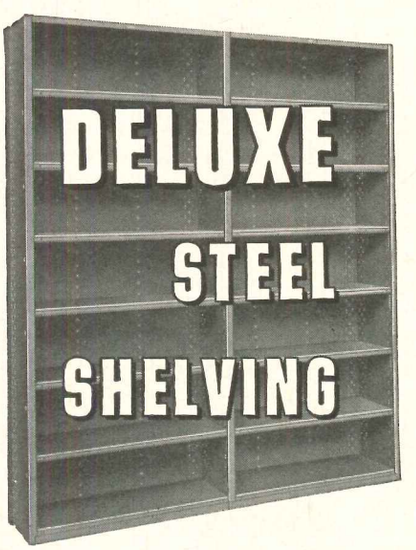

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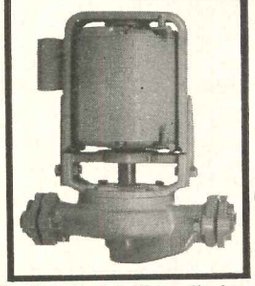

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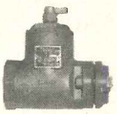

Horizontal Pattern Flow Control Valve.

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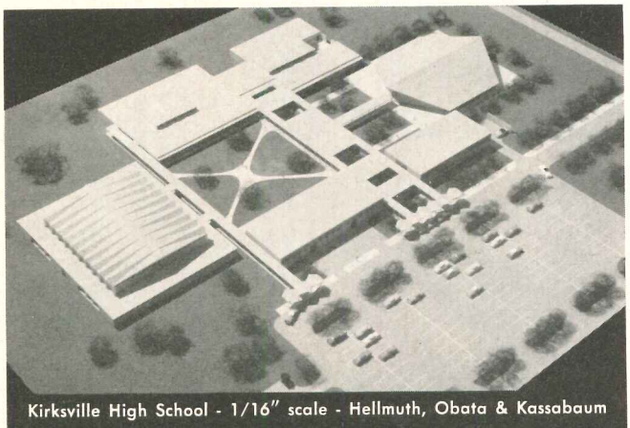

Kirksville High School - 1/16" scale - Hellmuth, Obata & Kassabaum

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- No visible screws or spot weld marks
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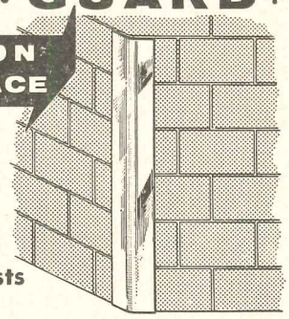
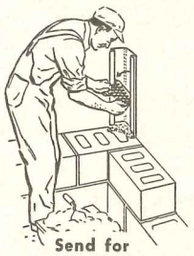


*Patent Pending



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These anchors, inserted into the corner guard as the workman builds the wall, eliminate all weld marks or screw heads from the surface of the corner guard.

They're money savers too—lower in initial cost, and less expensive to install.

Standard Models are available for tile, concrete block or plastered walls.

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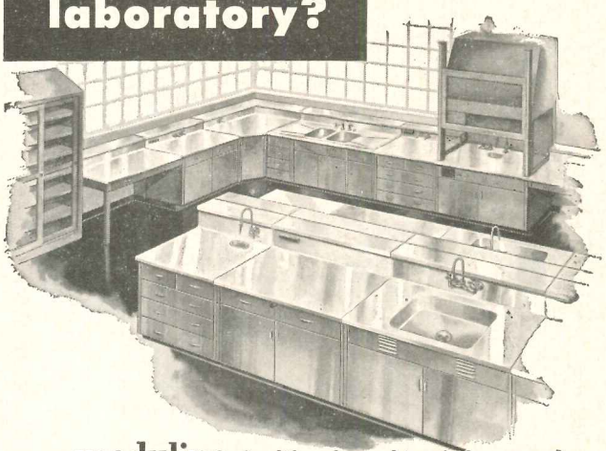
Wilkinson CHUTES Inc.

planning a laboratory?



moduline simplifies the architect's layout and installation of cabinets and casework for laboratories and hospitals. Consists of sectional steel units of architecturally approved widths and depths; easy to adapt to any building layout. Fabricated of quality materials; stainless steel tops, or choice of wood, stone, Formica, etc.

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A. S. Aloe Company AND SUBSIDIARIES
1831 Olive St., St. Louis 3, Mo.

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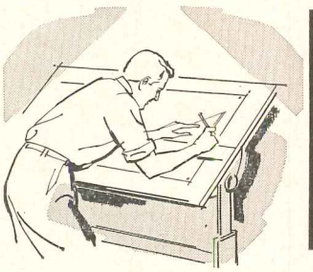

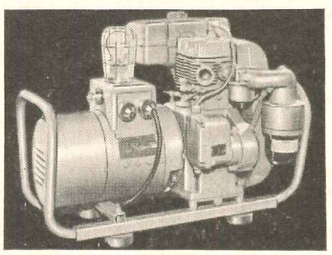

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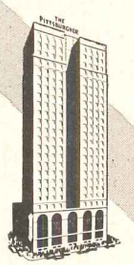

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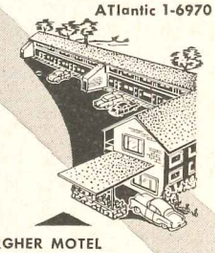

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Opposite Greater Pittsburgh Airport on beautiful Airport Parkway West. 56 luxurious, air-conditioned rooms with tile bath, TV, private phone. Courtesy car to and from airport.

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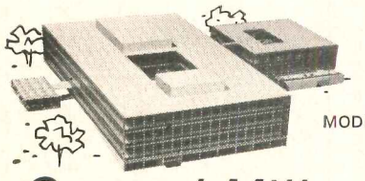


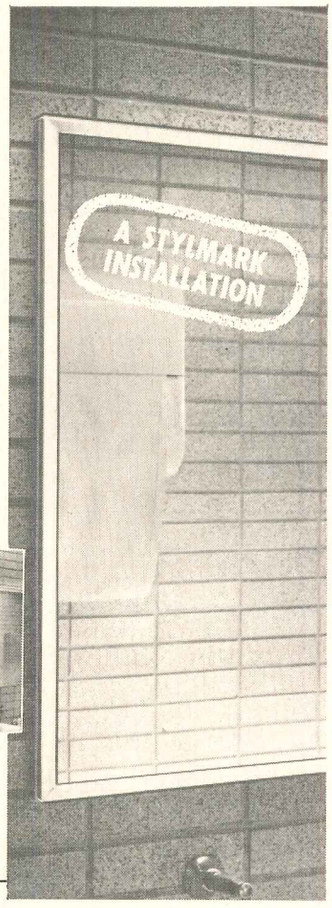
MODERN OUTSIDE | MODERN INSIDE

Architects — SKIDMORE, OWINGS AND MERRILL, Chicago

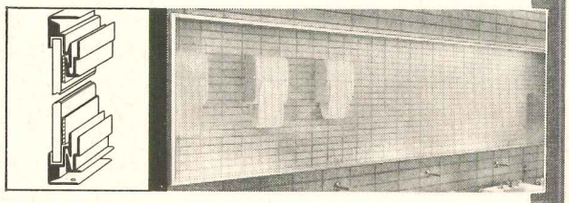
Glass and Glazing — HOFFER GLASS, Minneapolis

General Mills uses modern STYLMARK glass hardware in new home office

STYLMARK helps architects express the contemporary "metal-and-glass" *exterior* motif in *interiors*, too! Offers utmost design flexibility because there are no size limitations. Gives versatility of custom installation *at less than cost of standard-size frames*. Installs quickly, easily right on the job – without unsightly brazed corners. Made of extruded aluminum to rigidly controlled tolerances – comes in choice of five anodized colors for maximum beauty. Provides positive theft protection.



STYLMARK'S trim mirror hardware enhances modern, functional decor in office lounges. Die cast corner brackets insure permanent clean-cut fit of mitred corners. Design features make installation possible in minutes. No backing required.



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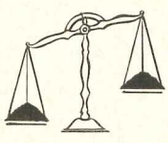

WAYLITE MASONRY UNITS give (1) an insulative wall (2) with an attractively decorated interior that (3) needs no acoustical treatment —(4) all at one low cost.

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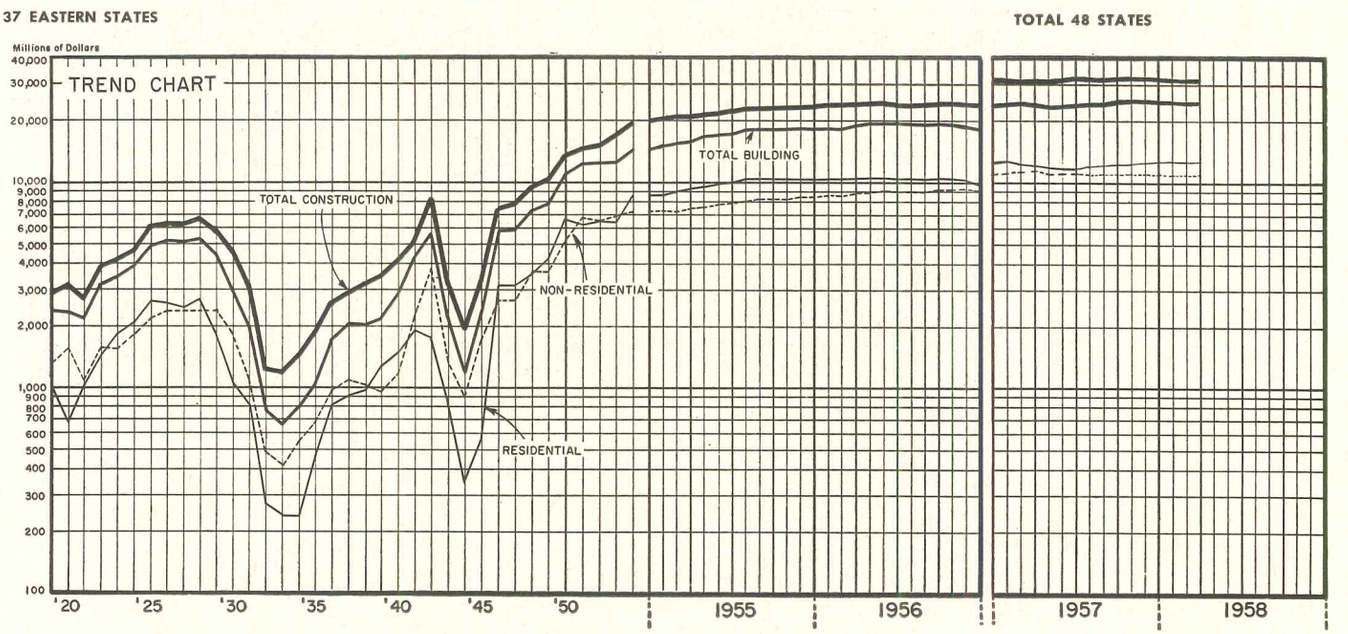
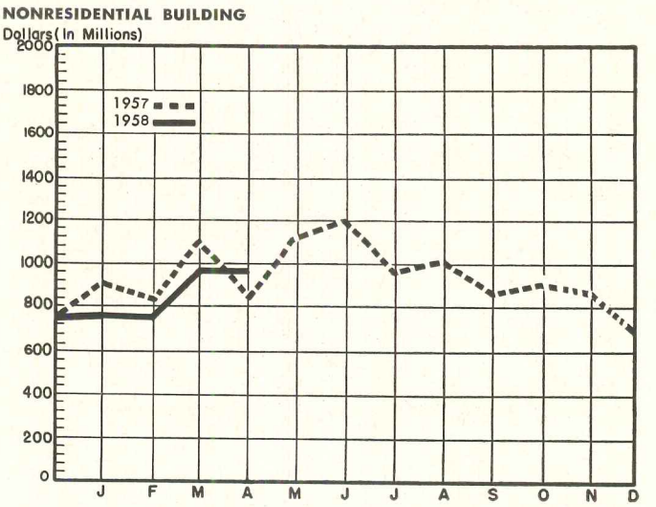
Current Trends in Construction

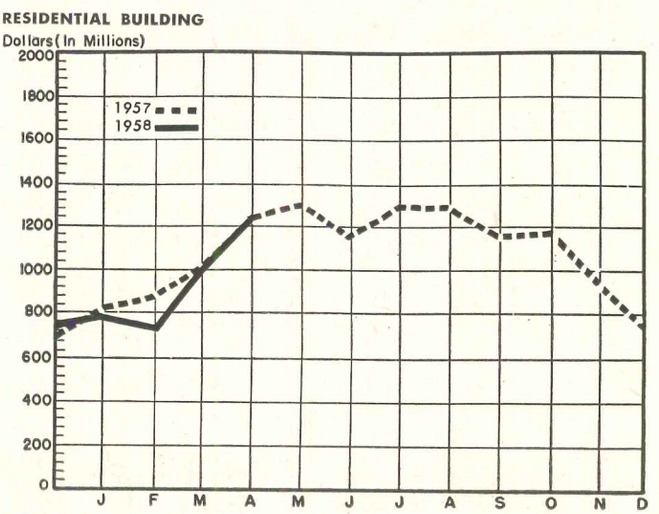
As Reflected in Contracts for Future Construction in the U.S. Reported and Tabulated by F. W. Dodge Corporation



FIRST UPTURN SEEN IN APRIL CONTRACT AWARDS

The first signs of a shift in the construction trend appeared in early figures released by F. W. Dodge Corporation on the totals of construction contracts reported for April. These figures, for 37 states east of the Rockies only, showed an increase of 18 per cent in non-residential contracts compared with April of last year. (The accompanying charts show 48-state totals.) Other encouraging features of the first April figures cited by Dr. George Cline Smith, Dodge vice president and economist, were an 18 per cent increase in school building contracts, a 13 per cent increase in contracts for apartments and other large residential buildings, an 18 per cent increase in commercial buildings and a 16 per cent increase in street and highway contracts in the 37-state area. Dodge has not released 37-state figures since its statistics went on a national basis in January 1957 but did so last month in view of "signs of a sharp trend reversal at a time when every shift in the economic winds is being observed with intense interest." Best April increase of all in the 37-state figures was shown by public works, up 33 per cent.





RELIGIOUS BUILDINGS*

Construction Contracts—Regional Comparison
Valuation (in thousands of dollars)

REGION	MARCH 1957	MARCH 1958	3 MOS. 1957	3 MOS. 1958
New England	5,612	2,957	8,976	5,852
NY, NJ, E. Pa., Md., Del., D.C., Va.	12,355	13,342	34,313	29,333
South Atlantic	8,098	7,137	20,429	14,860
Ohio, W. Pa., Ky., W. Va.	8,026	6,000	18,835	14,281
N.D., S.D., Minn., Ia., Wis., Mich., Ill., Ind.	14,404	15,376	30,410	33,214
E. Mo., Ark., La., Miss., E. Tenn.	4,360	4,476	11,203	10,620
Neb., Kas., W. Mo., Okla., Tex.	9,421	10,963	17,669	18,503
11 Western States	12,636	6,906	23,284	19,441
U.S. Summary	74,912	67,157	165,119	146,104

*Religious Buildings are the subject of Building Types Study No. 269, pages 175-202.

SHERRON ACOUSTIC STEEL BOOTHS

IN RECESSED, MULTIPLE GROUPINGS ARE IDEAL FOR LOBBY LOCATIONS WHERE TRAFFIC IS HEAVIEST . . .

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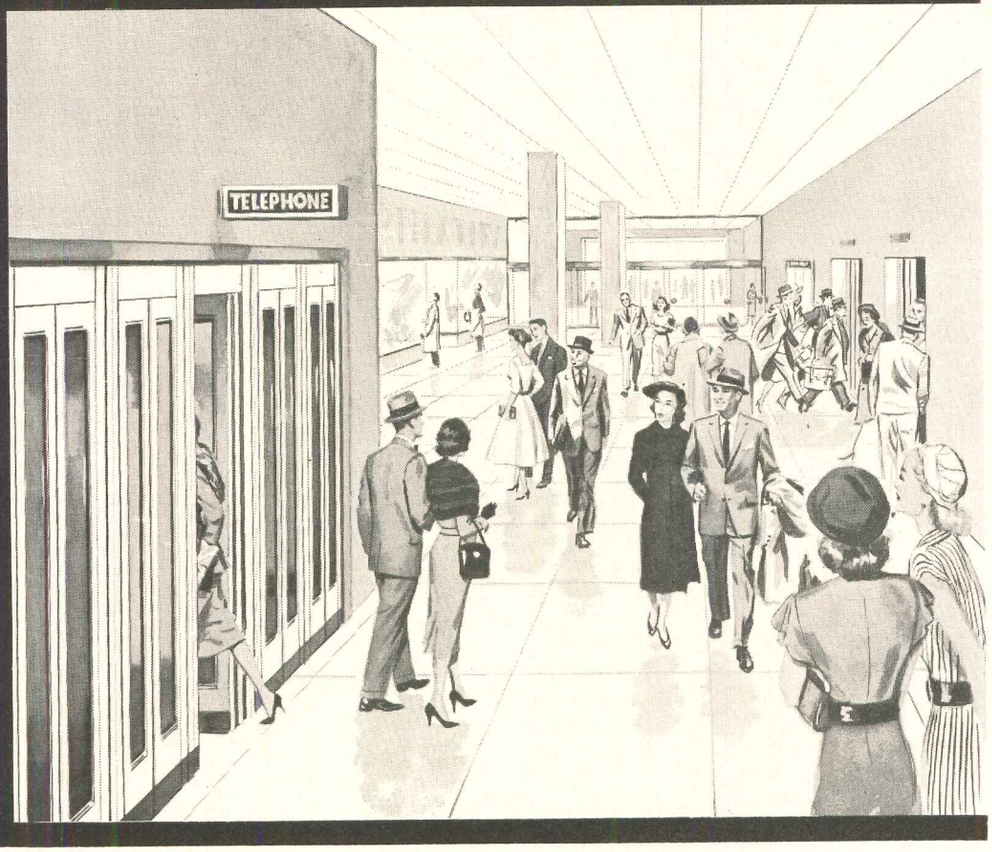

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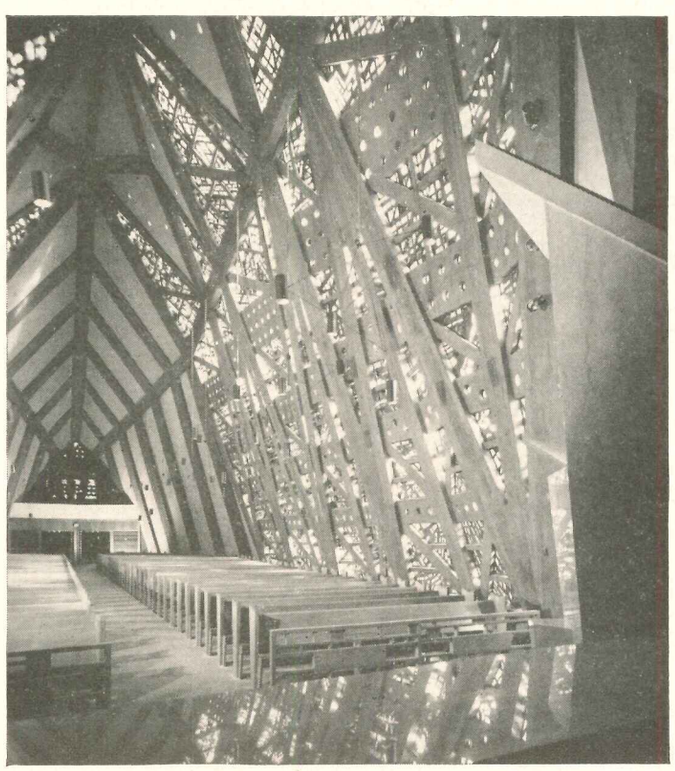

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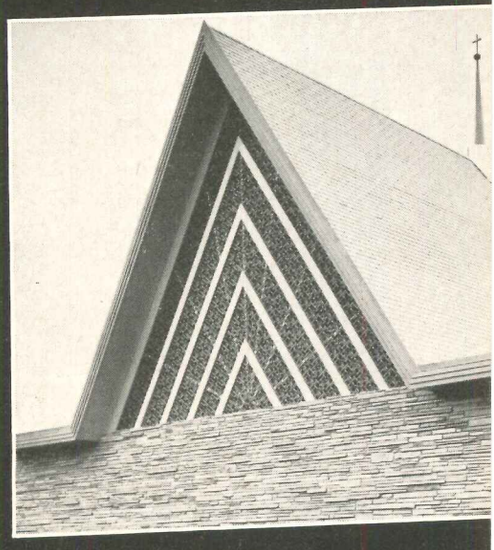

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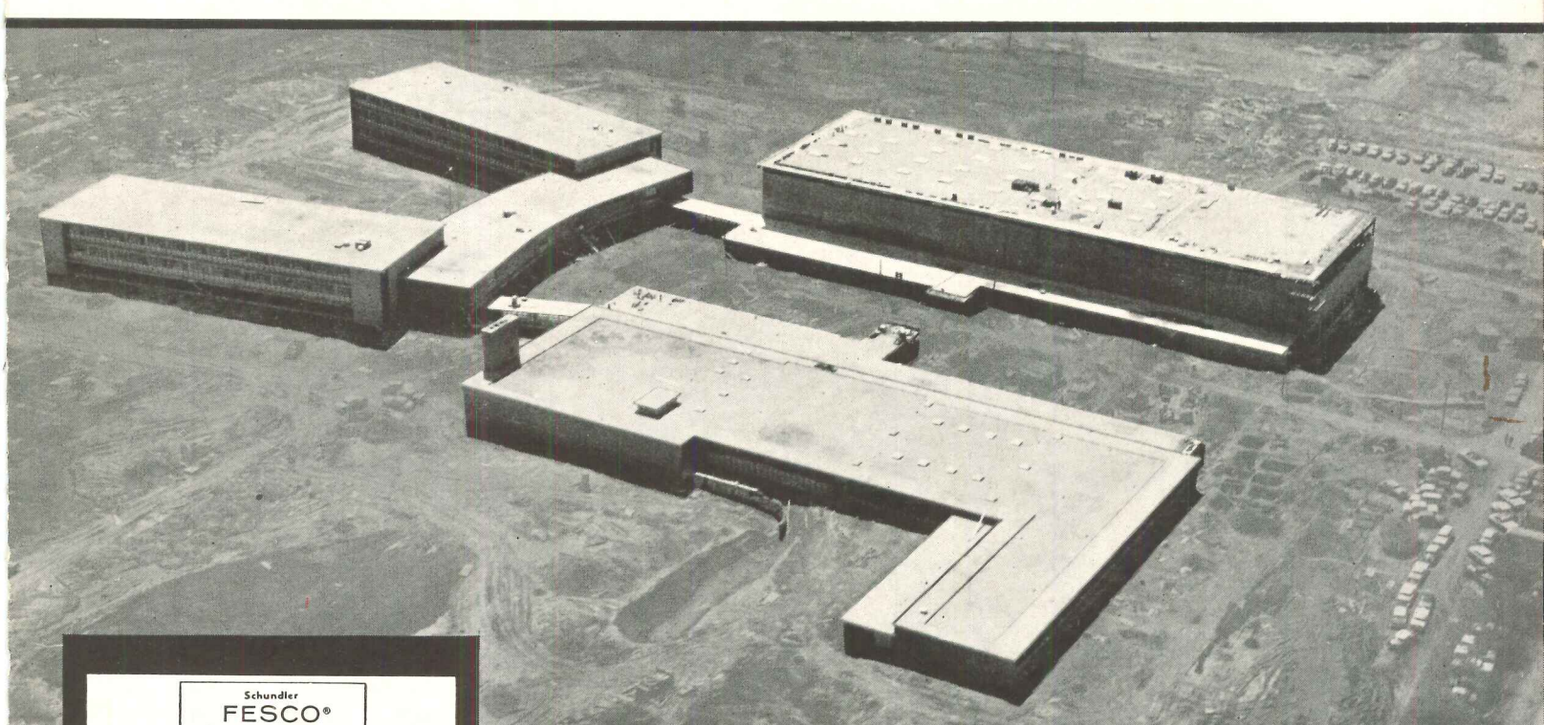

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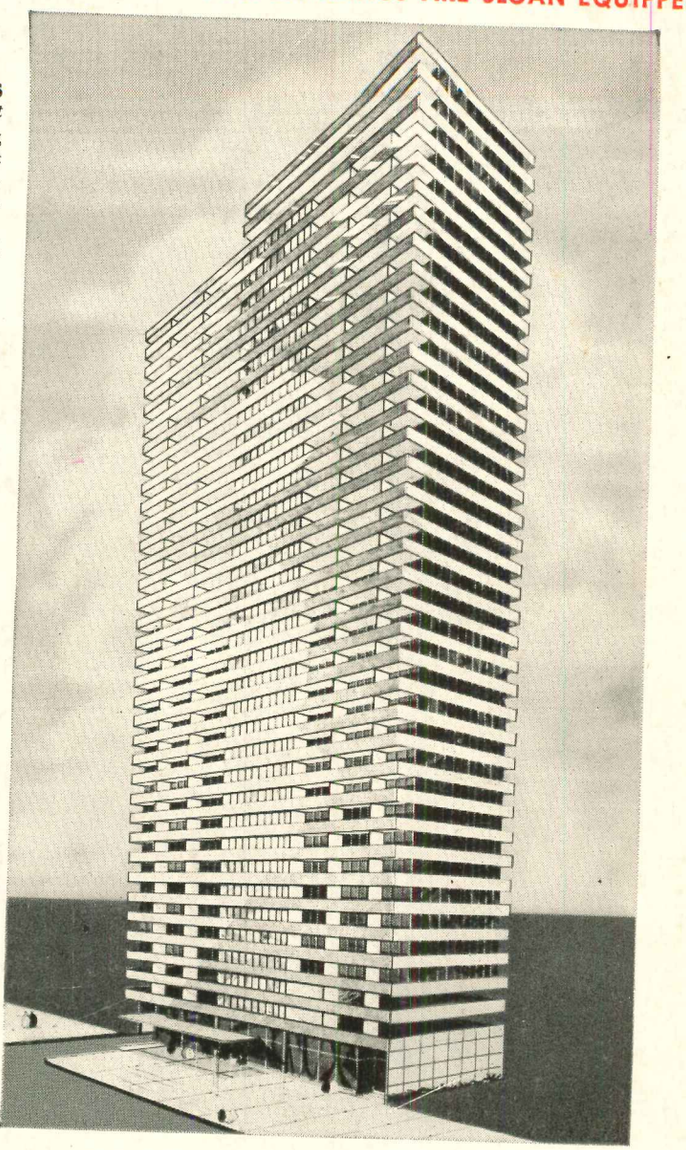

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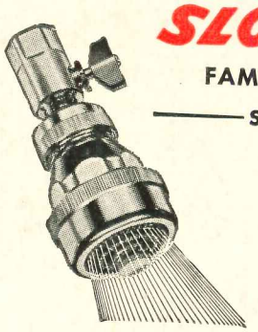

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