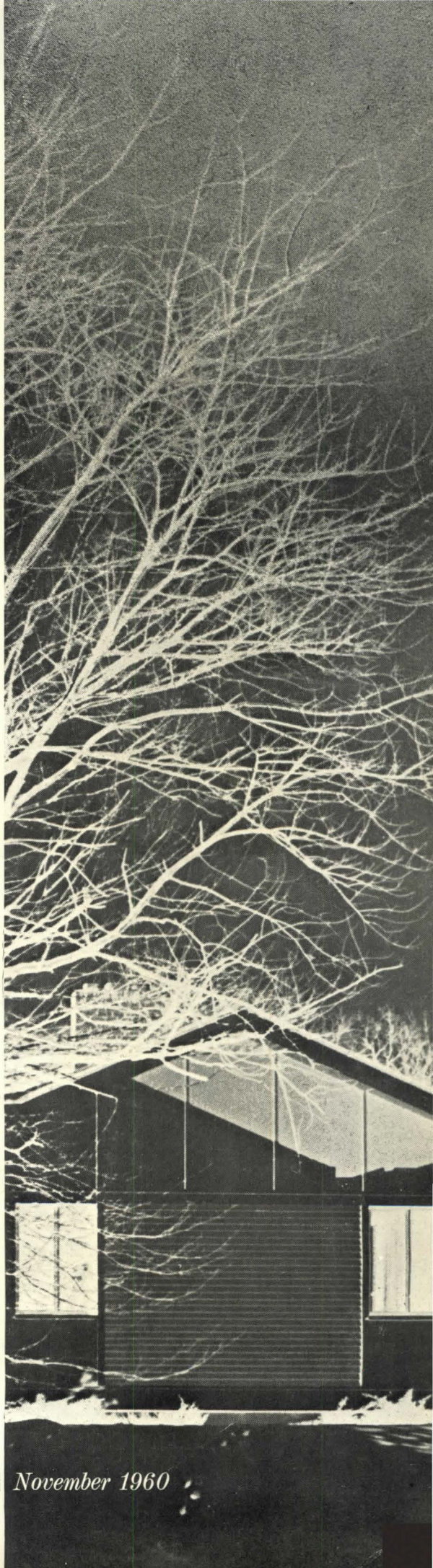

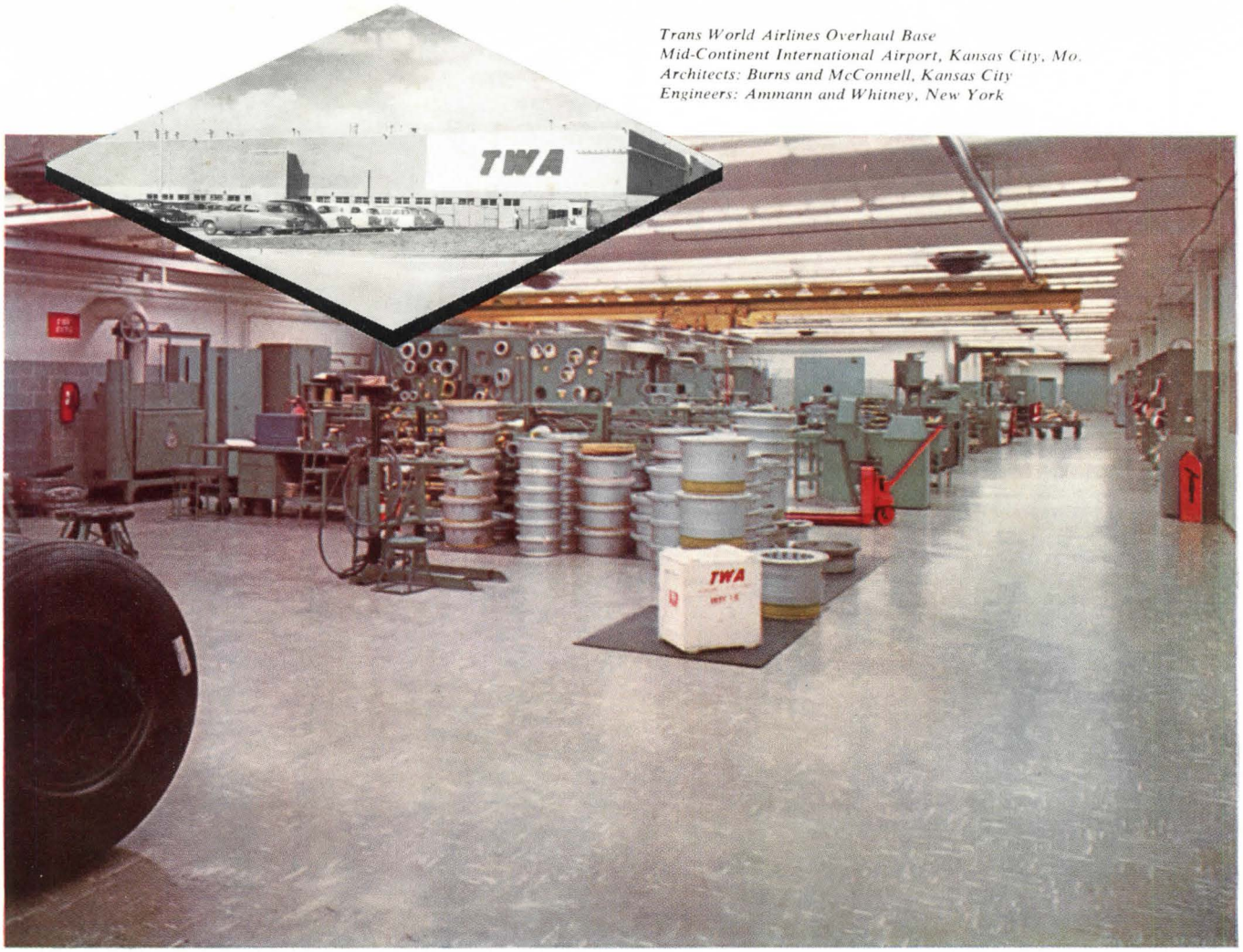

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Unusual design for resisting seismic forces incorporates Penmetal lath

In the new John Hancock Insurance Company building in San Francisco, loads from exterior bearing walls are transmitted to setback columns by haunched concrete arches. Seismic and wind loads are distributed into the walls of the central core by the third floor, which acts as a stiff diaphragm.

Further to insure the building's shock integrity, the interior was finished wherever possible with plaster over Penmetal lath. This combination of metal lath and plaster has proved, time and again, to be the most resistant to cracks and crumbling even during earthquakes. Its strength stems from an inseparable key between the plaster and the steel mesh, giving walls or ceilings the characteristics of a solid slab of stone.

Penmetal partition studs, metal lath, beads and casings were used in the central core enclosing elevators and stairways. Because of their height, studs of Penmetal Structural Steel Framing, also with metal lath and plaster, were used to form the partitions for the mechanical floor at the top of the building.

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JOHN HANCOCK BUILDING

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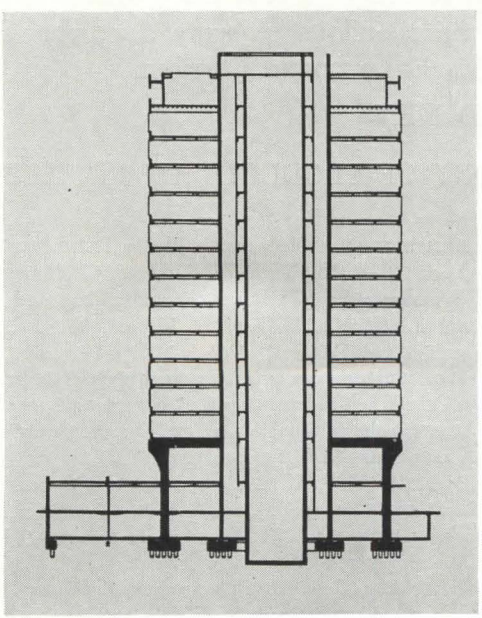
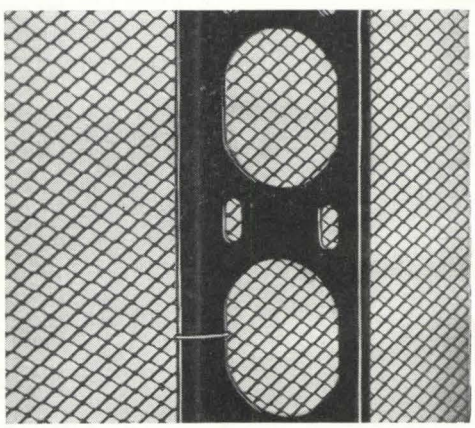
GENERAL CONTRACTOR: Cahill Bros., Inc.
PLASTERING: Frederick Meiswinkel, Inc.
LATHING: Roy Healy Lathing Co.
MATERIALS: San Francisco Gravel Co.
PENMETAL STRUCTURAL FRAMING DISTRIBUTOR: Tayler Products Corp.

This diagram shows the unusual structural concept employed by the designers.





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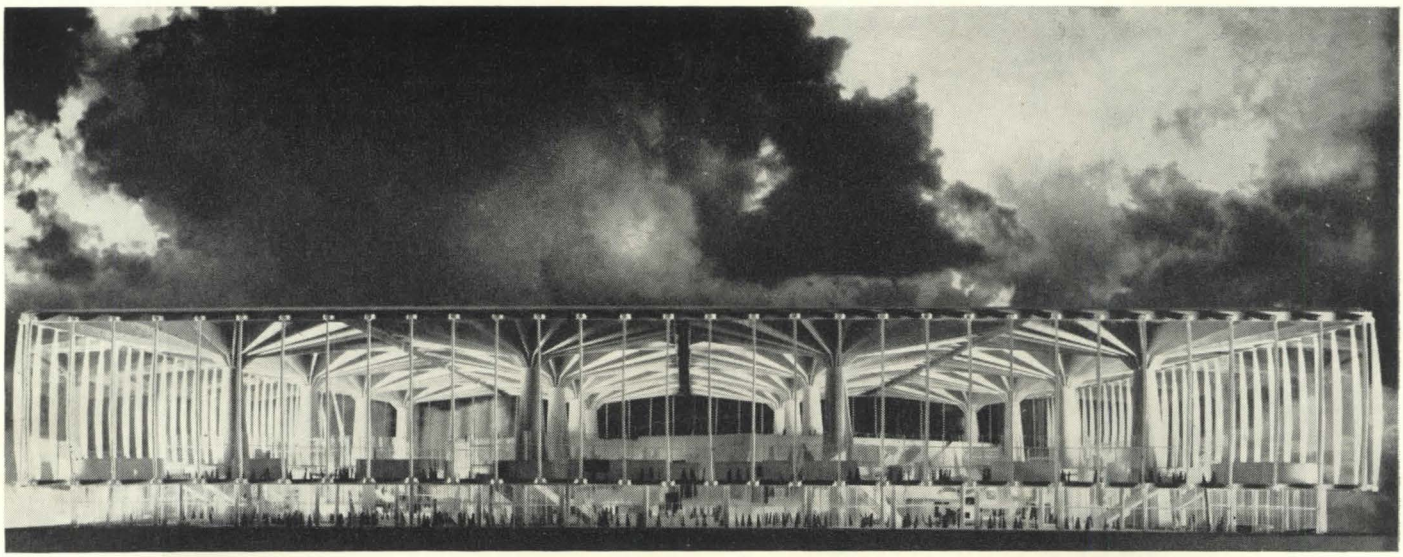


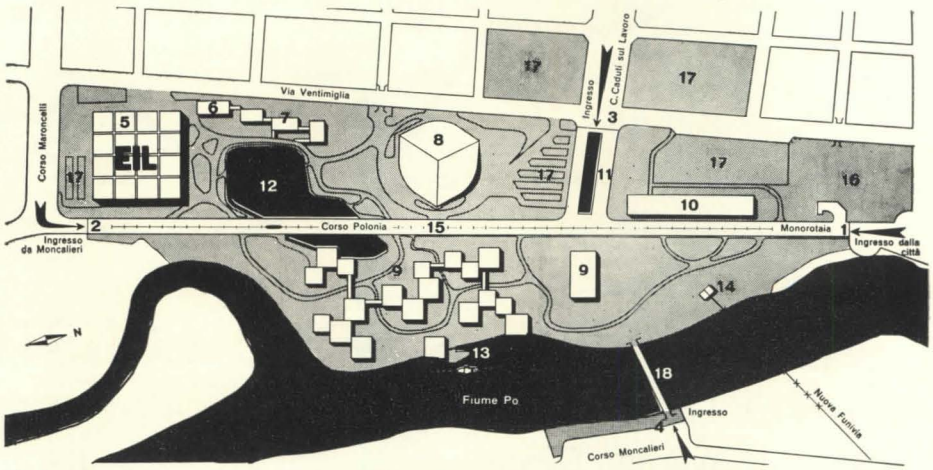
Nervi, Ponti Design Italian Centennial Pavilion

Nervi on the Outside, Ponti on the Inside

TURIN, ITALY. Two living masters of Italian architecture have designed one of the major buildings for the exhibition celebrating the 100th anniversary of the unification of Italy which will take place here next year (May 1-October 31). Pier Luigi Nervi and Gio Ponti collaborated on the International Labor Exposition pavilion, now under construction.

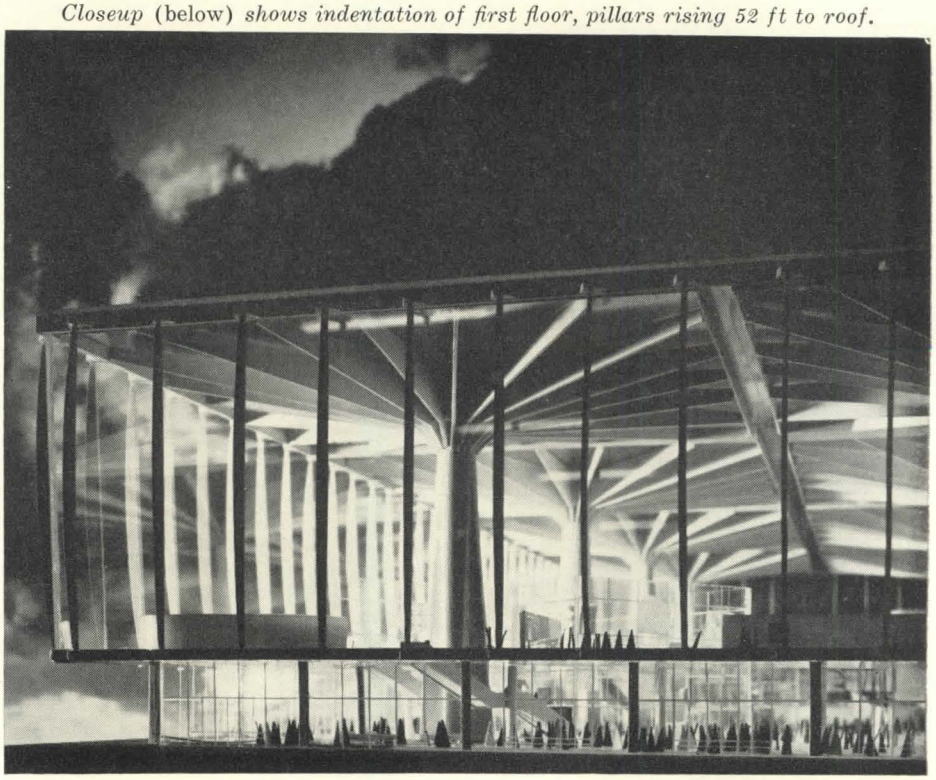
The roof of the 525 ft sq pavilion will be supported by 16 bladed, hyperbolic-shaped, reinforced-concrete columns. At the apex of each column, beams will radiate in a sunburst to support roof decking. Emanating from these masts, the beams will counterform their own supports from a common ring. The square roof areas thus formed will be divided from each other on all connecting sides by six-ft wide glass areas. Walls of the pavilion will be glass set in large mullions reaching from second floor level to the roof. The ground floor will be set in from the building mass, providing an overhang all around the pavilion. The structure of the pavilion is the work of Nervi. On the interior, Ponti's contribution, the Italian labor exhibits will occupy the center of the building in a series of intricately-partitioned areas. Foreign exhibits will occur around the periphery of the hall.

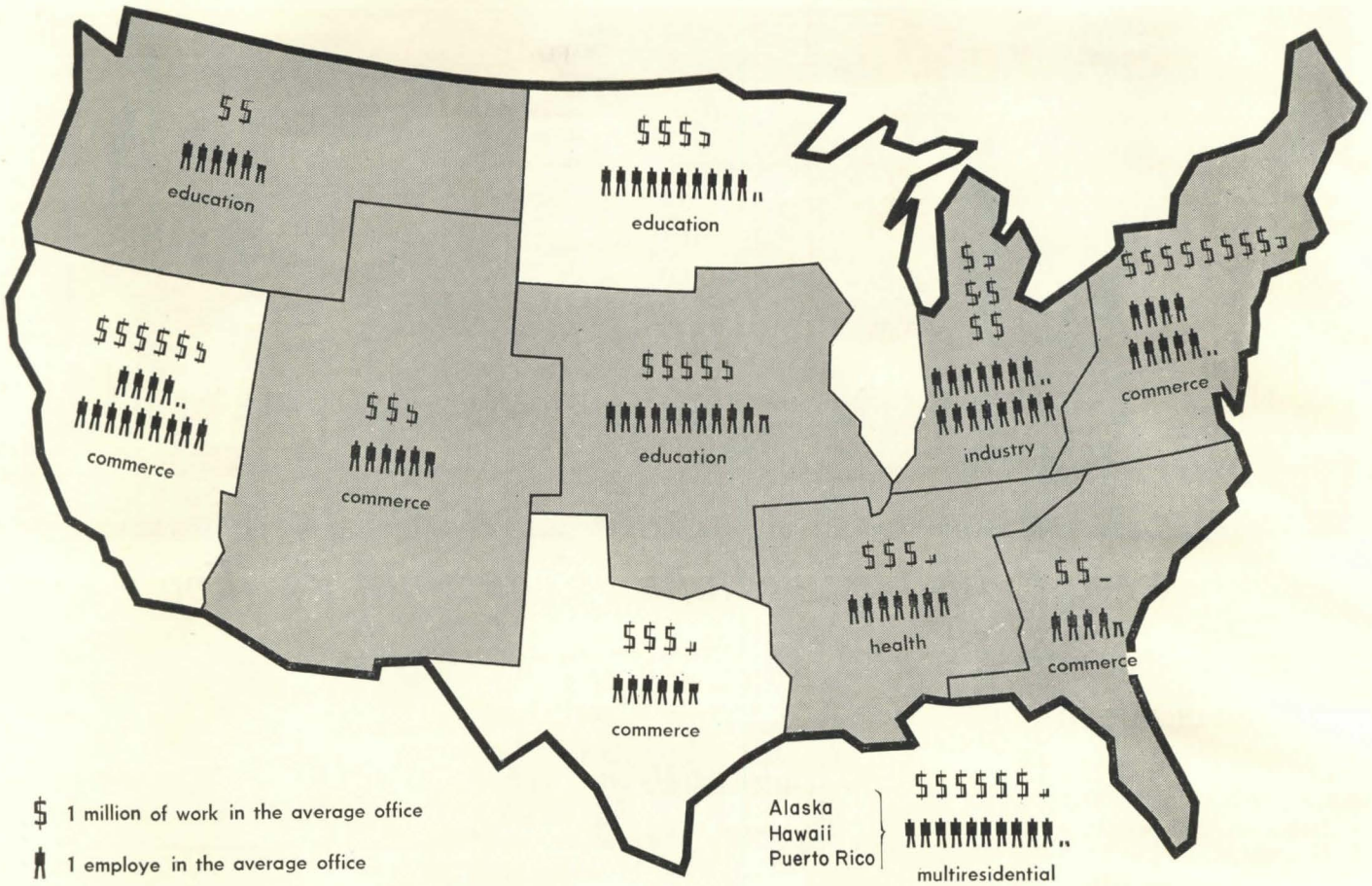
The Nervi-Ponti building is part of what will be an international observation of the Italian centennial. In the U.S., performances of opera, art exhibits, and other festivities are planned for New York, Dallas, New Orleans, Philadelphia, Washington, San Francisco, and other cities.



Turin site (above): 5 *Labor pavilion,* 8 *Southern Italy pavilion,* 9 *regional exhibits.*

Closeup (below) *shows indentation of first floor, pillars rising 52 ft to roof.*





1961 SEEN AS GOOD CONSTRUCTION YEAR

Commerce, Education Keep Leads in Average Office

The results of the largest annual business survey ever prepared by P/A are all tabulated, and the forecast is: continuing good business in construction next year. Returns from 1042 architects throughout the United States indicate that dollar volume of work now on the boards, to be built by the average office next year, will total an impressive $5,067,353. While this is a hair under the amount predicted for 1960 average dollar volume last November (a slight, 1.9% decrease), it is interesting to note that seven of the ten major regions of the country have reported an expected upturn in business, and seven substantial building categories—Commerce, Education, Public Use, Industry, Health, Religion, and Defense—will rise. Two categories which rose phenomenally in the last Forecast, Multiple and Single Residential, are back in line for 1961 with very respectable dollar volume per firm averages of $750,120 and $108,081, respectively. Unlike last year's survey, when one region reported under $1 million average dollar volume of construction expected, *not one* region averages below $1.8 millions of work underway for 1961, including the new reporters, Alaska, Hawaii and Puerto Rico *(see Table 2)*.

Work reported in the Forecast is divided into construction which should be going up in the early part of the year, and that which should start later on. More than half—52.7%—will occur later in the year; it is now in preliminary design phase. The remainder—47.3%—is now in working drawings and almost set to go ahead.

The 1961 Forecast sees more public funds going into construction than 12 months ago. Public commissions account for 33.2% of reported work and 66.8% of the clients are private individuals or companies. (Last year, the score was: 70.1% private and 29.9% public.) This can be seen in the increase of several public-type building categories, such as Public Use, up 3.1%, Defense, up 41.8%, Education, up 3.7%, and Health, up 9.9%. Private capital's healthy contribution to the construction picture can be seen in the increases in Commerce (20.1%), Industry (18.4%), and Religion (60.9%). Regional leaders in building categories *(see map above)* are also healthy types: in the Northeast and Southeast, Texas, Western Mountain, and California-Nevada regions, Commerce leads; in the Northwest, North Central, and Central States areas, Education is out front; while Health leads in the Gulf States and Industry will account for the largest average dollar volume in the Great Lakes region.

The four categories showing a decrease from the 1960 Forecast are Urban Design, Multiple and Single Residential, and Recreation. Urban Design, down 33.4% from the last study, is easily affected by the reporting (or non-reporting) of one or two single, large projects. Since many architects, in their written comments for the survey, stated that this area of business would have a great influence on *future practice*, it may be assumed that it really retains its importance. The Recreation category may well have been affected by the diverting of public funds, as noted above, to the more "basic" types of buildings represented by schools, public structures, and defense facilities. Since, as noted, Multiple and Single Residential construction reported sharp rises in 1960, these categories may be said to be taking their rightful positions in the business pattern

TABLE 1
Number of Firms Reporting and Regional Distribution

Region	% of Firms
Northwest	6.4
North Central	10.4
Great Lakes	10.3
Northeast	24.5
Southeast	10.1
Gulf States	6.0
Central States	6.7
Texas	5.8
Western Mountain	4.7
California-Nevada	14.4
Alaska-Hawaii-Puerto Rico (new)	.7
Total Returns: 1,042	100.0

Valid returns totalled 1042, with regional spread remaining about same.

TABLE 2
Average Dollar Volume by Regions

Region	Average $ Volume
Northwest	$1,865,060
North Central	3,640,492
Great Lakes	5,511,140
Northeast	8,450,242
Southeast	2,344,481
Gulf States	3,260,877
Central States	4,708,471
Texas	3,306,377
Western Mountain	2,749,388
California-Nevada	5,676,177
Alaska-Hawaii-Puerto Rico (new)	6,188,857
National Average	$5,067,353

Northeast leads in average dollar volume for 1961; most regions will rise.

TABLE 3
Dollar-Volume Averages and % Distribution of Work by Types of Buildings in All Regions

Type	% of Average Architect's Work	$ Volume in Average Office
Commerce	23.6	$1,196,968
Education	18.5	936,636
Residential (Multiple)	14.8	750,120
Public Use	10.0	504,887
Industry	9.1	458,754
Health	8.2	414,693
Religion	5.6	282,753
Defense	3.1	156,229
Residential (Single)	2.1	108,081
Recreation	1.5	76,824
Urban Design	1.0	50,049
Other	2.5	131,359
Total (average office, all regions)	100.0	$5,067,353

Commerce leads average dollar volume again; six others show rise for 1961.

TABLE 4
Activity of Architectural Firms in Types of Buildings

Types of Buildings	% Architects Reporting Current Work
Education	77.2
Commerce	52.1
Religion	43.9
Residential (Single)	42.4
Residential (Multiple)	28.6
Public Use	26.3
Health	25.6
Industry	23.0
Recreation	14.8
Defense	4.3
Urban Design	3.1
Other	9.2

Healthy distribution of work in offices is evident; education leads on boards.

TABLE 5
Specialization of Architectural Firms

Types of Buildings	% of Firms doing only this type
Commerce	2.4
Education	1.8
Residential (Single)	1.3
Health	1.3
Religion	1.3
Industry	1.2
Residential (Multiple)	.6
Public Use	.5
Other	.4
Total	10.8

Total specialization remains same as 1960, which represented slight decline.

TABLE 6
Sizes of Architectural Firms

Size of Firm by Number	% of National Total
Up to 4 employes	48.1
4-9 employes	32.0
10-19 employes	11.4
20-39 employes	4.6
40-100 employes	3.1
Over 100 employes	.8
	100.0

Size of Firm by $ Volume of Work on Boards	% of National Total
Under $1 million	38.4
$1-10 millions	51.6
$10-50 millions	8.7
Over $50 millions	1.3
	100.0

Shift to small-medium sized firm continues; $1-10 millions firms increase.

again.

Regionally, the Northeast regains the lead position held by California-Nevada for the past two years. Top building categories in this area will be Commerce, Multiple Residential, Public Use, and Education, in that order. California-Nevada and the Great Lakes region have the second and third largest average dollar volumes reported, maintaining the triumvirate which has led in business for at least five years. Texas, which had a very large gain in the 1960 Forecast, returns to normal in this study. While California-Nevada remains one of the leaders, it is expected to decline 27.7%, and the only other region on the minus side will be North Central. All other areas report substantial gains.

The move toward the average-size office, both in manpower and income, continues *(see Table 6)*. In the last report, 4-19 man offices accounted for 36.1% of the total. The present study shows 43.4% of the offices to be in this range. Similarly, firms doing business in the $1 million to $10 millions range are in a majority of 51.6%, while "giant" firms account for only 1.3% of the total.

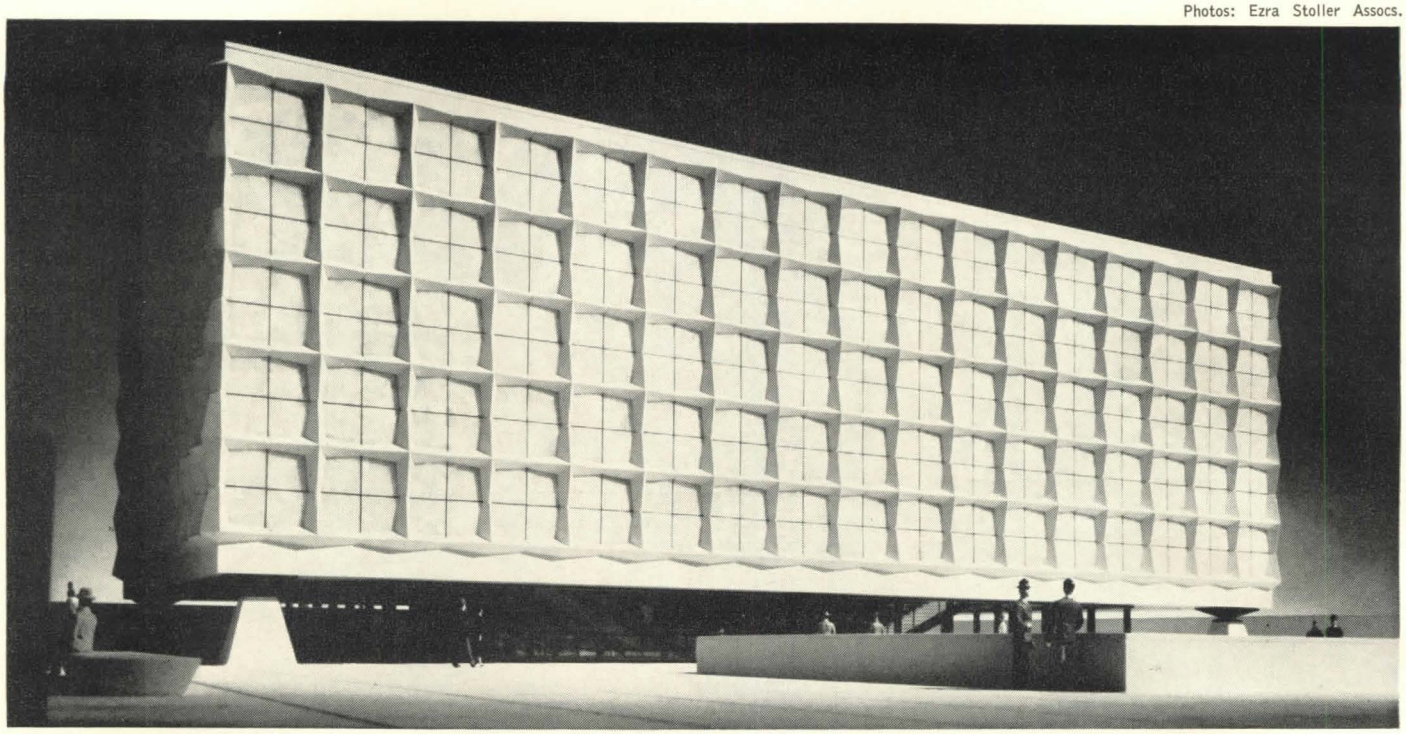
Firms specializing in only one type of building remain the same as 1960—10.8% of the total *(see Table 5)*. Commerce and Education still are the leading architectural "specialties".

Some of the factors the 1042 respondents to the Survey expect to influence design in the coming year are: advances in concrete technology, development of new materials (especially plastics), further development of modular assembly, preassembly of structural components, and emergence of new structural concepts—all trends which have been elaborated upon in recent issues of P/A.

Architectural practice will be affected, according to architects reporting, by the national election (by now a *fait accompli*), availability of adequate financing, continued urban renewal programs, rising costs of materials and labor, easement of taxing and lending regulations, expanding U. S. population, the world situation, competition of package dealers in some areas, tight money, provision of more integrated services by architects, and continuing improvement in public taste for good architecture (presupposing continued client education on the part of individual architects and professional groups).

All considered, 1961 will be another fine year—good in business, exciting in new design concepts. Architects and their suppliers can look forward to a year of technological advances and comfortable profits.

Photos: Ezra Stoller Assocs.

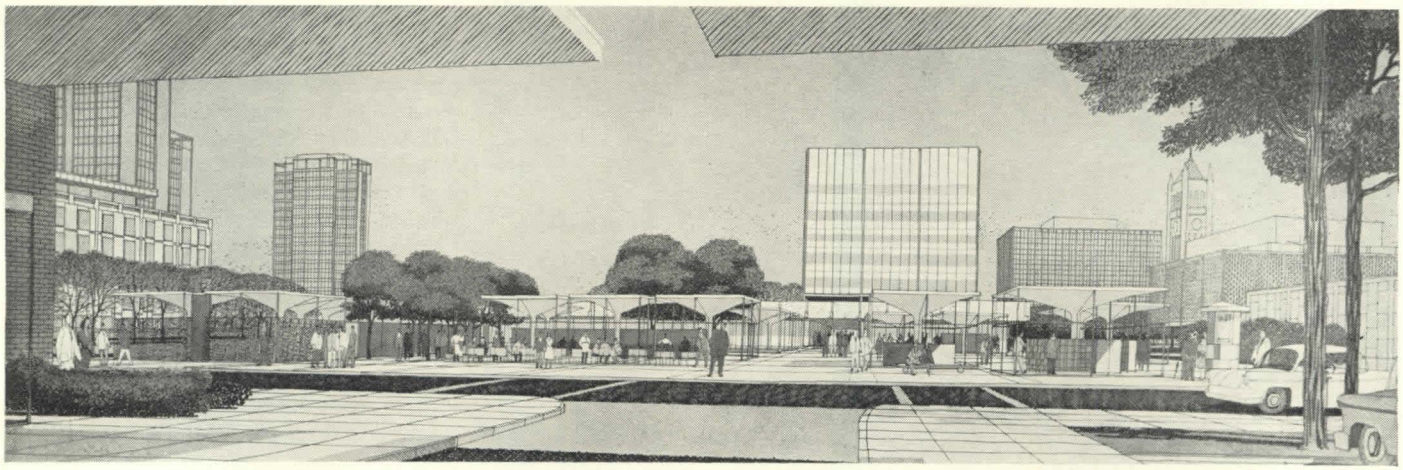


SOM Joins Notable Architects With Yale Designs

Skidmore Gets "Sensual" With Rare Book Library

NEW HAVEN, CONN. If current indications persist, Yale University may well develop as a full-scale museum of works by leaders of mid-20th Century U.S. architecture. Already in existence or in project form are buildings by Saarinen, Kahn, Johnson, and Rudolph. Now add the Yale Rare Book and Manuscript Library by Skidmore, Owings & Merrill's Gordon Bunshaft.

The library will be a monumental structure with walls composed of octagonal units faced in concrete or marble framing sections of translucent onyx. Exterior walls will be raised eight ft above a wide plaza on four columns, which will receive the weight of the building. A low-ceilinged entrance will give into a vast, building-high exhibition space. Focal point of this space will be a column of books 35 ft wide, 60 ft long and 50 ft high. Six tiers of illuminated bookshelves will surround the area on all sides. Glass will separate the books from the hall. A mezzanine will be reached by two large bronze staircases. Beneath the exhibit hall will be the research center, which will look onto a sunken sculpture court. Structurally, the hall will be framed with steel Vierendeel trusses acting to make each façade one great truss to carry roof loads and its own weight through ball-and-socket joints to the columns. Façades will be 50 ft high, 131 ft long front and back, and 88 ft at the ends.



35-Acre Redevelopment Proposed for Minneapolis

Apartments, Hotel, Offices Part of Plan

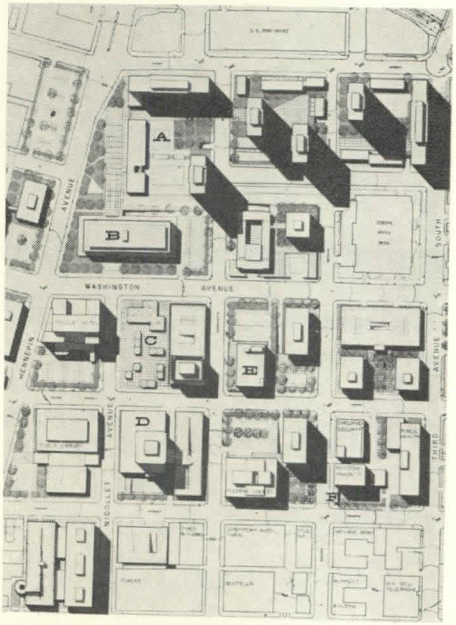
MINNEAPOLIS, MINN. Add to the list of "Gateway" redevelopments (i.e., San Francisco and St. Louis) the city of Minneapolis. Gateway Center, as this one is known, is a proposal to redevelop approximately 40% of downtown Minneapolis, leaving only three of the buildings presently existing on the site. The project proposes first-stage construction of five major projects: Sheraton Center Hotel by the Sheraton Corporation, the home office building of Northwestern National Life Insurance Company, an office training school for International Business Machines Corporation, a 1500-unit residential development, and a plaza-recreation area with restaurants and entertainment facilities. Buildings to be spared in the 17-square-block area would be the Pick-Nicollet Hotel, Hennepin State Bank, and Western Union Building. Major proposer for the redevelopment is the Knutson Company, entrepreneur for the residential development and the central plaza area. General land planning consultant to Knutson on the Gateway Center project was Thorshov & Cerny, Inc.

Sheraton Center Hotel, designed by Thorshov & Cerny, will be a 17-story square tower overlooking a plaza containing a sunken ice rink. Alternating panels of masonry and glass will characterize the façade. Shopping arcades on three sides of the hotel will enhance the pedestrian-oriented concept of the development.

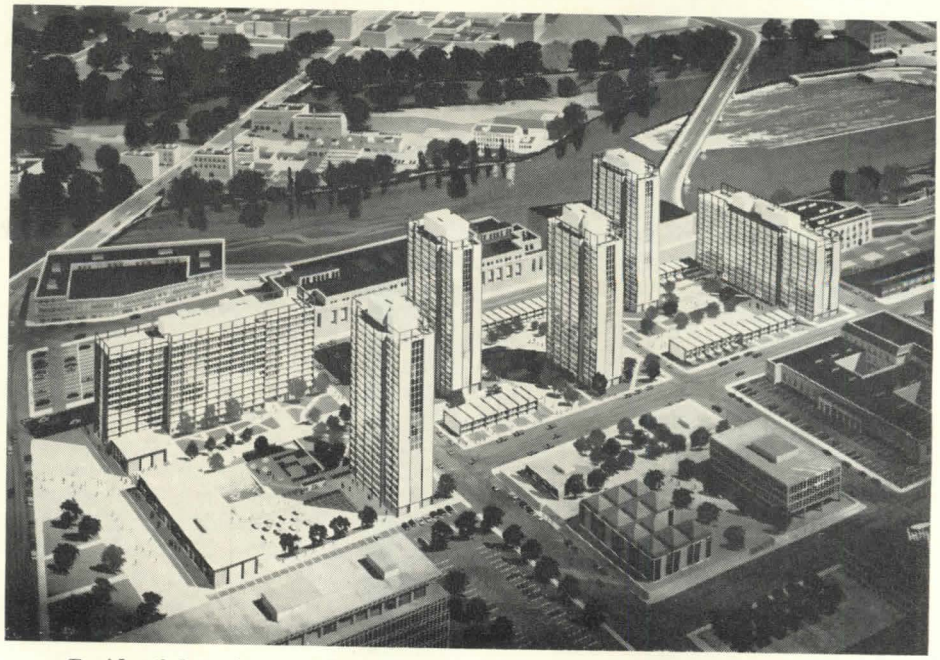
The insurance company will have its headquarters in a five-story building distinguished by a roof-high entrance. Employes' facilities will be in a penthouse.

IBM's offices and training school will be in a six-story building situated on its own raised plaza. Ceiling-floor slabs will extend beyond the window line for shade.

John A. Pruyn is architect for the River Towers residential project, in association with Paul Lester Weiner. Thorshov & Cerny again acted as land planning consultants. The development will have apartments in four high-rise buildings and two slab buildings, plus a series of town houses.



Site plan (right): A *residential development,* B *insurance company building,* C *Gateway Plaza,* D *Sheraton Center Hotel,* E *IBM building,* F *building for a realty company.*



Residential project overlooks river on one side, Gateway Center on other.

Slab towers, point towers, town houses characterize Golden Gateway winner.

GOLDEN GATEWAY GRANTED

Agency Announces Competition Winner

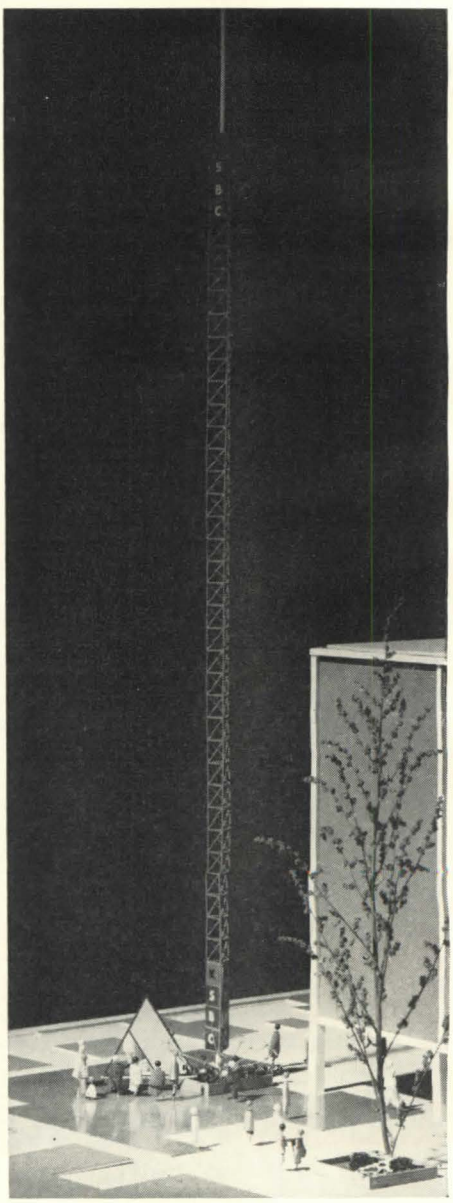
SAN FRANCISCO, CALIF. The firms of Wurster, Bernardi & Emmons and DeMars & Reay, in consultation with Pietro Belluschi, Milton Schwartz, and Landscape Architect Sasaki, Walker & Associates, Inc., have won the competition for San Francisco's Golden Gateway redevelopment (APRIL 1960 P/A, pp. 77, 79-81). Entrepreneur is Perini-San Francisco Associates. Architectural advisors for the competition were Architects Lawrence B. Anderson, Henry S. Churchill, Louis I. Kahn, Morris Ketchum, Jr., and *Minoru* Yamasaki, with Chicago realtor and mortgage banker Ferd Kramer. San Francisco Architect Mario Ciampi was professional advisor. The San Francisco Redevelopment Agency stated that over-all excellence of design and planning remained the keystone of the selection process throughout the competition and that the WB&E, DeMars & Reay proposal met these qualifications admirably.

Originally, there were nine competitive proposals submitted to the agency. One was withdrawn, and five others were eliminated at the suggestion of the advisors. Of the remaining three, one proposal was commended for its design of individual buildings, one interested the agency because of the developer's attractive financial offer for the land, and the third—the present winner—found favor for its planning, separation of pedestrians and automobiles, and such amenities as a block-size wooded park available to all inhabitants of the development.

The winning design provides 2174 dwelling units in three slab towers (1313 units), five "point" towers (755 units), and 106 town houses. Tenant parking is provided in 1818 spaces beneath the apartment blocks and surface parking for 358 cars. In addition to the large park, open areas will include private and public courts, walks, and malls. Adjacent to the residential development will rise a 25-story office building. This building will sit on a plaza over a 1326-space public parking garage. The plaza will have a glass-enclosed swimming pool for Golden Gateway residents and office workers. For variety, other architects will be asked to design some of the buildings.

L. A. RADIO KIOSK

LOS ANGELES, CALIF. For some time, A. Quincy Jones & Frederick E. Emmons & Associates has felt that the South Bay Shopping Center the firm designed with Victor Gruen Associates in 1958 needed a public-interest activity at the intersection of the main malls. When a radio station announced interest in having a transmitting station in the vicinity of the center, Jones and Emmons suggested this as an ideal focal point for South Bay. A pyramidal kiosk formed of three triangular panels will house the broadcaster; the floor of his booth will be below the mall level to permit viewing of turntable and control board by shoppers. Kiosk will be aluminum frame and panels and either heat-resistant glass or clear plastic. Transmitting tower will be of light structural steel members. FCC approval has been given, and construction will start soon.



PERSONALITIES

Holder of the title as youngest Dean of a major architectural school (formerly held by Paul Rudolph) is now **John W. Lawrence.** He is just 37; inherited the mantle of the late John E. Dinwiddie at New Orleans's Tulane University this semester. Rudolph was 38 when he was tapped by Yale. Actually, Lawrence has headed up the Tulane school as Acting Dean since Dinwiddie's death in September, 1959. He received his B. Arch. from Tulane, where he has been on the teaching staff since 1949. He got his M. Arch. from Columbia, where his fellow New Orleanian Charles Colbert is now Dean (P/A FEBRUARY 1960, p. 75). He is a partner in the firm of Lawrence & Saunders, whose current major commission is a Benedictine Seminary near New Orleans. Professional awards and citations have come from P/A, AIA, and Gulf States Regional AIA.

Mrs. LOUIS J. ACKER of the office of George H. Dahl, Dallas, was elected president of Women in Construction at organization's recent convention in Amarillo. . . . ARTHUR B. GALLION, former Dean of School of Architecture at University of Southern California, is now Director of Planning for Honolulu offices of Harland Bartholomew & Associates; HENRY C. BURGE is acting dean at USC. . . . PAUL FRANK JERNEGAN, Chicago, is chairman of recently-formed Lake Michigan Region Planning Committee, composed of members from AIA chapters in Wisconsin, Illinois, Indiana, and Michigan; purpose is to make recommendations on planning problems in area. . . . Committee on Institutional Cooperation, formed to stimulate cooperative projects among "Big Ten" universities and University of Chicago, now has a director, WILLIAM S. KINNE, JR., former professor of architecture at University of Illinois. . . . New president of Southwest Washington chapter AIA is JOHN E. MCGUIRE. . . . MRS. VANDERBILT WEBB, founder and Chairman of the Board of the American Craftsmen's Council, received an honorary degree of Doctor of Fine Arts from the California College of Arts and Crafts, Oakland. . . . RICHARD G. SLAUER, Manager of Engineering for Sylvania Electric Products, Inc., was elected President of Illuminating Engineering Society. . . . CHARLES and RAY EAMES won first $20,000 Kaufmann International Design Award, for "outstanding record of achievement in the practice of design." Award was established in honor of his parents by Edgar Kaufmann, Jr.; is administered by the Institute of International Education.

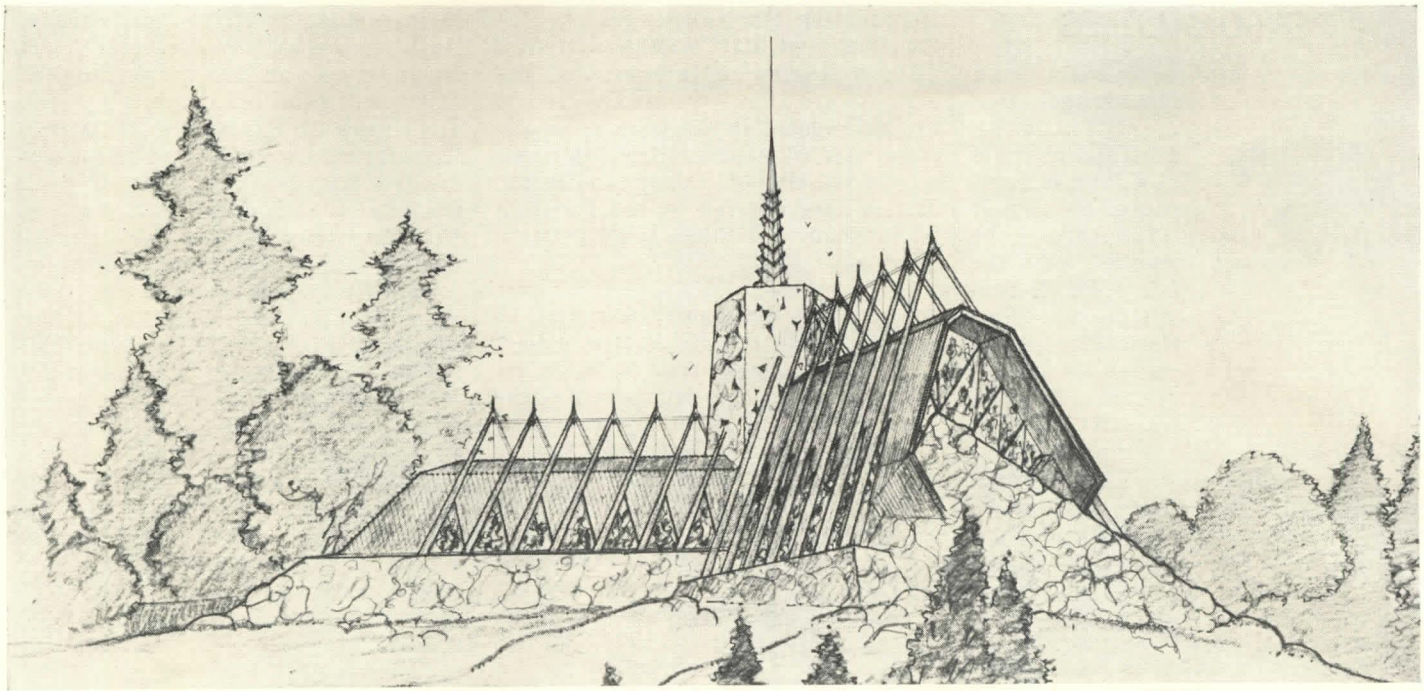
A long and distinguished career of service to the profession draws to a close with the announcement of the retirement of **Edmund R. Purves** as Executive Director of AIA. Purves, with the Institute since 1941, has held his present position since 1949. He has consented to act as Consulting Director for one year to help his successor, WILLIAM H. SCHEICK, assume the Executive Directorship. During this time, he will also tour AIA regions and represent the Institute at international professional conferences. AIA President Philip Will, in announcing the retirement, noted that when Purves joined the AIA, membership totalled 3000 and that today the group has almost 14,000 members in 131 chapters and 12 state societies. Will also commended Purves for his establishment of effective liaison with the Federal government and for his part in advancing the prestige of the profession with the general public. A holder of the Croix de Guerre with Silver Star from World War I, Purves received his Bachelor of Science in Architecture from the University of Pennsylvania in 1920. He practiced in Philadelphia before joining the Institute staff. He was absent during World War II when he served as Chief of Counter-Intelligence for the Seventh Air Force in the Pacific. During this time, he was voted an AIA Fellow.

William H. Scheick comes to AIA from his post as vice president of the Timber Engineering Company. He is former Executive Director of the Building Research Institute of the National Academy of Sciences. He received the AIA School Medal on his graduation from Carnegie Tech in 1928, and took the Warren Prize and the LeBrun Scholarship as a master's candidate at the University of Illinois. He has taught at Illinois and Oklahoma A & M.

Another AIA staff alumnus, WALTER A. TAYLOR, is now serving his first term as director of the new School of Architecture at Ohio University. . . . Business man and art patron NORMAN DAVIS will head art exhibits program at Century 21 Exposition. . . . CHARLES LUCKMAN is a member of the newly-created Board of Trustees of State Colleges in California. . . . MATT E. HOWARD, Houston, was elected president of American Registered Architects. He takes over from ARA Founder WILFRED J. GREGSON. . . . New president of the Producers' Council is ELMER A. LUNDBERG, Director of Architectural Service for Pittsburgh Plate Glass Company. . . . WALLACE K. HARRISON is the architect member of New York's newly-formed State Council on the Arts. Purpose: to find ways the state can encourage appreciation of and participation in the fine and performing arts. . . . New president of Marble Institute of America is S. K. MANSON of New Orleans.

Certainly the prettiest architectural critic-industrial designer to come down the pike in quite a while is **Ada Louise Huxtable.** In addition to writing P/A's "Progressive Architecture in America" series, she, in her capacity as Consulting Editor for P/A, contributes knowledgeable articles such as the historical survey of U. S. concrete technology in last month's issue (pp. 144-149). A frequent contributor to the pages of *Horizon* and *The New York Times,* Mrs. Huxtable also has written for *Industrial Design, Art in America* (for which she is also a Contributing Editor), *Arts,* and *Craft Horizons.* Her impressive dossier includes a five-year service as Assistant Curator for Architecture at the Museum of Modern Art (where she taught a course in New York architecture), and research on architectural and structural trends under Fulbright and Brunner Grants and a Guggenheim Fellowship. Her industrial design practice, latest fruit of which was design and selection of all tableware for Philip Johnson's Four Seasons Restaurant, is conducted with her husband, Garth. "This has been the most fun," she says. Recently, her book, *Pier Luigi Nervi,* appeared as part of the George Braziller Masters of World Architecture series (distributed to the architectural profession by Reinhold). "This was the hardest work!"

Sketches by Romeo Cobletz

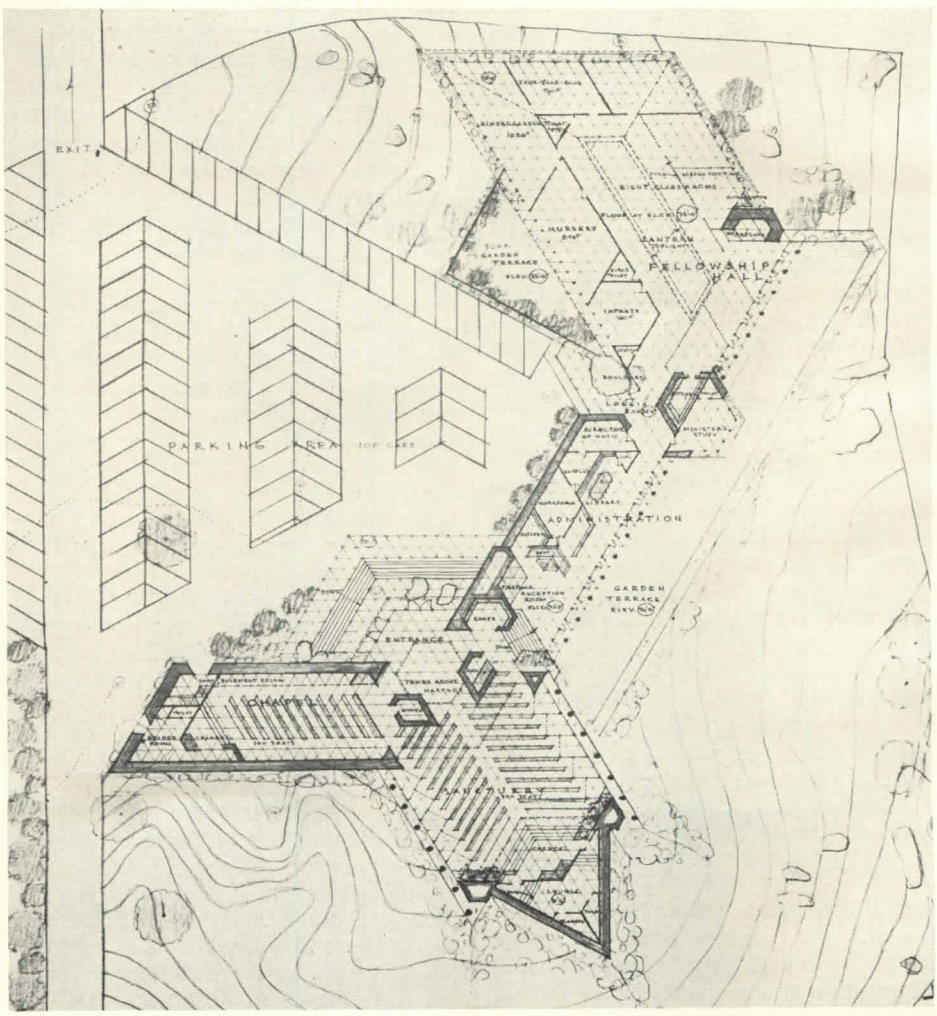


Wright Still Builds with California Church

1958 Project to Begin In Near Future

REDDING, CALIF. The legacy of Frank Lloyd Wright continues with the approaching construction of the Pilgrim Congregational Church in Redding, designed by the late architect in 1958.

Situated on the crown of a small hill amidst boulders and pine trees, the church, of course, will use natural materials to integrate with the natural beauty of the area. The steeply-pitched roof of the sanctuary will use as its motif the forms of the surrounding conifers. Long precast-concrete poles will rise from a stone base to meet above the sanctuary, supporting a plank roof hung from the apex. Opaque walls will utilize local boulders to tie in even more with the terrain. A great triangular expanse of stained glass will terminate the sanctuary at the crest of the hill. Side windows also will be stained glass. At the entrance end of the sanctuary a stone belfry will point upwards from the junction of the church with the chapel, administrative, and classroom units. The latter areas will branch right and left from the main structure, the chapel by itself on one side and the administrative offices, classrooms, and fellowship hall following the curve of the hill in a wing on the other. The church will seat 300 and has parking for 100 cars.

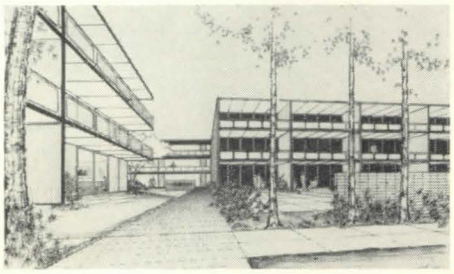


Wright's distinctive draftsmanship is seen in plan of the California church.

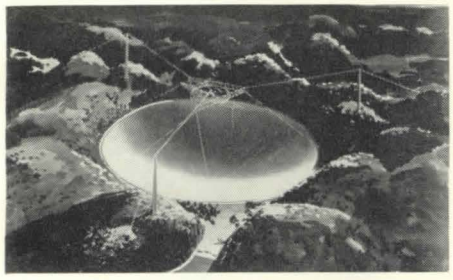
According to Taliesin Associated Architects, responsible for overseeing the Wright project. "When completed, this church will take its place naturally and beautifully in a land of forests and stone, moulded of materials indigenous to the countryside and created into a design of strong quiet aspiration."

California Apartments With "Outdoor Living"

"Los Gatos Riviera," on the Los Gatos River and next to a 1000-acre county park, will have its own three-and-a-half acre, park-like recreation area.

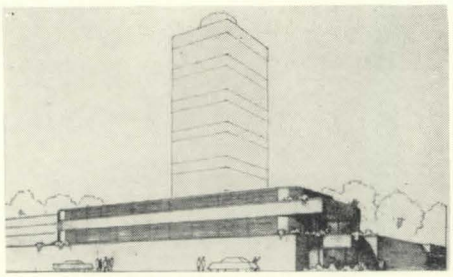


Facilities will include two swimming pools (one enclosed with a glass fiber and aluminum-frame geodesic dome for all-weather swimming), a putting green, shuffleboard and badminton courts, and other games. A landscaped creek will run through the property. The three-story, wood-frame, L-shaped apartment building designed by Bob McCabe will contain 123 one- or two-bedroom units.



Eye and Ear into Space

A team of engineering firms consisting of von Seb, Inc.; Developmental Engineering Corp.; Severud-Elstad-Krueger Associates; and Praeger-Kavanagh has designed a giant astronomical radio telescope for studying the upper atmosphere, composition of space, and the solar system. The mammoth instrument, for which T. C. Kavanagh is chief engineer, will be located at Arecibo, Puerto Rico. It will utilize a fixed reflector and a movable line feed for reception and transmission of radio signals. The reflector, which will have a large, natural sink hole as a bowl, will have a spherical surface of 870 ft radius; it is designed for a diameter of 1000 ft. Construction is under the direction of Cambridge Research Center (U. S. Army), and Cornell University is major contractor. Professor William E. Gordon, project officer for Cornell, is responsible for general conception of the project, selection of the site, and development of criteria.

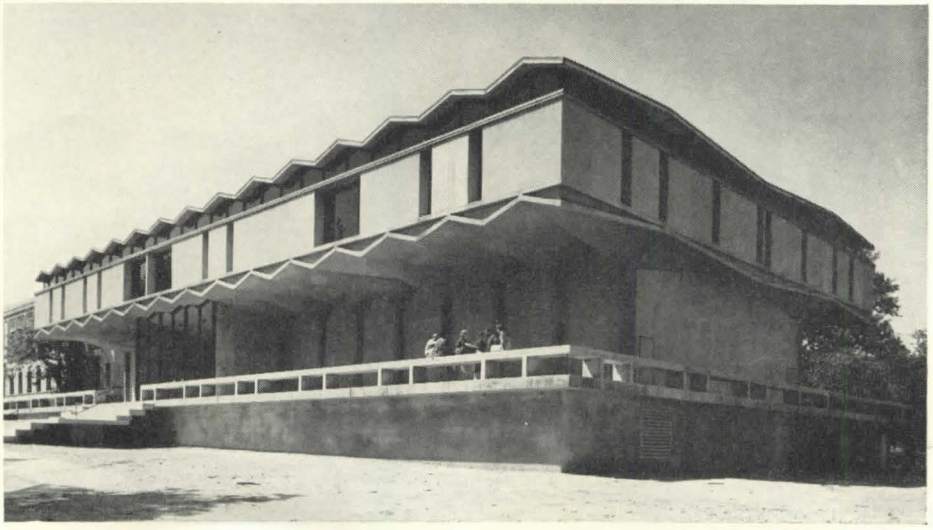


Johnson Building Addition By Taliesin Associates

Taliesin Associated Architects, professional heir of Frank Lloyd Wright, has announced plans for an addition to Wright's S. C. Johnson & Son, Inc., Administration Building (1939). The two-story addition, which will be built of the same materials as the original, will provide 38 more offices, two general offices, and a 20-ft-diameter, circular conference room. It will adjoin the 15-story, circular laboratory research tower, designed by Wright in 1950. Lineup of the Taliesin organization now is: Mrs. Frank Lloyd Wright, president of the Frank Lloyd Wright Foundation and chairman of the board of Taliesin Associated Architects, William Wesley Peters, vice president of the Foundation and head of the firm, and Eugene Masselink, secretary-treasurer of both organizations.

LA JOLLA ART CENTER USES CONCRETE BLOCK

Concrete block and reinforced concrete form the outer shell of Sherwood Hall, the newest addition to La Jolla's Art Center. The masonry block, exposed both on the exterior and the interior, has a plain coat of paint similar to that of the original Art Center buildings. Controlled use of the coarse native material by Architects Robert Mosher and Roy Drew has given the



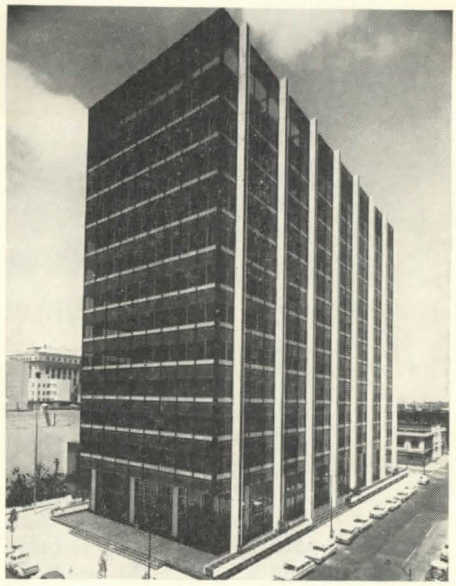
Folded-Plate Hall Houses Arts

Washington University's recently-opened Steinberg Hall of Art and Archaeology provides galleries, an auditorium, library, seminar rooms, and offices used by the schools of Architecture and Fine Arts in addition to the Department of Art and Archaeology. Enclosed bridges connect the building to the School of Architecture at three levels, and it is joined at ground level to the School of Fine Arts by a passageway. The roof extends 20 ft beyond the walls of the building on north and south sides, creating large porches. Glazing on the upper part of the second floor makes the roof seem to float. To go anywhere in the building, students must pass through the 50x70 ft gallery, which contains a significant collection of 20th Century art. Rather complex architectural credits include Russell, Mullgardt, Schwarz & Van Hoefen as architects working from basic designs by Fumihiko Maki, with Joseph Passoneau, Dean of the School of Architecture, responsible for some structural studies. Buford Pickens is Director of Campus Planning for Washington University.

cultural center a refined ruggedness. The structure contains an auditorium, a garden gallery, storage space for permanent collections, a sculpture garden for exhibits, and five studios for the School of Arts and Crafts.

Bethlehem Steel's San Francisco Tower

Bethlehem Steel Company has announced completion of its 15-story West Coast headquarters, designed by Welton Becket & Associates. The building is between the Golden Gateway redevelopment area (see p. 68) and the central portion of downtown San Francisco. The tower is suspended between free-standing exterior columns, creating open, flexible interior spaces. White marble and black granite sheathe the steel columns; the spandrels are faced with black and gray granite and windows are tinted gray. Designed to resist seismic and wind forces by use of lateral bracing



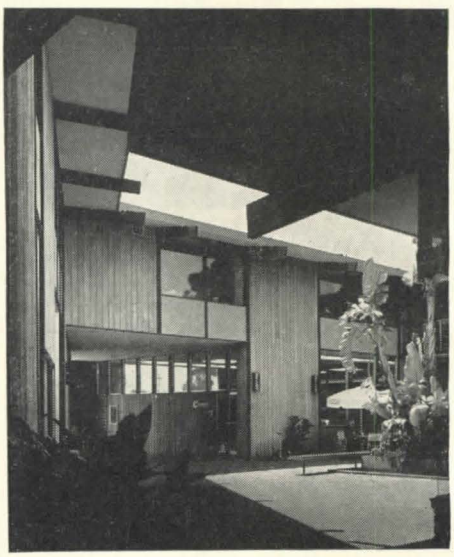
eliminating interior shear walls, the building has sensitive recording devices designed into its steel frame to provide a constant record of how it reacts to these forces. An open garden court located on the second floor of the two-story base was designed by landscape architects Royston, Hanamoto & Mayes.

VW Breaks Ground For National Hq

Volkswagen of America, Inc., broke ground last month for its national headquarters building in Englewood Cliffs, N. J. The 55,700 sq ft structure will house more than 200 employes on an 18-acre plot off Route 9-W. Courts will separate two wings of the quartz-faced, pre-cast-concrete building. Architects: Fellgraff, Ballou & Daly of Ridgefield, N. J., with T. W. Beddall of Toronto.

American Show Opens Johnson's Museum

The Munson-Williams-Proctor Institute in Utica, N. Y., opened last month with a show, "Art Across America," devoted to American art through three centuries. Main floor of the museum, which was designed by Philip Johnson, contains galleries, a members' room, an art shop, and a central, 75-ft-sq sculpture court. A double staircase leads to a balcony which rings the court with six more galleries. Exterior of the building is sheathed in black Canadian granite, and the exposed piers and girders are enclosed in statuary bronze. Since the balcony is hung from this frame, there is no need for supporting pillars on the main floor. A 300-seat auditorium occurs on the ground floor. Sumptuous materials are used throughout: gold-leaf mosaic for the walls of the auditorium, teak panelling for the lobby and main hall, Italian travertine marble for main gallery.



COURTLY CALIFORNIA FASHION CENTER

A new H-shaped shopping center in La Jolla is composed of fashionable clothing stores for men and women, beauty and sportswear shops, and a restaurant, surrounding twin courts California redwood panels are combined with mustard yellow spandrels and on the exterior, rich color accents highlight rough brick areas. Architect: Edward H. Fickett.

Continued on page 76

A. D. Pearson, vice president of Jewett Refrigerator Company, Inc., an Approved Insulation Contractor.

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Typical of the more than 90 Dow Approved Insulation Contractors is Jewett Refrigerator Company, Inc., Buffalo, New York. An AIC for three years, Jewett has installed more than three-quarters of a million board-feet of Styrofoam. To serve the architect, Jewett offers a design staff of engineers to make specific recommendations and detail out plans.

Combined cooling and deep-freeze facilities were constructed, using Styrofoam, for the hospital research institute. Low temperature rooms for meat, dairy products, fruit, vegetables and other purposes were constructed.

A typical Jewett job is the recent major modernization program for the Millard Fillmore Hospital in Buffalo. Styrofoam was used to insulate a variety of low-temperature facilities. Jewett designed and constructed combined cooling and deep-freeze facilities for the storage of enzymes, proteins, blood specimens and other substances under study in the adjoining research institute. Also part of the project was the building of refrigerated storage rooms for food service, and for other cold storage requirements as well.

Says A. D. Pearson, Jewett vice president: "Styrofoam impresses us with its qualities of lighter weight, easier handling, simplicity of installation and non-absorbency of moisture. Once it's installed properly, Styrofoam affords permanent insulation efficiency, and we never have to worry about the job."

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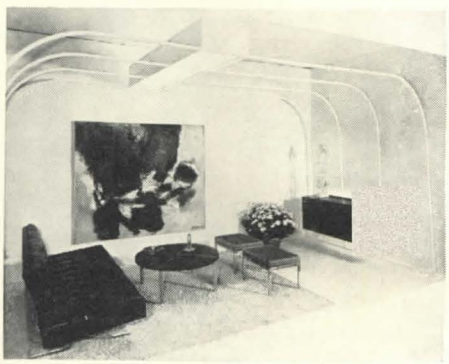
continued from page 72

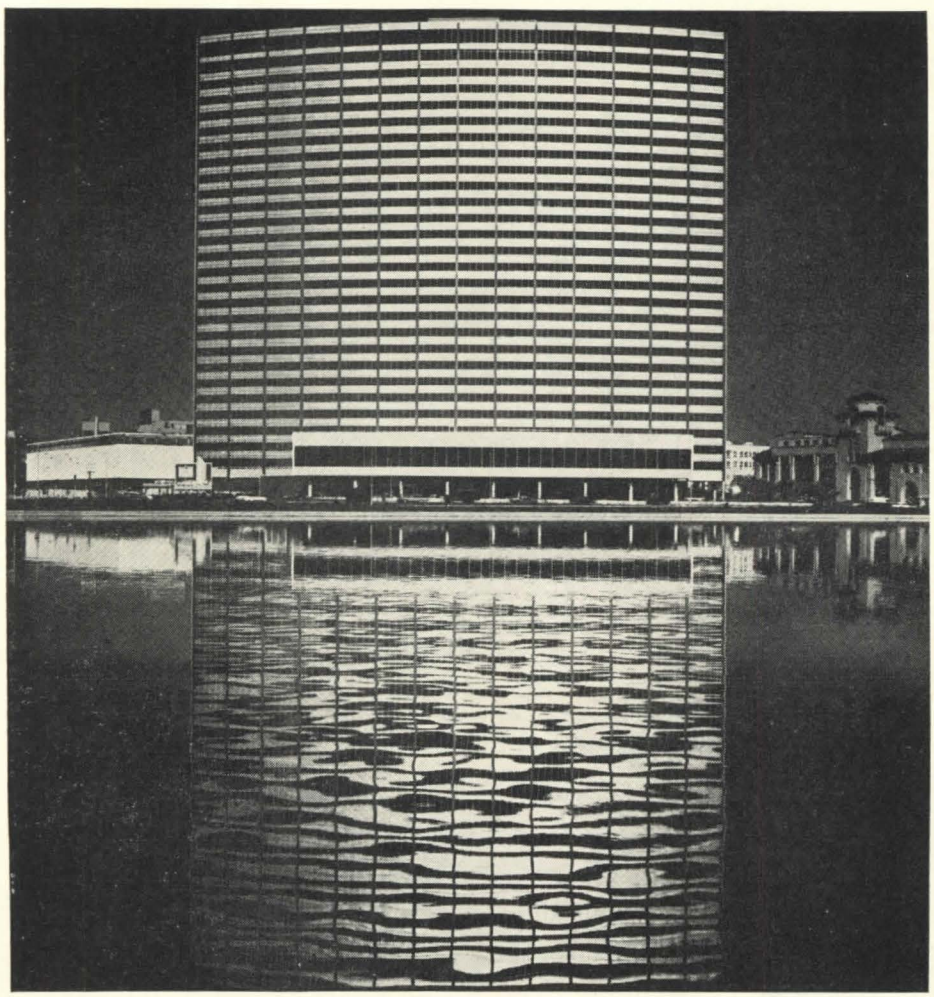
CONCRETE RESEARCH CENTER IN CLEVELAND

Master Builders Company recently opened its new general offices, which include a research and technical center devoted to the development of products to improve concrete. Said to be one of the most modern and complete concrete research laboratories in the country, it will occupy the first floor of the 60,000 sq ft building; the company's general and executive offices will be on the other two floors. The concrete, brick, and glass building was designed by Irving D. Robinson.

"DECORATION AND DESIGN 1961"

A forecast decorating show, sponsored by the Resources Council and the N. Y. Chapter of the American Institute of Decorators and the *New York Herald Tribune,* was presented last month in New York. The show included traditional as well as contemporary designs. Knoll Associates' room (*shown*) featured a white oval pedestal dining table and chairs designed by Saarinen and a large "Dandelion" sculpture by Bertoia. Darrell Landrum's room (*shown*) containing Avard, Inc.'s chrome-plated steel furniture has an arched steel structure supporting a walnut cabinet.





Kaiser's Big One Opens in Oakland

Kaiser Center, "the largest office building west of Chicago," has achieved full occupancy in all of its shopping, business, and office areas. Welton Becket & Associates designed the building to provide a world headquarters for the Kaiser organization. Appropriately enough, 80% of the structure results from use of Kaiser Products or products "emanating from Kaiser-processed or raw materials." The building, sheathed in gold, gray and natural aluminum, is reflected in Oakland's Lake Merritt. The seven-acre Center includes, in addition to the 28-story tower, a department store, shops, and a five-level parking garage. Unique company facilities include an employes' medical suite, a three-acre roof garden, two dining rooms, and a 400-seat auditorium equipped for motion picture and television production. General Contractor: Robert E. McKee, Inc.

CORRECTION

Because of a mechanical error in producing last month's issue of P/A, information on the annual AIA National Honor Awards Program was inadvertently dropped out, and the national organization made to look as sponsor of a mobile home competition, which it is not.

The AIA Honor Awards Program has as its deadline for receipt of entry slips and fees the 21st of this month. Submissions in brochure form must be at the Octagon by January 13, and judgment takes place January 18-20. Winners will be notified February 3, and must have their mounts in to the Philadelphia convention by April 20. Hanging will take place in the AIA Convention hotel, the Bellevue-Stratford, on April 22, and winners will be on exhibition there throughout the Convention, April 24-28.

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BUILDINGS NEAR AIRPORTS GET CONTROLS

FAA Sets Up Regulations For Air-, Heliport Areas

By E. E. Halmos, Jr.

A new Federal agency has moved strongly into the affairs of architects, with promulgation of regulations concerning building heights that may affect air navigation. This is Federal Aviation Agency—and its new regulations are broader than they appear at first glance, since they affect not only structures at or near airports, but any others that might be built on regular airways or control zones—and even in areas that at some future date might be included in such zones.

That would seem to control building in almost any populated area of the United States.

The new regulations—officially Part 626 of Chapter III, FAA—will have the virtue, FAA hopes, of setting up a "forum" through which it can consider not only the needs of air navigation, but also the interest of the construction sponsor.

The air agency says that it will consider "possible adjustments of aviation requirements to accommodate tall structures", by raising minimum flight levels, realigning routes and the like. But, on past performance, don't look for too much of that.

The regulation applies not only to new structures, but also to alterations on old ones that may have the effect of raising the height.

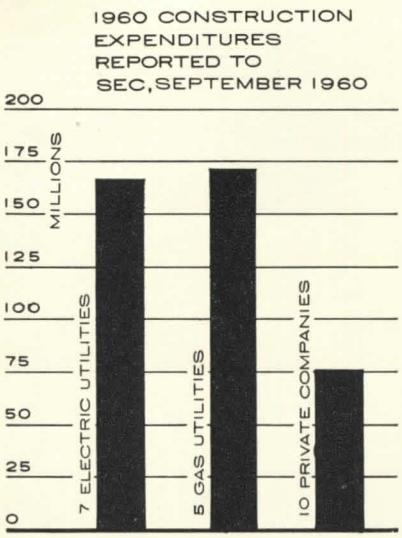
In detail, here are pertinent provisions, notice to the Administrator of FAA being required:

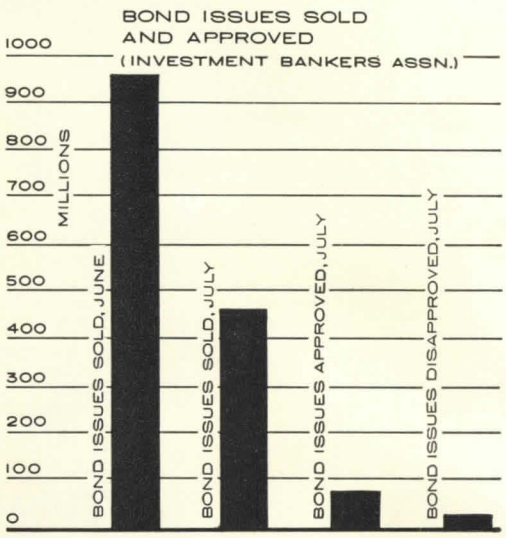
1 For any structure, the top or any portion of which may become at the construction site . . . greater than 150 *ft above* ground level.

2 Any structure within 15,000 ft of any airport or landing area, excluding heliports, the top or any portion of which may become . . . greater than one foot above such airport or landing area elevation.

3 Any structure within 5000 ft of any heliport, top of which may become . . . greater than three ft above the heliport elevation . . . for each 100 ft or fraction thereof, of the distance that the structure will be situated from the boundary of the heliport.

4 Any structure, the top of which may extend into an airport approach obstruction plane (defined as an imaginary surface extending from each end of any airport runway having a length of 2000 ft or more, longitudinally centered on the extended centerlines thereof, for a distance of 1000 ft at the elevation of the approach end of the runway, thence sloping upward at the ratio of 1 to 60. Instrument runways have a still broader "approach plane").





BOND ELECTION RESULTS – JULY 1960 BY USE OF PROCEEDS

USE OF PROCEEDS	APPROVED		DISAPPROVED	
	AMOUNT	NO	AMOUNT	NO
EDUCATION				
ELEM & SEC	$ 29,323,000	18	$ 5,923,000	12
OTHER	30,550,000	2	——	0
ROADS & BRIDGES	250,000	1	575,000	3
WATER & SEWER	12,176,000	23	325,000	3
OTHER UTILITIES	925,000	3	——	0
HEALTH & WELFARE	1,325,000	3	675,000	2
RECREATION	——	0	75,000	1
PORTS & AIRPORTS	150,000	1	——	0
INDUSTRIAL	1,136,000	3	——	0
FLOOD CONTROL	——	0	200,000	1
UNCLASSIFIED	536,000	7	——	0
TOTAL	$ 76,371,000	61	$ 7,773,000	22

BOND ELECTIONS SCHEDULED AS OF AUGUST 1, 1960

MONTH	AMOUNT
AUGUST 1960	$ 103,359,000
SEPTEMBER "	39,396,000
OCTOBER "	76,077,000
NOVEMBER "	1,553,981,000
DECEMBER "	6,520,000
FEBRUARY 61	400,000
MARCH "	70,000,000
NOVEMBER "	915,986,000
NO DATE SET	71,642,000
TOTAL	$ 2,837,361,000

USE OF PROCEEDS	AMOUNT
EDUCATION	
ELEM & SEC	$ 541,596,000
OTHER	216,065,000
ROADS & BRIDGES	233,325,000
WATER & SEWER	150,347,000
OTHER UTILITIES	954,806,000
HEALTH & WELFARE	187,625,000
RECREATION	33,254,000
PORTS & AIRPORTS	20,375,000
INDUSTRIAL	9,977,000
REFUNDING	2,000,000
FLOOD CONTROL	8,750,000
PUBLIC HOUSING	3,500,000
VETERANS AID	202,000,000
ADMIN & OFFICE BLDG.	74,087,000
UNCLASSIFIED	199,654,000
TOTAL	$ 2,837,361,000

Notice is not required for construction or alteration of structures located where they would be shielded by existing structures of permanent nature, or by natural topographic features of equal or greater height.

Other parts of the regulation control heights of buildings at locations other than near airports.

The "forum" that FAA hopes to provide for discussion of such construction plans would begin either with the request of the sponsor, or by the agency, and would take the initial form of a study of the effects on air navigation, to be initiated by the Air Traffic Management Field Division of a regional FAA office.

If the field division finds objection to the structure, it will hold an informal meeting, then forward conclusions to Airspace Obstruction Evaluation Branch of Airspace Utilization Division in Washington. An appeal is possible (from an adverse decision) within 30 days, directed to the Administrator of FAA.

FAA has a stableful of civil engineers and architects in its Facilities branch, who will presumably be available to field divisions for technical advice.

Up with Cement Prices

Apparently there will be a rise in cement prices next year, as result of Internal Revenue Service's interpretation of a recent Supreme Court tax decision.

The High Court ruled that Cannelton Sewer Pipe Co. (Indiana) must take its depletion allowance on the value of clay as "mined"—rather than on the value of the finished clay pipe, tile or brick. That brought immediate worry to cement manufacturers, who feared that a similar ruling would be applied to the materials used in cement manufacture.

The cement people were right: IRS announced that the provisions of the court decision wouldn't affect taxes due as of 1960, but starting with January, 1961, cement companies must base their depletion allowances on the value of "kiln feed", rather than on finished cement.

Depletion allowances at the kiln rather than on finished cement can thus spell smaller earnings, thus the probability of a price increase to compensate.

Hiring Halls, Pollution

Legal matters seemed to dominate much of the news for architects and construction men as Washington got well settled into its post-legislative, pre-election doldrums in October.

U.S. Supreme Court, for instance, opened its fall term with a heavy docket of general cases, although those that seemed to affect the construction industry directly were confined to various aspects of labor activities. Most of these were outgrowths of the uses of so-called hiring halls, or other union referral systems, by contractors— a practice frowned upon by National Labor Relations Board.

Department of Justice, meanwhile, announced "successful termination" of its antitrust action against American Radiator and Standard Sanitary Corp. A consent judgment orders American Standard to divest itself of Mullin Mfg. Co., of Salem, Ohio, which makes kitchen sinks and bathtubs.

And in a separate action that may have far-reaching results, Justice also sought a District Court injunction against a whole city, for failure to clean up sewage discharges into the Missouri River. The action was filed (at the behest of Department of Health, Education & Welfare) against City of St. Joseph, Mo., whose taxpayers had turned down an HEW-ordered bond issue to pay costs of preliminary engineering and construction of a sewage-disposal plant. There's a nice legal question involved: the suit, said Washington attorneys, appears to be directed at all residents of the city (population over 78,000) as well as city officials. How an injunction could be enforced against 78,000 persons is an interesting point.

Significance, however, is that if the courts go along with HEW, the action would put real teeth in the 1956 pollution-control act, might speed up action by many other communities that may have been dragging their feet.

REMEMBERING ROOSEVELTS

Plans for a suitable memorial to one Roosevelt (Franklin D.) seemed to be moving ahead satisfactorily; while a compromise solution to the controversial monument to another (Theodore) was worked out.

For the Franklin D. Roosevelt Memorial—to be located on a tract south of the existing Jefferson Memorial—a five-man jury selected six winners of the first stage, and directed them to prepare detailed drawings and models for judging December 29-30 (OCTOBER 1960 P/A, p. 79). The six plans varied widely, said the jury (headed by Pietro Belluschi), from parklike vistas to sculpture.

The memorial to Theodore Roosevelt—object of ridicule in Congress and elsewhere when a proposed celestial sphere centerpiece was revealed—will now proceed under a new bill (appropriating about $900,000) which requires that the son and daughters of "T.R." have a virtual veto over the final design.

Financial Picture Good

The over-all financial picture for the construction industry continued to look good in early October, despite growing puzzlement on the part of many analysts.

The evidence of continued health in the construction sector was strong, with an easing in money markets, and surprising continued strength in demands for construction work.

Yet many a financial expert, writing for the daily and specialized press, had started to hedge his predictions. There was some evidence, in fact, that the analysts were beginning to scare each *other*. It seemed to be working this way: if you started from the fact that housing, for instance, will be off for the year (by about 200,000 units) and added this to the fact of some business uneasiness over the elections and their effect; plus the great increase in private debt, you came up with a somewhat uncertain total.

And financial analysts, being cautious fellows, don't want to be caught out on any limbs. So they were beginning to hedge.

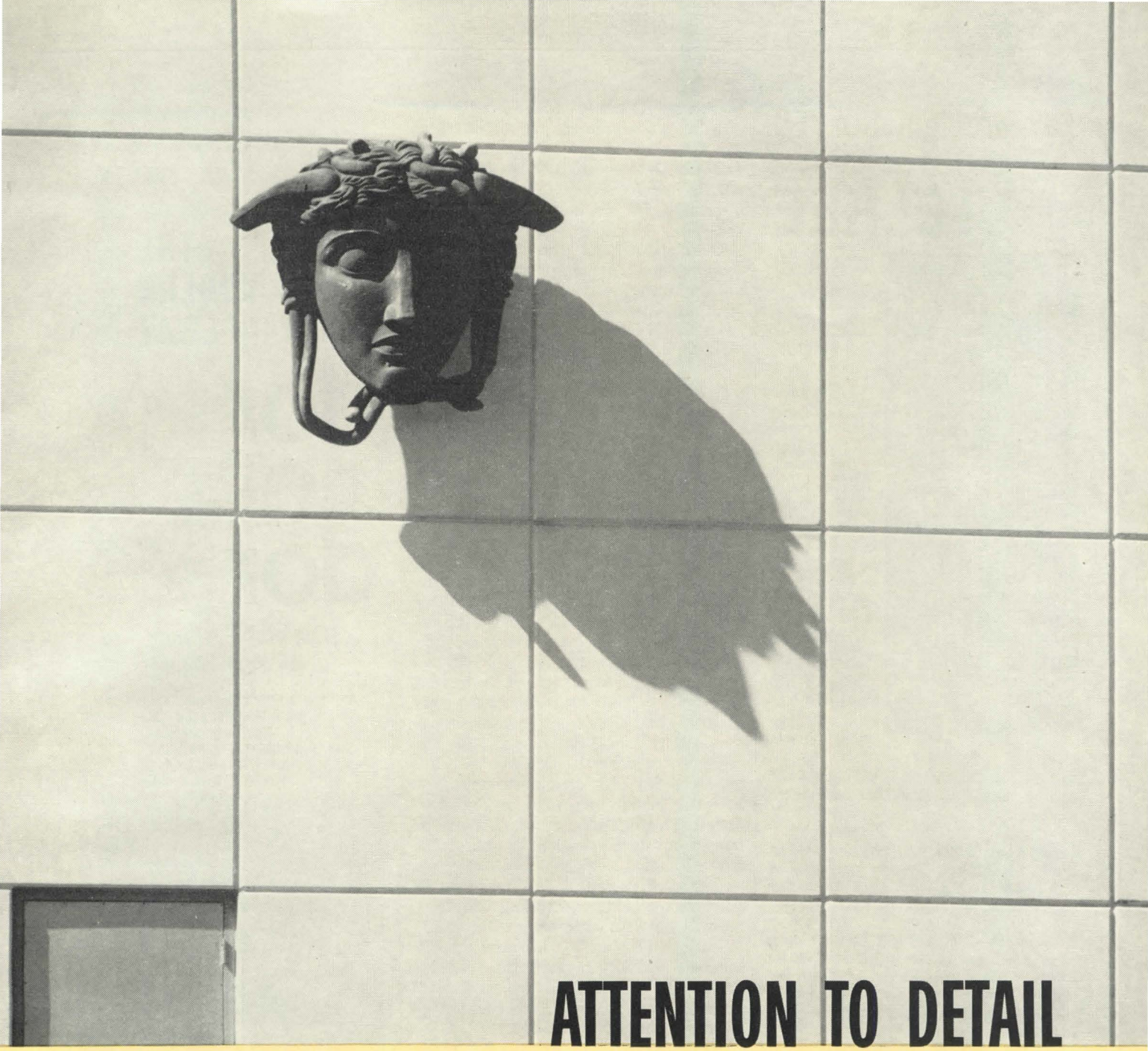
But the *facts*—at least as seen from the statistics on construction available in Washington—don't seem to support the hedging.

For instance (*see p. 78*), business itself continued to plan major expenditures for plant and utilities—even though there was some fall-off, since the plans here reported are for the remainder of 1960, which is running out.

And voters showed no sign of any revolt against taxing themselves to support bond issues for public works. In fact, the total of close to $3 billions worth of bond issues scheduled for the remainder of 1960 and early 1961—coupled with voter acceptance—seemed to augur well for continuing prosperity for the industry.

And as to the homebuilding segment of the construction economy, there were signs of better times ahead: the respected "Value Line" investment survey, for instance, found mortgage money easing, found that the U. S. is not overbuilt on housing, and that prices have kept reasonably well in line with median incomes. Homebuilders themselves began a series of sessions in Washington and elsewhere to look into their pricing structures, to see if they could offer more-for-less in their presentations to the buying public.

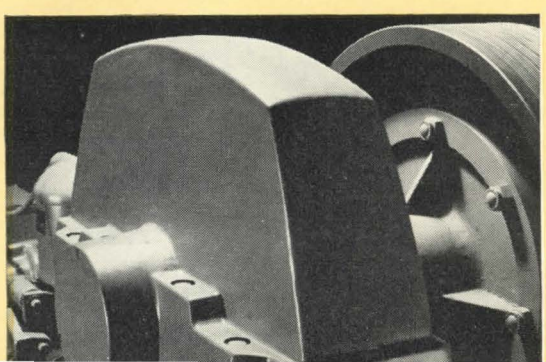
And there was a new source of



ATTENTION TO DETAIL

THE MEDUSA PORTLAND CEMENT COMPANY headquarters building in Cleveland Heights, Ohio was planned as a show-case for the beauty, strength and functional versatility of concrete. Meticulous attention was paid to every design detail, from the imposing sculptured Medusa head trademark on the east wall to special precast concrete interior panels. Similar devotion to craftsmanship gives Dover Elevators (formerly Shepard Elevators) outstanding performance characteristics. Dover Elevator machines are beautifully designed, combining compactness, accessibility of parts, symmetry of lines and physical proportions that provide adequate strength and durability. Their appearance is indicative of the optimum performance delivered. Dover Elevators are now available throughout the United States and Canada in both geared and high-speed gearless types to satisfy the most exacting vertical transportation requirements of all your multi-story projects. A letter will bring you more information promptly.

DOVER CORPORATION, Electric Elevator Division, 5051 Brotherton Road, Cincinnati 9, Ohio



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DOVER

Fine elevators since 1861

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mortgage funds available, with the President's signature on an omnibus tax bill that contains a provision exempting real-estate trusts from corporate-income taxes (if they distribute 90% of their profits to investors).

Over-all, then, the construction economy looked amply strong, as the nation headed into winter and national elections.

D.C. Planning Battles

The national capital's own private architectural and planning battles continued as usual, ranging from new building codes in the city itself to sometimes desperate attempts by surrounding suburban areas to bring some sort of order into their spectacular growth.

In Washington, for instance, city commissioners adopted a new performance-type code, including a controversial provision that older buildings must conform to its provisions; new legislation was approved to control building-repair contractors to prevent fraud; the District government was assured that it could re-possess the handsome "old courthouse" in the civic center near the Capitol, as headquarters for city commissioners. The building is now occupied by Selective Service headquarters, which will be moved out to a location in one of the new Federal office buildings now under construction. The building is 140 years old, according to city records, and an architectural gem.

And the Senate's District Committee said it will investigate progress of the city's Southwest urban renewal program, which has often been cited as moving much too slowly.

In surrounding areas, suburban Montgomery County, Md., eyed a new ordinance to curb construction of substandard housing and plans to coordinate its various planning agencies; Fairfax and Loudon counties (Va.) were getting together on zoning ordinances aimed at halting any "honky-tonk" developments around the now-building Dulles International Airport at Chantilly.

And some idea of the vast building program being undertaken by the Federal Government in Washington itself can be drawn from General Service Administration's announcement that by mid-winter it will have started work on at least nine huge structures (OCTOBER 1960 P/A, p. 74).

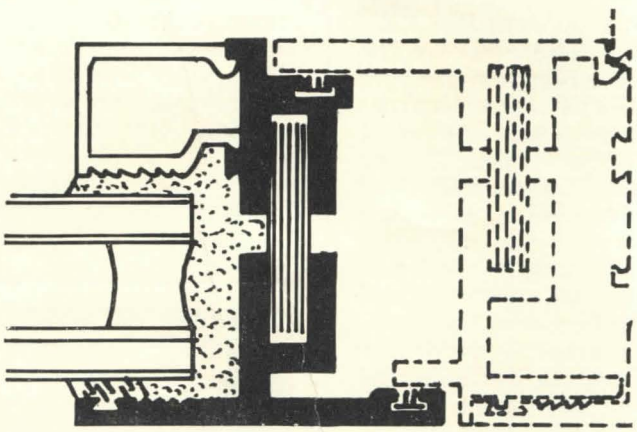
These include the now-building $55-millions State Department Extension; the $11-millions Office Building No. 6 in the Southwest area; and the $36-millions Museum of History and Technology, on Constitution Avenue.

Insulated Curtain Wall Holds Down Condensation

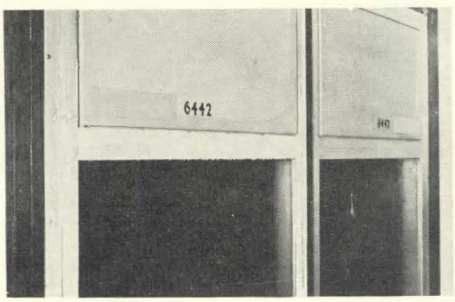
WAUSAU, WIS. A curtain-wall system has been introduced which incorporates a new technique of thermal insulation. The insulating material in "Insu-Wall" is a plastic formulation somewhat similar to that used for counter tops. Strips or bars of this material are fitted into slots in the extruded frame members of the curtain wall and specially pinned against shearing stresses. Permanent adhesion is achieved through use of an epoxy resin. The insulator is so formulated as to expand and contract at the same rate as the aluminum frame members. It is placed in such a way as to provide a complete barrier for all metal-to-metal, thermal conductivity.

Tests conducted by Becher-Hoppe Engineers, Inc. indicated that Insu-Wall has a U factor of .408. The insulated glass used as part of the curtain wall in the same test had a U factor of .58. At a temperature differential of 105 F at 35% relative humidity, condensation and frost formed on glass before forming on metal. Marmet Corp., Wausau, Wis.

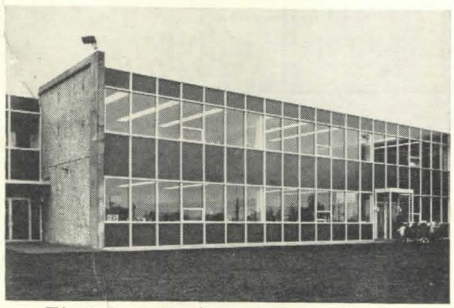
On Free Data Card, Circle **100**



Frame detail shows insulating element.



Comparison test result: frost formed on non-insulated panel first.



First installation of Insu-Wall is for a school in Fairbanks, Alaska.

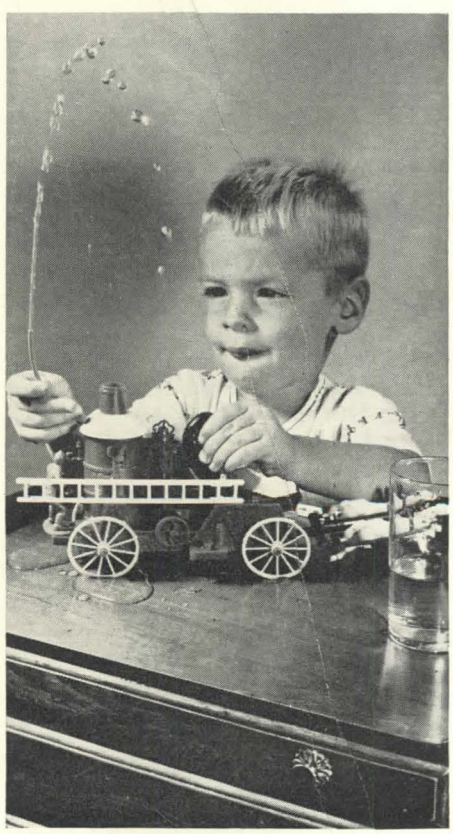
New Finish Is Clear, Long-Lasting, Easily Applied

BUFFALO, N. Y. Six years of laboratory research and field testing on a variety of surfaces including stair treads, boats, furniture, and exterior siding has produced "Varmor," a durable, clear finish for wood surfaces. Interpretation of tests is said to give Varmor up to 100% more wear resistance than previously available floor finishes. Made from a formula exclusive with the manufacturer, the finish produces the requisite hardness for floors and the degree of elasticity necessary on exterior finishes subject to changes in temperature, sunlight, and moisture.

Applications on boats and on panels in Florida indicate that the finish is from "50 to 100% more resistant to the elements than ranking spar varnishes." It withstands detergents, acids, alkalis, alcohol, salt water, cleaning fluids, and such household commodities as milk, coffee, ink, and gin. Producing a clear coat which does not cloud natural wood grains, Varmor is available at slightly more than one-purpose finishes, in gallon, quart and pint cans, and "touch-up" spray containers. Pratt & Lambert, Inc., Tonawanda St., Buffalo, N. Y.

On Free Data Card, Circle **101**

Tests with other finishes on stair treads show Varmor's toughness.



Imperviousness to water, both fresh and salt, enhances construction uses.

To Speed Foreign Inquiries

Since the inception of *P/A News Report,* our Reader Service Department has been besieged with a gratifying number of inquiries from readers outside the United States, its possessions, Canada and Mexico. Unfortunately, these requests are received some time after date of issue and, after processing, frequently reach suppliers late. In order to speed receipt of information, therefore, P/A asks readers outside the U.S.A., Canada or Mexico to send requests for information *directly* to the manufacturer. In this and subsequent issues, we are including addresses with each Products and Data item. Thank you.

Fiberglas Insulated Wall Panel Speeds Erection

Milcor Fiberglas field-assembled, nonloadbearing exterior insulated steel wall panel for commercial and industrial buildings can be erected in any weather—eliminates interior scafolding—self-sealing, self-tapping screw system attaches interior liner panels to structural framework—fastens exterior panels to subgirts. Fiberglas insulation, applied to interior panels, is 2′x4′, 1½″ thick, has average "U" factor of 0.160. Panels are 2′x28′-6″. Owens-Corning Fiberglas Corporation, 717 Fifth Ave., New York, N.Y.

On Free Data Card, Circle **102**

Insulating Glass Reduces Noise Transmission

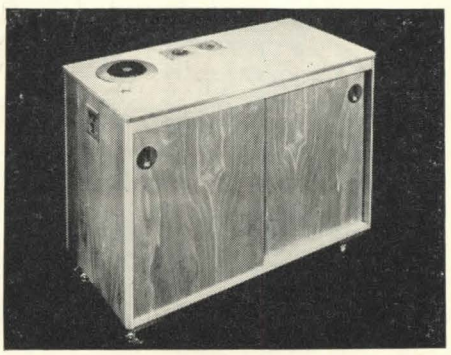
Insulating glass composed of two or more pieces of glass bonded together to enclose a space of dry, chemically pure air, is effective in minimizing sound transmissions and sound reflections through window areas. "Thermopane" with two lights of ¼″ plate glass separated by a ½″ air space is said to provide approximately the same sound insulation as 4″ of clay tile plastered on both sides or 4″ of cinder block plastered on one side. Libbey, Owens, Ford Glass Company, 811 Madison Ave., Toledo 3, Ohio.

On Free Data Card, Circle **103**

Cracker-Thin Pipe and Block Insulation

Pipe and block insulation for all temperatures up to 1600 F is composed of expanded silica with a specially developed binder and reinforced with inorganic fiber, claims exceptional water resistance; light weight without sacrifice of strength; ease in cutting without crumbling, requiring no special tools. Can be cut cracker-thin, providing neat square edges for tight joints. The Philip Carey Manufacturing Company, Anthony Wayne Ave., Lockland Station, Cincinnati 15, Ohio.

On Free Data Card, Circle **104**



Portable Kitchen Acts as Demonstration Unit

"Porta-Kitchen" is a movable, multiuse unit designed as a supplementary demonstration center for domestic science classrooms in elementary and junior high schools. Unit includes a three-heat, 110-volt burner, shelf storage, tote-tray storage, removable maple cutting board, and metal-covered asbestos heat resistant pad. Optional attachments are mixing unit, blender, juicer, sharpener, grinder, shredder, and extra mixing bowl. Also adaptable as a coffee and quick snack bar for teachers' lounges and semi-public rooms. Educators Manufacturing Company, P. O. Box 1261, Tacoma 1, Wash.

On Free Data Card, Circle **105**

Duct Systems Give More Wiring Capacity

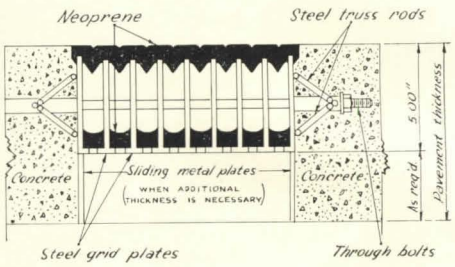
"Headerduct" underfloor wiring system for power and communications conductors in cellular steel floor raceways provide higher capacity. Series 15,000 has full 20.294 sq in. duct capacity; measures 2½″ x 10″, in 3′ and 5′ standard lengths. Removable aluminum rib-reinforced cover plates butt together to form cover, permit easy access to wiring; aluminum extrusions provide screed line for concrete and finish trim for tile. Series 14,000 offers 9.2 sq in. capacity, measures 1⅜″ x 7¾″, in 8′, 9′, 10′ standard lengths; available with junction units spaced on centers, ranging from 12″ through 120″, for convenient outside adjustment. Both systems are 14-gage steel, can be combined in one installation by use of special connecting device. National Electric Division, H. K. Porter Company, Inc., Porter Bldg., Pittsburgh 19, Pa.

On Free Data Card, Circle **106**

Highway Expansion Joints Laugh Off Heat, Cold

New type of expansion joint—used on highways, bridges, and airfield runways—may be applicable in architecturally-designed construction. The joint can absorb the movement of concrete during extreme temperature changes without any bulge, dip, or

CROSS SECTIONAL VIEW OF NEOPRENE EXPANSION JOINT



gap in the top surface, and keeps a tight seal against water and dirt. Constructed of neoprene synthetic rubber and steel, joint is designed so that movement of concrete pushes together neoprene cells or pulls them out, accordionlike. Steel truss rods looping out from both sides anchor joint firmly to concrete panels. Joint is 13¼″ wide and contains nine cells five inches high. It will accept a movement of three inches. Units come in lengths of 6′ and 6½′, and can be joined end-to-end for any desired length. B. F. Goodrich Industrial Products Company, Div. of The B. F. Goodrich Company, Marietta, Ohio.

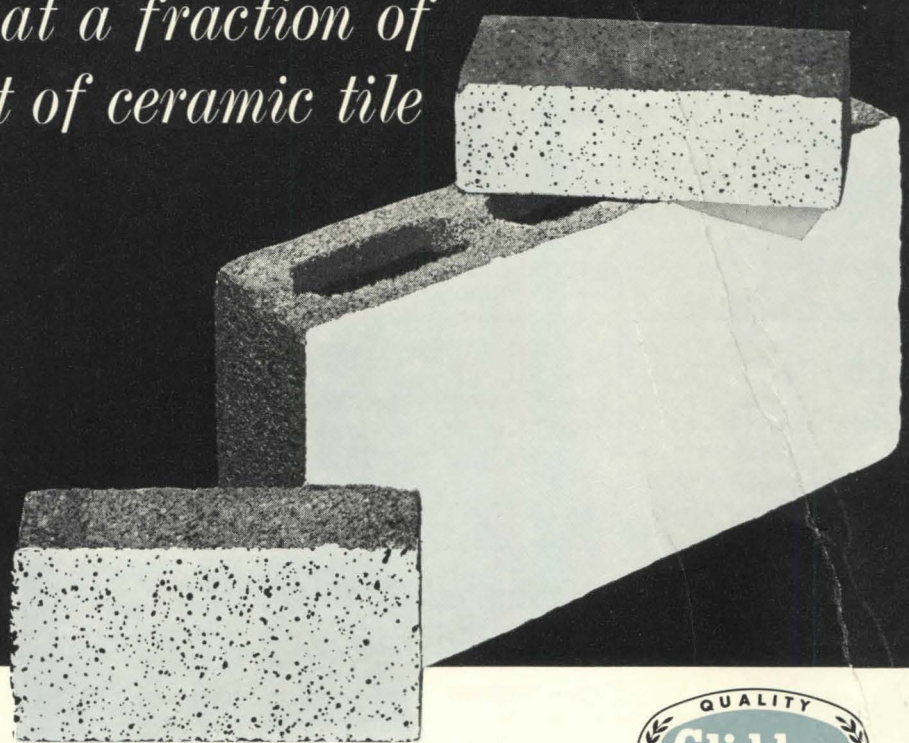
On Free Data Card, Circle **107**

Automatic Compensation For Humidity Rise

An "Effective Temperature Controller," which automatically compensates for humidity rise by lowering the dry-bulb temperature, solves a common problem in residential air condioning. In mild weather or at night, most units do not run enough to keep the humidity down to a comfortable level, requiring most users to lower the thermostat setting manually when stuffiness becomes apparent. New Controller, combining a thermostat and humidistat, now automatically solves the problem. The humidistat, in effect, "fools" the thermostat into

NEW GLID·TILE

A plastics spray finish that gives concrete block, brick and other surfaces a glazed, tile-like, lifetime finish in almost any color...at a fraction of the cost of ceramic tile



- *Impact and abrasion resistance*
- *Chemical resistance*
- *Versatility in application*
- *Wide choice of tile-like colors*
- *Easy, low-cost maintenance*

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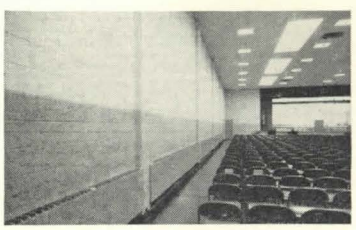
QUALITY Glidden PRODUCTS

THE GLIDDEN COMPANY

Architectural Finishes Division

900 Union Commerce Bldg., Cleveland 14, Ohio

In Canada: The Glidden Co., Ltd., Toronto, Ontario



Walls in high-traffic areas retain their tile-like beauty for many years when coated with Glidden plastic finishes.

Glidden plastic finishes offer beauty and easy maintenance for maximum cleanliness wherever they are used.

Attach this coupon to your company letterhead and mail to:

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900 Union Commerce Building, Cleveland 14, Ohio

Please send me the following information on Glid-Tile:

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Name_____

Firm_____

Address_____

City_____ State_____

operating as if the thermostat setting were several degrees lower. The operating cycles of the equipment are lengthened, and the humidity thereby lowered, for a healthier and more comfortable atmosphere. Airtemp Division, Chyrsler Corporation, P. O. Box 1037, Dayton 1, Ohio.

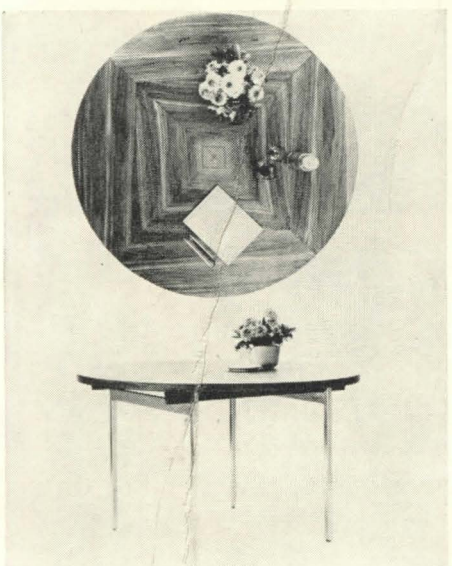
On Free Data Card, Circle **108**

Clip Systems Reduce Sound Transmission

Two systems using metal clips and gypsum wallboard reduce sound transmission through floors and walls. Overhead noises are relieved by "Cush-n-clips," spring steel clips supporting ceiling furring strips. Weight of wallboard expands clips, leaving an air strip between joist and furring strip. "Flex-clips" are used to wall-mount backer-board to wood framing. Layer of gypsum wallboard can be laminated to this, resulting in a resiliently suspended double wall. National Gypsum Company, 325 Delaware Ave., Buffalo 2, N.Y.

On Free Data Card, Circle **109**

Diamond-Patterned Veneer Tops Conference Table



Walnut, in either handrubbed oil or semi-gloss finish, forms the circular table top which is 48″ in diameter. Wood rails fit into chrome steel legs with adjustable glides; legs are also available in wood or black steel. The table, which was designed by Allan Gould, is 29″ high, retails for $300. Design Previews, Inc., 160 E. 56th St., New York 22, N. Y.

On Free Data Card, Circle **110**

Epoxy Replaces Cement in Terrazzo-Type Flooring

A new terrazzo-like flooring, "Durazzo," combines the classic beauty of terrazzo with the functional and cost-saving advantages of modern plastics. The trowel-applied material uses a compound of epoxy resins as the binder in place of the cement now used in terrazzo; all aggregates associated with terrazzo, and many additional ones, can be designed into

Durazzo. Resultant floor is a glossy, non-skid, non-glare, hone-finished surface that is impervious to acids, alkalis, sunlight, fungi, solvents and temperature changes. Durazzo requires no dividing strips, since its thermal coefficient of expansion prevents cracking and spalling under intense temperature changes. Material is approximately one-fifth the weight of conventional terrazzo, one-fourth the volume. Durazzo, Inc., 623 River Dr., Garfield, N. J.

On Free Data Card, Circle **111**

Ventilated Soffit Material Saves Time

Aluminum soffit material serving as room divider, shading screen, and in other functions in home, school, industrial building application is said to apply easily and fast, to be rot and rustproof, easy to paint. Perforated pattern opens 14% of area for ventilation, eliminates need for louvres. Comes in 100′ rolls of prime-coated white 26-gage aluminum (also available non-perforated). Available in 12″, 18″, and 36″ widths. Quaker State Metals Company, Lancaster, Pa.

On Free Data Card, Circle **112**

Masonry Sealer Permits Show of Texture

"Water-Block" masonry sealer acts as primer for cinder, cement, Haydite, Waylite, and pumice blocks. Product fills and seals pores and crevices in masonry without hiding texture. Applied in a neutral gray, paintable finish, Water-Block keeps out water, preventing dampness and deterioration due to moisture seepage. Brush or spray may be used to apply sealer. Available in gallon or five-gallon containers. Samuel Cabot, Inc., South Terminal Trust Building, Boston 10, Mass.

On Free Data Card, Circle **113**

Hospitality Unit Combines Five Services

"President II" compact food and hospitality cabinet contains a refrigerator, two electric cooking elements, a freezer, a sink, and storage space. Facility—designed for motels, offices, recreation rooms, apartments—comes

in walnut, mahogany, blond, oak, and knotty pine finishes. Refrigerator makes for easy wassailing by holding nine ice cube trays. Work surface is of stainless steel. Crane Company, 155 North Wacker Dr., Chicago, Ill.

On Free Data Card, Circle **114**

Color Is Preserved in Asbestos-Cement

"Dura-Color" process for asbestos-cement home sidewalls gives greater color permanency and uniformity, eliminates streaking. Time-tested plastic finish "Duroc" is combined with unique method of integrating color with finish prior to application. Weatherproof surface cannot blister, chip, crack, or peel; colors remain lustrous and true without repainting. The Ruberoid Company, 500 Fifth Ave., New York 36, N.Y.

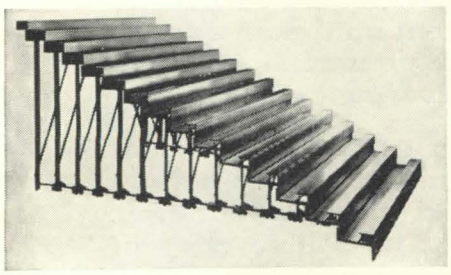
On Free Data Card, Circle **115**

Larger Joist Hangers

In an expansion of the joist-hanger line, "Teco-U-Grips" are now available for 3x6 to 3x14, 4x6 to 4x14, and double 2x6 to double 2x14 wood mem-

bers. Hangers are furnished with special nails to prevent faulty installation. Load values and design information are presented in 4-page technical booklet. Timber Engineering Company, 1319 18th St., N.W., Washington 6, D.C.

On Free Data Card, Circle **116**



Gym Seating Is Open Deck, Telescopic

New model of gym seating is telescopic, presents vertical face when not in use. Open-deck seating is of Arkansas pine with a steel framework. Standard section is 16′ long and from three to 15 rows high. Spacing between rows may be either 22″ or 24″. Sections roll on 4″ dia. plastic wheels; any desired number of rows may be extended and locked in place. Open deck model is lower in cost than closed desk design, but is said to meet and surpass all structural safety requirements. Hussey Manufacturing Company, Inc., North Berwick, Me.

On Free Data Card, Circle **117**

Superior Water Repellent For Masonry

A new, improved silicone resin for use in masonry water-repellant formulations offers performance superior to regular grades at no increase in cost. Protection in depth prevents water penetration in brick that is either exposed to splashed droplets or soaked in water. Concentrations of 5% tion. *General Electric Company*, Waterford, N. Y.

On Free Data Card, Circle **118**

Control Panels Record Status of Hotel Rooms

Electronic "Room Status Indicator System," for use in hotels and motels, gives instantaneous information to desk clerk, cashier, and housekeeper. Each of these personnel has a control board on which to give and receive information as to whether guest has occupied room or has checked out, and whether room is to be cleaned or is ready for new occupants. An important advantage of the system is that other internal communication lines are left free. System is easy to install and operate, and requires virtually no maintenance. American Communications Corporation.

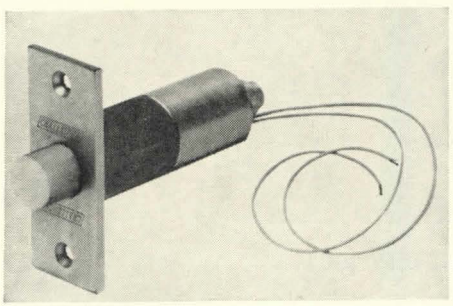
On Free Data Card, Circle **119**

Roof Deck Assembly Uses Box Section

Box Section Roof Deck Assembly applies 2-way continuous-beam principles to roof deck and sub-purlin design for great lateral strength. Lightweight box section, of 16-, 18-, or 20-gage steel, is welded to each supporting member, with sub-purlin spacings up to 48″ possible. Assembly is quickly and economically erected. Continuity of materials, plus resistance to uplift pressure provides maximum rigidity in all directions. Without thermal breaks in the roof deck there is improved thermal insulation. Tectum Corporation, 535 East Broad St., Columbus 15, Ohio.

On Free Data Card, Circle **120**

Device Facilitates Remote Electric Locking



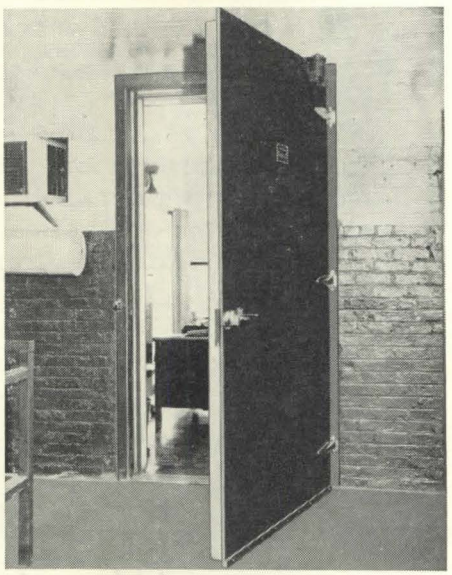
Safety electric locking unit for light or air traps and communicating bathrooms operates on a 24-volt AC current. Simple unit permits surface wiring and mounting for existing structures. Device utilizes a nylon bolt which is released by remote actuation and thrown into the strike, locking the door. When reactuated, bolt returns to latch unit, opening the door. Challenger Lock Company, 2349 W. La Palma Ave., Anaheim, Calif.

On Free Data Card, Circle **121**

Screechless Blackboard

The spine-chilling noise of chalk screeching across a blackboard is now a thing of the past. New vinyl-chalkboard surfacing material, "Armorsol," is a baked-on finish that can be applied on steel partitions for office and school. It becomes an integral part of the partition and provides a serviceable, unbreakable chalkboard surface that defies chalk or fingernail to make it screech. Union Carbide Plastics Company, Union Carbide Corporation, 30 E. 42nd St., New York 17, N. Y.

On Free Data Card, Circle **122**



Acoustic Doors Useful In Plants, Laboratories

Acoustic doors are constructed of steel-clad paneling in a number of thicknesses for specific transmission loss requirements in standard sizes and designs. "Noise-Lock" doors come with matched frame assemblies. In addition to manufacturing plants and research and industrial laboratories, doors have been used in TV and recording studios, aviation test cells, and sound isolation rooms. Industrial Acoustics Company, Inc., 341 Jackson Ave.. New York 34, N. Y.

On Free Data Card, Circle **123**

New Rotary Controls For Fireplace Dampers

Improved rotary controls for cast-iron fireplace forms and dampers have been designed. For the mason, the rotary controls offer quicker assembly because of fewer parts. For the user, smooth and simple action is provided. Rugged all-cast-iron construction assure durability. Handle is highly-polished solid brass; escutcheon is drawn brass. Bennett-Ireland Inc., Norwich, N. Y.

On Free Data Card, Circle **124**

THE REAL TRUTH about SAVING CLIENT MONEY!

"It costs the taxpayer almost as much each year to run school buildings as it does to acquire them . . . upkeep costs have been largely taken for granted . . . A ten percent reduction in these costs is almost as important to the taxpayer as a ten percent reduction in the cost of the building."

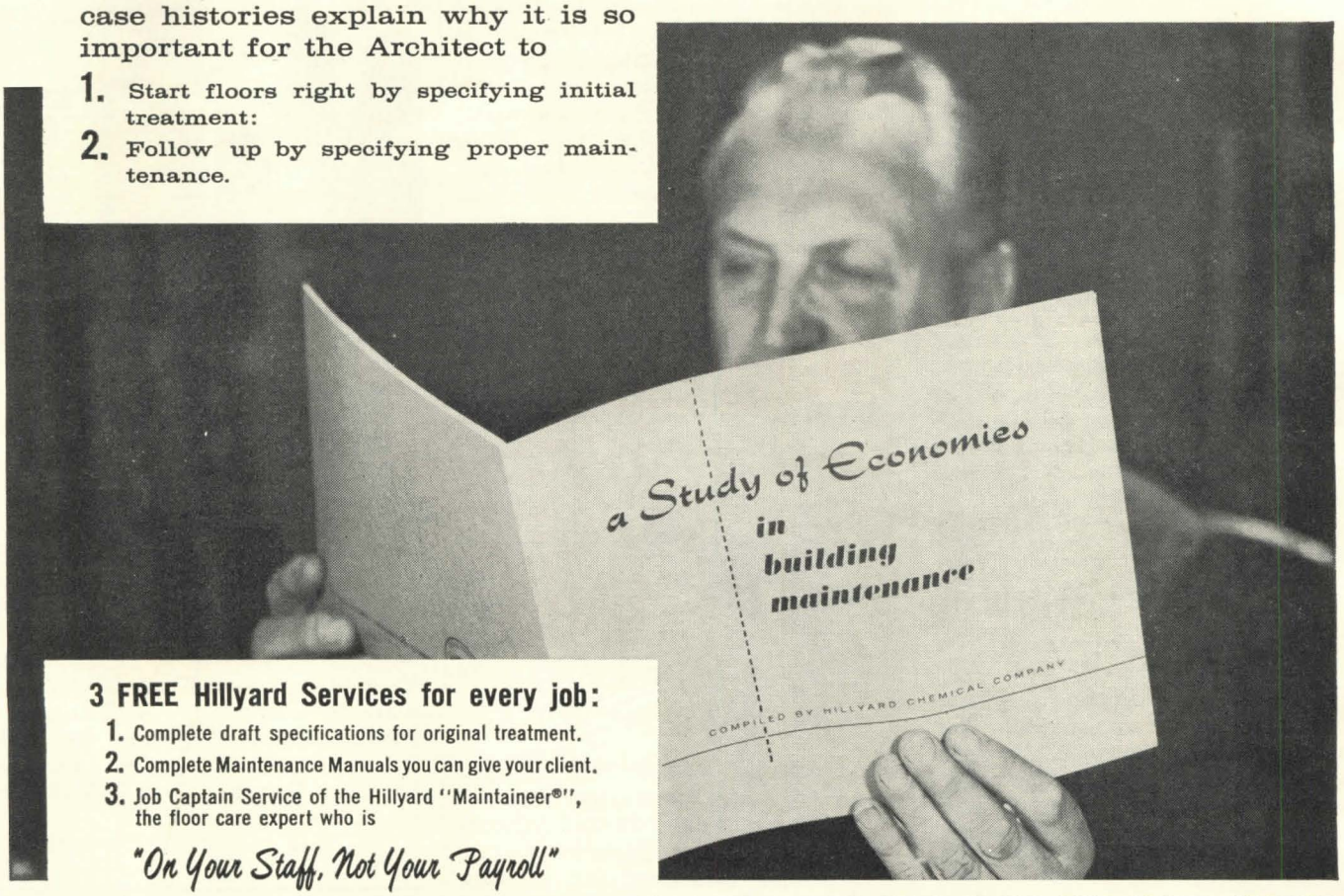
From a study made for the New York Dept. of Education by the faculty of the School of Architecture, Rensselaer Polytechnic Institute.

Read Hillyard's new Study of actual case histories for the answers to economy of floor maintenance. These case histories explain why it is so important for the Architect to

1. Start floors right by specifying initial treatment:
2. Follow up by specifying proper maintenance.

Contrary to opinion of all too many building owners, there is no economy in "cheap" floor maintenance products. Pennies saved here mean dollars lost in higher labor expense for floor re-treatment and maintenance –and, perhaps, permanent damage to expensive flooring.

If, without your guidance, the client guesses and guesses wrong, he will be the loser. So will your building. Write today for your Free copy of "A Study of Economies".



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2. Complete Maintenance Manuals you can give your client.
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THE BEST PROTECTION FOR YOUR FLOORS IS THE BIGGEST SAVING FOR YOUR CLIENT

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CONSTRUCTION

Installation Details For Aluminum Siding

Siding Application Manual, 44 pages, claims to be the most comprehensive installation guide in existence on the new aluminum siding introduced earlier this year. Illustrations show installation of horizontal 8″ siding (both insulated and noninsulated), vertical siding, accessories, and siding combinations. In addition, information is given on tools, estimating, ordering material, preparing the house, and cutting the siding panels. Write (enclosing $1.00) to: Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

Porcelain Enamel Specification Adopted

Specification for Architectural Porcelain Enamel on Steel for Exterior Use has been recently adopted by the PEI. Based on the experiences and recommendations of manufacturers and industrial authorities, the 4-page standard includes detailed requirements for the base metal, processing, the finish, panel flatness, and clips and attachments. Methods for testing weather resistance of the porcelain-enamel finish are described—an acid spot test for all surfaces, and a cupric sulphate test for red, yellow, and orange porcelain enamels. Supplementary considerations—concerning gloss, color, texture, thickness of the metal, and shop drawings—although not part of the specification, are offered as an aid to those specifying architectural porcelain enamel. Porcelain Enamel Institute, 1145 19th St., N. W., Washington 6, D. C.

On Free Data Card, Circle **200**

Self-Forming System *For Floors and Roofs*

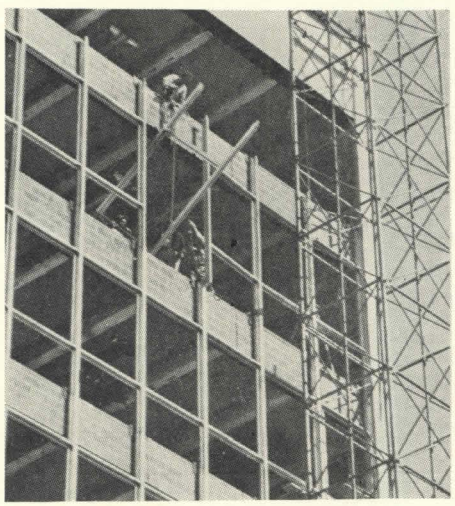
Self-forming floor and roof system that combines the advantages of precast and cast-in-place construction is presented in 24-page bulletin. System is composed of three components—joists (patented steel lattice enclosed in shallow 5″ x 2½″ base), lightweight-concrete block (in 4″, 5⅝″, 6″, and 8″ sizes), and poured slab (making a continuous, monolithic structure). Catalog shows installation techniques and structural details; gives complete load tables for floors and roofs varying from 6″ to 12″. Test results indicate high load-carrying capacity and high factor of safety. Complete specifications included. Omnia Industries Inc., 51 E. 42 St., New York 17, N. Y.

On Free Data Card, Circle **201**

DOORS/WINDOWS

Aluminum Windows for Nonresidential Uses

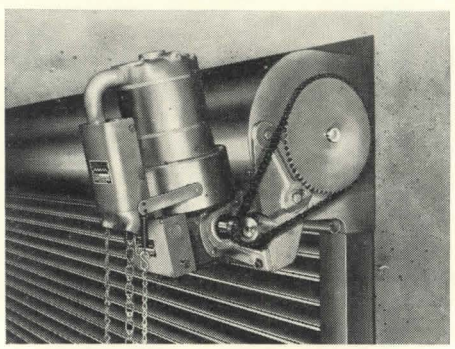
New catalog of aluminum custom windows and curtain walls is available. Containing 36 pages, catalog presents scale details, features, and specifications for its full line of products. "Adlake" windows, emphasizing the economy of quality, are intended for nonresidential structures, and include reversible, double-hung, single-hung, projected, and stationary types, curtain walls and spandrel panels. Adams & Westlake Company, Elkhart, Indiana.



On Free Data Card, Circle **202**

Rolling Doors for Various Openings

Rolling doors in steel or aluminum are presented in 36-page *Bulletin 104,* which includes full line by manufacturer who originated the interlocking-slat curtain almost 60 years ago. Types of doors illustrated in comprehensive catalog are rolling service doors, rolling grills, fire doors, counter shutters, bifold doors, and sectional overhead doors. Various methods of operation are available. The Kinnear Manufacturing Company, Fields Ave., Columbus 16, Ohio.

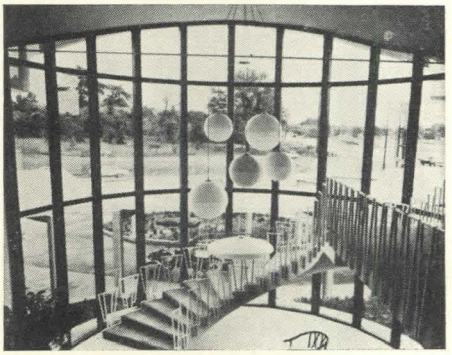


On Free Data Card, Circle **203**

ELECTRICAL EQUIPMENT

Large Collection of Lighting Fixtures

New 64-page catalog presents extensive collection of lighting fixtures designed with architectural applications in mind. Suspended fixtures, wall fixtures, and chandeliers are depicted in photographs and line drawings and accompanied by complete design data. "Rotaflex" plastic globes, handsomely designed in a variety of colors and shapes, are fully described. The Heifetz Company, Clinton, Conn.



On Free Data Card, Circle **204**

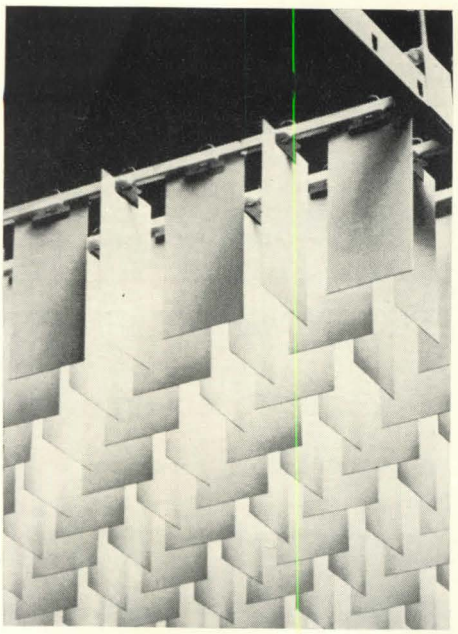
Data on Floodlighting

Series of five 1-page bulletins describes proper layout of G-E floodlights in sports areas, for high-rise buildings, for storage and materials-handling areas, for loading and unloading platforms, and for football fields. All necessary data—on mounting height and spacing, footcandle levels, type of lamps—are given for each application. General Electric Company, Schenectady 5, N. Y.

On Free Data Card, Circle **205**

New Patterned System For Luminous Ceiling

A new luminous-ceiling system featuring color, texture, and pattern has been designed. Called "Leaf-Lite," it has a multiplicity of 3″ x 6″ leaves in baked enamel on steel or aluminum, suspended from supporting channels



spaced 3″ o.c. The over-all texture shimmers and varies as the viewer moves. Installation is simple, and when in place, the many separate leaves are locked tight and do not move or rattle. Folder, 6 pages, shows components, and illustrates several existing installations. Luminous Ceilings, Inc., 3701 N. Ravenswood Ave., Chicago 13, Ill.

On Free Data Card, Circle **206**

Downlites and Troffers Are Catalogued

Lighting Equipment with Predictable Performance, 12 pages, handsomely illustrates some of manufacturer's fluorescent and incandescent luminaires produced for architectural applications. Information included with sketch of each model are type of trim, appropriate lamp, dimensions, optional features, control medium. General use of various types of lighting—downlites, troffers, and panelites—is indicated. Gotham Lighting Corporation, 37-01 31st St., Long Island City 1, N. Y.

On Free Data Card, Circle **207**

FINISHERS/PROTECTORS

New Water Repellents For Masonry

Superior performance in masonry water-repellent formulations is achieved with new "Dri-Film" silicone resin, states 8-page booklet. Use of the new and improved silicone water repellents is fully discussed, and standard specification form is included. Publication also outlines common causes of masonry damage—efflorescence, staining, and spalling—and shows how the new water repellents act to prevent such damage. Silicone Products Department, General Electric Company, Waterford, N. Y.

On Free Data Card, Circle **208**

INSULATION

Versatile Insulation for Thermal/Acoustical Use

Superior thermal and acoustical characteristics of "Fine-Fyber Felt" insulation are presented in new 4-page technical bulletin. The versatile, lightweight material is designed for service from sub-zero temperatures to 450 F; it is non-corrosive, moisture resistant, and fire resistant. Tables list the acoustical efficiency of the insulation, the various factory-applied facings available, and the thermal conductivity of the six standard densities that range from ½ to 3 lb/cu ft. Photographs show how the flexible insulation can be wrapped around a duct with only one longitudinal joint to seal. Widths of rolls range from 24″ to 72″. Baldwin-Ehret-Hill, Inc., 500 Breunig Ave., Trenton 2, N. J.

On Free Data Card, Circle **209**

Complete Line of Acoustical Products

New 1960 *Acoustical Products Catalog,* 20 pages, is now available. Illustrated and described are the four textures of Forestone wood-fiber acoustical ceiling tile, Forestone ceiling board and roof deck, standard-drilled roof deck and acoustical tile, random-drilled acoustical tile, fissured mineral tile, metal acoustical units, perforated cement-asbestos board, and perforated hardboard. Tables of technical information and physical characteristics, specifications, installation pictures and mounting suggestions are included in the reference book. Simpson Logging Company, 2033 Washington Building, Seattle 1, Wash.

On Free Data Card, Circle **210**

Vermiculite Fill For Masonry Walls

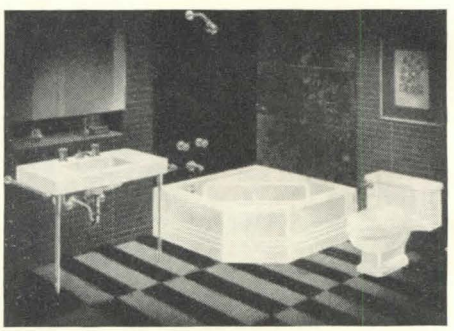
Facts about the new water-repellent vermiculite fill for insulating masonry walls in homes and commercial buildings are presented in 4-page folder The rigorous water-permeability and heat-transfer tests given the fill are outlined. Comprehensive tables of heat-transmission coefficients are shown for cavity walls of brick, tile, or stone; for backup walls with different facings; and for concrete block walls built with various block sizes. Also included are a coverage table and a short-form specification. Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill.

On Free Data Card, Circle **211**

SANITATION/PLUMBING

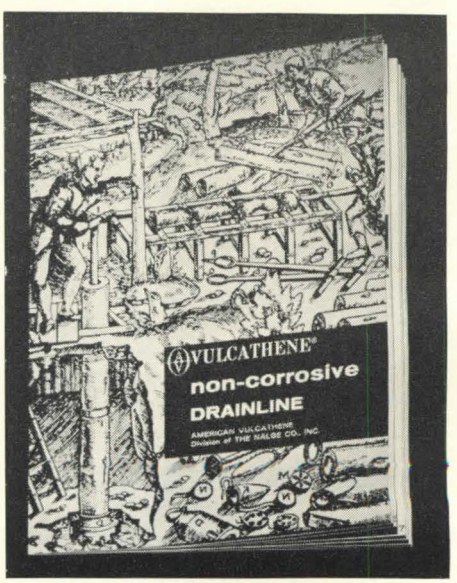
Residential/Commercial Plumbing Products

Condensed catalog of plumbing products, emphasizing residential and small commercial equipment, is available. *Catalog PT-60,* 32 pages, follows the basic format of the award-win-



ning complete catalog, with fixtures and fittings co-ordinated on each page for easy reference. Plumbing & Heating Division, American-Standard, 40 W. 40 St., New York 18, N. Y.

On Free Data Card, Circle **212**



Plastic Drainage System

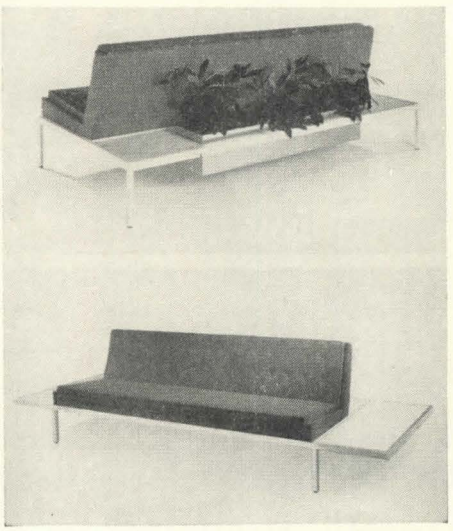
New 20-page engineering and parts catalog shows "Vulcathene" as a permanent waste and drainage system of plastic plumbing equipment that completely resists acids and corrosion.

Catalog covers sinks, traps, pipe and fittings, adapters, and other products; includes section on "polyfusion" method of joining Vulcathene pipe and fittings. Technical and dimensional information, and installation notes, are provided. American Vulcathene Division, The Nalge Company, Inc., 75 Panorama Creek Dr., Rochester 2, N. Y.

On Free Data Card, Circle **213**

SPECIAL EQUIPMENT

Furniture Collection For Public/Office Areas

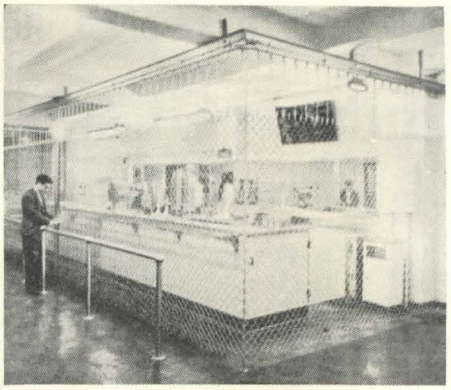


New 52-page catalog and price list of contemporary furniture is now available. Designed by William Armbruster, Architect, the collection includes lounge chairs, settees, planters, benches, tables, multiple-seating systems, desks, cabinets, chairs, and conference tables—all necessary pieces for public areas, executive offices, institutional and commercial interiors. The line is characterized by sensitivity to scale and function, clean detailing, and simple forms. Catalog, too, is handsomely designed and features unusual close-up photos of furniture craftsmen at work. Edgewood Furniture Company, Inc., 334 E. 75 St., New York 21, N. Y.

On Free Data Card, Circle **214**

Protection of Openings With Sliding Grills

New 4-page brochure, *Sliding Grills*, consists of detail drawings, specifications, suggested applications, and photographs of typical installations. Of steel or aluminum, the sliding grills effectively protect an opening or area with a flexible, unobtrusive barrier at a reasonable cost. Typical uses are at parking garages, cafeteria counters (shown), shopping arcades, storage bins, and loading platforms. There are no size or width limitations, and units may be divided into sections of any width. Cornell Iron Works, Inc., 36th Ave. & 13th St., Long Island City 6, N. Y.



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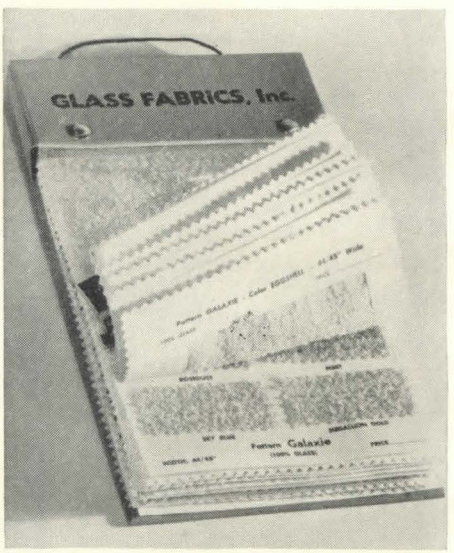

Sample Book of Architectural Draperies

New collection of architectural glass-fiber drapery fabrics has been published, showing 128 fabrics in sheer marquisettes, nubby bouclés, and rugged textures. A complete color range is available in each weave. The new fabrics help to control solar heat, diffuse light, and muffle sound. Maintenance *costs are low.* Glass Fabrics Inc., 620 N. Almont Dr., Los Angeles 46, Calif.

On Free Data Card, Circle **216**

Facts and Figures on Lightning Protection

The hazards of lightning, and the means of protecting life and property against them, are discussed in new

You get more architectural value with

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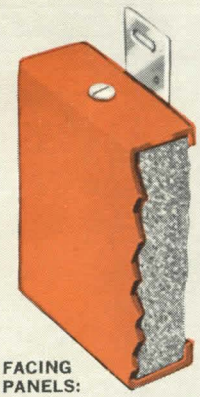
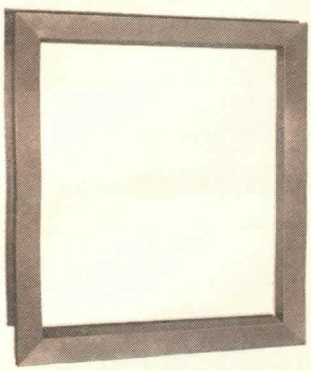
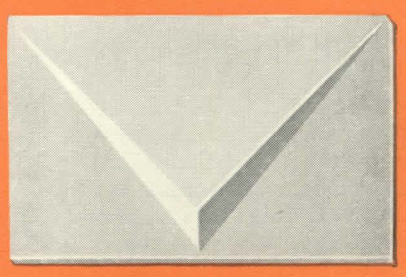
ARCHITECTURAL PORCELAIN



FACING PANELS:
Types — Vitrock filled and unfilled. Stainless Steel Fasteners.



WINDOW SURROUND:
Permanent, maintenance-free. Easy to install — all sizes for all type sash.



SCULPTURAMA PANELS:
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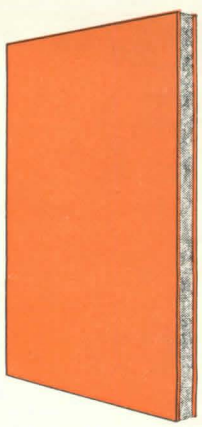
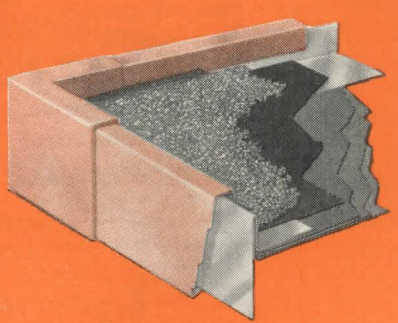
DECORATOR PANELS:
Functional and decorative — single or multi colors, stenciled and silk screened.



CURTAIN WALL PANELS:
Complete line of mechanically fastened, and laminated types.



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For more information, circle No. 316

20-page booklet. *Lightning Facts and Figures* explains in detail how lightning "happens," how often it is likely to strike in an area, and how particular structures should be protected against loss and damage. Booklet mentions the inferior lightning-protection systems that are peddled, and gives instructions for ensuring that an installation is properly designed. Lightning Protection Institute, 53 W. Jackson Blvd., Chicago 4, Ill.

On Free Data Card, Circle **217**

Handbook on Metal Framing

Unistrut Metal Framing Construction and Maintenance Handbook, 36 pages, is a comprehensive source of information on metal framing. Handbook gives complete application and installation data, specifications, and methods of attachment. Typical illustrations show practical applications of metal framing to support pipe, build rigid frames, support fluorescent fixtures, provide raceways, construct electrical substation structures, and mount equipment. All parts used in mechanical and electrical applications are shown with dimensions. Unistrut Products Company, 933 W. Washington Blvd., Chicago 7, Ill.

On Free Data Card, Circle **218**

Novel Designs With Chalkboard

New Directions in Chalkboard, 16 pages, illustrates many new classroom applications of "Colorlith" chalkboard. Suggestions include freestanding partitions, easel-reversible units, door and wall surfacing, movable panels, and convertible units that combine table surface, tackboard, and chalkboard in one compact assembly. Brochure also contains data on physical properties of the material—which is composed of cement, asbestos, and selected pigments—as well as architectural specifications. Johns-Manville Corporation, 22 E. 40 St., New York 16, N. Y.

On Free Data Card, Circle **219**

34" x 48" Print In 40 Seconds

New "Kecofax Projector-Printer," first electorstatic system capable of making prints from 8½" x 11" to 34" x 48" from miniature negatives, is described in 4-page bulletin. Print-size limit for previous equipment of this type was 24". Operation of the unit is completely automatic, and a finished print is produced in 40 seconds. The equipment is adaptable to 35 mm., 70 mm., or 105 mm. negatives. Keuffel & Esser Company, Third and Adams Sts., Hoboken, N. J.

On Free Data Card, Circle **220**

SURFACING MATERIALS

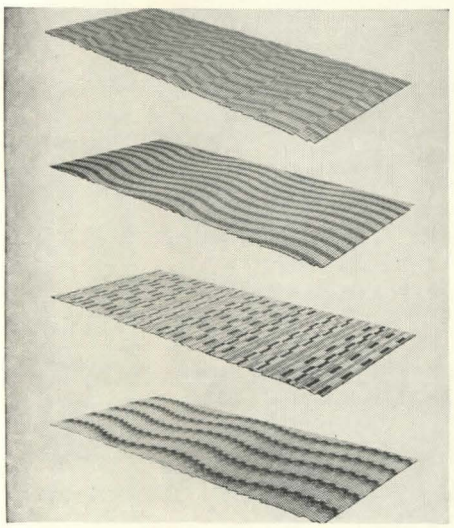
New Serpentine Pattern For Ceramic Floors

New "Serpentine" pattern in floor tiles is introduced in 4-page brochure.

Continued on page 106

Continued from page 100

Several different and distinctive designs, available in many color combinations, are shown. Serpentine design is made possible for economical commercial installations by manufac-



turer's patented "Setfast" method of mounting the tile. Individual tiles, 1" x 1" or 2" x 2", are set face up in large sheets; the tile setter can work more quickly and can be certain beforehand that all units are properly positioned in the over-all design. Department P, Cambridge Tile Manufacturing Company, Cincinnati 15, Ohio.

On Free Data Card, Circle **221**

Full-Color Reference On Complete Tile Line

New full-color catalog of the "Vico" line has been published, providing visual information on all ceramic-tile designs—mosaic, buckshot, random, spiral, and glazed. Patterns and colors are shown for wide variety of installations—bathrooms, fireplaces, store fronts, kitchens, and furniture. The Amsterdam Corporation, 285 Madison Ave., New York, N. Y.

On Free Data Card, Circle **222**

Resilient Flooring Facts and Patterns

Facts and Data on Resilient Floors, 46 pages, details all important factors in selecting correct resilient floor and wall coverings. Wire-bound booklet answers typical architect-client questions, and provides technical data on preparation of underfloors, installation, and maintenance. Complete line of patterns is illustrated. Congoleum-Nairn Inc., 195 Belgrove Dr., Kearny, N. J.

On Free Data Card, Circle **223**

Guide to Use of Felt

New guide describes the varied uses of the 800 types of specially-designed "A-Plus" felts for industrial and decorative uses. Illustrated booklet, 8 pages, describes the many felts—standard, laminated, coated and impregnated—that meet particular needs of spacing, padding, vibration isolation, sound absorption, percussion control, thermal insulation, and decorative surfacing. American Felt Company, Glenville, Conn.

On Free Data Card, Circle **224**

PROGRESSIVE ARCHITECTURE
NEWS REPORT
REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE NEW YORK 22, N.Y.

Publisher.....D. Bradford Wilkin
Editor.....Thomas H. Creighton
News Editor.....James T. Burns, Jr.

November 1960 **PROGRESSIVE ARCHITECTURE**

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE, NEW YORK 22, NEW YORK

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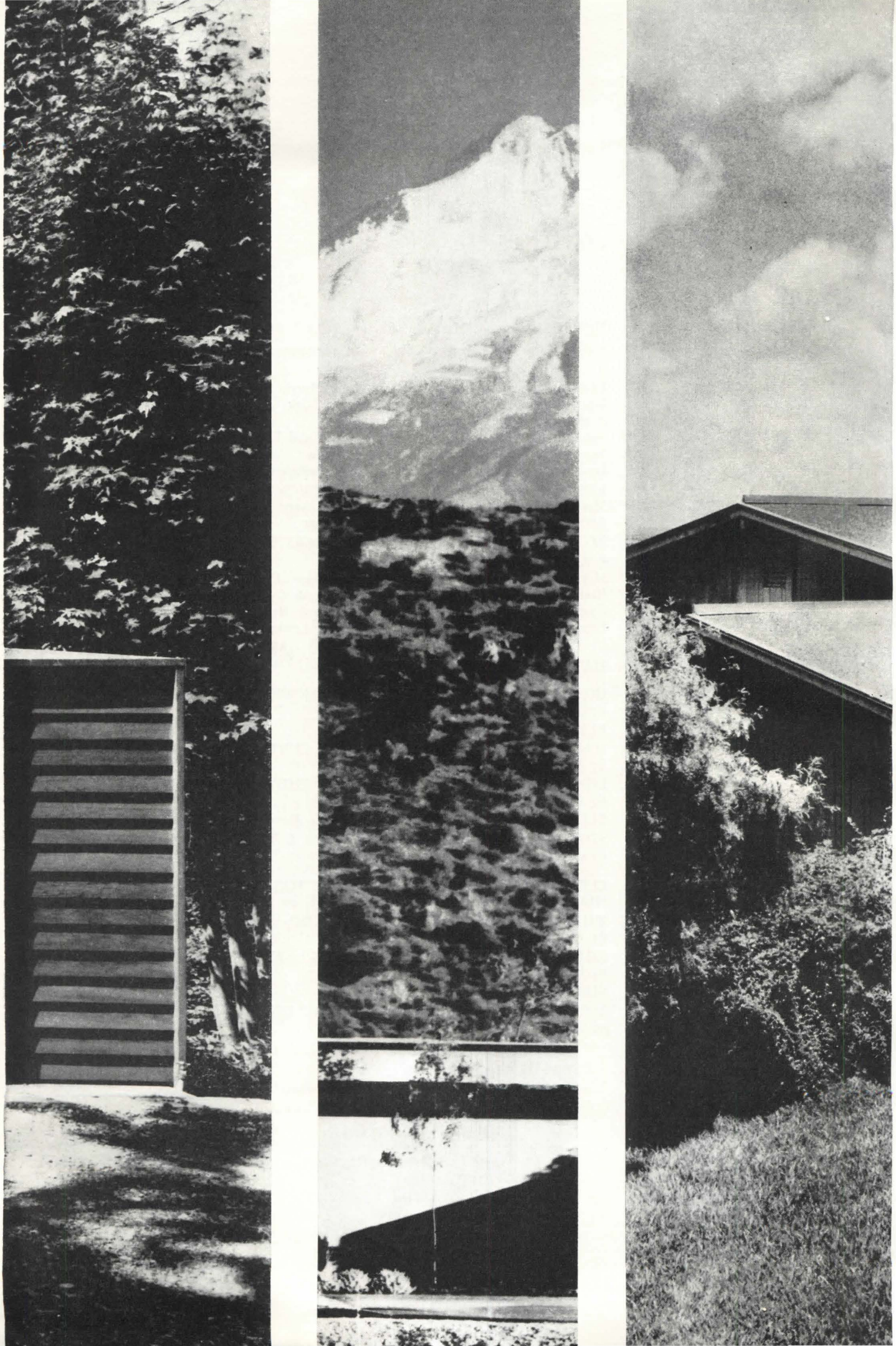


PLACES PEOPLE & HOUSES

BY JOHN MORRIS DIXON

In the 1930s and 1940s, when Form still followed Function, many architects and critics advocated the development of regional styles of architecture; by this they meant that design and choice of materials should reflect geographical differences—especially differences of climate and economy.

Buildings in the north were to be compact and insulated, with large openings to the south; southern buildings were to be open to the breezes, with high ceilings and broad overhangs. Economy would dictate the use of locally-produced materials.

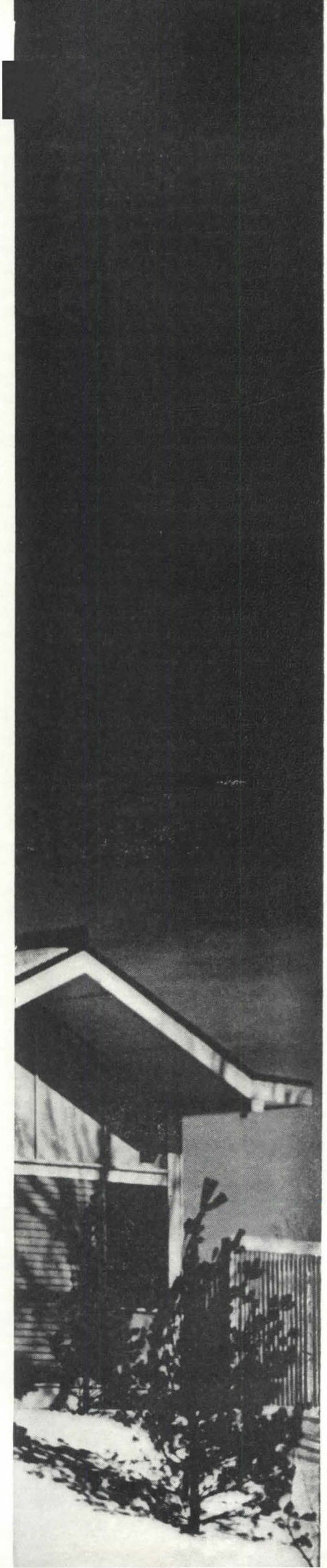
Progress in technology, however, has rendered these principles very nearly obsolete. Air conditioning, insulating glass, and other devices have made it possible to manipulate interior comfort without affecting design. Marketing of standardized materials on a nation-wide basis has largely eliminated the economic advantages of local materials.

In large commercial, industrial, and public buildings the effects of regionalism were never strong; by now technological advances have virtually eliminated them—except for the increased use of the sun screen in warmer climates.

In residential design, regional differences have been more persistent. The house is still likely to reflect regional and local variations in materials and techniques, climate, and living habits.

Materials and Techniques

Houses continue to lag behind other building types in the technology of their construction. House-building remains a locally varying craft despite the efforts of the prefabricators and the advocates



of geodesic domes or poured shells. The structure of a house does not demand the precision of mass-produced components. Local woods, stones, bricks, or tiles which are not widely distributed are *often* economically and functionally suitable for residential use.

The capabilities of local workmen are often of crucial importance in the construction of a house. Merely through repeated application, certain structural types have become economically advantageous in certain regions. Throughout most of the country, outside of the metropolitan centers, the tradition of the wood frame is dominant; use of steel frame or even post-and-beam wood construction may necessitate importing labor.

In some areas new "traditions" have evolved through the repeated specification of certain materials or methods, often due to capricious circumstances. In parts of the Southwest, for instance, the local activities of concrete block manufacturers have made block construction the most popular, hence the most economical, technique.

Climate

The use of air conditioning for houses is often economically unjustifiable; in the typical naturally ventilated house, interior comfort still depends on the adaptation of design to climate. Even where air conditioning is used, there is a need to minimize operating costs of heating and cooling equipment.

It is also desirable for the occupants to *feel* comfortable. A man coming into a house from the heat of a Georgia afternoon must feel that the sunlight is screened out, that the surfaces around him are cool, and that there is plenty of air around him.

Living Habits

House design is uniquely sensitive to regional differences in living habits and attitudes. Family life does vary from region to region—in the frequency and formality of entertaining; in the degree to which cooking, sleeping, and study functions are isolated from living spaces; in the proportion of living which is carried on outdoors. The distinctions are not clearcut, and factors of social and educational status and ethnic background are involved. In a general way, however, there are regional distinctions—the West is inclined to entertain informally, and the South formally; the Northeast is less inclined to entertain at all.

In the past two decades, however, the accelerated geographical movement of people and the mushrooming of the suburbs have done much to blot out regional variations in all ways of life.

In *The Organization Man*, William H. Whyte, Jr., speaks of the trend toward uniformity: "The more people move about, the more similar the American environments become, and the more similar they become, the easier it is to move about.

"More and more, the young couples who move do so only physically. With each transfer the *décor*, the architecture, the faces, and the names may change; the people, the conversation, and the values do not—and sometimes the *décor* and the architecture don't either."

It is important to note, however, that Whyte is discussing only a certain segment of the population—the families which move from place to place periodically as part of a planned career program, just as Army families do. These transient "organization" people are not misfits—in many ways, as he points out, they appear to represent the future—but they are not yet in the majority.

Max Lerner, in his *America as a Civilization*, assures us that regional ways of life do persist, but only in certain fields not yet subservient to mass media:

"The standardizing trend is stronger in America now than it has ever been. It is largely a by-product of American technology. The regional differences are obviously diminishing. Hartford, Atlanta, Wilmington, Akron, Dallas, Denver, and Seattle have more in common than they had a quarter century ago, and this is even truer of the suburbs around them and the small towns that dot them. . . .

"A distinction may be useful here between what relates to society, or the social structure, and what relates to the culture or the community ways. In their structure as a society—in their business and labor trends, their machines and machine living, their class directions, in transport, in distributive systems, in their use of the big media, in advertising and salesmanship, in consumers' goods and processed food—the regions are being fused into a national standardized pattern. It is this pattern that one sees in magazines and movies and on TV. But in whatever concerns group life, race relations and attitudes, legal customs, architecture and building, walk and talk, song and dance, the arts, the pace of living, in the use of leisure time (except for the big media), in the life of the mind, in prejudices and loves and hates, in the way people grow up and die and the way they feel about the place where they live, the regions still retain or are capable of autonomous creativeness. The process of erosion goes on here *too but* less swiftly than in the more external social forms that are being standardized."

A Fourth Factor

The design of houses, then, may legitimately reflect regional differences of materials and techniques, climate, and living habits. But, as the houses on the following pages illustrate, there seems to be a fourth major factor which differentiates houses by region; this factor is related to the past.

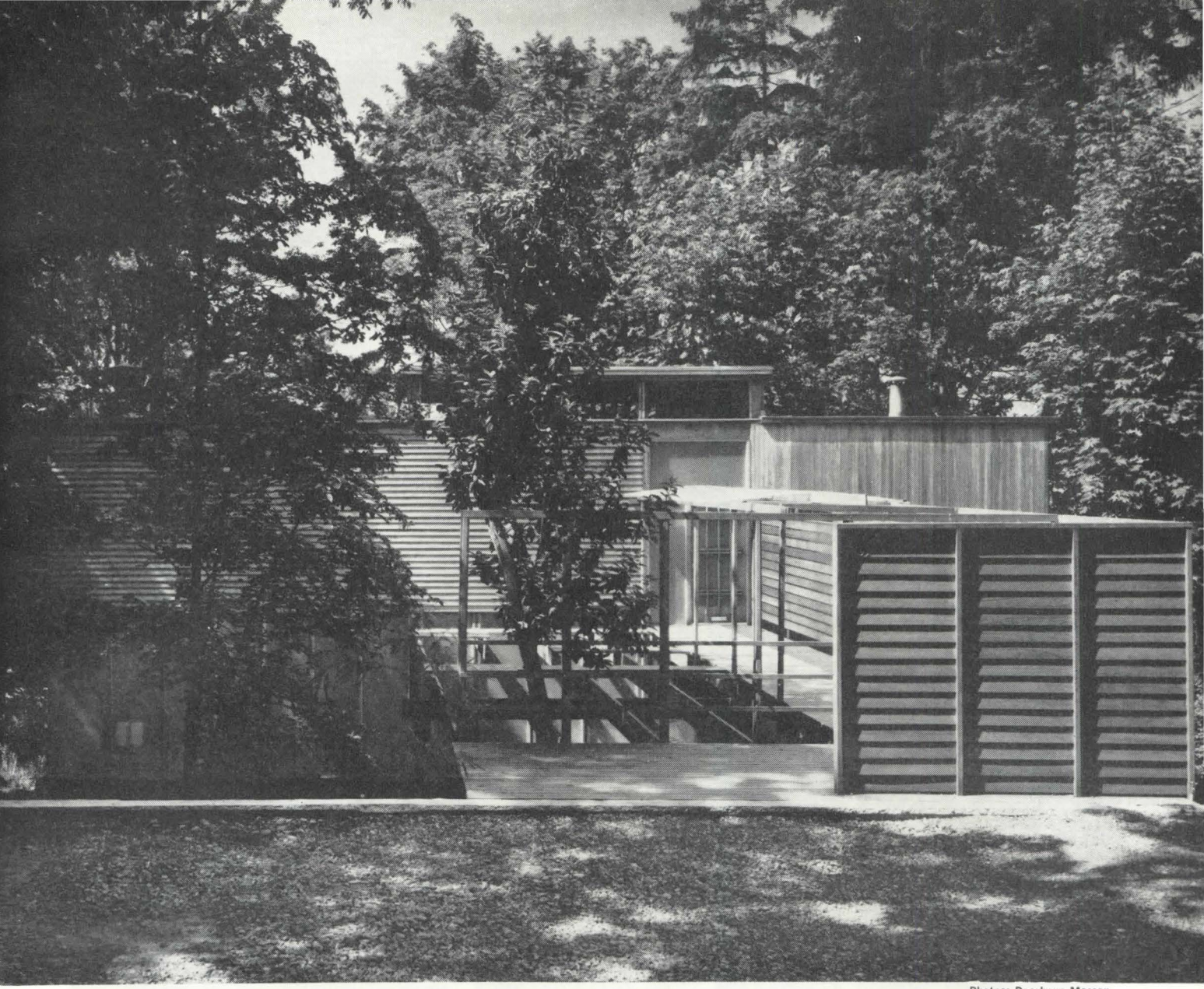
The Functionalists would not have admitted the possibility of regional traditions—that there might be affinities for certain forms in certain regions. But now that faith in the literal translation of function has been undermined—now that Neo-Classicism, New Brutalism, and New Sensualism have appeared—it is easier to admit that a building may be molded to meet stylistic preconceptions.

If we see two-story-high white columns supporting a veranda, for instance, they suggest the South. Even though the columns may be of rolled steel sections (as in the house by Mark Hampton which appears in this issue), they constitute a visual symbol which would seem out of place in Akron, or Seattle, or Hartford.

The visual symbol is part of our concept of the region. Most of us find the conformity produced by modern technology and mass media unsympathetic. We cherish the idea of continuity of thought and custom within geographical areas. We see tall white columns and shady verandas in relation to the past experience of the place.

The obvious pitfall in relating forms to regions is that historical forms may be adopted for reasons of mere nostalgia, in the face of practical objections. If, however, the forms are functionally and economically justifiable, they make a positive contribution to the design. Conversely, if our white columns were to appear in Minnesota, for instance, no functional justification would make them seem at home (but merely painting them black might make them fit).

If we find satisfaction in the architectural manifestations of regionalism, it is because we would like to agree with Max Lerner that America "is richly diversified within its unmistakable and frightening conformities."



Photos: Dearborn-Massar

Pacific Constructivism

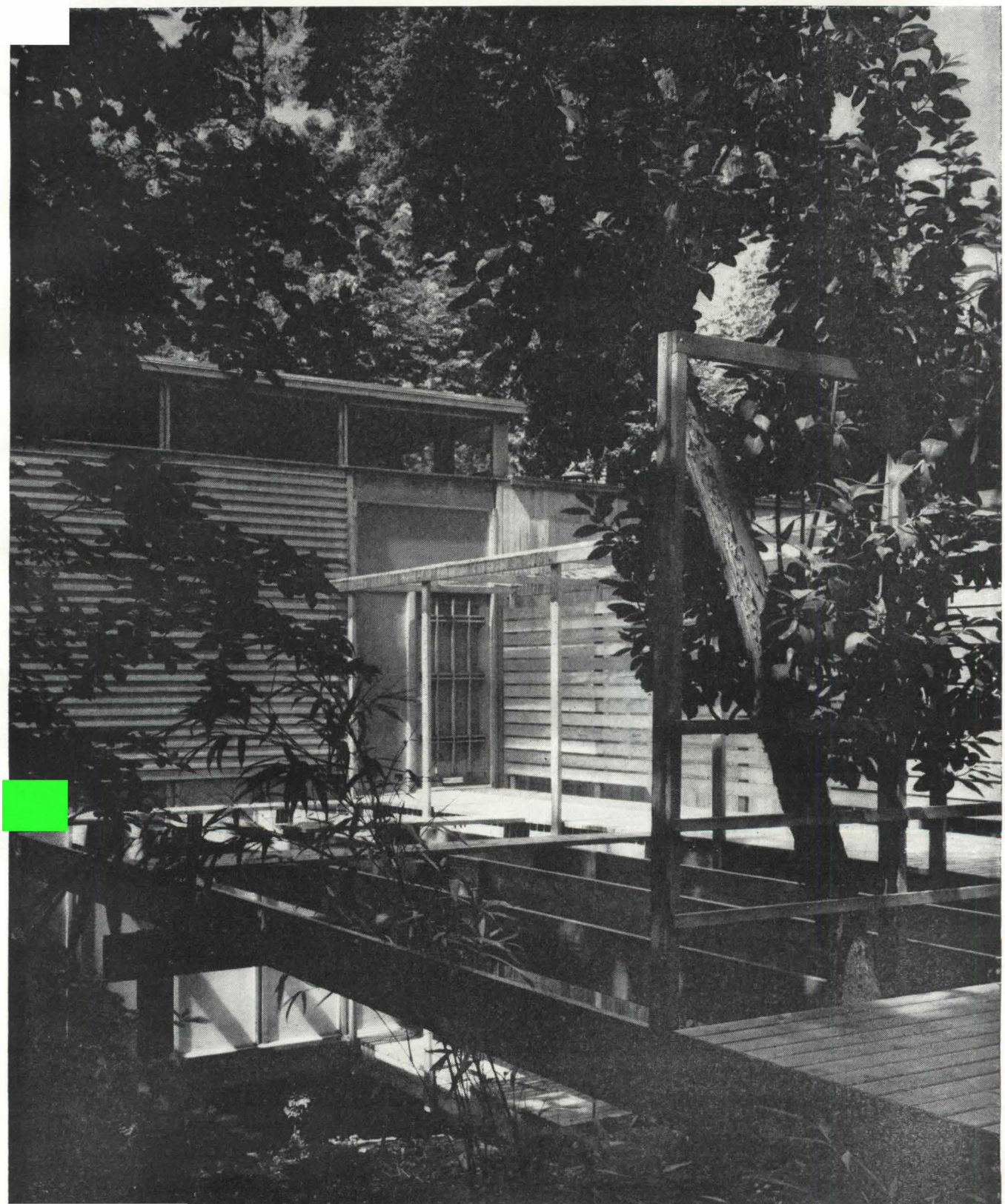
The Pacific Northwest was settled later than any other region of the country, largely by other Americans from the Midwest and the Plains; even today the bulk of newcomers are from these regions. One immigrant group, the Scandinavians, settled in significant numbers, mostly in Washington. Both the Americans and the immigrants were of rural backround and each brought a tradition of building in wood. In the Northwest they found a superabundance of timber and a climate ideally suited to the development of a wood architecture. The mild winters made it unnecessary to protect the ends of wood members from frost action or to burden the construction with insulating materials. The wood structure could be exposed and expressed, inside and outside. Trade with Japan, which began early in the region's history, contributed ideas on the esthetics of exposed wood structure. By the first decade of this century a clearly discernible Northwest style had emerged.

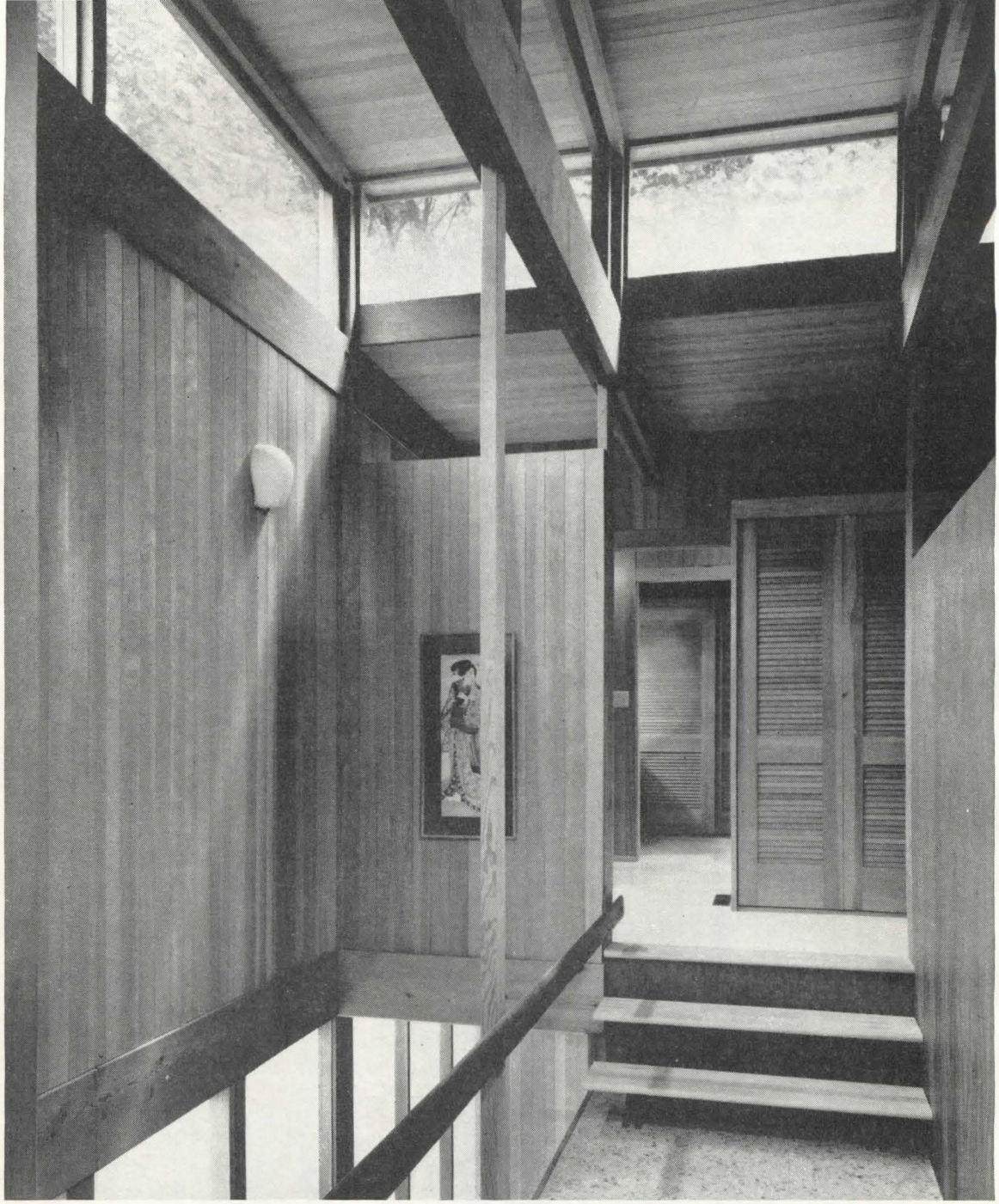
This style alone among our regional expressions has remained valid and continues to develop today. It is free of archeological influences and is consistent with 20th-Century esthetic movements; it has not yet become technologically outdated, at least for small buildings.

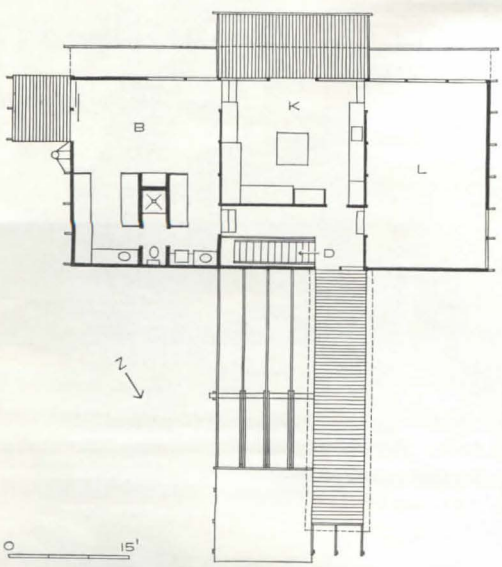
This little house at Mercer Island, Washington, designed by Architect Paul Hayden Kirk, is a particularly clear example of the articulated wood structure which is the essence of the Northwest style.

Little provision need be made for outdoor living in a climate where it is seldom warm and often rainy. The two balconies on this house are outdoor extensions of interior spaces, perched high above the moist undergrowth which flourishes around the house. The detail of these balconies illustrates the playful yet rational way in which Kirk is able to use the local hemlock, expressing the purpose of each member and joint. The lower floor, which has

been left unfinished on the interior, is raised above the ground to allow air circulation beneath it. A structure of joists and floor boards ties the plane of the entrance court to the main floor of the house; it is, in effect, a large wood sculpture, embellished by the planting which grows up through it. The walk to the entrance door, which overlooks this sculptural construction, is sheltered by a translucent plastic roof, so that none of the scarce sunlight will be kept out.



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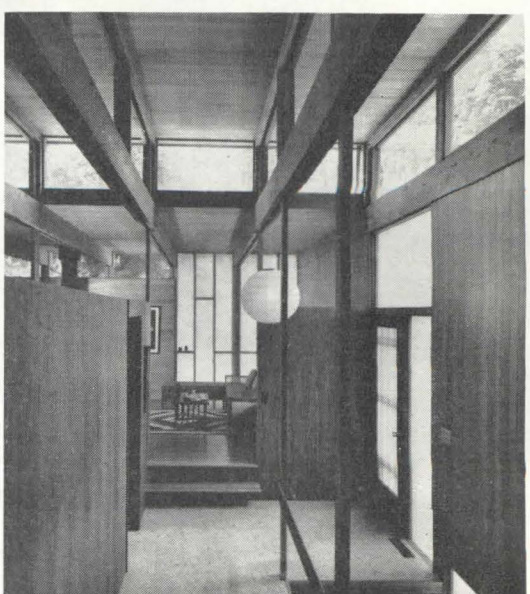
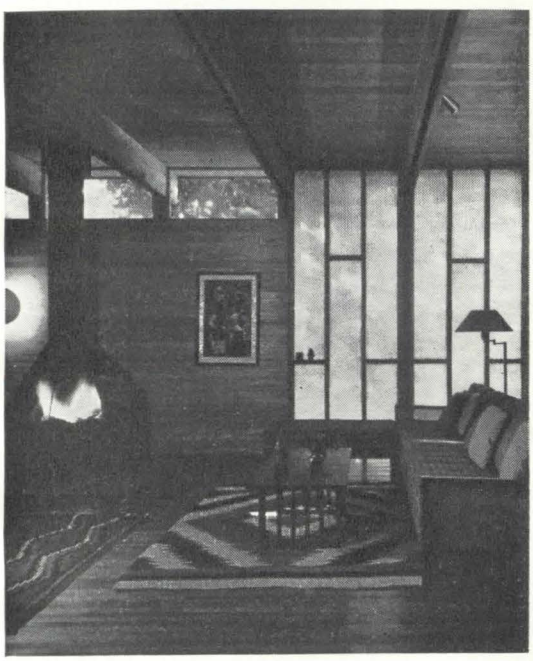
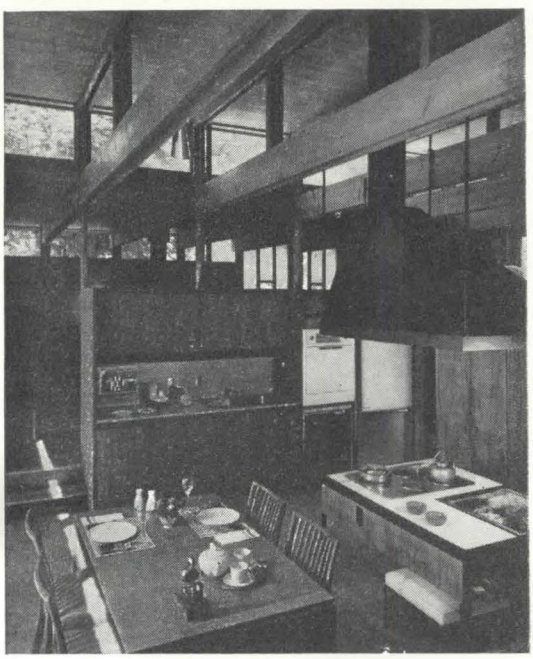
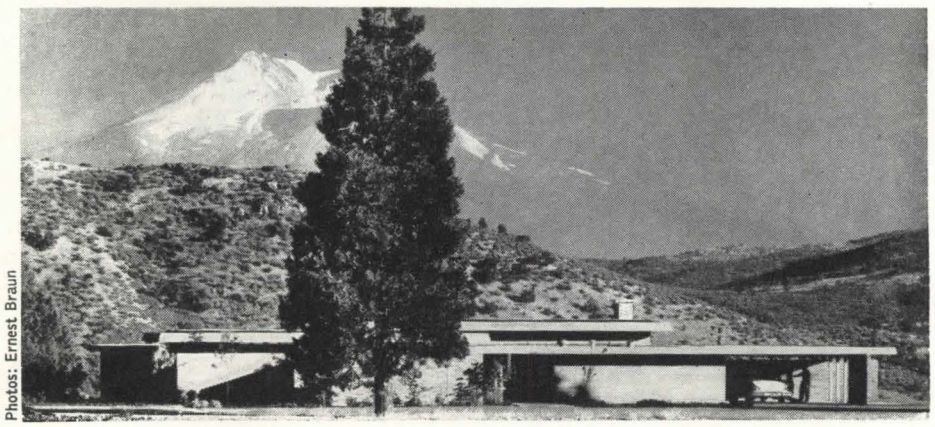






The articulation of the wood structure continues throughout the interior. Large areas of clerestory invite the sunlight and afford views of the treetops; the climate and the dense tree growth eliminate any need for sun control.

Since the house is occupied by a couple whose children have grown up and left home, it could be designed as one large room, with low partitions separating the living, cooking, and sleeping areas. The kitchen is at the center, its free-standing range with black metal hood recalling the stoves of farmhouses and logging camps. The views through the clerestories and into other spaces keep the compact interior from seeming constricted.



Photos: Ernest Braun

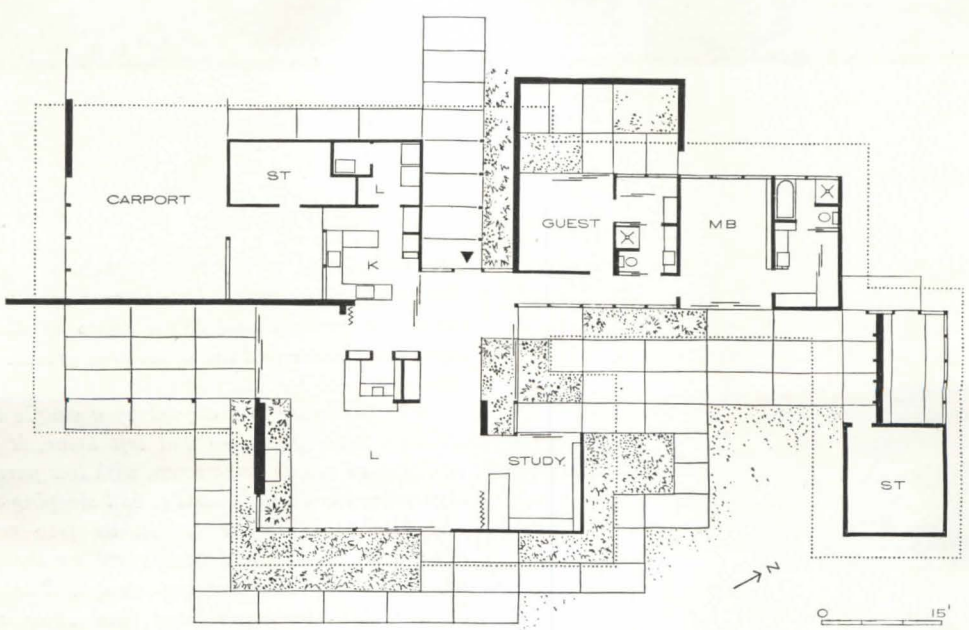
Bay Region Rarefied

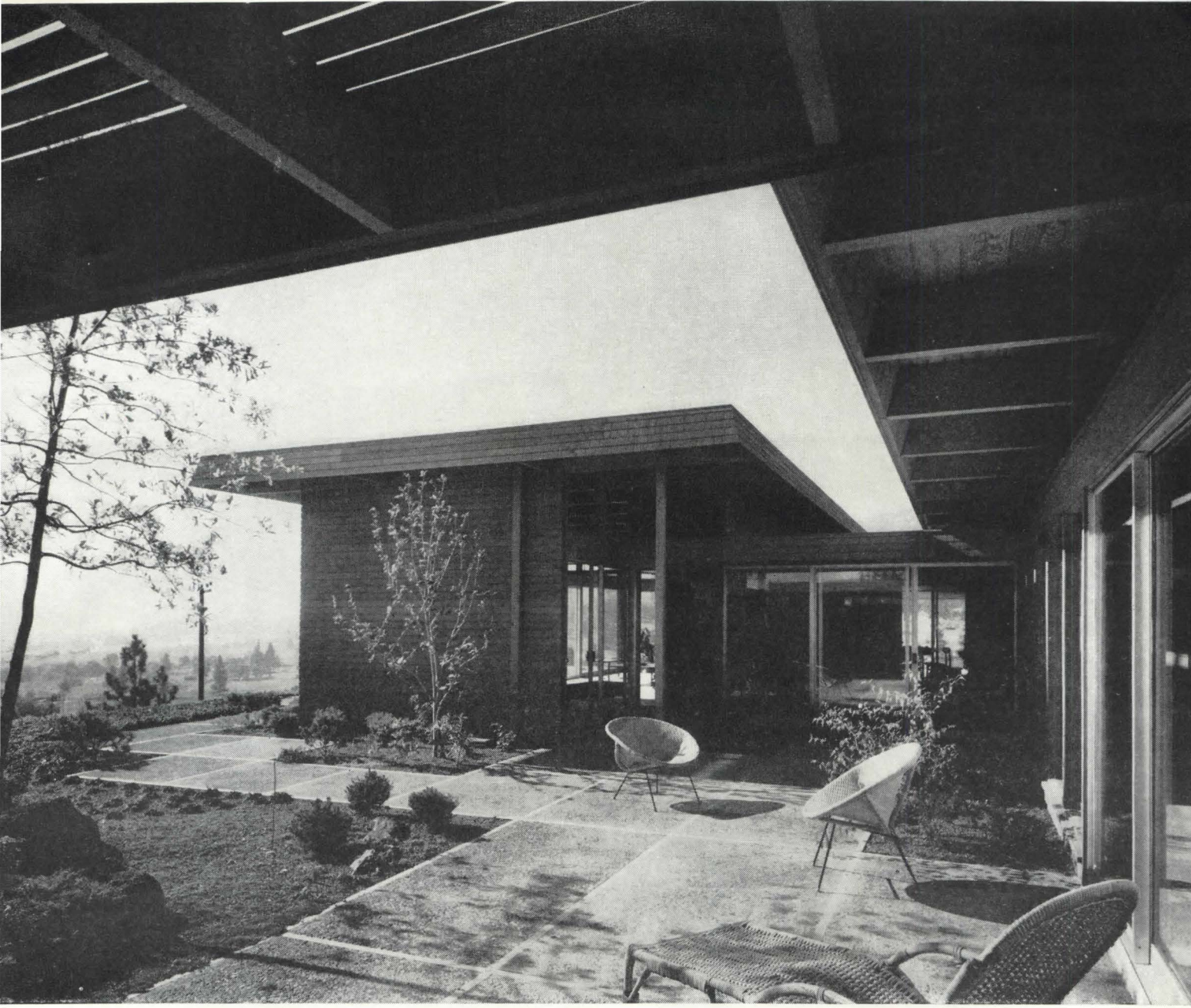
When Architect Roger Lee of Berkeley was commissioned to design a house for Yreka, near the northern border of California, he took his Bay Region approach with him. Yreka's mountain climate is nothing like the mild coastal weather of the Bay area; damp, freezing winters bring two to three feet of snow and summer temperatures range up to 95 degrees.

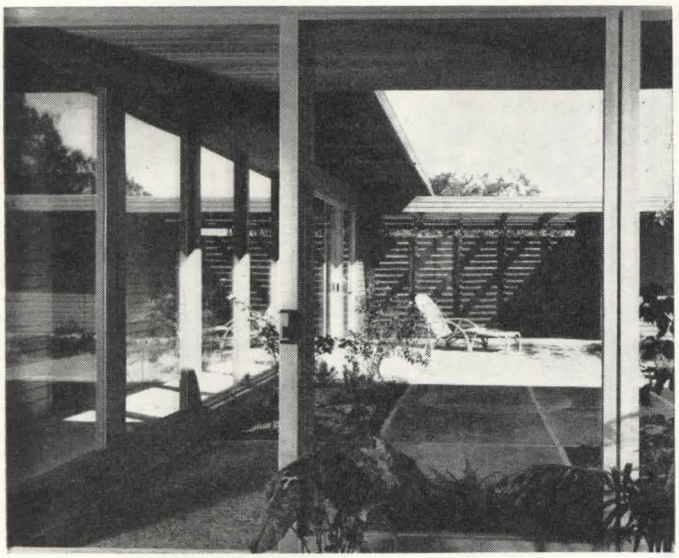
Nevertheless, the house was designed for indoor-outdoor living; each indoor space has a corresponding outdoor space, with a minimum of visual demarcation between them. The broad expanses of window-wall made double-thick insulating glass necessary, but paving materials and ground planting of the terraces continue into the interior.

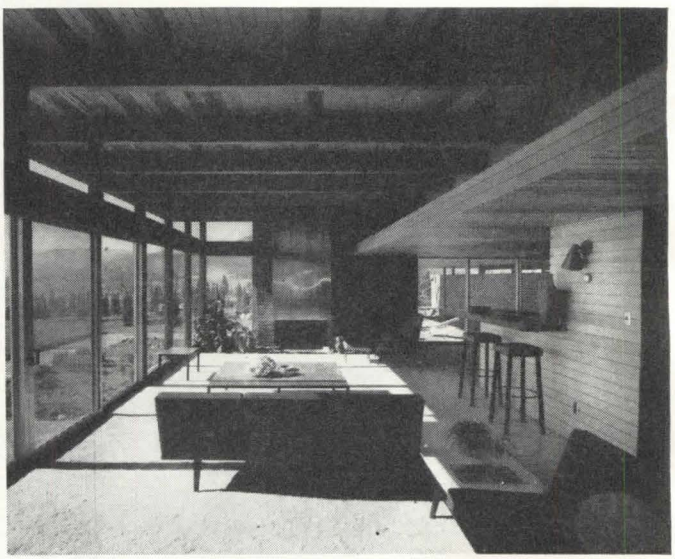
The site, at the top of a knoll, offers a fine view of Mt. Shasta; it is also exposed to strong westerly winds, which determined the placement of the terraces to the east and southeast, sheltered from the wind. These same breezes provide adequate natural ventilation for the interior throughout the hot summers.

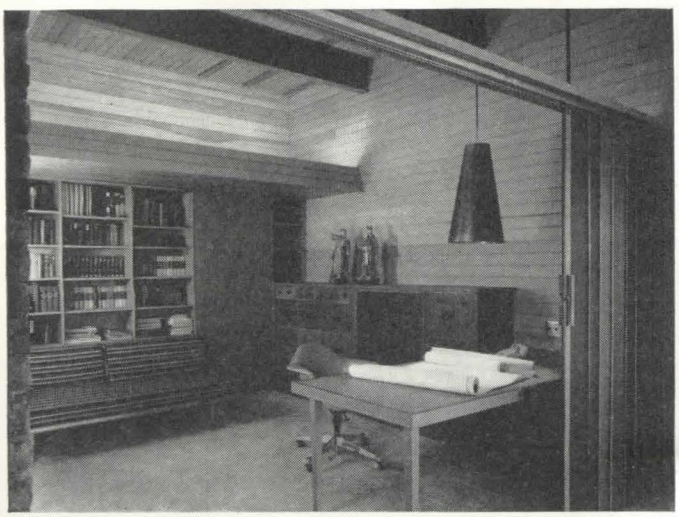
The house is built of locally-produced woods: Douglas Fir for the structure, white pine for the roof deck, and red cedar for exterior and interior siding.

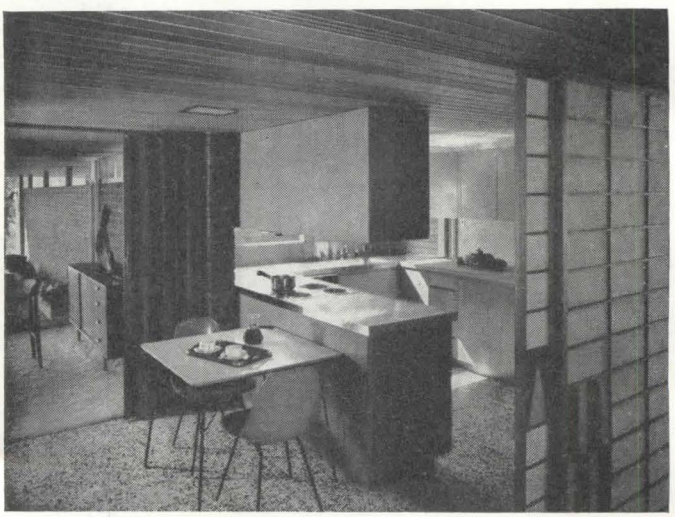












The surfaces and finishes of the interior are designed to emphasize the continuity of indoor and outdoor space. The living room is at the center of a large fluid space designed for informal entertaining. Only in a few areas, such as the study, is there a definite feeling of enclosure. The kitchen can be opened up to the rest of the interior and to courtyard views at the flick of a shoji.

Suburban Hacienda

Most of the houses in the wealthier suburbs of San Antonio express the economic growth and optimism of the Southwest in palatial plans and opulent materials; this house by two young architects, Robert Wilson Harris and E. B. Flowers II, attempts a more thoughtful expression of the place and its way of living.

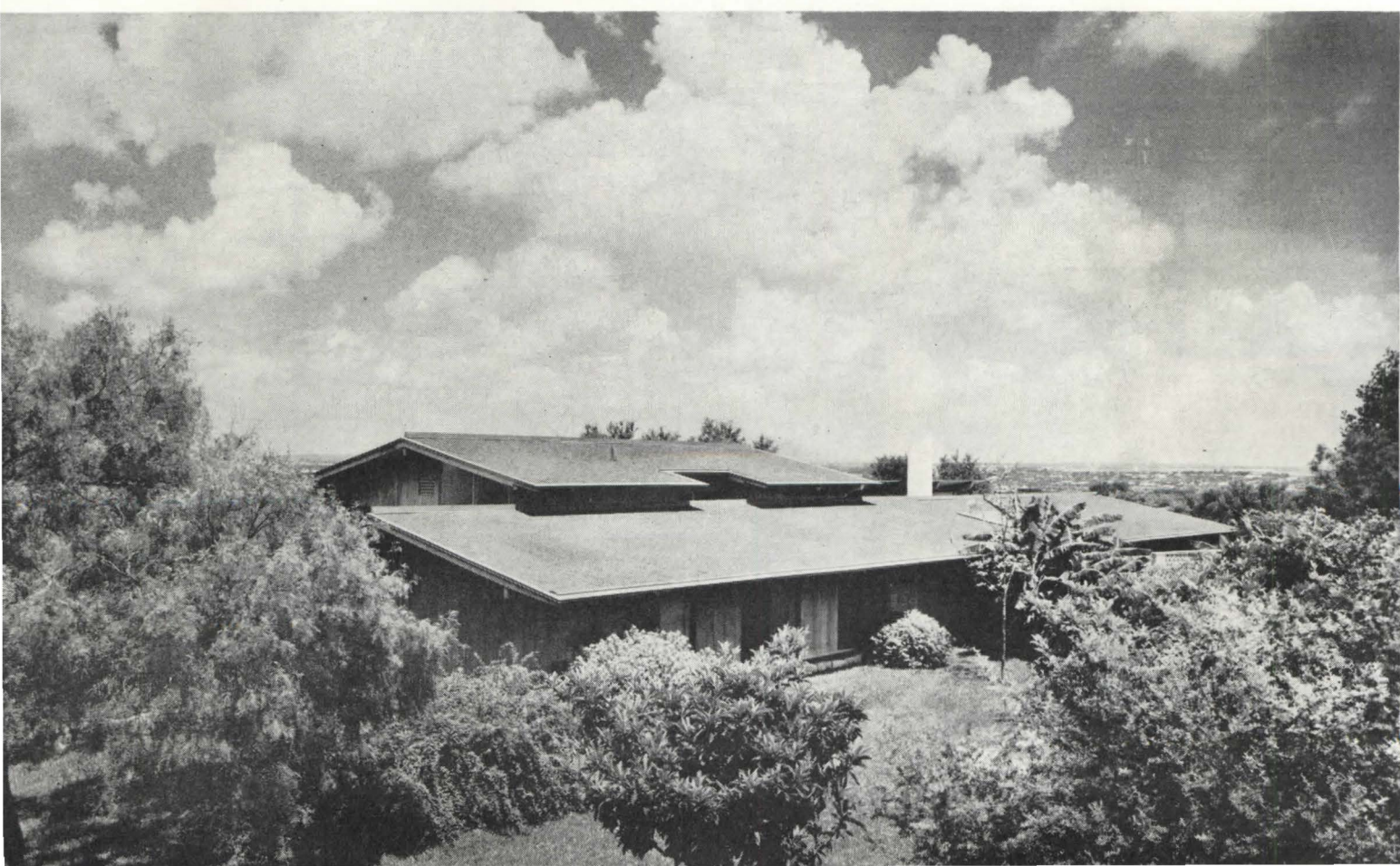
The house is low and sprawling, in the tradition of the real ranch-house. Its walls are of rough-sawn cypress boards; it uses old stone (from the same quarry which supplied the Alamo) for retaining walls. Its eaves are wide and low to keep out the summer sun.

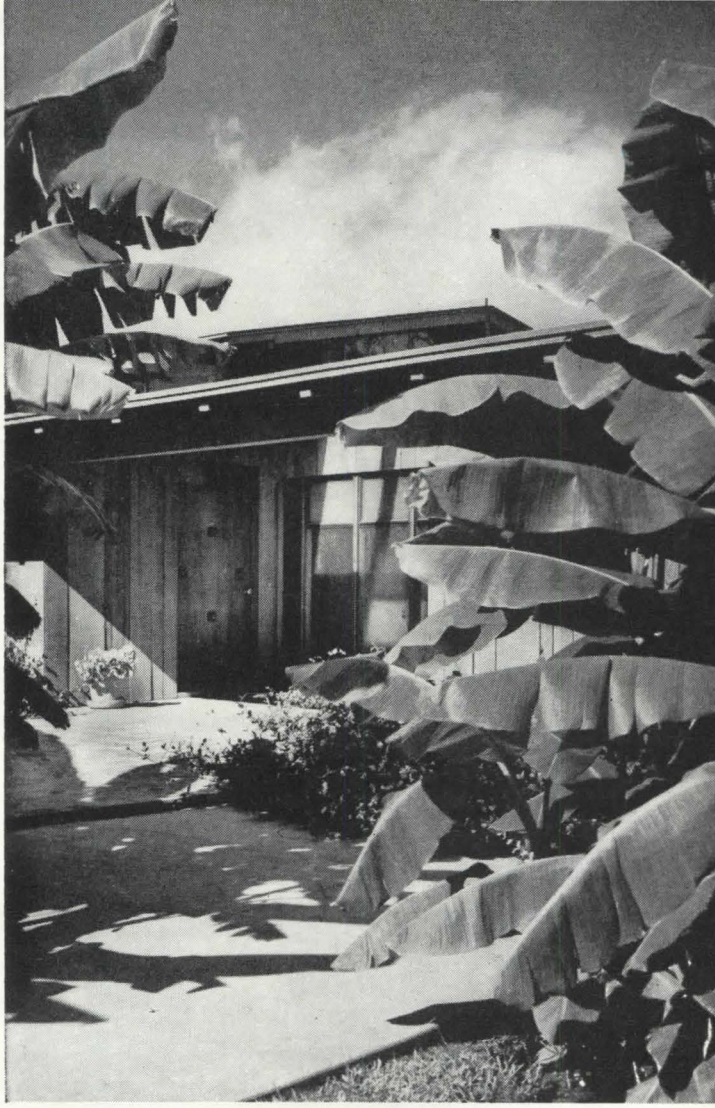
Although the occupants depend on the air conditioning for summer comfort, the absence of direct sunlight and the coolness of smooth, unadorned surfaces contribute to a feeling of comfort. When the weather is pleasant, the house can be opened wide. Outdoor living is relegated to a terrace beneath the bedroom wing, in the shelter of a stone retaining wall.

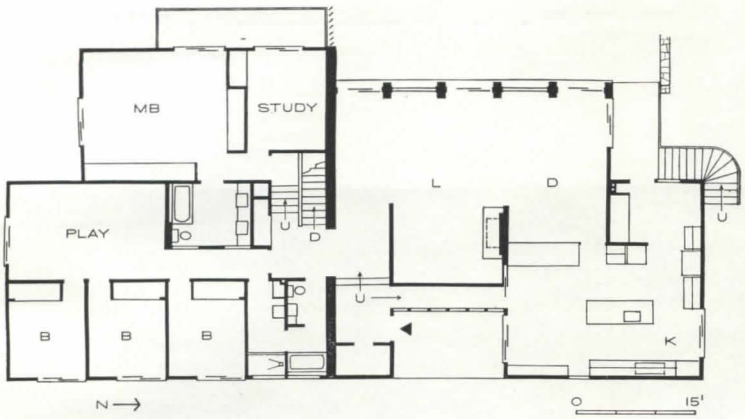
Photos: Roland Chatham

Interior spaces are planned informally, but divided into distinct areas. Living and sleeping areas are separated, visually and acoustically, by a massive stone wall; the parents' suite is at a higher level than the space where the five boys play and sleep.

The site offered an excellent view to the west, a fact which posed a problem since ideally there should be no openings toward the west in this locality. It was solved by providing deep overhangs and planting live oaks through which the view can be seen. Concrete columns along the west wall of the living room contribute to the feeling of shelter. The floors in the living areas are of Mexican clay tile, which is available locally. The fireplace is placed in a secluded alcove of the living room, to give a sense of warmth and enclosure in the winter months. The family entrance to the house is from the garage below (preceding page). *The entrance from the street is shaded by extended overhangs and banana leaves.*



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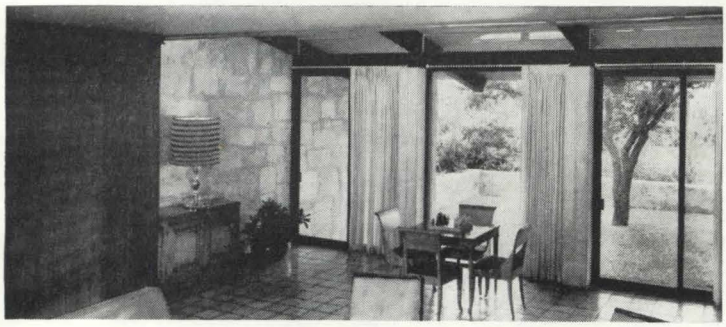
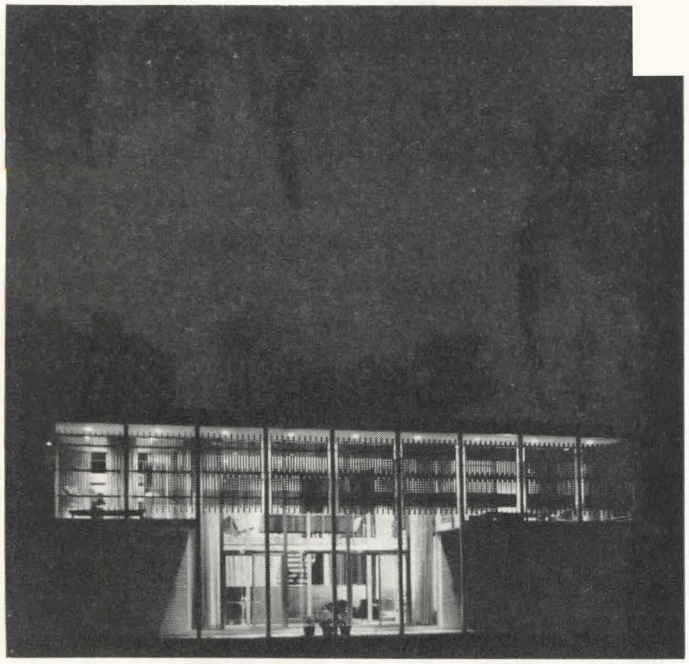
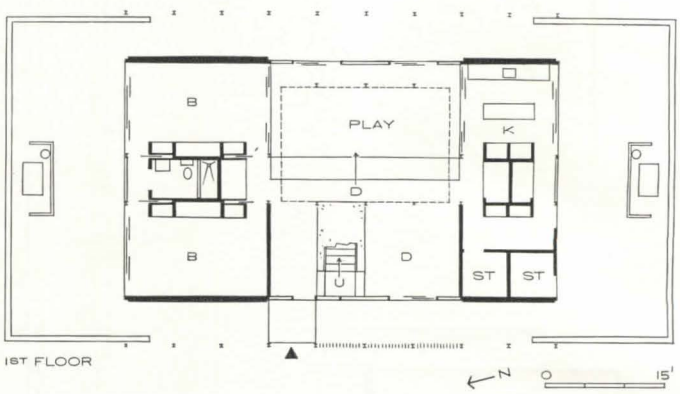


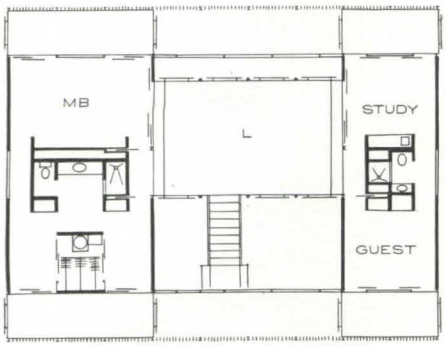
Post-bellum
Ante-bellum



Photos: Alexandre Georges



1ST FLOOR



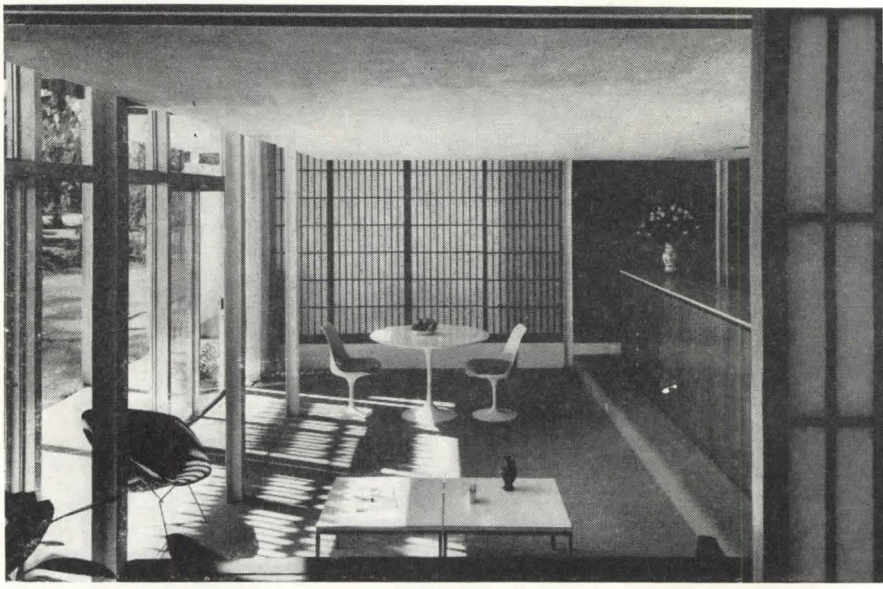
2ND FLOOR

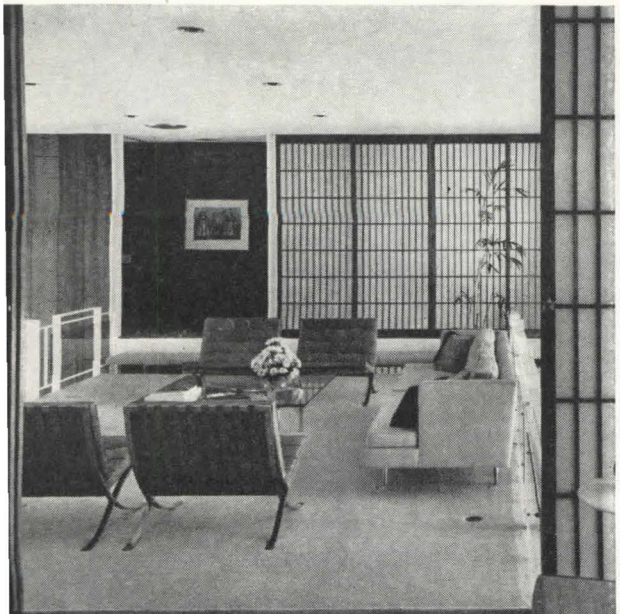
White columns, two stories high, framing a shady veranda, seem to belong in Georgia. In this Savannah house designed by Architect Mark Hampton, the columns are steel and the walls behind are of glass, yet the design recalls the porticos of the ante-bellum South.

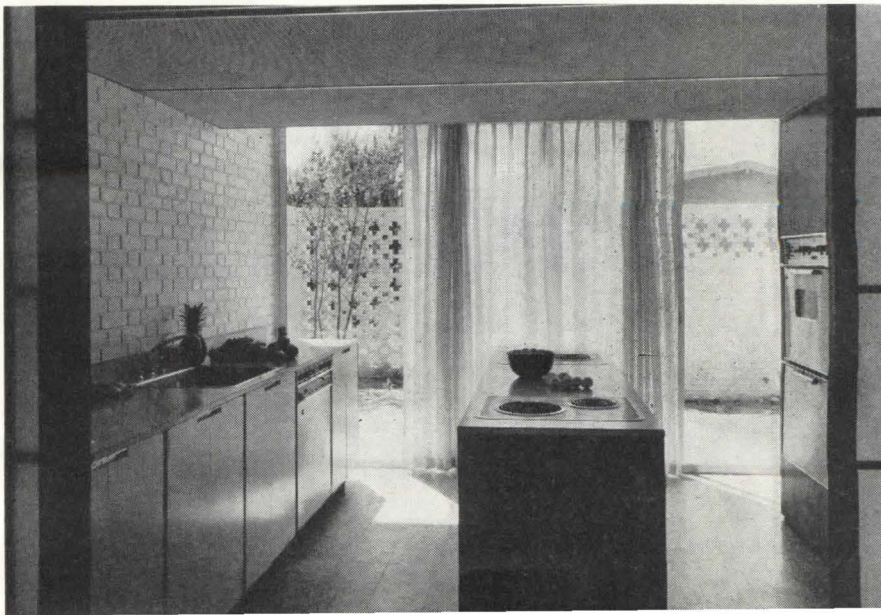
The airiness of the house is largely a matter of appearance; for most of the year it is tightly closed and air-conditioned. The interiors are shielded from the Georgia sunlight by twentieth-century brise-soleils of natural redwood. Behind the redwood screens are balconies, for enjoying the outdoor air when it is comfortable.

The site overlooks a golf course to the east. The owners wanted space for formal entertaining located high enough to take advantage of the view of the golf green. The formal living room is free-standing within the two-story central space. The bedrooms, guest room, study, and service areas overlook the enclosed courts to the north and south.

Throughout the house smooth white surfaces are combined with neutral beige furnishings to establish a feeling of spaciousness and coolness. Traditionally opulent materials—marble, travertine, leather, walnut, and crystal—have been used. The furniture and the shoji echo the lightness of the exposed steel structure. Sunlight is not merely controlled, but is manipulated to produce interesting shadow patterns and enhance textures.





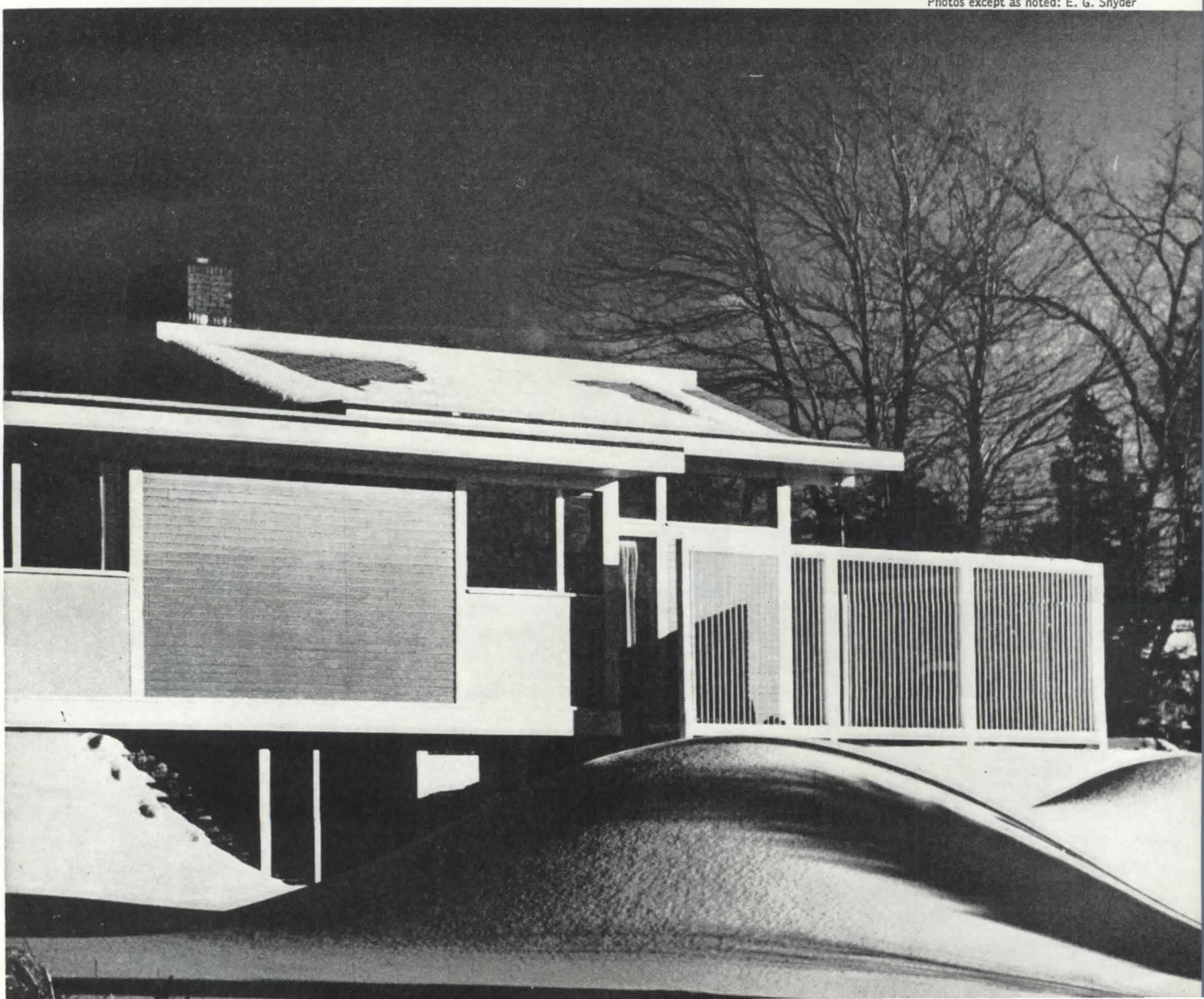


Oriental Yankeeism

The environment of suburban Lexington, Massachusetts, is reflected in the sharply delineated, compact form of this house—in its white trim and its gray-painted clapboards. But in the profile of the roof, the paneling of the walls, and the separation of the house from the ground there is a strong suggestion of the Japanese background of the owner, Landscape Architect Hideo Sasaki, who collaborated with Architect Allison P. Goodwin in the design of the house.

Sasaki's own description of the house throws much light on his synthesis of the attitudes of New England and Japan. He explains the unusual roof form as the result of practical considerations: "The physical expression of the house arose from the desire to get a higher ceiling for the major spaces, the living room and the children's room. Since it was necessary to have a 4 x 18 wood beam spanning the living and children's spaces, the thought was to have the beam on the outside instead of the inside of the room. This yielded the elevated ridge line outside and an uninterrupted intersection of the ceiling inside. The outward flare of the roof was to resolve the awkward angle created by the pitched roof as it met the flat portion in the middle section of the house."

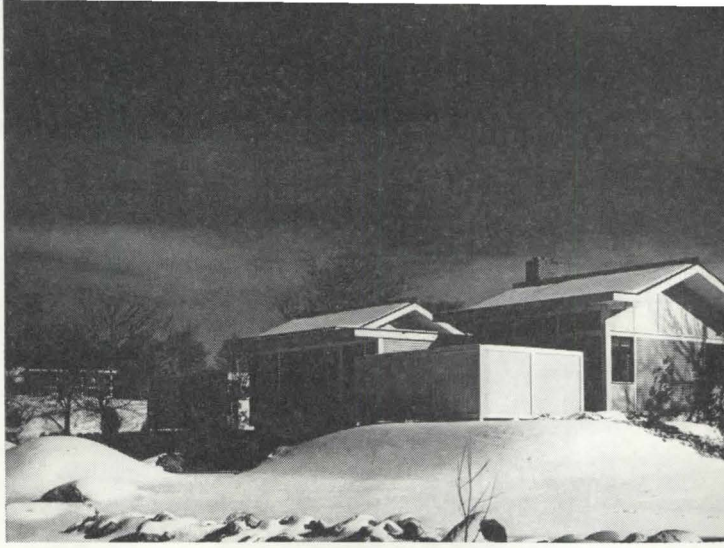
Photos except as noted: E. G. Snyder

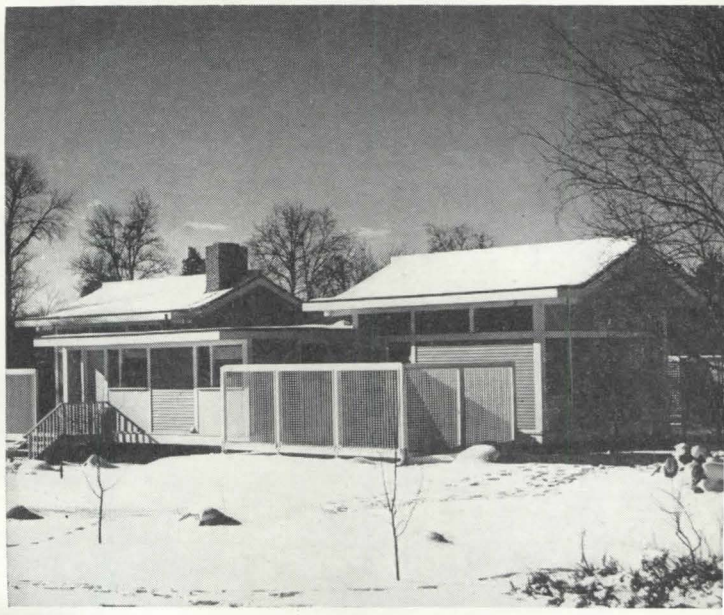


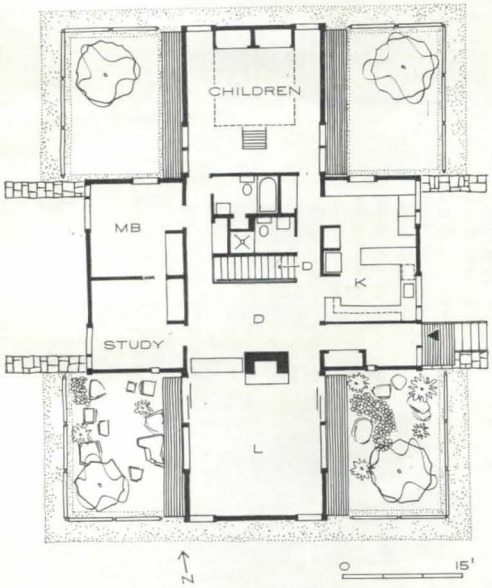
The site, in the middle of an existing development, had remained vacant because it was relatively low and treeless, and because traffic to the adjacent community playground and pool threatened its privacy.

The plan was evolved from the traditional compact rectangle of the region, with its central fireplace chimney. Cutting out the corners for gardened courts allowed generous openings for the principal rooms without loss of privacy. Only small windows are visible to the passer-by. Outdoor living was not specifically provided for, partly because relaxing outdoors is seldom comfortable here, partly because indoor living, with adequate natural ventilation, is rarely uncomfortable.

Although the interior spaces have the miniature scale of New England Colonial houses, the characteristically Japanese device of framing vistas into other rooms and courts—and out into sky and treetops—produces an impression of unconstricted space.







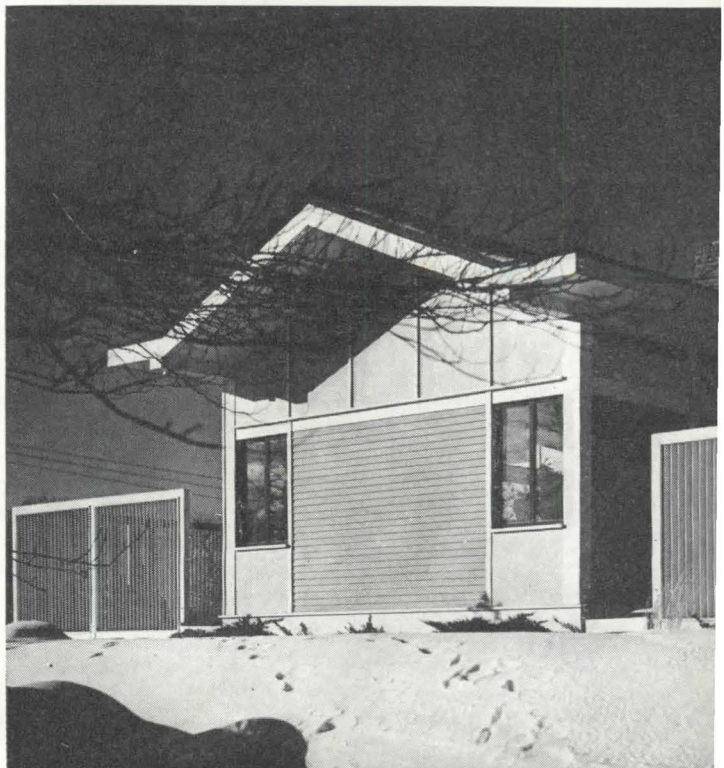


Photo: Alexandre Georges

Most of the site was developed to blend congenially with the neighborhood. The expression of Sasaki's creativity as a landscape architect and his personal outlook on life were discreetly confined to the courts, which he describes as follows:

"The courts of the living room wing were developed to reflect two opposing characters—east and west, dry and wet, or masculinity and feminity. These are visual courts to be viewed from the living room; the floor is lifted up slightly to give a sense of detachment as well as a better view of the garden.

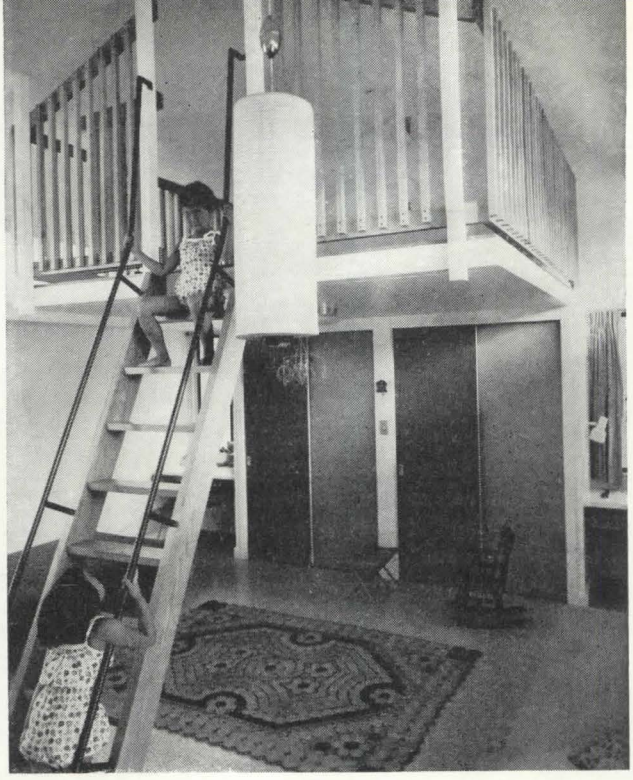
"The courts around the children's wing are for the two children to develop and use as they wish. In each court is planted a weeping cherry which will eventually create a cave of foliage into which the children may crawl to play."

Orderliness in family life and quiet but firm parental authority are Confucian ideals with definite parallels in Yankee tradition ("a place for everything and everything in its place"). Sasaki's discussion of the interior planning of his house points out a few "ground rules" for family activities.

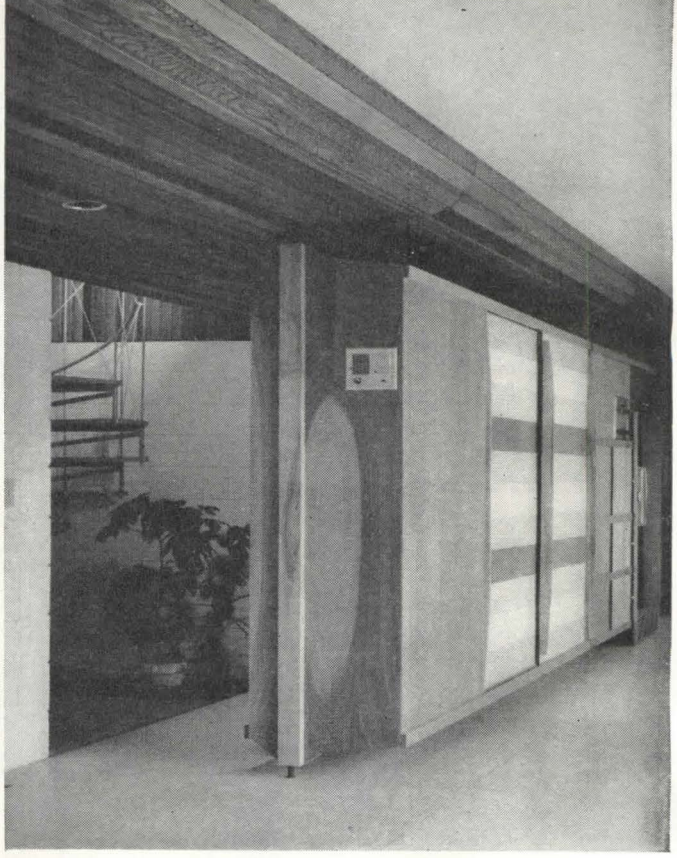
"The wing at the north end of the house is for the children's use. To differentiate and reduce the height of the interior space, a play balcony was built, known variously to the children as a "jail," or a "treehouse" or a "ship." Since the children's wing is the farthest removed from the adults' area, the spread of toys dwindles to a mere trickle by the time they reach the living room. Rules are therefore relatively easy to enforce.

"The east wing is devoted to the work and cooking centers. The children are relegated to the non-cooking side of the counter. Here they may converse with the mother, draw, paint, and otherwise occupy themselves while she prepares the meals, washes the dishes, etc.

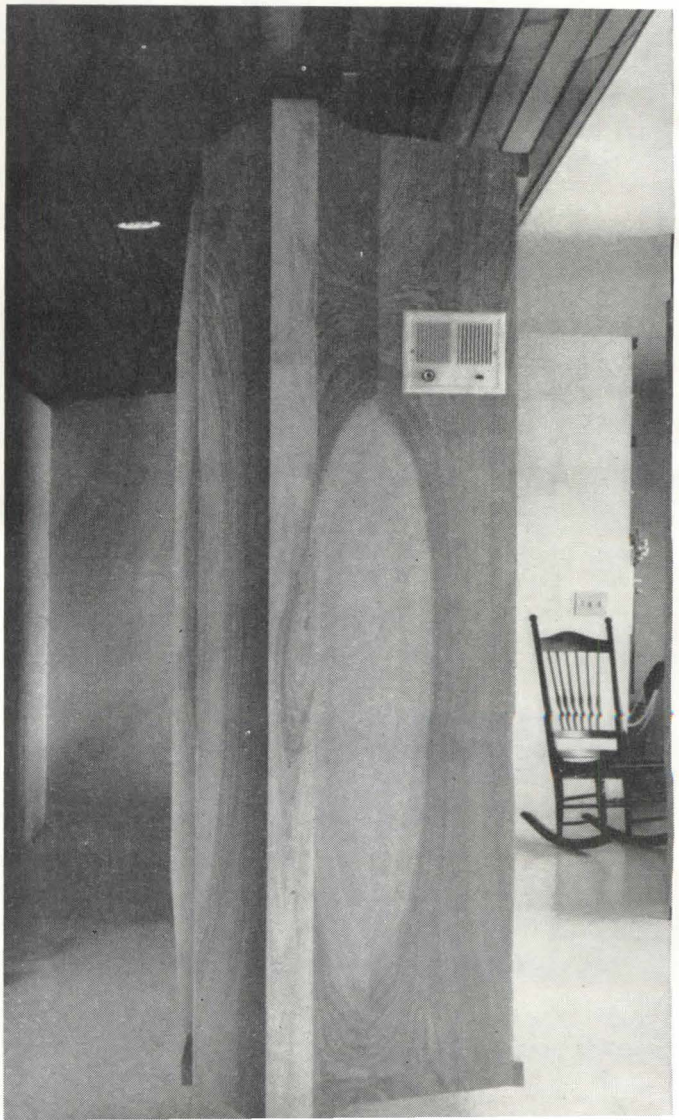
"The west wing of the house is the private and quiet side, principally for the parents. While the children may use the study, as well as the pencils, drawing pads, etc., found there, they must use the room respecting the rights and property of the parents."



Photos this page: Alexandre Georges



RESIDENTIAL DETAILS



MERCER ISLAND, WASHINGTON • WENDELL H. LOVETT, ARCHITECT

In this centrally located entry to a house on the shores of Lake Washington, continuity with the outdoors was established by echoing exterior materials on the interior: the ceiling is cedar siding, exposed-aggregate concrete slabs were used for the flooring; and planting, which will be more profuse in the future, suggests continuation of a walk through the garden.

The steel spiral stair (*right*), which rises from this indoor planting area, is painted light blue; the treads are surfaced with dark gray vinyl; the pumice block walls are painted white.

The 16′-10″ long birch storage cabinet separates the entrance from the main living area (*acrosspage*) and stretches from the family room to the kitchen where it incorporates a built-in refrigerator.

DATA: descriptions and sources of the major materials and furnishings shown.

CABINETWORK

Storage Cabinet: divides entry from family room and kitchen/16′-10″ long, ends are 2′-0″ deep, 6′-9″ high/¾″ natural-finish birch plywood frame and end panels/1½″x3½″ solid birch end post/¼″ birch plywood panel facing/¼″ hardboard sliding doors painted dark and light blues, light yellow, white/solid ¾″x2½″ birch pulls/½″ steel rod attached to ceiling, floor/architect-designed/custom-made.

EQUIPMENT

Refrigerator: Frigidaire Div., General Motors Corp., Dayton 1, Ohio.

LIGHTING

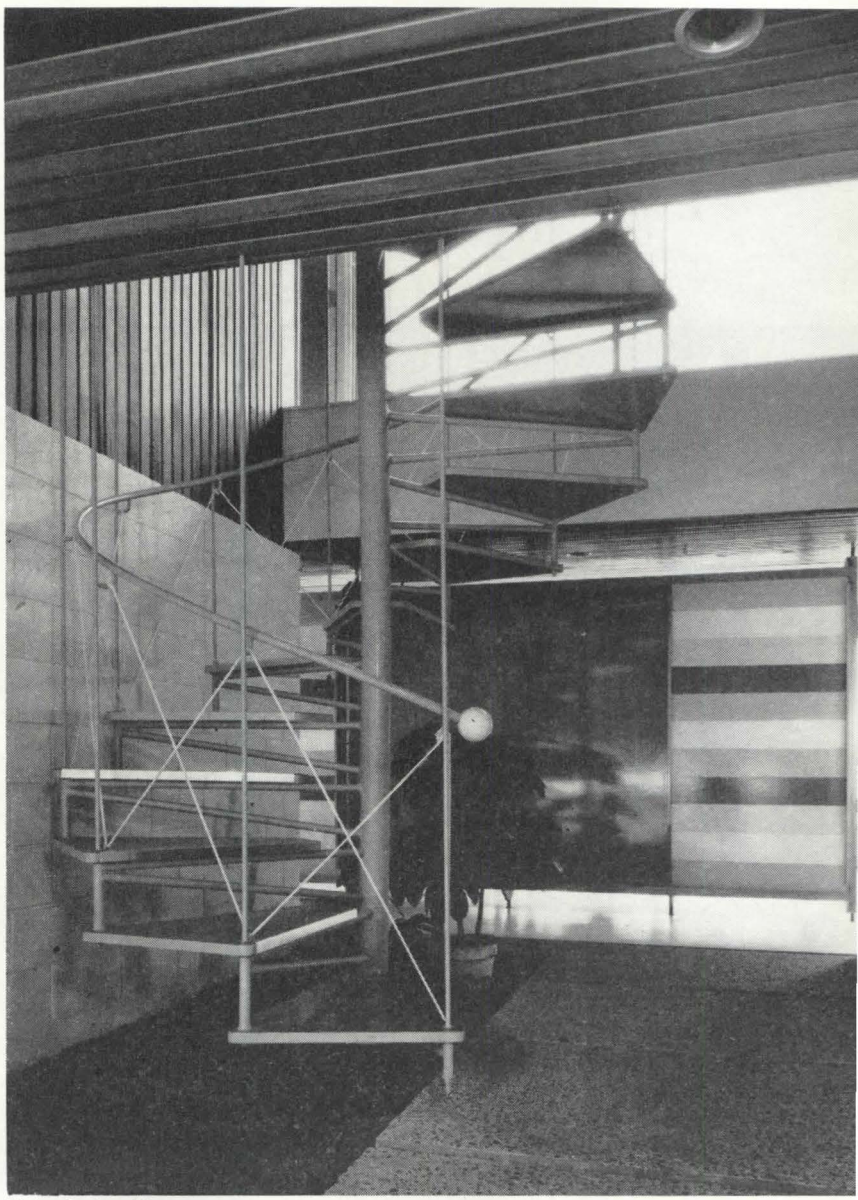
Downlights: ceiling-hung in entry area/ceiling-recessed in family room/Seattle Lighting Fixtures Co., 222 Second Ave., Seattle, Wash. **Ceiling-hung Fixtures:** in kitchen, dining, family room/imported from Sweden.

STAIR

Spiral Stair: central support, extra strong steel pipe, 4″ outside diameter/steel pipe supporting treads, 1″ outside diameter, welded joints/½″ steel rod vertical members welded to top and riser structure/steel painted light blue/1″ plywood treads surfaced with dark gray vinyl/Amtico Flooring Div., American Biltrite Rubber Co., Trenton, N.J./architect-designed/custom-made.

WALLS, CEILING, FLOORING

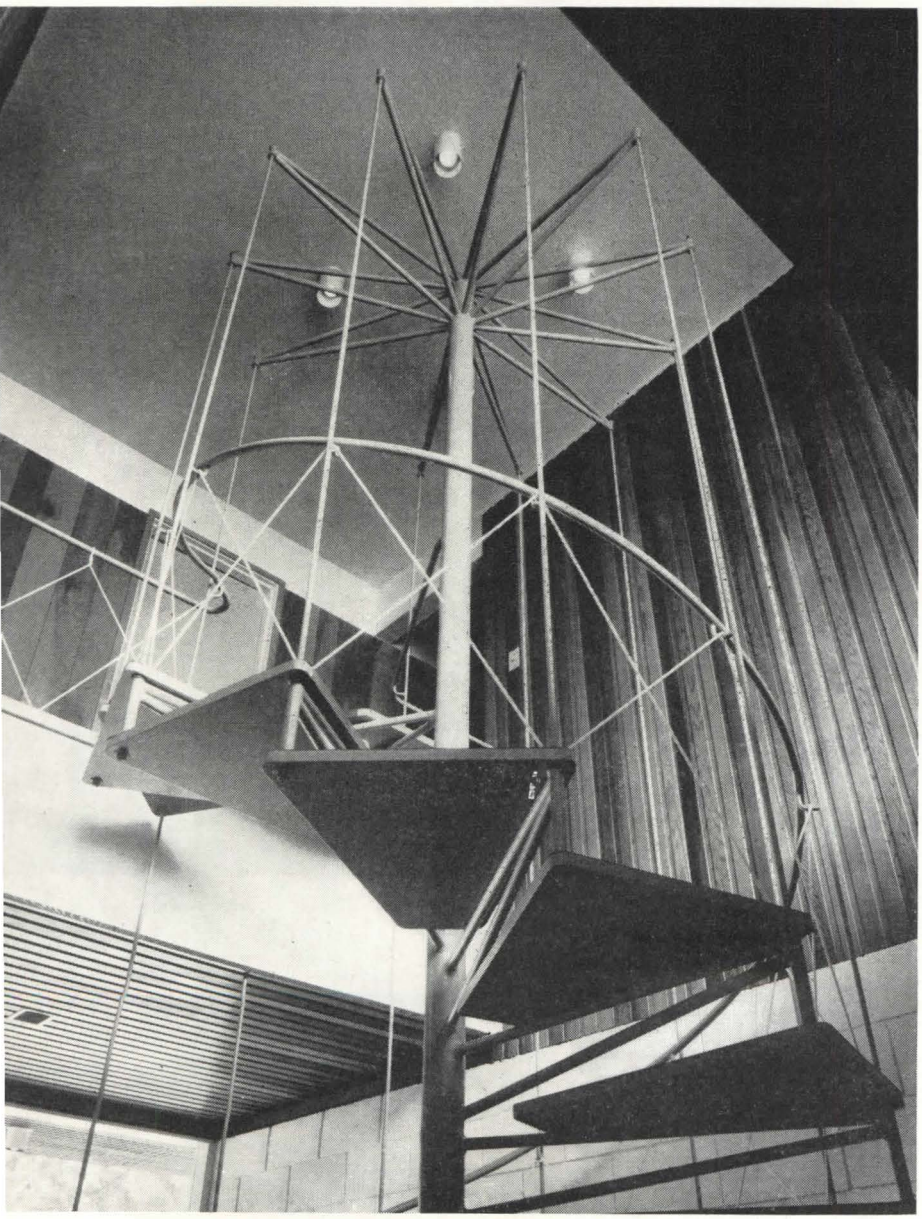
Walls: 8″ pumice block painted white. **Ceiling:** plaster board painted white or light gray/1″x4″ T&G nautral finish cedar. **Flooring:** white terrazzo with white and brown marble chips in family room, dining room, kitchen/at entrance, exposed-aggregate concrete.



Photos: Dearborn-Massar

Though the same major materials were used to solve what is virtually an identical problem—the design of a spiral stair—two different solutions are achieved. In Penraat's design (right), *the individual elements are severely limited for an effect of great simplicity. By contrast, Lovett uses a number of elements supporting the treads and the balustrade* (below), *giving a more baroque effect.*

Photos: Jan Versnel



AMSTERDAM, HOLLAND • JAAP PENRAAT, DESIGNER

The elegant spiral stair (*above* and *right*) was designed to link the three stories of an old canal house. Since the building is extremely narrow, it was mandatory that only a minimum amount of valuable floor space be used for vertical circulation.

The steel stair was constructed in sections. The treads, which are surfaced with black rubber, are made from steel plate. Each tread is supported on another steel plate, acting as a beam, which is welded to a steel ring the height of each riser. The rings—or riser units—have an outside diameter of 4 in. The rings are fitted over sections of steel pipe, forming the central member of the stair. When the stacked rings are in the correct position, each ring is then bolted to the steel pipe to hold the stair unit rigid. The handrail, attached to balusters of ½″ steel rods, is formed of plastic material, half-oval in section, molded to shape by heat on the job.

The stair, which is painted white, is attached to the floor at each level for rigidity.

Notes on Liability Insurance: Part I

BY JOHN M. LAKE

Insurance specifications are an important part of any construction project. Yet, in many cases, architects have little knowledge of the subject. In this article, an insurance consultant from Syracuse, New York, explains some of the problems involved and recommends several changes in the standard procedure.

With all due respect to the framers of the various construction specifications in general use, it is felt by many in the insurance industry that room for improvement exists in the area of liability insurance specifications.

A rather basic thought, but one which bears heavily on the subject, is that if any party to the contract is an innocent, it is the owner. He has neither the training nor inclination to assume the obligation of preparing proper specifications and of supervision of the contract. Next in line is the contractor. He does not write the contract and, often, is not a professional man and can only construe the terms of the contract much the same as would the man on the street. Therefore, it is incumbent upon the architect, as the draftsman of the agreement, to make clear the provisions of the agreement to the contractor. Yet, while the specifications for toilets and floor coverings are usually clearly spelled out, insurance requirements remain dangerously ill-defined.

Another problem is that of the language barrier between architect and carrier. The architect may have a specific coverage in mind when specifying "public liability and property damage insurance," but since there are five different kinds of public liability insurance available, the underwriter is left to divine which of the five types (if not all) the architect wanted to specify. So I hope that the architect will find this article a useful aid in understanding the spirit, as well as the letter, of liability insurance coverage.

The genesis of this study lies in a meeting held with a New York architect who had expressed interest in "professional liability" insurance. The insurance contract was reviewed in detail and appeared to be well received with but one exception. This was in the clause which read: "*This policy does not apply to liability which is based upon or attributable to any failure or omission of the insured to effect or maintain insurance or any required bonds.*" All forms of architects' professional liability insurance I have seen contain this exclusion. Perhaps it would be well to outline the reason for the incorporation of this clause in such policies. Many architects have been under the mistaken impression that the purchase of a professional liability insurance eliminates the need for other forms of liability coverage. This is not so. There are specific exclusions in the professional liability policy which rule out many risks in an architect's practice, since professional liability insurance intends to cover only acts, errors, or omissions of a mental nature and not those of a physical type. Therefore, professional liability coverage is needed *in addition* to the architect's own general liability insurance, automobile liability insurance, workmen's compensation insurance, etc.

But what of insurance which the architect must specify as part of the contract between owner and contractor? Apparently, it is not the intent of any professional liability insurer to include coverage for acts, errors, or omissions in regard to *specifying* insurance, even though the specifications of proper insurance protection to cover the unforseeable is every bit as important to the owner as the proper specification of materials, workmanship, etc. The words "effect or maintain insurance" do not spell out that this insurance must be carried by the architect; rather they seem to imply that his failure to see to it that such insurance be put into effect and/or maintained is not the subject of coverage within the purview of the professional liability insurance contract.

Many architects rely heavily on "The General Conditions of the Contract for the Construction of Buildings" as a base from which to work in specifying the contractor's coverage. (Revised printing, 1959, of AIA Document No. A-201 is the source cited here.) Article 27 requires the contractor to maintain insurance which will protect him from claims under workmen's compensation and other employe benefits acts; from claims for damages resulting from bodily injury and death; and from claims for damages to property which may arise both out of *and* during operations under the contract. While the contractor is required to provide coverage, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them, there is no requirement that the contractor carry coverage for claims arising after the building has been completed. In the insurance industry we refer to this type of coverage as "products liability, including completed operations," because the protection starts as soon as the insured has completed the project, i.e. it carries on immediately from the point where the insured's "premises and operations" coverage leaves off. It is well known that defects in a building are not always discovered during the course of construction or within the usual one year maintenance period. In the event a bodily injury or property damage loss (to other property) should occur after completion of construction operations and the contractor had not been required to furnish "completed operations" coverage, it would then appear that the "damaged" owner has recourse to one party only—the architect. Such a claim situation might arise well past the maintenance period, but within the statute of limitations, and could be occasioned by anything from a faultily constructed stairway to an improperly installed heating plant. Article 27 asked only that the contractor protect himself from claims which may arise both out of and during operations under the contract. Certainly the type of loss just mentioned would arise out of the contractor's operations, but since it did not occur *during* those operations, the insurance may be said to have been improperly specified as to the type of hazard to be covered. Granted, the Supplementary General Conditions of the contract might be drafted so as to cover such a contingency. However, I have reviewed scores of con-

tracts covering construction operations and in no instance has the question of "completed operations" coverage been properly handled. Usually, only some all-encompassing remarks, capable of any interpretation, were made. In a typical example there is a clause stating that "the Contractor shall take out and maintain proper workmen's compensation insurance, public liability insurance, and property damage insurance;" then certificates of insurance are generally called for and limits of liability specified, all in rather vague terms. This wording most decidedly would be used to great advantage by the contractor should any suit arise under which a declaratory judgment was being sought from the court as to the exact meaning of the contract between contractor and owner. Needless to say, when the contractor wins, the owner has very little choice but to turn to the architect for remuneration, and, as has been previously stated, these are circumstances which the architects' professional liability policy may not cover.

"Contractual liability" coverage is another subject about which most architects know little, whether or not they are in the habit of requiring a contractor, via the contract specifications, to indemnify and "save harmless" the owner in the event of suit or claim against the owner arising out of any act, error, or omission of the contractor. The contractor's general liability coverage, in almost all instances, stops short of providing him with protection against the hazards assumed whenever he signs any contract containing an indemnity agreement such as the standard "hold harmless" agreement delineated in Article 34. While this is a rather mild form of "hold harmless" agreement, many times it is expanded in the Supplementary General Conditions to include indemnification of the owner against claims or suits arising out of acts, errors, or omissions of the contractor, which are brought against the owner by *any* entity.

Few architects specify such "contractual liability" insurance. Here again, even if such coverage is specified, should a loss arise and insurance not be in force to cover the situation, the architect is guilty of having not effected the insurance which he did specify. And as the loss is not covered by the "professional liability" policy, we have another case of an architect digging into his own capital to back up a loss to the owner which was not properly covered.

At this point let us delve into the semantics of some of the terms used in a typical contract drawn up by an architect. The words "injury" and "damage" may be used almost interchangeably in the eyes of the law. *Injury*, not otherwise qualified, can mean the extent in dollars to which a defendant is impaired when the jury brings in an unfavorable verdict on a property damage claim. On the other hand, it may be said that one is *damaged* to the extent that one must pay money to another person arising out of a bodily injury claim. Therefore, if the term "injury" is used to mean bodily harm or accidental death, the phrase should be spelled out as "bodily injury;" whenever the word "damage" is intended to refer to property which has become broken or demolished or otherwise physically deranged, it should be specified as "property damage."

Turning again to Article 34, we see that if a contractor causes damage to another contractor on the job, he agrees, upon due notice, to settle with such other contractor by agreement or arbitration, if the other one will so settle. If such other contractor sues the owner on account of any damage alleged to have been sustained, the owner shall notify the contractor causing the damage, who shall defend such proceedings at the owner's expense; and should any judgment against the owner follow, the contractor shall pay or satisfy it and also pay all costs incurred by the owner. Here then is a case of the contractor agreeing to stand up and defend the owner in the event of any litigious circumstance, and to ante up the judgment and the costs which the owner may incur. Bear in mind that *damage* is an unqualified word here and might well be construed as being any damage that the other contractor could prove. The contractor's liability policy—be it for "premises and operations" coverage only, or "premises and operations" coverage with "products liability, including completed operations" coverage—would certainly defend the contractor were he the defendant, but it would not provide a defense for or any payment of judgment in the name of the owner. In other words, the contractor has agreed to do this on his own. This is all well and good, assuming he has the financial ability to do so. It might be well to note at this point that the ground rules of the National Bureau of Casualty Underwriters forbid the inclusion of the owner's interest on any contractor's policy; of the contractor's interest on a subcontractor's policy (or vice versa); or of either the contractor's or the subcontractor's interest on the owner's policy. Therefore, it follows that each party at interest must insure himself against his own liability under the law, and against any liability which he assumes beyond the scope of law as imposed by statute.

It might then be said that the surety bond would step in to cover such a situation. While this is possible, a great deal of work is done without the benefit of corporate surety and, even if all jobs were bonded, this would be a highly inadequate way to satisfy both the known as well as the unknown hazards of construction. Even if a bond covers 100% of the contract price, it could be entirely insufficient if the magnitude of the third party claim is in excess of the value of the building. Such a claim, even if finally adjudicated for an amount equal to only part of the value of the building, would diminish the protection afforded by the surety bond. The surety bond is written in a finite amount and any payment of claim made by the bond acting as insurance would be subtracted from the amount of payment made to the owner in the event of default on the part of the contractor. Needless to say there are many histories of contractors in tenuous financial situations who are game to chance any and all methods of operation in order to cut corners and salvage what may be the last few shreds of their foundering operation. Under such circumstances claims of the first order, by subcontractors or their employes, or conceivably other members of the public at large, are capable of finding fertile ground in which to take root. Hence, the bond should never be called upon to act as insurance since it was designed to cover quite a different contingency than that covered by contracts of insurance. The bond was conceived to eliminate or reduce the *known hazards* of the building industry, whereas insurance is definitely designed to provide security against *fortuitous occurrences* of origin unforeseen by the insured at the time he entered into the contract of insurance with his carrier.

To this point we have dealt with the relatively moderate "hold harmless" specifications contained in the AIA General Conditions. A rather more stringent Supplementary General Condition I encountered not long ago, which is a good example of the all-embracing "hold-harmless" contract required by many architects, reads:

"The Contractor shall, at his own cost, settle and discharge all claims made against the Owner and shall indemnify and save harmless the Owner from loss and damage from claim made by the public or any in-

dividual, on account of any work done under this contract."

The question of whether or not it is morally right to require this indemnification of the owner by the contractor shall not be explored here other than to say that there is very little doubt that the contractor in this instance is being required to stand behind his operations much the same as the architect is required by the provisions of the statute (in most States) to stand behind his operations as a professional. The only difference is that the architect need not define his own obligations since it is already well established by law. It is the feeling of many in the architectural profession that the contractor should be required to assume greater responsibility since he seldom hesitates to interpret the architect's design as he sees fit, whenever he disagrees with the data contained in the plans and specifications.

To digress for a moment, it might be interesting to quote here a publicity release on the indemnity subject recently received from one of the builders' exchanges:

"Some effort has been made in recent months to obtain some type of legislation correcting the present conditions surrounding the hold harmless clauses as prevailing. It is a very difficult piece of legislation to develop properly and to enact, but an effort is being made along these lines. In the meantime it would seem that everyone should be particularly careful about the type of hold harmless clauses they agree to. It is the feeling of many that contractors in frequent instances, sign contracts with 'all inclusive hold harmless clauses.' These are clauses which tie the contractor or subcontractor down to a liability for practically anything and everything that may occur on the job. It should be pointed out that your standard liability policy would not begin to cover the requirements of this type of a clause. Most usually you will find that if you take it up with your insurance agent he will be unable to give you a rate and will have to submit it to the home office for their rating procedure and most usually your rate is greatly in excess of the standard liability coverages. It is the feeling of many people that too many contractors are failing to check with their agents and one claim could easily wipe out a contractor if he is not properly protected. Just as a matter of good prudent business practice, the hold harmless clause in every instance should be checked with your insurance agent to determine your exact liability."

This comment about "correcting the present conditions" is somewhat ludicrous when one recalls that the standard contract form as recommended by the Associated General Contractors of America, Inc. (Form 3, 1960 Edition) contains in Section 29 under the title "Damage Claims" the following:

"The Contractor shall defend, indemnify and save harmless the Owner, its officers, agents, servants and employees against and from all suits, losses, demands, payments, actions, recoveries, judgments and costs of every kind and description and from all damages to which the Owner or any of its officers, agents, servants and employees may be subjected by reason of injury to the person or property of others resulting from the performance of the Project, or through any improper or defective machinery, implements or appliances used by the Contractor in the Project, or through any act or omission on the part of the Contractor or his agents, employees or servants; and he shall further defend, indemnify and save harmless the Owner, its officers, agents, servants, and employees from all suits and actions of any kind or character whatsoever which may be brought or substituted by any sub-contractor, material man or laborer who has perfermed work or furnished materials in or about the Project or by, or on account of, any claims or amount recovered for an infringement or patent, trademark or copyright."

Since most contractors carry insurance on the standard Comprehensive General Liability and/or Automobile Liability form, there is very little problem in seeing to it that they have proper protection (as to type) since such broad forms provide automatic coverage for Elevators (on an "if any" basis), acts of Independent Contractors (also on an "if any" basis), as well as automatically picking up any additional hazards in connection with the contractor's actual operations, which may arise during the policy term and which did not exist at its inception. These broad forms of insurance do not provide "if any" basis portection for either "contractual liability" or "products liability, including completed operations" coverage, as mentioned earlier. These must be specifically included on the policy, with a premium charge shown, and there must be no restrictive endorsements which would tend to defeat the purpose which the architect desires to accomplish, i.e., complete protection of the owner's interest.

A standard practice in writing specifications is to require from the contractor a certificate of insurance stating the name of the insurance company, the type of coverage in very broad terms, the limits of liability, the inception and expiration dates, and, every so often, that the owner be notified of any material change in, or cancellation of, the insurance contract prior to the effective date of such change or termination. These certificates are accepted on a casual basis so long as the limit of liability indicated on the certificate is sufficient to meet the requirements stipulated in the Supplementary General Conditions. To say that this certificate is *not* an insurance policy may seem to be talking down to one's auditor. But this is hardly the case when one considers that heavy reliance is placed upon the adequacy of these certificates in protecting the owner's interest. It should be stressed, therefore, that the contract of insurance is only between the carrier and the insured contractor, and the carrier is bound to abide only by the terms of the contract and not by the way an architect or an owner may happen to interpret the protection a certificate supposedly gives the owner. Certificates are cheap to produce and can be turned out by any agent willing to take the time. Since they have little if any legal effect, and in many instances do not contain an iron-clad cancellation or material change clause, they are of small value other than to inform the owner that as of a given point in time the contractor carried insurance of the type or types broadly described. By the same token, duplicate policies are relatively cheap to turn out, although they are certainly more bother to an insurer than a single-sheet certificate. It may well be that the architect could be adjudged remiss in several very important respects if he had not made himself completely conversant with the contractor's insurance situation, right down to the last dotted "i" and crossed "t." While common practice is not to do this, it is reasonably certain that there is not an architect in practice who would care to be the defendant in a test case concerned with this aspect of professional responsibility. This is particularly true when one considers that the inclusion of duplicate policies need merely be specified and the contractor would surely comply. Most contractors are regarded as desirable accounts by the insurance market. Architects must have noticed the solicitous treatment given contractors at bid openings by representatives of surety and/or casualty companies active in the field of bonding and insuring the contracting fraternity. I feel, therefore, that an insurance company should be able to grind out these certified true copies of a contractor's insurance program with little more than a few grumbles. Once such practice is established, the insurance companies should be able to comply with efficiency and speed, since, after all, their business is to turn out paper in vast quantities.

The purpose and recommended ways of implementing this "open sky" inspection plan, and suggested forms of insurance specifications and of certificates of insurance will be the subject of the second part of this article in next month's P/A.

P/A DESIGN AWARDS SEMINARS 1960

When results of the P/A Design Awards Program were announced in January this year, four Case-Study Seminars were held at The Architectural League of New York. The Seminars were co-sponsored by P/A and the Architectural Schools of Columbia University, Pratt Institute, and Cooper Union. The Award and Citation winning projects studied in the Seminars were presented by the architect and analyzed by a critic, with general comment and discussion following from the floor. This presentation of the Seminar discussions, edited from tape recordings, begins with the First Design Award. The projects were fully documented in JANUARY 1960 P/A.

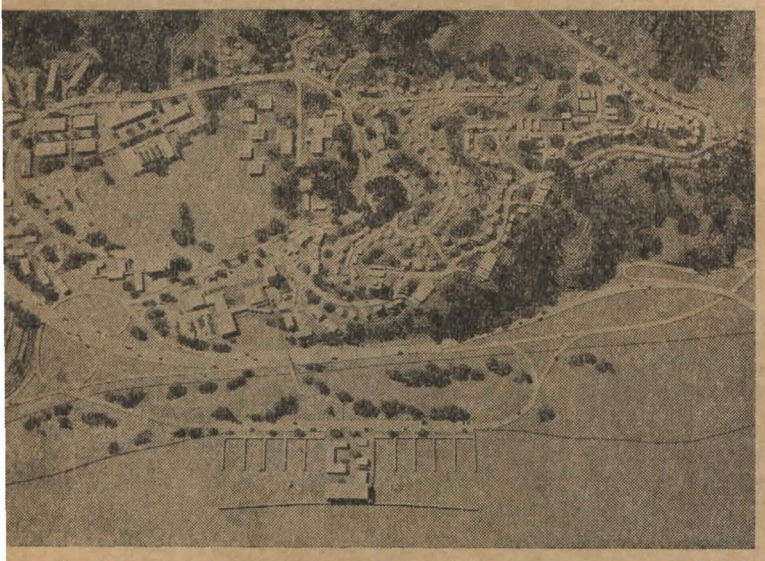
MARIN CITY REDEVELOPMENT

MARIN CITY, CALIFORNIA • JAMES SCHEUER, CLIENT • DEMARS & REAY, ARCHITECTS • MAYER, WHITTLESEY & GLASS, CONSULTANTS

PRESENTATION: **Vernon DeMars**

Marin City is a small housing project, residue from World War II, north of Sausalito, California. The war housing units, which are still there and which constitute the present slum condition, are quite interesting architectural solutions. The site is a bare California ridge, which doesn't look too prepossessing but has possibilities. Our concept was to create a new little town, a Swiss village if you like, in the bowl of Marin City with Mount Tamalpais in the background. We were not thinking just of a housing project but of a small community, with people living on the hills, with schools, and a small town center below. There's no industry, but we thought there was a marvelous opportunity to avoid the projectitis look of most new developments. The desire to exploit the views and the marvelous site was one thing that led us to press for a higher density, so that more people could share in it. There is a variety of housing types and other building construction. The high school will serve the whole southern part of Marin County, and is on one of the few flat sites available in the locality. An elementary school will serve a much larger area than the Marin City development itself. A public housing project is under construction, designed by John Carl Warnecke and Aaron Green; a church is our design at the moment, but will be done by another architect. So we see that there are many architects in here. It's like a small city; our concept is that a city is not a single work of art and, in fact, should not be designed by a single person with a single idea. Our concept in planning was that it might change materially in any of its details and still come out looking like this. It's a kind of planned scramble, which is pretty typically American, but this has a framework of order—not the negative things which sometimes happen either under complete non-planning or under the kind of regimented planning that results either in dullness or disorder.

The shopping center we like to call the town center; it ought to seem more than merely a place where people go to shop. The one high building in the middle of the group might be a little professional building, with dentists' offices and so forth; it will provide a focal point of some substance in the middle of this town center. There is need for a drainage pool that will collect the water from the whole area in flood times and be connected with flood gates into the bay, so the pond is a practical device which we hope to exploit for its esthetic value. The lower portion of the slope is mostly occupied by modestly-priced houses, for sale to the present tenants of the area—a mixed racial group. This has introduced problems, but they've been met head-on and the hope is that realistic solutions will come out of it; so far this has not been one of the stumbling blocks to the progress of the whole development. As we go up the hill and construction becomes more expensive, we have attempted to take the most *spectacular* portion of the site to develop for some rather high-rental apartment houses; the proximity to San Francisco, not only in distance but in time, makes it reasonable that persons of high-medium income will find this an attractice place to live. Going up further, the continuation of the road will later provide de-



velopment sites for houses for sale in a much higher income bracket; it will be more expensive to develop too, and we're hoping to pay off the total development by these higher-priced houses later on.

One thing has been foremost in our feeling about this project: there is an attempt to do *something* about the monotony of the usual tract development. We look forward to a time when most housing will be done by people who are in a position to build many dwelling units, and I think that more and more we have to find ways of getting rental housing into the picture. In many parts of the country rental housing is looked at as something for second-rate citizens. In fact the attitude of some Government officials, when confronted with schemes such as this, is: "People won't buy a private house across the street from people who live in an apartment house." When you ask why, they don't say: "Well, people who rent are no damned good," but they more or less imply it. In their minds a community with a mixture of private houses and people who rent is a community in a transitional stage, going from a nice place to a place which is deteriorating. For many years our zoning laws have effectively managed to prevent a mixture of this kind in development. We feel that a social cross section is a very real and organic expression of a community, of the way people do and should live. I think that where it is conceived initially there's no danger that it's going to produce a constant state of transition. So there are some houses for rent here, and there's a kind of walk-up apartment house for young couples or Aunt Emma, or your mother-in-law, who has her own private, small place. We think that a whole range of sizes and types built into communities in the first place makes sense. As we get into upper parts of the development the private homes predominate, but we have still introduced the small rental unit occasionally, for the variety it gives the landscape and because a person who needs just a small apartment should not be ruled out of this community.

A few comments on the esthetics of such a situation. A tract developer decides that, with the help of FHA, the bank, and the real estate people, he will build a three-bedroom house, with two baths, and a two-car garage . . . these are the absolute desiderata. He builds as many hundreds of them as the land will hold, and then everyone wonders why it looks monotonous. You can't vary the fronts enough or turn the plan around several times to make it look not monotonous. You have to do something in which the actual form of the structure is different, so that the volumes will contrast. The repetition of a few units offers a slightly larger design element; so we repeat three or four units, then introduce another element, and contrast that against another repetition. You have to do a little soul-searching when you start doing this: how many things increase the interest and add impact to the visual scene, and at what point does monotony set in? The variety of elements in our plan can be seen; we have the help of different forms—the high school, the elementary school, the churches. These community buildings obviously lend themselves to a change in size and form, but this is not enough. When the individual lives in his small part of a neighborhood or a community, he is aware of the whole community; there should still be visual interest and variety at any level of awareness in experiencing the plan.

It's certainly to the credit of the community that it chose to override the original concept of a rather low-density development for low-income people. It took about a year to

overcome this and we found ourselves against the local planning agency, which had proposed the lower density type of scheme. One is usually fighting the money-grubbing real estate promoter; in this case, we felt—our money-grubbing promoter and we—that our scheme had greater social validity and greater esthetic interest than the rather wishful-thinking concept which could not have survived 10 years.

PRESENTATION: **Donald Reay**

In the sense that the cathedral is typical of Gothic architecture, and the palace of Renaissance architecture, and the railway station of Victorian architecture . . . the 20th Century building is not necessarily the skyscraper or the large factory; it's the housing which is being built all over the world. This is the first time in history when enormous areas have been covered with buildings all at one go. In previous times, towns have grown by accretion with one building added at a time, and one could consider where the next building was likely to be located. Now, instead of painting a picture it's almost like designing a film—the time element, the questions of monotony and variety and visual interest come into it. In a sense this is like designing scenery, and to a person like myself, who has been brought up in a strictly functionalistic tradition, it seems rather alien. Yet if you lay out large housing areas on a strictly functional basis, you end up with landscape and townscape situations that are monotonous and dull. Many people say that variety has to come by accident and that you can't design accidents and amusing, picturesque, exciting things on the drawing board. This seems to me to be a very negative kind of attitude and a confession of failure—almost like someone saying he can't design a naturalistic film.

PRESENTATION: **Albert Mayer**

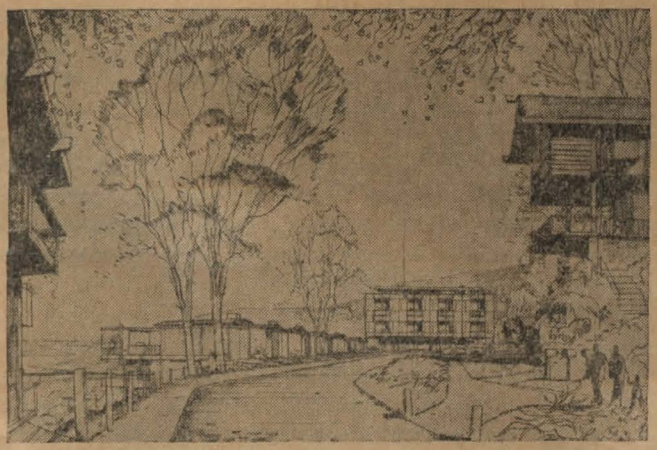
The program proposed by the Redevelopment Agency was essentially the rehousing of the people who were there and the addition of some more houses on top to sweeten it up and make something of it. The community showed some urban characteristics but was still not urban. Something was still lacking, and it became quite a controversy as to whether one could and should develop this as the kind of community that Vernon has described . . . not with *high* densities, but with much higher densities than the Utopian-minded authorities had in mind. One solution would have been smaller and smaller lots with more houses than normal subdivisions would provide, to meet the need for urbanization and the fact that San Francisco is nearby. Many subdivisions there have houses choc-a-block, undistinguished and undistinguishable. This was the real issue which, as you see, was resolved in an attempt to integrate all the real facts that were there—the fact that it is only 15 minutes from San Francisco and is one of the most beautiful sites in the world—and do something that would really meet all those problems and challenges.

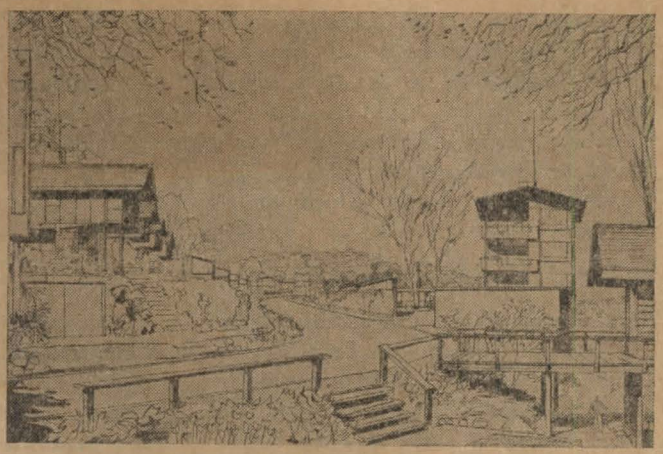
CRITIQUE: **Louis I. Kahn**

It's difficult to comment after the completely sound dissertations by Reay and DeMars, and the wise comments of Albert Mayer. However, I have things in mind. First, I know you cannot change the designs of yesterday and you cannot predict the designs of tomorrow. We know what designs look like now that we thought only five years ago would be valid five years later. You can only design today. I mean precisely this day. I do think there is a distinction, however, between form and design. You can design a form in many, many ways, but the form itself is a set thing, essentially, which is indestructible as a form. I think of a house and a home. A house is probably not the greatest act of the architect but symbolically *house,* which represents a place where it is good to live, is probably a greater attainment than building a specific house. A home you can do nothing about, because it has to do with the people in it, but you can certainly anticipate this by the charm and warmth and direction its design gives. Design is a personal act; the making of a form is rather different. I think the making of a form represents the greater achievement of the architect because from it many designs can be made. However, though the architect may have invented a form, the force of order is so great in it that it already belongs to everybody as soon as it is created; so the architect is left with the design that he produces as a result of his realization which led to form. These are the things that came to my mind when I was looking at this project. Just what is its form concept? And what is the design interpretation of this form concept?

There should be, I think, very strong points which are indestructible in a plan for a village (as DeMars called it, and I think it's a very happy name for such a development). I don't particularly sense them here, except in a physical way, but I see them in a sociological way—in the way there would be no distinction made between one type of dwelling and another. In an apartment building one must satisfy the same premises as in a house; it is actually a place to live in and therefore it is quite equal in its position in a village to a house. But I sense that here an apartment house is built quite differently. In the house there's a certain respect for shading, overhang, roof structure—a kind of indigenous quality casually distinguishable as Californian—whereas the apartment house is like any apartment house. I believe that an apartment house is no different from a house—I would say it's a house, upon a house, upon a house—and that each house must have a yard and that therefore the yard must be as apparent in the apartment building as it is for the house.

If the premises are carried out strongly I believe that a way of life can be represented in full, and this may become the basis for a form from which designs can be made. If these form realizations can be stated so that designs may result, even made by other architects who follow the realization of form, I think the project may turn out to be something of an excellent example in the direction of the development of these villages. There is a distinction between working design-wise, and building in variety with a *realization.* If I may define realization, it is a kind of harmony of system. I think that there is a tremendous harmony of system that has been established by the architects of this program, and this is its most commendable part. In the variety which they say must be—and I think it must be—and with the belief that one type of dwelling is not subjugated to another, and with the emphasis given to that which is already high by making it higher, there are esthetic realizations as well as psychological realizations. I believe that in many places the design itself could have been worked over a little bit more. The casual fences, stairways, the kidney-shaped ponds, the trees in pots, and all these little devices are, from my point of view, for the birds. They are purposeful in creating charm, but I doubt whether you can do it by such means. As handled by the usual aborigine





who goes in there to build they would be mangled to pieces; few people can do that sort of thing.

I believe you've treated too lightly the question of the pond, which is considered an essential part of the functioning community. In a village, the avenues of going and coming, the point where one takes a bus, the difference in grade between one level and another must be treated in a more ordered way. The sculpture of the ground itself, forming a logical framework for the development of houses, should not be quite so casually considered. I think it should be thought of as mandatory over-all design, without worrying whether you are encroaching on the prerogative of the architect who follows. I would like to see more rigid statements of the points which must be given form from the beginning, as a point of departure from which designs can come. It should be more than a casual and uncontrolled statement regarding overhangs, and so forth. These need not be made the same way by all people. The pond, since it is mandatory, should be quite formalized instead of so casual. I was hoping that such things as schools, institutions, the center part of town, would be given a little less of the feeling of the houses, which are much more subject to variation than those things which you say in a school.

Talking about institutions for a minute—I believe it is one of the most important duties of an architect to look into spaces which make up institutions. I believe they are too casually considered in filling out the program as put down by the school board or the city authorities. I believe that school started under a tree with a man who didn't know he was a teacher talking of his realizations or concepts to people who didn't know they were students. And because it really touched the need in man so greatly, out of it grew an institution called *school*. Think of the many different forms it had in Greek, Roman, or other periods that followed. But today you get a program from the school board that sounds like this: there should be a 9-ft fence around the property and there should be a lobby, measured by so many square feet per person; there should be stainless steel because it's so easily maintained; there should be corridors so wide because that's the minimum and then you have rooms *that* are all well ventilated and lighted. But is this actually a realm of spaces where it is good to learn? I doubt it. In California there's a much freer attitude, there are more possibilities, you can consider the outdoors and the indoors more casually; but that isn't what I mean—I don't mean design. I mean raising the level to what you may call a realm of spaces where it's good to learn, where you may come into a space which you don't name at all, only because it is a good place to come into as a place to learn.

In the same way, what is a city center place? Is it a casual kind of thing? I don't believe that it is. I think it should have human spaces which have as much of a sense of nobility as you can give them. If you look at the Baths of Caracalla—I'm not comparing them with the project that you're involved in—we know that we can bathe just as well under an 8-ft ceiling as we can under a 150-ft ceiling, but I believe there's something about a 150-ft ceiling that makes a man a different kind of man. I would like to see firmed up those things which represent the institution as against, let's say, the more intimate concerns of houses. I believe that realizations in this sense are infinitely more design-fertile than *starting* with design, than the purposeful making of charm and that kind of thing. I think the project has such excellence that it doesn't need a lengthy comment; I'd like to see it successful, and I see certain aspects of it that may turn out to be unsuccessful because there is less a statement of the form, that which is not changeable, than of a great variety of individual design compositions. A fugue is a form, a composition is a design; and it is the fugue aspect that it would be nice to feel in the plan, so that it would be easily recognized by anyone who passes it, who could say: I see the logic of this, I see the sense in it. From this, growth can come much more readily than by a casual riding with the contours of the land in a sort of circumstantial way.

DISCUSSION

DeMars: First: in defense of charm. I am reminded of Lawrence Halprin, our landscape architect, who did the landscape design for a building in Spokane. In his scheme there were pools with inlaid pebbles and fountains, rather unusual around Spokane. When he showed the Board of Directors his design, one of them said, "Do you think it's going to be too pretty?" and Halprin answered, "Do you want it ugly?" In the sketches that show little stairways, flower pots, and things—these are not part of a stage set. We don't plan to put all this in and have people sign a lease that they won't move the pots. We're trying to visualize the community in another ten years when people have

reacted to it and have planted the geraniums—or maybe have not planted geraniums, and maybe the pots won't be there, though we hope that they will be, in various places.

I wonder at what scale the architect can still impose his design concept, his framework on a community. You can do it on a house, you can do it on a group of buildings, but at some point you cut off because more and more people are involved, and these people have opinions. They have a certain self-expression which, in our society and our culture, varies from primitive, to sophisticated, to naive, etc. Sometimes this adds charm and interest; sometimes the naive touches are more charming than the very studied things which some designers attempt to build into a situation. This is the point that Don Reay touched on earlier—that we are for the first time confronted with building great areas, and this comes back to one of the first things you mentioned, Lou. You say that we can't return again to the past and we don't know what the future will be.

Kahn: I didn't say we can't return to the past; I said the forms of the past cannot be changed. Any design that exists—that you can change; but you can't change a form—it's finished. That's what I meant; it had nothing to do with going back to the past, which I believe in thoroughly. As for the future, you can anticipate the form but not the design. It *lasts for* tomorrow, but you don't *design* it tomorrow, you design it today.

DeMars: Because we are going to build this, we have to make decisions; the designer has the decisions confronting him. In redevelopment you design it *for* five years from now. One of the redevelopment projects I worked on in 1950 has the grass still waving across the slopes where nothing has happened since then. So you have to be patient; we may have some new ideas about it by now, unfortunately. But I think you're forced to make design decisions, and the designer has choices, and has a large palette of elements. He's free to do what he wants and then the question of how well he does it is open to criticism afterwards.

Reay: I am in sympathy with the attitude that buildings have their own natural form—up to a point. But the natural form for developments on hill sites is the road going along the side of the hill, with houses above and below the road; functionally it's fine, it's organic, this is its natural course. But it's also very dull, and when you get a situation like this you have to break the form. Sometimes you literally change the form—for instance instead of a continuous ribbon of road you force it into a group of spaces which it doesn't naturally take at all.

Kahn: I think you're making the definition of form and design too tight. Design is something that will come because you say so. Tomorrow you'll have another design. But if the backbone—the decision of the road and the movement through the site—starts to get casual, it will lose a great deal. I don't see enough design in the road pattern to set the character. If you were to develop a gateway or entrance on entering the project, making a definite, very clearly distinguishable thing—it could be a canopy of trees, it could be a gate, but it is the entrance—this is the way in which you make decisions as to what will develop later very much sharper. As it is, it is confused; the entire development of circulation, the entrances, the places of stopping—I don't believe you can consider those decisions to be casual things.

James Fitch: I think they're to be congratulated on recognizing one thing—the necessity for basing variety on social diversity. Westchester, socially, is just as dead if not deader than a lot of tract housing. And in a project like this the basic discipline is derived from contours, views, exposures, sun, wind; the logic of the site is a very powerful thing and you don't need to apologize for having respected it. I think that Kahn's points are quite valid, but I don't think we should lose sight of the validity of building social variety into the community.

William Mann: In the road layout, as you come from the residential areas, you get a loop which circles the center of the community. In order to come in or go out you must go by the commercial development, which rings a cash register every time you do. The community is built on either side of the road which circles the community center; the church is on one side, the shopping center appears to be on the other. I'm interested in a better description of the community center. Doesn't your traffic circle, with the need to slow down at this key point, produce a built-in traffic problem?

DeMars: We do funnel things through the shopping center, because there is a functional reason. Most Californians go by car, they all have cars, and you can pick up your groceries on the way home, or leave your car—there will be a bus station for inter-urban buses to San Francisco, and many people will commute and park their cars in a parking lot. We feel that they should really slow down through this area . . . why should they go racing through there at 40 miles an hour? As they slow down or stop, they may enjoy the center a bit, we hope. The plan is not completely set yet around this part of the area; possibly the engineers may suggest that what you're saying is a factor.

Kahn: I am not sure whether you're talking about the quality of things or engineering. This entrance could be designed very well by this gentleman . . . but it could also be designed poorly by that gentleman. The important thing is the sense of the design of the movement in such a way that the entrance is distinguishable, free . . . the character of the whole, for instance, in regard to its landscaping, is the point. I believe the design of a road is one of the most exacting problems, and I believe it should include places of stopping, places of entrance. I think this is too confusing . . . I think the thing should be more generously considered, not so much satisfying the program as satisfying the sense of space—of creating a kind of atmosphere.

Sibyl Moholy-Nagy: I know this site. People now have relatively free access to the water. If children wanted to get to the water, other than in official boating parties from the yacht club, they would have to go across the worst highway I remember in America, or they would have to go to this one overpass. Is there no other way of approaching the water than over this one overpass?

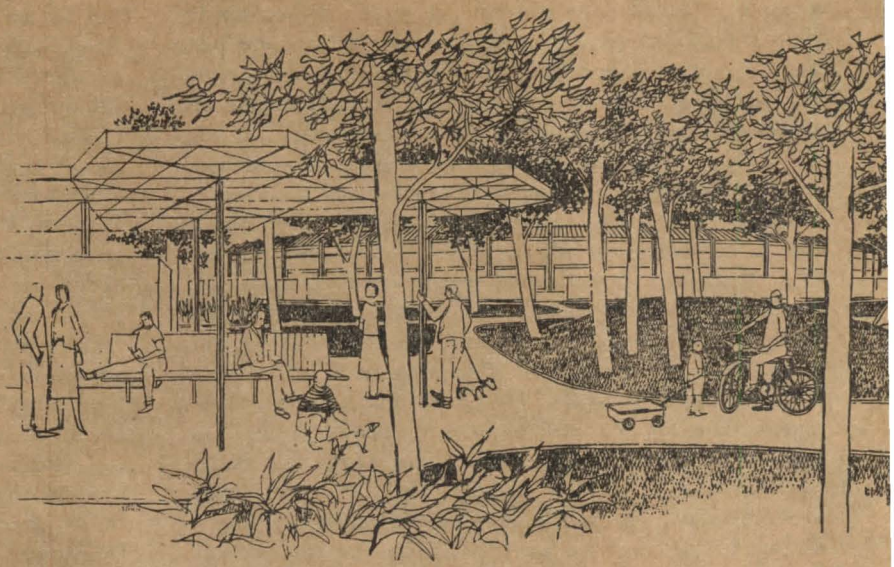
DeMars: Well, I think you can suspect that we borrowed enough trouble. We're leaving a few solutions to the planning agencies. There can be more overpasses across the highway. In fact there are none there now; there is no way to cross the highway officially. The County itself is working on the development plan of the waterfront areas clear down to the point at Sausalito and I'm sure that these considerations will be foremost in their mind.

Question: Did you consider pedestrian cul-de-sacs?

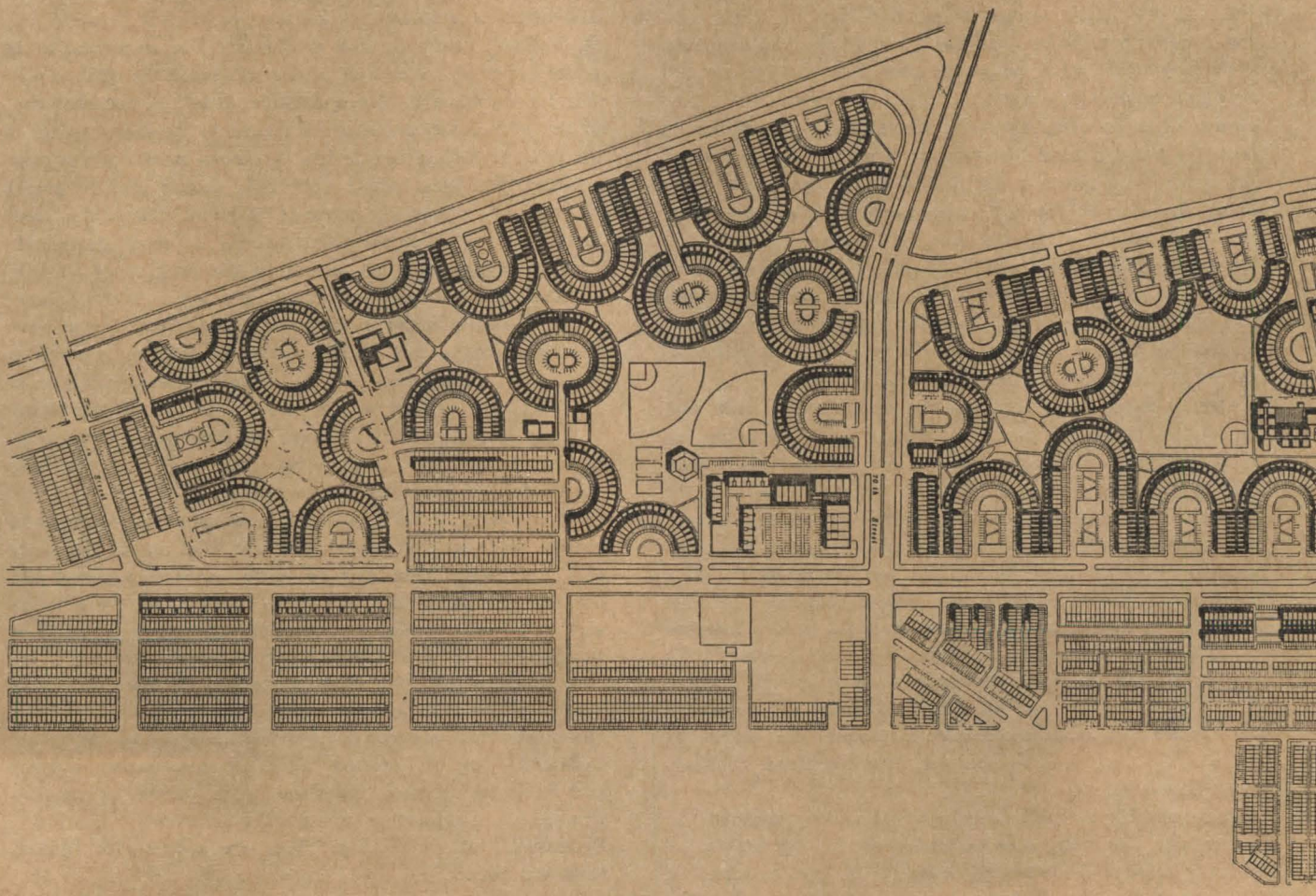
DeMars: Yes, we started right off considering clusters and Radburn schemes and these went by the board . . .

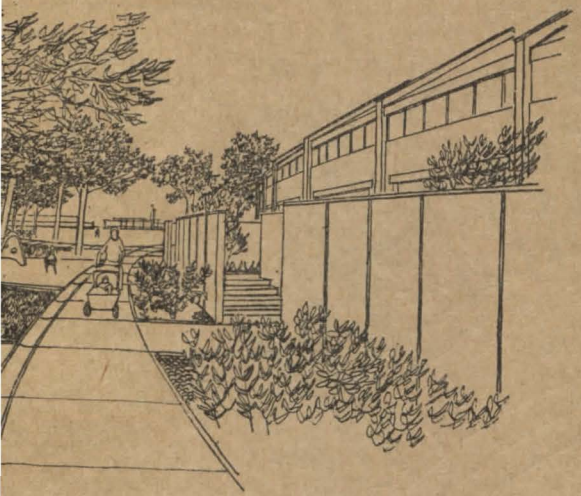
Reay: . . . Californians won't walk . . .

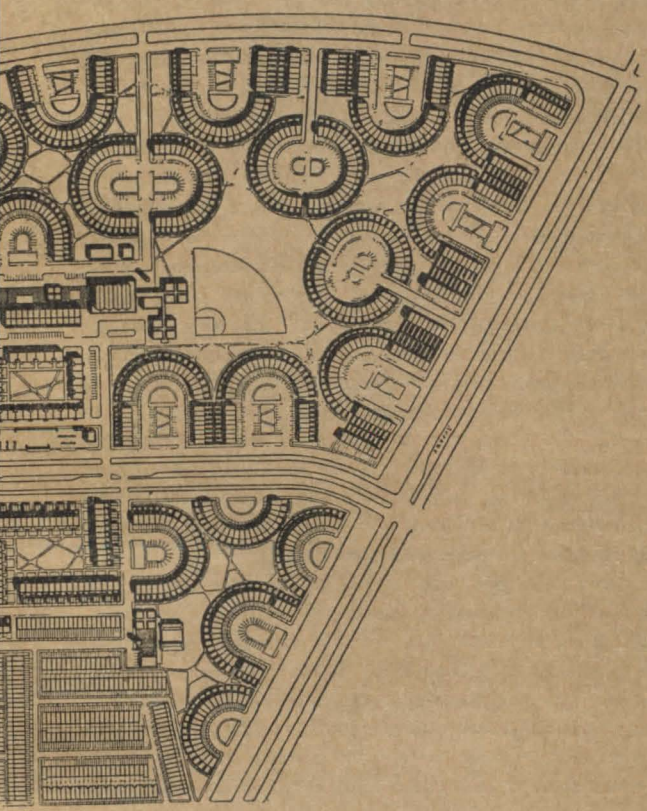
DeMars: . . . Californians' legs are a little bit shorter, have you noticed?



EASTWICK REDEVELOPMENT







PHILADELPHIA, PENNSYLVANIA • GREENTOWNE ASSOCIATES, CLIENT • GEDDES, BRECHER & QUALLS, ARCHITECTS

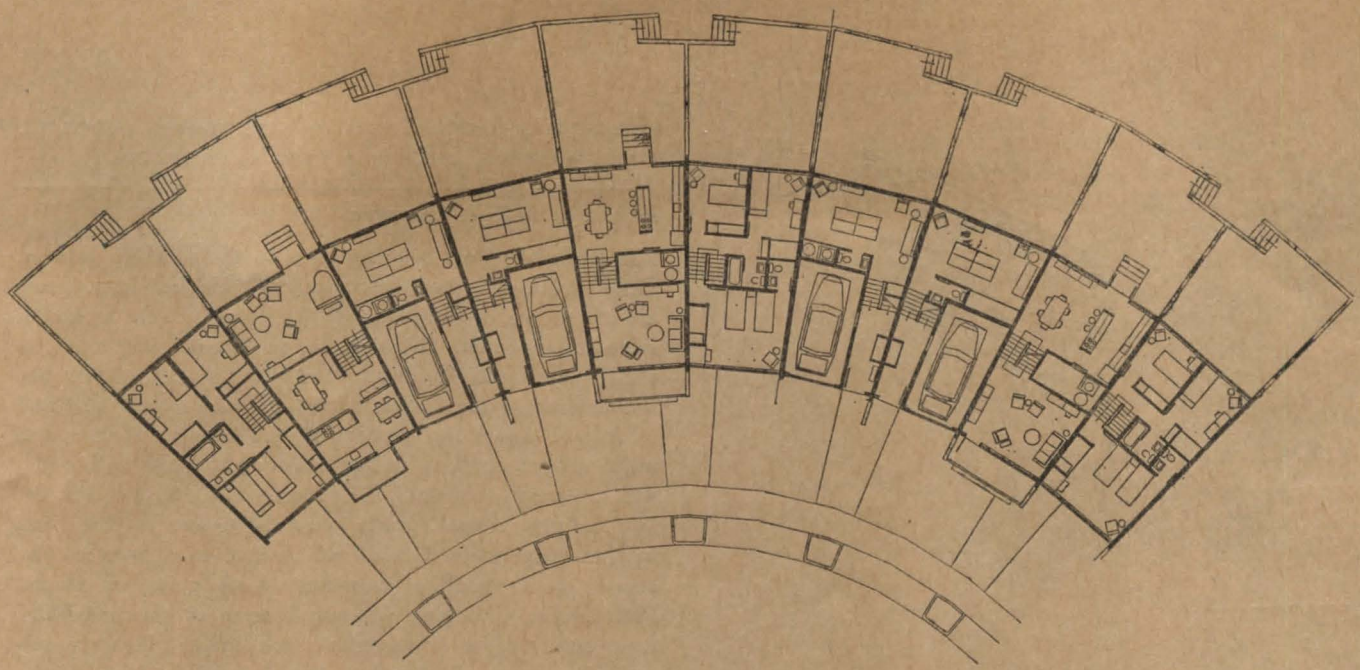
PRESENTATION: **George Qualls**

The Eastwick Area is a vast area in the southern part of Philadelphia near the airport, largely reclaimed land. There are a number of buildings on it; some will be removed, some will be kept. Philadelphia, in its central portion, is a city almost entirely of row houses. In a competition that was entered by three other teams, we accepted the program as it was. About five percent of the housing is in rental units, with the bulk of it row housing. Most of the housing was designed to be sold for between $11,000 and $13,000. We felt that a small group could be higher in price, but by and large it's a $13,000 row house. In a way it's the answer to the satellite community that's going up around Philadelphia. Shopping was not located in the immediate area, except for a few neighborhood shops; there are two schools and several churches, but it is essentially all row housing.

Our basic consideration was open space: the spaces around the buildings, both for pedestrians and automobiles—rather than the positive building elements themselves—are the creative design medium. Our problem, then, was this design of open space—trying to give it some crispness and definition, to provide a feeling that the space dominated. If you remove the automobile, of course it is easy; to a great extent our problem was a battle against this thing that Detroit has given us. We had to assume that each house would have its own parking place within the house, a garage of some sort; that you would have parking space on lots for an extra car; and that there would be a guest with a car. In other words, three cars per family. This is what happens in Philadelphia at the moment.

Our original idea was to have corner stores. We wanted to hide the automobile and have a feeling that you were in a completely pedestrian world. We wanted the kind of life that does sometimes exist in a city—a community such as you find in some parts of New York. But we found, in really examining the program, that we didn't have all that much life to put between the houses; that activity is being concentrated in major shopping centers. And we found that in trying to plan corners, getting the automobile in was virtually impossible. So we began thinking in terms of eliminating the corners entirely. This changed our thinking; we found that we could put the automobile in a contained motor court, and get cars into this landscaped point in the center by swinging a wide enough radius. We began to introduce straight elements along with the crescent and the circus (to use the English terms) and we planned a free-flowing Radburn-like open space behind.

The site is ringed with arterial roads, and there are cul-de-sacs for parking. The houses act as a wall between these planted auto courts and private yards; everyone has a pedestrian back yard. From these you go into planned small sitting areas with sandlots and places for the older people; and then into larger areas, in scale with the whole



development, which will have playgrounds for football and baseball, and provide pedestrian access to the shopping center and the school. The automobile is treated as a thing in its own special harbor or street; it cannot penetrate into the pedestrian area. The houses are treated, in a human sense, as walls. In architecture you begin to study joints, and the joints themselves become expressive and architecturally important; we found that the "joint" was important in urban design as well.

The fluidity of the total scheme against the rigid formality of the crescent is the essential point. We tried to get variety by using a horseshoe, a circle, a crescent—and by varying distances. The houses also differ. The crescent is formed by a wedge-shaped house, 15′ wide at one end and 21′ wide at the other. Rectangular houses are 18′ wide, generally, with some of them wider. So although we have only two basic elements—a curve and a straight line—we get a great variety of automobile and pedestrian spaces; we also get a variety of housing types. The landscape can be treated in different ways, too.

However, the person living in the house doesn't want it to be treated as simply a device to turn a corner. The house being narrower on the front than on the back, achieves something that no Philadelphia row house has ever achieved. The typical Philadelphia house is too narrow for three comfortable bedrooms on the second floor. By widening the house in the back, we get three decent-sized bedrooms on the second floor. This shape also puts the emphasis on living space predominantly in the rear, facing the essentially private outdoor living area. Nevertheless, since the automobile court will probably become very active, with washing of cars, parking of bicycles and so forth, there will be life on both sides of the house. When the Bath and Edinburgh crescents were built there was activity on one side only.

CRITIQUE: William Breger

I'd like to discuss something of the esthetic pattern, then the social problems involved, and then go through the plan in detail. The basic problem is the monotony of the scheme, whether 2000 or 8000 units should be built. Though there are differences, the units are essentially the same shape, and the project has a large scale of many hundreds of feet. The esthetic problem involved is the repetition of an element, which may be questionable. There's also a social problem involved here: namely, whether this is a community at all. What does it matter, as far as the sense of community is concerned, whether they build 8000 or 2000 units? How does this all relate together? You don't really come into a space that says "this is my space" but you come into a space that has something of an anonymous quality about it. How do I speak this as a language of *a* place and not *all* places? You may say that this is the fault of row housing, but the older row houses were actually different sizes—some had four bedrooms, some had two bedrooms—and the fact of trying to articulate one kind of row house against another produced crooked discord and disorder, not the rigid columns that are indicated here.

A very real analysis was made by the architects. The thing that strikes me first is that people who live in Philadelphia in $13,000 houses are worried about three automobiles. I'm willing to accept that; nobody walks, yet everybody walks. The analysis was very good, but the scheme is too simple: the cul-de-sac and the loop. In the past the cul-de-sac was usually counteracted by a long straight street, with a turnaround at the end. This is much more organic,

making the turnaround and the street one, rather than two separate parts; but in doing it, a lot of space is lost. If we analyzed the amount of space used for activity against the amount of space which I think is wasted, between the cars, would we not be better off adding it to the pedestrian function?

Another point: you accept some row houses without a pedestrian path in back of them, so that the people have to go along the street to get into the open interior space, whereas other people can walk very pleasantly out of their backyards and move right into the space itself. Some of these houses—compared to typical row houses have a tremendous amount of space between their living areas and the next house. But for others, in order to give a great area to the automobile, you reduce the physical proximity for the human in his recreation area to less than it is in terms of the car area.

Also, you're using a road with alien truck traffic which goes through a series of your loops; you're introducing a new kind of traffic which these people shouldn't have to suffer. Another question is the relationship of the school to the project. While there is an ideal relationship for one group, the school must serve the other group as well, and they must cross the main artery to get to it. Some sense of pedestrian movement or some way of going to school should have been articulated. Further, the church seems to be lost in the wilderness; it doesn't seem to have any relationship to what is happening.

I'm not going to say anything about the houses themselves. Mr. Geddes is the definitive row-house man in America, so I'm sure that they were very well studied. However, there are some problems; one is that to get into the kitchen is very hard. There's no service entrance at all. And to get to the living room you must go up the stairs and through, whether your kitchen faces the rear yard, or your kitchen faces the street. You have two variations.

DISCUSSION

Robert L. Geddes: The living room is on the second floor, above the garage; there is one kitchen that's a full flight up, and one a half flight. But you're referring to what we call the garbage can problem—the ash can school of architecture.

Qualls: The backing up of the houses is a pattern that we didn't feel was a disadvantage. They are a bit close, but there are dozens of ways you can get complete privacy; we think the idea is permissible in this kind of row housing. We used it as a device to give a stronger pattern along the street. I do not agree with you on the problem of entrance. You come in between the trees into a space that is pretty much of a scale with your house, as opposed to the kind of endless street which you have in existing Philadelphia, in which you tend to get lost.

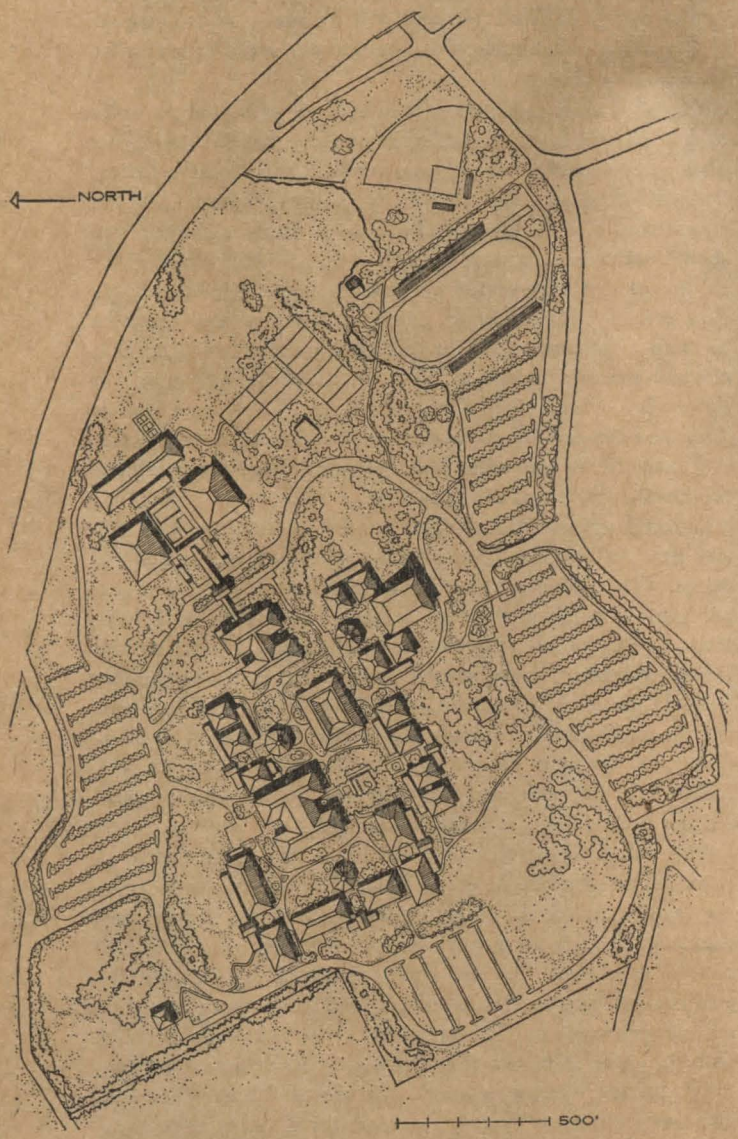
Louis I. Kahn: I look on this scheme with great sympathy, not for the form of the design, but for the sense and the order of it. It is a wonderful contribution to recognition of the automobile. You can have there a harbor of cars; you can recognize when the car comes to a stop. This is a design where the stopping is separated from the going. I think this is a very important contribution; the principle of stopping, as a *raison d'être* for going, is so simple that there should be no argument about it. I do think, however, that the harmony of an entrance to your community is not there, and I think that that may be a problem at issue—the split between the two areas—maybe you've got a sense of entrance but it doesn't count.

Question: One of the problems here was the search for form on an extremely flat site without enough interesting elements in the site itself to afford *changes in scale*. Even though there are groups or cul-de-sacs of row houses, we start with the outdoor room, each the same size; whereas in Marin City there is variety in the site. Here it wasn't a matter of choice: what form shall be used to express community and diversity? There isn't a thing here except buildings which, in size, scale, and height, can give variety. The modular solution is repeated, in the sense that the row house solutions are repeated, endlessly, to the same scale. You may vary the architecture but the physical features of each of these areas are going to be the same. The physical scale of each individual area will be fixed for all time, because the right-of-way is one of the most permanent things we ever created. We may tear buildings down but we can't start messing around with property lines. I think this particular aspect of fixed patterns will dictate a severe esthetic to the whole community even though you get a dozen architects working on it.

Geddes: I tend to agree with what you said, but in order to get the kind of change that's really needed here, not done on a superficial basis, one must have a greater variety both sociologically and physically in the program. On the other hand this is being judged as a single element; you should see this as a part of Philadelphia as a whole. This might act as a very strong community focus in Philadelphia as a whole, because other parts of the city are going to be built differently. I do not believe that within that element there is monotony. The question is: how many of these should be built? I suspect that if this project were done and the rest of the area were continued in rectilinear, or hexagonal, or any other linear way, this would not achieve the kind of drumbeat that you fear.

Vernon Demars: Donald Reay and I are familiar with this site because we were consultants to one of the competing teams. When we saw this in brochure form we felt it was a brilliant coup in many ways. I am more in favor of it than I am against it so that most of the things I want to say are in defense. I have some reservations, as the architects who designed it have, about variety within the project. On the other hand it brings about an order and it is technically a brilliant solution. Certainly the spaces on the inside will be extremely interesting. I wish that some builder would take a small corner and try one out right away—one meaning four of those loops. When you think of other cul-de-sacs—Bath or the Bloomsbury area of London—they never got off the ground this many times, and so they are unique. This form perhaps is weakened as its uniqueness is repeated. The old part of Philadelphia, with its gridiron pattern, creates a texture, and this texture can take on infinite variety. This project is on another level of pattern, above that, and it is more difficult to repeat pattern than texture. Variations in the texture of Philadelphia can give one little street length a completely different look from another one. Some of the very handsome old sections around Rittenhouse Square, a couple of blocks of urban townscape, have almost a brickwork pattern. You get a closed vista at the end of each street, and they are still handsome living places, closed to traffic. This means that the city can take on this kind of look. The scheme is so persuasive that one wishes a piece of it could be tried out. It's much to your credit that you attempted a separation of car and pedestrian and that schematically, it seems to me, you've come up with a brilliant solution.

FOOTHILL COLLEGE



LOS ALTOS HILLS, CALIFORNIA • FOOTHILL COLLEGE JUNIOR COLLEGE DISTRICT, CLIENT • ERNEST J. KUMP AND MASTEN & HURD, ASSOCIATED ARCHITECTS

PRESENTATION: Ernest J. Kump

In this project, we think we have achieved variety within unity and have recognized some of the tradition of regionalism and community relationship. The buildings are all based on a space module, 60′ x 68′ in floor area, with maximum flexibility to accommodate to future curriculum changes. Each space module is self-sufficient, structurally and mechanically. The entire plant can be prefabricated. The walls are all modular panels which can be replaced with doors or glass or any type of opening. The structural piers are tied to the space module; partitioning is flexible.

The attic-form roof acts as mechanical raceway, and there is intense mechanical activity in this space. A tunnel connects all the buildings under the walks, which have removable precast-concrete unit slabs. It carries all mechanical lines and audio-visual communication lines from the library. The lines enter the attics of the units and can be taken to any room or space, giving us complete flexibility throughout the entire plant. The attics are floored with solid decking. Ceilings are luminous; 4′ modular-grid squares are formed by redwood beams which also receive the redwood partitions.

There is repetition in the forms of the buildings, but we tried to achieve a feeling of informality in their relationships. All circulation is exterior. There are three octagonal lecture units, used by various departments. The administration wanted to stimulate circulation in the school; technical and engineering subjects and social studies are not in their own little areas where the students become lost and never see or go through the rest of the campus.

We tried to achieve some subtlety in planning to adjust the buildings to the plateau, an area of about 30 acres. The buildings are all on a slight rise—it has about a 2000° arc as I recall—and much refinement and adjustment were necessary to achieve the relationships of buildings and the planned spaces that we wanted. All the buildings are entered from patios. Parking areas, which are segregated around the campus, are all developed with trees. We wanted to get rid of great seas of asphalt and automobiles. The parking areas are at a lower elevation, with the buildings all at a higher plane, and the trees are so planted that the view from the campus doesn't include lanes of cars.

CRITIQUE: Sibyl Moholy-Nagy

I find myself in a very difficult situation, because this is the most schizophrenic criticism I've ever done for any project. Architecturally, creating a form and a space and putting it into a particular setting, I think this is one of the most successful and gifted schemes I've ever seen. I was so delighted with it that in the beginning I was blind to almost anything else, because I find really depressing the fact that in our extreme urgency to abolish the façade, we have deprived our buildings of any recognizable personality. We no longer have what is called Gestalt—a combination of visible features that will make a person or building memorable—not memorable in the monumental sense but simply to remember that this building is a junior college or a hospital. In this respect I found Mr. Kump's buildings very refreshing. The actual drama of modern

architecture is to combine regional aspects in the best sense of the word—in the sense of planning, in the sense of regional materials, and in the sense of putting architecture into an unmistakable surrounding without sacrificing economy. I would like to read into the record a brief statement by Patrick Geddes from "The Co-operative Activities of all Organisms," written in 1910, simply as a special tribute for Mr. Kump's design: ". . . each true design . . . should and must embody full utilization of local and regional personality. Local character is thus no mere accidental old world, as its mimics think and say. It is attained only in the course of an adequate grasp and treatment of the whole environment and in active sympathy with the essential and characteristic of the place concerned." To which one very well could add Voltaire's beautiful statement on Ideal Architecture: "The satisfied eye embraces the structure, never surprised and always enchanted."

It was from this very satisfactory reaction that I found a difficult transition to make, in anlyzing what these buildings are for. And then the criticism becomes rather sharp, I am afraid. Because I feel that the three-dimensional reality, so harmonious and dignified and reverent toward nature, has completely neglected the movement of bodies through space and the element of time. The diffusion of building units and the identity of the space module are, to my feeling, completely hostile to the psychology of 17 to 19 year olds who are the ones to use this building.

To speak of the simplest aspects first: 3500 young people will be on a continuous move from one building to the next with hourly or two-hourly intervals, which will create movement which I think must be disconcerting. Since there are no home rooms in this whole complex—no rooms to which a particular group belongs and where they can leave their belongings—they will have to carry all their belongings and books from place to place. It will be a continuous, frantic movement. I taught for two unforgettable years on the campus of Berkeley and I remember, even for a teacher, the completely shattering experience of moving up and down, hill and dale, to get from one building to another. It will be un-understandable in the case of the torrential rains which I remember very distinctly from the Palo Alto region.

Mr. Kump has pointed out that all the classrooms are entered by patios, but this is not quite so according to the plan; the language building, the social science building, and some rooms in the engineering building, face back to back so that they can be entered only from the walks around the buildings. The 17- to 19-year-old group is the most difficult as far as discipline goes. It is a puppy state of enormous puppiness, mixed with the unhappy anticipation of being an adult, and is very hard to handle. You make no provisions, for instance, for students accumulating in front of classrooms when the classes change; you have no provision for where they are going to drop all their things; you have no provisions for weather, and (my main objection) the students have no identification with one particular place. The student who goes to college has an almost maniacal desire to identify with the group. He is confronted with a new situation; he is confronted with a new group of people; and he has no place in this college where he can form a group—no home room. I am sure that the beauty and harmony of the landscape treatment is, subconsciously, extremely beneficial to the young people; but I am also sure they will scram at the first available moment to the juke box parlor at the corner in Palo Alto to be together with their group, because there is no provision for this get-together which a home room gives to students, or which even the old-fashioned college corridor gives them.

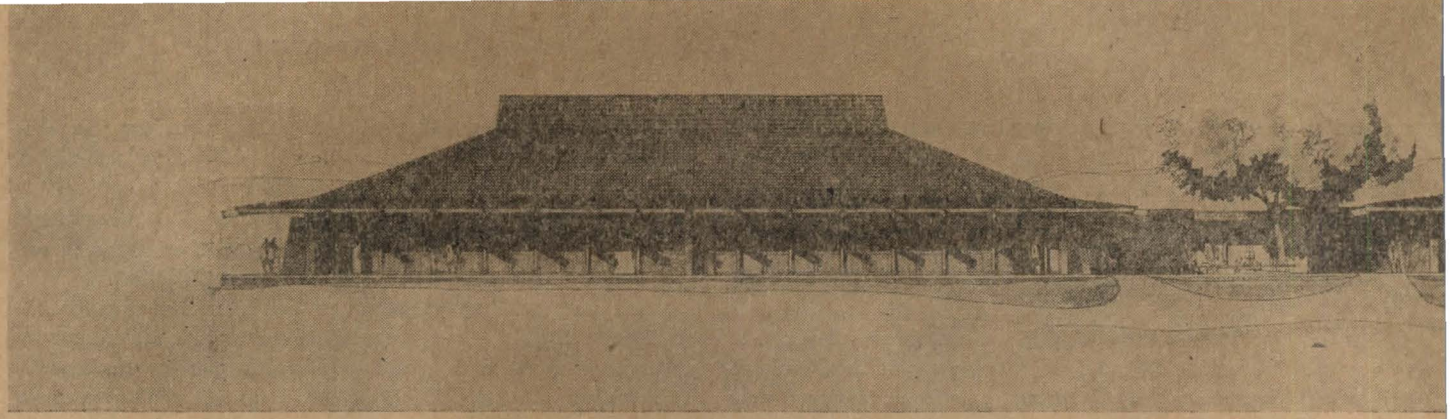
In addition to the lack of identification of the student with one particular place in this college, there is the great difficulty of the necessary identification of buildings with their purpose. I have said that I find your individual buildings beautiful; I feel tremendous relief that an important architect goes back to native materials and creates a technological solution with them. But it is nightmarish to think that Social Science, Languages, Fine Arts—all the buildings—look alike; it is the sort of experience you get in some of the modern pavilion hospitals. In teaching, I think, this is even more important, because there are very decisive differences in the character of the things taught. The sheer fact that buildings are totally different—that they create a completely different environment—helps to create the necessary feeling of differentiation of aims and future goals. And the identity of the space module and the identity of the building exterior and the identity of the approach to it have a deadening effect which will add to the feeling of homelessness and lack of identification which is also created by the lack of assembly.

Finally, there is the old problem of the flexible partition. As far as I can see from the plan your partitions are extremely thin and I try to imagine art classes with chatter going on in various groups; language classes where you have Spanish, English, Italian, Russian, etc. in groups side by side. An extremely unrestrained verbalization is today the backbone of teaching, unfortunately. These are things that would make the interior of these beautiful buildings extremely difficult from a practical standpoint.

So in conclusion, my criticism would be this: if I were led into this as a college where students lived in dormitories and had an outlet for their personal life—for their desire for grouping and assembly—in dorms, lounges, etc., then I would say it was very successful as a college. As a college where groups have to move from place to place, it seems to me it will defeat its own purpose. The beauty of it, the dignity of it will be lost in the frantic scramble which is inherent in the scheme.

DISCUSSION

Kump: The criticism is very well taken. The question of distances and the activity which must go on in changing classes is a fact. One of the big problems in the development of a junior college in California is its large size. This is the most compact junior college to date in California. We feel the only way to solve the thing Mrs. Moholy-Nagy mentioned is by limiting the scale or the size of the plant. This one is limited to 3500 students; most of the colleges in California are tremendous plants planned for as many as 20,000. The interesting thing, from the architect's point of view, is the position of the educator in the planning of a junior college. We often have the frustrated junior college president who does not want to be the superintendent of a high school; he hasn't a university but he would like to have his school on the scale of a university; he would like to think of himself as the president of a university or at least a 4-year college. And so we're continually fighting with the administrative staff wanting to create this great campus aspect like the University of California or Stanford, on a tremendous scale. I have seen campuses which have great courts with no meaning, or quadrangles of 8 to 10 acres, just to try to appear as a



great university. We had a different situation here.

Circulation without covered connections was purposely planned in this case. We have the rainfall you mentioned, but the administrative superintendent—a strong person, a strong client—wanted the school planned in a very informal manner. He feels there is no necessity to connect the buildings; that it is too reminiscent of high school planning. I don't think it's a very serious aspect.

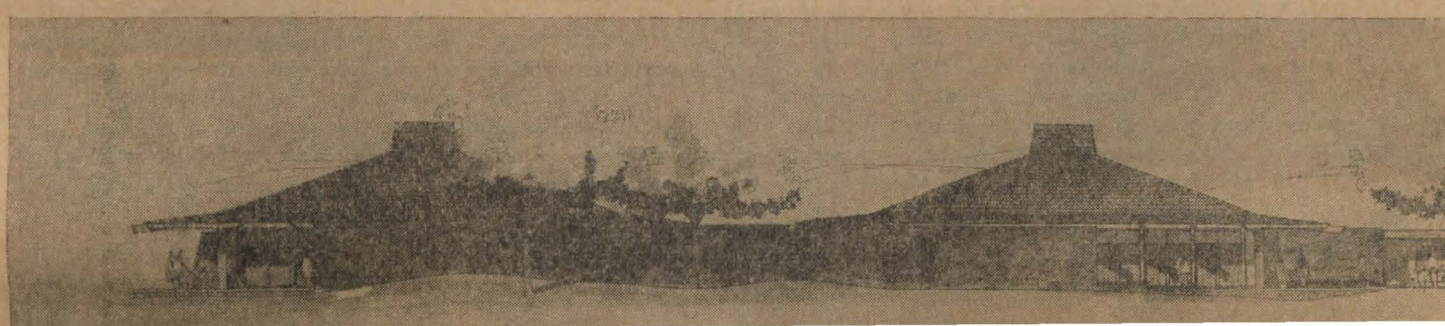
I think there is more variety in the buildings' identities than can be grasped in the drawings and I doubt very much if the space module will consciously express itself in the over-all pattern of the design.

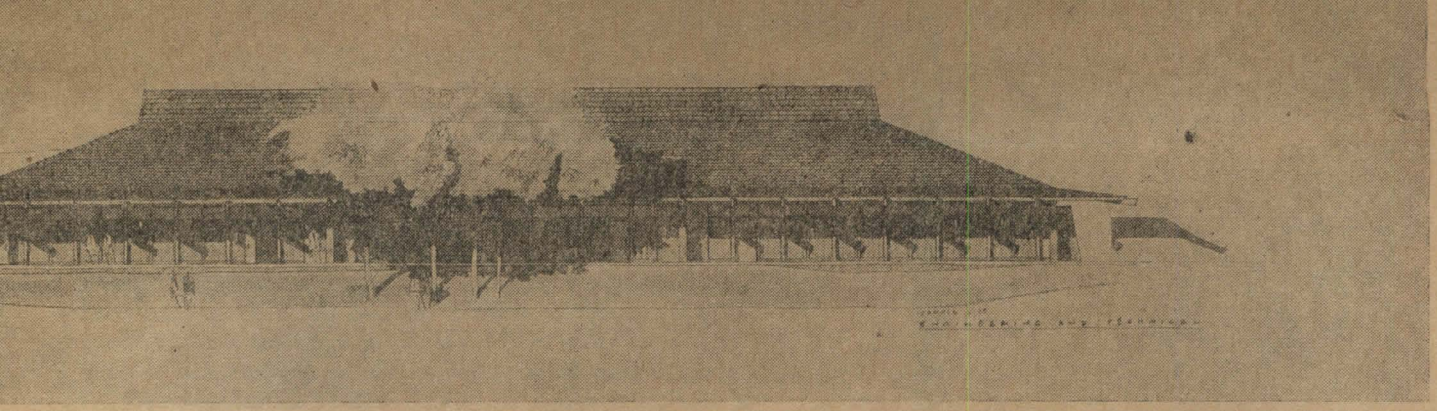
William Breger: This isn't really a question. An artist sets his own premises. But here you have a series of buildings. You look at the plans on the exterior; they are organized as a repetition of one unit. You go inside and you find differences; each one is laid out differently inside. We are trying to take multiples of life and organize them into wholes, but just think of the function of a science building —it can be different from that of a lecture room for French or math. Shouldn't there be some reflection of that within the whole statement? Shouldn't that be indicated in the particular forms and shapes of buildings, rather than axial relationships? Within this sense I feel very strongly critical about it.

Kump: Through the principle of flexibility of teaching spaces we are approaching the fast-moving developments of education in the West. Ideally, educators would like the principle of loft space with everything used for teaching purposes—cabinets, laboratory equipment, seating, and the partitions—movable, flexible, and adaptable to the requirements of the educational program. Their ideal solution is to have merely a visual and sound barrier partition, that does not attach to the ceiling or floors; they even ask if this could not be achieved electronically without putting any material partitions between classrooms. Our partitions today are just a hangover from structural partitions; they used to function to hold walls up as well as act as sound and visual barriers. So, with that premise, it would be very difficult to customize the science laboratory or any room and express it. Some of the buildings—the octagonal lecture halls, the library, the auditorium and other special units—have their own identity. What we have tried to do with this philosophy of organic flexibility is to get variety by adopting a loft-space module and, by giving it variety within groupings, to get richness and diversification. With this need for flexible space, we are not using natural lighting at all. There are no windows in the walls except in certain rooms and garden areas. The walls rise up under the eaves to give an openness. Natural lighting is not a consideration.

Louis I. Kahn: What I'm going to say has already been said but I'm going to say it anyway. I think that we don't know the answers. The question here is much greater than just fitting partitions in a loft space. The consideration of a place to learn is a complex problem of extreme sensitivity. A place of learning has to me a definite inspirational quality in itself. Not only what's taught is important, but the inducement of teaching also. How can you teach under artificial light? This is an unbelievable situation, to me. And how can you define space by artificial light? You couldn't get anything which makes nuances of the seasons or the time of day, which have an influence on the mind. So therefore, I believe this is the satisfaction of the program in the same way a druggist fills a prescription. If that is architecture, I don't know what architecture is. Architecture is completely sensitive. If I were asked, "What is architecture?" I would say it is the thoughtful making of spaces. It is not divisions of areas; it is not flexibility. I believe one mistake I made at the gallery at Yale was to consider flexibility; partitions never change—only once in a blue moon. What is important is how to define spaces.

Kump: I don't think we disagree at all; I think there is a misinterpretation. There is richness of space. We've ap-





proached space objectively and we have also tried to take into consideration the technical problems and functions as outlined by the client. The rooms have a variety of space qualities, ceiling heights, and the handling of textures and color. With many schools in California, the technical aspects of the formula of technical solutions dominate the whole thing; when you see this built, I think you will see that we are trying to get back to exactly what you are talking about. The quality of the space is an important thing we were trying to achieve within this framework. But I think the architect is up against a fight with a great public worship of technical solutions that are blinding our school people to the human values.

Moholy-Nagy: On this aspect, I think your landscaping and the way your buildings are set in the grounds are marvelous, for one senses in them your opposition to the machine or factory approach. But if you have 3500 people, you must keep them off your plot of ground, so the whole experience must be visual. And with this shocking ideal of artificial light in daytime, the beneficial influence of the seen site is lost. So couldn't you, please, try to get your client to think in terms of the visual intake of the student?

Kump: Every building has to manifest the philosophy of the client; you can't overlook that. And if it is a strong personality with strong ideas, the result is going to be the architect's interpretation of this man's philosophy of education. What you say is very true; it does not happen to be the philosophy of this administrator. Try to put yourself in the position of telling an educator how to organize a philosophy-of-education program; it is like trying to tell us how to do architecture.

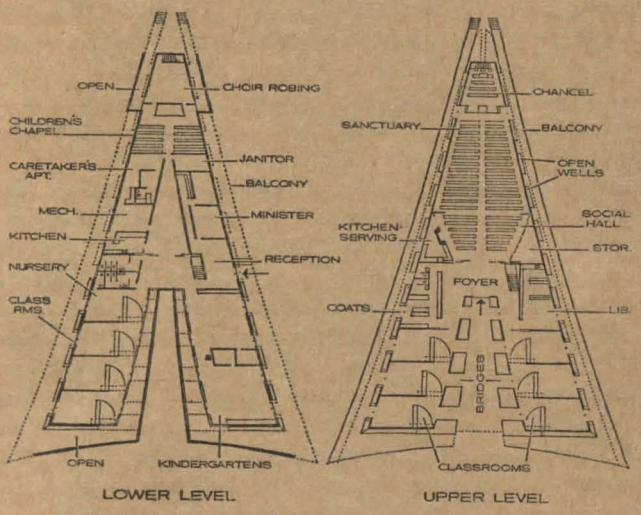
Charles Magruder: This is a tax-paid project, is it not? Is the administrator really given that authority to express his personal ideas? There is a board, isn't there?

Kump: That is correct. They selected the president on the basis of his philosophy: of education, organization of campus, policies, courses, etc. And they give him pretty much carte-blanche. Other boards might not care for an administrator like that; they would select a different type. Their responsibility, I think, is parallel to the client when he selects an architect. They delegate everything; their major decision was the man they selected. They know him; they know the way he operated a school before, his philosophy, etc. I think it's similar to selecting an architect. You try to fit the architect to your philosophy. Then you turn it over to him. You feel he's the man to best interpret what you wish. And you give him a free hand.

Hideo Sasaki: It's rather frightening to me to see this school being criticized for its lack of attributes of dignity and variety. I wonder whether we can get back on the proper track. The so-called space modules are varied and not so fixed as to destroy different sorts of space qualities that are in the school. For instance, as I look at the whole campus, it's quite obvious that there are certain major elements that stand out—things like the Library, Student Union, Fine Arts Building, Gymnasium, Administration Building. You will even note massing of the buildings in relation to the open spaces. The buildings I cited are articulated and expressed as major elements.

Inside the buildings, too, these spaces are articulated, with ceilings ranging from 17 to about 26 feet high; they create this spacial quality that Mr. Kahn was looking for. The office rooms are housed in a separate unit in back and they have a completely different sort of interior quality as well as a different relation to their own office patios. When you go from the office cluster with its own patio, and then to a cluster of classroom units around patios, and then to these buildings joining campus patios, you have a coherent structure—a space structure through the whole project. It seems to me an architect has several sorts of problems. One is to create an expressive art. Another is to contend with economies and structural techniques. At this junior college level, I really wonder whether the difference is so dramatic that you can't work with certain fixed structural conditions.

FIRST UNITARIAN CHURCH



WESTPORT, CONNECTICUT • VICTOR A. LUNDY, ARCHITECT

PRESENTATION: Victor A. Lundy

Let me discuss briefly what Unitarianism stands for; you can never take architecture out of context—the conditions that create it—and yet we all know that once the job is done the building stands by itself. The designing architect isn't there to explain it; all the problems of budget, site restrictions, and so on are hardly ever thought of, and yet those are the elements that produce the created work. This building is a serious attempt to express Unitarianism within all the restrictions of the problem. The total building budget for this project is $350,000 in its ultimate stage. It had to be buildable in two stages; the first stage started at $200,000, and by the time furniture items and so on are taken out we're down to about $170,000—and the program requirements were formidable.

When we think of Unitarianism we think of a sense of unity—including everybody in. That's the first obvious symbol, and in a way that helped us to arrive at one single shape to house all the simple functions. But there's more to Unitarianism; the Unitarians stand almost agreed to disagree. They feel that you arrive at the fundamental truth through opposing points of view. So my solution to the problem was a building that isn't finite. It doesn't complete itself. The observer and user, the person who enters this building and worships there, or studies or reads in it, completes the structure for himself. In a way, maybe it isn't a building. When I analyzed the functions and tried to house them in one simple, fundamental shape, starting with low areas where low areas were required, and working forward to a high area where we have a climax, the present roof shape evolved. What the building means depends, I think, on the beholder. For some, it may be a ship taking sail. For some people it may represent two angel wings. To some it may mean two hands in prayer, or two hands welcoming one in. And I think this sense, right from the first presentation of the project, really hit home. It was a very thrilling experience to present this, and it seemed that after a few minutes everybody accepted the concept.

Of course there were difficult problems of function to work out. One real problem was the site. It's roughly an 8-acre site and the only really buildable part is a strange, granite ridge that runs through the land, to one side, and is dominated by two huge oak trees. I used this ridge as a point of departure. Every time I visited the site, and every time the church people were there, there seemed to be a way of walking on the land. You would move in low and be drawn by the hill, and then walk around to the south and then up—you just seemed to aim northward toward the oak trees. I wanted very much to try to preserve the sense of the site; by splitting the two halves of the room structure, by the entry court, by the low, intimate instructional area down the side, the site very definitely sweeps through.

There's a real sense of progression from south to north. People will be led to enter where it is low and intimate; as they move in, the building pulls in on the side and rises vertically, and it comes together at the end in a sense of oneness. In so many churches that imitate the hands-in-prayer symbol, there's almost a sense of submission. There's a feeling, "O God, I can't do it myself, you do it for me." But when the hands are apart, as the two roofs of this church are apart, there's a sense that you have to control this thing in yourself. The space between will be filled with a continuous skylight. There will be a simple weather skylight above, and below it suspended some distance away (as part of the second stage) a great, stained glass abstraction, running from the outdoor court all the way to the apex and then on down. Looking up, it will be almost like looking through the branches of trees.

This building has to be built in stages. I will build the roof structure complete, in stage one; in working with very small church groups you need the inspiration of a visible thing to lead them on. Just the areas on the entry side will be enclosed, stopping short of the social hall and the sanctuary. I must take many, many photographs of that, because it will be the best-looking time of the building. The structure is of laminated timber and very simple. I think too much has been made of the upside-down ship symbol. A Unitarian place of worship is a "place"—it isn't a house, or a church, even, or a ship; it's a meeting *place*.

The arches are set 16 feet on center and spanned by two-by-fours on edge. The system of construction is very much like boat-building; in fact the arches will be laid out on a great loft floor much in the same way that ship

timbers are laid out. On the almost horizontal entry arches, the two-by-fours are at right angles to the arch; but in the 200-ft length of the church, the arches gently tilt—the arch starts vertical and by the time it gets to prow it will be horizontal. The lines that go forward won't be straight, because of the double-curved nature of this design. I'm afraid this may look too sensuous, but luckily the minister, who will face this live animal, will be the one who has it looking towards him.

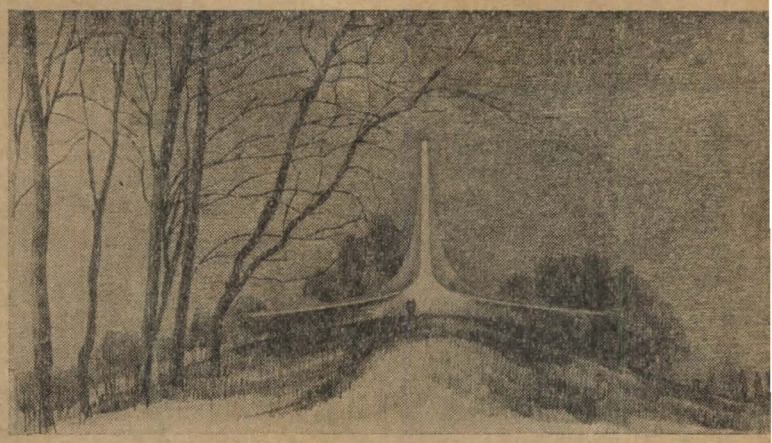
I would have liked everything contained on one floor level, but there wasn't enough buildable land, so we had to stack the classrooms. Thus the entry will be two-storied and the little children will be down below; they can walk right in and, leaving, run down the hill (their parents wanted them away, noise-wise). The balcony gives us a chance to get to the back of the sanctuary when the sanctuary seats are reversed, as in an auditorium. The social hall, which is used as spill-over space for the sanctuary, can also be the stage for the sanctuary space. The seats are all individual and movable, and we can get a huge stage in depth, by sliding the foyer doors apart. I can see great pageants there, because the site itself is the stage.

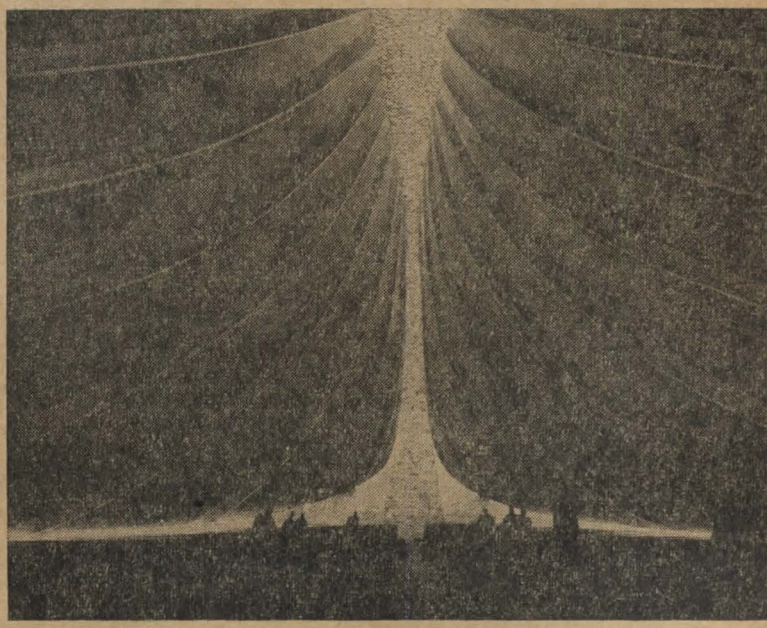
The plans have been much simplified: all the area under the sanctuary is now unexcavated and I have decided to eliminate the voids of the inner court. I think it was perhaps too contrived an idea. The entry court is very small in scale and if there were bridges with holes under them, this would have become a narrower corridor.

CRITIQUE: Professor James Fitch

It goes without saying that any criticism of a building based merely on photographs cannot be very profound; the only proper way to analyze a building is to see it in real life and walk through it. However, a complicated question posed by a dynamic form of this sort—so powerful a form with such tremendous movement from fore to aft—is whether the very rational plan projected into the third dimension is going to do violence to the form of the roof. It seems to me that there's a discrepancy between the plan, which is quite orderly and sensible, and the lines of the roof; and the very fact that Lundy has framed this on a skeletal basis will exaggerate, rather than minimize, this kind of conflict. If it were a simple shell, the intersection of the vertical plane with the double curvature might not be as difficult. I know he proposes to use glass, but glass is transparent only when there's more light on the other side of it than there is on yours. It seems to me a very difficult problem and one that is posed by the very nature of his assignment: he's asked to do a sanctuary whose primary function will be emotional, where there are very few rational limitations; and then he has to have under that a number of other spaces which are quite mundane and practical in their nature.

Another aspect of this same problem is the question of lighting—both natural daylighting and artificial lighting. In the daytime he'll have a serious glare problem caused by the tremendous skylight, unless there are sources of artificial light thrown up against the central slab. The canopy, far from being light, is apt to seem very heavy unless it is illuminated from below. The roof construction that he proposes I have seen on the West Coast; Van Evera Bailey has used it in a number of houses—in effect it's a wood slab. This is a beautiful treatment, provided it's adequately lighted from below, but if it isn't it tends to be quite heavy and oppressive. I assume that the transom





or clerestory along the outside wall will help overcome that but one should be sure that there will be enough natural light to do it. And then, of course, one wonders how the auditorium will be lighted at night. If the skylight is so *important*—and I think it's a very lovely conceit—it should be artificially lighted. One should be aware of the reason for this split down the middle; it should be just as legible at night as it is in the daytime.

I'm glad that Lundy has given up those little cavities in the lobby—the little bridges that cross the inside areaway. Paul Rudolph used this device at Wellesley, and though his intentions were good I think it was really quite unsuccessful; the bridges served to act as a very insecure connection between the lobby and the theater.

I'm sure that the building is very well sited, from the indication of the profile of the building in relation to the site. I hope that Victor hasn't been in Florida for so long that he's forgotten the dangerous, dirty ice and snow that we have in a suburb like Westport until March; there are real problems, as well as esthetic problems, like getting from the car to the sanctuary both safely and beautifully, and I hope that he has considered those.

The central problem is the one of being forced by budget limitations to house under one roof two quite different kinds of functions—one of which by nature is highly subjective, and the other subject to very rational controls—and whether or not under this one canopy this can be successfully resolved.

DISCUSSION

Lundy: Professor Fitch sounds like one of the tough members of the building committee. I'll take your major point first because, of course, that is the very basis of the conception. The sense of Unitarianism is really that of *total place* and the separate parts aren't intended to be made so much of. None of the partitions go higher than door height, and they are insulated by glass above that for sound. It's a total visual experience. The kids in Sunday school will have a sense of the roof continuing on beyond their little world into the sanctuary, which they can also see. There's to be no sense of exclusion and mystery. Unitarians like to let the stars in—at least these Unitarians do. One, a very forceful fellow, said, "We want to have a sense of the magnitude of the universe in this building." That was a very purposeful decision.

On the question of ribs versus shell and the ribs fighting the sense of continuity of the design concept: the ribs actually won't fight the continuity sense. In a way they might enhance it, because they're points of reference. You will be able to see the next rib beyond and, in fact, just about up to the peak; there will be a very strong sense of being drawn forward in this building. The roof is completely a roof concept and you will see it flow through completely. To emphasize that, the artificial lighting scheme I've developed, to go completely around the Sunday school areas and other areas requiring it, is a valance light, a curved laminated front with fluorescent tubes that shine upwards and downward on the walls. So that when all the lights of the building are on, this roof will glow from below. You recognized something that I did very early—the skylight should be a thing of beauty at night as well as in the daytime. That's the reason for the double skylight arrangement; there'll be an artificial light source between these two. However, that's a part of the second stage.

Fitch: If I sit just off center in the middle of the auditorium and I look up and at the altar, won't the thickness of the ribs almost meet in the skylight? Aren't they going to, in effect, be off center?

Lundy: No. There's a clear space of two feet between them. Those arches at the top are separated by thin steel pipes that will occur in the space between the two skylights. Something would have been needed there anyway to support the lighting. Perhaps this may not sound pure by university standards but I think that, in the reality of working on total problems, you sometimes get into compromises of concept versus structure. I wish the budget were some half a million dollars or more and by some miracle of structure we could have these two angel wings floating there somehow, but that isn't the case.

Kahn: I almost question whether you have the idea of a form and you then translate it into making sense. I question that approach as an artificial one. I am also not sure that representation of any kind is the right approach to architecture. To represent angel wings or praying or the unity of the Unitarian Church . . . I think the stated concept is the same in other cases as it is in the Unitarian Church. The school and the auditorium as a meeting place use the same words, and have the same very good response from the committee and all the problems seem to be budget problems. I wonder whether there isn't a confusion between design and form. Form and design are not the same. I wonder whether this represents design or form. Is it a personal interpretation or can it lead to, in time, an accepted way of presenting, rather than representing, the idea?

Lundy: I have always had a feeling against the whole sense of groupism and restraint and, maybe, abstract theory, when it comes to creative expression. There is a total answer to every problem, where finally the creative source copes with the problem and comes up with an answer. My feeling here was that this is a total space and that the little rooms require intimate ceiling structure in the sense of identity. They have that, but there is a bigger message to the building. The building is a live thing. It's something you participate in—it has a direction, a stated thought, and yet it's frozen in space. It was intended this way. I wanted this building to have a sense of moving out through and beyond. I went through many, many solutions before I started in this direction. I think architecture is finally an art of doing, and I think the proof of structure is in its final image and whether it works. And I believe very strongly that this will work. If the little classrooms have a feeling of privacy when the door is shut, and yet a sense of a world beyond through the glass above—I think this is an old device in school work and I find that it works very well. As a matter of fact, on this point, the whole direction of education today—as in the Ford Foundation reports on educational facilities—is toward total malleable spaces. What works today may not be the meaning of education tomorrow. In a way this building is one space divisible into smaller spaces. In the first stage the two-story-high area will be built, mostly without partitions; I hope that, when they can afford them, we will put in movable partitions. That will free the space for what lies ahead in education.

Hospital-Acquired Infection: Role of Ceramic Tile

BY DR. HERMAN WAGNER

From this report—made by the Director of Chemical Research, Tile Council of America Research Center, Princeton, N.J. —the following conclusions may be drawn: Although it is not yet definitely established that bacterial contamination of any environmental surface plays a role in hospital-acquired infection, if such environmental contamination is a real factor, the ceramic tile surface should be ideally suited to resist it. This would be expected from the impermeability of the tile, the lethal pH of the grout, and the high response shown by both to germicidal disinfection.

The struggle for aseptic hospital conditions is a continuing one and finds its focal point in the operating suite. During the past 15 years antibiotics have been widely employed as prophylactic agents in an attempt to prevent the occurrence of these post-operative surgical infections. Too great a reliance upon these has apparently led to relaxation in other precautionary procedures; this, coupled with the development of a tolerance for the antibiotics by certain pathogenic organisms, has left infection a continuing hospital problem.

Aerial Disinfection

At the present time the exact mode of entry of micro-organisms into clean surgical wounds is unkown. Direct contact with surgical gloves,[1] sponges,[2] blankets and linen[3] have all been associated with this infection. In addition, numerous investigations have been conducted on the air of operating rooms to determine the types and quantity of bacteria present. Various techniques of aerial disinfection have been tried, based upon the hope that the effective elimination of pathogenic agents from the air in crowded environments would lead to a reduction of infection.

From the results obtained in field studies, it was apparent that certain techniques, when properly applied, were capable of providing a significant reduction in the bacterial content of the air. However, they had no demonstrable effect upon the infectious particles deposited upon environmental surfaces or fabrics. From these "secondary reservoirs" infection might well be transmitted by means of direct contact, or through redispersal of the pathogens into the air. It is in this connection that the nature of the environmental surface, and its susceptibility to disinfection, becomes significant.

Germicidal Action

It is a common misconception that a visibly planar surface is readily cleaned. Certainly this is not so from the standpoint of surface microbial contamination. From recent studies conducted by the Department of the Navy, the conclusion is drawn that, with even the smoothest and least porous surfaces, mechanical removal of micro-organisms does not obviate the need for a very efficient disinfectant. This efficiency is related not only to the germicidal action of the disinfectant upon initial contact with the surface, but also, and more importantly, to the residual germicidal action imparted to the surface. This was strikingly demonstrated where the residual germicidal action of various disinfectants was tabulated, following application to various surfacing materials *(see table)*. The figures given in the body of the table show the percentage of germicidal activity remaining one week after application of the disinfectant, relative to that existing immediately after application. It is seen that this "antibacterial potential," as it has been termed, varies considerably with the surfacing material which is being tested and is highest for ceramic tile.

TABLE I: RESIDUAL GERMICIDAL ACTION AGAINST STREPTOCCUS PYOGENES ON VARIOUS SURFACE MATERIALS[4]

DISINFECTANT	Ceramic Tile	Formica	Battleship Linoleum	Asphalt Tile	Rubber Tile	Plastic Tile	Plastic Linoleum	Painted Wood	Shellacked Wood
Liquour Cresolis Sap. N.F.	99.9	100	98.7	23	99.2	100	99.3	0	97.5
Cresylic type fortified (p.c. 5)	100	100	87	36	84	100	100	26	45
Coal tar type emulsif. (p.c. 7.5)	99.2	97.5	97.5	25	20	94	98.2	27	81
Pine oil (76.66% pine oil p.c. 5)	99.2	96	57	20	26	32	57	1.5	30
Synthetic phenolic (p.c. 5)	100	100	99.3	73	94	100	99.4	64	77
Synthetic phenolic (p.c. 10)	100	100	89	41	71	99	96.5	32	66
Hypochlorite (5.2% av. Cl.)	13	0	0	0	14	39	0	28	12
Benzalkonium chloride (anhyd.)	100	99.5	22	25	82	82	86	16	28
Benzalkonium chloride (anhyd.)	99.8	76	27	32	50	60	84	17	33
Dodecyl ammonium lactate (anhyd.)	99.9	86	44	55.6	47	83	99.2	27	45

Effect of Joints

The picture of any integral surface would not be complete without attention to the effect of joints, where these are present. With ceramic, asphalt, rubber, and plastic tiles, joints are present even though comprising a minor part of the area. Where such joints are left open, a valid question may be raised as to the shelter they provide for bacterial accumulation. When filled, however, the character of the jointing material is of significance. With ceramic tile, for example, the portland-cement type of grout commonly used insures a minimum pH value of at least 10, even within joints that have been installed for many years. Thus the portland-cement joint would provide a lethal chamber for any bacteria that might conceivably enter.

Experimental microbiological data on integral wall sections of ceramic tiles, bonded to one another by the usual portland-cement joints, are meager. Some preliminary results, obtained at one medical center, and reported in a recent issue of the *Journal of the American Hospital Association*, have indicated that the viability of staphylococci deposited on glazed-ceramic tile, unglazed-ceramic tile, and on the tile joint is essentially the same. Leaving the tiles exposed to room air, for 24 hours after deposition of the staphylococci, resulted in a large decrease in the number of organisms originally on the tile surfaces and joints. The tiles and joints could be almost completely sterilized by applying the antibacterial agent "Weskodyne."

[1] Wise, Sweeney, Haupt & Waddell, "The Environmental Distribution of Staphylococcus Aureus in an Operating Suite." *Annals of Surgery*, 149:30-42, 1959.

[2] Dandy, W. E. "The Importance of More Adequate Sterilization Processes in Hospitals." *Bull. Am. Coll. Surg.*, 16:11, 1932.

[3] Church, B. D. & Loosli, C. G. *Jour. Infectious Diseases*, 93:65-74, July-August 1953.

[4] Klarmann, E. G., Wright, E. S., & Saternov, V A. "Prolongation of the Antibacterial Potential of Disinfected Surfaces." *Applied Microbiology*, 1:19-23, 1953.

Plywood School Roof

Despite a tradition of non-wood schools in South Carolina, a new elementary school with plywood folded-plate roofs has proven the value of its "revolutionary" construction. Economical techniques of design and construction, responsible for a low $8.86-sq-ft cost, are discussed in this article.

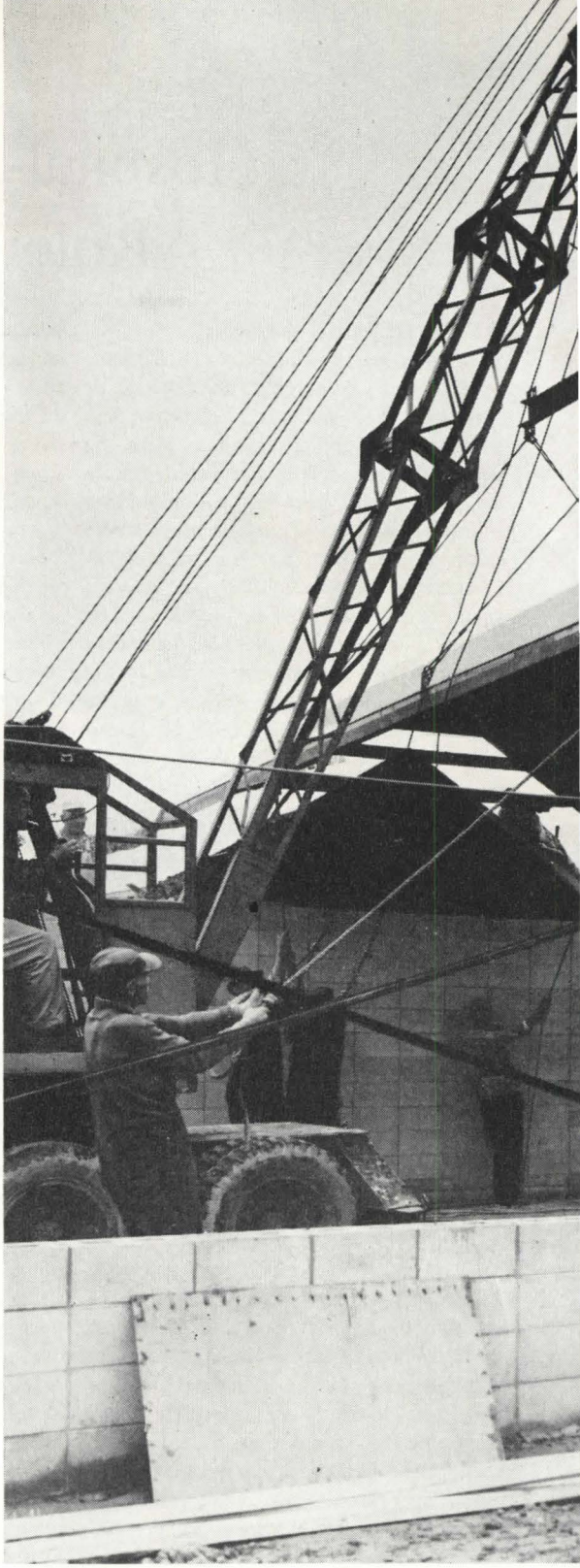
One of the first folded-plate plywood roofs in the South—and also the first wood roof deck used on a South Carolina school in 20 years, and the first used in Greenwood County during this century—has proven itself even to the traditionalists. Total cost of the campus-plan elementary school at Fountain Inn, S. C., was $8.86/sq ft, a low figure even for this low-cost area. The architects, W. E. Freeman, Jr. & Associates, took great care in the design of the school to get the utmost economy from the materials used.

Of interest, in addition to the roof technique and the low cost, is the fact that this school is a "separate but equal" facility for Negro children. Structurally, at least, there is no doubt that it is distinct and outstanding in comparison with other schools in the locality.

Economy of Materials

Fir plywood for the five folded-plate roofs was applied in full 8′ or 10′ sheets, requiring only diagonal cutting of the panels for the ends of the plates, thus avoiding all waste. Roof plates of only two sizes were fabricated on the site, in jigs, with nailed construction only. A peak height of 12′-6″ above floor level provides a high ceiling despite the 8′ height at the valleys; additional wall height

1 *A bay of the folded-plate roof is lowered into place, where it will be lagged to the* V*-joints and bolted together at the valleys.* 2 *Workmen on the site apply ½″ fir-plywood sheathing as skins for folded plate.* 3 *Folded-plate sections are bolted together at the peak into typical bay. In background, nails that connect plywood panels and deliver necessary diaphragm action are applied with a pneumatic hammer.* 4 *A bay is hoisted into place atop its steel columns.* 5 *Framing, of 3 x 4 purlins and ripped 4 x 6 chords, is exposed on the interior, later sprayed with asbestos.*



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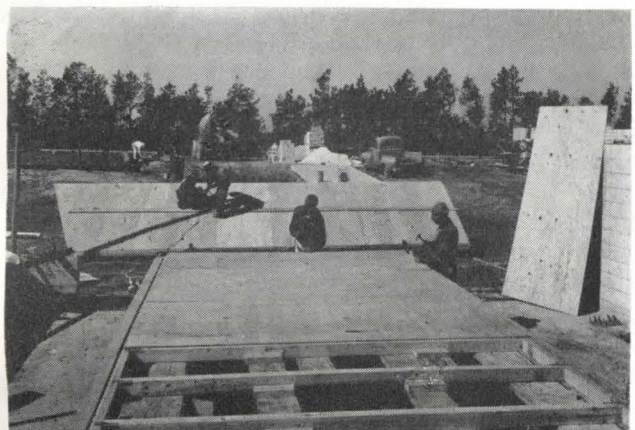

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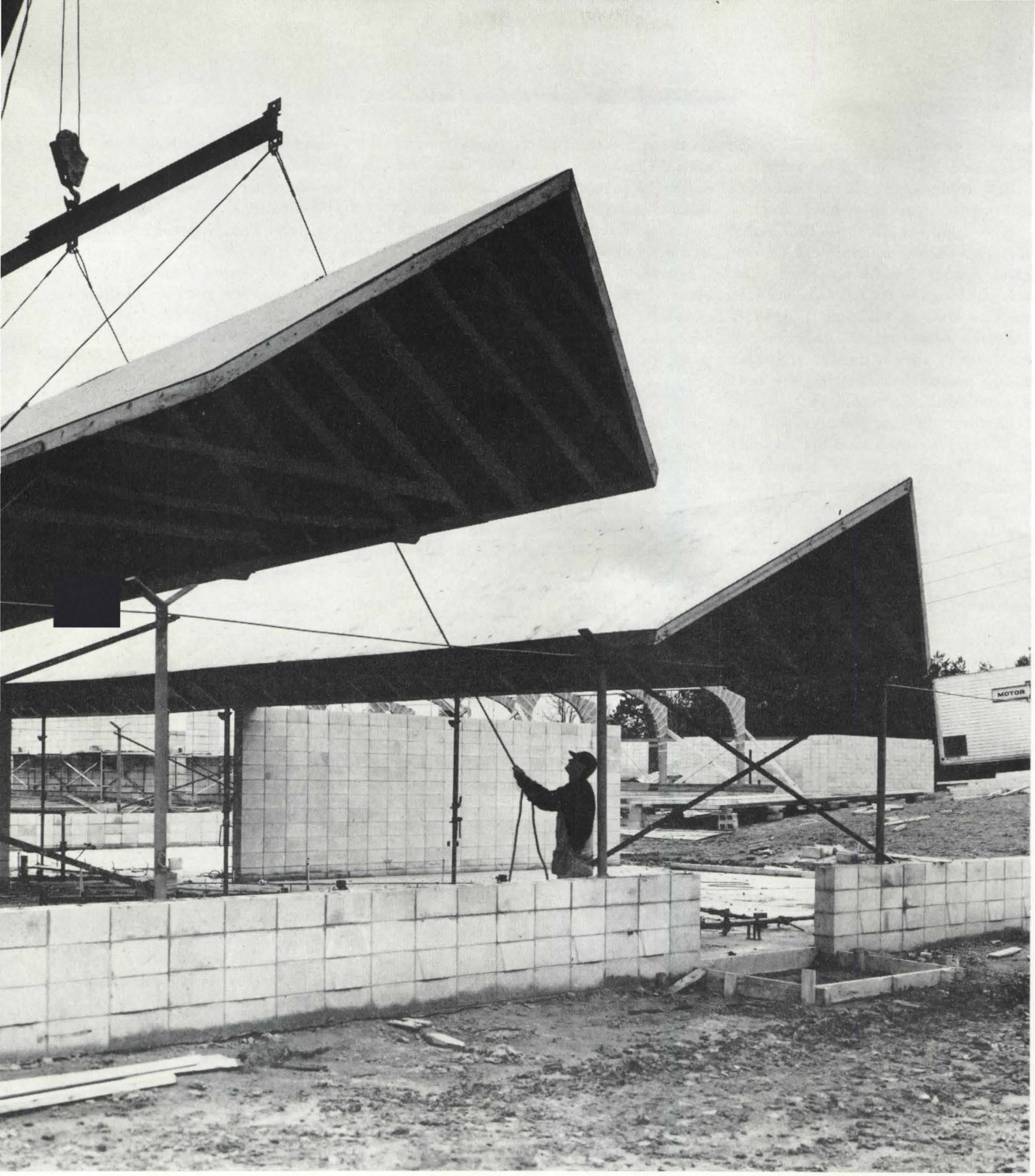

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was thus eliminated for a large saving in concrete block and other materials. Walls were designed on a 3′4″ module, to avoid wasteful cutting of block.

Light admitted through the glazed gables is sufficient without need for skylights. Windows, while not stock sizes, were all designed on the same module, and were used in sufficient quantity to make significant savings. The use of standard mill sizes of lumber and other building materials eliminated the need for a millwork contractor.

The result of this planning was the low $8.86-sq-ft cost, a total that includes all expenditures, even the planting of a number of full-grown trees on the open site. (The Greenwood County school district has been paying approximately $9.50/sq ft for other elementary schools.)

Educating Owner and Contractor

Because of the well-established tradition of non-wood schools in the area, the architects faced a difficult problem in winning approval for the Bryson School design. Convincing the school board was made doubly difficult, since the firm of educational consultants (required for all school construction in this county) was originally opposed to the design.

To gain approval, the architects explained all details of the "expensive" campus plan and the "revolutionary" folded-plate construction; acceptance followed.

Then, to insure accurate bidding on the unfamiliar construction techniques, the architects prepared a six-page article on folded plates, appending it (together with technical literature from the Douglas Fir Plywood Association) to the specifications. The office later called each contractor, offering to confer in detail on the specs, the over-all design system, and the fabrication method. Only one of the 12 contractors took advantage of this; ultimately he was the low bidder.

The architects suggest their procedure as a profitable one for any unusual building method, since they regard the low price of the school as the direct result of bidding that was based on full knowledge of the job.

Folded-Plate Construction Details

Each of the four small identical structures includes four 28′ x 30′ classrooms and their lavatory facilities. The fifth small unit is devoted to a library and two additional—slightly smaller—classrooms. Outside dimensions of the five units are 62′ x 69′-4″, and all have five-bay folded-plate roofs.

Roof panels, designed to span about 30′, were fabricated on the job using jigs. Each bay consists of four panels and is joined at a bearing wall dividing the building.

End panels are 10′ wide and have an upturned edge 2′-6″ wide (which, together with the panel overhang, provides a 4′ extension at the end of each building). All other panels are 8′ wide.

Plates are 35′ long at the peak edge, 32′ at the valley. Chords are ripped 4 x 6's; eave nailers at the ends are ripped 3 x 4's. Framing for the plates are 3 x 4 rafters, 2′ o.c., except at the cantilevered ends, where 2 x 4's are used. Teco hangers attach purlins to chords.

Top skins for the panels are ½″ fir plywood sheathing, with bottom skins of ⅜″ exterior fir plywood applied at soffits. Interior exposed ceiling and framing are sprayed with ¾″ asbestos for insulation and acoustical control. Nailing schedules were carefully followed on the skins to provide the diaphragm action necessary for the roof to function as a folded plate.

Plates were joined on the ground in pairs, with bolts 4′ o.c., then hoisted into place and linked together in the same way. Valleys rest on V-shaped brackets of ½″ iron attached to 2½″ pipe columns; columns are linked 13′-8″ o.c. by welded ¾″ tie rods. Brackets for end plates are ¾″ plate. Pipe columns support the folded plates at the end of the bearing walls, also, and are linked with tie rods.

Tapered ½″ plywood crickets, rising from 1″ above the valley at the eave, to 12″ at the center, provide drainage. They are covered with asphalt-roll roofing, the remainder of the roofs with 210-lb asphalt shingles over 15-lb building felt.

Other Construction Features

Concrete slab and block construction of the school is conventional, with all block work on a convenient 3′-4″ module that virtually eliminated cutting.

The largest building of the six (housing the 44′ x 44′ cafeteria, service facilities, and—across a courtyard—the administrative offices) uses both standard concrete block and sculptured block. Grooved hardboard is used for one wall. A conventional plywood roof deck is laid over purlins between glue-laminated bents. With essentially the same wall construction, this building is integrated visually with the others.

Interior bearing walls of the school are solid concrete block, and exterior concrete-block walls are either 4′ or 8′ high, with the glazing above. Covered walkways between the buildings are decked with plywood and surfaced with roll roofing.

1 *Bird's-eye view shows folded-plate roofs of two of the five smaller units of the school.* 2 *Campus plan of school arranges five units, roofed with folded plates, in a square. A sixth unit, not shown, is roofed with a gentle gable to harmonize with the folded-plate profile. Construction throughout is concrete block, designed on an economical 3′-4″ module.*

1

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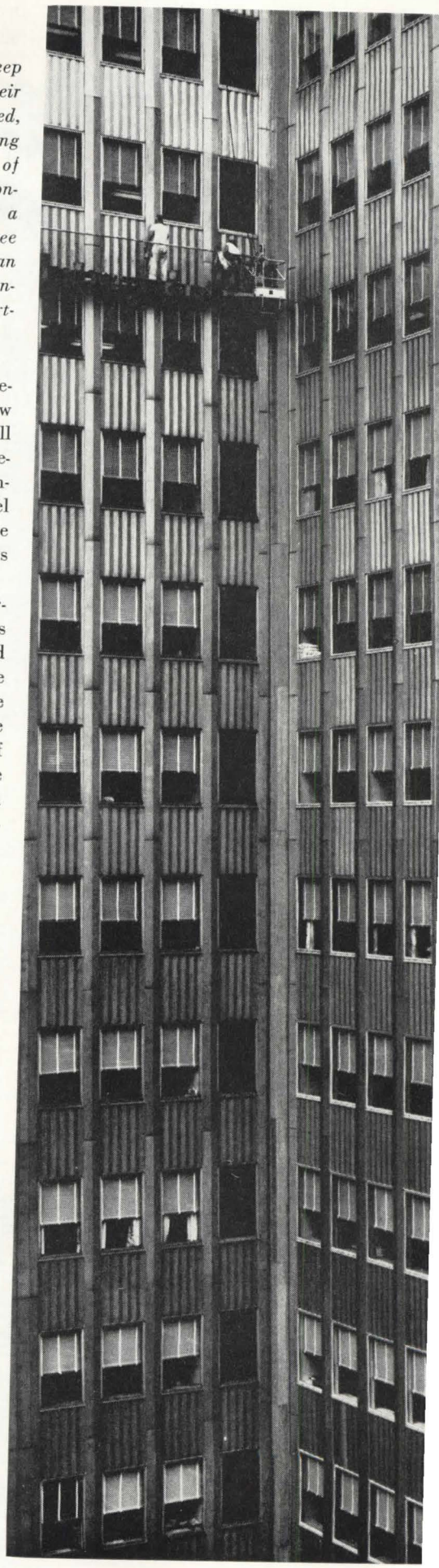
Maintenance of Stainless-Steel Curtain Walls

BY RICHARD PARET AND
JULIAN R. PANEK

Stainless-steel curtain walls tend to keep clean due to normal rainfall and, if their joints are properly designed and sealed, they are leak free. Problems involving the cleaning and sealing of this type of metal curtain wall—where unusual conditions have existed—are discussed by a stainless-steel specialist of the Committee of Stainless Steel Producers, American Iron and Steel Institute, and by the Manager of the Technical Services Department, Thiokol Corporation.



Stainless-steel curtain-wall structures require major washdown in relatively few cases; generally, normal rainfall will keep them presentable. Pittsburgh's Gateway Center Buildings, however, demonstrate the ease of cleaning stainless-steel curtain walls in those few cases where severe washing with strong cleaners is necessary.

Stainless steel does not rust under normal exposure to the atmosphere. It does not pit, become pock-marked, or covered with dull oxide film. The smooth surface tends to keep itself clean as successive storms wash off dust and dirt that settle on the building. The small amounts of dirt that do adhere are not apt to be noticeable from the distance at which most buildings are viewed. With the Gateway Buildings, however, heavy dirt due to unusual construction activity in the immediate vicinity adhered to the stainless steel as it would to any other surface.

The exteriors at Gateway Center had not been cleaned for seven years after completion, although frequent — even annual — washing had originally been planned. This frequency was considered desirable, since the temporary nickel shortage at the time of construction necessitated use of Type 430 stainless steel, a grade not normally employed for exterior architectural uses.

In 1959, the Grenadier Company of New York, N.Y., was asked to study the situation and to clean the buildings by the easiest and most practical method. Several relatively strong cleaning compounds were tested, all satisfactory as far as the stainless steel was concerned. Finally, a mild acidic cleaning compound produced by Turco Products, Inc., Wilmington, Calif., and designated "Turco Scale 4368," proved most practical and was selected for the job.

Working from scaffolds suspended from the top of the buildings, Grenadier's two-man crews sponged down three floors at a time with the acid solution, then

hoisted themselves back up and rinsed off the solution with fresh water. In this way, the building panels of stainless steel were made to look like new.

In a few locations on the curtain wall, particularly at the corners, leaching of dissolved cement from the concrete columns caused heavier dirt accumulations under some panels. Here, Grenadier's workmen followed the Turco solution with an application of "Steel Bright," a mildly abrasive scouring paste made by Steel Bright Products Co., Detroit, Mich., and achieved excellent results.

When the face-washing was completed, Grenadier advised the building owners to have the window washers swab down the stainless-steel panels each time they cleaned the windows. This would require only a little extra effort and the buildings would then need no special cleaning in the future.

General Procedures for Cleaning

On the stainless-steel installations at ground level, in the Gateway Center Buildings as well as in any other major building, regularly scheduled cleanings are considered most economical and practical. A light wash with simple cleaning solutions is sufficient. When there are unusually difficult marks from heavy traffic, stainless steel permits use of active cleaners without danger of corrosion. Also, by the very nature of the metal, there is no protective coating required which could be removed by abrasive scouring. The general rule of using a cleaning agent only strong or abrasive enough to remove the dirt will prevent excessive marring of the surface.

The Committee of Stainless Steel Producers, American Iron and Steel Institute, recommends several simple procedures for proper care of stainless steel applications.

Light dirt and normal dust accumulations on ground level can usually be removed with a solution of soap and detergent, or ammonia and water, applied with a sponge or rag and rinsed with clear water.

Fingerprints can be removed in the same way. On doors, pushplates, and other print collectors, many maintenance people follow up with a cleaner which leaves a thin, waxy film to absorb subsequent prints.

Heavy or greasy dirt can be removed with organic solvents such as acetone, alcohol, benzine, or almost any degreasing agent. The area should always be sluiced with fresh water after cleaning, and safety precautions should be observed when using flammable agents.

Discoloration might appear on stainless steel from the corrosive product of an adjacent material. This can be removed by scouring with a slightly abrasive cleaner, always rubbing in the direction of the finish grain in the metal with long, even strokes, and avoiding circular scouring. In extreme cases, stainless-steel wool or scouring sponges can be used in the same manner. Regular steel wool should be avoided, since bits might remain on the surface to become rust spots.

Window and door frames should be wiped down whenever the glass is cleaned. This simple step will prevent accumulations of dirt, especially on bottom sections. Dirty wash water should not be permitted to drip onto areas below the window; if it does, it should be wiped away as the last step in the cleaning procedure.

Once cleaned, stainless steel is just as corrosion resistant as before. There is no surface finish to wear off and it needs no special protective coating (such as lacquer) to resist the elements and traffic abuses.

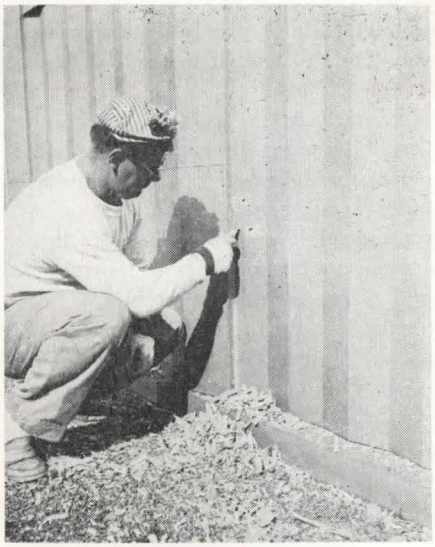
A general listing of common cleaning situations, along with methods of cleaning known to be effective, is shown (*see table*). Cleaners should be applied according to the manufacturers' instructions.

Since design and specifications can affect the future maintenance of a building, architects should keep certain simple rules in mind when employing stainless steel. Stainless-steel installations should be protected from the powerful acids used on masonry or brick. If possible, all brick work should be completed before stainless is introduced on the job. In new construction, final cleaning of stainless-steel parts is best assigned to the general contractor.

Horizontal surfaces, such as soffits, should be avoided or minimized; if used, proper drainage should be observed. A good protection is the design of drips on sills.

Calking Problems

A characteristic of any curtain-wall system is movement caused by thermal expansion and contraction, and by wind pressure. Unlike masonry construction where expansion due to heating is negligible, metal and glass skin is apt to expand one-quarter inch in each direction on a typical spandrel panel. Although the joints are designed to permit this expansion without putting stress on members, the joint itself is difficult to



EFFECTIVE CLEANING METHODS

Condition	Cleansing Agent	Method of Application	Effect on Finish
For normal atmospheric and construction dirt	Soap, or ammonia, or detergent and water	Sponge or rag; rinse with clear water; wipe dry	No effect
For heavier dirt containing oil or grease	Organic solvents: ether, acetone, alcohol, benzol, benzine, xylol, etc.	Sponge or rag; rinse with clear water; observe safety rules	No effect
	5 to 15% caustic soda, 6% solution of sodium metasilicate, trisodium phosphate, etc.	Same as above	No effect
For rust discoloration from other materials	Oakite #33, one part in two parts water	Clean cloth or sponge; let stand 20 min.; rinse; repeat and let stand longer if necessary	No effect on stainless. Can harm paint, wood, or fabrics. Wear rubber gloves, goggles, apron
For deposits which require scouring	Grade FFF Italian pumice, whiting, Bon Ami	Rub with damp cloth	No effect
	Liquid Nu-Steel, Permapass	Rub with small amount on dry cloth	No effect; use light pressure
	Steel Bright	Rub with small amount on dry cloth	No effect; use light pressure
	Paste Nu-Steel or DuBois Temp	Rub with small amount on dry cloth	No effect on satin finish; may scratch mirror finish
	Cooper's Stainless Cleaner	Rub with damp cloth	Satisfactory for satin finish
	Allen Stainless Steel Polish	Rub with damp cloth	Scratches, but leaves mirror reflection
	Household cleaners: Bab-O, Old Dutch, Sunbrite, etc.	Rub with damp cloth	May scratch satin finish slightly

seal against penetration by water.

Most curtain walls, including the Gateway Center Buildings, were designed with extruded gaskets for the purpose of preventing water penetration. These gaskets depend on compression for their effectiveness, and low temperatures may cause this compression to become nonexistent. In addition, rubber gaskets tend to take on a compression "set" after a few months of severe compression and lose their ability to return to original form.

To some extent this gasket limitation was anticipated. But this did not rule out gasketing for it performs another important function in protecting the edges of glass and spandrels against shock and vibration. The actual waterproofing was attempted by a mastic filler applied to the joint after erection was completed.

The calking material chosen for Gateway Center was a conventional oil-base compound which is reasonably successful on certain joints in masonary construction.

To the dismay of architects and owners, the calking was no match for the expansion and contraction that changed the dimensions of the joints almost daily. Oil-base compounds characteristically lose their elasticity and adhesion as they dry. Within a year small leaks develop, especially during winter months when panels do not provide sufficient compression on the gasketing system.

Recalking of Gateway Center

When this began to happen at Gateway Center, the Grenadier Company recommended a polysulfide sealant which, alone among the mastic-filler compounds, will 1) maintain continuous watertight contact with the joining members regardless of dimensional changes in joint size, 2) maintain stability and integrity under all weather effects, and 3) be relatively easy to apply.

In order to apply the polysulfide compound (often improperly called "Thiokol" since the raw synthetic rubber in liquid form is produced by Thiokol Chemical Corporation), Grenadier's workers had to scrape out all of the old calking compound. Solvents then were used to eliminate any oil film before the two-package, cold vulcanized compound could be gunned into the joints.

This synthetic-rubber compound was applied to joints over a year ago, and since then the buildings have had no trouble with leakage.

Industrial Floor Surfaces: Can They Be Trouble Free?

BY BUCK MICKEL

Is a satisfactory concrete industrial floor simply the result of a correctly specified mixture of water, cement, and aggregate that has properly cured? Or are there other factors that should be considered to assure the owner that his floor will fully meet the demands of his particular operation? These questions are here discussed by the Vice President of the Daniel Construction Company, Greenville, South Carolina.

Floor surfaces in industrial plants are among the most unsatisfactory items found in these structures, or so it would seem if one listens intently during plant tours, industrial maintenance shows, and similar gatherings of those who operate today's plants. Concrete floors in particular seem to be causing the following problems: high maintenance and repair costs, low product quality and/or quantity, and slow vehicle movement.

These factors are important to the architect because they are often traced by the owners directly to his recommendations and, therefore, may reflect on his professional ability. This probably would happen even if the owner initially refused to appropriate funds for good floors, or if the contractor did not follow specifications.

$60,000 Problem

The expense of floor problems is illustrated by the experience of the Norton Co., Worcester, Mass., manufacturer of abrasives, who have been spending $60,000 annually for floor-repair purposes. The trouble stemmed from the fact that abrasives falling on the floor were ground into it by materials-handling vehicles. Only recently has Norton obtained floors that resist this punishment.

Why should this be so? Isn't a concrete floor just a proper mixture of water, cement, and aggregate? Can't this mix be easily specified so that the result —a durable floor—will be assured? The most forceful answers to these questions are found wherever there is a dissatisfied building owner.

According to Frank Burgoyne, Norton's Chief Layout and Construction Engineer: "I have found there is a decided advantage in having specialist tradesmen finish a floor. We know from experience that it's almost impossible to get a durable floor without them. A nonspecialist generally doesn't have the workmen or the know-how to lay a good floor except on a hit-or-miss basis."

Because of these two reasons—workmen and know-how—a concrete floor cannot be considered simply a mixture of certain ingredients to be written into the specifications with foolproof accuracy.

Types of Floors

Because of these same reasons, it is much easier to specify the grade of floor desired than the quality. Generally speaking, there are three grades:

1 *Ordinary Finish* This is cement poured from a ready-mix truck, screeded, and troweled. It should be specified only for exceedingly light-duty areas, since foot traffic is all that its low resistance to abrasion will accept.

2 *Ordinary Finish with a Surface Hardener* This is an intermediate grade. It is the same as the above, but with a surface hardener—a material such as iron fillings or aggregate—cast onto the surface and troweled in. The difference in wearing quality between this floor and the preceding one depends on the lb/sq ft of filling or aggregate, and the workmanship which goes into troweling the surface hardener into the mass.

3 *Topping* This is a separate course applied to the base slab. It is intended for areas where use is heaviest, where there must be no floor dusting, and where imperviousness or easy cleaning is important. It has great abrasive resistance and a strength of about 8,000 to 10,000 psi.

Cement Is Most Important Factor

The strength of various aggregates is well known; basalt or diabase traprocks, a few granites, and emery have a Dorry Hardness Coefficient of 17 to 20, and an abrasion loss of 15 to 20 percent on the Los Angeles Rattler Test (C Grade). But inclusion of traprock or emery in the mix does not necessarily insure that a floor approaches the stone's capabilities. The cement paste holding the aggregate in place is the floor's weaker element and is, therefore, the more critical factor. Thus if the cement lacks maximum adhesiveness, the aggregate will work loose and come out. Emphasis of this fact is not meant to minimize the role of aggregates, iron filings, or other types of "surface hardeners," but rather to indicate which factor is the more important. In other words, if the cement paste fails to hold the aggregate in place, the aggregate cannot resist abrasion. If the paste wears away rapidly, the surface will be rough, making the floor hard to clean, and this roughness further means that trucks will exert a greater pounding and will weaken floors more quickly.

Experienced building owners recognize this relative strength factor. C. W. Rice, Engineering Services Manager for American Enka Corporation, in discussing iron filings, states: "No amount of metallic hardener will make a good floor just by itself—workmanship is what determines it." Enka's plants are severe testing grounds for any floor material. At Enka, N.C., for example, the plant operates continuously and in some areas "we cannot afford to take a chance on a poor floor—if the floor should be inadequate we'd get a dust problem that would affect quality control." Enka does not have trouble-free floors in the sense that floors never need repairs. But they do have trouble-free floors in the sense that floors do not dust or disintegrate rapidly. Some of the concrete floors in heavily-trafficked areas do wear out and are replaced, but these floors might be 15 to 25 years old—which Enka considers a satisfactory life under certain traffic conditions.

The Specialist's Place

Experience shows, however, that not everyone is capable of installing industrial floors of high caliber.

One of the problems which bedevils specifications writers who try to insure a trouble-free floor is that there is no adequate method of testing a floor's quality

as it is being installed. Nor is there a method, except for the test of time, for determining its quality after completion. One cannot provide a 10,000 psi floor, for example, as easily as he can designate specific types of steel. Slump is one measurement of concrete strength, with a low slump considered ideal since it is an indication of the water-cement ratio. But the theoretically-correct ratio will produce a mix so dry that proper consolidation is exceedingly time-consuming and costly.

This is where the floor specialist becomes important. The construction field is too complex for any group to be expert in all phases of work—the general contractor is needed to co-ordinate the entire building team, but the special problems and difficulties of industrial floors are best handled by the specialist.

Even when specialists are employed, however, there are pitfalls, as the experience of Imperial Tobacco Co. proves. The original floor at Imperial's factory in Durham, N. C., was mastic, which became so pliable in hot weather that it was difficult to push small-wheeled trucks over it 1. Also, when a new redrying machine was installed, heat from the machine melted the mastic, making it difficult to level the redryer. For these reasons, Imperial decided to undertake a resurfacing program, taking out the mastic and installing a new concrete topping. Aware of the difficulties inherent in this type of work, Imperial began its resurfacing on an experimental scale, and with an agreement that if the work failed to stand up there would be no cost to the company. The work of two "specialists" proved unsatisfactory. The work of the third specialist, Kalman Floor Co., New York, N. Y., met with approval. (All case histories cited in this article are from Kalman files.)

There are several lessons to be drawn from the work done for Imperial. First, precise methods of installation and rigid standards of workmanship are required to merit the title of specialist. Second, although it is not always possible to test the ability of several contractors, as Imperial did, it is certainly profitable to inspect previous work done by the specialist, particularly jobs that are similar in use to the proposed project.

The logical extension of these two points is that once the investigation is completed, it is best to specify outright by name—a point of view held by the Construction Specifications Institute.

A good rule of thumb to follow in selection of people for floor work is the following: An ordinary floor can be installed by any good general contractor. A topping can be installed only by a specialist. An ordinary floor with a surface hardener is somewhere in between—a specialist is certainly competent to install this surface; a general contractor is also competent, if he has the know-how and the workmen.

Giving the entire floor portion of any job to one subcontractor is the ideal situation for those cases where extraordinary conditions exist, and where the owner insists on a good floor. This measure eliminates split responsibility by making one contractor responsible for the successful completion of the job. If this cannot be arranged, as is more usual, the following plan is suggested: On major work solicit bids only from general contractors who have proven their ability; also demand a list of subcontractors to be used. Each subcontractor's work will have a bearing on that of all the others, and a poor job by one will affect the work of another. (For example, poor soil compaction can eventually show up as cracks in the floor surface.)

COMPARISON OF RESULTS ACHIEVED WITH VARIOUS MIXES

Mix	Voids	Absorption ability	Cumulative abrasion loss			Flexural strength	Shrinkage
			6 min	18 min	100 min		
1 Initially wet mix. Excess water removed immediately after screeding to achieve zero slump*	100	100	100	100	100	100	100
2 Wet mix (6 in. slump, no water extracted, no tamping)	139	141	220	169	135	83	136
3 Medium dry mix (tamped)	147	152	170	128	104	89	169
4 Dry mix (tamped)	140	139	140	114	95	93	152

* Mix supports weight of man without indentation.
NOTES: Normal job practices were followed in placing various mixes.
Values given in percentages using initially wet mix as a base of 100.

Convincing the Owner

Since poor floors are going to redound to the discredit of the architect and contractor, even if the owner was the stumbling block in the planning stage, it is essential that floor problems be pointed out to the owner in advance of construction. Failure to recognize potential problems at this stage will invariably result in expensive repairs and production headaches later.

Unfortunately, there are three major reasons that tend to make building owners turn a deaf ear to discussions of floor surfaces. First is the fact that non-technical people do not realize there are various grades of concrete floors.

The second reason is that they do not fully understand or anticipate the expenditure or saving that can be traced directly to the floor.

The third reason is that the term "industrial floor" is a misnomer, a term that does not fully describe the function of the surface. Webster defines a floor as "the bottom or lower part of a room, on which one stands." But in an industrial plant, the floor is much more than simply a place on which to stand or walk.

It is a materials-handling system for heavily loaded trucks, a "drip pan" for oil spillage from machines, a gigantic flow trench for other machinery spillage, a storage shelf for exceedingly heavy loads, and a mounting for machinery that is both heavy and capable of transmitting constant vibrations 2.

In addition, many industrial floors are put to uses that are special to an industry or plant. For example, Huyck Felt Co. uses its concrete floor as a "table" on which to spread papermaker's felts during a certain stage of manufacture. Huyck's requirements are that the floor be absolutely smooth so that nothing snag the felt and injure the fabric. The floor must also be nondusting so that cement particles will not get into the fabric where they would be an abrasive to felt and paper alike.

Thus it is evident that the floor takes

an active part in production. It is a structural part of the building *and* a functional part of the manufacturing equipment. Viewed this way, the problem is not how to provide trouble-free floors in the sense that they will last forever under any conditions, but rather to specify the best possible concrete floor for the operating conditions that will exist in a given plant. The first step, then, is to determine the use to which a floor will be put; next comes the specification of a particular grade of floor.

The Ubiquitous Steel Wheel

Perhaps the most severe operating condition is imposed by the steel wheel 3. Steel wheels are universally recognized as being harmful to concrete floors because the edge actually shaves the floor surface. However, steel wheels are used in many plants because plant people feel that nothing else is able to perform certain jobs. The most frequently cited reason is the ease with which trucks so mounted can be pushed.

Economy is another reason. At Tomlinson of High Point, N. C., for example, only steel wheels are used on the 550 four-wheel hand trucks because of initial cost and maintenance cost of the wheels themselves. The cost of a set of rubber wheels is $62; of steel, $18. Life of the rubber wheels (used on a fork lift truck and several two-wheel hand trucks) is about 1½ years. This short life, apparently, is because wood floors in other parts of the plant pull the rubber apart. Thus, on initial cost, Tomlinson saved $44 per truck, or a total of $24,200, and an addditional $34,100 is saved every 1½ years because the iron wheels last almost indefinitely. The floor has been in use for 13 years, which has meant a saving of at least eight replacements at a cost of $272,800, or a total saving of $297,000. One must admit the validity of this reasoning. However, it is a valid argument for the architect, too, in seeking sufficient budget for specification of a first-class topping, since only a high-quality topping will withstand constant steel-wheel traffic.

The Tomlinson floors have been in use for 13 years. The aisle areas have been worn to the point where the aggregate shows; no other area has been worn and in most places the original sheen remains on the floor. However, the aisle areas are not in danger of failing and the wear will be even, because the mix was adequately compacted and the cement paste is sufficiently strong to hold the aggregate in place. As a matter of fact, that floor is just getting down to the hard-wearing surface.

Oil and Acids

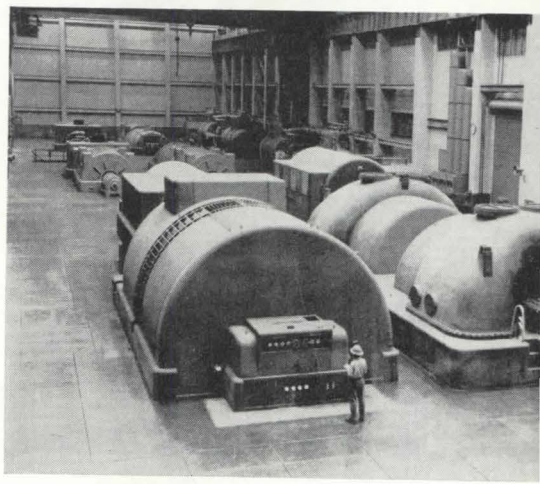
Oil is another universally-used material that is hard on floors. At the Bossong Hosiery Co. of Asheboro, N. C., the floor in the 28,000 sq ft knitting room is a veritable drip pan for machine oil, with the knitting machinery throwing out a fine spray of oil. On the original floor the oil seeped into the concrete and almost immediately began to soften the cement binder that holds the floor together. This posed the danger that the floor would start dusting, with the results that the fine tolerance of the machinery could have been upset, and the fabric itself could have been injured as it was knitted. To combat this danger, Bossong tried sealers, which lasted only a week and cost $595; they then tried all-out maintenance procedures, utilizing 10 men every other weekend, at overtime rates, for a total yearly expense of $3,120. Finally, the Bossong management decided to resurface the entire area with a first-grade concrete topping, installed by a specialist. The new floor is subjected to the same conditions as the old floor, but it is not softening as the old one did, and Bossong's problem is solved.

At the Dallas, Texas, headquarters of Dr Pepper Co., manufacturer of soft-drink syrup, the floors must offer protection against food acids, hot water, carbonated water, mild caustic solutions, trucking, and the movement of heavy barrels. In addition, the floor must have a neat appearance to help promote cleanliness and to be presentable to the visiting public. Most industrial floors, then, are not subjected to just one severe condition; they are subjected to a number of them.

Conclusion

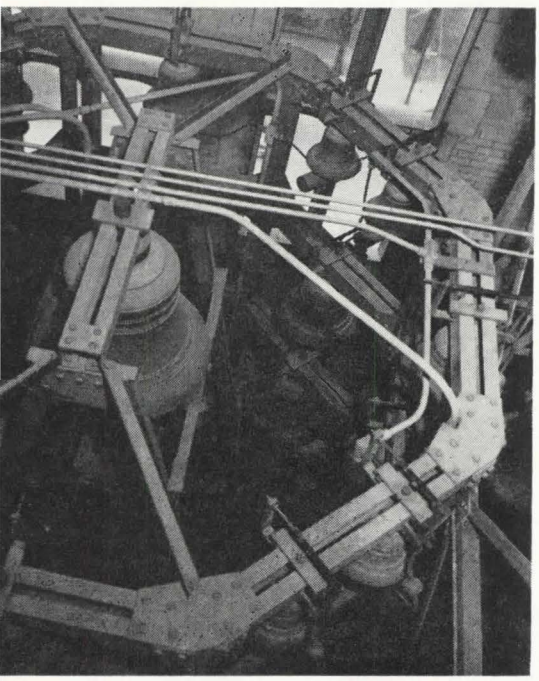
It is evident that good industrial floors, able to eliminate most troubles, can be specified and obtained. Floors, instead of being subject for owner discontent, can be an area of owner satisfaction. Not only can first cost be last cost, but first cost can also, in some cases, result in substantial yearly savings. The know-how and workmanship are available; all that must be done to render the client a considerable service is to study his needs, show him the potential, investigate specialists, and write tight specifications.

1 *Pock-marked mastic floor, a result of wheel indentations during hot months, led to resurfacing program.*



2 *Industrial floor can also be a mounting for machinery capable of transmitting constant vibrations.*

3 *Only a topping should be used where steel wheels abound for they shave concrete as they swivel.*



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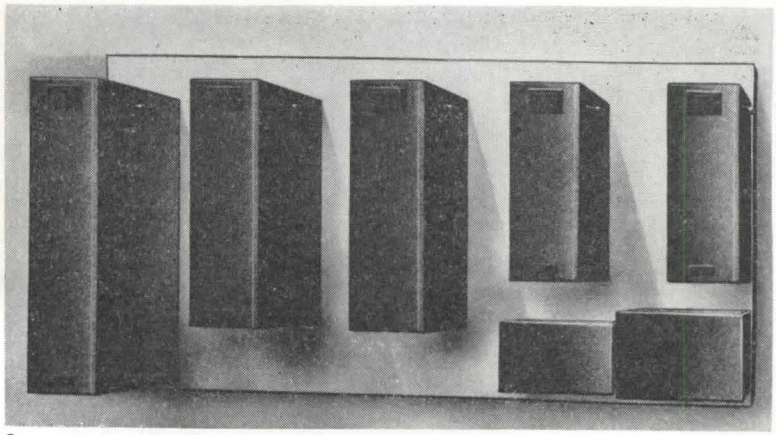
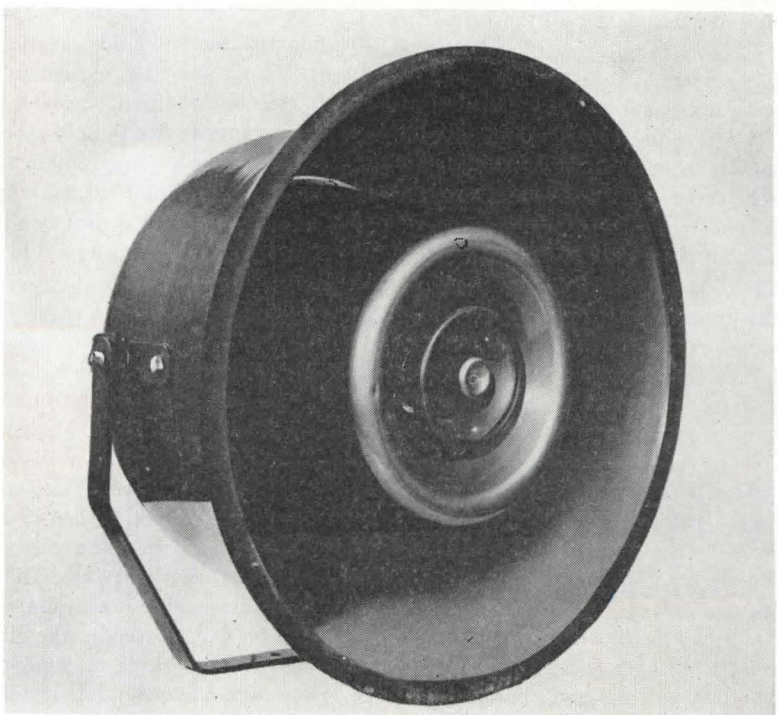


2

Electro-Mechanical Carillons

3



BY HARRY SMITH

Characteristics and advantages of electro-mechanical carillons—as compared with traditional cast-bell carillons—are described by the Manager of Field Engineering, Schulmerich Carillons, Inc., of Sellersville, Pa.

As the cost of materials goes up and the pressure for construction economies increases, the church architect is faced with a growing problem. He must design both for beauty and for function. These two considerations will affect his choice of bells for the church, and for several important reasons he may find a satisfactory solution in the electro-mechanical carillon. It is as functional as some of the finest contemporary church designs, comparable in tone and timbre with the greatest traditional cast bells of Europe's ancient cathedrals. But the cost of the equipment and its installation is surprisingly low.

Traditional vs. *New*

The traditional cast-bell carillon dating from the Middle Ages, 1, weighs from 8000 to 280,000 lb. A tower to house such a weighty instrument is both massive and expensive, and its supporting structural members will further add to the over-all costs of construction. Nor is strength of the housing the only factor involved in planning for a cast-bell carillon. Occasionally the older instrument may have to be removed for retuning or repairing, and the church architect cannot assume that, once installed, it will permanently remain undisturbed. Thus, the tower must be versatile enough to permit this occasional removal—a potentially expensive design consideration.

But if a church decides to install the modern electro-mechanical carillon, it saves the high cost of such a strong and versatile tower. The use of this instrument permits the design of a church tower whose dimensions and structural system can be varied at will; in fact, the tower can be entirely eliminated if so desired.

In the electro-mechanical carillon system, bell tones are created inside the church by small individual metal hammers, activated from a single keyboard, striking miniature rods of bell metal (bronze). These tones are then built up electronically—often exceeding the volume of large cast-bell instruments. Bell tones are carried to stentors for sounding outside the building, or to organ bell-

4

1 *Traditional 35-note cast-bell carillon—originally installed at The Cathedral of the Most Blessed Sacrament in Detroit—was later replaced with an electro-mechanical unit.* 2 *A typical 61-bell Flemish-type electro-mechanical carillon.* 3 *High-fidelity, weatherproof, dual-range-type stentor measures 33" in diameter, has depth of 20", and weighs only 72 lb.* 4 *Well-known carilloner Anton Brees sits at console of electro-mechanical unit at Bok Singing Tower, Lake Wales, Florida.*

reproducers for sounding with an organ inside the church. Outside stentors can be located in or on a tower, or on a roof, and a sizeable variety of outside stentors and organ bell-reproducers permits every instrument to be custom-designed to meet the needs of the building and community 2, 3. In churches without towers, the stentors are mounted under the eaves or in a similar place of concealment. Many recently-built churches have vaulted roofs which provide natural installation areas for the stentors.

Old Churches

Installation of an electro-mechanical carillon is often accomplished long after the building is completed. Specific instructions for older churches depend on the exact type and size of instrument required, of course, but several general suggestions may prove helpful.

When the carillon stentors are to be placed inside an existing tower, the architect or engineer should plan for as much space as possible in front of the speaker, so as to keep the sound from being confined inside the tower and permit it to be projected more easily. Heavy grilles or louvers are inadvisable since they deflect the sound downward to the ground and prevent it from being heard at distant points. There is no need to worry about wind or rain damage to the stentors, as they are thoroughly weatherproofed.

It is necessary to run ¾″ or 1″ conduit from the stentor located outside the church to the carillon cabinets located inside. Furthermore, sufficient pull-boxes along the conduit line are needed for easy cable pull.

New Churches

For new churches, there is an added design flexibility possible with the electro-mechanical carillon. Money formerly required for a heavy bell tower can now be devoted to a large educational building or other church facility. Churches are frequently able to build substantial additions with the money saved by installing a modern carillon.

The electro-mechanical carillon ranges in price from $3000 upwards, from a 25-bell carillon to one of 61 bells. In the latter, all types of harmony—major, minor, augmented, and diminished chords, or any other type of chord, arpeggio or trill—can be played without restriction.

In preparing for the installation of the equipment, the only work necessary is the installation of conduits for the wiring and the AC current necessary for the actual carillon installation. This preparatory work varies, depending on the scope of the installation, as the modern carillon is available in several sizes and models, and with several items of auxiliary equipment. But whatever the complexity of the equipment, the associated wiring for the carillon is quite simple and can be incorporated into any structure, regardless of its design.

Selection of Equipment

Selection of the particular instrument best suited to the needs of the church can only be made after a careful survey. Some of the factors that must be considered are:

1 The type of bell programs desired.
2 The area to be covered by the music of the bells (it is important not to interfere with other bells in the vicinity).
3 The musical range of the bells.
4 Automatic program facilities to be included. Selection can be made from an automatic roll player (which operates on the principle of the old player piano), a Westminster strike (which plays the familiar Westminster chime sequence every fifteen minutes), the regular hour strike (on the hour), or the melody player (which strikes, peals, or plays a short tune).
5 Location of stentors in tower or on roof of building.
6 Location of equipment.

Until the basic functions and program use of the instrument are determined, the proper equipment cannot be selected. Too much emphasis cannot be placed on the importance of making a thorough survey of the church, its program needs, and the facilities offered by each instrument, before a final selection is made.

Comparison with Traditional Bells

The following paragraphs summarize the numerous design advantages of the modern electro-mechanical carillon, comparing it in each case to the traditional cast-bell carillon:

Weight The electro-mechanical carillon weighs a few hundred pounds compared to a cast-bell carillon weighing from 8000 to 280,000 lb. Tons of reinforcing steel, as well as stronger foundations, are necessary for a tower which houses cast bells, while this type of construction is unnecessary for the installation of electro-mechanical carillon.

Size The space needed for the large clavier of a cast-bell carillon is unnecessary for the modern carillon, as the compact console is about the size of a standard piano 4.

Design The modern carillon possesses flexibility enabling it to be installed in any type of structure. Bell-shaped stentors may be used in free-standing or open towers where campaniform shape is considered essential to over-all design.

Cost A cast-bell carillon weighing 80,000 lb would cost at least $100,000, compared to a modern carillon of the same tonal range, which would cost one-tenth as much.

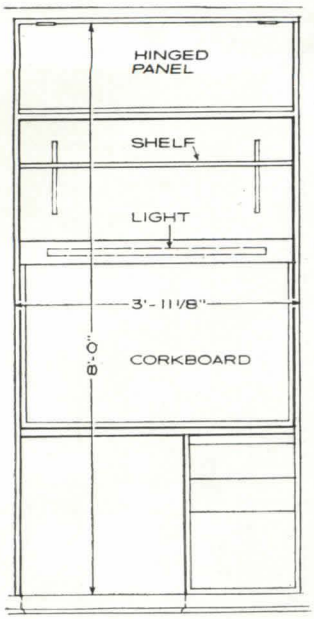
Operation The modern carillon can be played from the organ console if desired, and can also be played inside the church either with the organ or as a solo instrument.

Automation. The modern carillon affords completely automatic clock-controlled programming, including electric roll player for the playing of hymns. These features would be very expensive and in some cases impractical with cast-bell carillons.

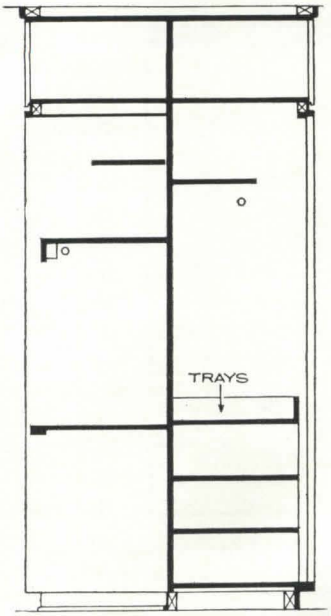
Sound Coverage The sound of the modern carillon may be projected or distributed in any direction. Sound can be projected to any area without excessive sound in the immediate area. Sound can also be projected in one direction at a higher level than in another. This provides complete flexibility in sound projection to meet varying acoustical conditions.

Power There are no special power requirements necessary for the modern carillon, as a low-voltage line is adequate for any tower stentors.

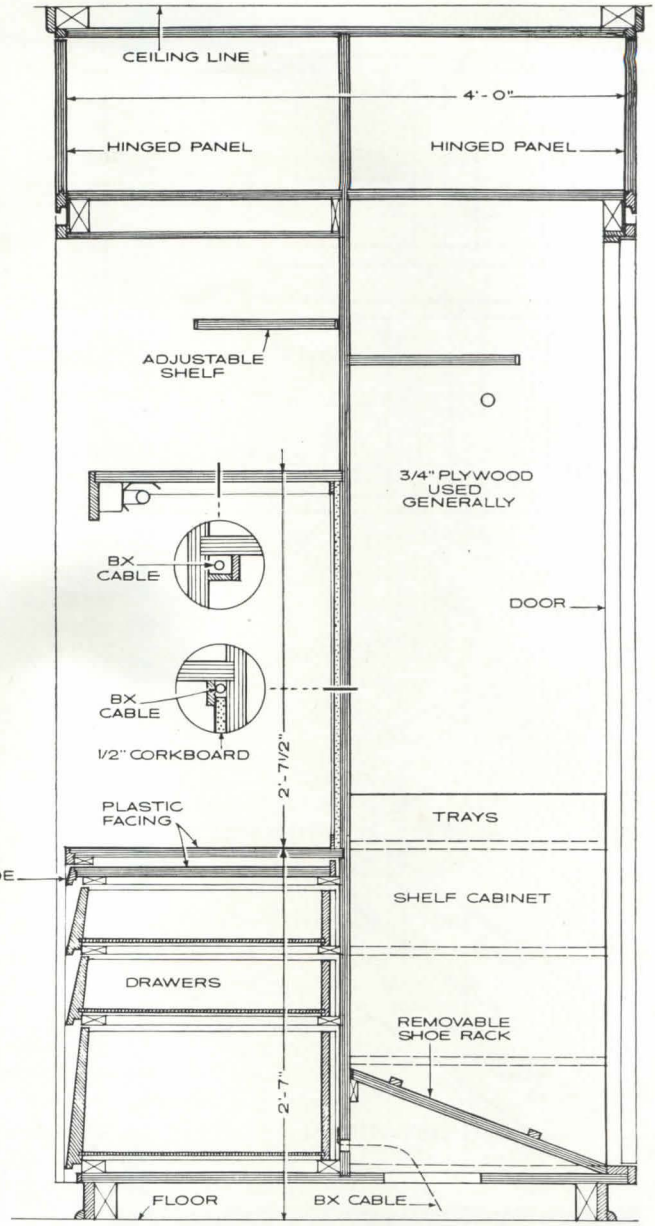
Maintenance The maintenance costs of the electro-mechanical carillon are very low, because all control equipment is inside the building, not in the tower where it would be exposed to the weather.



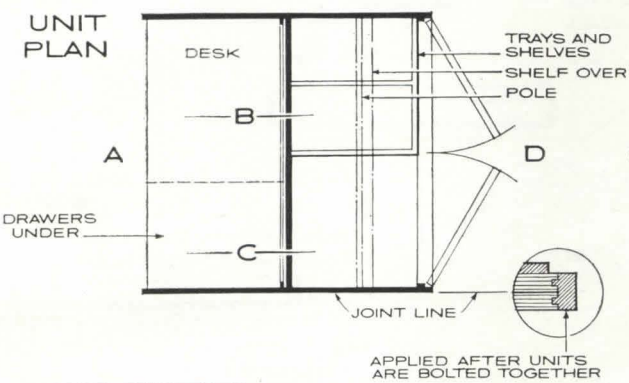
ELEVATION A 3/8" SCALE

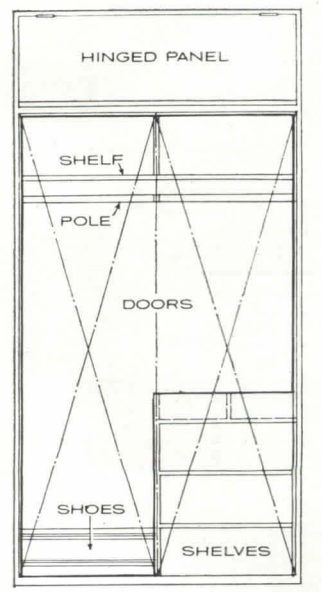


SECTION B

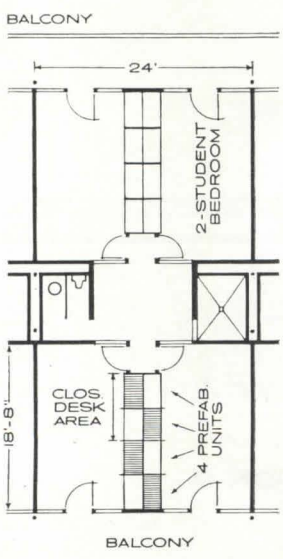


SECTION C 3/4" SCALE



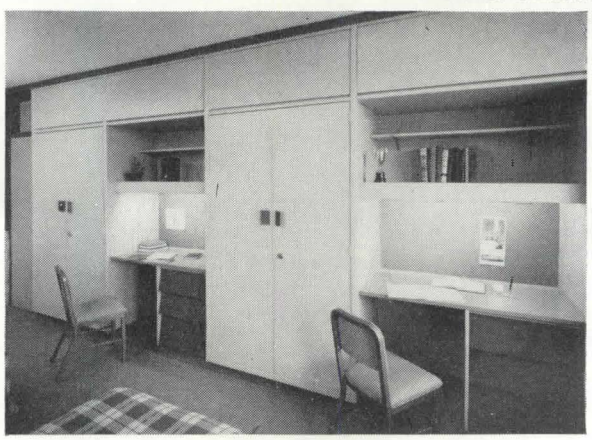


ELEVATION D 3/8" SCALE



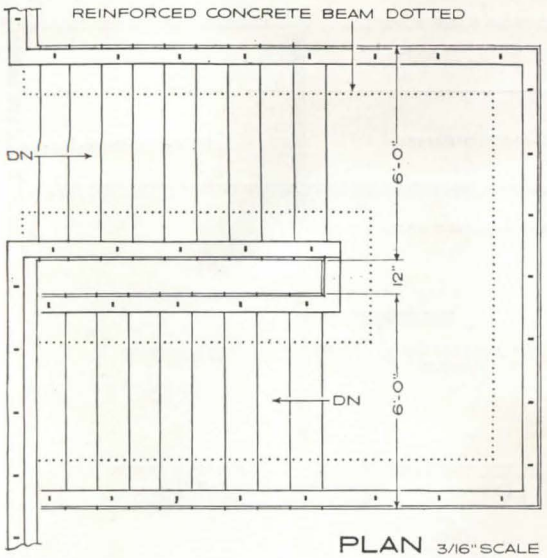
ROOM PLAN

FRANK LOTZ MILLER

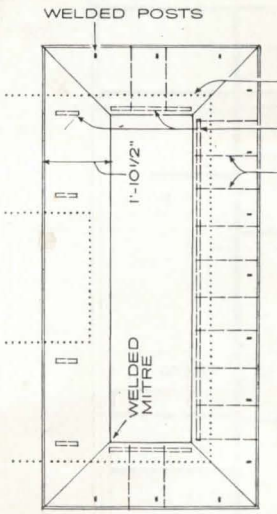


*S.L.I. MEN'S RESIDENCE HALLS: Lafayette, Louisiana RICCIUTI ASSOCIATES, Architects	SELECTED DETAIL STORAGE WALL

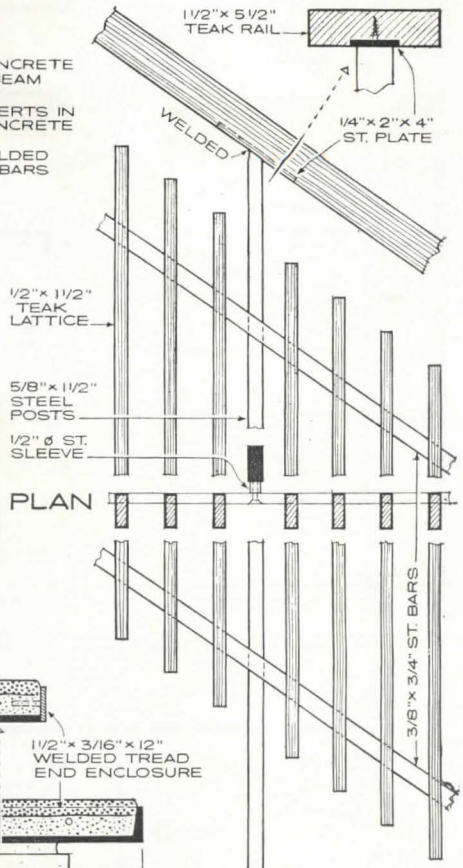
*See SEPTEMBER 1960 P/A

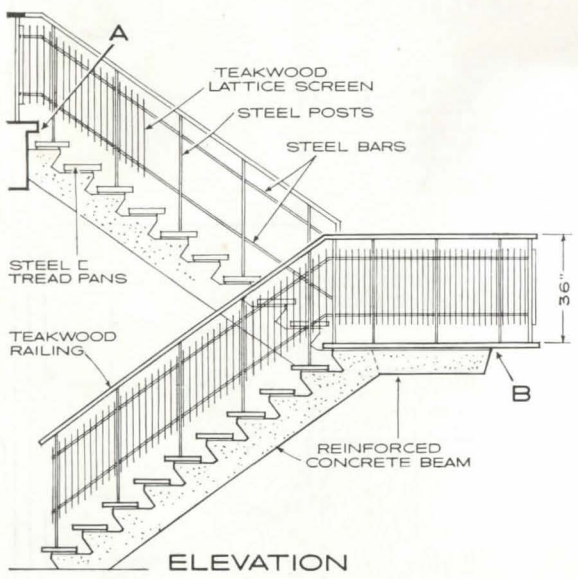


PLAN 3/16" SCALE



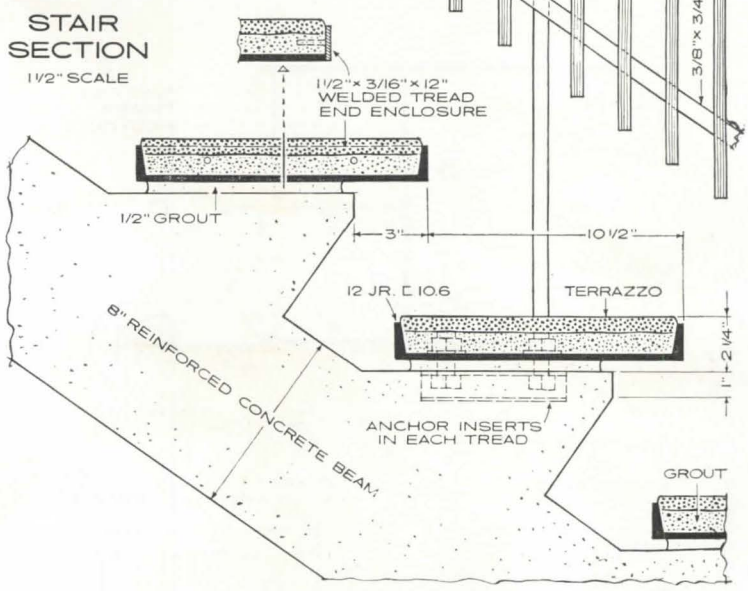
PLAN
SHOWING BENT STEEL PLATE AT LANDING



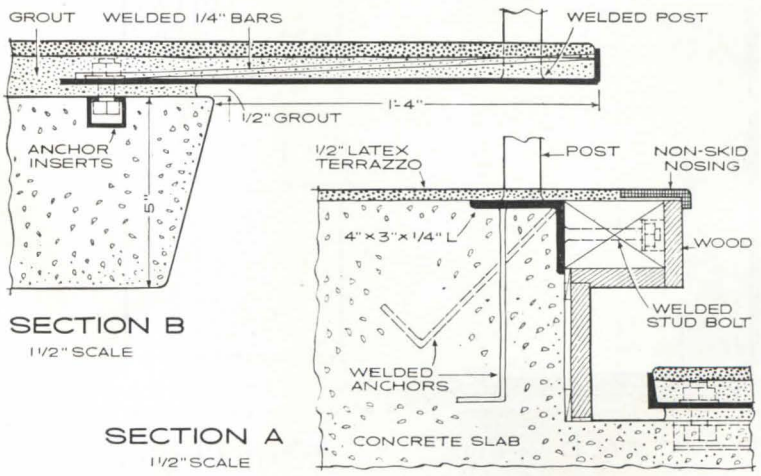


ELEVATION

STAIR SECTION
1 1/2" SCALE



JOSEPH W. MOLITOR



SECTION B
1 1/2" SCALE

SECTION A
1 1/2" SCALE

*RHODE ISLAND SCHOOL OF DESIGN: Providence, Rhode Island
ROBINSON, GREEN & BERETTA, Architects

SELECTED DETAIL
STAIRS

*See SEPTEMBER 1960 P/A

Architect: W. Henry Neubeck, Trenton, N. J.
Acoustical Contractor: Yeck Acoustics, Trenton, N. J.

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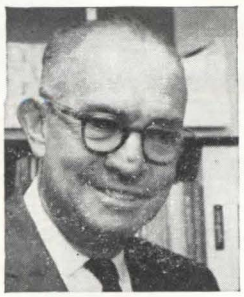

Electric Heat Proven Favorable For Ohio School

BY WILLIAM J. McGUINNESS

Electric heating was chosen for an elementary school near Warren, Ohio, simply because a careful analysis showed it to be the most practical solution to a variety of problems confronting the architect. A report of this analysis is made by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute, Brooklyn, N. Y.

Electric heating, established in many cases as desirable and economically competitive for schools and other buildings, is unquestionably on the increase. Until now its use has been relatively small. The most recent report of United States Department of Commerce shows that the sale of electric-heating elements is seven percent of the total sales of heating equipment. It is evident that not many designers are familiar with electric heating through experience. For this reason, descriptions of successful applications are valuable.

A major contribution to this educational need is a summary and report of the design and application of electric heating for a school in Ohio. The study was sponsored by Dow Chemical Company which manufactures a rigid insulation of foamed-polystyrene plastic, appropriate as an adjunct to electric heating and successfully used on this job. A digest of *The Braceville School Report* follows:

"Electric heat was chosen for the new Braceville Elementary School simply because careful analysis showed it to be the most practical solution to the variety of problems which confronted us." These are the words of G. Donald Schade, AIA, the architect who designed this elementary school in Trumbull County, near Warren, Ohio.

The Braceville school is a one-story, masonry structure with 13,900 sq ft of floor area and a content of 218,925 cu ft. It provides facilities for six classrooms, a multipurpose room (the equivalent of two classrooms), general office, principal's office, bookroom, teachers' room, clinic (health room), mechanical room (housekeeper's room), and five toilet rooms.

As the building is located in a rapidly growing suburban community, one of the major considerations was provision for future expansion. This problem was of particular concern during the planning of the heating and ventilating system. The design should not only lend itself to probable future expansion, but also should be economical to operate, safe, and should provide maximum comfort.

Fuels available in the community include oil, coal, and electricity. All three were carefully considered, but after an objective analysis automatic electric heat was selected as best suiting the specific needs of the project. A comprehensive proposal, including detailed cost estimates covering the available methods of heating, was presented to the school board and to interested members of the community.

Largely on the basis of efficiency and convenience, electric heating received unanimous approval.

In preparing his analysis of the various heating systems, the architect cited five basic advantages of electric heating. These were:

1 *Future Expansion Convenience* With individual electric heaters in each room, future expansion of any size and in any direction can be made easily and economically.

2 *Safe Operation* Electric heating offers fewer safety hazards than any of the other fuels considered.

3 *Accurate Temperature Control* Because heating units in each room are controlled individually, room temperatures can be controlled to suit specific needs.

4 *Savings in Original Construction Cost* The accompanying estimate (*Table I*) shows the specific cost comparison between the three fuels—electricity, coal, and oil.

5 *Reduction in Operating Cost* The chart of estimated operating costs (*Table II*) shows a somewhat simplified comparison between three types of systems based on steam or hot-water heating. The over-all operating costs of the three systems are quite comparable. While the actual fuel cost for electric heat is substantially higher than for the other fuels, economies in other areas equalize this difference.

Undoubtedly the most important factor in assuring successful operation of an electrically-heated building lies in proper insulation. After considerable study of available materials, foamed-polystyrene board was selected to meet all of the unique insulating requirements of this electrically-heated building. This insulation has a low thermal conductivity, with a "K" factor of less than 0.28; it will not absorb water and thus retains its insulation value; it also provides an effective vapor barrier. Since the material was to be used behind masonry construction, the fact that it does not mildew or decay and offers no food value to plants or rodents assures trouble-free service.

The insulating material was designed to form a continuous envelope around, over, and under the building.

More specifically the construction specifications concerning insulating materials were as follows:

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TABLE I: COMPARATIVE CONSTRUCTION COSTS

	Electric	Oil	Coal
Additions to Basic Building			
Double glazing	$3,400		
Extra insulation	5,100		
Fuel tank/coal bunker		$2,500	$4,500
Enlarge boiler room		12,000	12,000
Chimney		900	1,700
Pipe tunnel		3,300	3,300
Extend drive			1,500
Total additions	$8,500	$18,700	$23,000
Heating System Installed	$19,500	$22,000	$22,000
Total Cost of Construction	$28,000	$40,700	$45,000

NOTE: The above estimates apply to the cost of constructing the Braceville Elementary School. Other buildings and other locations may show substantially different cost figures, although the relationships should remain approximately constant.

TABLE II: ESTIMATED ANNUAL COST OF OWNING AND OPERATING

	Electric	Oil	Coal
Fuel	$3,500	$2,000	$ 900
Labor (operating)		100	1,000
Maintenance*		150	150
Ash handling			25
Operating boiler auxiliaries		100	100
Depreciation	100	750	750
Additional cost of repayment on principal, insurance, and interest on extra investment		375	565
Insurance on boilers		50	50
	$3,600	$3,525	$3,540

* Does not include cost of ventilator, blower, and filter cleaning, nor oiling, which would be equal on all three systems.

TABLE III: ELECTRIC ENERGY USED TO HEAT BRACEVILLE SCHOOL
1959–60 Heating Season

Billing Period	Degree Days	Kw	Kwhr	Net Bill
Sept 9 — Oct 8	112	46	1,360	$ 52.75
Oct 8 — Nov 9	582	105	9,320	258.95
Nov 9 — Dec 9	943	110	18,720	452.75
Dec 9 — Jan 12	1,074	75	20,800	448.57
Jan 12 — Feb 10	1,007	77	22,720	478.17
Feb 10 — Mar 10	1,219	74	28,000	567.25
Mar 10 — Apr 8	967	86	20,080	447.15
Apr 8 — May 10	355	64	7,520	195.10
May 10 — May 26	160	49	2,960	76.60
	6,419	686	131,480	$2,977.29
May 26 — Sept 9 (estimated minimum charges)				$181.00
				$3,158.29

NOTE: Electricity for general use is not included in the above chart.

Floors Concrete slab on grade. Two courses with intermediate damp-proofing, 3″ thick polystyrene insulation laid horizontally beneath the slab.

Walls Cavity-wall construction with 4″ face brick, 4″ of insulation and air space, 4″ concrete block. Three in. of polystyrene sheet, held in place by conventional wall ties, was used between the walls. The insulation was applied to the outer face of the interior wall allowing a 1″ air space between the insulation and the face brick.

Windows Steel sash glazed with vacuum-insulated double glass.

Roof Two in. poured-gypsum deck with 3″ polystyrene insulation, and four-ply, slag-surfaced, built-up roofing. The designed "U" factor of the walls was calculated to be .075 Btu per hr per sq ft per degree F. The roof was designed for a "U" factor of .069.

Four different types of electric heaters are used in the building, depending on their location. Unit ventilators, with baseboard draft barriers on either side, were employed at window locations in each classroom. Offices, health room, teachers' room, housekeeper's room, and boys and girls rest rooms are heated with recessed cabinet convectors. Baseboard units are used in the small lavatories, and fan-driven unit heaters are installed in corridors. The total insulated capacity is 134.4 kw.

Design conditions for the Braceville school were: Zero F outside, 75 F inside temperature differential with 6100 degree-day seasonal load. To meet Ohio State ventilating requirements (four cfm per pupil minimum during school hours) unit ventilators introduce fresh air into each classroom. Air is removed from the rest rooms by ceiling-mounted fans which draw the air through the pipe space between the two rooms.

With the completion of the first heating season, what have been the results? Most important, students and faculty alike agree that electric heating is not only comfortable, but also convenient. Teachers are able to adjust room temperatures to suit their personal taste or the type of activity carried on in the classroom. Constant temperatures throughout the day even in the coldest weather result from the close control of the automatic electric system. Even temperatures within each room and throughout the building result from the effective insulation used.

As predicted, no maintenance has been required during the season, and at no time was it necessary to enlist professional help to adjust temperature controls.

Perhaps one of the most important advantages of electric heat on this job was its low cost. This applies not only to the initial construction costs, but also to the cost of operating and maintaining the system.

Analysis of construction costs showed that, as predicted, the expenditure for the building was substantially lower than for other buildings of similar type in the area. The total cost of the Braceville school was $175,906.50, which represents $0.79 per cu ft compared with $1.10 per cu ft which is about average for the area. This cost saving is largely attributable to the reduction in the cost of the heating system afforded by use of electric heat.

Operating costs, another area of major concern, were also substantially below original predictions. The accompanying record (*Table III*) shows the actual month-by-month cost of electricity used for heating the Braceville school during the 1959-60 season. It should be noted that although the season was severe—6419 degree days, up 5.2 percent over the normal of 6100 degree days—the total cost of operating was only $3158.29, or 9.8 percent below the predicted $3500.00 for an average year.

The foregoing report leads to some interesting observations.

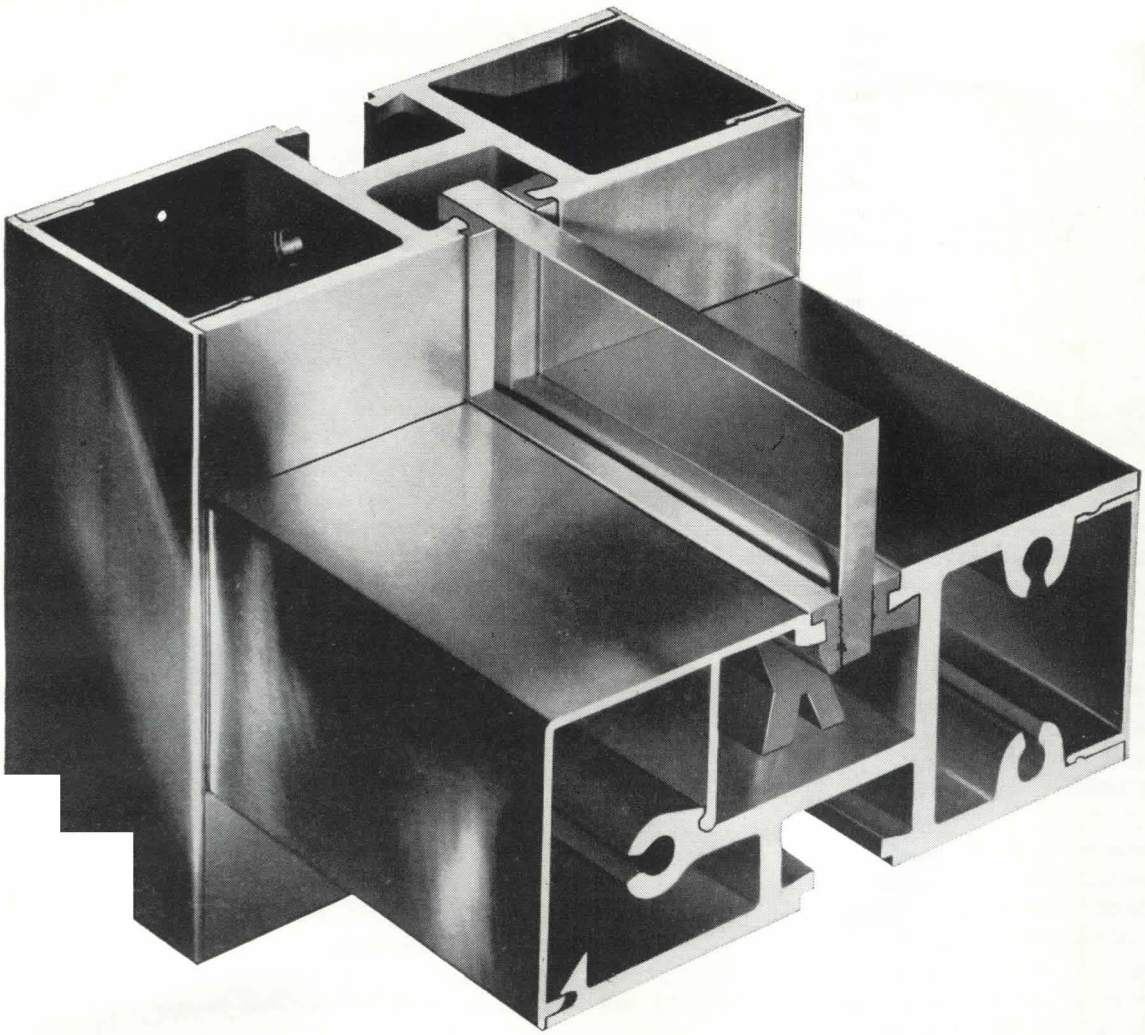
1 Those who have objected to extra insulation as a crutch to make electric heating competitive are answered (*Table I*). This table shows that insulation, planned only for electric heat, is offset by other savings.

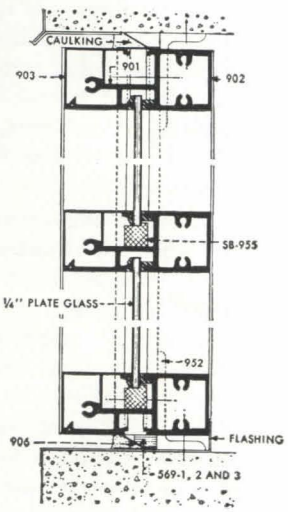
2 This school has an extremely low heat-loss rate. A factor of Btu per hr per cu ft of building volume is 2.1. For many buildings with uninsulated masonry walls and single glazing, this factor often exceeds 5.

3 Slabs on grade with insulation below provide a comfortably warm floor.

4 The absolute cost of electric energy is admitted by electric utility companies to frequently exceed the cost of oil or coal-plus-labor by 70 percent. This is evident (*Item 1, Table II*), yet the total costs are comparable.

5 The Ohio State ventilation requirement of four cfm per pupil is much lower than many other bureaus permit. The HVAC Guide lists seven to 38 as acceptable rates. The low rate of four is a great assist in dollar saving and perhaps enough for an assurance of air freshness in a clean suburban school. This item might well be studied.





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What Concrete Admixtures Can Do

BY HAROLD J. ROSEN

If an admixture can impart a more desirable characteristic to concrete, its use may be considered for special conditions. What additives can contribute to a concrete mix—as well as what should not be expected of them—are discussed here.

Many engineers and specifications writers are reluctant to modify concrete by introducing an admixture. They are of the opinion that if concrete is properly designed, proportioned, and handled, it should not require the addition of an admixture.

However, admixtures may be beneficial if—when added under certain conditions—they can impart a more desirable characteristic without any ill side effects. The use of admixtures may be considered when it is necessary to improve workability, to achieve high-early strength, to retard set, to increase durability to special conditions of exposure, and to reduce permeability.

Workability or the ease with which concrete can be placed is a property which is usually desired more by the contractor than by the engineer. However, the design engineer may require a more workable mix where closely-spaced reinforcement would restrict the placement of concrete, and where concrete is to be placed by means of a tremie or by pumping. Some of the more successful admixtures used to increase workability are mineral powders and air-entraining agents. In mixes which are low or deficient in "fines," a minutely divided admixture such as bentonite, clay, diatomaceous earth, fly ash, fine silica, or talc will improve workability. Air-entraining agents, through the incorporation of numerous well-distributed air bubbles, will act as lubricating agents and aid materially in the placing of an otherwise harsh concrete.

It is frequently important to achieve high-early strength to permit early form removal, to obtain early use of a structure, and to compensate partially for the retarding effect of cold weather. Admixtures which increase the rate of chemical reactions between portland cement and water are termed accelerators. One chemical material used as an accelerator is calcium chloride which can generally be used safely in amounts up to two percent by weight of the portland cement. Calcium chloride, however, generally increases drying-shrinkage and lowers resistance to sulphate attack.

Admixtures which reduce the setting time of concrete are termed retarders. They are used principally to overcome the accelerating effect of high temperature during the summer, and to delay the early stiffening action of concrete for difficult conditions of placement. Retarders are also used to expose the aggregate in the surface of concrete. This can be achieved by applying a retarder to the forms, thereby inhibiting the setting of the surface layer of the mortar. Upon removal of the forms the surface mortar is removed by wire brushing, thus exposing the aggregate to produce unusual surface texture effects. Retarders generally used as admixtures are carbohydrate derivatives and calcium lignosulphonate. The use of retarders should not be attempted without specific technical advice, since some act as retarders with certain cements and as accelerators with others, while some retard the set in certain quantities and accelerate the set in other amounts.

The admixture which has obtained widest recognition and use to increase durability for special conditions of exposure is an air-entrainment agent. Concrete which is subjected to freezing conditions can be best protected against damage from frost action by incorporating a suitable amount of entrained air in the concrete. The air-entraining agent when added to concrete increases the number of air bubbles in the paste to provide a certain protective characteristic against the disruptive effects of freezing. This admixture has become so well accepted that cements containing air-entraining agents are included in A.S.T.M. and Federal Specifications for portland cement. The admixtures used for air entrainment are natural wood resins, fats, various sulphonated compounds, and oils.

The reduction of permeability in concrete can be achieved by the use of certain admixtures, known as integral waterproofing agents. Water under pressure can flow from one surface of concrete to another through channels connecting both surfaces. In addition, moisture can pass through concrete by capillary action. Some admixtures reduce this permeability and alleviate the more troublesome problems connected with the passage of water and moisture. It should be emphasized that no "waterproofing" admixture is a substitute for good concrete. An admixture will not prevent passage of water through cracks or voids. Many proprietary formulations are sold as integral waterproofing agents and vary widely in composition and effectiveness.

There are literally hundreds of proprietary admixtures on the market, many of which purport to be panaceas for all the ills of concrete. If any one of these is to be considered for use in concrete, it should be investigated carefully. The evaluation of any admixture should be determined by the results obtained with the concrete mix in question, since the efficacy of the admixture is largely due to the characteristics of the cement and aggregates used.

The following paragraph should be incorporated in specifications to prevent the use of unauthorized additives:

"The use of admixtures to improve workability, reduced permeability, and to facilitate hot and cold weather concreting, will not be permitted except when authorized by the architect. If the contractor wishes to obtain approval of an admixture for any of the aforementioned conditions, he shall submit laboratory tests showing the effect of the proposed admixture on the strength and permeability of the concrete."

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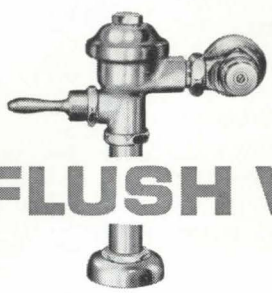

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Injury to a Third Party

BY JUDGE BERNARD TOMSON & NORMAN COPLAN

This month's column describes a case where an architect was sued by an employe of a contractor.

The responsibility of an architect, his consulting engineer, and the owner for injuries sustained by an employe of a contractor caused by an alleged failure to furnish adequate supervision was recently considered by the Appellate Division of the Supreme Court of the State of New York in *Olson vs. Chase Manhattan Bank*, 10 A.D. 2d 539.

The plaintiff was an employe of one of three contractors who were acting as joint venturers in the construction of a bank building for the Chase Manhattan Bank. During the period when foundations were being laid, this employe was struck by a bull point or drill of the type used in pneumatic drilling, which fell from a temporary platform about thirty feet above where he was stationed. The employe sued the owner, the architect, and the architect's consulting engineer to recover damages for his injuries alleging that each of them had negligently failed to provide proper supervision for the maintenance of the platform and equipment thereon.

The contract between the owner and the foundation contractors required them "to furnish all labor, materials, equipment, plant machinery, staging tools, and supplies . . . necessary to perform all of the work" shown on the plans and specifications. It also provided that the contractors were to have "sole supervision and direction" and "full control" of all the personnel and labor employed by them in this work. It further required the contractors to remove any workman who, in the opinion of the owner or architect, was unfit or guilty of improper conduct.

The contract between owner and architect contained a provision that the latter was to prepare the plans and specifications for the building, and render "supervision and control over the work of the various contractors . . . and such general administration and supervision of the work as may be required to furnish the owner with a finished building in conformance with the drawings and specifications."

The contract between the architect and his consulting engineer required the engineer to furnish the plans and specifications for the foundation, check the contractor's working drawings, and "provide general supervision . . . to insure that the prosecution of the work is in accordance with the plans and specifications."

During the progress of the laying of the foundation, representatives of the consulting engineers were at the site continually and made daily written reports to the architect. A member of the consulting engineering firm visited the site at intervals of not more than a week apart, and a member of the architectural firm visited the site about once a week to observe the project. The engineer testified that one of the purposes for his supervision was the "review and approval for safety at all times, both for temporary construction and permanent installation."

The jury returned a verdict in favor of the employe against the architect and his consulting engineer, but dismissed the case against the owner. The trial court set aside the verdict insofar as it absolved the owner from liability indicating that the proof was much stronger against the owner than against the architect and engineer. The three defendants appealed and the case was dismissed against all three.

The Appellate Court first considered the liability of the owner, ruling that his only duty was to furnish a safe place to work and that the accident occurred because of the manner in which the contractor's work was performed. The Court said:

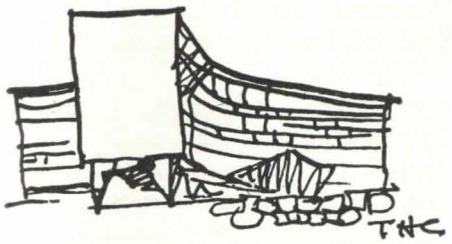
"The Bank owed respondent the common-law duty of furnishing a safe place to work . . . which duty has been extended by statute . . . to include the tools and appliances without which the place to work would be incomplete . . . However, the Bank would not thereby become liable for respondent's injuries if the factors which caused them, namely a defective platform and a falling bull point (appliances furnished by his employers), were no part of the Bank's plant . . . and if the injuries occurred because of the manner of performing a detail of his employers' work. . .

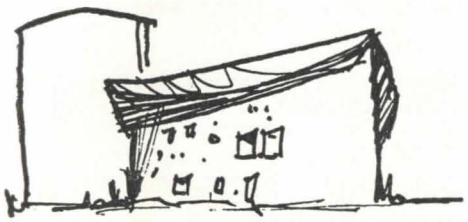
"In our opinion, the accident occurred because of the manner in which a detail of said contractors' work was being performed, and the situation was not one in which the Bank could be held liable for a breach of the obligation to furnish a safe place to work. . ."

The Appellate Court next considered the liability of the architect and his consulting engineer and ruled that the obligations and duties of the architect or his consulting engineer, which are created by the contract between the architect and his client, are owed primarily to the client and not to third persons. Consequently, the purported failure of the architect or his engineer to provide adequate supervision as provided by the architect's contract with the owner did not create any legal rights in the contractor's employe which could be enforceable by him against the architect or engineer. The Court said:

"On the evidence presented, . . . the architects and engineers could be charged only with nonfeasance. For that it is possible they could be liable to the Bank, but not the respondent."

It is reasonable to assume that the architect was not held liable because he owed a duty to the owner who, in turn, was deemed not responsible to the contractor's employe. This decision, however, does not establish the proposition that the architect is not required to exercise due care in supervision vis-à-vis the public. Since the architect may be liable to the public for errors and omissions in design which cause injury (see IT'S THE LAW, MAY 1958 P/A), the probabilities are that he would also be deemed liable for negligent supervision if injuries resulted to a third party to whom the owner would be responsible. The extent of the architect's liability for injuries to third persons has not as yet been adequately defined. The cases throughout the United States should be carefully examined by the profession to determine what steps are required to protect its members.





European Diary: ENCORE!

Dear Editor: I read your article in AUGUST 1960 P/A and I wish to say that this was the most interesting and instructive report on contemporary European architecture I have read in the past years. It is my belief that similar reports (on North American, South American, etc. architecture), preferably by you, would do a remarkable service to your readers, and could effectually retard the sad phenomenon of "The Passing of The Pro," as portrayed so well in your P.S. of the same issue.

LESLIE L. DOELLE
Architectural Acoustician
Canadian Broadcasting Corporation
Montreal, Que.

Dear Editor: Your European Diary report in August was great!

Congratulations on so stimulating and forthright an appraisal of current architecture in Europe, the thoughful criticism, and particularly, the comparative study between UNESCO and Ronchamp. Your plea for architecture by the total artist as opposed to architecture by committee could not be better timed.

EDWARD D. DART
Chicago, Ill.

Wanted: Angry Young Landscape Architects

Dear Editor: Congratulations to P/A for publishing two fine critical issues on landscape architecture (with great improvement in typography and layout too). Interesting as the points of view were, it seems only fair to point out that not all landscape architects are obsessed with abstractions, especially when the original sites are as attractive as those illustrated. Some still know and even use *plants* occasionally, as well as—or instead of—jagged-angled paths, pools arranged like buildings laid flat, and date palms marching around in fours.

Full marks must go to Sasaki, Walker & Associates for assailing the No Man's Land between architecture, landscape architecture, and engineering, in spite of their timid design. There have been hardly any new ideas in either landscape design or subdivision planning in the last ten years.

However I am interest in a far more epoch-making event. It appears that this same SWA have discovered independently and unaided that subdivisions need more green area.

A truly remarkable feat!

It is even more amazing to find there are still municipalities that allow such land exploitation as the sardine can portrayed. Unfortunately we must face the fact that the small but vital force which represents enlightened landscape design is but a pin-prick against the armies of bulldozers which scour the modern subdivision, and the phalanxes of ghastly houses (architect, where art thou?) which adorn the bulldozed streets.

"For what is left a poet here?
For Greeks a blush, for Greece a tear."

We are worried about trivialities when this great land is being laid waste by developers, realtors, and land sharks. Landscape architects have got so far behind we now seem grateful if we can preserve a bit of nature in the blacktop and diluted bricks and mortar of any so-called modern development.

Shades of Olmstead indeed!

What our profession needs is some articulate angry young men, whose horizon is the universe and not the subdivision lot; or else there won't be anything left of this wonderful American landscape to architect.

DESMOND MUIRHEAD
Landscape Architect
Honolulu, Hawaii

A Cheer!

Dear Editor: I want to be among the first to congratulate you, warmly, for this fine job you did on our Quincy House (SEPTEMBER 1960 P/A).

I would like to add that my praise of your efforts is not contingent on the outcome of this article. It does take time—in the case of an architectural magazine, several issues—before a new policy, a new format, and new contents can truly be evaluated for what they are worth.

Your efforts put P/A in a category all of its own. Bravo!

J. P. CARLHIAN
Shepley, Bulfinch, Richardson & Abbott
Boston, Mass.

Progress in Providence

Dear Editor: Page 142 of SEPTEMBER 1960 P/A (R.I.S.D. Climbs College Hill) shows most tragically the toboggan trend of architecture in the United States. At the left of the picture is the grand old spire of the Baptist Church, in the center the very distinctively designed main building of the Rhode Island School of Design, toward the right the magnificent studied mass of the State Capitol and—on the extreme right—just about as stupid a shed as could well be unimagined. And all the description of its red brick walls, slate roofs and white-painted woodwork relating the design to local tradition is just so much baloney. Too bad.

HARRY E. WARREN
New York, N. Y.

Intuitive Design: More Cracks in the Wall

Dear Editor: Since the writing of my article, "Intuitive Design of Structures" (AUGUST 1960 P/A) there have appeared more cracks in the wall separating intuition from engineering. Drs. Norris and Wilbur of MIT in their latest book on structural analysis formally give credit to the role of intuition in structural design to complement the other acknowledged methods; and others also have privately acknowledged its existence. However, in this age when the "scientific method" of believing only what one can directly see or measure is the vogue, the unseen factor of intuition is harbored in the darkness of the catacombs. There must be a broader "techni-

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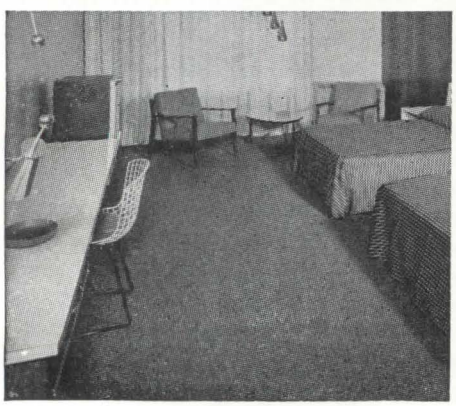

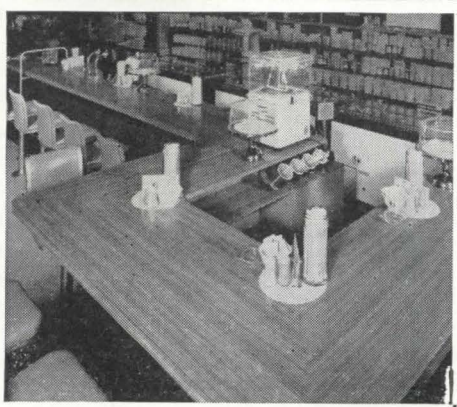

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sophical method," transcending this limited "scientific method," which gives full status to the higher capabilities of the mind.

There is no denial of the fact that a direct application of intuition in engineering is difficult to achieve, yet its implementation is believed to be easier than in the fields of pure creation (as in the fine arts) because intuition in structures can be built on an acquirable foundation of direct knowledge such as contained in our existing reference books. If intuition can be brought into the open and given an air of respectability, structural engineering and the architecture affected by it may well take a dramatic turn.

I appreciate indeed the words of encouragement from Chelazzi regarding the use of intuition in structural analysis (OCTOBER 1960 P/A). In his letter he draws attention to the relation of electromagnetic forces to bending in the transient phenomena of a propagating crack or rupture in a beam. Recently, a symposium was held on the subject of the basic mechanisms of fracture, wherein eminent research people from physics and engineering discussed these phenomena from such fundamental aspects as the dislocation of atoms and microscopic plastic slip planes. Although there exists much disagreement among the experts on some basic points of fracture theory, there does exist agreement on the fact that the stresses at the root of the crack or fracture are extremely large, in some microscopic regions approaching the electromagnetic strengths. One can get a picture of the behavior of the stresses near a crack in a beam by utilizing the flow line concepts mentioned in the August article, wherein the flow lines of stress are drastically altered by the formation of a sharp crack, causing the flow lines to swerve around and compound at the root of the crack.

There are, no doubt, many dormant ideas possessed by engineers and architects at large on ways to encourage and implement intuitive concepts in structural design and it is hoped that more ideas on this fascinating subject will be openly discussed, perhaps through the enlightened direction of the Editors of P/A.

WILLIAM ZUK
Professor of Civil Engineering
University of Virginia

The Quantity Surveyor: Errors and Contingencies

Dear Editor: For some time I have been interested in the English system and have talked with contractors and architects regarding this process while visiting in their country. The article by Terence J. A. Ash (AUGUST 1960 P/A) is particularly interesting and concise enough to be attractive for quick reading.

I have just one question: What occurs when the quantity survey is found to be in error? I have taken off many material lists myself when in the field of general contracting. We all know that it is impossible for anyone to be one hundred percent accurate. Therefore, when a bidding contractor accepts the quantity survey as his own take-off and prices his bid out only to find later that there is more or less material required than indicated originally by the quantity survey, how are these adjustments made other than by negotiation and how does the client feel when he finds that his building is going to cost him more than originally quoted by the low bidder?

Answer to these questions would be most sincerely appreciated as I believe that the quantity survey process is a most sensible one.

VICTOR L. WULFF
San Diego, Calif.

Dear Mr. Wulff: The question that you raise is a very important one and one that has caused more than one quantity surveyor a great amount of anxiety. Of course nobody would guarantee that his Bill of Quantities is one hundred percent accurate, for many reasons, but if entrusted to a competent surveyor it will be as accurate as it can possibly be. The quantity surveyor in England suffers an initial disadvantage, however, in that architects usually require a Bill prepared before all the drawings are finally complete. Usually this doesn't present too much difficulty, but in an acute case it often leads to overmeasurement and "covering items." The latter isn't such a sin as it sounds because, in difficult jobs where there is substantial alteration in the quantities after the contract is signed, the quantity surveyor and the contractor usually make a remeasurement of the relevant items on completion. These are priced of course at the rates the contractor submitted for his bid.

During the actual running of the contract a Bill of Variations is prepared, the items contained therein being agreed to by both the quantity surveyor and the contractor. This is priced at the rates contained in the original Bill or negotiated on these rates. This Bill would include any alterations approved by the architect in his Variation Orders; the adjustment of "provisional items" (i.e., items subject to substantial change such as drainage or plumbing); the adjustment of "written in" items (i.e., sums included for possible contingencies and to cover work to be done by "nominated" subcontractors or suppliers); and any remeasurements that may have been made while the work was in progress. This Bill thus represents the clearing ground for all additions and omissions made during the progress of the work.

You will see then that the prudent quantity surveyor has ample opportunity to "put money in" under the provisional headings to cover possible inadvertent error elsewhere in his Bill. A substantial error is inadmissible, but minor deviations can be absorbed in this way. It follows of course that the architect can also take advantage of this by putting additional work into the job without any apparent increase in cost.

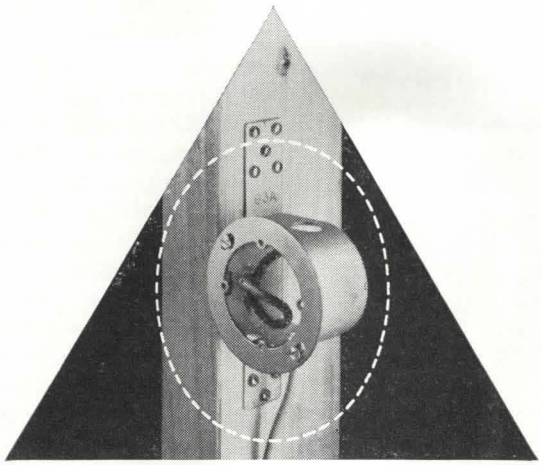
The "written in" prices perhaps need a little explanation, although since you are aware of the format of our Bills of Quantities I won't elaborate. These are prizes for set items that are standard for all bidders. A Contingency item is usually included and provides a useful omission item in the Bill of Variations. Set sums for work to be done by "nominated" specialists, or for equipment to be provided by "nominated" suppliers—all arranged by the architect and not by the contractor—are also included. These fixed sums that will be adjusted at a later date in the Bill of Variations are given to the quantity surveyor by the architect for inclusion in the Bill.

Coming back to your question again, the quantity surveyor in England doesn't have so much trouble dealing with any error in his quantities, but in deciding how much should be put into the Bill against possible contingencies while the work is in progress. Many architects tend to ask for these hidden contingencies, so that the money is authorized should they want to use it.

I am aware that rather than answering your question directly, I have elaborated on the ways and means of putting hidden money into the Bill, but you can understand how important a limited and legitimate use of this is. To the client there is no difference. If the contingencies do not arise then he has a saving. I hope that this has given you an adequate answer to your question, although I have dealt with it in wider terms.

TERENCE J. A. ASH
Yale University

For details of home installations, see Sweet's Light Construction File, 11c/Be. ▲



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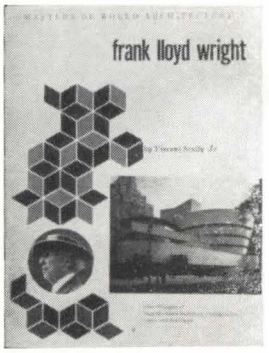

BY PHYLLIS DEARBORN MASSAR

Noted architectural photographer gives her impressions of Masters of World Architecture Series: Antonio Gaudi *by George R. Collins, 136 pp.;* Pier Luigi Nervi *by Ada Louise Huxtable, 128 pp.;* Ludwig Mies van der Rohe *by Arthur Drexler, 128 pp.;* Frank Lloyd Wright *by Vincent Scully, Jr., 124 pp.;* Alvar Aalto *by Frederick Gutheim, 128 pp.;* Le Corbusier *by Françoise Choay, 126 pp. Published by George Braziller, Inc., 215 Fourth Ave., New York 3, N.Y., 1960. illus. $4.95 each*

My first look at the Braziller Series had me avidly thumbing the books in the expectation of a visual treat. This hope was rudely dashed when I came upon the first morass of mush-grey, hackneyed, and amateurish photographs, undistinguished in layout. It was especially disappointing after the color, smooth paper stock, and excellent black-and-white reproductions of the jackets, although they, at second glance, might be termed a little brash and self-conscious.

The reasonable price of $4.95 might provide a clue. But on closer examination the books are found to consist of 20 percent text and 80 percent illustration. Was I gullible, then, to be caught in the snare of American packaging techniques? Or were these books meant to make their primary impact visually?

Plates preponderantly outweighing the text, it is perhaps fair to list objections in detail. The lack of glossy blacks and sparkling whites might be laid at the door of what I am afraid is becoming the norm of American reproduction of architectural photographs—general greyness on poor paper stock. But if one did not know otherwise, one might be forced to the conclusion (accepting many of the reproduced photographs as evidence) that the view camera, the perfect perspective machine, accompanied by adaptable lenses, and capable of exact architectural corrections, had yet to be invented, instead of having been a common tool for more than one hundred years. For their most recent works, why are these "masters of world architecture" eternally victimized by having their masterpieces shown in bad, premature, and frequently amateur photographs?

Continued on page 196

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McLOUTH STAINLESS STEEL

Continued from page 194

In books which are four-to-one visual material, why is there no budget for new photographs? Why are the often-published and over-familiar ones used once again, except in the obvious cases of work since destroyed?

A partial exception to this is Arthur Drexler's book on Mies van der Rohe, where Drexler has knowledgeably, I believe, chosen the most professional photographs extant, the purity of the architecture presumably calling forth a corresponding purity in the illustrations. One suspects that Drexler may have omitted interior views of most of Mies's buildings more because of his own inner conviction that the embodiment of Mies's structural conceptions precludes any emphasis on the interiors, rather than because of the lack of good interior photographs. But it is probably for the latter reason that there are few illustrations of interiors in the books on Le Corbusier, Wright, and Aalto. In the case of the Aalto book, Frederick Gutheim acts as if he were giving a home slide-talk, expecting us to evoke the architecture from his snapshots, which for himself at least are symbolic of architectural spaces that he has personally experienced, but for us are merely visual jumbles.

Significantly, perhaps, no one admits to the creation of the layouts of these books. One wonders why so many photographs are used, if they have to be squeezed onto the page, as in the Aalto book. Why not fewer and finer? And all these books force one to employ the old neck-twisting gymnastics, to avoid a ninety-degree turn of the book in switching from horizontal to vertical photographs. (When one tires of this, presumably, one can always view all the photographs diagonally, and read the text slightly aslant.) Another diabolical device is in the alphabetical listing of sources, so that it takes half an hour to discover who did which photograph. Why not list plate numbers chronologically instead, with keyed initials or abbreviations? One doesn't want to know that Hedrich-Blessing did plates 6, 87, and 100; one wants to know who did plate 25, at which one is now looking.

Since these books are not demonstrably good picture books, then, one is constrained to inquire for whom, if not for members of the Museum Without Walls, these books are intended? I must say first that there is no question as to one in the series—Professor Collins's book on Gaudí—since it fills a well-known need for a scholarly, original, definitive work in English on this Catalan architect.

But the others . . . are they for the practicing architect? Presumably not, since virtually all of the visual material has been previously published, and fuller technical descriptions have appeared in professional journals and books. Are they for the layman? Apparently not, since the various styles of writing imply some prior knowledge and familiarity, either with experiencing architecture itself, or with a critical style that is well above pseudo-technical once-over-lightly-jargonese.

Are they for the scholar? Obviously not, because bibliographies are "selected" and therefore partial; because the list of works is not definitive; because little is advanced in the way of new theory concerning the work of the five architects other than Gaudí; because no previously unpublished plans or drawings are turned up; because a scholar might find premature and pretentious the title, *Masters of World Architecture*, to cover two lately-deceased architects, and four contemporary ones; and might wonder what happened to Brunelleschi, Michelangelo, Bernini, Borromini, Mansart, and Wren,

Continued on page 202

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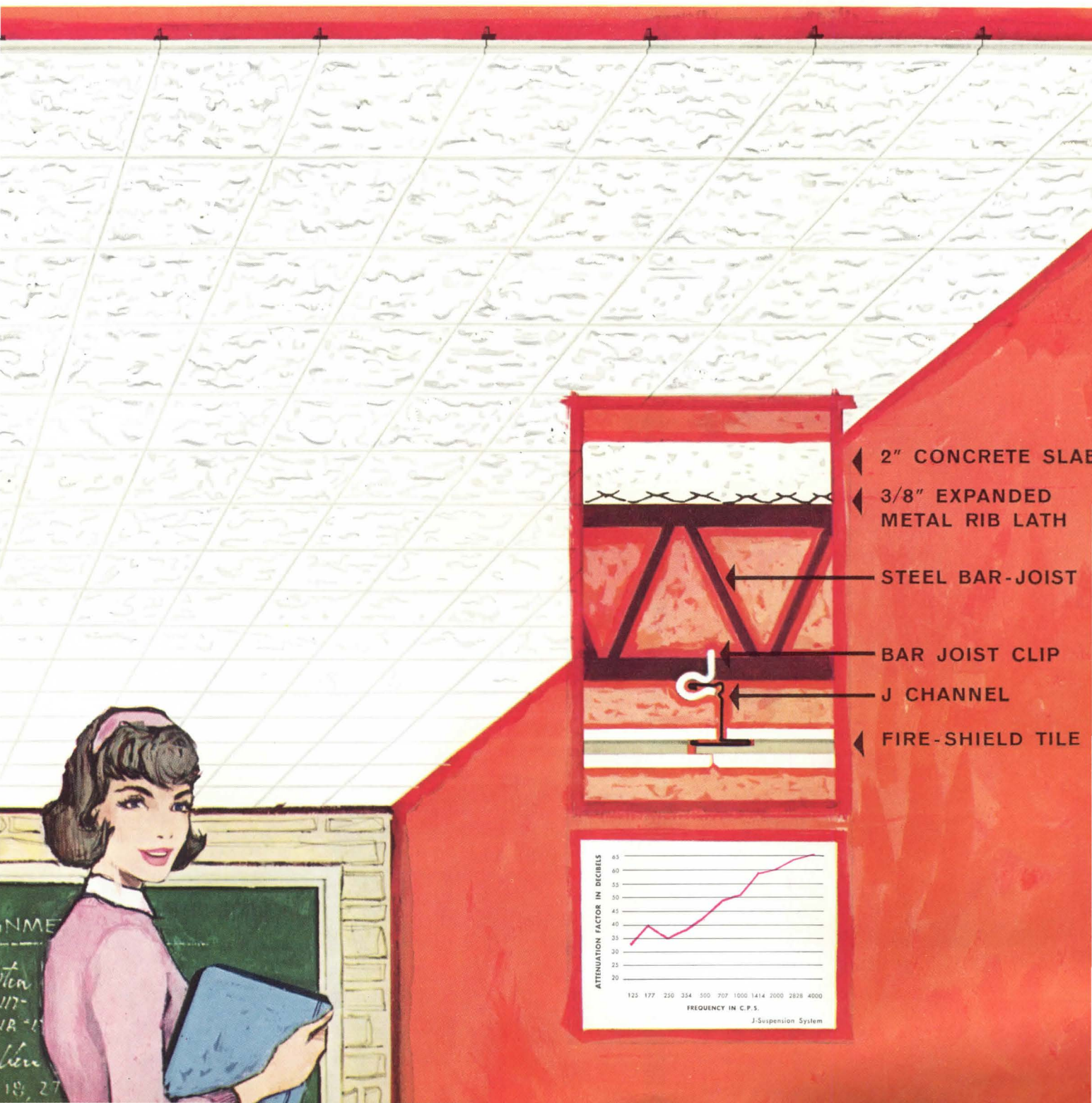

Continued from page 196

to say nothing of the un-named Greek, Roman and Gothic masters.

Are these books for Europeans? No, since their own literature in the field is extensive, in many languages, even on Wright, the one American-born in the group. Are they for an American audience, then? Not specifically, since the writers (all Americans but Choay) do not attempt to relate the work of these masters to the contemporary scene, to show their influence, or to imply that any and all followers have merely misused the vocabularies of the masters.

Are they for the traveller? We seem to be getting warm here, and Gutheïm does add a "Note on Tourism" which seems evidence of the intended practical use of the series. But the inconveniently large format would probably discourage the architect-traveller from slipping one of these books into air-luggage or pocket, and in this respect they compare unfavorably with the Italian *Astra-Arengarium* series, which, in addition to being compact, combines excellent reproduction of some outstanding photographs with brief scholarly text—just enough to foster recognition and some understanding.

For whom are these Braziller books intended, then? Why, they are for me! In spite of the preceding comments, they are unique as a group in American architectural publishing, and they are a comfort to have on the shelf. For one who has long been associated with architecture, but who has never formally studied it and its history; for one who is neither scholar nor practicing architect; for one who knows most of the names and locations of buildings, but whose knowledge lacked precision; these books are invaluable references, utilizing the photographs at least as cues, and the texts at least as far as they go.

In each thin volume one has, indubitably, a single master architect between covers, with enough visual presentation to become aware of style, and with enough bibliography to pursue further study.

The uniformity of the volumes (plates start in each book on page 33, notes on page 113) invites ready comparisons. One can open the various books to plates of buildings of a certain date, and thus see at a glance the simultaneous works of these rival geniuses. When Françoise Choay compares the fire-stairs of Le Corbusier and Nervi, it is simple: plate 60, Le Corbusier; plate 89, Nervi. This comparative process goes far to scotch any idea that these architects as individualistic creators were working in a vacuum.

These books also give virtually the first vantage point from which to view in retrospect the work of these six late-19th Century to mid-20th Century advocates of varying architectural philosophies. All are now either dead or in their sixties. Much of Le Corbusier's and Mies's architecture having been paper up until the last decade or so, comparisons of real buildings were lacking. Contrasting the fecund architectural imagination of Gaudí and the convincedly one-track Mies, using views of works at hand, is striking. But what is perhaps most moving is to see tangible evidence that despite 20th Century standardization, depressions, revolutions, and the chaos of two wars (and sad evidence are the numerous works listed as destroyed), these architects as individuals have been strong enough to persevere and to have standing these many livable, usable monuments to differing architectural beliefs.

The comparison of contemporary styles of architectural writing is also absorbing.

Writing about Aalto, Frederick Gutheïm, seemingly part social-historian, talks like a man telling one personally of his travels, of the beautiful architecture he saw, of the climate he experienced, of the interesting people he met. One regrets the section where he felt constrained to compress a mass of fact, college-thesis style. But we never question that his was a genuine personal experiencing of the architecture; he walks one through it with his words. But visual equivalents are abysmal, and points made in the writing are unillustrated. Humanism, the distinguishing factor in Aalto's architecture, is nowhere stressed in the photographs. Continuity, the point made about Sunila and Saynätsälo does not come through in the photographs of these building complexes.

Vincent Scully, whose subject is Frank Lloyd Wright, wields his art-historical style with precision, moving one through step-by-step analyses of the buildings, and tightly keying each step to photographs, plans, and drawings. Perhaps he is too patently desk-bound. If Scully has seen and walked through all the buildings he treats, he manages to write as though he hasn't, while demonstrating thorough familiarity with all the published sources.

In the general muddle of Françoise Choay's book on Le Corbusier (the muddle consisting of plates that are seemingly ordered neither chronologically nor according to the text; no ground plans; photographs that are just as evocative of architecture upside down as right side up) it is a relief to find the writing densly packed and obviously stemming from an intimate knowledge of Le Corbusier's architecture, of the painting and sculpture of his era, and above all of his stated (and often misapplied as well as misinterpreted) theories. She leads one through the maze of seeming perversities, from the art-historical background, through the progressively starved and deprived-looking visual and spatial equivalents, and through the apparent about-face at Ronchamps.

Since Ada Louise Huxtable sounds rather detached, it is probably best that she has more or less let Nervi write his own book, showing herself to be an adept compiler and quoter. One suspects that the unforgivable first chapter of dry historical background, intended to justify engineer Nervi's inclusion in a series on architects, was necessary to fill the required 22 pages of text. Some of the broad, general statements are provocative, though. "His work reestablishes architecture as a primarily structural art, as it has always been in its best productive periods of the past." Or so that last college generation was taught. What happens to Palladio, the Greeks, Brunelleschi? "For the most serious foe of architecture is the man who sets out seriously to produce it." Was San Carlo alle Quattro Fontane accidentally produced, then? Is a non-architect inevitably more likely to produce great architecture than an architect? The illustrations for this book are most interesting, but again a master of span and scale is represented by amateurish photographs. The drawings, especially details, are fascinating.

Arthur Drexler writes a powerful opening page in his monograph on Mies van der Rohe, and continues to move the reader along excitedly by means of his dynamic, staccato style. Perhaps speed and rhythm are maintained by his not using references to notes and plates. His is also a more philosophical approach than the others. The consistently high level of writing is echoed in the illustrations. Most of the plans are

Continued on page 206

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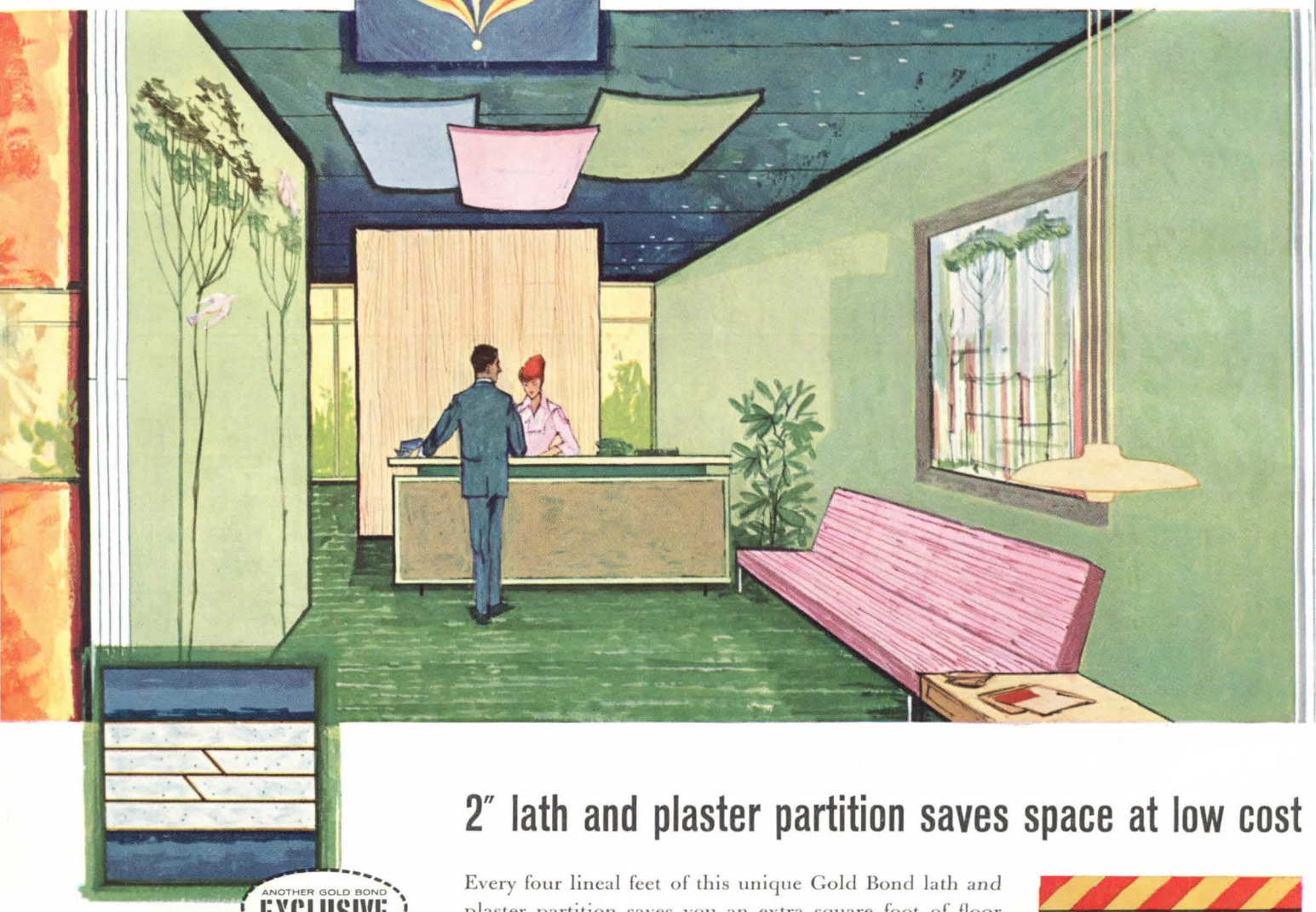

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Continued from page 203

large enough to read; thorough familiarity with their plans and drawings is manifest in the descriptions of unexecuted projects; and photographs in the main look professional and allow one to study the architecture without distraction.

Opening Prof. George Collins's book on Gaudí is like receiving a long-awaited Christmas present. Here everything is shiny and new—to me, at least, and probably to most other American readers. Almost every plate carries a mysterious surprise in style or rendering of scale, manifesting a prolixity of created form. The drawings, too, are charming, provocative creations.

It is a scholarly piece, yet I found myself gobbling it like detective fiction —text, notes, plates, and all—despite the acrobatics required to keep fingers in three areas of the book at once. Professor Collins is so sincerely dedicated and deeply involved as to make the other five books seem contrived and self-conscious by contrast. Although Collins could never have met Gaudí personally, he makes the Catalan master architect far more of a person for us than the eulogized living architects in the series.

The page-flipping, note-following, neck-twisting procedures are here proliferated endlessly, but one is glad to do it all, quite breathlessly absorbed. Inconvenience is forgotten in discovery, and one arrives at the end with regret, but happy in the anticipation of beginning again immediately, and probably finding new treasures. And plates 101 and 102, of the curtseying dressing table, are worth the price of the book.

Beyond the Taj Mahal

The Art of India: Temples and Sculptures. *Louis Frederic. Harry N. Abrams, Inc., 6 W. 57 St., New York 19, N. Y., 1960. 468 pp., 426 gravure illus. $17.50*

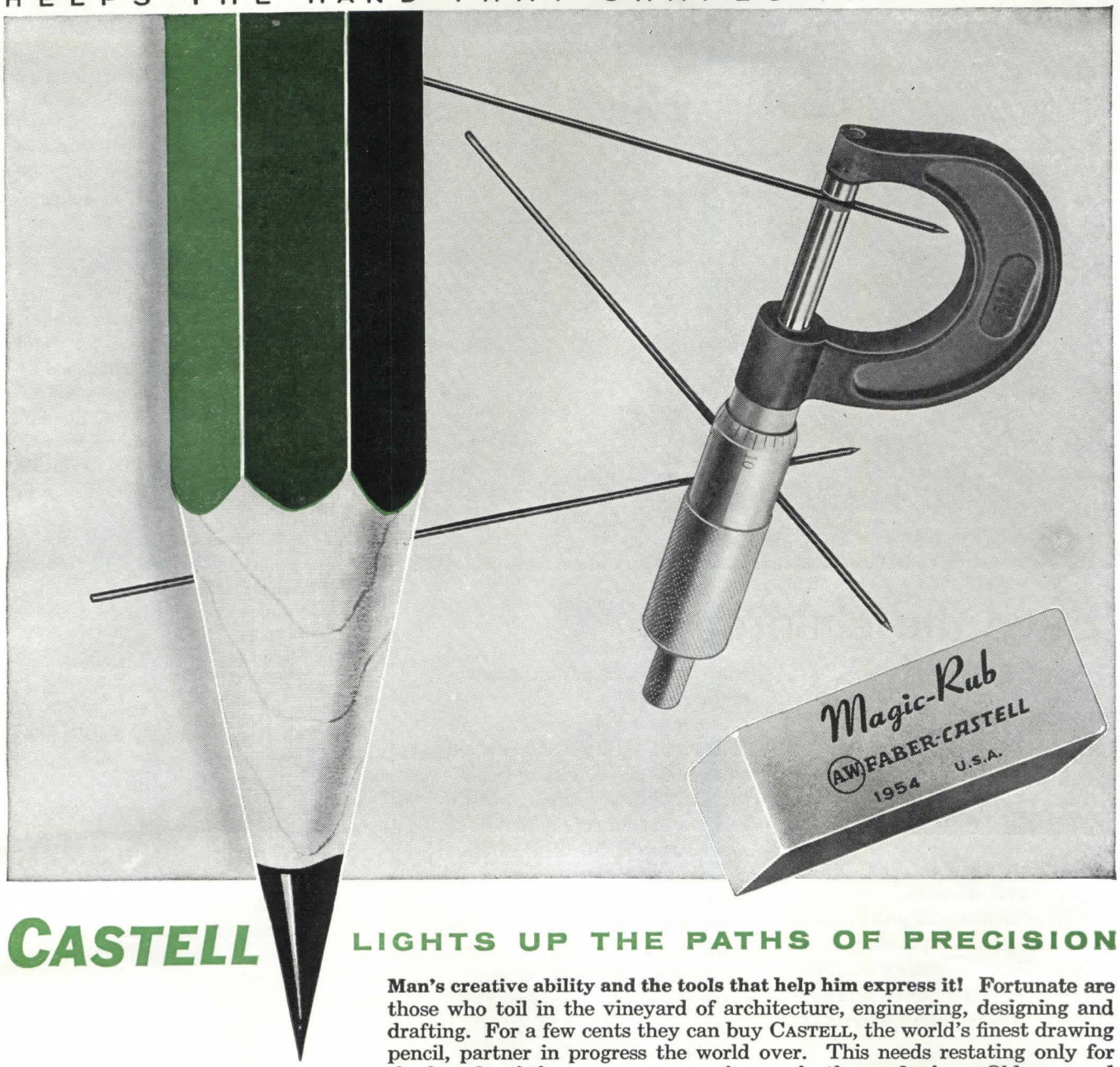
In their professional studies or in their travels few architects are exposed to the cultural treasures of India. Knowledge of Indian architecture seldom goes beyond the Taj Mahal, a magnificent (although rather more Persian than Indian) example.

India's immensely complicated history, involving successive ascendancies and declines of many differing ethnic groups, has produced a profusion of widely diversified art forms—too many, perhaps, to be readily assimilated by the casual observer. Jean Naudou, a recognized authority on Indian art, has summarized well the many phases of the subject in this book's introduction, painting a broad picture that prepares the reader for the author's more specific and detailed comments. More than 4000 years of history are documented, ranging from the pre-Aryan art of the third millenium B.C. through the ancient, classical, medieval, Indo-Muslim, and Moghul periods. Photographs and related commentary comprise most of the book, and, as might be expected from this publisher of fine art books, the photographs are handsome and well reproduced.

It may seem petty, in view of the excellence of the content, to interject a criticism of pure book-making technique. The convenience to the author, book designer, and printer, of grouping photographs in one part of the book and grouping captions in another, is self-evident. However, to the reader (at least to this reviewer), the separation of picture and caption is an annoying detraction from the reading pleasure.

Continued on page 212

HELPS THE HAND THAT SHAPES THE FUTURE



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Continued from page 206

Cross-indexing of introductory text and photographs would also have been appreciated.

Although Frederic has restricted himself to the study of temple architecture, this is probably the most significant and representative area of Indian art and architecture. The all-pervasive and powerful influence of the Indian religions (Buddhism, Jainism, Hinduism, and Moslemism) were the prime determinants in all phases of the Indian creativity that reached its apogee with the temples.

Of particular interest to the architect are the early stupas, which are solid hemispherical monuments surrounded by circular walks. These stone edifaces, commemorating the death of Buddha, are obviously copied from a previous wood architecture, and give valuable knowledge of the earlier period of construction.

Even more fascinating are the sanctuaries cut into rock, with their barrel-vaulted roofs, basilical plans, rows of pillars, and small stupas of the first period of Buddhist art.

When rock-cut architecture yielded to the structural, architectural inventiveness took off in many directions. Some of the buildings are of fairy-like magnificence, others are of great simplicity or delicate elegance, and still others are of highly plastic and theatrical quality (as, for example, the astronomical observatories built by the Maharaja of Jaipur in 1734).

To anyone not already acquainted with these masterpieces, this book will open an entirely new world of architectural form and ornamentation. It is an experience that cannot fail to be exhilarating.

ILSE MEISSNER REESE
Forest Hills, N. Y.

Old Wine, New Bottle

The Art of Painting. *Leonardo da Vinci. Philosophical Library, 15 E. 40 St., New York 16, N. Y., 1957. 224 pp., illus. $4.75*

Since Leonardo da Vinci wrote his *Trattato della Pittura* around 1500, it has been a permanent reference for artists and art students. The first printed edition was published in Italy in 1651. In 1802, John Francis Rigaud referred back to that earliest edition for an English translation, *A Treatise of Painting by Leonardo da Vinci*, which was published in London and was reprinted a number of times, up to 1906.

Continued on page 216

ST. JOSEPH'S ACADEMY, BROWNSVILLE, TEXAS CAUDILL, ROWLETT & SCOTT, ARCHITECTS PHOTO: ROLAND CHATHAM

IN THE DECEMBER P/A...

the editors review two distinguished examples of architecture—St. Joseph's Academy, Brownsville, Texas, Caudill, Rowlett & Scott, Architects; Louisiana Arts Museum, Humlebaek, Denmark, Jorgen Bo and Vilhelm Wohlert, Architects.

An article on training professional urban designers includes four student schemes for the redevelopment of Staten Island. Related Design Fields article discusses sandblasting of concrete and how it is used to create decorative patterns and images. Practice of Architecture presents Part II of the article on liability insurance in which the author, John M. Lake, explains his recommendations for improving the policing of contractors' liability coverage. An added attraction is the life and works of Jens Jensen, perhaps America's greatest landscape architect.

This variety of subjects plus Materials and Methods articles and Interior Design Data makes the December P/A another outstanding issue. Make sure you receive every copy of P/A. Use post-free subscription card in the News Report section.

PROGRESSIVE ARCHITECTURE

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Continued from page 212

This recent edition of *The Art of Painting* is from Rigaud's translation and follows what he considered the logical arrangement of Leonardo's 365 brief expositions on painting, including: technique of drawing, composition, light and shadow, color, and miscellaneous comments. There are detailed instructions on drawing the human figure; using knowledge of anatomy and rules of proportion; and composing a landscape with the proper use of perspective, light and shadow, and color, to show objects as they appear at a distance, through a fog, in a storm, etc. The comments on landscape painting were particularly influential on the generations of painters following Leonardo, and his writings on anatomy were so in advance of his day that they brought him into conflict with the church and legal authorities.

Though the contents of the *Treatise* had their greatest impact on the artists of Leonardo's day and those immediately following him, the reference remains an interesting one today.

ADELAIDE LEWIS
Greenwich, Conn.

For Clients and Students

Experiencing Architecture. *Steen Eiler Rasmussen. Technology Press of Massachusetts Institute of Technology and John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1959. 251 pp., illus. $4.50*

One of Denmark's leading architects and architectural educators, who has also lectured extensively in this country, has written a lucid guide to seeing, feeling and *hearing* architecture. Citing examples from classical as well as contemporary design, and drawing appropriate analogies from nature, sculpture and painting, and industrial design, Rasmussen's book becomes one of the most useful—and one of the handsomest—primers for the understanding of architecture. In a good translation by Mrs. Eve Wendt, *Experiencing Architecture* should prove invaluable as a "client book" and as an introduction to the building arts for secondary school students. Various chapters deal with space as contrast between "solids and cavities," color, scale and proportion, rhythm and texture, use of natural light, and "hearing architecture"—the effects achieved by good acoustics. Illustrations are well chosen to illumine the text; happily, the section on color uses four-color plates.

J. T. B., Jr.

Continued on page 218

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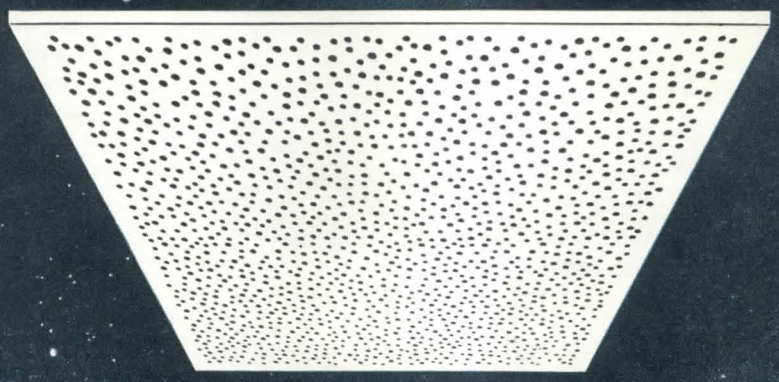

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Continued from page 216

To Laugh or Not to Laugh

Architectural Follies in America. *Clay Lancaster. Charles E. Tuttle Co., Rutland, Vt., 1960. 243 pp., illus. $10*

Although this handsome volume contains many a chuckle-provoking example of architectural aberration, its final and general effect is sobering. One is struck by the thinness of the line that separates that which we regard seriously and respectfully from that which we label folly. In fact, sometimes the line disappears altogether, leaving us, like the classic cockroach when the light it turned on, in a quivering agony of indecision. To laugh or not to laugh, that is the question. The agony comes when we look at our own work and ask the same question.

In his closing chapter Lancaster says, "It will have been found that the majority (of the examples given in the book) predate the present century, which is due to the fact that architectural follies, like the Chinese eggs, take on more savour with the passage of time."

I wonder whether this is the whole answer, or is it partly that we prefer to be less objective about work closer to us, lest we see it too well? Surely a building such as the Capitol Records Building in Hollywood has enough savour for any egg connoisseur. But let us keep away from that area of discussion, for the sake of our own comfort. The room is getting a bit warm, isn't it?

EUGENE RASKIN
New York, N. Y.

Communication of a Theme

Exhibition and Display. *James Gardner and Caroline Heller. F. W. Dodge Corp., 119 W. 40 St., New York 18, N. Y., 1960. 192 pp., illus. $13.75*

A thorough analysis of exhibition planning and design in all details is given in a new book that stresses the obvious, but often forgotten, fact that exhibitions and displays are meant to communicate a specific theme to the public in the most direct and exciting way. The authors state this basic point of view in their introduction: "an exhibition does not in fact exist until it is crowded with people, and what really matters is how these people react to what they see."

The first section—"Principles"—deals with general issues: the importance of selection, simplification, and restraint; the physical factors of circulation and the eye; and the technical potentialities

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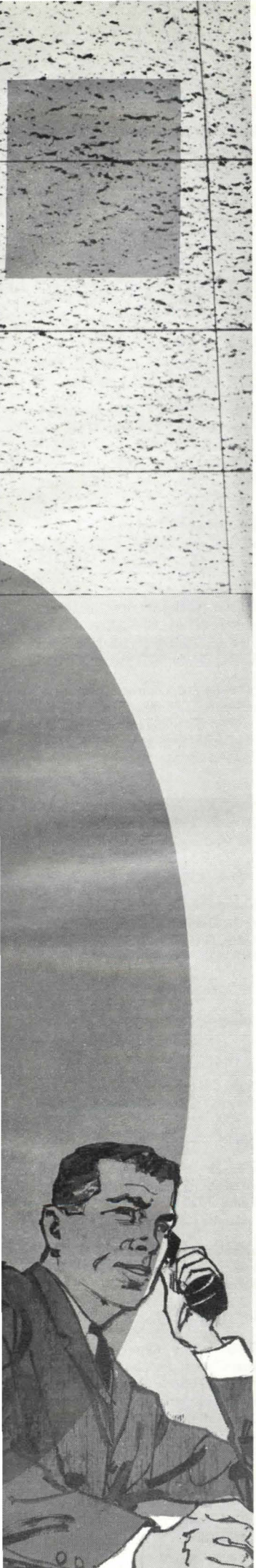

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Continued from page 218

of sound, animation, and controlled lighting. Well documented with photographs and line drawings, the most interesting chapter here is an excellent study on lighting in all its forms. For once, even the problems of changing daylight in outdoor exhibitions are considered.

The second part—"In Practice"—illustrates additional applications of the principles discussed in the first section, and includes a chapter on museums, some brief comments on shopfronts, some basic examples of traveling exhibitions, and finally a survey of the 1958 Brussels Fair.

It is in the discussion of the Brussels Fair that one misses a more serious evaluation of the exhibition as such. Are "world's fairs" still justified? Can an exhibition of this scale, without a definite basic theme or ideologic program, communicate any direct (let alone lasting) impression? What message, if any, does it have for the average human being? How can it be economically justified?

The book concludes with a section called "Procedure," giving practical organization outlines for the planning of various types of exhibitions—trades fairs, traveling exhibitions, etc.

Disappointingly, and ironically, the book is not always easy to read. Typography of the titles and subtitles is slightly confusing, individual chapters are not clearly marked, and credit lines for the illustrations (which are often the only captions), are so discreet that they are frequently hard to decipher.

But these are minor defects. The book is of undoubted value to all concerned with the creation of exhibitions: to the prospective exhibitor as much as to the designer. With considerable competence, the authors have covered all aspects of their subject in a positive and realistic way.

SUSANNE WASSON-TUCKER
Architect
Stockholm, Sweden

Books Received

Construction Contracting. Richard H. Clough. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1960. 382 pp., tables. $9.75

Erecting Structural Steel. Samuel P. Oppenheimer. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York, N. Y., 1960. 272 pp., illus. $9.50

Construction Estimates and Costs. (Third Edition.) H. E. Pulver. McGraw-Hill Book Co. Inc., 330 W. 42 St., New York, N. Y., 1960. 640 pp., illus. $12

Planning the Neighborhood. (New edition of the 1948 classic, with a revised, annotated bibliography.) Committee on the Hygiene of Housing, American Public Health Association. Public Administration Service, 1313 E. 60 St., Chicago 37, Ill., 1960. 108 pp., 18 tables. $3

The Mute Stones Speak: The Story of Archaeology in Italy. Paul MacKendrick. St. Martin's Press, Inc., 175 Fifth Ave., New York, N. Y., 1960. 369 pp., illus. $7.50

Five California Architects. Esther McCoy. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1960. 200 pp., illus. $10

A Picture Dictionary and Guide to Building and Construction Terms. Benjamin Lipowsky and Murray Bersten. Arco Publishing Co., Inc., 480 Lexington Ave., New York 17, N. Y., 1960. 70 pp., illus. $5 ($3 paperbound)

Children's Rooms and Play Yards. A Sunset Book. Lane Book Co., Menlo Park, Calif., 1960. 96 pp., illus. $1.75 (paperbound)

Economic Planning for Better Schools. Benjamin Handler. A Department of Architecture Research Publication. College of Architecture & Design, University of Michigan, Ann Arbor, Mich., 1960. 107 pp., tables. $5

A New Approach to School Building Cost Comparison. Fred M. Fowler. Utah State Department of Public Instruction, Division of School Finance, State Capitol, Salt Lake City, Utah, 1960. 44 pp. $.90 (paperbound)

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