



# ARCHITECTURAL RECORD

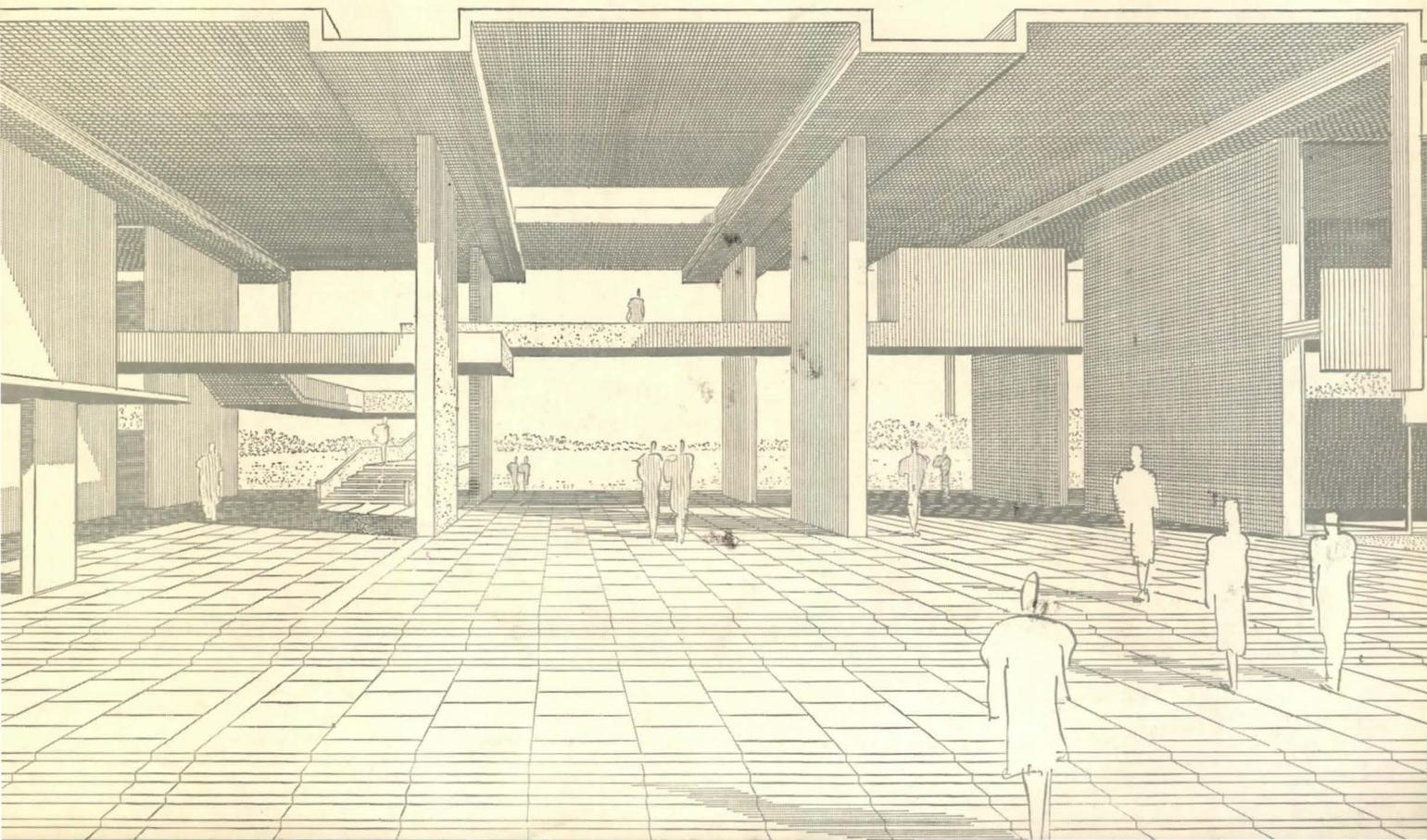
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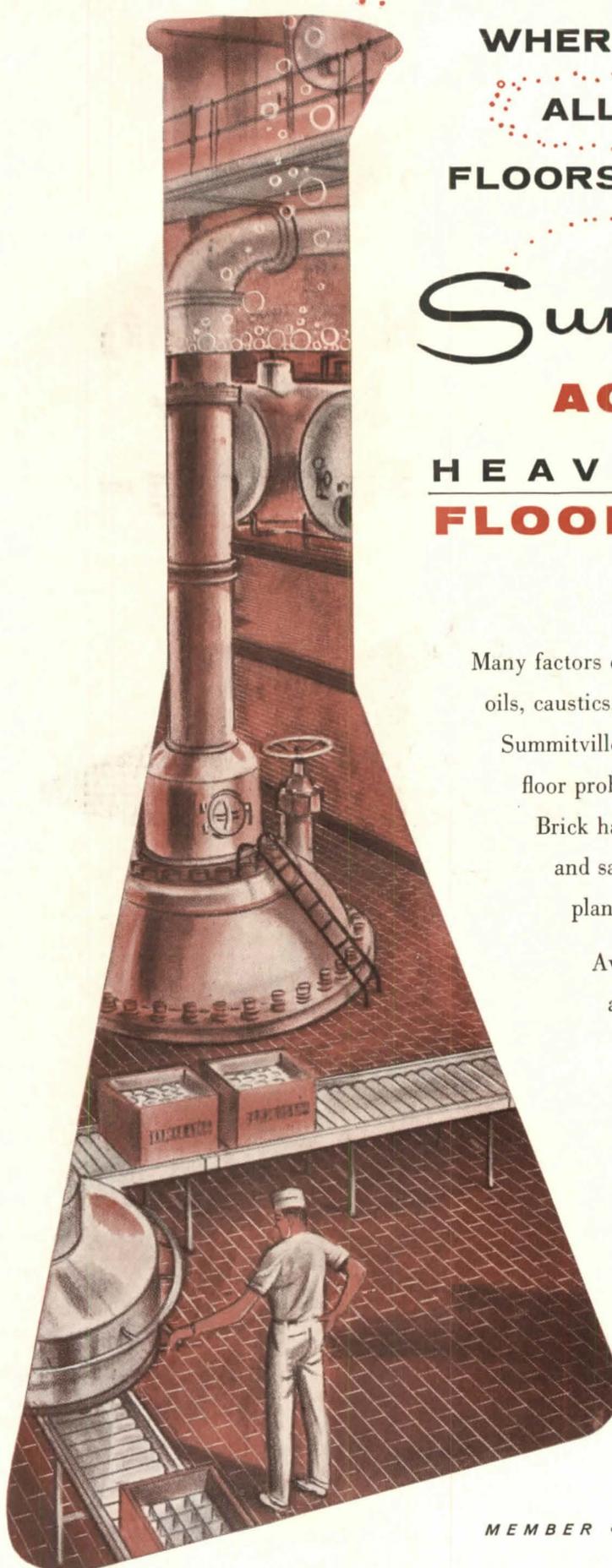
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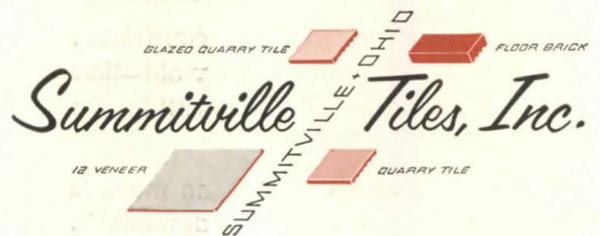
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# Coming in the Record

## BUILDING TYPES STUDY: STORES

*Stores are for merchandising: and the April study will focus on the very down-to-earth matter of the effect of merchandising principles on store design. An article by President William Snaith will expose some of the data developed by the Raymond Loewy Corporation in its extensive store planning operations. And, of course, stores!*

## ARCHITECTURE, NOT DOGMA

*A portfolio of the latest works of The Architects' Collaborative is a better instructor than any words on the architectural philosophy of the founder of the Bauhaus, and a just rebuke to those who would make Gropius an academician. Not stylistic prescriptions but architecture here.*

## FOUR TALL BUILDINGS AND WHY THEIR STRUCTURE

*Two in San Francisco, one in Seattle, one in Melbourne (Australia): all by the San Francisco office of Skidmore, Owings and Merrill, and all different in structural concept. (And not all metal and glass, and not all curtain walls.)*

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**"This Is Design"**

"It is the process," says the initial prospectus of the American Institute of Architects on the 1959 annual convention in New Orleans June 22-26, "which distinguishes architecture from construction, the bridge between art and the satisfaction of human needs, the substance which breathes life into shelter and transforms a tribe into a civilization."

**—And This Is Architecture?**

A new publication called *Actual Specifying Engineer* has defined as one of its objectives "to eliminate the junior status of engineers compared to architects." Calling "the present subordination of engineers, as expressed in law and trade practice, both "unrealistic" and "inequitable," the magazine offers this remarkable explanation for its position: "There is no reason for subordination beyond the historical. When structures were shelter and little more, the architect's contribution was obviously paramount. But today a building is an *operating* organism. The structure—after due regard for its beauty, stability and spatial arrangements—is merely an enclosure for the machinery which makes it operate. The engineer is the mastermind behind the machinery which makes the building work and fulfill its function. The architect designs once and is done. The engineer's responsibility continues insistently during the life of the building. The scope of exact knowledge needed by the engineer is far greater than that of the architect. His contribution to the operation of a building, its economics and even its safety, is far greater. If comparisons must be made, we place the engineer foremost. To do otherwise would be to accord the package more importance than its contents." Oh!

**A Matter of Vision**

"Persons who really understand the peculiar nature of an architect's work are not numerous," observes Dean Walter Gordon of the University of Oregon's School of Architec-

ture and Allied Arts in an article on the work of Pietro Belluschi in the Fall-Winter issue of *Northwest Review*. "Architecture includes design in the broadest sense—the design of structures which satisfy practical functional requirements—and at the same time involves the art of designing details, as well as entire environments, which appeal to the spirit. Everywhere along the line in this complex profession today the architect finds traps set for him. The special nature of architecture as an art form is its need for the work and money of many others in order to get realized. The architect must at the beginning cope with the client, nearly always a person or a group of limited vision, if not downright irrational. He must face the peculiarities of the building industry, especially the realities of mediocre craftsmanship and inflated building costs. He must then conceive his designs in a general climate of indifference to art values, knowing all the while that his building, more often than not, will be constructed in an unsuitable setting, which in the modern city is usually characterized by commercial shabbiness and aggressive vulgarity." But, as Belluschi himself has said—and as quoted at the beginning of Dean Gordon's article—"We architects, of the common working variety, who must be frontline men, facing frustration and compromise; we, who must understand, absorb and give visual form to so many of the forces which make our world move, must not be ashamed to listen to nor to understand what lives around us, ever mindful that each one of us can give more in a creative way by being part of the great mass of people, sharing their loves and enthusiasms, guiding them in the realization of their obscure ideals—not disdainful, temperamental stars—but men of vision among men. . . ."

**Commerce Wants Architecture**

The finest location in the world deserves the finest building in the world, said Erwin S. Wolfson at the press conference announcing the

new scheme for Grand Central City (see page 10). In testimony whereof, Mr. Wolfson said later in response to questions, he wants his octagonal tower even though its 2,400,000 sq ft of floor area is some 600,000 sq ft under that provided by the earlier scheme it replaces. Perhaps this site deserves not to have a skyscraper at all, but that is another story and now only a fairy story. As it is, the development of the design for the world's largest commercial office structure by Walter Gropius and Pietro Belluschi as consultants with Richard Roth of Emery Roth and Sons constitutes a milestone in the history of commercial office buildings in New York: a signal reaching toward architecture.

**Art and the Observer**

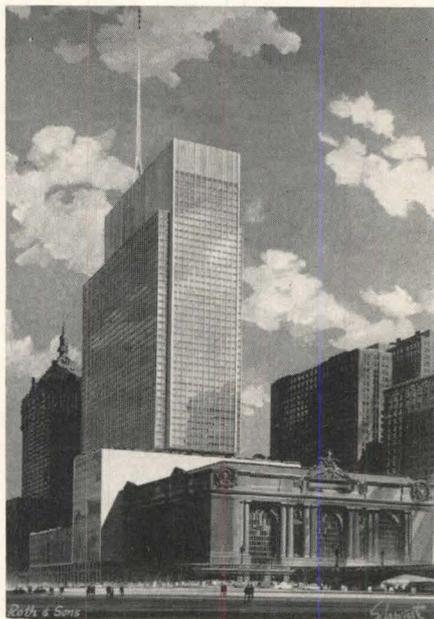
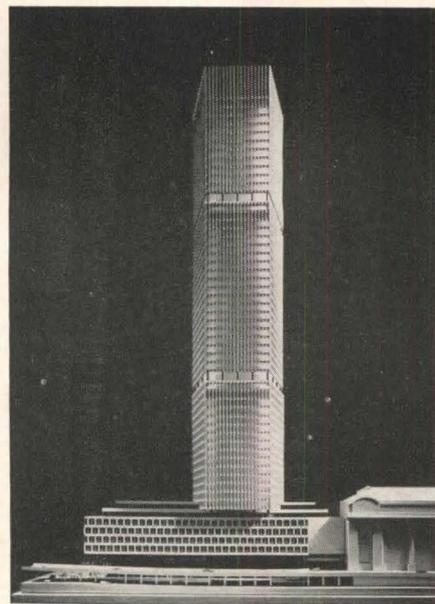
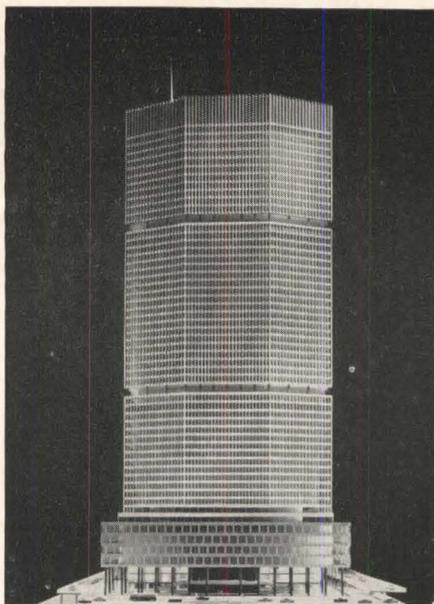
A native of Sardinia named Costantino Nivola last year returned to his native land for what he has called the most important artistic show of his career. He built his sculptures in the streets of his native town (see cut) and he said in a broadcast introducing the exhibit: "Art was never imitation of nature. . . . What I discover and attempt to achieve in my sculptures and bas-reliefs is a plastic unity harmonious and expressive, capable of evoking in the observer his own images and experiences, so as to solicit, in his sensitiveness, the same sensation which I experienced in spotting in everyday observation the presence of art."



## Buildings in the News

### Gropius-Belluschi-Roth Design For Grand Central City

A 55-story octagonal tower of metal, masonry and glass, to cost \$100 million and provide about 2,400,000 sq ft of area for "the world's largest commercial office structure," was unveiled last month as the "final plan" for Grand Central City, to be erected on a three-acre site adjoining Grand Central Terminal in mid-Manhattan by a group consisting of Erwin S. Wolfson, chairman of the board of Diesel Construction Company; Herbert Scheftel; Stuart Scheftel; and Alfred G. Burger. The new scheme was developed by Walter Gropius and Pietro Belluschi, as design consultants, and Richard Roth of Emery Roth and Sons, architects.



1. Present view up Park Avenue, Grand Central Terminal in foreground, turreted New York Central Office Building in distance. 2. Rendering of "Grand Central City" as first proposed (AR, July 1958,

page 13) by Wolfson-Scheftel-Burger group last year; Emery Roth and Sons, Architects. 3. Rendering of the present Gropius-Belluschi-Roth scheme. 4. Looking up Park Avenue toward Grand Central Terminal and

its new neighbor. 5. Looking down Park Avenue toward New York Central Office Building, carefully framed, now, by new design. 6. View from Forty-fifth Street east toward the side of the proposed tower



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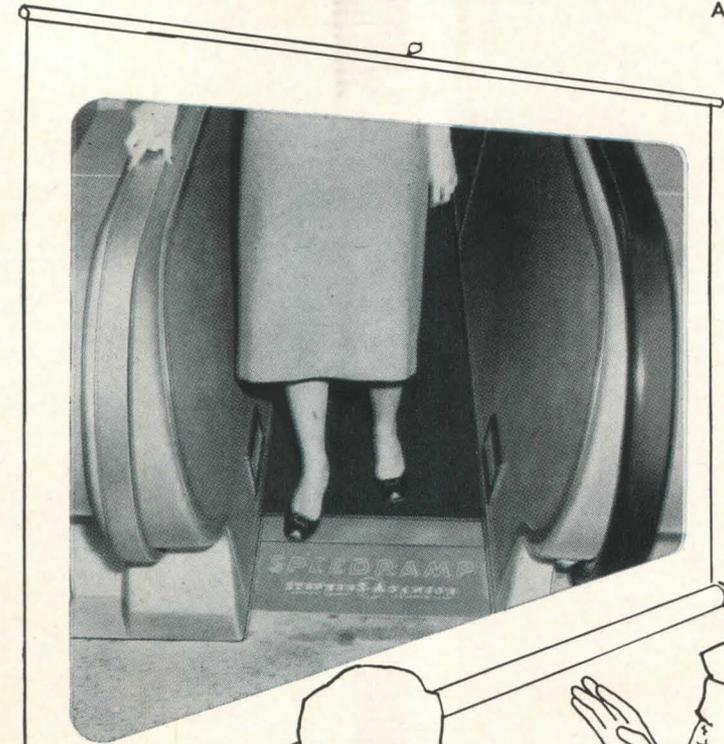
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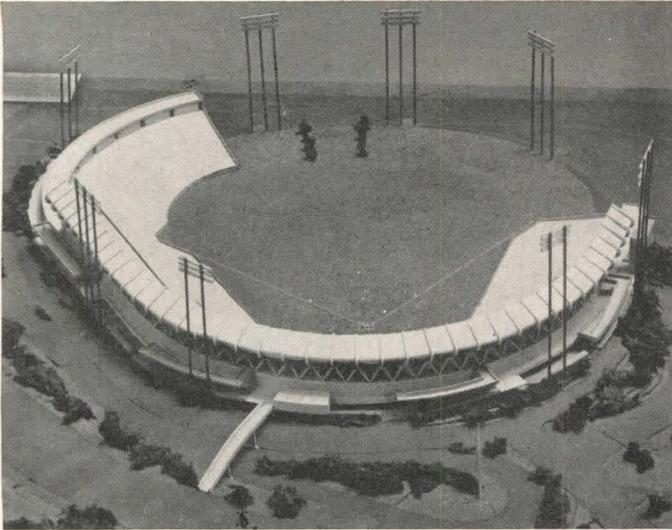


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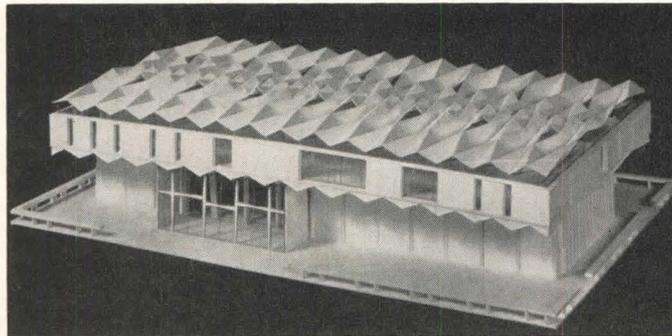
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## Buildings in the News



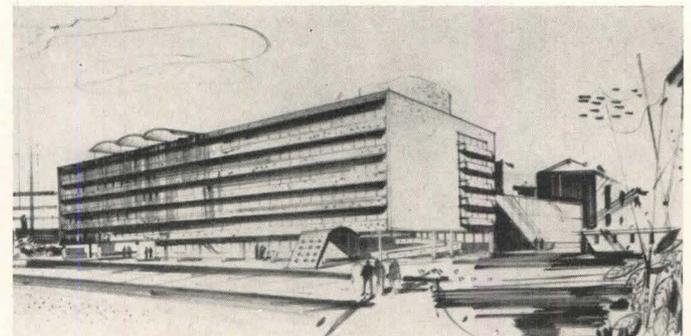
*Above:* Due to be completed soon is the San Francisco Giants Stadium, a municipal structure to serve as the baseball team's home field, but adaptable also for football, pageants, etc. The first major league stadium entirely of reinforced concrete, it is on a 77-acre site; it seats 45,000 and includes parking for 12,000 cars. Cost: about \$11 million. There are three levels, with a concrete shell baffle behind the top row of seats for wind protection. John S. Bolles, architect, and E. Elmore Hutchison, engineer, in association; Charles L. Harney, Inc., general contractor. *Below:* Construction recently began on the Mark C. Steinberg Hall of Art and Archaeology, Washington University, St. Louis. Thin folded plate concrete is being used for the \$650,000 building, which has 50-ft spans between columns and a 20-ft cantilever in two directions. Fumihiko Maki, designer of structure; Russell, Mullgardt, Schwarz & Van Hoefen, architects; G. L. Tarlton Contracting Co., general contractor



*Below:* The new ticket agency of Alitalia, Italy's national airline, was recently opened in the center "island" of the street-floor arcade of 666 Fifth Avenue in New York (Alitalia's North American headquarters are on the 32nd floor). Gio Ponti designed the office and the furniture and commissioned various Italian artisans to design and make the ceramics and art objects; all major components of the room were manufactured and assembled in Italy. The 27-by-50-ft space contains four three-dimensional ceramic columns; the floor and walls are also in ceramics. An "undulating" ceramic rear wall conceals closets and storage. Pale blue, symbolizing the sky,

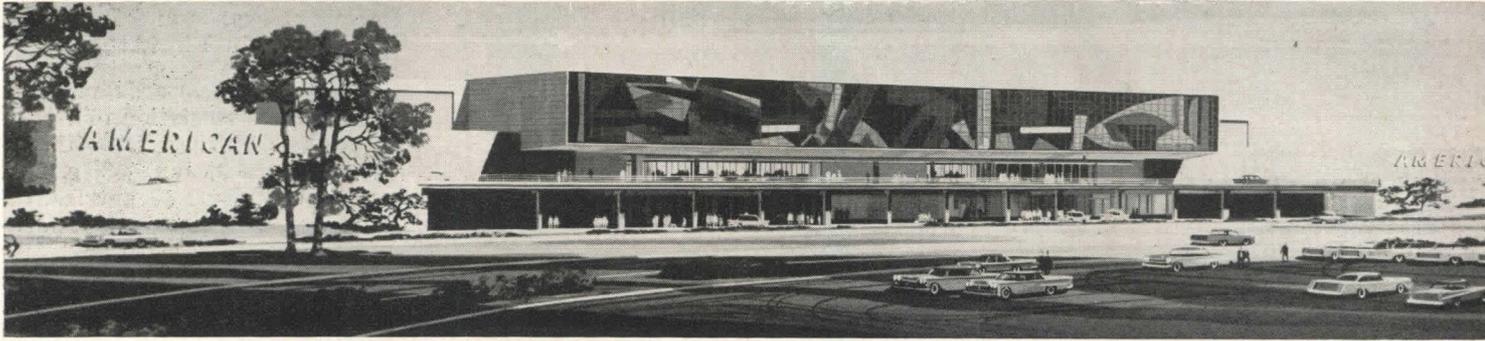


*Above:* The first new hotel in New York since 1931 will be The Zeckendorf. Completion is scheduled for 1961 on the 2000-room, 48-story structure, which includes six floors of office space above lobby and banquet facilities. The 10th floor contains mechanical equipment, and guest rooms are from the 11th floor up; all rooms are on the tower periphery. There are 10 banquet halls (one, seating 3300, the largest in the U.S.) and 15 private dining rooms. The \$66-million building has about 1.7 million sq ft. Harrison & Abramovitz, architects; Edwards & Hjorth, structural engineers; Jaros, Baum & Bolles, mechanical engineers; George A. Fuller Co., general contractor. *Below:* The six-story Quincy City Hospital in Massachusetts is under construction. Its cost is \$2,250,000. The structural frame and sunshade overhangs are reinforced concrete. Cooling and ventilating equipment are in the penthouse. Coletti Brothers, architects; John Capobianco Co., general contractor



is the predominating color; darker blues are also used. The ceiling consists entirely of frosted glass panels covering 200 yds of daylight type fluorescent lights. There also are incandescent lights on the columns. Furniture, desks, chairs, and couches are made of peroxide-bleached white ash. The desks and chairs replace conventional ticket counters. The walls under the windows are lined with low shelving, also white ash, which hides radiators and serves as a base for hand-wrought art objects. The photo at right shows a wall detail. Gio Ponti, architect; Freidin, Studley Associates, associated architects; Jacob Kotler Co., general contractor





American Airlines' \$14-million air terminal at New York International Airport is due to be completed late this year. It features a stained-glass wall 317 ft long and 22½ ft high along its front; the wall, designed by Robert Sowers in three types of glass, is in an abstract design intended to suggest

space. The overhead view, below left, shows how airplanes are to be brought to passengers, rather than vice versa. Below right is a detailed diagram: passengers may enter an aircraft at either A or B through enclosed corridors extending from a lounge and fitting around the plane's doors. Just

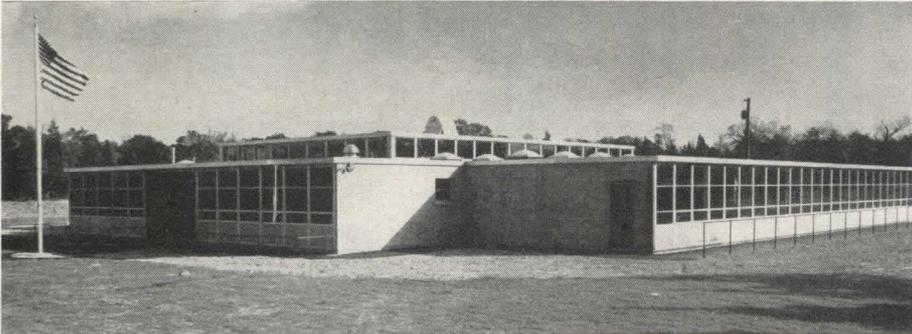
before departure, the rear corridor is contracted and pivoted clear to C; the front corridor may be left in position until the last minute. The terminal provides one-level routing from entrance to airplane cabin. Kahn & Jacobs, architects; Turner Construction Co., general contractor



In Warwick, R. I., it was decided to build as quickly as possible 58 elementary school classrooms with an appropriation of \$800,000 (exclusive of land and site development). The work, completed last fall, con-

sists of three new eight-room schools, one six-room addition to an older school, and seven four-room additions. Low bids were close to \$10 per sq ft, and costs worked out to \$18,000 per classroom for the new

schools and \$12,000 per classroom for the additions. Classrooms are 864 sq ft each, and the new schools also each have a 60-by-36-ft all-purpose room, principal's and clerk's offices, sick room, teachers' lounge-library, and storage. One of the typical new schools is shown in these three photographs. All new schools and additions are one-story buildings with slab floor, gas-fired furnaces, cavity wall construction with brick for the additions and cement blocks for the new schools, acoustical ceilings, tar and gravel roofs with glass bubbles. Each classroom has a sink, and some additions include new toilets. All are built on a 12-ft module. MacConnell & Walker, architects; Kargman, Mitchell & Sargent, educational consultants; O. Ahlberg & Sons, general contractor



## Buildings in the News



Honor Award: Northside Bank, Tampa (AR, Feb. '59, pp. 182-3). Pullara, Bowen & Watson, architects; Ranon & Jimenez, general contractor



Honor Award: Seven Houses for Laurel Grove, Jacksonville (one is shown). Robert C. Broward, architect; Hall Enterprises, Inc., builder and developer



Honor Award: Remodeling, Central Nat'l Bank, Jacksonville. Edwin T. Reeder Assocs., architects; H. J. High Const. Co., contrac.



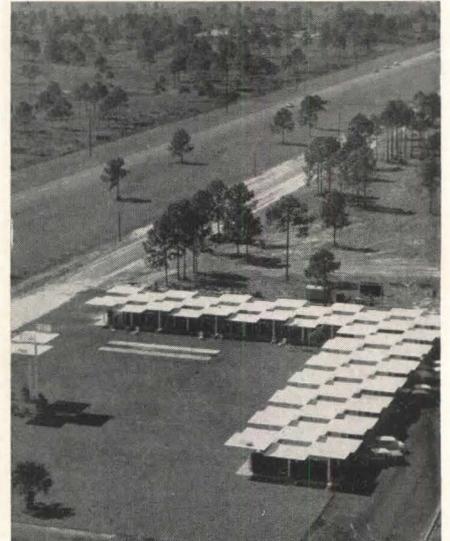
Honor Award: Ewing House, Coconut Grove. Alfred Browning Parker, architect; Albert Hallquist, general contractor

## Five Honor Awards and Four Merit Awards in Florida

The annual honor awards program of the Florida Association of Architects was held during the 44th annual meeting (AR, Jan. '59, p. 25).

There were about 40 entries, divided into five categories: residential, commercial, institutional, remodeling, merchant builder. Nine, shown on this page, were honored.

The jury consisted of John Noble Richards, A.I.A. president; Leon Chatelain, Jr., immediate past A.I.A. president; Philip Will, Jr., A.I.A. first vice president.



Honor Award: Warm Mineral Springs Inn, Venice. Victor A. Lundy, architect; Spear, Inc., general contractor



Merit Awards: *Above, left:* Starnes House, Miami. Starnes & Rentscher, architects; Albert Hallquist, general contractor. *Above:* Alliance Machine Company, Coconut Grove. Alfred Browning Parker, architect; Avant Construction Co., general contractor. *Left:* Sigma Phi Epsilon Fraternity House, Gainesville. Smith & Korach, architects; Kirkpatrick & Pierson, general contractor. *Right:* No. 1 Davis Medical Building, Tampa. Mark Hampton, architect; Russello & Barker, structural engineers; Charles T. Healy, mechanical engineer; DeWitt, Funnell & Spicer, Inc., general contractor

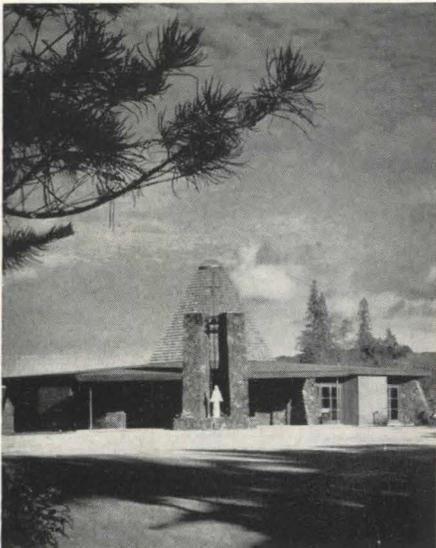




Grand Award: McInerney Store, Waikiki. Vladimir Ossipoff, architect; Walker-Moody Construction Co., general contractor



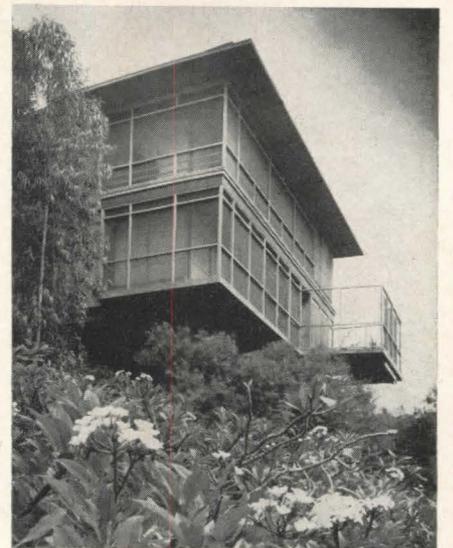
Grand Award: Ossipoff House. Vladimir Ossipoff, architect; Shuji Miura, general contractor



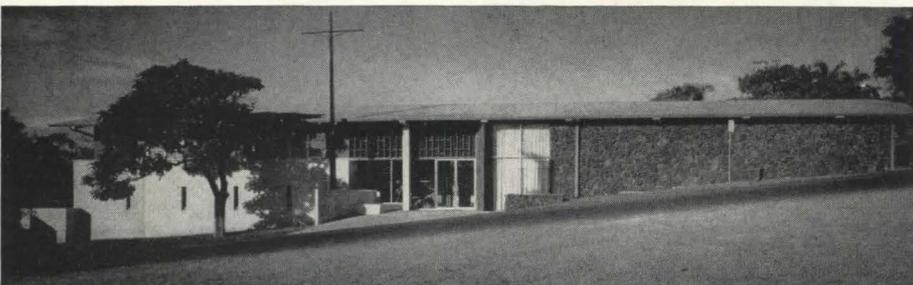
Honor Award: Kilauea Catholic Church, Kauai. John H. McAuliffe, Jr., and Edwin L. Bauer, architects; Kaoru Kato, contractor



Honor Award: C. S. Wo Building, Merrill, Simms & Roehrig, architects; Walker-Moody Construction Co., general contractor



Honor Award: Perkins House. Johnson & Perkins, architects; Harry Yamane, general contractor



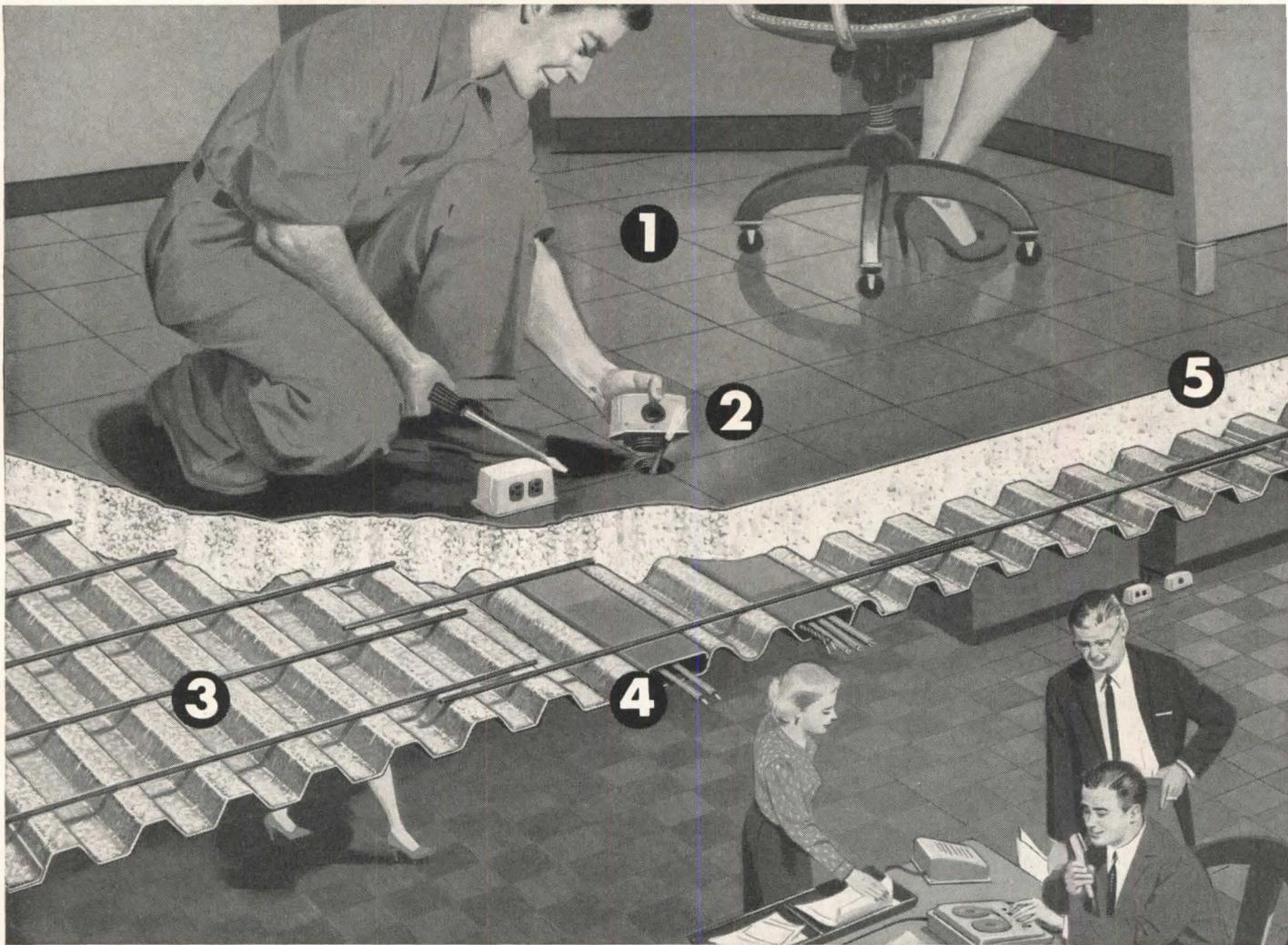
*Above:* Honorable Mention: Wesley Foundation Student Center and Chapel, next to University of Hawaii campus. Lemmon, Freeth, Haines & Jones, architects; Harry Kobayashi, general contractor. *Left:* Merry Monarch restaurant, Waikiki, last building of the late Philip C. Fisk, who received a special posthumous award for it. The name plates and other decorations of the building were designed by Edward Malcolm Brownlee, recipient of a special award for artistic contributions to architecture

### Six Awards and Two Special Awards Given in Hawaii

The 1958 honor awards of the Hawaii Chapter, American Institute of Architects, were presented at a meeting recently. New officers were also installed (see photo, p. 28).

The two grand awards both went to Vladimir Ossipoff. There also were three honor awards and an honorable mention. In addition, a special award went to the late Philip C. Fisk in posthumous recognition. A special award was made to Edward Malcolm Brownlee, sculptor, for his artistic contributions to local architecture.

The jury consisted of Alfred Preis, Richard N. Dennis, and Albin Kubala.

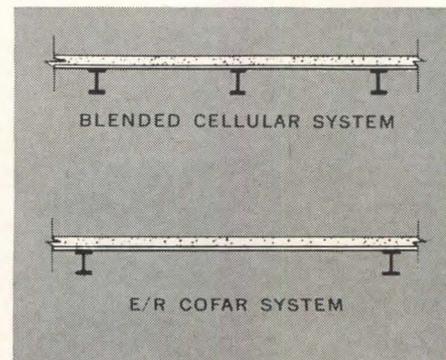
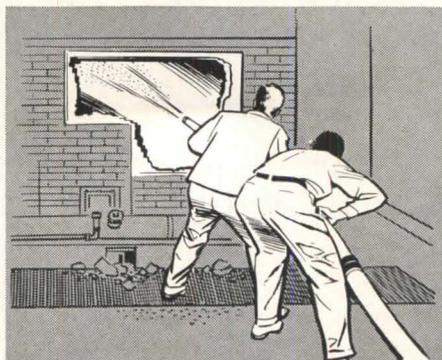
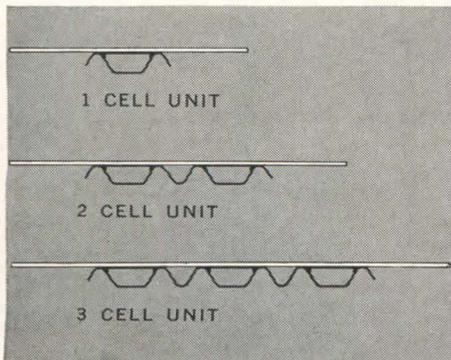


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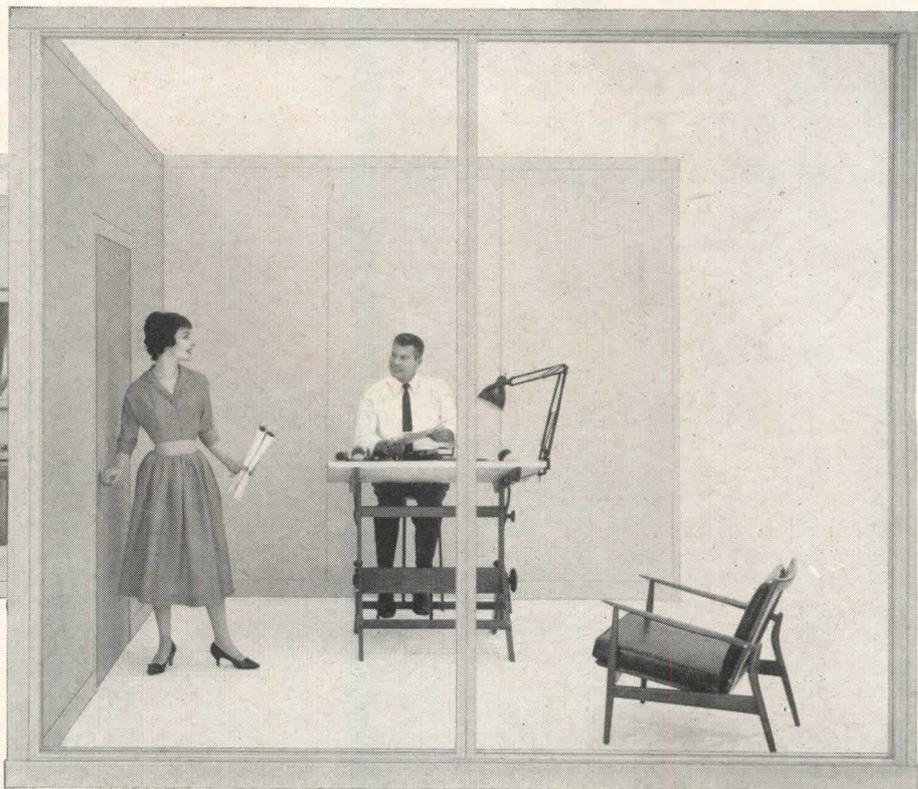
E/R units are wide troughs capped to form spacious cells for wiring. They are placed between standard Cofar units. Result: a solid, continuous base for concrete. Check these other features of the Cofar system:



**ALL THE ELECTRIFICATION YOU NEED.** By blending in one-, two-, or three-cell E/R units with standard Cofar sections you meet office electrical needs today and tomorrow.

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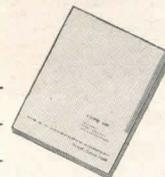
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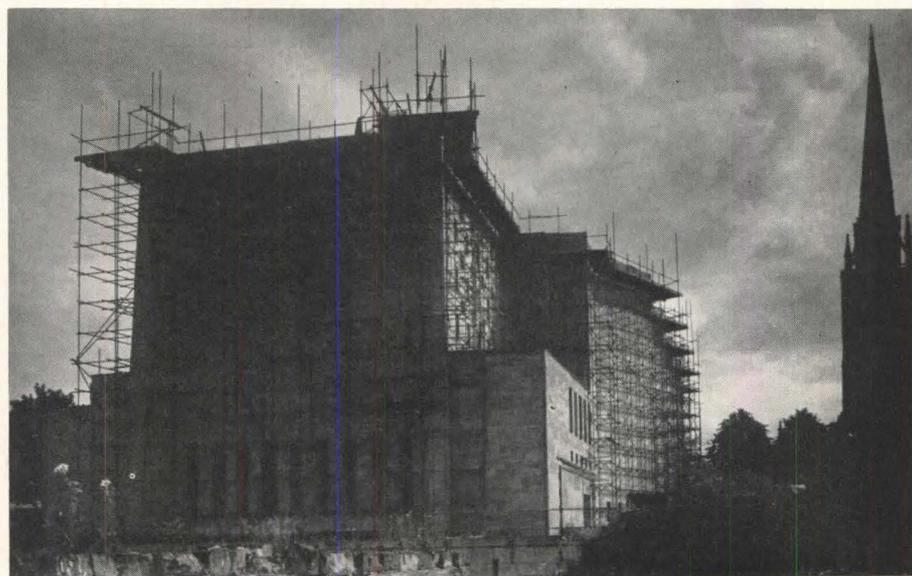
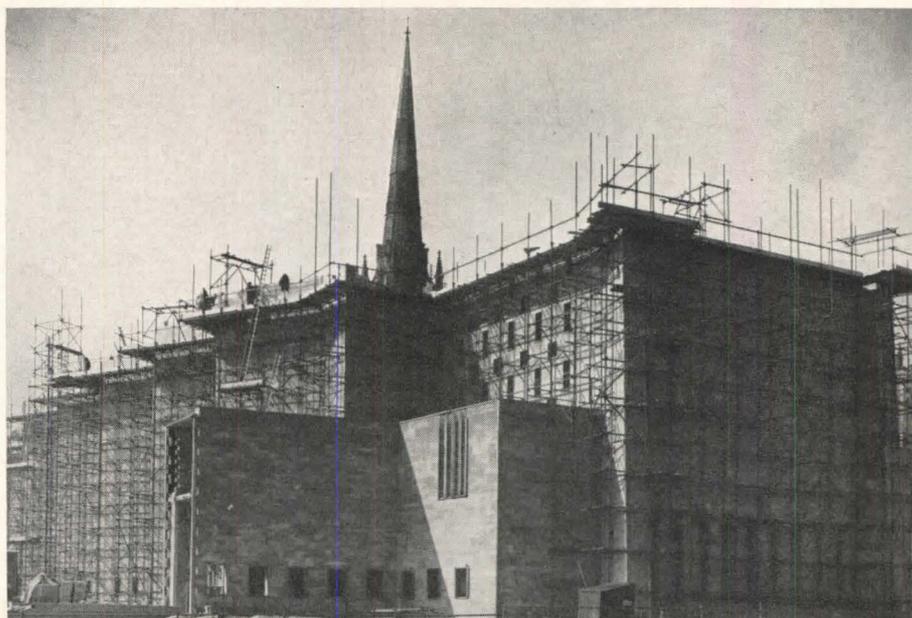
## PROGRESS REPORT: COVENTRY CONTINUES TO REBUILD

A phoenix rising from its ashes is incised on a stone set in the pavement at the head of Coventry's main shopping precinct. Certainly nothing could more effectively symbolize the story of this city's remarkable recovery since the war. An important center of English heavy industry, Coventry was exceptionally heavily blitzed in 1940. Of the 975 buildings in the central area all but 31 were damaged or destroyed, including the Cathedral, which was gutted when incendiary bombs lodged within the timber roof.

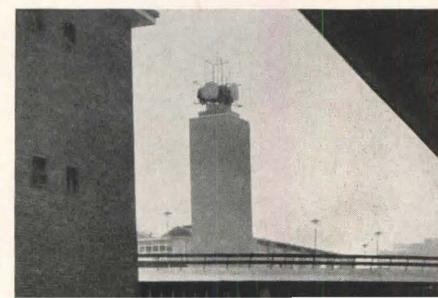
The design that won the competition for the new cathedral (AR, March 1954, pages 143-151) typifies the spirit in which all the reconstruction has been carried out. The architect, Basil Spence, has elected to preserve the walls and spire of the gutted church just as they were when the debris was cleared away. They will form the forecourt of the new building now rising in what used to be the churchyard. In this way the past has been respected, but so has the necessity to make no compromise with the present.

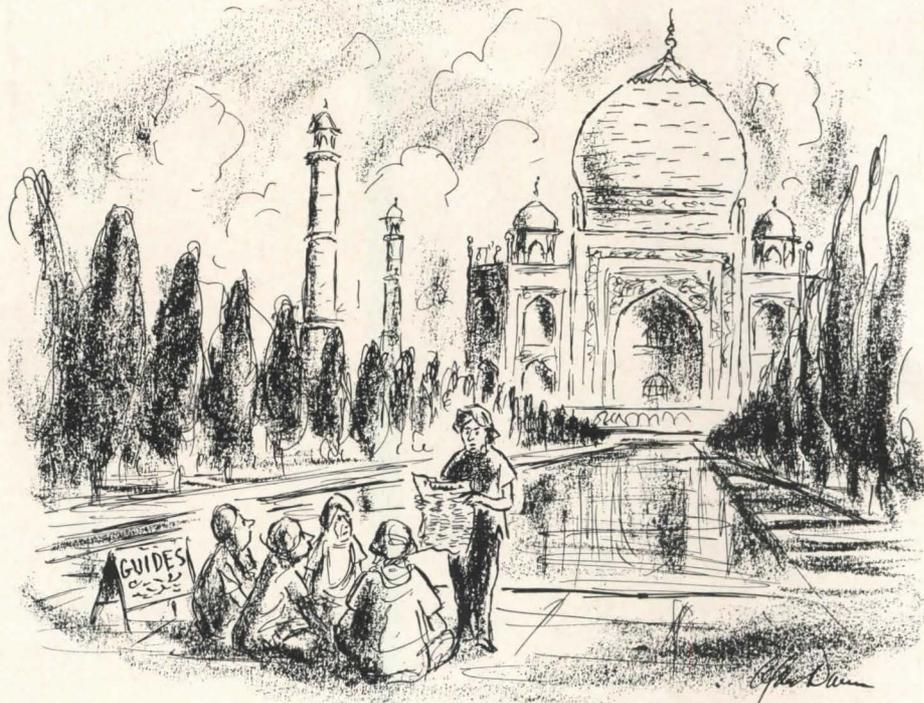
It is hoped that the new cathedral will be completed in time for a festival of Coventry in 1962. By that time the upper shopping precinct, which was opened four years ago, will have been joined to the lower precinct, the first units of which are now nearing completion. A handsome 910-seat legitimate theater and a new retail market were both completed within the past year. In addition, by 1962 Coventry will possess a new campus for its new College of Art, a new museum, and much of a system of ring roads designed to isolate the center from through traffic. The plans of city architect Donald Gibson and his successor Arthur Ling will have come to fruition, and Coventry will have risen from its ashes a far more important trade and cultural center than it ever was before.

—Jonathan Barnett



1. The main shopping precinct of Coventry looking toward the spire of the gutted cathedral. 2. and 3. Construction photographs of the new Coventry Cathedral, Basil Spence, architect, showing its relationship to the spire of the old church. Begun in 1956, the building is scheduled for completion in 1962. 4. Part of the newly completed retail market with parking for 213 cars on roof. Clock tower in background is on reconstructed factory





— Drawn for the RECORD by Alan Dunn

“This is the end for us, boys—the tourists go to Ed Stone’s ‘Taj Maria’ now—”

## Design is the Theme

The theme of this year’s annual convention of the American Institute of Architects will be “Design.” The meeting is to be in New Orleans, June 22-26.

One panel on design in general is to be moderated by Philip Johnson, with Edward D. Stone, William L. Pereira, Minoru Yamasaki, and Charles E. Pratt (of Vancouver) participating.

Robert Anshen is to be moderator of a panel on design factors and resources during which Lovic P. Harrington will talk on temperature, Julian E. Guarnsey on color, and Stanley McCandless on light.

The economic value of design is to be the subject of a panel with Morris Ketchum as moderator. Participants are to include Edward Drew of Lever Brothers and Graham Morgan of U. S. Gypsum.

The jury for the 1959 Annual Honor Awards Program, which will meet in Washington, D. C., March 30-April 1, will consist of Walter Gordon, Vincent G. Kling, and Harry Weese.

## Danforth Succeeds Mies

George Edson Danforth has been appointed professor and chairman of the department of architecture at Illinois Institute of Technology. The appointment, effective September 1, 1959, was announced last month by Dr. John T. Rettaliata, I.I.T.’s president.

Mr. Danforth, now professor and chairman of the department of architecture at Western Reserve University, succeeds Ludwig Mies van der Rohe, who headed I.I.T.’s architectural school from 1938 until his retirement last September.

Mr. Danforth received his degree in architecture in 1940 from Armour Institute of Technology, a predecessor of I.I.T. He did graduate work until 1943 with Mies and in city planning and esthetics. From 1941 to 1953 he was an instructor, administrative assistant to Mies, and later assistant professor at I.I.T. He went to Western Reserve as chairman in 1953. He is a member of the American Institute of Architects and is a licensed architect in Ohio and Illinois.

## Who’s Who

HERMON S. BRODRICK, recently elected president of the Architects Society of Ohio. Others elected were: HAROLD W. GOETZ, first vice president; GILBERT CODDINGTON, second vice president; HOWARD B. CAIN, third vice president; FRANK E. POSELER, secretary; H. JAMES HOLROYD, treasurer. Mr. Brodrick is a partner in Walker, Norwick & Associates, Dayton.

ALBERT W. HILGERS, new president of the Oregon Chapter, A.I.A. Other new officers are: ROBERT C. DOUGLAS, vice president; EVERETT B. FRANKS, secretary; JOHN W. FOSTER, treasurer; NORMAN

C. ZIMMER and JOSEPH J. RUDD, directors. Continuing in office are: JOHN K. DUKEHART, past president; DONALD W. EDMUNDSON and DANIEL McGOODWIN, directors.

H. I. FELDMAN, re-elected president of the New York Society of Architects. Also re-elected were: NATHAN R. GINSBURG, vice president; JOHN JOSEPH CARROLL, secretary; JOHN N. LINN, treasurer.

ARTHUR F. SCHWARZ, re-elected as chairman of the St. Louis City Plan Commission. Mr. Schwarz, a partner in Russell-Mullgardt-Schwarz-Van Hoefen, is a former president of the A.I.A.’s St. Louis Chapter.

ENOCH R. NEEDLES, re-elected president of the Engineers Joint Council for 1959. AUGUSTUS B. KINZEL was elected vice president.

GEORGE S. RICHARDSON, elected president of the American Institute of Consulting Engineers. Mr. Richardson is senior partner of Richardson, Gordon & Associates, Pittsburgh.

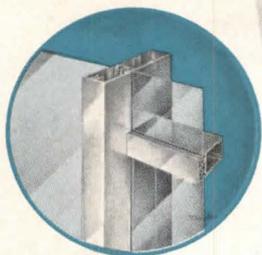
HAROLD A. MOSHER, nominated for president of the National Society of Professional Engineers for the 1959-60 year.

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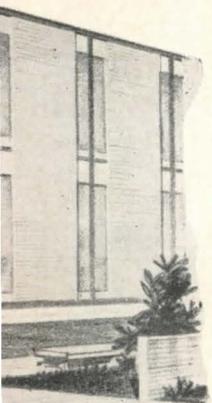
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## Meetings and Miscellany

gateway of welcome to our nation"—New York International Airport. The award was presented on the first anniversary of the opening of the International Arrival and Airline Wing Buildings (Skidmore, Owings & Merrill, architects). Wallace K. Harrison is architectural consultant for Terminal City.

**SECOND ANNUAL GREGORY AWARD** to John Clifford Chapman of London, since 1948 a member of the Civil Engineering faculty, Imperial College of Science and Technology. The \$1500 award, sponsored by Gregory Industries, Inc., Toledo, was presented to Dr. Chapman for his use of stud welding for vibrating wire strain gauges for long-term analysis of stresses on a multi-story steel-frame structure.

**ARNOLD W. BRUNNER SCHOLARSHIP** of the New York chapter, A.I.A., to G. E. Kidder Smith, who will use the \$2400 award to compile a pocket-size guide to European contemporary architecture.

**GEORGE G. BOOTH TRAVELING FELLOWSHIP IN ARCHITECTURE** for 1958 (\$1500) to Rudolph Horowitz, B. Arch., University of Michigan, '58, awarded by the university's department of architecture. Mr. Horowitz, now employed by Skidmore, Owings & Merrill, New York, plans to study architectural finishes in concrete in Europe.

### Worth the Winning

**STEEL HIGHWAY BRIDGE DESIGN COMPETITION** sponsored by the American Bridge Division, U. S. Steel Corporation. Awards totaling \$44,000 will be made in the professional and student categories. Entries are due by May 31. Rules from: Steel Highway Bridge Design Competition, American Institute of Steel Construction, Inc., 101 Park Ave., New York 17.

**FLINTKOTE CARLOAD CONTEST** open to architects and others connected with building. The problem is to guess the total shipping weight of a number of the products shown on a flatcar in advertisements in *Life*, *Saturday Evening Post*, and professional magazines (AR, March 1959, pages 102-3). The grand prize

consists of the products illustrated or equivalent products or their \$5000 cash value; there are 121 other cash awards. Entries must be post-marked by April 15 and sent to Flintkote Carload Contest, Box 7a, Mount Vernon 10, N. Y.

### Architects Cited at N.A.H.B.

Merchandising and legislative matters were as usual the chief concern of the 30,000 attending the 15th annual convention of the National Association of Home Builders, January 18-22 in Chicago. Carl Mitnick of Merchantville, N. J., succeeded Nels G. Severin of San Diego as N.A.H.B. president. There were 990 exhibits of building products in some 69 categories; and the convention theme "Opportunities Unlimited" got one pleasant definition in the official N.A.H.B. expectation—as expressed by Executive Director John M. Dickerman—of a five per cent increase in housing starts in 1959 "provided—and this is mighty important—mortgage money is available at reasonable terms." Architects were noticed chiefly as the designers of projects for which builders received various awards at the convention. To wit:

Merit Awards in contest sponsored by N.A.H.B. *Journal of Home Building* and N.A.H.B. Construction Department—(three awards for three entries) Builder Edmund J. Bennett, Bethesda, Md., and Keyes, Lethbridge and Condon, Washington, D. C.; Oak Hill Builders Inc., Red Bank, N. J., and Harsen, Johns and Kobayashi, Red Bank, architects; Builder John F. Long, Phoenix, and Architect Malcolm M. McPherson, Phoenix; Builder Lincoln Lumber Co., Oakland, Cal., and Architect David B. Whittet, Oakland; Builder Ross Corteso, Los Alamitos, Cal., and Architects Chris Choate and Robert G. Jones, Los Angeles.

Neighborhood Development Merit Awards Competition—Laurel Park, Bloomfield, Conn., Green Acres Inc., builder, Charles A. Currier, land planner, Irving Rutherford, architect; Oak Hill, Middletown, N. J., Oak Hill Builders Inc., builder, Jacob Lefferts, land planner, N. Kobayashi of Harsen, Johns & Kobayashi,

architect; Park Forrest, Dallas, Fox and Jacobs Construction Co., builder, Philips, Proctor, Bowers and Associates, land planner, Parker Folse, staff engineer, designer; Kingston Knolls, Tucson, Lusk Homes Inc., builder, Blanton and Cole, land planner, Design Department of Lusk, designer; Harundale Mall, Glen Burnie, Md., Community Research and Development, builder, Rogers, Taliaferro and Lamb, land planner and architect; Springfield, Va., Carr Inc., builder, and land planner, Marion L. Bagley, Harry Ormston and Richard Gomersall, architects.

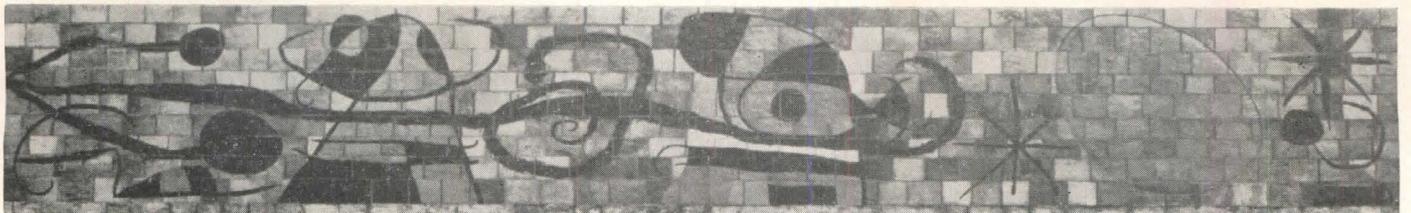
*Parents' Magazine's* Ninth Annual Awards for the Best Homes for Families with Children (see AR, Dec. 1958, page 25).



New officers of the Hawaii chapter of the A.I.A. are, left to right, seated: Douglas Freeth, president; Frank S. Haines, vice president; Clifford F. Young, secretary; Gordon Bradley, treasurer; Howard L. Cook, director and past president; standing: Jack McAuliffe, Alfred Preis, directors

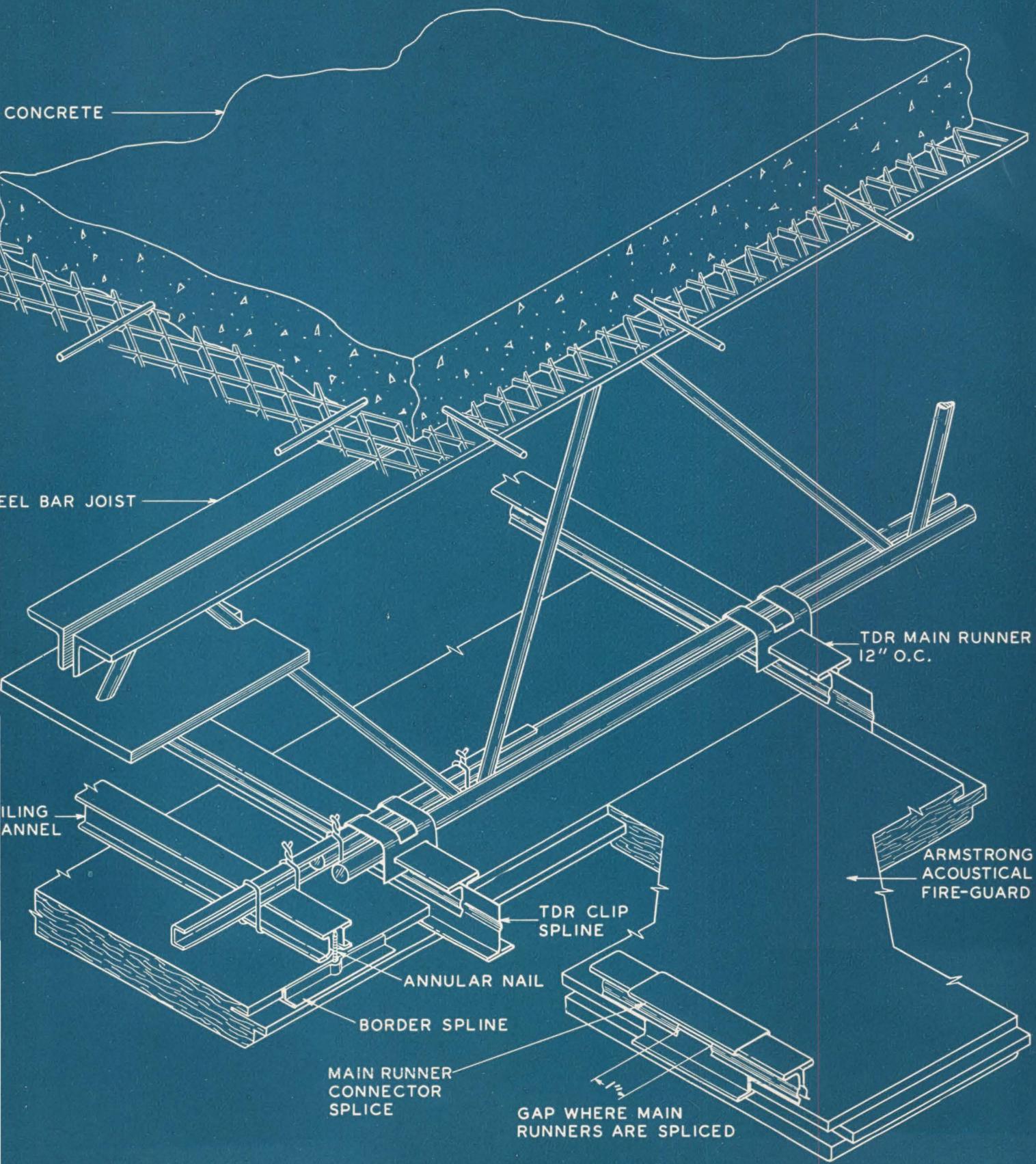


An "Inter-American Architectural Symposium," linking architects in Toledo and in Bogota, Colombia, by radio-telephone, was held on January 29, sponsored by Owens-Corning Fiberglas Corp. Principals at the Toledo end were, from left: architect Carl Koch, assistant professor of architecture, M.I.T., and visiting critic at Yale; Ieoh Ming Pei, New York architect; John Noble Richards, national president, A.I.A., who introduced the program; Alvaro Ortega, Colombian architect and visiting critic at Harvard; Leonard J. Currie, head of the department of architecture, Virginia Polytechnic Institute, who was moderator



"Day" (above) is one of two ceramic murals (the other is "Night") on the grounds of the new Paris headquarters of UNESCO (Breuer-Zehruss-Nervi). Joan Miró, the Spanish artist, received the \$10,000 Guggenheim International Award 1958 for the murals, two free-standing walls almost 10 ft high. "Day" is over 49 ft long. Among Señor Miró's other murals are those at the Terrace Plaza Hotel, Cincinnati

# ARMSTRONG ACOUSTICAL FIRE-GUARD CEILING SYSTEM



**C.S.I. Counts 3200 Members, Confirms New Executive**

The Construction Specifications Institute learned at its January Board of Directors meeting in Chicago that approximately 3200 members were affiliated at that time, and that 36 chapters were organized and functioning, established and awaiting organization, or in the process of com-

pleting negotiations for organization. The report was made by Willard Barrows, New York City, chairman of the Chapter Development Committee.

A new charter was approved for the Winston-Salem chapter, and by-laws of the Denver chapter were referred to the bylaws committee with power to accept them if they did not

conflict with the national bylaws and regulations.

Thus C.S.I. continues its phenomenal growth and continues to hold in view a 50-chapter organization with 5000 members.

Approval was given at the Chicago session of the executive committee action employing George Lamb as executive secretary, the first full-time executive officer for the Institute. Mr. Lamb in February opened new offices in Washington, D. C., from which the national affairs of the organization will be handled henceforth.

The following officers were nominated for the fiscal year 1959-1960 with election to be by mail ballot: president—J. Stewart Stein, Chicago; vice president (two nominations)—Willard H. Barrows, New York City, and Jack R. Lewis, San Diego; secretary-treasurer—Harry C. Plummer, Washington, D. C.; directors at large (two years)—James C. Bort, Chicago, and Terrell R. Harper, Dallas; director at large (one year)—Edwin T. Pairo, Washington, D. C. All but Mr. Harper are incumbents.

The Board voted to accept the invitation of San Francisco for the 1960 convention.

Preparations for the third annual convention to be held at the Palmer House, Chicago, May 4-6 this year were discussed in detail. A convention committee of approximately 100, headed by Warren Richardson of Chicago, has been at work on details for this third annual meeting for many months.

By unanimous vote, the Board awarded Fellowships posthumously to J. Norman Hunter, Los Angeles, who was C.S.I. president from June 1, 1956 until his death in May of 1958; and Ben John Small, a past president of the New York C.S.I. chapter. Honorary Memberships were voted for Dr. Goldwin Goldsmith, former head of the Department of Architecture, University of Texas; and for Clarence A. Graether, retired chief specification writer for Smith, Hinchman & Grylls, Detroit, and chapter member of the Detroit chapter of C.S.I.

—Ernest Mickel

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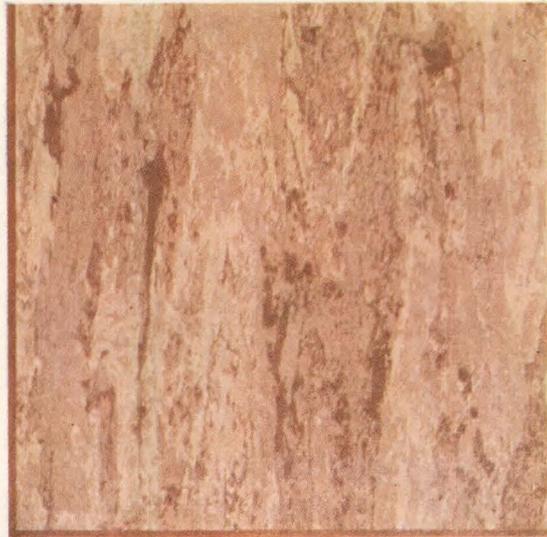
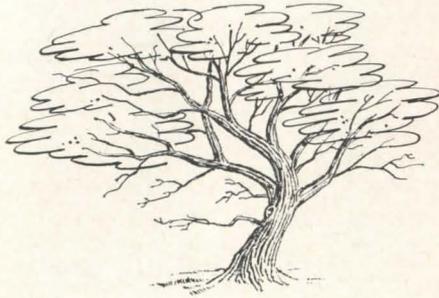
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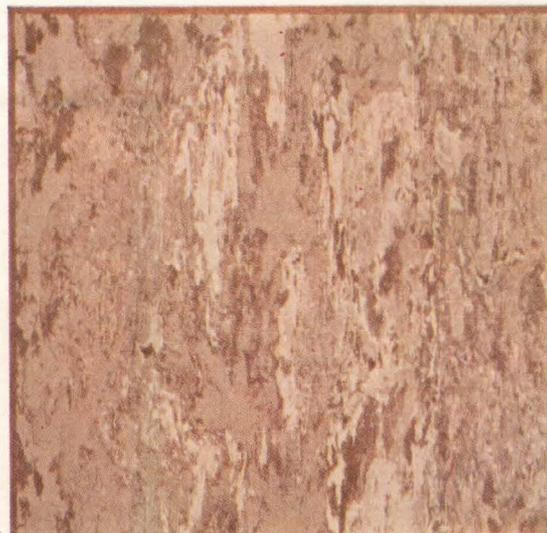
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## Stress on Cooperative Effort at A.G.C. Annual Convention

"... The building industry is just emerging from the horse and buggy stage. We are bound to see radical new developments in building techniques, materials and methods. We must see greater efficiency and increased productivity. And just as with motor cars, the demand will increase as building gets better, cheaper, and more efficient."

The speaker was John Noble Richards, president of the American Institute of Architects, and the setting was the American Hotel in Bal Harbour, Fla., where the Associated General Contractors of America was holding its 40th annual convention, in January.

Mr. Richards told the contractors he felt the nation had made considerable progress in this direction in the past few years—progress due in

good measure to the increasing harmony and cooperation between builder and architect. He dated much of the progress from June 4, 1958, the day of the first meeting of the Joint A.G.C.-A.I.A. Committee.

He urged the delegates to take more active interest in their local affairs and serve their communities directly. As businessmen, he told them, we are largely responsible for the community spirit which sets the tone for good living, for the housing, the schools, the churches, the transportation and community facilities.

The A.I.A. president was one of a number of convention speakers who touched on the good stemming from cooperation between industry groups and the need for more of this working together. The A.G.C., summing up its cooperation with other segments at the final session, estimated that work of its task units with government agencies alone had saved taxpayers millions of dollars through promoting more efficient and workable contract and specification procedures.

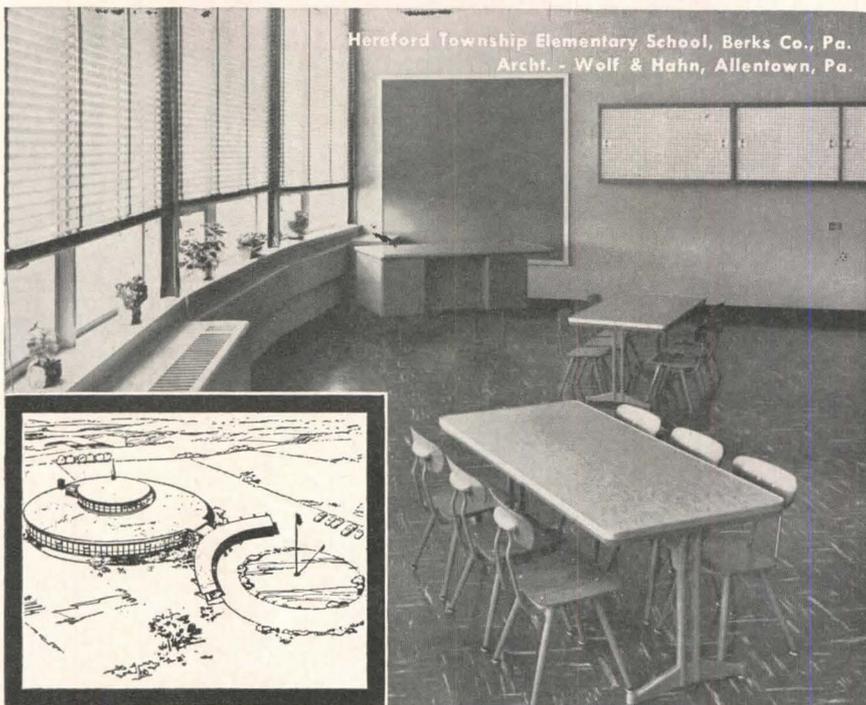
Labor relations continued to be one of the foremost problems before the generals. At last year's convention in Dallas a great deal of emphasis was placed on the need for a fair day's work for a fair day's pay. The contractors at that time insisted that the building trades eliminate non-productive wasteful practices.

At Bal Harbour they reported an encouraging trend toward the solution of this problem. A large number of local chapters have understandings with their union groups, although the terms are not always written into working agreements.

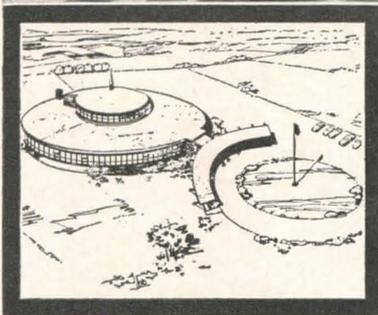
Labor troubles of a different sort occupied the employers this year, however. Much time was spent in consideration of the increasing trend toward construction by industrial unions and so-called force account work rather than by the contract method. A.G.C.'s executive director, James D. Marshall, told ARCHITECTURAL RECORD that an estimated \$2 billion worth of construction has slipped away from the general contractors through this device over the past two years.

The condition is influenced in large measure by growing strife between the big industrial unions and the building and construction trades. This has been in evidence since the A.F.L.-C.I.O. merger.

So serious is the problem that the generals are banding together with the subcontractor and specialty con-



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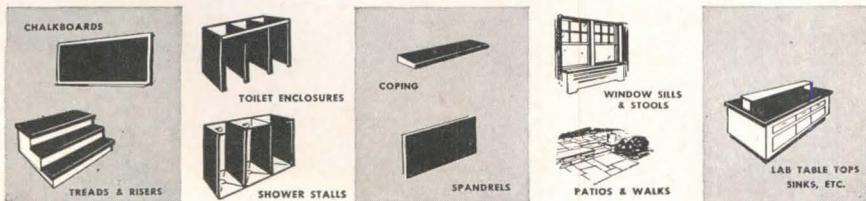
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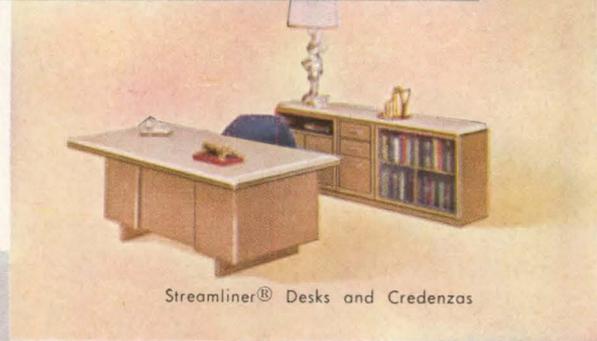
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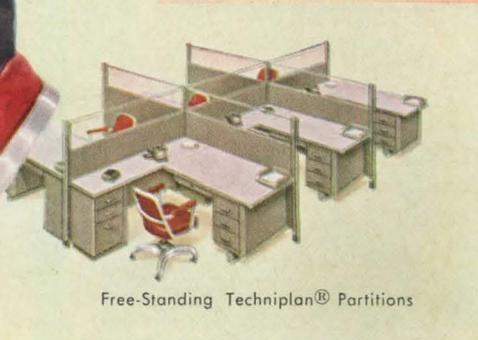
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## The Record Reports

tractor groups and in cooperation with the building trades are forming a new joint conference to attack the matter.

In their resolutions this year, the A.G.C. took a solid stand against the outlay of any Federal funds for school construction. Fearing possible Federal control and increased construction cost, the delegates approved a statement opposing any additional Federal program for financing school building.

At the same time, they urged Congress to establish the Federal-aid airport program on a continuing basis and to encourage local governmental units to expedite improvements to needed airport facilities.

There was a resolution on firm material prices commending cement producers for giving a firm price for 1959 at no increase over 1958. It called the action one of the most significant steps taken toward combatting the inflationary spiral. The members also approved a statement urging Congress to provide funds for a continued orderly expansion of the highway construction program and to prevent any further diversion of trust funds for purposes other than highways.

James W. Cawdrey of Cawdrey and Vemo, Seattle, was installed as the new A.G.C. president, succeeding Fred W. Heldenfels, Jr., Heldenfels Brothers, Corpus Christi.

John A. Volpe, John A. Volpe Construction Co., Malden, Mass., was installed as vice president, succeeding Mr. Cawdrey. These officers were elected at the midyear session last year in Atlanta, Georgia.

Arthur S. Horner, A. S. Horner Construction Co., Denver, was named secretary-treasurer at the Bal Harbour meeting, succeeding William H. Muirhead of Durham, North Carolina, who had held the office for more than a decade. Mr. Horner is a former A.G.C. president.

Details of a new disaster plan whereby equipment, personnel and technical knowledge will be made available in any disaster by the contractors to local agencies were announced at the 40th annual meeting. Relief organizations to carry out the aims already are being established. Known as "plan bulldozer," the program has been welcomed enthusiastically by Federal civil defense and other Federal officials, including the armed forces, the general contractors said.

—Ernest Mickel

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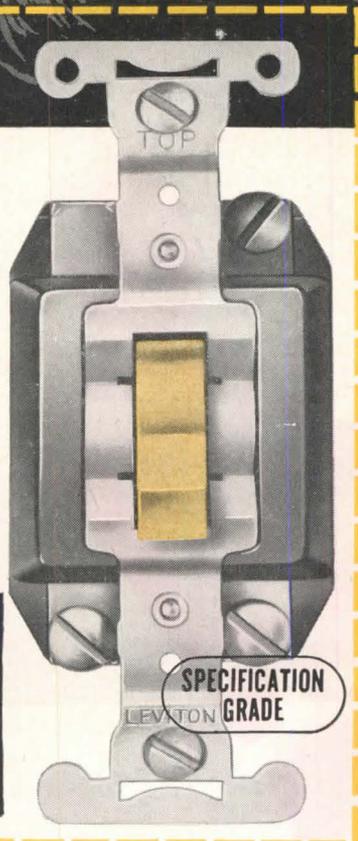
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## MODULAR COORDINATION AND HOW IT'S DOING: SYMPOSIUM GETS REPORTS FROM USERS

New Modular Building Standards Association and S.C.P.I.  
Co-sponsor Washington Sessions for Federal Officials' Briefing

Better buildings at lower cost can result from general application of the modular measure principle, more than 100 government architects, engineers and administrators were told at a symposium held for them in Washington, D. C., in January.

Joint sponsors of the one-day session at the National Housing Center building were the Structural Clay Products Institute and the Modular Building Standards Association.

Familiar figures who have backed the modular dimensioning movement for many years were on the program—Harry B. Zackrison, chief, engineering division, military construction, Office of the Chief of Engineers; James E. Coombs, Baker & Coombs Construction Co., Morgantown, W. Va.; Cyrus E. Silling, F.A.I.A., C. E. Silling & Associates, Charleston, W. Va.; and Neill Boldrick, vice president of Acme Brick Company, Fort Worth, Texas. Other speakers included Harry C. Plummer, director, Engineering and Technology Department, Structural Clay Products Institute; Byron C. Bloomfield, executive director of the Modular Building Standards Association; and Stanley R. Kent, division of building research, National Research Council of Canada, Ottawa.

### One in Ten Is Use Estimate

As symposium keynoter, Mr. Bloomfield said he had observed new optimism about the future of modular dimensioning since he became M.B.S.A.'s first executive director six months ago. He finds evidence of a willingness among many architects and others to evaluate the MM principle.

It is estimated by the association that one out of every ten projects going forward in the country today has been designed in modular, and the percentage is expected to grow rapidly. The assumption is being put to a test soon through more accurate measurement by job canvass.

It was revealed that M.B.S.A. is prepared now to give a registered trademark to material producers for their use in the identification of true modular materials in manufacturers' literature.

Professor Kent reviewed the Canadian effort in the modular measure field and told the Federal architects and engineers of the programs for this type of dimensioning carried forward in other countries.

### An Architect's Testimony

It was Architect Silling who stressed the economy angle. "Modular Measure is your opportunity to provide better buildings at lower cost, meantime simplifying your own administrative problems," he told the government men. "It is the only system where architect, engineer, producer and contractor think alike to meet on common ground."

Mr. Silling, whose shop has done nothing but modular drawings for the past 10 years, said he has never found a manufacturer, supplier, or contractor unable to accommodate with first-class results. And, he adds, this has been done at what they say are alarmingly competitive prices.

### As the Army Sees It

Savings to be realized through modular design and construction also were mentioned by Mr. Zackrison, whose Army Engineers have used the principle consistently and encouraged its broader use throughout the industry since late in 1946. He pointed out that \$10 billion worth of work has been directed by the Army Corps since Korea and that roughly half of the \$1.5 billion annual volume currently is building construction in which the modular method is employed.

Mr. Zackrison said he thinks of MM as being a standardization of individual products to permit close coordination of them with other products on a construction job.

"Too often the field solution of a problem by a builder's foreman is not of the best," he observed. "Often these solutions do not relate to the architect's desires." Then he argued that better resolution of detail through application of the modular principle could obviate the need for such field decisions and result in greater savings in construction generally.

### And the Producers?

The material producer's view was outlined by Mr. Boldrick. After naming a number of large American material firms that advocate modular, he said: "From this imposing group of producers, it must be obvious that any item of construction is available and can be delivered to any location. With the continuing expansion of the use of the modular system, the economies of standardiza-

tion and of mass production can and will be channeled by our American system of competition into the pockets of our taxpayers and be realized in the form of more and larger projects for the use and benefit of the people who pay for them."

### A Contractor Speaks

The contractor's view was presented by Mr. Coombs, who asserted that modular-designed buildings will attract more contractors to bid. This results from faster, easier, and far more accurate estimating, he believes. He made the point that modular eliminates the necessity of preliminary interpretation of each architect's own individual system.

Judging from his experience with the construction of both types of buildings—modular and non-modular—this contractor declared that modular economies apply "without question" to all types of buildings and all types of work in each building. Here were some specifics: sawing time and consumption of masonry cutting blades is reduced 55 to 60 per cent; squeezing and stretching of mortar joints is no longer necessary; layout time is reduced 35 to 40 per cent, and rate of actual bricklaying is increased—savings on masonry labor alone, eight to 10 per cent. Mr. Coombs claimed that experience has shown that some savings can be made when modular drawings are used, even if non-modular materials are used.

### Age of Application Here?

The history of the modular coordination movement was traced by Mr. Plummer, who divided it into four stages. The first, from 1938 to 1948, he termed the technical age, influenced primarily by the Modular Service Association. The second stage was described as that from 1948 to 1950 and was characterized as the "dark age," or transitional stage of modular dimensioning. The third, from 1950 to 1956, Mr. Plummer called the promotional stage, influenced primarily by the American Institute of Architects' then Secretary for Modular Coordination, William Demarest Jr.

Stage four was hopefully referred to as the application stage. That is the period now being entered, Mr. Plummer continued, with the hope that it will be influenced by the Modular Building Standards Association, established last September.

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**School Aid Battle Looms as HEW Finds Shortage Dip**

The stage appeared to be set for another Congressional battle over Federal aid to schools. Hearings on half a dozen different bills had already begun in the Senate Education subcommittee last month when the Administration sent its own proposed legislation to the Hill; and subcommittee chairman Senator James E. Murray (D-Mont.) had expressed "sincere regret" over the Administration's present attitude as he views

it: i.e., less eagerness for more aid.

As the subcommittee hearings opened, Senator Murray cited the latest figures from the Department of Health, Education and Welfare on public school enrollment, teachers and housing to support his contention that the nation's classroom shortage has not been substantially diminished. Preliminary returns from HEW's fifth annual survey covering the situation as of last fall showed enrollment 1,843,000 over normal classroom capacity of public

elementary and secondary schools, compared with an excess enrollment of 1,943,000 a year earlier: 5.4 per cent of total enrollment compared with 5.9 per cent in fall 1957.

Mr. Murray recalled that the states reported a shortage of 159,000 classrooms in 1956, a year later a shortage of 142,300. And last fall the shortage was 140,500. So, he remarked, we gained only 1800 classrooms during the year, a mere 1.3 per cent of the national deficit.

HEW's preliminary figures from the new survey showed 71,600 new instruction rooms completed during the 1957-1958 school year with 17,300 abandoned over the same period. The number of rooms available at the start of the school year last fall was 1,232,667.

Under the heading "additional classrooms needed," the states placed a total of 65,300 to accommodate excess enrollments, and another 75,200 to replace all unsatisfactory facilities.

HEW now concludes that the need for instruction rooms stands at 140,500 additional units on the basis of the state findings. The figure compares with 142,300 a year ago.

The number of instruction rooms scheduled for completion during the 1958-1959 school year was placed at 68,440 as against the 71,600 rooms actually completed during the 1957-1958 year and now occupied. In a previous annual survey, the states said that 70,500 rooms would be constructed in the 1957-1958 year, or 1100 fewer than the number actually completed.

Enrollment in the public schools increased 1,148,000 last fall over the previous year's total. The states reported approximately 33,936,000 pupils in the public schools, a 3.5 per cent increase for the year.

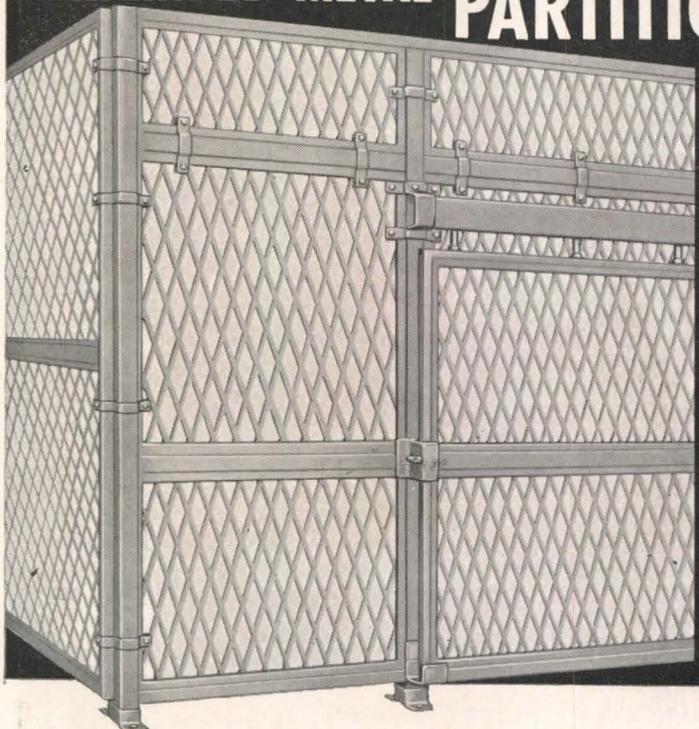
**Administration Proposes Loans**

The Administration program, which HEW Secretary Arthur Flemming estimated would provide from 70,000 to 75,000 new classrooms with an aggregate cost of \$3 billion over its proposed five-year span, bases its aid on loans undertaken by the school districts themselves. The Federal government would repay half the principal and interest charges on loans to school districts if the state involved agreed to pay the other half.

A ceiling of \$600 million in each of the five years on total cost of the elementary and high school construction is provided. The program could cost the government around \$85 million a year in long-term school bond payments, or as much as \$2.1 billion over a 25-year period, it was said.

*continued on page 346*

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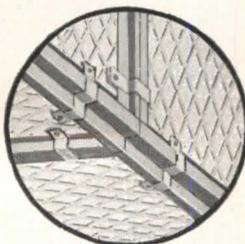


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# Construction Cost Indexes

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

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

## NEW YORK

## ATLANTA

PERIOD	RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.		RESIDENTIAL		APTS., HOTELS, OFFICE BLDGS.	COMMERCIAL AND FACTORY BLDGS.	
	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel	Brick	Frame	Brick and Concrete	Brick and Concrete	Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1	158.0
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8
1949	243.7	240.8	242.8	246.6	240.0	189.3	189.9	180.6	180.8	177.5
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0
1951	273.2	271.3	263.7	274.9	271.8	212.8	214.6	204.2	202.8	205.0
1952	278.2	274.8	271.9	265.2	262.2	218.8	221.0	212.8	210.1	214.3
1953	281.3	277.2	281.0	286.0	282.0	223.0	224.6	221.3	221.8	223.0
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	233.5	225.2	225.4
1955	293.1	286.0	300.0	308.3	302.4	225.3	225.1	229.0	231.5	231.8
1956	310.8	302.2	320.1	328.6	324.5	237.2	235.7	241.7	244.4	246.4
1957	318.5	308.3	333.1	345.2	339.8	241.2	239.0	248.7	252.1	254.7
October 1958	335.9	321.5	358.7	378.2	367.5	246.5	242.0	259.3	265.9	265.1
November 1958	335.9	321.5	358.7	378.2	367.5	246.5	242.0	259.3	265.9	265.1
December 1958	335.9	321.5	358.7	378.2	367.5	246.5	242.0	260.2	266.4	266.8
December 1958	% increase over 1939		174.4	183.5	182.5	% increase over 1939		173.6	173.5	181.7

## ST. LOUIS

## SAN FRANCISCO

1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.6	104.9	100.4
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6
1953	263.4	256.4	259.0	267.0	259.2	255.2	257.2	256.6	261.0	259.7
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5	267.2
1955	273.3	266.5	272.2	281.3	276.5	268.0	259.0	275.0	284.4	279.6
1956	288.7	280.3	287.9	299.2	293.3	279.0	270.0	288.9	298.6	295.8
1957	292.0	283.4	295.2	307.1	302.9	286.3	274.4	302.9	315.2	310.7
October 1958	298.9	289.8	307.2	320.6	316.3	292.0	277.1	314.2	329.7	323.3
November 1958	298.9	289.8	307.2	320.6	316.3	292.0	277.1	315.1	330.2	325.0
December 1958	299.1	290.0	307.7	321.4	316.5	292.9	278.0	316.5	331.0	325.2
December 1958	% increase over 1939		159.2	168.3	166.0	% increase over 1939		169.6	171.5	179.1

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

index for city A = 110

index for city B = 95

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

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

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

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

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

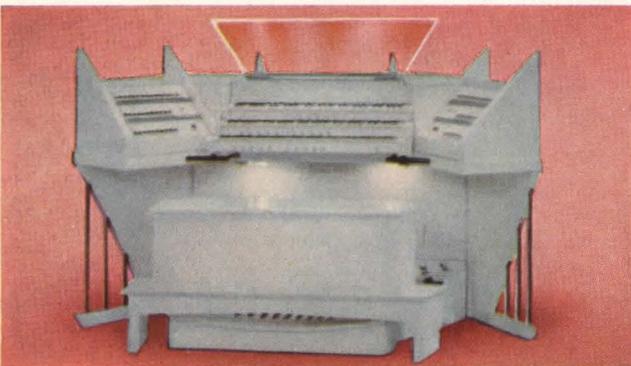
Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

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

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# Required Reading



*Baroque*: "... a taste for the grandiose is, once it has been fully acquired, difficult to keep within limits ..."

## Lancaster Rides Again!

HERE, OF ALL PLACES. By Osbert Lancaster. Illustrated by the Author. Houghton Mifflin Co., 2 Park St., Boston 7. 189 pp. \$4.

BY GRACE M. ANDERSON

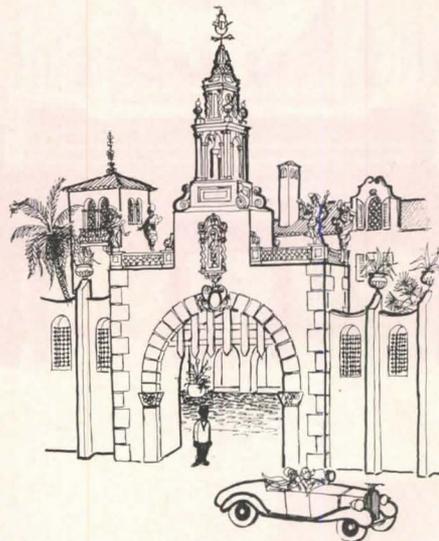
Much of Mr. Lancaster's latest book will be familiar to readers of his earlier *Pillar to Post, or English Architecture without Tears*; it is the same book, with parts of *Homes Sweet Homes* thrown in, and brought up to date and across the Atlantic by the addition of illustrations of American building, current and his-



*Hudson River Bracketed*: "... melancholy symbols of the thwarted hopes of an over-confident generation ..."

torical. The author is primarily a social commentator, and one who, as his readers know, seems to be as familiar with the social absurdities of history as he is with those of our times. Architectural absurdities, in Mr. Lancaster's context, are only a part of the whole. He is also a coiner of such phrases as "Bypass Variegated," a suburban architectural style similar, in spirit if not in appearance, to "Wimbledon Transitional" and "Homes on the Range."

For a definition of the purposes of the book, one cannot do better than to quote the author himself: "First, to do for buildings what so many popular writers have done for birds, to render them a source of informed interest and lively excitement for the passer-by so that his quiet satisfaction at having identified a nice



*Spanish Super-Colonial*: "... down flights of balustraded stairs, Flaming Youth tottered to its doom ..."

bit of Banker's Georgian might equal that of the keen bird-watcher on having spotted a red-breasted flycatcher; second, and with no very sanguine hopes of achievement, that such an interest, once stimulated, might become so widespread as to cause inconvenience to speculative builders, borough surveyors, government departments and other notorious predators." All this will undoubtedly amuse the architect; but it may be more useful to his wife, his children or old friends who have for years been left on the outside looking in at cocktail parties and other functions where the profession meets to talk shop.

Three of the book's 91 drawings appear on this page.

## Building Supervision Manual

FIELD INSPECTION OF BUILDING CONSTRUCTION. By Thomas H. McKaig. F. W. Dodge Corp., 119 W. 40th St., New York 18. 337 pp., illus. \$9.35.

This is the first book of its kind to be published on inspecting, testing, and supervising the construction of buildings. The practical material presented is designed for day-to-day use by architects, engineers, contractors, and field inspectors. It is not a textbook and does not delve into theory. Thomas H. McKaig is both architect and engineer and has for 35 years headed his own consulting firm in Buffalo. He is chairman of the New York State Board of Examiners for Professional Engineers and Land Surveyors. He is the author of *Applied Structural Design of Buildings* (also published by Dodge).

Mr. McKaig's presentation closely follows the sequence of work as it is normally met in building jobs and is of value in defining the responsibilities of each in the complicated owner-architect-engineer-contractor-subcontractor relationship. The first chapter discusses the field inspector's job. It covers coordinating work by the various trades, defines the thin line between over- and under-inspection, and treats the keeping of proper records.

In five subsequent chapters, Mr. McKaig describes the duties and responsibilities of the inspector at each stage of construction. These chapters give appropriate information for the preliminary, foundation, structural-framing, intermediate, and finishing stages. The last chapter is devoted entirely to concrete because of the many special problems involved in obtaining uniform, acceptable quality.

Sample documents and check lists are incorporated, and the appendixes include a list of 86 reference sources with addresses.

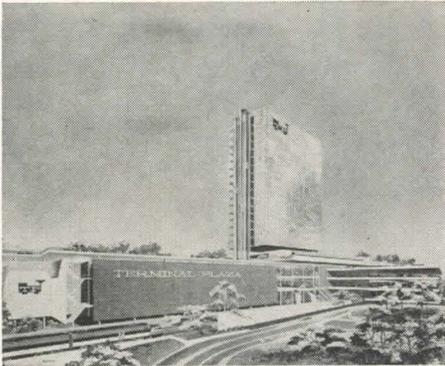
## Wright on Cities

THE LIVING CITY. By Frank Lloyd Wright. Horizon Press, 220 W. 42nd St., New York 36. 224 pp., illus. \$7.50.

This book is, in part, a reworking and expansion of *When Democracy Builds* (1945), which in turn stemmed from *The Disappearing City* (1932). The present work elaborates on the ideas presented in the earlier work.

continued on page 63

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Required Reading

Wright . . . cont. from page 60

orates Wright's views on centralization and the machine age, deplors the present plight of our cities, and condemns the policies that fashioned them.

The author's analysis of the social, political, and economic problems of our time is too familiar for comment here, and certainly the reader who already believes Wright's philosophy to be either inspiring or inane will not be swayed by any new revelations in *The Living City*. What is new and valuable in this work is the presentation, in dazzling detail, of a monumental project—Broadacre City—that perfectly delineates Wright's soaring architectural imagination and grasp of technique.

Beginning with a comprehensive plan (an eight-page foldout in color), the "living city" is revealed in sketches and drawings of houses, apartment-office buildings, schools, theaters, motels, service stations, markets, sports stadiums, highways—even vertical-body cars and radically designed helicopters.

Fifteen years ago, in *An Autobiography*, Wright said: "I wish to build a city for democracy: the Usonian city that is nowhere yet everywhere." Every architect will want to see it in this book. —ARTHUR FISHER

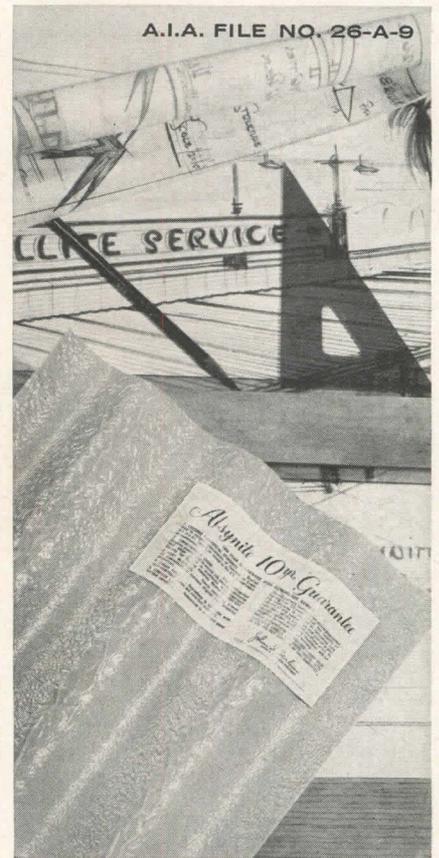
Away From It All

TREE HOUSES. By Royal Barry Wills. Illustrated by the Author and Charles H. Crombie. Houghton Mifflin Co., 2 Park St., Boston 7. 67 pp. \$3.50.

During the early life of most American rural, non-farm males somewhere between the ages of marbles and girls, there arises an arboreal form of the "club" or "hideout" syndrome. *Tree Houses* evidently was written in the hope that this atavistic, or evolutionary, drive might result in something other than broken collarbones.

Many will remember that the author has as deft a touch with the pen as the flattened pencil. This book is written as if by a knowledgeable uncle to a respected nephew. It starts out with an anecdote about two young friends who put up a quite respectable tree house, only to have one of New England's wandering hurricanes almost destroy it. They rebuilt (and provided an example of how increasing maturity sometimes decreases fun) by adding a ground floor, then removing the tree from the inside. They finally rented it to a young couple.

continued on page 376



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## High-strength bolts speed erection of new jet hangar by 6 weeks

United Air Lines' new jet service center at San Francisco International Airport is part of the airline's new facility for turnaround maintenance of the DC-8 jet transports scheduled to begin service this year.

The hangar accommodates four jet airliners with wing spans of 140 feet. These are housed under an unusual roof supported by seven 125-ton steel plate girders. These girders soar out in two directions in a spectacular 142-foot cantilever. Each girder measures 365 feet from tip to tip.

To speed erection of these massive members, 27,795 Bethlehem high-strength bolts—ranging in size from 1¼-inch to ¾-inch diameters—were used in splicing. According to H. F. Kjerulf, chief engineer, Pacific Iron and Steel Corporation, Los Angeles, "Trying to splice the heavy girders in the air by welding would have been almost

impossible. High-strength bolting speeded completion of the entire job by at least six weeks."

The reason for such time saving is simple. A high-strength bolt, used with hardened washers, can be installed in seconds. A pneumatic impact wrench is all that's needed to tighten the nuts.

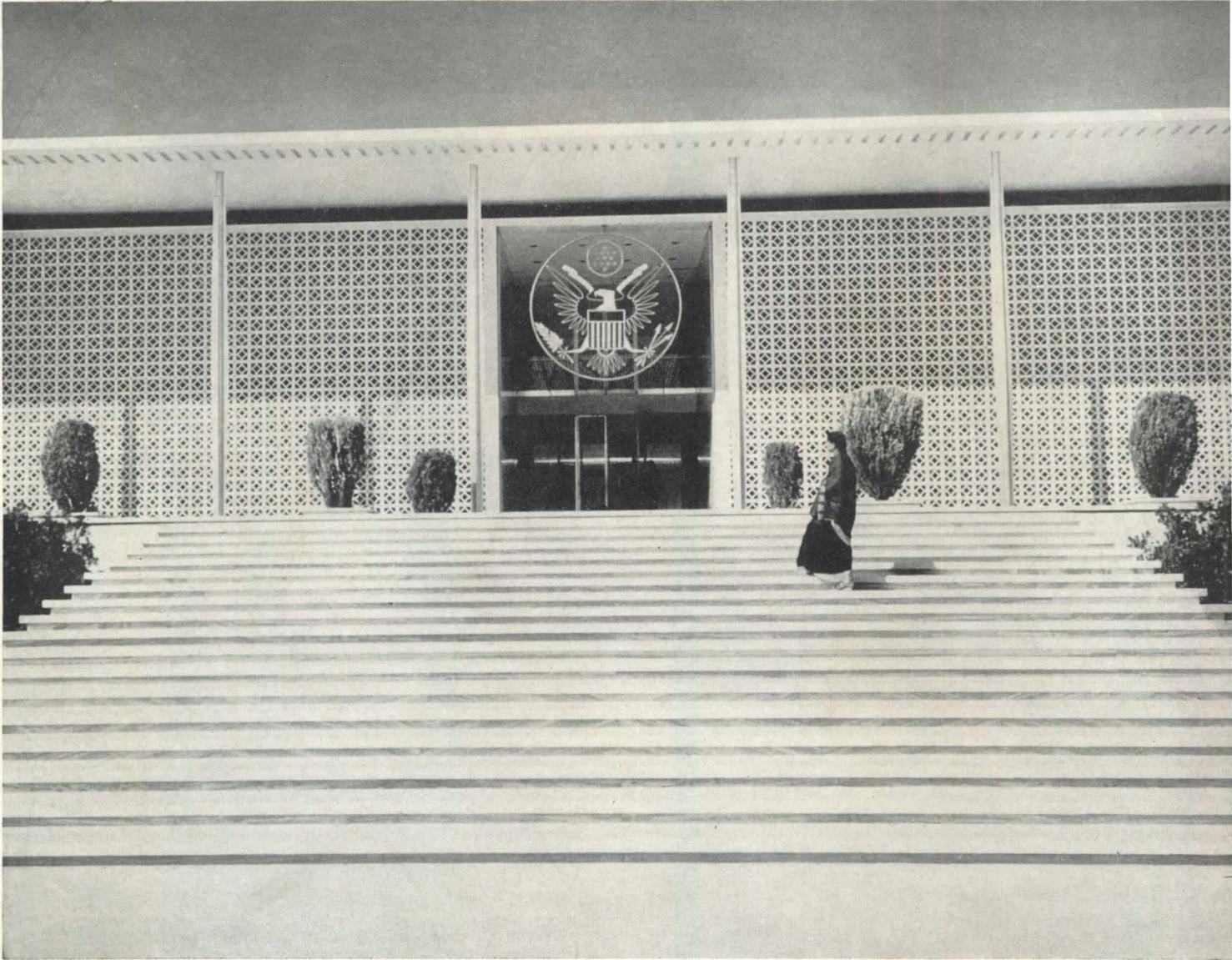
Other advantages: no fire hazard, no danger of injury from tossed rivets; less noise (important in hospital and school zones).

Bethlehem high-strength bolts are made of carbon steel. They are quenched and tempered to meet the requirements of ASTM Specification A-325. Plan to use them on your next job. You'll like the way they speed up the work.

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# BETH EHEM STEEL





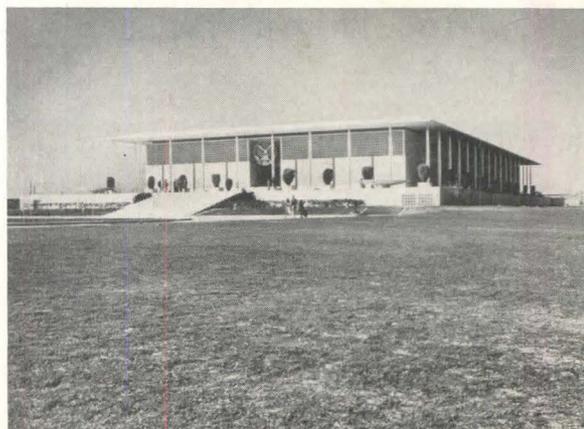
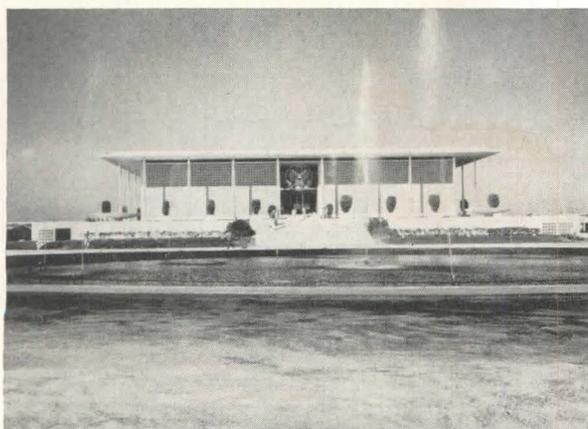
## The Work of Edward D. Stone

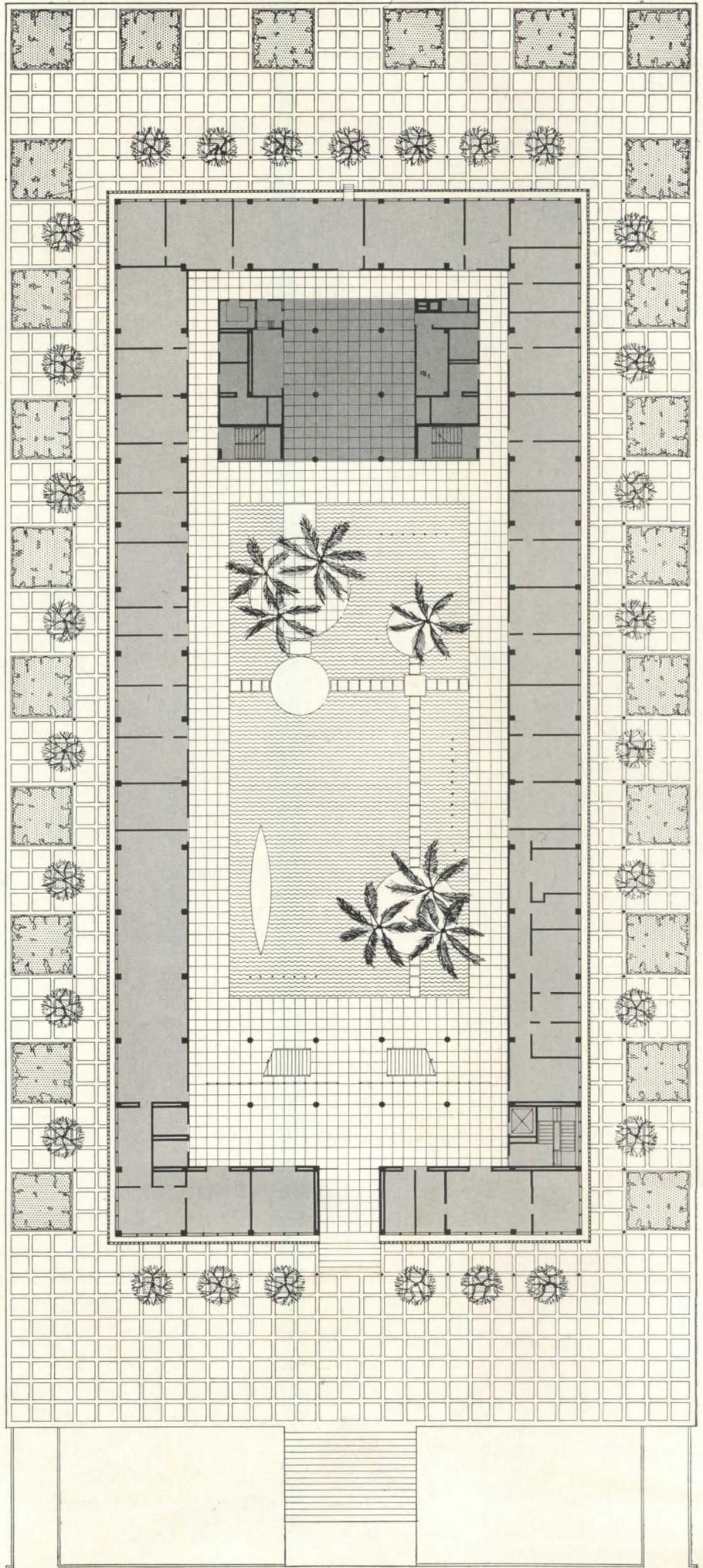
### Completion of a Lauded Project: New Delhi

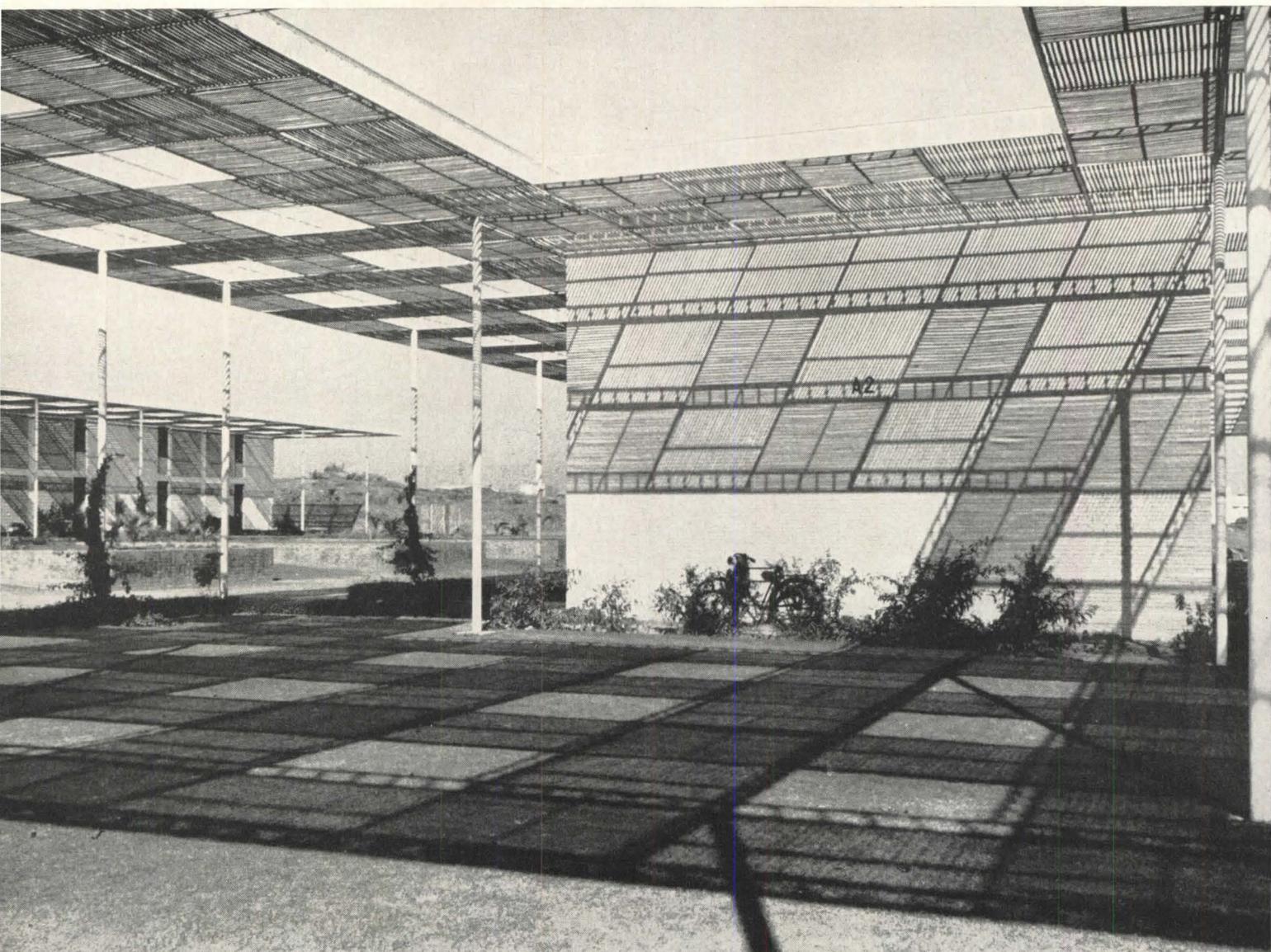
The shimmering dignity of the recently completed United States Embassy group in New Delhi, India, seems to be amply fulfilling its role, designated by the State Department's Foreign Buildings Operation, of serving as a symbol of friendship and good will. During the two years of its much publicized construction, Eastern and Western skills were combined with great care. Much was done by hand. The grillwork, for example, was cast in foot-square moulds of concrete and marble aggregate, finished and polished by hand. U.S. manufacturing techniques were applied locally, by the builder Mohan Singh, for other items: teak woodwork, aluminum window sash, hardware, lighting fixtures and concrete piping. The result is an elegant merger of the tastes and techniques of the cultures of the two countries.



The New Delhi Embassy



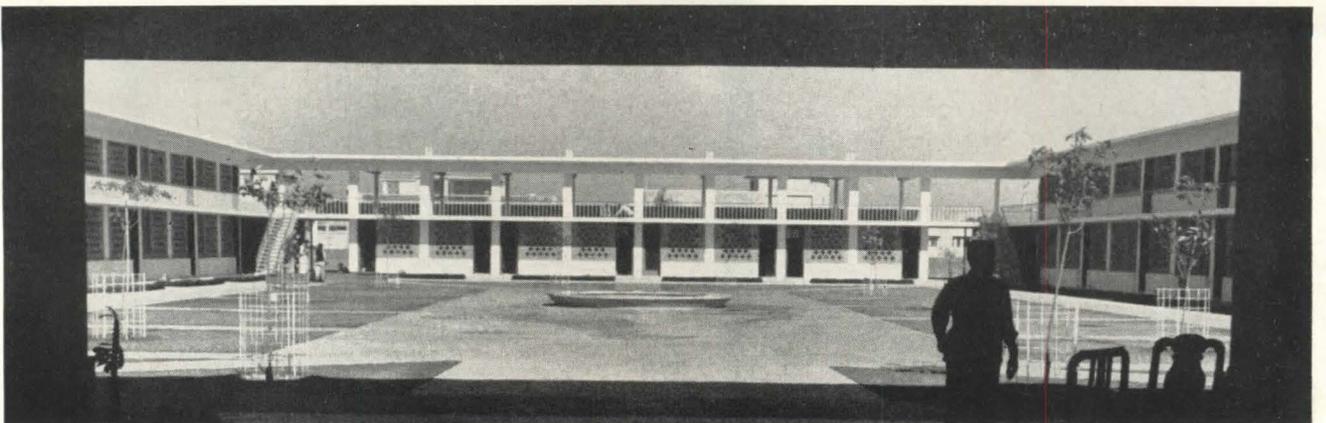
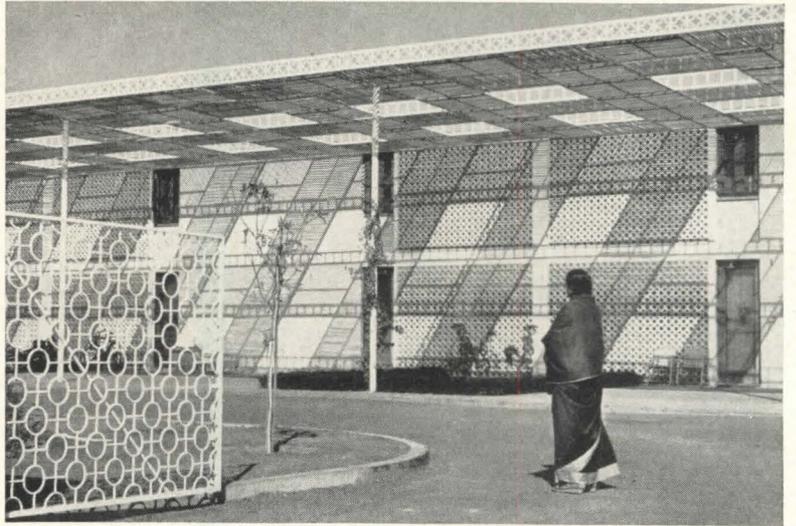
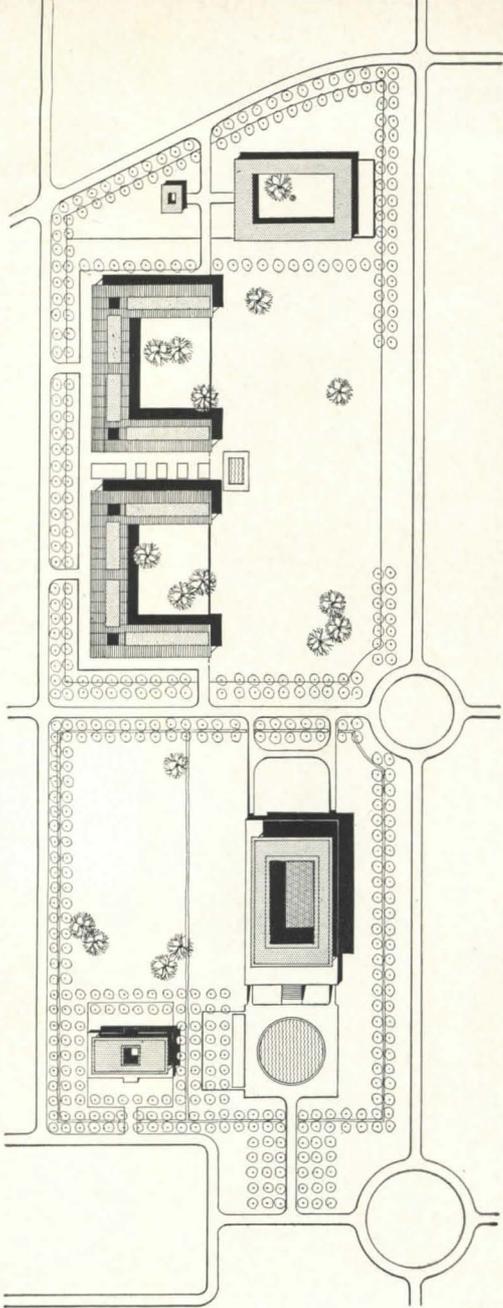




## Housing For The New Delhi Embassy

The dominant building of the Embassy group is, of course, the Embassy building itself, resplendently gold, white, and blue-pooled. It is further set off by its podium (which conceals parking). Quieter, but no less attentive to climate and "style," are the housing units for staff and servants at the rear of the plot. All focus on a large central mall. As in the Embassy, the most eye-catching architectural features are the devices used to umbrella and screen the buildings from the intense sun. These become ornament in themselves, and in the patterned shade they project. Similarly useful landscaping is in its early stages: shade trees, flowering vines. Pools and fountains are widely used.

The Ambassador's residence is at the front left of the plot, to be screened from the Embassy by a large grove of trees.



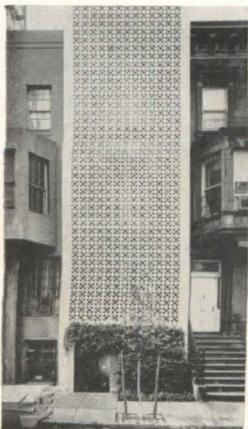


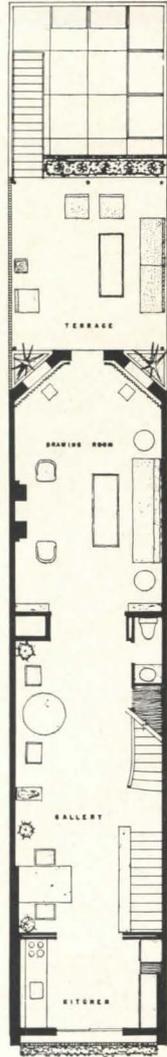
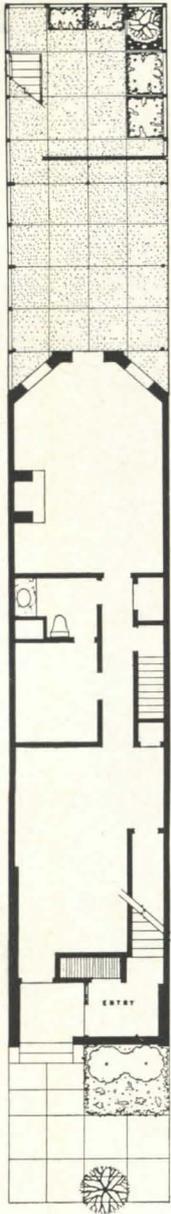
*Alexander Georges*

## Stone's Remodeled Town House

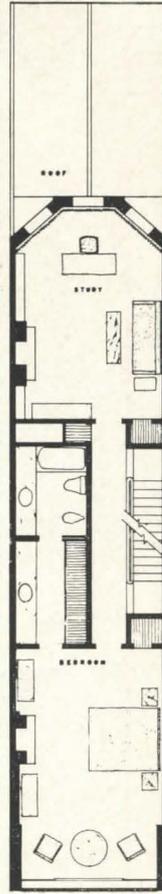
In addition to sun control, Stone derives another virtue from his screening devices—privacy. This New York house, originally a brownstone similar to its neighbors, probably once used tiers of lace curtains to provide a cloistered sanctum. For the remodeling, the façade was stripped away and replaced by a glass wall veiled by a terrazzo grille. It works amazingly well: there is good visibility, light and air, complete daytime privacy.

All interior partitions were removed from the original building, and new plumbing, heating, cooling, etc., were added. The ground floor was arranged as office space for a doctor. The Stones' living quarters occupy the three top floors. Major rooms include: living area (above) and (right) master bedroom, terrace, study.

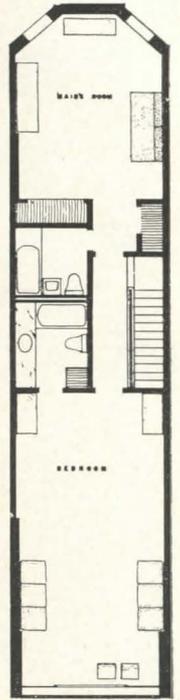




FIRST FLOOR

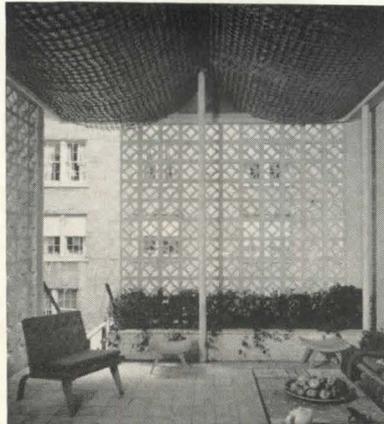


SECOND FLOOR



THIRD FLOOR

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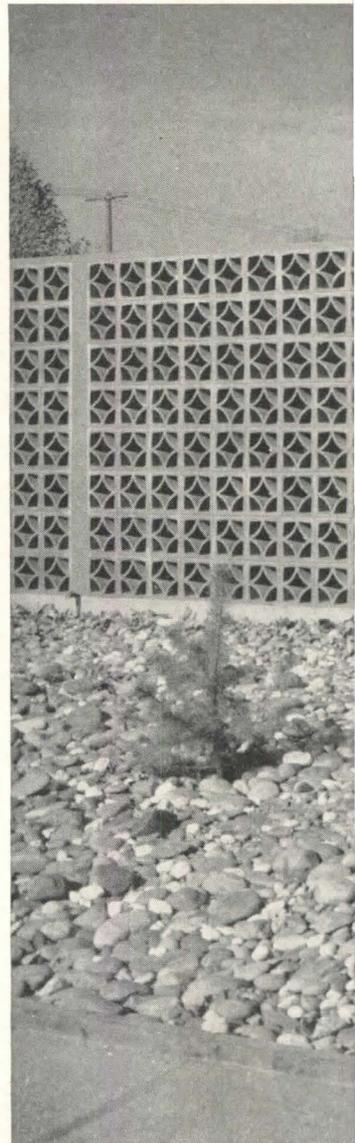




*Alexander Georges*

### The Stones' Own Home

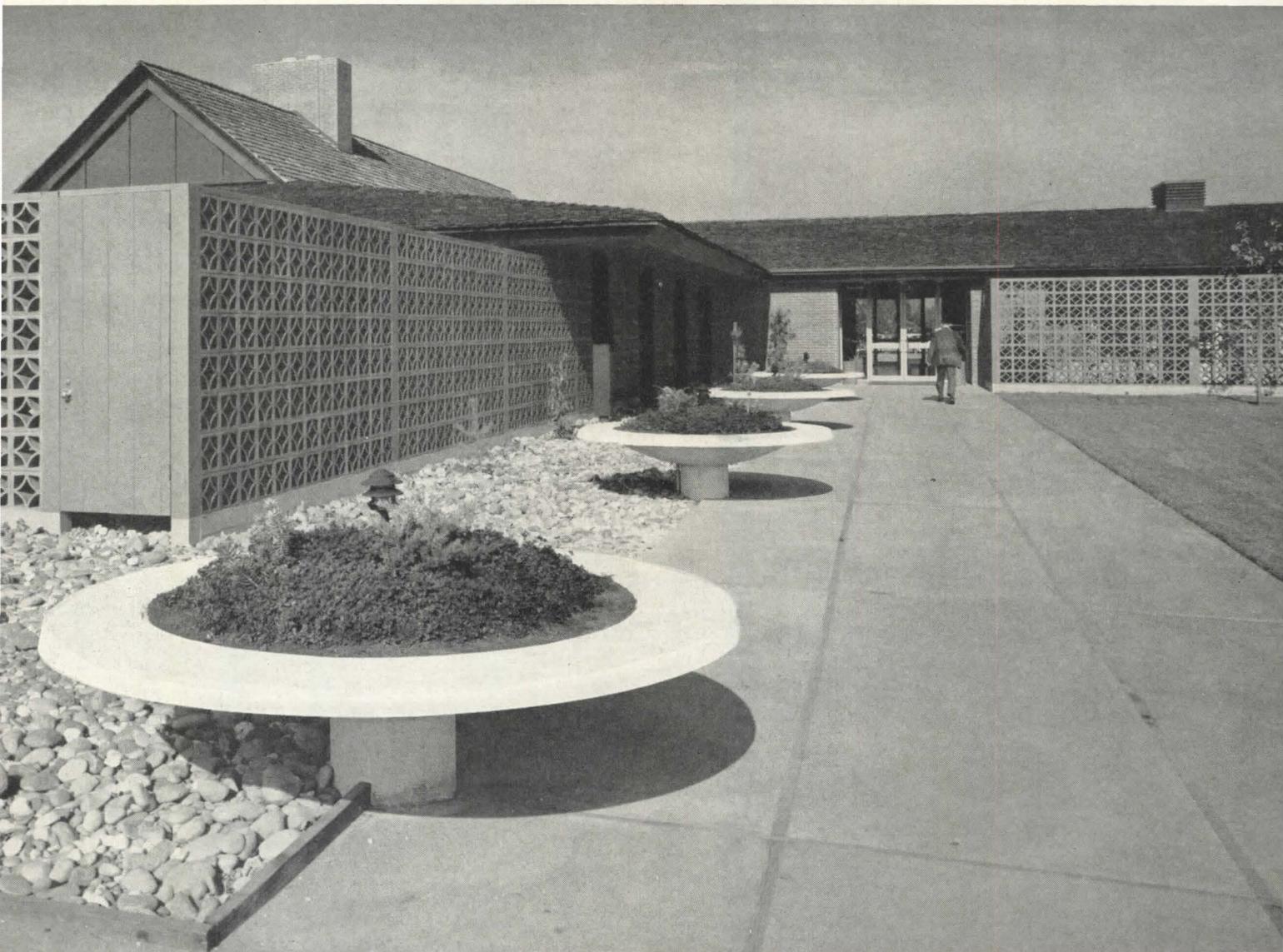
The only original room preserved during the remodeling is the drawing room, which has exuberant 1875 East-lake mahogany paneling. The floor is unified by white marble which runs from kitchen and gallery (bottom photo through drawing room to terrace.



*Roger Sturtevant photos*

*Phil Fein & Associates*





## Main Library, Palo Alto, California



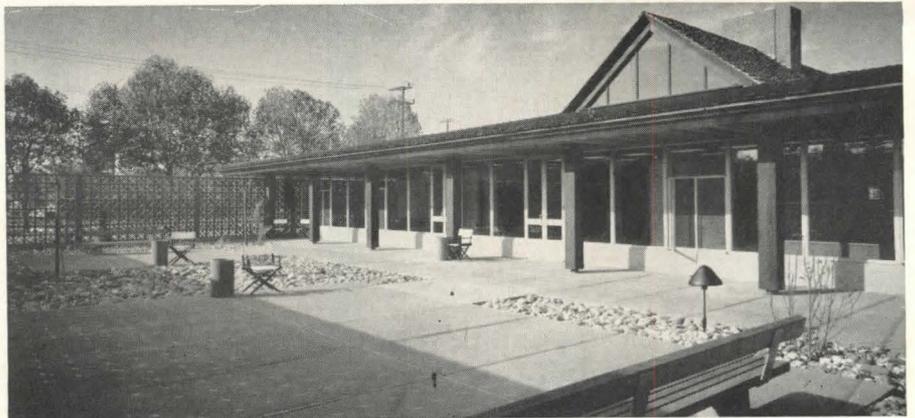
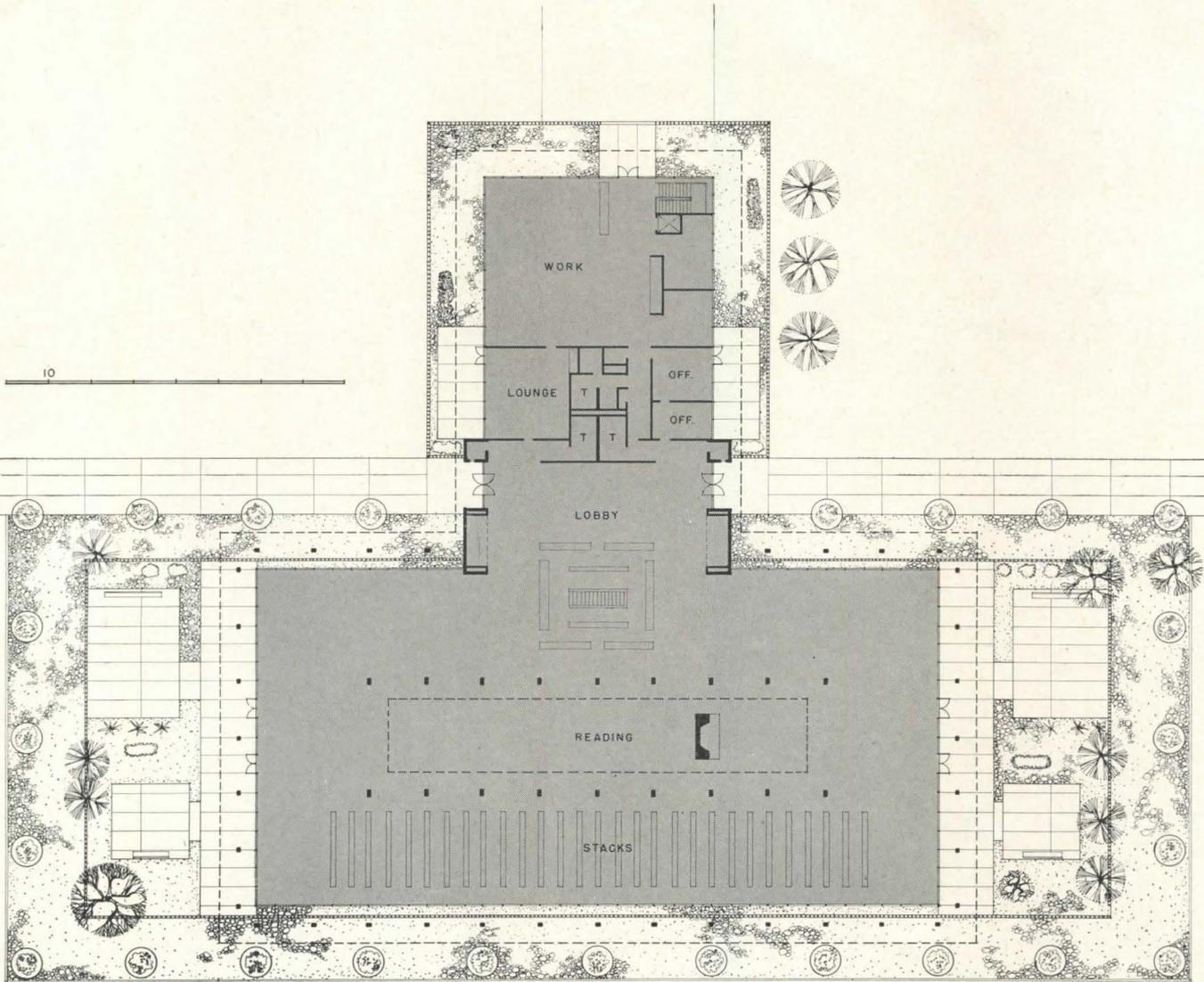
Regional influences are often felt in Stone's work, although he makes wide use of several personalized design idioms in each. This is headquarters for a city library system. The "Pacific Island quality" prevalent on the West Coast is also dominant here: the roof line, the quiet colors, the casual atmosphere and disposition of building masses. The landscaping of Eckbo, Royston & Williams further emphasizes this.

The big, well-lighted interior seats 160, holds 100,000 volumes. Most exterior walls are glass, protected by overhangs and a screen fence, which is extended to form outdoor reading rooms. The attempt to avoid an overly institutional atmosphere seems successful. There are reading and lounge areas of varying sizes, denoted by changes in the roof line, or by folding screens.



Main Library, Palo Alto, California





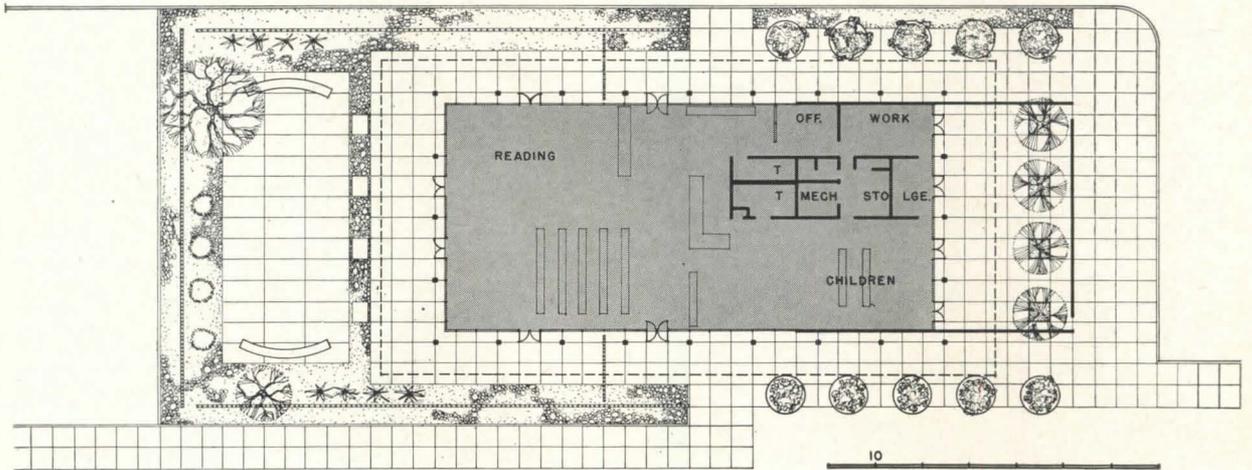
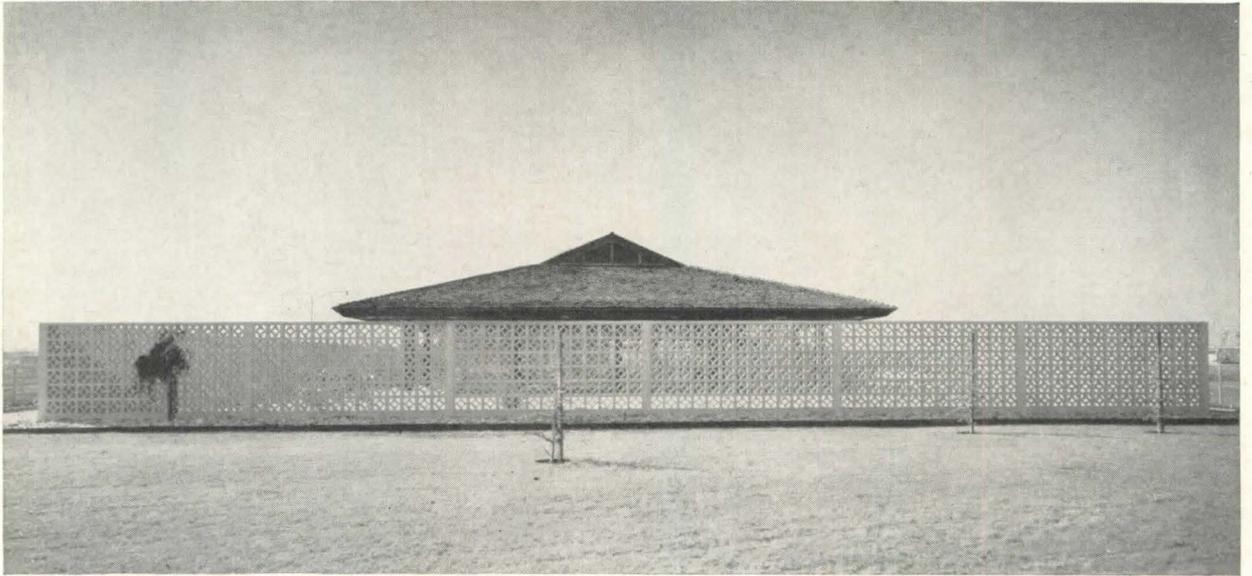


## Mitchell Park Branch Library, Palo Alto

This scaled-down branch of the library shown on the preceding pages, recalls the spirit of the parent-design, but uses simpler masses, lighter colors in keeping with its size. The exterior is redwood, terra cotta grille.

The interior is big and open, with central control. Glass walls permit supervision of outdoor areas, as well as indoor, with a minimum of operating personnel, as was required by the program. Folding screens (visible in photo far right) permit subdivision of the room for study groups and the like.

The landscaping presents some interesting items for simplifying maintenance. Most border areas are "planted" with small, smooth stones, with actual vegetation limited for the most part to raised planting "tables" or tubs. Courtyards are paved, except for the borders.



*Roger Sturtevant photos*

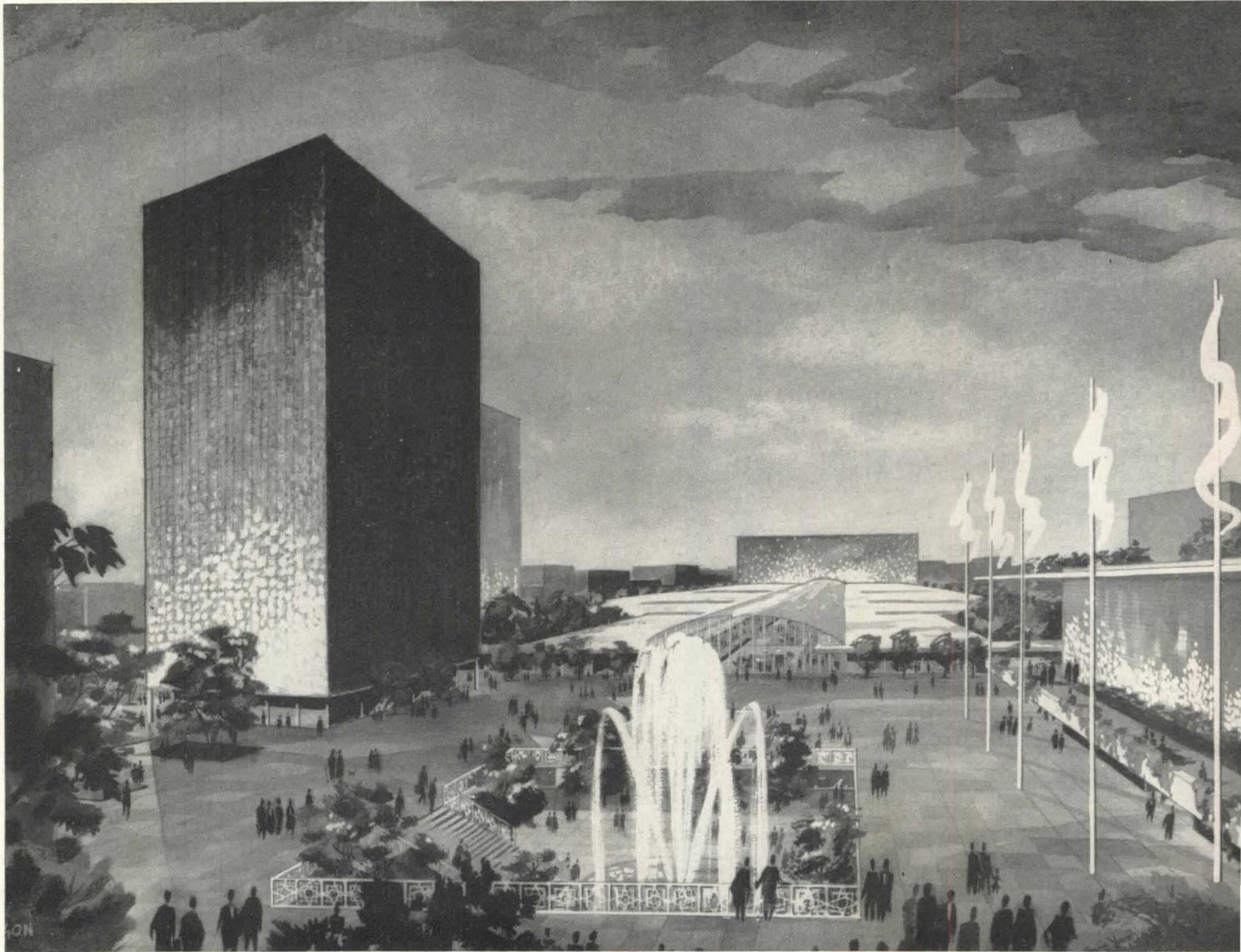


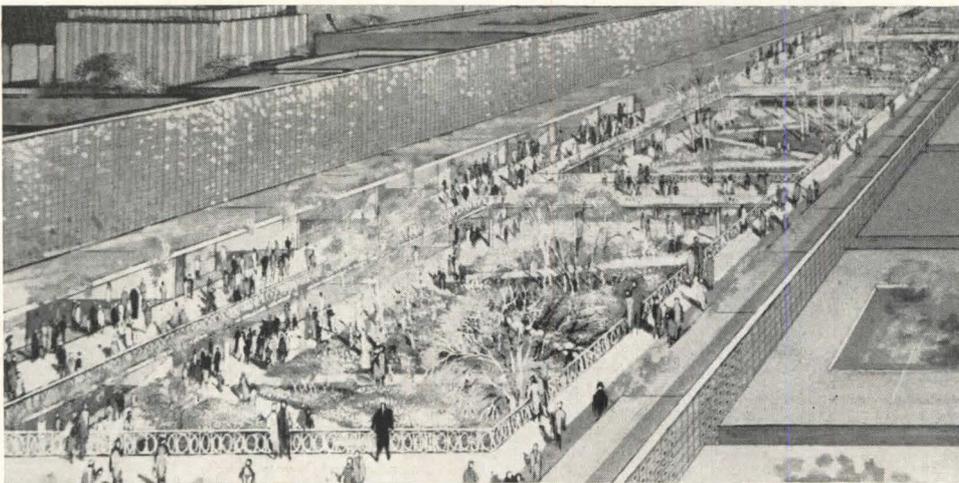
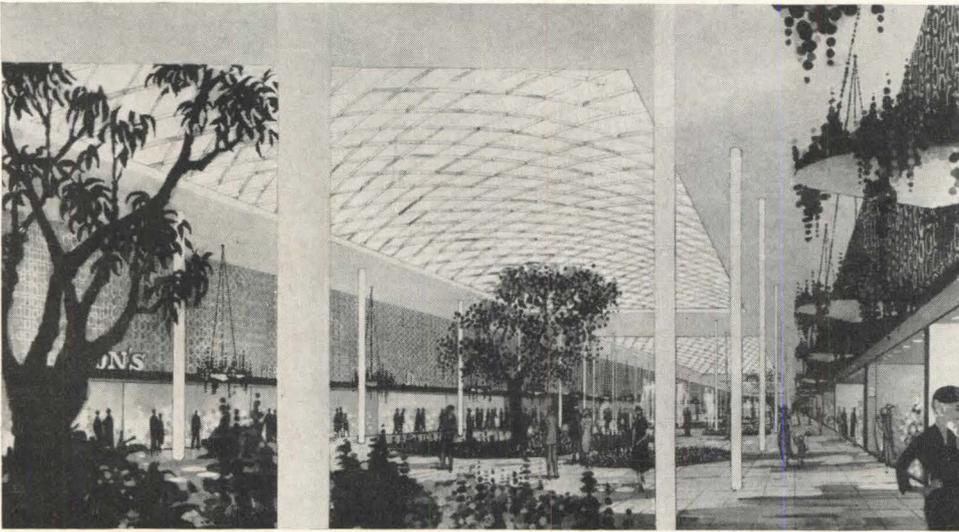
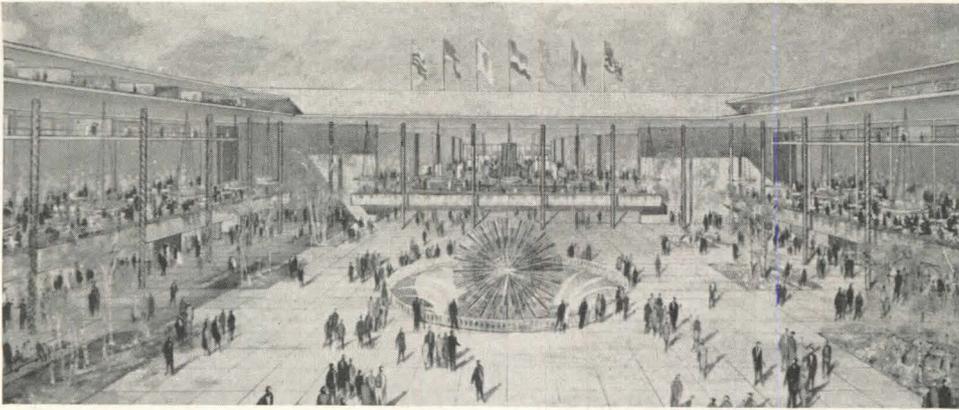


## A Program to Revitalize Downtown Akron

A festive air of plazas, fountains and pedestrian ways dominates this thorough-going scheme for the redesign of downtown Akron, Ohio. Plans for building a cultural center, which forms the hub of the area, are actively underway.

Automobile traffic is handled by peripheral arteries around the main area, and intersecting streets below the level of the plazas. The principal mall will be elevated to simplify this. Parking facilities include adjacent surface areas and a three-level underground garage beneath the cultural center. The total area is divided into three "use" districts: retail, civic, and commercial and office. It is planned to remove all obsolete buildings and "rehabilitate" the others. An early scheme for the plaza is top right, a revised one (from the opposite direction) is above.





## Downtown Akron

The basic emphasis of the scheme is the creation of a concentrated regional market. Thus, the Cultural Center (top) is to be built first, to draw large crowds from all over the area. It will contain: a large arena, and a theater-auditorium, with art and exhibition galleries between; a library; indoor sports area; and public and commercial facilities. The fountain is by Richard Lippold. Two variants on the shopping malls are shown below, all planned for eventual glass enclosure. Robert Dowling, of City Investing Co., has joined in the preparation of the plans.



Photographs © Ezra Stoller

## DESIGNING AND BUILDING BRANDEIS UNIVERSITY

### *A Ten Year Development Starting Almost From Scratch*

Situated in Waltham, Mass., ten miles west of Boston, the 260-acre Brandeis campus—hilly, rocky, and wooded—presented both a planning challenge and an architectural opportunity when design and development was begun ten years ago. Nearly every building had to lie against a slope; roads for access had to pretty much follow contours. Fortunately, the character of the college lent itself to an informal arrangement—smaller than usual in scale—and college officials wanted modern architecture.

Now, after ten years, there are 37 buildings, and more are being built. The enrollment is 1200—will never be large—and the college is already known for its high scholastic standards. Although it was fi-

nanced by the American Jewish community, Brandeis is conscientiously non-sectarian—a fact the well known three chapels on its campus demonstrate.

The original property—complete with the pseudo-Gothic “castle” (overleaf)—was acquired from a defunct medical college in 1946. Architect Eero Saarinen made the first master plan, designed and built some housing. Following a construction lull of several years—during which the new college was busy building up its faculty, administration, scholastic program, and raising funds—the building program was resumed in accordance with a new master plan prepared by Max Abramovitz, of Harri-



The picturesque old "castle" is now a dorm

## The Special Character of Brandeis University

By Dr. ABRAM L. SACHER,  
President

son & Abramovitz, who had meanwhile been appointed Consulting Architect for the university; a post he has held since. Abramovitz has brought in outside architects to design certain buildings while continuing to do others himself. See page 184 for a preview of projects by the various architects, soon to be ready for use. Four of the most recently completed buildings at Brandeis are pictured and described immediately following the master plan shown on page 177.

Regarding the master plan, architect Max Abramovitz says, "Our aim was to preserve the natural qualities of the site—rolling land, rock outcroppings, numerous old trees, and a general elevation higher

*I have often been asked to define the special character of our young university, and the question is a fair one, for we do have American colleges that have developed unique personalities. They cannot offer chemistry or mathematics in any slanted way, yet their character lineaments exist and leave an enduring impact.*

*I think of Harvard, choice product of the Congregationalist genius. It is no accident that the Harvard noblesse oblige has produced public spirited citizens who have interpreted a Harvard education to mean the obligation of communal service. Van Wyck Brooks' "The Flowering of New England" makes clear the enormous role this spirit has played in every aspect of American life.*

*The impact of the Quakers on higher education has been phenomenal. This relatively small group has made the building of quality colleges a major corporate objective; and Haverford, Swarthmore and Bryn Maur are crowning glories. At Swarthmore there is a passion for excellence within a climate of simplicity, of modesty, indeed of austerity, in both action and thought. This kind of spirit has special importance in an Age of Brass with so much emphasis on front and display and the tinsel of advertising superlatives.*

*The Catholics are responsible for more than 200 American colleges. The finest of these have a tradition of learning and scholarship which makes them prime assets in American life. Special character at Fordham is quickly sensed. Here you find a deep religious reverence; a sharp restraint upon the boundless sweep of pragmatism. There is no lowering of intellectual standards, but reason is mellowed by reverence, and the utilitarian is never permitted to crowd out the sacred.*

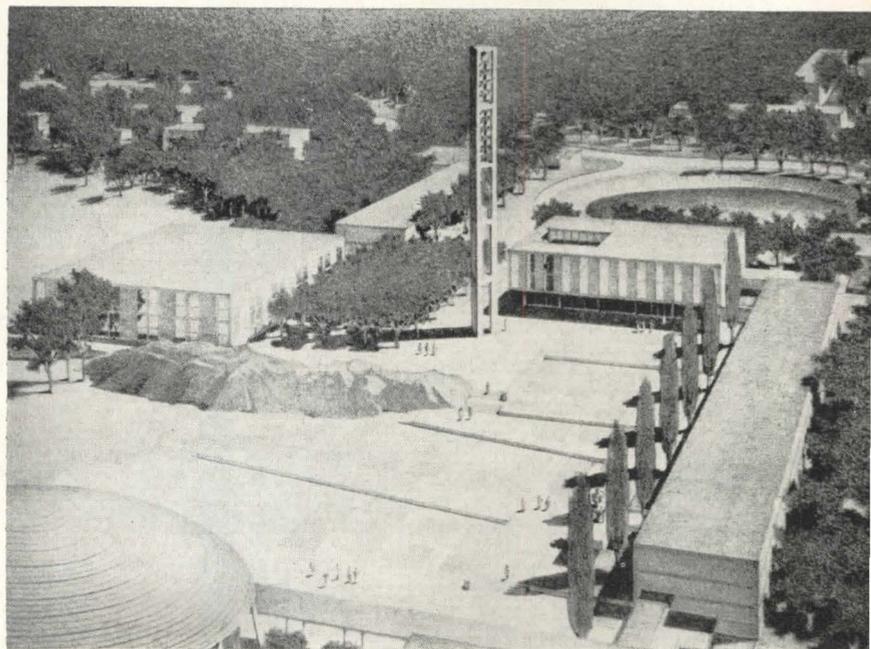
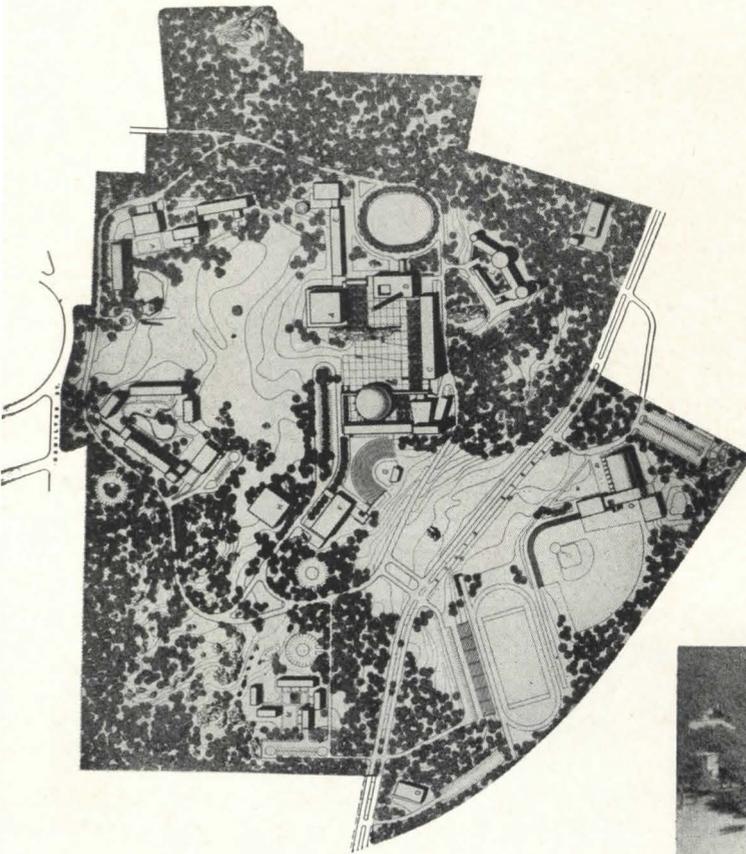
*Ten years ago the Jewish community came into the corporate family of Universities through the founding of Brandeis. We and our children have profited through the years from the generosity of the great Christian founded colleges; it means much to us that we, too, can now make a basic contribution. Hence, we have poured energy and resources into the enterprise, a beautiful campus has grown up, peopled by a select student body and superb faculty, served by fine buildings. Now we ask ourselves whether there has been time—in a short decade—to develop a special character. Harvard means a community of public spirited citizens; Swarthmore means a climate of simplicity and integrity; Fordham means a mystical, reverent spirit. What does Brandeis mean?*

*If there is one special emphasis here, I would say that it is a highly sensitive social consciousness, the concern for the underdog, the resistance to any kind of discrimination or privilege. Some of it comes from a long prophetic tradition which has woven the passion for social justice into the very warp and woof of life. Whatever the cause, the student body is volatile and very much concerned with rights. The faculty, brought together primarily for its academic knowledge and skills, and with no thought of outlook or temperament, have somehow quickly shown a more than average concern for the preservation of social values. It would be arrogant to suggest that Brandeis alone has this concern. We are privileged to stand with other universities in the forefront of the battle to link truth with justice, and pledge ourselves to this tradition.*

*It would be more comfortable to deal with a conforming student leadership; but these youngsters challenge and oppose and question all credentials and sanctions. Jeremiah and Hosea and Ezekiel were probably not easy to live with either, but they were a lot more interesting, and in the long run, a lot more creative and valuable than the custodians of the status quo who preceded and followed them! One asks only that the spirit of criticism be constructive and respectful. Within such limits of good taste we are hopeful that we can bring renewed strength to those forces which think and serve in terms of conscience, remembering that "Distress which is confined to us alone is not distress."*

than surrounding areas—while avoiding any appearance of formality or the rigid, monumental groupings of large buildings one so often sees on college campuses. Our plan thus developed into a series of intricate clusters of medium-sized and smaller structures designed to function with and complement the trees and hills. A looping road pattern along natural contours links the clusters and units together. Outcroppings remain, and sometimes become elements in the 'landscaping.'

"A red and light gray quality consistent with New England will be maintained throughout the campus by using red brick with fieldstone accents in the construction. They present a pleasant contrast to the



Above, the early master plan—now superseded—designed by architect Eero Saarinen. His rendering of a suggested central campus grouping of library, student union, and humanities building about a plaza surmounted by a bell tower is shown at the right. The upper photo pictures an early residential unit, designed by Saarinen for faculty housing, which is now being used temporarily as a dormitory for male students awaiting completion of the new men's dormitory and dining group, now under construction. Refer to the rendering, bottom of page 184

dull colors of winter as well as the gay colors of a vivid New England autumn and the greens of spring and summer there.

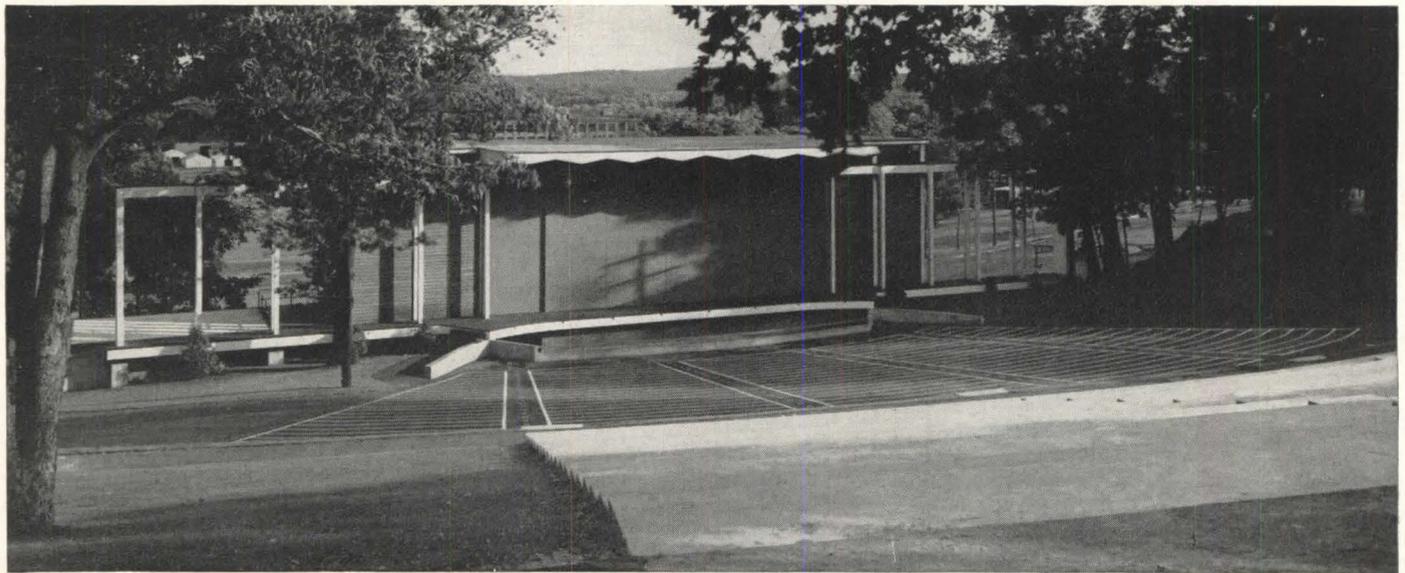
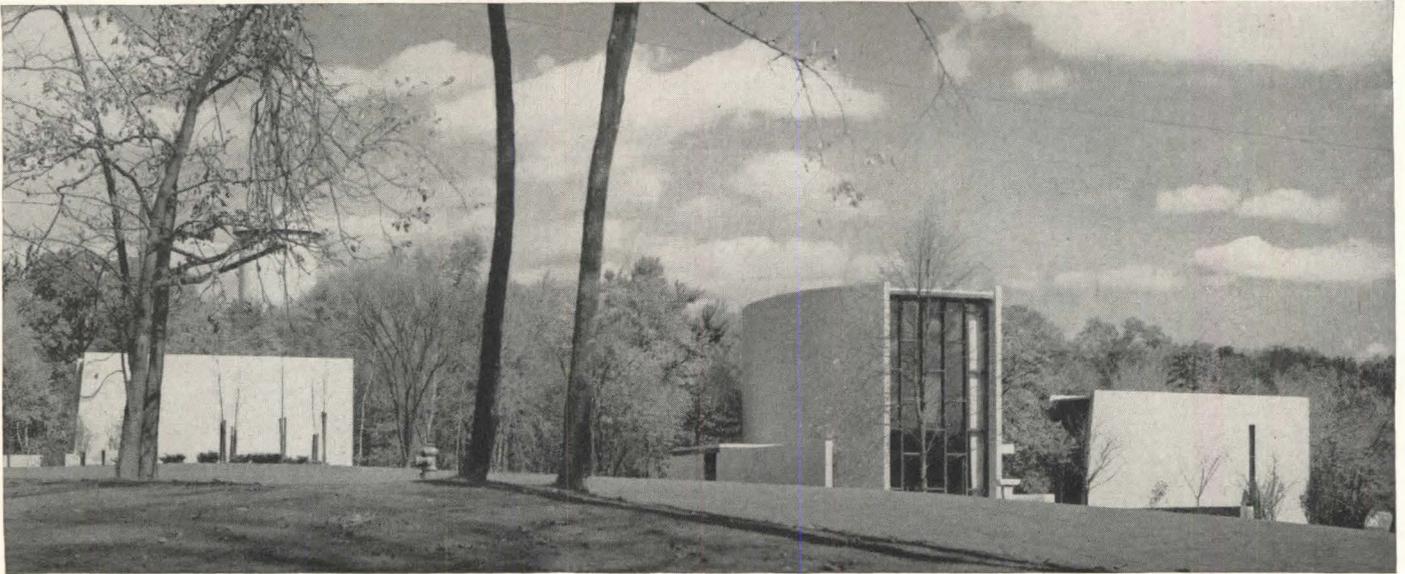
"One of the natural features of the Brandeis site is the large central area hollowed by nature into a huge bowl. We intend to develop this as a central open area about which important buildings such as the library, residence halls, the three chapels, and the science and humanities clusters will rise. These will all be accessible from the main loop road; other groupings can be made later as secondary loops from the main road develop.

"As the campus and university grow, new vistas can be created within this free scheme. Following

detailed study of landscape design, the basic pattern of the turning vistas in relation to the natural characteristics of the terrain can continue.

"Along with the expansion of facilities will come planned development of parking areas. These special areas will be screened from general view by landscaped walls to minimize the visual unpleasantness of parked cars and bare asphalt.

"We feel that this kind of thinking and planning will give Brandeis University a unique and naturalistic campus pattern that will preserve the beauty of the site and at the same time create an atmosphere conducive to the personal and informal ideals of teaching the university stands for."



The A.I.A. award-winning three chapels—Protestant, Catholic, and Jewish (see ARCHITECTURAL RECORD, January 1956, pp 147-153)—and the Ullman amphitheater are shown above. Both of these projects were completed several years ago; both were designed by Harrison & Abramovitz, Max Abramovitz in charge; Bolt, Beranek & Newman were acoustical consultants. For a view of the other face of the 6000-seat amphitheater from on down the hill, see page 173. The stage house and classroom building is of wood construction, with the structure and trim painted white, the cedar siding left natural to weather gray, the large sliding proscenium doors painted vivid blue. The three chapels have exterior walls of red brick, retaining walls and terraces of fieldstone

 EXISTING BUILDINGS

1. Power Plant
2. The Castle
3. The 3 Chapels (above)
4. Kalman Science Building
5. Ullman Amphitheater (above)
6. Women's Dorms & Dining
7. Old Classroom Building
8. Men's Dorms; Future Studios

 NEW BUILDINGS

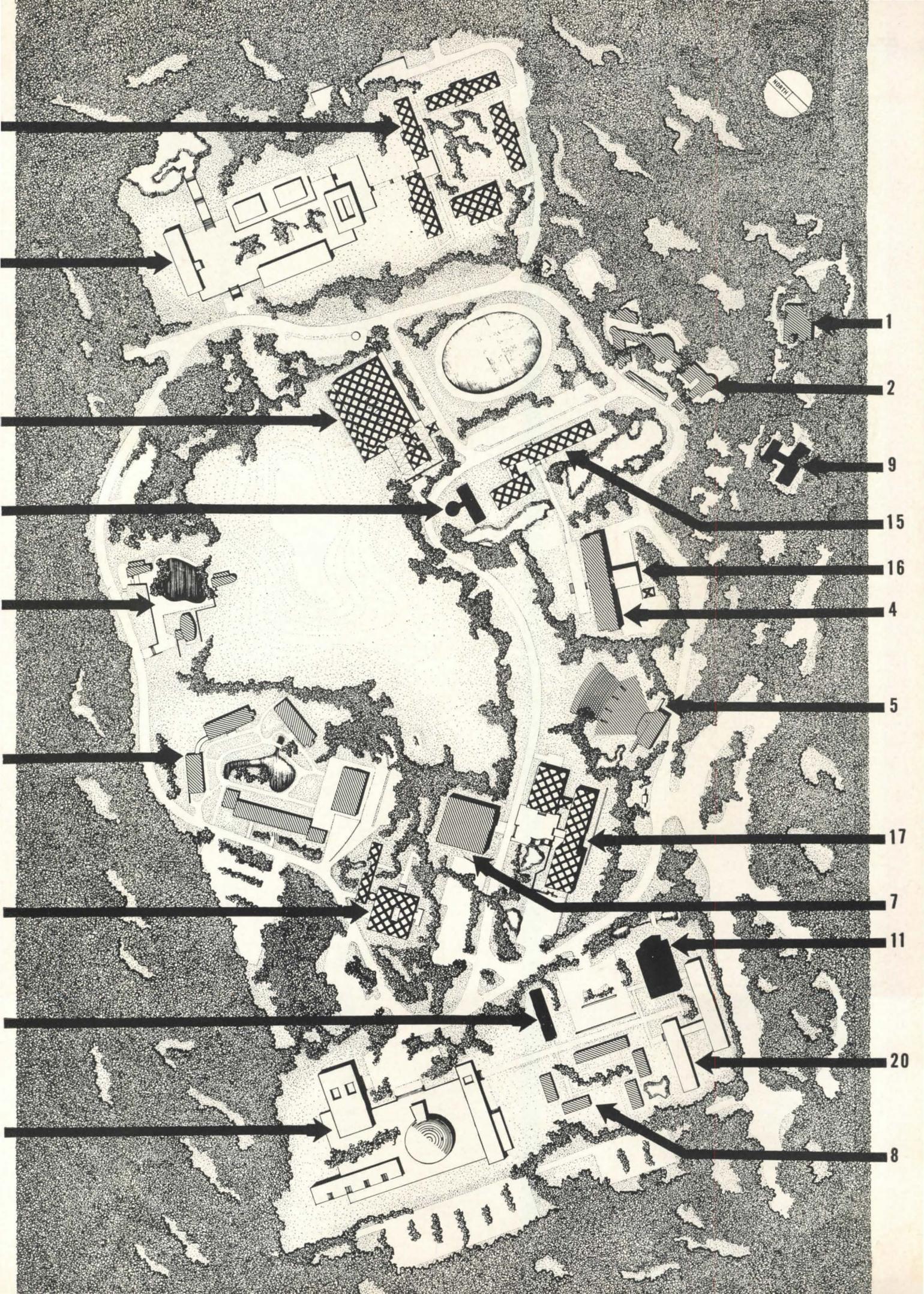
9. Stoneman Infirmary (p 183)
10. Rabb Graduate Center (p 178)
11. Slosberg Music Center (p 180)
12. Mailman Commuter's Center (p 182)

 UNDER CONSTRUCTION

13. Men's Dorms & Dining
14. Goldfarb Library
15. Social Science Center
16. Friedland Research Center
17. Administrative Center
18. Faculty Center

 FUTURE BUILDINGS

19. Humanities Center
20. Creative Arts Center
21. Art Museum & Theater



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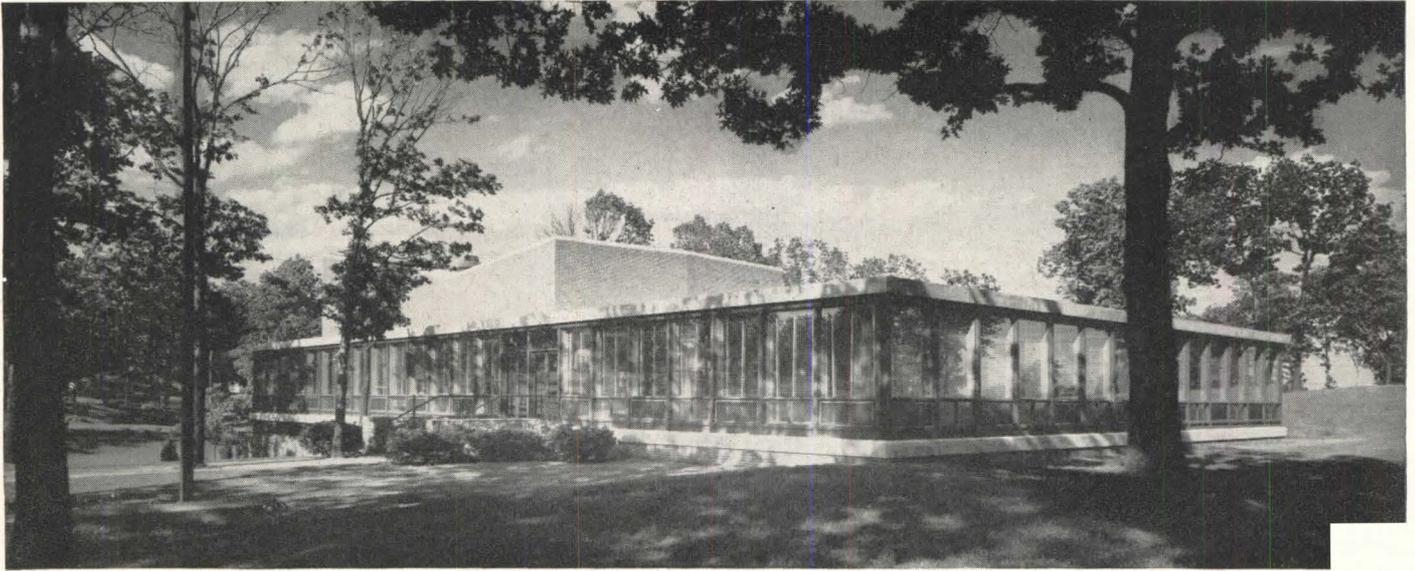
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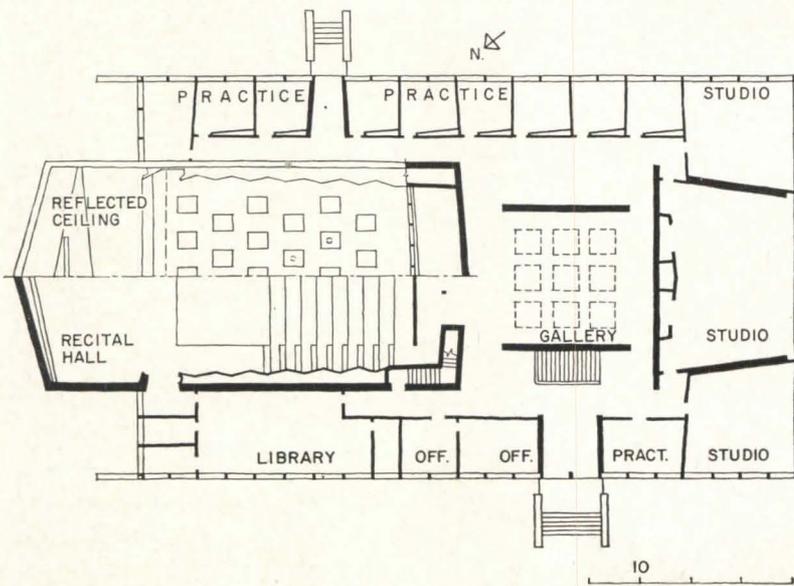
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## THE SLOSBERG MUSIC CENTER

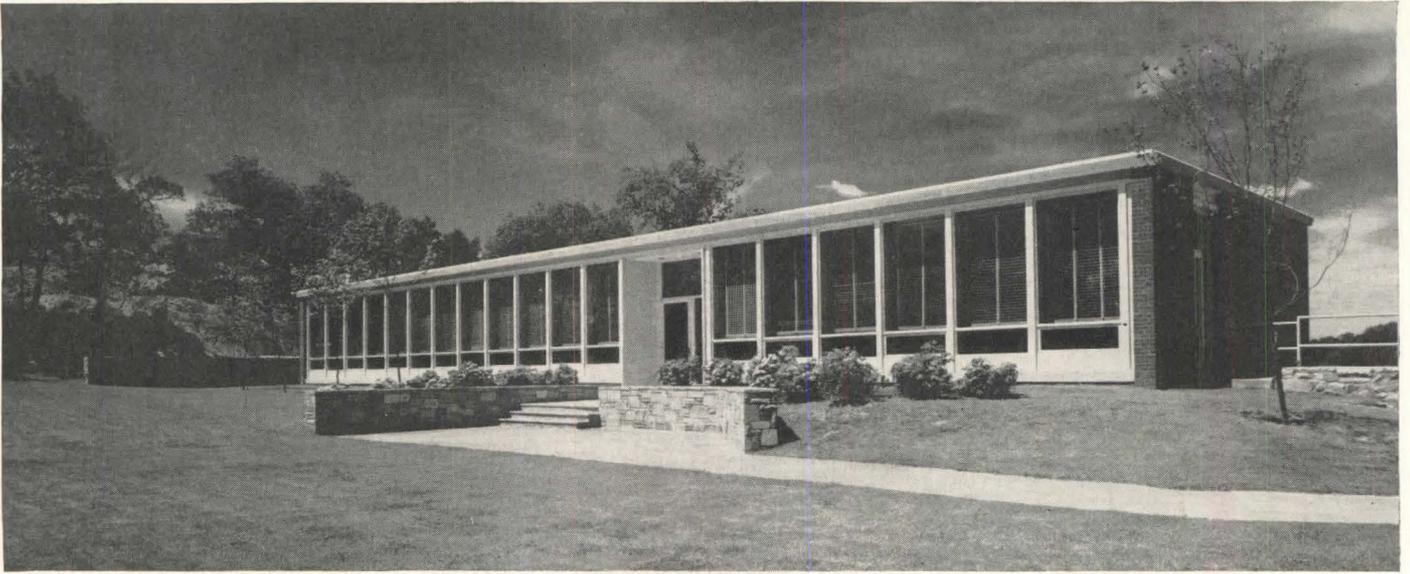


This 16,700 sq ft structure—which cost \$371,000—serves as the music center and school for the university. In plan, it consists essentially of a strip of classrooms and practice rooms wrapped about three sides of the central recital hall. Future expansion can be accomplished by simply extending the wrap-around strip. The building also houses a top-daylighted exhibition hall—centrally located on the campus—for the display of changing exhibits of paintings, sculpture, etc. The exhibition hall provides, in addition, overflow space for the auditorium.

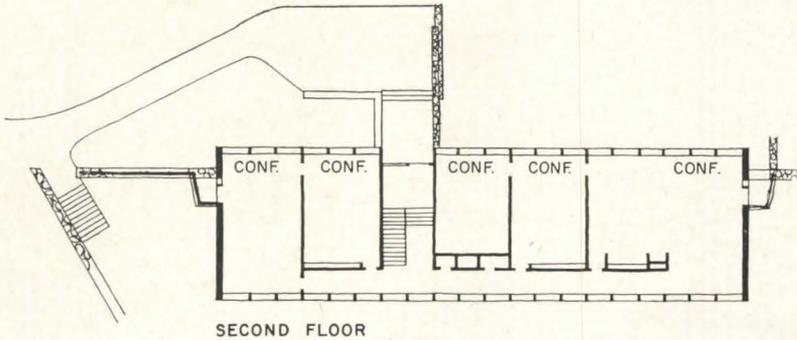
*Max Abramovitz of Harrison & Abramovitz, Architect. Linenthal & Becker, Engineers. Bolt, Beranek & Newman, Acoustic Consultants. Alice Tiebout, Interior Designer. Canter Construction Co., Contractors.*



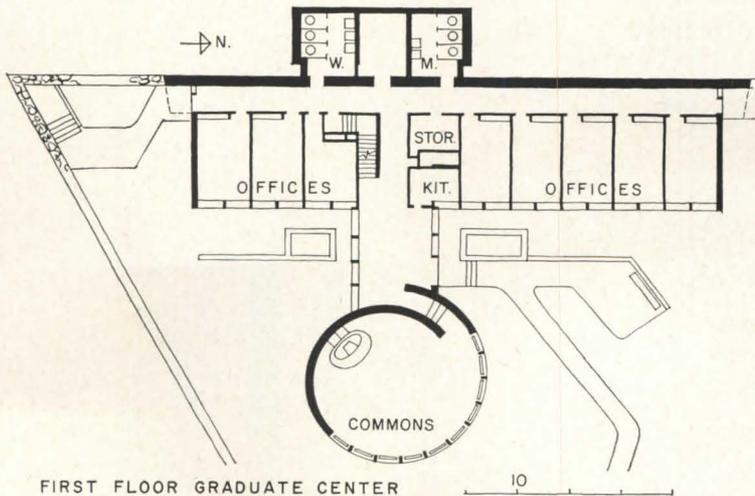




THE RABB GRADUATE CENTER



SECOND FLOOR



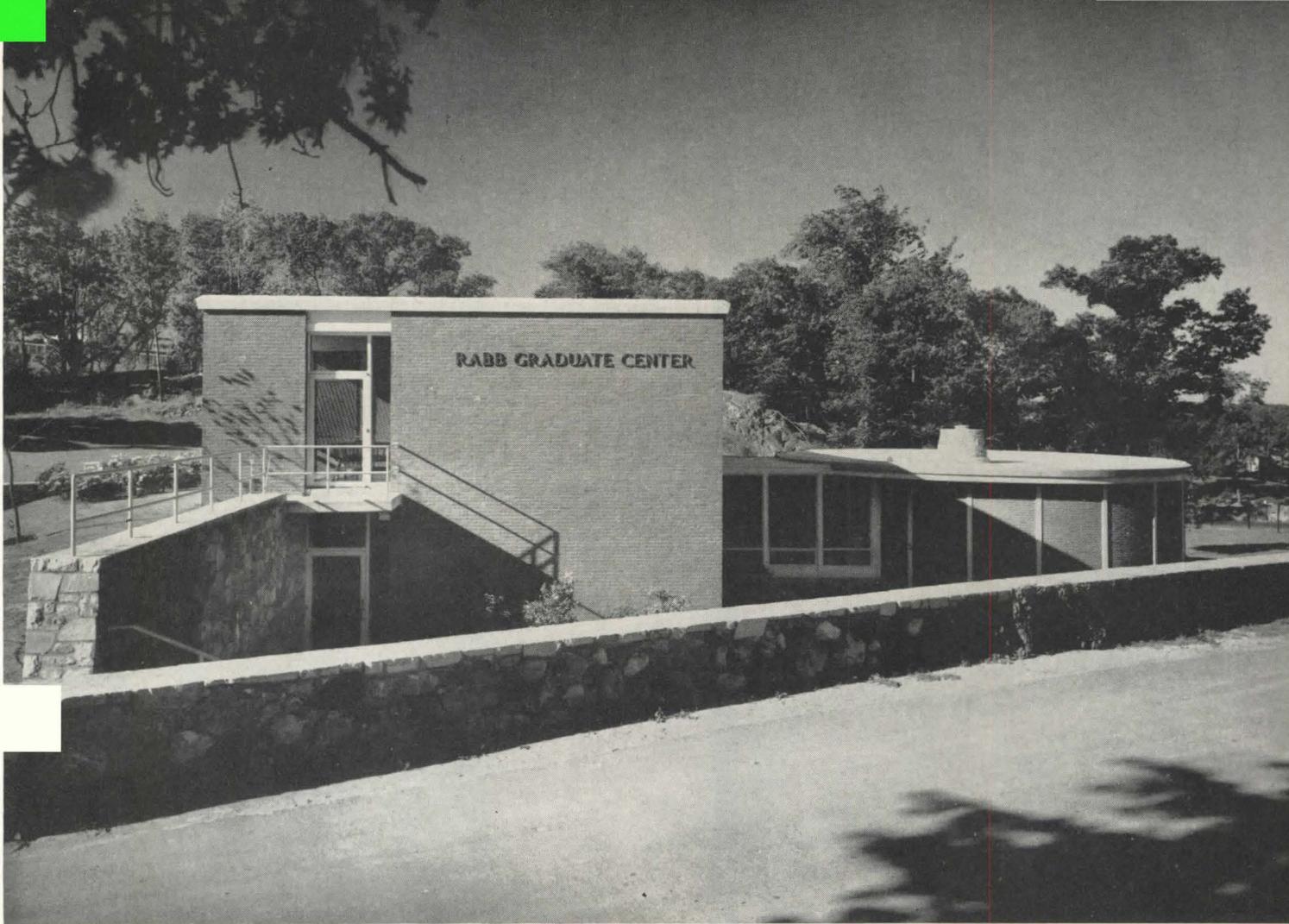
FIRST FLOOR GRADUATE CENTER

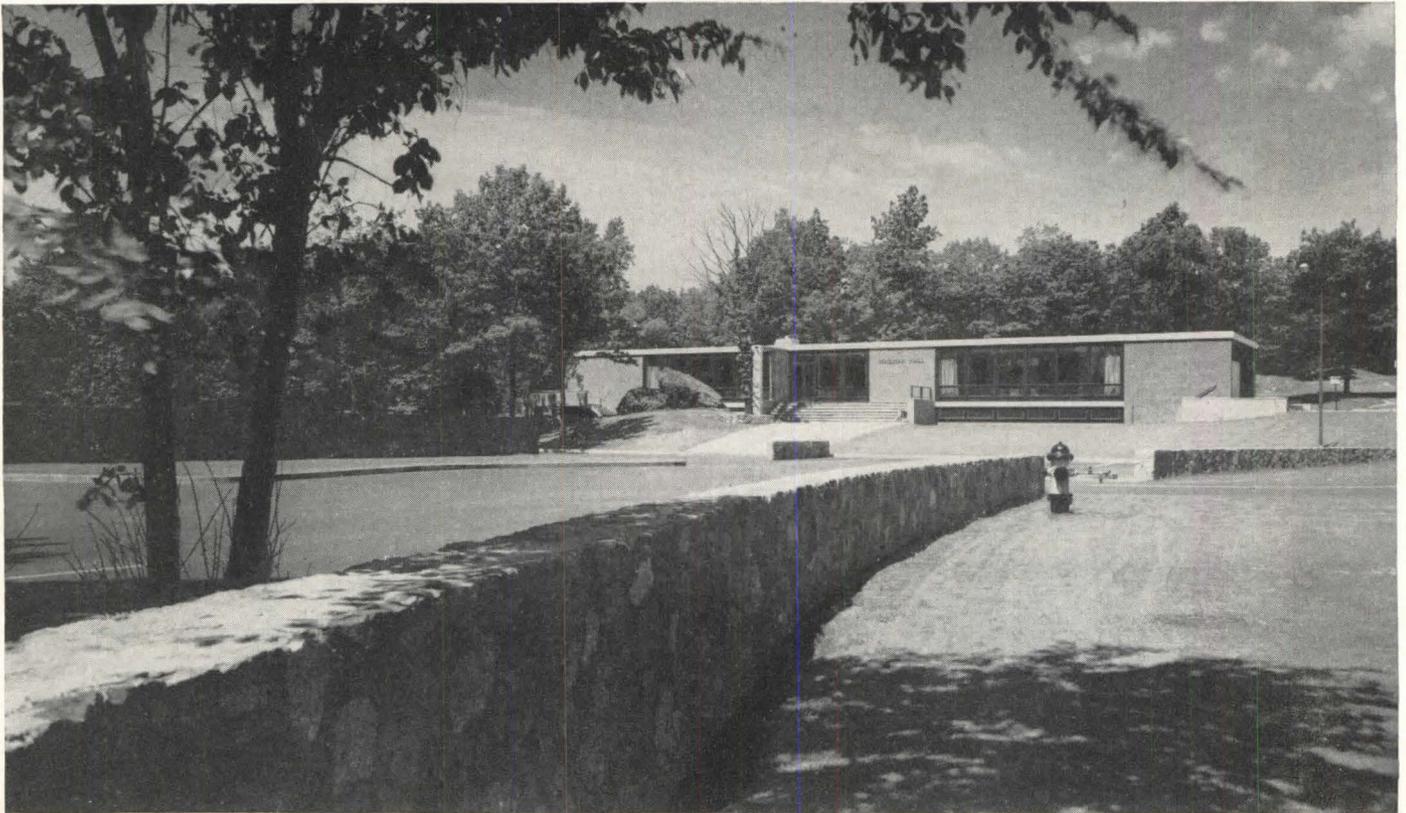
This 8500 sq ft building for the university's graduate school was built for \$220,000. On the upper floor level there are seminar rooms—as pictured below—certain pairs of which can be thrown together upon occasion. On the lower level there are faculty offices and a circular lounge. The lounge, which contains a fireplace and is comfortably furnished, is used by graduate students for relaxation when not otherwise in use for meetings, parties, informal talks by visitors, etc.

The steel-framed building has walls of red brick, fenestration of painted steel, retaining walls and terraces of fieldstone, acoustic ceilings, and rather extensive interior walnut paneling.

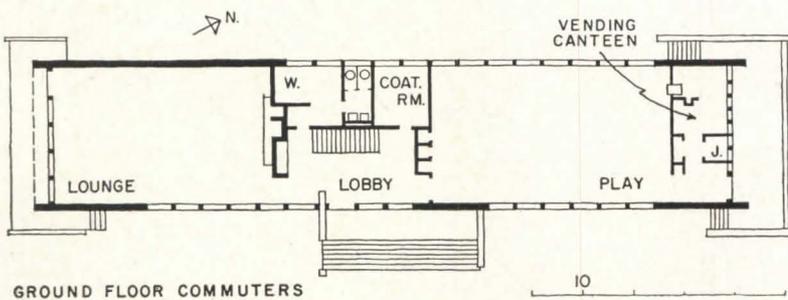
*Max Abramovitz of Harrison & Abramovitz, Architect. Linenthal & Becker, Engineers. Alice Tiebout, Interior Designer. Lilly Construction Co., Contractors.*







### MAILMAN HALL COMMUTER'S CENTER



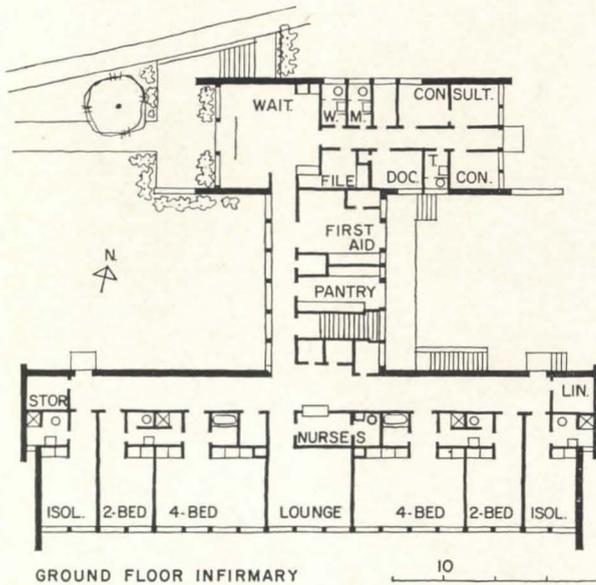
This 6550 sq ft structure, which cost \$190,000, serves as a center for day students and is thus located adjacent to a large parking area. The building contains two large lounges, a coin-operated canteen, and lockers for the commuters.

The structural steel frame is enclosed by walls of red brick and fieldstone; interior wall finishes are plaster or wood paneling; ceilings are acoustic tile; floors are vinyl tile.

*Max Abramovitz of Harrison & Abramovitz, Architect. Linenthal & Becker, Engineers. Fritz Construction Co., Contractors.*



## THE STONEMAN INFIRMARY

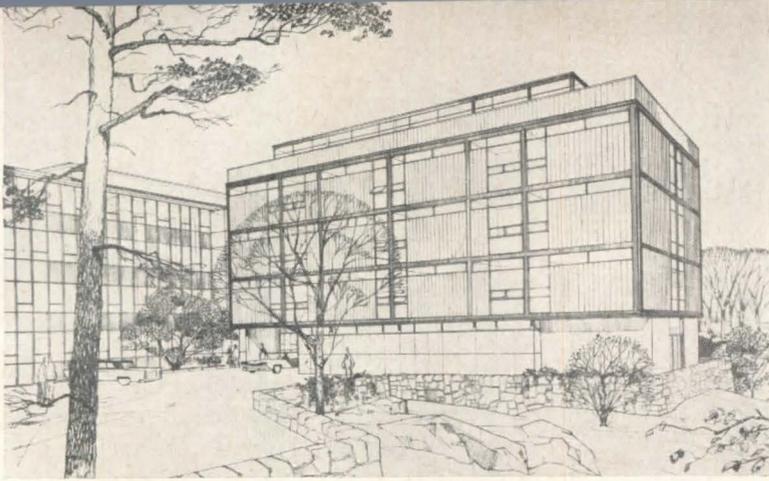


The university infirmary, which provides outpatient as well as hospital bed care for ill and injured students, was built at a cost of \$150,000. The H-shaped building contains a patient and visitor lounge, clinic, four consulting suites, first-aid treatment room, laboratory, kitchen, and beds for 16 patients. There are two isolation rooms.

The exterior walls of the steel-framed building are red brick; retaining walls and terraces are fieldstone; interior walls, partitions, and ceilings are painted plaster; floors are asphalt tile.

*Max Abramovitz of Harrison & Abramovitz, Architect. Eipel Engineering, Structural Engineers. Sears & Kopf, Mechanical Engineers. Linenthal & Becker, Utilities Engineers. Keystone Construction Co., Builders.*

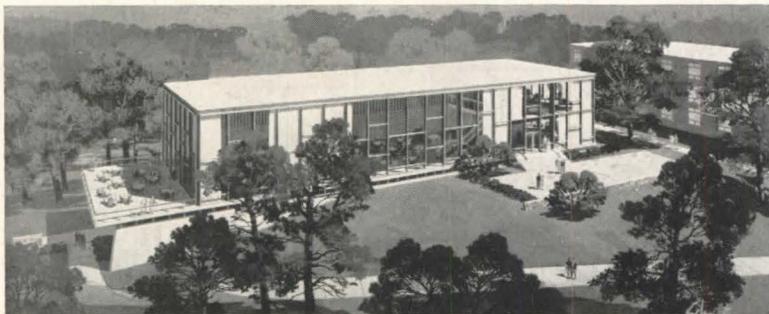




1



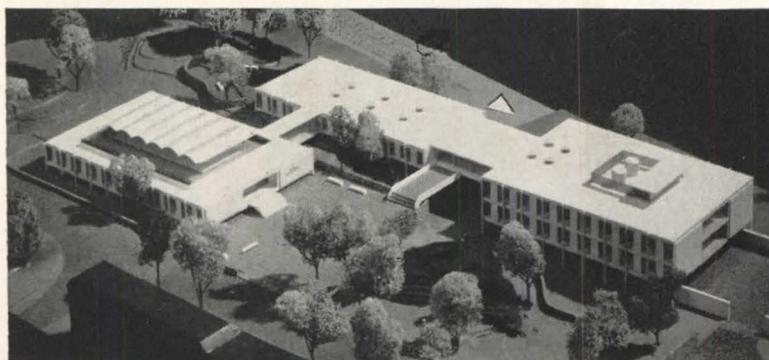
2



3



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5

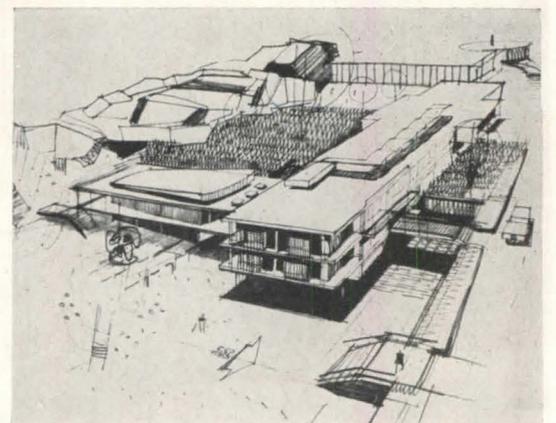


6

## Brandeis University

Buildings now under construction or very soon to be:

1. The Friedland Science Research Laboratory; Shepley Bulfinch Richardson and Abbott, Architects
2. The Goldfarb Library; Max Abramovitz of Harrison & Abramovitz, Architect; Dr. Keyes Metcalf, Library Consultant
3. The Men's Dining Hall; Max Abramovitz of Harrison & Abramovitz, Architect
4. The Faculty Center; Max Abramovitz of Harrison & Abramovitz, Architect
5. The Administration Center; Hugh Stubbins and Associates, Architects
6. Men's Dormitory Group and Dining Hall; Max Abramovitz of Harrison & Abramovitz, Architect
7. The Morris Brown Social Science Center; The Architects Collaborative, Architects



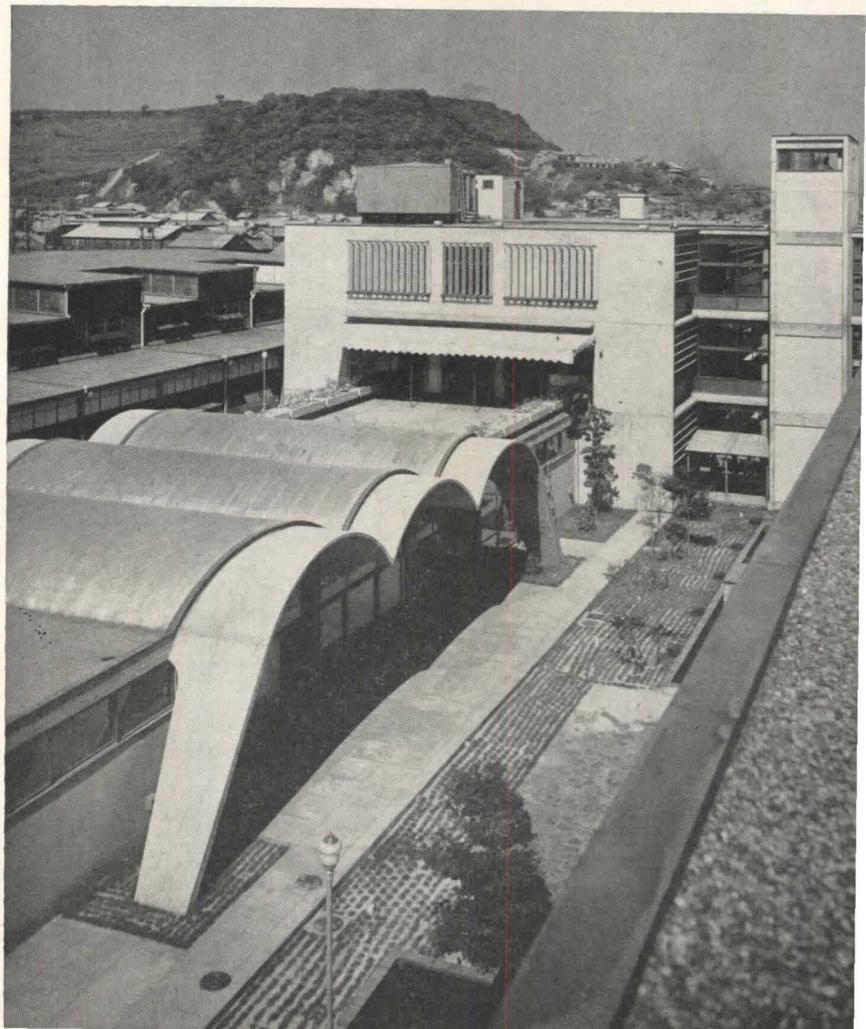
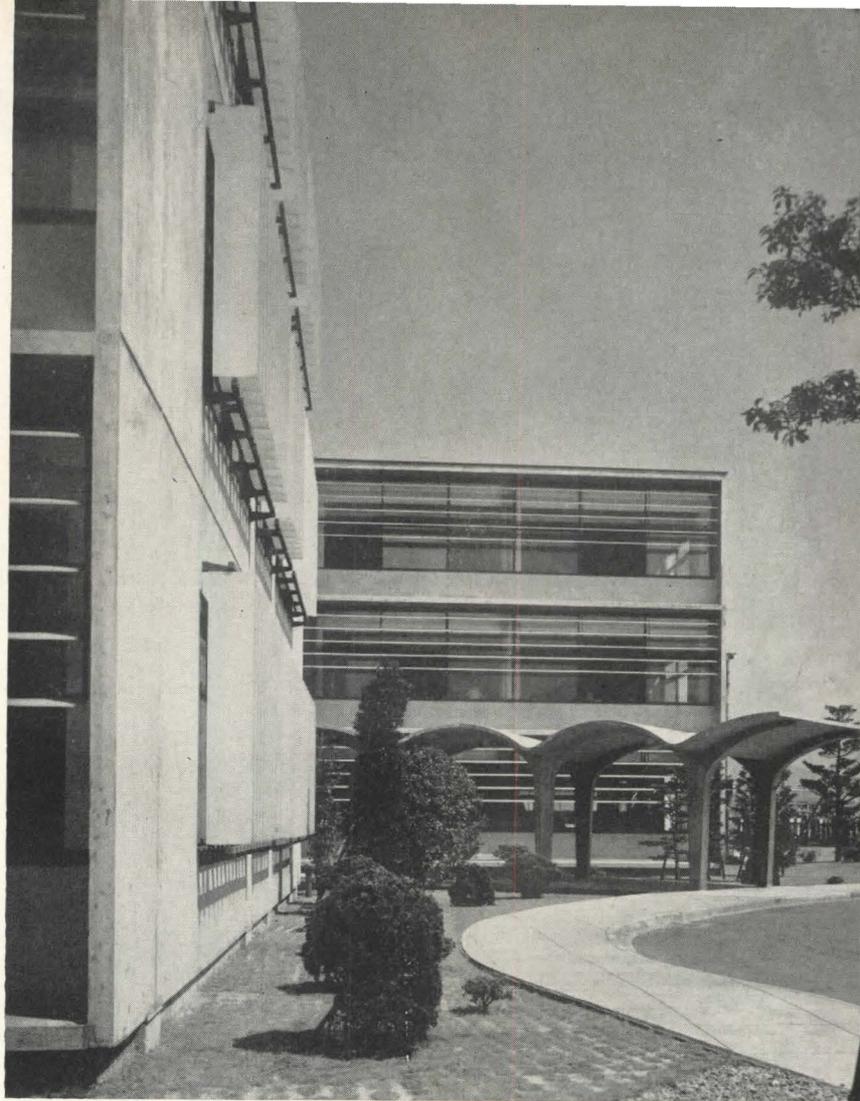
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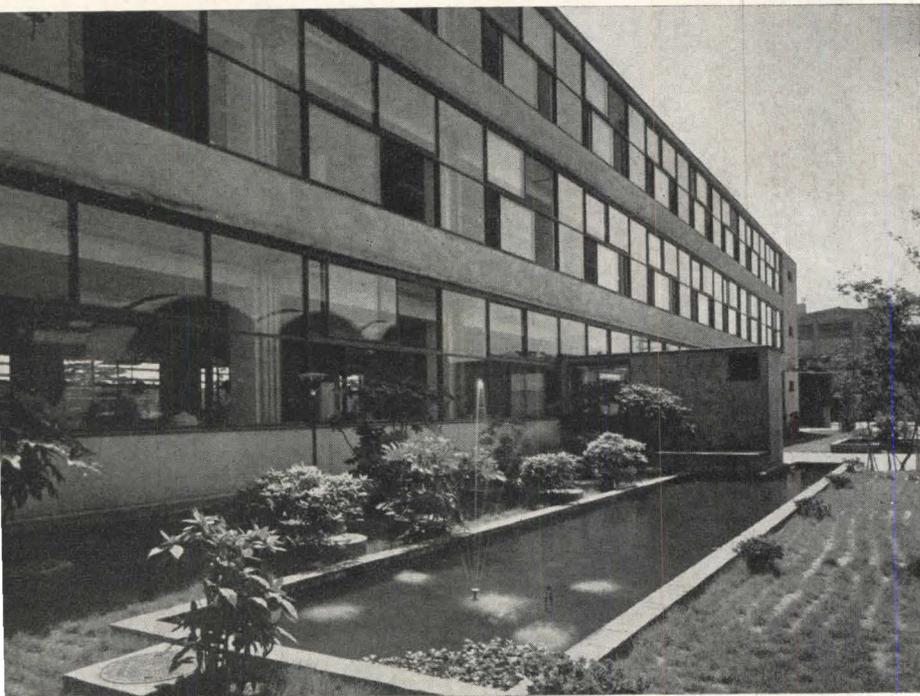
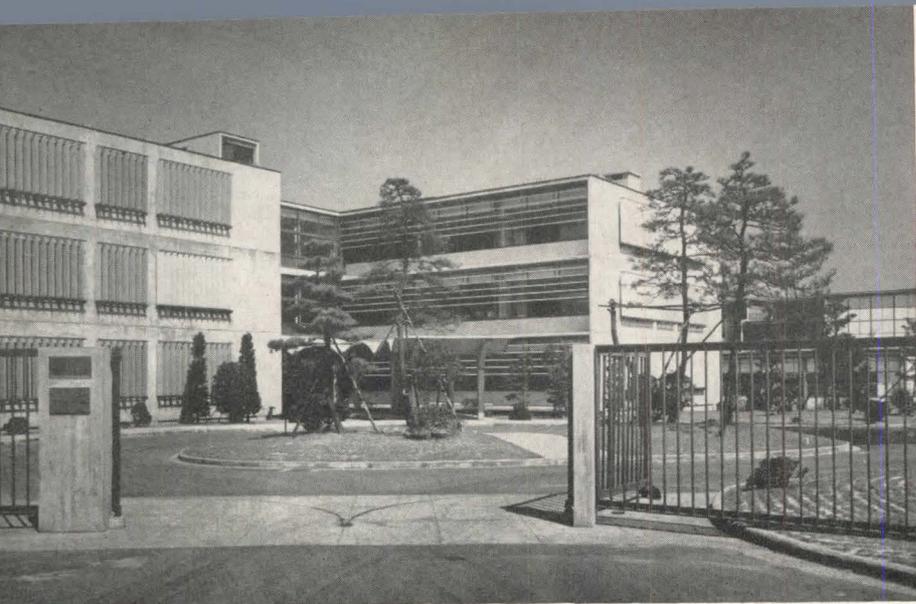
# Weather Hazards Influenced This Design

*Office Building for Yasukawa Denki K. K.  
Kyushu Island, Japan  
Raymond & Rado, Architects*

In addition to the usual considerations of esthetics and utility, the character of the prevailing weather weighed heavily in the design of this office for Japan's largest manufacturer of electric appliances and equipment. Both this office building and the company factory are located on Kyushu Island, which is occasionally mauled by 150 mph typhoons, and is in a major earthquake belt as well. The typhoon hazard necessitates a horizontal wind pressure design component of 60 lb per sq ft; the possibility of quake requires the tying together of the entire structure.

This attractive building—of concrete cast in place—is braced laterally by 6-in. concrete shear walls (serving as partitions) and braced also by the spandrel-to-sill panels. All footings are tied together by a system of grade beams and struts. Architect Antonin Raymond says the structure is built in such a manner that the entire building could be tipped on its side and suspended by a giant chain and would still continue to retain its shape and rigidity without apparent distortion.

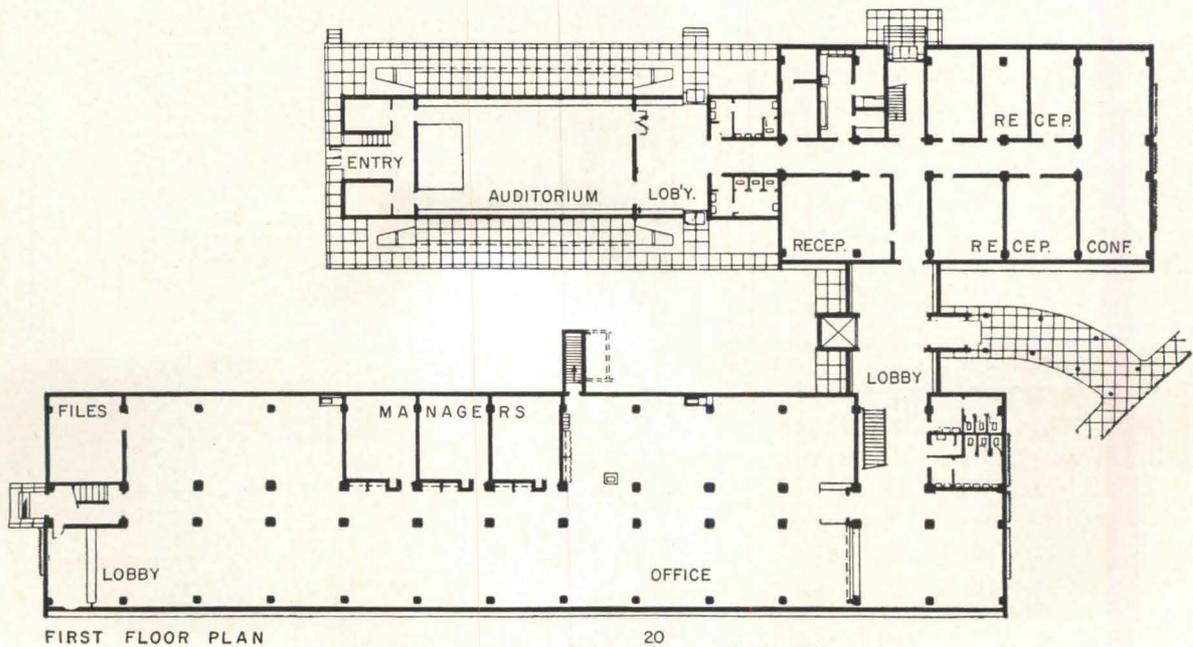


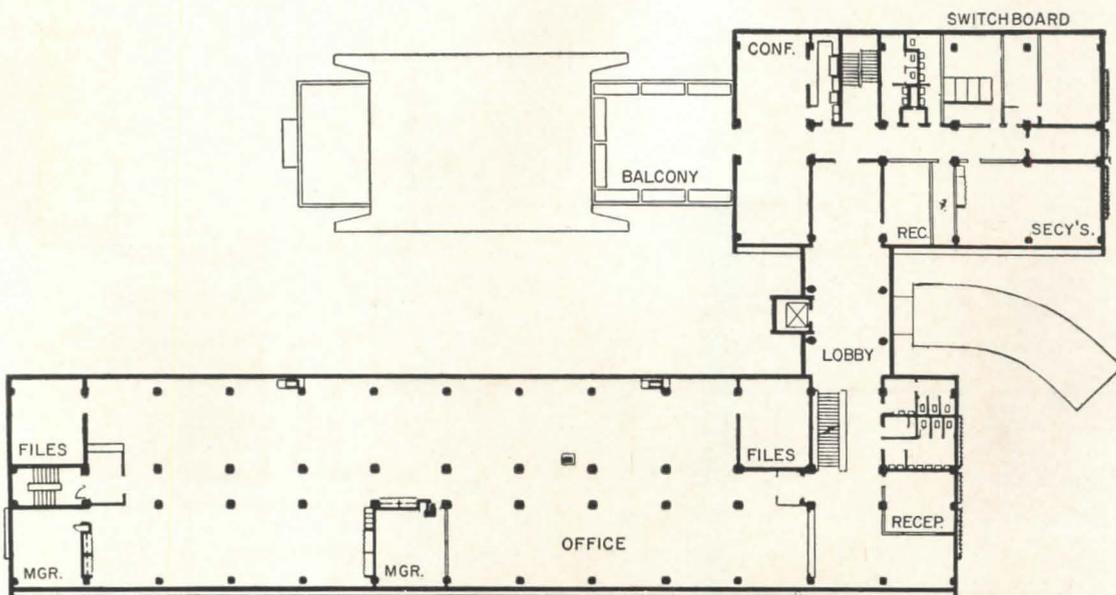
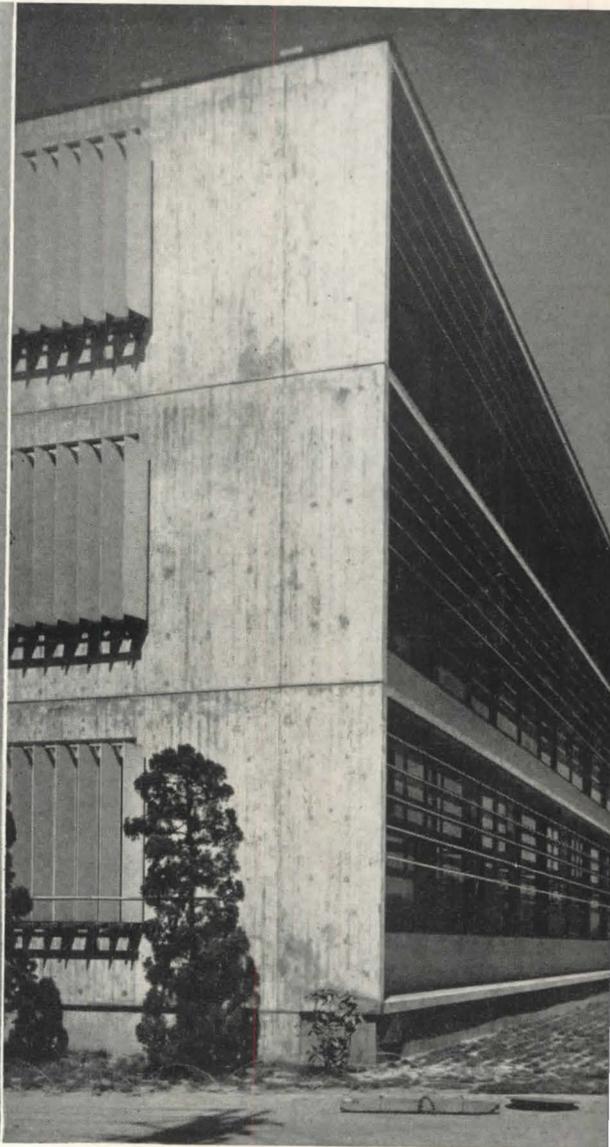
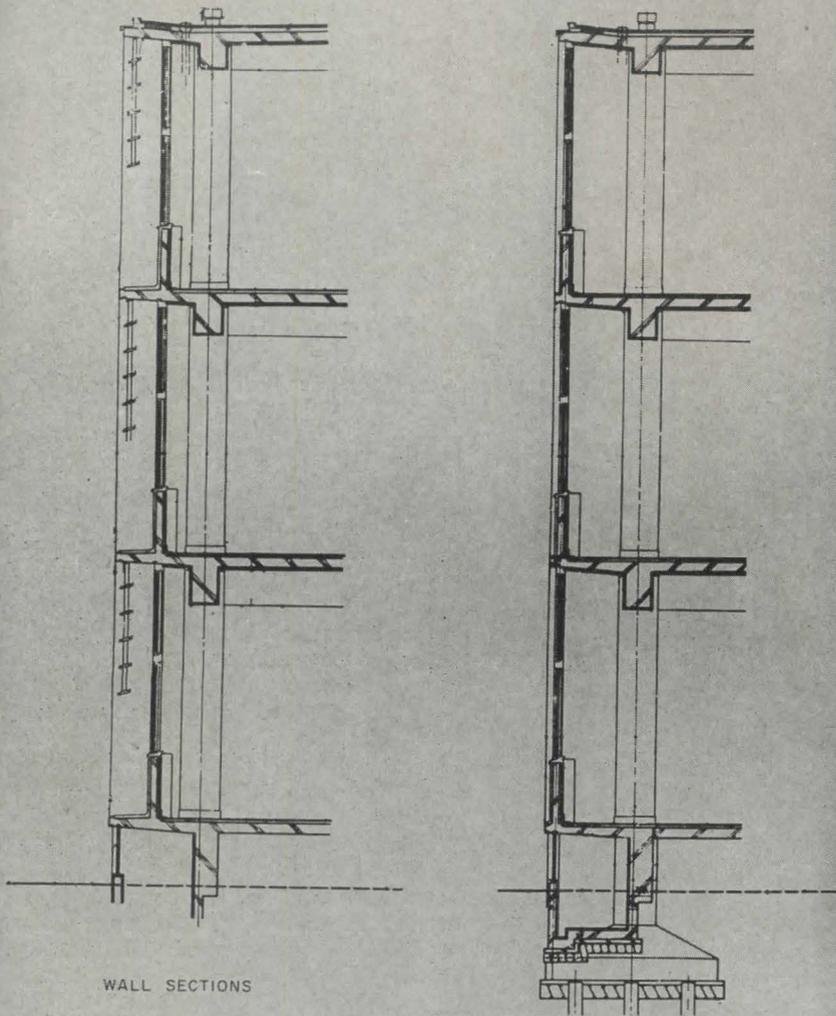


## Yasukawa Office Building

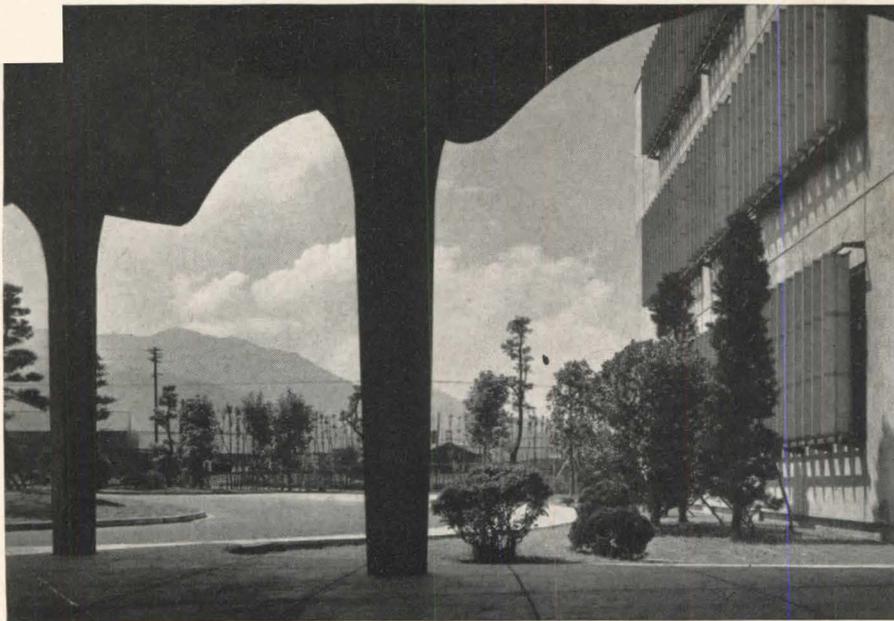
Kyushu Island—locale of the building—is devoted in large part to industrial plants and worker's homes; which means that the outlook is not the most favorable. The situation influenced the plan, which is a typical Japanese fenced-compound arrangement that looks inward upon a garden and pool.

Sun control devices—highly desirable since the building is not air conditioned—are of two types; both consisting of fixed louvers made of painted metal. On south façades the louvers are horizontal; to the east and west they are vertical; there are none to the north. Refer to the wall sections at right, which also show the manner in which the columns are set inside the glazing plane





SECOND FLOOR PLAN

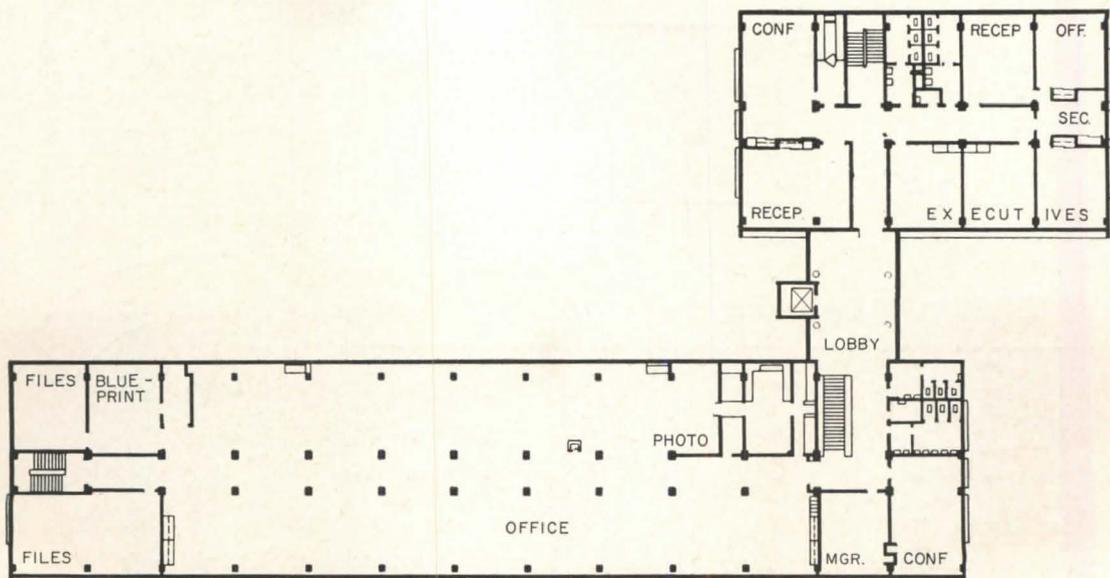


## Yasukawa Office Building

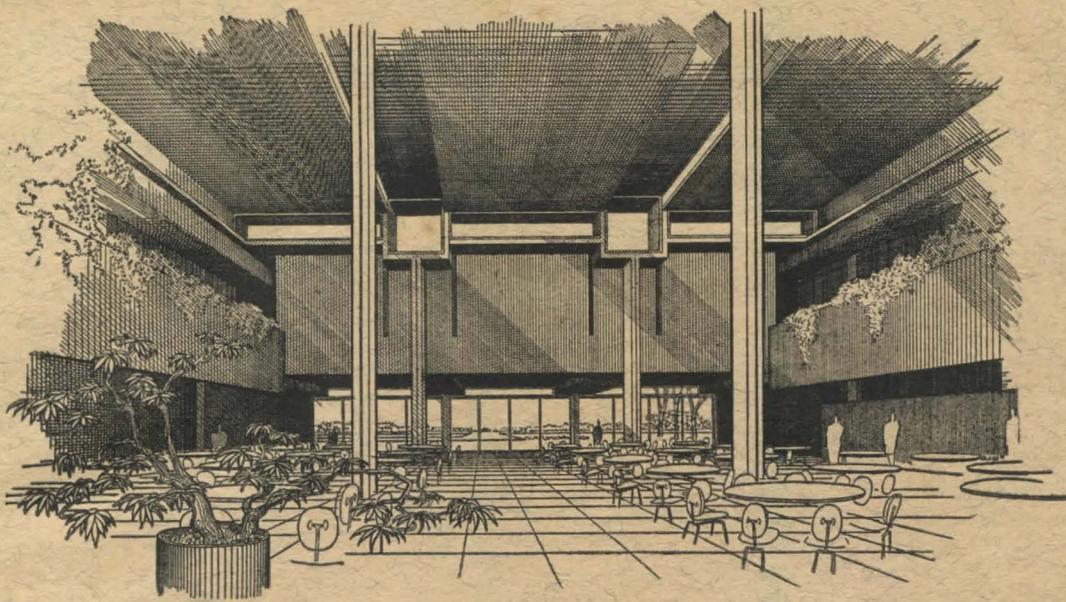
The top picture, taken in the shelter of the entrance canopy, reveals how planting has been used within the compound to ameliorate the otherwise fairly grim outlook. The graceful canopy (see also page 185) is of concrete, superbly molded and finished as a result of the highly skilled carpentry available in Japan for formwork.

The auditorium (lower photo) is enclosed within a series of thin shell vaults, 3 in. thick at their apices.

Materials and finishes: structural columns remain natural concrete; otherwise interior walls and ceilings are furred and plastered (or paneled) to furnish condensation damproofing and an air space for thermal insulation. Floors in public spaces and corridors are terrazzo; others are rubber tile. Ceilings are acoustic plaster; wall paneling, as it occurs, is of natural finish shioji wood (scrub oak). All materials and equipment are Japanese



THIRD FLOOR PLAN



## SARASOTA HIGH SCHOOL

**LOCATION:** *Sarasota, Florida*

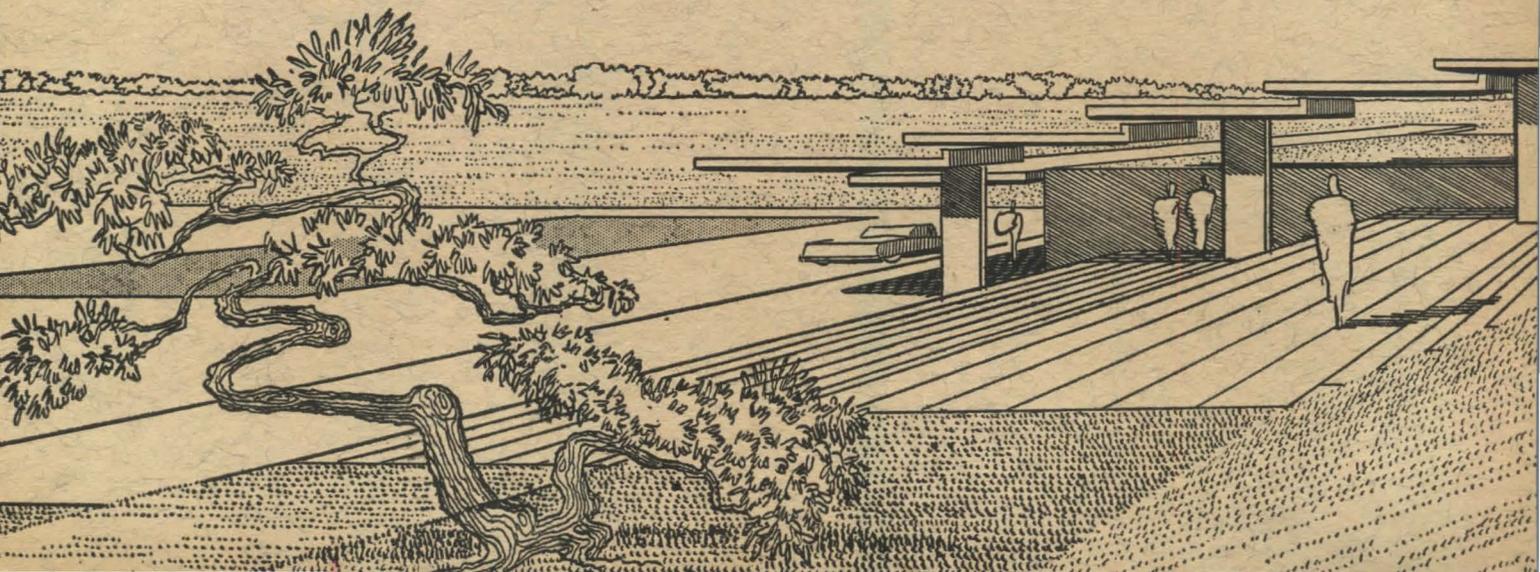
**ARCHITECT:** *Paul Rudolph*

**STRUCTURAL ENGINEER:** *Sidney Barker*

**MECHANICAL ENGINEER:** *Charles T. Healey*

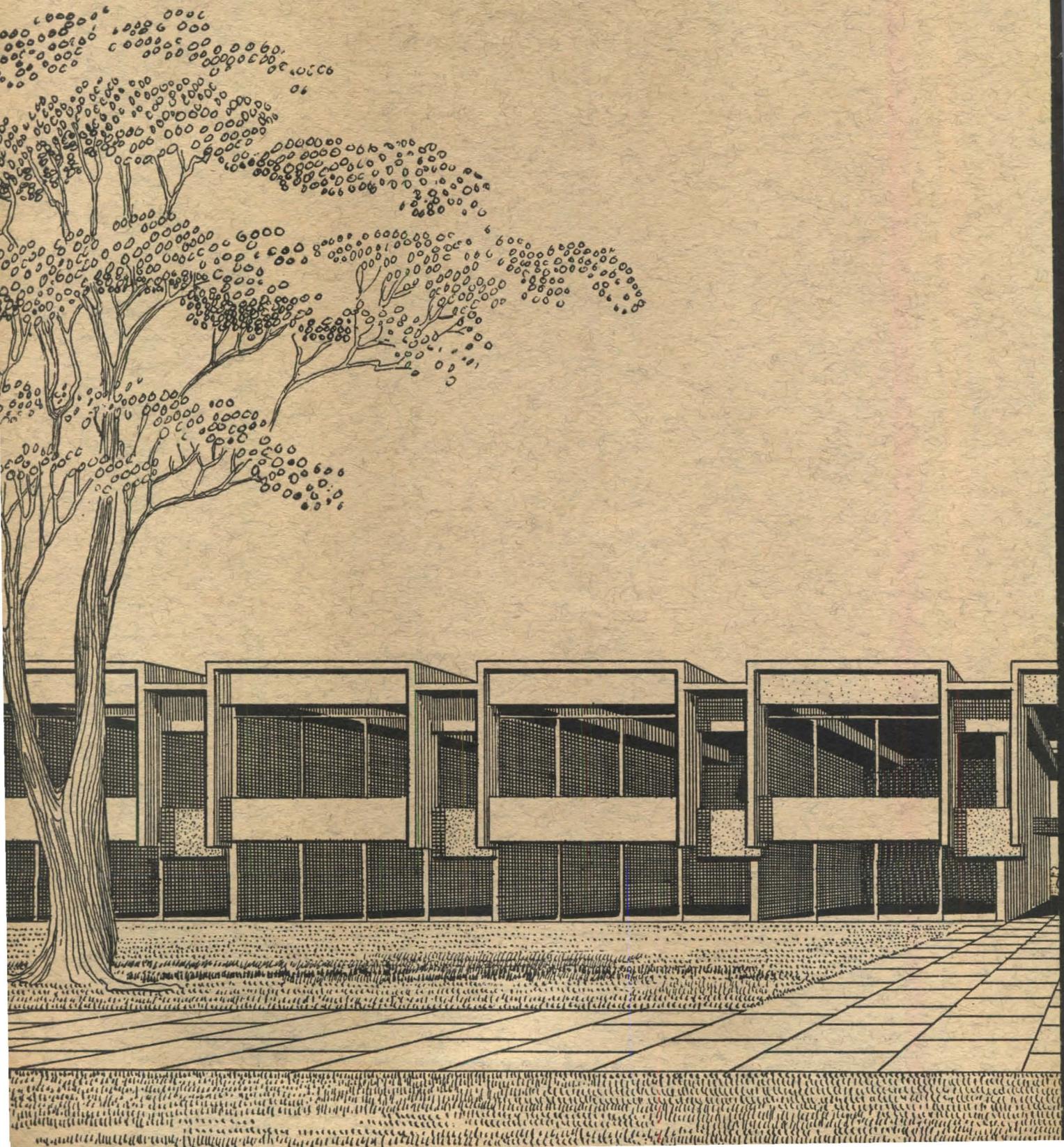
**CIVIL ENGINEERS:** *Smally, Willford and Nalven*

Construction has begun on the first phase of this high school for the Sarasota Board of Public Instruction. It shares a 67 acre site in the geographic center of town with a high school which it will eventually replace, a junior high school and a grammar school. The present phase, shown at top and bottom right, includes classrooms, music facilities, a cafeteria and gym. In the future, administrative facilities, an auditorium, library, additional classrooms and increased parking will be included. (See plot plan overleaf) *Above:* cafeteria interior is composed of nine bays three rows deep. The second floor has been omitted over the central row of bays to give height and spaciousness to the large room. *Center right:* the entrance is also two stories high and the second story classroom corridor becomes a bridge at this point connecting the classroom element on one side of the entrance with practice rooms which overlook the band and choir rooms on the opposite side. Corridor, bridge and practice rooms as structures within a structure express the design theme.



*"An effort has been made in this building to make the mechanical space eloquent and integrated into the whole, rather than an appendage cutting the pure structure indiscriminately. Mechanical systems should not render our buildings like Swiss cheese."*

PAUL RUDOLPH



# HOSPITALS

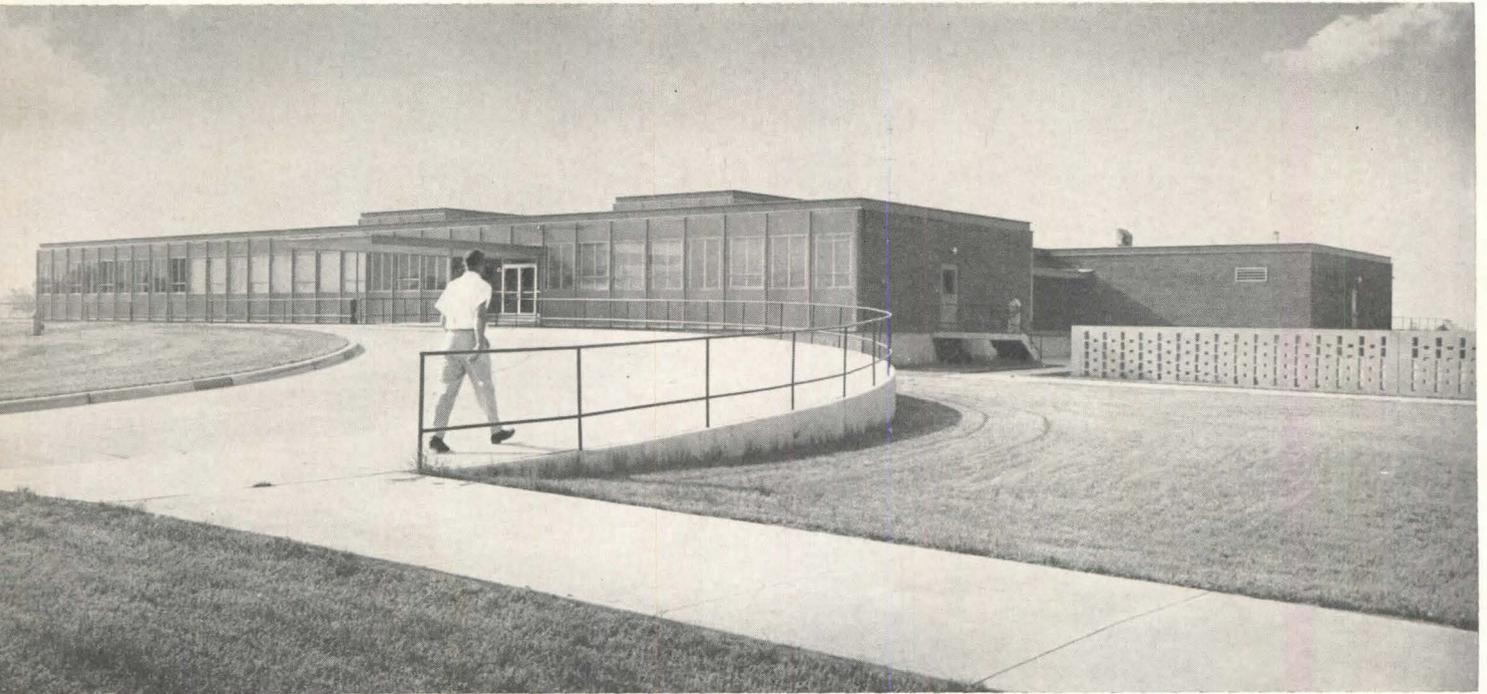
BUILDING TYPES STUDY 268

®

Buildings in this study go far to illustrate what federal hospital authorities were thinking about, years ago, when they planned the Hill-Burton program and directed it first of all toward rural communities. Most of these buildings are just such hospitals as they might have visualized: modern, well planned, well-equipped health plants where good hospital care is not only possible but in fact inspired. So many communities in rural sections had no hospitals at all, scarcely dared think of having really good care locally available. Doctors, at least in special fields, had no facilities, no inducement to enter practice in those remote areas.

Now the program has come to fruition in many outlying towns and counties, as these buildings stoutly assert. They are good hospitals, based generally on planning criteria developed by the Architectural and Engineering Branch, Division of Hospital and Medical Facilities, Public Health Service. Local architects have designed the buildings, have used their own ingenuity in interpreting criteria and meeting individual problems.

One is encouraged to note that such hospitals seem to be a bit more assertive than earlier groups in the architectural expression of the hospital necessities. If some critics would be inclined to find them perhaps too efficient-looking, too preoccupied with their shiny new techniques, their calculated stepsaving measures, not expressing the sheltered sympathy a patient might lean toward, well, so it goes in this scientific world. Maybe if skilled psychological surveys could develop just what people in general demanded of hospitals it would tend toward the scientific, not the hand-patting. At any rate, these are very representative hospital buildings, and one should have to say, not at all bad.



A P I photos

## A Clean Little Hospital for an Air Force Base

*Hospital for Blytheville Air Force Base, Memphis, Tenn.  
A. L. Aydelott and Associates, Architects and Engineers*

Here is an exceptionally clean little hospital, clean architecturally as well as medically. As an air force base hospital it is not, of course, substantially different from any general hospital of comparable size, since it serves a total community at the base. Present capacity is 25 beds, its chassis being large enough for expansion of the hospital to a 50-bed capacity. The expansion would be accomplished by just filling in the outlines of the plan at 25-bed stage; most of the additional bed capacity would be in eight-bed wards added onto the present ward unit. Main plan of the hospital portion would not be changed importantly, if at all, most of the rest of the growth needed being in offices, dining facilities, storage and so on.

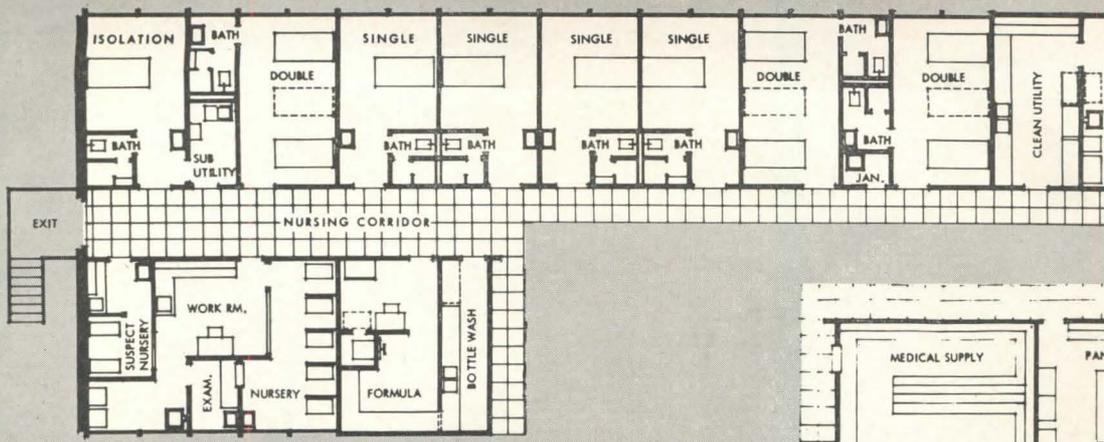
Architecturally the design makes much of a system of wall panels, with essentially two types of materials. Main window wall panels are prefabricated of enameled iron; end walls are of cavity wall

construction, outside wythe of 4-in. hard burned clay brick; inside wythe lightweight concrete block.

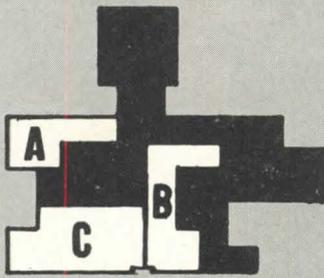
The building is set on concrete footings and suspended concrete slab on concrete piers, beams and grade beams. Interior partitions are of metal lath over steel studs and glazed structural facing units. The roof is 3-in. vermiculite slab over steel joists supported by steel column and beam frame.

Inside the typical floor and base is of vinyl plastic, the walls and ceilings are plastered, with non-combustible acoustical tile on many of the ceilings. Special floors, bases and wainscots are of ceramic tile. Doors have metal bucks and wood doors.

The building is air conditioned throughout. The central core area has a combination forced warm air heating and air conditioning system supply ducts above furred ceiling, returns in crawl space below the floor. Outside rooms have unit ventilators below the windows at outside wall with a system of hot water, chilled water piping providing hot water for heating in winter and chilled water for cooling in summer weather.

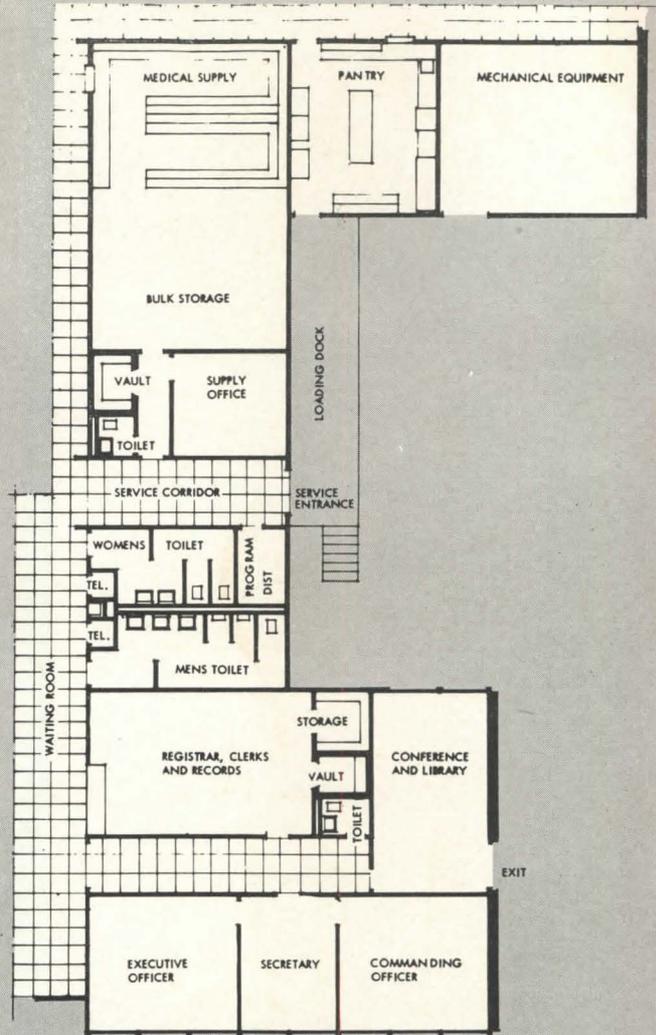


**A NURSING UNIT (PRIVATE & SEMI - PRIVATE) & NURSERY**

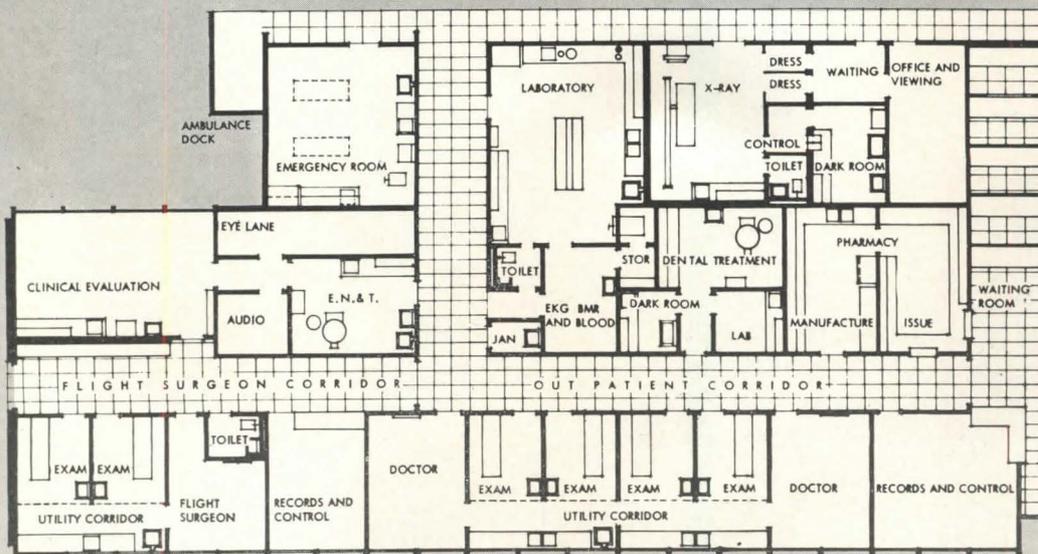


KEY PLAN

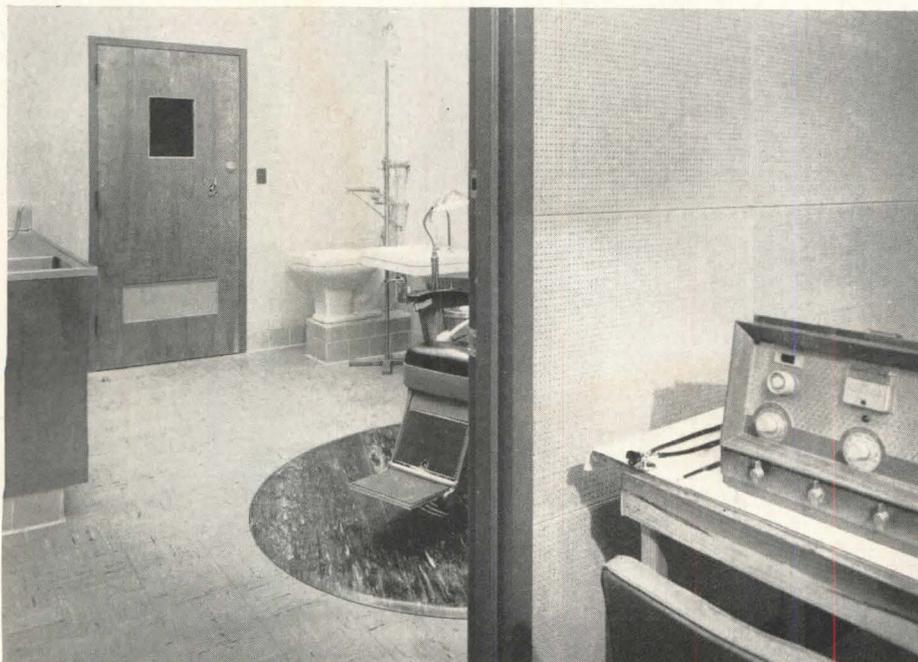
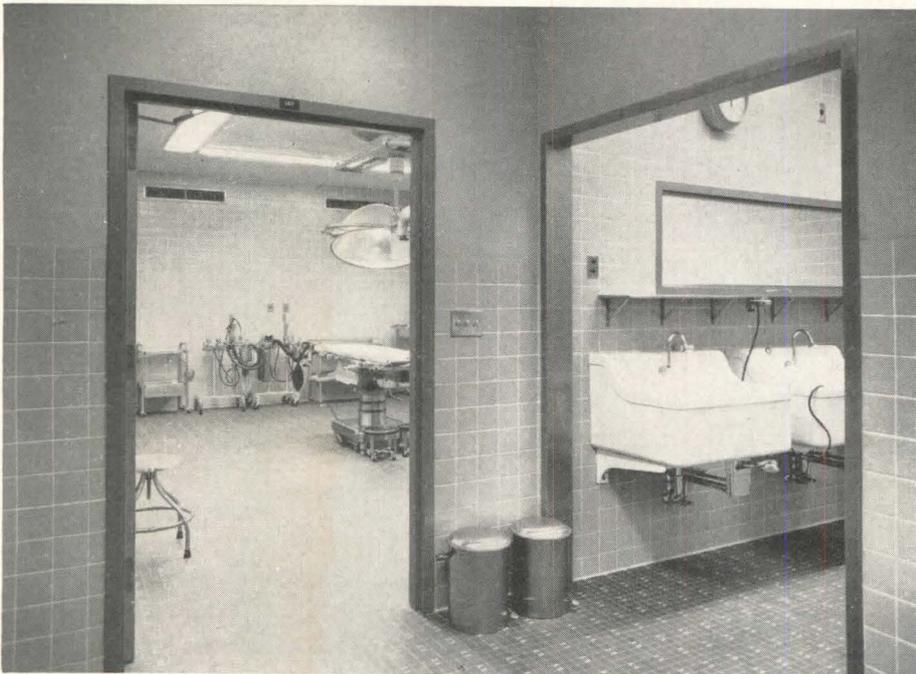
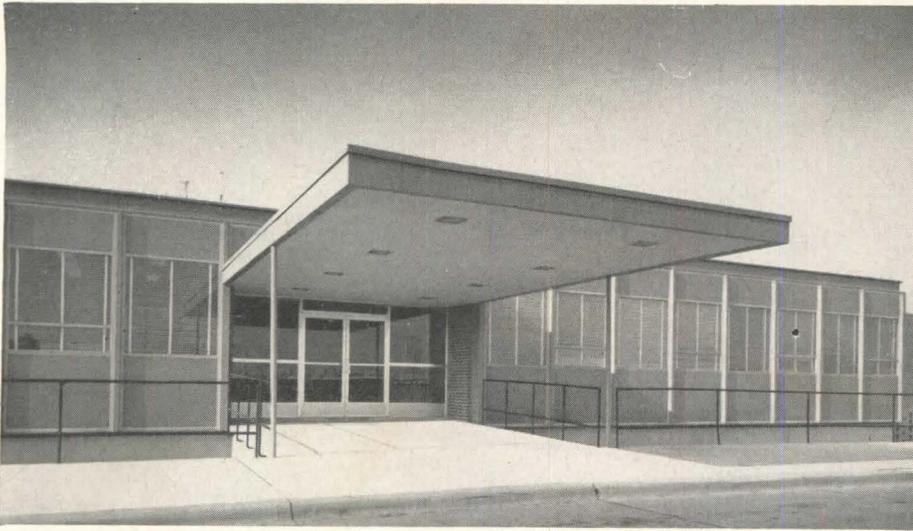
Above is the nursing unit of the 25-bed scheme, that is, the private and semi-private rooms and the nursery; there is also, in the top wing of the diagrammatic plan, the start of the ward wing, containing at present two four-bed wards and one eight-bed. At the right is the administration and service wing of the 25-bed scheme; and at the bottom the out-patient and adjunct facilities section, also of the 25-bed stage. Operating suite and delivery suite, plus central sterilizing, take up the space between the out-patient department and the nursing unit shown above



**B ADMINISTRATION AND SERVICE 25 BED STAGE**



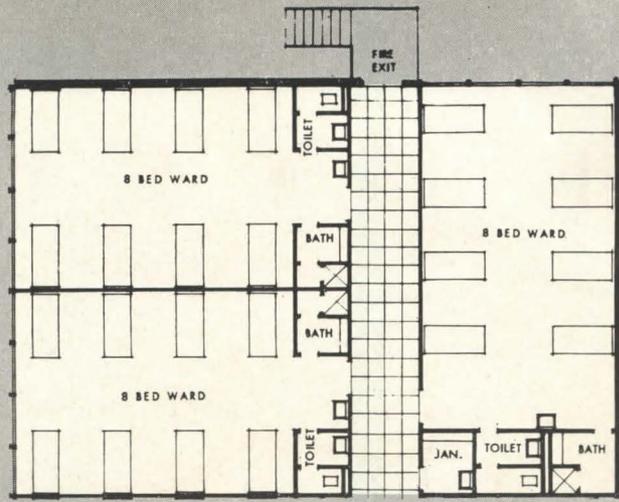
**C OUTPATIENT AND ADJUNCT FACILITIES**



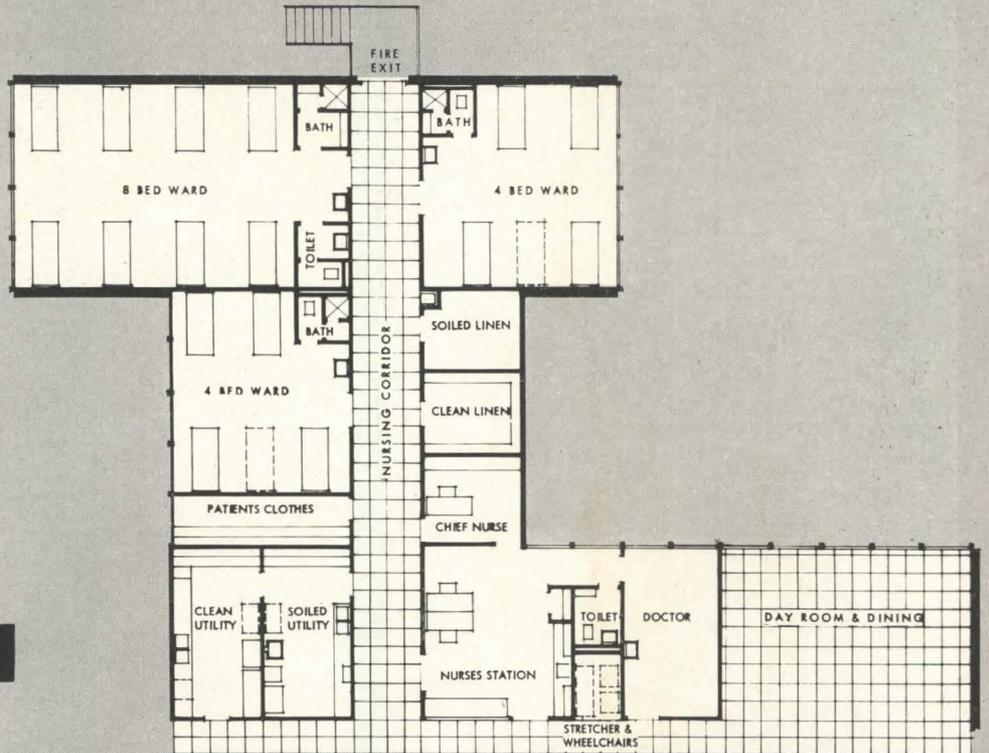
## Hospital for Blytheville Air Force Base

*Upper left:* main window walls are of prefabricated enameled iron panels set in steel sash frames. View shows main entrance, which opens in bottom of the plan diagram at outpatient department. *Center view* looks into main operating room, also into scrubup alcove. *Lower view at left* shows the ear, nose, and throat operating room, audio room at right of the photograph

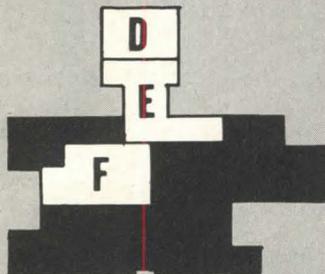
*Opposite page:* plans at upper part show the ward section of the plan at both the 25- and 50-bed stages. The three eight-bed wards to be added in the expansion would virtually double the capacity of the hospital. Plan at bottom shows an interesting scheme to combine the operating suite and the delivery suite in one unit and yet to keep them isolated from each other for aseptic control



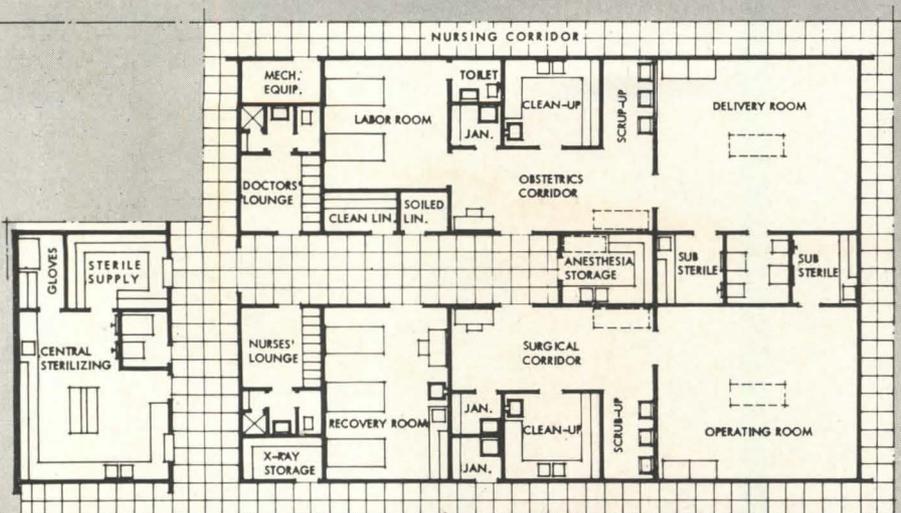
**D** NURSING UNIT (WARDS) 50 BED STAGE



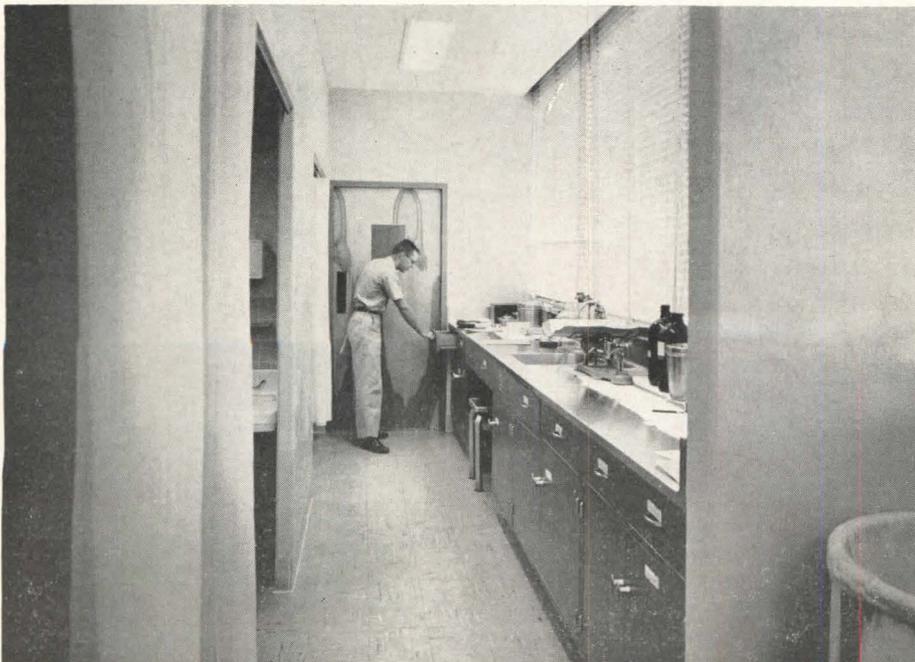
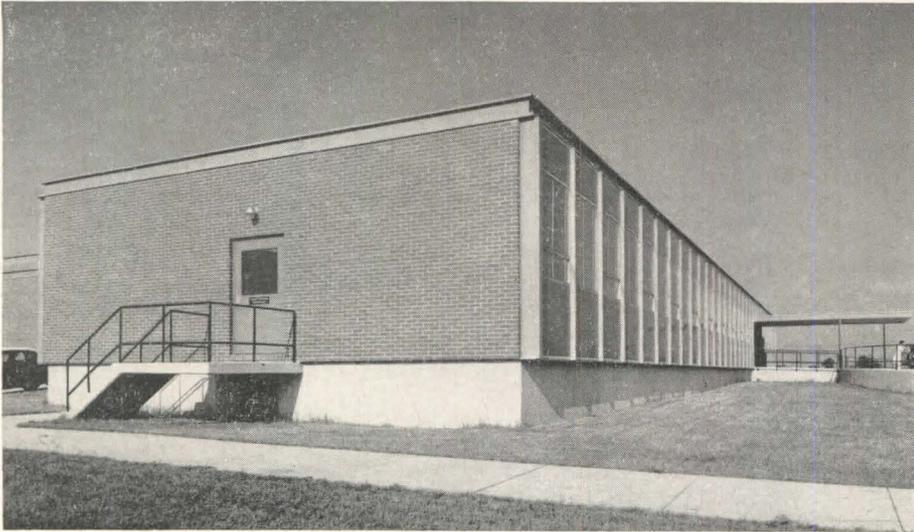
**E** NURSING UNIT (WARDS) 25 BED STAGE



KEY PLAN



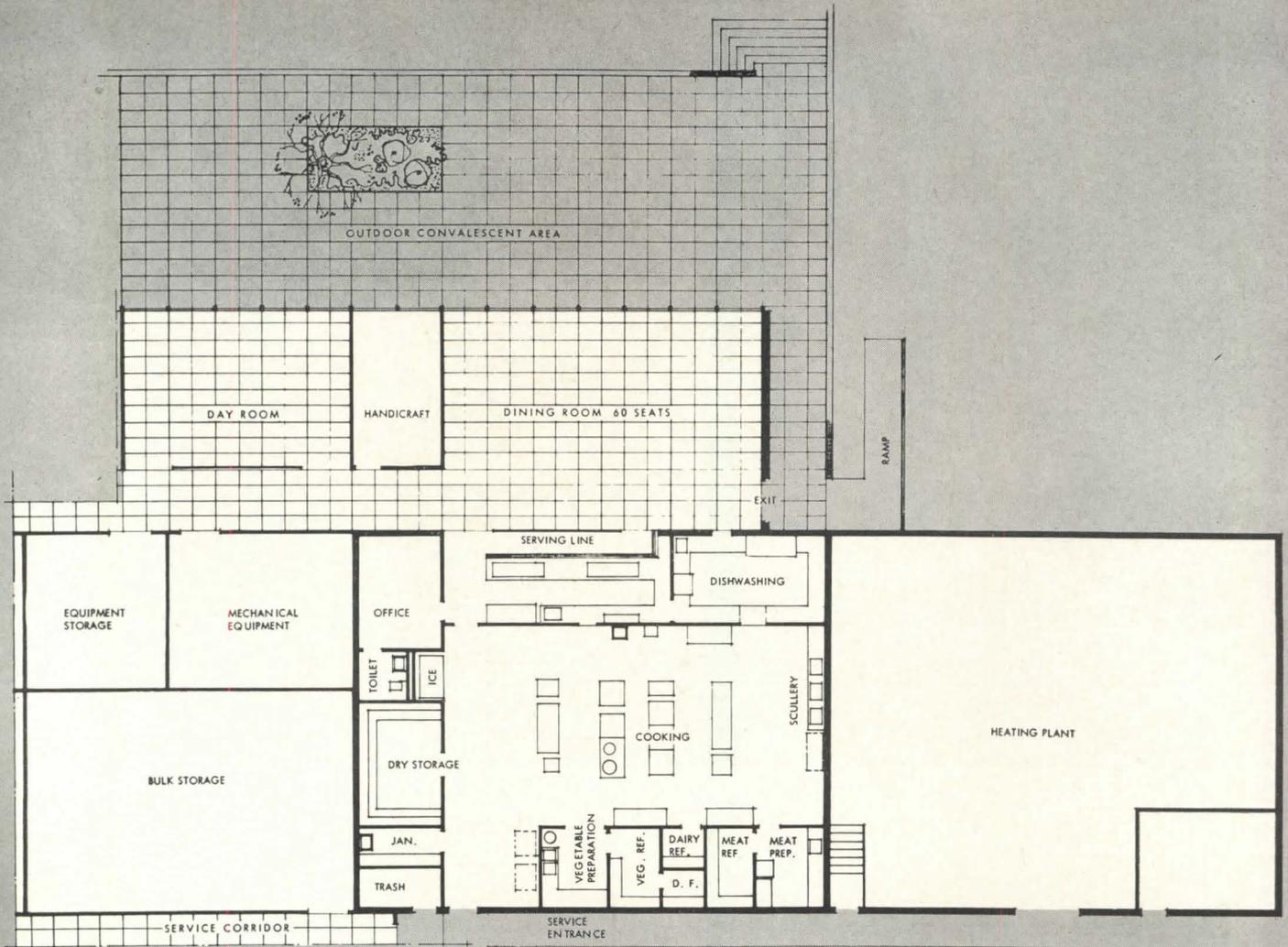
**F** SURGICAL AND OBSTETRICAL SUITES



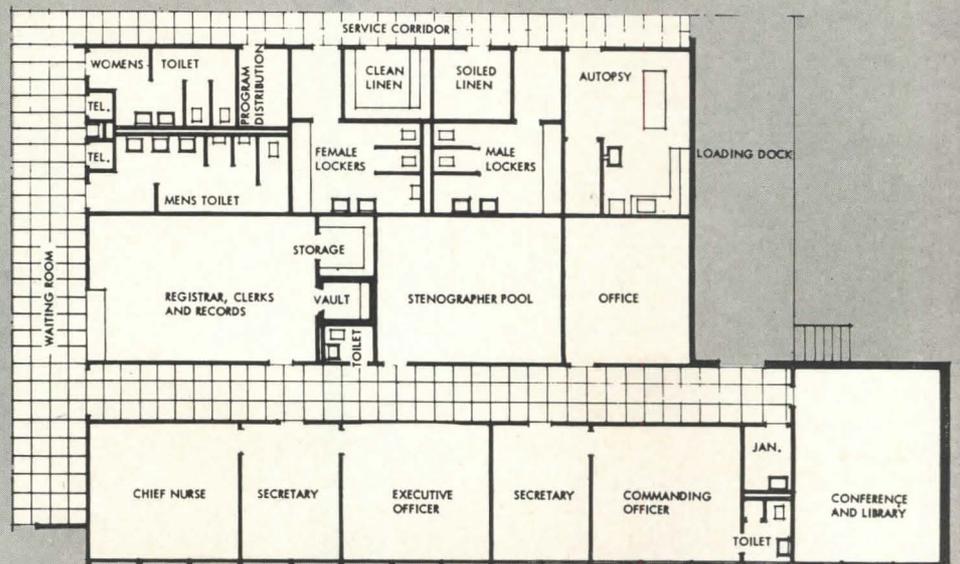
## Hospital for Blytheville Air Force Base

*Upper left:* end walls are of cavity wall construction, exterior panels of hard burned brick. They are neatly enclosed by enameled iron fascia and end of panel walls, to join well with window wall panels. *Left center:* view of central sterilizing room, shown in plan on preceding page. View in lower left shows utility corridor behind examining rooms in the flight surgeons suite

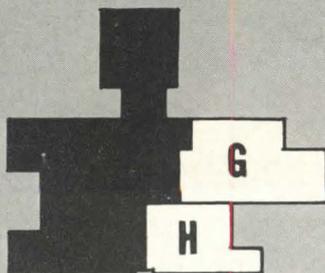
*Opposite page:* the plans shown here take a couple of the service areas to the 50-bed stage. The dining room fills in an area of the earlier stage plan left empty and involves some arrangement of the boiler room for the kitchen. The new office portion at the bottom of the page represents a considerable expansion of offices, addition of the library-conference room, plus morgue and record storage



**G** SERVICE FACILITIES 50 BED STAGE



**H** ADMINISTRATION 50 BED STAGE



KEY PLAN



Dewey G. Mears photos

## Large General Hospital with Several Innovations

*Wadley Hospital, Texarkana, Texas. Page, Southerland & Page; Reinheimer & Cox, Associated Architects; Gordon A. Friesen Associates, Hospital Consultants; B. Segal, Mechanical Engineer; Frank B. Johnson, Mechanical Engineer; Montgomery & Williams, Civil Engineers; Boner and Lane, Acoustical Consultants*

Here is a hospital that will justify close study. Circulation and departmentalization problems are exceptionally well worked out, to separate different types of traffic, to isolate hospital units by types of activity, and to protect certain departments from invasion by people and germs. Also the hospital has a number of innovations: a psychiatric section; a central control and dispatching system for all hospital supplies; a 50-bed nursing unit arrangement in a double-corridor scheme.

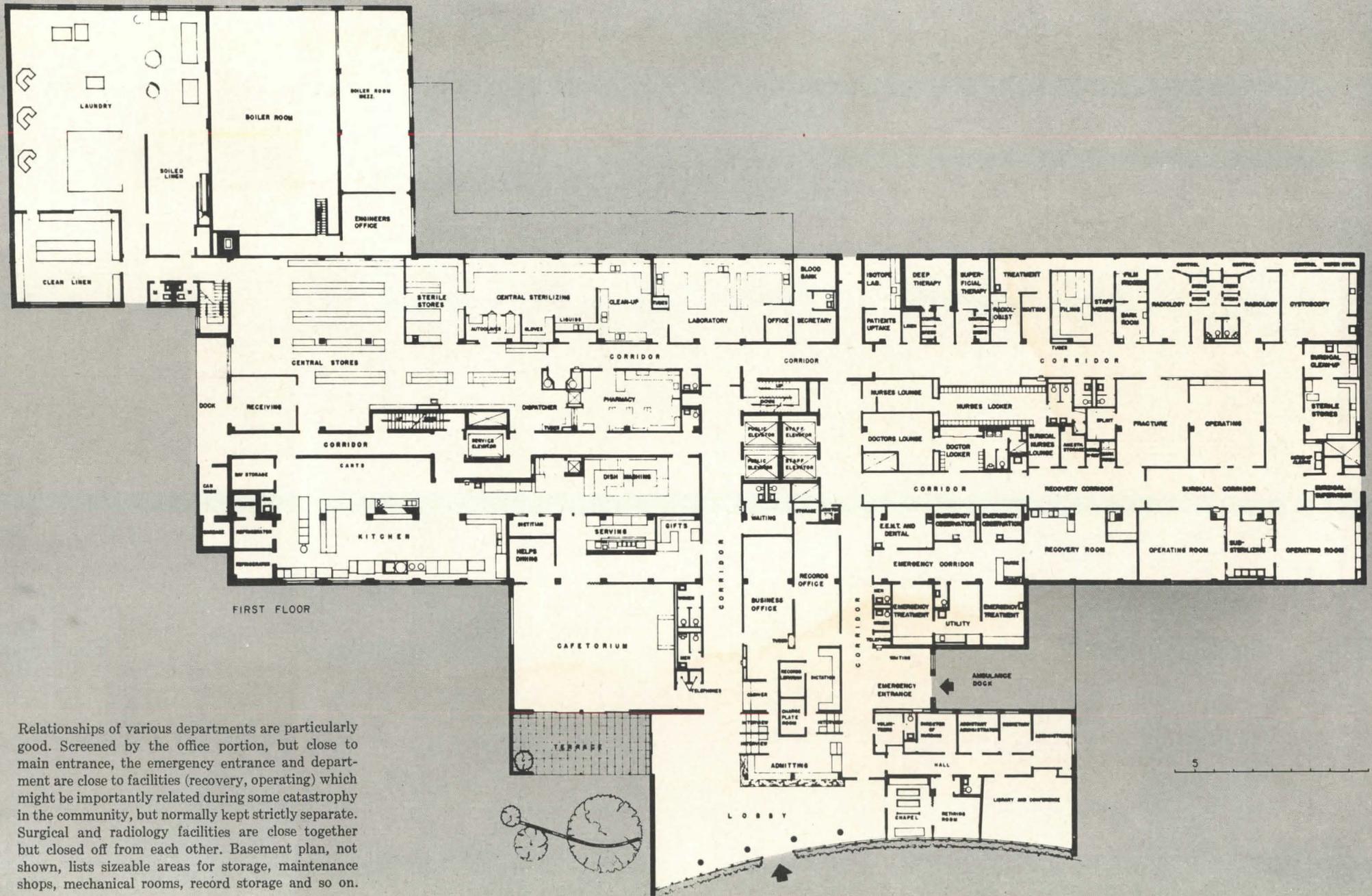
The hospital is now a 180-bed facility, expandable to 300 beds by the addition of new nursing floors. It replaces an old 50-bed hospital, which will be converted into a long-term convalescent unit to be operated along with the new hospital.

As for the general scheme, the first floor is expanded to contain most of the heavy-traffic areas, adjunct facilities and operating suite. These disparate types of areas are well separated and grouped. Notice especially the separation of public and staff elevators and corridors. A visitor can get to an upper floor room without seeing anything more distressing

than a few offices, gift shop or "cafetorium" and staff personnel are free to go their own ways without interference from wandering visitors. Upper floor corridors are also arranged (with the help of the double-corridor plan) to keep working areas bunched together and isolated. First floor plan divides roughly in half, with kitchen, stores, laundry and such at one end, medical facilities at the other. Laundry and boiler room are nicely banished in a rear projection. Above the first floor the building reduces to the dimensions of a 50-bed nursing unit, plus some special department on each floor: delivery suite, nursery, pediatric unit (on third floor, plan not shown), and psychiatric nursing unit. Elevators are so placed that one end of each floor can be cut off for these special facilities, reachable by staff elevators but not by public ones.

On the first floor plan, between pharmacy and stores, is a dispatcher's office, central focus of a supply control system developed by the hospital consultant. This office is staffed round the clock, and the dispatcher is responsible for all supplies for all areas. Deliveries are by tube system, dumbwaiter or cart, normal deliveries being made in light-traffic hours.

The psychiatric section represents a forward step, particularly in this community. There is no mental facility within 75 miles, and only after inclusion of this section in the plans was it possible to induce a psychiatrist to locate in the community.



Relationships of various departments are particularly good. Screened by the office portion, but close to main entrance, the emergency entrance and department are close to facilities (recovery, operating) which might be importantly related during some catastrophe in the community, but normally kept strictly separate. Surgical and radiology facilities are close together but closed off from each other. Basement plan, not shown, lists sizeable areas for storage, maintenance shops, mechanical rooms, record storage and so on.



### Wadley Hospital

Hospital presents a commodious and pleasant main entrance to visitors; backed by nothing more sinister than offices. Large turnaround leads to visitor parking; there are separate parking areas for staff and for employe cars. Center photograph at the left shows interview booths, acoustically treated. From the main kitchen food service to patients' rooms is by heated food carts, via elevators



Hedrich-Blessing photos

## Small Hospital for a Rural Community

*McDonough District Hospital, Macomb, Ill. Lankton-Ziegele-Terry and Associates, Architects; Gerhard Hartman, Ph.D., Hospital Consultant; Beling Engineering Consultants, Mechanical Engineers; Alfred Benesch and Associates, Structural Engineers; S. Patti Construction Co., General Contractors*

One of the heavily stressed objectives of the Hill-Burton program of the federal government is to get better hospital facilities in outlying districts. This hospital is the direct result of such purpose, following creation of a hospital district to build and operate a hospital in an area not previously served.

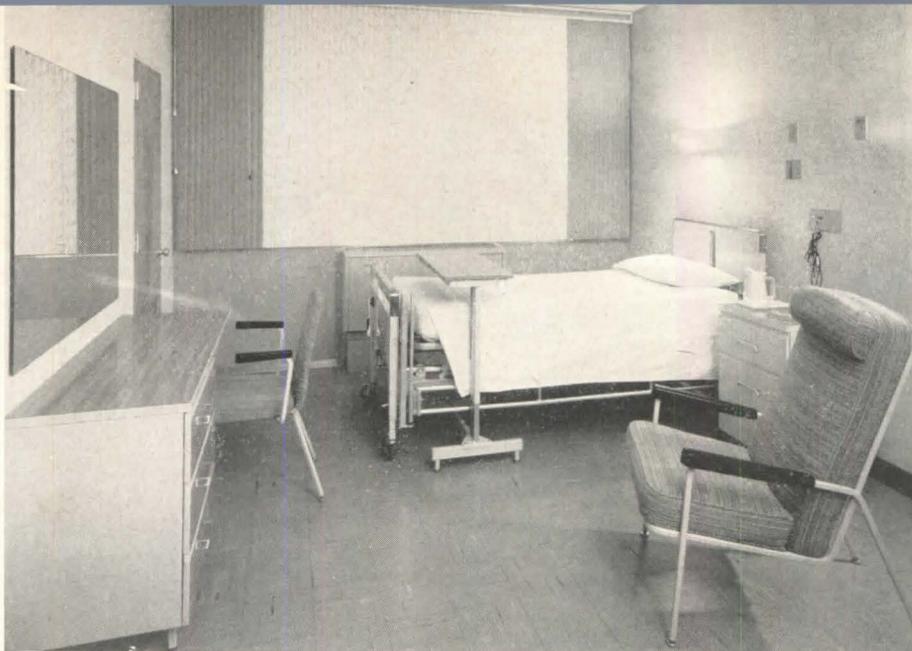
The architects make much of the fact that both they and the hospital consultant were named long before the selection of a site, and that the administrator was on the job a year and a half before completion of the building.

The hospital is a nominal 50-bed hospital, but all its basic facilities—kitchen and dining, operating, delivery, adjunct facilities, and so on—are adequate for a much larger building. Though present size should be sufficient for the next ten years or so, vertical expansion could add bedrooms at any time without disturbance to the working of the hospital.

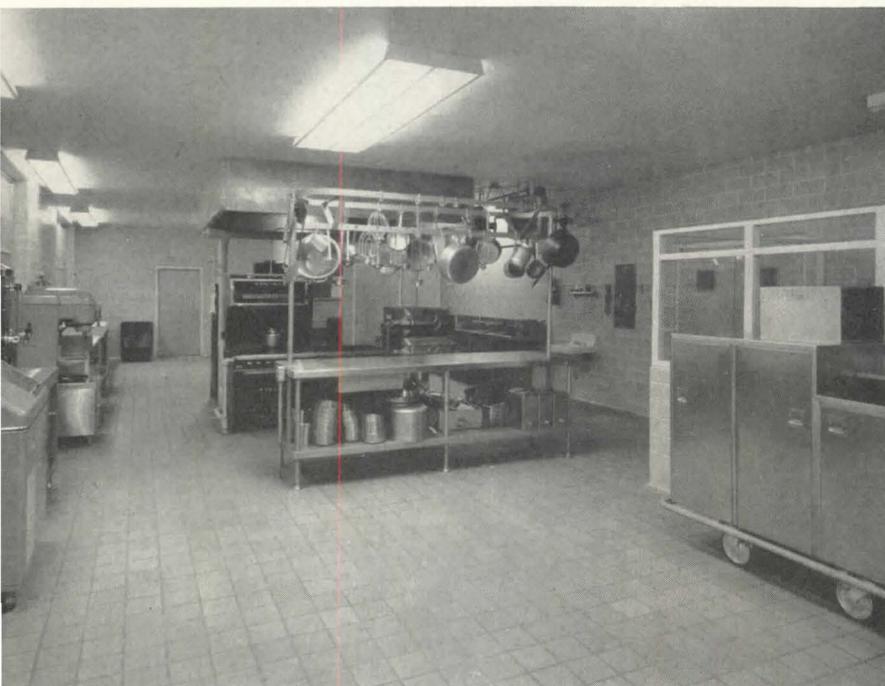
Moreover, on the nursing floors the nurses' station and other facilities are so placed that wings can be sent out horizontally to complete the same cruciform plan as on the lower floors.

"It will be noted," say the architects, "that the plan of the hospital indicates that all patient rooms are semi-private rooms; in other words, one or two beds can be installed in each room. Each has its own toilet room, clothes locker, drawers and built-in vanity. Wallpaper was used on one wall of each patient room to add to the decorative effect. All patients' bathrooms are tiled, both floor and side wall. An extensive communication system between nurses' stations and patient rooms provides for good communication between these points. A great deal of attention was given during the planning to make the patient rooms as comfortable and cheerful as possible.

The building is completely air conditioned throughout. Costs are given as \$24.42 per sq ft, for 87,942 sq ft; and \$1.958 per cu ft, for 1,096,474 cu ft. These costs include all construction costs, built-in equipment such as sterilizers, kitchen equipment, built-in refrigerators, mortuary refrigerator and so on.

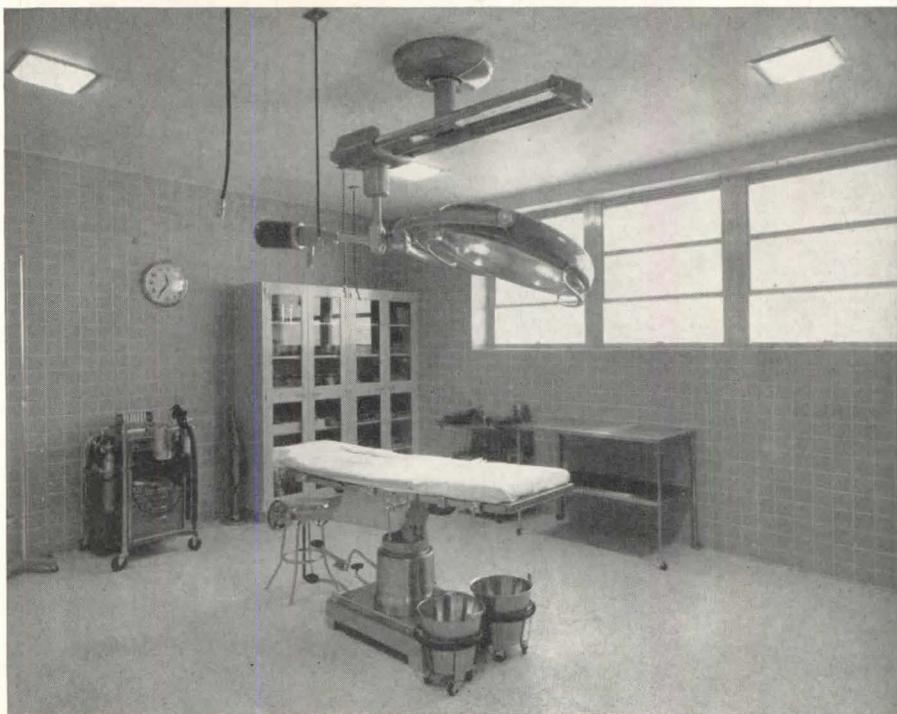
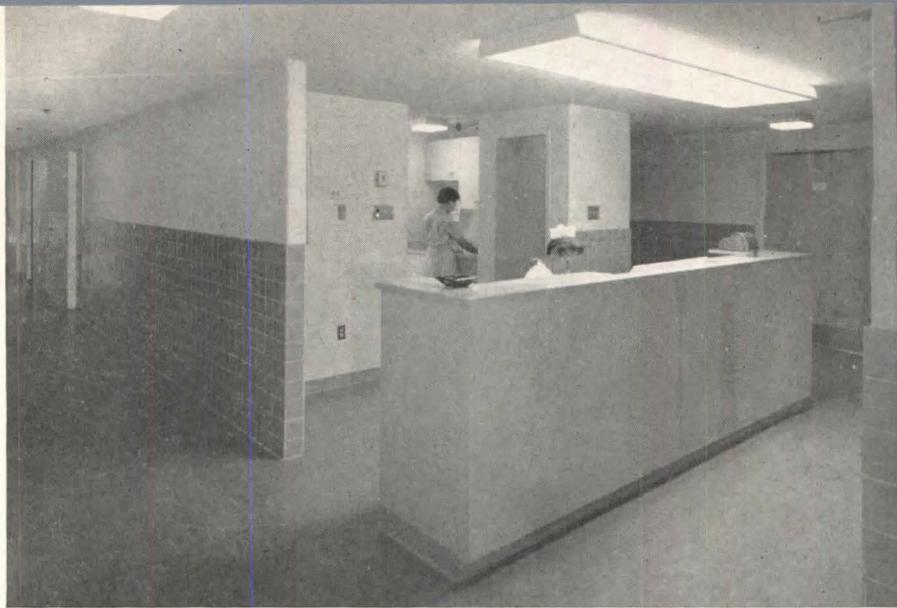


*Right, top to bottom:* private room, semi-private room and four-bed ward. In the main portion of the hospital the beds are distributed as follows: 12 private rooms, two single rooms for isolation use, two four-bed wards and 17 semi-private rooms. In maternity sections there are two private rooms, four semi-private and nursery bassinets for 12, plus premature nursery

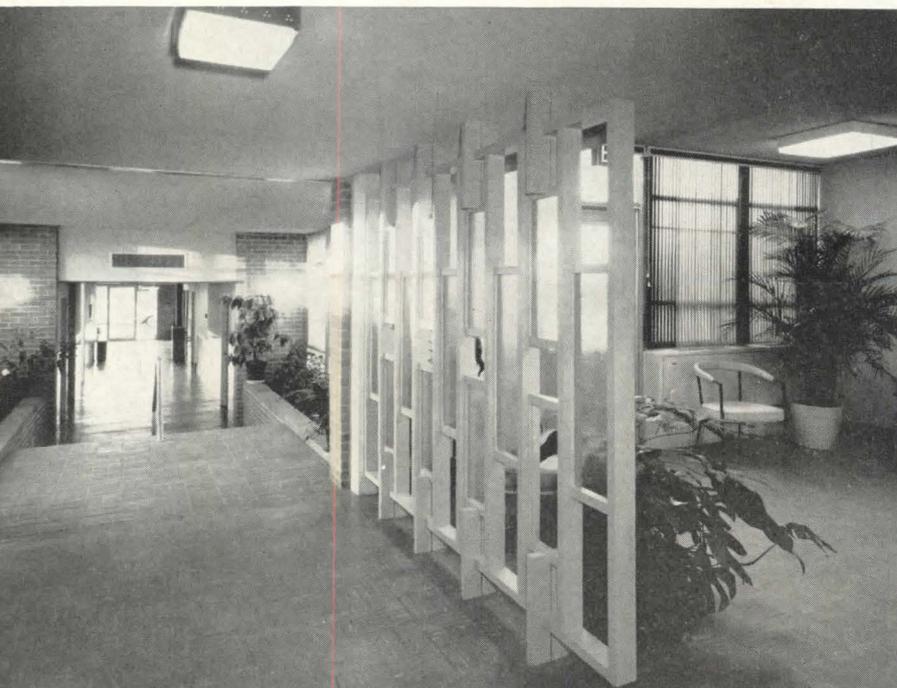


## Forrest Memorial

*Upper left:* separate entrance in the public health center wing permits use of the facility, especially its auditorium, during evening hours. *Left, lower and center:* kitchen and dishwashing area have tile floors, concrete block walls. Block walls are standard in service area; exterior walls are of pink brick, with block backup, plastered in bed rooms



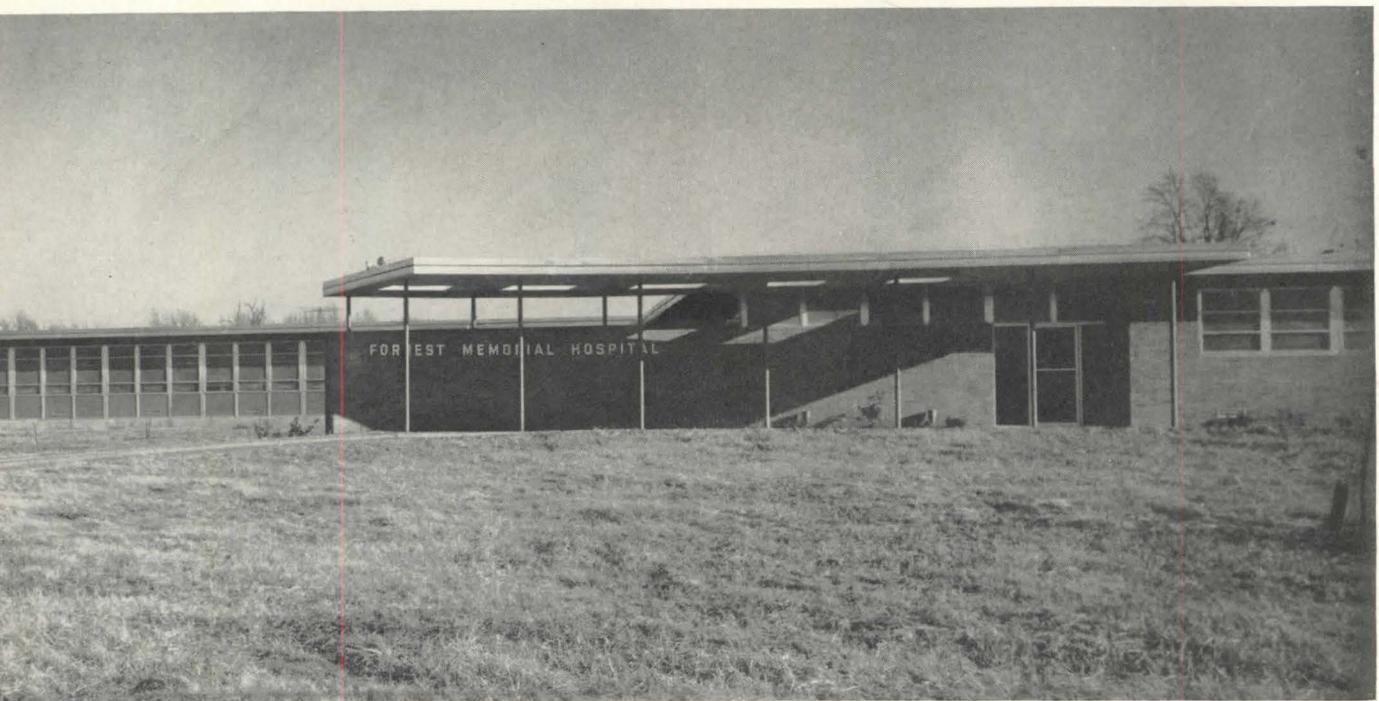
*Upper right:* one of the nurses' stations between the two corridors. Nurses' stations, two in a long line, can be activated or closed down as load or hours may indicate. *Right center:* one of the main operating rooms. *Lower right:* one of the nursery rooms; these are located in the separate wing, going off to the right in the plan, for maternity section



## Forrest Memorial

*Upper left:* main entrance to hospital is at one end of the separate wing that contains the public health center; special entrance for center at far end. *Left center:* small courtyard at the juncture of the cruciform plan. *Lower left:* view down main corridor looking toward main entrance; visitors' waiting room is shown at the right





Earl Saunders photos

## 65-Bed General Hospital and County Health Center

Forrest Memorial Hospital, Forrest City, Ark.; Erhart, Eichenbaum, Rauch and Blass, Architects; Edgar K. Riddick, Jr., Mechanical Engineer; H. Price Roark, Structural Engineer; J. E. Pyle, General Contractor

### COST TABULATION

square feet—First Floor	36,610
square feet—Basement	2,020
<b>TOTAL SQUARE FEET</b>	<b>38,630</b>
<b>TOTAL CONSTRUCTION COST</b>	
Includes all Group I Equipment—\$19.25 per sq ft	<b>\$744,196.00</b>
<b>GENERAL CONSTRUCTION COST</b>	
Includes Case and Cabinet Work	
Includes Site Work (\$24,351.00)	\$412,981.00
<b>PLUMBING, HEATING AND AIR CONDITIONING (100%)</b>	
Includes all Sterilizers, 100% Oxygen and Vacuum System	241,233.00
<b>ELECTRICAL AND FIXTURES</b>	
Includes Surgical Lights	78,165.00
<b>KITCHEN EQUIPMENT</b>	11,767.00
<b>ARCHITECT'S FEE</b>	44,650.00
<b>PIVOT AND BORINGS</b>	1,500.00
<b>LAND COST</b>	10,000.00
<b>GROUP II AND III EQUIPMENT</b>	113,000.00
<b>TOTAL PROJECT COST</b>	<b>\$913,346.00</b>
<b>HOSPITAL USABLE BEDS</b>	68
<b>TOTAL COST PER BED</b>	<b>\$ 13,431.00</b>

This project was partially financed with Hill-Burton funds administered by the Division of Hospitals, Arkansas State Board of Health

health center has its separate entrance and in fact its own wing so that its operation can be kept isolated from the main building.

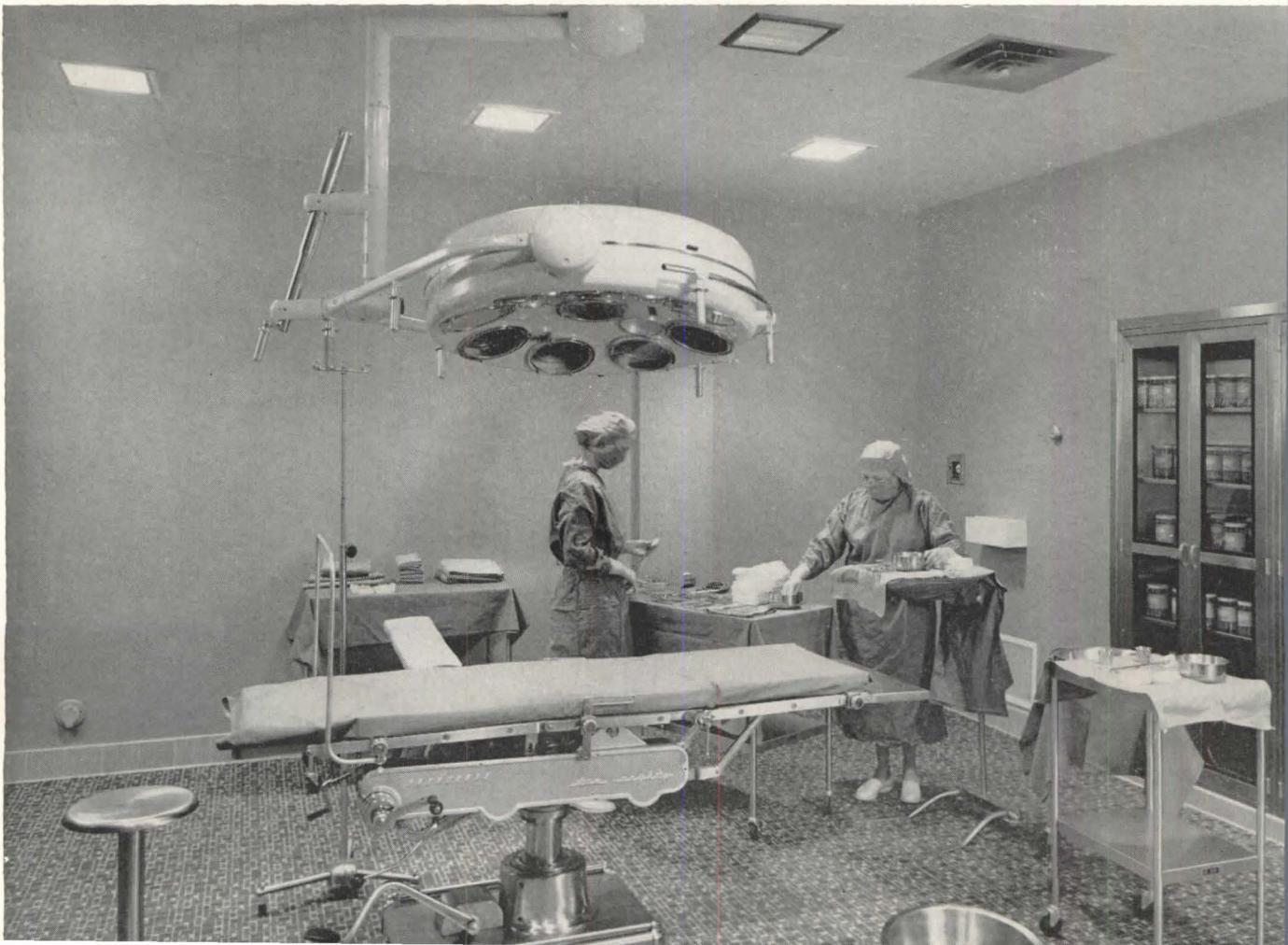
With a nine-acre site the building could afford to spread out in a one-story scheme. The nursing portion of the hospital is in effect two nursing units in line. There are two nurses' stations, so placed that either can be closed down during the night hours, or in case the hospital load is unexpectedly light. Major adjunct facilities are in separate wings, the operating suite having the cul de sac location at the end of one wing, the obstetrical suite a similar placing in another. Kitchen and service are together in another separate wing, placed at the central point in the long nursing section.

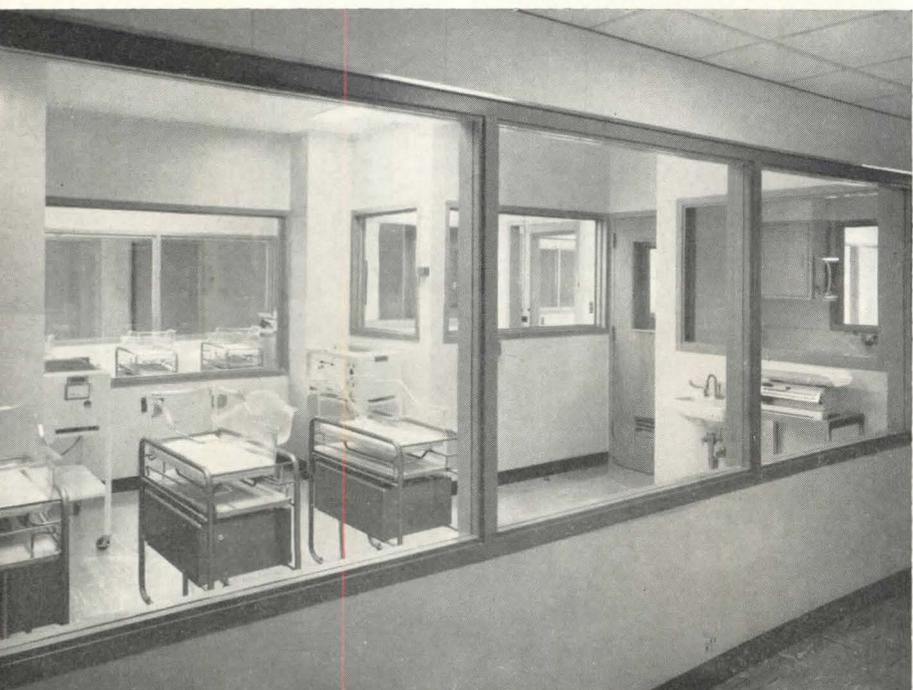
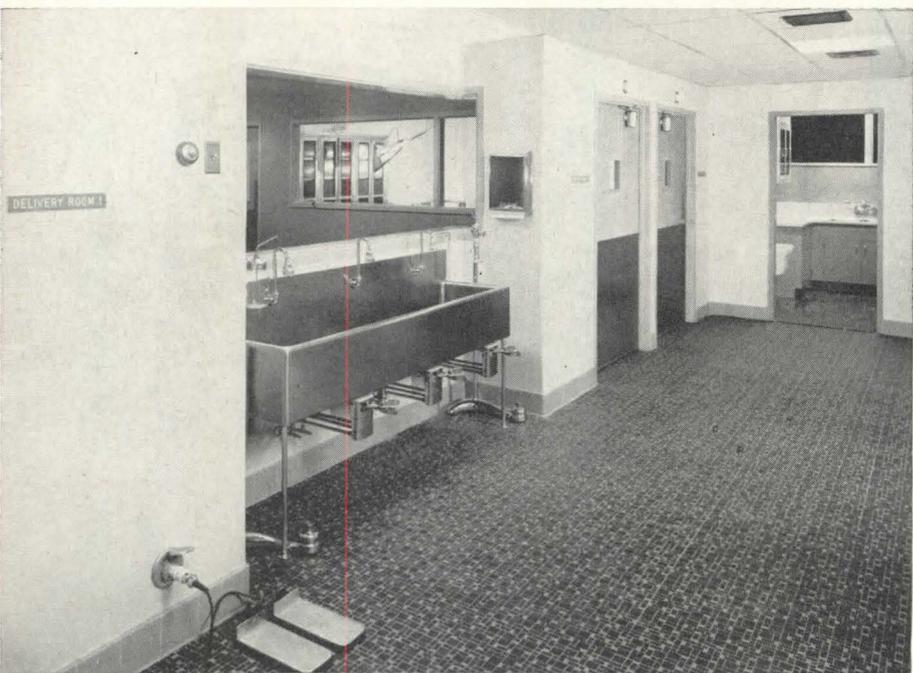
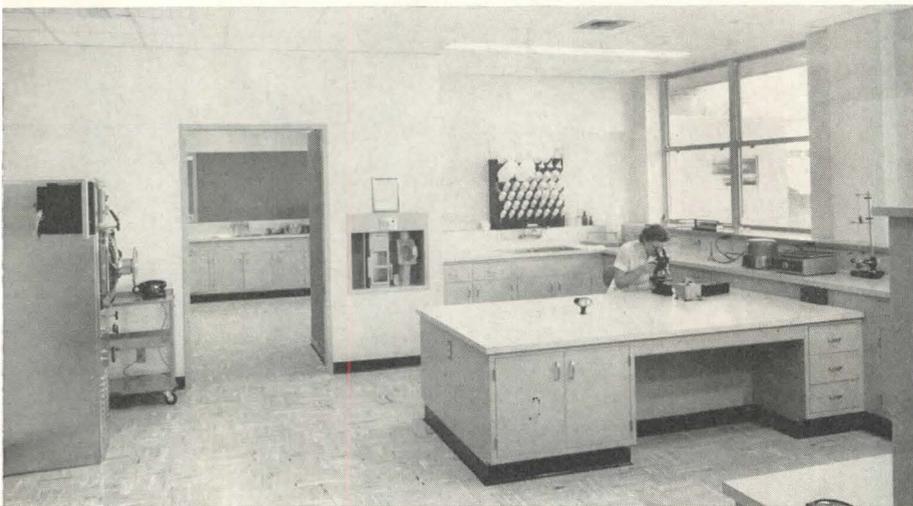
In general patients are not in private rooms, although there are a dozen or so one-bed rooms in the general nursing units, and a few more in the maternity section. There are two four-bed wards and 17 semi-private rooms. All patient rooms have their own toilet and bath facilities, or share a bath with the adjoining room.

The building is completely air conditioned, with a chilled water and hot water system. There is a central oxygen system, and a central vacuum system also. Doctors' and nurses' call systems are of audio variety.

The building was completed and put into operation within the past year.

This hospital, at present a 65-bed general facility expandable to 100-bed capacity, combines within the building the county public health center. The





### Wadley Hospital

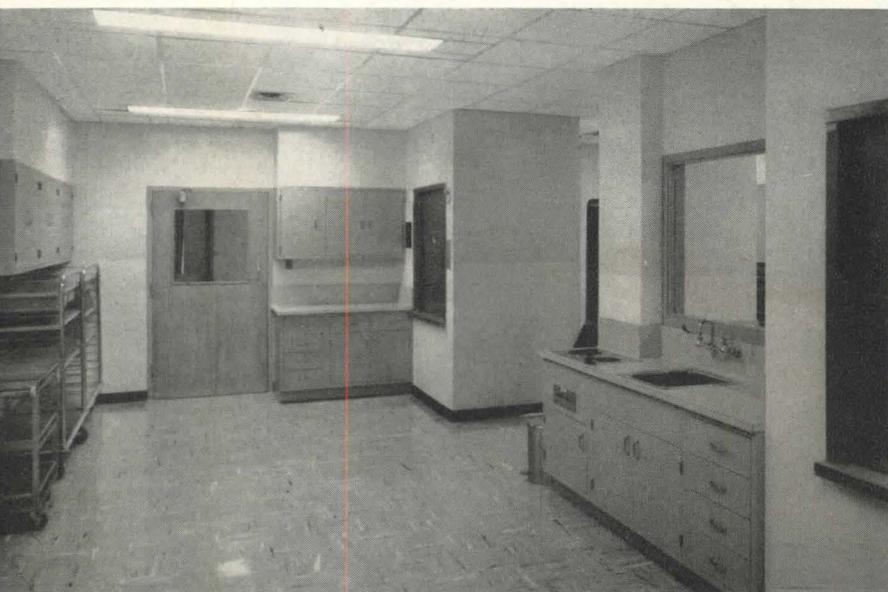
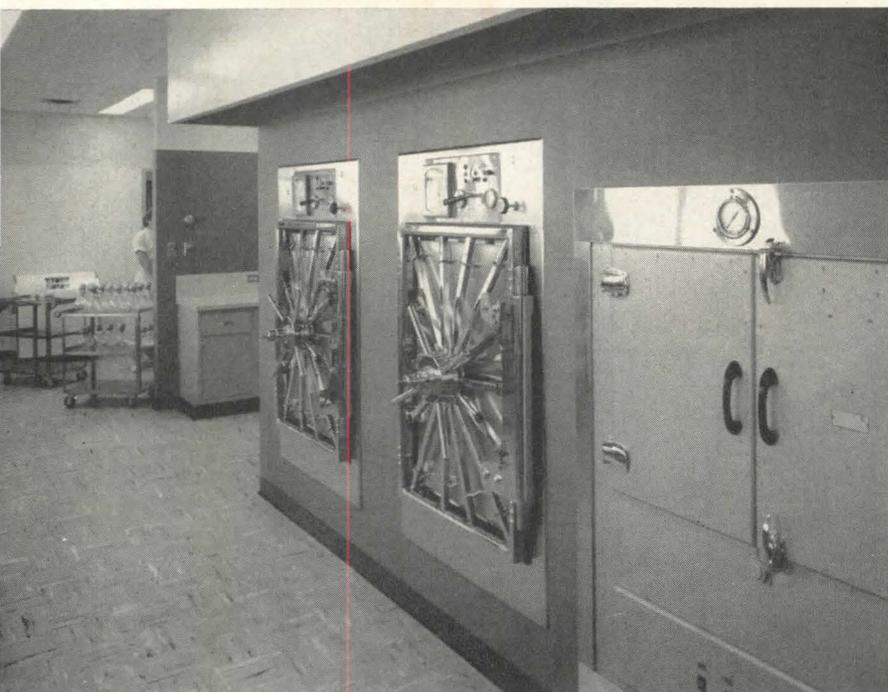
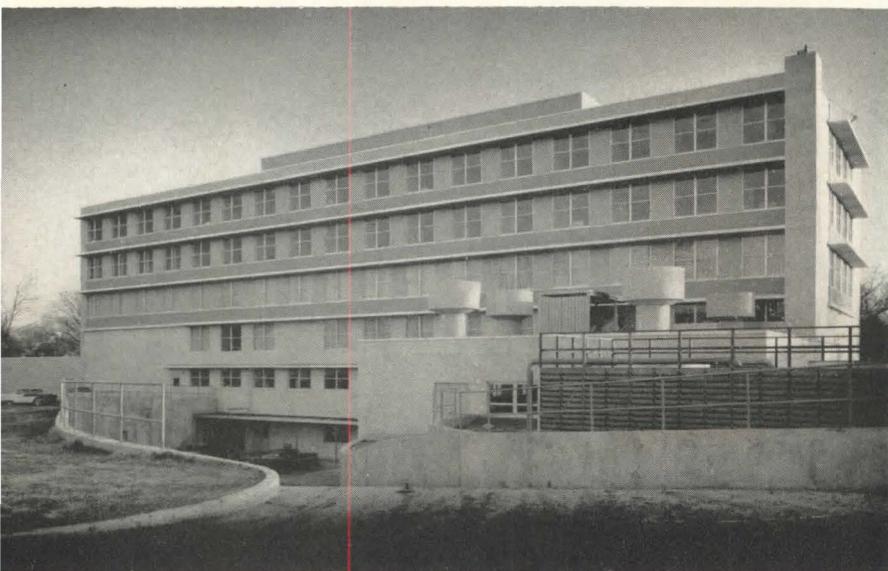
*Upper left:* the hospital has an exceptionally large laboratory, which is well located with respect to its traffic—close to radiology corridor and surgical suite. View looks through laboratory into cleanup room. *Center left:* the scrubup sink in the delivery corridor. *Lower left:* view into one of the nurseries, located between the two corridors on the second floor

*Opposite page:* Above, one of the delivery rooms; and, below, one of the major operating rooms



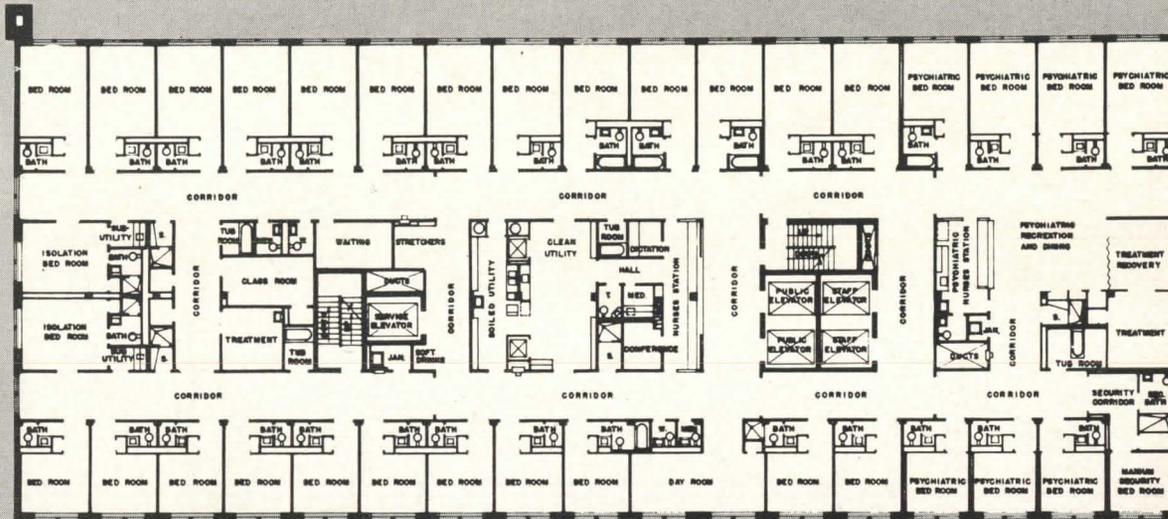
Nurses' station occupies full length of space between two corridors, facing the public elevators. Immediately behind nurses' station is a panel of pneumatic tubes. Opening off the station are two small rooms, one for private conference with doctors, another for doctors to dictate the records. Patient rooms are decorated to have as little institutional atmosphere as possible in a hospital



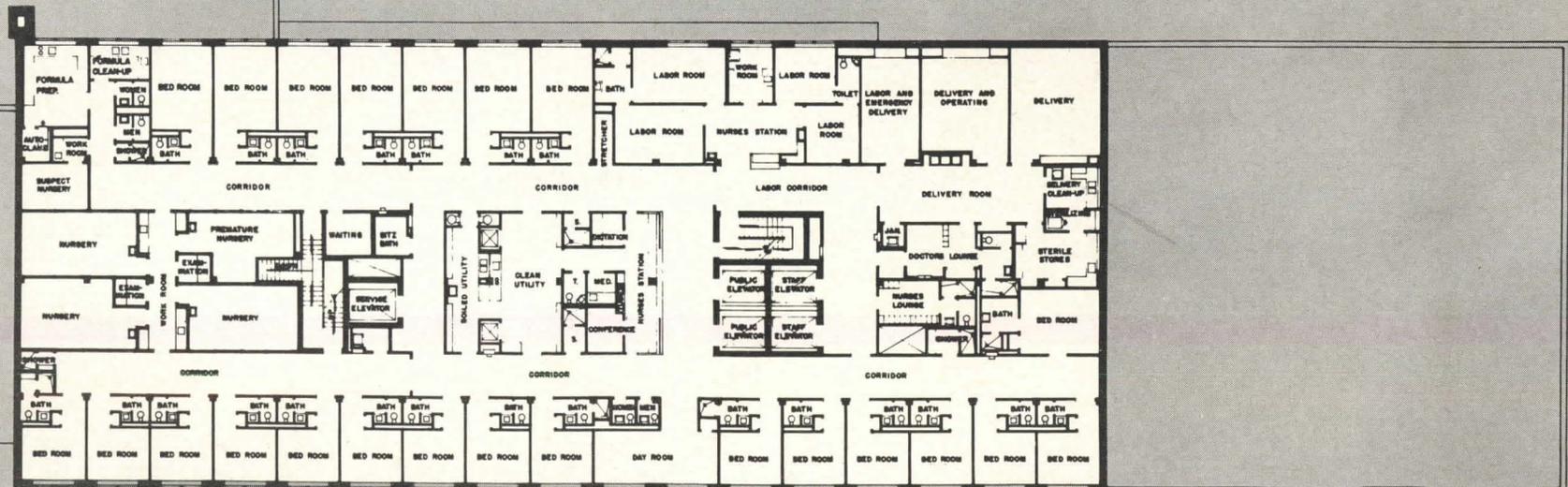


### Wadley Hospital

At the rear of the building a ramped service drive leads to basement, though main service entrance is at ground level, to the right in the upper photograph. Center photograph shows autoclaves in central sterilizing room. Sterile supplies, like all other materials, are controlled by a central dispatcher, with a cubby-hole office near central sterilizing room on first floor. Lower view at left shows one of the large utility rooms between double corridors on nursing floors



FOURTH FLOOR



SECOND FLOOR

Double-corridor, with wide center core, keeps nurses' walking to a minimum, has enabled the architects to plan 50-bed nursing units instead of the usual 25 or 30. Patient rooms all have private baths. One end of each floor can be cut off for special purposes. On fourth floor it is the psychiatric section, which can be closed off from rest of floor. Should this section prove too small, as the architects think it may, other bedrooms can be included. On second floor this end portion becomes the delivery suite, with labor rooms. Third floor (plan not shown) this end portion becomes a special pediatrics section.

# HEADQUARTERS

Pratt Institute

comfortable during this period, one should be in the shade oneself and the building also should be shaded.

In addition to the ambient temperature of the air, direct solar radiation is the most important natural contribution to the heat gain in buildings. During the overheated time this radiation should be intercepted before it can reach into the building and heat up the floor, the furniture, etc., which then act as secondary heat sources. There are two main ways of doing this:

1. *The short wave solar radiation can be changed into heat by absorption and then dissipated by convection.* For greatest efficiency, this should be done out from the face of the building.

2. *The radiation can be reflected.*

The concrete louvers used in the UNESCO building act partly by absorption and partly by reflection. The heat-absorbing glass absorbs some, reflects some and transmits the rest. In both cases the heat which is absorbed is carried away by convection currents which can rise unobstructed up the face of the building. Set away from the building as it is, the heat-absorbing glass is much more effective than if it were placed in the windows.

The temperature graph shows that the overheated period centers around the first of August. This was therefore taken as the design date for sun protection. The latitude of Paris is approximately 49° North.

## Which Facades Should be Protected?

Solar radiation arrives mostly under two forms: as direct radiation from the sun in a clear sky and as

diffuse or sky radiation with an overcast sky. It can also show itself indirectly as long-wave terrestrial radiation.

These studies were concerned only with direct solar radiation. This was plotted with the charts of the "Sun Angle Calculator" and of the HHFA report "The Application of Climatic Data to House Design."

Radiation striking the building has a double effect. It falls directly on people, who feel it immediately as heat; and secondly, the radiation is absorbed by the mass of the building and its contents, which in turn raise the temperature of the inside air. There is an appreciable time lag involved due to the building mass, in this second effect. For these calculations this time lag was taken as two hours, since it is a relatively light structure.

Ideally the secondary effects of radiation should not be felt on the inside of the building during the overheated period, taking the time lag into account. (See Figures 2a and 2b.)

1. **N N E facade.** 220 Btu per day per sq ft on August 1st. This is a very small amount of heat. The peak load arrives at 6 a.m. and its effect will be felt on the inside around 8 a.m. This is before office hours and at eight o'clock the temperature outdoors is still below critical. If the windows are open, the morning breezes can keep the interior pleasantly cool. Sun protection is not needed.

2. **E N E facade.** 755 Btu per day per sq ft on August 1st. This is a considerable amount of heat. The maximum radiation occurs about 7:30 a.m. and the heating effect will

be felt inside around 9:30 a.m. The outdoor temperature is still below critical, so comfort can be achieved by opening the windows. Sun protection is not essential on this facade.

3. **S E facade.** 1020 Btu per day per sq ft. It is this facade which receives the maximum heat. The peak intensity occurs at 9 a.m. and will be felt on the inside around 11 a.m. The outdoor temperature is well above critical by this time. Radiation continues to penetrate the rooms along this facade until 2 p.m. and its effects will be felt until 4 p.m. indoors, this time when the outdoor temperature is highest. This facade must be protected.

4. **S S W facade.** 895 Btu per day per sq ft. This represents a large amount of heat spread through most of the working day. Maximum radiation is at 1:30 p.m., with the maximum heating effect inside about 3:30 p.m., which is also the time of maximum outdoor temperature. Sun protection is absolutely necessary.

5. **W S W facade.** 500 Btu per day per sq ft. A very large amount of heat, all of which is felt in the afternoon at the same time as peak temperatures of the outside air. Sun protection is absolutely necessary.

6. **N W facade.** 500 Btu per day per sq ft. A moderate amount of heat with the peak late in the afternoon. The outdoor temperature is already falling by this time, so comfort can be achieved by ventilation. Most of the heating effect will be felt after office hours. Sun protection is not necessary.

In conclusion, complete sun protection is needed on these facades:

S E; S S W; W S W  
(and of course the intermediate ori-

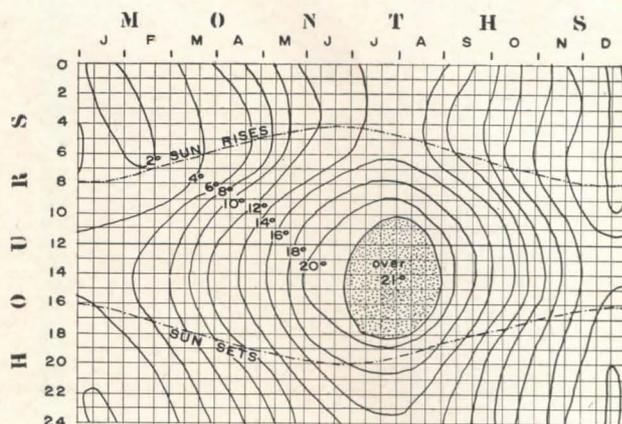


FIGURE 1. Average air temperatures (centigrade) for Paris over a period of 80 years. (Multiply by 9/5 and add 32 to get degrees Fahrenheit.)

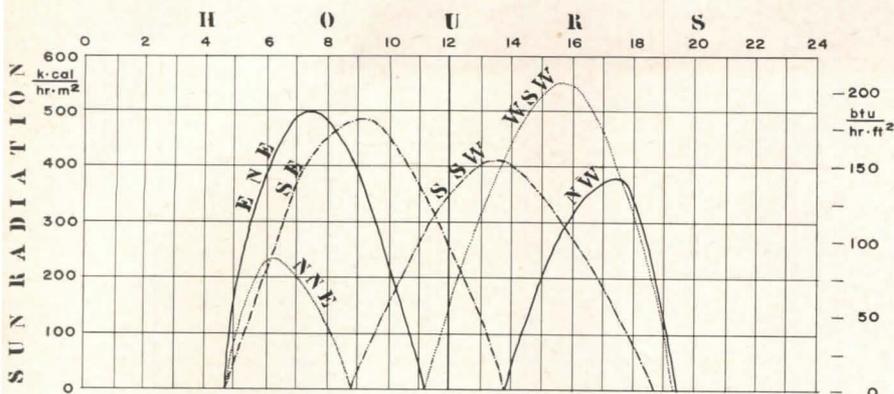


FIGURE 2a. Clear sky radiation on the six façades for August 1

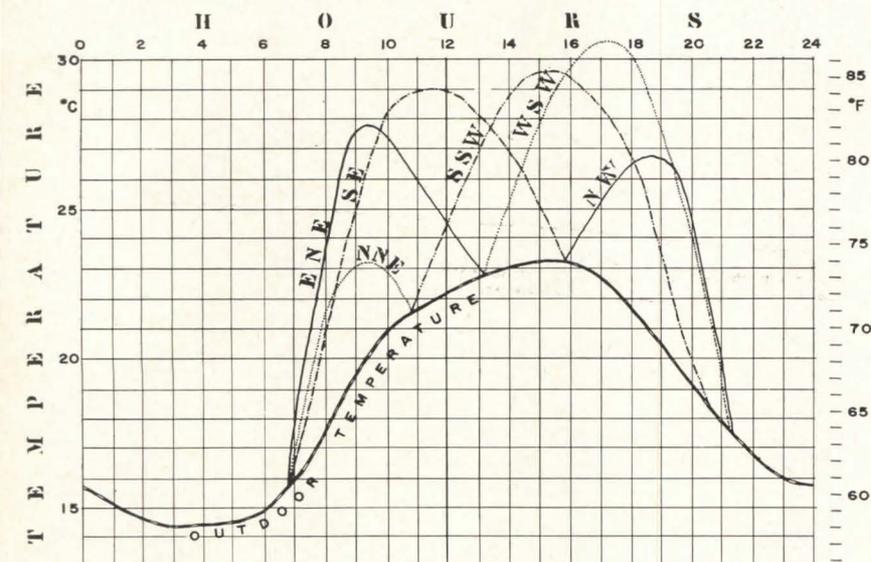


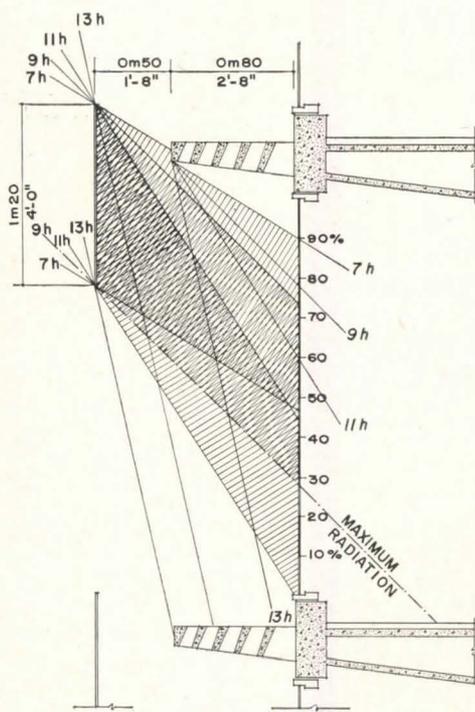
FIGURE 2b. Temperatures, determined by formula, which would exist inside rooms if no sun control devices were used. Indoor temperatures were calculated by adding the effect of sun radiation (Fig. 2a) to the outdoor temperature, assuming a 2-hr time lag. To plot this, 12.5 Btu per sq ft are assumed equal to a 1 F rise in temperature, based on studies by Prof. C. P. Yaglou of Harvard

entations in the curved section between S S W and W S W.)

### What is The Efficacy of the Sun Protection Devices?

Each façade receives its radiation under different conditions, at different hours and at different angles. The maximum intensity of radiation occurs when the bearing of the sun is perpendicular to the façade. The closer the façade faces to true south, the higher the sun is; the closer to east or west, the lower the sun.

These differences are taken into account by moving the heat-absorbing glass closer or farther from the face of the building. The farther the



S E

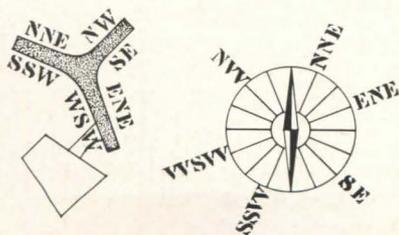
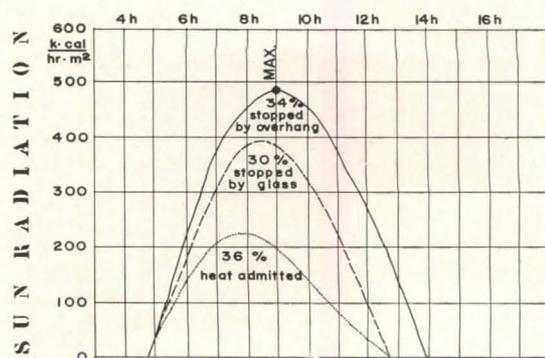


FIGURE 3 a, b, c. Diagrams show percentage of shading for various hours of the day on those façades where sunshades were provided. Accompanying graphs indicate relative amounts of solar radiation cut off by the solar-reducing glass and the concrete overhang



façade faces away from true south, the farther the glass is set out, thus providing a more or less uniform protection from the sun. The distance by which the heat-absorbing glass is held away from the face of the building was determined so that during the period of maximum radiation on each façade the shadow cast on the façade is the same, with about 75 per cent of the window shaded.

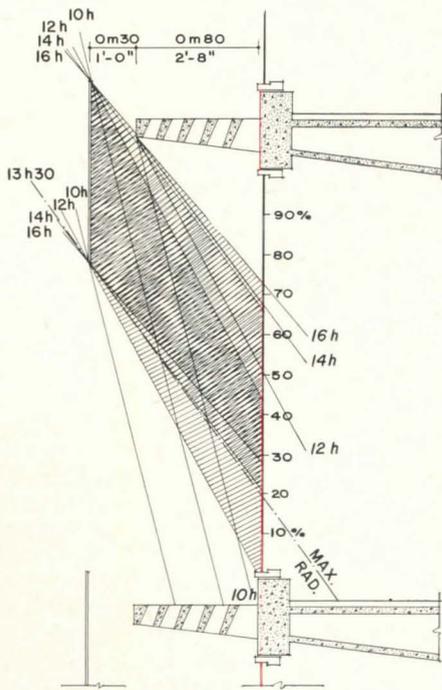
In order to check the design numerically, sections were drawn of each of the three critical façades and the rays of the sun were plotted at two hour intervals. (See Figures 3 a, b, c). The amount of radiation intercepted is directly proportional to

the shadow cast and to the opacity to heat radiation of the sun control device. The louvered concrete overhangs are counted as 100 per cent obscure and the heat-absorbing glass as 65 per cent. When the same glass is used in a window or curtain wall, its net absorption is only about 30 per cent.

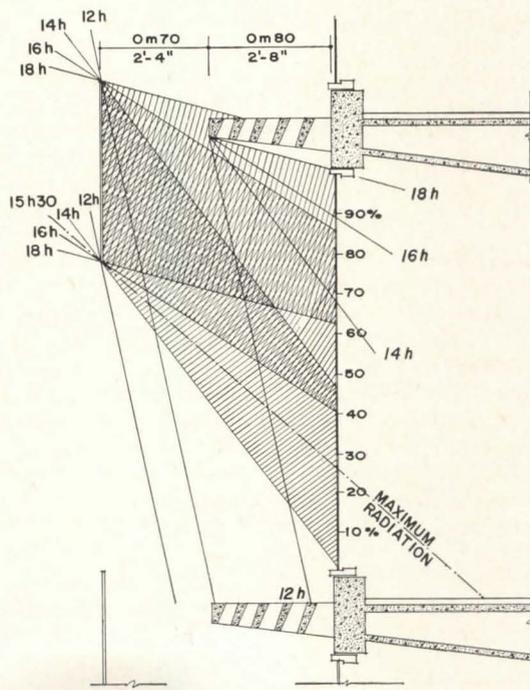
Taking the S E façade as an example: At 11 a.m. the overhang shades 40 per cent and the glass 45 per cent of the window:

Overhang: 100% opaque x  
 40% shadow = 40%  
 Glass: 65% opaque x  
 45% shadow = 30%  
 Total reduction in radiation: 70%

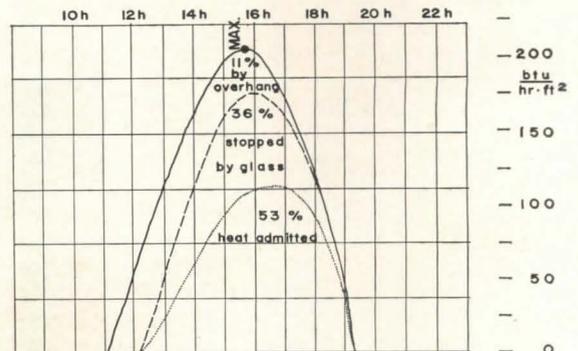
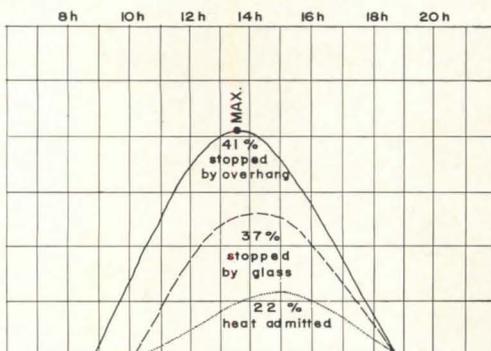
These results were plotted on the radiation diagram. At 11 a.m. the total radiation is 380 kilocalories per hr per sq m (140 Btu per hr per sq ft) 40 per cent of this is subtracted for the overhang (150 kilocalories) and 30 per cent for the heat-absorbing glass (115 kilocalories). By doing this for every two hour interval the three curves of radiation can be drawn: one for the unprotected window; one for the window with louvered overhang only; and one for the window with overhang and with the heat-absorbing glass. The area under each of these curves gives the corresponding total daily solar radiation.



S S W



W S W



# SCHOOL PLUMBING FIXTURES

## *What Goes Where?*

*Every architect who has ever designed a school knows that codes, planning manuals, school administrators, teachers—and architects are often in something less than complete agreement on how educational facilities should be equipped.*

*However, a report being issued this month by the School Planning Laboratory of Stanford University's School of Education may help to reconcile conflicting views in at least one area: determining the size, type, number and location of plumbing fixtures that will best serve both the physical needs of the students and the educational program of the school.*

The study on which the report is based was made in an attempt "to state in an organized, logical manner . . . the practices and needs of public schools in the area of plumbing fixture installations." Under a grant from the National Plumbing Fixture Manufacturers Association, the investigators, led by Drs. James D. MacConnell and William R. Odell, tracked down pertinent data via questionnaires to teachers and principals, personal interviews with architects and key administrators, analyses of state and city building and plumbing codes, perusals of blueprints and specifications for educational buildings in major school systems, examination of the rather sparse existing literature, and even specially-conducted time-use studies. They then leavened the information thus gleaned with data compiled from the Planning Laboratory's own considerable background in school programming to arrive at the findings and recommendations excerpted here. These excerpts—and certainly the report itself—should at least serve as a check list for planning school plumbing fixture installations. At best, they may prove a valuable programming aid to both the architect and the school board he serves.

## **TOILET ROOMS Number and Location**

Educators generally agree that separate toilet facilities for boys and girls should be provided from kindergarten on, although some school systems provide only one toilet room in kindergarten and sometimes first grade classrooms. If dual facilities are not provided, the single toilet room may serve both sexes or dual facilities may be shared by two adjacent rooms.

Above grade one, centrally located gang toilet rooms are favored. Such factors as supervision, age differences, traffic flow and time utilization suggest optimum ratios of one toilet room for each four to six classrooms in elementary schools, and one for each six to eight classrooms from grade seven to grade twelve. If schools cover different grades and maturity levels, separate facilities should be provided at least for the kindergarten-primary grades, the middle grades, the junior high school and the senior high school.

## **Requirements for Special Areas**

Over and above these general basic requirements, toilet rooms should be provided in certain special areas.

- In HEALTH SUITES for example, a toilet room for the nurse and patients is required; and men's and women's toilet rooms should be provided off the TEACHERS' LOUNGE, preferably with entrances from a corridor rather than from the lounge itself.

- Such areas as AUDITORIUMS, GYMNASIUMS AND MUSIC CENTERS require nearby toilet rooms for student use. If they are also to be used for public performances or gatherings, it is common practice to use student facilities that are conveniently located, or to make public facilities available for student use during school hours. In any case, facilities must be adequate to care for the peak occupancy, public or student, and must be located so that the rest of the school plant need not be open to the public.

- When the teaching areas for ART, INDUSTRIAL ARTS, ETC. are located on the perimeter of the school, as they often are, they too require teachers' and pupils' toilet rooms in the immediate area, without regard to the number provided elsewhere. The same is true of PHYSICAL EDUCATION DEPARTMENTS, where toilets must be provided in proportion to the peak occupancies of dressing-locker-shower areas.

## **Layout and Special Provisions**

All toilet rooms should be designed

with the problems of maintenance, operation and supervision in mind. In order to cut down loitering, they should be no larger than is necessary to accommodate the required fixtures and the anticipated traffic, and while the main entrance should be properly screened from the corridor, doors may not be necessary: some systems have realized better supervision by using screen baffles instead.

Lavatories or washfountains should be located near the exits, with urinals nearer the door than the toilets. To get fuller use of lavatories (and prevent hair-clogged drains) mirrors should be near but not over them. In junior and senior high schools, a book shelf should be provided near the entrance, and in toilet rooms for girls above the sixth grade, there should be a sanitary napkin dispenser and disposal. There should be no drinking fountains in toilet rooms.

To discourage smoking and "art work", the space should be well-lighted, preferably with some direct sun. Ventilation should be accomplished by negative pressure, with or without exhaust fans, rather than by forced air.

## **Materials**

Although the selection of any specific material for floors, walls and toilet stalls will depend on its relationship to other materials in terms of initial cost, maintenance costs, and the conditions of use, these surfaces should, in general, be of durable, impervious materials which will not absorb odors.

- FLOORS are generally of ceramic tile, quarry tile, or terrazzo, although sealing of cured grouting and of terrazzo is desirable. If concrete is used, it must be well sealed and kept that way.

- WALLS of tile or other proven impervious materials have been most satisfactory. Hard plaster has been used with varying degrees of success, but generally the maintenance costs soon exceed the saving realized in its lower initial cost. Such materials as aggregate blocks are satisfactory for toilet room walls only if they are completely and competently sealed. All wall surfaces, regardless of the material used, should be of light, highly reflective colors.

- TOILET STALLS should be durable enough to resist abuse, relatively easy to maintain and to clean, and fairly light in color. There is no justification for their omission or removal from either boys' or girls' toilet rooms. Materials that have been found to be suitable for toilet stalls include:

*Enameled metal*, which is low in initial cost, lightweight and sanitary;

*Porcelain enameled metal*, which is easy to clean, relatively light weight and sanitary;

*Tempered glass*, which is impervious, sanitary and easy to clean;

*Ceramic tile*, which is durable and sanitary if well maintained and cleaned;

*Concrete plaster*, which is durable and may be sanitary if carefully maintained but requires frequent painting and sealing;

*Waxed transite*, and similar cement-based panels which are economical, easy to clean and strong, though rusting of frames may occur if moisture is allowed to collect adjacent to them; and

*Marble*, which is standard in many systems and would be used in others except for its high initial cost.

● **DOORS** for toilet stalls are commonly of such materials as:

*Wood*, which is easy to repair, but requires considerable maintenance;

*Plastic covered wood*, which is easy to clean and difficult to disfigure, but will scratch;

*Enameled metal*, which has a low first cost but a short life, and scratches and rusts easily; and

*Porcelain enameled steel*, which has a higher initial cost but is easily cleaned and maintained.

## TOILETS

### Bowls and Seats

For proper sanitation, the toilet bowl must have a smooth impervious finish with no cracks or joints, and a minimum of fouling surfaces which are not covered by water. Vitreous china is generally accepted as the most desirable material, and the elongated oval bowl is the preferred shape except for kindergarten through third grade students. There is almost total acceptance of elongated, plastic or plastic-covered, open-front seats without covers, although the round closed front type are again preferred for kindergarten through third grade. Little justification was found for the installation of germicidal lamps in conjunction with toilet seats, and even less for the use of integral china seats rather than the separate hinged type.

### Flush Valves

For the most part, syphon jet and blow-out toilets with non-hold-open flush valves of either the piston or diaphragm type are used. Flush valves are operated in several ways, and should either be concealed behind the wall or, if exposed, designed to be vandal-resistant. In some in-

## RECOMMENDED FIXTURE MOUNTING HEIGHTS

FIXTURE	GRADES	MOUNTING HEIGHT	
TOILETS	K-3	13 in. (floor mounted)	
	4-12	15 in. (wall mounted)	
URINALS maximum height lip to floor	K-3	18 in.	
	4-6	20 in.	
	7-9	22 in.	
	10-12	24 in.	
LAVATORIES maximum height rim to floor*	K-1	24 in.	
	2-6	27 in.	
	7-12	31 in.	
WORK SINKS maximum height rim to floor**	K (if used by children)	24 in.	
	4-6	27 in.	
	7-12	31 in.	
DRINKING FOUNTAINS maximum height nozzle top to floor	K-3	24 in.	
	4-6	28 in.	
	7-12	34 in.	
SHOWERS average height bottom of shower head to floor	7-9	boys	56 in.
		girls	54 in.
	10-12	boys	60 in.
		girls	56 in.

\* Height based on 6 in. basin depth

\*\* Height based on 8 in. basin depth

stances it may be necessary to provide seat-operated flushing toilets, and for operations requiring minimum water consumption, pressure tank installations are often desirable. "Quiet" fixtures should, of course, be specified if the wall to which they are attached is adjacent to a classroom, teacher's room or office.

### Size and Mounting

Although 10, 13, and 15 in. bowls are all in common use, pupil and parent opposition to the 10 in. size may outweigh its physiological advantages for the very young students. Wall mounted fixtures are most desirable from the standpoint of cleaning, but since a wet mop will not clear a 13 in. wall mounted fixture, floor mounting is more satisfactory for fixtures of this height.

## URINALS

### Type and Mounting

Urinals are recommended for boys in all grades from kindergarten on. Like toilet bowls and other fixtures, they should be of smooth impervious materials (preferably vitreous china) and should have a minimum of fouling surfaces, all of which should be cleaned by the flushing action. Outlets and traps must be of sufficient size to handle the volumes

of water required for thorough flushing.

Although pedestal urinals are sometimes used in schools, they are considered unsatisfactory for general boys' room installations, and stall or wall-hung models are more commonly provided. Of the two, the wall mounted type, with an extended lip, is preferred because it is more sanitary, less apt to splash the user, and serve as a catch-all for trash.

### Flush Valves

User-operated flush valves similar to those for toilets are most often installed, but since boys apparently do not flush urinals as regularly as they flush toilets, motor operated flush valves should be installed whenever it is economically feasible. To avoid tampering they should be either concealed or mounted high above the fixture. Where water supply is not a problem, continuously-operating flush tanks are probably most economical, but in any given situation the cost of the water wasted should be weighed against the additional expense of installing electrically operated urinal valves.

### Girls Urinals

Although girls' urinals are probably more sanitary, save some time and require fewer fixtures, they have only

recently come into use, and reaction to them is mixed. In any case, there is not enough data on them for any recommendation to be made.

## LAVATORIES

### Location

Lavatories are commonly located in toilet rooms, with supplementary fixtures located in or near the cafeteria so that children may conveniently wash their hands before eating. Handwashing facilities may also be necessary in shops, crafts rooms, gyms, certain special areas in the journalism and business education departments—wherever children must wash up before proceeding to another class. In toilet rooms, lavatories should be located near the entrance, and should be screened from toilets but not from each other.

### Materials

Vitreous china and stainless steel are generally considered the best materials for lavatories, although enameled cast iron, precast stone, or marble may be preferred where high strength is important (for example, in shops or service areas).

### Mounting

Wall mounting is always desirable from the standpoint of cleaning, but the unit must be properly installed to insure rigidity. Concealed chair-carriers are most satisfactory since they present no difficult cleaning spaces. Vanity and cabinet type mounts, which are too expensive and too difficult to clean for use in general toilet room spaces, may have a limited place in homemaking suites and teachers' lounges.

### Controls

The greatest single problem in selecting lavatories for schools is that of providing satisfactory controls. These must, of course, require a minimum of maintenance and replacement and be as vandal-proof as possible. (Both the adjustment and the faucet handle, if there is one, should be keyed rather than simple screw controlled.) In addition, they should permit washing in running water, should not require closing by hand after the hands are washed, and should not waste water. Foot-operated controls meet all these requirements, but they are expensive to install, and in most cases the controls used in schools represent a compromise of one or more of the desirable points. If the controls can be operated by the child involved (push-down timing devices, for example, are difficult for small children to use), the order of preference, from

a purely functional standpoint, is from foot controls to easily operated timing devices to standard shut-off faucets to self-closing, non-timing faucets. Screens are recommended in lieu of waste plugs at the basin drain to permit washing in running water, and tempered water (up to 115 degrees F) is advised for all general-use lavatories.

### Washfountains

In addition to standard lavatories, washfountains have found wide use—particularly in industrial arts shops, corridor installations adjacent to cafeterias and in group toilet rooms. Their basic design, with the foot control, permits washing in running water and, by eliminating hand controls, gives better sanitation.

## WORK SINKS

### Location

Work sinks, which were formerly provided only in such areas as homemaking and science, are now considered desirable—if not essential—in all elementary classrooms; in core and special area classrooms at the junior high school level; and in not only the special areas but also many social studies and some language arts areas of the senior high school.

### Type and Mounting

The classroom sink may be used as a source of water, as a place to wash equipment and supplies, and for handwashing after painting or similar activities, with the type of sink and mounting depending on the particular use. Most sinks are mounted on work and storage cabinets, and surrounded by impervious working surfaces and splash boards. Those used primarily for washing equipment often have an integral back, while those used as a source of water and for clean-up may be flush mounted to the working surface. In any case they should be designed and constructed for easy, thorough cleaning. General use sinks for installation in areas other than science are usually enameled cast iron or steel, vitreous china or stainless steel. They should be provided with water mixing supply faucets, and with tempered water.

### Sinks for Special Areas

● For all-purpose ART LABORATORIES, two peninsula or island work sinks are desirable in addition to a perimeter, double-compartment sink for soaking basketry materials. If water soluble paints, clays and similar materials are used, special traps should be provided, and in all cases the water flow should be sufficient

to wash away sediment.

● **HOMEMAKING DEPARTMENTS** are generally provided with a variety of equipment including cabinets and both single and double compartmented sinks, usually of enameled cast iron, with mixing faucets. A general purpose sink is needed in the clothing area.

● Handwashing facilities in the **INDUSTRIAL ARTS AREAS** may be either wall mounted wash sinks, usually of cast iron or vitreous china, or wash fountains of precast stone, marble or stainless steel. Hot (120 degree F) and cold water are both needed, especially in any situation where the hands may become extremely soiled or greasy.

● The **MUSIC DEPARTMENT** office or workroom requires a work sink as a source of water and as a place to wash small parts (and hands) during instrument repairs. Both a high velocity jet and a standard faucet may be needed, depending on the extent of repair work anticipated.

● Sinks are also needed in all **WORKROOMS** provided for clerical personnel and teachers, as well as in business education, journalism and library areas. To simplify maintenance, they should be of the same type installed in the classrooms. However they should provide both cold and tempered water.

● In **SCIENCE CLASSROOMS**, where various caustics and acids are dealt with, both sinks and work spaces must be acid-resistant, durable and easily cleaned. Soapstone is widely used, and acid-resisting enameled cast iron and steel, asbestos cement products, sealed slate, stainless steel, and ceramic products also work well if carefully used and properly maintained. If only small amounts of dilute solutions of corrosive chemicals are used, regular extra heavy cast iron soil pipe is adequate for wastes and vents; however, the use of large amounts of concentrated chemicals demands that the greater initial cost of high silicon content, acid-resistant pipe be weighed against the cost of periodically replacing regular cast iron waste and vent lines. These lines should run independently to the main building drain where they will be diluted by waste from other parts of the buildings. Extra heavy welded lead or duriron traps are recommended for fixture connections.

## DRINKING FOUNTAINS

The school's—and the architect's—responsibility in installing drinking fountains extends not only to providing them in proper numbers and locations but also to making sure that they are safe and sanitary.

## Location

For greater convenience, better supervision and more efficient time use, it is recommended that they be placed within the main classroom (not the toilet room), away from doors and other traffic lanes, from kindergarten through grade six. They should not be a part of the classroom work sink.

In junior and senior high schools, drinking fountains should be in the corridors, recessed, and away from stairs and corners. And in all schools, additional fixtures should be provided in areas near the plant perimeter and in areas where strenuous activities or student and public gatherings take place.

## Type and Mounting

The drinking fountains should of course be designed so that the mouth does not touch the water outlet and so that water does not fall back upon the orifice. Pedestal fountains are often specified for playground installations, but wall mounted single or multiple place fixtures are preferred for interior use. To minimize squirting of water, they should be equipped with water pressure regulators and guards.

It may also be desirable to provide water chillers and coolers in areas of extreme heat, and freeze-proof mechanical parts in areas where freezing is a problem.

## SHOWERS

While shower installations are made in some schools, elementary as well as secondary, to serve students who have no bathing facilities at home, most are designed to serve junior or senior high school physical education programs. In either case, their purpose is personal washing and the installation should be planned to encourage use by the students. This means general cleanliness of shower rooms, adequate space for traffic in and out, some provision for individual control of water temperature and flow, and an adequate flow of water. It also means avoiding such installations as "rain rooms" and "progressive lanes," which are generally disliked by both boys and girls, although shower lanes fill a need in conjunction with swimming pools. Boys' showers are universally of the group type, while combined gang and individually partitioned showers are recommended for girls.

## Controls

Every school shower installation requires tamper-proof temperature control protection, with only tempered water at a temperature of 120

## RECOMMENDED FIXTURE—PUPIL RATIOS\*

FIXTURE	GRADES	FIXTURE/STUDENT RATIO		
		min.	max.	
TOILETS	K-6 boys	1:20	1:40	
		1:15	1:35	
	7-12 boys	1:30	1:50	
		1:20	1:40	
URINALS	K-6 boys	1:15	1:35	
		insufficient data		
	7-12 boys	1:15	1:35	
		insufficient data		
LAVATORIES	K-6 boys	1:25	1:45	
		same	same	
	7-12 boys	1:30	1:50	
		same	same	
	DRINKING FOUNTAINS	K-6	1:30	1:50
			1:40	1:60
minimum two per floor	7-12			
SHOWERS	Physical education areas	1:3		
	grades 7-12 only	Other areas	as needed	

\*NOTE: Because the adequacy of plumbing fixture installations is so greatly affected by such variables as their location within the building, the ease or difficulty of supervision, and the nature of the educational program itself, no set fixture-pupil ratio can be established even for fixtures of the same type at the same grade level. The ratios presented here are the maximum that would be necessary in the most unsatisfactory condition (picture a three-story school with all the toilets in the basement and with a program that demands their use by all the pupils at the same time), and the minimum that would be adequate when the planning is "ideal." The optimum for most schools would of course be very close to a mean between the two. In each case, the provision for initial segment enrollments should be considered as the base upon which time the ratio is applied.

## INITIAL SEGMENT ENROLLMENTS

NUMBER OF PUPILS	TOILETS	URINALS	LAVATORIES	DRINKING FOUNTAINS
15 or less	boys	1	1	1
	girls	2	—	1
16 to 35	boys	2	2	2
	girls	3	—	2

degrees F or less being admitted to the hot water lines. Of the commonly used types of controls, a single mixing valve at each shower head is recommended, preferably of the thermostatic type with a built-in volume regulator. Control valves for both junior and senior high school shower installations should be located about 45 in. above floor level.

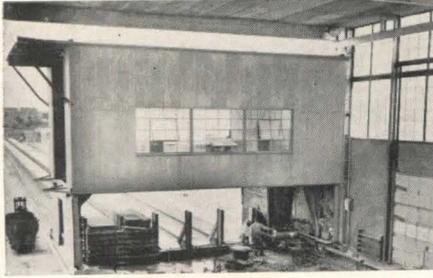
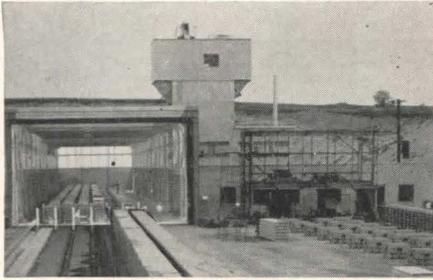
## Shower Heads

The shower heads themselves should be self cleaning and vandal resistant, and should have either adjustable heads or, better, a properly designed spray pattern that makes adjustability unnecessary. Since both boys and girls have an aversion to showers which wet the hair, the head should be mounted so that the stream hits at about shoulder height.

To accommodate students who are shorter or taller than the "average" for their age, mounting heights may be varied within a single gang shower room. However, the previously mentioned heads which give a pre-determined spray pattern lessen the problem of mounting height as well as of adjustability. If heads are mounted on opposite walls, the shower room should be at least 10 ft wide.

## Drains

It is essential that drains be located so that soiled water does not flow into an area occupied by another bather, and curbs should be limited and no-slip floors installed. Perimeter gutters, with domed screens to prevent damming, help keep water off the central floor.



### "ASSEMBLY LINE" FOR PRECAST CONCRETE

There's been much talk of late about the advanced state of concrete technology in Europe and the U.S.S.R., and particularly about the assembly line methods that have been developed for producing precast and prestressed components. However, a closer look at some home-grown concrete products reveals manufacturing methods that rival the best the continent has to offer.

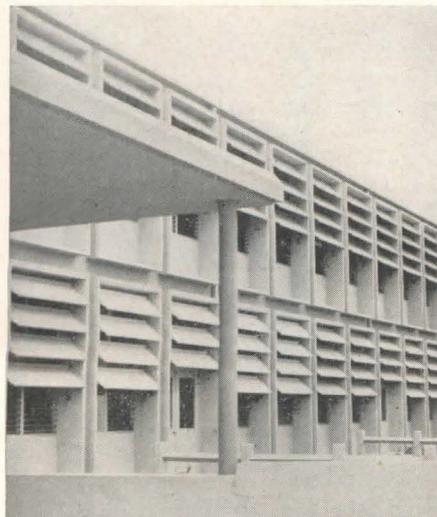
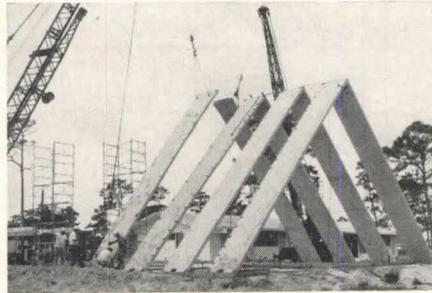
For example, the West Allis Concrete Products Company of Milwaukee, Wis., is operating a largely automatic production line with a capacity of up to 9000 sq ft of precast, prestressed roof and floor slabs per day. Essentially sandwiches with dense layers of sand-and-gravel concrete on either side of a lightweight

concrete "filling," and nine hollow cores within their 40 in. width, the slabs are produced by a casting machine that straddles several tension beds, extruding concrete over pretensioned wires as it moves down the production line at the rate of 4 ft per minute. About the size of a small house, it is supplied with raw materials by a fork-lift truck and internal hoisting machinery, and with power by a "third rail" at one side of the beds. The high strength concrete used makes it possible to cast full beds seven planks high in seven consecutive days, and to mix standard four, six, and eight inch slab thicknesses. Planks are sawn to length before being removed from the casting beds.

### PRESTRESSED SLABS ROOF FLORIDA CHURCH

After investigating several roof systems, with particular attention to their fire ratings and ability to hold up in the Florida climate, architects Herbert S. Johnson and Charles F. McAlpine, Jr. decided to roof a low-budget parish hall-church and classroom wing in the Fort Lauderdale area with precast, prestressed concrete slabs. The flat slabs selected had the advantage of being suitable for both medium and long spans, and, in addition, gave the simplicity of form, ease of erection and low on-the-job labor costs that the architects were looking for. For the parish hall, they were laid from foundation to peak so that they form both roof and side walls; and were overlapped so that they provide a pleasant rhythm over the large area while

correcting visually any differences in camber caused by variations in prestressing. In the classroom wing, similar 4-ft slabs were used to span from cross wall to cross wall, parallel to the ridge. The roof slabs for both buildings were joined by welding metal inserts set in place during casting.



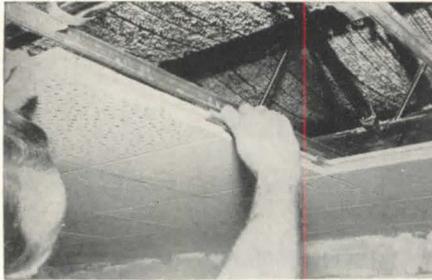
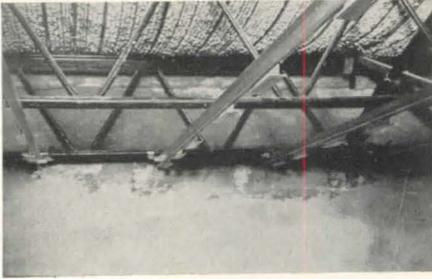
### PRECAST WINDOW WALLS CUT SCHOOL COSTS

Also in Florida, Frank H. Shuffin and Associates have developed a precast concrete window-wall unit that has helped to pare costs on several schools in the Miami area. Their most obvious cost advantage lies in the repetitive use of a standard manufactured element. (To date, over four hundred of the frames have been cast in a steel form that originally cost \$1500.) However corollary savings have also stemmed from the increased speed and ease of installing the precast units.

The frames themselves not only incorporate spandrels, mullions and muntins, but are also used to form the sides of the concrete columns and

the bottom of the continuous perimeter beams. At the Douglas Elementary School (shown), they are set in a module of roughly 8 ft, with slightly less than a foot between adjacent frames. When set in place, the units form a series of "shadow boxes" designed to receive standard glass jalousies on the inside face, and horizontal aluminum sun vanes on the outside face. These sun vanes serve as a shield against sky glare, develop a natural source of indirect light and eliminate interior blinds. They also help to cool the classrooms by guiding breezes in—and keeping the direct sun out.

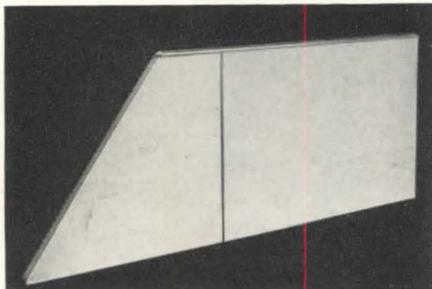
*more roundup on page 250*



## Two Hour Fire-Rated Acoustical Tile Ceiling

An acoustical tile ceiling designed to provide effective fire protection for structural steel members and floor assemblies has been given a two-hour fire rating by Underwriters' Laboratories. As a rule, mechanically suspended acoustical tile ceilings do not prohibit the passage of flame and heat to areas above the ceiling, even though the tile itself may be incombustible. Consequently most codes have required that acoustical tile be used with reinforced concrete or fireproofed steel, or backed by an intermediate fire-stop. The new *Acoustical Fire-Guard* tile can, however, be suspended directly from bar joists or carrying channels with only a 10-in. air space between it and the structural floor or deck, thus elimi-

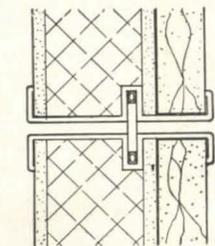
nating one step in the construction procedure. The heart of the *Fire-Guard* system is a dense mineral fiber tile with a special tongue, groove and kerfed edge that permits interlocking of the tiles. Each tile rests on a clip spline that has been snapped onto main runners, which are installed on 12-in. centers and attached to the carrying steel with clips placed at nominal 4-ft intervals. The new system gives a noise reduction coefficient of .75, or about that of a standard mechanically suspended incombustible tile ceiling. At present the tile is available in a random perforated pattern only, but more designs are expected to follow shortly. *Armstrong Cork Co., Lancaster, Pa.*



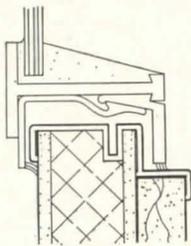
## Marble-Faced Insulating Sandwich Panels

A three-year-old technique for slicing marble into thinnesses of as little as 1/2 in. has led to the introduction of a fully insulated, marble-faced wall panel that is said to weigh up to 50 per cent less than standard marble veneer. Developed jointly by the Vermont Marble Co. and the Maul Macotta Corp., the new

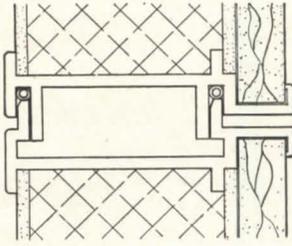
*Vermarco Panel-Wall* consists of marble "tiles," each 1 ft square and 1/2 in. thick, bonded to 1/8-in. asbestos-cement board which in turn is bonded to a rigid, lightweight insulating core. The interior facing, also of asbestos-cement board, can be painted or covered with a wide variety of materials—including marble. An aluminum frame permits positive mechanical fastening and includes a built-in weatherstop and expansion seal. If desired, it can be anodized to blend or contrast with the marble facing. Three types of panels will be available initially: the Series 100 flush mount panel for opaque curtain and panel walls, the Series 200 grid wall panel, and the Series 300 window wall panel. *Vermont Marble Co., Proctor, Vt.*



Grid Wall Panel



Window Wall Panel



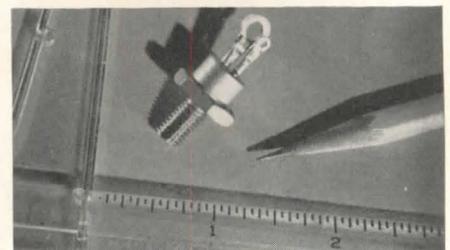
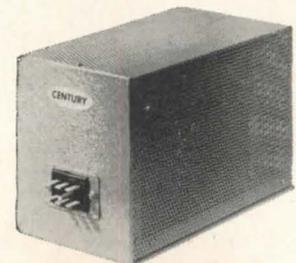
Flush Mount Panel

## Miniature Dimmer for More Effective Light Control

The silicon controlled rectifier, a tiny semiconductor no bigger around than a dime and less than 1 5/8 in. long, has made possible substantial reductions in the size, weight and cost of the *CEN-TROL* electronic dimmer system—with no corresponding reduction in efficiency. In fact, its performance is said to rival and even surpass those of other devices for dimming large lamp loads. Because the *C-CORE* rectifier is activated instantly by as little as .015 watts, no warm-up time is required. The system has an indefinite load dimming ratio from maximum rating to zero; operates with no overdrive, no surge, no drift, and no dip during cross

fading; and gives complete dimming to blackout. Operation is smooth and quiet, and there is no significant radiant heat problem. In addition the reduction in bulk, heat and noise makes it possible for the *C-CORE* dimmer chassis to be located very close to the lighting instrument it will control, thus measurably reducing long heavy individual cable runs. (The cable that connects the dimmer chassis to the centrally located console is only No. 18 wire.) The chassis itself measures 6 by 6 by 6 in. and weighs about 4 1/2 lbs. *Century Lighting, Inc., 521 West 43rd St., New York 36, N. Y.*

more products on page 266



### Unit: A Manual of Design

(A.I.A. 19-B-3) Drawings and photos of typical glued laminated wood structures are followed by design procedures, load tables, connection details, etc. for two- and three-hinged arches, buttressed segment arches, laminated purlins and laminated beams. Information on the fabrication of *Unit* laminated wood members, guide specifications, and a color selection chart are also included. 28 pp. *Unit Structures, Inc. Peshtigo, Wis.*

### Roll-O-Matic Air Filter

Bulletin 248-C describes construction and operating characteristics of the new Model "B" *Roll-O-Matic* automatic renewable-media air filter. 12 pp. *Dept PD, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.*

### Concreting of Airport Pavements

. . . and *Structures* discusses role of *Pozzolith* in meeting high concrete requirements for nine major airport projects. 20 pp. *The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio*

### Steel Doors and Frames

Shows standard types and sizes, and gives specifications for models in the *Commercial* and *Commodity* lines of steel doors and frames for commercial, institutional and residential installations. 20 pp. *Amweld Building Products, 604 Plant St., Niles, Ohio*

### Installed Vacuum Cleaning Systems

Catalog 160 includes detailed information, along with illustrations and descriptive diagrams, on installed vacuum cleaning systems for institutional, civic and municipal buildings. 8 pp. *Spencer Turbine Co., Hartford, Conn.*

### Centrifugal Roof Ventilators

Describes construction features, capacities, noise levels and accessories of new line of centrifugal roof ventilators. 8 pp. *American Blower Div., American-Standard, Detroit 32, Mich.*

### Sound Insulation of Wall, Floor

. . . and *Door Construction*, the second supplement to National Bureau of Standards Building Materials and Structures Report 144, contains sound insulation data for twenty-eight building constructions measured at the Bureau between July 1955 and December 1956. The accuracy of the figures is discussed, and details are given on the "Energy Average," a new average figure for

the overall sound insulation of a panel which is designed to supersede the "Decibel Average." BMSR 144, 40¢; 1st supplement, 5¢; 2nd supplement, 10¢. *Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.*

### Lightning Facts and Figures

Explains in detail how lightning "happens"; how often it is likely to strike in a given area; and how individuals as well as structures can be protected from lightning loss or damage. *Lightning Protection Institute, 53 West Jackson Blvd., Chicago 4, Ill.*

### Thru-Vu Vertical Blinds

(A.I.A. 35-P-3) Describes, illustrates, and gives installation details and specifications for *Thru-Vu* vertical blinds. 4 pp. *Thru-Vu Vertical Blind Corp., 113 Calvert St., Harrison, N. Y.*

### ASTM Standards on Cement

Compiles up-dated standard specifications, methods of test and definition of terms. Appendices contain a Manual of Cement Testing, a list of selected references, and a discussion of analytical balances and weights. 278 pp. \$3.50. *American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.*

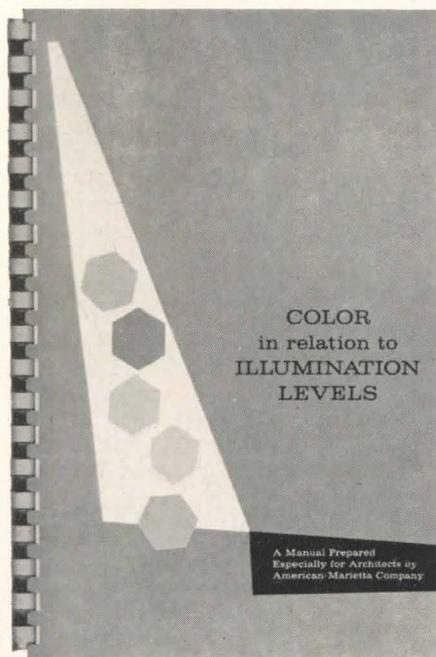
### Lighting for Hotels

Lighting guidebook discusses problems of lighting guest, employe and public areas of hotels and motels, and gives suggested solutions. Other topics include: types of bulbs and fluorescent tubes, use of color, maintenance and cleaning of lighting installations, and economics of good lighting. 40 pp. Single copies, 70¢. *Publications Office, Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y.*

### Architect's Manual

. . . on *Flooring Products* (A.I.A. 23-G) gives complete specification information on resilient tile flooring, including approximate installed costs, applicable Federal Specifications, wearing qualities, characteristics, properties, etc. Subfloor conditions and specifications are reviewed along with installation and maintenance data, and special charts show recommended adhesives, static load data, acoustical properties and light reflectivity values for various types of floor tile. *B. F. Goodrich Co., Flooring Products, Watertown 72, Mass.*

\* Additional product information in *Sweet's Architectural File, 1958*  
more literature on page 294



*Color in Relation to Illumination Levels*, (A.I.A. 25-B-21) discusses the selection of paint colors in relation to their appropriateness and compatibility with low and high footcandle levels. A suggested palette of colors for low illumination areas is supplemented by a discussion of the colorimetric basis for their selection and by examples of suitable color schemes. A similar color palette for normal and high illumination areas is followed by illustrations of typical color applications in those areas and by a discussion of the relation between illumination and paint-color appearance. Packets of chips from both color palettes are included. *American-Marietta Paint Div., 101 East Ontario St., Chicago 11, Ill.*

**STRUCTURAL STEEL COMPOSITE BEAMS: 1\***

By ELWYN E. SEELYE

**Usage**

Composite construction is used to take advantage of the extra strength of an I beam integrated with a concrete slab. It has been used on highways very extensively. It has been used less frequently but with success on buildings where the integration is obtained by shear connectors welded to the flange of the beam. The saving in structural steel might run from 25% to 40%. The actual economy depends on an economic study but is substantial, even after taking into account the cost of the integration.

**Design Criteria for**

**Composite Construction for Buildings**

1. Width of slab effective as T-flange is taken as the least of the following values:

- (a) 1/4 span length of beam
- (b) The distance center to center of beams
- (c) 16 times the least thickness of the slab

For fully encased beams, the effective width may be taken as 16 times the least slab thickness plus the stern width.

2. Full shoring is supplied, so that the composite section carries both dead and live loads. In actual practice, if the shores are omitted, the safety factor on ultimate strength will not be changed.

3. The allowable load on the shear connectors is based on their useful capacity with a safety factory of 2.4.

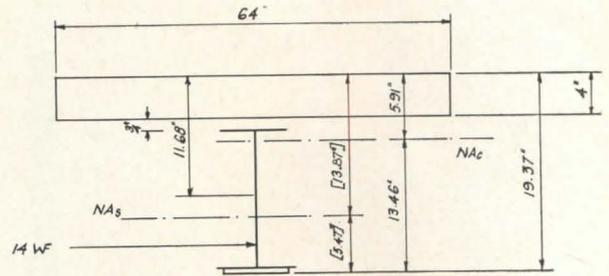
**Design Steps in**

**Composite Construction for Buildings**

1. Choose a trial section composed of concrete slab thickness, steel beam, and steel cover plate.
2. Compute neutral axis of steel section.
3. Compute moment of inertia of steel section about its own neutral axis.
4. Compute neutral axis of total steel section plus transformed concrete area.
5. Compute moment of inertia of total steel section plus transformed concrete area about its neutral axis.
6. Compute section moduli for steel and concrete in composite section.
7. Compute extreme fiber stresses in steel and concrete.
8. Compute length of cover plate. Steps 4, 5 and 6 must be repeated, omitting the cover plate from the calculations.
9. Design the shear connectors.

**NOMENCLATURE**

- Y = distance from top of slab to neutral axis of combined steel beam and plate
- Y = distance from top of slab to center line of steel area listed
- Ay = moment of area about top of slab
- Io = moment of inertia of steel about its own axis
- Ss = section modulus of steel
- Sc = section modulus of concrete
- fs = extreme fiber stress of steel
- fc = extreme fiber stress of concrete
- h = horizontal shear
- V = total shear (end reaction)
- Q = static moment of steel beam about that portion of cross section of composite section lying above steel beam



Dimensions shown thus [ ] are computed values.

PROBLEM: Given: Beam moment = 192 foot-kips

Design: Composite beam.

Assume 4" concrete slab  
n = Es/Ec = 10

**STEP 1**

14 WF 30 with 5 x 3/4 bottom cover plate.  
3/4" haunch between top of beam and bottom of concrete slab.

**STEP 2**

Member	Area	Y	Ay
Plate 5 x 3/4	3.75	19.0	71.2
14 WF 30	8.81	11.68	103.0
	12.56		174.2

$$y = \frac{174.2}{12.56} = 13.9"$$

**STEP 3**

Member	Byl <sub>0</sub> + ΣAy <sup>2</sup>
Io (14 WF 30)	= 289.6
Ay <sup>2</sup> (14 WF)	8.81 x 2.19 <sup>2</sup> = 42.3
Ay <sup>2</sup> (plate)	3.75 x 5.09 <sup>2</sup> = 97.0
	428.9

**STEP 4**

Take moments about top of slab.

$$\text{Transformed area of slab} = \frac{64 \times 4}{10}$$

$$kd = \frac{12.56 \times 13.9 + \frac{64 \times 4}{10} \times \frac{4}{2}}{12.56 + \frac{64 \times 4}{10}} = \frac{174.5 + 51.2}{12.56 + 25.6} = 5.91"$$

**STEP 5**

I of transformed slab area about NA<sub>c</sub> (I =  $\frac{bd^3}{3}$ )

+ Ay<sup>2</sup> (steel beam + plate)  
+ I<sub>s</sub> (steel beam + plate)

$$I_{\text{composite}} = \frac{64}{3 \times 10} (5.91^3 - 1.91^3) + 12.56 \times 7.96^2 + 429 = 425 + 796 + 430 = 1651$$

**STEP 6**

$$S_s = \frac{1658}{13.46} = 122.7$$

$$S_c = 10 \times \frac{1651}{5.91} = 2790$$

**STEP 7**

$$f_s = \frac{192000 \times 12}{123} = 18700 \text{ psi}$$

$$f_c = \frac{192000 \times 12}{2800} = 823 \text{ psi}$$

\* From material soon to be published in a new edition of "Design, Data Book for Civil Engineers" by John Wiley & Sons, Inc.



Our community needs a new school.



We need it in a hurry.



We want a sturdy, attractive building.



We want fire safety for our children.



We want a building that's easy to add on to.



We want a flexible floor layout.



And we want to keep the cost low.



Now, what structural material do you recommend?

**How to give the community what it wants:** Recommend framing the school building with structural steel. Only steel framing meets all these demands. Both steel producers and steel fabricators have expanded facilities. There's an ample supply of the fabricated structural shapes you need -- when you need them.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**



**STRUCTURAL STEEL COMPOSITE BEAMS: 2\***

By ELWYN E. SEELYE

**STEP 8**

The theoretical length of cover plate is determined from the parabolic moment curve by the given equation where

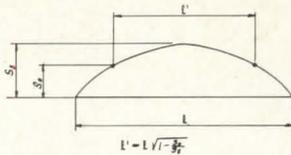
$l$  = span length

$S_s$  = section modulus of composite section plus plate

$S_0$  = section modulus of composite section without plate

$l'$  = theoretical length of cover plate

The actual length of the cover plate should extend 1'-0" beyond the theoretical points of cut-off.



Repeat STEP 4 - Without Plate

Total depth of section = 4.75 + 13.87 = 18.62"

Distance from top of slab to  $\bar{C}$  of steel beam = 4.75 + 6.93 = 11.68"

$$kd = \frac{8.81 \times 11.68 + \frac{64 \times 4}{10} \times \frac{4}{2}}{8.81 + \frac{64 \times 4}{10}} = 4.48$$

Repeat STEP 5

$$l = \frac{64}{30} (4.48^3 - 0.48^3) + 8.81 \times 7.20^2 + 289 = 938$$

Repeat STEP 6

$$S_0 = \frac{938}{(18.62 - 4.48)} = 66.3$$

Length of cover plate for a 30 ft. beam =  $30 \sqrt{1 - \frac{67}{123}} = 20.4$

Use plate length = 22' - 3"

**STEP 9**

The horizontal shear per unit length of beam =  $H = \frac{VQ}{I}$ .

The spacing of shear connectors equals the total working capacity of the connectors divided by the horizontal shear per unit length of beam. Thus  $S = \frac{UC}{FS} \times \frac{I}{VQ}$

Given: Beam length = 30'-0"

End reaction = 25.5 kips

Use: 2-3/4  $\phi$  stud shear connectors.

Working load for 2 studs = 2  $\times$  4.25 = 8.5 kips.

(See following table for values.)

Maximum V at end of beam = 25.5 kips

$$S = \frac{8.5 \times 938}{25.5 \times 58.5} = 5.3''$$

V at 4'-0" = 18.75 kips

$$S = \frac{8.5 \times 1658}{18.75 \times 98.4} = 7.64''$$

V at 7'-0" = 13.70 kips

$$S = 7.64 \times \frac{18.75}{13.70} = 10.5''$$

V at 10'-0" = 8.6 kips

$$S = 7.64 \times \frac{18.75}{8.6} = 16.7''$$

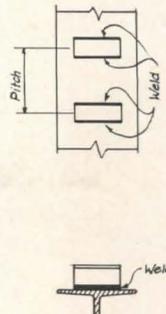
No Plate  $Q = \frac{64 \times 4}{10} (4.48 - 2) = 58.5$

With Plate  $Q = 25.6 (5.84 - 2) = 98.4$

Use the following pitch of connectors: 4'-0" at 5", 4'-6" at 7 1/2", balance at 12".

**TABLE A - CHANNEL CONNECTORS**

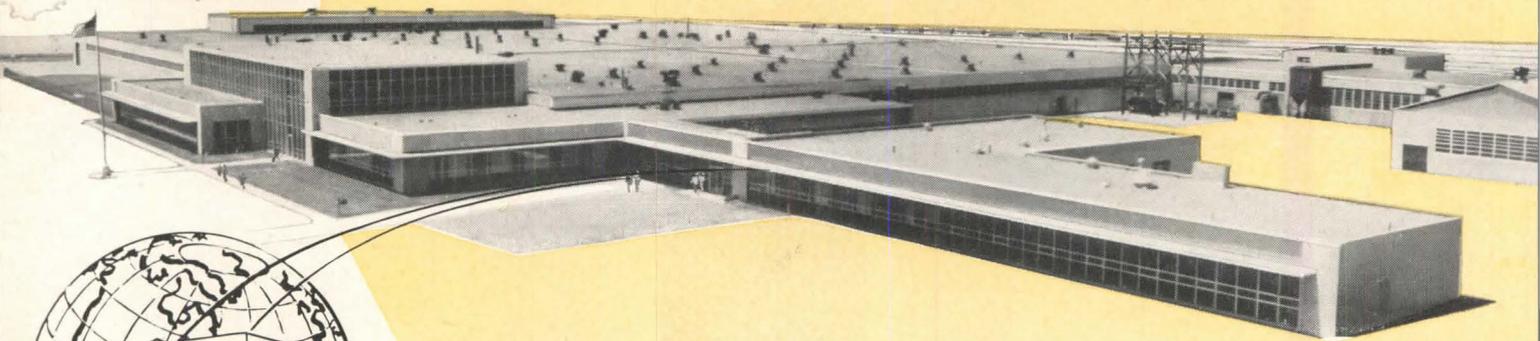
Channel Type Size	Working Load for 1 in. of Width				Weld Size, in.	Required Length of Weld for 1 in. of Width					
	Concrete Strength, p.s.i.					Concrete Strength, p.s.i.					
	2500	3000	3500	4000		2500	3000	3500	4000		
Am. Std. 3" $\bar{C}$	4.1#	1730	1900	2050	2190	1/8	.98	1.08	1.16	1.24	
	5.0#	1910	2090	2260	2420		1.08	1.18	1.28	1.37	
	6.0#	2080	2280	2460	2630		1.18	1.29	1.39	1.49	
4" $\bar{C}$	5.4#	1890	2080	2240	2390	1/8	1.07	1.18	1.27	1.35	
	7.25#	2150	2360	2540	2720		1.22	1.34	1.44	1.54	
	Car and Ship 3" $\bar{C}$	7.1#	2050	2250	2430		2600	3/8	1.16	1.27	1.37
9.0#						1/4	.78		.85	.92	.99
			2400	2630	2840	3040	3/8		.58	.64	.69
4" $\bar{C}$	13.8#					1/4	1.36	1.49	1.61	1.74	
						3/8	.91	1.00	1.08	1.15	
						1/4	.67	.75	.80	.86	
4" $\bar{C}$	13.8#	2930	3210	3470	3710	3/8	1.66	1.82	1.96	2.10	
						3/4	1.11	1.22	1.35	1.41	
						1/4	.83	.91	.98	1.05	
						5/16	.67	.73	.79	.84	
						3/8	.56	.61	.66	.70	



\* From material soon to be published in a new edition of "Design, Data Book for Civil Engineers" by John Wiley & Sons, Inc.

# Solution

## for Hospital Technical Departments



HOSPITAL PROBLEMS

AMSCO RESEARCH  
LABORATORIES



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METHODS ENGINEERING  
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Infant Formula Rooms, Operating Room Suites,  
Central Instrument Rooms, Utility Rooms.*



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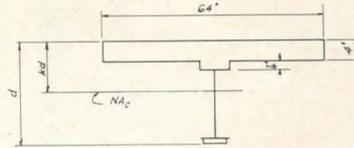
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**STRUCTURAL STEEL COMPOSITE BEAMS: 3\***

By ELWYN E. SEELYE

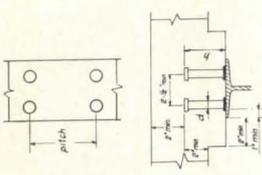
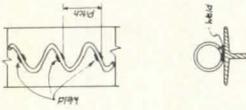
**TABLE D - SECTION MODULUS  $S_s$  AND  $S_c$  FOR GIVEN BEAMS**

These tables have been figured for 3000 p.s.i. concrete,  $n = 10$ .



**TABLE C - SPIRAL CONNECTORS**

Spiral Bar Diameter, in.	Working Load Per Weld Concrete Strength, p.s.i.			Effective Length of Weld, in. per Pitch		
	2500	3000	3500	2500	3000	3500
1/2	5650	5920	6150	1.05	1.10	1.14
3/8	7070	7400	7690	1.18	1.23	1.28
3/4	8480	8880	9220	1.01	1.06	1.10
				1.12	1.17	1.21
				1.01	1.06	1.10



**TABLE B - WORKING LOAD OF ONE STUD CONNECTOR, L.B. FOR  $\frac{h}{d} > 4.2$**

Stud Diameter, in.	Concrete Strength, p.s.i.		
	2500	3000	3500
1/2	2680	2940	3180
3/8	3870	4250	4910
3/4	5290	5790	6250
			4000
			3400
			4910
			6700

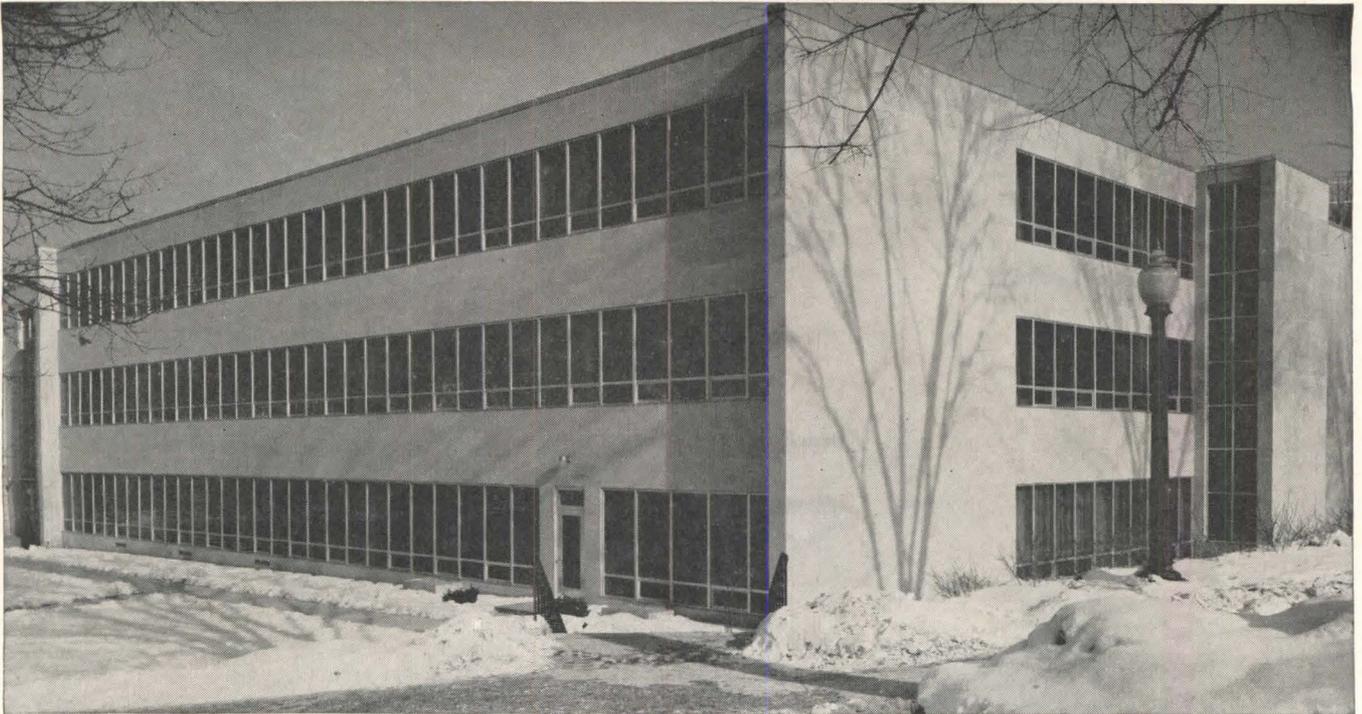
Section	Steel Weight, lb./ft.	I	Kd	d - Kd	$S_s$	$S_c$
14WF30	30	938	4.48	14.13	66.3	2095
14WF30 6 x 1 RL	54.4	2030	6.64	12.97	156.7	3060
14WF43	43	1241	5.17	13.26	93.6	2400
14WF43 6 x 1 RL	63.4	2220	7.04	12.39	179	3155
14WF61	61	1669	6.0	12.66	132	2780
14WF61 6 x 1 RL	81.4	2585	7.58	12.08	214	3415
14WF78	78	2042	6.61	12.20	168	3095
14WF78 6 x 1 RL	98.4	2900	8.02	11.79	246	3620
16WF36	36	1333	5.11	15.49	86	2610
16WF36 9 x 1 RL	66.6	3178	8.29	13.31	238	3620
16WF40	40	1481	5.38	15.37	96	2755
16WF40 9 x 1 RL	70.6	3311	8.46	13.29	249	3910
16WF50	50	1792	5.96	15.04	119	3010
16WF50 9 x 1 RL	80.6	3568	8.80	13.20	270	4050
16WF64	64	2122	6.55	14.20	149.5	3240
16WF64 6 x 1 RL	84.4	3263	8.28	13.47	242	3940
18WF50	50	2126	6.29	15.46	129	3380
18WF50 9 x 1 RL	80.6	4242	9.38	14.37	296	4520
18WF60	60	2493	6.84	16.16	154	3640
18WF60 9 x 1 RL	90.6	4559	9.70	14.3	319	4700
18WF64	64	2558	6.93	15.69	163	3690
18WF64 8 x 1 RL	91.2	4340	9.4	14.22	305	4610
21WF62	62	3228	7.52	18.22	177	4300
21WF62 10 x 1 RL	96	6087	10.97	15.77	386	5540
21WF82	82	3941	8.4	17.21	229	4700
21WF82 8 x 1 RL	109.2	6106	10.85	15.76	388	5620
24WF76	76	4709	8.85	19.81	238	5315
24WF76 8 x 1 RL	103.2	7540	11.76	17.9	421	6410
27WF94	94	6790	10.4	21.26	320	6530
27WF94 8 x 1 RL	121.2	10086	13.25	19.41	518	7600

Intermediate cover-plate sizes may be obtained by interpolation.  
EXAMPLE: Find cover-plate size for a 14 WF 30 that will provide a steel section modulus of 130 in.<sup>3</sup>

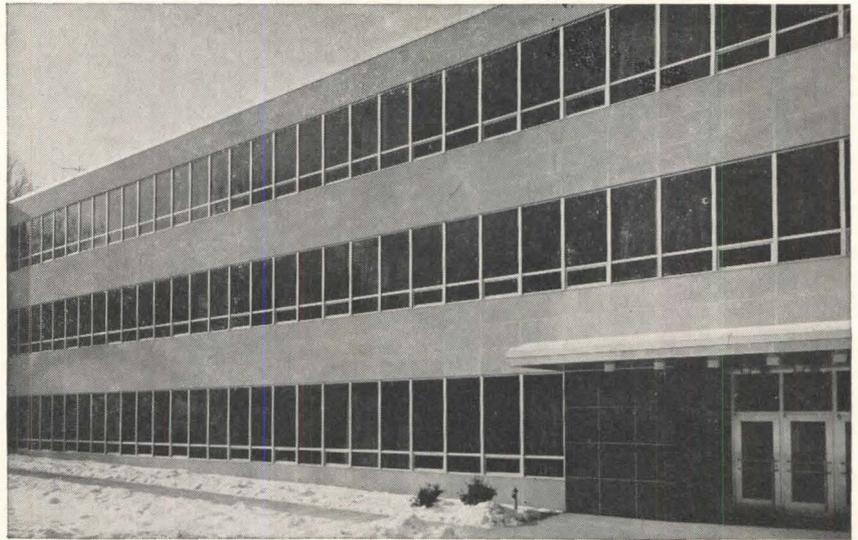
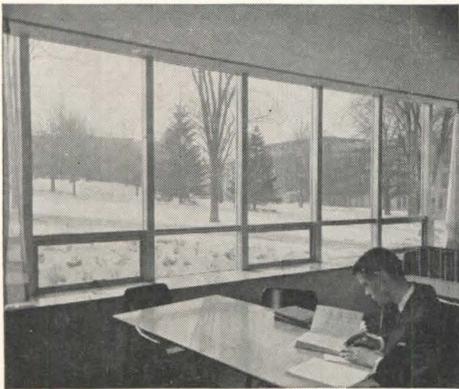
$$\begin{aligned}
 & \left. \begin{array}{l} 14 \text{ WF } 30 \\ 6 \times 1 \text{ RL} \end{array} \right\} A = 14.81 \\
 & \left. \begin{array}{l} 14 \text{ WF } 30 \\ 6 \times 1 \text{ RL} \end{array} \right\} A = 8.81 \\
 & \left. \begin{array}{l} 14 \text{ WF } 30 \\ 6 \times 1 \text{ RL} \end{array} \right\} \left. \begin{array}{l} S_s = 156.7 \\ S_s = 66.3 \end{array} \right\} S_s \text{ of RL} = 90.4 \\
 & \frac{130}{66.3} = \text{Req'd } S_s \quad 6.0 \times \frac{63.7}{90.4} = 4.23 \text{ Area Req'd}
 \end{aligned}$$

Since this ratio is dependent on plates of equal thickness, use 4 1/2" x 1" RL.

\* From material soon to be published in a new edition of "Design, Data Book for Civil Engineers" by John Wiley & Sons, Inc.



**New Library Addition, Kent State University, Kent, Ohio,** has windows of American Lustragray glare reducing glass. Architects: Fulton, Krinsky & Dela Motte, Cleveland. Glazier: Toledo Plate & Window Glass Co., Cleveland.



WSW 7396

## Another installation of **AMERICAN Lustragray...**

the glass that reduces sun glare and heat without sacrificing vision

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gray glass gives to the exterior of new buildings is also a reason for its tremendous acceptance. Lustragray provides all these features economically.

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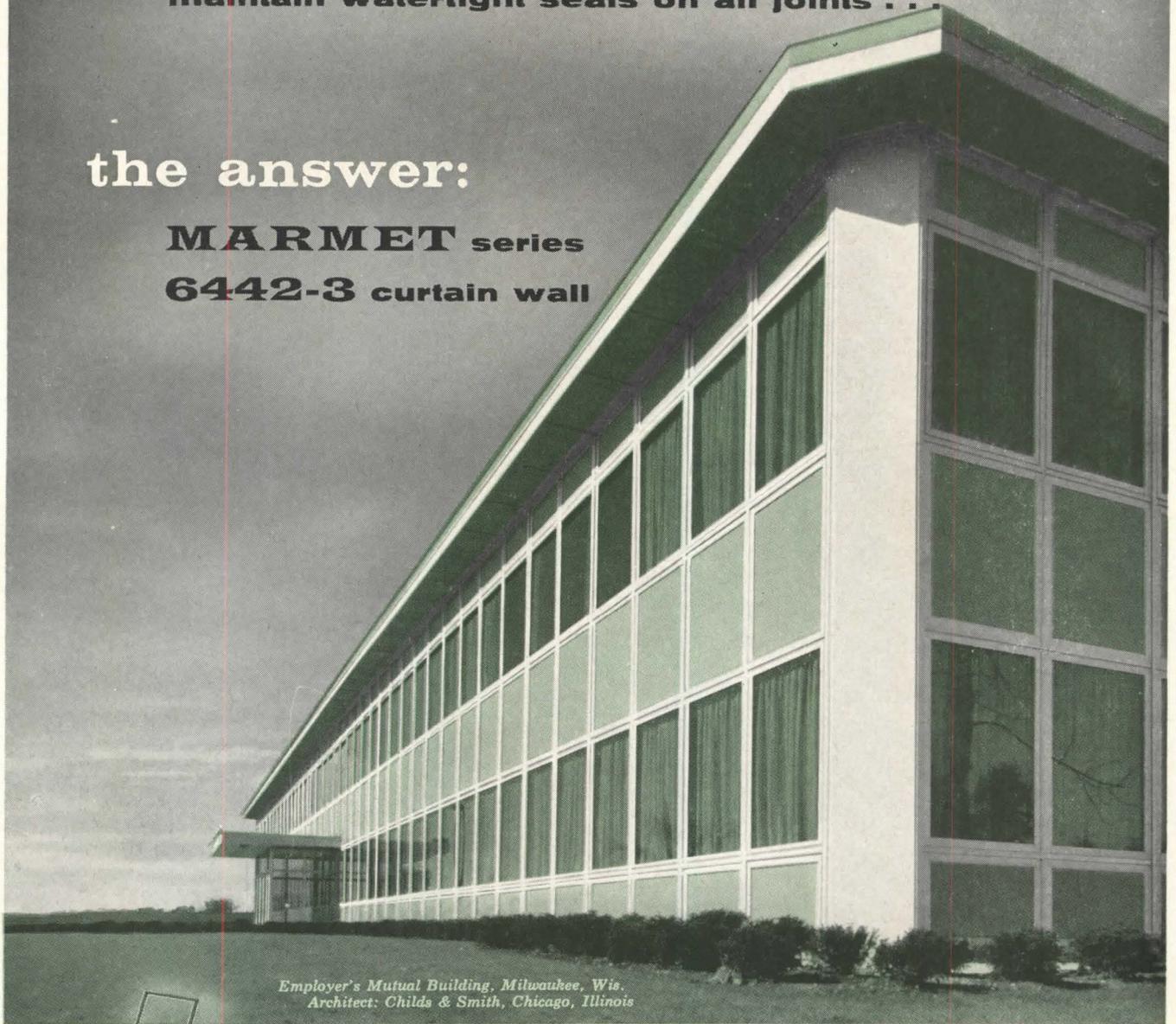
AMERICAN-SAINTE GOBAIN CORPORATION is a merger of the former American Window Glass Company, Pittsburgh, Pa., and the former Blue Ridge Glass Corporation, Kingsport, Tenn. (which was a wholly-owned subsidiary of Saint-Gobain of Paris, France). American Window Glass Division plants are located in Arnold, Jeannette, Ellwood City, Pa.; Okmulgee, Okla. Blue Ridge Glass Division plant is located in Kingsport, Tenn.

# problem:

as 224 ft. of window-wall expands and contracts,  
maintain watertight seals on all joints . . .

# the answer:

**MARMET series**  
**6442-3 curtain wall**



*Employer's Mutual Building, Milwaukee, Wis.  
Architect: Childs & Smith, Chicago, Illinois*



*look how fast it goes up...look at the results!*

Typical of the single and double level buildings for which the 6442-3 series is designed, this office building has large horizontal dimensions in which the cumulative effect of expansion and contraction is considerable.

Its glistening sheath is a group of interlocking frame sections, each of which can be quickly erected by two men.

Mortise and tenon joints are connected with bolts, carefully concealed by the glass race (or snap-on glazing bead where specified), to provide a flush plane and tubular appearance. These mating sections are

weatherstripped where feasible, and all peened joints are internally sealed with a special compound injected under a pressure of 800 lbs. per square inch.

With single or double weatherstripping, this window wall has proven watertight and structurally sound in winds of hurricane velocities. Special expansion joints at the proper intervals absorb the cumulative effects on the long horizontal span. Whatever your curtain wall problem may be . . . structurally or esthetically . . . Marmet design engineers have the answer . . . just write or call.

For detailed specifications on the complete line of MARMET products — consult Sweet's Catalog File No. 3a or write to MARMET for Catalog 59a, 59c, and 59d. Mar

**MARMET** Corporation

300-C Bellis Street, Wausau, Wisconsin

# Technical Roundup

continued from page 234

## Vierendeel Trusses Provide Truck Area in New Telephone Building

The steel structure for a new ten story addition to the Mountain States Telephone Building in Denver, Colorado, includes Vierendeel trusses which provide unobstructed areas for ground level garage space, and beam-column connections which permitted the use of fast iron powder electrodes.

Since the ground floor truck area had to be free of columns that would obstruct free movement of vehicles, and since diagonal stiffeners in the area above could not be tolerated, the designers chose Vierendeel trusses as the means of supporting the nine stories over the garage. Two were required to provide adequate depth. The trusses, each approximately 32 ft long and 19½ ft high, arrived at the job site completely shop welded and ready for erection. They were then placed on top of columns which rose from the underground levels, and tied to the old building and to other steel work in the new addition. Their use resulted in a column-free area about 30 ft wide and 60 ft long.

The rest of the steel work was al-

so fabricated and erected with welding. At joints where beams joined the column webs, tee sections were welded inside the column, forming what amounted to a box section. Standard "A" connections on the beams were field bolted to the columns with high strength bolts which served as erection fasteners and were left in place to carry the shear load at the joint. The welded connections, which were used to take wind and distributed moments, join the beams to the columns through connection

plates on the top flange and direct butt joints on the bottom flange. This joint design made it possible for all welding to be done in the flat position, which in turn reduced welding costs by (1) permitting the use of high-speed iron powder electrodes, and (2) eliminating time-consuming out-of-position welding.

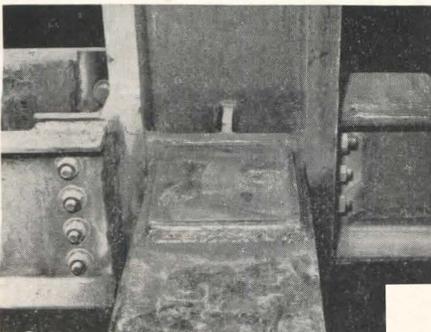
The architects for the project were Raymond Harry Ervin & Associates; consulting engineers were Phillips-Carter-Osborn, Inc.

more roundup on page 254

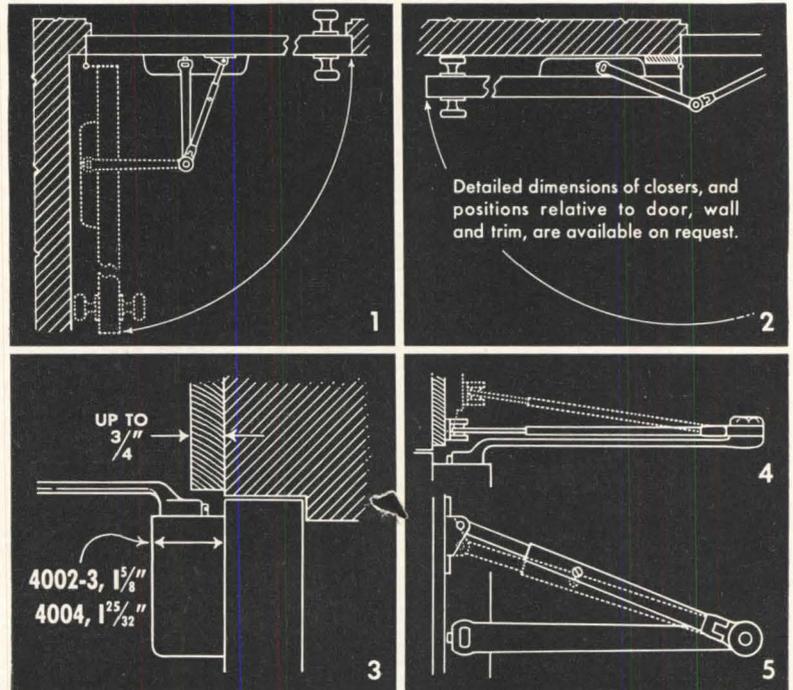
Photos courtesy of Lincoln Electric Corporation



Second of two Vierendeel trusses goes into position against original building



Tee section welded to web and flanges makes column a box section at connection



### APPLICATION DETAILS

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

As Demonstrated in Drawings Above:

1. The LCN "Smoothee" takes less space than most doorknobs between door and wall.
2. Degree of door opening possible depends mostly on type of trim and size of butt used.
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May we send a descriptive folder? Or a complete LCN Catalog, if you like? Address

**LCN CLOSERS, INC., PRINCETON, ILLINOIS**

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario

# Texas...

*Curtis Visioneers provided high levels of glare-free illumination, Eye-Comfort diffused lighting... blending with modern low-ceiling architectural design... at Fort Worth savings and loan company*

office where banking transactions are made as a special need for lighting that assures visual acuity. Fort Worth's Mutual Savings and Loan Association was faced with this problem: how to achieve modern low-ceiling construction, yet obtain high levels of illumination without objectionable shadows or glare. Solution: Drawing from a wealth of experience, Curtis created a continuous luminous ceiling through use of Strato-Lux. Result: a lighting system compatible with the modernistic low-ceiling design of the building that provided high intensity lighting with even-panel illumination... yet delivered low brightness quality. No glare, no distracting shadows or eye strain. Using standard products, with slight modifications to satisfy your job requirements, when necessary, Curtis visioneers can assist you, whatever your commercial lighting needs. So write for the name and address of the Curtis visioneer in the principal city nearest you. Curtis Lighting, Inc., 6135 West 65th St., Chicago 38, Ill. In Canada: 195 Wicksteed Ave., Toronto 17 Canada.



Curtis Strato-Lux provides high levels of glare-free illumination to promote efficiency and serenity. Exceptionally low ceiling brightness is achieved through use of #6025 Holophane acrylic plastic Controlens.

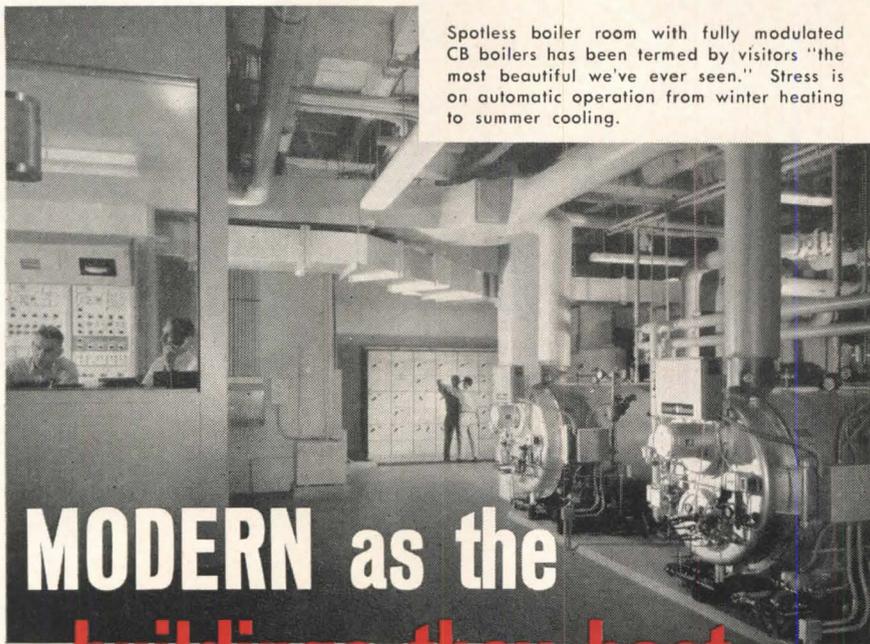


Even with Strato-Lux directly overhead, there are no bright spots, no reflections, in critical viewing areas. Acrylic plastic panels never discolor, can be slipped out one at a time and dipped in detergent for cleaning.



**CURTIS**

*Visioneers in Planned Lighting*



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## MODERN as the buildings they heat...

Two compact, efficient, automatic CB boilers heat five new buildings for International Minerals and Chemical Corporation

Precision and quality are a must for this company which produces minerals and chemicals for industry and agriculture. It's an attitude that carries over to the equipment they buy. That's why they installed two 100-hp Cleaver-Brooks boilers to heat their dramatic new headquarters at Skokie, Ill.

According to Callix E. Miller, A.I.A. Project Manager for IMC, "Our Cleaver-Brooks automatic packaged boilers are efficient and quiet." He added, "Their styling and performance are in keeping with functional design that characterizes our new headquarters."

W. J. Mullineaux, Plant Engineer, reports, "Cleaver-Brooks four-pass, forced-draft design has proved it can keep our operating costs low. The CB boilers fit in well with the automatic system we have and simplify our entire operation. Hinged doors make routine inspection easy."

Architects and Engineers on the job were Perkins and Will. Builder was Turner Construction Company.

For complete information on Cleaver-Brooks packaged boilers like those installed at IMC, contact your representative or write direct to Cleaver-Brooks Co., Dept. C, 362 E. Keefe Ave., Milwaukee 12, Wisconsin, U. S. A.

**Cleaver  Brooks**  
ORIGINATOR AND LARGEST PRODUCER  
OF PACKAGED BOILERS

IMC headquarters buildings that are heated by CB boilers include the operations building and annex, administrative building, and employees' lounge-cafeteria.



## Technical Roundup

### New "Float" Process Promises Better, Cheaper Glass

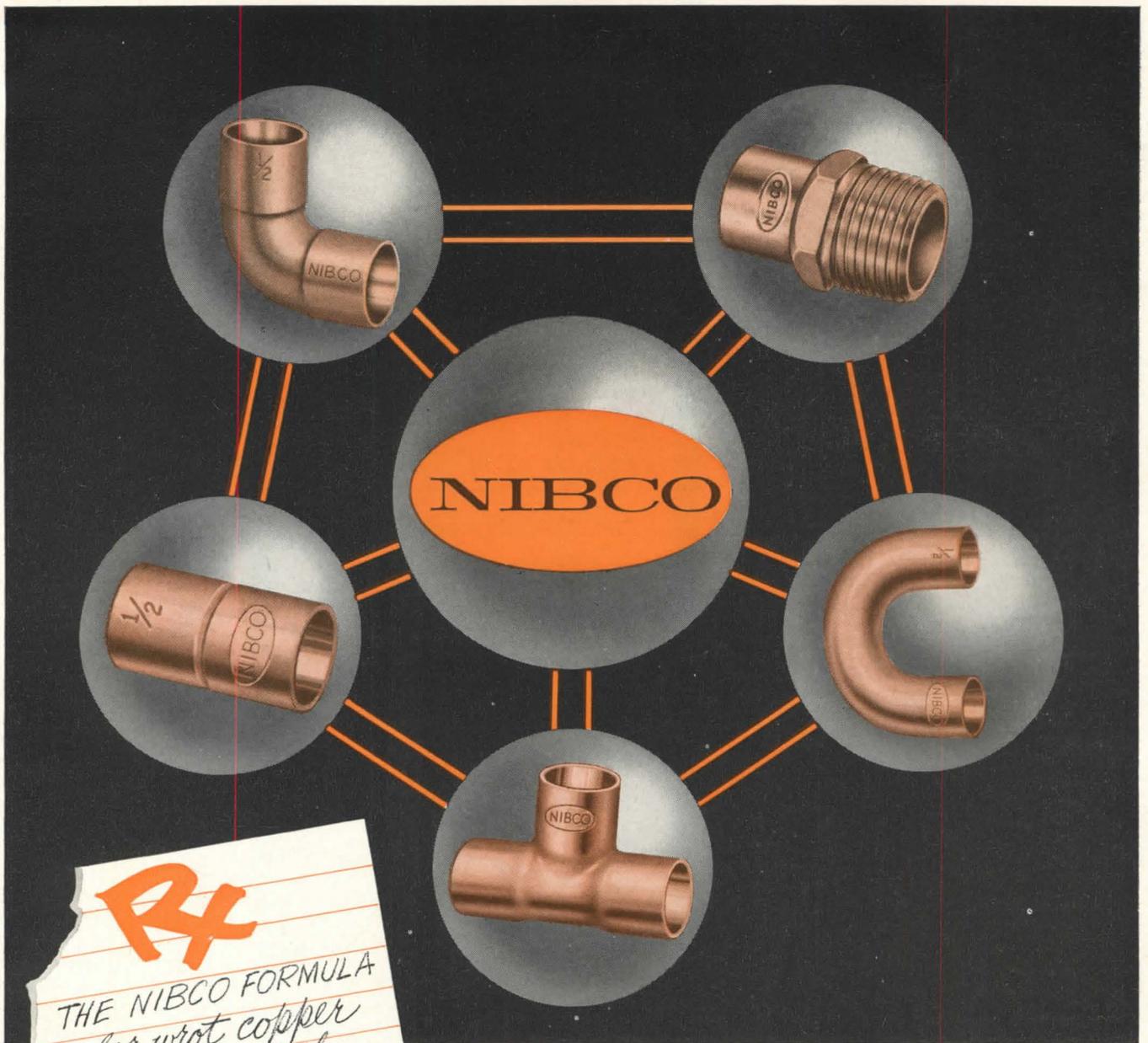
When a Briton calls a new glassmaking process "the most fundamental, revolutionary and important of all the advances in glassmaking of the present century," it must be so. And certainly the "Float" process recently announced by Pilkington Brothers, Ltd., British flat glass manufacturer, does seem to hold promise of making available an improved glass for building and other uses.

Essentially the process consists of floating a continuous ribbon of glass on a bath of molten metal in a controlled atmosphere. The finished Float Glass emerges from this bath "exceptionally" parallel and free from distortion, with fire polished surfaces which, according to Pilkington Bros., are of better quality than can be produced by grinding and polishing. Since the process is also expected to reduce manufacturing costs, Float Glass should eventually be not only better, but cheaper as well. It is currently available in limited quantities through outlets in Great Britain and overseas.

### ARI Certifies Unitary Air Conditioning Equipment

Thirty-three of the nation's leading manufacturers of unitary air conditioning equipment, representing more than 80 per cent of the total U.S. production of such units, have signed contracts to participate in a certification program guaranteeing to the architect that units bearing a "Seal of Certification" have been produced, tested and rated in accordance with standards established by the Air Conditioning and Refrigeration Institute. The program, developed by ARI in cooperation with the National Warm Air Heating and Air Conditioning Association, centers around the adoption of Btu-based ratings for cooling capacity, and applies to unitary equipment of 135,000 Btu's and under, excluding room air conditioners and heat pumps. Each manufacturer has signed a firm, enforceable contract under which the seal may be withdrawn if models tested at random by an independent laboratory do not conform to the established standard. A directory of participating manufacturers, and a detailed brochure explaining the program, are available from: Chief Engineer, Air Conditioning and Refrigeration Institute, 1346 Connecticut Ave., N.W., Washington 6, D. C.

more roundup on page 258



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# Wrot fittings that are *just right!*



Not too thick, not too thin... NIBCO wrot copper fittings heat quickly for fast assembly. And, they exceed strength requirements of recommended standards\* by more than *six times!* They exceed the required copper content by more than 15%, as well.

Whether you specify copper systems or install them, you'll appreciate the satisfaction of using wrot copper fittings you know are *just right*. Fittings by NIBCO are available from leading wholesalers throughout the nation.

**SEND FOR CATALOG "1"**  
**NIBCO INC., Dept. J-2103**  
**Elkhart, Indiana**

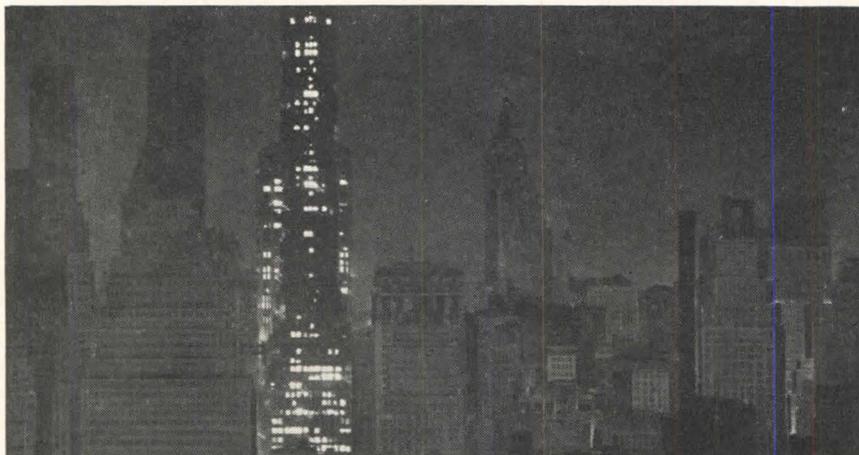


\*American Standard  
 ASA B16.22-1951

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# Exide®

## Technical Roundup

### Pros and Cons of Polysulfide Sealants Discussed at Forum

"Increasing use of shop-built components that are assembled in the field, the growing tendency toward shell construction with its variety of geometric forms, the introduction of new materials, and the increasing employment of combinations of materials—these are the four trends that will lead to increased reliance on sealants." So predicted Albert Dietz, Professor of Architecture, Massachusetts Institute of Technology, at a recent Building Industry Forum on polysulfide sealants, the first in a series to be sponsored by the Thiokol Chemical Corporation in key building areas.

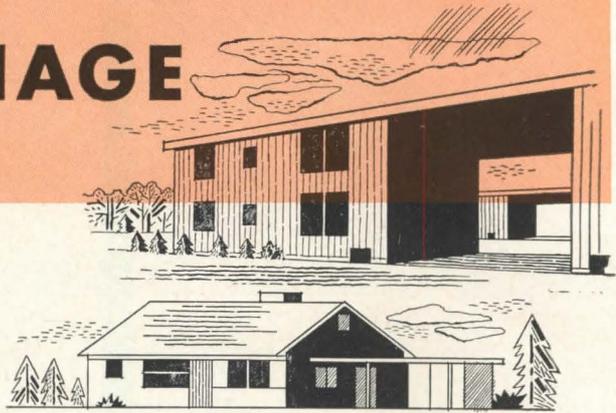
Serving with Professor Dietz on the panel were Wayne F. Koppes, architect-consultant, who acted as moderator; Francis Frybergh, Specifications Chief, Skidmore, Owings & Merrill; W. S. Kinne, Jr., General Manager of Contracts, Architectural Metals, Kawneer Co.; George Grenadier, President, Grenadier Corp.; Robert McKinley, Pittsburgh Plate Glass; H. F. Johnson, Aluminum Company of America; and J. R. Panek, Thiokol Chemical Corp.

Although the panelists generally agreed with Professor Dietz' statements that there will be increased reliance on sealants and that the polysulfide compounds will "go the whole way" toward solving the joint problem if joints and seams are designed with their potentials and limitations in mind, they also pointed out some of the problems involved in their use. For example, Mr. Kinne, whose company specializes in fabricating standard and custom wall systems, reported that, while the polysulfide sealants have proved "exceptionally usable" in the shop, where production control is good, the difficulties of assuring equally good control of field applications have caused his company to be inclined to limit their use for field assembled joints.

Mr. Grenadier, on the other hand, not only contended that the sealants were relatively easy to handle, but invited members of the audience to prove it by trying their hand at sealing several typical window wall assemblies that were on display. And Mr. Panek added weight to this point of view with the good news that a one-part compound which will alleviate the problems of mixing and storing the polysulfide sealants is "just around the corner," and should be on the market this year.

*continued on page 262*

# COPPER TUBE AND FITTINGS SANITARY DRAINAGE



Lifetime copper is recognized as the ideal material for modern piping . . . that's why Streamline DWV copper tube and fittings for sanitary drainage has gained widespread acceptance by architects, building and plumbing contractors everywhere.

Here are just a few of the many ways that DWV tube and fittings can make a better installation at a new, lower cost:

 DWV copper tube and fittings are easy to handle and are far lighter than competitive rustable materials. Lengths up to 20 feet can be easily handled by one man. Fewer joints are needed and every step of installation is quicker, easier, allows more work per man-hour.  DWV copper tube and fittings are corrosion resistant . . . cannot rust.  DWV copper tube and fitting joints never leak . . . always form permanently water-tight and gas-tight connections.  DWV copper tube and fittings have smooth interiors with no internal projections or threads to trap particles and clog the system.  DWV copper tube and fittings take up less space. 3" stack fits in 2" x 4" wall partition with no furring or buildouts. DWV is also ideal for remodelling.  DWV copper tube and fittings can be prefabricated in the shop or on the job to cut time and costs to a minimum.  DWV copper tube and fittings in a drainage system improve the quality of any home or building. Everybody accepts copper as the symbol of permanence and dependability.

## VISIBLE PROOF OF STREAMLINE QUALITY. .

All Streamline tube is color coded for your convenience . . . in a flash you can tell size and type, BUT more important, it's your guarantee of quality. Genuine Streamline tube is made to the highest American standards and it never varies. Type "M" is coded Red . . . Type "L", Blue . . . Type "K", Green . . . and DWV is coded Yellow.



250

≡ **MUELLER BRASS CO.** ≡ **DWV** ≡

PORT HURON 8, MICHIGAN



Add Beauty

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# INSIDE OUTSIDE

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124 - OC



*REUTEN TRU-BOW or TRU-WALL windows add dramatic, graceful exterior lines to any house. They permit unlimited expression of interior decorating ability.*

*Designs range from extreme fine-lined "Colonial" to the massive ruggedness of "Modern." REUTEN windows are available in over sixty combinations of styles, pane shapes, and vent positions. Some are designed for insulated glass.*

*Construction details include weathertight, smooth-fitted, "dovetail" joints . . . WOODLIFE treatment to resist age and insects . . . interior screens and storm panels on vents . . . custom quality at assembly line costs.*

*Additional information in Sweet's Architectural File 17c/Re, Sweet's Light Construction File 6c/Re or write:*

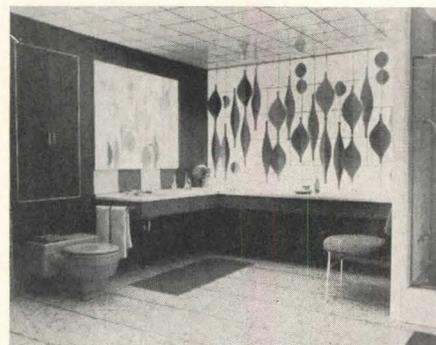
TRU-BOW  
TRU-WALL



**FRED REUTE | INC.**  
C L O S T E R , N E W J E R S E Y

## Technical Roundup

Since the overall tenor of the meeting seemed to be that the polysulfide compounds are as effective as any sealant now available—if they are properly specified and applied—perhaps Mr. Frybergh's remarks shed the most real light on the subject. He pointed out early in the meeting that, from the architect's point of view, the most pressing problems with sealants are: unavailability of adequate literature, absence of specifications and standards, inadequate technical assistance, and a lack of trained "sealing specialists."



### Prototype Hot-Cold-Light Panel

A full-scale wall panel that combines thermoelectric heating and cooling with electroluminescent lighting previews the functional-decorative tools which tomorrow's designer may expect to have at his disposal.

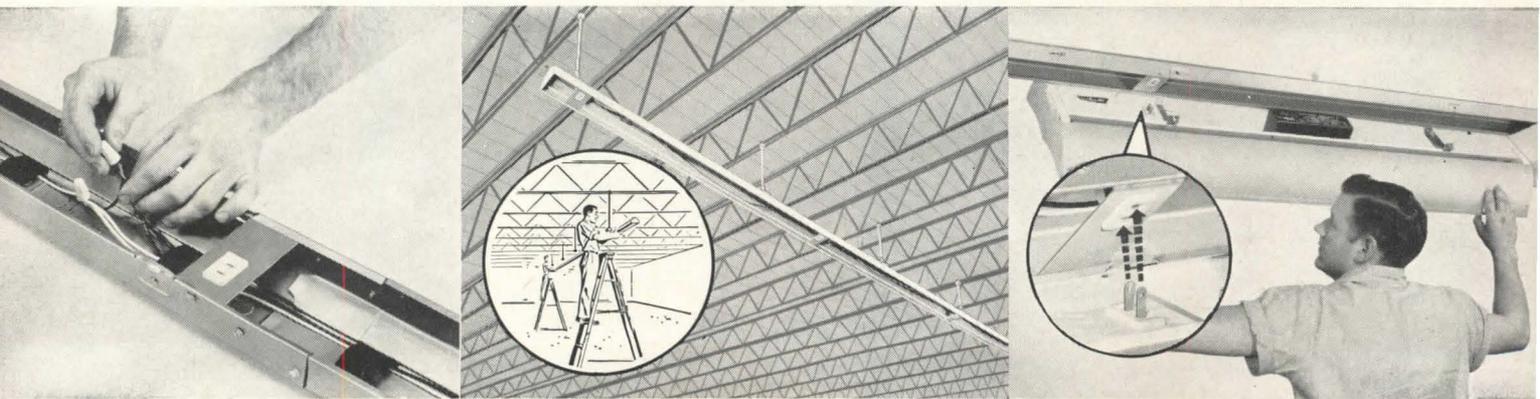
The light source is a thin layer of phosphor sandwiched between the two "panes" of glass that make up the electroluminescent screen. When excited by an alternating current, the phosphor gives off a soft, even light which may be varied in intensity and color to produce changing "moods" within a room. In the prototype hot-cold-light panel, patterns or "mobiles" of anodized aluminum are mounted in front of the light producing screen. The visible part of the thermoelectric assembly, these mobiles heat or cool the room air. The rest of the assembly is concealed behind the glowing panel. Since the heating or cooling effect is produced directly from the flow of an electric current through special solid materials, there are no moving parts. Controls consist of four dials: one to change color combinations; one to vary light intensity; one to select either heating or cooling; and a thermostat for automatic temperature control.

The panel was developed by Westinghouse Electric Corporation, with Peter Muller-Monk Associates as consultants on the design.

# Add, remove, re-space fixtures any time without tools or rewiring



The unique design of the Gibson Ortho, with its exclusive Uni-Race, makes it the world's most versatile fixture. Instead of being wired permanently to the branch circuit, it simply plugs in—like an appliance. A plug built into the fixture engages a receptacle in the Uni-Race, and since the receptacles are positioned at 48" or 96" fixture intervals along the Uni-Race, spacing of the fixtures is automatic. They can be mounted in continuous rows or spaced at intervals of 4, 8, 12 or more feet. Fixtures can be added or removed any time, according to the requirements of plant layout. Such changes need no electrical work whatever. They can be made by one man without tools. Think what this saves the owner whenever the lighting layout has to be re-arranged or when a fixture must be removed for repairs or cleaning!



**2 Wire the Uni-Race** • Branch-circuit wires are laid in the Uni-Race and connection is made at each built-in receptacle. The receptacles will later receive the plug that is built into each fixture. The Uni-Race is U.L. approved as a raceway with a capacity of five No. 8 AWG wires or eleven No. 14 wires.

**3 Hang the Uni-Race** • The rigid Uni-Race is easily lifted and hung in any of several different ways. Lengths up to 48' can be hung as a unit if supported every 24' while being raised to mounting position. When the branch-circuit connection is made, the Uni-Race is ready for the fixtures.

**4 "Plug In" the Fixtures** • The fixtures are merely "plugged in" on the Uni-Race. Hooks on the fixture engage in slots on one side of the Uni-Race, acting as hinges. The fixture is swung closed and latched. The built-in plug on the fixture automatically connects with the receptacle in the Uni-Race.

## GIBSON MANUFACTURING COMPANY

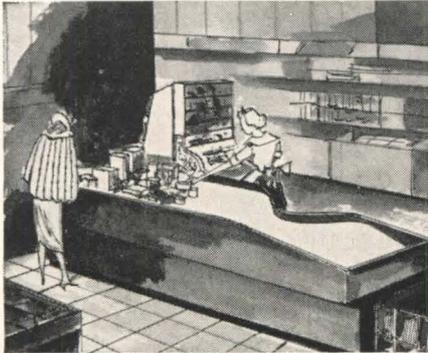
1919 PIEDMONT CIRCLE, N.E.

ATLANTA 9, GEORGIA

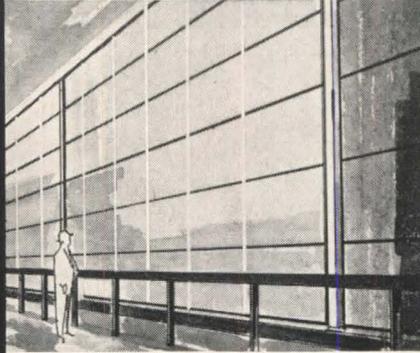
Manufactured in Canada under franchise by Electrolier Manufacturing Co., Ltd., Montreal

When wear creates problems...

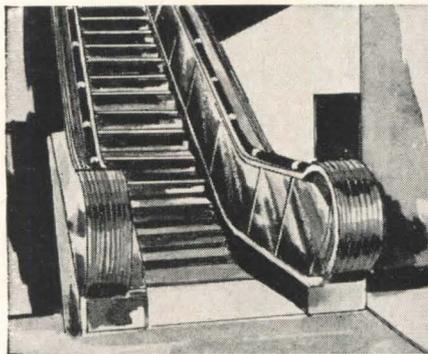
# MET-L-WOOD® puts beauty to stay!



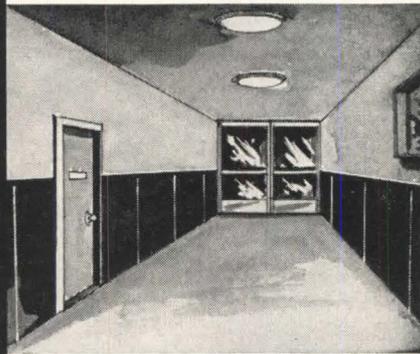
**COUNTERS** of Met-L-Wood can be designed to fit any decorating scheme, yet stand hardest service.



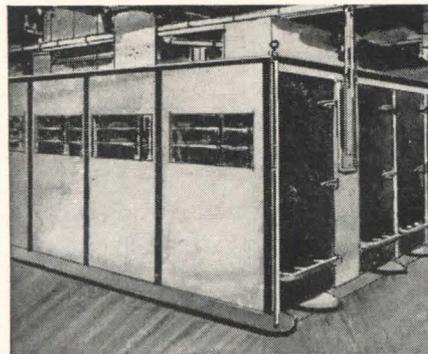
**CURTAIN WALLS** made of Met-L-Wood panels permit fast construction; lend beauty and life to buildings.



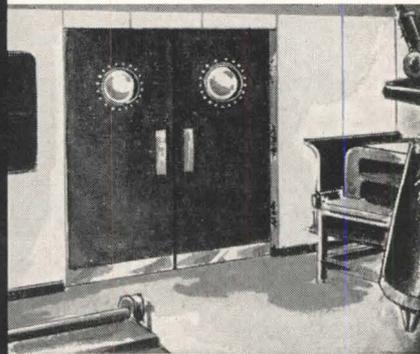
**MOTOR STAIRWAY** and **WALKWAY PANELS** of Met-L-Wood stand up under constant use... help damp vibration, resist denting.



**WAINSCOTING** in traffic areas gets rough treatment; is a natural for decorative Met-L-Wood use: sustained beauty without upkeep.



**CABINETS** and enclosures of all kinds gain strength, beauty, life from Met-L-Wood.

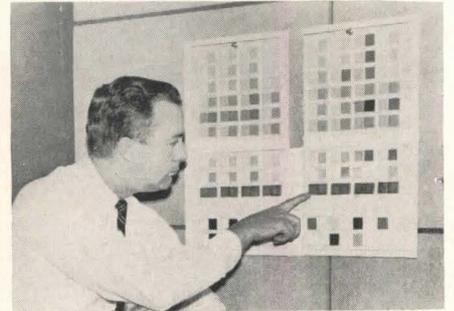


**X-RAY & RADIATION ROOMS** can be attractive as well as safe with lead-cored Met-L-Wood panels, doors.

Detailed data on how Met-L-Wood can serve you, in one or more of its many forms, is yours for the asking. Write for new Bulletin 522. Met-L-Wood Corporation, 6755 West 65th Street, Chicago 38, Illinois.

## Product Reports

continued from page 235



### Color System for Ceramic Tile

The "Harmonitone Palette," a new system of categorizing tile colors, is expected to greatly simplify the selection of coordinated colors in ceramic tile. Each color family is called simply by its right name—blue, yellow, green, etc.—and includes within it all the shades of that color in all the available glazes and textures. Each of the 139 *Harmonitone* colors harmonizes with others in the same family, and is compatible with colors from other families in the system. In addition, a simplified numbering system clearly identifies each tile by color family, color value and texture. *Mosaic Tile Co., Zanesville, Ohio*



### Low Cost Welding Fittings

A new line of welding fittings is said to make it possible for plumbing contractors to install welded pipe connections at a price competitive with threaded systems now on the market. The line includes tees, elbows and concentric reducers designed for normal (150 lb.) installations and cold formed to match perfectly with the pipes they connect. Their roughing in dimensions are the same size as the nominal size of the fitting. According to the manufacturer, the *Husky* fittings are actually stronger than the pipe they join: in a test set-up, the pipe fractured at 7750 psi internal pressure, leaving the fitting and the welded joint intact. *Nibco Inc., 500 Simpson St., Elkhart, Ind.*

more products on page 270

STRONG  
DURABLE  
LIGHTWEIGHT

# MET-L-WOOD

Metal bonded  
to plywood

# THERMAL COMFORT throughout is provided by **POWERS** Temperature Control for each individual room and various types of baths

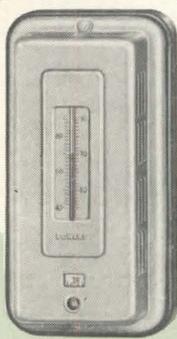
**Proper Thermal Environment** is important in this 450 bed hospital. Patients, nurses, doctors and staff benefit from Powers air conditioning control in the surgical suite consisting of 8 major and 3 minor operating rooms, recovery and delivery rooms, X-Ray department, laboratory, maternity department and pediatric unit. Temperature in other spaces is also regulated by Powers individual room control system.

**Greater Simplicity and year after year dependability of a Powers Pneumatic Control-System** provides these money saving benefits —

**Lower Heating Costs** — Powers accurate control prevents discomfort of over-heating and reduces fuel losses.

**Lower Maintenance Cost** — 25 to 40 years of dependable control with a minimum of repairs is often reported by users of pneumatic control systems. Some are still in operation after 50 years of service.

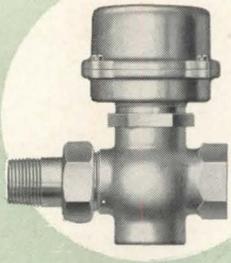
**Powers Complete Responsibility** — for a correctly engineered control system, proper installation, continuous successful operation and prompt SERVICE, when required, from offices in 85 cities.



**732 Powers Pneumatic Thermostats** maintain set temperatures constantly. They need no daily checking or readjusting. Patients, nurses, doctors, staff and visitors all benefit from the THERMAL COMFORT they provide throughout the hospital.



**NO MORE Valve Packing Maintenance or Water Leakage with Powers PACKLESS Valves.**



**864 Powers PACKLESS Control Valves** are used here on convectors, and unit ventilators. They're labor savers, and cut the cost of maintenance.



For Sitz Baths, Shampoo Tables, Arm and Leg Baths, etc.



**PATIENT'S SAFETY and COMFORT** in Hydrotherapy, showers, and infant baths are assured by Powers HYDROGUARD thermostatic water mixers. They are also used for X-Ray film developing, surgeon's wash-up sinks, artificial kidneys, blood coolers in heart surgery and many other applications.



SHOWER AND TUB WITH DIVERTER SPOUT

Powers makes the most complete line of water temperature control

**Are You Planning a New Hospital?** No other single firm makes so many of the essential thermal comfort controls for modern hospitals as POWERS. Only a few are shown above. Ask your architect or engineer to include a Powers Quality System of Thermal Comfort Control—throughout the building for heating, air conditioning, various baths and hot water heaters.

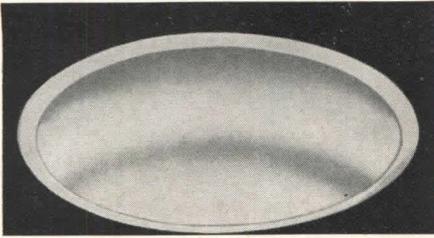
## THE POWERS REGULATOR COMPANY

SKOKIE, ILL.

Offices in 85 Cities in U.S.A. and Canada

65 YEARS OF AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL





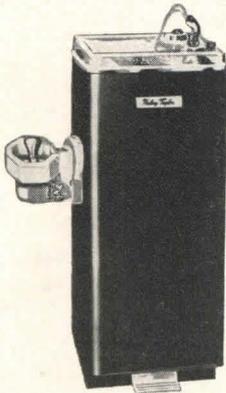
**Circular Fixture in Square Frame**  
Although the face appearance of a new series of *Neo-Ray* recessed fixtures is circular, the housing itself is square to accommodate four, six

or eight fluorescent lamps. The frame-within-a-frame construction of the face assembly leaves no fasteners or screws exposed, and the hinged inner frame and concave *Plexiglas* diffuser mount securely by means of an exclusive "Twist-Lock" feature. The round fluorescents come in 24, 36 and 48 in. diameters. *Neo-Ray Products, Inc., 315 East 22 St., New York 10, N. Y.*

**More Powerful Fluorescent Lamp**  
An improved version of G.E.'s *Power-Groove* lamp is said to produce 15

per cent more light with only 7 per cent more power consumption. The grooves in *Power-Groove* lamps serve to place part of the inside phosphor coating closer to the arc stream where it can be stimulated into greater light production. The new design uses forty 3 in. crescent-shaped grooves alternately on opposite sides of a 96 in. tube; the earlier model has a series of nine 9 in. U-shaped grooves along one side only. In the new lamps, the grooves force the arc stream in an 8 ft tube to travel an extra foot—a distance

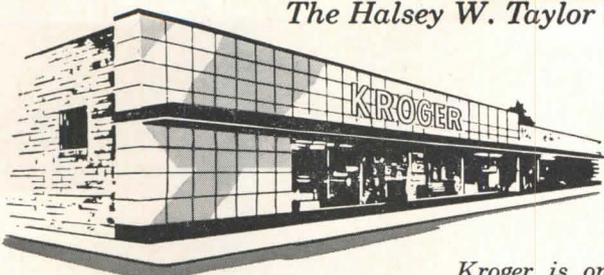
"Mother, don't bother—  
I can help myself"



*Halsey Taylor*® builds good will  
for chain stores and shops

Supermarkets and retail shops in the new suburban shopping centers find Halsey Taylor combination low and high level coolers bring the customer back. Children can drink from this modern cooler without any attention from mother or store personnel . . . and mother can step on the pedal without shifting bundles.

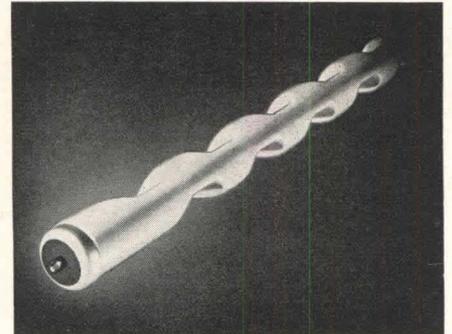
*The Halsey W. Taylor Co., Warren, Ohio*



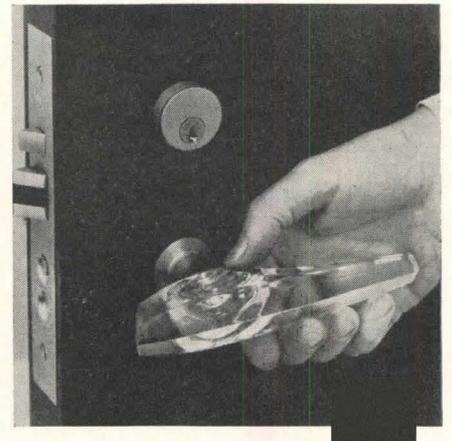
Write for  
latest catalog



*Kroger is one of many national chains using Halsey Taylor coolers.*



equal to the arc in a 9 ft lamp. In addition, the redesigned tube configuration made it possible to reduce the weight of the lamp by nearly one quarter. The improved *Power-Groove* will be available in 8 ft lengths by early spring, with 4 and 6 ft lengths to follow. *Large Lamp Dept., General Electric, Nela Park, Cleveland 12, Ohio*



**Glass Lever-Handle**

Appropriately enough, the new New York City office building for Corning Glass Works will have locks equipped with glass lever-handles. The free-blown, teardrop handle of *Pyrex* boro-silicate glass was developed by the Yale & Towne Research Center in collaboration with Corning's Engineering Division and architects Harrison, Abramovitz & Abbe. It is used with specially adapted heavy-duty mortise locksets. *Yale & Towne Mfg. Co., Chrysler Bldg., New York 17, N. Y.*

*more products on page 274*

# . A LEAK IN MY ROOF?"

Yes, this owner's new roof does have a leak — A HEAT LEAK. And, it can't be fixed. It was designed into the roof, quite unintentionally, by a specification allowing thermal conductance in excess of a 0.24 U.

How costly is such a leak? In terms of return on investment, the architect's greatest contribution to the structure could have been right here — in its thermal design. For example, a 0.12 U roof specification (instead of 0.24) could have offered these savings for a 200,000 sq. ft. structure in a 7000 degree-day zone:

- 1 — A savings of from \$10,000 to \$20,000 on original investment in heating systems and equipment.
- 2 — Per-season fuel savings, depending on fuel used, of \$4,650 for oil (@11.4¢/Gal.), \$4,530 for natural gas (@ 8.4¢/Therm), or \$2,940 for coal (@ \$11.85/Ton).
- 3 — A savings of \$15,000 in original investment in cooling system and equipment.
- 4 — A reduction of \$462 per season in cooling costs — for electrical energy and maintenance of equipment.

And these direct savings are in addition to the benefits of better condensation control, and increased comfort for the occupants.

The difference in cost between **minimum** roof insulation, and an adequate, 0.12 U thermal design is small — so small that it becomes the most profitable investment that can be made in a structure.

And because heating and cooling costs are a continuing expense it is necessary to choose a roof insulation that will provide these dramatic savings year after year. Fesco Board will provide this permanence. Formulated with all-mineral perlite, Fesco is incombustible, moisture resistant, super-efficient, and rot-, mildew-, and fungus-proof. Write us for new technical data on thermal design.



**SPECIFY INCOMBUSTIBLE**

# FESCO® ROOF INSULATION BOARD

Calculations based on 200,000 square foot industrial building in 7000 degree-day zone, using temperature differential of 75° for heating and 15° for cooling. Reference: 1958 ASH&VE GUIDE.

**F. E. SCHUNDLER & COMPANY, INC. 504 RAILROAD ST., JOLIET, ILL.**

Eastern Office: Chatham Phenix Bldg., 29-28 41st Ave., Long Island City, N.Y.

**RATED FIREPROOF MATERIALS-ACOUSTICAL & INSULATING**

Developers and producers of incombustible mineral products including Ebbtone Acoustical Tile, Fesco Insulation Board, Coralux Acoustical Plaster, Coralux Perlite Aggregates, Mica Pellet Vermiculite, High Temperature Insulating Blocks and Insulating Cement.

SEEMORE SAYS: LOOK! NEW!

Guth

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## GYM LIGHTS

You relamp 'em  
without ladders

FROM  
ABOVE  
OR  
BELOW



From above, just snap-out the reflector. From below, use a relamping stick. No sky-high ladders to mess with!

They're available with hinged wire guard and 40° shielding louver —and with louver or guard only.

High quality 60° beam ALZAK reflector for high efficiency, easy maintenance, long life.

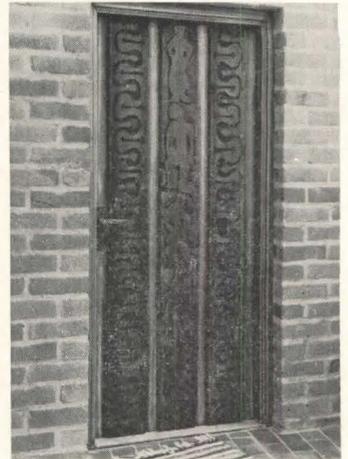
**THERE ARE MANY  
MORE GUTH GYM LIGHTS  
TAKE YOUR PICK:**

Single, double, triple and quadruple units, for high or low bay installations, 100% downlight or with 15% uplight, round or square, pendant or recessed.

**WRITE FOR GYM LIGHTING  
DATA SHEETS TODAY!**

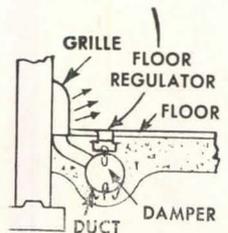
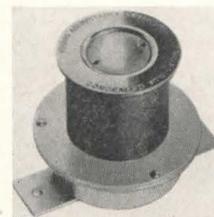


## Product Reports



### Carved Wood Panels, Viking Style

Speaking of architectural revivals, the Seneco Company of Nyköping, Sweden, is now marketing in this country a series of wood panels patterned in a style that dates back to the days of the Vikings. The various low-relief patterns in the series are "carved" into the Swedish pine (fir to us) by a sandblasting technique that produces an appropriately rough-hewn appearance. For interior use, the wood is given no further treatment; for exterior use, it is treated with a preservative and painted or stained. The finished panels, which measure 7 in. wide by 7 ft 3 in. high, are often combined into doors as shown, but may also be used as frames, moldings, paneling, room dividers, ad infinitum. Manufacturer's U. S. representative: *Stig Hagstrom, Lake Hill, N. Y.*



### Damper Regulator for Branch Ducts

By making possible the use of branch ducts and inexpensive grilles instead of registers, the new No. 330 concealed damper regulator cuts installation costs for perimeter heating and air conditioning. Installed in the floor in a branch duct near the grille, the regulator accurately controls the volume of air in the branch. Its adjustable cover can be screwed down flush with the floor after the concrete is set and the form is removed. *Young Regulator Co., 20910 Miles Ave., Cleveland 28, Ohio*

more products on page 280

Guth

**THE EDWIN F. GUTH CO.**

St. Louis 3, Mo.

TRUSTED NAME IN LIGHTING SINCE 1902

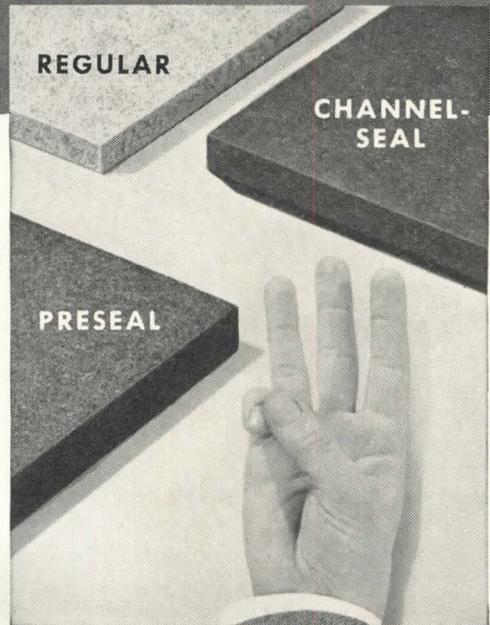


**DOES THE ROOF INSULATION YOU SPECIFY MEET THESE 10 BASIC REQUIREMENTS?**

- |  |                                     |
|--|-------------------------------------|
| 1. Rugged—hard to damage   | 5. Withstands heavy traffic         |
| 2. Clean-cut, snug-fitting edges   | 6. Strong, rigid, crush-resistant   |
| 3. Smooth, solid base for felts  | 7. Uniform density and thickness    |
| 4. No worry about punctures or depressions that become weak spots under felt | 8. Permanent, efficient insulation  |
|  | 9. Over 30 years job-proved service |
|  | 10. Billions of feet in use         |

**IT WILL IF YOU SPECIFY JOB-PROVED CELOTEX BRAND ROOF INSULATION BOARD**

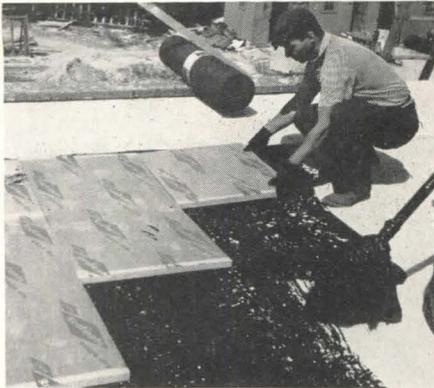
You get the "BASIC 10" requirements when you specify the CELOTEX brand . . . assurance of job-proved performance . . . and then some! You know what to expect of Celotex Roof Insulation . . . not how it SHOULD, but how it DOES perform. That's what we mean when we say Celotex is "PERFORMANCE-PREDICTABLE!"



**AVAILABLE IN 3 TYPES**  
 Dependable "REGULAR" . . . asphalt-coated "PRESEAL" . . . and exclusive "CHANNEL-SEAL" . . . all 3 in a variety of thicknesses.

**CELOTEX**  
REG. U. S. PAT. OFF.  
**ROOF INSULATION**

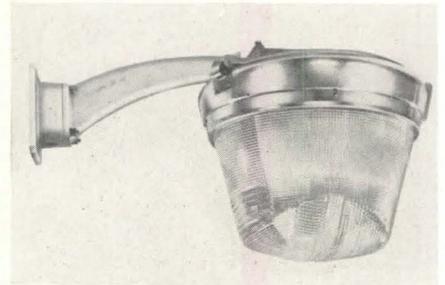
*See 1959 Sweet's Architectural File, Catalog 10a Ce. Write for specifications, Samples, Information Manual*



### Rigid Built Up Roof Insulation

*Roofmate*, a new insulation designed especially for use under built up roofs, consists of expanded polystyrene board wrapped in laminated kraft paper. Because it is waterproof, its insulating efficiency (a U value of .22 for one inch thickness, .13 for 2 in.) does not deteriorate with age. In most cases, an additional vapor barrier is not needed. The boards, each 2 by 4 ft, come in thicknesses of 1, 1¼, 1⅝ and 2 inches. Their light weight is said to make

laying easier and lighten roof loads, while their high compressive strength provides a firm base for roofing materials and good resistance to wear and tear during construction. The material can be cut with a pocket knife, and applied with conventional roofing techniques. *The Dow Chemical Co., Midland, Mich.*



### Heavy Duty Outdoor Luminaire

A new luminaire designed for use with 400 watt mercury vapor or 500 watt incandescent lamps controls light via a one-piece prismatic refractor made of thermal shock-resisting glass. The glass member is supported by a stainless steel spring hinge, and pressure latches hold the refractor assembly tight against the gasketed hood, protecting its interior against weather and dirt. The unit, which measures 16½ in. in diameter and 15½ in. in depth, can be installed on a cast aluminum bracket or a standard pole bracket arm. *Holographane Co., Inc., 342 Madison Ave., New York 17, N. Y.*



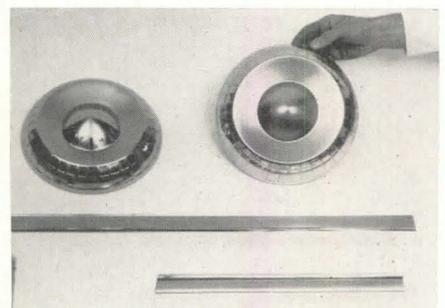
...your only cost for

## NEW SPECIFICATIONS ON TROY LAUNDRY EQUIPMENT

Both abbreviated and detailed specifications are contained in Troy's new and up-to-date LAUNDRY EQUIPMENT SPECIFICATIONS FOR ARCHITECTS. 60 pages covering Troy's complete line of power laundry equipment . . . washers, extractors, ironers, tumblers, compressors, presses . . . to name but a few.

An illustration and specification for each unit are printed on separate, loose-leaf pages.

Send for this helpful reference book (sans advertising) today!



### Frosted Stainless Steel

A new finish called *Fro-Zon* is being applied to stainless steel to give the shiny metal a frosted look. Produced by a "semi-blasting" technique that forms tiny light-diffusing mounds on the metal surface, the finish does not actually penetrate the surface and has no effect on the physical properties of the steel. It can be applied to stainless steel of any size, shape, type or gauge, but has thus far been used primarily on the Type 430 stainless used for automobile trim. *Stamping Service, Inc., Detroit, Mich.*

more products on page 286

**Troy**<sup>®</sup>  
**LAUNDRY MACHINERY**  
 Division of  
 American Machine and Metals, Inc.  
 East Moline, Illinois  
*World's oldest manufacturer  
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 Division of American Machine and Metals, Inc.  
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SYSTEMS**  
scientifically engineered,  
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Regular  
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complete maintenance  
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When you install a protective system, it must be kept in perfect operating condition at all times. Even though your fire or burglar alarm equipment is well designed, carefully manufactured and properly installed, it can be no better than the attention and care it receives.

Every ADT Protection System receives regular, specialized attention to assure that it is constantly in readiness to operate in emergency. The value of such maintenance measures is evident in the enviable record of *service* supplied year after year to over 65,000 commercial and industrial establishments and other properties in approximately 2,000 municipalities from coast to coast, and to highly important security systems used by more than 30 Government agencies in upward of 300 locations.

Only ADT has the extensive facilities, trained personnel and years of experience to give your property, profits and employees' jobs the security they deserve.

The following ADT Automatic Protection Services can be combined to give you better protection *at lower cost*.

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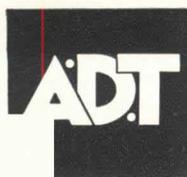
**AUTOMATIC FIRE DETECTION AND ALARM SERVICE** — for unsprinklered properties.

**PREMISES BURGLAR ALARM** — for doors, windows, walls, ceilings and other points of entry.

**TELAPPROACH** — for safes.

**PHONETALARM** — for vaults.

**HEATING AND INDUSTRIAL PROCESS SUPERVISION.**



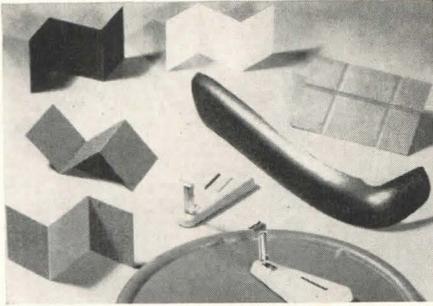
AN ADT SPECIALIST WILL EXPLAIN HOW THESE SERVICES CAN BE APPLIED TO PROTECT YOUR PROPERTY **MORE EFFECTIVELY**. CALL OUR LOCAL SALES OFFICE OR WRITE TO OUR EXECUTIVE OFFICE.

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**AMERICAN DISTRICT TELEGRAPH COMPANY**

A NATIONWIDE ORGANIZATION

Executive Office: 155 Sixth Avenue, New York 13, N. Y.



**Vinyl Coated Steel Sheet**

A new plastic coated steel combines

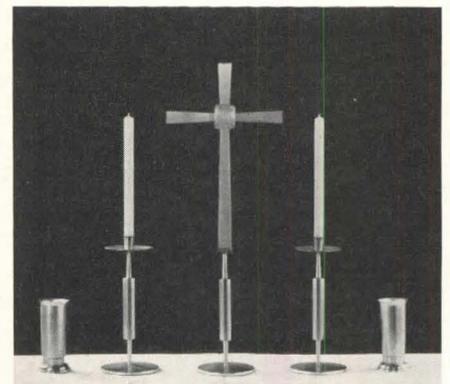
the decorative value of vinyl in custom colors and textures with the strength and workability of steel. According to U.S. Steel, tests indicate that the material can be fabricated in much the same way as cold rolled sheet without damaging the coating or effecting a color change. Production of the coated steel involves curing and bonding of liquid vinyl plastisols to sheet steel in a continuous coating process. The coating can be specified in thicknesses ranging from .008 to .020 in., in increments of .001 in. It can be em-

bossed with any texture that can be engraved on a printing roll, and produced in any specified color with assurance of color uniformity. Several standard textures are available, but colors will be provided on a wholly custom basis. Sheets are available in 18 through 28 gages and widths from 24 to 52 in. Lengths can run 30 to 144 in. *U. S. Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.*



**Textured, Patternless Wallpaper**

A new collection of handmade wall-coverings designed for commercial installations features a rich raised-surface texture and a wide range of unusual colors. Because the design surface, with its raised "dots" and tone-within-tone color combinations, is sealed onto the parchment ground with transparent vinyl, the papers in the "Architectural Collection" are fully washable. They come in standard-size rolls and can be hung like conventional wallpaper. *Winfield Design Associates, San Francisco, Calif.*



**Altar Appointments in Aluminum**

A line of altar appointments designed by Rambusch Studios for the Aluminum Company of America's "Forecast" collection of outstanding designs in aluminum will be available on the market during 1959. Fabricated from Kensington metal, a special luxury-finish aluminum alloy, the Altar Group will be produced and sold through *Wearever Aluminum, Inc., New Kensington, Pa.*



The porch roof is Nova Vista-Lux corrugated Fiberglas® paneling—sold by Nova Sales Co., Homasote's wholly-owned subsidiary

**Sidings...**

HORIZONTAL OR VERTICAL

...but always of weatherproof Homasote

Recent surveys show a growing preference by home owners for exteriors with a combination of colors and materials. Prime considerations are appearance, durability and low maintenance—in that order.

With Homasote Beveled Siding and Grooved Vertical Siding, every demand is met. These weatherproof sidings add strength, insulation and sound-deadening to the structure. Optionally, they are supplied with a prime coat front and back. They hold paint far longer than wood. With their high density and 5/8" thickness, they are split-proof, crack-proof, trouble-free.

*Beveled Siding.* 16" width for 14" exposure; 12" for 10" exposure. In 8' lengths, ship-lapped 1/2" at ends. Luxurious, deep shadow lines. 45° bevel on lower inside edge estab-

lishes a revolutionary, efficient drip cap. With the Beveled Siding Clip, there are no exposed nails.

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These two sidings are in every way equivalent to the finest wood sidings. Material, design and method combine for economy of application and long life.

There's always news at Homasote. Check and mail the coupon for detailed literature.



Send me the literature checked below:

- Exterior Finishes
- Dry-Wall
- One-Man Panels
- "48" Roofing
- Roof Deckings
- Homasote (72-pg.) Handbook—10¢

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224 Merton St., Toronto 12, Ontario



# goes to college



**Iowa State College:** Keywall masonry reinforcement approved for Helser Hall, a new men's dormitory at Iowa State College, Ames, Iowa. Architect: Brooks-Borg, Des Moines, Iowa; General Contractor: W. A. Klinger Construction Co., Sioux City, Iowa.



**University of Missouri:** Three 9-story residence halls and a single cafeteria unit for women students being constructed at the University of Missouri, Columbia, Missouri. Keywall is being used in this vast project. Architect: Hellmuth, Obata and Kassabaum, St. Louis, Missouri. General Contractor: D. C. Bass & Sons, Enid, Oklahoma.



**University of Wichita:** Keywall used in masonry curtain walls in the new Mathematics and Physics Building at the University of Wichita, Wichita, Kansas. Architect: W. I. Fisher & Company, Wichita, Kansas. General Contractor: Hahner & Foreman Inc., Wichita, Kan.



**Indiana University:** The Elisha Ballantine Hall, a basic course classroom building at Indiana University, Bloomington, Indiana. Masonry walls are being reinforced with Keywall. Architect: A. M. Strauss Inc., Fort Wayne, Indiana. General Contractor: Huber, Hunt and Nichols Inc., Indianapolis, Indiana.

## Campus buildings are getting greater reinforcement at lower cost

Architects accept Keywall masonry joint reinforcement for building projects at colleges and universities. Look at these new classroom buildings and residence halls at four leading universities. Masonry joints on these buildings are being reinforced with Keywall for added strength, greater crack resistance.

The ability of Keywall to increase lateral strength and reduce shrinkage cracks in masonry has been demonstrated on job after job. Recent tests confirm this superior quality. Architects know they're getting effective reinforcement at a savings.

Masons like Keywall... they use it as specified. They find it easy to handle and easy to adapt to a wide range of applications. Keywall can be lapped at corners without adding thickness to joints. Full embedment and a complete bond are assured.

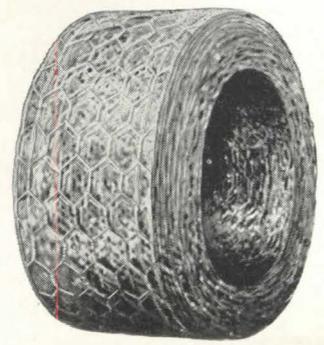
Galvanized Keywall can be stored any place without rusting. No wonder Keywall wins wide acceptance among builders and architects!

Keywall is made for the following wall thicknesses: 4", 6", 8", 10" and 12".

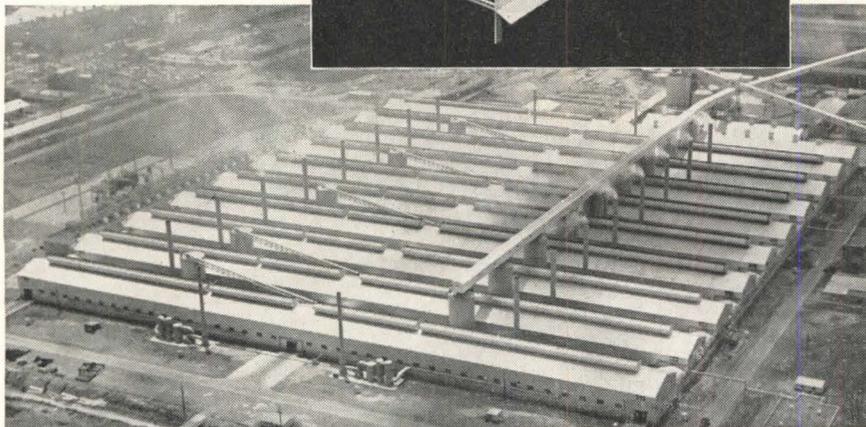
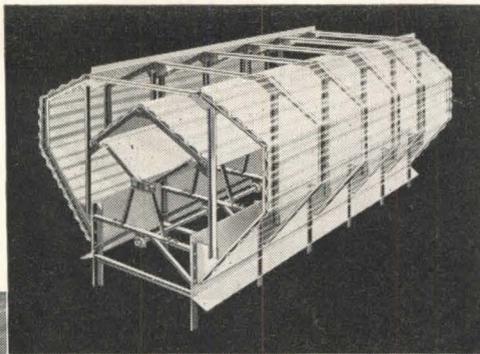
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Burt Monovent Continuous Ridge Ventilator converts roof ridge to a quick-acting, giant air valve . . . economically.



## POT ROOM AIR MOVES OUT FAST AT REYNOLDS ALUMINUM

The huge new Reynolds Metals Company's aluminum plant at Sheffield, Alabama, conditions the air in each manufacturing operation with a carefully engineered system of modern Burt Ventilators.

On the pot lines, where the snow-white alumina powder is transformed into aluminum in a bath of molten cryolite—where great crucibles of molten metal swing down the aisles—84" aluminum Burt Monovents keep the air moving out fast. Over 7,200 lineal feet of this continuous ridge type Burt ventilator—more than 1½ miles—ventilates the nine pot line buildings uniformly and economically. Nearly 400 lineal feet of 60" Burt Monovent conditions the service building.

Atop the adjoining rectifier building, with its thousands of square feet of electrical equipment, twenty-five 54" aluminum Burt Free Flow Fan and Gravity ventilators provide fast, big-volume exhaust.

Thirty additional aluminum Burt Free Flow Gravity ventilators serve the pin cleaning, coke and ore unloading and carbon paste buildings.

In the big Reynolds installation only two Burt Ventilator types were required. Other types and sizes might better solve your air moving needs. You will find them all readily available in the complete line of time-proven, modern Burt Ventilators.



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MEMBER AIR MOVING & CONDITIONING ASSOCIATION, INC.

## Office Literature

*continued from page 236*

### Corrosion-Resisting Coatings

Bulletin 100 features a simplified chart for selecting protective coatings according to service requirements, with physical properties and chemical resistance shown in easy-to-read columns. 4 pp. *Carboline Co., 32 Hanley Industrial Court, St. Louis 17, Mo.*

### How to Design Pole-Type Buildings

Revised second edition presents time-tested design procedures for proportioning structural members of pole-type buildings of all sizes, kinds and uses. Extensive charts, tables and illustrations are supplemented by line drawings showing construction details of selected typical buildings. 72 pp., \$1.50 postpaid. *American Wood Preservers Institute, 111 West Washington St., Chicago 2, Ill.*

### Fuel Burning Systems

Bulletin 1255 lists and describes eleven Model 3 oil, gas, and combination oil and gas burners for firing boilers or other heat exchange equipment. 8 pp. *Orr & Sembower, Inc., Box 1138, Reading, Pa.*

### Convertors for Hot Water Heating

Bulletin No. 303-A contains hot water heating convertor selection data, including product dimensions, connections, operating capacities, temperatures, and pressure losses. 12 pp. *Patterson-Kelley Co., Inc., East Stroudsburg, Pa.*

### Automatic Control Systems Guide

. . . for Architects and Engineers (A.I.A. 30-E) describes and illustrates electric, electronic and electronic automatic control systems for heating, ventilating and air conditioning. Bulletin F-8944, 8 pp. *Barber-Colman Co., Rockford, Ill.*

### Vertical Transportation

(A.I.A. 33-G) Covers operation and features, sizes and capacities, minimum pit depths and overhead heights, and other pertinent data on passenger and freight elevators. 32 pp. *Otis Elevator Co., 260 Eleventh Ave., New York 1, N. Y.*

### Safety Treads and Nosings

(A.I.A. 14-D-1) Describes and illustrates complete line of aluminum base, abrasive filled safety treads and nosings. 20 pp. *Wooster Products, Inc., Foot of Spruce St., Wooster, Ohio*

*\*Additional product information in Sweet's Architectural File, 1958*

*more literature on page 298*



Howard Seminary, West Bridgewater, Massachusetts. Eleven classrooms. Designed by Harvey and Provost.

## Built in just 17 weeks with AmBridge Modular School Components

**USS AmBridge School Components** have helped to open a whole new vista of school design to you. They make it possible for you to deliver an expression of the most modern concepts of classroom construction to your clients in the shortest possible time.

Working with these integrated modular components—columns, joists, roof deck and wall panels—you can translate your community's needs into a handsome, permanent, almost maintenance-free structure in time to meet the most pressing classroom needs.

The school on this page is Howard Seminary at West Bridgewater, Mass. It was ready for occupancy just 17 weeks after foundation work started. Quality went hand in hand with speed because every USS AmBridge Modular

School Component has been proved architecturally, and is factory-fabricated with precision and quality control.

Working with these components, you have the widest latitude in design. The flexibility of the structural frame and the wide range of panel colors make possible the full expression of your ideas. And the components harmonize well with existing architectural atmosphere and with other materials you may wish to use to complement them.

American Bridge representatives will be glad to discuss this whole concept of construction with you and work with you on specific applications of these time-saving materials. We welcome your inquiry. For more details, mail the coupon for our 24-page booklet.

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Please send me your informative 24-page booklet which contains complete description of AmBridge Modular Schools.

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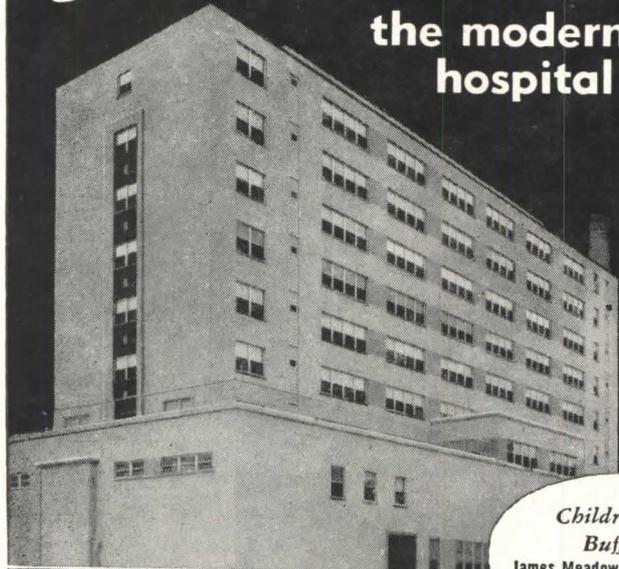
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City ..... State .....

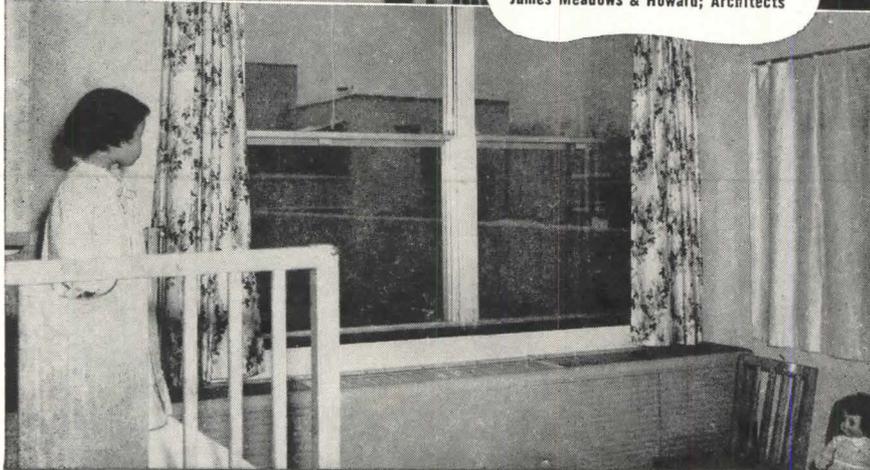
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the modern hospital treatment



- Provides the right ventilation for any weather condition.
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- Adds years of maintenance—free life to buildings.

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James Meadows & Howard; Architects



The tight weatherstripped and interlocking construction of Fleetlite windows stops drafts, dust, noise, rain and snow for extra comfort. Double window design provides the insulating air space that saves heating and air conditioning costs and permits indirect ventilation during rainstorms. Fleetlite windows never need painting or puttying. Save maintenance costs.

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## Office Literature

**Industrial Door Literature File**  
Reference literature includes complete descriptions and specifications on four types of commercial-industrial doors. *Crawford Door Co., Hoover Rd., Detroit 5, Mich.*

**Thiokol Technical Bulletin**  
Details results of laboratory and field tests with *Thiokol* liquid polymer/epoxy resin concrete adhesives, and describes methods of applying them for a number of uses in highway and building construction and maintenance. 8 pp. *Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton 7, N. J.*

**Flooring Products Catalog**  
All-Products Catalog illustrates *Tile-Tex* flooring patterns and colors, and provides a comprehensive selection table. Adhesives, waxes, cleaners and underlayments are also covered. 16 pp. *Tile-Tex Div., The Flintkote Co., 630 Fifth Ave., New York, N. Y.*

**Kenco Submersible Pumps**  
(A.I.A. 29-D-5, 30-C-5) Eight page catalog lists physical dimensions, pumping capacities, electrical data and specific features for each model in Kenco line of domestic and industrial submersible pumps; and gives guide-form specifications. *Kenco Pump Div., 1305 Oberlin Ave., Lorain, Ohio*

**Light Reflectance Charts**  
Indicate light reflectivity of colors in *Matico* lines of asphalt and vinyl-asbestos tile. *Mastic Tile Corp. of America, Vails Gate, N. Y.*

**Low Voltage Power Protector**  
Provides detailed information (photos, tables, charts, curves, guide form specifications, dimensions and ratings) on application, features and operation of Type LB-1 power protector for heavy duty commercial building applications, 480 volts AC and under. 8 pp. *General Electric Co., Schenectady 5, N. Y.*

**Acoustical Ceiling Design**  
Covers, in simple diagrams and brief captions, the essentials necessary to meet good ceiling construction standards: true sound isolation, low cost partitioning, rated fire protection, easy access to utilities, and low cost maintenance. *Acoustical Tile Adhesives Manufacturers, c/o The Schuyler Hopper Co., 12 East 41st St., New York 17, N. Y.*

\*Additional product information in *Sweet's Architectural File, 1958*



## wood casements

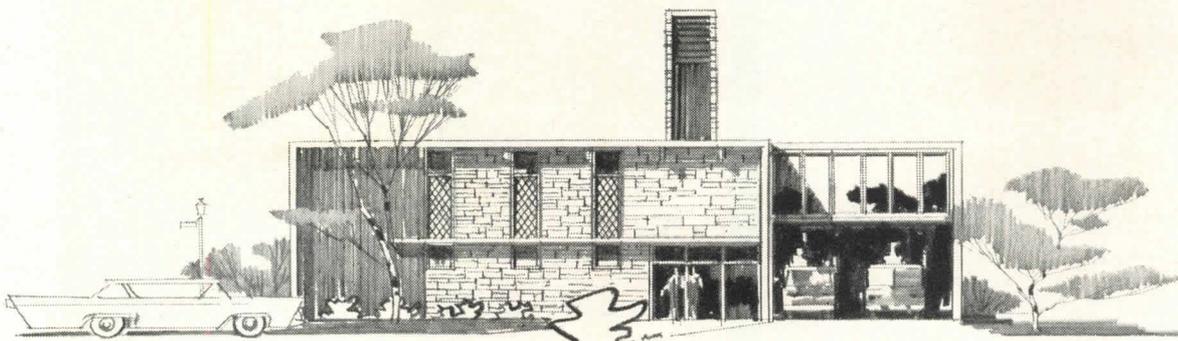
help integrate fire station into suburban scene

Diagonal muntin bars in PELLA WOOD CASEMENT WINDOWS give attractive relief from the horizontal and vertical patterns in this redwood and stone fire station. As a utility feature, PELLA muntins are removable for fast, easy cleaning of glass.

Large 24" x 68" glass size PELLA CASEMENTS above and below the rear balcony provide a novel variation from stereotyped window arrangements and lend a home-like quality to

dormitory and lounge areas. PELLA WOOD CASEMENT WINDOWS — with their built-in ROLSCREEN feature — deserve a place in your plans for municipal, commercial and residential buildings.

Glass height up to 68", glass width up to 24". Full specifications in Sweet's. For the nearest U. S. or Canadian distributor, consult your classified telephone directory. ROLSCREEN COMPANY, PELLA, IOWA.



## The Record Reports

### On the Calendar

#### March

- 1ff University of Illinois Biennial Festival of Contemporary Arts; through Apr. 5—University of Illinois, Urbana
- 11-13 45th Annual Convention, Michigan Society of Architects—Statler-Hilton Hotel, Detroit
- 13-14 Middle Atlantic Regional Conference, A.I.A., sponsored jointly by Virginia and West Virginia Chapters—White Sulphur Springs, W. Va.
- 18-24 New England Home Show, sponsored by Home Builders Association of Greater Boston—Commonwealth Armory, Boston

#### April

- 5-10 Fifth Nuclear Congress—Public Auditorium, Cleveland
- 6-10 Atomic Industrial Forum Atcm Fair—Cleveland
- 7-8 Eighth Annual Meeting, Building Research Institute—Penn-Sheraton Hotel, Pittsburgh
- 12-17 21st Annual Convention, National Association of Architectural Metal Manufacturers—Monteleone Hotel, New Orleans
- 24-25 Great Lakes Regional Conference, A.I.A.—College of Architecture and Design, University of Michigan, Ann Arbor
- 26-30 28th Annual Conference, American Institute of Decorators—Plaza Hotel, New York

#### May

- 3-6 Annual Meeting, Air-Conditioning and Refrigeration Institute—The Homestead, Hot Springs, Va.
- 3-7 Eighth Annual Convention, National Parking Association—New Orleans
- 4-6 Third Annual Convention, Construction Specifications Institute—Palmer House, Chicago
- 4-6 "Action for Better Communities," a national urban renewal conference under the joint sponsorship of ACTION and the Newark Economic Development Committee—Newark, N. J.
- 4-8 National Convention (second of three in 1959), American Society of Civil Engineers—Cleveland
- 13ff "Recent Sculpture, U.S.A." exhibition; through Aug. 16—Museum of Modern Art, New York

continued on page 310



## Alberene Stone adds "Dark Accent" Beauty That Requires no Maintenance

The Toledo Trust Company's Branch Bank exemplifies the beauty and utility of Alberene Black Serpentine Stone—a natural silicate stone that is weatherproof. Its low absorbency rate, fine grain and absence of stratification prevent spalling and splitting in freezing temperatures. Its all-silicate mineral components resist chemical attack, staining and loss of surface polish. It requires no maintenance.

Architects are also offered a color range of silvery gray to dark gray; green to black; and jet black. Also economical slab thicknesses of 3/8" to 1 1/4".

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# ALBERENE STONE

provides **LOW ABSORBENCY** protection

The biggest design news in bathtubs since they  
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# CONTOUR BATHTUB

Here's the first "something new" in bathtubs in 25 years . . . the "something new" that will add lots of extra interest to the bathrooms you design!

This new American-Standard CONTOUR bathtub was designed for maximum beauty, maximum comfort and greatest ease of cleaning. The diagonal shape is a functional as well as a beauty feature that will appeal to your clients. It provides maximum width where needed for the most pleasurable bathing and

showering . . . maximum comfort all the way. It has two wide ledges that serve as comfortable seats or handy shelves.

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For more information see your AMERICAN-STANDARD representative or write AMERICAN-STANDARD, PLUMBING AND HEATING DIVISION, 40 W. 40th Street, New York 18, N. Y.

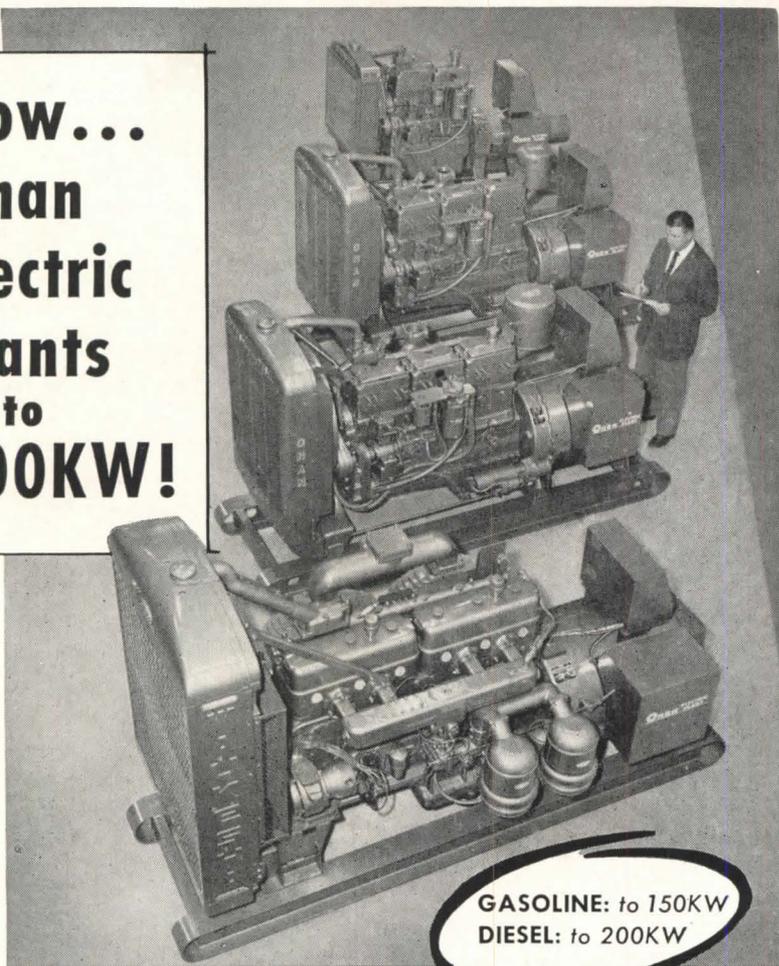
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## AMERICAN-Standard

PLUMBING AND HEATING DIVISION

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## *New Magneciter\* Generator gives important performance advantages*

Now you can have Onan engineering and Onan dependability in high-capacity plants, too! In gasoline-powered models, 100, 125, and 150KW sizes have been added to the line. New diesel models include 10, 15, 25, 35, 50, 60, 75, 100, 125, 150, 175, and 200KW capacities. All standard voltages are available.

All models are powered by heavy-duty industrial engines matched to the power requirements of the generator. Custom modifications to meet the needs of particular applications add to the versatility of the new Onan line. Automatic controls for standby installations are available for each model.

### *All plants 100KW and larger are Magneciter-equipped*

This new Onan generator with static exciter and voltage regulator has these advantages for both standby and primary power installations:

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- **Lighter weight, more compact** — Plants are shorter by a foot or more, lighter in weight.
- **Less maintenance, easier servicing** — The static exciter and regulator are externally mounted and easily accessible.

\*Onan alternator with static excitation and static voltage regulation.

*Specification kit available now! Write for it!*

Onan builds electric plants from 500 watts to 150KW, gasoline-powered; 3,000 watts to 200KW, Diesel-powered.

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ELECTRIC PLANTS • AIR-COOLED ENGINES • KAB KOOLER • GENERATORS



## *The Record Reports*

- 14 Industrial Conference, Society of Industrial Realtors—Pittsburgh
- 20-21 Conference on Building Illumination, sponsored by Building Research Institute—Statler-Hilton Hotel, Cleveland

### Office Notes

#### *Offices Opened*

Ralph Appleman, Architect, announces the opening of an office at 208 S. W. Stark, Portland 4, Ore.

Crawford & Banning, Architects, is the name of a partnership formed by Eugene E. Crawford, A.I.A., and George V. Banning, A.I.A., at 15 West End Ave., San Rafael, Calif.

Eberlin and Eberlin, Consulting Engineers, is a partnership formed by Ralph Eberlin and Monroe M. Eberlin, his son; their office is at 123 E. 77th St., New York 21.

The firm of C. J. Kordys and Ed. A. Oldziej, Architects, has been formed by those named at 1379 Hamburg Tpk., Wayne, N. J.

Manson, Jackson, Wilson & Kane, Architects, is a partnership formed by Elmer J. Manson, Edward Jackson, Dixon S. Wilson, and William J. H. Kane, all A.I.A., at 520 Cherry St., Lansing 33, Mich.

Snyder, Palmer, Toussaint and Associates, Inc., is the new name of the consulting engineering firm formed by the association of Eugene P. Palmer, mechanical engineer, and Francis J. Toussaint, electrical engineer, with J. Robert Snyder, mechanical engineer; their office is at 1645 Hennepin Ave., Minneapolis.

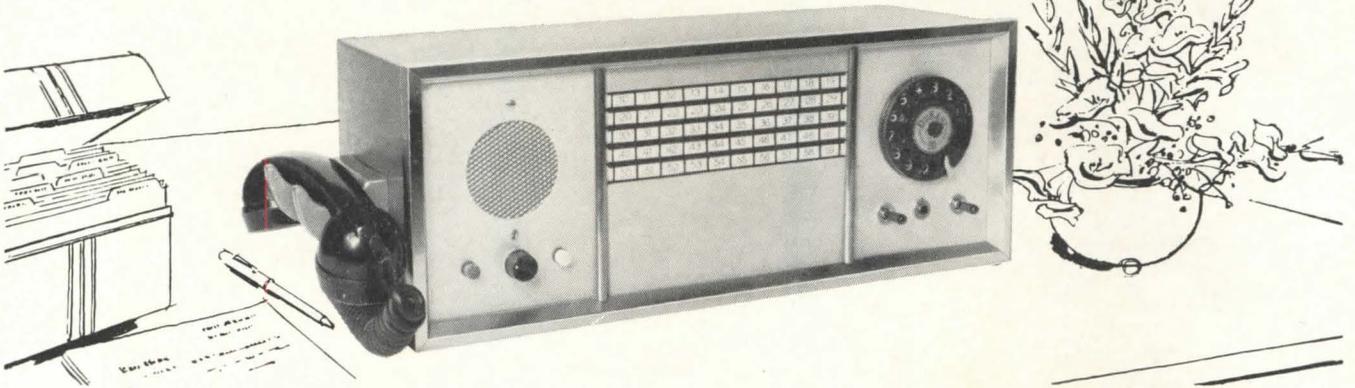
#### *Firm Changes*

Charles W. Johnston, A.I.A., announces that his firm is now Johnston & Smith, Architects, with Robert J. Smith as junior partner; the firm's address is 13 N. 8th St., Payette, Idaho.

A. M. Kinney and Charles Burchard, partners in A. M. Kinney Associates, Engineering & Architectural Consultants, 2912 Vernon Pl., Cincinnati 19, and 60 E. 56th St., New York 22, announce the naming of five additional partners: Marvin E. Mathewson, Russel W. Bandomer, John R. Morris, Malcolm G. Duncan, and Max Cardiff. Also, Ernest V. Manning has been named a project architect with the firm.

Charles Luckman Associates of 9220 Sunset Blvd., Los Angeles 46, and 24 E. 51st St., New York 22, announced on page 318

# DuKANE



## *fully automatic hospital communications system*

Automatic . . . flexible . . . expandable . . . The DuKane Hospital Communications System is the modern successor to nurses' call systems. From this attractive, functional master unit, the duty nurse can answer patients' calls, automatically, by simply pressing



a button. Or, she can answer selectively by dialing just two digits.



Or, she can dial rooms, duty stations, or corridor reply stations and talk with all locations.

With DuKane, she has a complete floor communications system. Modern, attractive bedside stations  incorporate combinations of features needed for modern hospital usage. Lavatory stations and emergency stations, too.  Corridor door

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He is a factory-trained engineering distributor who will act as

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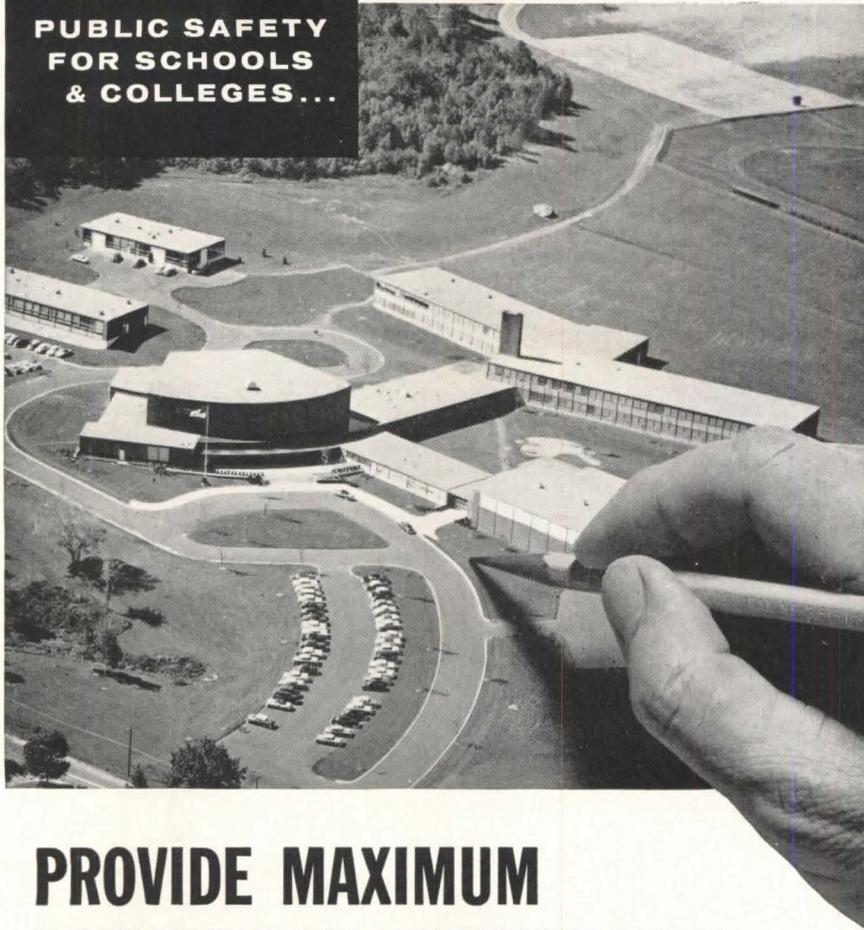
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**PUBLIC SAFETY  
FOR SCHOOLS  
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## PROVIDE MAXIMUM PROTECTION AGAINST FIRE with GAMEWELL FLEXALARM!

Schools and Colleges, like all public buildings, have special requirements for fire alarm systems and fire defense.

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### *The Record Reports*

nounces the appointment of Serge P. Petroff, A.I.A., as director of architecture for the firm's New York branch.

McEntire, White & Pendergrast announces that Morris R. Jellison has been admitted to the firm and that its name is now McEntire, White, Pendergrast & Jellison, Architects; the firm's offices are in Alaska at 131 Fifth Ave., Anchorage, and 201 Chena Bldg., Fairbanks.

William L. Pereira & Associates, 1231 West 5th St., Los Angeles 17, announces that three former vice presidents of Pereira & Luckman have become partners. They are: Gin D. Wong, A.I.A., James H. Langenheim, and Jack L. Campbell.

The firm of George Pierce-Abel B. Pierce, 2200 Welch Ave., Houston, announces the elevation of two associates to partnership: E. J. Goodwin, Jr., and Robert V. Flanagan.

Sargent-Webster-Crenshaw & Folley, 2112 Erie Blvd., E., Syracuse 3, N. Y., announces that Robert S. Steele has been appointed senior planner in the firm's division of city and regional planning. Mr. Steele is assisting Hollister Kent, director of the division.

Waasdorp, Northrup and Austin is the new name of the firm formerly known as Waasdorp and Northrup. The present partners of the firm, at 740 East Ave., Rochester 7, N. Y., are: Leonard A. Waasdorp, F.A.I.A., Charles V. Northrup, A.I.A., Roger O. Austin, A.I.A., Carl F. W. Kaelber, Jr., A.I.A., Herbert P. Kopf, A.S.C.E., and William P. Roberts, A.I.A.

Minoru Yamasaki & Associates is the new name of the firm formerly known as Yamasaki, Leinweber & Associates, because of the retirement of Joseph W. Leinweber, A.I.A. The principals of the firm, whose address is 1025 E. Maple Rd., Birmingham, Mich., are: Minoru Yamasaki, Cass Wadowski, William Jarratt, Frank Straub, and Gunnar Birkerts. Recently appointed chief draftsman and head of the construction department was Walter P. Graydon.

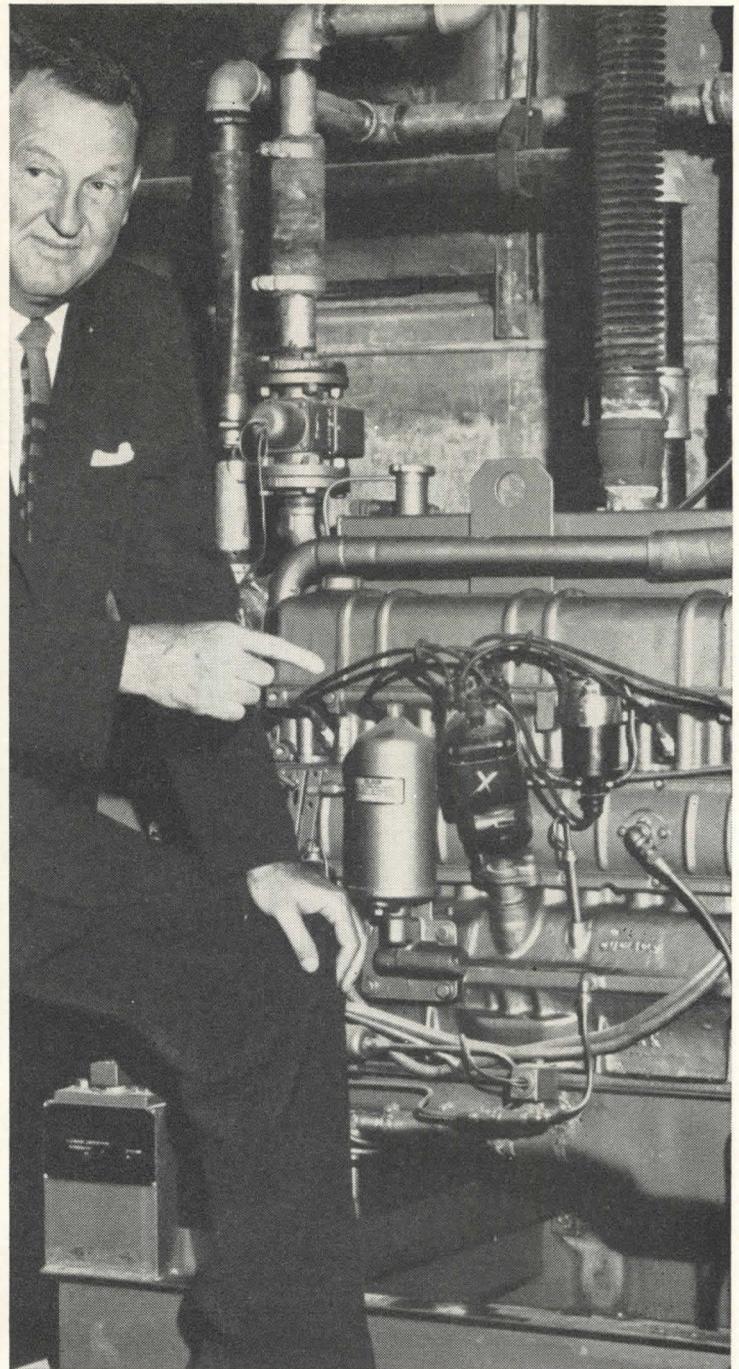
#### *New Addresses*

Donald Cowan, Architect, Wilson-Bates Bldg., Hillsboro Rd., Nashville, Tenn.

Victor Gruen, A.I.A., New York office: 2 W. 13th St., New York 11.

Eero Saarinen and Associates, 1300 N. Woodward Ave., Birmingham, Mich.

*more news on page 322*



Gas-operated unit provides exact climate control, adds to the efficiency of agency's creative people.

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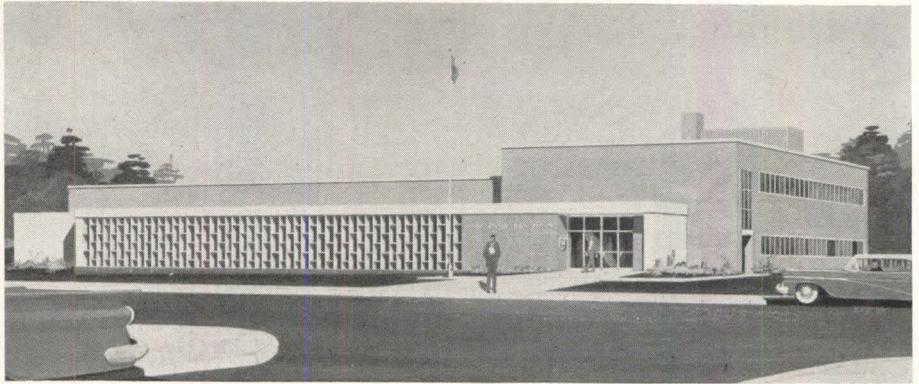
Because they combine the outstanding economy of gas fuel with automatic metering to match the load on hand, Ready-Power units have the lowest known operating costs . . . *less than a penny per ton per hour!*

For information on how you can benefit by installing modern Gas air conditioning equipment, call your Gas Company's commercial specialist or write to the Ready-Power Company, Detroit 14, Michigan. *American Gas Association.*

**Designs for Three Post Offices  
Recently Accepted by GSA**

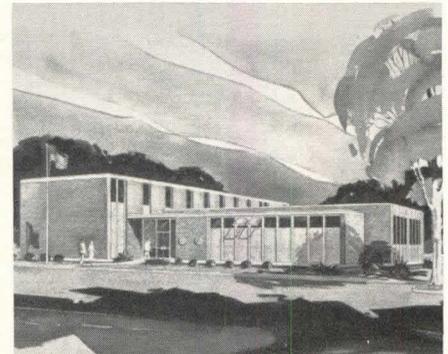
The continuing program of Federal buildings throughout the country includes these three whose designs were recently accepted by the Public Buildings Service of the General Services Administration.

At top is the Federal Building, Orange, Texas; architects: the firms of Pitts, Mebane & Phelps and George L. Ingram, both of Beaumont, Texas. The building has a gross floor area of over 25,000 sq ft; costs are not to



exceed \$653,000. The single-story postal area has a sun-control grill in front. The two-story portion is the office wing. The walls, rising from a Texas granite base, are of face brick with cut stone coping and trim.

The center rendering shows the Federal Building, Livingston, Ala.; architects: Pearson, Tittle & Narrows of Montgomery. The building has a gross floor area of over 14,000 sq ft; costs are not to exceed \$300,000. The L-shaped structure has a



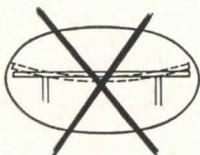
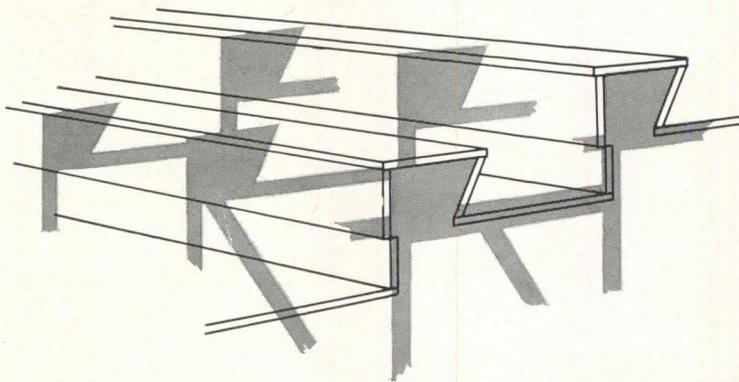
brick façade and curtain walls of glass and cast stone. Framing for wall panels and coping is of aluminum.

At bottom is the Federal Building, Monticello, Fla.; architects: Barrett, Daffin & Bishop of Tallahassee. The building has a gross floor area of 12,200 sq ft; costs are not to exceed \$323,000. The two-story structure with portico has exterior walls of gray brick and white finished concrete with ceramic tile spandrels.

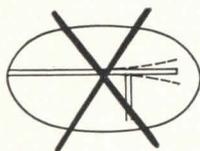


more news on page 328

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CLOSED DECK ROLL - OUTS**



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See Sweet's Catalog 23J/HU.

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# Markets

acoustical ceiling when exposed over beam or joist. It is firesafe, termite resistant, rot and fungus-proof. Its textured "ceiling" surface is light reflective and attractive. Its use in both public and private construction attests to its natural good looks. Get in touch with your Tectum representative today; find out how Tectum roof decks can save time and money.

*Contractor: Rydeen Construction Co., St. Paul.*



St. Mark's Episcopal Church, Columbus, Ohio. Decorative and functional use of Tectum for the two-slope, ceiling design and sidewall in the narthex of the church. Acoustical control plus decorative good looks. *Architect: Brooks & Coddington, Columbus. Contractor: Leo E. Ruisinger, Inc.*



Westgate Elementary School, Edmunds, Washington. School officials are very happy with appearance and cost. 20 classroom school uses Tectum roof deck over exposed web joists, throughout. *Architect: D. F. Miller, A.I.A. and E. D. Morris, Edmunds. Contractor: Glacier Construction.*



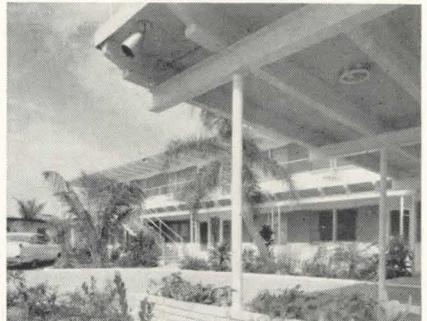
U. S. National Bank of Portland, Hillsboro Branch. Attractive Tectum roof deck and acoustical panels enhance the interior of this Oregon bank. Beams are painted a contrasting color. *Architect: Williams & Matin. Engineer: Cooper & Rosé.*



Lebanon Lanes, a part of the L.M.S. Office Building, Pittsburgh, Pa. This new building uses both Tectum roof deck and 1" suspended acoustical board. Acoustics are ideal. *Designers & Builders: Larson Construction Company, Pittsburgh.*



The Lanai, residence, Dearfield, Florida. The Lanai room is illustrated, showing how Tectum roof deck complements other textures and materials. All roof areas including overhang are Tectum plank. *General Contractor: John Apetz. Robinson Real Estate in charge of sales.*



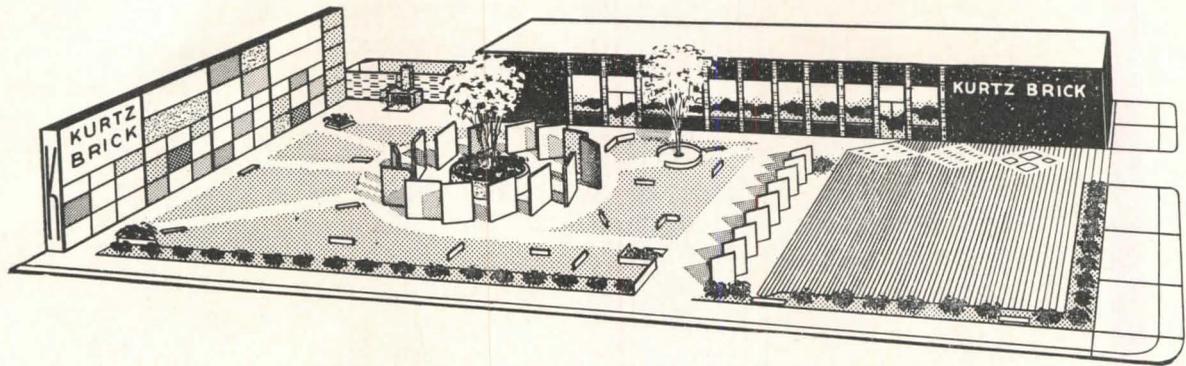
Skipper Motel, Tampa, Florida. For tourist comfort, sound conditioned motels are a necessity in these busy areas. Tectum over concrete beams is featured in this beauty. The second floor is composed of poured concrete on Tectum formboard "left-in-place" as an acoustical ceiling for the first floor. *Architects: Goiswald & Reynolds, St. Petersburg.*



Tectum Corporation, Newark, Ohio. Regional offices in Philadelphia, Atlanta, Columbus, Chicago, Dallas, Beverly Hills, Seattle and Toronto, Canada. Distributors in all leading areas. Plants in Newark, Ohio and Arkadelphia, Arkansas.

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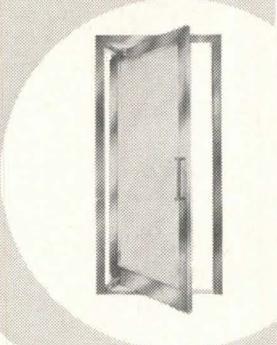




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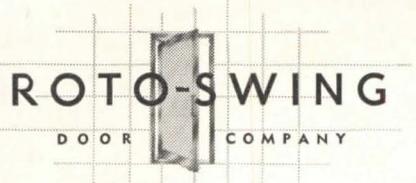
Bailey, Bozalis,  
Dickinson and Roloff  
Architects,  
Oklahoma City



**The Citizens State Bank, Oklahoma City, Oklahoma**

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### "Supermarket" For Brick Shows Many Types From 30 States

A brick "supermarket" in Detroit is the Kurtz Brick Company's building and display yard. Paul Kurtz, president of the company, spent three years searching the country for different types of brick. The result, an exhibit of bricks from 30 states, is believed to be unequalled in the United States. Edward M. Newman, A.I.A., is architect in charge.

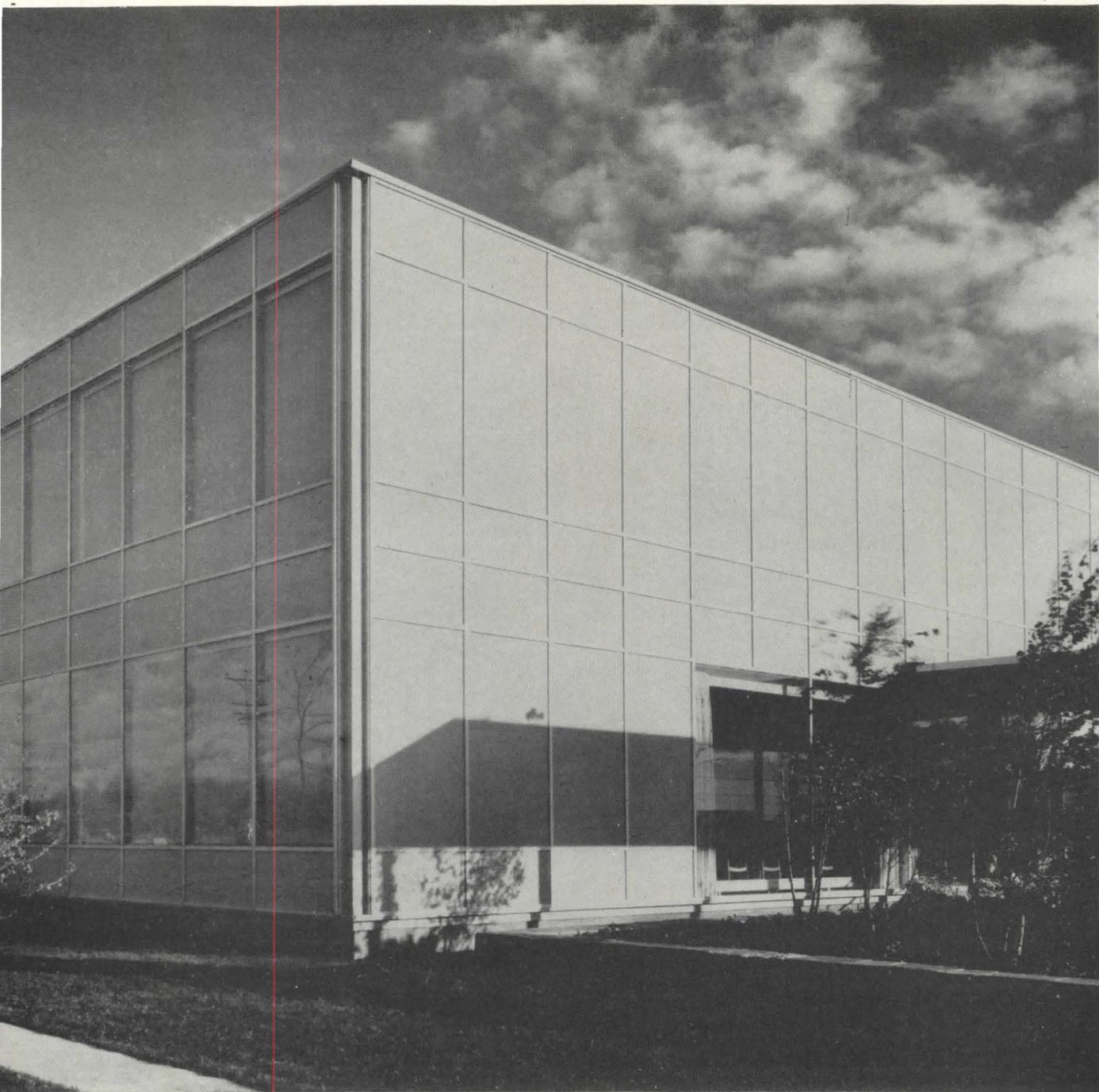
The whole layout is above, with the free-standing masonry wall, left, 100 ft long and 25 ft high; it consists of 17,000 bricks in 50 different styles and is divided into 40 sections. The photograph below shows the wall and some of the smaller free-standing walls.



The building at right of the drawing contains a "brick gallery" where more than 200 different clay building materials are exhibited for architects, contractors, and builders. It also includes a conference room where architects may bring clients for consultation after showing them the displays.

The display panels outside range from 4 by 7 ft to 12 by 22 ft and show the various bricks set in permanent form in mortar with different types and colors of bonds and joints. The assortment at the Kurtz establishment includes face brick, sand moulds, glazed brick and tile, ranging from hand-chiseled rock-faced adobes of New Mexico to the colonial sand moulds of the Virginias, from Roman to Norman, and from antique to Acapulco.

*more news on page 336*



*Architect: Skidmore, Owings & Merrill, Chicago, Ill. Contractors: Chell & Anderson, Chicago, Ill.*



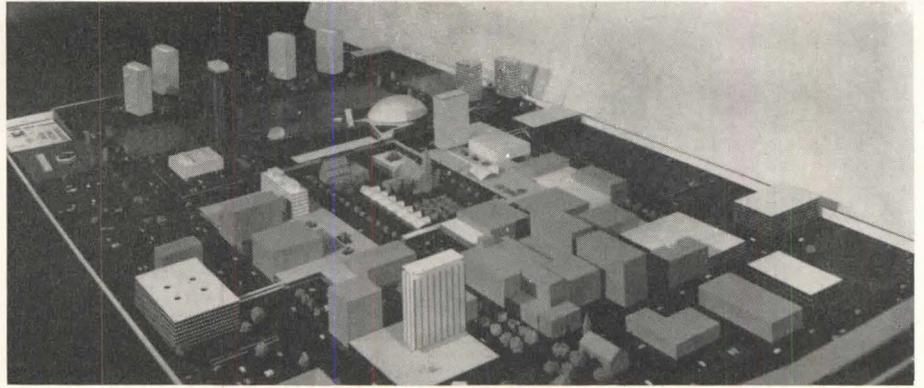
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**Proposed Joliet Redevelopment  
Planned by Illinois Students**

A plan for a redeveloped Joliet was recently presented to business and civic leaders of the Illinois city 30 miles from Chicago. Graduate students in architecture of the University of Illinois, under the direction of Professor A. Richard Williams, evolved the plan for the downtown area. Eleven students worked on the design, including Hwei-Chih Hsiu, whose preliminary concept won a prize from the Greater Joliet Com-



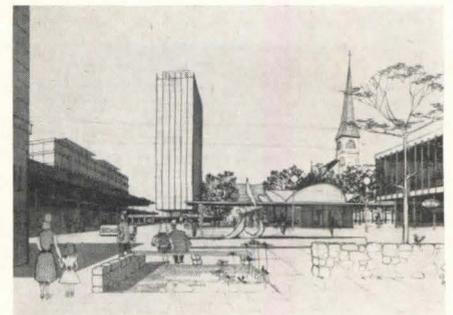
mittee, and Edwin J. Drimmel, Jr., job captain and project architect.

The 7-by-11-ft model above, scaled one in. to 20 ft, shows how redevelopment might change a nine-block area. White buildings are proposed structures; darker ones are existing buildings which would be retained. Major high-rise buildings include the County-City Building, office building, hotel and transportation center, and housing project (across the Des Plaines River in the background).

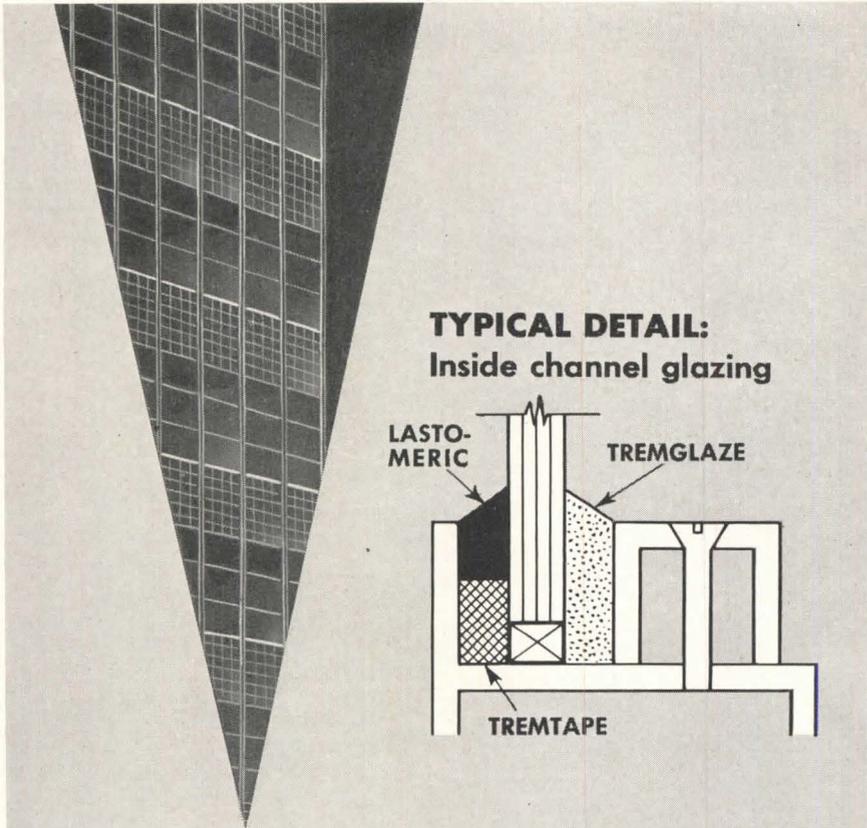
Below is a rendering of one of the proposed shopping malls. The Darcy Building (extreme left) and St. Mary's Church (spire in the distance) are among present structures which would be kept. The mall includes benches, pools, refreshment kiosks, and sheltered walks.

The redevelopment plan envisions four levels: underground building service; ground level with pedestrian traffic through the area and diversion of motor traffic around it; roof-deck shops and civic center plaza level; and roof plan, including penthouses. Some of the main features are: parking for 8000 cars (5000 more than at present) in multi-level garages and covered areas; a civic center on the river front; two shopping malls; exclusion of auto traffic from the central area; new housing; a new department store, theaters, etc.

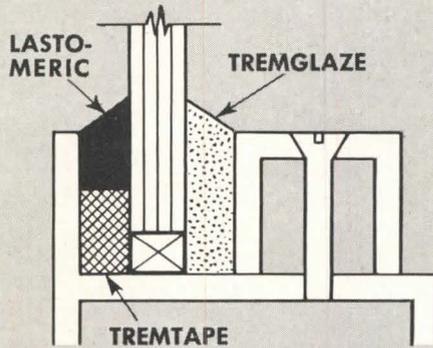
The Greater Joliet Committee, Inc., paid all expenses, including field trips by students.



more news on page 340



**TYPICAL DETAIL:  
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ABOVE—Military Personnel Records Center. Architect: Hellmuth, Yamasaki & Leinweber



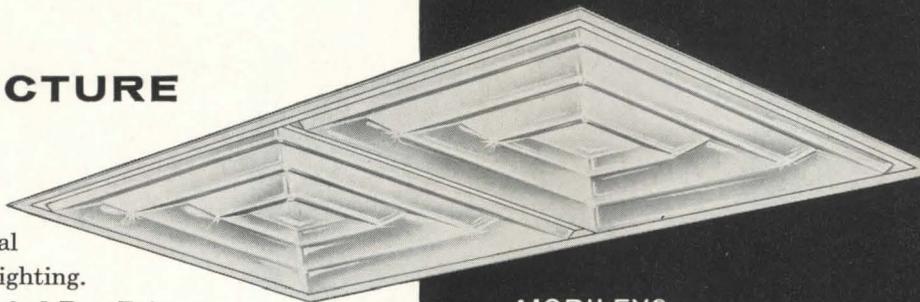
ABOVE RIGHT—Pius XII Memorial Library. Architect: Leo A. Daly Company

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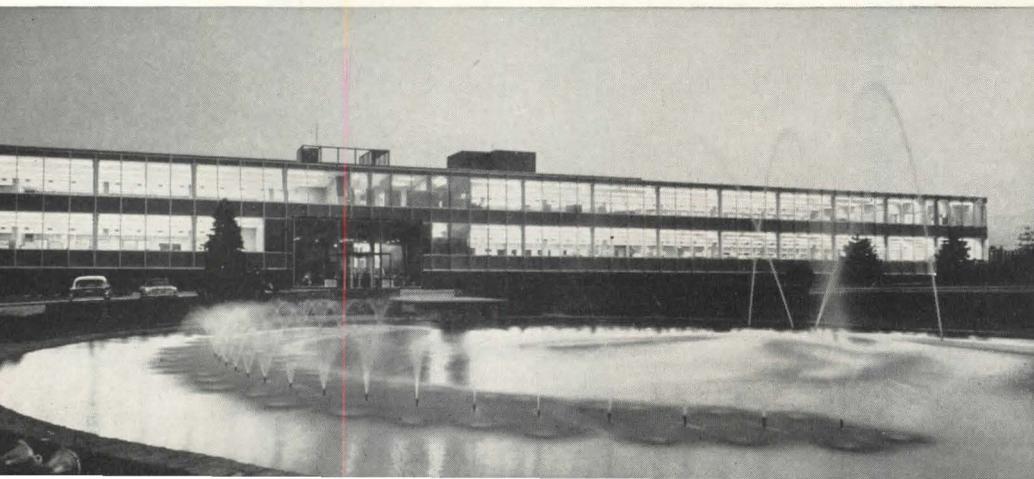
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A-118

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McDonnell Aircraft Corporation, Engineering Campus  
Architect: Harris Armstrong, F.A.I.A.



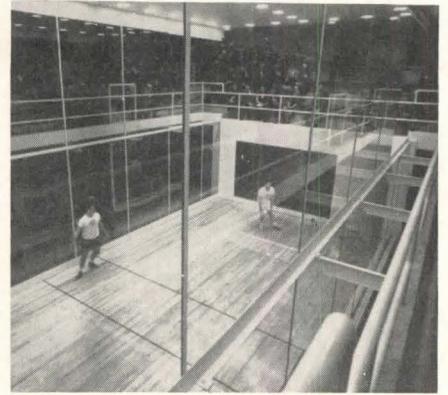
**All-Glass Handball Court Provides Many Spectators With View**

The first completely glass-enclosed handball court has been built at the Young Men's Christian Association in Aurora, Ill. Bertram A. Weber, F.A.I.A., of Chicago was the architect; the Arnold Lies Company was general contractor.

The court is expected to be a stimulus to the ancient sport because it allows 400 spectators to watch matches; there is also a large glass

panel in the rear wall (shown in the two smaller photographs) for televising matches. A traditional masonry court has only a tiny gallery for about a dozen spectators.

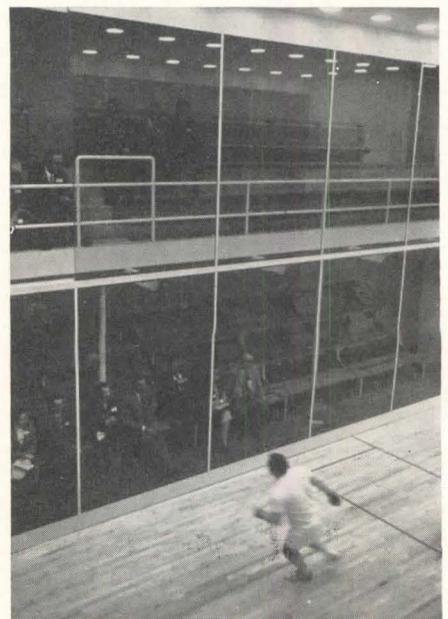
A handball court with glass walls starting 10 ft from the floor on two sides had already been built in Chicago, developed by R. Kendlar, president of the U. S. Handball Association, but achievement of the Aurora court was the result of the determination of the Y.M.C.A.'s building committee, under the chairmanship



of James H. Critton, and advised by Mr. Kendlar.

The glass in the side walls of the court is 40 ft long and 20 ft high. Glass 3/4-in. thick, to withstand impact from the bodies of even the heaviest players, was selected. Then a special bevel-edge setting bar to be used with the 9-by-6-ft bevel-edged glass panels was designed. When bolted into position, the bevel bars pulled the panels into alignment, forming the flush joints necessary to give a "true bounce" of the ball off the walls.

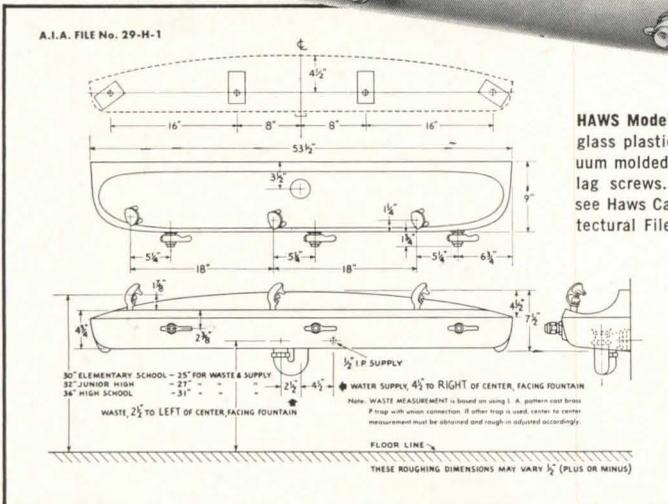
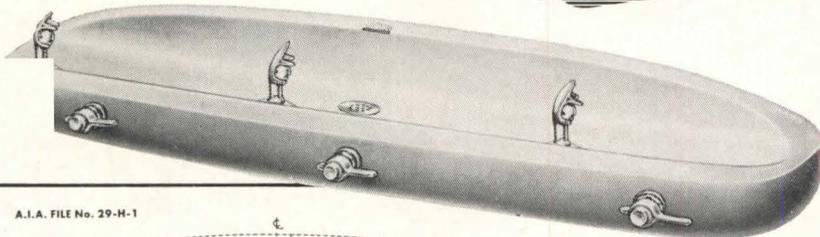
The glass is said to need very little maintenance. Players, incidentally, say they are not conscious of glass or spectators during a game.



more news on page 346

**MOLDED IN FIBERGLASS**

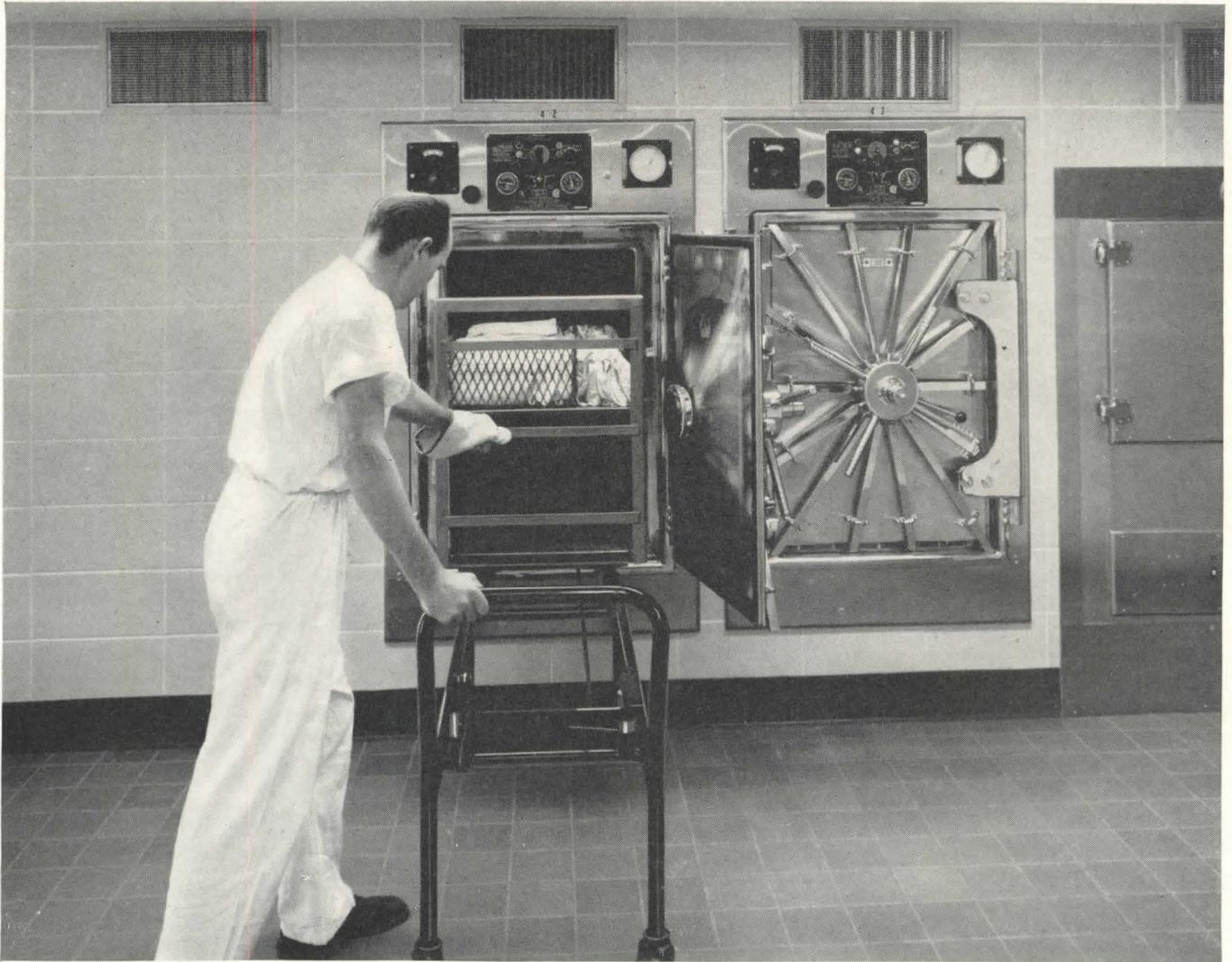
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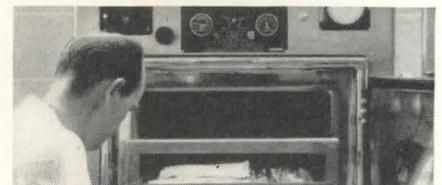
or spilled hospital solutions, so destructive to some metals, can't harm corrosion-resisting Monel\* nickel-copper alloy or Nickel-clad steel. Both clean quickly and easily . . . provide an unbroken armor against rust and corrosion for the life of the sterilizer.

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**Monel end rings** on AMSCO sterilizers stand up to bumps from loading cars . . . stand up to heat, moisture. Installation: Methodist Hospital, Memphis, Tenn.

# INCO NICKEL ALLOYS



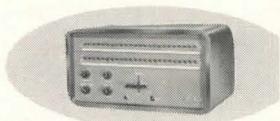
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## Washington Topics

continued from page 48

There is a provision that the Federal contribution, or loan, would be repaid by a district only if the locality were able to increase taxes to cover the debt. Should the local government be unable to make the payments, the Federal government would write off the amounts as direct aid 10 years after the school bonds have been retired.

### Colleges Also Covered

A second proposed measure, covering colleges, proposes Federal grants amounting to 25 per cent of the cost of paying off construction loans. Both public and private colleges would be eligible. Dr. Flemming estimated the program could generate \$2 billion worth of new facilities over a five-year period.

Maximum Federal outlay for the college assistance would be \$25 million annually, with the total cost to the Federal government limited to \$500 million. The Federal outlays would not be made until fiscal 1961.

### New Hospital Data Offered In USPHS Report

The first detailed analysis of short-stay hospital use based on data collected in interviews for the U.S. National Health Survey is given in a new Public Health Service publication.

The report, "Hospitalization—Patients Discharged from Short-Stay Hospitals," designated as Public Health Service Publication No. 584-B7, can be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., at 30 cents per copy.

It reveals that more than 16,738,000 persons spent varying periods in these hospitals for a total of more than 143,322,000 hospital days during the year ending June 30, 1958.

A short-stay hospital was defined as one for which the type of service is general; maternity; eye, ear, nose and throat; osteopathic hospital; or hospital departments of institutions. For purposes of the report, the surveyed population consisted of the civilian non-institutional population of the country.

The report shows that the number of patients discharged from such hospitals averaged 99.4 per 1000 of the surveyed population.

It is estimated from the data gathered that 70.4 per cent of the hospitalizations lasted one to seven days, that another 18 per cent were completed in eight to 14 days; only 3.5 per cent lasted 31 days or longer.

continued on page 352

## WEATHER STRIPPING

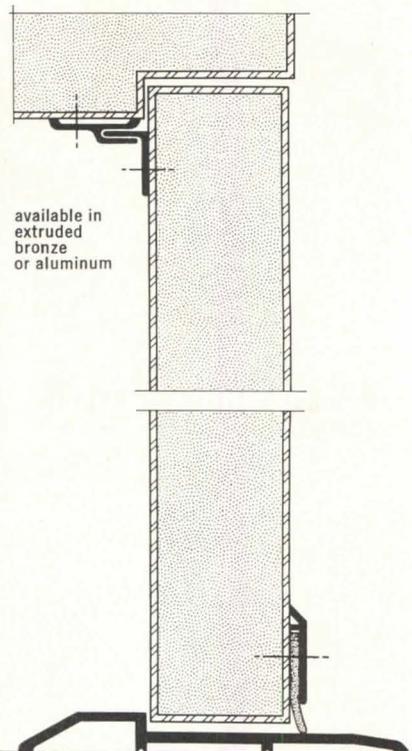
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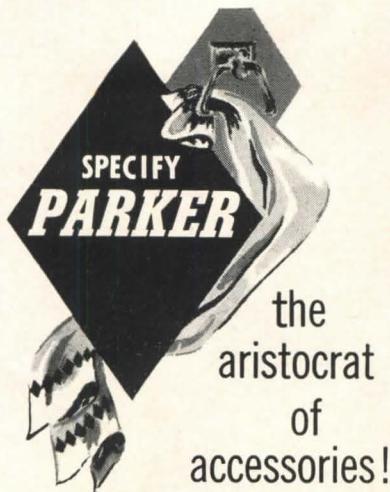


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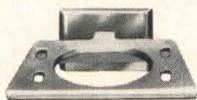
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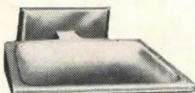


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## Washington Topics

### First Bills to Clear Senate Up Construction Funds

The first major bills to clear the Senate at this session of Congress were construction measures—housing and aid to airport development.

The debate on this legislation was acknowledged as the first true test of the President's new determination to balance the budget in fiscal 1960; and in both instances, the Senate approved larger amounts than Mr. Eisenhower wanted. The housing bill as voted by the Senate is about \$1 billion above the President's desire for a six-year program.

The Senate extended Federal Housing Administration insurance of home improvement loans (Title I) and gave that agency an additional \$10 billion of total insurance authority. The bill authorized \$2.1 billion in Federal contributions to urban renewal programs over six years, permitting the outlay of at least \$350 million each year. The Federal portion was left at two thirds although the White House had asked for a gradual reduction to one half.

The Senate measure on housing also approved \$150 million for direct loans to veterans. This was a compromise from the \$300 million approved by the Banking Committee.

The bill also authorized \$300 million for college housing loans, again an average compromise between the \$400 million sought by the committee and the \$200 million in the Administration proposal. A sum of \$125 million was provided for government loans to colleges for construction of classrooms and laboratories.

The special program aiding builders in construction of housing for elderly persons was extended in the Senate version and the ceiling on cost of houses FHA can insure under other programs was raised.

As work on the omnibus housing measure was pushed on the House side, it appeared an increase in interest rates on both FHA-insured rental housing and VA-guaranteed mortgages, sought by the White House, would be approved.

An amendment to the Senate bill secured by Senator Joseph Clark (D-Pa.) would require the outlay of an added \$150 million for urban renewal in any year if applications required it. In no event, however, would the \$2.1 billion ceiling for the program in six years be exceeded.

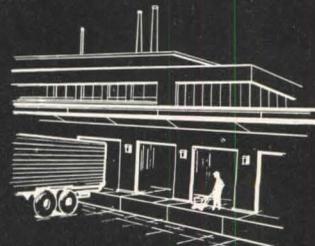
A more liberal measure, all the way around, was approved by the House Banking Committee.

*continued on page 358*

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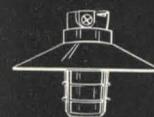


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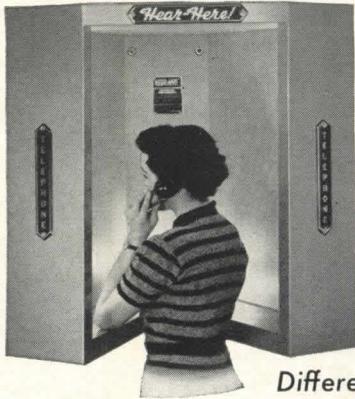
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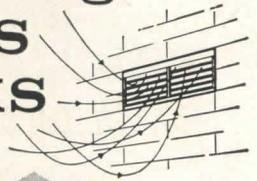
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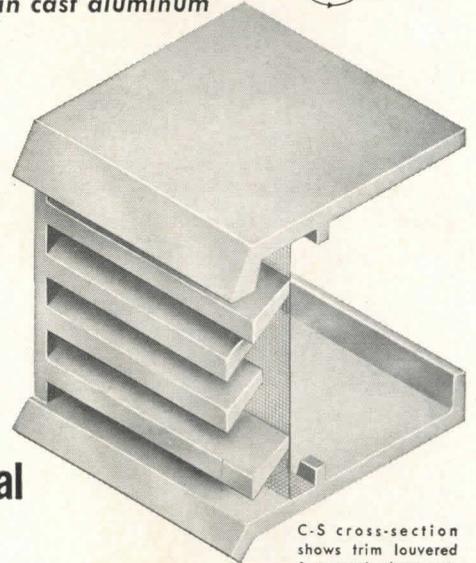


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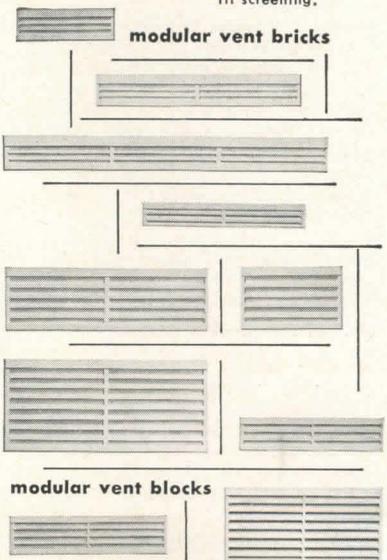
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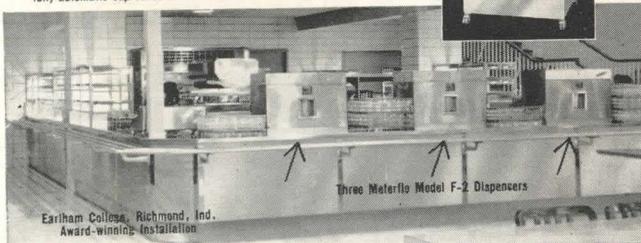
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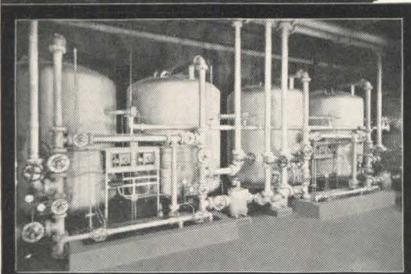
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## Washington Topics

The Senate included authorization of an additional 35,000 public housing units over repeated Republican protests. There are another 16,000 units to carry over from existing programs.

### Double Airport Request

The Senate-passed airport aid measure stipulated that \$465 million could be granted by the Federal government to assist in construction and improvement of airports over four years. The President had asked for \$200 million for the same period.

The Senate voted to leave in the measure the use of this money for construction of airport terminal buildings as well as runways and taxiways. There had been a move to limit the funds to engineering aspects of airport work.

The bill as finally voted by the Senate provides for \$100 million in each of four years to be matched by the states or local agencies dollar for dollar. Seventy-five per cent of this would be allocated on the basis of population, the balance on the basis of need.

### A.I.A. Lambastes PHA as "Administrative Morass"

The American Institute of Architects spoke up bluntly on the subject of public housing and architects in recent testimony before the Senate Banking and Currency Committee by J. Roy Carroll Jr., F.A.I.A., of Philadelphia, A.I.A. Middle Atlantic regional director.

The A.I.A. Board of Directors, at its November meeting in Clearwater, Fla., had voted to argue its case in public after prolonged and unfruitful consultations with the Federal Government agency.

Mr. Carroll told Congress that because of administrative difficulties created by the Public Housing Administration architects are losing interest in the public housing program. He noted evidence of "a decided falling off of interest . . . of an apathy among our own members, of the lack of desire of leading architectural firms to participate in it."

Here are selected excerpts from the Carroll testimony:

"That many competent architects today will not consider accepting a commission for a public housing project is indeed an unfortunate state of affairs. It is one produced chiefly through a feeling that it is no longer feasible to use architecture to its fullest capacity to create better living through public housing. . . . Ponderous bureaucracy and the atti-

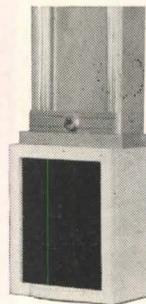
*continued on page 364*

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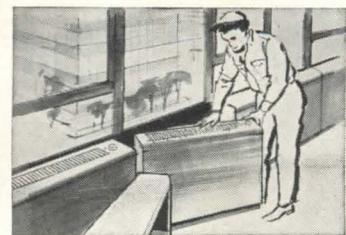
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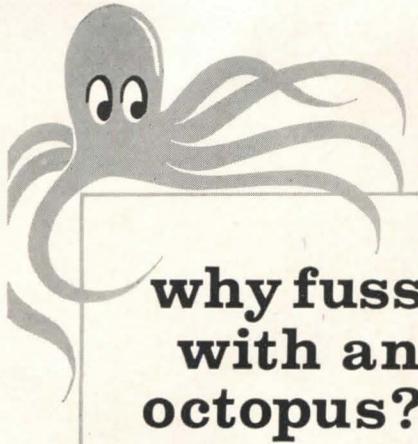
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## Washington Topics

tudes that naturally develop from it are frustrating and serve only to stimulate the hostility of those whose support is needed. . . . Public housing today is bogged down in an administrative morass. . . . The PHA contract goes far beyond the customary contract of a public agency in holding the architect personally liable for errors and omissions, which may well be beyond his control. It has been described by a distinguished Philadelphia attorney as the most one-sided document he had ever seen. . . . The fee schedule is entirely inadequate and should be junked. However adequate the fees may appear to be to the PHA, they certainly are not appealing to an architect and will not attract to the program that competent and dedicated architectural service which the program demands. . . . Current projects, with few exceptions, are dreary, unimaginative masses that can hardly be characterized as architecture."

### U.S. Support of Urban Renewal Urged by Feiss for A.I.A.

Another witness for the American Institute of Architects before the Senate Banking and Currency Committee, Chairman Carl Feiss of the A.I.A. Committee on Community Planning, chided the Federal Government for what he described as its failure to give proper support to the urban renewal program it had authorized.

Mr. Feiss said the Federal attitude had made the program "on again, off again: catch-as-catch can." This approach, he asserted, is "sheer foolishness."

"After a painfully slow start," Mr. Feiss declared, "the program finally commenced to roll only to bog down again when it failed to receive the necessary support from the Federal government."

His criticisms were directed at the failure of Congress to provide urban renewal funds in volume sufficient to keep an adequate program in continuous operation. Only "postage stamp" size projects are possible under the allocation methods employed by the Urban Renewal Administration, he contended.

"Plans for well developed large-scale projects that could not only eradicate the diseased areas but indeed turn the tide against further decay, ground to a stop because they are not eligible for consideration under the dismal rationing system now in effect," he testified. "What this means in terms of withdrawal of pri-

continued on page 370

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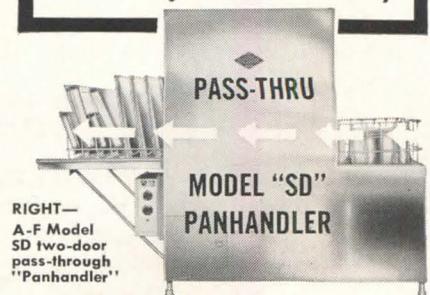
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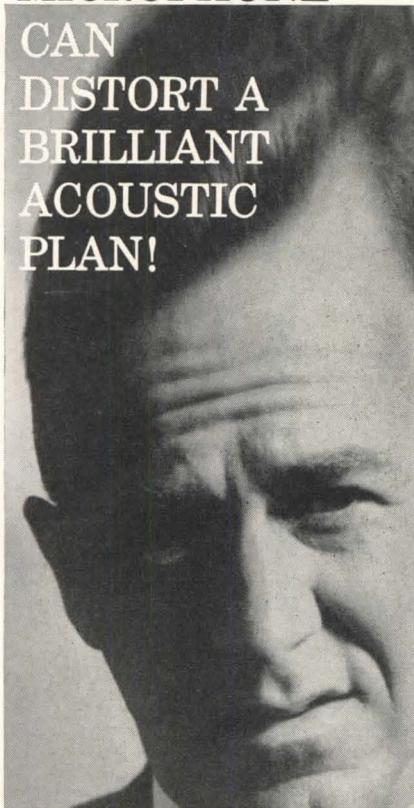


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## Washington Topics

vate investment money, loss of interest by sponsors, and the frustration of the people in the communities involved is hard to calculate. And in the end, this procrastination will prove extremely costly. Each delay and slowdown in the program makes the job of restoring our cities that much more difficult and inevitably far more expensive."

He noted a need for advance planning because of the lag required between authorization and actual construction. And he called on Congress to reduce the present residential requirements to make possible the improvement of the physical, structural and economic shape of the central city.

He placed A.I.A. on record as supporting provisions for additional programs, such as universities, to be developed as a natural part of the urban renewal process. And continuation of the 701 planning assistance program to small towns also was recommended.

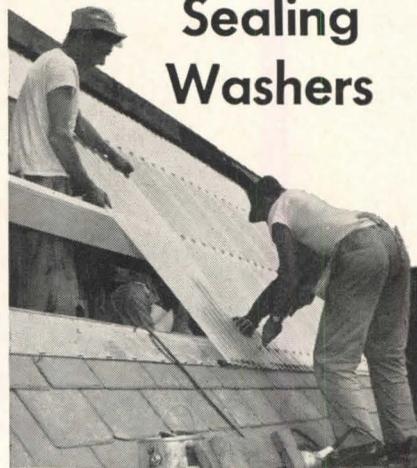
Specifically, Mr. Feiss said Congress should promptly enact a comprehensive program with assurance that it will be sustained at a continuing high level for the next 10 years.

### Lease-Purchase Procedures Under Fire Again

Budget Director Stans and Rep. Albert Thomas (D-Tex.) locked horns over the lease-purchase building program in recent closed hearings where President Eisenhower's fiscal 1960 budget was being considered. Partial release of the testimony showed that Representative Thomas charged Mr. Stans with being "a pretty expensive luxury," and with costing taxpayers \$35 million in allowing construction of 30 projects previously in the lease-purchase program. (The \$35 million was Representative Thomas' estimate of the additional cost of the buildings over what they would cost if constructed with direct appropriations.)

When Mr. Stans was allowed to reply, he explained that last February, Representative Thomas had asked the General Services Administration not to bind the United States in any more lease-purchase construction contracts. (The law had expired in July 1957.) The subject was discussed with budget officials and GSA Administrator Franklin G. Floete. GSA was allowed to continue with the 30 authorized jobs since all but three had been advertised for financial bids and all but 11 for construction bids. It was feared, Mr. Stans said, that damage suits would result if the program on these was halted.

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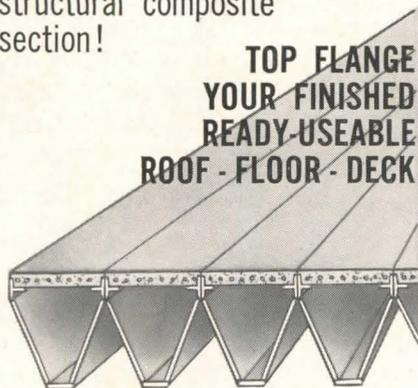
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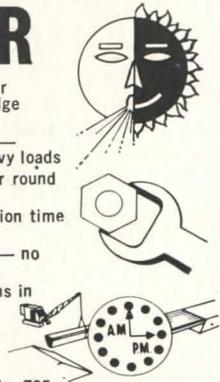
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## Required Reading

Trees . . . cont. from page 63

The greater part of the book is a detailed, carefully written text on tree-house construction for the 10- to 14-year-old boy. There are sections devoted to basic tree facts, tools, lumber (used and new), and fastenings. Several types of houses are fitted to appropriate shapes of tree, and two complete house projects are illustrated step by step from sill leveling to ladder rigging. Good spring reading for young and old with well-planned format and clear drawings and type.—JOHN T. WEEKS

### Two Useful Handbooks

CONSTRUCTION ACCOUNTING AND FINANCIAL MANAGEMENT. By William E. Coombs. F. W. Dodge Corp., 119 W. 40th St., New York 18. 481 pp., illus. \$12.85.

In this book Mr. Coombs, an attorney and certified public accountant who is secretary and treasurer of a large general contracting firm, specifically recommends proper accounting and management procedures for the construction industry. Starting with the basic operating and accounting patterns of a construction firm, the author covers in 24 detailed chapters every aspect of the topic. There are 200 checklists, illustrations, and sample forms and reports.

GROUNDS MAINTENANCE HANDBOOK. By H. S. Conover. F. W. Dodge Corp., 119 W. 40th St., New York 18. 501 pp., illus. (2nd ed.). \$10.75.

Written for those professionally responsible for the maintenance of grounds of any size, this book is a complete exposition of the subject. Mr. Conover, now landscape architect for the New York Power Authority, has expanded the volume from a manual he developed while manager of public services for TVA.

### On Schools

THE NEW SCHOOL: MASTERWORKS OF INTERNATIONAL SCHOOL ARCHITECTURE. By Alfred Roth. Frederick A. Praeger, Inc., 15 W. 47th St., New York 36. 279 pp., illus. \$11.50.

SAVING DOLLARS IN BUILDING SCHOOLS. By David A. Pierce. Reinhold Publishing Corp., 430 Park Ave., New York 22. 112 pp., illus. \$5.95.

GUIDE FOR PLANNING SCHOOL PLANTS. National Council on Schoolhouse Construction, Peabody College, Nashville, Tenn. 254 pp. \$3.

SCHOOL NEEDS IN THE DECADE AHEAD. By Roger A. Freeman. Institute for Social Science Research, 917-15th St., N.W., Washington 5. 273 pp. \$5.

THE AMERICAN HIGH SCHOOL TODAY. By James Bryant Conant. McGraw-Hill Book Co., 330 W. 42nd St., New York 36. 141 pp. \$1 (paper) or \$2.95 (cloth).

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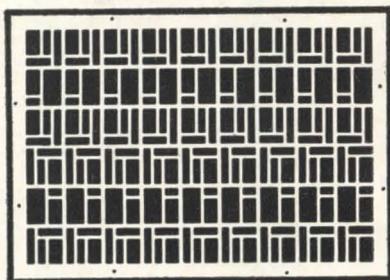
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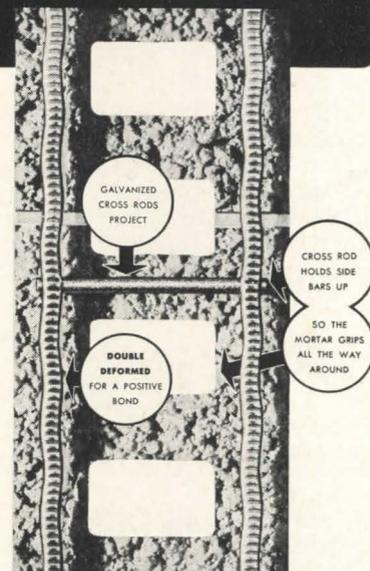
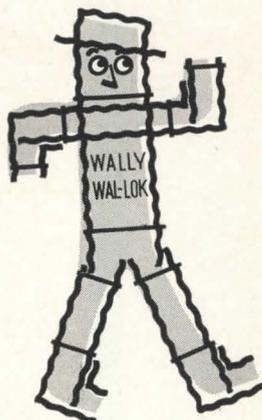
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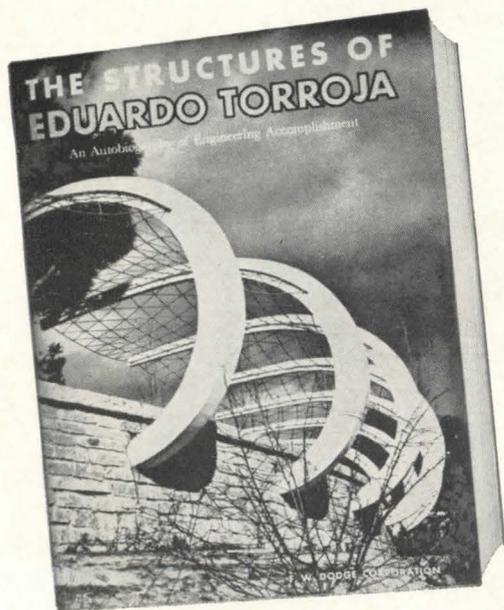
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# Current Trends in Construction

As Reflected in Contracts for Future Construction in the U.S. Reported and Tabulated by F. W. Dodge Corporation

## 1959: UP TO THE SAME OLD TREND: UP

In its first report for 1959 on contracts for future construction in the United States (except Alaska), F. W. Dodge Corporation reported an increase of 12 per cent for January 1959 compared with the 1958 month. Total for the first month of the new year was \$2,319,167,000.

A 31 per cent increase in dollar volume of contracts for residential building—one- and two-family houses and apartments totaled \$1,021,516,000—led the January upswing; the number of dwelling units represented by these contracts was 84,166, up 33 per cent from January 1958.

## 1958: "A NEW RECORD—AS USUAL"

The construction industry's eleventh consecutive record year is analyzed in F. W. Dodge Corporation's annual review of construction contracts published last month in *Building Business*, the Dodge monthly bulletin.

Substantial gains in housing and highways are recognized as the chief instrument of the 1958 record. The year's cumulative total of contracts for future construction in the United States amounted to an all-time high of \$35,090,000,000, a gain of nine per cent compared to 1957.

The review, written by Dodge vice president and economist George Cline Smith and associate economist Edwin W. Magee, Jr., notes the following highlights:

—The record year was realized despite a recession in the first quarter of 1958.

—Contracts for housing and highways accounted for just about all the increase.

—Contracts for government-owned projects rose much more rapidly than the private-ownership sector, although the latter began to rise sharply in the second half of 1958.

—One important category, industrial building, remained weak throughout 1958. It's expected that this situation will change as business improves and as the economy continues to grow.

—Apartments accounted for a larger share of the total dwelling units than in any year since 1951. They accounted for 17 per cent of the units reported in 1958, as compared with 14 per cent in 1957 and 10 per cent in 1956.

—Contracts for educational and science buildings were one per cent

Nonresidential contracts also contributed to the increase: at \$818,225,000 a gain of eight per cent. Commercial, hospital and social and recreational buildings were the leaders here; and gains were also recorded in contracts for religious and miscellaneous nonresidential buildings.

In the heavy engineering category in January, contracts totaled \$479,426,000, down ten per cent compared to January 1958; while public works, aided by contracts for streets and highways, showed an increase, utilities were down because of a sharp drop in electric contracts.

below 1957. This point is significant only because it marks the first time in the postwar period they failed to register an increase.

Releasing details of Dodge construction contract figures not normally made public, the review states that the greatest percentage increase in dollar volume of contracts in any single building type occurred in apartments, with contracts in this classification 43 per cent ahead of last year.

Notable increases were recorded also in contracts for public buildings, social and recreational buildings, electric light and power systems and public works.

### Is Construction the Bellwether?

The review observes that the performance of the construction industry in the postwar period has been "nothing short of remarkable: come recession, come boom, every year reaches a new high point." And in this connection:

"It's interesting, and perhaps valuable, to speculate on what the course of the national economy might have been had the construction industry behaved otherwise. Major wars generally have been followed by major depressions, and there was considerable expert opinion a few years back that World War II would be no exception. But despite three opportunities, no depression developed. Is it pure coincidence that in each of the three postwar recessions, the nation's largest fabricating industry continued to grow?"

"Obviously, it isn't easy to separate cause from effect in such a situation. There were many economic and

some non-economic factors that caused construction to increase even during the three postwar recessions. But conversely, the high level of construction activity must have been a heavy contributor to the ease with which we pulled out of these recessions."

### Trends by Types

Excerpts from the section of the review which discusses trends in various construction categories are presented below. All figures are 48-state totals for the year 1958 (Alaska is excluded) and all percentage changes are comparisons with the full year 1957.

—*Residential buildings.* Contracts rose 13 per cent above 1957, reaching a total of \$14,696,000,000. The housing spurt in 1958 resulted chiefly from two factors: first, a general easing in money conditions in the first half of the year; and secondly, and more important, the passage by Congress of the emergency housing act of 1958 which had as its prime purpose the stimulation of homebuilding as an anti-recession measure.

—*Industrial buildings.* Contracts down 35 per cent: total \$1,400,000,000. By far the weakest category. It seems probable that manufacturing building contracts in 1959 will provide some impetus to construction in contrast to the record of the past two years.

—*Commercial buildings.* Contracts valued at \$3,197,000,000, down two per cent. Since midyear commercial buildings have shown signs of strength; second half 1958 contracts averaged seven per cent higher than the comparable period of 1957.

—*Educational buildings.* Contracts valued at \$2,908,000,000, down one per cent. This small dip is likely to be only temporary, however, as demand pressures, spurred by population gains, continue to mount.

—*Hospital buildings.* Contracts valued at \$879,000,000, up one per cent. During the past several years contracts for hospital construction have been moving steadily upward and this trend is likely to continue.

—*Religious buildings.* Contracts valued at \$746,000,000, up seven per cent. Very strong during second half.

—*Recreational buildings.* Contracts valued at \$500,000,000, up 17 per cent. Strong all year.

—*Public buildings.* Contracts valued at \$655,000,000, "a remarkable 39 per cent" over 1957. Types sharply up included public administration buildings, jails and penitentiaries and armories.