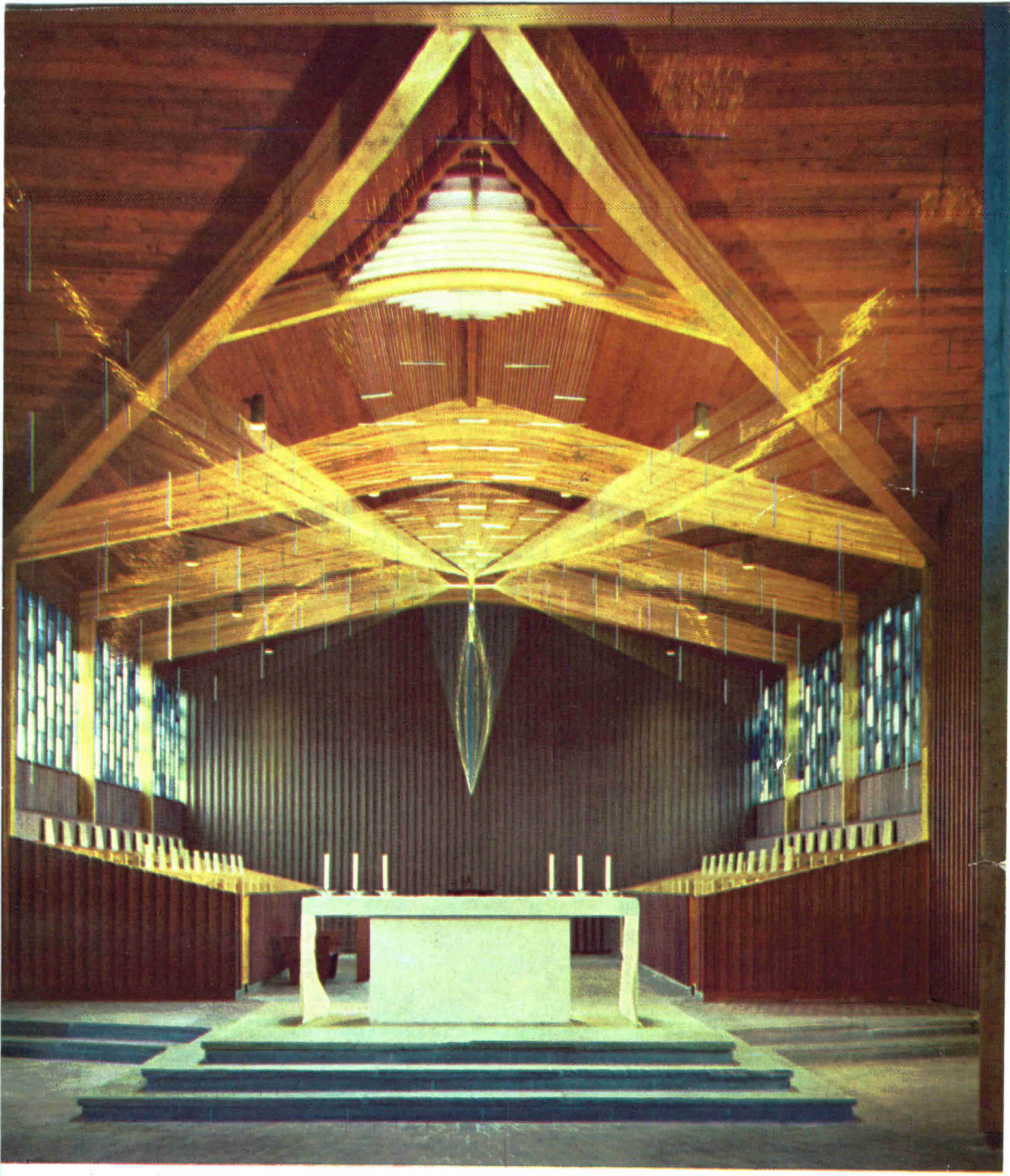

ARCHITECTURAL RECORD

6 *June 1961*

Building Types Study: Churches

Saarinen's Design for IBM Research Center

State Capitol for Hawaii

Semi-Annual Index

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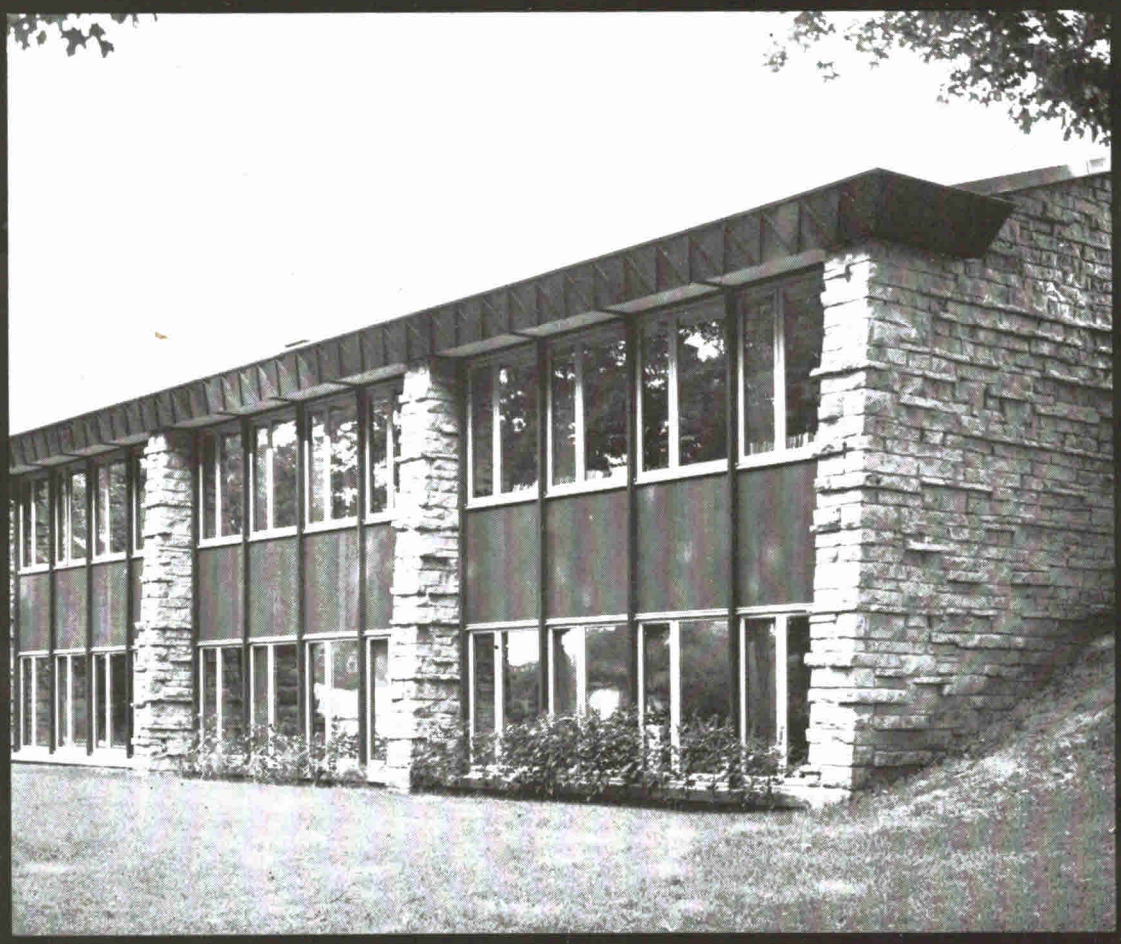

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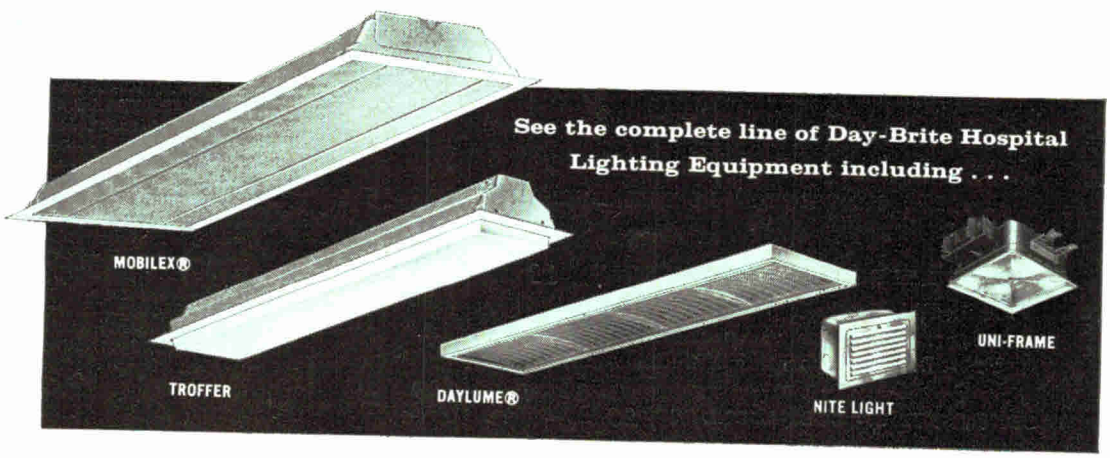

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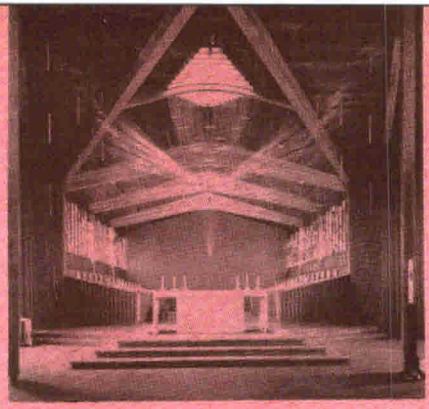

Cover:

View toward altar in Portsmouth Priory's new church and monastery designed by Pietro Belluschi and Anderson, Beckwith and Haible. Photograph by Joseph W. Molitor

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SCHOOLS AND AIR CONDITIONING: PROGRESS AND PROBLEMS

The Building Types Study on Schools will include a major review of air conditioned schools in various parts of the country as well as analysis of design implications and cost problems. Closely integrated with the study itself will be a technical section covering application of various systems and related principles and problems.

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Patronizers of the Arts

Since I wrote (last month) about "conscious design for bad taste," I have been trying to ignore the whole idea, but it refuses to go away. Not that there is anything new about it —pandering to vulgarity is as old as the human race—but when you apply it to building design it does seem newly distressing.

The reference last month was to government buildings, and I was complaining that government as a client seemed to inhibit creative thinking. Seemed in fact to lead positively to negative design, the conscious design for a definite philosophy of mediocrity. Perhaps the general assumption would be that such design is not conscious, that subconscious would be a better word. But I don't think so; there is a conscious feeling abroad in government circles that good design is arty, or sophisticated, or undemocratic.

It was conscious when, back in wartime, I interviewed a commander in BuDocks. He told me plainly that the Navy didn't have time for any architects (he mispronounced the word: deliberately, I thought). Architect designs would be interpreted, he said, as artistic dawdling in war emergency. Navy buildings must look plain, inexpensive, business-like.

A warehouse philosophy of design, calculated as a public relations effort for simple minds.

But the exact reverse can also be conscious design for bad taste, as in Miami Beach.

On our trip to Atlantic City I had a sobering experience. As we drove up to the dignified old hotel (yes, this one was), I saw a brand new motel across the street, and burst out laughing. It was a three-story job, a mile and a half long, covered all over with bright green, yellow and orange red panels. I determined to photograph it for the amusement of posterity, or at least of the people at the office. The idea grew into a photo tour as I saw other motel-type curiosities, until I spent several hours recording on color film the various tricks for catching the motorist's eye. I began in high good humor, but you can be amused only so long by crazy color combinations, weird decorations, cockeyed pylons. It grew more and more depressing as I pondered on the deliberate garishness of it all.

Granting an eye-catching necessity, is such bad taste also a necessity? And it is obviously deliberate. After all, these things are done by professional designers: architects, I suppose. Or at least in each case some architect must have gone along with the pitch. The pitch is, I suppose, that visual horrors have a shock value and so gain attention, and of course that motels are supposed to look gay and exciting.

Well, the older disciplines of architecture are gone. And whatever the results might be on the positive side, the negative side of the coin is plain to see. No, it's not "plain"—it's honky-tonk. It's a do-it-yourself, jazz-it-up, anything-goes, design-for-attention sort of mish mash. Not just in sucker traps like Atlantic City or Miami Beach, but along every highway in the Sun Belt, or up north for that matter, or in every village square.

It's all in the spirit of democracy. Reach down and pat the little man on the head.

It has long been the rule in patent medicines, in politics; yes, and in automobile design. And now it's the thing in architecture—well, at least in building design.

—*Emerson Goble*

A.I.A. RAISES DUES TO BUY NEW AIDS FOR NEW ERA

CORBU CAME to receive the 1961 Gold Medal, and his grateful but nervous hosts found him —as above, with President Will—responsive, genial and only affably quizzical

Philadelphia Convention Also Approves More Powers for Bigger Executive Committee; Limits Terms of Some Officers; Rejects "Professional Affiliate" Class of Membership

This year's annual national convention of the American Institute of Architects seemed to mark a turning point in Institute affairs. The conviction expressed with increasing emphasis over the last few years by the A.I.A. Board of Directors and its Committee on the Profession, that expanding responsibilities of the architect require expansion of his professional services and new techniques of organization for practice, had by now apparently registered sufficiently with the membership to support action. It was, at any rate, the year in which delegates recognized the increasing demands upon the profession sufficiently to (1) raise dues for the first time since 1952; and (2) move to expedite the administration of the Institute by empowering a newly-enlarged Executive Committee to perform many functions formerly reserved to the Board.

The dues increase, a plan for assessing supplemental dues based on ability to pay, was the most significant action of a convention at which business matters were more important than in many years. The bylaw change as proposed by the Board, expected to increase Institute revenues by some $200,000 a year, was amended after spirited floor debate to put the plan on a two-year trial basis. As adopted, it provides for annual supplementary dues to be paid by firms of corporate members in an amount calculated as a percentage (one per cent the first year, up to two per cent the

continued on page 12

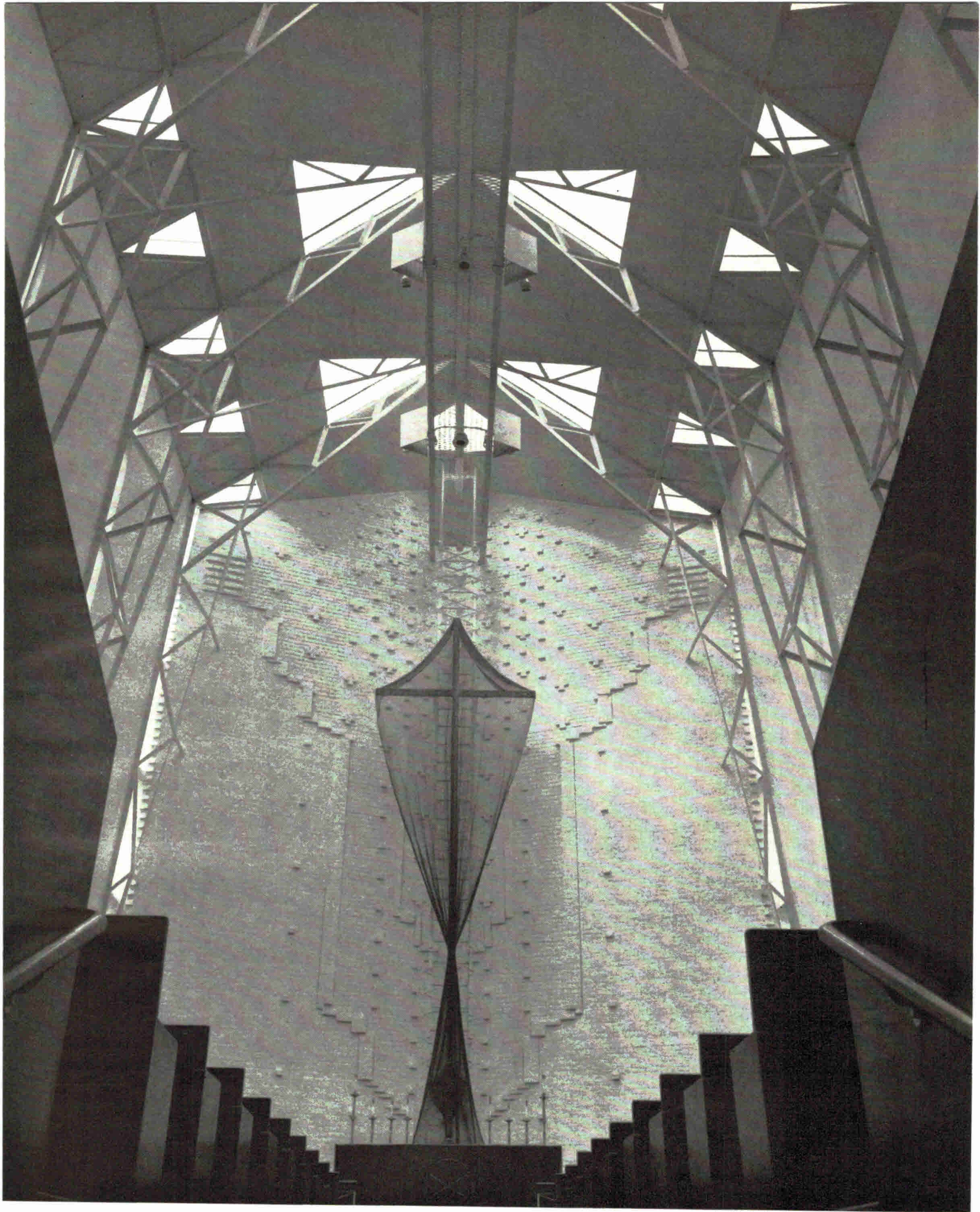
A NEW EXECUTIVE DIRECTOR, William H. Scheick, pledged a headquarters "geared for action and maximum service" for times ahead "different from anything the profession has ever seen"

A NEW BOARD OF DIRECTORS, all but seven members of the old Board, headed a new "structure" approved by the convention. Seated, left to right: Directors Clinton E. Brush III, *Gulf States*, and Robert M. Little, *Florida*, Treasurer Raymond S. Kastendieck, First Vice President Henry L. Wright, President Philip Will Jr., Secretary J. Roy Carroll Jr., Second Vice President James M. Hunter, Executive Director William H. Scheick. Standing, also left to right: Directors William Bachman, *Illinois;* Malcolm D. Reynolds, *California;* William W. Eshbach, *Pennsylvania;* Linn Smith, *Great Lakes;* Morris Ketchum Jr., *New York;* Daniel A. Hopper Jr., *Middle Atlantic;* Julius Sandstedt, *North Central States;* Harry C. Weller, *Northwest;* George B. Mayer, *Ohio;* James Allan Clark, *East Central;* Arthur Gould Odell Jr., *South Atlantic;* R. Lloyd Snedaker, *Western Mountain;* Reginald Roberts, *Texas;* James Lawrence Jr., *New England*

Photos: Mildred F. Schmertz, Jules Schick; also Emerson Goble and Daniel J. Howe Jr.

AN OLD FRIEND, Consulting Director Edmund R. Purves, received a valedictory award

NEW RECIPIENTS OF COVETED HONOR, 1961 "class" of Fellows posed for picture on grand staircase of Philadelphia Museum of Art, scene of their investiture



Architects: Huntington and Darbee, Hartford, Conn.

ST. MARK'S EPISCOPAL CHAPEL, UNIVERSITY OF CONNECTICUT (STORRS)

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continued from page 10

second) of the Social Security taxes paid by such firms during the preceding fiscal year both for themselves and their employes.

The other important bylaw change, also proposed by the Board, embodied some rather sweeping changes. Most significant:

1. The Executive Committee was enlarged to include in addition to officers all regional directors serving the last year of their terms and was empowered to act for the Board on all matters except general budget, disciplinary action, change of board rules or bylaws, proxy in any corporation, honor awards, fees, or annual dues. The Committee thus becomes far more powerful.

2. Terms of officers are limited: president, one term of one year; first and second vice presidents, two terms of one year each; secretary, two terms of two years each; treasurer, any number of two-year terms. The first and second vice president and the secretary may serve not more than four years in these offices or any succession of them.

One important proposal of the Board was rejected by the convention—the recommendation for a new "Professional Affiliate" class of Institute membership open to consulting engineers, planners, landscape architects and professional artists.

Seven Directors Elected

Elections didn't cause even a small ripple of excitement. All incumbent officials were re-elected without contest (see photo of Board, page 10) and seven new regional directors were elected, also without contest: Morris Ketchum Jr. of New York City—*New York* (succeeding Trevor W. Rogers of Buffalo); Ross Lloyd Snedaker of Salt Lake City—*Western Mountain* (succeeding Frederic H. Porter Jr. of Cheyenne, Wyo.); Julius S. Sandstedt of Oshkosh, Wis.—*North Central* (succeeding Harold P. Spitznagel of Sioux Falls, S.D.); James Lawrence Jr. of Boston—*New England* (succeeding Alonzo J. Harriman of Auburn, Me.); William W. Eshbach of Philadelphia—*Pennsylvania;* William Bachman—*Illinois;* and George B. Mayer—*Ohio.*

Le Corbusier Was There!

Despite the unusual importance these organizational matters assumed, the attention of most of the 2744 registered for the convention

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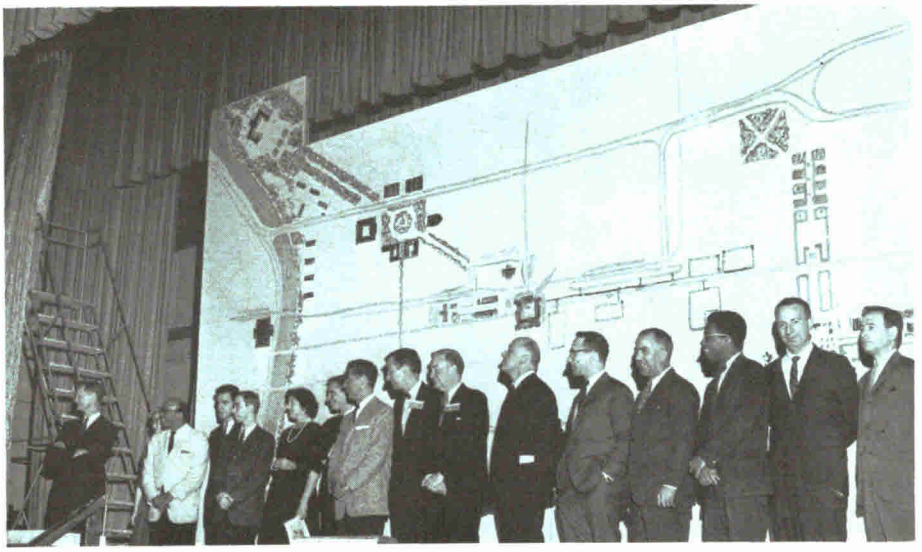
REDESIGNING URBAN AMERICA, theme of the convention program, was saluted at the opening session in two keynote addresses—one from the New Frontier, the other from an old one. Speakers were the new HHFA Administrator Robert C. Weaver (top left and, in large photo, at lectern) and noted British city planner Sir William Holford (above left). Welcomers to the convention included (left to right below) A.I.A. Middle Atlantic Director Daniel A. Hopper Jr., convention honorary chairman; Host Chapter President Norman N. Rice; and Host Chapter Convention Chairman Beryl Price

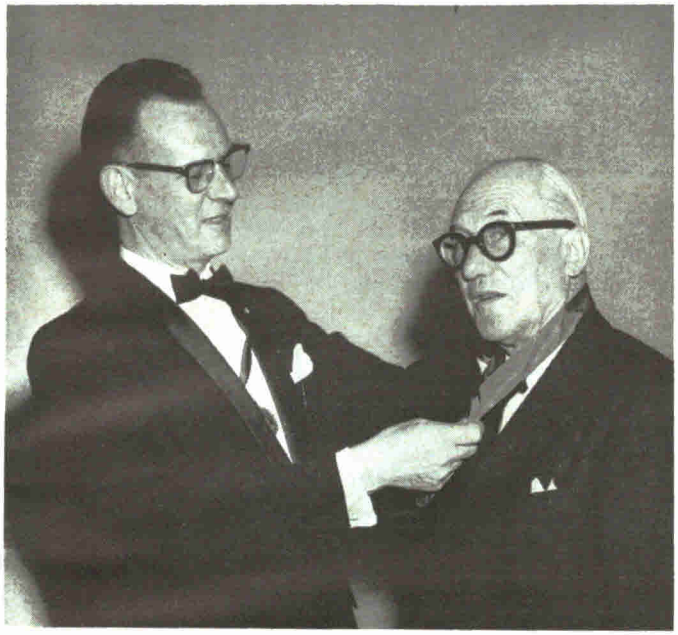
TWO OF THE WORLD'S leading architectural critics, America's Lewis Mumford and Italy's Bruno Zevi, shared the podium at the second program session. Zevi wanted dynamic cities and Mumford wanted human cities, and were these objectives complementary or alternative?—the debate will never end



SMASH HIT of the convention—perhaps of any A.I.A. convention—was the graphic presentation at the final program session of the redesign of downtown Philadelphia. Executive Director Edmund S. Bacon of the Philadelphia City Planning Commission, key members of his staff and the private architects who participated are shown above with the monumental drawing they severally produced before the eyes of a spellbound audience as one by one they explained their separate parts

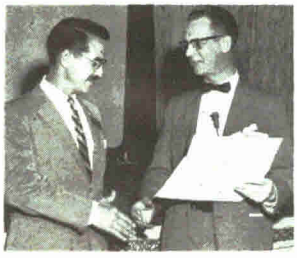
PRESIDENT'S RECEPTION had a monumental setting in the Museum of Art and the traditional receiving line of officers and their ladies: (left to right) President and Mrs. Will, First Vice President and Mrs. Wright, Second Vice President and Mrs. Hunter, Secretary and Mrs. Carroll, Treasurer and Mrs. Kastendieck, Executive Director and Mrs. Scheick and Consulting Director Purves

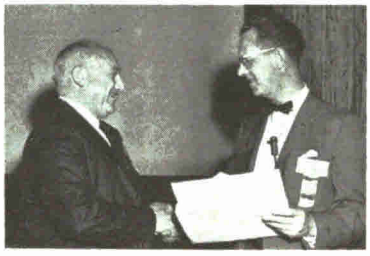
INTERMISSION CEREMONY at A.I.A. command performance of Philadelphia Orchestra—five successive chancellors of College of Fellows receive walnut bowls inset with Philadelphia Chapter Medal: (left to right) John F. Harbeson, who made presentation, Morris Ketchum Jr., current chancellor, Roy F. Larson, Arthur Holden (accepting for Edgar Williams), Alexander Robinson III and Ralph T. Walker



AWARDS CEREMONIES at convention were highlighted, of course, by presentation to Le Corbusier of the A.I.A.'s highest honor, the Gold Medal, as the grand climax of the annual dinner

R. S. Reynolds Jr. congratulates Murphy (shaking hands) and Mackey on $25,000 R. S. Reynolds Memorial Award, while Industrial Design Award winner Florence Schust Knoll and Architectural Photography Medal winner Ezra Stoller look on. Right: Craftsmanship Medal winner Anni Albers. Below (from left): David Condon accepts N.A.H.B.-A.I.A. Award for Keyes, Lethbridge & Condon; Producer Tom Wolf, Citation of an Organization for CBS; G. Holmes Perkins, Special Citation for Philadelphia City Planning Commission





Landscape Architecture's Grady Clay (left), Structural Clay Products Institute's Douglas Whitlock (next photos), Dr. George Bishop Tatum of the University of Pennsylvania's School of Fine Arts, and Helen Duprey Bullock of the National Trust for Historic Preservation receive Honorary Memberships. Far right: Earl H. Reed of Chicago receives Edward C. Kemper Award for Service to the Institute, in recognition of his leadership in historic preservation efforts

ANNUAL DINNER VIGNETTES: Philadelphia's famed Mummers started things off with a colorful and vigorous performance (left) in Bellevue-Stratford's crowded ballroom (next). Architect and planner Jacques Greber of Paris, an Honorary Fellow these many years, unexpectedly got a second Medal. And finally, Corbu accepting the Medal: *"Chers Amis . . ."*

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(architects, exhibitors and guests) was, as usual, focused most of the time on less mundane matters: an excellent program on "Redesigning Urban America," a host chapter program which virtually turned Philadelphia inside out; and, of course talking to each other.

Until his arrival in Philadelphia on Thursday morning, easily the most discussed question of the week was "is he coming?"—Le Corbusier, of course, the volatile, Swiss-born Old Master of modern architecture who was scheduled at last, at 74, to receive the A.I.A.'s Gold Medal, the profession's highest honor.

Well, he came; and despite considerable (and understandable) advance nervousness in official quarters as to whether his tolerance would hold through the day and to the climatic moment of presentation, all went swimmingly.

In the afternoon, he addressed a packed session of the student convention which was being held concurrently with the A.I.A. convention —or rather he drew for them, with accompanying comments (in French, with architect Paul Damaz of New York translating—and occasionally corrected by Corbu). "I prefer to draw rather than talk," he said. "It permits less lying."

When the big moment came, Corbu heard himself cited as "architect, planner, sculptor, painter, author, poet, teacher, visionary, and, most of all, man of principle, who, often misunderstood but always respected, has by his tenacious insistence on seeking truth and beauty for the human environment, by his great works, by his discoveries, and by his motto that 'creation is a patient search,' led and inspired the dawn of a new architecture." President Will presented the Medal and Corbu (again in French, with Paul Damaz again translating) made his brief acceptance, which follows:

"There is no 'wing of victory' in this room. There is no 'wing of victory' in life.

"Great things are made out of a multitude of little things, and those little things are daily successive without end from morning to night. Daily life is made of perseverance, courage, modesty, and difficulties.

"I am a little like St. Thomas, minus the Saint. My whole life has led me to 'put my finger on it.' I feel a little like a railroad ticket collector: I only believe what I have seen; and to see everything in architecture is a dog's life.

"The Queen of England has already given me a gold medal—and it was very thick.

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ENJOYING THE CONVENTION

Philadelphians Mr. and Mrs. Vincent Kling with Mr. and Mrs. Bernard Grad of Newark (left) and (right) Mrs. Emerson Goble, wife of the RECORD's editor, President Irving Hadsell of F.W. Dodge Corporation and President Donald C. McGraw of McGraw-Hill Publishing Company, Dodge parent company

Two young and venerable, happy and venerated people, Mr. and Mrs. Julian Clarence Levi of New York, with President and Mrs. Will (left) and (right) Solis Seiferth of New New Orleans; Leon Chatelain Jr. of Washington, D.C., A.I.A. past president (and just named BRI president); and Edwin H. Lundie of St. Paul

A.I.A. director of public information Wolf von Eckardt; Florida's A.I.A. director Robert M. Little of Miami, with Minoru Yamasaki of Birmingham, Mich., and RECORD editor Emerson Goble; and A.I.A.'s immediate past president John Noble Richards of Toledo with F.W. Dodge president Irving Hadsell

Sidney Katz of New York, William Dudley Hunt Jr., a RECORD senior editor, and Mrs. Goble; South Atlantic A.I.A. Director Arthur Gould Odell Jr. with Gyo Obata of St. Louis; A.I.A. staff members Polly Shackleton, professional affairs head, and new public affairs director, Matthew Rockwell

Impressions of a conversation with Bruno Zevi—always urbane, always beguiling, usually persuasive, dynamic by temperament (and also by conviction). In Philadelphia he made a visitor at once *sympatico* and disturbing: always challenging the facile platitude with his wry, impatient "what's the point?"

A.I.A. First Vice President Henry Wright, with speakers Lewis Mumford and Bruno Zevi; Philip Hiss Jr. of Sarasota and Dr. George Cline Smith, vice president and chief economist, F.W. Dodge Corporation; an informal "conference" of architectural deans Ralph Rapson, University of Minnesota, Thomas Howarth, University of Toronto and C.E. Stousland, Miami University (Ohio); Jacques Greber, Hon. F.A.I.A. of Paris, with Julian Clarence Levi and Walter Kilham Jr. of New York

Robert F. Marshall, F.W. Dodge Corporation executive vice president and publisher of ARCHITECTURAL RECORD, with Louis Kahn of Philadelphia; Mrs. Philip Creer of Austin, Tex., Mr. and Mrs. Leon Chatelain Jr., and the A.I.A.'s director of staff administration, J. Winfield Rankin; College of Fellows Chancellor Morris Ketchum Jr. welcomes Honorary Fellow Sir William Holford; and Norman J. Schlossman of Chicago with Mr. Ketchum and Samuel Homsey of Wilmington, Del.

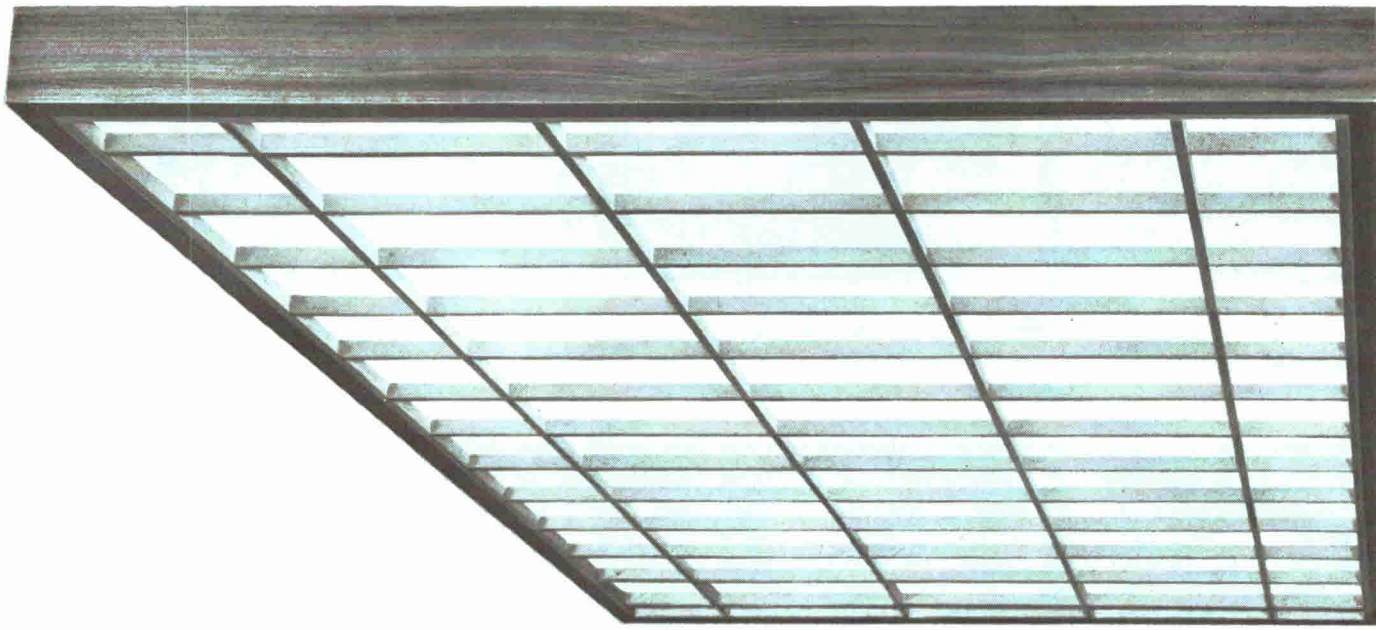
Dean Harold D. Hauf of R.P.I., soon to join Charles Luckman Associates of New York and Los Angeles as vice president in charge of design and planning, and Mrs. Hauf; Edwin T. Reeder and Miss Marion Manley of the Miami contingent; Executive Director Robbins Elliott of the Royal Architectural Institute of Canada and RECORD associate editor Mildred Schmertz; Beryl Price with Mr. and Mrs. Worley Wong of San Francisco, Mitchell Van Bourg of Berkeley and architecture head Knute Henning, North Dakota

Architecture's own Bard, Robert W. Schmertz of Pittsburgh, surrounded by admirers intent on such matters as "Walter and Mies and Corbu," and "John Lally of Boston" (or how the sixth Order got its start); Jeanne Davern of the RECORD and Le Corbusier at "press conference" (no questions, only photographs); Bradford Tilney of New York and E.H. Hunter of Hanover, N.H.; John R. Macelwane, Toledo, George Marshall Martin, Cincinnati, Art Alliance head Lawrence Eldridge, Arthur Nutter, Houston

Herbert L. Smith Jr. of the RECORD, Arthur J. Fair of South Africa (and now of Washington, D.C.) and Daniel J. Howe Jr., F. W. Dodge Corporation public relations director; J. Gordon Lorimer of New York, Raymond Matz of White Plains and Grant Curry of Pittsburgh; Harry Weese of Chicago, H.B. McEldowney, University of Illinois undergraduate division, Chicago, and Edmund N. Bacon of Philadelphia; from one president to another, greetings: Will of A.I.A. and Marcelo Elejalde Valdez, Peru

A year ago a new type of fixture was born... *Corona,* the first fluorescent fixture to be designed as a decorative element. Surrounded by a rich walnut frame with handsome birch baffles, it spoke for Lightolier's philosophy of combining engineered performance with distinctive styling. Now *Coronet* makes its debut . . . in many respects a twin, ye

NOW, FAMOUS CORONA



LIGHT

Jersey City 5, New Jersey / Showrooms: New York, Chicago, Dallas, Los Angele

Corona and Coronet are stocked by these Authorized LIGHTOLIER Distributors:

ALABAMA
Birmingham:
Mayer Elec. Sup. Co.

ALASKA
Anchorage:
Northern Supply Co.

ARIZONA
Phoenix:
Brown Wholesale Elec.
Tucson:
Beacon Ltg. Fix. Co.

ARKANSAS
Little Rock:
Adcock Ltg. & Sup.

CALIFORNIA
San Francisco:
California Elec. Sup. Co.

COLORADO
Denver:
Central Elec. Sup. Co.

CONNECTICUT
Bridgeport:
B. M. Tower Co., Inc.
Hartford:
Beacon Light & Sup. Co.
New Haven:
Grand Light & Sup. Co.
New London:
United Elec. Sup. Co.
Stamford:
Marie Co.
Waterbury:
Starbuck Sprague Co.
Suburban Supply Co.

DISTRICT OF COLUMBIA
Washington:
Maurice Elec. Sup. Co.
National Elec. Wholesalers

FLORIDA
Miami:
Farrey's Whlse. Hdwe. Co.

GEORGIA
Atlanta:
Electrical Wholesalers
Noland Co.

HAWAII
Honolulu
Hawaiian Light & Sup. Co.

ILLINOIS
Chicago:
Efengee Elec. Sup. Co.
Englewood Elec. Sup. Co.
Harlo Elec. Sup. Co., Inc.
Hyland Elec. Sup. Co.
Metropolitan Elec. Sup.
Steiner Elec. Co.
Wholesale Elec. Sup. Co.
Elgin:
Fox Elec. Sup. Co.
Rockford:
Englewood Elec. Sup. Co.
Springfield:
Springfield Elec. Sup. Co.

INDIANA
Ft. Wayne:
Mossman-Yarnelle Co.
Gary:
Englewood Elec. Sup. Co.
South Bend:
Englewood Elec. Sup. Co.

IOWA
Des Moines:
Weston Lighting, Inc.

KANSAS
Kansas City:
W. T. Foley Elec. Co.
Wichita:
Architectural Lighting, Inc.

KENTUCKY
Louisville:
Henry J. Rueff Co.

LOUISIANA
Baton Rouge:
Electrical Wholesalers Inc.
New Orleans:
Interstate Elec. Co.

MAINE
Bangor:
Standard Elec. Co.
Portland:
Holmes Elec. Supply Co.

MARYLAND
Baltimore:
Baltimore Gas Light Co.
Excello Public Serv. Corp.
Salisbury:
Artcraft Elec. Sup. Co.

MASSACHUSETTS
Boston:
Boston Lamp Co.
Mass. Gas & Elec. Light Co.
Henry L. Wolfers, Inc.
Pittsfield:
Carr Supply Co.
Springfield:
Arco Elec. Sup. Co.
Eastern Elec. Sup. Co.
Worcester:
Atlantic Elec Sup. Co.
Benjamin Elec. Sup. Co.

MICHIGAN
Detroit:
Madison Elec. Co.
Michigan Chandelier Co.
Flint:
Royalite Co.
Grand Rapids:
Purchase Elec. Sup. Co.
Jackson:
Electric Wholesale Sup. Co.
Pontiac:
Standard Elec. Co.
Saginaw:
Schmerheim Elec. Co.
Standard Elec. Sup. Co.

MINNESOTA
Duluth:
Northern Elec. Sup. Co.
Minneapolis:
Charles A. Anderson & Co.
North Central Elec. Distr. Co.
Northland Elec. Sup. Co.
St. Paul:
Lax Elec. Co.

MISSOURI
Kansas City:
Glasco Elec.
St. Louis:
M. K. Clark
Springfield:
Southern Materials Co.

MONTANA
Great Falls:
Glacier State Elec.

NEBRASKA
Lincoln:
White Electric Supply Co.
Omaha:
Electric Fix. & Sup. Co.

NEVADA
Reno:
Western Elec. Dists. Co.

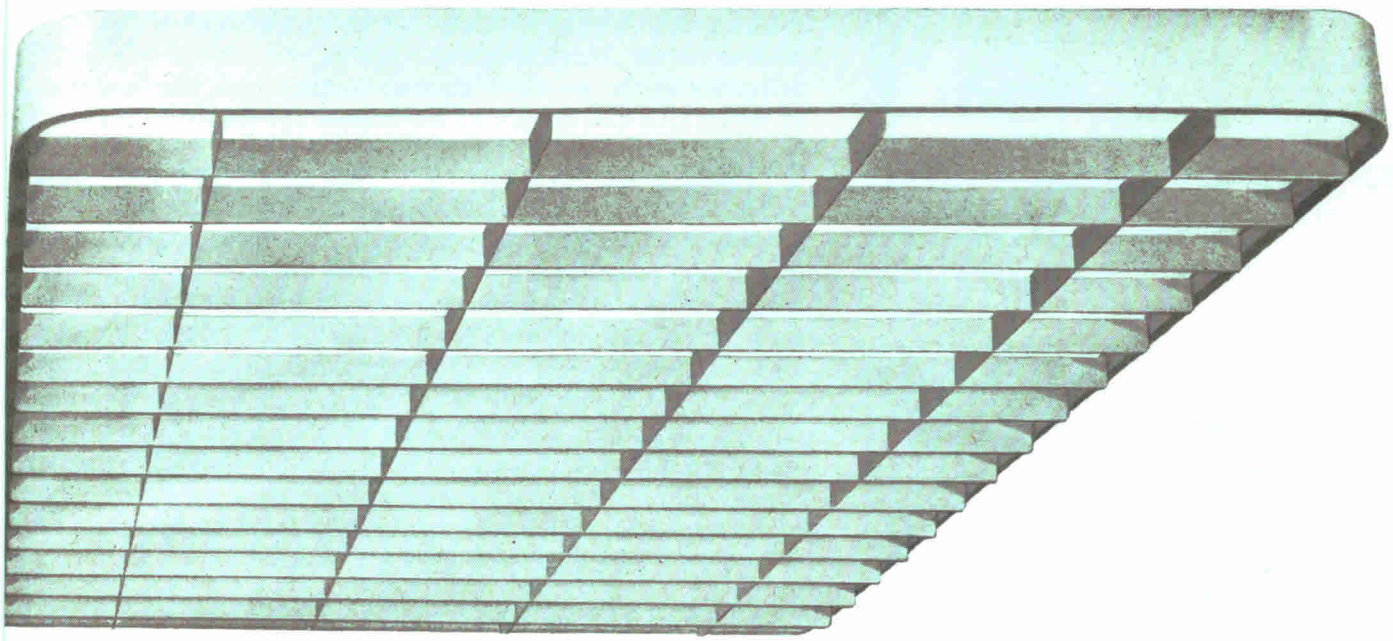
NEW HAMPSHIRE
Portsmouth:
Mass. Gas & Elec. Light Co.

NEW JERSEY
Atlantic City:
Franklin Elec. Sup. Co.
Cherry Hill-
Delaware Township:
Flynn's Camden Elec. Fix. Co

NEW MEXICO
Albuquerque:
The Lighting and Main. Co.

with a character all its own. It's made of steel . . . finished in enamel . . . shaped to present a finely sculptured appearance. Golden anodized aluminum louvers add a subtle luster. Broadly scaled for low brightness illumination, both fixtures are available either stem or surface mounted in five sizes: 54″ x 54″, 42″ x 42″, 30″ x 30″, 32″ x 54″, 16″ x 54″.

HAS A FRATERNAL TWIN



To learn more about Corona and Coronet, write today for a complete brochure to Dept. AR6

OLIER®

...for a better way of Light

NEW YORK
Binghamton: Freije Elec. Sup. Co.
Buffalo: Buffalo Incand. Light Co. Inc.
Niagara Falls: Hysen Supplies Inc.
Poughkeepsie: Electra Sup. Co.
Rochester: Rowe Electric Sup. Co.
Syracuse: Superior Elec. Corp.

NORTH CAROLINA
Charlotte: Independent Elec. Sup. Co.
Durham: Noland Co.
Greensboro: Elec. Sup. & Equip. Co.
Kinston: Kinston Elec.
Raleigh Electrical Equipment Co.
Winston-Salem: Noland Co.

NORTH DAKOTA
Fargo: Northwest Elec. Sup. Inc.

OHIO
Akron: The Sacks Elec. Sup. Co.
Canton: Electric Sales Co.
Cincinnati: B. & B. Elec. Co.
F. D. Lawrence Electric Co.
Richards Elec. Sup. Co.
Cleveland: The H. Leff Electric Co.
Midland Elec. Co.
Columbus: Elgee Elec. Co.
The Loeb Elec. Co.
Dayton: Duellman Elec. Co.
Springfield: The W. W. Elec. Co.
Toledo: Gross Elec. Fix. Co.
Youngstown: The Braff Ltg. Fix. Co.

OKLAHOMA
Oklahoma City: Elec. Sup. of Oklahoma

OREGON
Portland: Baker-Barkon Co.

PENNSYLVANIA
Allentown: Coleman Elec. Co.
Erie: Kraus Elec. Co.
Harrisburg: Fluorescent Sup. Co.
Schaedler Bros.
Hazleton: Power Elec. Co. Inc.
New Castle: Midwestern Elec. Co.
Philadelphia: Ace Lighting Fix. Co.
Gold Seal Elec. Sup. Co.
Sylvan Elec. Fix. Co.
Pittsburgh: Allied Elec Sup. Co.
Argo Lite Studios
Brown & Green
Wally Elec. Sup. Co.
Reading: Coleman Elec. Co.
Scranton: Lewis & Reif, Inc.
Uniontown: Pioneer Electric Dist.
Wilkes-Barre: Anthracite Elec.

RHODE ISLAND
Pawtucket: Major Elec. Sup. Co.
Providence: Leavitt Colson Co.

SOUTH CAROLINA
Columbia: Capitol Elec. Sup.
Noland Co.
Greenville: Sullivan Hdwe. Co.

SOUTH DAKOTA
Watertown: J. H. Larson Elec. Co.

TENNESSEE
Knoxville: Square Elec Sup. Co.
Memphis: Belvedere Lighting Co.
Nashville: Nashville Elec. Sup. Co.

TEXAS
Dallas: Rogers Elec. Sup. Co.
Ft. Worth: Anderson Fixture Co.
Cummins Supply Co.
General Industrial Sup. Corp.
Houston: Anderson Lighting Co.
Gulf Coast Elec. Sup. Co. Inc.
Marlin Associates
Southern Electric Supply Co.
Worth Elec. Sup. Co.
San Antonio: Southern Equip. Co.
Strauss-Frank Co.

UTAH
Salt Lake City: Artistic Lighting

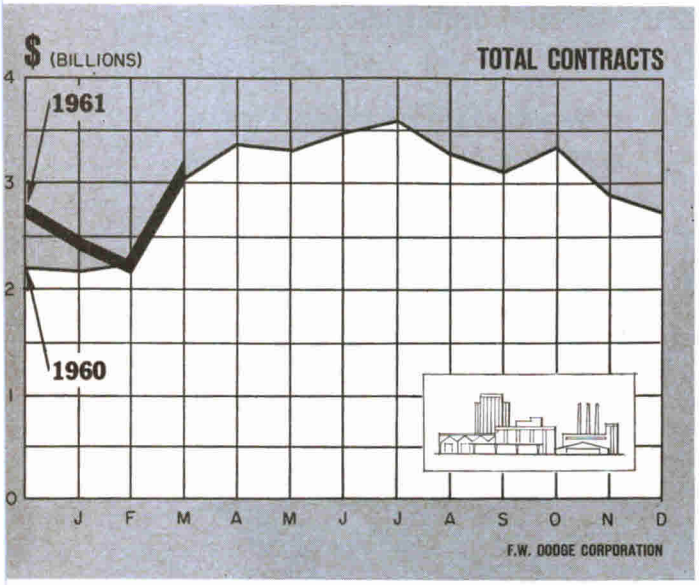
VIRGINIA
Arlington: Dominion Elec. Sup. Co. Inc.
Noland Co.
Lynchburg: Mid-State Elec. Sup. Co., Inc.
Norfolk: Noland Co.
Roanoke: Noland Co.

WEST VIRGINIA
Clarksburg: Tolley Engineering Co.
Huntington: West Virginia Elec. Co.
Wheeling: The Front Co.

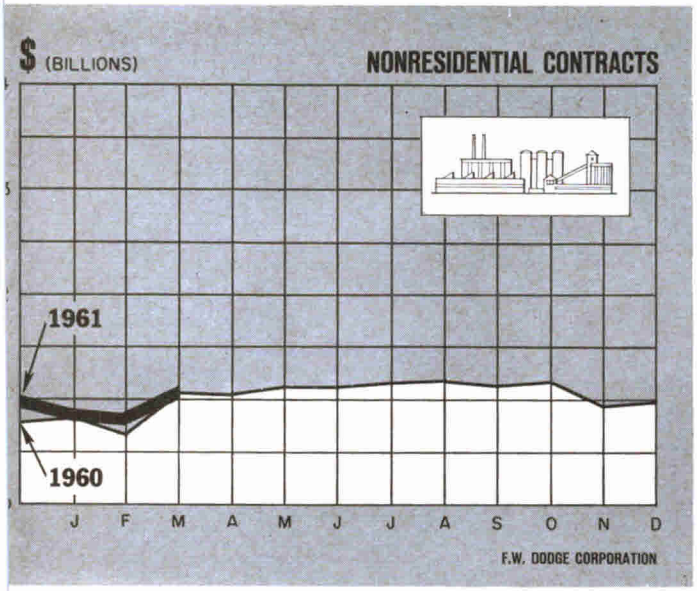
WISCONSIN
Appleton: Moe Northern Co.
Eau Claire: W. H. Hobbs Sup. Co.
La Crosse: W. A. Roosevelt Co.
Milwaukee: Electri-Craft Lighting
Lappin Electric Co.
Standard Elec. Sup.

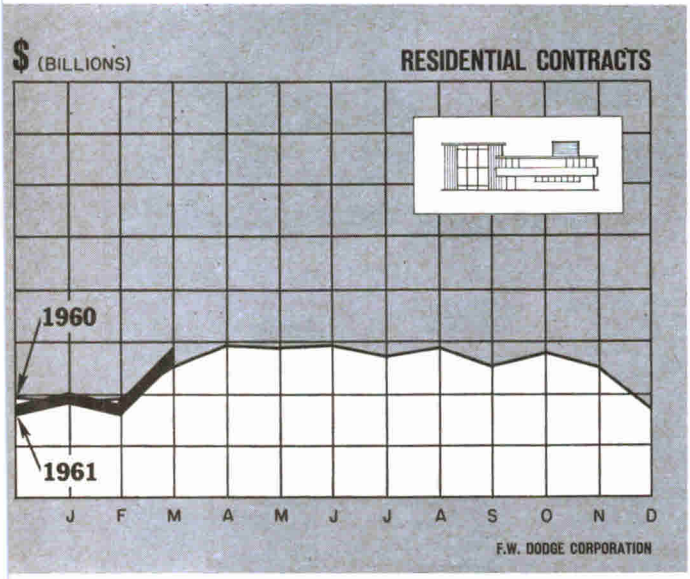
WASHINGTON
Seattle: Seattle Lighting Fix. Co.

CANADA
Montreal: L. D. G. Products, Inc.
The Gray Elec. Co.
Union Electric Sup. Co. Ltd.
Toronto: Revere Elec. Dist.
Toronto Ltg. Studios



Total contracts include residential, nonresidential, heavy engineering contracts





AN ECONOMIST LOOKS AT ARCHITECTURE

ONE OF THE MOST INTERESTING things that can happen to an enconomist interested in architecture is to participate in an architectural break-through. The writer has just had this opportunity, in a small way, as a school board member involved in the development of a totally new type of school. As this is written, work is just getting under way on the site, in Greenwich, Conn., of the Dundee School, designed by Perkins and Will specifically for team teaching at the elementary level. Team teaching itself is new, and is relatively unknown in the primary grades, so that both the teaching program and the design of the school are experimental.

TEAM TEACHING involves grouping of teachers into teams for particular subjects, and grouping students by degree of advancement in these subjects, with some breaking down of traditional class structure. At a given time, large groups of students from one or more grade levels may be attending lectures or visual presentations, while other smaller groups may be receiving advanced or remedial work in the same subjects. To handle this work effectively, the school must have some large teaching areas, akin to lecture halls, and small seminar-type rooms, as well as some standard classrooms. In addition, work facilities must be provided for the teaching teams, which will consist of a team leader, four or five other teachers, and a clerical assistant.

PART OF the problem in designing a school for team teaching is provision of flexible facilities to take care of changing needs. This raised the problem of providing movable partitions which are genuinely soundproof—a challenge which in the case of the Dundee School was solved by research based on an original grant by Educational Facilities Laboratories. Other features of the school include provision of multi-channel facilities in each room for television and tape recordings, and a combination library for books, tapes, films and audio-visual control. Not the least radical features of the school, from the layman's point of view, are a pitched roof and a combination of fieldstone and redwood in the exterior walls. And, most fitting in modern suburbia, a split-level design.

BACK TO ECONOMICS. The fact that housing starts rose sharply in March led to many rosy predictions that housing was beginning a big boom. There were skeptics who felt that the March upturn merely represented the postponement of starts originally scheduled for January and February, but delayed by bad weather. Now that the April starts figures have appeared, it looks as though the skeptics were right; April housing starts were seven per cent below the year-earlier figures, and down six per cent from March on a seasonally adjusted basis. It is true that April had fewer than normal working days, but it seems clear that the house market is not about to go into orbit.

GEORGE CLINE SMITH
Vice President and Chief Economist
F. W. Dodge Corporation
A McGraw-Hill Company

McMorran Memorial Auditorium, Port Huron, Mich. Architect: ALDEN DOW, Midland, Mich. General Contractor: COLLINS & CATLIN, INC., Port Huron. Fabricators and Erectors: MAUL MACOTTA CORPORATION, Detroit.

Exciting new design role for Revere Copper Panels

McMorran Memorial Auditorium, Port Huron, Michigan, Features Unusual "Planter" Facade

To finish off the two entrances of this building, the architect could have used any material he wished. But he asked himself what would be the most striking treatment, yet still be in keeping with the architecture of the building proper.

His answer? The unusual "planter-type" facade you see here. It is faced, not with plain copper panels, but with embossed panels framed with smooth copper. The attractive "aged" effect was secured when the contractor applied an artificial patina.

Practically unlimited design possibilities become available when you design with copper, as in this project. So easy to work with and form, so versatile in its application possibilities, copper offers the architect challenging opportunities in design and virtually no limitations on his thinking. No wonder it is so practical to "Design with copper in mind."

REVERE

COPPER AND BRASS INCORPORATED

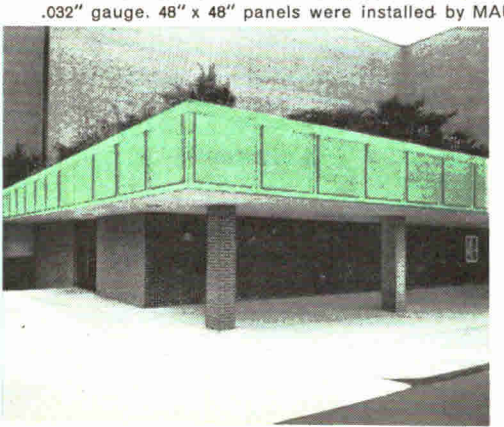
Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Rome, N.Y.; Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles, Riverside and Santa Ana, Calif.; New Bedford and Plymouth, Mass.; Brooklyn, N.Y.; Newport, Ark.; Ft. Calhoun, Neb. Sales Offices in Principal Cities.

Distributors Everywhere

The two entrances of the building used 5,000 pounds of Revere sheet copper in .032" gauge. 48" x 48" panels were installed by MAUL MACOTTA CORPORATION over a backing of ½" light-weight aggregate concrete. Interlocking tongue and groove joints made of brass strip were installed on all four sides of the panels.



Construction Cost Indexes

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

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

NEW YORK

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1949	243.7	240.8	242.8	246.6	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	274.9	271.8
1952	278.2	274.8	271.9	265.2	262.2
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
1956	310.8	302.2	320.1	328.6	324.5
1957	318.5	308.3	333.1	345.2	339.8
1958	328.0	315.1	348.6	365.4	357.3
1959	342.7	329.0	367.7	386.8	374.1
1960	351.6	337.2	377.7	395.8	380.6
Jan. 1961	357.2	341.3	385.8	406.3	385.1
Feb. 1961	357.9	341.7	386.9	407.9	386.4
March 1961	356.5	339.9	386.6	407.7	386.0
	% increase over 1939				
March 1961	188.7	177.7	195.8	205.6	196.7

ATLANTA

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
1952	218.8	221.0	212.8	210.1	214.3
1953	223.0	224.6	221.3	221.8	223.0
1954	219.6	219.1	233.5	225.2	225.4
1955	225.3	225.1	229.0	231.5	231.8
1956	237.2	235.7	241.7	244.4	246.4
1957	241.2	239.0	248.7	252.1	254.7
1958	243.9	239.8	255.7	261.9	262.0
1959	252.2	247.7	266.1	272.7	273.1
1960	259.2	253.3	274.7	282.5	278.8
Jan. 1961	259.1	252.0	276.5	285.2	278.8
Feb. 1961	259.1	252.0	276.5	285.2	278.8
March 1961	258.4	251.1	276.4	285.1	278.6
	% increase over 1939				
March 1961	199.4	202.2	190.6	192.7	194.2

ST. LOUIS

1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.0	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
1956	288.7	280.3	287.9	299.2	293.3
1957	292.0	283.4	295.2	307.1	302.9
1958	297.0	278.9	304.9	318.4	313.8
1959	305.4	296.4	315.0	329.8	323.9
1960	311.4	301.0	322.2	337.2	329.2
Jan. 1961	313.0	300.7	326.1	343.1	330.7
Feb. 1961	313.0	300.7	326.1	343.1	330.7
March 1961	313.0	300.7	326.1	343.1	330.7
	% increase over 1939				
March 1961	184.0	181.0	174.7	186.4	177.9

SAN FRANCISCO

1930	90.8	86.8	100.6	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
1952	250.2	245.0	245.6	248.7	249.6
1953	255.2	257.2	256.6	261.0	259.7
1954	257.4	249.2	264.1	272.5	267.2
1955	268.0	259.0	275.0	284.4	279.6
1956	279.0	270.0	288.9	298.6	295.8
1957	286.3	274.4	302.9	315.2	310.7
1958	289.8	274.9	311.5	326.7	320.8
1959	299.2	284.4	322.7	338.1	330.1
1960	305.5	288.9	335.3	352.2	342.3
Jan. 1961	300.6	281.7	337.0	355.2	343.2
Feb. 1961	300.6	281.7	337.0	355.2	343.2
March 1961	306.2	288.9	338.0	355.8	344.6
	% increase over 1939				
March 1961	190.0	190.9	187.9	191.9	195.8

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

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

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

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

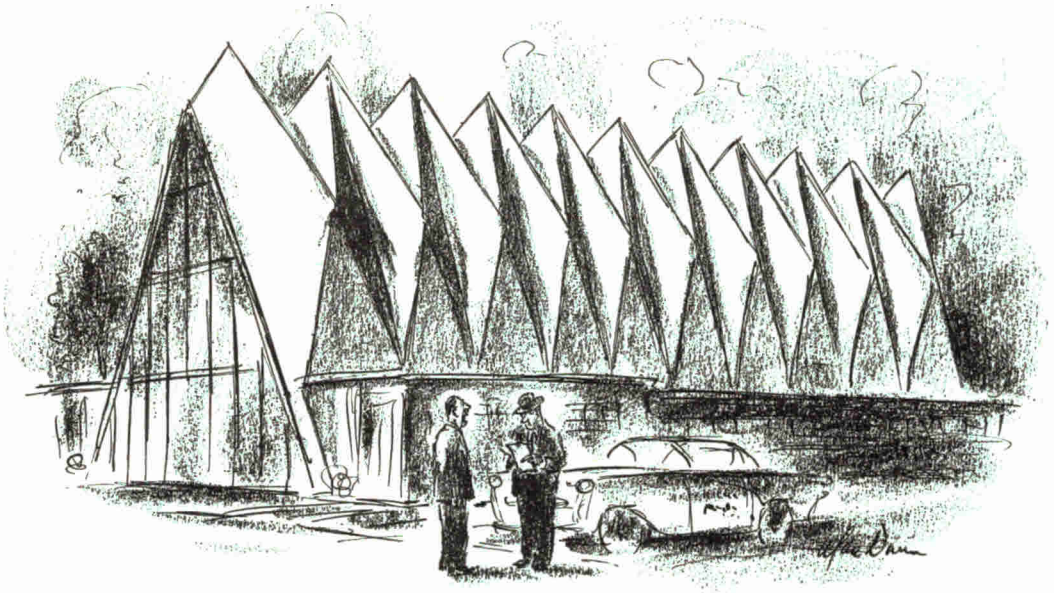
$$\frac{110-95}{95} = 0.158$$

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

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

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

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



Drawn for the Record by Alan Dunn

"What, *eleven* lightning rods?!"

Four Stouffer Fellows To Work at Joint Center

Two students from Massachusetts Institute of Technology and two from Harvard University have won awards for urban research in 1961-62. The awards honor the late Samuel Stouffer, Harvard sociologist, first director of the Harvard Laboratory of Social Relations and a member of the faculty committee of the Joint Center for Urban Studies at the time of his death last August.

The students from M.I.T. are: Martin Anderson, Northboro, Mass., in the school of industrial management, who will study the role of private capital in urban renewal; and Frank C. Colcord, Long Island, N.Y., in political science who is studying the politics of metropolitan transportation planning. Those from Harvard are: Leon H. Mayhew, Berkeley, Calif., in the department of social relations and Stephan A. Thernstrom, Battle Creek, Mich., in the department of history. Mr. Mayhew is examining the impact of anti-discrimination legislation on the employment, education and housing of negroes in the Boston area. Mr. Thernstrom is analyzing the social and economic position of the manual laborer in Newburyport, Mass. during the 19th century. The Fellows will spend the next academic year at the Joint Center completing their research and writing their theses.

The Joint Center has also appointed, as visiting associate for the year 1961-62, Thomas A. Sullivan, Councilman for the City of Boston. The first elected official to be appointed a visiting associate, Mr. Sullivan is chairman of the Boston City Council Committees on Appropriations and Finance and on Legislative Affairs. He will study the role of municipal legislative bodies in budgetary matters.

The Joint Center conducts research programs on several aspects of urban and regional problems. It engages in both basic research and in efforts to solve practical problems and make policy recommendations in urban affairs.

$10,000 Engineer Undergrad Awards for Welded Design

The 14th annual offering of awards and professional recognition for student papers on welded design has been announced by the James F. Lincoln Arc Welding Foundation. This national competition, whose total awards have been increased to $10,000, has as its purpose the encouragement of scientific interest, study, research and education in the "development of the arc welding industry through advance in knowledge of design and practical application of the arc welding process."

The program offers 46 cash awards to undergraduates for the best papers explaining how the efficient application of welded steel to the design of a machine or structure has contributed or can contribute to its improvement or reduction of its cost. The program and awards are in two separate and non-competing divisions, Machines and Structures. The top award in each division is $1500, other awards ranging down to ten sixth prizes each worth $50.

Participants must be resident undergraduate students registered as full-time day students in any school, college or university in the United States, which offers a curriculum in any branch of engineering or architecture leading to a degree, and cadets registered in the United States Military, Naval, Air Force and Coast Guard Academies.

The closing date for the competition is June 26, 1961. For complete information and rules, write the James F. Lincoln Arc Welding Foundation, Box 3035, Cleveland 17, Ohio.

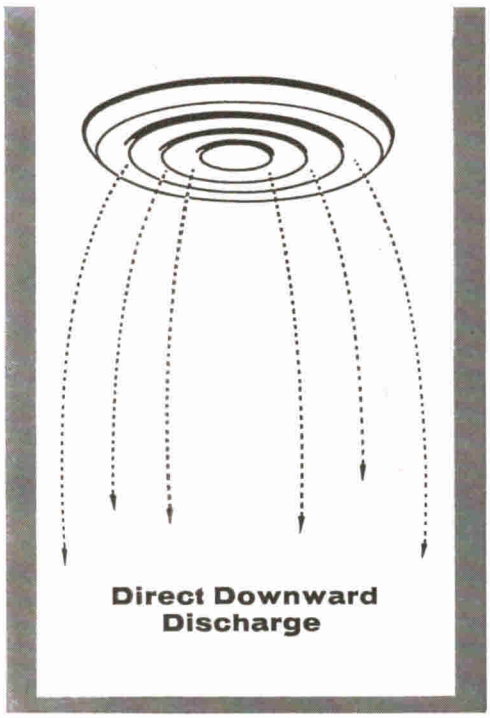
Fuller's Design Philosophy Recorded on Film

A massive sound-film record of the design philosophy and engineering theories of R. Buckminster Fuller has been undertaken at Southern Illinois University. The basis of the production is a 20 to 30 hour film record of lectures Professor Fuller now gives to S.I.U. design students.

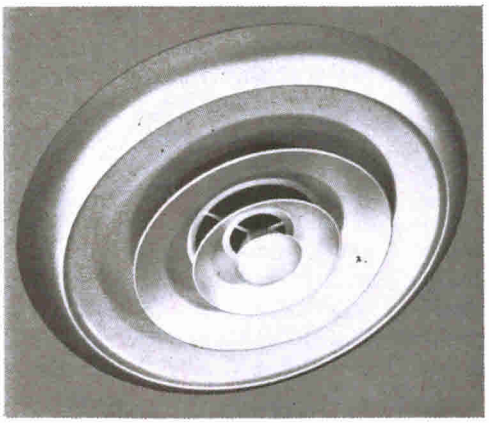
The film is being directed by Francis Thompson, New York film designer, whose own film corporation is producing the effort jointly with the S.I.U. Film Production Unit and design department.

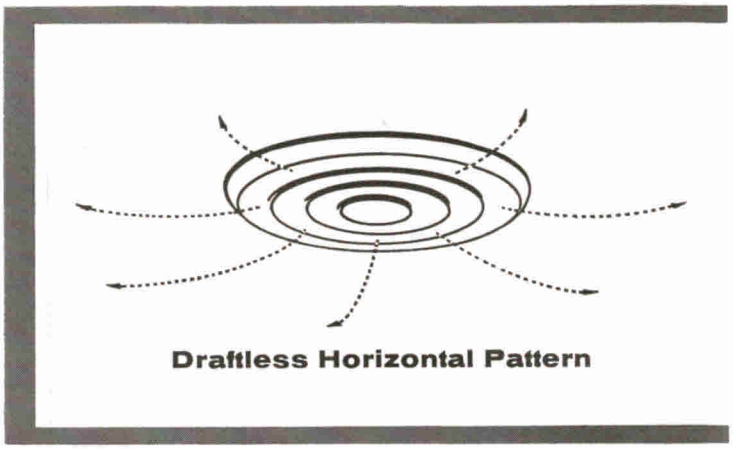
Chairman of the design department, Harold Cohen, said the film's

continued on page 26



Direct Downward Discharge





Draftless Horizontal Pattern

ANEMOSTAT C-4 Adjustable Air Diffuser GIVES YOU BOTH

The Type C-4 Anemostat Air Diffuser provides controlled variable air distribution. The snap-on inner-assembly of this adjustable unit may be easily raised or lowered, thus varying the air pattern from draftless horizontal to a direct downward discharge.

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continued from page 23

objective will be to document all of Fuller's "comprehensive design science" philosophy in one huge film package. "This will avert such a loss as occurred when Frank Lloyd Wright died, leaving no complete personal record of his own unique ideas available on request to students and professionals," he said.

The final product, segmented to cover various aspects of Professor Fuller's work and discoveries, will be housed at S.I.U. and will be available for circulation nationwide.

S.I.U. Negotiates for African Research Institute

The Southern Illinois University design department is negotiating with Nigerian government officials, the U.S. State Department and other agencies for establishment of an African Design Research Institute.

Department chairman Harold Cohen said the Nigerian Institute would be the first project of an S.I.U.-based international design organization. One of the aims of the organization is to create self-supporting design institutes in "have-not" nations of the world, helping them to use "the industrial equation to study the nature of their problems relating to education, housing and feeding their citizenry."

The heart of the African project, and first priority item in the over-all plan, is a two-way student exchange between the S.I.U. design department and Nigeria. Mr. Cohen has proposed that five to 10 Nigerian students be exchanged with graduate-level design students at S.I.U. The Nigerians would study at Southern for five to six years with full economic support. The first S.I.U. exchange unit would be a small research team which would establish a general program attached to one of the Nigerian technical institutes. Its first job would be setting up research with local industries and government posts to find ways of using native resources in dealing with physical needs. Eventually the African Design Research Institute would revert to the native designers trained at S.I.U.

Although the over-all International Design Organization program would also include aid to underdeveloped nations seeking U.S. industrial investment and major design education and research centers abroad, the student exchange would come first, Mr. Cohen said, possibly by late this year if negotiations are successful. The pilot project in Nigeria would be set up in buildings "of an impermanent nature, of local color, and inconspicuous."

According to Cohen, the proposal follows long-range aims of S.I.U.'s own Design Research and Development program, which are "reorienting the use of our industrial wealth for the purpose of solving those parts of the world's problems that can be aided by man's physical reorganization of his inherent wealth through the use of his intellectual and industrial know-how."

Sverdrup To Receive 1961 N.S.P.E. Award

Lief J. Sverdrup, president and director of the engineering firm of Sverdrup & Parcel, Inc., has been selected to receive the 1961 National Society of Professional Engineers Award for outstanding service to the engineering profession. He will receive the award at a banquet session of the National Society's annual meeting in Seattle, July 4-7.

The Award cites Mr. Sverdrup for "his acumen, sound judgment and ability as an engineer executive; his patriotism, valor and meritorious service to his country as an engineer soldier; his constructive, distinguished and unselfish public service to his fellow man as an engineer citizen; and his talents, competence and leadership as a professional engineer."

Mr. Sverdrup, whose St. Louis, Mo. firm has spanned the Missouri River with bridges at 14 places and the Mississippi at four, is the 11th individual to receive the Award since it was first presented in 1949. Other recipients were: Herbert Hoover, 1949; David B. Steinman, 1952; Charles F. Kettering, 1953; Harry A. Winne, 1954; A. A. Potter, 1955; Donald A. Quarles, 1956; Granville M. Read, 1957; Nathan W. Dougherty, 1958; William F. Ryan, 1959; and James F. Fairman, 1960.

Born in Norway, Mr. Sverdrup came to this country in 1914. He received his B.A. from Augsburg College in 1918, and a B.S. in civil engineering from the University of Minnesota in 1921.

Student Design Contest Sponsored by Flintkote

With the aim of stimulating new design features in the home and encouraging originality and self-expression, the Flintkote Company is sponsoring a contest for architectural students. The grand prize is a free round-trip to Rome or a $1200 post-graduate scholarship in architecture. Runners-up will receive Flintkote Achievement Award Plaques, as will the colleges they represent.

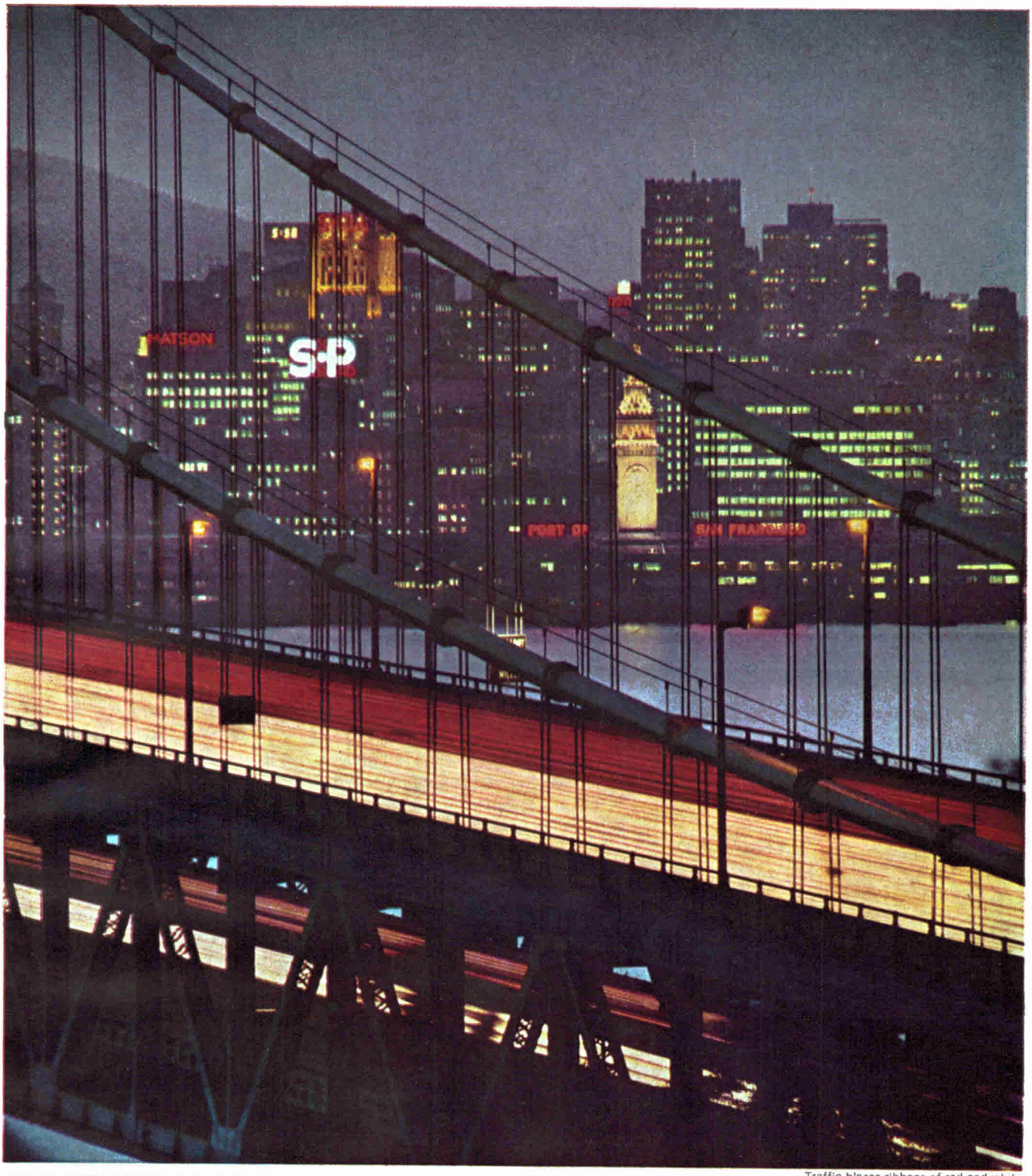
Entrants are required to submit a mechanical drawing or architectural rendering of an original design feature which has application in the house. The design feature should be practicable, such as, use of idle space in a patio, basement or attic; a new kitchen design or unusual lighting arrangement. Accompanying the drawing must be a brief description, including specifications, not to exceed 100 words.

Judging will be based on originality and imagination demonstrated in the design and the practicability of design application.

Students can obtain entry blanks at their college dean's office. Entries must be postmarked by July 31 and received by August 7. The address is Flintkote Company, 30 Rockefeller Plaza, New York 20.

(Left) Dr. Pier Luigi Nervi, the noted Italian engineer, is shown with John M. Kyle, chief engineer of the Port of New York Authority, on a recent inspection tour of the George Washington Bridge Bus Station being built by the Port Authority. The two-block-long, three-level station, to be completed in the summer of 1962, is the first building in this country designed by Dr. Nervi

more news on page 98



Traffic blazes ribbons of red and white on San Francisco-Oakland Bay Bridge

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

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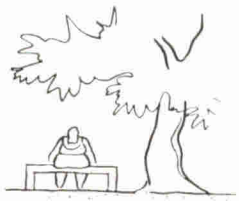
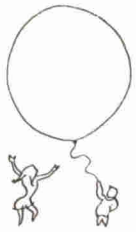
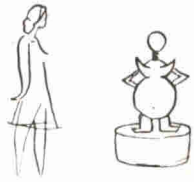


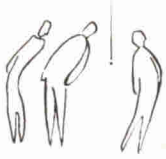
The restful when weary



The admirable

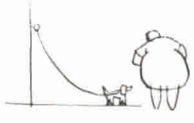


The exotic



The subtle

The familiar



The appealing

—from *Landscape Architecture*

To Shape Man's Natural Environment

LANDSCAPE ARCHITECTURE: *The Shaping of Man's Natural Environment. By John Ormsbee Simonds. F. W. Dodge Corporation, 119 W. 40th St., New York 18. 244 pp., illus. $12.75.*

"One plans not places, or spaces or things—one plans experiences."
—John Ormsbee Simonds

This book belongs in an architect's office as a source of technique, and in his home as a source of delight. It is not only philosophic, esthetic and charming, it is practical. John Ormsbee Simonds is a landscape architect and town planner, and he knows what the problems are and how to go about solving them.

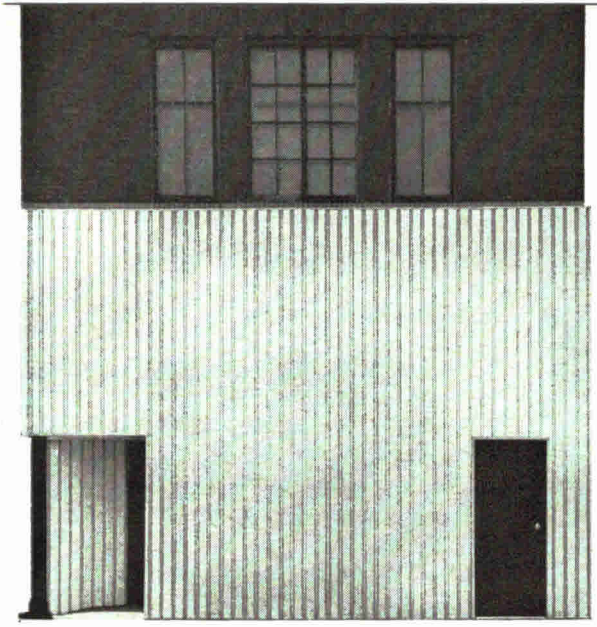
Some authorities assert that the training and developed attitudes of the landscape architect offer the best background for the practice of city and regional planning. John Simonds makes no such specific claim in his book, which nonetheless reveals that his concern as a landscape architect extends far beyond the site planning of particular limited areas, or the design of particular spaces, to include the planned control of man's total physical environment.

The scope of this book is broad and rich, not only because the author sees his subject whole, but because he draws upon a fascinating variety of sources to communicate it. The book is rewardingly personal. Parts of it have the quality of good autobiography because Simonds does not hesitate to reveal his subtlest experience of beauty in nature or in man's control of it, in reminiscences which range from his boyhood frog hunting in a backwoods Michigan lake and an esthetic law unconsciously learned thereby, to his conscious search for the laws of form as a young postgraduate traveling in Japan, Korea, China, Burma, Bali, India and Tibet. In this warm vein, Simonds is not above a frequent anecdote or folk tale if it makes an esthetic point: ". . . to the west of Peking is a courtyard that now lies half in ruin . . . still known as 'The Court of the Concubine.' Here lived many years ago the favorite concubine of one of the imperial princes. At one end of the courtyard stood her handsome residence of lacquered wood, tile, soft mats and woven screens, and at the other end a light airy pavilion, where she and her maids whiled away the summer afternoons. By legend she had been brought from the open plains of Szechwan province, and she longed for its lakes, woods, meadows and far mountains, and for the wide open spaces and the freedoms she had known there. And here, in the summer palace, this cramped and constricted courtyard had become her whole world.

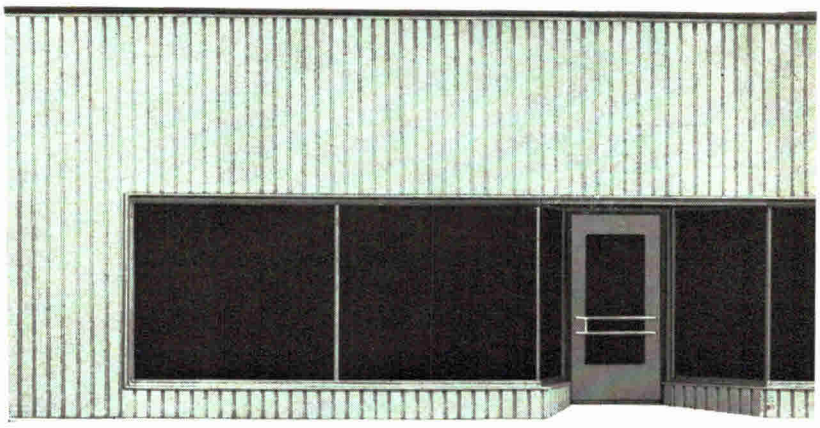
"The prince and his planners, wishing to please her, set out to achieve, within the limits of this space, an expansive paradise of freedom and delight. From her residence, to give the illusion of distance, the walls of the courtyard were tapered both inward and down, to vastly increase the perspective toward the facing pavilion; further to reduce the effect of rigid enclosure, the far plantings were extended on either side of, and beyond, the lines of the converging walls. . . . Moving outward, all textures changed imperceptibly from the rough to the refined, and colors varied from the warm scarlets . . . to the cool, muted greens and lavenders and evanescent grays. Trees and plants in the foreground were bold in outline and foliage; those near the fragile pavilion were dwarfed and delicate. Water in the near fountain gurgled and splashed, while in the far ponds it lay mirrorlike and still. By such manipulations of perspective alone, the views from the concubine's quarters were made to seem expansive and the pavilion was made to appear remote."

The author also draws, and the book is full of charming diagrams and cartoons. He knows good photography and his choice of illustrations is handsome as well as relevant. Simonds has a great respect for the opinions of others, especially

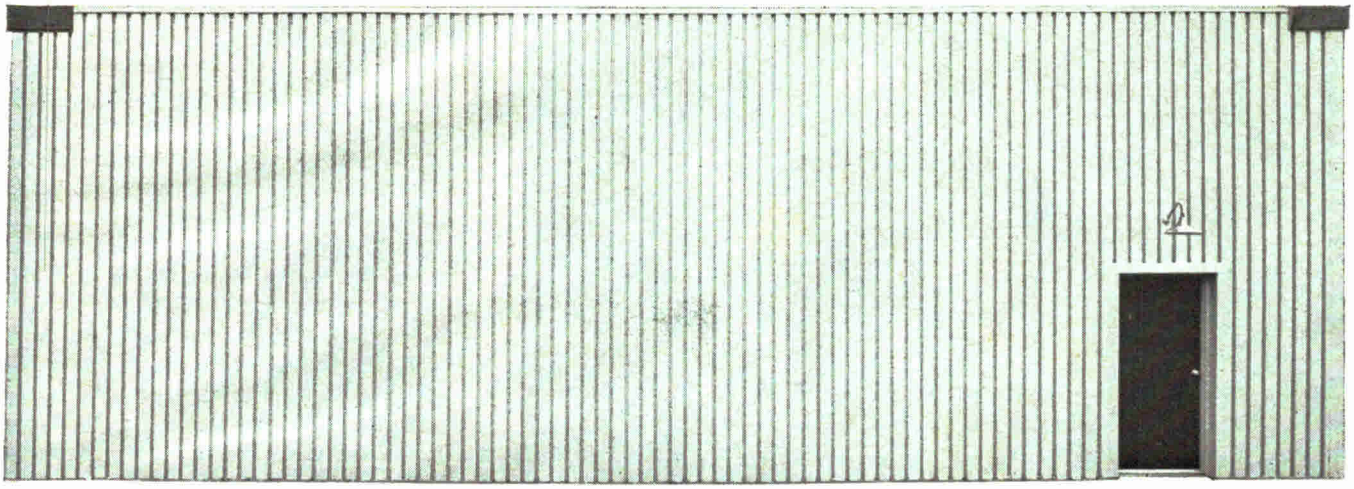
continued on page 70



it refaces old buildings . . .



or finishes new store fronts . . .



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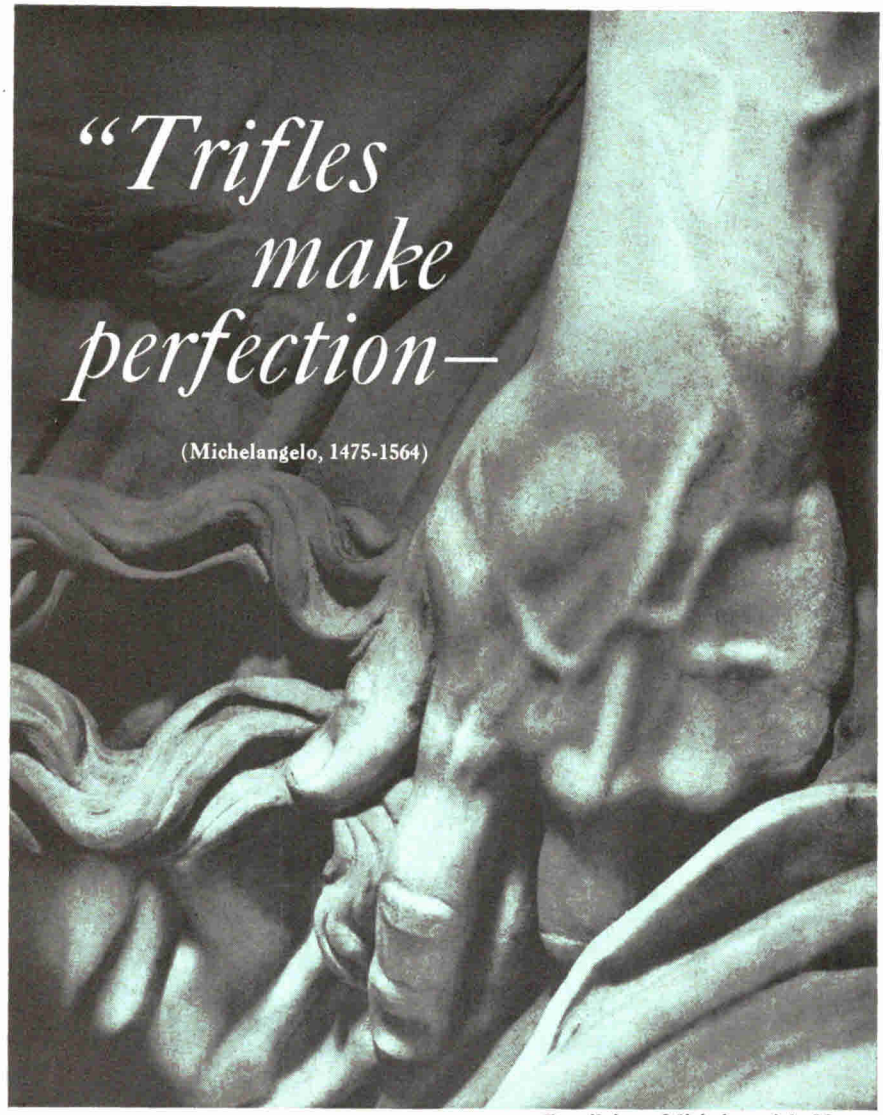

Detail from Michelangelo's *Moses*

and perfection is no trifle."

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Required Reading

continued from page 54

To Shape . . .

when they are gracefully expressed, and running in the margins of his book are over one hundred quotations from many sources which serve to keynote each topic as it is taken up in his own well-written text. A fine book.

—MILDRED F. SCHMERTZ

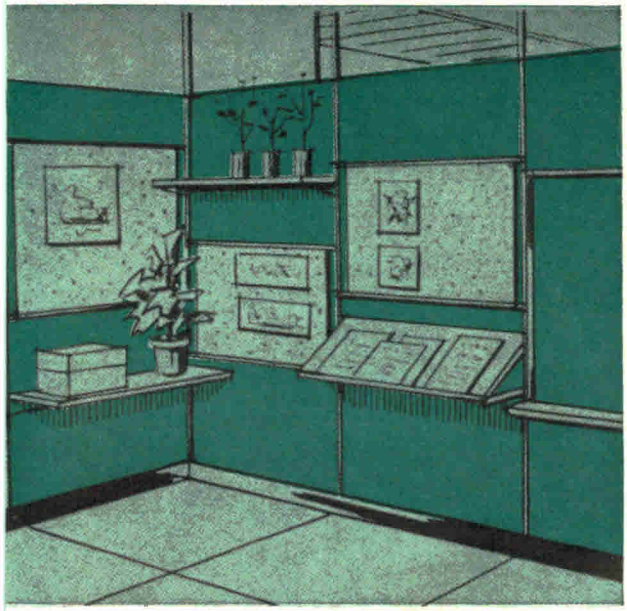
Functionalism Betrayed

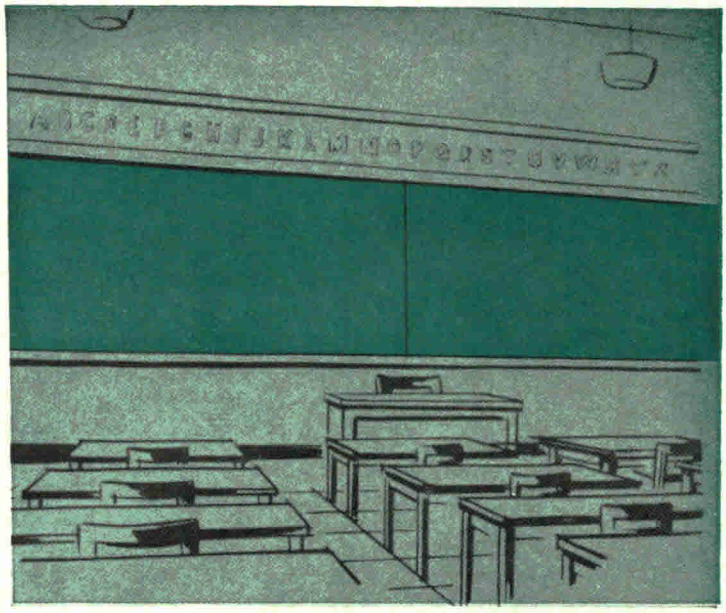
THE AUSTRALIAN UGLINESS. *By Robin Boyd. F. W. Cheshire Pty. Ltd., 338 Little Collins St., Melbourne C 1, Australia. 230 pp., illus. 35 shillings.*

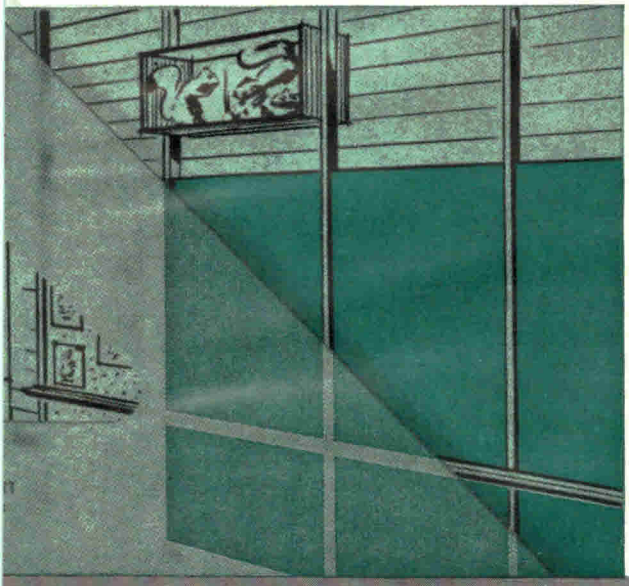
Americans ought not to laugh too quickly or too hard at Mr. Boyd's description of awful Australia (awful only, it is to be understood, in a visual sense). Although he is more or less kind to American taste, one feels that this must stem more from a desire to draw an horrific comparison for his Australian readers than from any uncritical admiration. Many of the faults for which he castigates Australian taste are visible enough north of the equator—"the inexorable process of [suburban] uglification," for instance, or the jamming into one room (in this case a typical Sydney bar, but it might have been a New York sandwich shop) such "usual" materials as "split-stone veneer, chromium-plated steel, anodized aluminum, sprayed vermiculite plaster, crocodile-patterned hardboard and striated plywood."

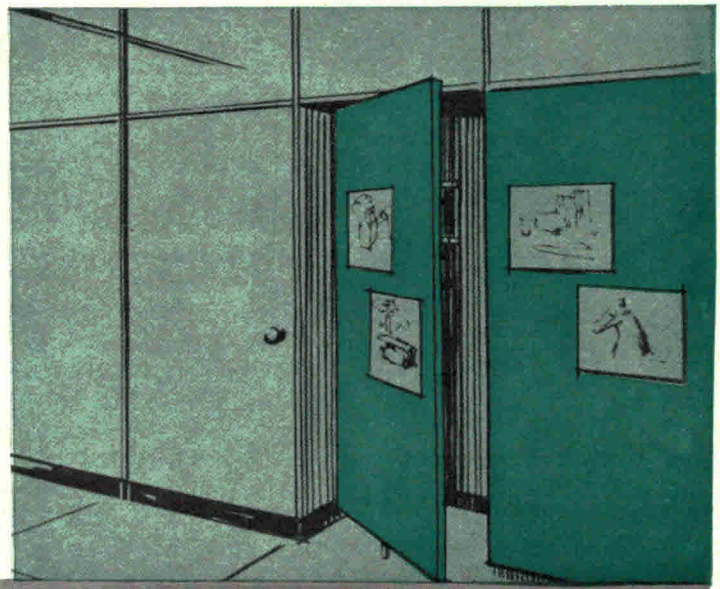
Mr. Boyd has a more important message in mind, however, than simply to berate his fellow Australians for visual insensitivity. A large part of his book is devoted to an extension of an hypothesis articulated earlier in the American general and architectural press (see "Decoration Rides Again," AR, Sept. 1957). This hypothesis contends that the basic principles of early modern architecture, *viz.*, rationality and functionalism, have fallen into disrepute and have been replaced by "Featurism." "Featurism," in Mr. Boyd's definition, "is not simply a decorative technique . . . [it is] the subordination of the essential whole and the accentuation of selected separate features."

continued on page 78









Shown here are excerpts from "New Directions in Chalkboards," a colorful, 16-page brochure containing many exciting chalkboard designs especially created for Johns-Manville by Peter Schladermundt Associates, noted industrial designers.

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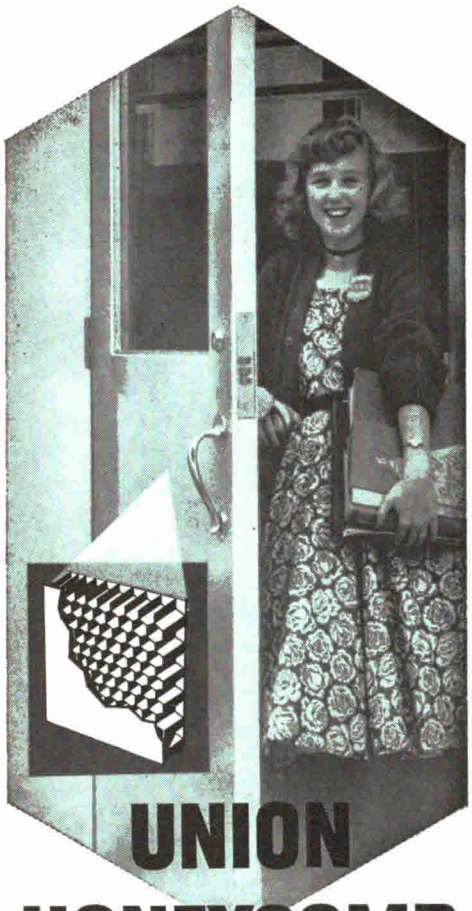

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Required Reading

continued from page 70

Functionalism . . .

Or, at another point, "The symbol or the image . . . is applied to the old thing in the hope that it will tinge the whole old thing with new color."

There will certainly be those who will not want to answer Mr. Boyd's call for a return to the old-time religion, and not all of them will be simple "Featurists." But neither will many be able to deny that the trend toward "enrichment" has been, to say the least, abused.

Design in Steel and Concrete

THE DESIGN OF CYLINDRICAL SHELL ROOFS. *By J. L. Gibson. D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N.J. 271 pp., illus. $10.50.*

Since the original publication of this work in 1954, it has become a standard reference for shell designers. With the addition of chapters on programming for digital computers and model testing, its usefulness has been greatly extended. In addition to a sound mathematical treatment of the subject, the author treats the design aspects by means of both examples and actual construction details. The chapter on the design of reinforcement is of particular value to the designers.

—MATTHYS P. LEVY

ADVANCED DESIGN IN STRUCTURAL STEEL. *By John E. Lothers. Prentice-Hall, Inc., Englewood Cliffs, N.J. 454 pp., illus. $8.50.*

In devoting a chapter to concrete design, this book goes beyond the usual treatment which divorces the steel skeleton from the reinforced concrete slab. The author also treats lamella roof, light gage steel and plastic design, among other topics, in practical terms, presenting both the theory and many useful examples. Although certain topics are not covered in as great a detail as might be desired, the usefulness of the work is enhanced by a wealth of references.

—MATTHYS P. LEVY

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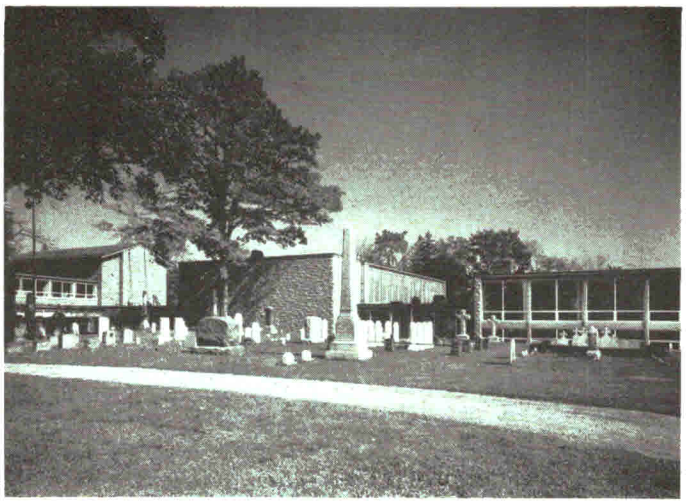
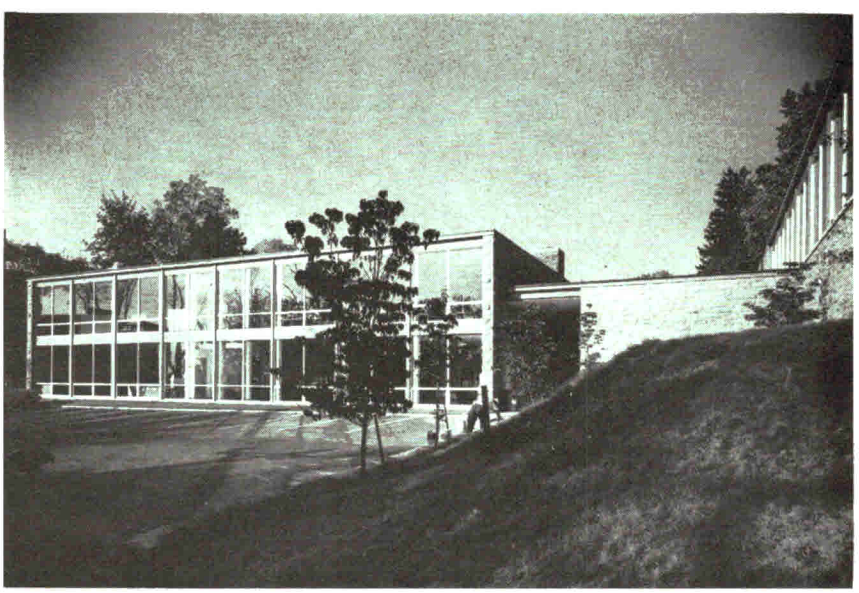
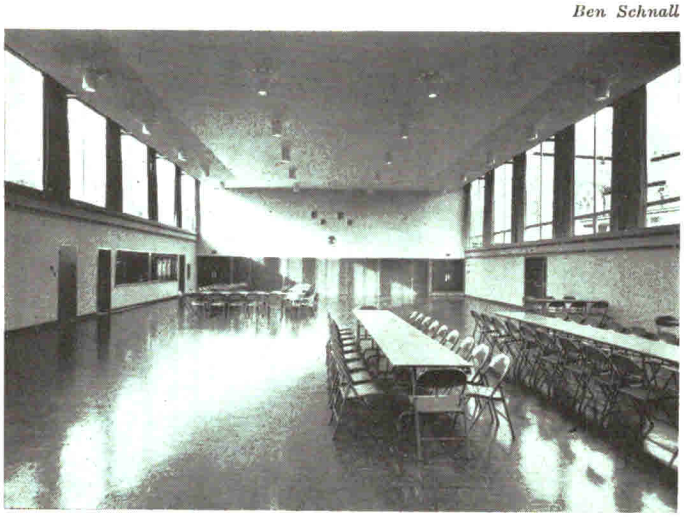


Chapel at left, parish hall center, classroom element at right



Two story classroom wing

Ben Schnall



Interior, parish hall

Episcopal Church Doubles its Space

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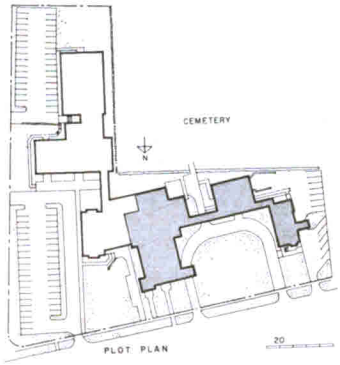
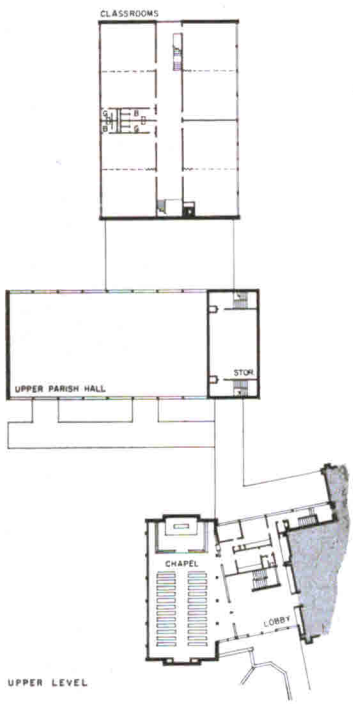
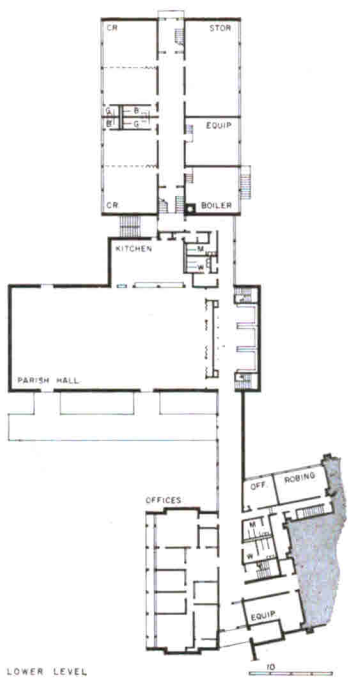
STRUCTURAL ENGINEERS: *Eipel Engineering*
MECHANICAL AND ELECTRICAL ENGINEERS: *Ebner Associates*
ACOUSTICAL CONSULTANTS: *Bolt, Beranek and Newman*
LANDSCAPE ARCHITECT: *Archibald Davis*

An expanding church membership and a new emphasis on education made it necessary for this church congregation to greatly enlarge its facilities to include a chapel and offices, a two story parish hall, twelve classrooms and storage and equipment facilities. A restricted site confined by a cemetery and the necessity for increased off-street parking space, demanded a two story scheme articulated in separate recognizable units. The older church elements are also defined in distinguishable units (see plot plan), and it is in this manner of planning, rather than in a contrived stylistic relationship, that the architects have related the addition to the old church. The buildings are steel frame. A local stone is used to match that of the original church building.





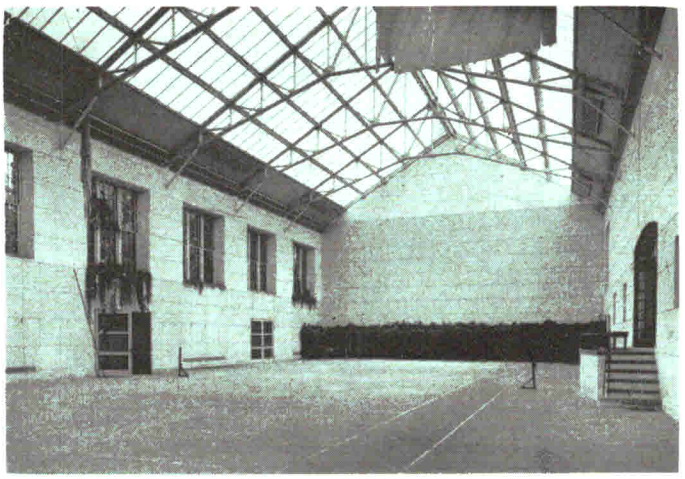


Chapel exterior with offices on ground floor

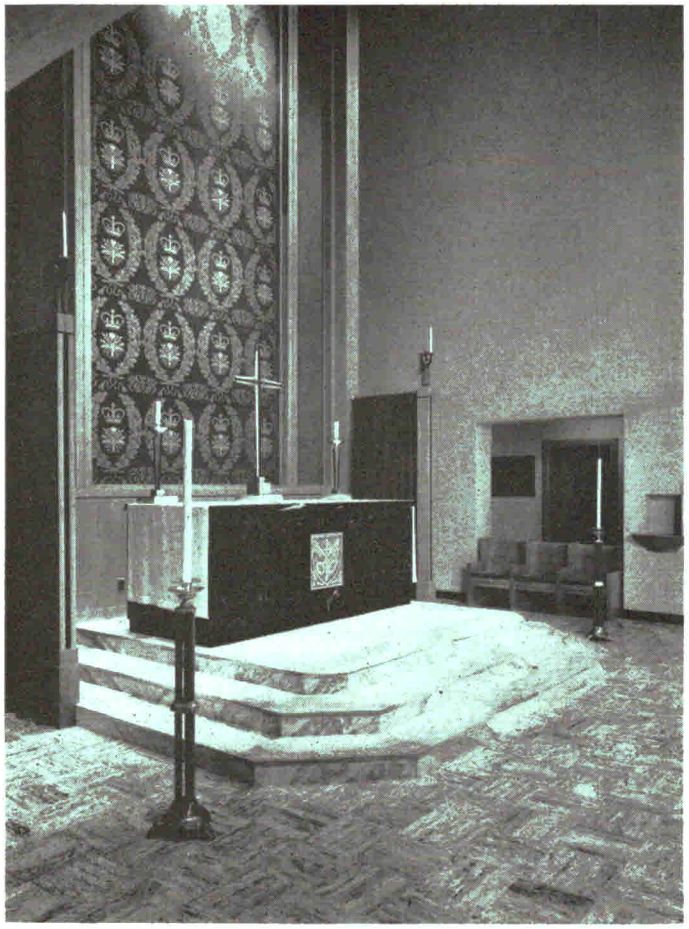
Chapel interior

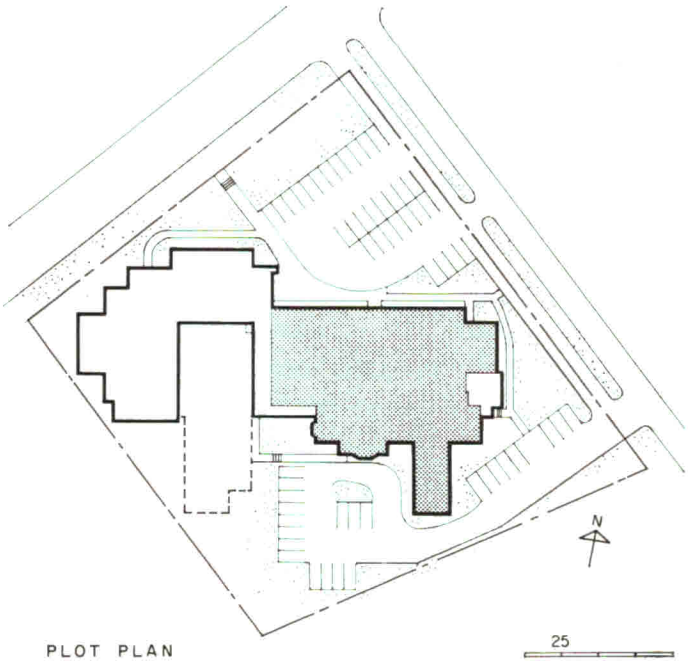
Ben Schnall

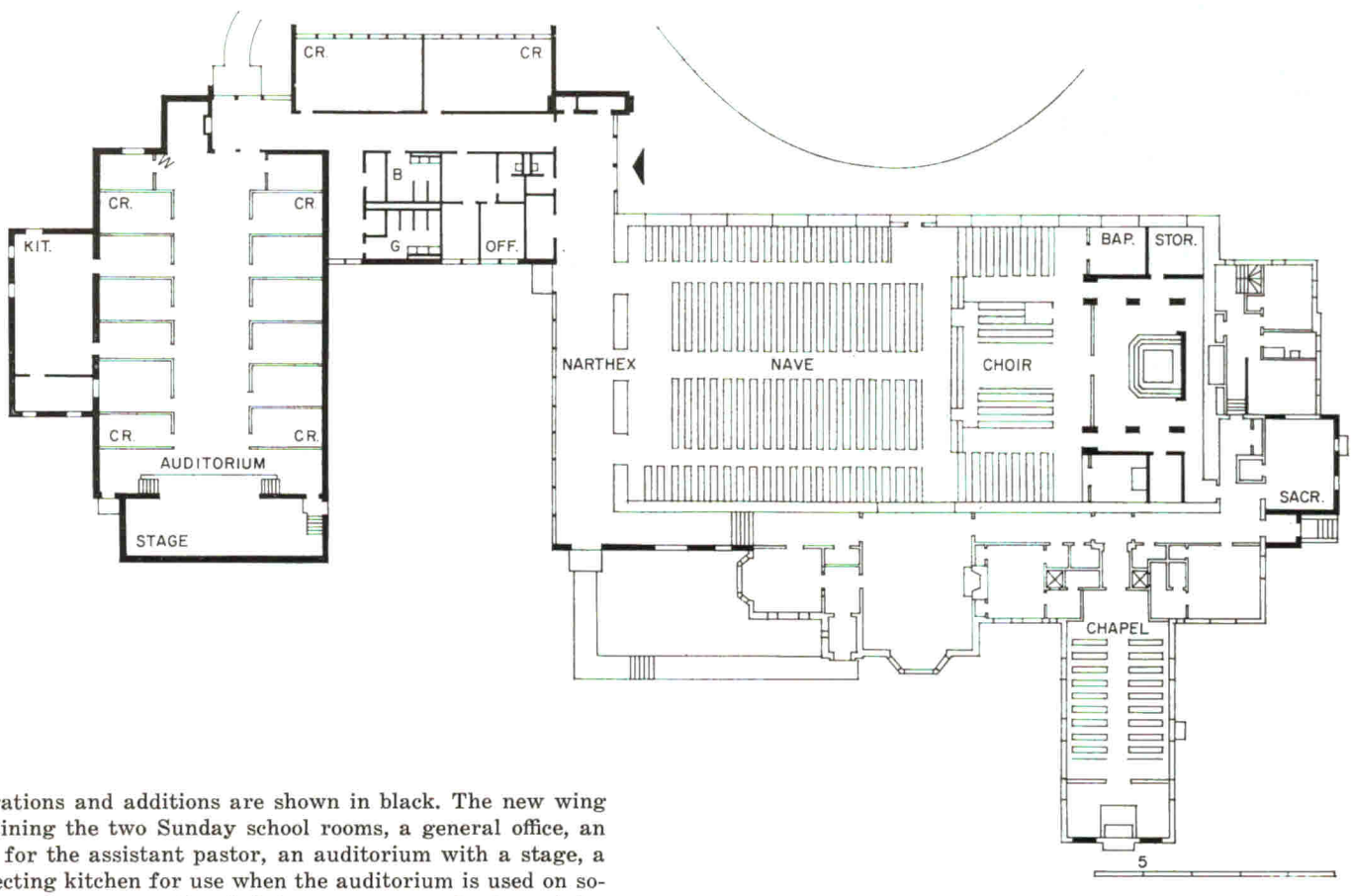
It was necessary to remove the skylight over the tennis court and to install a new hung ceiling with recessed lighting, and to replace the hard clay court with an asphalt tile floor. A pair of organ screens above the baptistry and the small chapel flank the sanctuary. Small riddle curtains of blue velvet stand on either side of the new marble altar which is set against a ceiling height reredos of Queensway damask in gold on blue. The overall wall coloring of the antique plastered church interior is off-white. The clerestory height windows are located along one side and are of clear glass. The pews are finished in a light gray oak. The asphalt tile floors are an Etruscan red in the nave and choir.



Gottscho-Schleisner, Inc.







Alterations and additions are shown in black. The new wing containing the two Sunday school rooms, a general office, an office for the assistant pastor, an auditorium with a stage, a connecting kitchen for use when the auditorium is used on social occasions, connecting toilet rooms—were all planned for 'total use', not merely on Sunday mornings. They are arranged in the 'L' shaped wing so that they can be entirely cut off from the church itself, if the occasion demands. The Chapel shown in plan was the former swimming pool. The former locker rooms have become dressing rooms.

Tennis House Into Church

NAME: *St. Peter's Episcopal Church*
LOCATION: *Bayshore, L. I., New York*
ARCHITECTS: *Eggers & Higgins*
STRUCTURAL ENGINEERS: *Eipel Engineering*
MECHANICAL ENGINEERS: *Wohlpart Associates*

Tennis house with skylight

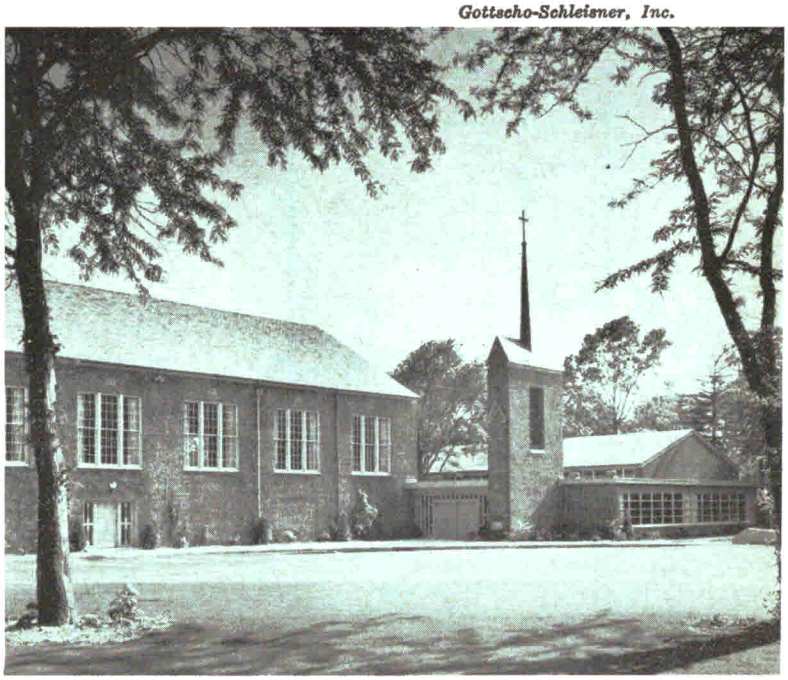
The church was formerly a full-sized tennis court building, complete with a huge skylight, and a viewing balcony on one side that was connected with a lounge, dressing room, and a tap room. Originally built in 1929 by Mr. Landon K. Thorne, a Wall Street banker, the plot and the building were given to the St. Peter's congregation two years ago by Mr. Thorne, who was a friend of the pastor, Canon S. R. Peters. The congregation had outgrown the old church and on Sunday there was literally no place to park and most of the congregation arrived by car.

The project was essentially one of conversion—since the central structure was already there. It was necessary to add a wing for office and Sunday school rooms, and a small auditorium that can be subdivided into more classrooms, but the 60 ft by 125 ft tennis court room that formerly served the purposes of a maximum of four persons—now serves four hundred.

The entrance to the church is distinguished by a patterned wood screen on either side of the double doors and adjacent to the new bell tower. The tower is over 60 ft in height. It is constructed of brick and has three bells exposed to view. The tower is topped by a slender flèche. The bells were cast in the Netherlands. The new narthex is the connecting link between the original and the new sections of the building and has entrances at either end. Two parking areas for approximately 50 cars are located at the extremities of the narthex. Additional parking space is available along the estate driveway.

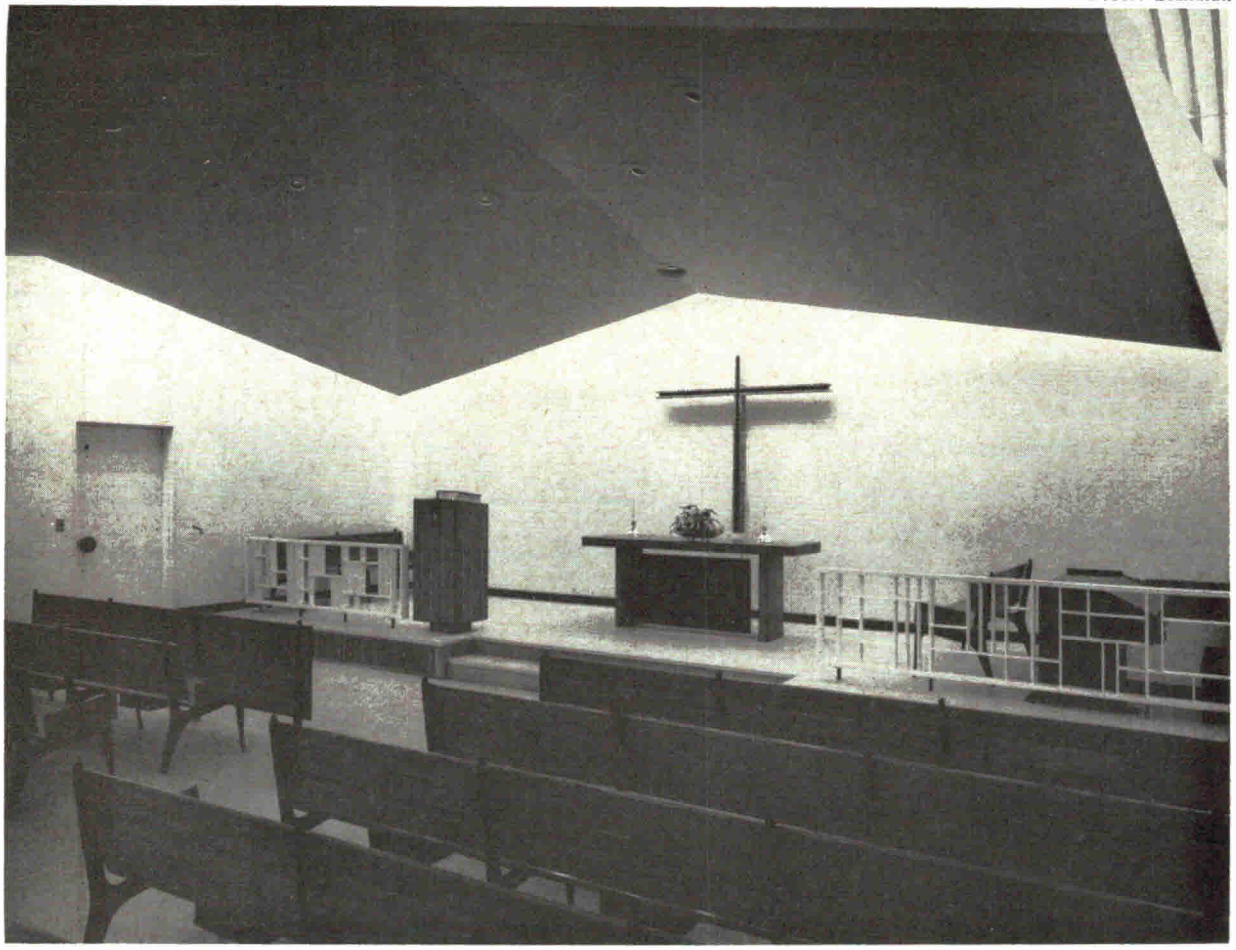
The new wing was naturally designed to complement the existing structure and is faced with a brick similar in color to that of the original building as well as being roofed with the same color of slate. Cost of the alteration as well as the addition was approximately $500,000.

Gottscho-Schleisner, Inc.

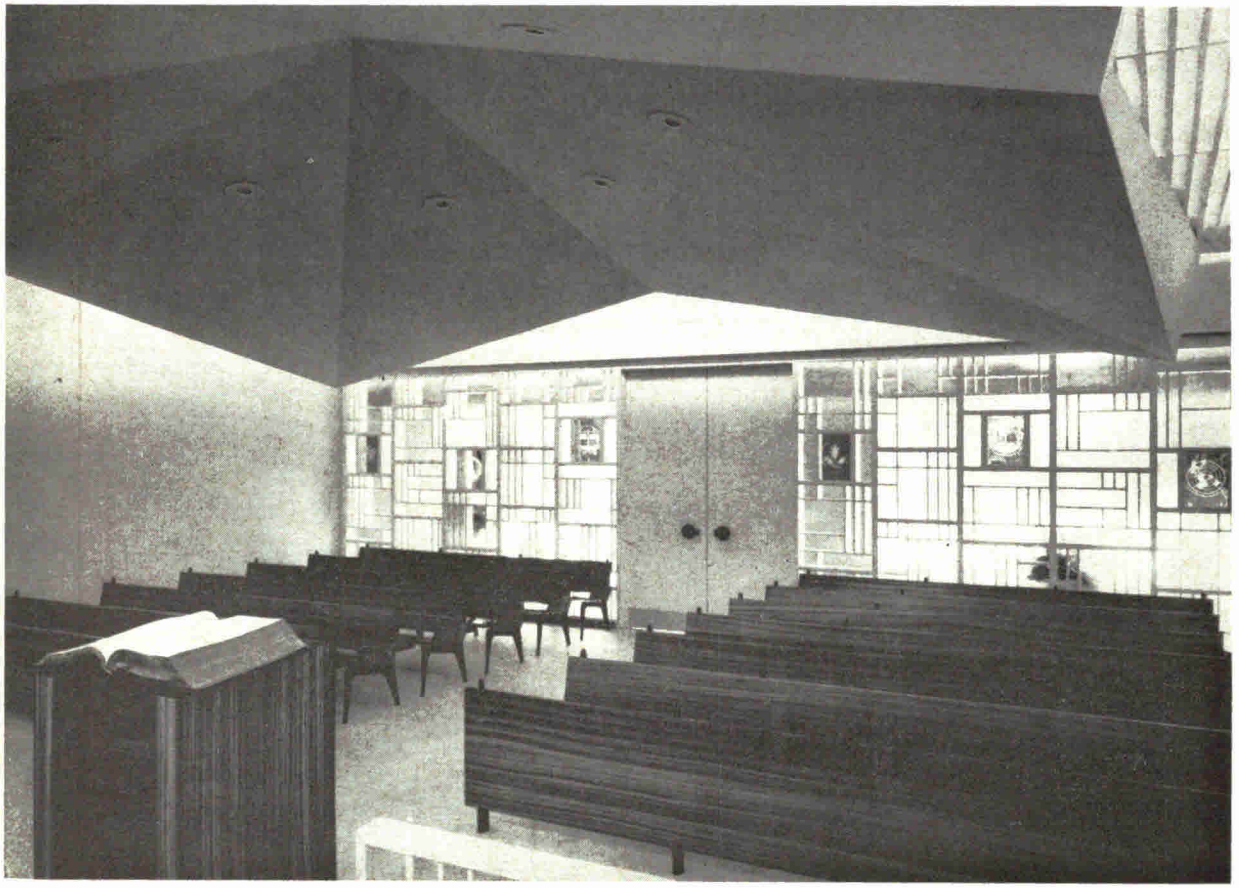


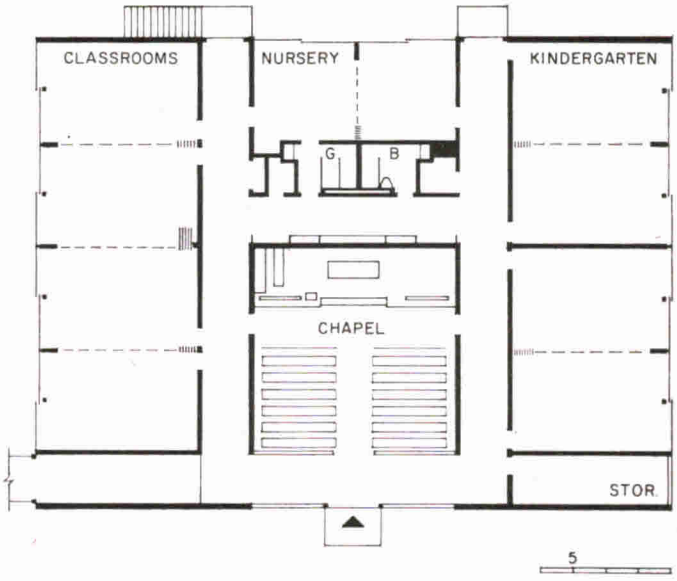
Remodeled tennis house now a church, with new entrance and office and classroom addition

Robert Stahman



Simplicity of chapel interiors in harmony with the New England tradition established in original church





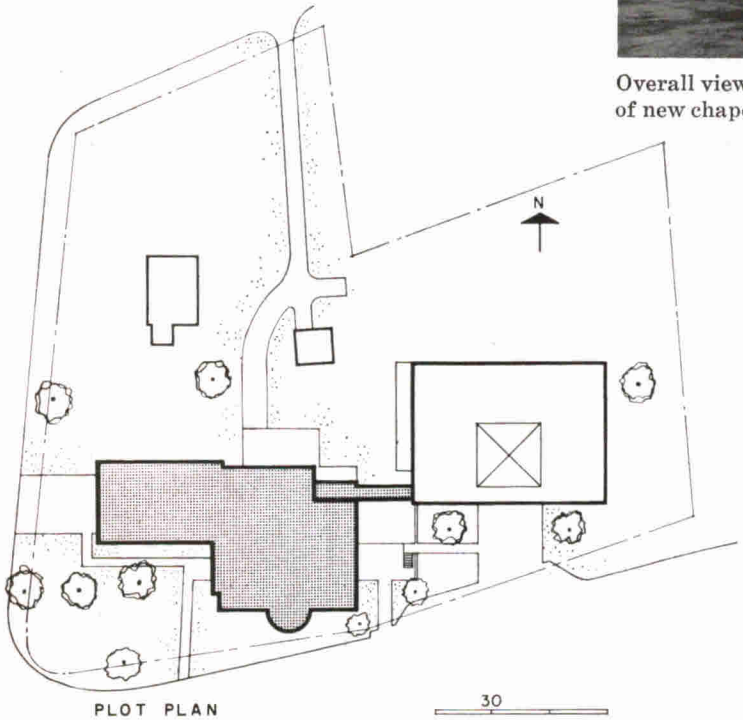
NAME: *Chapel and Sunday School for the First Congregational Church*

LOCATION: *Darien, Conn.*

ARCHITECTS: *Sherwood, Mills and Smith*

MECHANICAL AND STRUCTURAL ENGINEERS: *Werner-Jensen and Korst*

Overall view from the south showing unpretentious character of new chapel and school



PLOT PLAN

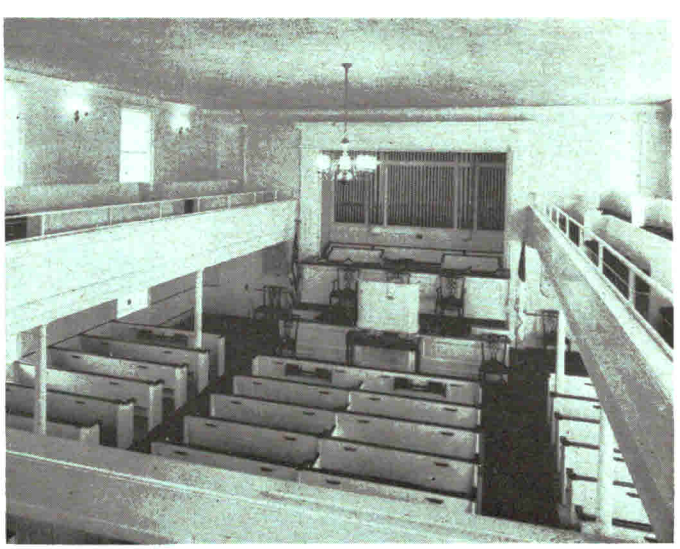
Main entrance to chapel and school. Tower of early church is seen beyond intermediate building

A Chapel and Sunday School Added to Historic Church

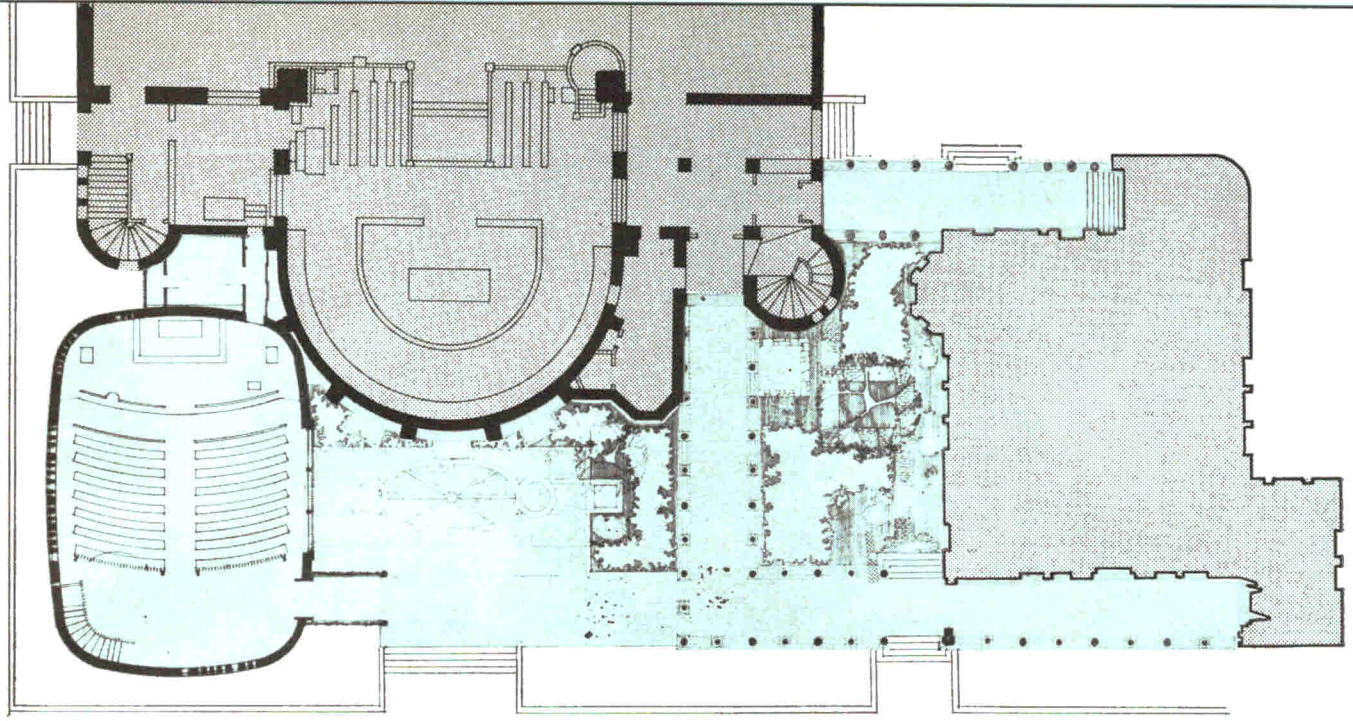
The problem of adding a chapel and Sunday school to a fine specimen of an early 19th century Connecticut church was not as delicate as it would have been had not an addition been made which lies between the simple rectangle of the old church and the simple rectangle of the new building. This rather clumsy intermediate addition which contains a kitchen, small auditorium and stage, spoiled the opportunity of creating a truly sensitive relationship between the new school and the historic church. The architects of the present addition were able to succeed, however, in establishing a simple architectural character which in its scale, symmetry, and use of brick and wood trim painted white, harmonizes well with its elegant predecessor.

On the plot plan the elements shown in grey include the historic church to the west and the intermediate structure. The new building is linked to the older elements by means of a new covered passage also shown in gray.

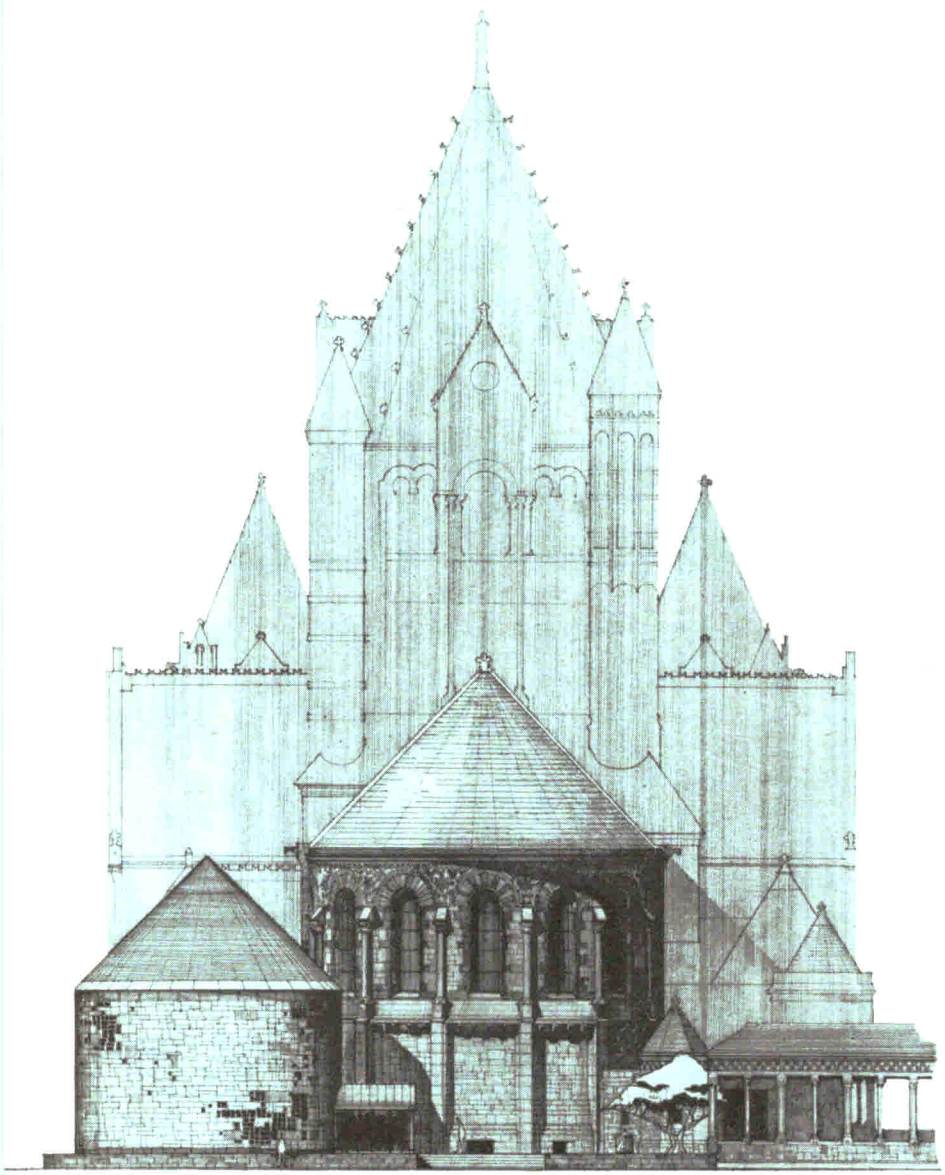
Robert Stahman

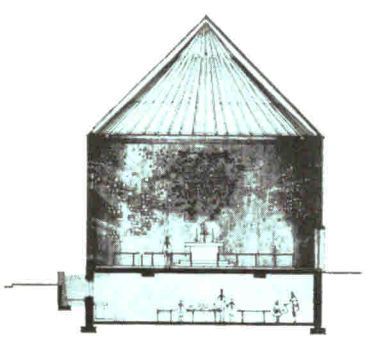


Exterior and interior of historic church



Drawing above shows apsidal end of Richardson church. Parish house to the right and portico are part of Richardson scheme. Addition is oval form to the left. Elevation below shows the manner in which the chapel addition is related visually to the Richardson Romanesque apse. Chapel has kindergarten and meeting room on lower floor





An Addition to a Masterpiece

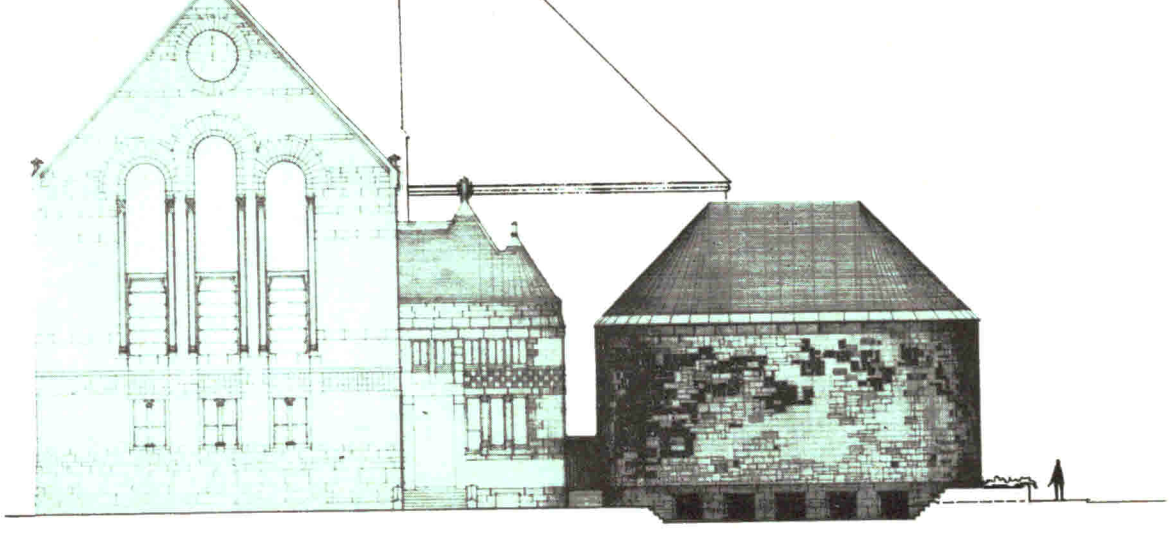
NAME: *Trinity Church (Episcopal)*
LOCATION: *Boston, Mass.*
ARCHITECTS: *Pietro Belluschi, Shepley, Bulfinch, Richardson & Abbott*

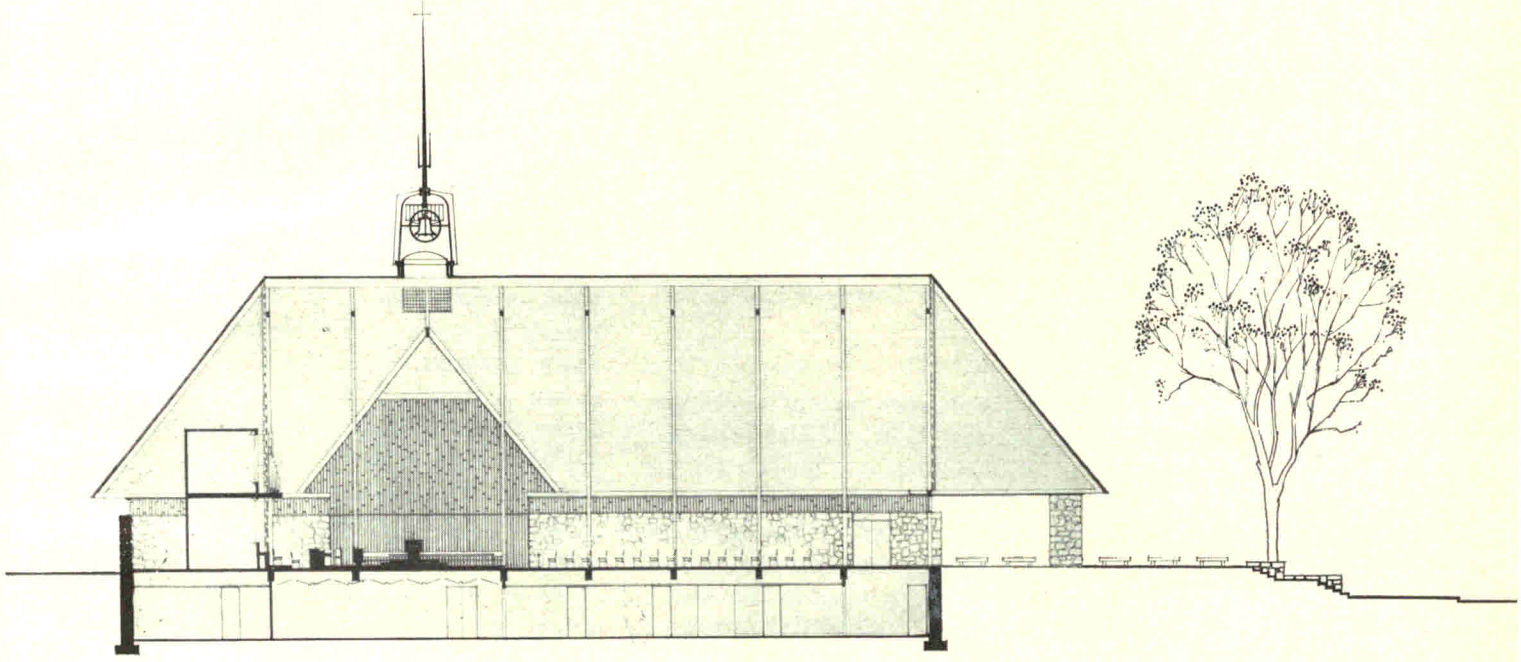
"I have been working on and off on designs for a Trinity Chapel since 1916 and had developed some very strong feelings about it. This new design meets all the criteria and conditions that I have for such a chapel and goes even further. It has captured a spirit and individuality and appropriateness that I never expected could be achieved."
HENRY R. SHEPLEY

Henry Hobson Richardson's great church on B ton's Copley Square will have a small chapel ac tion by Pietro Belluschi and Shepley, Bulfinch, Ri ardson and Abbott. Belluschi's account of the cc mission follows: "When I was asked to desig Chapel for historical Trinity Church in Bostor thought here was a commission no architect in right mind should accept. The old church is a mo ment beyond challenge; on the other hand, th was an irresistible pull, which must be similar that of a bird unable to escape the hungry snake. I accepted, but requested that I be associated w Henry Shepley, the grandson of Richards Through the years, Mr. Shepley and his firm h given loving devotion to the building and have ta care of its refurbishing and recently of its lighti

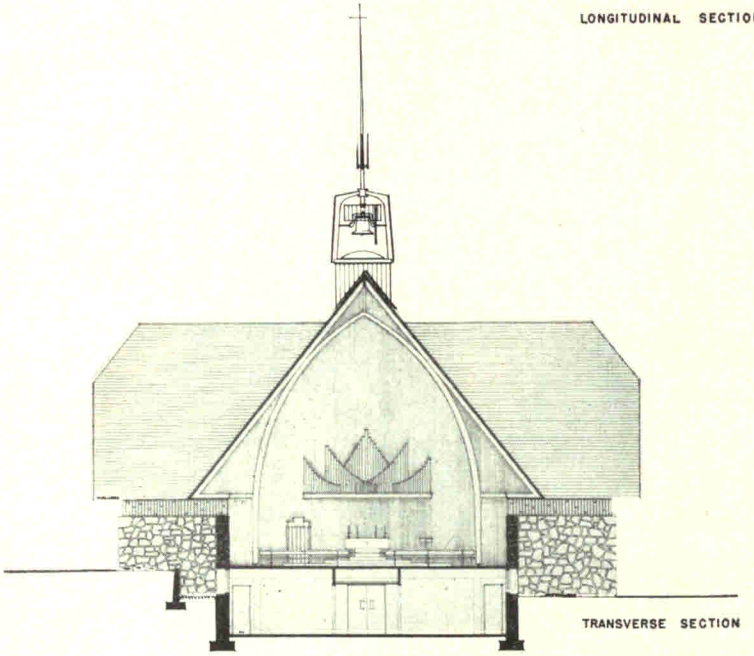
"There was almost no land on which to build; integrity of the existing structure had to be p served on all sides. A wing in the same scale as Parish House would have been too big. To ext the fine stone portico in the rear would dwarf new chapel. After much thought, it was decided give the chapel its own scale, its own identity, by its oval shape its own containment. It was tc extremely simple in form, but precious in execut —almost like a jewel. This was to be accomplis by enlisting from the very beginning the help of outstanding artists, Gyorgy Kepes to do the stai glass, which was to be fully integrated within masonry walls, and Mirko to do the ornamer metal sculpture of the entrance.

"In this small chapel then, the materials, form, the pitch of the roof, and the general color texture were to proclaim their allegiance to the building. Yet it must also show and affirm the signers' faith in their own age and times by hav modern, creative artists collaborate intimately ir design. The results would show to future gen tions, for better or for worse, that we were ou make our own contribution with respect for the pa





LONGITUDINAL SECTION

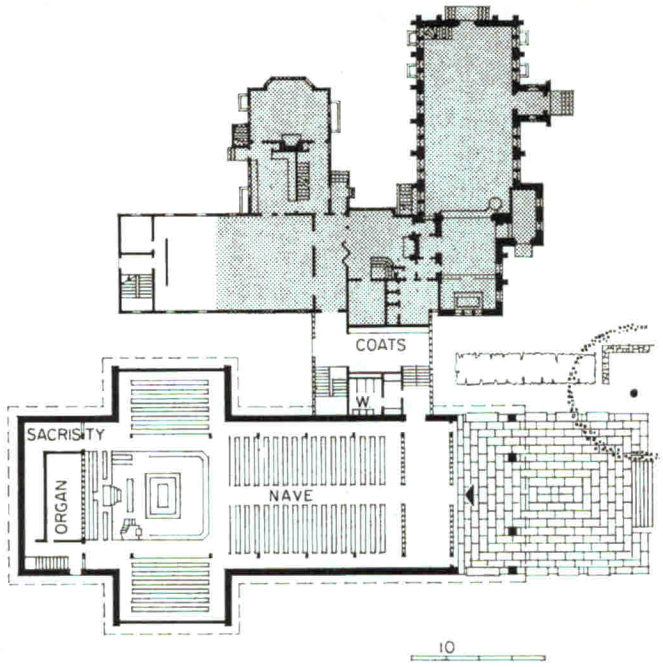


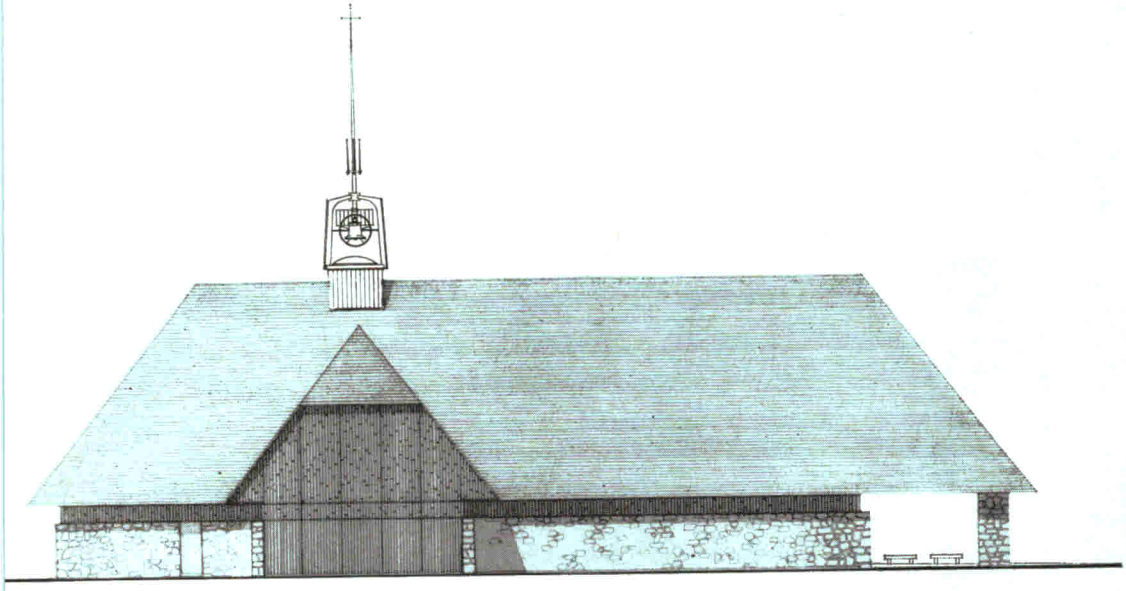
TRANSVERSE SECTION

SECTIONS

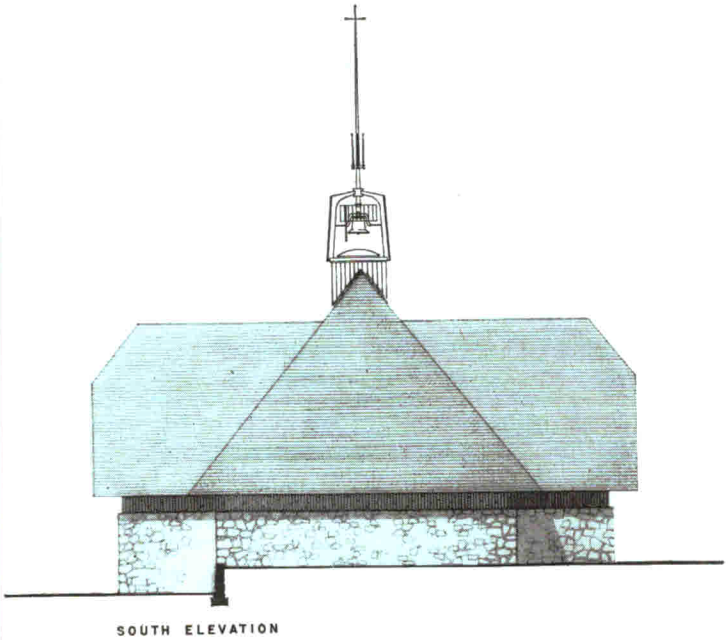
0 5 10 15 20 30 40 feet

Overall plan: present church, parish hall etc. shown in grey. Present church will become chapel and existing parish hall will be extended as shown in plan





EAST ELEVATION



SOUTH ELEVATION

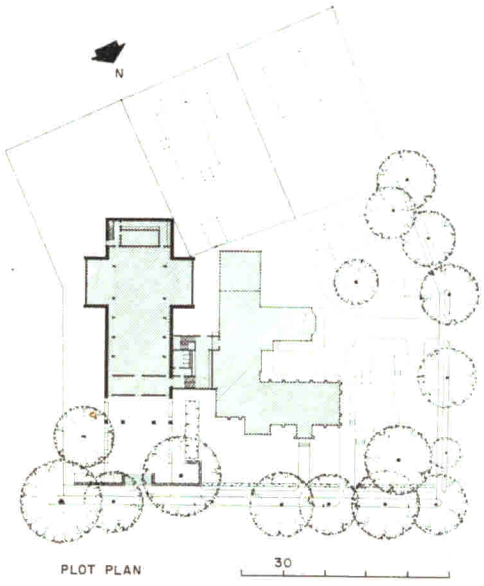
ELEVATIONS

0 5 10 15 20 30 40

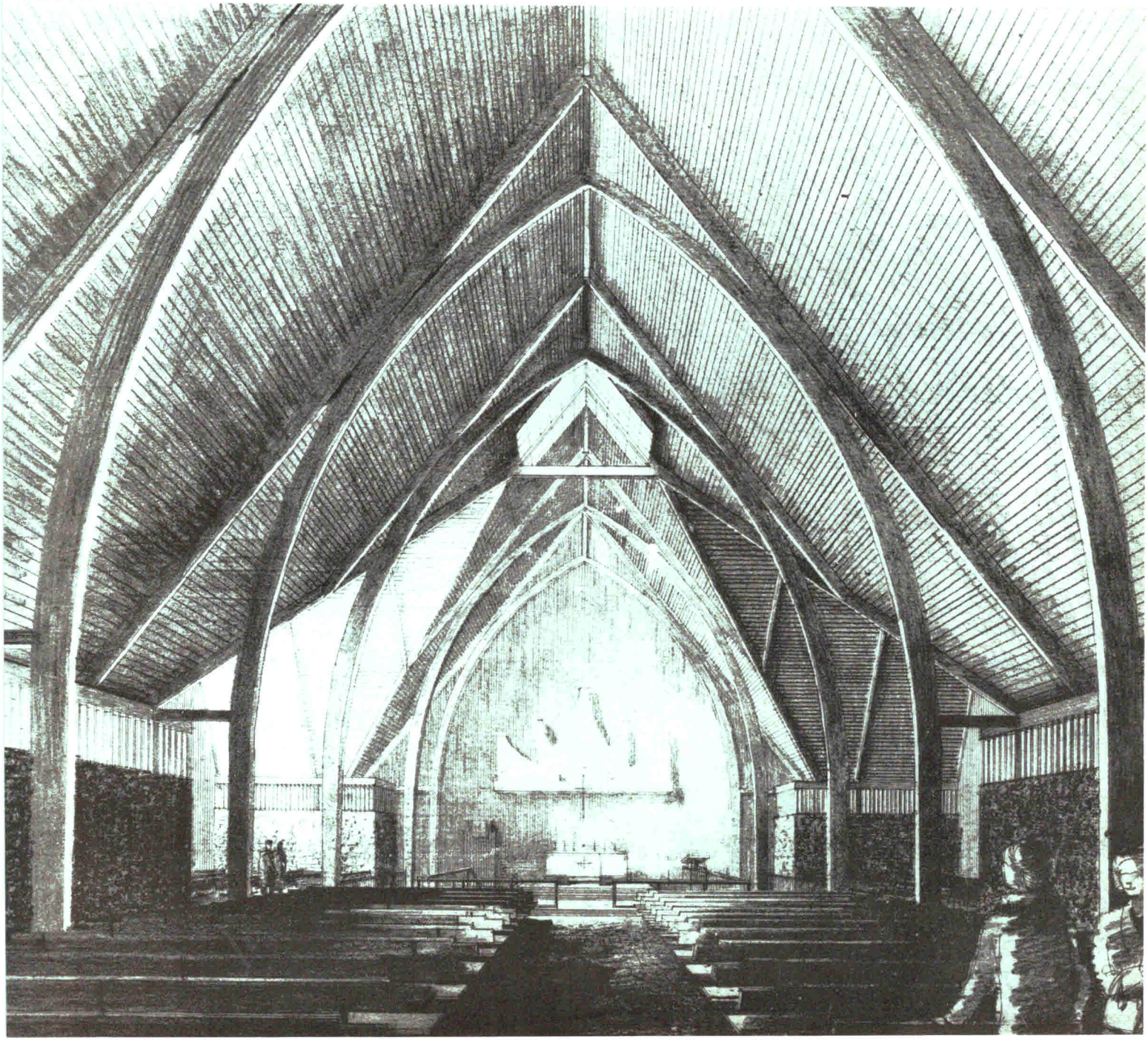
NAME: *Trinity Episcopal Church*

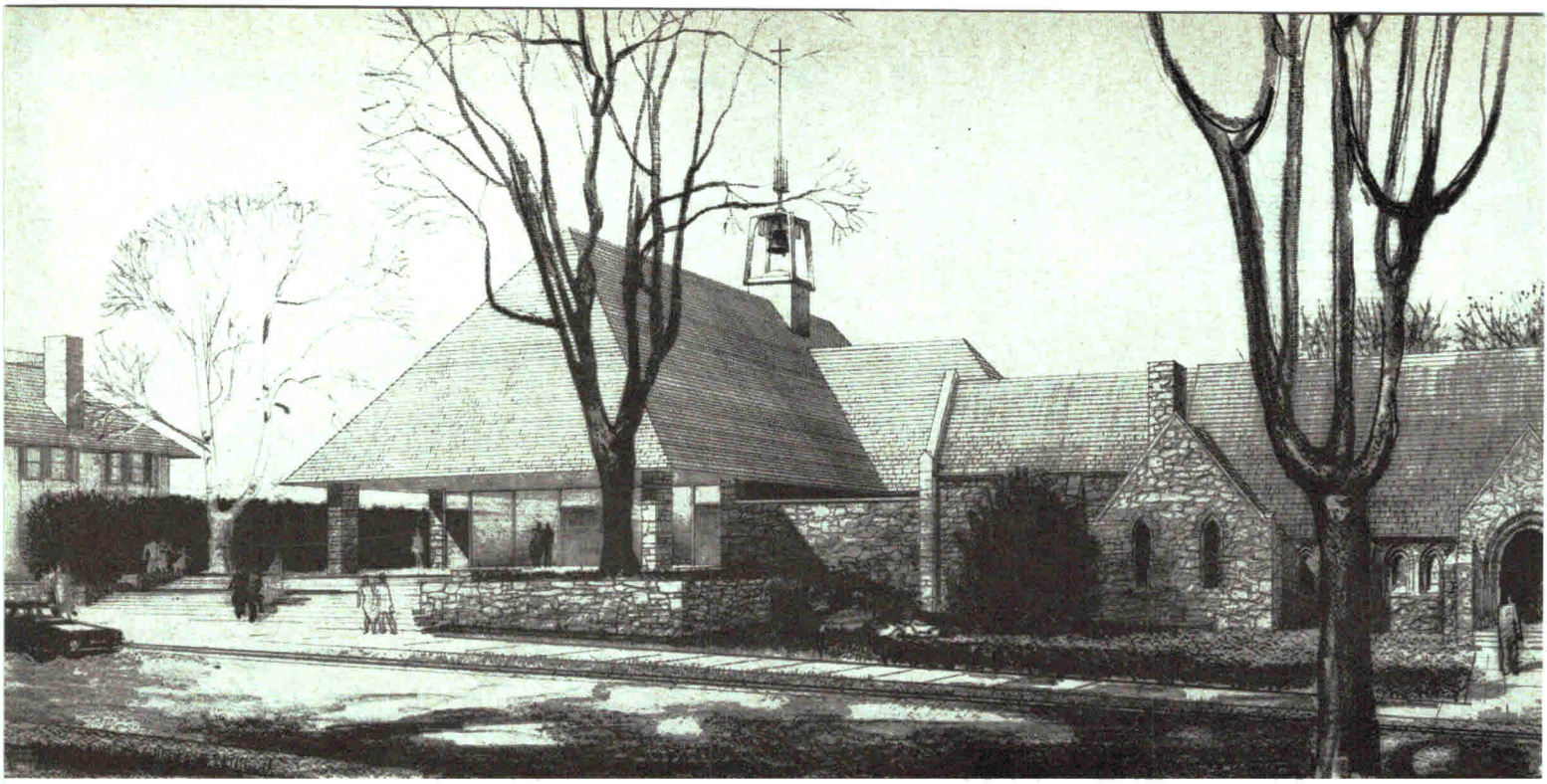
LOCATION: *Concord, Massachusetts*

ASSOCIATED ARCHITECTS: *Pietro Belluschi, Anderson, Beckwith and Haible*



PLOT PLAN





Addition to a Small Gothic Church

Pietro Belluschi describes this current design as follows: "This is the third and finally successful attempt to provide a building which satisfies many requirements and overcomes many restrictions, which include:

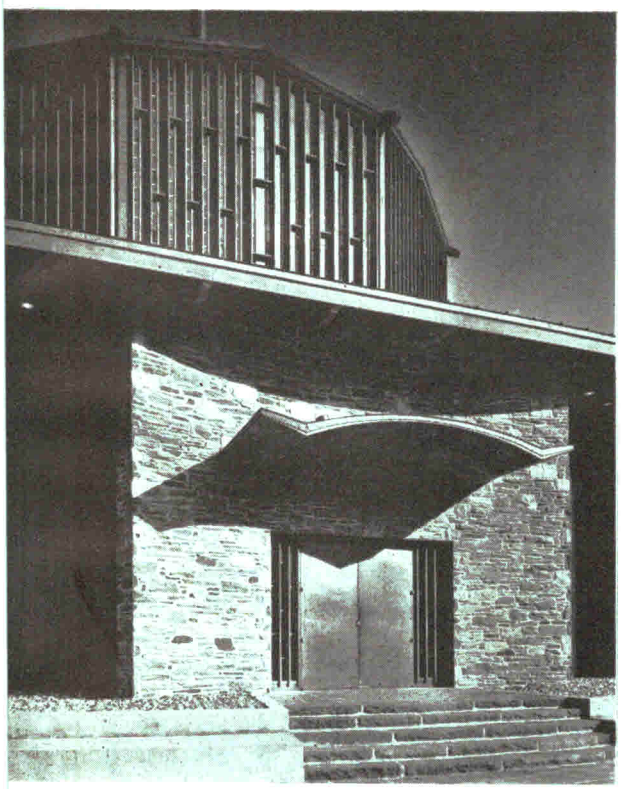
1. a very restricted site;
2. objections by the congregation to a modern building, in the belief that Concord is the seat and symbol of American tradition, although the tradition is more historical-psychological than visual-architectural;
3. the necessity to provide ample capacity for 400 seats, grouped around the altar, but not so obviously as to require a round or octagonal form which would be visually too strange looking in the neighborhood;
4. the need to compose with and form a reasonable extension of an existing rural, stone Gothic church;
5. the provision of an allowance for future expansion;
6. the addition of an educational unit that had to be included within a reasonable low budget;
7. the achievement, in the words of the minister of the congregation, of a sense of mystery, the 'otherness' of worship.

"The solution, as forced by thought and circumstances, is extremely simple which pleases us very much. We find the idea of 'holy emptiness' a satisfying one; it is a statement of the importance of humility and of emphasizing the qualities of space over the pretensions of form. It acknowledges the poetry of simple things when they are conceived in love rather than in arrogance.

"I am pleased with its composition with the land, the generosity of approach, the sensitive recognition of what is already there. Now in carrying through its design, the quality of space must be carefully guarded so that the light it receives, the materials of which it is constructed, and the details which are used implement the idea with grace and eloquence.

"To have designed this church has been more than an architectural experience; it has been a voyage into awareness. We hope this will become apparent in the completed building."

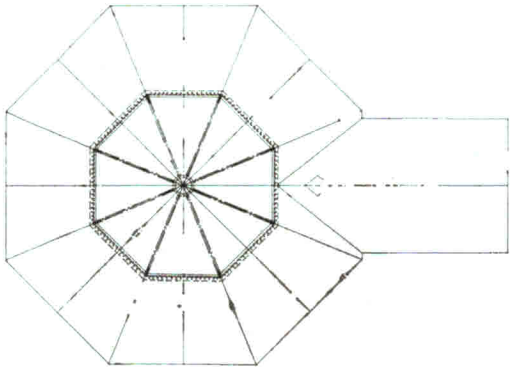
Two earlier schemes for this church appear in the July 1959 issue of ARCHITECTURAL RECORD.



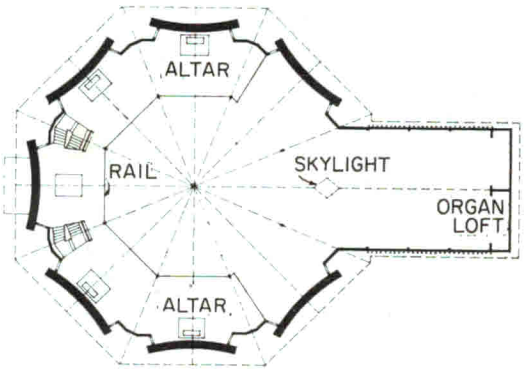
Joseph W. Molitor

Details: main entrance and narthex

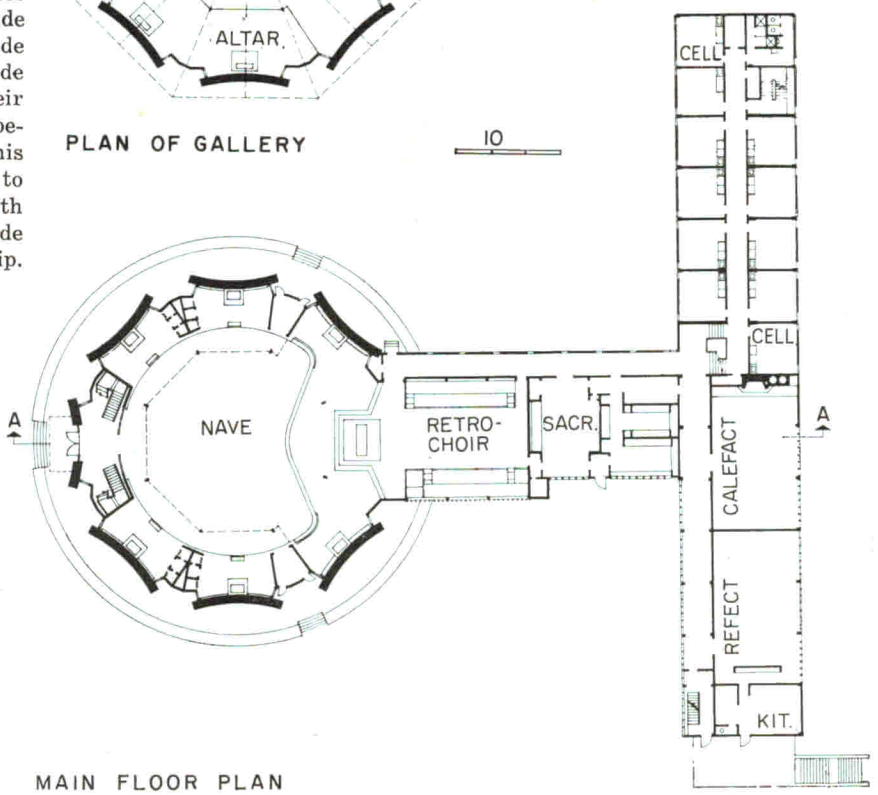
Opposite page: view of altar showing retro-choir to the left, high nave element to the right. Edge of gallery appears and two side altars are shown



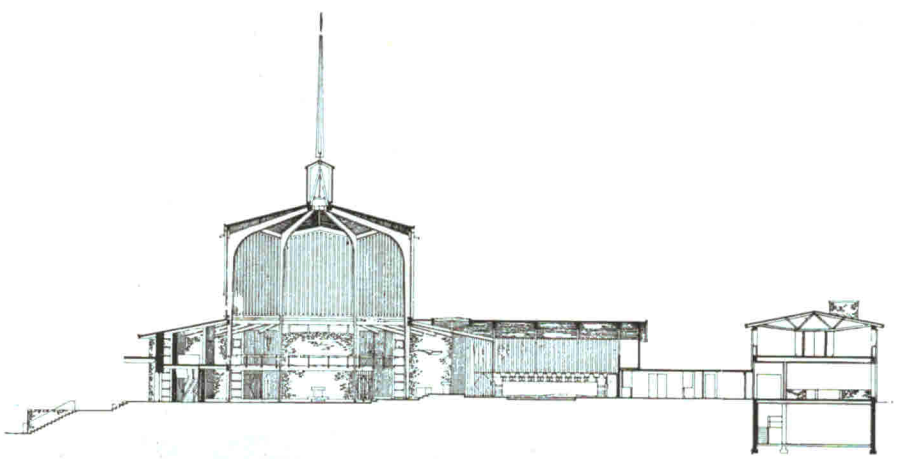
PLAN OF TOWER



PLAN OF GALLERY



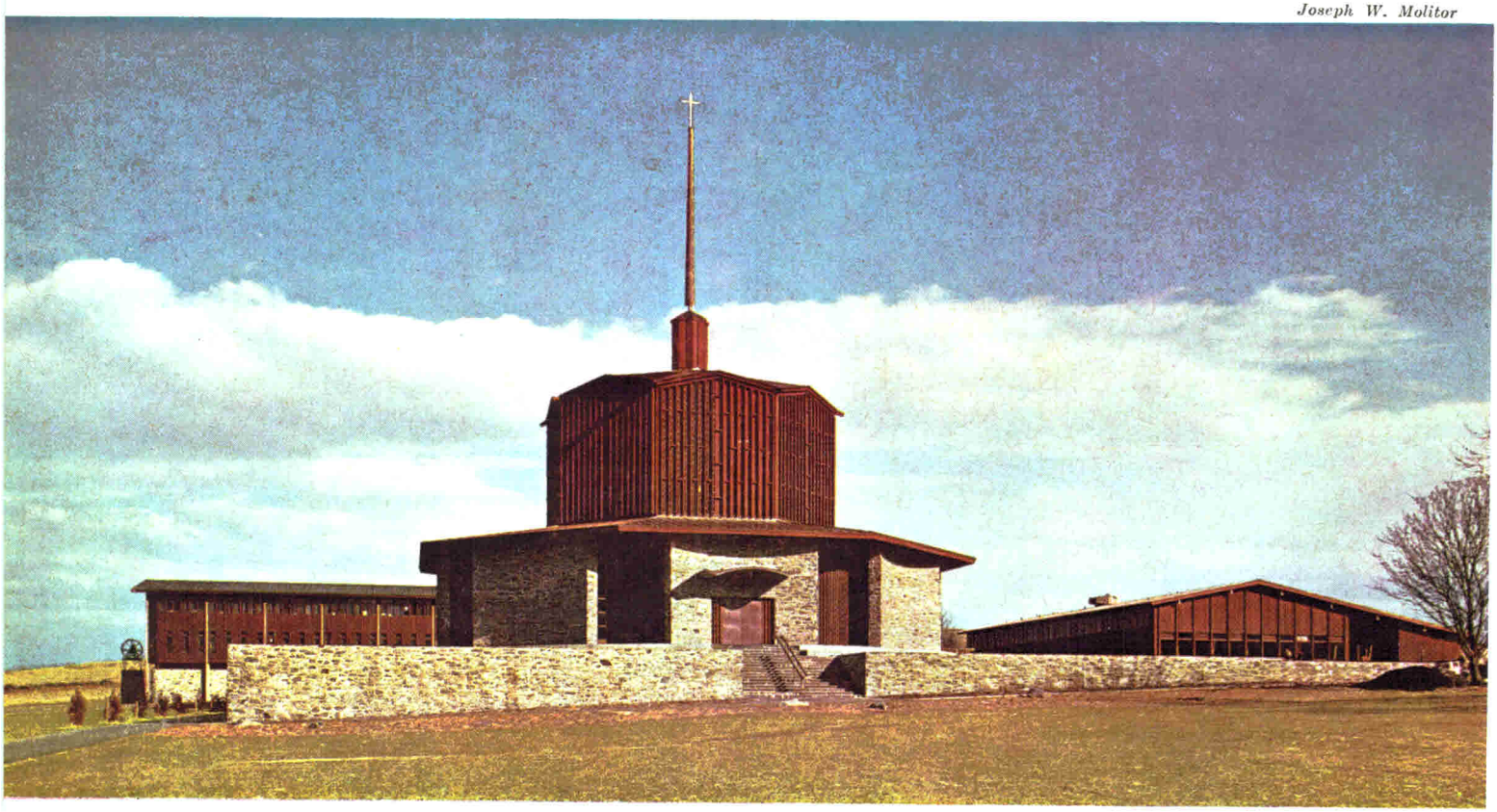
MAIN FLOOR PLAN



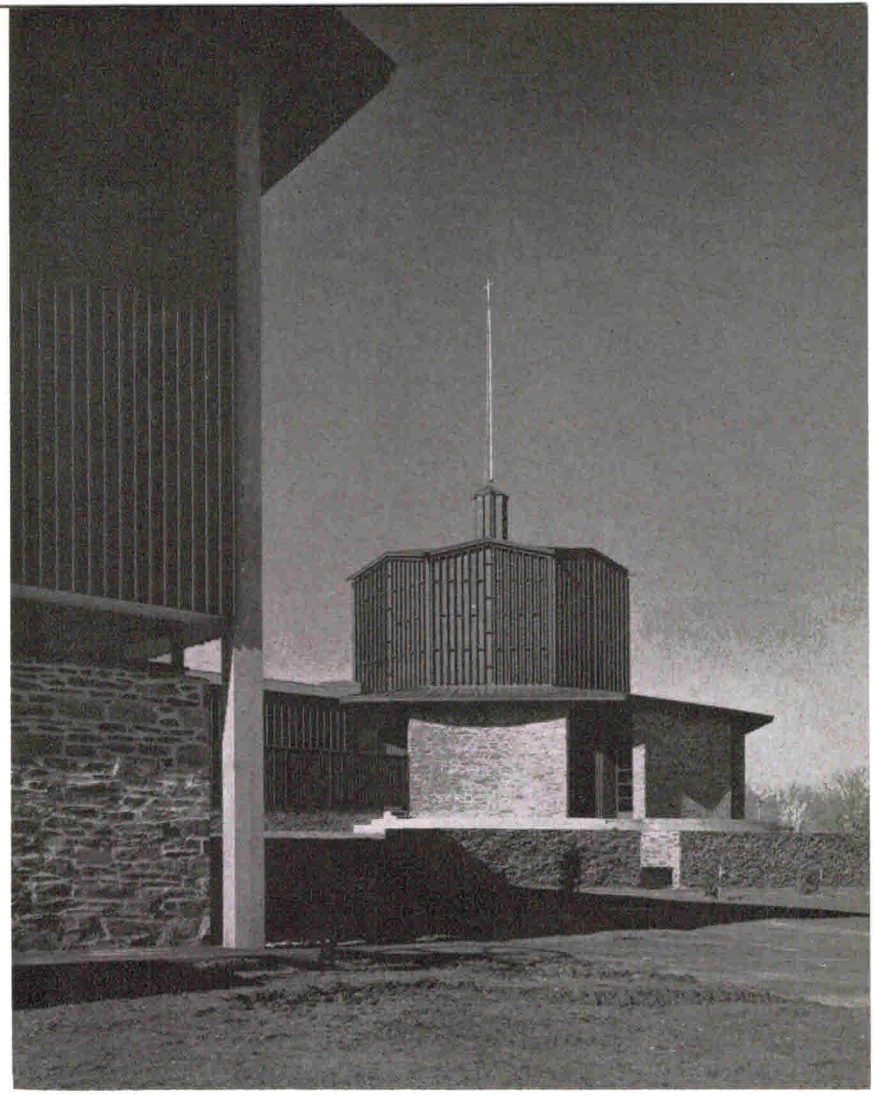
tsmouth Priory Church, inspired perhaps in its octagonal n and massing by San Vitale in Ravenna, accommodates distinct requirements. Its primary function is to provide lace for each Benedictine to say daily Mass (note six side ars on the main floor and four in the gallery) and to provide hoir section to enable them as a group to chant or sing their es seven times a day. The retro-choir has been placed be- d the high altar, thus separated from the nave for this pose. Connected with the sacristy and with a passage to monastery, it allows the monks to worship separately, with e privacy. The secondary function of the plan is to provide lace where students and visitors may assemble to worship. s takes place in the central nave

Nave and altar, with retro-choir beyond. Monks have access to retro-choir from monastery. Wire sculpture over altar by Richard Lippold. Floors are brick

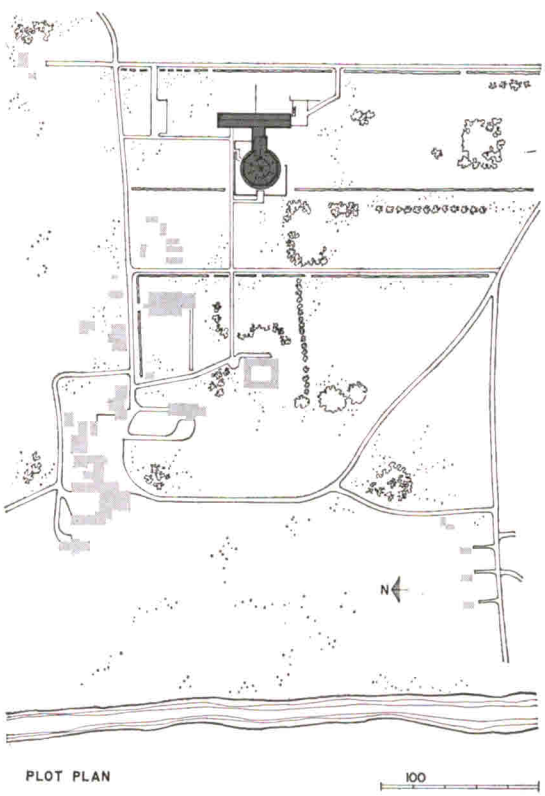
Joseph W. Molitor



View of church at entrance showing monastery at rear. Building at right is earlier school structure



Monastery is concrete frame, church is constructed of laminated hardwood members. Walls are of Rhode Island fieldstone and redwood. Roofs are copper



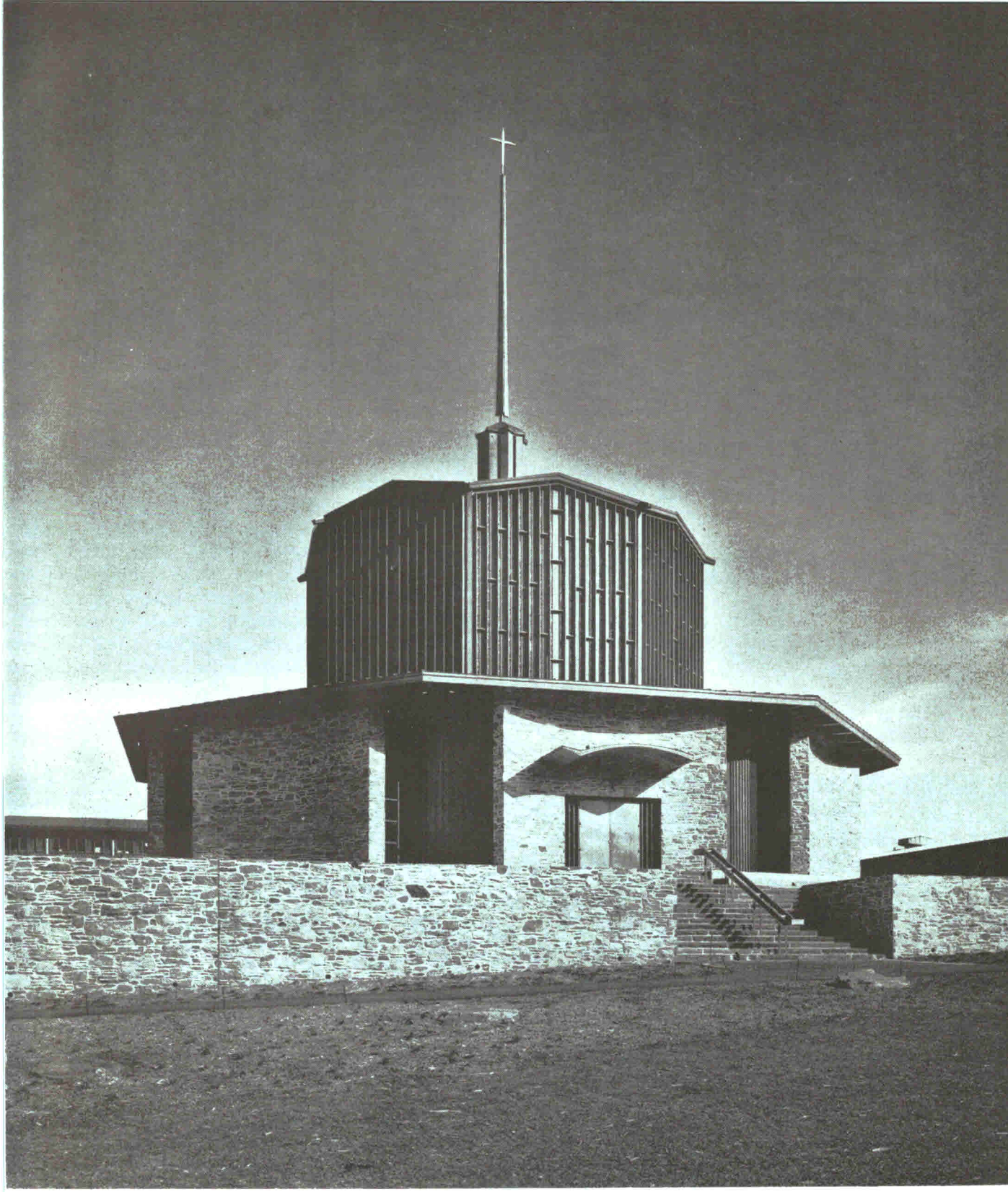
LOCATION: *Portsmouth, Rhode Island*
ASSOCIATED ARCHITECTS: *Pietro Belluschi, Anderson, Beckwith and Haible*
STRUCTURAL ENGINEERS: *Severud-Elstad-Krueger Associates*
MECHANICAL ENGINEERS: *Delbrook Engineering Co.*
ELECTRICAL ENGINEER: *Edwin P. Mahard*
ACOUSTICAL CONSULTANTS: *Bolt, Beranek and Newman*
SANITARY ENGINEERS: *Camp, Dresser and McKee*
CONTRACTOR: *E. Turgeon Co.*
SCULPTOR: *Richard Lippold*

Belluschi Designs a Church and Monastery for Portsmouth Priory

This church and monastery built at the crest of a hill which gently slopes down to Narragansett Bay, was recently completed for members of the Benedictine Order who have long conducted a boys' school and a dairy and sheep farm on their land.

Belluschi's new building is composed in elements which are carefully scaled to harmonize with the group of modest farm structures which it dominates, and with the landscape which is dimensioned by small pastures and fields. The octagonal church is placed on a circular stone platform which increases its elevation and therefore its visual primacy on the site. The monastery, a long narrow three story element, is connected to the church proper by an intermediate link which contains the sacristy and retrochoir (see plans on page 119). The octagonal nave is lit by the sky through the lantern at the base of the spire and cross, and through narrow panels of colored glass set in the walls of the upper nave octagon.

Joseph W. Molitor



Joseph W. Molitor

Church at Portsmouth Priory by Pietro Belluschi

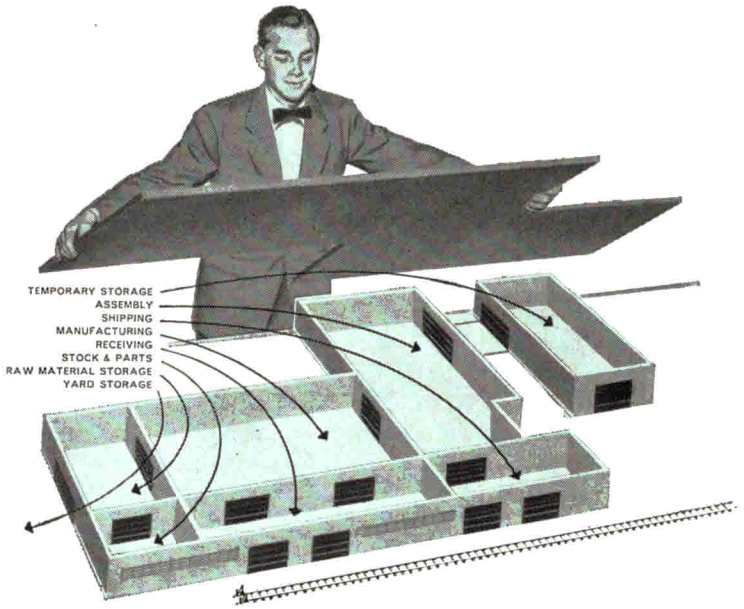
BUILDING TYPES STUDY 295

®

CHURCHES

ARCHITECTURAL RECORD JUNE 1961

How much money can doors make (or lose) for a plant?



Plant operating COSTS...flow of material, productivity, maintenance, and environmental control...are directly affected by doors. Exclusive Barber-Colman guaranteed 100,000 CYCLE SPRINGS and DOOR INVENTORY PLAN anticipate and prevent expensive trouble . . . before it starts!

For example, when the "most important" (frequently open-closed) doors break down in production-assembly areas . . . the direct or indirect cost of plant operation can skyrocket! Even the failure of a vital shipping-room door can raise havoc with plant efficiency.

CASE PROBLEM: One Midwestern company estimates that it spent over $3000 last year in spring repair and heat loss on six overhead-type doors . . . and this did not include production downtime losses! Door springs fatigue and break . . . the problem was to obtain maximum performance, yet replace springs before breakage occurred!

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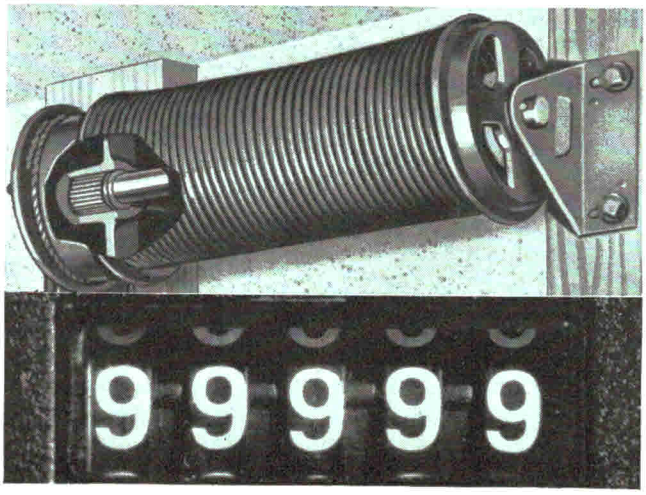

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The Record Reports

continued from page 98

velopment of plastic form in structural and non-structural components with emphasis on the completion of a number of sculptural pieces to serve as basic research for later architectural applications; and Peter L. Nicholson, sculptor of New York City, has begun a series of experiments on the sculptural effects of water in conjunction with architectural projects and will undertake specific studies in relation to installations at New York's Lincoln Center.

The Graham Foundation was established by the late Chicago architect Ernest R. Graham to further work in architecture and related arts by providing creative men and women with the opportunity for advanced study in these fields. Working with an eminent group of advisors, the Foundation has awarded, since its opening in 1956, more than 20 substantial grants for work in architecture, sculpture, painting and related arts.

Four Named Honorary Members of A.S.C.E.

Four of America's outstanding civil engineers have been named Honorary Members of the American Society of Civil Engineers. They are: Abel Wolman, professor of sanitary engineering at Johns Hopkins University, Baltimore, Md.; George S. Richardson, senior partner of the consulting engineering firm of Richardson, Gordon & Associates, Pittsburgh, Pa.; Thorndike Saville, construction engineer, Gainesville, Fla.; and Samuel B. Morris, a construction engineer of the Los Angeles Department of Water & Power, Los Angeles.

They will be presented with honorary certificates at the annual convention of the Society in New York City in October.

According to the Society's constitution, any engineer selected for honorary membership shall have attained eminence in some branch of engineering or related science. The total number of honorary members elected in any one year cannot exceed one for every 7500 members. A.S.C.E.'s present membership is about 46,000.

more news on page 248

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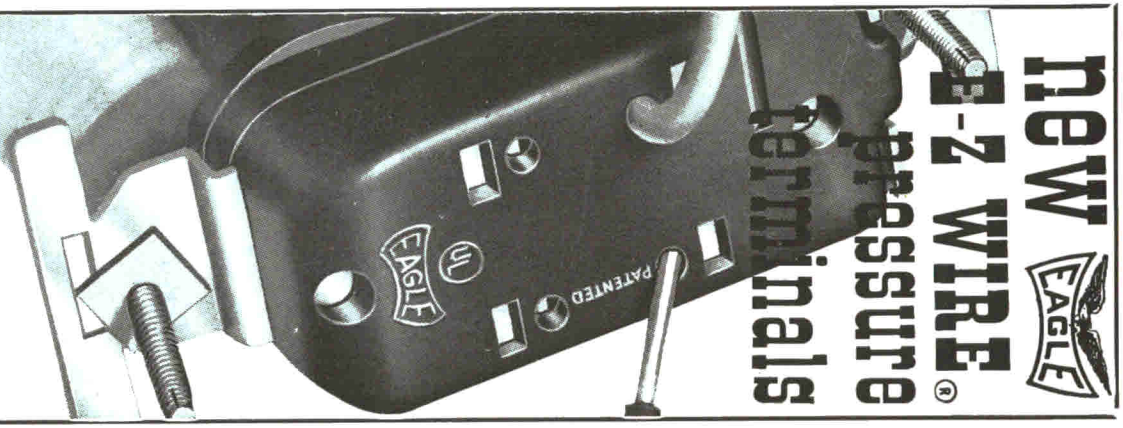

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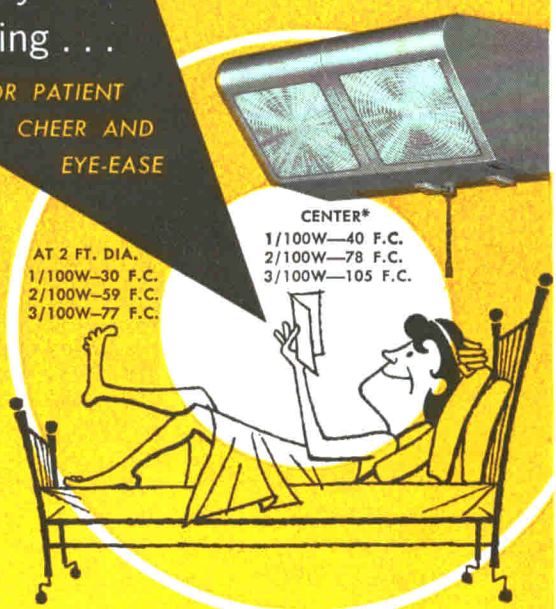

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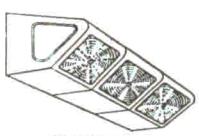

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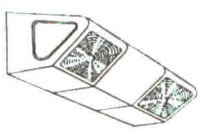

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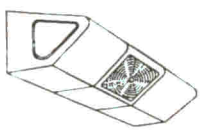

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Five Architects Receive Graham Fellowships

Five architects are among the recipients of nine fellowships by the Graham Foundation for Advanced Studies in the Fine Arts. Totalling $60,000, the one-year grants of from $5000 to $7500 have been awarded nine fellows to enable them to pursue advanced studies or undertake projects in architecture and related arts.

The architects are: Kenneth H. Cardwell, Berkeley, Calif., professor in the department of architecture, University of California; David J. Jacob, Bloomfield Hills, Mich., with Eero Saarinen Associates, Birmingham, Mich.; Louis I. Kahn, Philadelphia, Pa., professor of architecture, University of Pennsylvania; Reginald F. Malcolmson, Chicago, Ill., professor in the department of architecture and city planning, Illinois Institute of Technology; Paolo Soleri, Scottsdale, Ariz., resident architect of Arizona State College at Tempe.

Professor Cardwell has received a grant to enable him to complete and publish a definitive work on the late west coast architect Bernard Ralph Maybeck. Mr. Jacob and his wife Marian, a sculptress, are engaged in a project to search out and historically correlate architectural free forms. Professor Kahn is developing new studies, drawings and models in detailing his Viaduct Architecture and its relation to the core of the city. Professor Malcolmson will continue his work on the Metro-Linear City, preparing the developmental steps in graphic form with extensive models and drawings. Mr. Soleri is working on a theoretical project, "City on a Mesa," an undertaking which embraces a complete concept of future city forms.

Other Graham fellows: Milton Cohen, sculptor and instructor in the department of art, University of Michigan, Ann Arbor, Mich., will pursue his studies on light-sculpture and its applications to architecture; Jules Langsner, critic and lecturer in art history at Chouinard Art Institute, Los Angeles, is developing and coordinating a series of five lectures which will be prepared for eventual publication; Malcolm Leland, architectural sculptor of Los Angeles, will continue research on the creative de-

continued on page 103

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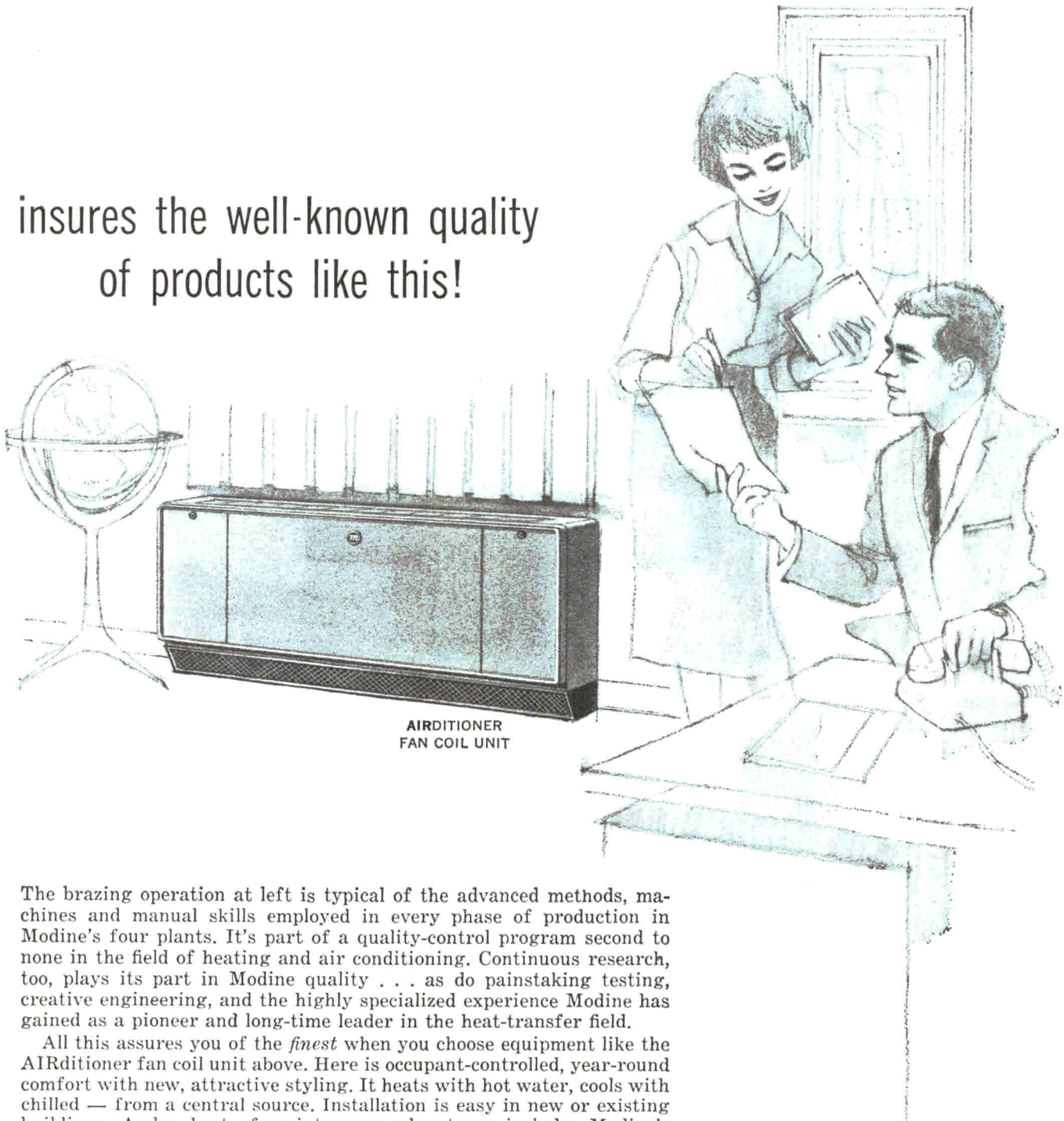

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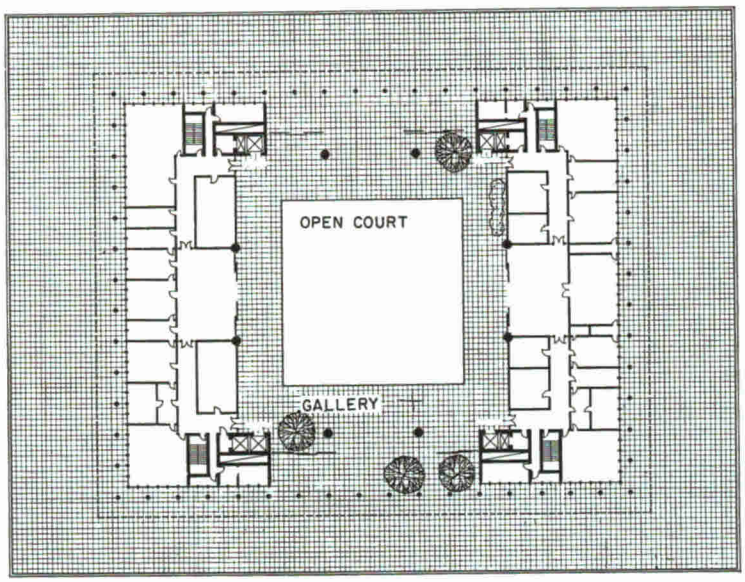
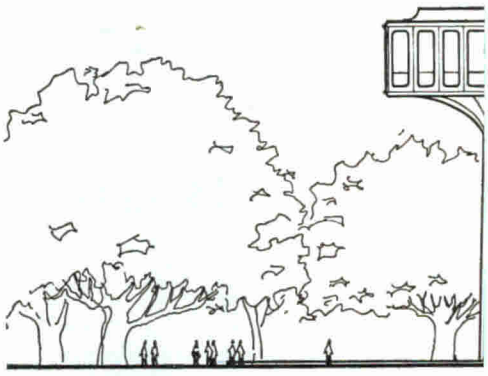
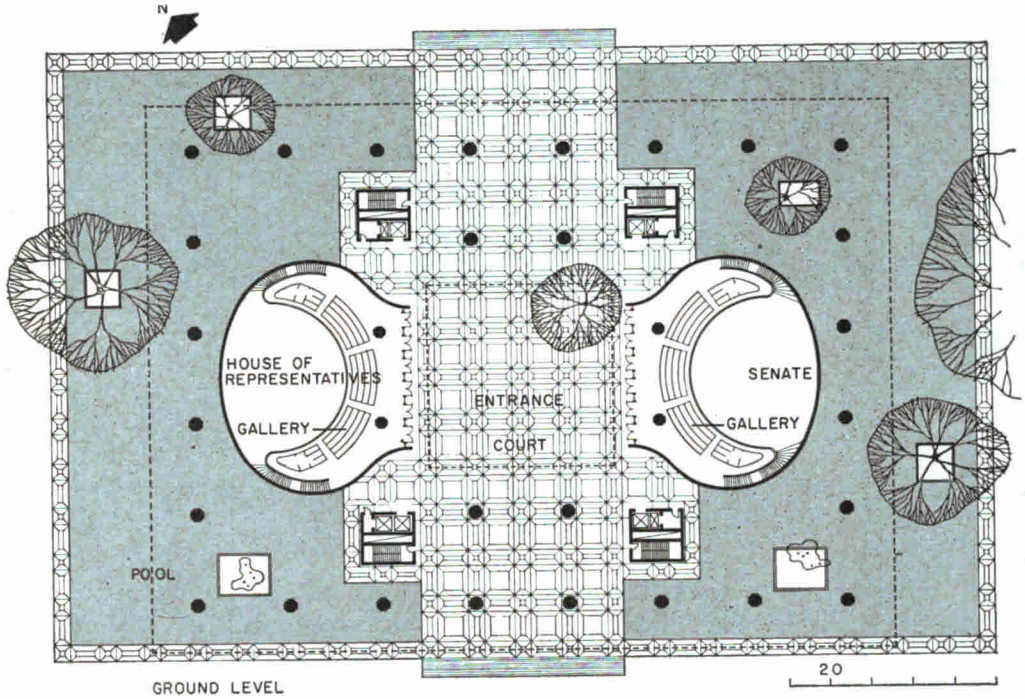
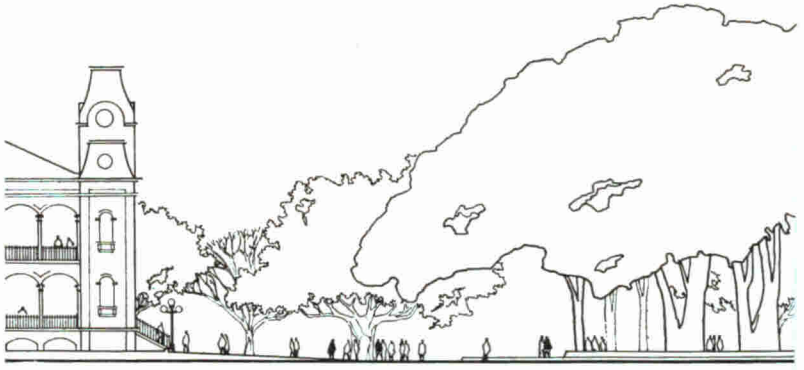


EXECUTIVE LEVEL



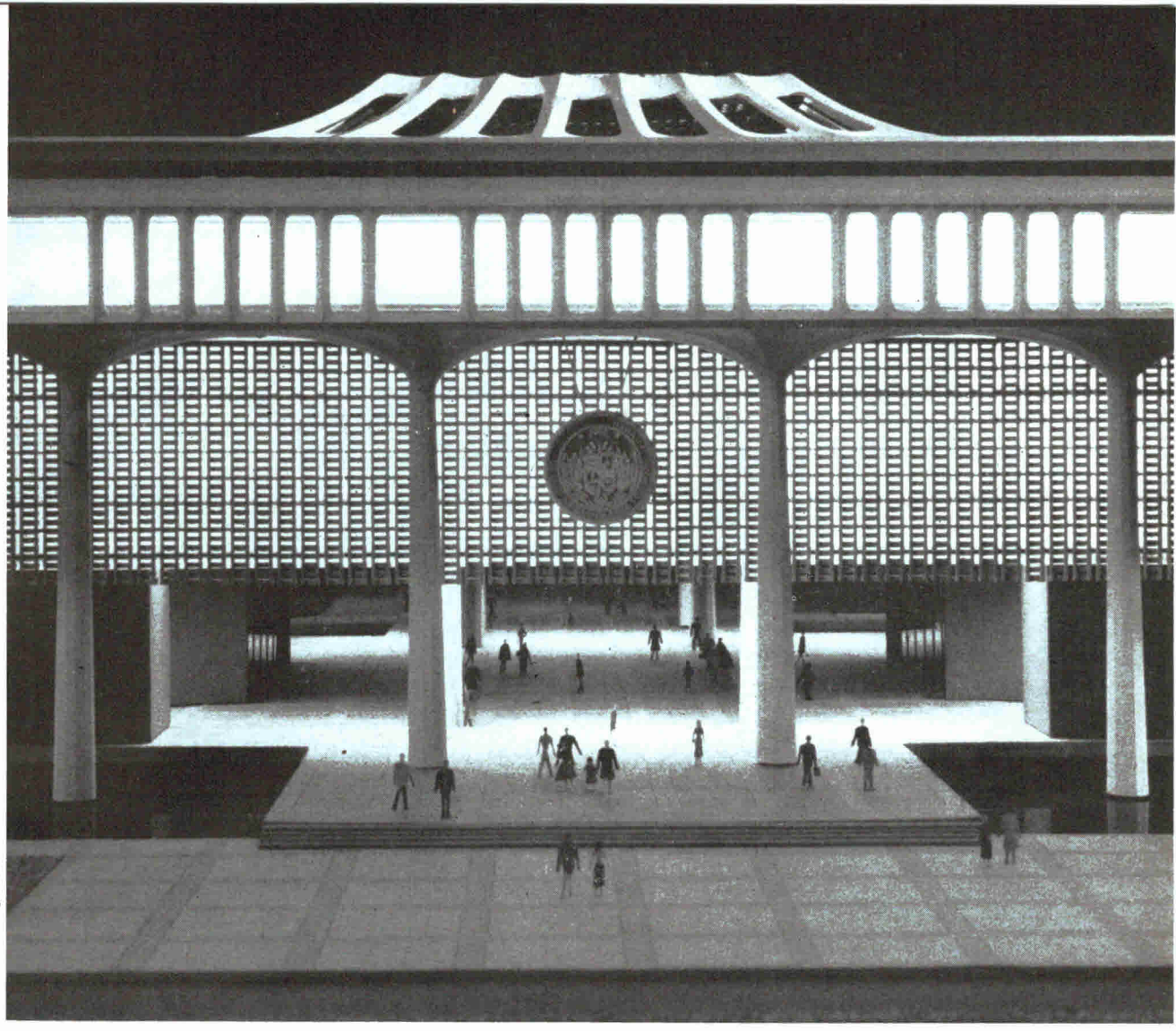


GROUND LEVEL

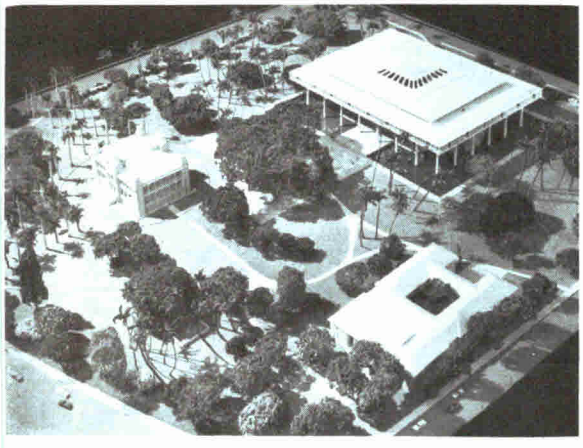


Hawaii State Capitol, Honolulu

Four factors particularly influenced the ground level plan: the Hawaiians' traditional easy relationship with their legislators which determined the location of the two Houses on either side of the great court, immediately accessible from the entrance; the colorful pageantry which attends the opening of each Legislature; the site in a park; and the climate



Gerald Ratto photos



A NEW CAPITOL FOR THE NEWEST STATE

Serene, elegant and distinctive, the design for the new Capitol of Hawaii reflects not only the history and culture of the Islands but the unaffected democracy of their people. The building's form, unique among capitols, is open and inviting; its crown, a truncated cone open to the sky—subtly suggesting Hawaii's volcanic origin—is a graceful interpretation of the traditional statehouse dome. The building itself stands in a reflecting pool, a pleasant architectural statement of the Fiftieth State's situation across the water. A great central court, open "mauka" (toward the mountains) and "makai" (toward the sea) and to the sky, is the unifying element in the building's design. This lanai leads directly into a handsome park and to the historic Iolani Palace, only royal palace in the United States and since 1893 Hawaii's Capitol, from which it is separated by a magnificent 75-ft high East Indian banyan tree whose spreading branches, like the arches of Iolani Palace, are echoed in the new Capitol. The Legislature is now studying the design and is expected to announce its decision shortly.

Hawaii State Capitol, Honolulu

ARCHITECTS AND ENGINEERS: *Belt, Lemmon and Lo*

ARCHITECTS AND PLANNING CONSULTANTS: *John Carl Warnecke and Associates*

Cyril W. Lemmon, architect in charge; Robert M. Belt, civil engineer; Walter K. Collins, city planner; Donald Lo, structural engineer; Frederick H. Kohloss, mechanical engineer. John Carl Warnecke, director of design; Lun Chan and Morton Rader, senior designers; John Foti, designer; Wm. Richard Armor, project architect

broadest basis. Our present casual way of solving problems of collaboration on large projects is simply to throw a few prominent architects together in the hope that five people will automatically produce more beauty than one. The result, as often as not, becomes an unrelated assemblage of individual architectural ideas, not an integrated whole of new and enriched value. It is obvious that we have to learn new and better ways of collaboration.

In my experience these call first of all for an unprejudiced state of mind and for the firm belief that common thought and action is a precondition for cultural growth. Starting on this basis, we must strive to acquire the methods, the vocabulary, the habits of collaboration with which most architects are unfamiliar. This is not easy to accomplish. It is one thing to condition an individual for cooperation by making him conform; it is another, altogether, to make him keep his identity within a group of equals while he is trying to find common ground with them. It is imperative, though, that we develop such a technique of collaboration to a high degree of refinement since it is our guaranty for the protection of the individual against becoming a mere number and, at the same time, for the development of related expression rather than of pretentious individualism.

There can be no doubt, of course, that the creative spark originates always with the individual, but while he works in close cooperation with others and is exposed to their stimulating and challenging critique, his own work matures more rapidly and never loses touch with the broader aspects which unite a team in a common effort.

Communication from person to person is at an all time low today in spite of, or because of, our tremendous technical means of communication, and most individuals are driven into shallow superficiality in all their relations with other people, including their own friends. But just as the airplane is no substitute for our legs, so personal contact between people of like interests cannot be replaced by the vast output of professional literature and information service because individual interpretation and exchange is still essential for our functioning as human beings. Our overextended receptive faculties need a respite so that greater concentration and intensification can take place, and I feel that a well balanced team can help achieve just that. As we cannot inform ourselves simultaneously in all directions, a member of a team benefits from the different interests and attitudes of the other members during their collaborative meetings. The technical, social and economic data, gathered individually and then presented to the others, reaches them already humanized by personal interpretation, and, since all members of a team are apt to add their own different reactions, the new information is more easily seen in its proper perspective and its potential value.

For the effectiveness of this kind of intimate teamwork, two preconditions are paramount: voluntariness, based on mutual respect and liking; and exercise of individual leadership and responsibility within the group. Without the first, collaboration is mere expediency; without the last, it loses artistic integrity. To safeguard design-coherence and impact, the right of making final decisions must therefore be left to the one member who happens to be in charge of a specific job, even though he has previously received support and criticism from other members.

Such principles of teamwork are easier explained than carried into practice, because we all still arrive on the scene with our old habits of trying to beat the other fellow to it. But I believe that a group of architects willing to give collaboration a chance, will be rewarded by seeing their effectiveness strengthened and their influence on public opinion broadened. All teams so organized, I trust, will eventually act as ferments in our drive for cultural integration.

Considering the reservoir of rich talent and the wealth of technical and financial resources available today, it would seem that this generation holds all the aces in the age-old game of creating architectural form symbols for the ideas by which a society lives. Only a magic catalyst seems to be needed to combine these forces and free them from isolation. I personally see this catalyst in the power of education: education to raise the expectations and demands a people make on their own form of living, education to waken and sharpen their latent capacities for creation and for cooperation. Creativity of the makers needs the response of all the users.

I am convinced that a surprising amount of individual whimsey, yes even aberration and downright ugliness, could be tolerated without causing serious harm if only the grand total design, the image a society should have of itself, would emerge clearly and unequivocally. What we admire in the achievements of city builders of the past is the fact that their work reveals so clearly the ultimate destination to which each individual feature was put as an organic part of the whole area. This was what made the city perform its functions well and gave the people a stimulating background for all their activities.

How else can the marvel of the Piazza San Marco, this arch example of perfection, be explained? Not the work of a single master like the Piazza San Pietro, we find instead that over a long period of growth a perfect balance was developed between the contributions of a number of architects, using many different materials and methods. They achieved this miracle because they never violated the main purpose of the general plan yet never forced uniformity of design. San Marco is an ideal illustration to my credo "unity in diversity," to the development of which, in our time, I can only hope to have made my personal contribution during a long life of search and discovery.

creative spirit, which is essentially one of non-conformist independent search. We must instill respect for it and create response to it on the broadest level, otherwise the common man stays below his potential and the uncommon man burns up his fireworks in isolation.

My concern with the problem of drawing out the potential artist and of providing him with a stimulating educational climate and a chance to acquire a perfect technique prompted me over 40 years ago to create the Bauhaus School of Design. In opposition to the then prevailing trend of bringing up a student of design on the subjective recipes of his master, we tried to put him on a solid foundation by giving him objective principles of universal validity, derived from the laws of nature and the psychology of man. From this basis he was expected to develop his own individual design approach, independent of the personal one of his teacher.

This novel method of education in design has been widely misunderstood and misinterpreted. The present generation is inclined to think of it as a rigid stylistic dogma of yesterday whose usefulness has come to an end, because its ideological and technical premises are now outdated. This view confuses a method of approach with the practical results obtained by it at a particular period of its application. The Bauhaus was not concerned with the formulation of timebound, stylistic concepts, and its technical methods were not ends in themselves. It wanted to show how a multitude of individuals, willing to work concertedly but without losing their identity, could evolve a kinship of expression in their response to the challenges of the day. It wanted to give a basic demonstration on how to maintain unity in diversity, and it did this with the materials, techniques and form concepts germane to its time.

It is its method of approach that was revolutionary, and I have not found yet any new system of education for design which puts the Bauhaus idea out of course. In fact, the present disenchantment with the doubtful results obtained from simply imitating highly personal design methods of this or that master without adding to their substance should give renewed emphasis to its principles.

It would be most desirable if the initial work done by the Bauhaus were continued and expanded, so that we would be able to draw on an ever-increasing common fund of objective knowledge, teachable to all age groups and furnishing the much needed vocabulary with which individuals are free to compose their personal design poetry. If the capacity to focus and crystallize the tendencies of a period becomes dim, as it has in our time, the necessity of intensifying our efforts at coherence becomes ever more important. There are some vital centers in this country where such work is pursued with dedication, but their influence is still limited, and it is hard to find creative architects and artists who want to take on teaching positions besides their other work, because public opinion regards teaching as a mere backwater compared to the excitement and rewards of practical work. That the two must be combined if a healthy climate for the growing generation is to evolve remains an applauded theory rather than an actual accomplishment.

I remember an experience I had myself years ago when, on the occasion of my 70th birthday, *Time* magazine commented on my career. After coming to this country, they said, I had been "content to teach only," as if this were, in itself, a minor occupation as compared to that of a practicing architect. Apart from the fact that the paper was misinformed—I had never given up my practice—it brought home to me again the realization that the profession of the teacher is looked upon in this country as a kind of refuge for those visionaries who cannot hold their own in the world of action and reality. Though admittedly there has been a shift in this view lately, it is still much too firmly established to become uprooted overnight. It remains a tremendous handicap for those who realize the importance of combining practice and teaching and want to make their contribution in both fields.

What, now, can be done by the individual practicing architect to promote a greater measure of cooperation between those groups who contribute to the development of our visible world? In spite of our partiality to "Togetherness," this fashionable trend has accomplished little in our field, since it lacks a distinct purpose, a discipline, a working method of its own. All these must be found before we get more and more lost to each other.

I think we all agree that a relatedness of expression and a consolidation of trends cannot be consciously organized in a democracy, but springs from spontaneous group consciousness, from collective intuition which brings our pragmatic requests and our spiritual desires into interplay. I have tried for a long time, therefore, to give more incentive to such a state of mind by developing a spirit of voluntary teamwork among groups of architects. But my idea has become almost suspect since so many of my colleagues are still wedded to the 19th century idea that individual genius can only work in splendid isolation. Just as our profession 50 years ago closed its eyes to the fact that the machine had irrefutably entered the building process, so now it is trying to cling to the conception of the architect as a self-sufficient, independent operator, who, with the help of a good staff and competent engineers, can solve any problem, and keep his artistic integrity intact. This, in my view, is an isolationist attitude which will be unable to stem the tide of uncontrolled disorder engulfing our living spaces. It runs counter to the concept of Total Architecture, which is concerned with the whole of our environmental development and demands collaboration on the

who are aware of their obligations to environmental integration. Here again we see that the forces which cause confusion and chaos originate from the excessive infatuation with the rewards of salesmanship which dominates modern life and which we can influence only in the role of human beings and democratic citizens, but hardly as professionals.

I was somewhat startled, therefore, by a sentence in the recent A.I.A. report on the state of the profession: "The total environment produced by architecture in the next forty years can become greater than the Golden Age of Greece, surpass the glories of Rome and outshine the magnificence of Renaissance. This is possible provided the architect assumes again his historic role as Masterbuilder."

How does this vision compare to the realities of the situation at hand? Don't we need to remember that such highpoints in history came about only when the skill and artistic inspiration of the architect and the artist were carried into action by the clear and unquestioned authority of those who felt themselves to be the rightful representatives of a whole people? The Greek pinnacle was reached by the courage and foresight of their leader Pericles who pulled together all financial and artistic resources of the whole nation and its allies, including the military budget, to force the erection of the Parthenon. The Romans, spreading this Mediterranean heritage over the whole of the Roman empire, set in their buildings monuments to the centralized power of their leaders. The Renaissance, after giving birth to fierce political rivalry, harnessed all secular and clerical powers, all craftsmen and artists for the glorification of the competing principalities. Wherever we look in history, we find that the rulers took no chances with the individual tastes and inclinations of the populace, but imposed strict patterns of behavior as well as a hierarchy of religious, civic and economic standards which dominated architectural and artistic expression. In Japan this even covered the proportionate size of all domestic architecture, which was strictly regulated according to birth, rank and occupation of the owner.

All these systems have produced magnificent results in one period or another, but they have no roots any more in our modern world. Even if some authoritative remnants are still around in the form of large corporations and institutions, this cannot conceal the fact that the architect and artist of the 20th century has to face a completely new client and patron: the average citizen or his representative, whose stature, opinion and influence are uncertain and difficult to define. As we have seen, this citizen, as of now, is not at all in the habit of extending his vision beyond his immediate business concerns, because we have neglected to educate him for his role of cultural arbiter. He repays this neglect by running loose, only here and there restricted by social ambitions from recklessly following his commercial interests. Though he is quite aware of the restrictions the law puts on his building activities, he is almost totally unaware of his potentialities to contribute something positive, socially and culturally, to the actual development, change and improvement of his environment. So far we are only trying to prevent him, by zoning laws, from committing the worst abuse, but I feel that unless we take the positive step of trying to mould him into the man of responsibility he must become, there will be little chance for the "masterbuilder" ever to assume his comprehensive historic role as creator of cities again.

Our modern society is still on trial where cultural integration is concerned. This certainly cannot be accomplished by handing out authoritative beauty formulas to an uncomprehending public, untrained to see, to perceive, to discriminate. A society such as ours, which has conferred equal privileges on everybody, will have to acknowledge its duty to activate the general responsiveness to spiritual and aesthetic values, to intensify the development of everybody's imaginative faculties. Only this can create the basis from which eventually the creative act of the artist can rise, not as an isolated phenomenon, ignored and rejected by the crowd, but firmly embedded in a network of public response and understanding.

The only active influence which our society can take towards such a goal would be to see to it that our educational system for the next generation will develop in each child, from the beginning, a perceptive awareness which intensifies his sense of form. Seeing more, he will comprehend more of what he sees and will learn to understand the positive and negative factors which influence the environment he finds himself in. Our present methods of education, which put a premium on accumulation of knowledge, have rarely reached out to include a training in creative habits of observing, seeing and shaping our surroundings. The apathy we meet in the adult citizen, who entertains only vague notions of wishing to get away from it all, can certainly be traced to this early failure of arousing his active interest in the improvement of his living area. Children should be introduced right from the start to the potentialities of their environment, to the physical and psychological laws that govern the visual world and to the supreme enjoyment that comes from participating in the creative process of giving form to one's living space. Such experience, if continued in depth throughout the whole of the educational cycle, will never be forgotten and will prepare the adult to continue taking an informed interest in what happens around him.

Recent research at the University of Chicago has shown that "the high I. Q. children seek out the safety and security of the 'known,' while the high creative children seem to enjoy the risk and uncertainty of the 'unknown'." We should strengthen this

sets of components which are apt to influence and direct his work. The first consists of the human trends which gradually move a society towards new patterns of living; the second, of the contemporary technical means and the individual choices of form expression which help these trends to take shape. It is imperative never to lose sight of the first while getting embroiled with the second, because the architect is otherwise in danger of losing himself in the design of technical stunts or in personal mannerisms.

The potentialities of the new technical means fascinated my generation just as much as it does the architect of today, but at the beginning of our movement stood an idea, not an obsession with specific forms and techniques. The activities of life itself were under scrutiny. How to dwell, how to work, move, relax, how to create a life-giving environment for our changed society—this was what occupied our minds. Of course we went about the realization of such aims in very different ways, but I do not see why this diversity should by itself cause confusion, except to those who naively believe that there is always only one perfect answer to a problem. There are of course many technical and form approaches to the same task, and any one of them may be successful if they are well suited to the purpose of the building, to the temperament of the architect, and if they are used with discrimination in their given environment.

The great technical inventions and social developments of the last hundred years, which set off such a stream of changes in our way of living and producing, gradually established new habits, new standards, new preferences which have come to represent the unifying trends in today's general picture. Beginning with the discovery of the Bessemer steel and of Monier's reinforced concrete which freed architecture of the supporting, solid wall and presented it with virtually limitless possibilities for flexible planning, there has been a steady movement toward a less rigid, less encumbered style of living and building. The skeleton structures enabled us to introduce the large window opening and the marvel of the glass curtain wall—today misused and therefore discredited—which transformed the rigid, compartmental character of buildings into a transparent "fluid" one. This, in turn, gave birth to a totally new dynamic indoor-outdoor relationship which has enriched and stimulated architectural design beyond measure. Pressure for ever more mobility and flexibility encouraged the evolution of industrial prefabrication methods which have, by now, taken over a large part of our building production, promising ever increasing precision and simplification of the building process for the future.

The common characteristics which clearly emerged from all these innovations are:

an increase in flexibility and mobility;

a new indoor-outdoor relationship;

a bolder and lighter, less earthbound architectural appearance.

These are the constituent elements of today's architectural imagery and an architect can disregard them only at his peril. If related to a background of meaningful planning, they would reveal diversity, not chaos.

I cannot accept, therefore, the verdict of the critics that the architectural profession as such is to blame for the disjointed pattern of our cities and for the formless urban sprawl that creeps over our countryside. As we well know, the architect and planner has almost never received a mandate from the people to draw up the best possible framework for a desirable way of life. All he usually gets is an individual commission for a limited objective from a client who wants to make his bid for a place in the sun. It is the people as a whole who have stopped thinking of what would constitute a better frame of life for them and who have, instead, learned to sell themselves short to a system of rapid turnover and minor creature comforts. It is the lack of a distinct and compelling goal, rather than bad intentions of individuals, that so often ruins attempts of a more comprehensive character to general planning, and sacrifices them bit by bit to the conventional quick profit motive.

And this is, of course, where we all come in. In our role as citizens we all share in the general unwillingness to live up to our best potential, in the lack of dedication to our acknowledged principles, in our lack of discipline towards the lures of complacency and of material abundance.

Julian Huxley, the eminent biologist, warned recently that "sooner rather than later we must get away from a system based on artificially increasing the number of human wants and set about constructing one aimed at the qualitative satisfaction of real human needs, spiritual as well as material and physiological. This means abandoning the pernicious habit of evaluating every human project solely in terms of its utility. . . ."

Our cunning sales psychology, in its unscrupulous misuse of our language, has brought about such a distortion of truth, such a dissolution of decency and morality, not to speak of its planned wastefulness, that it is high time for the citizen to take to the barricades against this massive onslaught against the unwary. Naturally, the all pervading sales mentality has also had its detrimental effect on the architecture of our time. Relentless advertising pressure for everchanging, sensational design has discouraged any tendency to create a visually integrated environment because it tacitly expects the designer to be different at all cost for competition's sake. The effect is disruptive and quite contrary to the desirable diversity of design which would result naturally from the work of different personalities

"Whether a conscientious and dedicated architect of today solves his personal design problem in this or that way is, unfortunately, less decisive for the general looks of our surroundings than we are fond of believing. His contribution is simply swallowed up in the featureless growth that covers the acres of our expanding cities."

"How else can the marvel of the Piazza San Marco, this arch example of perfection be explained? Not the work of a single master . . . we find instead that over a long period of growth a perfect balance was developed between the contributions of a number of architects . . . San Marco is an ideal illustration to my credo 'unity in diversity' . . ."

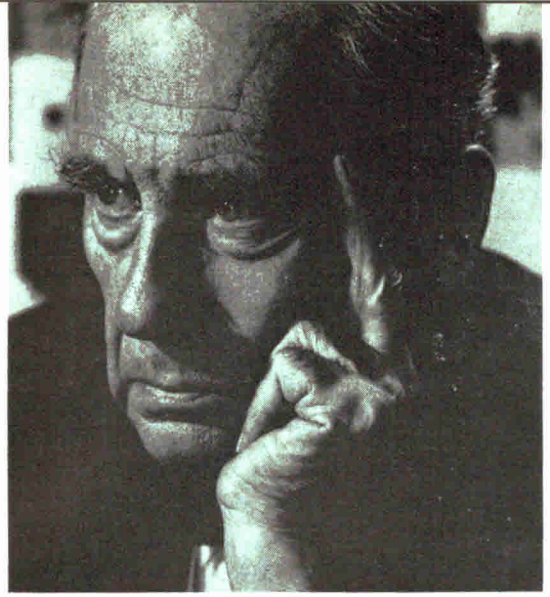
in which chance is supreme." Well, those of us who welcome "chaoticism" may take comfort from the fact that the ancient Greeks considered Chaos to be the oldest god of all times.

Personally I do not feel too fearful of this god, who returns periodically to stir up things on earth, because never in my life-span has the architectural mission looked any less dangerous, less difficult and chaotic to me as it does now. It is true, in the beginning of the struggle the battle lines were drawn more clearly, but the fight was essentially the same: the coming to terms of a romantically oriented, jealously individualized architectural profession with the realities of the 20th century. It seems to me that the specter of confusion is haunting mostly those who, for a short while, thought they had won all the battles and found all the answers; those who have come by their inheritance too easily, who have forgotten the great goals set at the beginning and find now their equilibrium upset by new developments in the social and technical field.

But let me examine the meaning of the word "chaos" more closely in all its aspects.

With our tremendously accelerated communication system, it has become quite easy today for people in all corners of the world to reiterate the most advanced ideas verbally while being actually unable to catch up with themselves in this respect emotionally. Therefore we see all around us an astonishing discrepancy between thought and action. Our verbal glibness often obscures the real obstacles in our path which cannot be sidestepped by brilliant and diverting oratory. It also creates too rosy an impression of the actual influence architects are permitted to take in the shaping of our larger living spaces. Whether a conscientious and dedicated architect of today resolves his personal design problem in this or that way is, unfortunately, less decisive for the general looks of our surroundings than we are fond of believing. His contribution is simply swallowed up in the featureless growth that covers the acres of our expanding cities. In the last 20 years the U.S. has seen the emergence of an unusual number of gifted architects, who have managed to spread interest and admiration among designers in other countries. But when the curious arrived at our shores to see the new creations for themselves they were overwhelmed by the increase in general ugliness that hit their eyes before they had even a chance to find the objects of their interest in the vast, amorphous display. It is here where chaos reigns supreme; it is the absence of organic coherence in the total picture which causes the disappointment, and not the dilemma between different individual approaches to design.

Having been in the cross-currents of the architectural development for over half a century now, I find that an architect who wants to help mould the evolutionary forces of his time, instead of letting himself be overcome by them, must distinguish between two



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True Architectural Goals Yet to be Realized

by Walter Gropius

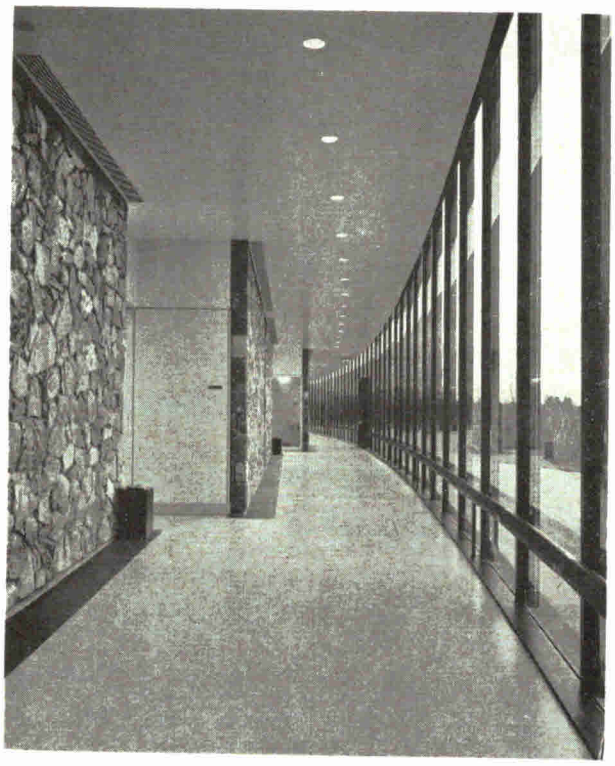
How can the architect strengthen his influence on the shape of our present and future environment? This is the theme developed in the following complete text of a recent address made by Dr. Walter Gropius upon receiving the honorary degree of Doctor of Humane Letters from Columbia University, as part of the "Four Great Makers" of contemporary architecture series sponsored by the Columbia School of Architecture.

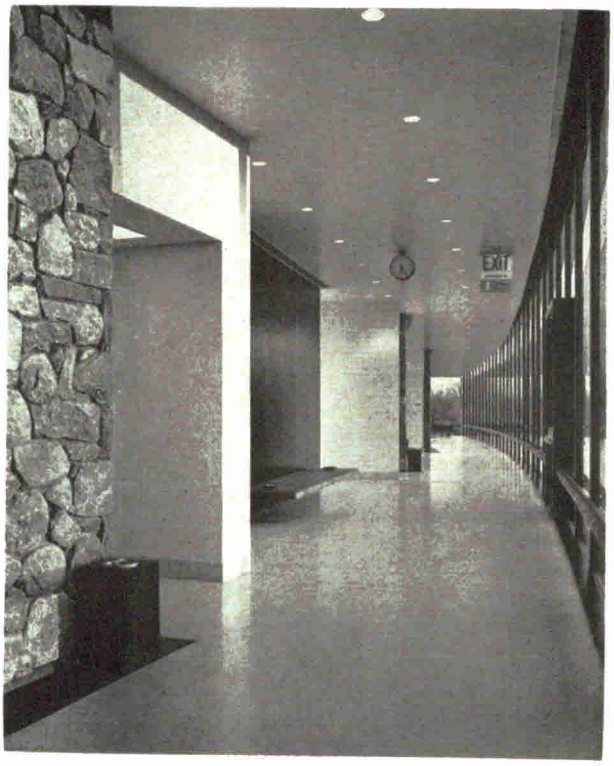
Tonight I should like to talk about the ambiguous position of the architect in his relation to society and about his double role as a citizen and a professional. I want to point out why he, armed to the teeth with technical intricacies, design theories, and philosophical arguments, so rarely succeeds in pulling his weight in the realm of public domain where decisions are made which vitally affect his interests. Since popular opinion holds him responsible for the condition our cities, towns and our countryside have gotten into, I would like to examine where exactly he stands in this respect and which avenues of action are open to him to broaden his influence.

I would like to add also my reactions to certain "rumbles" in the architectural profession which have interested me as much as they have baffled me. Since architects possess in general a sensitive, built-in thermometer which registers the crises and doubts, enthusiasms and fancies of their contemporaries, we should listen to the notes of misgiving, warning or satisfaction emerging from their ranks.

All reports, made lately by architects and educators on the state of architecture in the sixties, were dominated by two words: "confusion" and "chaos." It seems to them that the inherent tendencies of an architecture of the 20th century as they were born 50 years or so ago and appeared then as a deeply felt, indivisible entity to their initiators, have been exploded into so many fractions that it becomes difficult to draw them together to coherence again. Technical innovations, first greeted as delightful new means-to-an-end, were seized separately and set against each other as ends in themselves; personal methods of approach were hardened into hostile dogmas; a new awareness of our relationship to the past was distorted into a revivalist spirit; our financial affluence was mistaken for a free ticket into social irresponsibility and art-for-art's-sake mentality; our young people felt bewildered rather than inspired by the wealth of means at their disposal. They were either trying to head for safe corners with limited objectives or succumbing to a frivolous application of changing patterns of "styling" or "mood" architecture. In short, we are supposed to have lost direction, confidence, reverence—and everything goes.

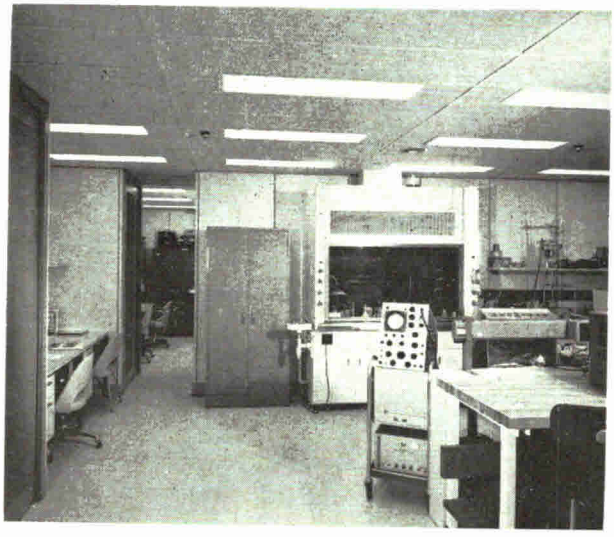
When trying to take a stand, I would like first of all to extricate myself from the verbal jungle we have gotten ourselves into. What, actually is chaos? One of Webster's definitions is: "A state of things

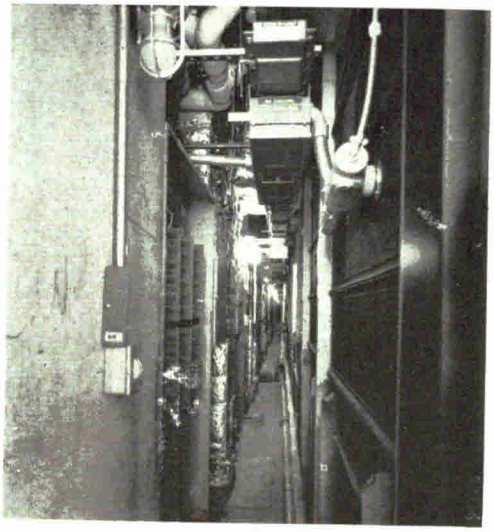


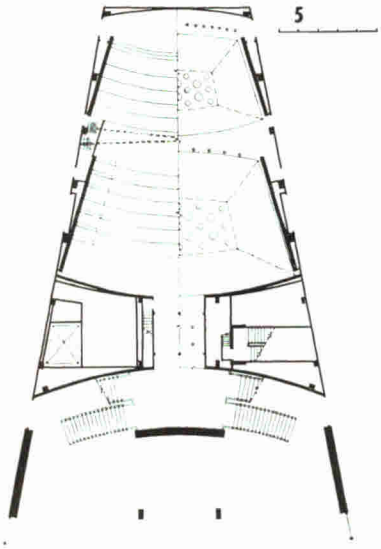


IBM Research Center: TYPICAL INTERIORS

The two top photos show the curving, glass-enclosed north corridor as it swings around its arc to terminate in a glass return. At left, a typical office, showing the modular storage wall and its 4-ft units. These walls progress through a range of muted color harmony from end to end—green to blue, yellow to orange, etc.—so that any pattern of partitioning against them will reveal floor to ceiling blocks in harmonious combination. Bottom left, a typical lab; below, a view into one of the 4-ft utilities tunnels that serves 10 different gases and liquids to the labs, and contains also the exhaust risers from the hoods

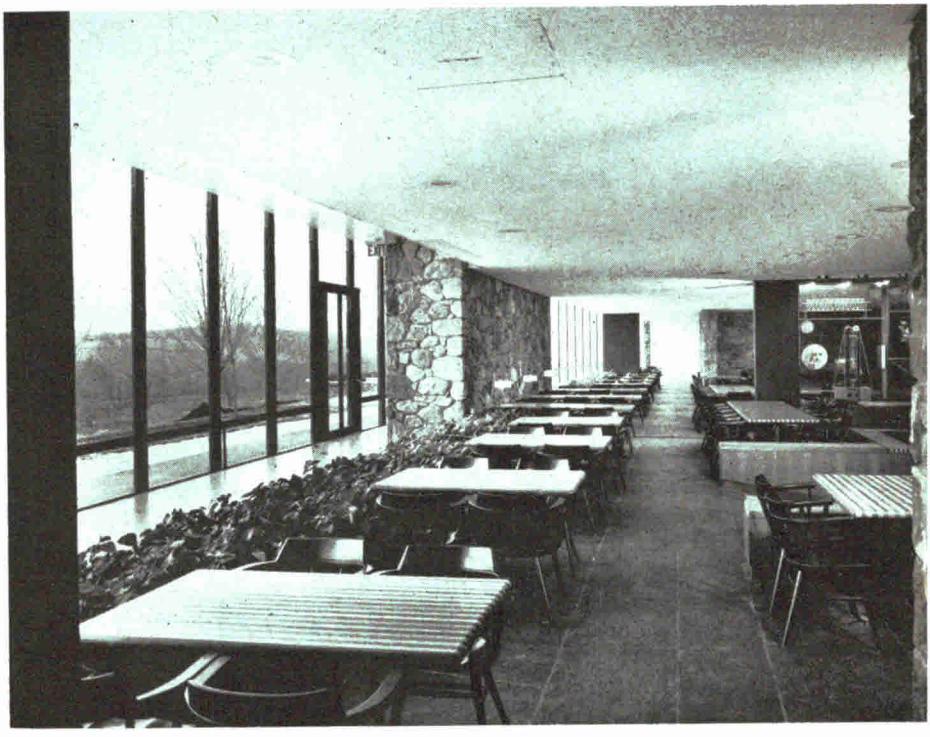






AUDITORIUM

The 270 seat auditorium can be divided in the middle by means of folding teakwood doors. Each part has its separate canopy-like white plaster ceiling, which contains lighting and ventilation units. The stage wall is flush-paneled in teakwood; the rear wall covered with vertical teakwood strips —serving for decoration and sound control

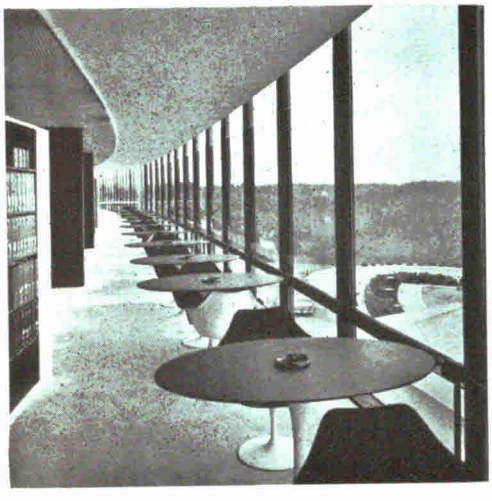


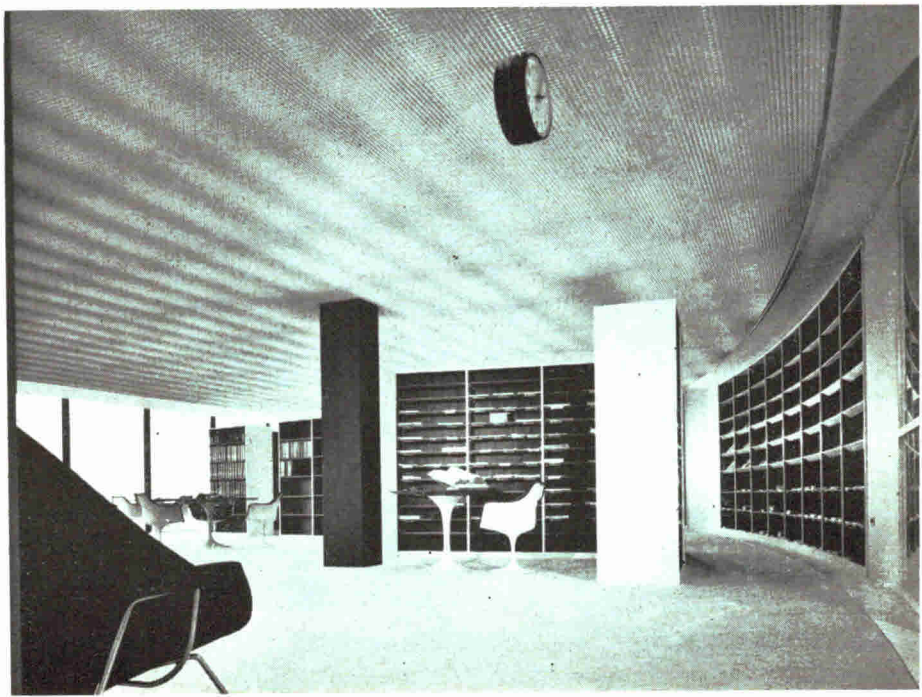
CAFETERIA

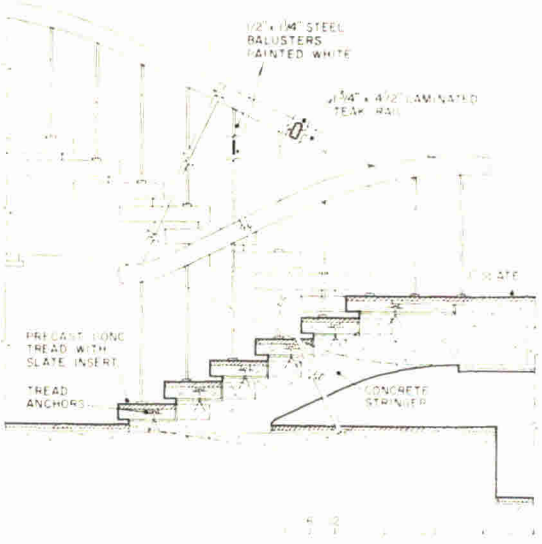
The slate-floored cafeteria is separated from the glass-walled trunk corridor by occasional stone walls, with low planting boxes extending continuously between. The tables are of laminated teakwood and white maple in natural finish. Lateral dividers house a portion of IBM's famous collection of scale models of Leonardo da Vinci's inventions

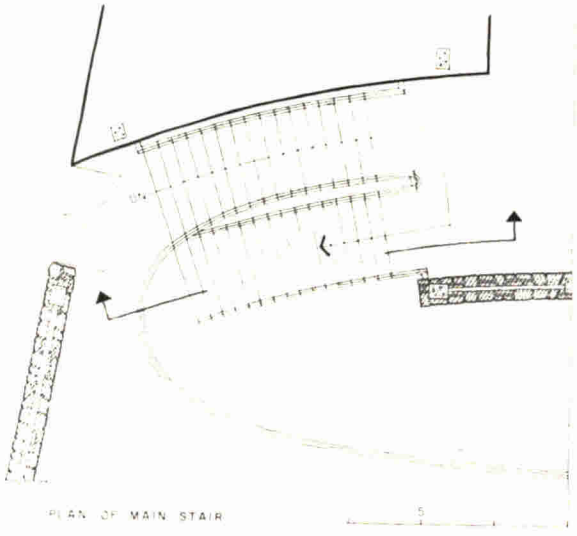
LIBRARY

The top floor library and reading room (two lower photos) looks out over a spectacular view of the valley to the north. Tables are of the Saarinen pedestal type in white plastic; walls are of white plaster; the floor is carpeted in beige; the ceiling is of white perforated metal for sound control. Tabletops and shelving are of natural teakwood









IBM Research Center: MAIN STAIR AND LOBBY

The handsome, elliptical main stairway forms the rear of the lobby, and curves about a pylon of fieldstone—which serves also as a backdrop for the 10 ft reception desk of black slate, facing the entrance doors and marquee. The lobby has a floor of black Buckingham slate, side walls of fieldstone, rear wall and ceiling of white plaster.

The stair is supported on concrete stringers; has handrail of laminated teakwood in natural finish; and uprights of bar steel painted white. The combination of natural wood, white, black slate—together with the muted grays, rusts, pinks and beige tones of the stone—creates a total effect which is at once properly restrained and dignified, yet full of visual interest.

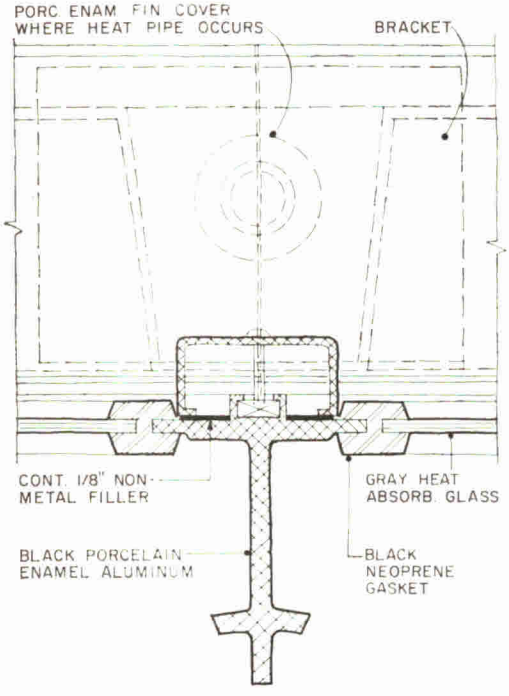
The generous stair landing lies midway between the first and terrace floors, giving access to the rear of the auditorium

IBM Research Center: THE GLASS WALL

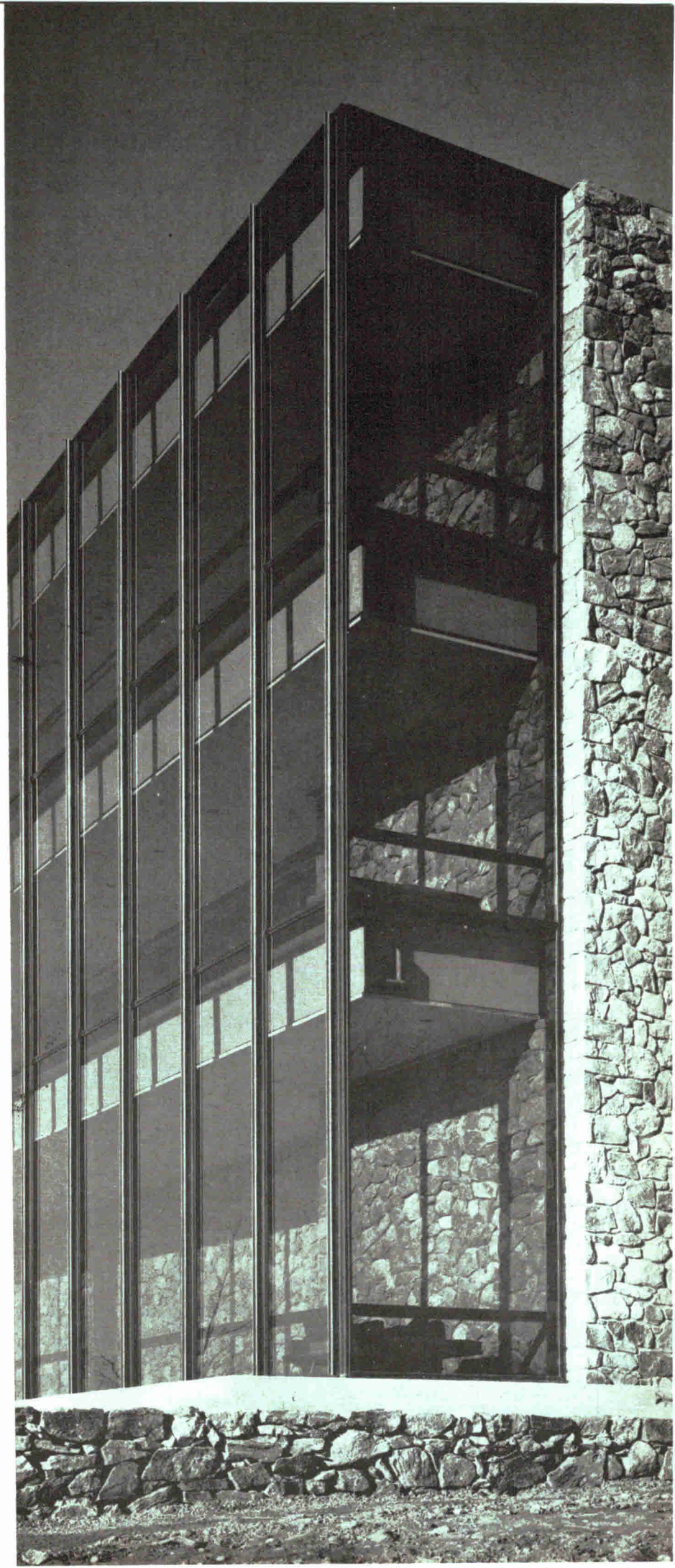
The spectacular glass wall—three stories high and 1090 ft long—is terminated neatly by returns against the stone end-walls, which fold inside the building at this juncture to give a fine sense of interior-exterior wholeness. The grey heat-absorbing glass is held in place by black neoprene gaskets fitted over the extending "ears" of mullions and muntins (see details), which are of extruded aluminum with a matte black porcelain enamel finish. The mullions (see large scale detail below) are all black except for the two outer surfaces of the extended "T" portion, which are bright aluminum. These shiny pencil lines contrast vividly against the black; add sparkle and a note of refinement to the façade.

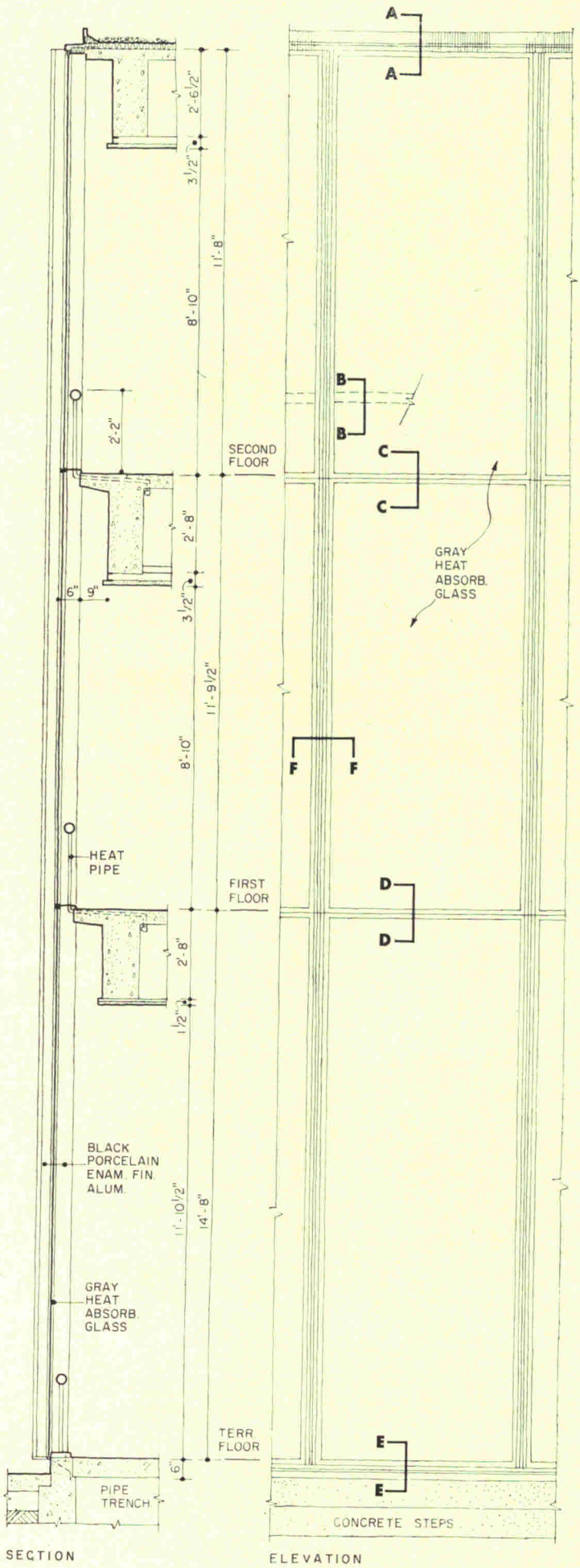
Secondary peripheral heating for the glass is handled in an unusual way, as reference to detail B-B on the left page will show. A continuous horizontal run of circular, fin-tube convection units is placed at sill height for each of the three floors, and is protected by a tubular cover of perforated aluminum, porcelain enameled black to match the mullions and muntins.

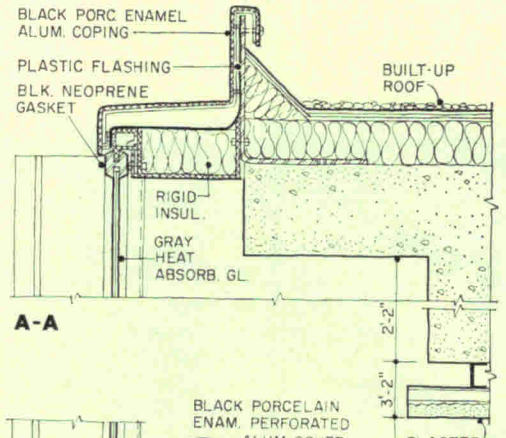
The spandrel beams are set back 15 in. from the glass, and the columns even further—just beyond the line of the aisle—with the result that the outer wall appears as a delicate, web-like integument in sharp contrast to the massiveness of the fieldstone

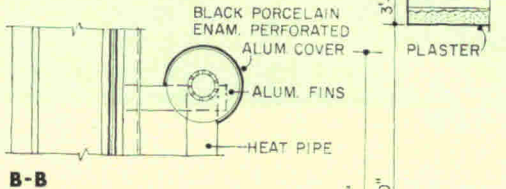


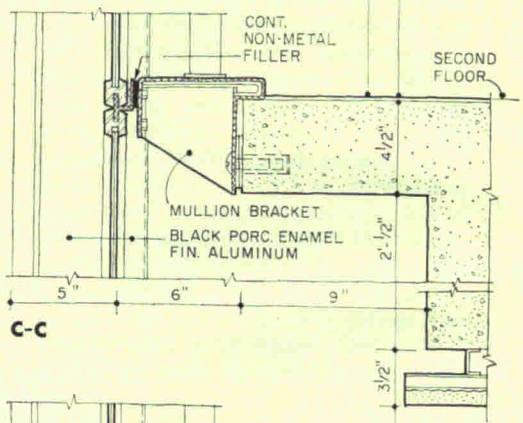
F-F, TYPICAL MULLION

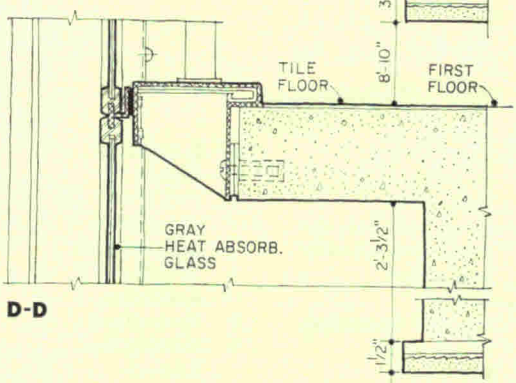


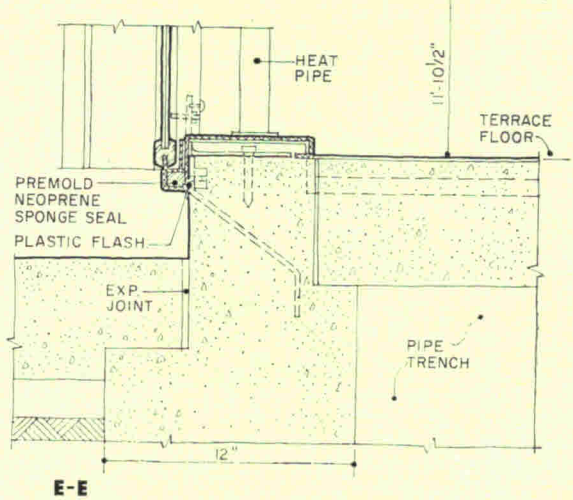

A
A
B
B
C
C
D
D
E
E
F
F
2'-6½"
3½"
11'-8"
8'-10"
2'-2"
SECOND FLOOR
2'-8"
3½"
6"
9"
GRAY HEAT ABSORB. GLASS
11'-9½"
8'-10"
HEAT PIPE
FIRST FLOOR
2'-8"
1½"
BLACK PORCELAIN ENAM. FIN. ALUM.
11'-10½"
14'-8"
GRAY HEAT ABSORB. GLASS
TERR. FLOOR
6"
PIPE TRENCH
CONCRETE STEPS
SECTION
ELEVATION

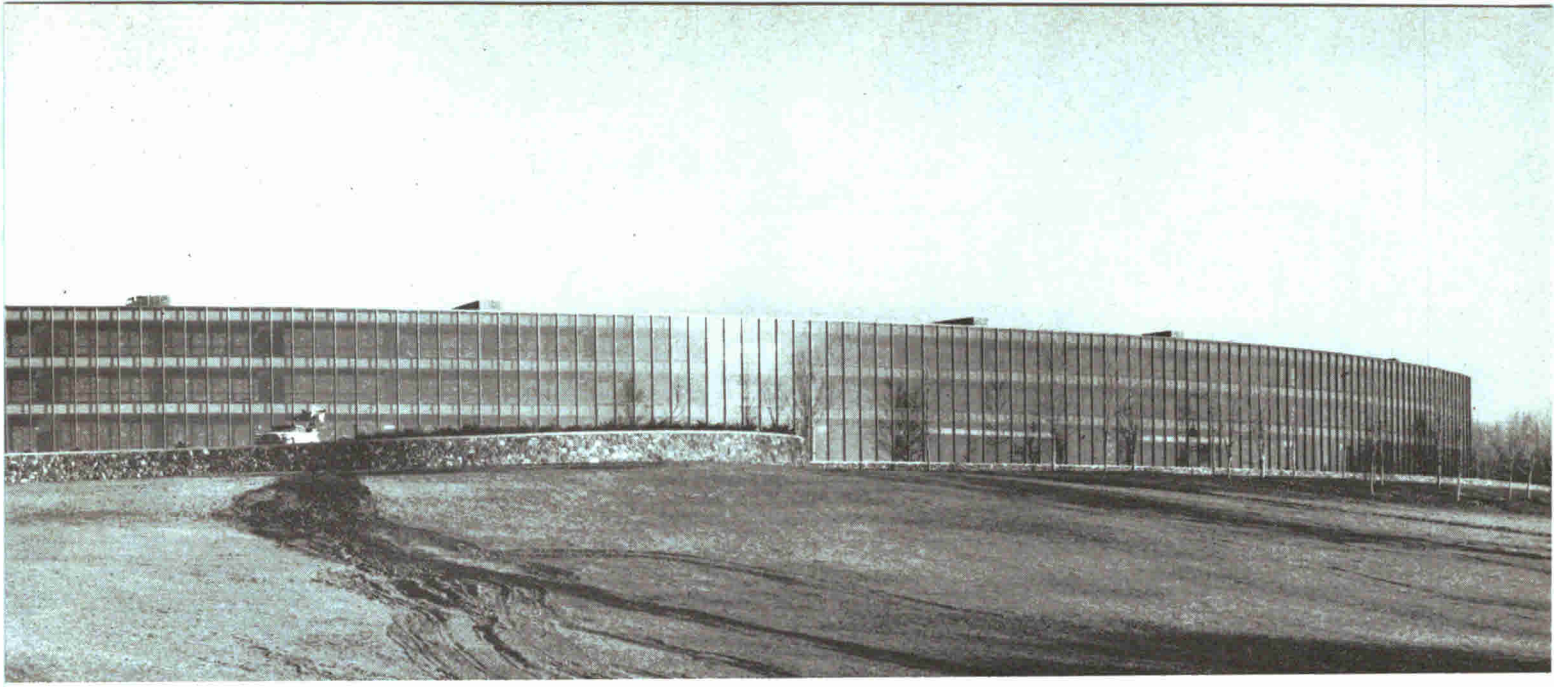

BLACK PORC. ENAMEL ALUM. COPING
PLASTIC FLASHING
BLK. NEOPRENE GASKET
BUILT-UP ROOF
RIGID INSUL.
GRAY HEAT ABSORB. GL.
A-A
2'-2"
3'-2"
PLASTER


BLACK PORCELAIN ENAM. PERFORATED ALUM. COVER
ALUM. FINS
HEAT PIPE
B-B

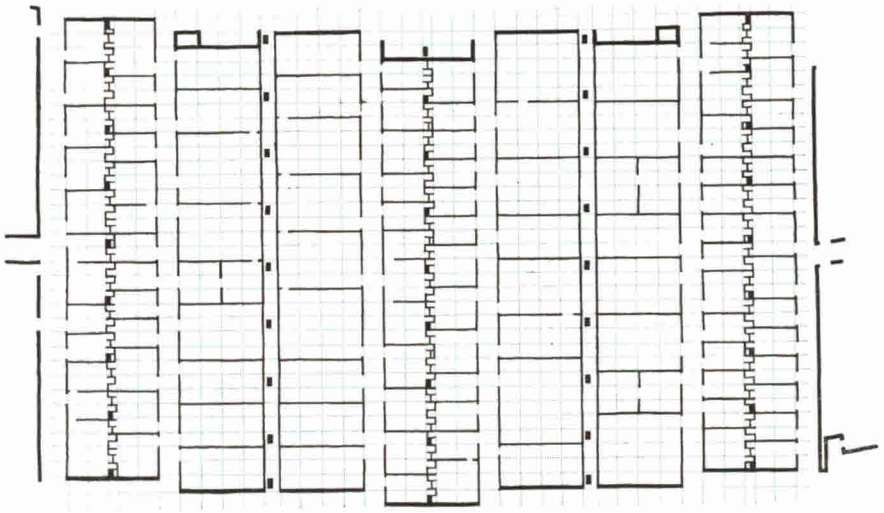

CONT. NON-METAL FILLER
SECOND FLOOR
2'-2"
8'-10"
4½"
MULLION BRACKET
BLACK PORC. ENAMEL FIN. ALUMINUM
2'-½"
5"
6"
9"
C-C
3½"


TILE FLOOR
8'-10"
FIRST FLOOR
GRAY HEAT ABSORB. GLASS
2'-3½"
D-D
1½"

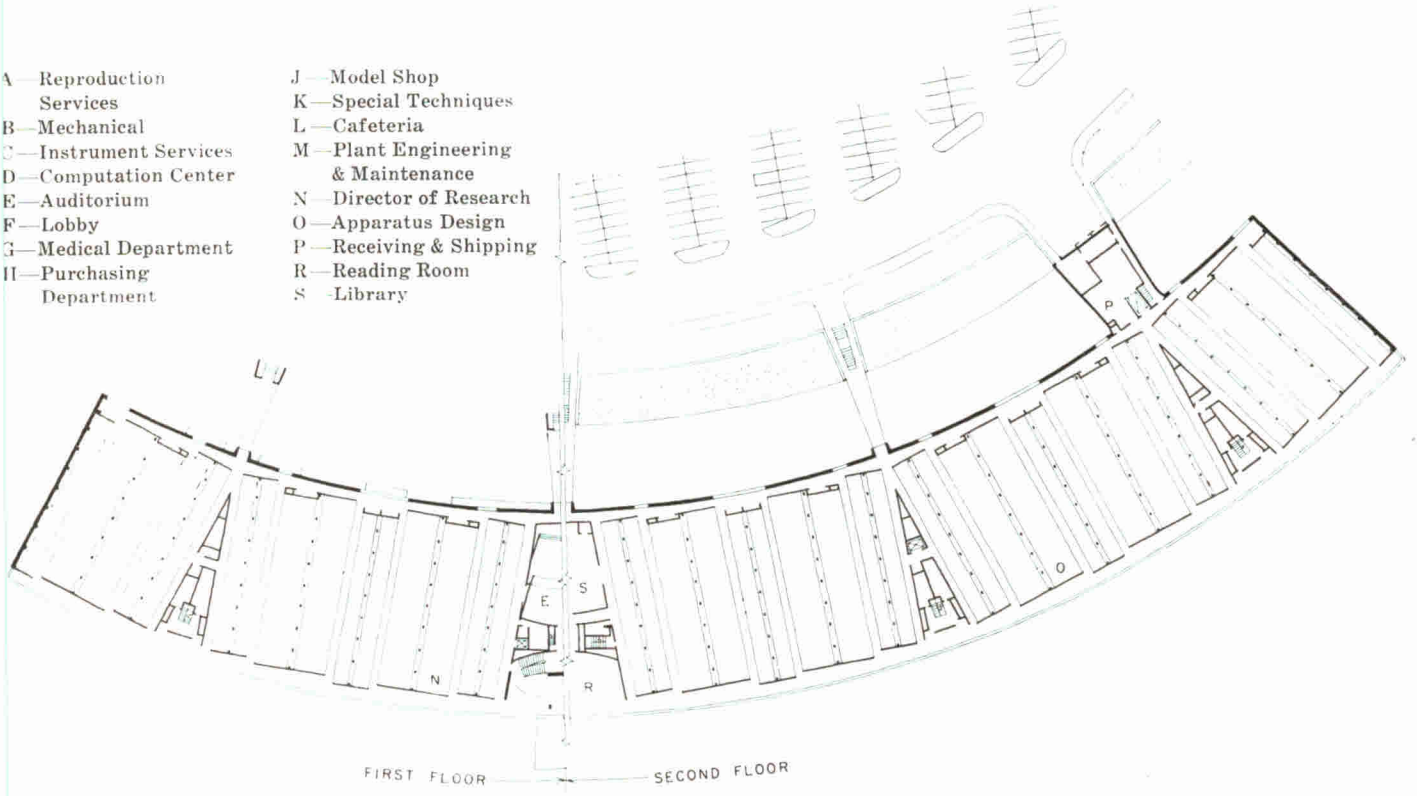

HEAT PIPE
11'-10½"
TERRACE FLOOR
PREMOLD NEOPRENE SPONGE SEAL
PLASTIC FLASH
EXP. JOINT
PIPE TRENCH
12"
E-E

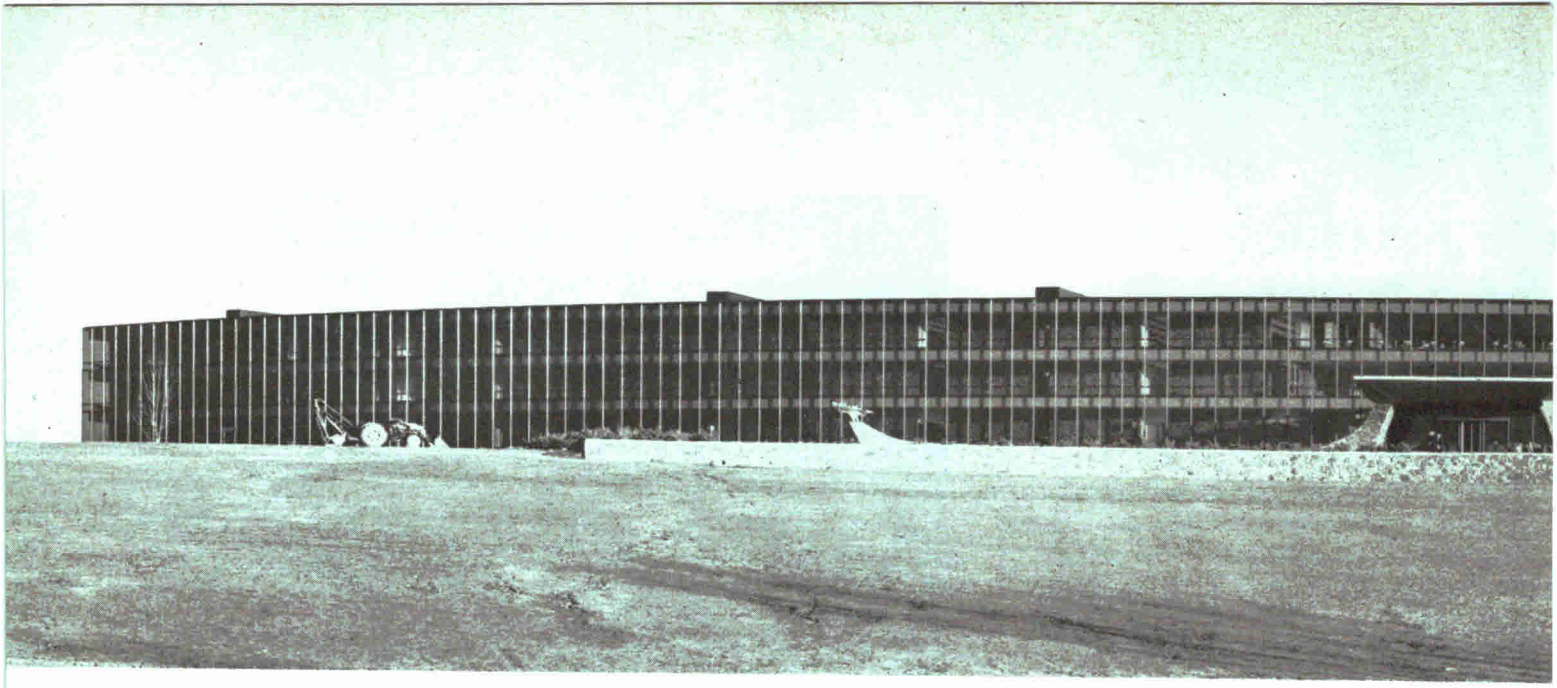


All labs and offices are planned on a 4 by 6 ft modular grid, and can be readily changed about. The movable partitions —designed by Saarinen—consist of several types of wall units, doors, etc., which are assembled by means of a 4-way locking metal spline. Rooms can range from an 8 by 12 ft office for one man to a laboratory 128 ft long. Labs are banked back to back against a 4-ft wide service and utilities tunnel; offices are banked back to back against a two-way, architect-designed storage wall 2-ft 6-in. wide, composed of interchangeable filing and storage elements



A—Reproduction Services
B—Mechanical
C—Instrument Services
D—Computation Center
E—Auditorium
F—Lobby
G—Medical Department
H—Purchasing Department
J—Model Shop
K—Special Techniques
L—Cafeteria
M—Plant Engineering & Maintenance
N—Director of Research
O—Apparatus Design
P—Receiving & Shipping
R—Reading Room
S—Library

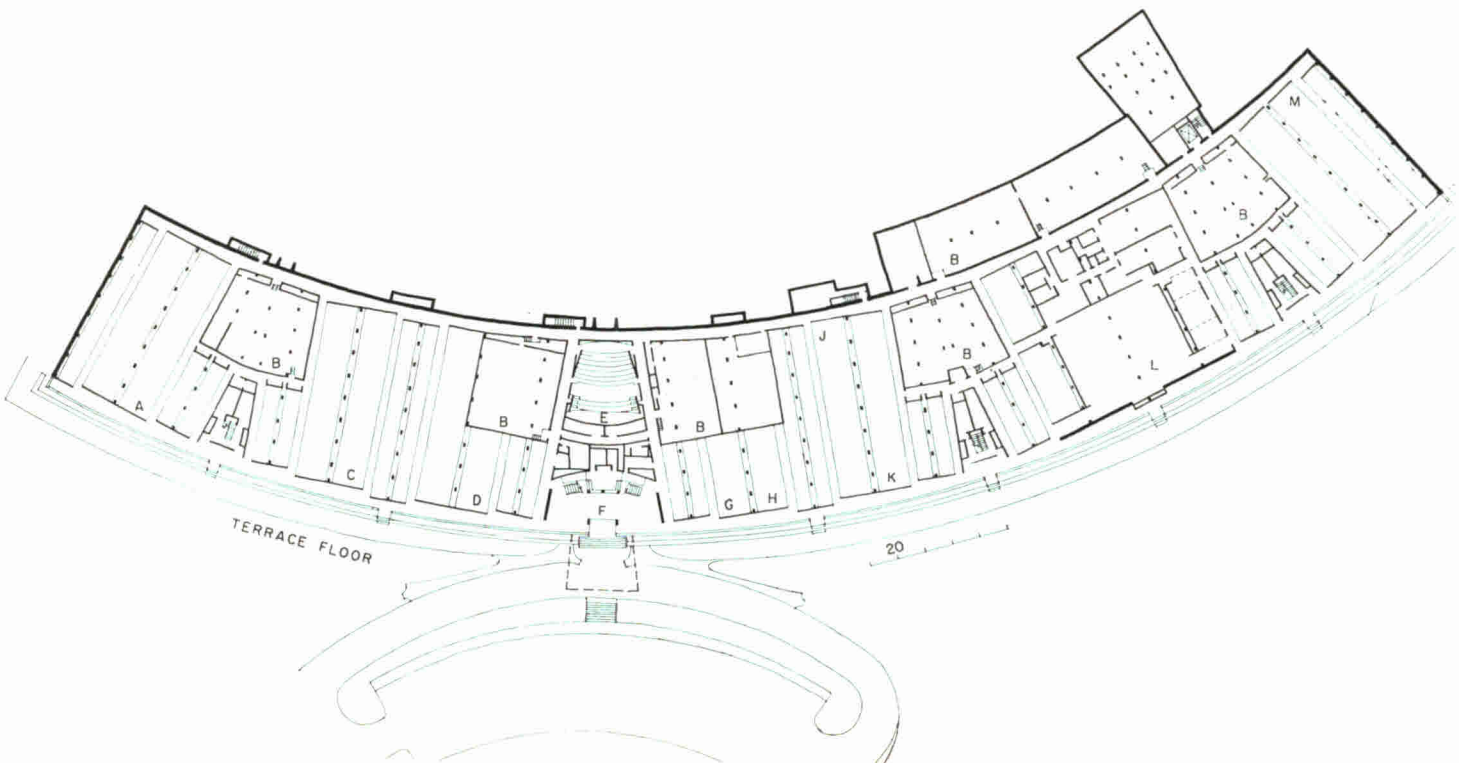




IBM Research Center: THE PLAN

The ingenious plan of the new IBM center provides a compact, workable arrangement for a large number of laboratories and offices within a pattern that offers privacy, short communication lines, great flexibility, amenity, and visual appeal. Banks of labs and offices—planned over a 4 by 6 ft grid and easily changed—are aligned on radial (or cross) corridors about 120 ft long, which flow into two trunk corridors running uninterruptedly along each outer length of the 1090 ft building. Labs placed back to back flank a continuous utilities core; offices placed back to back flank a continuous, architect-designed storage wall. In thus providing the required hundreds of labs for 1500 workers, the plan eliminates the usual thousands of feet of dreary corridors, provides "clean" space by placing structural columns in utility or storage areas, saves utility costs, and reduces exterior wall area. Except for the pie-shaped service cores, only the lobby, auditorium, library, cafeteria, and mechanical areas break the continuity of the lab-office pattern.

After weeks of observing researchers at work, architect Saarinen found that most sat with their backs to windows; relied on air-conditioning and efficient fluorescent lighting rather than windows for ventilation and light. Saarinen says, "Instead of small windows with Venetian blinds that obscure the view, the floor to ceiling windows at each end of every cross corridor present unobstructed views of the beautiful landscape; provide a pleasant encounter with nature whenever one steps out of his office or lab." Upon visiting the building, one must agree that the effect is most appealing, for one is never more than 60 ft from a floor to ceiling glass panel —usually less—and constantly has a feeling of identity with the countryside.

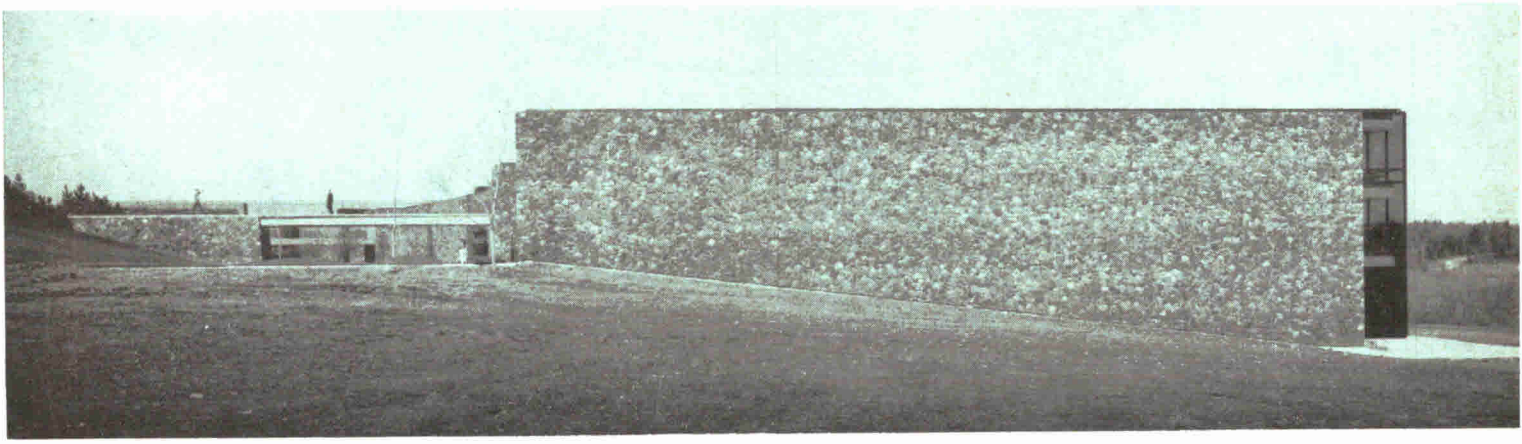


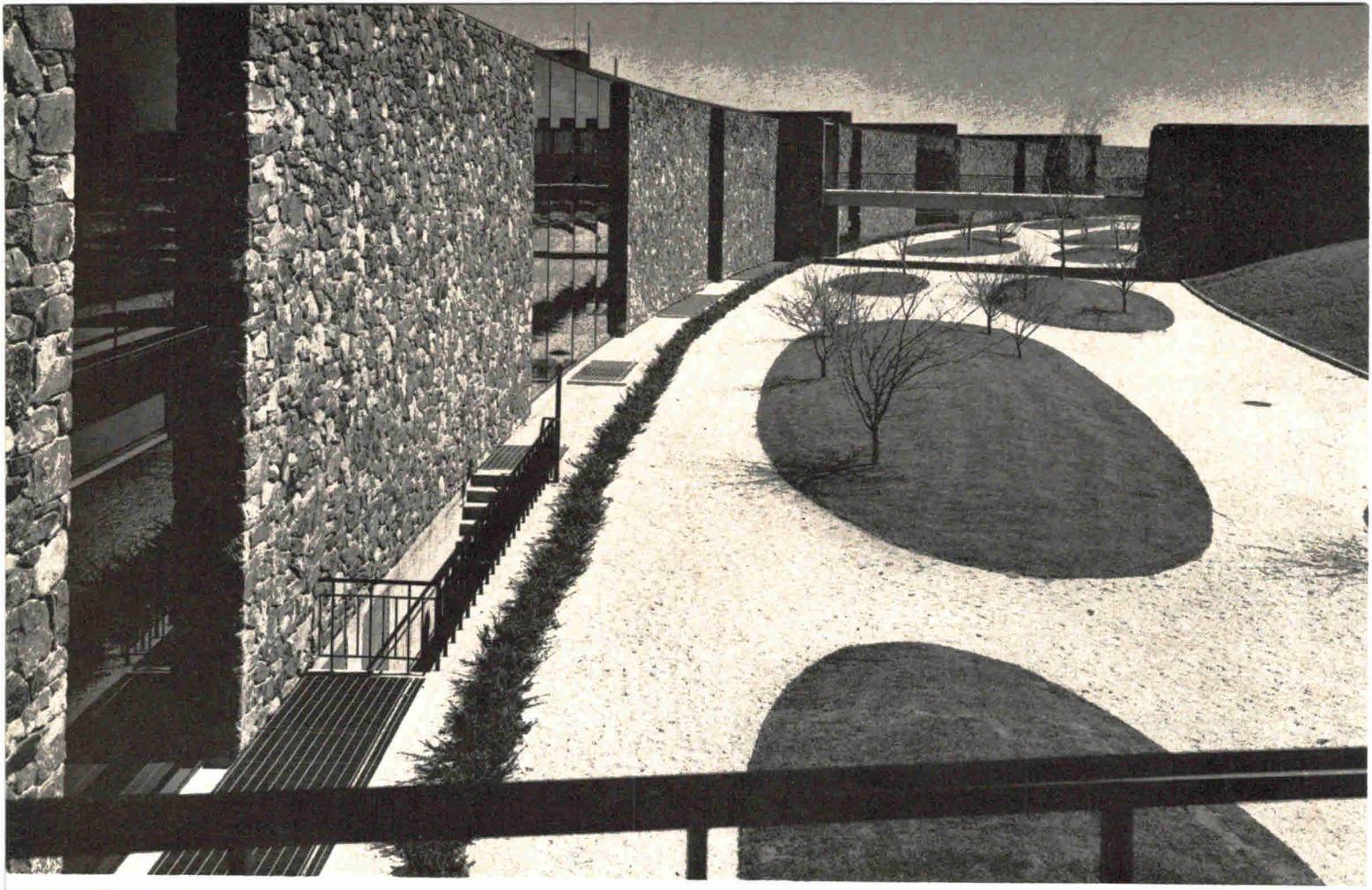
IBM Research Center: SITE AND BUILDING

The wooded, rolling hills and fieldstone walls of the surrounding Westchester countryside played a large part in shaping the building and in determining its character. The beautiful 240-acre site rises southward to a crescent-shaped hill, and it seemed both appropriate and economical to bend the building along a contour near the crest. The cross-aisled plan works equally well curved or straight; had conditions warranted, it might have been S-shaped and equally functional. To meet future needs, the crescent may be extended to the east.

The building is disposed on three levels, which appear from the rear (south) as two, since the slope rises in that direction. A 1000-car employe parking lot up on the hill is at the level of the top floor and connected to it by bridges spanning a Japanese garden. Local fieldstone is widely used—with great effect—throughout the building, and aids in giving it a character appropriate to the site.

The Japanese garden, designed by Sasaki-Walker, is a "mound" garden of more than an acre. Grass covered elliptical islands rise above a level floor of white crushed limestone to provide a pool-like effect between the building and the ivy-covered slope that rises to the parking area. Willow and crab-apple trees will add dimension and color to the island.



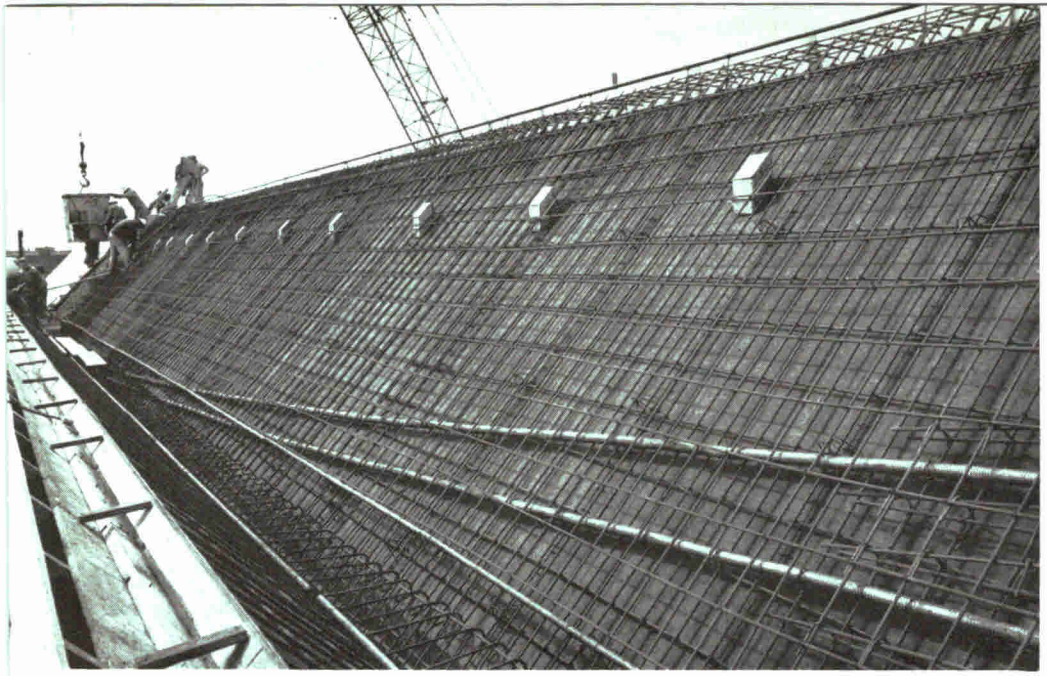


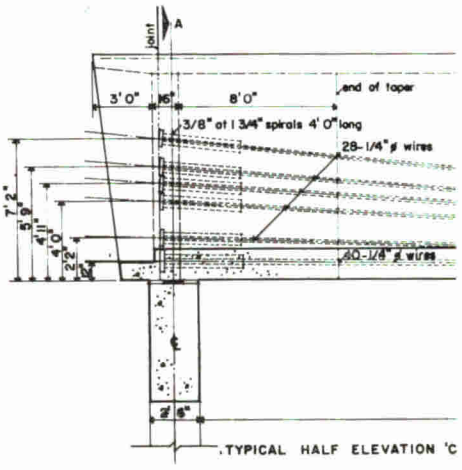
All photos by Joseph W. Molitor

UNIQUE CROSS-CURVE PLAN FOR IBM RESEARCH CENTER

Eero Saarinen's striking design for the IBM world research center in a spectacular setting near New York

Thomas J. Watson Research Center, Yorktown Heights, N.Y.
ARCHITECT: *Eero Saarinen & Associates*
LANDSCAPE ARCHITECTS: *Sasaki, Walker & Associates*
STRUCTURAL ENGINEERS: *Severud-Elstad-Krueger Associates*
MECHANICAL & ELECTRICAL ENGINEERS: *Jaros, Baum & Bolles*
ACOUSTICAL CONSULTANTS: *Bolt, Beranek & Newman*
FOOD SERVICE CONSULTANTS: *Howard L. Post*
CONTRACTOR: *William L. Crow Construction Co.*





Prestressed Folded Plate Roofs a Gym

While concrete folded plates are hardly new, this example at Indiana State Teachers College is one of the largest to be prestressed, and demonstrates some interesting construction techniques

A 165-ft long, prestressed folded plate roof, believed to be the longest single span structure of this type, will serve as the gymnasium roof for the new Physical Education Building of Indiana State Teachers' College. Cost of the roof installed is estimated at $6.36 per sq ft. Architects are Miller, Vrydagh & Miller of Terre Haute.

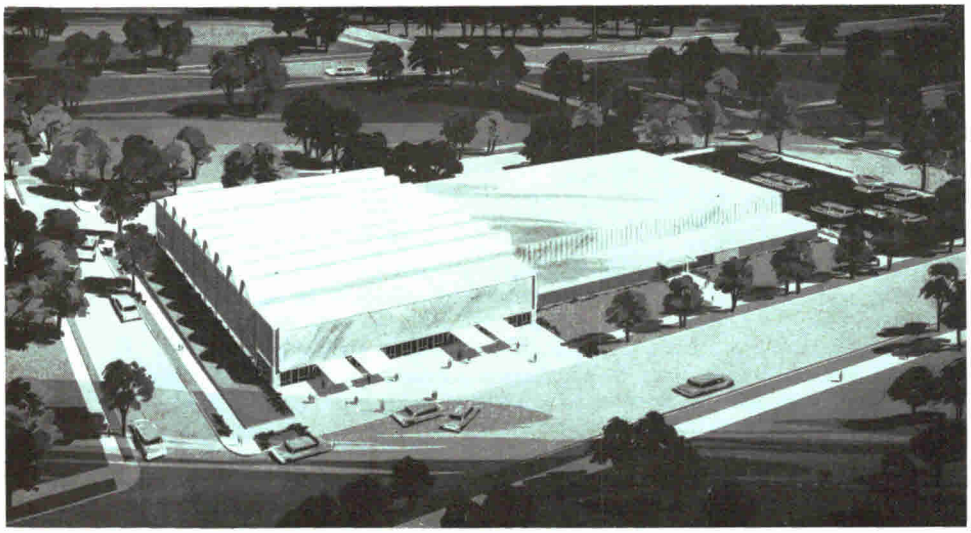
In the transverse direction, there are 8 configurations on a 26-ft module. Each interior configuration will be prestressed by 12 tendons; 10 of these tendons will contain 28 wires each. The other two will contain 40 each. All wires will be ¼ in. in diameter and will receive an initial stress of 168,000 psi.

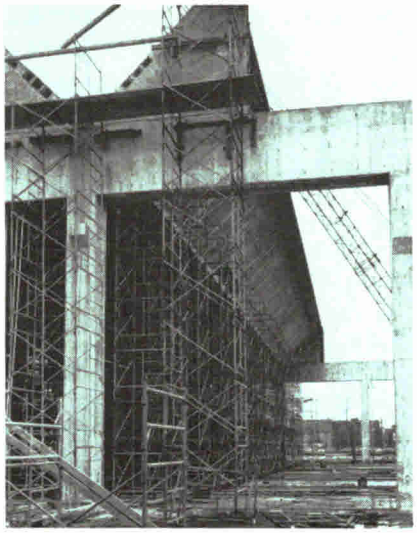
The Swiss BBRV post tensioning system will be used with Ryerson Steel Co. supplying the tendons and technical supervision during tensioning. Mild steel was used to provide for temperature stresses and load distribution in the transverse direction.

At the transverse ends of the building the bottom flange of the plate rests on a continuous beam and extends outward to provide an overhang.

This overhang will be cast after tensioning of the half bay adjacent to the discontinuous edge. Tensioning of the half bays will be accomplished by two tendons containing 28 wires each.

Strength of concrete at the time of stressing is required to be 4000 psi. A low slump concrete (2½ in. maximum) is necessary not only for high quality concrete but also to facilitate placement of the web members which are inclined at a 45° an-





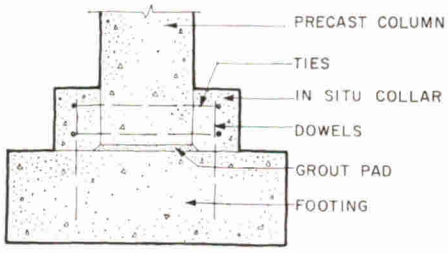


Figure 1

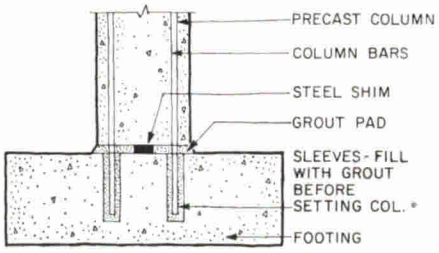


Figure 2

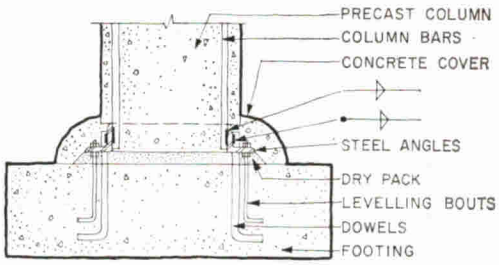


Figure 3

One-story columns may be set on footings with the simple connection shown in *Figure 1*. Footing is cast rough with accurately placed grout pad added later. A row of dowels around the column set in the footing anchors the cast-in-place collar. *Figure 2* shows a simple and inexpensive, moment-resisting, column-to-footing connection. The footing has sleeves to receive column bars. The steel shim near the center of the column provides temporary support. Prior to setting of the column, the sleeves are filled with a thick grout paste. Space between column and footing is grouted last. When columns must develop high bending moments at the base, the connection in *Figure 3* is used. In this case an angle bar collar is welded to the column bars. Small leveling bolts are convenient for setting the column. After the column is positioned, by these bolts, the dowels are welded to the angle bar

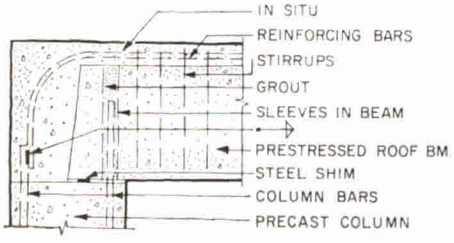


Figure 4

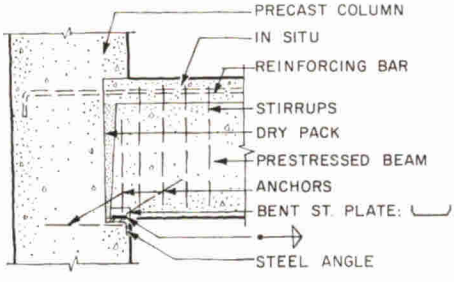


Figure 5

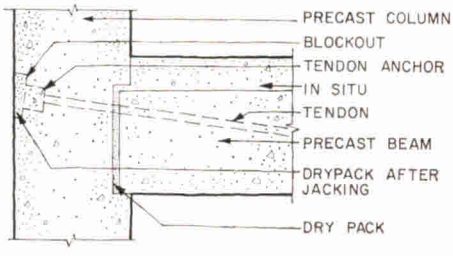


Figure 6

Figure 4 is a simple but effective detail for a roof beam-to-column connection in which the interior column bars project upward into sleeves of the beam, and the sleeves are filled with grout. Bent reinforcing bars placed over the ends of the beams are welded to the exterior column bars. Space over the beam and column is filled with in-situ concrete. The roof slab may be cast-in-place or precast. *Figure 5* shows connection for floor beams in multi-story buildings. Beam seat is a steel angle anchored in the column. Steel plate in the beam is welded to the angle bar after beam is erected. Reinforcing bar in column projects inward over the beam to develop a negative bending moment in the joint. Careful analysis is required for concentrated bearing stresses and moments and shears in the members. *Figure 6* shows the beam joined to the column by post-tensioning. This method is particularly effective for beam spans up to 70 or 80 ft. Space at the end of the beam is drypack grouted

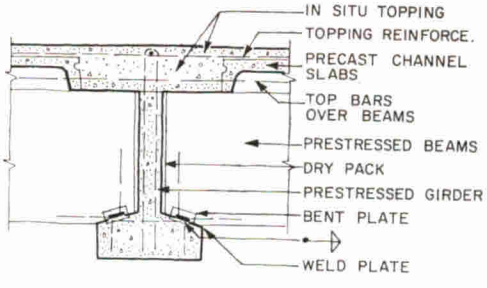


Figure 7

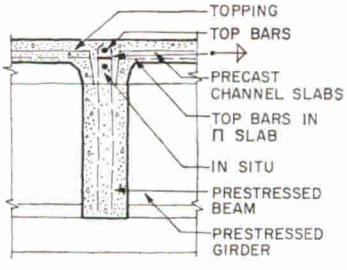


Figure 8

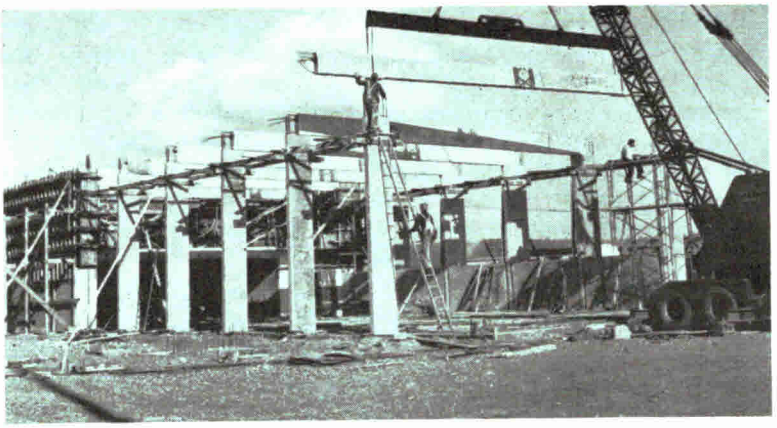
Economical framing for large bays is possible by using precast girders, beams and slabs, particularly when the precast members are prestressed. Girders of inverted T section may be used so that the bottom flange serves as a seat for the beams as is shown in *Figures 7* and *8*. The connection between the beam and girder is made by welding embedded steel plates. The precast channel slabs are composite with the in-situ topping. The precast slabs over the girder may be omitted, allowing a substantial in-situ section to be cast as a composite top flange for the girder and for placing negative reinforcing bars over beams and girders. Figure 8 is a section through the detail of Figure 7 and shows negative bars projecting from the ends of the precast channel slabs which are welded together; space over the beam is filled with in-situ concrete

Job-Proven Details

A series of connections developed and used by Arthur R. Anderson, Partner, Anderson, Birkeland & Anderson, Consulting Structural Engineers, Tacoma, Washington

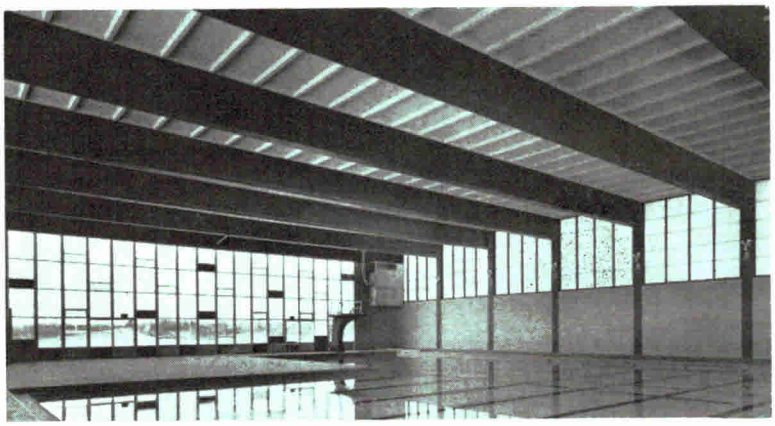
National Bank of Washington, Tacoma
Architect: Robert B. Price
Contractor: Concrete Engineering

Series of rigid frame bents made from precast columns and a prestressed roof beam comprise the structure. The connection detail at the corners is shown in Figure 4. The column to footing connection is shown in Figure 2



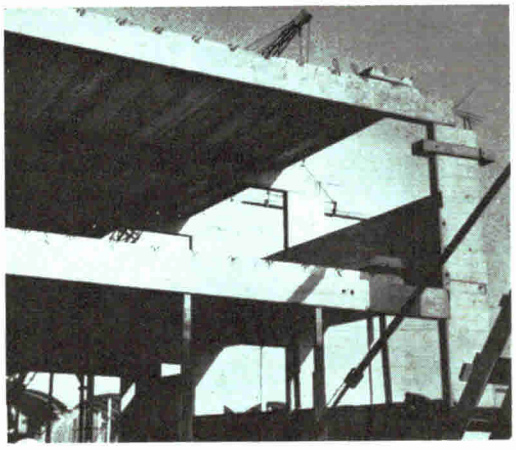
Woodrow Wilson High School, Tacoma
Architects: Lea, Pearson and Richards
Contractor: Nelsen Construction Company

Prestressed concrete I-beams span 105 ft over the swimming pool. These beams are 48-in. deep with 18-in. flanges and a 4-in. web. Since the structure is exposed, a clean, simple connection between beam and column is desirable; a bearing seat or corbel projecting from the column must be avoided. The connection in Figure 5 makes this possible



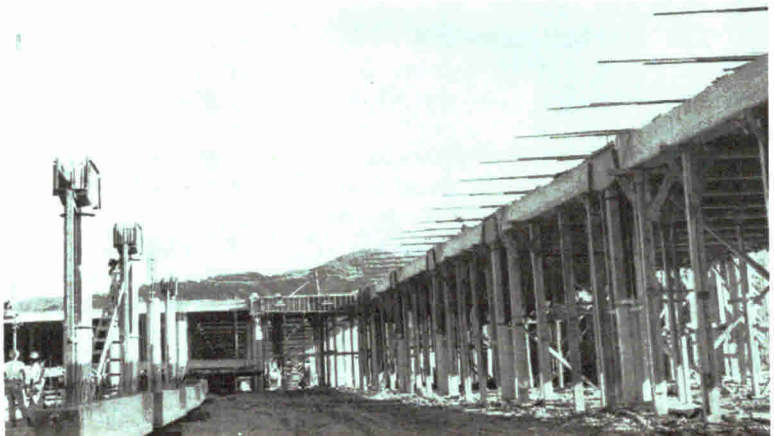
Office Building and Carport, Tacoma
Designer and Builder: Concrete Engineering Co.

In this two-story rigid frame of precast columns and prestressed beams, the second floor beam is joined to the columns in accordance with the detail in Figure 5 and the roof beams as in Figure 4. Precast channel slabs are carried on the beams with the negative steel being welded prior to casting concrete into space over the beams (Figure 8)



Ala Moana Shopping Center, Honolulu, Hawaii
Architect: John Graham and Company
Contractor: Hawaiian Construction & Dredging Co.

Two-level parking structure of precast and prestressed concrete is designed composite with a cast-in-place deck slab. Prestressed piles also serve as columns. Upper ends of columns are joined to girders by connecting steel projecting from the column and the two girders and filling in the space surrounding the steel with concrete. Prestressed beams are carried on the lower flange of the girder as shown in Figures 7 and 8



area, splitting and other tensile stresses in the bracket; flexure and shear computations should be done in accordance with the requirements of ACI-318, the *American Concrete Institute Building Code.*

Bearing calculations should be made to suit the particular seating arrangement of the member on a bracket. For uniform bearing, a maximum stress of $0.3f'_c$ should not be exceeded. Provisions such as chamfered edges or well anchored corner angles should be employed to prevent spalling. Bearing plates on the member and bracket should be used either with or without bearing pads.

Concrete to concrete connections should be avoided except where the designer has other requirements which make this type of contact desirable. Splitting, or the tensile stresses resulting from bearing, should be guarded against by using reinforcement parallel to the bearing surface in both directions. A maximum of 1½ in. of cover is recommended. Reinforcing for splitting should be in addition to that required for flexure and other design stresses.

Extreme care is necessary in the detailing of member-to-bracket connections to eliminate, or take into account, the effects of member length changes due to shrinkage, creep or thermal expansion or contraction.

The use of embedded structural steel shapes for the transfer of shear requires that positive anchorage of these shapes be provided. With a given load on a projecting element, such as a steel wide flange projecting from the end of a beam, local bending, bearing and tensile stresses are produced in the end of the member as well as shear in the web of the wide flange. Therefore the designer should check the following:

a) The fiber stresses in the projecting element resulting from its section modulus and the moment produced by the shear force.

b) The bearing stresses produced where the projecting element is in contact with the concrete of the member.

c) The tensile stresses produced on planes perpendicular to shear force, i.e. the plane on the bottom of the projecting element which lies above the rest of the depth of the precast member.

Use of prestressing force to transfer shear requires that the designer familiarize himself with the results of combining moment, shear and compression at such a joint. The designer must determine through mathematical means the angle and magnitude of the principal stresses, and then satisfy these localized stress conditions. The stresses produced should not exceed those permitted by ASCE-ACI Committee 323 —Tentative Recommendations for the Design of Prestressed Concrete —for segmental elements.

Moment. In the transfer of moment through a precast concrete joint, the entire moment must be taken by one type of device, as in the transfer of shear, even though more than one such device may be available at the connection. Moment may be transferred by reinforcing steel (Fig. 5a), mechanical devices (Fig. 5b), and by prestressing forces (Fig. 5c).

When reinforcing steel is used to transfer moment, the designer must check the joint so that the full yield strength of the bar may be developed, if required, by bond or by welding. Where welding is used, care should be taken to prevent excessive heat from damaging the concrete. The detailing of such a joint should provide for the necessary protection of the reinforcing, and should provide means for limiting rotation at the joint to that assumed in the original design. This is accomplished by giving special attention to the erection and loading sequences and the condition at the time the joint is to be completed. The completion of the joint with concrete requires careful attention to compaction and curing, and the effects of shrinkage, creep and temperature changes.

It is very common to use mechanical devices to transfer moment in precast joints. Mechanical devices include structural steel shapes, welded plates and couplings—to mention a few. The main criteria for their use is that they be fully developed and are anchored adequately in the members. They are designed by checking net areas available, unit stresses in tension or compression, weld sizes and similar design conditions.

Prestressing force employed to transfer moment through a joint can be designed by following the recommendations for the design of segmental members in the ASCE-ACI Committee 323 Report. In the joint

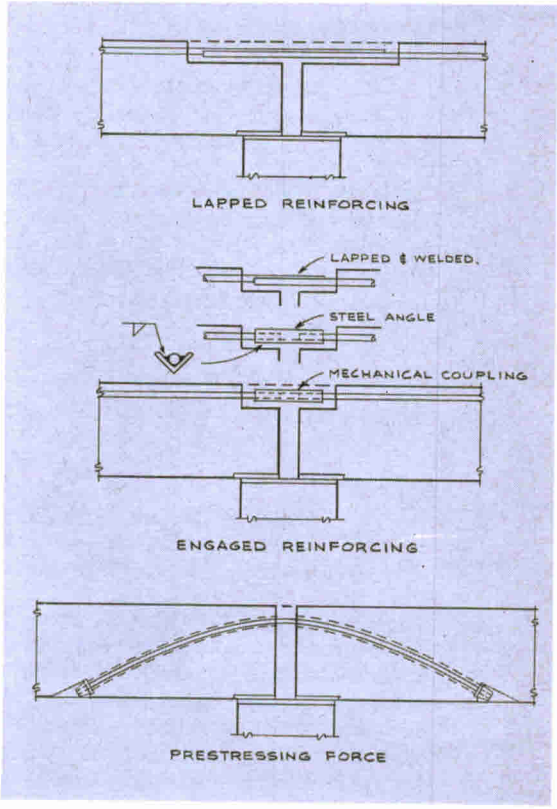


Figure 5 MOMENT CONNECTIONS

design, means must be provided for distributing the force over the contact surfaces without creating local stress concentrations. Grouting is one of the most satisfactory methods.

Torsion. This is the most difficult of all connections to design and detail. It is also a loading condition that should be avoided whenever possible. Some designers have avoided the problem by simply ignoring it; but this is a very unscientific attitude and could cause serious legal difficulties if failure of a structure occurs.

Torsion may be transferred by concrete keys, reinforcing steel, mechanical devices, embedded structural steel shapes, and prestressing force. With any of these devices the designer must combine the effects of torsion with the other loadings present. This means that if a joint has been designed for shear it must also be checked for the effects of any applied torsion.

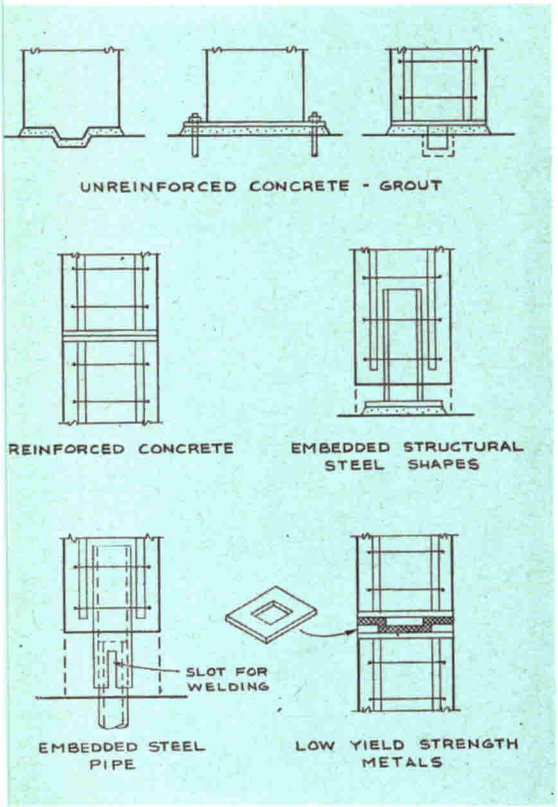


Figure 3 **COMPRESSION CONNECTIONS**

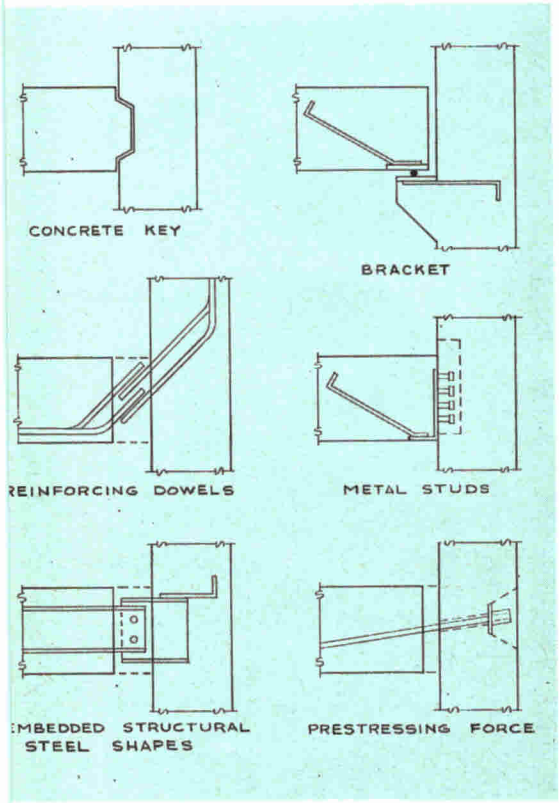


Figure 4 **SHEAR CONNECTIONS**

concrete stress); and (b) the bearing stresses created when the prestressing force and the maximum tensile force are applied simultaneously (minimum concrete stress). Positive means, such as grouting, should be employed to insure uniform contact between members. The joint should also have provisions for preventing lateral movement. Prestress losses should be carefully studied and provisions made for their effects in this type of joint.

Compression (Axial). For this type of loading, the joint is required to transmit the entire compressive force while keeping within the allowable stresses for the materials involved.

Compression may be transmitted by unreinforced concrete (Fig. 3a), reinforced concrete (Fig 3b), structural steel shapes (Fig. 3c) or steel pipe (Fig. 3d) and by low yield strength alloys (Fig. 3).

When compression is transmitted by unreinforced concrete (grout) the design consists only of going through the same procedure used when checking bearing stresses under column base plates. This type of joint should also have provisions for preventing lateral movement.

The transfer of compression across a joint by reinforced concrete consists of designing the joint in the same manner used for the design of the member, taking into account bond length requirements of reinforcing when bars are lapped or butted and welded. Most important is the placement of structural concrete which is intended to complete the joint. The concrete must be carefully compacted and cured, and attention should be given to the transfer of stress by bond between the reinforcement and the concrete.

The joint used to transfer compression by means of structural steel shapes has the same general requirements as a joint used to transmit tension with structural steel shapes.

Use of low yield strength alloys to transmit compression across a joint requires careful attention due to the general lack of information of the properties of these alloys, and the problem in determining the possible range of loads they will be required to transmit.

These alloys are extremely useful in compression connections because of their ability to redistribute very localized stress concentrations that occur when one member bears on another. Low yield strength alloys should be of the type that will not "flow" under sustained loads. Those of the "Babbitt Metal" family have proven satisfactory.

Shear. This connection must be capable of transmitting the entire shear by only one means. In other words, you cannot assign 50 per cent of the total shear to a concrete keyway and 50 per cent to another device (such as a structural steel shape). The designer must select one or the other to carry 100 per cent of the shear, just as he would if he were designing a structural steel connection where bolts and weldment are both present.

Shear may be transmitted by concrete keys (Fig. 4a), reinforcing steel (Fig. 4b), brackets (Fig. 4c), embedded structural steel shapes (Fig. 4d), metal studs (Fig. 4e) and by prestressing (Fig. 4f).

The use of concrete keys for the transfer of shear is a very familiar method. The criteria for their use in precast concrete joints is the same as that for poured-in-place concrete work. Specifically, it is recommended that the unit stresses in either the key itself or the area in the member where the connection is being made do not exceed the following: bearing $0.08f'_c$; shear $0.02f'_c$ (which are less than the values permitted in ACI-318, the *American Concrete Institute Building Code*). Also, the joint should be constructed so that the contact sufaces remain in contact during the life of the structure with adequate provisions against possible tension between the surfaces.

The use of reinforcing steel for the transfer of shear from one member to another through a joint requires that the bearing stresses and tensile stresses of reinforcing bars be carefully considered along with the anchorage of the bars so used in the members, and the lapping or welding of these bars in the joint.

Brackets are frequently used for shear transfer. When they connect precast concrete members, certain practices ought to be followed. Some of these are: The distance from the leading edge of the bracket to the point where the load is acting should not be less than one third of the bracket depth; the brackets must be designed for flexure, shear, bearing

Basic Design Principles

by Kenneth C. Naslund, Partner, The Engineers Collaborative, Consulting Structural Engineers, Chicago

Design considerations for precast concrete connections include the following: 1) feasibility, 2) practicality, 3) serviceability, 4) appearance, 5) fireproofing of the construction in some cases, and 6) the stress analysis of very localized conditions.

Feasibility of a precast concrete joint is determined by checking it for load carrying capacity, or, more simply, determining if the joint can be used for the intended load at the desired location.

The *practicality* of a joint is determined by considering the amount and kind of material used, the cost of its fabrication and placement and the speed and ease it imparts to erection.

Serviceability can be determined by consideration of how the joint will stand up under repeated loadings, exposure to climatic or chemical conditions, and possible overloadings.

Appearance of a precast concrete joint is what many of us are interested in, having blithely assumed that anything can be made feasible, practical, fireproof and serviceable. In an architectural sense, it seems most logical that precast joints be expressed as joints rather than being disguised to look like cast-in-place concrete.

Fireproofing of joints requires consideration of the type of protection required for specific hourly ratings and the method of applying the fire resistive covering.

Stress analysis of very localized conditions is the least written about aspect in the design of precast concrete joints, even though it is the most important design consideration. With this the case, this article will deal exclusively with the types of loadings on joints and the requirements of the various connections used to resist those loadings.

TYPES OF LOADINGS

In the design of a precast joint it is very desirable to consider each type of loading separately and then the combined loadings of the structure being studied. This procedure will help prevent overlooking any one type of loading. There are five basic types of loadings: *Tension (Axial)*, *Compression (Axial)*, *Shear*, *Moment* and *Torsion*. It is entirely possible to have as many as four of these present in a single joint.

In the design of connections it is necessary to 1) consider each type of loading and 2) to establish criteria for each of the loadings and each of the types of connections.

TYPES OF CONNECTIONS

Tension (Axial). This type of loading (experienced, for example, in a truss) requires a connection which will transmit the entire tensile force without any reliance on the tensile strength of concrete. The design should be checked for the effects of possible eccentricities.

Tension may be transmitted by reinforcing steel (Fig. 2a), embedded structural steel shapes (Fig. 2b), by prestressing forces (Fig. 2c) and by anchored steel plates (Fig. 2d). When reinforcing steel is used to transfer tension, the design should be checked to make sure that the stresses in the reinforcing bars are fully developed either by bond or some form of mechanical anchorage. Also, sufficient welding or lapping of bars should be provided to transfer the load across the joint. Reinforcing steel should also be arranged symmetrically in the section to eliminate the effects of localized eccentricities.

When embedded structural steel shapes are used to transfer tension, the same criteria used for reinforcing steel is applied. That is, stresses in the structural shapes must be fully developed by bond producing devices attached to the shapes, or by sufficient welding to the mild steel reinforcement used in the member.

Structural steel shapes also should be arranged symmetrically in the section to eliminate the effects of localized eccentricities.

Tension can be transferred across a joint by having that joint precompressed or prestressed by a force which exceeds the design tensile force (multiplied by the appropriate load factors). The design criteria for such a joint involves: (a) the bearing stresses created by one member on another with only the prestressing force being applied (maximum

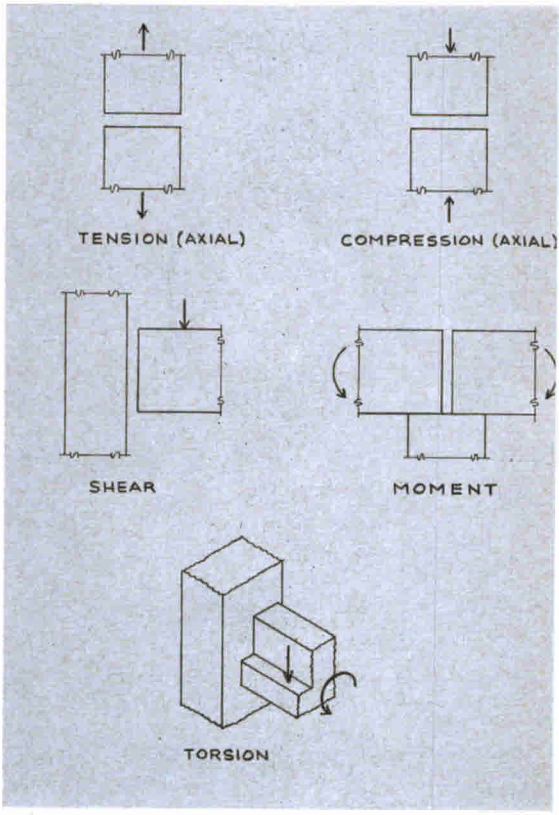


Figure 1 TYPES OF LOADS

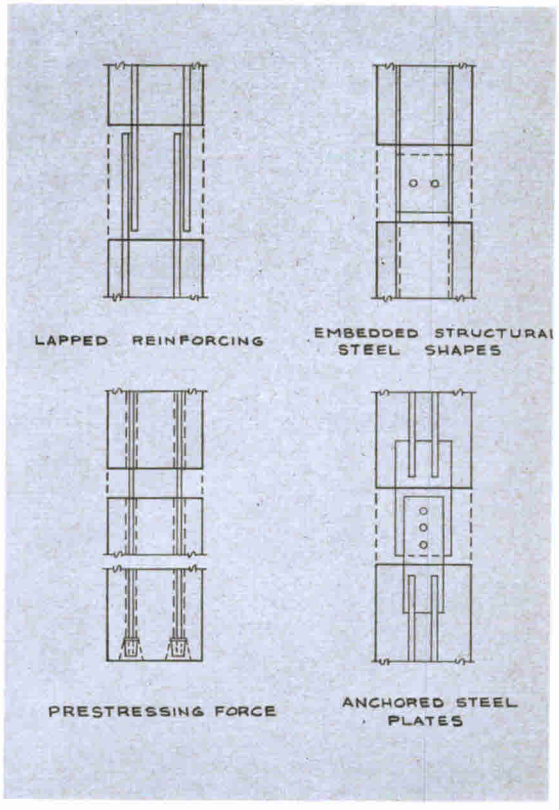
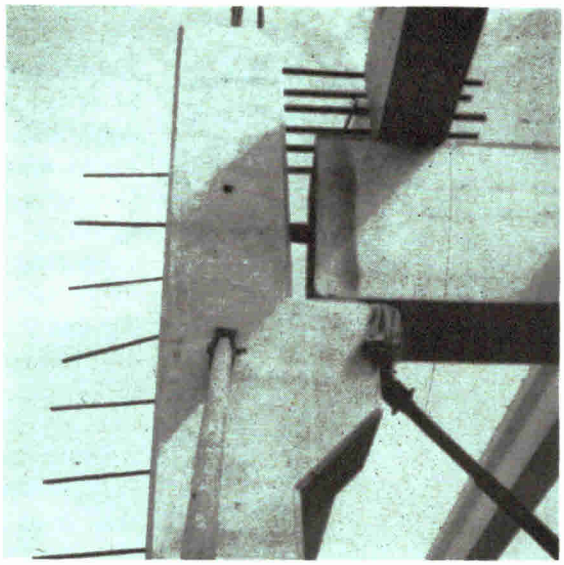


Figure 2 TENSION CONNECTIONS

PRECAST CONCRETE JOINERY

Success of a precast structure depends to a great extent on how carefully the connections have been considered. Joint design affects ease of assembly; appearance, cost and structural integrity of the connection



Walter Dickey

Precast concrete has caught on for both practical and esthetic reasons, but since it is a new structural material in many respects, new problems have arisen. The most pressing of these currently is that of connections because their design determines not only the ease and speed of field assembly, but to a large extent the cost of the structure, the appearance of the joints, and, most important, integrity of the structure.

Architect John Lyon Reid, speaking at a conference* on prestressed and precast concrete last fall in San Francisco, remarked, "The commonly available forms and shapes of prestressed concrete are lean and disciplined; customary methods of making connections and joints are rational, and discourage tampering for the sake of esthetic effects.

"Distinguished architectural designs using components on the market today are quite possible, but this requires a special kind of inventiveness on the parts of both engineer and architect. The increasing complexity of modern requirements for buildings and the opportunities for new and inventive designs inherent in this material will undoubtedly mean that the variety of forms in which this material is now available may be greatly extended."

At the same conference, engineer Arthur R. Anderson stated that progress in precast concrete construction has been thwarted by the lack of information and criteria related to joint design. He said further that until design criteria are established, the architect and structural engineer can resort only to basic principles of mechanics and judgment based on experience. To strengthen the latter it has been necessary for the structural engineer to test prototypes. Although the tests may be relatively simple, the results can contribute information of substantial value to the designer.

Tests conducted by Anderson, which brought to light new facts and data, included tension connections made by projecting reinforcing bars from a precast member into a sleeve (spiral-wrapped metal tube) embedded in the adjacent member, which at the time of erection is filled with a thick paste grout.

While it generally has been assumed that keys are necessary to develop shear connection between precast members, recent tests by Anderson showed that concrete cast against previously hardened concrete which had been roughened (undulations ¼-in. deep) and tied with steel projecting across the interface has higher shear strength than keys.

According to Walter L. Dickey, structural engineer who spoke on a similar program on prestressed concrete in Los Angeles, the engineer must determine his scheme of erection, then design his members and joints for the stresses that occur during fabrication, delivery and erection as well as with final conditions. He must visualize how the members will be erected to assure that the erection is safe and feasible and that it is economical. Otherwise, Dickey comments, the engineer may find that he has "built a boat in his basement."

Secondary stresses with prestressed concrete such as temperature change, shrinkage and creep are frequently more important in joint design than primary loads such as vertical and lateral loads, restraint or end rotation, according to Dickey.

Also on the Los Angeles program, and emphasizing proper connections, was Edward K. Rice who cited proper bearing as one of the major trouble spots in precast prestressed concrete.

He observed that in some parts of the country "stacked" construction is used in which building frames are constructed by simply stacking structural components one on the top of another and connections poured in place with ties being practically unknown. Thus bearing problems have become acute, and distress has occurred. Rice noted that in nearly every case the distressed members practically had point bearing. This was caused by members not being exactly true in dimension and the condition was aggravated by camber and temperature changes.

To improve designs, Rice stated that proper bearing length must be provided as well as some form of makeup for construction tolerances such as a neoprene bearing pad, dry-pack concrete, or, for light loads, a fiber glass pad.

* Two Western Conferences on Prestressed Concrete Buildings were held in San Francisco and Los Angeles last November under the sponsorship of the University of California College of Engineering and University Extension in cooperation with the Prestressed Concrete Manufacturers Association of California.

Architectural Engineering

All a Matter of How You Look at It

Architectural students at the Rhode Island School of Design now are being asked to write a detailed lighting program for their design projects. Reason for this is a new course in lighting taught by William M. C. Lam, author of the RECORD's recent series, *Lighting for Architecture*. As part of their orientation, Lam asks the students to observe a number of common phenomena involving brightness relationships which affect what the lighting situations communicate. For example, he suggests that a student: a) look at objects within the shadow of a building from within the shadow, then outside it, b) judge the impact of outdoor signs during the day and at night, c) look at any object in the middle of a room silhouetted against a window or bright light, and then look at the same object from other directions, d) compare his ability to see a dark country road at night with headlights versus the daytime situation when he has to drive into the sun.

Observing such brightness phenomena is nothing new, points out Lam. He reports that Leonardo da Vinci wrote, "Every concave place will appear darker if seen from the outside than from within. And this comes about because the eye that is outside in the air has the pupil much diminished, and that which is situated in a dark place has the pupil enlarged . . ."

A Center for Environmental Research

Controlled thermal environment studies which had been conducted at the American Society of Heating Refrigerating and Air Conditioning Engineers laboratory in Cleveland will be resumed in 1962 at a new Environmental Research Center established at Kansas State University of Agriculture and Applied Science. This is part of an expanded grants-in-aid program to colleges and private laboratories by the Society following its decision to close the Cleveland facility. A $150,000 controlled environment room which was used to investigate the reaction of healthy subjects to various thermal and radiant environments will be dismantled and sent to the school at Manhattan, Kansas. Program of the Environmental Research Center is to: 1) conduct research on human response to thermal environment, 2) conduct research on air pollution, 3) collect and disseminate information on man and his environment and 4) provide education at the graduate level in environmental engineering.

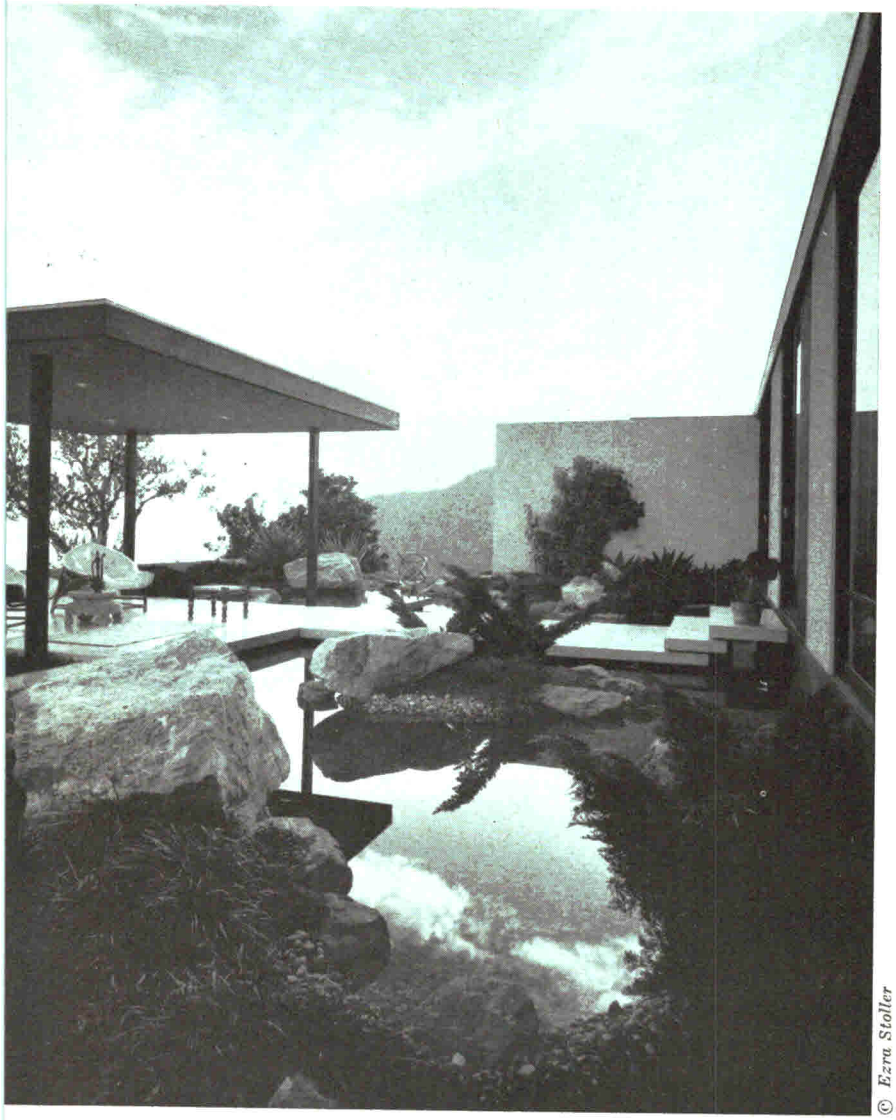
Publications to Note

Ever have a problem of converting feet to meters or vice versa; or converting other units of length, area or volume? It can be done easily and without slide rule through a new publication of the National Bureau of Standards, *Units of Weight and Measure, Definitions and Tables of Equivalents* which is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. for 40 cents.

Want to know what types of basic heating equipment (boilers, furnaces, electric systems) and how many units were installed during the year 1959 in nine different geographic areas of the country? The April issue of *Construction Review* published by the Business and Defense Services Administration of the U. S. Department of Commerce reports on a survey conducted among approximately 8000 heating contractors, 6000 plumbing contractors and 2800 fuel oil dealers; some 9500 returns were received. Total numbers of units are reported for the various areas; breakdown into single-family, multi-family, commercial and industrial installations is given in terms of percentage distribution for the nine areas.

Failures of Floor-Surfacing Materials on Concrete Slabs is a new report by E. H. Waters, Division of Building Research of the Commonwealth Scientific and Industrial Organization in Australia. It discusses causes of dampness, why water causes trouble, how to prevent it, other causes of adhesion trouble, and gives a series of drawings showing right and wrong ways to install waterproofing membranes.

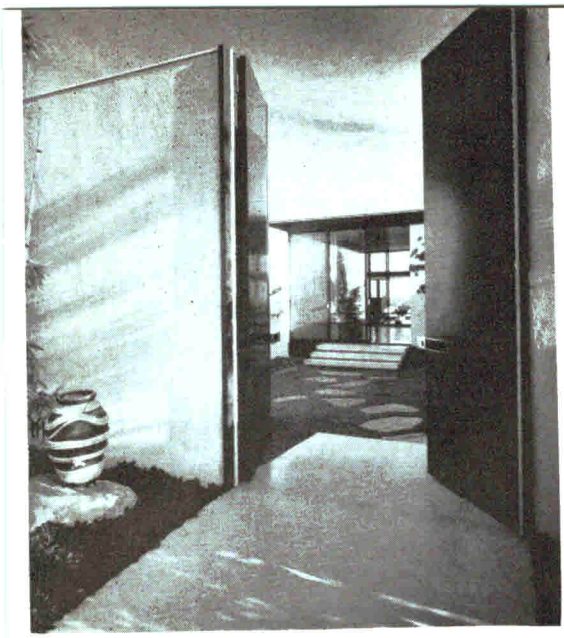
This Month's AE Section



© *Ezra Stoller*

The Wolff House

Water, rocks and fairly naturalistic planting provide an appropriate foreground for the long range vista in the architects' landscape design. Rooms in the house, though few, are spacious, make the most of the view, and provide simple backgrounds for the furnishings. Photo at top: a view of the garden adjoining the living and dining areas. Photo at left: the master bedroom

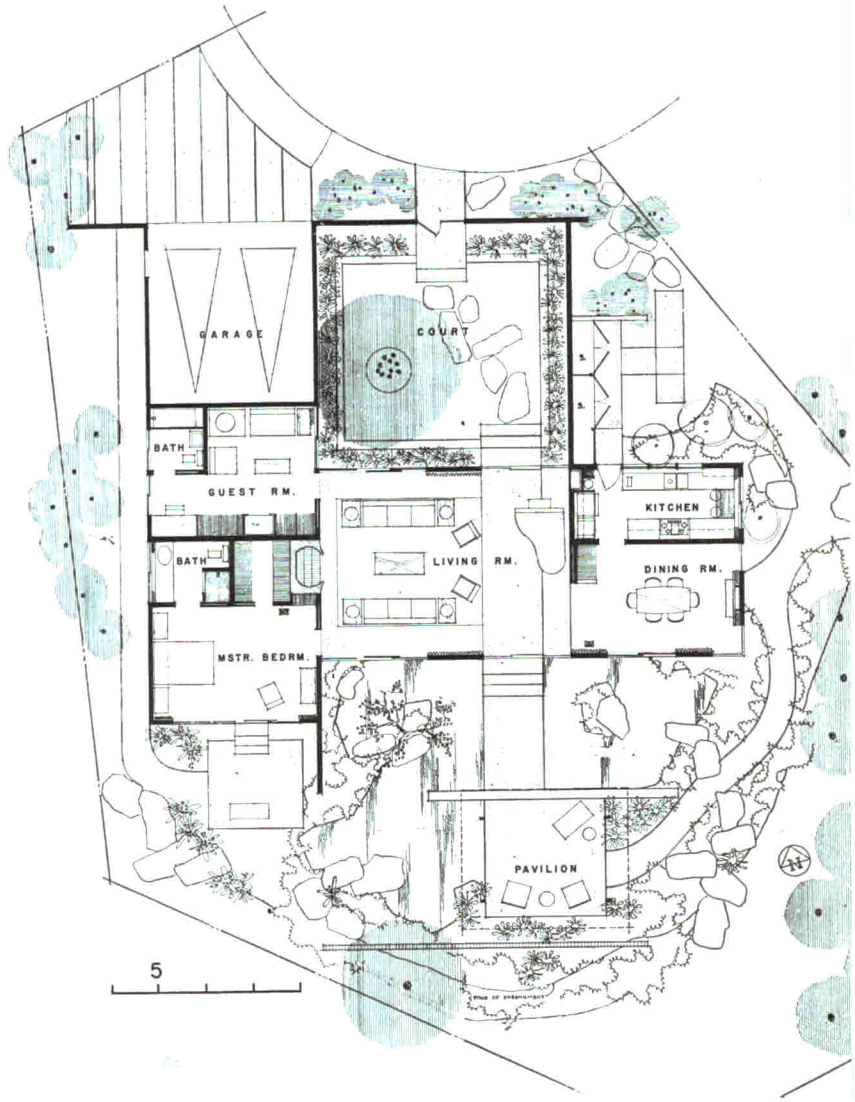


The Wolff House

The design of this spacious house emphasizes its lush setting by a deliberate and elegant understatement of design. The site is located at the end of a cul-de-sac on a bluff with a 210 degree view of the Hollywood Hills. As the owner required complete privacy from the street, a walled-in entrance courtyard was created to act as a sound buffer. This area also forms a dramatic foil to the wide panorama seen from the glass-walled interiors. All landscaping was carefully done by the architects to complement the design of the house. The comfortable interiors were designed by the owner.

The plan makes use of the entrance court as a foyer to the house, and the big living room for circulation, thus eliminating all hallways. The guest room doubles as TV room and study. A simple garden pavilion is used with great effect to frame and give scale to the view from the living areas. The cost of the house was approximately $48,500, excluding lot, landscaping, and furnishings.

The structure is wood frame on concrete spread footings. Exterior walls are painted plaster. Interior partitions are wood stud and plaster. Ceilings are plaster in the living areas, acoustic tile in the kitchen; floors are terrazzo, vinyl tile or carpet. The roof is built up. Horizontal sliding sash is used throughout, much of it floor-to-ceiling. Batt thermal insulation is used.

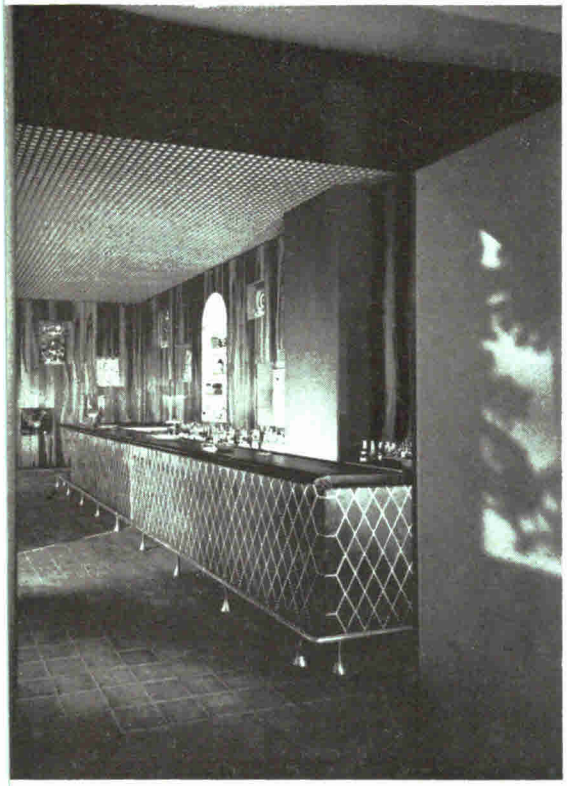


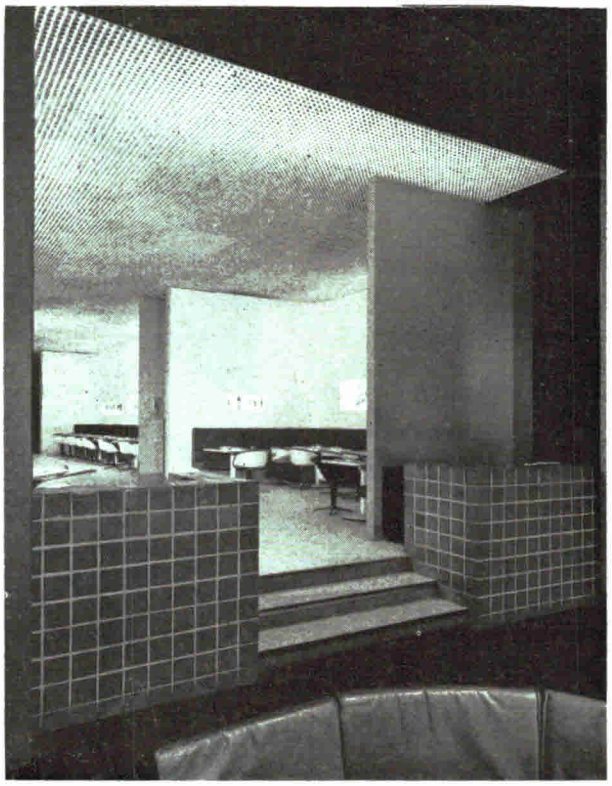
© *Ezra Stoller*

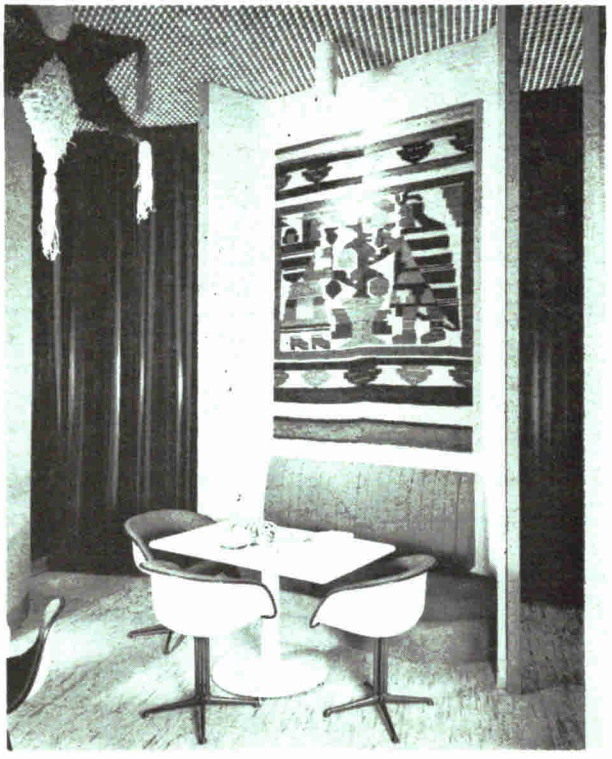
© *Ezra Stoller*

A HOUSE PLANNED FOR A MAGNIFICENT SITE

OWNER: *Marco Wolff, Jr.*
LOCATION: *Hollywood, California*
ARCHITECTS: *Ladd & Kelsey*
CONTRACTOR: *Don Buhler Co.*

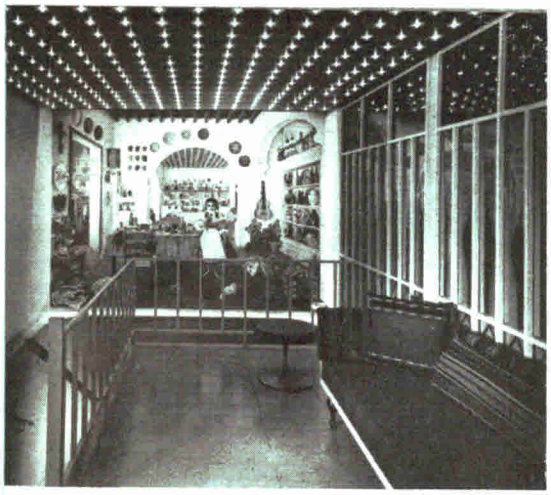




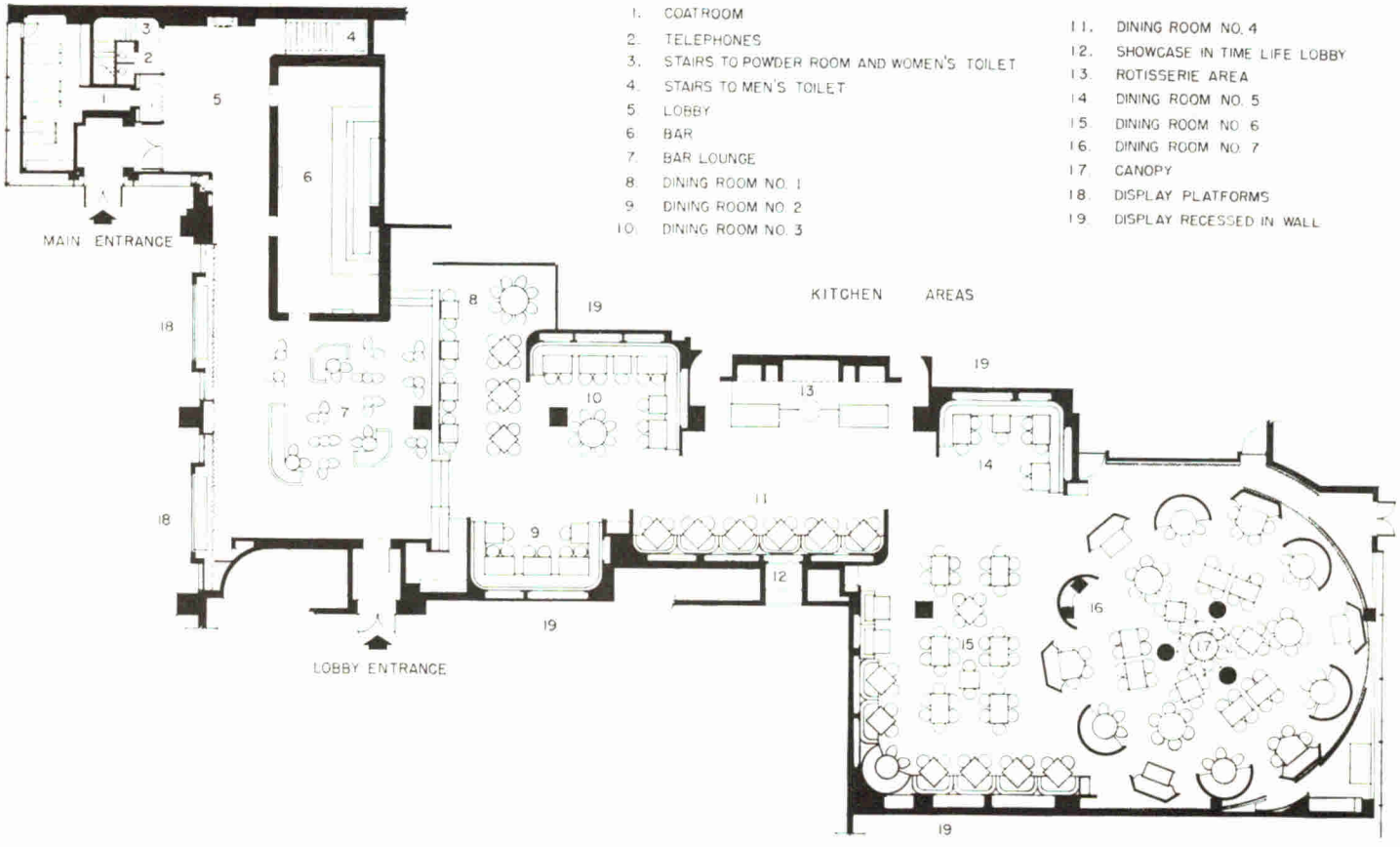


La Fonda del Sol

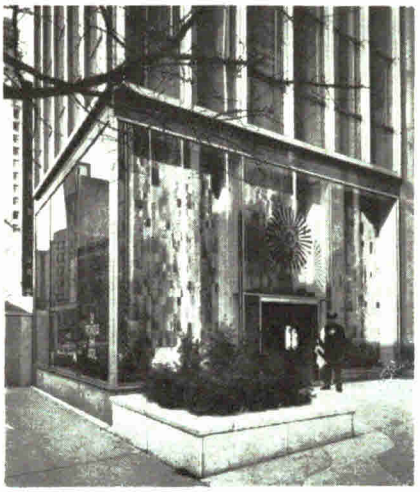
The illustrations above give some further evidence of the spatial qualities achieved. In the areas shown, as elsewhere in the restaurant, spaces open up into vistas on the one hand, but are shortened to achieve privacy where desirable, on the other. Upper left: view of the bar showing the black floor tile used here and in the lobby and the walls of Jacaranda wood from Brazil. Upper right: general view of interior showing low brick walls used in some areas for division of spaces. Lower left: the rotisserie area, where special dishes are prepared in full view of diners. The back wall of porcelain enamel in bright variegated colors announces in Spanish and Portuguese as on a poster-menu, traditional drinks and dishes. Lower right: a closeup of one type of dining group, placed against a room divider on which a Peruvian blanket has been hung



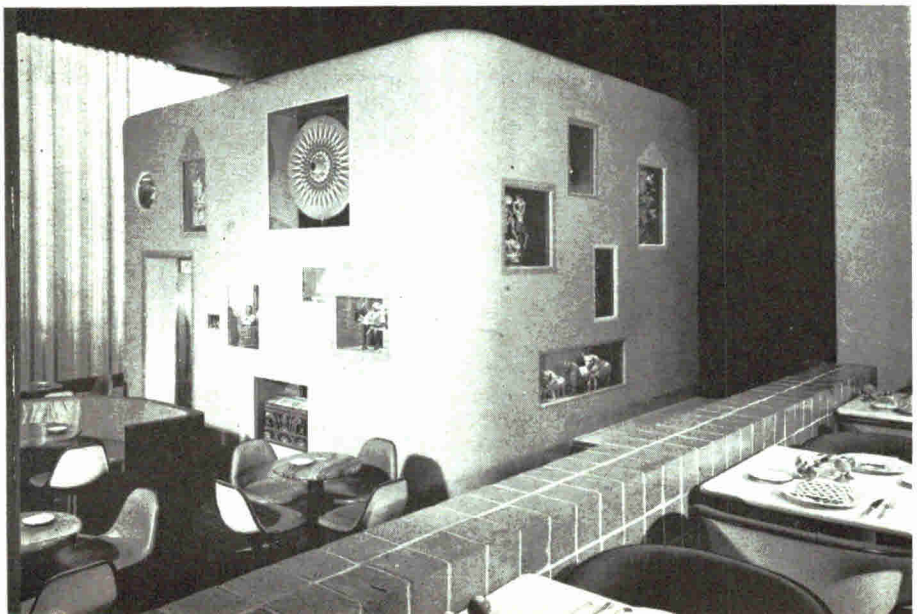
An indication of the spatial qualities and design of the restaurant may be had from the illustration shown here. Above are shown, from the left, a view of the street entrance, the main lobby with tiled fountain, display niches, and sun symbol, the entrance to the check room and lounges, and finally the powder room entrance with mural in the background. Across-page, on the extreme left are two views of the dining areas showing other uses of the sun symbol and display niches. Most of the objects displayed were collected from Latin American sources. On the right is a view from the large round dining room, toward the booths in an adjoining room. In this view may be seen the partitions used for dividing the space, Italian marble mosaic floor tile, and the special wood and aluminum louvered ceiling



1. COATROOM
2. TELEPHONES
3. STAIRS TO POWDER ROOM AND WOMEN'S TOILET
4. STAIRS TO MEN'S TOILET
5. LOBBY
6. BAR
7. BAR LOUNGE
8. DINING ROOM NO. 1
9. DINING ROOM NO. 2
10. DINING ROOM NO. 3
11. DINING ROOM NO. 4
12. SHOWCASE IN TIME LIFE LOBBY
13. ROTISSERIE AREA
14. DINING ROOM NO. 5
15. DINING ROOM NO. 6
16. DINING ROOM NO. 7
17. CANOPY
18. DISPLAY PLATFORMS
19. DISPLAY RECESSED IN WALL



La Fonda del Sol

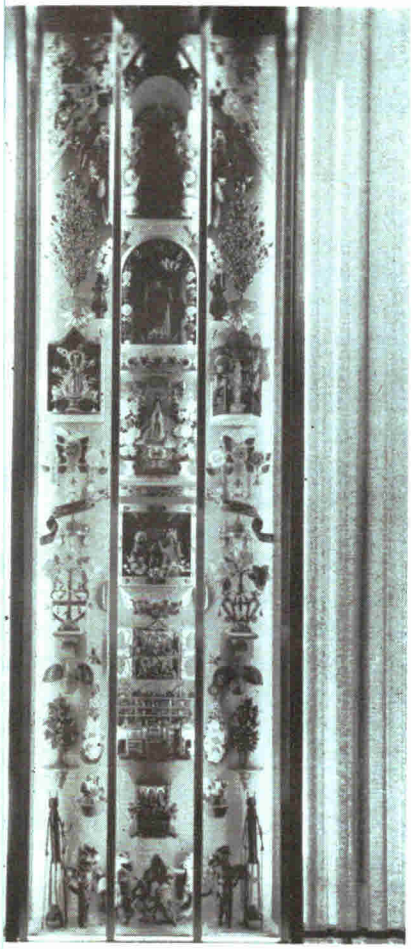


Alexander Girard says of La Fonda del Sol, "it is of our time." Yet it is apparent from the moment one enters the restaurant that this quality has been achieved in no ordinary way. The interior spaces have been designed for delight and for commodity. The one restaurant is an actuality many restaurants—at least seven in all. Circulation flows between these spaces freely and easily. Spaces ebb and flow, are stopped short, and open up again. Each smaller area has been designed for privacy and intimacy. Yet from each of these spaces, a glimpse may be had of larger vistas just beyond a column, a screen, or a low wall. Provisions for the seating of diners are virtually unlimited, so varied are the arrangements. Service aisles are wide and uncluttered.

The restaurant has quite obviously been designed for relaxation, for fun, for partaking of good food and drink. The muted colors and textures of walls and floors, the natural materials—tile, brick, marble, natural wood and the like, form a quiet background for the vibrant colors and forms of the native art on display. All of these elements have been so handled by the architect that what might have been merely garish or quaint is in actuality restrained, yet joyful, highly controlled, yet free.

El Sol, of the restaurant name and of the Latin America from which all here derives is much in evidence—in the great sun symbols on many of the walls, above a small fountain, in niches in walls, even on matchboxes and waiters' uniforms. The sun is in evidence in subtler ways, in the whole atmosphere of the place, in the colors, in the airy and open plan.

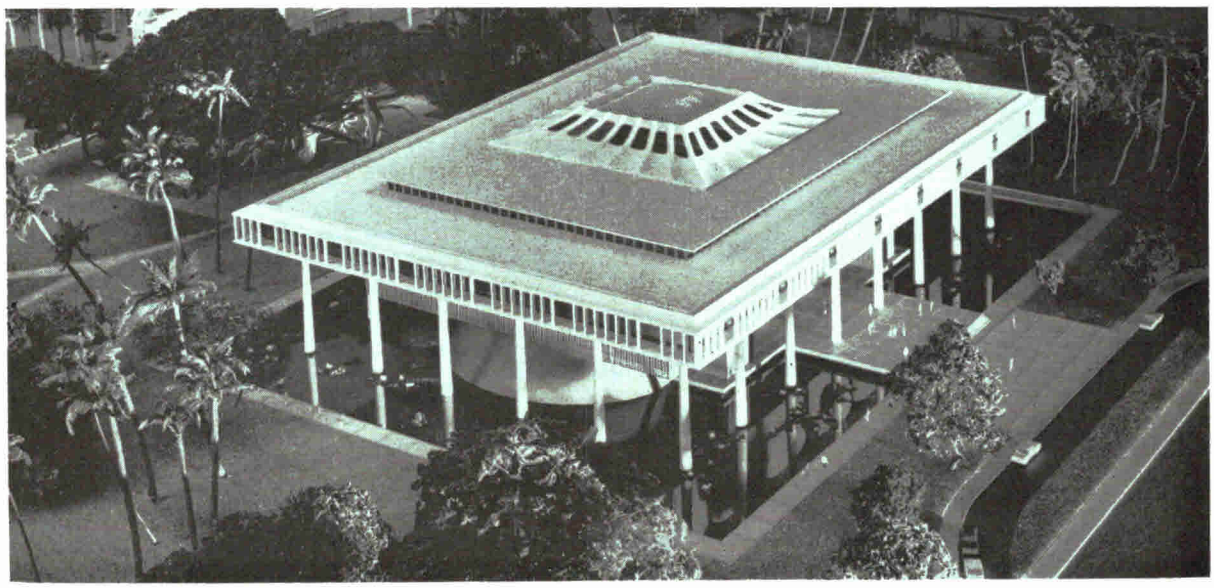
INTERIOR DESIGNED BY ALEXANDER GIRARD FOR THE INN OF THE SUN



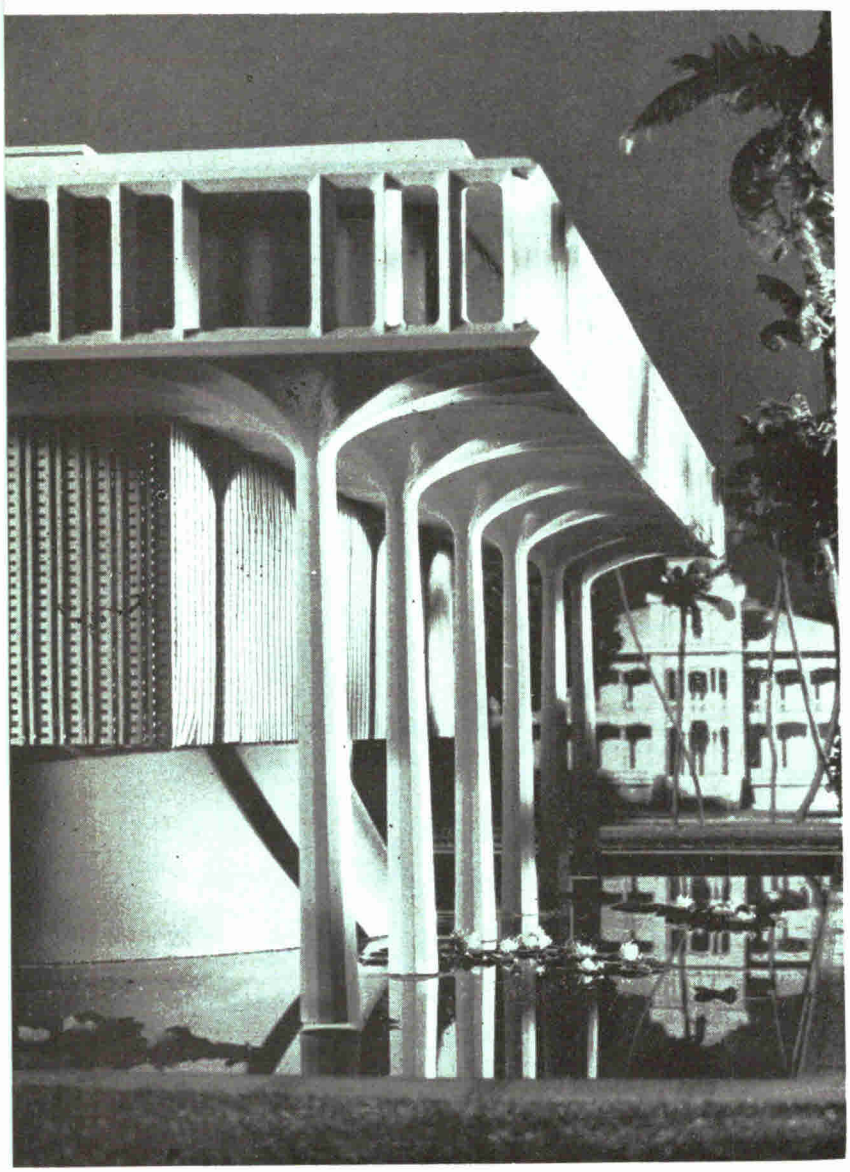
Louis Reens photos

La Fonda del Sol Restaurant
LOCATION: *New York*
ARCHITECT: *Alexander Girard*
ARCHITECTS & ENGINEERS: *Rose, Beaton & Crowe*
LIGHTING CONSULTANT: *Richard Kelly*

Others associated with the project were:
Susan Girard, wife and advisor
and Michael Hamilton,
associate of Alexander Girard;
William Dearden, Project Architect for
Rose, Beaton & Crowe;
Lee Jaffe, Director of Purchasing
and George Arnold, Director of Engineering
for Restaurant Associates, Inc.,
the owners of La Fonda del Sol



Hawaii State Capitol, Honolulu

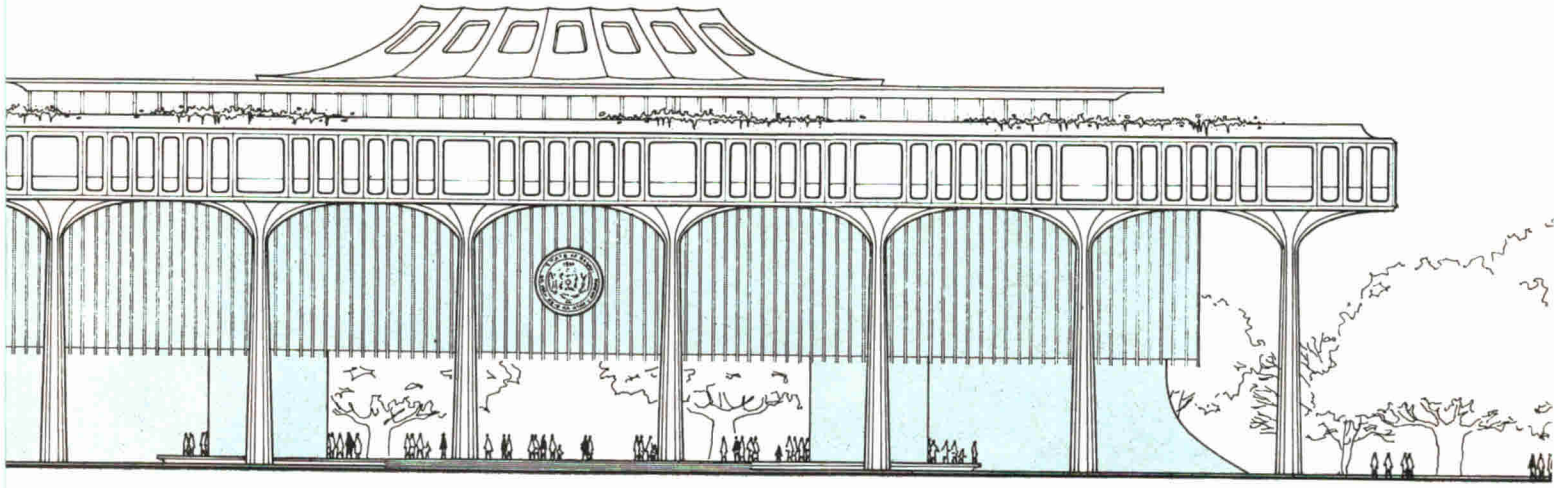


The Capitol's contemporary expression of the peristyle is the key to its structural solution. The tall columns with their flat vaults support the extra-large fifth floor which is really the building's roof. The only other columns are those around the central court. The openwork frieze of precast concrete at the roof level is both a part of the structure, acting as a one-story truss, and a decorative element in the building's façade; since it is placed free of the glass walls of the offices behind, it acts also as a sun shield. Offices on the two floors below are shielded by a screen, also of precast concrete, which hangs from the fourth floor.

The site plan envisions eventual closing of Hotel Street, which presently runs between Iolani Palace and the new Capitol; removal of the Iolani Barracks and Archives buildings, now located near the Palace; and construction of multi-level parking facilities adjacent to the civic center complex. Location of the new Capitol near the Palace was decided in 1944 and reaffirmed in 1959. But a storm of suggestions for other sites greeted the unveiling of the new building's proposed design. The downtown site, however, is central to many existing municipal, county and state buildings, and to Washington Place, the governor's residence.

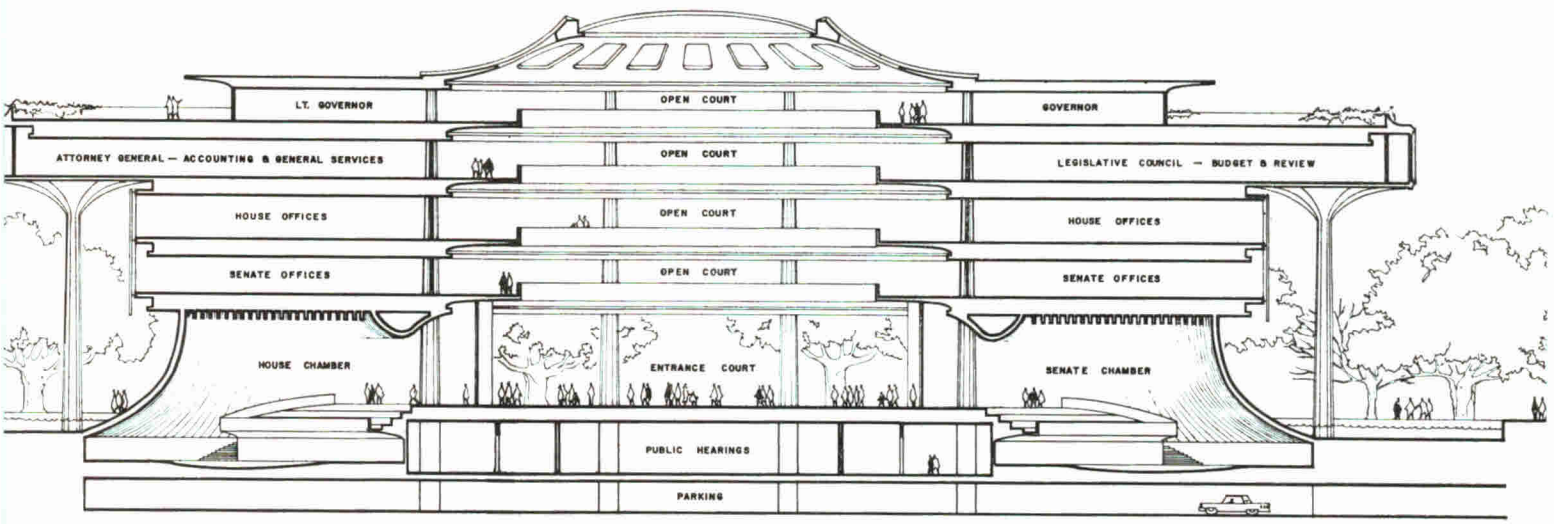
When the preliminary design was presented, its cost was estimated at $24 million—a sum which made Legislature and public gasp. But as finally developed, the estimated cost—$14,500,000—came within $250,000 of the amount provided for it in the capital improvement budget.

The architects for the Capitol were aided by two unusual committees: the State Capitol Architects Advisory Committee, made up of lay citizens, co-chaired by Robert Midkiff, vice president of the Hawaiian Trust Company, Ltd., and Representative George M. Koga; and the critics to this committee whose members were architects Pietro Belluschi, Leonard Hunter of the General Services Administration, and George Wimberly of Honolulu. The critics enthusiastically endorsed the design, saying that it is "the visual image of a building symbolic of the State of Hawaii" and has "dignity and poetry without ostentation"

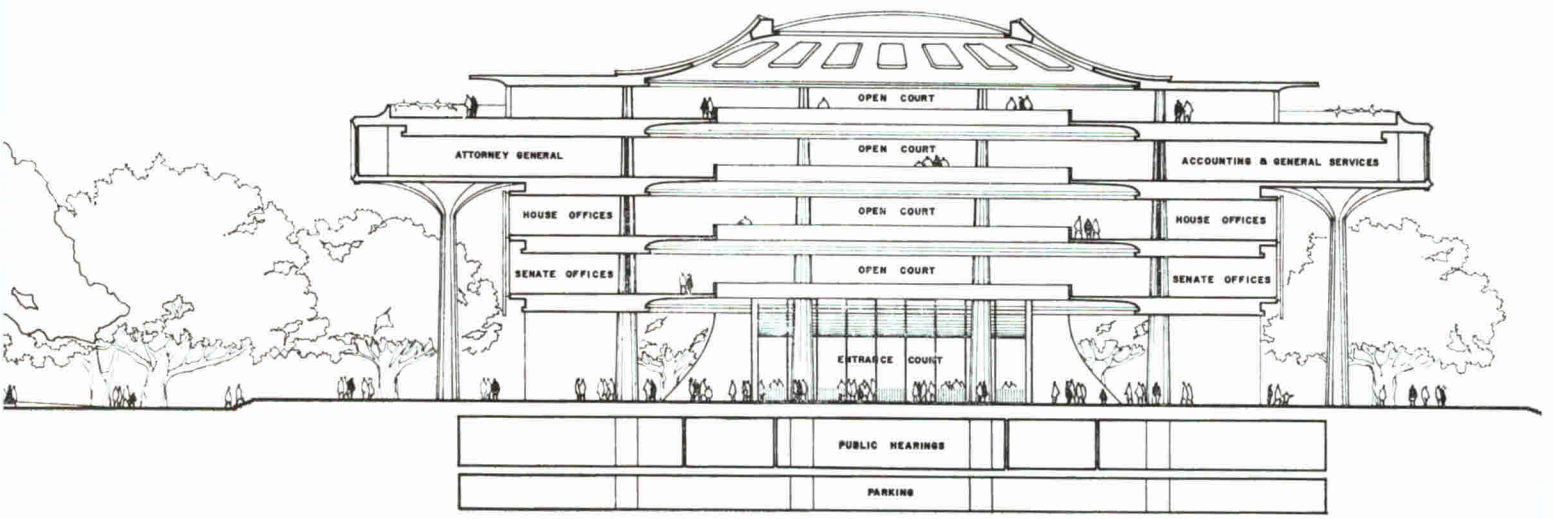


MAKAI ELEVATION

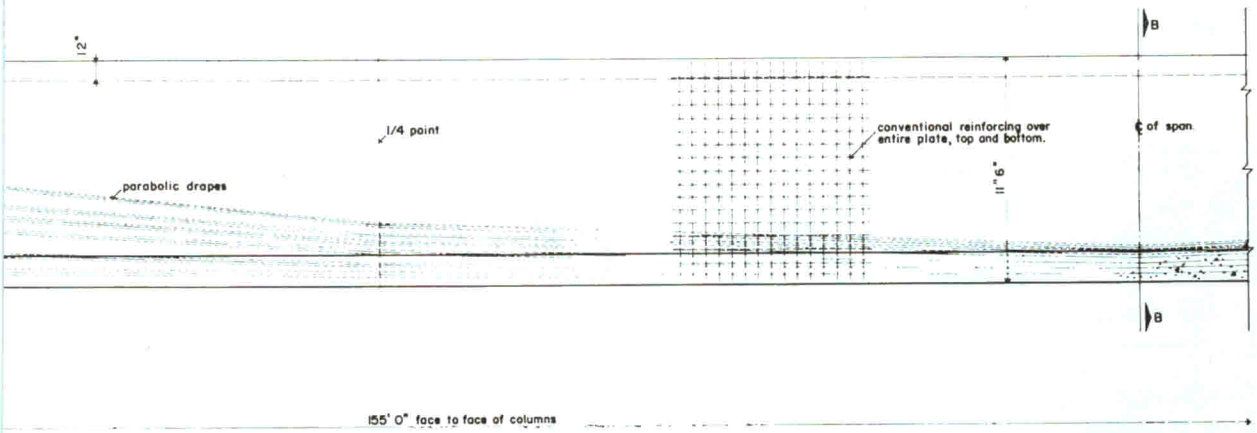
Galleries around the central court provide public circulation on each level, with dramatic vistas up and down; the building's open sides and crown permit a continual circulation of air within this public space. The two Houses, partially underground, and other office areas are air conditioned. Members' offices are on second and third floors. Largest of the office floors is the fourth containing departmental agency offices, Legislative Reference Library and other facilities. This floor is actually the building's roof; the executive level, with suites for governor and lieutenant governor, is a penthouse with spacious lanais opening to a broad terrace overlooking park, Punchbowl and sea



LONGITUDINAL SECTION



TRANSVERSE SECTION



gle. These webs are placed without the aid of a top form.

At the time of initial stressing, computations indicate a net upward deflection at the span center line of .9 in. and an inward movement of the bottom flange of .4 in. at each end. Neoprene pads between the folded plate and girder accommodate this horizontal movement through shear distortion, and temporary lateral support will be provided by tie bars spaced at 20-ft centers, extending from top flange to top flange, and will be burnt off after closure strips have been cast.

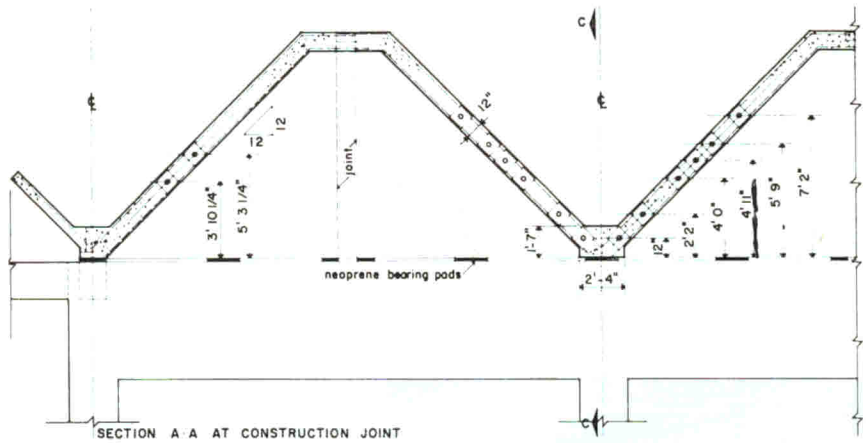
Maximum reuse of forms is made possible by providing an open 12-in. construction joint in each top flange, permitting eight uses of one set of forms. The closure strip is cast after both plates adjacent to it have been tensioned and shoring has been removed.

The building will have three gymnasiums for instruction which can readily be converted into one large gym, 210 by 155 ft, for intercollegiate basketball games and other large college events. Telescopic bleachers pull out over two of the gym floors to make the conversion into the large gym which will seat some 5000 people.

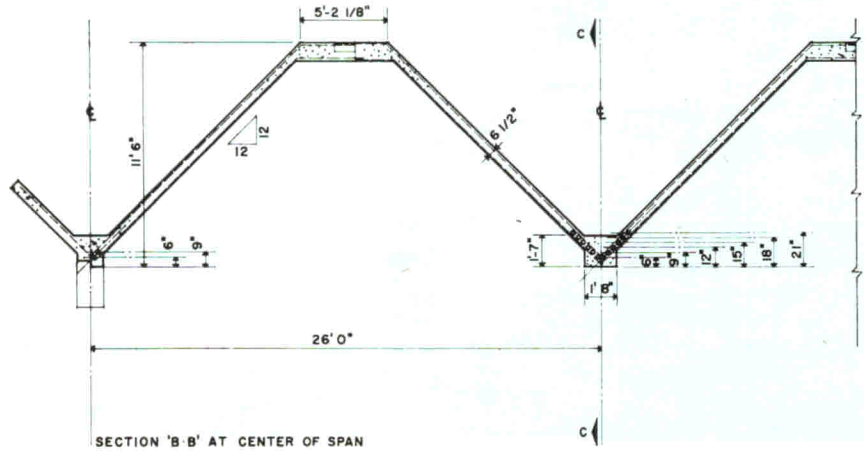
The building also will have three classrooms, 14 offices, a gymnastics floor, wrestling and boxing area, and a 75-ft Olympic-size swimming pool.

Homer Howe is the structural engineer on the project, David J. Field, Architectural Designer. General Contractor is the J. L. Simmons Company, Indianapolis, Indiana.

Eight folded plates span 165 ft and vary in thickness from 6½ in. at the center to 12 in. at the support. Bottom flanges of the plates rest on neoprene pats atop a continuous beam to accommodate movement when the plates are post-stressed. Overhangs are cast in place after plates have been tensioned

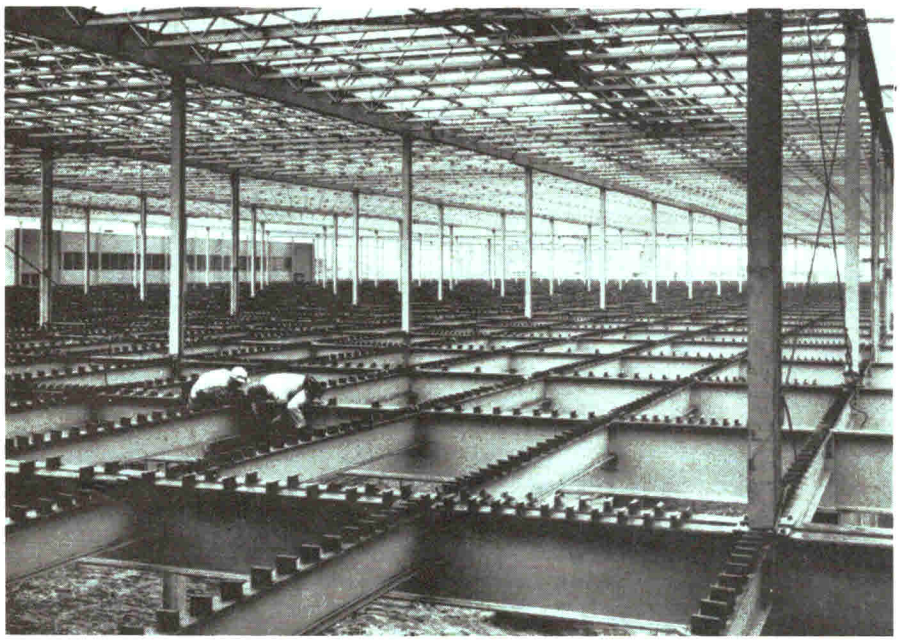


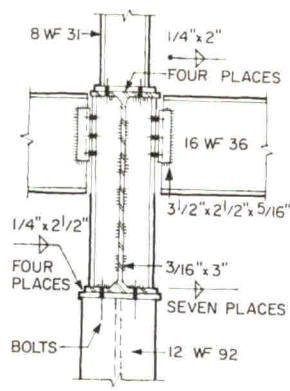
SECTION A-A AT CONSTRUCTION JOINT

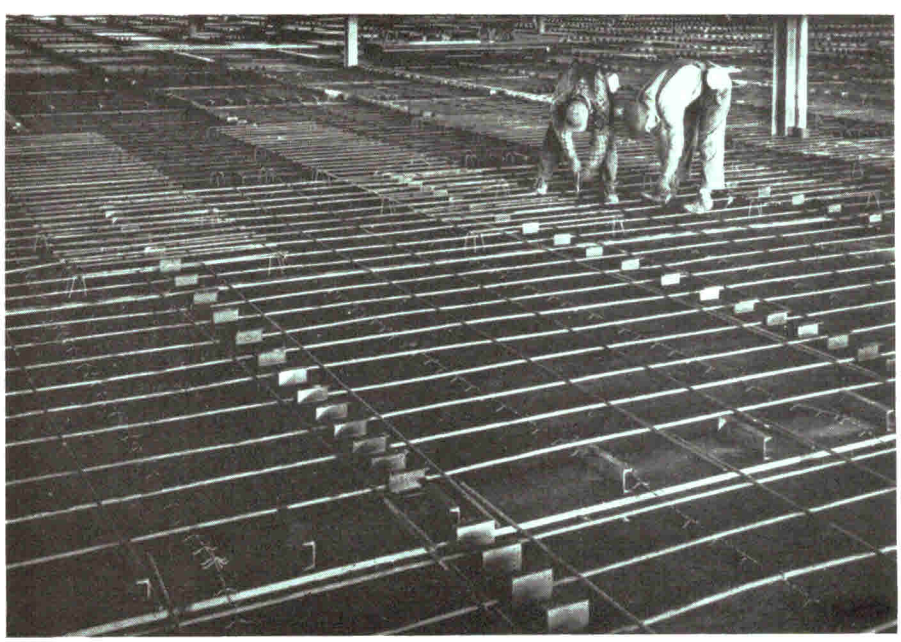


SECTION 'B-B' AT CENTER OF SPAN

How Composite Construction Saved 25% on Steel







Thousands of channel section shear connectors were arc welded to the top flanges of girders and beams in the structural steel frame of a new manufacturing plant for Steelcase, Inc., in Grand Rapids, Michigan, saving perhaps as much as 25 per cent in steel over conventional design, according to George Bain, District Engineer for the Lincoln Electric Company. These connectors unite steel framing with the reinforced concrete floors to reduce slab thickness and size of beams and columns. This 320,000 sq ft plant is said to be the largest building to be constructed by the composite method.

Channel connectors are spaced approximately 12 in. on center. Full-length fillet welds on the toe and heel of these channels attach them to the steel. The top photo shows the long dimension of the second floor of the building. A typical bay measures 20 by 40 ft, with floor beams spaced 8 ft apart. One-way monolithic concrete slabs, 6 in. thick, span floor beams.

Columns supporting the roof have their axes at right angles to the columns below. This was the result of a peculiar set of circumstances. Roof steel for the job had been ordered early and originally the second floor framing system was to have been prestressed concrete. A voluntary alternate bid on the steel framing arrangement was permitted and accepted. Since roof steel had been fabricated, the change required that major axes of upper columns be reversed from those below.

Continuity between upper and lower columns, through the 33 in. WF girders, was achieved by means of 5 in. Tee stiffeners welded to the girders as shown in the sketch. The upper column is bolted and tack welded to the girder.

Where floor beams frame into the girders at other than column points, the upper flange and web are cut back slantwise at an angle sufficient for the upper beam flange to clear the girder flange.

J & G Daveman Company designed the structure; Beckering Construction Company was the general contractor; Haven-Busch Company, Grand Rapids was the fabricator.

FLUORESCENT BALLASTS AND NOISE PROBLEMS

by R. W. Zarosi,
Ballast Department
General Electric Company

With the growing trend toward higher lighting levels—meaning more lamps and ballasts per square foot of area being lighted—ballast sound has become an important factor to consider in planning new lighting installations.

All ballasts for fluorescent lamps have a normal magnetic "hum" of 120 cycles when powered by 60-cycle current, caused by a changing magnetic field in the laminated core of the unit. The intensity of this inherent "hum" is dependent upon ballast construction, manufacturing processes, electrical rating, etc. Fixture construction and installation can also contribute to amplification of the noise—especially if ballasts are not mounted securely or if there are any loose parts.

While one would suspect the ballast itself as being the prime cause of noise problems—the largest single source of ballast complaints—this is not the case. Faulty ballasts (those out of noise limits) account for only two per cent of all complaints. In most instances, either the wrong ballast or the wrong lighting system was specified.

In order to illustrate some typical noise complaints, information was obtained at several different types of lighting installations—a classroom, a school drafting room, and a gymnasium.

Case 1: H. S. Classroom

The first installation was in a new high school, located in a small country town, which we shall call "Adams" school. The noise complaint at Adams school was made by the architect before the school was opened.

Before investigating the Adams school, we decided to measure the ambient sound level in another school which the same architect considered as having an excellent lighting system, regarding both lighting level

CASE 1: TWO SCHOOLS

	Baker	Adams
Dimensions	25 by 30 by 10 ft	28 by 28 by 10 ft
Ceiling material	Acoustic tile	Hard plaster
Fixture description	6—2-lamp 96T12 slimline 2—2-lamp 48T12 slimline	9—2-lamp 96T12 slimline
Ballast Sound Rating*	"C" Sound Rating	"C" Sound Rating
	Two Rooms Analyzed	Three Rooms Analyzed
Measured sound level in decibels Lights off and room not in normal use	30 31	29 29 28
Measured sound level in decibels Lights on and room not in normal use	35 35	40 40 41

CASE 2: DRAFTING ROOM

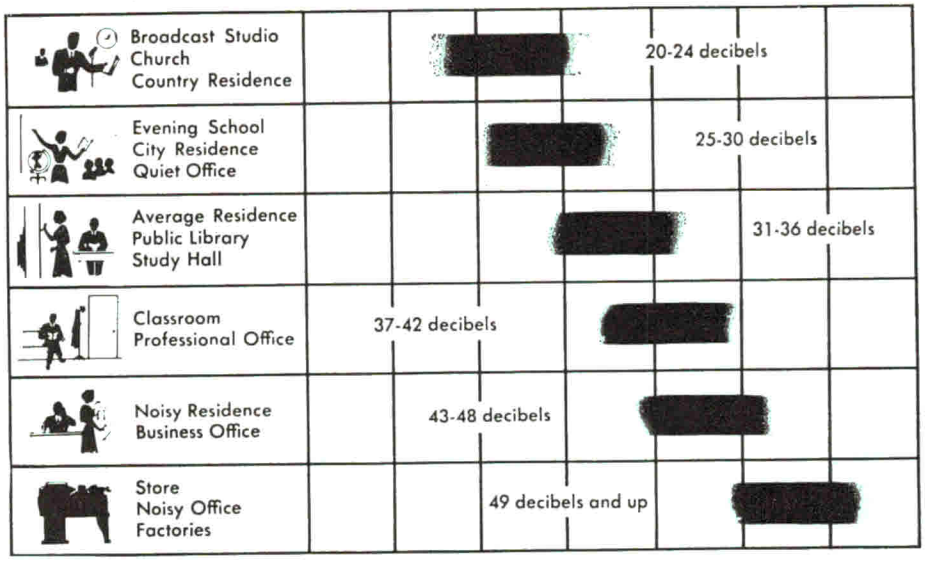
Dimensions	50 by 62 by 13 ft high
Ceiling material	Hard plaster ceiling
Fixture description	41 — 2-lamp (8 ft) 800 ma. fixtures, surface mounted
Ballast Sound Rating*	"C" Sound Rating
Number of fixtures lighted Time: 11:00 A.M.	0 7 14 18 25 31 41
Measured sound level decibels —(room not in normal use)	37 39 40 40 40 41 41

CASE 3: GYMNASIUM

Dimensions	70 by 100 by 26 ft high
Ceiling material	Hard ceiling which could not be considered equivalent to acoustic tile
Fixture description	46 — 2-lamp power groove 96PG17 2 — 2-lamp power groove 48PG17
Ballast Sound Rating*	46 — These are two-section ballasts; each section is sound rated "E" making a total of 92 ballasts 2 — "E" Sound Rated
Number of fixtures lighted	0 4 8 12 16 20 24 28 32 36 40 44 48
Measured sound level in decibels —(room not in normal use)	34 36 39 40 40 41 41 41 41 41.5 42 42 42.5

FIGURE 1: Three case histories involving sound from ballasts

FIGURE 2: Ambient Sound Level Guide (reproduced from *The G-E Sound Rating Calculator**)



* The G-E Sound Rating Calculator (copyright 1956, General Electric Company) is a four-page informational brochure which includes a circular slide rule. If the size of a room and its ceiling type (acoustical tile or hard plaster) are known, it is possible to determine the room constant (sound-absorbing property) from a chart which is included in the calculator. When the normal ambient sound level for the installation is selected and the number of General Electric ballasts and their sound ratings are considered (G-E ballasts are assigned sound ratings "A" through "F"—"A" being the quietest, and "F" being the noisiest) it is possible to pre-determine whether the ballasts in the installation will be inaudible, slightly audible, audible, or annoying. All acoustical calculations referred to in this report were performed using the General Electric Sound Rating Calculator.

and sound. We shall refer to this installation as "Baker" school (Figure 1 and Figure 3).

A sound analyzer and a sound-level meter indicated an average ambient of 30 decibels in the rooms with the lights OFF; 35 decibels with the lights ON with the room unoccupied. While ballast "hum" could be heard when only one or two individuals were in the room, more people masked the "hum" entirely.

At Adams school, sound levels were recorded in four different classrooms. Figure 1 shows that with the rooms unoccupied, there was an average ambient of approximately 29 decibels in the room with the lights OFF, and 40 decibels with the lights ON. Once more, just as at Baker school, the ballast "hum" could be heard; however, the noise was more prominent in Adams school. This was anticipated because Adams school had hard plaster ceilings, while Baker school was constructed with acoustical tile ceilings.

From the ambient sound level guide (Figure 2), we find that the average classroom will range from 37-42 decibels in normal use (classes in session). Using those values we can predict that the ballast "hum" in Adams school, recorded at 40 decibels, will more than likely be completely masked by normal classroom noises. However, at times the room ambient may fall to 37-39 decibels, causing the ballasts to become slightly audible.

From all appearances, the ballasts and fixtures in Adams school were representative units. We recommended that the architect visit the new school after classes began their sessions in the fall. If the installation was not satisfactory, and the architect desired a lower sound ambient with the lights ON (approximately 35 decibels, as recorded at Baker school), it was agreed that the only practical remedy would be the installation of acoustical tile ceilings in the rooms.

The architect later reported that the installation proved to be quite satisfactory when tested under actual "use" conditions.

Case 2: Drafting Room

A relighted drafting room in a school caused concern due to the slightly audible ballast hum during the quieter evening classes.

With the portable sound level meter, we recorded some readings turning on various rows of lights in succession (see Figure 1).

The ballasts were audible whether only seven or all forty-one fixtures were turned ON.

From the ambient sound level guide in Figure 2, we know that the average classroom noise levels range between 37-42 decibels with a full class in session. Evening schools or exceptionally quiet classrooms would have an ambient of 25-30 decibels. As pointed out previously, these sound levels are not the sound ratings of the ballasts but are the normal room ambient noises (caused by people merely breathing, shuffling papers and by ventilation and air distribution system noises). The ambient noises are depended upon to mask the ballast hum. This is why it is very important that the specifier accurately determine the correct ambient that applies in his installation.

We also recorded some test results when the drafting room was fully occupied. The sound level varied between 55-58 decibels during the morning session, which is quite high. We then asked that all the students be as quiet as possible—the ambient sound level decreased to 45 decibels. The ballast hum, of course, could not be heard under this condition since the 41 decibel reading (see Figure 1) was completely masked by the 45 decibel sound level of the normal daytime class room noises.

It is evident that the ballast hum in this installation would be audible during the evening school session or during an "extremely" quiet day classroom period in which the ambients will range from 25-37 decibels.

Tests showed that the ballasts were well within their nameplate sound rating of "C". Acoustical calculations, showed that the ballast hum could be eliminated *completely* in this installation even at the low levels of 25-37 decibels, by the addition of acoustical tile ceiling material.

Case 3: Multi-Purpose Gym

The final complaint was rather unique since it concerned a large, well-lighted (100 footcandles) private school gymnasium (Figure 1 and Figure 4) part of which was used daily for music classes, and every Sunday for church services.

Various fixture combinations were lighted in succession to determine whether any particular group of bal-

continued on page 194

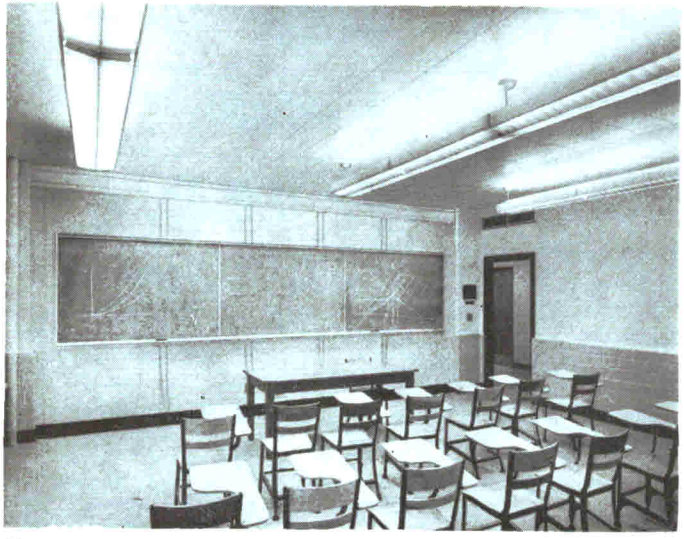


FIGURE 3: "Baker" school has 35db sound with lights on, room unoccupied. Over two people in room mask ballast "hum"

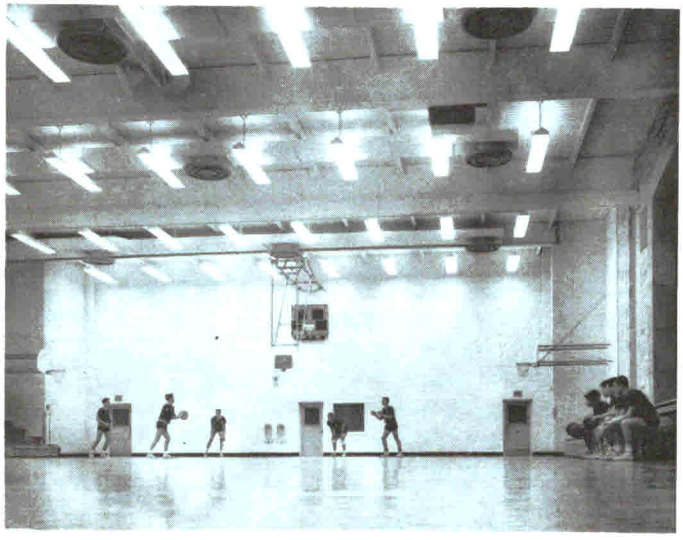


FIGURE 4: Gym had 34 db sound level when all lights were off and room was unoccupied; 42.5 with all lights on

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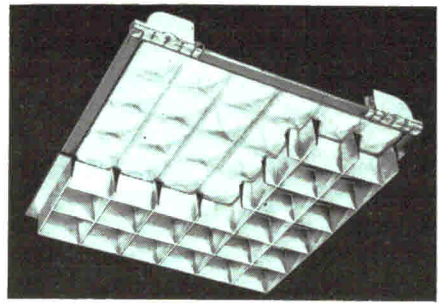
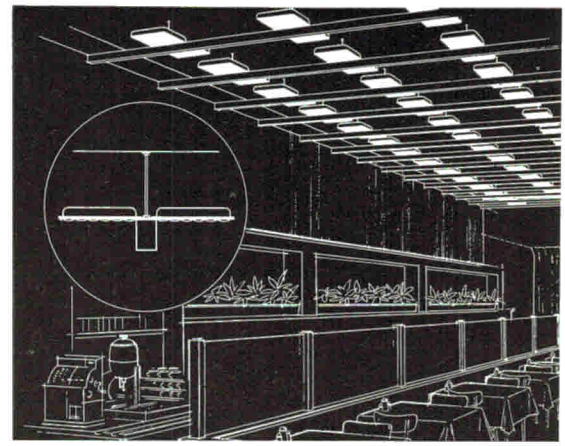
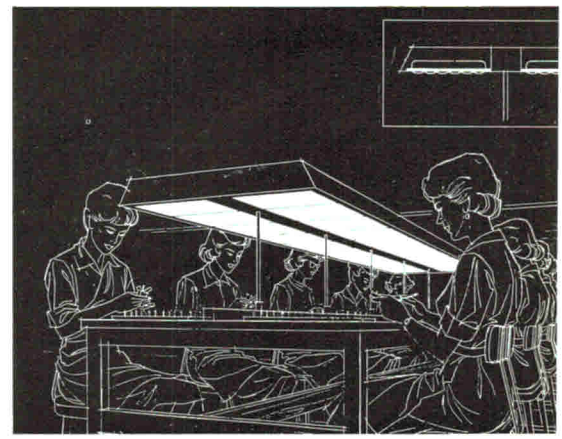
A fluorescent lamp in the shape of a thin panel 11⅝ in. square and 1½ in. deep is designed to fit a module one ft square, can be used singly or in groups, and lends itself to built-in, surface-mounted, suspended and free-standing applications requiring small size and high light output. Face plate is waffle-patterned in 1¾ in. squares. These facilitate use of the lamp in fixtures with egg-crate louvers of an identical grid spacing. Face plate diffuses the light, concealing the 5-ft sinuous path of the arc.

Bi-pin terminals for electrical connection are behind an outer rim at adjacent corners and are entirely within the overall depth and other dimensions of the panel. This arrangement permits the use of push-pull connectors, capable of being inserted with one hand.

The lamp will come in two types. The first to be available emits light in equal amounts from the front and back. Another version will have a reflective coating on the back side to direct most of the light from the front. The lamp is designed to operate at either 80 watts or 50 watts. At 80 watts it produces 4800 lumens. The average brightness of its face is approximately 3200 footlamberts. At 50 watts the lumen output is 2900 lumens. Rated life is 7500 hours at both wattages. Availability of the panel lamps to the general public will follow the production of new fixtures by the industry. G. E. expects that these will be coming to the market place this fall. *General Electric, Nela Park, Cleveland 12, Ohio.*







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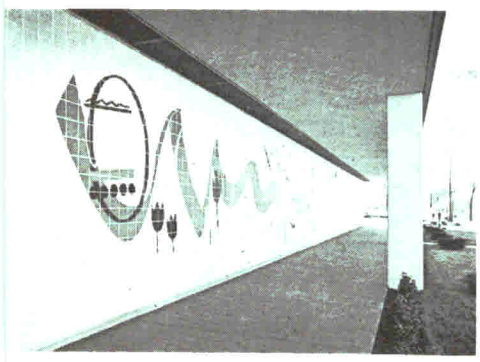


The Summitville art department is under the direction of Frank Eggleston, designer and painter, who is available for consultation and for development of mural ideas into reality. The company will furnish sketches and cost estimates on either interior or exterior *Customurals*. Costs are comparable to murals made of mosaic tile or porcelain enameled steel panels.

The basic tile may be Summitville's frostproof 6 in. square by ½ in. quarry tile with a wide choice of high-fire ceramic glazes or the larger 12-veneer, nominal foot-square by ⅜ in., for interior applications. *Summitville Tiles, Inc., Summitville, Ohio.*

more products on page 198

Fixture Selection Calculator
How would you select a particular downlight for a specific application? How many would you need to achieve an overall intensity of 20 footcandles? Or 35? Or 50? What type of fixture would provide the light distribution required for a display, a corridor, or an auditorium? A new graphic calculator gives this information at a glance for all models of *Lightolier* recessed incandescent fixtures; 18 basic models in a total of 96 sizes. The *Calculite Selector* may be obtained without charge. *Lightolier, Jersey City 5, N. J.*

Ceramic Murals Portfolio
Ceramic Customurals by Summitville is a gate-fold brochure describing the company's new offering of ceramic murals duplicating virtually any art technique or color motif for exterior or interior walls. A portfolio of 3½ by 5½-in. color prints of recent installations is included. Offering is described in the Products section of this issue. *Summitville Tiles, Inc., Summitville, Ohio.**

Spray-on Acoustical Insulation
A full color brochure describes new "*Asbestolite*, The Spray-on Insulating and Acoustical Building Material," designed to be sprayed directly on various interior building surfaces such as steel, iron, wood, or even glass. It is formulated of asbestos, bonding agents and lightweight aggregates offering permanent beauty, fire proofing, low cost, ease of application and acoustical and insulating value. *The Clute Corp., 1449 West Littleton Blvd., Littleton, Co.*

Lumber Industry Facts
A new edition of "Lumber Industry Facts," statistical handbook tracing over 350 years of growth in the American lumber industry. 56-pages, contains thousands of facts and figures on forest resources, lumber production, consumption, stocks and shipments, industry employment, exports-imports, and financial statistics. For the first time, data is also included on the wholesale and retail lumber trade, on research expenditures in the industry, and several tabulations are devoted to manufacturing census statistics for lumber and wood products. *National Lumber Manufacturers Association, 1319 Eighteenth St. N.W., Washington 6, D. C.*

Four ASA Construction Standards
Four revised American Standards in the construction field newly approved by the American Standards Association are:

(1) "American Standard Specifications for Gypsum Wallboard" (ASTM C36-60) A69.1-1961 (30 cents) covers board which is to be used without the addition of plaster for walls, ceilings, or partitions.

(2) "American Standard Methods of Testing Gypsum and Gypsum Products" (ASTM C26-60) A70.1-1961 (50 cents) prescribes the procedures for the chemical analysis and physical testing of gypsum and gypsum wallboard.

(3) "American Standard Specifications for Facing Brick (Solid Masonry Units Made From Clay or Shale)" (ASTM C216-60) A99.1-1961 (30 cents).

(4) "American Standard Methods of Sampling and Testing Structural Clay Tile" (ASTM C112-60) A83.1-1961. *American Standards Association, 10 East 40th St., New York 16, N. Y.**

Lighting Fixtures
A new, 72-page, full-color catalog shows residential, decorative, public area and architectural lighting products in a crisply modern graphic setting. The new catalog shows over 250 fixtures; 164 are new designs. *Globe Lighting Products, Inc., 1710 Flushing Ave., Brooklyn 37, N. Y.*

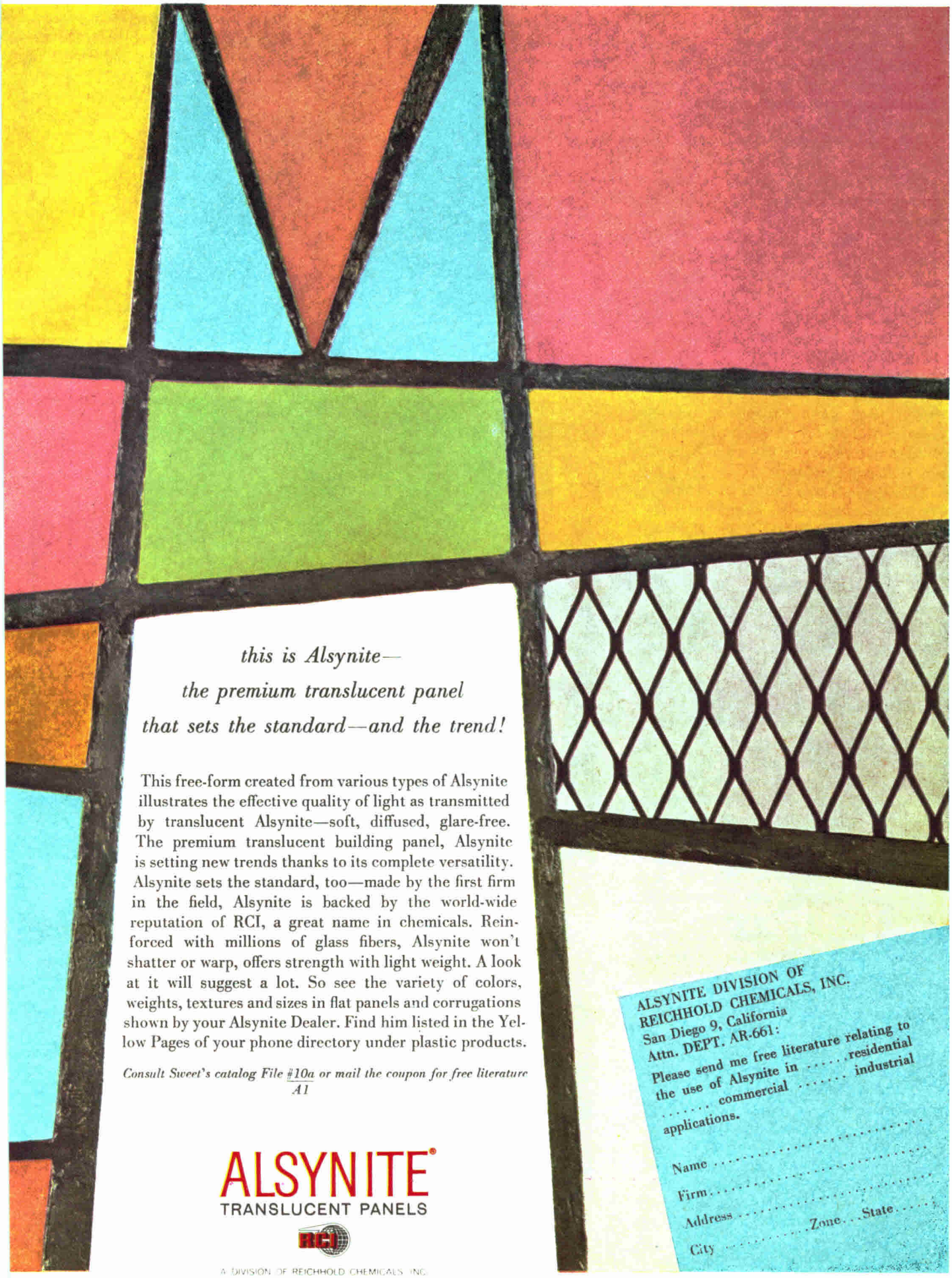
Troffer Air Diffusers
(A.I.A. 30-J) An 8-page catalog gives complete information on the Anemostat *CLD* diffuser which permits coordination of air distribution and illumination in a single efficient ceiling unit. Catalog *CLD-70* contains selection and performance data on air handling troffers. *Anemostat Corp. of America, 10 East 39th St., New York 16, N. Y.**

Handbook of Sprinkler Design
The 1961 edition of "Automatic Sprinkler Hydraulic Data," by Clyde M. Wood, CE, of the Automatic Sprinkler Corp. is a complete revision and expansion of the 1944 edition. This manual is a practical guide for those who design fire protection systems, or who review fire protection plans or proposals. Hydraulic calculations and tabular data show total water requirement, pipe sizing, unit arrangement, choice of discharge orifice, value of existing water supply, methods and procedures. Detailed explanations and examples are given, and 104 pages of tables show discharge characteristics for various office sizes, friction loss and factors, gpm per floor area, velocity in steel pipe, etc. Conveniently arranged, completely indexed, large clear type; 300 pages 8½ by 11; $10.00 postpaid, in U.S. and Canada. *"Automatic" Sprinkler Corp. of America, Box 360, Youngstown 1, Ohio.*

Laminated Architectural Glass
Laminated architectural glass for glazing hazardous industrial areas to eliminate flying glass is described in a 4-page bulletin. Among the advantages listed are: Will remain intact when subjected to repeated low pressure shocks or low-energy missiles. Will minimize the hazards of flying glass. Can be procured in standard sizes and cut to size in the field. *Department IS, Monsanto Chemical Co., Springfield 2, Mass.**

** Additional product information in Sweets Architectural File.*

more literature on page 222



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continued from page 180

lasts was noisier than the others.

An analysis of the data in Figure 1 shows that any noise greater than 34 decibels would be audible. Therefore, the noise problem could not be solved by merely turning off half of the fixtures, or even three-fourths of the fixtures. Even though only eight of the fixtures were lighted, the room sound level of 39 decibels would be annoying.

Using the ambient sound level guide (Figure 2), we estimated that the "normal use" ambient of a typical gymnasium would be 49 or more decibels. As the actual readings indicated, the ballast hum of 42.5 decibels would be completely masked by the noisy ambients associated in any gymnasium in full use. However, when used as a church or music room, the much quieter ambient would not cover up the ballast hum in this installation.

We did not use the 20-24 decibels ambient sound level suggested for churches in the ambient sound level guide (Figure 2) when we made our calculations for this installation. Being somewhat different in physical characteristics from a typical church, the gymnasium had a 34 decibel sound ambient when not in use (see Figure 1). We can safely assume that the ambient would fall within a 35-36 decibels range when church services were being conducted in the room.

Under consideration was the possibility of replacing the older two-section "E" sound-rated units with new "D" sound-rated, single-section units. These new, single-section quieter ballasts had not been available at the time of the original installation. However, our calculations showed that merely changing ballasts would *not* eliminate the noise problem in this particular installation.

Another possible solution was the addition of acoustical tile ceiling material. Again, our calculations showed that with this change alone, the noise problem would still exist.

We concluded that there were only two practical methods of eliminating the noise problem. One solution was to install complete acoustical tile ceiling material *and* replace the older two-section ballasts with the new, quieter single-section units.

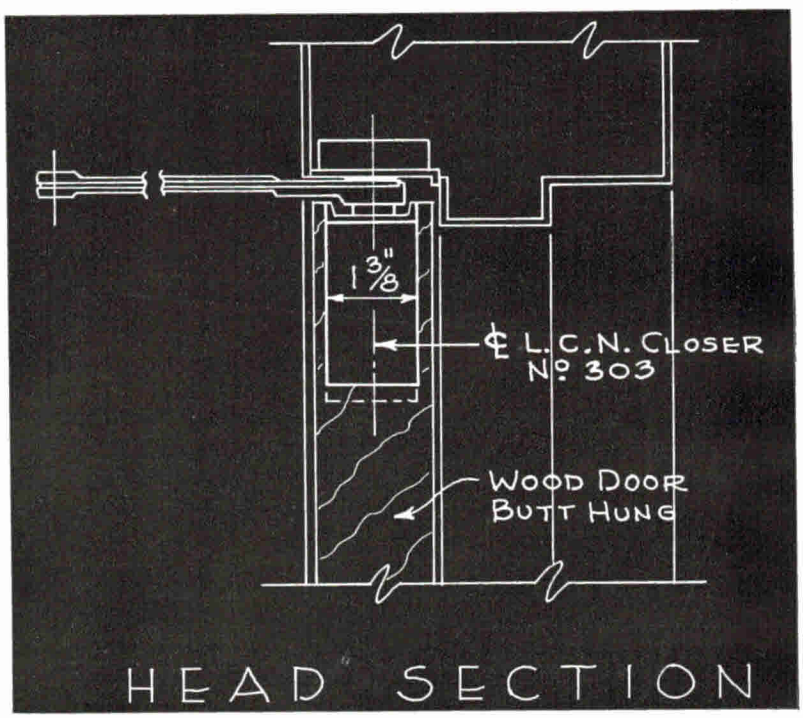
The other solution was to add supplementary incandescent lighting, with lower but adequate lighting levels, which could be installed directly above the area to be used for church services and music classes. School officials chose the latter method because of lower cost.

The three complaint cases reported here strongly suggest that ballast "hum" be considered when a fluorescent lighting installation is planned. It is also most important that all eventual uses of a room be known in advance by the lighting designer.

Ballast sound rating is *not* an industry standard. Each ballast manufacturer must define and stand behind his own sound rating system.

Any questions on the sound rating of ballasts as applied to new lighting installations should be referred to the ballast manufacturer.

With the knowledge currently available, it is possible to avoid misapplications such as those included in this article.



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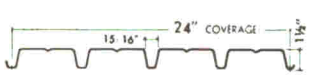
Write for catalog 248, the Inland Roof Systems Manual — see Sweet's section 2i/InL. For help on unusual problems, you can draw on the diversified experience of Inland sales engineers. Write or call your nearest Inland office.



A-DECK—For purlin spacings not exceeding 8'4". Narrow ribs provide deck surface that supports the thinnest or softest types of insulation.

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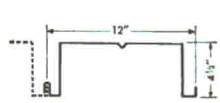

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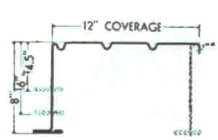

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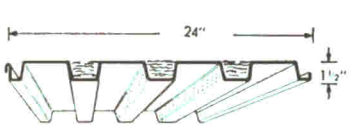

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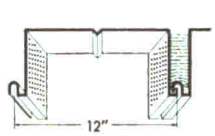

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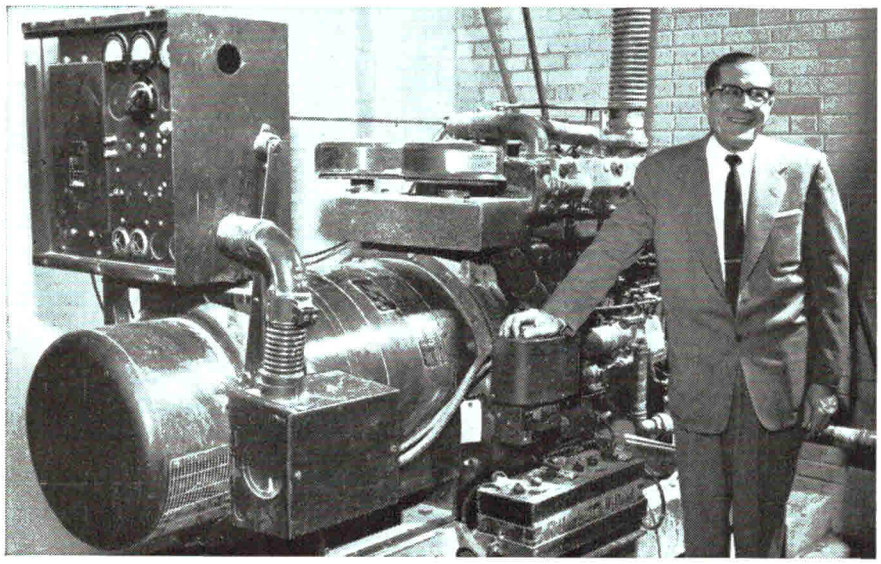

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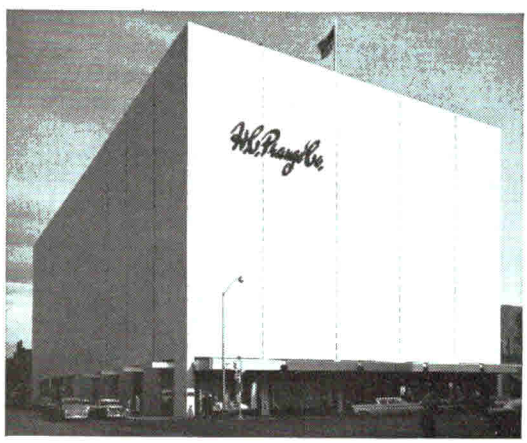

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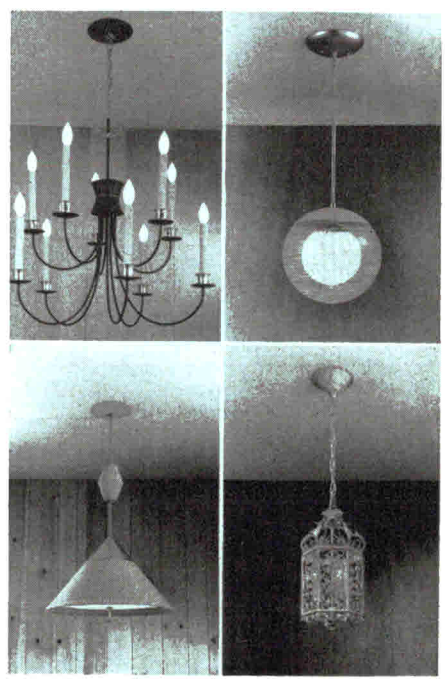
Product Reports

continued from page 181

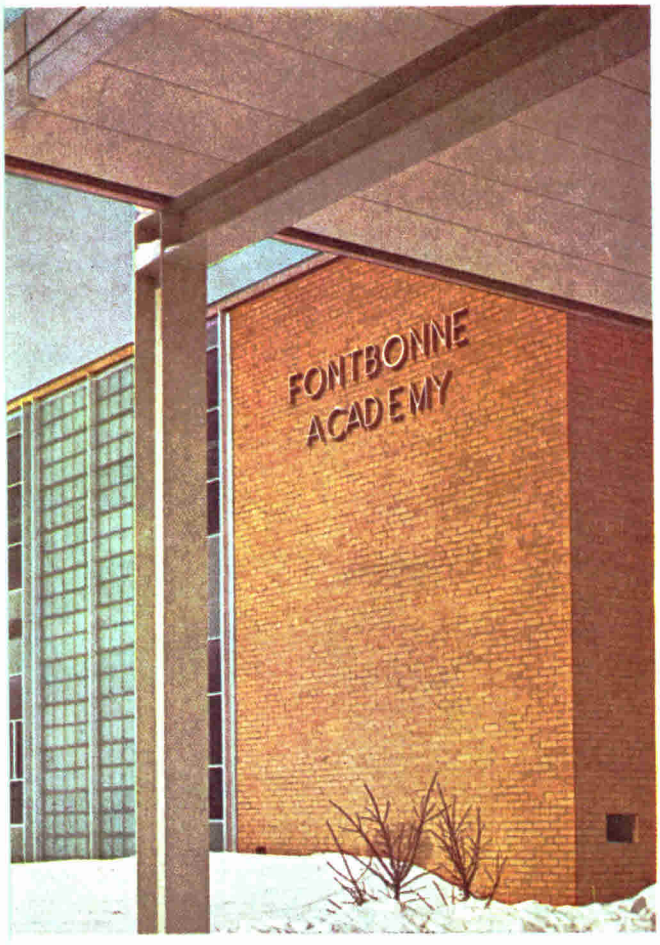
New Lighting Fixture Line

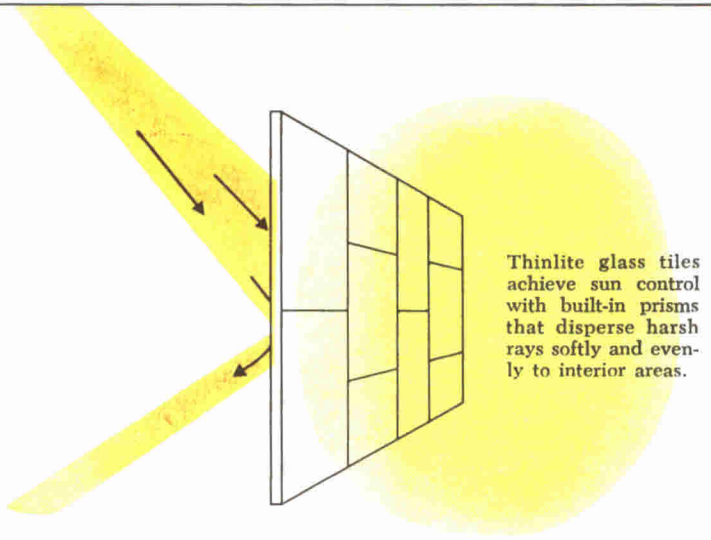
Enchante lighting fixtures for 1961 by Thomas Industries are being introduced in more than 80 models in authentic traditional and original contemporary. The new line includes chandeliers, pulldowns, pendants, wall lamps and lanterns, close-to-ceiling fixtures, pole lights, outdoor wall lanterns and postlights. Among *Enchante's* traditional designs is a chain-hung florentine lantern (see cut). Its delicate tracery of Italian lace is finished in French gold on white. Contemporary designs include the low-hanging crystal globe (see cut) for the restaurant, lounge, foyer, hall or dining area, and trim pulldown (see cut) adaptable to the office, shop, dining area or family room. Among fixtures designed to capture the nostalgia of the antique in clean-sweeping contemporary lines is a candelabrum (see cut) featuring 10 white plastic candles with flame bulbs. Especially designed for the restaurant lounge or contemporary foyer, it comes in black or white matte finish with polished brass trim. *Enchante* also continues its original designs for the out-of-doors with lanterns and postlights. *Moe Light Division, Thomas Industries, Inc., 207 East Broadway, Louisville 2, Ky.*



more products on page 202

At Fontbonne Academy, Allegheny County, Pa., architects Celli-Flynn, McKeesport, combined light-controlling panels of green Thinlite with window and metal panels to achieve this unusual effect in the classroom wing.





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  Tests show Thinlite tiles transmit less solar heat than any other light-transmitting medium.
- **SAVINGS IN HEATING AND AIR CONDITIONING**
  Significant savings in heat and air conditioning can be achieved with Thinlite curtain walls. Tiles transmit less solar heat while the double-glazed construction guards against heat loss. Through-metal is kept to a minimum.
- **FACTORY-CONTROLLED PRE-FABRICATION**
  All possible fabrication is performed at factory under controlled conditions. Field cutting and fitting is reduced to the barest minimum. Field caulking is unnecessary except at wall perimeters.
- **LOW MAINTENANCE COST**
  Thinlite glass tiles are self-washing. Colors are permanent and metalwork is durable anodized aluminum.
- **COMPLETE CURTAIN WALL SYSTEM**
  The Thinlite system includes all necessary framing metal and parts, as well as glass or metal panels in 2′ x 4′ or 2′ x 5′ sizes.

For complete information including details, see Thinlite catalog in 1961 Sweet's Architectural Files—Curtain Wall Section.

THINLITE CURTAIN WALL
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

HOME OF THE SAN FRANCISCO GIANTS

John S. Bolles, Architect E. Elmore Hutchison, Engineer

All 33 Front Doors at Candlestick Park Are Cookson...the Stronger Rolling Doors with the Compatible Architectural Look

Agreed that greater strength gives greater protection – against rough use, wind, weather, unauthorized entry, damage of any kind. That's why Cookson uses thick galvanized copper-bearing steel curtain slats of heavier gauge than most others, with deeper corrugations for added rigidity; and why Cookson has engineered its doors to resist a wind-load of 20 lbs. per square foot! Pure ruggedness is built into every other part, too, from the thick steel plate brackets to the continuous steel angle guides. Whatever the punishment, greater strength Cookson Doors can take it.

They're easier to operate than most other doors, too. It actually takes 35% to 65% less effort to open or close a Cookson Door, because the barrel is supported by and rotates on grease-sealed ball bearings, and the oil tempered torsion springs are designed for the *individual* door, providing the correct counter-balancing force.

Whether you specify motor, chain or crank operation, you'll find Cookson Doors the smoothest to operate, the least expensive to maintain, the best looking to live with, year in and year out. See our catalog in Sweet's, or write for a copy. The Cookson Company, 1525 Cortland Avenue, San Francisco 10, Calif. Sales and service in principal cities.

COOKSON

ROLLING DOORS • FIRE DOORS • GRILLES • COUNTER DOORS • WOOD COILING PARTITIONS

Product Reports

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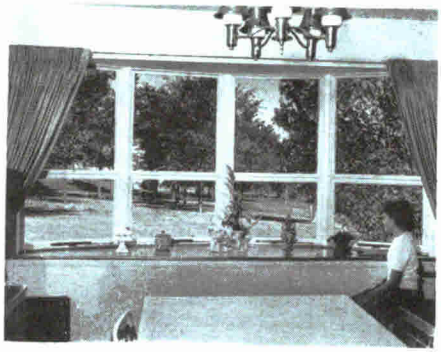
Stock Unit Bow Windows

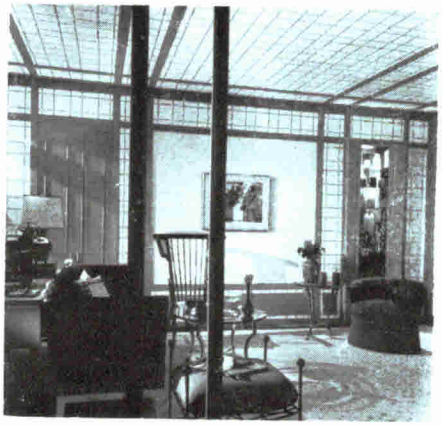
Beauty-Line bow windows have been added to Andersen's window line. Bow styles fit either contemporary or



traditional homes. Windows are stock units fitted in an easily-detailed staggered semi-circle with either ventilating or stationary sash in bow widths from 8½ to 13½ ft. *Andersen Corp., Bayport, Minn.*

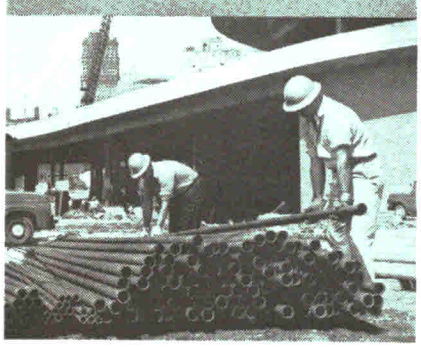
Companion Ceiling and Floor

The first ceiling and floor designed for each other feature original patterns by Michael Greer. Highlight of the collection is *Bamboo Trellis* ceiling with a floor design of fallen bamboo leaves. Ceiling panel is available in red, yellow, and green. Bamboo-leaves floor is *J-M Terraflex* vinyl-asbestos tile. Also in the Greer collection of J-M ceiling panels is *Floral Tracery*, a gentle turquoise design. Another is classic *Medallion* of traditional elegance. *Architectural* is an intriguing geometric pattern in white. *Johns-Manville, 22 E. 40th St., New York 16, N. Y.*

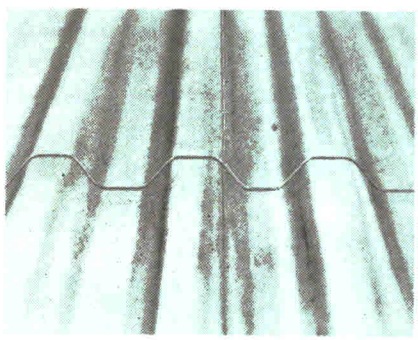


more products on page 206

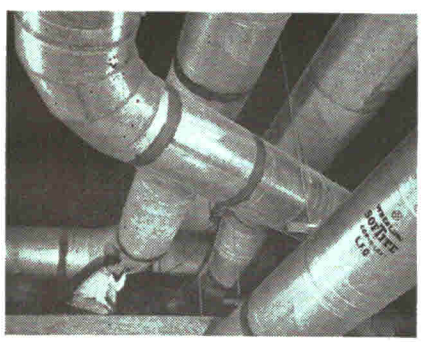
OTHER WHEELING PRODUCTS



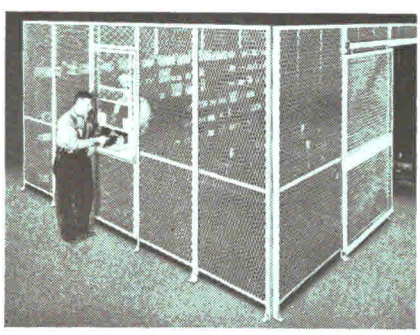
Wheeling Continuous Weld Steel Pipe gives strong, dependable, low-cost service...usually outlasts the building itself.



Wheeling Tensilform®, with conventional or light aggregate concrete, gives structures excellent lateral stability.



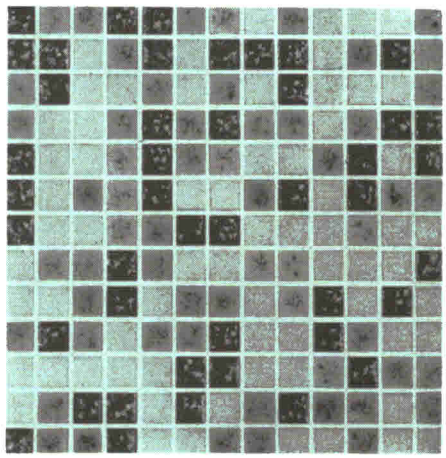
Wheeling SofTite® Cop-R-Loy® Galvanized Steel Sheets, for heating and air-conditioning ducts, will not flake or peel under rough use.



Wheeling Expanded Metal Partition Systems prevent pilferage... yet allow free passage of light, heat, air and moisture.

Product Reports

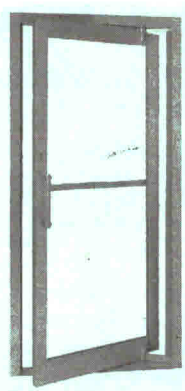
continued from page 202



New Ceramic Tile Pattern

A new mosaic tile design, the *KJA* series, is described as: "an exhilarating burst of color surrounded by whites and liberally sprinkled with a gold leaf effect on dark-toned tiles." The new pattern is an addition to the *Vico* line of popular priced ceramic tile. The new *KSA* design is a ⅜-in. by ⅜-in. tile in 1-ft-square sheets, mounted on Perfo-Mesh backing. Eleven color combinations are available from local warehouses. *Amsterdam Corp., 285 Madison Ave., New York 17, N. Y.*

Safety Balanced Door



A balanced door that can't pinch fingers has a vinyl finger guard attached to the door frame at the heel of the door. Guard easily depresses when anything comes between it and the door on closing also provides a safe and efficient seal. *Roto-Swing* balanced action tends to neutralize wind and stack draft forces, yet it operates at a normal touch for customers. Door is manufactured as a package entranceway in extruded aluminum. With custom construction, tempered glass doors, hollow metal steel doors, stainless steel doors and wood doors are available with *Roto-Swing* balanced door hardware. *Roto-Swing Door Co., 3110 N. Walker, Oklahoma City, Okla.*

more products on page 210

hc products co.

home comfort

Princeville, Illinois

* Reg. U. S. Trade Mark

H-C PRODUCTS COMPANY PRINCEVILLE, ILL. AR200

Please send additional literature on X-Panda shelves.

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Proven in actual use in over $1,000,000,000 of construction

INSTALL in MINUTES

X-Panda is the complete answer to all your shelving problems! All-Steel, completely fabricated and packaged, cuts labor costs 85%, all sizes have 13" length adjustment, installs in less than 10 minutes, choice of greytone or linen finish.

TYPICAL INSTALLATIONS

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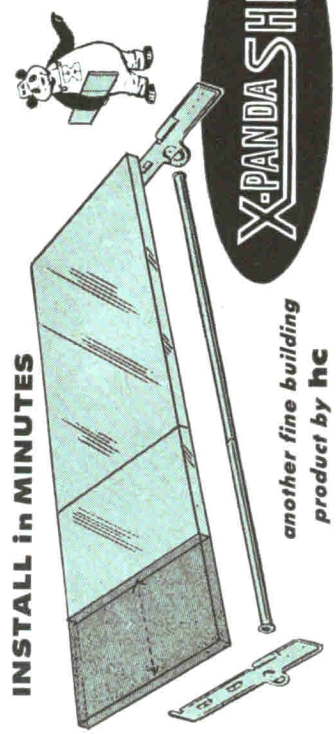
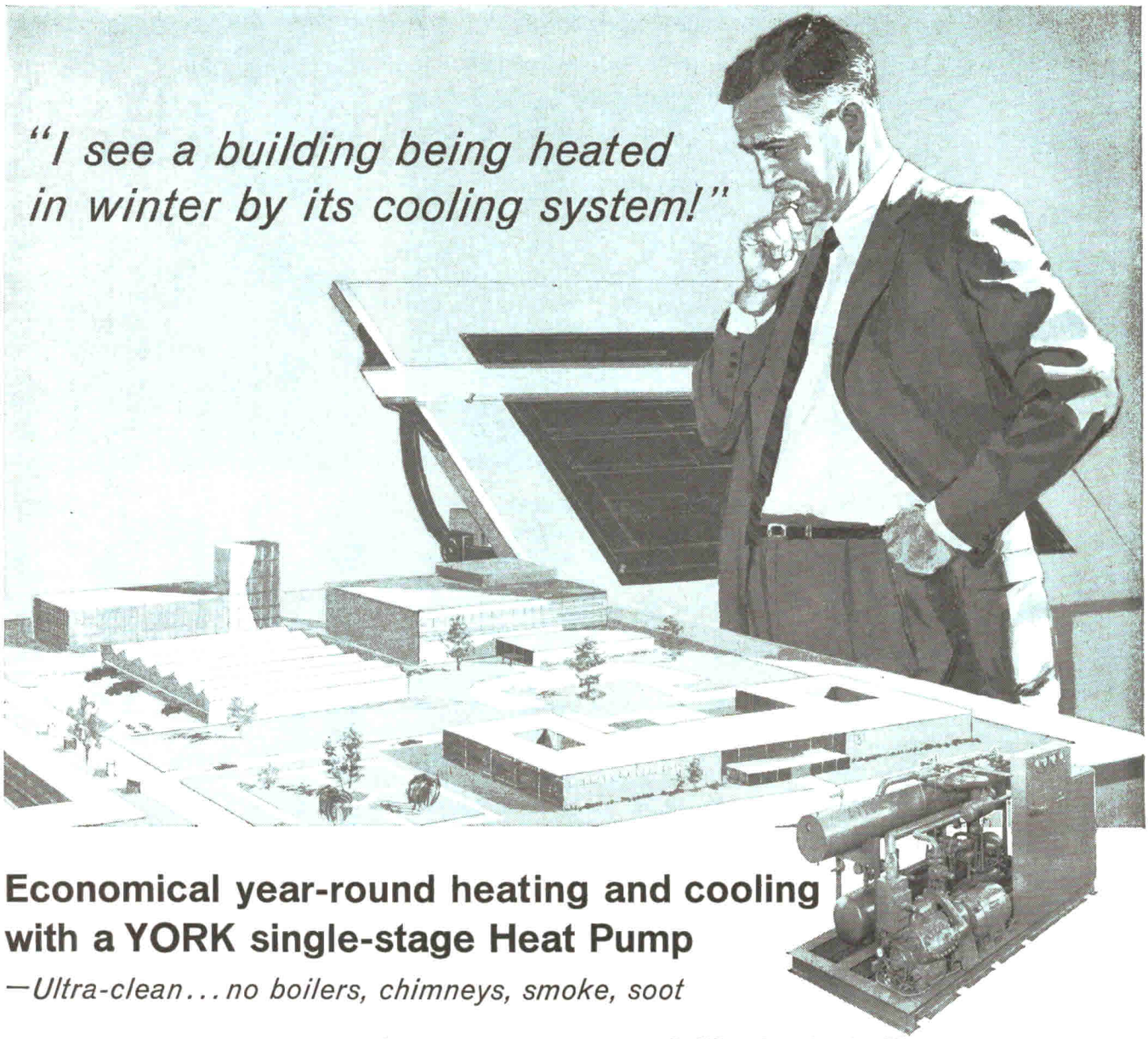
Washington U. Medical Students' Dorm, St. Louis, Mo.
Women's Dormitory, University of Missouri
Proctor Hospital, Peoria, Illinois
Wilshire Garden Apartments, Baltimore, Maryland
Cocoa Beach Motel, Cocoa Beach, Florida



another fine building product by hc



Economical year-round heating and cooling with a YORK single-stage Heat Pump

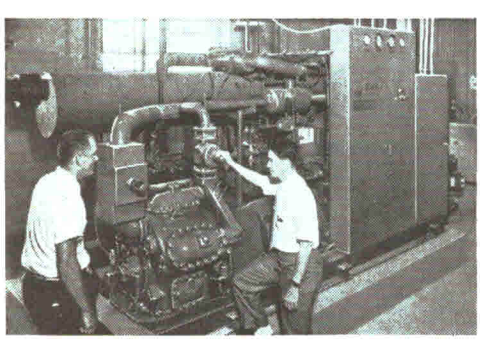
—Ultra-clean... no boilers, chimneys, smoke, soot

USES ONLY AIR AND POWER—One compact all-electric air source unit provides continuous control of temperature-humidity, plus extra cleanliness and safety. Single-stage design keeps initial and operating costs competitive.

CAN HEAT AND COOL SIMULTANEOUSLY—Versatile York Heat Pump can take heat from one area of a building needing cooling, and move it to another area needing heat. Can also utilize waste heat from exhaust air, processing, etc.

SAVES MONEY AND SPACE—No unsightly chimney to build and maintain. No space-wasting fuel storage. No boilers to tend or furnaces to feed. No boiler insurance to buy or boiler water to treat. No flames, fumes or odors.

COMPLETELY FACTORY ASSEMBLED—Saves design time and installation costs. Units are clean, tight and factory pre-tested for reliability. Packaged single stage systems are available up to 150 tons cooling and up to 750 MBH heating at 20°F. Compound compression systems also available up to *150* tons and *1200* MBH heating at 0°F.



Another YORK Trail Blazer Concept Proved In Action At *Morgan County Hospital, Madison, Ga.*—York single-stage Heat Pump provides healthful coolness in summer and clean, odorless heat in winter for year-round comfort of patients and medical staff. Factory assembled unit delivers 50 tons of cooling and 230 MBH heating at 10°F.

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

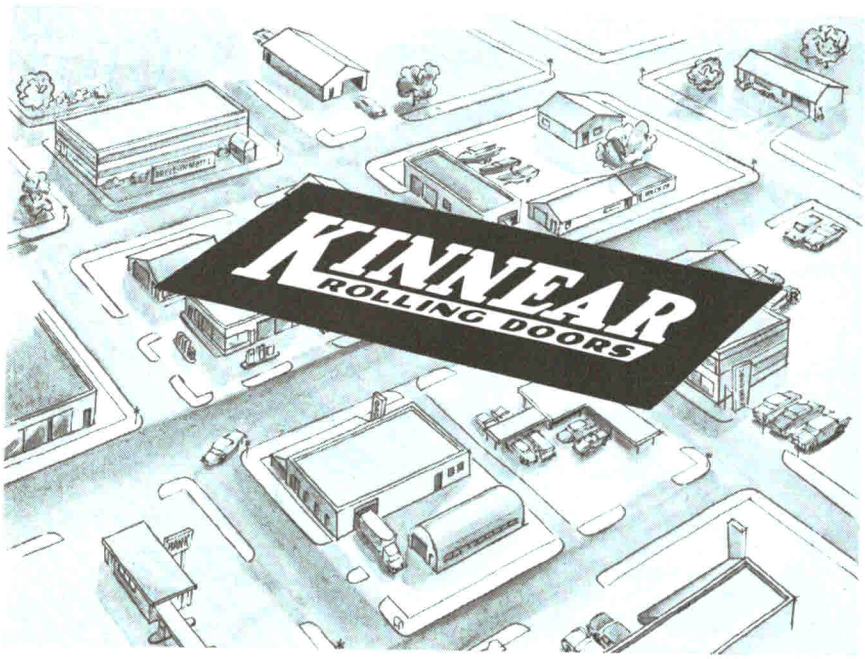
1806 SOUTH GRANTLEY ROAD, YORK, PENNSYLVANIA

Air Conditioning, Heating, Refrigeration and Ice-Making Equipment • Products for Home, Commercial and Industrial Applications

CATCH THE SPIRIT OF THE JET AGE WITH SEATING BY ROYAL!

The unique and rapid acceptance of Royal's Viscount Modular Seating System has been little short of spectacular. It has earned "first choice" honors in the newest, most modern public buildings from coast to coast. • For instance, it was the recent choice of Eastern Air Lines for their Idlewild Terminal building (see left). You'll spot the same trim, modern lines of Viscount in a fast growing number of hospitals, office and college buildings.

Such sudden and unique acceptance comes directly from the free rein Viscount Modular Seating System gives to the individual creativity of designers. Unlimited combinations are possible with four standard units. A simple turn of a bolt joins them into a single, rigid ensemble. • For full information, write: ROYAL METAL MFG. CO., Dept. 8-F, One Park Ave., N.Y. 16. In Canada— Galt, Ont. • SHOWROOMS: New York, Chicago, Los Angeles, San Francisco, Seattle; Galt, Ont.

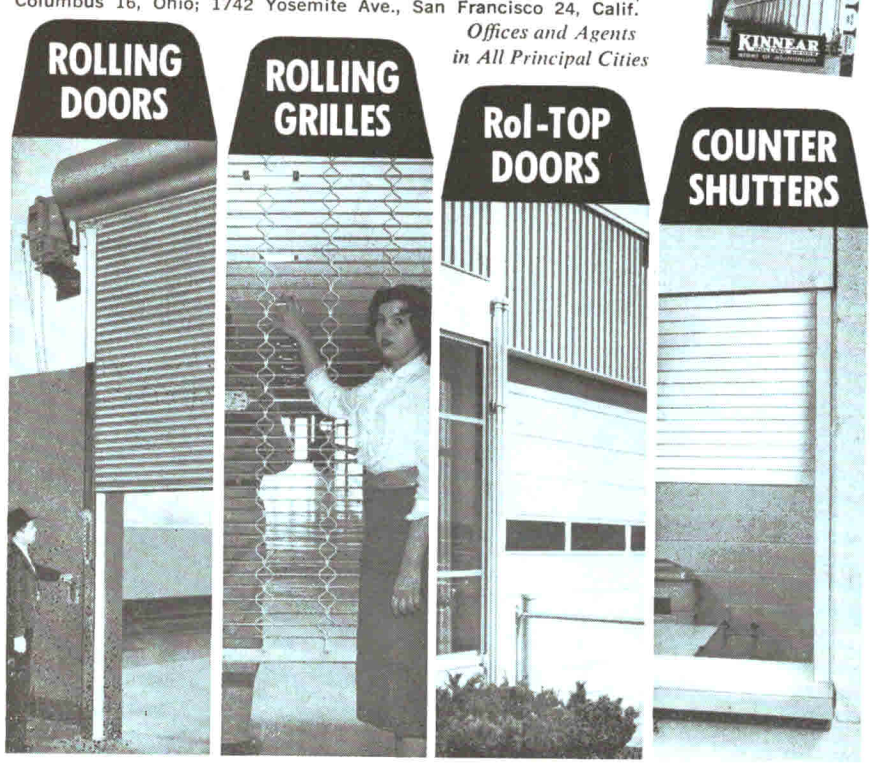


KINNEAR DOOR *Quality*
has a place in every building picture

Only four Kinnear space-saving doorway products are shown below. All reflect the *extra quality* for which Kinnear has been recognized through more than half a century. They meet *many* needs, in buildings of every classification. And Kinnear equipment is never "orphaned" . . . *all* are REGISTERED — parts are always replaceable from engineering details kept in Kinnear's *fireproof vaults!* It pays to insist on *Kinnear!*

SEND FOR NEW DATA —
Be sure you have all data on the **complete** Kinnear line — upward-acting sectional doors (steel or wood) . . . protective "see-through" rolling grilles . . . interlocking-slat counter shutters and service doors (aluminum, steel or other metals) . . . Kinnear Power Operators — also U-L labeled fire doors, Bi-fold (two-section jack-knife) doors! Lots of useful "specs". Send for FREE copy today.

The KINNEAR Manufacturing Co. Factories: 1860-80 Fields Ave., Columbus 16, Ohio; 1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in All Principal Cities



Product Reports

continued from page 207

Data Processing Accessory Equipment
A complete line of data processing accessory equipment designed to meet filing and storage needs created by business automation systems has been announced by General Fireproofing. Modern and functional in appearance and use, the GF equipment provides specifically designed housing, storage and transportation for cards, control panels and tape reels with maximum efficiency and protection. Any of five sizes of control panels can be housed either horizontally or vertically in multiple combinations. Cabinets open from both sides for maximum capacity and easy access. *General Fireproofing Co., Youngstown, Ohio.*

Obround Butterfly Valves for Ducts
A line of control and shutoff butterfly valves for rectangular and flat oval ducts for industrial and process ventilation and air conditioning is easily adaptable, with the application of simple transitional fittings. Valve has a one-piece aluminum alloy body, replaceable rubber or synthetic liner against which the oval aluminum disc seats for tight closure. There is minimum pressure drop in full open position of the disc. Throttling and shut-off can be controlled by a lever, hand wheel or automatically. Available in 14 sizes from 3 by 7 in. to 20 by 30 in. *W. S. Rockwell Co., 300 Eliot St., Fairfield, Conn.*

more products on page 214

Prefinished walnut Architectural Grade hardwood plywood paneling by Roddis brings dramatic richness and beauty to this handsome Executive Reception Room in the new *Pure Oil Company General Offices near Palatine, Illinois.* Chosen for its low-maintenance value as well as for fine graining and natural wood highlights, Roddis paneling graces many other areas in this remarkable building. These include the President's Offices, the Board Room and Dining Room, the Executive Offices, the Employee Dining Rooms, among others.

A wall becomes a work of art when you design with famous Roddis hardwood plywood panelings. Their richness and warmth can lift any application out of the ordinary—give it a personality all its own.

When you specify Roddis panelings you are working with some of the world's most beautiful woods. Each veneer is hand-selected for subtle colorings and character of graining by skilled craftsmen with an instinctive appreciation of wood beauty.

Roddis hardwood plywood panelings are available in stock panels, ready for immediate delivery; or custom-made to your exact requirements. Whatever your need, Roddis has the paneling that is "right" for your design.

See Sweet's catalog for complete information or write direct to Weyerhaeuser Company, Roddis Division, Marshfield, Wis.

Enjoy complete freedom of choice with... Famous Roddis Hardwood Plywood Panelings for Architectural Applications

Architectural Grade. The finest in hardwood plywood panelings. You select the veneers and Roddis sequence matches and numbers. Available per your blueprint, if desired. Here is the ultimate in wood beauty, perfect for your custom design requirements.

Number One Grade. Artistically matched veneers of rare beauty and rich grain. Produced in all popular sizes and species. Faces are selected for color and figure, or unselected for color, as specified. Panels are stocked for immediate delivery.

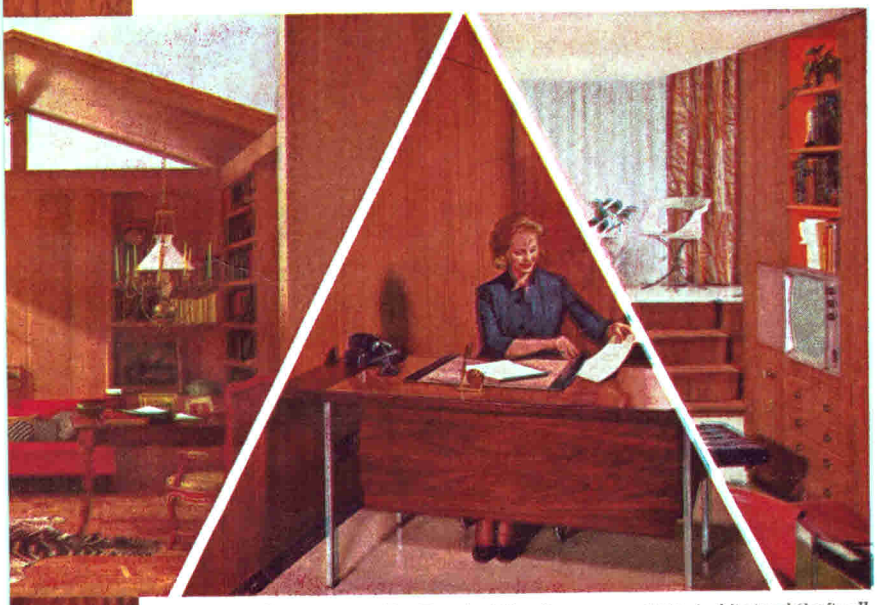
Craftwall®—the original ¼" V-grooved, prefinished paneling! Achieve beauty with economy by specifying this famous real wood paneling. An exclusive finish protects against scuffs and stains. Matching molding and trim available.

7/16" Architectural Craftwall. A new, cost-saving, labor-saving wood paneling with a special center core of Timblend, man-made board. Works and handles like fine ¾" material, costs far less. Installs directly on studs. Prefinished.

Fire-Retardant. All the beauty of wood—plus real fire safety—is possible now with any Roddis hardwood plywood paneling. All are Underwriters' Laboratories labeled and listed and meet or exceed most building codes.

Tigaclad® Paneling. Beautiful woods from Roddis can now be shielded from abuse and wear by the lamination of a unique diallyl phthalate resin. Its hard, impervious surface is ideal for high traffic areas—wainscoting, corridor panels, custom built-ins, elevator interiors, etc.

All Roddis panelings are available with prime-and-seal protection that assures finer finishing results on the job, guards wood beauty during transportation and storage. Or your paneling can be completely custom prefinished at our factory to your exact color and finish requirements.



Craftwall Paneling *Fire-Retardant Paneling* *7/16" Architectural Craftwall*

Weyerhaeuser Company
Roddis Division
Marshfield, Wisconsin

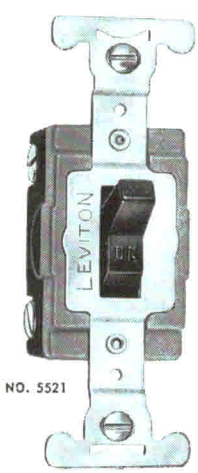
LEVITON QUALITY *talks...*

"You're right in figuring Leviton on this bid!..

"Darn right! I've been very happy with Leviton on the last two jobs. And this may mean the third."

This typical wholesaler-contractor conversation at bid time is being repeated 'round the country. Leviton's line of specification grade devices have caught on.

Everyone is pushing Leviton because of the delivery, the price, the completeness of line and the consistent quality. Architects and engineers have the confidence to specify Leviton on their biggest projects.



Quiet Switch in 15A.-120-277V.A.C. only and 20A.-120-277V.A.C. only

HIGH CAPACITY will accommodate the high inductive loads of fluorescent systems, or full rated capacity of tungsten filament lamp loads. Take full load currents up to 80% of the switch rating for motor control.

LEVITON QUALITY TALKS BUSINESS

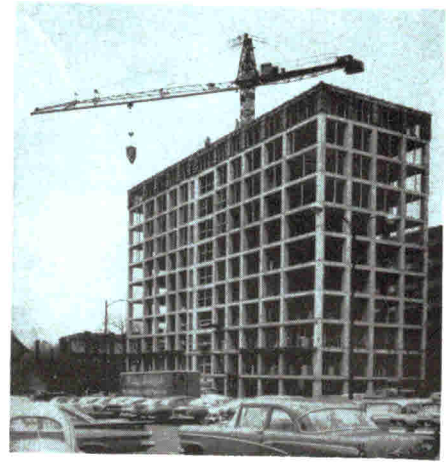
LEVITON®

LEVITON MANUFACTURING CO., INC.,
BROOKLYN 22, N.Y.
Chicago • Los Angeles • Montreal, Canada

Contact American Insulated Wire Corp., Pawtucket, Rhode Island, a Leviton subsidiary, for a complete line of insulated wire and cable products.

Product Reports

continued from page 210



Hydraulic Climbing Crane

Concretor-Linden climbing cranes are now equipped with an exclusive hydraulic climbing arrangement which operates by electric push-button control, eliminating complicated wires and pulley blocks. The crane raises itself as high as necessary while work is in progress. Remote control box enables the operator to see all phases of loading and unloading. Trolley jib can rotate 360 degrees on a 100-ft radius. Rental-purchase plans are available as is on-the-job engineer service. *B. M. Heede California, Inc., 951 N. Linden Ave., South San Francisco, Calif. or B. M. Heede, Inc., 30-01 37th Ave., Long Island City 1, N. Y.*

Church Furniture Association Formed

A new organization, the Church Furniture Manufacturers Association, has been formed as a division of the National Association of Furniture Manufacturers representing 19 church furniture firms.

Jesse E. Eschbach, Endicott Church Furniture Co., Warsaw, Ind., is president of the association; Edward W. Walker, Southern Desk Co., Hickory, N.C., vice president; and John M. Snow, NAFM executive vice president, secretary-treasurer.

By aligning the new group with NAFM, Eschbach said, the association and its members will be entitled to services already provided by NAFM and to special services to be developed for the new membership. High on the list of immediate objectives is development of product standards, trade statistics, factual data, uniform accounting methods.

elegant floor beauty that won't "walk off" . . .

Vina-Lux® PREMIERE *Series*

Premiere is a new achievement in vinyl asbestos tile — an exquisite, lacy styling you can specify with confidence for heavy-traffic floor areas, because the pattern is distributed at every level through the tile. And because Premiere costs no more than regular vinyl asbestos tile, you can offer your clients custom styling on limited flooring budgets.

Premiere, like all Vina-Lux, can be installed over concrete — above, on or below grade, or over wood subfloors. Available in 1/8″, 3/32″ and 1/16″ gauges; 9″ x 9″ size; 7 classic colors, including 2 metallics. Write today for complete architectural specifications, Premiere samples and color charts. There's no obligation, of course.

AZROCK FLOOR PRODUCTS DIVISION

Specialists in the manufacture of vinyl asbestos tile and asphalt tile flooring

UVALDE ROCK ASPHALT COMPANY • 514A FROST BANK BUILDING • SAN ANTONIO, TEXAS

AZROCK FLOORING PRODUCTS

Now...

CANADIAN INDUSTRIES Ltd., Office Building, Montreal. *Architect:* Greenspoon, Freedlander & Dunne — Montreal. *Consulting Architect:* Skidmore, Owings & Merrill — New York City. *General Contractor:* Anglin-Norcross (Quebec) Ltd., Montreal.

Cure, Dustproof, Harden and Seal Newly Laid Concrete in ONE OPERATION

One application of TREMCO TREMCRETE — after final troweling and when floors can be walked on—can cure, dustproof, harden, and seal newly laid concrete floors at an applied cost that is *substantially lower* than the lengthy conventional moisture curing method. Tremcrete dries to a tack-free stage in 2-3 hours . . . possesses superior abrasion resistance . . . protects against wear, most solvents and alkalis . . . repels oils, greases and resists various types of staining commonly found during construction. Cleaning of floors are facilitated prior to turning the building over to the owner. The application of paint, asphalt tile and other decorative coverings can be made directly over Tremcrete treated floors when construction is completed.

An Independent Testing Laboratory reports the following performance of Tremcrete: "After 3 days, more than 97% of the original water content of the slab was still present. After 7 days, more than 95% was still present."

TREMCRETE meets ASTM Specifications C-309-58, Type I. For additional information contact your Tremco Representative or write: The Tremco Manufacturing Company, 10701 Shaker Blvd., Cleveland 4, Ohio or The Tremco Manufacturing Company (Canada) Limited, 220 Wicksteed Avenue, Toronto 17, Ontario.
See our Catalogs in SWEET'S.

TREMCO
PRODUCTS AND TECHNICAL SERVICES FOR BUILDING MAINTENANCE & CONSTRUCTION

"When you specify a Tremco Product . . . you specify a Tremco Service!"

Office Literature

continued from page 182

Wood Color Manual
A new manual, "Wood Color in Relation to Illumination and Color Environment," reveals the mechanics of selecting complementary colors and lighting to enhance the various woods used in decorating. Prepared by Walter Granville, the manual includes a precise colorimetric theory amply illustrated. *American-Marietta Co., 101 East Ontario St., Chicago 11, Ill.**

Screen System Design Book
(A.I.A. 15) A booklet describing and illustrating the new *Curtainscreen* system of components for forming interior and exterior screens, includes information about designs and applications, and is illustrated with full-color renderings and scaled architectural sections, elevations and details. Write for Bulletin No. 141. *Julius Blum & Co., Inc., Carlstadt, N. J.**

Ballast Replacement Guide
An 8-page "Fluorescent Lamp Ballast Cross-Reference Guide" contains the catalog numbers of ballasts of competitive manufacturers with the catalog numbers of all Advance FL Ballasts listed alphabetically as suggested replacements. *Advance Transformer Co., 2950 N. Western Ave., Chicago 18, Ill.*

Moveable Partitions
A pair of colorful catalogs show movable walls and partitions. Information on the various sizes, finishes and surfaces is given with ideas for solving sound, light, and traffic problems. *Modern Partitions, Inc., Holland, Mich.*

Joint Sealing Compounds
Complete technical service data on Horn No. 159 cold-applied and No. 164 hot-poured *Horn-Tite* joint sealing compounds is now available from the manufacturer. These are rubber-asphalt compounds for sealing the joints and cracks on highways, streets, bridges, parking areas, drives and other traffic areas. *A. C. Horn Companies, division Sun Chemical Corp., 2133 85th St., North Bergen, N. J.**

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

more literature on page 234

Yours to Use!

... a world of knowledge to aid your planning *of Hospital Technical Departments*

We at American Sterilizer know little about current concepts of general building design and construction, except that they advance at a headlong pace.

But we DO have the largest single fund of knowledge concerning the design, function and essential workflow of those specialized technical departments which make a hospital *different from any other Architectural problem.*

This knowledge is *yours to use* in developing, for your hospital designs, Technical Departments which assure the ultimate in *patient protection* with *simplified staff work* and *lower operating costs.* This specialized information is gathered, evaluated, applied and supported by a group activity at Amsco which is not elsewhere equaled . . . for size, completeness or professional stature.

These are its major components

esearch Working with a knowledge of hospital problems and procedures gained from equipment installations in more than a hundred countries of the world . . . Amsco Research investigates, evaluates and recommends techniques for the highest standards of patient protection.

Nurse sultants Six full-time Nurse Consultants assure the vital quality of *practicality* in every procedure involving personnel training.

Methods neering A professionally staffed Methods Engineering department incorporates the efficiencies of work simplification and workflow on the basis of Method — Time — Measurement studies.

opment neering Development Engineering devises equipment to carry out advanced procedures with the maximum degree of automation, dependability and economy.

chnical Projects gineers Attached to each of Amsco's 19 Branch Offices, Technical Projects Engineers are specialists in selecting, assembling and presenting the detailed data which will most effectively solve the Technical Department problems of *your hospital design.*

Detailed Technical Planning This service includes the preparation of room plans, specifications and roughing-in prints to provide the maximum in function and utilization of space *for your specific project.*

Supervision of Installation Amsco's supervision of the total department installation assures the Architect that his approved concepts will be fully achieved.

Technique Training When the department goes into service, equipment demonstrations and thorough technique training by Amsco's Nurse Consultants provide the staff knowledge that will maintain the efficiencies of the integrated design.

Preventive Maintenance The continued high performance of Amsco Technical Department equipment is assured by the soundest of production engineering and by the only national Preventive Maintenance staff in the technical field.

• This unique combination of services and skills will greatly lighten your design load for such hospital departments as Central Service, Surgical Suites, Solution Rooms, Infant Formula, Central Instrument, Utility and Autopsy rooms. More important, it will enable your client hospitals to carry out the most advanced techniques with the minimum of staff time and cost.

Literature or consultation is freely available from our Technical Projects Division

AMSCO AMERICAN STERILIZER
ERIE • PENNSYLVANIA

MORE THAN 11 years AND 2,243 churches

OFFER "PROOF POSITIVE"

THAT ENDICOTT'S Cushion-Eze PEW

IS YOUR CHURCH CLIENTS'

BEST VALUE IN SEATING . . .

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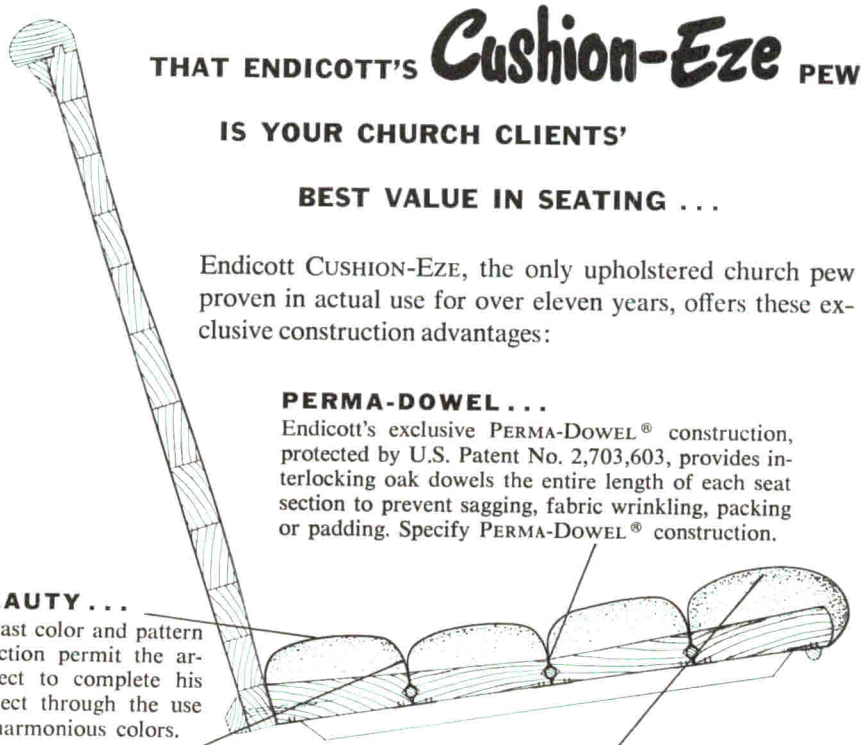

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Endicott's exclusive PERMA-DOWEL® construction, protected by U.S. Patent No. 2,703,603, provides interlocking oak dowels the entire length of each seat section to prevent sagging, fabric wrinkling, packing or padding. Specify PERMA-DOWEL® construction.

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A vast color and pattern selection permit the architect to complete his project through the use of harmonious colors.

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The upholstered seat is made of four sections, covered with breathable fabrics. This four-section channel construction permits constant air circulation. Specify CUSHION-EZE—the best ventilated cushion seat available.

DURABILITY . . .
The breathable vinyl coated fabrics can be wiped clean with a damp cloth to eliminate marks or stains which could permanently mar wood seats. Only pure, long lasting latex foam rubber is applied. No synthetic padding is used. Why take chances? For durability and comfort, specify pure foam rubber for your clients' upholstered seating.

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offer *all* of these quality, exclusive construction features. Guarantee your clients' satisfaction—specify CUSHION-EZE by Endicott.

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should be the determining factor.

For more of the "inside story"—call or write Dept. AR-16

A SYMBOL OF FINE CRAFTSMANSHIP

Endicott CHURCH FURNITURE
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The Record Reports

On the Calendar

June

5-7 First Inter-governmental Symposium on Urban Renewal, organized by the United Nations Economic Commission for Europe's Housing Committee—Palais des Nations, Geneva, Switzerland

5-9 Ninth National Plastics Exposition, sponsored by the Society of the Plastics Industry Inc.—The Coliseum, New York

7-9 Sixth Architectural Sales Representatives' Institute, sponsored by the Producers' Council in cooperation with the adult education division, Syracuse University—Sagamore, N.Y.

11-15 54th Annual Air Pollution Control Association Meeting, sponsored by the Manufacturing Chemists Association and the Air Pollution Control Association—Hotel Commodore, New York

25-30 Annual meeting, American Society for Testing Materials—Chalfonte-Haddon Hall, Atlantic City

26-28 Annual meeting, American Society of Heating, Refrigerating and Air-Conditioning Engineers—Denver

July

3-10 Sixth Congress of the International Union of Architects; theme: "New Techniques and Materials—Their Impact on Architecture"—London

9-21 First of three seminars on atomic shelter and survival in the nuclear age; theme: "Planning Aspects of Atomic Shelter"—Pennsylvania State University, University Park, Pa.

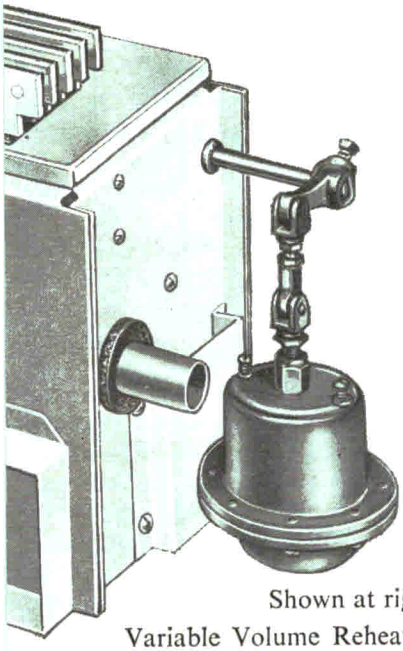
10-12 62nd annual meeting, American Society of Landscape Architects—Harvest House Hotel, Boulder, Colo.

17-28 23rd M. I. T. Special Summer Program on City and Regional Planning—Massachusetts Institute of Technology, Cambridge, Mass.

23ff Second seminar (of three) on

continued on page 252

Variable Volume Reheat unit by TITUS®

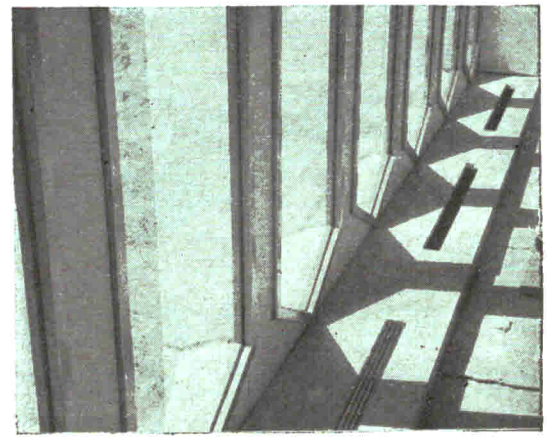


PATENT PENDING

✳ *developed in conjunction with Minoru Yamasaki... Smith, Hinchman & Grylls, Associated Architects and Engineers*

TESTED AND PROVED in a 2-story mock-up of the new Michigan Consolidated Gas Company Office Building in Detroit

Shown at right is actual photo of new Titus Variable Volume Reheat units installed in mock-up of Michigan Consolidated Gas Company Office Building. The units were installed under the floor with a 3-inch pre-cast concrete sill containing Titus extruded aluminum Linear Grilles as outlets. *The new Titus VVR units fully met all requirements of the variable volume reheat system.* They proved capable of maintaining room temperature within 1 F—with varying heating and cooling loads.



MAIL COUPON FOR COMPLETE INFORMATION

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Please rush new CATALOG giving complete details on the new Titus Variable Volume Reheat unit.

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ADDRESS_____

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continued from page 248

atomic shelter and survival in the nuclear age; theme: "Structural Engineering Aspects of Atomic Shelter"; through Aug. 4—Pennsylvania State University, University Park, Pa.

August

13-18 Third seminar (final of three in the areas of atomic shelter and survival in the nuclear age) sponsored by Pennsylvania State University; theme: "Survival in the Nuclear Age-Executive Management"—Pennsylvania State University, University Park, Pa.

16-17 Australian Building Research Congress—Monash University, Victoria

Office Notes

Offices Opened

Leon E. Browning has recently opened a new office for the practice of architecture at 369 Romany Road, Lexington, Ky.

New offices have been opened by Wah Yee, Rourke J. Haas and Emil Bango under the name of Wah Yee Associates Architect. The address is 17575 James Couzens, Detroit 35, Mich.

John G. Ashe Jr. announces the opening of his office for the practice of architecture and engineering at 103 S. Goldsboro St., P. O. Box 543, Wilson, N.C. The firm name is John G. Ashe Jr., Architect and Engineer.

New Firms, Firm Changes

J. Stewart Stein, A.I.A., former partner of Walter H. Sobel and J. Stewart Stein, announces the formation of his new firm for the continuation of the practice of architecture and engineering at his present offices located at 10011 West Grand Ave., Franklin Park, Ill.

George Gross has been appointed an associate with Ammann & Whitney, Consulting Engineers. He will work in Ammann & Whitney's New York and Athens, Greece offices.

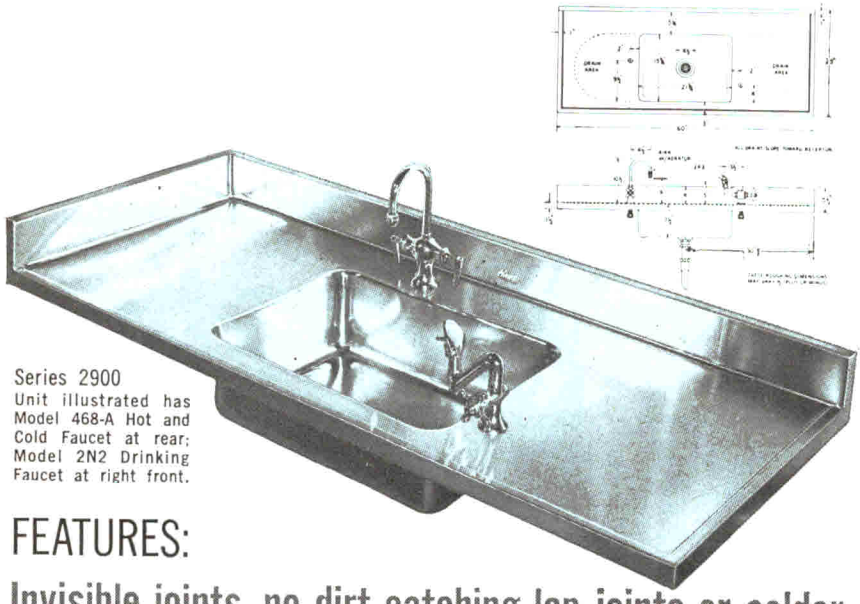
Robert B. Liles, A.I.A., Architect and Engineer, who has maintained offices in San Francisco since 1952, announces continuing professional services as: Robert B. Liles, Inc., 340 Pine St., San Francisco. Thomas N. "Bert" Foris, vice president and chief draftsman, has been named general manager of the corporation.

Edward J. Hills, A.I.A., and Maurice Medcalfe, A.I.A., have formed the firm of Hills & Medcalfe, Architects, for the general practice of architecture at 36 E. 57th St., New York 22.

The Detroit architectural and engineering firm Malcomson, Fowler & Hammond, Inc. has changed its name to Hammond, Quinlan and Fowler, Inc. The Hammond name represents two men in the new firm—Maurice E. Hammond, A.I.A., president, and his son James W. Hammond, P.E., who will serve as chief structural engineer and field superintendent. Other members of the new firm are Homer A. Fowler, A.I.A., chief draftsman and in charge of specifications; and William S. Quinlan, A.I.A., who will serve as chief designer, planner and project manager.

continued on page 256

HAWS ONE-PIECE,
STAINLESS STEEL
DECK TOP & RECEPTOR UNIT



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Unit illustrated has Model 468-A Hot and Cold Faucet at rear; Model 2N2 Drinking Faucet at right front.

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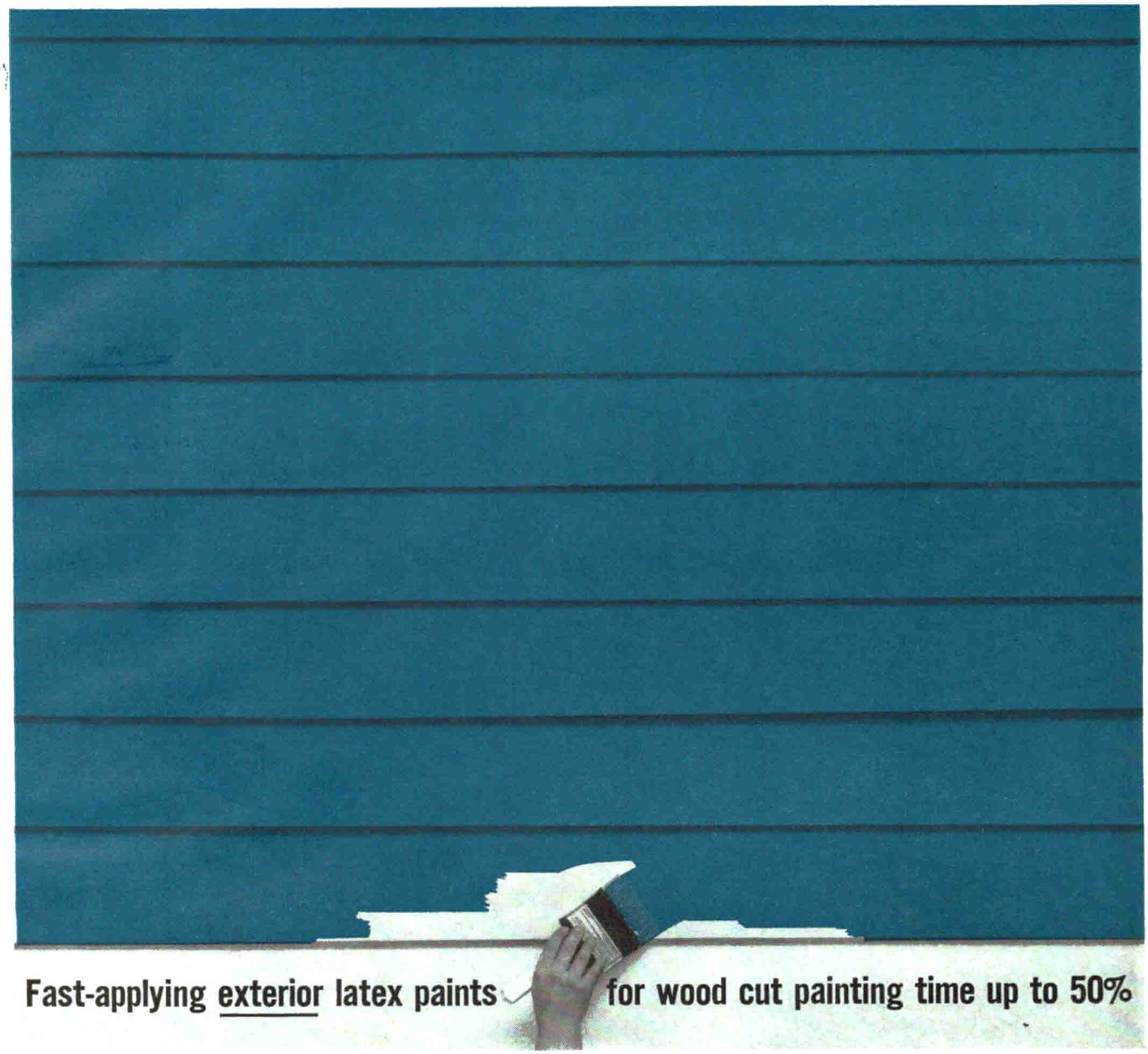

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MONSANTO DESIGNER IN **PLASTICS**

continued from page 252

New Addresses

Fred Buford & Associates, Architects & Engineers, Suite 1100, Rio Grande National Building, 251 North Field, Dallas.

W. Hardy Craig, P. Eng., Consulting Engineer, 2175 Victoria Park Ave., Scarborough, Ontario.

Hunter, Heiges & Gross, Registered Architects & Engineers, Shenango and Reno Streets, Sharon, Pa.

Elections, Honors Announced at A.I.D. Conference

During the 30th Anniversary Conference of the American Institute of Decorators held April 16-20 in New Orleans, the following officers were elected: Milton Glaser, Richmond, Va., president; Roy Folk Beal, Austin, Tex., chairman of the board; L. Raymond Toucher, New York, N.Y., James Merrick Smith, Coconut Grove, Fla., John C. Murphy, Chicago, J. Marshall Morin, Colorado Springs, Colo., Taylor Robinson, Dallas, A. Allen Dizik, Los Angeles, vice-presidents; Mrs. Marion L. Heuer, Chicago, secretary; and Mary E. Dunn, New York City, treasurer.

Gibson A. Danes, dean of the School of Art and Architecture of Yale University, and James Grote Van Derpool, associate dean of the School of Architecture of Columbia University, were among five who received honorary memberships in the Institute. Others were: Alice Winchester, writer and lecturer on antiques as documents of human life and culture; Richard Hubbard Howland, head curator of the department of civil history at the United States National Museum in Washington; and Harry Vernon Anderson, editor and publisher of *Interior Design* magazine.

Results of the 23rd Annual A.I.D. Student Competition in Interior Design and Decoration were announced at the conference. Students from 42 schools and colleges submitted 233 entries. The problem this year was "A Remodeled House" bought by a couple whose married children live elsewhere.

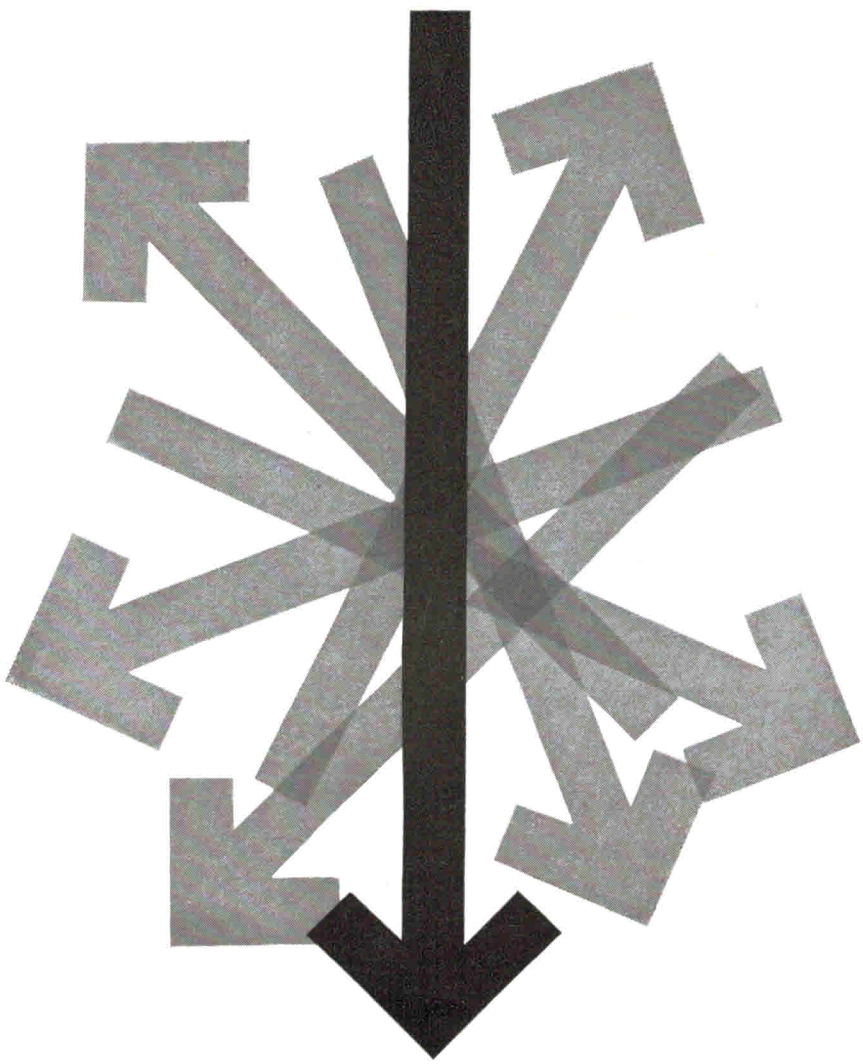
The Jury of Award was composed of John Van Koert, A.I.D.; Thomas Creighton, American Institute of Architects, editor of *Progressive Architecture;* Miss Mildred Irby, A.I.D.; Harmon S. Goldstone, A.I.A.; and Miss Barbara Barnes, press associate, A.I.D.

The first award went to Gerald T. Privette, University of Washington, Seattle. Carol White, Boston University, Boston, received the second award; and Barbara G. Schoen, Pratt Institute, N.Y., the third. Honorable mentions went to: Theron Ware, University of Kansas, Kansas City; Ronald Bricke and Gerald P. Klosky, Parsons School of Design, New York; Jens-Peter Kemmler, New York School of Interior Design, N.Y.; and Jill Kathleen Denny, University of Washington, Seattle.

Transportation, Land Development Discussed by Business Leaders

Executives of 41 major businesses

continued on page 260



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New Low Prices! New Sani-Dri Automatic Hand Dryers are the key to automation in school, plant and institutional washrooms. Automatically, they provide service at all times . . . save your client up to 85% of washroom maintenance costs. Write for our new cost comparison sheet, brochure and price list.

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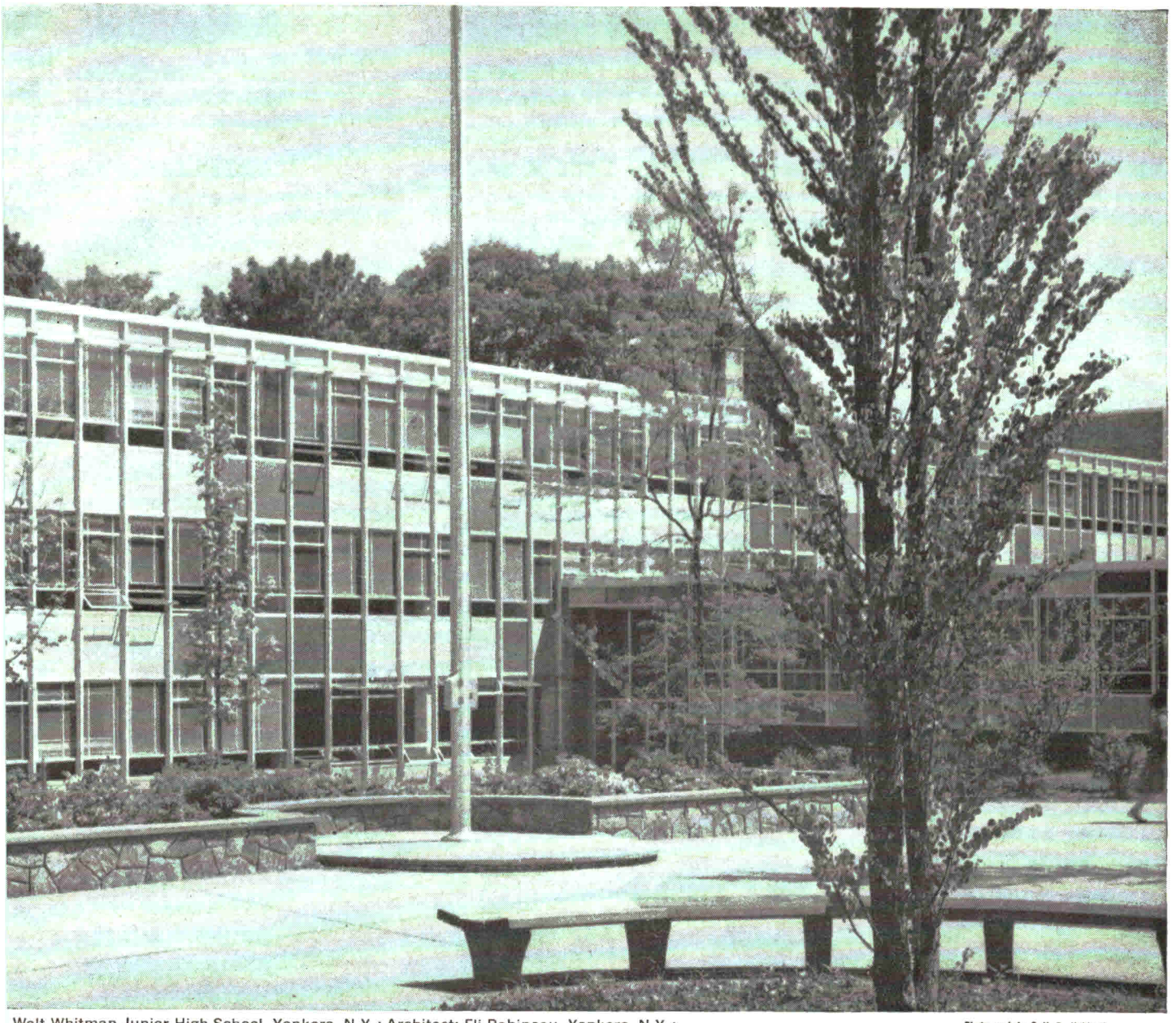

Walt Whitman Junior High School, Yonkers, N.Y.; Architect: Eli Rabineau, Yonkers, N.Y.; Engineers: Abrams & Moses, New Rochelle, N.Y.

Photograph by C. V. D. Hubbard

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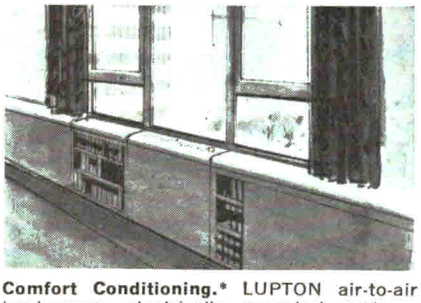

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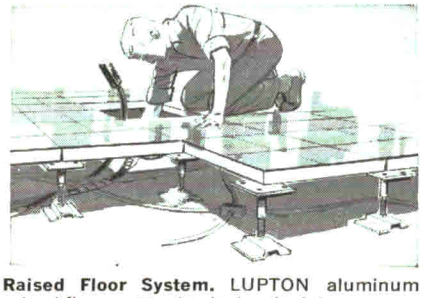

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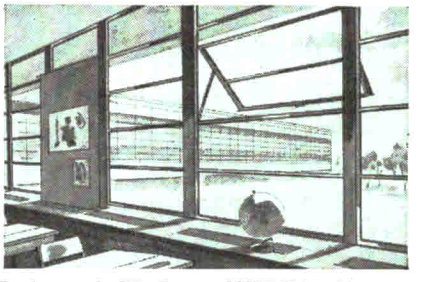

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continued from page 256

in the New York-New Jersey-Connecticut metropolitan region met recently for three days at Arden House, Harriman, New York, on the invitation of the Regional Plan Association, to consider the region's development over the coming 25 years. They based their discussion on the results of a New York Metropolitan Region Study by a research team of Harvard University's Graduate School of Public Administration. The study, a three-year project, was conducted for the Association, a non-government organization that fosters coordinated planning of land-use in the three-state, 22-county region.

Agreeing with the Harvard study on the projection of a 50 per cent increase in population and jobs in the area, the businessmen saw transportation as a major concern. Former New York City corporation counsel Paul Windels emphasized the problem of commuter transportation, suggesting that commuter rail lines be unified under public control. Luther Gulick, president of the Institute of Public Administration and former New York City Administrator, advised dealing with the "total transportation system of the region, not with single segments, and with all forms of transportation, not one at a time. It will be governments who will be making these decisions, not the rail or bus companies." New York City Planning Commission Chairman James Felt agreed transportation must be planned as a whole, on a regionwide basis.

Among the specific proposals expressed were: immediate action to retain and improve rail passenger transportation; a regional passenger transport study to cover all modes and needs of passenger transportation and looking toward a system integrated with land development plans; cooperation among the region's 1400 local governments; more responsibility by the states in regional development through technical advice and stimulation of local planning and action, together with more effective service in county and other governmental agencies above the municipal level; quick action from states, counties and municipalities to reserve open space for the anticipated population boom.

The meeting's general conclusion was: "The only way to assure satisfactory growth is through coordinated plans for the best use of land and transportation system to go with them. Community leaders should support and participate in the development of such plans for the whole region and seek wide support and participation among their colleagues and others in the planning process."

Evans Is City Architect of Philadelphia

John Lane Evans, A.I.A., has been named City Architect of Philadelphia. A graduate of the University of Pennsylvania, Mr. Evans has been the architect for 17 buildings in the Philadelphia area. He helped design the $2,300,000 Spring Garden high-rise housing project, and he designed the new quarters of the 22nd and 23rd police districts in Philadelphia.

more news on page 266

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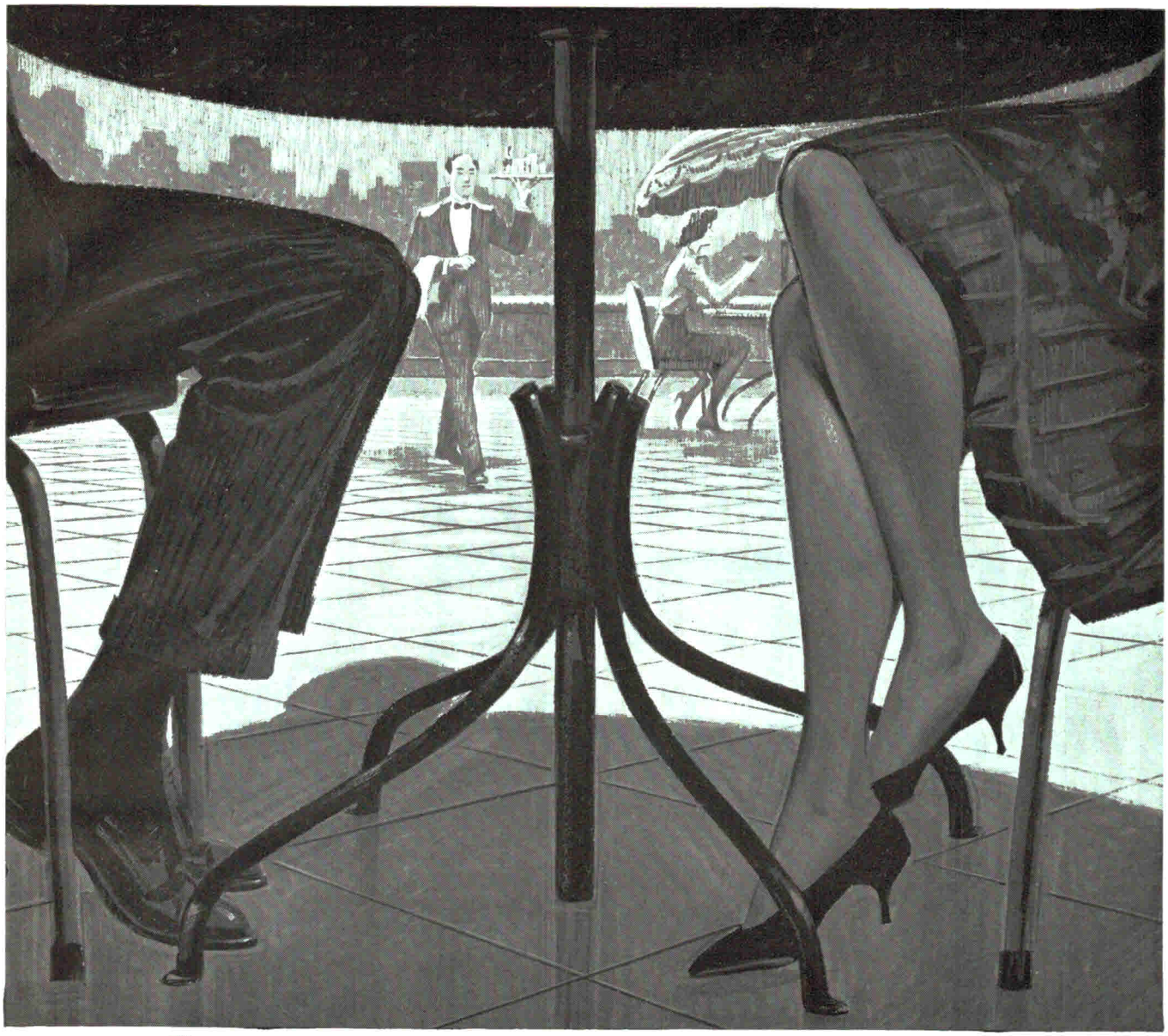

what a hat does for a woman . . .

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Keasbey & Mattison
at Ambler

continued from page 260

New Engineering Division Created at Case Institute

On July 1st, a new engineering division at Case Institute of Technology, Cleveland, will replace the present departments of civil, electrical, mechanical engineering and chemical engineering. The announcement was made in early April on the 80th anniversary of the opening of the first classes at Case by Dr. T. Keith Glennan, president.

Dr. Glennan cited three reasons for change: "The first is recognition that traditional department structure is no longer a valid foundation for the building of an engineering education program to prepare men for responsible positions in industry, government and education. The second is to substitute for a rigid organization, a flexible one able to anticipate swiftly engineering educational requirements. The third, and perhaps most important reason, is that the change in departmental organization provides flexibility of movement for the student's interests."

Describing the engineer as a "humanist in action," Dr. Glennan spoke of tomorrow's engineer as facing enlarged responsibility, as one who will deal with problems encompassing many areas of human activity. "Thus," he said, "highly specialized training with a four-year college course is neither desirable nor possible."

"Education for these leadership positions must include deep understanding of the basic laws which relate physical phenomena in all fields, the very soundest preparation in mathematics, and a broad and intimate acquaintance with the humanities and social sciences . . . It is the responsibility of engineering education not only to develop basic and broadly applicable fundamentals, but also to provide an environment in which challenging engineering activities are continuously underway. To this end, in the last year and a half, Case has established the Engineering Design Center and the Systems Research Center. These centers offer students opportunities to participate in creative engineering research in a manner unhampered by traditional departmental barriers.

"Reorganization of the engineering departments constitutes acknowledgement of the fact that when the engineer embarks upon his professional career, he will not find his problems arbitrarily split between specialized and narrowly defined engineering fields. Case will continue to make such curriculum changes when they are required by the needs of our rapidly changing society."

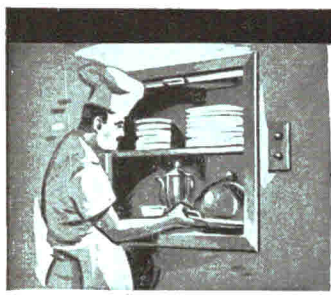
The new engineering division will be headed by Dr. Ray E. Bolz, at present head of the department of mechanical engineering. Dr. Harry R. Nara, head of the present civil engineering department will be associate head, engineering division.

For administrative purposes the new division will be considered as two groups—an engineering design and systems group and an engineering science group. Dr. Boltz will be responsible for the work in engineering sciences and Dr. Nara for engineering design and systems.

continued on page 270

WHEN YOU SPECIFY dumbwaiters

...the name to remember is **Sedgwick**



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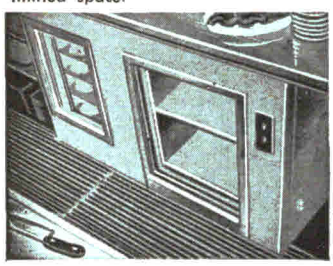

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When you use Sedgwick engineering (based on experience since 1893) and specify Sedgwick equipment, your clients will be assured of dumbwaiters that exactly fit the needs and will give many years of safe, dependable and trouble-free service.

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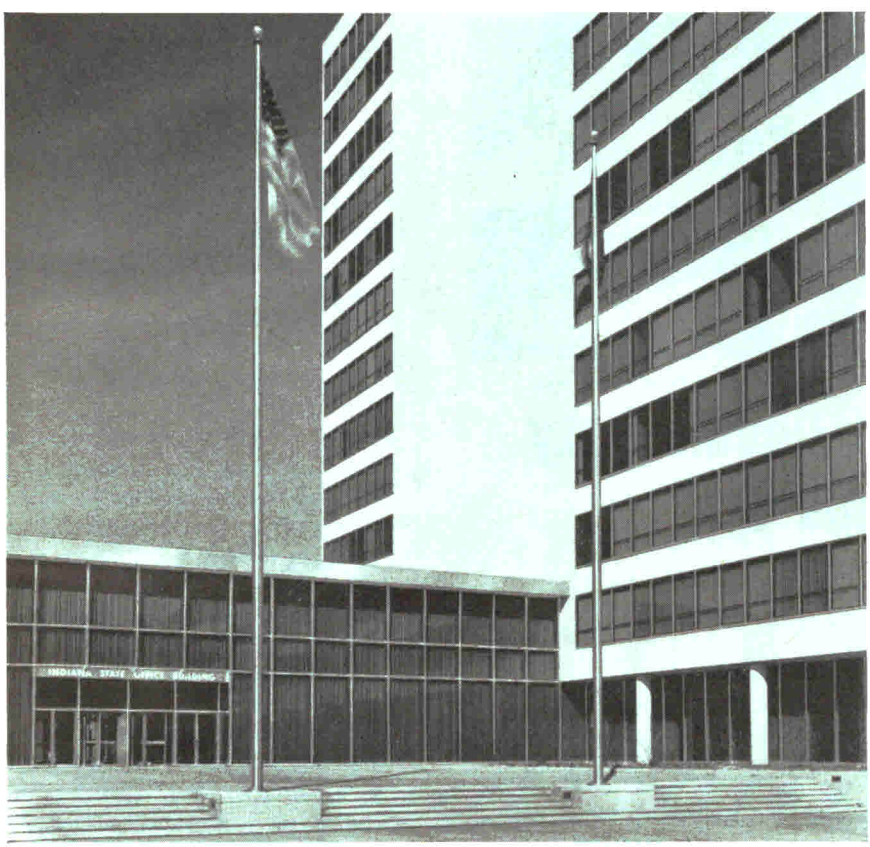

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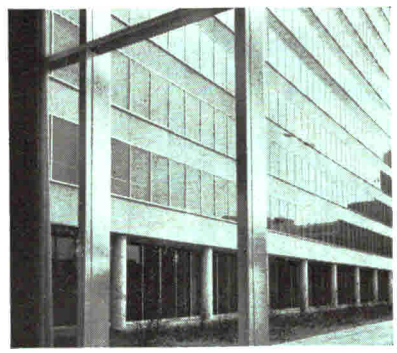

New steels are born at Armco

The new Indiana State Office Building is an imposing example of distinctive, economical architecture and the effective use of stainless steel. Centralizing departments of the state government, the 14-story structure was built at a cost of approximately $17 per square foot.

According to Mr. John A. Whitehead, executive director of the Office Building Commission, "Stainless steel was specified for both interior and exterior applications throughout the structure because its extremely low maintenance cost made it the most economical metal. It will help retain the attractive appearance of our building, and has helped us create a handsome, efficient structure at lowest over-all cost."

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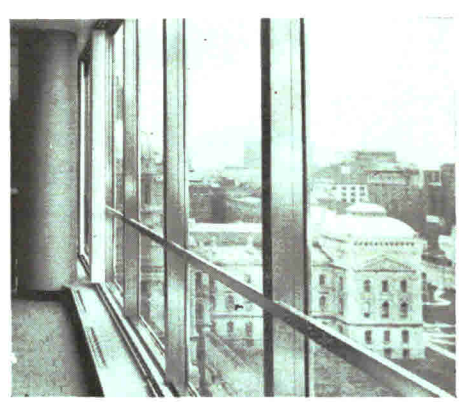

ARMCO

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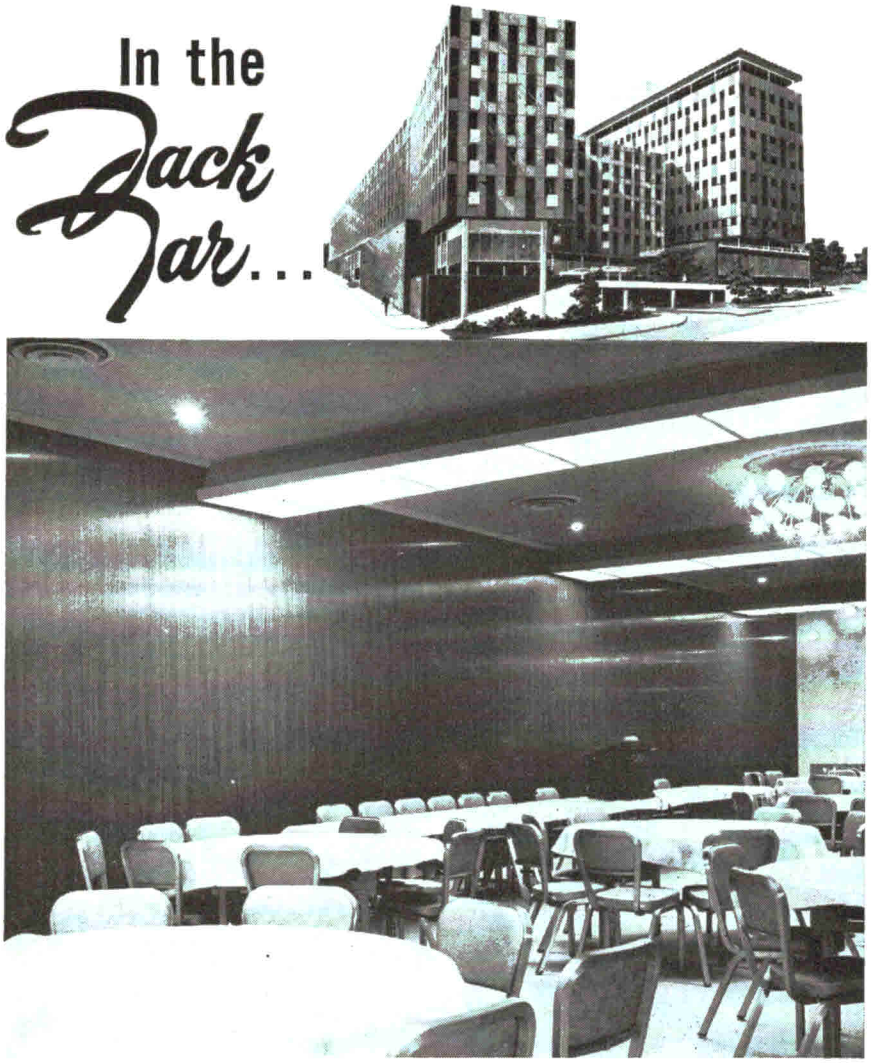
In the Jack Tar...



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1961 A.I.A. Convention

continued from page 14

"I have had very beautiful speeches. I was asked to answer. I had nothing prepared. I had a little paper in my pocket which contained all the defeats in my life, and it was the greatest part of my activity. If you will excuse me, I am going to become very vulgar. One day in my studio in Rue d'Sevres, where I've been for the last forty years, I told my collaborators, 'It is Le Corbusier who cleans the toilets of the 35 Rue d'Sevres, and that's why I am the boss.'

"Today's problems remain in front of us— the world explodes not only technology changes everyday.

"I am going to make my definitive confession: I live in the skin of a student."

Weaver Asks New Ideas

The intense interest of architects in the expanding field of urban renewal was recognized in an outstanding program developed on the theme "Redesigning Urban America."

As keynote speaker, the new Administrator of the Housing and Home Finance Agency, Dr. Robert C. Weaver, got things off to an encouraging start with a discussion of Administration thinking on urban renewal which suggested a consciousness of design as a creative catalyst as well as a technique and which recognized the need for coordination of urban and suburban planning with transportation (including highway) planning. Dr. Weaver called for architectural thinking on a scale which "surpasses anything we have ever known before" and "in new urban patterns—patterns based not on the demands of today but on the demands of tomorrow."

Sir William Holford, the noted British planner and president of the Royal Institute of British Architects, was concerned about the architect's responsibilities as "thinker, designer and coordinator." He emphasized that "civic design has to be recognized and fought for. Otherwise it can easily drop out of the redevelopment process altogether."

Cities and/or People?

The visiting Italian critic and editor of *l'Architettura*, Bruno Zevi, called for "a totally different type of international cooperation on city-design"—an organization "coming directly from the profession, anti-bureaucratic, quick to intervene in every part of the world, around a drawing board, with pencils in hand. Towns are to be redesigned, and in

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ARCHITECTURAL RECORD

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SEMI-ANNUAL INDEX VOLUME 129 JAN.-JUNE 1961

ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards; BC—Building Components

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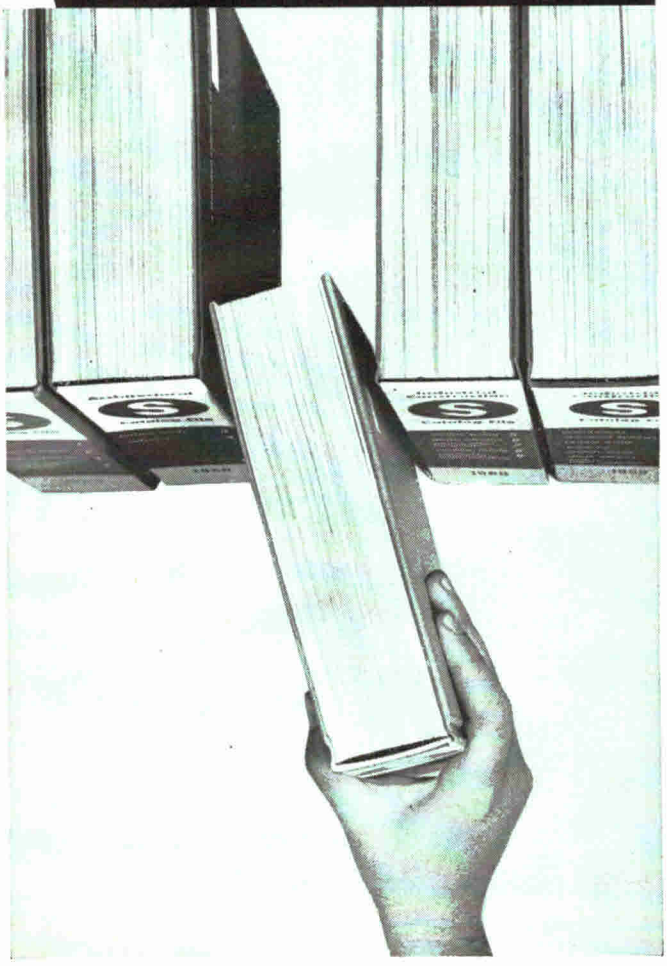

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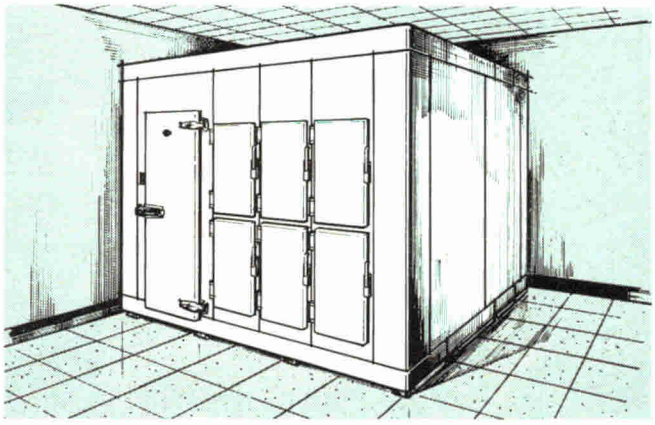

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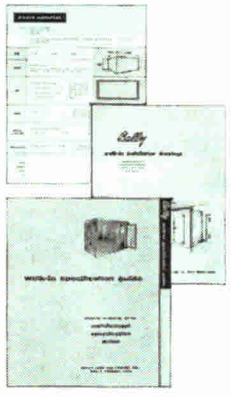

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