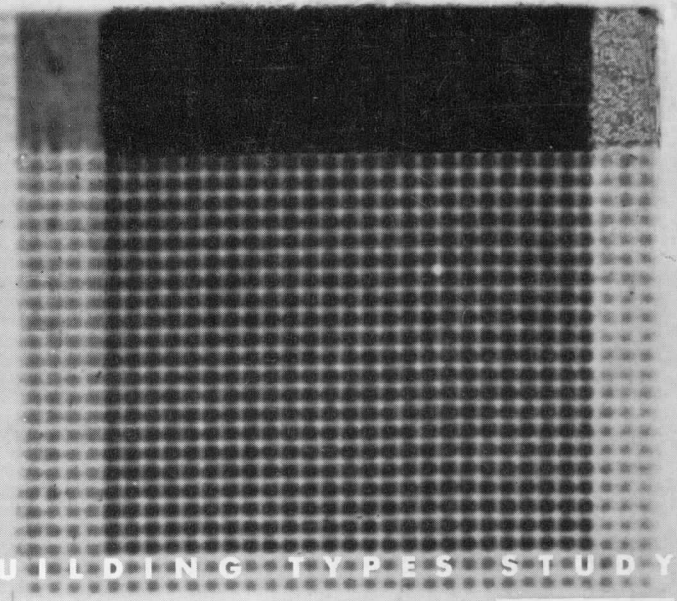
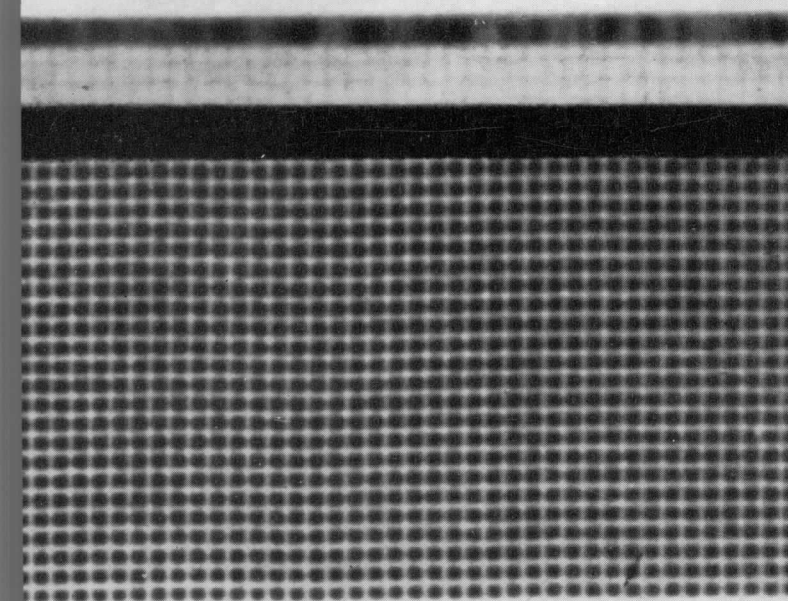
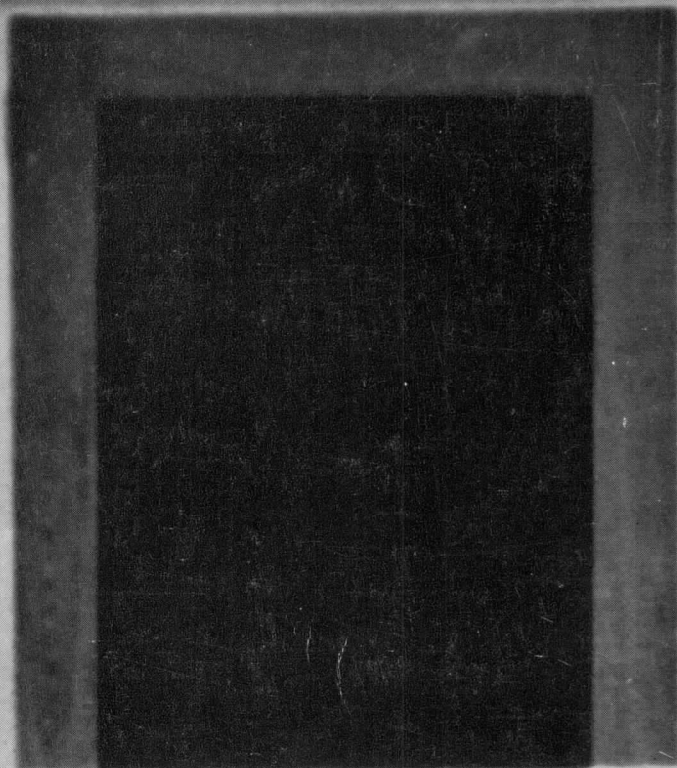


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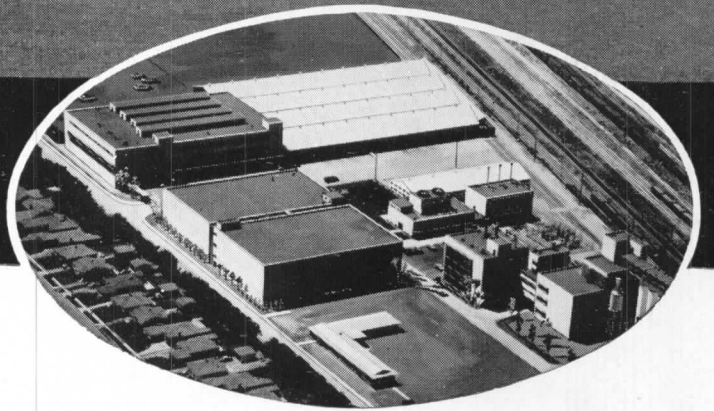
BUILDING TYPES STUDY

H O U S E S **222**

MAY 1955



Schlitz Brewing Company, Van Nuys, California
 Archts.—Harley, Ellington & Day, Detroit
 Consltg. Struct. Engrs.—Brandow & Johnston, Los Angeles
 Gen. Contr.—P. J. Walker Co., Los Angeles
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* American Concrete Institute, Committee 613, 1944 Report, Page 655
 Bureau of Reclamation's current Concrete Manual, Page 130

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ARCHITECTURAL RECORD

May 1955 Vol. 117 No. 5

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TABLE OF CONTENTS

The Record Reports

Perspectives	9
Buildings in the News	11-12
Meetings and Miscellany	15-16
Three Firms Cited in Wisconsin Biennial	20
A Washington Report. <i>By Ernest Mickel</i>	24
News From Canada. <i>By John Caulfield Smith</i>	26
Washington Topics	38
Construction Cost Index	42
Required Reading	46
Current Trends in Construction	382

Building Types Study Number 222 — Houses

Architects Coast-to-Coast Comment on Design Trends	155
Hamilton House, Shrewsbury, Mass.; Carl Koch & Associates, Architects	158
Goodsill House, Honolulu, Hawaii; Vladimir Ossipoff, Architect	161
Cornelius House, Cincinnati, Ohio; Carl A. Strauss, Architect	164
Thorne House, Austin, Texas; R. Gommel Roessner, Architect	166
Hall House, Everett, Wash.; Harold W. Hall, Architect	168
O'Brien House, Shreveport, La.; Richard J. Neutra, Architect	170
Resnick House, Pleasantville, N. Y.; Aaron L. Resnick, Architect	172
Cohen House, New Orleans, La.; Curtis & Davis, Architects	175
Joseph House, Freeport, N. Y.; William W. Landsberg, Architect	177
McGowin House, Chapman, Ala.; Huson Jackson, Architect; H. Seymour Howard, Jr., and Harold Edelman, Associates	178
Colby House, Upper Brookville, N. Y.; John H. Callender, Architect	180
Blum House, Beaumont, Texas; Bolton and Barnstone, Architects	182
Straub House, Altadena, Calif.; Calvin C. Straub, Architect	184

Architecture to Represent America Abroad

Various office and residential buildings for the State Department	
Tangier, Morocco; Hugh Stubbins Associates, Architects	187
Asuncion, Paraguay; Keyes, Smith, Satterlee & Lethbridge, Architects	188
Tegucigalpa, Honduras; Michael M. Hare, Architect	189
Manila, P. I.; Gardner A. Dailey, Architect	189

Continued on next page

ARCHITECTURAL RECORD

Continued from page 5

Architecture to Represent America Abroad (Continued)

New Delhi, India; Edward D. Stone, Architect	190
Lagos, Nigeria; Weed-Russell-Johnson Associates, Architects	191
Dakar, French West Africa; Moore and Hutchins, Architects; Georges Pellisier, Assoc. Architect	191
Hong Kong, China; Wurster, Bernardi and Emmons; Feltham and Cumine; Architects	191
Djakarta, Indonesia; Raymond and Rado, Architects	192
Kobe, Japan; Leinweber, Yamasaki & Hellmuth, Architects	192

The Dilemma of Architecture

An article by John Ely Burchard	193
---------------------------------	-----

Four Stores

Carson Pirie Scott & Company, Woodmar Shopping Center, Hammond, Ind.; Victor Gruen Associates, Architects	199
Bloomingtondale Brothers, Stamford, Conn.; William T. Snaith, Architect for Raymond Loewy Corp., Designers	203
De Bijenkorf, Rotterdam, Netherlands; Marcel Breuer — A. Elzas, Architects	206
The Hecht Company, Baltimore, Md.; Abbott Merkt & Co. and Daniel Schwartzman, Architects	209

Contemporary Art in a Remodeled Theater

Capri Theater, San Diego, Calif.; Faxon & Gruys, Architects	211
---	-----

Large High School is Both Practical and Inspiring

Edsel Ford High School, Dearborn, Mich.; Eberle M. Smith Associates, Architects-Engineers	214
---	-----

Architectural Engineering

Economics in Wood House Framing. By William J. Le Messurier	220
Lighting the Small School Stage. By Stanley McCandless	230
Roundup	226
Office Literature	228
Product Reports	229
Time-Saver Standards — School Stage Lighting; North American Building Stones, 16	233

Index to Advertising

404

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Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage.

Subscription rates in U. S., U. S. Possessions, and Canada: \$5.50 for one year, \$9.00 for two years, \$11.00 for three years. Elsewhere, subscriptions from those who by title are architects or engineers, \$6.50 for one year, \$11.50 for two years, \$15.00 for three years; subscriptions from all others outside U. S., U. S. Possessions and Canada, \$20.00 a year. Single copy price, \$2.00. Circulation Manager: Marshall T. Ginn. Change of Address: Subscribers are requested to furnish both old and new addresses, sending if possible the stencil impression from magazine wrapper. Allow four weeks for change.



THE RECORD REPORTS

P E R S P E C T I V E S

THE REAL LOWDOWN: according to a piece in the British magazine *Building Materials Digest*, architect Edward Mills reported at a recent "colloquium" at the Building Centre in London that "American architects are seriously considering abandoning the use of curtain walls because they are scared of the problems which have arisen." (Don't turn the page.)

PUBLIC RELATIONS NOTE: architecture was ranked below medicine, law, education, banking and journalism among "prestige" occupations in a recent poll of 25 high school editors in the New York metropolitan area. The architect outranked the accountant, the salesman and the secretary in the students' social scale.

WHITHER THE ENGINEERS? Location of their new headquarters has been a matter of lively interest ever since it was announced they had outgrown their home of more than 50 years in the Engineering Societies Building at 33 West 39th Street in New York. Bidding has been spirited among leading U. S. cities, which know a Cultural Benefit when they see one; and Philadelphia, Pittsburgh and Chicago, so far the leading contenders, have each thought this one was worth \$1,500,000. But New York itself, having dragged its feet for long enough to see the color of the opposition's money, last month brought up the big guns. First, at a luncheon at New York's University Club, former President Herbert Hoover asserted the engineers ought to stay in New York, "for their own good and the good of the city." Then a five-man committee was named to select a New York site for a new headquarters and "arrange for financing construction"; and William Zeckendorf himself was appointed chairman. After a more or less discreet interval (six days), New York State Attorney General Jacob K. Javits advised New York City's Commissioner of Com-

merce and Public Events that the state would oppose the societies' plans to move elsewhere on the ground that special state legislation incorporating them as "United Engineering Trustees Inc." provided the corporation will "perpetually maintain its headquarters" in New York. Whither?

IN PORTLAND, Paul Thiry of Seattle urged Oregon A.I.A. members at their annual banquet not to "underestimate the function of that intangible thing called beauty." Form follows function, yes; but "beauty is a functional necessity. . . . I would like to dissipate the notion that it is something apart. Architecturally speaking beauty can be many things . . . a dancing shadow of a tree branch on a wall, maybe a stream of sunlight, a curve, a contrast of surfaces, a texture, perhaps a reflection in the water. Sometimes it is achieved by a fresco or a mosaic. Somehow beauty is not something acquired but it is inbred . . . it is woven into the fabric of a building . . . it is not divisible. . . . Proportion and form and line are not something we prescribe . . . they too are the result of design . . . they too must be inbred factors . . . not struggled for, but easy and concise and not compromising in that they steal from the practical, but rather that they complement the practical." And the end of it all: "Primarily it is the architect's mission to understand the life of the people he serves and to weave into his structures the framework for living. The complexities of their enterprises should find simple direction through his rational thinking."

IN MILWAUKEE, it should be noted, Frank Lloyd Wright told the Wisconsin Architects Association that "America is going to have an architecture, the greatest the world has ever known, to which Rome's will not compare." Mr. Wright also

warned against "importing style from abroad," viewing architecture as a business, striving for quantity instead of quality and blind reliance on the form-follows-function formula. "Architecture is an expression of human beings for human beings. You can see painting, you can hear music. No word is sufficient to describe architecture. Literature tells about man. Architecture presents him. There must be a soul in architecture — art and religion go hand in hand. We must have something to go with the Declaration of Independence. We need the spirit of our forefathers to inspire our young."

AND IN DETROIT, Minoru Yamasaki shared some of his architectural thinking with the Michigan Society of Architects at their annual convention — against the background of his recent travels in Italy, India and Japan, "experiencing for the first time their wonderful architectures of the past." Discussing overemphasis on function among other "fallacies" he listed as "growing pains" of today's architecture, Mr. Yamasaki observed that "if we stop at function and function only, we have not even commenced with architecture. We must," he declared, "work for the uplift, the emotional quality of architecture which is man's physical expression of his nobility. If we could attain this quality in every building, in every walk of life, no matter to how small a degree, then we would have achieved with the tools of our architecture the kind of environment that we so desperately need as a framework for our civilization." In spite of the fallacies, Mr. Yamasaki believes, "the state of architecture is wonderful. In our dreams of the future are buildings which will be symbolic of the democracy in which we so deeply believe. The enjoyment of buildings, the designs, will be enhanced by our never-resting search for beauty . . ."

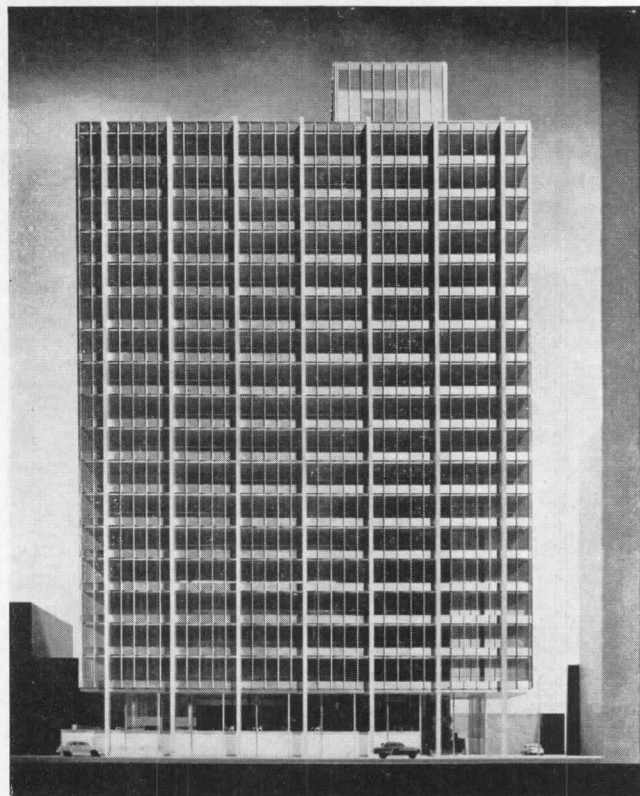
THE RECORD REPORTS
BUILDINGS IN THE NEWS

CHICAGO

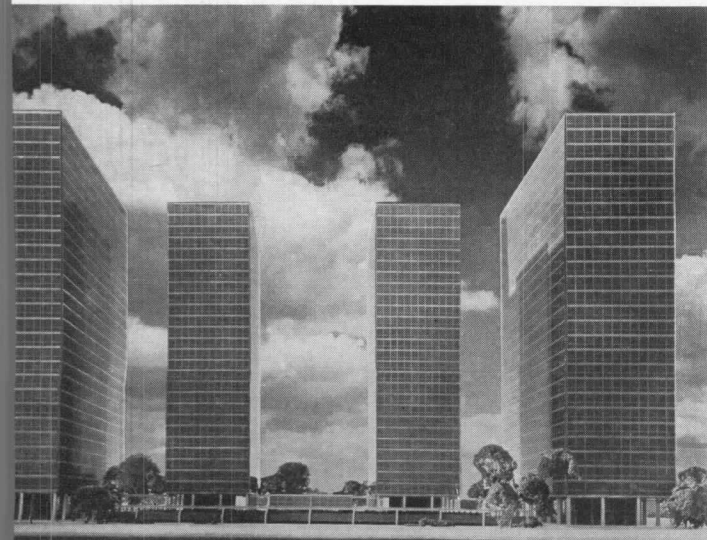
Ezra Stoller



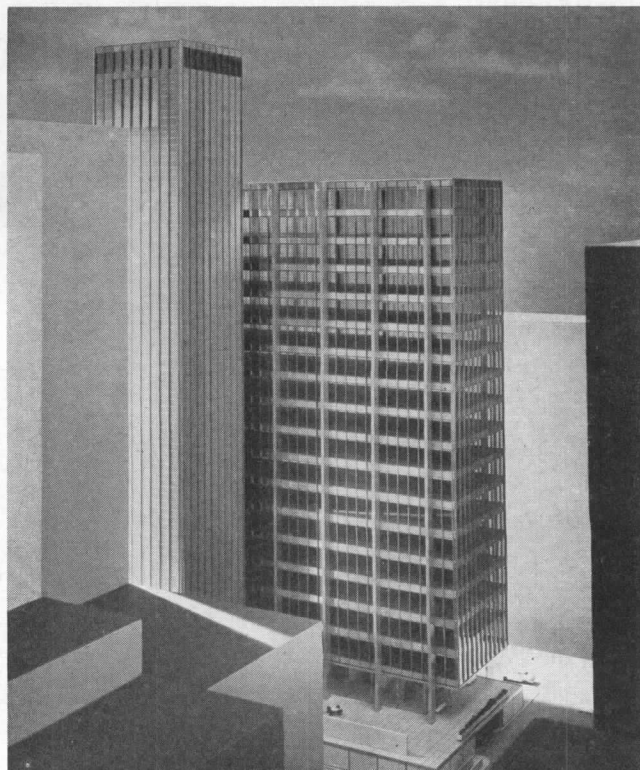
ALUMINUM AND GLASS—Two more lakefront apartment projects by Ludwig Mies van der Rohe (Friedman, Alschuler and Sincere associated) for Chicago builders and developers Herbert S. Greenwald and Samuel N. Katzin: above, "900 Esplanade Apartments" (to be immediately adjacent to Mies' 860-880 Lake Shore Towers); below, "Commonwealth Promenade Apartments." Structure will be flat-slab, reinforced concrete; exteriors a series of pre-fabricated aluminum frames nine by 21 ft, designed to eliminate as many construction joints as possible. Frank J. Kornacker is the structural engineer. Estimated cost: \$25 million

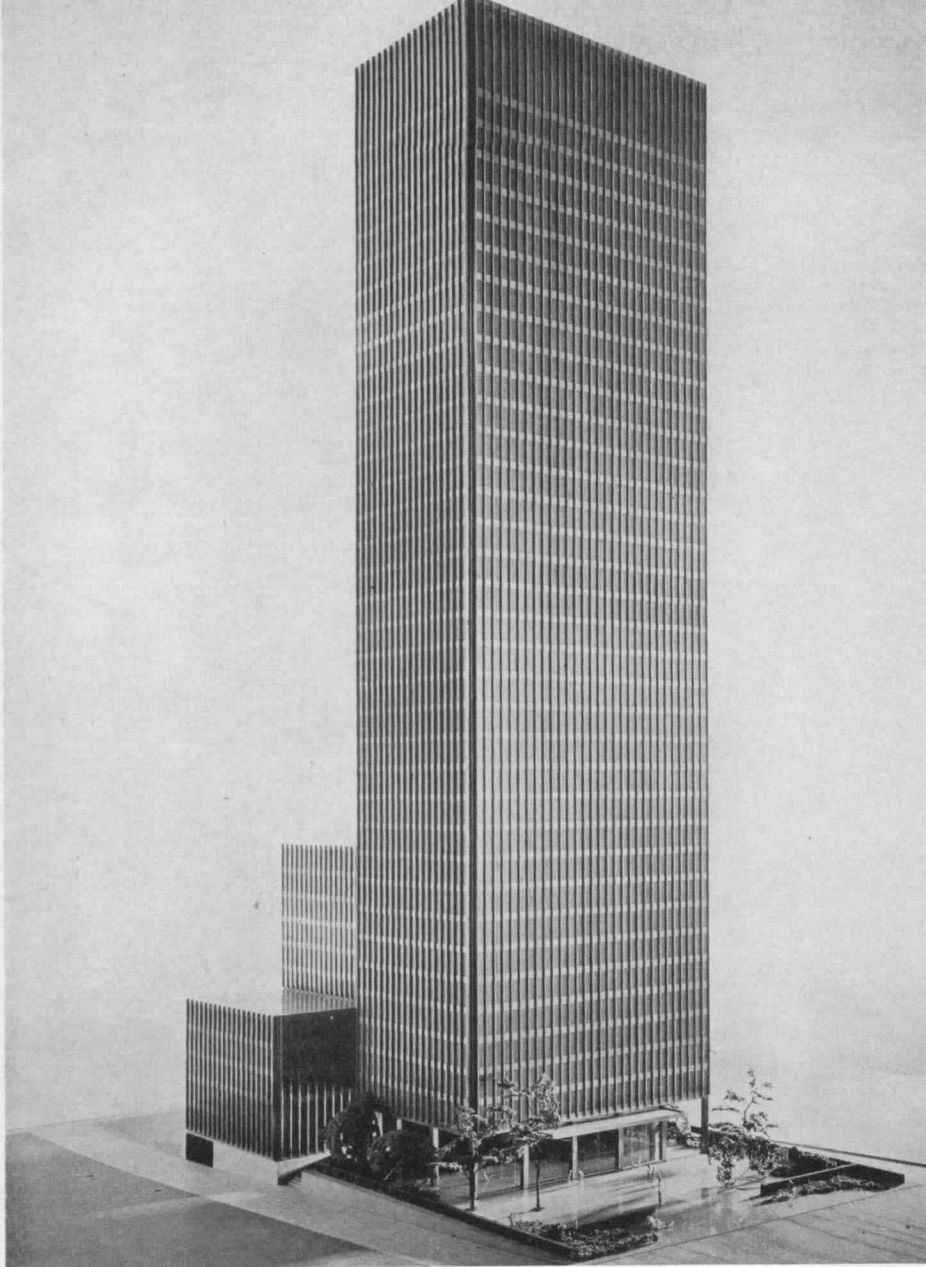


STEEL AND GLASS—Skidmore, Owings and Merrill are architects for 19-story, 250 ft \$6 million office building projected by Inland Steel Company for northeast corner of Dearborn and Monroe streets. It will be Loop's first large new office building in 20 years and the city's first all stainless steel building. Use of exterior steel columns for structural support and a separate service shaft (310 ft high) for all risers as well as utilities will leave the main office tower unobstructed interior floor areas 177 by 58 ft, said to be the widest clear span of floor space ever designed for a multi-story building. Construction is scheduled to start this fall



Hedrich-Blessing





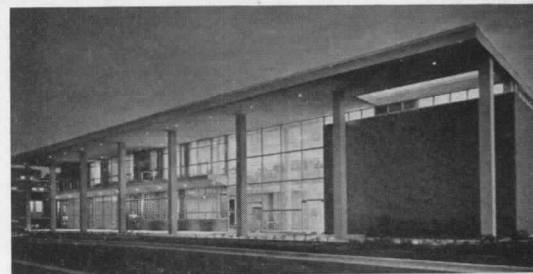
Joseph W. Mollitor

BRONZE AND GLASS—The design by Ludwig Mies van der Rohe and Philip Johnson (Kahn and Jacobs, Associated Architects) for "Seagram Park Avenue" projects a 38-story skyscraper with a façade entirely of bronze and dark-gray glass, set on a marble platform which will constitute a large open plaza at ground-floor level. The new headquarters of Joseph E. Seagram & Sons Inc., on the east side of Park Avenue between 52nd and 53rd streets, is scheduled for completion in 1957, when Seagram's will celebrate its 100th anniversary. Estimated cost: "in excess of" \$20 million. Structural engineers: Severud-Elstad-Krueger. Builder: George A. Fuller



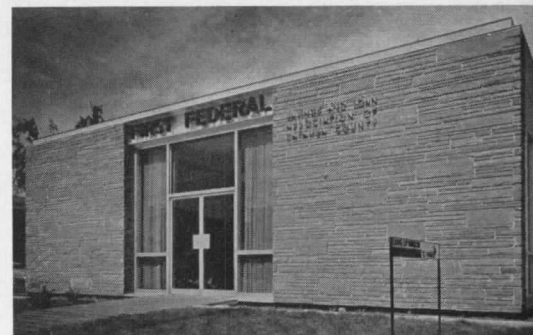
NORTH CAROLINA Chapter of the American Institute of Architects held its first honor awards program as a feature of its annual winter meeting at Chapel Hill this year (AR, Mar. 1955, page 15). A jury consisting of Richard L. Aeck, A.I.A., Atlanta, Thomas H. Creighton, A.I.A., editor of Progressive Architecture, and Dean Olindo Grossi of the Pratt Institute School of Architecture, named 14 projects (of 52 submitted by 21 North Carolina firms) to receive honor awards, and designated nine of the 14 for "special commendation." The nine are shown on this and next page

Joseph W. Mollitor



Student Union Building, North Carolina State College, Raleigh; William Henley Deitrick—John C. Knight, Architects

Joseph W. Mollitor



Office building for First Federal Savings and Loan Association of Catawba County, Conover; Clemmer & Horton, Architects

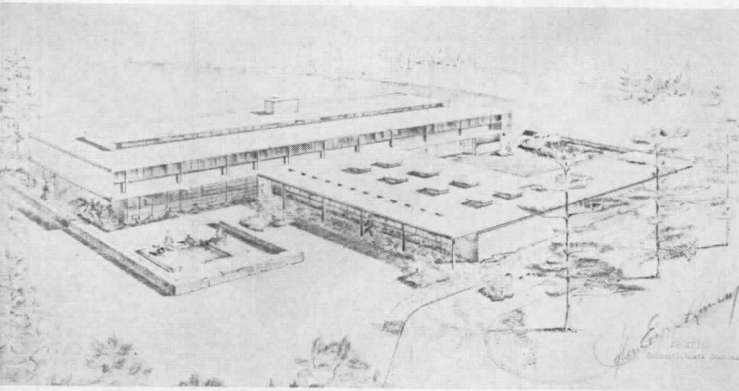
Joseph W. Mollitor



Office Building for Addison Building Corp., Charlotte; A. G. Odell Jr., Architect
(Continued on page 12)

THE RECORD REPORTS
BUILDINGS IN THE NEWS

North Carolina Awards
(Continued from page 11)



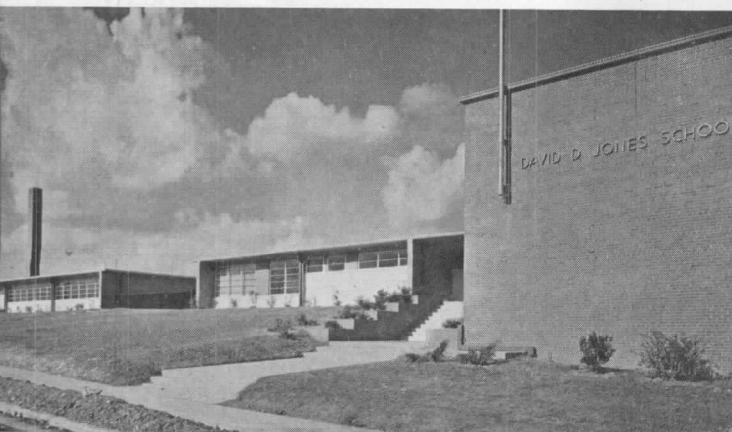
Farm Colony Building, State Hospital, Morganton; John Erwin Ramsay, Architect

Joseph W. Molitor



Double Oaks Elementary School, Charlotte Public School System; A. G. Odell, Jr., Architect

Joseph W. Molitor



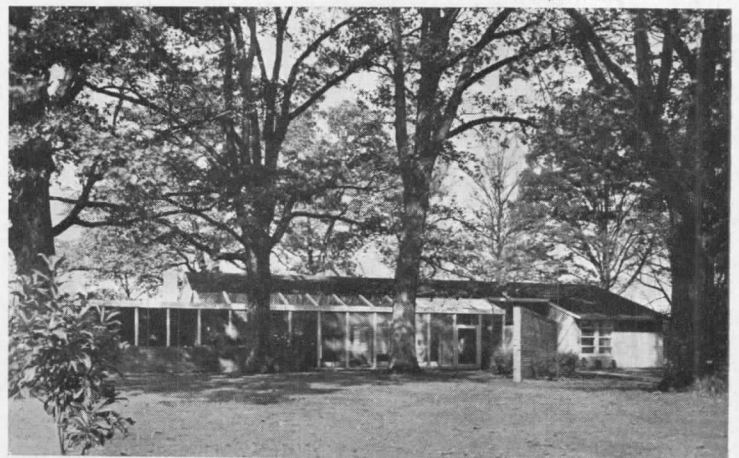
David G. Jones Elementary School, Greensboro Public School System; Loewenstein-Atkinson, Architects

Joseph W. Molitor



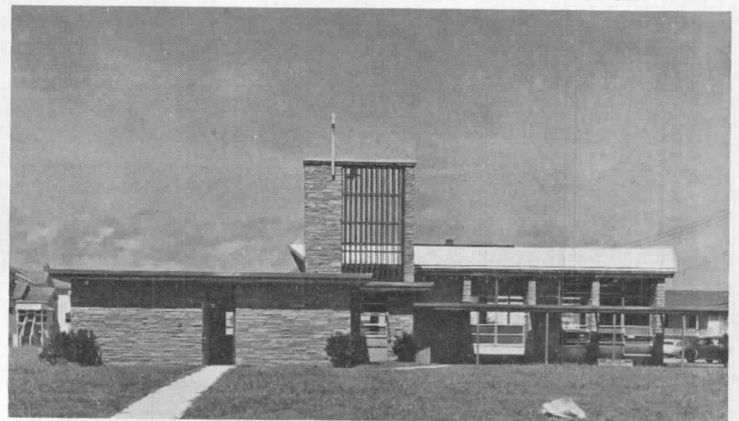
Residence for Mr. and Mrs. J. Spencer Bell, Charlotte; A. G. Odell Jr., Architect

Joseph W. Molitor



Residence for Mr. and Mrs. Wilbur Carter Jr., Greensboro; Loewenstein-Atkinson, Architects

G. E. Kidder-Smith



"The Little Chapel on the Boardwalk," Wrightsville Beach; Leslie N. Boney, Architect

(More news on page 15)

The State of Construction

BOOM, BOOM, BOOM is the continuing theme, and for whatever the economic pundits can make of it, the construction industry goes on setting new all-time records. The latest F. W. Dodge Corporation report shows first quarter 1955 construction 40 per cent over the previous all-time-high first quarter in 1954 (for details, see page 382). At its annual meeting in Washington at the end of March, the regional directors of the American Institute of Architects reported more work in architects' offices at that time than a year ago in eleven of the Institute's 12 geographic regions; the twelfth — the Great Lakes area — maintaining last year's high level. And the Associated General Contractors of America reported at its annual convention in New Orleans (see next page) that a telegraphic survey of their members revealed a large majority anticipated increases in all three major categories of construction — building, highway and heavy engineering — over the next six months.

A.I.A. News and Notes

FIVE HONOR AWARDS and 22 Awards of Merit will be given in the 1955 A.I.A. Honor Awards Program. Selections were made last month in Washington — in advance of the annual convention for the first time — by a jury consisting of

Thomas H. Locraft, Washington, D. C., chairman; Ludwig Mies van der Rohe, Chicago; Eugene F. Kennedy, Jr., Boston; J. Byers Hays, Cleveland; and Ernest Born, San Francisco. **First Honor Awards:** The General Telephone Company of the Southwest, San Angelo, Tex. — Pace Associates, architects, with Charles B. Genther, architect in charge; Central Restaurant Building, General Motors Technical Center, Warren, Mich. — Eero Saarinen and Associates, architects; Women's Dormitories and Dining Hall, Drake University, Des Moines, Iowa — Eero Saarinen and Associates, architects; American Embassy, Stockholm — Ralph Rapson and John van der Meulen, architects; North Hillsborough Elementary School, Hillsborough, Cal. — Ernest J. Kump, architect. **Awards of Merit** were made to: St. Brigid Catholic Church, Los Angeles — Chaix and Johnson, architects; Texas Children's Hospital, Houston, Tex. — Milton Fay Martin, architect; Eagle Rock Playground Clubhouse, Eagle Rock, Cal. — Richard J. Neutra, architect, and Dion Neutra, associate; Men's Residence Hall, University of Washington, Seattle — Young, Richardson, Carleton and Detlie, architects; Bank of Apple Valley, Apple Valley, Cal. — McFarland, Bonsall, Thomas, architects; Danforth Chapel, Colorado A&M College, Fort Collins, Colo. — James M.



William E. Bradley

Happy humorist: architect Roger Allen of Grand Rapids addressing Michigan architects' banquet. Below: A.I.A. President Clair W. Ditchy, who received the Michigan society's 1955 Gold Medal, with Elmer J. Manson, society president



William E. Bradley

Hunter, architect; O'Neil Sheffield Shopping Center, Sheffield Township, Ohio — Weinberg and Teare, architects; Charles M. Goodman residence, Alexandria, Va. — Charles M. Goodman, architect; U. S. Naval Postgraduate School, Monterey, Cal. — Skidmore, Owings and Merrill, architects; U. S. Navy Service Schools, Great Lakes, Ill. — Skidmore, Owings and Merrill, architects; Bandstand and Park Pavilion, St. Petersburg, Fla. — William A. Harvard, architect; Home Economics Building, University of California, Davis Campus — Hervey Parke Clarke and John F. Beuttler, architects; George Channing residence, Sausalito, Cal. — Roger Lee, architect; St. Matthews Church, Pacific Palisades, Cal. — A. Quincy Jones and Frederick E. Emmons, architects; Children's Clinic, Raceland, La. — Curtis and Davis, architects; Sigmund Kunstadter house, Highland Park, Ill. — George Fred Keck and William Keck, architects; apartment development, Fairfax County, Va. — Keyes, Smith, Satterlee and Lethbridge, architects; Manresa Jesuit Retreat House, Azusa,

(Continued on page 16)



— Drawn for the RECORD by Alan Dunn

(Continued from page 15)

Cal. — Wallace Neff, architect; Ernest Nelson Moore house, Carmel, Cal. — Anshen and Allen, architects; five-unit apartment building, Los Angeles — Carl Maston, architect; the William H. and May D. Taylor Memorial Library and the John M. Reeves Student Union Building, Centenary Junior College, Hackettstown, N. J. — Jan Hird Pokorny, architect; and the Mercantile Library, Philadelphia — Martin, Stewart and Noble, architects.

CLARENCE STEIN will be the banquet speaker at the 87th annual convention in Minneapolis June 20-24. The choice of one of this country's pioneer city planners is in key with the convention's theme, "Designing for the Community," and Mr. Stein's address will highlight a program of seminars on such subjects as

"Rebuilding the City" (Cities Are Planning Conscious Review of Redevelopment Accomplishment, Training the Architect for Planning, Design Objectives in Planning, Urban Design and Housing) and "The Architecture of Community Expansion" (Planning Needs the Architect, Development Housing — Neglected Architectural Opportunity, Planning of Smaller Communities, Commercial Service to New Areas).

Michigan Architects Meet

HIGHLIGHTED BY AN ADDRESS "Where Do We Go from Here?" by Minoru Yamasaki (see page 9), the 41st annual convention of the Michigan Society of Architects was held at the Hotel Statler in Detroit March 9-11. At the Michigan Building Industry Banquet, traditional

closing event of the Society's conventions, A.I.A. President Clair W. Ditchy, F.A.I.A., received the Society's Gold Medal for 1955.

Another notable event of the convention was the first public showing of the Society's new 16-mm color sound movie made as part of the Society's very lively and effective public relations program to dramatize the architect and his work for public consumption. The Society plans to make prints available to A.I.A. chapters for a nominal fee.

Prosperity and Competition

THE COUNTRY'S GENERAL CONTRACTORS, some 1800 of them, met in New Orleans this spring in an atmosphere of continuing prosperity. Talk of continuing tight competition in bidding for the big jobs while markets remain strong highlighted

(Continued on page 314)



Exra Stoller

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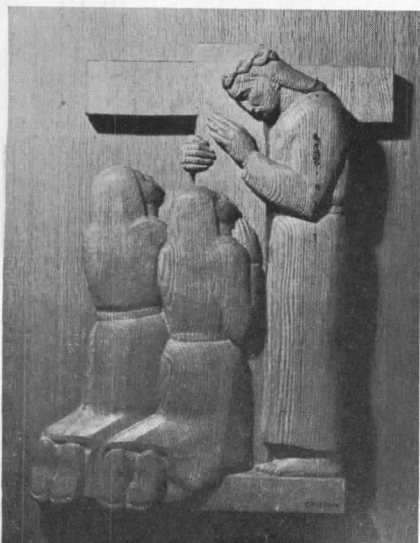
Exra Stoller

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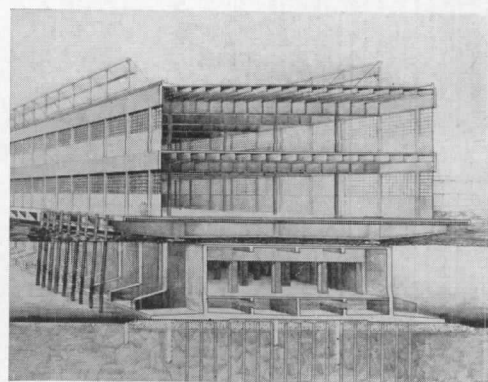
ARCHITECTURAL LEAGUE OF NEW YORK GOLD MEDALS for 1955 went to these entries in the League's 58th annual exhibition of architecture and the allied arts. 1. Manufacturers Trust Company branch bank, Fifth Avenue and Forty-third Street, New York City, Skidmore, Owings and Merrill, Architects, received the Gold Medal for Architecture. There were no Silver Medals or Honorable Mentions in architecture. 2. Harry Bertoia's sculptural metal screen, in the same bank, was awarded the Gold Medal in Design and Craftsmanship. 3. Gold Medal for Sculpture was awarded to Ernest Morenon for his Stations of the Cross in the Church of the Blessed Sacrament, Holyoke, Mass. (Chester F. Wright, architect). 4. Pier 57 (Grace Line), New York City, won the Gold Medal in Engineering for E. H. Praeger of Madigan Hyland. Rendering shows concrete boxes which support the superstructure, provide unique underwater storage areas

3

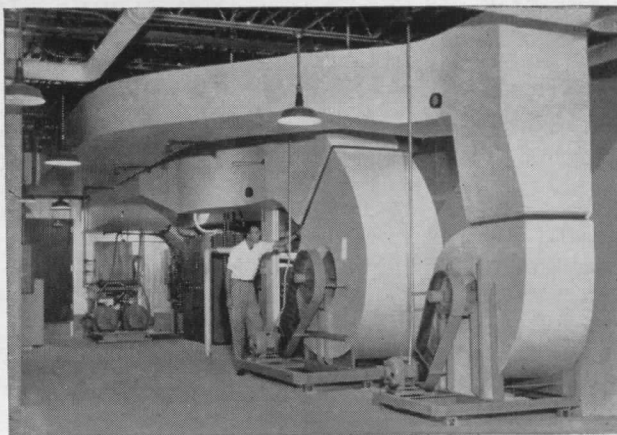
4



Grace Line



(More news on page 20)



↑ **Five American Blower** Supply Fans and a Sprayed Coil Dehumidifier furnish conditioned air for offices, test laboratory in upper floors of missile hangar.

← **Chance Vought** (foreground) and adjoining plants are leased from the U.S. Navy. Entire air-conditioning installation contains 7400 tons of refrigeration — of which no less than 6600 tons are applied to the load through American Blower equipment.

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THE RECORD REPORTS

THREE FIRMS ARE CITED IN WISCONSIN BIENNIAL

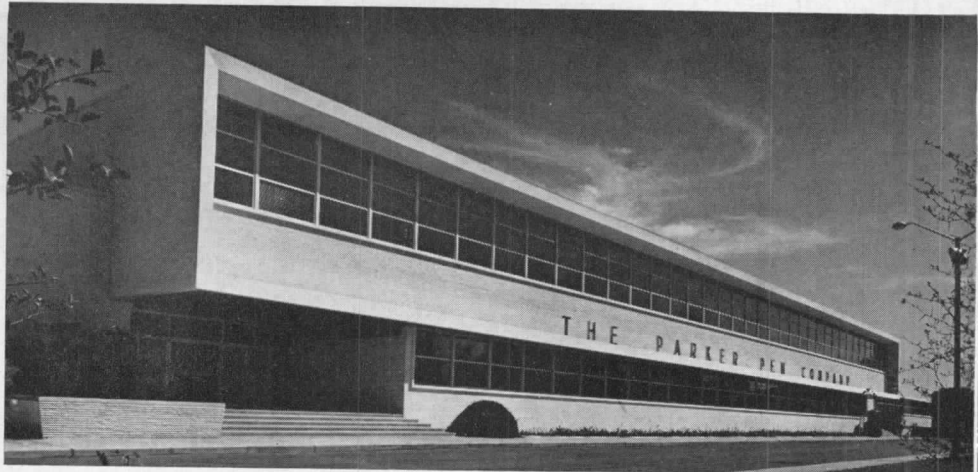
THREE FIRMS WON FIVE AWARDS in the 1955 Biennial Honor Awards Competition sponsored by the Wisconsin Architects Association. All of the premiated buildings are shown on this page.

There were 44 entries in the competition, which is held every two years "to encourage the appreciation of excellence in architecture and to afford recognition of exceptional merit in recently-completed buildings which are the product of Wisconsin members of the American Institute of Architects." Entries are judged, not in competition with each other, but "on the basis of the excellence of the architect's solution of the problem presented him by the owner's requirements, site conditions, cost limitations and other limiting factors."

The winners and other entries are to be exhibited throughout the state.

Members of the jury were: Carl Koch, A.I.A., of Cambridge, Mass.; Harold Spitznagel, A.I.A., of Sioux Falls, S. D.; and John W. Root, F.A.I.A., of Chicago.

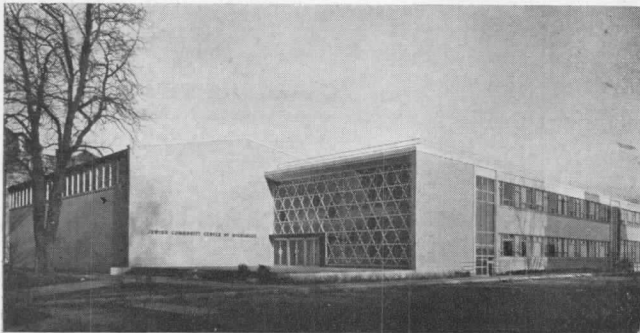
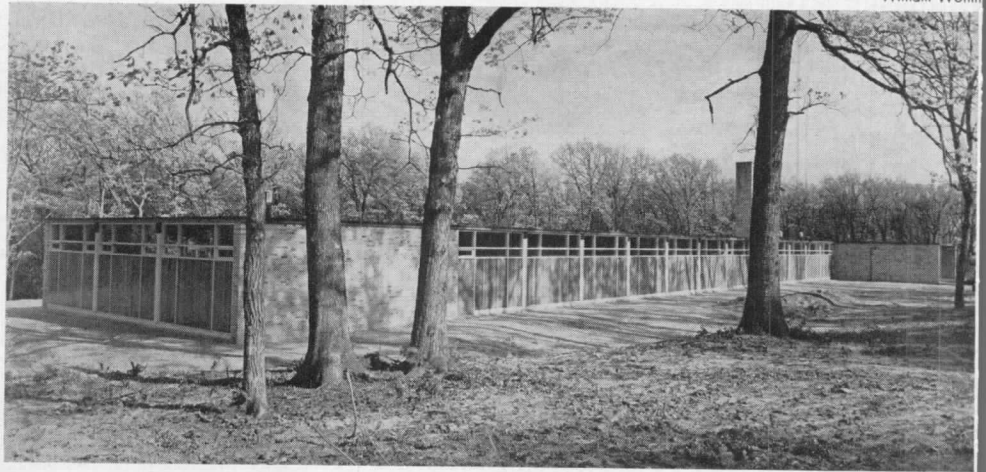
Mark T. Purcell of Madison was chairman of the committee which arranged the competition. Members were Frederick J. Schweitzer of Milwaukee and Maurey Lee Allen of Appleton, vice chairmen; Wallace R. Lee Jr., Robert J. Van Lanen and Austin A. Fraser, all of Milwaukee; Thomas H. Flad of Madison; and Theodore H. Irion of Oshkosh.



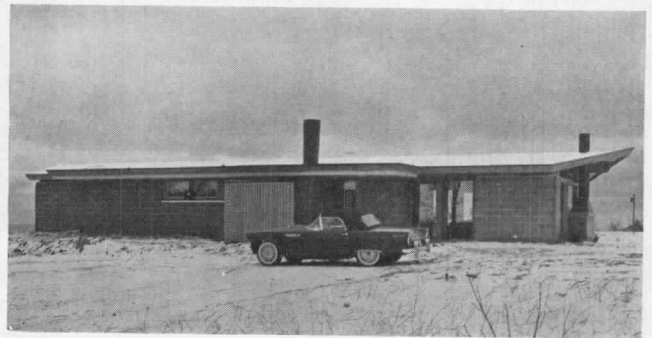
William Wollin

FIRST HONOR AWARDS — "for distinguished accomplishment in architecture" — went to two buildings by John J. Flad and Associates of Madison: above, industrial plant for Parker Pen Company, Janesville, Wis.; below, Middleton (Wis.) State Graded School. The jury, choosing to give two first awards instead of the one the program called for, commended the Parker plant especially for its "straightforward plan" and "well-integrated exteriors"; the school for "interesting fenestration and human scale"

William Wollin



1.



2.

3.

AWARDS OF MERIT IN ARCHITECTURE —

1. Jewish Community Center, Milwaukee; Maynard W. Meyer & Associates, Milwaukee, architects. Jury praised "ingenious solution" of difficult site problem
2. Residence of Mr. and Mrs. William Metzker, Mequon, Wis.; Maynard W. Meyer & Associates, architects. Jury called house "a good low-cost solution to the residential problem"
3. Public Library Branch, Milwaukee, Wis.; Grassold, Johnson & Associates, architects. Jury liked use of garden as part of plan, commended "strategic location" of control desk



(More news on page 24)

Throughout one of the World's newest and most luxurious hotels

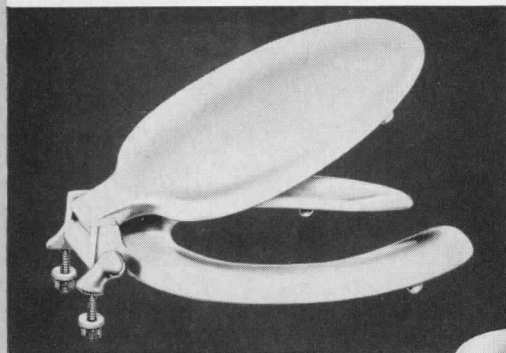
The Fontainebleau

MIAMI BEACH, FLORIDA



ARCHITECT: Morris Lapidus, Miami Beach, Fla.
General Contractor: Taylor Construction Co., Miami, Fla.
Mechanical Engineers: Sasnett and Bennett, Miami, Fla.
Mechanical Contractors: Markowitz Bros., Inc., Miami, Fla.

SOLID Olsonite SEATS



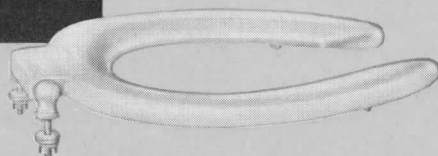
Olsonite model No. 56 Solid color seats were installed throughout the Fontainebleau Hotel.

For every deluxe and standard bathroom throughout Miami Beach's new Fontainebleau Hotel—one of the world's most fabulous—Solid Olsonite Seats were specified and installed.

Olsonite No. 56 open front seats with cover were specified in a variety of plain colors to match the pottery of the colorfully appointed bathrooms. Like all Olsonite seats, these plain color models are solid one-piece construction. There's no sheet covering or applied finish of any kind to crack, chip or peel.

Selection of Olsonite for the Fontainebleau is another indication of Olsonite's ever increasing popularity. Equally popular for hotels are Olsonite *white seats* both with and without cover. Unlike ordinary white seats, they will not fade or discolor even after years of use.

For a complete catalog of all Olsonite models, please write on your letterhead.

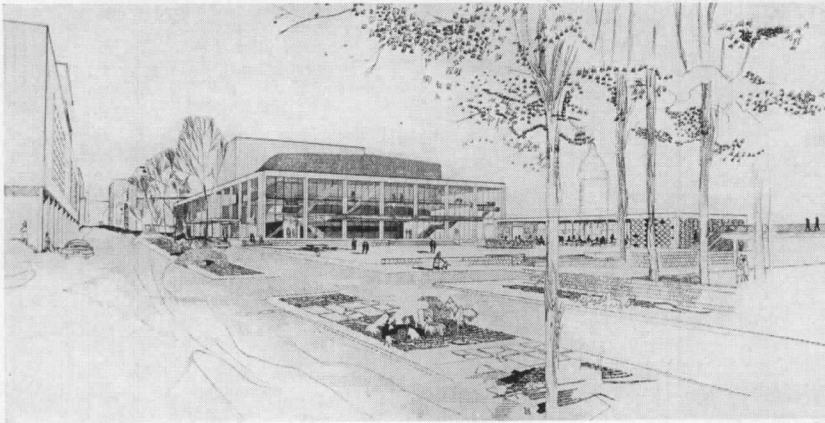


Olsonite models 5 and 10 (both with and without concealed check hinge) are also ideal for hotel installations.

A-3-55

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VANCOUVER CHOOSES A PLAN FOR ITS CIVIC AUDITORIUM



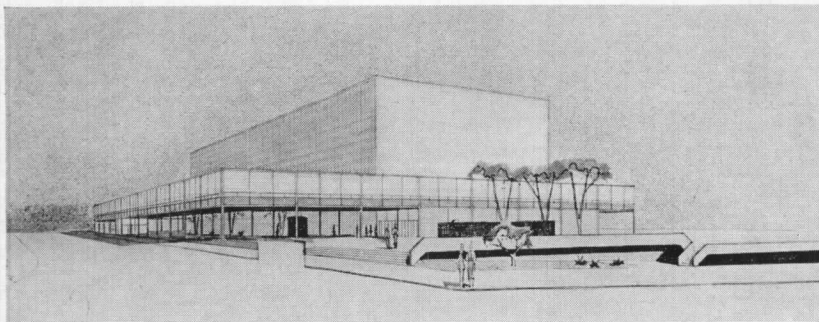
First Prize of \$5000, and the commission, went to architects R. T. Affleck, J. Michaud, G. Desbarats, H. Sise and D. F. Lebensold, all of Montreal

AFTER SEVERAL FALSE STARTS over the past 40 years, Vancouver, it seems, is finally going to get its Civic Auditorium. The city plans to build the winning design in its recent competition, which was won by a group including architects R. T. Affleck, J. Michaud, G. Desbarats, H. Sise and D. F. Lebensold, of Montreal. The first prize is \$5000 and the commission fee.

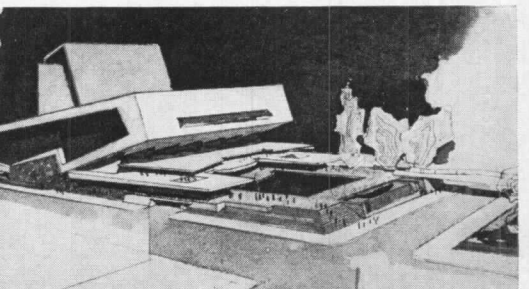
The second prize, of \$2500, was awarded to J. Clayton and K. Bond of Calgary and the third prize of \$1000 went to J. Paivio, also of Calgary. Five honorable mentions, shown on this and the following page, were awarded \$200 each. The competition was open only to members of the Royal Architectural Institute of Canada.

The project, which will be built at a cost of \$2,750,000, will cover a city block in downtown Vancouver. The facilities required by the city include a principal hall for opera, ballet, drama, concerts, meetings and films (in that order of importance) to seat 2750-3000; broadcasting headquarters; a small hall seating 450-700; a restaurant with lounge; and two meeting rooms seating

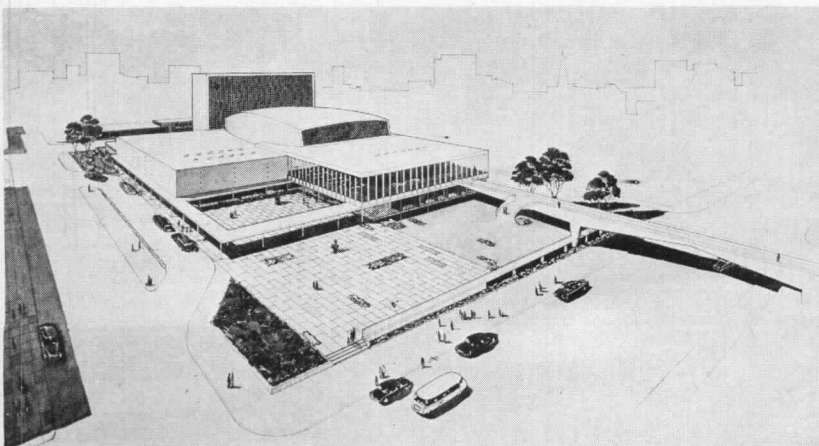
(Continued on page 30)



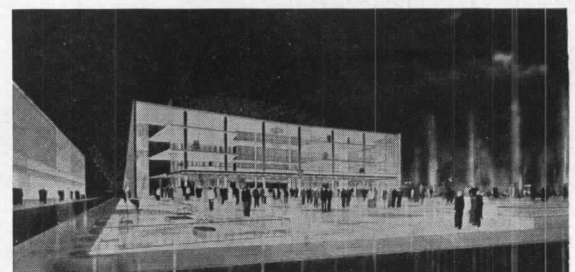
Second Prize, of \$2500, was awarded to the entry of Calgary architects J. Clayton and K. Bond

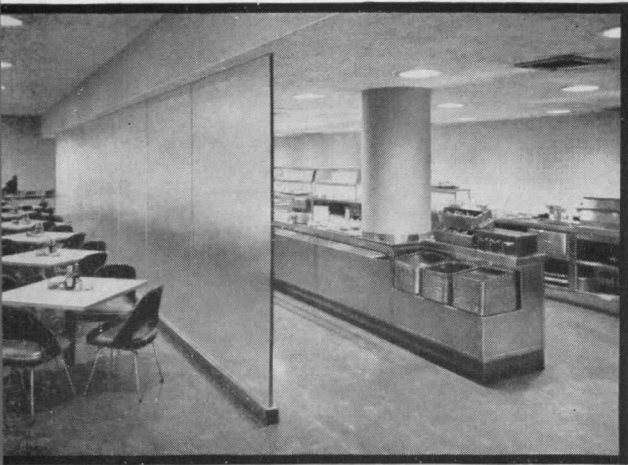


Above: First Mention (all mentions were awarded \$200) went to C. Outram, Vancouver architect. Below: Second Mention was awarded to W. R. Ussner and J. C. Peeps of the University of British Columbia



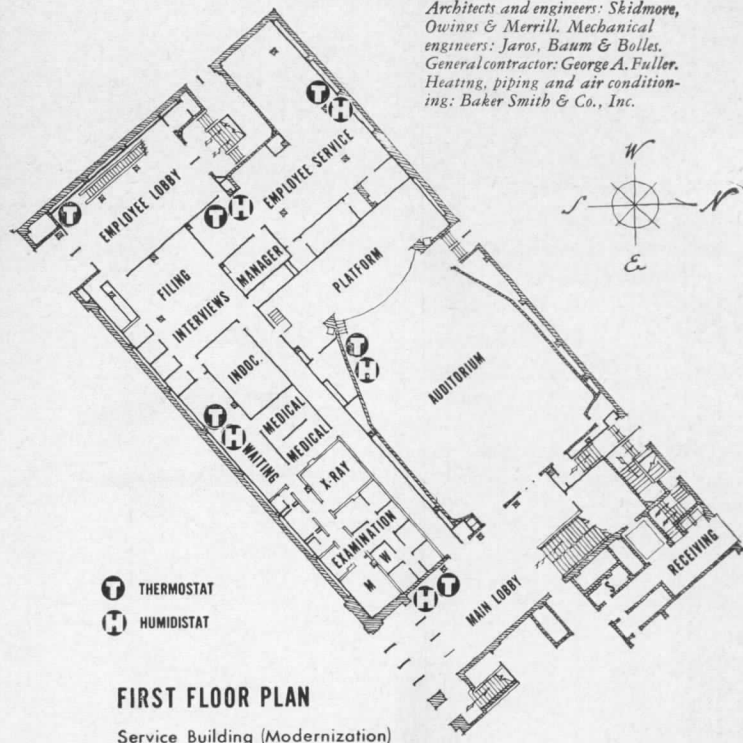
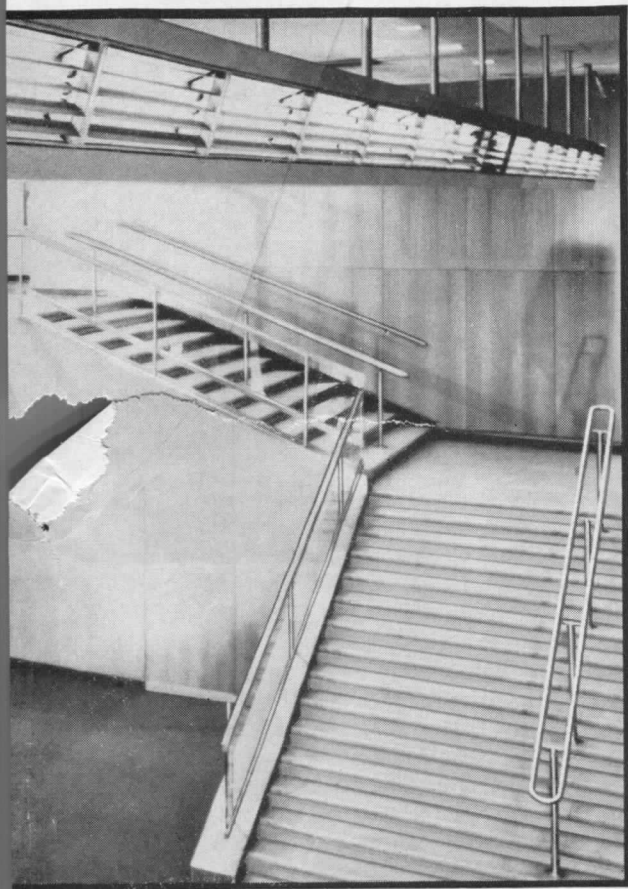
Third Prize, of \$1000, was awarded to the design submitted by architect J. Paivio of Calgary





Occupancy. Separate thermostats in the cafeteria provide ideal comfort by calling for more heating or cooling—depending on the number of occupants. They also easily meet special comfort problems such as compensating for heat from steam tables. Separate thermostats, too, provide comfort in locker rooms where the internal cooling load may be raised by the influx of hundreds of people in a few minutes' time.

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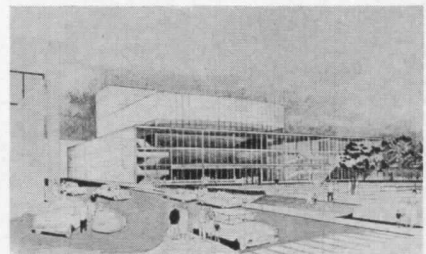
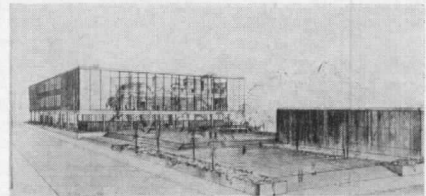
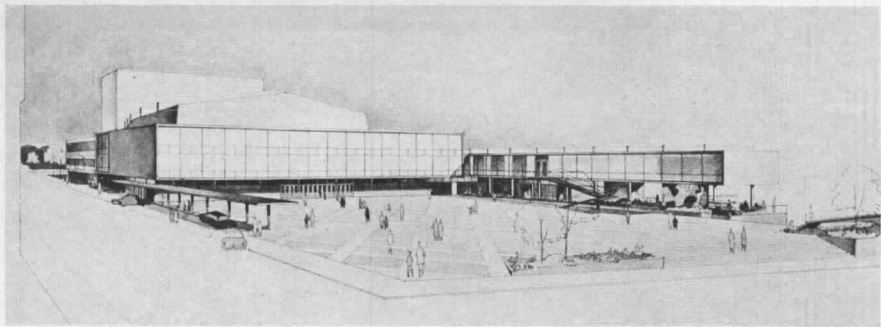
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Vancouver Auditorium

Top: Third Mention was won by J. Semmens and D. C. Simpson, Vancouver architects. Center: Fourth Mention, by architects Green, Blankenstein, Russell & Associates, Winnipeg. Bottom: Fifth Mention, by architects J. B. Parkin Associates, Toronto



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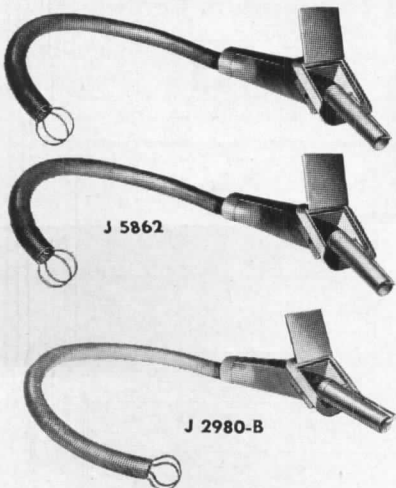
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100-200 people. Site requirements include a landscaped forecourt and a smaller landscaped court on the opposite side; service areas and unloading and parking facilities.

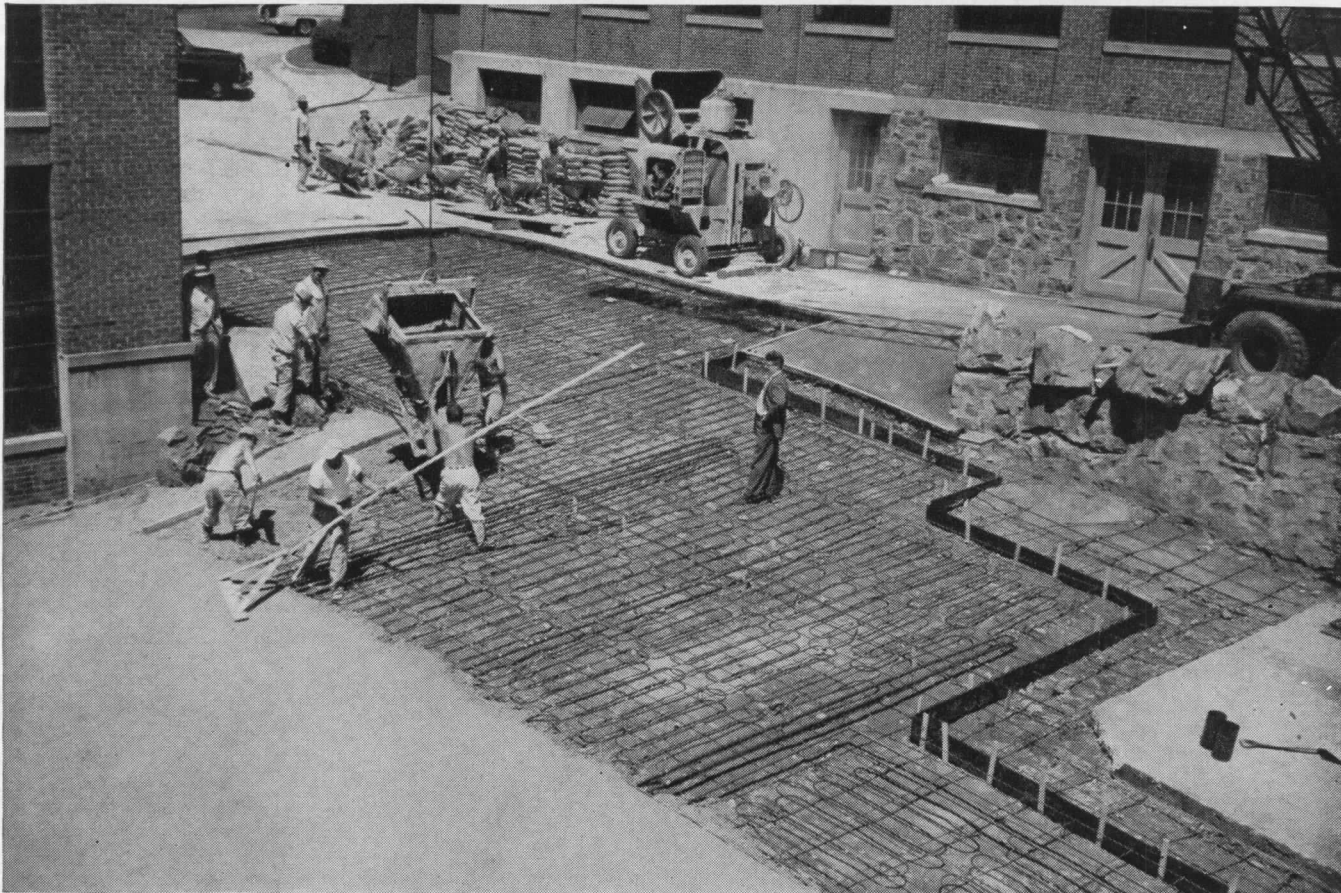
Fred Lasserre, M.R.A.I.C., director of the School of Architecture at the University of British Columbia, was professional adviser for the competition and chairman of the board of assessors. Other judges were G. Sutton-Brown, Director of Planning, City of Vancouver, and architect Eero Saarinen of Bloomfield Hills, Mich.

HOUSE BUILDERS URGED TOWARD BETTER DESIGN

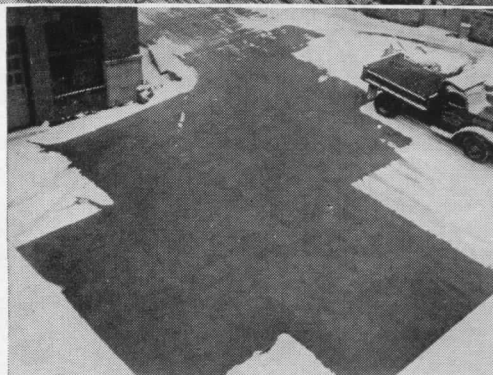
The need for better residential design was stressed at the 12th annual convention of the National House Builders Association, held in Toronto March 27 through April 1.

The view held by a number of the speakers was that an increasingly competitive market focused attention on the contribution the architect was in a position to make. It was agreed that the idea of architect-builder teams, as they have developed in the United States, has very definite application in Canada.

(Continued on page 32)



Pouring concrete over Anaconda Pre-Formed Panel Grids, the basic units of this snow-melting system for the loading area of a New England manufacturing plant. Right, you see how effective the system is in operation. No snow, no ice, no trouble all winter. All done by simply turning a valve.



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THE RECORD REPORTS

CANADA
(Continued from page 32)

BID DEPOSITORY SCHEME ACCEPTED IN ONTARIO

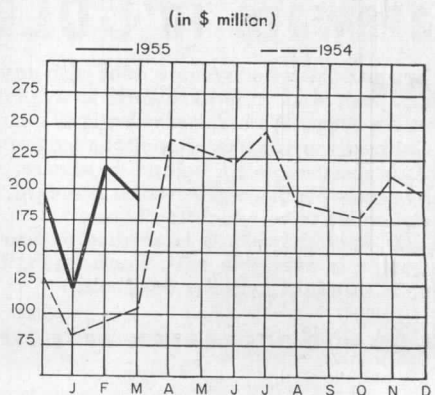
Intended to halt the practice of “bid peddling,” a plan for mechanical and electrical subcontractors to submit their bids, when so directed by the architect, to a bid depository instead of to the general contractor has been accepted by the Council of the Ontario Association of Architects. The proposal, which is modeled in part on systems operating in Vancouver, Regina and the Lakehead, was prepared by the Ontario General Contractors Association, the Electrical Contractors Association of Ontario and the Ontario branch of the National Association of Master Plumbers and Heating Contractors of Canada.

The scheme will become effective in Metropolitan Toronto as soon as arrangements have been made with the Toronto Builders' Exchange to manage the bid depository. O.A.A. members have been asked to try the plan until the end of the year, although they may continue to call for separate and direct bids if the circumstances demand them.

CORRECTION

Keith L. Graham, described as a “designer” in the RECORD's story on the Steinberg supermarkets (February, p. 26), is an architect registered in Nova Scotia. Mr. Graham also designed the store at Manor Park, Ottawa, incorrectly credited to Eliasoph & Berkowitz.

Contracts Awarded : Comparative Figures *



* Compiled by the editor and staff of The Building Reporter, from information compiled by MacLean Building Reports

(More news on page 38)

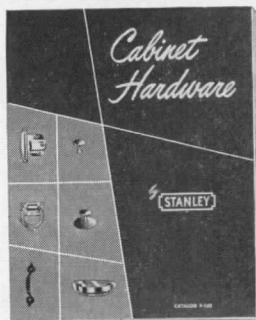
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Stanley has just published this new 12 page catalog in color. It contains the *complete, compact, quality* Stanley line . . . solid brass, aluminum, chrome, distinctive Ranch Craft and Rustic Iron . . . the latter now available in new antique copper and familiar black finishes. Brand new items include the magnetic catch with the "floating" magnet, unique hinges for overlapping doors, smart decorator knobs, streamlined capped hinges and a versatile rubber roller cabinet catch.



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**FCDA PUSHES EVACUATION:
ODM STUDIES DISPERSION**

One approach to Federal Government policy on civil defense was reiterated in repeated appearances on Capitol Hill last month of Federal Civil Defense Administrator Val Peterson. He left no doubt of his conviction that major American cities must be evacuated in case of atomic attack.

Visits to the Hill took Mr. Peterson to the House and Senate Armed Services Committees, the House Appropriations Committee, and the Senate Subcommittee on Public Works.

Mr. Peterson acknowledged that presently anticipated warning time is not sufficiently long to permit complete evacuation from densely populated areas of all principal cities. Even with increased warning time, he said, many

cities could not be completely evacuated because of inadequate highway systems. Mr. Peterson continued to urge "rapid improvement of our highway system" as a vital civil defense measure.

The Federal Civil Defense Administration also issued a new guide to be used in planning evacuation of target cities. Obtainable from the Superintendent of Documents, Washington 25, D. C., for five cents per copy, the bulletin answers questions on how states should plan for emergency evacuation of their cities. Title: "Evacuation of Civil Populations in Civil Defense Emergencies." Designation: TB-27-1. It is the first in a planned series describing evacuation techniques and operations of the various civil defense services.

Three types of evacuation are listed: 1) Strategic. During a period of international tension preceding actual warning, it may be desirable to move certain dependent, non-productive people away from danger areas. 2) Tactical. After warning that attack is probable, time may permit the mass evacuation of people from target areas. 3) Remedial. Following an attack, survivors not needed for civil defense services may be evacuated.

The President has asked Congress for \$12 million with which to survey 92 target areas with a view to improvement of escape routes. If the money is forthcoming, the studies will begin with a dozen cities of about a million population each.

One such study already has been done on Milwaukee with this showing reported: existing routes would enable 600,000 to be evacuated with three hours' warning time during night emergency; first stage improvements with an outlay of \$321,000 would raise this figure to 615,000; second stage with cost at \$6,629,000 would push it to 680,000; and building a freeway system outside the city proper with improvement of 130 miles at a cost of \$78 million would permit 825,000 to be emptied from the city under the prescribed circumstances.

ODM Restudies Dispersion

Also last month, the Office of Defense Mobilization established a new task force to revise its industrial dispersion policies. Composed of representatives from the Department of Defense, Federal Civil Defense Administration and the Department of Commerce, the group is


(Continued on page 344)

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QUOTES FROM PARTICIPANTS

"I like what I feel is honestly good design, and dislike what I know to be over-designed junk. . . . Too many [architects] are beginning to follow a pattern. . . . There is a wide variety to be found, but there is also a great quantity of highly similar stuff being done. I do not exclude some of our own work. Some of this is due to the pressure of economics, but some I am afraid is a lack of imagination; and some of the worst we see is just plain bad taste. . . ." — **John Carden Campbell**

Like "use of materials in their natural state; the integration of the house with the landscape; the ease of building on difficult view property." Dislike "design trickery such as unrequired steel crossbracing on wood frame house." — **Wm. H. Carleton**

Like "the freedom of design to develop living facilities for mankind beyond just putting a roof overhead. Utilization of outside and inside areas blending them into a composite whole; freedom from traditional arrangements of functional areas." — **Eugene Kinn Choy**

"Like the best of them [custom-designed houses] because they are honest, unaffected, efficiently planned and humanized contemporary design. Dislike the worst of them because they have a mechanical appearance: surfaces which should be natural are slick; stone work which should look like masonry looks like gum drops or layer cake; unshuttered picture windows are placed where there is too much sun and perhaps no view (except from the outside-in, of papa in his suspenders reading the newspaper); many clichés are used, none with discrimination or taste." — **Clark and Beuttler**

"Very little study seems to be given to imaginative use of materials and structural methods." — **Walter H. Costa**

Dislike "lack of integration with community planning, lack of variety in various interior spaces, overemphasis on gadgets and equipment at the expense of space." — **Harold Edelman**

"I think the owner is receiving more livability per \$ spent. . . . In some instances designs need softening. Can possibly be obtained by a more careful selection of materials and colors." — **Arthur Fehr**

Like "the unlimited sectional characteristics of the house which can result from enlightened solutions of site and spacial relationships." Dislike "the slavish imita-

tion of contemporary styles of the great in architecture." — **Seth M. Fulcher**

"I don't like houses that strain tiresomely for effect. I don't like houses that look shabby and worn out after a few years. Both are common faults." — **Walter Gordon**

Like "the natural use of materials, openness of planning, recognition of climatic conditions, and tailoring to the client's needs rather than to a preconceived concept of design." Dislike "occasional straining at the leash to incorporate clichés or tricky materials uses which do not contribute anything to the net result." — **Fred M. Guirey**

Like "built-in features, opening of plan." Dislike "lack of work space and storage space for bulky items. Some houses are too open to public." — **Harold W. Hall**

Like "the way some homes are really designed for their own site and region; the way some homes express original thinking to meet the specific problems; open planning, limited by privacy, through an entire concept of a plan, limited only by property lines or defined views; an honest recognition of materials and their own characteristics." Dislike "the lack of understanding of the simplest of basic fundamentals — i.e., circulation, orientation." — **Henry Hill**

"I favor the trend toward flexible room uses, and means of combining spaces, but do not go along with some examples of excessive openness of plan with no means of control or subdivision for privacy or quiet — nor with some plans where circulation is overlooked. . . . The effects of mechanical equipment cannot be neglected in house design. The complex of kitchen and laundry equipment now available (and demanded by most clients) almost require more design efforts than all the rest of the house. Adding air conditioning, sun lamps, indirect lighting, panel heating, etc. can often make the house an engineer's paradise, but an architect's nightmare." — **Gerson T. Hirsch**

Dislike "excessive use of glass with resultant loss of privacy. The home should be a place of intimacy and not a fishbowl." — **James M. Hoffman**

"I believe that space is quite necessary for a family — space for individual privacy, and larger space that can give one a sense of freedom for thought and feeling as well

as movement. . . . What I like about the better house is a character of domestic warmth and scale, a feeling for design within the framework of a philosophy that believes in individuals, as opposed to an expression of our highly industrialized culture. . . . Man's esthetic wants must be satisfied, perhaps even stimulated, in his home. . . . The house should have richness and warmth, and should be an organic unity, much as man himself. . . . I think there is, in favor of today's houses, a trend away from novelty for its own sake, in structure and in exterior appearance." — **Victor Hornbein**

Like "freedom from stylistic dogma in enough cases to give hope of the development of a great architecture in our time." Dislike "careless detailing of much work." — **M. K. Hunter**

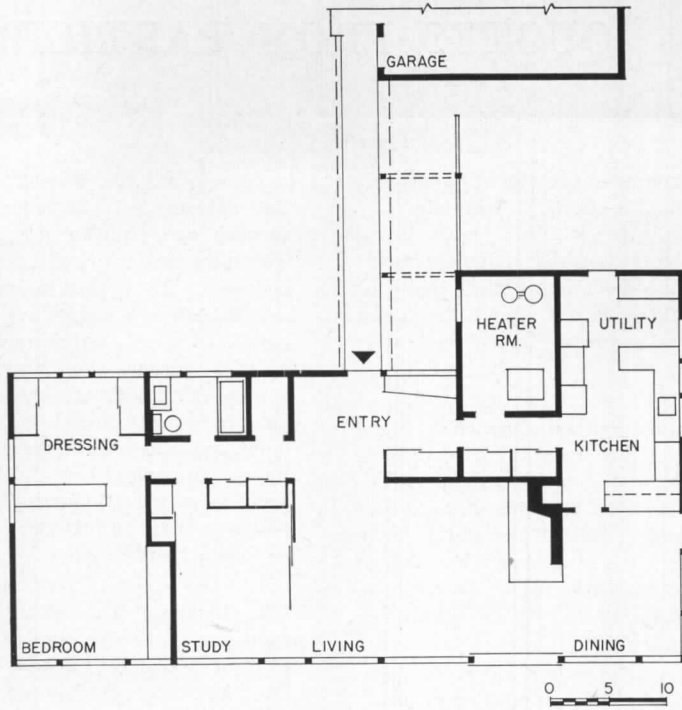
Like "new disposition of functional spaces." Dislike "lack of clarity." Note "The discovery of basic house plan types as clearly recognizable as the 'Cape Cod' central chimney type: i.e., 'central core,' 'central court,' 'H' (which will be used extensively by speculative builders)." — **John MacL. Johansen**

"The open plan is receiving some criticism in these days of sizable families." — **George Fred Keck**

Like "Straightforward use of the structural elements, the visual rhythm of the exposed beams and posts inherent in the architecture. Particularly, the use of the partially enclosed patios and terraces (away from the main view)." Dislike "complicated masses with excessive ornamentation." — **Bernard Kessler**

Like "the trend toward providing more and more people with well designed houses for less money and even on the custom design level." Dislike "the effect of magazines, and particularly ladies' magazines as well as recent architectural books on today's client. They believe that they can have everything they read about, all for a minimum budget. Magazines should refrain from quoting phony prices." — **Carl Koch and F. L. Day**

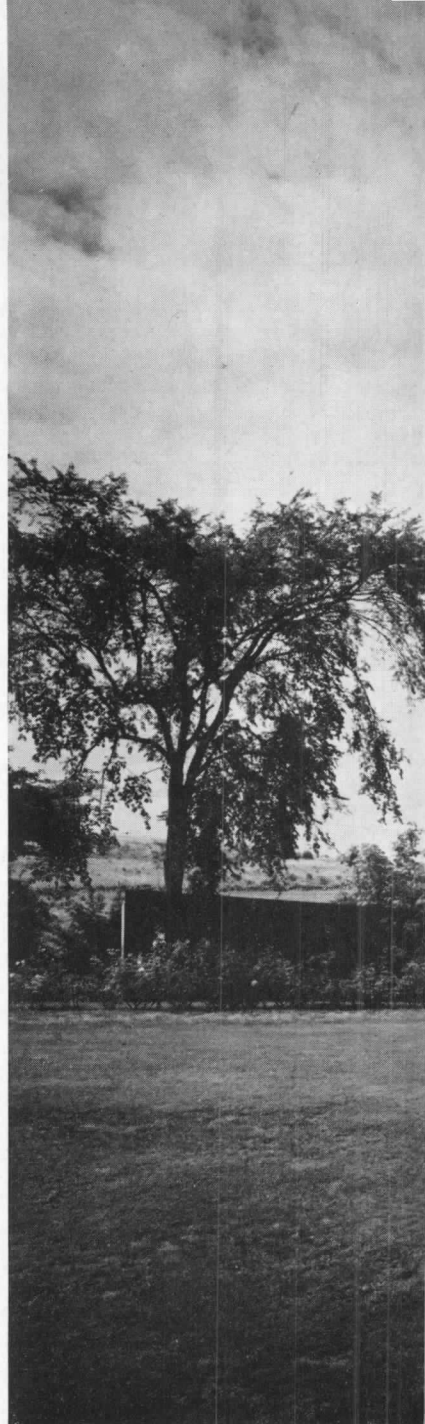
"Rising costs are keeping the size of houses generally small, but by ingenious planning and clever use of materials architects are creating the illusions of space where it really does not exist in large quantities. . . . New patterns of living have exploded the old familiar plans. Indoors and
(Continued on page 302)



Flexibility. House was planned for man and wife and occasional guest; one end of living room can be closed off as needed for owner's study or guest bedroom, or can be opened to considerably enlarge living-dining area for entertaining. Owner's hobby is book-binding, to which one corner of kitchen was assigned

NORTHEAST

*Arthur Hamilton House, Shrewsbury, Mass.
 Carl Koch & Associates, Architects
 Frederic L. Day, Jr., Associate*



© Ezra Stoller



Site Relationship. *Site is large, with a long gradual slope at rear which low pitch of roof echoes; living room has floor-to-ceiling glass wall which extends room to far corner of site. Materials. Vertical T&G siding and painted (red) plywood panels on exterior; concrete floors*





NORTHEAST

*Arthur Hamilton House, Shrewsbury, Mass.
(continued)*

Openness plus Privacy.
Main area of living room is closed off from entry by ceiling-high bookcase-storage unit; living and dining areas are separated by fireplace. Kitchen has direct access to carport through utility room and to entry by short enclosed hallway

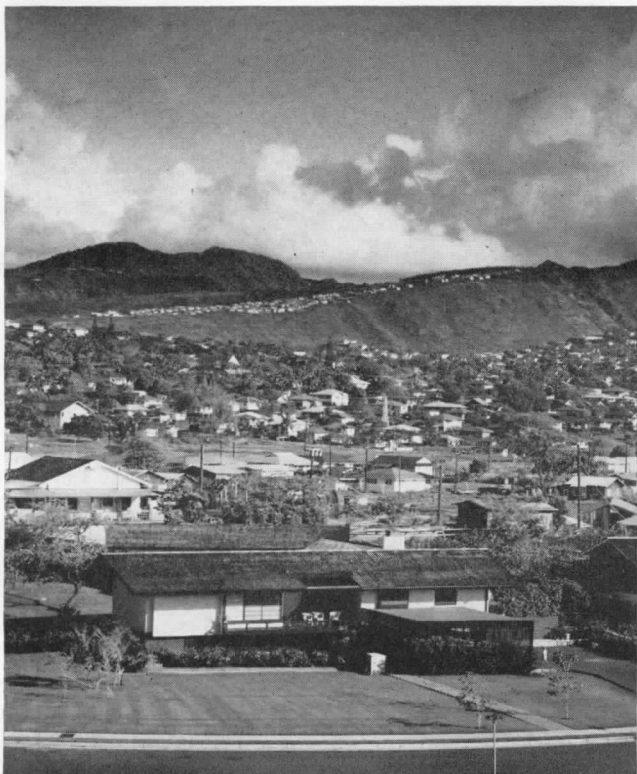


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HAWAII

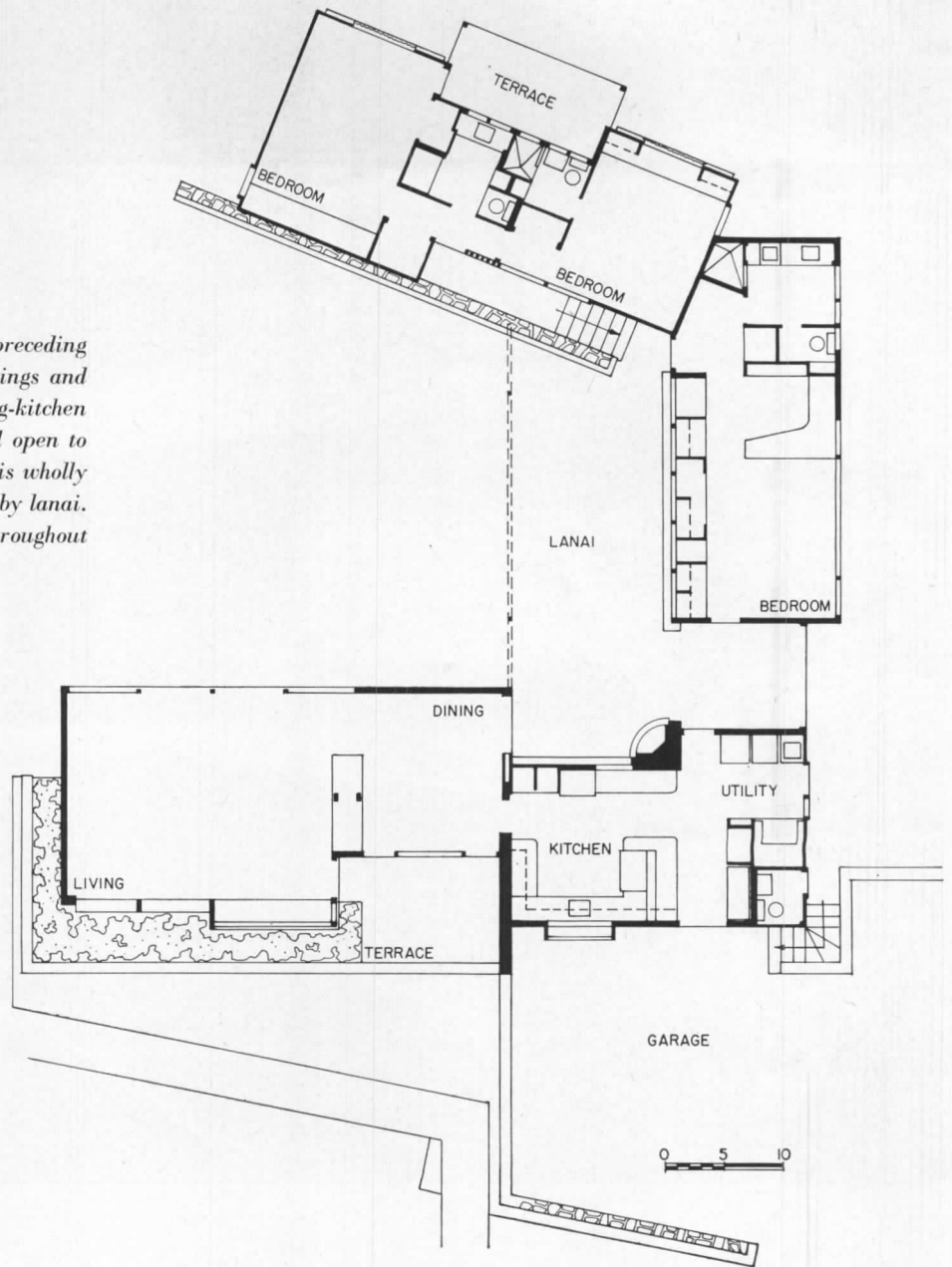
R. Wenkam



M. M. Goodsill House, Honolulu, Hawaii
Vladimir Ossipoff, Architect

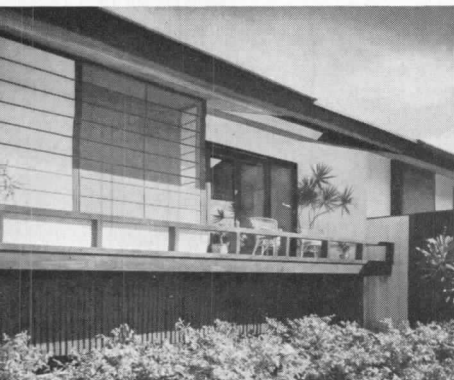
Privacy. *The lot this house occupies is relatively small, and in a well-populated residential area. Since provision for outdoor living is an absolute must in Hawaii, the problem was how to combine that requirement with a reasonable amount of privacy. As the plan (next page) shows, one wing of the house was placed at an angle to increase the area of the inner court, which every room in the house faces*

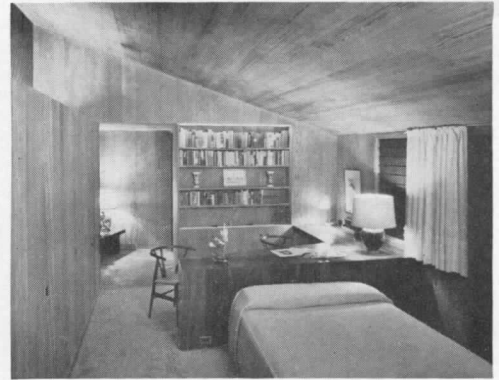
Zoned Plan. *Limitations of site (see preceding page) resulted in house with angled wings and unusually complete zoning: living-dining-kitchen areas stretch across front of house and open to lanai and patio; master bedroom suite is wholly separate, connecting with rest of house by lanai. Use of wood for ceilings and walls throughout house unites various plan elements*



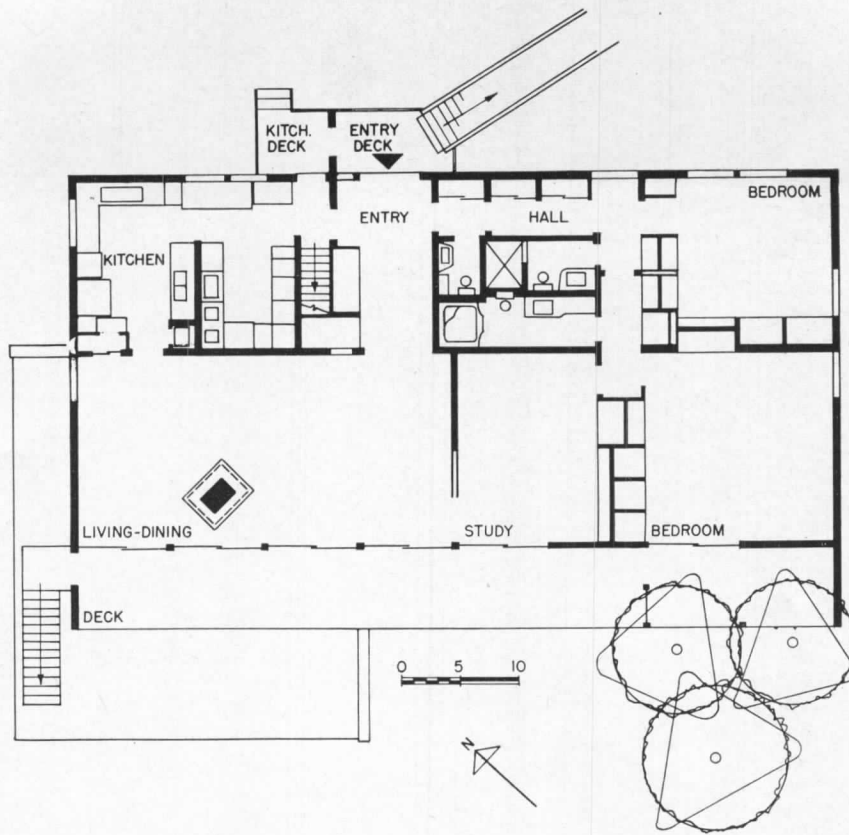
HAWAII

*M. M. Goodsill House, Honolulu, Hawaii
(continued)*





R. Wenkam



Site Relationship. *Site slopes steeply at rear toward fine view of Ohio River and city; carport at street level necessitated a bridge to main entrance. Owners wanted one-level house with maximum flexibility, easy access to outdoors, and minimum maintenance for both house and garden. Solution: all main rooms on upper level with connecting deck along whole view side; lower-level game room and covered terrace planned for future conversion to two-bedroom suite, so full bathroom is already installed*

NORTH CENTRAL

M. L. Cornelious House, Cincinnati, Ohio

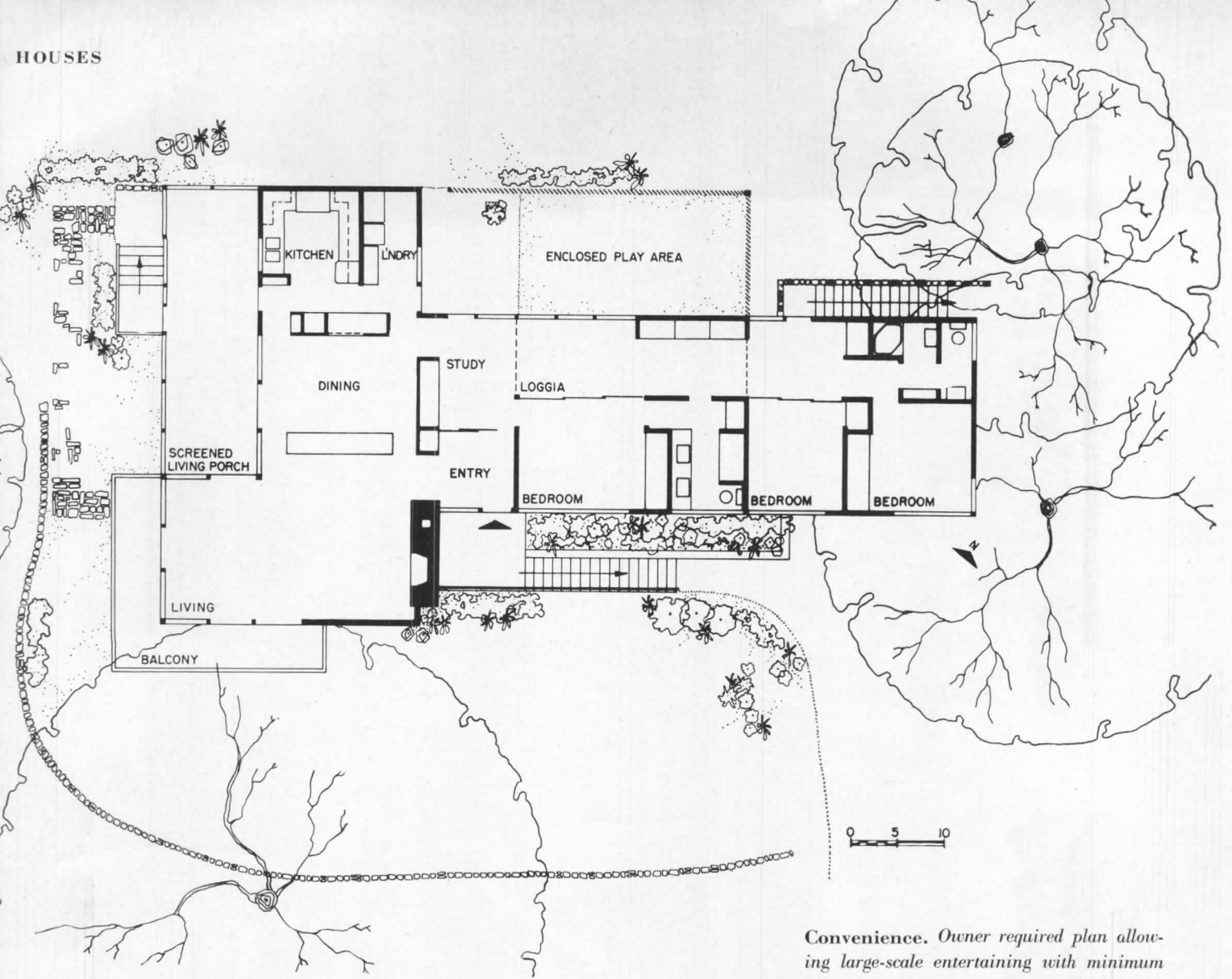
Carl A. Strauss, Architect





Structure. Concrete block, concrete footings and piers; wood frame; exterior walls, redwood; floors, asphalt tile over plywood; plaster ceilings. Free-standing fireplace resulted from owners' desire for fireplace on view side without spoiling view. Roof is built-up with gravel and oyster shells



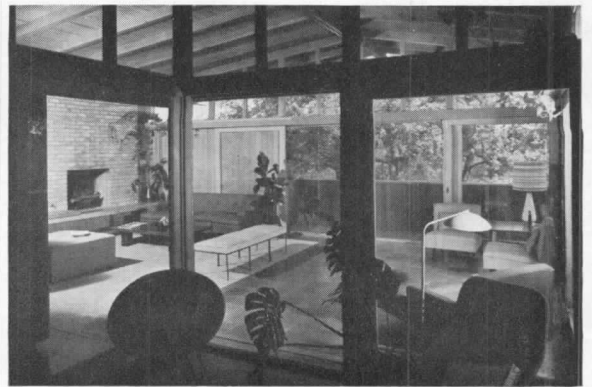


SOUTH CENTRAL

Dr. Clifford G. Thorne House, Austin, Texas
R. Gommel Roessner, Architect

Convenience. Owner required plan allowing large-scale entertaining with minimum effort for serving from kitchen to dining area or porch; barbecue and terrace also demanded. Children must be able to come from play area at rear of property directly into house without stairs or ramps; children must also have an enclosed play area. Ample storage was another specific owner requirement

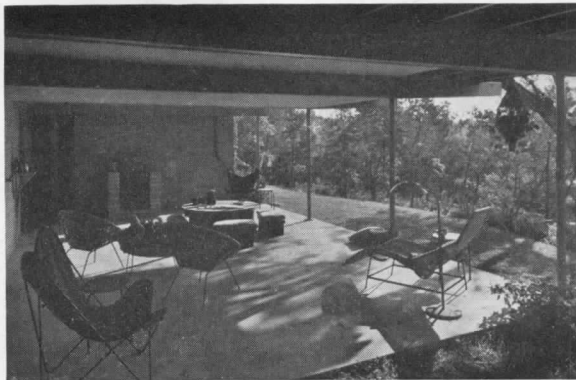
Mears Photography



Site Relationship. Site was difficult, rising in grade from a creek at low point more than 40 ft to top. Slope was used partly for lower-level outdoor living area with required barbecue pit. Rest of house is on one level

Materials. Glass fiber insulation, cork flooring, fir paneling, 4-ply built-up roof

Total Cost. \$32,765



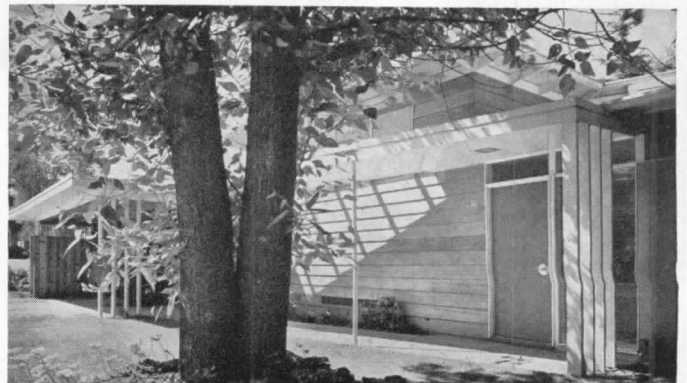


NORTHWEST

Harold W. Hall House, Everett, Wash.

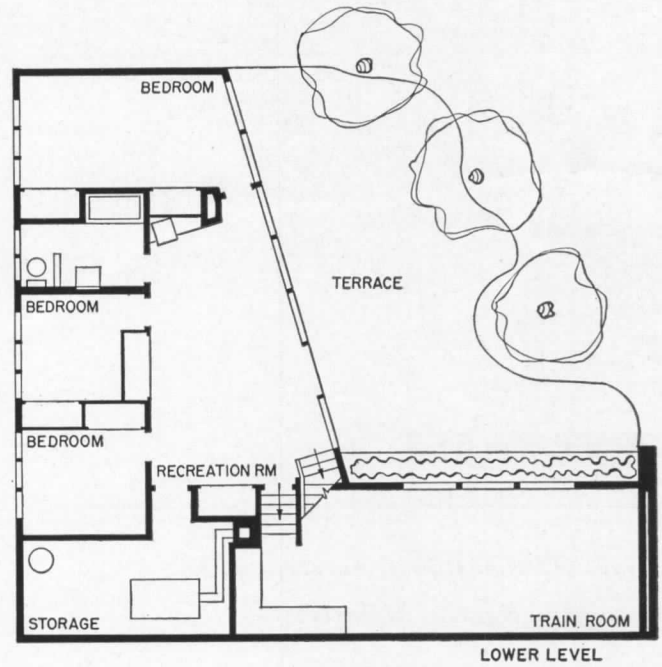
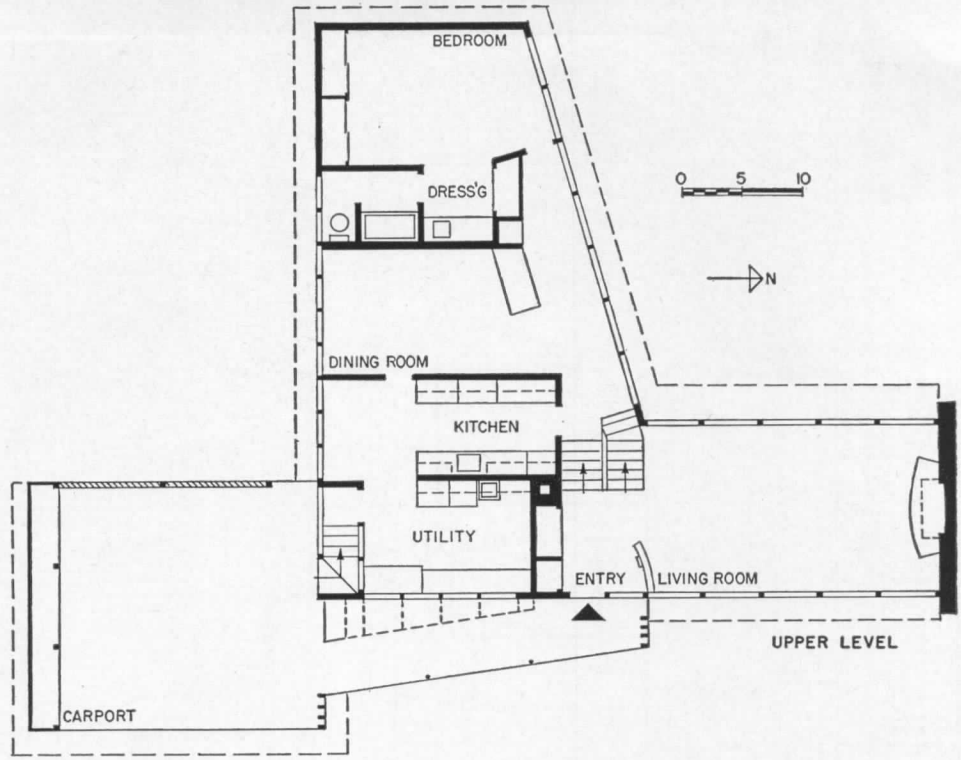
Harold W. Hall, Architect

Utility Core. *"I have always felt that it was very important that the kitchen-utility area be located and planned as one unit relatively close to the front and also be large enough so that everything did not have to be put away in its particular place all the time" — H.W.H.*



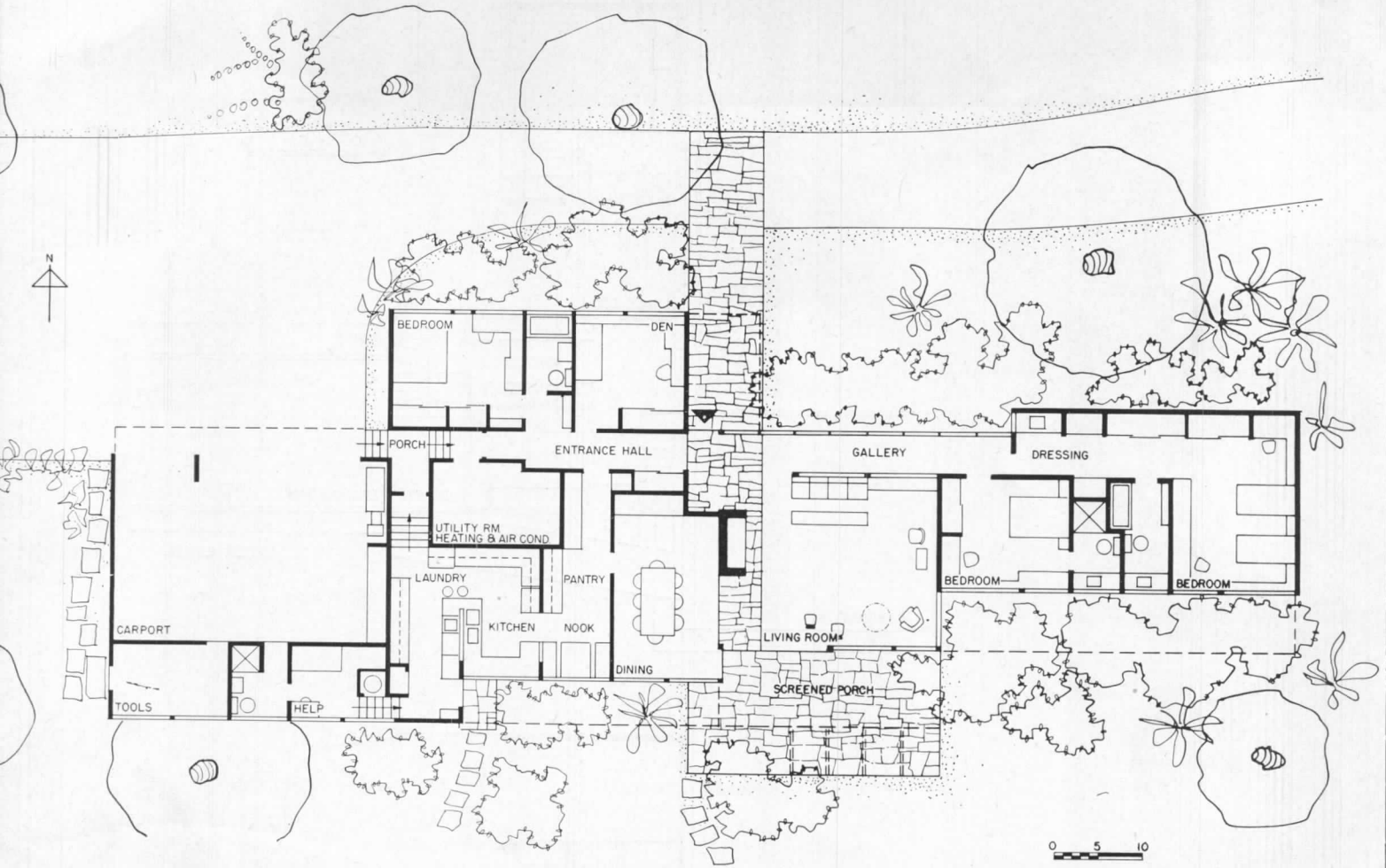


Jos. G. Kennedy



Activity Zoning. Parents have upper level, four small children the lower. Children's bedrooms open to large play area and thence to terrace. Hot air radiant heating system on lower level keeps floor warm for children playing. Cost per square foot, \$8.00



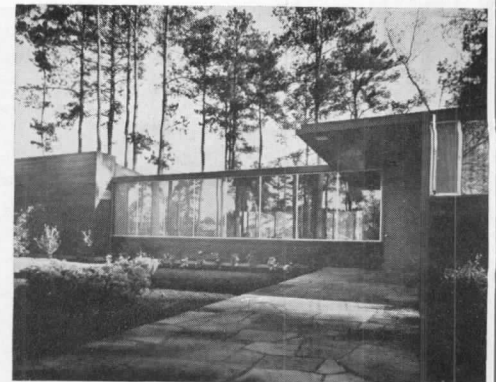
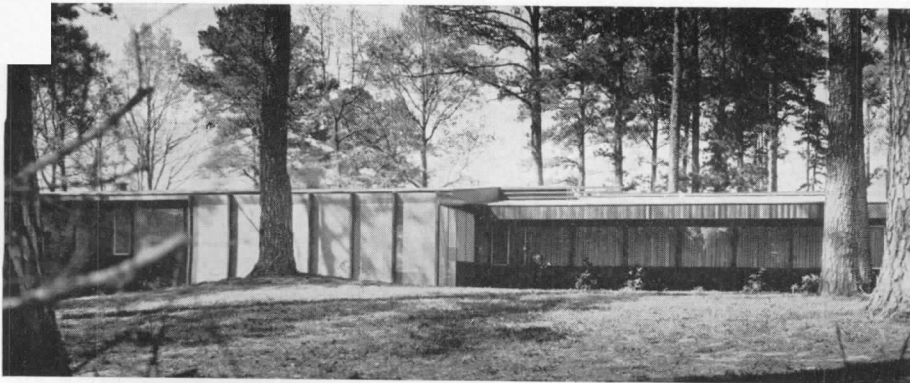


SOUTHWEST

Privacy. House was placed to preserve as many trees as possible for privacy in residential neighborhood. Main requirement for arrangement of rooms was provision for visits of married sons and daughters and small grandchildren, hence wholly separate master and guest bedroom areas (one son still lives at home)

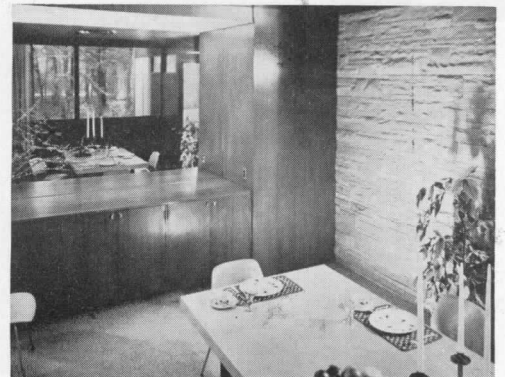
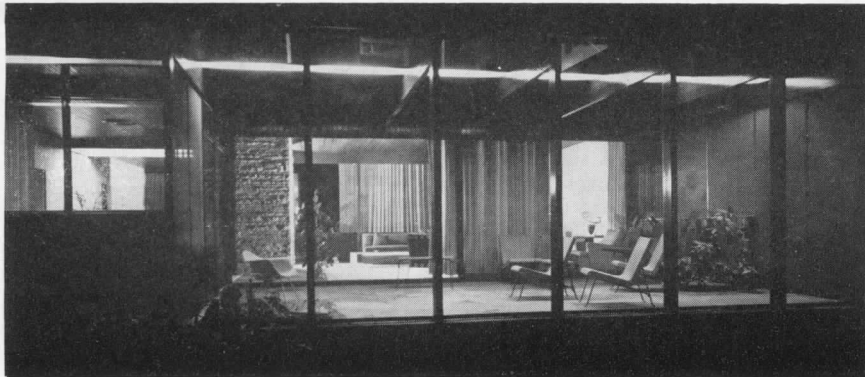
James O'Brien House, Shreveport, La.

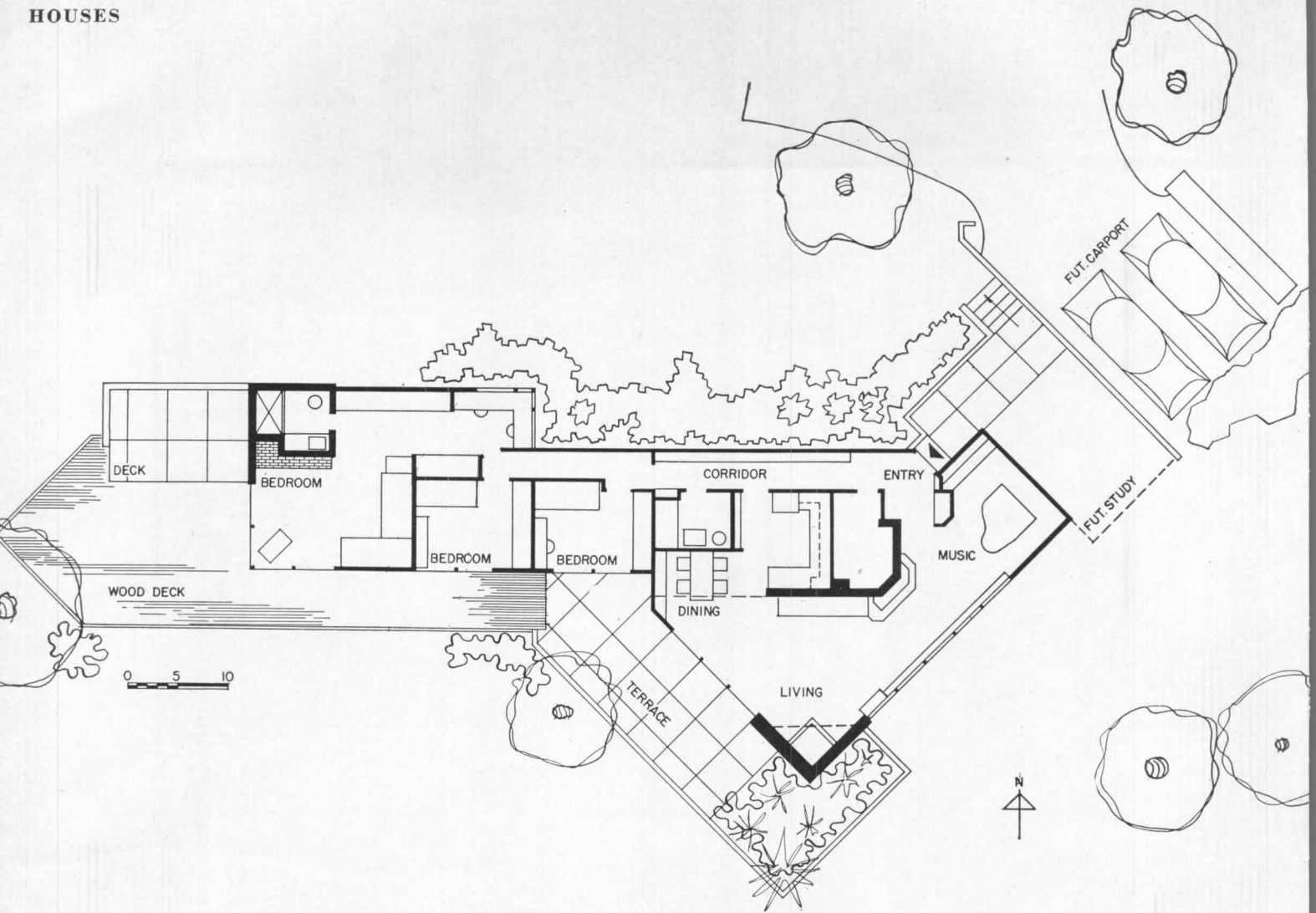
Richard J. Neutra, Architect





Warm Materials. Construction is wood frame on concrete slab with exterior siding of T&G redwood in contrasting vertical and horizontal treatments; in living area ceilings are redwood, walls are white plastered; chimney is flagstone, as are floors in entry and screened porch





NORTHEAST

Indoor-outdoor Living. All main rooms open to decks a few feet above grade. Living room is V-shaped for views to southeast and southwest; fireplace shuts out unwanted view of another house directly to south, increasing sense of privacy

Aaron L. Resnick House, Pleasantville, N. Y.

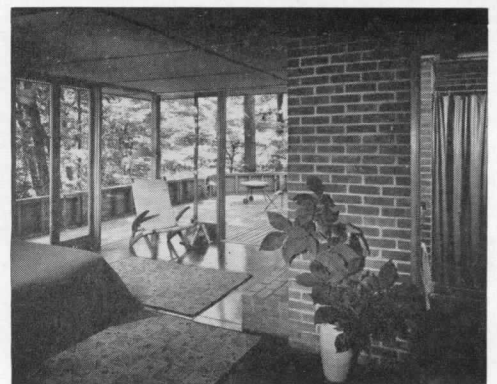
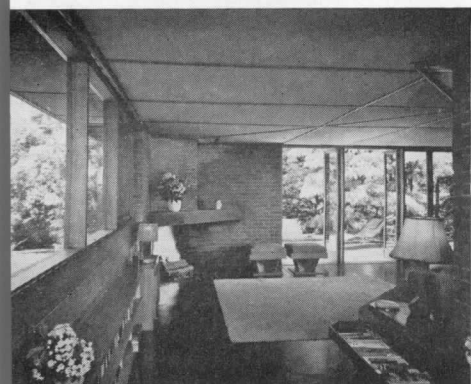
Aaron L. Resnick, Architect



Joseph W. Molitor



Activity Zoning. Master bedroom and terrace were designed as secondary living room for parents' use when two young daughters entertain; shape of living room gives privacy to dining area.
Materials. Cement floors, brick and plywood walls, cypress siding. Interiors by Mrs. Resnick

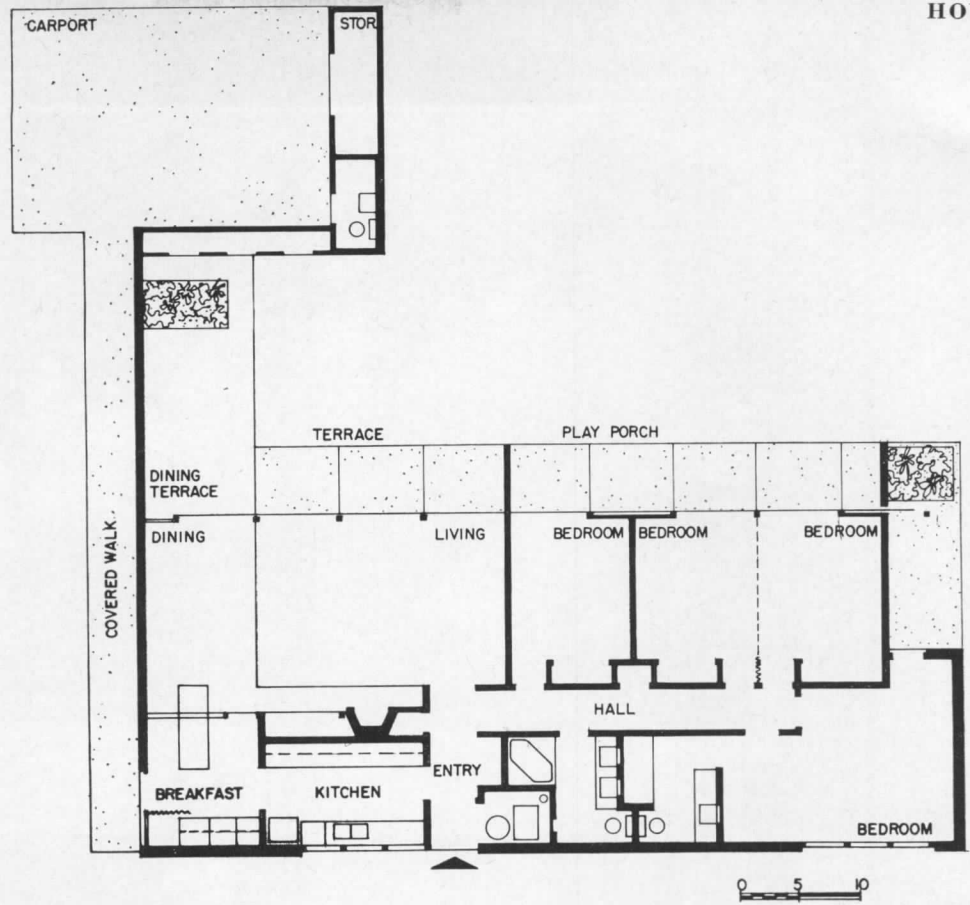
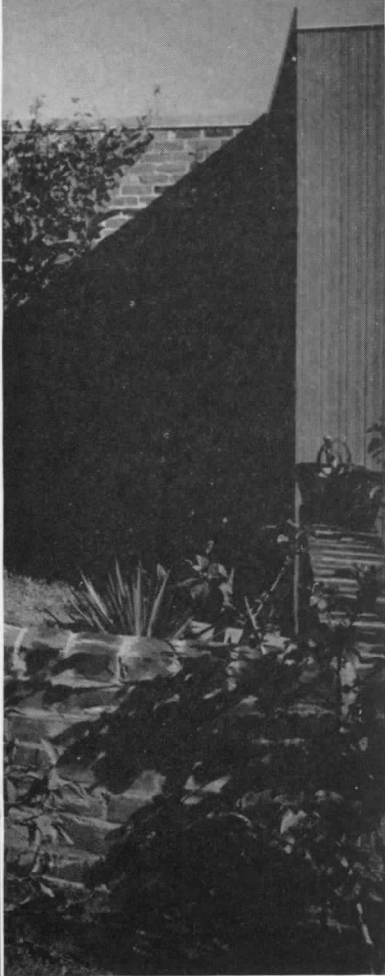




Structure. Post and beam, with structural elements exposed throughout; 4 by 10 in. beams on 7 ft centers form module for glass sliding panels on south and fixed glass and glass lower panels on north; roof deck exposed and stained a rich brown to form the finished ceiling



Ulric Meisel



Large Glass Areas. All major rooms (except master bedroom) open to south through a wall-to-wall expanse of glass 10 ft high. Future plans call for extension of house to west property line, when present master bedroom will become a guest room-study and a new master suite, with southern exposure, will be added. Cost of house, excluding land, landscaping and fees: \$36,000

SOUTHEAST

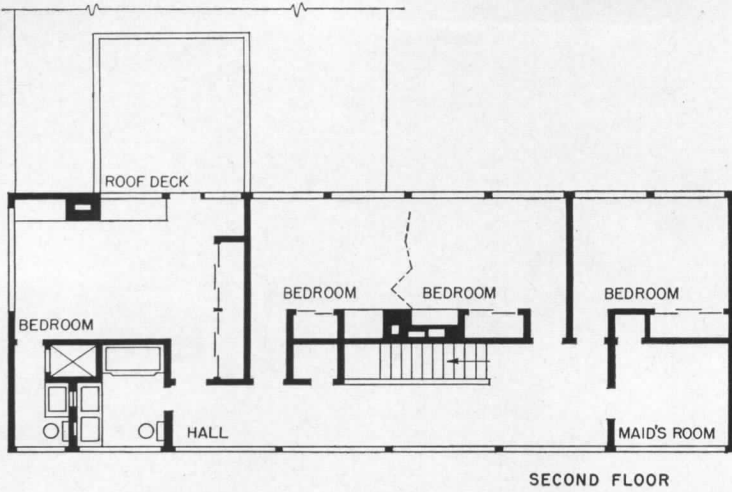
*Dr. Stanley Cohen House, New Orleans, La.
Curtis and Davis, Architects-Engineers*



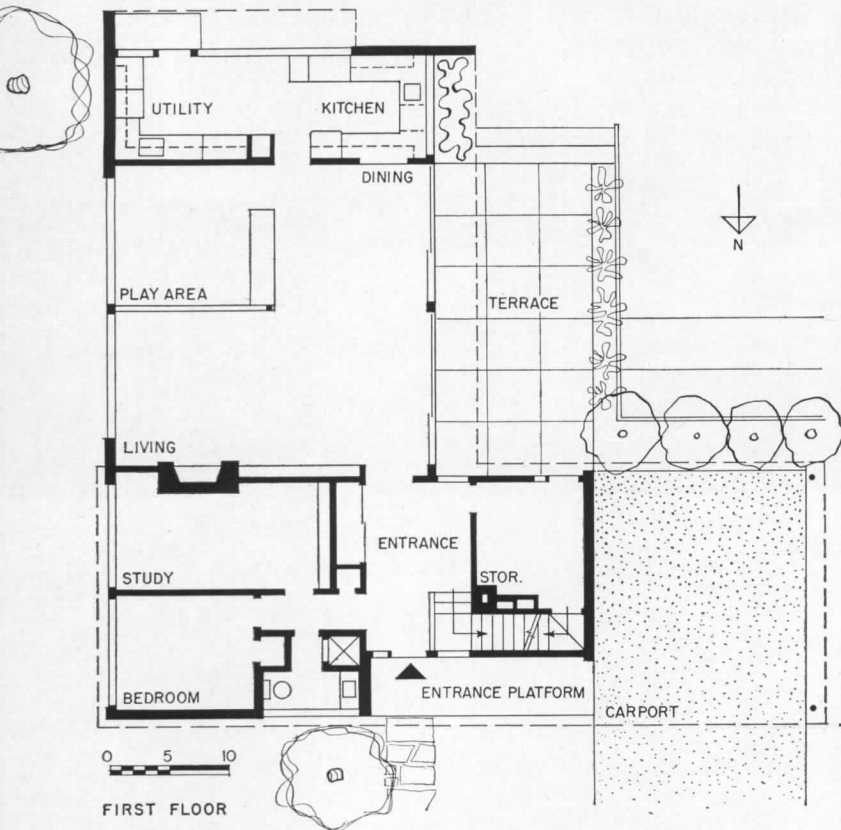


Exterior Appearance. *"The masses of the lower and upper floors were put perpendicular to each other to achieve southern exposure for the bedrooms, which the client requested. . . . This disposition of the two floors, together with the open carport, also serves the purpose of giving a feeling of lightness and openness to what might have been a heavy, ponderous building mass."* — W. W. L. Cost of house without landscaping: \$43,000



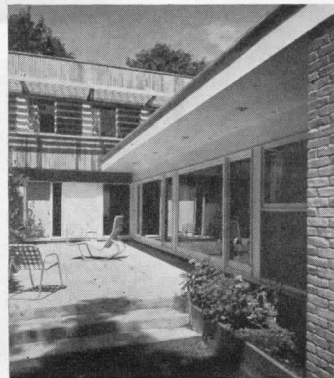
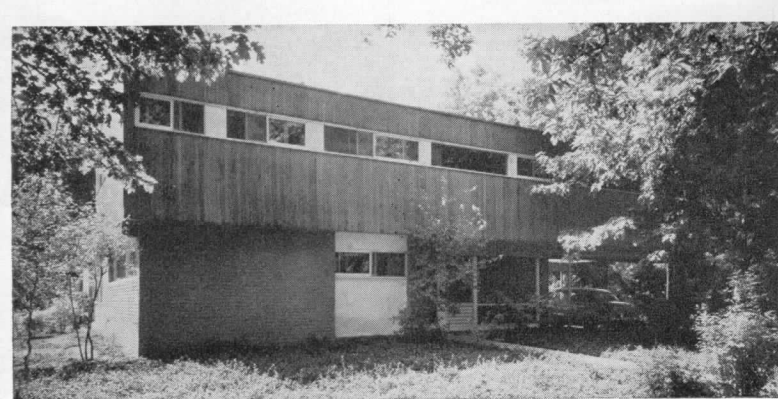


Zoned Plan. Household consists of four adults and three children, necessitating six bedrooms, three baths, play area and much storage space. Requirements also included a doctor's study and a private garden area. Site is relatively small (100 by 125 ft) corner lot; a 40-ft setback from each street was mandatory. Solution was L-shaped plan enclosing back corner of lot. Kitchen was located for southern exposure, convenient access to street for service entrance, and view of garden for supervision of children's play activities



NORTHEAST

Dr. Rudolph Joseph House, Freeport, N. Y.
William W. Landsberg, Architect

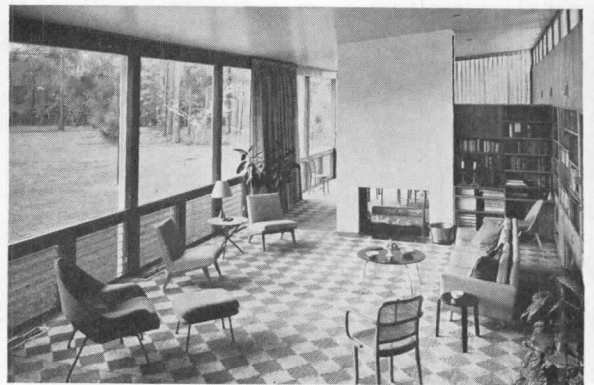


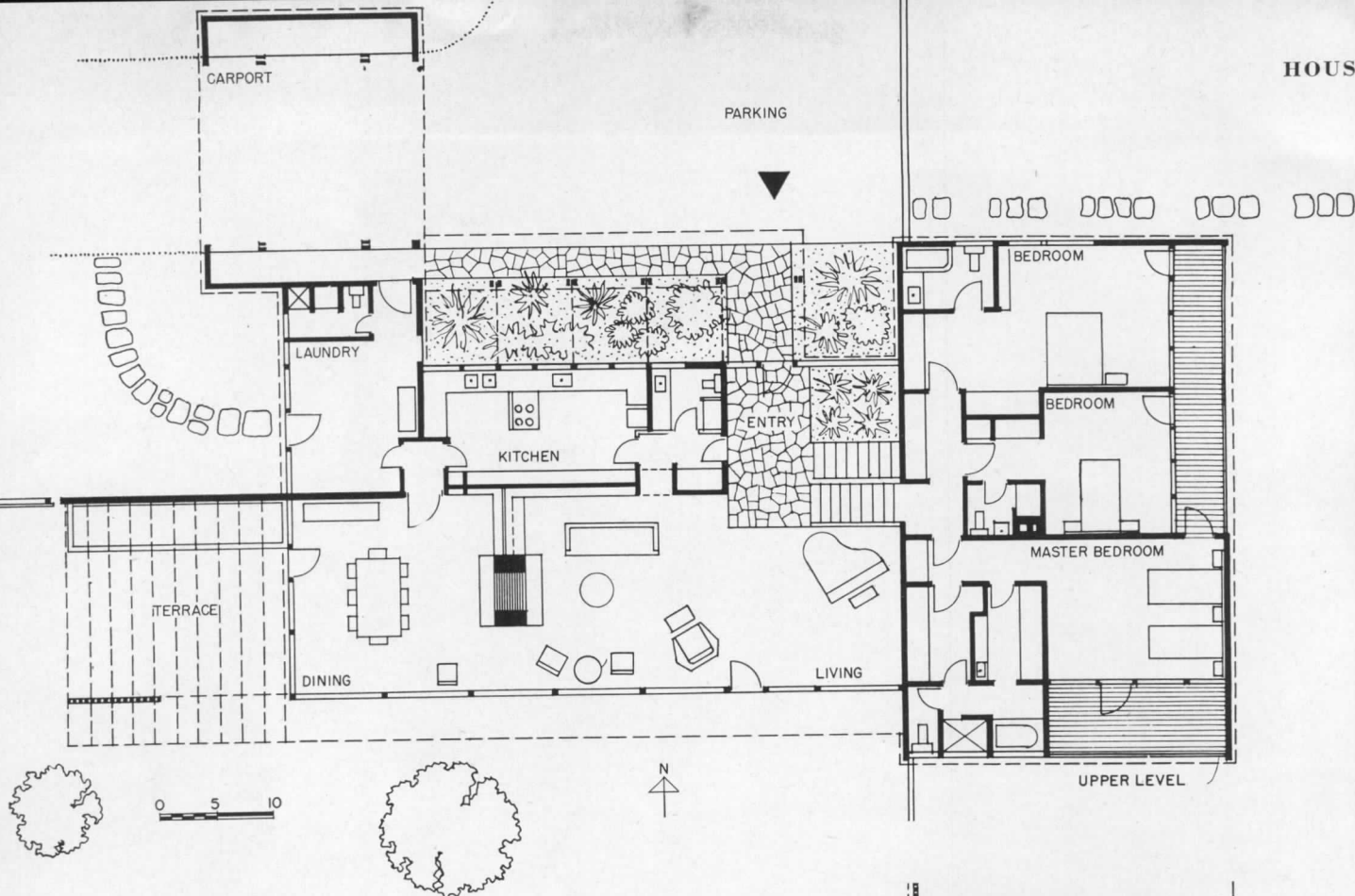
Ben Schnell



SOUTHEAST

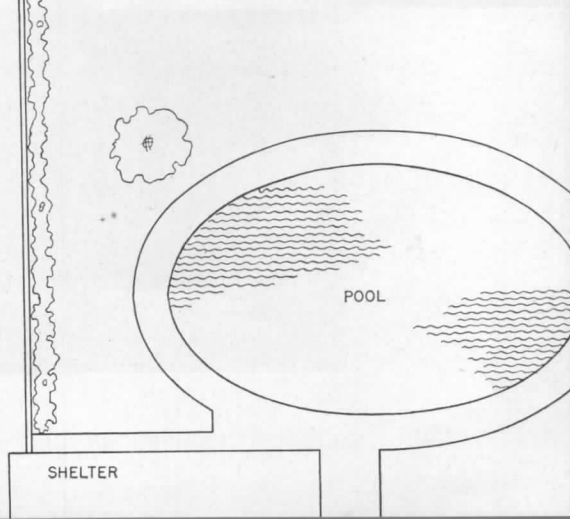
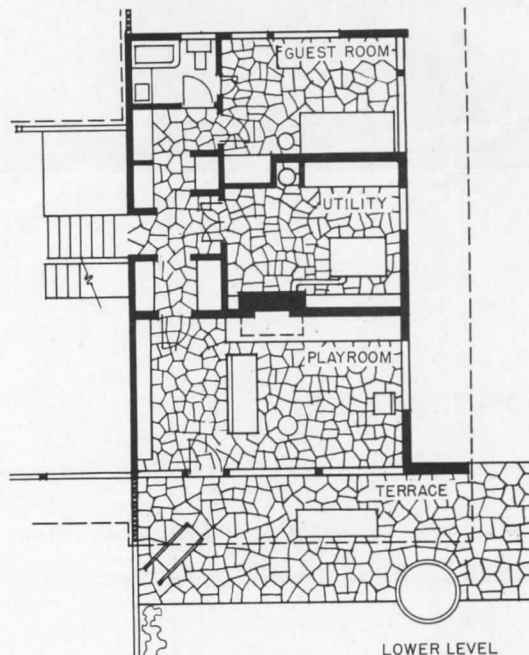
*Julian McGowin House, Chapman, Ala.
Huson Jackson, Architect; H. Seymour Howard, Jr.,
and Harold Edelman, Associates*





Family Living. Family has three children, does a lot of entertaining, much of it centered around music: living room is planned to give illusion of music alcove although area is completely open; two-way fireplace and storage unit partially separate living and dining areas, increasing privacy without loss of free circulation of air or sense of space. Warm climate and family's liking for outdoor living resulted in the series of porches, terraces and pool

Materials. Since owner is head of a lumber company wood was used in both quantity and variety. Exterior walls are cypress and concrete block; interior walls are siding, block and wallboard; floors are oak, flagstone, or asphalt tile; ceilings are wallboard and siding. Approximate cost of house: \$55,000

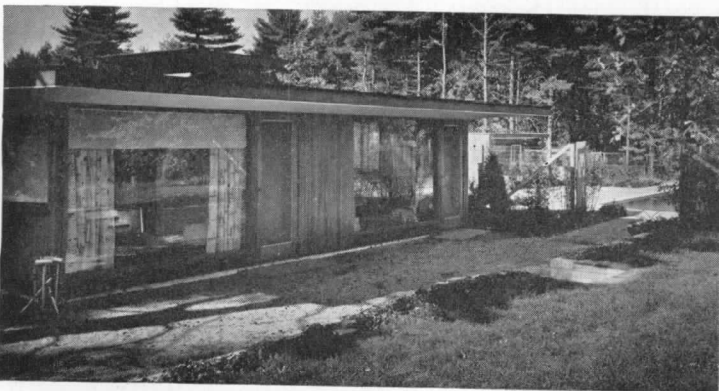




NORTHEAST

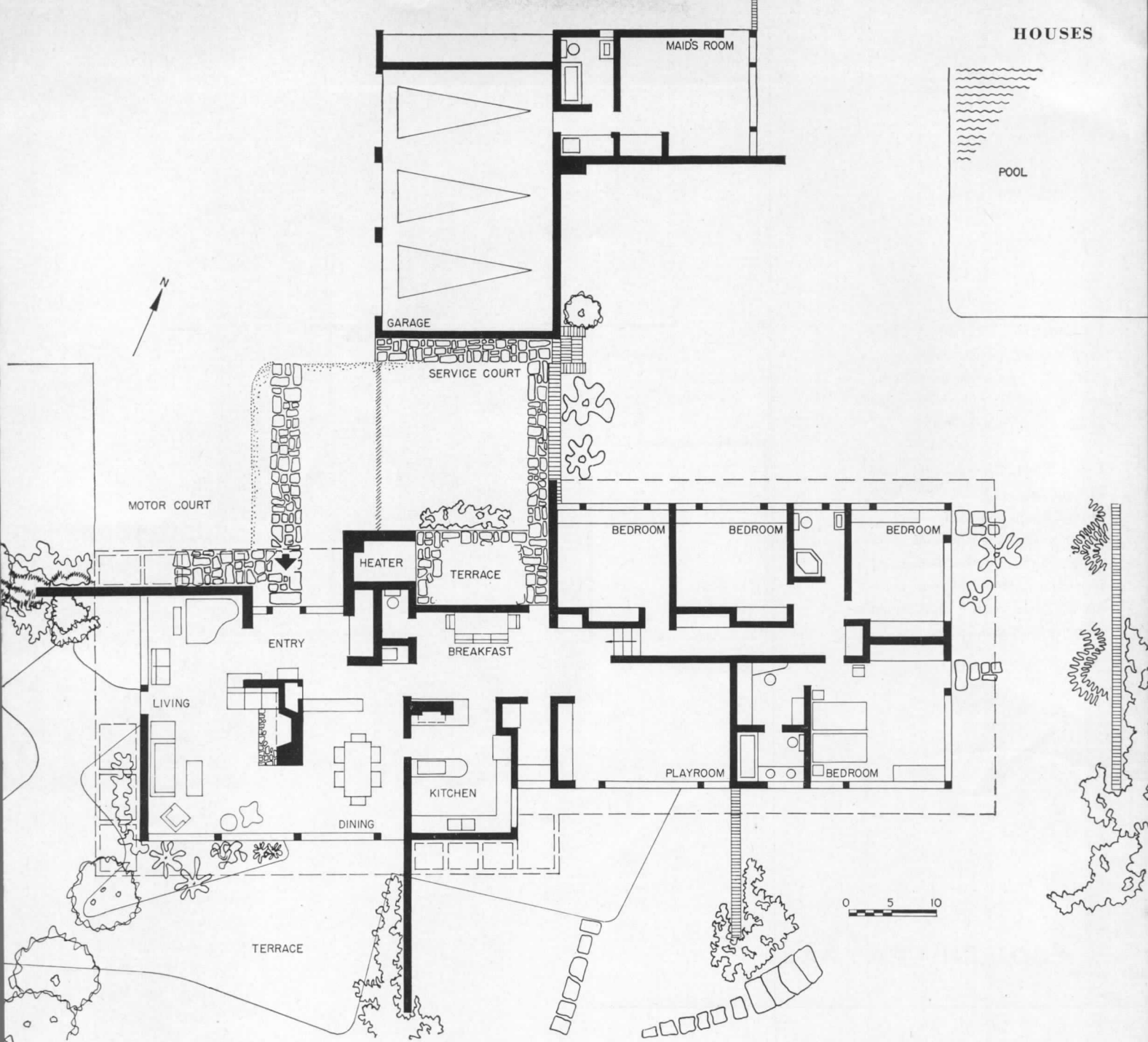
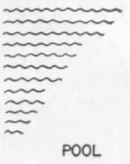
R. W. Colby House, Upper Brookville, New York
John Hancock Callender, Architect

Family Living. House was planned for young couple with three small children; main living area consequently is well separated from rest of house, kitchen is central with playroom adjacent, and children's rooms form a unit with convenient bath and easy access to outdoor play area. Owner has hobby workshop in a separate building down the slope from the main house

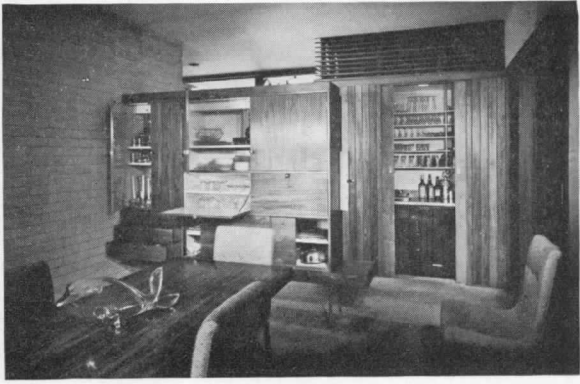


Joseph W. Molitor



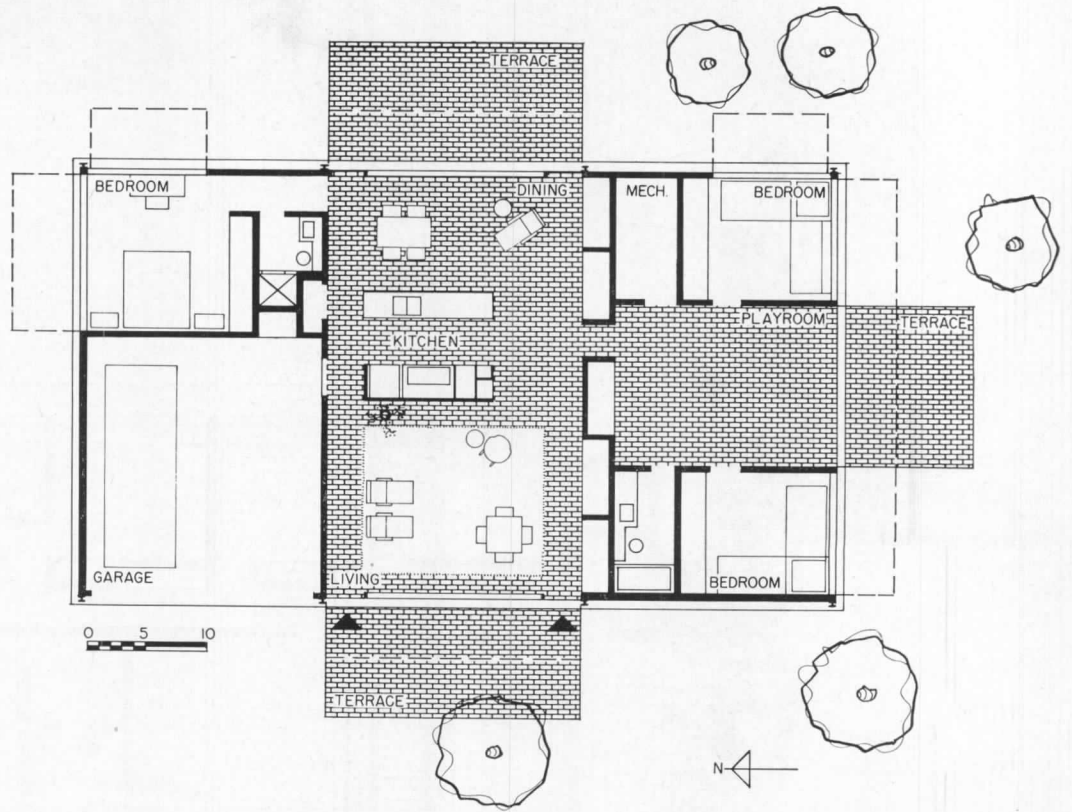


Activity Zoning. Living-dining area opens on two sides to outdoor terraces, is adjacent to entry and connected directly with kitchen; children's playroom is close to kitchen, on same level as all bedrooms. Pool is so placed that all bedrooms have direct access to it and play area surrounds it



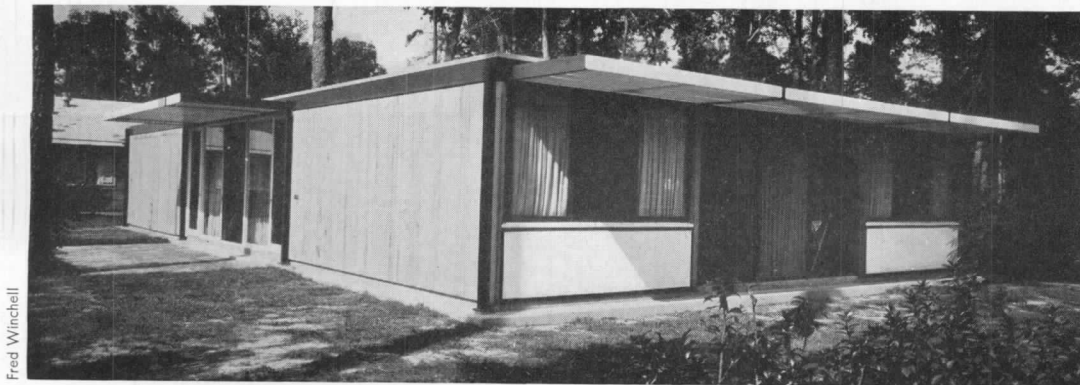
Individual Privacy. *Children's wing is insulated from rest of house by continuous wall of closets; playroom is between children's bedrooms*

Open Plan. *Living, dining and kitchen areas form one large central room, completely open to breeze side (east) and also open to west for cross ventilation, an important consideration since house is not yet air conditioned though ducts are installed*

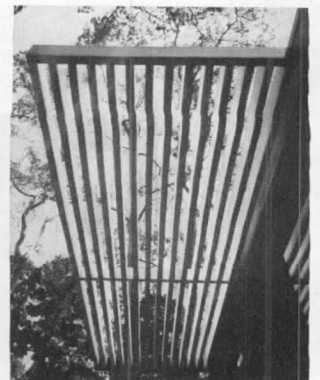


SOUTH CENTRAL

*Laurence H. Blum House, Beaumont, Texas
Bolton and Barnstone, Architects*



Fred Winchell

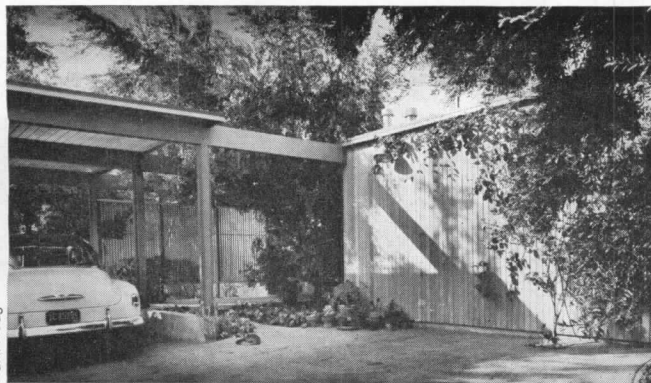


Structure. *Steel frame: 2 by 12 in. fascia on eight 4-in. wide flange columns. Overhangs are redwood 2 by 6 members at 3 in. o.c., set in steel channels cantilevered from structural steel channel fascias*



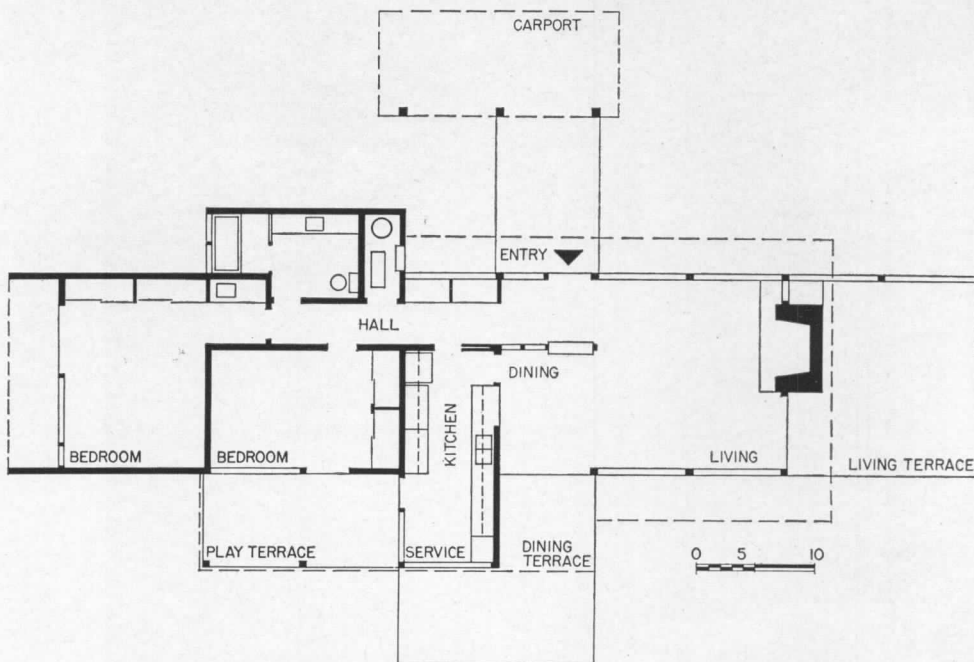


Openness plus Privacy. *Entrance is from carport through landscaped court directly to living room. Bookcase unit shelters dining area, creates a small entrance hall (additional photo on page 186). Landscaping and high redwood fences give privacy to end terraces on street side*



Hank Hoog

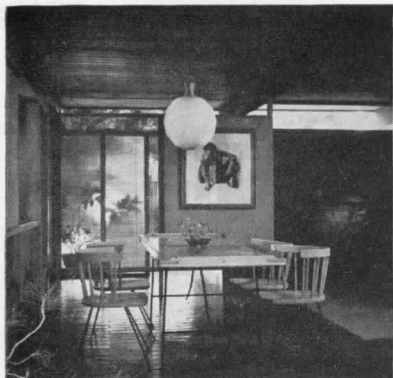


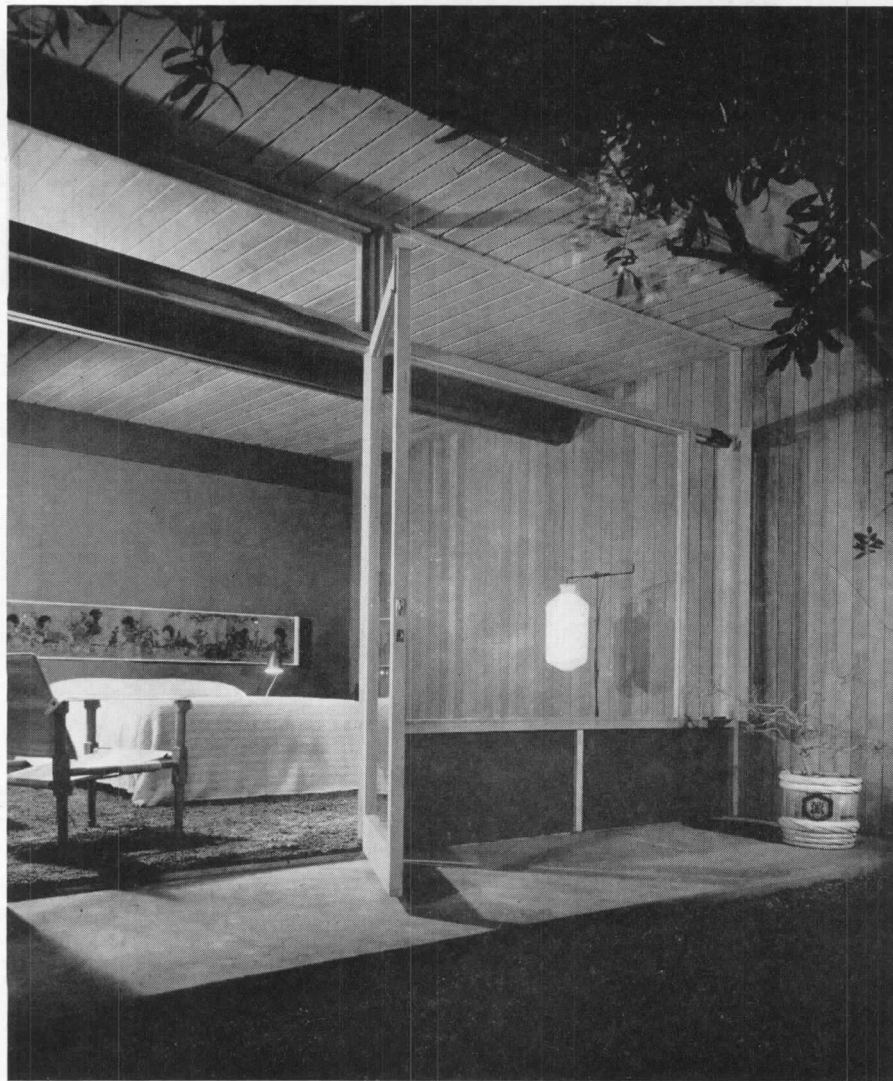


Indoor-outdoor Living. Every room in house has its own terrace arranged for complete privacy from street. Play terrace adjoins kitchen as well as children's bedroom for easy play supervision. Materials: Vertical redwood siding, redwood and fir plywood interior walls and ceilings; brick or asphalt tile floors

SOUTHWEST

*Calvin C. Straub House, Altadena, Calif.
Calvin C. Straub, Designer*

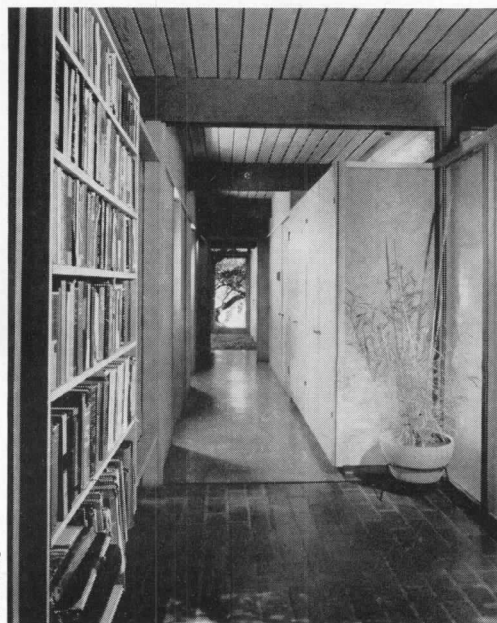




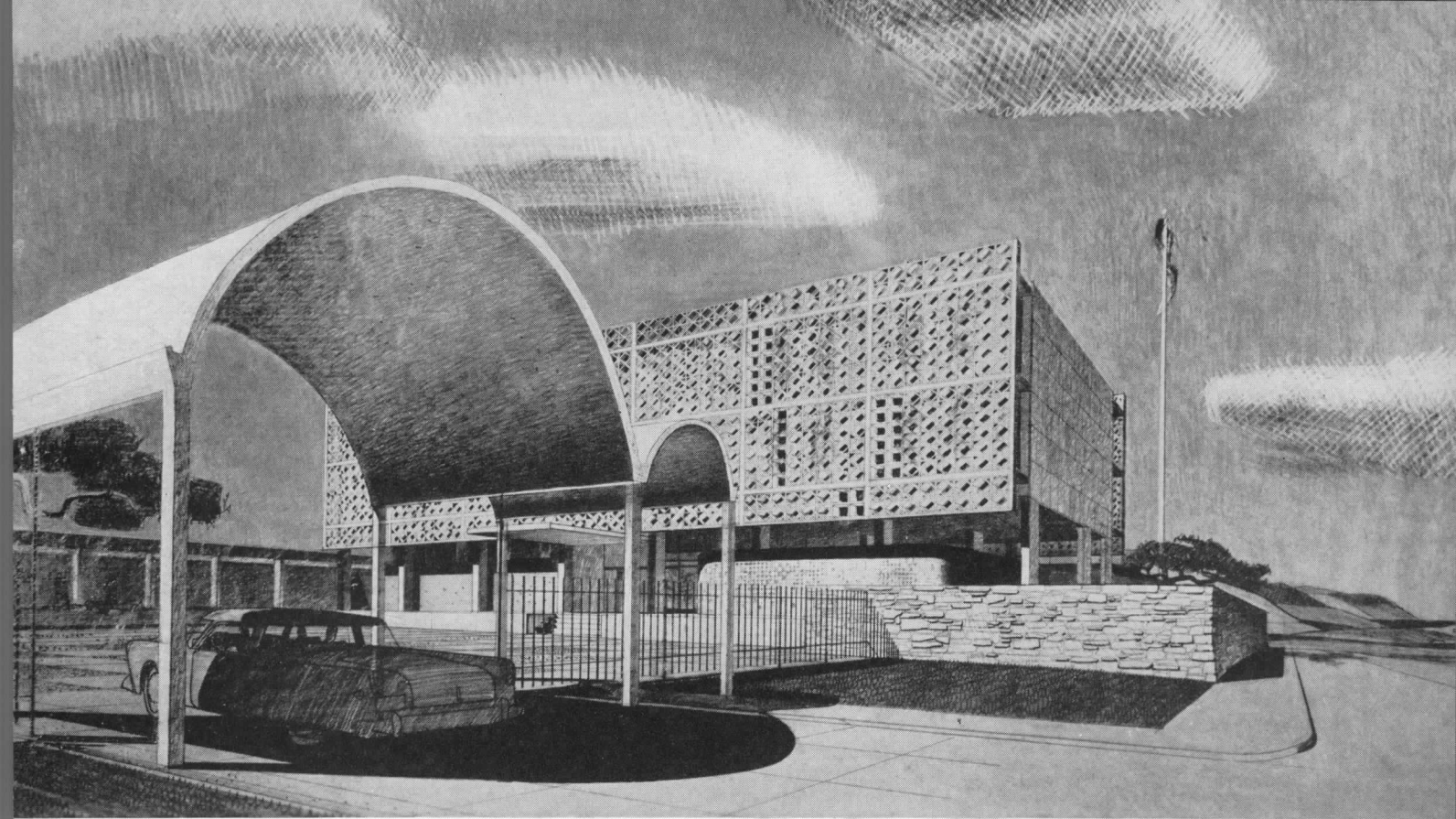
SOUTHWEST

*Calvin C. Straub House, Altadena, Calif.
(continued)*

Sense of Space. Space is unbroken for full length of house from living room fireplace to terrace door of master bedroom; bedroom hall is lighted by high windows over storage cabinets



Hank Hoog



*U. S. Legation Office Building
Tangier, Morocco*

*Hugh Stubbins Associates,
Architects*

While this rendering is rather dominated by the arches at the entrance, other features will perhaps contribute more to the overall expression: pierced concrete sun screens shading the large glass areas of the three-story building, marble facing at the ends, an arcaded patio landscaped with water pools and orange trees. The Consular Court at ground level will have a surround of glass at the ceiling line with a dado of colorful mosaic tile. The three-story building is roughly in the center of a one-and-a-half-acre site, is surrounded by one-story elements which with it form the entrance court on one side and an enclosed patio on the other. Open arcades provide circulation at ground level. One-story buildings are wall bearing, with stucco finish.

ARCHITECTURE TO REPRESENT AMERICA ABROAD

Regional Expressions of American Architectural Thinking are Sought for State Department Buildings

THE NEW PROGRAM for State Department buildings in foreign countries might be characterized as a significant experiment in regional architecture for diplomatic objectives. Really now just getting to the first-look stage, the refurbished operation has a panel of famous architects to guide it and a clear statement of purposes. A dozen or so American architects have had plans for various buildings approved, and an appropriation decision is now in the making.

Objectives are given as two: (1) to represent American architecture abroad; (2) to adapt itself to local conditions and cultures so deftly that it is welcomed, not

criticized, by its hosts. Here is a clear mandate to develop a sympathetic, regional expression of our own architectural thinking, all to a purpose whose importance transcends the normal challenges in design.

This was the need that led to the formation of the rotating Architectural Advisory Panel for the Foreign Buildings Operation, consisting of: Pietro Belluschi, F.A.I.A., dean of the School of Architecture and Planning, Massachusetts Institute of Technology; Henry Shepley, F.A.I.A., of Shepley, Bulfinch, Richardson & Abbott, Boston; and Ralph Walker, F.A.I.A., of Voorhees, Walker, Smith & Smith, New York. The panel is

chairmanned by Col. Harry A. McBride, former Foreign Service officer and Assistant Secretary of State, and, from 1939 until his retirement, administrator of the National Gallery of Art.

To state the objectives positively for the panel, Mr. Belluschi prepared this addendum to the State Department's instruction sheet:

"To the sensitive and imaginative designer it will be an invitation to give serious study to local conditions of climate and site, to understand and sympathize with local customs and people, and to grasp the historical meaning of the particular environment in which the new building must be set. He will do so with a free mind without being dictated by obsolete or sterile formulae or clichés, be they old or new; he will avoid being either bizarre or fashionable, yet he will not fear using new techniques or new materials should these constitute real advance in architectural thinking.

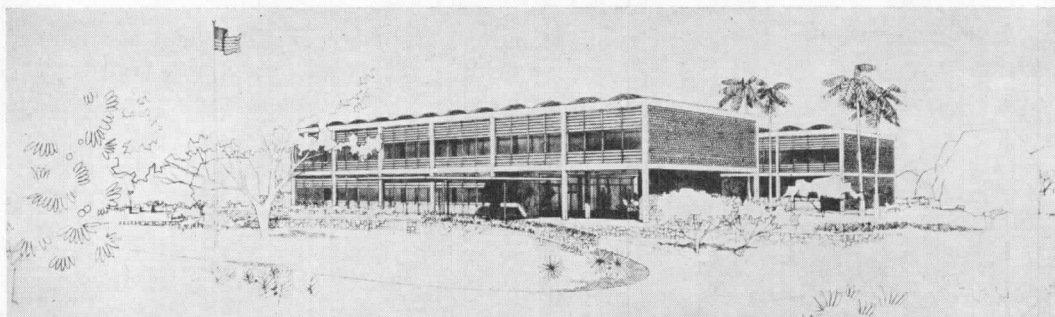
"It is hoped that the selected architects will think of style not in its narrower meaning but as a quality to be imparted to the building, a quality reflecting deep understanding of conditions and people. His directness and freshness of approach will thus have a distinguishable American flavor.

"The committee feels that if the above philosophy is adhered to, we need not fear criticism; on the other hand, if we act timidly, solely in the hope of avoiding

any and all criticism from whatever quarters, we shall surely end up in dull compromises with the result that we shall have nothing but undistinguished buildings to represent us abroad. We would thereby have forfeited our opportunity to display the high American cultural achievements in the field of architecture generally recognized by architects of the more advanced nations of the world."

Architects invited by the Department of State — after consultation with the Advisory Panel — to participate in the program are sent to visit their assigned sites after intensive briefing by the department and the Panel. They normally then make two "presentations" before the officials and the panel: at the first, preliminary designs are presented and discussed; at the second, the final schemes incorporating any suggestions or amendments arrived at through the first discussion are submitted and — usually — approved. Architects are to visit sites a second time during construction. Although there has so far been no conflict of judgment, it should be noted that the function of the Advisory Panel is advisory only; and the State Department does not bind itself to accept Panel recommendations.

On following pages ten of the early projects in the new program are quickly shown in renderings or model photographs. The RECORD will report further as the program develops.



*Office Building (above) and Embassy Residence, Asuncion, Paraguay
Keyes, Smith, Satterlee & Lethbridge, Architects*

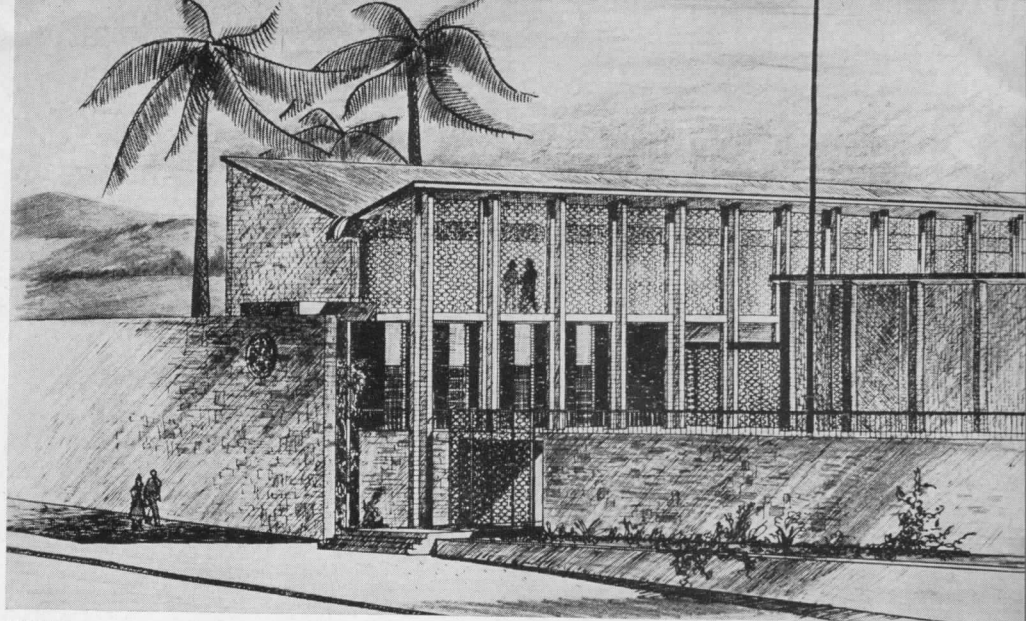
More than any other, this design was affected by difficulty of transporting materials. Both buildings will be of reinforced concrete columns and slabs with native brick interior partitions and stucco on brick exterior walls. Due to extreme heat, humidity and tropical rainfall, both buildings will have wide galleries and roof overhangs with an umbrella roof above the main roof. The entire office building and sleeping rooms of the residence will be air conditioned. Retaining walls and drainage ditches will be necessary to prevent excessive soil erosion.



*U. S. Embassy Office Building
and Residence*
Tegucigalpa, Honduras

Michael M. Hare, Architect

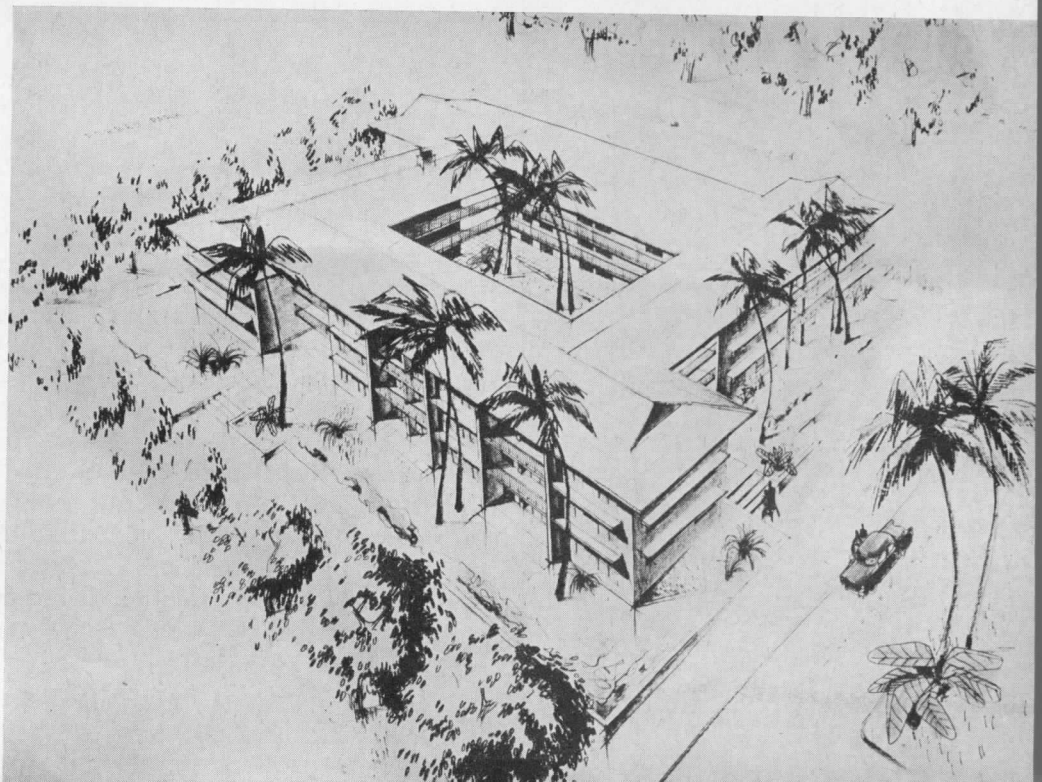
Office building and residence in this instance are on two different sites, the office building in the city, the residence on a high site some miles away. Both buildings are similar in design, and employ such native features as small wall openings, high ceilings, patios and verandas, using materials and construction typical of the country. Structurally both two-story buildings will be wall bearing with reinforced concrete floor and roof slabs. No air conditioning will be used, as the climate is "ideal."



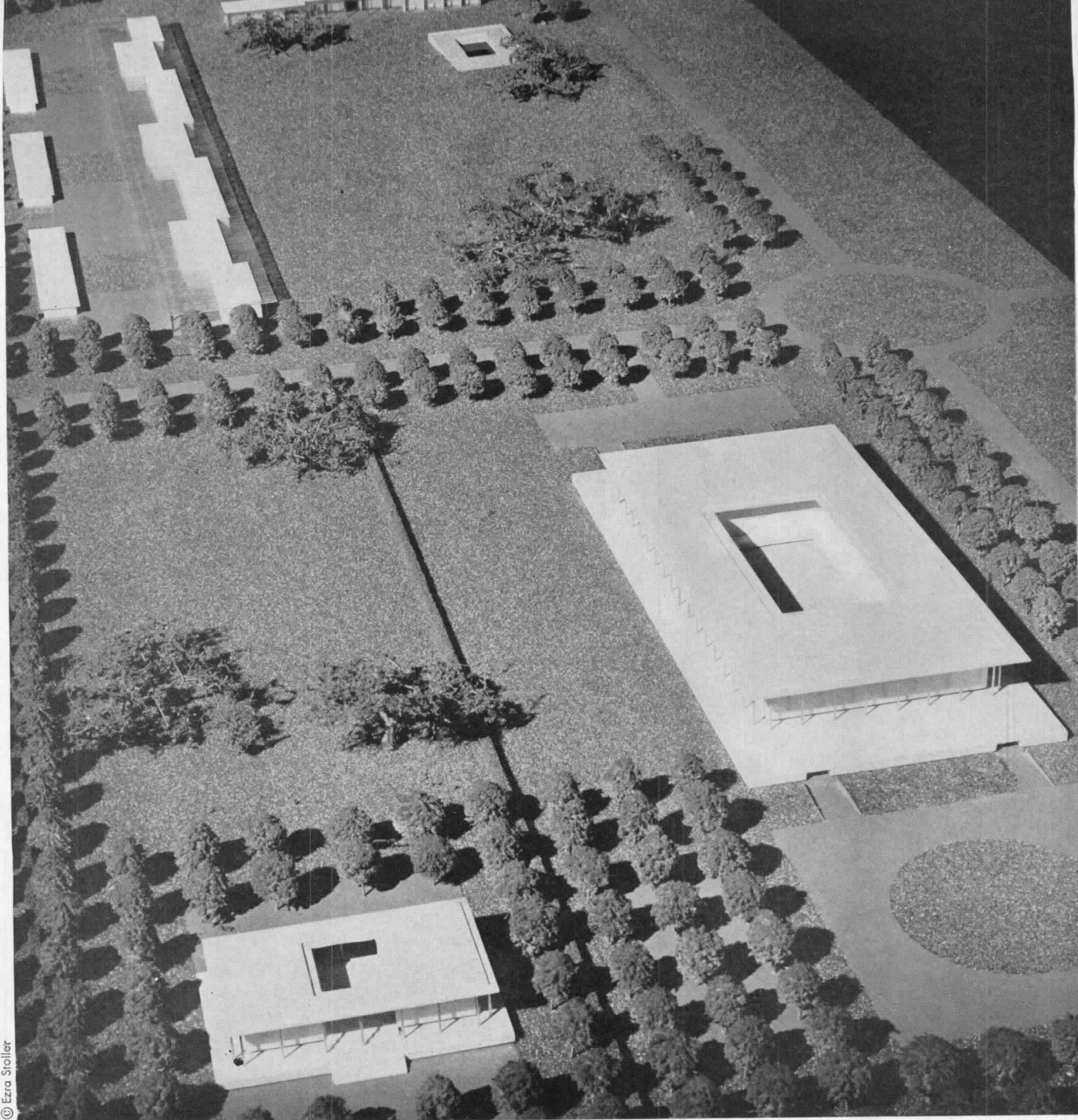
U. S. Embassy Staff Apartments
Manila, P. I.

Gardner A. Dailey, Architect

This apartment house, containing 30 units of from one to three bedrooms, is in effect four buildings around a planted court, joined together by interior corridor-balconies and a common roof. The open plan takes advantage of the prevailing breeze from Manila Bay. This will be the first of three proposed buildings on 23 acres.

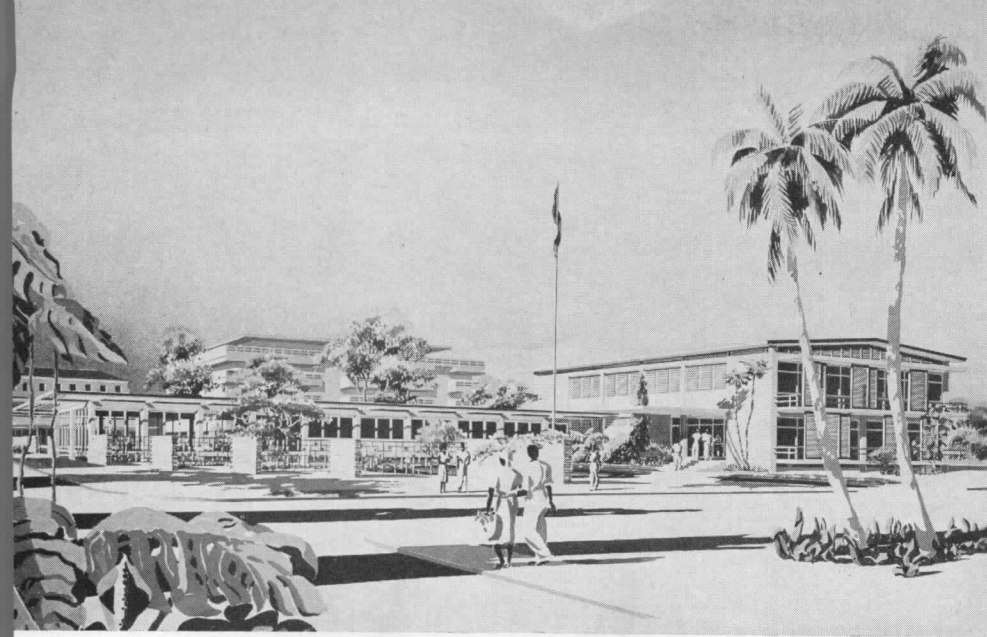


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U. S. Embassy Office Building and Staff Quarters, New Delhi, India
Edward D. Stone, Architect

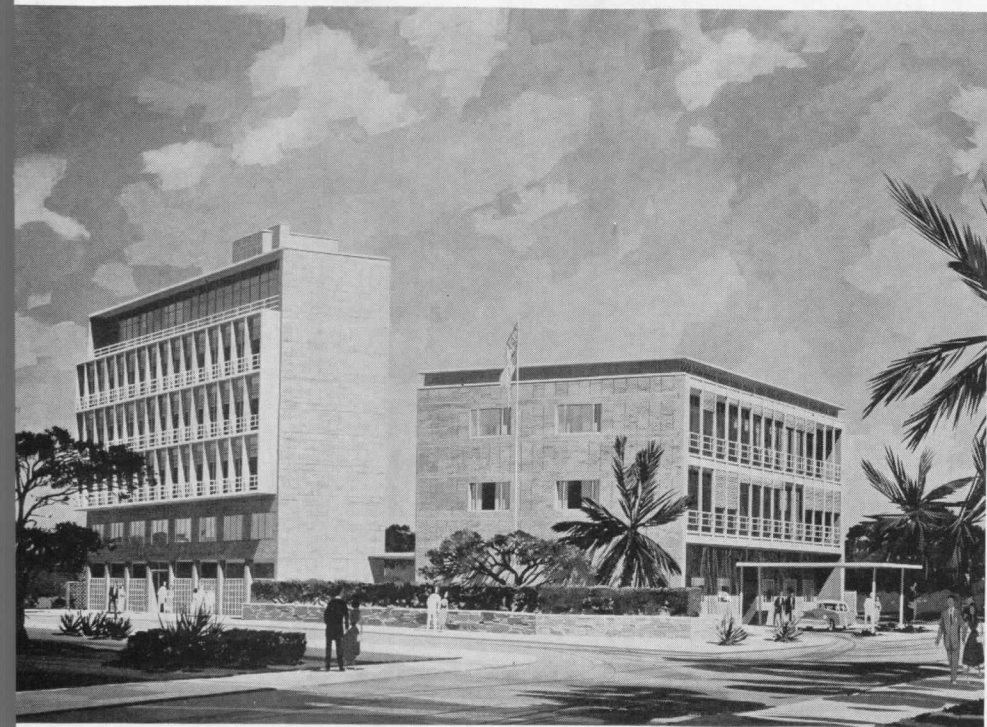
To achieve a formal expression of both character and dignity, the general design of the office building resembles the traditional Greek or Indian temple. The two-story building encloses an open aquatic garden, which is to be covered by aluminum stripping suspended on cables. All offices are one bay in depth and all corridors become open balconies fronting on the central garden. The design employs the surrounding podium of the Indian temples in that locale. Exterior of the office building is of ornamental perforated tile, marble and concrete, with concrete frame. Space for a future residence for the ambassador has been provided adjacent to the office building. Buildings in the background are apartments for the staff, and quarters for servants. Central air conditioning will be provided for the office building; individual units for the staff quarters.



*U. S. Consulate General
Office Building
Lagos, Nigeria*

*Weed-Russell-Johnson
Associates, Architects*

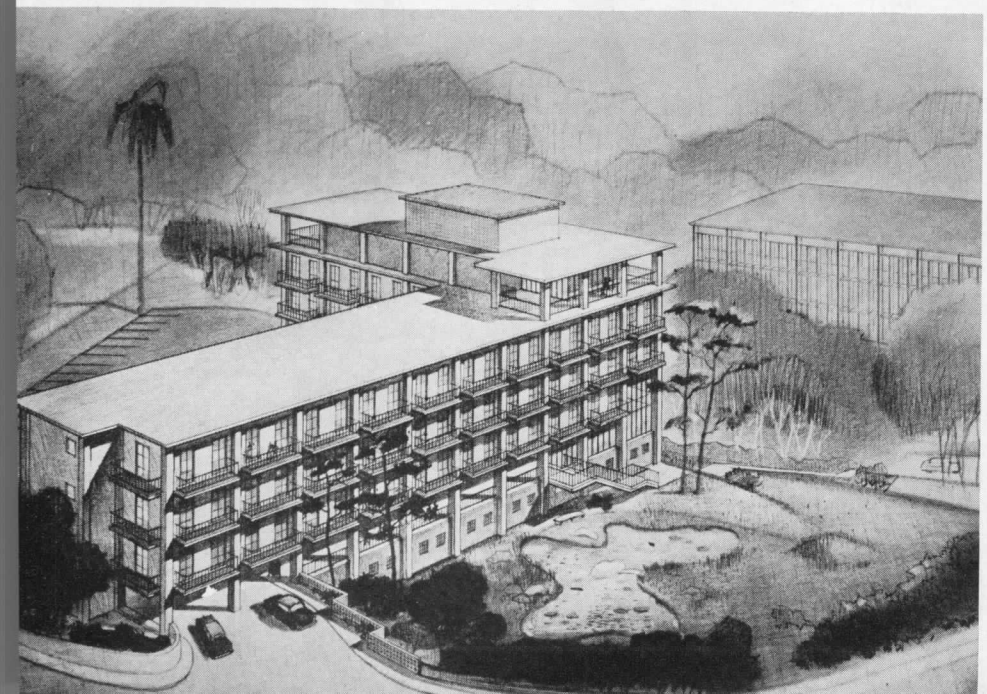
Designed for an enervating climate, the building exhibits a variety of sun control devices and venting ideas. Here the patio is designed as an entrance element, especially to serve the information center, which attracts many visitors. The library will be featured on the street side in window displays. Local stone will be used for facing.



*U. S. Consulate General
Office Building
and Staff Quarters
Dakar, French West Africa*

*Moore and Hutchins, Architects
Georges Pellisier, Assoc. Archt.*

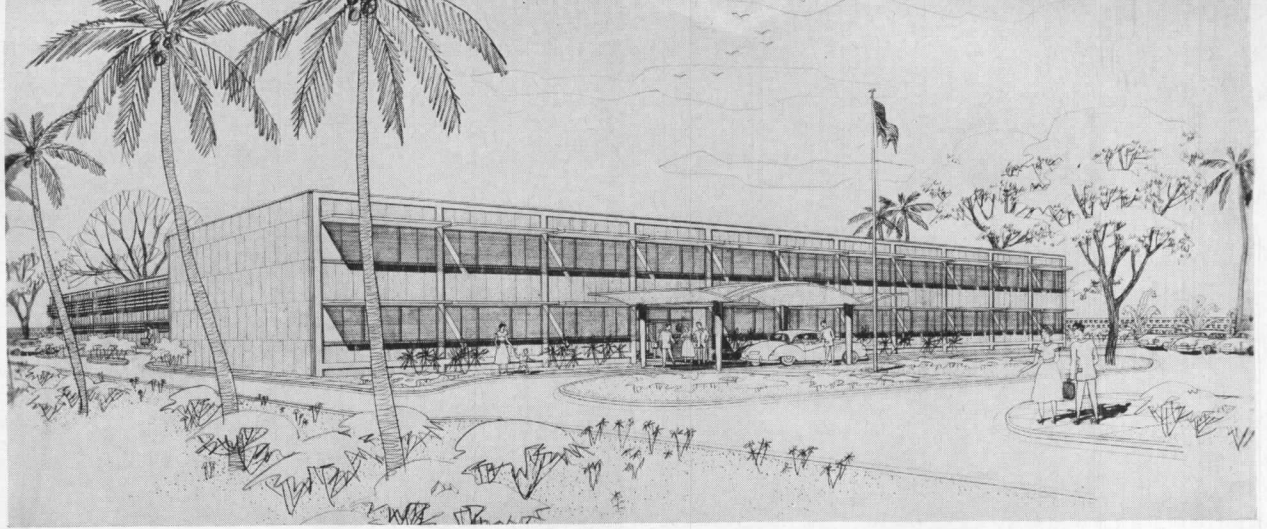
So far as local codes permitted, the three-story office building and the apartment building were oriented on the site to catch the prevailing breezes; all living units have through ventilation. Buildings have reinforced concrete frame: exterior facing is Italian travertine, marble and some tile. The design incorporates a great deal of glass, and glass jalousies behind the sunshades. Stainless steel was used for rails and trim, aluminum for windows and frames.



*U. S. Consulate General
Hong Kong*

*Wurster, Bernardi and Emmons;
Feltham and Cumine; Architects*

The office building is to be built on the side of a hill opposite the new Secretariat of the Hong Kong government in Victoria, and will overlook the harbor. It is of reinforced concrete construction with native granite facing. It has a fifth floor penthouse for the Consul General and his staff, can add complete fifth floor later.

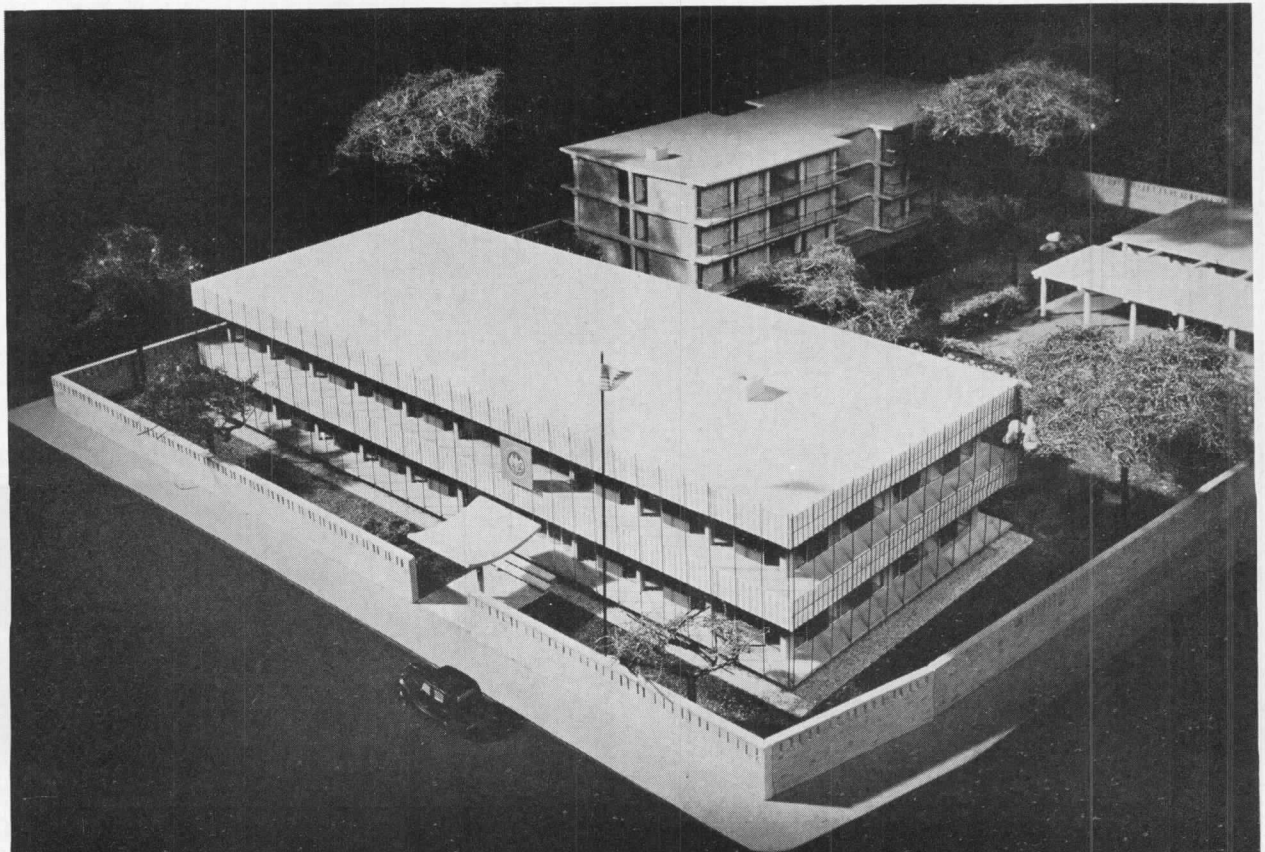


*U. S. Embassy Office Building
Djakarta, Indonesia
Raymond and Rado, Architects*

The office building, of two stories, will have a reinforced concrete frame, faced with marble and stone and concrete overhangs. Underneath the sun shades there will be sun louvers of metal. Behind the office building there will be a service building housing generators, cooling towers and a garage. The service area will be separated from the office area by high open-type stone walls enclosing a garden court with reflecting pool and tropical planting.

*U. S. Consulate
General Office Building
and Staff Quarters,
Kobe, Japan
Leinweber, Yamasaki & Hell-
muth, Architects*

This complex of office building apartment house and combined servants quarters and garage, will become an interesting addition to the search in Japan for contemporary methods combined with Japanese qualities in design. Office building will be reinforced concrete and glass, with fiber-glass sunshades to cut off direct rays of the sun but keep the light and views. In the apartments, living rooms will have sliding glass doors to balconies.



THE DILEMMA OF ARCHITECTURE

by John Ely Burchard

Dean of the School of Humanities and Social Studies, Massachusetts Institute of Technology

OF ALL THE ARTS, architecture stands in many ways in the most difficult position for it is the only one which must serve pragmatic as well as spiritual utility. There is never any architecture until there is a building. There have been a few times, and only a few, in the history of mankind when man has been able to afford purposeless buildings. Most of the time the very cost of a building has insisted that it could not be useless.

It is in this necessity that the dilemma of architecture arises. For a building which will not serve its user well is a bad building. But though it is necessary that the building serve well in a practical sense, this is not sufficient. There is another necessity, that of delight. There was a short time in the history of functional architecture when we all insisted that if the function were really well served the delight would follow as a matter of course. We know better now and we probably always did know better. A building which works well but is without delight is quite as much a failure as a building which is visually pleasurable but works abominably.

Thus every architect must be partly a Mary and partly a Martha. In any one man one trait or the other is sure to dominate. Of late years we have tended to praise the Marthas the more and it is perhaps time that a little more praise be awarded the Marys. But a building which does not reveal something of both personalities will not be a great building. I shall shortly return to the question of purpose in buildings.

Besides purpose three other forces condition the resulting building or should do so.

Does it matter to a building whether it is on a hill or in the valley, whether the sun never shines or beats down incessantly, whether the leaves change with the seasons or are always green, whether the winds are capricious or prevail in one direction, whether the surrounding vegetation is tropical or temperate or arctic or non-existent? In early days there was no doubt as to the answer. The walls of Spain were thick and the windows small as firm defense against the sun; the roof of Egypt was flat so that the house-dweller might recline upon its top in the cool of the evening; the roof of North Germany was high-pitched to shed most of the snow so that it could support the burden of what remained; the house of New England huddled for warmth around its great central chimney and fireplaces; the high ceilings and the through hall of tide-water Virginia

made it possible to brook the humid heat of a summer on the James. All these things had their esthetics of course but they probably arose from practical considerations. Now it is hard to disentangle the pragmatic from the sensuous.

This is one of the tricky questions to consider as we go along. For modern technology has made many of the original practical considerations no longer relevant. You can successfully build a flat roof on a house in the Donner Pass if you want to, you can keep a thin-walled house cool in Spain, you can dispense with the fireplace in New England, although there are few of us prone to adopt these suggestions. Thus it is now possible to build a California house in the East and an Eastern house in California and to make both of them work, technically at any rate.

But it is still not certain that this ought to be done because after all logic has died away we do sense that even the miracles of modern engineering have not abolished nature, and that the building should have some relevance to the nature which surrounds it. People may not always agree as to what is relevant. Some think that a prairie house should lie flat on the prairie, others think the prairie needs contrapuntal pinnacles; some think that the pinnacle should enlarge the mountain as at Mont-Saint-Michel, others that it is precisely the mountain building which must nestle into the slope. But despite these major contradictions there is something, perhaps atavistic, that insists that the site and the climate do have something to say about what architecture is appropriate. In this sense there can be no such thing as a universal or transportable style.

Let me give one example. The national capital of Australia, Canberra, is set on a rolling hilly terrain, now brown, now green; the eucalypts are ubiquitous. In most respects it reminds one of a fine California landscape; it bears not the slightest resemblance to the misty and broad mouth of the James River in Virginia. Yet the United States, building its embassy on one of the most prominent hilltops of the Australian capital, has erected not a California house but something resembling one from Colonial Williamsburg. It was a disastrous decision by our country to build such a building. It is equally disastrous that many Australians like it. You see this is not even a question of contemporary or old, but of commodity to a site. Contemporary architectural thinking is certainly aware of and even



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3

Samuel Chamberlain

“The walls of Spain (1) were thick and the windows small as firm defense against the sun . . . the roof of North Germany (2) was high-pitched to shed most of the snow . . . the house of New England (3) huddled for warmth around its great central chimney and fireplaces; the high ceilings and the through hall of tide-water Virginia (4) made it possible to brook the humid heat . . .”

enamored of technology. Still it has sought again to understand the site rather than to force a universal solution.

Materials must obviously exercise a profound effect upon the building. Again historically the materials had to be indigenous. Sundried bricks were used in dry and treeless Mesopotamia; stone in Greece and Rome, where there were timbers to be sure but not good ones in profusion; wooden architecture arose in wooded places. It was not always the case that the local material was desirable for the local need. For example, though wood is everywhere in the tropical rain forest, it also deteriorates rapidly there. But the over-riding consideration was historically one of supply.

Think how few major building materials there really are; wood, brick and stone were the great three for thousands of years. Stone was burned to form plasters which when applied resumed the quality of stone. Bricks were burned in kilns instead of by the sun and thus other ceramics were developed but the tiles and terra cottas which emerged were used primarily for decoration or finish. Glass was used at first as a luxury and for esthetic purposes which culminated for a while in Sainte Chapelle in the thirteenth century and arose again in the greenhouse architecture of the Crystal Palace in 1851. Lead was used early enough for caulking joints and shedding rain. Copper and wrought or cast iron were used for decorative purposes or in minor functions as railings. But through all this time there were really only three basic materials — wood, brick and stone, with glass perhaps offering more suggestion than realization.

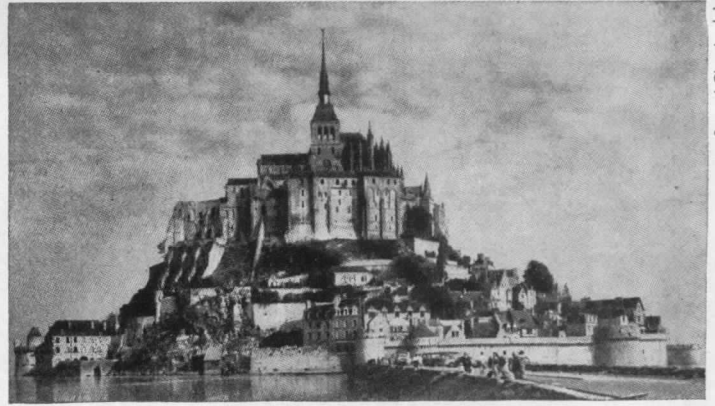
Then in the last hundred years we have added a few more, a kind of synthetic stone in the form of rein-

forced concrete which is more plastic than stone has been heretofore, steels which suggested hitherto impossible structural opportunities, most recently metals which can themselves be used as wall-facing materials. Thus today we have six materials of major importance where the long ages had but three, and I would not quibble if you said there were eight and not six today, since glass is almost certainly a material of enormous importance to the builder and it is possible, though not certain, that the future of plastics is not far away.

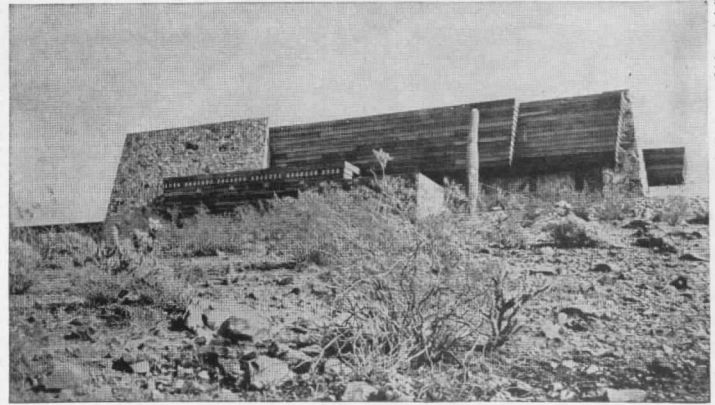
As the use of simple materials became more general, artists sought variety. Some variety, even great variety, is of course possible when transportation is available for there are enormous local differences in timbers, in clays, in stones, even in glass. But until very recently the artist architect was somewhat bound by economics to the use of what was available locally. Only the opulent client could import from afar and indeed the opulent client of the nineteenth century, abetted by the architect of that day, did often import less for the esthetic purpose than to demonstrate that he could import, again verifying Bevlén's theory of conspicuous waste. But for the most part local architects found outlets in modifying the materials, shaping them into forms, revealing unusual textures, or often and nobly yielding them to the ministrations of painters and sculptors. Even those architectures which we think of as the purest were not free of these ministrations. The Parthenon had sculptured friezes, and in polychrome moreover; the detail of the triglyphs, the metopes, the guttae, the column capitals and bases were not regarded as trivial. Yet some of these details were vestigial from wooden details and some were plainly fantasy. They were none the less beautiful for that.



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Frank L. Wright, architect, from "In the Nature of Materials"

Samuel Chamberlain

"... some think that the pinnacle should enlarge the mountain as at Mont-Saint-Michel (5), others that it is precisely the mountain building which must nestle into the slope (6)."

Contemporary architecture is not seriously shackled by the limitations of economic transport. Very few buildings of any importance are now wholly constructed of indigenous materials. Almost the world supply of building materials is available throughout the United States at no very high premium for the use of the exotic. Moreover, the nature of modern American production is such that the architect may ship even unexotic materials or assemblies from long distances. The entire range of American resources provides his minimum palette, no matter where in America he lives and works. Thus technology in this matter as in the matter of climate and geography has freed the hand of the architect.

This freedom of course imposes a responsibility which has on the whole been well exercised. The effect of freedom of choice has been to diminish the desire to rework the materials, to increase the effort to let the materials stand for themselves and to seek effects by strong juxtapositions of unlikes, of wood and stone, of steel or concrete and glass. The fascination with the materials and with the framework, confronted by municipal fire laws, has even led at times to designs which purported to display simple materials and structures when they really did not. This is not honest but it is no more harmful, if the esthetic motivation is candidly admitted, than were the stone triglyphs and guttae, residues of wooden construction, on Greek temples; no more dishonest, but no less so, either.

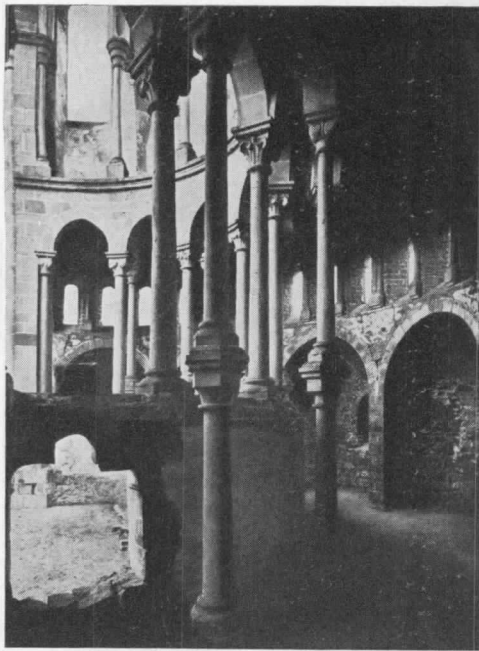
Besides the place and the materials, there is the question of the times. There is such a thing as a *Zeitgeist*. It is partly a matter of the technological life that is led and we must always remember that every new convenience brings a new inconvenience. When jets crowd

the skies we will move faster from place to place but there will be fewer places over which the heavens will always be quiet. We have perhaps accepted the handicaps of technological progress as being too inevitable and we are likely to seek relief from their pressures by a synthetic ruralism almost in the manner of Rousseau. But we do live in the twentieth century and not the fifteenth or the twenty-fifth. And our century has its positions, not all technological. And these positions must be reckoned with in our buildings if they are to be successful. The people of the great periods often admired the work of an earlier period but this is quite a different thing from trying to turn back the clock.

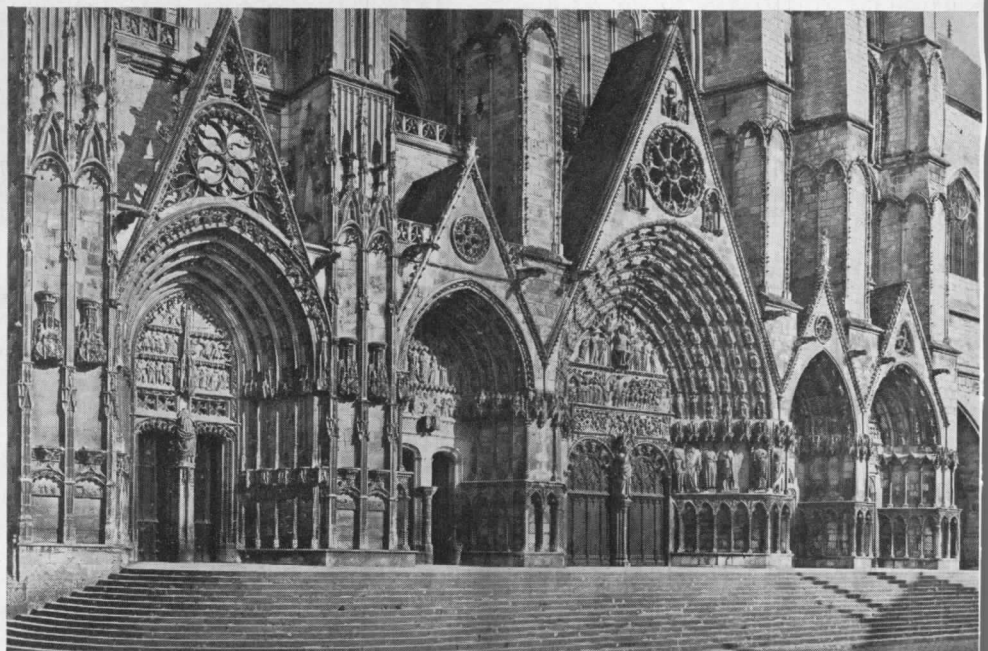
The problem of the times as it affects architecture has been well summarized by Thomas Merton in *The Sign of Jonas*. This is what he says about church architecture:

"The perfection of twelfth-century Cistercian architecture is not to be explained by saying that the Cistercians were looking for a new technique. I am not sure that they were looking for a new technique at all. They built good churches because they were looking for God. And they were looking for God in a way that was pure and integral enough to make everything they did and everything they touched give glory to God.

"We cannot reproduce what they did because we approach the problem in a way that makes it impossible for us to find a solution. We ask ourselves a question that



“The perfection of twelfth-century Cistercian architecture. . . .”



“The Cathedral of Bourges serves the Mass quite as well perhaps”

they never considered. How shall we build a beautiful monastery according to the style of some past age and according to the rules of a dead tradition? Thus we make the problem not only infinitely complicated but we make it, in fact, unsolvable. Because a dead style is dead. And the reason why it is dead is that the motives and the circumstances that once gave it life have ceased to exist. They have given place to a situation that demands another style. If we were intent upon loving God rather than getting a Gothic church out of a small budget we would soon put up something that would give glory to God and would be very simple and would also be in the tradition of our fathers. That is why the best-looking buildings around Gethsemani are the barns. Nobody stopped to plan a Gothic barn, and so they turned out all right. If they had built the gatehouse on the same principles as the hog house it would have been beautiful. Actually it is hideous.

“However, the twelfth-century Cistercians took good care to be architects. Saint Bernard sent Achard of Clairvaux out to study the village churches of Burgundy and see how they were built. And it is true that there was a clean kind of mysticism in the air of the age that made everything beautiful. One of the big problems for an architect in our time is that for a hundred and fifty years men have been building churches as if a church could not belong to our time. A church has to look as if it were left over from some other age. I think that such an assumption is based on an implicit confession of atheism — as if God did not belong to all ages and as if religion were really only a pleasant, necessary social formality, preserved from past times in order to give our society an air of respectability.”¹

This seems obvious to many of us but unfortunately it is still far from universally clear.

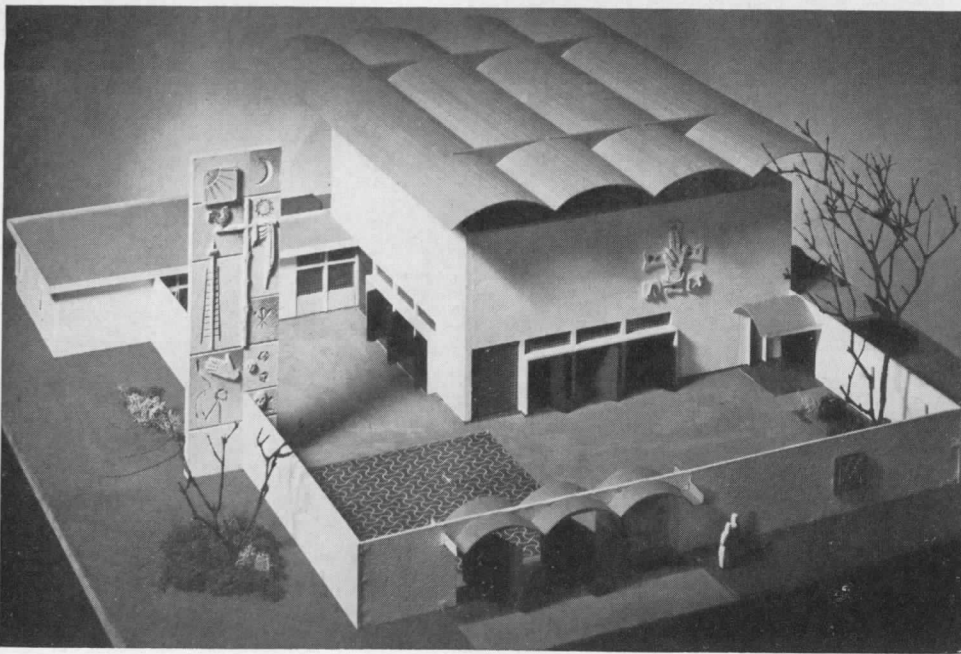
¹ Thomas Merton, *THE SIGN OF JONAS*, Harcourt, Brace and Company, New York, 1953, pp. 86-88.

Now if indigenous necessities have been diminished by technology and buildings are no longer limited by the local availability of materials and if they are to be buildings of their time, it might appear that something universal would develop in Western architecture. It was this sort of thing that people have had in mind in praising or castigating what was never really existent, the International Style. That is, it was existent only in the same sense that every other great style which has prevailed has had an international quality. Greek temples adorned hillsides far from the Aegean. Roman atria were built in misty England. The Gothic of France turned up later in Cologne and Milan. The Renaissance of Italy could be found in France and in Spain and in England. The work of the brothers Adam was imitated in climates very different from that of London — in India, South Africa, Australia, New Zealand.

The point to notice about this is that the great styles did spread from a center which was in some way at the moment the center of the cultural thrust in the broadest possible terms, in a military and an intellectual and a political and an economic as well as in an esthetic way. As the buildings were built in the outposts they were, to be sure, seldom as fine as those in the home land. If they were built by weak men they were shallow copies of what was being done better in the land of origin. If they were built by *strong men* they gradually took on their own characteristics. But they remained within a general tradition of purpose, of materials, and even of detail. Still only the unsophisticated could confuse an English Gothic with one of France, much less with one of Germany or Italy. And so it has always been. So it was with the International Style, if there was any such thing.

Not the least challenging of America's present ques-

THE DILEMMA OF ARCHITECTURE



Church design by Weiner and Serri, architects

... as the latest modern church in Brazil ...”

tions is the wonder whether, standing as we now do at the heart of the economic, military, political and even to some extent the scholarly power of the West, we will decline the role which has traditionally gone with these others or else play it badly and let the esthetic mantle fall elsewhere. If the United States Congress were to have its way this might happen. What we build abroad ourselves may be controlled by the Congress but what we build here cannot be. And it is what we build here that will decide finally whether we furnish esthetic leadership. For it is better for a style to be transferred to another country by the builders of that country. Great thinker as he may be, the Swiss Le Corbusier will never think as a Hindu; brilliant designer as he is, the Finnish Aalto will never design as a Brazilian. So to use the term “International Style” as Mr. Philip Johnson seems to have done, to indicate a special domain of contemporary architecture which must not be invaded or polluted, is to act against all the evidence of history; but to use it as a term of reprobation as Elizabeth Gordon has done is to ignore the inevitable ripples which have always spread through the world whenever something important has been said anywhere.

Let me return now to the use of the building. As I have suggested, this use cannot be described in exclusively technical terms although this has been the pretense of some of our great contemporary architects. The plain fact is, of course, that very old buildings which we would not build now but which have survived are often very habitable. They are habitable even with archaic heating and lighting and plumbing systems and without big windows opening upon the landscape. The cathedral of Bourges serves the Mass quite as well perhaps as the latest modern church in Brazil or the Pyrenees.

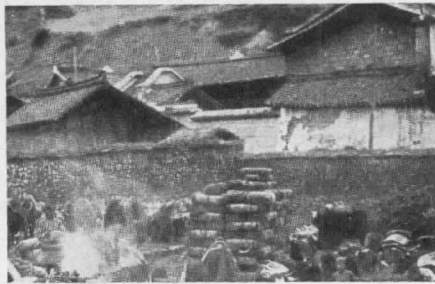
But needs *are* partly functional and it was the crime of the eclectic architects of the nineteenth century that they forgot this altogether. If a sermon is the most important part of a religious service, as it is in some Protestant denominations, it is a crime to build a sanctuary which no matter how mystic offers nothing but reverberations to the preacher. And it is one of the great glories of the Roman Catholic Church that on the whole and with only modest wavering it has often chosen to build in the language of the current times. It is a crime to build a public library in the manner of the Farnese Palace if in so doing you make it impossible to find a book, to borrow it, or to read it. It was the kind of thoughtless excess that forced the revolution in architecture which began long ago but reached a crescendo in the early part of this century, the fruits of which are now blooming as the contemporary architecture of America.

When you are fighting a serious revolution you must be pure in your own attitudes. If iconography and details from the past are counter-revolutionary you must tear them down. If history may be cited against you, you must be opposed to history. If the proliferation of art on buildings is called for only by bad architects who use bad artists, then you may not use painting and sculpture to embellish your buildings. You seek first purity of line and principle; you overemphasize engineering and utility; you put washbasins nakedly in foyers; you adhere to purity knowing that to yield at all will corrode your entire effort.

And when you produce this clean-cut break, this antiseptic design, so different from anything any of your contemporaries are used to seeing, much less admiring, you need all the supporting arguments you can find. You sense the weakness in eclectic architecture to have



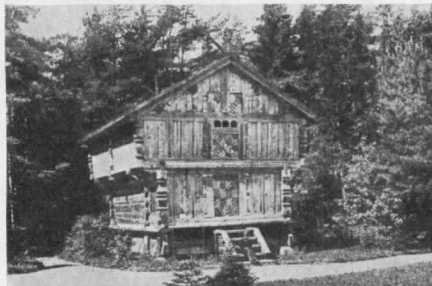
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“ . . . the good work of peasants everywhere, the people who build beautiful houses in Tibet (8) and in the Swiss Alps (7), in Norway (10) and in the Congo (9), good works because they are honest . . . ”

been twofold; one, esthetic incompetence, the other, functional failure. The argument on esthetic grounds is complex and hard for everyone to understand. But the argument on function is practical, it appeals to commonsense. So you start talking about form following function, and the house as a machine for living. Sometimes you even come to believe it altogether.

The fact is of course that you should believe it only in part. Modern buildings do sometimes work better than their predecessors. But not everything that goes into a modern building goes into it for practical reasons. Not every new chair, free form, or wall of glass is practical or sensible. Do not convince yourself that they ought to be. A much cited architectural writer, Vitruvius, said long ago that a great building must have firmness, commodity, and delight. The delight is not unimportant — and it will not always be rational. It is the great hope of contemporary architecture in its advance towards historical importance that it has finally become possible to do some things irrationally. It is of less hope that it still seems necessary to persuade some of the buyers of these ideas that they all rest on rational grounds.

What I am suggesting here is that the needs of a time are a combination of the rational and the irrational; some things must work physically; others are plainly symbolic or mystical; the mystique may be that of a medieval Last Judgment or of the modern hunger for an unimpeded space in the manner of Chirico. Great architecture will provide for these irrational needs and tastes while not making it too difficult to meet the rational physical requirements. Indeed, the main reason I believe that contemporary architecture has come of age is

because it is recognizing this principle implicitly in the explanation of their work.

As a result of all this I hope you will agree with me that we are fortunate to live in a time when our architecture is so vital; that this architecture is not only strong and commodious but that it is often beautiful; that it is something to be happy about now while we live in it and to have some confidence in as our legacy to posterity. This confidence can be reinforced, I suggest, by the understanding that this architecture is not some strange and warped and incoherent diversion of the stream of our heritage but rather a continuation of the flow of that stream. It can compare favorably with the good work of peasants everywhere, the people who build beautiful houses in Tibet and in the Swiss Alps, in Norway and in the Congo, good works because they are honest and use simple materials simply. It can also compare favorably with the great times of Western architecture, with the times of Greece and Rome and Byzantium, with the Romanesque, the Gothic, the Renaissance, the Baroque, and the Georgian, — great times because they solved complex problems superbly, used structures boldly, exploited materials magnificently, met and expressed the challenges of their day. In examining the architecture of our times, and especially in examining the architecture that the next decades will present, it is wise to greet it with an affirmative effort to understand and believe; but if that is not possible, then at least one should say, as Hamlet did in the fifth act:

“If it be now, ’tis not to come; if it be not to come, it will be now; if it be not now, yet it will come: the readiness is all.”

4 STORES



Carson Pirie & Scott Store; see following page

PENTAGON—ENTRANCE MALL—BENT STRIP

Store for Carson Pirie Scott & Co.
Woodmar Shopping Center, Hammond, Ind.

Landau and Perlman, Developers

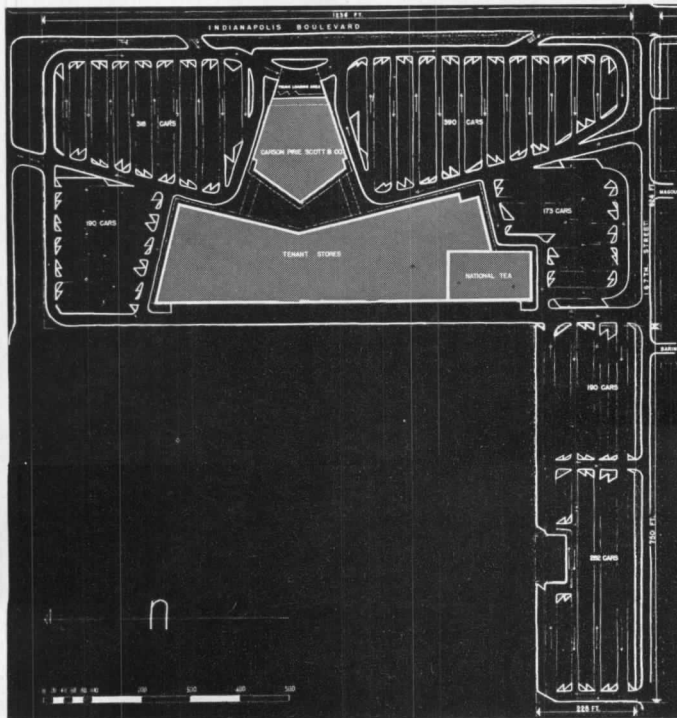
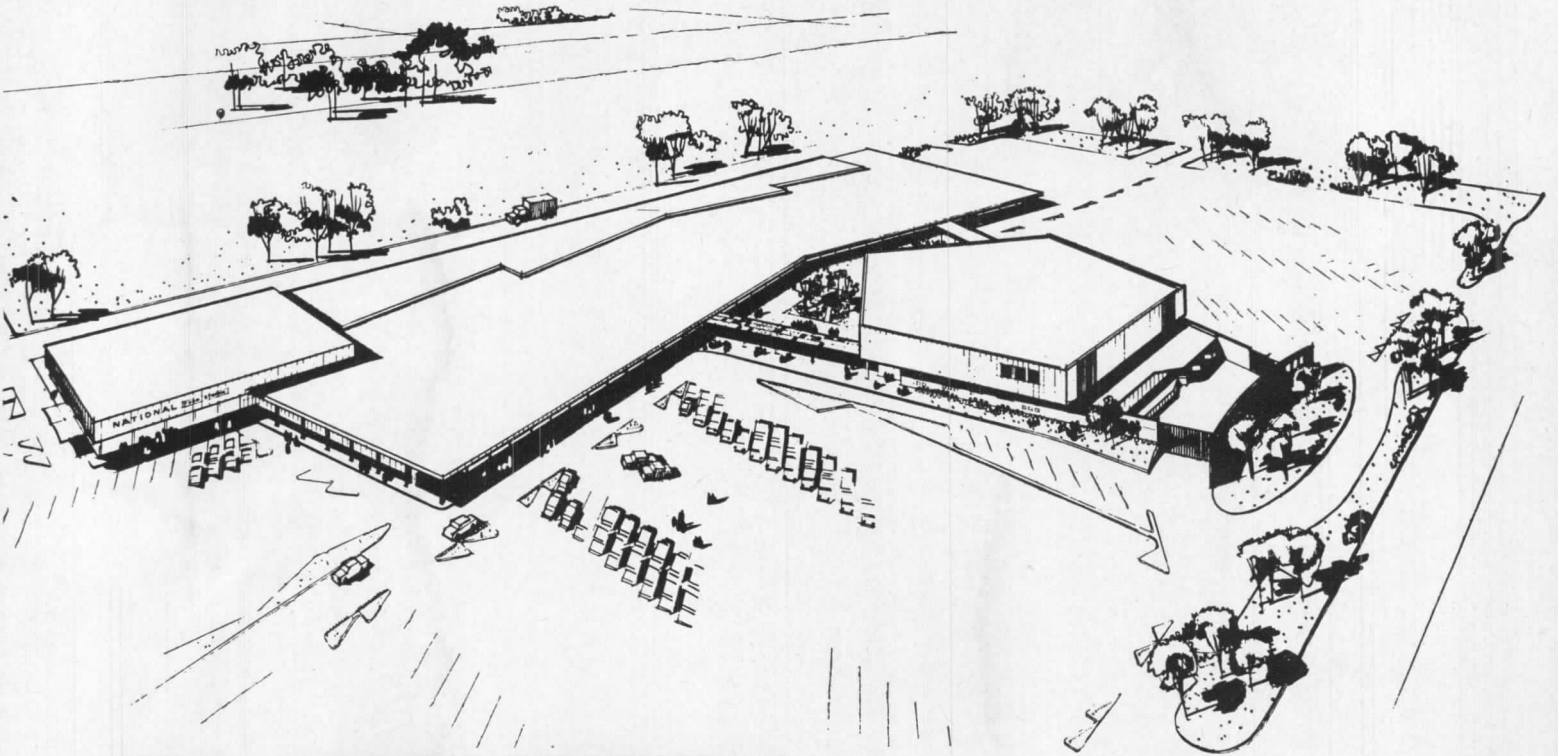
Victor Gruen Associates, Architects

Karl Van Leuven, in charge

Sidney C. Finck, Associated Architect

George W. Barton Associates, Traffic Consultant

Inland Construction, Inc., Builders



THE PROBLEM was to place a department store, some 30 other stores, and parking for 1200 cars on a long, narrow, 18-acre site. The quite unusual result illustrates several sound planning ideas and holds considerable architectural interest.

The key to the scheme lies in pulling the department store forward to the highway and then turning it backwards with concealed front service and rear entrance. Its pentagonal form yields two glazed entrance and window-shopping walls facing a landscaped mall — this mall becoming the heart of the plan. The smaller store block faces the mall and the dual parking; is serviced from a rear drive; but this strip has been bent into a flat V for several very good reasons. The dihedral shape provides a more intimate relationship of all stores, shortens walking distances, and forces pedestrian traffic into the desired pattern, i.e., past the smaller stores and toward the department store. All stores are raised above the general street pattern for greater visibility from the highway.



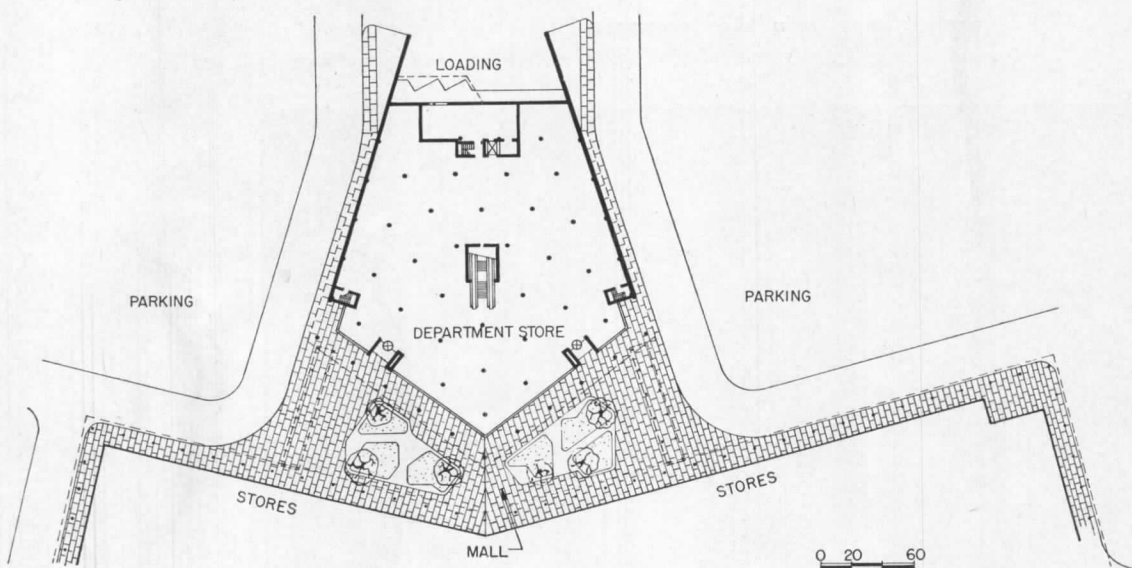
Department store loading area is concealed by a curving screen of wooden louvers, above. The second floor volume is covered with white glazed brick; the first floor with red face brick



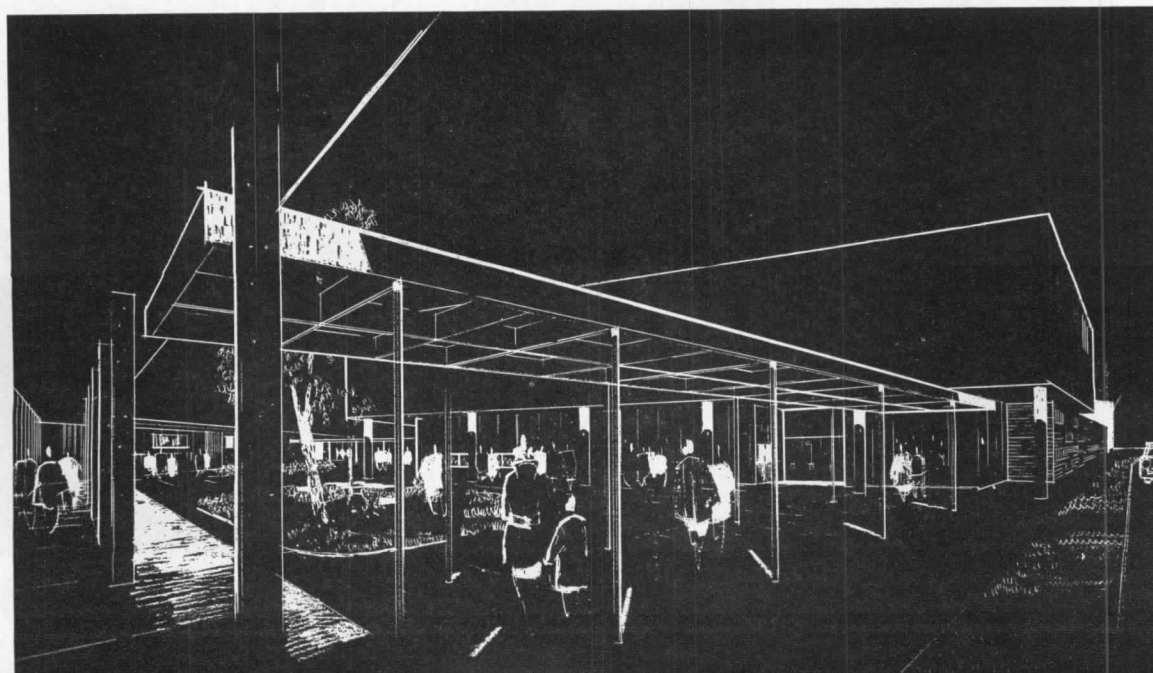
CARSON PIRIE SCOTT & CO., HAMMOND, IND.



Hube Henry, Hedrich-Blessing



The two sides of the pentagonal department store which face the landscaped mall at ground level are completely glazed, the surrounds being aluminum finished in matte black. At the two entrances adjacent the terminations of the two covered walkways, vertical piers are sheathed in white tile mosaic to add sparkle. All pedestrian walkways in the center are protected from the weather



2

BLOOMINGDALE'S NEW STAMFORD BRANCH

*Bloomington Brothers
Stamford, Conn.*

*William T. Snaith, Architect for
Raymond Loewy Corp., Designers
The Austin Co., Engineers & Builders
Helen Wells, Store Designer for Bloomingdales*



Gottscho-Schleisner

THE SITE for Bloomingdale's third and largest branch, located in a region of pseudo-Colonial houses and "country living," comprises about 85,000 sq ft and is bounded by three streets. Designing a modern department store for such an environment presented a challenge; for a stark, blank-wall and glass box was considered inappropriate — an essay in Colonial eclecticism insincere. This design tackles the problem by incorporating certain of the thinking from both directions; offers one kind of answer for an all too typical situation.

A natural six-foot differential in level was built up to make an incline to second floor level for delivery. Trucking takes place on this ramp, the beginning of which is at the extreme right in the picture above.

The lengthy façade extending 350 ft along Broad Street might have been, in strictly utilitarian terms, a monotonous strip of blank masonry and glass lacking both in proper scale and character for its surroundings. As executed, the design establishes a vertical-patterned mass of rock-faced salmon pink brick as a *strong central* element from which extend the two white painted brick wings.

The three entrances are sheltered by natural teakwood canopies. The cantilevered balcony at the principal corner (shown below and at near right) contains the Chanticleer Restaurant.

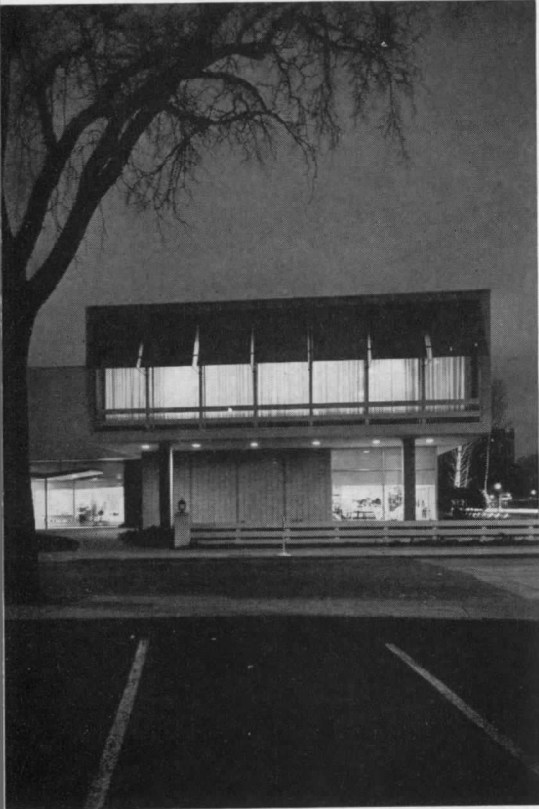
Materials, finishes, equipment: aluminum store fronts and entrance doors; terrazzo floored vestibules; sales floors of rubber tile or carpeting; ceilings of painted plaster or acoustic tile; interior spaces sprinklered and air conditioned; lighting is by a combination of incandescent and fluorescent fixtures.



3 photos by Gottscho-Schleisner



Alexandre Georges



NETHERLANDS DEPARTMENT STORE REBUILDS

De Bijenkorf (The Beehive), Rotterdam

Marcel Breuer — A. Elzas, Architects

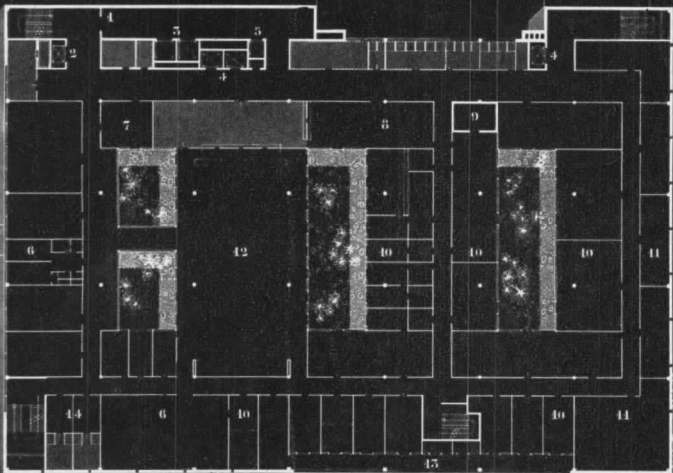
Daniel Schwartzman, Consultant

DISASTROUSLY FIRE-BOMBED by the Nazis in 1940 and serving its customers in makeshift quarters since then, the 85-year-old De Bijenkorf department store plans to open its striking new building in the fall of 1956. The structure will face one of the entrances to Lijnbaan, Rotterdam's planned shopping plaza.

Its reinforced concrete slabs, of mushroom design, will require no joists; will be supported on columns spaced at 39 ft to provide maximum clear interior space. The gross area will be 387,000 sq ft.

The ground floor show-window strip — 262 ft total length — will be framed in Portuguese granite; while the closed upper floors — the first in Holland — will be faced with striated Italian travertine in a symbolic honeycomb pattern overlaid with widely spaced vertical lights. At one corner (nearest in the top rendering) an abstract sculpture by Naum Gabo will extend from show-window soffit to parapet.

In terms of the typical American department store, there will be several interesting features in the scheme. There will be a glass-enclosed automobile showroom (see plan and bottom rendering); a small cinema (recessed element, top rendering); offices and employees' facilities that open to roof gardens (4th floor plan).



FOURTH FLOOR

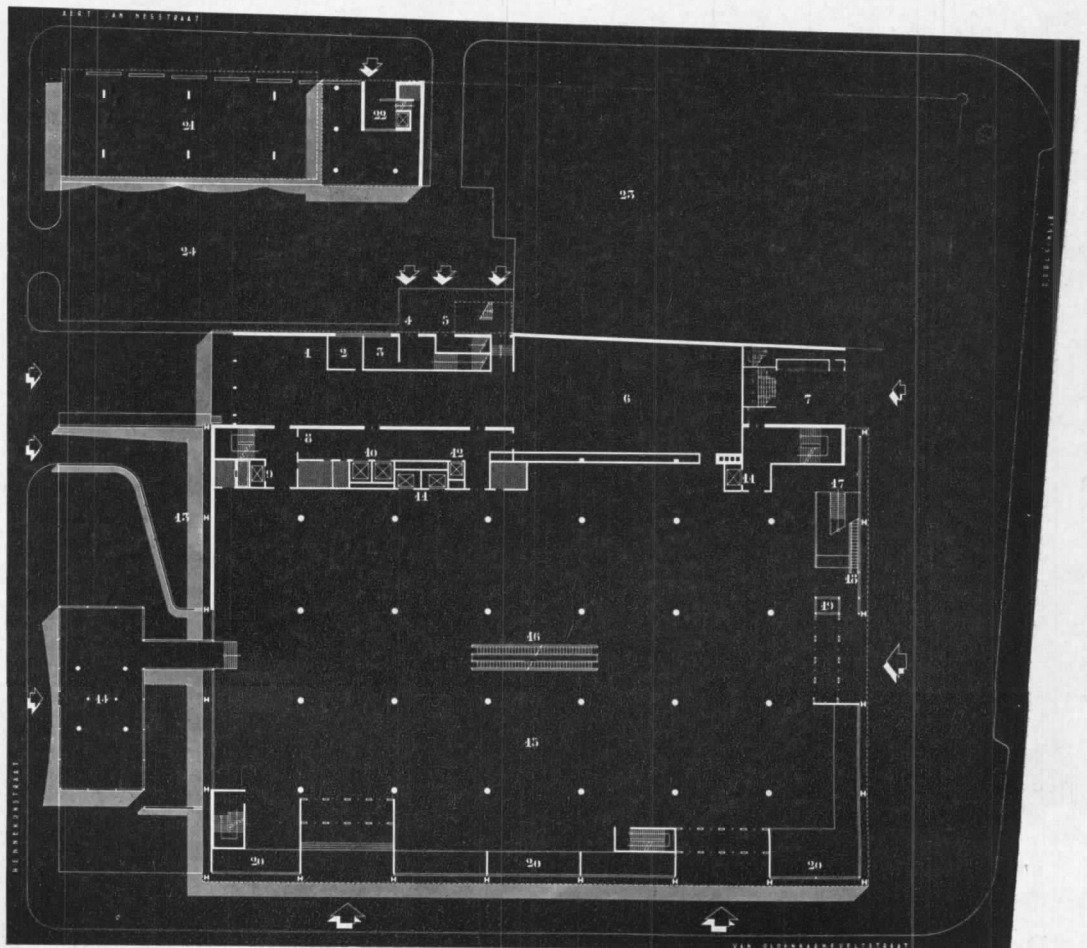
1. Passage
2. Employees' Elevator
3. Freight Elevator
4. Public Elevator
5. Kitchen Elevator
6. Workshops
7. Rest Room
8. Executive Canteen
9. Vault
10. Offices
11. Storage Rooms
12. Personnel Canteen
13. Loggia
14. Lockers

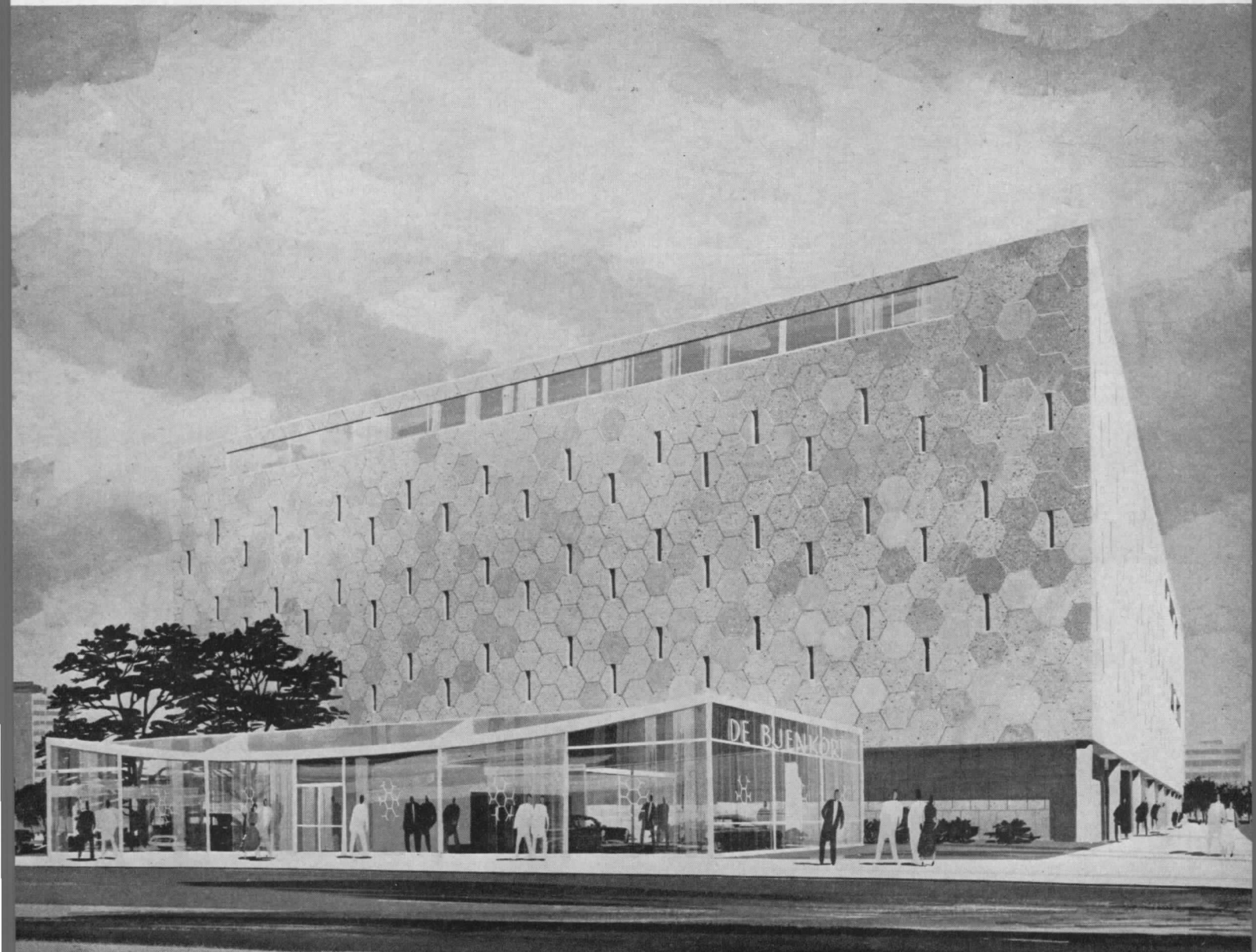
GROUND FLOOR

1. Receiving Department
2. Office
3. Control
4. Employees' Entrance
5. Public Entrance
6. Accounting
7. Cinema
8. Employees' Passage
9. Employees' Elevator
10. Freight Elevator
11. Public Elevator
12. Kitchen Elevator
13. Basement Drive-in
14. Auto Show Room
15. Main Sales Area
16. Escalator
17. Basement Entrance
18. Basement Exit
19. Showcase
20. Displays
21. Bicycle Parking
22. Office Building Lobby
23. Hotel Atlanta
24. Auto Parking



FEET 0 10 20 30 40 50 60 70 80 90 100
METRES 0 5 10 15 20 25 30





Ben Schnoll



4

THREE-LEVEL PARKING AND RETAILING

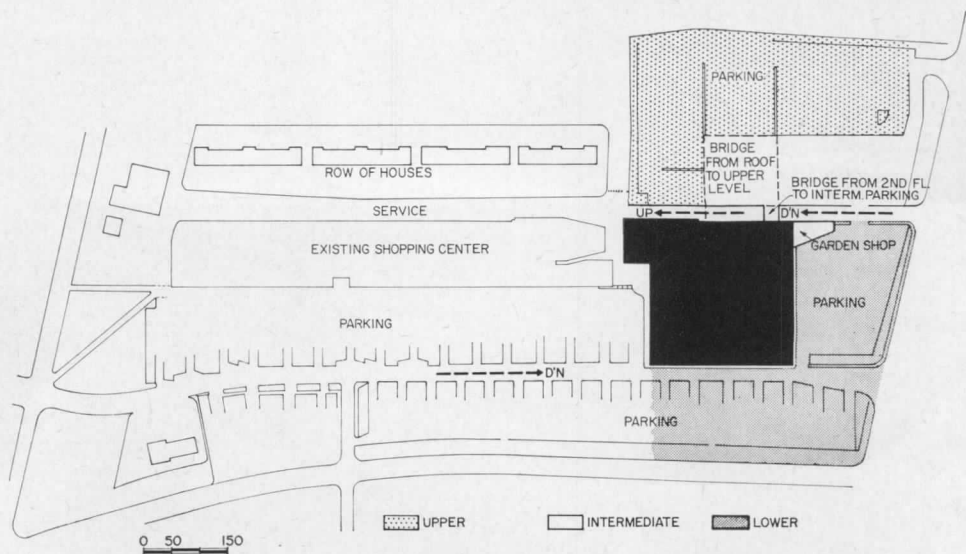
*The Hecht Co. Store
Baltimore, Md.*

*Abbott, Merkt & Co. and
Daniel Schwartzman, Architects
Consolidated Engineering Co.,
Contractors*

BY TAKING ADVANTAGE of a natural slope it was possible in this suburban store design to arrange both parking and selling areas at three levels. A feature of the scheme is roof parking immediately adjacent the restaurant, which remains open for business during weekends when the store is closed.

The structure is located in a residential area densely built up in typical Baltimore fashion — this density relieved here by a nearby college campus and park. In an effort to achieve a suburban character, the design called for natural field stone and white painted brick for exterior finish, with turquoise color for the columns, awnings and lettering.

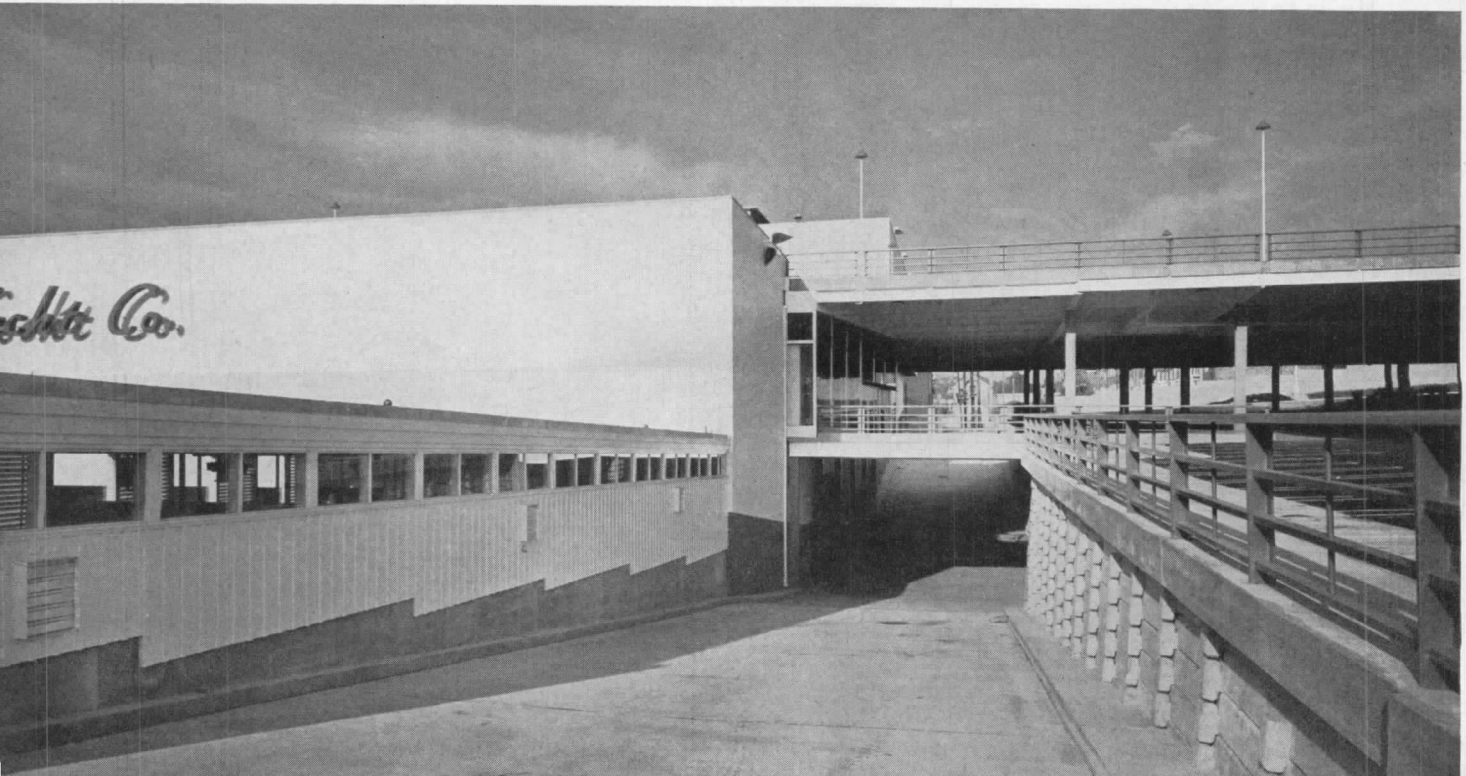
The gross area of the store is 155,000 sq ft, and its cost was \$15 per sq ft, exclusive of site work.



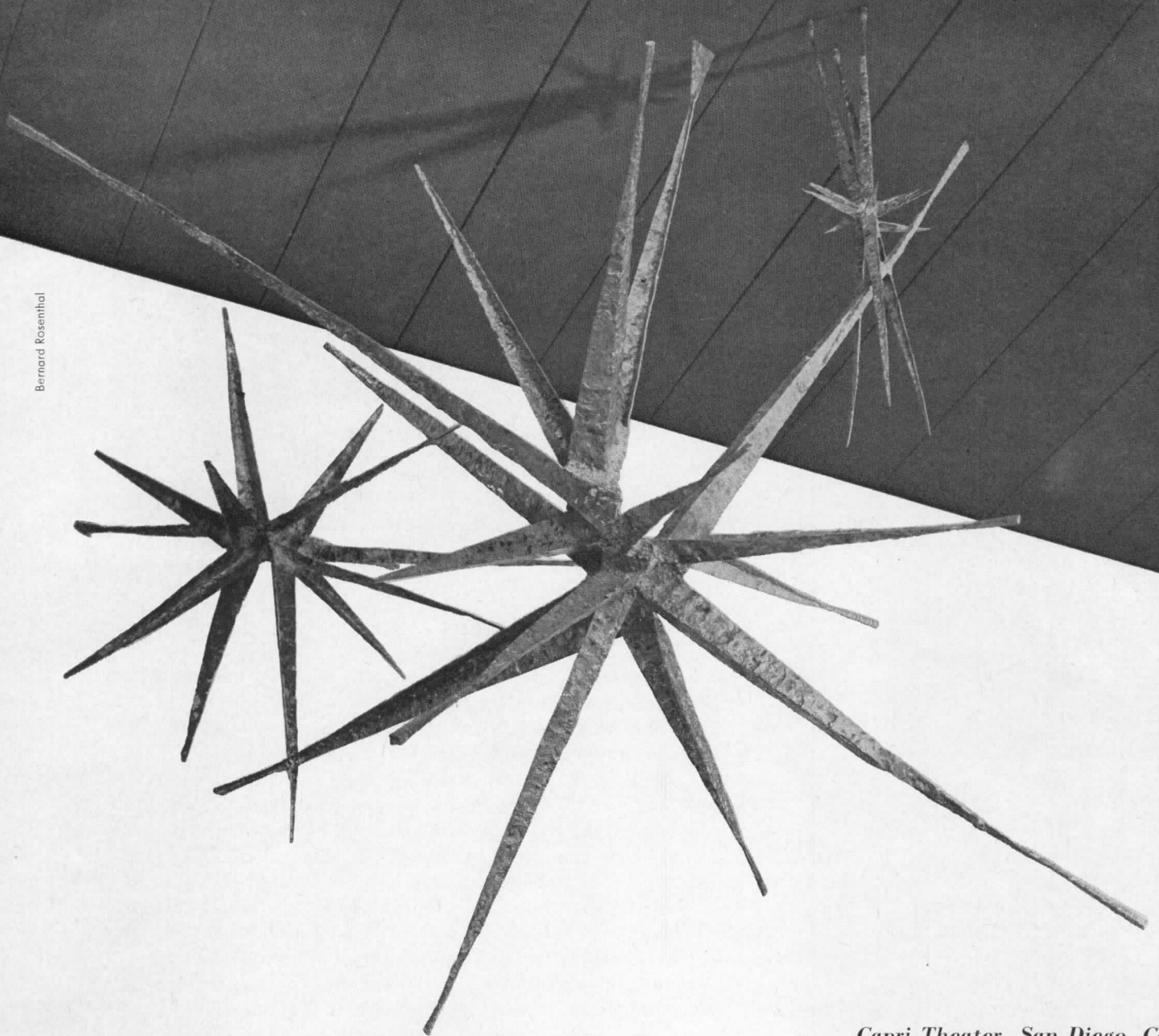


Ben Schnall

Use of natural stone, white repeats, and light finish bronze on interior — as well as “look-through” windows — help establish the interior-external relationship of the scheme. In the lower photo can be seen the garden shop, a separate wing framed in wood and sheathed in vertical boards to recall the character of garden structures. Ramp leads to truck dock.



Bernard Rosenthal



Capri Theater, San Diego, Calif.

CONTEMPORARY ART IN A REMODELED THEATER

Faxon & Gruys, Architects

ONCE UPON A TIME the Mondrianesque movie theater whose façade appears at the right and on the following pages was a neo-Karnak palace. Even its name was *The Egyptian*. Now, its former impressive gloom replaced by light flooding through its glass wall (even the ticket-seller sits in a glass jewel-box), in its lobby is a gallery showing the best examples of contemporary painting and sculpture the owner can procure. Appropriately suspended from the lobby ceiling are bronze stars sculptured by Bernard Rosenthal. Its seats are new and ultra-comfortable. The movies it shows are of high quality; they are booked for runs of several weeks so busy people who really want to see them can plan ahead at leisure; and there is just one feature picture. The Capri's owner, Burton I. Jones, an experienced movie-house owner as well as a connoisseur, has found that this approach pays.



Julius Shulman



Julius Shulman



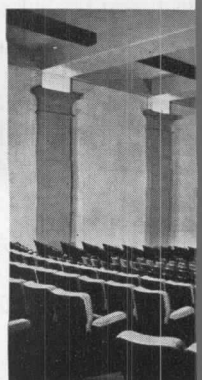
CAPRI THEATER

The old *Fox Egyptian*, whose portrait appears at the left, is hardly to be recognized in its suave new façade (above). True, this is just a remodeling job in which no great technical problems arose. Yet it does exactly what it should for the intelligent San Diego audience its owner wishes to attract, and it is successfully competing with numerous new drive-in theaters. Frank Gruys, its architect, obviously enjoyed himself while he was designing it. He is happy with the results, and so is the owner.

On its typical city street the Capri sends out a blaze of light after dark, and during the day its brilliantly colored lobby is wholly visible from the sidewalk. The traditional marquee has become an unobtrusive canopy. At the rear of the lobby is the gallery with special lighting for the continuing exhibition of contemporary painting, sculpture, etc.

Even the turnstile at the glass ticket booth is quietly worked into place; a simple sign announces the feature. Rosenthal's bronze stars dominate the lobby, both symbolizing light (and that American invention, the movie star) and casting a dramatic shadow that beckons to the shadow play within. While the stars were being hung the owner said to a hanger-on: "Most people don't realize that when they think of a five-pointed star they're thinking of an abstraction. This star is more like the real star you see in the heavens; it's more realistic. Your five-pointed star is really the abstraction." The kibitzer, we understand, was converted.

Julius Shulman

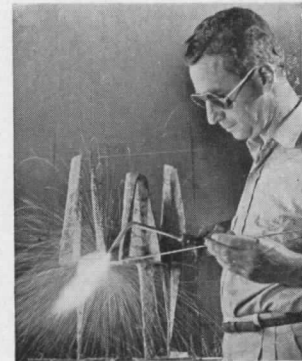




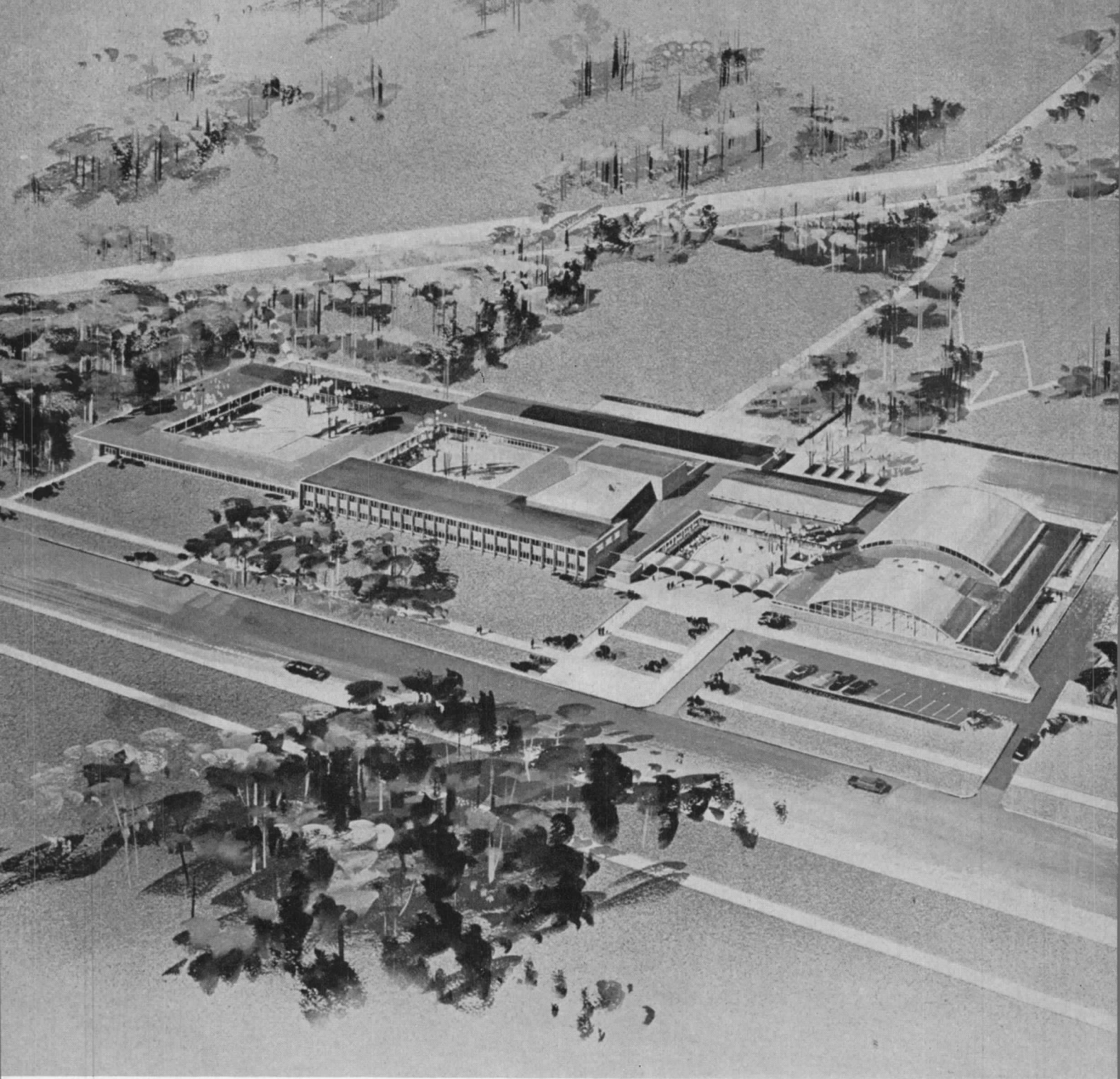
Julius Shulman



Primary and near-primary colors in the lobby are brilliant against clean white surfaces broken by black lines (photo above). At right, Bernard Rosenthal, sculptor of the lobby's bronze stars, at work. At far left, two photos show exhibit space leading to the auditorium, whose interior (center, left) was little changed except for installing comfortable seating and air conditioning, widening the screen, etc.




Lew Nichols



LARGE HIGH SCHOOL IS BOTH PRACTICAL

Edsel Ford High School, Dearborn, Michigan; Eberle M. Smith Associates, Architect-Engineers;



A GOOD MANY YEARS AGO Henry Ford recreated, in five of the reconstructed historic buildings at Greenfield Village in Dearborn, the small, personal sort of school he had known as a child. One of the buildings is the Pennsylvania log cabin where William Holmes McGuffey, of *McGuffey Reader* fame, was born.

Today, less than a mile south of Greenfield Village, the city of Dearborn is building the great new Edsel Ford High School shown on these pages. At first glance this new secondary school plant is farther removed from the one-room school than the 1955 automobile is from the Model T. The contrast emphasizes how many more children we try to educate in these days than we did in the 19th century, how much more there is for them to be familiar with today, how much more money we spend per child and in toto on this job, how much educators have learned about the educative process itself and — not to be overly modest — how much architecture can enhance the process. So prominent a position does education occupy now in the public mind that we may sometimes forget that, for years prior to the end of World War II, one did not ordinarily regard it as a pressing problem unless one's own children were having difficulties.

Fortunately most educators and a number of architects were meanwhile substantially occupied with the problems of evolving educational concepts and appropriate buildings to house them. True, most of the emphasis was placed on elementary schools, almost — it seems — without realization that the elementary school child would soon reach high school age, that the birth rate was zooming up, and that more youngsters were tending to stay in school more years. The secondary school now looms as a nation-wide problem of nearly the proportions the elementary school problem had attained only five years ago. Size, cost and nature of the secondary educational program are only three of the horns of this multi-pronged dilemma. Unit schools, campus plans, finger plans — all have been employed; too often, the high school building of the Twenties has merely been enlarged into a monstrous, inhuman monument. At times, too, each of these approaches to the design of a high school has been appropriate; no two school situations are alike and no two design concepts can be expected to be identical.

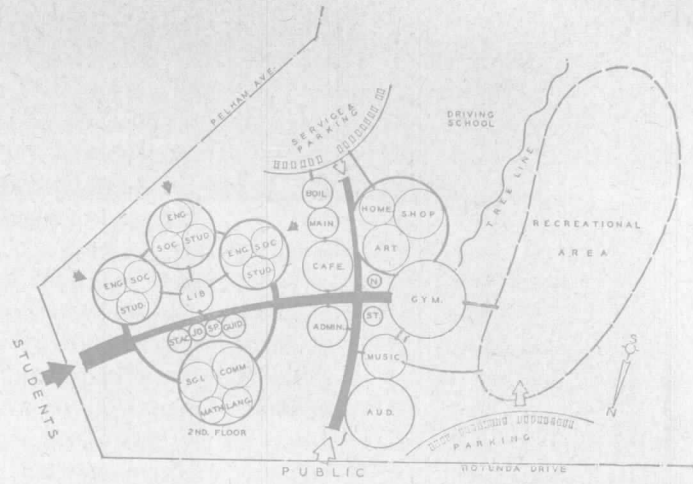
The Edsel Ford High School is an inspiring design of a nature both familiar and new. It retains the compactness and even the impressiveness of the pre-war high school, gaining thereby a unity of purpose and some qualities in which the community's children and adults alike can take pride — gains which some excellent contemporary high schools might be criticized for not having achieved. At the same time, much of Dearborn's new building is low, informal and, as the verbal cliché goes, "human in scale." Economy and appropriateness for this particular design worked hand-in-hand, however (as in good architecture they must), to cause some portions of the school plant to take on a second story and others almost to demand the application of highly imaginative structural techniques. Over the two gymnasiums and the swimming pool are thin-shell barrel vaults, concrete shells only 5 in. thick at the crown, spanning in one instance a room 130 by 110 ft. This type of construction, seldom attempted in this country, is here used for the first time in Michigan; these are the largest "short" barrel vaults in the United States.

But the design is noteworthy for sounder reasons than bigness alone. Its plan is a positive reflection of the Dearborn school system's educational program. Learning is a process which, particularly in an industrial environment, needs to be made a pleasant, friendly, eagerly awaited experience to the student. On the other hand, economics dictated that this school must be planned for 1200 students, with the certain knowledge that, until more secondary facilities now envisioned could be built, at least 1800 would occupy it. The practical

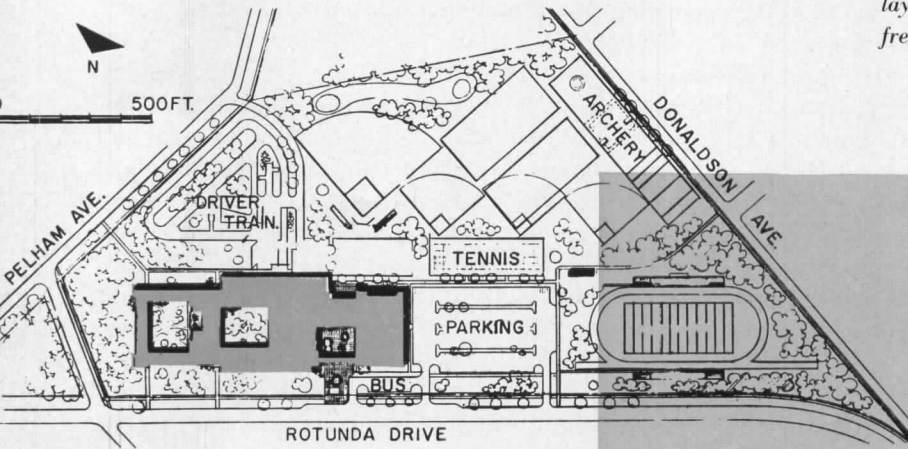
AND INSPIRING

Jonathan A. Taylor, Designer; Stewart S. Kissinger, Project Manager; Arthur T. Bersey, Mechanical Engineer

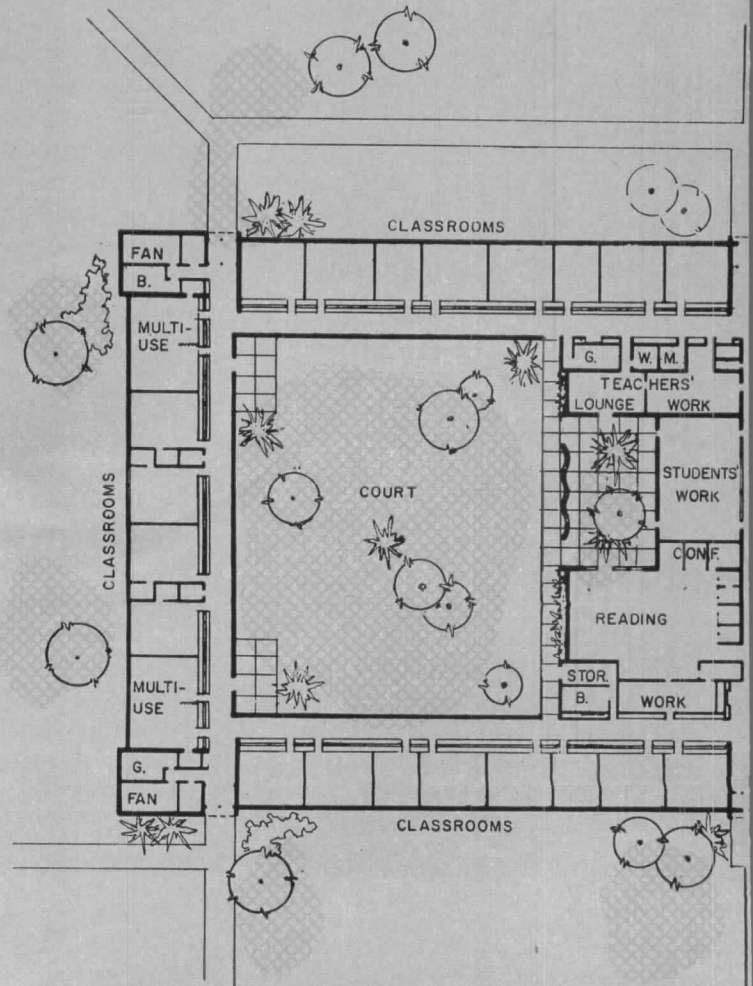
DEARBORN HIGH SCHOOL



Many studies preceded as well as accompanied actual designing. Above, in bubble-diagram form, is represented the organization of activities and areas as determined at one time. Site layout and building design developed from this, improving as fresh possibilities were realized

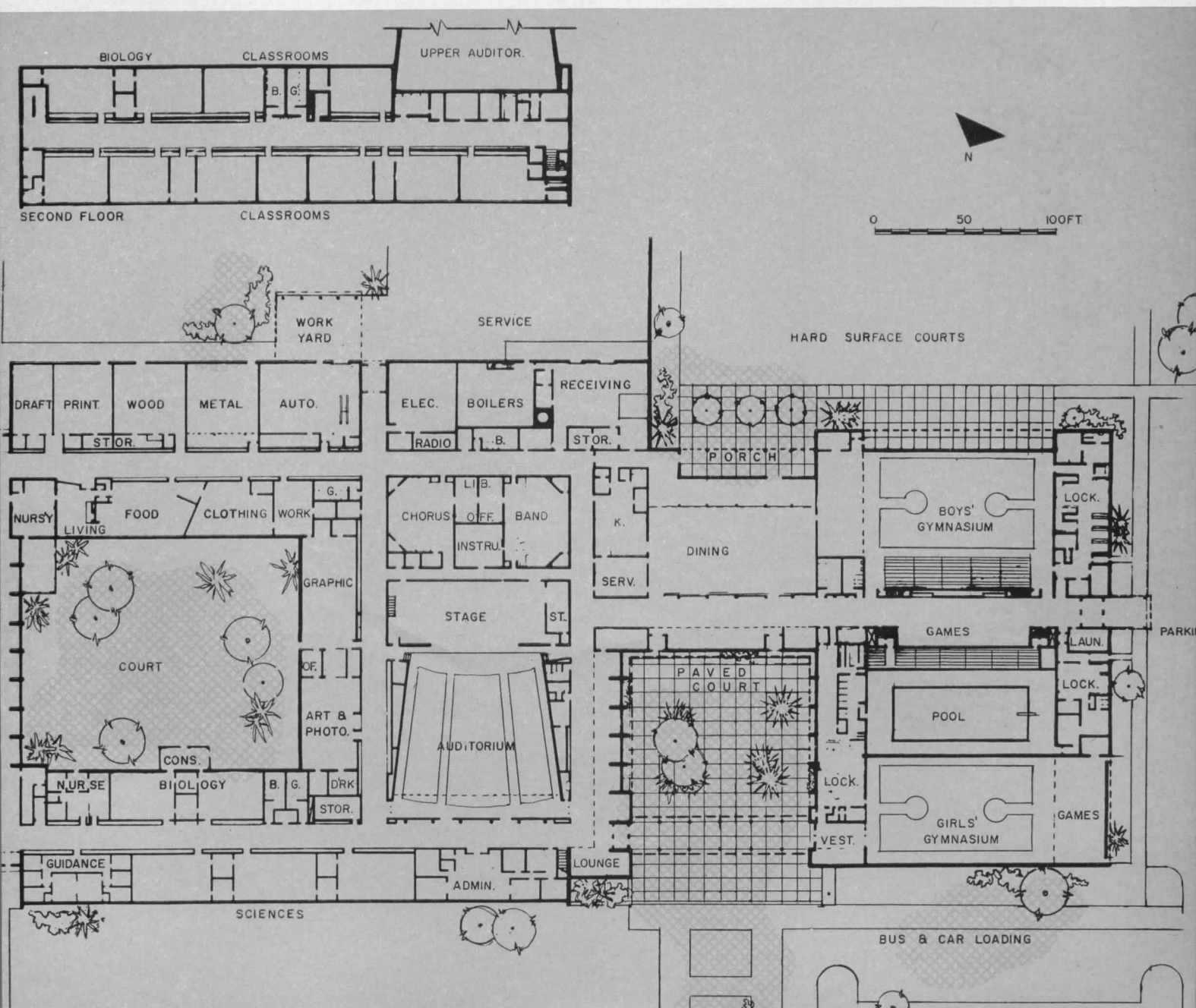


Of the fifty-acre site, twenty acres are heavily wooded, the remainder, mostly in the center, is open and was selected for games and sports fields. There was ample space for a one-story building scheme, although for certain portions two stories seemed best. The plan, right, was developed to accommodate the educational trend in Dearborn toward increasing emphasis on the "common learnings," and to provide a highly integrated activities program. Note the large student work center where cooperating classes may gather to use special equipment for projects. As this teaching technique expands, areas now labeled "multi-use" may become work centers

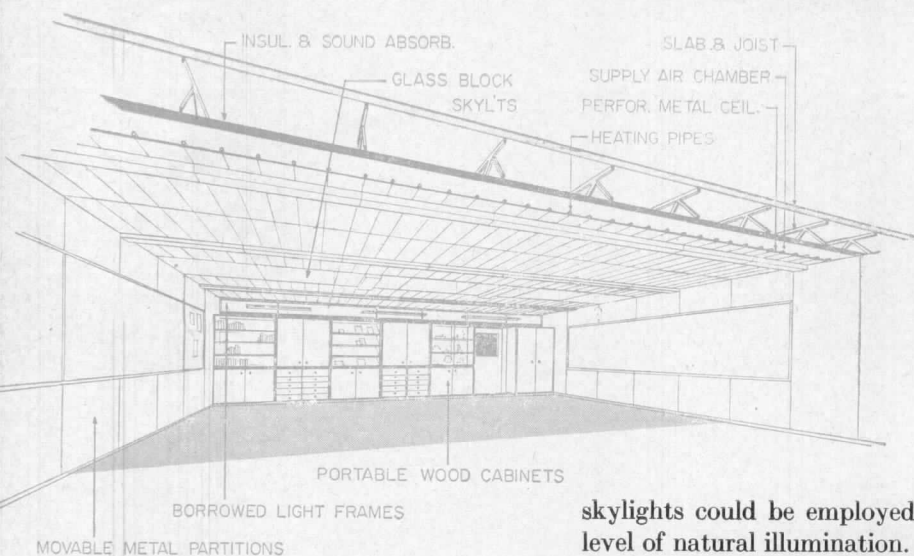
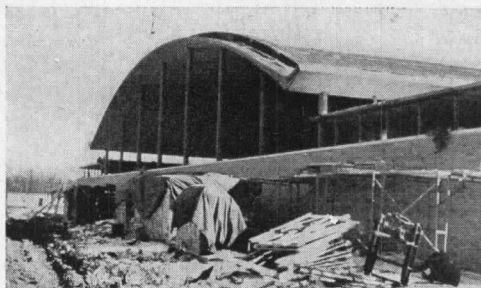
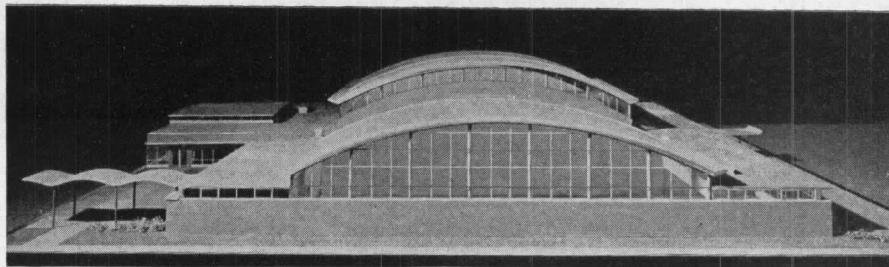


aspects of the problems size created were resolved by employing recognized architectural devices: movable, prefinished wood cabinets in a great variety of types, for instance, but all constructed to modular dimensions so they can be shifted and reorganized easily; demountable, acoustically retardant classroom partitions of steel, likewise easy to rearrange; free-standing steel corridor lockers; continuous perforated metal-pan ceilings, of "snap-on" type, in classroom areas, with radiant heating piping above and two inches of glass fiber over the piping for both thermal and acoustic purposes.

These meet the need for flexibility imposed by expected fluctuations in size of student body. A special, different kind of attention has been paid in design to the problem of making the student feel like a human being among other human beings. The entire building complex is planned around a series of courts, which sounds rather anticlimactic after the emphasis we have placed upon it. An examination of the plan indicates, on the contrary, its great importance. Here again both the imponderable and the practical helped to determine design decisions. To wrap the building units around a series of courts eliminates dead-end corridors, encourages two-way circulation and provides a focus for each group of related spaces. For economy, the "end-on" classroom, deeper than it is wide, was used; it could be since in one-story areas glass block



**DEARBORN
HIGH SCHOOL**



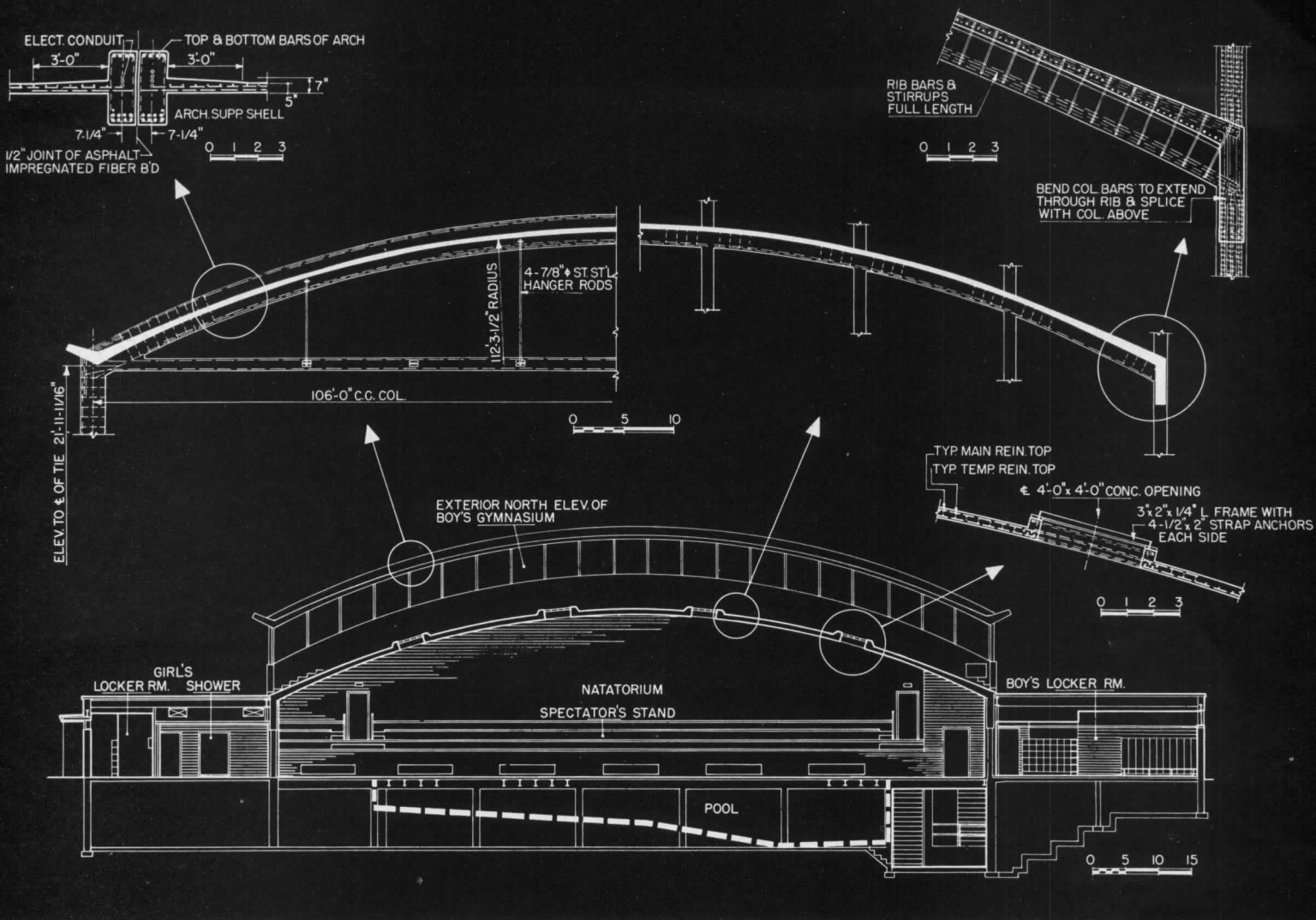
Classroom cabinets are of 4 basic types; there are 20 variations. All a modular dimension, 4 ft, they can be moved and interchanged; they are made of birch, prefinished in a furniture factory. Nearly 700 of these are required for the school, plus numerous special cabinets. Metal classroom partitions are movable, insulated to reduce noise transmission. Metal ceiling contains radiant coils, acoustic absorbent

skylights could be employed to maintain the desired 30-ft-candle minimum level of natural illumination.

At the left of the plan is what might be called the "quiet court," and around it are the more academic classrooms where noise elimination is necessary. Here, too, is the library with its seven adjacent conference, reference and phonograph-listening rooms, and an outdoor reading terrace. "The rooms surrounding the tree-shadowed quiet court," say the architects, "are by intention more cloistered than other portions of the school." In the center of the plan is the "project court," focus for the creative, active parts of the curriculum; grouped around this are classes which can take advantage of the outdoors such as: art, photography; biology, with greenhouse and horticultural beds; and in one corner a nursery school where girls in home-making courses may observe small children through one-way-vision glass, and at times assist in their care.

At the plan's right is the "social court," which not only provides access to parts of the school open to public use, but is also to function as a student forum. Its paved areas are relieved by planting beds; on one side is the student lounge and on another is a game area next to the dining room, for noon-hour recreation. In the dining room students will sit in groups of four to six, not at institutional boards; when the room is cleared of tables, 400 can be accommodated at a dance. The room's full-height sliding glass walls open to the student forum on one side and to a sheltered outdoor eating porch on the other.

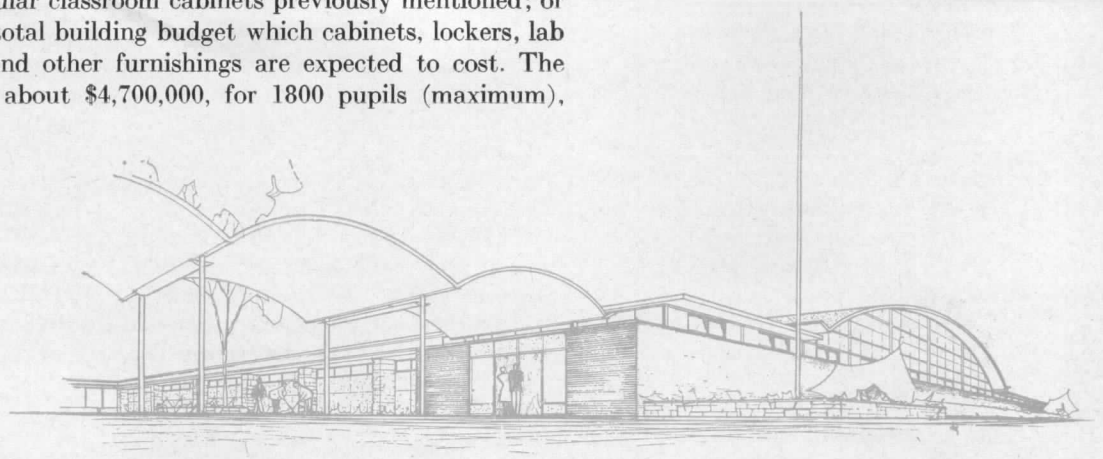
Between the "quiet" and "project" courts is a group of areas accessible to the entire school population, including the library, student work center, teachers' lounge and work center. The organization of spaces around the 900-



seat auditorium is also convenient: band and chorus rooms are directly accessible for ease in handling musical ensembles; beneath the stage are dressing rooms; nearby are the art room and the clothing laboratory so stage sets and costuming can be executed close to their point of use. The five types of shops are toward the rear of the building for noise reduction and easy service; guidance rooms are adjacent to the health suite; the sciences are grouped for proper interrelation and to share offices and storage rooms.

In developing the 50-acre, partly wooded site, the 30-acre center portion has been laid out for nearly every sort of game with, perhaps, more than the usual emphasis on sports that can be carried on into adult life. These recreational facilities are available to the entire community. The expected cost of site development is about \$350,000 including bleachers for 1500, temporary seating for 1000 more, and parking for 450 cars and 600 bicycles. This compares with the \$70,000 cost of the modular classroom cabinets previously mentioned; or with the 15 per cent of the total building budget which cabinets, lockers, lab equipment, desks, seating and other furnishings are expected to cost. The "total building budget" is about \$4,700,000, for 1800 pupils (maximum), in about 204,900 sq ft.

Because gymnasiums have clerestories on all 4 sides their thin shell roofs appear to float above the large rooms. Boys' gymnasium has a pair of shells in barrel-vault form with a double bow-string truss between. Gym ceilings are acoustic tile applied to the concrete. Swimming pool shell has special moisture-proof acoustic treatment of glass fiber behind perforated panels



ECONOMICS OF WOOD HOUSE FRAMING

By William J. LeMessurier

Assistant Professor of Building Engineering and Construction, M.I.T., and partner in the consulting engineering firm, Goldberg and LeMessurier

MAJOR CONCLUSIONS FROM THE HHFA FRAMING STUDIES:

1. Most economical framing was studs and joists, 24 in. o.c., with a flat roof, followed closely by trusses, then rafters with joists. 2. Wide spacings for the primary framing, while decreasing its cost, does not necessarily yield a proportional decrease in the total structure — due to higher cost of finish materials. 3. The difference in cost between trussed framing and flat roof joist framing is so small that the final choice need not be based on economy. 4. Of clear span schemes incorporating trusses — trussed bents, three-hinged arches, and pitched roof trusses — only the last proved practical. 5. Among systems departing from conventional methods, post and beam generally gave the most economical designs. 6. The lack of stress grade lumber in 2 by 4's and smaller causes difficulties in the engineering of house structures. 7. A pitched roof can be built without ceiling joists or ridge girders.

Two aspects of HHFA's analysis have quite some significance: (1) the comprehensiveness of the cost data which makes possible accurate comparisons of costs for the wood framing of residences, and (2) the conclusion one must reach, as for the moment, that the principles of framing economy employed in large buildings do not necessarily apply to residences, and some of the structurally efficient designs cannot be built practically with types and sizes of materials now available. Some examples follow:

The stud wall, while it may seem to be an anachronism, is rather practical because of the convenient spacing for finishing materials — and in addition, it can be tipped up from flat on the floor to save construction time.

Economy in larger buildings is often attained with rigid frame members, but one type of rigid frame for a house, spanning 24 ft, 8 ft o.c., and comprised of three 2 by 12's for girders and 4- by 12-in. columns takes 216 bd ft of lumber; a similar structure designed as simple beams on posts takes only 200 bd ft.

Even the popular post and beam system, which harks back to the old mortise and tenon framing cannot be said to be structurally efficient as used today, but it gives flexible plans at fairly low costs, and has such auxiliary values as ease of installing large glass areas, increase in effective ceiling height and

pleasing appearance of the ceiling.

It's not all dark, however, for efforts to achieve more efficient house framing systems: improved gluing techniques for site fabrication may furnish cheaper trusses; factory production of stressed skin panels may bring their cost down; honeycomb-core panels may work as load bearing walls; more accurate and fuller data on floor and roof loads will make possible more accurate design based on allowable deflection; tests by others have shown that bridging for floor joists is unnecessary most of the time; rafters sheathed with plywood transmit direct stress in rafters to the end walls, eliminating the need for ties.

How Analysis Was Done

In the course of its study the Small Homes Council surveyed the entire field of wood framing, selected 18 systems for detailed analysis, and then proceeded to determine material and labor costs by actually building sample units. The framing systems studied were chosen for their suitability for residential construction, their adaptability to usual methods of assembly and erection, and their representation of a variety of basic structural patterns. Nine of the systems which proved costly or impractical in the initial phases were eliminated before the final comparisons. Since it was essential that all units have equal

structural strength for a valid comparison, the engineering analysis of design loads, materials, and framing methods is a particularly valuable portion of the paper.

All items making up the "shell" of the house were included in the cost comparisons. These items were roof, ceiling, wall, and floor framing; roofing, insulation, and vapor barriers; exterior sheathing; interior and exterior finish materials applied but not decorated; finish floors; and foundation, flashing, and rough grading.

Variables not considered in the comparisons were the cost of interior partitions, doors and windows, interior and exterior trim, plumbing, heating and wiring, and all painting and finishing.

The common denominator of the study was a 1000 sq ft, one-story basementless house. It was assumed without question that a rectangular plan with an unbroken roof line was fundamentally most economical. Circular plans, perhaps theoretically more efficient, were considered impractical to build with available materials. A 24-ft span was used as a basis for all cost data.

Cost data was developed with unusual care. Fully detailed plans were prepared for each structural system using consistent engineering criteria for all designs. Based on these drawings, units of one bay, generally 8 by 24 ft were then constructed to determine labor costs and erection characteristics.

After assembling time data and material quantities, costs for each system were developed based on prevailing wage and material rates in Urbana, Illinois, as of February, 1952. These costs were prorated to apply to a constant base of 100 sq ft of floor area. Although end walls were not actually built for all units, their effect was included in all cost figures. Overhangs of 18 to 24 in. were similarly considered. The cost comparisons do not, it should be noted, include allowance for a general contractor's overhead and profit.

As a subdivision of the cost compari-

A review and interpretation of a report on costs of house structural components, sponsored by the now-terminated Division of Research of the Housing and Home Finance Agency, which was headed by Joseph H. Orendorff. It was conducted at the University of Illinois Small Homes Council under the direction of James T. Lendrum, Director, and is now being published as Housing Research Paper 33, "Material and Labor Analysis, House Framing Systems"

sons, in addition to the major study of primary framing methods, separate evaluations were made of methods of sheathing, wall framing, floor framing, and foundation construction. These comparisons may be summarized as follows:

Roof Sheathing

The important variable in the cost of roof sheathing is the spacing of supports provided by the primary framing. Maximum sheathing economy is provided with supports 24 in. o.c., no advantage being obtained with smaller spacings. The most economical material for this spacing is nominal 1-in. sheathing, applied parallel to the ridge. The cost per thousand square feet is \$245.

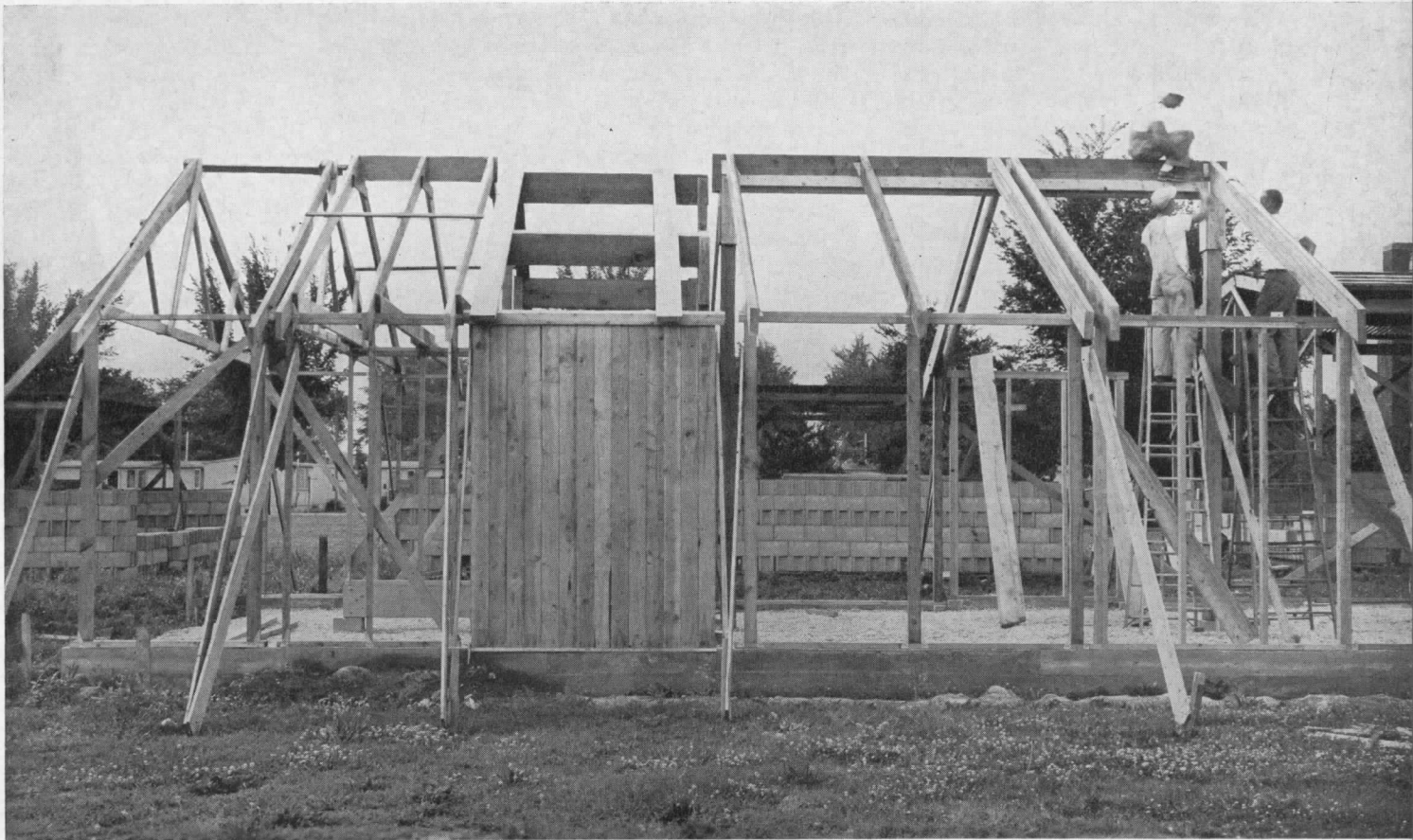
Due to higher material costs, $\frac{3}{8}$ -in. plywood at this spacing is a little greater at \$266.

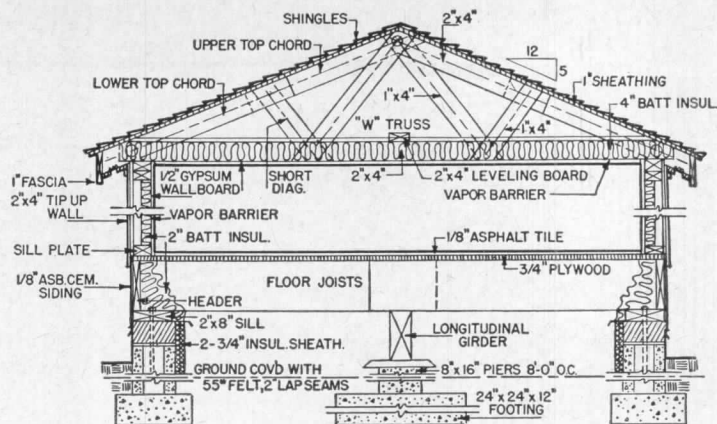
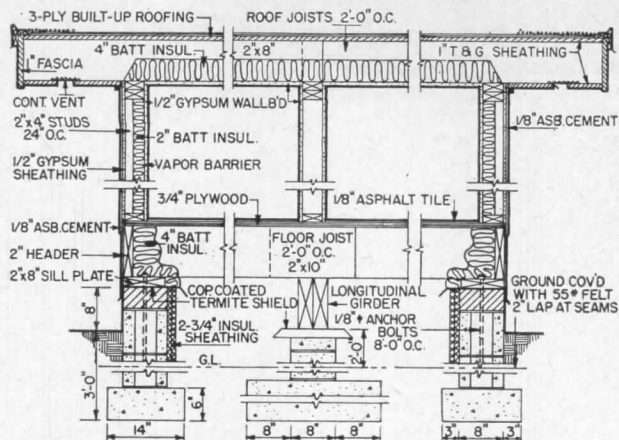
When primary supports are spaced at more than 24 in. o.c. up to 8 ft o.c., sheathing costs increase rapidly. Using 2- by 4-in. purlins at 24 in. o.c. between primary frames, costs become \$368 with nominal 1-in. boards and \$390 with $\frac{3}{8}$ -in. plywood. Nominal 2-in. planking, surfaced four sides, supported at 4 ft o.c. costs \$481, while tongued and grooved planking in the same thickness costs \$544 at spans up to 8 ft o.c. Most costly is $\frac{3}{4}$ -in. plywood spanning 4 ft with blocking 4 ft o.c. at right angles to main supports. This system comes to \$563, or more than twice the cost of sheathing supported at 2 ft o.c.

It is obvious that the increase in roof sheathing cost with span will largely offset economies gained by increasing the spacing of the primary supports. This principle is borne out in the data on total costs.

Floor Framing

Preliminary investigation of floor framing with the goal of finding the most economical system, including finish flooring, showed that asphalt tile and $\frac{3}{4}$ -in. plywood subfloor over joists 24 in. o.c. gave best results. With a longitudinal girder supporting floor, bearing partition, and roof, this system cost \$930 for 1000 sq ft. With the girder supporting the floor only, as is the case when trusses are used for roof framing, the




1. Conventional joists and load-bearing stud walls
2. Trussed rafters and load-bearing stud walls

cost of floor framing is reduced to \$920.

Floor framing costs for post and beam systems showed little difference. The most economical system consisted of beams 8 ft o.c. with purlins 2 ft o.c. and 3/4-in. plywood, costing \$930. The similar case with beams 6 ft o.c. cost \$960 while beams 6 ft o.c. used with nominal 2 in. tongued and grooved planking cost \$950.

For all of the floor framing systems, cost of asphalt tile finish floor was \$280.

Wall Framing

The study of wall framing showed that construction assembly and erection procedures significantly affected costs. Conventional stud walls fabricated on the floor and tipped-up into place, including exterior, interior finish and insulation, cost \$720 for flat roof framing.

The effect of gable ends raised this cost to \$790 for rafter and joist framing. Asbestos-cement fiberboard laminated panels also cost \$720 when used with flat roof post and beam framing with posts at 4 ft o.c. and floor slab construction. The most economical wall framing used with post and beam construction consisted of tip-up panels and posts 8 ft o.c. costing \$710 for flat roofs and \$860 for pitched roofs.

Exterior and Interior Finish Materials

A separate study was made to determine the most economical and satisfactory finish materials. Fundamental to this study was the assumption that dry materials would give lowest costs and plaster was not, therefore, considered as

an interior finish. The finishes chosen for use with framing members spaced at 24 in. o.c. are as follows:

Interior: 1/2 in. by 4 ft by 8 ft gypsum board with taped joints.

Sheathing: 1/2 in. by 4 ft by 8 ft gypsum sheathing and 1- by 4-in. let-in diagonal braces at corners.

Exterior: 1/8 in. by 4 ft by 8 ft asbestos-cement sheets with 1- by 2-in. wood battens at nail lines and joints.

Where framing members were spaced at intervals larger than 24 in. o.c., other materials were used. For roofs of post and beam framing with bays 6 ft o.c. and 8 ft o.c., exposed 2-in. nominal planking was the finish ceiling.

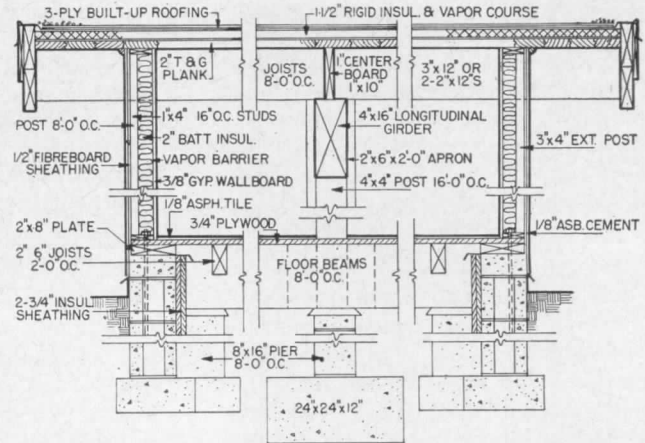
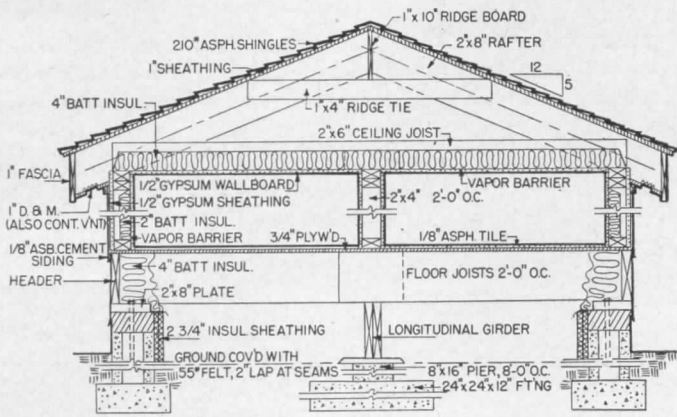
Foundations

An extensive study of foundations

TABLE 1. COST OF ROOF AND CEILING FOR 1000 SQUARE FEET

FRAMING TYPE	ROOF TYPE	PRIMARY FRAME	SHEATHING, ROOFING AND PURLINS	INSULATION	CEILING	TOTAL	RATIO TO LOWEST
Joists 2' o.c.	Flat	\$150	\$440	\$100	\$180	\$870	1.00
Trusses 2' o.c.	Pitched	250	400	100	150	900	1.03
Rafters & Joists 2' o.c.	Pitched	310	400	100	180	990	1.14
Trusses 8' o.c.	Pitched	160	530	100	240	1030	1.18
Trusses 6' o.c.	Pitched	200	540	100	250	1090	1.25
Post & Beam 4' o.c.	Flat	200	920 *	—	—	1120	1.29
Trusses 4' o.c.	Pitched	230	560	100	240	1130	1.30
Quarter Beams	Flat	120	710	340	—	1170	1.34
Quarter Beams	Pitched	140	680	370	—	1200	1.38
Post & Beam 8' o.c.	Flat	160	710	350	—	1220	1.40
Post & Beam 6' o.c.	Flat	170	710	350	—	1230	1.41
Post & Beam 8' o.c.	Pitched	200	700	370	—	1270	1.46
Post & Beam 6' o.c.	Pitched	200	700	370	—	1270	1.46
Post & Beam 4' o.c.	Pitched	240	700	370	—	1310	1.51

* Asbestos cement fiberboard laminated panels and built-up roof



3. Conventional rafters and load-bearing stud walls

was not made as part of this project. While foundations of the grade beam and pier variety may have advantages over the conventional type, they were not studied, because the variables of soil type, presence or absence of frost action, and the relative importance of heat losses were too complex to evaluate. The conventional foundation used with post and beam framing is more expensive than when used with joist framing because of the extra cost of forming piers. For this reason, and because the study at this point had shown joist framing to be most economical, foundations for post and beam framing were not evaluated.

A comparison of slab construction versus crawl space was made for the two most economical types of framing.

Floor joists 24 in. o.c. with flat roof and crawl space construction cost \$440 more than slab construction. For pitched roof trusses 24 in. o.c. the difference was \$490. Slab construction is relatively cheaper with trusses than with joists because no footing is required for a center bearing partition.

SYSTEMS ANALYZED FOR COSTS

Flat Roof Joist Construction

As will be seen in Tables 1 and 2, flat roof construction with joists 24 in. o.c. is the most economical type of house framing. This structural scheme is the most traditional of those studied. The essential character of this type is gov-

4. Post and beam with non-structural stud walls

erned by the central bearing partition used to support the joists. In general the construction is standard with stud walls, 1-in. roof sheathing, batt insulation, and 3-ply built-up roof. Wall materials are as indicated before.

Rafters and Ceiling Joists

This system is also traditional and is similar to the corresponding flat roof construction in requiring the use of an interior bearing partition to carry the ceiling joists. All primary framing members are 24 in. o.c. and the roof is shingled with asphalt shingles. Other materials are, in general, identical with those used for flat roof construction.

It should be noted that the combination of rafters and ceiling joists is essentially a form of truss framing. The de-

TABLE 2. COST OF ROOF, CEILING, WALLS AND FINISH FOR 1000 SQUARE FEET

FRAMING TYPE	ROOF TYPE	ROOF AND CEILING	WALLS* AND FINISH	TOTAL	RATIO TO LOWEST
Joists 2' o.c.	Flat	\$870	\$720	\$1590	1.00
Trusses 2' o.c.	Pitched	900	760	1660	1.04
Rafters & Joists 2' o.c.	Pitched	990	790	1780	1.12
Trusses 8' o.c.	Pitched	1030	760	1790	1.13
Post & Beam 4' o.c.	Flat	1110	720 ¹	1830	1.15
Trusses 6' o.c.	Pitched	1090	760	1850	1.16
Trusses 4' o.c.	Pitched	1130	760	1890	1.19
Post & Beam 8' o.c.	Flat	1220	710 ³	1930	1.21
Post & Beam 6' o.c.	Flat	1230	750 ³	1980	1.25
Quarter Beams	Flat	1170	960	2130	1.34
Post & Beam 8' o.c.	Pitched	1270	860 ³	2130	1.34
Post & Beam 4' o.c.	Pitched	1310	840 ¹	2150	1.35
Post & Beam 6' o.c.	Pitched	1270	910 ³	2180	1.37
Quarter Beams	Pitched	1200	1120 ²	2320	1.46

* All walls 2x4" studs, 24" o.c., covered by sheathing, asbestos cement exterior finish, gypsum dry wall interior finish, except as noted below
¹ 2" asbestos cement laminate both exterior and interior surfacing; cost on slab foundation only
² 3" T&G with 1x2" strapping and reflective insulation
³ 1x4" studs, 16" o.c., asbestos cement exterior, gypsum dry wall interior

sign was carefully engineered on this principle and the connections of joists to rafters were made with sufficient strength to develop truss action.

Trusses

Although several clear span schemes using trusses were studied — trussed bents, three-hinged arches, and pitched roof trusses — only the last type proved economical. These trusses were of the Fink type with diagonals at the quarter points of the top chord and at the third points of the bottom chord. While larger spacings were considered as a means of economy in the trusses, the great savings in sheathing and finishing materials made a spacing of 24 in. o.c. clearly the most efficient. Since the trusses do not require the use of an interior bearing partition, this system is the most economical when planning requires a clear span of 24 ft or more. Furthermore, considering the total shell cost of slab construction, trussed framing at the 24-ft span is \$2920 while flat roof joist framing is \$2900. This insignificant difference means that the final choice between flat and pitched roofs need not be based on economic considerations.

Post and Beam Construction

Among those structural schemes which depart from conventional methods, the post and beam system generally gave the most economical designs. Two types of post and beam framing were studied: the first ("post and beam" in tables), having beams parallel to the 24-ft dimension of the house and an interior girder paralleling the long walls, is the more common variety; the second, called quarter-beam framing, used beams supported by interior posts with the beams 6 ft o.c. and running parallel to the long walls. In both cases, nominal 2-in. sheathing was used between beams, with the single exception that asbestos cement fiberboard laminates were used with posts and beams 4 ft o.c.

The quarter beam system gave the most efficient primary frame of any system studied, but complexities of wall framing made the total costs of this scheme higher than the other post and beam arrangements. With beams parallel to the 24 ft span, maximum economy was achieved by using 4 ft o.c. spacing and asbestos cement fiberboard laminate panels. Slightly more expensive (\$100 in the total of roof and wall costs) was the case with beams at 8 ft o.c. and 2-in. plank. In both of these systems the cen-

tral girder spanned 16 ft between posts, giving unusual freedom to planning, there being only two interior posts in a house 40-ft long.

Comparison of Framing Systems

Tables 1 and 2 summarize the cost data of the HHFA paper, giving total costs of roof construction and the cost of roofs and walls combined, respectively. Examination of these data will show several important facts. Of outstanding importance is the approximately inverse relation of the cost of the primary framing to the cost of sheathing and finishing. It can be easily shown that the cost of primary frames decreases as spacings increase. All members become more heavily loaded and consequently work more efficiently. This is a well-known principle. Sheathing and finishing materials, however, become more and more expensive as their span increases, and this rise in cost more than offsets savings in the primary frame. For these reasons, it can be seen that the three systems — joists, rafters, trusses — with primary structural element spaced at 24 in. o.c. give the least total superstructure cost.

When spacings are increased above 24 in. o.c. the economy relations change abruptly. Since nominal 2-in. planking or 2 by 4-in. purlins can span 8 ft, 8 ft o.c. spacings of primary supports lead to lower costs than spacings of 6 ft or 4 ft for the same sheathing system. The economy here is realized in savings in the primary structure. (The exception to this rule of flat-roofed post and beam with 4-ft o.c. spacings is explained by the special asbestos-cement panels used for sheathing, insulation, and finish ceiling.)

In view of the current interest in post and beam framing, it is interesting to note the higher cost of this system when compared to a flat roof built of joists 24 in. o.c. The combined cost of walls and roof, post and beam, with 8 ft o.c. bays and 2-in. planking, is 21 per cent higher than joisted construction. A large part of this difference (\$250 out of a total difference of \$340) is accounted for by the cost of 1½-in. rigid insulation compared to 4-in. batts. The \$90 remaining in the cost difference between these two types represents the higher cost of 2-in. planking, compared with 1-in. sheathing and a separate ceiling of ½-in. gypsum board.

The Small Homes Council has made a

diligent effort to discover the most economical framing system for houses, and we should not be surprised to learn that joists and a flat roof achieve the lowest cost. *This fact demonstrates that principles of structural economy developed for larger buildings cannot be extended to house construction without careful examination. The relation of finish materials to structure is so critical in the economics of house construction that any cost evaluation which neglects consideration of them is valueless.*

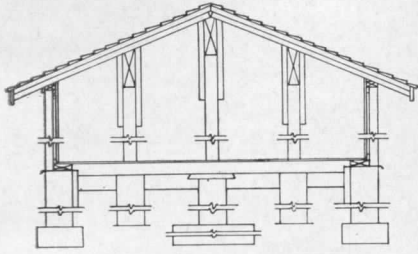
HHFA's paper will be of great usefulness to architects in choosing structural schemes, even though their choices may not be the most economical. It is important to know the premium paid for a slightly more expensive system. A cost differential of 34 cents per sq ft may be a small price to pay to gain the architectural values of post and beam framing, which may be lacking in joisted construction.

Limitations of the Study

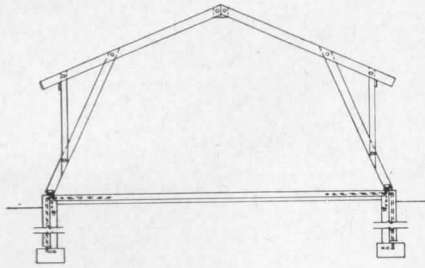
Any comparison of costs on a product as complicated as a house must, by necessity, be limited in terms of variables considered. The Small Homes Council and HHFA are to be praised, therefore, for the breadth and scope of their study. Certainly, no other investigation of this kind has examined so many different structural schemes with such thoroughness. There are, however, several restrictions which must be placed on the results.

First, and perhaps most important, it must be understood that the cost data given by HHFA are based on methods for building single houses one at a time. It is certain that the volume builder can cut material costs through quantity purchases, and in some cases can reduce the labor costs through production line assembly. An obvious place for the latter type of savings would be in the fabrication of roof trusses.

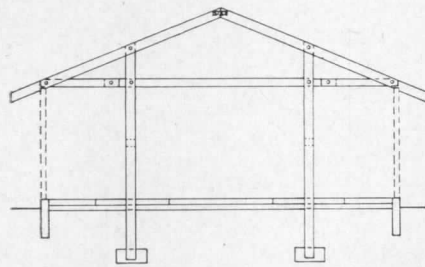
Another aspect of the study, which must be noted, is the wide variation in the adaptability of the structural schemes to different architectural plans. The least expensive, joists at 24 in. o.c., is also the least adaptable, since an essential part of the scheme is the use of an interior bearing partition. (Furthermore, HHFA, in its cost data, does not include the cost of this partition. While this may be justified, an objection may be raised to the inclusion of the cost of interior supports in totals in the case of post and



Plank and quarter beams



Three-hinged arch



Trussed bents, curtain walls

The 18 systems selected for analysis were: 1, 2. conventional stud wall, pitched and flat roofs; 3, 4, 5. trusses 2 to 8 ft o.c.; 6, 7, 8. post and beam 4 to 8 ft o.c.; 9. plank and quarter beams; 10. rigid frames, 8 ft o.c.; 11. stressed skin panels; 12. walls comprised of spandrel and lintel girders; 13. honeycomb-core panels; 14. semi-rigid trussed bents, 8 ft o.c.; 15. trussed bents, 8 ft o.c., columns at quarter points; 16. three-hinged arch; 17. walls of trussed frames; 18. rigid posts 8 ft o.c. with lateral girts

beam framing. In the case of posts and beams at 8 ft o.c., the use of interior posts at the same spacing as the beams would reduce the cost of this system by approximately \$60, whereas ridge girders spanning 16 ft were actually used.) Since a rectangular plan was assumed in all cases, departure from this will change relative cost data. Joists and rafters are, for example, more adaptable to irregular plans than trussed framing.

Other Schemes Considered

Among other schemes studied, several merit discussion here. Because of its applications in prefabricated construction, the stressed-skin panel system is of special interest. The Small Homes Council made a special investigation of the cost of 4- by 8-ft panels to be used as roof members or wall panels spanning between primary supports, 8 ft o.c. The panels were built of 1- by 3-in. ribs, 12 in. o.c., and $\frac{1}{4}$ -in. plywood faces, and the total cost for these materials was 42 cents per square foot. For comparison, it was found that a nailed panel, having no stressed-skin action, could be built of 1- by 4-in. ribs, 16 in. o.c., faced with $\frac{1}{2}$ -in. fiberboard sheathing and $\frac{3}{8}$ -in. gypsum drywall and taping, for 24 cents per square foot, material cost. As HHFA points out, the relatively high cost of plywood to other materials casts doubts on the economy of plywood stressed-skin panels in the sizes studied. No study was made of panels serving as primary structure for spans longer than 8 ft, and it is probable that only in this range do stressed-skin panels become truly efficient cost wise.

Two framing systems were investigated which are rigid bents, capable of independently carrying both vertical and lateral loads. The trussed bent system, suggested by architect Rene de Blonay of New Haven, Connecticut, uses pitched top chord trusses, supported at the $\frac{1}{4}$ and $\frac{3}{4}$ points of their span by interior posts. Using these frames at 8 ft o.c., it was found that they were a very costly primary structure. (\$370 for the trussed bents versus \$160 for regular roof trusses at the same spacing.) Although material costs were also high, the major difficulty with this scheme was erecting the bents.

The second rigid system, three-hinged arches spaced at 8 ft o.c., cost \$310 for the primary frame. Of this total cost, \$200 was for material and \$110 for labor. This scheme was also much less efficient

than ordinary roof trusses, and had the further defect of awkwardly cutting into the interior space.

Structural Factors Considered

In any comparative study of building costs it is essential, for realistic comparisons, that all systems studied have approximately equal resistance to loads. It was necessary, therefore, for the Small Homes Council to undertake a study of structural factors and methods as part of their work. Of prime importance was the choice of live loads. Based on examination of a variety of building codes, floor loads were taken as 40 psf and snow loads on both flat and pitched roofs were 20 psf on the horizontal projection. For wind loads, the recommendations of the *Building Code Requirements for New Dwelling Construction—BMS 107*, United States Department of Commerce, were followed. In general, maximum forces of 18 psf normal to walls, and 23 psf outward force normal to flat and pitched roofs were used.

Investigation of strength properties of building materials discovered many deficiencies in available information. The lack of stress graded lumber to meet the structural needs of house construction was a particular difficulty. Specified material for this study was the 1100 psi stress grade. In Southern Pine, 1100 psi grade is limited to 2-in. thickness. No Douglas Fir (C.R.) lumber graded for bending stresses is available in the 2 by 4 and smaller sizes (1100 psi grade applies to members 2 to 4 in. thick and 6 in. and wider).

In its study of pitched roofs, the Small Homes Council reviewed ordinary practice in the light of engineering principles, and concluded that it is possible to build a satisfactory pitched roof without ceiling joists or ridge girders. A design was made for a house 24 by 40 ft using rafters sheathed with $\frac{3}{8}$ -in. plywood, nailed on 4-in. centers with 8d nails on all edges. Calculations showed that this combination of rafters and sheathing was sufficiently strong to transmit all outward thrusts to end walls, thus creating a clear span framing system requiring supports only at the perimeter of the house. Such construction offers especially good resistance to wind loads. Unfortunately, this framing technique was not evaluated in the cost analyses, but it seems possible that it might have advantages as a particularly economical clear span framing method.

LIGHTWEIGHT METALS MAKE "SUPERSTRUCTURE" ADDITIONS FEASIBLE

Welded aluminum alloy structural members frame a second-story addition to an office building

An all-welded aluminum alloy structural frame rests on the 26-ft-wide by 75-ft-long flat roof of the single-story Ferodo Company office building in Chapel-en-Frith, England.

Lightness and ease of handling large prefabricated sections were the main advantages of the aluminum construction, said H. C. Husband, consulting engineer. In spite of adverse weather conditions, a team of four men, including a foreman, erected the whole structure in 382 man-hours. The heaviest element used in the frame weighed only 224 lb.

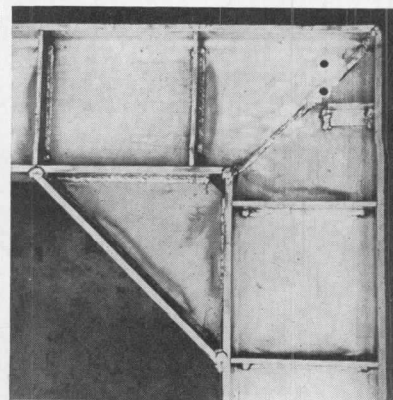
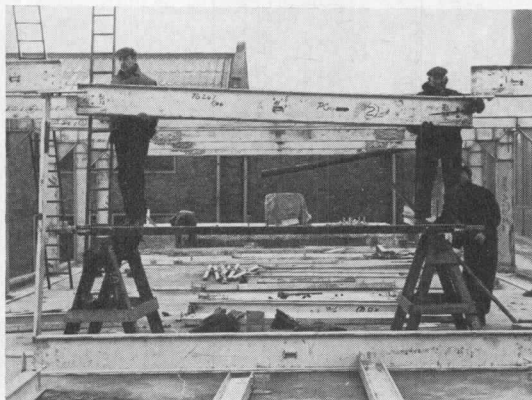
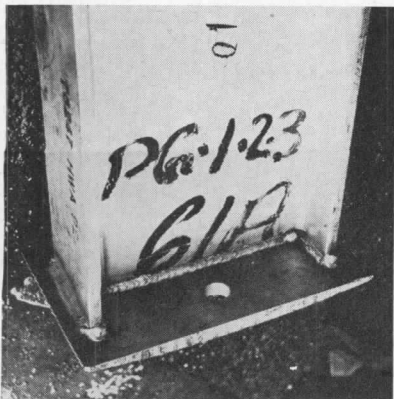
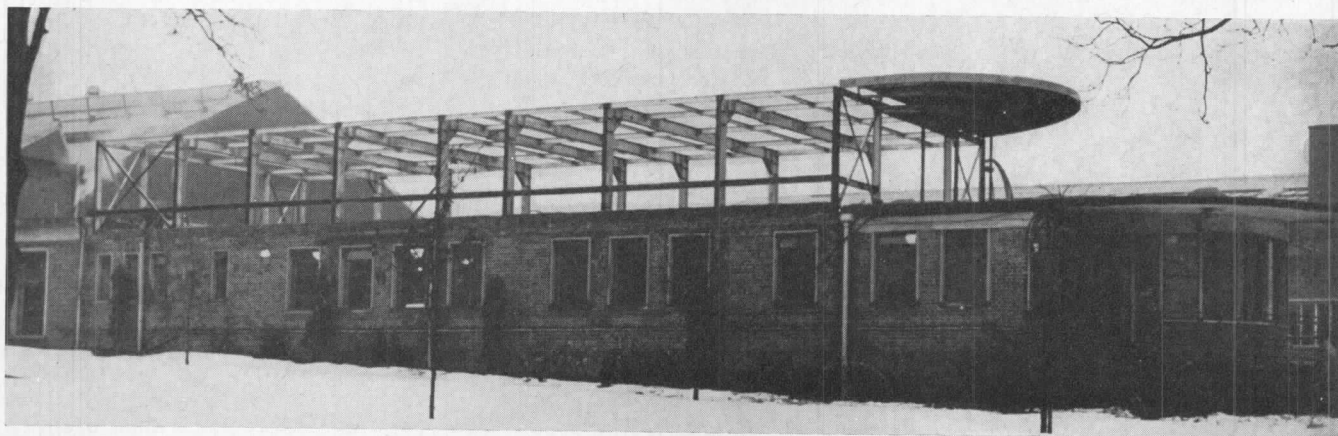
The welded rigid frame structure was designed to eliminate any bending moment on the walls of the existing building due to the fixing of the column bases. A two-pinned frame design was

adopted for the main supports, with a special welded knee-joint detail (shown below right). An interesting base plate design, as pictured at left below, is curved to form a rocker which takes much of the load. The legs of the frame are welded to the base plate. The welded frame structure was practical also in this case, since the depth of the rafter had to be kept to a minimum anyway.

Flat aluminum alloy sheets cover the roof, and a false ceiling of flat asbestos sheets is suspended from the underside of the plate girders. A semicircular canopy cantilevered from the front of the framework consists of five aluminum alloy plate girders extending radially from the main structure and supported at the center by thin steel columns.

Head Wrightson Aluminium Ltd., English specialists in aluminum fabrication who designed, fabricated and erected the structure, point out that the initial cost of an aluminum alloy structure will be higher than a similar one in steel but that the following secondary advantages are sometimes desirable:

1. Saving on foundations to support the lightweight structure.
2. Reduced cost of machinery for moving elements.
3. Reduced transportation costs and erection time.
4. Lower maintenance costs. In most cases it is unnecessary to paint aluminum.
5. High disposal value of aluminum scrap.



Many overcrowded buildings can expand in only one direction — upwards. Lightweight metals make it possible by minimizing the dead weight on the existing foundations. Here are two recent examples

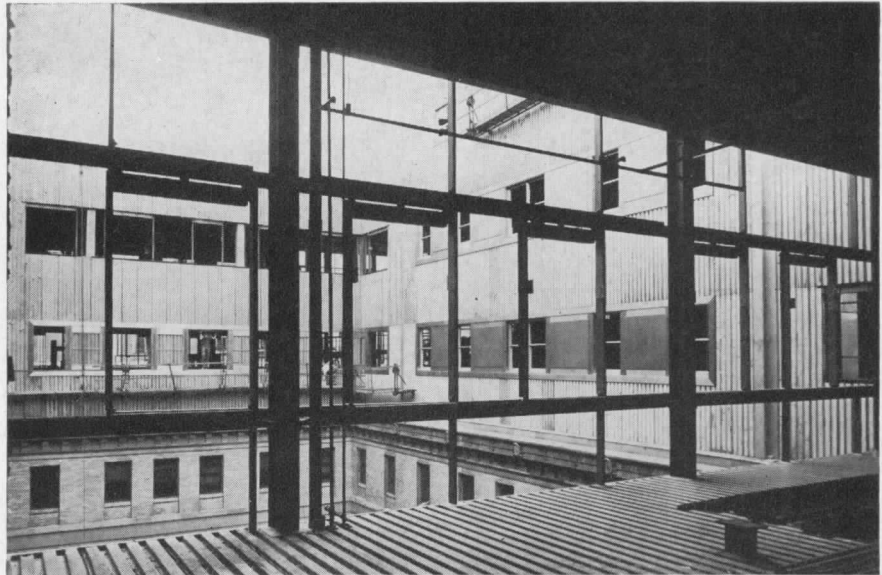
Insulated, prefabricated, stainless steel curtain wall panels enclose a city hospital addition

A sandwich-type, prefabricated, fire-code-approved curtain wall was erected on top of New York City's Bellevue Hospital after engineering investigations revealed that the structure could not support a masonry addition. Masonry construction that would have satisfied New York City's fire code would have weighed 140 psf, and the heavy structural steel needed to support this dead weight would have further burdened the old foundation. Consequently the architects, Fellheimer and Wagner, recommended insulated stainless steel panels that weigh only 14 psf and satisfy fire codes.

Each panel consists of a sandwich of metal and insulation. Twenty-gauge 2-D finish stainless steel, cold-rolled to a fluted cross section, is on the weather side, and a galvanized sheet of steel on the other. Two layers of 10-lb mineral wool, one layer of unsaturated asbestos felt and two sheets of gypsum board make up the filling, as shown in the photograph at the right.

The panels are shaped to fit on top of each other with an overlap of about 2 in. The bottom panel is die-formed with a slight inset, so that a smooth exterior is formed. The interior sheets of the panels butt against each other, making good walls that require only a decorative coating. No auxiliary installation or additional fireproofing is required. The thin, heat-resistant panels provide 2-hr fire protection, and their insulation value is superior to 12 in. of brick.

The penthouse addition was made by tying into the existing columns and erecting a light structural framework above what was once the roof, leaving a crawl space under the new eighth floor. Another weight-saving feature is the light-gauge, cold-formed floors, which have great strength with little bulk. The floor panels are fluted, so that wiring installation is simplified and future electrical obsolescence is prevented.

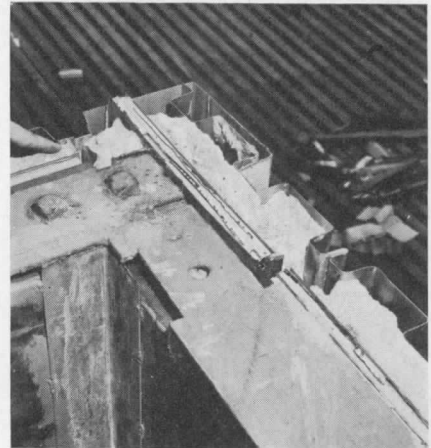


The prefabricated panels, of standard 2-ft widths and varying lengths, were identified for position before erection. They were hoisted into place, bolted at two points on the upper end and then welded to the structural steel with short beads on 1-ft centers, the entire operation for one panel being a matter of minutes. The stainless steel trim, coping, soffits, fascia, flashing and window panels were also completely fabricated and marked for position before delivery to the job site.

Although the texture of the panels harmonizes with the brick, sections of brickwork were carried up into some lower areas of the penthouse to avoid too severe a horizontal line.

Quicker completion of the construction and lower erection costs kept the job within the specified \$2¼ million budget. The panels were fabricated and erected by the H. H. Robertson Co., which claimed that they had, in addition to high fire resistance and strength-to-weight ratio, high durability, weather-tightness and freedom from maintenance.

(Roundup continued on page 240)



TIMBER TRUSSES

• The following new catalogs are available from *Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C.*:

The 1955 edition of *Teco Products and Service Catalog* contains a roster of timber fabricators equipped to supply fabricated lumber ready for assembly into roof trusses.

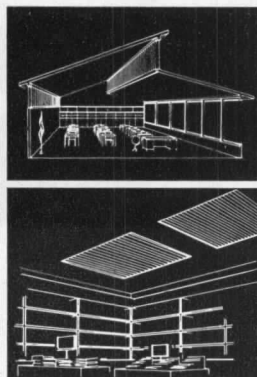
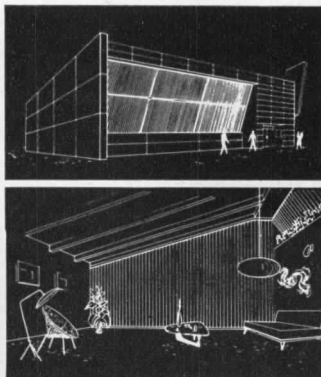
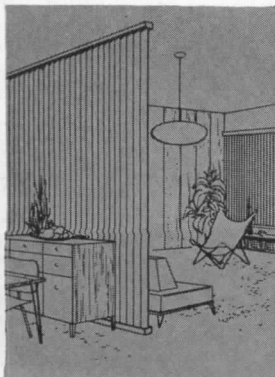
Typical Designs of Timber Structures, in a new edition, includes 102 typical designs that illustrate suggested methods of Teco timber connector wood framing for commonly encountered structural problems in timber roof trusses, bridges, towers, hangers, bleachers and farm buildings.

Copies of five new typical designs (Nos. 629 to 633) of segmental bowstring timber trusses, for spans of 60 to 100 ft, are available. Design No. 636 is a new segmental bowstring timber rafter for spans of 34 to 50 ft with 4-ft spacing.

Clear Span Wood Roof Trusses has been prepared as a guide for the selection of the proper and most economical roof truss design for particular building projects.

STAIR TREADS

• *Tri-Lok grating and stair treads* are explained in a 16-page brochure containing illustrations of applications and installation and a series of tables listing the grating weights, sizes and safe bearing loads. *Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa.**



Details, specifications and illustrations of the applications of *Lowerdrape* vertical blinds are included in a 4-page folder

• *Stage lighting* information and equipment is presented in three new bulletins from *Century Lighting, Inc., 521 West 43rd St., New York 36, N. Y.**

The C-I Board describes the first all-electronic system — the Century-Izenour system — for stage lighting control. 10 pp, illus.

Catalog 4 covers television lighting equipment. 24 pp, illus.

STAGE LIGHTING EQUIPMENT

Stage Lighting Facilities for the School and Community Theater includes lists of equipment and recommended quantities for each type of theater. 8 pp, illus.

• *Lighting Control Switchboards* for schools, universities, theaters, TV studios, and auditoriums are cataloged in a 21-page illustrated bulletin, with circuit diagrams. *General Electric Co., Distribution Assemblies Dept., Plainville, Conn.**

AIR CLEANERS, CONDITIONERS

• *Electronic air cleaners* for homes are described in an 8-page brochure, which includes section drawings and specifications. *Electro-Air Cleaner Co., 1285 Reedsdale St., Pittsburgh 33, Pa.*

METAL BULLETIN

• *Architectural Metal Bulletin No. 20* gives illustrations and detail drawings of the Philadelphia International Air Terminal. *Natl Assoc. of Architectural Metal Mfrs., 228 N. LaSalle St., Chicago, Ill.*

MOISTURE PROTECTION

• *Protect New Home Construction from Destructive Moisture* explains the cause and effect of destructive moisture and includes illustrations and a description of *Seallight* premolded membrane vapor seal. *W. R. Meadows, Inc., Elgin, Ill.**

*Other product information in *Sweet's Architectural File, 1955.*

FIRE PROTECTION

• Information on *metal lath membrane fireproofing* for steel structures is available in the revised edition of *Technical Bulletin No. 3*. Specifications and descriptions of metal lath membrane fireproofings as well as details and fire resistive ratings for columns, beams, girders, trusses and floor and roof deck assemblies are included. 22 pp. *Metal Lath Mfrs. Assoc., Engineers Bldg., Cleveland, Ohio.**

• *Firesafe Churches* gives details of church construction and remodeling jobs using vermiculite plaster aggregate, insulating concrete, insulating fill, acoustical plastic and precast concrete roof tile. *Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.**

• A folder containing literature giving data and information on the design and fire resistance of machine-applied vermiculite concrete walls can be obtained from the *Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill.*

PORCELAIN PANELS

• A 12-page, illustrated catalog covers the subject of *porcelain enamel panels* and includes architect's details and methods of application. *Davidson Enamel Products, Inc., 1109 E. Kibby St., Lima, Ohio.**

DICTAPHONES

• *Telecord dictation systems*, basic installation, manual and automatic selection and dictaphone service are covered in a 12-page illustrated brochure from *Dictaphone Corp., 420 Lexington Ave., New York 17, N. Y.**

(Continued on page 288)

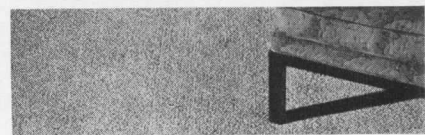
HOME FURNISHINGS PRODUCTS CITED. *Eleven products from a field of over 300 entries in the National Home Fashions League's fifth annual competition have won Trail Blazer Awards for representing "a genuine departure in the design and styling of contemporary home furnishings, and a significant contribution toward the advancement of the industry as a whole." Professor James Marsten Fitch, of the School of Architecture at Columbia University, who served on the awards jury, explained the significance of the winners at award ceremonies. Each of the winners, some of which are shown below, is mass-produced in the United States and was introduced between June 1, 1954 and Feb. 15, 1955.*

Wall refrigerator-freezer combination, cited as best in "Major Equipment" and also winner of an honorable mention in the 58th Annual Gold Medal Exhibition of the Architectural League of New York, hangs on the wall and looks like a kitchen cabinet. Available in the G-E "Mix-or-Match" five colors and white, the unit has an 8.7-cu ft refrigerator section and a 2-cu ft freezer compartment. Doors open by means of finger grips at the base, so there are no protruding handles, and they are sealed closed by a magnetic device. Panels along the bottoms of the doors are replaceable so that they can match the design and material of the counter top. *General Electric Co., Major Appliance Div., Appliance Park, Louisville 1, Ky.*



Color-flecked steel kitchen cabinets, winner in the "Finishes — Hard Surface" class, are available in six color-flecked shades to color-match cabinets to kitchen appliances. A special paint with a heavy colloidal suspension dries slowly and results in a multi-color effect. Should chipping occur, the finish can be touched up with no area color differences. The Capitol Roto-Base Corner Cabinet in color-flecked finish is shown at left. *Capitol Kitchens, Roselle, N. J.*

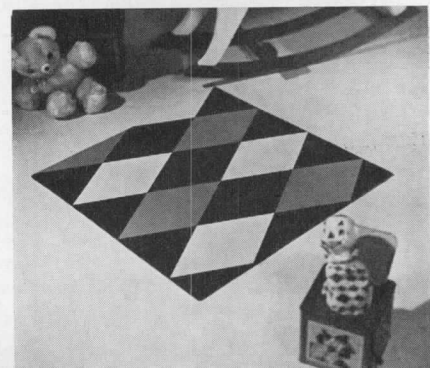
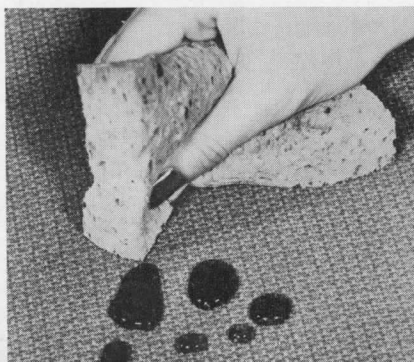
"Counterpoint," a 100 per cent wool, tufted carpet, won in the "Floor Coverings — Soft" class. The first to be placed on the market, the Gulistan carpet has a rough, tweedy appearance and is available in nine colors. *A. & M. Karagheusian, Inc., 295 Fifth Ave., New York 16, N. Y.*



Plastic pull-out drawers, molded of Bakelite phenolic plastic, took top honors in the "Furniture" class. The units, made in one piece with molded-in runners and center guide flanges, have rounded corners for easy cleaning and molded-in color. Resistant to swelling and warping, the drawers can be used as decorative pieces in furniture or as storage units. *Boonton Molding Co., Boonton 1, N. J.*

Sylmer finish for upholstery fabrics, top entry in the "Finishes and Finishing Materials — Soft" class, is a silicone-base finish which forms a thin, resilient, invisible envelope around each fiber of the material. It provides resistance to liquids, which form beadlike shapes for sponging, permits easy removal of oil and grease stains and increases resistance to wear and wrinkling. *Dow Corning Corp., Midland, Mich.*

Patterned resilient floor tile, "Geometile" was declared best in the "Floor Coverings — Hard Surface" class. The pre-cut vinyl tiles are made in a series of modular geometric units in a variety of slim diamond, regular diamond, hexagonal and octagonal shapes and come in bold and solid shades, marbleized and terrazzo patterns. *Robbins Floor Products, Inc., 535 Fifth Ave., New York, N. Y. (More products on page 244)*



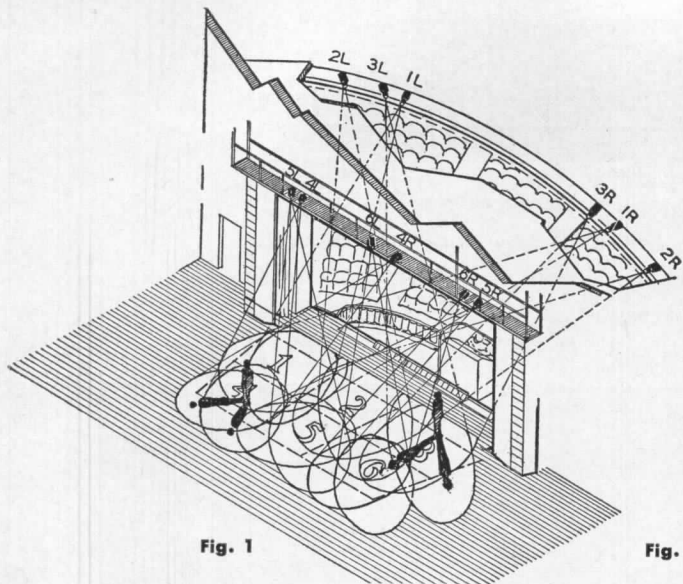


Fig. 1

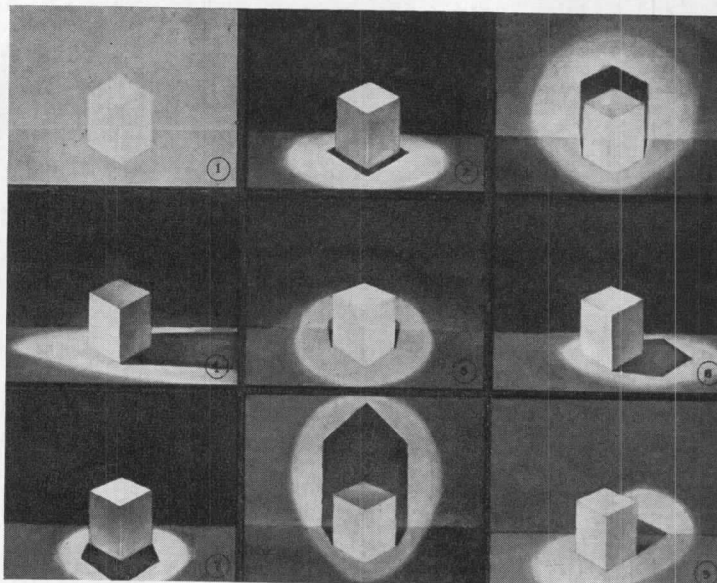


Fig. 2

Illustrations from, "A Method of Lighting the Stage" by the author published by Theater Arts, Books

LIGHTING THE SMALL SCHOOL STAGE

By Stanley McCandless

Professor of Lighting, Yale University
 Research and Development, Century Lighting, Inc.

LIGHTING techniques for the school stage have changed as radically as the structural methods and design concepts of the school as a whole. Yet, lighting layouts for these stages often are based on outmoded practices of twenty-five years ago, with the result that obsolete equipment is bought and thus stage uses are extremely limited.

There are perhaps several reasons for this: First the idea still persists that footlights and borderlights are the basic essentials, whereas they are only of secondary importance (sometimes they are not used at all). Second, a guide is needed for the design of the school stage along professional lines at a cost that will match the budget available.

The purpose of this article and the Time-Saver Standards on pp. 233 and 235 is to explain briefly the functions of stage lighting equipment and to present a typical up-to-date layout, with the minimum equipment required even if only one play a year is to be presented. The extensiveness of the lighting layout will depend on just how much the stage is to be used as a teaching medium for dramatics and for school programs, and whether it is to be used as a community theater.

The fundamental uses of light on the stage are so simple, and so obvious from every-day experience, that even the beginner can produce results if he has a

strong dramatic and experimental urge. A dramatic sense comes with an understanding of the functions of light on the stage.

Obviously, it is necessary to provide "visibility," and some ways are better than others for achieving it. Light must be directed to the areas of most importance (the actor's face usually) and kept off those of least importance (the scenery, usually). It is not true that a flood of general light from borderlights or footlights gives the best results. On the contrary, directional spotlighting from the front is much better because it localizes light where it is intended, and does not make the actor compete with the scenery for attention.

The figures above demonstrate how spotlights cover a stage, and how an object looks lighted from various directions.

Fig. 1: actor is lighted from both sides in six "acting areas." Pools of light merge to give even appearance.

Fig. 2: effect of different directions and distributions of light. (1) general distribution from all directions practically eliminates form; (2) downlight directly above gives little illumination on vertical faces; (3) center-front light as from balcony; (4) light as from side of stage — sharp contrast between vertical faces; (5) center-front at 45 deg, less shadow than (3) gives; (6) side lighting at 45 deg, good on top and one vertical face;

(7) back lighting, good light on top and separation from background; (8) front lighting as from below, exaggerated shadow; (9) diagonal lighting, desirable balance of highlight and shadow.

Light can be made to simulate different times of day — to give the effect of sunlight and moonlight. In fact there is a danger that this "naturalism" can so intrigue the beginner, and sometimes the expert, that it tends to "steal the show."

The professional designer in the theatre spends considerable time balancing the lighting of each scene. With a wide selection of colors, and each source on a dimmer, he is able to modulate the intensities and colors from various directions so that a carefully composed picture results. The whole visual effect must be appropriate to the type of play, and, strange as it may seem, many small dimmers are included in the layout, not for changing light during the performance as much as to provide a proper static balance.

The last function of light on the stage, and probably its most important one, is creation of mood or atmosphere. For example we know that bright light is consistent with comedy, dim with tragedy; warm with comedy, cool with tragedy. Thus visibility, naturalism and composition comprise the interrelated objectives of stage lighting.

LIGHTING THE SMALL SCHOOL STAGE: 1

By Stanley McCandless

Professor of Lighting, Yale University
Research and Development, Century Lighting, Inc.

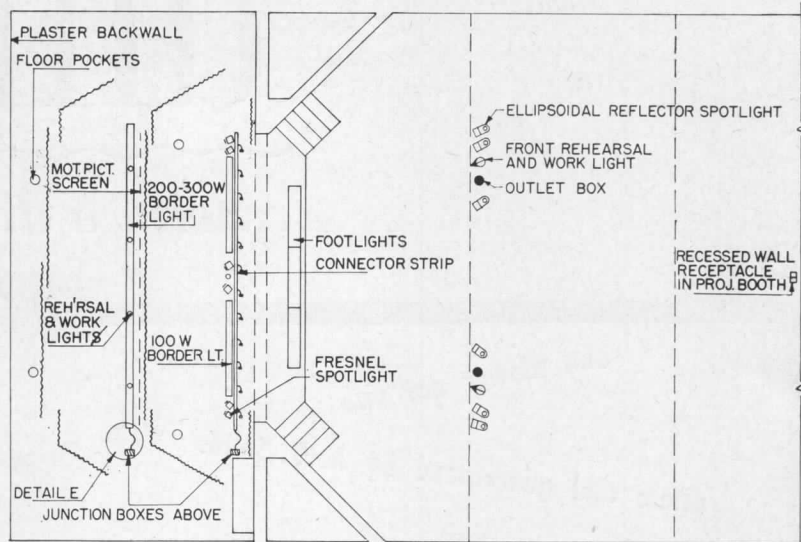
These pages show a suggested layout and equipment for a small stage. Anything less should be considered a speaking platform and be treated as such. Equipment listed in the tables is a conservative minimum. A discussion of the lighting equipment and some special portable units follows:

Spotlights: generally there should be acting area lights directed so that the actor is lighted from the front diagonals with a warm and a cool color. Ellipsoidal spotlights are used in front of the proscenium because they will not spill light on the audience; fresnel lens spots behind the proscenium blend the lighting of adjacent areas easily.

Border and Background Lights: There should be a borderlight behind each masking border to light the next cloth border or back curtain. Background lights are for lighting the back-drop or cyclorama (plastered back wall in this case), window backings, ground rows, and all parts of the scene visible to the audience but outside the acting area. These instruments are used primarily for exterior scenes. The back-drop or plastered back wall calls for considerable wattage. Strips placed close to the base at the foot of the back-drop can give effects of sunset, etc.

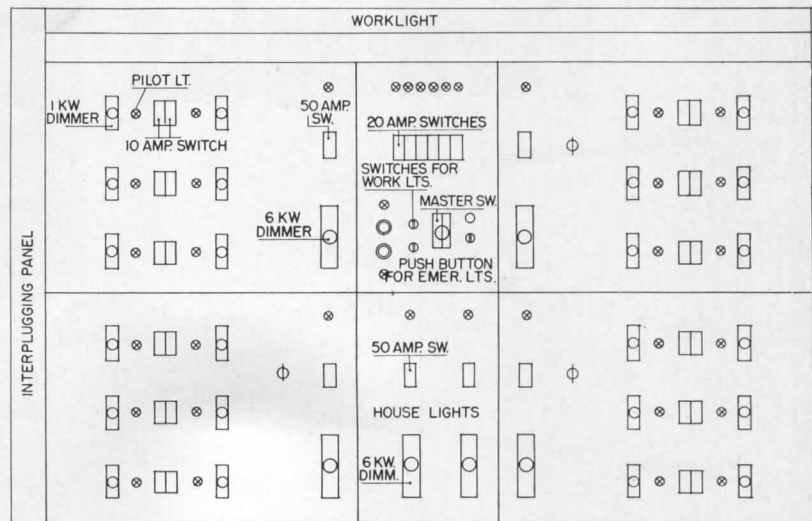
Special Lights: (1) instruments used for emphasizing doorways and special pieces of furniture (generally spotlights); (2) high-powered units to

(Continued on page 235)



Lighting Layout

Switchboard Diagram



LIGHTS

UNIT	FUNCTION	QUANTITY
6-in. Ellipsoidal Reflector Spotlight, 250-750-w	Lighting front acting areas	6
Disappearing Footlight, 100-w, nine lamps	Toning of faces and set	3
6-in. Fresnel Spotlight, 250-750-w	Lighting rear acting areas	6
Borderlight, 100-w, 8-ft long, 16 lamps, four colors, one work light	Blending of acting areas	2
Borderlight, 200-300-w, 25 ft, 4 in., 36 lamps, three colors, four work lamps	Lighting background	1
Front Rehearsal and Work Lights, 500-w, R-40 lamps, adjustable sockets	As indicated by name	2

OUTLETS

UNIT	QUANTITY
Connector Strip, 24-ft long	1
Surface Mounted Outlet Box	2
Floor Pockets, 4-way	4
Recessed Wall Mounted Receptacle, 2-way, 50 amp	1

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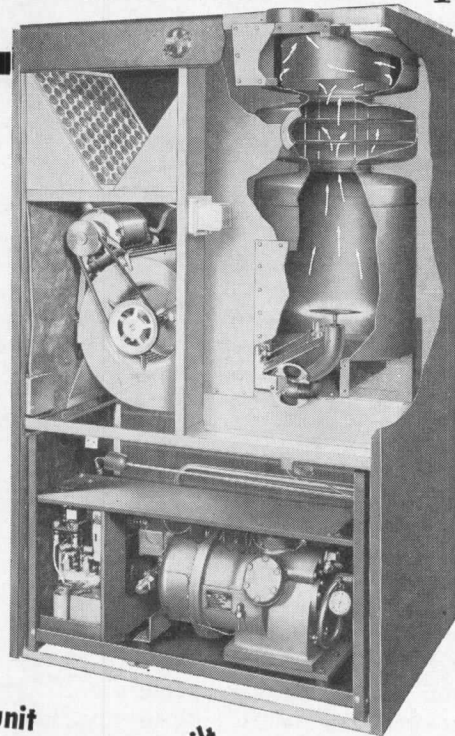
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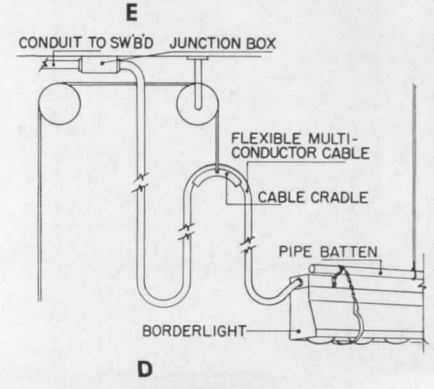
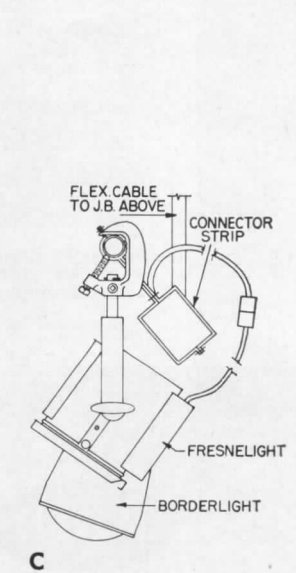
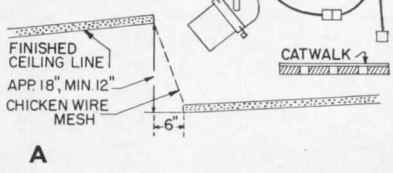
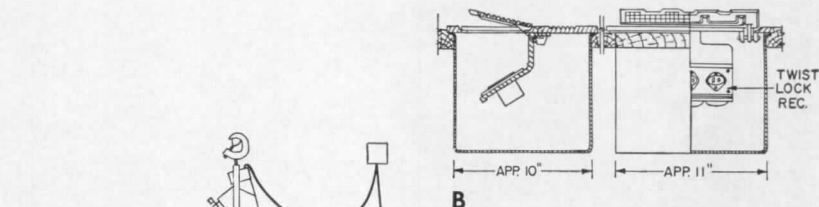
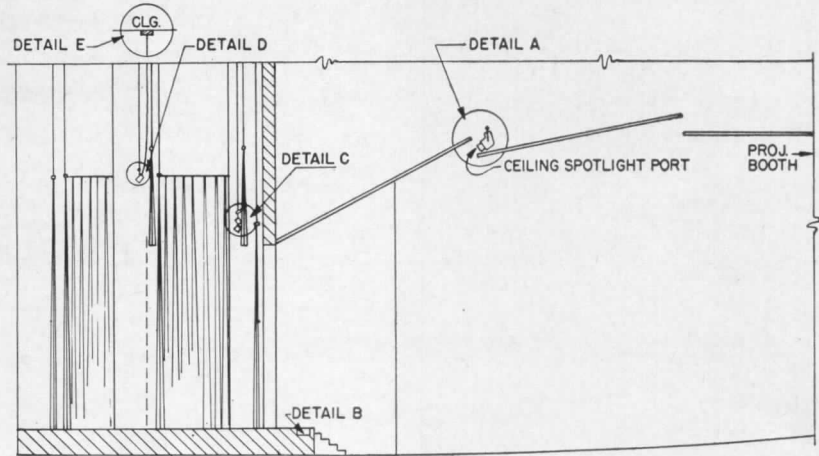
LIGHTING THE SMALL SCHOOL STAGE: 2

By Stanley McCandless

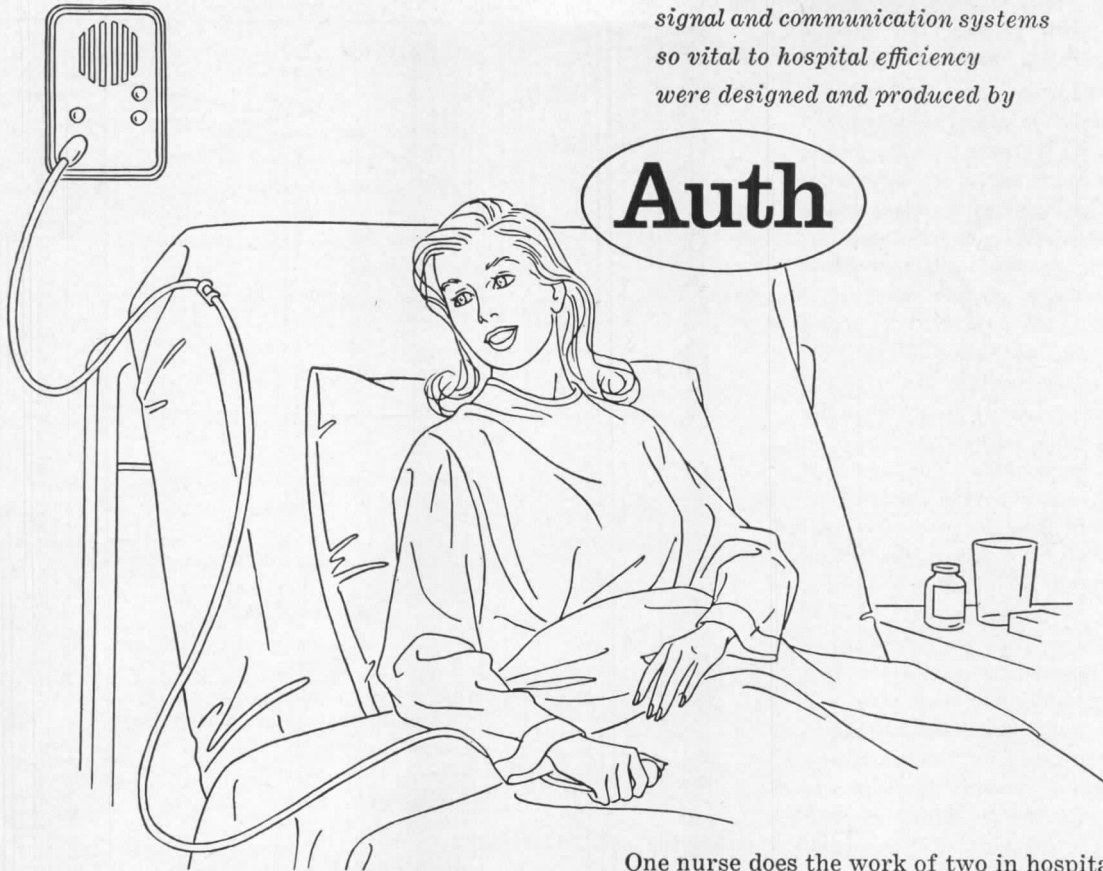
Professor of Lighting, Yale University
 Research and Development, Century Lighting, Inc.

simulate sunlight and moonlight (3) "effect machine" to project patterns or Linnebach Lantern for shadow patterns; (4) a 2000-w ellipsoidal reflector follow spot for musicals, which should be mounted on a stand not over 75 ft away from the stage. As a measure of safety and reliability, all portable connections should be made by 20-amp twistlocks.

Dimmers: lighting equipment is useless without a certain number of dimmers to permit (1) color mixing and intensity balancing, (2) individual or group dimming or brightening at some course of action in the play. In theory each circuit should be dimmed separately, but cost will probably necessitate a compromise. A practical way for grouping several circuits is through use of an interplugging panel. With this panel any one or group of load circuits can be connected to any dimmer control. Auto-transformer type dimmers are used because they will dim any load proportionally up to their rated capacity; this is not true of resistance dimmers. Note on the drawing of the switchboard that house light dimmers are separate. Large dimmers can serve as proportional masters over the six smaller dimmers, or be used as individual large dimmers for controlling background lighting. In the patch panel, the 1000-w dimmer controls have two jack pockets and the 6000-w units have four jack pockets. Each load circuit representing outlets placed about the stage is protected by a circuit breaker, and the whole panel has a locked door to prevent tampering with the setup. As far as possible, switchboards should be placed so that the operator can see the stage.



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**SIGNAL, TIME
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NORTH AMERICAN BUILDING STONES—16

Presented through the cooperation of the International Cut Stone Contractors' and Quarrymen's Association

INDEX OF BUILDING STONES—(To be continued in a later issue)

65 WINONA TRAVERTINE STONE

Company Name: Biesanz Stone Co., Inc.
Quarry Location: Winona, Minn.
Geological Designation: Dolomitic Limestone
Texture: Travertine
Color: Yellow, white, buff, pink and gray
Chemical Composition: Large magnesium content (not tested by this company)
Physical Tests: Specific gravity—2.53%; abrasive hardness—13.9%; absorption of moisture by weight—2.8%; percentage of porosity by volume—9.8%
Strength: Compressive strength, against grain—17,000 psi, with grain—8900 psi; tensile strength, against grain—960 psi, with grain—550 psi
Weight: 158 pcf
Furnished As: Dimensional, Ledge stone, Splitface. Brick heights for 2 $\frac{3}{4}$ " coursing. Lengths to 8'
Surface Coverage: 40 sq ft per ton

66 "YASU"

Company Name: Nevada Flagstone Quarries, Inc.
Quarry Location: Goodsprings, Nev. (Mail address: 2840 Fremont, Las Vegas, Nev.)
Geological Designation: Sandstone
Texture: Medium
Color: White, yellows, gold, pink, purple, red and brown
Furnished As: Dimensional, Splitface. Splitface: Heights — 1"—10". Lengths — 8"—48". Dimensional: Heights — 1"—2 $\frac{1}{2}$ "
Surface Coverage: Dimensional (strataface) — 120 sq ft per ton. Splitface — 40–50 sq ft per ton

ADDENDA

67 ALLEGHENY (reg. U. S. Pat. Off.)

Company Name: Allegheny Natural Stone Co.
Quarry Location: Jersey Shore, Pa. (Mail address: 1237 Belmont Ave., Paterson 2, N. J.)
Geological Designation: Quartzite
Texture: Fine-grained
Color: Allegheny Bluestone—Variegated shades of green, red, blue, lilac, gun metal
Furnished As: 1" rock-faced veneer. Each stone bonded with adhesive, interlocked with special clip and mechanically tied with screw, completely processed, ready for application
Surface Coverage: 235 sq ft per ton 1" veneer

68 ARKANSAS CHERRY BLEND STONE

Company Name: Arkansas Cherry Blend Stone Co.
Quarry Location: Paris, Ark.
Geological Designation: Sandstone
Texture: Medium
Color: Brown, gray, cream, buff, pink, pink variations

Furnished As: Dimensional, Splitface, Ledge stone. Heights — 1"—5". Lengths — 12"—48"
Surface Coverage: 45 sq ft per ton

69 ARKANSAS RAINBOW LEDGE

Company Name: Rainbow Stone Co.
Quarry Location: Paris, Ark.
Geological Designation: Sandstone
Texture: Medium
Color: Brown, tan, yellow, pink, white gray, variegated with swirls
Chemical Composition: Silica — 95.2%; aluminum oxide — 2.5%; iron oxide — 0.6%
Physical Tests: Absorption of moisture — 1.33%
Strength: Crushing strength — 13,400 psi
Weight: 159 pcf
Furnished As: Dimensional, Ledge stone. Heights — 1"—6"; 1"—4". Lengths — 12"—48"
Surface Coverage: 1"—6" coverage — 40 sq ft per ton. 1"—4" coverage — 50 sq ft per ton

70 CLEARCREEK CUT-FACE

Company Name: Missouri Native Stone Co.
Quarry Location: Dederick, Mo.
Geological Designation: Sandstone
Texture: Fine-grained
Color: Mixtures of buff, gold and brown
Furnished As: Ashlar Veneer. Heights — $\frac{3}{4}$ "—8 $\frac{1}{2}$ ". Lengths — 10"—30"
Surface Coverage: 50–60 sq ft per ton
Other Facts: Each piece has outline of sawmark top and bottom

71 CLEARCREEK SNAP-FACE

Company Name: Missouri Native Stone Co.
Quarry Location: Dederick, Mo.
Geological Designation: Sandstone
Texture: Fine-grained
Color: Mixtures of buff, gold and brown
Furnished As: Splitface, Ledge stone. Heights — 1"—6". Lengths — 10"—30"
Surface Coverage: 45–50 sq ft per ton

72 COLORADO BERTHOUD PINK

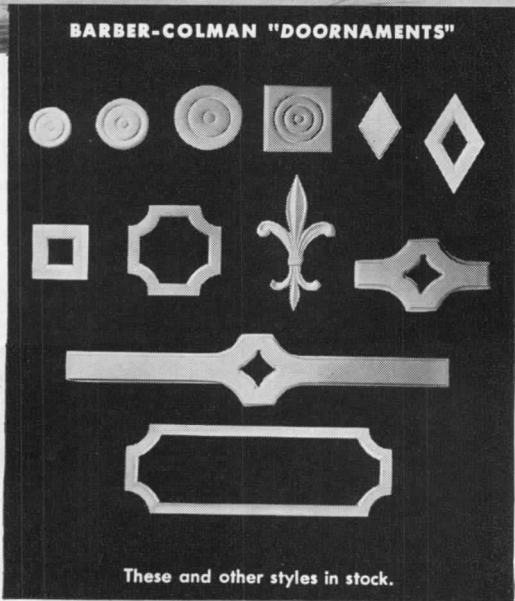
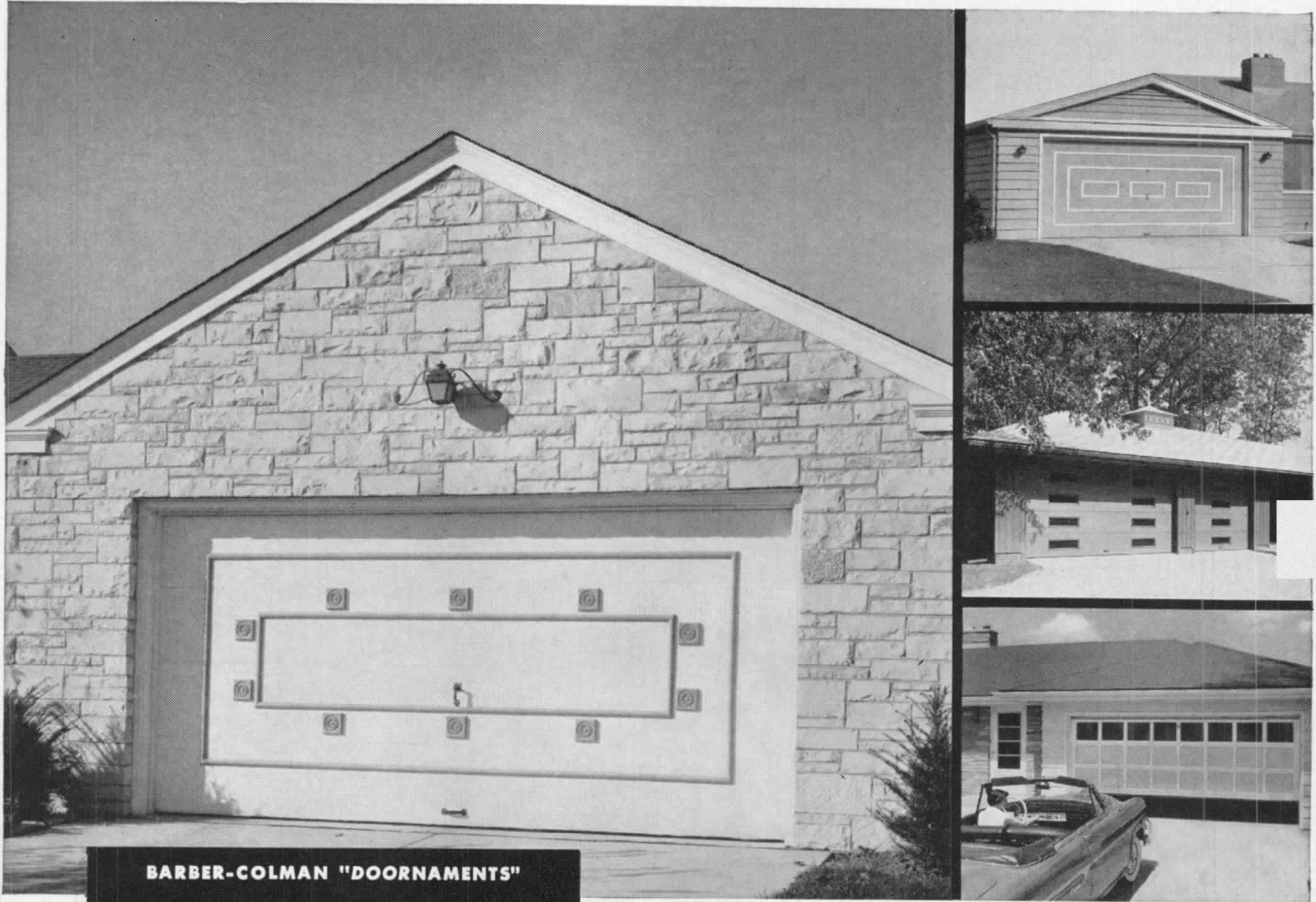
Company Name: Colorado Stone Co.
Quarry Location: Near Berthoud, Col. (Mail address: Longmont, Col.)
Texture: Very fine-grained, closely cemented, fine texture
Color: Light-colored stone of soft, delicate light pink to orchid shades
Geological Designation: Quartzitic Sandstone
Weight: 156 to 162 pcf
Furnished As: Dimensional, Splitface, Ledge stone, Flagging. Heights—1" to 3"; 1" to 6"; $\frac{3}{4}$ " to 2"; 6" to 11". Lengths—12" to 12'
Surface Coverage: Splitface—40 to 44 sq. ft. per ton. Flagging—120 to 140 sq ft per ton
Other Comments: This stone is from the Lyons Ledge-stone formation



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ELECTRIC-ELECTRONIC

Control Centers

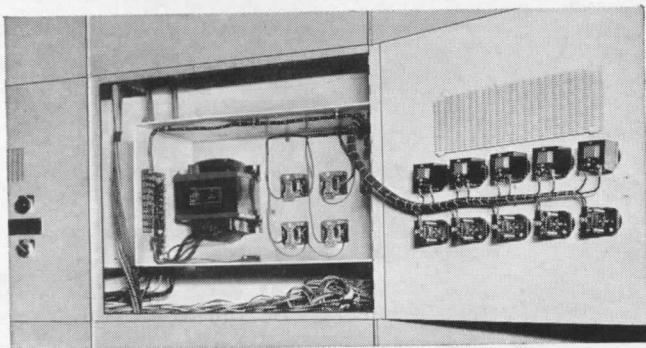
In Milwaukee,
Wisconsin Telephone Company
engineers specify
better control . . . electrically

Architects (both buildings): GRASSOLD-JOHNSON & ASSOCIATES. Consulting Engineer (new building): JOSEPH VOLK, deceased. Consulting Engineers (remodeling old building): LOFTE & FREDERICKSEN. Heating Contractors (both buildings): PAUL J. GRUNAU CO. Ventilating Contractors (both buildings): REINKE & SCHOMANN, INC.

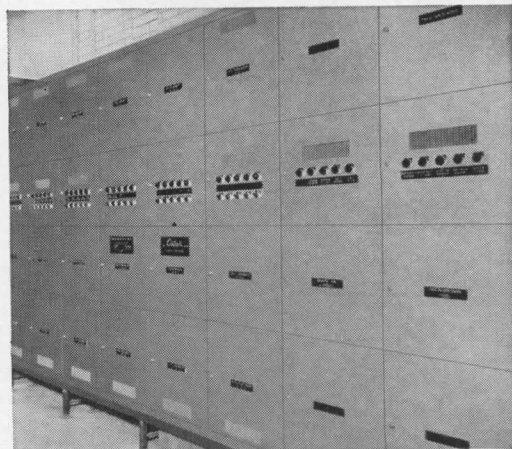
In new addition, all radiators, convectors, and reheat coils are individually controlled with electronic outdoor reset on the hot water supply. Remodeled building has Barber-Colman controls for ventilation, reheating coils, and direct radiation.



(Below) One of twenty-four compartments comprising the 8' x 16' "Control Center" in remodeled building. This type of installation exemplifies latest cost-saving techniques in automatic control system engineering.

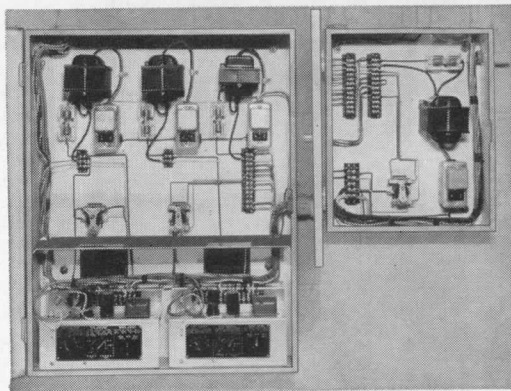


Electric-electronic controls have been specified again by telephone engineers . . . this time in Milwaukee for the new and existing Headquarters buildings of the Wisconsin Telephone Company. Electric-electronic controls are used throughout the new six-story addition (foreground), completed late in 1954. Modernization of the nineteen-story older building is in process — electric-electronic controls have been installed on eight floors to date. The speed, flexibility, accuracy, and reliability of electrical equipment were big factors in the selection, plus savings on original cost of the controls, installing labor and materials, and maintenance.



Modern "Control Center" (above) in remodeled building serves as central junction box, houses prewired accessories, numbered terminal strips, indicating lights, remote starting buttons, etc. A Uni-Flo "VF" Grille provides ventilation of each compartment.

Another "Control Center" (below) in new building serves as "nerve center" to speed field installation, expedite checking, simplify revisions and servicing. It's the fast, cost-saving method for modern buildings.



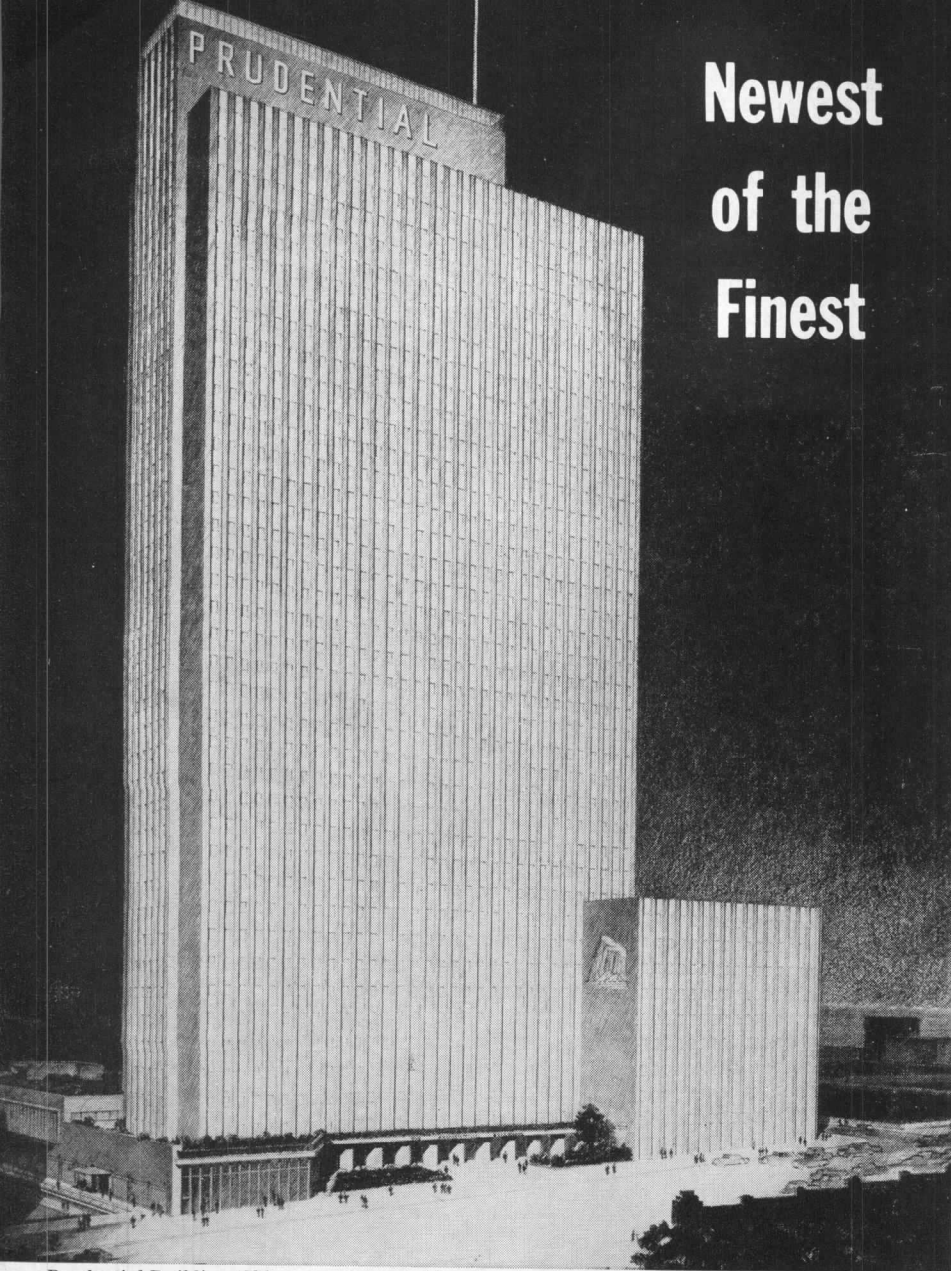
Rapid response of electronic controls appealed particularly to the telephone engineers. Controls for the lobby compensate instantaneously for heat loss through front doors. Controls on fresh air supply adjust mixture continuously for improved comfort conditions. "Better control . . . electrically" is now practicable for most installations in large or small buildings. Phone your nearby Field Office, or write us for data, prices, and expert engineering service on any automatic control problem.

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As a building, it will take its place among our country's finest structures and is a perfect example of the features a well-informed investor is willing to put into the space he plans to use and rent. For instance, to prevent future obsolescence and to meet the increasing requirements of modern electronic office

equipment, architects Naess & Murphy have prepared the new Prudential Building to handle the highest electrical load of any office building yet built. To do this job easily, and to permit layout changes and additions at minimum cost, Robertson Q-Floor construction is being used. This strong, light-weight, steel, cellular structural floor is the only construction material available which provides easy electrical access over every 6-inch area of the entire exposed floor. For more good reasons why fine new buildings all over America have turned to Robertson Q-Floor construction, see the opposite page.

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A-E ROUNDUP

(Continued from page 227)

HUGE VENETIAN BLIND for RCA Is Motor-operated in Control Room

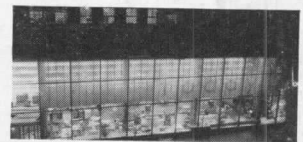
A huge Venetian blind, 88 ft long by 18 ft high, has been engineered for New York City's RCA Exhibition Hall in order to eliminate a serious sun problem.

The problem arose with the morning sun, which shone through the big windows of the Exhibition Hall, causing Dave Garroway to squint during his news program and also producing a shimmer on the receiving TV screens. RCA wanted to keep out the sun's rays without impeding the vision of sidewalk audiences, and the answer was a motorized blind.



Big blind assembled in Warner studio

Many considerations were involved in building the giant blind. Two of the most important were where to build it and how to install it without interfering with scheduled telecasts, and how to motorize it to be operated by remote control. The blind was assembled in an old Warner Brothers studio in Brooklyn, which had catwalks and balconies big enough for snaking in the two miles of slats and testing the blind. After completion the blind was delivered at midnight on a special 105-ft trailer.



Blind installed in Exhibition Hall

Three electric motors control the 1584 sq ft of blind. It can be raised, lowered, tilted either way or completely lowered for cleaning by pushing buttons in the TV control room. Special safety and electronic devices required 29 electric wires to complete the circuit.

The 114 slats of the blind, which was made by Levolor Lorentzen, Inc., are a special linen-like finish on metal which does not reflect highlights or show dust. Stainless steel cables are used instead of cord. Thirty-one extra-strong tapes are in a gray linen pattern to match the slats.