RCHITECTURAL RECORD

BUILDING TYPES STUDY

LODGINGS FOR TRAVELERS

230

JANUARY 1956

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ARCHITECTURAL RECORD (Regular Edition) (Vol. 119, No. 1, January, 1956) is published monthly by F. W. Dodge Corporation, 10 Ferry Street, Concord, N. H., with editorial and executive offices at 119 W. 40th St., New York 18, N. Y. $5.50 per year Foreign, $20.00.

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The Record Reports

COVER: photo by Samuel Chamberlain

Aesthetics by Slide Rule

In an industrialized world architects are called upon to think as engineers, are judged as engineers, are accepting the aesthetics of engineers. But there is still the need "of holding before men the true and enduring content of their civilization . . . our architecture will ultimately return to these enrapturing springs."

An Unusual Design for Collegiate Religion

At Brandeis University it was deemed necessary to provide for student worship distinct settings for each of three religious traditions. Three chapels grouped around a central pond provide a stimulating answer.

M.I.T. Chapel

At M.I.T. the students of all faiths will worship in a chapel whose design has focused on the common denominator: meditation.

Continued on next page

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PERSPECTIVES

ARCHITECTURAL CRITIC: the anonymous letter writer who advised police in Buffalo he planned to bomb the main post office, an art gallery and the New York Central Railroad Terminal because they were all "architectural monstrosities."

THE INTEGRATED HOSPITAL got a $200 million push from the Ford Foundation's recently announced program making that amount available for new grants to all of the nation's approximately 3500 voluntary, nonprofit hospitals. "All hospitals," said the Foundation's statement, "need to expand the scope of their services if they are to serve satisfactorily as health and rehabilitation centers in their communities." The grants, in amounts ranging from $10,000 to $250,000, must be used for improvement of or addition to facilities or services, additions to or training of personnel, or conducting research; they may not be used for operating expenses or services currently being performed. The Foundation noted the need for "several hundred thousand" additional general hospital beds, the need to replace many old and obsolete buildings and the dilemma of the hospitals in the face of rising costs of both hospital construction and hospital operation. "The pressing need," the statement said, "is for funds to expand or modernize present facilities, and extend services to keep pace with the rapid development of medical science."

CONSTRUCTION will be our major industry, the sun will be our major power source and the most important raw material will be water" in the year 2000, according to science consultant George R. Price, writing in the December issue of *Challenge*, monthly publication of New York University's Institute of Economic Affairs. Mr. Price believes, in fact, that construction will be the major U. S. industry by 1980. "As America becomes ever richer, desires for food and clothing will be more fully met, so that people will inevitably take advantage of the opportunity to have spacious, luxurious housing. Furthermore," Mr. Price adds, as though relating a series of unmixed blessings, "automobiles will largely give way to battery-powered helicopters, with automatic radar controls to make them as safe as railroad travel now is. These will permit the break-up of cities into vast suburban-type areas." As for the house of the future: "By 1980 or 1990 houses will very likely be constructed largely of a vitreous foam. I foresee furnaces borne on trucks that will melt a mixture of sand, alkaline rocks and limestone, obtained locally where possible. The molten glass thus created will be mixed with air and blown out through hoses to produce foundations, exterior walls and roofs of large ranch-type houses. Walls a foot thick will be quickly and cheaply built up in any shape desired. They will be sturdy, fireproof and give superb heat and sound insulation. Outer surfaces will be smooth and hard, made from solid glass unmixed with air and colored by pigments added to the melt." Although Mr. Price does foresee some practical difficulties to be overcome before housing ceases to be "the industry that capitalism forgot," he cheerfully predicts that "around 1975, barriers of inertia, local ordinances and restrictive union rules will collapse under the pressure of the new construction methods."

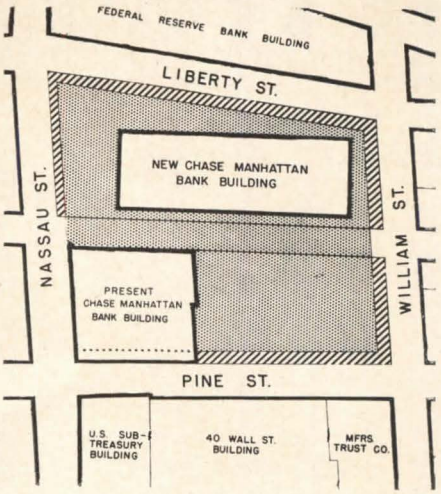
TOMORROW'S HOUSE was also the subject of a talk last month by Jay Doblin, director of Illinois Institute of Technology's Institute of Design and a former executive designer for Raymond Loewy Associates. *He* said tomorrow's houses will have cushioned bathrooms, radio-frequency cooking units and beds that never need to be made. The entire bathroom, said Mr. Doblin, could be molded in one piece of a soft material like sponge plastic — this would cut down "tremendously" on home accidents and eliminate joints where dirt and water now collect — and heated "from within," thus avoiding cold, clammy surfaces. In the kitchen of the future, Mr. Doblin went on, the housewife's most important appliances will be not for food preparation but for food storage — a compact radio-frequency unit will do the cooking job and "cooking as we now know it will be considered strictly a hobby." And tomorrow's bed, as Mr. Doblin describes it, will have a radio-frequency heating unit that will encircle the sleeper and keep him comfortably warm — "the necessity for covering would be only a matter of privacy"; will fold away automatically and be "sterile cleaned" when not in use; will have its softness or firmness regulated hydraulically or pneumatically. . . .

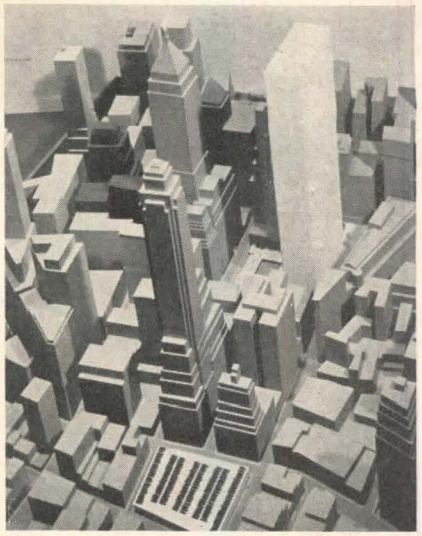
THE AIR ACADEMY," says the lead article in a recent issue of the Baltimore Chapter A.I.A.'s monthly publication *Architects' Report*, "is to be a 'factory for birdmen.' Of course it is. Where in the language of Webster or of the poets could a more exact definition be found? . . . The tragedy of those words lies, now that the controversy has lessened, not in any serious harm to the architect's central idea for the academy itself but in the dubious future of his chapel. . . . Here was a design done in the truest heritage of the American fighting man. The chapel was a campaign tent set up on the field of battle for communion, with helmet off and rifle in readiness. None of your stained cathedral glass, swinging censers and Gregorian chants, but a chapel to the God of Moses on the march, to the God of Washington kneeling in the snows of Valley Forge. One could almost see the light of a candle through canvas. No airman cadet could enter it without sensing his dedication to the fighting for which he was being prepared. The stripped darkness of the moments before a hundred beaches of Normandy and of the Pacific were expressed there for him to feel. . . ."

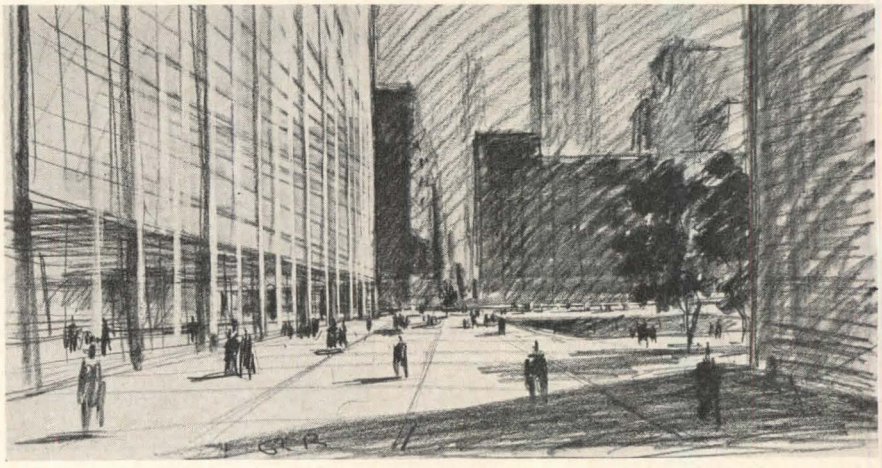
THE RECORD REPORTS

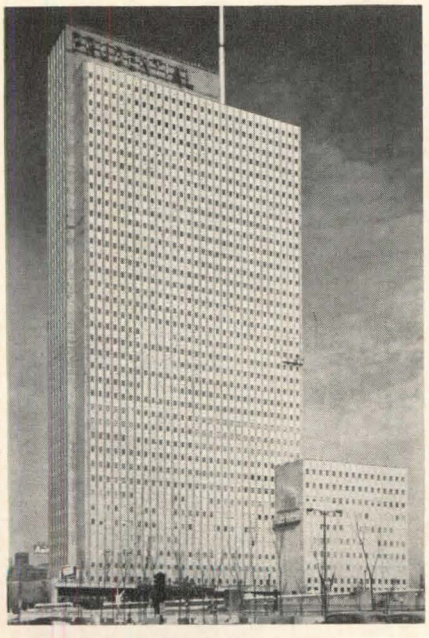
BUILDINGS IN THE NEWS

CHASE MANHATTAN BANK last month announced tentative plans for a $75 million headquarters development in downtown Manhattan — Skidmore, Owings and Merrill, architects. No information about the design of the building was made public except that it will probably be 50 to 60 stories in height; but there was big news in the site plan (right), which proposes a building to occupy only about 30 per cent of a two-block area. The plan would thus introduce an open plaza as large as the Piazzo San Marco into the heart of the world's most congested city district (in model photo, Chase project is shown as white block among existing towers). "Several floors" of vaults, service facilities and office space would extend under the plaza area; this and what the architects describe as "the extreme simplicity of the building design" which produces "an exceptionally high proportion of usable space" are said to give the plaza concept an economic as well as human advantage over more conventional schemes. A 1000-car parking garage (center foreground in model photo) would be constructed on a site one block from the plaza. The City of New York has announced plans for a 750-unit Title I middle-income housing project only a few blocks away



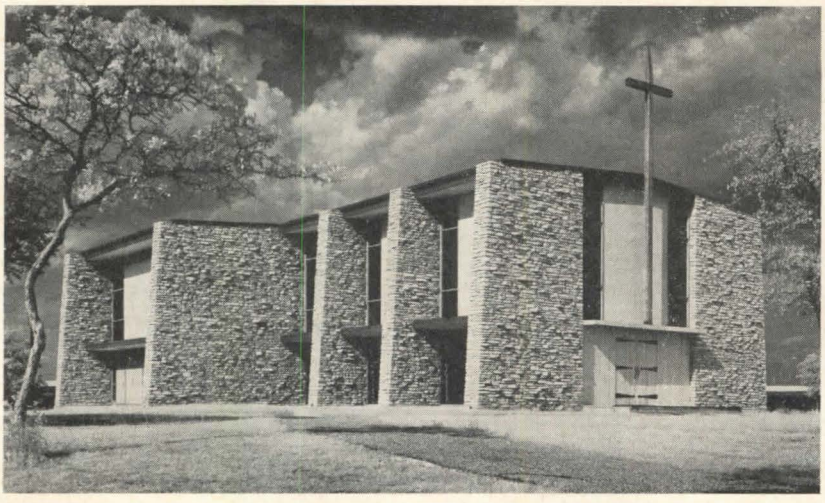




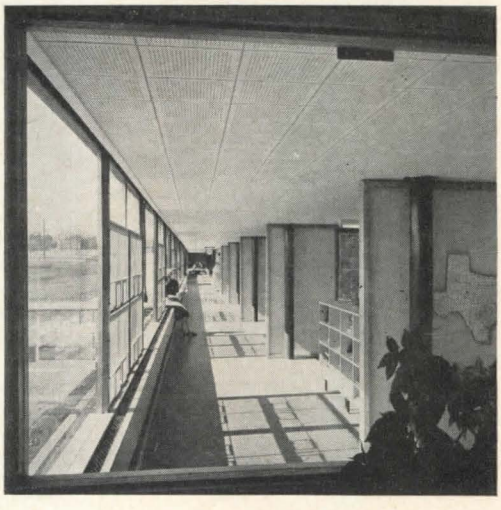


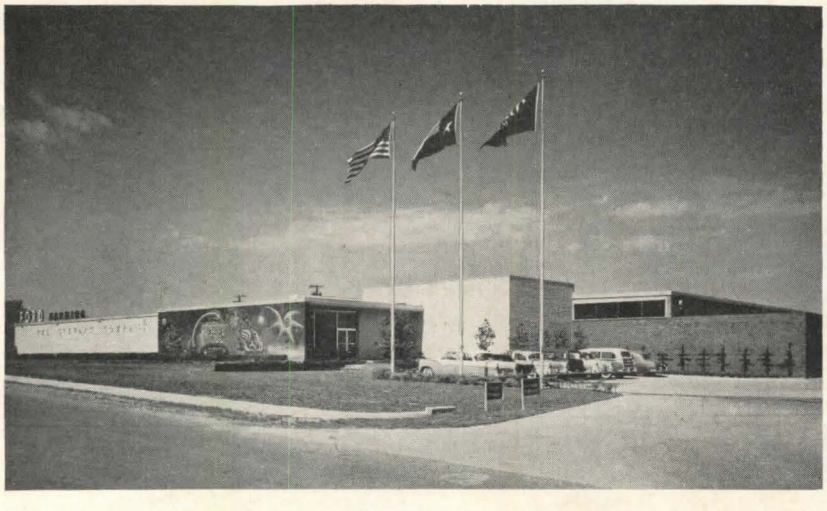
PRUDENTIAL INSURANCE COMPANY OF AMERICA dedicated its $40 million Mid-America Home Office Building in Chicago (photo at left above — Naess & Murphy, architects; George A. Fuller Company, builder) on December 8, seven years after completion of its first regional home office building in Los Angeles (rendering at right above, showing third wing now under construction; Welton Becket & Associates, architects) and six years after initiating the intricate negotiations for its site on and above the Illinois Central Railroad tracks at Randolph Street — a site comprising 540 separate parcels of land for caisson holes and 10 "air lots" amounting to 143,000 sq ft of air. The building, second largest and second tallest U. S. office building outside New York City, has over a million sq ft of space in a 41-story tower and 11-story lower section. It is supported on 31-ton steel columns bolted to steel plates set on 250 cylindrical concrete caissons that reach 100 ft down to the bedrock of the Niagara shelf. Walls are unbroken vertical limestone-faced piers two ft eight in. wide and vertically fluted aluminum spandrels

NINE BUILDINGS CITED AS "TEXAS ARCHITECTURE—1955"



FIRST HONOR AWARDS (Non-Residence) in the annual competition sponsored by the Texas Society of Architects were (below) A & M Consolidated High School, College Station, Caudill, Rowlett, Scott and Associates, Architects; (above) St. Stephen's Chapel, Austin, Fehr and Granger, Architects. Winners were exhibited at Dallas State Fair





HONOR AWARDS (Non-Residence) went to four buildings (above and next page). Left: Stewart Company, Dallas, Harwood K. Smith and Joseph M. Mills, Architects. Right: Presbyterian Church, San Antonio, Milton A. Ryan, Architect

(Continued on page 12)

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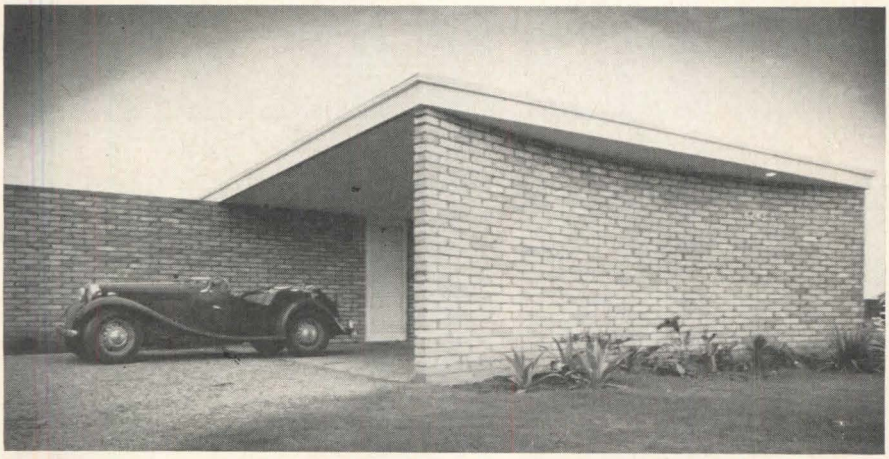
HONOR AWARDS (Non-Residence) went also to the buildings above. Left: Engineering Office and Classroom Building, U. of Houston, Caro, Austin & Evans, Architects. Right: St. Mary's Student Center, College Station, William Nash, Architect

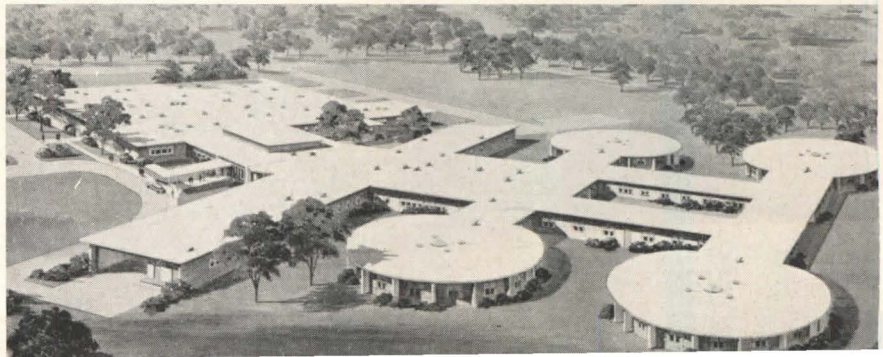


AWARDS OF EXCELLENCE FOR RESIDENCES were given for the three houses shown here. Above left: John G. York Residence, Harlingen, Tex., John G. York, Architect. Above right: Richard M. Hardison Residence, Houston, Bolton & Barnstone, Architects. Left: John A. Watson Residence, Harwood Taylor, Architect. Jurors for the 1955 Texas competition were Harris Armstrong of St. Louis and Charles Colbert of New Orleans

(More news on page 15)

MEDICAL RESEARCH CENTER WITH SPECIALLY DESIGNED REACTOR PLANNED FOR BROOKHAVEN

Eggers and Higgins are architects for laboratory (square building, far left), hospital (circular buildings, right) and reactor building (at rear — not shown) of $6 million new center for Brookhaven National Laboratory, Upton, N. Y. Reactor will be one of first two in U. S. designed for medical research and treatment



The State of Construction

Records were tumbling once more as F. W. Dodge Corporation announced the latest totals for construction contracts awarded in the 37 states east of the Rockies. In fact, the November figures produced no fewer than eight new records. For details, page 346.

Who Wins?

The architecture of the Smithsonian's proposed National Air Museum (AR, Sept 1955, pages 163–170) became embroiled last month in a controversy over future development of the city plan of Washington, D. C.

The question was whether New York realtor William Zeckendorf, whose firm of Webb & Knapp has a reputed $500 million investment in its proposal for redevelopment of Southwest Washington, would force the National Capitol Planning Commission to abandon long-standing plans for a 10th Street site for the Smithsonian's new building, which would be just across Independence Avenue from its present buildings and easily accessible to visiting tourists, in the heart of downtown Washington.

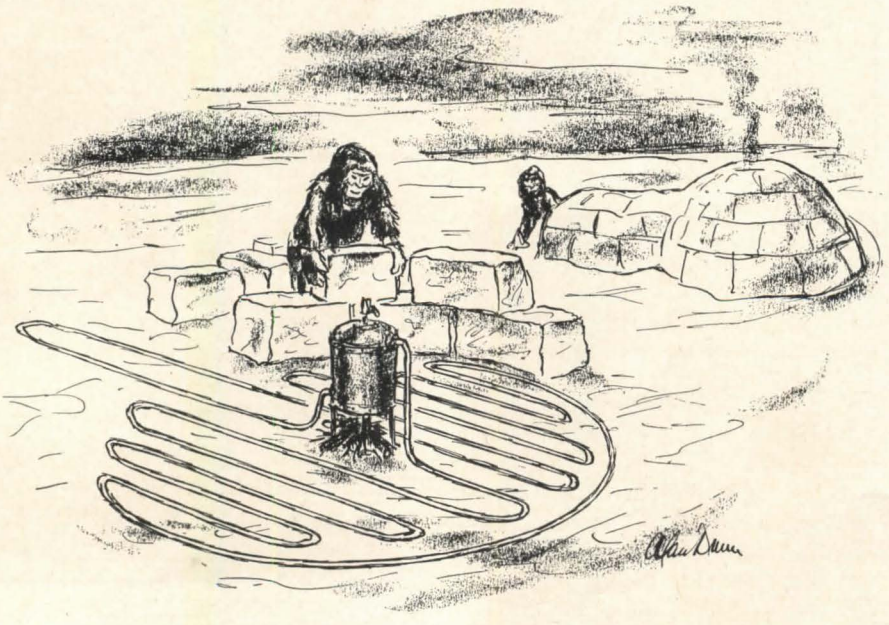
The proposed site is unacceptable to Mr. Zeckendorf because he believes it would block the 10th Street entrance to the projected new South Mall which he insists is essential to the commercial success of his 400-acre redevelopment project.

An alternative site between Independence and Fourth, Seventh and C Streets S.W., has been rejected by the N.C.P.C. because it would entail closing off the lower part of Maryland Avenue. Other available sites are all in outlying areas, and many feel the museum's benefits would be lost to too many tourists if it is not located near other important museums and sights they go to Washington to see.

An alternative redevelopment scheme for the Southwest area, which put the South Mall entrance at 8th Street and gave the Smithsonian its preferred 10th Street site, was considered by the N.C.P.C.'s subcommittee on Southwest redevelopment but dropped after it had been strongly opposed both by George A. Garrett, President Eisenhower's personal "trouble-shooter" for the Southwest project, and I. M. Pei, chief architect for Webb & Knapp.

The design of the Air Museum, for which McKim, Mead & White have prepared preliminary plans, got into the discussion by the back door, after Douglas Haskell, editor of *Architectural Forum*,* was quoted by Washington newspapers as likening the argument over a downtown site to "a dispute over the proper way to bring an elephant into a church." According to the newspaper stories, Mr. Haskell charged that so large a building as the proposed museum would overshadow the Capitol and belonged, not downtown, but on the outskirts of Washington. "The only reason this debate over a proper downtown site is possible," Mr. Haskell was reported by the *Washington Post and Times-Herald* to have said, "is that the architect's drawings have fudged the size of the structure. Trees that look like trees in the sketches would look like a hedge in actual relation to the building."

* And member, New York chapter, A.I.A.



— *Drawn for the* RECORD *by Alan Dunn*

Congressman Frank Thompson (D — N. J.) picked up and echoed Mr. Haskell's criticisms, and in a statement issued by his office chided Dr. Leonard Carmichael, Smithsonian Secretary, for commenting publicly that Mr. Haskell was not fully informed on some points.

In none of the ensuing published discussions was the point made that, in fact, all of the Mall buildings approach, and many exceed, the size, dimensions or cubage, of the Capitol; the 90-ft setback rule has been sufficient to assure dominance for the great dome which rises 287 ft above a 75-ft hill. The Air Museum would be a mile away, on lower ground, and at most 90 ft high; two thirds of it from 18 to 60 ft high. It would be relatively low compared with the buildings of the Department of Agriculture, the Department of Commerce, the Triangle group, the Museum of Natural History and the National Gallery of Art. In horizontal dimensions alone, the largest and highest portion of the Air Museum is exceeded by the overall dimensions of all of the buildings just mentioned, and perhaps of others.

As for the inference about scale to be made from the drawings, a review of the only published drawings (in the RECORD's September article) indicates they show trees planted approximately 32 ft on center and appearing to be 50 to 60 ft high, a fairly conventional assumption for the height of full-grown trees.

On the central issue, the National Capitol Planning Commission at its December 16 meeting seemed to avoid a final decision by (1) approving nearly the entire Webb & Knapp preliminary land-use plan for the Southwest redevelopment, (2) withholding approval of the relatively small portion of the plan which involves the disputed site, and (3) asking the Smithsonian to find a location for its project outside the Southwest area. The hope is for development of an acceptable compromise before the next meeting of the Commission in February.

Bright Beginning

By all accounts, the first meeting of the Architectural Student Forum sponsored by the American Institute of Architects at A.I.A. headquarters in Washington

(Continued on page 16)

MEETINGS AND MISCELLANY

(Continued from page 15)

November 21–22 was a smashing success. The first conference ever held at which each of the nation's 65 architectural schools was represented by at least one student, the Forum was made possible by A.I.A. assumption of expenses for one delegate from each school; 86 students attended in all. They formed a permanent organization, headed by James R. Barry of Rice Institute, Houston, as chairman, and Miss Laurie Mutchnick of Pratt Institute, Brooklyn, as secretary, with six regional student representatives; made plans to begin immediately publication of a news-sheet to be converted to magazine format later on — students to edit, A.I.A. to publish; and adopted a 25-point program for improving student-profession relations. The program included enthusiastic endorsement of the A.I.A.'s architect-in-training program as set up in the "logbooks" which are just getting their first trial runs in Alabama, Colorado, New York and Oregon. The log book is intended to constitute a record for the architectural graduate's activities from degree to license, showing time spent in various kinds of work and enabling him and his professional adviser to assess his progress against a background of concrete information. Also on the student Forum agenda were talks by Nathaniel Owings, of the New York architectural firm of Skidmore, Owings & Merrill, who discussed the opportunities and responsibilities of the profession; architect Hugh Stubbins, of Lexington, Mass., who described the evolution of his design for the U. S. Conference and Exhibition Building for the Berlin International Building Exposition of 1957; Carl Feiss, Washington, D. C., planning consultant, who discussed the projected student publication; and Edmund R. Purves, A.I.A. executive director. James M. Hunter of Boulder, Colo., chairman of the A.I.A.'s Committee on Education, and Beryl Price of Philadelphia, chairman of the Committee on Chapter Affairs, were present as observers. At last month's meeting of the executive Committee of the A.I.A. Board of Directors, official approval was given to (a) continuance of the student forums on an annual basis; (b) Institute subsidy of a student newsletter this year and later consideration of a subsidy for a student magazine; (3) Institute assistance in setting up one or more circulating exhibits of student work; (d) a meeting of the student organization's executive committee during the Institute's annual convention, and if required, at another time, with the Institute to bear the expenses.

LE CORBUSIER AND NIVOLA

Editor, ARCHITECTURAL RECORD:

In the November 1955 issue of ARCHITECTURAL RECORD [pages 180–187] there is an article by Mr. Frederick Gutheim on Le Corbusier. I should like to point out the incorrect notion that I had such "terrific" influence on Le Corbusier.

Le Corbusier gave me confidence and encouragement. I learned everything I know about plastic art from him. I gave him only my gratitude and affection, and the love of my family.

I would appreciate it if you would publish this in your next issue.

Sincerely,
Costantino Nivola
Graduate School of Design
Harvard University

Editor, ARCHITECTURAL RECORD:

With characteristic modesty Mr. Nivola disclaims his influence upon Le Corbusier. Such influence must be deduced by the artistic evidence, not the protestations of the parties themselves. Only the association is a matter of fact, not the influence.

Yet I cannot resist pointing out that my article was not concerned with "influence." On the contrary, my explicit concern was summarized in the sentence: "Genius searching for nourishment feeds on what its immediate environment offers and is inexplicitly selective." Sincerely,
Frederick Gutheim

The passage in question:

"Genius searching for nourishment feeds on what its immediate environment offers and is inexplicably selective. Little in the highly refined, intellectualized atmosphere of Paris could have provided Le Corbusier with the experience he was seeking. The opportunities opened up by his visits to New York at the time the United Nations Headquarters was being designed thus acquire a singular importance.

"During those years the decisive influence appears to have been exercised by a young, friendly Italo-American sculptor, Costantino Nivola, whose New York studio Le Corbusier used, and at whose Long Island cottage he spent many week ends. Nivola, probably best known for his warm and technically ingenious sand-concrete reliefs in the Olivetti showroom in New York, was then working as a typographer and art director of Interiors magazine. He is now on the faculty of the Harvard Graduate School of Design.

"At this point, with the assistance of Nivola and other professional sculptors who aided in translating Le Corbusier's ideas of polychromed sculpture into three-dimensional actuality, the gap was bridged between his plastic research of the war years and its application in architecture. In the end, his painting and architecture were once again united.

"Of greater importance, perhaps, was Le Corbusier's first association with an artist of the first rank who lived an utterly normal family life. Sharing this life, playing with the Nivola children, his emancipation from Swiss bourgeois ideals undoubtedly began here, and with the most profound application to the Marseilles apartment project and to Chandigarh. A new humanism, expressed in the requirements of the household and the community, is still being built on this moral change."

For Service to Construction

The Producers' Council has given its third Award of Recognition for Outstanding Service to the Construction Industry to F. Stuart Fitzpatrick, manager of Construction and Civic Development Department of the U. S. Chamber of Commerce. Mr. Fitzpatrick, who received the award at a dinner in Washington, has been with the national Chamber for 37 years and organized both its Trade Association and its Construction and Civic Development departments. He has been in the forefront of efforts to further building research and to encourage slum clearance and urban redevelopment.

N.S.P.E. and A.I.A.

Professional relations between the National Society of Professional Engineers and the American Institute of Architects are reviewed in the annual report of the N.S.P.E. to its membership. Noted as a

(Continued on page 20)

PARTITIONS ARE INSTALLED without costly interruption of regular office routine. Workman is shown installing section of Weldwood Movable Partition; completed corridor is shown at left.

BEAUTIFULLY GRAINED WALNUT Weldwood Movable Partitions and matching Weldwood Doors with Weldrok cores are used for the executive offices of General Dynamics Corporation, New York City. Interior planning: Ethel Pilson Warren and Joseph W. Rogers, Jr. Distributor: Nuroco Woodwork, Inc.

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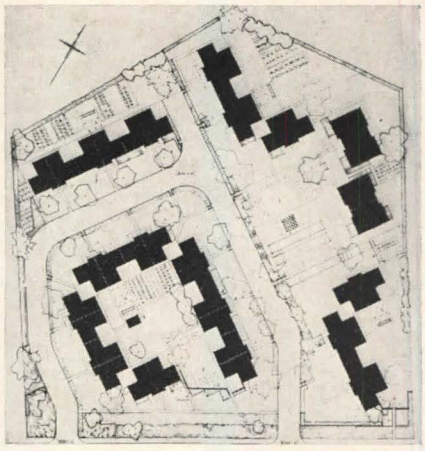
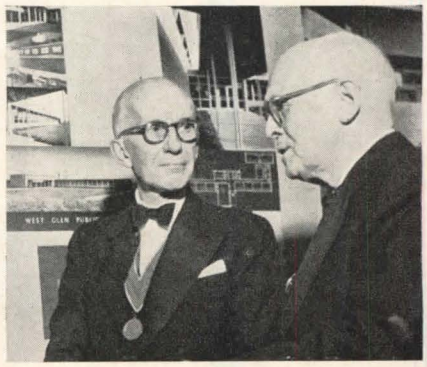




Gold Medal was awarded to Sharp & Thompson, Berwick, Pratt and Charles E. Craig, Victoria architects, for Kiwanis Village, a community of rowhouses for the aging; the jury "was impressed by the social aspects of this project and that such an institutional program could be carried out with such a high regard for human personality." Right: Governor-General Vincent Massey and R.A.I.C. president A.J.C. Paine at opening

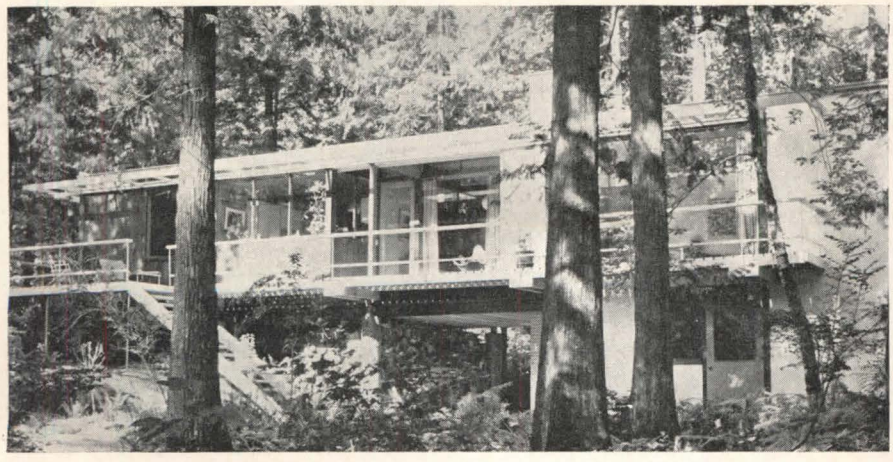
MASSEY MEDAL WINNERS ANNOUNCED: SEVEN FIRMS SHARE HONORS

The Massey Medals for Architecture were presented for the third time on November 18 at the National Gallery in Ottawa. Governor-General Vincent Massey officiated.

The Gold Medal for 1955 was awarded to the Victoria firm of Sharp & Thompson, Berwick, Pratt and Charles E. Craig for Kiwanis Village, a community designed for elderly pensioners in Victoria. In addition to its commendation of the design, the jury mentioned the landscape architecture by Wallace Ruff, of Eugene, Ore., and praised the provision made in the community for private gardens and places for group activities outdoors.

Silver Medals were presented in 10 of the 15 categories listed in the program: ecclesiastical buildings — St. Anthony's Church, Vancouver, B.C., Gardiner, Thornton, Gathe & Associates, architects; educational buildings — Toronto Teachers' College, Page & Steele, architects; office buildings — B. C. Sugar Refining Company, Semmens and Simpson, architects; industrial buildings — Simpson-Sears Ltd. and Photo Engravers and Electrotypers Ltd., John B. Parkin Associates, architects; commercial buildings — Convenience Center, Don Mills, Ont., John B. Parkin Associates, architects; hotels and restaurants — The Seaway Hotel, Toronto, A. Elken and R. W. Becksted, associated architects; miscellaneous buildings — head-

(Text continued on page 36; more winners on page 32)



Silver Award winners: for houses costing under $15,000, the Smith house in West Vancouver, by architects Erickson & Massey, "seems closely linked with the outdoors." For houses costing over $15,000, the Hamilton house in Ontario by architects Blackwell, Craig & Zeidler, was termed "a triumph in the adaptation to unfavorable site conditions"

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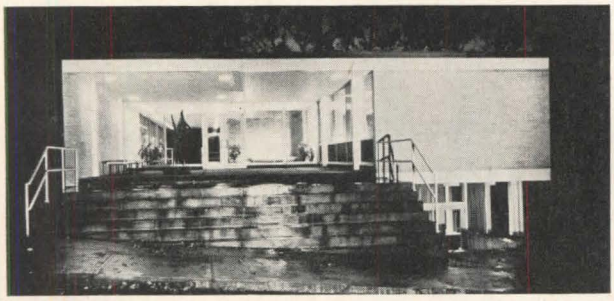
NEWS FROM CANADA

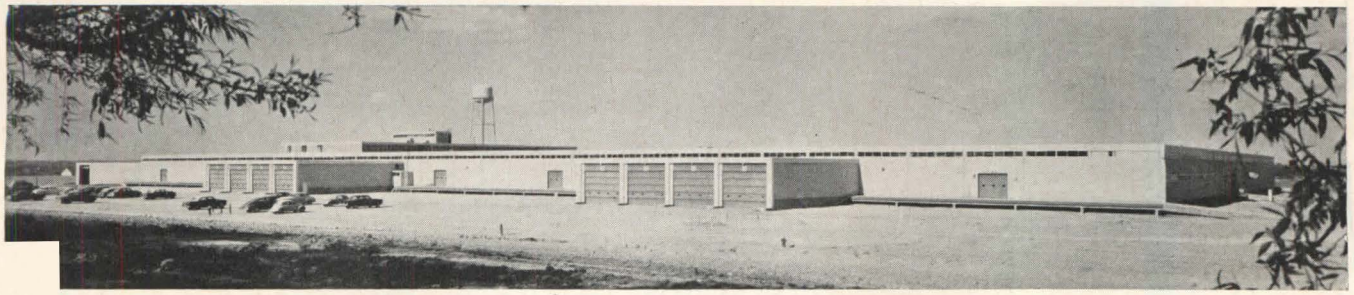
(Continued from page 30)

Winner of a Silver Medal in the church category, St. Anthony's Church, Vancouver, by architects Gardiner, Thornton, Gathe & Associates, was commended for "its modesty and refinement as a simple wooden building with low eaves and nave spanned with scissors trusses"

Silver Medals went to A. Elken and R. W. Becksted, Associated Architects, for the Seaway Hotel in Toronto, "a bold and successful attack on the problem using some of the best features of the one-story motel in working out the solution"; to architects Semmens & Simpson for the office building of the B.C. Sugar Refining Company, "a project which is in excellent taste, comfortable and elegant without ostentation"; and to Page & Steele, Architects, for the Toronto Teachers' College, which was considered "a very urbane building with a plant type suitable for many situations"



Three Silver Medals went to the firm of John B. Parkin Associates, Architects and Engineers, of Toronto, for Convenience Center (above) at Don Mills, Ont., where they were cited for "eliminating the customary anarchy of competitive advertising"; for headquarters of the Ontario Association of Architects (left), where they "made successful features of the combined exhibition space and ramp and the social space"; and for an industrial building group for Simpson-Sears Ltd. and Photo Engravers and Electrotypers Ltd., which "showed a complete mastery of industrial building form"



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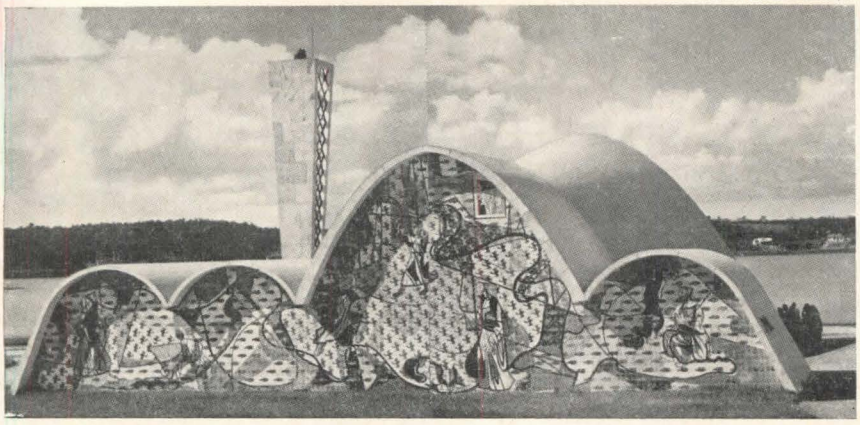
More Than 150,000 Classroom Installations

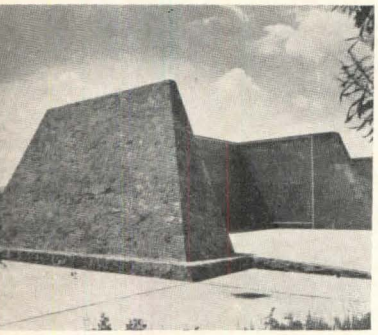
AAL

herman nelson

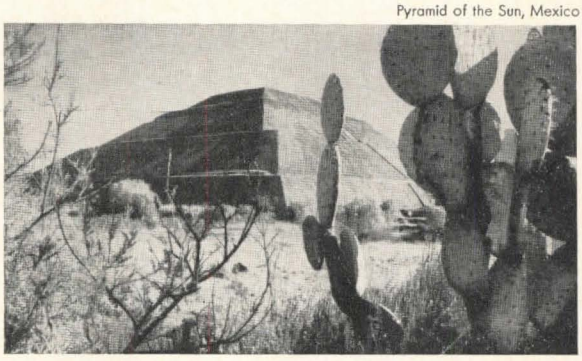
Church, Brazil. *Niemeyer*



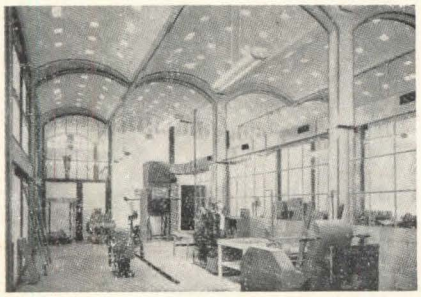
Fronton, Mexico. *Arai*



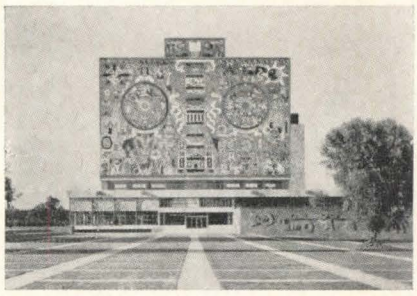
Pyramid of the Sun, Mexico



Factory, Colombia. *Pizano*

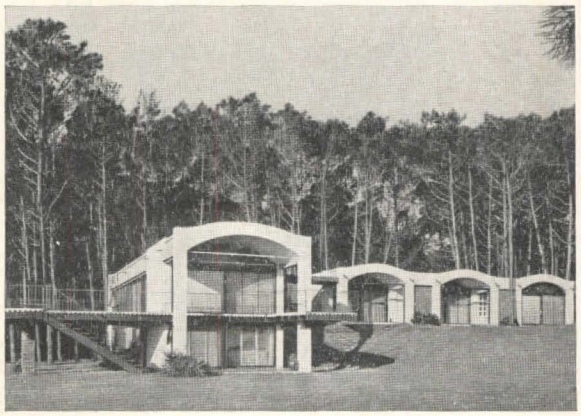


Library, Mexico. *O'Gorman*



Stadium, Venezuela. *Villanueva*

House, Uruguay. *Bonet*



Housing Development, Venezuela. Bermudez

Office Bldg., Venezuela. *Vegas y Galia*

A SURVEY OF ARCHITECTURE IN LATIN AMERICA

Latin American Architecture Since 1945. By Henry-Russell Hitchcock. The Museum of Modern Art (New York) 1955. 204 pp, illus. $6.50.

LATIN AMERICA HAS GROWN tremendously in the past 15 years. This continent, which until recently has been remote from the rest of the world, is at present undergoing a great expansion in population growth (about 3 per cent a year — double the rate of the rest of the world) and economy. The result: a building boom, so far unparalleled in the rest of the world.

In the Museum of Modern Art's exhibition of Latin American Architecture Since 1945 definite characteristics of this building boom are at once evident: In much of the work there is an over-all boldness not to be found in this country. This is a boldness of form as well as of monumental scale and vivid, often strident color.

Two dimensional art, mostly in mosaic is much employed, as is sculpture, often with real distinction.

The influence is predominantly of the International School and especially of Le Corbusier.

The characteristic structural material is ferro-concrete, chiefly in conventional cage construction but sometimes in thin shell form.

Henry-Russell Hitchcock, commissioned by the Museum's International Program to make this survey, discusses these characteristics and gives some historical background of Latin American architecture in an accompanying book.

In the first place, Mr. Hitchcock states that "the lands where this major flowering of modern architecture has taken place in the last twenty years are not unknown to the history of architecture." He sites in particular Mexico and the Andean highlands.

He continues his historical background with the explanation that "the richness of colonial architecture from the 16th century to the early 19th century, especially in its more decorative aspects, and the curious flavor arising from the elaboration of various Renaissance and Baroque themes by Italian craftsmen, produced a series of style phases where common qualities give the adjective 'colonial' a far more precise meaning than it had with us."

(Continued on page 60)

". . . there still exists another and ancient need which architecture may yet satisfy. I mean of course the need of expression: of holding before men the true and enduring content of their civilization of which technological thought and achievement are consequences, not causes. Beneath these outward trappings we are still Hellenic and Christian — more Hellenic, I think, than the Athenians, more Christian than the Crusaders. Our architecture will ultimately return to these enrapturing springs."

THE ENGINEER'S AESTHETICS

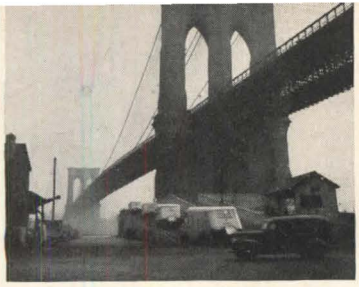
by Joseph Hudnut

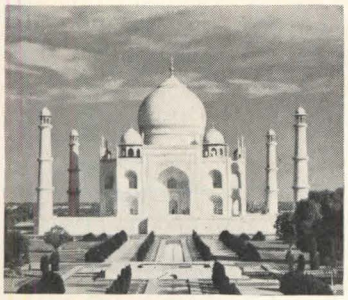
IT IS PROBABLE that in the near future the art of architecture will become except for its themes, identical with the art of the structural engineer.

I am not speaking of architecture as a profession. As a profession architecture will continue its distinct organization and legal status, its traditional procedures and peculiar language, and, no doubt, its inherited loyalties. Architecture is too much fun to be renounced either by practitioner or public. But the art of architecture will suffer — is suffering — a strange subversion. Already architects plan, invent, calculate and understand as engineers. And it is as engineers that in the future they will be valued and respected.

I make this statement of course with many reservations. There will be certain types of shelter, certain areas of value or need, in which architecture will be practiced, like painting or music, as an art of conscious and contrived expression. Those persons who build houses for their own occupancy may be permitted to impress their tastes and their caprices on their environments. There will still be romance in the suburbs. Some institutions — the Church, for example — may cling to their symbols. At times architecture will be practiced, as it is today, as a function of promotion, an adjunct to the art of advertising. And there will remain in and around architecture the buzz of aesthetes curious of such matters as interpenetrating space and the dynamic nature of elliptical lines. These also will have their audiences and their experiments. When therefore I say that engineering will absorb architecture I do not mean to say that there will not exist individual modes of expression in that many-sided art. I mean that in the greater part of their practice — let us say in nine-tenths of it — architects, less concerned with that search for form and meaning which occupied their tradition, will approach their problems of design with the method and in the spirit of engineers. It would not be surprising if office buildings, multi-family dwellings, schools, hospitals, factories, airports and administrative buildings of all kinds should be definitely recognized as works of engineering — although built by architects.

At this point I must hasten to explain that I intend no insult to the





architects of this land. The changes in their practice will not be made by themselves. They will be the consequences of changes in the architect's environment. New modes of manufacture and distribution, new standardizations in the uses of buildings, new materials and mechanizations in the processes of construction and above all new currents of thought and evaluation in that climate of opinion which intimately envelopes architecture — these will force upon architects the new conformities to which the engineering mind is already adapted. Below the surface aspects of their profession architects are being silently sifted by a Law of Subconscious Selection. Those who survive will be those most fitted for an industrialized system and economy. And perhaps that is as it should be.

Are we to assume then that buildings will no longer be beautiful? Of course not. Works of engineering are often beautiful. The Brooklyn Bridge is beautiful; it has been compared to a harp held against the sky and its towers are those of a cathedral. The Merritt Parkway is beautiful; a "ribbon inviting to adventure." But this beauty is not quite the same as that of architecture as architecture existed before our time. A difference arises, not because works of engineering are more rigorously functional — the Queensboro Bridge, as hideous as anything this side of Hell, is deliriously functional — but because the tradition of engineering, like that of architecture, includes an ideal of beauty peculiar to itself and quite distinct from that of any other art. Is it not reasonable to suppose then that architects (still in search of beauty) will, when they become engineers, reform their ideal of beauty into a harmony with the ideal of engineers? That is, in fact, precisely what they are doing. In part at least they have accepted as their own the *engineer's aesthetics.*

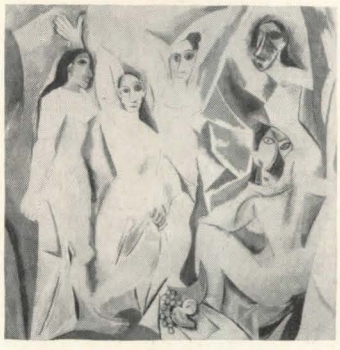
By aesthetics I do not mean those researches in psychology which treat of the emotions evoked by art nor am I concerned with a philosophy of the beautiful. My definition, for the purpose of this essay, is less exacting and less perilous than either of these. By aesthetics I mean only those practices, or ways of working, of which beauty is a consequence. Once upon a time, for example, architects were solicitous to give proportion to everything they built; beauty, they believed, was in part a consequence of proportion; and they could condemn the Taj Mahal for a lack of that subtle attribute. They could also condemn the great iron shed of the St. Pancras Railway Station, having failed to remember that proportion, although a source of beauty in architectural form, ought not to be expected in a pattern determined by scientific calculation. The practice of architecture was once hedged about by such *principles of method* none of which rested upon a philosophy or upon any persuasive discoveries in the experiments of psychologists and yet were the universally accepted laws of design. Engineering also had its principles of method which, when followed, led to a realization of beauty. These did not form a system, were not frozen into an academy, formed no part in an arsenal of criticism and yet were everywhere current in the practice of engineers.

* * * * * * *

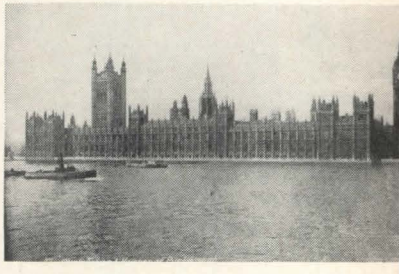
At least three of these principles of method, hitherto characteristic of engineering, are now becoming cardinal in the art of architecture. Among these the practice least questioned is that of purifying the patterns of structure from all emotional content other than that which is inherent in their actual and objective forms. Engineers do not admit romance as an ingredient in their bridges and aqueducts. They do not interpret their works with symbol or humanize them with ornament. They are equally indifferent to philosophies, to historical allusion and to the guidance of academies. Whatever beauty they attain is a consequence of their reliance upon the potentialities of structure to express its own idea — and of course upon the sensitivity of

the spectator to that expression. The Germans, who give everything a name, call this manner of working *materialgerechtigkeit*. In England it is called *purism*.

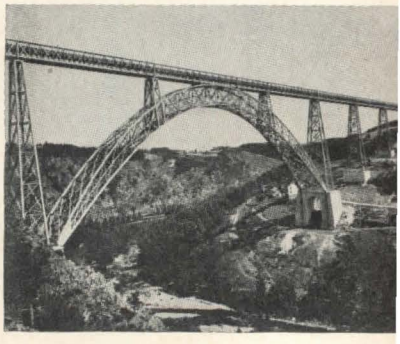
Lessing, having noted in the *Laocoön* that the arts — music, letters, painting, sculpture, drama, architecture — had each a unique quality and range of expression, declared that this quality and range are determined in each art by the materials and techniques employed. The expressive potentialities of music, for example, are limited to whatever ideas and feelings may be evoked by sound waves having a regular recurrence; the expressive potentialities of painting are limited to those emotions which can be conveyed by colors laid on a two-dimensional surface; and architecture, in the same manner, is — or ought to be — limited in its range by that expression which can be attained by the functional use of space and structure.



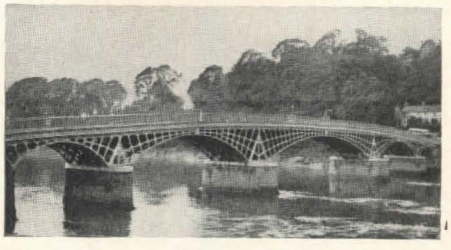
From this premise, which appears to be unassailable, the disciples of Lessing drew the corollary that a work of art is most eloquent when the artist, having realized the potentialities of his material, renounces all attempts at a wider expressiveness. An artist must know the kind of expression suited to his art. He must not try to do in one art that which can be better done in another. A musician who tries to express in music feelings which depend for their recognition on literary associations confuses and often defeats the more moving speech of his tonal pattern. The brilliance and surge of Tschaikowsky would be therefore more immediately felt had he omitted his romantic allusions to Romeo and Juliet. A painter who tries to express in painting the human interest of story and representation blurs the more directly-apprehended meanings of his line and color. The serenities of Picasso would therefore intrigue us more poignantly if the demoiselles d'Avignon did not make their appearance behind his nice balance of surface area and contour. And the Houses of Parliament would lift their chiseled towers out of the mists of London with a more touching majesty were they not screened by the more engaging mists of history.



I do not suggest that engineers had any part in this fine-spun doctrine. Engineers do not have doctrines. Among engineers purism had long since become, not a doctrine, but a practice. It was a practice which arose from nothing more recondite than reasonable adaptations of materials to the thing to be done; it rested, not upon a philosophy, but upon common sense. Engineers did not need to be concerned lest they should cloud with sentiment the beautiful works which they created — the viaducts of Eiffel, the bridges of Rennie, the exposition halls of Cottancin — for they professed no competence whatever in such matters nor did they desire any competence. Engineers must have been astonished when late in the nineteenth century the speculators in aesthetics decorated their pragmatical tradition with subtleties of dialectic. Good heavens, they had been practicing *materialgerechtigkeit* for a hundred years without knowing it!

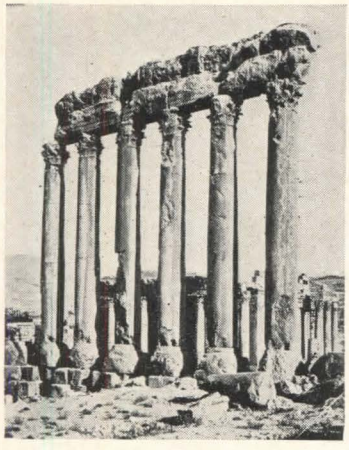


The architects too must have been astonished when they learned that the engineers, who were supposed to have no principle whatever, actually had built their practice on a principle superior to their own! Moreover it was evident that in engineering purism had assumed an exceptionally lucid and vigorous character. Architects who had been persuaded of the rightness of purism and who were therefore ready to limit the scope of their art to those feelings which space and structure might express now became aware of a severely ascetic beauty which arose, not merely from conformities to the capacities of space and structure, but from conformities to the more restricted competencies of a single material. That material was steel — the material which architects had so improvidently resigned to the trusteeship



of engineers. It became evident that steel had well-defined avenues of expression quite apart from those of wood or stone. Just as a painter recognizes in the multiplex art of painting the separate authorities of water-color, oil and tempera — each of which "can do things that the others cannot do" — so the architect recognized in steel a range and quality of expressiveness peculiar to itself. There existed a possibility of beauty in steel which could be defeated not only by sugar coatings of Greek column and Gothic pinnacle but by the more subtle incongruities of other materials and techniques. This the engineer taught, not by precept, but by example.

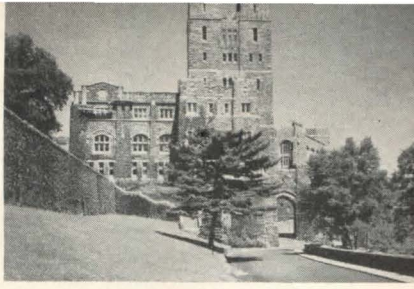
Clearly the architects had much to answer for. Their excesses in sentimentalities and showmanship were plain; they had displayed a most grievous lack of integrity; and they were penitent. The engineer's asceticism, which had begun as a principle of method, now rose before them as a morality. And it was then that Mr. LeCorbusier invited the architect — uncertain of his own tradition, eager to relate his troubled art with the scheme of a mechanized universe — to share not only the engineer's purism but to share also the virility, self-discipline, honesty, usefulness and innocence of that Noble Savage. Nothing can be more disquieting to an artist who is questioning his own standards (the customary habit of a scientist!) than sonorous rhetoric on the morality of his art — especially if the art is one to which morality has no relationship whatever. In the arts integrity is a word which — unless it be the word organic — is unequaled in its soporific influence over the intelligence. Before these awesome metaphors architects lay down their burnished arms.



Moralities, and philosophies as well, can often be explained by the pressures of events which accompany them. It is probable that the architects would not have embraced either the doctrine of purism or the specious morality of functionalism had not a cold wind of economic necessity blown so vast a debris of column, arch and traceried finial from the sides of their steel buildings. The architect did not actually lose his confidence in his aristocratic art until he had lost also the princely patron who sustained that art. It was not until the architect, like the engineer, had become the servant of industry that he made so exalted a virtue of the engineer's necessity. That necessity had become the architect's also.

All honor to those gallant pioneers who developed from the dicta of Lessing the cathartic theory of purism! Purism was — like cubism, impressionism, surrealism — a re-examination of the fundamentals of art, made necessary by the dismal academic art of their time. Thus they laid the bases of modern art. And besides they are responsible for some excellent architecture. Nevertheless we ought to remind ourselves that purism is neither a philosophical nor a scientific concept. Purism is a preference and ought to be recognized as such. Certainly every architect has a right to his preference and so has the Spirit of Our Industrial Era. And just as a poet may prefer the disciplines of the sonnet form to the liberty of blank verse so an architect may prefer the disciplines of purism to the licentiousness of the styles. We know how artists do their best work when they design within the frame of known and accepted conventions. And yet it would be a pity if as a consequence we were to have only one kind of architecture — or if in our need for a boundary we should submit our art to a doctrine which, if valid, would stain half of the greatest masterpieces in architectural history. It may be that architecture is, like opera, an art made up of a fusion of many arts and techniques. Perhaps architecture is, like love, a "many-splendored thing." Nor is it true that architecture can tell a story that could be told in words or convey a sentiment that could be translated into music.

Preferences often grow into fashions and fashions into dogmas. The dry



Gothic architecture of the military academy at West Point and the lush Baroque of the naval academy at Annapolis had each their origin in a preference which had grown into a dogma and from a dogma into a tyranny — and each was explained and defended by passion and high argument.

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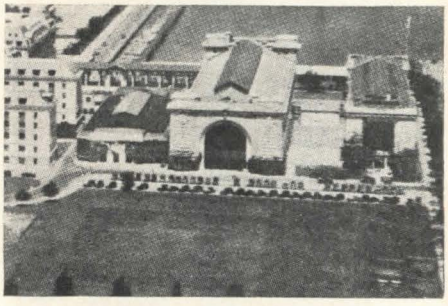
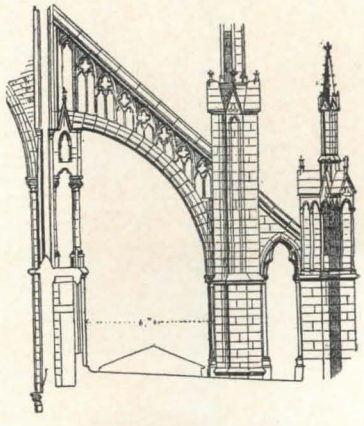


Neither of these works of architecture exhibits to any marked degree the second among those engineer's aesthetics which I wish to discuss in this essay. Neither of them proclaims a beauty which like that of the new Air Academy arises directly from technological invention and daring — a beauty which has its origin not in form, or in the remembrances that cluster about form, but in action and interaction within and among structural elements.

A preference for that quality of beauty — a beauty which has its source in that *principle of method* — has characterized the engineer from the beginnings of his profession. Engineers delight in difficulties and when they have overcome difficulties they delight to display that victory to the world. Both of these satisfactions are no doubt intellectual satisfactions; but they are also aesthetic; and that is true also of our own pleasure whenever we find the technological achievements of engineers made visible in their structures and share in our imaginations the balance and interaction of their arrested energies. Works of engineering are live creatures; like athletes they are pleased to display their strength and poise. They are dramas which tell us what is going on among their many actors; they are events.

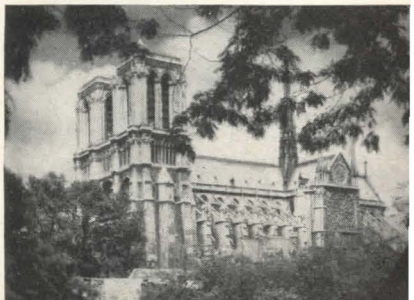
Architects who once admired the beauty of repose are now aware of the active beauty of techniques. They show a marked preference for technological virtuosities and are at pains to announce their preferences. They are thinking as engineers.

Of course I know that architects have always (well, nearly always) been conscious of the energies which give life to their constructions and have made these energies important elements in their designs. The architects of the Parthenon were careful to show us how their peristyles press against their celestial burdens, and the buttresses of Gothic cathedrals, although loaded with ascending ornament, nevertheless acknowledge their role as the containing elements around a structural system. But in all of these the forces are felt, not described. They are the secret essences which give vitality to the fabric but their part in the expressive character of the architectural form is seldom explicitly revealed. The form was, until our time, a "corrected view of the truth."

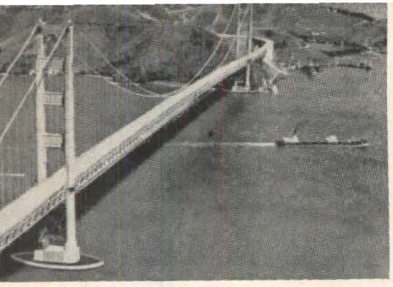


"The force and spirit of the constructive parts," said Alberti, "is a unifying influence but must nevertheless play a secondary role — the supremacy of form over matter being the primary concern of the architect." It is fair to say that the engineer has made that principle momentarily outmoded.

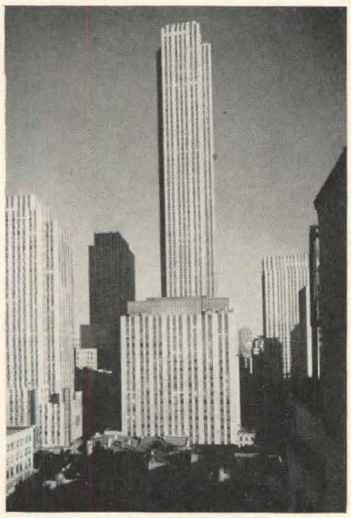
Le Corbusier once defined architecture as "the masterly, correct and magnificent play of masses brought together in the light" and he agreed with Plato that the primary shapes of geometry, "distinct and tangible within us and without ambiguity," are the most beautiful. Certainly the beauty of these shapes does not rest upon a structural principle nor is their magnificent play in the light overshadowed by any failure of logical consistency. Perhaps there is illustrated here an essential distinction between the philosopher-architect and the engineer-architect.



In contrast to the patterns of architecture, the patterns of engineering often appear to be direct translations of equilibriums of forces — of forces in and around — into physical substances. The engineer is always aware of the stresses which are active below the appearances of his design; these are ethereal animated patterns on which he builds his visible pattern; and we know how often the beauty of such patterns has been explained by analogies

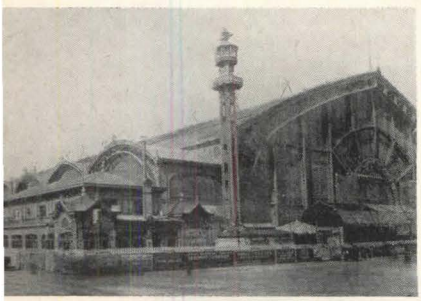


between them and the forms of nature. Just as a tree grasps the earth with its roots and with its branches reaches into the sun and wind, so the suspension bridge presses its great towers against the floor of the river and lifts its slender filaments against the sky. The Bridge Over the Golden Gate is a colossal diagram in which are set forth, as in a mathematical formula, all of its active forces: the pull of the cables against their firm anchors, the bending of the towers this way and that with the vagaries of traffic and the winds, the tensions of the strings that delicately sustain the long arc of the roadway.



The themes of architecture do not often include a theatre so grandiose as a suspension bridge and the practice of architecture is too often hedged about by commercial and human factors which do not as a rule embarrass the engineer. That is why the engineer's visible symphonies seem often to lose in cogency when we encounter them in buildings which minister more intimately to our daily lives. Our school houses, for example, resolutely display their steel armatures without exciting us to any participation in their somewhat adolescent play and the infinite scorn of our new apartment houses for any shred of grace does not persuade us that truth is beauty however frankly they may confess the indelicacies of their anatomies. I am speaking in general terms; of course I know that there are instances of grandeur even in factories and housing projects; and the engineer-architect's principle of method is often successful in skyscrapers. I have in mind those recent skyscrapers which are stripped of everything but their iron and cellular monotonies — structural circumstance so insistently shown that we feel even plate glass to be an impertinence. No doubt these have lost that "glory and pride of exaltation" which Louis Sullivan called the organ note of their appeal — the ascending power that we feel for example in the central building at Rockefeller Center — but they have definitely taken a high rank in the engineer's hierarchy of beauty. Perhaps that is where they have always belonged.

Among all modern buildings the beauty of engineering-architecture is most persuasively exhibited in the great iron sheds that were once built as parts of railway stations and are now built as convention halls. The Galerie des Machines at the Paris Exhibition of 1889 has taken its place in the legends of architecture with the Basilica of Maxentius and it would not be surprising if the new Kresge Auditorium at M.I.T. should achieve a parallel renown. The architect — in his building at M.I.T. — has been at great pains to make clear, as the basis of his design, the equilibrium and power of two great bowls of concrete, one suspended above the other. One of these lifts an audience from the earth; the other, inverted and anchored at three points only, bends over the first like a man-made sky; and the unity of the whole is thus attained by the play of effort and weight in the great shell that rests on the ground and the volatile energies of the canopy above it. The beauty of this work does not rest on an ordering of useful spaces — for such an ordering could have been achieved with greater harmony and with greater economy of means — but upon a proud solution of a technological problem. This excellence is an excellence of engineering.



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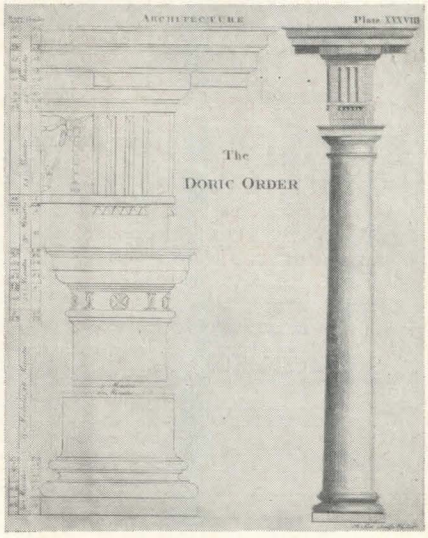
Works of engineering so dramatic as the Kresge Auditorium could not, I think, form architecture's daily food. Neither architecture nor engineering can be forever adventurous. In the thousands of buildings which must be built each year there must be established and abbreviated practices which permit only a limited range of invention and astonishment. For such buildings the engineer has created *standards*.

All the world knows that Americans are supreme in the arts of standardi-

zation. Pittsburgh enlightened our land with her standardizations in steel manufacture. It is characteristic of our culture that we should desire such standards in our art. It is not surprising that we should find standards beautiful.

I have not forgotten that architects had standards before the founding of Pittsburgh — and what standard, for example, could be more universal than the Doric column? No one has explained the seduction of that pattern throughout the ages or told us why until yesterday it was as eloquent in South Africa, in London, in Stalingrad and in Chicago as it is on the shores of the Mediterranean. One might say of classical architecture in general that it is — perhaps I should say it was — an art of standards. And we know that this fact did not discourage an individuality of idea and character.

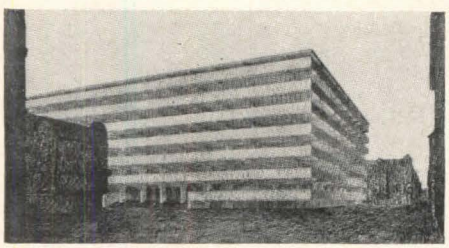
A great architect has defined a standard as "that simplified practical exemplar of anything in general use which embodies a fusion of the best of its anterior forms" — and he said that standards are one of the immediate prerequisites of civilization. This definition is clearly that of an engineer: no artist would willingly fuse his work with anterior forms. There is in it also the concept of progress and — if I have understood the author — he has identified a progress towards technological perfection with a progress towards beauty. That concept also could only be that of an engineer. The artist knows that the arts do not progress.



Le Corbusier, as we all know, illustrated the development of technological standards with a little essay on the Parthenon. The columns of the Parthenon, he tells us, are products of a selection applied to a standard, the Greek temple having been standardized in all its parts before the building of the Parthenon. In the same manner, we learn, the mechanisms of modern life — the airplane, the locomotive, the television set — advance towards perfection. All motor cars have the same essential arrangements; design consists in a search for a simplicity and harmony beyond that of technical necessity. And from this principle of method Le Corbusier drew the conclusion that our engineers, the Hellenes of our day, are re-creating in the shapes of their motor cars a beauty that Phidias might have envied. The author neglected to add that the Doric column has stubbornly refused to progress since the last stone of the Parthenon was laid.

The distinction between technological standards and those of art is one of great importance in the art of architecture. Until our time the architect's delight in standards of art was quite separate from his delight in the serviceable standards which were the practical requirements of his craft. The standards of art existed as elements of form; their beauty was the beauty of form; and the contemplation of these elements was unalloyed by necessity or desire. The columns which decorated the neo-classical buildings of our time did not promise the architect anything. They were without reference to progress in industry or to efficiency in the conduct of life and one could apply them to the Lincoln Memorial without any other intention than a renewed delight in their stately processionals. Of course I know that the Doric column had its origin in the qualifying laws of its material but I do not believe that an awareness of that fact forms any part in the apprehension of its beauty. The Doric column existed, like all the elements of classical design, in a realm set aside for architecture. It was as alien to the spirit of engineering as a sonnet of Wordsworth or a divertimento of Mozart.

The engineer's delight in standards is not so immediate. It does not rest upon a recognition of form; it has its source rather in the hundred ideas that surround and penetrate standards. A standard may, as I have noted, embody the idea of progress — of that promise and unfoldment in our environment



PICTURE CREDITS

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Doric columns, Bettmann Archive
Lincoln Memorial, Ewing Galloway
Ribbon window, from Power of Buildings, by Hugh Ferriss
A hotel in Miami, Ewing Galloway

that are so often mistaken for beauty. A standard may also embrace the ideas of service and convenience and of pleasing economies in cost and operation. Our natural pleasure in craft is there and our contemporary joy in that enlargement of human power that is the gift of our machines. And no one will deny that standards, including the type-shapes which are generic to industrial manufacture, are indeed prerequisites in our civilization — that they are prime factors in social health and well-being.

Such standards have definitely an aesthetic character. By this I mean that their use is one of those principles of method by which desire, hope and a sense of accomplishment may become summarized in a building. Consider, for example, the ribbon window. A ribbon window is more than streamlining; it is an embodiment of an engineer's longing for system and efficiency of operation. The fact that such a system and efficiency may impose a harsh monotony on the sides of skyscrapers does not blur the satisfactions of the technological mind. In 1922 Mies van der Rohe showed how this utilitarian device could be made continuous around the periphery of a building; the result, writes Philip Johnson, was an apotheosis of a ribbon window. But from an apotheosis the ribbon window descended rapidly to a cliché, from a cliché to a standard, and from a standard to a sterility. The new office buildings which are rising along Fifth Avenue, like weeds in an old-fashioned garden, are wreathed with that "rational aesthetic."

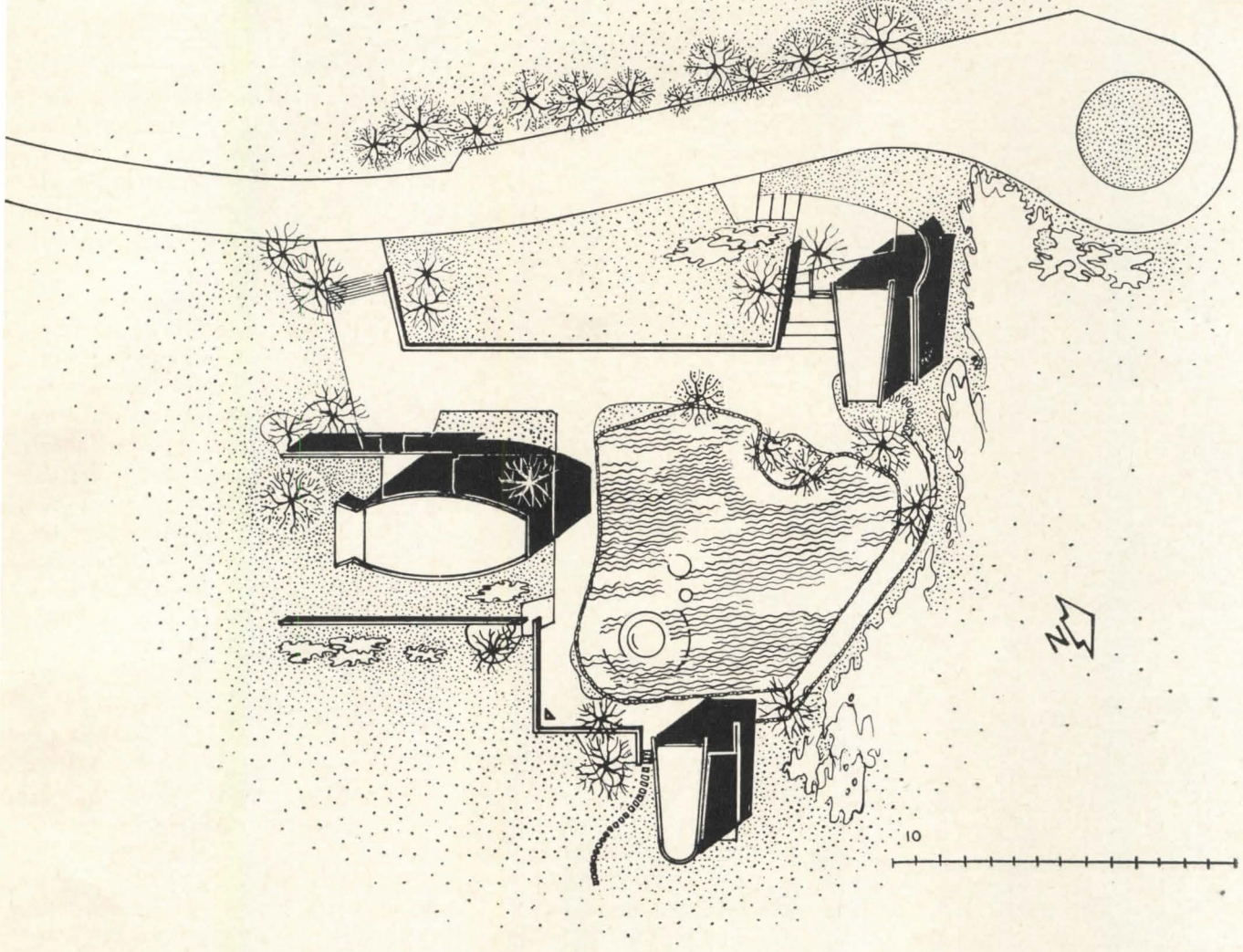
These office buildings are themselves standards, and in that respect they do not differ from the majority of our building types. A hotel in Miami is like a hotel in Santa Barbara and that "miraculous mile" proposed for Chicago cannot be distinguished from the miraculous mile-and-a-half to be built in Philadelphia. I suppose that standards are inevitable when governmental agencies undertake the guidance of architecture. When, for example, Washington decided to assist the building of hospitals throughout our land, architects found that they had little to do other than to please themselves with the color of brick. Standards in school house design, formulated by state authorities, are frozen into law in order to defend our children from the imaginations of architects; church designs are furnished by church bureaus at small expense complete with appropriate sentiment; and small town banks receive the plans for their buildings as a premium in the purchase of marble counters. It is quite impossible to tell the split-level ranches and expandable cods of Dallas from those of Wellesley Hills; and as for the homes of the poor (I mean the lower income group) — with all our humanitarianism these have not relinquished their ancient title to dreariness. It is pleasant to remember that there are romances in these boxes.

* * * * * * *

The role of engineering is one of great dignity and splendor. It is not surprising that architects, considering the circumstances of their time, should wish to assume that role and in so doing participate more urgently in that conquest of nature which is the magnificent event of contemporary life. It is an infinite satisfaction to know that the techniques of building are employed in the cause of human liberty.

Nevertheless there still exists another and ancient need which architecture may yet satisfy. I mean of course the need of expression: of holding before men the true and enduring content of their civilization of which technological thought and achievement are consequences, not causes. Beneath these outward trappings we are still Hellenic and Christian — more Hellenic, I think, than the Athenians, more Christian than the Crusaders. Our architecture will ultimately return to these enrapturing springs.

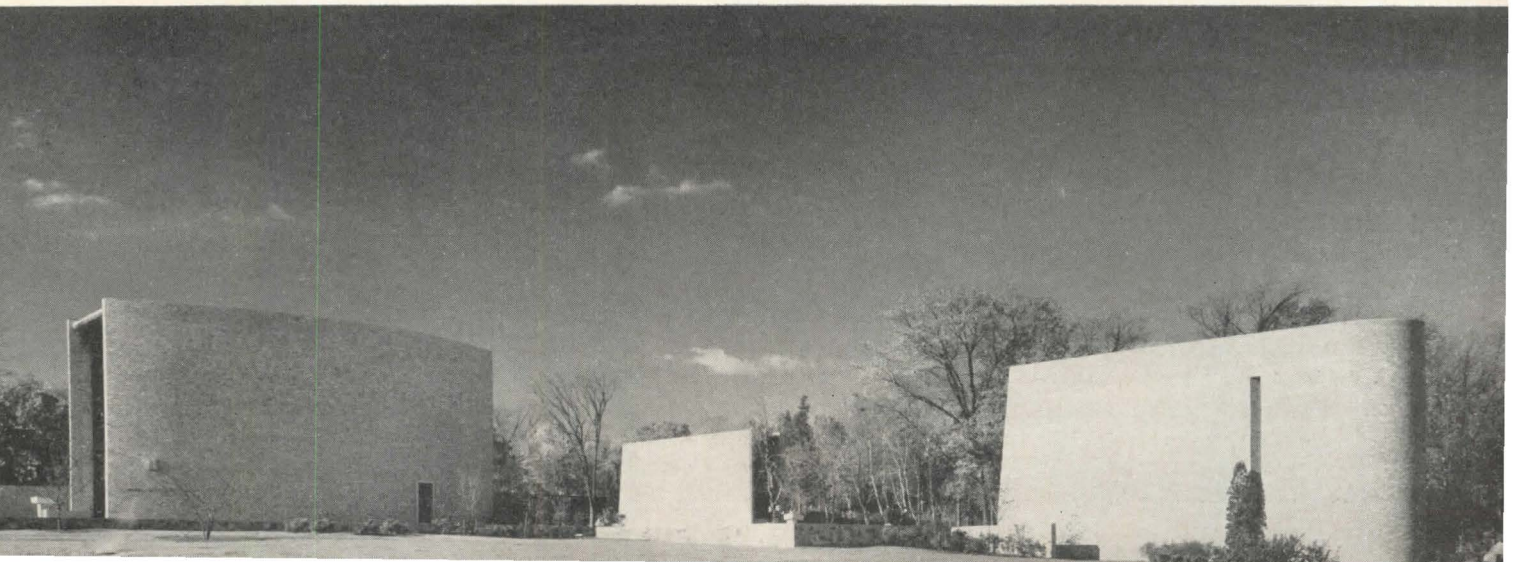
AN UNUSUAL DESIGN FOR COLLEGIATE RELIGION



Drawings by Thad Leski of Harrison & Abramovitz

Interfaith Center, Brandeis University, Waltham, Mass. *Harrison & Abramovitz, Architects*

Structural Engineers — *Eipel Engineering;* Mechanical & Electrical Engineers — *Sears & Kopf;* Utilities Engineers — *Linenthal & Becker;* Acoustical Engineers — *Bolt, Beranek & Newman;* Lighting Consultant — *Lighting by Feder;* General Contractor — *Lilly Construction Co.;* Interior Consultant — *Alice Tiebout;* Sculpture (Eternal Light & Menorah) — *Herbert Ferber;* Ark Curtain — *Design, Mitchell Siporin — Execution, Helen Kramer;* Ark, Lecterns, Furniture — *built by Jens Risom;* Religious Appointments *executed by Rambush.*

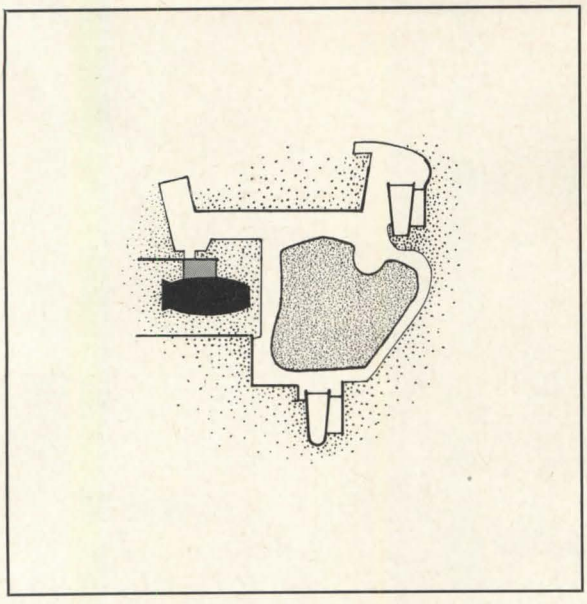


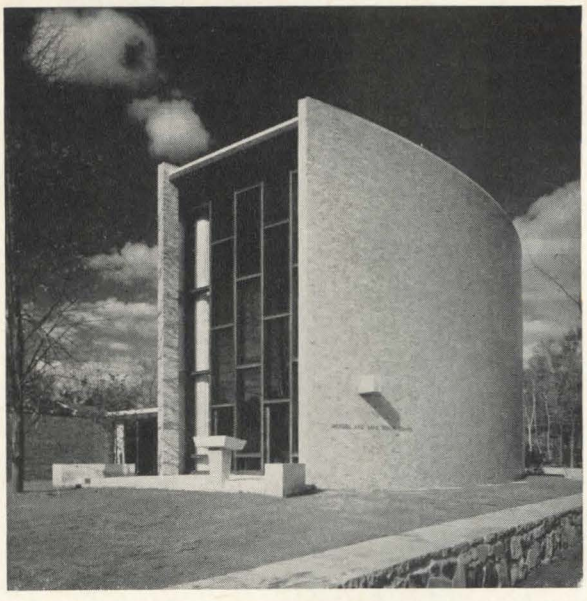
THREE CHAPELS: JEWISH

Architect Max Abramovitz says:

"Following the development of a program at Brandeis University to provide equal and distinct facilities for the Catholic, Protestant and Jewish faiths, it became apparent after many studies that the best solution would be three distinct structures — not one with subdivisions or movable appointments within. Each group would then have its own atmosphere and quality — possible only with special attention to individual space and concern for specific religious ritual and procedure. Thus developed the idea of three chapels grouped about apond, adjacent to a growth of trees. The composition permits a view of each building in relation to the other, as well as a vista from the campus proper.

"Although varied in shape and design — expressive of the peculiar characteristics and functions within — a feeling of unity and neighborliness was provided by





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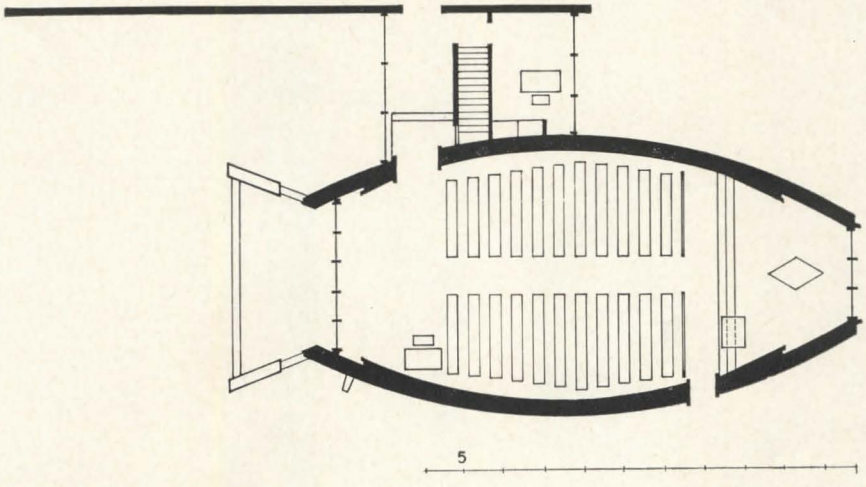
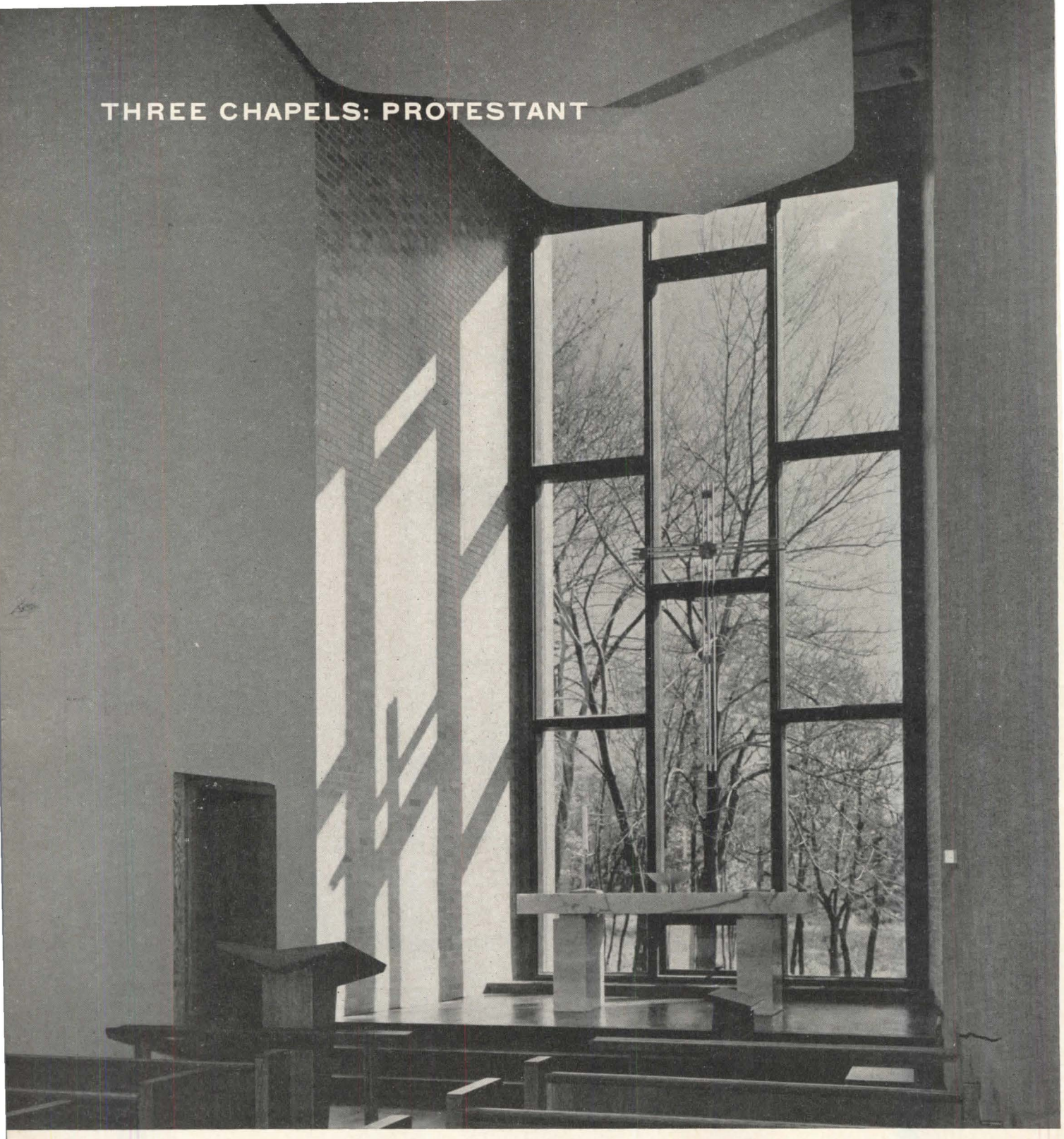
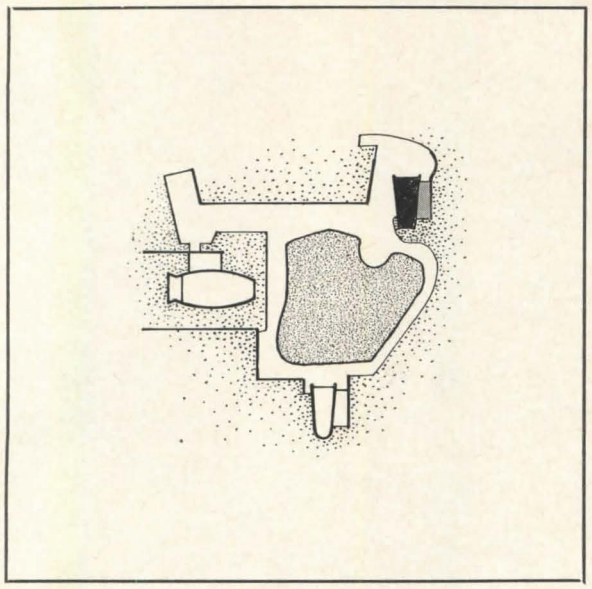


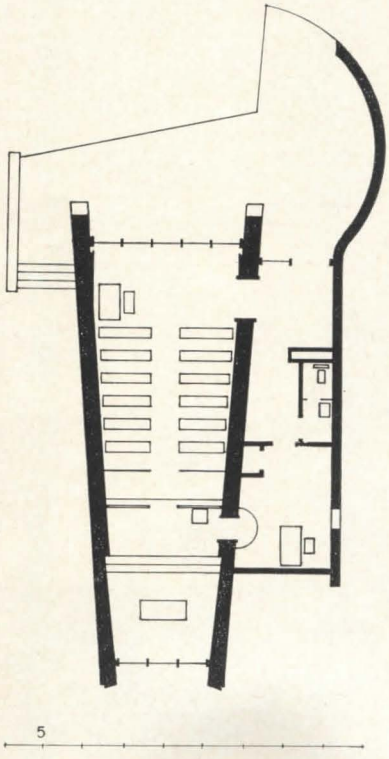


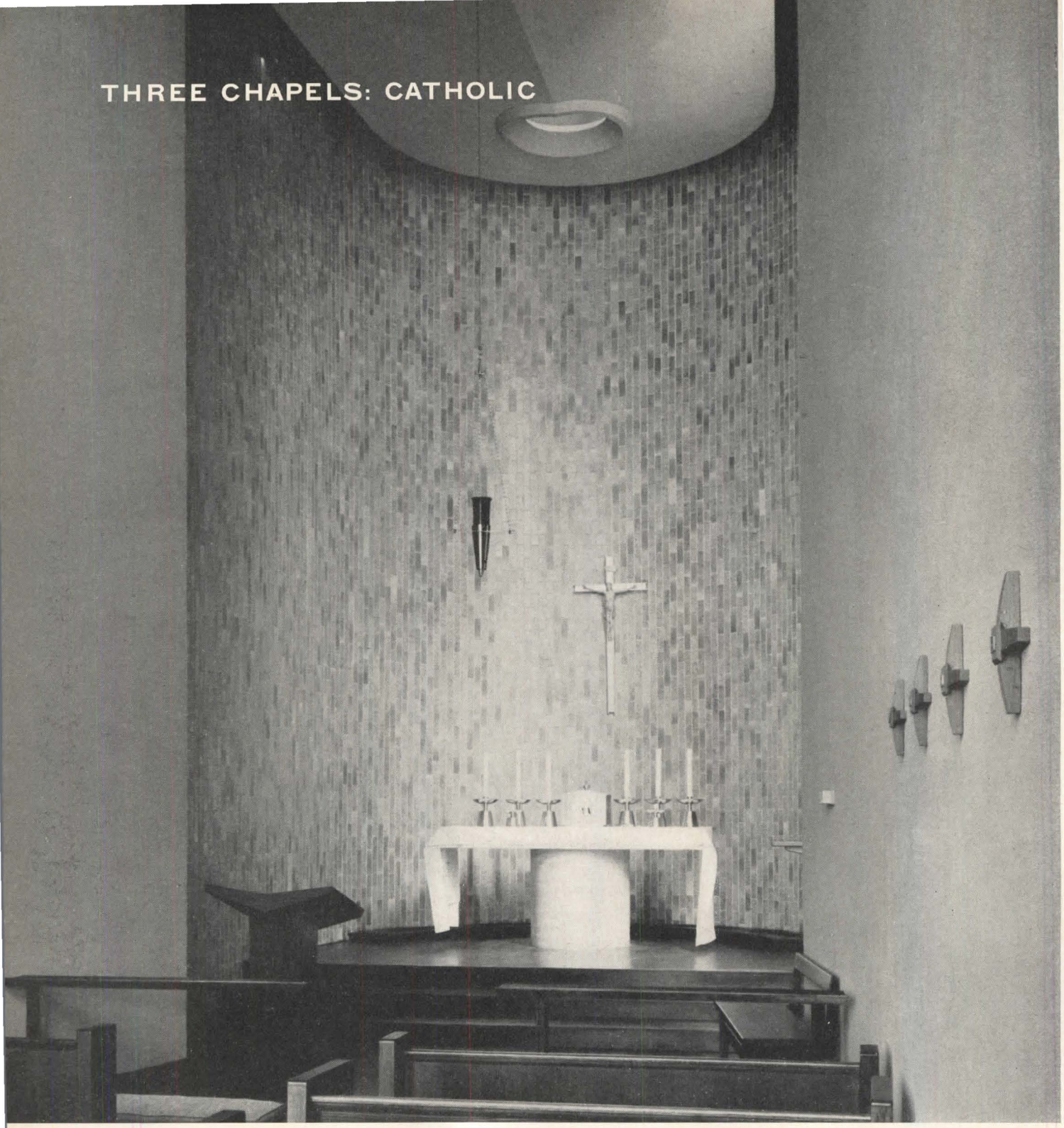
Max Abramovitz:

using similar materials and a like character throughout. Competition was avoided by an absence of exterior symbolism — yet individual identification becomes apparent to one strolling about the pond. There is the Ark form in the Jewish chapel; the Communion table in the Protestant chapel; the Altar for the Catholic chapel — all readily apparent through the plate glass and wood screens that open to the pond.

"The Catholic chapel is round-ended. The enclosed east end envelops the ritual of the high Mass and helps achieve a low lighting level; the open, glass-walled west end reveals the altar from without. The Protestant chapel is of bold trapezoidal shape with glass and white-oak end walls, the walls focusing on the Communion table and sky beyond. The Jewish chapel is formed of two solid curved screens of brick with end walls of oak





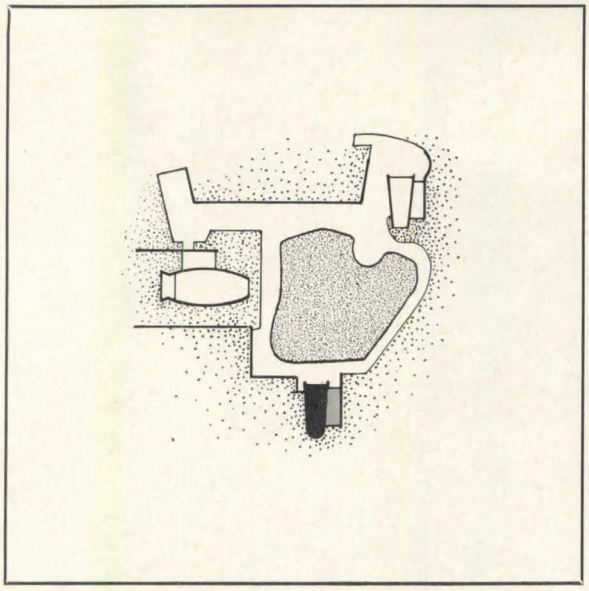


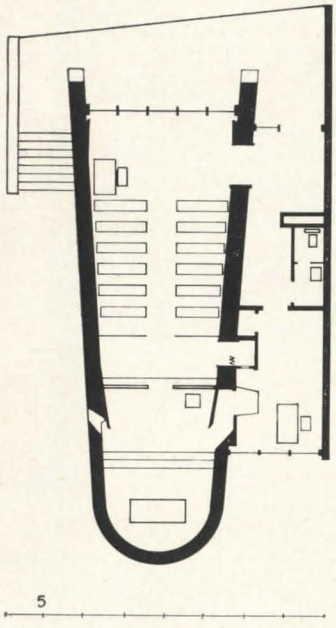
Max Abramovitz:

and glass, yielding a view through to the Ark and the grouped trees beyond.

"Architecturally, the aim was to develop a special atmosphere within the group which would set it apart from the academic buildings and develop an inner mood associated with today's three major faiths.

"The ceilings are visually separated from the walls for a floating effect, which is furthered by side-lighting for an impression of airiness. They also slope downwards toward Altar, Communion table or Ark to accent the focal points for each of the faiths. The floors are all of dark oak planking, and the end screens uniformly of natural finish white-oak and polished plate glass for exterior unity. Great care was taken in both the design and execution of the ritualistic furnishings, executed by leading artists."





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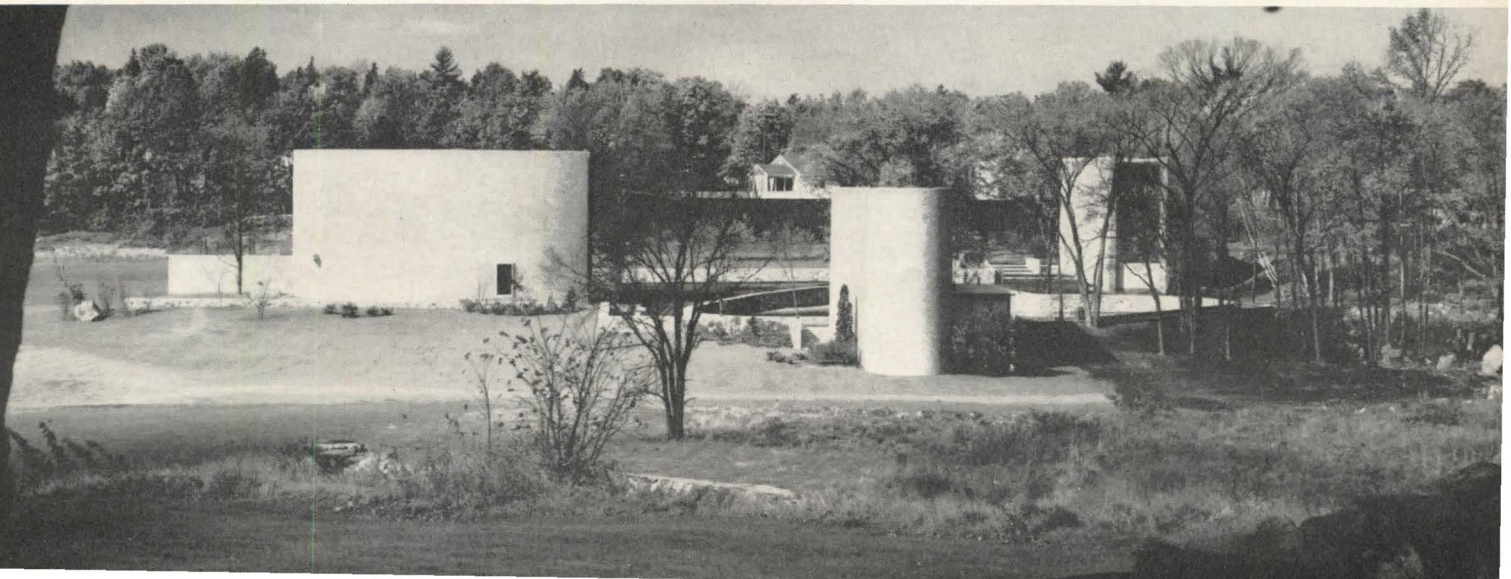
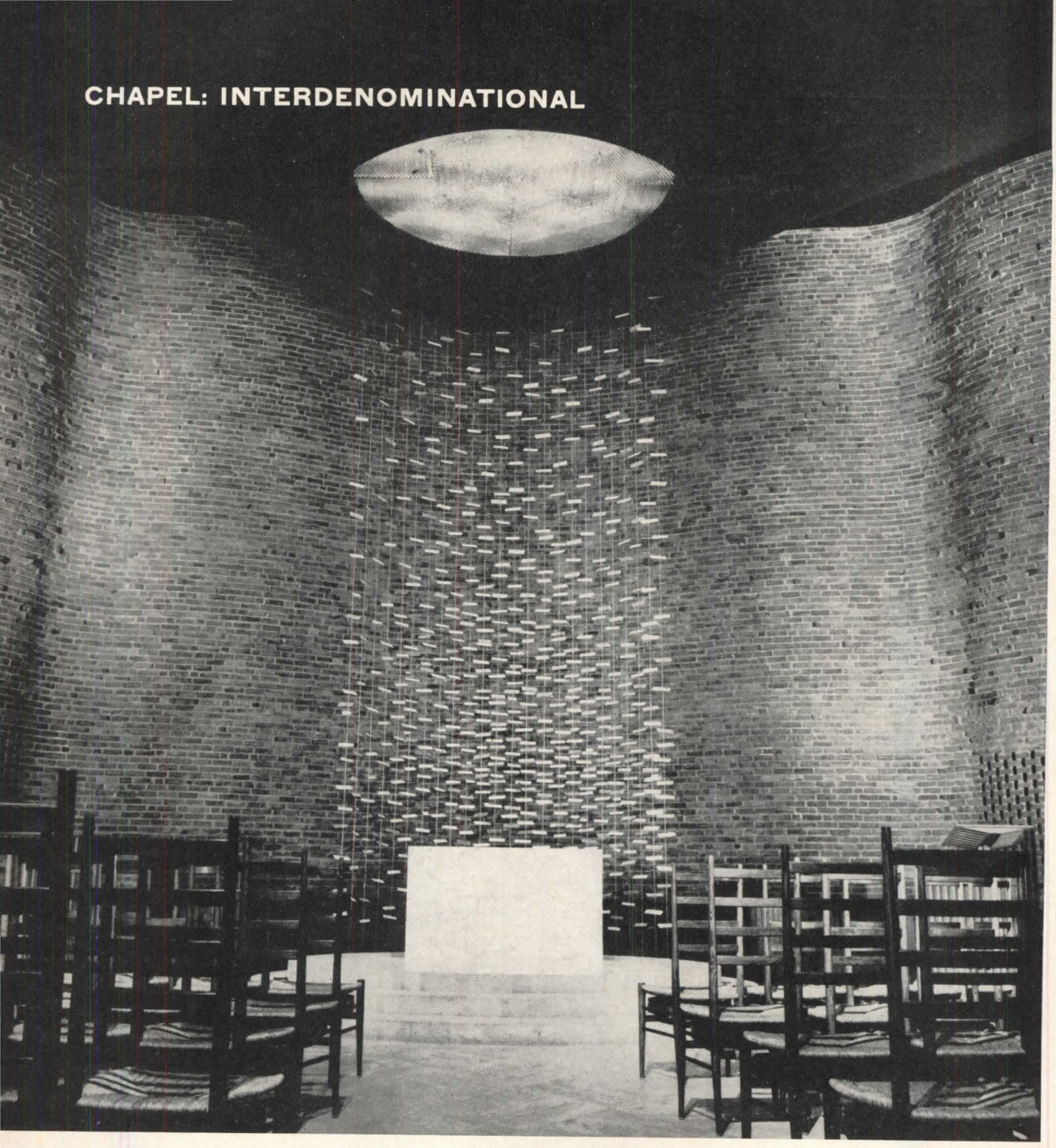


CHAPEL: INTERDENOMINATIONAL



Eero Saarinen and Associates, Architects

Anderson and Beckwith, Associate Architects

Ammann and Whitney, Structural Engineers

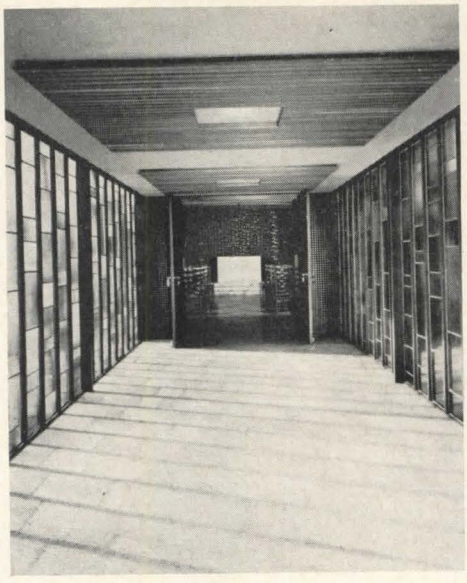
Hyde and Bobbis, Mechanical and Electrical Engineers

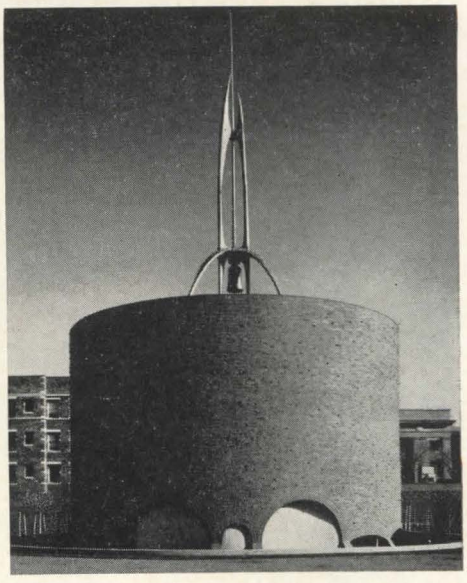
Bolt, Beranek & Newman, Acoustical Engineers

George A. Fuller Company, General Contractors

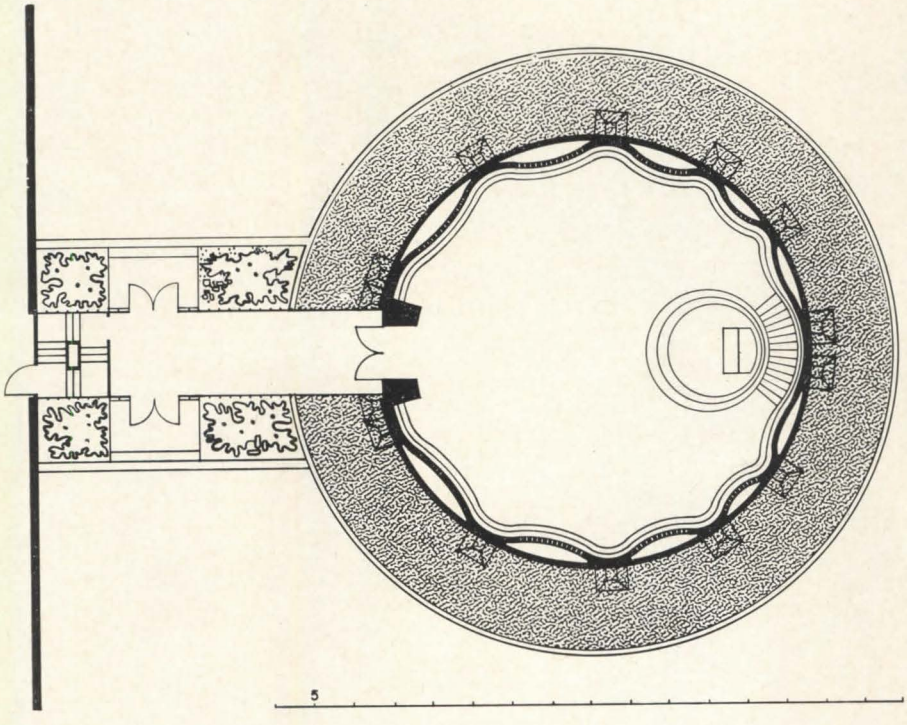
EERO SAARINEN was asked to design M.I.T.'s Kresge Chapel to serve the needs of Jewish, Roman Catholic and Protestant faiths. The hemmed-in site on the West Campus was almost as difficult as the program. The final building is a clear response to both.

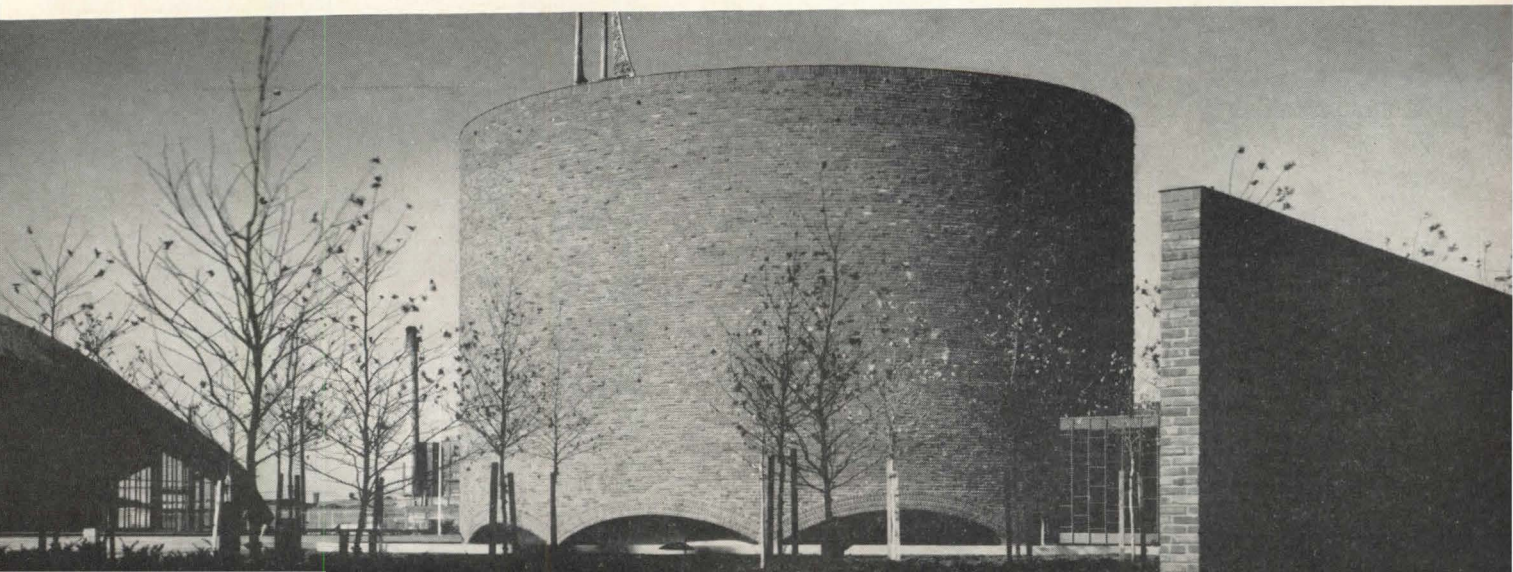
The architect, in effect, was asked to resolve differences historically unresolvable in terms of architectural space and form. The resolution has been made in



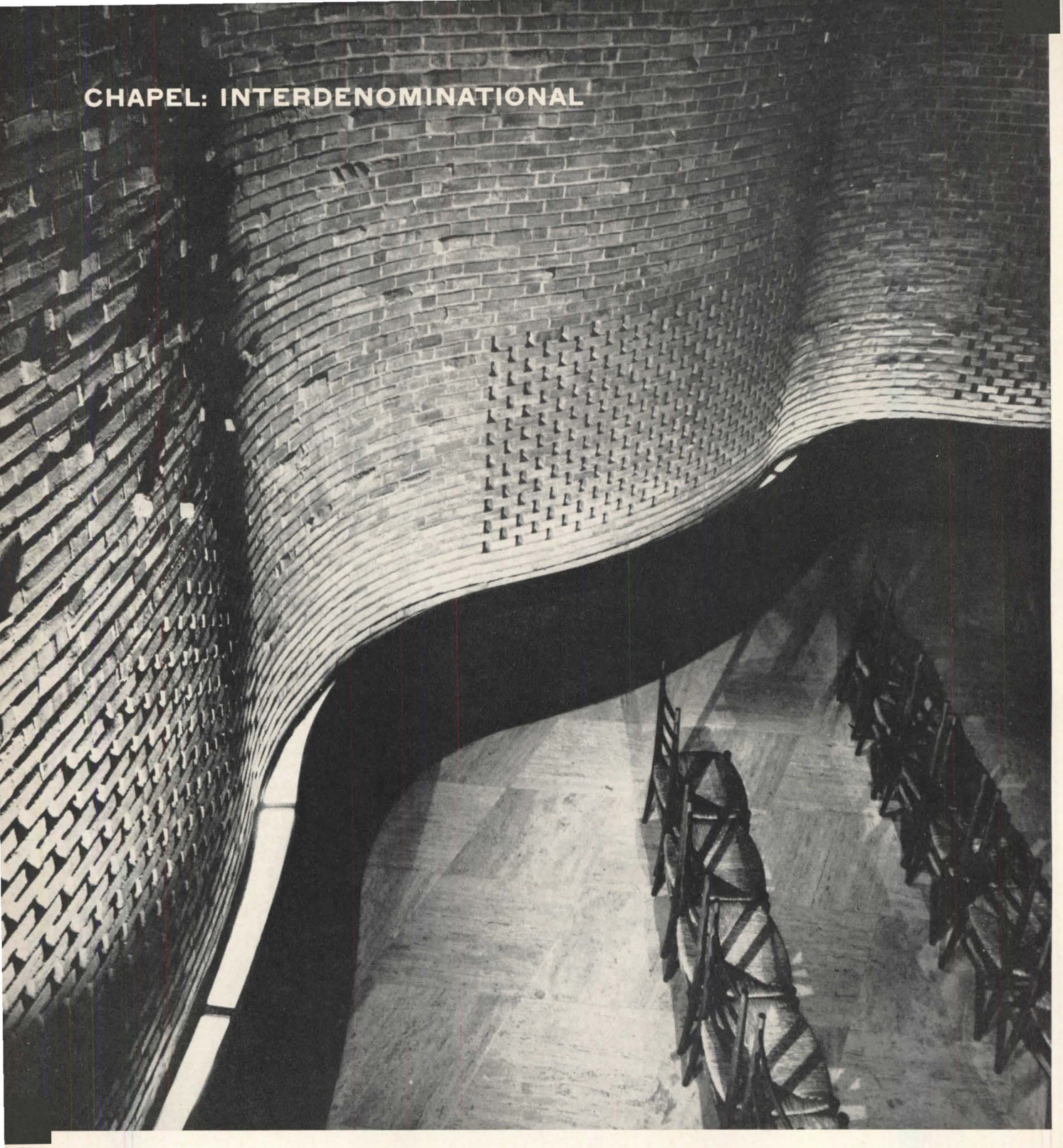


Ben Schnall





CHAPEL: INTERDENOMINATIONAL



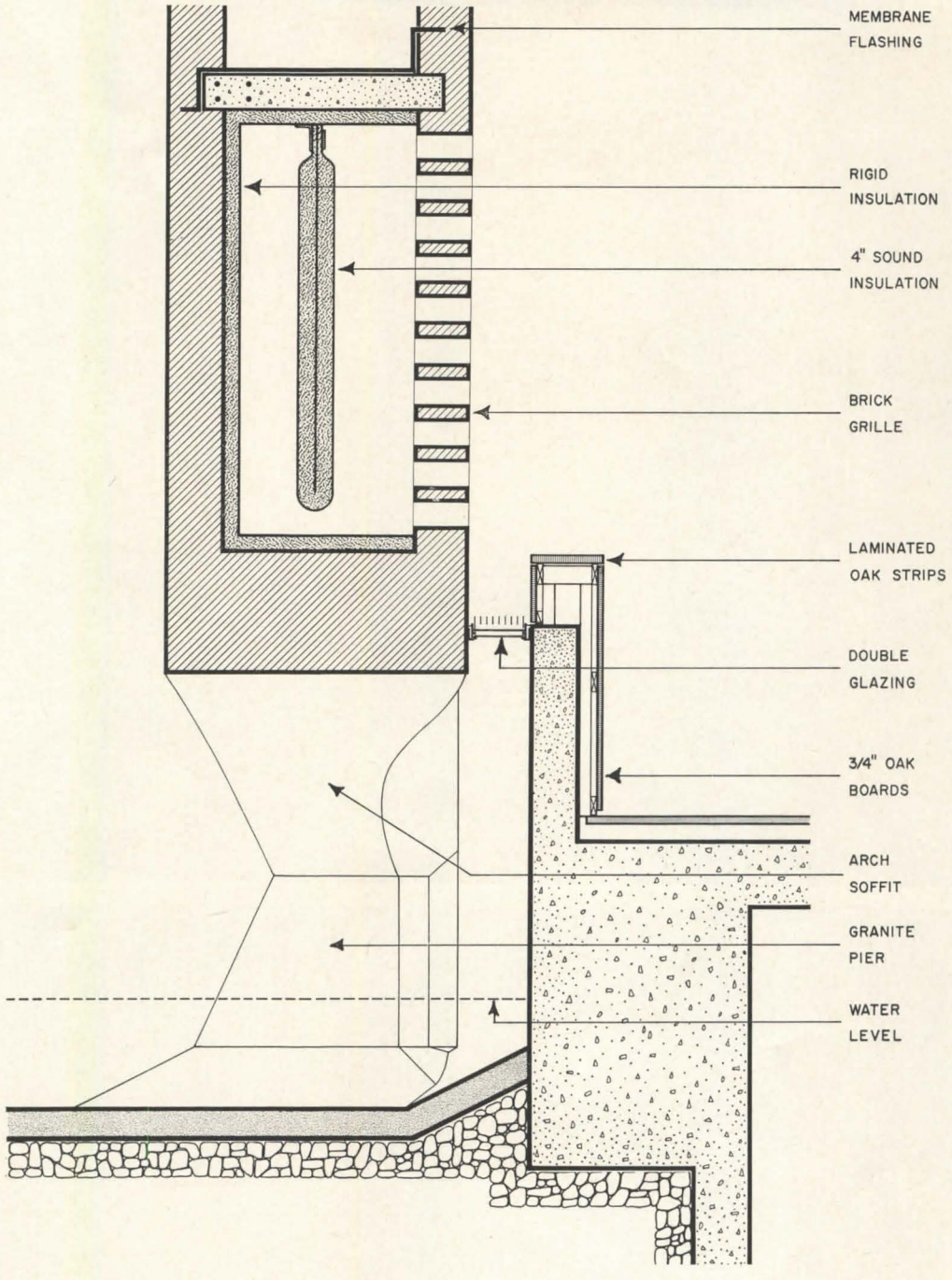
M. I. T. Chapel

terms of the least common denominator, and in this moated, windowless structure of simple shape, the high sense of removal and calm necessary to meditation has been achieved.

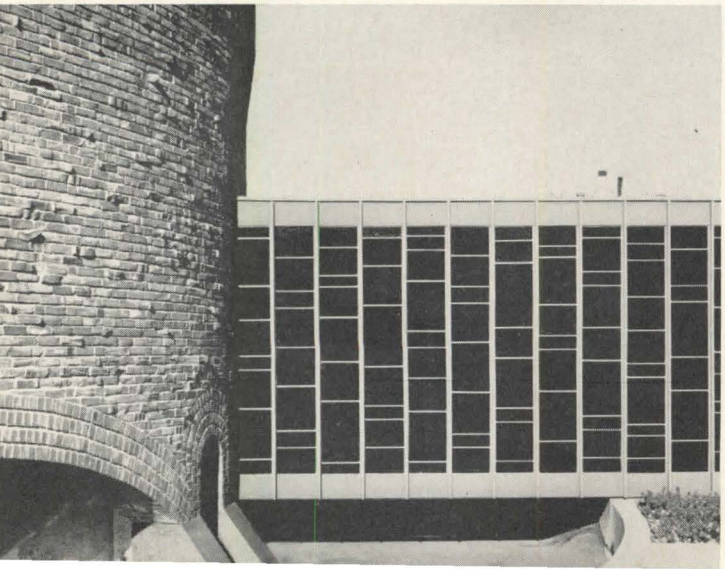
Natural light enters the chapel through a honeycombed baffled lantern and through a ribbon of horizontal wainscote glazing (see detail). Reflected upward from the water, this light plays on the brick surface of the inner wall which undulates irregularly to prevent acoustical focus. The shallow inverted cone of the suspended plaster ceiling and the brick grillwork of the lower walls are also in response to acoustic determinants.

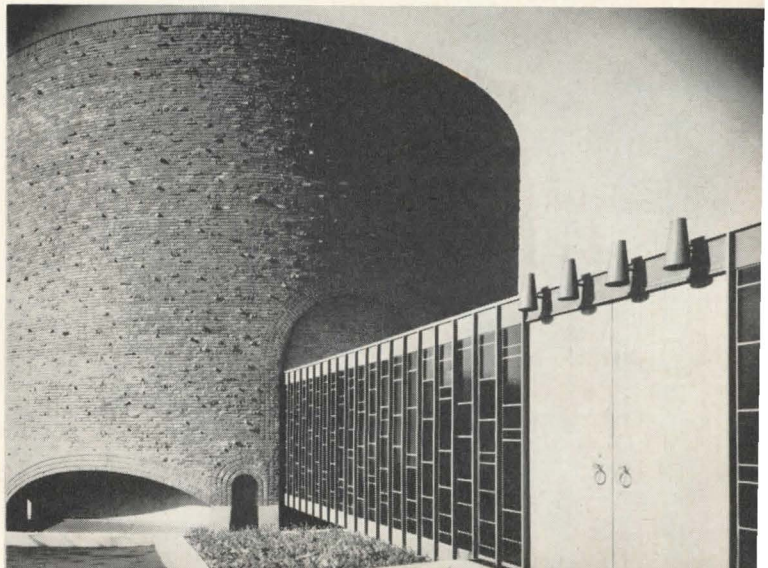
The gilt metal screen behind the marble pedestal is by Harry Bertoia. The aluminum spire is by Theodore J. Roszak.

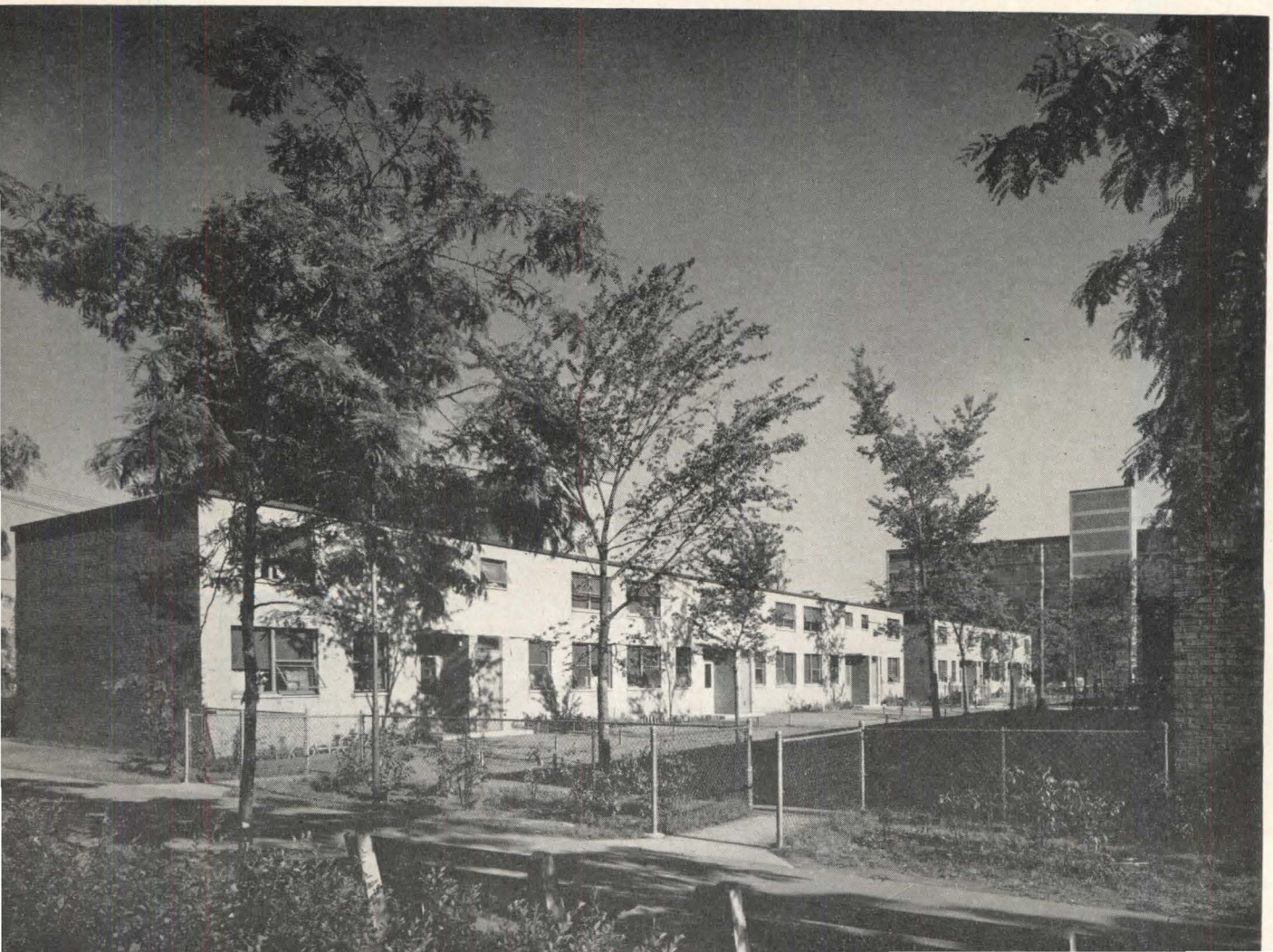
Brick is red; narthex glass is leaded, gray antique.


MEMBRANE FLASHING
RIGID INSULATION
4" SOUND INSULATION
BRICK GRILLE
LAMINATED OAK STRIPS
DOUBLE GLAZING
3/4" OAK BOARDS
ARCH SOFFIT
GRANITE PIER
WATER LEVEL

Ben Schnall







Prairie Avenue Courts, Chicago

For Chicago Housing Authority

George Fred Keck — William Keck, Architects

Samuel R. Lewis & Associates, Mechanical Engineers

Frank J. Kornacker & Associates, Structural Engineers

W. G. Atkinson, Landscape Architect

Hedrich-Blessing

ARCHITECTURAL CONCEPTS OF HOUSING PROVED VALID

As PUBLIC HOUSING this project has won enthusiastic kudos. Observers stress the avoidance of a standard type of building, with standardized units and thus standardized occupants. In the variety of buildings — fourteen-story, seven-story and two-story apartments and row houses — there is a variety of accommodations, ranging from one to four bedrooms. Automatically then the project attracts diversified family groups and has a natural and stable neighborhood cohesion.

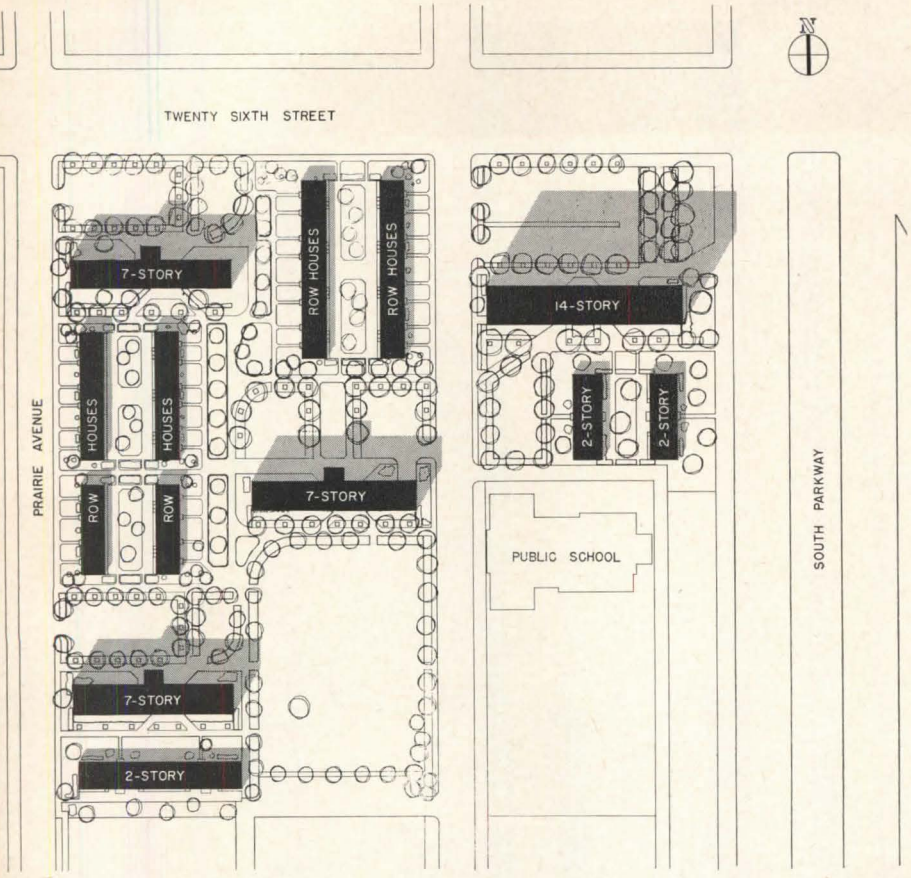
These facts alone would be sufficient to earn for it a high rating among public housing projects, but architects will be quick to note attractive concomitants. The variety of buildings has much stronger appeal than can be stated in statistics of family groups. It obviates the deadly monotony of so many apartment projects, the filed-away feeling. There is contrast, there is composition, there is form and mass and shadow. There is change in the lawns, playgrounds, parking spaces. If there is economy in the building of it, and there is, there is denial of what Dean Hudnut (page 139) dubs the "ancient title to dreariness" of housing for the lower income groups.

This achievement was not accomplished without some struggle. There were those who argued against the tall building, others who did not like the row houses. And, no doubt, there were some to whom the mere fact of variety seemed radical. But the architects' persistence was not to be denied, and in the end it makes Prairie Avenue Courts a noteworthy proof of the validity of architectural thinking.

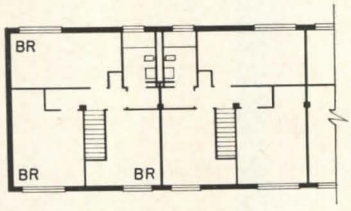
Notice (site plan, next page) that the disposition of buildings follows a shadow pattern. Careful studies were made of sun angles throughout the year to minimize the shading of one building by another. The heaviest shadows fall on the parking lots, the least on the playgrounds and buildings.

The architects explain that the overall pattern of accommodations makes no claim of universal applicability; it was dictated solely by needs of the city's public housing program. A secondary consideration was that there was to be a minimum of dislocation of families during the construction stages. It is important, nevertheless, that the pattern did meet the specifications as to population density.

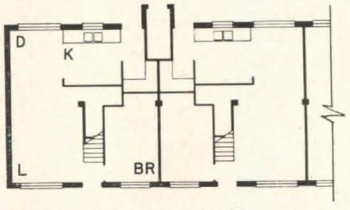
Economy was a major consideration in design; exclusive of land the average cost per family unit was $8500. The high-rise buildings are of reinforced concrete, with exterior walls of hollow brick and concrete block construction. Low buildings follow the same construction except that walls are load bearing. There are no plaster walls in the project; interior partitions are of lightweight concrete block, painted.



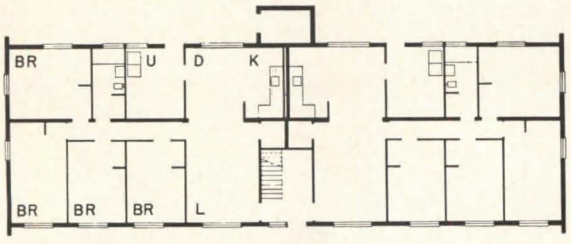
Variety of buildings sizes and types makes Prairie Avenue Courts a real neighborhood, not a human filing system. There is one 14-story building, three 7-story buildings, three 2-story apartment buildings and six row-house groups. The buildings are placed for the least shading of each other; heaviest shadows fall on parking lots



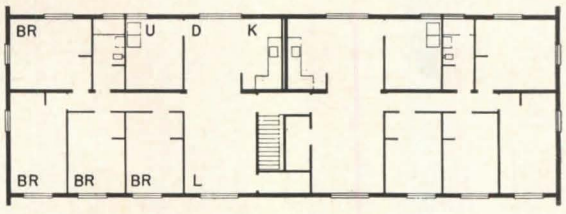
SECOND FLOOR



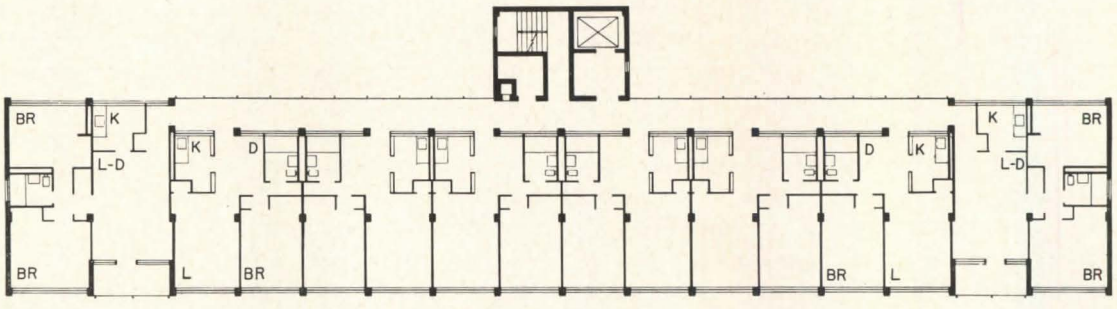
ROW HOUSES FIRST FLOOR



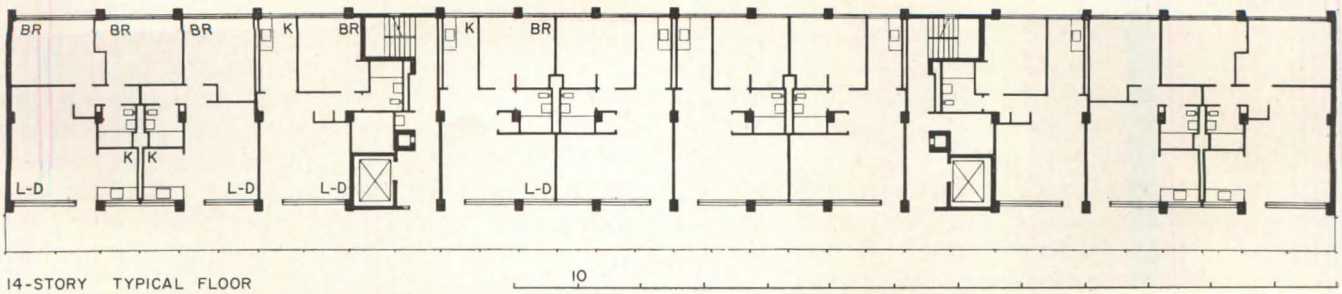
2-STORY FIRST FLOOR



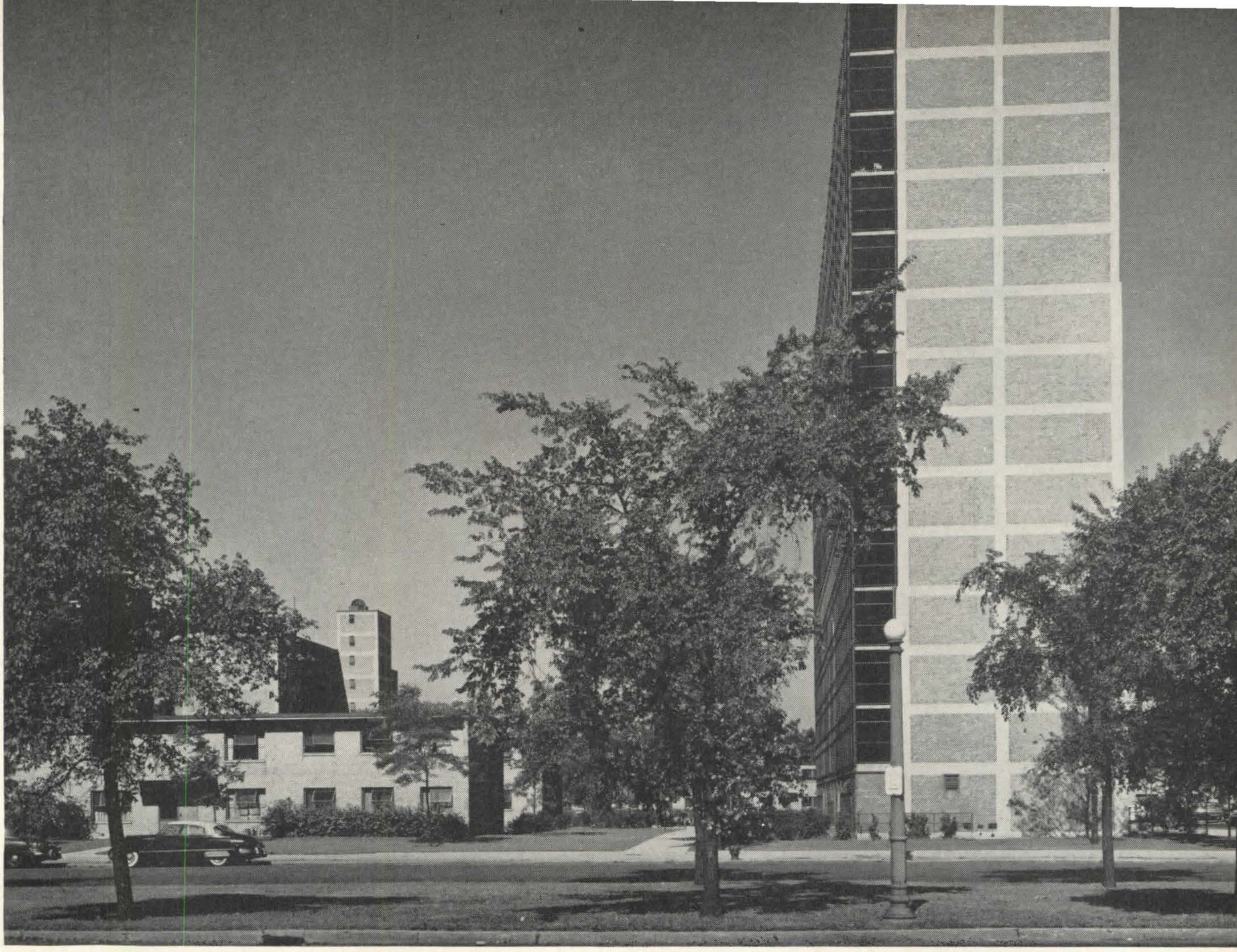
SECOND FLOOR



7-STORY TYPICAL FLOOR



14-STORY TYPICAL FLOOR



Hedrich-Blessing

RESIDENTIAL ENTRANCES

Highland Park, Ill.

A. James Speyer, Designer

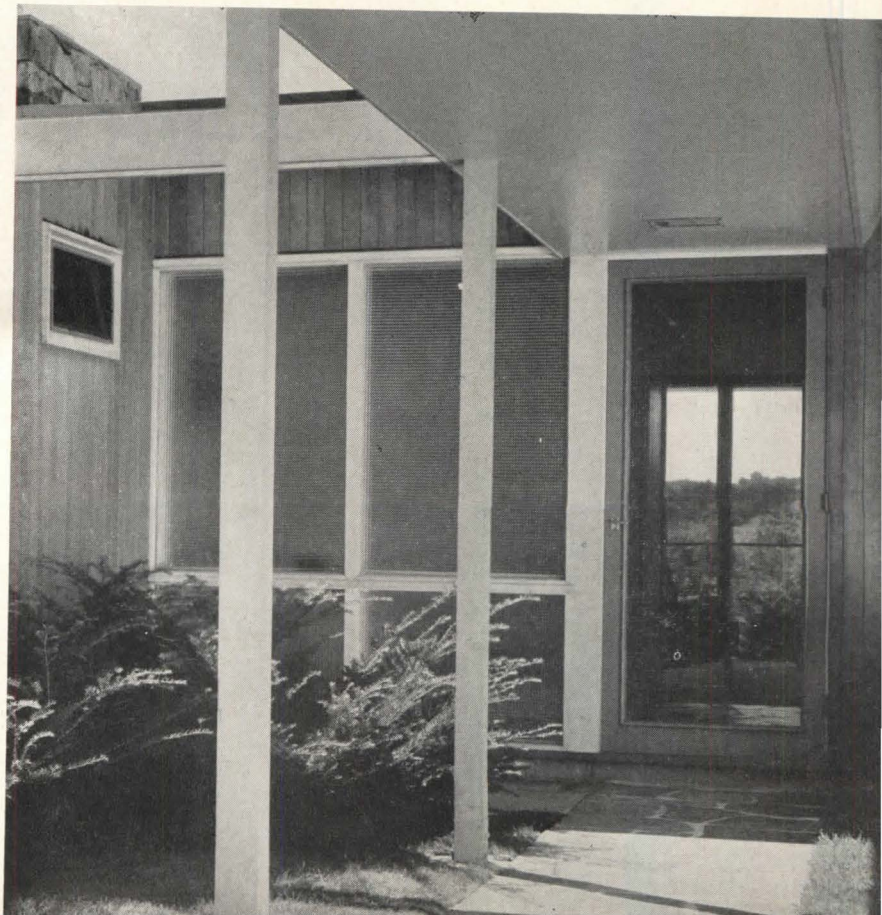
George E. Danforth,
Associate Architect

Tom Yee photos

Opposite: Hanover, N. H.: E. H. & M. K. Hunter, Architects; Joseph W. Molitor photo

Shrewsbury, Mass.

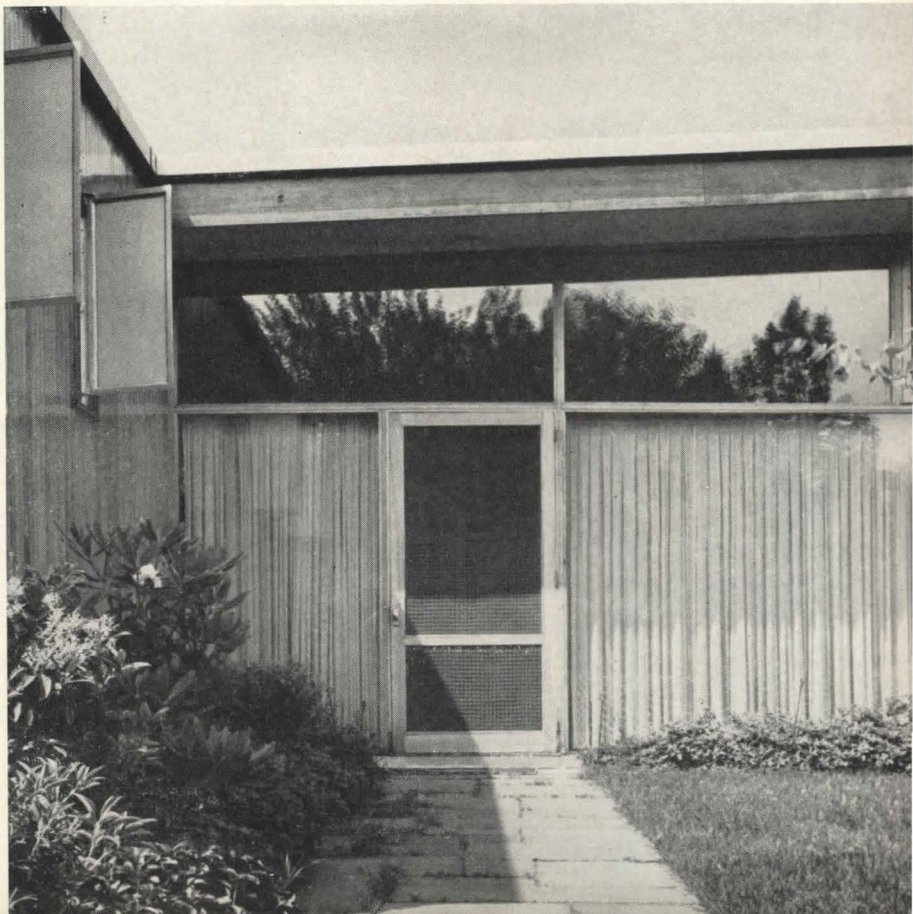
Carl Koch & Associates, Architects

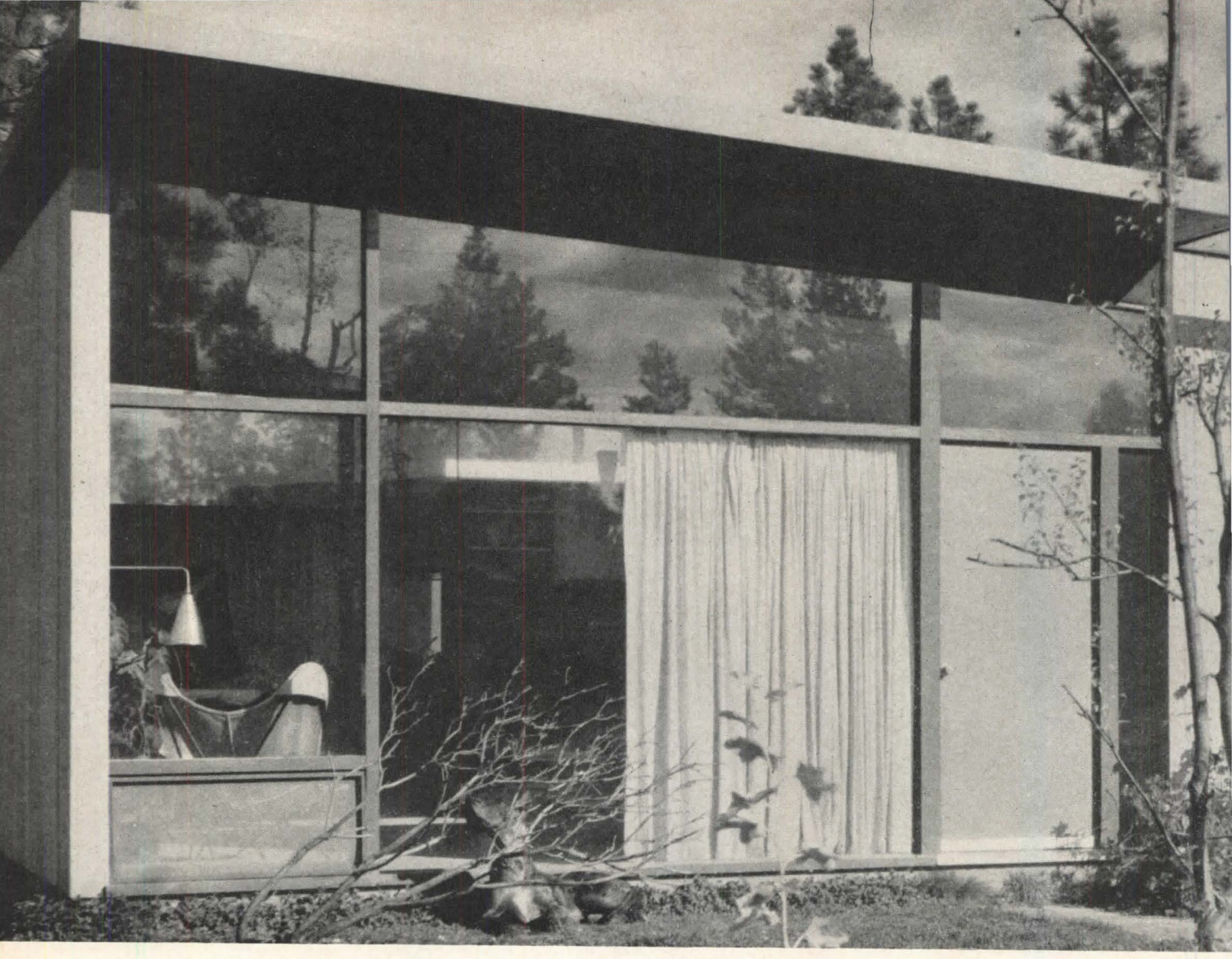


Stamford, Conn.

Huson Jackson, Architect

Louis Reens photos

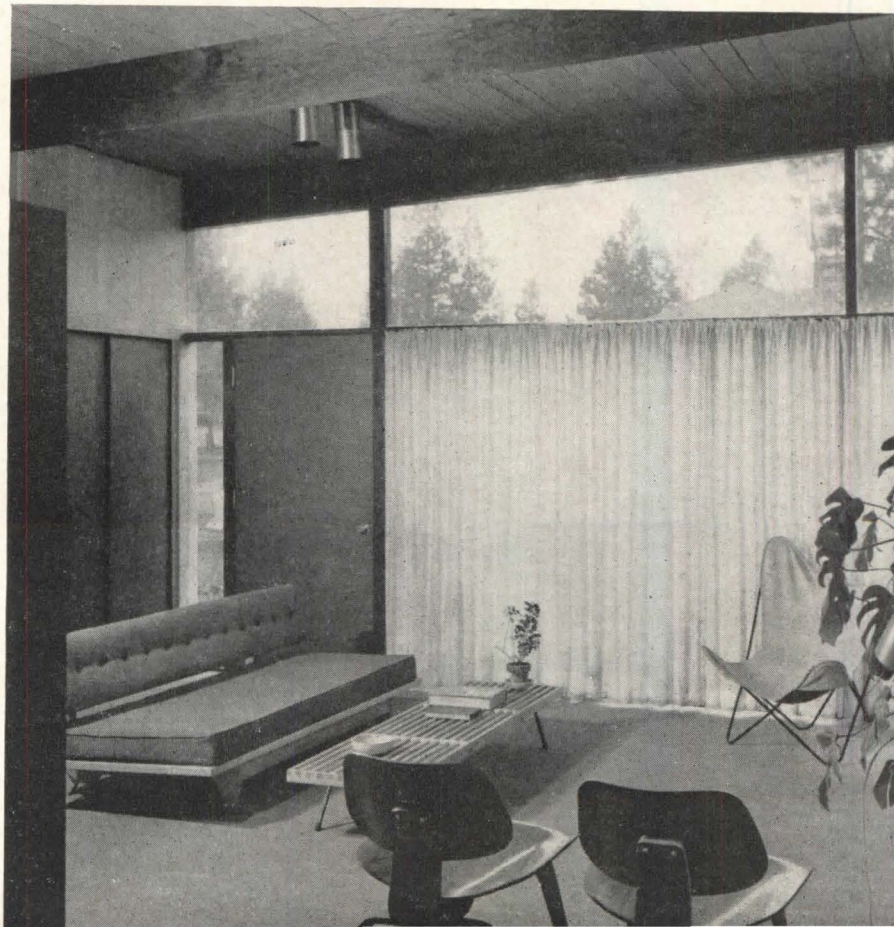




Spokane, Wash.

McClure & Adkison, Architects

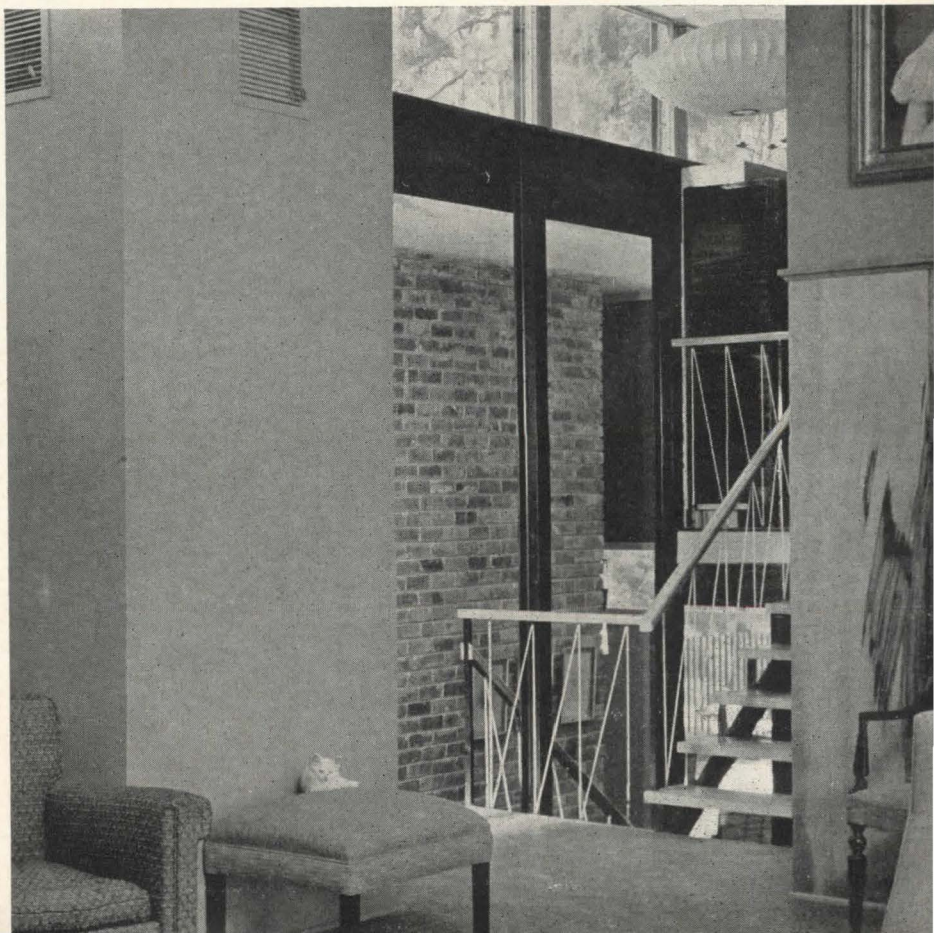
Dearborn-Massar photos

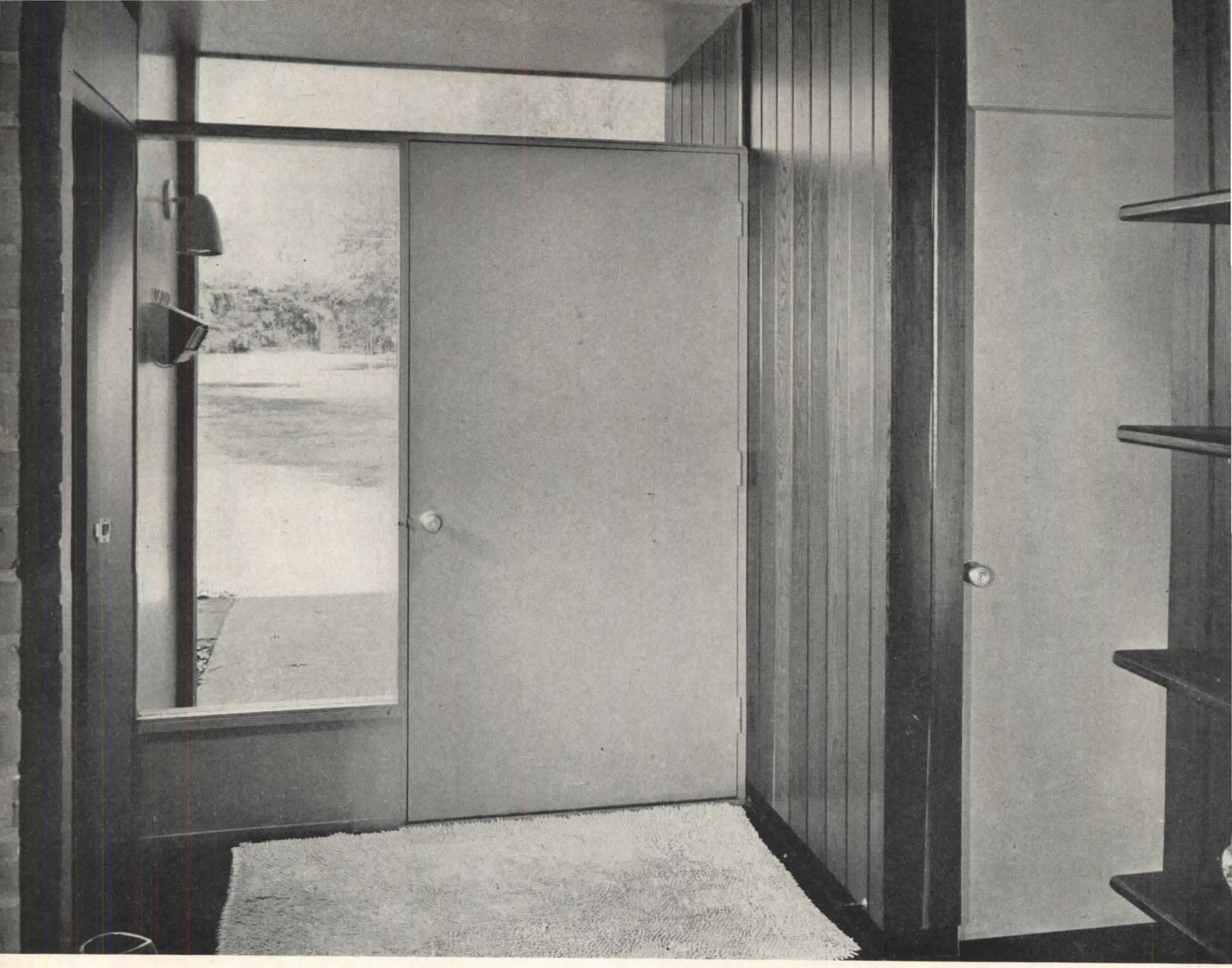


Pascagoula, Miss.

Curtis & Davis, Architects

Ulric Meisel photos





Baton Rouge, La.

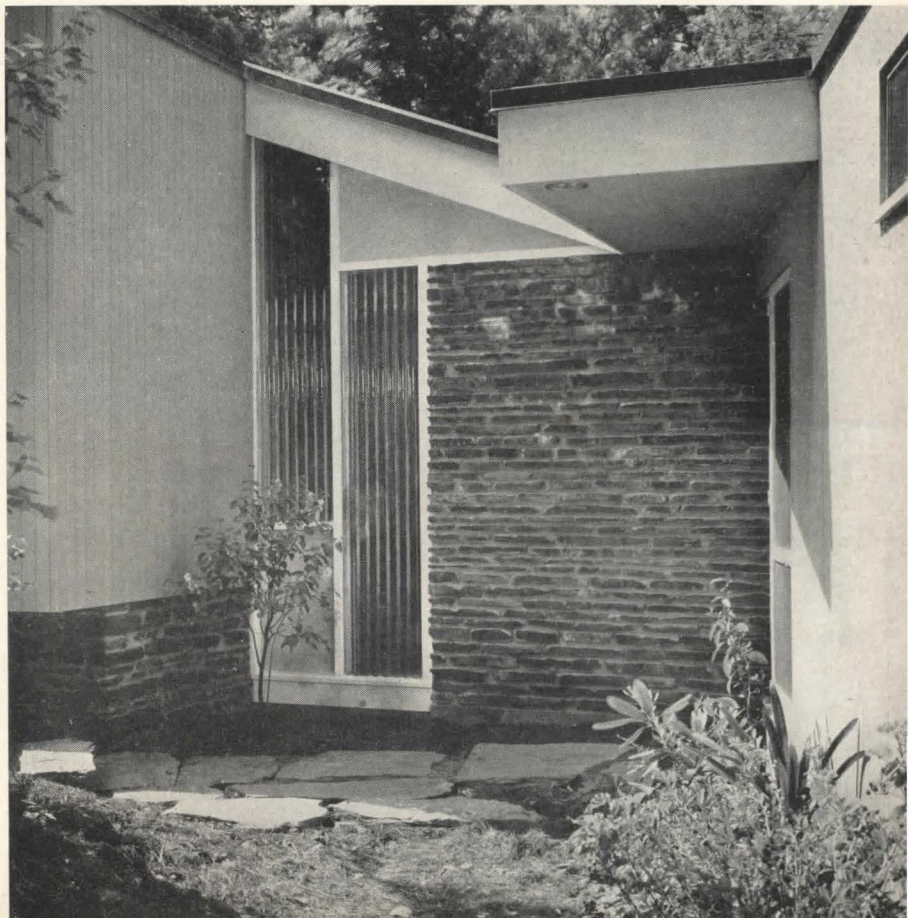
John W. Lawrence,
Sam T. Hurst, Architects

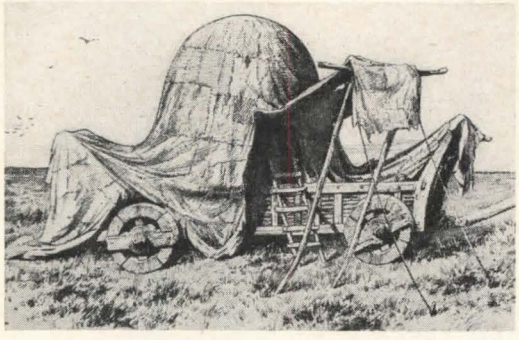
Joseph W. Molitor photos

Hanover, N. H.

E. H. & M. K. Hunter,
Architects

Joseph W. Molitor photos





Wagon-mounted tent of the wandering Huns (Bettman Archive)

Even the town-dwelling Japanese had roadside hotels (Culver Service)

LODGINGS FOR TRAVELERS

Compared to the modest hostelries of earlier days, the lodgings we now provide for travelers are very big business indeed. Another comparison: in 1939 Business Census reports listed 13,521 tourist courts and 27,987 hotels; the totals today are reliably estimated to be 56,000 motels — successors to the "tourist court" title — and just over 30,200 hotels. Nowadays motel rates are not low, yet the demand grows and more and more profitable motels are built. There can be only one reason: more travelers want the kind of facilities the motel provides.

If proof is needed it can be found in the sum of a number of apparent trends. One of the soundest seems to be the emerging highway hotel, in which refinement and quality of design, construction, equipment, type of facilities, operation and service spell permanence, stability and continued well-paying patronage. Often highway hotels are run by dyed-in-the-wool experts, men who after years spent learning the hotel trade have seen horizons beyond the downtown commercial hotels' limits and have enthusiastically embraced the new opportunities. Nearly half the high-quality motor hotels, we are told, are operated by hotel men or owned by hotel capital.

Another publicized development is the downtown motel, possibly of less certain long-term worth though at present apparently profitable. Since it is smaller than the big commercial hotel it has some of the intimate appeal of the highway motel; but high land costs force it into a multi-story pattern and raise parking problems which highway sites

NATURE OF LODGINGS PARALLELS FORM AND PURPOSE OF TRAVEL

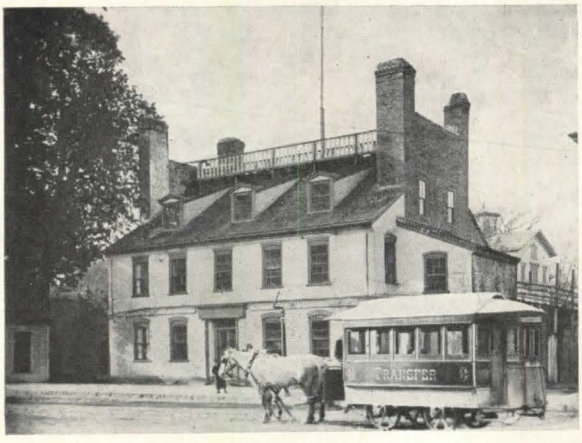
Historically, the form lodgings en route has taken has developed to accommodate the needs of the common method of travel. Examples both earlier and later than those shown here abound: until fairly recent times the North African nomad carried as he moved from place to place the frame of a light shelter made of saplings bent and tied to a dome shape; over this skins and brush were placed. Compare these and the dome-tented wagons of the warring nomad Huns, above, with the spheres so painstakingly devised by Bucky Fuller for modern American military purposes! But travel for business or pleasure seems to demand more formal accommodations

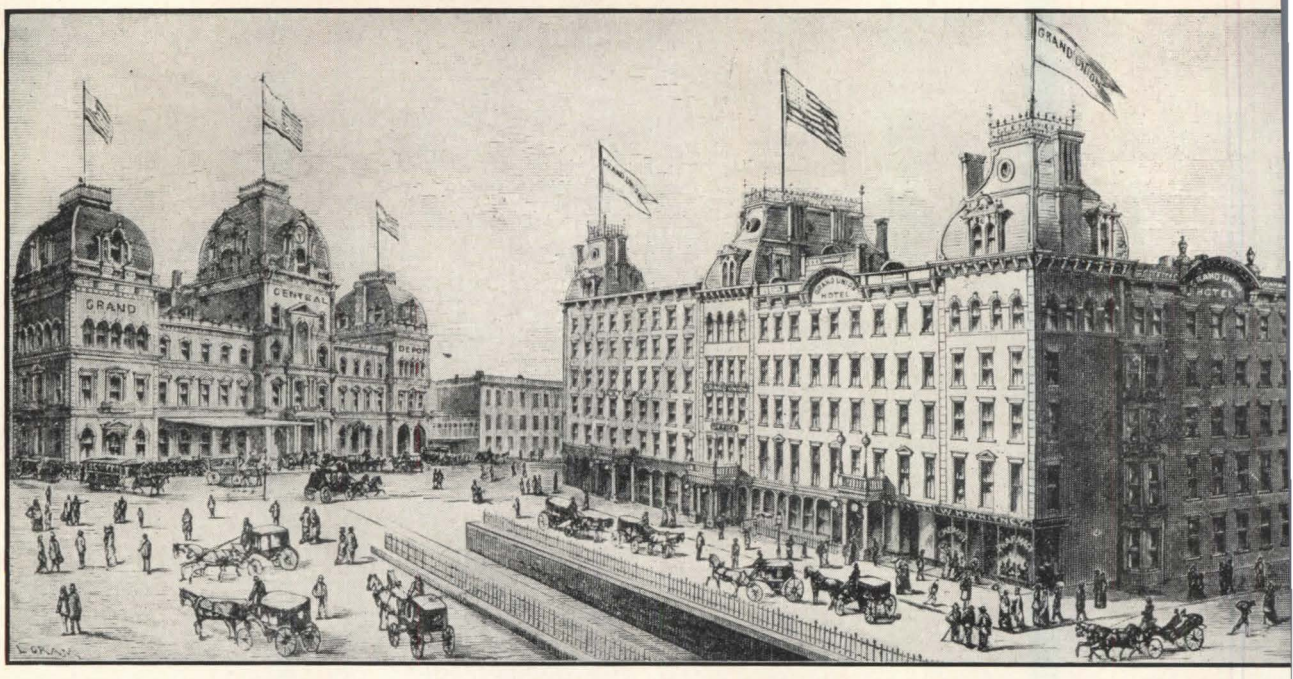
The famous Hospice du Mt. St. Gothard *sheltered the traveler of a later European day (Culver Service)*

In the early 19th century, American travelers by Conestoga wagon or stagecoach stopped at country inns (Bettman Archive)

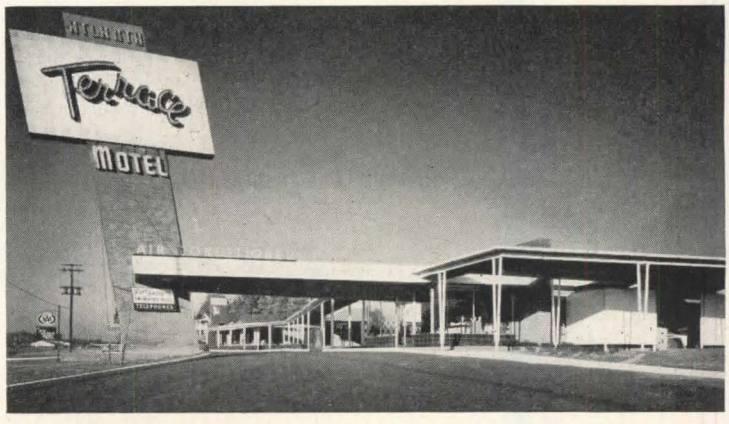
While on our Western frontier woodsmen found ruder accommodations (Culver Service)

Simpson House, formerly Seccomb Tavern, Medford, Mass., typical of more sophisticated Eastern inns, lasted through the day of the horse-trolley (Bettman Archive)





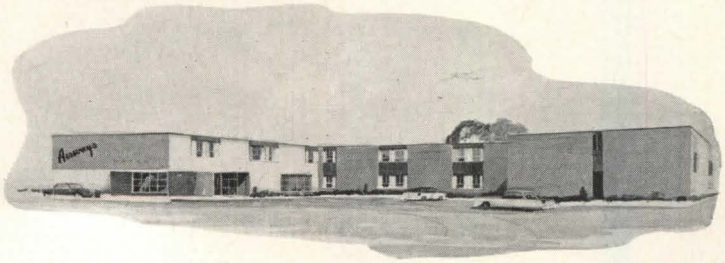
City hotels: New York's Grand Union Hotel catered to carriage trade; its site adjoined Grand Central Depot; the hotel collected rail passengers' baggage quickly and free (Bettman Archive)



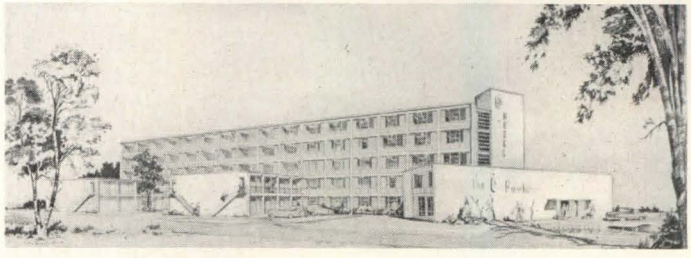
Today's motels: The Terrace, Atlanta, Ga.; Willner & Millkey, Archts. (Molitor)

LODGING TYPES AND TRAVEL NEEDS

From pioneer days through the era of the horse and buggy the country inn changed little; railroads carried people from city to city and those who traveled by wagon train camped at night. But in the city great hostelries rose, their locations and their nature dictated in some part by the mobility of their patrons. Thus the Plaza could be built next to New York's Central Park, far from transportation, business or amusement centers, only because the automobile had come to stay. As paved roads and cars invaded the countryside tourist cabins rose. Once transient facilities, they have often become terminal resorts; and now we have motels at airports for the convenience of delayed air travelers

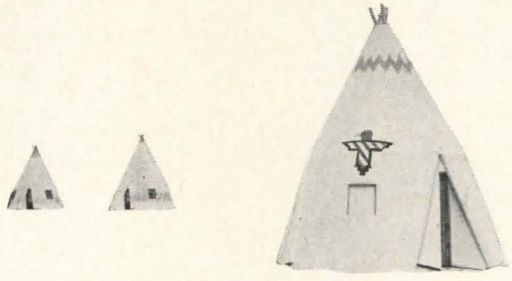


Above, Airways Hotel at Buffalo, N. Y., Airport, Backus, Crane & Love, Archts.; below, Park Motor Hotel, Silver Spring, Md., R. S. Senseman, Archt.



Automobiles made hotels like New York's Plaza profitable (Bettman Archive)

By the mid-1930's tourist cabins began to spring up in rows across New England hay fields. Soon their banality led owners to strange lengths in the competition for travelers' attention, as in the concrete tepees below (both photos, Black Star)



To combat high cost of accommodations at resorts this cooperative motel-apartment-hotel was built recently at Fort Lauderdale, Fla., Robert Hanson, Archt. (Alexandre Georges)

"Tip End of the Season", an 1890 cartoon (Culver Service)

"Camp Grounds", Alton Bay, N. H., a typical religious retreat (Culver Service)

do not ordinarily cause. Again, "motels" are being built at airports for the comfort of delayed passengers; construction is less expensive than a hotel would be, and plane take-offs and landings necessitate height restrictions.

Nor do automobile travelers, whose increase has brought all this about (even the airport "motel" is reached on wheels!), any longer regard the roadside tourist cabin as merely an overnight convenience. Some years ago patrons began staying at tourist cabins for weekends and then for entire vacations. Today the motel, whether at a recognized resort or not, is likely to be both a terminal vacation spot and a tourist's temporary rest.

Commercial hotel operators have at times tried to fight the trend. Latterly they have turned instead to seeking ways to meet these demonstrated needs, and the devices for parking cars on land almost nonexistent, for making the tired, road-dirty traveler comfortable and inconspicuous, have sorely taxed their — and their architects' — ingenuity.

Behind the 31 per cent increase in motel construction reported by F. W. Dodge for the first 9 months of 1955, behind the numerous hotel modernizations, lies a huge increase in automobile use. Some 51,000,000 passenger cars owned by 35,000,000 families now travel our highways; 86 per cent of all U. S. travel is on the roads; 85.5 per cent of vacation trips are by automobile; 42 per cent of new car buyers use their cars regularly for business travel.

THE RETREAT FROM HOME

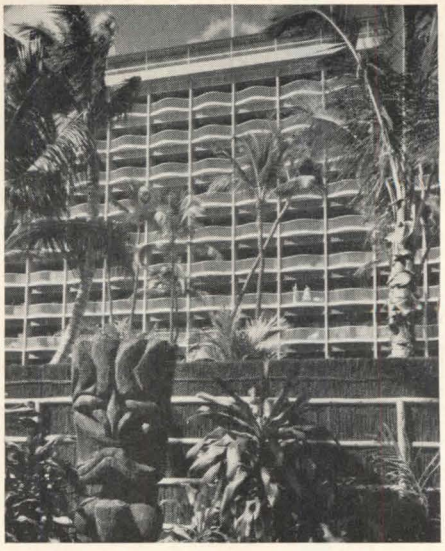
That well established American institution, the resort hotel, has begun to awaken to the impact of the automobile. Here it is not so much a matter of reducing expense to travelers as it is the necessity of providing comfort and above all convenience. The resort patron no longer arrives by train or even by chauffeured limousine; he wants the same mobility at a vacation spot that he has at home — perhaps more. Only the unique island in the Caribbean or the Great Lakes seems able successfully to buck the trend toward combining motel and hotel facilities

Seaside resort hotel of the '90s; its counterpart could be found in shore, mountain or lake country (Culver Service)

Above, one portion of the Golden Gate, new Miami Beach resort which also includes villas, motorists' accommodations, apartments, cottages, clubs; Igor Polevitzky, Archt.
Photo below: old Halcyon Hotel, Miami, Fla., when the auto was displacing the horse (Culver Service).

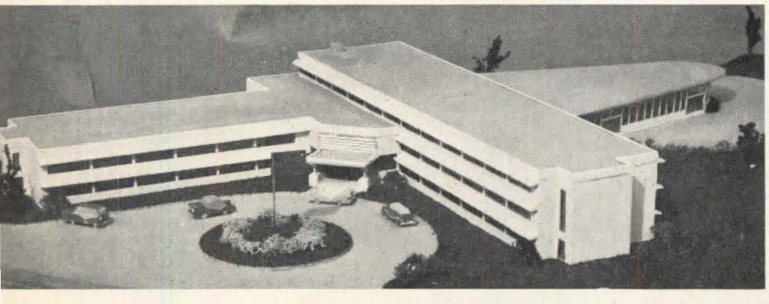
THE RETREAT FROM HOME

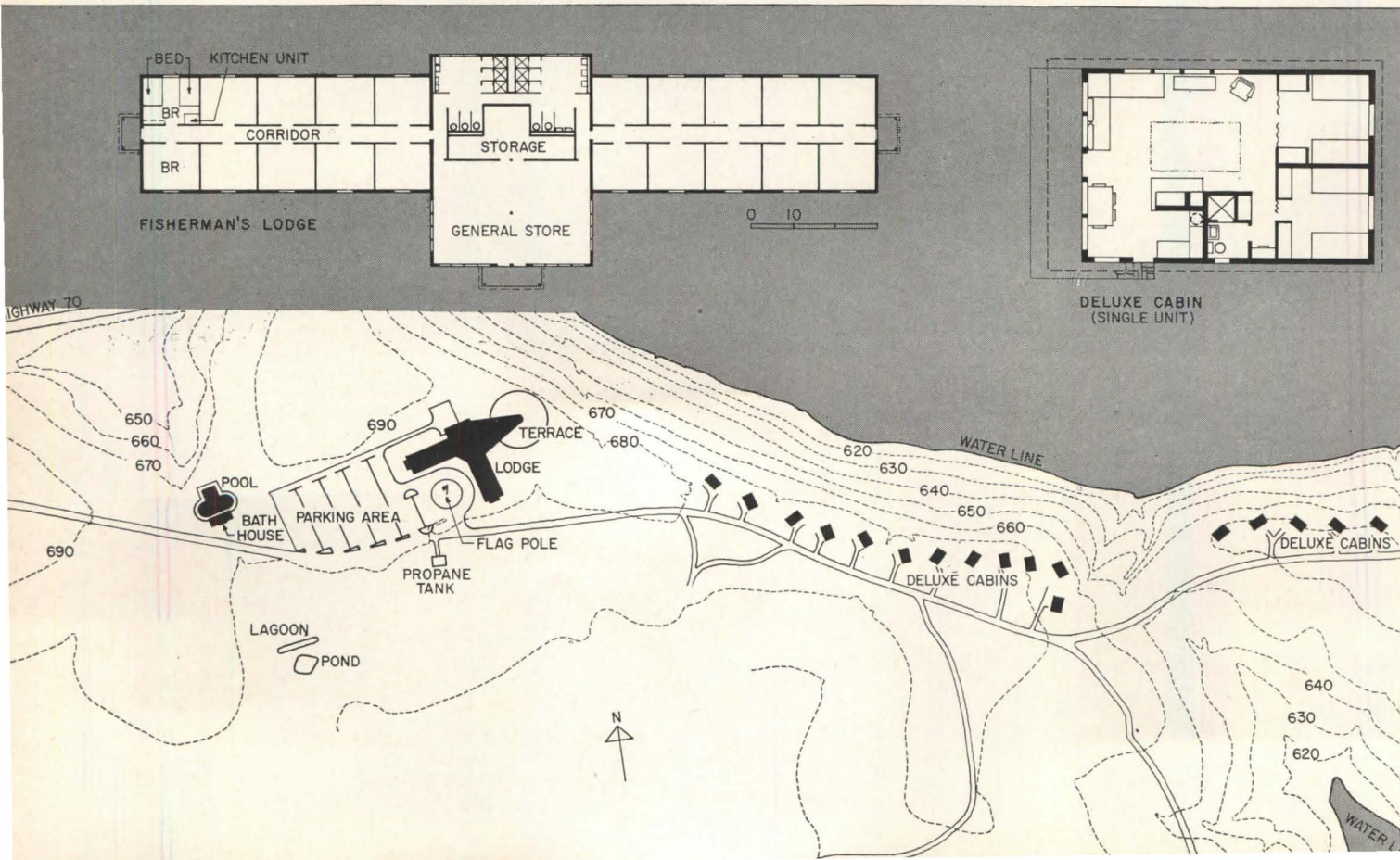
Whether a resort caters to the recluse, the explorer or the show-off, its patron does not expect to stay put after he has arrived. Even after a long trip by boat, train or plane, he's likely to hire a car and set out to see the countryside. At Lake Texoma, illustrated below, he'll hire a boat and go fishing, or a horse and go riding. Larger than the family camps that dot New England and other scenic areas, Lake Texoma's facilities consist primarily of a main lodge, numerous scattered cabins and a dining room seating 250; its ballroom will seat 500 at a banquet, 700 for a meeting, so it provides convention accommodations as well

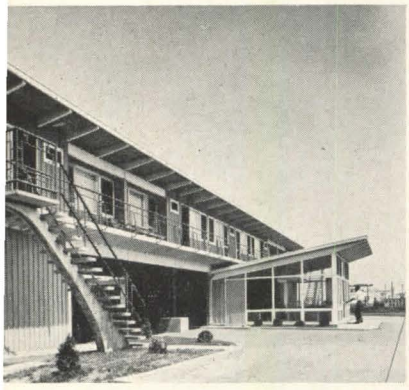


Shipping interests, too, find resort hotels profitable, above, Matson Line's Princess Kaiulani in Hawaii

Facilities at Lake Texoma State Park in Oklahoma include 106-room lodge (left), 30 de luxe cabins (exterior and interior below), 20 duplex fishing cabins, 20-room fishing lodge, numerous public areas,

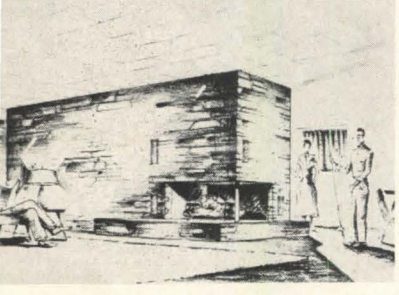


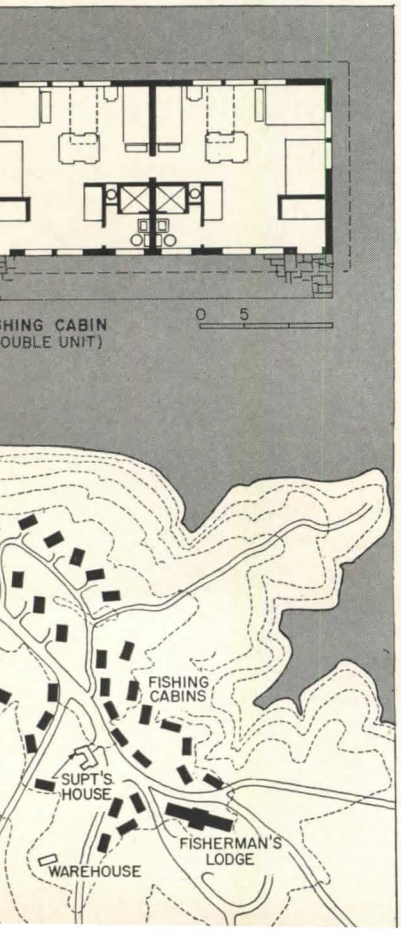




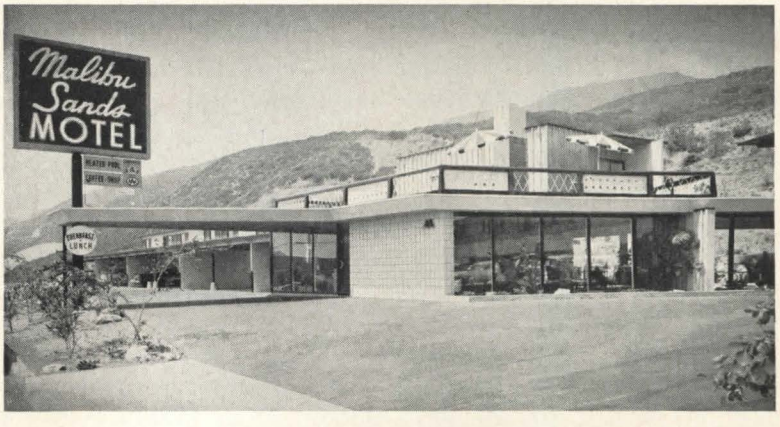
Small site and view caused elevated rooms at Seaboard Motel, an Ocean City, Md., resort, R. S. Senseman, Archt. (Fred Maroon)

ervices, etc. Dow Gumerson, Archt.

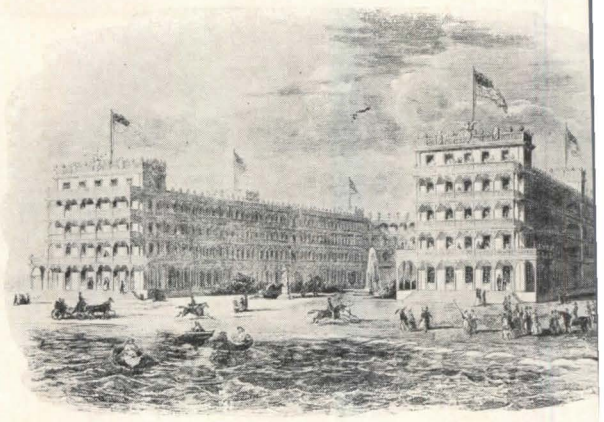




$300,000 Malibu Sands Motel, 34-room motel-apartment project, Malibu, Calif. A. T. Gilman, Archt. (Robt. C. Cleveland)



Rockbridge Alum Spring, Va., as seen in 1857 (Bettman Archive)



Mt. Vernon Hotel, Cape May, N. J. (Bettman Archive)

Motels cost a lot to build; hotels cost more, per unit or in toto. Figures are hard to arrive at because estimates of averages differ and because available valuations include establishments built in depression and prewar years when costs were much lower. The average capital investment in motels is said to range from $72,000 to $80,800; the average per room about $4000. Actually, motel cost per room to build now varies from $6000 to $8000 (before the war it was about $2500) and the usual motel has 20 or more rooms; the number of units has been increasing.

Comparatively, the average hotel investment is about $4¾ million; 35 new hotels in 1955 cost $166,712,000, averaging about $4½ million each and a little over $18,000 per room. The hotels being built, with a few noteworthy exceptions, are smaller than those we used to build. Motels have made money on a 70 per cent occupancy. Hotels, busy though they may have seemed, had 72 per cent occupancy in 1954 and, not making as much money as they felt they should, worried about the decline in patronage.

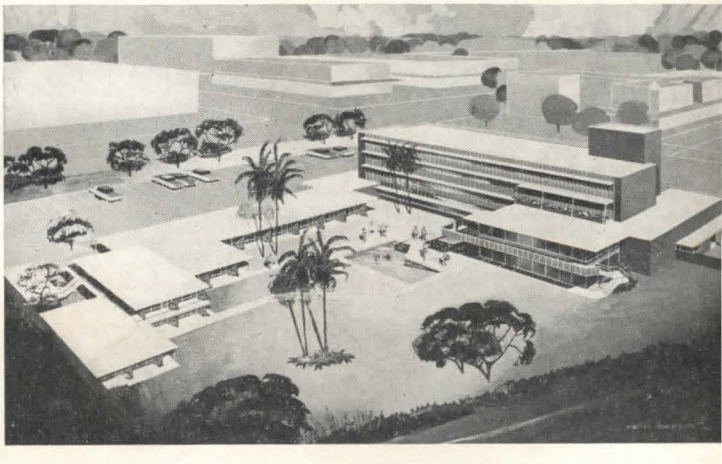
Such an investment warrants careful planning in every sense. Physically, design starts with site selection and development. Each site has inherent values to exploit and drawbacks to be countered: in the city, convenience to the things the city has to offer; on the highway, scenic values, convenience regarding traffic and proximity to major attractions. Among the items to be checked are:

Recognition or advertising value
Quality and nature of surroundings
Ease of access — by car, remember!
Effect on building layout as to compact or spread-out plan
Visibility vs. seclusion
Soil conditions for construction
Grades for drives, etc.
Possibilities for expansion

SITE PROBLEMS: WHAT NATURAL BEAUTY TO DESPOIL

Some of the early resort hotels exploited fully the natural beauties to which they owed their existence, as the three examples above show. The Virginia spa owed at least as much to its surrounding hills as to its bitter waters, and gracefully recognized the debt in the pleasant disposition of its cottages around its central building. The Cape May hotel had something of a problem in this respect; the solution was found in providing balconies for rooms that faced its main attraction, the sea — doubtless these rooms were high priced. The Antlers, sitting as it still does beneath Pike's Peak, commands tremendous views. Congestion and high realty values, concomitants of auto-mobility, pose serious site problems for modern resorts and for the small city hotel-motel

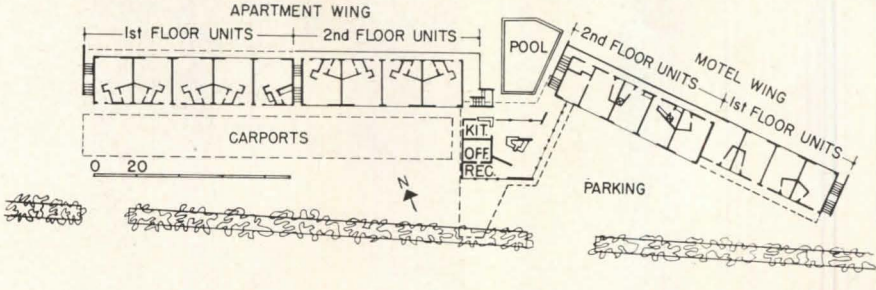
Above, The Antlers, Colorado Springs, Colo., in 1886 (Culver Service). Below, Orange Hotel, Orange, Tex.; Golemon & Rolfe, Archts.



The Golden Gate, Miami Beach, Fla.; Igor Polevitzky, Archt.

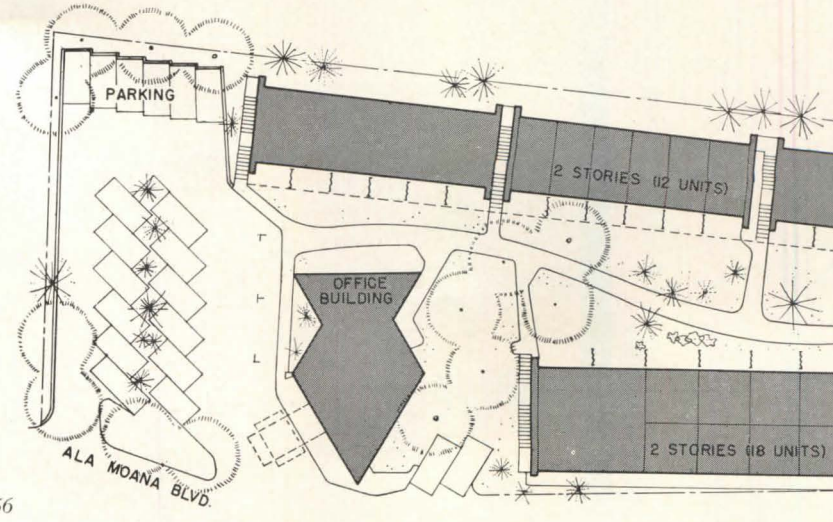
Howard Johnson's is starting a motel chain; Haag & d'Entremont, Archts. (L. S. Williams photo)

Malibu Sands Motel in California has a long thin site between the Pacific Coastal Highway and steep bluffs



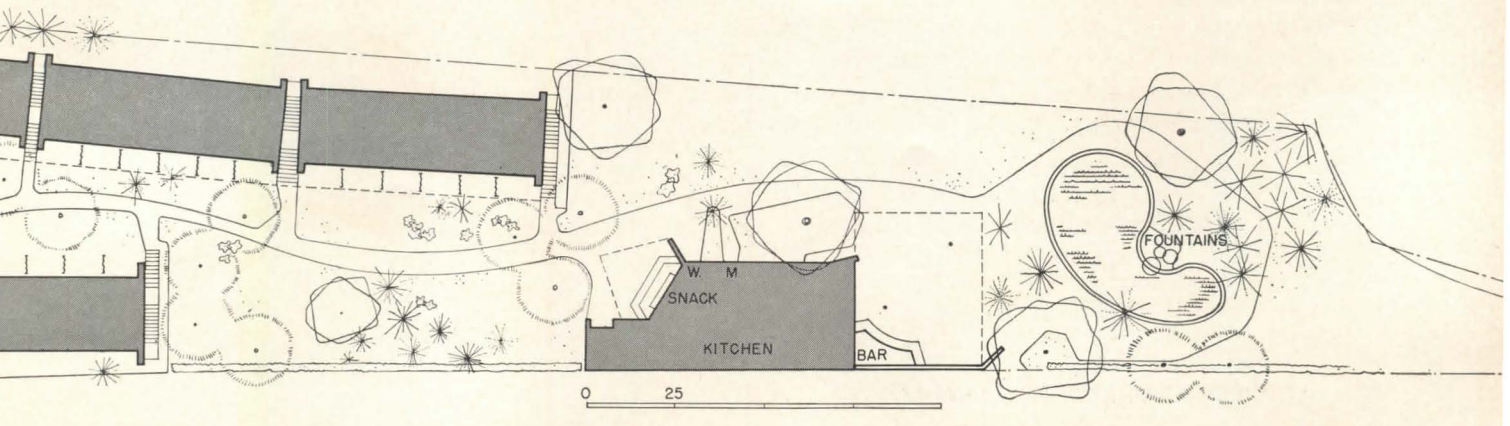
SITE PROBLEMS: WHAT NATURAL BEAUTY TO DESPOIL

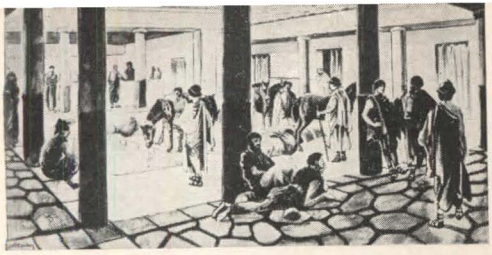
Whether a motel is a unit in an eastern chain or an individual enterprise on the West Coast, the sign, it appears, must command attention if not esthetic respect. In competition with each other, prominent signs seem to blossom most frequently where really is expensive or where a unique location does not serve to provide an establishment with its own identity. Examples of site plans for congested areas are the Malibu Sands and the Waikikian, both shown here, where the problems of long, narrow lots have been met head on. Jackson Lodge, on the other hand, suffers only from the competition of the mountains; in an attempt at harmony with its rugged surroundings it is built of concrete poured against rough wood forms and stained brown to look rough-hewn



Jackson Lake Lodge, Jackson Hole, Wyo., has the Grand Tetons as a backdrop; Gilbert Stanley Underwood, Arch. (Herb Pownall photos)

The Waikikian in Hawaii, also on a long narrow lot but with a narrow end to the street; Wimberly & Cook, Archts; Paul D. Jones, Assoc.





Top, horses being watered in a tavern in ancient Greece (Bettman Archive). Lower, common room, medieval inn (Culver Service)

Lobby, Union Hotel, Saratoga, N. Y., on arrival of boat train from Albany (Culver Service)

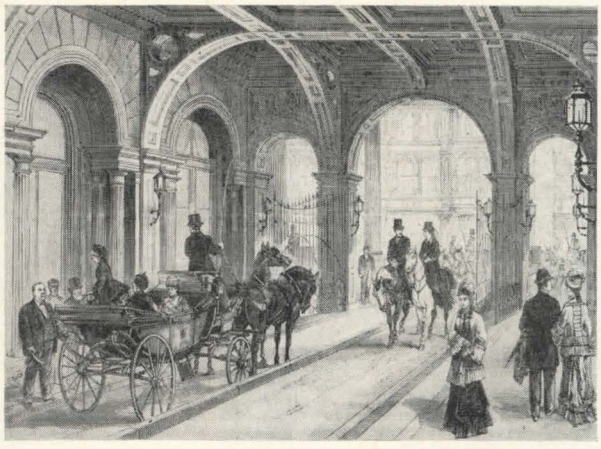
We are considering the comfort and convenience of the traveler by automobile. When he arrives at his lodgings he needs, first of all, protection from the elements as he and his family alight. A marquee or porte-cochere at the main building is fairly common. Occasionally one used to see a similar provision at the door of each guest room; but as rooms became joined into rows or wings these have tended to disappear. Is this sensible? Is the economy of construction justified? Parking the car is the next problem; the closer it can be left to the room door, the better. It is on this score that the multi-story downtown motel parts company with its rural cousin.

The guest must register; usually he is road-weary and rumpled. The lobby, it follows, should be intimate in scale and proportion so he will feel at home, unobserved. This does not mean that the front desk should be cramped, either small in itself or crowded as to circulation around it. In some instances drive-in registration windows, much like drive-in banking windows, have been tried.

Most motels furnish recreational opportunities: swimming pools, courts for games, lounges for social purposes particularly in bad weather. These can all be made pleasantly attractive; but the hostelry that places its swimming pool out by the roadside hardly capitalizes on the expensive investment. In some cases, as in The Shreveporter (see later pages), soft-drink machines and ice chests are available for the guests to help themselves. Restaurants are often included, ranging from lunch counters to full meal service; good food has been found a decided attraction. A bar, when it is appropriate, usually brings in more revenue than a restaurant. Ordinarily a gasoline station is considered a drawback, its dirt and noise being objectionable.

THE AMENITIES: PUBLIC AREAS

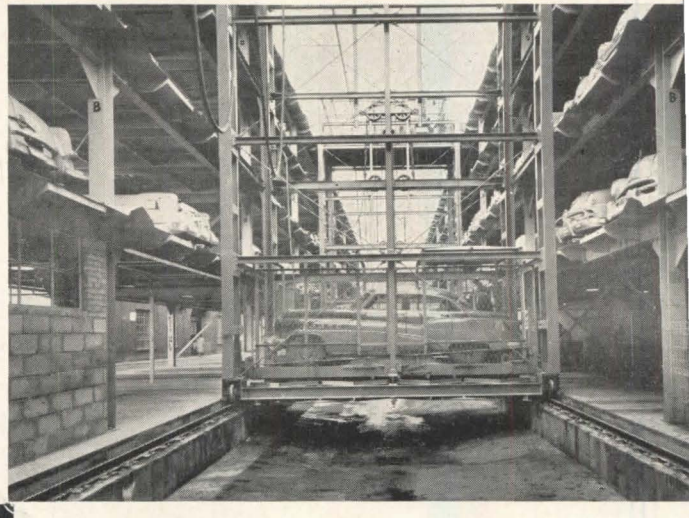
Anyone who has tried to register at a big downtown hotel at convention time is familiar with the mob scene directly above. It exaggerates only slightly what happens today. In proportion, there seems to have been as much bustle and to-do in ancient times. So much for progress, at least in the art of designing an efficient hotel lobby. The brief respite from inelegance that was afforded by the public rooms of such hostelries as the Palace and the Glacier Park Hotel is gone; for boat-train substitute "plane-bus" today. Should a lodging place make such demands of its clientele? Why shouldn't the less pretentious motel concept take over?



Two views, courtyard, Palace Hotel, San Francisco, as it was designed for carriage trade (left, Culver Service; right Bettman Archive)

Lobby, Glacier Park Hotel, Montana; note Ionic columns formed of log sections (Culver Service)

There's good reason for Jackson Lake Lodge's 60-ft picture window (Herb Pownall)



Downtown Penn Harris Hotel, Harrisburg, Pa., cars mechanically parked in pigeon-holes (Brown's Studio)

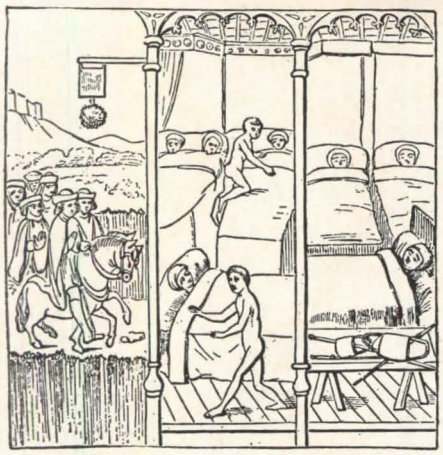
At The Shreveporter, new highway hotel in Louisiana, design of unit containing public rooms emphasizes quality of accommodations (T. C. Smith)

THE AMENITIES: PUBLIC AREAS

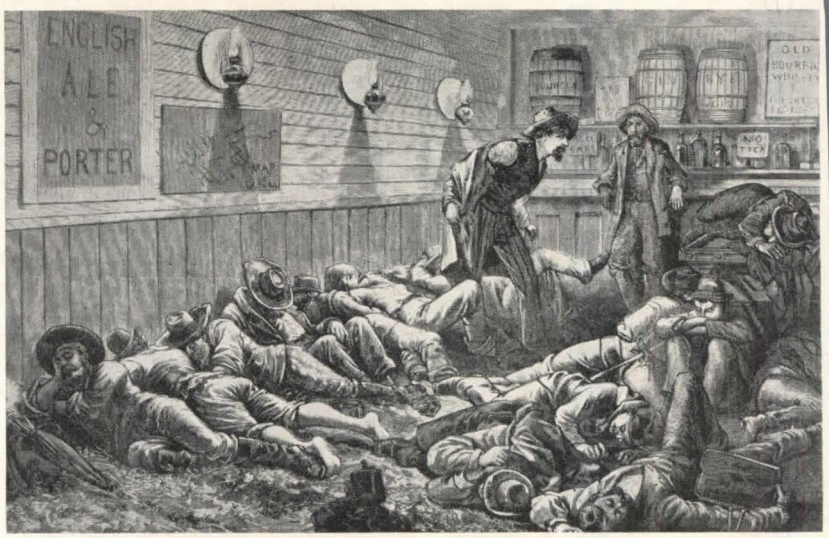
The approach, the lobby and parking facilities help form an arriving patron's opinion of a hostelry. Dignified or whimsical, the appearance of the establishment tells in advance what a guest may expect; an intimate lobby foretells coziness and personal attention while impressive ornateness betokens something different. Parking — there's a tough one! If the grassy meadow would stay green and its winding ruts remain dry (though not dusty) what could be more pleasant? But they won't, so our motels sit in asphalt seas. The city hotels' parking plight is worse. Some have underground garages. At the Penn-Harris, above, a car is driven onto a dolly on an elevator which, moving horizontally as well as vertically, automatically parks the car in a pre-selected pigeon-hole; once more the hotel owner has ingeniously circumvented really costs

Terrace Motel in Atlanta: two-story bedroom wings directly accessible from paved parking area (J. W. Molitor)

Above, Ocean View Motel, Ocean City, Md.; small lobby for reception only, snack bar adjoins (Fred Maroon). Below, spacious lounge of Malibu Sands Motel in California, obviously more expensive (R. C. Cleveland)



The medieval inn's guests climbed into any bed (Bettman Archive)



A night's sleep on the sawdust in a Leadville, Colo., saloon cost two bits (Bettman Archive)

While the average number of motel rental units is about 20, the high-quality establishment is likely to be uneconomical at that small size, particularly if it offers any quantity of typical hotel services. The larger highway hotels, like their downtown counterparts, may find it wise to provide a range of accommodations at varying rates.

One motel at a Florida resort has apartment units with cooking facilities; the apartments are sold on a cooperative basis much as cooperative city apartments are. The objective has been called a means of circumventing the high cost of vacationing at a popular resort. The owners, we hear, can sublease in the off season or whenever they are not using their quarters themselves.

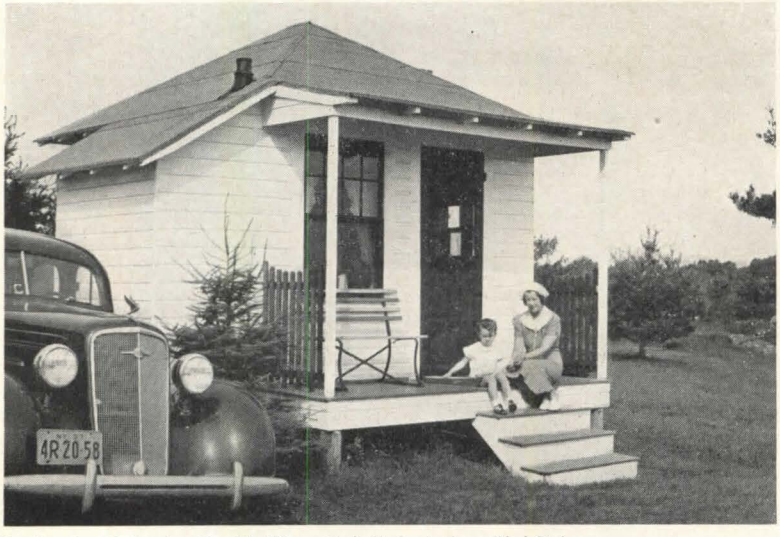
Maid service, too, has developed far since the early days of motels. Linen rooms are necessary, sometimes maids' quarters. Laundry and valet service may be necessary; so may simple shops for maintenance, repairs and landscape care.

But the heart of the job remains the private room. It needs identification — room number or name — for convenience; it is, according to nearly universal current practice, large enough to be furnished as a double room even if it is ordinarily regarded as a single. The family on vacation is a family, not an individual person, and vacationing is still the principal reason for automobile travel. In fact, the room is often large enough to take additional temporary beds or cots.

Since much business is still one-night, complete closets are not always needed. On the other hand we have graduated from the nail-in-the-wall era; and if resort trade is anticipated to any degree, closets may be mandatory.

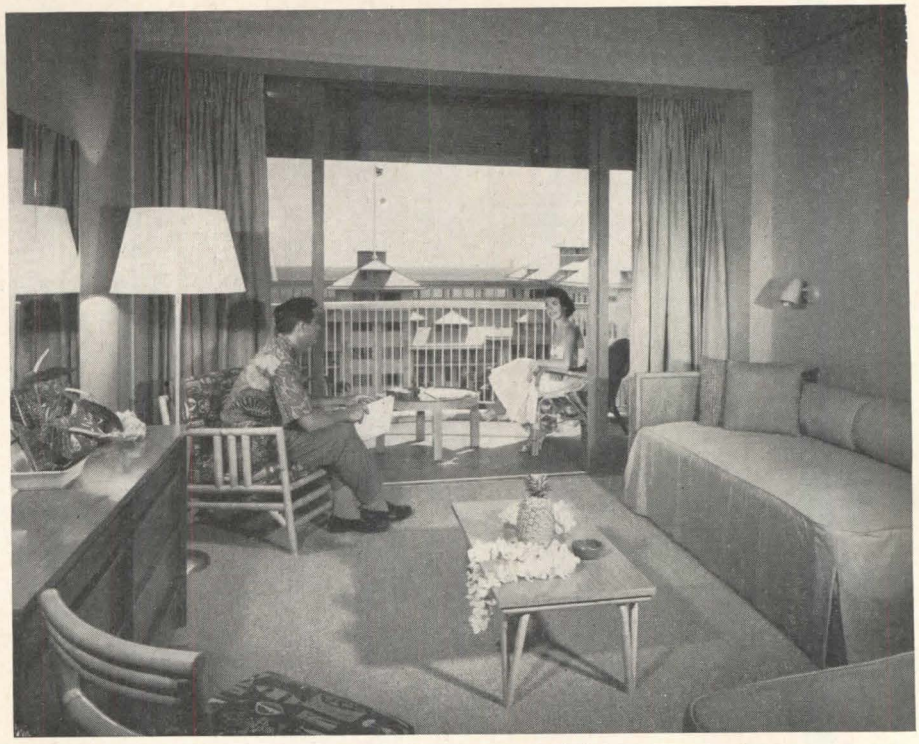
THE AMENITIES: THE IMPORTANCE OF PRIVACY

As Lewis Mumford remarked some time ago in The Culture of Cities, *privacy is a modern phenomenon and its relative importance is almost an index of the development of urban culture. Not to debate the point, only very recently has this been true of either travel or lodgings en route. In unselfconscious fashion the 1935 tourist cabin gave the confirmed auto-dweller — which by now means most of us — the same overnight control of his immediate environment that he enjoyed on the road. If he was just as cramped in the tiny quarters (with the brass-bound, lumpy-mattressed bed, wire clothes hangers hidden perhaps by a length of gingham, hand-me-down rocker with no room to rock in and bare electric bulb) as in his car, he could nevertheless lay down his head, master for the night of what he surveyed. And the price was fittingly modest*



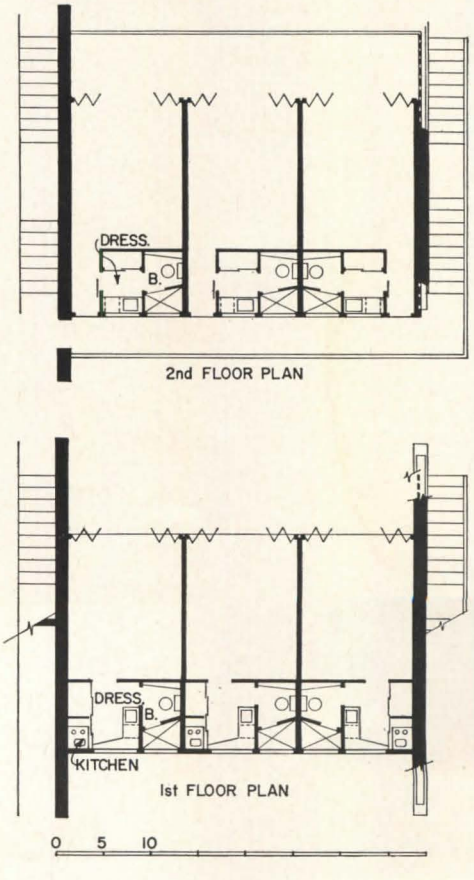
One thing the typical tourist cabin of the '30s provided at low cost: privacy (Black Star)

Even the huge Jackson Lake Lodge in Wyoming offers a measure of privacy in its 250 guest cottages — some of them multiple units, it is true (Herb Pownall)



Double room, Princess Kaiulani Hotel, Hawaii; convertible from sitting room to studio bedroom (Matson Lines)

Guest rooms on two floors, The Waikikian, Hawaii; planned for privacy yet openable to the breeze, with deep overhangs and lanais to protect from tropical sun and rain

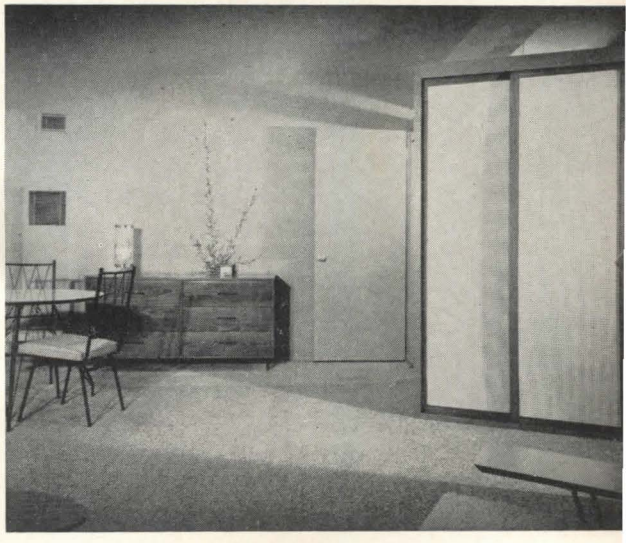


THE AMENITIES: THE IMPORTANCE OF PRIVACY

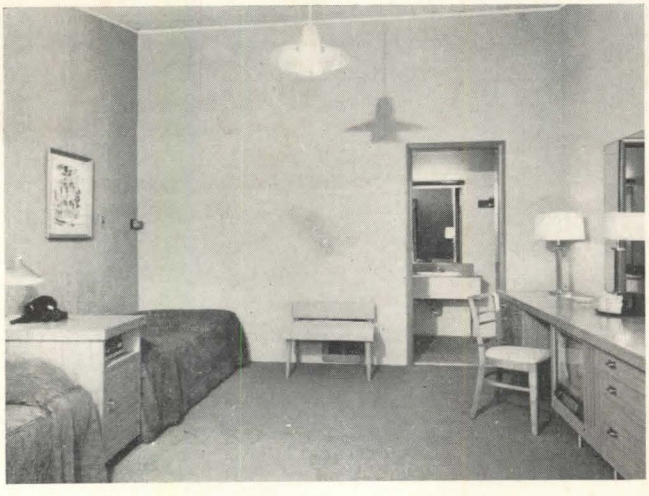
In contrast with the tourist cabin today's guest rooms for travelers, whether in resort hotels, commercial hostelries, motels or highway hotels, tend toward the luxurious. They are tastefully appointed; wall-to-wall carpeting is quite common; they benefit from the latest in mechanical equipment. Possibly in the name of economy, however, or possibly for a more impressive appearance, it became common a few years back to unite the once separate cabins into rows, and the tourist court was born. Too often this produced monotony and a re-invasion of privacy, which nowadays we are at some pains to remedy by careful site layout, sound-resistant partitions, wings in which bedrooms are offset, sawtooth fashion. The higher quality costs more to build and operate, and leads to higher room rates

Studio bedrooms, Malibu Sands Motel, California. have fenced private patios for sunbathing (R. C. Cleveland)

Malibu Sands guest rooms; interior screened from entry by angled wardrobes (R. C. Cleveland)



Guest room, Howard Johnson Motor Lodge (L. S. Williams)



Left, Chinese Rest House: masonry bunks surrounded by hot air chambers heated by a stove (Bettman Archive). Center and right, pierced walls, sliding panels, admit cooling trade winds, Princess Kaiulani Hotel, Hawaii (Matson Lines)

The best of our motels provide in their guest rooms an interior having a less "institutional" look than most hotels. Colors, textures, furniture and furnishings are carefully selected, often with competent professional advice. Custom furniture, sometimes specially designed and built, is employed. Finishes are domestic in character; paint, wall paper, wood panelling and exposed masonry are all used. The success of the result is more a matter of design quality than of the materials themselves. Lighting fixtures, TV sets, radios and room telephones — sometimes in color now that colors are available — all have the same high standards to live up to. Baths are preferably fully tiled, with a shower or tub-shower combination and, often, a water closet in its own compartment. It is common to provide a small dressing room since the guest room may serve as both living room and bedroom. For the same reason, studio beds are sometimes used.

In cold climates heating is imperative if year-round revenue is to be obtained. In southern climates, air conditioning individually controlled in each room is commonplace.

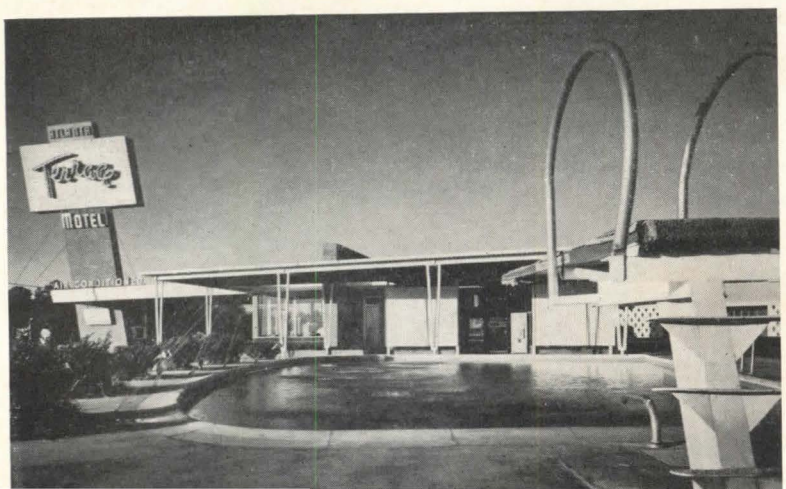
Over all these matters the hotel and motel associations and chains exercise increasing control. These organizations set high standards, which individual operator-members must maintain. Membership in a reliable association has become an inducement to patronage.

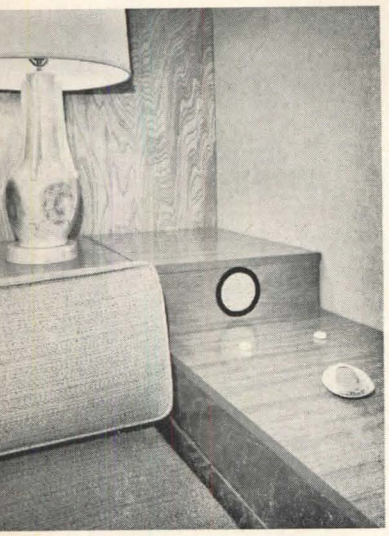
THE AMENITIES: FROM RUNNING WATER TO TV

Only a few years ago occasional tourist cabins proudly advertised running water; then came signs announcing private showers; now in northerly sections some motels still exhibit signs advertising HEATED CABINS — which means winter sports enthusiasts are using motels year 'round rather than seasonally. In the south, air conditioning is proclaimed unnecessarily; how could a southern operator hope to stay in business without it? The trend to increased mechanical control of environment — heating, lighting, air conditioning — is as pronounced in this field as in any other. Now when advantage is taken of natural phenomena for the same purpose, as in the Princess Kaiulani (above), the event seems as noteworthy as the first plumbing installation

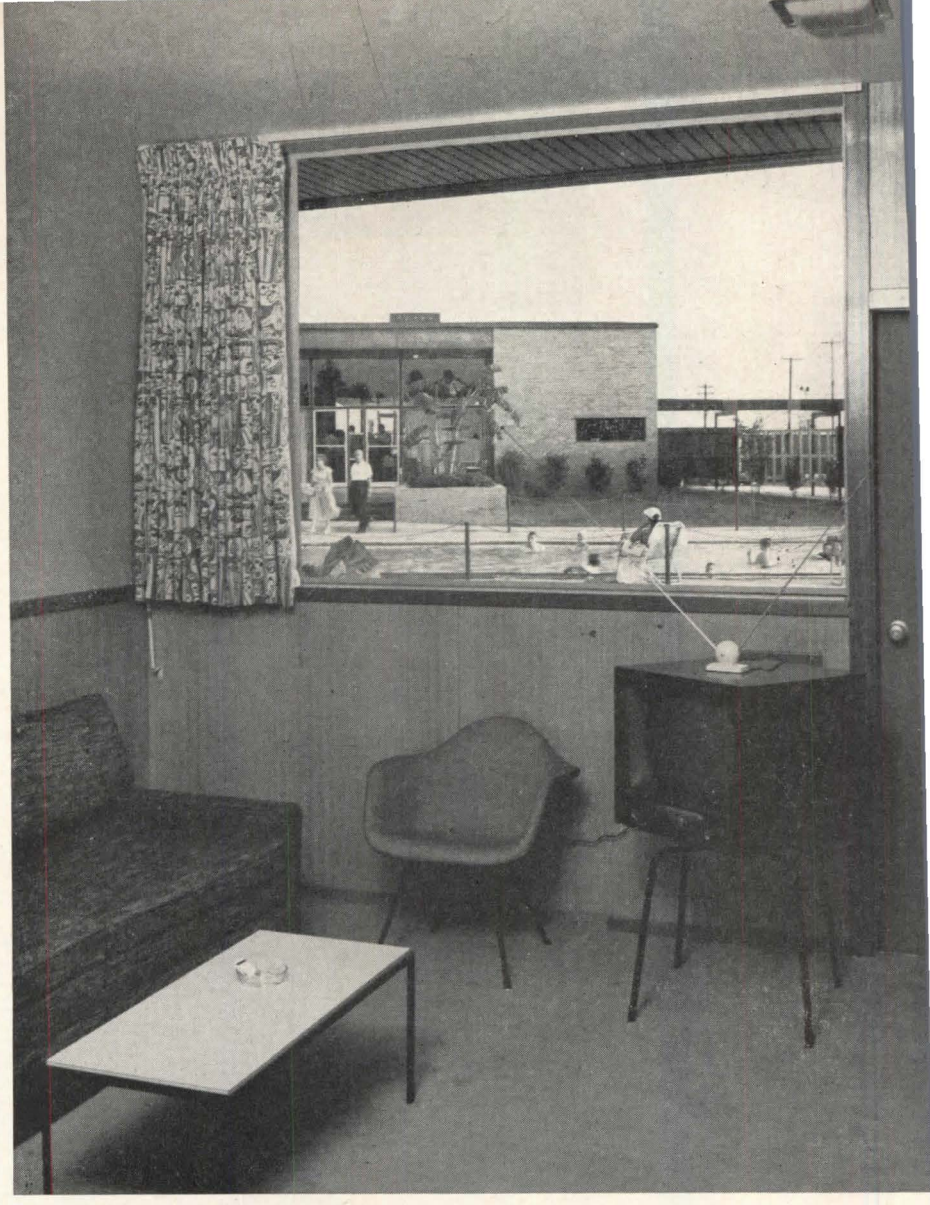
A place in the sun, Ocean View Motel, Md. (Fred Maroon)

The air conditioned Atlanta Terrace Motel in Georgia has a swimming pool too (J. W. Molitor)





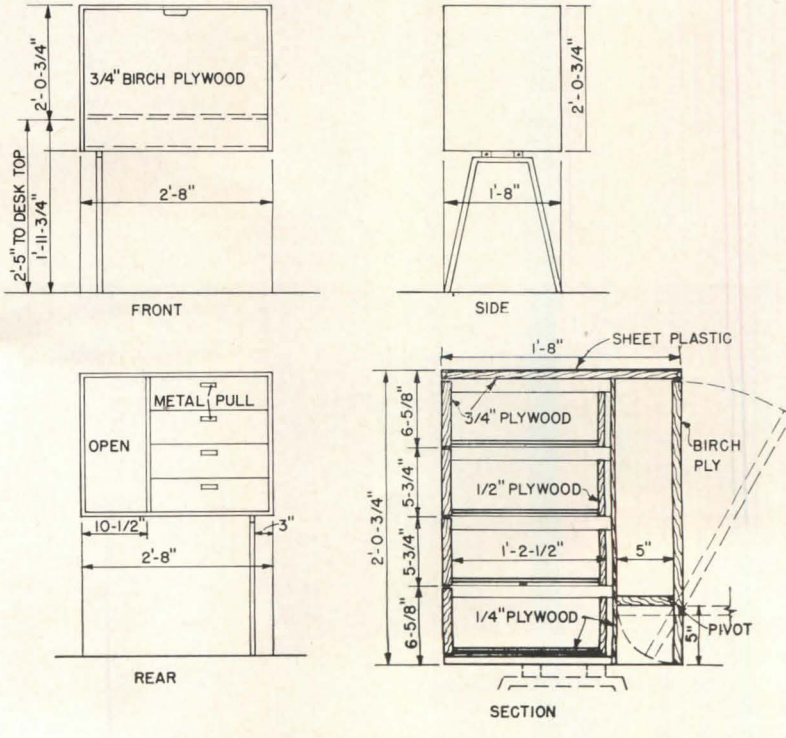
Built-in radio and bed, Malibu Sands Motel (R. C. Cleveland)



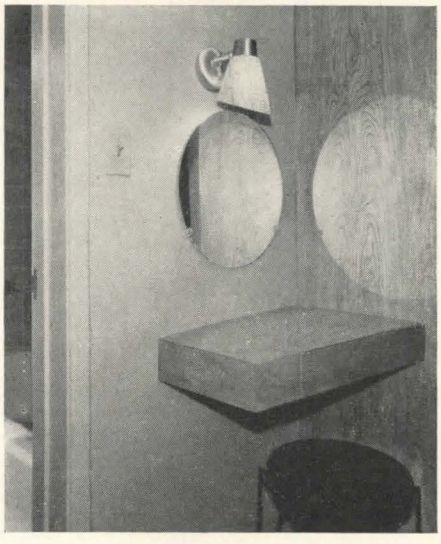
Both TV and a view of the pool, The Shreveporter (T. C. Smith)

THE AMENITIES: FROM RUNNING WATER TO TV

Competition for patronage produces comforts for travelers that were unheard of in earlier days. As hotels provide radio and TV in guest rooms, so do motels. Practices common in new, high-quality highway establishments go far beyond this, however. Built-in furniture and items of equipment, many of them custom made, are quite common. Much furniture of course has to be portable, and such items are often selected from standard merchandise of excellent design and superior quality. This not only sets a tone which the motel's progenitor, the tourist cabin, lacked; because high quality furniture wears well in addition to pleasing the customers, it also results in lower maintenance and replacement costs

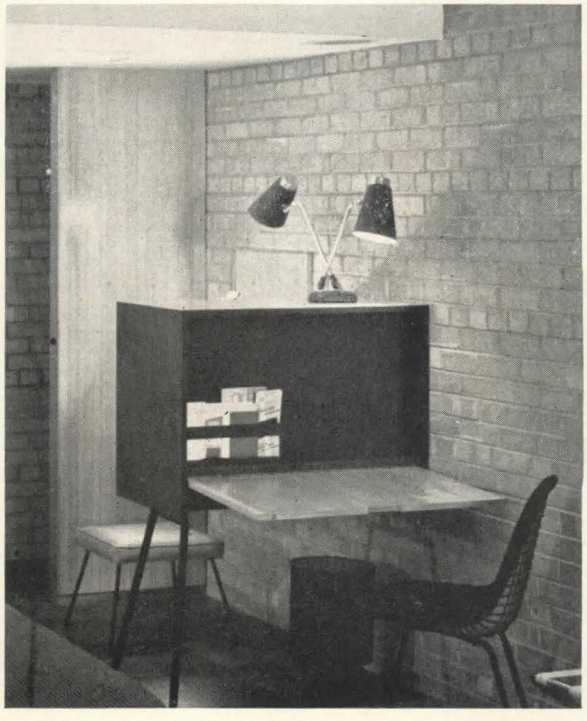


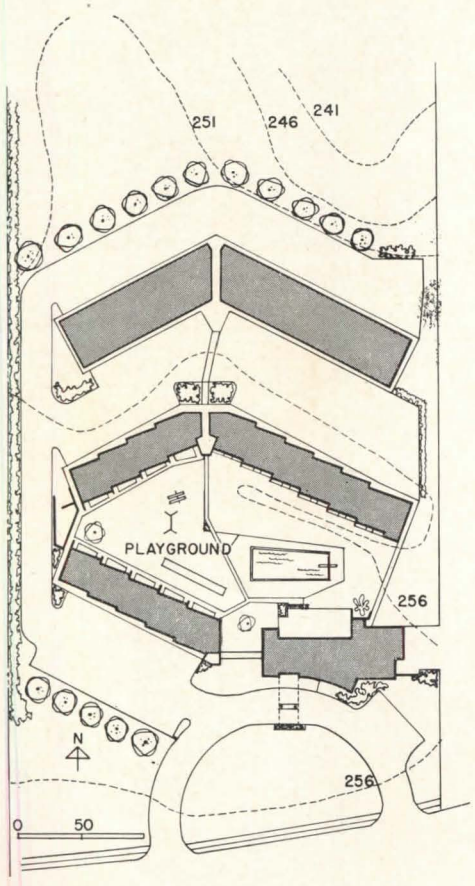
Bathroom mirror mounted at angle for better vision, Malibu Sands (R. C. Cleveland)



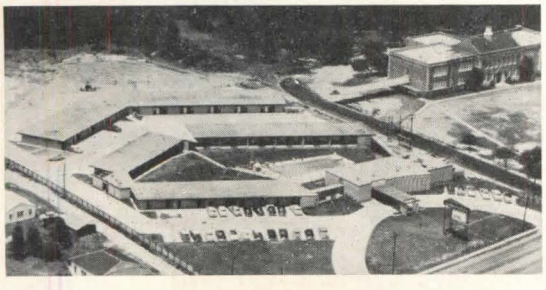
Built-in vanity in an unused corner, Malibu Sands (R. C. Cleveland)

Two views and (facing page) details, built-in dresser-desk, The Shreveporter (T. C. Smith). Further details on following pages





Site, on heavily traveled Highway 80, is just inside city limits, 4 miles from downtown and 2 miles from the airport and State Fair Grounds. Room orientation varies less than 20° from ideal north-south exposure



SOUTHERN HIGHWAY HOTEL: THE BEST IS NONE TOO GOOD

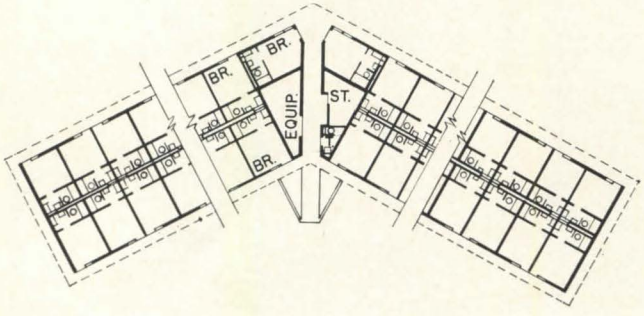
The Shreveporter, Shreveport, La., Samuel G. Wiener & William B. Wiener, Architects, Jesse O. Morgan (Architect in Charge) and Aubrey E. Butler, Assoc.

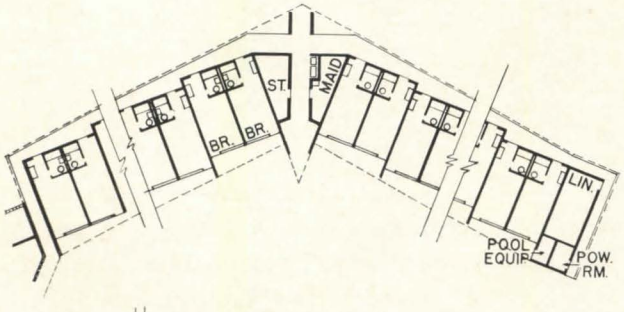
JACK TULLOS, president and manager of The Shreveporter, and Alfred Roper, vice-president and treasurer, were experienced hotel men when they quit good jobs to get the new highway hotel under way in 1953. Mr. Tullos describes the profitable enterprise and its underlying concept:

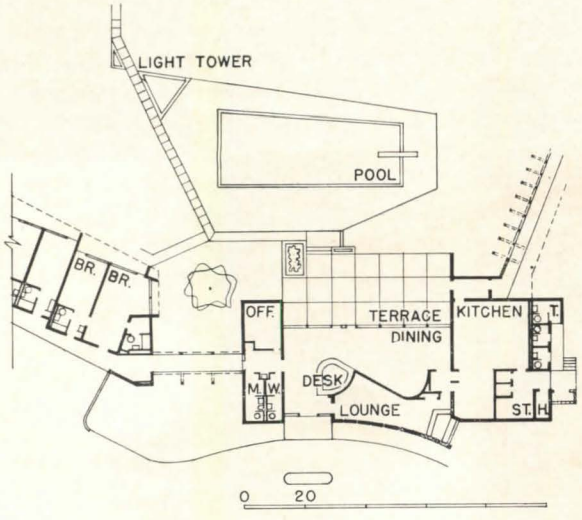
"It is my opinion that there is a need for both the highway hotel and the well operated downtown commercial hotel. The highway hotel is the answer for a man traveling with his family and for the commercial man whose activities are not entirely downtown. Today, many business establishments are moving to suburban areas; and many commercial travelers find a hotel on the outskirts *convenient*. Too, convenient parking makes the highway hotel ideal for small conventions and group meetings. Some commercial men, particularly in summer, even though business keeps them in town all day, enjoy leaving the city hubbub and relaxing here. On the other hand, downtown hotels are certainly satisfactory for those who have time only for downtown business.

"The Shreveporter attracts people just passing through, for overnight or longer stays. Our resort atmosphere, swim-

Frank Lotz Miller

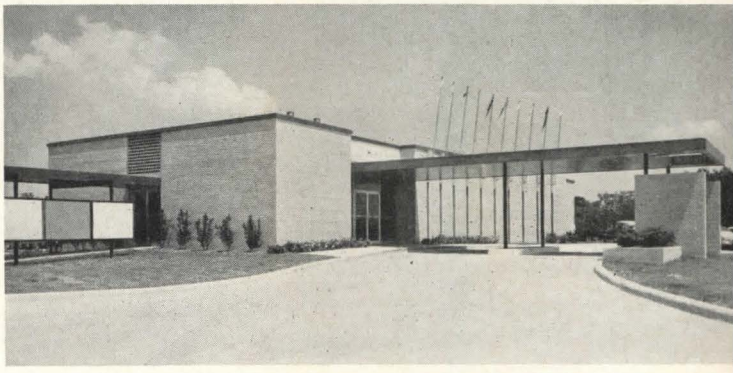






Everything from sign and landscaping to interior decoration, menus and stationery is architect-designed. Auto access and parking at room doors are kept away from main court, dining terrace, pool and game layouts

T. C. Smith

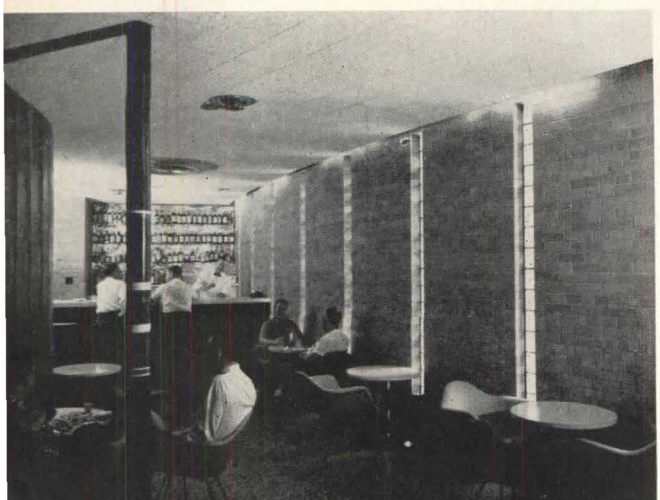


Frank Lotz Miller

COST DATA

Site	$ 30,000
Buildings, paving, pool	530,600
Landscaping	6,800
Furnishings, equipment	82,750
Cost per room, excluding furnishings bought separately but including public areas, kitchen, landscaping, pool, etc.	8,000

Average rate per room is $9.75, which provides satisfactory return on investment at 70 per cent or more occupancy



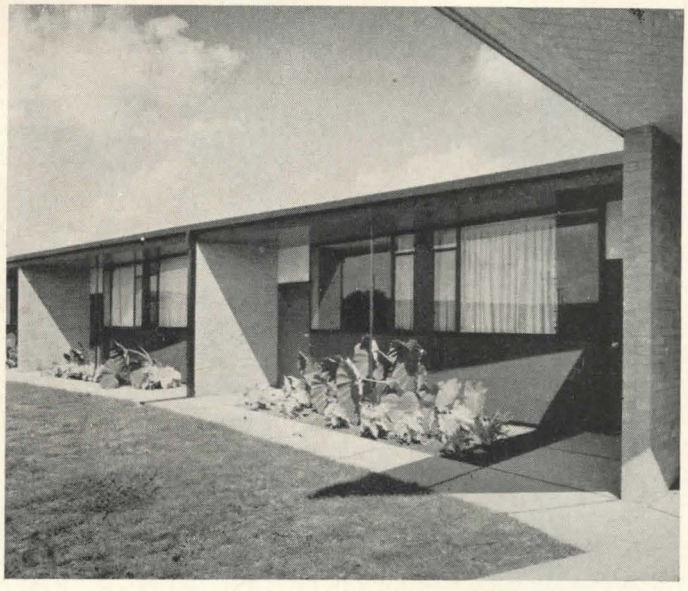
T. C. Smith

ming pool, dining facilities and good food have attracted local patronage also. Families in town spend weekends to enjoy swimming and other recreation for adults and children; people spend long vacation weekends here and as we become better known we hope to have them for full vacation periods. Many local people find us convenient for lodging out-of-town guests who can't be accommodated in their homes.

"These are the patrons we expected and planned for. If we were to start over, we would include private dining rooms for group meetings and the necessary larger kitchen facilities. We should increase the number of rooms from 70 to 100 or 125. Part of this expansion plan is under way."

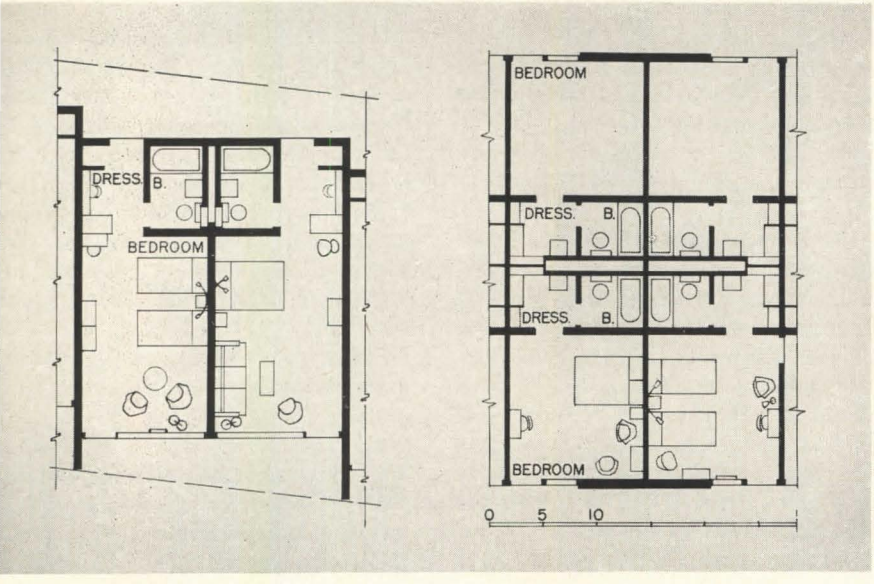
The operators emphasized to the architects the importance of high quality and atmosphere in every respect, from landscaping and site development through the smallest detail of finishes and equipment, including air conditioning. Only in one respect were there restrictions on design: the 400-ft-wide site, the architects believe, might better have been 500 ft for this size of establishment.

droom wings angled and offset for variety



Frank Lotz Miller

Color relieves monotony. Diffused outdoor lights are carefully placed

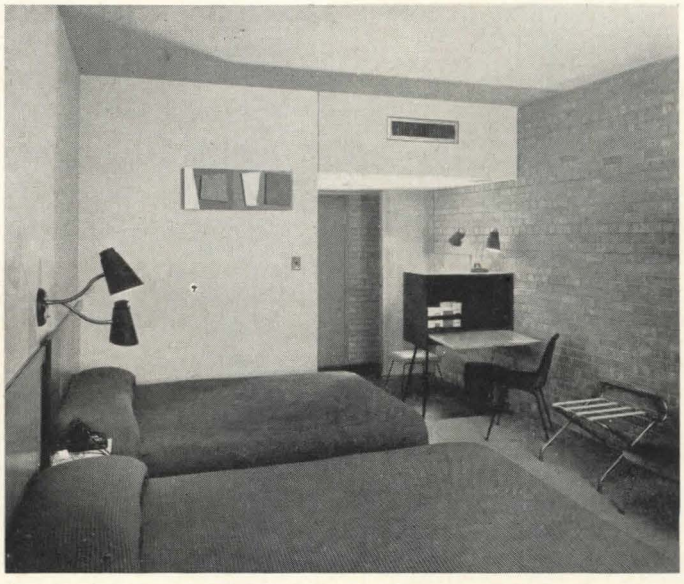


e-room-deep wings command higher rates for larger quarters

T. C. Smith

Deep shelves hold toilet cases; mirrors are fixed, bath towels extra large

dividually controlled air conditioning



T. C. Smith

Abstract "Stabile" designed by Samuel Wiener, Jr., carpenter-made

FINE HARDWOOD VENEERS FOR ARCHITECTURAL WOODWORK

By Burdett Green, Executive Vice President, Fine Hardwoods Association,
and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

FINE HARDWOOD FACE veneers bonded into plywood offer a classic example of a truly modern material. The decorative value of the wood is locked under the bark of a tree for years until it is fashioned by man and machinery and incorporated into a building. No two trees are alike and, indeed, no two pieces of veneer are exactly alike. Veneer is unique when it is applied to an architectural wall panel, a door, built-ins or other cabinetry. The color, figure, luster and depth of true wood may be unveiled over large expanses of wall area in the form of smooth paneling, instead of being confined by many small recessed and divided panels. Raised panels framed by stiles and rails may now be fabricated of architectural plywood uninhibited by limitations on size and decorative possibilities.

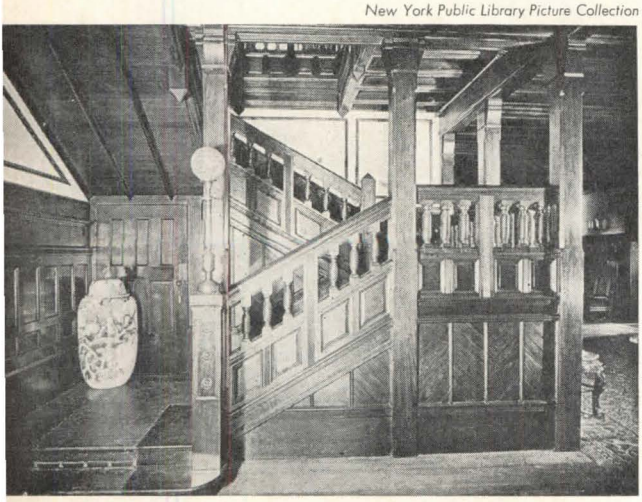
This timeless material owes its resurgence to modern design and to technical advances. Synthetic adhesives have made possible the bonding of veneers into a homogeneous material, and the new finishes enable architects to take advantage of the natural characteristics of wood for decorative wall covering. Clear and toned finishes which protect the wood from abuse and soil spots provide a modern substitute for time-consuming, hand-rubbed oil finishes or "French polish."

Nineteenth century concepts about the use of wood as a material were partially involved with the display of the products of the new woodworking machines. Adaptations of French and English styles of paneling could be reproduced at will, and solid wood paneling in dark stains was considered *de riguer* for certain types of buildings, particularly for such special functions as private libraries, law offices and inns.

New processes of production have changed the old philosophy of design. Contemporary thinking is concerned with the inherent beauty and function of natural materials. Twentieth century methods of panel fabrication free th architect of the requirement that h arbitrarily divide the wall area into number of small panels. He may nov divide the wall surface into well-pro portioned units as he sees fit, and h may integrate the wall panels with th door frames and window frames. Man opportunities for designing harmoniou rooms are possible in matching, or con trasting, the panels on casework an built-in cabinetwork with the panels o the walls.

Today, smooth wall paneling in many different species and finishes is being installed in all types of buildings, i spaces that serve all manner of grou functions and in rooms for individuals The new Diagnostic Building in Roches ter, Minn. (Ellerbe and Company, Ar chitects) incorporates plywood wainsco of special design throughout the spacious lobbies, corridors and halls on all floor above the second floor, except for large murals in the waiting halls. Each floo

New York Public Library Picture Collection



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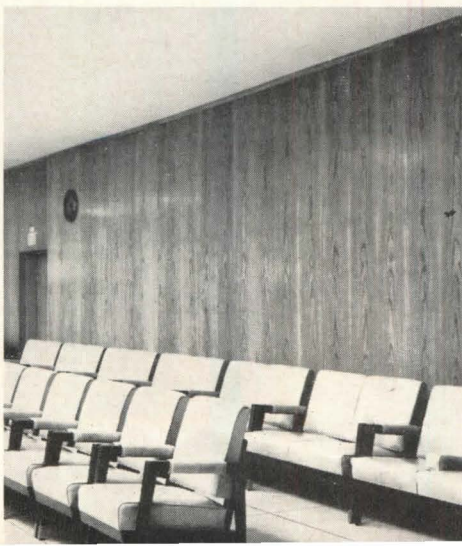


Ornate paneling and stairway of 19th century home contrast with smooth, book-matched, red oak paneling (right) in Diagnostic Building, Rochester, Minn. (Ellerbe & Co., Architects), and book-matched, figured flat cut walnut paneling of vice presidents' offices (far right) in Mellon Bank, Pittsburgh (W. K. Harrison, M. Abramovitz, W. Y. Cocken, Associate Architects), separated from Trust Dept. by hardwood-framed glass

Wood paneling is being used more frequently today than at any time since the era of Christopher Wren. This development has been made possible by the application of modern technology to the fabrication of custom-designed plywood paneling which embodies face veneers of fine hardwoods. In order to provide you with information on the characteristics of many hardwood veneers, this article introduces a series of Time-Saver Standards which will identify and describe many of the species now available to architects, and of interest to them

is paneled with a different species, carefully book-matched. The waiting room, of red oak, is shown below. A special flitch of walnut was provided by Chester B. Stem, Inc. of New Albany, Ind., for the integrated paneling and glass framing, shown below, of the Mellon National Bank and Trust Company in Pittsburgh. Many other examples can be cited, and numerous projects under construction or on the drawing-boards will testify to renewed interest in wood for interiors.

There are many different species of hardwoods — 99,000 to be exact — and each one varies in physical properties as well as in decorative features. Regardless of these variations, most hardwoods that are on the market today are there because they have proved themselves durable enough and stable enough to perform a required function in veneer form. Admittedly the architect's principal motive in selecting a veneer is to achieve an aesthetic goal, and he would be well-advised, therefore, to place primary emphasis on appearance and effect instead of "practical" considerations of strength and stability, which motivate him when he selects other building materials, including solid lumber.

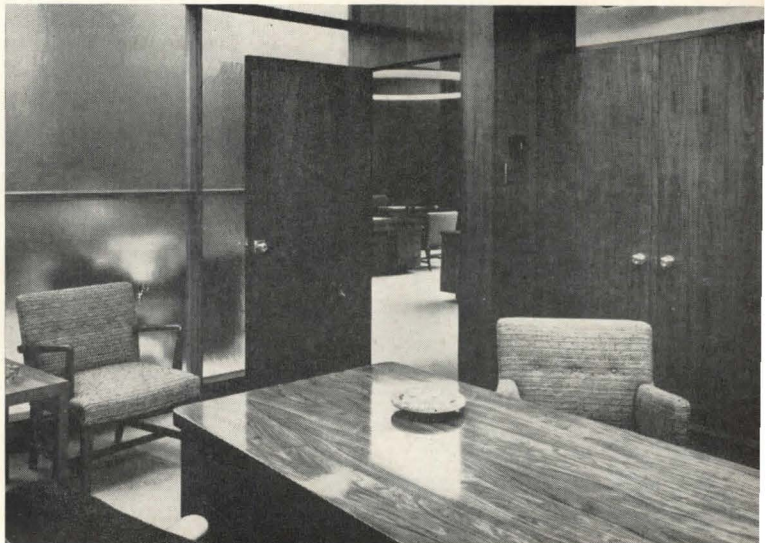
COST

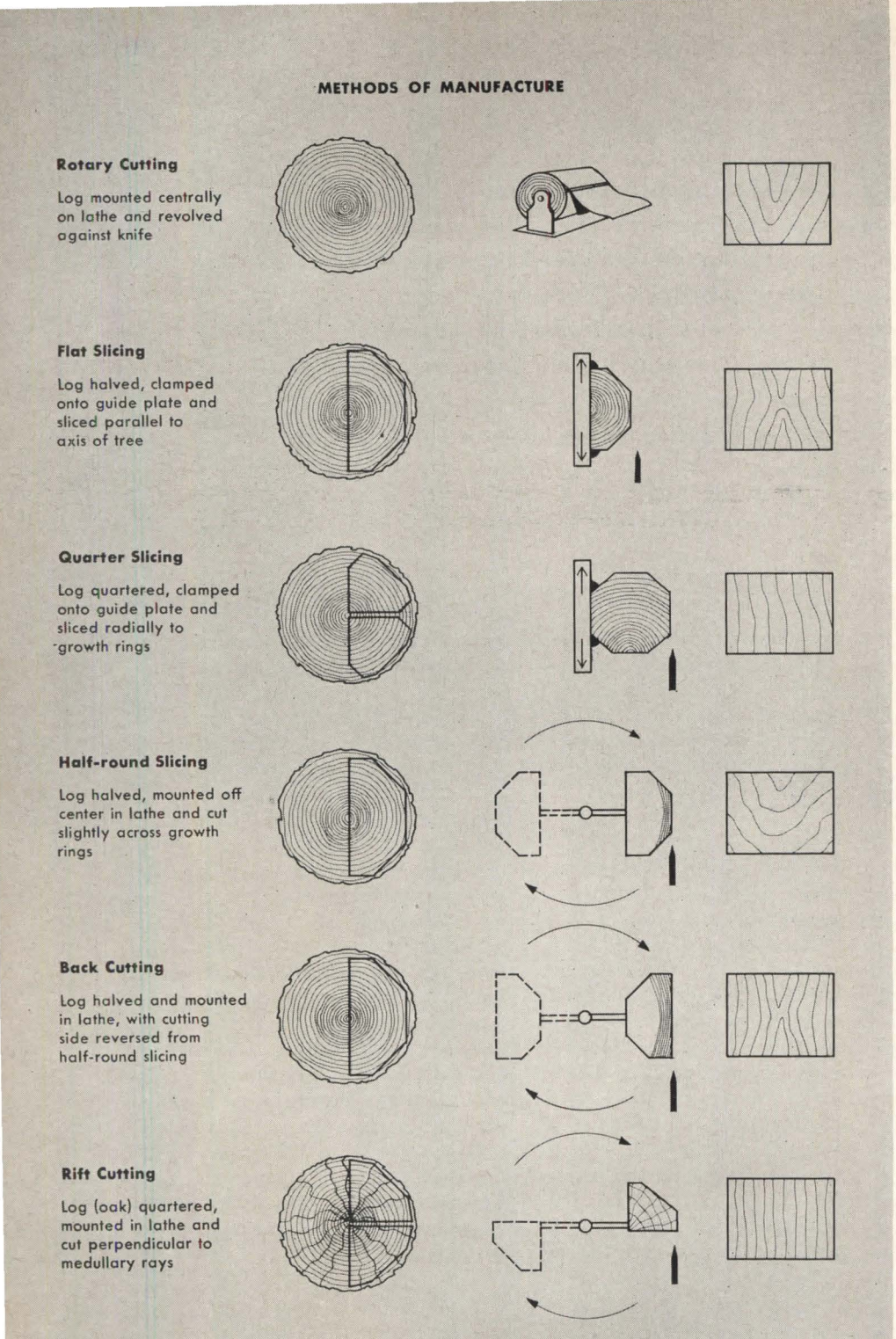
The cost of fine hardwood face veneers, regardless of the species, is but a fractional part of the total cost of wall paneling. This total cost includes fabrication and installation of the entire panel or other form of architectural woodwork. The plywood core, with cross-banding and back sheets, costs the same regardless of which species is chosen for the faces. And the cost of fabricating the paneling, installing it and finishing the walls and trim is certainly not dependent on the veneer used. Since the cost difference between two different flitches will represent such a tiny portion of the total cost, the selection of veneers solely on the basis of relative cost is questionable economy.

The total range of the cost of veneers varies from 2 to 60 cents per square foot, with many architectural veneers available in a bracket as low as 10 to 25 cents. The differences in cost are determined by the economic laws of supply and demand. A species that is popular with both architects and owners, and which has an effective but sedate figure, might sell for a few cents more per square foot than the same species with a flamboyant figure. In general, though, figured face veneers cost more than plain veneers. Wide veneers and extra-long veneers are not easily obtainable, and therefore a premium is charged for larger sizes. Other factors also influence the cost, especially if the logs are brought from a distant land, such as the jungles of South Asia, where sometimes elephants and natives are used as carriers.

Lawrence S. Williams

Lawrence S. Williams





MANUFACTURE

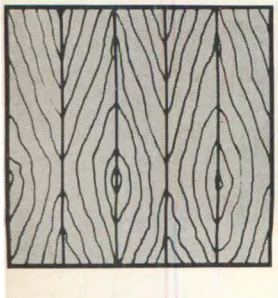
Manufacturing methods are important because they determine the various types of veneer from which the architect makes his selection. Fine woods may be either "plain" (grain character caused by annual growth rings) or "figured." "Figure" results from any of these three sources: (1) distorted, irregular or wavy arrangements of wood fibers; (2) the presence or absence of conspicuous rays, *e.g.*, quartered oak; (3) pigmentation, *e.g.*, circassian walnut or figured red gum. There are three methods of cutting used to produce different veneer characteristics:

1. Slicing. This method of cutting veneer is usually employed for the production of most of the veneers for fine paneling and cabinetwork. Sliced veneers are produced in a vertical slicer by thrusting the prepared log, or flitch, against a long knife which cuts slice after slice, straight through the entire length. The angle of cut can be varied with respect to the grain of the wood, in order to bring out the most attractive figure. As each slice comes from the knife, it is turned over and piled in the same sequence as it is cut. This order is carefully maintained in subsequent drying and handling operations. The veneers from any one flitch are usually boxed and sold as a complete unit. Successive sheets of sliced veneer are frequently matched to produce uniform figure formations.

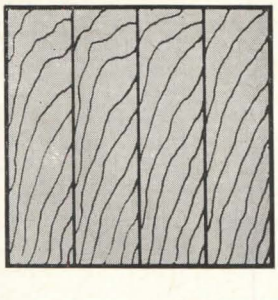
The face veneers produced by slicing are usually $\frac{1}{28}$ in. thick, but thicknesses varying from $\frac{1}{100}$ to $\frac{1}{8}$ in. can be produced by this method. Two basic figure types result from the slicing operation: (1) flat-cut (also termed "flat-sliced" or "sliced"), and (2) quarter-sliced.

In *flat-cut* veneers the log is halved and cut tangent to the annual rings. This provides an opportunity to reveal

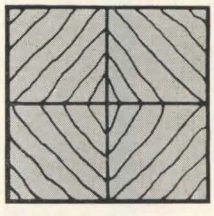
METHODS OF MATCHING



Book Matching (or Reverse Side Matching) is accomplished by turning over adjacent sheets of veneer, like unfolding the pages of a book. Thus, the back of one veneer meets the front of the next, and so forth. According to the angle of *light*, one sheet will be slightly darker than the next



Side Matching (or Slip Matching) consists in laying adjacent sheets of veneer right side up, so that essentially the same flitch figure is repeated. This method avoids light and dark contrast. Although all types of veneer can be used, side matching is most common in quarter slices



Diamond Matching

Reverse Dia Matching

the heartwood, which is generally darker than the sapwood, if such an effect is desired. Varying amounts of sapwood may appear, diminishing as the sheets approach the center of the log. With this type of cutting, the grain pattern resulting from the annual growth rings is most prominent.

Quarter-sliced veneers result from slicing a quartered log radially to the growth rings of the tree. This cutting produces conspicuous striped or ribbon types; also, in some woods, pronounced rays or flakes. The annual rings form the finer stripes, and interlocking grain forms the ribbon stripes, *e.g.*, quartered African mahogany.

2. Rotary Cutting. In rotary-cut veneers the annual growth rings frequently form ellipses and parabolas that make striking grain character effects, especially when the rings are irregular in width and outline on the cut surface.

Rotary cutting is always used in the production of commercial veneers for the inner plies of plywood, and also for cutting some figured veneers. In this process the log is centered and held by chucks in a massive lathe. The veneer is obtained by rotating the log against a knife which is held parallel to the axis of the log and peels the veneer off in a continuous sheet like wrapping paper on a reel. This continuous sheet is very suitable for covering large surfaces, but has limited matching possibilities. The thicknesses are the same as sliced veneers.

Half-round Slicing, also Termed "Stay-log Cutting." Half-round slicing is a form of rotary cutting. It is generally used to produce figured face veneers from stumps, burls and crotches, and in certain species (oak) to avoid a marked radial figure. This method also produces wider widths than flat-cutting.

Half-round employs a "stay-log" (a heavy casting) which moves the center of the log away from the center of the lathe. The sheets of veneer are kept in sequence and sold in the same manner as sliced veneer.

Rift cutting is a method of half-round cutting in which the flitch is placed in the machine, again off center, so that the cut is neither parallel to the medullary rays nor tangential to the growth rings. The result is a rather wide quartered effect, with no rays showing.

Back-cutting is another form of rotary cutting. It approaches quarter-slicing to the same degree that half-round slicing approaches plain slicing. The purpose is to produce a rift effect (oak).

3. Sawn veneers are used to produce thick door faces or lengths over 16 ft. Thicknesses are generally from $\frac{1}{16}$ to $\frac{1}{4}$ in. However, practically all veneer saws have been eliminated by the veneer industry because of excessive costs.

FLITCH

"Flitch" is a valuable term for specifying veneers. It is a segment or section of the log of such a shape and size that it can be handled most efficiently through the various manufacturing processes. The log is sawed into segments which are usually halves and quarters. From two to four samples are taken from each flitch. One comes from near the top, one from the center and another from near the bottom. "The samples must truly represent the flitch" is a basic tenet of the industry. All sheets of veneer in a flitch are kept in sequence through the slicer and drier and into the final strapped and crated flitch. This sequence facilitates accurate book matching for face veneers. Where a uniform or formal effect is desired, specification writers can assure such uniformity by specifying "architectural matched plywood," which means, "the face veneers shall be kept in sequence, or the order in which they were produced."

MATCHING

Young architects are sometimes mystified by the process whereby their more experienced elders select veneers. It is not an over-simplification to state that they select the veneers which they like best. Frequency of use familiarizes the architect with the different species and the various cuts. The more he learns about veneers, the more conscious he becomes of the real challenge they can present in the form of matching.

Matching is the system of organizing the veneers within a given wall area in such a manner as to take full advantage of the figure, the combinations of color and the multiplicity of shades, and so to determine the over-all pattern. The chart below illustrates the most common methods of matching. Some other matching terms which it is helpful to know are as follows:

Center Matched — two pieces of equal size are matched with the joint coming in the center of the panel.

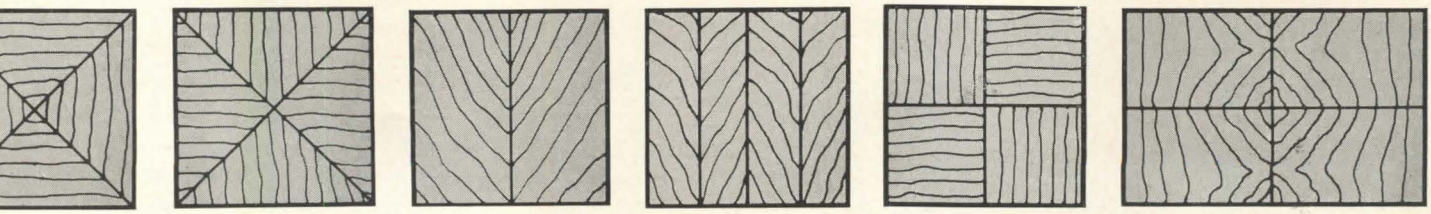
Random Matched — a combination of unequal-sized pieces.

Balance Matched — more than two faces, although of uniform size, are laid as a face.

Mismatched — grain character or figure of the adjacent pieces in the face of a panel do not properly match.

A scheme for matching or combining veneers should necessarily be predicated on a knowledge of the existing sizes which are available for one or more preferred species. This information may be readily obtained from veneer manufacturers or from manufacturers of sequence-matched architectural panels. If veneer of a preferred length or width cannot be found in a particular species, it may be available in another species of somewhat similar character or color. However, dimensional problems arise only in the case of a large room with high ceiling.

Book and Side Matching are the most commonly employed matching methods. However, there are many other matching patterns possible, simple and elaborate, some of which are shown here



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Reverse Box Matching

"V" Matching

Herringbone Matching

Checkerboard Matching

Four-way Center and Butt Matching

DIMENSIONS

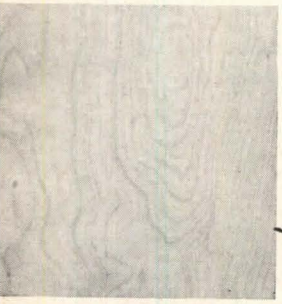
Lengths of veneers range from 6 to 16 ft, with the highest percentage being cut in lengths of from 9 to 12 ft. The woods which are sold in the greatest volume may usually be obtained in the larger sizes. Individual species, such as holly, rosewood and yew, and special cuttings, such as burls, will vary from these standards down to 30-in. lengths.

Widths of veneers range from 6 in. up to 30 in. or more. The determining factor in flat-cut veneer is the diameter of the tree. Quarter-sliced and ribbon-stripe veneers are necessarily procurable in small widths, because of the manner in which they are produced. Narrow widths of veneers may be joined together by means of the tapeless splicer, an electronic gluing device which forms a continuous effect without visible evidence of jointing.

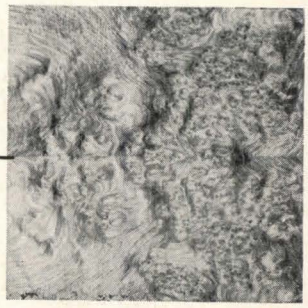
The standard thickness for architectural veneers in North America is $\frac{1}{28}$ in. if produced by slicing or rotary cutting. Sometimes individual manufacturers will produce slightly heavier veneers in certain species, but seldom thicker than $\frac{1}{16}$ in., and then only on custom order. At first glance, a $\frac{1}{28}$-in. veneer may appear to be fragile and unduly thin. Actually, it is a very substantial piece of wood when blended into plywood and will readily resist normal abuse. Use of the standard $\frac{1}{28}$-in. veneers is the only method of obtaining uniformity over large wall areas.

PARTS OF TREE

Crotch (Mahogany sample). Not available in large sizes. Subject somewhat to checking because it is very highly figured and has a heavy amount of endwood. Available generally in mahogany, walnut and aspen. Sliced or cut half-round

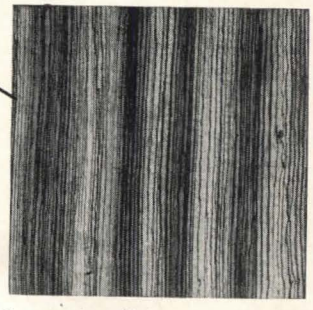


Rotary cut (Birch sample). Cut from **longwood** for long lengths



Burl (Maidou sample). Available in comparatively small sizes. Very highly figured throughout. Suitable as overlays, inlays, borders and other uses. Usually cut half-round

Flat cut (Oak sample). Cut from **longwood** for long lengths



Quarter slice (Zebrawood sample). Cut from **longwood** for long lengths

Stumpwood or Butt (Walnut sample). Most commonly available in American walnut (often misnamed "burl" walnut), in which an unusually attractive figure develops just above ground line. Especially suited to four-piece matching. Usually cut half-round

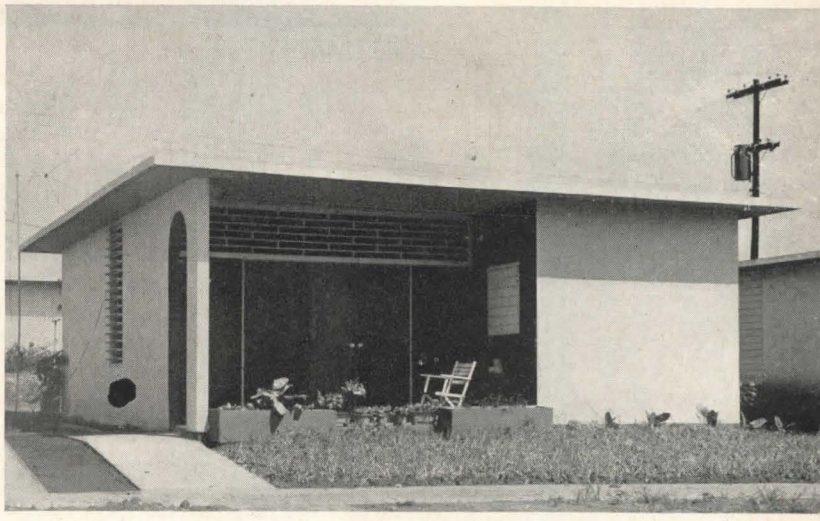
FIGURE TYPES

The actual figure type of a veneer is determined by a number of different factors, including the species of the tree and the particular nature thereof, the part of the tree from which it is produced and the method used in manufacture. On pages 211, 213 and 215 of this issue of ARCHITECTURAL RECORD, the first sheets are presented of a new series of Time-Saver Standards which will attempt to identify and describe the hardwood veneers which have the most common acceptance and which are readily available from inventory in most parts of North America. The index commences with the woods which are familiar to designers, which are available in greatest quantity and which offer the greatest variety in figure types. These woods are:

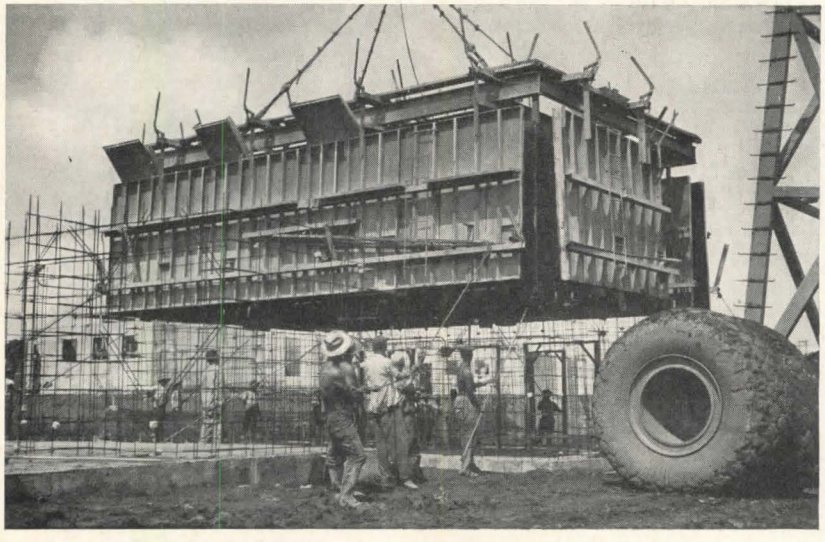
Birch
Maple
Mahogany
Oak
Cherry
Philippine Hardwood
Walnut

Possibly an entire page may be devoted to woods such as Genuine Mahogany and Walnut, each of which has many figure types. Some of the other woods may feature two or three figure types. However, most species will have only one type. The series will close with a listing of the most obscure of the exotic woods.

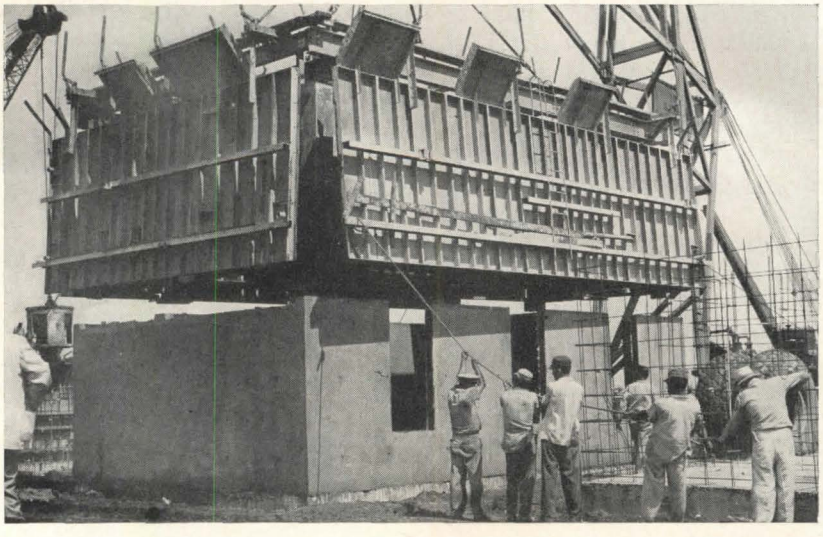
STEEL FORMS SPEED SAN JUAN HOUSING

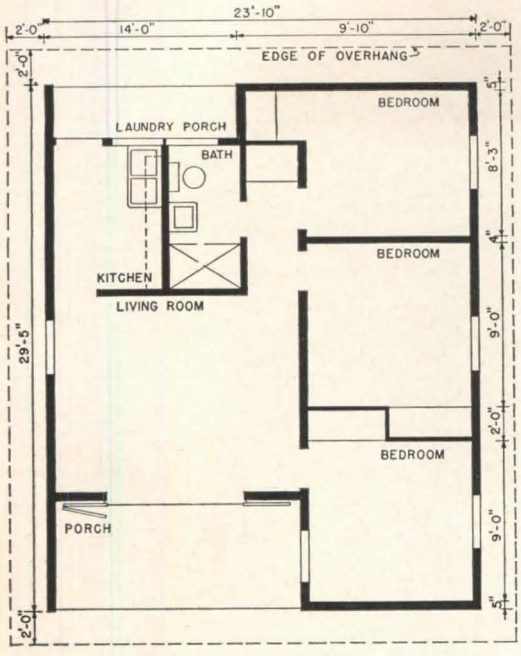


VILLAS LAS LOMAS, a low-cost housing development covering a sloping tract of 205 acres in San Juan, Puerto Rico, is springing into existence by assembly-line methods at the rate of six houses a day. Colorful, compact, reinforced concrete houses — 1583 of them — are being "poured" by means of a unique system of steel forms.

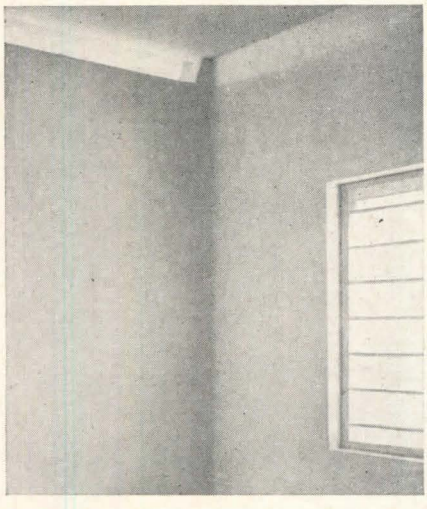


The 32½-ton steel form (above left) is lowered onto a 4-in.-thick reinforced concrete slab, into which have been incorporated piping and electrical conduit. After tightening of the exterior panels, left loose during lowering for easier alignment with steel reinforcing rods, concrete is poured through "lips" at the top of the form (top right). After the concrete has set for approximately 24 hr, the form is loosened and lifted off the house (below left). About 28 days later, a 4-in.-thick concrete roof slab is placed on top of the hardened concrete

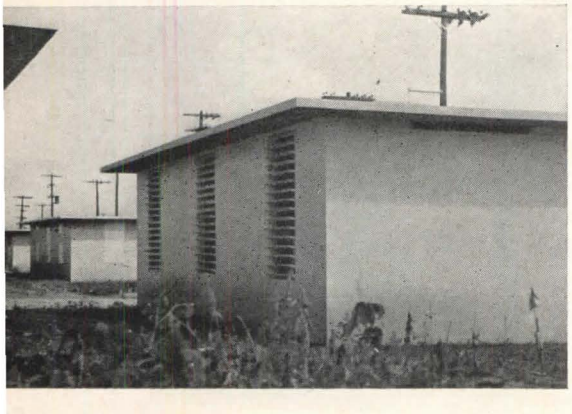




Floor plan of Trade Winds house, one of two basic models in Villa Las Lomas



As shown from the inside (above) and from the outside (below), slots are left in the walls just under the roof to provide natural ventilation. Most windows, enclosed with adjustable aluminum louvers, open to roof height, although bedroom window shown in photograph above does not



The steel forms which make possible the speed of construction being realized in Villa Las Lomas were conceived by Wallace K. Harrison, partner in the architectural firm of Harrison & Abromovitz and a director of the International Basic Economy Corp., and engineered by Emil H. Praeger, structural engineer. As shown in the series of construction shots on the preceding page, each form consists of heavy steel ribbed plates, prefabricated into one complete house form, including cavities not only for exterior but also for interior walls. The 32½-ton form is hoisted in its entirety, by means of a mammoth mobile crane, and lowered onto the already-poured 4-in.-thick reinforced concrete slabs on grade. All piping and electrical conduit are incorporated in the slab, and vertical risers fit readily into the proper walls in the form. Steel reinforcing rods are also secured before lowering of the form. Small concrete blocks, barely visible in the photo on the preceding page, are tied to the rods at intervals to keep them from slanting against the sides of the forms during the pour.

After the form has been set securely on the concrete slab, the exterior steel panels, which are loose during the lowering so that there will be a wider opening into which the reinforcing rods can fit, are locked to the interior faces by means of tie rods. Concrete is then poured into the wall cavities, as shown. The steel "lips" at the tops of the exterior panels can be moved in order to guide the concrete into the forms. Exterior walls are poured to a thickness of 5 in., interior walls 2 or 3 in.

The next day, after the concrete has set for a little less than 24 hours, the form is loosened and lifted off the house, then set down again on another slab to form another house. About 28 days later, or less, after the concrete has hardened sufficiently, a concrete roof slab is laid on top of it. The 4-in.-thick roof slabs are poured in piles of six, one on top of another, much as they are for lift-slab operation. A thin layer of paraffin oil separates each slab. Each day six houses are "roofed" by "sucking" each of the slabs up separately by means of a vacuum suction apparatus on a crane and lowering it onto the proper house. Metal roof anchors and wall anchors at eight points are welded together to supplement the 21-ton weight of the slab in keeping the roof securely in place.

Only six forms are used in Villa Las Lomas, which makes possible the pouring of just six houses a day. Activities on the site are planned so that some progress is made on each group of six houses every day, from leveling of the plot to painting.

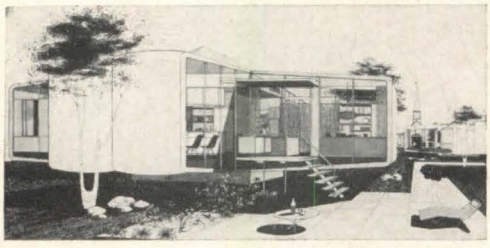
Of the six forms used, there are two basic designs, each of which is planned for easy expansion. Three variations in each of the two basics, simply minor changes in the façades, relieve what might otherwise be a "too standardized" appearance. The floor plan of one of the houses, the Trade Winds, is shown at left. It is 23 ft 10 in. wide and 29 ft 5 in. deep (not including the roof overhang), and includes three bedrooms, living room, kitchen and bath, in addition to front and back porches. The bath has a stall shower, but the floor curb is raised so that it can be filled with a few inches of water to provide a small tub for bathing babies. A Trade Winds house, completed and occupied, is pictured on the preceding page.

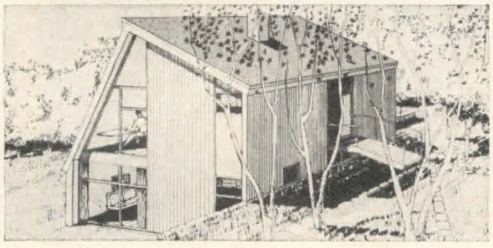
The second basic house, the Belair, measures 20 ft 9 in. wide by 33 ft 1 in. deep, with an area of 685 sq ft as opposed to an area of 705 sq ft for the first type. All six houses sell for $6000 to $6200, the $200 difference being site preference. Architect for the houses was Edward L. Barnes of New York.

The houses have no heating system, since the temperature in Puerto Rico is almost never low enough to require heat. Window openings are not enclosed with glass, but with adjustable aluminum louvers, which can be closed when necessary for keeping out weather or light. Natural ventilation is provided through door and window openings and wall slots under the roof overhang, which are left in the concrete forming. Both the interior and exterior walls and ceiling are painted. No other finish is practical in such a moist climate. All floors are natural cement tile.

So far well over 1000 houses have been started, and almost half are completed and occupied. Before Villa Las Lomas is completed this year, it will be serviced by a 10-acre shopping center, with a huge supermarket and the first Woolworth's on the island, and an elementary school, church and park areas.

The $11,000,000 development, one of several in the San Juan area, is jointly financed by the Ibec Housing Corp., of which Winthrop Rockefeller is chairman, and the Corbetta Construction Co., both of New York City. Henry C. Rexach, San Juan general contractor, is in charge of construction operations, which also include such related activities as grading and pouring concrete streets, erecting electric service poles, laying water mains and sewer pipes.





Preliminary plans for two "houses of tomorrow" have resulted from two M.I.T. research projects — one of them in "plastics in building" and the other in "space heating with solar energy"

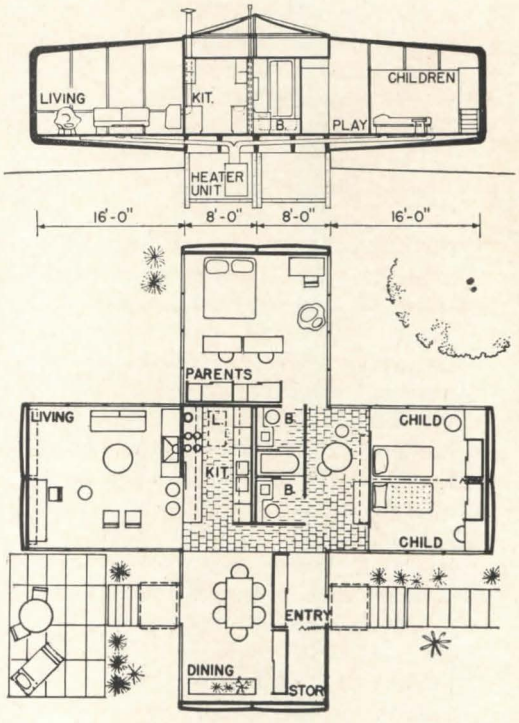
M.I.T. DESIGNS A PLASTIC HOUSE AND A SOLAR HOUSE

THE PLASTICS HOUSE (above left) was described as "a revolutionary type" at a Building Research Institute Plastics Study Conference at the University of Michigan in November by Richard Hamilton, director of the M.I.T. plastics research project (sponsored by Monsanto Chemical Co.), and Marvin Goody, staff architect who created the design.

The basic element of the house will be an 8- by 16-ft plastic modular unit molded in a U shape, with one side serving as the floor, one side as the ceiling and roof, and the bottom as the outer wall. The unit could, of course, be molded to larger dimensions, or smaller, but 8 ft is the maximum height that can be transported, according to shipping regulations. In the simplest plan, pairs of units can be joined and cantilevered from a 16-ft square utility core, which will contain baths, kitchen, laundry and heating facilities. A minimum of site excavation will be necessary for the concrete-based core. A variety of floor plans is possible with combinations of the design components and the addition of one or more cores.

The actual plastic materials from which the house will be fabricated have not been determined as yet. However, it is likely that the U-shaped modular unit will be formed by reinforced plastic sheets sandwiched around foamed plastic. A variety of transparent and translucent plastic panels will be used on both the exterior and interior of the house. Conduits, piping and ducts, much of it integrally formed into wall and floor sections, will be made of flexible and corrosion-resistant plastic.

Still the most perplexing problem confronting the research staff is the method of joining the modular units. It is likely that gaskets and stripping of extruded plastic will be used.

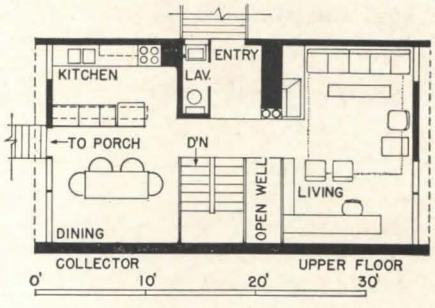


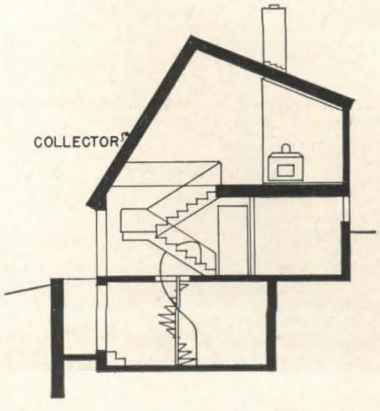
THE SOLAR-HEATED HOUSE (above right) was discussed at the World Symposium on Applied Solar Energy at Phoenix, Ariz., in November by Lawrence B. Anderson, professor of architecture at M.I.T. and chairman of the Committee on Space Heating with Solar Energy (see AR, Nov. 1955, page 230).

The solar energy collecting system in the house, devised to produce the greatest amount of cheap heat during New England's cold and often cloudy winters, will consist of two layers of glass over a black-painted copper sheet which is tilted (at an angle of about 60 deg for New England) and faces south. The heat absorbed by the black-surfaced copper will be transmitted to water passing through copper coils fastened to the underside of the copper. This water, at a temperature of about 150 F, will flow to a 1500-gal tank in the cellar. From there it will be pumped to a heat exchanger, where a fan will transfer the heat to air, which will be carried through the house in ducts. The controls and piping will be arranged so that, whenever heat from the sun is insufficient to keep the house warm, an oil furnace will turn on automatically and heat the water to the required temperature. The domestic water system will also be connected to both the solar collecting system and the furnace so that oil will augment the sun whenever it is needed.

As can be seen in the rendering above, the house will be built on a hillside, with the main entrance into the upper floor, where living room, dining room and kitchen will be located. Three bedrooms and a bath will be located on the lower floor. There will be large windows facing the south on this floor and large windows at the east and west ends of the house on both floors. Exterior walls not of glass will be of vertical siding.

It is expected that the solar house will be built this winter and will be sold to a family who will live in it while data are gathered by M.I.T. researchers.





MINIATURE SWITCHBOARD WILL LIGHT SMALL STAGE

LIGHTING OF SMALL STAGES — in schools, community theaters, hotels and clubs — with a maximum of variable effects and a minimum of bulky equipment and cost appears to be a practical possibility with a miniature portable switchboard developed by Gerald B. Ewing, lighting consultant, of Wilton, Conn.

The portable switchboard system has been installed in the Hotel Taft in New York, so that bandleader Vincent Lopez can have complete and simplified control over the lighting effects on his bandstand. As shown in the photographs at the right, the miniature switchboard can be placed near the keyboard on the piano and operated with one hand while Mr. Lopez is playing with the other hand, or it can be moved to the front of the piano for easy access while he is conducting.

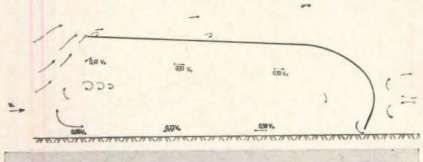
In essence, the board consists of two banks of low-voltage, remote-control switches, each of which lights a specific area of the stage with a particular effect. Banks of lights are located above and to the front of the bandstand and can be varied to produce special lighting effects on the side and backdrops, which are draped with pale green and yellow.

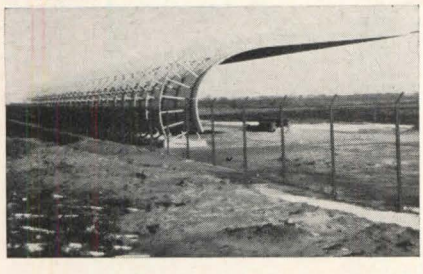
The portable switchboard is wired directly through larger equipment — transformers and relays — which actually operate the banks of lights. In addition, there is also a motor-controlled auto-transformer which regulates the amount of current to each bank. By means of this auto-transformer, a variable lighting load can be dimmed, a major advantage over resistance dimmers, which must be loaded to capacity in order to produce smooth dimming curves. In addition, cross-fading from one bank to the other is possible. The transfer switch which actuates the auto-transformer is located between the red and green indicator lights at the top of each bank of switches. While one bank is in operation, the other bank can be pre-set to the desired lighting effect. Then, by throwing the transfer switch, the operating bank can be cross-faded to the pre-set at any speed. If desired, the cross-fade can be stopped at any point, with the red and green indicator lights showing the proportion of current being taken by each bank. Or, if a quick change is called for, the switch can be flicked so that one bank will replace the other without any dimming.

The combinations of effects possible with this small switchboard are probably sufficient for any production that would be staged by small theater groups, bands, etc. Sealed beam lamps, with spread lens action and color filters, give a wide range of beam pattern, intensity and color. The major advantages of the system are, of course, its size and portability (and cost), so that it can be operated directly from the stage, replacing the larger flexible boards with their many switches, dimmer handles and plugs.

CANTILEVERED STEEL GARAGE SHELTERS FREE INTERIOR SPACE

GARAGE SHELTERS, called "Elascon Aero-garages" because they enclose so much unobstructed interior space, consist of a curved inner steel skin attached underneath external cantilevered frames,





thus eliminating the need for columns or internal supports. Described in the July–August 1955 issue of the Belgian publication *Acier Stahl Steel*, the Elascon Aero-garage is constructed on aerodynamical principles, based on wind-tunnel tests to determine roof loads and wind patterns. As shown in the drawing at the left, when wind is blowing toward the open end of the garage, an opposing draught is set up to deflect the wind pattern up and over the floor. The most unfavorable effects have been shown to result from lateral wind, and so it has been recommended that panels enclose the sides of short garages.

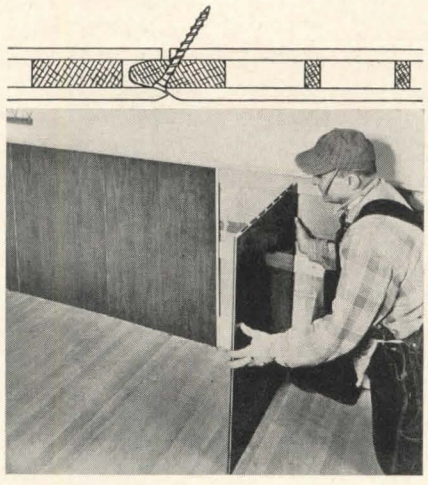
The frames of the garage, which are completely shop-welded, consist of two curved channels joined by steel tubes welded to their backs. They are spaced about 10 ft apart and anchored to concrete foundation blocks. The skin plating of galvanized sheet steel is attached to the frames by bolting to angle lugs which are affixed to the lower channels. The skin is stiffened by angle bars between the frames. The lower edge of the skin is indented somewhat to prevent penetration of rain water and raised to provide air passage and thus reduce the draught effect. The depth of garages intended for use by private cars is about 20½ ft.

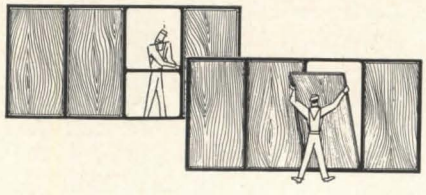
The light weight, strength and ease of fabrication of this type of enclosure, and its maximum utilization of available space, may make it practical for use as storage sheds, market halls and other types of buildings as well as garages.

(*More Roundup on page 218*)

WALL AND CEILING PANELS, MOVABLE WALLS AND PARTITIONS FEATURE EASE OF INSTALLATION

Rigid, Hollow-core Panels for walls and ceilings combine two sheets of *Masonite* tempered hardboard and an interlocking wood core. The face of the panel has a durable plastic finish in plain color or wood pattern, and the back sheet is sealed and baked. Rigid and self-aligning, *Korelock* paneling is applied directly over open framing or over furring. No backup materials, splines, clips, mastic, bracing or division moldings are needed. The paneling is fastened along the tongue edge with screw-type nails driven through pre-drilled holes, as shown in the illustration above right. *Korelock* is said to have good resistance to sound transmission, soiling, moisture and wear, and can be cleaned by damp-wiping. It is made in two sizes — 2 by 4 ft and 2 by 8 ft, with nominal $\frac{5}{8}$ in. thickness. Harmonizing moldings of metal and *Presdwood* are available. *Marsh Wall Products, Inc., Dover, Ohio.*



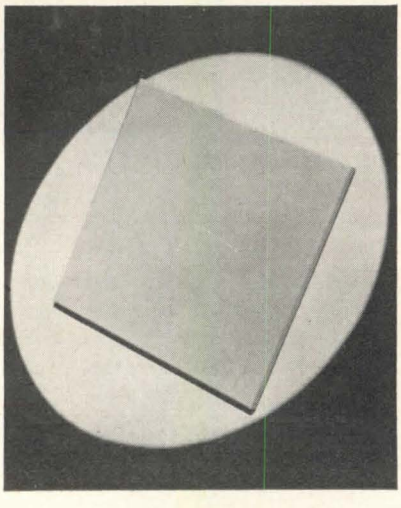


Movable Walls and Partitions can be erected by the Attwood system of space division using *Unistrut* steel channels combined with any standard paneling material — plywood, hardboard, pressed wood, plastics, wallboard, metal, glass, etc., from $\frac{1}{8}$ to $\frac{1}{2}$ in. thick. Any type of framing pattern can be raised, including floor-to-ceiling, open ceiling, 7-ft office divider, cubicle, railing, etc. The Unistrut channels are screwed to floor and wall abutments and the upright and horizontal channels connected with a simple, positive-locking nut and bolt. The panels are slipped into place, and molding strips and corner cover plates complete the installation. Whenever an adjustment is necessary, the partitioning can be taken down, changed or removed, as shown in the illustration below left. Bulletin 900 available. *Unistrut Products Co., 1013 W. Washington Blvd., Chicago 7, Ill.*

NEW CEILING PANELS: THEY BOAST INCREASED LIGHT REFLECTANCE AND SOUND ABSORBENCY

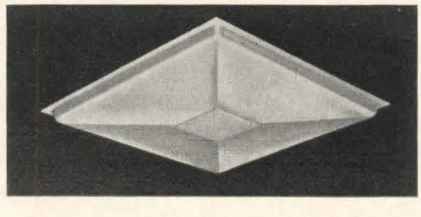
Textured Sonofaced Acoustical Tile (below left) has a soft white finish which has a light reflectance 10 points greater than that of regular *Sonofaced Tile*. It is encased in a plastic film which can be cleaned any number of times without impairing its noise control function and requires no painting. The panels are also said to be fire-safe. They are available in 12- by 12-in. and 12- by 24-in. tiles and as 24- by 48-in. ceiling boards. *Owens-Corning Fiberglas Corp., Toledo 1, Ohio.*

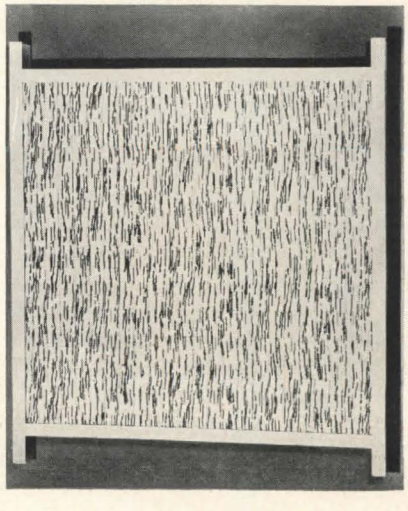
Translucent Plastic Light Panels (below center) are of such light weight (a 2- by 2-ft pan, such as that shown below, weighs only 5.6 oz) that both Underwriters Laboratories and Factory Mutual Laboratories have approved their use under sprinkler systems, according to a report from the manufacturer. The inherent properties of the *Milite* panels cause them to shrink and drop from their frames when exposed to flame. Normal maintenance can be handled simply, because each panel can be removed separately for cleaning and bulb changes. Accelerated aging tests have shown long life with no apparent color change. The panels are also made in 1- by 4-ft and 1- by 1-ft sizes. *Kirby Cogeshall Steinau Co., 606 East Clybourn St., Milwaukee, Wis.*

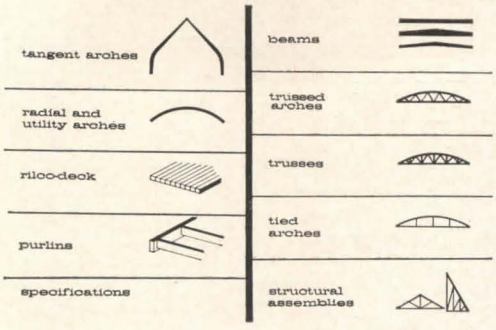


Stria-Colored Steelacoustic (below right) is a new sound-conditioning panel that combines color, effective noise reduction, incombustibility, economy and easy maintenance, according to the manufacturer. It is a white baked enamel steel panel with overlay striations of black, green or brown. Sound passes through the steel facing and into the absorbent material behind it. It is installed on the Celotex T and T Suspension System, a suspended ceiling grid also finished in white baked enamel. The panels are produced in 2- by 2-ft squares and can be washed and painted without damage to their sound absorption. Diffusers, light fixtures, sprinkler heads and other standard outlets can be incorporated into the ceiling plan. *The Celotex Corp., 120 So. LaSalle St., Chicago 3, Ill.*

(*More Products on page 230*)







LAMINATED WOOD STRUCTURAL MEMBERS
As shown in the illustration at the left, cut from the index of "Glued Laminated Wood and Solid Timber Arches, Beams, Trusses," a very complete coverage of wood structural members is offered in this well-illustrated and informative 24-page booklet. It presents data and construction details on the use of laminated members for schools, churches, gymnasiums, residences, industrial and commercial buildings, and includes photographs of typical installations. AIA File 19-B-3. *Rilco Laminated Products, Inc., 2591 First National Bank Building, St. Paul 1, Minn.*

Marble Wall and Floor Tile, with color sample plates and suggested specifications, is presented in an 8-page brochure (AIA File 23-N). A 16-page brochure, *Marble for the Home* (AIA File 22-A), pictures marble installations and includes a membership list of the *Marble Institute of America, Inc., 108 Forster Ave., Mount Vernon, N. Y.**

Air Conditioning and Refrigeration Equipment. A new packet of literature, file-separated by categories of *Spotaire* units, air conditioning units, air conditioning coils, evaporative condensers, commercial refrigeration, product coolers and water chillers, is available from *Drayer-Hanson Inc., Box 2215, Terminal Annex, Los Angeles 54, Calif.*

Plywood Paneling is the seventh in a continuing series of brochures on architectural woodwork, giving characteristics, construction of panels, suggested specifications and application. The 8-page brochure, AIA File 19-E-6, was prepared by a Technical Advisory Committee made up of members of the *Architectural Woodwork Institute, 332 So. Michigan Ave., Chicago 4, Ill.*

Aluminum Projected Window Designs and curtain wall systems are described, with details, specifications and sizes, in a 28-page catalog (AIA File 16-E) which will be supplemented by a designer's file containing full-size details and other pertinent data. *The William Bayley Co. (attn: Mr. C. H. Thompson, Gen. Mgr. of Sales and Distribution), Springfield, Ohio.**

Mechanical Folding Bleachers. Design and construction features of *EZ-A-Way* bleachers, with architects' specifications and construction diagrams, are presented in a brochure from *Berlin Chapman Co., Bleacher Div., Berlin, Wis.**

Sash and Door Controls is a 24-page indexed catalog which gives essential data and descriptions of door controls and hardware manufactured by *Sargent & Greenleaf, Inc., Rochester 21, N. Y.*

Zone Heating. *SelecTemp* self-modulating zone heating, for thermostatically controlling every room from a central heating system, is described in an 8-page brochure from *Iron Fireman Mfg. Co., Cleveland 11, Ohio.*

Weatherstripping. *Schlegel Certified Woven Pile Weather Seals* for doors and windows are presented, with catalog pages of U shapes, flat shapes, plastic shapes and special shapes, in Catalog 6 from *Schlegel Mfg. Co., Rochester 7, N. Y.*

Heat Flow by Radiation in Buildings is a 48-page, illustrated manual (AIA File 37-C-3) covering many of the problems connected with heat flow, the conservation of fuel for heating or of power for air conditioning and the maintenance of comfort in summer and winter. It is written by Alexander Schwartz, president of *Infra Insulation Inc., Dept. R, 525 Broadway, New York 12, N. Y.*

Trends in Residential Sliding Door Hardware (AIA File 27-A) is a comprehensive study treating design features, job conditions and recommended applications of sliding door hardware, written for *Hardware Consultant* by Kurt Klopstock, Director of Market Research of *Grant Pulley & Hardware Corp., 31–85 Whitestone Pkwy., Flushing, L. I., N. Y.**

Extruded Aluminum Skylights are detailed and described, with specifications and standard construction features, in a 4-page illustrated brochure from *Super Steel Products Co., 1244 N. 4th St., Milwaukee 12, Wis.**

High Temperature High Pressure Hot Water Heating Manual (No. 2685) contains an extensive, indexed discussion of the subject, with well-arranged diagrams and tabular material. 28 pp. *C. A. Dunham Co., 400 W. Madison St., Chicago 6, Ill.**

Granite in the Hospital is a 10-page brochure which develops a series of hospital sketches, made by an AIA member, illustrating typical granite applications within and without, analyzing each in terms of the material's characteristics of durability, water resistance and appearance. *Cold Spring Granite Co., Dept. KP, Cold Spring, Minn.**

Building Facing Panels. *Macotta* building panels, made up of a metal face sheet backed up with lightweight concrete and edged with either stainless steel or bronze interlocking tongue and groove molding, are detailed and illustrated in a 12-page brochure from *Maul Macotta Corp., 1640 E. Hancock, Detroit 7, Mich.*

Corrugated Asbestos-Cement. An "Idea File" showing different types of installations suitable for *Corrugated Asbestone* is available and will be followed up monthly with additional inserts. Gold Bond Tech. Bulletin 2032 (AIA File 12-F). *National Gypsum Co., Corrugated Asbestone Dept., P. O. Box 5257-B, New Orleans 15, La.**

Stoker Heating. *The Logic of Stoker Heating* is a 12-page brochure (Form W-301) which discusses the reasons for considering stoker-fed coal heat for schools, institutions and public buildings. *The Will-Burt Co., Dept. 2, Orville, Ohio.*

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

(Continued on page 264)

FINE HARDWOODS FOR ARCHITECTURAL USES — 1

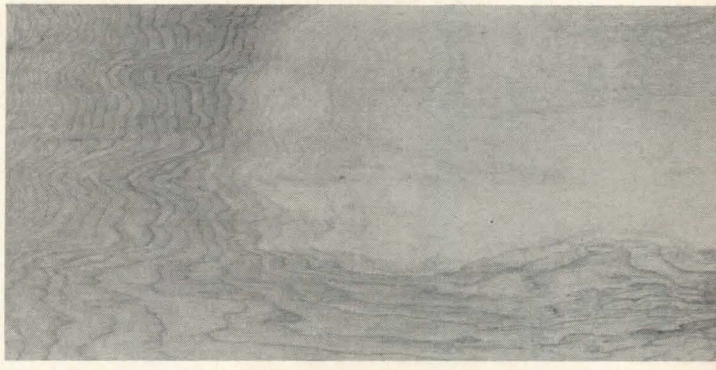
By Burdett Green, Executive Vice President, Fine Hardwoods Association and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

BIRCH, DOMESTIC AND CANADIAN

There are two species of commercial importance that are often marketed together, as listed below. They are so similar that it is not necessary to specify them. However, one should specify either "Natural Birch," "Selected White Birch" or "Selected Red Birch." Natural Birch combines both sapwood and heartwood. Selected White Birch includes only sapwood, and Selected Red Birch only heartwood.

BIRCH, SWEET (*Betula lenta*) — Black Birch, Cherry Birch
Source: Mainly from Adirondack and eastern Appalachian areas, although also as far south as northern part of Gulf States
Color: Brown tinged with red; thin, light brown or yellow sapwood
Pattern: Grain distinct but not prominent
Characteristics: Heavy; very strong and hard; close-grained
Uses: All cabinetwork where strength and hardness is desired
Availability: Abundant as both veneer (rotary, sliced) and lumber
Price Range: Medium

BIRCH, YELLOW (*Betula alleghaniensis,* formerly *Betula lutea*) — Gray Birch, Silver Birch, Swamp Birch
Source: Canada, Lakes states, New England south to North Carolina
Color: Cream, light brown tinged with red; thin, nearly white sapwood
Pattern: Plain and often curly or wavy
Characteristics: Heavy; strong; hard; close-grained; even texture
Uses: Interiors; furniture; doors; store fixtures; accessories; etc.
Availability: Veneer (both rotary and sliced) and lumber abundant. As veneers, sapwood of rotary birch is sold as "selected white" and heartwood as "selected red." Greater volume produced is "natural birch," and contains a normal combination of color tones
Price Range: Medium



Birch, Natural, rotary (1 piece)

Birch, Selected White, rotary (1 piece)

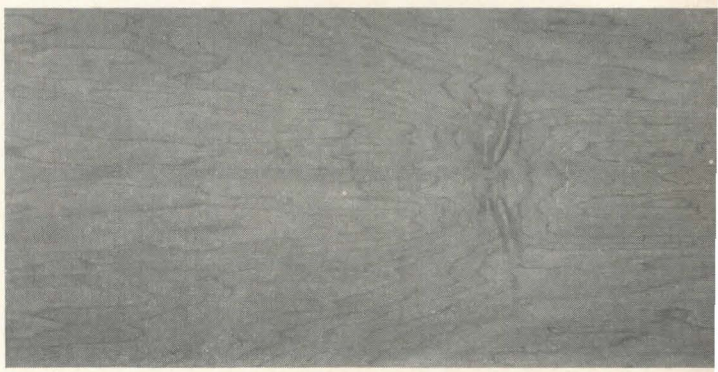
MAPLE

The three species of maple described below are grown in widely separated areas and vary greatly in physical properties.

MAPLE, HARD (*Acer saccharum*) — Birds Eye Maple, Northern Maple, Rock Maple, Sugar Maple
Source: Lakes states, Appalachians, Northwest U. S., Canada
Color: Cream to light reddish-brown heartwood; thin white sapwood tinged slightly with reddish-brown
Pattern: Usually straight-grained; sometimes found highly figured with *curly, blistered, quilted, birds eye* or *burl grain,* scattered over entire tree or in irregular stripes and patches
Characteristics: Heavy; hard; strong; close-grained; tough; stiff; uniform texture. Excellent resistance to abrasion and indentation
Uses: Interiors; furniture; fixtures; flooring; decorative inlays
Availability: *Plain maple* veneer (quartered, sliced, half-round, rotary) plentiful. *Figured maple* (including birds eye, butts, etc.) veneer (quartered, sliced, half-round, rotary) rare
Price Range: *Plain maple* — medium. *Figured maple* — costly

MAPLE, SOFT (*Acer saccharinum*) — Silver Maple
Same general characteristics as hard maple, but not nearly so hard or strong. Usually shows considerable dark (mineral) streaks.
Availability: Plentiful as both veneer and lumber
Price Range: Medium to inexpensive

MAPLE, OREGON (*Acer macrophyllum*) — Big Leaf Maple
A true maple, but not so hard or strong as silver maple.
Source: Pacific Coast and Southern Canada
Availability: As both lumber and veneer, locally. As figured veneers (blistered, burl, etc.), rare
Price Range: Inexpensive for plain types. Moderate to costly for quilted and burls



Maple, plain rotary (2 pieces, book-matched)

Maple, birds eye (1 piece)

A *New Light* ON BANKING

The Third National Bank of Rockford, Rockford, Illinois

has put a new light on their banking operation with Curtis Alzak aluminum low-brightness Eye-Comfort® troffers. And just as the Third National put on a new light, so have others of America's outstanding banks — banks like the First Wisconsin National Bank of Milwaukee, the First National in Chicago and the Republic National in Dallas. What is this new light? First, its basis is the Curtis Alzak aluminum low-brightness Eye-Comfort® troffer. The low-brightness of this fixture properly installed assures that 90-96% of the people will be visually comfortable. That means increased productivity because of less time lost due to headaches, eye-strain and fatigue. Guaranteed for a lifetime, Curtis Alzak low-brightness troffers provide superior light control. They're color stable and tarnish-free. Maintenance is a dry-cloth operation. *That's* the new light by Curtis. *That's* why bankers and architects the country over have made Curtis lighting the standard of quality bank lighting over the past 60 years and *that's* why more banks are depending on Curtis for their lighting dividends in the years to come. If you're planning to light a new bank or relight an existing one, write Department A3-TN for more detailed information.

Architect: Hyland-Hubbard, Rockford, Illinois. Electrical Contractor: Elmer A. Johnson, Wilson Electric Co., Rockford, Illinois

CURTIS LIGHTING, INC.

6135 WEST 65th STREET
CHICAGO 38, ILLINOIS

IN CANADA:

195 WICKSTEAD AVENUE
TORONTO 17, CANADA

Name_____

Address_____

City_____ State_____

A3-TN

FINE HARDWOODS FOR ARCHITECTURAL USES — 2

By Burdett Green, Executive Vice President, Fine Hardwoods Association and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

MAHOGANY

An often misused name, applied to many woods not of the mahogany family. The three authentic commercial species of mahogany are *Swietenia mahogani, Swietenia macrophylla* and *Khaya ivorensis.* (All true mahoganies are the *Meliaceae* family, *genera Swietenia* or *Khaya.*) Their descriptions follow:

MAHOGANY, AFRICAN (*Khaya ivorensis*)

Source: Africa (Ivory Coast, Gold Coast, French Cameroon, Cape Lopez, Nigeria)

Color: Light pink to reddish-brown and tannish brown

Pattern: Although pores are distributed, this wood produces a very distinct, pleasing grain. The most lavishly figured mahogany offered in plain stripe, broken stripe, mottle, fiddleback, fine crotches and faux swirl

Characteristics: Available in great lengths and widths; milder textured with slightly larger pores than other mahogany species; relatively hard; works well; highly lustrous; polishes well; durable

Uses: Interiors, furniture; accessories and art objects; etc.

Availability: Veneer (quartered, sliced, half-round, rotary) abundant. Lumber abundant

Price Range: Medium; costly for highly figured veneers

MAHOGANY, CUBAN (*Swietenia mahogani*)

One of the finest of the several mahogany species. However, the exportation of this species from Cuba is no longer permitted

Source: Cuba, also throughout the West Indies

Color: Light red; yellowish-tan when cut; darkens rapidly to deep rich golden brown or brown-red; exceptionally fine color

Pattern: Highly figured, mottled, fiddle-back crotches, also plain stripes

Characteristics: Heavier and harder than the other mahoganies; wears exceptionally well; extremely durable; close-grained; takes excellent finish; has good strength and bending properties; ideal wood for turning and carving

Uses: Fine cabinetry

Availability: Haiti, Puerto Rico, and the Dominican Republic

MAHOGANY, TROPICAL AMERICAN, including **PERUVIAN** and **BRAZILIAN MAHOGANY** (*Swietenia macrophylla*). (Brazilian Mahogany marketed as Amazon Mahogany)

Source: Mexico, Brazil, Peru and Central America (especially Honduras)

Color: Varies from a light reddish or yellowish-brown to a rich, dark red, depending upon country of origin and situation. Most supplies tend to be yellowish-tan, changing on brief exposure to rich, golden brown

Pattern: A considerable variety of figures, similar to African mahogany except crotches are not readily available. Straighter grain generally. Location influences appearance also

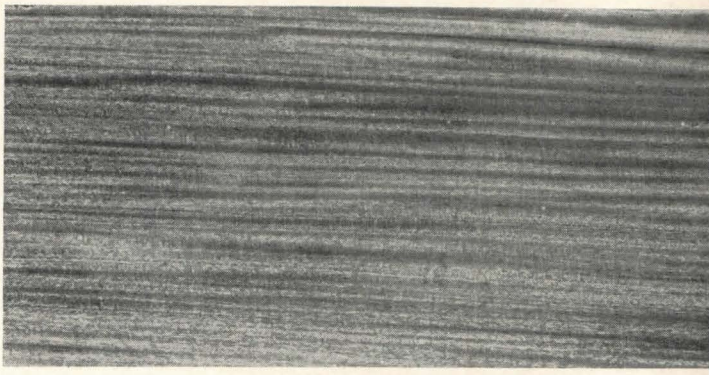
Characteristics: Lighter and softer than Cuban; mostly straight-grained but even when interlocked is exceptionally stable; more mellow texture than Cuban (West Indian); extremely good strength properties; works well; stains and finishes well; durable and decay-resistant. Central America produces more figured logs for fancy veneers

Uses: Paneling; furniture; fine joinery; exterior uses

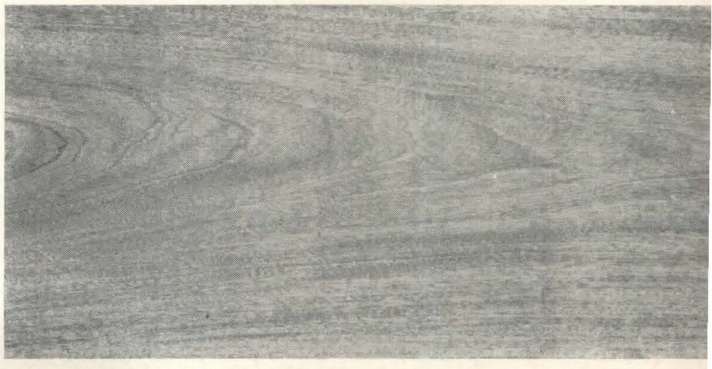
Availability: Central American veneer (quartered, sliced, half-round) abundant. Lumber plentiful. Brazilian and Peruvian plentiful

Price Range: Inexpensive to medium

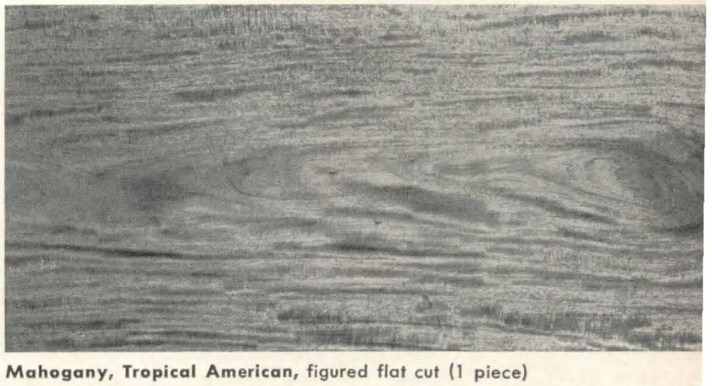
Mahogany, African, swirl (1 piece)



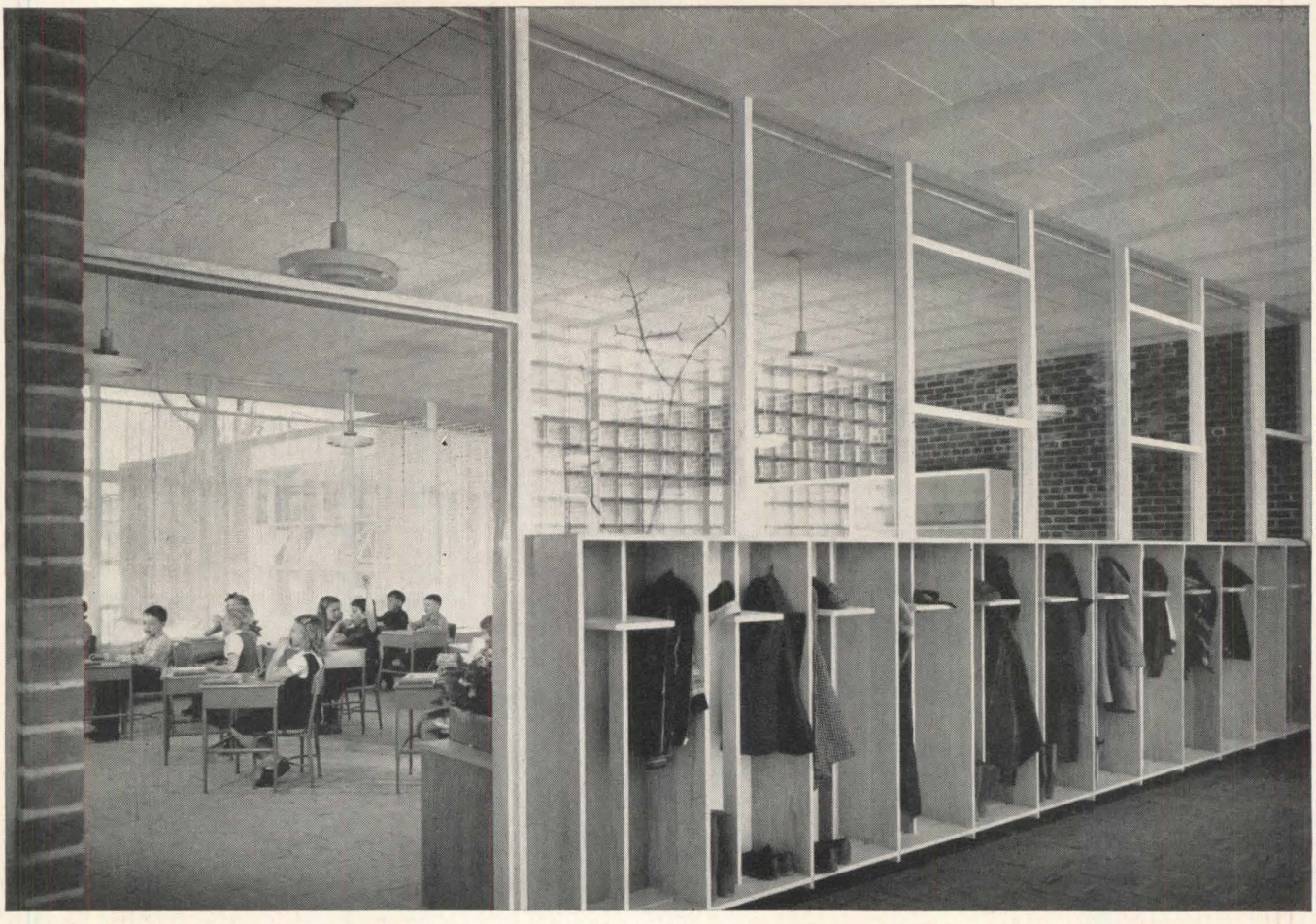
Mahogany, African, quartered ribbon-striped (1 piece)



Mahogany, Tropical American, plain flat cut (1 piece)



Mahogany, Tropical American, figured flat cut (1 piece)



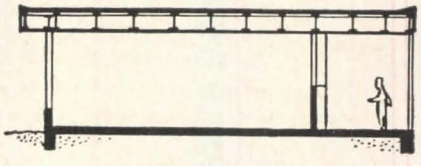
HOW STEEL JOISTS HELPED LOWER COSTS OF SCHOOL ADDITION AT DARIEN, CONN.

The new addition to the Holmes Elementary School in Darien, Conn., containing classrooms, a multi-purpose room and kitchen, is modern in every respect, but well-integrated in scale and materials with the older building. No additional ground was available for the new wing, but the architects were able to preserve most of the original play area and, by using large areas of glass, obtain maximum daylight for all rooms.

When the new wing was planned, comparative cost analyses were made of various types of construction. Based on the results of those studies, it was decided to build the addition with a structural-steel frame and open-web steel joists.

The use of Bethlehem Open-Web Joists helped to bring savings in two ways. Actual construction costs were lower because Bethlehem Joists reached the job site ready for immediate placing, without falsework. Ducts, piping and wiring could be run right through the open-webs.

In addition, Bethlehem Steel Joists contribute to keeping future maintenance at a minimum. Sturdy and rigid, these steel joists won't sag or warp, and they help promote fire-safety throughout the structure.



Architects: Ketchum, Gina and Sharp; *Consultants:* Moore and Hutchins; *Structural Engineers:* Severud-Elstad-Krueger—all of New York; *General Contractor:* Sam Grasso Co., Inc., Darien.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM OPEN-WEB STEEL JOISTS

BETHLEHEM STEEL

FINE HARDWOODS FOR ARCHITECTURAL USES — 3

(To be continued in a later issue)

By Burdett Green, Executive Vice President, Fine Hardwoods Association and James Arkin, A.I.A., Consultant, Architectural Woodwork Institute

OAK, AMERICAN

Includes several species from the Red Oak and White Oak groups. Except for source and color, Red Oak and White Oak, the two leading American species, are very similar. Characteristics they have in common are:

Pattern: Quartered oak has a striking "flake" pattern caused by extremely large and wide rays that reflect light. Plain flat-sliced or sawn oak has an attractive figure of stripes and leafy grain caused by the distinct layers of springwood and summerwood and the large pores, especially concentrated in the springwood. Rift-cut (half-round) oak has a fine pin stripe. Rotary-cut oak has a distinct watery figure with great contrast

Characteristics: A heavy, ring-porous hardwood with larger, more prominent pores in the springwood than summerwood; very strong and very hard; stiff and heavy; durable under exposure; great wear-resistance; holds nails and screws well. Red and white oak look very similar when finished, and because of its large pores, oak takes a great variety of fine filled or textured finishes

Uses: Flooring (both solid and plywood tiles); furniture; paneling; general construction; display and store fixtures; handles

Availability: Veneer (quartered, sliced, half-round, rotary) plentiful. Lumber available

Price Range: Medium

OAK, RED (*Quercus borealis*)

Source: Throughout the eastern United States; especially in the Appalachians, Ohio, Kentucky

Color: Slightly redder tinge than white oak (though hard for an untrained eye to tell), and more uniform in color

Pattern: Flake figure less prominent than white oak

Characteristics: Slightly coarser grain, with large, rounded, *open* pores. Easier to finish than white oak, though both are excellent

Uses: All the same purposes as White Oak

OAK, WHITE (*Quercus alba*)

Source: Entire eastern United States, especially produced in the Central States and down through the Appalachian region

Color: From light brown with a grayish tinge in the heartwood to shades of ochre in the sapwood

Pattern: More pronounced and longer rays than red oak, and more frequently rift-sawn for the comb-grain, pin-striped figure than red oak. Occasionally crotches, swirls and burls

Characteristics: Pores are angular and very numerous and filled with a glistening substance called tyloses, which makes this wood especially suitable where water-resistance is required. Tannic acid in the wood protects it from fungi and insects. Closer grained than red oak

Uses: Nearly all common uses of hardwoods, and especially popular where strength and durability are required. Also for watertight or water-resistant purposes

OAK, ENGLISH BROWN will be treated in a later issue.

CHERRY, BLACK (*Prunus serotina*) — Rum Cherry, Wild Black Cherry

Source: Maine to Dakotas and Appalachians; production largely Pennsylvania to West Virginia

Color: Light reddish-brown

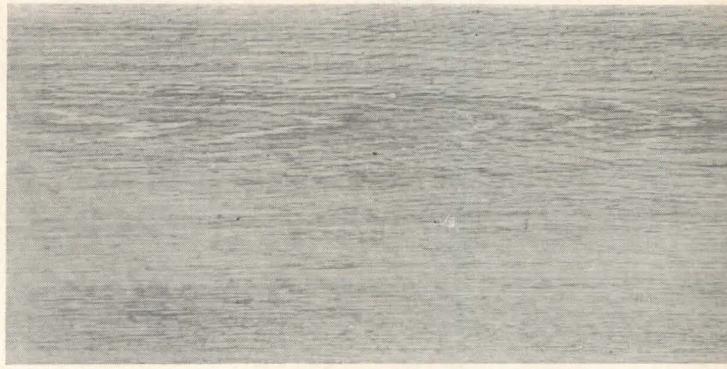
Pattern: Straight-grained; satiny; some figured. Small gum pockets are normal markings

Characteristics: Light; strong; rather hard; fine-grained

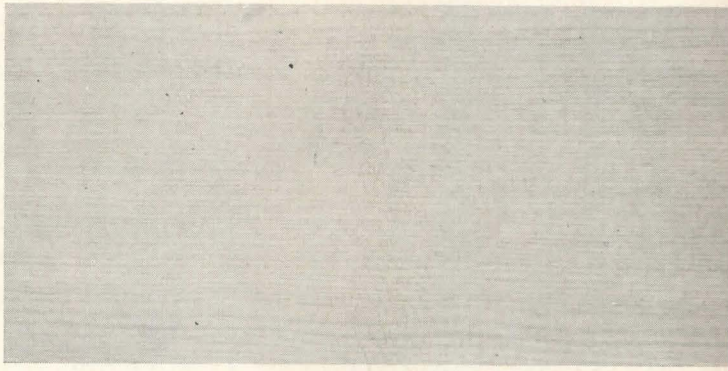
Uses: Woodwork; fine furniture

Availability: Veneer (quartered, sliced, half-round) plentiful. Very fine figured cherry available for architectural use. Lumber plentiful

Price range: Medium

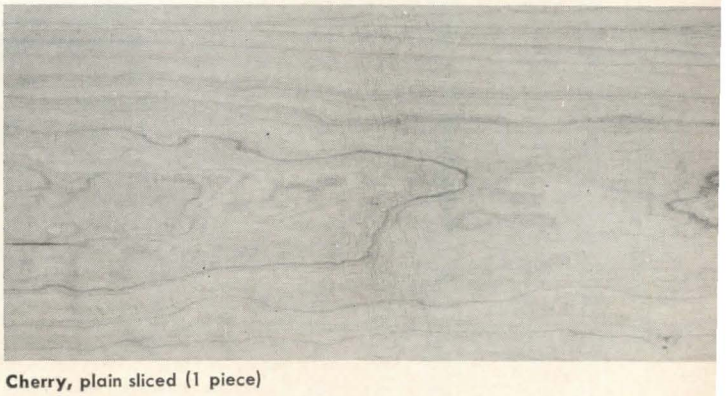


Oak, White, plain flat cut (1 piece)



Oak, White, rift cut (2 pieces, book-matched)

Oak, White, quartered (2 pieces, book-matched)

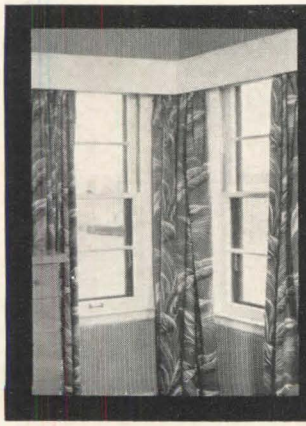


Cherry, plain sliced (1 piece)

"For Beauty, Efficiency and Economy, You Can't Beat BILT-WELL Wood Products"

...say builders R. Van Bruggen of Kalamazoo, Michigan, and Clarence Andersen, of Emmetsburg, Iowa

The designer, Johnson & Howard Lumber Co. of Kalamazoo, of this attractive 11 unit motel in Plainwell, Michigan, wisely specified 100% weathertight BILT-WELL Double-Hung Windows and BILT-WELL Combination Doors. Architects and suppliers of BILT-WELL products on the job was the Johnson & Howard Lumber Company.



Only the BILT-WELL Double-Hung Window features built-in "thermostatic control." Weatherstripping is self-adjusting with changes in temperature and humidity to provide constant weathertightness with 1/10th the lifting effort.

Now the famous BILT-WELL Awning Window is better than ever! With the addition of a new fool-proof lever operator, the BILT-WELL offers a combination of simple operation, weathertightness and flexibility of arrangement that is unbeatable!

New louver doors add a distinctive new charm to the ever-popular BILT-WELL Wardrobe Storage Cabinets. Their design blends so well with the comfortable-homey style of decorating now so popular. They permit the active air circulation so desirable in storage areas.

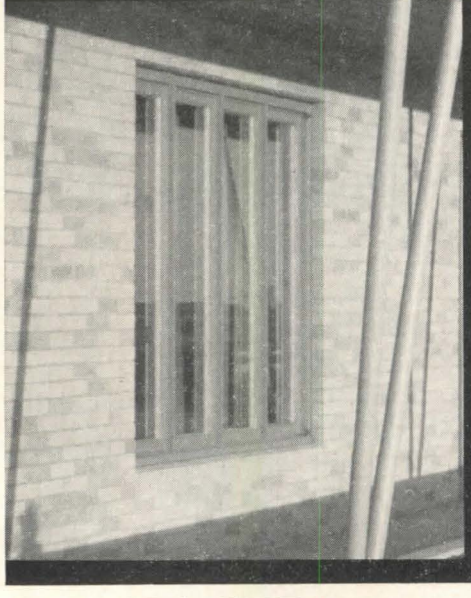
The BILT-WELL Line—*WINDOW UNITS*, Double-hung, Awning, Casements, Basement, Storm and Screen. *CABINETS*, Kitchen, Multiple-use, Wardrobes, Storage, Vanity-Lavatory and Vinyl Countertops. *DOORS*, Exterior, Interior, Screens and Combination.

Both R. Van Bruggen and the Andersen Construction Company have recently completed motel jobs using BILT-WELL Products and both are enthusiastic about their many advantages.

Says Mr. Van Bruggen, "The fuel bill can often spell the difference between profit and loss for a motel operator. That's why it's very important that every unit be constructed as weathertight as we can make it. When we use BILT-WELL windows, we know we are getting an unbeatable combination of maximum protection against the weather and fool-proof operation. That goes for BILT-WELL combination doors, too!"

"Using the distinctive BILT-WELL Casement Windows on the Suburban Motel job added appreciably to the over-all beauty of the structure and also provided a window that is designed and manufactured to afford positive air-tight protection against the weather", says Clarence Andersen of the Andersen Construction Company.

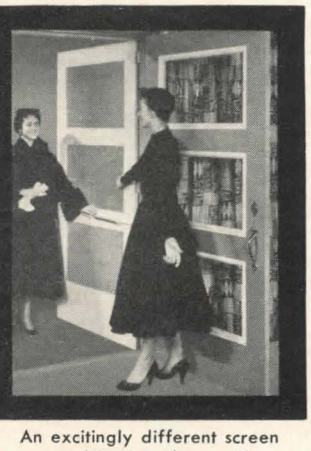
Whether You're Designing a Motel, School, Institutional Building or a Private Residence, It Will Pay You to Specify BILT-WELL Wood Products!



BILT-WELL Casement Windows add traditional charm to this beautiful 20-unit motel in Emmetsburg, Iowa. The architectural department of the Andersen Construction Company designed the building. BILT-WELL Products were supplied by the Baker Lumber Company in Emmetsburg.

New BILT-WELL bathroom vanity offers the last word in built-in storage space for the modern bathroom. The three basic units are easily combined into arrangements to fit any space need or taste.

Available in four different designs, the popular Belvedere door is the "high fashion" door of the industry. The Belvedere is made of the finest kiln-dried Ponderosa Pine. Stiles are of durable 5-ply construction.



An excitingly different screen or combination door with a specially designed entrance door to match. Com-o-dor comes with removable storm panels and decorative grilles. With its companion entrance door, the Com-o-dor permits unlimited decorating possibilities.

BILT-WELL
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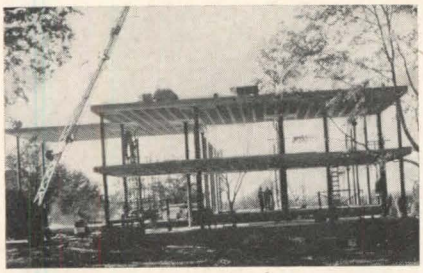
Manufactured by
CARR, ADAMS & COLLIER COMPANY
Established 1866 • Dubuque, Iowa

AH ROUNDUP

(Continued from page 206)

Lift Slab Radio-TV Station. The lift slab method of construction has been used to raise concrete floor slabs poured in a waffle-honeycomb pattern for WFBC Radio-TV station in Greenville, S. C. The unusual pattern permitted electrical and mechanical facilities to be incorporated into the structure.



As shown in the photograph of the finished building, the roof and second floor were raised with staggered lines, in order to provide wings. Architect was Lyles, Bissett, Carlisle and Wolff of Columbia, S. C.

"Low Cost Comfort" National Test Program. "The average house, built anywhere in the United States, ought to be heated and cooled for $120 per year," according to a statement made recently by Robert Thulman, former mechanical engineer of FHA and HHFA. In order to test the validity of this statement, Owens-Corning Fiberglas Corp. has inaugurated a nationwide test program embracing from 100 to 125 houses in 20 cities in all climatic areas of the country.

The houses to be studied, selected after careful analysis, will be "comfort-engineered" by specialists to see that they conform to, or can be readily modified to satisfy, current engineering practices. This may involve orientation of the house on the lot, the use of effective shading devices, the correct use of insulation, summer ventilation of roofs and the correct sizing of equipment. Each house will be built with a central heating and cooling system. It will be sold only to a buyer who will allow publication of the house, the fuel and power costs and other data arising from the study. A two-year testing period will start with the date of occupancy.

By means of sub-meters installed by cooperating utility companies, records will be kept of the fuel and power consumption for heating and cooling separately from consumption for cooking, water heating, domestic appliances and lighting. Operating costs will be predicted for each house at the time it is accepted for test. Both predictions and actual measured results will be published at the midpoint and end of each heating and cooling season for each house. If estimates made the first year are substantially out of line with performance, the second year of the test will be used to try corrective measures. National averages and adjusted totals will be published, bringing all houses to a common basis of area and fuel cost.

The typical house will have 1200 sq ft of conditioned floor area (porches and garages excluded), but the test will include houses 200 to 300 sq ft above or below this average. Selling prices are expected to range from $10,000 to $25,000, depending in part on the value of the lot. Fuels will include gas, oil and electricity for heating and both electricity and gas for cooling.

(Continued on page 222)

The charming Fjord Lounge of the Hotel Dennis in Atlantic City invites luncheon or cocktails. Bigelow's Empire Rexton is the carpeting.

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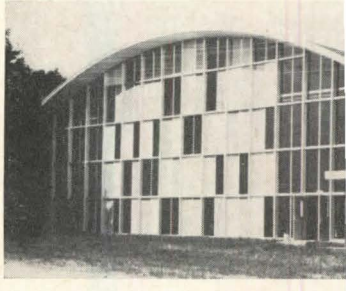
AIA ROUND

(Continued from pa

Color and Distance. Color ca ence the apparent distance of a s according to findings of a r project conducted by the Psych Laboratory of The Johns Hopki versity Institute for Cooperati search, in collaboration with Pitt Plate Glass Co. The investigat vealed that a bright surface a closer than a dark one, with a ma average change in apparent dista about 17 per cent. Highly sa strong colors tend to appear clos colors of low saturation, the Hues of longer dominant wav appear closer than those of dominant wavelength.

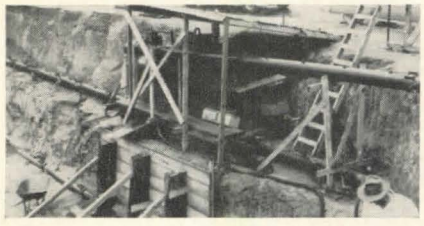


Double-faced Porcelain-ena Panels combined with insulatin and mounted in aluminum framin both the exterior and interior w this high school in Paoli, Pa. The i surface of the panels is blue, a exterior is faced in various color blue, blue, black and yellow. Ba the panels, which were manufa by Ingram-Richardson Mfg. C composed of two 16-gauge por enameled steel faces laminated to of *Insulrock*. Most of the pan quite large, the largest standar being 7 ft 11⅝ in. by 3 ft 7½ in stops, vinyl spacers and caulkin used in mounting the panels frames. The architect was H. L. Associates, Philadelphia.

"Floating" Bank. The new bra the Federal Reserve Bank of Ne which is being erected in Buffalo, is being constructed on a "dry Because of the high water table of the downtown Buffalo area 10 ft below ground level — all had to be pumped out of the gro a depth of 30 to 40 ft so that t crete floor and walls of the fou could be absolutely waterproof.

In order to dry out the soil an it dry, 180 well points were dri

to 40 ft deep and spaced 6 ft apart around the perimeter of the excavation, 1000 ft of 8-in. pipe connected them, and an 8-in. pump worked 24 hr a day to remove water at the rate of 500 gal per min. As shown in the photograph below, the well points were first sunk from different levels of the excavation as digging of the 400,000-sq ft foundation progressed.



When the digging was completed, a 4-ft-thick concrete pressure floor was poured over a waterproof membrane to form the sub-cellar. The operation required 900 cu yd of concrete to be poured over a 79- by 105-ft area in approximately 9 hr. To accomplish this feat, two 40-ft-long concrete belt conveyors delivered the concrete automatically to the correct spot for pouring. The unusual thickness of the floor was necessary to ensure a watertight foundation over the enormous water pressure that would be built up.

Pumping continued until it was ascertained that the weight of the foundation and superstructure was heavier than the weight of the water displaced, so that the foundation would not float up out of the ground. When this safety point was reached, the pumping was stopped and the well points removed.

Architects of the building are James, Meadows and Howard of Buffalo and Eggers and Higgins of New York. General Contractor is William L. Crow Construction Co. of New York.

Fire and Accident Control. An *Index and Directory of Fire and Accident Control Codes, Standards, and References* has been developed, after eight years of assembling, research and compiling, to provide a means of locating any information desired on accident prevention, fire control and health and sanitation contained in nationally recognized codes and standards and reliable references. A supplement will be issued each month to keep the Directory up to date. It is published by Loss Control Associates, 629 Oakmont Drive, Plattsmouth, Neb.

(Continued on page 226)

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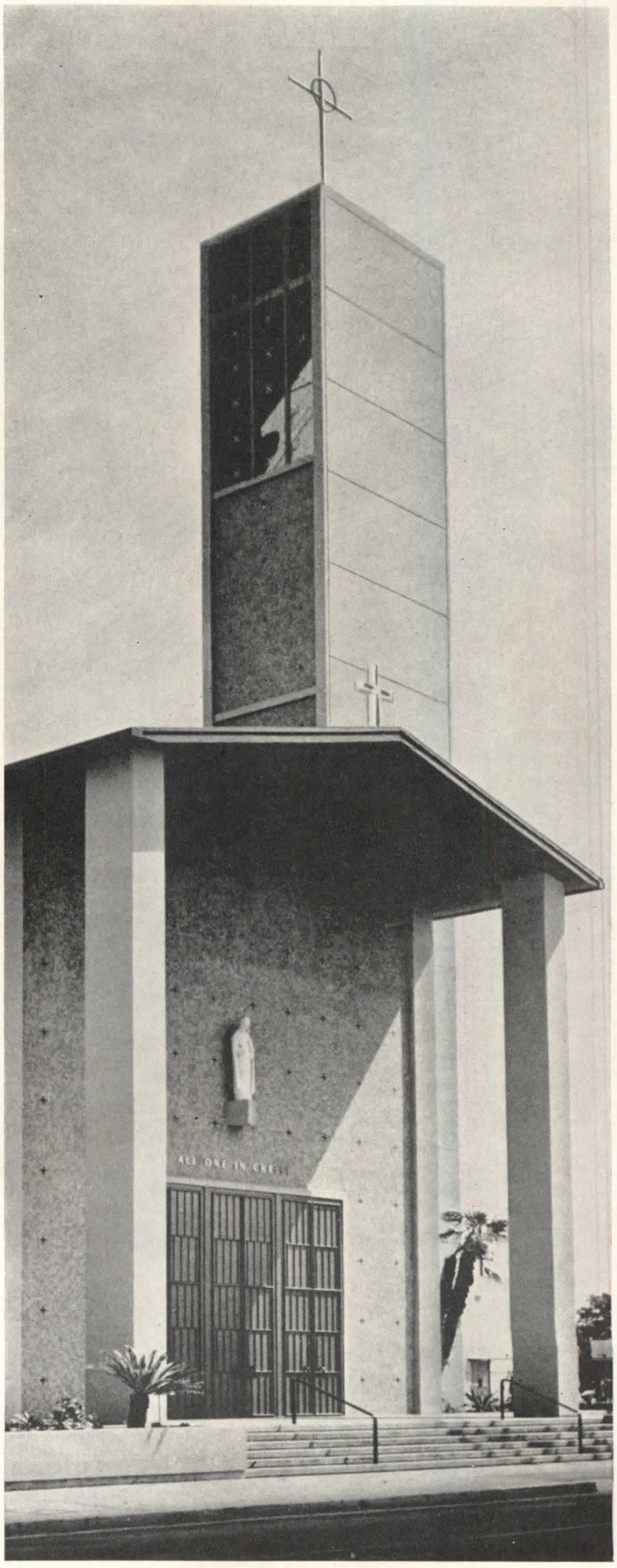
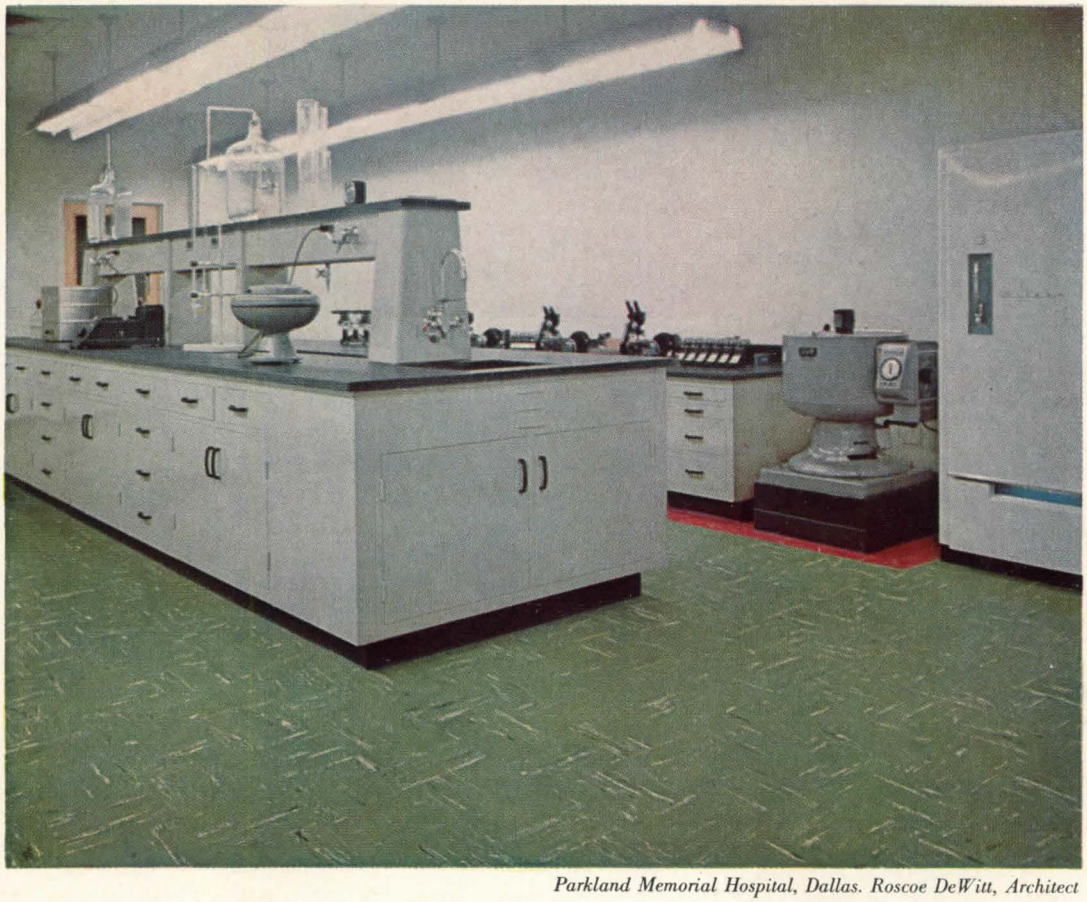


St. Brigids Church, winner of Award of Merit, A.I.A. 1955 Nat'l Convention. Architect, Chaix and Johnson, A.I.A., Los Angeles, Calif. Painting Contractor—J. P. Carroll, Los Angeles, Calif.

Vinylized AZPHLEX floors answer the laboratory floor problem



Parkland Memorial Hospital, Dallas. Roscoe DeWitt, Architect
Albert H. Scheidt, FACHA, Consultant, Dallas

Laboratories put floors to a severe test, subject as they are to unusual types of abuse. Vinylized Azphlex is the *new* and better flooring that is especially qualified to serve in such areas.

Because it is vinylized, Azphlex has greater resistance to most chemical products, food greases, petroleum oils and solvents. Vinylizing gives Azphlex other characteristics that are far superior to ordinary greaseproof tiles. It gives it a tightly textured, smooth surface — one that is easier to clean and keep clean with minimum care. It gives it added toughness that means added years of wear.

For modern hospitals and institutions where floor beauty is a requisite, vinylizing gives Azphlex a surprising range of clean, bright colors with superior light reflectance.

These are some of the qualities that are making Vinylized Azphlex a prime choice with hospital authorities — plus the fact that Azphlex *costs no more* than ordinary greaseproof tile. Why not get all the facts on Azphlex before you select those specialized floors in your hospital. At no obligation to you, a qualified representative will call on you to give you the full Azphlex story.

AZPHLEX

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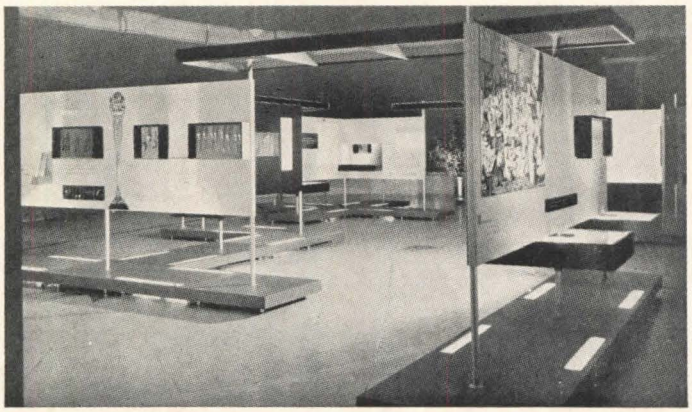
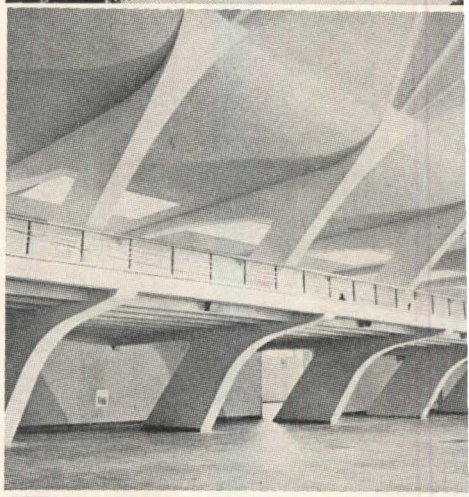
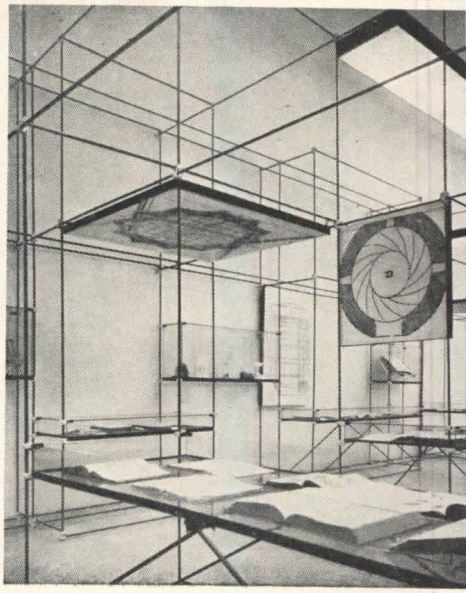
"A brilliant array of creative landmarks . . . an inspiring guidebook to modern design — one which every creative architect should own and enjoy."

Morris Ketchum, Jr. in *Progressive Architecture*

"An indispensable work for architects and designers involved with the problem of designing creative exhibitions." ***Design News***







NEW DESIGN IN EXHIBITIONS

by Richard P. Lohse

Here is the first comprehensive book on modern exhibition design and architecture. *New Design in Exhibitions* gives an international cross-section of classics in this field. Superbly illustrated, this unique volume draws upon the finest work done in the past 20 years by architects and designers in the United States, England, France, Italy, Germany, Holland, the Scandinavian countries and Switzerland.

More than 600 excellent photographs, plans, structural details complement the pertinent text to graphically describe these outstanding examples of modern exhibition design.

The introduction describes exhibition techniques, themes and form as well as the achievements of pioneers in the field from 1851 to 1930. The major portion illustrates national, industrial, small manufacturing, scientific, cultural, social and political exhibitions of many types — 75 in number — ranging from the Finnish Pavilion at the 1937 Paris Exposition Universelles to the "Good Design" exhibition at Chicago's Merchandise Mart in 1950; and from the exhibit of Medieval Italian Goldsmiths at the Triennale di Milano in 1936, to the Haus Berlin exhibition at Hanover in 1951.

For its comprehensive, concrete treatment of a subject never before presented in book form, *New Design in Exhibitions* is an indispensable work for architects and designers as well as all creative exhibitors and manufacturers who wish effective, esthetic display of their products.

Richard P. Lohse is a Swiss architect who has specialized in exhibition design. He is editor-in-chief of *Bauen und Wohnen,* a Swiss architectural journal.

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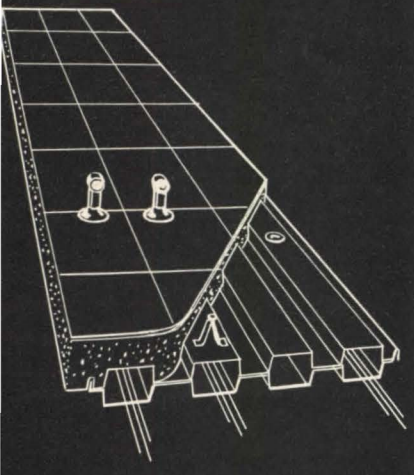

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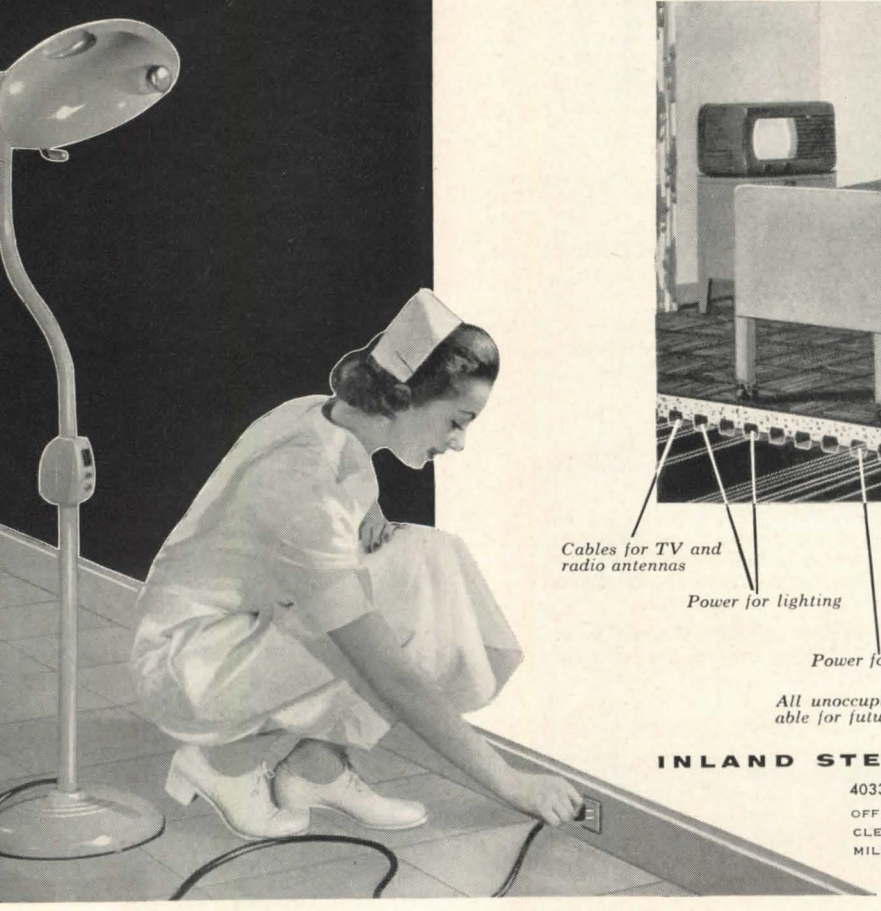

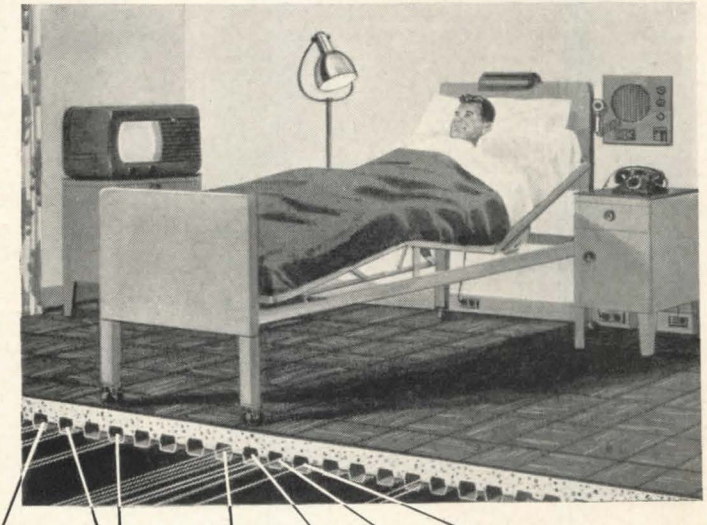

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M-170

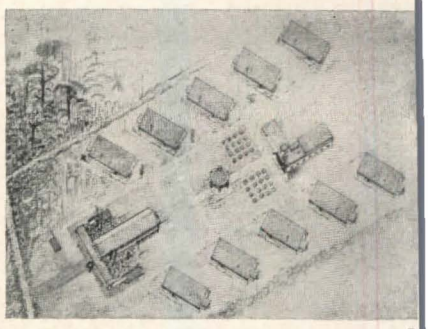
THE RECORD REPORTS

(Continued from page 298)

BOUW, October 29, 1955 (The Netherlands), reported a project for a children's vacation camp designed by architect J. J. P. Oud for a site near Arnhem. The buildings planned will include 10 "children's pavilions," each housing 12 children.

The main building (shown at left in the plan and in photo 2) will contain facilities for recreation, cooking and sleeping quarters. A sports building, which will be equipped with gymnastic facilities, will be at the opposite end of the mall from the main building. The boilerhouse will be a small round building situated in the center of the group, and the chapel, not shown on the plot plan, will be located just below the main building (see cut 3).

The Spanish painter Joan Miro will do the murals for the project (note the architect's rendering of the main building.)



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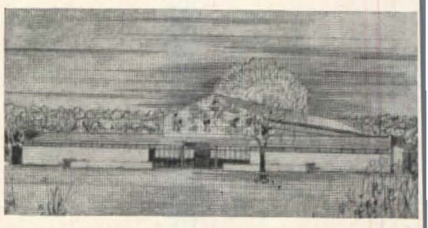

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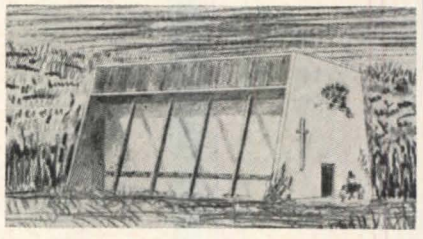
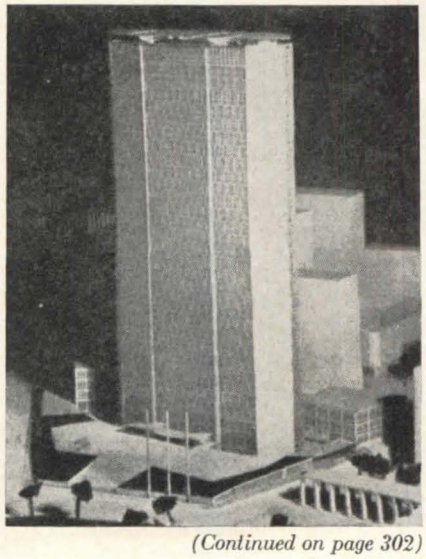


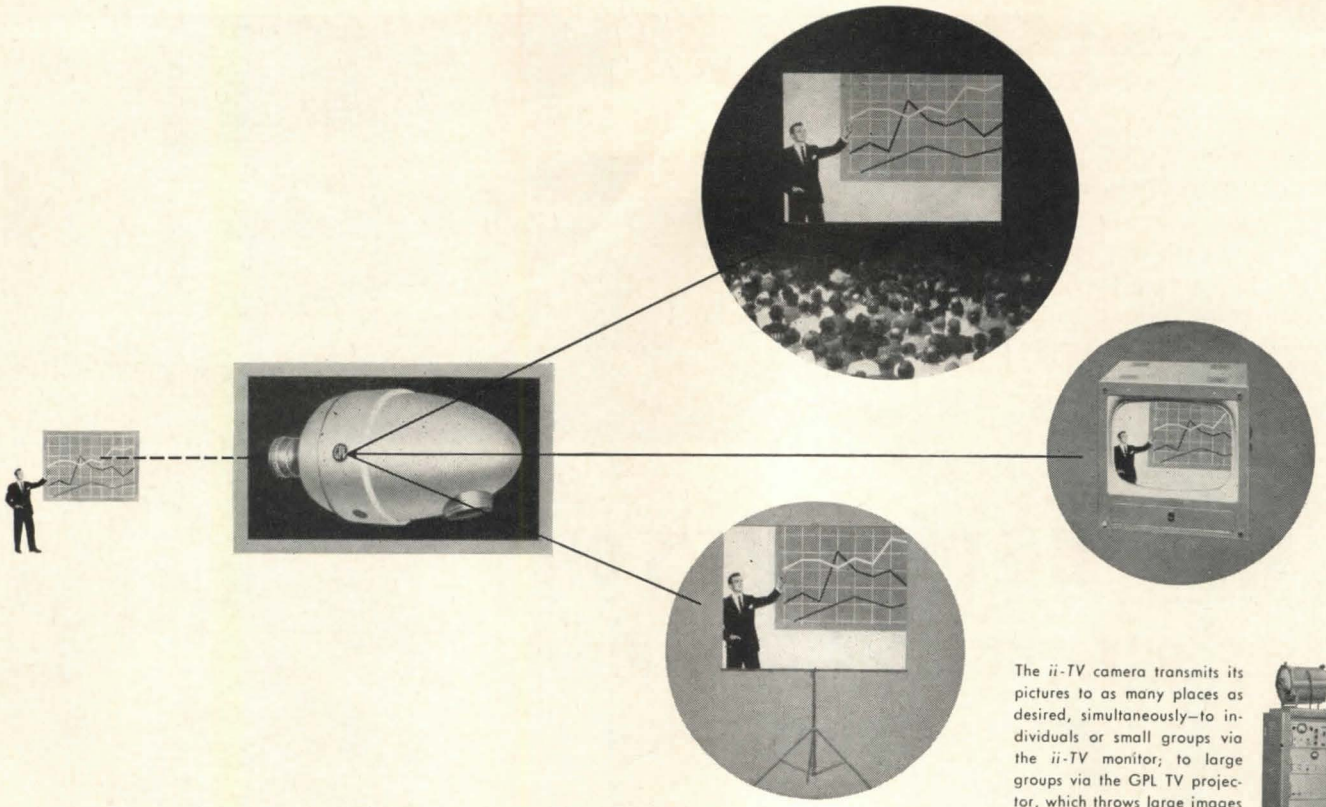
3

THE ARCHITECTS' JOURNAL, October 20, 1955 (Great Britain), published this photograph of the Pirelli building designed by an Italian group of which two members were engineer Pier Luigi Nervi and architect Gio Ponti. It will be built in Milan.

The building will be supported by four bifurcated columns, which will fork at about ground level and taper gradually as they rise. This structural solution, the *Journal* commented, "will surely give the Pirelli building a standing among the commercial masterpieces of the mid-Century equal to that of Mies van der Rohe's entirely conventional Seagram building in New York."



(Continued on page 302)



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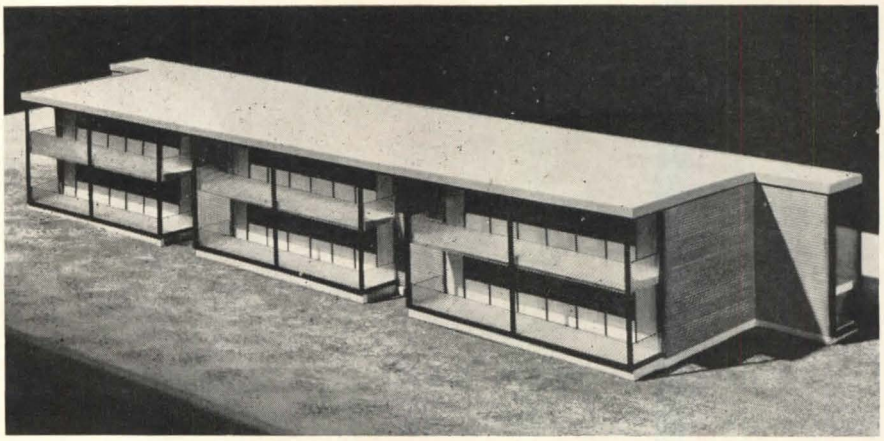
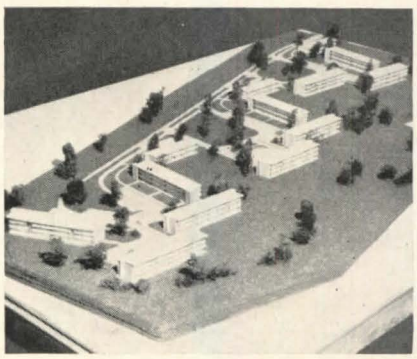
(Continued from page 304)

APARTMENT UNITS PLANNED AS FACULTY-STAFF HOUSING

Viewing its old "Shawneetown," a temporary World War II housing development, as a "liability, not only as a fire and traffic hazard, but from the esthetic and maintenance standpoint," the University of Kentucky, at Lexington, plans a new "Shawneetown" for its faculty and staff.



Above: model of the Type 1 unit, containing six two-bedroom apartments. Below: the site model



Two types of buildings are planned. Type 1 will be a two-story unit containing six two-bedroom apartments; three of these units are planned. Type 2 will be a three-story building containing eight efficiency units on the third floor and four one-bedroom apartments on each of the other floors; there will be 10 of these buildings.

In the one- and two-bedroom apartments, some flexibility of space arrangements is afforded by folding doors between bedroom and living area. Community laundry rooms are located on each floor.

The apartments will be entered from open corridors. On the other side of the building, each apartment will have its own balcony, oriented for climate control and a view of the University farmlands. Another reason for choosing this scheme was the resultant economy in providing cross-ventilation.

The 24-acre site will furnish parking facilities and child and adult recreational areas. The total cost of the project is estimated at $1,500,000, including site development and fees.

Thomas Page Edwards Associates, of Lexington, are the architects, with Edward D. Dart of Chicago as associate architect. Landscape architects are Scruggs and Hammond of Lexington and Peoria, Ill.

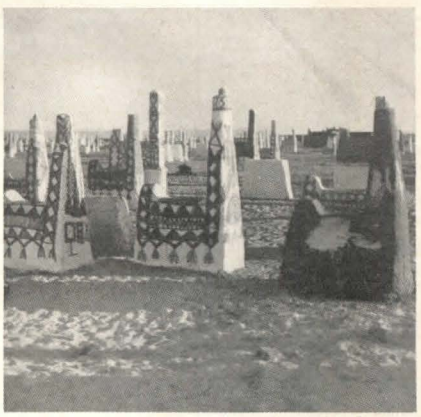
(More news on page 308)

REQUIRED READING

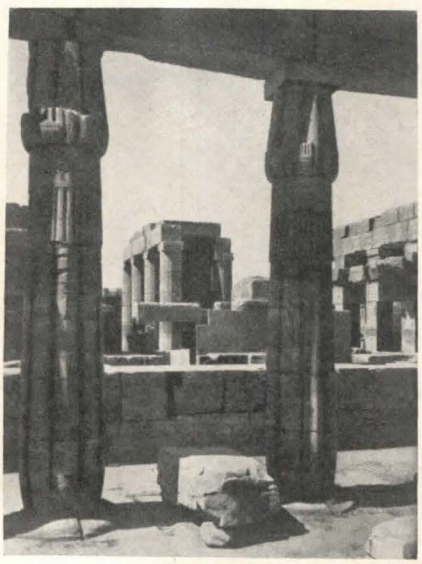
(Continued from page 330)

fifth annual book award by the Society of Architectural Historians last year for *Early Victorial Architecture in Britain* has presented the picture of architecture in Latin America with customary clarity, scholarliness and interest. One can only wish that the contemporary architecture of every culture were as well documented.

EGYPT PHOTOGRAPHED



Musul Mao Cemetery



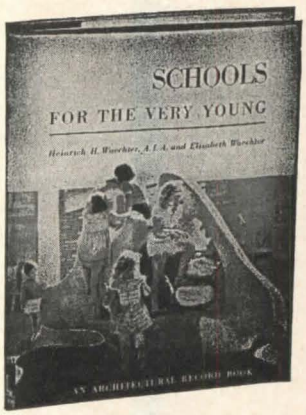
Temple of Amun

Eternal Egypt. By Clement Robichon and Alexandre Varille; translated by Laetitia Gifford. The Philosophical Library, Inc. (15 East 40th St., New York) 1955. 140 pp, illus. $6.50.

This is a book of splendid photographs covering the monuments and splendors of the ancient civilization and the life in the present-day big towns of Egypt. Explanatory notes and a foreword by Alexandre Varille accompany the photographs.

Schools for the Very Young

by HEINRICH H. WAECHTER, A.I.A.
and ELISABETH WAECHTER



THOUGH many volumes have been written about school design, "Schools for the Very Young" is — so far as we know — the first in which an architect and a child educator have collaborated to provide an up-to-date treatise on the requirements of the particular type of school demanded for the proper training of the very young child.

Beginning with a brief yet adequate historical and philosophical background, in which the development of the theory and practice of child education is discussed, the book goes on to describe the pre-school in action, noting the events of the school day and the corresponding environmental needs of the children and their teachers. Examples of existing pre-schools are presented with the critical comment. Detailed information is given concerning the space apportionments and arrangements called for by the activities peculiar to such institutions. Since one of the authors is especially concerned with city planning, the relation of the pre-school to its neighborhood and community is analyzed, and the many different types of pre-schools that have developed to meet special conditions are enumerated and explained.

The outdoor space and its proper equipment are thoroughly covered from the standpoint of a capable architect who has given much thought to the problem. Technological problems of construction, lighting, ventilation, mechanical equipment, etc., are scrutinized in the light of the most recent practice. A wealth of illustrations add both interest and information, and a selective bibliography will aid further study.

208 pages, 7⅛ x 10, stiff binding. Price $6.50.

Book Department, F. W. Dodge Corp.
119 West 40th Street, New York 18, N.Y.

Enclosed is $.....for.....copy(s) of "Schools for the Very Young" by Heinrich H. and Elisabeth Waechter at $6.50 per copy. (Add 20¢ for N.Y.C. delivery — $6.70.)

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