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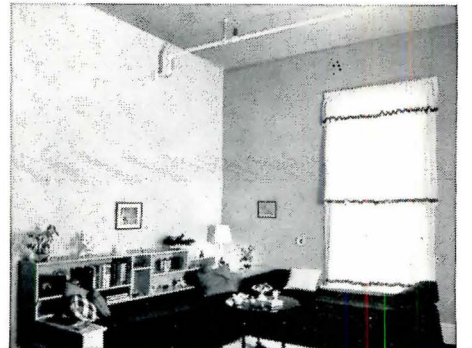
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August 1957 Vol. 122 No. 2

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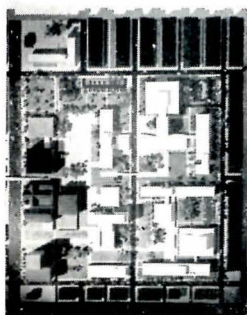
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COVER: Campus Plan, Temple University, Philadelphia, Pa.; Nolen & Swinburne, Architects; Cortlandt V. D. Hubbard photo

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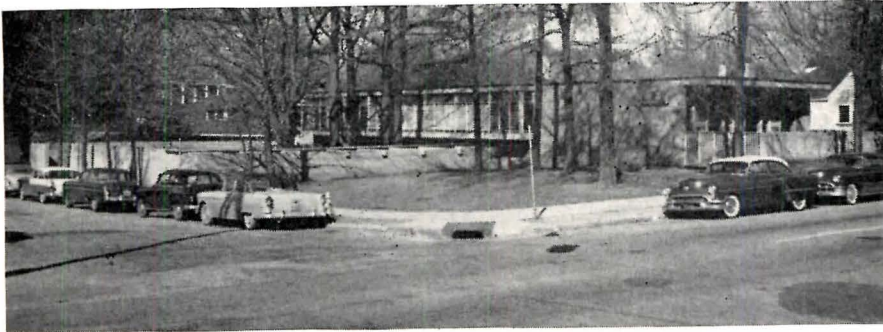
the manufacturer wanting to "sell" any of them should keep firmly in

edify its New York viewers by inter-viewing such widely varied types as

concrete he adds, "Either you do it well or you might better not use it."

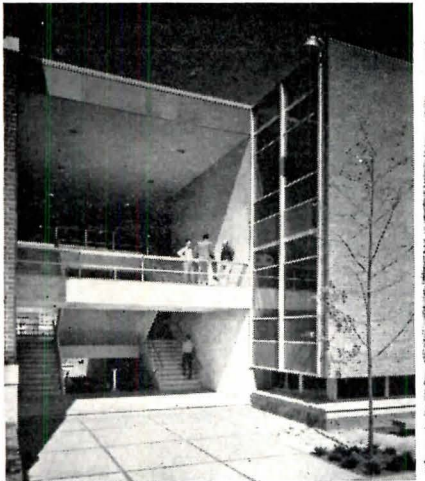


## THE RECORD REPORTS: BUILDINGS IN THE NEWS

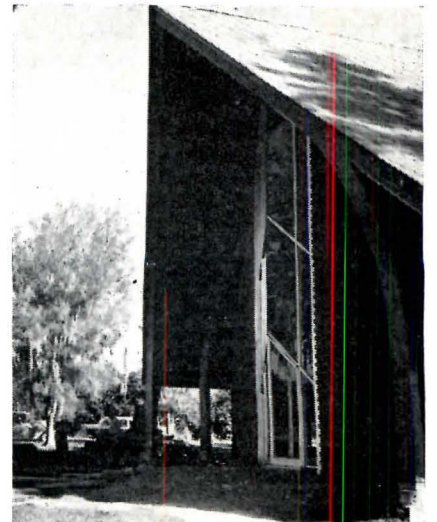
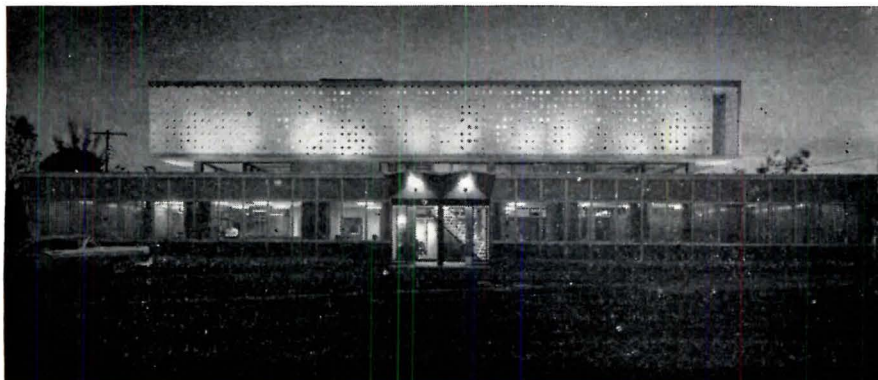


*HONOR AWARDS* went to the Alpha Epsilon Rho fraternity house (left, above) at Georgia Institute of Technology, Willner and Millkey, Atlanta, architects; and to the Continuing Education Center Building (left, below) at the University of Georgia, Stevens & Wilkinson, Atlanta, architects, in the annual honors program of the American Institute of Architects' South Atlantic District. The awards, made at the South Atlantic regional conference held at Atlanta in April, were selected by a jury composed of chairman John E. Dinwiddie, dean of architecture at Tulane University; architect Louis I. Kahn of Philadelphia; Thomas K. Fitz Patrick, dean of architecture at the University of Virginia; and Philip Will Jr., architect, of Chicago

## SIX BUILDINGS CITED IN SOUTH ATLANTIC DISTRICT'S HONORS PROGRAM

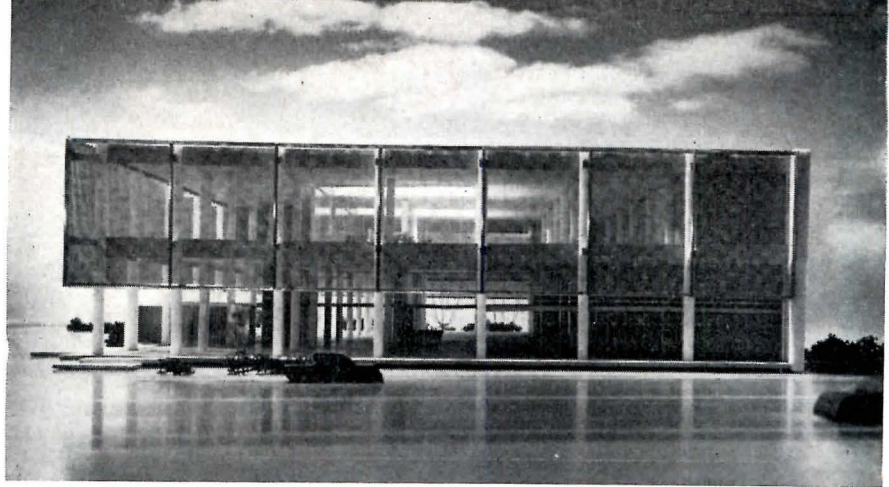


*AWARDS OF MERIT* were made to the School of Design at North Carolina State College (far left), F. Carter Williams, Raleigh, N. C., architect, and George Matsumoto, Raleigh, consulting architect; the Baptist Professional Building, Atlanta (left), Stevens & Wilkinson, architects; Dade County Medical Association Offices, Miami (below, left), Robert M. Little, Miami, architect; and Bee Ridge Presbyterian Church, Sarasota (below), Victor A. Lundy, Sarasota, architect



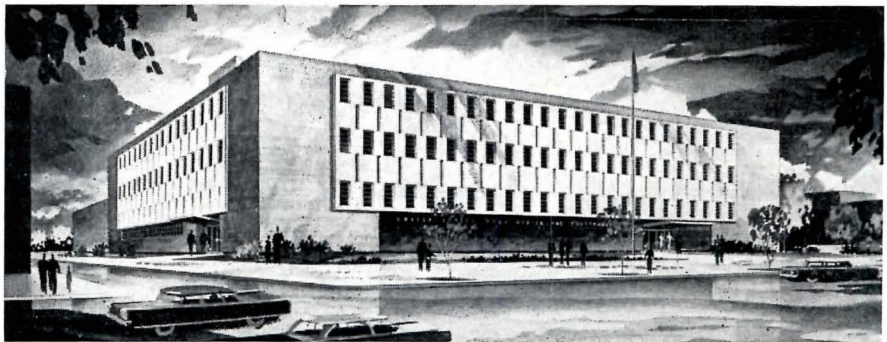


*CITY OF NEW ORLEANS* builds this new public library designed by architects Curtis and Davis. The building has major reading and reference areas on the ground floor, browsing and juvenile rooms on a mezzanine overlooking the reading area, and, on the second main level, the arts and music, professional library and audio visual departments, along with listening rooms, meeting rooms, a multi-purpose room and administrative and staff facilities. Estimated cost: \$2.7 million



## WHAT KIND OF ARCHITECTURE FOR PUBLIC BUILDINGS?

*THIS KIND OF ARCHITECTURE* for a private commercial client, Warren Petroleum Corporation, in Tulsa, Okla.; Skidmore, Owings and Merrill are architects. Soon to be completed, the building will be occupied solely by Warren's executive offices, providing 150,000 sq ft of floor space. Structure is fireproofed steel, with 36-ft clear spans for the office tower. Sun control will be effected by five-in. overhangs at every floor and sun visors of transparent heat- and glare-resistant glass. Building will be air conditioned

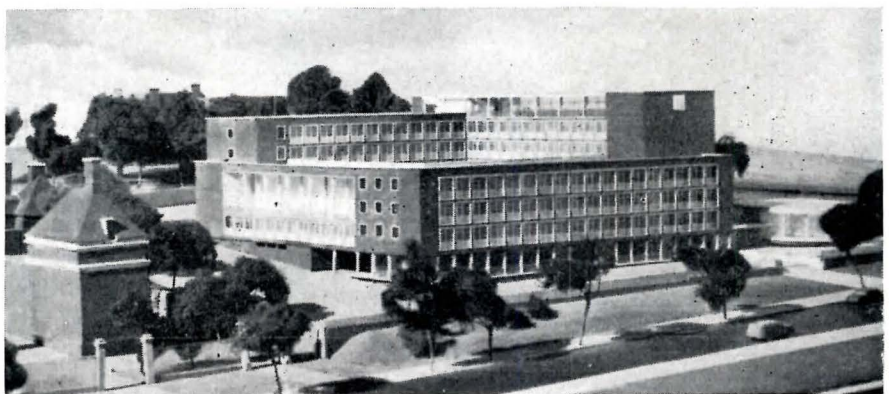


*U. S. GENERAL SERVICES ADMINISTRATION* has accepted this design for the U. S. Post Office and Courthouse which has been approved for construction under the lease-purchase program in Brunswick, Ga.; architects are Abreu and Robeson, Inc. Besides post office and U. S. Court, six agencies will have space. Cost: \$1,431,000



*CLARK COUNTY, NEV.*, plans \$4.5 million convention center to be part of this projected civic center estimated to cost \$15 to \$20 million; Adrian Wilson & Associates, Architects and Engineers, are the designers. Thin shell concrete dome will shelter circular hall 240 ft in diameter; overall building diameter will be 440 ft

*BRITISH GOVERNMENT* has announced plans for this new building for the British Embassy in Washington, D. C.; Sir Eric Bedford, the British Government's Chief Architect, is the designer. Estimated cost is \$3,220,000. The project will replace a temporary building as complement to main Embassy building, designed by Sir Edwin Lutyens and built in 1930. "Much thought," says the official announcement, "has gone into the problem of evolving a proper esthetic relationship"

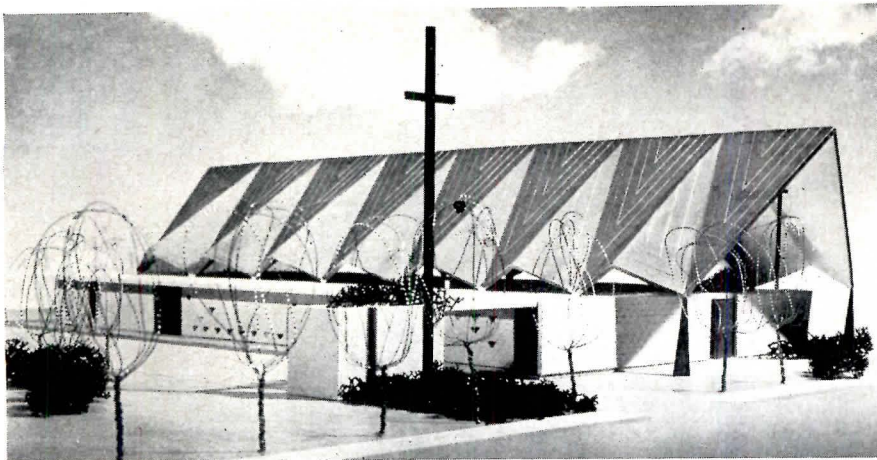




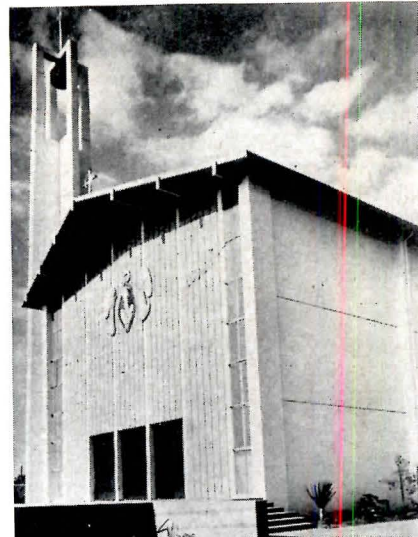
## THE RECORD REPORTS

### BUILDINGS IN THE NEWS

(Continued from page 11)



*Immaculate Conception Church (above), (churches seating over 400, approved or under construction). Right: Church of the*



*Nativity, El Monte, Cal.; Chaix and Johnson, Architects (seating over 400)*

### 13 ARCHITECTURAL AWARDS GIVEN FOR CATHOLIC INSTITUTIONS



*Our Lady of Sorrows School, White Plains, N. Y.; McCoy and Blair, Architects (elementary school for no more than 400, design approved or under construction)*



*St. Ignatius Parish Group, Sacramento, Cal.; Harry J. Devine, Architect (complete parish plant, including church, rectory, elementary school, convent, parish activities space)*



*Mater Christi School, North Riverside, Ill.; Belli and Belli, Architects (elementary school for no more than 400 and completed since 1951)*

Five Plaque Awards (shown on this page) and eight Distinctive Design Awards were made in this year's third annual architectural competition in Catholic institutional design sponsored by the magazine *Catholic Property Administration*. Jury for this year's competition included: Rev. Richard Douair, Riverdale, Ill.; Prof. Robert Blakeslee, head, Department of Architecture, University of Detroit; Barry Byrne, A.I.A., Evanston, Ill.; John J. Flad, A.I.A., Madison, Wis. Professional adviser was Frank Montana, A.I.A., architectural head at Notre Dame.

Distinctive Design Awards went to:

*Church seating more than 400 and completed since 1951*—St. Agnes Church, Phoenix, Ariz., Weaver and Drover, Architects.

*Church seating more than 400, design approved or under construction*—St. Andrew Church, Detroit, Walter J. Rozycki, Architect; St. Ignatius Church, Harry J. Devine, Architect.

*Elementary school accommodating no more than 400 and completed since 1951*—St. Patrick School, El Paso, Tex., Carroll and Daeuble, Architects; Sacred Heart School, Bryan, Conn., J. Gerald Phelan, Architect.

*Elementary school accommodating no more than 400, design approved or under construction*—Holy Rosary Parochial Elementary School, Jacksonville, Fla., Boardman, Ewart and Meehan, Architects; Our Lady of Perpetual Help School, Pelham Manor, N. Y., Edward Fleagle, architect.

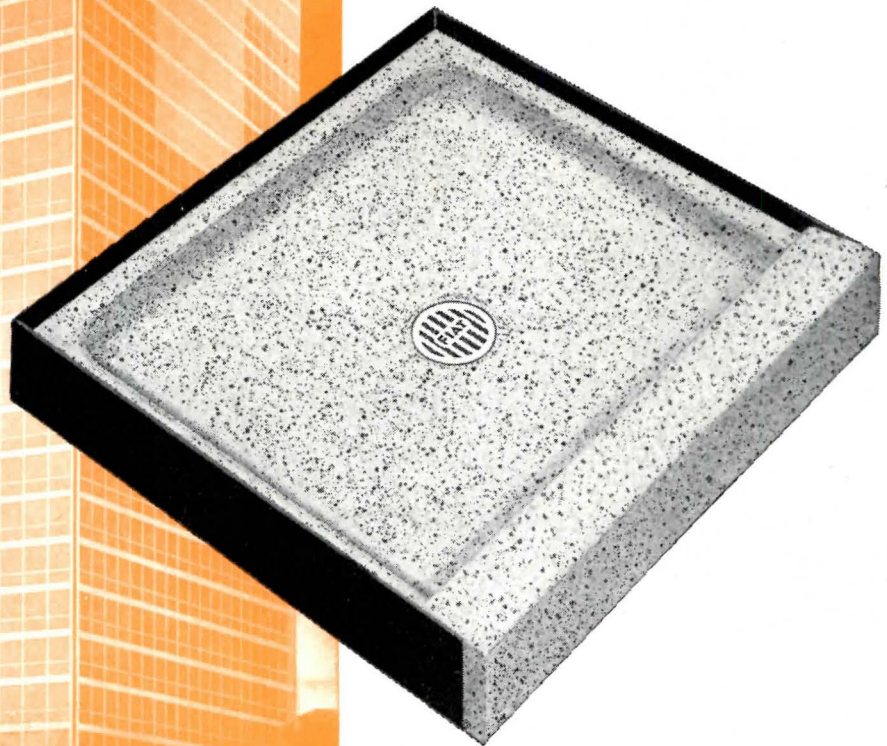
*Complete parish plant*—St. Michael School, Greenville, Pa., P. Arthur D'Orazio, Architect.

(More news on page 21)



Architect: Mies van der Rohe  
 Architect: Skidmore, Ovington & Merrill  
 Interior Architect: Friedman, Aischuler & Sincere  
 General Contractor: Herbert S. Greenwald  
 Plumbing Contractor: Economy Plumbing & Heating Co.  
 Showering Wholesaler: Amstan Supply  
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*"The Architecture of American Colleges"*

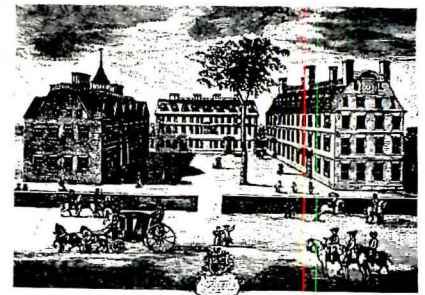
**SCHUYLER'S PLEAS WERE CAMPUS PLANS AND "COMITY"**

During the first decade of this century, judging from the number of new buildings mentioned in the RECORD's series on "The Architecture of American Colleges," American campuses seemed to be enjoying a considerable boom in new facilities. Montgomery Schuyler, who authored the series which ran from October 1909 through May 1912, visited more than 35 campuses from Brunswick, Me., to Winter Park, Fla. (though he ventured no farther west than Geneva, N. Y.). In the course of these visits, he found much to be pleased with, but more to be disappointed with.

Schuyler's chief complaints were of omissions — lack of foresight, lack of campus plans, lack of stylistic continuity. And the older the college, he said, the worse the muddle. "The later the foundation of an American College the better chance it has to have architectural interest," he wrote in September 1910, "for it is only of very late that we have

discovered that, to be architecturally successful, a college must, first of all, proceed upon a general plan. It must not be subject to the caprices and vicissitudes of passing fashions. . . . Oxford and Cambridge, indeed, may slowly have been aggregated of architectural fashions without destroying, nay, absolutely with increasing their charms, and adding an historical to the esthetic interest, now that all the fashions have taken the tone of time. But that is not our case. There are not half a dozen American college buildings that have any interest that can be decently called historical, and not half the half dozen add any architectural interest that can be decently called architectural. As a rule, the older they are the uglier. And the old European fashions were matters of centuries, at least of generations. Ours are matters of decades.

Harvard, being the oldest of the American colleges, was, Schuyler felt,



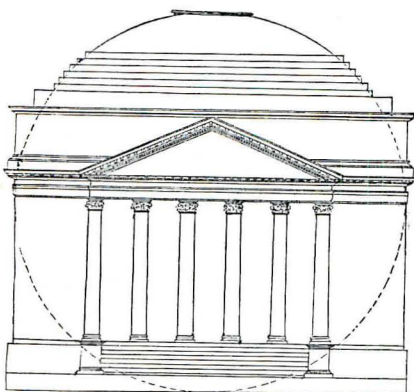
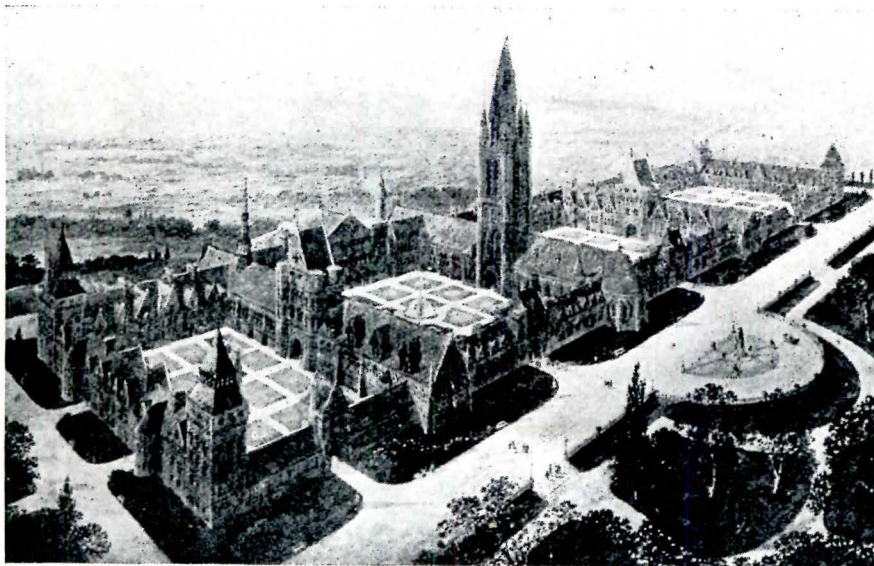
*In the beginning: 1726 print of Harvard Yard, illustrating what Schuyler called "the handiwork of the honest bricklayer"*

correspondingly the worst, speaking architecturally. "Neither in ground plan nor in the actual aspect," he said in the first article of the series, "is there anything to be made out but higgledy-piggledy. There is no grouping, there are no vistas. No building borrows any increase of attractiveness from any other, nor lends any to it. There are American colleges, very likely, of which the actual building is more discouraging than that of Harvard, which, indeed, in its oldest examples, is not discouraging at all. . . . But there is none in which the chaotic want of foresight and arrangement in the relations of the buildings renders any real rectification more difficult." If Yale came off better in an assessment of campus planning, most of the credit, Schuyler hinted, was due to its very restricted site in the center of New Haven, which demanded a plan if minimum facilities were to be accommodated.

The nearest thing to a perfect college, in Schuyler's estimation, was Jefferson's University of Virginia, which combined the virtues of planning, comity and a "cloistral" atmosphere. Jefferson's idea of an "academical village" was indeed a departure for American colleges at the time, which generally consisted of one building housing dormitories, classrooms and chapel. Schuyler was also impressed with the value Jefferson got for \$250,000.

The plans for Trinity College were as satisfactory as those for the University of Virginia, in Schuyler's opinion — or would have been, if Trinity had built the project. It did at least conform to Schuyler's predilection for a Gothic campus — "the most appropriate and attractive architecture for a place of education for English-speaking mankind." Columbia, emphatically, did not have much appeal for the critic, in spite of McKim, Mead & White's splendidly extravagant and highly successful library. Columbia had adopted a "municipal" approach to design for its new

*(Continued on page 278)*



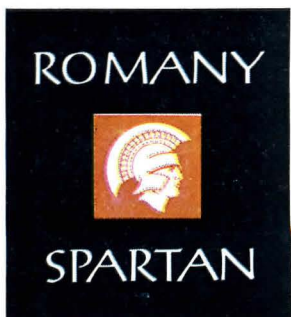
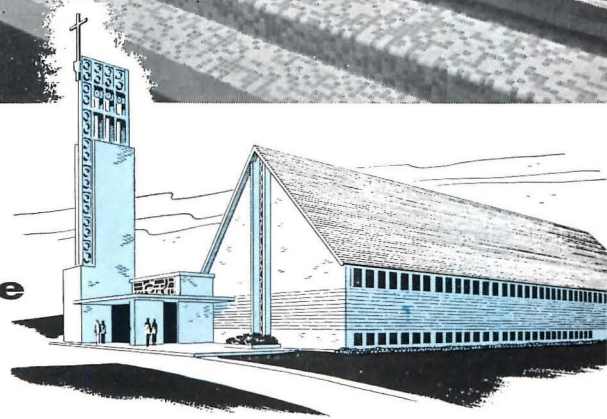
*Two campuses which exemplified good planning, according to Schuyler's lights, were those of Trinity College (above), designed by British architect William Burges in 1873, "the most impressive embodiment in the Western world of the spirit and the charm of Oxford"; and Jefferson's design for the University of Virginia (left, one of Jefferson's drawings for the school), "architecturally vindicated by the appearance of the 'Lawn' today, as it has been practically vindicated by the experience of nearly a century"*





**First Methodist Church, Hopkins, Minn.**  
 Architects: Armstrong & Schlichting, Minneapolis, Minn.  
 Tile Contractor: Drake Tile Co., Minneapolis, Minn.

## Romany•Spartan tile lends serene beauty to Minnesota church



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## THE RECORD REPORTS

### MEETINGS AND MISCELLANY

(Continued from page 24)

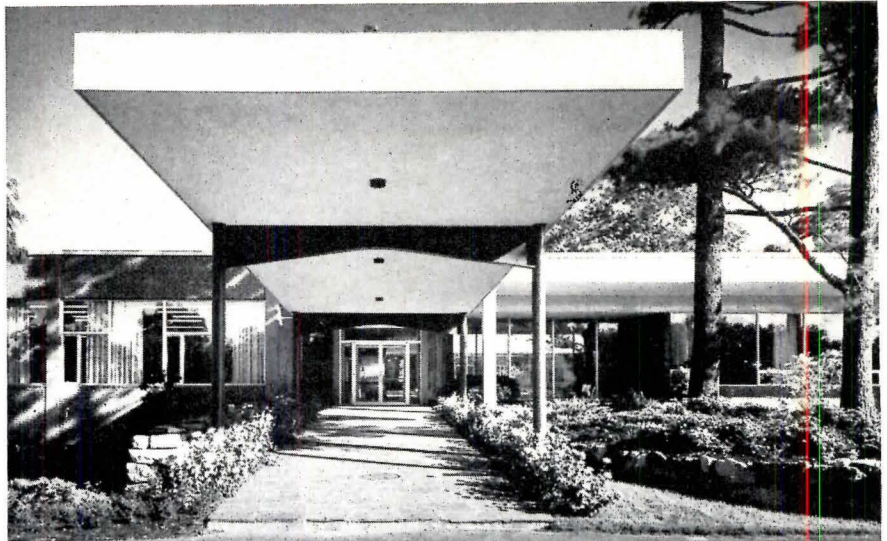
#### NEW ENGLAND ARCHITECTS CELEBRATE THE CENTENARY

Members of the New England District of the American Institute of Architects met June 20-21 for their annual conference with a program that made the least of business and the most of a celebratory occasion in the A.I.A.'s centennial year. The only speakers at the meeting, at the centennial banquet, were Edward A. Weeks Jr., editor of *The Atlantic*, and Perry T. Rathbone, director of the Boston Museum of Fine Arts. For the rest, most of the attendees' time was taken up by the annual Boston Arts Festival, along with an afternoon trip to Salem for the MacIntire Bicentennial, assorted parties, an evening of modern dance, and a ball.

The Boston Festival helped celebrate the architects' centenary with two architectural exhibits — its annual awards program for building in the last five years, and a special exhibition, "A Century of New England Architecture."

A three-man jury, composed of architects Ioh Ming Pei and Samuel E. Homsey and Yale planning professor Christopher Tunnard, selected 13 buildings for the annual exhibit. In addition to the awards shown on this page, they gave awards of merit to the Lincoln-Sudbury Regional High School, Sudbury, Mass., Anderson, Beckwith and Haible, architects; Temple Israel, Swampscott, Mass., Pietro Belluschi and Carl Koch and Associates, architects; Buck House, Manchester, Mass., George W. W. Brewster, architect; Head Island Shelter, South Boston, Griswold Boyden Wyld and Ames, architects; St. Mark's Chapel, University of Connecticut, Storrs, Conn., Huntington and Darbee, architects; Noyes house, New Canaan, Conn., Eliot Noyes, architect (AR, Mid-May 1957, pp. 124-127); Arthur Fiedler Footbridge, Boston, Shepley, Bulfinch, Richardson and Abbott, architects (AR, February 1955, pp. 155-157); Mills House, New Canaan, Conn., Sherwood, Mills and Smith, architects (AR, Mid-May 1957, pp. 176-179); Camp Kirby, West Townsend, Mass., Smith and Sellew, architects; and the Ryder house, Marion, Mass., Hugh Stubbins and Associates, architects.

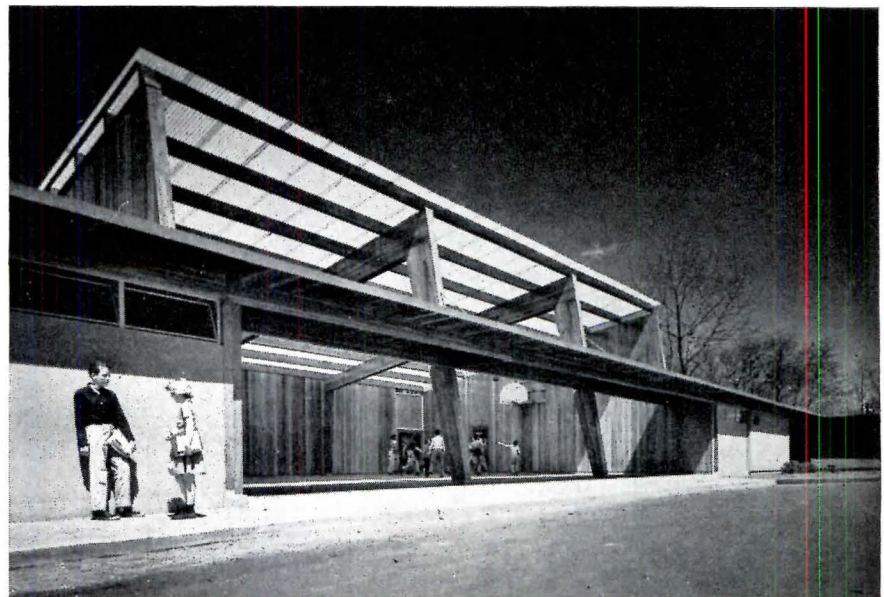
The 32-panel historical exhibit includes representative New England architecture ranging from tobacco barns through, most recent, Eero Saarinen's auditorium and chapel at M.I.T.



*GRAND ARCHITECTURAL AWARD* in Boston Arts Festival's annual architectural exhibit went to offices of Boston Manufacturers Mutual Insurance Company and Mutual Boiler and Machinery Insurance Company in Waltham, Anderson, Beckwith and Haible, architects (AR, February 1957, pp. 177-182). Jury's comment: "sensitive planning of both the interior and exterior space and judicious harmony of materials"



*SPECIAL COMMENDATION* went to the Brandeis Interfaith Center (above), Harrison & Abramovitz, architects (AR, January 1956, pp. 147-153) — jury's comment: "a well-coordinated mass with a happy relation to pool and terrain" — and to the Tokeneke Elementary School in Darien, Conn., R. B. O'Connor and W. H. Kilham Jr., architects (AR, July 1957, pp. 201-205) — jury's comment: "simple and direct answer to school planning unaffected by tricks"



(More news on page 32)





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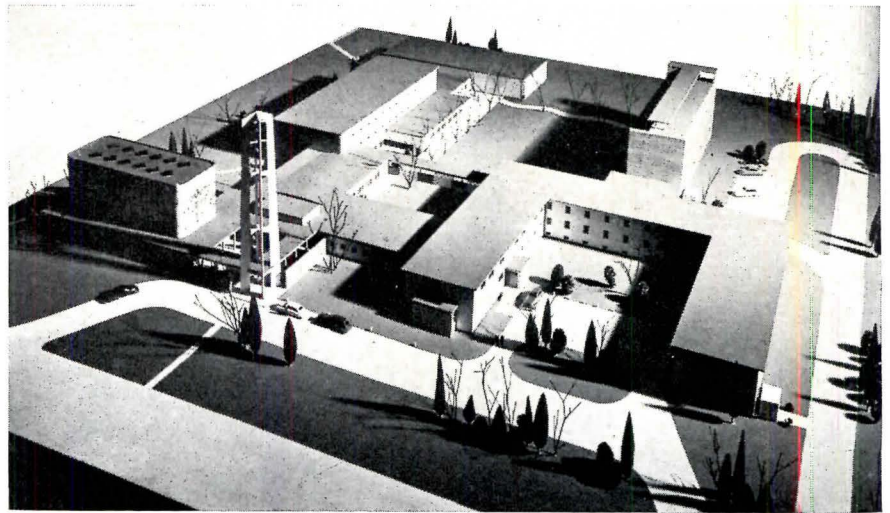
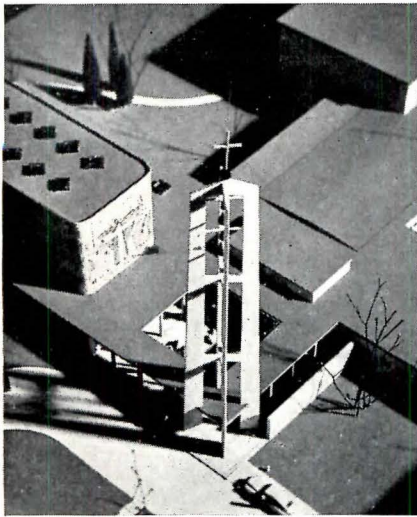
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**ARCHITECTURE IN MANITOBA:  
ST. PAUL'S COLLEGE BUILDS**

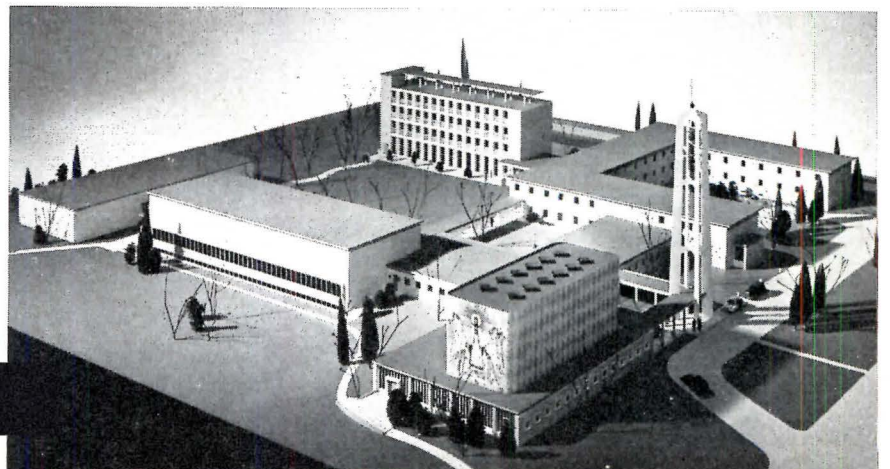
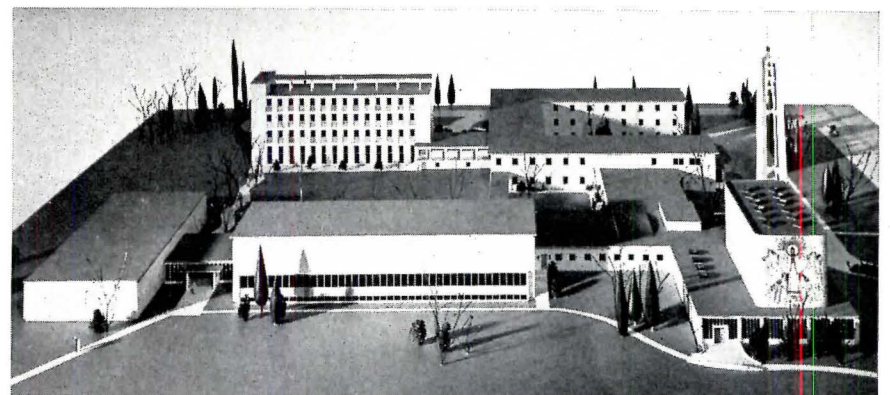
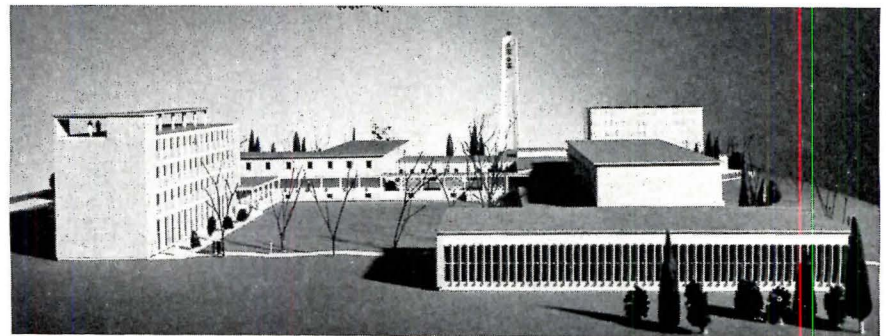
The buildings shown in model photographs on this page comprise a long-range expansion program for St. Paul's College, one of the denominational colleges linked to the University of Manitoba in Winnipeg; it is for the Jesuit Order. Architects are Gardiner, Thornton, Gathe and Associates of Vancouver, in association with Green, Blankstein and Russell of Winnipeg.

The first stage of the project, now under way, includes an instruction unit, comprising six lecture rooms, physics and chemistry laboratories and a University Catholic Center unit made up of a lunch room and clubroom, a chapel seating 380, and administration wing. Estimated cost is \$500,000.

In a later stage, a lecture-room wing for 500 students, residences for men and women and complete club facilities will be added.

The Anglican College of St. John's on the site immediately east of St. Paul's will be well related to it due to the collaboration of the architects involved. The proximity of the two groups of buildings, the complex circulation requirements, the approaches and views from inside and outside the campus, have dictated the general arrangement and massing of the development.

For the most part, the structural design is reinforced concrete, although the lower units have load bearing masonry walls. Exterior finishes are stone and mosaic. Within, structural materials will be exposed "wherever possible." Chapel exterior will have mosaic mural.







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AT ANNUAL DINNER: (above left) R.A.I.C. Past Presidents Gordon M. West, Toronto; H. L. Felherstonhaugh, Montreal; Burwell R. Coon and Forsey Page, Toronto; A. J. Hazelgrove, Ottawa; John Roxburgh Smith, Montreal; R. S. Morris, Toronto; A. J. C. Paine, Montreal; President Douglas E. Kerland, Toronto, is at microphone. Center: President Kenneth Cross, R.I.B.A. president, receiving R.A.I.C. Honorary Fellowship from Canada's Governor General Vincent Massey. Right: Miss Yvonne Williams of Toronto and Alan Beddoe of Ottawa, Allied Arts Medal recipients



NEW FELLOWS OF R.A.I.C. (see story for list) pose for a formal portrait



PROGRAM HIGHLIGHTS included speech by Architect Louis Kahn of Philadelphia, shown at left above with Rev. Father Cole of St. Benoit du Lac and Jacques Greber, Ottawa town planner now living in Paris; and seminar on "The Architect's Role in Housing," featuring

(center) Don Mills Developments Ltd. President Angus McClaskey, Toronto; CMHC President Stewart Bales, Ottawa; Prof. A. P. C. Adamson and Prof. James A. Murray of the University of Toronto School of Architecture; Director James T. Lendrum, Small Homes Council, Uni-

versity of Illinois; S. A. Gitterman, CMHC Development Division architectural adviser, Ottawa. Right above: distinguished visitors C. D. Spragg (left), R.I.B.A. secretary, and Kenneth M. B. Cross, R.I.B.A. president, with R.A.I.C. President Kerland (center)

R.A.I.C. MARKS GOLDEN JUBILEE IN ASSEMBLY AT OTTAWA

Architects must try to educate the public in recognizing and demanding good architecture, members of the Royal Architectural Institute of Canada were told at the annual dinner which concluded their "Golden Jubilee" Assembly at the Chateau Laurier, Ottawa, May 29-June 1.

Speaker was Governor-General Vincent Massey. He told his hearers that, for better or for worse, buildings are coming more and more to give us almost our total physical setting. They condition, as never before, the way we eat and enjoy our recreation, the way we do our daily work, and the way we feel towards the world we live in.

"The architect of today," he said, "is

taking on a new function. A public building is no longer an event; it is an everyday affair. And thanks to increasing interest in municipal housing, you are now called on to build appropriate houses not only for the rich and very rich, but for the poor and very poor.

"Architecture has been democratized. It is the architect's problem and his privilege to devise a decent physical environment for all."

In closing, the Governor General suggested that architects should "sign" their buildings in a suitable manner, and asked members of the Institute "to temper their work with humanism and thus help architecture take its rightful place among our lively arts."

Tributes and Presentations

The Governor-General's speech was followed by a colorful ceremony admitting 13 architects newly elected to the College of Fellows. They were Douglas E. Catto, Toronto; Colin Drever, Kingston; William E. Fleury, Toronto; George D. Gibson, Toronto; William A. Watson, Belleville; Lawrence J. Green, Winnipeg; John E. Hoskins, St. John's; Hugh P. Illsley, Montreal; Victor E. Meech, Lethbridge; Gilbert Parfitt, Winnipeg; Harold N. Semmens, Vancouver; Hugh A. I. Valentine, Montreal, and Gerard Venne, Quebec City.

Then came presentation of gifts to nine past presidents of the Institute attending the dinner. Special tribute was

(Continued on page 40)





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## THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 36)

paid by president Douglas E. Kertland to the founders of the R.A.I.C., among them J. Albert Ewart of Ottawa, Canada's oldest practising architect.

An honorary fellowship was awarded to Kenneth M. B. Cross, president of the Royal Institute of British Architects. One also went to Hon. Robert H. Winters, Federal Minister of Public Works,

unable to attend due to the election campaign (in which he was later defeated).

Climax of the evening came with presentation of the Allied Arts Medals to Miss Yvonne Williams of Toronto and Allan B. Beddoe of Ottawa. Miss Williams received her award for her outstanding work in stained glass windows. Mr. Beddoe is heraldic advisor to the Royal Canadian Navy and has made many contributions to Canadian art over the years. He was one of the designers and executors of the "Book of Re-



*JUBILEE GATHERING* opened Assembly. Snapped there (above) some of the Ottawa committee members and their wives—Mr. and Mrs. J. W. Strutt, Mr. and Mrs. Gordon B. Prilchard, Mr. and Mrs. H. Gordon Hughes, D. G. Helmer and Norman Sherriff; (below) Mrs. Fred Lasserre and Professor Lasserre, Vancouver; Neil M. Stewart, Fredericton; and Mr. and Mrs. H. Gordon Hughes, Ottawa



membrane" in the Parliament Buildings.

Other awards included the presentation of an honorary fellowship in the British Institute for Mr. Kertland, and the awarding of an honorary membership to Msgr. Olivier Muralut, past rector of the University of Montreal.

### "Plastered in Paris"

About 200 architects and wives attended the annual dinner, slightly over half the number that enjoyed the Andrew Cobb dinner and revue presented by the Ottawa Chapter the previous night.

At that affair, taking as inspiration the pageant presented by the past 50 years, amateur Zeigfelds put on four skits, "The Good Old Days," "The Hungry Thirties," "2B or Not 2B" (a glimpse into the push-button future) and "Plastered in Paris" (a takeoff on Canadian expatriates living it up in Gay Paree). Latter effort, particularly the appearance of H. Gordon Hughes as "Mlle. Fifi," brought down the house.

This light touch gave welcome relief from the heavier fare provided by the rest of the Assembly program. Theme, in keeping with the golden anniversary year, consisted of a forward look into the opportunities and problems of the next half century, with special emphasis on the architect's contribution.

Things got underway with a "Jubilee Gathering" in the Quebec suite of the hotel on Wednesday evening, May 29, which served well as an ice-breaker.

(Continued on page 44)

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## THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 40)

Everyone henceforth was on a first name basis, though the business session the next morning saw the spirit of *camaraderie* somewhat strained.

Chief bone of contention was wording of a resolution calling for preservation of the West Block of the Parliament Buildings, whose future is in doubt. Finally,

it was agreed to compromise with a statement that the assembly had "heard with pleasure of the retention of a distinguished firm of architects to study and report on the West Block and hopes that it will be practicable for this project to be developed in such a manner as will retain the general historical and architectural character of the building."

### Design for Future Cities

That afternoon, Thursday, May 30, delegates enjoyed a drive to the Country Club where they had lunch and partici-

pated in a symposium on "Fitness, Order and Architecture." Speaker was Architect and Planner Louis I. Kahn, professor of architecture at Yale University and the University of Pennsylvania.

Mr. Kahn urged Canadian architects to redirect their thinking on fundamentals. He illustrated his talk with drawings of his own buildings, most of them already erected or under construction. Brilliant and imaginative towers were shown soaring into the sky on triangulated columns. A policy of decentralization is ruinous, Mr. Kahn declared. Cities of the future must be built around central areas.

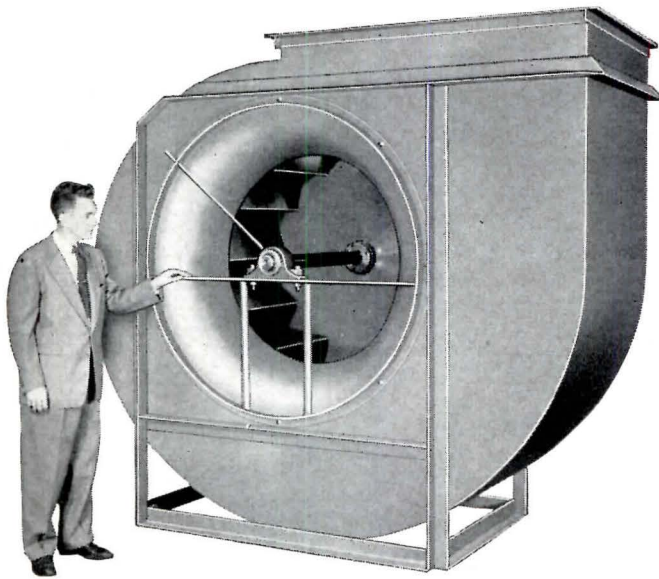
The distinguished visitor recommended that parking spaces or huge garages should be built close to living areas with streets zoned for certain types of traffic rather than for types of buildings. "The buildings will conform to the type of traffic," he asserted.

### The Uses of Structure

Mr. Kahn lectured the R.A.I.C.'s assembled members sternly on the use of overly long beams. "Just because we have learned how to use long concrete spans is no reason why we should have huge rooms."

Returning to the theme of centralization Mr. Kahn declared "architecture must be related to motion and the center of the modern city is stopped. We must have therefore heavy buildings at the center, indicating this stopped motion."

(Continued on page 46)



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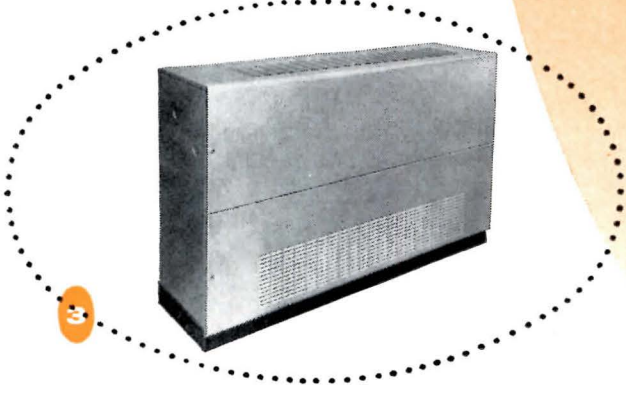
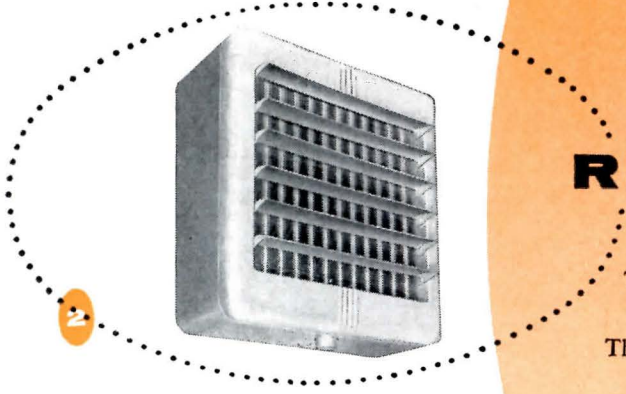
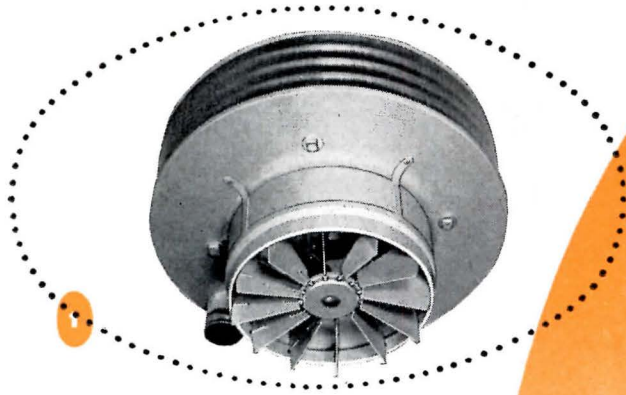
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OTTAWA COUNTRY CLUB provided setting for one session. On the lawn there: (above) R. Schofield Morris of Toronto and John Roxburgh Smith and Maurice Payelle of Montreal; (below) John H. Wade of Victoria, Prof. E. R. Arthur of Toronto, Herbert H. G. Moody of Winnipeg and Andrew J. Hazeland of Ottawa







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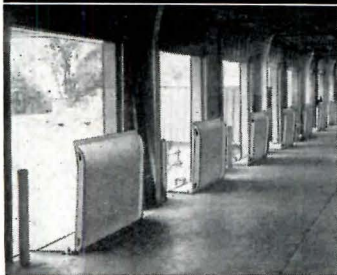


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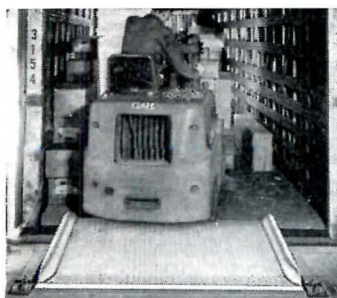
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## THE RECORD REPORTS

### NEWS FROM CANADA

(Continued from page 44)

#### Architects and Housing

Next morning witnessed a massive onslaught on the housing problem spearheaded by Stewart Bates, president of the Federal government's Central Mortgage & Housing Corporation.

Mr. Bates told his audience that Canada has almost 6,000,000 people under 18 years of age. The proportion in relation to total population — about 37 per cent — is unique. Soon, he said, they will marry; in a year or two they will begin to enter the labor market, and then the housing market.

"Here is the chance for your profession to take wing. This future involves you in house design, group design and neighborhood design, city and metropolitan design and regional design — quite a tall order.

"Take only one element, house design. Today this can hardly be termed the bread and butter of your profession. It may have been the first love for most of you, because it is the most human and sensitive branch of your art. But in recent years your clients have come mainly from the nonresidential part, from industrial, commercial and institutional builders. All of these put together just about equal in value the amount of residential building. The source of your

(Continued on page 270)



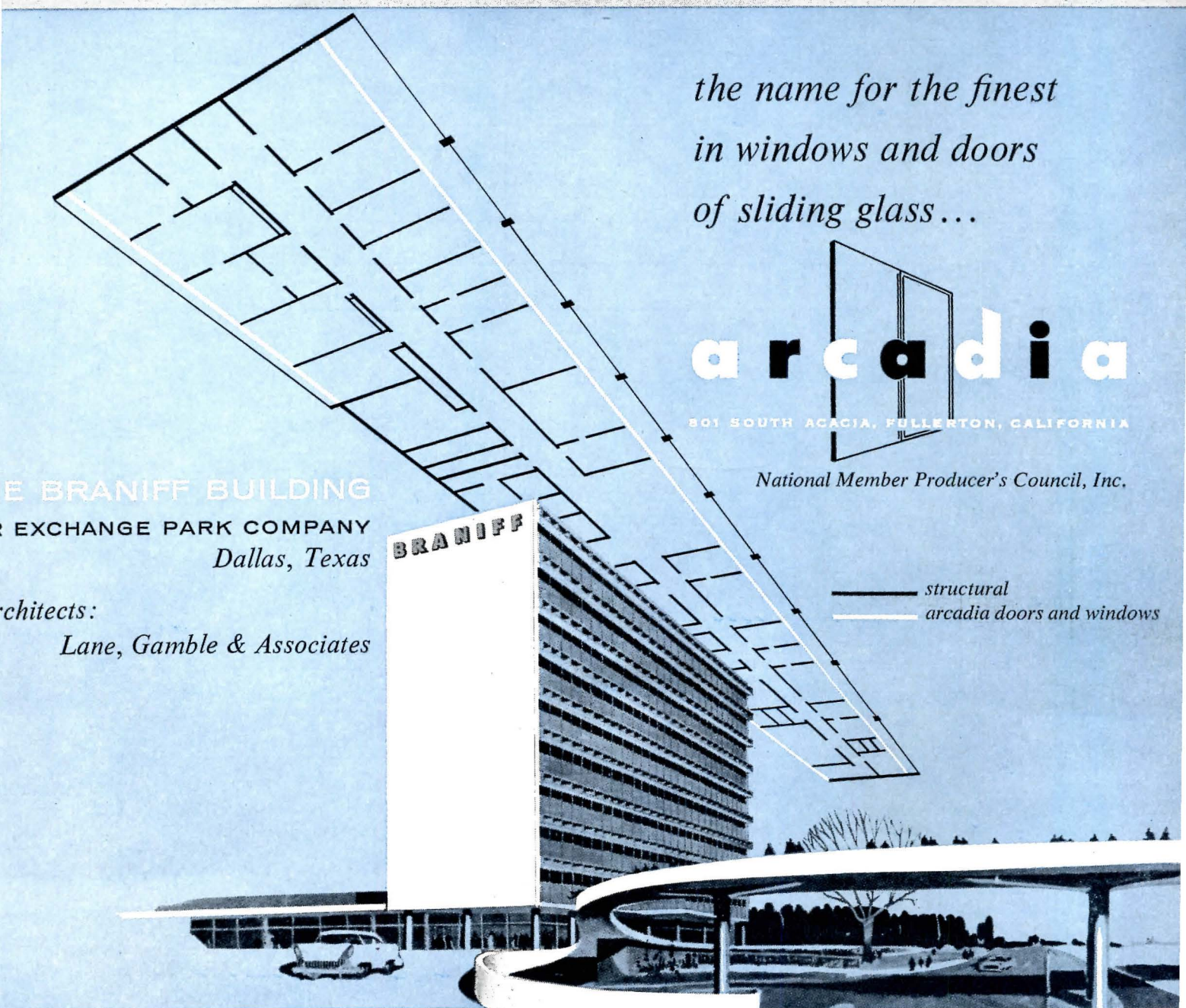
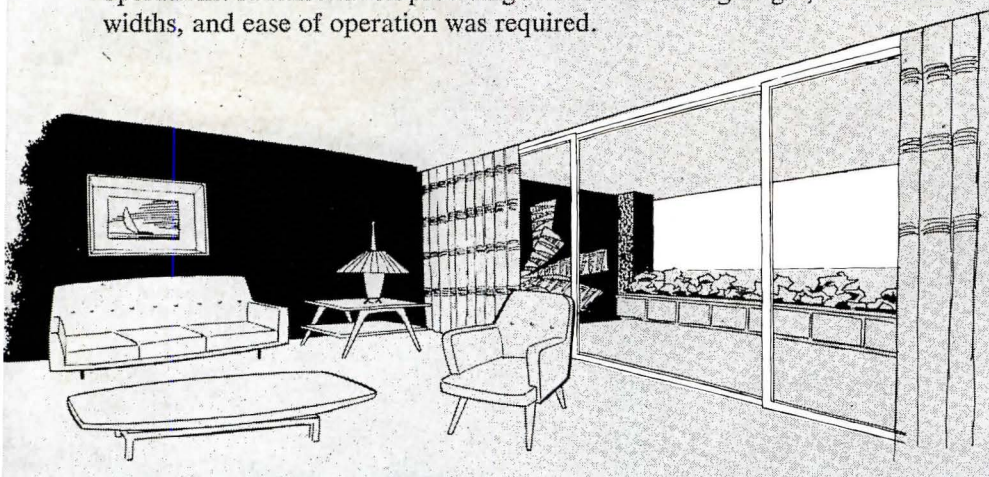
**JUBILEE GATHERING**  
Again — (above) P. C. Amos of Montreal with John Lovatt Davies, Vancouver, and Mr. and Mrs. Gerard Verre, Quebec City; (below) Prof. James A. Murray, Toronto; and Mr. and Mrs. Ian MacLennan, Ottawa





**problem:** Each executive office on the top floor of the Braniff Airways Administration Building required access to an open terrace which afforded a full view of Dallas' Love Field, the hub of Braniff's operations. A fenestration providing full floor to ceiling height, maximum widths, and ease of operation was required.

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# THE RECORD REPORTS: CONSTRUCTION COST INDEXES

Labor and Materials

U. S. average 1926-1929 = 100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

## NEW YORK

## ATLANTA

Period	Residential		Apts., Hotels Office Bldgs. Brick and Concr.	Commercial and Factory Bldgs. Brick and Brick and Steel		Residential		Apts., Hotels Office Bldgs. Brick and Concr.	Commercial and Factory Bldgs. Brick and Brick and Steel	
	Brick	Frame		Concr.	Steel	Brick	Frame		Concr.	Steel
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1	158.0
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8	178.8
1949	243.7	240.8	242.8	246.4	240.0	189.3	189.9	180.6	180.8	177.5
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7	185.0
1951	273.2	271.3	263.7	265.2	262.2	212.8	214.6	204.2	202.8	205.0
1952	278.2	274.8	271.9	274.9	271.8	218.8	221.0	212.8	210.1	214.3
1953	281.3	277.2	281.0	286.0	282.0	223.3	224.6	221.3	221.8	223.0
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	223.5	225.2	225.4
1955	293.1	286.0	300.0	308.3	302.4	225.3	225.1	229.0	231.5	231.8
1956	310.8	302.2	320.1	328.6	324.5	237.2	235.7	241.7	244.4	246.4
Mar. 1957	316.5	306.5	329.5	341.2	335.1	239.8	238.1	245.7	248.7	250.8
Apr. 1957	316.5	306.5	329.8	341.8	335.4	239.4	237.7	245.2	248.3	250.4
May 1957	316.5	306.5	329.8	341.8	335.4	239.8	238.0	245.9	249.2	250.7
	% increase over 1939					% increase over 1939				
May 1957	156.3	150.4	152.2	156.2	157.8	177.9	186.4	158.6	155.9	164.7

## ST. LOUIS

## SAN FRANCISCO

1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.4	104.9	100.4
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7	249.6
1953	263.4	256.4	259.0	267.6	259.2	255.2	257.2	256.6	261.0	259.7
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5	267.2
1955	273.3	266.5	272.2	281.3	276.5	268.0	259.6	275.0	284.4	279.6
1956	288.7	280.3	287.9	299.2	293.3	279.0	270.0	288.9	298.6	295.8
Mar. 1957	289.0	280.8	290.6	302.2	296.7	283.1	272.4	296.9	307.4	303.4
Apr. 1957	288.6	280.4	290.1	301.8	296.3	283.5	272.8	297.7	308.4	303.8
May 1957	292.0	283.6	294.4	306.8	300.6	286.7	274.4	302.7	315.6	309.6
	% increase over 1939					% increase over 1939				
May 1957	165.0	165.0	148.0	156.1	152.6	171.5	176.3	157.8	158.9	165.8

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:  
 index for city A = 110  
 index for city B = 95  
 (both indexes must be for the same type of construction).

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

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

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

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

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

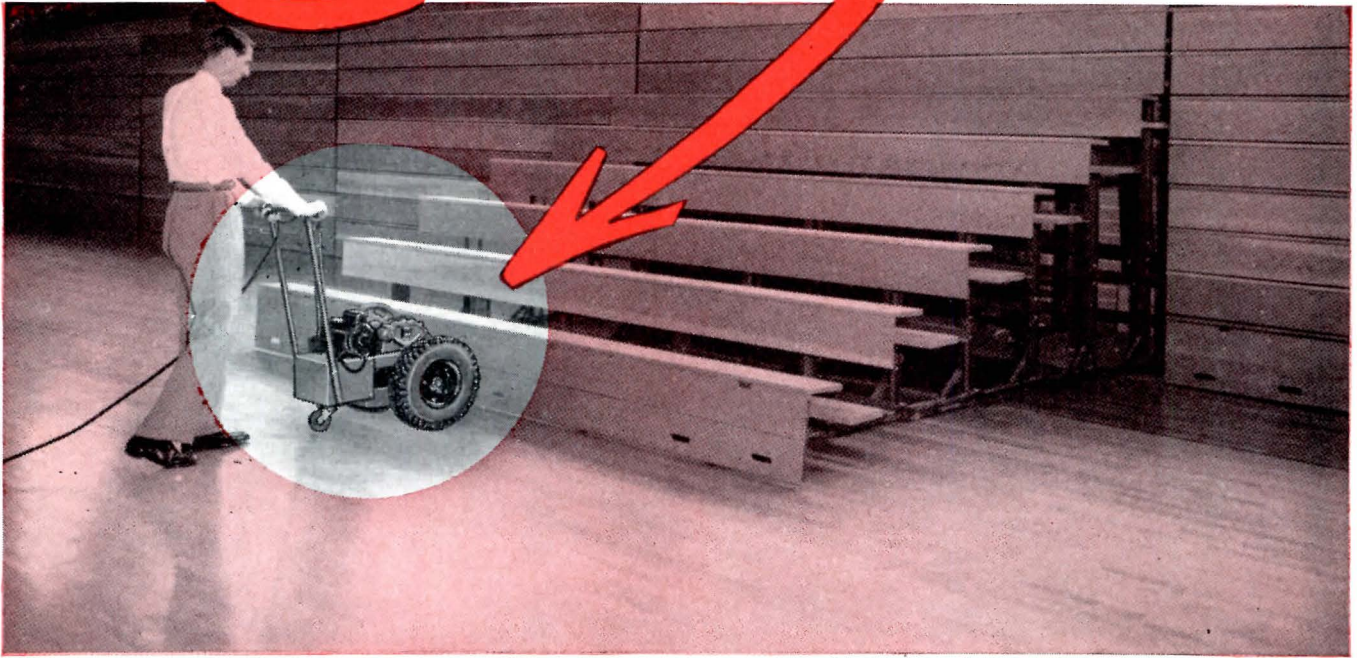
Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.



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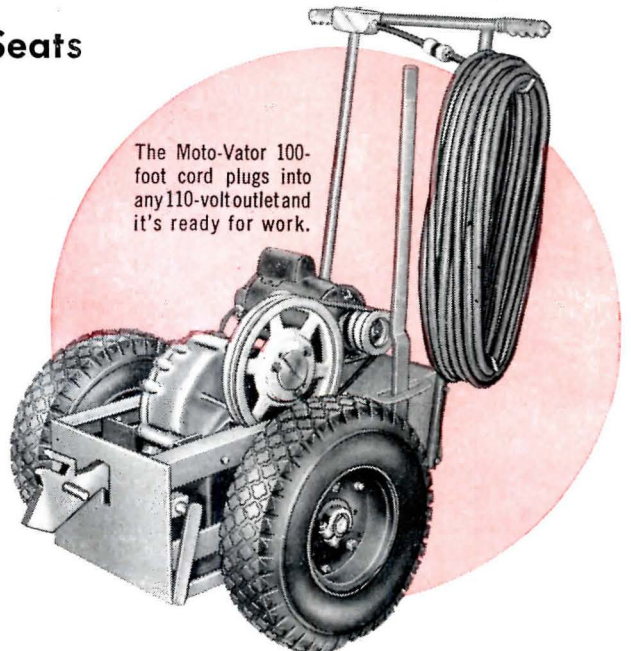
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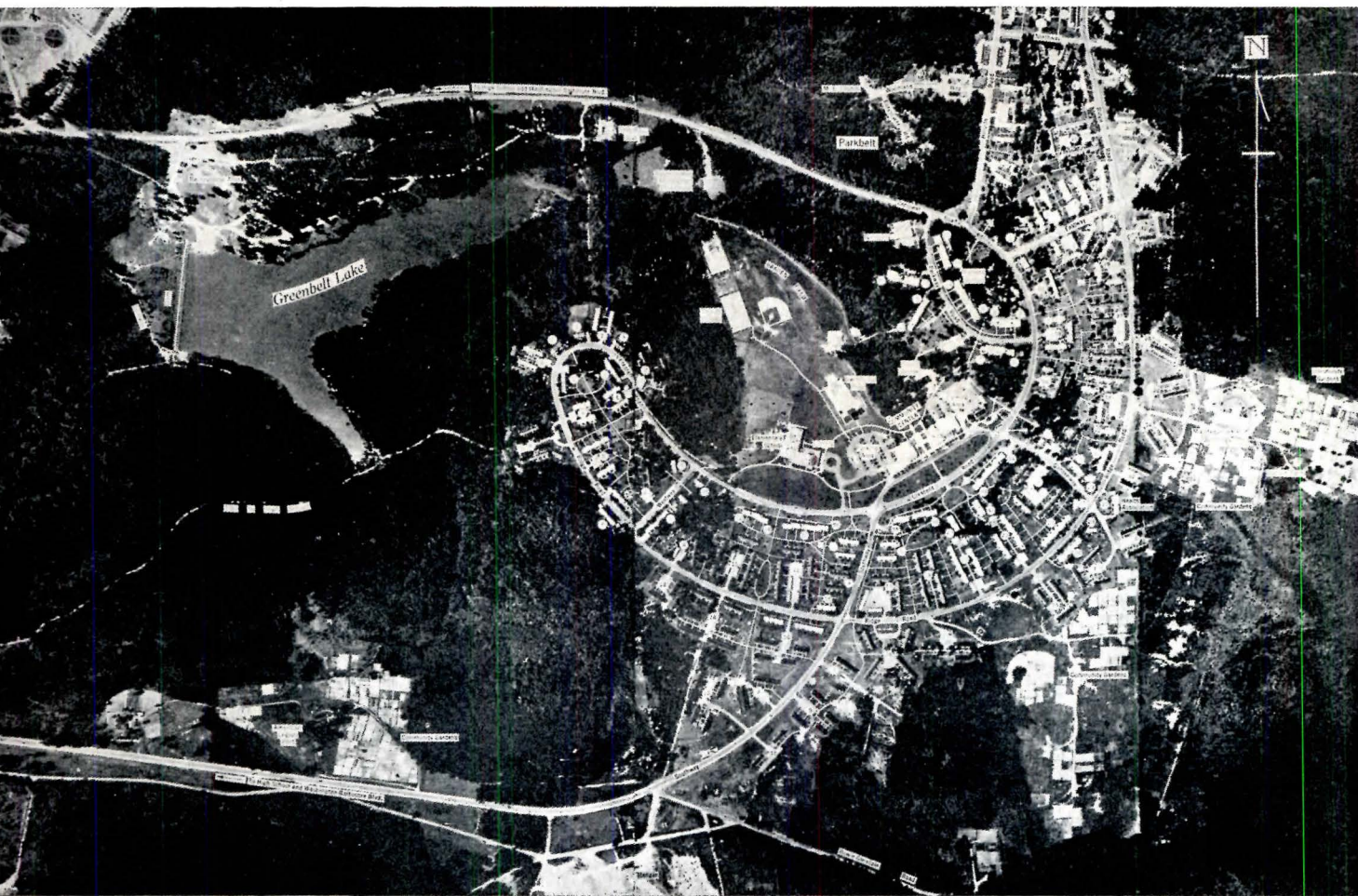
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“ . . . The Greenbelt Towns (Maryland) are the first experiments in the combined development of three basic ideas of the modern community: the Garden City, the Radburn Idea, and the Neighborhood Unit. . . . ”

## THE SEARCH FOR NEW URBAN PATTERNS

By ROBERT E. BARRACLOUGH, City Designer

*Toward New Towns For America.* By Clarence Stein. (Second Edition) Reinhold Publishing Corporation (N. Y.), 1957. 263 pp., illus., \$10

AMERICAN CITIES ARE CHARACTERISTICALLY obsolete, ugly, chaotic and singularly lacking in individuality, being largely based on the grid street plan and monotone zoning. Living has changed more fundamentally in the past half-century than ever before, but the technological advances responsible for the change have not been matched by as great an improvement in our urban environment, where eighty per cent of our people spend ninety per cent of their time. Wholesale new urban patterns are long overdue.

Clarence Stein, basically an architect, has collected in *Toward New Towns For America* the fruits of experiments conducted with others in a search for modern urban forms suited to contemporary living. The quest has resulted in Sunnyside, Radburn, Chatham Village, Phipps Garden Apartments, Hillside Homes, the Greenbelt Towns, and Baldwin Hills Village — milestones in housing and planning. The Radburn Plan has been studied the world over, and provided a springboard for the recent new towns of Kitimat in Canada, Chandigarh in India and Vällingby in

(Continued on page 60)





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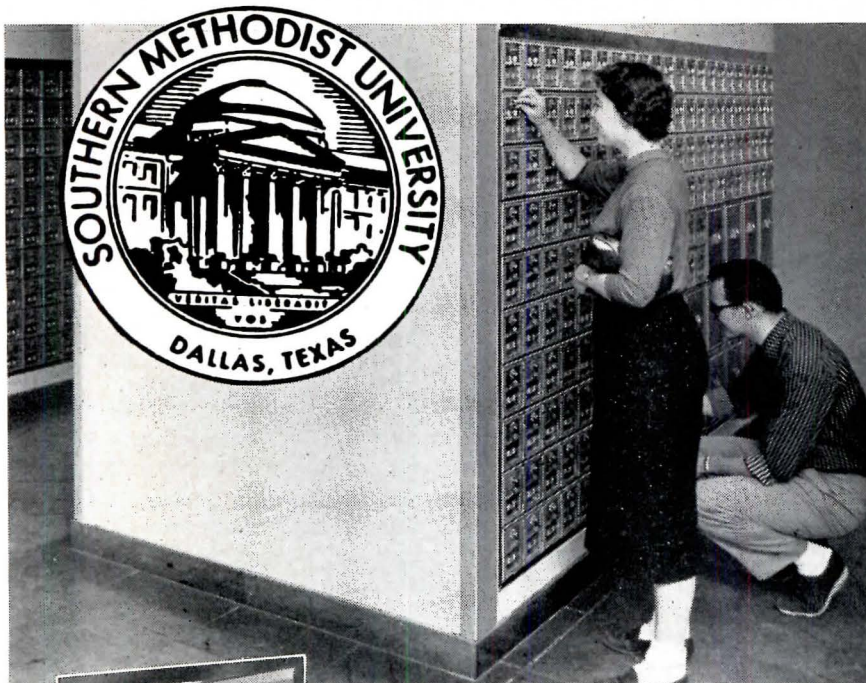
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# Lock-Type Letter Boxes

## Solve Mail Handling Problems

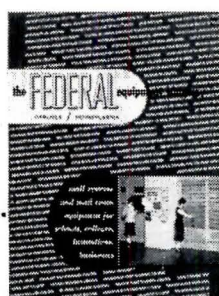
...for schools, colleges, institutions



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(Left) FEDERAL Lock - Type Letter Box with combination lock in plain architectural style.

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### REQUIRED READING

(Continued from page 56)

Sweden (described in the April 1957 issue of ARCHITECTURAL RECORD). All the "Stein" projects have aged well and resisted blight. They are popular with their tenants not merely because of their low rents. Phipps boasts families extending over three generations. Chatham has had people on its waiting list longer than two years.

The book covers each project fully from the initial idea through the planning, financing and execution to a critical appraisal. Excellent photographs and plans support the text. Mr. Stein crystallizes his approach to tomorrow in the chapter, "Indications of the Form of the Future" — essential reading for all who have anything to do with building and cities. Lewis Mumford introduces the book with a very appropriate historical background to Stein's work.

The wastefulness of the grid-iron street plan, the inadequacy of existing block sizes, the unsuitability of today's streets for cars, the danger in not segregating pedestrians and motorists, the lack of nearby play-time space, the folly of overcrowding, the extravagance of niggardly initial investment with its built-in blight and high maintenance costs, the evil of consuming leisure-time in commutation, the archaicness and indignity of congestion, the negativity of losing the individual in crowds, the short-sightedness of obliterating beauty, sunlight, openness and nature, and the poverty of present restrictive city planning are some of the problems that Stein and his colleagues strived to solve. The record shows that they went a long way in doing this.

Not that Stein was at any time satisfied with the as-built solutions. He is constantly looking for something beyond, a new, positive, city planning urban design that will start with people's needs at home: a living room with a park view; and from there extend to a garden flowing into a link in the chain of communal parks, which will serve as meeting grounds, play areas, places to relax; ways to schools, swimming pools, shops, and other community facilities; and not too far from this, industry and employment; all of this scaled to the pedestrian, cut off from the motor car (which will have its ample parking areas and efficient routes designed for flow and freedom from hazards). Facing the parks in this neighborhood unit will be housing types for young and old, single

(Continued on page 338)



# **CAMPUS ARCHITECTURE**

**ARCHITECTURAL RECORD    AUGUST 1957**



## DESIGN IS DESIRED UNDER THE ELMS

ONE ROSE STILL FAILS to make a summer. The spasmodic blooming of well-designed campus buildings falls far short of the design leadership for which we would naturally look to the colleges and universities had we not learned long ago that in these matters ignorance, ineptitude and indifference are rank amidst the ivy. Campus architecture is a melancholy prospect. In the face of enrollments which will double in a decade the continued building of *phonial Colonial*, *tragic Gothic*, and that misbegotten, modern product of incompetent compromise: *neo-Cretin*, insures the imminent flowering of full-grown malignancies in hundreds of our communities.

It is a sad story of wasted opportunities. Opportunities to serve students, impressive because they are socially unsure, intellectually curious, and generally eager to accept whatever has the approval of an authority presumed to be sophisticated. The campus is a matrix in which appreciations are formed. Witness the tastes with which trustees return to their campuses. Today's student is tomorrow's trustee, but he is tomorrow's business, professional, and community leader as well. On the typical American campus he is not being afforded the early, positive experiences and impressions which could inform and refine that awareness of meaning in planning and design out of which he must make essential decisions affecting his business and his community.

But the campuses are wasting even more direct and immediate opportunities to serve the community. They could and should be living laboratories for experiment in planning and design. Their acreage is large and the authority over its use almost uniquely single. Because the campus is becoming increasingly a community in microcosm — with most of its building types and most of its planning problems — every lesson that can be learned there has direct value for the community. There are so few places where a reluctant councilman or company president can see and feel the effects of good planning. Full size campus demonstrations could be powerful persuaders for effective action in our choking towns and in the industrial parks and shopping centers that are ringing them. Instead of museums of fruitless mistakes our campuses could become full scale experiments in building design and technique where, when mistakes *are* made they are made at least in the bold cause of inquiry; in the invigorating search for knowledge which presumably is still education's purpose. Has not the university that asks (or takes in taxes) the support of its community the obligation to return *full* dividends to the donors? Is it inaccurate to observe that they do not and impertinent to suggest that failure is in a leadership short on care and courage? The trustee who may vote good design at the meeting of his company board too often wears a different hat at his college building-committee meetings. The college president who keenly appreciates the issues and nuances in his own field is all too ready to disallow that there are any of consequence in the field of design. In this he is his institution's poorest advertisement. He defers to alumni and trustees when he should lead them. He defers to his superintendent of buildings and grounds. And he can always find a host of architects willing to share in his program of caution and callow indecision. Experts in the righteous double-talk of economy and tradition.

Tragically they will not be found out until they have spoiled some of our best existing and prospective campuses. This will happen despite such examples as are on the following pages. These are neither completely nor uniformly rewarding, but they have all been undertaken by thoughtful men of talent who believe that colleges and universities should build in the spirit in which they teach. *John Knox Shear*



## ONE BILLION A YEAR ON THE 1965 CAMPUS

THOMAS CARLYLE ONCE wrote that "the true University of these days is a Collection of Books." This 19th-century epigram could conceivably become a 20th-century reality, judging from the inexorable movement of the statisticians' trend lines. If we don't expand our facilities on a large scale and in a hurry, we could find ourselves in an era where many a university will have books — and students — and no space.

In quantitative terms, the impending demand for college education, and thus for college facilities, is nothing short of staggering. Census Bureau projections indicate that the number of people in the college-age brackets (18–24 years) is going to climb by nearly two thirds between now and 1970. This isn't just speculation; these youngsters are all alive today, and their numbers are known. It only remains to calculate the effects of mortality and immigration, which do not offer large elements of possible error. We can be sure that the Census age projections won't be far off.

Projecting the college-age population isn't quite the same thing as projecting college enrollment, because higher education is not compulsory. The proportion of potential students who actually show up before the registrars depends on many things, including the general level of prosperity, government and school policies, changing social customs, and so on. But it is certain that actual enrollments will rise substantially. Population increase is just one factor; among other trends which should at least offset the declining stimulus of the G. I. program are (a) increasing emphasis on longer training and more advanced degrees; and (b) generally higher living standards which will make it possible for more people to go to college. The U. S. Office of Education estimates that enrollments will nearly double by 1970.

The pressure for new college facilities won't be the same in all parts of the nation. The Census Bureau has tried to calculate the effects of interstate migration on the college-age population of every state. This is by no means an easy forecasting job, and there is much room for error. But the inevitable conclusion is that the pressure will be much more intense in some places than in others. The West Coast and the Mountain States are in for the largest percentage increases; but there will also be greater-than-average growth in some eastern states — notably Florida, Maryland, Delaware, Ohio, Indiana, New Jersey, Connecticut, and Virginia.

Our college and university facilities are already overburdened, even though today's students come largely from the relatively small baby crops of the Depression. The upsurge in the college-age brackets, however, is beginning right now.

And facilities are being expanded now. Latest government figures show that colleges and universities spent at least \$540 million for plant expansion in 1955; officials think the 1957 total may be about 20 percent higher. It wouldn't be at all unreasonable to find outlays for buildings at well over a billion dollars a year by 1965, when the enrollment squeeze becomes most pronounced. If the pattern of building established in the first half of the current decade holds for the future, close to half of this will go for "instructional buildings" — including classrooms, libraries, athletic buildings, and teaching hospitals. Another quarter or so will be spent on residential buildings of all types, and the remainder will be for research facilities and general service buildings.

Consideration of these quantitative factors is only a part of the story. Providing a high quality of education to all those ready and willing to undertake it will challenge educators to use imagination, innovation, and courage. A goodly share of this challenge will eventually fall in the laps of the architects and engineers who design the physical facilities. *George Cline Smith, Vice President and Economist, F. W. Dodge Corporation*



## THE UNIVERSITY OF ST. THOMAS, HOUSTON

WESTERN CULTURE is traditionally urban. A broad liberal arts training demands an acquaintance with and some relish for music, the theater and the graphic arts. The larger universities create their own urban atmosphere; smaller ones draw upon the facilities of their city. St. Thomas is located so that all of the cultural centers are a short ride away. Most of them are within walking distance.

We are a co-educational liberal arts college with a present enrollment of 325. This figure is expected to grow to 1,000 in 10 years; ultimately to 1,500. Few students own automobiles; the majority use public transportation.

The completed buildings (see plan, right page) will provide classrooms, laboratories, cafeteria, and assembly facilities for 1,500 students on an area about 300 by 900 ft. There will be dormitories for 160 women and a faculty residence for 50. Library, administration, and men's residences can be on nearby properties — as can the future gymnasium and playing field, since no intercollegiate football is contemplated. The total campus will comprise 15 or 20 acres. *The Reverend V. J. Guinan, C.S.B., President of St. Thomas University.*

The design of the modern college campus is, I believe, turning away from the "group building in the park" approach and back to a more formal and more connected building group — the medieval, or 18th century approach rather than the 19th. The concept underlying Eero Saarinen's Concordia College is an example.

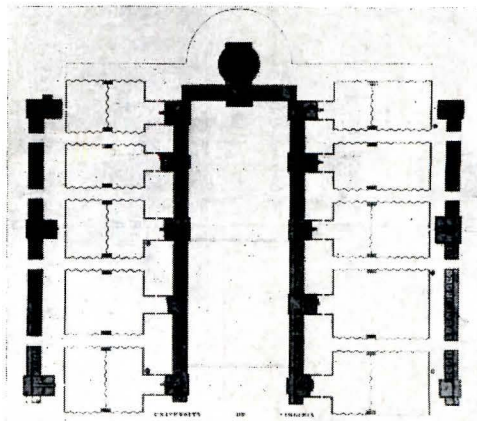
St. Thomas is a more formal design in which there will be a cloister built within and against a cityscape. All of the buildings will face to the pedestrian walk, and the campus proper forms more of a "green street" than a typical American campus. The sense of community that such an enclosure gives a campus seems to be much the same sense of cohesion that a cloister gives a monastery.

One architectural advantage of the closed-walk plan is that the design of the campus consists of the enclosure as such, to which various buildings can front. If later buildings do not conform in size to the preconceived plan, they can nevertheless be fitted with ease into the modular sequence of the covered walk. An important design feature is the chapel, which — by its height and position — dominates the entire court. Symmetry once more becomes, as in Jefferson's plan, the principle of order. *Philip Johnson, Architect* (see also pages 142, 143).

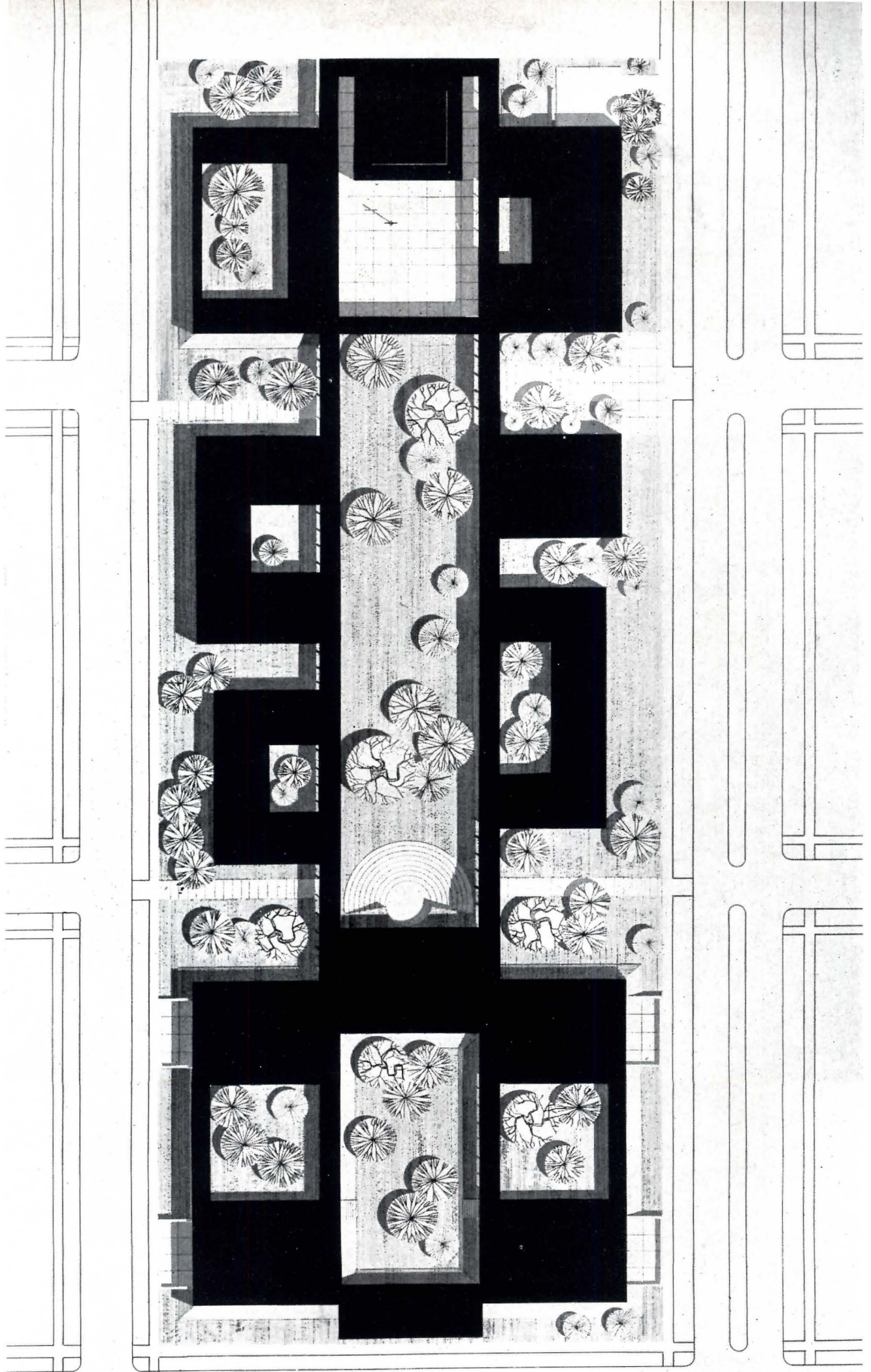
*Architect Johnson further notes, "My plan for St. Thomas is a more formal example than Concordia. There is a cloister walk connecting every building, and the arrangement is more to be compared with Jefferson's University of Virginia, which I very consciously used as a model. But even Jefferson was too open in his plan, with the "U" on the crown of the hill dominating the sweeping view to the south."*

*At right, Jefferson's original plan for the University of Virginia, in which the domed library becomes the focus for the entire campus.*

*Johnson's plan for St. Thomas, right page, places chapel and amphitheater as closures at opposite ends of the central landscaped mall.*









## THE CLASSROOM CAN EVOKE INSPIRATION

**M**OST UNIVERSITY CLASSROOMS contribute little beyond physical facility; they usually comprise four walls, rows of chairs with note-taking arms, and a blackboard. They become merely a place for lecture or discussion. Perhaps some classrooms take on this plain, utilitarian aspect because there is no need — in the case of purely factual courses — for more than the most formal relationship between teacher and student. Or perhaps the primary consideration is economical space use. Yet, there is surely the need for the classroom to become a place of inspiration and stimulation; a place where a mood can be evoked to supplement and strengthen the material taught there. It is to implement this principle that a new kind of classroom has been devised for Brandeis.

The humanities center at Brandeis is planned to provide ten or twelve spacious halls in each of which a long, trustee-type table will be substituted for the more conventional classroom benches or chairs. Around the walls there will be attractive exhibition cases for the documentation of eras and areas being studied. There will be halls devoted to the literary heritage of ancient Greece and Rome; to the moral genius of the Hebrews; the cultural treasures of the English, Americans, French, Spanish, Germans, and Italians. There will be a hall for those philosophies which have immeasurably enriched the humanist tradition.

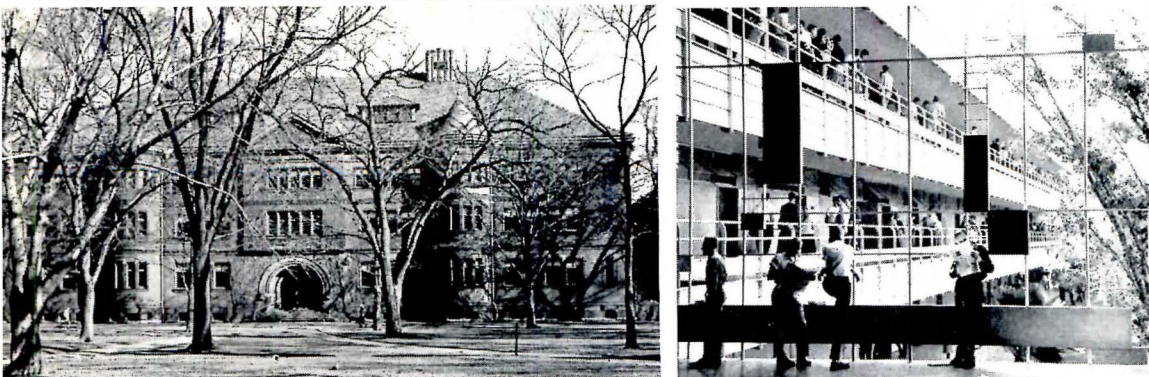
In the same area there will also be an American Civilization Center where similar environments are planned for the great American figures and periods.

Lectures and discussions will retain their scholarly integrity, but students will be receiving their instruction almost literally in the climate of the periods and institutions under study. The documentation can be changed from month to month or augmented through borrowed exhibits. The point is that inspiration is added to instruction; and documentation, manuscripts and rare books are no longer hoarded in sterile, seldom-visited archives.

The concept has endless potentialities for teaching, for influence upon students beyond formal course content, and for campus visitors. Even as a chapel is enriched for spiritual inspiration, so should the classroom for the humanities, for history, or for other social sciences be creatively housed in order that the evocations of mood can combine with the incandescence of imaginative teaching to bring inspiration.

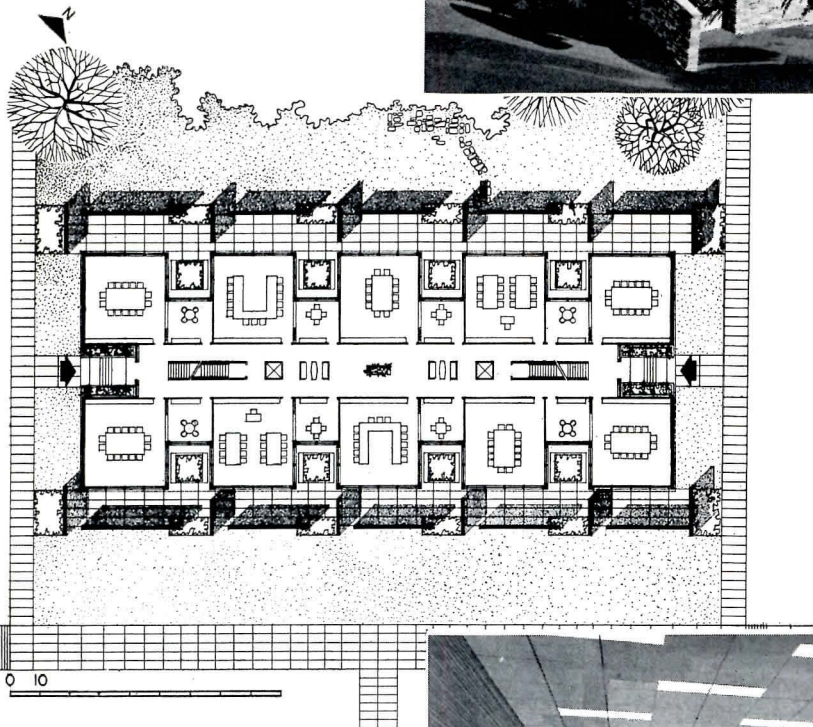
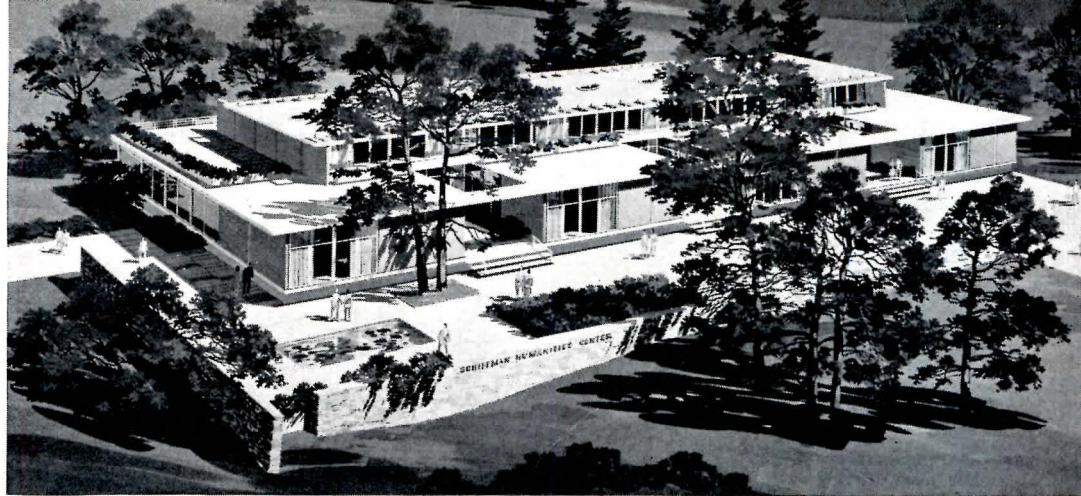
*Dr. Abram L. Sachar, President of Brandeis University.*

Photos l. to r.: Harvard News Office, Miami U. News Bureau, Lawrence H. Miller



Left to right: Sever Hall, Harvard University, Cambridge, 1880, by Henry Hobson Richardson; Memorial Classroom Building, University of Miami, 1947, Coral Gables, 1947, by Robert Law Weed and Marion I. Manley



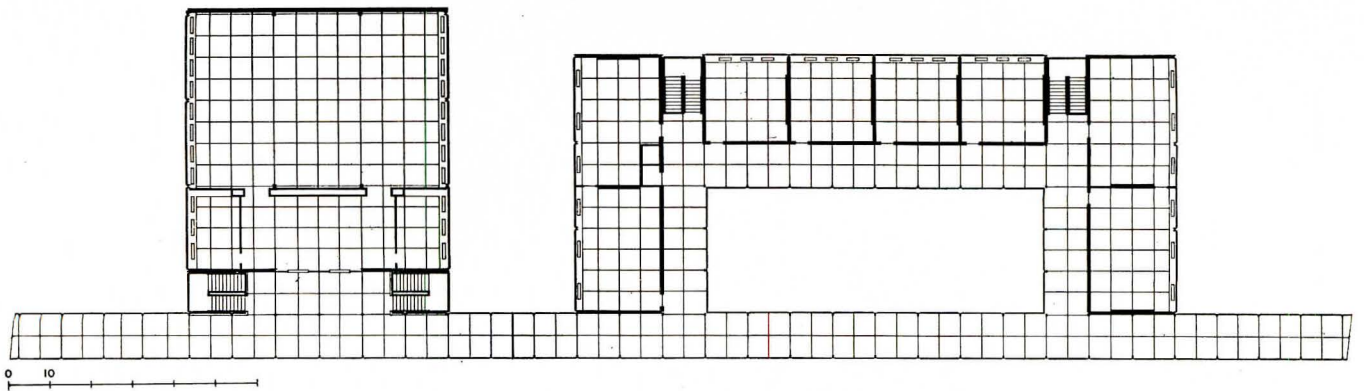


### CLASSROOMS: DESIGNED TO CREATE AN ATMOSPHERE

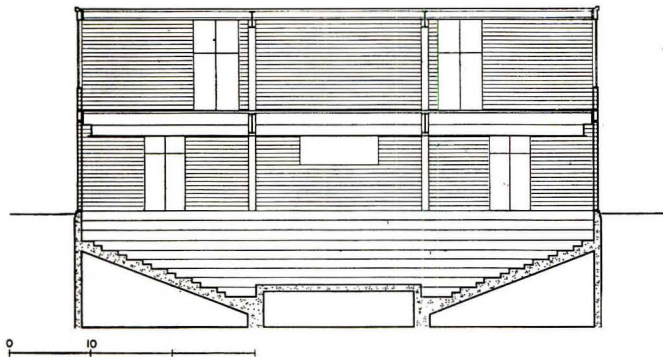
THE SCHIFFMAN Humanities Center for Brandeis University, Waltham, Mass., will house classrooms at ground floor level; faculty offices, two large seminar rooms and washrooms on the second floor.

The unusual design of the classrooms (or seminar rooms) stems from the ideas of University president Sachar (see text at left). The tables can be arranged in various ways — as the plan shows — and folding doors can be opened or closed for further flexibility of space, as needed. Cases for exhibits, documents, and memorabilia will line one wall of each area; the smaller space — which opens to a garden — can be either closed off for private study, or used as a conference room, or made into a small museum dedicated to the period or figure or culture to which the room will be permanently devoted. *Architects: Harrison & Abramovitz*



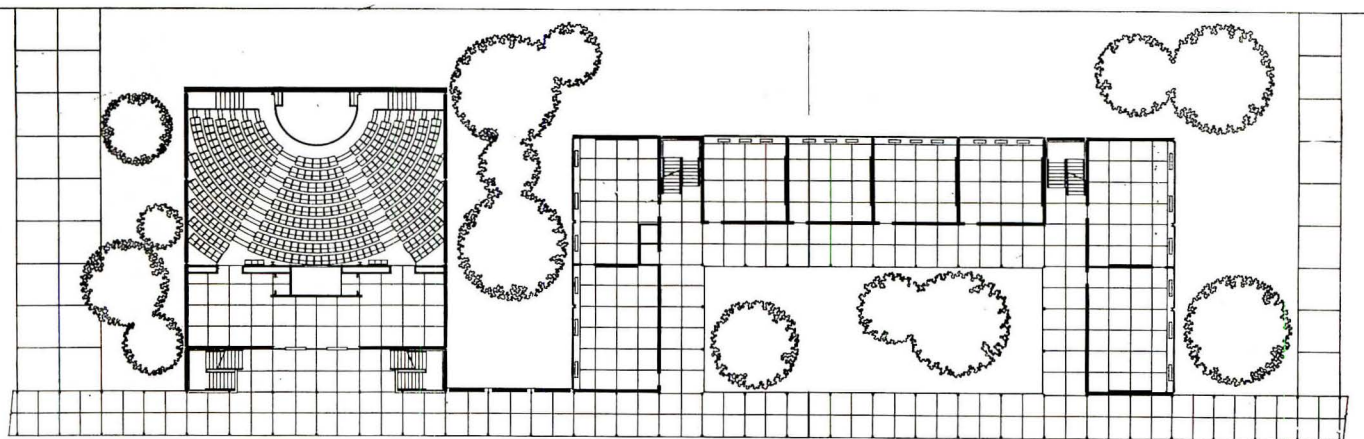


Second Floor

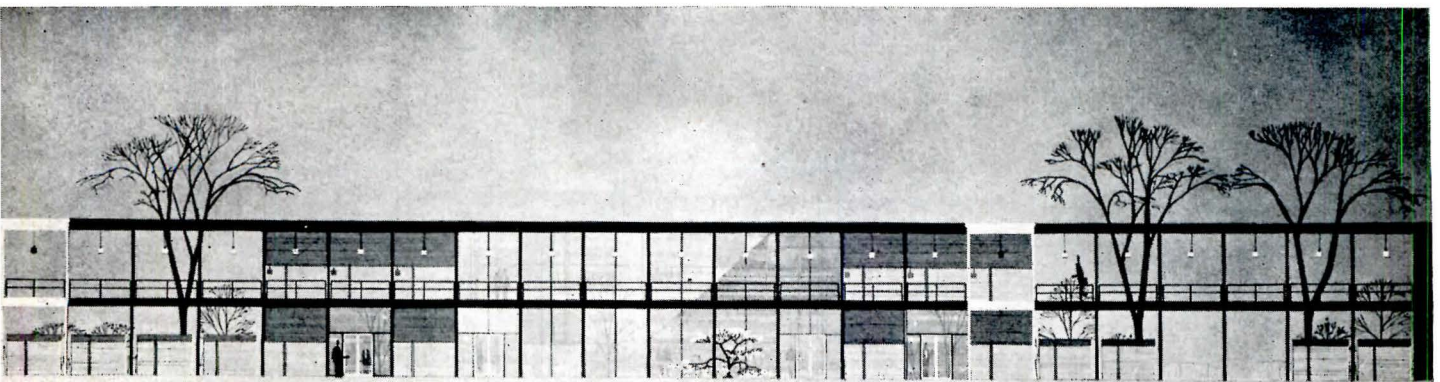


Section

*The concrete walkways connecting all the buildings will have a pebbled surface and natural redwood divider strips. Interior floors throughout will consist of white terrazzo with white bronze divider strips. All interior ceilings will be finished with acoustic tile, except for the fine arts gallery above the assembly hall. Typical classrooms will have white chalkboards of toothy porcelain enamel on steel; the same material will be used for a large panel in the assembly hall for either projection or writing*

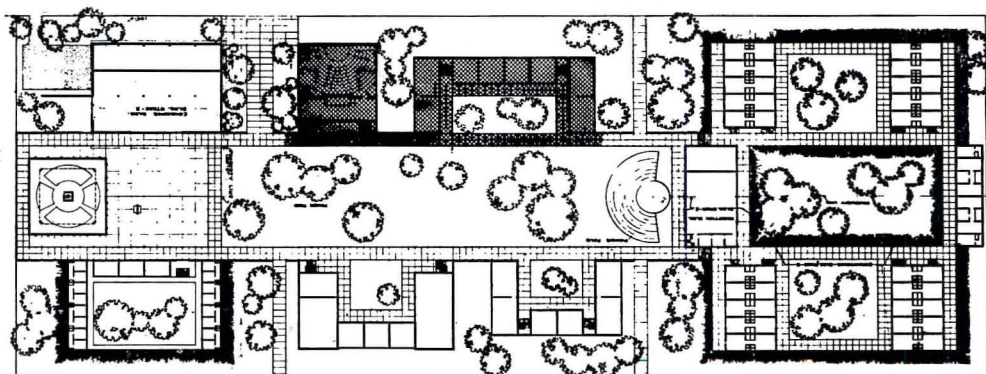
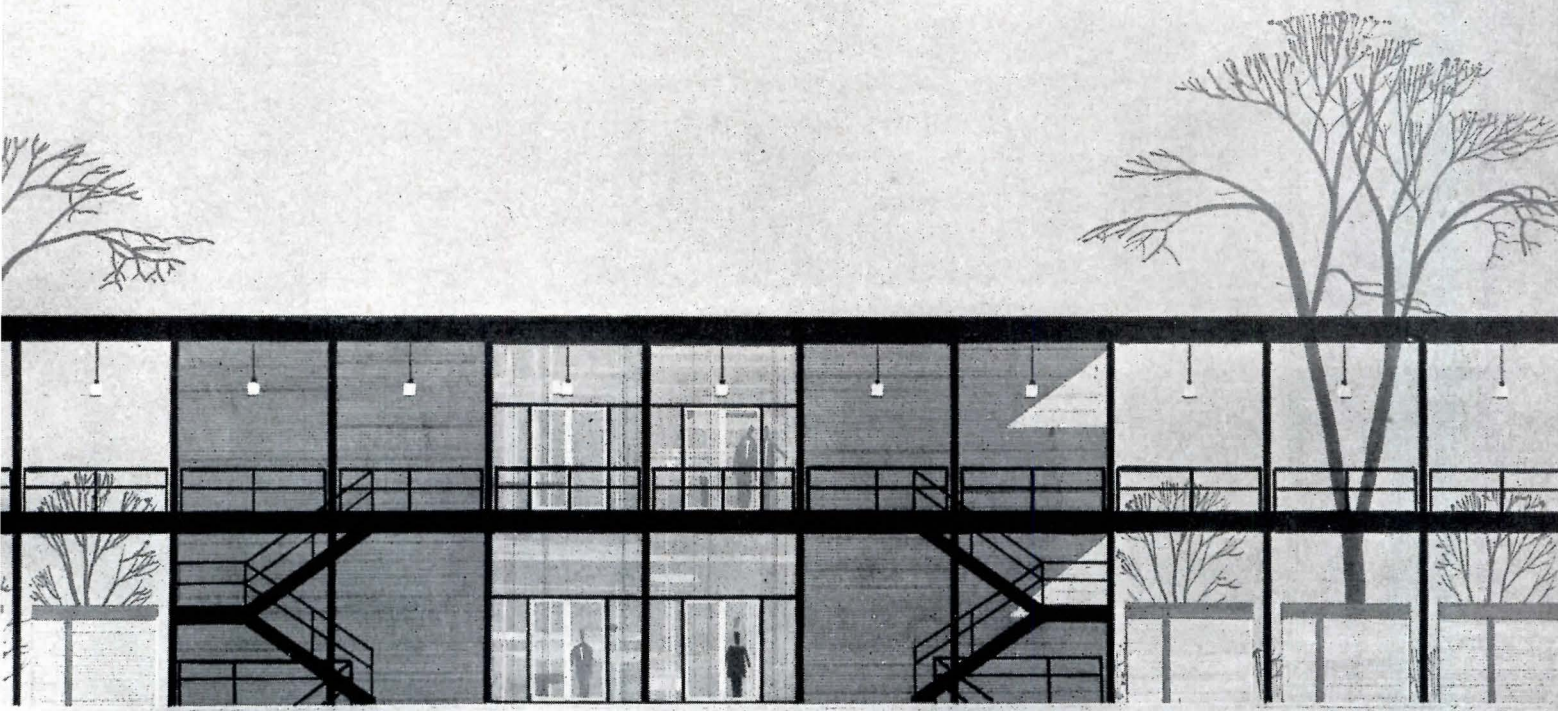


Ground Floor



*Elevation to show the general character of the buildings as they face the central mall*





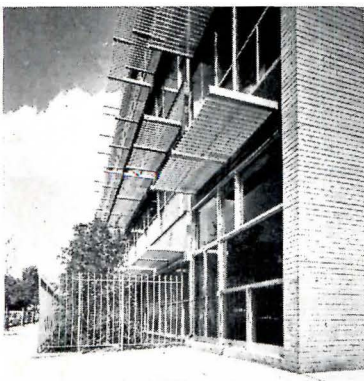
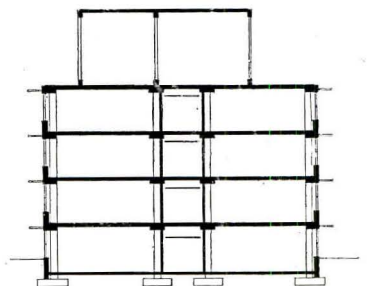
### CLASSROOMS: ELEMENTS FROM A WHOLE CAMPUS FABRIC

FOR ST. THOMAS University in Houston, the first phase of the construction program will consist of erecting the classroom building and the adjacent assembly-fine arts structure. They will be built within the 10'6" modular pattern that will give the entire campus unity, scale, and flexibility. The plans and section of these units are shown at left; their location indicated in the plan above.

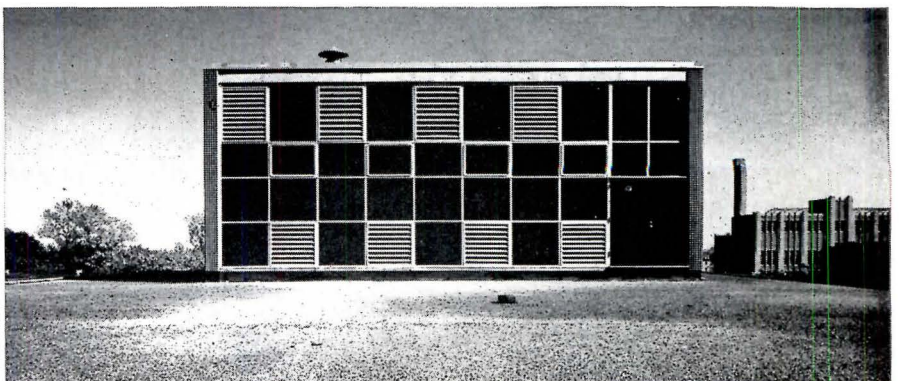
The 350-seat assembly hall is disposed in the fashion of a medical amphitheater with entrance at ground level, and will be centrally air-conditioned.

The exposed structural steel will be painted charcoal gray both inside and out; the infilling panels will consist of a speckled tawny-pink brick laid up in English cross bond. *Architect: Philip Johnson Associates. Supervising Architects: Bolton and Barnstone.*

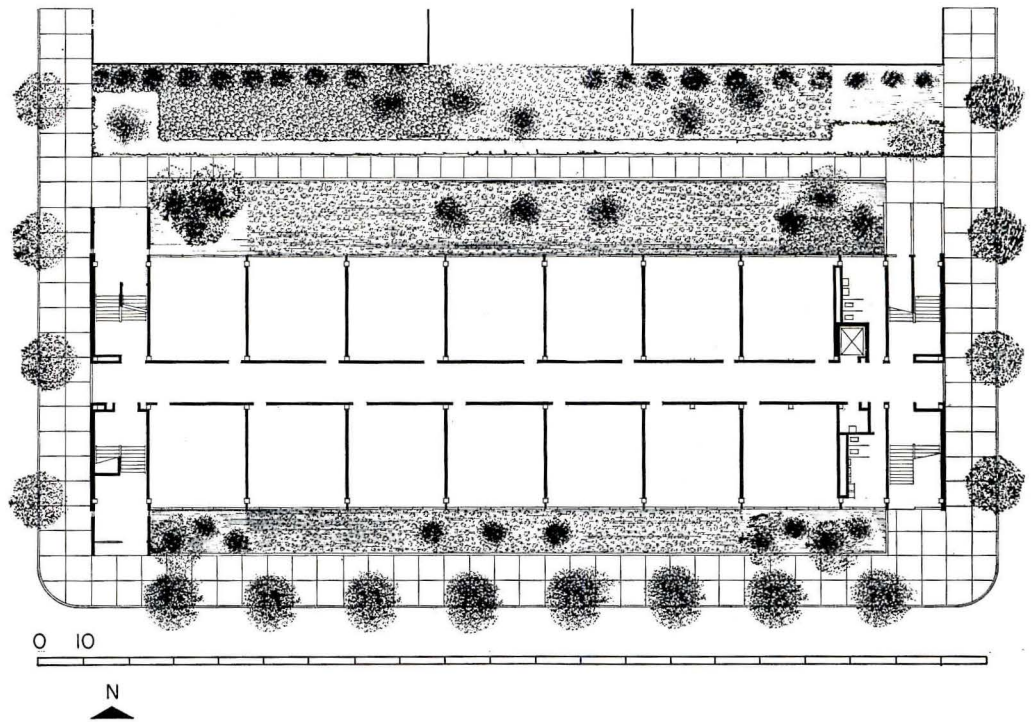
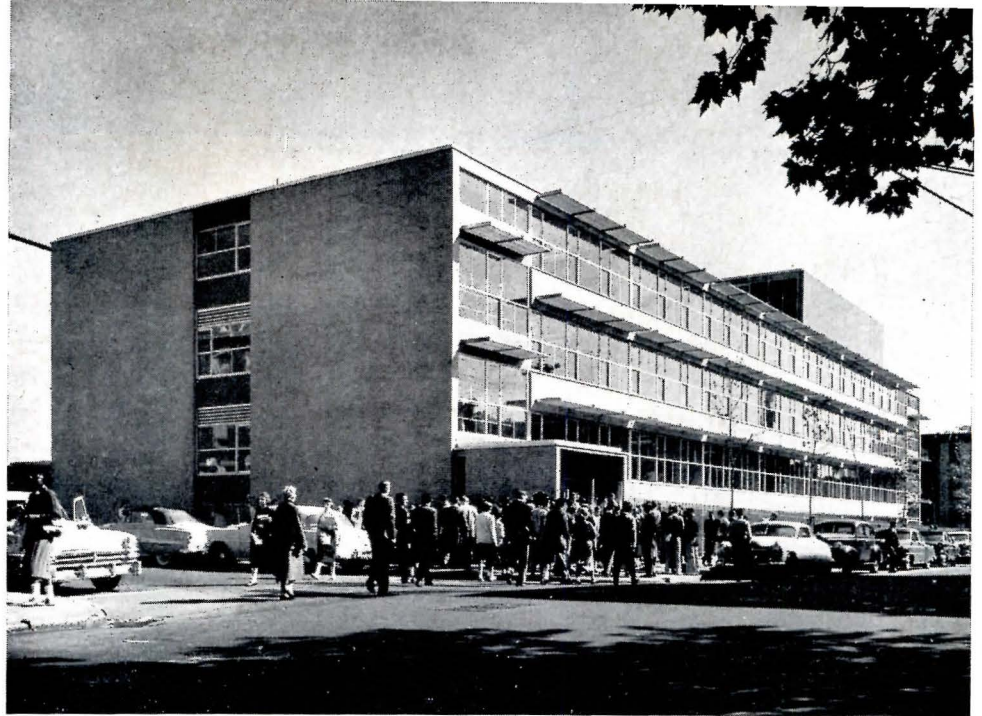




Corliss V. D. Hubbard







### **CLASSROOMS: FOR THE UNIVERSITY IN A LARGE CITY**

THE NEW GENERAL classroom building for Temple University, Philadelphia — Curtis Hall — is in an area characterized by heavy traffic, dense population and excessive land cost. A building to house 50 classrooms for 2,000 students under an 8 A.M. to 10 P.M. schedule 12 months a year had to be built on a plot 100 by 200, and could not rise higher than four stories! These problems were met by a compact, air-conditioned structure with a tan-gray brick and aluminum exterior which features combination sunshade and window-washing platforms made of aluminum subway grating. The necessary mechanical equipment was placed in a penthouse (left) which is fully isolated acoustically. *Architects: Nolen & Swinburne; Consultants: Structural, Allabach & Rennis; Mechanical, A. Ernest D'Ambly; Acoustical: H. V. Munchausen; Landscape Architect: George Patton.*



# GOLDEN GATE THEOLOGICAL SEMINARY

AFTER A LONG SEARCH we have been led to a site which appears to meet all our needs, which is naturally beautiful, and which has a most inspiring outlook. We are confident that the sound approach to planning demonstrated by Mr. Warnecke and his associates will result in the creation of a place of genuine beauty and a landmark that will become an inspiration to the area.

Each of our seminaries has become a valued and respected part of its community, bringing from one to two million a year purchasing power into those communities. From our reception to date we feel that a similar relationship will be established here. Certainly we shall do everything possible to bring it about. We hope to become welcome and worthy members of this growing community of Marin County where, only a few miles from the Golden Gate, we will endeavor to carry on the fine tradition which has become associated with that name. We want the general public to enjoy it with us. Musical and dramatic events — both indoors and out — will be an important part of our program, and we hope the public will participate. **Harold K. Graves, President, Golden Gate Baptist Theological Seminary.**



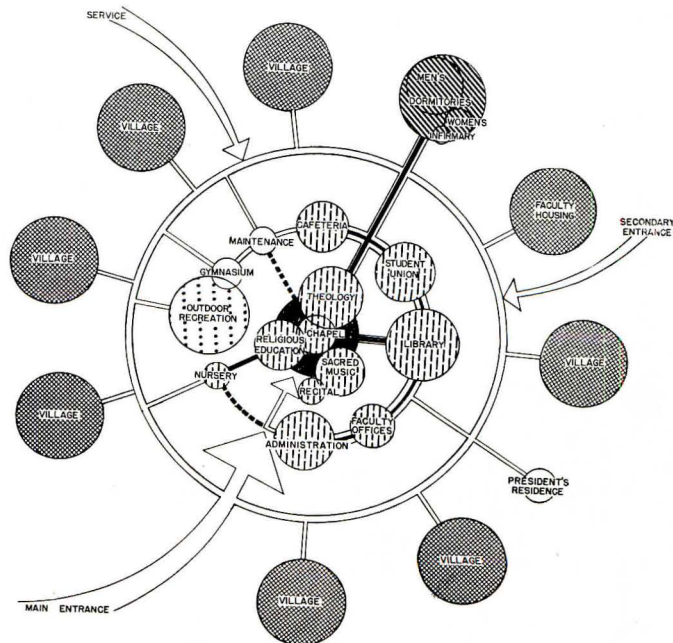
Respect for the existing terrain is a basic premise of the plan. Buildings are deliberately conceived and located to harmonize with and complement the hillsides, valleys and ridges of the site. Landscaping is keyed to the native environment and only in the heart of the seminary will greater formality be developed.

Residence halls are distributed along existing contours so the building axes do not conflict with natural slopes. Also, present valleys and folds are deliberately used to achieve separation and isolation for each residential village.

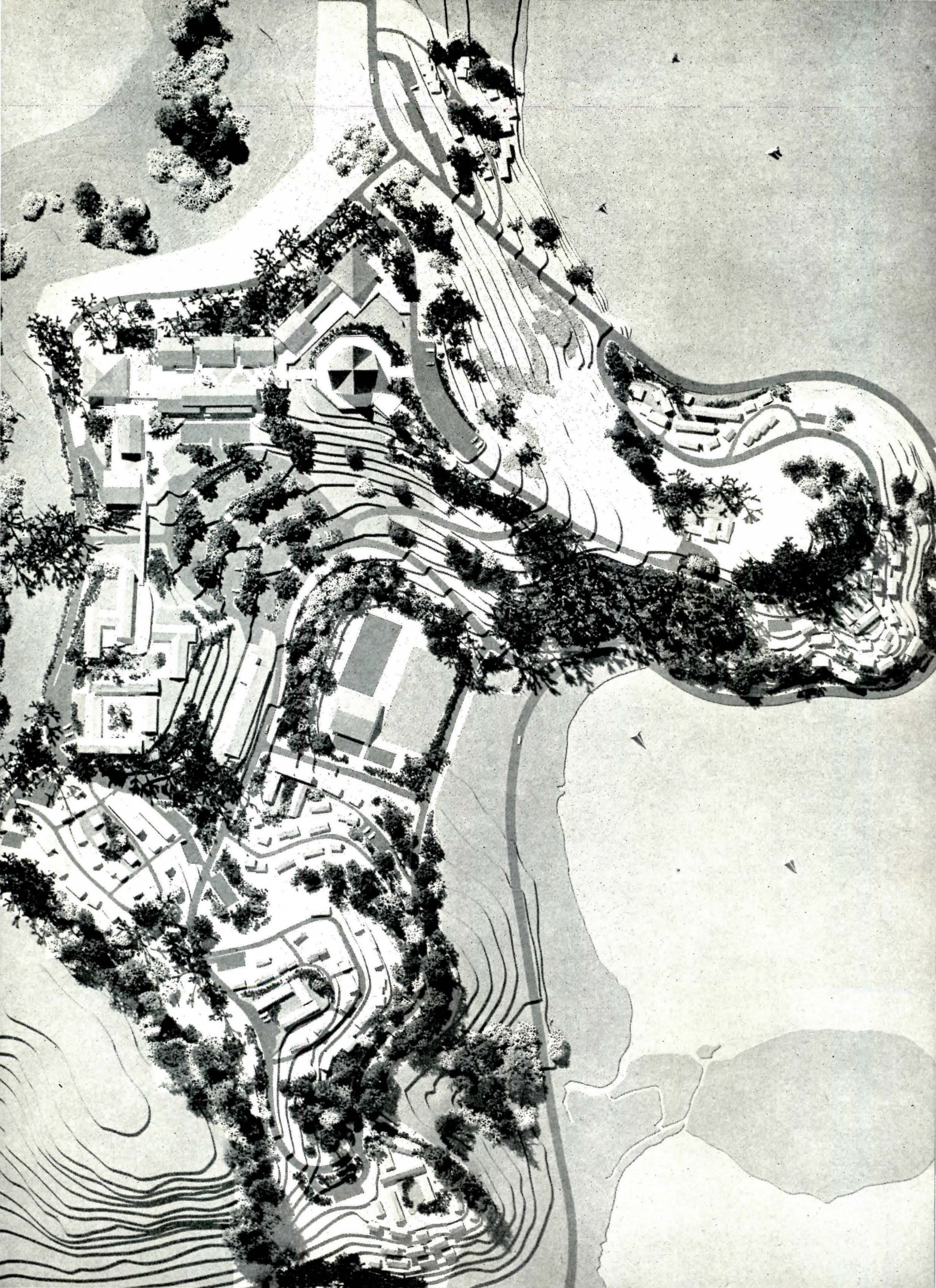
Careful program analysis led to a functional diagram (see below) indicating the relationships of various academic, religious, administrative, and residential components. The site model photograph shows building relationships.

The heart of the seminary is placed on a high knoll, where a central mall — flanked by classrooms and administration building — leads from library to chapel; an adjoining recital hall completes this group. Residence halls are on an adjacent rise, with student union and cafeteria units leading to the linking element, a pedestrian bridge surmounting an access driveway at lower level. **John Carl Warnecke, Architect** (See also pages 150, 151).

Rondal Partridge









## A PROGRAM FOR THE NEW COLLEGE CHAPEL

IT IS NECESSARY to go far beyond the concept of a typical church building when it comes to the writing of a program for a campus chapel. For while the campus chapel should minister to the college community in the ordinary sense of the word, it should also be the symbolic expression of the rediscovered compatibility between the humanities and theology. Ever since the Church was expelled from the dominant position she held in the University before the Renaissance, she has been tempted to stand aloof from secular investigations of the Natural Order. However, in the last 75 years this tendency has been so completely reversed that in some quarters a humanistic Christianity and Judaism has developed that is more secular than religious in nature.

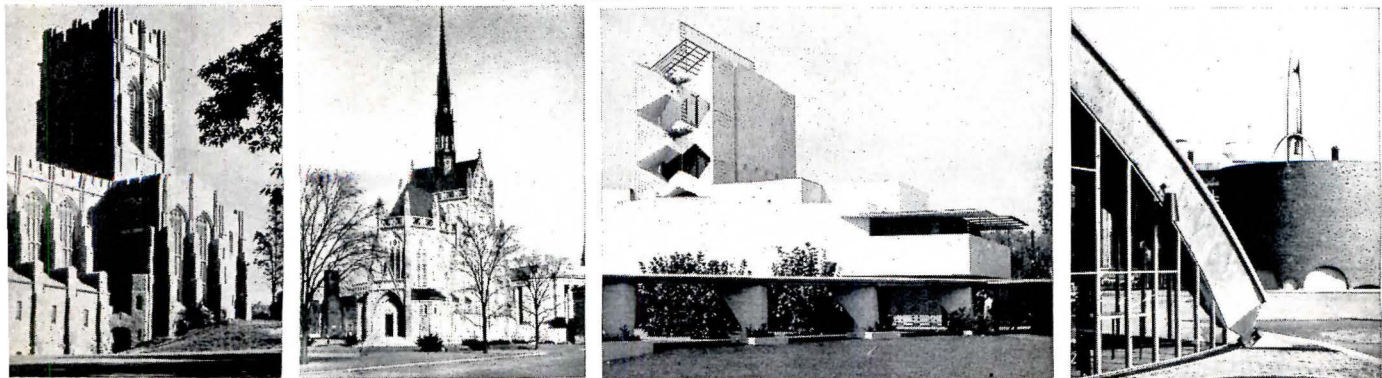
Architecture has participated fully in these extremes. Archeological Traditionalism has often made the campus chapel a self-conscious museum; while uninformed modernity has tended to reduce it to either a lecture hall or a "meditation corner." On the campus today students are chiefly occupied with the study of man, his works and his world. God should be wholeheartedly welcomed into such an enterprise by way of the chapel on the campus.

In architectural terms, what does this mean? It means that the mysterious greatness of God permeates the building but does not completely overwhelm it. It means that nature is admitted, but only as a disciplined worshipper used purposefully to enhance the glory of God rather than as rampant and uninterested decoration for its own sake. It means that the symbol of God's presence — be it pulpit, altar or ark — must be the real focus of attention, where study as well as prayer and praise can be offered to God.

Although designed primarily for worship and preaching, the campus chapel should also provide for their chief by-products; pastoral counseling, free discussion and dedicated fellowship — but it should not try to compete with the student union or college gymnasium in these functions.

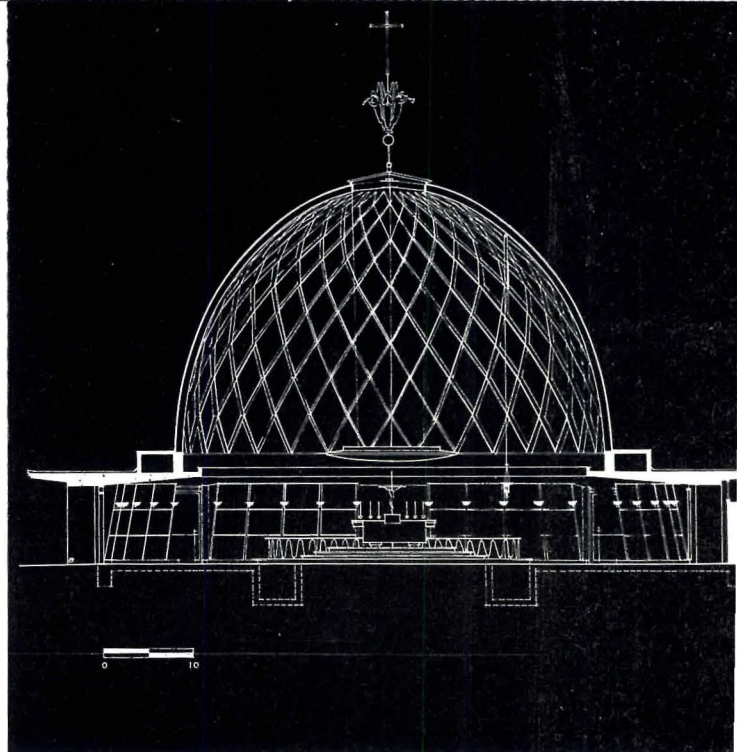
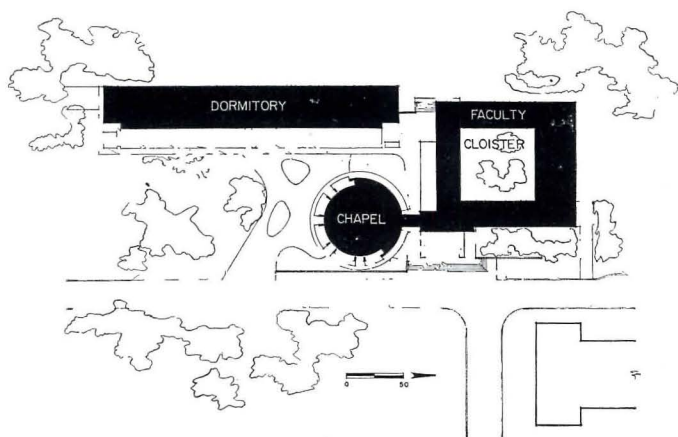
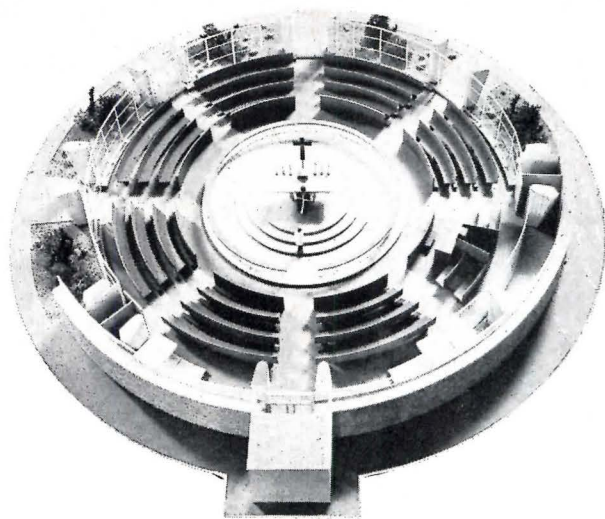
To be faced with and to have explained the nature and purpose of Almighty God in an atmosphere sympathetic to the problems, curiosity, and greatness of man is to bring the humanities and divinities together in God's service. This should be a basic program for the campus chapel. *The Very Reverend Darby Wood Betts, Dean of the Cathedral of St. John, Providence.*

Photos l. to r.: Paul J. Weber, University News Service; Paul Wille, MIT News Service



Left to right: Chapel, U. S. Military Academy, 1908, by Cram & Ferguson; Heinz Memorial Chapel, University of Pittsburgh, 1938, by Charles Z. Klauder; The Annie Pfeiffer Chapel, Florida Southern College, Lakeland, 1941, by Frank Lloyd Wright; Chapel, Massachusetts Institute of Technology, 1955, by Eero Saarinen & Associates

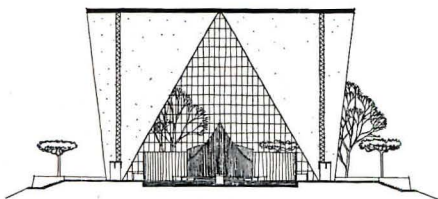
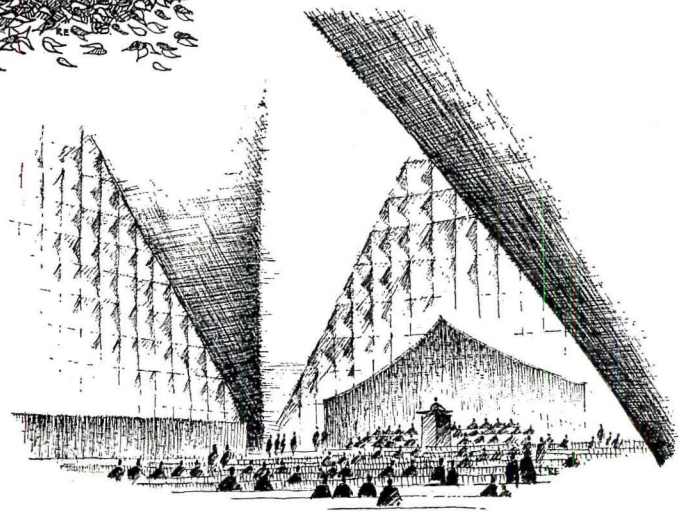
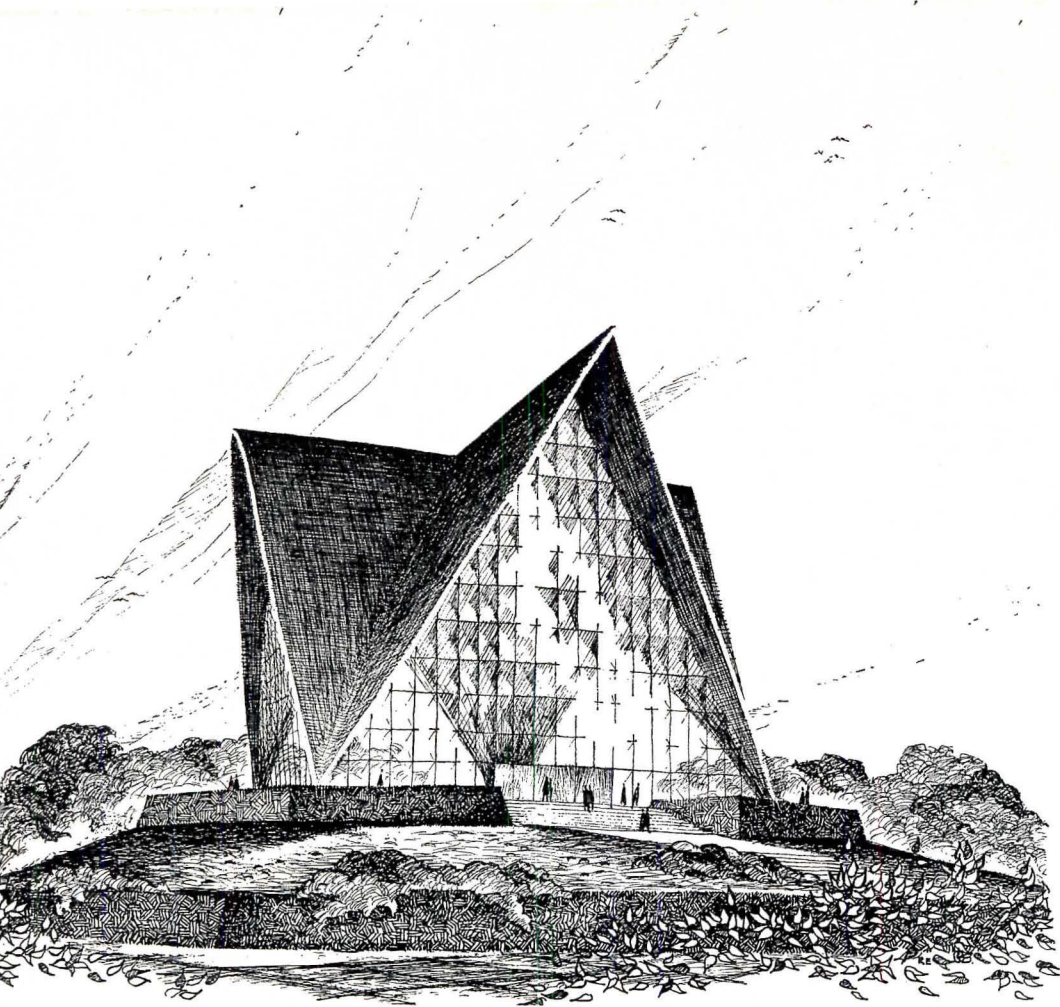




**CHAPELS: CIRCULAR SEATING FOR SPIRITUAL UNITY**

FOR CHAMINADE COLLEGE near St. Louis, a Catholic boys' school, the architects have created an unusual chapel, soon to be built, which will become the visual focus for the entire campus. Architect Murphy says, "The circular form, to accommodate 160, seemed logical and attractive. With the altar centered and no one more than four rows away, the scheme seemed to lend itself to the unity of spirit desired. The lamella wood structure of walnut, pierced at the top by a skylight and variously with several points of brightly colored glass, will make a rich interior. From inside, one will see the lawns and trees; from outside, a glimpse of the altar should be inspiring." *Architects: Murphy & Mackey. Consultants: Structural, Neal Campbell; Lamella roof, G. R. Kiewitt; Mechanical, Ferris & Hamig; Acoustical, Bolt, Beranek & Newman. Sculpture: Hillis Arnold.*



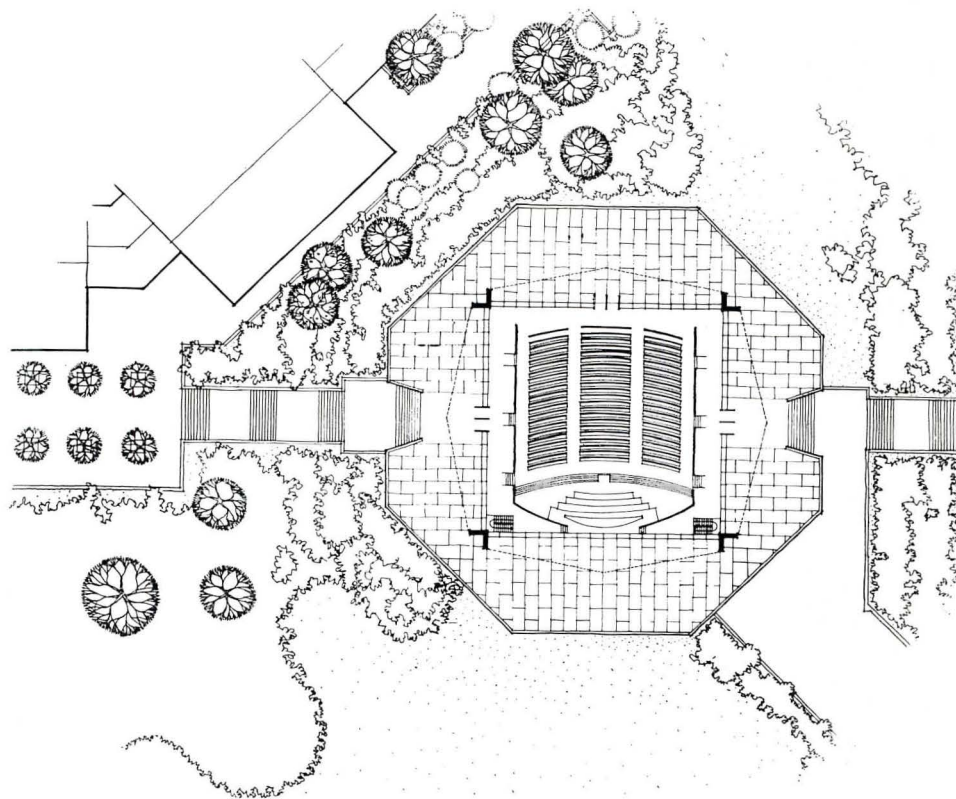


Rondal Partridge



Photo, left, shows actual rise upon which the chapel will be located, as in the model at right



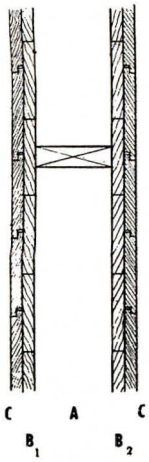


## CHAPELS: GREAT, GLITTERING MOSAICS OF LIGHT

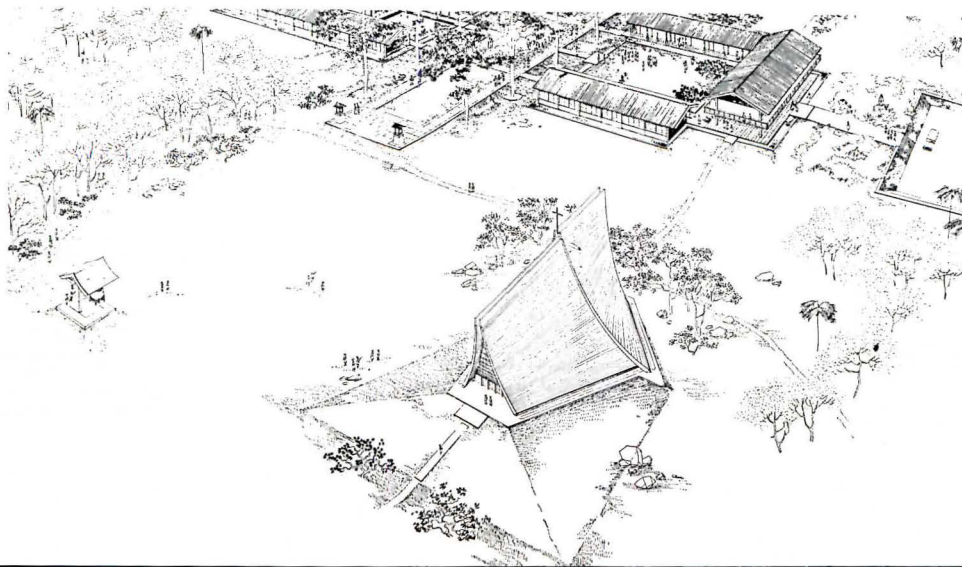
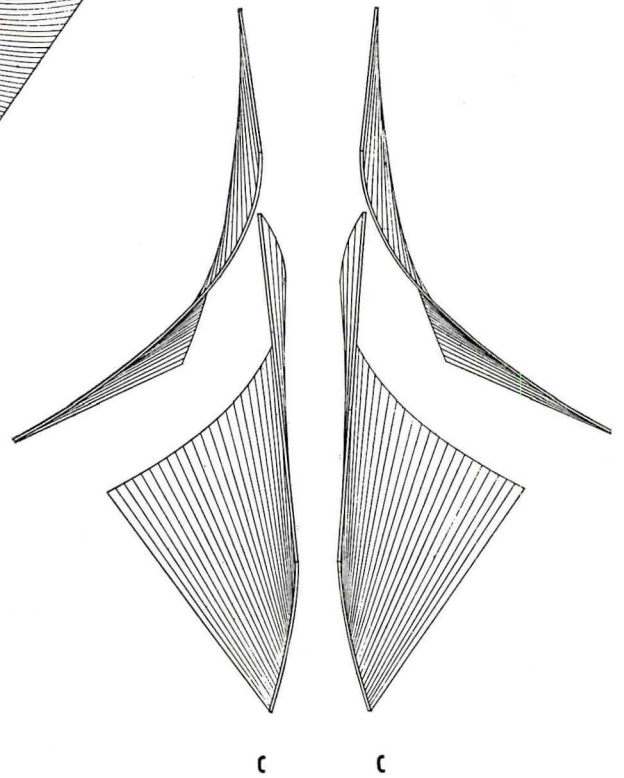
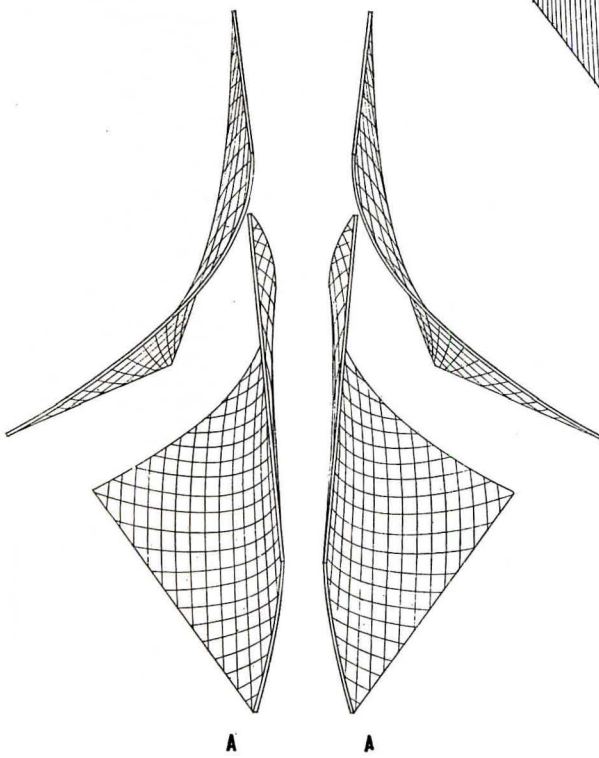
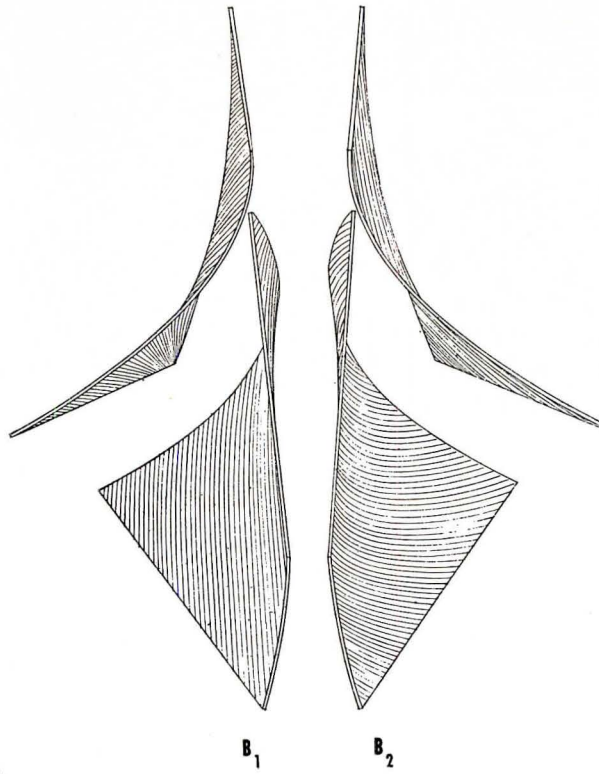
OF HIS CHAPEL DESIGN for the Golden Gate Baptist Theological Seminary (see also pp 146 & 147 for campus plan) Architect Warnecke notes, "This is the single exception to the idea of natural land configuration influencing building shapes. The highest hill was chosen for the chapel; and it culminates the progression of form upwards to a climax in the soaring roof-vaults. Each building side is a great triangular window 100 ft high, infilling the reinforced concrete vault. Planes of colored glass in over-all pattern and a trusswork of either metal or masonry will fill the openings. Problems of wind, sun, weather, etc. will influence the final design for the windows."

*Architect: John Carl Warnecke; Planning Consultant: Lawrence Livingston, Jr.; Landscape Architect: Lawrence Halprin; Structural Engineer: John Blume; Mechanical & Electrical Engineer: G. M. Simonson.*

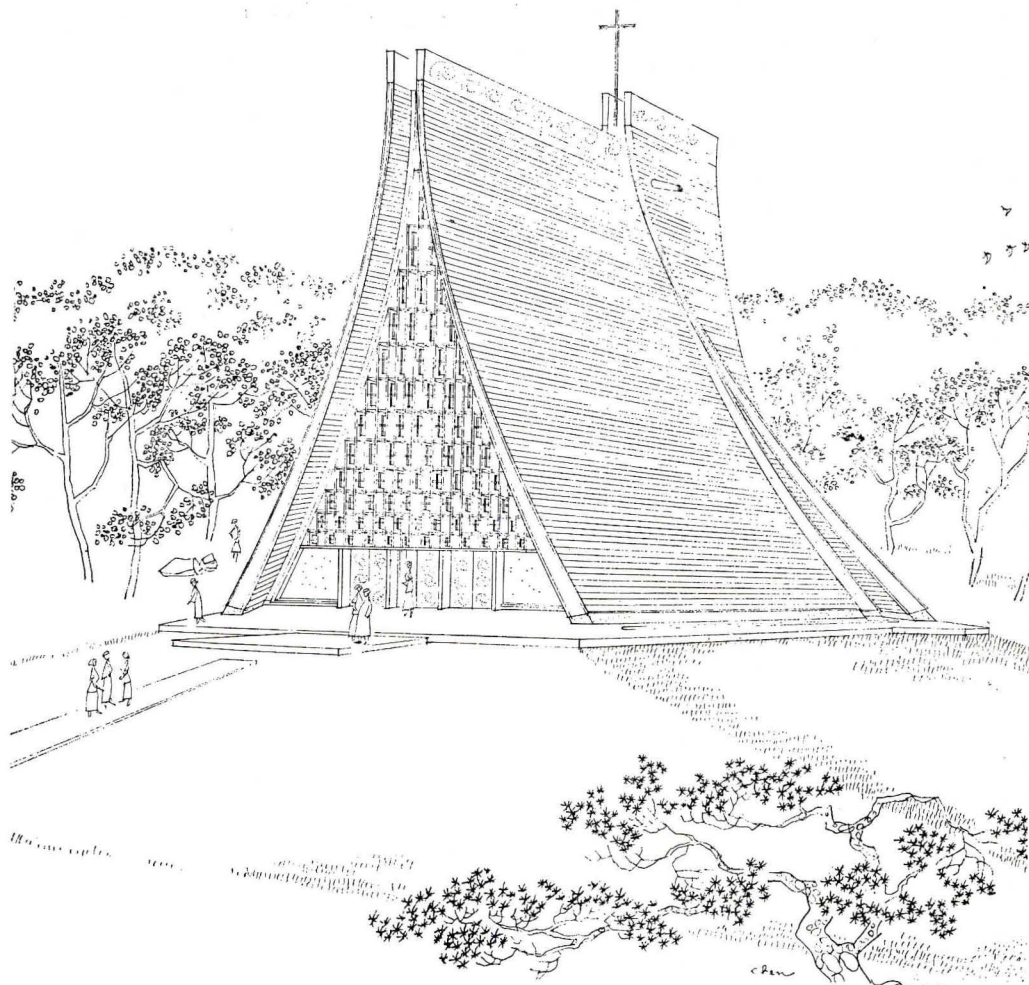
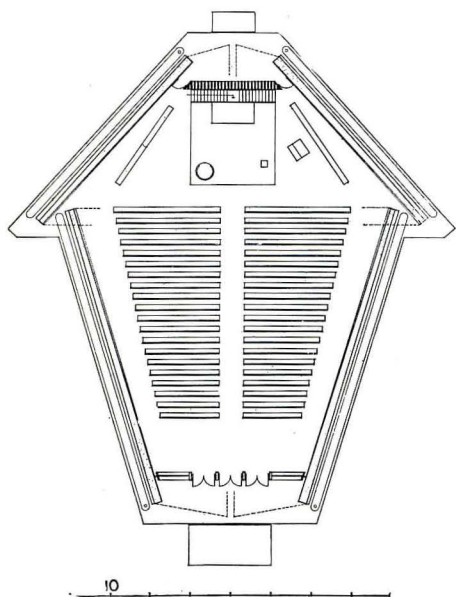




*Plan views of the conoidal shells in three construction phases: A, the 2 by 6 framing; B<sub>1</sub> & B<sub>2</sub>, the inner and outer diagonal sheathing; C, the finish will be horizontally adjusted by overlapping. Hinoki, fine grained and oily, will be used for both interior and exterior finish*







### CHAPELS: THE SHAPE AND LIGHT OF INSPIRING SPACE

TUNGHAI UNIVERSITY, Formosa, will soon have as its architectural dominant a new 500-seat chapel. The graceful curves of the building's shells — conoidal in shape — will rise 72 ft over the sloping site. The conoids, anchored along their bases, will be connected at top and sides only by glass and slender ties. Within, the beautifully formed spaces will soar upward with increasing surge from the dark, red-brick floor to burst skyward through the brilliance of the longitudinal skylit strip. The shells are to be clad both sides in Hinoki; edged with copper; the end-wall screen will be glass and wood. The chapel promises the spiritual uplift a religious building demands within an envelope peculiarly Oriental and delicately serene in character. *Architect: Ieoh Ming Pei; Associates: Chi Kwan Chen and Chao-Kang Chang; Structural Engineer: Georgio Baroni of Roberts and Schaefer.*



# COLLEGE ARCHITECTURE: AN EXPRESSION OF EDUCATIONAL PHILOSOPHY

By ALBERT BUSH-BROWN, *Assistant Professor, Architectural History, Massachusetts Institute of Technology*

SURELY AMONG THE PROBLEMS confronting the United States today none is more important than that of developing a higher form of civic life, one capable of sustaining our cultural arts while embracing the wealth of an urbanized, commercial and industrial world. For more than three hundred years, the American public has supported educational institutions devoted to that end.

Now, an understanding of the function of architecture in education is especially required; when in the next years, our colleges expand and rebuild, it is important that college properties and buildings become instruments of college education and, consequently, of improved civic life.

It seems unbelievable that colleges should so often fail to clarify the educational program to be met by a building, while insisting upon matters of style, which presumably lie outside the competence of the educators. A firm of architects recently hired to design a large library for an eastern university could not begin any planning until two years of interviews with the faculty and administration determined what the educational objectives of the library were to be. Yet that same university, so uncertain about the functioning of a library, insisted that the style of architecture should unquestionably be Gothic!

The public, including college administrators and trustees, has much to learn about architecture. Some, unfortunately, have bought the idea that modern design is cheaper than traditional architecture. That is sometimes true, but it neglects the facts that great architecture is never cheap and that economy usually comes through curtailing performance.

Nearly all colleges have at one time or another adopted the notion that architectural harmony within a campus will result from making buildings conform in style, forgetting that a garden has many plants. But no one glancing at the new pseudo-Georgian buildings at the Harvard Business School or the pueblo-Gothic Firestone Library at Princeton will entertain for a moment longer the belief that conformity in style brings neighborliness. What matters far more are siting, scale, rhythm, balance.

But these are professional matters for architects, not educators, who too often are ready to sacrifice convenience, performance and a chance to do something splendid before giving up alumni and donor sentiments about style.

Did he only know it, the educator-client's proper role is to define educational purpose and insist that he obtain a building conforming to it. In this he will find most architects entirely sympathetic, for recent architects, particularly those who, like Louis Sullivan and Frank Lloyd Wright, have held an environmentalist point of view derived from nineteenth-century thinking about evolution,<sup>1</sup> have generally believed that architecture itself, as the most important part of environment, can be an effective instrument of education. Louis Sullivan, for instance, wrote that we "can never make of our pupils good citizens" so long as we "continue to cram . . . [our] confiding pupils full of trashy notions concerning the Classic and Gothic and utterly ignore . . . [our] own land and people."<sup>2</sup>

Except for Sullivan's intense nationalism and modernism, his belief in the educational effectiveness of architecture has been shared by many American architects who represent diverse points of view both in architecture and in education. Thus, the Gothic Revival architect, Ralph Adams Cram once wrote ". . . I believe that art . . . as a system of spiritual and psychological influence is perhaps the greatest teaching agency . . ."<sup>3</sup> At the dedication of the Greek Revival building, Girard College, at Philadelphia, one orator said, "The adoption of the grandeur and beauty of an ancient architecture for this building must be considered with regard to their influences on the mind and character of the pupils . . ."<sup>4</sup> And Walter Gropius, too, though his style of architecture and beliefs about education are quite different from those of the other three, conceives that architecture is educational: "How can we expect our students to become bold and fearless in thought and action if we encase them in sentimental shrines feigning a culture which has long since disappeared?"<sup>5</sup>

Behind the statements about the moral and intellectual role of architecture lies the conviction, which has been held by many great architects since Ruskin and the

<sup>1</sup>Donald Egbert, "The Idea of Organic Expression and American Architecture," *Evolutionary Thought in America*, edited by Stow Persons, Yale University Press, New Haven, 1950, pp. 336 ff.

<sup>2</sup>Louis Sullivan, *Kindergarten Chats*, Scarab Fraternity Press, 1934, p. 169.

<sup>3</sup>Ralph Adams Cram, *The Gothic Quest*, New York, Baker and Taylor Co., 1907, p. 217.

<sup>4</sup>Joseph R. Chandler, "Address Delivered on the Occasion of the Placing of the Crown-stone, August 29, 1846," *Final Report of the Building Committee of the Girard College for Orphans*, ed., John C. Davis, Philadelphia, L. R. Bailey, 1848, p. 74.

<sup>5</sup>Walter Gropius, "Tradition and the Graduate Center" *Harvard Alumni Bulletin* October 14, 1950, p. 68.



romantic writers of the Continent,<sup>6</sup> that architectural plans, having been generated in the context of certain social, moral, religious and philosophical ideas, must express those cultural origins. Some understanding of that expression in the history of college architecture may help modern architects and educators.

New College, Oxford, finished in 1400, before Romantic theories about the educational function of college architecture were created, may nevertheless be considered as expressing a specific philosophy in education. Its chapel, in the perpendicular style of Gothic architecture that had been developed only fifty years previously in English cathedrals, is placed prominently in the plan. The location of the chapel and the fact that its interior movable partitions, which allowed the hall to serve also as a place for secular assembly, screened a sacred altar from profanation, indicate that the college was founded and supported by the church, that theology was the major study and that the university day was punctuated by required attendance at the chapel services. Like the monastic prototypes of English colleges, the plan of New College, which includes a dining hall, a library, residences and gardens, comprises a self-sufficient community that was walled off defensively against a town which often grew hostile to the gown, as during the Civil Wars in England. A new educational ideal expressed itself in a different, new architectural plan and style: Renaissance humanism developed — not in mediaeval Italian universities like that at Bologna — in private villas, such as that of the de Medici in Florence, or, later, in newly-built academies. A building near Vicenza, which was designed in the first quarter of the sixteenth century by the humanist scholar, Giorgio Trissino, was the academy in which Trissino's protégé, the great architect, Palladio, received part of his education. Trissino modeled his literary criticism and style upon Aristotle and Cicero and, for his academy, he joined two earlier towers by a block of classical design that was derived from Serlio's publication of Roman architecture. His educational program was also inspired by classical models, by the prototype of all academies, that of Plato in ancient Athens.

For the students in Trissino's geometrically designed academy there was the new Renaissance goal for educa-

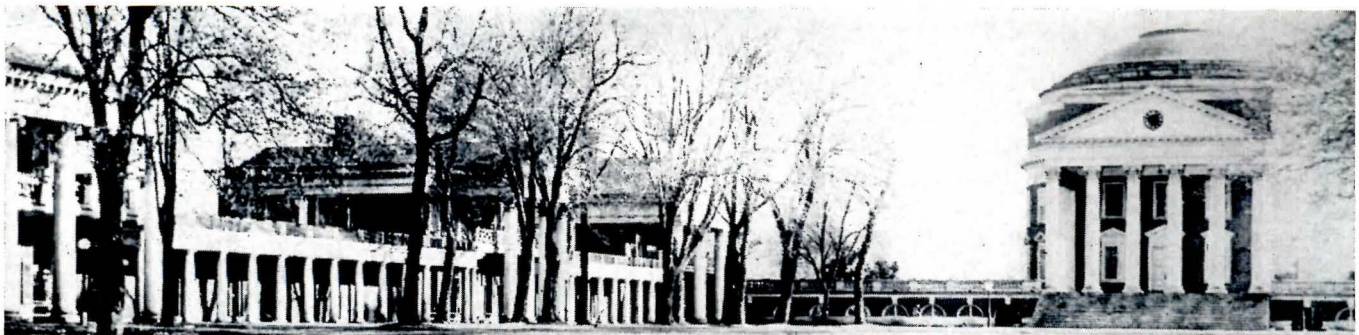
tion: the development of the *uomo universale*, the man, especially the civic leader, who was fitted by a humanistic education to remodel his world. He was not trained in one particular mediaeval profession such as theology or law, nor was he taught to justify everything by reference to Scripture or scholastic exegesis. Humanism offered in the classics and in a Platonic conception of nature a new standard of philosophical and social criticism, encouraged a more admiring estimate of the physical world.

Furthermore, humanism suggested a new ideal manner for realizing or understanding that world; in painting, in 1425, an ideal, geometric system of perspective was developed that approximates visual experience and is precisely delineated; ideal canons of human proportions were established and although they were arbitrary, formal rules, Alberti, for one, believed they corresponded with reality; architectural design through geometry and anatomy, was given absolute standards for determining scale, proportion and shape. In all phases of thought classical humanism revealed a knowledge of nature as ordered by rational principles that conformed to experience more generally than the symbolizing, particularized paintings and catalogues of mediaeval Aristotelian and Christian fidelity.

Plato's psychology was accepted and along with it his theory of education as written in *The Republic*: the Body was to be disciplined by Renaissance arts, such as horsemanship; the Emotions nurtured by music, poetry and oratory; the Will was to be strengthened by the complete discipline required in the residential life; and Reason, at the top of Plato's hierarchy, was to be sharpened by the study of logic and geometry and, especially, the geometric discipline of formal architectural design. For this humanist program of active intellectual and physical life the meditative cloisters, the liturgically-oriented chapel and the "barbarous" Gothic style, multiform and unruled, as Vasari thought, were quite unsuited. Only as material became mastered by geometry and logic, became rationally ordered, was architecture able to express, as it had with the Ancients, Reason's ideal control over matter.<sup>7</sup> Physical perfection in the pure circle or exact cube was then perceived as being moral perfection; for in Renaissance Formalism,

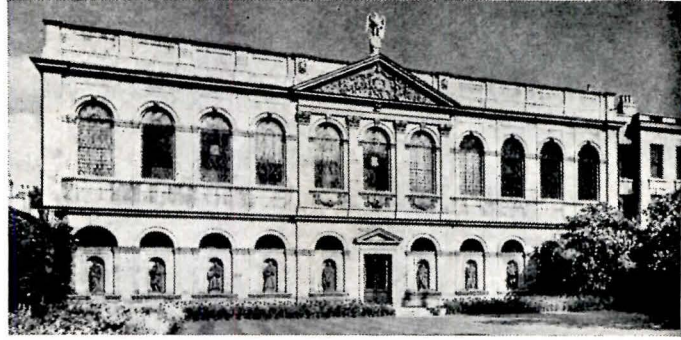
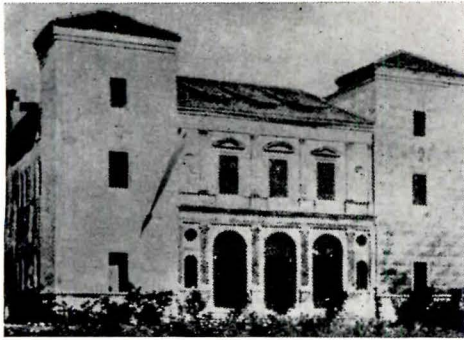
<sup>6</sup> John Ruskin, *The Seven Lamps of Architecture*, New York, Longmans, 1905, IV, parag. 43.

<sup>7</sup> Rudolf Wittkower, *Architectural Principles in the Age of Humanism*, London, The Warburg Institute, 1949, pp 89 ff.



The University of Virginia campus, Thomas Jefferson, architect, an "academical village," with library as focus





Left: Palladio studied here. Right: Sir Christopher Wren's library, Queens College, Oxford, 1694

education and architecture were mutually harmonious in their antique origins, their values and their apotheosis of abstract, universal reason.

New types of residential plan and a less classical style originated with the creation of Dissenting Academies and small colleges at Oxford. Worcester College is typical of those new utilitarian buildings of about 1700 which small, less wealthy colleges were erecting. Everything is in one hall; the multiple entry system, as in our early Colonial designs, is retained; the central portion is devoted to residences; in one wing there is a chapel; in the other, classrooms.

It was this type of single, compact building, derived ultimately from the Italian Renaissance, that came to America at Harvard, Yale and Princeton in the eighteenth century. In the last decade of the seventeenth century, the original building at William and Mary, the so-called "Wren" building, took this form. Its Renaissance style, like that of the building at Worcester College, was no longer classical in reference; Vitruvius had been absorbed. New authorities were replacing Plato also: Bacon's science replaced Aristotle; Newton's physics replaced the Greek; Locke's account of society left no foundation for Plato's state, just as his philosophy of empiricism restricts if not eliminates, ancient metaphysics. Education and its texts, like architectural style, became Anglicized.

While they were economical and compact, the single large buildings such as Nassau Hall at Princeton, had obvious disadvantages; their long corridors provided ample space for riotous gatherings. The usually elegant Thomas Jefferson, who knew the William and Mary dormitory in his own student days, called such buildings, "dens of filth, noise, and fetid air."<sup>8</sup> When he designed the University of Virginia, therefore, Jefferson made an arrangement of many small, separate buildings and connected them by porticoes, probably inspired by the ancient Roman villa plan that had been taken up by French chateaux and their dependencies, as at Marly. The plan, accepted in 1819, formed an "academical village" which ensured privacy and quiet, formed a community, isolated disease, and lessened the dangers of fire. At the head of the lawn, between the dormitories and faculty pavilions, the library, not the European

church, was the focus of the plan; for it was Jefferson's contention that education, like government, should not be ruined by those ecclesiastical controls detrimental to intellectual freedom, as he had witnessed both in this country and in the Jesuitical teaching in Europe. The liberal arts courses, especially the study of Greek and Roman history, were designed to strengthen students against despotism both in its political and religious forms.

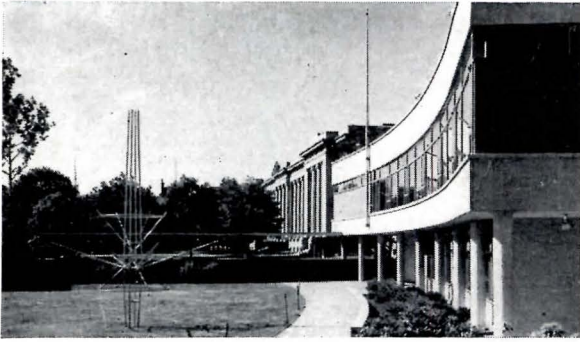
The architectural style of the University of Virginia set the classical educational goal into material form. Several of the pavilions were derived from ancient Roman monuments, and the library, in which one-fifth of the books had classical titles, was a reproduction of half-scale of the Pantheon in Rome. These ancient temples were intended to provide examples of great architectural refinement in the architectural lectures; for with humanism, architecture was considered a necessary part of a gentleman's training.

Other secular forms of romantic thinking in the twentieth century, especially nationalistic emphasis upon our own American tradition, garbed the residential, liberal arts education in a Colonial style, as at Harvard and Dartmouth. And before the First World War the Beaux-Arts, Academic style, inherited through France from Rome, with columns, domes and great staircases, threatened to become our national university style at Columbia, Harvard and the University of California. Often a version of the Beaux-Arts style was used for institutions that specialized in one branch of learning, such as engineering; for a school of engineering such as the Massachusetts Institute of Technology was based ultimately upon the Roman origins of the "art of genius" and French institutions in the eighteenth century that continued the Roman technical competence.

About 1925, still, we were using historical styles to express the origins and nature of our cultural and educational beliefs. But in Germany both education and architecture had made a conscious attempt to seek new methods and forms. For instance, Walter Gropius' *Bauhaus*, framed in steel and glass in mechanistic style, taught architects and artists by practical work with machinery, by the study of science and geometry, and by manual work with materials; the educational methods and goals had a nonhistorical basis and the liberal arts, including history, were almost totally neglected.

<sup>8</sup> Quoted in Karl Lehmann, *Thomas Jefferson, American Humanist*, New York, The Macmillan Company, 1947, p. 185.





*Graduate Center, Harvard, by The Architects Collaborative*

"Teaching methods of approach to problems . . . , rather than giving them too many fixed results will broaden the student's vision and make him independent and mature."<sup>9</sup> The requirements of an industrial society established the practical problems and set the educational goals.

When, after 1935, the European industrial architects emigrated to America, they found many supporters; for the point of view about education and architecture, in which modern industry, mechanism and utilitarianism are praised, was still popular in the United States. We first met that point of view at the Johns Hopkins, and it flourished at many great American universities in the twentieth century, including Harvard University. Many Americans visited the same Swiss schools of Pestalozzi and Fellenberg from which the German educators, Froebel and ultimately Gropius, got their ideas. The early work of Horace Mann and Henry Barnard has been developed in this country by many in the twentieth century who, like John Dewey, are "Progressive" educators; this native group received the modern European progressive architects and educators enthusiastically when, before the Second World War, they emigrated to the United States. Richard Neutra built a famous school in California that was designed for the new education, and it was in the European version of modern architecture. Yet America was not without its own kind of progressive architects and educators.

The foremost exponent of a type of "Progressivism" in American education was the pragmatist philosopher

<sup>9</sup> Walter Gropius, "Essentials for Architectural Education," *PM*, iv, 5, March 1938, no page.

John Dewey. His work in adapting the subject-matter and teaching methods of traditional education to a student's individual abilities and concerns (by manual work, art, re-creation of history through dramatics) was conceived to develop greater emotional balance and self-reliance in a student. Dewey's educational philosophy, though progressive, is quite different from that of Gropius. It has been characteristic of Deweyan educational methods, as opposed to the more mechanistic forms of "Progressivism," such as Gropius', to retain the liberal arts, particularly history, language and literature, in order to encourage imagination, to humanize originally by bringing the refinements of history to it, and, through group creation, to develop the social and communicative activities of a student in relation to the work of his classmates. Architecturally, such goals would encourage the creation of an architectural style that would include many of the principles, such as individuality, diversity, regard for natural beauty, and variety, which were characteristic of Cram's architecture — but now in a modern style.

Thus, by considering the architecture in conjunction with the educational programs at several schools, colleges and universities, it has been possible to show a few of the broad connections existing between architecture and education. Naturally many other factors not considered here influence college architecture: fashion, the whims of donors, technology, finances — all are influential. But the strong connections possible between architecture and education suggest the need for concern in this area.

Many new ideas need to be explored by educators firmly intent upon deciding issues on the basis of educational philosophy. Architects need the educator's answers to questions of many kinds. What happens when students live in residential colleges? What happens when they have inadequate dormitories? Are high standards of living valuable? Should libraries be departmentalized? Can students learn science better by lecture demonstrations or in laboratories?

These are questions to which architects need answers. The answers would help architects to design buildings offering greater performance. For architecture is educationally effective to the degree that it is in cultural harmony with the educational goals and methods of the institution.



*Left: Ralph Adams Cram's Graduate College at Princeton. Right: Eliot House, Harvard, more elegant than seems possible today*



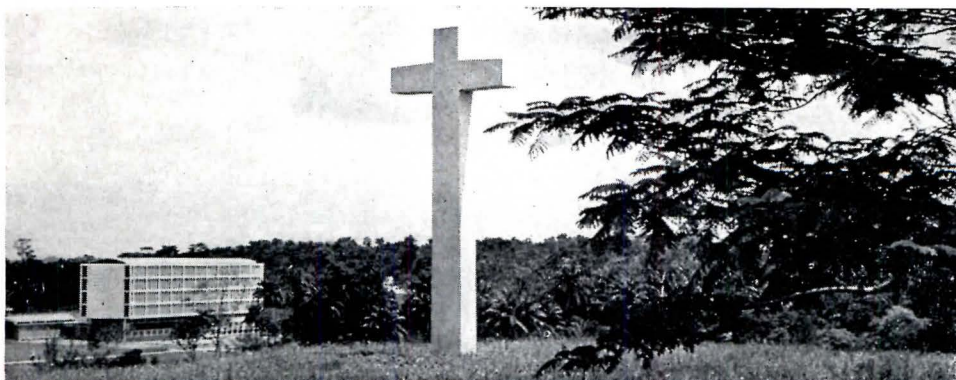
## AN AFRICAN ENVIRONMENT MOLDS A CAMPUS

FOR THE FIRST West African University College at Ibadan in Nigeria a site covering five square miles of rolling land was chosen. The University is located on a portion selected for its accessibility to a main road and for its central saddle of land flat enough for playing fields. The plan is a concentrated one emphasizing minimum walking distances and the integral character of the residential colleges. The buildings, moreover, combine proximity with an east-west orientation that allows the prevailing southwest winds to penetrate the residential quadrangles.

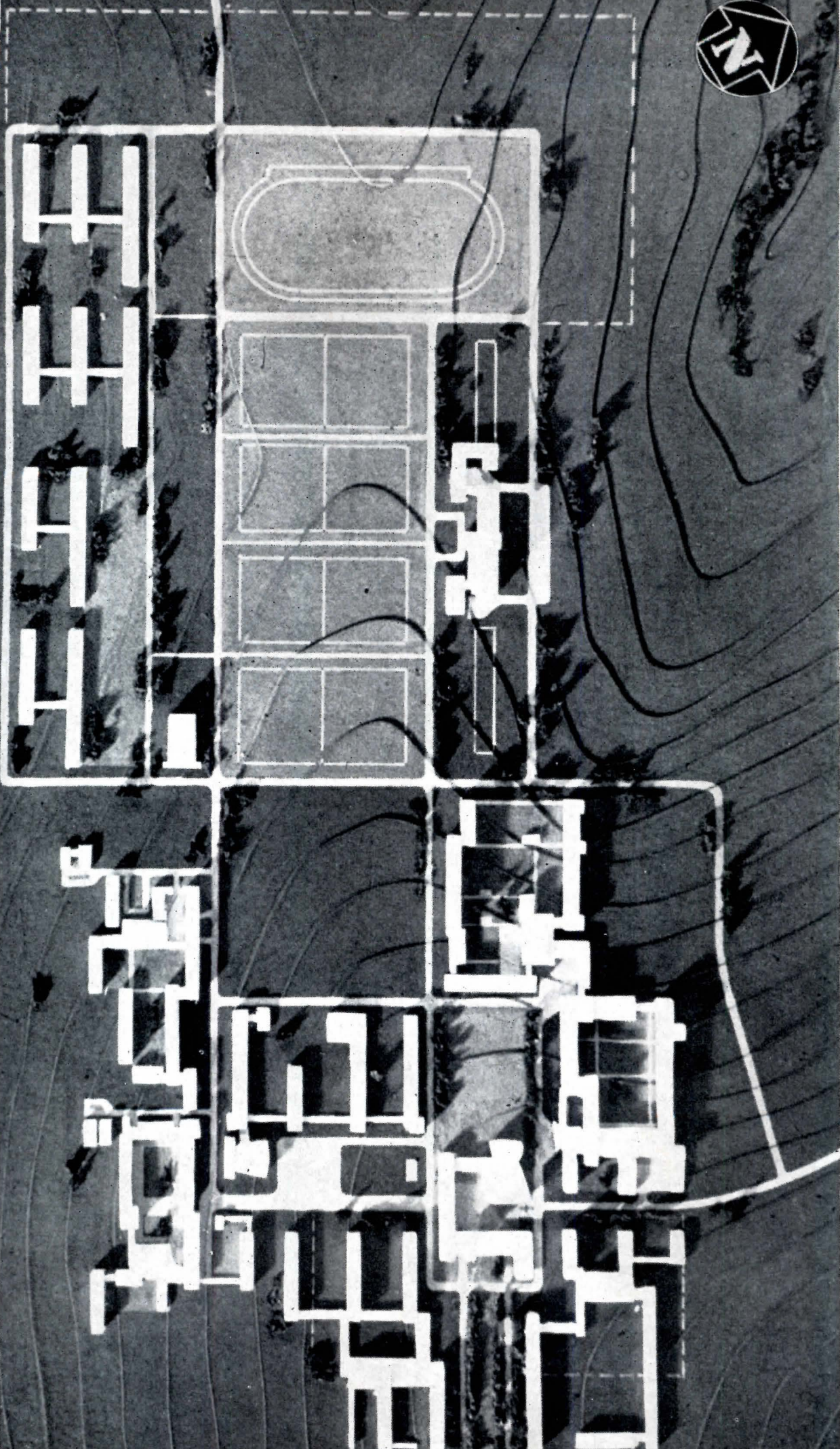
The residential colleges and the teaching buildings are fairly closely grouped around the central administrative block (*lower right, opposite*), which is approached from the main road. In the block are the administration building and its attached bookshop, plus Trenchard Hall (*larger flared building*), an all-purpose assembly and social hall accommodating nearly 1,000. Near Trenchard a tower both counterweights the mass of the hall and serves as central symbol for the University. A succession of arts faculty buildings, connected by a covered way with many steps, is set on a southward sloping grade. At the low point is the Arts Theater (*smaller flared building*), which seats 300 and is equipped for lectures, plays, and films.

There are four residential colleges, located on the periphery of the administration-teaching area. Two future colleges are also indicated (*bottom*) on the site model. The present colleges house about 500 students — the planned expansion will double the number. The students live singly in study-bedrooms in blocks that give the impression of forming courtyards. Each college, with its dining halls, senior and junior common rooms, fellow's apartment, and porter's lodge forms a unified whole. This has proved to be a successful arrangement, promoting a decentralized form of discipline and guidance. Throughout the colleges a 10-foot module is used, but there is variety in the different kinds of cast concrete balcony fronts, which nearly everywhere face the breeze, and in the planning of the dining halls, common rooms, and apartments. The steeply falling land provides an additional esthetic dimension, the grand scale of which is accentuated by the long roof lines and many dropped terraces.

There are four one-story laboratories (*upper left*). The library (*upper right*) is presented on a following page. *E. Maxwell Fry.*









## THE CAMPUS LIBRARY AND THE ARCHITECT

THE MAJOR PROBLEM in university library design is to find a competent architect who will really study the library business." This statement came from the librarian of a university that has recently completed a four-million-dollar building.

Why should a university library demand any more competence on the part of the architect than other college buildings? Certainly beyond the satisfying of psychological and space needs of demanding librarians, cranky professors, and book-shy students, lies the most important form problem of expressing the heart of an educational institution in such a way that the projected building forms will symbolize the university and inspire students for years to come.

*Basic Concept.* The architect first approaching the design of a campus library will discover a divergence of ideas among librarians, even though they may agree on major functions. Divergence results partly from individual attitudes and experiences, partly from basic concepts which vary with the nature of the institution: location; ownership; enrollment; curricular emphasis; nature of service.

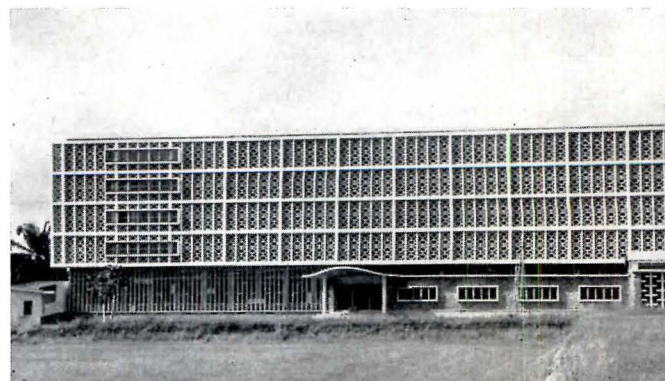
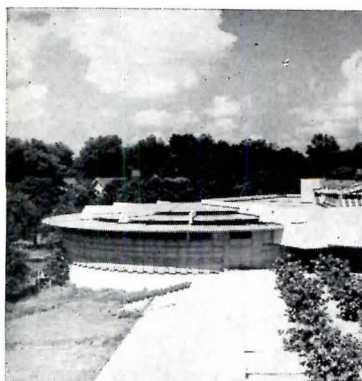
*Bulk Storage and Expansion.* No easy solution to this critical problem has yet been found. Microfilm has certain excellent uses within the library, but neither film, TV, nor electronic gadgets have changed radically the size and shape of books, shelves, and stacks as we know them.

*Flexibility.* Modular structure and the open plan have been freely adapted to library layout. Recently designed library plans resemble the supermarket with reading oases strategically placed. The rest of the library has invaded the stack areas; the "corridor" scheme of 1946 seems virtually obsolete. With uniform column spacing, ceiling heights, and mechanical treatment, flexibility is no longer a problem.

*Readers in the Books.* As a direct result of the new flexibility in plan, librarians have been quick to place readers and books in closer proximity and with greater comfort and intimacy than ever before; many have planned for two thirds of all seating within the stack area. Browsers become readers.

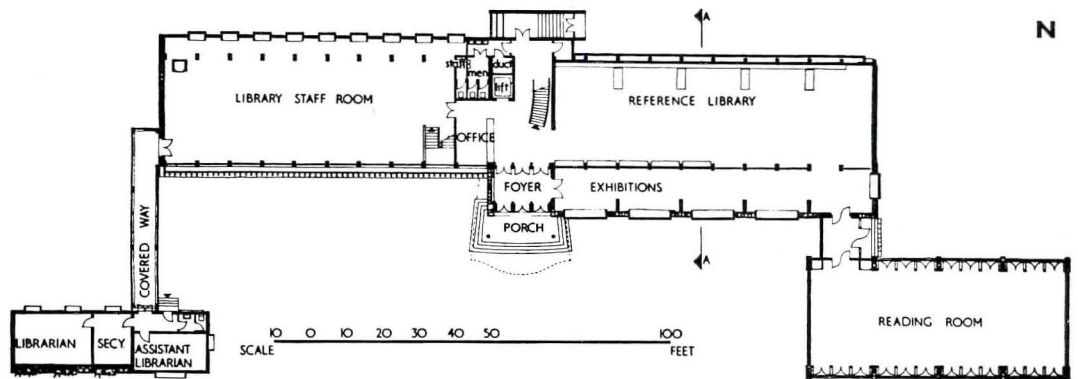
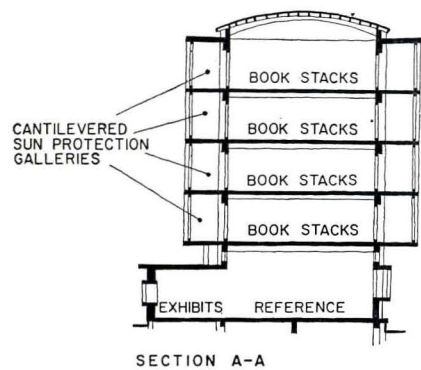
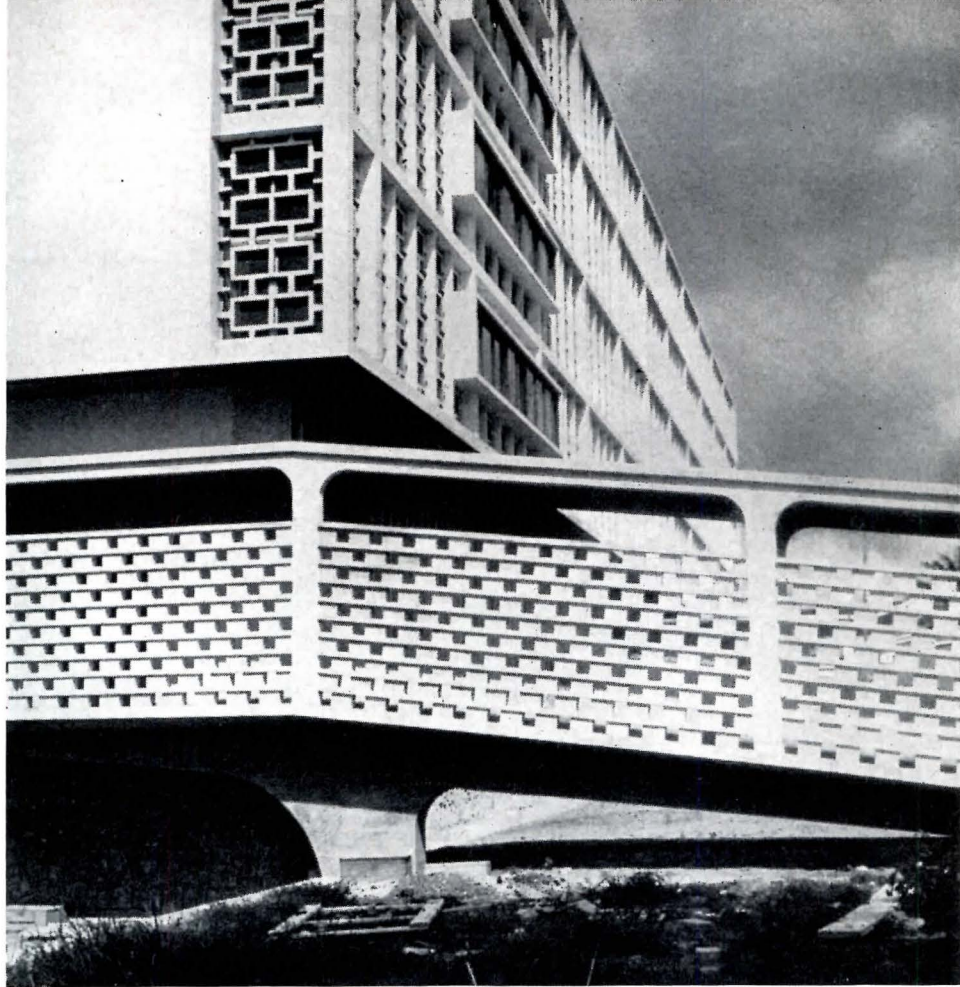
*Expressive Form and Relationship to Campus Plan.* Even today architects with demonstrated competence to design isolated buildings have been known to fail to produce building forms on campus which have the distinction and beauty symbolizing the library as the heart of the university's activities. **Buford L. Pickens, Director of Campus Planning, Washington University, St. Louis**

Photos 1. to r: Joseph W. Molitor, Paul Wille



Left to right: Price Gilbert Library, Georgia Tech, Atlanta, 1953, by Bush-Brown, Gailey & Heffernan; E. T. Roux Library, Florida Southern College, Lakeland, 1954, by F. L. Wright

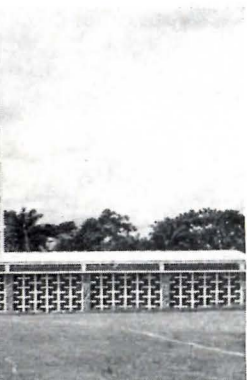




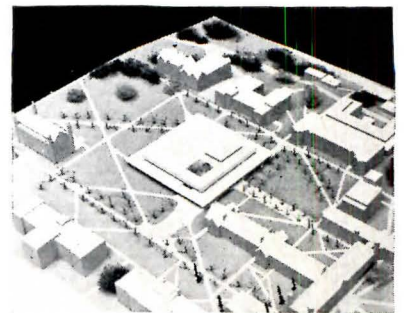
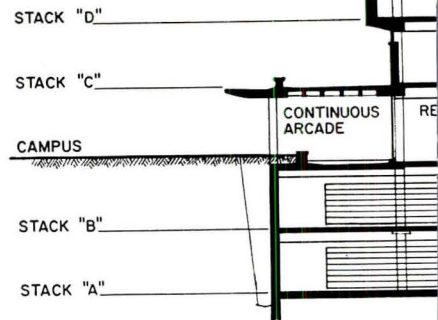
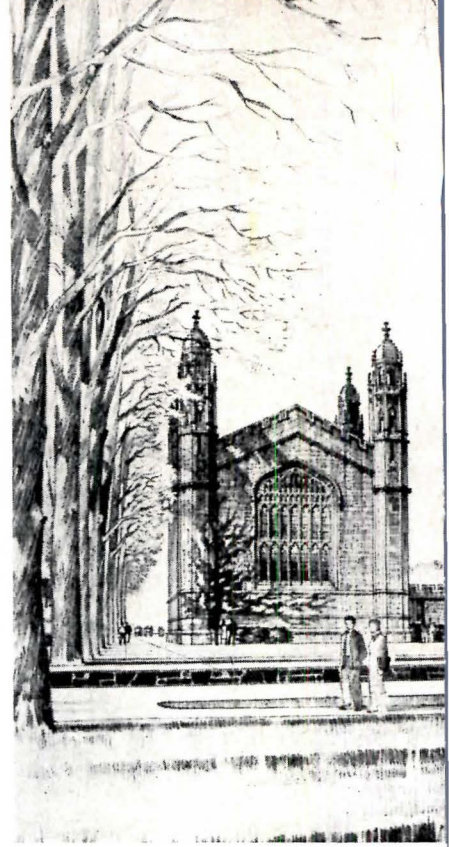
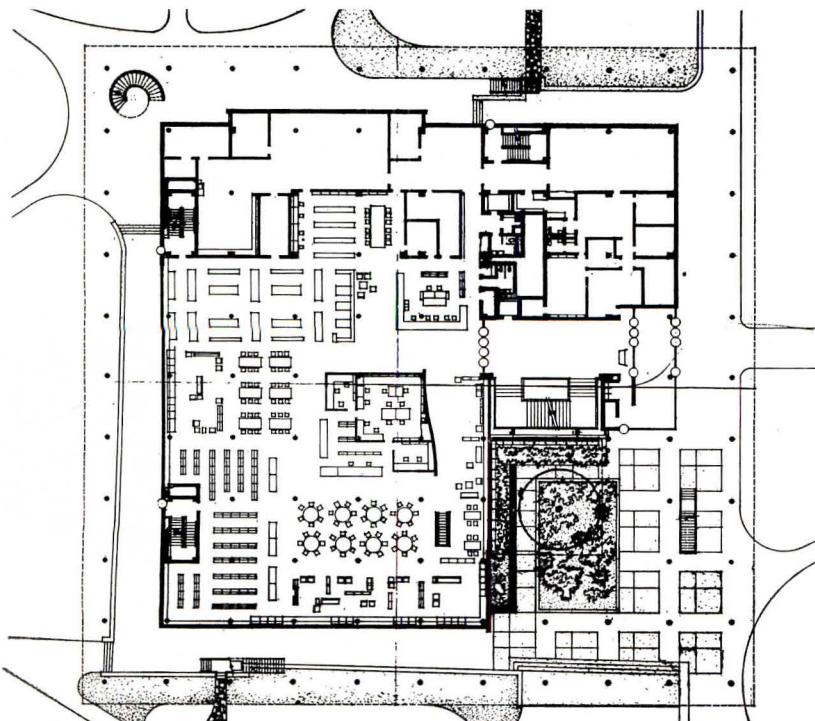
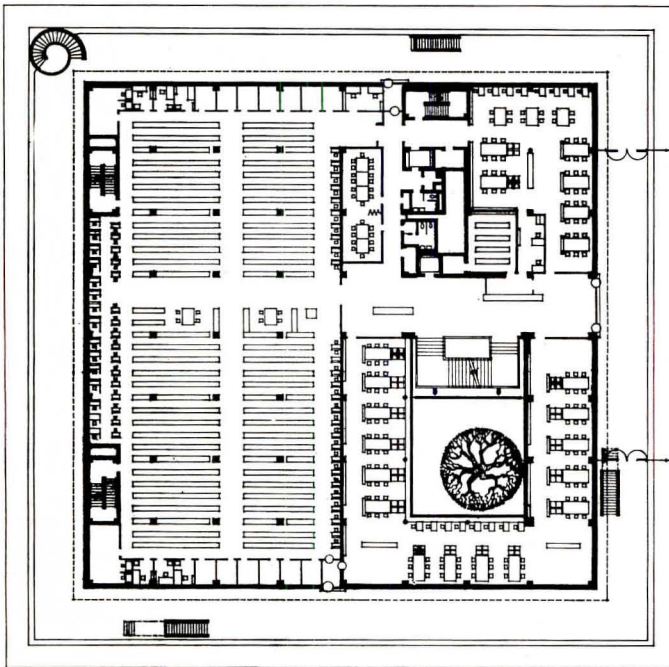
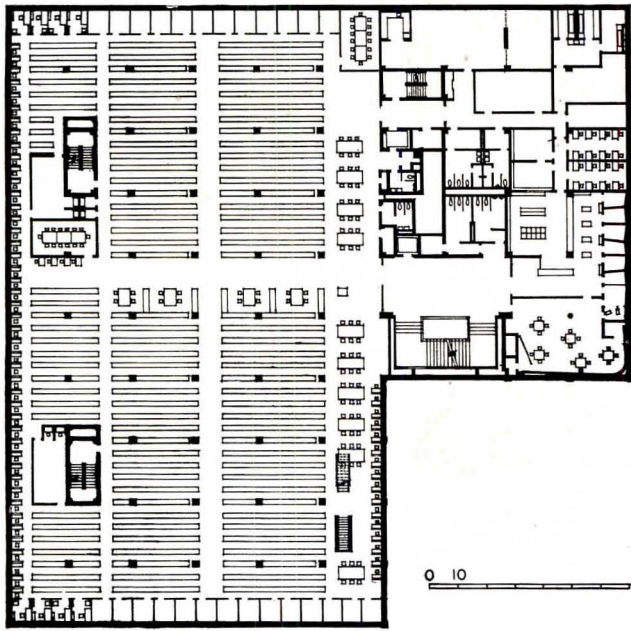
### GRILLS SCREEN OPEN LIBRARY STACKS AT IBADAN

FROM THE OUTSET ventilation — for books and readers — was a prime determinant in the design of this library for the University College at Ibadan in Nigeria. An early plan to air condition was eventually discovered to be impractical in this place and time and led to the present scheme with its four upper floors of cross-ventilated book stacks. Protection for the stacks is afforded by deep cantilevered balconies and fly screening which covers the entire building faces just behind the cast concrete grills. Double doors at the end of each bookshelf aisle are kept closed during the rainy season, when drying through electric heating may be resorted to if necessary.

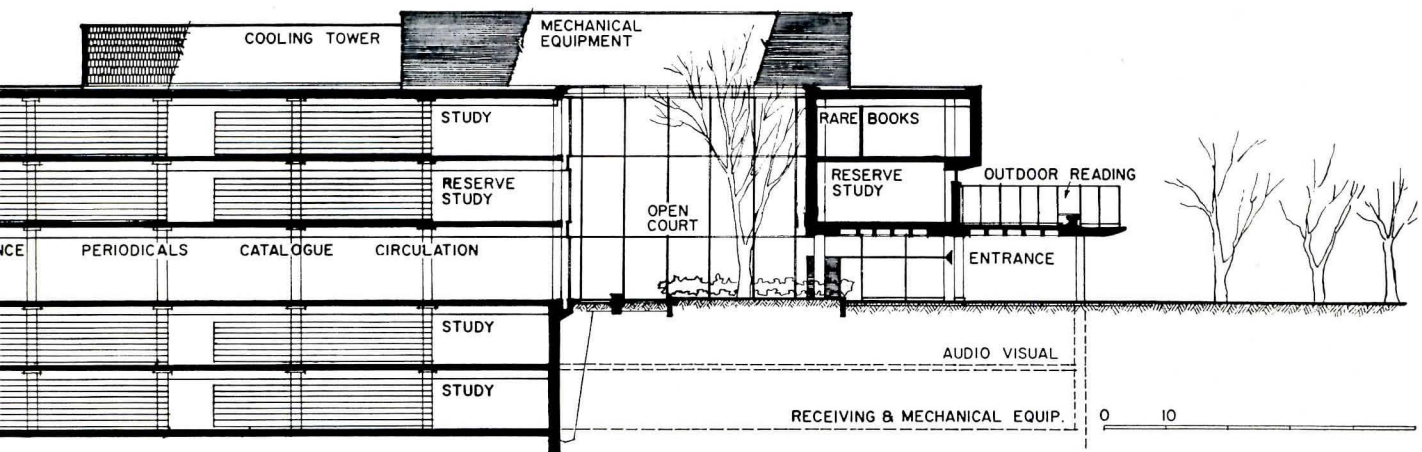
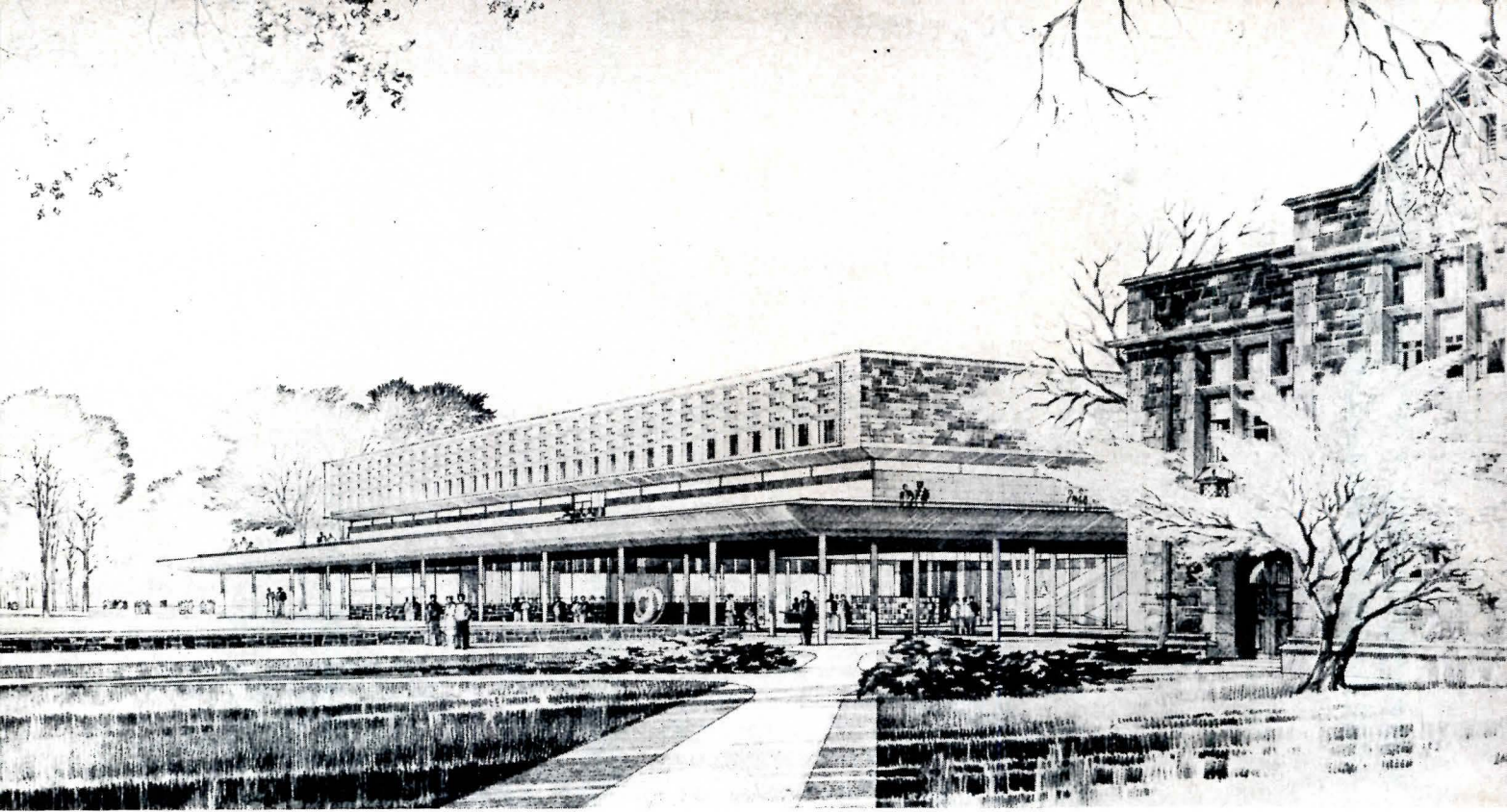
Out of the climatic problem and out of a ready, reasonably skilled labor force the grills develop logically and effectively as an important element in the character of this building. *Architect: E. Maxwell Fry; Assistant Architect: G. S. Knight*











### SKILLFUL HARMONIES IN AN INTEGRATED BUILDING

WINNER IN A SIX-FIRM competition this design for the John M. Olin Library is under construction at Washington University in St. Louis. The program asked — and this building promises — an excellence derived from “the appropriateness with which it is related to its functions and its environment.” Into the fine scale of a campus laid out by the Olmsteads and among original buildings by Cope and Stewardson this proposal should play a harmonizing and unifying role. Bulk has been reduced by placing two stack floors below ground. Under the open terrace an arcade surrounds the square building, shields the glass-walled main floor, collects adjacent campus walks, and brings students pleasantly and directly into the center of the library. *Architects: Murphy and Mackey; Landscape Architect: Thomas Church; Engineers: Fred Dubin, Mechanical; Neal Campbell, Structural; Bolt, Beranek and Newman, Acoustical*



## PRECISE RESPONSE TO URBAN CONDITIONS

TEMPLE UNIVERSITY is continuing the mandate of its founder, Russell Conwell, when it places the riches of a university education on the doorstep of a city and makes them readily and inexpensively available to everyone. However, like every other major urban university, Temple faces its greatest period of growth in the next fifteen years. Twenty thousand students will become forty thousand. As we push back the city for the space we must have, every square foot of ground we take over will cost somewhere between \$6 and \$10 a square foot.

Our great reservoir of students is the Greater Philadelphia area; our future is intimately tied to that city. Accordingly, from the very beginning we have coordinated our program with the Philadelphia City Planning Commission and the Re-development Authority.

After administration and faculty programming, we turned to a youthful and imaginative team of architects. They were told that we were not interested in buildings just as buildings, but as vehicles that help us further the educational process efficiently. More than that, the individual building together with its companions and the spaces and courts between them should offer an environment which will give to students and faculty an atmosphere of active participation rather than scholarly detachment. They were asked to study our students, our faculty, the patterns of our activities. They had to plan by the inch so thoroughly that each square foot of space, exterior and interior, is utilized to the maximum.

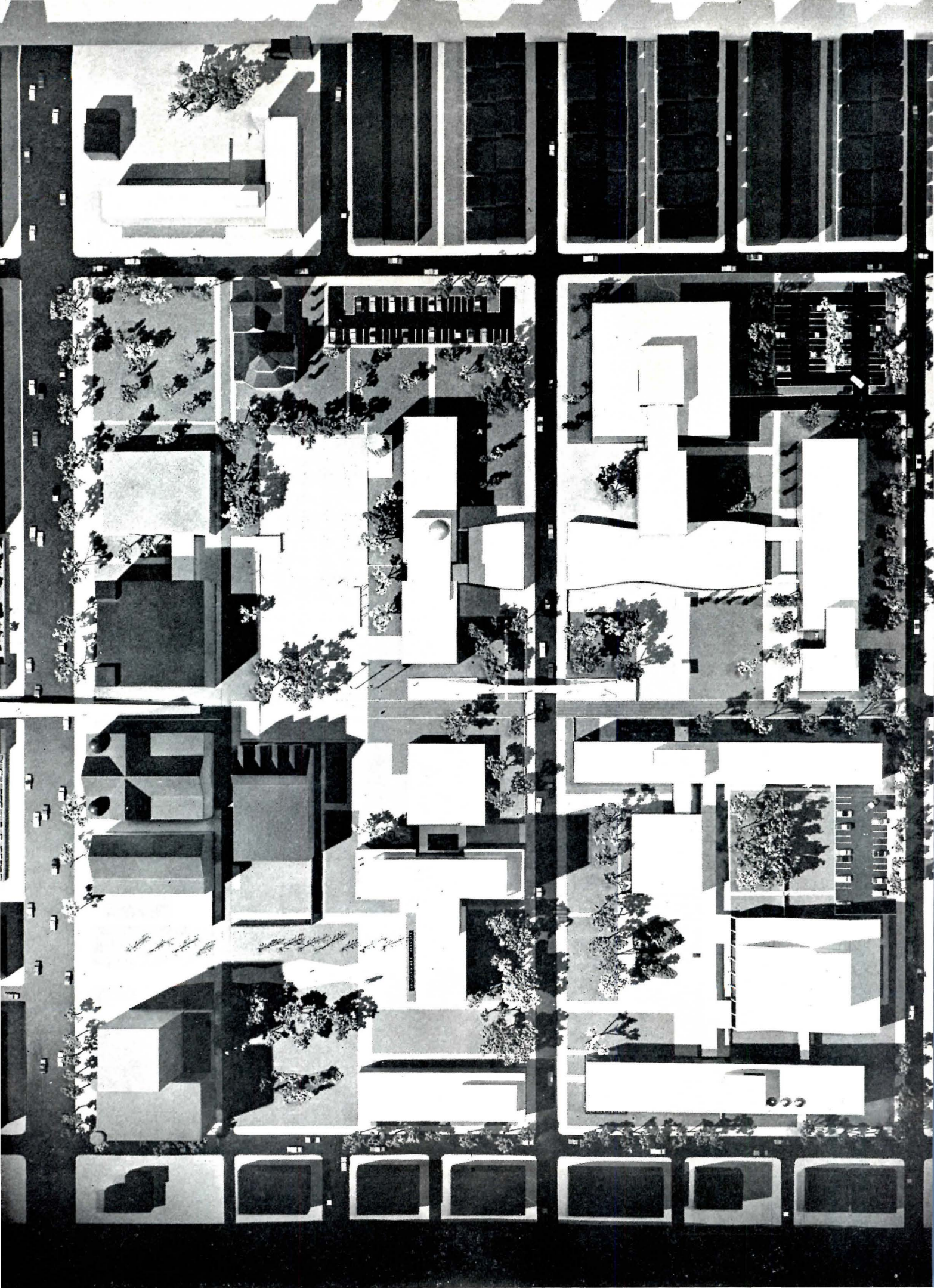
We consider the solution to the first phase of our development program outstanding. It is a vital expression of a complex series of requirements in the sciences, business, education, and communications. The solution in contemporary architecture we admire as fitting and proper for these buildings to be used in the 20th and 21st centuries. Most importantly, however, the solution recognizes *change*. The requirements of physical plant must be able to shift suddenly in order to satisfy the ever-changing requirements in education. We consider one of the most vital elements our architects have given us is the privilege of changing our mind — of shifting as we go along. The internal arrangements of the buildings in terms of a changing curriculum and the pattern of expansion in buildings are so fluid that we feel we can confidently meet the unknown future requirements of a university.

**Robert L. Johnson, President, Temple University**

Cortlandt V. D. Hubbard (also opposite page)









## SCIENCE BUILDINGS KEY THE NEW CAMPUS

ACROSS THE COUNTRY in courses ranging from aeronautical engineering to zoology our colleges and universities are increasing study facilities in the sciences and their applications at a rate which far outruns any other of the established fields. Few need betatrons; all need bunsen burners and the work spaces in which to employ them. Highly specialized equipment and highly specialized spaces are required increasingly, but the proportion of these to standard spaces is small — just about the proportion of graduate and professional programs to undergraduate ones.

The real demand is for laboratory space and for immediately adjacent classrooms. Increasingly these are being coupled in administration, faculty, and architect thinking for two principal reasons. The first grows out of the desire to link up closely laboratory observational experience with immediate discussion — or pre-observation instruction. At St. John's College (*opposite*) the laboratories are organized to accommodate seminars in the middle of the work space. Elsewhere classroom and small lecture spaces are being located opposite laboratories on double-loaded corridors or alternately along single-loaded ones. The latter arrangement is particularly effective in achieving the second planning goal: flexibility.

Using modular planning — and often demountable partitions — a laboratory may be doubled in size over a weekend, or a classroom may become two, or either may be subdivided into several small project laboratories or offices or storage and preparation spaces. Of course to accomplish this desirable interchangeability it is mandatory that mechanical and electrical services be established in continuous patterns, and this is the order of the day. In the three examples that follow, such continuity is provided.

Equally important with the continuity of these services is that of fenestration, acoustical, and structural organization. It is only in our time that such flexibility in use or for expansion has become technically feasible, and it is only in our time that the need for it has developed to such a critical extent.

The satisfactory science building today must start with a structural pattern which can permit subsequent multiple choices and multiple additions. It cannot freeze spaces or combinations of them. And because of this it cannot possibly ape older campus styles with any measurable success, although some otherwise impeccable institutions are still trying. A thoughtful approach to the new science building may yet bring us thoughtful — and beautiful — campus architecture.

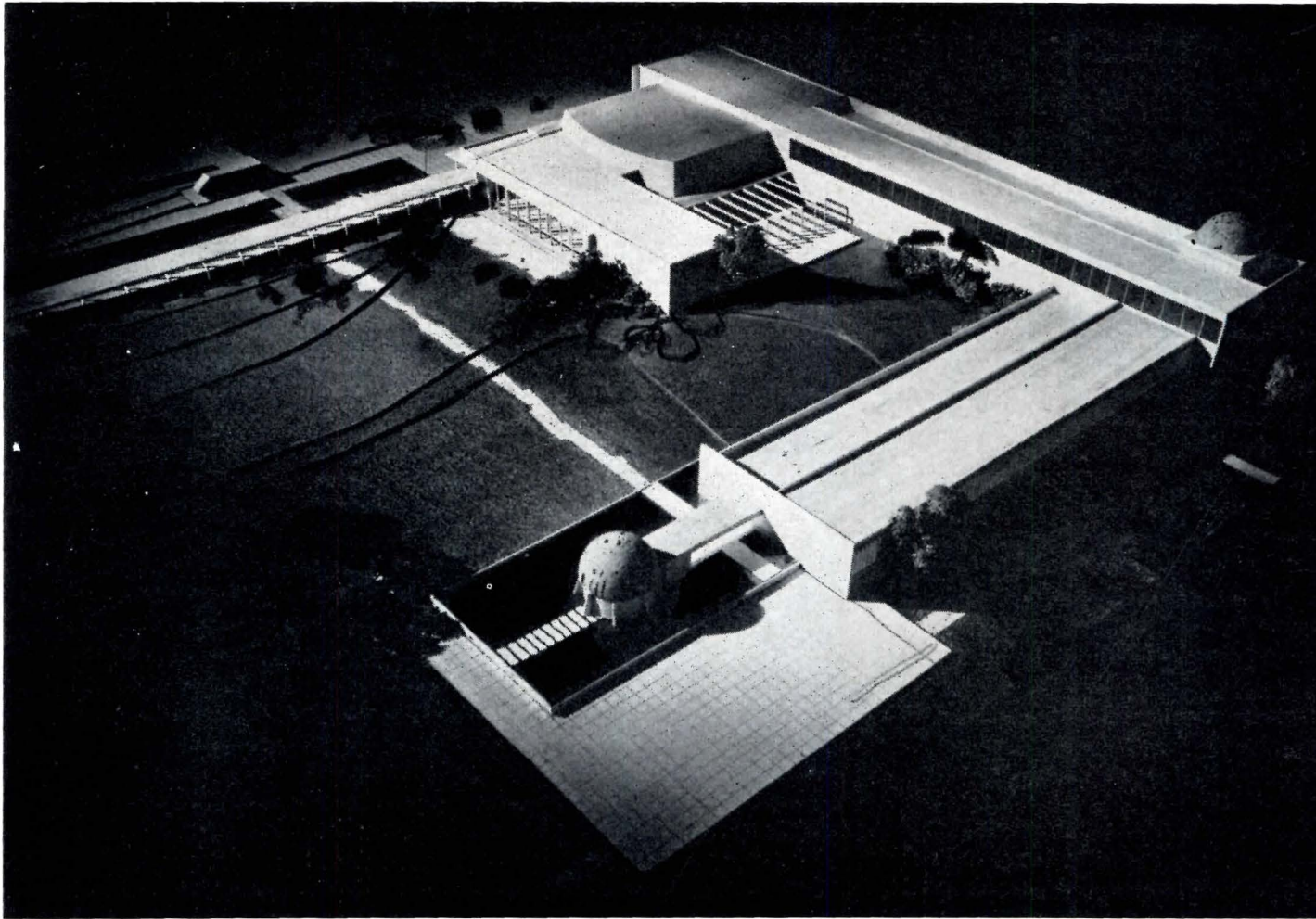


Lawrence H. Miller



Left to right: Karl Taylor Compton Laboratories, Massachusetts Institute of Technology, Cambridge, 1957, by Anderson, Beckwith & Haible; Porter Hall, Carnegie Institute of Technology, Pittsburgh, 1905, by Henry Hornbostel

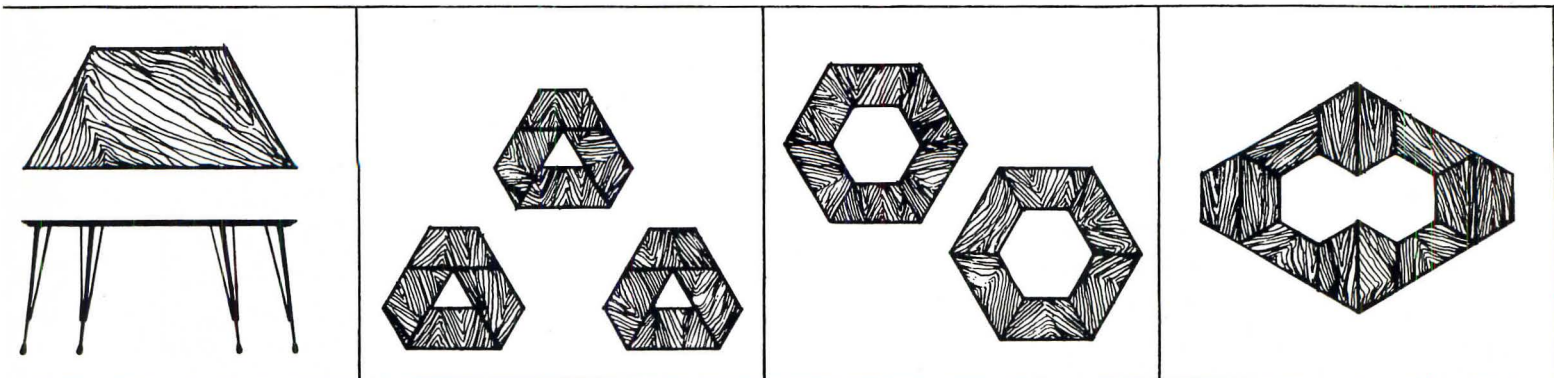
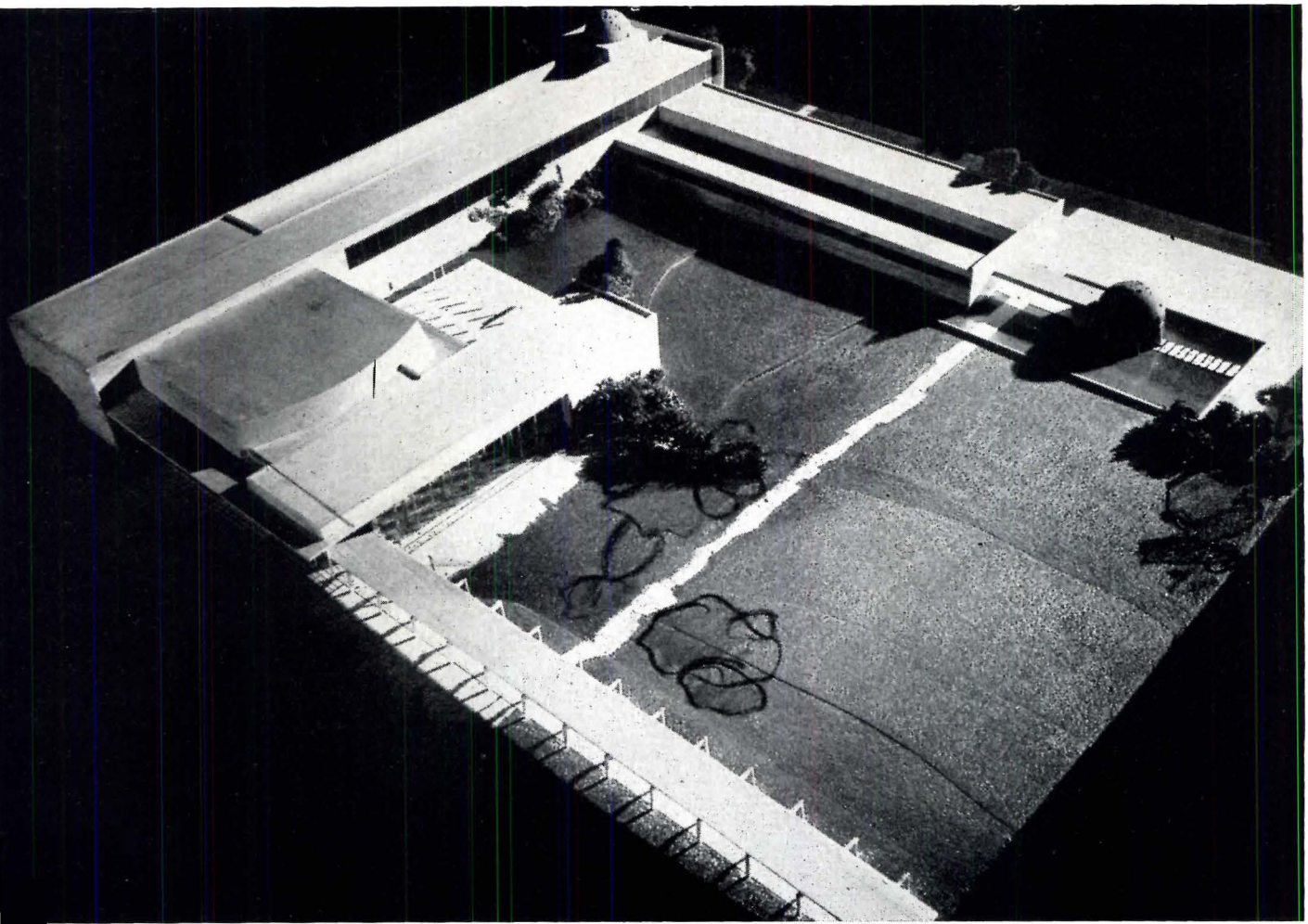




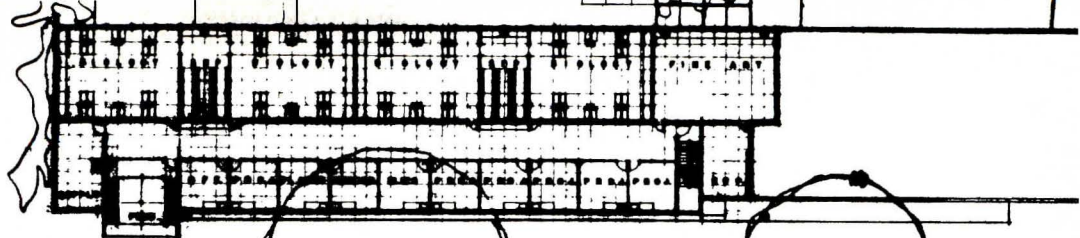
### **UNIQUE CURRICULUM GENERATES EXCITING BUILDING**

**ST. JOHN'S COLLEGE**, in Annapolis, is venerable and unique. It is the possessor of "red and white" buildings in a lush, green landscape and an unusual curricular philosophy. In planning to triple the enrollment to 300 students the college chose architects who believe that building form must develop from detailed study of activities to be accommodated. In visits to the campus totaling a month the architects and their wives studied the curriculum and talked at length to students and faculty, with whom they formulated a thoughtful program. The first new building of the few that will be necessary houses science facilities, a fine arts unit, and an auditorium carefully planned for the traditional Friday night visitor's lecture, as well as dramatic, choral, and convocational uses. Adjoining its lobby is the "conversation" room where shape and variety of seating arrangements have been developed as



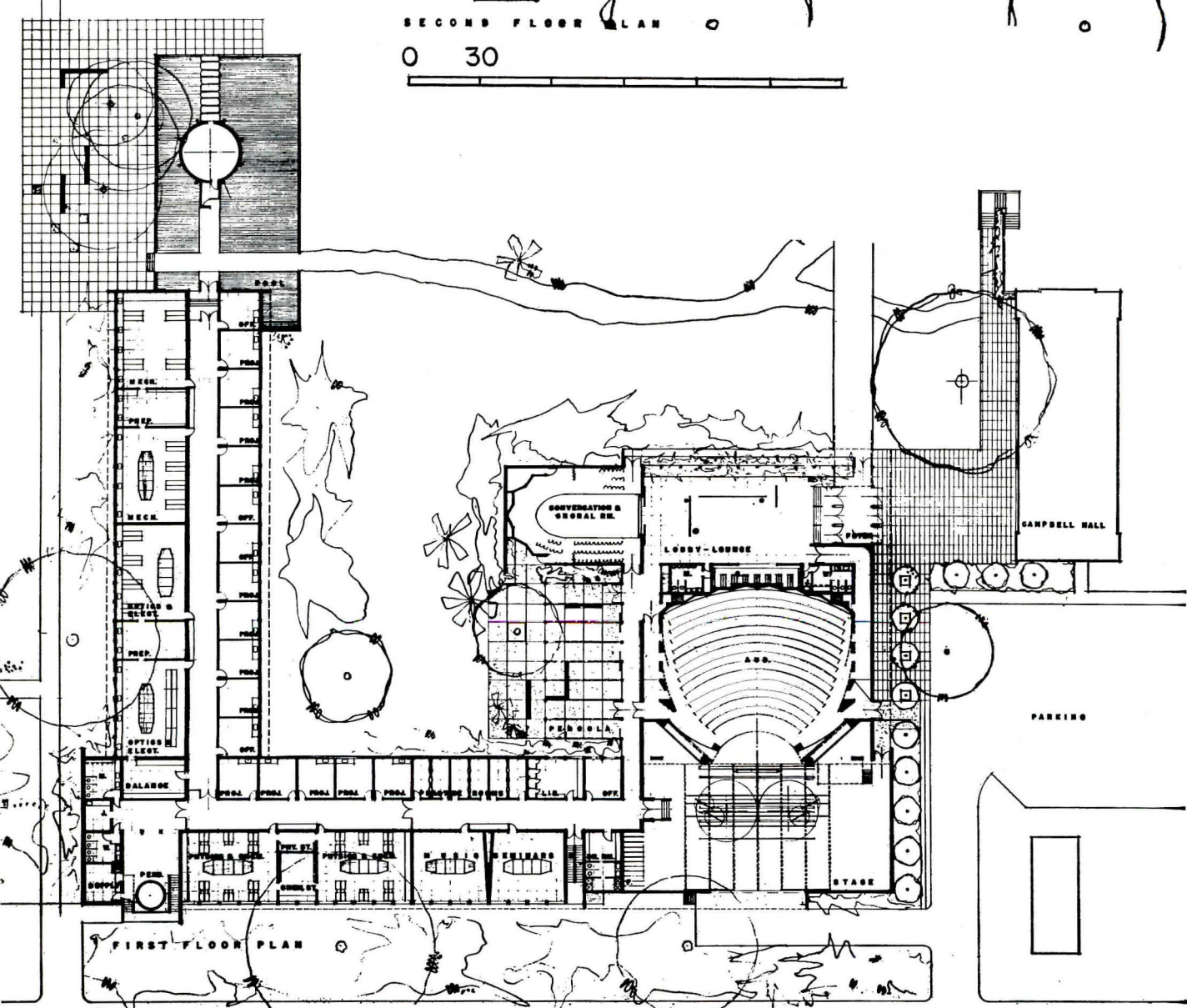
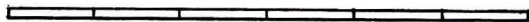






SECOND FLOOR PLAN

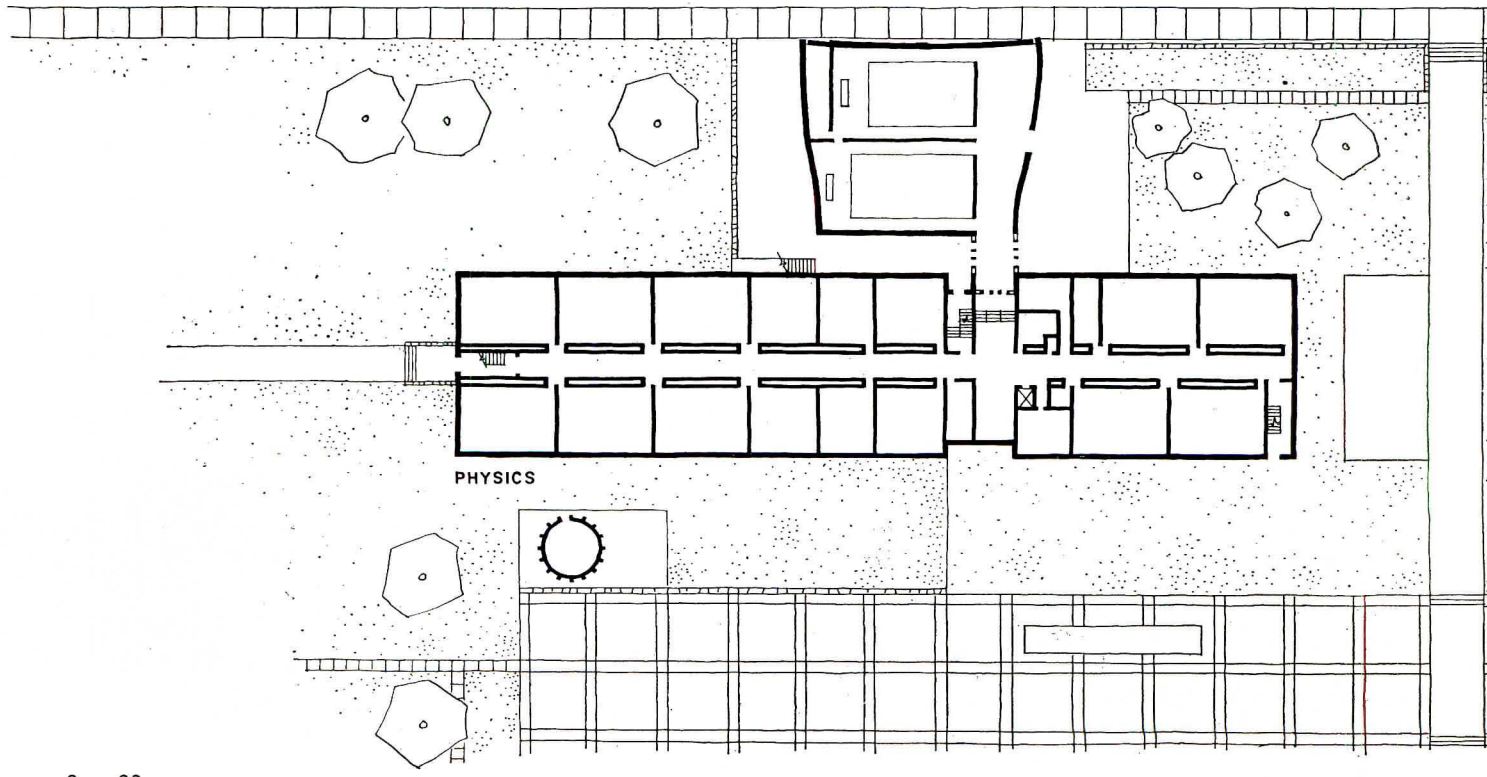
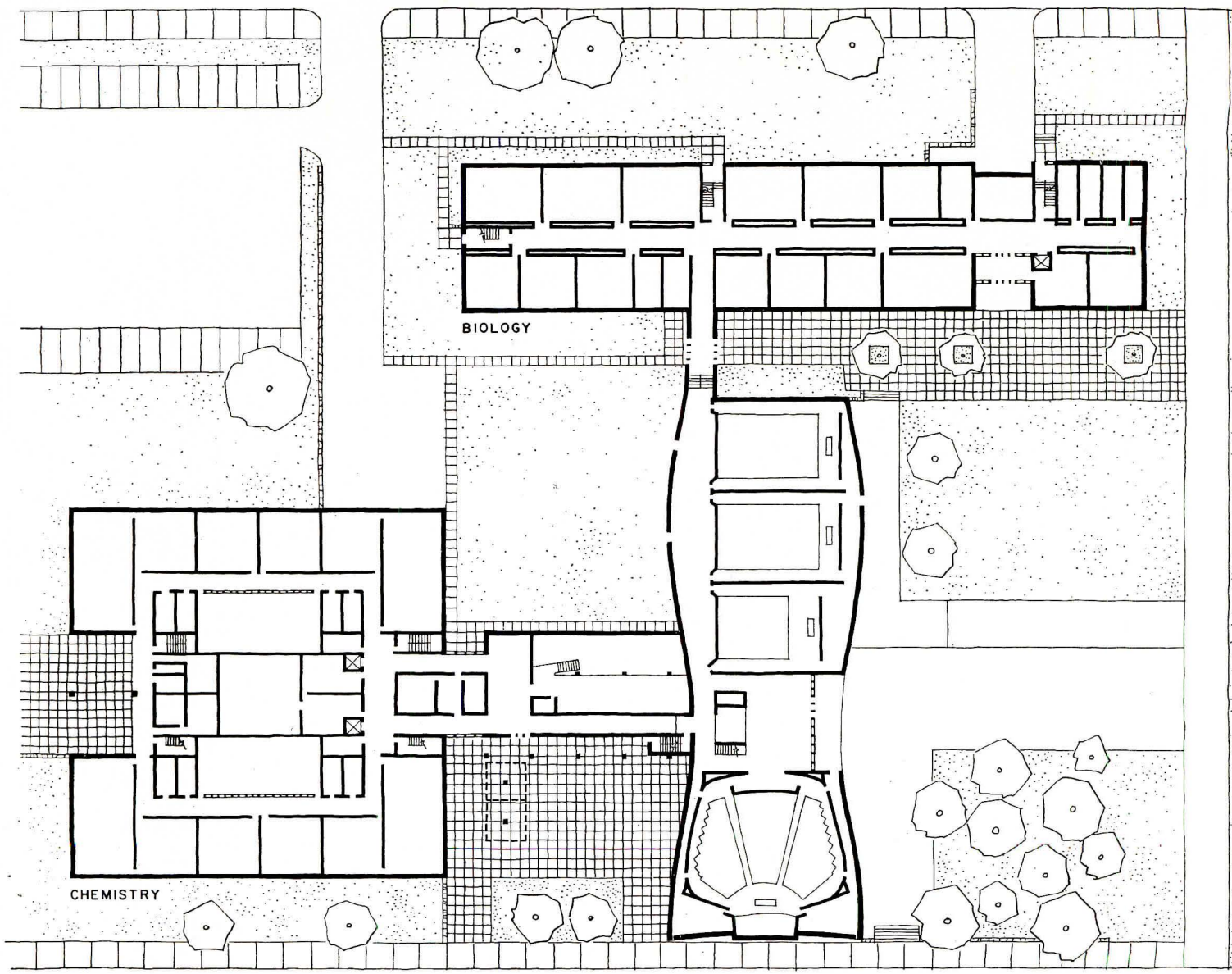
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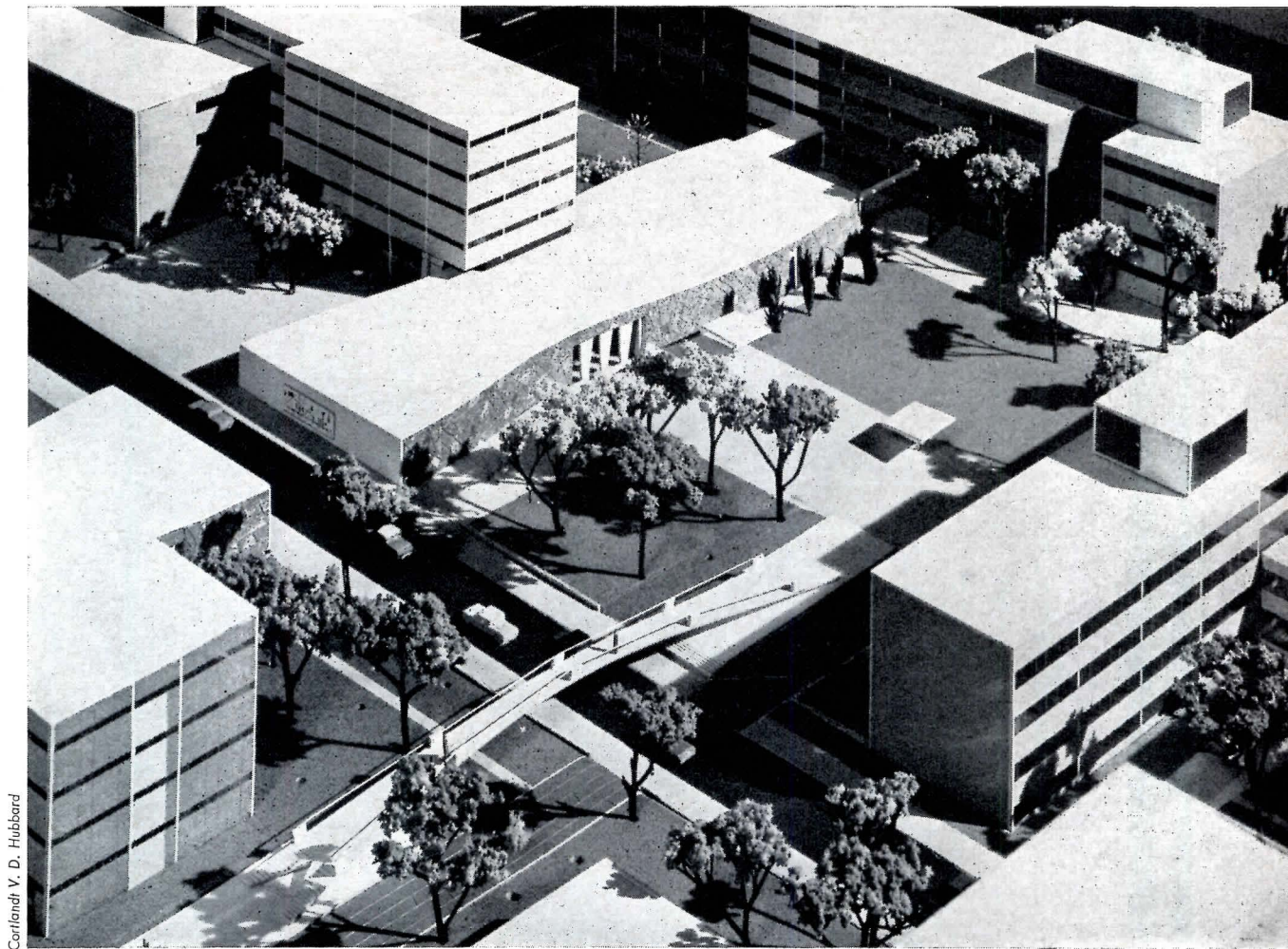
FIRST FLOOR PLAN

painstakingly as the flexibly arranged laboratories and the interchangeable project rooms and offices. Each of these types has evolved from the particular study methods used here (example: seminars in labs) as well as from basic concern with acoustics, glare, ventilation, and easy communication (a dozen or so table groupings for seminars and tutorials can be achieved). A small planetarium (*upper left*), an observatory, and a 40-foot-pendulum shaft will afford opportunities for astronomical and measurement observations. Faced in brick and limestone, the low-silhouette building has been designed to underline the campus scene. **Architects: Richard J. Neutra and Robert E. Alexander; Associate Architects: Dion Neutra, Robert R. Pierce, C. Howard Miller, Richard R. Stadelman, Immanuel Lewin, assisting; Engineers: Parker, Zender and Associates, Structural; Boris M. Lemos, Mechanical; Earl L. Holmberg, Electrical; Dr. Vern Knudson, Acoustical**







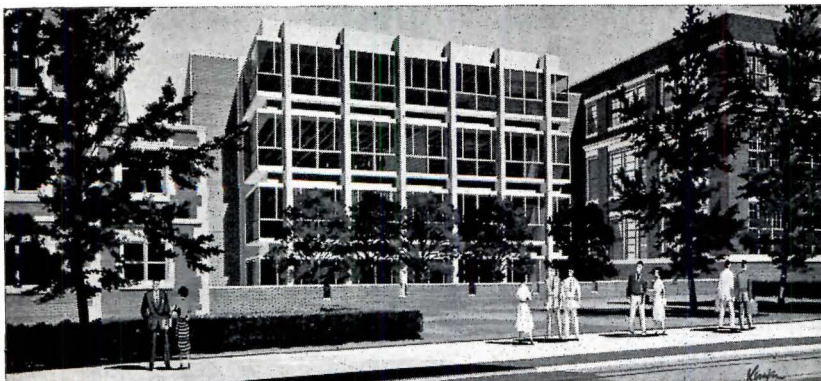
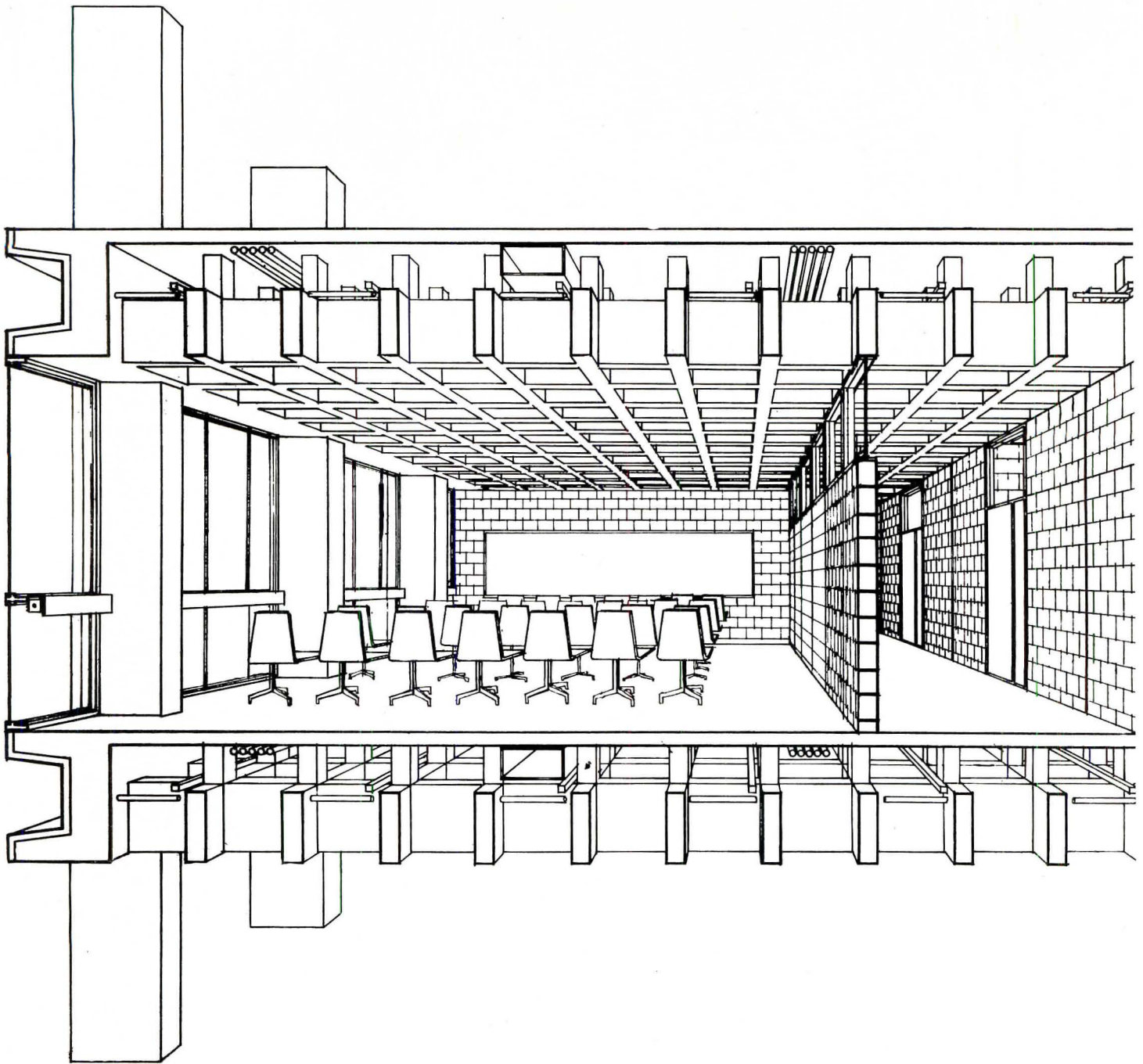


Corlandt V. D. Hubbard

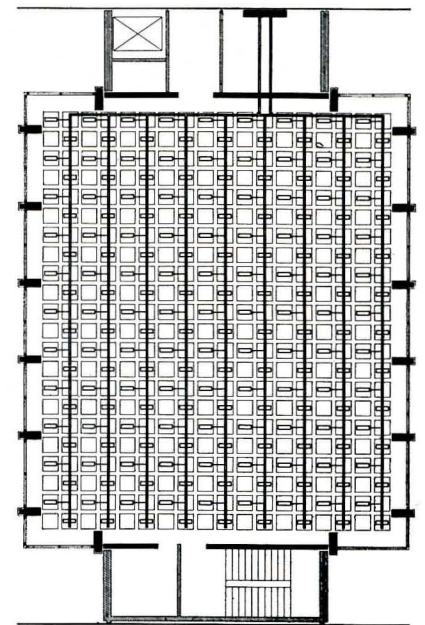
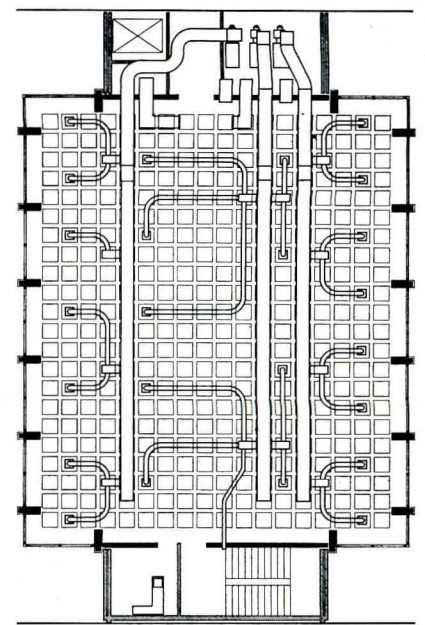
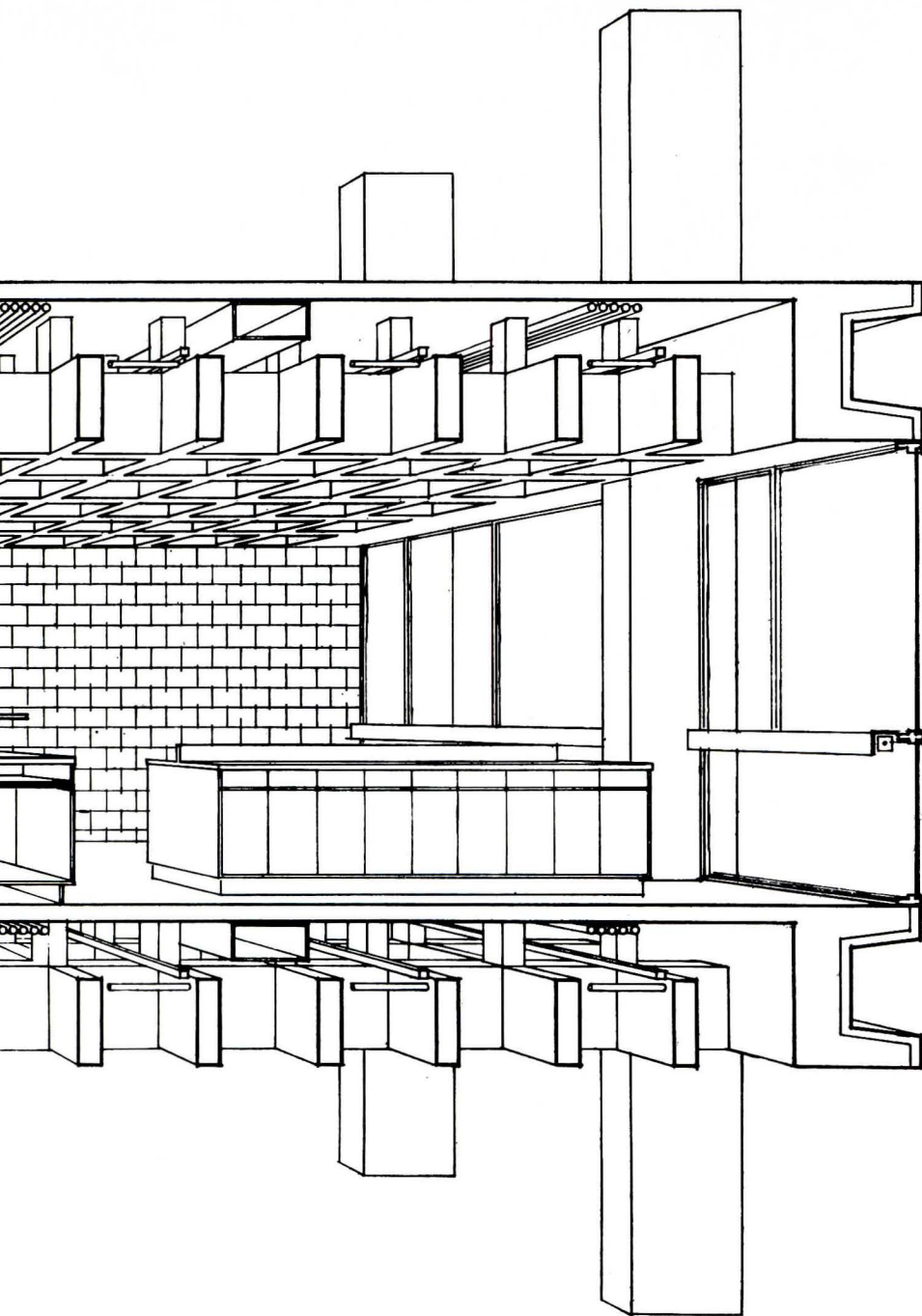
### MAXIMUM USE THROUGH WELL DESIGNED FLEXIBILITY

TEMPLE UNIVERSITY has asked its architects to organize space on \$400,000-an-acre land. A large element in the first stage of the redevelopment program is a Science group consisting of Biology, Chemistry, and Physics units organized around common library facilities and a group of adjacent one-story lecture spaces. Separation of these permits easy public use, as well as the complete interchangeability between remaining classroom and laboratory spaces. These are developed out of strictly modular elements with laboratories formed from two or three classroom units. The University specifically desired the interspersing of classrooms throughout all specialized areas. In consequence the modular scheme became imperative, as well as the inclusion of basic mechanical-electrical services in every space. All buildings are completely air conditioned. *Architects: Nolen & Swinburne.*









## THE ORGANIZATION AND THE EXPRESSION OF UNITY

THIS REMARKABLE INTEGRATION of spatial, structural and mechanical requirements is a four-story addition to the Moore School of Electrical Engineering at the University of Pennsylvania. Research laboratories, offices, class and conference rooms must possess here a high degree of interchangeability. Partitions and the electrical and air conditioning supply must be flexible. The latter is achieved by locating all services in the 14 in. space between the floor slabs and the two-way, reinforced grids which support them. The 50 by 60 ft clear span grids are supported continuously by channel-shape edge-beams, expressed without compromise and in great harmony.

*Architects: Robert L. Geddes, Melvin Brecher, W. W. Cunningham; Engineers: Dorfman and Bloom, Structural; Jack P. Hartman, Mechanical; James T. Clark, Electrical; Bolt, Beranek and Newman, Acoustical*



# THE SHAPES ON A CAMPUS ARE NOT EXTRACURRICULAR

By RICHARD J. NEUTRA\*

WHAT EDUCATION WILL LOOK LIKE in the future, and therefore what the college of the future might look like, is a fascinating mystery to all of us.

Ample predictions have been made by authentic specialists concerning 1980. Many of our forecasts seem to relate in one way or another to what I would call "progress pride." We are living in an age undoubtedly very proud of progress. Not in all the ages in which education occupied minds were people as proud of progress as in ours. Never has so much of grand statistical material been gathered and collected and put to so many immediate uses. It seems always that it is large quantities to which we like to refer when we speak of our glorious time and the still more glorious future. But our information and our knowledge have characteristics that are somewhat different from the wisdom of the ages. Our sort of knowledgeable consciousness is extremely numerical. It is based on the quantitative approach. It is statistical and "specialistic" and analytical. It is very hard to imagine that from all these figure-rich specialistic approaches there will emerge universalistic wisdom — and yet it seems that the root of the conception of *university* connects with some universal cosmopolitan attitude. Are we cosmopolitans?

Young people, in the ages before the jet and the flying constellations were invented, could transfer from Salerno to the Sorbonne or to Salamanca without losing an hour's credit. But I have three sons whom I found it very difficult to have transferred from any place to any other place, even from USC to UC in the one state of California, not to speak of neighboring Mexico. It wasn't difficult to do such things in those dark ages. To be sure, the scholars traveled on foot, but they got there to sit at a master's feet. On the way, traveling as lowly pedestrians, they were fed and put up in haystacks. Everybody respected learning and contributed good will for the studios.

We are perhaps too proud of our age; too proud that we have shrunk the globe.

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\* *All who know Mr. Neutra's work and writings are aware of his long-continuing concern with the physiological and psychological determinants of form. In this paper — whose substance was originally presented to the convention of the Association for Higher Education in Chicago this year — he relates this approach to problems of campus design.*

We architects have been trying to explain progress in architecture to the lay person in about this way: "You see, we are surrounded in our days by these new materials, the startling technical novelties, these new installations and new gadgets and new construction, and so, you understand, we must have also an architecture of the new day."

Unfortunately, there is a new day every twenty-four hours. The problem then is not to get dizzy while the earth is spinning on. Campus architecture needs less the "quick-turnover type of fabulous future" than does the seasonal fashion business of the ladies' apparel trade.

Yes, we have emerged from the horse-and-buggy stage into the age of electric transmission, and from electric transmission to the atomic age — and there is one age after another. They follow each other fast, and the devil takes the hindmost. Man surely is run over by this fast and faster traffic he has conjured. But why is man getting under the wheels in this wonderful progressive world? What has it to do with the colleges and with the breeding of thinking men, and with the architects' housing of college activities?

At the outset we must recognize that not all the needs of organic man have really been studied objectively. All the mechanical forces we have harnessed are not necessarily or automatically favorable to the subtle human relations of teacher to student and *vice versa*. These precious relations have had some other and less mechanical origin.

What is technically feasible and commercially desirable from an inventor's standpoint is not necessarily desirable for you. And if his technological development is in the field of lighting, for example, it can come so fast that a biological adaptation, such as the eyes underwent for thousands of years to fit the natural scene, is out of the question. Whether the whole thing is humanly tolerable in the long run is not primarily in the minds of the inventor and his backer.

Technological and commercial fireworks illuminate our scene while we teach and train our young. Progress is all well and good. But unless we develop some biological checks and balances, you can see under what determining circumstances we would have to design a campus such as that for the University of California at Los Angeles, where officials predict 41,000 students in about fifteen years. They must plan in the near future for 17,000 cars. They will have to run over an immense



aggregate of concrete paving to scattered parking areas, because you cannot put a metallic herd of 17,000 on one stamping ground. You decentralize and figure the intricate geometry of placement, so that every student can reach his classes conveniently from this or that parking place. His scholarship may well be impeded by the traffic engineer's mistakes.

I may say these 41,000 day students we are going to have in twelve or fifteen years on this particular campus are based on only 12 percent of the high school graduates. That is a conservative percentage, as percentages may run. If we figure that some more young people become ambitious and capable, how many students will we have then? If one tentatively multiplies that current percentage by about eight to get a full quota, we might have 320,000 students; for perhaps no one will want to take a back seat in a world that produces fifty times as much as the clever time of Voltaire and Benjamin Franklin. And we go on multiplying. We merrily multiply with the factor of projected car ownership, and you see we have more and more general commotion around departmental, specialistic parking places, while less and less universal wisdom emerges.

But while we are producing so mightily what we are progressing into seems really not anything but chaos — the terrible thing that frustrates us and has frustrated the human mind, even in mythology. It is the horrid thing man has hoped he had behind him; hoped that deity had abolished in an orderly, lovely creation.

The Greeks called the universe *cosmos*. It is the same word for *jewel* in Greek, universal jewel, order, harmony. That was God's gift, the jewel, the universal jewel. They thought chaos had been in the beginning but that it was happily over and ended after the gods had taken up planning.

In principle, Babylonian astrologers were quite right, believing that there was an environmental, a universal influence active in our lives. It surely is not as stupid as it may have looked on the first "non-superstitious" glance. The universe with its cosmic rays, its electricity, its solar light and heat, has some-

thing to do with us, and our very chemistry and physiology. The impact exists on an adult, and even more on a growing person. A student on the campus and a child in the home are surely marked by biological individuality, but the designer of environment must not think those ancients ignorant, who intuitively felt how deeply man with his innate and evolving sensitivities is integrated into the universal landscape. What a terrible responsibility the most ignorant architect has for our lives and for our ability to flower and bear fruit in the future — at least over the amortization period. It takes so much decision and time to tear down buildings firmly built the wrong way.

When the University of Paris or Vienna, or any of the medieval universities were founded, it was quite clear in those days of expressive architecture that form was of the essence, that it was a vital human concern. Architecture was not just an assortment of cubic feet and dollars and cents and tons per square foot of ground pressure and kilowatts, and what-have-you. It had a *shape*, a *Gestalt*. The attitude in creating it had a family resemblance to the original attitude that created the cosmos, the beautiful supreme shape. People at that time were not overcome, as we are, by the enormous decimal numerology of the statistical, quantitative approach that started to become popular in the 18th century. Since the "great revolution" democracy has depended on counting noses, votes, and everything else, as a method leading to decisions. I would like to suggest that we have gained much, but we have also lost something while we were "figuring," and architecture, *shaped environment*, has been discredited, since all faith has been put in figures.

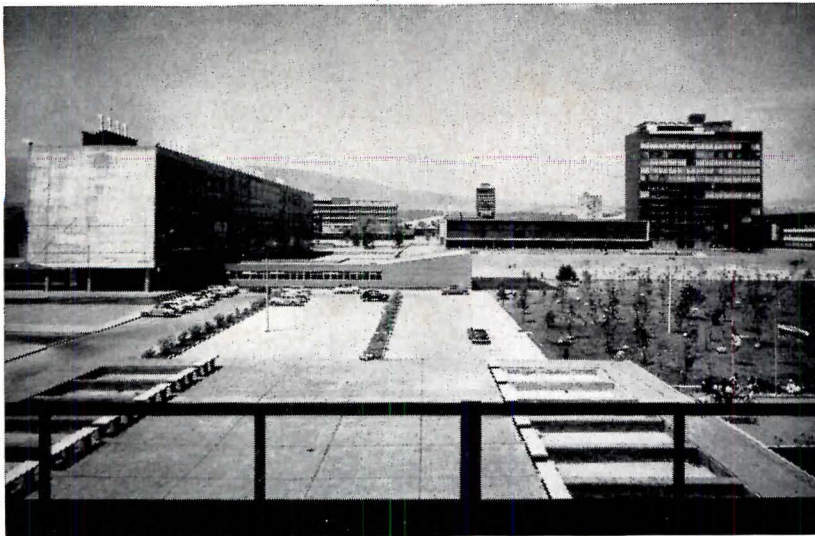
Comprehensive shape disappeared while quantities began to loom in significance. Strangely, the word "figure" means in English both number and shape. Plato used and cherished the word "idea." He deemed it to be at the bottom of everything. In the Hellenic language and culture it happens that the word *eidos* means both idea and shape. For architects this has great import.



"When the University of . . . Vienna, or any of the medieval universities were founded, it was quite clear . . . that form was of the essence . . ."

Ewing Galloway





In Mexico "I saw the second oldest university of the hemisphere go modern in its building"

As architects for new work at St. John's College in Annapolis, where Socrates is said to have crossed the Delaware, we tried hard to understand its approach to learning — to get the shape from the idea. I am not really competent to describe the philosophy of St. John's, but it helped our design to understand that there are no professed specialized teachers or "professors." They have no courses or classes in the general sense. They have tutorials and seminars. There is one lecture given on Friday evening which everyone attends. After coffee, there follows a dialogue between questioning students and the off-campus lecturer. We have designed, and there are under construction, both the lecture hall and the adjacent discussion room — in a way really the heart of the campus.

While we were working on this, I came to think tentatively that there are two ways of advancing wisdom. One is based on dialectical curiosity. Probably Socrates would have agreed. The face-to-face group is fertile and productive, if dialogue is guided in a masterly fashion. Socrates would find what is truth, what is dignity, what is virtue, by just talking with people in the market place. A wonderful method, and by certain means of design one can accommodate it architecturally. But we have also to deal with other kinds of mind-advancement than the dialectic ones. There is another approach to wisdom. There is *observational curiosity*, comparable and parallel to *dialectical curiosity*. Both will have to be accommodated in a full curriculum.

At St. John's we tried to plan these two curiosities together. This was worked out in long and careful sessions with the collaboration of the faculty. We attached seminar rooms to every laboratory. Guided discussion by the student group tests the validity and logic of experimental observation. We worked very hard and with great interest to find out how all this functions. It was extremely instructive and fascinatingly determinative of layout and shape.

I have been talking about old universities which had shape, like the *cosmos*. I would say shape is not only a *sequitur* of function, as the masterful H. L.

Sullivan would have said. I have thought over this matter of "form follows function" again and again. First of all, *shape* is not lifeless and static; it is *itself functioning* — and *further* it is the *cause* of function. You have only to look at the colorful and beautifully shaped birds who are shaped, at least in part, so that the species will be propagated by means of this attraction.

Manmade shapes are surely not all mechanical in origin and motivation. To explain the human world in terms of use, technique, and material, as the great 19th-century architect Gottfried Semper did, is now belated materialism which had its philosophical heyday a hundred years ago when educated people glibly used the word "matter," and believed they knew what it was and meant. Those were also the days when industrial technology was a promising teen-ager. I do not propose, like Jean Jacques Rousseau, to return to nature, but I do propose as true progress one that is physiologically tolerable. We have completely lost sight of what can be organically sustained under the conflicting impact, not of progress, but of the millions of progresses which the patent office in Washington has in its mounting records and methodically files in a new wing to be built every year.

I propose that instead of looking with exaggerated emphasis on either today or yesterday, we should give up flavoring them with either technocratic or archeological awe or accents. We should in no case dress up romantically. Are the classical and the contemporary necessarily clashing, or are they capable of gentle combination? At St. John's, after going over the venerable campus, we explained first to ourselves and then to our friends there: You have had and used these dear old buildings, some of them since the 17th century, opposite to the State House of Maryland, itself one of the monuments of early America. What are we going to do now with these new buildings? One cannot put imitation glass pearls into a bracelet of genuine ones without making even those suspect. Imitation would be merely a superficial flattery of the past, not a true and



deserved honor to its lasting values. Since I have visited all the leading universities of this and other countries on this side of the Iron Curtain, I can testify that a campus lasts at least one hundred years longer than any Hallowe'en party.

When President Aleman and the late Carlos Lazo of Mexico imported me as a sort of honorary consultant, I saw the second oldest university of the hemisphere go modern in its building, although some of its original teaching and construction had started before the middle of the 16th century. In the oldest university of the Americas, in Santo Domingo, which had its beginning when Christopher Columbus hardly had ended the middle ages, there is an entirely contemporary campus under the gorgeous live-oak trees. Being short of manifest tradition, we in our country have been prone to adopt conspicuous revivalism. I have been a guest in one Gothic graduate center where we put on black gowns every time we went to dinner, and the students, especially the architectural students, did it with tongue in cheek. I have never understood how they could eat, chew, and assimilate with tongue in cheek.

Our procedure and design decisions should be guided by realism, yes, but not by the realism of dollars and cents; not by that realism which recognizes that the donor has given the money and therefore has the divine right to decide what to do, even if it is against human biology. Actually, a donor has no wish to be remembered as ridiculous. His chief concern must always be the living student and the living faculty. These are the inhabitants, the users, of whatever we build on the campus.

Like children leaving a family the graduating student will carry the impressions of his home all his life, one way or another, as a grievous burden or as a cherished image. The environment in which he develops may be a perennial anchorage for his soul. The harbor we hope for and hold in our memory as alumni is mostly a shape or an integration of shapes and not an accumulation of figures.

I want to accept my share of responsibility for all the sins that have been committed by modern architecture, whether I was definitely connected with it as architect, or as a consultant, or perhaps only gave it support by the nod of a privileged guest. I cannot and do not claim to be a sweetly innocent bystander. Collectively our fraternity of architects is responsible not only for leaking roof flashings and for wrong "guesstimates" or blowing up budgets, but above all, for much of these surrounding shapes that are life determinants.

We are housing educational activities and accommodating educational aspirations. We must help educators with sympathetic understanding and particularly the top administrators who labor hard to coordinate all these specialties so characteristic of our life today, on the campus and off it. We must house the education of the future so that in a manner of speaking it develops toward the partition-less, not the over-departmentalized. It may be profitable to reflect on the ideal of one big room, so people can hear and see each other, as in the open colonnade where Aristotle taught, or somewhat after the fashion in which Raphael placed the informal groups of philosophers in his colossal canvas, "The School of Athens." There were no partitions, no equipment, no plumbing to worry about, no hermetical laboratories or fume hoods, but a good deal of clinical contact with the universe and plenty of fresh air.

In any event, a human being is one whole at all times, and the architect must recognize this and shape the campus environment according to this truth. Man, like fish and birds and beasts of all kinds, is shape-motivated. Form-consciousness is as little extracurricular as our need for physiognomic contact which relates to it. A campus can more satisfy by offering opportunity to be face to face, than fender to fender. No king-size, two-tone progress should be allowed to overcome the thoughtfulness that now withers in our massive rush. The campus of the future must honor and salvage the ancient tradition of human biology and, I hope, become a valid model of other human communities to come.



“ . . . after the fashion in which Raphael placed the informal groups of philosophers in . . . ‘The School of Athens’ ”

The Belfman Archive



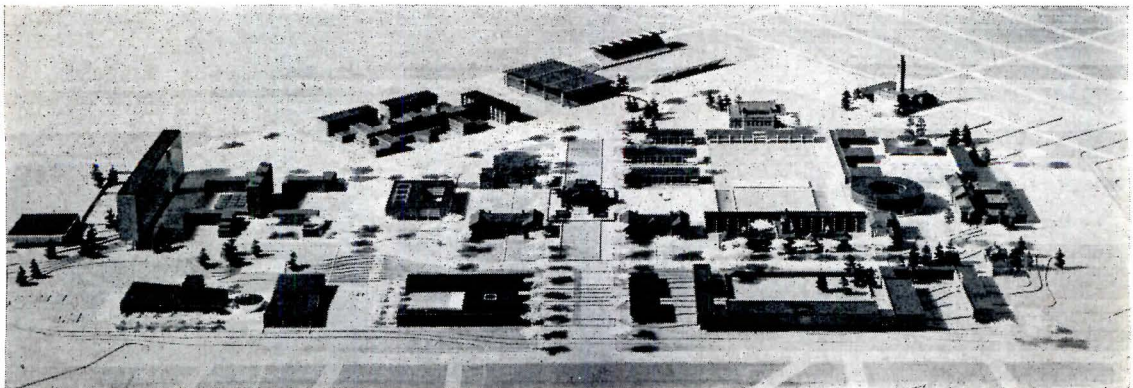
## A MASTER PLAN FOR THE UNIVERSITY OF BUFFALO

THE UNIVERSITY OF BUFFALO is situated on the northern boundary of the city, adjacent to Grover Cleveland Park; its 178-acre campus is roughly triangular in shape, and its existing buildings (indicated opposite by a lighter gray tone) form the nucleus for the proposed long-range campus plan. Existing buildings include a five-unit dormitory group at the north end of the campus (center top, opposite), lecture halls and library in the center, gymnasium at lower right, and engineering building at center bottom. Among additions proposed are a new residence hall and dining room-lounge building to the north of the dormitory group; a Fine Arts Center to the west of that group (see pages 181-183); a Student Union Building to the south of the dormitories; an addition to the library; additions to classroom units; a field house and stadium at the eastern corner of the campus; and a new circular research building close to the south end of the campus. Also proposed are an addition to the medical research facilities and a new nuclear research center.

The new dormitory unit, the Student Union Building, the Fine Arts Center, and various classroom buildings would receive priority according to the program as developed by the architect Paul Schweikher, and his associates, Earl P. Carlin, Peter Millard and Edward N. Marcus.

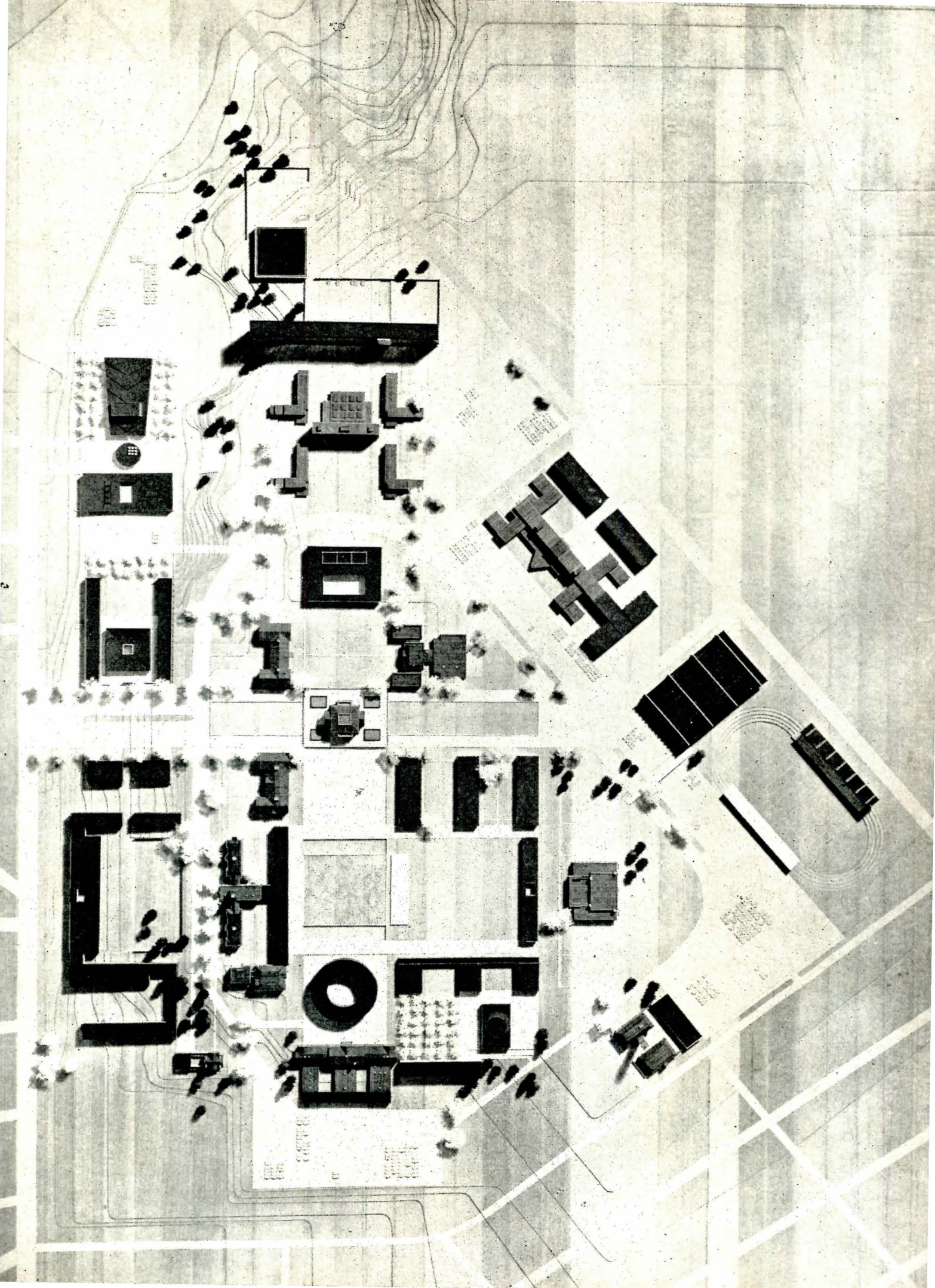


The Master Plan of the University of Buffalo was intended to be a guide to short range planning by indicating the general objective of long range plan and is to be used by the University Administration as a point of departure in both short range and long range planning as much as a specific plan. Many changes may occur over the years in the requirements and in the location, use and design of projected buildings. . . . It is anticipated that the building forms will be more and more disciplined to the simple and the rectangular as time goes on. . . . The plan is underway in development, especially in the sense of road-ways and parking. It acts as a control to the thinking of all but is as much a point of departure as it is a disciplined framework for future planning. *Paul Schweikher, Architect.*



*Model of proposed long-range plan for the University of Buffalo*







## THE ARTISTS ARE OUT OF THE ATTICS

THE DEVELOPMENT OF CAMPUS CENTERS for activities in the arts has recently flourished as the arts have gained in curricular importance. The traditional assignment of basements and attics to the campus painters, sculptors and craftsmen, and the use of remote or casually adapted space to insulate serious but noisy activities in music and the theater from the quiet scholars have given way in many places to well conceived and centrally positioned buildings, planned with the requirements of creative people in view. Equally important is the growing recognition of the arts as a contributing force in the education of all students.

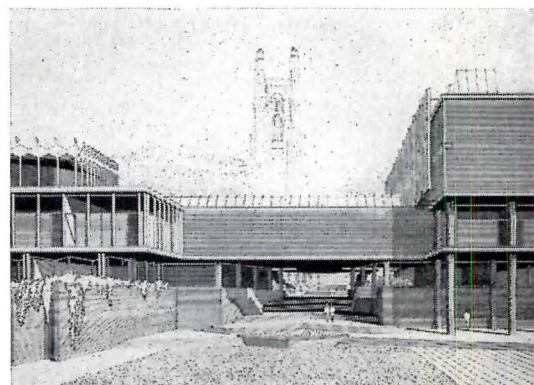
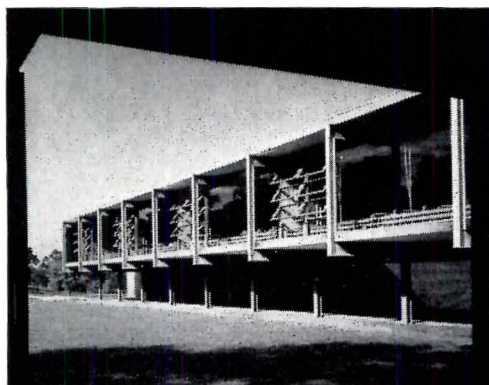
In schools where the emphasis is not on the preparation of professional artists (Dartmouth can be cited as an example) there are elaborate plans for centers which not only focus attention on the arts and provide facilities for their development, but which hopefully aspire to a fusion of understanding and acceptance of the arts through the combination of areas for specialized activities (in music, drama, and the visual arts) and inviting space for the pursuit of miscellaneous interests peripheral to the curriculum.

Each institution, of course, solves its problem of housing the arts in terms of its existing facilities, its academic purposes and its concept of the general relationship of the arts to mature social intelligence. One institution may consider itself adequately served by space for presentation — gallery spaces, recital and lecture halls, theaters and similar public areas. Another will find these inadequate unless supplemented by studios, shops, rehearsal rooms, storage and faculty work rooms and all of the specialized relationships and equipment that these imply.

The advantages of bringing the arts together in a single building or building complex can be cited. Thoughtful planning on the part of the architect can lead to the encouragement of a flow of interest from one activity to another, without creating new confusions. Thus the architecture itself can serve the ends of education.

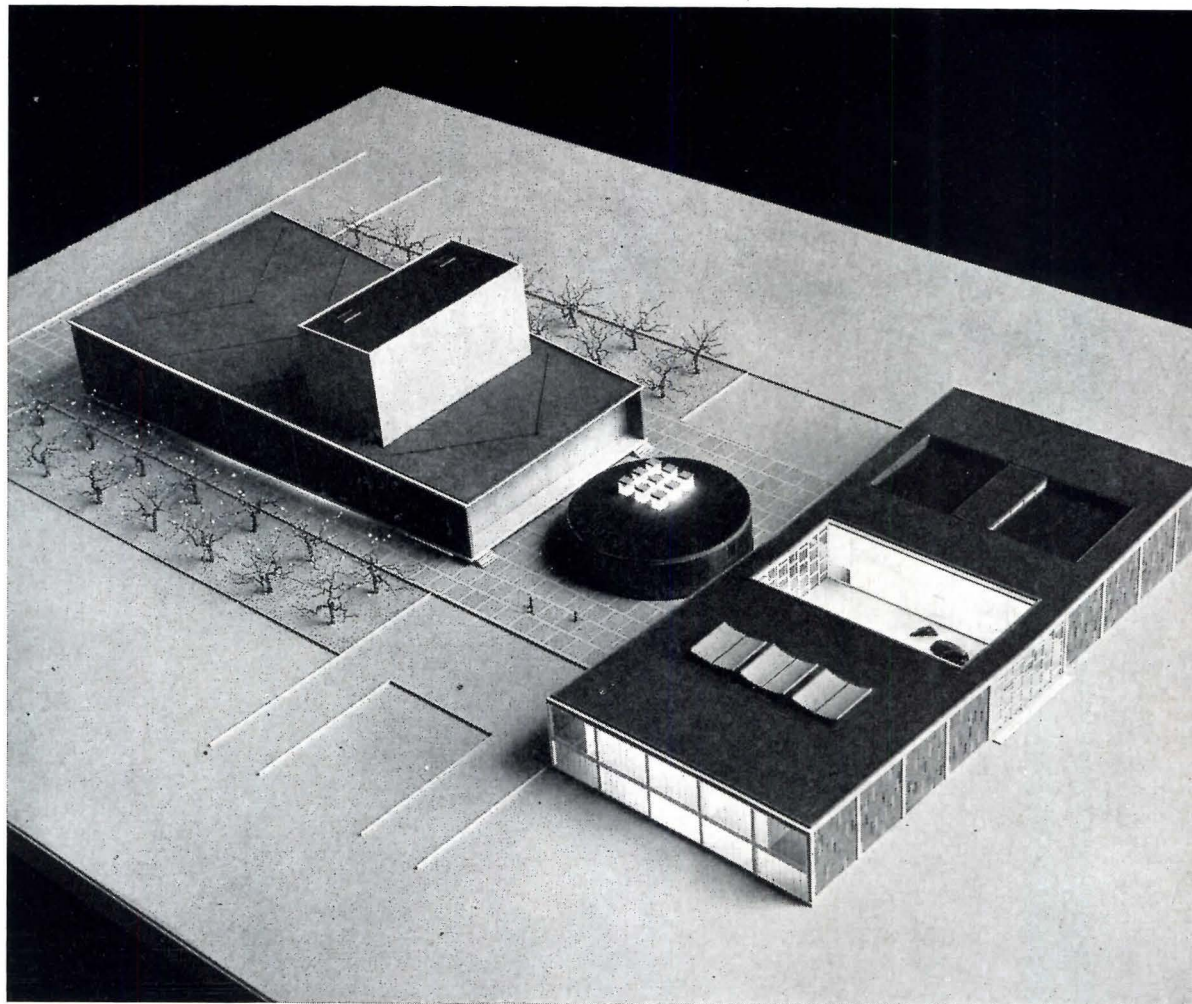
Architecturally, of course, the campus art center should affirm in unmistakable terms the right of architecture to be considered the creative equal of the other arts. The campus residents of today are the trustees, politicians, teachers and business leaders of a rapidly approaching tomorrow. If the arts touch them deeply, they will respond; and the widest impact of this microcosm will be made by the building itself. *Norman L. Rice, Dean, College of Fine Arts, Carnegie Institute of Technology.*

Photos l. to r. Lionel Freedman; Joseph W. Malliar



Left to right: Fine Arts Center, University of Arkansas, 1948, by Edward D. Stone, Haralson & Mott, associated; Fine Arts Center Maryville College, 1950, by Schweikher & Elting; Mar Cooper Jewett Arts Center, Wellesley College, under construction, by Paul Rudolph, Beckwith & Haible, associated



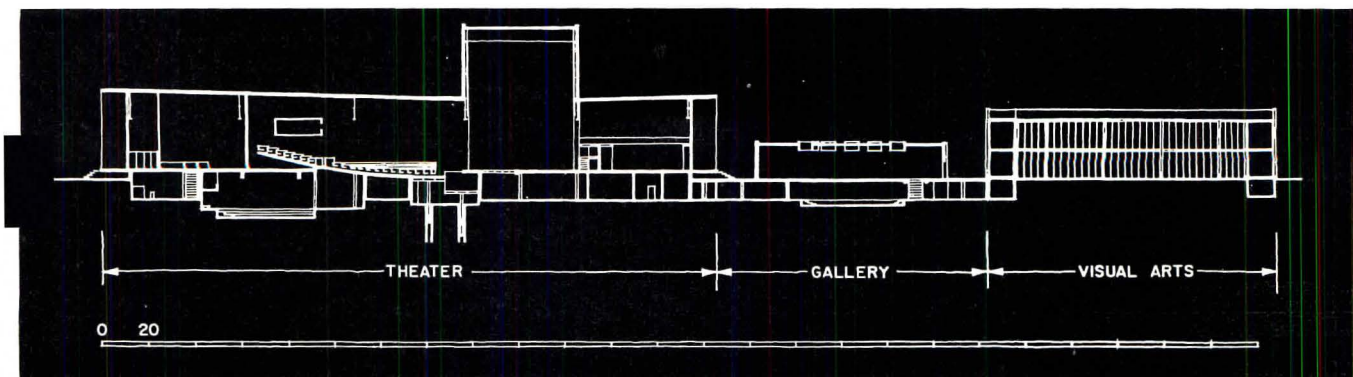
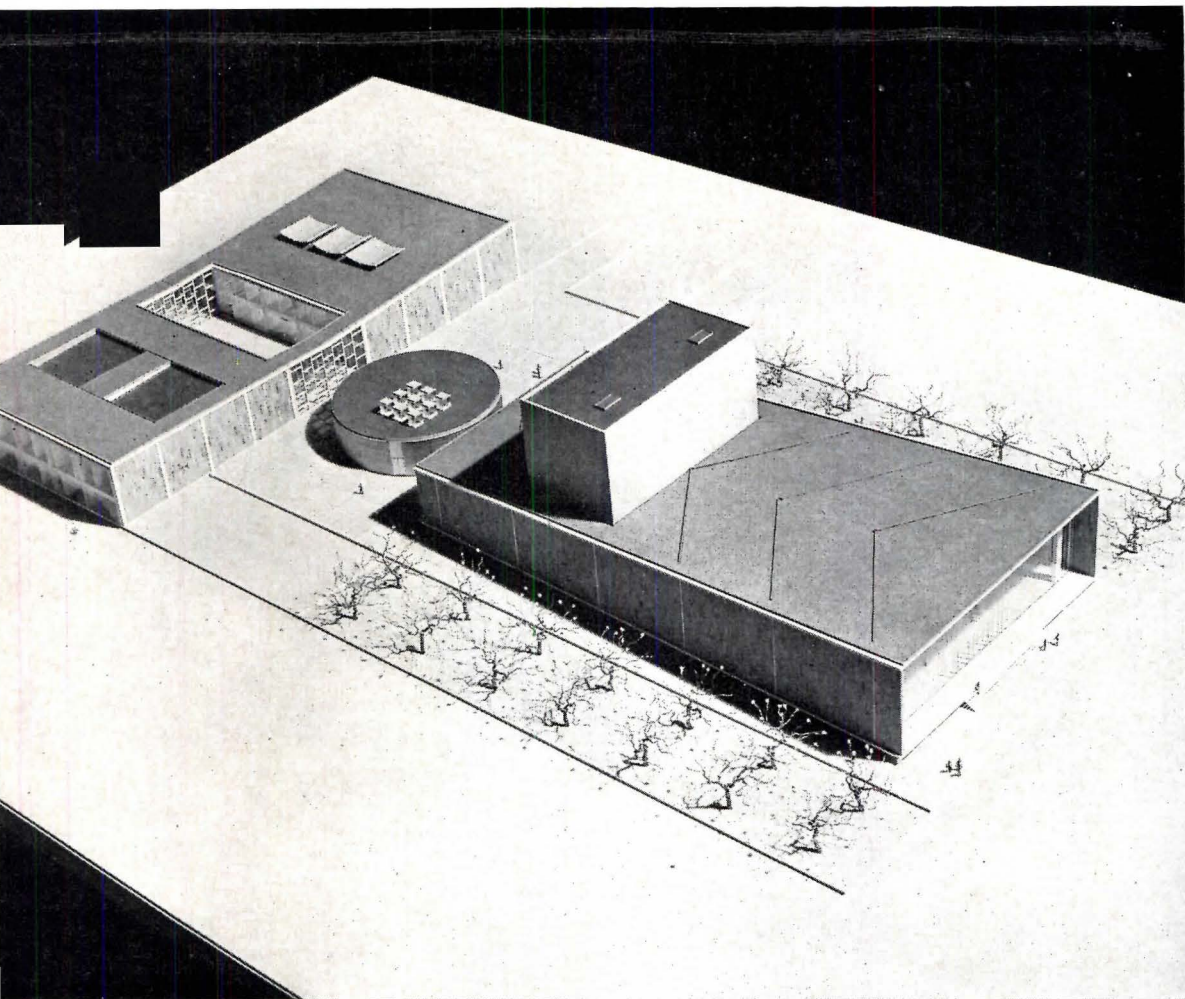


### **FINE ARTS: A HARMONIOUS STATEMENT OF FUNCTION**

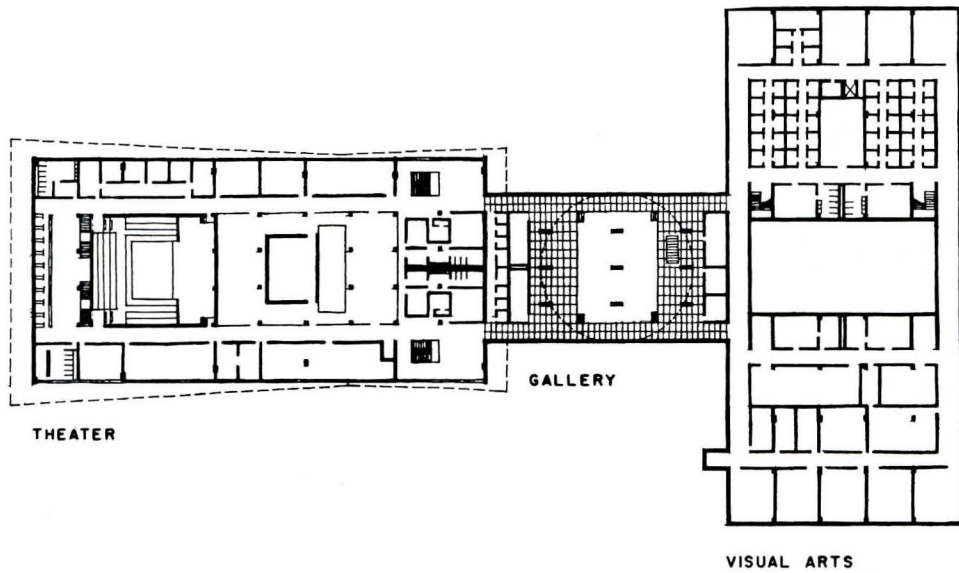
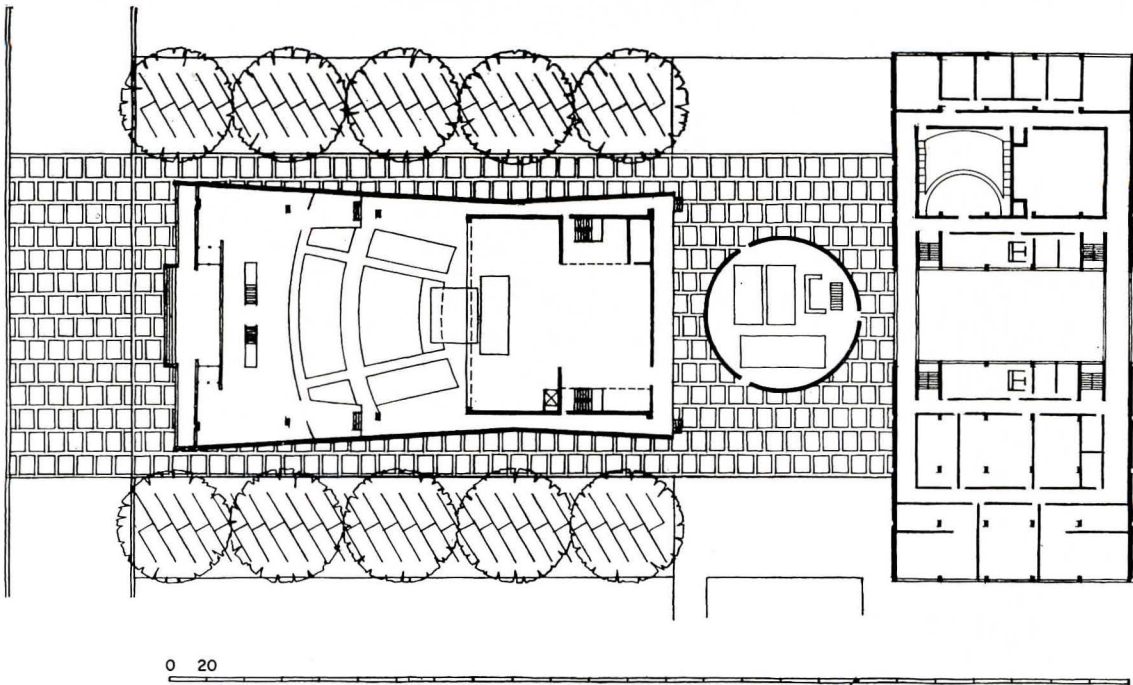
AT THE UNIVERSITY OF BUFFALO the new Fine Arts Center is now partially under construction, with the music section nearing completion. Eventually the Center will consist of three separate structures, each a straightforward expression of its function, and all merging into a harmonious whole.

In the music and visual arts building, the architect explains, "the rectilinear discipline has, to some degree, been followed. The pitch of the roof is partially for the purpose of modifying the skyline, but is adapted as well to the need for increased height at the studio ends, especially in the visual arts section. It is meant, too, to act as a foil to the slope of the theater." On the sub-level are practice rooms and sculpture and ceramics rooms, linked to the theater by an underground passage that passes beneath the circular library, where it forms an exhibition gallery. Classrooms







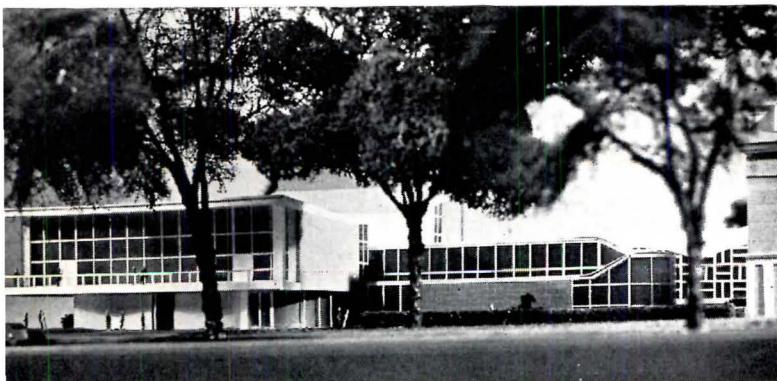
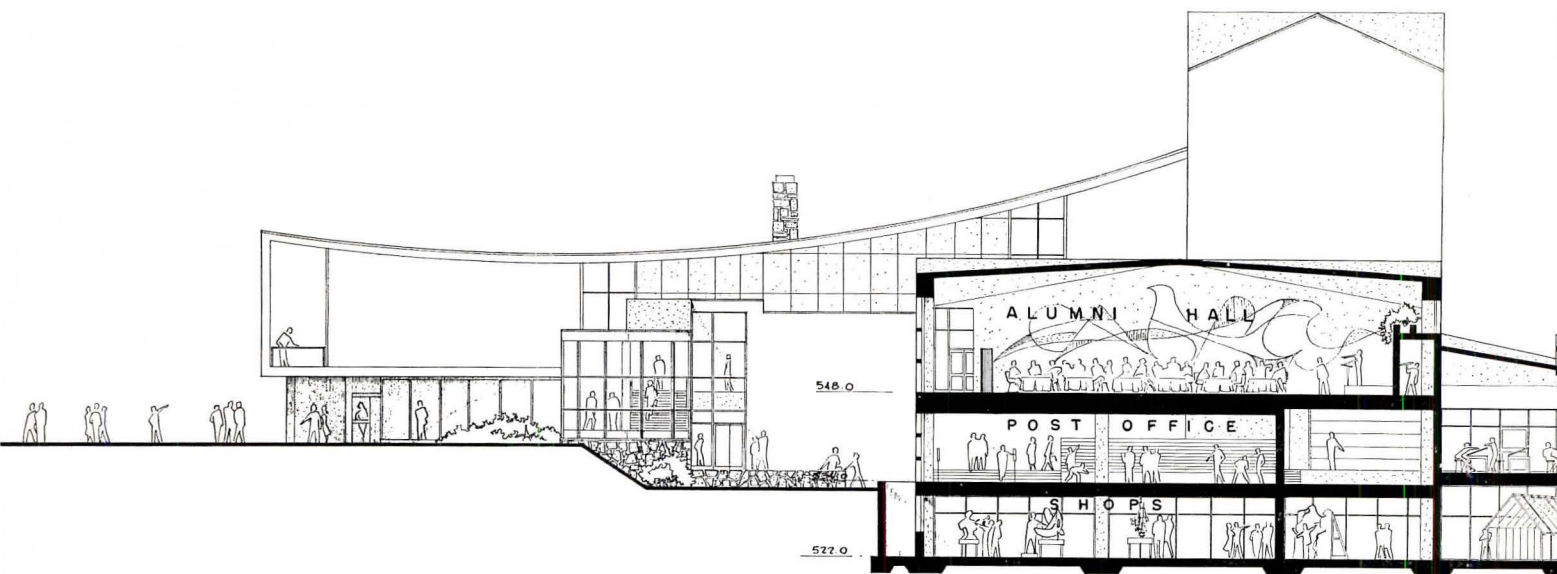
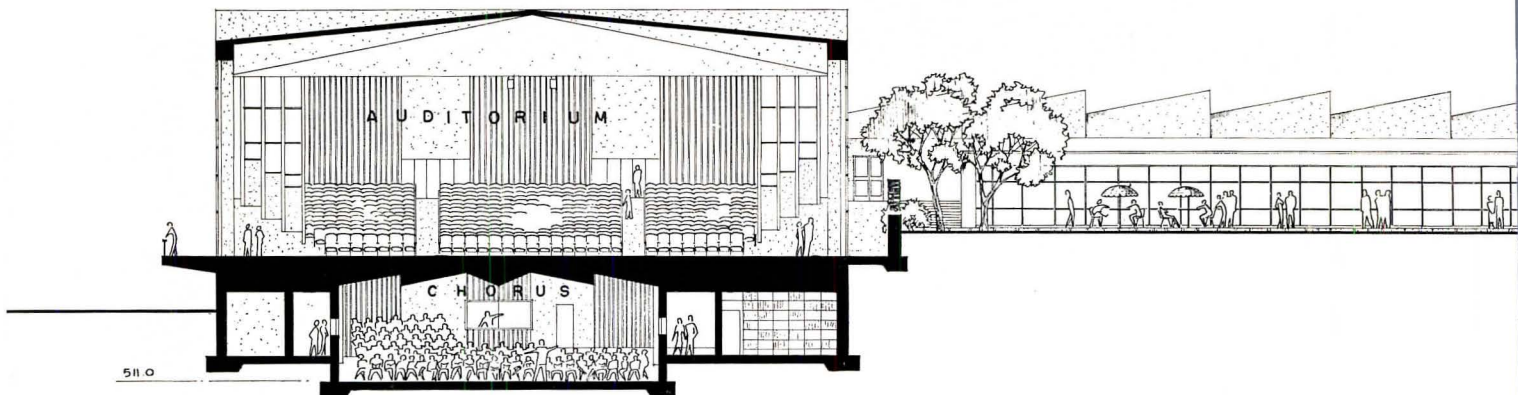


and studios occupy the upper levels of this unit, together with band and chorus rehearsal rooms.

The library is intended to be a working library containing books and portfolios of art, sheet music, microfilm, slides and records; it will have access to listening booths at the sub-level.

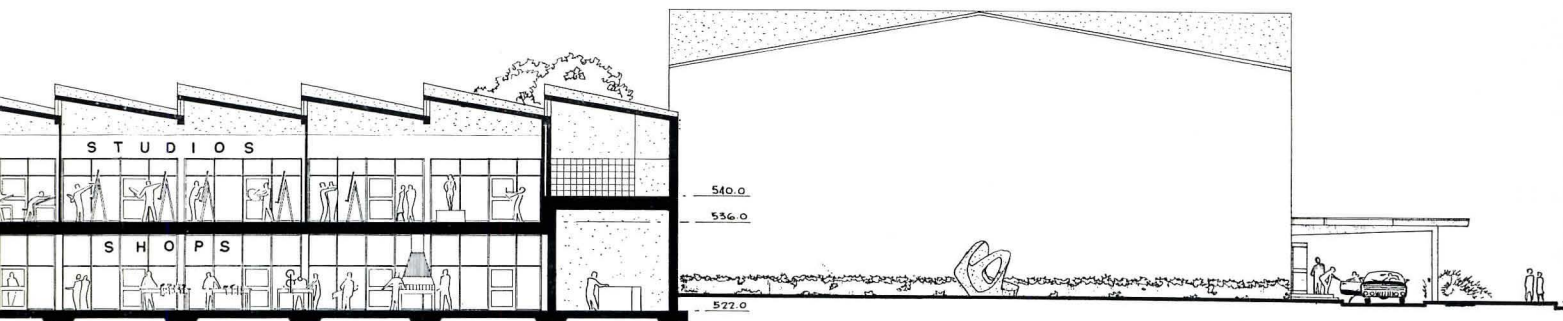
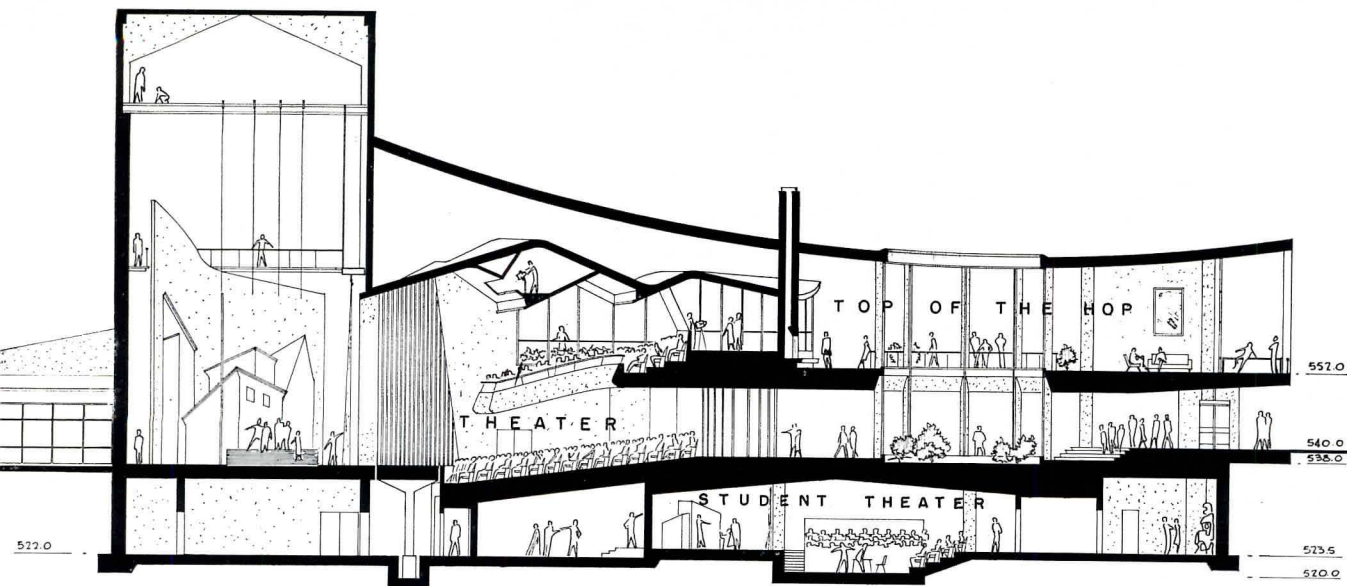
The theater will have a large stage and generous work space for scene and costume design and production. Its auditorium was designed to be readily adaptable by a set of metal curtains (similar to medieval chain mail, the architect comments) for audiences of 500, 800 or 1400. *Architect: Paul Schweikher. Associates: Earl P. Carlin, Peter Millard, Edward N. Marcus. Consultants: Structural, Henry A. Pfisterer; Mechanical, Fred S. Dubin; Acoustical, Bolt, Beranek & Newman.*





Left, model view from northwest looking toward Top of the Hop and lounge. Right, main floor corridor and art studios

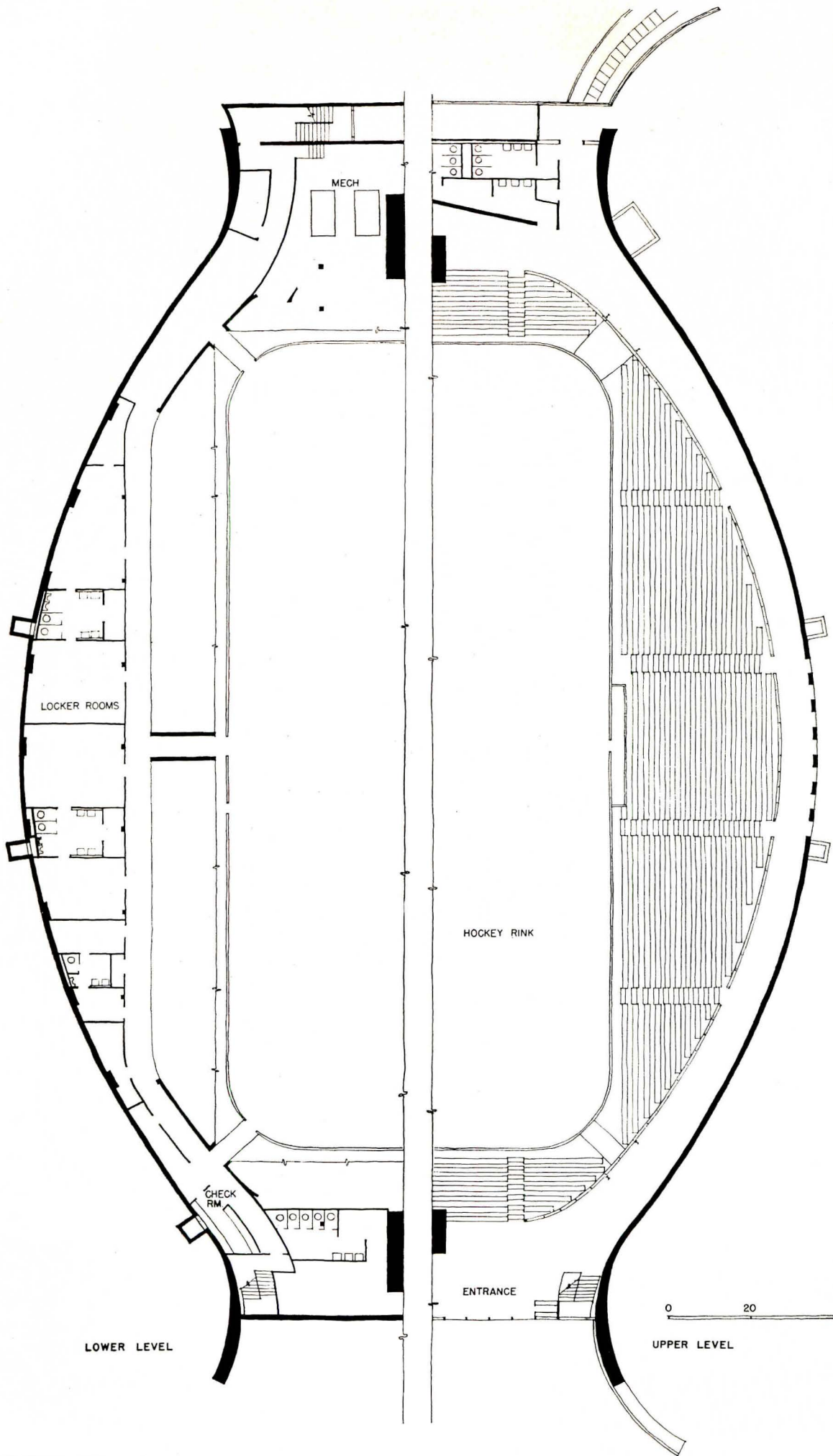




### FINE ARTS: A COMBINED ARTS AND SOCIAL CENTER

CONSTRUCTION IS SCHEDULED to start next Spring on Dartmouth College's great new Hopkins Center, a \$7,500,000 project intended to provide an educational, cultural and social center for the College's students, faculty and alumni. It will consist of four interconnected units: the theater block, including a 400-seat theater, a small student theater, rehearsal and dressing rooms, stage shops, exhibition areas and the "Top of the Hop" social area; the Alumni Hall block with college post office, divisible alumni hall, lounge and offices; the studio block; and the auditorium block which will provide a 900-seat concert hall, band and orchestra rehearsal rooms, glee club room, music library, practice rooms and offices. A large garden court will separate the theater and auditorium wings. *Architects: Harrison and Abramovitz. Consulting College Architect: Nelson Aldrich.*

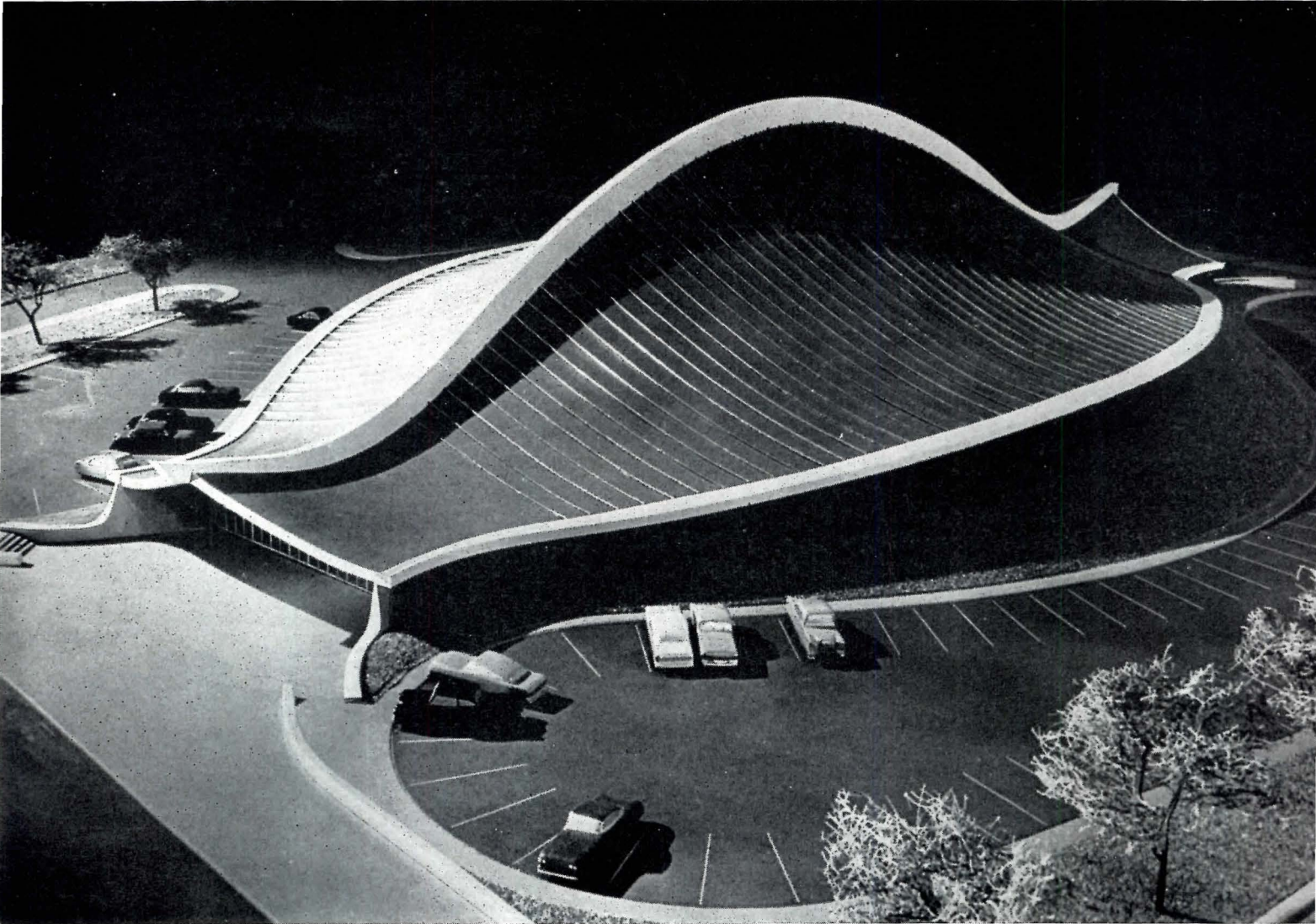






## RECREATION AND ADMINISTRATION FACILITIES

On the next ten pages are presented a few of the many types of campus buildings which help to round out a university's organizational and community activities

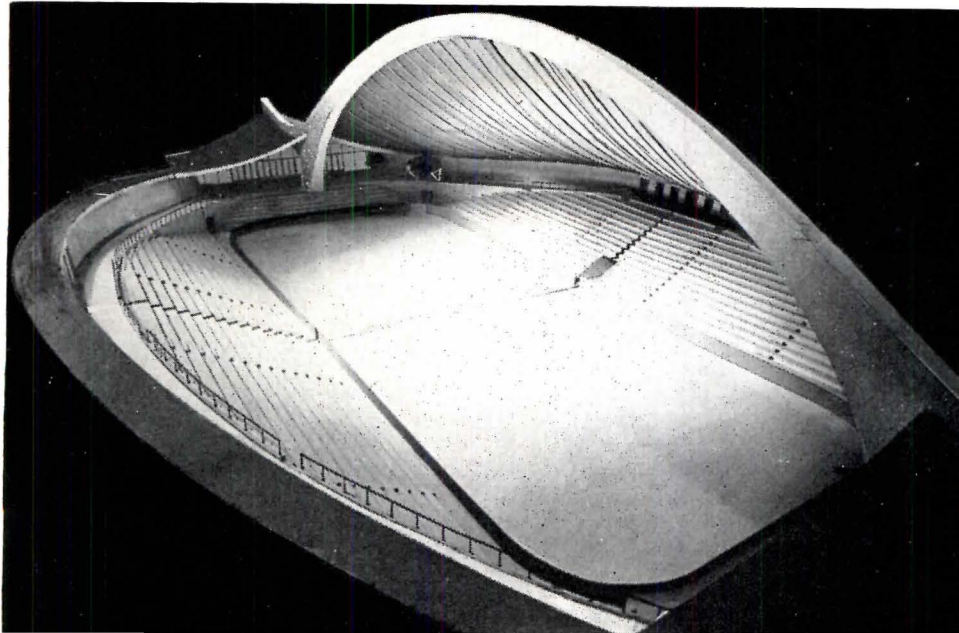
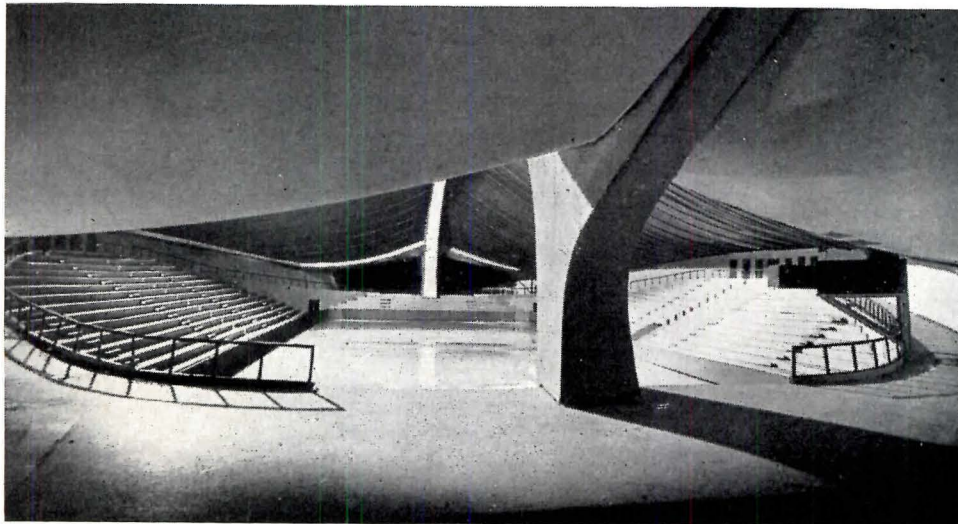
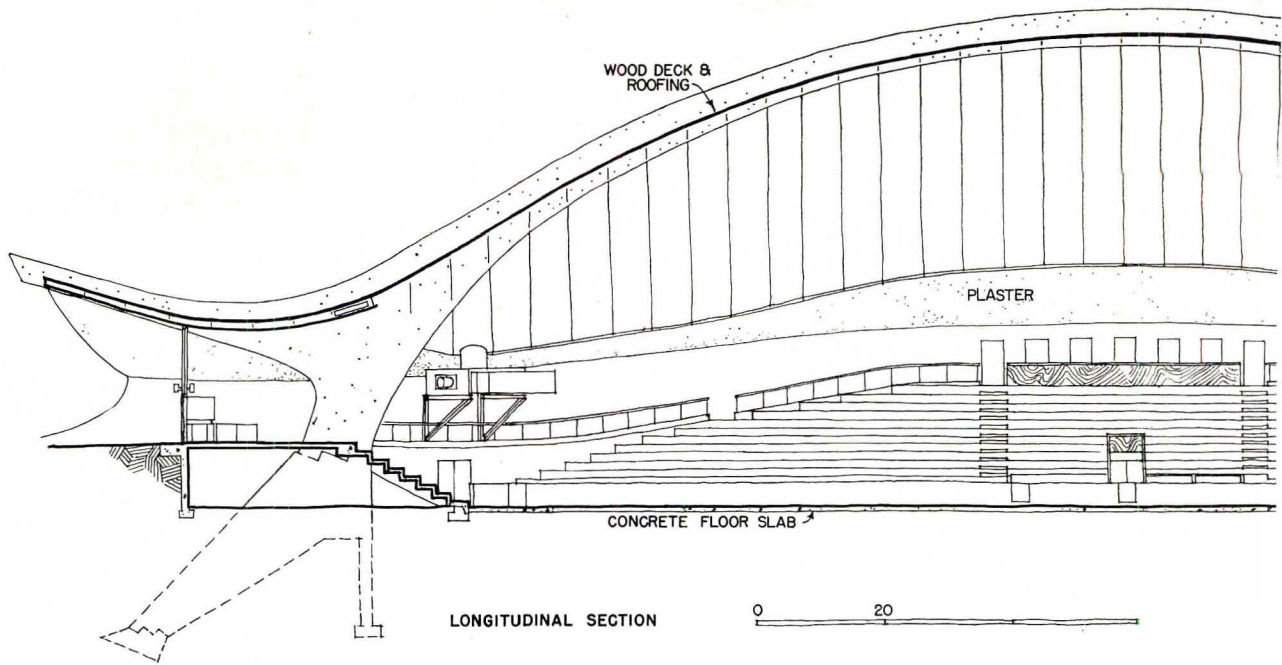


### HOCKEY RINK: SPINES AND CATENARIES FORM NEW SHAPE

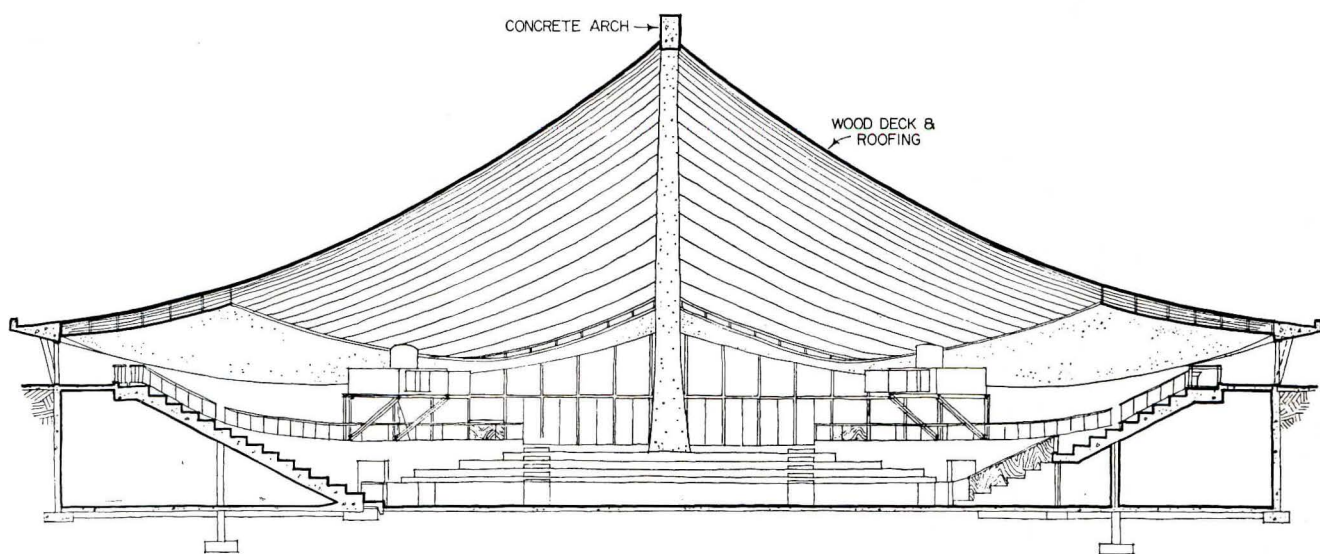
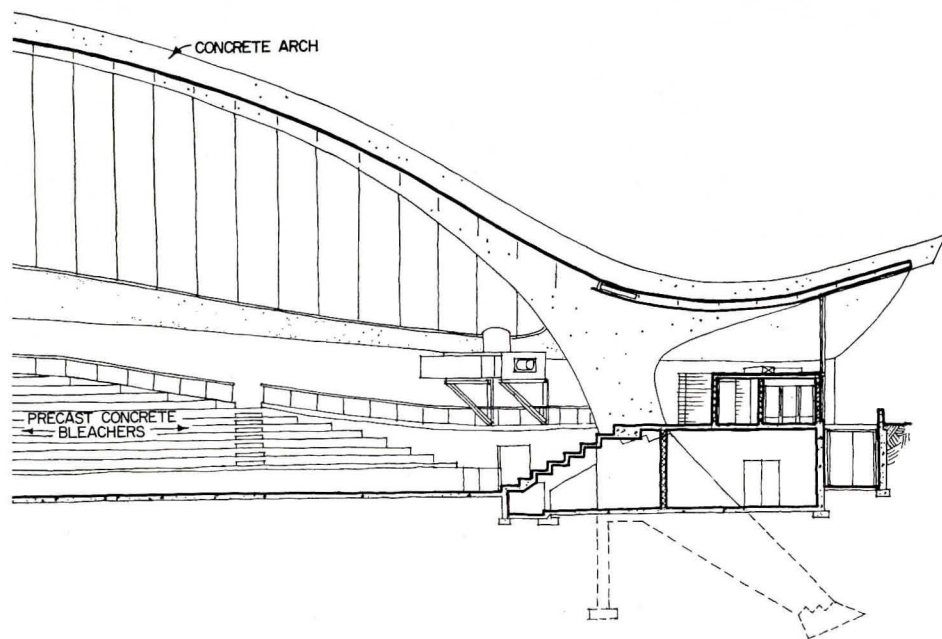
The unusual, undulating shape of Eero Saarinen's scheme for the David S. Ingalls Hockey Rink at Yale University marks another significant and firm step toward a more fluid, sculptural design vocabulary. The great sweeps of the structure neatly package (and provide column-free) the functional spaces required within; the high spaciousness of the arena center diminishes to flared fillips at the ends, which highlight the entrances. When completed, it should provide a spectacular housing for athletic events.

The form of the structure is created by suspension cables stretched in a catenary curve from the great spine-like arch to the curving outside walls, which are, in turn, like arches turned on their sides. The rink will seat about 3000 spectators. When there is no ice surface, the building can hold assemblies up to 5000.







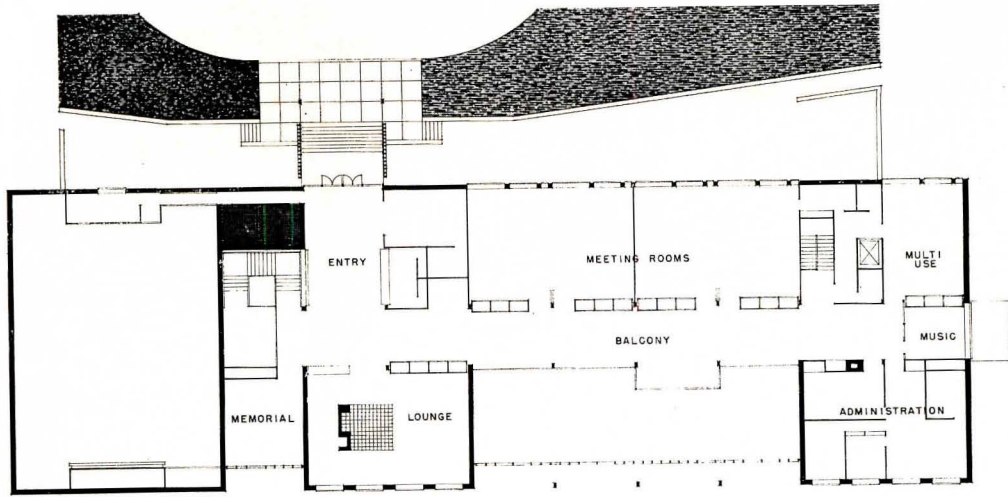


CROSS SECTION

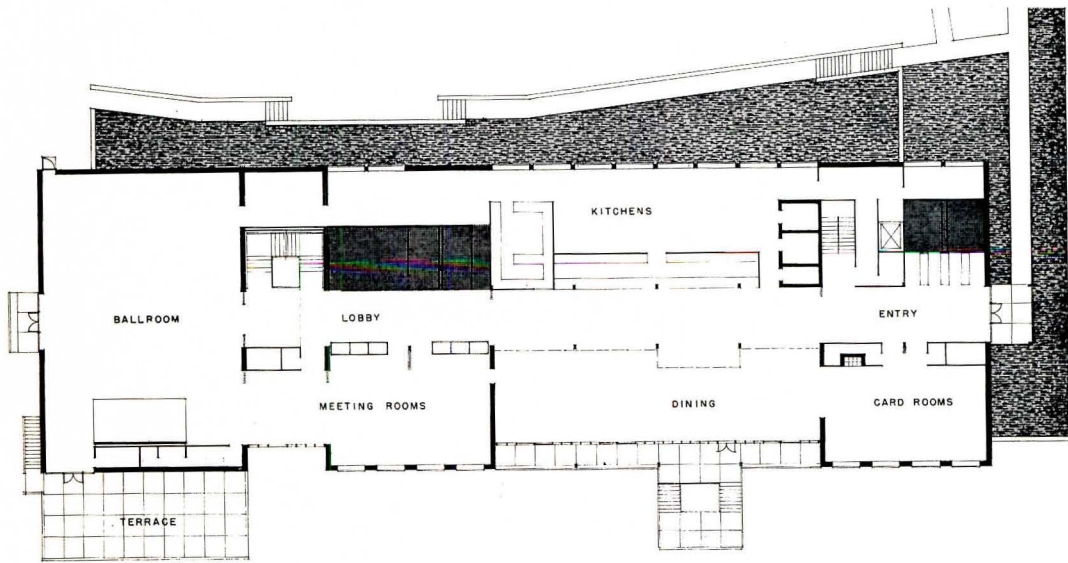
### YALE HOCKEY RINK: A PACKAGE FOR AN INTERIOR

Inside, as out, the reinforced concrete parabolic arch is completely visible and dominant. The ceiling is patterned by the steel bridge strand cables strung on 6-ft centers between the arch and side walls. A wood plank roof deck is laid across nailers fastened to the cables. Over this are two base layers of roofing felt and a top layer of coarse aggregate roll roofing capped with aluminum battens parallel to the steel cables. The main entrance to the rink will be formed by a glass and aluminum wall. There are four large ventilating units in the arena; lighting is by thirty-six 8-tube fixtures hung in four rows. The lower level beneath stands on one side will be left unfinished. *Architects: Eero Saarinen and Associates. Consulting Engineers: Severud-Elstad-Krueger; Jaros, Baum and Bolles. Lighting Consultant: Stanley McCandless. Contractors: George B. H. Macomber Co.*

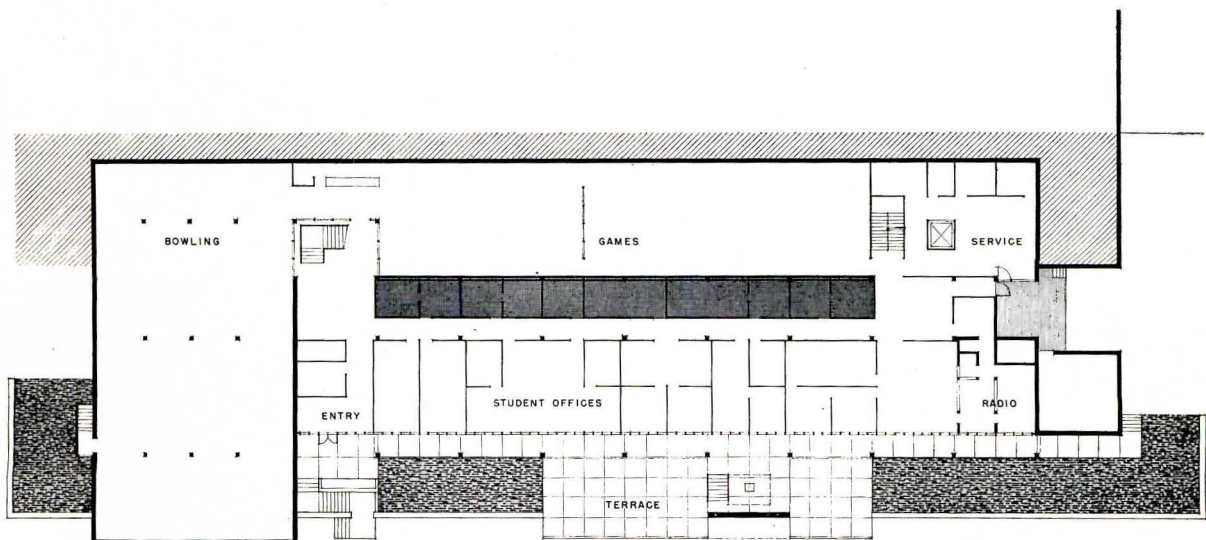




UPPER FLOOR

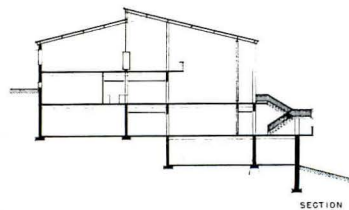
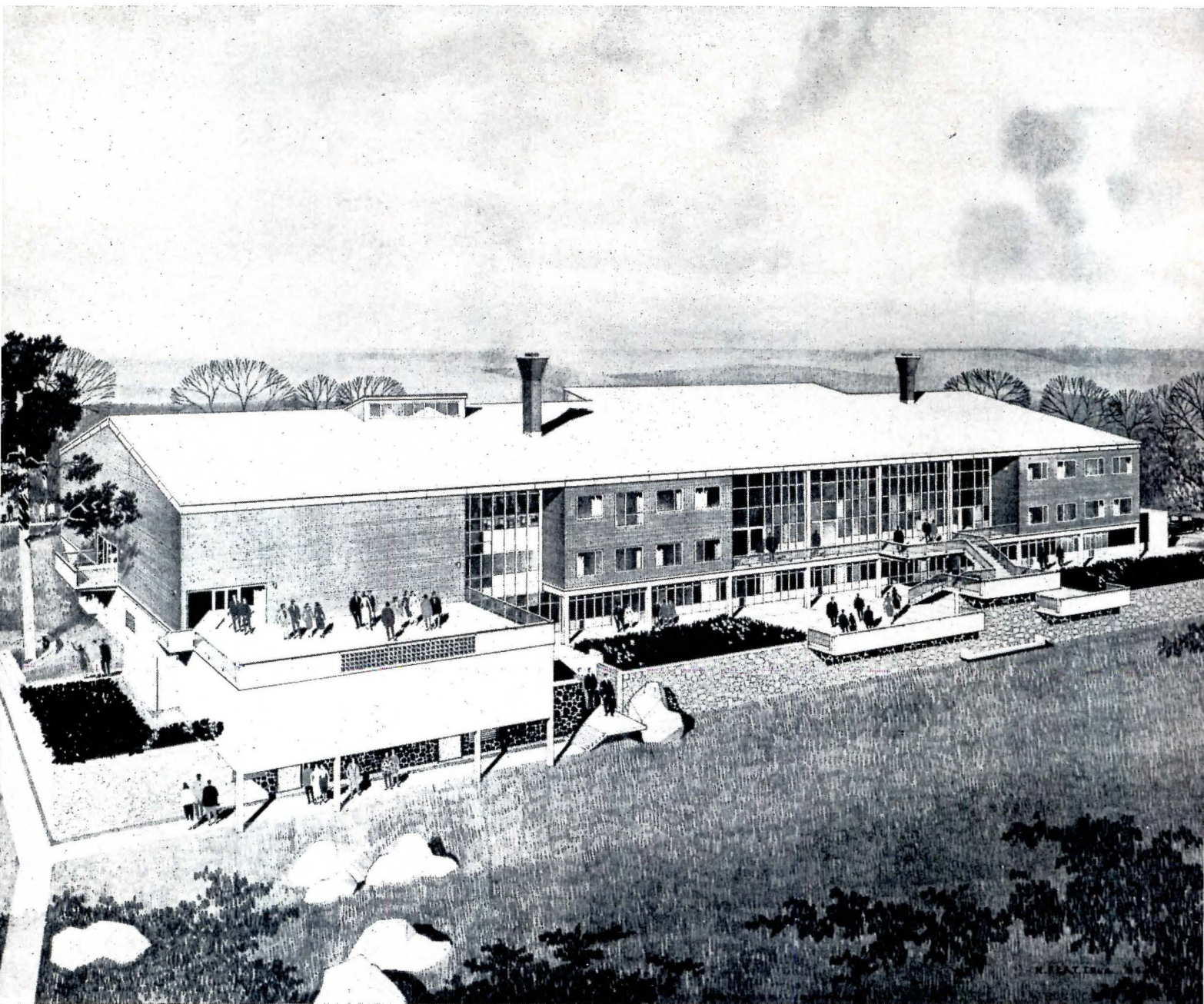


MAIN FLOOR



LOWER FLOOR





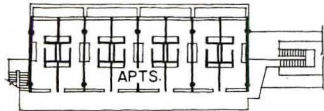
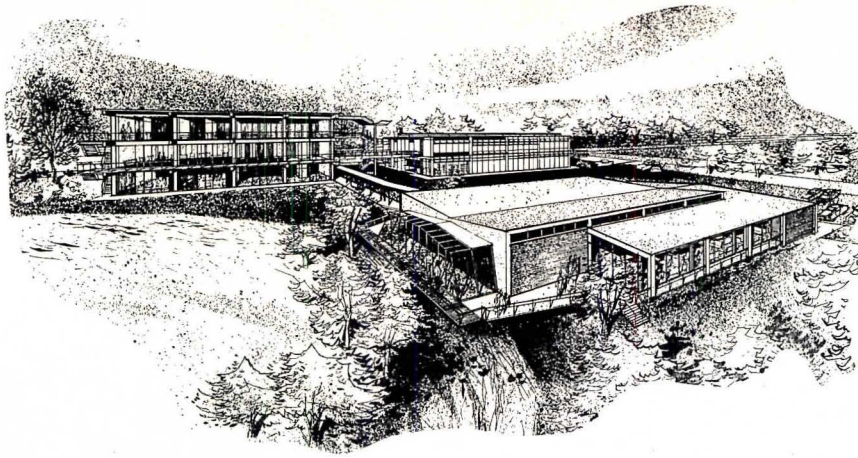
### STUDENT UNION: AN AWARD WINNER NEARS COMPLETION

In 1951, the preliminary design for this clean-cut, generously proportioned building won first prize in a competition sponsored by the University of New Hampshire for a Memorial Union Building on its campus in Durham.

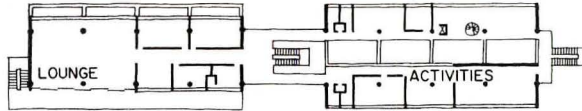
Today, in spite of the usual dangers of intervening time, the building stands about finished — and with very few changes in the original basic scheme. Principal modifications are a pitched roof and re-study of some fenestration.

The structure combines a variety of facilities for recreation, dining, and student activities. Rooms are large and nicely disposed. Excellent use has been made of a sharply sloping site to give convenient outside access to the several floor levels, and to provide a variety of terraces and balconies. *Architect: Ronald Courley.*

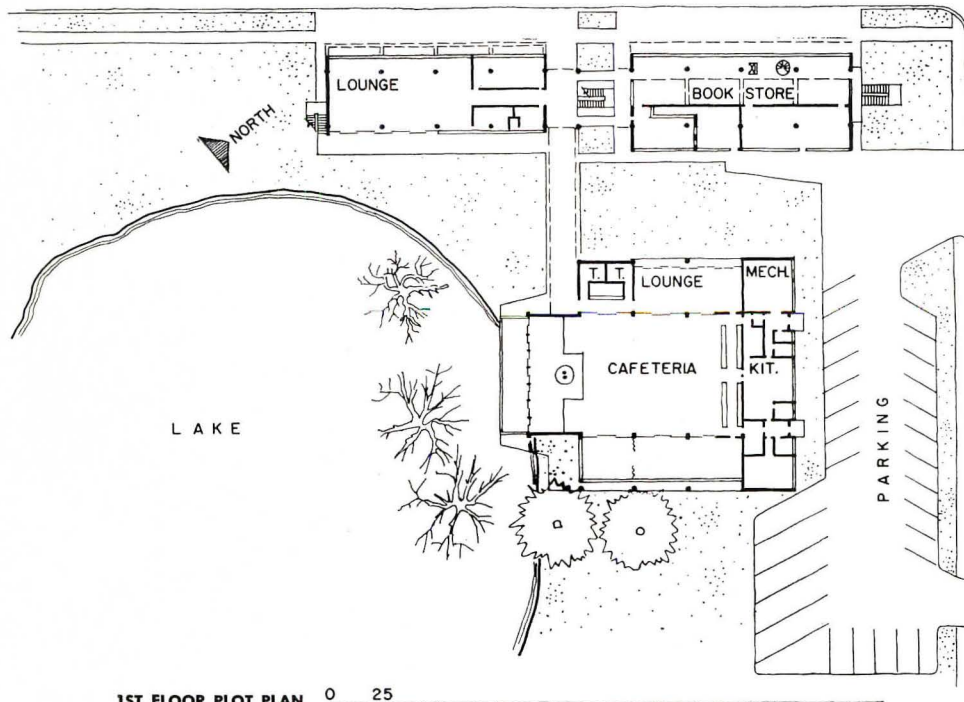




3RD FLOOR



2ND FLOOR

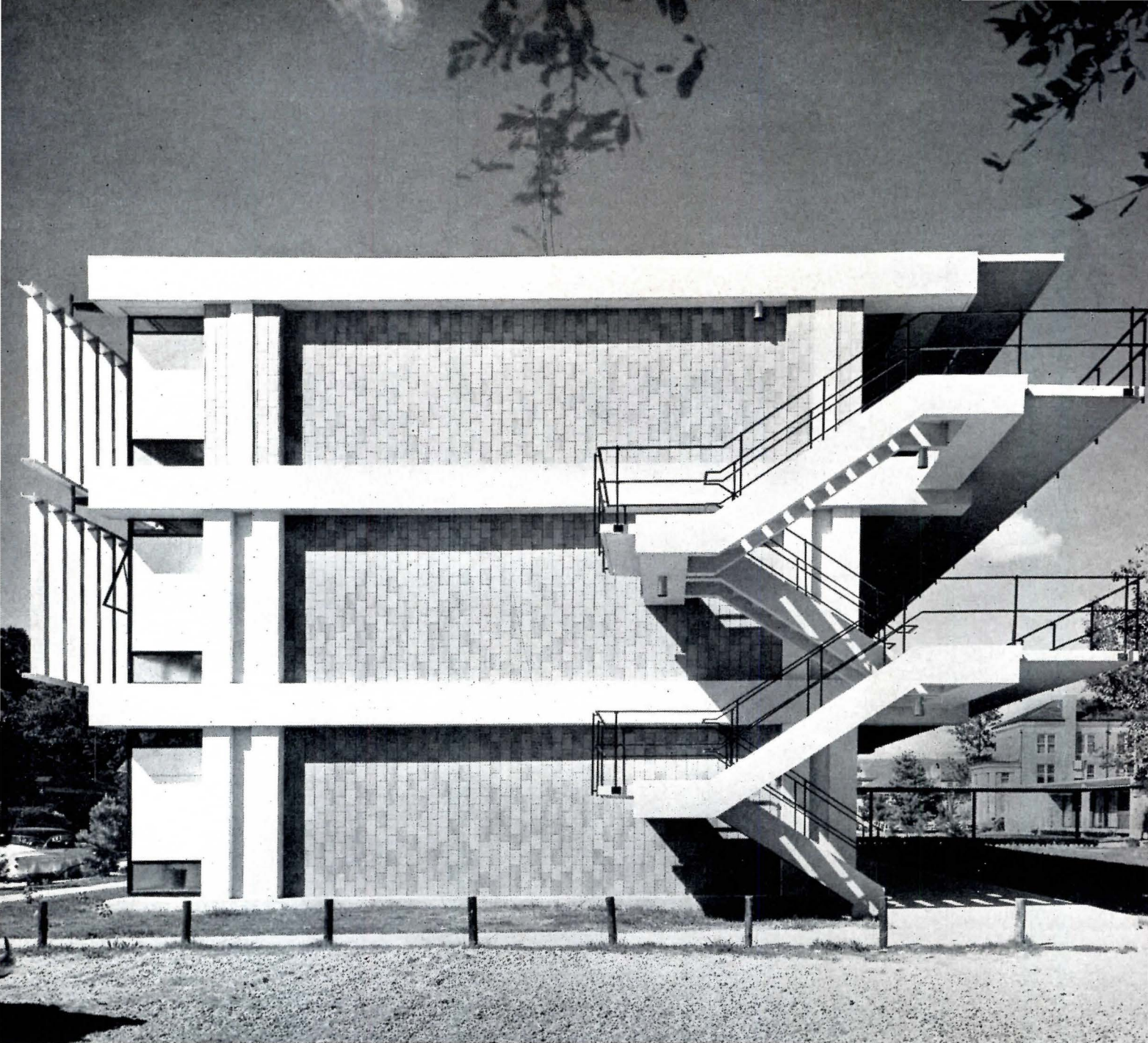


1ST FLOOR PLOT PLAN

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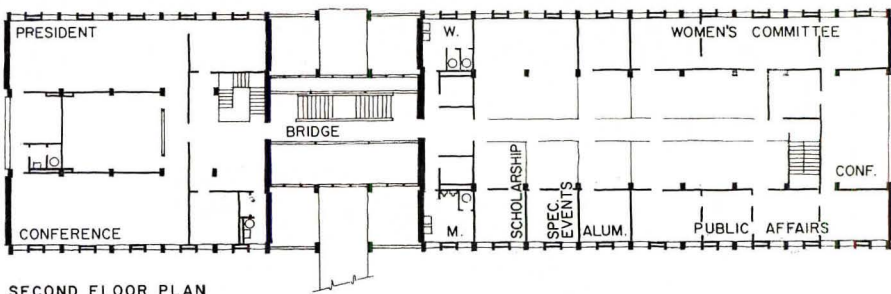
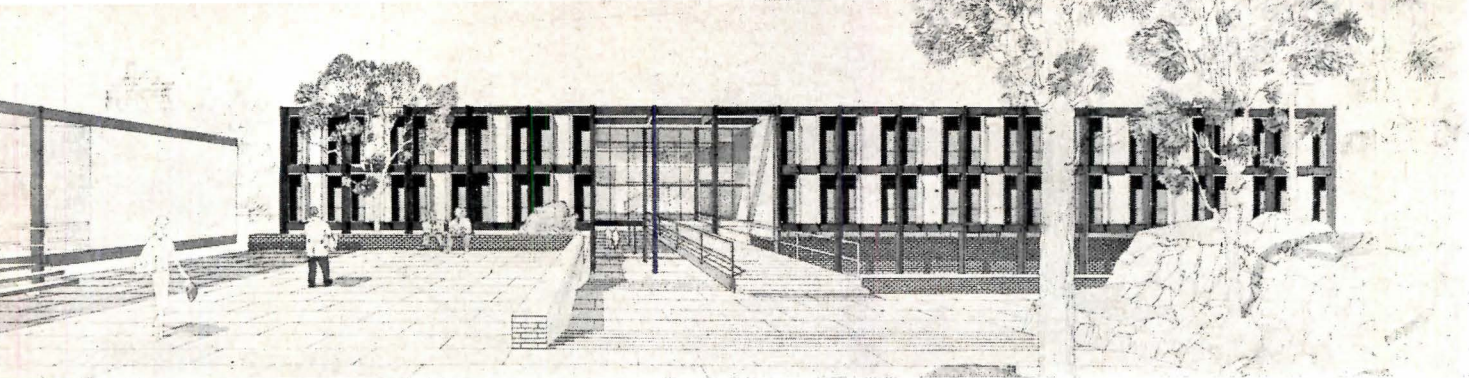
Frank Lotz Miller

### STUDENT UNION: BOLD SHAPES AMIDST SPANISH MOSS

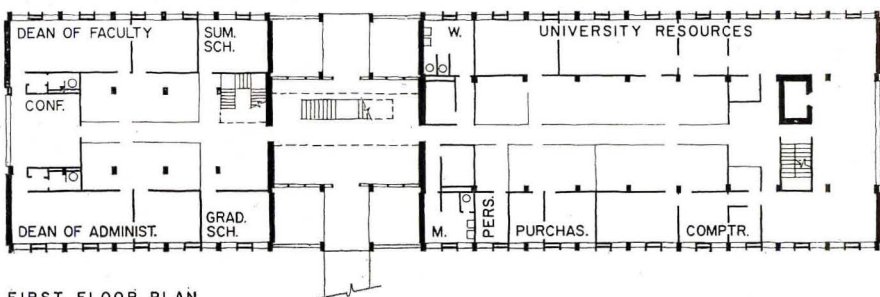
This trio of multi-purpose buildings deftly coordinates a variety of miscellaneous facilities for the campus of Southwestern Louisiana Institute in Lafayette. The building shown above with adjustable sunlouvers, a strongly accented concrete structure, has rooms for men on its first floor: a general lounge, lockers, toilets, an office and typing room. On the second level are similar areas for women, plus a dormitory and a library. The top floor contains eight faculty apartments. Flanking this, and linked with it, is a unit housing a bookstore, mailroom and rooms for student organizations.

The third building is a very flexible one which can be adapted for use as a banquet hall, student and faculty lounges, a ballroom, or a second campus cafeteria. *Architects and Engineers: Burk, Le Breton and Lamantia.*

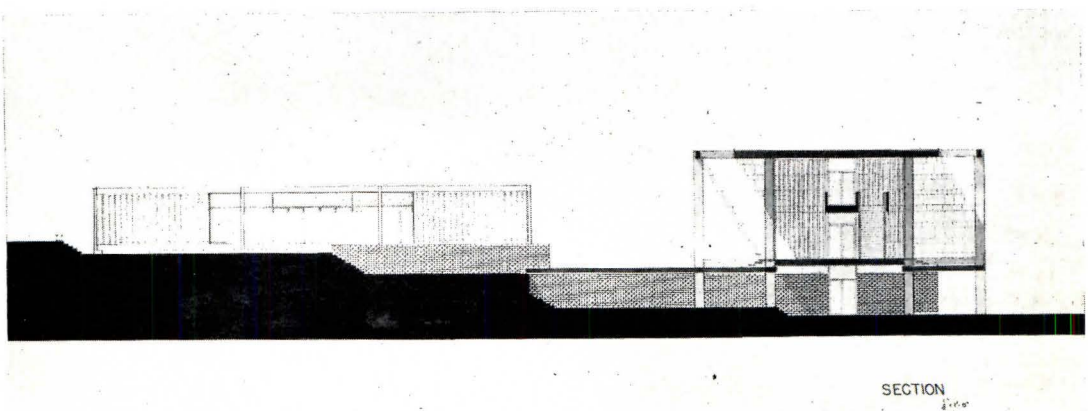
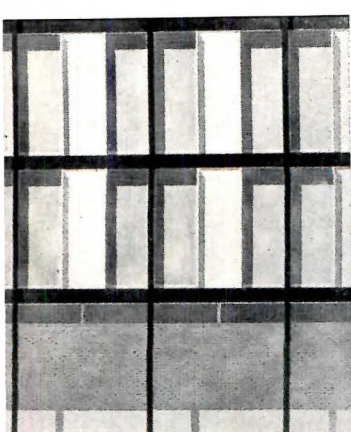
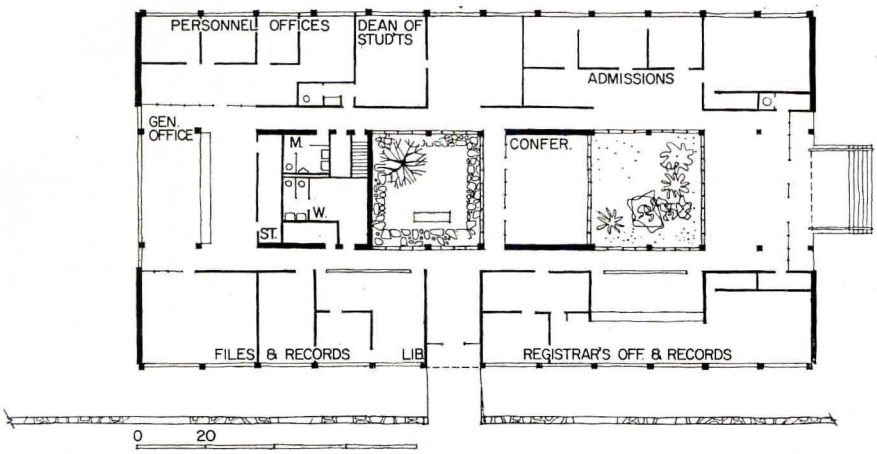




SECOND FLOOR PLAN

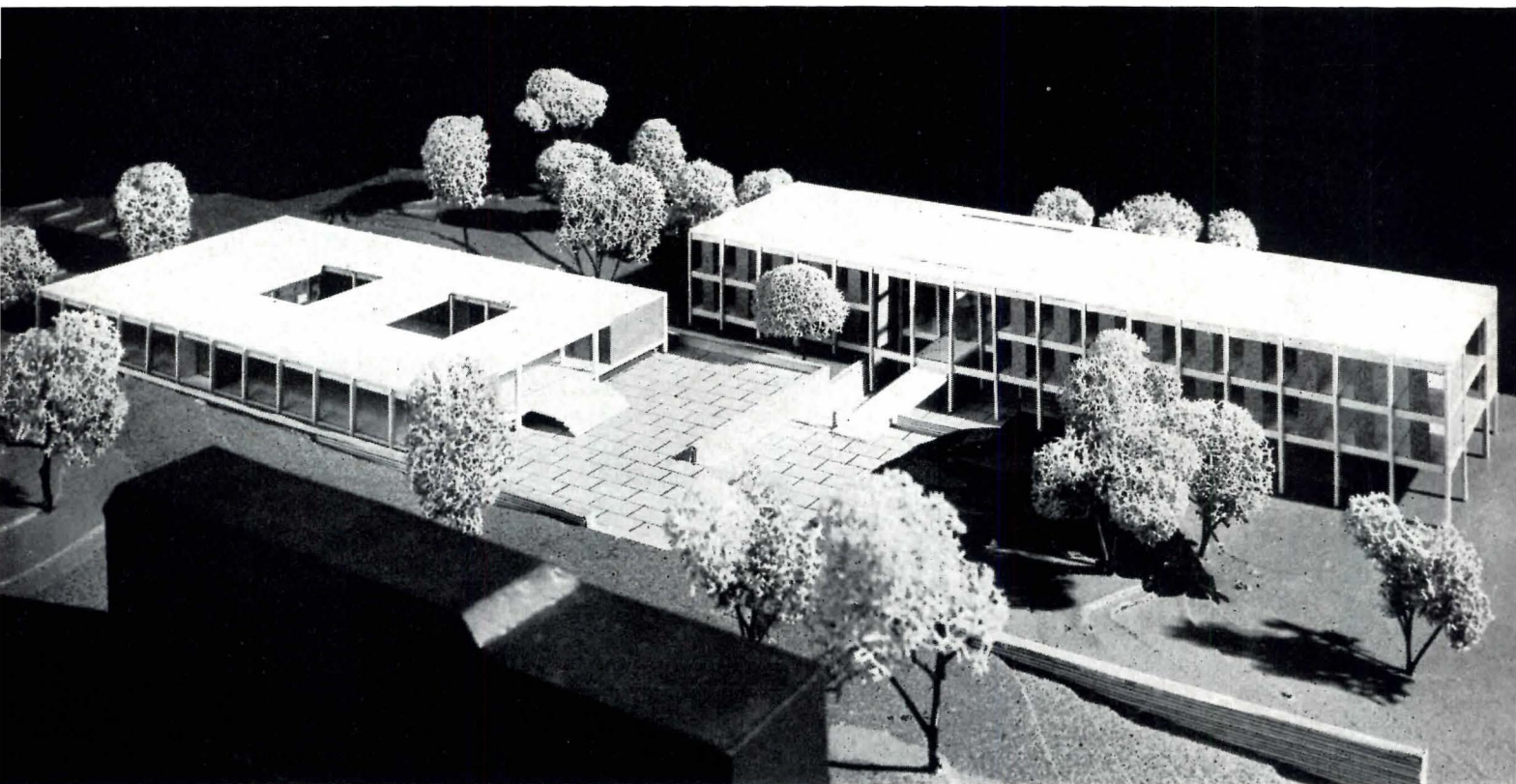
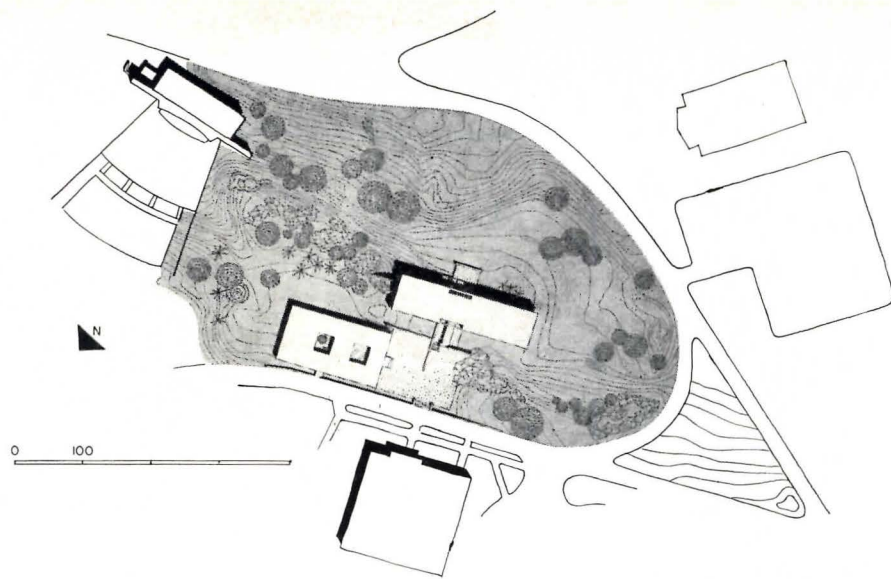


FIRST FLOOR PLAN



SECTION





### FOR ADMINISTRATION: A SCHEME FOR VISUAL EMPHASIS

An office building with a "campus plan" might well characterize this carefully studied administration center for Brandeis University near Waltham, Mass.

Facilities are split into three separate zones and two distinct buildings. One end of the larger building houses the executive area; the other end is for business administration. Student administration is in the smaller building, reducing traffic through the main one. The compound and plaza emphasize the importance; it forms a visual stopping place as one approaches via the drive.

The plan, structure and utilities are integrated to give wide flexibility in partitioning offices. The curtain wall has inset sections to add rhythm, obviate flatness (see detail far left). Structural columns are two steel channels filled with concrete.

*Architects: Hugh Stubbins Associates.*



## DORMITORY DESIGN: ECONOMICAL HOUSING ISN'T ENOUGH

By ALBERT BUSH-BROWN, *Assistant Professor, Architectural History, Massachusetts Institute of Technology*

PRIMARY among the facts to be faced by the architect of dormitories is the individual student himself. Outwardly perhaps no different from the boy who becomes a truck driver or mechanic, no different from the girl who marries or becomes a salesgirl, the student nonetheless is separated from these by different ambitions: he shunts aside temporarily — and sometimes forever — the accepted goods of financial return, domesticity and gregariousness. He arrives at college sensitive to values in uncommon areas of culture. For him, isolation, small-group housing, a chance to select what is compatible to his personality and objectives, are important. Students occupying hotel-like dormitories often discover to their pleasure that a room rented in a house is preferable to the small cell on a bleak corridor available at college. They find in the house a scale, a warmth, a compatibility of environment with personal values, and an intimate group of friends in harmony with their needs and ambition. If the architect ignores the scholar's needs for privacy, domestic scale and identification with a small environment, his dormitories will miss the mark.

The architect will also miss the mark if he fails to recognize the collective identity existing within groups of students and the educational benefits attendant upon such identity. Proximity to other students provokes greater concentration upon learning, but it also accentuates the uniqueness of men who sever customary ties with non-academic goals, loose the bonds of identity with small communities and lower schools, and develop loyalties to higher institutions, new friends and quests. This is a disruptive process, easier for some students than others, but it is not aided by the dormitory conceived entirely as a series of cellular bedroom-studies precluding any activities that make education a corporate experience. Nor is it necessarily aided by a multi-purpose room (that horrible admission of unclear planning!) in combination with dormitory cells. What is needed is a plan containing spaces of well-defined use capable of nurturing contact among students, encouraging common participation and endeavor in specific, objective activities that release student energies.

Besides providing spaces and scale ranging all the way from individually private to corporate, the architecture of a residential system must also recognize the variety existing among students. Some arrive self-

disciplined, others ready to explore all facets of bohemianism, and still others are insecure, possibly from an unrecognized need for outer control. Some are gregarious, others mavericks, and still others constricted by shyness.

All this variety presents problems for the architect and educator seeking the common denominator. Should he plan to have men live singly, in pairs, in suites, in rooms all alike? Should he provide rooms and apartments for faculty residents? Should he have long corridors with many small rooms, or suites opening off short stairwells? If, for reasons of expediency or financial economy, he is too ready to accept the minimum, standardized solution to dormitory planning, the architect may fail to obtain that variety and those controls needed by individual students, while planning for a fictionalized statistic who does not exist.

Moreover the architect must face the realities of student habits. Not all activities enjoyed by students are civilized or meditative or scholarly. They are not encompassed by studying, eating, sleeping and relaxing. What about the light controls needed by a student who still must test the long-proven false notion that man works best throughout the night? What acoustical treatment is required to protect others from the background music or the typewriter working against tomorrow morning's deadline? What materials will resist the scars of baseball played indoors? The function of a room is hardly defined by the name an architect gives it, but rather by the limits of a student's imagination. There he may rehearse a play, meet with others to speak French, discuss religion, play bridge; there he may first follow a Beethoven symphony in the score, assemble his personal library, propose to his future wife. But just as likely he may become intent upon reassembling a stripped-down Ford within the fourth floor shower room.

The architect can not, of course, plan for any of these activities, but the personality of his dormitory has got to suggest the range and warmth they imply. There is little an architect can do about the annual Spring riot, which is as predictable as the coming of final examinations; an architect can not prevent it, but the plan and materials he selects may well control that riot or at least save the university some maintenance bills.



### Should a University Supply Dormitories?

Opinion is still divided today, as it has been since the fourteenth century, on the question of how best to serve the needs of this special client, the student. There are still those who believe that the university should offer only intellectual education, permitting students to live in fraternities, apartments, rented rooms or wherever they may wish. There are others who believe equally strongly that a college or university is responsible for the total training of an individual, including social and personal education, and must provide a residential system. Traditionally, the first point of view has been held by educators at universities, the latter by teachers at colleges.

Because of the complexity of individuals they house and the range of conditions they must meet, systems of residence have not always been successful. Dormitories built by colleges in the eighteenth and early nineteenth century were especially inadequate as regards crowding, ventilation, illumination, heating, dampness, noise, fire-protection and furnishings.

No dormitories were built at M.I.T. or the Johns Hopkins, and while Cornell was forced by its rural location to provide residences, Harvard saw no additional dormitories built for undergraduates during a large period of Eliot's long presidency between 1871 and 1909.

This important detour from the older English collegiate practice was made at universities where educators emulated German and other continental universities. In Germany, universities provided only lecture halls, libraries, laboratories and a main hall suitable for holding ceremonies. Students attending a German university obtained their own lodging and board. Such was the respect for the product graduated by German universities that many educators in America attempted to introduce university organization by either beginning new institutions such as the Johns Hopkins or superimposing university structure upon the colleges, as was done at Harvard. Many remnants of the system are still visible, particularly at urban universities, such as New York University, and graduate schools, such as that at Michigan, as well as in technological institutes,

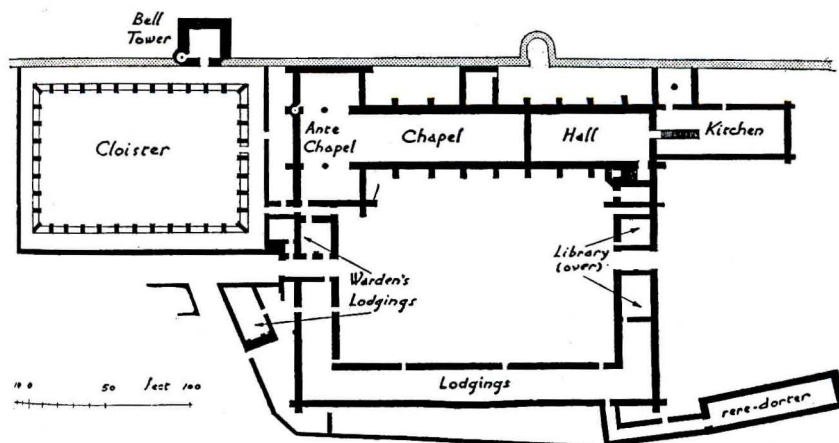
such as M.I.T., which has not yet fully converted to the residential system for undergraduates.

Aligned against all their arguments are those educators who believe that higher education should continue the English collegiate tradition of being concerned with educating the whole man. They conceive that the primary objective of the residential system is to assist the institution in providing a better educational program; housing students is a secondary aim. American history is full of eminent men who supported this belief: all the early college educators, Jefferson, McCosh, Porter, Abbot Lawrence Lowell who developed the brilliant scheme for the Houses at Harvard, Woodrow Wilson and Andrew Fleming West who together helped shape the residential pattern at Princeton, and Compton and Killian who were instrumental in modifying the pattern for use at M.I.T.

Their belief in the educational effectiveness of a good residential system rests on one fact: intellectual life at those institutions possessing good residential systems is more vigorous than at those institutions where they are lacking. List the top institutions in the country on the basis of educational worth; each has physical accommodations that promote active common life. In some cases, the residential system may be supplemented by a favorable residential neighborhood, or by fraternities, but the heart of the common life lies in the residential system.

To sum up, there are five major reasons for supporting the idea of having good residential systems:

1. *The absence of a residential system may be one factor in lowering academic performance.* A striking instance of this occurred at a university in a large Middle Western city which had for a long time enjoyed high academic attainment by students who resided in houses near the campus. In the period around 1918 when good rooms were still available in private houses in the neighborhood, the absence of a dormitory system was not serious. But when, after the depression, the neighborhood became increasingly less residential, the university could no longer easily attract young men and especially young women from areas lying outside the metropolitan limits.

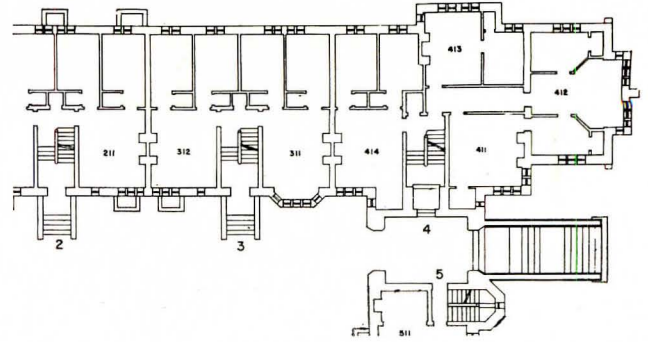


"Student needs do not change substantially from generation to generation, and it is important therefore to build upon a plan that is enduring, whether the actual building is considered temporary or not. For this the excellent traditions at Oxford, where New College dormitories date from about 1400, are still worth studying."





*Cuyler Hall, Princeton University, a "good example of what may be done"*



2. *Still another result of the absence of a good residential system is divisionism among students.* The dormitory is democratic, embracing everyone; its substitutes tend to separate people according to intellectual interest in studies, social position and friendships, economic advantage, religion or race.

3. *Adequately planned residential systems foster life in common, with desirable educational effects.* All a student really learns he gets by the active operation of his own intellect. Here his environment, including his fellows and place of residence, are important. If he is overly specialized, as many students are, he needs contact with a community of interests. He needs to be provoked to think on many subjects, exchanging views, acquiring a corporate spirit of mutual inspiration, liberality of thought, breadth of view, and even some training in responsible citizenship.

4. *It also decreases emphasis upon certain other aspects of college life.* I like to think that the downfall of Harvard's early twentieth century preeminence in football — so greatly missed by Harvard graduates — is in some part due to the enormous success of the thoroughly praise-worthy house system, begun tentatively about 1929 and fully in operation now. That house system was largely developed by a great educator, Abbott Lawrence Lowell, and it was he who, to my knowledge, first revealed that the increasing emphasis on mass spectator sports — so well emphasized by the building of the huge Harvard stadium shortly after the turn of the century — was due in large measure to the fact that they then provided the only means for displaying the corporate spirit of the institution. Lacking any common life in the elective system of education and residence, the undergraduate found in the football spectacle his major evidence of institutional solidarity.

5. *The residential system which encourages a common, institutional life may realize some incidental financial benefits.* It builds identifications with institutions that result in alumni loyalty. Clark University at Worcester is often cited as an instance of a non-residential university, which failed to enlist the financial support of alumni in retaining its former eminence.

#### **Planning the Residential System**

At a minimal level, much can be accomplished by having a series of separate dormitories, in combination with a

student union or dining hall for general use. This plan was adapted at many older universities such as Harvard, where, shortly after the Civil War, Memorial Hall served as dining hall for students housed in many separate dormitories and private residences. Where the institution is large, the disadvantages of this system are obvious.

Within dormitories, architects may adopt several types of circulation. Standards are the corridors, either single or double loaded, served by either staircases or elevators. These have the usual advantages.

A plan not used recently but of the oldest merit should be recalled, the multiple-entry system. Traditional ways of using it seem to involve additional expense and to consume more ground area than is normally available; but this plan has not had the study it deserves. Among the advantages obtainable in the multi-entry system are these:

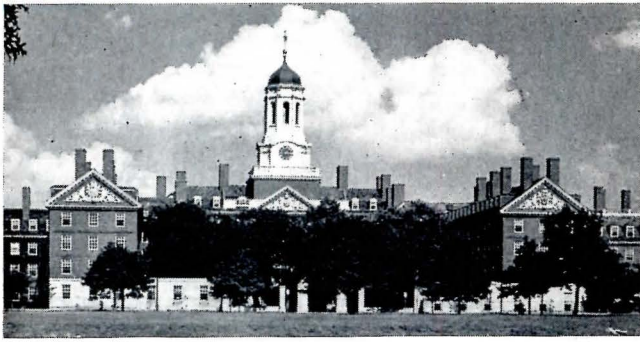
1. *reduction of corridor traffic;*
2. *division of the plan into small units capable of producing better scale, easier relation to irregular sites;*
3. *more privacy;*
4. *greater variety;*
5. *division of dormitory into smaller units thereby encouraging identification with entry and greater responsibility for protecting and caring for property;*
6. *protection against mass assembly and riots;*
7. *better light and acoustical insulation;*
8. *reduction of structural bays;*
9. *improved fire protection.*

There are some disadvantages in the need for additional staircases, particularly where a second means of egress is required, but the plan needs to be studied further by modern architects. Particularly happy older applications exist in dormitories at Harvard, Princeton, Haverford, Yale and Trinity College.

Rooms within dormitories have tended recently to be bedroom-studies, all alike, intended either for single or double occupancy. It is questionable in many cases whether equal space might not be arranged in a series of suites consisting of common living room-studies with as many as four private or double bedrooms nearby. The houses at Harvard and the Pyne Dormitory and Cuyler Hall at Princeton offer good examples of what may be done.

Above all architects must realize that dormitories





*Dunster House, Harvard University*

are less subject to obsolescence than many other types of building. Massachusetts Hall at Harvard is still in partial use as a dormitory, though it was built in 1718. Student needs do not change substantially from generation to generation, and it is important therefore to build upon a plan that is enduring, whether the actual building is considered temporary or not. For this the excellent traditions at Oxford, where New College dormitories date from about 1400, are still worth studying.

There are, however, some modern needs generally inadequately provided for in dormitories. Some institutions run summer schools and conferences, and for them air conditioned dormitories may be useful. Transportation facilities are often overlooked, particularly provisions for bicycles and automobiles. Curiously some architects have forgotten that books and their storage are major items in student rooms. Recently, students have found increasingly useful an area fitted as a laundry and another where kitchen facilities are available. There are other service machines that students attract: particularly hard to place unless specific provisions have been made are the various dispensaries of coke, candy and cigarettes which clutter too many hallways. Contact with home and the town is important, and adequate provisions should be made for telephones and mail delivery. Also in the perimeter of the dormitory students need some kind of private area, well landscaped, where the Spring pastime of sunbathing can be conducted with less disturbance to the general aspect of the campus.

But more important than the dormitories alone is the residential system as a whole where dormitories

are combined with adequate dining rooms, libraries, common rooms and sports areas. The best of the systems so arranged are to be found in the Houses at Harvard, which are based upon the colleges at Oxford and Cambridge. Approximations of the system exist at Yale, and other institutions; notably California at Berkeley, M.I.T.; and many women's colleges have similar systems. The basic idea contained therein is to form a complete, self-sustaining residential complex. Several dormitory wings are arranged around courts from which multiple entries open. Within the dormitories are suites for students, residences for tutors, a master and his family and studies for non-resident faculty members. Nearby are kitchens, dining halls, libraries, a common room with magazines and exhibits of painting, and game rooms. Frequently, as at Adams House at Harvard, old buildings are easily incorporated into the new houses.

Even in the house system, with all its advantages to education, there have been many recent concessions to lower standards of living, and it's generally conceded that the new house, soon to be erected at Harvard, will not provide the degree of elegance obtained twenty-five years ago when Lowell and Eliot Houses were built, or the Graduate College at Princeton.

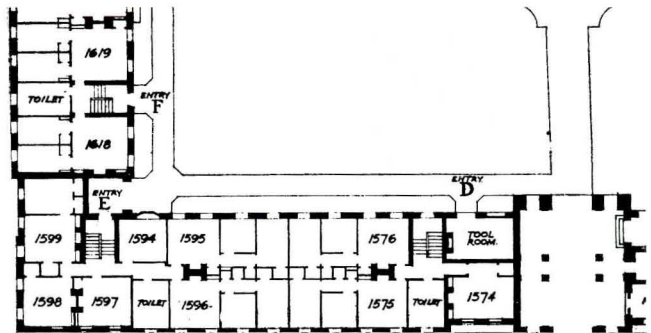
### *Three-fold Purpose*

Many educators today recognize a three-fold purpose in higher education; to lead young people in attaining competence in intellectual affairs; to develop personal character and social responsibility; and to aid in forming patterns of behavior, thought and imagination which will best foster living happily and generously. Towards these ends the formal curriculum and its methods of education by means of lectures, seminars, conferences, research and theses, contribute. But common life, especially in the residential system, is regarded as playing an enormous role.

The architect's plan for a dormitory must, in the long run, help the university to teach self-respect and respect for the rights, beliefs and habits of other men; it must help to enlarge the capacity to understand strange and opposing points of view, customs and preferences; and to foster in students the kinds of decorum expected in the manners, dress and speech of educated men.



*Timothy Dwight College, Yale University, one of the "house" system dormitories with many entries and small student groups*

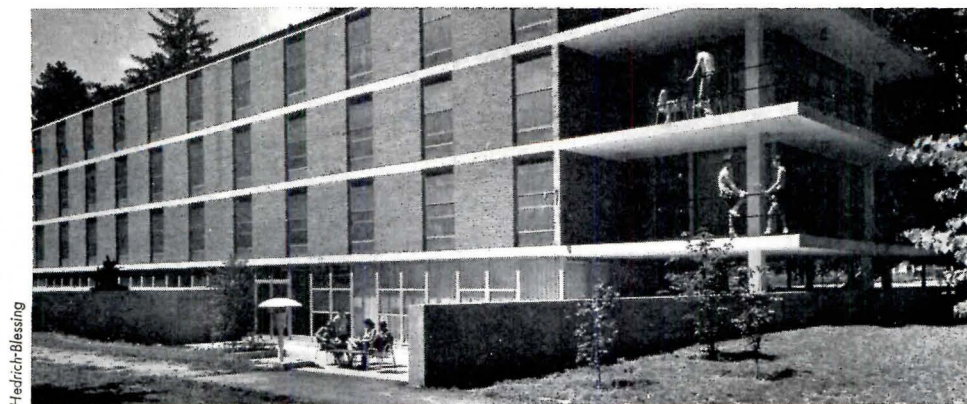






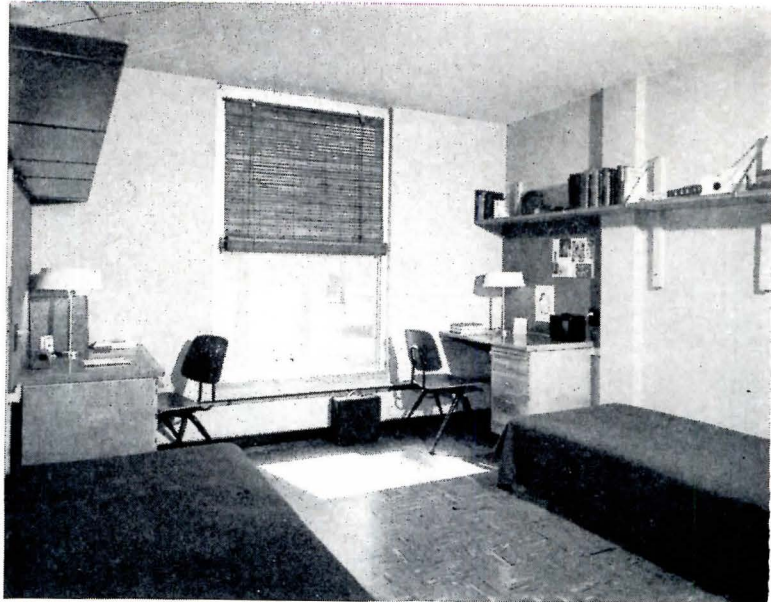
### **MEN'S DORMITORY WITH EXTRA-SIZE SOCIAL ROOMS**

**DORMITORY** HOUSES 114 men, mostly in double rooms. There are six living-study rooms, one for every 17 to 20 students. Corridors are narrow (3 ft 6 in.) with recesses serving four rooms each in order to cut down apparent length of corridor and assist somewhat in acoustical problems. Typical bedroom has built-in closets and bureaus, book shelf and desks. On the ground floor there are commons rooms which are to serve other students besides those in this building, the campus needing more social space: a large lounge with separate parlors, table tennis room and kitchenette. Outdoor space on adjacent terrace will considerably extend the social areas in seasonable weather. Storage space is exceptionally large, as students are in school six months, away working the other six. *Corry Hall, Antioch College, Yellow Springs, Ohio. Skidmore, Owings & Merrill, Architects.*

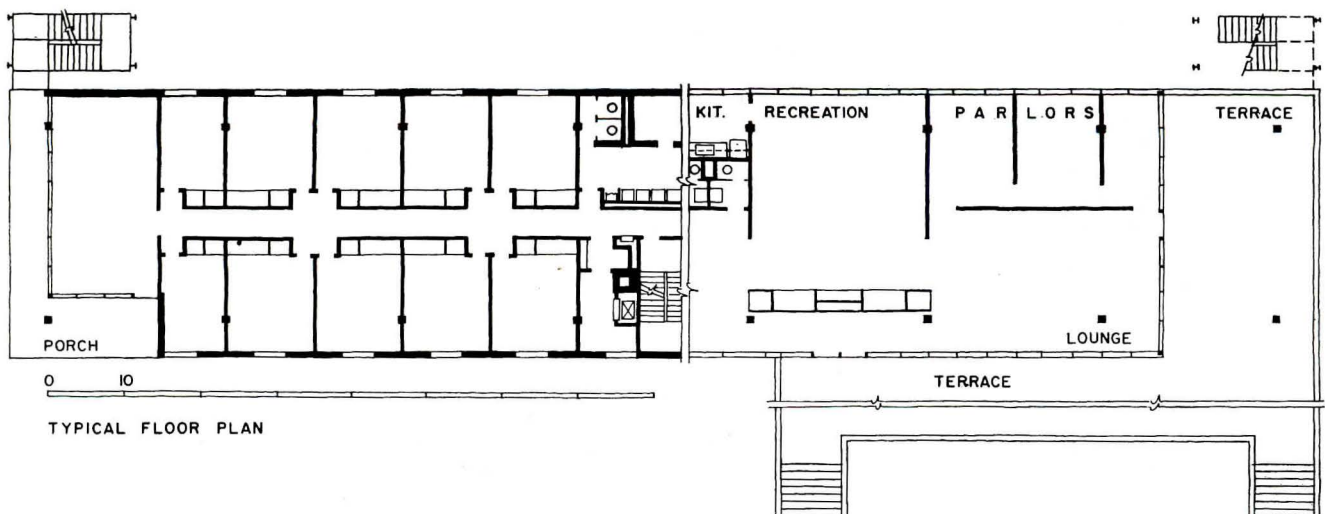


Hedrich-Blessing





*Technical Data: lift-slab, Youtz-Slick system. Square columns built up of two 8-by-8-in. steel angles filled with concrete. Exterior walls, salmon colored brick with lightweight concrete block backup, furred and plastered. Windows in bedrooms are double hung aluminum, with precast concrete spandrel below. Edges of concrete floor and roof slabs are exposed flush with face of brick in-filled panels.*







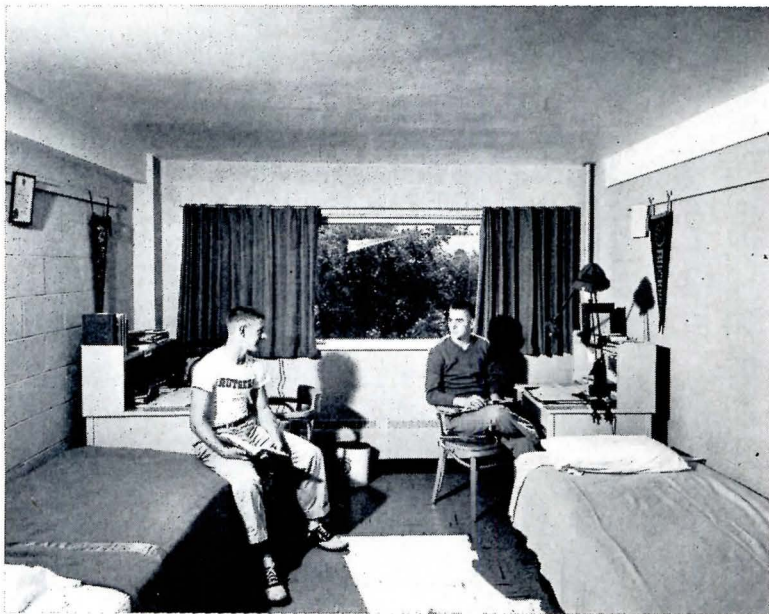
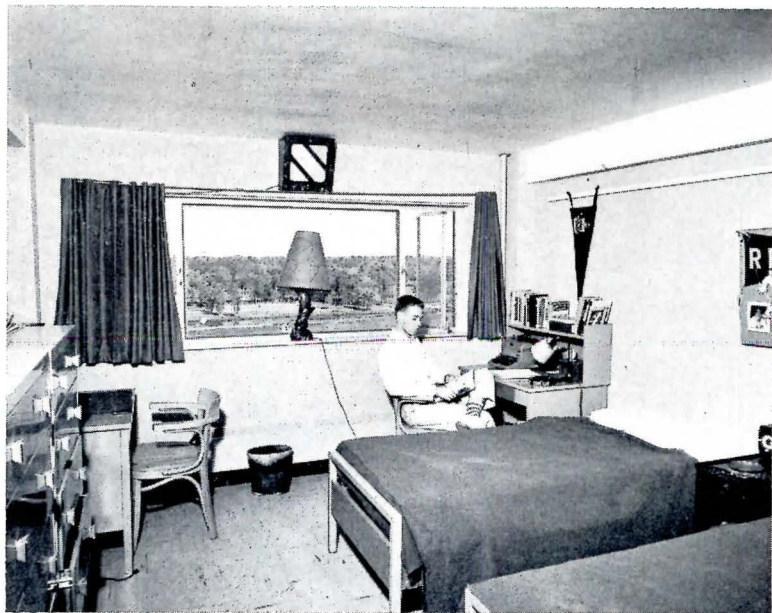
### THREE DORMITORY BUILDINGS WITH CLASSROOM FLOORS

TO MEET an urgent need for on-campus living quarters and classrooms Rutgers has combined the two in three new buildings. The group also includes a student lounge building, which is calculated to focus social life in this new section of the campus. "The architects and the University," say the architects, "approached the many problems of planning with the basic concept that today's student, no matter at what level, is a social being and that he functions best, academically, physically and socially, when he feels at home." The site, a narrow, steeply sloping strip along the Raritan River, made it possible to keep classroom and dormitory circulation at different levels. *Dormitory and Classroom Group, Rutgers University, New Brunswick, N. J. Kelly & Gruzen, Architects; Martin L. Beck, associate in charge.*

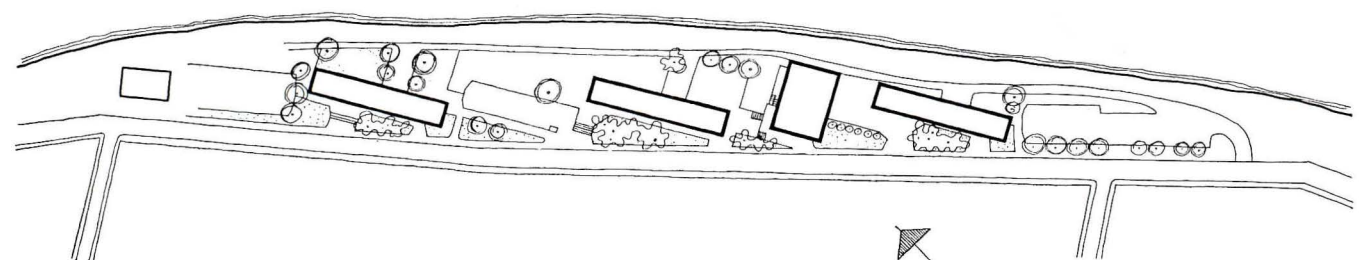
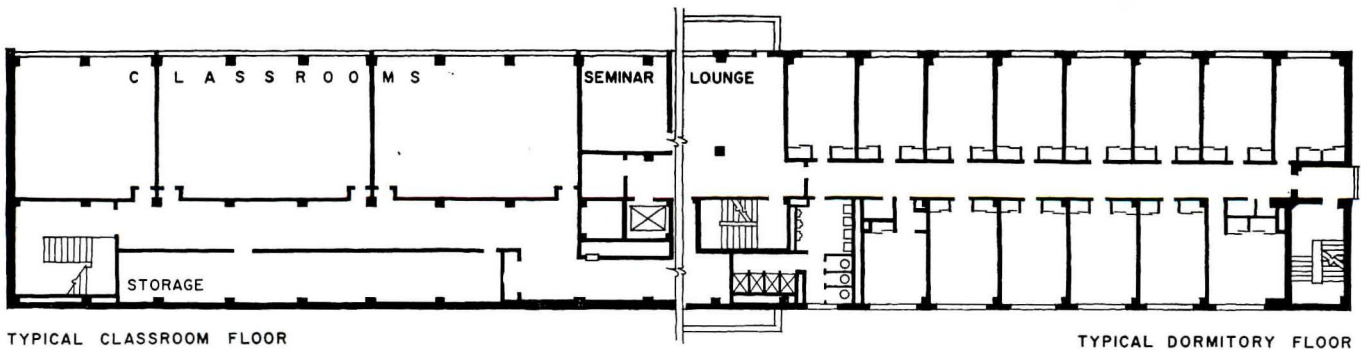


F. J. Higgins





*Technical Data: Construction is fire-proofed steel frame, concrete floors, with cavity-type exterior walls, with brick colors to complement those of other campus buildings. Cost of the buildings: \$4,000,000. Weiskopf & Pickworth, Structural Engineers; Mongitore & Moesel, Mechanical Engineers; Clarke & Rapuano, Landscape Architects.*

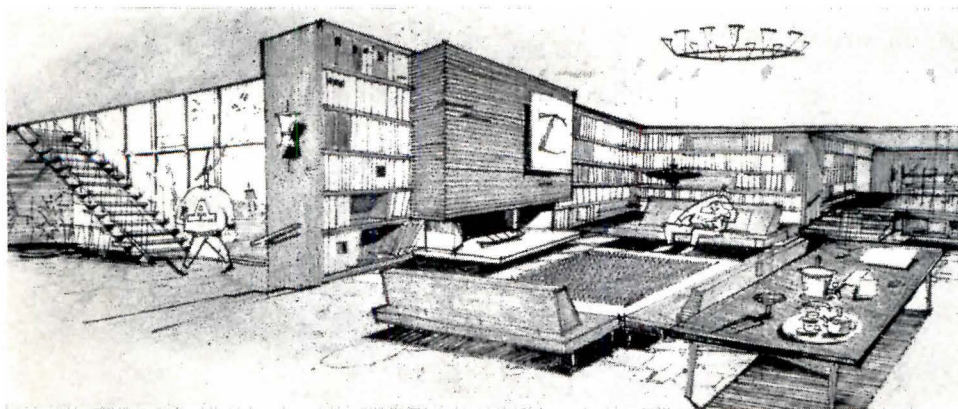




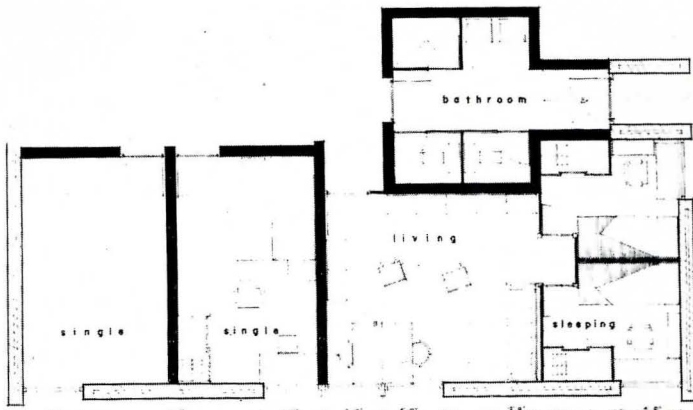
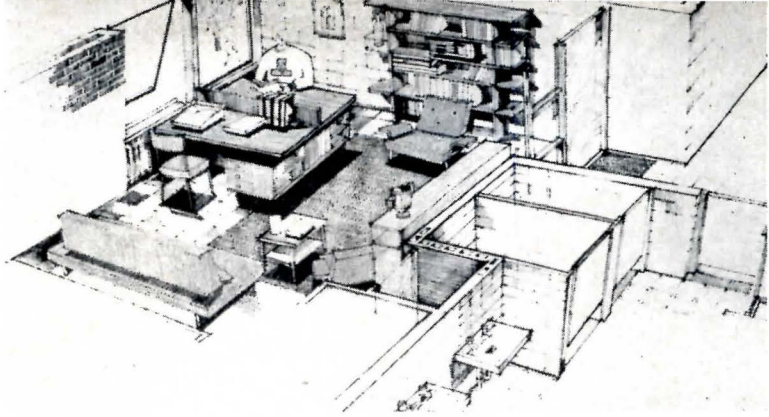
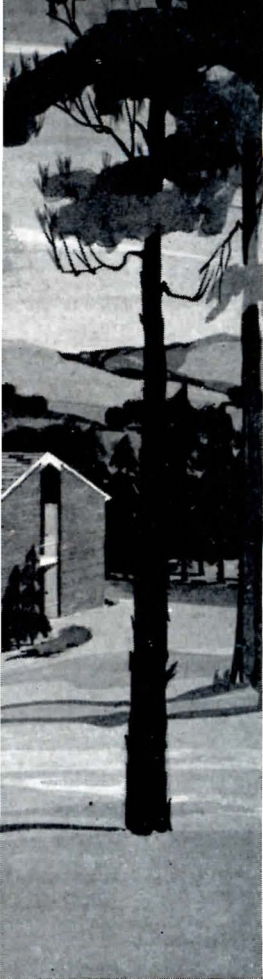


### PRIVATE SCHOOL DORMITORY: HOUSEMASTER IDEOLOGY

A HAPPY EXAMPLE of architectural thinking applied anew to an old problem, this dormitory scheme grew out of an intense study of such questions as: How should private school boys live? How many together? How many per housemaster? How about privacy for housemasters and their families? The final solution shown here was officially Scheme F. It both joins and separates houses for two housemasters and families with/from dormitory housing for five different groups of eight boys each. Architects and faculty committee put in a year and a half of study, including observation of a full-scale mock-up of students' room, expecting this scheme to be a prototype for others at Phillips. *Abbot Stevens Hall, Phillips Academy, Andover, Mass.; The Architects Collaborative, Architects.*

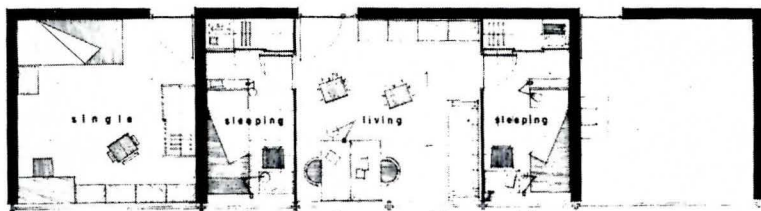






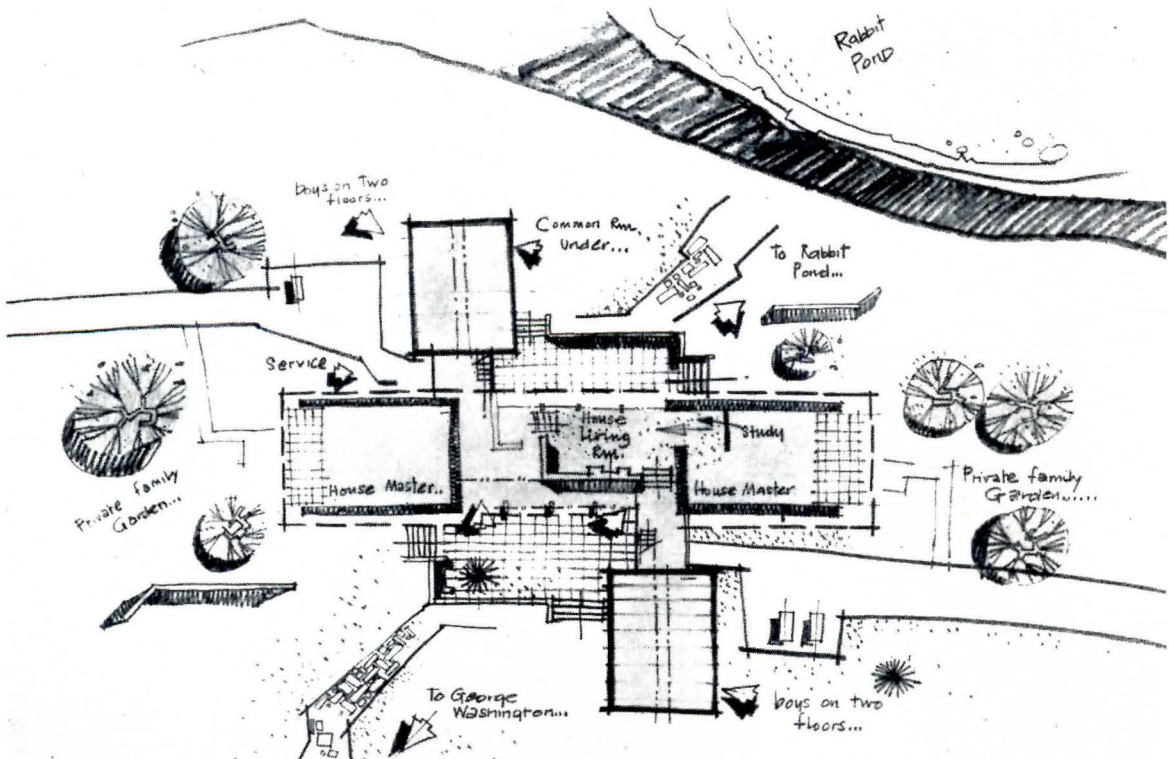
END SINGLE ROOMS

END DOUBLE ROOM and BATH

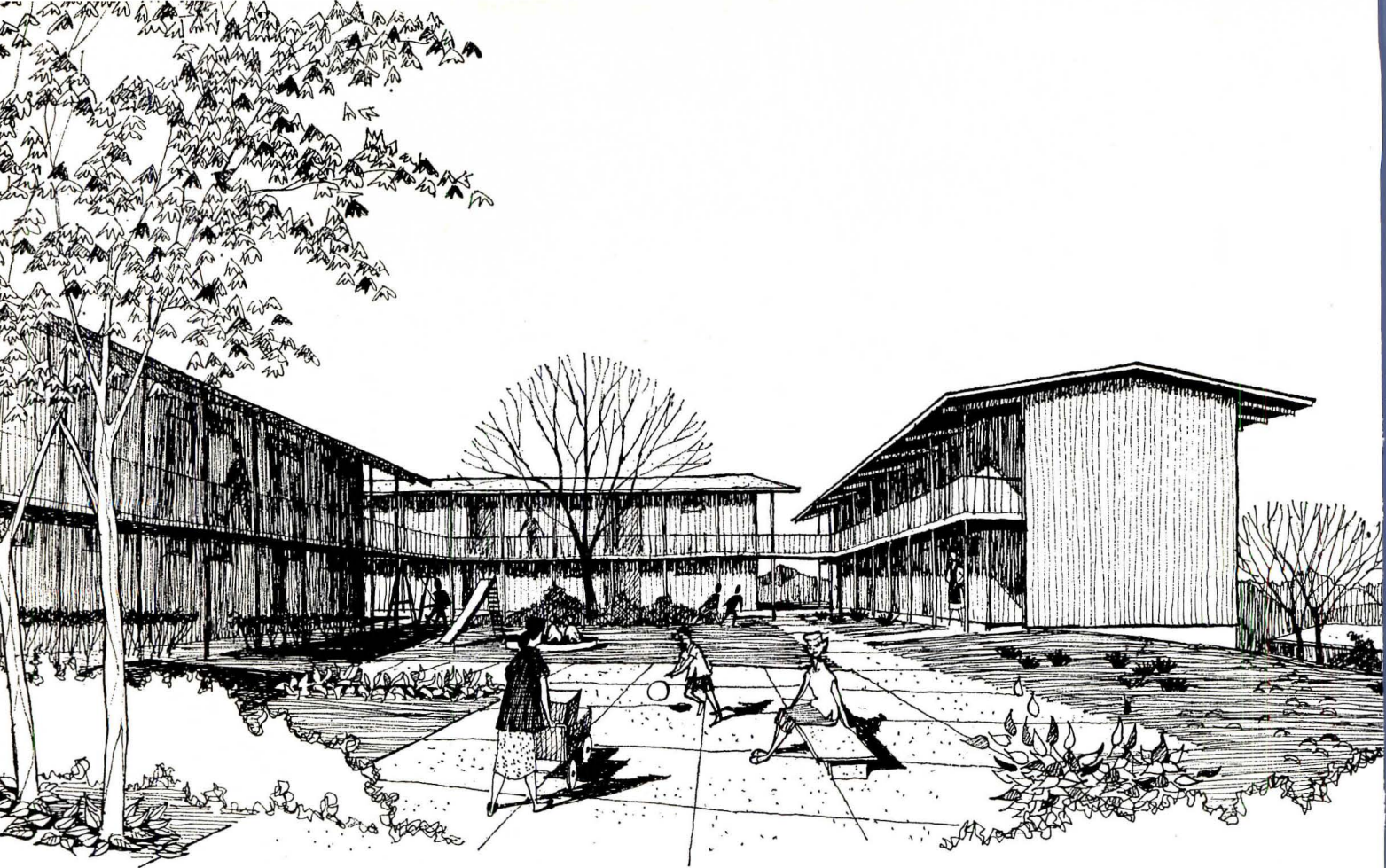


CENTER SINGLE ROOM

CENTER DOUBLE ROOM

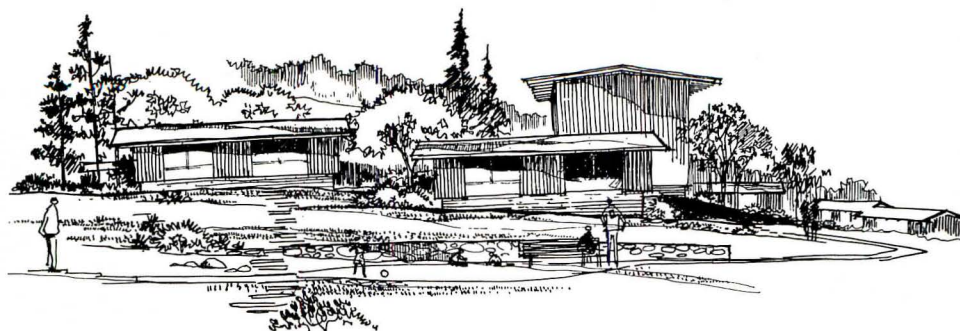




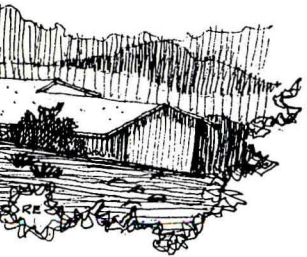
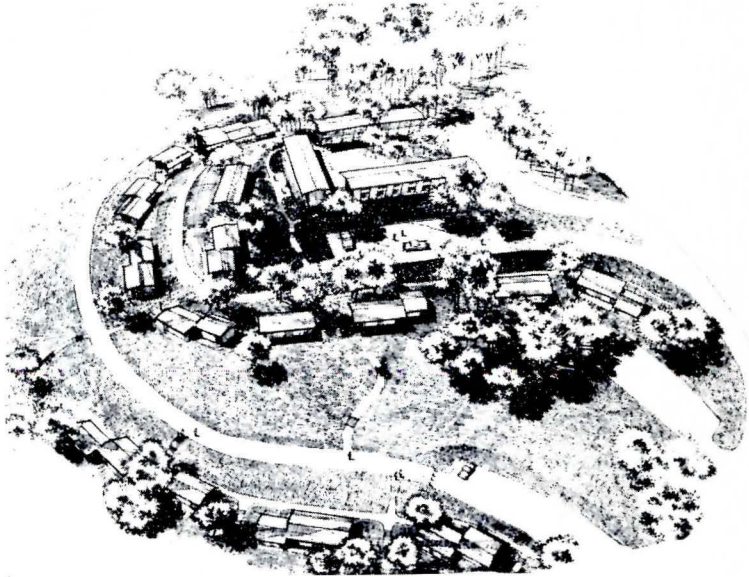


### VARIED STUDENT QUARTERS IN VILLAGE CONCEPT

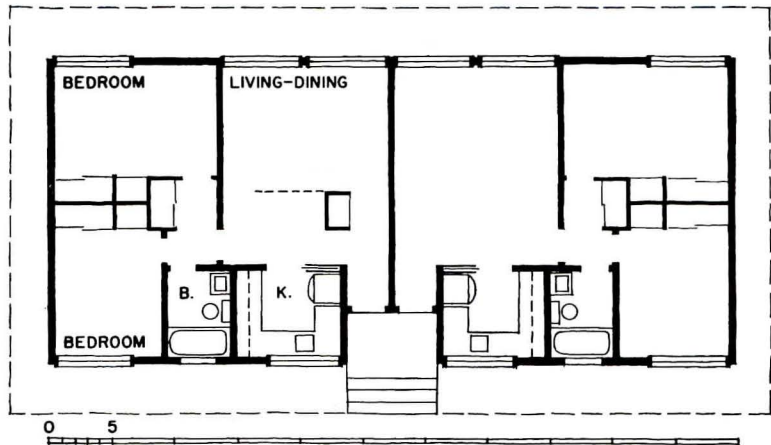
ANOTHER TITLE MIGHT BE: "New-Campus Housing for Automobile Age." The architect, planning a new campus, has grouped his dormitory facilities in small "villages," which are designed for walking, not driving, through. They are designed also to promote friendly, cooperative living by students ranging from young single men and girls to married families with children, all preparing for missionary work. The group living experience can, it is thought, contribute to the educational preparation and this architectural solution is intended to enhance that experience. Thus accommodations range from dormitory-type bedrooms, to two-bedroom apartments and duplex units. Designs are residential in character; landscaping is heavily stressed — patios, play yards, terraces, paths, views. *Golden Gate Baptist Theological Seminary, Marin County, Cal. John Carl Warnecke, Architect.*



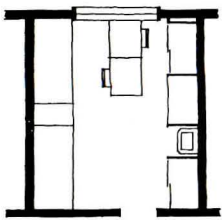




*Technical Data: residence buildings will have concrete floor slab on grade, with wood framing finished with wood or gypsum board. Built-up composition roofing over wood frame; sloping eaves and warm tile were used to avoid the dullness of flat colorless roofing. This residential construction saves substantially compared to large buildings. Lawrence Livingston, Jr., Planning Consultant; Lawrence Halprin, Landscape Architect; John Blume, Structural Engineer; G. M. Simonson, Mechanical and Electrical Engineer.*

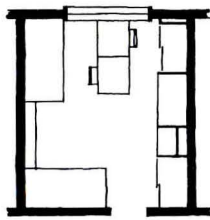


TYPICAL DUPLEX PLAN

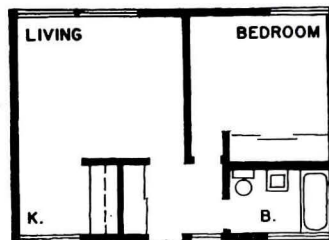


WOMEN

TYPICAL DORMITORY ROOMS

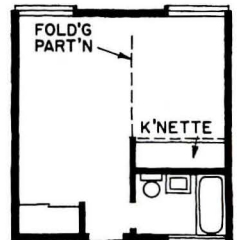


MEN



COVERED PORCH

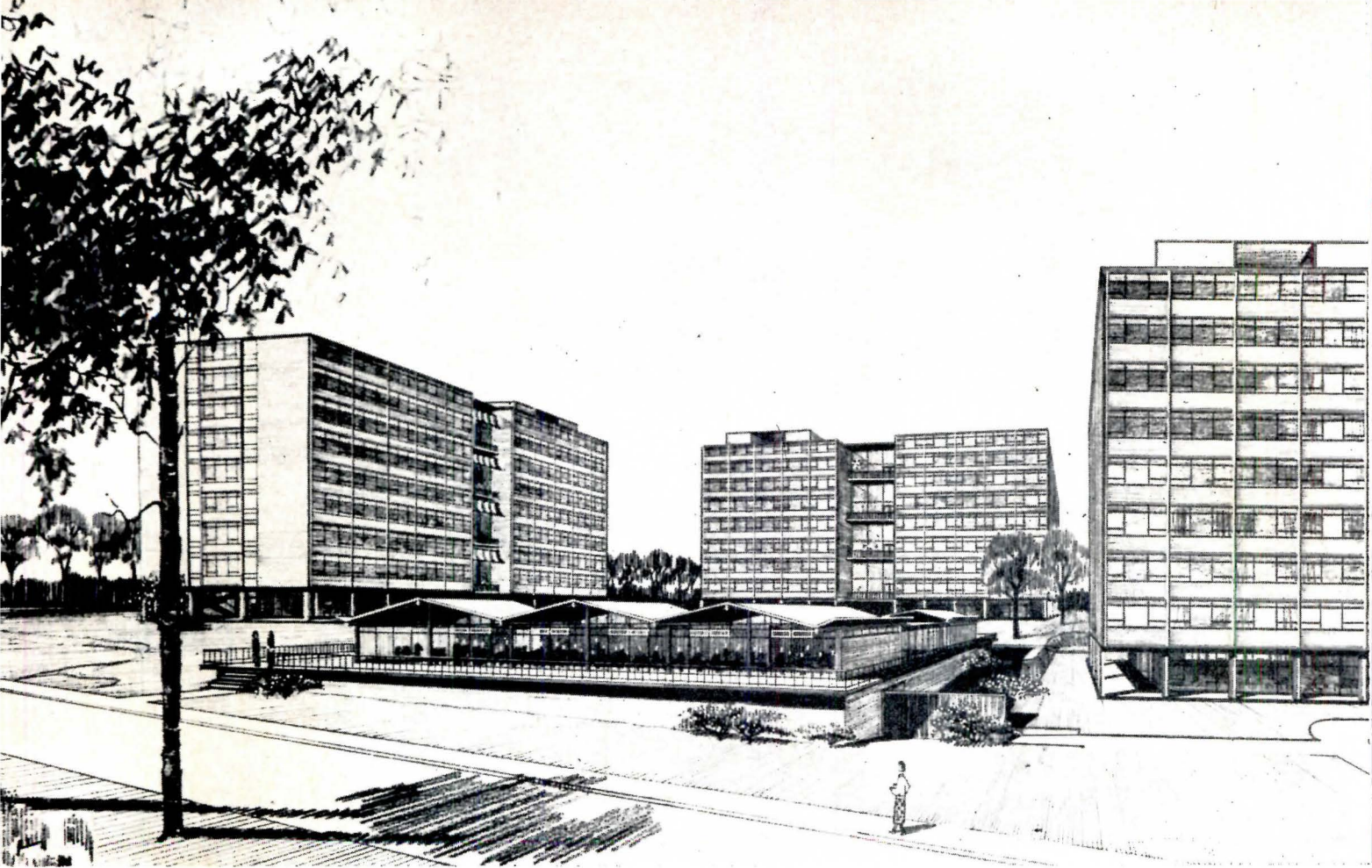
TYPICAL UNIT



COVERED PORCH

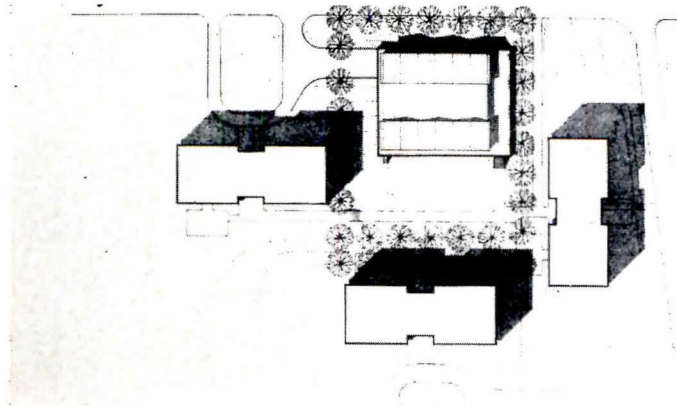
TYPICAL STUDIO



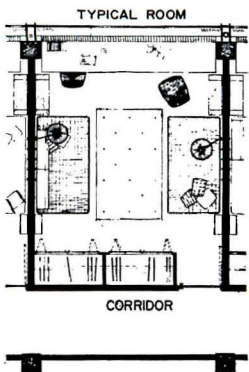
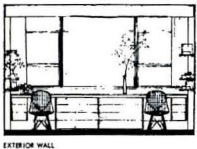
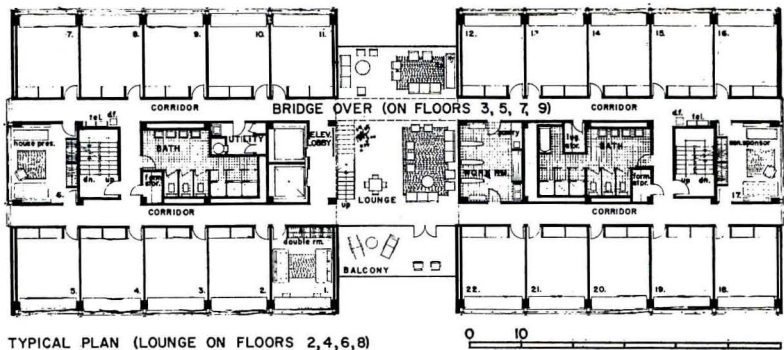
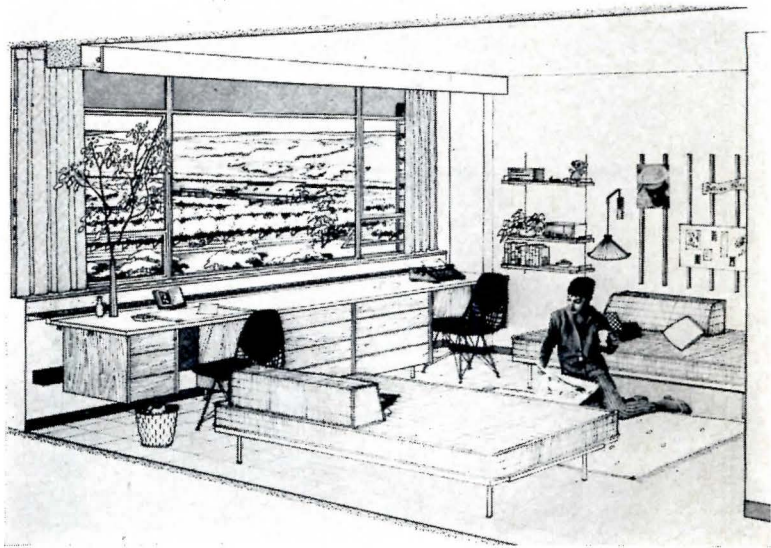
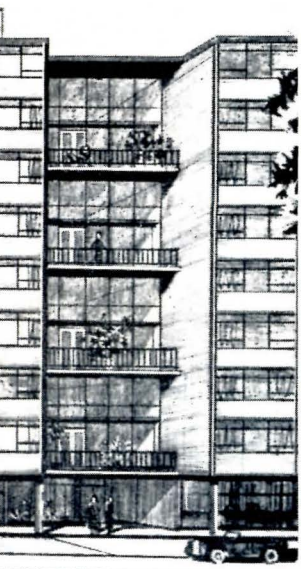


### LARGE BUILDINGS PLANNED FOR "HOUSE" SYSTEM

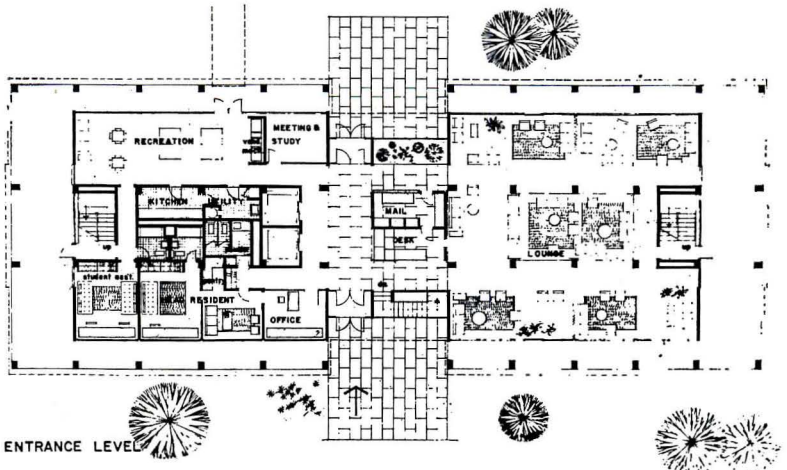
THIS UNIVERSITY'S dormitory program operated on a "house" system, in which each "house" comprising about 80 students has its own name, elected officers, social and athletic programs. Budgetary considerations, however, necessitated large buildings; site economy was also a factor, as additional land must be acquired for a \$10 million dormitory program. The architects' solution consists of a basic two-story "house" within a large building. Each one has glass walled entrance floor with a large social area, central mail desk and office, head resident's apartment, study and meeting rooms and snack kitchen. *Dormitory Group, University of Missouri, Columbia, Mo., Hellmuth, Obata & Kassabaum, Inc., Architects.*



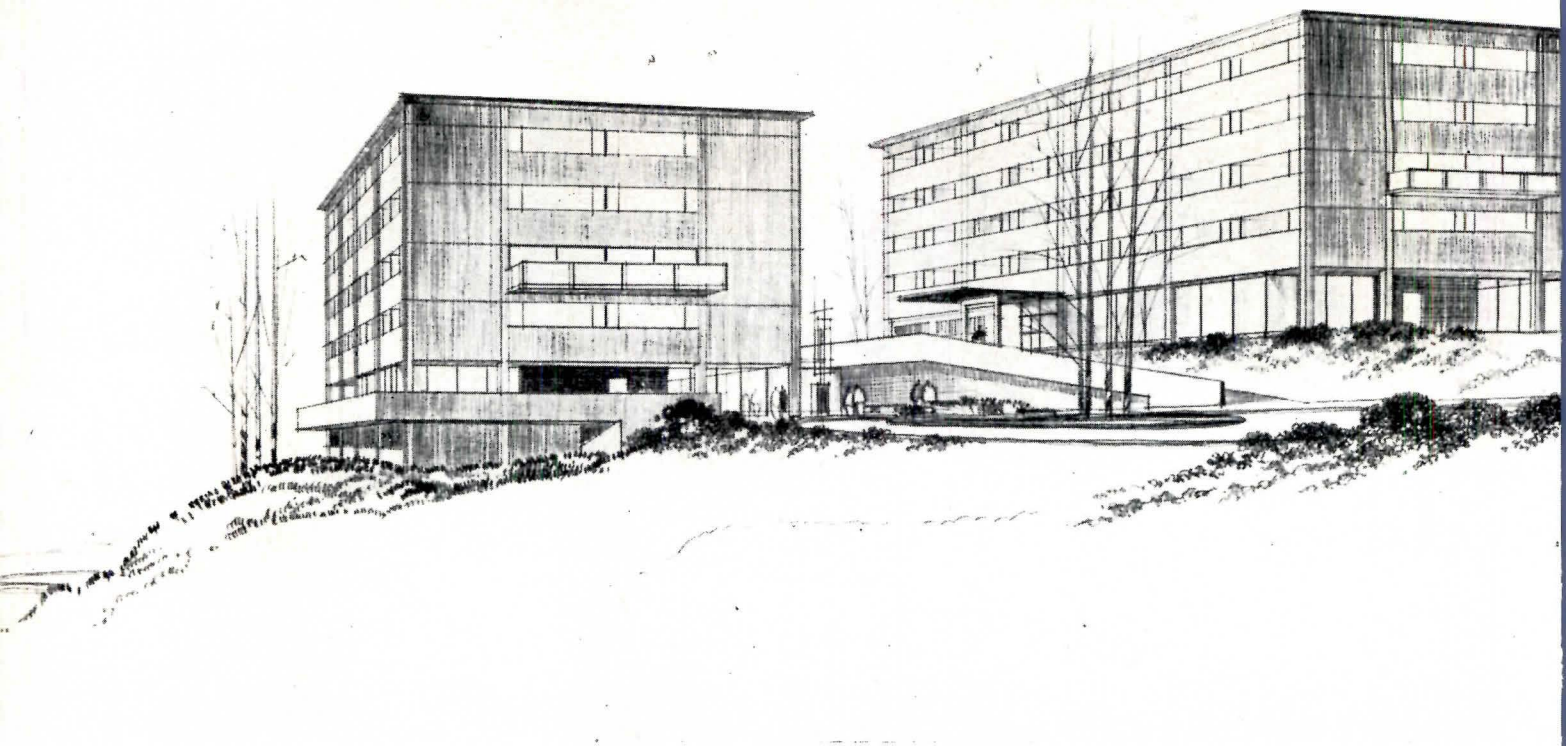




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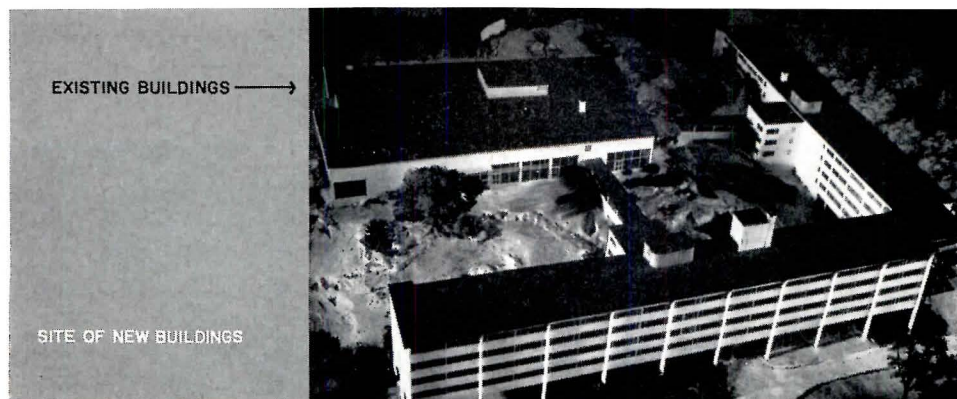




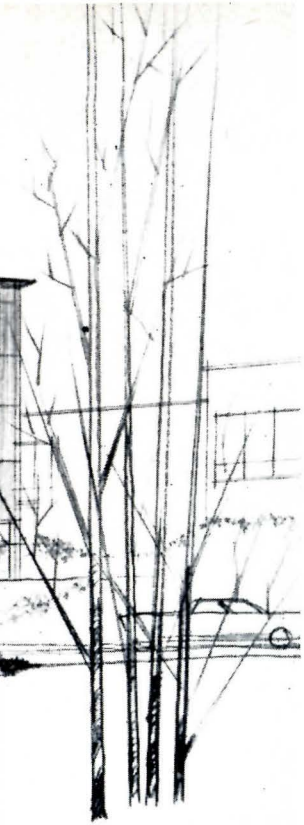


### CROWDING PUTS DORMITORIES ON DIFFICULT SITES

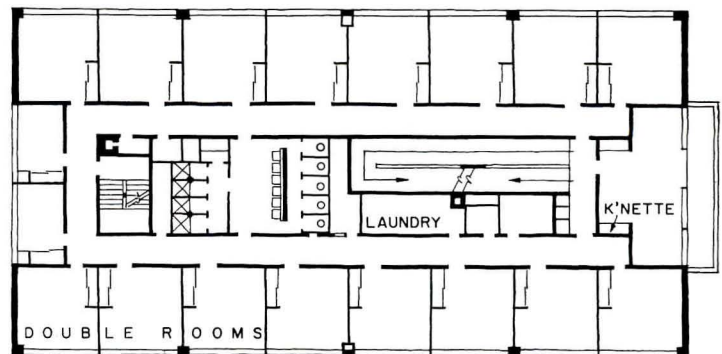
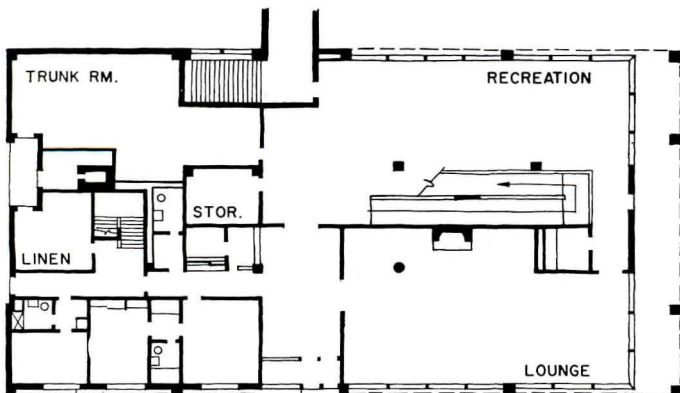
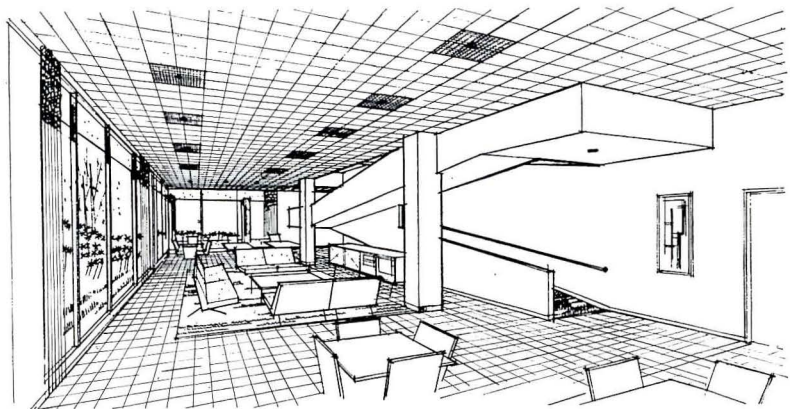
THE PRESSING NEED for dormitory accommodations here forced the development of a steep hillside site, and the necessities thus imposed largely determined the design that resulted. The program called for buildings for 100 occupants each, with enclosed access to each other and to the dining halls. The temperature in this locality sometimes goes as low as 30 degrees below zero; hence the insistence on enclosure. Moreover, ramps were requested, rather than stairs, wherever at all feasible. As the planning developed it appeared that occupancy per building of 144, instead of 100, would be much more economical, and it was considered that supervision and services would not generally change because of the added number. *Residence Buildings for Women, State College of Washington, Pullman, Wash. Paul Thiry, Architect.*



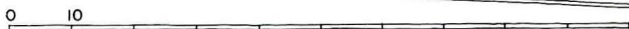




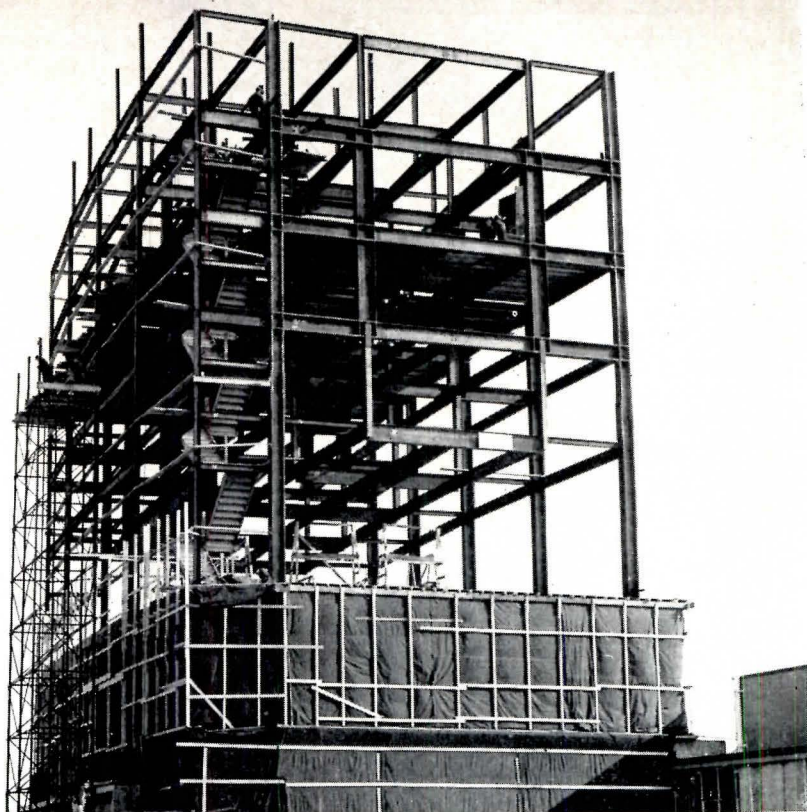
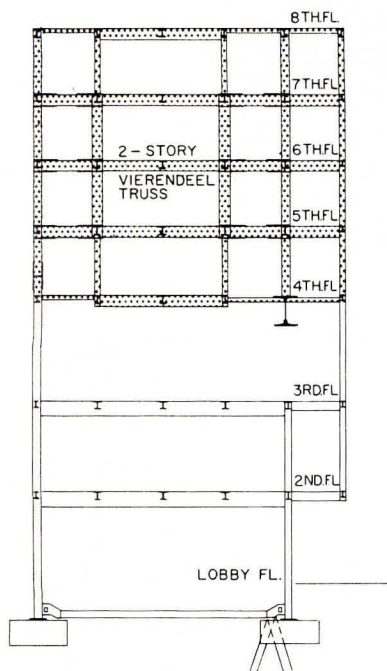
*Technical Data: construction will be in monolithic concrete, flat slab system. Sash and frames, doors and frames, will be of aluminum. Interior partitions of gypsum lath and plaster. Floors will be mostly asphalt tile; ceramic tile in baths. Interior doors and woodwork will be of birch. Heating from an existing central steam plant, each study room convactor to be thermostatically controlled.*



THIRD FLOOR PLAN







## Triple Chord Vierendeel Trusses Carry Five Floors



Felix J. Nessikian

*Control Tower, Logan International Airport, Boston, Mass. Architects: Samuel Glaser Associates; Structural Engineers: Goldberg, LeMessurier & Associates*

BEHIND THE SLEEK GLASS and aluminum face of the recently completed control tower at Boston's Logan International Airport lies a complex structural frame in which triple chord Vierendeel trusses — believed to be the first of their kind — support five of the building's eight floors.

Outward manifestations of the inner workings of the Vierendeel frame include a roadway running directly beneath the building; two floors (the second and third) completely free of columns; and an extra floor squeezed into the total height limitation. Of these, the first two were architectural requirements dictated by the use of the building — and by its location squarely across the main access road to the airport. The third was a bonus made possible by the reduction in floor depth which resulted from the use of a truss frame instead of the clear-span framing scheme first considered.

As finally constructed, the building's 42 ft bays are spanned on the second and third floors by 36 in. wide flange girders, while the upper five floors form an inter-acting structural frame centered in the Vierendeel trusses. The three chord members in each truss are located symmetrically about the sixth floor, with the eighth floor and penthouse supported on columns above and the fourth floor suspended below the truss.

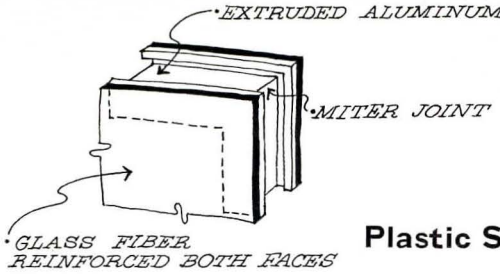
Both floors therefore participate in the frame action, the eighth floor by providing a compression strut at the top, and the fourth floor by acting as a tension tie between the lower extensions of the vertical members of the five trusses.

The trusses themselves are made up of 21-ft center panels flanked by 10-ft-6 in. side panels, plus a 9-ft cantilever at one end. Because of the greater depth given by using the girders in three floors, the trusses could be fabricated from relatively small members. Chord members for the end panels were built up from plates; those for the center panels are 21-in. wide flange sections.

The structure is supported on foundations which were laid when the original passenger facilities at the airport were constructed. Since the existing pile clusters and heavy pile caps were designed to support only vertical loads, with horizontal loads to be taken by an assumed adjoining structure — which did not exist at the time the control tower was built — provision had to be made for carrying lateral wind forces to the ground. This was done by driving seven pairs of battered steel piles between the existing foundations, and using a truss-like subgrade frame to transfer horizontal reactions from the building columns to the new battered piles.

(More Roundup on page 224)





## Plastic Skin, Aluminum Grid Form Translucent Wall Panels

The new *Kalwall* curtain wall panel combines translucency, thermal insulation and structural efficiency in a self-supporting prefabricated "sandwich" unit that weighs only one-seventh as much as an equivalent metal panel. Faced with an exterior skin of reinforced polyester glass fiber, the panels contain an interior grid of aluminum I-beam extrusions which not only acts as a load-bearing component but also produces a solid metal edge banding that can be incorporated into a flush, internal joint system for maximum rigidity in actual installations, or used to provide easy accommodation for door and window frames.

The glass fiber skin itself is said to be stronger than metal of equal weight, with an average tensile strength of 10,000 to 12,000 psi and a weight of approximately 8 ounces per sq ft. In addition, it is highly resistant to shattering, crazing, fading, sharp blows and vibrations, and withstands tempera-

tures ranging from minus 20 to plus 200 degrees F with little or no change in its physical properties. Although not classified as a fireproof material, the skin is fire-resistant and can not be ignited by cinders or matches falling on its surface. Extensive tests have shown that the panels also have excellent acoustical properties, and a heat transmission factor low enough to eliminate any problem of condensation on the inside face. The sealed core prevents condensation from forming inside the grid.

The panels, whose unique properties make them suitable for both exterior and interior walls, as well as roof surfaces, come in four modular sizes and six colors. Standard panels are 1 $\frac{1}{16}$  or 2 $\frac{3}{4}$  inches thick, 4 feet wide and 8, 10, 12 or 20 feet high, with non-standard sizes supplied on special request. Colors include white, crystal, green, blue, rose and yellow. *Kalwall Corp., Manchester, N. H.*



## Student Housing Units Feature Low Cost Prefab Curtain Walls

Collaboration between the manufacturers of *Vampco* aluminum window walls and *Hasko-Struct* laminated plastic sandwich panels produced the sleek, colorful curtain walls used in the low cost housing units for married students recently completed at Michigan State University.

The buildings are of masonry construction, faced front and back with the prefabricated wall sections. Front window walls (below right) are one story

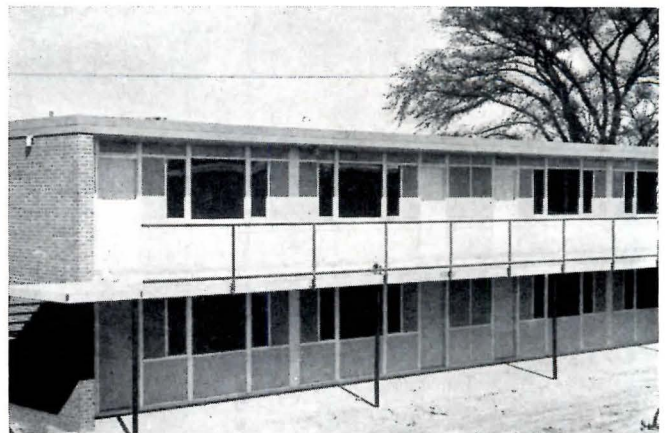
high, and include window and door sections as well as solid panels. On the rear of the buildings (below left), solid and window wall sections, 16 ft high, curtain the full two stories.

The *Hasko-Struct* panels themselves consist of polyester resin impregnated glass fiber cloth faces, bonded to cement asbestos interbands and expanded polystyrene cores. Their 1 $\frac{1}{4}$  in. thickness is said to give an insulating value equal to that of standard brick masonry

construction. The wall sections are fabricated from aluminum extrusions, with window and door frames built in. According to the manufacturer, *Vampco* window walls are so designed that adjacent panels can be joined in a matter of minutes. Aluminum window walls: *Valley Metal Products Co., Plainwell, Michigan*. Plastic sandwich panels: *Haskelite Manufacturing Corp., Grand Rapids, Michigan*.

(More Products on page 236)

*A 4-man crew installed this two-story rear wall in one day; single-story front wall sections were placed by a 2-man crew*







### ALUMINUM IN SCHOOL CONSTRUCTION

As a result of a nationwide survey among school architects and building supply manufacturers, Kaiser Aluminum's Technical Publications Department has published a 64-page report on the increasing role of aluminum in school construction. The first of three sections in the report deals with the importance of economy in planning new schools; the second illustrates typical uses of aluminum in schools throughout the country; while the third discusses specific application of the material for walls and partitions, sheet metal work, doors and windows, ceilings and lighting, piping, storage units, teaching aids and educational equipment. The booklet is extensively illustrated throughout, both with photographs and with drawings such as that shown at left. *Technical Editor, Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Ave., Chicago 11, Ill.\**

### Food Serving Equipment

. . . *For Schools, Colleges and Universities* contains over 100 photographs and floor plans of elementary schools, junior high and high schools, colleges and universities, together with descriptive information on the newest advances in food serving equipment for schools. 48 pp. *Southern Equipment Co., 4550 Gustine Ave., St. Louis 16, Mo.*

### Insulpanel Roof Decking (A.I.A. 19-D)

Describes and gives details for various methods of using *K & M Insulpanel* roof decking in residential and industrial construction. 8 pp. *Keasbey & Mattison Co., Ambler, Pa.\**

### Smithcraft Fluorescent Units

New 4-page folders and catalog sheets include information on general features, lighting characteristics, mounting, maintenance, accessories, photometric data and specifications for Smithcraft's *Two-some, Civic, Executive* and *Freeway* fluorescent units. *Smithcraft Lighting, Chelsea 50, Mass.\**

### Manual of Plus Values

Presents list and net prices for 186 basic sizes and thicknesses of insulation made by the *Union Asbestos & Rubber Co., 1111 West Perry St., Bloomington, Ill.\**

### Plumbing Fixtures

(A.I.A. 29-H) Presents complete line of bathroom, powder room and kitchen plumbing fixtures, with photographs, drawings and specifications. 52 pp. *Sales Dept., Ingersoll-Humphreys Div., Borg-Warner Corp., Mansfield, Ohio.*

### Watertight Masonry

Folder "O.M."-8A discusses problems involved in the design and specification of watertight masonry, and outlines six considerations in designing tight masonry walls. 6 pp. *The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio.\**

### Steber Lighting Equipment

Condensed Catalog No. CTC-2 includes selection information and prices for complete line of *Steber* lighting equipment. 18 pp. *Steber Manufacturing Co., Broadview, Ill.*

### Matico Floor and Wall Tile

Specification Book #789 contains architectural specifications, installation instructions, packaging information, color availability and suggested floor designs for *Matico* floor and wall tile. *Adv. Dept., Mastic Tile Corp. of America, P. O. Box 986, Newburgh, N. Y.\**

### Steam Specialties

Catalog No. 69 contains complete descriptions, illustrations, dimensions, capacities and prices of Strong steam traps, strainers, separators, flash separators, reducing valves, block steel valves and engine stops. 60 pp. *Strong Steam Specialties Div., Strong, Carlisle & Hammond, 1392 West 3rd St., Cleveland 13, Ohio.*

### Semi-Pressure Fans (A.I.A. 30-D-1)

Bulletin 400 describes and illustrates *Aerovent SP-7* semi-pressure fans, with selection data and certified ratings for all models. *Aerovent Fan Co., Inc., Piqua 6, Ohio.*

### Designs for Laboratory Living

Describes and illustrates installation of the *Flexlab* voltage distribution system in more than one hundred college laboratories, with complete details of power supplies, methods of distribution within the laboratory and terminal facilities as well as descriptions of the components. *The Standard Electric Time Co., 239 Logan St., Springfield, Mass.\**

### Armco Steel Buildings (A.I.A. 14-1)

Manual SX-2056 catalogs and presents design information on five basic types of *Armco* steel buildings. 32 pp. *Armco Drainage & Metal Products, Inc., Middletown, Ohio.\**

### Control Center Manual

Sixteen-page manual contains descriptive and pictorial information on *Square D* control centers, with special attention to planning and specifying. *Square D Co., 4041 N. Richards St., Milwaukee 12, Wisc.*

### Styrofoam Construction Details

(A.I.A. 37B) Construction Detail Folder contains 12 scale drawings showing typical applications of *Styrofoam* plastic foam insulation. Accompanying the drawings are information on the sizes and physical properties of the foam, as well as design data and specifications for its use as plaster base or perimeter insulation. *Plastic Sales Dept., Dow Chemical Co., Midland, Mich.\**

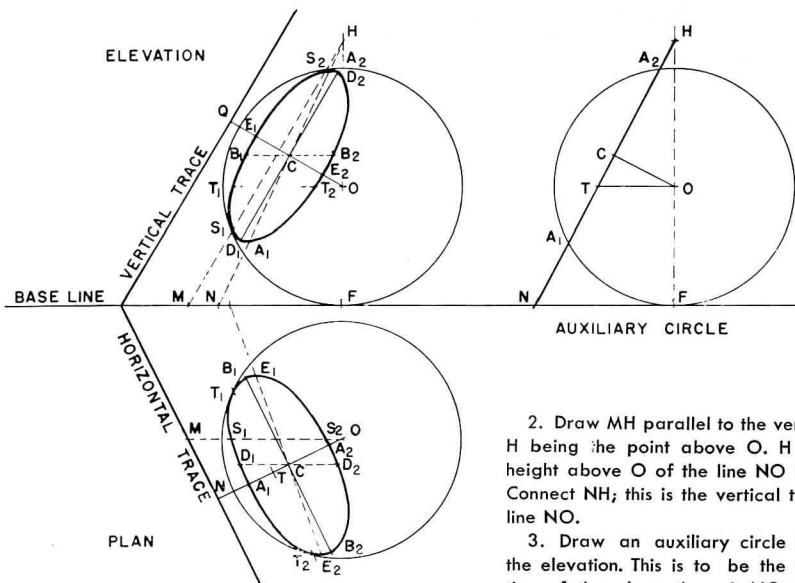
\* Other product information in *Sweet's Architectural File, 1956.*

(More Literature on page 258)



USEFUL CURVES AND CURVED SURFACES: 23—Sphere

By SEYMOUR HOWARD, Assistant Professor, Pratt Institute, Architect associated with Huson Jackson and Harold Edelman



To draw the plan and elevation projections of the section of a sphere cut by any plane, given the horizontal and vertical traces of the plane on the plan and elevation. (The Base Line is the plane of the plan as seen in elevation and the plane of the elevation as seen in plan.)

1. On the plan, draw ON normal to the horizontal trace. This line represents a plane cutting the sphere in a great circle and cutting the section plane in a straight line. Draw OM parallel to the elevation plane. Project N and M up to the Base Line.

2. Draw MH parallel to the vertical trace, H being the point above O. H is the true height above O of the line NO in the plan. Connect NH; this is the vertical trace of the line NO.

3. Draw an auxiliary circle in line with the elevation. This is to be the true elevation of the plane through NO; the section plane appearing as the line NH. Set FH = FH and NF = true plan length = NO measured on the plan. Join NH; this cuts the circle at A<sub>1</sub> and A<sub>2</sub>. Draw OC normal to A<sub>1</sub>A<sub>2</sub>. C is the center of the little circle which is the required section of the sphere, and is the center of the ellipses in plan and elevation which are the projections of this little circle.

4. Project C back onto NH on the elevation and the plan. The axes of the ellipse in plan lie along NO and a line through C parallel to the horizontal trace. The axes

of the ellipse in elevation lie along CQ, normal to the vertical trace and a line through C parallel to the vertical trace.

5. From the auxiliary circle, project A<sub>1</sub> and A<sub>2</sub> onto NH in elevation. These are points on the ellipse in elevation. Project them down to the plan; they are the ends of the minor axis of the ellipse in plan. Draw a line through C parallel to the horizontal trace and measure CB<sub>1</sub> = CB<sub>2</sub>, equal to the diameter of the little circle, which can be measured from the auxiliary circle as A<sub>1</sub>C. B<sub>1</sub> and B<sub>2</sub> are the ends of the major axis of the ellipse in plan. The ellipse can be completed by any convenient method (see Sheet 4). To verify the points of tangency T<sub>1</sub> and T<sub>2</sub>, draw OT on the auxiliary circle. Transfer the distance OT onto the plan and draw T<sub>1</sub>T<sub>2</sub> parallel to the horizontal trace.

6. From the plan ellipse the elevation ellipse can be drawn. On the plan, draw a line through C parallel to the Base Line, cutting the plan ellipse at D<sub>1</sub> and D<sub>2</sub>. This is the plan projection of the major axis of the ellipse in elevation. Draw a line through C in the elevation, parallel to the vertical trace and project D<sub>1</sub> and D<sub>2</sub> up onto it. These are the ends of the major axis. The length CD<sub>1</sub> = CD<sub>2</sub> (in elevation) = CB<sub>1</sub> = CB<sub>2</sub> (in plan) and is equal to the true diameter of the little circle. This is the plan projection of the minor axis of the ellipse in elevation. Project E<sub>1</sub> and E<sub>2</sub> up to the elevation; these are the ends of the minor axis. Draw the ellipse. The points of tangency S<sub>1</sub> and S<sub>2</sub> can be checked by projecting S<sub>1</sub> and S<sub>2</sub> on OM up from the plan to the elevation.

Given any two points, A and B, on the elevation of a sphere, to draw the projection of the geodesic (arc of great circle) through them. (This projection will be typically an ellipse.)

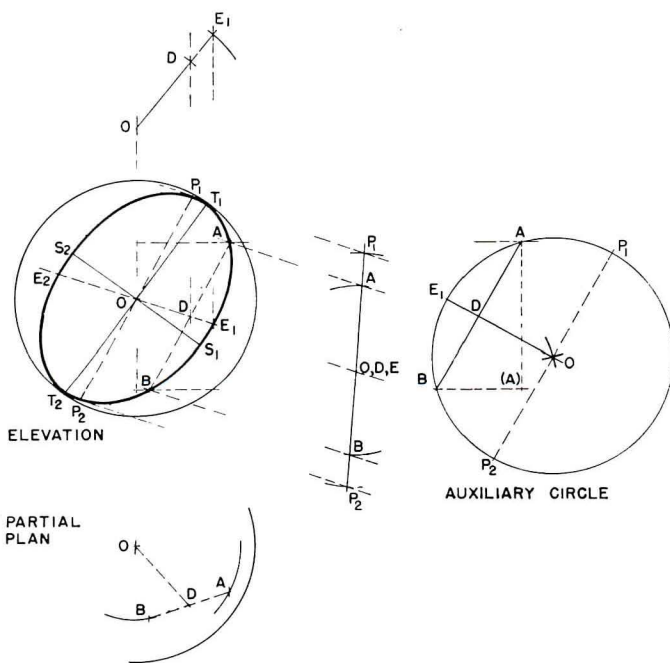
1. Draw the chord AB on the elevation. Join the center O to the midpoint D of the chord AB. Draw a line through O parallel to AB. These two lines through O lie on perpendicular diameters of the great circle and therefore lie on conjugate diameters of the ellipse.

2. Draw part of the plan below, showing the portions of the arcs of the little circles on which A and B lie. Project down A and B.

3. From the elevation project horizontal lines through A and B. On one of these lines measure B (A) equal to the true plan length AB. Erect a perpendicular on (A) to A. The hypotenuse of this right triangle is the true length of the chord AB. Draw the circle, of the same radius as the sphere, through A and B. Draw the diameter EDO normal to the chord AB and draw the diameter P<sub>1</sub>OP<sub>2</sub> at right angles. (This auxiliary circle is the true plan or elevation of the great circle and gives the true angular length of the geodesic AEB.)

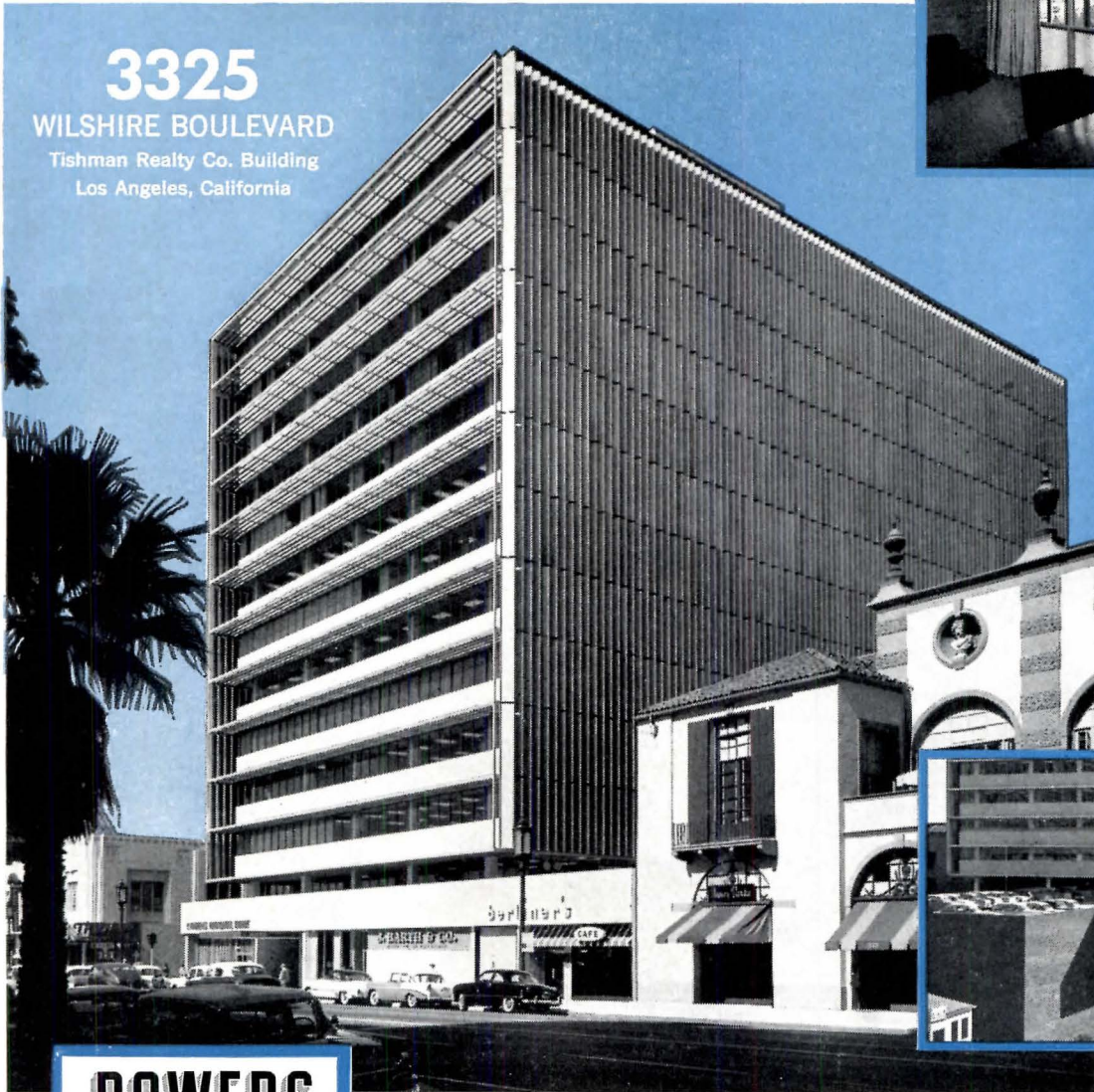
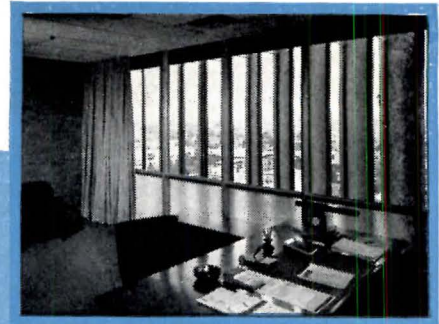
4. With proportional dividers or by measuring along oblique lines, as shown here, find the projected points P<sub>1</sub>, P<sub>2</sub> and E on the elevation.

5. OP<sub>1</sub> and OE on the elevation are now conjugate semi-diameters of the ellipse. Use method of Sheet 20 to find the major axis T<sub>1</sub>OT<sub>2</sub> and the minor axis S<sub>1</sub>OS<sub>2</sub> and draw the ellipse. T<sub>1</sub> and T<sub>2</sub> are of course the points of tangency between the circle and the ellipse, the length of the major axis always being the diameter of the circle.





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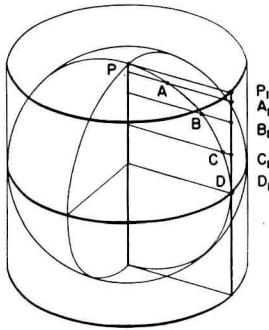


(c89)



USEFUL CURVES AND CURVED SURFACES: 24—Sphere

By SEYMOUR HOWARD, Assistant Professor, Pratt Institute, Architect associated with Huson Jackson and Harold Edelman



MAPPINGS OF THE SPHERE

Since the sphere cannot be developed onto a plane, many methods of studying it in various projections or mappings have been devised. The construction of spherical domes, particularly the newly developed "geodesic dome," is facilitated by understanding some of these.

A. Cylindrical projection

This is an "area-preserving" mapping of the sphere onto a cylinder. Each point on the sphere is projected onto the circumscribed

cylinder along the normals to the cylinder. The area (zone) on the sphere cut off by any two parallel planes, normal to the axis of the cylinder, will be equal to the corresponding area cut off on the cylinder.

The great circles which have the axis of the cylinder as a diameter (i.e. longitude lines) become straight lines; the latitude circles are mapped as straight lines. All geodesics except the longitude lines and the equator are mapped as curves. The whole sphere is mapped onto a plane rectangular area,  $2\pi R$  wide and  $2R$  high.

B. Mercator's Projection

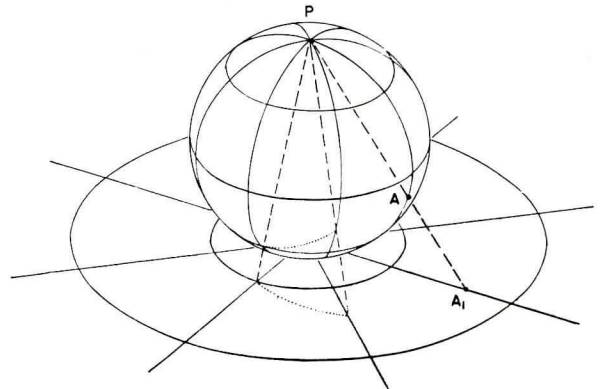
Like the cylindrical projection, this shows all meridian and latitude lines as straight lines, forming an orthogonal network. The longitude lines are equally spaced, proportionately to the degree of longitude; the latitude lines are spaced further and further apart as the latitude angle increases. On the

map  $x = R\Theta$ ;  $y = R \log_e (\sec \psi + \tan \psi)$  where  $\Theta$  is longitude and  $\psi$  latitude. This projection was developed for navigation: to map rhumb lines or loxodromes as straight lines. The rhumb line is a curve on the sphere which cuts all meridians at the same angle; it is the path taken by a ship whose course is fixed on a constant bearing with

respect to true north. The whole sphere is mapped on a plane strip  $2\pi R$  wide and of infinite height (although it is only the last fraction of a latitude degree which goes to infinity). Angles are preserved. The only geodesics which become straight lines are the longitude lines and the equator.

C. Stereographic projection

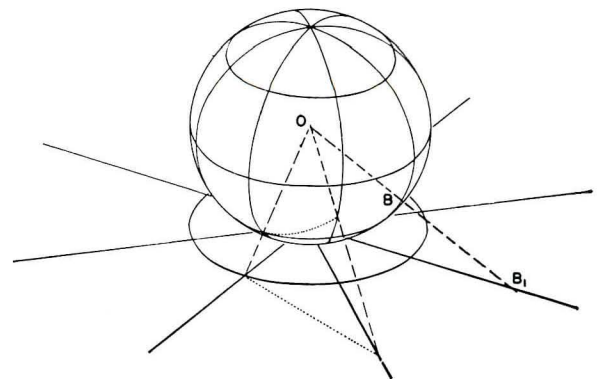
All points on the sphere are projected onto a plane which is tangent to the sphere, by rays from the pole which is diametrically opposite the point of tangency. All circles, geodesics and little circles, on the sphere are preserved as circles on the mapping. The arc of a geodesic is shown here as a dotted line. The radii of the projected circles are generally not the same as the circles on the sphere; the geodesics which pass through the pole are mapped as straight lines (which can be considered as circles whose radii are infinite). The angles between lines on the sphere are preserved on the mapping. Areas and distances are increasingly distorted as the mapping goes outward. However, the ratios of distances in any small area are approximately correct, and the stereographic projection can therefore be called a "conformal" mapping. The whole sphere is mapped onto the whole infinite plane once.



D. Central projection (sometimes called gnomonic projection)

If a sphere is projected from its center onto a tangent plane, all geodesics become straight lines. A geodesic is shown here as a dotted line. Such a projection is called a geodesic map, because all the geodesics on one surface, i.e. the sphere, are geodesics on the other, i.e. the plane. Angles are not preserved, nor are areas. The whole sphere is mapped twice onto the infinite plane; in other words each half of the sphere covers the plane once.

Both stereographic and central projections may be useful in studying geodesic domes. The plane of projection can be moved about at will to show different portions with a minimum of distortion.





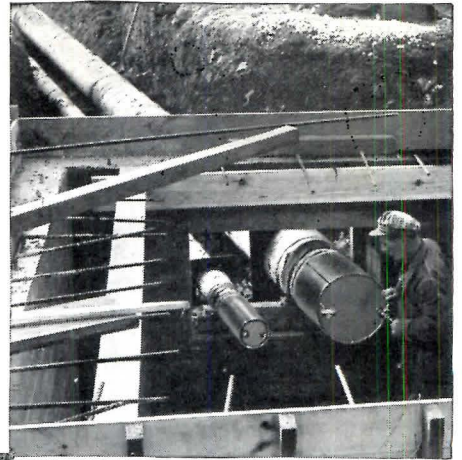
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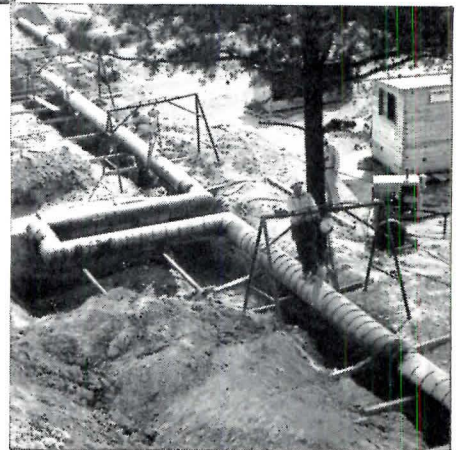
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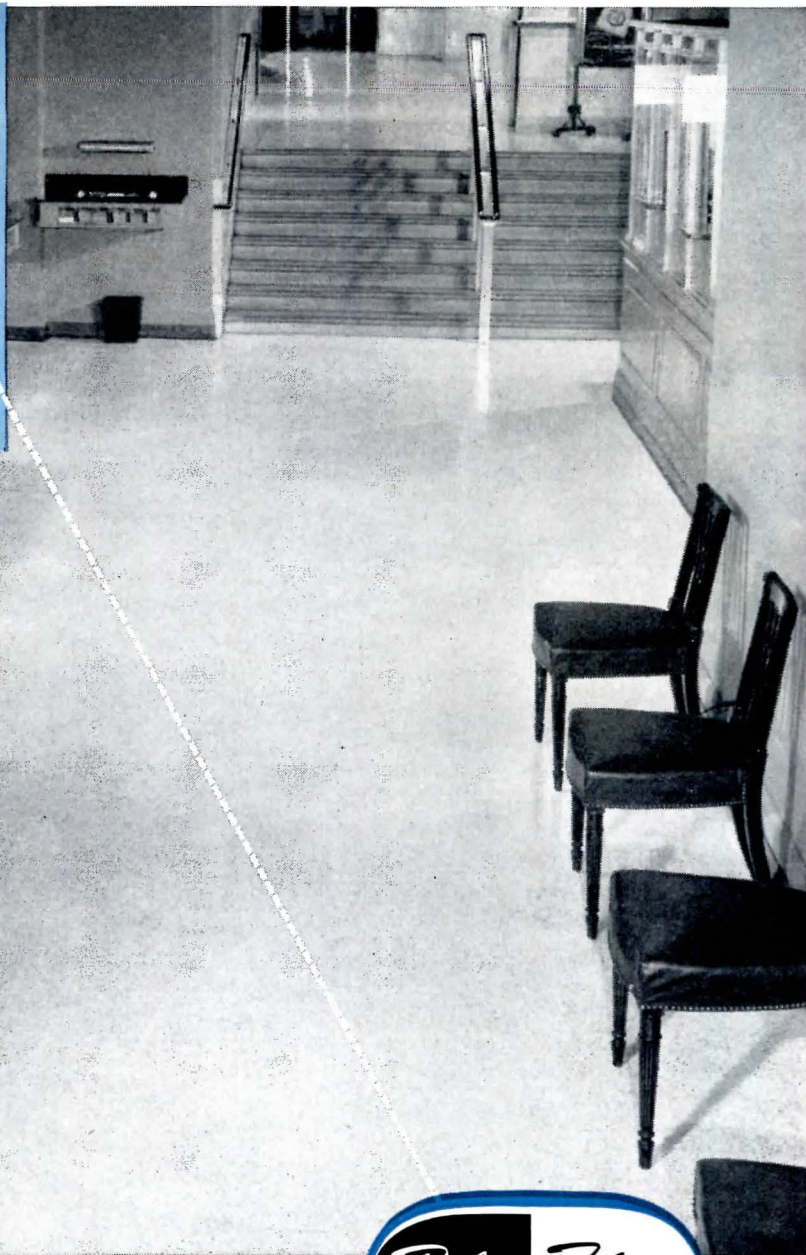
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**TECHNICAL ROUNDUP**

*(Continued from page 212)*

**OUTDOOR SCULPTURE FORMED FROM AIR PLACED CONCRETE**



A search for new media led Julius Schmidt, chairman of the department of sculpture at the Kansas City (Missouri) Art Institute, to the air placed concrete building method — which student Herman Snyder promptly used for the non-objective outdoor sculpture shown above. Snyder had framed the piece in steel reinforcing rods and mesh, with the intention of covering it with hand-troweled concrete. Instead, the mesh structure was sprayed with a three

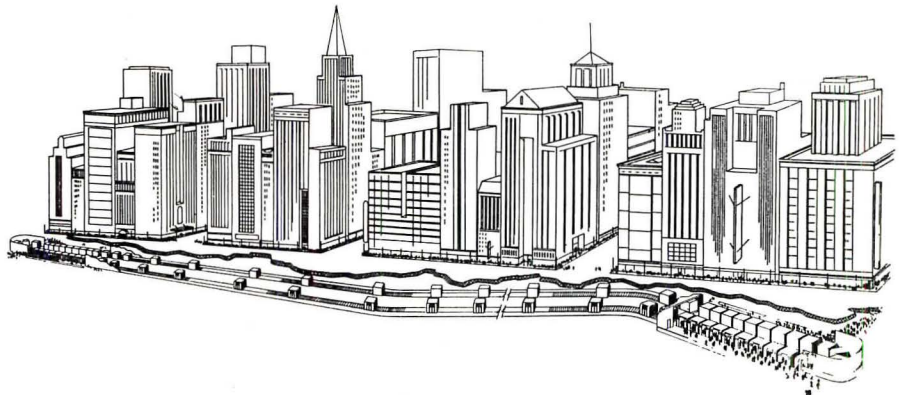
to one mix of sand and concrete, which was then troweled to a smooth finish and sprayed with fine textured gray concrete.

**RAPID TRANSIT SYSTEM PROPOSED FOR CHICAGO**

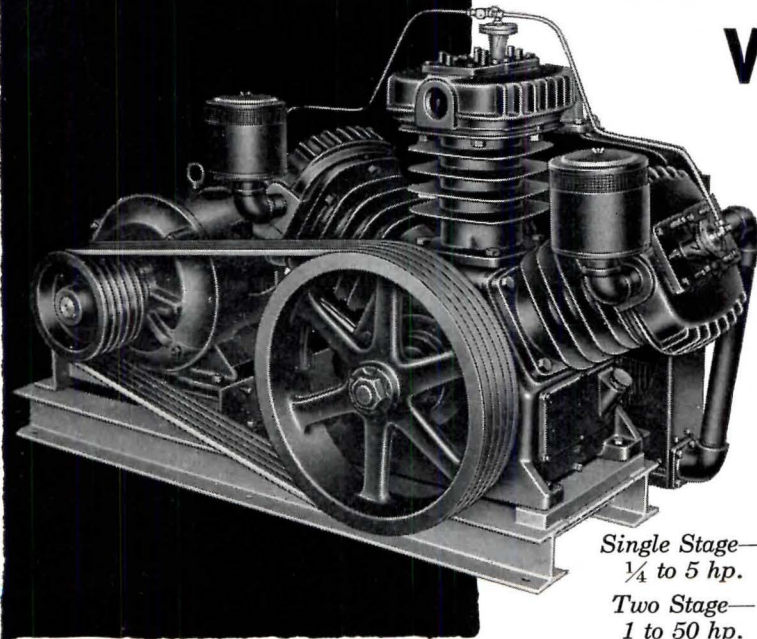
At the Chicagoland Fair last month, the Stephens-Adamson Mfg. Co. of Aurora, Illinois displayed a working model of a new rapid transit system proposed to carry passengers from the loop to stadiums and railroad stations.

Similar in principle to the heavy, rubberized conveyor belts long used for materials handling in industry, the system uses small (4, 6, 8 or 10 seat) cars to carry passengers from point to point

along a continuously moving conveyor belt. The cars move through stations at approximately 1½ mph, allowing passengers to enter from a sidewalk moving at the same speed. As they leave the station, a bank of pneumatic rollers accelerates the cars to a cruising speed of 15 mph, which is maintained until they approach the next station and are slowed by a decelerating conveyor to the speed of the moving station platform. To propel the cars smoothly around curves, "live rolls" are set on radial lines, and the wheels rotated at different speeds. The shortness of the cars makes it possible for them to negotiate short-radius turns around building



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Large fin area for quick and efficient air cooling—Timken Tapered Roller Main Bearing, adjustable for wear—Positive Centro-Ring pressure oiling system.

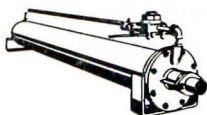
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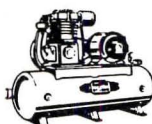
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Two Stage—  
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corners without swinging out over inter-sections — a particular advantage for elevated lines.

Other advantages cited for the *Carveyor* system include continuous service, with no waits for trains; flexibility that allows its use for either elevated or underground systems; and low investment and operating costs.

**STUDENTS PLAN MINING TOWN FOR 20TH CENTURY FRONTIER**



In 1949 the Blind River area north of Lake Huron in Canada was undeveloped, its chief claim to fame the excellent hunting and fishing in the vicinity. Today its rocky wooded landscape boasts a population of 4,000 — and the world's largest uranium center. By 1960 an estimated total of 30,000 people will

inhabit a mining community now taking shape on the shores of Elliott Lake.

Challenged by this emergence in the twentieth century of a new frontier — complete with boom town — city planning students at Cornell undertook as a class project the development of a long-range plan by which the mushrooming mining town might escape the ghostly fate met by so many of its predecessors in the last century. The course they have charted for the town of Elliott Lake is based on an attempt to cure at the outset what have been the besetting ills of similar communities in the past — a disproportionately large number of single men and transients, and a one-commodity economy.

Because of the ever-present specter of mine failure and because a study of the area showed that its economic potential (other than the three billion dollars worth of uranium) lies primarily in its scenery and wildlife, the student plan provides for the development of mass recreational facilities by which these natural resources might be exploited to make tourism a second — and perhaps more stable industry. This consideration, combined with the topography of the site, determined the layout of the model town. Four residential

neighborhoods are ranged in a crescent along Elliott Lake's south shore, separated by "guaranteed green belts" of unbuildable terrain. The lake front itself is reserved for parks, with supplementary recreational facilities and the main commercial district placed in the large open areas at the center of the crescent. To the far east of the community are three and six-story apartment groups for the single men. These housing units are so designed that, as what the student report calls the "predominantly male and boisterous core" of the community is gradually replaced by family groups, they may be easily converted to resident hotels and tourist accommodations. (More Roundup on page 228)



# IMPORTANT REASONS WHY

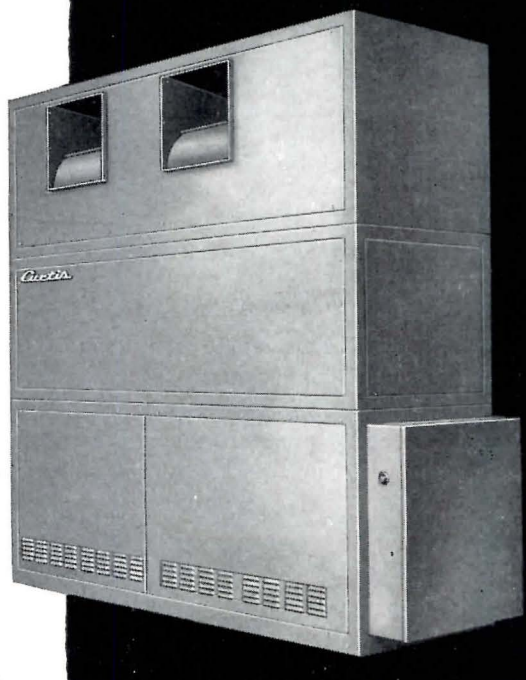
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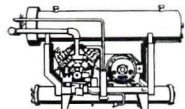


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**FABRICATING  
STEEL  
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## **FRAMEWORK FOR THE FUTURE!**

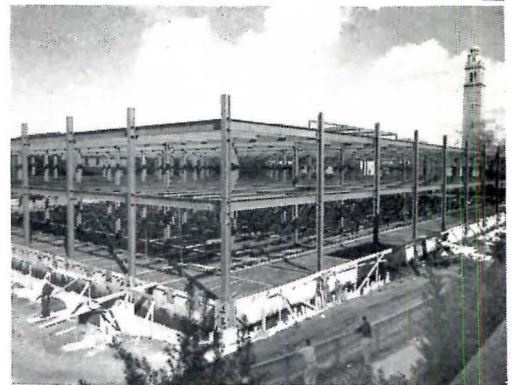
When completed, Louisiana State University's new library building can still grow . . . *two more stories!*

The specially engineered structural steel framework, fabricated by Ingalls, is designed to accommodate two more floors with no additional strengthening of original under-structure . . . *yet, the column dimensions are held to a minimum.* All future splices on both exterior and interior columns can be made with a very minimum of disturbance to construction.

Ingalls' ability to coordinate and excellent shop control resulted in perfect matching and alignment of the structural steel. This effected substantial savings in fabrication and erection costs.

Ingalls' 47 years experience in fabricating structural steel . . . and in structural steel erection, too . . . will work for you, as well. Whatever you plan to build, using fabricated structural steel, give Ingalls the opportunity to help you do it *better!* Write for complete information . . .

Architects and Engineers:  
Bodman, Murrell and Smith, Baton Rouge, La.



### **INGALLS' PLANTS GREATLY EXPANDED**

Capacity has been increased nearly 70% at Ingalls' Plants within the past three years . . . part of a program designed to give Ingalls the facilities to meet every modern requirement for fabricated structural steel for any construction purpose.

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Established 1910

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Stadia • Hangars • Bridges • Office Buildings  
Theatres • Hotels • Apartment Buildings • Bins  
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Buildings • Tanks • Pressure Vessels • Stacks





The new Kansas State Office Building is illuminated by luminaires manufactured by the WESTINGHOUSE ELECTRIC CORPORATION, Lighting Division, Cleveland, Ohio. Lenses for these fixtures (see inset) of Du Pont LUCITE acrylic resin were injection-molded by the HOLOPHANE COMPANY, INC., New York, N. Y.



*Better looking, better lighting*

with luminaires using Du Pont **LUCITE**<sup>®</sup>

ACRYLIC RESIN

Du Pont LUCITE was specified for the forty thousand square lenses used to illuminate the new Kansas State Office Building by the Lighting Engineer for the State Architect.

Lenses of LUCITE were specified because they insure a "prairie field" of light, as opposed to "hill-and-valley" lighting. Also, when the weight, maintenance and safety factors for this important job were being considered, LUCITE was found to have a "top rating" in all these departments.

The molded lenses of LUCITE enable three fluorescent tubes in each fixture to deliver 65 foot-candles of glare-free light on the working area. Partitions may be moved to adjust office sizes, but light intensity varies only two or three foot-candles.

Though light in weight (in this case a total of 60 tons lighter than glass), LUCITE is strong and shatter-resistant. Handling and installation of lenses is easier, faster and safer. The lenses are easy to maintain, remain free from discoloration.

Versatile LUCITE has proved outstanding for all types of modern lighting installations: large-area lighting, low-brightness lenses for troffer and pendant luminaires, side panels, cove lighting enclosures and protective covers for outdoor lighting fixtures.

Can we help you accomplish better lighting by use of Du Pont LUCITE in your lighting designs?

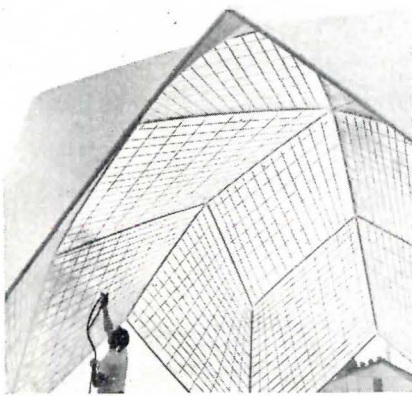
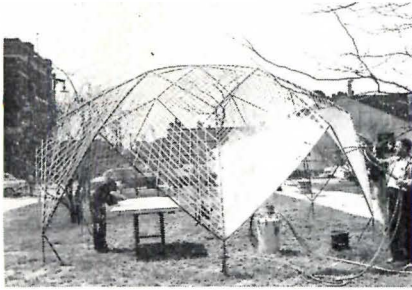
**SEND FOR FREE BOOKLET.** A 12-page illustrated booklet describing property and application data on LUCITE acrylic resin for lighting is yours for the asking. For your free copy, write E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Room 428, Wilmington 98, Delaware.



BETTER THINGS FOR BETTER LIVING  
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## TECHNICAL ROUNDUP



Experimental shelters constructed by students at Illinois Institute of Technology's Institute of Design apply the mothballing technique developed for ships to housing. Tubular steel frames, 12 ft high and 20 ft in diameter, are covered with a 6 in. mesh of cloth tape, sprayed with two coats of quick-drying vinyl. To prevent wind flutter, structures are built in the form of hyperbolic paraboloids.



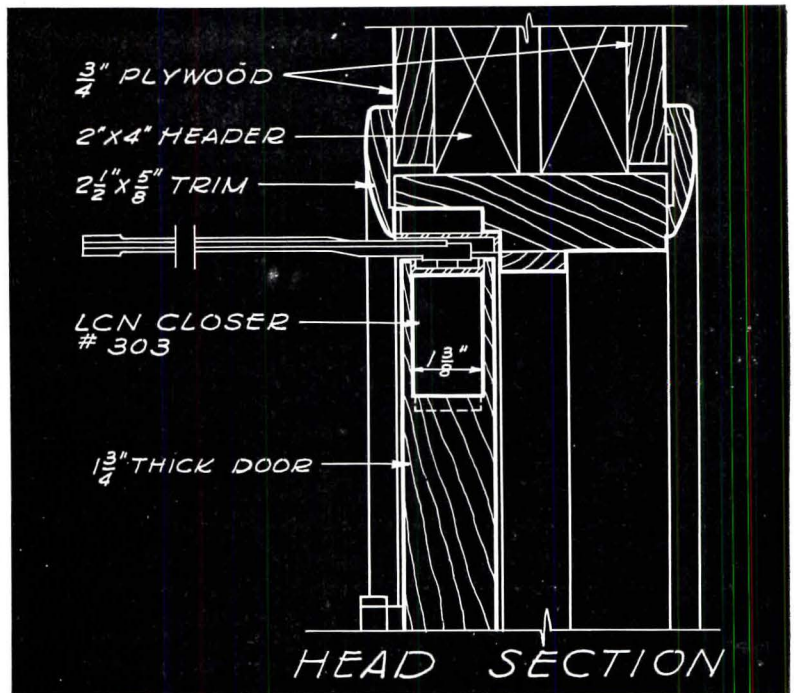
## STUDENTS SPIN VINYL COCOONS FOR EXPERIMENTAL SHELTERS

Employing a technique similar to that used for "mothballing" ships, students at Illinois Institute of Technology's Institute of Design have wrapped tubular steel frames in sprayed-on cocoons of a tough quick-drying vinyl which is inexpensive to use, easy to apply and as durable as many commonly used roofing materials. The project was initiated by Richard E. Baringer, head of shelter design, who believes that the technique might be used to construct better — and cheaper — houses.

To keep the sprayed skin in tension

the experimental shelters developed by his students were built in the form of hyperbolic paraboloids. Before the plastic was applied, cloth tape was stretched over the frames and meshed at six inch intervals, giving the vinyl fibers a surface on which to cling. The structures were then sprayed with two coats of plastic, the first of which contained a webbing agent. White pigment was added to a finishing coat of pure vinyl to prevent the plastic's deteriorating under exposure to direct sunlight.

(More Roundup on page 232)



## CONSTRUCTION DETAILS

for LCN Closer Concealed-in-Door Shown on Opposite Page

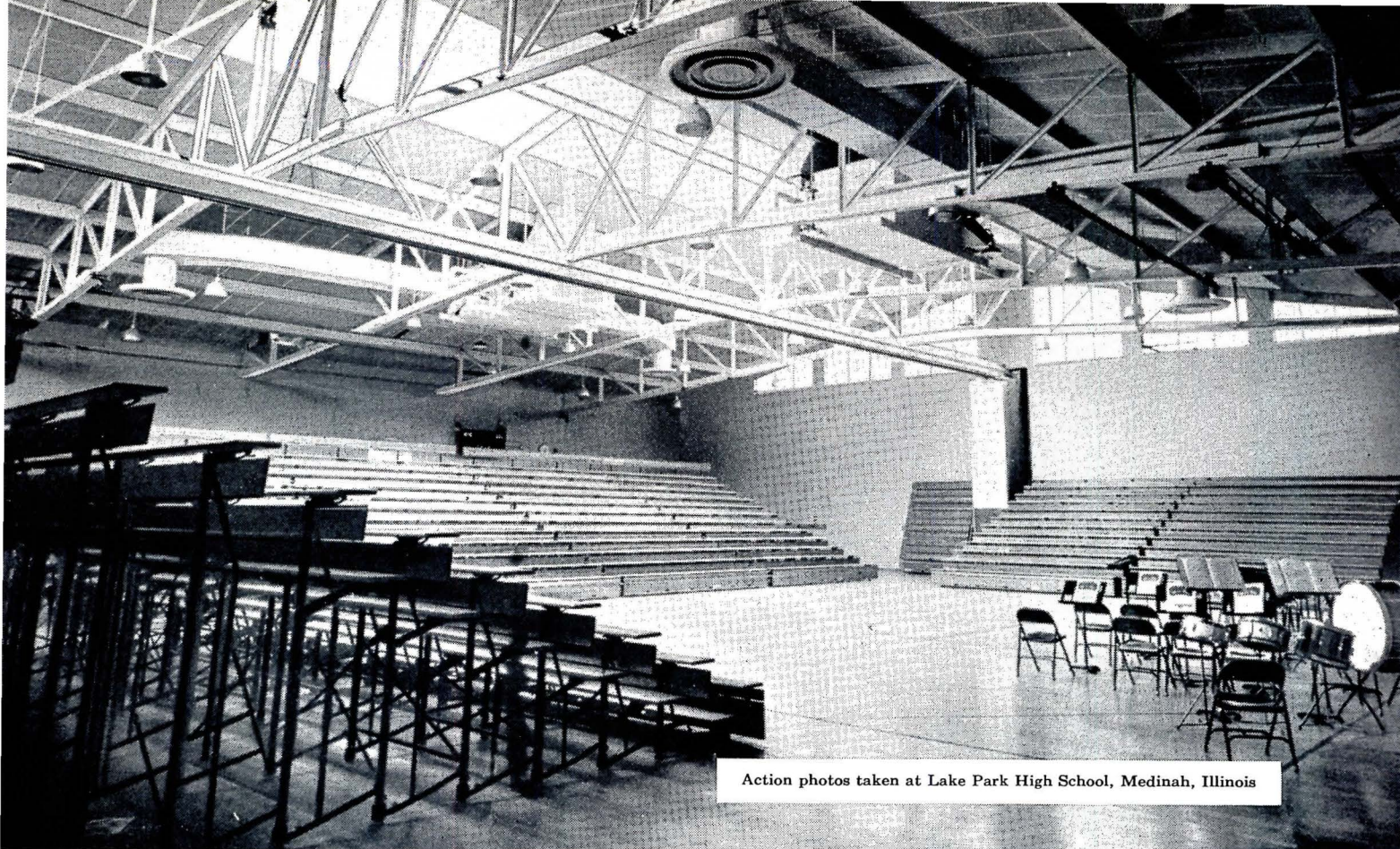
The LCN Series 302-303 Closer's Main Points:

1. An ideal closer for many interior doors
2. Mechanism concealed within door; flat arm not prominent, and provides high closing power
3. Door is hung on regular butts
4. Closer is simple to install and to adjust
5. Hydraulic back-check protects walls, etc. on opening
6. Practically concealed control at little more than exposed closer cost

Complete Catalog on Request—No Obligation  
or See Sweet's 1957, Sec. 18e/La

LCN CLOSERS, INC., PRINCETON, ILLINOIS





Action photos taken at Lake Park High School, Medinah, Illinois

with exclusive row locking . . . turns the gymnasium into a dollar-earning auditorium.

## pays for itself as you use it

Brunswick Folding Gymnasium Seating soon pays for itself in convenience and earning capacity. It lets students use every inch of activity space. And it quickly converts the gym into an auditorium for paid-admission events. Besides gym seating, Brunswick makes folding partitions, stages, basketball backstops, wardrobes and closet walls. Brunswick School Furniture includes chairs, desks, tables, cabinets . . . everything for the classroom. All offer a unique combination of advanced features and quality exclusives you'll find in no other line.

**Complete Flexibility:** Brunswick folding equipment and furniture makes every area of the school multi-purpose. It saves space, cuts maintenance costs, too. And Brunswick furniture is the *only* stacking line. It moves, nests, stores, and groups in countless combinations. You'll find Brunswick as ideal for after-school uses as for schoolday activities. The company pioneered the concept of flexibility . . . and is now taking the lead in further advances. No other line can offer such proof-in-use by hundreds of schools throughout the country.

**Functional Beauty:** Brunswick's unique combination of flexibility and beauty makes classrooms living rooms for learning. Functional designs and harmonious colors create surroundings that actually improve teacher and pupil efficiency. See the beauty of Brunswick furniture and equipment at neighboring schools, and get the opinions of other school authorities. They can tell you that the Brunswick line is an investment in beauty . . . the perfect partner for modern teaching methods.

**Rugged Construction:** Many manufacturers have found inspiration in Brunswick's designs. But Brunswick quality is unique. No other line is engineered and constructed with such careful attention to quality. Every piece of Brunswick equipment is built as an investment . . . not merely a purchase. From concept to smallest detail, Brunswick furniture is rich with quality exclusives. Your representative can explain in detail how Brunswick is built for years of trouble-free use.

**Dependable Service:** Brunswick regards service as "quality in action". Your representative's service *begins*, not ends, when you buy. He is always on call. And Brunswick is the only line offering both folding equipment and furniture. You buy from a single dependable source . . . know exactly where to turn for service. Brunswick backs every sale with a quality reputation that has been bright for 112 years.

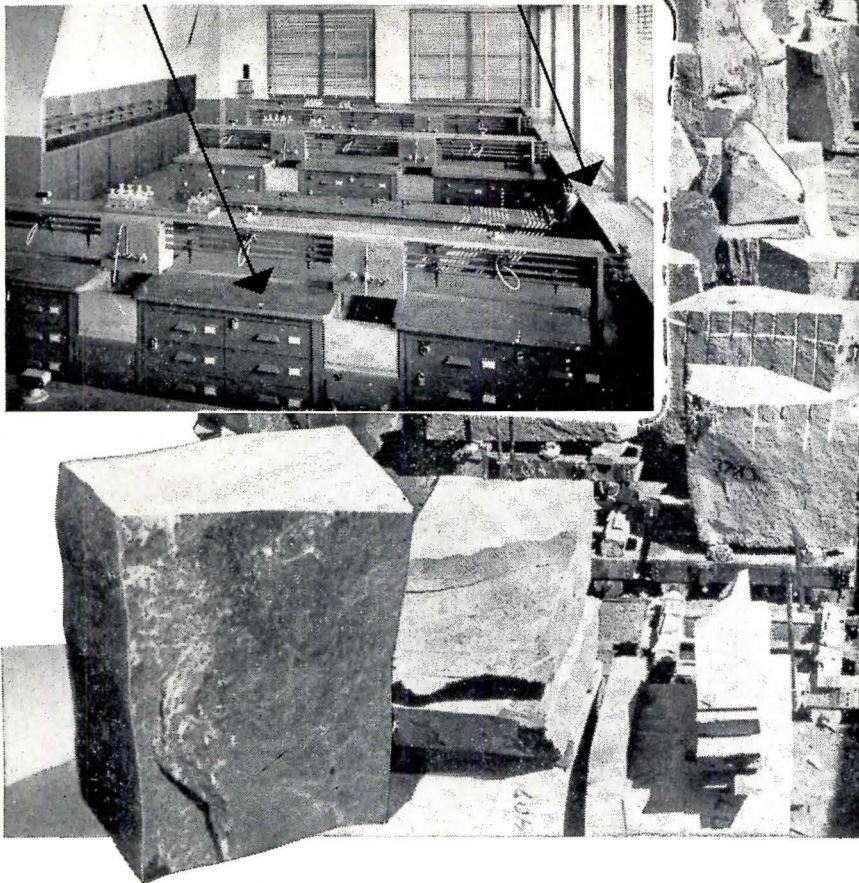
For complete information, write to The Brunswick-Balke-Collender Company, 623 South Wabash Avenue, Chicago 5, Illinois.

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Fellheimer & Wagner, Architects.



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## TECHNICAL ROUNDUP

### PLASTIC PLAY SCULPTURE FOR JUNIOR JONAHS



A "great white whale" of reinforced plastic obligingly thrusts his tail 9½ feet in the air to form a curved slide for youthful patrons of a drive-in theater on Long Island. Designed by Dr. Joseph Brown of Princeton University's School of Architecture, the 32-foot whale is molded of polyester resin over a sisal core. The concave scooped back which forms the sliding surface is covered with a double layer of acrylic fiber cloth to provide the necessary abrasion resistance. Youngsters clamber topside via a nearby "rope ladder."

### STEEL OFFICE WALLS PERMIT OVERNIGHT ALTERATIONS

Movable steel walls that may be shifted overnight to meet changing space requirements have been developed to give tenants in a New York City office building maximum freedom in arranging their office spaces. Designed jointly by the Tishman Realty Construction Company, Inc. and the E. J. Boyle Division of the Aetna Steel Products Corporation, the panels will be supplied in varying widths for added flexibility in locating walls and doors, and can be cut through to provide interior windows. Since the walls themselves form a continuous raceway for wiring, telephones and electrical outlets and switches can be placed wherever desired.

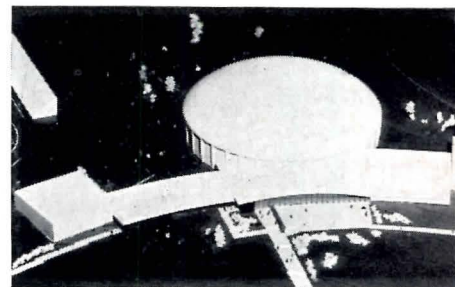
The 3-in. thick partitions are made up of flush steel panels filled with an inorganic material which provides sound-proofing while increasing the rigidity of the wall. They are tightly fitted together with friction joints to insure dimensional stability of rooms. Except for the removable projecting base panels that give access to the wiring, the walls present a smooth flush surface unbroken by vertical members or moldings. Factory-finished with a baked enamel prime coat, the panels may be painted after installation, or surfaced with such materials as tile or wood panelling.





**Montana State  
College Fieldhouse,  
Missoula, Montana,**

*is 300 feet in diameter and 1-2/3 acres in area. Clear span roof is supported by a dome structure of glulam timbers. Rise of the dome is 50'-8 7/8". Seating capacity for basketball is 12,500.*



*Architects:* Willson and Berg, Bozeman, Montana. *Contractors:* Haggerty & Messmer Company, Bozeman.

*Architect:* Jan H. Pokorny, New York City. *Contractor:* Fred J. Brotherton, Hackensack, N. J.



**Reeves Student Union  
Building,  
Centenary Junior College,  
Hackettstown, N. J.,**

*is framed by five Tudor arches of 100-foot span and 36 degree spacing. Canopy extends beyond sidewalls on seven of the ten sides.*



## THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 46)

fees, however, shows a very different ratio.

"In effect, the profession has little business with the housing industry. The design of the very environment in which the urban population lives has benefited only in small part from your skills. With nearly 40 per cent of our population going to enter the housing market in the future, this situation calls for change.

"To claim your due place in the task of city making, you cannot neglect the housing part of the environment."

Following Mr. Bates, a five-man team of experts took the stage led by Prof. A. P. C. Adamson of the School of Architecture, University of Toronto. His colleagues were Prof. James A. Murray of the same institution; Prof. James T. Lendrum, director, Small Homes Council, University of Illinois; Angus L. McClaskey, president, Don Mills Developments Ltd., Toronto, and S. A. Gitterman, architectural advisor, development division, Central Mortgage & Housing Corporation.

Mr. McClaskey queried the merit of housing surveys based on consumers' tastes. Professor Murray agreed to the extent that "most women do not know what they want in a house."

Professor Lendrum observed that if house design were left to the wishes of the individual "we would still be living in caves." He said that architects must lead the way in the conceiving new and imaginative, yet practical, housing units.

The panel agreed that more multiple housing is needed since the space and cost of services for individual houses were rising too rapidly. "We will soon run out of countryside," Mr. Gitterman commented.

Mr. McClaskey argued that, as a former staff member of CMHC, he did not think the Corporation was doing enough advance planning for the people

(Continued on page 274)



VICTORIA THREESOME—  
John H. Wade with Mr. and Mrs.  
Patrick Birley



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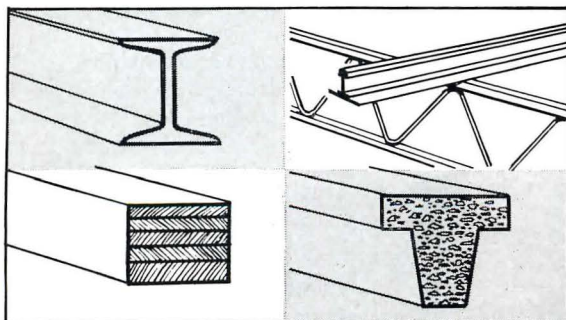


*Jefferson Elementary School, Livonia, Michigan  
Architects and Engineers: Jahr-Anderson Assoc. Inc.*

## TYPICAL COST REDUCTION REPORTS FROM TECTUM USERS

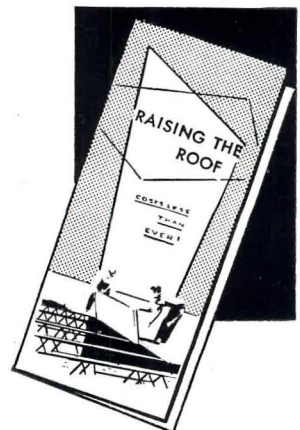
**Example 1** "The use of Tectum in lieu of the base specifications and having the same insulating and acoustical properties, resulted in savings of \$6694.00 on the new Grandview High School Gymnasium. This is a savings of 38c per square foot."

**Example 2** "In order to assure our client an economical design, we asked for alternate bids. Through use of Tectum, the savings to the Board of Education was \$7400.00 or a unit savings of 34c per square foot."



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Send today for this informative booklet, "Raising The Roof Costs Less Than Ever" and see how hundreds of plants, schools, churches and other types of buildings have incorporated Tectum type decks and sidewall construction. Write today for the complete facts.



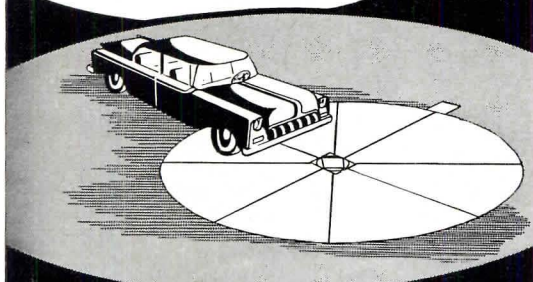
# Tectum CORPORATION

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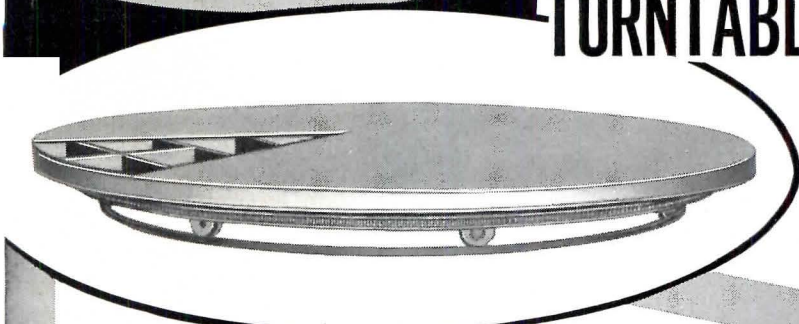
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Somerville, Mass.

## THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 270)

who will need housing in the near future. He urged that more attention be paid to research directed at development of new residential designs and housing projects, as well as to the revision of existing building codes. Consensus of opinion appeared to be that, in general, the life span for which the typical small house is constructed is too long.

Friday afternoon was devoted to the College of Fellows installation ceremony, following which the Andrew Cobb dinner was held.

### Bucky Fuller on Design

Saturday, June 1 marked the last day of the "Golden Jubilee" Assembly. R. Buckminster Fuller spoke on a symposium "An Anticipatory Science of Design" during the morning. He recounted the impact of industrialization on the arts and described results of studies which he first started 30 years ago. His optimistic forecast was that in design the degree of freedom accorded the individual will be greatly increased in future.

The afternoon was given over to tours and social events, with the president's reception and annual dinner at night.

The president of the Institute, Douglas E. Kertland of Toronto, chaired the meeting. Earlier he had reported that membership now stood at an all-time high, in the vicinity of 1900. He said that "one of the difficulties today appears to be that of keeping the strides of our economy in pace with our resources. It would seem reasonable that, if in pacing our strides forward, some postponements are necessary, then all — government, industry and individuals — should share in making those postponements."

### Officers Reelected

Present R.A.I.C. officers were confirmed in their present positions for another year. They are: Douglas E. Kertland, president; A. F. Duffus, first vice president; K. C. Stanley, second vice president; Harland Steele, honorary secretary; Maurice Payette, honorary treasurer. C. J. G. Carroll continues as secretary.

Officers of the College of Fellows are B. R. Coon, chancellor (reelected); Prof. John Russell, dean; and Dr. F. Bruce Brown, registrar.

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Please attach to your professional letterhead and mail to:

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(photograph courtesy Arkansas Foundry Co., Little Rock)

# LACLEDE OPEN WEB STEEL JOISTS used in cotton storage warehouses

**because they're strong...yet lightweight**

**Owner:**

S. R. Nichols  
Des Arc, Arkansas

**Structural Engineer:**

H. A. Gibson  
Little Rock, Arkansas

**General Contractor:**

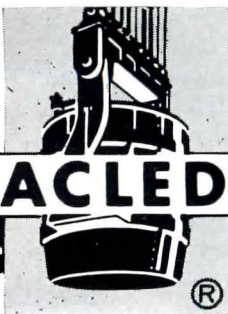
C. R. Carly  
Little Rock, Arkansas

More than 90 tons of Laclede high strength steel joists, specified for three new cotton storage warehouse buildings in Arkansas, went up quickly because lightweight Laclede joists are easy to handle and place.

Specify these Laclede construction steels:

MULTI-RIB REINFORCING BARS  
WELDED WIRE FABRIC  
FORM AND TIE WIRE  
SPIRALS

CORRUGATED STEEL CENTERING  
ELECTRICAL WELD GAS TUBING  
CONDUIT  
STEEL PIPE



**LACLEDE STEEL COMPANY**

SAINT LOUIS, MISSOURI



Producers of Steel for Industry and Construction



## THE RECORD REPORTS

(Continued from page 296)

### DORR-OLIVER FAÇADE USES 120-FT BRONZE SUNSCREEN

The new worldwide headquarters for Dorr-Oliver Inc., an international organization of process engineers, is under construction in Stamford, Conn. Sherwood, Mills and Smith of Stamford are the architects.

The principal feature of the façade will be a 120-ft bronze sunscreen de-



## DODGE BOOKS

for the active architect and engineer

The only complete, practical handbook with every item of basic information needed to execute a successful school building program.

### SCHOOL PLANNING AND BUILDING HANDBOOK

by N. L. Engelhardt, N. L. Engelhardt, Jr.,  
and Stanton Leggett

The best source of information needed every day by everyone concerned with planning, designing, or building school projects. The most specific work ever published in this field. Every procedure is analyzed, programmed, set down with each item in logical chronology. Every procedure is fortified by the inclusion of actual checklists, contracts, documents now in use by leading specialists. Many different methods of cost estimating are analyzed and compared, resulting in a working outline of cost controls for every stage of building.

626 pages • 6 x 9" • \$12.75

**THE BASIC PROBLEM IS THE PUPIL!**  
That summarizes Caudill's approach to every school design problem — be it the design of an easel, or of an entire school system.

### TOWARD BETTER SCHOOL DESIGN

by William W. Caudill

Goes beyond physical considerations into the social, economic, and cultural forces which affect the school — yet still provides practical, concrete solutions to problems the school architect encounters daily.

#### SEVEN EXTENSIVE SECTIONS:

The Pupil • Education • Environment • Economy • City Planning • Division of Space • The Planning Process.

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The first book ever to analyze the primary school curriculum in terms of architectural design.

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and Stanton Leggett

Elementary school building design today calls for a degree of planning and preparation unknown a generation ago. No longer is it sufficient to provide only for the 3 R's. Today, the school architect must understand the origin, objectives, and methods of modern education; he must provide for teacher-pupil activities which often include dramatics, music, crafts, group games, and even simple scientific experiments.

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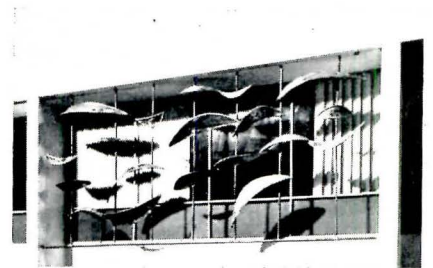
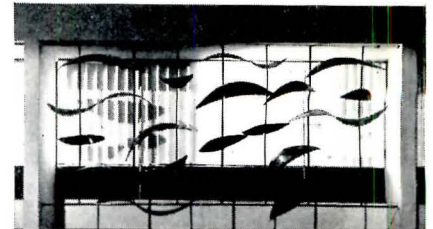
Tested, in-use solutions to today's school design and construction problems.

### SCHOOLS FOR THE NEW NEEDS

by the Editors of *Architectural Record*

Here, in 312 pages and over 900 illustrations, is a fully-detailed, vivid cross-section of new school buildings which best demonstrate today's sweeping advances in concept and design. 66 new schools were selected from all over the country to present a wide geographic and climatic variety. Each school is completely analyzed — plans, sections, and construction details are shown. Costs per square foot are indicated, and further breakdowns and comparisons are made on all other costs. In each case the architect tells his reasons for designing as he did, and even points out flaws which were revealed after the building was put to use.

312 pages • 8 3/4 x 11 5/8" • \$9.75



signed by Sculptor Robert Cronbach of Westbury, L. I. The building will be essentially a two-story hollow square, measuring 264 ft on each side, with an entrance loggia opening the full width of the interior landscaped court. Located in the bridge over this loggia will be the company's executive offices, protected from the western sun by Cronbach's sunscreen of bronze vanes mounted on bronze pipes. The screen will be given a rough brown and green patina.

Building construction will be of reinforced concrete with brick veneer panels front and back; aluminum framed windows will be largely fixed. The building will provide 120,000 sq ft of office space for some 550 home office staff members of the Dorr-Oliver organization. Estimated cost is \$2,500,000.

Partners in charge of the project for Sherwood, Mills and Smith are Thorne Sherwood and Thomas A. Norton. Structural engineers are Werner-Jensen and Korst, Stamford; mechanical engineers, Bernard F. Green Associates, New York; landscape architects, Bye and Herrman, Rye, N. Y. Deluca Construction Company, Glenbrook, Conn., is the builder. Completion is set for May 1958.

(More news on page 306)

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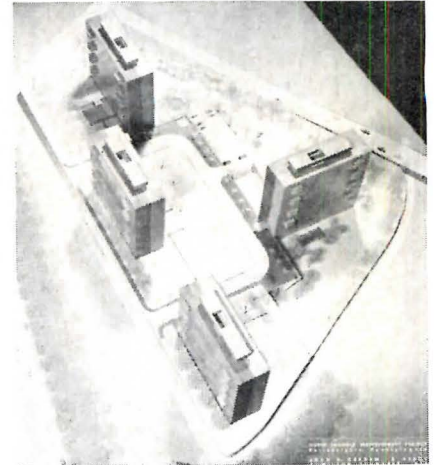
(Continued from page 302)

## A REDEVELOPMENT PROJECT "PLANNED FOR HUMAN USE"

Now under way on a Philadelphia site known as North Triangle No. 1 — adjacent to Benjamin Franklin Parkway between Twenty-second and Twenty-fourth streets, a central location — is a redevelopment project comprising four 18-story apartment buildings containing 880 dwelling units; parking for 880 cars;

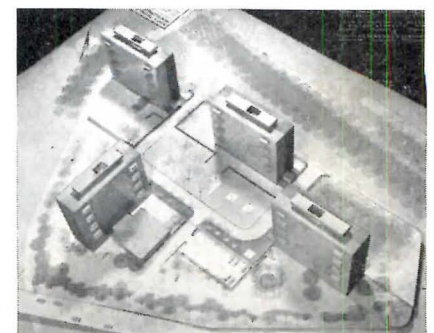
25,000 sq ft of commercial space; and play areas for children. Architects are John Hans Graham and Associates and Milton Schwartz; landscape architects are Collins, Simonds and Simonds.

The site plan, as described by the landscape architects, "is developed for human use and enjoyment. Monumentality is inherent in the solution," they note, "because of the Parkway location and the economic requirements demanding high-rise structures. Yet primarily the concept is a residential environment — a place for convenient living."



Site coverage is approximately 15 per cent. Location and orientation of the buildings were governed by these considerations: 1. Optimum use of the land after complying with the various site restrictions and program requirements. 2. Relationship of open spaces to buildings. 3. Views from apartments. 4. Orientation with care to minimize western sun and headlights of night traffic. 5. Responsibilities to the city of Philadelphia because of the prominent Parkway location. 6. Direct pedestrian and vehicular approach to each apartment building as well as to the commercial facilities. 7. Service circulation independent of tenant traffic. 8. Close proximity of surface and underground parking to each building with a minimum length of approach and exit roads, and ease of circulation.

The resulting scheme develops the entire site for residential use through a series of defined open spaces rather than a single monumental mall flanked by buildings. The emphasis is on a domestic scale in these spaces in contrast with the monumental scale of the buildings. The roof of the two-story parking garage becomes a town plaza, with a decorative wall flanking the main pedestrian way to the north, sitting areas along the promenade and a place beside the pool for outdoor eating. Eighteen fountain jets will rise from terrazzo squares set almost flush in the lawn of the plaza.

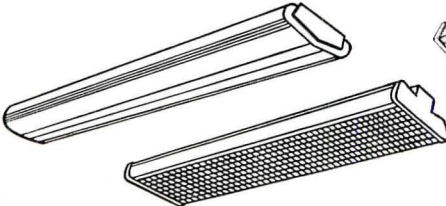


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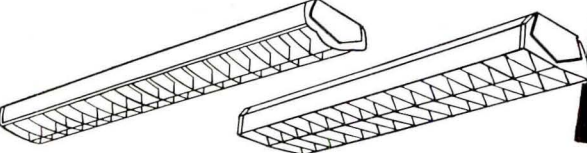
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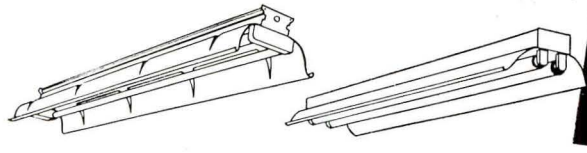
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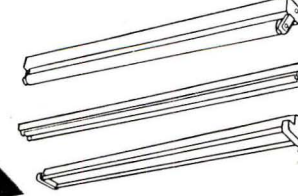
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