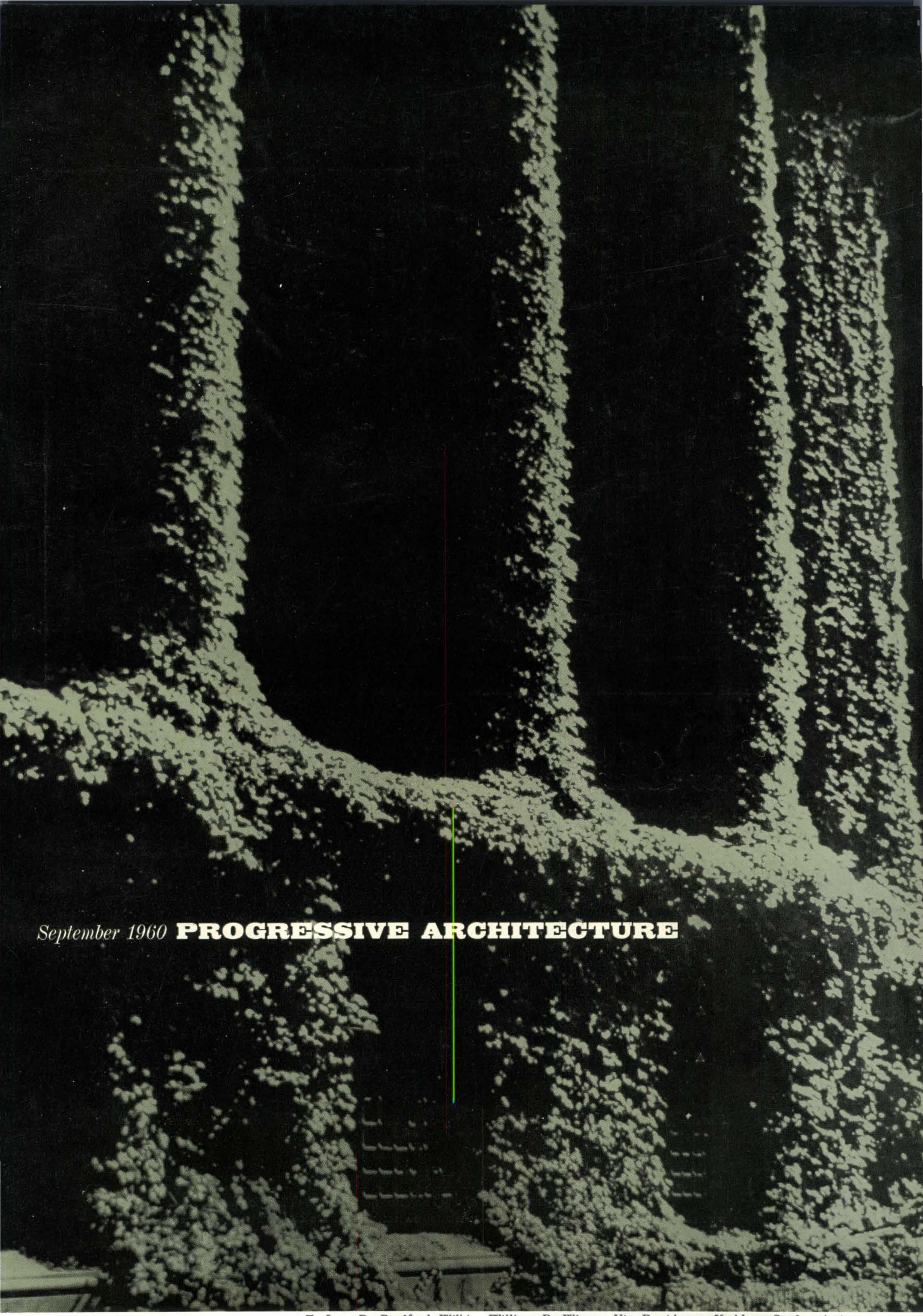

September 1960 PROGRESSIVE ARCHITECTURE

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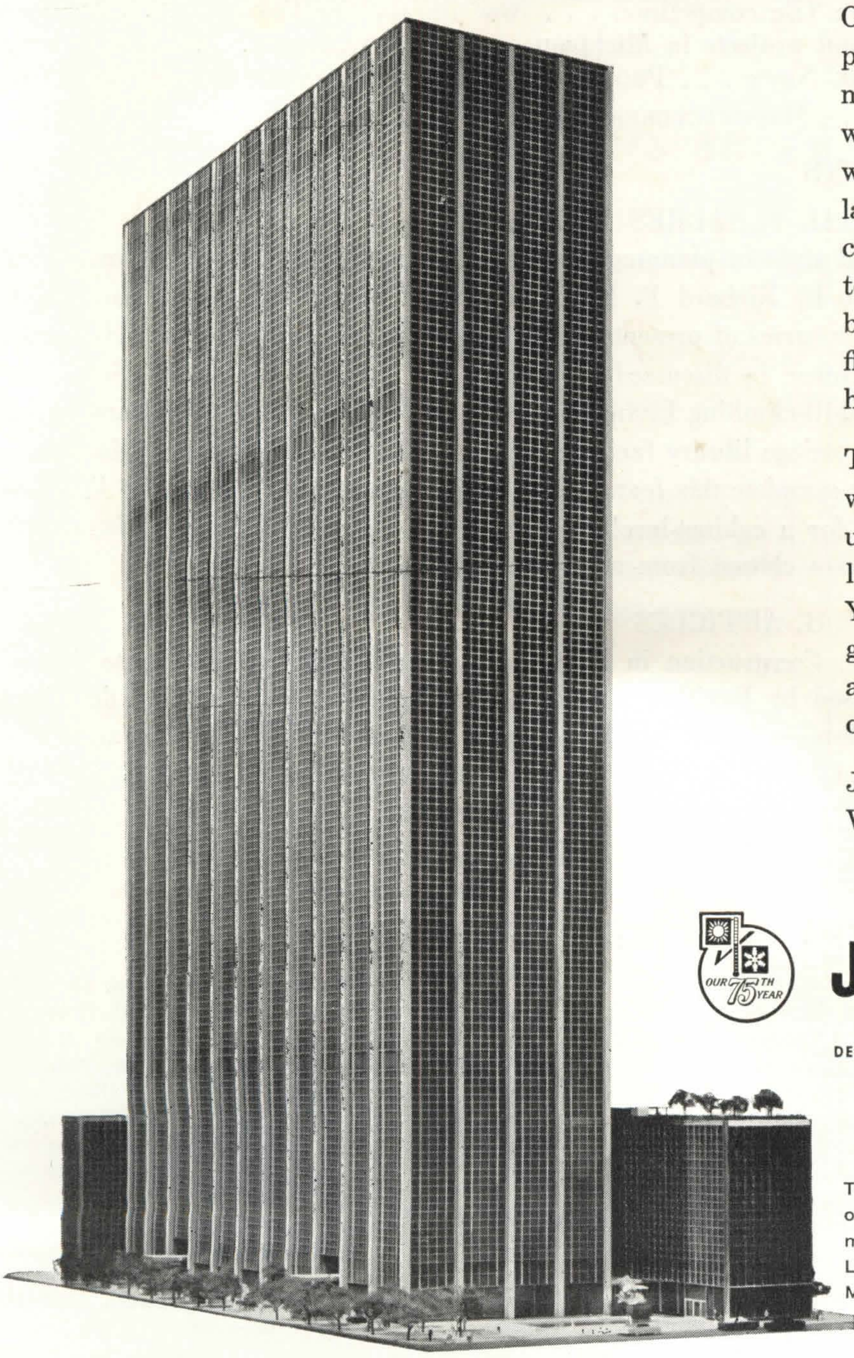
Western Electric Distributing House
Arlington, Virginia

New TIME & LIFE BUILDING
Accents Comfort and Economy with

JOHNSON PNEUMATIC CONTROL



The new Time & Life Building in New York's Rockefeller Center contains over 1½ million square feet of comfortably air-conditioned office space. To provide an ideal working climate throughout this 48-story structure, a specially planned Johnson Pneumatic Temperature Control System directs the operation of the 60 central fan air conditioning and ventilating systems and the 16 secondary water systems serving the perimeter induction units.

On the 20 floors occupied by Time Inc., publishing deadlines require many departments to work at night and on weekends, while others have a conventional work-week. To meet this unusual schedule with large savings in operating costs, special control provisions allow air conditioning to be on or off at any time on a selective basis in each of four zones per floor. These floors, of course, also are equipped with a high degree of *individual room* control.

This system, like every Johnson System, was planned and installed to provide an unmatched combination of efficiency and lifetime economy of operation and upkeep. Your nearby Johnson representative will gladly explain how these benefits can be applied to your clients' buildings, small or large.

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OUR 75TH YEAR

JOHNSON CONTROL
PNEUMATIC SYSTEMS

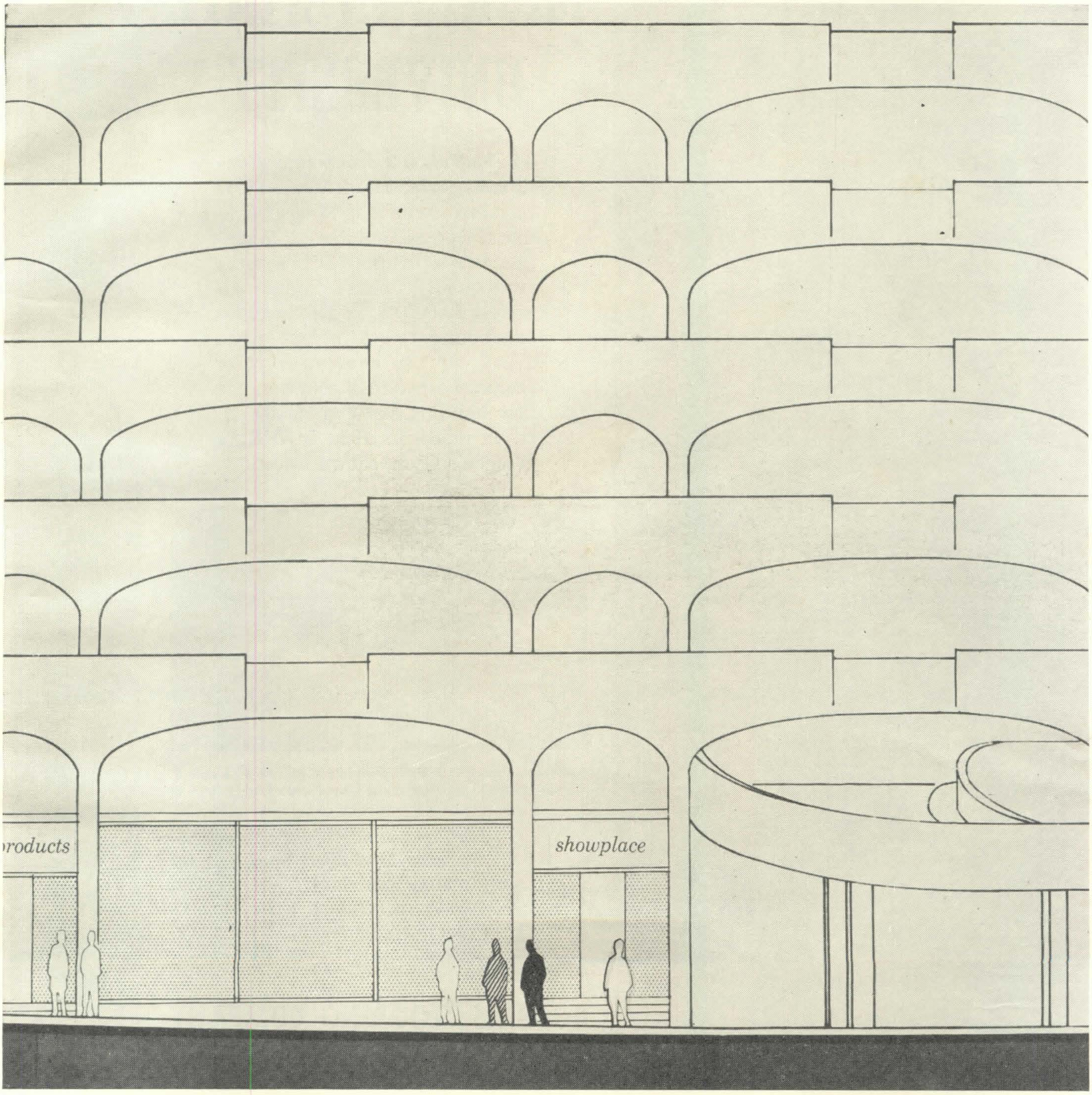
DESIGN • MANUFACTURE • INSTALLATION • SINCE 1885

Time & Life Building, New York. Harrison & Abramovitz & Harris, architects; Syska & Hennessy, Inc., mechanical engineers; George A. Fuller Co. and John Lowry, Inc., general contractors; Almirall-Wolff & Munier, mechanical contractors; all of New York.

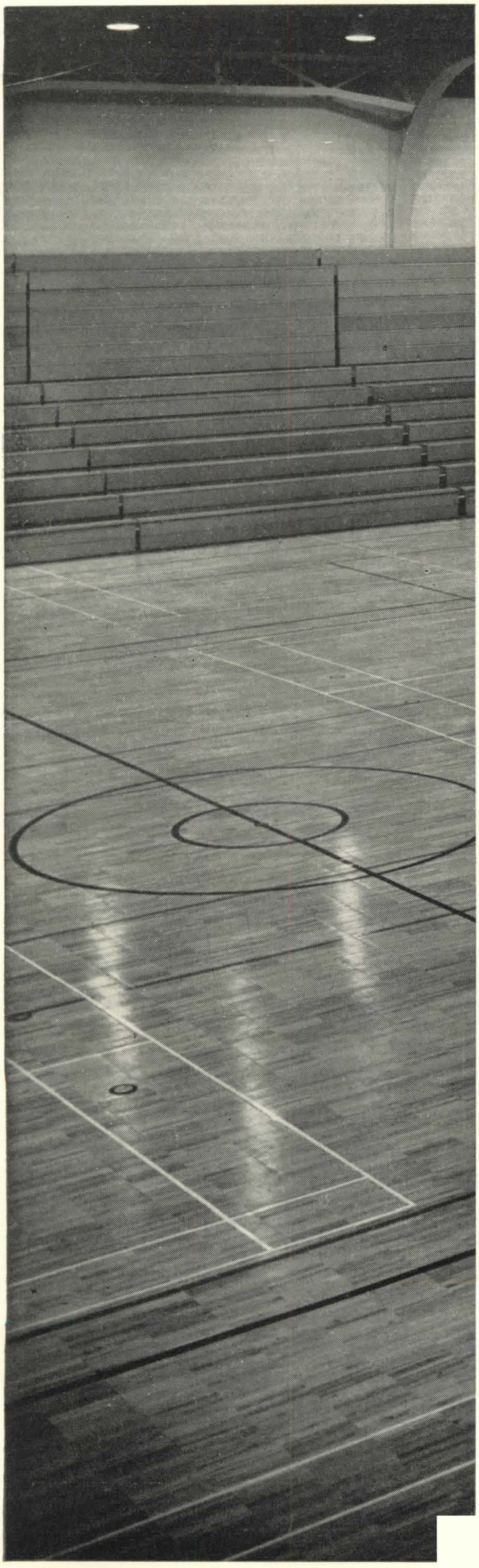
PROGRESSIVE ARCHITECTURE SEPTEMBER 1960

NEWS REPORT

Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products



New Haven parking garage by Paul Rudolph will have two-block frontage, recall Roman walls and aqueducts.

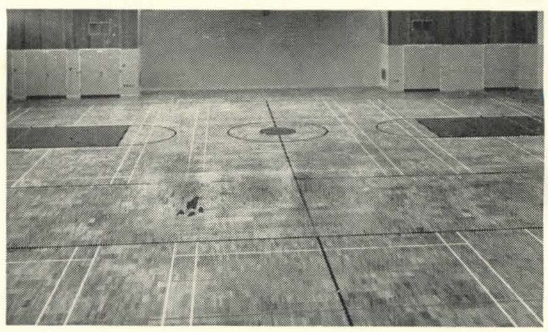


79,000 sq. ft.

of smooth, resilient beauty for

MICHIGAN STATE UNIVERSITY

The 60,000 sq. ft. Ironbound* Continuous Strip* Hard Maple Floor installed in the new Men's Intramural Sports Building at Michigan State brings MSU's total Ironbound floor area to approximately 79,000 sq. ft. This includes Ironbound floors in gymnastic areas, squash courts, exercise rooms and handball courts in the new building and the 19,000 sq. ft. installed in 1958 in MSU's Women's Gym, shown below.



Ironbound floor in MSU's Women's Gym. Arch: Ralph R. Calder, Detroit; Installer: Bauer-Foster Floors, Inc., Detroit

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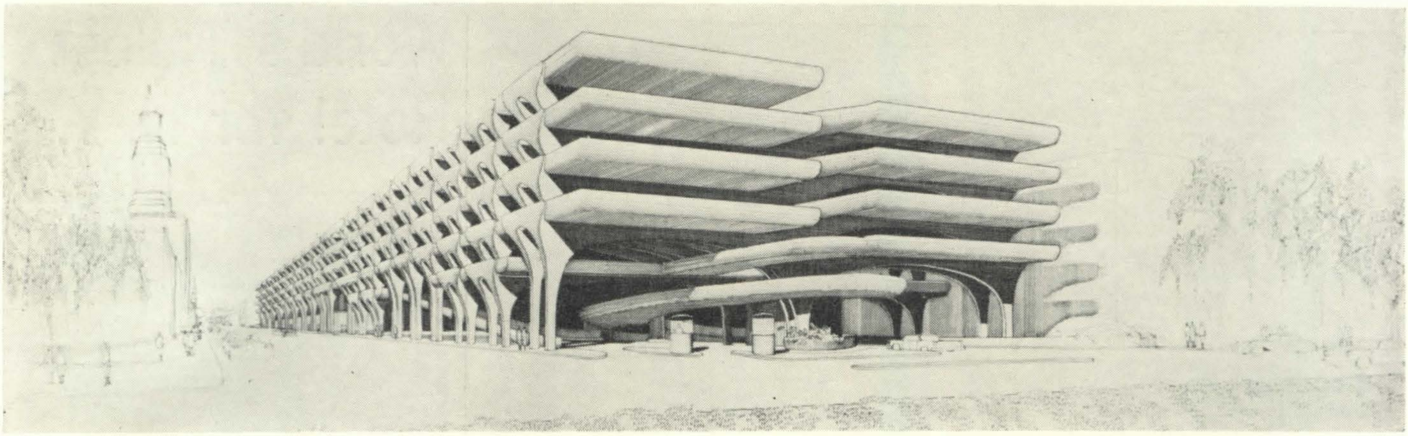
Manufacturers of Ironbound* Continuous Strip* Maple Flooring, Perma-Cushion† Resilient Floor Systems and other hardwood flooring

*T.M. Reg. U.S. Pat. Off. †U.S. Pat. No. 2862255

Background photo is Ironbound floor in Men's Intramural Sports Building, Michigan State University, East Lansing, Mich. Arch: Lewis J. Sarvis, Battle Creek, Mich.; Installer: Bauer-Foster Floors, Inc., Detroit. Flooring Dri-Vac treated.



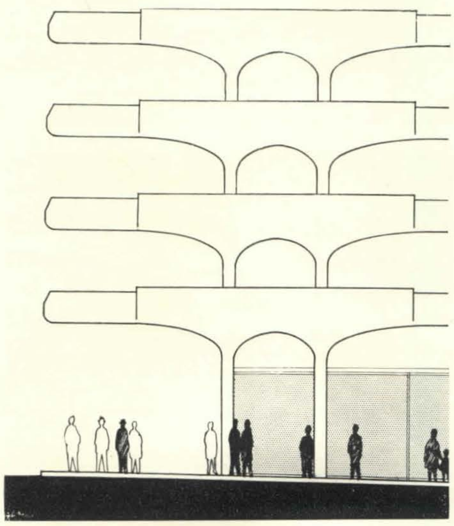
Sensually Structured Parking Garage by Rudolph

Design Sprang from Engineering Requirements

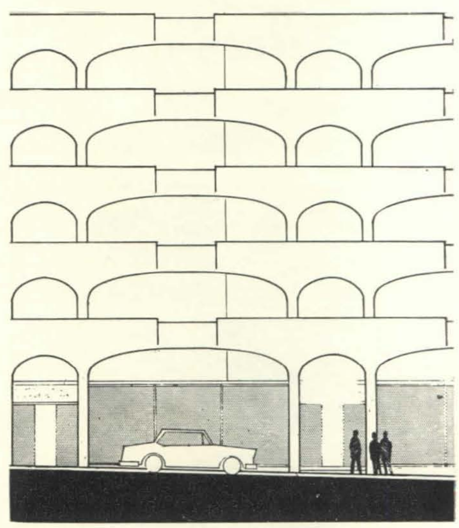
NEW HAVEN, CONN. A two-block-long parking garage which at least one observer has compared to a Roman wall has been announced for the City of New Haven. The garage, designed by Paul Rudolph, Chairman of Yale's Department of Architecture, will have a 1487-automobile capacity, plus 41,-400 sq ft for shops and stores.

The structure will be bounded front and rear by Church Street and Temple Street, and at either end by Crown Street and North Frontage Street. George Street will penetrate the center of the building. Entrance and exit ramps will occur at either end, and on either side of George Street. There will be three entrance-exit ramps at each typical level. Levels will alternate back to front, providing ten parking areas above ground. Levels will measure 10 ft apart from top of slab at outside face of column to top of slab at the same point. Four elevators and three sets of stairs will provide for vertical circulation of patrons. Two underground parking levels will accommodate 378 cars. According to Rudolph, these basement levels will be connected with a hotel which will be built to the north of the garage.

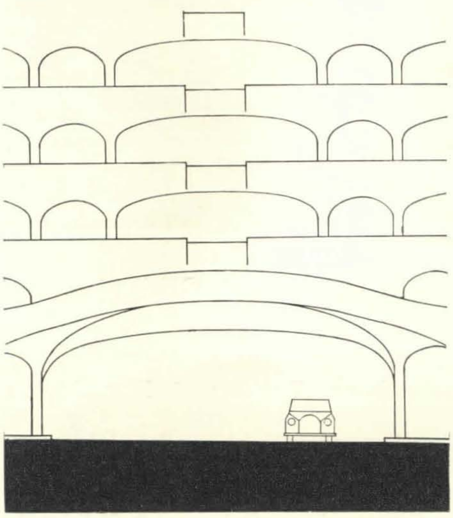
The ground floor will contain specialty shops and a department store, the latter to have a 2900 sq ft mezzanine at the second level. Storage space for these merchandising facilities will be included in the basement. Rudolph's plans indicate, but do not include, a shopping mall to bridge Crown Street at the third or fourth levels. The ground floor will be arcaded all along the Church Street and Temple Fronts in a series of alternating narrow and wide arches. The shops and department store will open off these arcades and have glazed show windows facing on to the streets.



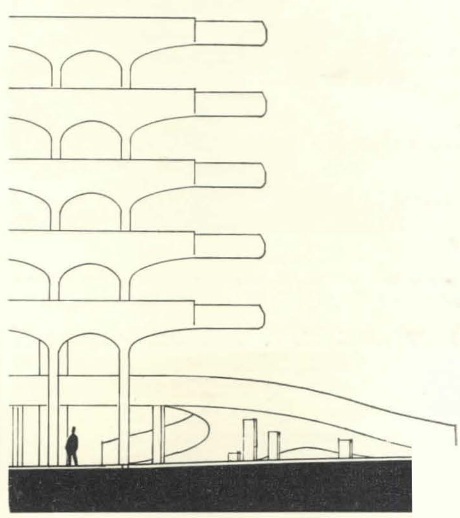
Parking levels will project past columns at North Frontage Street end.



Shops and stores behind arched arcade will invite pedestrian trade.



George Street will penetrate building at midpoint, have garage ramps.



Entrance, exit ramps will extend out from Crown Street end.

Asked about the structure of the garage, Rudolph stated: "The plasticity of the structure comes from the engineering requirements and forming of the concrete rather than the mechanical systems. In point of fact, the upper portions of the Garage are open, and not mechanically ventilated."

Structural engineer: Henry A. Pfisterer; mechanical engineer: Jerome F. Mueller; parking consultant: Wilbur Smith & Associates; design consultant: E. A. Barton & Associates.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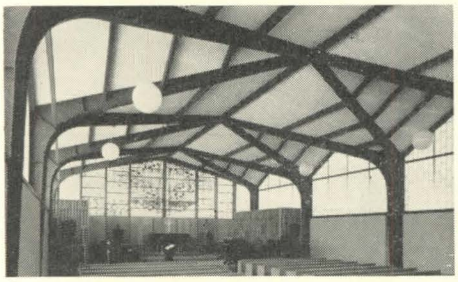
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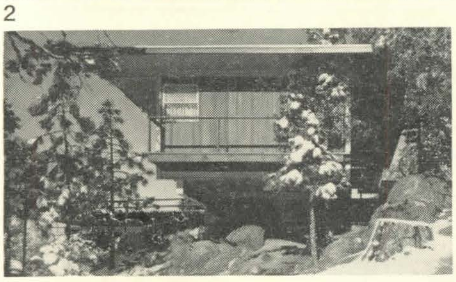
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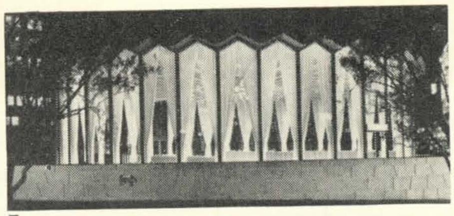
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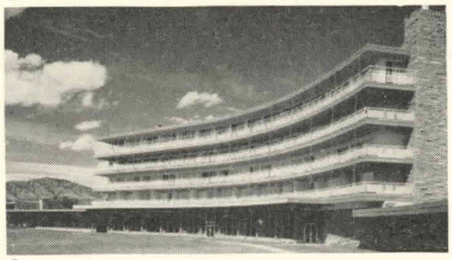
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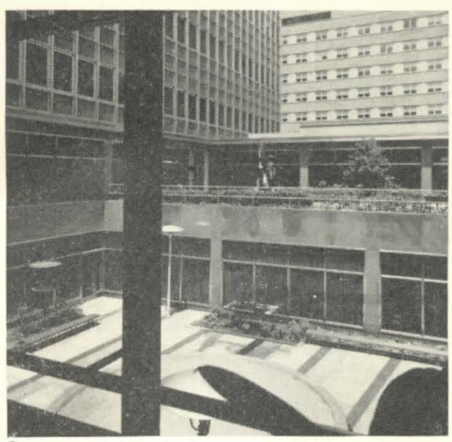
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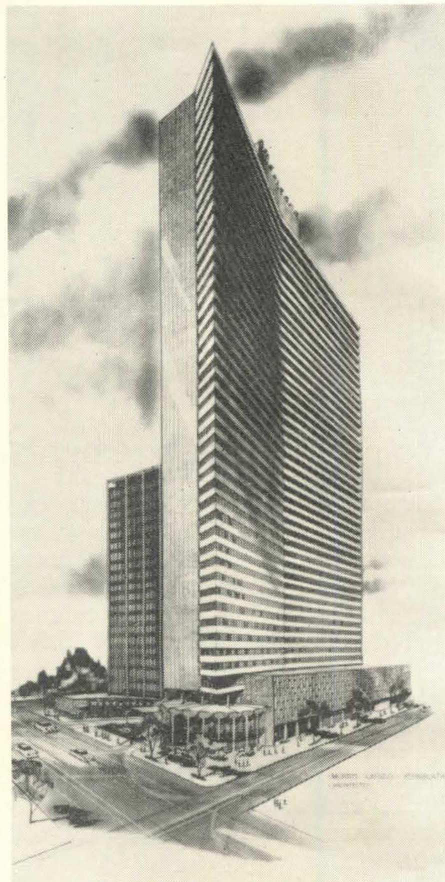
AISC'S FIRST ARCHITECTURAL AWARDS GIVEN

NEW YORK, N. Y. Thirteen winners of the first awards for architectural excellence in use of structural steel have been announced by the American Institute of Steel Construction, Inc., sponsor of the annual awards.

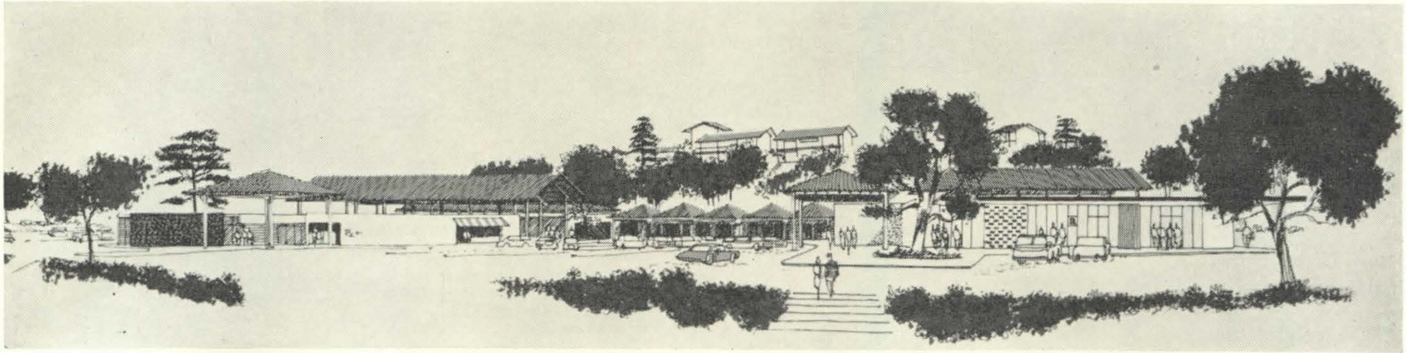
Award-winning buildings shown above are: 1 National Bank of Detroit by Albert Kahn Associated Architects & Engineers, Inc.; 2 Church of Our Saviour by Cochran, Stephenson & Wing, Baltimore; 3 Bartlett Mountain Retreat Cabin by David Thorne, Berkeley, Calif.; 4 The Southland Center by Welton Becket & Associates, Los Angeles; 5 American Trust Company Bank by Skidmore, Owings & Merrill, San Francisco; 6 Harvest House Hotel by Ralph D. Peterson & Associates, Denver; 7 Bloomington High School Gymnasium by Lundeen & Hilfinger with Schaeffer, Wilson & Evans, Bloomington, Ill.; 8 National Maritime Union Building by Ledner & Saputo, New Orleans; 9 Children's Hospital of Pittsburgh by Alfred D. Reid Associates, Pittsburgh. Not shown are St. Ann's Catholic Church by Martin & Lemmon, Andrews, Texas; Dudley High School Physical Education Building by Lowenstein-Atkinson, Greensboro, N.C.; and Red Bud High School Gymnasium by Clarence H. Glass, Decatur, Ga.

World's Tallest Hotel for N. Y.



NEW YORK, N. Y. The *tallest* hotel in the world with the *largest* banquet and restaurant capacity of any hotel in the world has been announced for the West Side of New York by Loew's Theatres, Inc. Designed by Morris Lapidus, Kornblath, Harle & Liebman, creator of several of Miami Beach's most uninhibited hostelries, the hotel will have 50 stories—each of which "will be dedicated to one of the states of the Union."

The "Americana West" (an "Americana East," also by Lapidus, was announced recently) will rise on Seventh Avenue between West 52nd and West 53rd Streets. The 2000-room hotel will be faced with honey-colored, glazed brick and white Vermont marble, with window frames of stainless steel. A year-round swimming pool will occur at the 25th-floor setback. Public rooms at the lobby level will include two large restaurants, coffee shop, specialty restaurant, and bar. The upper level will contain a supper club. The grand ballroom and private dining rooms will be approached via their own entrance on 52nd Street. A 30,000 sq ft exhibition hall will be accessible from street level.



Gruen Plans 2000-Acre Australian Community

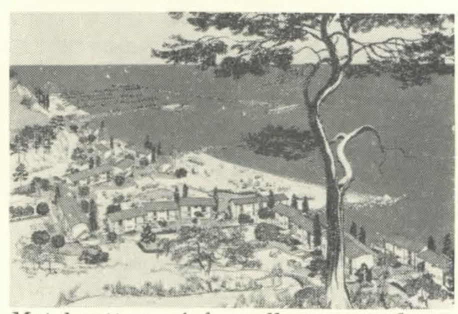
Country Club To Be Center Of Informal Community

MELBOURNE, AUSTRALIA Across Port Phillip Bay from this city, a complete new town designed by an American firm is scheduled to rise. Clifton Springs will be a residential, country-club community within 20-minute commuting distance of fast-growing Geelong, and an hour and twenty minutes from downtown Melbourne.

Victor Gruen Associates have created a community which will not only house hundreds of families, but also will provide week-end and vacation accommodations for visitors from Melbourne and other cities. Parks, beaches, tennis courts, bowling greens, swimming pools, marina, mineral springs pavilion and golfing facilities will all be at the disposal of the tourist as well as the resident. Family and social life is expected to center around a large, well-appointed country club overlooking the fairways on one side and the bay on the other. Within easy walking distance from the clubhouse grounds will be a commercial center *(above)* designed to serve all the needs of Clifton Springs except for durable hard goods available in Geelong. Included in this center will be a supermarket, clothing stores, drug store, services such as laundry and barber, a large variety store, specialty shops, and a garage-service station. Motel cottages for visitors will be grouped informally along the shore, some near the country club and a larger group hard by the mineral springs whence the town gets its name.

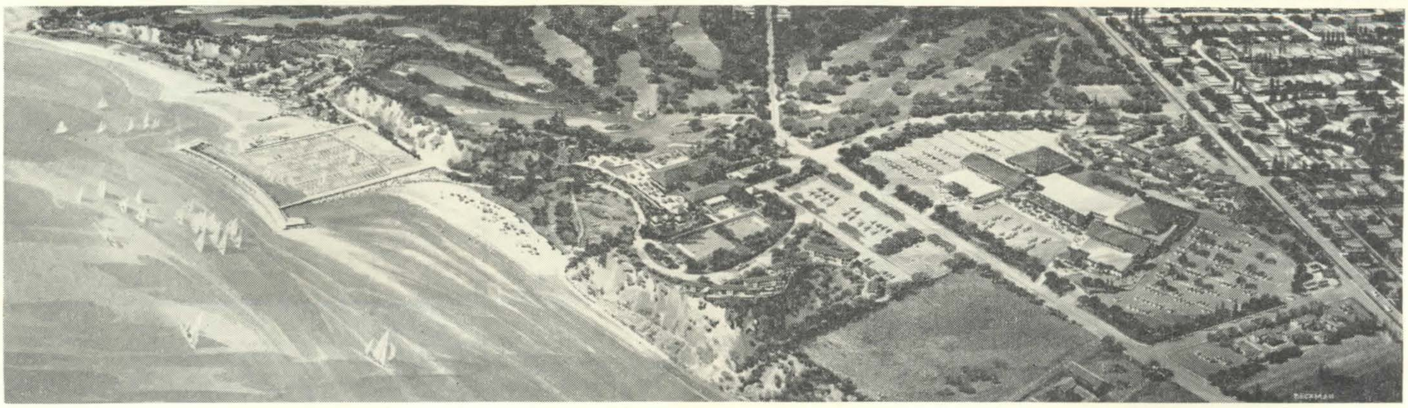
The architecture of the community will be relaxed and comfortable, featuring low, overhanging, clay tile roofs, masonry walls, collonades and courts, and natural landscaping.

1 *clubhouse,* 2 *commerce,* 3 *motels,* 4 *single residences,* 5 *multiple residences,* 6 *golf course,* 7 *driving range,* 8 *marina*

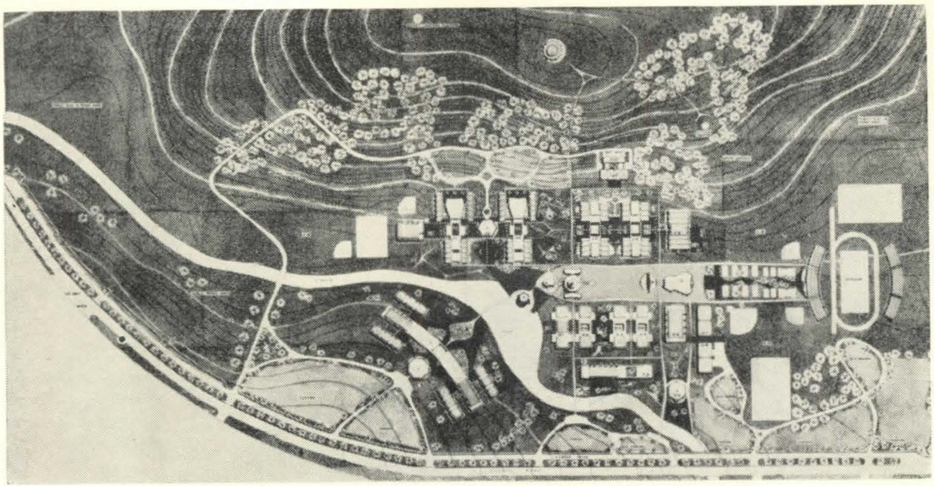


Motel cottages informally arranged.

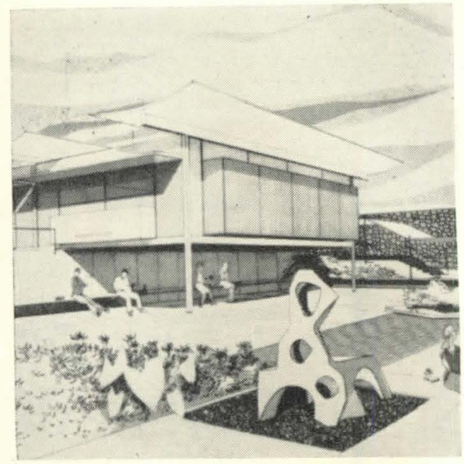
Photos: Gordon Sommers



Aerial perspective shows commercial center at lower right with the country club and golf courses to its left.



Grand Prize winning design places information center at hub of plan.



Relationship and scale of buildings appealed to the Awards Jury.

Education-Recreation Center Theme of Competition

Program Second to Explore Planning for Towns

VAILS GATE, N. Y. "The annual national architectural competition sponsored by the Mastic Tile Division of The Ruberoid Company is one of those too infrequent manifestations of the large corporation willing to spend a significant sum of money to explore and develop the building culture of the nation beyond the immediate consequence of the sale of the corporate product." So spoke Henry L. Kamphoefner, Dean of the School of Design at North Carolina State College, at the termination of his duties as Jury Chairman for the second annual *Mastic* Tile architectural competition.

The competitions are based on architectural design and planning of the American community. Last year, entrants were presented the problem of creating a middle-income housing development in the Mid-West near a large city (SEPTEMBER 1959 P/A, pp. 102-103). This year, under the theme "Education for Youth and Adult—And Recreation for All the Family," competitors were asked to design an educational (junior high school, high school, and college) and recreational complex to serve the community. Hypothetical site consisted of 295 wooded acres adjacent to the housing development which was the basis of the 1959 program. On the jury in addition to Dean Kamphoefner were Architects William W. Caudill, John Lyon Reid, and Eberle M. Smith, and Dr. Harry J. Carman, Dean Emeritus of Columbia College, New York. Architect A. Gordon Lorimer was Professional Advisor.

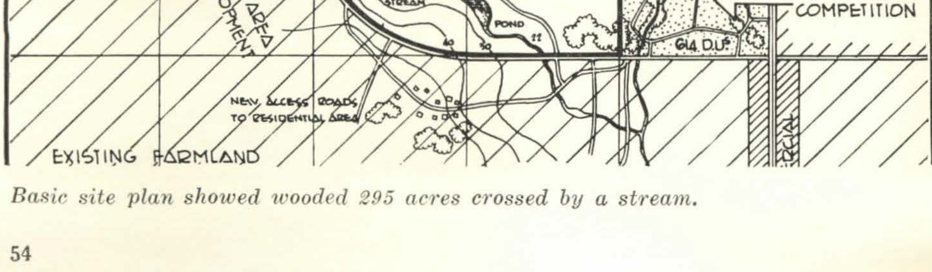
Grand Prize of $10,000 was won by Edward Colbert of McComb, Miss., and Alfred J. Petrilli of Detroit, Mich. Jury commended the entry on its planning, which placed an information center serving the community and the schools at the heart of the site, and attention to scientific aspects (entry included an atomic reactor).

The $5000 second prize went to Edwin F. Harris, Jr., of Raleigh, N.C. A large space module developed for the program and an interesting roof system for light and ventilation pleased the Jury.

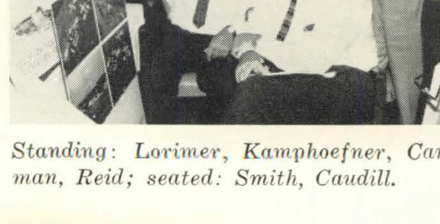
Marvin Hatami, New York, received the $2500 third prize for having one of the best de-centralized plans in the competition. Jury felt it was a superior architectural statement.

In the Student Group, the $2000 first prize was awarded to John Scarlata of Brooklyn's Pratt Institute. The Jury's attention was held by the good use of water; the planning of the cultural center; and the provision of views from all seminar rooms.

Juror Caudill stated that the competition gave a good picture of what the trends are in school design. Two things are evident, he said: "(1) Dr. Trump and his 40-20-40 system of educating high school and junior high school youngsters intrigues school designers. A very substantial number of entries were based on the Trump Plan. (2) If education or educators would not get in their way, a great number of designers would go the route of complete decentralized plans, as evidenced by the number of schools based on the decentralized concept.



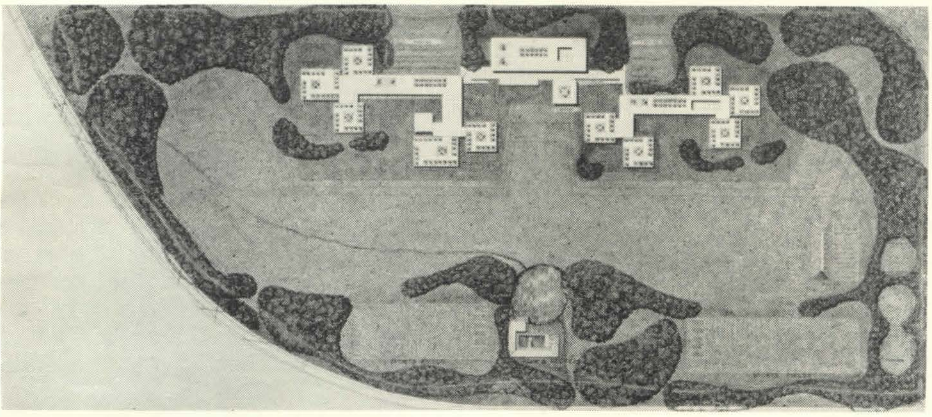
Basic site plan showed wooded 295 acres crossed by a stream.



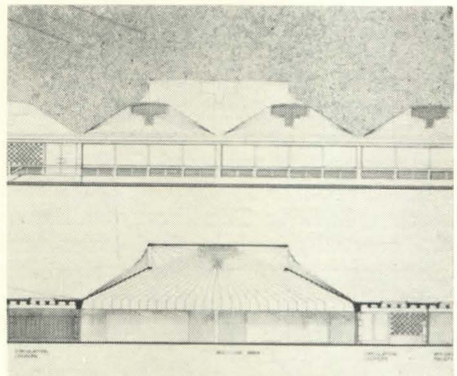
Standing: Lorimer, Kamphoefner, Carman, Reid; seated: Smith, Caudill.

Apparently designers are attempting to humanize school plants in the best way they know how—by breaking up the big piece into little pieces." "The emphasis on the community use of the educational facilities points to a recognition of the urgent problem of every community in making maximum use of available facilities for the benefit and enjoyment of the community," according to John Lyon Reid. Dean Carman said: "We are a pragmatic, materialistic people and as a consequence some of us are willing to sacrifice that which is esthetically beautiful as well as practical for the sake of cutting costs. This Program stressing . . . the quality of excellence can . . . contribute to . . . esthetic aspects of American life."

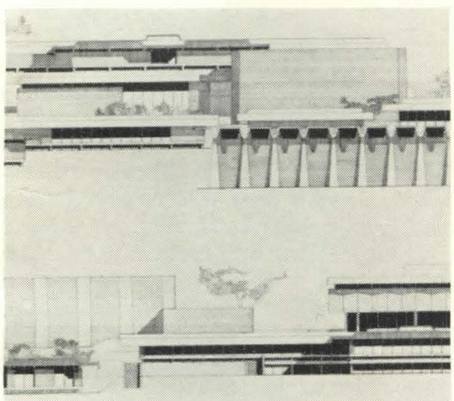
Professional Merit Awards of $500 each were won by Peter Tarapata and Charles MacMahon, Jr., of Bloomfield Hills, Mich.; John V. Sheoris of Grosse Point, Mich.; Israel Stein and Robert F. Lindsey of Houston; Richard Saul Wurman and Alan Levy of Philadelphia; J. Byers Hays, Harry J. Roberts, Joseph A. Poch, and H. David Howe of Cleveland; and John V. McPherson, Jack H. Swing, Robert L. Amico, and George Albers of Homewood, Ill. Professional Certificates of Achievement went to Ralph Lewis Knowles of the Department of Architecture at Auburn University; George Colvin and William B. Little of Charlotte, N.C.; and George B. Hagge, Chih-Chen Jen, Hanford Yang, and Heinz Zobel of University City, Glendale, St. Louis, and Affton, Mo., respectively. Second prize in the Student Group was won by Richard M. Foose of Columbia University; and Pratt Institute scored again with Richard C. Marcantonio's third prize. Student Merit Awards were given to Fredric E. Melby of the University of Minnesota, Minoru Takeyama and Ozdemir Erginsav of Harvard Graduate School of Design, John M. Ellis of Massachusetts Institute of Technology, and James S. Daley of Oklahoma State University.



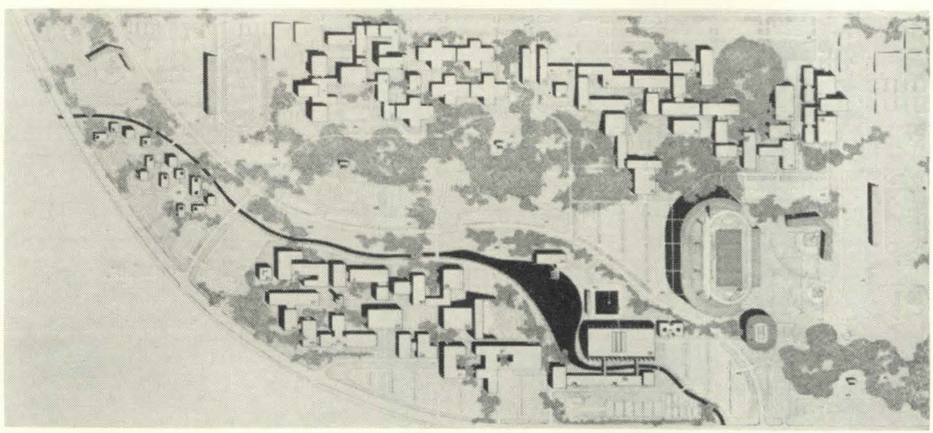
Accent of second prize winner was on planning within large space module.



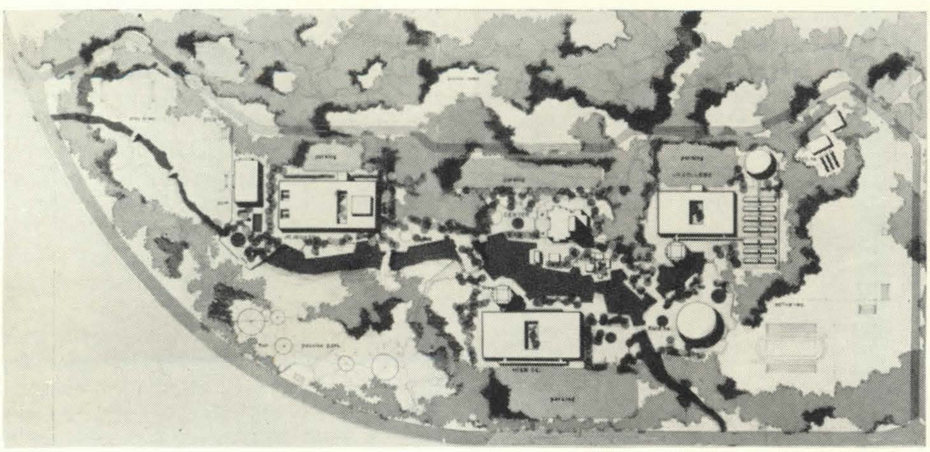
Ingenious roof system contains lighting and ventilating elements.



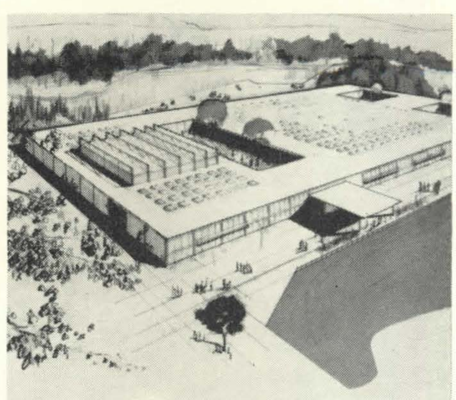
Architecture of third prize winner earned Jury's commendation.



Decentralized site planning distinguished third prize winner.

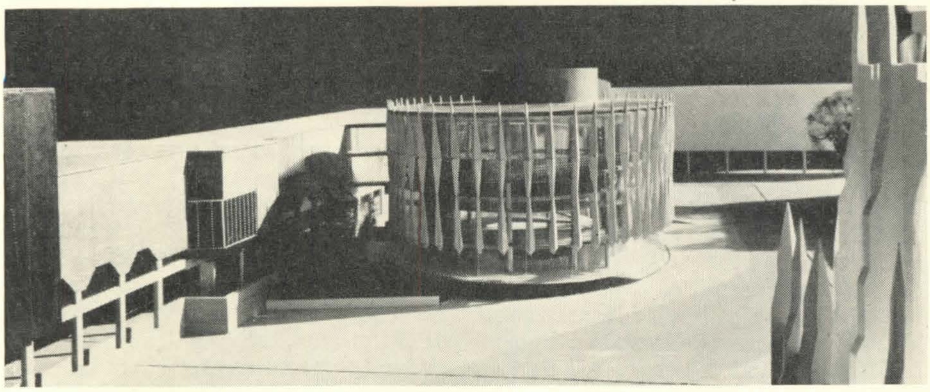


Jury found first prize winner in student group commendable for use of water.



Double-decking of seminar rooms gave each a view of water and woods.

Courtesy: The Architectural Review

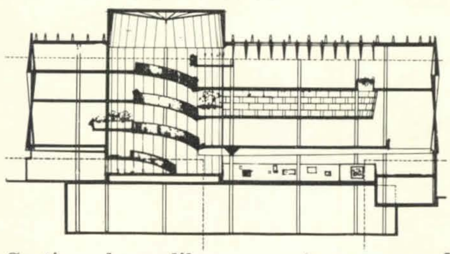


LIBRARY TO REFLECT CATHEDRAL RUINS

Project Latest in City's Redevelopment

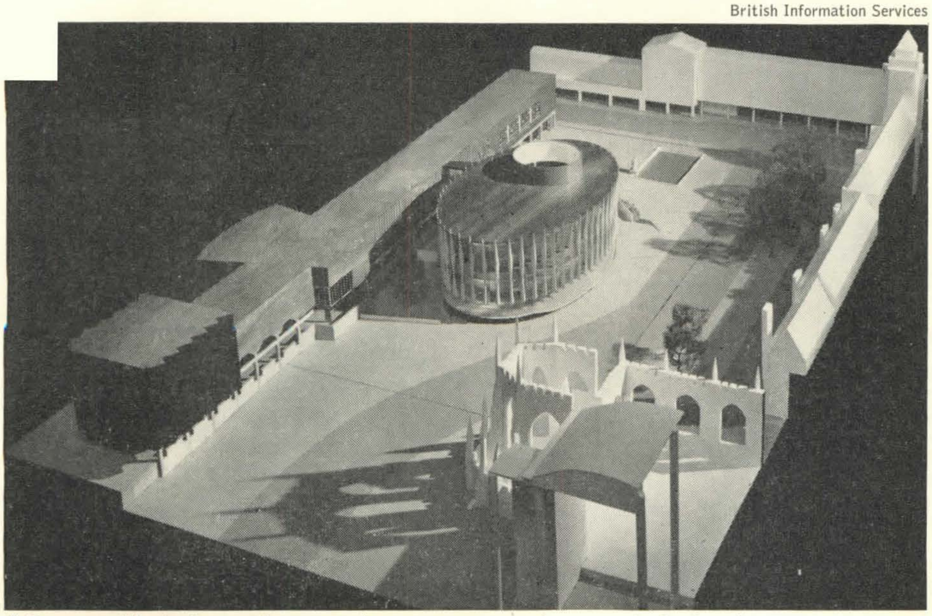
COVENTRY, ENGLAND One of those almost unheard-of phenomena, excellent architecture by a civic employe, may be seen in the projected Central Library for Coventry by City Architect Arthur G. Ling. The library continues the generally high level of design and planning which have characterized the rebuilding of this city—most of it, excluding the new cathedral, by the city architect's office.

The library will be an elliptical structure projecting into a new square, across which readers and librarians will be able to view the ruins of the old, bombed-out Coventry Cathedral, and, through them, the new Cathedral. The building will stand on its own paved and patterned plaza, connected only by a slim link to the new city art gallery (which will contain some offices and lecture halls for use with the library). The other two sides of the square will be closed by a late Victorian, neo-Jacobean Council House at one end, and a four-story building housing city council offices (including Mr. Ling's) at the other. Exterior of the library will be glass with aluminum mullions which will project above roof level and echo the finials of the Cathedral ruins across the square. An open well will penetrate the building, allowing the visitor to be conscious of the entire building on entering Basement will include the main book stack, a news room, three meeting rooms, and a 400-seat lecture room. The ground floor will house the quick-reference department, an exhibition hall, and a two-level children's reading room. The main lending library will be on the second floor.



Section shows library services arranged around ramped well in center.

British Information Services



Library will sit in newly-created square across from cathedral ruins.

CHIEF OF DESIGN DISCUSSES FAIR

"We must approach this problem positively and with hope to get the best results; you [the press] can help us in this direction." "The Fair can represent a wonderful opportunity for industry to make a major statement, an important contribution to design . . . if they can get together." "If we have a no-holds-barred Fair, in the design sense, it might attract some exciting new designs and perhaps some exciting new designers, such as the young Scandinavians."

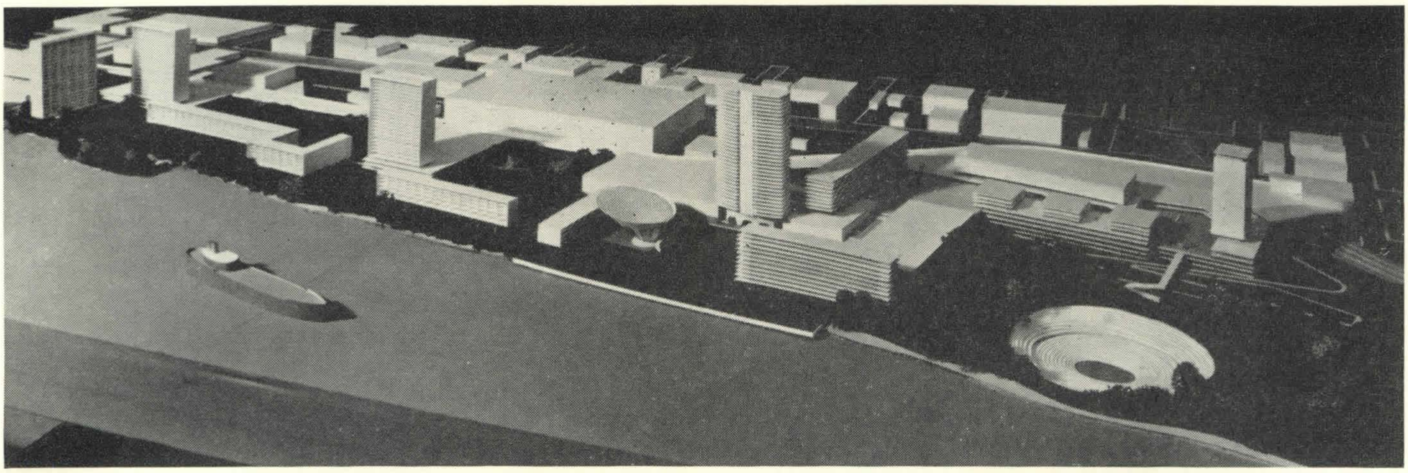
Sitting over lunch in New York's Swiss Pavilion restaurant (itself a vestige of the 1939-40 World's Fair), Wallace K. Harrison, Chairman of the Board of Design for the 1964-65 New York World's Fair, discussed with P/A plans for the event.

Asked whether the Fair would have a "theme" structure such as the Trylon and Perisphere, Harrison said he certainly hopes not. "Those structures are usually meaningless. That thing—the Atomium—in Brussels was terrible." He said that the Fair board itself does not have money to build buildings. "We have just about enough to prepare the grounds and create some new pools."

Harrison said that, at this point, indications are that the Fair will not be unified in the design sense. This was proposed by the design board, but turned down by the administrative and executive branch under Fair President Robert Moses. Shortly thereafter, Gordon Bunshaft resigned from the design board. "I respect Gordon for his action, but certainly wish he had stayed with us."

What has been accomplished at the Fair so far? "Right now, our basic plan for allotment of land between the various types of exhibits has been accepted and Fair representatives are contacting potential exhibitors in this country and abroad." The closest thing to a main building probably will be the U. S. Federal Building, which will be sited on axis with a large, circular pool some distance away in the industrial exhibit area. This building will have the additional duty of screening the permanent New York City Building, an eyesore. Surrounding the U. S. building will be state and foreign buildings, and a "Tivoli-like area" is planned around the amphitheater on Meadow Lake.

"This can be a terrific propaganda vehicle—not only for us, but also for all other countries that participate," Harrison concluded. "I hope we can have a good Fair, and I am going to stick with it in that hope."

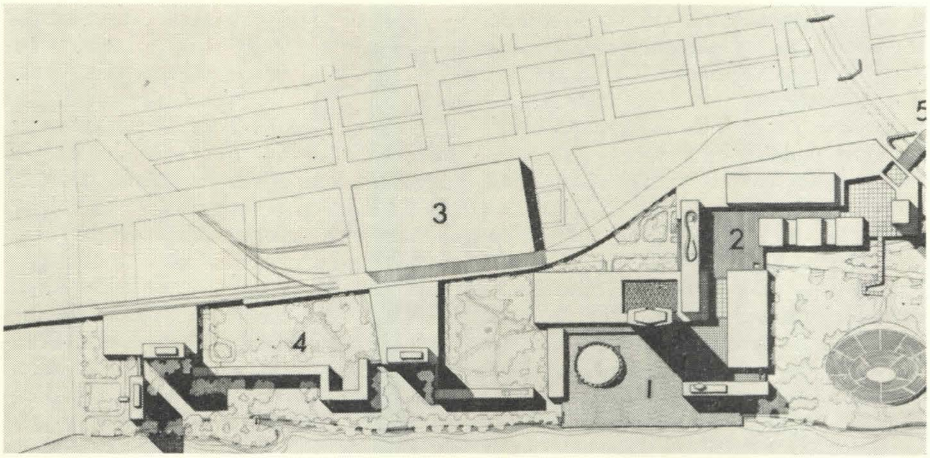


Detroit Firm Plans Two Michigan School Projects

Detroit's Civic Center, Dearborn Are Sites

DETROIT, MICH. Designs for a large-scale riverfront development for the Detroit Institute of Technology near this city's redeveloped civic-convention center and a junior college in Dearborn are now on the boards of Eberle M. Smith Associates, Inc.

Prime objective in the design of the Detroit Institute of Technology Riverfront Development (*above*) was to provide a technical campus in mid-city which will be as spacious and cloistered from its surroundings as possible. With this in mind, educational and research buildings will be screened from the neighboring convention center and the adjacent expressway by commercial and recreational areas. Both public and campus housing will be provided, each oriented for maximum light and view. A hotel will serve visitors to the Institute and the convention center. An amphitheater planned for the campus will be used for summer musical performances.



1 *Institute,* 2 *commerce,* 3 *mail department,* 4 *residential,* 5 *train station*

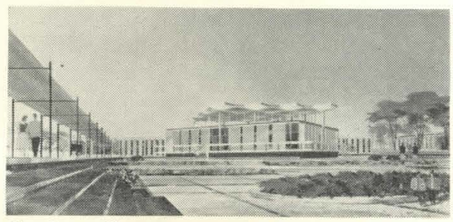
The entire redevelopment, which will complete Detroit's riverfront plan, will replace unsightly railroad yards.

The Dearborn project, Henry Ford Community College, will be located on the late automobile magnate's "Fairlane" estate adjoining the Dearborn Center Campus of the University of Michigan. The junior college will have a student enrollment of 2600 full-time and 9300 part-time students. The nine major buildings presently planned include liberal arts and library building, science building, technical building, technical laboratory building, fine arts building, music building, administration and student center building, and physical education building. All but the latter will be grouped around a central sunken court.

Photos: Lens Art

Henry Ford Community College is planned around a central, landscaped courtyard.

Library-liberal arts building faces student center across court.



Student Center, attached to administrative wing, sports jaunty roof.

PERSONALITIES

The architect and planner providing for 20th-Century man "needs the ardent passion of a lover and the humble willingness to collaborate with others, for, great as he may be, he cannot do it alone." In this quote from **Dr. Walter Gropius'** talk at the 1955 P/A Design Awards Banquet is contained the philosophy of collaboration and mutual respect for his peers which guided him through the creation of the Bauhaus, the years as head of Harvard's Graduate School of Design Department of Architecture, and the founding and successful operation of The Architects Collaborative. Most recent honors for this much-honored man include last year's long-overdue Gold Medal from AIA, his being made Honorary Life Member of The International House of Japan in Tokyo and a Benjamin Franklin Fellow of the Royal Society of Arts in London, and the German Grand State Prize for Architecture. The text of the latter award, presented to him by Dr. Meyers, Minister President of Rhineland Westphalen, at the Academy of Arts in Dusseldorf, read, "Walter Gropius performed at the beginning of the century pioneer work basic for the new architecture. The comprehensive community of the Fine and Applied Arts united by him in the Bauhaus has set an example of how to renew the integration of all design. It has exerted his influence to the present day. His architectural work, his thoughts, and his teachings have been effective and have found acceptance throughout the world reilluminating the German sphere through his personal participation, counsel and advice." Returning from Germany, Gropius stopped in London to advise entrepreneur Jack Cotton on two projects: the Piccadilly Circus building and a civic center in Birmingham. Cotton heads a British group investing in New York's Grand Central City project, for which Gropius is consulting architect with Pietro Belluschi.

EERO SAARINEN will design his first skyscraper for Columbia Broadcasting System in New York; structure will be on Avenue of the Americas between 52nd and 53rd Streets, two blocks north of RCA Building, home of National Broadcasting Company.

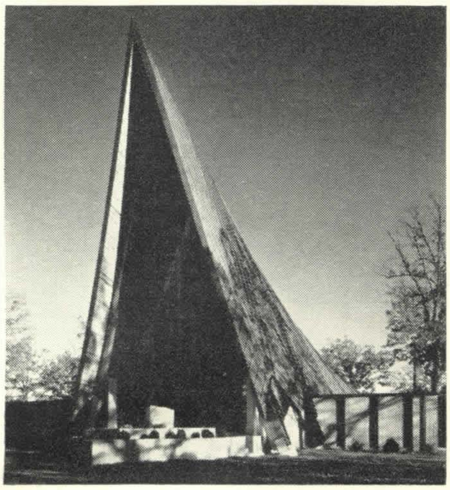
Architect HARMON H. GOLDSTONE is new president of New York's Municipal Arts Society; treasurer is EDWARD LARRABEE BARNES, and P/A Managing Editor CHARLES MAGRUDER is secretary . . . . Same society gave an award to Violinist ISAAC STERN for his leadership in the successful fight to save Carnegie Hall . . . . JOHN LOUIS WILSON was re-elected as president of Council for the Advancement of the Negro in Architecture.

Effective the 15th of last month, **James Johnson Sweeney** resigned as director of the Solomon R. Guggenheim Museum. In a letter to Harry F. Guggenheim, president of the museum Board, Sweeney said, "In view of the difference between the ideals held by the Board of Trustees with reference to the aid and use of the museum and my own ideals, which I feel I have a responsibility to follow, I herewith submit my resignation." Brooklyn-born, Irish-descended Sweeney (he is a Fellow of the Royal Society of Antiquaries of Ireland; named his children, Ann, Séan, Siadhal, Tadhg, and Ciannait) has stood up for his convictions before. He resigned as Director of Painting and Sculpture of the Museum of Modern Art in 1946 when the museum wanted him to go along on a curatorial program with which he did not agree. Trouble at the Guggenheim has undoubtedly been brewing ever since Wright's designs for the building were first revealed (Sweeney changed a number of Wright's plans, notably the lighting, mounting of the pictures, and interior wall color). The immense popular success of the museum since its reopening in the new building has evidently persuaded the Board to consider a program directed at a less-informed viewer than heretofore. In a release on the acceptance of Sweeney's resignation, Guggenheim stated that ". . . the trustees believe the time has come to develop a series of activities that will be interesting, informative and educational to an ever-widening number of art lovers and will attract for display at the museum notable collections of art throughout the world." This is an attitude against which Sweeney has written in *Daedalus*, ". . . museum trustees or perhaps even museum directors are ambitious to embrace the broadest possible public and, in our democratic age, have not the courage to face the fact that the highest experiences of art are only for the elite who 'have earned in order to possess.' " No immediate plans have been announced by Sweeney, but his time will undoubtedly be well taken up by his work on at least 15 art or educational boards, lecturing, and writing. His successor has not been appointed at this writing.

Dismal note department: "We are prepared to build anywhere and everywhere. Our only requirements are substantial demand, available land and the opportunity to make money," says Levittown perpetrator WILLIAM J. LEVITT.

Major problem confronting **Rockwell King DuMoulin** this fall is probably which hat to wear next, for, in addition to being a practicing architect and a devoted teacher, he is also Head of the Department of Architecture, acting Chairman of the Division of Architecture, and acting Head of the Department of Interior Architecture at Rhode Island School of Design. Furious activity seems to be taken with a great deal of *sang froid* by DuMoulin, however—in the twelve years between 1943 and 1955, he represented the United States or the United Nations in design and planning capacities in about 40 countries in Europe, Asia, Africa, and North and South America. These assignments included such posts as directing the UN program for Public Works Rehabilitation in Yugoslavia, City Planner and UNRRA Capital Liaison Officer in China, and overseeing the Point 4 Program of Technical Aid in Architecture throughout Latin America. Retired to the comparative peace of private practice and teaching in Rhode Island since 1955, he says the family summers "in one of those wonderful 'Cottages' built in the Maybeck manner 50 years ago, on the side of a hill overlooking fields and the ocean. A super-highway is heading right for the view from the cantilevered wood deck." In winter, the lucky DuMoulins live on Providence's College Hill in the servant's quarters of the Candice Allen House, designed by John Holden Green, c. 1818. Pretty soon, architecture will have a new DuMoulin; "Rocky's" younger son is entering Columbia Architectural School this semester.

Sketches by Raniero Corbelletti

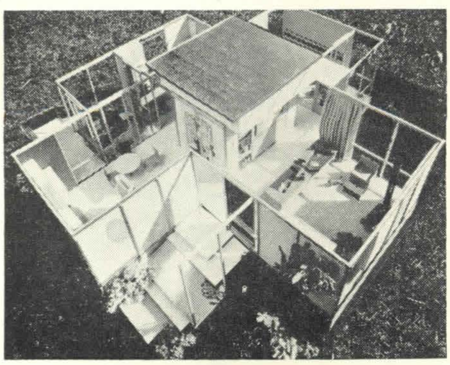


Use of Copper in Roof Merits Award

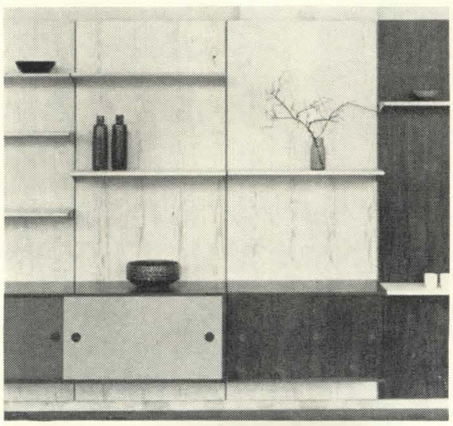
Architect A. G. Odell, Jr., won special citation in competition held by the Copper and Brass Research Association for his "distinctive creative application of copper in the design of Concordia Evangelical Lutheran Church" (DECEMBER 1959 P/A, pp. 128-133). Commenting on design, Mr. Odell said, "It was my opinion that the only suitable roof covering for the sanctuary was copper. The anticipated blue-green patina was a primary consideration, and the batten seams were designed to give variety and texture to the large expanse of roof." Annual competition honors outstanding new use, application, or metallurgical development of copper, brass, or bronze.

"HOME AND SCHOOL" THEME OF TRIENNALE

The 12th Milan Triennale, which opened in July and will continue through November 4, has not exactly



aroused the acclaim of the multitudes. Departing from previous tri-annual expositions, which had as their *raison d'être* advances in architectural and industrial design, this one announced a theme: "Home and School." Admittedly, several of the most interesting exhibits were beyond this pale (notably the Frank Lloyd Wright retrospective mounted by Paul Grotz and Walter McQuade, and the exhibit in honor of the late Adriano Olivetti). But, according to reports, the general effect of the whole exhibition is diffuse and unrewarding. Main buildings are a complete school from Great Britain, by Rex Goodwin, and a U. S. house done for Alcoa by Designer John I. Matthias of California (*shown*). U. S. Government agencies repeated their past history of disinterest in U. S. participation in this international design showcase, and it was once again the task of Walter Dorwin Teague to save our face by encouraging private and governmental enthusiasm (in 1957, with desperate last-minute activity, he and Paul McCobb managed to get us in with the award-winning Fuller dome display). Thanks to Teague, Alcoa, and the Wright exhibit, we are represented this year. It might not be too soon for the State Department to start thinking about the 13th Triennale. A direct report on the show has just come in from Professor John C. Grace (on European leave from Tulane University); watch for it in VIEWS in OCTOBER P/A.



Exhibition to Highlight Design from Denmark

To open its autumn exhibition season, New York's Metropolitan Museum of Art will have royalty in attendance. King Frederick IX and Queen Ingrid will preside at the opening of "Arts in Denmark," an exhibition of Danish architecture, arts, and crafts, on October 15. The show, designed by leading Danish Architect Finn Juhl will run through January 8, 1961. Opening of the show will be the climax of a series of "Denmark in the U. S. A." events planned during the state visit of the King and Queen to this country October 4-17. Shown is an example of Architect Juhl's furniture design.

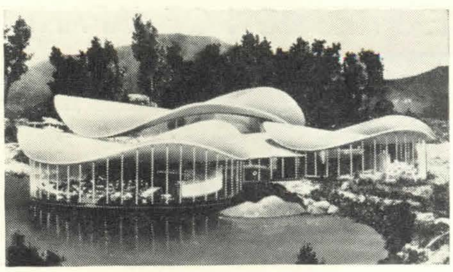
Tube-Tower Center of Student Exhibition

An interesting structure utilizing 18 in. diameter cardboard tubes was designed by Rhode Island School of Design students as housing for a large sculpture (also student-designed) in the recent exhibition of student work at RISD. The 25-ft-high structure is of six double columns forming a hexagon. Central ring was built on the ground, then hoisted into place around a staging tower. Columns were bolted together on the ground, then raised and bolted into place to support the dome. Columns were connected to

a wooden frame extending four feet into the ground for protection against high winds. For weather-proofing, the tubes were treated with a mixture of waterglas and paint. For news of RISD's Rockwell K. DuMoulin, see page 58.

Wavy Restaurant Will Palpitate over Lake

Restaurant for Sterling Forest Gardens, Tuxedo, N.Y., is described by Arthur Wagner Associates, designer, as having "highly organic forms" to "retain a relationship with the natural and organic forms of flower and plant inherent in the garden's site." Structure will be in three open pavil-



ions: main dining room, cocktail lounge, and kitchen. A central entrance lobby will give access to the three. To provide open plan, most duct and electrical work will be in the floor. Restaurant will have views of a lake and the gardens.

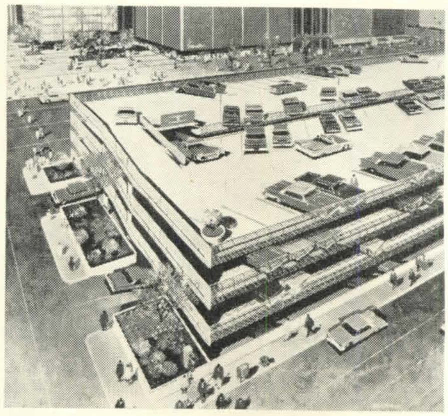
Institute for Crippled and Disabled Building Proposed

Sherwood, Mills & Smith, architects of the Stamford, Conn., Rehabilitation Center for the Institute for the Crippled and Disabled, have designed

a New York building for the Institute which will house administrative offices, general workshops, and an auditorium. In addition to administration, the building will be used to instruct professionals in the rehabilitation of the disabled, and for the treatment and training of the handicapped. The six-story building will be faced with precast concrete on the street front; other three sides will be glazed face brick. Ground floor doors will be fully automatic and treadle operated for convenience of visitors using crutches or wheel chairs. Partners-in-charge Thorne Sherwood and Carrell S. McNulty, Jr., state that the lobby will be enhanced by a relief mural or large sculpture. Mechanical engineer: Bernard F. Greene; structural engineer: Werner-Jensen & Korst.

Contini Designs Prefab Parking Structure

A self-parking structure which can be mass produced in three basic elements off the job site and rapidly erected in multiple combinations has been announced by Tishman Research Corporation. "Tierpark," designed by Engineer Edgardo Contini, has as its three primary components the typical prestressed, precast concrete slab, slanting down- and up-slabs, and tapered columns to support both typical slabs and ramp slabs. Secondary elements such as railings, lighting, and decorative panels may be custom designed for specific projects. First Tierpark installation is at Hempstead,



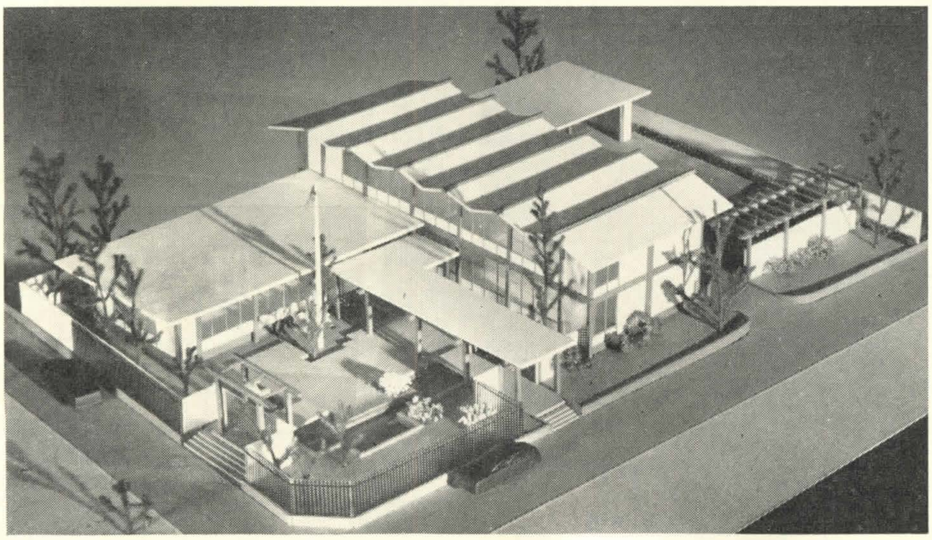
N. Y., branch of Abraham & Straus Department Store. Tishman has announced 49 prestressed concrete producers licensed to fabricate Tierpark components.

HEADY ARCHITECTURE

Wallace K. Harrison and Oscar Niemeyer probably will be somewhat bemused to see items from the current collection of hat designer Sally Victor. One piece of headgear is based

on Harrison's arches for the Metropolitan Opera House in Lincoln Center, and the other chapeau is said to be derived from Niemeyer's design

for the Brasilia cathedral. Onward and upward with the arts . . . we suppose.



EXPRESSION OF JAPANESE DESIGN FOR CONSULATE

For the design of the U. S. Consulate in Fukuoka, Japan, architects Hervey Parke Clarke, John F. Beuttler, and George T. Rockrise of San Francisco strove for such characteristics of Japanese design as simplicity, serenity, and refined articulation of structural elements "without aping traditional Japanese architecture." The result will be a building on a residential scale in a garden which will reflect the parklike atmosphere of the neighborhood. Most prominent design element will be the folded-plate concrete roof of the two-story wing. Frame, wall panels, and floor and roof slabs of reinforced concrete will have different finishes and colors to define parts of the building. Indigenous materials such as stone, slate, and various woods will relate the building to its environment. In addition to consular affairs, the structure will house a portion of the U.S. Information Agency for Fukuoka and the surrounding area. Associate architect: Shohei Matsuda; landscape architect: Lawrence Halprin; civil engineer: William B. Gilbert; mechanical engineer: Buonaccorsi & Murray.

MUSIC IN GREEK TEMPLE FOR LOS ANGELES

A building planned to combine "modern structure and design with elements of classical taste" has been proposed for the long-awaited Los Angeles Music Center by Welton Becket & Associates. The five-story center will be enclosed on all four sides by roof-high, fluted columns of steel covered with precast white stone. The roof overhang will be sculptured into modillions on its underside, and wide promenades will occur at the first and second floor levels. Capacity of the auditorium will range from 2700 to 3100; additional amenities will include a 1000-capacity reception hall, a 300-seat top-floor restaurant, five rehearsal halls, offices for non-profit cultural groups, and underground parking for 700 cars. Seating will be on the orchestra level, dress circle

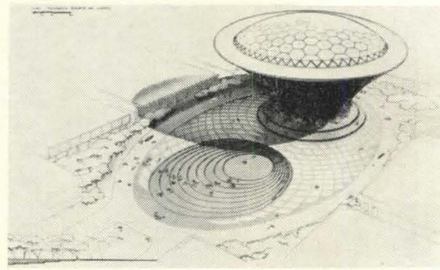
level, and two upper tiers. At no performance would the farthest spectator be more than 130 ft from the stage. Site of the Music Center is Los Angeles's Civic Center. Consultants to the Becket firm—acoustics: Dr. Vern C. Knudsen, Paul Veneklasen, and Dr. Robert Leonard; stage engineering: Professor Walter Unruh; stage lighting: Jean Rosenthal; seating: Ben Schlanger.

Apartment Group Will Pierce L. A. Skyline

The Barrington Plaza development in Los Angeles will feature three high-rise apartment buildings oriented to provide views of the ocean on the west and mountains on the north. Two 17-story apartment buildings will occupy one end of the site, balanced at the other end by a 26-story apartment building and a two-story commercial building. Glass and bronze-anodized aluminum curtain walls will sheathe the buildings. The sloping site will be used advantageously in construction of underground garages. The park around the buildings will include a swimming pool and recreational area. Completion is expected in early 1962. Architects are Daniel, Mann, Johnson & Mendenhall.

World's Fair Center Paris Prize Theme

Winner of the 1960 Lloyd Warren Fellowship (47th Paris Prize in Architecture) was this design by Lloyd G. Walter, Jr., of North Carolina State College. Subject of the competition was "a theme center for the 1964 New York World's Fair." Mr. Walter's proposal provides nine levels for national and international exhibits surrounding an immense circular space. Hyperboloid shapes generated by straight-line elements of two lat-



tice skins form the main structure. In his report for the Jury, Morris Lapidus stated, ". . . beside an imaginative design, the presentation shows a thorough grasp of draftsmanship, which is something rare in student competition these days."

World's Fair to Get First Building

Action for the New York 1964-65 World's Fair has begun with the current erection of a temporary administration building to be situated on the World's Fair grounds. The architects, Skidmore, Owings & Merrill, designed a prefabricated shell "Butler" type structure including administration facilities and cafeteria. Completion has been set for late December.

Has-Everything Hotel Center for New Jersey

The "Forum," a unique design by Davis, Brody & Wisniewski for Lakewood, New Jersey, will combine three distinct elements—hotel, motor inn, and convention hall—in one. The three units will be situated atop a plateau with parking, kitchen facilities, service, and storage below. Structures will be reinforced and precast concrete, both with exposed aggregate of marble and quartz. Business conventions will be offered recreation breaks by the outdoor and indoor swimming pools, health club, and skating rink which can be converted into tennis courts.

Continued on page 66

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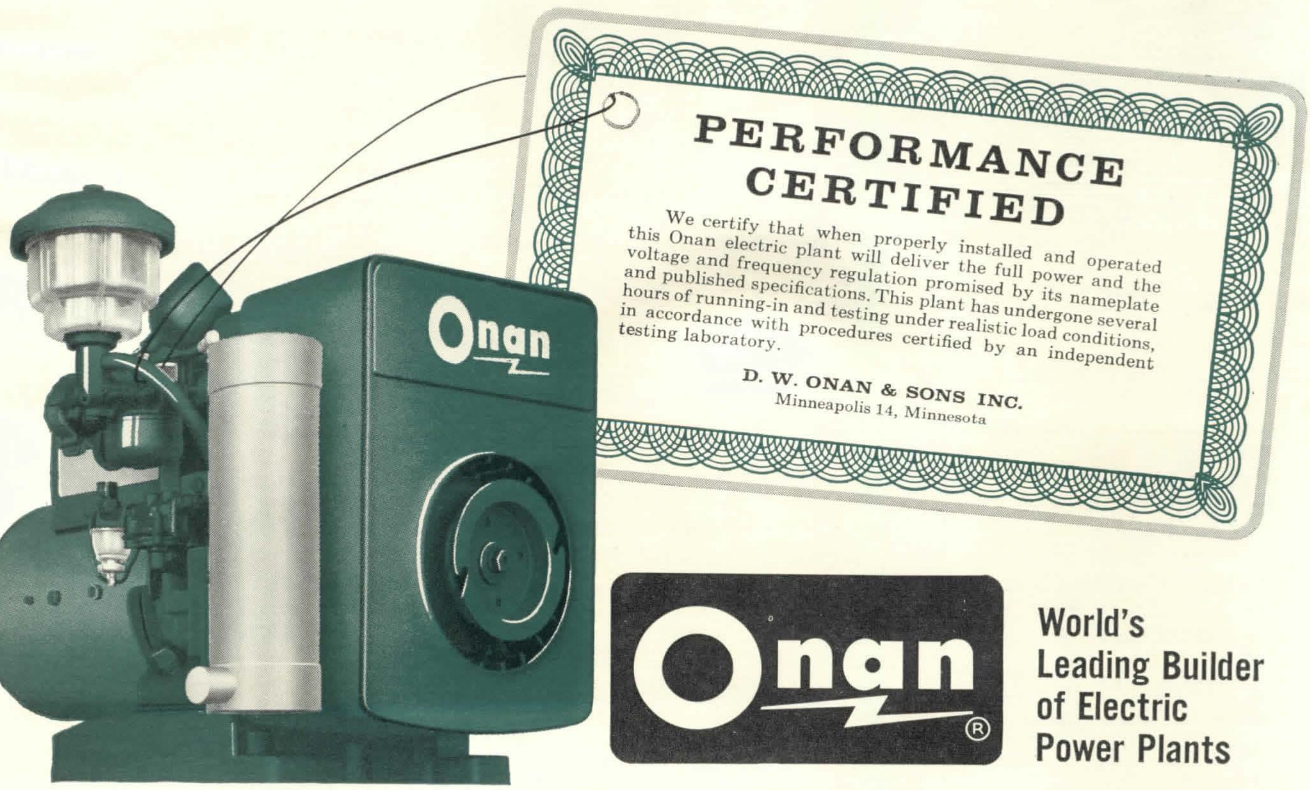

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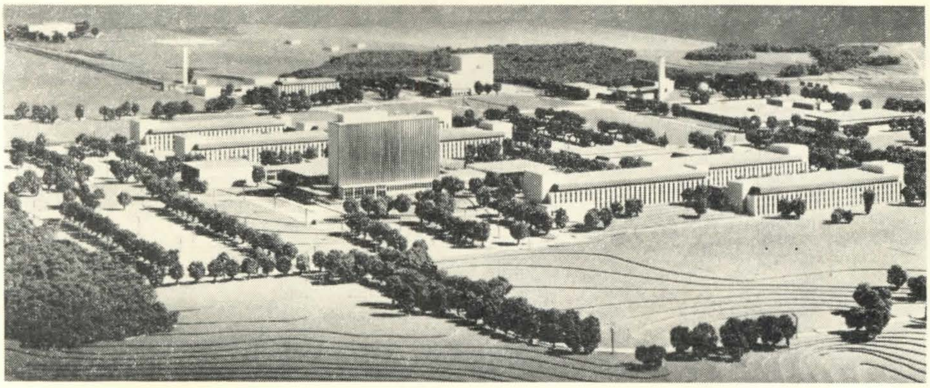
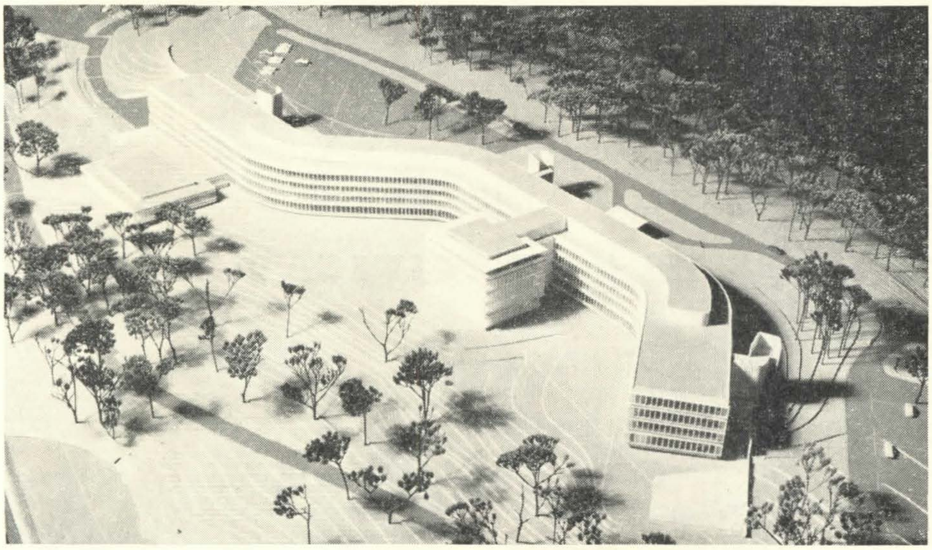


New Laboratories for National Bureau of Standards

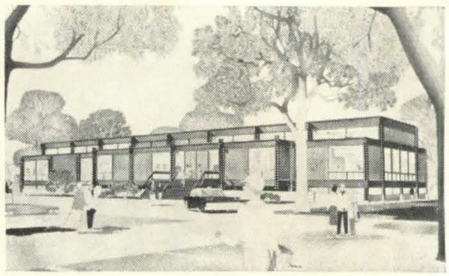
Relocation of the National Bureau of Standards to a 550-acre site near Gaithersburg, Md., will begin with the construction of three building units designed by Voorhees, Walker, Smith, Smith & Haines, New York. The first phase includes Engineering Mechanics Laboratory, Radiation Physics Laboratory, and Power Plant. Completion of first phase is expected in about two years. Design work is also in progress for numerous other buildings including Fire Research Laboratory and Concreting Materials Building. The demand of science and industry for new and improved standards and measurement methods will be met with modern laboratory facilities provided in the Bureau's new home. First phase set at $23.5 million.



New Headquarters for American Cyanamid

An example of American industry moving into and reviving a town (in this case, practically putting it on the map), is seen in plans of American Cyanamid Company for its new executive and administrative center in Wayne Township, New Jersey. The company, which had planned to build elsewhere, was approached at the instigation of "amateur" citizen leaders, was convinced, and will now contribute to the future, formerly somewhat dubious, of this section.

Design for the headquarters, by Vincent G. Kling of Philadelphia, provides a long, curving, four-story main building, following the contours of the site. This building will house administrative office space. Two wings will extend from the east side of the main building, one to contain a 600-seat cafeteria, and the other executive offices topped by a penthouse board room and executive dining room. Main entrance canopy and two stair towers will jut from the west side of the building. Structure will be steel frame with concrete-filled steel deck. Sculptured spandrel facings of cast stone with exposed aggregate will highlight exteriors of the serpentine building. Vertical expression will be given by aluminum frames outlining walls of glass above and ceramic-enameled glass below. Structural engineer: Severud-Elstad-Krueger Associates; mechanical and electrical consultant: Meyer, Strong & Jones.



Country Club to Have Sophisticated Design

For River Vale, New Jersey, Architect Norval White, New York, has designed the Edgewood Country Club in the form of a "raised basilica" with side aisles and clerestory lighting. Dining room, bar, and lounge occupy raised hall; locker, service, and kitchen facilities are located below existing grade. Structure is basically of laminated wood with columns paired and in clusters of four. Exterior materials consist of stained laminated members, painted wood frames, natural cypress in vertical strips, and glass. Associate architect: Gerald A. Paul; engineer: Robert E. Levien; mechanical engineer: Kalman Kish.

GOLDEN GATEWAY RACE

Word from one of the finalists in San Francisco's Golden Gateway Competition (APRIL P/A, pp. 77, 79-81) is that five competitors have gone by the wayside, leaving the Welton Becket scheme "still in because of its ingenious and attractive financial offer for the land (which is 2½ times everyone else's offer)," the Wurster, Bernardi & Emmons—DeMars & Reay submission, and the entry by John Carl Warnecke & Associates, Gardner A. Dailey & Associates, and Victor Gruen Associates. The latter two were the design jury's choices, the first on the basis of good planning, and the second on grounds of fine architecture.

Central Park Cafe Voted by City Board

OK for the cafe in New York's Central Park (MAY P/A, p. 78) was given by New York's Board of Estimate after a hearing during which the Board heard 22 persons speak against it and six people speak in favor. Board voted to approve Huntington Hartford's gift of $862,500 (up $362,500 since May), including the fee of $112,500 for Architect Edward D. Stone, according to *The New York Times*.

Concern Voiced Over Decline in Population of Cities

Census Indicates Move Away from Cities' Centers

By E. E. Halmos, Jr.

Census Bureau has started detailed studies of a phenomenon of major concern to architects, as well as city officials and other planners: the population decline of almost every major U. S. city over the past 10 years.

You have probably read sketchy accounts based on preliminary census results. They indicate that all U. S. cities, with the exception of six, lost population to their suburbs, although the total population of "standard metropolitan areas" generally showed increases, or at least no loss.

(The six cities that gained are Los Angeles, Houston, Dallas, Milwaukee, Seattle, and Atlanta—and some of these showed gains as a result of extensions of city limits.)

Reasons quickly advanced are many. They include such factors (to take a local example) as the major urban renewal program in Washington's Southwest section, which has cleaned out acres of housing (even though much of it was well below substandard), thus forcing residents out of the city area; better and less crowded schools and family accommodations in suburban areas; lack of good city transportation; obsolescense of office and store buildings; destruction of living areas to make way for highways; and the like.

Nevertheless, the loss is real enough, and it is bound to affect the thinking that goes into future planning for city construction and rehabilitation. It lends strength to a long-held argument of many planners: perhaps the original need for a city, as a concentration of many people, services and skills in a comparatively small area, is passing—thus planning should be concentrated on creating a business and shopping center of greatest beauty and utility, to be fed daily by people from outlying areas, but be virtually unoccupied (except for theater-goers, etc.) at night.

It also presents the somewhat horrifying picture of endlessly growing square miles of suburban housing and shopping centers, rising formlessly on the outskirts, and creating problems in transportation, culture, sanitation, etc. greater than those of any single city.

Census, along with government agencies concerned with housing, health and other aspects of urban life, wants to dig deeper into its facts, hopes to come up with indications of causes and further trends.

Incidentally, the Census figures are sure to give impetus—this next session of Congress—to bills such as were presented (but not acted upon)

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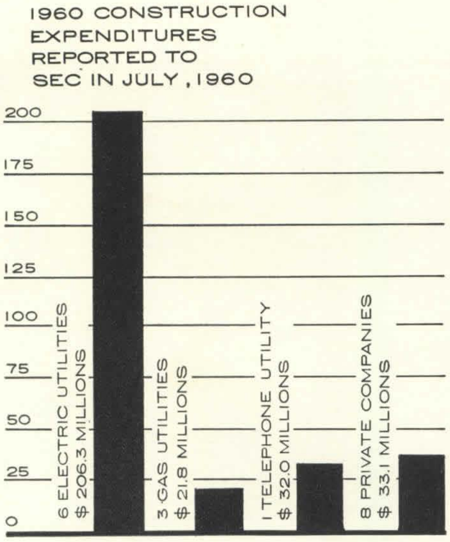
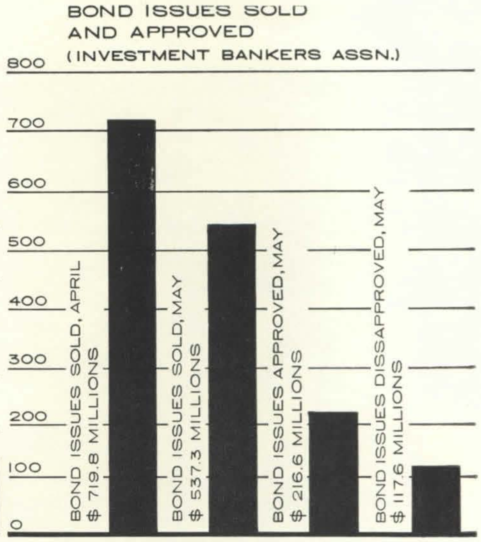




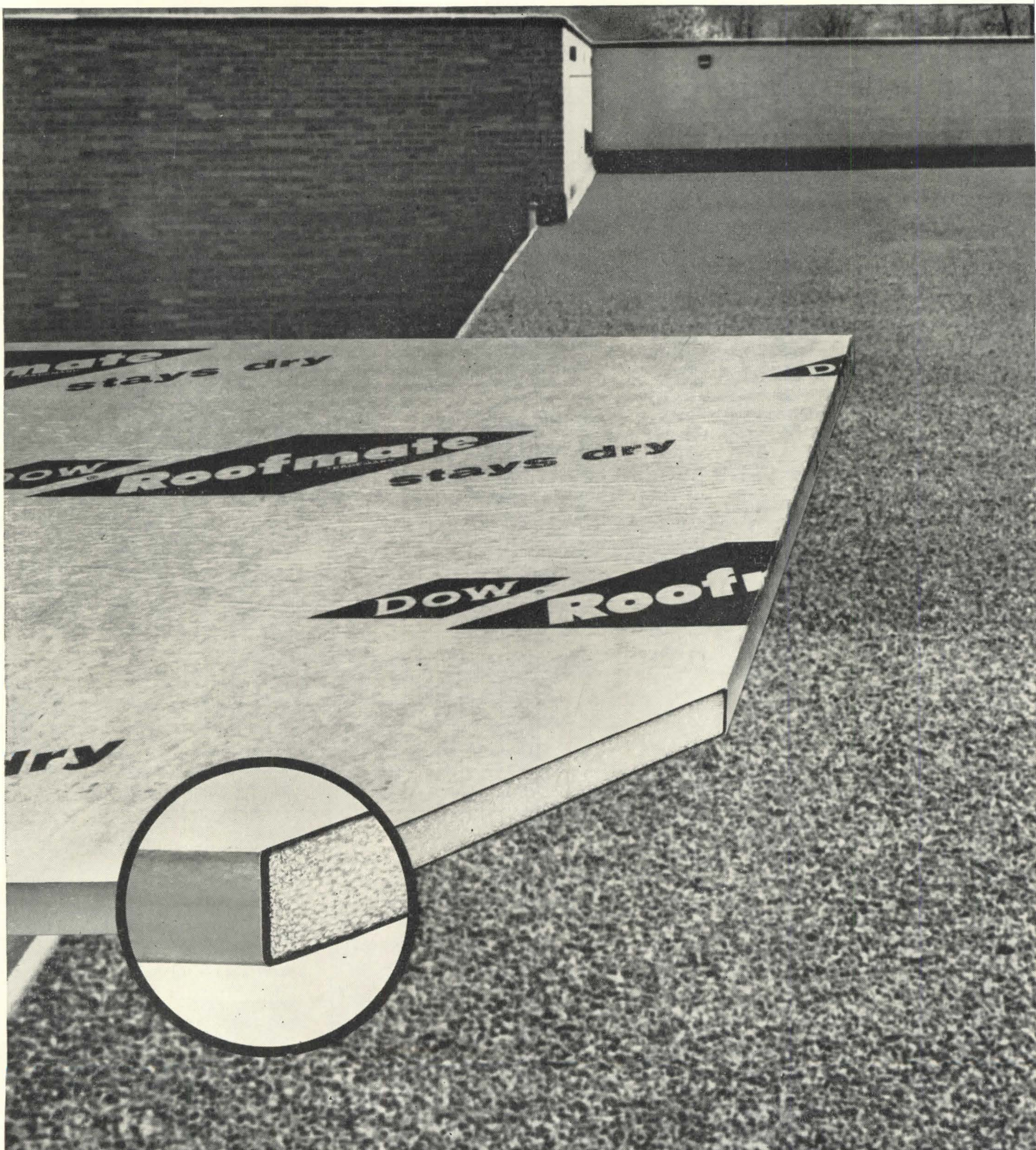
BOND ELECTION RESULTS — MAY 1960 BY USE OF PROCEEDS

USE OF PROCEEDS	APPROVED		DISAPPROVED	
	AMOUNT	NO	AMOUNT	NO
EDUCATION:				
ELEM. & SEC.	$ 126,323,000	108	$ 86,861,000	41
OTHER	1,640,000	3	145,000	2
ROADS & BRIDGES	57,420,000	8	275,000	2
WATER & SEWER	15,684,000	31	18,453,000	8
HEALTH & WELFARE	1,060,000	4	200,000	1
RECREATION	1,731,000	6	3,828,000	4
PORTS & AIRPORTS	2,060,000	2	225,000	1
INDUSTRIAL	425,000	2	——	0
REFUNDING	49,000	1	——	0
PUBLIC HOUSING	1,148,000	2	——	0
VETERANS AID	235,000	1	——	0
FLOOD CONTROL	5,080,000	2	——	0
ADMIN. & OFFICE BLDG.	485,000	1	1,520,000	5
UNCLASSIFIED	3,295,000	10	6,140,000	6
TOTAL	$ 216,635,000	181	$ 117,647,000	70

BOND ELECTIONS SCHEDULED AS OF JUNE 1, 1960

MONTH	AMOUNT
JUNE	$ 895,284,000
JULY	42,927,000
AUGUST	5,100,000
SEPTEMBER	9,390,000
OCTOBER	19,855,000
NOVEMBER	1,129,585,000
MARCH 1961	70,000,000
NO DATE SET	744,645,000
TOTAL	$ 2,916,786,000

USE OF PROCEEDS	AMOUNT
EDUCATION:	
ELEM. & SEC.	$ 683,734,000
OTHER	215,815,000
ROADS & BRIDGES	191,260,000
WATER & SEWER	56,008,000
OTHER UTILITIES	710,262,000
HEALTH & WELFARE	176,595,000
RECREATION	37,527,000
PORTS & AIRPORTS	11,686,000
INDUSTRIAL	3,500,000
REFUNDING	2,000,000
FLOOD CONTROL	——
PUBLIC HOUSING	——
VETERANS AID	602,000,000
ADMIN. & OFFICE BLDG.	70,075,000
UNCLASSIFIED	156,324,000
TOTAL	$ 2,916,786,000


stays dry
DOW Roofmate
stays dry
DOW Roof
dry

CLOSED CELL STRUCTURE KEEPS ROOFMATE DRY

That's why the insulating efficiency stays high permanently; why Roofmate keeps heat, water, moisture out, regardless of weather conditions.

Roofmate doesn't soak up water.* The millions of tiny non-interconnecting air cells in Roofmate provide high water resistance. This insulation can even act as its own moisture vapor barrier, eliminating the need for a separate vapor barrier. Water and moisture vapor won't pass through or build up inside Roofmate.

Roofmate has a rigid core of expanded polystyrene foam (Styrofoam®), enclosed in asphalt-laminated Kraft paper. The closed-cell structure of the foam core bars water and moisture vapor entry so effectively that foam of this type is used as unsinkable flotation material for floating docks! This same water resistance makes Roofmate a permanently effective insulating material.

Low "C" factor gives Roofmate maximum insulating efficiency with minimum thickness. This lightweight material is strong and rigid, too, spanning fluted steel decks without danger of cracking. In addition, the high moisture vapor resistance of Roofmate reduces the possibility of blistering.

Roofmate can be bonded to any conventional deck—poured concrete, pre-cast panels, poured gypsum, wood, steel—and the built-up roof can be applied directly over it using any of the conventional hot-applied systems.

The advantages offered by Roofmate add up to quick, easy installation for the contractor, long, trouble-free service life for the owner, and dependable, economical performance which the architect can plan on with confidence. For more information about Roofmate, contact the nearest Dow sales office, or write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 1702EB9.

*Trademark

Other Dow Building Products

STYROFOAM®—Long lasting insulation for cavity walls; an effective insulating base for plaster and wallboard. Low "K" factor, resistant to water and water vapor.

SCORBORD® (pat. applied for)—Superior moisture-resistant insulation for foundation perimeters, slab floors. Pre-scoring speeds installation.

SARALOY® 400—Durable, elastic flashing material that's cut to size right on the job, conforms to irregular shapes, bonds to most common construction materials.

POLYFILM®—High-quality polyethylene film for use as vapor barrier or dust stop.

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THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

Continued from page 69

to the previous session, calling for creation of some sort of a federal department of urban affairs to deal with the city-suburb complexes that are developing. (See Congressman Lindsay's article on page 164 of this issue.)

FINANCIAL

While housing starts held steady to near the predicted 1,334,000 units for 1960 (good, but below the 1,577,000 for 1959, shown by newly-adjusted Census figures), homebuilders pinned their hopes on future increases.

They had some facts and some predictions going for them: Dr. Reinhold P. Wolff of the University of Miami saw a "record rate" of construction due during the next five years (he set it at 1,350,000-nonfarm); Dominick & Dominick, New York investment bankers and brokers, saw a 1.8 million level by the mid-1960s. On the fact side, the Federal Housing Administration said that the annual rate of FHA applications on new homes turned upward in June for the first time this year—up 9% from May.

And there was high hope that a new source of mortgage funds would aid the housing picture after FHA began a new plan that will permit individuals—for the first time—to invest in FHA-insured mortgages. Bankers think this source will develop slowly, while investors learn the ropes.

On financial matters, generally, the U. S. economy continued to show strength, particularly for the construction market.

Probably most encouraging was the announcement of a surprisingly large U. S. Government budget surplus, amounting to about $1 billion. That represents an amazing rebound, when you consider that last year showed a deficit of $12 billions. Actual tax receipts by the government jumped nearly $10.1 billions over those for Fiscal Year 1959. Economists took it as ample evidence of the nation's economic strength.

In construction areas (see chart, page 69) evidence of continuing demand remained surprisingly strong, in view of the fact that the half-year mark had been passed.

Public utilities, or instance, announced plans during the month of July for more than $260 millions worth of work for the remainder of the year; private investors also continued their planning for heavy expansions of manufacturing plant and housing construction.

Sales of municipal bonds also continued strong—reports for May (latest available) showing continuing acceptance by the money markets. In this connection also, average median yields on these bonds, in all categories, remained several percentage points below the high figure for the year (in March).

It is interesting also that voters continued to be disenchanted with proposals for water and sewer construction and recreation projects of all kinds—they turned down much more than half of all proposals in this area. But schools and road projects continued to be approved in great numbers.

There were, however, a couple of specks on the generally good financial picture. One of these was in the manufacture of construction machinery, which apparently will drop (at $1.7 billion total shipments) in 1960 to a rate of about 60% of the capacity of manufacturing plants. The drop-off—blamed on dumping of government surplus and imports—has already caused cutbacks in production schedules.

Another was FHA's announcement that secondary market prices for FHA-insured home mortgages increased (by 0.1%) during June—which indicates a slight tightening of the money markets.

ICBM Construction Changes

Architects who have been working —or hope to work—in the area of missile-base construction should study carefully the recent changes made by the Army's Corps of Engineers in its organization for handling construction.

The changes are at once a major overhauling of the Corps' traditional organizational setup and an answer to growing criticism of alleged delays in base construction. Further changes may be in the offing in other areas of the Corps' work.

And in any case—along with some parallel reshuffling by the Air Force—anyone working in missiles now has a whole new set of bosses and circumstances to contend with.

Briefly, here's the picture: the Corps has set up a new "Corps of Engineers Ballistic Missile Construction Office" (already dubbed "CEBMCO" in initial-happy Washington), under command of Brig. Gen. Alvin C. Welling, who has just completed a 3-year tour as Engineer-Commissioner of Washington.

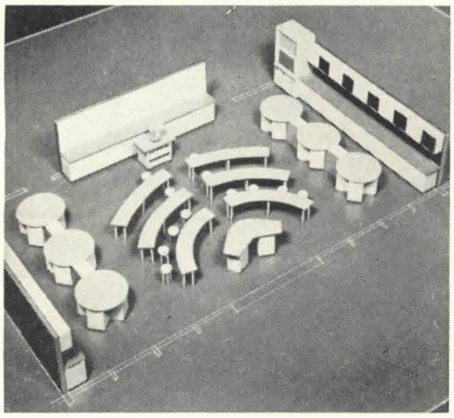
CEBMCO has a direct line to Washington, reports only to the Chief of Engineers, and supersedes all district and division offices in connection with ICBM work (and experimental construction at Vandenberg, Andrews, and Patrick bases as well). It will let all contracts for architect-engineering as well as construction work; field officers on the sites will report directly to it, not to district or divisions.

Efficient Science Room Furniture is Flexible

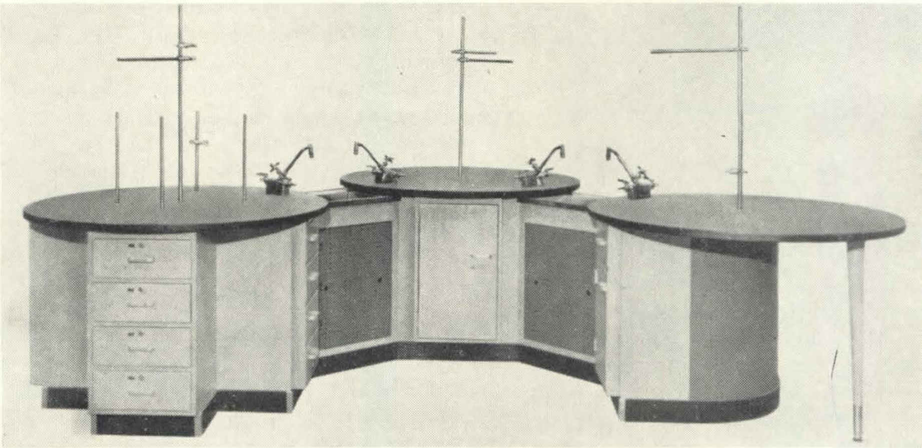
Circular Units May Be Included in Lecture Halls

PHILADELPHIA, PA. School laboratory furniture which combines flexibility of arrangement and use has been introduced here. "Science Circle" furniture consists of laboratory tables with circular tops and a choice of bases, including a general cabinet unit with racks for equipment, a drawer unit, and a unit combining a drawer and a cabinet. Tops are available in green or black Searesin but may also be specified in alberene and stone or monolab. Supporting furniture is of white oak in two stains. Connecting sink units provide two cold water faucets, four gas cocks, four duplex electrical receptacles, stainless steel bowls, and a lead drum trap to floor line for chemicals. Each lab unit accommodates four students. Science Circle manufacturer has published a brochure showing a number of arrangements of the furniture, including an eight-student combination biology-physics-general science unit and two twelve-student combination chemistry-physics units. In addition, arrangements are shown featuring the laboratory tables in combination with an instructor's lecture and demonstration desk, curved "Amphi-Lecture" student's lecture tables, student seating, and projection equipment. John E. Sjostrom Company, Inc.

On Free Data Card, Circle **100**



"Science Circle" science room arranged for 24 students.



Composite unit in "V" formation. Three bases are shown.

ROOF DECK, SHEATHING ARE ECONOMICALLY PRICED

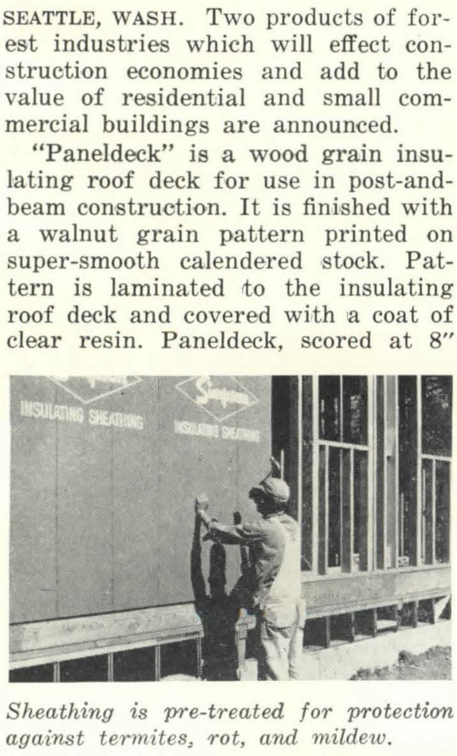
Roofing Is Printed with Walnut Grain Pattern

SEATTLE, WASH. Two products of forest industries which will effect construction economies and add to the value of residential and small commercial buildings are announced.

"Paneldeck" is a wood grain insulating roof deck for use in post-and-beam construction. It is finished with a walnut grain pattern printed on super-smooth calendered stock. Pattern is laminated to the insulating roof deck and covered with a coat of clear resin. Paneldeck, scored at 8" centers for a planked appearance, is available in 2'x8' size in thicknesses of $1\frac{1}{2}''$, 2" and 3", with tongue-and-groove edges. It has a thermal insulation value of K-0.36.

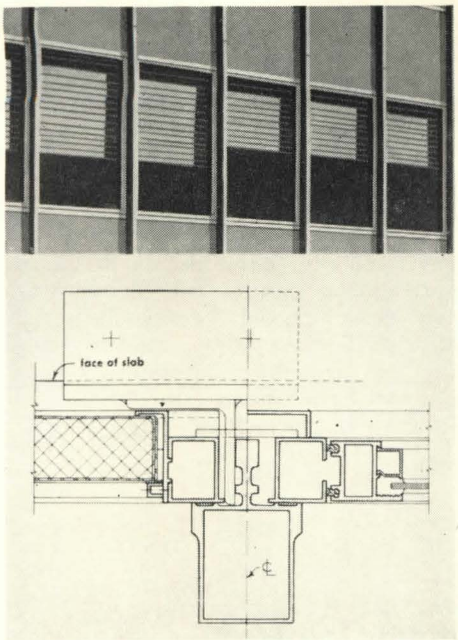
"Super-Strong Sheathing" is designed primarily for use without corner bracing. The sheathing, made from long, rough fibers of Douglas Fir and Western Hemlock, comes in $\frac{1}{2}''$ thickness, in 4'x8' and 4'x9' sheets. Wood and asbestos shingles may be nailed on directly, using annular ring nails of specified size. Simpson Logging Company.

On Free Data Card, Circle **101**



Sheathing is pre-treated for protection against termites, rot, and mildew.

Insulating roof deck may be used in exposed beam construction.



New Curtain-Wall System

"Series 400" curtain-wall system is erected in independent mullions and one-story units consisting of sash and panel frame. System can be combined with all generally-accepted spandrel materials and fixed or reversible windows. Series, made of high quality aluminum extrusions, is integrally keyed for weather-tight seal, simplified erection, and protection against expansion and contraction. System can be erected largely from inside the structure, permitting all-weather erection. Albro Metal Products Corp.

On Free Data Card, Circle **102**

Custom Fabrics May Be Applied to Foam Backing

Almost any fabric may now be backed with vinyl foam up to 1/4" thick, creating sound absorbent wall covering. New laminating process enables a wide variety of fabrics to be mounted on the foam backing. Material can then be applied to walls with standard cellulose paste, or tacked or stapled. B. F. Ruskin & Company.

On Free Data Card, Circle **103**

Luminous Tile for Glowing Floors

"Afterglow," a luminous vinyl floor tile incorporating phosphorous pigments, glows in the dark with a bluish light "bright enough so that objects near or on it are clearly distinguishable." When strength of light source and length of exposure equal eight ft-candles of light, tile will emit steady glow for as long as 12 hours. Decorative possibilities include lobbies, restaurants, and cocktail lounges; practical applications include hospitals, institutions, photographic and X-ray darkrooms. B. F. Goodrich Company, Flooring Products Division.

On Free Data Card, Circle **104**

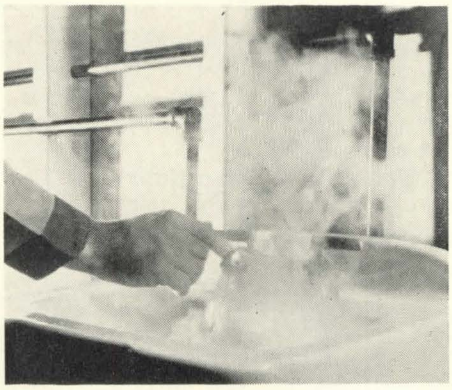
New Ceramic Facing In Large Sheets

"CV Durathin," a new ceramic facing material only 3/8" thick is available in sizes up to 18"x24" and in a virtually unrestricted choice of colors. Both initial costs and installation costs are substantially reduced because of its thinness, light weight, and large unit sizes. In addition, it assures the durability and low maintenance of ceramic veneer. Face-to-wall dimension is 1" (3/8" of CV Durathin and 5/8" of mortar). Federal Seaboard Terra Cotta Corporation.

On Free Data Card, Circle **105**

Prefab Plumbing Possible With High-Temp Vinyl

A new vinyl plastic that can withstand temperatures 60 degrees higher than conventional vinyls, indicating use in household hot-water plumbing



and industrial hot-acid piping, has been developed. The new material, a polyvinyl dichloride called "Hi-temp Geon," retains all the qualities of strength, light weight, impact resistance, non-flammability, and corrosion resistance that have made vinyl the second largest selling plastic in the world. Claiming to be the only self-extinguishing thermoplastic pipe material capable of handling hot-water systems, and at costs competitive with existing pipe products, Hi-temp Geon represents the first significant breakthrough in this industry since the development of rigid vinyl 12 years ago. Its light weight, ease of installation, and new heat resistance make possible prefabricated kitchen and bathroom piping facilities that are, for the first time, economic and easily transported. System has recently been demonstrated in a research house built by the NAHB in Lansing, Mich. B. F. Goodrich Chemical Company.

On Free Data Card, Circle **106**

Wall Heater/Ventilator On Separate Operation

The first wall heater/ventilator combination that may be operated simultaneously or separately has just been introduced. New "Heat-A-Vent" has two radiant-heating elements to pro-

vide instant, draft-free warmth. One element operated singly will give a constant and economical heat level. Where required by codes, ventilator operation may be controlled by light switch. Unit is encased in anodized aluminum for durability. Ideal for bathrooms and other areas requiring extra heat plus moisture removal and ventilation. NuTone, Inc.

On Free Data Card, Circle **107**

Compact Heating-Cooling Unit for Area Conditioning

Complete, ducted, all-season heating and cooling conditioning can be provided for apartments and small commercial areas with a unit which will fit into a 36" x 36" closet. The air handling surface of the condensing unit extends through the outside wall; the part of this unit remaining inside serves as the base for the furnace. The cooling coil is mounted in top of the furnace. Unit assembled requires only 89" headroom. Unit provides nominal two tons of cooling and 51,000 Btu input of heating. Condensing unit handles intake and exhaust air on same side. By switching face plates, exhaust can be from

Continued on page 88

Solve more application problems with extra-strong Insulite Roof Insulation

Tapered Edge Strip and Cant Strip assure better, trouble-free roofs

Today, more than ever before, a sound, trouble-free roof requires insulation with high transverse and compressive strengths. These strength properties are needed to resist cracking, crushing and flexing due to on-the-job handling and roof traffic loads. Insulite Roof Insulation is vastly different from soft—or brittle—materials. It is made of *all-wood fibers*—slow-growing Northern wood, for strength and rigidity.

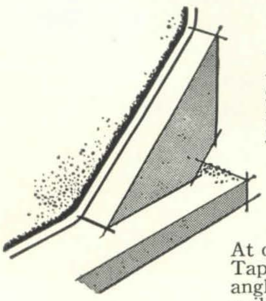
Insulite® Roof Insulation is available in two types: Ins-Lite® made of natural wood fibers; Graylite®, of the same basic material, but integrally impregnated with asphalt for greater strength and moisture resistance.

To meet certain troublesome roofing problems, Insulite offers a Tapered Edge Strip and a Cant Strip (illustrated and described below); both are made of the same basic wood fibers as Insulite Roof Insulation to eliminate any hazards caused by introducing another material with different properties.

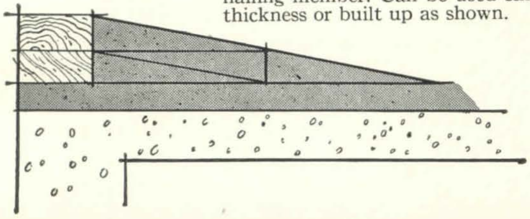
Insulite provides a uniform, durable and highly efficient insulation that takes rough on-the-job handling without breakage or crushing. It lays fast and uniformly, is easy to apply.

For complete specifications on Insulite Roof Insulation, Tapered Edge Strip and Cant Strip, just call your nearby Insulite representative; or send the coupon to Insulite.

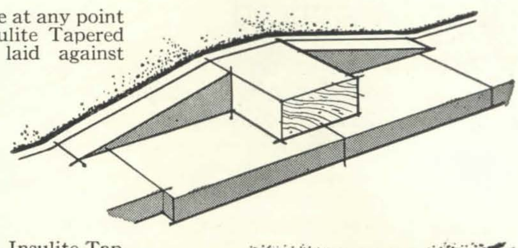
Solve these special roofing problems with Insulite Tapered Edge and Cant Strip



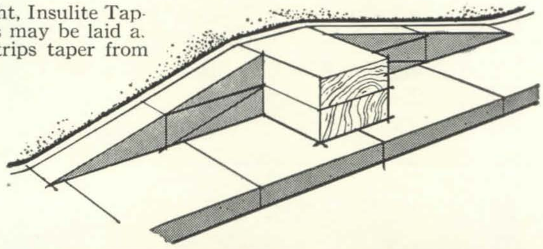
Where roof meets wall or other vertical surface, Insulite Cant Strip eliminates 90° break in roofing felts. Makes a well designed joint.



At outer edges of flat roofs, Insulite Tapered Edge Strip eliminates sharp angles, carries felt smoothly over nailing member. Can be used single thickness or built up as shown.



To channel drainage at any point on a flat roof, Insulite Tapered Edge Strips are laid against raised nailing base.



To build up height, Insulite Tapered Edge Strips may be laid a. shown above. Strips taper from 1⅝″ to ⅛″.

SPECIFY

INSULITE®

INSULITE, *made of hardy Northern wood fibers*

Insulite Division of Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota

INSULITE DIVISION
MINNESOTA AND ONTARIO PAPER COMPANY
MINNEAPOLIS 2, MINNESOTA

Send specifications and samples of Insulite Roof Insulation to:

NAME____________________

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CITY__________ ZONE____ STATE________

For more information, turn to Reader Service card, circle No. 314

Continued from page 84
either right or left side. New refrigerant circuiting method increases the amount of refrigerant sub-cooling, improving Btu per watt performance because liquid refrigerant reaches evaporator coil up to 20 F cooler than the condensing temperature. Lennox Industries, Inc.
On Free Data Card, Circle **108**

Two New Fire Ratings For Acoustical Fire Guard

"Acoustical Fire Guard," introduced a year and a half ago, has received from Underwriters' Laboratories new ratings as fire retardants. A four-hour rating was given an Acoustical Fire Guard ceiling when combined with a cellular steel deck and a 2½" concrete floor assembly. This system also passed the four-hour test with "penetrations" (recessed lighting fixtures, air conditioning ducts, etc.). A one-hour rating was granted the tile in tests with a floor and ceiling assembly consisting of wood joists and a wood floor. Armstrong Cork Company.
On Free Data Card, Circle **109**

Attic Fan with Automatic Shutter Announced

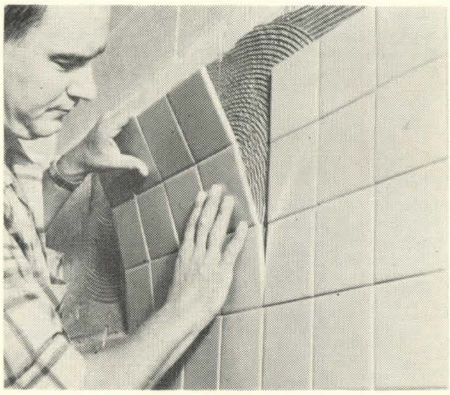
A 30" electric, direct drive attic fan is available which can be equipped with ceiling shutters that open and close with the operation of the fan, and have a "flutter"-proof design of overlapping aluminum louvers mounted in a formed steel frame. Fan is said to be quieter than most kitchen exhaust fans; operates smoothly at 835 rpm. The Emerson Electric Manufacturing Company.
On Free Data Card, Circle **110**

Four Drywall Systems Announced

Four new drywall partition systems have been announced by U. S. Gypsum, making such systems announced this year an even half dozen. The new systems are: two-inch solid partition system; double-solid partition system; metal stud partition system; and ceiling and wall furring systems. Two previously released were movable Vaughan walls and semi-solid partition system for residential use. The 2" solid partion is designed to divide space within a living unit. It has a core of 1" monolithic gypsum coreboard, 24" wide, with long edge tongue-and-grooved, and available in 8', 9', 10', and 12' lengths. Floor and ceiling runners may be wood or steel. The double-solid partition is for party and corridor walls or to enclose mechanical services. It has L or U shaped runners to which the coreboard is screw-attached. The metal-stud partition system consists of a lightweight channel stud set in steel runner tracks at floor and ceiling, and faced on each side with "Sheetrock" gypsum wallboard. It is suitable for practically all types of new construction, plus remodeling and alterations. In the drywall ceiling system, gypsum wallboard or backing board is fastened to a lightweight metal furring channel of special design. Complete ceiling may be decorated or left exposed to receive acoustical tile. Drywall wall furring system has same parts and materials as ceiling system, and may be installed over any surface. United States Gypsum Company.
On Free Data Card, Circle **111**

Sheet-Mounted Wall Tile Installs Economically

Sheets of twelve 4¼" x 4¼" ceramic wall tiles can be installed with greatly increased speed and reduced cost. Tile is mounted on strong paper mesh that is twisted and bonded to the tile by a



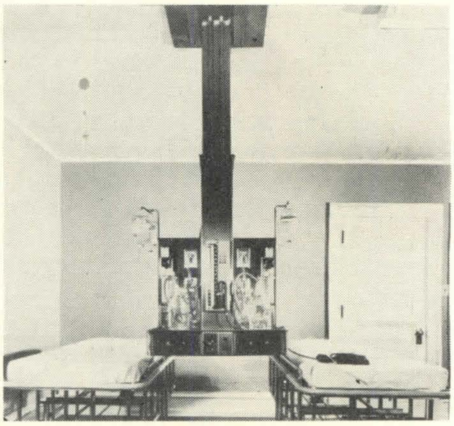
special cement. Sheets do not buckle in handling, yet mesh can be easily trowel-cut. Mortar, mastic, or mortar mix are suitable for installation, coming in contact with 70 percent of the tile surface. Soaking is not necessary. Stylon Corporation.
On Free Data Card, Circle **112**

Ceiling Tile Is Cheaper, More Lightweight

Expanded plastic ceiling tile is said to be priced at least 50 percent lower than other standard ceiling tile materials. Rigid material is white, and has a striated surface. Light weight makes possible use of lighter than usual supporting grids. Tile has superior insulating qualities. It is classified by American Society of Testing Materials as a self-extinguishing plastic. Material, 1" thick, comes in 2'x2' and 2'x4'. General Foam Plastics Corporation.
On Free Data Card, Circle **113**

Recovery-Room Unit Lowers from Ceiling

A new intensive-care nursing and service unit for hospital recovery rooms telescopes downward to nursing level when needed, and upward above head when not in use. The ceiling-



mounted emergency station makes it possible to bring all supply lines—oxygen, vacuum, and electricity—directly to bedside without crossing floor. Beds can be located in center of room for improved circulation. Unit provides complete facilities for two patients. National Cylinder Gas Division, Chemetron Corporation.
On Free Data Card, Circle **114**

Acoustical Board In 4'x4' Size

A new, large 4'x4' size in glass-fiber acoustical-ceiling boards for suspended ceilings has been introduced. The new "Ultracoustic" board features low initial cost, fast installation, minimum of handling and fitting, and reduction of suspension members required. The surface is a travertine fissured design, and can be used with 2'x4' boards of the same design for varying effects. Gustin-Bacon Manufacturing Company.
On Free Data Card, Circle **115**

Wood-to-Concrete Adhesive Material

Newly-developed adhesive material rapidly secures wooden-block flooring
Continued on page 90

Specify Floor Maintenance to Insure CONTINUING Beauty of your Interiors

After you have specified flooring, its final clean-up and initial treatment, go one step further: **Specify proper continuing care.**

After building acceptance, proper maintenance will display your floors effectively, help set off and complement your interior design–through years of wear.

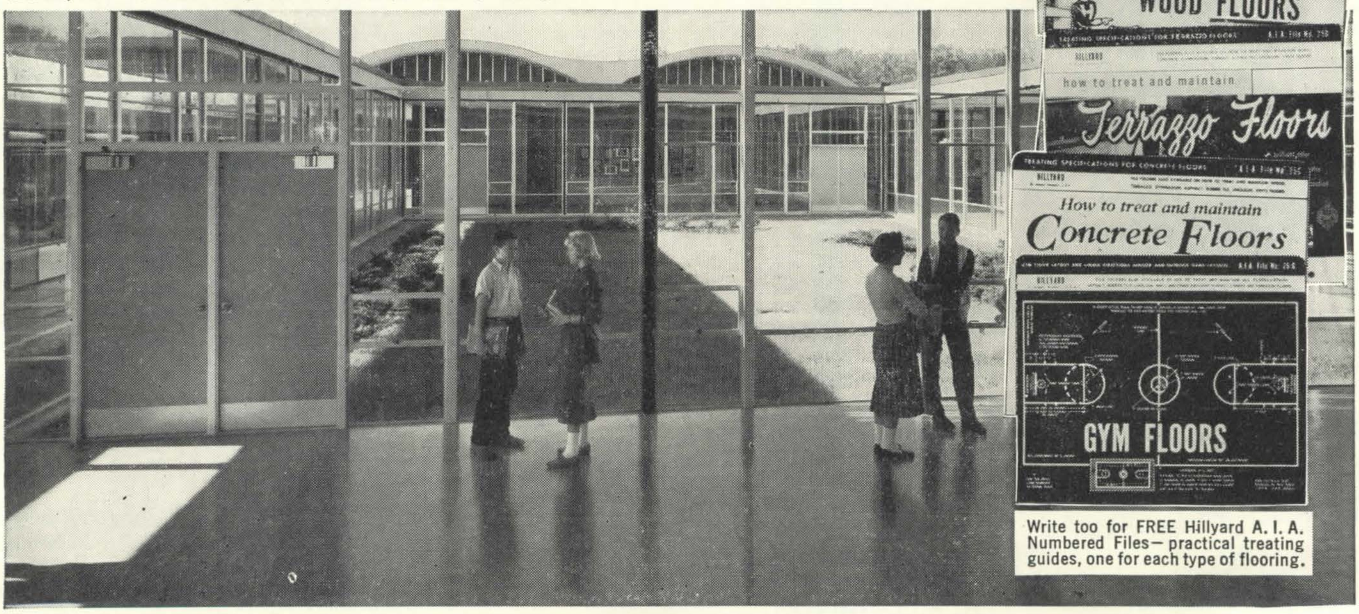
For the beautiful floor below, there was no "or equal".

Let us prepare for you a manual on the care of the floors you specify. Your client will appreciate this added architect specified maintenance service and you'll like the way flooring complaints will be eliminated.

- Over 160 Hillyard trained floor treatment experts are located throughout the United States.
- There's one near you who will, at your request, survey your finished floors, determine traffic and soil loads for the various floors and recommend proper maintenance procedures. A complete manual for floor care will be individually compiled for every floor you specify.
- Write for the name of your nearest Hillyard "Maintaineer" who can provide this free service. District offices listed in Sweet's Architectural File.

Approved by the Maple Flooring Manufacturers Assn. Listed by UL classified as to slip resistance.

Bloomfield Hills Junior High School, Bloomfield Hills, Michigan



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Branches and Warehouse Stocks in Principal Cities

Continued from page 88

and wooden screeds to concrete slab floors and foundations. The new product, "Bondite Asphalt Adhesive," enables wooden blocks to be laid and walked on at once; flooring may be nailed to screeds 30 minutes after application. The material dries to a flexible form that allows expansion and contraction during temperature changes, yet holds wood firmly in place without disbonding. Lion Oil Company Division, Monsanto Chemical Company.

On Free Data Card, Circle **116**

New Foamed Insulation Cuts Installation Time

A new liquid spray foam insulation, promising installation in half the time of conventional insulations, has been developed. The foamed-in-place urethane, expanding to 30 times its original volume within seconds of application, is permanently bonded in place, will not shrink, is not subject to damage by mildew or age, and is

odorless. Spraying is done with a high-speed gun that mixes the chemicals, atomizes them, and forces them out of the gun. The insulation has a K factor of 0.15 at 75 F, and a 2″ layer is equal to or better than 3″ of the best conventional insulations. Additional advantages: a permanent monolithic seal devoid of seams; excellent soundproofing characteristics; and high moisture-vapor impermeability almost equal to plastic film. Dayton Industrial Products Company Division, Dayco Corporation.

On Free Data Card, Circle **117**

Electronic Air Cleaner Reduced in Size

New panel-type electronic air cleaner is only 2″ thick in direction of air flow, occupies less than 1/60 the space needed for similar equipment 10 years

Continued on page 92

For more information, turn to Reader Service card, circle No. 317

Continued on page 90

ago. Capacity ranges (with size) from 640 to 1000 cfm per panel. Removes particles as small as 1/2,500,000 of an inch from the air. A gage shows when dirt-collecting pad should be changed. Power requirement is only that of a 25 watt light bulb. Trion, Inc.

On Free Data Card, Circle 118

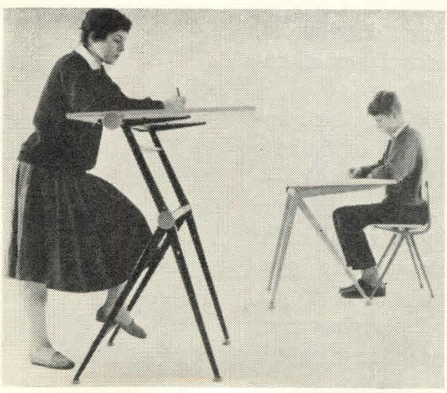
Light-Weight, Load-Bearing Panel Wall System

"Stran-Wall," a new load-bearing panel wall system for one- and two-story buildings, includes three major elements in one package from one source: light-weight, load-bearing steel framing; porcelain enameled curtain wall panels that are slipped into grooves in the steel structure; and aluminum mullions, jambs, sills, and headers which are snap-fit or attached by concealed screws. Other features are positive water seal and ventilation to reduce condensation, thin-line mullions, and a choice of hopper, fixed, and projected windows. Stran-Steel Corporation, Division of National Steel Corporation.

On Free Data Card, Circle 119

Dutch-Made Table/Desk Of Unusual Versatility

A remarkedly versatile drawing table/desk has been recently introduced by a Dutch firm. Adjustable from a low horizontal position of 30″ to a high of 46″, the "Reply" can be adjusted to any inclination from completely



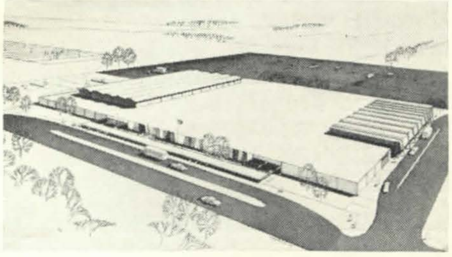
horizontal to completely vertical. A device on one leg of the molded-steel frame permits adaptation to any floor condition, keeping the unit constantly level. Unit is equipped with a ¾″-thick drafting board in sizes up to 30″ x 40″ and a detachable tray for drawing equipment. Table has received an award for design and quality from an international jury in Brussels. Netherlands Trade Commission.

On Free Data Card, Circle 120

AIR/TEMPERATURE

Research-Study School Presented in Report

Environment for Learning is a 20-page report on a research study in secondary-school design. The school that emerged from the study is described in detail, with plans and renderings, and compared with the conventional school on which its educational specifications were based. The



research school clearly demonstrates the value of fresh concepts and new approaches to school planning; in particular, cost comparisons point up many advantages of the flexible, compact "EFL" school. Study was conducted by Goleman & Rolfe, AIA, architects and engineers of Houston, Texas. Carrier Corporation.

On Free Data Card, Circle **200**

Radiant Panel Heaters Of Shatterproof Design

Data sheet, 2 pages, describes "Texsun" radiant electric panel heaters, the only shatterproof glass units on the market. Panel heaters may be installed in wall or ceiling, are safe to the touch, clean, and economical. Units are of simple and handsome design, suitable for installation in a variety of interiors. Information is supplied for 5 models. Electric Heating Corporation.

On Free Data Card, Circle **201**

CONSTRUCTION

Use of Computers In Civil Engineering

A new, 11-page index of G-15 computer programs in civil engineering is available. The index contains an extensive listing of applications prepared by G-15 digital computer users, and submitted to the Bendix Users' Exchange Library. Programs in the following categories are represented: traffic, surveying, earthwork, culverts and sewers, soils, interchange, bridges and piers, beams, columns, section properties, miscellaneous analysis, and hydraulics. Companion literature, *Organizational Problems Encountered in Setting Up a Computer,* is a 20-page article presented at the Structural Engineering Conference at the University of Illinois in 1958. It is based on experiences of civil-engineering consultants with electronic computers. The Bendix Corporation.

On Free Data Card, Circle **202**

Landscaping Ideas In Redwood

Garden Redwood Ideas from California, 16 pages, is a potpourri of imaginative designs for outdoor living. Pho-

tographs and lengthy captions present a variety of outstanding decks, benches, screens, overhead shelters, planters, bridges, walks, and fences by noted designers. Notes on the last two pages define the grades of garden redwood, and describe fastening and post-setting methods. California Redwood Association.

On Free Data Card, Circle **203**

Compilation of Brochures On Structural Components

Spiral-bound book, 106 pages, compiles all current building-product literature of company. Complete data is given on insulated metal curtain walls, metal-clad fire walls, rolling steel doors, electrified floors, long-span decks, steel roof decks, acoustical and troffer forms, acoustical ceilings, structural steel, and steel-plate components. Specifications, construction details, and appropriate technical data are included for each type of product. The R. C. Mahon Company.

On Free Data Card, Circle **204**

Manuals Discuss Wood for Residential Construction

Two comprehensive, well-designed manuals on wood have been published —*Wood Frame Construction for Residential Buildings,* 48 pages, and *Post and Beam Construction for Residential Buildings,* 32 pages. Each is a readable and thorough discussion of its subject. Many isometric drawings and considerable text give full details on framing; complete beam tables are also included. Canadian Wood Development Council.

On Free Data Card, Circle **205**

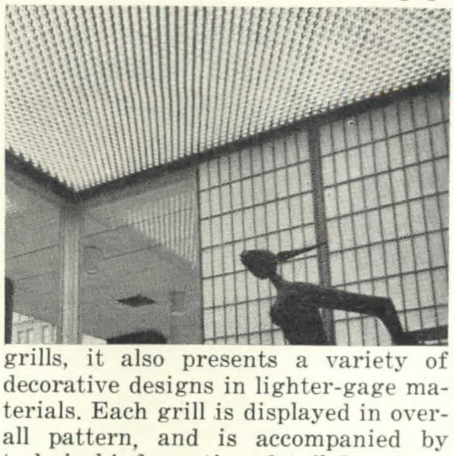
Modular System For Steel Buildings

AmBridge Modular Schools describes a system of modular steel components utilized in a number of school buildings. Booklet, 20 pages, enumerates design and construction advantages, among them the speed of erection: 17 weeks from foundation to completion. Structural components shown in section include open-web joists, trusses, square tubular columns, and corrugated roof deck; sample colors for exterior and interior panels are also shown. Modular system has recently been used in U.S. Post Office at New Hyde Park, N.Y., representing first use in non-school construction. American Bridge Division, United States Steel Corporation.

On Free Data Card, Circle **206**

Comprehensive Manual On Perforated Metals

Architectural Handbook of Perforated Materials provides complete design and technical information on full line of products. While handbook concentrates primarily on the heavier-gage



grills, it also presents a variety of decorative designs in lighter-gage materials. Each grill is displayed in overall pattern, and is accompanied by technical information, detail drawings, and tables in a separate section of the

64-page book. The Harrington & King Perforating Company, Inc.
On Free Data Card, Circle **207**

Lead Pads Used for Vibration-Free Buildings

An illustrated 4-page brochure shows several examples of the use of lead-asbestos pads to reduce or eliminate vibration in buildings adjacent to railways, subways, or other heavy traffic areas. Among the examples described is the new 54-story Union Carbide Building in New York, N. Y. Step-by-step photos show the operations of placing, positioning, and grouting one of the 115 pads used. Typical engineering drawings and specifications for this building, other American buildings, and several Canadian projects are also included. Lead Industries Association.
On Free Data Card, Circle **208**

New Aluminum Soffit Available in Rolls

A new simple-to-install ventilated-aluminum soffit system, developed through extensive research and job-site tests, has been announced. Prefinished with a new, more durable baked-on enamel, the new soffit system eliminates peeling and warping of vulnerable eave overhangs, and eliminates the need for frequent repainting. The system is installed by cutting the soffit material (in 50′ rolls) to required length and slipping it into place through aluminum supporting channels that are nailed to the building. A flexible plastic rod is then pressed into place to hold edges of the soffit sheet. Application of product is fully explained in 8-page booklet. Soffit material, crimped and stucco-embossed, is available in perforated and non-perforated form, in widths up to 48″. Reynolds Metals Company.
On Free Data Card, Circle **209**

DOORS/WINDOWS

General Information On Weatherstripping

What You Should Know About Interior and Exterior Weatherstripping is the title of an informative new 14-page booklet. Published in the interests of improving building methods, it is not a sales booklet for specific products. Description of general types and materials is followed by recommendations for weatherstripping against dust, noise, drafts, leaks, and light. Pemko Manufacturing Company.
On Free Data Card, Circle **210**

ELECTRICAL EQUIPMENT

Suggested Methods for Residential Lighting

Forty ways to use lighting in the home are shown in *The Light Side of Decorating*, a new booklet published by the manufacturers of "Luxtrol" light controls. Included are at least four lighting schemes for every room type, all designed by C. Eugene Stephenson, FAID, internationally-known designer and authority on residential lighting. The 36-page booklet contains full-color sketches of its well-lighted rooms, each keyed to wiring diagrams and installation sketches. A directory shows how to build and install such features as valances, brackets, coves, etc. Write (enclosing $.25) to: Superior Electric Company, Bristol, Conn.

Comprehensive Book On Signaling Systems

A new 88-page manual describes air and electric signal systems and lists specifications of horns, bells, buzzers, chimes, and sirens. Included in the new publication are sections on gravity-drop and lamp-type annunciators, and accessory equipment such as door openers and clocks. Selection of the proper type of signal for various background noise levels and work areas is illustrated by charts and diagrams. Sperti Faraday, Inc.
On Free Data Card, Circle **211**

New Lighting Fixtures Described in Folders

Three new 4-page brochures—entitled *Exit and Aisle Lights, Opal Luminaires*, and *Opal Drum Lights*—are now available. UL-approved exit lights described in first brochure can be either incandescent or fluorescent and are furnished with unbreakable glass-fiber lens panels. The opal luminaires are produced in both pendant and spin-up fixtures, in satellite, spheroid and sphere shapes. Opal sphere post lights, designed for outdoor use, have a special weatherproof gasket and are base-tapped for 1″ pipe mounting. The third brochure describes round and square opal drum lights having hand-blown "Thermopal" glass hinged to a "Dielux" diecast aluminum pan. Technical information on dimensions, construction, and performance accompanies illustrations. Prescolite Manufacturing Corporation.
On Free Data Card, Circle **212**

Data on Lighting Levels

A new edition of the booklet *Footcandle Levels and Interior Lighting Design* is now available. The 60-page, pocket-size manual contains valuable information on modern lighting practices for various types of luminaires and light sources. A table indicates the recommended lighting level for an extensive list of room types. Write (enclosing $.10) to: Westinghouse Lamp Division, P.O. Box 388, Bloomfield, N. J.

FINISHERS/PROTECTORS

Directions for Urethane Wood Finishes

Urethane Coatings for Wood, 3 pages, describes two clear-resin systems for producing highly-durable finishes that protect and enhance the natural grain of wood. Bulletin, unillustrated, gives data on preparation of surface, application, and coverage. B. B. Chemical Company.
On Free Data Card, Circle **213**

INSULATION

Installation Systems For Acoustical Tile

Mechanical Attachments for Erecting Acoustical Tile, 12 pages, presents 10 "Securitee" systems, each depicted with full-page isometric and sectional drawings. Systems included are 1½″ channel, H-section clip, line exposed, line concealed, strip panel, T & G. Short-form specifications are provided. W. J. Haertel & Company.
On Free Data Card, Circle **214**

Sound Data for Partitions and Floors

For the first time in MLMA technical bulletins, information on sound-transmission loss is available on a resilient-clip system used in conjunction with

Continued on page 101

Continued from page 98

a prefabricated-metal-stud assembly. *Sound Insulating Partitions and Floors,* 4 pages, advises that the degree of sound resistance desired is influenced by factors other than those involved in the selection of a construction assembly. Location is important, according to the text, because an area adjacent to a busy street, for instance, has higher noise-making levels than a room in isolated areas. Illustrated tables give figures on sound-transmission reduction for solid and hollow partitions and for floors of various construction. Metal Lath Manufacturers Association.

On Free Data Card, Circle **215**

Guide to Effective Use Of Thermal Insulation

Re-thinking Thermal Insulation, new 16-page booklet, is a guide to the best use of thermal insulating materials. It emphasizes the "economic thickness" approach to specification, which enables management and engineers to determine the point at which an insulation gives the greatest financial return for its cost. Characteristics of different types and purposes of insulation are given in detail, and the question of surface temperature determining insulation thickness is reviewed. A worksheet for calculating economic thickness is included. National Insulation Manufacturers Association.

On Free Data Card, Circle **216**

SANITATION / PLUMBING

Plastic Drain Fittings Presented in Folder

Literature on plastic drain and sewer fittings, 6 pages, shows available sizes and types of fittings in large-scale photographs, and presents the five easy steps of installation. Advantages of the material are its light weight—one-tenth that of cast iron—and its ease of handling—joints do not need threading but are simply joined with solvent. Sloane Manufacturing Company.

On Free Data Card, Circle **217**

Complete Data on Underground Sprinklers

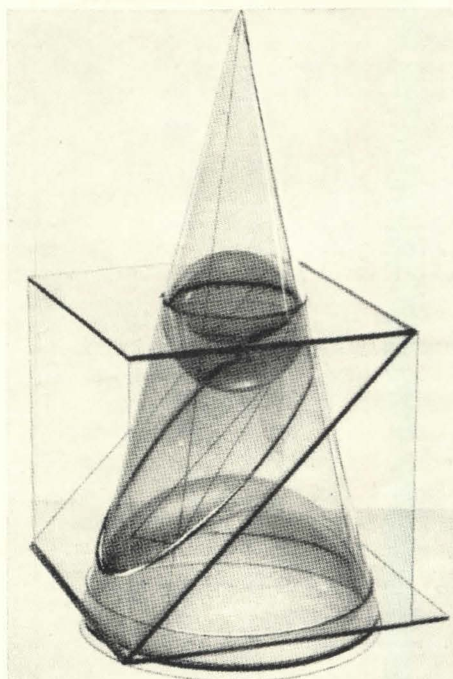
Keeping Lawns Beautiful gives essential operating data, specifications, and suggestions for use of 16 different underground sprinkler heads. The various patterns and sizes—including squares, rectangles, and circles—are described, with coverage, discharge, and pressure data. Catalog, 24 pages, enumerates all accessories needed for complete installations. Rain Jet Corporation.

On Free Data Card, Circle **218**

SPECIAL EQUIPMENT

Plastic Models Aid In Studying Shapes

New 40-page catalog, *Mathematical Models for Teaching,* illustrates hundreds of three-dimensional, clear-plastic models in Guenter Herrman line



now being distributed in U.S. Models are grouped topically under the subjects of: plane, solid, and analytical geometry; curve-drawing appliances; projections, elevations, traces, and intersections; interpenetration of solids. Transparency of the models enables one to see not only the external shape, but also concealed edges, enclosed intersecting planes, and internal dimensions. Arthur S. LaPine & Company.

On Free Data Card, Circle **219**

Compilation of Articles On Furniture Woods

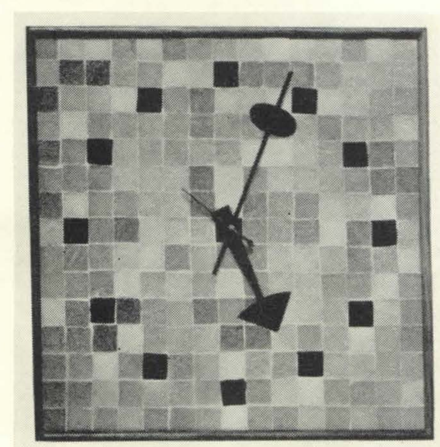
Fine Furniture Woods, a 24-page reprint of this association's articles that were published in a consumer magazine, is a handsomely-presented collection of interesting facts on walnut, cherry, maple, birch, oak, and the more exotic woods. In readable fashion booklet discusses the use of the particular wood in early days, the properties that suit it for its special uses, and the

range of possible finishes. Full-page sketches show the shape of the mature trees; smaller photographs show distinctive pieces of wood furniture. Fine Hardwoods Association.

On Free Data Card, Circle **220**

Stylized Faces For Institutional Clocks

After a comprehensive survey of architects suggested high styling in clock systems, 15 new clock faces have been designed for "ClockMaster" system.



The unusual designs, shown in 8-page booklet, are a collaboration between the Howard Miller Clock Company and Minneapolis Honeywell, and are designed by George Nelson. ClockMaster system is used in hospitals, schools, banks, and offices. Minneapolis Honeywell.

On Free Data Card, Circle **221**

Street Zoos Offered With Play Sculpture

Street zoos are the latest items of playground equipment featured in 32-

Continued on page 102

Continued from page 100

page catalog. Units are galvanized tubular steel, with a glass-fiber teardrop shape that holds a 30"-diameter animal cage or a plastic display unit. Catalog also includes photos of standard items—such delightful pieces as turtle tents, tunnel bridges, fantasy villages, and play façades. Prices, weights, and installation information are noted. Creative Playthings, Inc.

On Free Data Card, Circle **222**

Recent Installations Of Thonet Furniture

Handsome spiral-bound brochure, 24 pages, shows some of the recent designs of this 130-year-old firm. Color photographs of prominent public installations are contrasted with free sketches of the most famous of Thonet's masterpieces, in an excellently-designed promotional booklet. The booklet is not a *catalog* of the complete line, but will be a source of pleasure to anyone who enjoys fine design in both product and literature. Thonet Industries Inc.

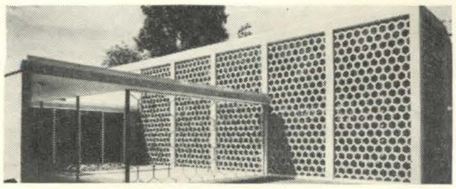
On Free Data Card, Circle **223**

Expanded Line of Solar-Screen Grills

Expanded line of "Ceramic Veneer" grills, used for solar screens, is shown in new 8-page brochure. The augmented line now includes 12 standard units,

Continued on page 106

Continued from page 102



in unlimited choice of ceramic colors, and gives wide variety of design possibilities wherever a perforated façade is desired for sun control, ventilation, privacy, or appearance. Booklet shows each design, in isometric view of single unit, and in elevation view of over-all pattern; several designs are shown in completed buildings. Federal Seaboard Terra Cotta Corporation.

On Free Data Card, Circle 224

Closed-Circuit TV Without Cameras

A specially-designed, closed-circuit television transmitter produces a sharp, intense image without using camera or lighting equipment. By eliminating the camera and substituting a unique method of detecting and transmitting image-brightness differences, "Scan-A-Graph" reduces the focusing and distortion problems of conventional systems. Scan-A-Graph insures instant and accurate visual communication with as many as 500 locations simultaneously. Operating procedures are simple, and no specially-trained personnel are required. Brochure, 4 pages, describes features and operation of system. Television Utilities Corporation Division, Nord.

On Free Data Card, Circle 225

SURFACING

Specifications for Installing Vinyl Tile

A revised set of *Installation Specifications for Vinyl Asbestos Tile and Asphalt Tile Flooring* gives a wide variety of information on the proper types of concrete and wood sub-floors. Folder, 4 pages, includes a special note of caution regarding the use of concrete-curing compounds, and indicates plywood types and sizes for sub-floors, various underlayments used to correct rough or uneven sub-floors, and simple maintenance instructions for newly-completed installations. Asphalt and Vinyl Asbestos Tile Institute.

On Free Data Card, Circle 226

Glazed Brick In Vivid Colors

The 10 vivid colors of a new line of glazed brick, called "Glazed Provincial," are illustrated in 4-page folder. Rugged, unmatched character of the brick provides a warm effect that is distinct from mechanically-perfect surfacing. Many possibilities are suggested for their use—as color emphasis in spandrels, as single mass of color in large wall areas, as small groupings throughout a wall, as a colorful mural. Single data sheets are also available on unique unglazed brick, one (called "Frosty Wirecut") a frosty-surfaced soft red with a gently-aged character. Des Moines Clay Company Division, Goodwin Companies.

On Free Data Card, Circle 227

PROGRESSIVE ARCHITECTURE NEWS REPORT

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE NEW YORK 22, N.Y.

Publisher..........D. Bradford Wilkin
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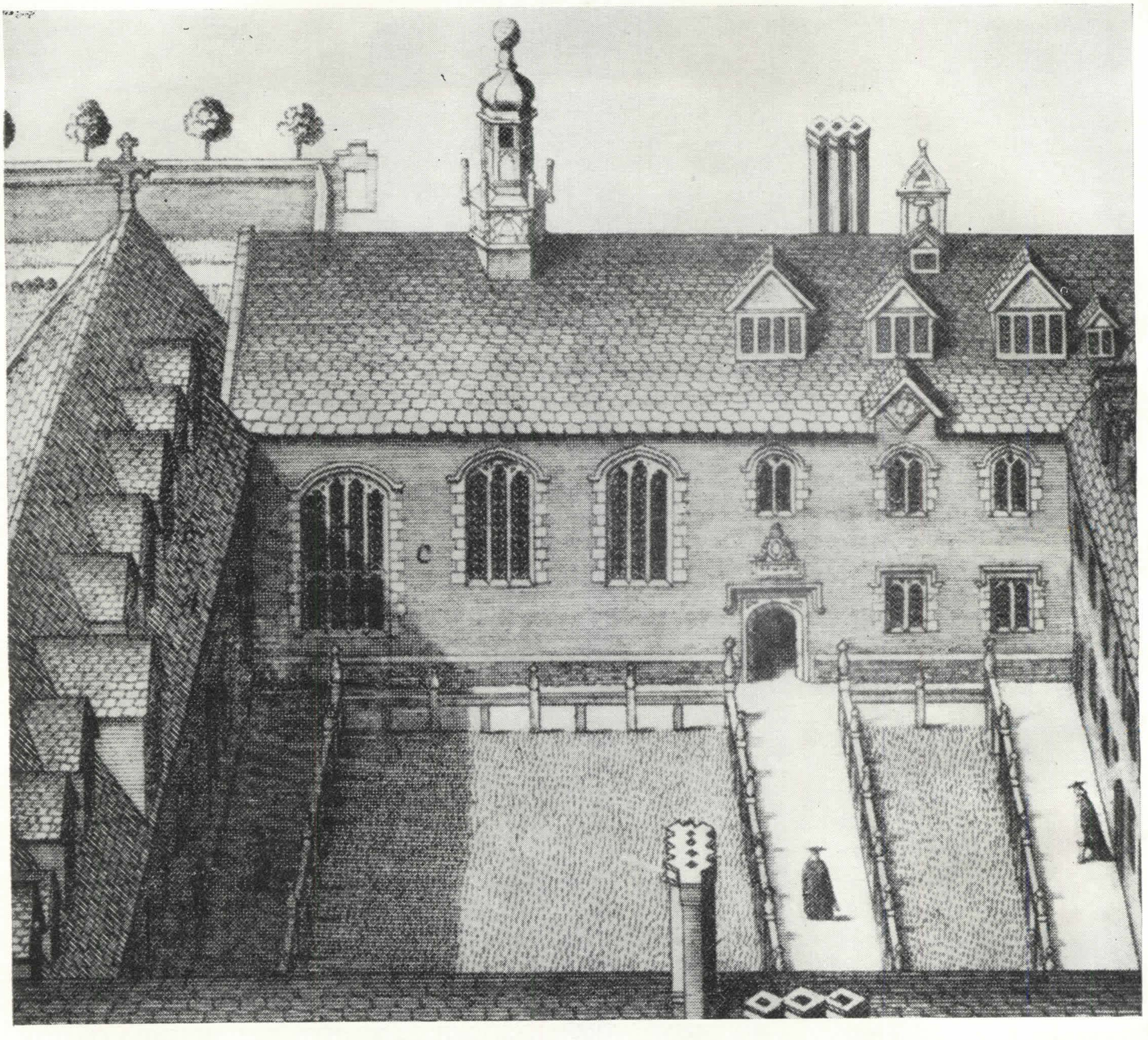
News Editor ....James T. Burns, Jr.

September 1960 **PROGRESSIVE ARCHITECTURE**

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE, NEW YORK 22, NEW YORK

CONTENTS



BY RICHARD P. DOBER

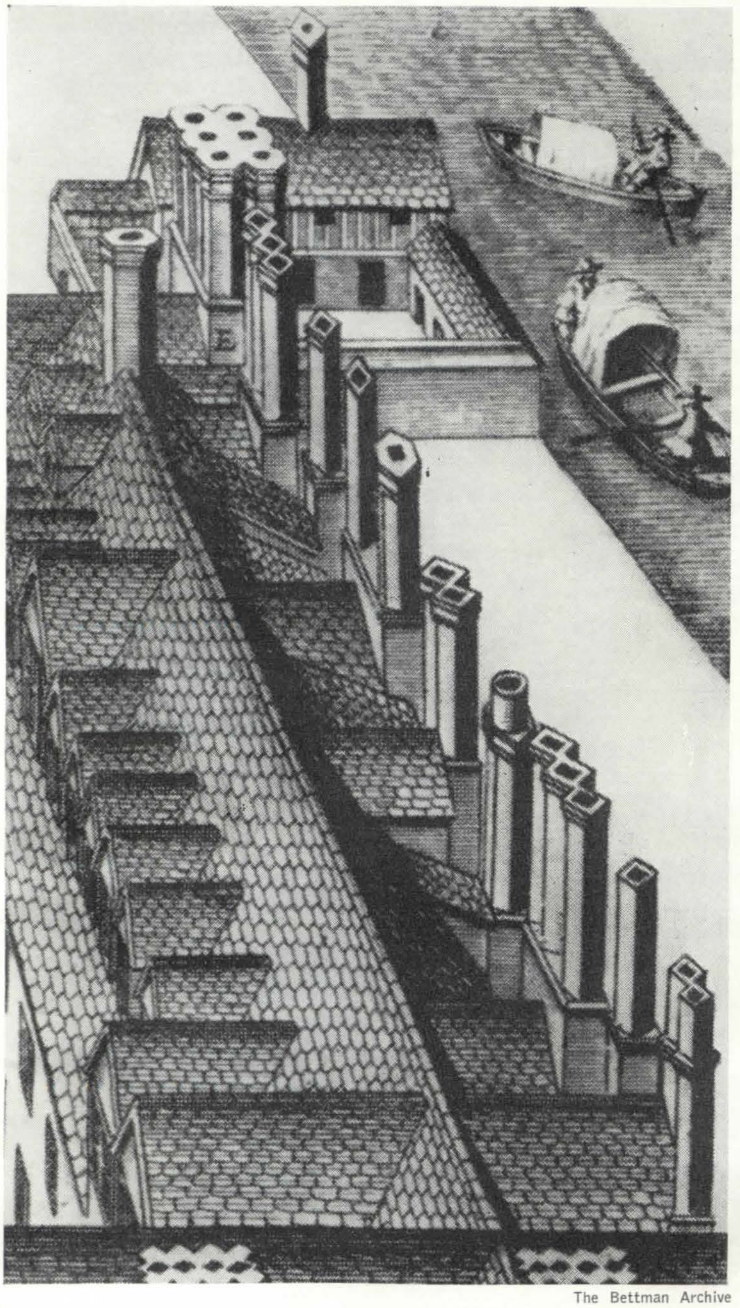
In an article on the work of Sasaki, Walker & Associates ("Design of Exterior Spaces" by Jan C. Rowan—JULY 1960 P/A*) it was mentioned that "because universities and colleges are beginning their greatest expansion programs, much of the firm's work is in this area of design" and that the subject would be discussed in a future issue of* P/A.

Therefore, in this month's introductory article, one of the firm's planners explains design problems affecting the planning of campuses and describes the concepts of several recent campus plans by his and other offices.

Any discussion about planning and design for colleges and universities must first recognize the peculiar nature of these institutions. They are long-lived, non-profit social organizations, dedicated to both continuity and change, and, in general, they have limited resources and little oportunity to accumulate surplus capital for expansion. With few exceptions, private institutions today are dependent on a philanthropy which, on a relative scale, has dwindled in each decade since 1900. Public colleges and universities compete with other government responsibilities, such as medical care, elementary education, housing, highway construction, and other public works projects. While they may plan for the future, they can meet only the most pressing and immediate of physical plant development needs.

Behind all this is the specter of increasing numbers, the so called "population explosion." Population experts predict that 1965 will be the zenith of this decade's enrollment trend. It will mark the final stage of a cycle of marriages and births that began after World War II. Institutional construction seems to follow the pattern of population maturation. First the boom in elementary school building, then the peak years for junior and senior high schools, and now the colleges' turn. In New England alone there will be, by 1970, double the 1958 college enrollments, and, by 1975, double the amount of facilities now in use. The disproportion between students to be educated and space available may be managed by scheduling larger classes and lengthening the school term.

It is against this background of penury on one hand and social obligation on the other that the significant problems



The Bettman Archive

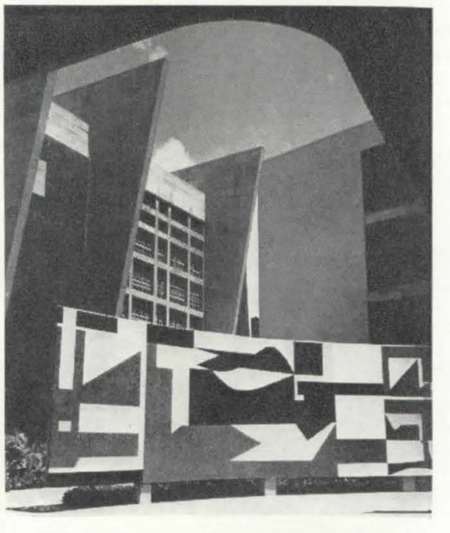


Photo: Paolo Gasparini

FORM AND STYLE IN CAMPUS DESIGN

of design for these institutions should be considered. These problems can be grouped and described as the question of appropriate *style* and the search for campus *form*. Stated in its simplest terms, the former is a concern for the characteristic expression of architecture, the latter the manner in which buildings relate to the site and to each other.

Affecting both is a subtle interplay between educational policy, program, and planning requirements. These are of two kinds: those relating to the functional aspects of the site and those relating to the concept and purpose of the institution. The former are discernible influences. They lend themselves to measurable surveys of space, climate, geology and soil, utilities, accessibility, direction of expansion, and peripheral physical influences. While the control of these may not always be in the institution's hands, the questions they raise can be posed in finite terms; resources can be allocated and alternative plans made.

Unraveling of the institution's philosophic goals, so that effective design programs and plans can be articulated, is a more difficult task. These goals are seldom explicitly stated; thus it is often frustrating for a consultant designer, who has not worked intimately with an institution, to understand or appreciate the ways and means by which decisions affecting his design are made.

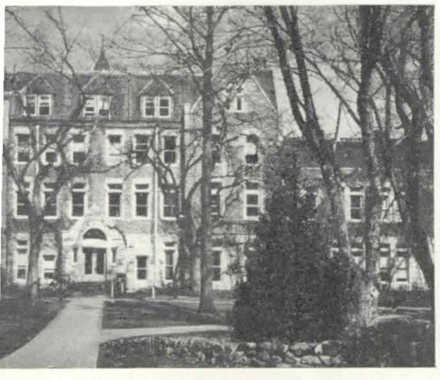
Among the functions and activities which deserve attentive regard in planning and programming are: the kinds of functions and activities to be sponsored and supported; the balance between male and female and upper and lower divisions enrollments; academic requirements; the sensitivity of the institution to the legislature in the case of a public college, or to the trustees in the case of a private school. The resolution of such concerns rarely lies in the hands of the consultant, no matter what his mandate might be, though he is often a catalytic force which brings about a consensus. Even in a strongly centralized administration it is inherently part of the academic convention to support the autonomy of individuals, departments, and colleges. Thus institutional mores, not necessarily the consultant's best judgment, will occasionally dominate an assessment of a design proposal.

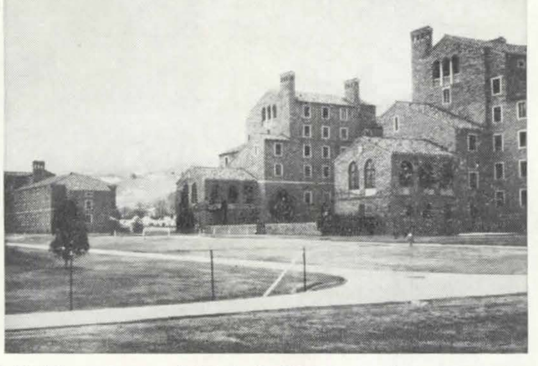
With the need for information, direction, and action so pressing in the rapid expansion which institutions are experiencing—while still wanting to preserve their traditional system of checks and balances—many colleges and universities are turning to the planning process as a device for effectively reaching all members of the academic community and bringing their dreams, ideas, thoughts, ambitions—even complaints—to bear on the problems of design. The technique involves a continuous review of any course of action in the light of long-range goals as modified by changing means and ends. As a start, an over-all prognostication of potential growth and development is made and problem areas of the existing plant are pin-pointed. Present and future needs are then weighed and evaluated, and resources are allocated in priority of implementation.

Homogeneous Style

No one should seriously question whether the institution's educational policy affects the concepts of campus design, both in the larger sense and in detail. An excellent example is the planning and programming of the Air Force Academy 2. The ephemeral and fanciful were eliminated from the beginning. Changes in level, connections between academic, residential, and student service areas, the relationship of the site to its environs—elements which could have been treated in a more gentle manner—have been strikingly and directly formed and shaped by Skidmore, Owings & Merrill into a monumental pattern that superbly reflects the militaristic character of the institution.

The Air Force Academy falls into a category of style that can be called *homogeneous*. It is a mannerism conceived as an entity, with aluminum, steel, and glass meticulously joined together into a geometric pattern reflecting the highest standards of technology.





1 *Monotony through repetition: old* (left) *and new* (right) *buildings in the same style and materials at the University of Colorado in Boulder, Colorado.*

The conditions and restrictions of design permeate all this thinking. Plans are made not only in terms of budget and administrative directive, but also in designation of land uses, building zones, circulation systems, and landscape development policy. Positions on architectural design and siting are often taken. Flexibility—in opposition to rigidity—is sought.

The plans and policies are continually used as frames of reference against which day-to-day decisions, events unknown at the time of the plan, can be appraised. To work well, planning must be a full-time responsibility of some member of the administration. By adding outside specialists and consultants to solve specific design problems, universities and colleges can begin to avoid the expense of the hit-and-run technique that has left so many splendidly conceived architectural plans of the past decade completely out of phase with the demands of the times.

Similarly homogeneous is Foothills Junior College 3, though the mannerism is of another kind. The architects Ernest J. Kump and Masten & Hurd, and our office as landscape architects, hope that here wood and stone, a consistent scale, the integration of landscaped open spaces and the hilltop, the subtle balancing of aerated water, sun, and shadow combine to form a unity.

Heterogeneous Style

The above examples were given a shape and form in a moment in time. They are in distinct contrast with two other recent campus designs, Mexico National University 4, planned under the general direction of Carlos Lazo, and Brandeis University 5, under Max Abramovitz, which also were designed within a relatively short period of time, but which are *heterogeneous* in style. They too are cited by many critics as being reflections of the best modern architecture available. Individual buildings are distinct entities. If the focus of attention is on style alone, one has to mention that the richness of texture, color, and form lacks a background context to set off so many jewels.

The Historic Question

Should the style be homogeneous or hetrogeneous? This problem becomes more acute when the historic question is posed: how to meld old and new styles on existing campuses. Because the physical form of the institution is a vehicle for transmitting continuity and change, and is recognized as one of the mirrors of culture, the question of style (i.e. characteristic expression) cannot be brushed away in the hope that function alone will determine form. In attempting to find a rationale for dealing with the issue of style, the university or college administrator is faced with the stale praise of the public relations sycophant. He is told that this man's work or that firm's approach is "timeless architecture"—an expression the profession should exscind from its vocabulary since it contradicts cultural and intellectual history. As observers have noted, the verities of the situation seem to be:

1 Modern architecture has not yet created a universal symbolism with the directness of communication that has been ascribed to the Gothic, Neo-Classic, and Georgian forms.

2 There appears to be little consistency in the creation of style in institutional architecture today. The "skin" façade that followed World War II is quickly being supplanted by a more plastic art. Textures, color, and an involvement with non-rectilinear shapes are creeping back into the design vocabulary. The esthetics of the "action" school of painting may be an influence; in any case it seems that this month's vital image is next year's stereotype. While many a gem is created, the backlog of dependable, if pedestrian, architecture that is needed in any campus is sadly absent in the contemporary tradition.

3 There is little chance for a return to the historic styles even if the institution wanted to turn its back on the new plastic arts. The reasons are simple: the cost of construction is not competitive with contemporary architecture; maintenance costs on such older forms are prohibitive; the craftsmanship is no longer available.

2 *Elimination of the fanciful: aerial view of US Air Force Academy in Colorado Springs, Colorado.*

Photo: Dwain Faubion

3 *Consistency of design: model of proposed Foothill College at Los Altos, California.*

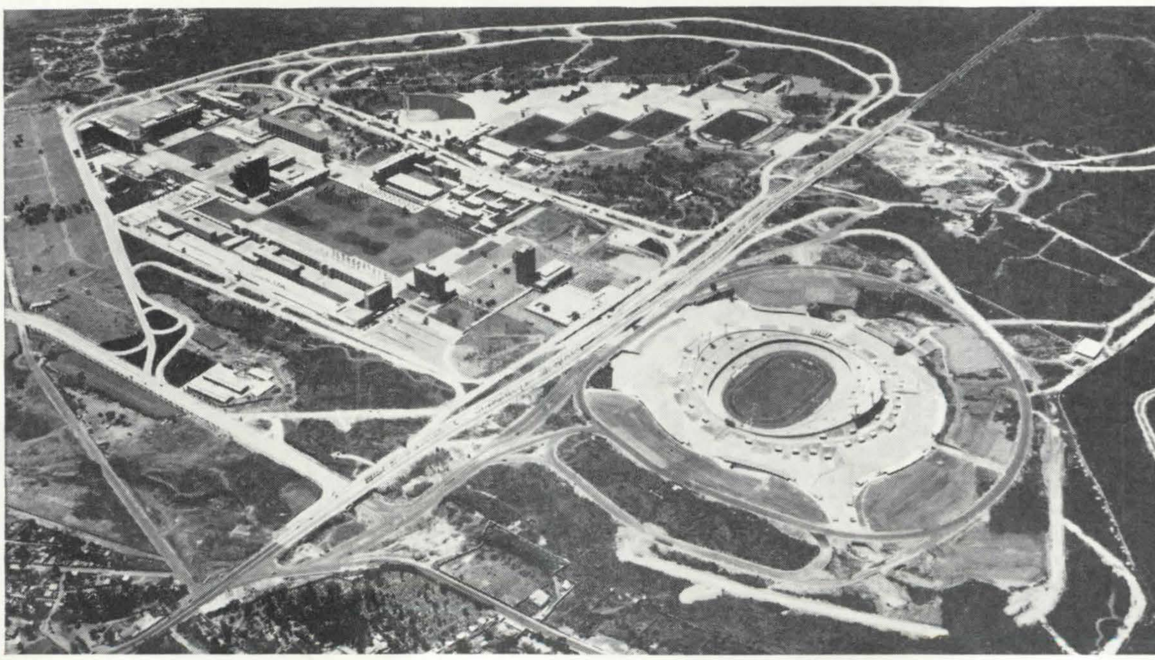
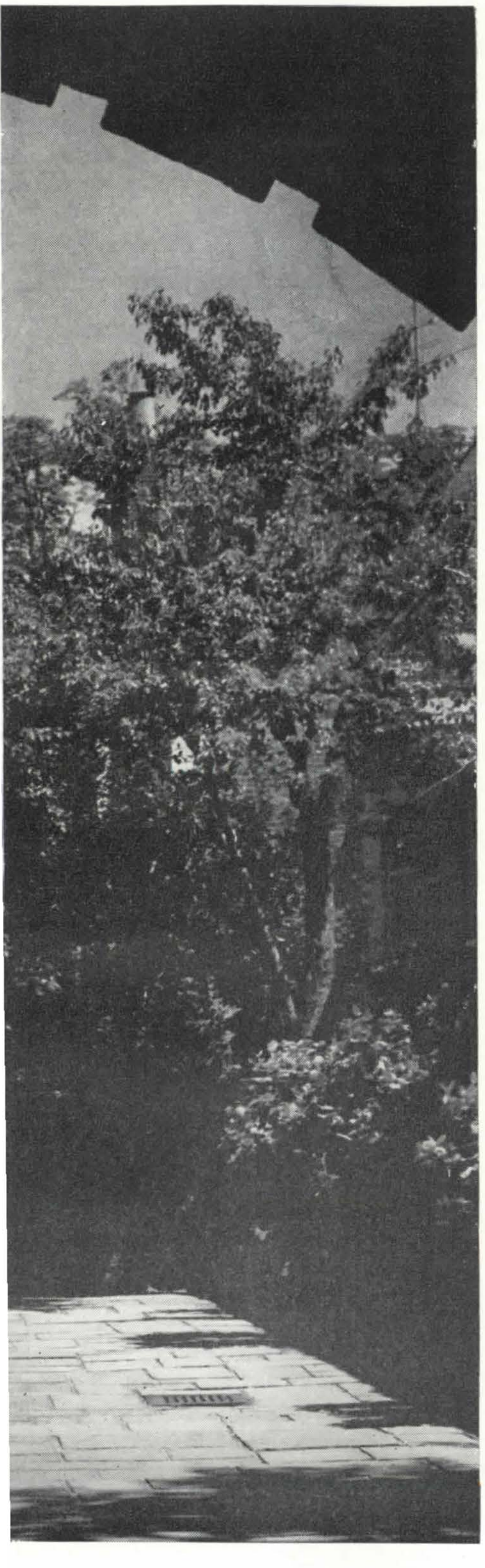


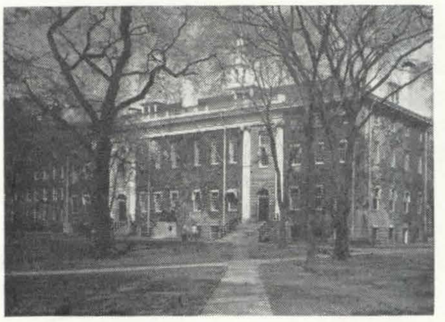
Photo: Cia. Mexicana Aerofoto, S.A.

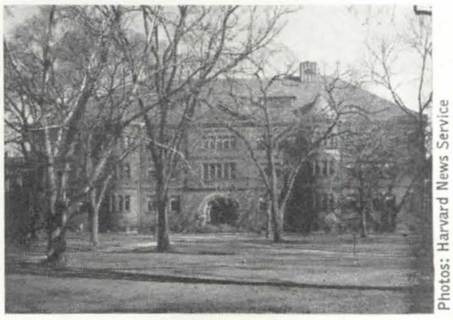
4 *Heterogeneous entities: aerial view of National University at Mexico City, Mexico.*

5 *Lack of background context: existing and proposed buildings at Brandeis University in Waltham, Massachusetts.*

Photo: A. Dev







Photos: Harvard News Service

6 *Disparate styles side by side in harmony and consonance: view towards Harkness Tower at Yale University* (left) ; *University Hall* (above left) *and Sever Hall* (above right) *which face each other across the Yard* (right) *at Harvard University.*

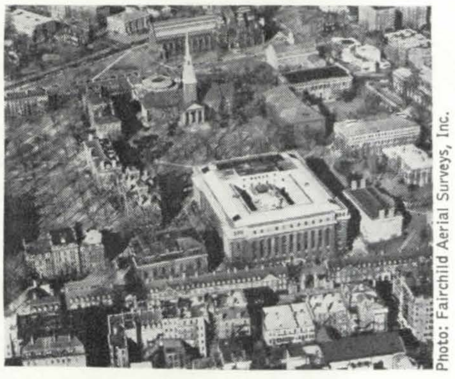


Photo: Fairchild Aerial Surveys, Inc.

In homogeneous campuses that have retained a consistency of traditional style over a period of time, there are the added problems of diluted architectural concepts as newer buildings are added to the old, and the increasing disfavor with non-flexible buildings, particularly for engineering and science facilities.

The University of Colorado 1 administration has stated: ". . . architectural styles that were excellent solutions for smaller campuses may become monotonous when repeated over and over for a campus many times the size of the original conception."

There is no simple solution to the historic problem, nor is there a single answer to questions of choice of homogeneous or heterogeneous styles. However, insights, perhaps even the keys to transmutation, may be discerned in an examination of institutions which are centuries old. Among these are Harvard and Yale 6, collections of buildings which carry the full history of architectural style in America. Disparate styles have existed side by side in harmony and consonance on these campuses because:

1 There has been a respect for scale, especially in elements such as roof lines, massing, corner-to-corner building relationships, fenestration and doorway treatments.

2 There is a general consistency in the selection of materials, creating a series of design recalls and themes.

3 In the siting of buildings, full respect has been given to the neighboring buildings and environs. There is no shadowing or crowding out.

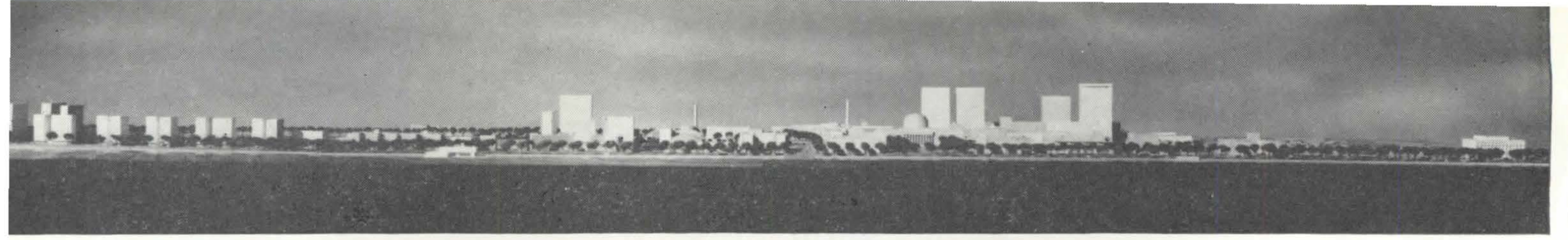
4 Of its kind, each building is a first-class example of the craftsmanship of the period it represents.

5 Spaces around buildings are well arranged and ordered so that unity and commodity go hand in hand with the esthetic sensing of the space.

6 Elements of landscape are judiciously placed to complement the architecture, control the flow of traffic, and strengthen the spatial sequence.

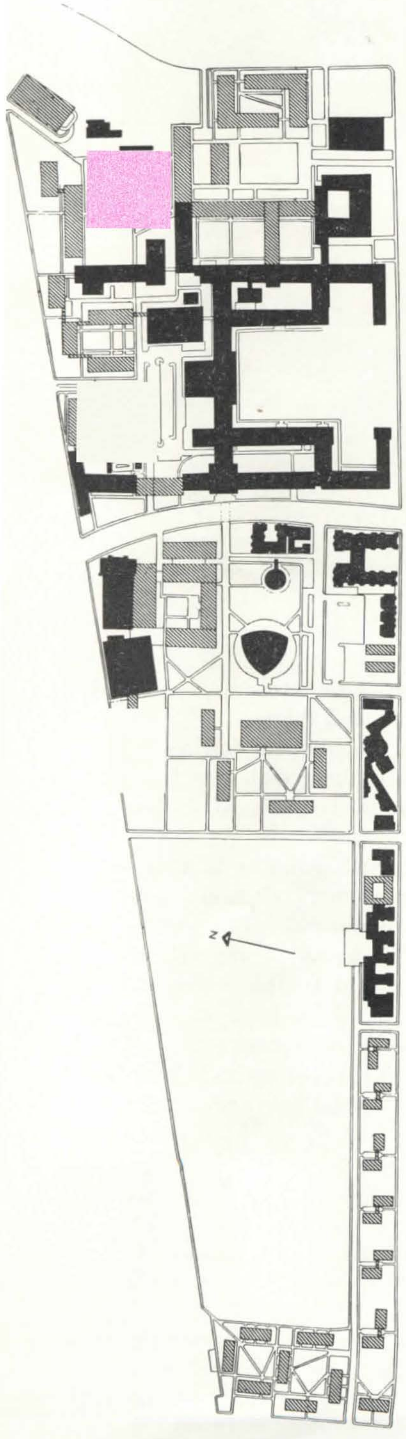
Do these clues as to how to handle style have universal application? Will they be applicable in the decades to come when today's bright modernity is to be replaced with the unknown?

I believe so, for even the genius designer, inventing new forms and solutions, would probably ground his ideas in the above principles. Moreover, an extreme stylistic solution may work well only where the institution's goals and means for achieving its ends are rigid. This is an exceptional instance and, fortunately for those colleges and universities which cannot afford to risk their resources on a building or plan which is experimental, a less radical approach



7 *Urban character in campus forms: the new Master Plan* (below) *for MIT at Cambridge, Massachusetts. Existing buildings are shown solid black, proposed buildings are cross-hatched. Student residences surround the play fields at the west end of the campus.*

Photo: Ezra Stoller



to style need not be a compromise of artistic integrity, as illustrated by the buildings presented in another section of this issue of P/A.

Closely related to style is the question of form. Although some estheticians can't intellectually separate one from the other, it should be noted that the discussion of form in this article relates to the perceptual quality or collective identity of the campus. This can be readily grasped if one thinks of campus form in terms of a series of abstracted opposites such as: vertical versus horizontal; unified versus decentralized; integrated versus insulated. The permutations of such variables are endless, and few campuses are purely one or the other. The descriptions that follow are but a few examples of the kinds of situations designers and planners are facing in their search for form.

Reaching for the Sky

A move towards verticality is seen in the concentrated institutional development along the Charles River in Metropolitan Boston. Harvard, MIT, and Boston University face similar expansion problems. Applications for enrollment are the highest ever and the present physical plants are at capacity. Duplication of facilities in the shape of satellite campuses has been rejected as a planning alternative. Adjacent land is either not available in the quantities needed for a horizontal expansion of the projected building programs, or the cost of land acquisition is unreasonable. Thus, severely limited by lack of land, the campuses are changing their earlier scale and reaching for the sky.

Sert, Jackson & Gourley's preliminary scheme for Boston University 8, for example, calls for a series of towers to be placed on key development tracts, sited and composed in relation to the University skyline and to the view from adjacent Charles River amenities.

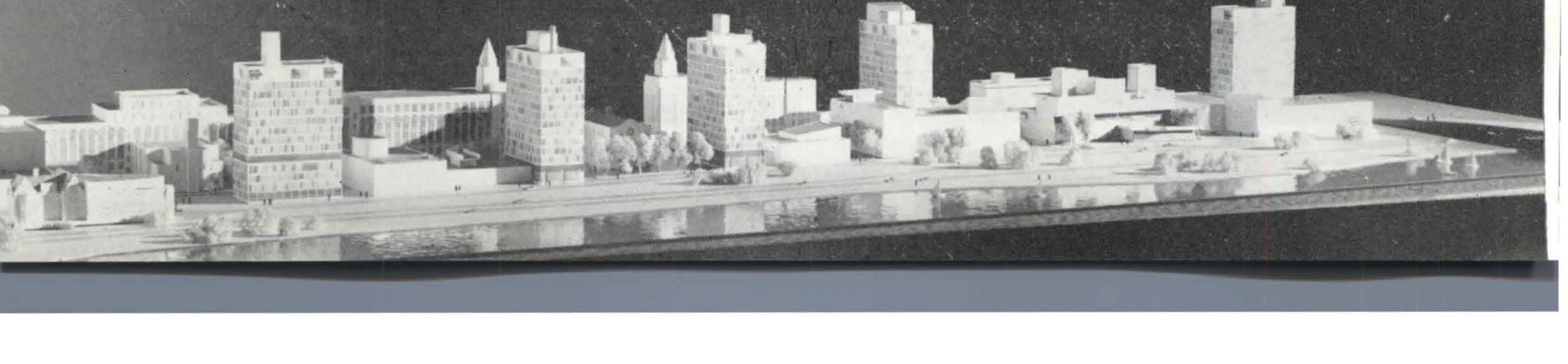
Across the river, MIT's planners and designers (the Long-range Planning Committee and our office) were faced with a similarly narrow site, sandwiched between the Charles River and the B. & A. Railroad 7. Existing play fields had to be preserved, and planning policy directed that most on-campus functions were to remain where now located.

The solution presented to the administration and used for their Second Century Fund drive divided the campus into three parts: the academic precinct on the East Campus, the residential area on the West Campus, and the auditorium, chapel, student union, and physical education facilities located between the two. Residential and academic expansion is to be contained in a series of towers and slabs as shown on the model. Residential buildings have been advantageously sited between the play fields space and the Charles River.

On the East Campus, long-range academic expansion will take place in tall structures; some of these will replace lower-density facilities when these uses can be housed elsewhere during the transition phase.

Though capitalizing on the potential of slabs and towers, the planners did not forget the symbolic domes of MIT, and the new arrangement of buildings will give these architectural features a handsome setting. Special attention was given to the treatment of the ground plane. Linked courts and pedestrian ways, embellished with landscape elements appropriately recognizing the urban character of the campus form, will soften the impact of the vertical scale.

8 *Series of towers: model of a preliminary scheme for the expansion of Boston University campus in Boston, Massachusetts.*



Unity of Form through Land and Program Planning

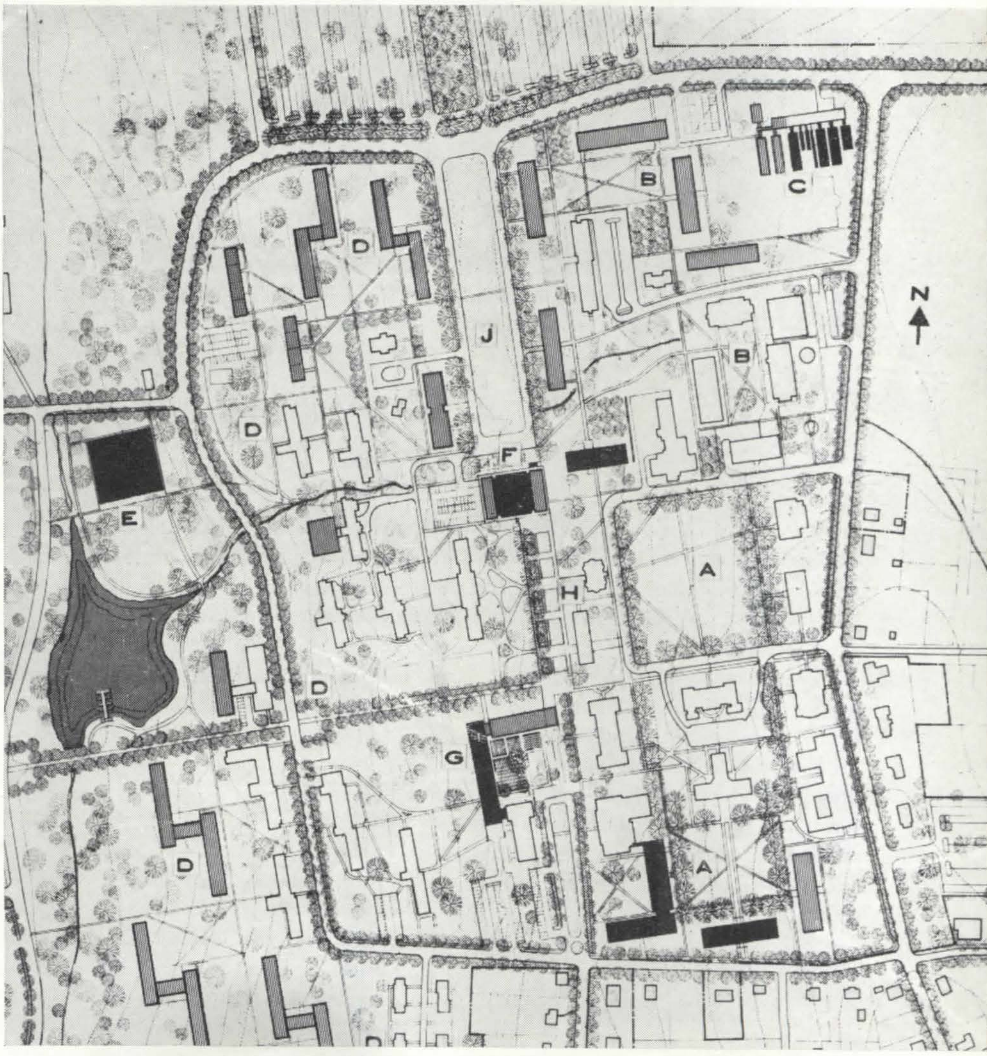
A common design problem is the tying together of parts of the campus into a design unity. We are planning consultants for the University of Rhode Island 9, where a two-phase development program was used to bring order and coherence to a campus form that had lost much of its earlier design structure as new facilities were built at a rate not previously experienced in the University's history.

Fortunately the intrinsic campus design had been recognized by Charles Eliot a half century ago when he suggested that the academic buildings be sited on a north-south plain, with residential facilities on the westward slope, and agricultural and athletic plots at the base of the incline. The advice was held to, but the plan remained uncompleted.

The problem of finding sites for double the existing amount of building space, plus finishing the fifty-year-old scheme, was compounded by the necessity of designing a circulation system that would adequately service the first development phase and also be manageable when the University's front door would be reversed 180 degrees northward on completion of a major highway north of the campus six or more years from now.

As shown in the illustration, the central campus will be filled in with new academic buildings in phase one. For the same construction period a new core was designed as the nexus of the academic and residential sectors. The core will include a new library and additions to the student union—the latter on the south end of a landscaped mall, the former on the north end. Key student administration buildings will be located along this pedestrian way. A loop road is planned to service the existing and proposed buildings.

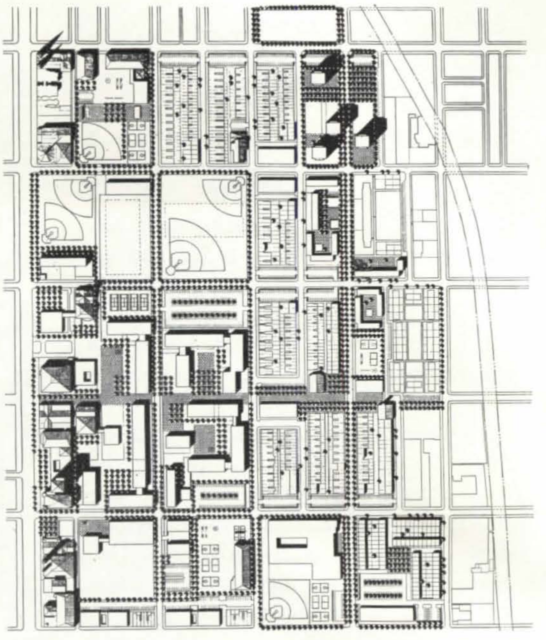
During phase two, buildings will be added to the engineering and agricultural precincts, which have already been started north of the old quadrangle. When service and parking demands rise, additions will be made to the phase one loop, including another major mall which becomes the University's automobile front door. Through traffic will be kept out of the academic precinct, and no automobiles will cross the core. As at MIT, pedestrian movement will be channeled through a sequence of landscaped open spaces, each distinctive, yet connected to each other to form a whole.



9 *Tying of parts into a design unity: Master Plan for the University of Rhode Island at Kingston, R.I. Existing buildings are shown in outline, phase one in solid black, and phase two cross-hatched. The plan proposes additions to the academic core* A, *and additional buildings for engineering* B, *agriculture* C, *residential use* D, *and athletics* E. *A new library is located at* F, *additions to the student union at* G, *a pedestrian mall at* H, *and an automobile entrance mall at* J.

Photo: Rebman Photo Service

10 *Two use areas tied together by a plaza* (circled in photo); *model of proposed development for the University Circle area in Cleveland, Ohio.*



11 *Capitalizing on existing urban elements: Temple University and the adjoining area in Philadelphia.*

By 1975 the University of Rhode Island campus will no longer be a mosaic of mixed uses. The central core will be the heart of the campus, serving residents as well as commuters. In order of intensity of use, academic, housing, and field spaces will be arranged in bands away from the core. By carefully using each program increment in conformance with the master plan, the central campus form will seem complete to the pedestrian after the first five year program, and the rest of the campus after construction that follows.

Unity through the Use of an Architectonic Element

University Circle 10 in Cleveland is one of the world's largest institutional clusters. Colleges, universities, museums, and hospitals are interspersed among housing and commercial structures. The consultants (Adams, Howard & Greeley and Anderson, Beckwith & Haible) organized the major uses into two groups: an academic-medical zone and a public leisure-cultural center. Planning criteria dictated an urban-scale, integrated campus form, with town and gown harmoniously joined together. Even with planning controls of use areas, ground coverage ratios, the location of open spaces, and the articulation of circulation systems, the size of the area weakened the feeling of integration. Therefore, as a symbolic and functional link, the consultants designed a plaza tying both use areas. This will allow an uninterrupted pedestrian movement across heavily traveled Euclid Avenue and also provide convenience facilities such as bookstores, restaurants, and meeting rooms.

Insulated Campus Form

The economic necessities and historical land use patterns that were fused together in University Circle were considered incompatible forces in our development of the Goucher College Master Plan 12. One of our goals—the plan included a full analysis of the site's development potential, including specific recommendations for future building sites—was an insulated campus form.

In the late 'Thirties Goucher had deliberately moved from Baltimore to the quiet open lands of Towson. After World War II, the expanding urbanization of the Baltimore metropolitan region gave Towson a dramatic share of new construction. Goucher found itself again surrounded by developed land. As can be seen in the diagrams and maps, the institution's amenities gradually crumbled under the encroachment of highway construction and other uses. Having identified this problem, we advised that a buffer be planted to complete the perimeter and to insulate the campus from the environs. In addition, we suggested a campus form that concentrated buildings along the high points of the land, with play field space and dedicated woods (memorial groves are particularly resistant to capricious destruction for building sites) lying between the buffer and the various academic and residential sectors, creating a green ring around the central campus.

Other Kinds of Form Making

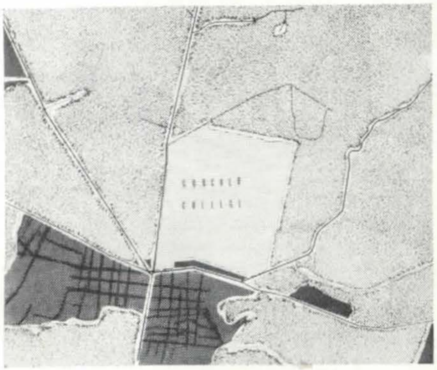
The plans cited above have been skimmed to illustrate a few contemporary trends and influences in campus design. Other significant efforts that deserve recognition are the urban development techniques used by the Philadelphia Planning Commission in its studies for the Temple University neighborhood, and William Johnson's exploratory studies of campus forms being conducted for the University of Michigan (Ann Arbor).

The Temple University 11 approach capitalizes on significant existing urban design elements in the neighborhood and the campus articulates the spatial rhythm of adjoining urban areas.

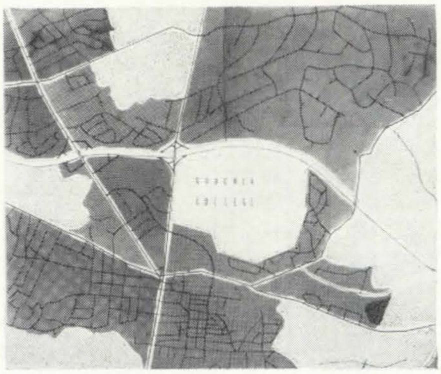
Johnson's technique involves the identification of large-scale planning and site elements which will shape and modulate the campus in the years to come. He includes highway improvements, the pattern of construction adjacent to the campus, the nature of the topography and the site, and the problem of accessibility between parts of the campus. Sub-

12 *Insulated campus form: Master Plan for Goucher College at Towson, Maryland.*

In 1938 Goucher was in the open on the outskirts of Towson.

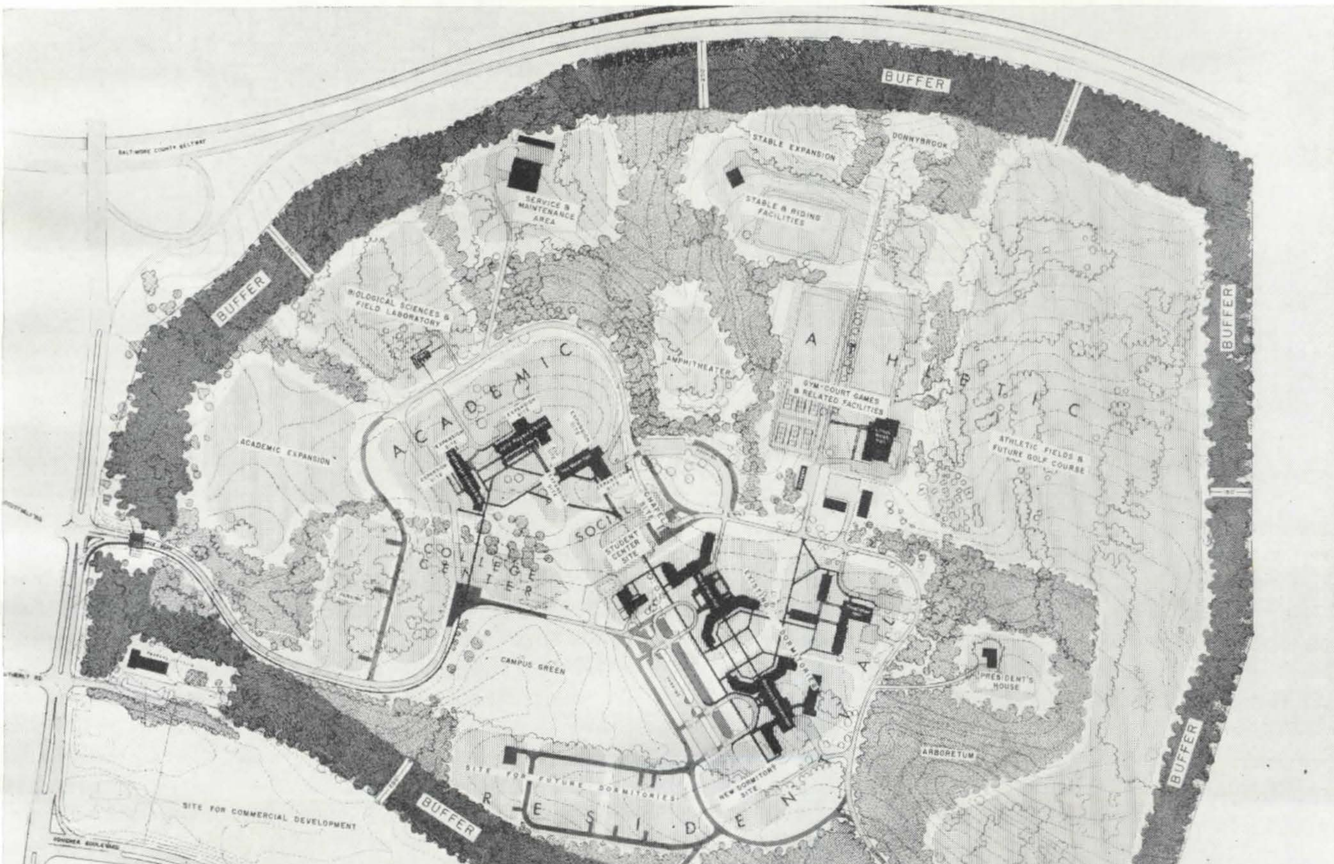


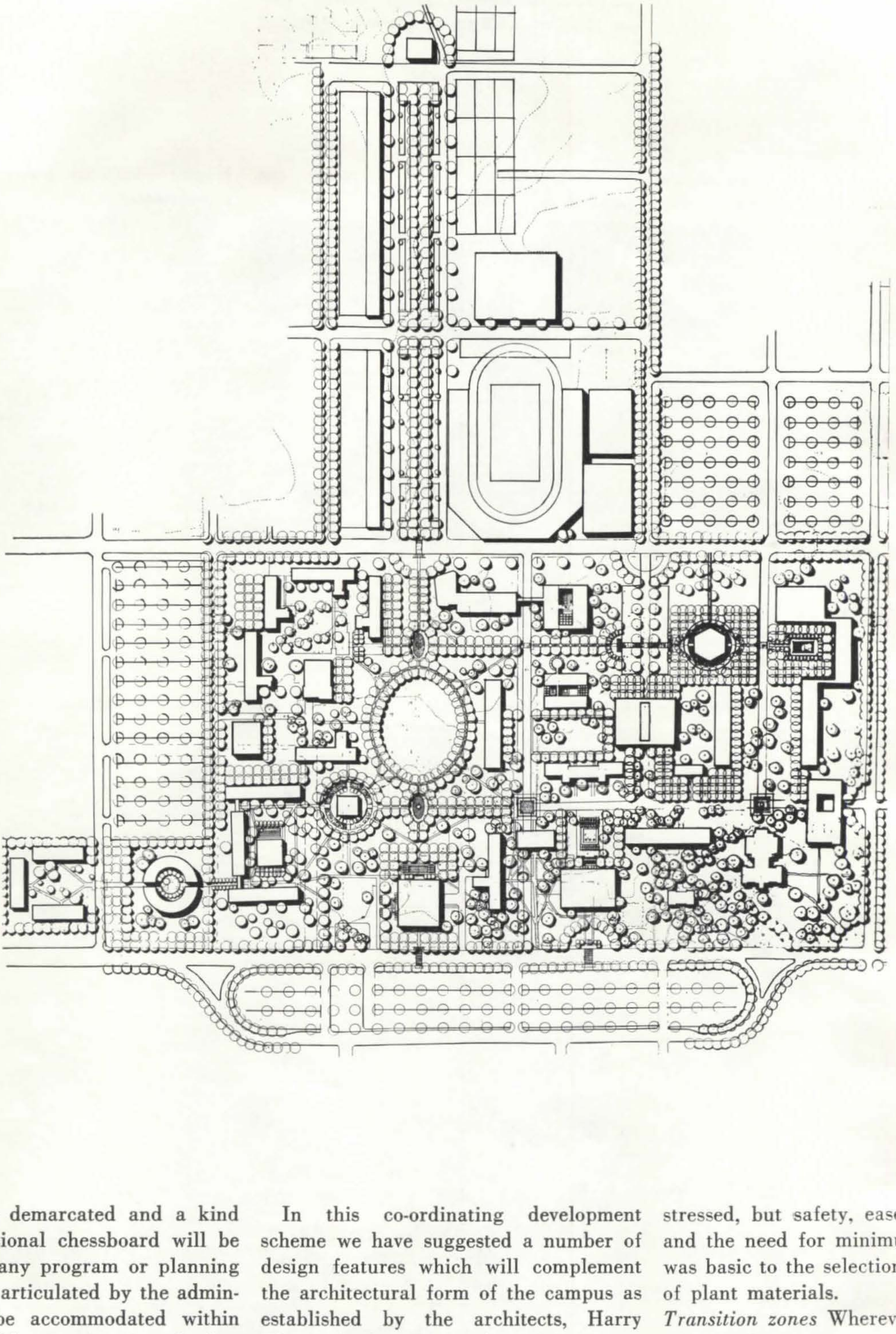
By 1958 built-up areas completely surrounded the campus.



Present conditions indicate dangerous encroachments.

Proposed Master Plan showing a planted buffer to insulate the campus from the environs.





sectors will be demarcated and a kind of three-dimensional chessboard will be set up so that any program or planning moves that are articulated by the administration can be accommodated within the many variable site situations he has established. Most importantly, the consequences of any such move can be readily evaluated in terms of what such an action does to the rest of the campus.

Landscape and Campus Form

As one of the most economic means of establishing a campus design form, landscape development plans are gaining much favor among institutions. They hold together various architectural styles and esthetically enrich the environment for learning. Our landscape plan for Drake University **13** is a case in point.

In this co-ordinating development scheme we have suggested a number of design features which will complement the architectural form of the campus as established by the architects, Harry Weese & Associates. A major recommendation is an outer screen of pyramidal street trees to pull together the peripheries of the campus and to contain the space within. This screen is punctured at certain points and landscape elements arc composed to form a series of gateways. They vary from place to place, falling into three categories depending on their use:

Functional gateways Where traffic has to enter utility spaces such as parking lots and service courts, the line of trees has been interrupted to clearly mark the entrance. No special design effect was stressed, but safety, ease of circulation, and the need for minimum maintenance was basic to the selection and placement of plant materials.

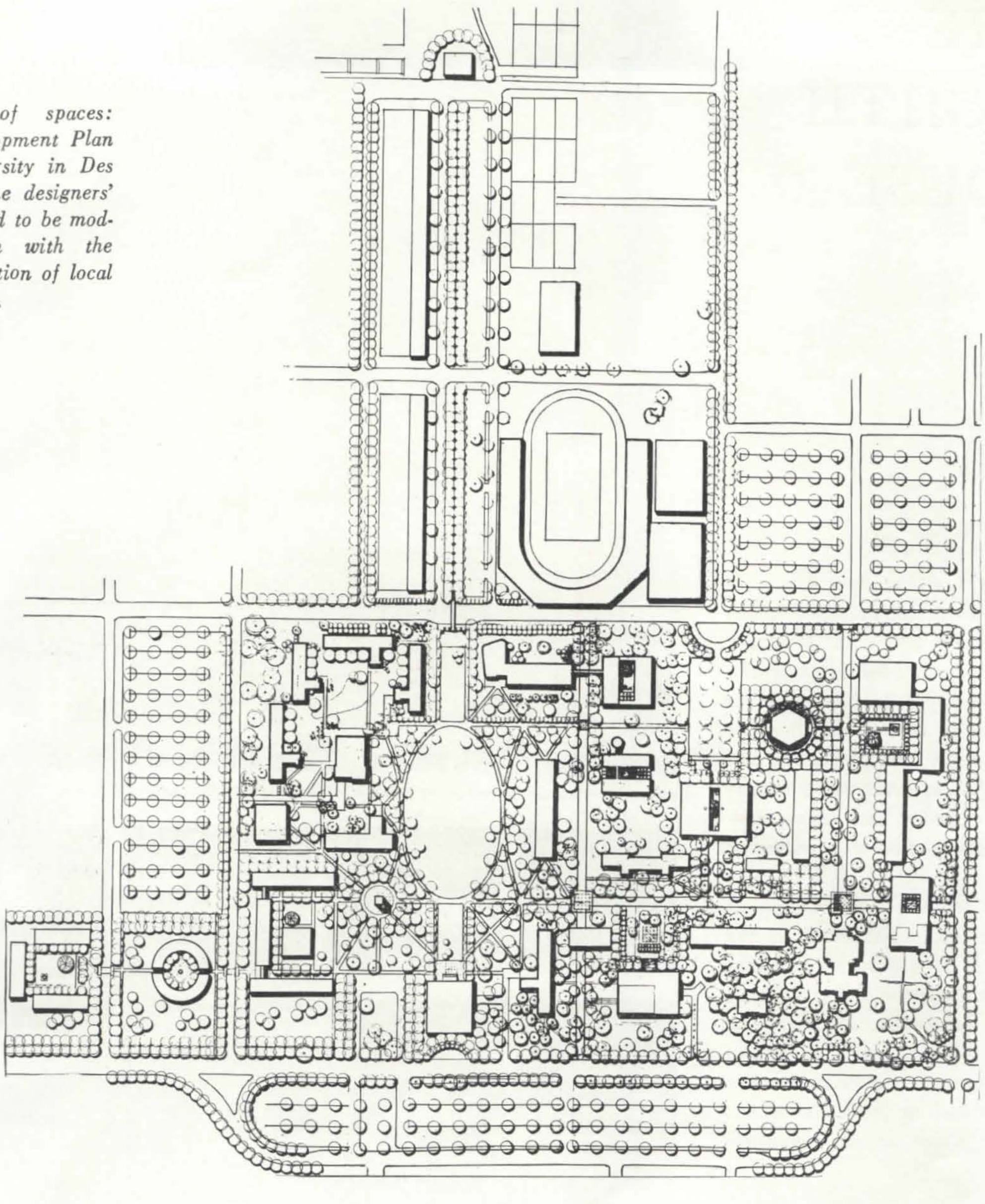
Transition zones Wherever major pedestrian traffic movements cross, design recognition of these points was achieved by changing ground plane textures or through the use of plant materials. At street intersections cross-overs were provided.

Symbolic gateways Builidngs used by the public were given prominence by changing the character of the outer screen and by manipulating the vistas and landscape materials.

Functions and Spaces

The Drake master landscape plan points out another aspect of campus form that

13 *A variety of spaces: Landscape Development Plan for Drake University in Des Moines, Iowa. The designers' concept* (left) *had to be modified to conform with the client's interpretation of local traditions* (right).



is a universal design problem. As an academy of learning, the institution must accommodate and provide for a variety of facilities that are usually compartmentalized and separated in other life situations. Rarely today do people eat, sleep, and work in a single environment.

To afford opportunities of physical and psychical relief from a demanding and occasionally restricting communal life, a campus plan should be designed to include a variety of spaces related to predictable academic and other activities. A plan should include large, friendly, and inviting open spaces around the student unions and dining halls. Quiet spaces should alternate with active spaces in the residential sectors. Some spaces should be suitable for small groups, but not for crowds; some should be in the shade, some in the sun; some grassed, and some terraced.

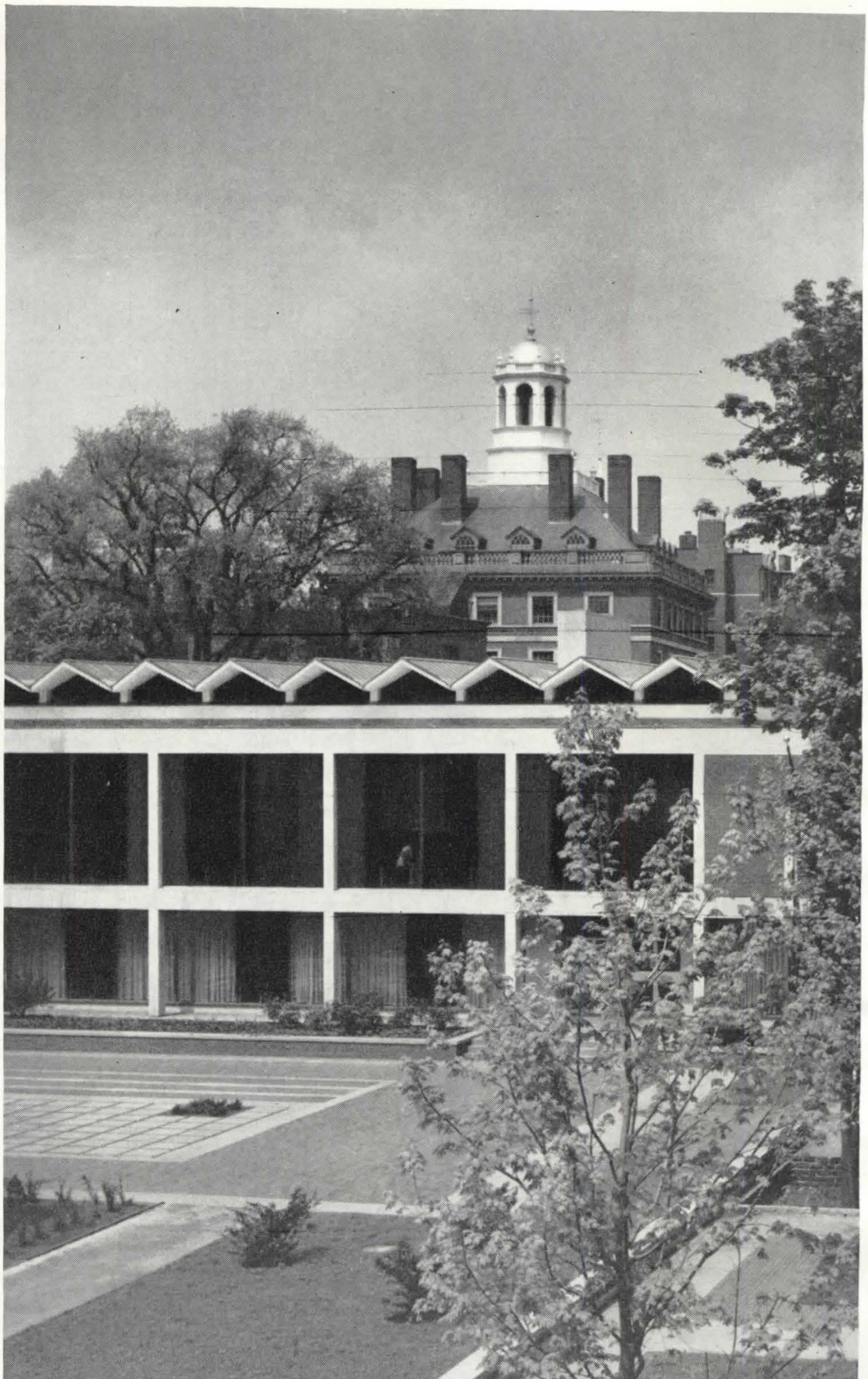
A special open space should be planned and designed as a focal point in the campus form. It should functionally and symbolically hold the campus together. It has been called in the past the "Yard," the "Green," or, affectionately, "Old Quad."

Should it be a new element in an old campus, the design of this space is best grounded in the roots of the institution's traditions. How it may differ physically and yet functionally be the same can be seen in the evolution of the Drake landscape plan.

The preliminary scheme envisaged a disciplined design treatment. Spaces were tightly knitted and held together by a geometric pattern. After some discussion, the University's administration decided to direct the constultants' aim towards a more relaxed landscape, and the major space was finally designed as a meadow—an echo from the earlier days of Drake and Iowa. Here again the peculiar nature of institutional design comes to the surface. As a nexus the formal space would have served the campus form well. The softer form will be built, for the tradition it represents was not imposed by the consultant, but rather developed from the institution's own symbolic needs.

Thus, as implied in all the generalizations made in this article, adaption not adoption, resourcefulness not retrogression, integrity not imitation, will in the end meld together style and form into a reasonably viable campus design.

THE EIGHTH HOUSE



Photos: Gottscho-Schleisner

"An Architectural Revolution was certainly necessary to break the conventional stalemate of the 20's and 30's, but when success was achieved most of the profession, instead of consolidating their gains and weighing and evaluating the various revolutionary philosophies, and distilling out of them what was permanent, and rejecting what was trash, continued their preoccupation with inventive originality.

"Really great architecture cannot be achieved by revolution but must in the end be the result of a process of evolution where the excellence and quality of each step can be compared with the step before and from there back to the great things of the past. Excellence is not spectacular or novel or fashionable but it remains, and there is no substitute for it.

"In working for an institution with a distinguished historical background and buildings representative of different styles and times, the architect has a special professional responsibility. He cannot go all out experimenting with novel forms and fads, but must discriminate thoughtfully between the different phil-

osophies and phases of contemporary architecture to be sure he uses only those that will stand the test of time. Furthermore it is not proper to subject these institutions to the high obsolescence factor of experimental structures or those that cater to passing fashion. Much of this type of modern has aged poorly and is soon outmoded.

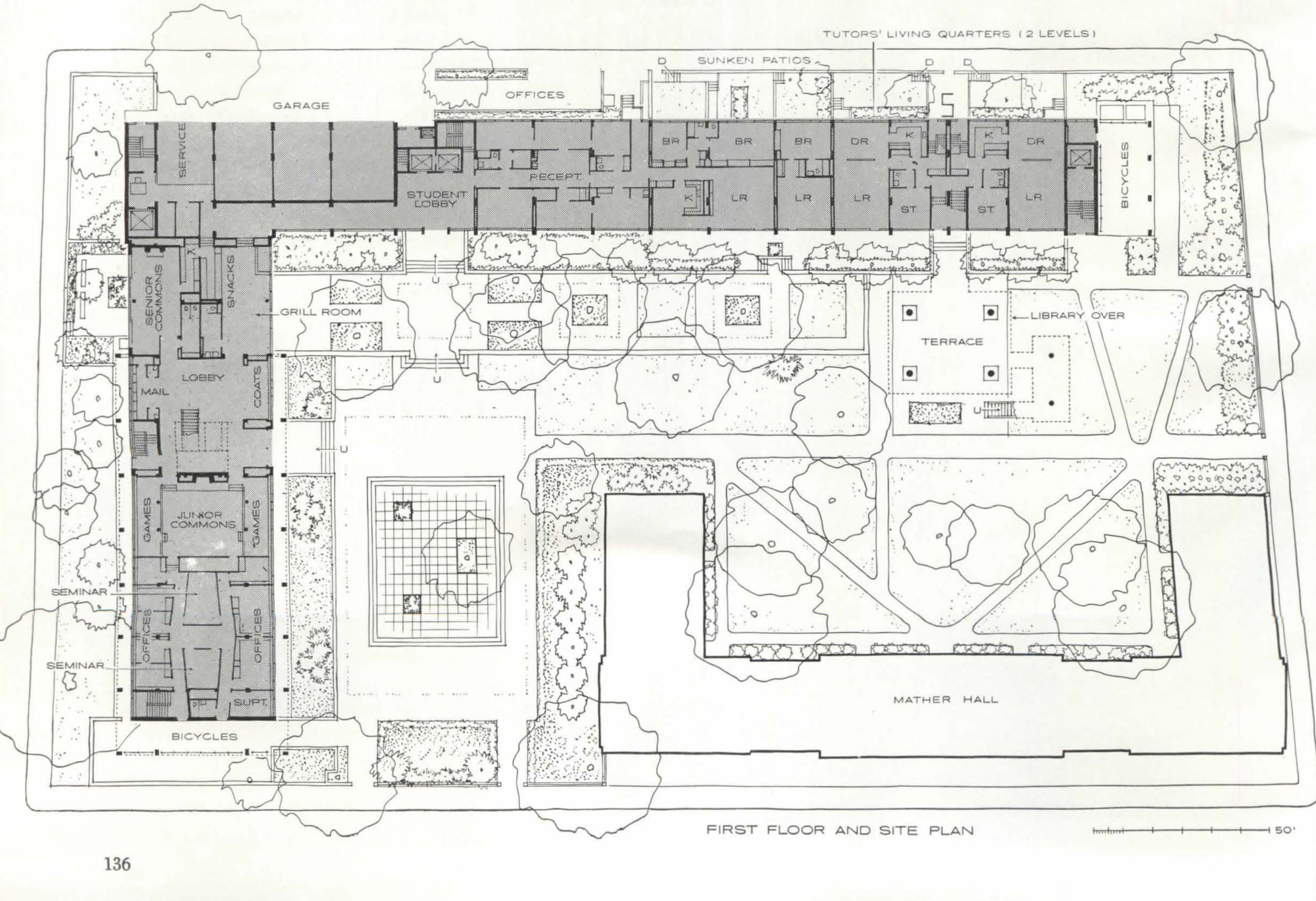
"If we figuratively lift our eyes and try to imagine our building fourth-dimentionally, see it in its relation to past and future as well as present, we may find we shall break one of our cherished rules of technocratic or esthetic morality, and, as artists, liberate it from being too grim an example of the Strong Statement or the Pure Solution. After all, our cherished rules are not static, but are always changing as our architecture develops, and if we tie ourselves to a formula we very soon find we are left behind and on the defensive in the onrush of new concepts that are flooding in on us from all sides."

Excerpts from a statement to a prospective client by Henry R. Shepley, designer of Harvard's eighth House, the Quincy House.

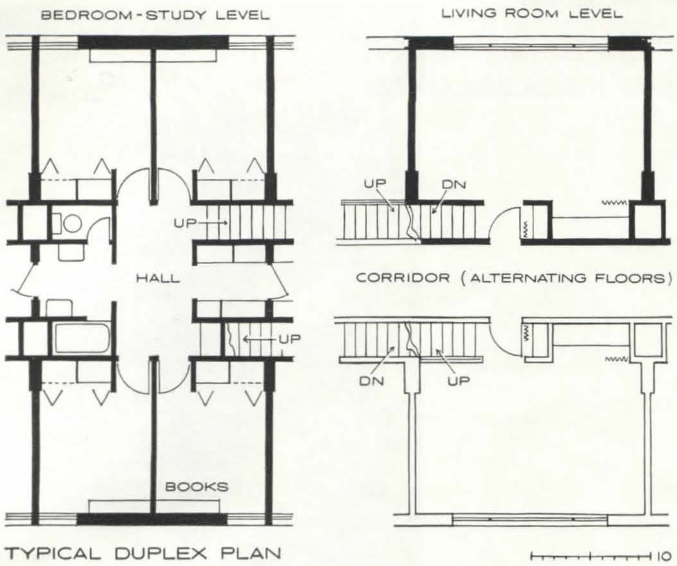
QUINCY HOUSE, HARVARD UNIVERSITY, CAMBRIDGE, MASSACHUSETTS • SHEPLEY, BULFINCH, RICHARDSON & ABBOTT, ARCHITECTS • SASAKI, WALKER & ASSOCIATES, LANDSCAPE ARCHITECTS

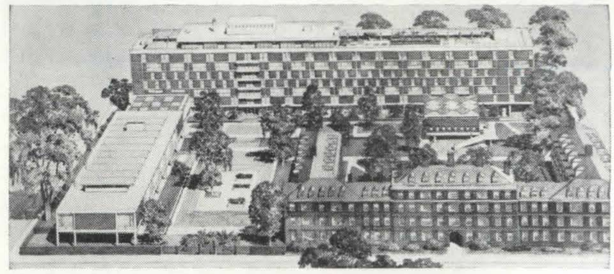
At the presentation of the 1958 "Gold Medal Award for Architecture" of the American Academy and the National Institute of Arts and Letters, Lewis Mumford said: "In Cambridge, it was the imagination of Henry Shepley that, during the dullest years of imitative eclecticism, boldly identified the new undergraduate houses of Harvard by means of white towers, capped by vivid red and azure-blue cupolas, to create from the Charles River the gayest and loveliest urban profile any American city can show."

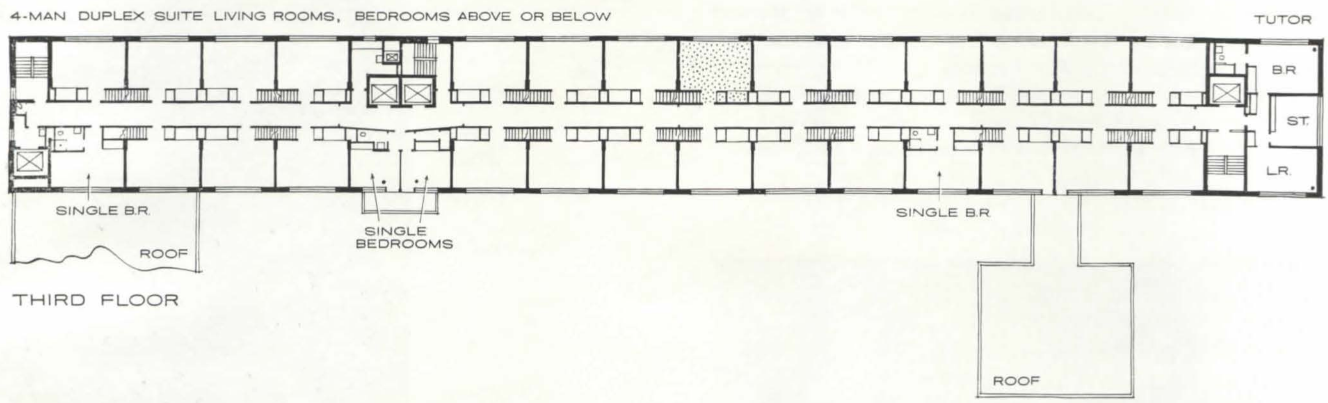
A few months ago, another under-

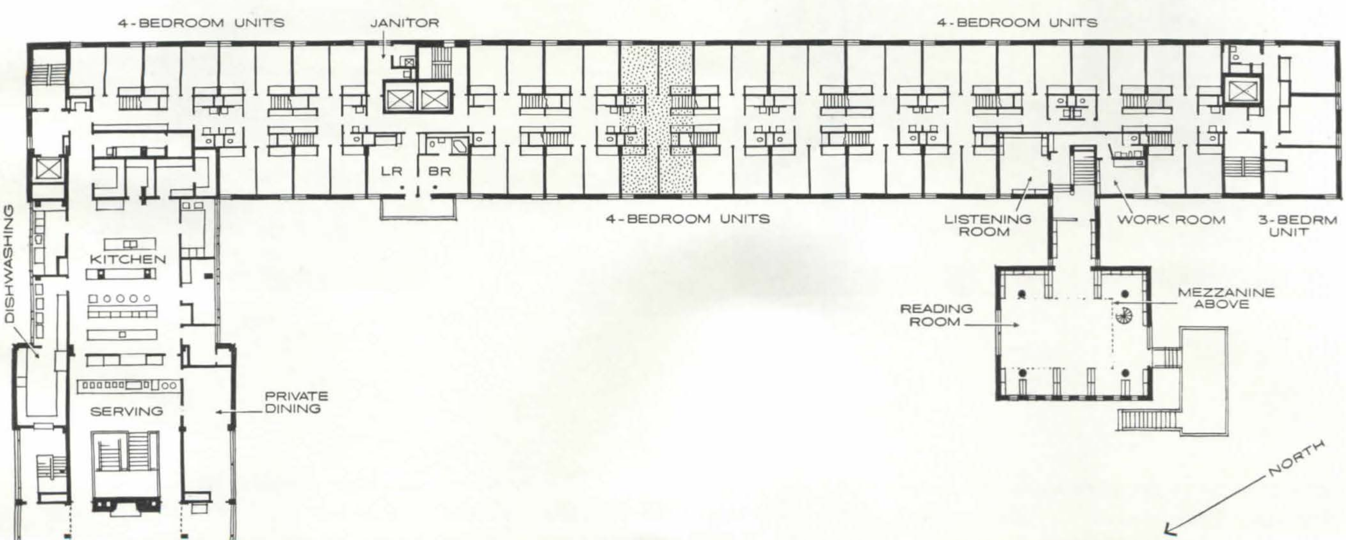


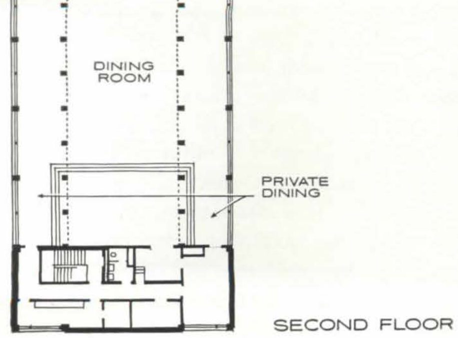
FIRST FLOOR AND SITE PLAN



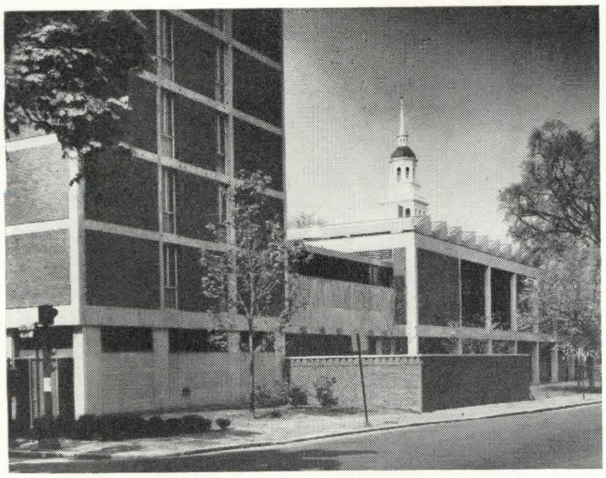


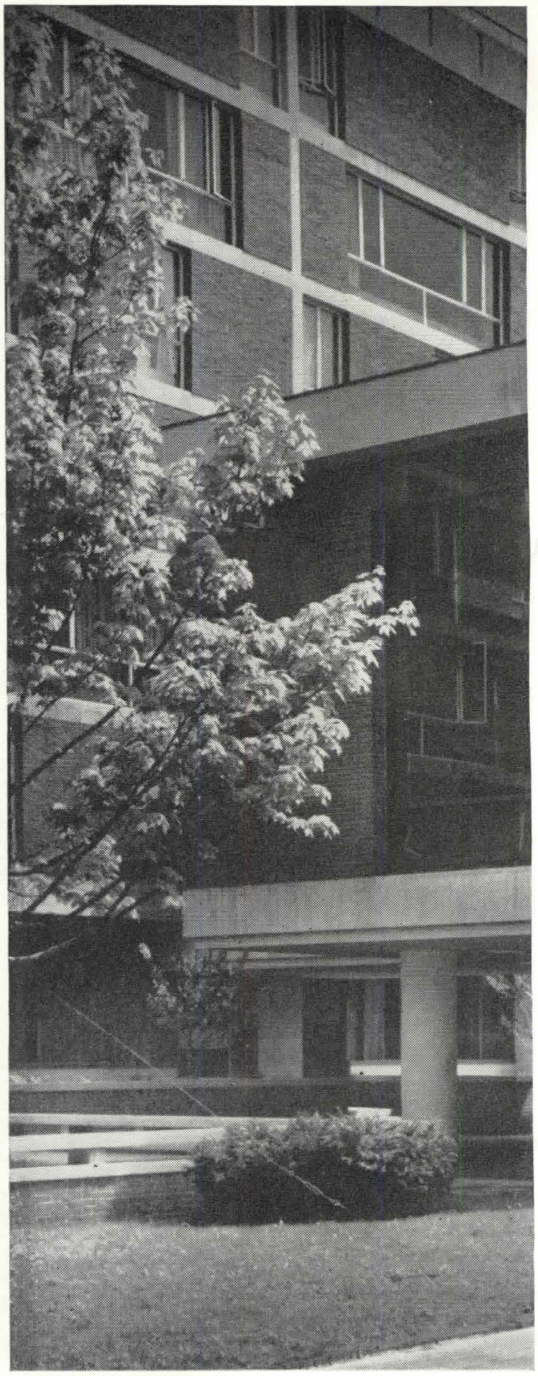




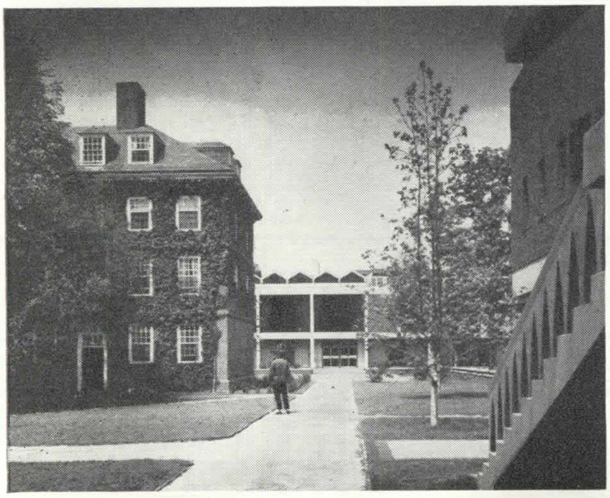


Because Mather Hall consists of many single and double suites, the new building has mostly four-man suites (three-man suites are considered an "unfortunate social set-up"). All corridors and living rooms are on the third and sixth floors. The duplex disposition of this skip-stop scheme allows for speedy elevator service, through-ventilation, and the confinement of major noise sources. Locating bathrooms at the bedroom levels achieves privacy within a suite, and allows one student to entertain while his roommates are sleeping, dressing, or studying. Fire doors from bath to bath, specially keyed and sealed, provide a second means of egress and a general circulation available for cleaning and maintenance crews.





The approach to the design of the site was similar to the architectural approach: integration of new buildings and the current methods of construction into the existing Harvard scene, yet allowing the buildings and the site to retain their own distinct character. The landscaping problem, therefore, was one of transition from the old to the new through the use of indigenous plant material and of construction materials used in the new buildings as well as those used in the past.



graduate house designed by Henry Shepley, has been added to the Harvard scene.

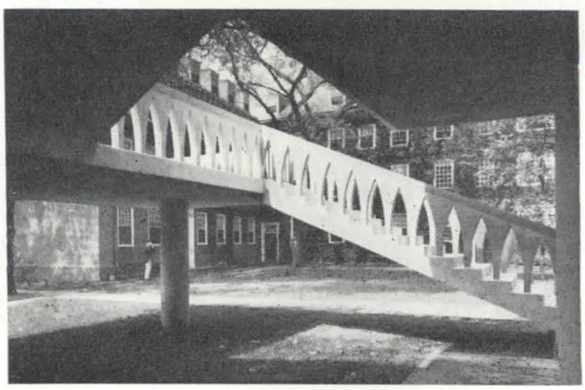
A typical Harvard "House" consists of dormitory facilities for 350 to 450 students, a large dining hall, a library for approximately 12,000 volumes, junior common rooms for students, senior common rooms for the faculty, administrative and tutorial offices, seminar rooms, game rooms, apartments for the Master and resident tutors, and accommodations for guests. The first buildings of this type came into existence in the 'Thirties when the munificence of the Harkness gift enabled President Lowell to carry out his dream of "gentlemen around the breakfast table" House System of education.

The old freshman dormitories facing the Charles were remodeled into Winthrop and Leverett Houses, the "Gold Coast" dormitories were absorbed into Adams House, and four new Houses were built: Lowell, Dunster, Eliot, and Kirkland. This elaborate program was carried out in the Georgian style by Coolidge, Shepley, Bulfinch & Abbott.

Post-war development plans called for additional Houses. As a start, Mather Hall (then part of Leverett House) and a newly acquired, adjoining block were assigned to the future eighth House, to be called Quincy House. Thus the new House inherited a building in the Georgian manner which had to be incorporated into the design. The architects were also faced with other problems: the site was smaller and the per-student budget only about one-third of the budget

for the other seven houses. Within these difficult conditions, they had to arrive at a design which would compare favorably in site layout, accommodations provided, quality of materials, and over-all attractiveness with an impressive and homogeneous group of existing buildings.

"We were convinced," they wrote, "that open space, materials, and scale were the factors on which to capitalize to achieve a House in keeping with its predecessors, yet truly modern in all other aspects.



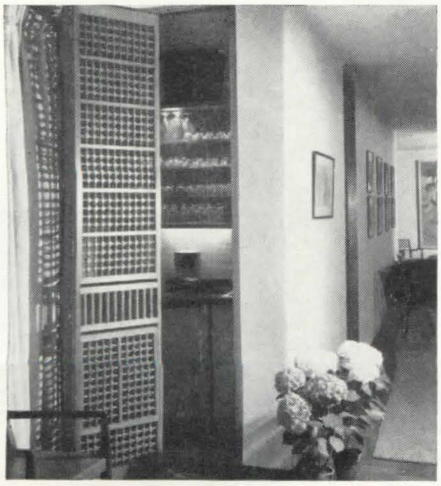
" A series of closed-court schemes were first tried as offering the maximum quiet and privacy conducive to scholarly research. Problems of junction with the U-shaped Mather Hall and general crowding of the land soon proved this approach undesirable.

"A complex of low and tower structures was then attempted with the towers taking too much ground space to be really efficient.

"Single slabs for living quarters and separate structures for common facilities were the next solution envisaged. To be satisfactory, the capacity would have had to be greatly reduced. The next step was to concentrate all dormitory space into one long elevator slab, commons and library remaining low, while the Master was housed in a penthouse. This became the adopted solution.

"The library at first was located at half-point of the main slab, then moved to the final location on axis with Mather Hall, thus creating an undulating, flowing space rather than two distinct courts, somewhat a departure from the typical Harvard quadrangle. The small north court is 100 feet wide, as is the smallest court of adjoining Lowell House, this being considered—from the start—as minimum desirable open space.

"An 8-story slab, 345 feet long, presented an arduous challenge. The student block, six stories high, was expressed as a separate entity from the Master's penthouse and the guests' and tutors' residences on the ground. A system of depressed courts was devised to offer privacy to tutors' families with children, away from the students' courts. To mini-



Interiors of all public spaces have a high quality of craftsmanship and a restrained character, conducive to study and producing an atmosphere of "gentlemanly comfort" (left).

The focus of academic and social life of the House is the Commons Building, where all public rooms with the exception of the library are located.

The nerve center is the two-story entrance hall (acrosspage). *The monumental stairway, which doubles as a waiting line, leads to the dining hall* (above *and* right) *and private dining rooms. The serving counter disappears*

mize weight, red brick was confined to this center portion of the project, the ground floor and penthouse being generally light in value (stucco or limestone). White sash, red brick, and limestone were used throughout as the traditional Harvard colors with an emphasis on pattern, thus avoiding large unbroken surfaces of red brick.

"The size and proportion of the openings as well as their rhythmical arrangement keyed to the traditional 'student-window' became the most important element in achieving richness, variety, and scale, while retaining essentially a residential character. This is probably the most successful achievement of the whole design.

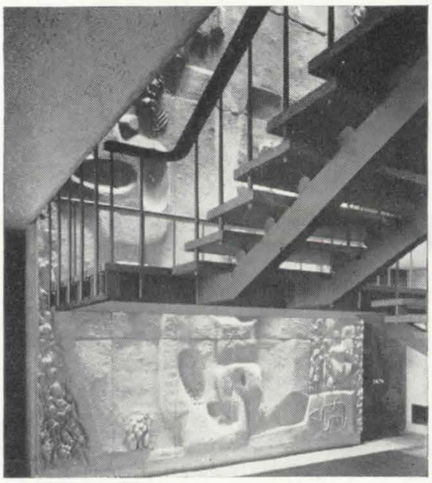
"Special attention was given to the rich plasticity of the roof lines, when low and located near Georgian counterparts. This is the main purpose of the folded slab topping the commons building (in addition to providing clerestory light to the large dining room).

"For the same general purpose, folded roofs were tried on the dormitory slab and abandoned as attracting too much attention, thus increasing visually the bulk of this structure, already large enough.

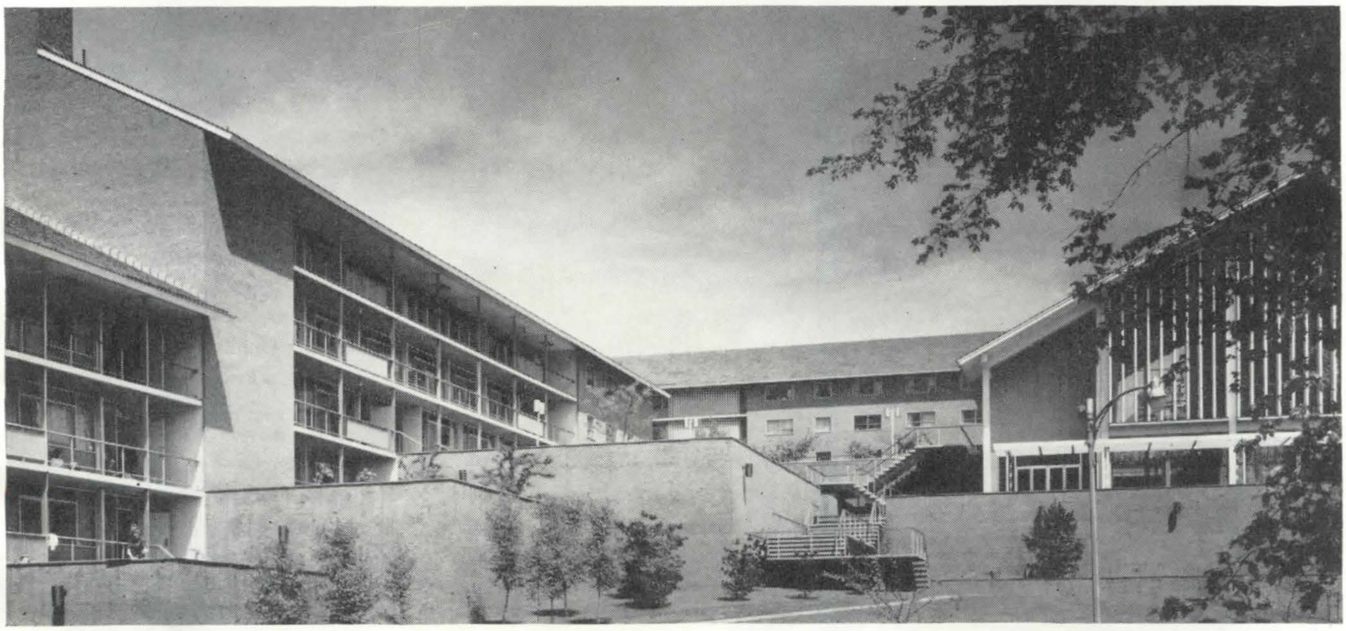
"A conscious effort was made to counterbalance the rich detailing of carved pediments, incised cornices, and other Georgian paraphenalia by special lighting effects. Students being in residence mostly during winter months of short daylight, it was thought that a carefully work-out pattern of lighting, designed by Richard Kelly, would fulfill this purpose best."

behind a moving panel when the dining room is used for social functions such as dances, concerts, or theatre productions. The private dining rooms are then used as cloak rooms. The head table is on a raised plat form which doubles as a stage for amateur theatricals.

Two works by Costantino Nivola add interest to the dining room and the main hall. The graffito mural was executed by using an old technique akin to Renaissance frescoes. The sand sculpture, a medium popularized by Nivola, is lighted from above to emphasize the grainy texture.



R.I.S.D.
CLIMBS COLLEGE HILL



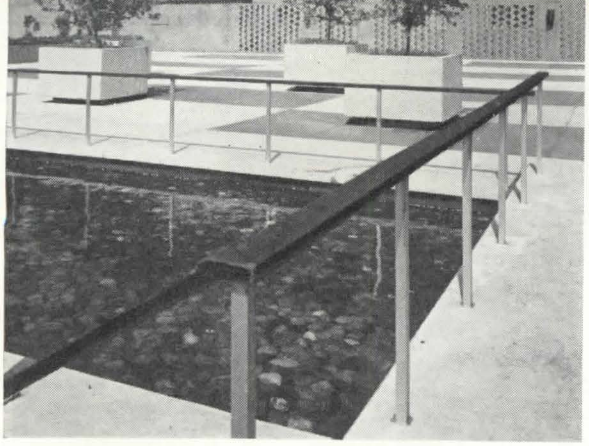
STUDENT LIVING CENTER, RHODE ISLAND SCHOOL OF DESIGN, PROVIDENCE, RHODE ISLAND • ROBINSON, GREEN & BERETTA, ARCHITECTS • PIETRO BELLUSCHI, CONSULTING ARCHITECT • SASAKI, WALKER & ASSOCIATES, LANDSCAPE ARCHITECTS

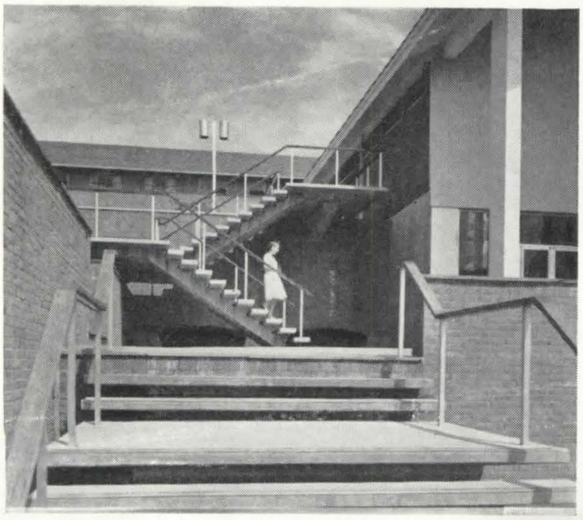
College Hill is a neighborhood unique in America for its extensive collection of historical architecture, ranging from Early Georgian to Late Victorian. It was on the western slope of this hill that Roger Williams founded his colony in 1636. The establishment of Rhode Island College, now Brown University, in 1770 gave the hill its name. The steep contours of the hill were inhospitable to the commercial and political community of Providence, which grew up instead on the reclaimed tidal flats to the west. College Hill remained a sedate area of churches, schools, and fine houses.

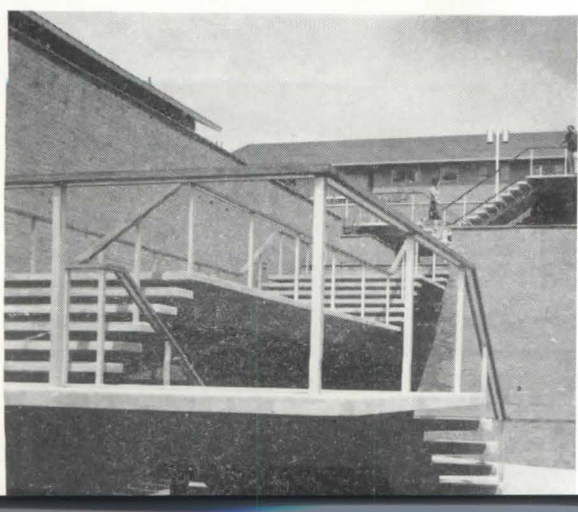
In recent decades urban decay has affected some parts of the hill; private mansions have been razed or "converted"; expressways have threatened. Now a far-sighted renewal program promises to restore and enhance the neighborhood (OCTOBER 1959 P/A, page 272).

The Rhode Island School of Design (RISD) was established in 1877 at the foot of College Hill. It has been a four-year college since 1947, and now offers degrees in architecture, interior design, landscape architecture, fine arts, industrial design,

Photos: Joseph Molitor







apparel and textile design, and art education. It maintains the foremost art museum in the state.

With its full-time enrollment exceeding 800, the majority from out of state, RISD's need for a residential center was evident. The congested downtown area to the west forced RISD to grow in the direction of the hill. The only available site was a city block fronting on three major streets, with a difference in grade of 80 feet from west to east.

The program called for living accommodations for 470 men and women and a dining hall to serve the entire school. Designer Warren A. Peterson helped in preparing early studies, which ranged from high-rise schemes to units of domestic scale; in the final design buildings are of a maximum height of four stories. "It was deemed most important," say the architects, "that the buildings should blend with the quiet spirit of their surroundings and not be of an assertive nature."

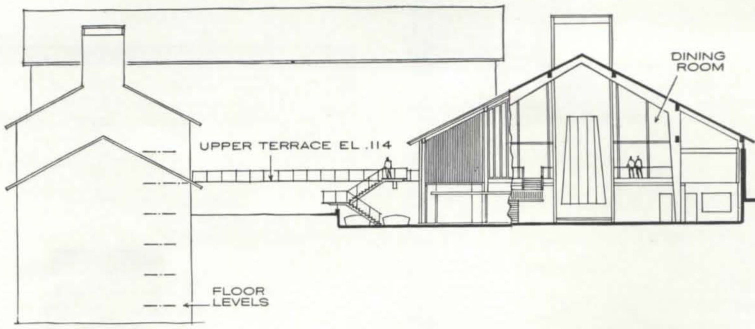
Red brick walls and slate roofs relate the buildings to local tradition. The walls of the dormitory units are relieved by recessed balconies overlooking the terraces. The detail of these balconies, executed in aluminum and white-painted wood, recalls the scale and color of traditional white woodwork.

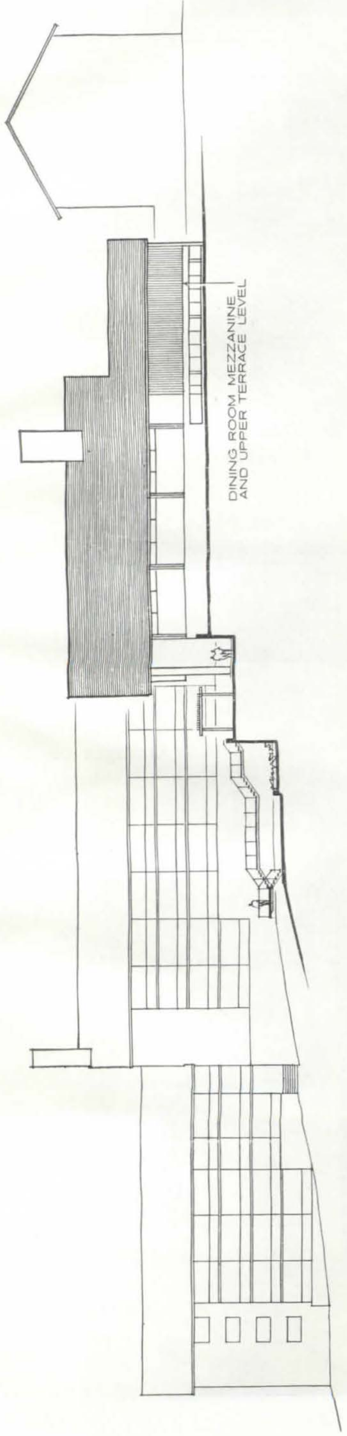
A sequence of courts and terraces in the middle of the site affords variety in space and outlook as one ascends or descends through the project. The massing of the buildings allows a maximum of sunlight in the open spaces. There is variety in the paving and planting of the terraces; two reflecting pools add interest to the upper courtyard. Stairs between levels offer frequent changes of pace and direction, making an interesting experience of an otherwise tiresome climb.

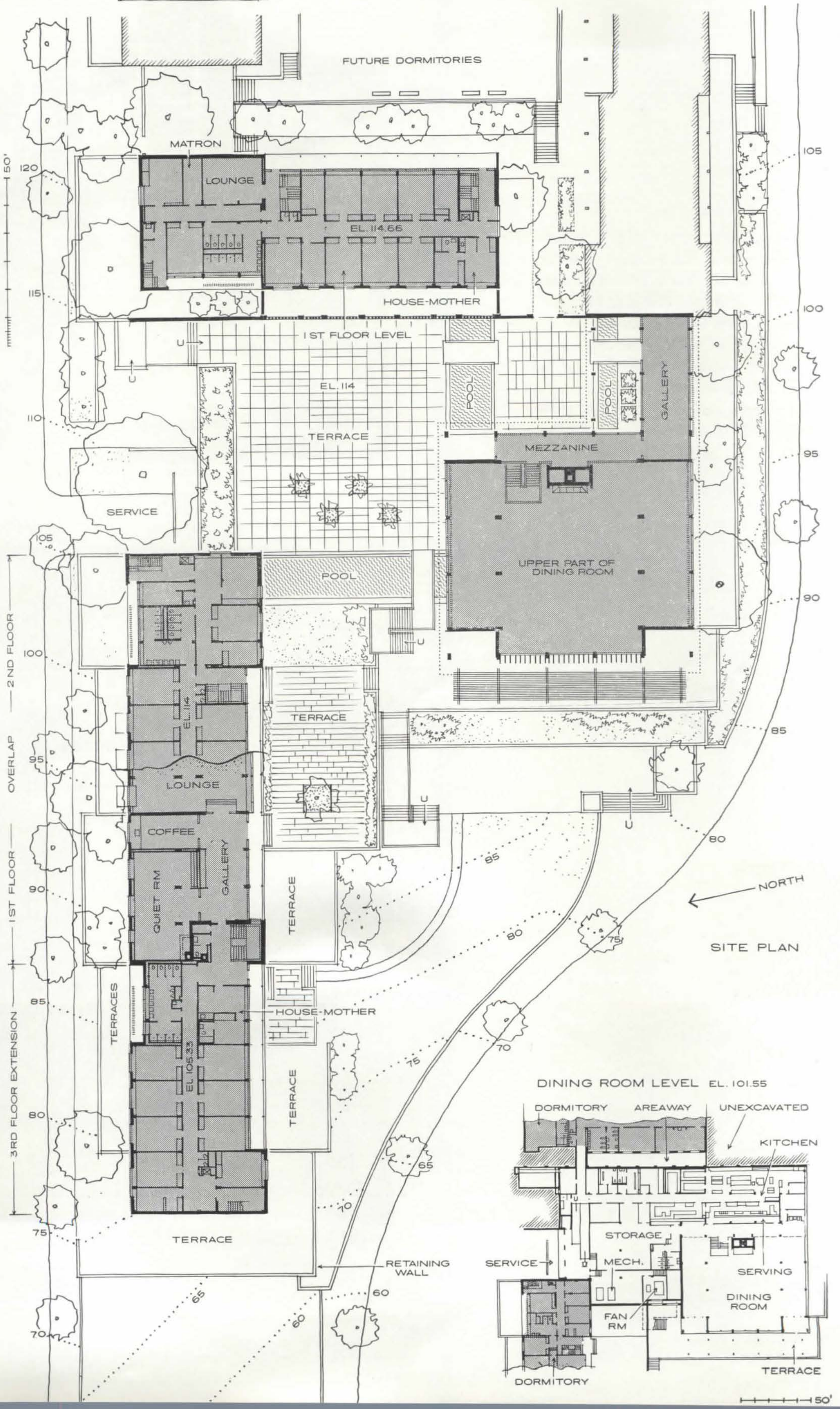
The two dormitory units and lounge building which will enclose the quadrangle at the top of the site have not yet been constructed. The completed units now accommodate 260 women; eventually the three units around the upper quadrangle will house women only, and men will occupy the lower two units.

The special needs and interests of the students were considered in planning the dormitories. The rooms are larger than usual, with movable furniture, for individuality in arrangement and space for easels and drafting boards. Corridors have been brightly painted and unevenly lighted to avoid monotony, but room walls have been left white, with special provisions for hanging art work. Common facilities in the dormitories include lounges, snack rooms, laundries, sewing rooms, and large, well-lighted work rooms.

The site is planned to provide a variety of spaces and views as one moves up or down the hill. Stairs between levels have been designed to enhance this spatial sequence (photos acrosspage).

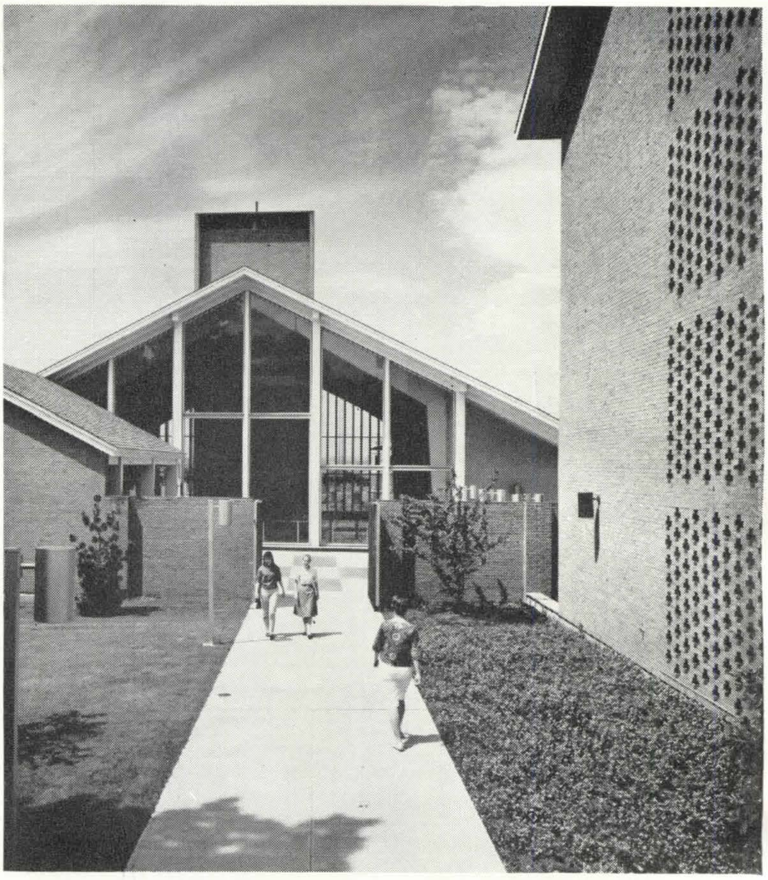






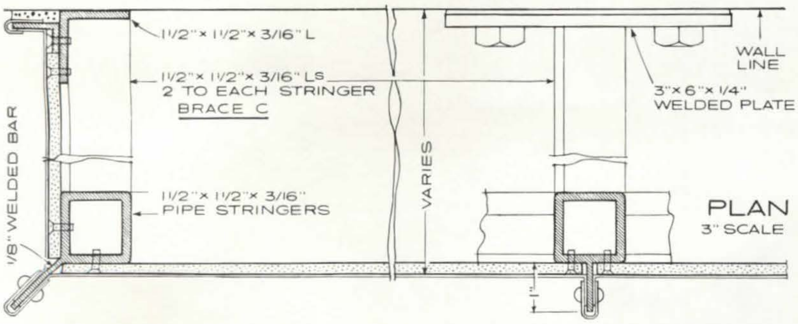
The dining hall serves as a cafeteria for the entire school and provides a setting for social events. The main entrance is through a gallery wing at the east side (above). *The gate shown here will eventually be the entrance to the women's quadrangle.*

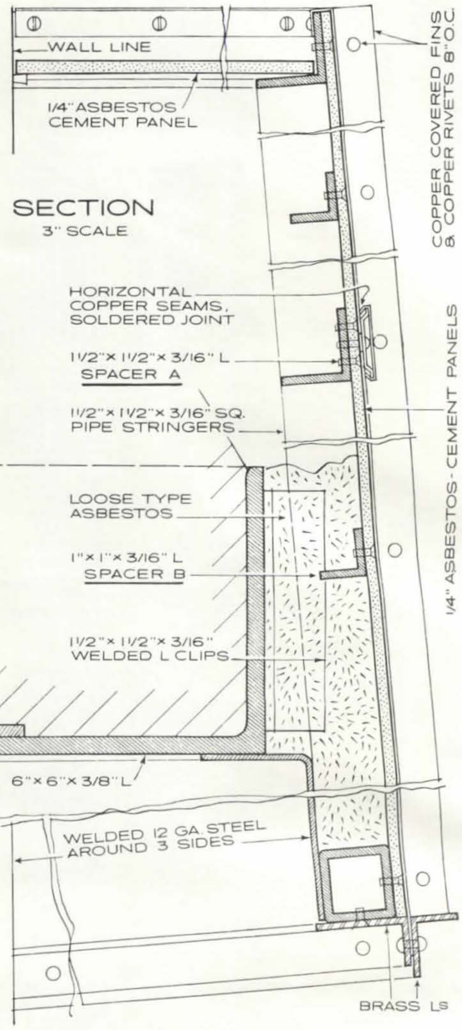
A balcony extends across the east end of the hall at the entrance level (below). *The serving line is under the balcony, separated from the hall itself by a fire wall. The fireplace, with its copper hood, dominates this*

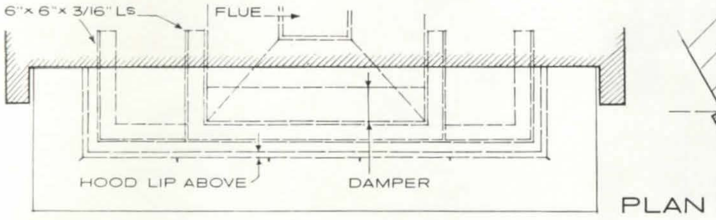


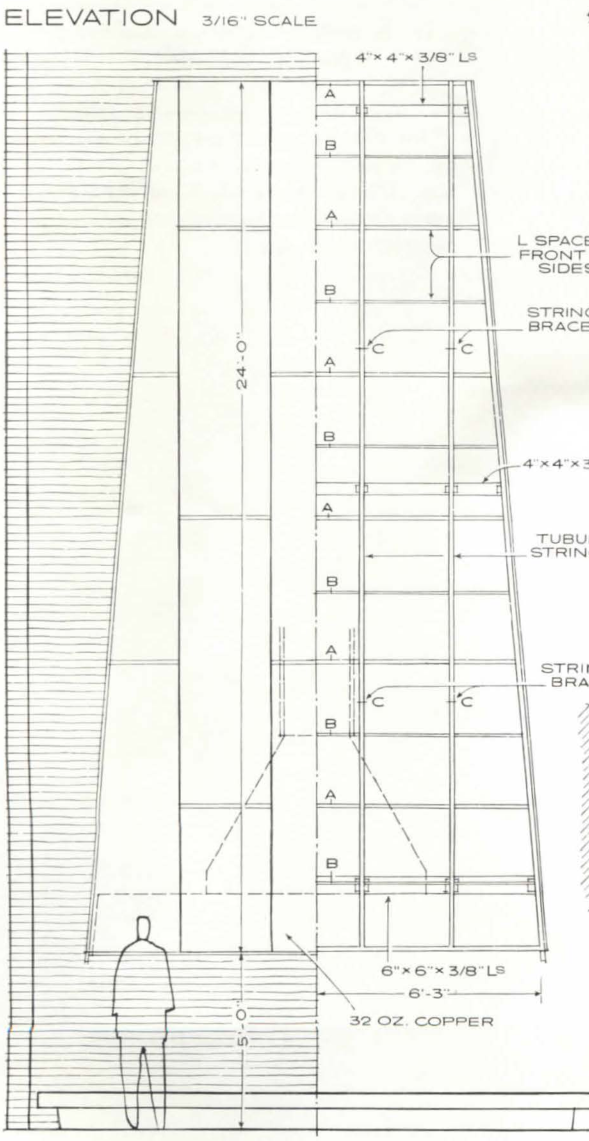
end of the room. The chimney also accommodates exhaust ducts from the kitchen.

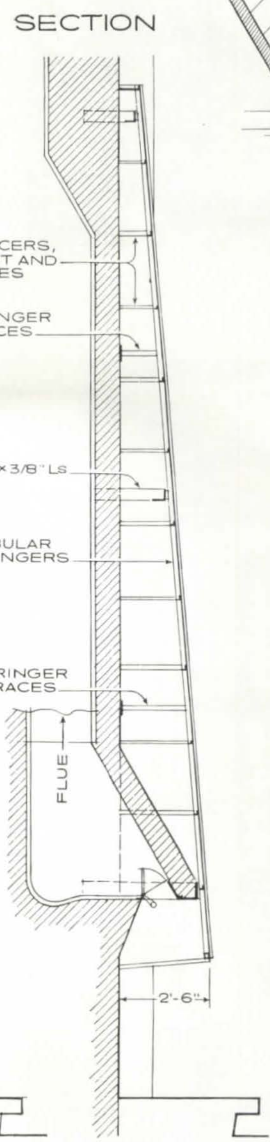
The fireproof steel frame of the dining hall encloses a space 50 feet wide and 40 feet high at the peak. The expanse of glass on the west wall offers an exciting panorama of the city, but presents a serious sun control problem. This was solved by the use of deep vertical louvers which eliminate direct sun penetration for most of the year without obliterating the view.



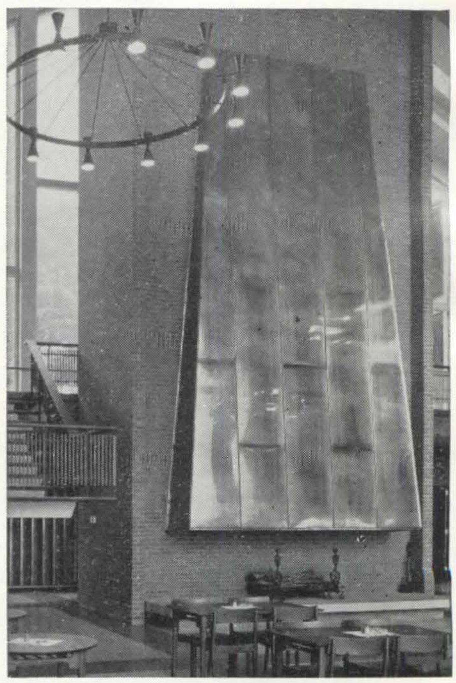






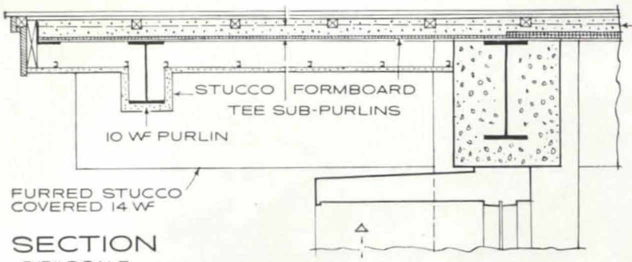


JOSEPH W. MOLITOR

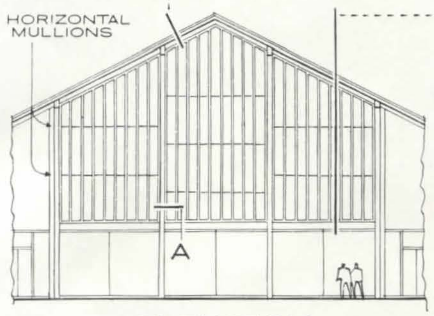


RHODE ISLAND SCHOOL OF DESIGN: Providence, Rhode Island
ROBINSON, GREEN & BERETTA, Architects

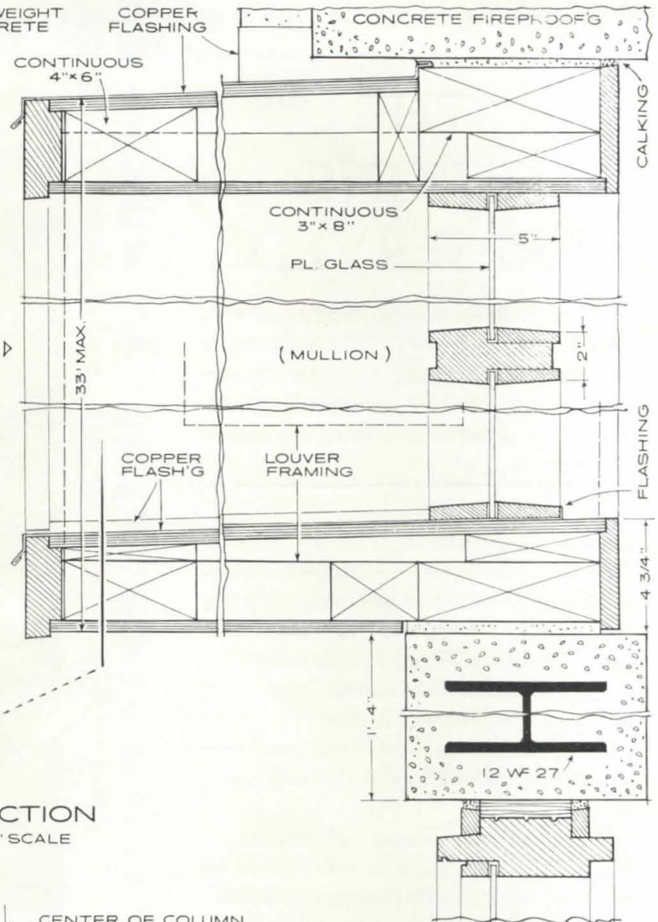
SELECTED DETAIL
FIREPLACE



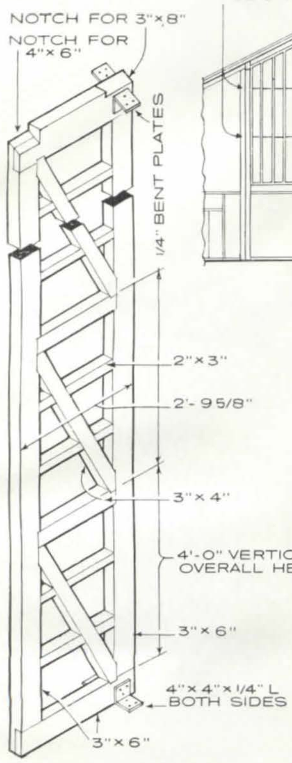
SECTION
3/8" SCALE



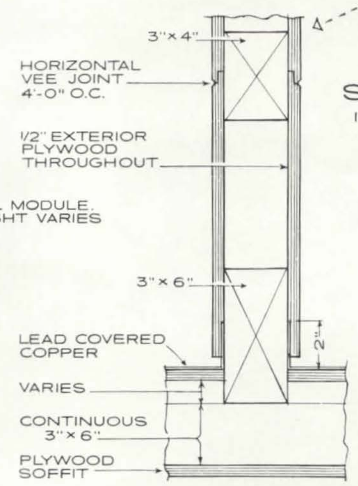
ELEVATION



SECTION
1 1/2" SCALE

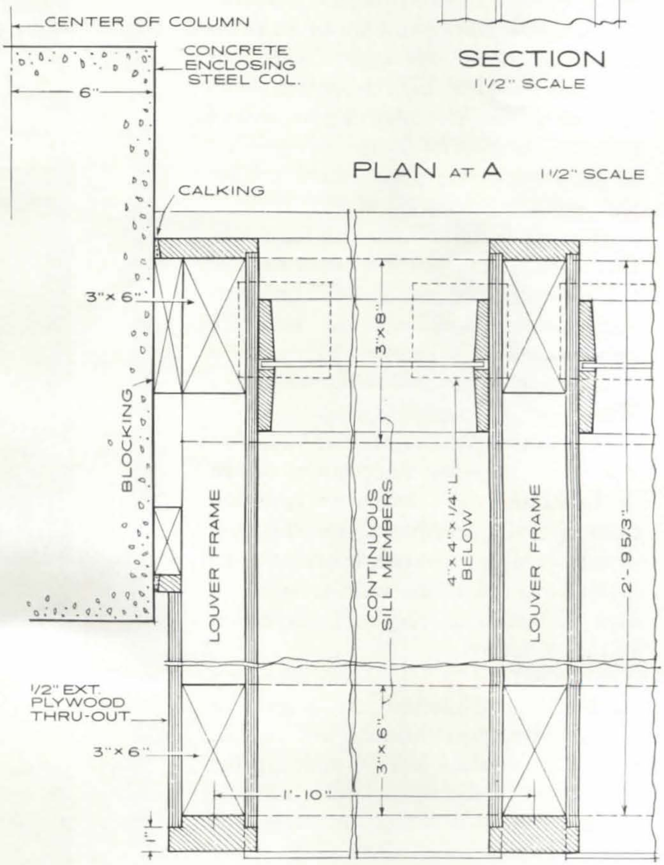


LOUVER FRAME

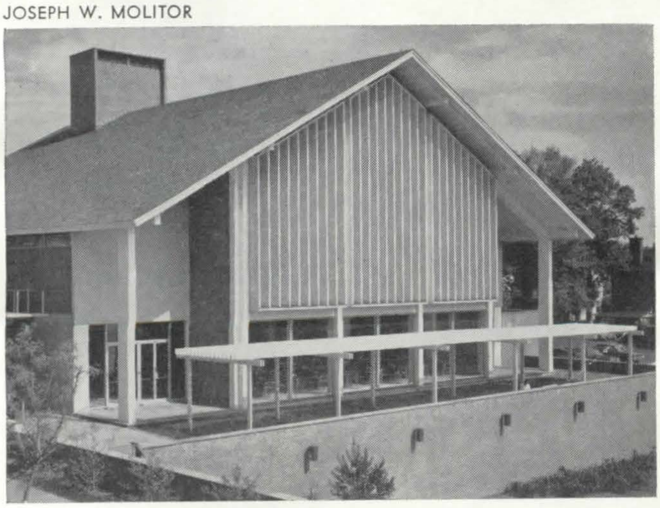


SECTION
1 1/2" SCALE

PLAN AT A 1 1/2" SCALE



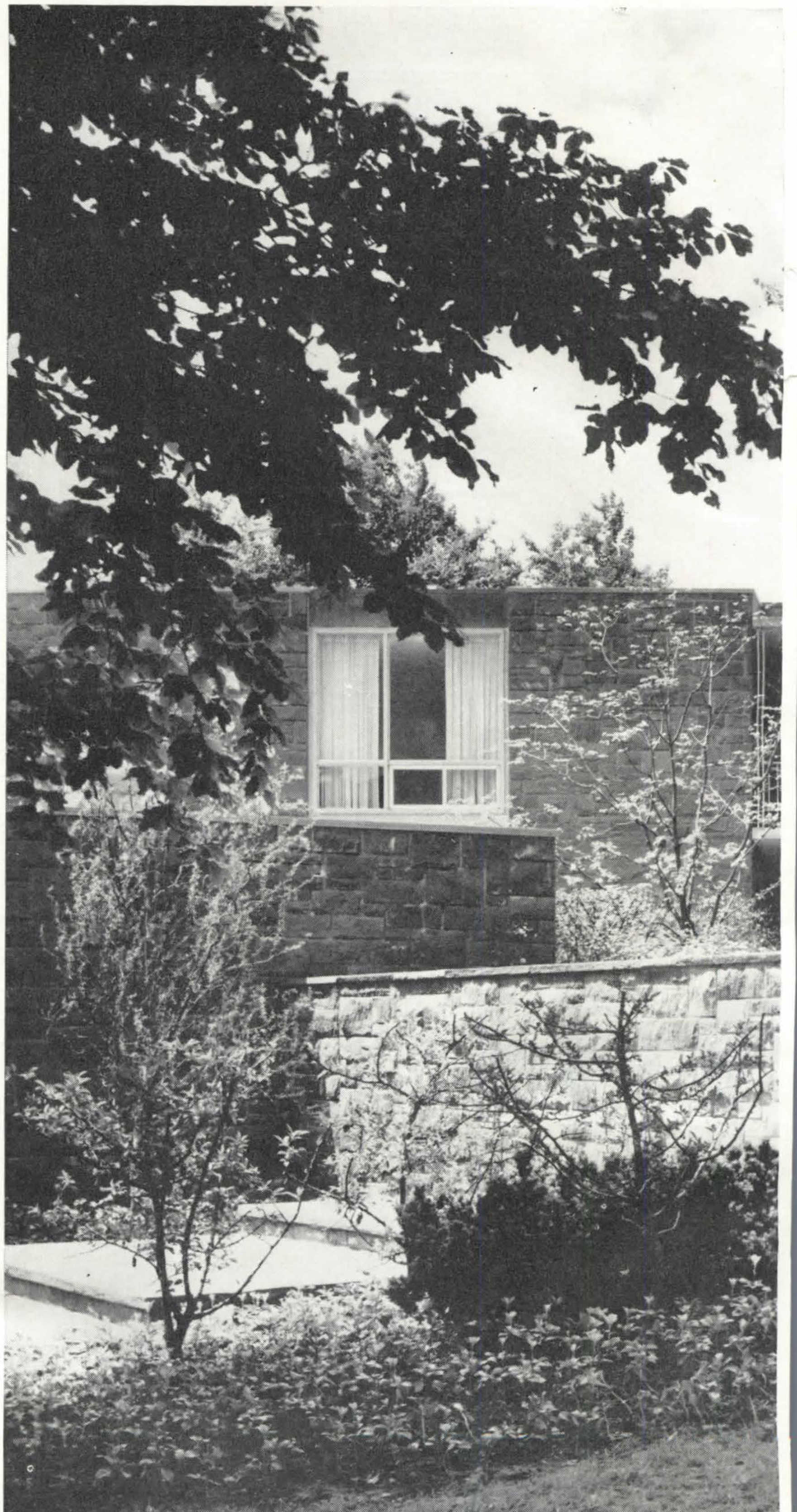
JOSEPH W. MOLITOR



RHODE ISLAND SCHOOL OF DESIGN: Providence, Rhode Island ROBINSON, GREEN & BERETTA, Architects	SELECTED DETAIL SUN SCREEN

THE SETTING PRESERVED

FOSS HILL DORMITORIES, WESLEYAN UNIVERSITY, MIDDLETOWN, CONNECTICUT • CHARLES H. WARNER, JR. AND BROWN, LAWFORD & FORBES, ASSOCIATED ARCHITECTS • CLARKE & RAPUANO, LANDSCAPE ARCHITECTS



A sense of the natural landscape with its large meandering open spaces—a distinctive characteristic and advantage of many rural college campuses—has been captured by the architects in siting the Foss Hill dormitories. The random irregularity of nature is echoed in the variety of building heights and levels and the choice of materials as well as in the shaping of outdoor spaces.

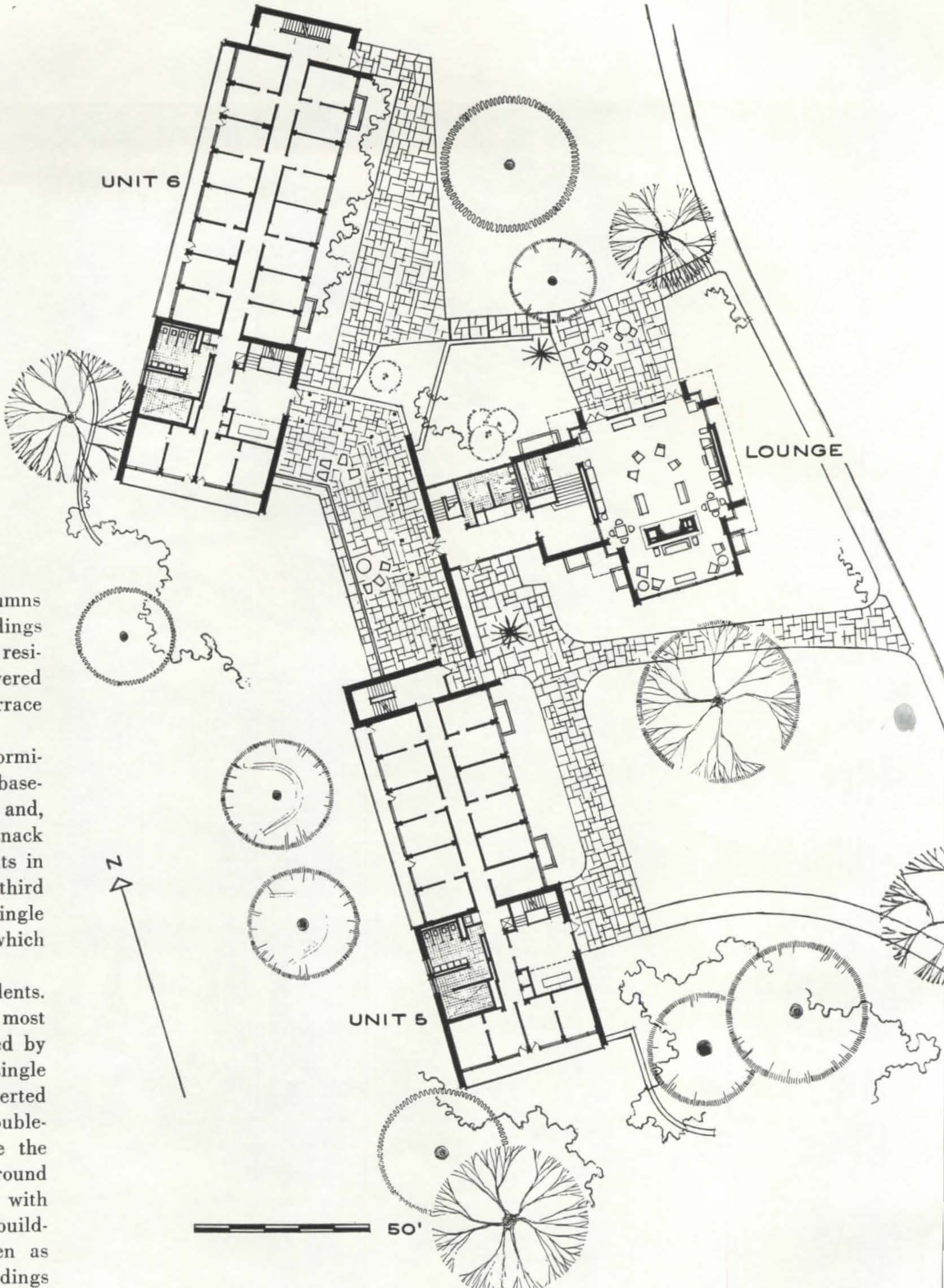
Wesleyan's President has written of Foss Hill, "It is hard to conceive of an arrangement of rooms, lounges, and landscape that better contribute to an atmosphere of study and appreciation." In addition to Foss Hill, presented here, the architects are planning a second group of dormitories for the college. Now in the design stage, the future project will continue the spirit of Foss Hill.

The new dormitories are on high, rolling, wooded land at the western edge of the Wesleyan campus. The college's earlier academic buildings and residence halls were built primarily of brownstone with a few in the red-brick, white-trim idiom.

In planning the project, the architects wanted to preserve the contours of the land and the site's handsome specimen trees. Equally important was the goal of a relaxed, informal environment to be achieved by a domestic scale in the buildings. The solution, they felt, was in low rambling forms.

Six dormitory buildings and three one-story lounge buildings are placed on various levels and threaded between the trees. Glass-walled links connecting the dormitories and lounges were designed to bridge over the changes in levels. The units—dormitories alternating with lounges—are grouped in two main clusters (site plan *overpage*). From the entrance to the project, under dormitory

Photos: Gottscho-Schleisner, Inc.



Unit 2 which is raised on columns (*below*), the larger group of buildings is seen. An office for the director of residential halls is adjacent to this covered area which opens directly to the terrace on the campus side.

Except for Units 5 and 6, the dormitories are two stories high with a basement level which is used for storage and, in Unit 3, a recreation room and snack bar. Units 5 and 6 house 96 students in rooms on three levels; first and third floor rooms, however, are only a single flight of stairs from the entrance which is at second floor level.

There are 211 rooms for 211 students. The rooms are arranged, for the most part, in sleeping/study suites shared by two students, though there are also single rooms and suites which may be converted to single rooms. Rooms are on double-loaded corridors; all rooms above the ground floor, and many on the ground floor, have balconies. To harmonize with the campus's earlier brownstone buildings, rough-faced stone was chosen as the dominant material for the buildings and terrace walls. Cost of the dormitories, including game rooms and lounges, was $21 per sq ft.

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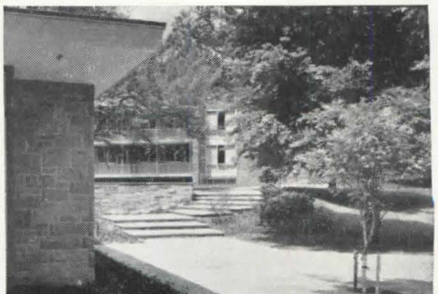

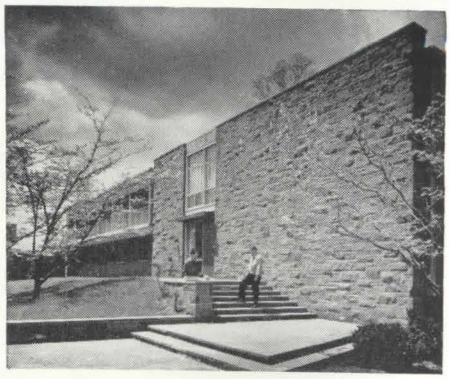

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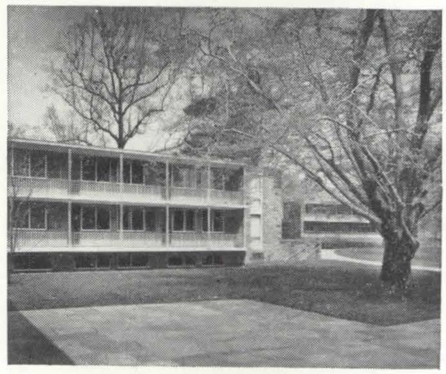

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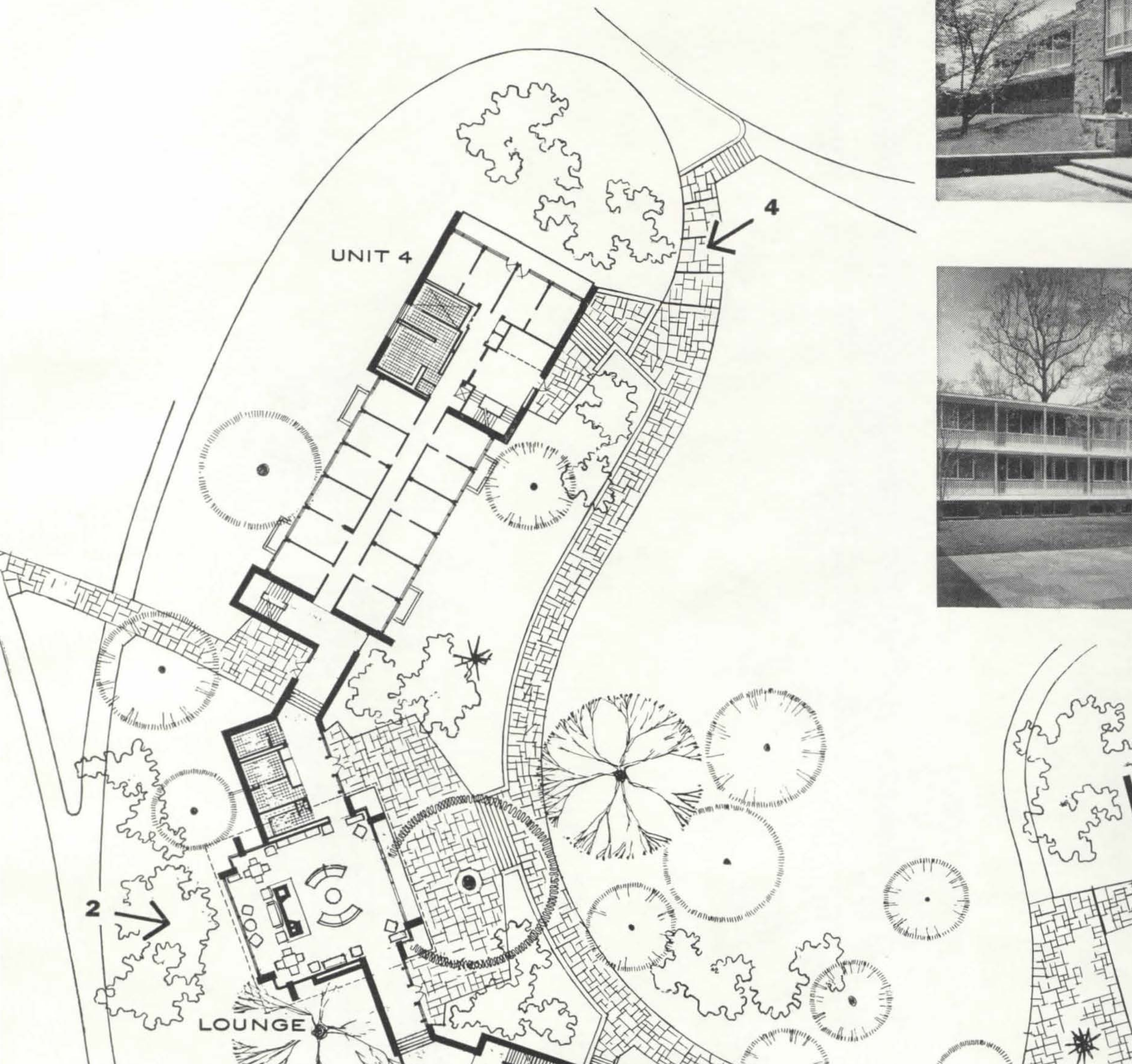
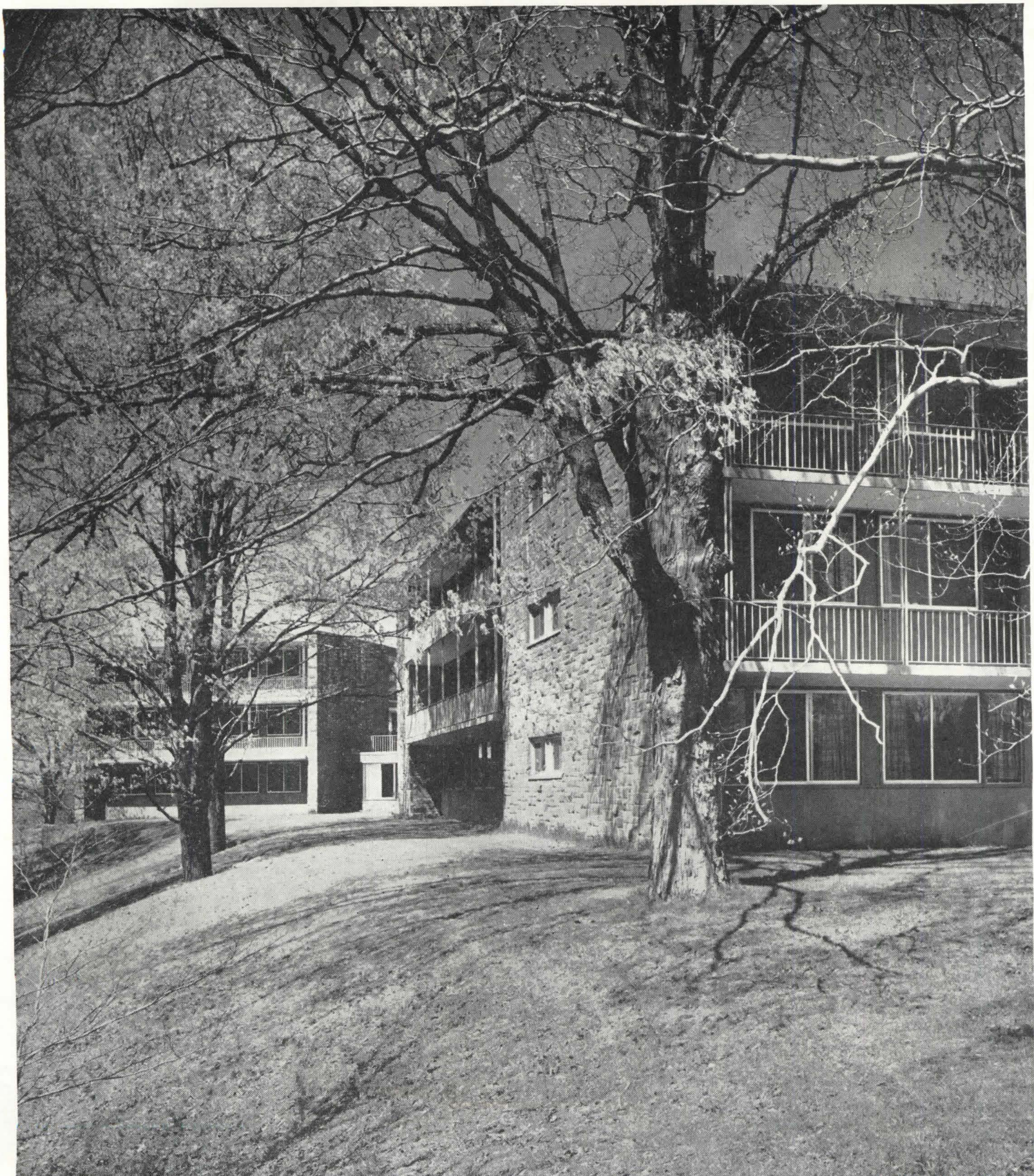
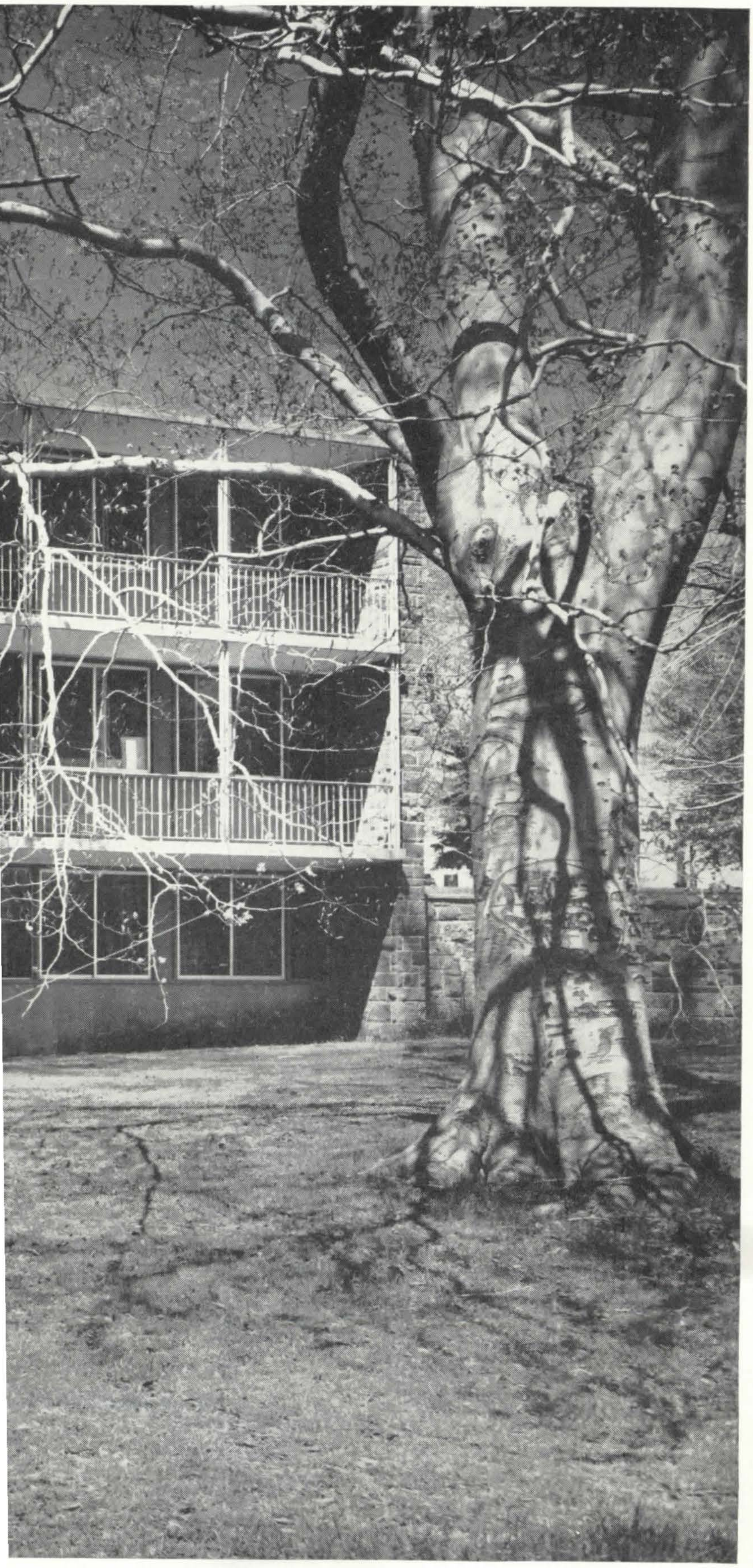






Within the main dormitory cluster, the site drops more than 12 feet between the flagstone terrace at lounge B (top) *and lounge A* (above)*. The only three-story-high housing units, dormitories 5 and 6* (left)*, together with their lounge, form the second cluster.*

The two dormitories presented on the following pages were planned to meet unusual program requirements. The building which John Carl Warnecke designed for the San Francisco Theological Seminary had to accommodate either single students or married couples, in units easily convertible from one use to the other. The buildings at Southwestern Louisiana Institute, by Ricciuti Associates, were required to meet difficult climatic conditions within a minimal budget.

DORMITORY PLANNING: Two Examples

The plan of the San Francisco dormitory is based on a repeating unit which serves as a suite for four single students or as an apartment for a married couple. As a suite it includes four private rooms, with common lounge and bath. Individual privacy was an important consideration, since all students are at the graduate level. With the removal of two partitions and the space-dividing wardrobe units, and the conversion of a closet into a kitchenette, the basic unit becomes an apartment.

The building site is a constricted one, sloping sharply down to the north from the access road. These conditions demanded a narrow slab form of building running along the contours. The dormitory consists of three living floors, with five units per floor, raised sufficiently far off the ground to permit adequate through ventilation on all floors. Access to the building is by bridges at the first floor level, which lead from the road to stair towers at either end of the dormitory. Cantilevered galleries along the north side of each floor provide access to the individual units; the south side of the building is devoted to balconies, which are accessible from every room. Translucent plastic screens have been used to minimize the view into the rooms from the nearby road without cutting out natural light.

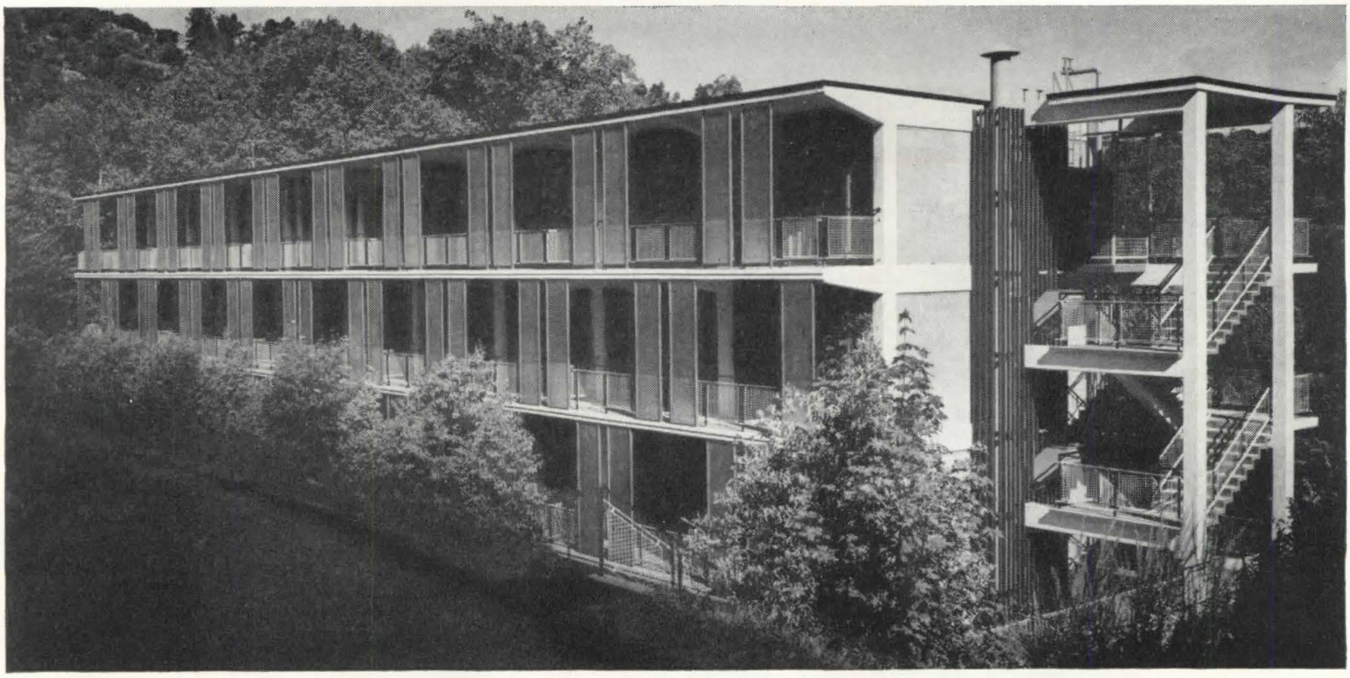
Wildman & Morris were the engineers for the reinforced concrete structure. The columns at the lower level were designed to withstand earthquake loads; varying the column section kept them from appearing massive.

The Southwestern Louisiana Institute dormitories have exterior corridors completely surrounding each building; the architects refer to them as "verandas." They have been utilized to the same effect as the verandas of Southern antebellum mansions: to keep out the summer sun; to protect the windows from rainstorms, which may be sudden and heavy in this area; and to provide convenient, economical circulation.

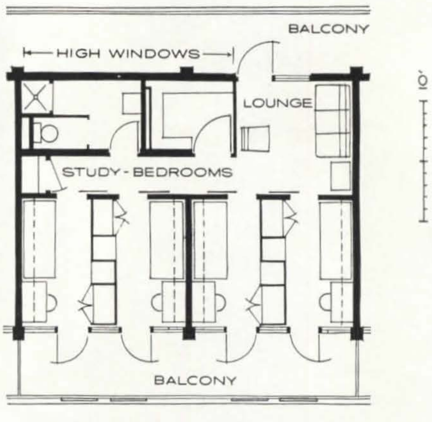
The basic unit of these dormitories accommodates eight men. It consists of two double rooms on either side of the building and a central bathroom area. One advantage of the plan is the provision for emergency exit from every room to the veranda on the opposite side of the building. Storage walls between the rooms are made up of prefabricated plywood units; they provide a wardrobe, a desk, bookshelves, and a tack-board for each student. Mechanical exhaust is provided for the bathroom areas. Louvers between bedrooms and baths allow for free circulation of air.

The structure of the dormitories is reinforced concrete. Exterior walls are made up of aluminum jalousie window units with porcelain-enamel steel panels below the windows. Brick is used for the end walls and cast-stone grills shade the stair towers. Interior partitions are of unglazed structural tile. The cost of the buildings was $13.86 per square foot, or $2,702 per occupant. Future plans call for the construction of a lounge building between the two completed dormitories.

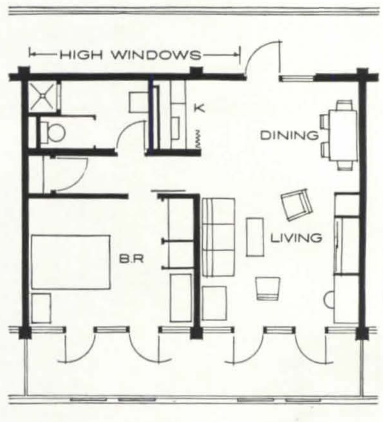
Photos except as noted: Dandelet



OXTOBY HALL, SAN FRANCISCO THEOLOGICAL SEMINARY, SAN ANSELMO, CALIFORNIA • JOHN CARL WARNECKE, ARCHITECT

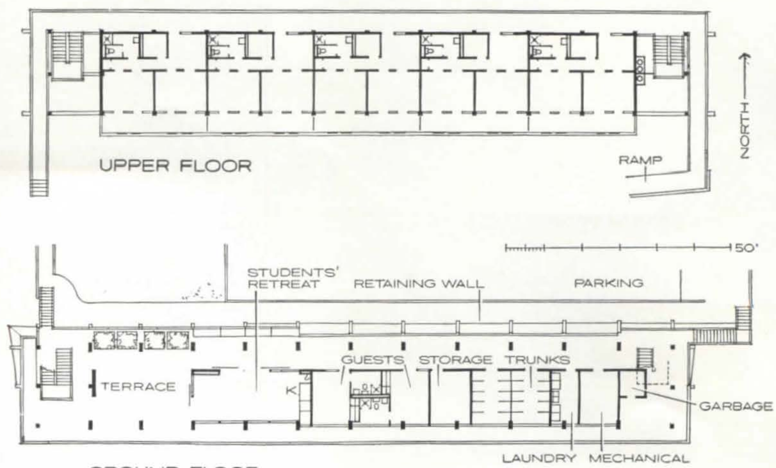


TYPICAL 4-MAN UNIT

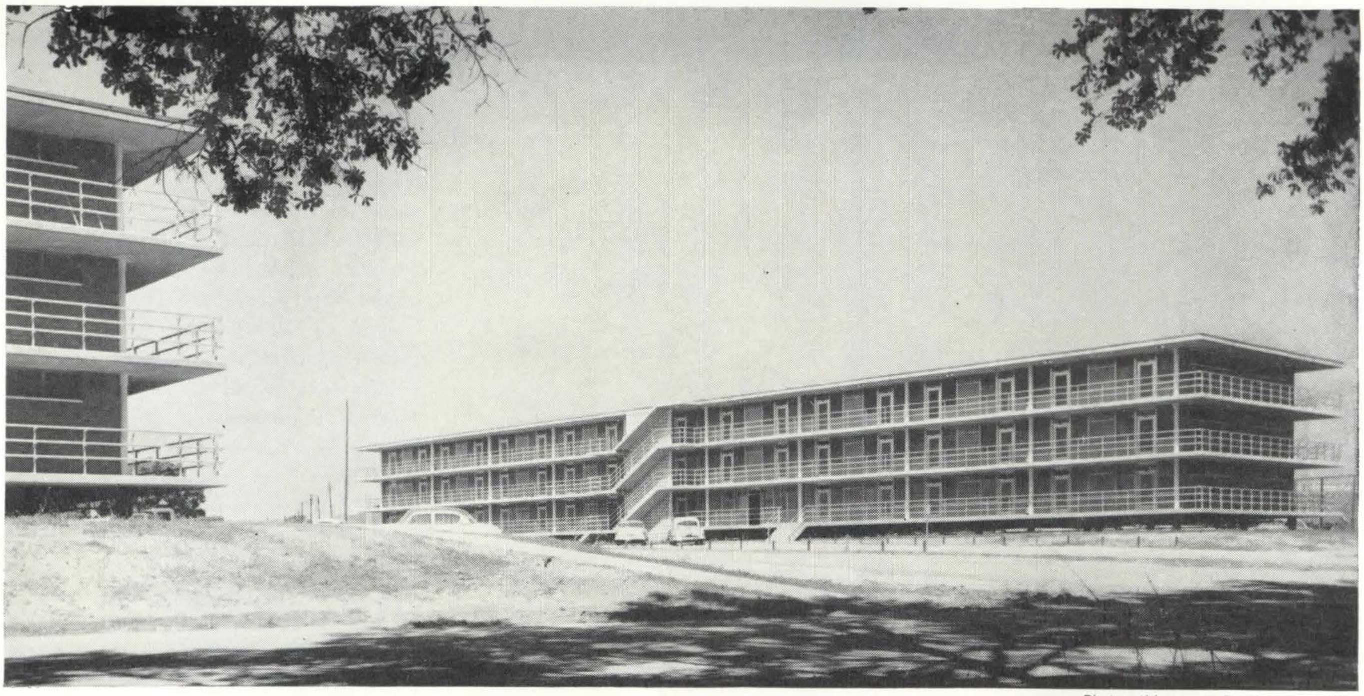


TYPICAL APARTMENT UNIT

The living room of an apartment unit (below) is secluded from the nearby road by translucent plastic screens on the balcony.

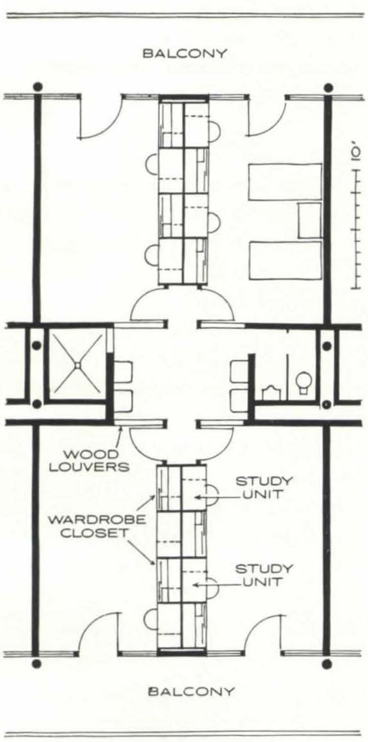


GROUND FLOOR

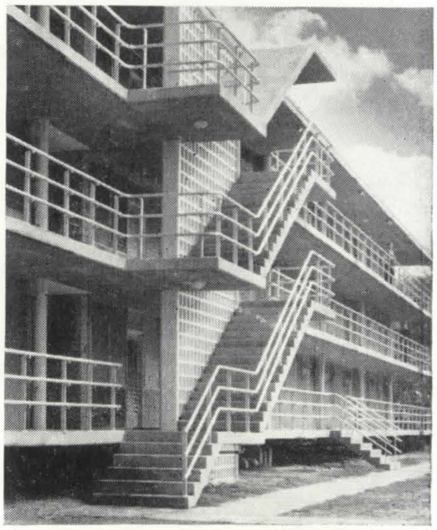


Photos this page: Frank Lotz Miller

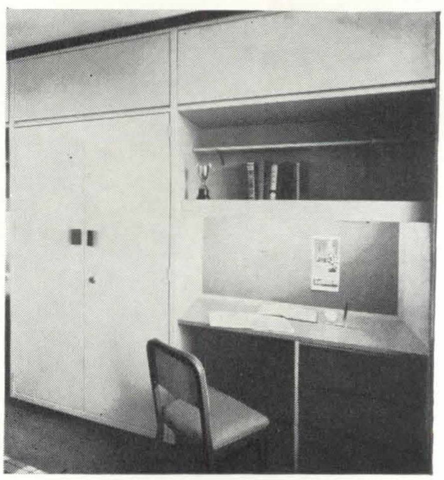
MEN'S RESIDENCE HALLS, SOUTHWESTERN LOUISIANA INSTITUTE, LAFAYETTE, LOUISIANA • RICCIUTI ASSOCIATES, ARCHITECTS

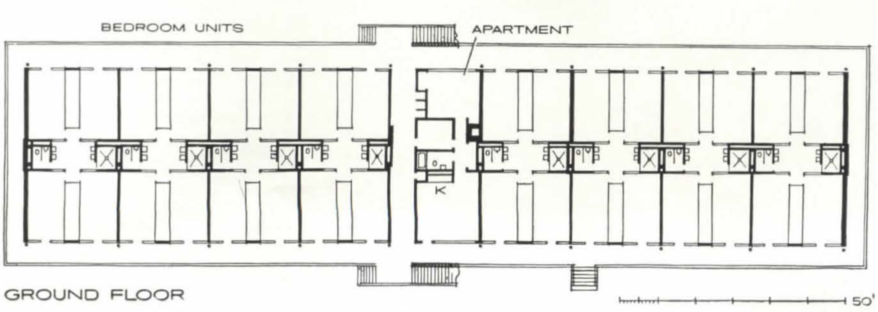


PLAN OF BEDROOM UNIT



Continuous "verandas" meet the demands of climate and economy (above). *Desk-storage units serve as room partitions* (below).





GROUND FLOOR

BARNARD COLLEGE, NEW YORK, NEW YORK • O'CONNOR & KILHAM, ARCHITECTS • PHILIP M. CHU, ASSOCIATE, PROJECT DESIGNER

LIBRARY FACILITIES

Special facilities for various study activities are features of libraries of Barnard College and Bennington College.

Photos: Ezra Stoller

The language laboratory has 29 student positions in individual cubicles which house electronic equipment for listening and recording.

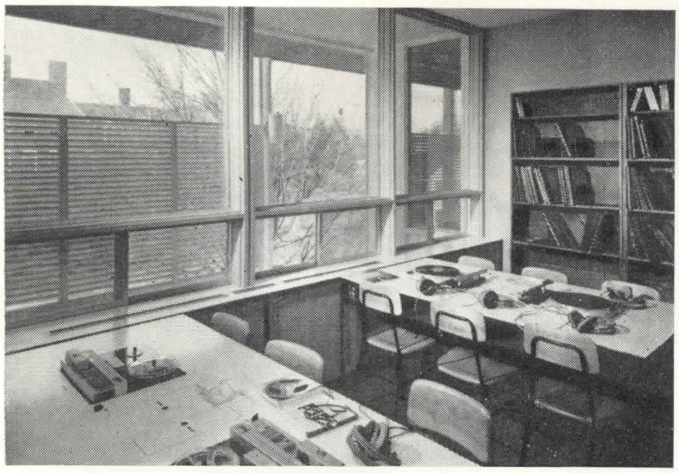
The need for a quiet study area directly accessible to the book stacks is happily solved at Barnard's library. A row of carrels along the two-story-high east wall of the library (*acrosspage*) provides the individual study spaces. At the same time, the carrels, in contrast to the visual barrier of a partition, allow natural daylight to supplement the fluorescent lighting of the stacks on this level and on the mezzanine.

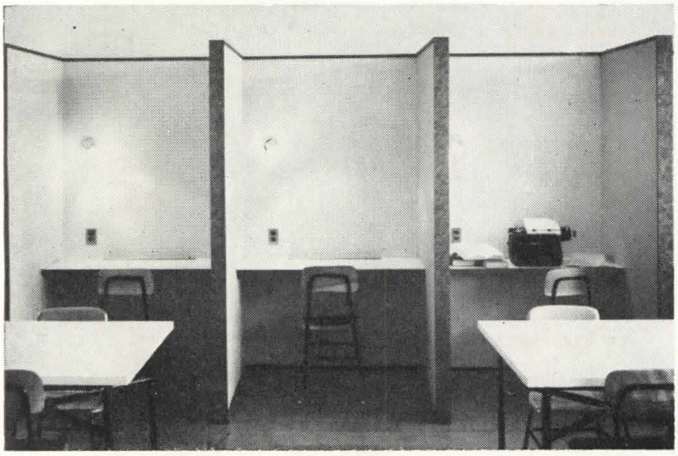
The carrels were designed by the architects to be portable as well as easy to maintain; they were required, in addition, to be attractive enough to inspire private donations to the building fund. The carrels are sufficiently high to give the reader who must concentrate, a sense of isolation, and yet they do not impose the feeling of confinement that an enclosed cubicle would. Built of birch with a plastic-laminate desk top, the front part of the carrel, with book-shelf space above the desk, is faced with white plexiglass.

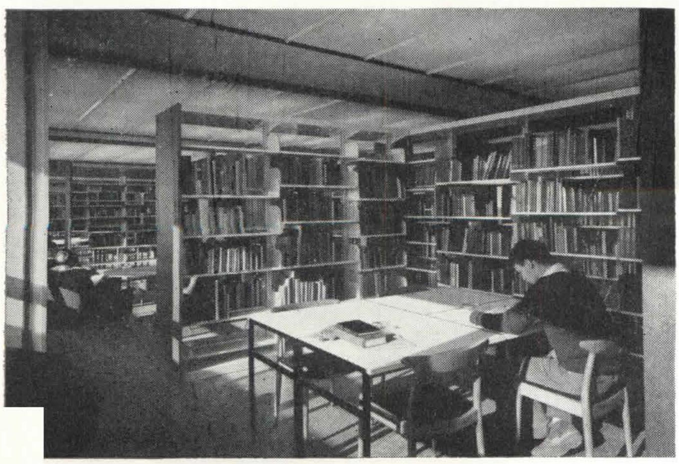
Another room of unusual interest and one which is likely to be included in the program requirements for more schools, is the language laboratory *(left)*. The architect must achieve special acoustical conditions and design and plan workable facilities for the electronic equipment. Walls here are acoustic tile. The equipment is housed in individual cubicles designed and built by the college. Prime considerations in designing these were: privacy and acoustical control within each cubicle, clear view to the chalkboard and movie screen, and easy maintenance.

DATA: descriptions and sources of the major materials and furnishings shown.

CABINETWORK, SCREENS, PARTITIONS
Carrels: cherry wood frame, sides/cherry-pattern plastic laminate desk top/Parkwood Laminates, Inc., 33 Water St., Wakefield, Mass.; cane end panels/white plexiglass facing panel/aluminum legs and book shelf/architect-designed/custom-made. **Book Shelving:** metal stacks/birch ends/Remington Rand Inc., 315 Fourth Ave., New York, N.Y. **Language Listening Cubicles:** birch panels, frame/white plastic laminate desk top/metal pan sides/glass fiber acoustical pads/custom-made.
FURNITURE
Chairs: cherry-finish birch/architect-designed/custom-made/Milwaukee Chair Co., Milwaukee, Wis.
LIGHTING
Wall-Hung Fixtures: incandescent downlights/Lewis Smith & Co., 101 Park Ave., New York, N.Y. **Fluorescents in Language Laboratory:** Globe Lighting Products, Inc., 1710 Flushing Ave., Brooklyn 37, N.Y.
WALLS, FLOORING
Walls in Language Laboratory: acoustic tile/gray stipple on off-white/Fiberglas Sonofaced/Owens-Corning Fiberglas Corp., 717 Fifth Ave., New York 22, N.Y. **Flooring:** turquoise blue at carrels, tan gray in language laboratory/vinyl-asbestos tile/Flexachrome/Tile-Tex Div., The Flintkote Co., 30 Rockefeller Plaza, New York 20, N.Y.







BENNINGTON COLLEGE, BENNINGTON, VERMONT • PIETRO BELLUSCHI AND CARL KOCH & ASSOCIATES, ARCHITECTS • CONTRACT INTERIORS, INC., CONSULTANTS

Carrels for individual study spaces and a room with special equipment for language learning were also requirements for the library at Bennington. Rather than choosing wood for the dominant material, however, the interior designers here used metal for a lighter appearance.

The portable carrels (background *acrosspage)* at the stacks, the movable study tables grouped in alcoves *(bottom)*, and the tables which house recording and listening equipment *(left)* have plastic-laminate top surfaces and metal frames which are coated with a fused black vinyl finish for a rustproof, scratchproof, and chip-proof surface. The language-learning tables—designed in collaboration by the architects, college authorities, the interior designers, and the manufacturer — house equipment carefully selected for quality, durability, and flexibility.

The built-in carrels (foreground *acrosspage*) and the typing booths are constructed of walnut frames and are surfaced with acoustic tile. Further sound control is achieved in the typing room with an acoustic tile ceiling; throughout the building, the air-conditioning system was designed to run with a slight hum, creating an "acoustic perfume" to camouflage any distracting noises.

Walnut was used for the frames of the built-in carrel and typing booths, and also for the ceiling lighting shields *(acrosspage)*. Materials such as the natural oil-finished walnut and cork flooring were chosen to recall the rich interiors of older campus buildings.

DATA: descriptions and sources of the major materials and furnishings shown.

CABINETWORK, SCREENS, PARTITIONS

Book Shelving: steel with walnut ends/Library Bureau of Remington Rand, 315 Fourth Ave., New York, N.Y. **Built-in Carrels:** walnut frames/acoustical tile side walls/white plastic laminate tops/custom-made. **Portable Carrels:** walnut/steel frame/white plastic laminate top/custom-made/C. I. Designs, 348 Newbury St., Boston, Mass.

FURNITURE, FABRICS

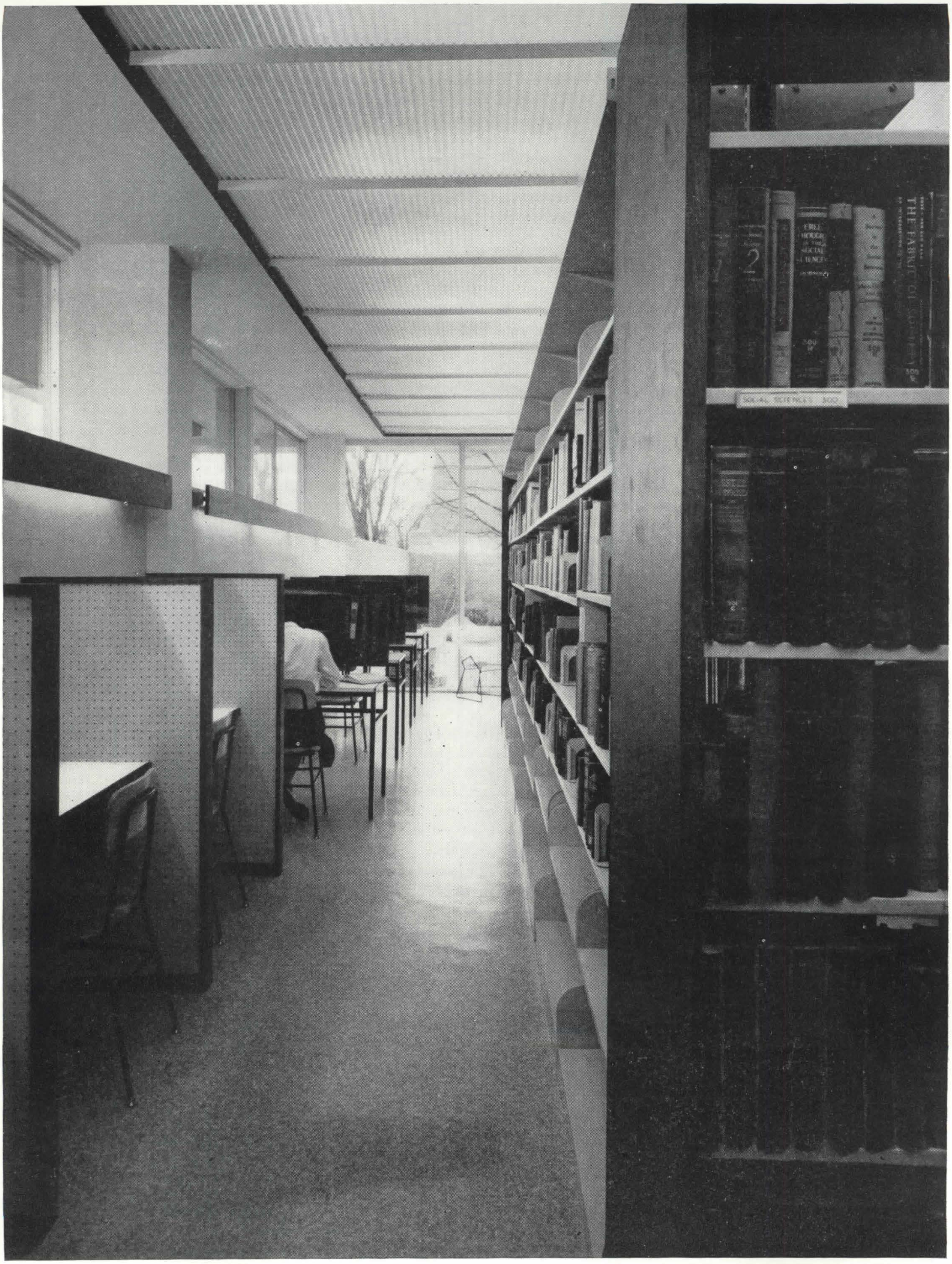
Chairs: steel-frame arm chairs/C. I. Designs; Heywood-Wakefield Furniture Co., Gardner, Mass.; oak frame chairs/black leather seats/Pacific Overseas, Inc., 478 Jackson St., San Francisco 11, Calif.; upholstered lounge chairs/Knoll Associates, Inc., 575 Madison Ave., New York, N.Y.; Dux, Inc., 1633 Adrian Rd., Burlingame, Calif. **Tables:** steel frame/white plastic laminate or walnut tops/custom made/C. I. Designs.

LIGHTING

Luminous Ceiling: white corrugated plastic/Contrex Company, 217 Everett Ave., Chelsea, Mass. **Light Shields:** walnut/custom-made.

WALLS, FLOORING

Walls: painted off-white. **Flooring:** cork; on grade, Corlon/Armstrong Cork Co., Lancaster, Pa.


SOCIAL SCIENCES 300

The Cries of Our Cities

BY CONGRESSMAN JOHN V. LINDSAY

Architects are often irritated and frustrated by the lack of direction and co-ordination on the part of Federal agencies dealing with urban problems. In this article a Republican Representative from New York makes a plea for cabinet-level representation of the cities and proposes creating a Department of Urban Affairs. P/A *invites discussion of this proposal from its readers.*

Let's take a tour with Mayor Jones of Urbanville through the Federal establishment. Mayor Jones and his Board have decided that an area bordering on the outskirts of his city needs supervision in its growth. He plans to undertake an urban renewal project which will involve the clearing and demolition of some run-down properties and the rehabilitation of others. He has an air pollution problem. Water and sewage facilities must be expanded. The State is planning a super-highway with expressways into Urbanville connected with the interstate highway system. The pressure will be on to do away with one of the few remaining parks to make room for roads, trucks, and automobiles. The airport facilities in a neighboring town are overtaxed, and Urbanville may need to construct airport facilities. There are rumors that a new defense plant will be constructed in the suburbs. Public housing will be needed in the redeveloped area to accommodate the increased labor force. The Veterans Administration is considering a new hospital. New high schools are needed. Mayor Jones is also worried about Civil Defense and has recently approached a local citizen to co-ordinate activities in that area.

Of course the Mayor also has an overabundance of problems in the city proper. There is a housing shortage. Low- and middle-income apartments are not available. The best talent in the city—young married couples with children—are being driven to the far suburbs. Older people living on fixed incomes can't carry the rents. Costs are rising. Mayor Jones is feeling the heat. The Governor of the State says Urbanville is not entitled to more state aid; he can't balance the state budget as it is; besides, says the Governor, schools come first and if he doesn't do something about that he'll be out of office. If he raises taxes to pay for them he'll be out even faster. So Mayor Jones packs his bag and goes to Washington, which at least has the advantage of getting him out of town for a while.

The Mayor is not quite sure where to begin in Washington. His Congressman in Washington is a member of the opposition party and has called him a boob, so he decides to figure it out for himself. He buys a Government directory and hails a cab.

His first stop is in the Housing and Home Finance Agency's Urban Renewal Administration Office where he discusses his over-all plans. Having prepared a workable program in compliance with the Urban Renewal regulations, he may be under the impression that most of his business can be transacted within this one office. He soon finds to his dismay that he must contact separately the Housing and Home Finance Agency; the Public Housing Administration; the Community Facilities Administraton; the Sanitary Engineering Division of the Department of Health, Education and Welfare; the Federal Aviation Administration and the Bureau of Public Roads of the Department of Commerce; the Veterans Administration; the U. S. Corps of Engineers in the Defense Department; and the Office of Civil Defense Mobilization in the Executive Offices of the White House. This is just a beginning. In his travels he picks up the names of half a dozen other agencies he should check into. He's never heard of most of them before. A week later he goes home with a heavy heart and an even heavier suitcase full of regulations, forms, telephone numbers, and maps.

Mayor Jones is not alone with his troubles. His problems are multiplied across the United States. He discovers in his Mayors' Conferences that all mayors have the same troubles.

The Federal Government has long been in the business of assisting cities in the solution of their problems, many of which are interstate in character. In addition, the Federal Government has always had an obligation to promote the general welfare by insuring a healthy living environment for its citizenry, almost two-thirds of which lives in cities.

To meet the needs of the cities for improved housing, community facilities, and such necessary public projects as sewage treatment and disposal, water supply, abatement of air pollution, renewal of slums and deteriorated areas, and construction of airports and highways, the Federal Government has set up a vast array of activities and programs. But these programs are administered by at least five major Federal Departments and independent Agencies, and at least as many lesser ones. Each Department or Agency has several separate Bureaus, Divisions, and Branches, which are in some manner concerned with urban living. Each Bureau, Administration, or other office has its own requirements and regulations which must be met, whether or not they conflict with the requirements of other units.

Before long, more than two-thirds of the American people will be living in the 174 metropolitan areas of the nation.[1] The unprecedented growth in population during the post-war period alone would have created problems for the country. Between 1946 and 1958, we had a bumper crop of babies—51 million, according to the Bureau of the Census. Two other population trends are also quite evident—the "flight to the suburbs" from the central cities and the movement of substantial portions of the farm population into the urban centers.

Until the current decennial census is completed we will not have exact data on the portion of the population residing presently in metropolitan areas. Reliable estimates place it in excess of sixty percent. Regardless of what figure is selected as an indicator, the fact remains that the majority of the population live and work in urban communities, and that this trend toward a predominantly urbanized society is here to stay—it is anticipated that between 1950 and 1975 metropolitan populations will have increased by 60,000,000 people.

The 1959 Conference of the American Municipal Association reflected the uniformity of the problems which urban areas are currently facing. Most common problems were civil defense, efficient mass transportation, air pollution, adequate housing, both public and private, and the whole gamut of urban renewal and its concomitants—rehabilitation and conservation, the construction and expansion of sewage disposal and water facilities, the provision of such community requirements as hospitals, schools, libraries, recreational and other cultural facilities.

Perhaps one of the most dramatic examples of the problems of municipal governments can be found in the 1957 study made by the Special Assistant to the President for Public Works Planning. Major General John S. Bragdon found that the backlog of needed public facilities would require some $130 billion during the next decade. In addition, replacement demand between 1955 and 1965 could amount to $29 billion, and expansion could easily require a minimum of $45 billion.

The solution of the problems of urban areas is among the most important of all domestic questions facing us today. Obviously, local responsibility—state and municipal—is paramount. At the same time, the Federal Government is the government of all the people, regardless of whether they live on the farm, in the city, or in the suburbs. The problems created by the change in our geographical and social pattern are rightly the concern of the Federal Government. The problems deriving from the urbanization of the American populace provide compelling reasons for action at all levels of government.

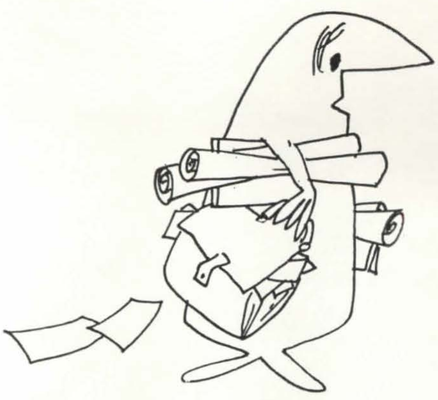
Urban centers are the nerve centers of our national economy; to allow them to deteriorate is to prepare for disaster. The city is the center which brings together labor, finance, and raw materials with which to produce the goods which nurture the national organism and it must be treated as the geographic, social, and political base for national economic planning in all its ramifications; therefore, we must accept the fact that Federal assistance in the solution of urban problems is essential and wise.

In my view, the interests of city, state, and federal governments would be more economically and efficiently served by a single executive department charged with co-ordinating all Federal activities concerned with urban affairs. This co-ordination would not imply the usurpation of any of the rights and privileges of other levels of government. Instead, it could serve more clearly to delineate the responsibilities and the services to be rendered by each level of government. In addition, such a department would bring the structure of the executive branch of the Federal Government up to date with our times.

Until recently we were a harmonious mixture of urban and rural communities. When the Department of Agriculture was established by the Congress in 1862 we were a predominantly rural people. When the Department of Health, Education and Welfare was established in 1953, we were rapidly becoming a predominantly urban people. Today, there is little question but that the trend is permanent and that the time is ripe for the establishment of a Department of Urban Affairs. I hold no brief for this particular name. The name itself is not important; the proper focus is vital.

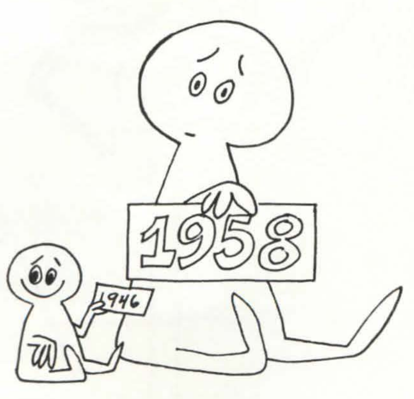
I have introduced in the House of Representatives a bill which presents a somewhat different approach from past

[1] U.S. Bureau of the Census defines as "metropolitan" those areas where at least one city has a population of 50,000 or over; in cases where an area has several cities of that size, the largest city for which the area is named is called the "central city."



"...he goes home with a heavy heart..."

proposals in this area. The Act would establish a Federal Department of Urban Affairs. The preamble of the bill is important because it states the need for and the purpose of the legislation. It provides that Congress recognizes the rapidly increasing urbanization of the United States and the resulting problems in housing, urban renewal, slum clearance, prevention and elimination or urban blight, air and water pollution, water supply, sewage facilities, transportation, and other areas. It reminds us that as urbanization increases, the needs of our urban population also will increase. It emphasizes the importance of education, research, and technical assistance to municipal governments. It stresses the importance of focusing attention for the



"...we had a bumper crop of babies..."

solution of urban problems in the highest councils of government. Accordingly, the bill provides for the establishment of an Executive Department headed by a Secretary, appointed by the President, confirmed by the Senate.

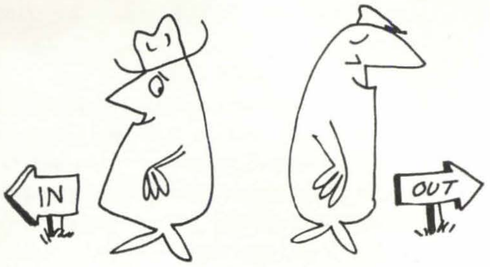
Within the Department, the Secretary shall appoint an advisory council known as the Federal Urban Affairs Advisory Council. Members of the Council shall be appointed by the President upon nomination by the Secretary from among persons with broad experience and interest in urban affairs and related problems. This Council may include persons outside the Federal service. The Secretaries of Labor, Treasury, Commerce, Health, Education and Welfare, and the Administration of Veterans Affairs shall be members ex-officio. Members of the Council shall receive no compensation for their services other than reimbursement for necessary travel and subsistence expenses. The Council will provide a forum for the co-ordination of the interrelated functions of the Departments and the establishment of an integrated policy. In the same context it will provide an opportunity to harness the combined thinking of federal, state, and local officials along with private enterprise.

The legislation transfers all functions of the Housing and Home Finance Agency and its constituent agencies to the Department of Urban Affairs. It further provides that the President shall submit to the Congress reorganization plans to effectuate the transfer of these functions and to assist appropriately in the accomplishment of the purposes of the Act.

The proposal should not constitute any additional drain on the Treasury. It merely assembles under one roof all the federal functions and offices now in existence. It will permit for the first time a consistent and co-ordinated approach to this important and ever-increasing problem of urban needs.

Alas, the introduction of a new bill, such as the one I have introduced, does not mean that we shall have immediate action—I have not been around the Congress long, but long enough to know some of the problems we face in matters of this sort. But the effect of such a bill will be cumulative, and I have no doubt that, in time, the essential action will be taken.

Since what I have proposed is an addi-



"...population trends are also quite evident..."

tion to the Cabinet, it is important to understand how the Cabinet functions. President Eisenhower has placed heavy emphasis on the use of the Cabinet. The Cabinet structure was reorganized in 1953 and there now exists in the White House an office called the Cabinet Secretariat. Matters rating Cabinet attention are carefully programmed in advance and background material is made available to members of the Cabinet before discussion. "De-briefing" sessions are held with subordinates after Cabinet meetings to make certain that Cabinet policy is implemented throughout the vast machinery of government. I suspect that the Cabinet Secretariat will be continued under future administrations. It is logical, and it is a time-saver.

"...metropolitan populations will have increased..."

But our urban areas have no spokesman in the Cabinet. The farmers, now comprising less than 20 million people, are represented by an enormous Department of Agriculture. Business has a spokesman through the Secretary of Commerce. Our 20 million organized workers have a voice through the Secretary of Labor. The Western states are represented by the Secretary of the Interior. There is historical justification for each.

There is now more than justification for the inclusion of our cities at the Cabinet level. The exclusion of cities from the highest councils of government is one reason why policies affecting urban development conflict—when they exist at all. Urban redevelopers in one part of the government urge the redevelopment of cities in order to keep them intact, while civil defense officials urge their dismemberment. Road programs and defense construction programs are conceived without concern for the impact on city dwellers. The statistics about surplus crops on farm lands are available through the Agriculture Department, but there is no department to gather facts about the cities and their surplus people. We spend more federal money to provide and maintain storage accommodations for wheat than we do for housing homeless citizens. We spend twenty to thirty times as much on farm housing research as we spend on urban housing research. We spend more money on research about potatoes than we do on urban economics.

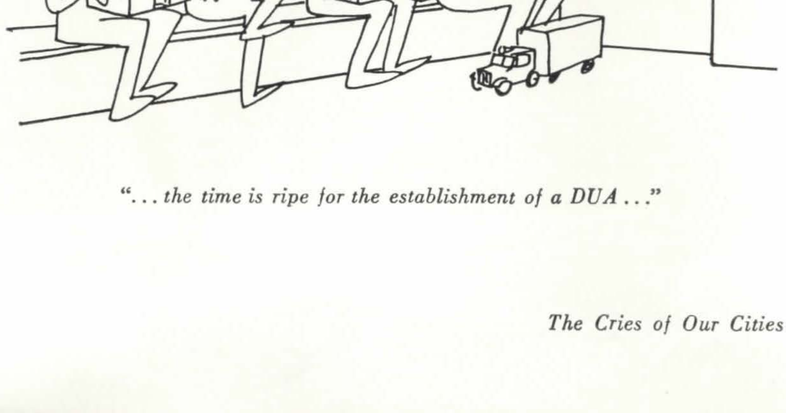
Don't misunderstand me here. Cabinet officers are not necessarily "advocates" for the groups engaged in the particular activities which they administer. They are not lobbyists before the President. But the plain fact is that they do reflect and echo in the high councils of government the thinking of these groups, whether or not they respond according to the likes of such groups. Right now the cries of the cities produce only the faintest of echoes in the highest of chambers.

Fairer legislative *representation* in Congress for cities is one step toward the solution of the urban problem. This is also true in the State legislatures. For example, in New York State, New York City's population is one-half the State population and yet its representation in the State Legislature is only forty-three percent. But representation is a long range problem, the solution of which provides new and perhaps greater problems outside the scope of this discussion.

"... while civil defense officals urge their dismemberment ..."

It has been argued that the problems created by our exploding metropolises are not necessarily answered by placing federal responsibility for urban matters in a single organizational unit—that the problem is one of principle and philosophy, rather than of method. True, but the same was also true of the Department of Health, Education and Welfare. The fact of its creation has led to the gradual formulation of a philosophy establishing more clearly than in the past the separate responsibilities of federal, state, and local government. It is also argued that the problem is basically one of research. Conceded, but any one who has been in the business of research knows perfectly well that research can be wasteful and ineffective unless it is organized from top to bottom. This is what the Department of Health, Education and Welfare has done in most of the matters under its supervision. In short, it has been able to keep pace with the times, not by pre-empting local responsibility, but by determining the over-all nation-wide scope of the problem. Without intimate knowledge of a problem, one cannot solve it.

Here then is the challenge that faces us, and here is a proposal. It is not new. Others have suggested it in the past. There will be others who will arrive at the same conclusion in the future. It is to be hoped that action comes before it is too late.



"... the time is ripe for the establishment of a DUA ..."

ROOF-TOP PLANTING

BY ROBERT L. ZION

Problems related to roof-top planting—both structural and horticultural—are discussed by a partner of Robert Zion-Harold Breen, Site Planners-Landscape Architects, New York, N. Y.

Roof-top planting has intrigued mankind ever since Nebuchadnezzar commissioned his Hanging Gardens in Babylon. But most roof-top plantings today fail because they are so obviously nothing more than plantings on a roof-top—an unnatural phenomenon, and a trifle upsetting. Since it is probable that such plantings will continue to be included in large urban projects, we should like to set forth here some basic structural and horticultural considerations which may assist the architect and owner in avoiding such failures.

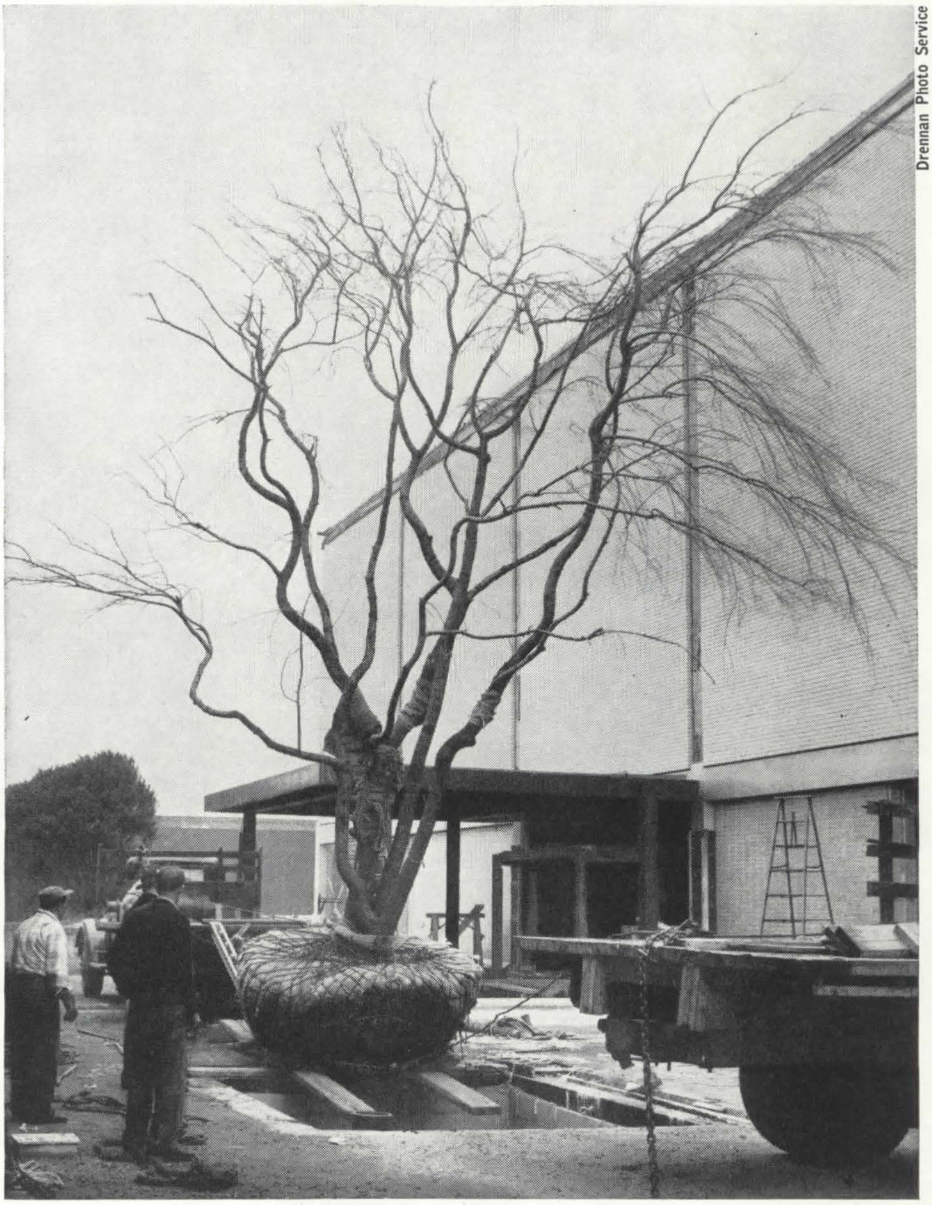
Requirements of the tree: Assuming that there is sufficient daylight (prolonged periods of direct sunlight are essential only for flowering trees), the basic requirements of the tree are three: (a) sufficient room for future growth; (b) adequate water supply; (c) good drainage.

Size of the tree pit: The actual dimensions of the pit will naturally vary with the size and variety of the tree. A depth of 4′ will adequately accommodate any tree and allow for proper drainage. Some trees can be planted in a depth of 3′, but this should be considered the minimum, for provision must be made for drainage at the bottom of the pit.

As for the lateral dimensions of the box, these will vary according to the size of the tree to be received and/or the maximum future size desirable from the point of view of design. When a tree is to be planted on a roof top, one must decide the ultimate spread of the crown that is desirable. Since the extent of the root system is a function of the spread of the crown, and generally reaches to the drip-line of the branches, it is a simple matter to determine adequate lateral dimensions of the tree pit.

How a Tree Grows

At this point, it would be helpful to digress briefly into a nontechnical explanation of the functioning of the tree, in order to assist the architect in understanding such aspects of roof-top planting as pit dimension, future care, etc. The tree takes



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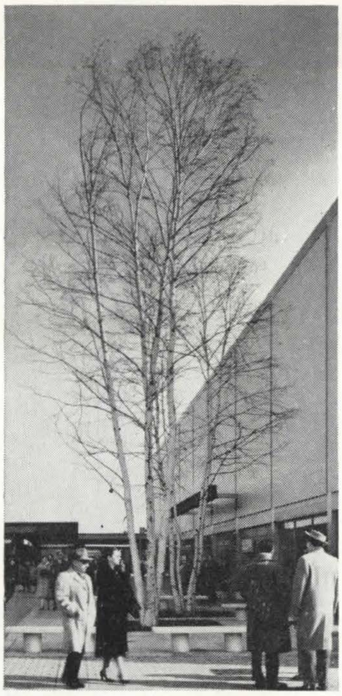
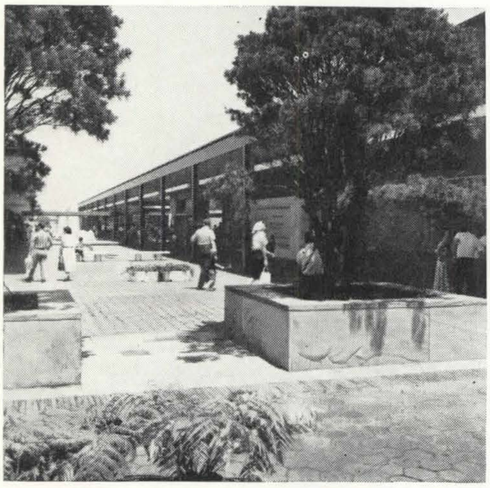


Lionel Freedman 2



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Ezra Stoller (above and below)

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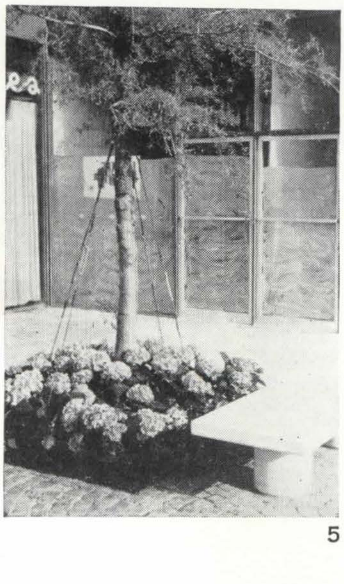

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its nourishment from the soil by means of vapor absorbed through the roots. The moisture taken up through the roots is given off through the leaves. The larger the root system, the greater the quantity of water taken in; the greater the number of leaves, the more moisture given off.

As a tree grows in the field, nature provides a balance between the root system and the leaf system so that the moisture given off does not exceed the amount taken in. If the supply of water is curtailed, the tips of the branches die back, thus decreasing the number of leaves and restoring the balance.

In artificial plantings, such as on a roof top, however, we must anticipate this desirable balance and compensate for a loss of root system (through transplanting) or a limit of the root system (through an architectural limit to the size of the pit). This compensation is achieved by pruning (destroying leaves or aborting leaf production) in order to prevent an overtaxing of a limited root system.

Watering Care

A large tree, such as an elm, can emit through its leaves as much as 2000 gallons (15,000 lb) of water per day. The amount of water necessary to sustain a tree on a roof-top will vary with the variety and size of the tree as well as the state of its root system.

Other variable factors also determine the necessary quantity of water and the frequency of watering. For example, in a raised tree box 1, considerable amounts of water will be evaporated because of the action of the sun on the side of the box. This is not the case where the planting is flush with the roof surface 2, 3, 5.

Therefore, the proper quantity of water for each tree can be determined only by experimentation, and this should be left to an expert on the site who is in a position to observe the tree daily, watching such signs as coloring or feel-of-leaf, etc., which indicate its state of health.

It is our finding that automatic devices which water all trees in a planting, without regard for differences in individual requirements, are unsatisfactory. Trees—like human beings—vary in the amount they can drink and still remain happy. For this reason, underground saturating devices can also be dangerous, since they tend to make watering too simple and thus careless. For purposes of checking the moisture content of the soil—and this should be done regularly and frequently—it is preferable to water on the surface rather than below, so that an oversaturated condition will be visible immediately. When watering is done below the surface, frequent soil probes with an auger become necessary, often with injury to the root system.

Drainage

After the depth and width of the tree-pit or box have been determined, steps must be taken to provide for rapid and thorough drainage.

The floor of the pit must be sloped carefully toward the drain. (It is essential that this slope be tested with water before the soil is installed to reveal any defect in workmanship.) From 3″ to 6″ of coarse gravel is recommended for the bottom of the pit to facilitate drainage. Between the gravel and the soil, a layer of salt hay should be provided to prevent the soil from mixing with the gravel and thereby clogging the drain.

The drain itself, contrary to the general impression, is best placed in a corner of the pit rather than in the center. Perforated pipes are so placed as to conduct water from each of the three other corners to the drainage opening. The installation of a vertical clay pipe directly over this opening, equal in dimensions to the drain itself, will permit a constant visual check on the drainage of the pit. Such a check would naturally be impossible were the drain situated in the center, beneath the earthball of the tree. Corner location also facilitates any probing of the drainage pipes should clogging occur.

It is a wise emergency precaution to perforate this vertical pipe and to surround it with 3″ to 6″ of coarse gravel. Should damage occur to the pipes at the bottom, through carelessness of plantsmen or defective materials, standing water—always fatal to a tree—can thus be prevented.

Further Precautions

Some further technical considerations which arise in roof-top plantings are: *means of guying;* the *weight factor* as it affects structure; the *raised vs. flush* tree pit; and, finally, the *selection of proper species* of tree.

Guying is essential to the survival of any newly-planted tree. The purpose of guy wires is to reduce to a minimum the swaying caused by the wind. It is this swaying motion that pulls the young rootlets from their foothold in the fresh soil beyond the original earthball, causing them to dry out and die.

Guying in unexcavated earth can be done simply with stakes or deadmen, but in a freshly filled roof-top pit the earth offers no resistance. Hence, it is wise to incorporate hook-eyes in the walls of the box, sufficiently below the surface so that wire can be attached to the tree at ⅓ its height at an angle of 45 degrees. Naturally, the wire must be attached to these hook-eyes before much soil has been introduced into the pit.

The importance of the *weight factor* is self-evident. For determining the feasibility of roof-top planting, it is wise to allow for 3000 lb per cu yd of topsoil, and the weight of the tree can be computed at the rate of 75 to 100 lb per in. of caliber.

The *flush vs. the raised tree box* question is often settled by such utilitarian factors as headroom necessary to the function of the floor below. Where there is free choice, it is our feeling that both types can be used together very effectively, but an overuse of the raised box destroys the illusion of a natural "on-the-level" planting. The choice between flush or raised box should also take into consideration the stature of the tree to be received. A mature forest tree looks more "comfortable" in a flush planting where the limits of its roots are not immediately apparent. The raised box seems more suitable for smaller material and exotics 4.

As for *selection* of the proper trees for roof-top planting, there are considerations of temperature, sun and wind exposure, atmosphere pollution, susceptibility to disease, fibrous root system, etc. Overlooking any one of these factors will surely cause failure and replacement of a tree on a rooftop can be a difficult and costly task. For this reason, too, special care should be taken to see that the digging and planting have been expertly done.

Composite Designs

IN PRECAST AND CAST-IN-PLACE CONCRETE

BY ARTHUR R. ANDERSON

Early use of composite construction was in bridge work and only in the last few years has it been used to any extent in the architectural construction field. Principles of composite design for structural-steel beams and concrete slabs were reviewed in July 1960 P/A. Composite construction's most recent advances, however, have occurred in conjunction with precast and cast-in-place concrete. The author's own firm—Anderson, Birkeland & Anderson, Structural Consultants, Tacoma, Washington—has been especially active in this development. Discussed here—and illustrated with detail drawings and photos of existing examples—are tests of composite connections, and column-to-footing, wall-to-column, beam-to-beam, and beam-to-slab joint details.

This report was originally presented as a paper before the Structural Division session on Composite Design in Building Construction at the A.S.C.E. Annual Convention in Washington, D.C.

In recent years technological developments in the production of high-strength precast and prestressed concrete structural members have been remarkable, and to exploit the possibilities of this new material of construction, the structural designer faces a challenge. Improved production techniques now make available precast concrete with a compressive strength of 7500 psi or more. The designer, as yet unguided by codes and textbooks, must resort to imagination and ingenuity in order to capitalize on the potential of this material.

Composite-concrete structures should combine the economy and efficiency of mass-produced, high-strength elements with the advantages of continuous monolithic structures hitherto cast-in-place at the jobsite. Construction trends now clearly indicate increased use of prefab units in all materials of construction, and designers are under pressure to keep the cost of structures within reach of the client's budget. As material and labor costs creep upward, new concepts of construction must be developed.

As in all manufacturing, economy in concrete construction can be achieved through mass-production of standardized units. Thus the designer is called upon to create the standard units, and he must resort to repetition of these units. If the unit can be assembled efficiently into the completed structure, so as to become an integral part of the architecture, the maximum economy is possible.

It is obvious, therefore, that the architect and structural engineer must collaborate at the outset of the preliminary design phase. With proper teamwork, the structural engineering and the architectural design go hand in hand toward achieving a unity of design. In the early stages of a precast-concrete design, the engineer should clearly recognize all factors affecting cost—production problems, transportation, erection, and final assembly in the field. He must be alert to those factors relating to economy. He should develop sympathetic feeling for good architecture, and should encourage the architect to develop his appreciation of the structure.

To evaluate the factors affecting economy in production, the designer must become acquainted with the practical aspects of fabrication of precast concrete. Molding techniques, dimensional tolerances, assembly of reinforcement, types and location of structural and architectural inserts, influence of shrinkage and creep, and quality of finish are important factors.

Transportation and erection of precast members involve a study of handling methods, allowable weights and dimensions, provisions for structural security during assembly, and suitable connections between members. When one compares the design procedure for conventional cast-in-place concrete with that for precast composite concrete, it is obvious that the latter is more demanding. The structural engineer must not only analyze the structure as finally built, but must also consider what happens to the individual members during several stages of construction. His design may include several separate stress analyses and also may require a special procedure for manipulation of stresses in the composite structure.

During the past decade, considerable progress has been made in the development of precast-concrete structural members, particularly with prestressed concrete. With continued research and development, we can expect to see further progress in the creation of high-performance structural sections in precast and prestressed concrete. When the engineer has achieved the desired sections, their assembly into a completely integrated composite structure introduces further problems, involving the details of connections between members. Design of satisfactory structural connections between prefab-concrete members and cast-in-place concrete calls for an understanding of their behavior when subjected to tension, compression, bending, shear, or a combination of any of the four.

Tests of Connections

Until design criteria for precast-composite concrete connections are established, it may be necessary for the structural engineer to prepare prototypes of the connections and subject them to load tests. Many of the tests may be relatively simple; nevertheless, the results obtained in some cases can contribute substantial savings to the cost of a structure.

One of the most obvious *tension* connections between precast concrete members is made by the welding of projecting reinforcing bars. If the connections are designed in this manner, high-carbon hard-grade bars should be avoided. Although intermediate-grade reinforcing steel has a relatively high carbon content (0.30 to 0.60 percent), it can be suitably welded if certain precautions are specified. Low-hydrogen electrodes, AWS class E7015 or E7016, should be used. Preheating and controlled cooling are important, particularly if the welding is done in cold weather. Tests carried out on welded joints of intermediate-grade reinforcing bars indicate that, when connections are properly made, the tensile yield strength of the bars can be developed without difficulty. Results of tensile tests, made on three types of welded connections of intermediate-grade reinforcing bars in sizes No. 3 through No. 9, are shown (*Table I*). Connections Type II and Type III were made by welding a short lap of the bars. Because of eccentricity, the failure load was hastened by rotation of the joint. When embedded in concrete with adequate lateral support, these connections obviously have a better performance. The Type I connection utilizes a short angle bar, and although requiring more material, this concentric arrangement may be preferred in certain situations.

Another form of tension connection can be made by projecting the reinforcing bar of one member into a sleeve embedded in the adjacent member, which at the time of erection is filled with a thick, neat cement-paste grout. To develop a good bond between the sleeve and the contiguous concrete and grout, the use of spiral flexible metal hose is recommended. Pull-out tests on this type of connection show that the ultimate tensile strength of the bar can be developed in less than 14 bar diameters 1, 2.

A satisfactory *shear* connection can be obtained by casting fresh concrete against previously hardened concrete whose surface is roughened with undulations approximately ¼" in depth. When the roughened surface of the hard concrete is coated with a neat cement slurry, immediately before the casting of the fresh concrete, an excellent bond results. The ultimate shear strength of the joint varies with the amount of reinforcing steel projecting through the joint interface. A series of tests on such joints have been carried out 3, 4. From the test data, it is evident that shear keys in concrete are redundant when the interface surface is cast rough.

Compression connections between precast members can be made by filling the joint with concrete or grout. Shrinkage can be avoided by drypacking, or using an expanding admixture such as aluminum powder or "Embeco" aggregate. Where high concentrations of bearing stress occur near the edges, the concrete should be confined by encasing the end of the member in steel to avoid the danger of spalling. The efficacy of such confinement, where concentrated bearing stresses near the edge of the section exceeded 40,000 psi, is illustrated 5.

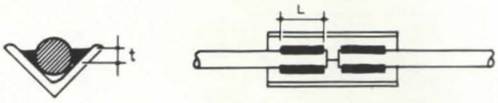
Joint Details: Column to Footing

Joint details most often encountered in precast composite-concrete construction are: (a) column to footing, (b) wall to column, (c) beam to column, and (d) beam to slab. In practice, the number of possibilities for joining members together is almost without limit. Several types of joints or connections which have been determined satisfactory by test and experience are described below.

A simple detail of a footing connection for a one-story precast column or post is shown 6. The footing is cast with a rough top set about an inch below finish elevation, allowing a grout pad to

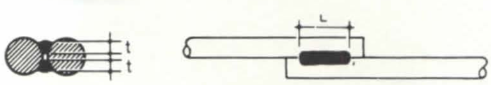
Table I. *Tensile tests on three types of welded connections using intermediate-grade reinforcing bars.*

TYPE I



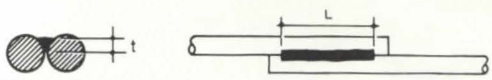
Bar Size	Bar A_s in.^{2}	Weld Size—in. L	Weld Size—in. t	Weld A in.^{2}	P_y lbs.	P_{ult} lbs.	Bar f_y psi	Bar ts psi	Weld Shear psi	Failure
3	0.11	¾	3/16	0.28	6,400	9,900	58,200	90,000	35,400	bar ts
4	0.20	1	7/32	0.44	10,700	16,100	54,000	80,500	36,600	bar ts
5	0.31	1¼	¼	0.62	17,000	22,700	54,800	73,200	36,600	weld
6	0.44	1¾	9/32	1.05	20,500	34,000	46,500	77,000	32,400	bar ts
7	0.60	2¼	5/16	1.41	31,000	46,000	51,600	76,600	32,600	bar ts
8	0.79	3	⅜	2.24	37,500	60,000	47,500	76,000	26,800	bar ts
9	1.00	3½	7/16	3.06	50,000	76,000	50,000	76,000	24,800	bar ts

TYPE II



Bar Size	Bar A_s in.^{2}	Weld Size—in. L	Weld Size—in. t	Weld A in.^{2}	P_y lbs.	P_{ult} lbs.	Bar f_y psi	Bar ts psi	Weld Shear psi	Failure
3	0.11	¾	3/16	0.28	6,030	6,950	54,800	63,200	24,800	rotation of joint due to eccentricity
4	0.20	⅞	7/32	0.38	10,100	11,800	50,500	59,000	31,100	
5	0.31	1¼	¼	0.62	ND	19,500	ND	63,000	31,400	
6	0.44	1⅝	9/32	0.92	ND	23,500	ND	53,500	25,600	
7	0.60	2	5/16	1.25	ND	28,500	ND	47,500	22,800	
8	0.79	2¾	11/32	1.89	ND	42,800	ND	54,200	22,600	
9	1.00	3⅜	⅜	2.54	ND	58,100	ND	58,100	22,800	

TYPE III



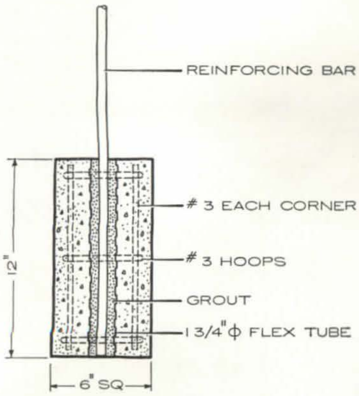
Bar Size	Bar A_s in.^{2}	Weld Size—in. L	Weld Size—in. t	Weld A in.^{2}	P_y lbs.	P_{ult} lbs.	Bar f_y psi	Bar ts psi	Weld Shear psi	Failure
3	0.11	1⅜	3/16	0.26	6,200	9,500	56,500	85,500	37,500	rotation of joint due to eccentricity
4	0.20	1⅜	7/32	0.30	10,200	12,300	51,000	61,500	41,000	
5	0.31	2½	¼	0.62	16,300	19,200	53,500	62,000	31,000	
6	0.44	3⅛	9/32	0.88	20,800	29,000	47,200	66,000	23,600	
7	0.60	4	5/16	1.25	32,000	37,000	53,400	61,600	29,600	
8	0.79	5⅜	11/32	1.85	ND	53,700	ND	68,000	29,000	
9	1.00	6⅜	⅜	2.39	ND	71,800	ND	71,800	30,000	

ND = Not determined.

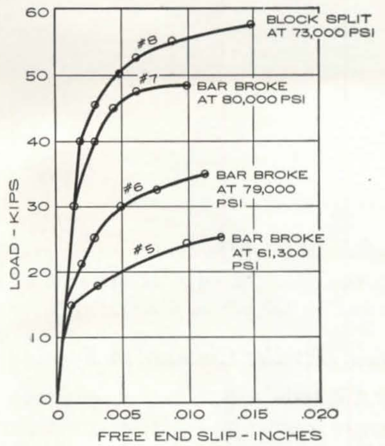
All bars are intermediate-grade billet steel, ASTM A15, rolled to ASTM A305.

All welding electric arc with low-hydrogen electrodes AWS class E7015 or E7016. On multiple passes, surface is thoroughly cleaned prior to welding next pass.

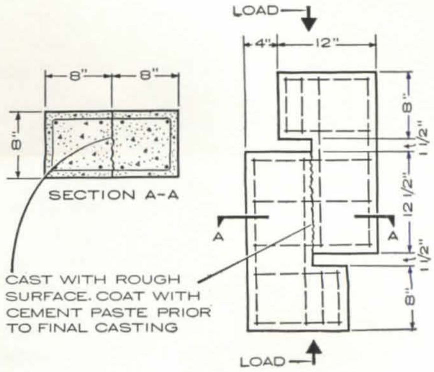
On Type I joints, cross-section area of structural angle bar should be at least 1.5 times the reinforcing bar cross-section.



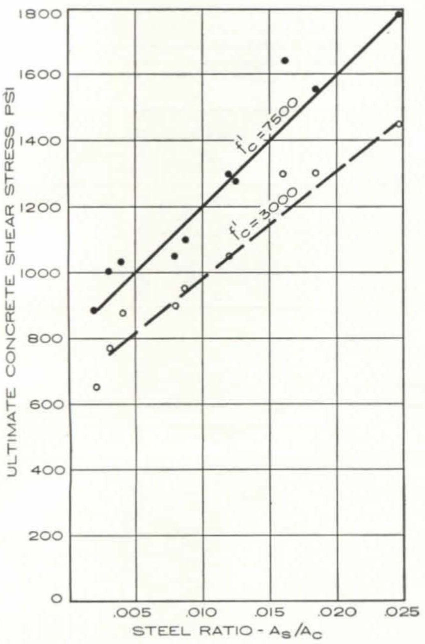
1 *Pull-out test specimen. Concrete block cast with spiral flexible metal tube in center. Concrete $f'_c = 6000$ psi. Tube was filled with neat cement-paste grout of thick consistency, and deformed reinforcing bar was placed by forcing it into the grout. Estimated compression strength of grout at time of test: 6000 psi.*



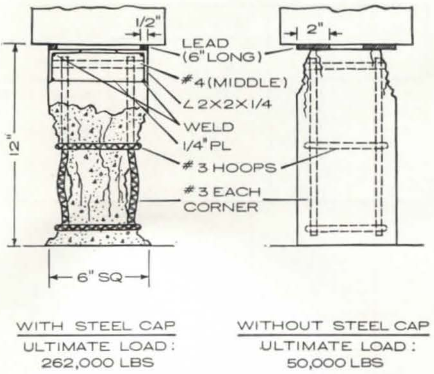
2 *Pull-out test results. Bar sizes No. 5, 6, and 7 fully developed tensile strength and broke outside the concrete block. Block containing the No. 8 bar split vertically on all four sides when the steel tension reached 73,000 psi, and the bar, with grout and flexible metal tube intact, was pulled out of the block.*



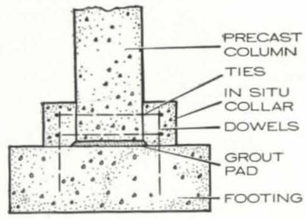
3 *Left side of specimen was cast first with 7500 psi concrete, leaving a roughened surface on the joint face. The steel crossing the rough face varied from two No. 2 hoops to four No. 5 hoops ($p = 0.002$ to 0.0248). Second half of the specimen was cast against the hardened concrete of the first half using two concrete strengths, $f'_c = 3000$ psi and $f'_c = 7500$ psi. When loaded in pure shear, the specimen behaved like monolithic concrete up to loads of 75 to 85 percent of ultimate, at which time slip of the joint started.*



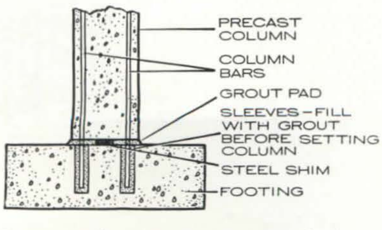
4 *Ultimate concrete shear strength of composite specimens with varying percentages of reinforcing steel projecting across the joint face. Specimens are delineated in* 3.



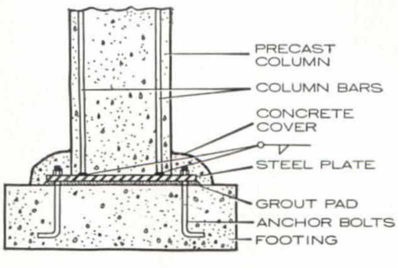
5 *Reinforced-concrete compression specimens with concentrated loads placed at the upper edges. Concrete compression strength at time of test: 7000 psi. When confined by steel cap, the specimen sustained a concentrated compression stress of 43,700 psi at the top edges. Without the steel cap, the concrete failed at the upper corners at a stress of 2080 psi.*



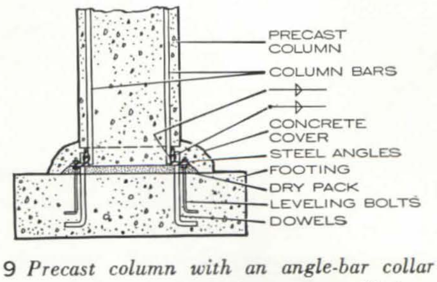
6 *Precast column on footing with accurately placed grout pad. Grout pad is allowed to harden before setting column. Base of column is cast square and flat. In situ collar (cast-in-place concrete) is placed after erecting and bracing column.*



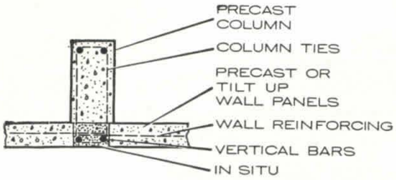
7 *Precast column on footing in which grouting is done at time of erection. Base of column need not be as accurate as in* 6, *but more time may be required in setting for accurate alignment.*



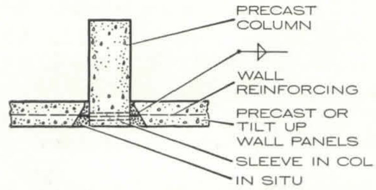
8 *Precast column with a steel-plate base. Leveling nuts may be placed under the plate for convenience in erecting.*



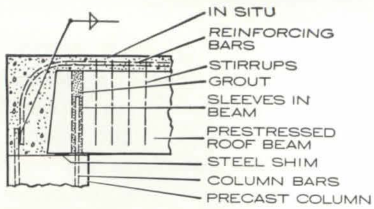
9 *Precast column with an angle-bar collar at the base. Column bars are welded to angle, and, after erection, footing dowels are welded to opposite side of angle. This connection is advantageous where high-moment-resisting joint is required.*



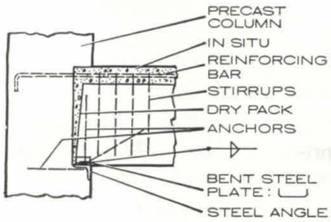
10 *Precast column and precast wall-panel connection. Finished column and wall surfaces exposed to exterior. Column hoops and wall bars are welded together, and space between the three precast elements is filled with in situ concrete.*



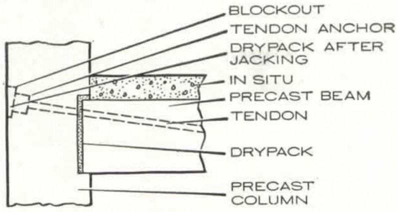
11 *Precast column with horizontal sleeves allows a short bar to be welded to reinforcing bars in wall panels. Space between precast wall and columns is filled with grout after welding.*



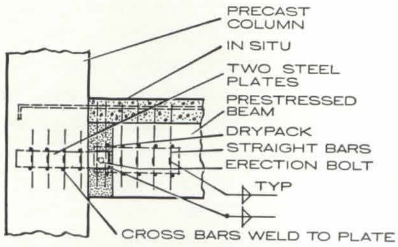
12 *Precast roof beam to column connection. Interior column bars project upward into sleeves of beam, and space is filled with grout. Bent reinforcing bars placed over the beam are welded to exterior column bars. Space over the beam and column is filled with in situ concrete.*



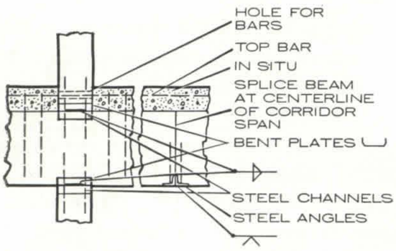
13 *Precast floor-beam to column connection. Embedded-steel in column and beam is welded together after erection. Bar extending from column over beam is encased by in situ concrete, and may be designed to develop frame action.*



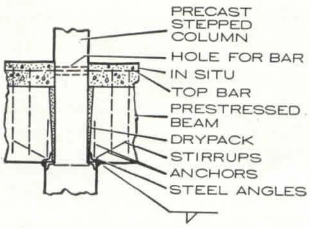
14 *Precast beam connected to column by post-tensioning. Space at end of beam is filled with drypack prior to stressing the tendon.*



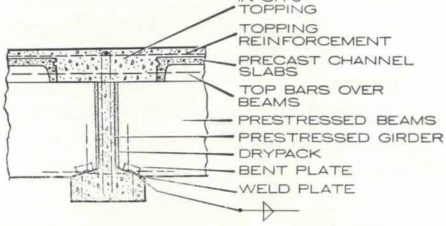
15 *Precast beam connected to column by erection bolt prior to welding. This connection is advantageous for multistory construction as it speeds erection. Space around the welded connection is reinforced with suitable hoops and filled with drypack or cast concrete. Frame action may be developed by extending bar from column over beam and covering with in situ concrete.*



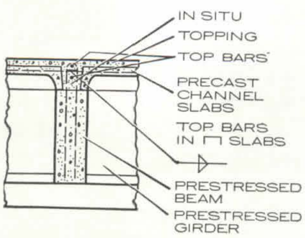
16 *Precast beam connected to interior precast column. This detail is applicable to multistory construction where beams are continuous over the columns. Embedded steel in columns and beams is joined by welding. Negative reinforcing bars may be run through sleeve in column and covered with in situ concrete.*



17 *Precast beam connected to interior precast column. Column is stepped to provide beam seat. Embedded steel in column and beam designed to confine concrete is joined by welding. Negative reinforcing bars may be run through sleeve in column and covered with in situ concrete.*



18 *Precast girder, beam, and channel slab composite with in situ concrete. Bottom flange of inverted* T*-girder serves as seat for beams. Embedded steel in girder and beam joined by welding. Precast slab over the girder may be omitted, allowing a substantial in situ section to be cast as a composite top flange for girder and to provide space for placing negative reinforcing bars over beams and girders.*



19 *Section through beam and slabs of scheme shown in* 18. *Negative bars projected from ends of precast channel slabs are welded together, and space over the beam is filled with in situ concrete.*

be placed accurately later. A row of dowels around the column is placed in the footing to provide anchorage for the collar. The base of the column is cast square and flat. After placing the column on the grout pad, the collar is cast around the column. This type of connection should be considered hinged at the base.

If a simple and inexpensive moment-resisting connection is required, another type of joint can be used 7. The footing is cast about an inch below finish elevation, with sleeves provided to receive the column bars. A steel shim is placed near the center of the column for temporary support. Immediately prior to setting the column, the sleeves are filled with thick grout paste and the column is then placed. After bracing the column, the space between it and the footing is filled with grout.

An adaptation of the conventional base for a steel column on a concrete footing is another possibility 8. The steel plate is welded to the column bars, and the anchor bolts in the footing are fastened to the plate after erection and grouting. Leveling nuts may also be used here for convenience in erection.

Where columns are required to develop high bending moments at the base, a detail that has been found convenient and efficient is shown 9. An angle-bar collar is welded to the column bars. Small leveling bolts may be provided for convenience in setting the column. The footing dowels are carefully located so as to line up close to the outside of the angle bar when the column is erected. After the column is positioned by the leveling bolts, the dowels are welded to the angle bar. Weld sizes may be determined from *Table I*, using the low-hydrogen welding procedure already described. To facilitate the final positioning of the footing dowels, it is recommended that a pipe sleeve be provided around the upper end of the dowel embedded in the footing. The sleeve allows lateral movement in the dowel, while setting the column, and a good fit to the angle bar, prior to welding. The annular space around the dowel in the sleeve is filled with grout after welding.

Joint Details: Wall to Column

Where precast wall panels with textured finish are attached to precast columns, successful details are 10, 11. Column hoops project inward, and are welded to bars projecting from the ends of the wall panels 10. The space between the walls is filled with concrete. In alternate design, the column is provided with sleeves to receive short bars which overlap the horizontal bars projecting from the ends of the wall panels 11. After the bars are welded, the space is filled with grout or concrete.

Joint Details: Beam to Column

Contemporary buildings framed in precast concrete often have an exposed structure, and a clean connection between beam and column is essential. This precludes the possibility of a projecting seat or corbel on the column. A simple but effective detail for a roof-beam-to-column connection is shown 12. The interior column bars are threaded into the beam, and the sleeves filled with grout. Bent bars are placed over the ends of the beam and welded to complete the joint. The roof slab may be cast-in-place or precast concrete.

In multistory buildings, floor beams may be supported in shallow notches in the exterior columns 13. The beam seat is a steel angle securely anchored into the column. A steel plate embedded in the end of the beam is welded to the angle bar after the beam is erected. A reinforcing bar projecting inward over the beam develops negative bending in the joint.

A variation of the floor-beam connection to the column, in which the beam is joined to the column by post-tensioning, is shown 14. This method has been particularly attractive for beam spans up to 70 or 80 ft. The tendons are threaded through the columns and beam after erection, and the narrow space at the end of the beam is drypack-grouted. When the drypack has developed sufficient strength, the assembly is post-tensioned.

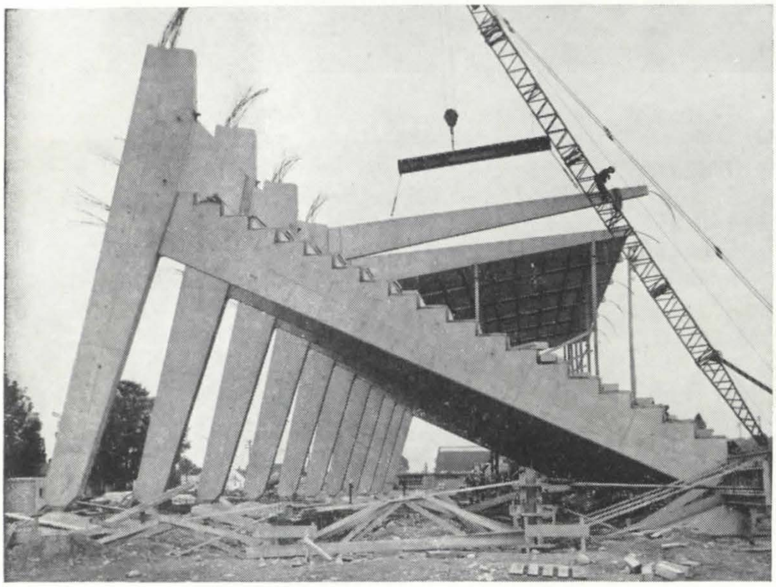
In the erection of multistory buildings, construction people have expressed a keen interest in a simple and rapid temporary bolted connection 15. Since it is only a temporary connection, a bolt need only be strong enough to carry the erection load until the final welded connection has been completed. One straight bar with a slotted hole projects from the end of the beam. It is placed between two parallel straight bars projecting from the column, each containing a round bolt hole. The slotted hole in the center bar allows a tolerance for horizontal positioning of the beam. After bolting, the erection crane and crew are free to pick up another member, and delays usually caused by the welding operation are avoided. After placing a light cage of reinforcing steel around the connection, the space between the beam and column is filled with concrete. A bar may be extended from the column over the beam to develop frame action through the joint.

Where multistory construction includes interior columns, the designer has a choice of designing the beams to be continuous over the columns, or making the columns continuous. The case of a continuous beam, with the columns precast for each story, is shown 16. Steel embedded in the ends of the columns and in the upper and lower faces of the beam is joined by welding. Negative reinforcing steel placed over the beam can be run through a sleeve in the column, and later covered by concrete cast-in-place after erection and welding of the precast members. When the precast column is continuous, however, it may be notched or stepped to provide a seat for the beams 17. A very narrow seat or bearing can be safely used provided the concrete is adequately confined in steel. The steel is joined by welding, and if fireproofing is required, the steel may be recessed to allow for a plaster cover. Negative reinforcing steel may be threaded through sleeves in the column and covered with concrete cast-in-place after the precast members have been erected and welded.

Joint Details: Beam to Slab

In framing large bays, the use of precast girders, beams, and slabs has been economical, particularly when the precast members are prestressed. Girders of inverted-T section may be employed, in which case the bottom flange serves as seat for the beams 18, 19. The connection between the beam and girder is accomplished by welding embedded-steel plates. The precast slabs carried by the beams run parallel to the girders. If a precast slab is omitted over the girder, a space is provided for a substantial cast-in-place top flange to the girder, where negative reinforcing steel may be placed for both the girders and the beams. It has been found advantageous to shore the beams and girders during construction, so that the dead-load as well as the live-load bending stresses are carried by the composite section. Also, a better distribution of the moments (positve and negative) can be developed.

Illustrated on the following pages are buildings—engineered by the author's firm—in which some of the foregoing composite details were used.



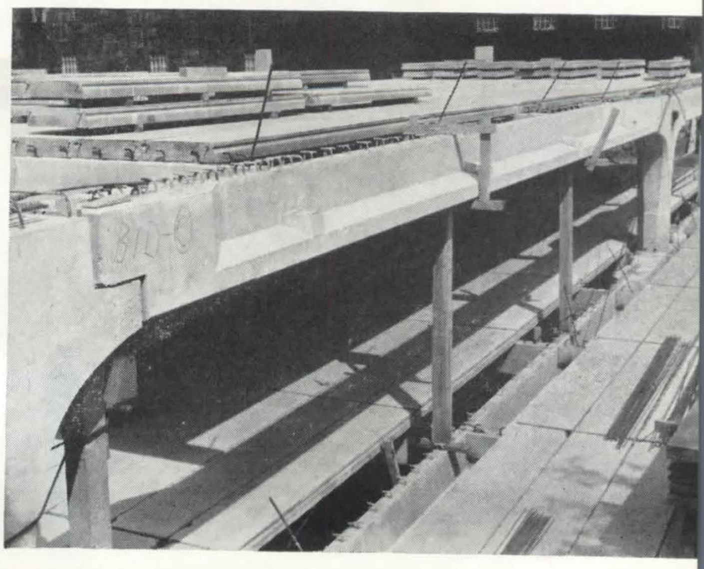
SUMNER HIGH SCHOOL STADIUM • Sumner, Wash. • Lea, Pearson & Richards, Architects • Concrete Construction Company, Contractor.

This stadium is 180′ long, and features a 45′ cantilevered concrete roof. The basic frame consists of three precast parts—a sloping rear column, a serrated beam to carry the seats, and a cantilevered roof beam—assembled and joined together by post-tensioning. The seat units, cast L*-shape* (above), *were reinforced by pretensioning with four ⅜″, seven-wire strands and a curtain of welded-wire fabric that projected from all edges. Precast wall panels, 4″ thick and 8′ high, were fitted between the columns. When all columns and wall panels were erected and grouted, they were post-tensioned into a monolithic structure by tendons running continuous from end to end. The* L*-shaped seat members were placed on the serrated beams and the joints grouted.*

The roof slabs are pretensioned channel sections 4′ wide, 1½″ thick, and 6″ deep at the legs. They are supported on a flange cast on the lower edge of the roof beam. Sleeves in the roof beams were provided to insert short reinforcing bars, which were welded to steel projecting from the legs of the channel slabs. After welding, the space between roof slabs and beams was filled with cast-in-place concrete. Through the use of high-strength concrete and prestressing, the dimensions and weights of the members were reduced to the minimum practical value for a structure of this type.

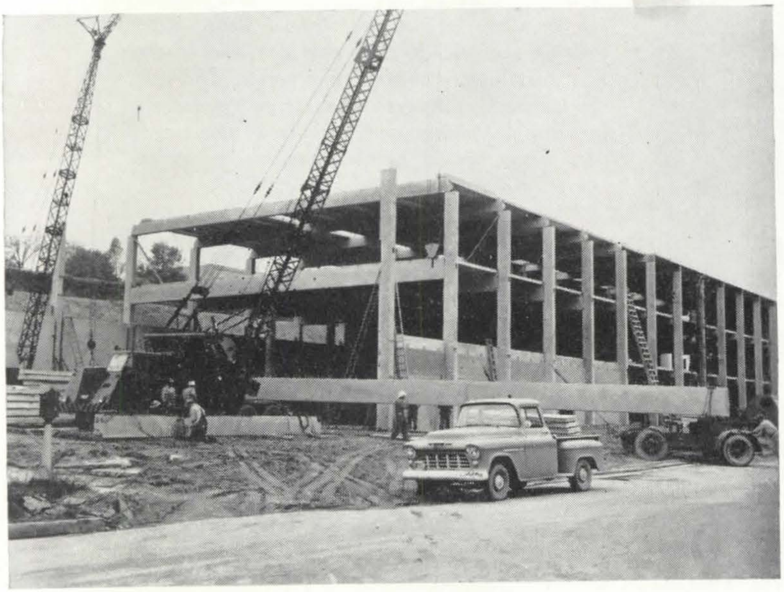
STATE CAPITOL PARKING GARAGE • Olympia, Wash. • Gordon Brown, Architect • Halvorsen Construction Company, Contractor.

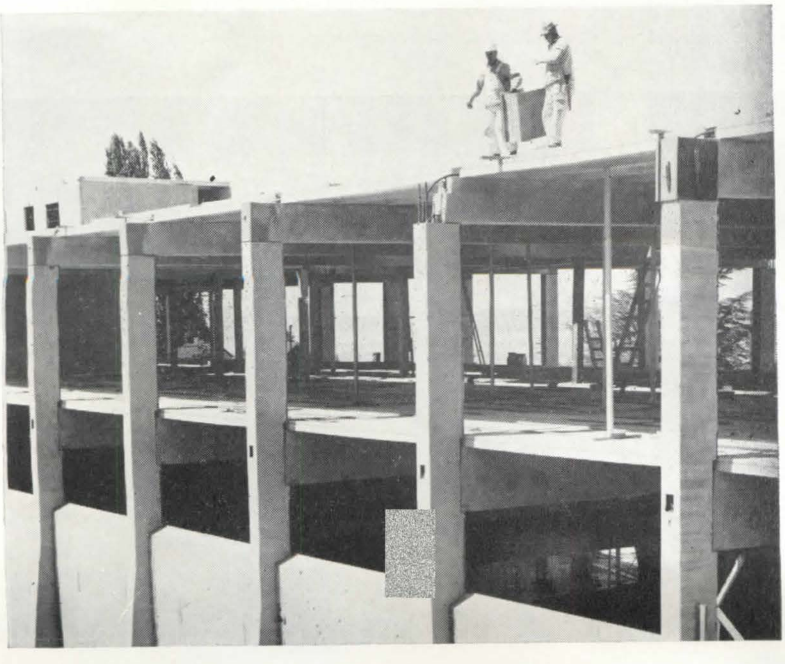
This three-level parking garage, 120′ wide and 240′ long, has only seven interior columns. The basic frame consists of two exterior precast double L*-shaped columns, one interior double* T*-shaped column, and four inverted* T*-shaped prestressed girders. The flange of the girder serves as a seat to carry prestressed beams, which in turn carry precast channel floor slabs. The structural scheme utilizes details previously shown* 18, 19. *The girders and beams were shored during erection to carry the dead load. Negative reinforcing steel was provided for all girder, beam, and slab connections and embedded in cast-in-place concrete. When the concrete reached its specified strength, the composite structure functioned continuous and monolithic for dead load as well as live load. Structure was built for $3.45/sq ft, including electrical and mechanical work.*



ALA MOANA SHOPPING CENTER • Honolulu, Hawaii • John Graham & Company, Architect • Hawaiian Construction & Dredging Company, Contractor.

A two-level parking structure, over several hundred thousand sq ft of filled land, utilized precast and prestressed concrete composite designed with a cast-in-place deck slab. Prestressed-concrete piles driven through the fill material were designed for point bearing on the coral ledge. The piles were designed to stand as columns, the upper end of the column being cast-in-place in an adjustable steel form. Reinforcing steel for the upper section of the



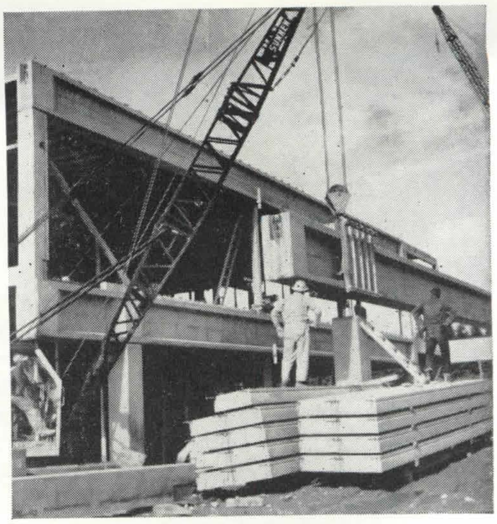


AQUINAS ACADEMY • Tacoma, Wash. • Lea, Pearson & Richards, Architects • Earley Construction Company, Contractor.

This three-story high school was built in five months at a cost of $12.80/sq ft. It is a rigid-frame construction, which is subjected to a horizontal load on one side from a 25′ earth embankment. The retaining-wall panels were precast with haunches and reinforced horizontally for continuity at the columns. The columns on this side were designed as counterforts and were fixed to deep footings by welding of reinforcement.

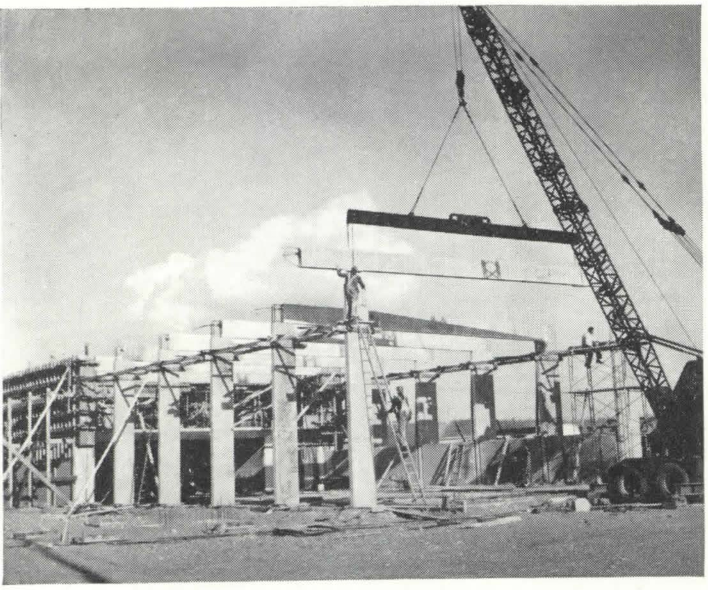
In the three-story portion of the building, the interior columns were stepped from 8″ x 12″ at the first story, to 8″ x 10″ at the second story, and 8″ x 8″ at the third. The beam to column connections were in accordance with detail previously shown 17. *The exterior connections were according to details* 12, 13. *Detail of the roof-beam connection is seen* (below). *One end of the building contains a gymnasium in the first two stories. The third floor is spanned by a 70′ prestressed beam connected to the columns by the scheme detailed earlier* 14.

column was dropped into sleeves cast into the pile heads, and grouted to the pile in accordance with procedure previously shown 1. *Pile lengths for each location were predetermined by an ingenious method devised by Charles W. Watson, manager of the project. Watson developed a light, truck-mounted driver for a steel probing bar, and correlated hammer blows on the bar with pile resistance. This procedure resulted in almost perfect determination of pile lengths within the tolerance allowed. Photo* (left) *shows a row of piles with the adjustable steel forms in place, and photo* (right) *shows the prestressed girder positioned on one side of the column capital. When the girders were placed on both sides, and the projecting steel from the three members connected, the space was filled with concrete to complete the connection. Prestressed beams are carried on the lower flange of the girder, similar to details shown* 18, 19. *Negative steel over the beam and girder supports was placed in the 4½" cast-in-place deck.*



FLORIDA BUILDING • Federal Way, Wash. • Lyle Swedberg, Architect • Bona Fide Builders, Contractor.

This two-story commercial building features 90' prestressed-concrete beams, with the second floor cantilevered 10' at one end. Photo shows a second-floor beam being erected on a precast column whose bars are threaded into sleeves in the beam. Precast channel slabs span 20' between the beams, and the negative bars projecting from their ends are welded, prior to filling in the space over the beams with concrete.

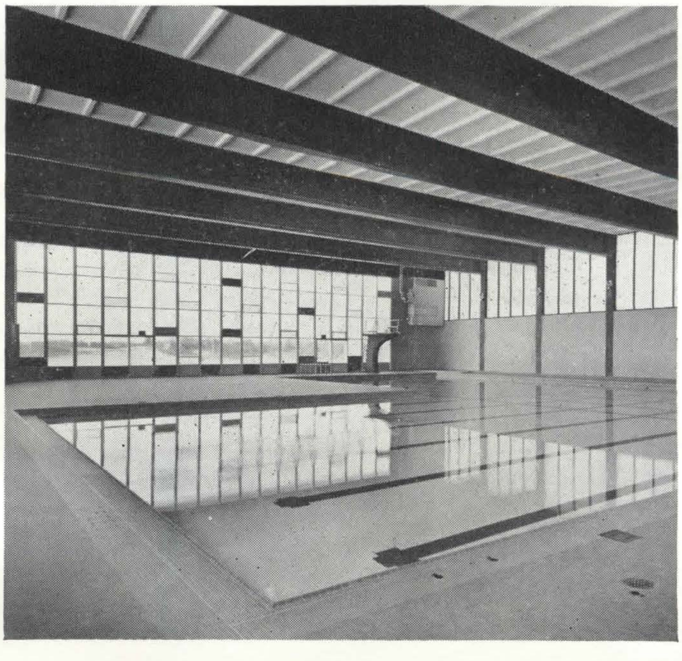


NATIONAL BANK OF WASHINGTON INDUSTRIAL BRANCH • Tacoma, Wash. • Robert B. Price, Architect • Concrete Engineering Company, Contractor.

This bank consists of a series of rigid-frame bents made from precast columns and a prestressed roof beam. Connection detail at the corners is in accordance with detail shown earlier 12. *Precast wall panels on the far side are connected to columns in accordance with detail* 11; *column-to-footing connection is also shown* 7.

WOODROW WILSON HIGH SCHOOL • Tacoma, Wash. • Lea, Pearson & Richards, Architects • Nelson Construction Company, Contractor.

Roof of this swimming pool spans 105'. The prestressed-concrete I*-beams are 48" deep, with 18" flanges and a 4" web. The beams are carried on precast columns connected by detail previously shown* 12. *The precast wall panels are joined to the columns in accordance with detail also illustrated* 11.



Acoustics and Reverberation

BY DAVID P. COSTA

It is often desirable to know the reverberation time of a room, in advance of construction, so that desirable acoustical qualities can be provided. A Mechanical Engineer associated with the Naval Material Laboratory, Brooklyn, New York, discusses effects of reverberation time and by means of a nomogram shows how this interval can be speedily determined.

Everyone has experienced disagreeable effects due to faulty acoustical design: excessive reverberation (or echoing) in a large church or gymnasium, for example, or insufficient sound intensity in the rear seats of a large auditorium. The problem of reverberation, or lack of it, involves the acoustical behavior of an enclosure as it directly affects the audibility and intelligibility of sounds produced in the enclosure. Fortunately, such defects, which in extreme cases can completely destroy the usefulness of a room, can almost invariably be eliminated by various corrective expedients. It is important, therefore, that a designer of such rooms be able to predict their acoustical performance and arrange for the desired results in advance of construction.

An important factor in the acoustical quality of any enclosure is its reverberation time. This is defined as the length of time required for the sound intensity to decay to one-millionth of its initial value.

Effects of Reverberation Time

If the percentage of sound energy that is absorbed by the boundaries of a room at each sound reflection is large enough, the sound in the room will decay rapidly, and succeeding sounds (or syllables, in the case of speech) will experience no interference. Thus, an over-reverberant condition can be corrected by application of sound-absorbing materials to the boundaries.

In view of this, it might be expected that the best intelligibility would be obtained with the shortest reverberation time. It should be remembered, however, that the greater the sound absorption, the smaller the steady-state sound intensity in the room. This indicates that in some cases, the reverberant reinforcement of sounds in a room can have a beneficial effect on intelligibility. It has been determined[1] that there is an optimum point where intelligibility of speech (as well as the esthetic quality of music) reaches a maximum as the reverberation time is decreased from large values; but if reverberation time is decreased below this point, intelligibility decreases because of lowered sound intensity in the room. Optimum reverberation times for rooms of various volumes and uses[1, 2], as well as sound-absorbing characteristics of various materials[3], can be found in the appropriate references.

Determining Reverberation Time

The reverberation time of a room can be determined with reasonable accuracy by use of the standard equation[4]

$$T = \frac{0.049\ V}{-S\ \log_e (1-\alpha)}\ ;\ \text{where}$$

$T =$ reverberation time, sec;
$V =$ volume of enclosure, cu ft;
$S =$ total surface area of boundaries, sq ft;
$\alpha =$ sound energy absorption coefficient.

According to the initial assumptions made in its derivation, the standard equation is strictly applicable only to enclosures in which all boundaries have the same sound-absorption coefficient. Because this condition is seldom encountered in practice, it is necessary to use the "appropriately averaged" sound-absorption coefficient. There are various means of determining this. A convenient method of computing this average is given by the Arithmetic Reverberation Equation[5]

$$T = \frac{0.049\ V}{-S\ \log_e \left[1 - \dfrac{\Sigma (S_i\ \alpha_i)}{S}\right]}\ ;\ \text{where}$$

$S_i =$ a particular area of surface whose random incidence sound-absorption coefficient is α_i, sq ft;
$\alpha_i =$ random incidence sound-absorption coefficient of a particular surface of area S_i.

Here the (α_i)'s are the absorption coefficients of the different parts of the room, and the (S_i)'s are the corresponding areas, so that, in taking the average, each absorption coefficient is weighted by the area possessing that value. That is,

$$\alpha = \frac{S_{11}\alpha_{11} + S_{12}\alpha_{12} + S_{13}\alpha_{13} \ldots S_{1n}\alpha_{1n}}{S_1 + S_2 + S_3 \ldots S_n}$$

By using this average sound energy absorption coefficient, the reverberation time of most enclosures can be calculated with very acceptable accuracy.

Use of Nomogram

A nomogram (*acrosspage*) provides a means for determining the reverberation time of a room if its volume V, total surface area S, and average sound energy absorption coefficient α are known.

For example, find the reverberation time of a room at 512 cps (*conventional* standard frequency), whose volume is 120,000 cu ft. The acoustical-tile ceiling has an area of 4000 sq ft and an absorption coefficient of .66, while the cork-tile floor of the same area has a value of .07. The wall area of 8400 sq ft (including wooden door, window glass, and plaster) has an average absorption coefficient of .03.

Solution

1 Sum up the areas of the ceiling, floor, and walls, to find total surface area S.

$$S = 4000 + 4000 + 8400 = 16{,}400 \text{ sq ft}$$

2 Employ equation above to find the average sound energy absorption coefficient (α).

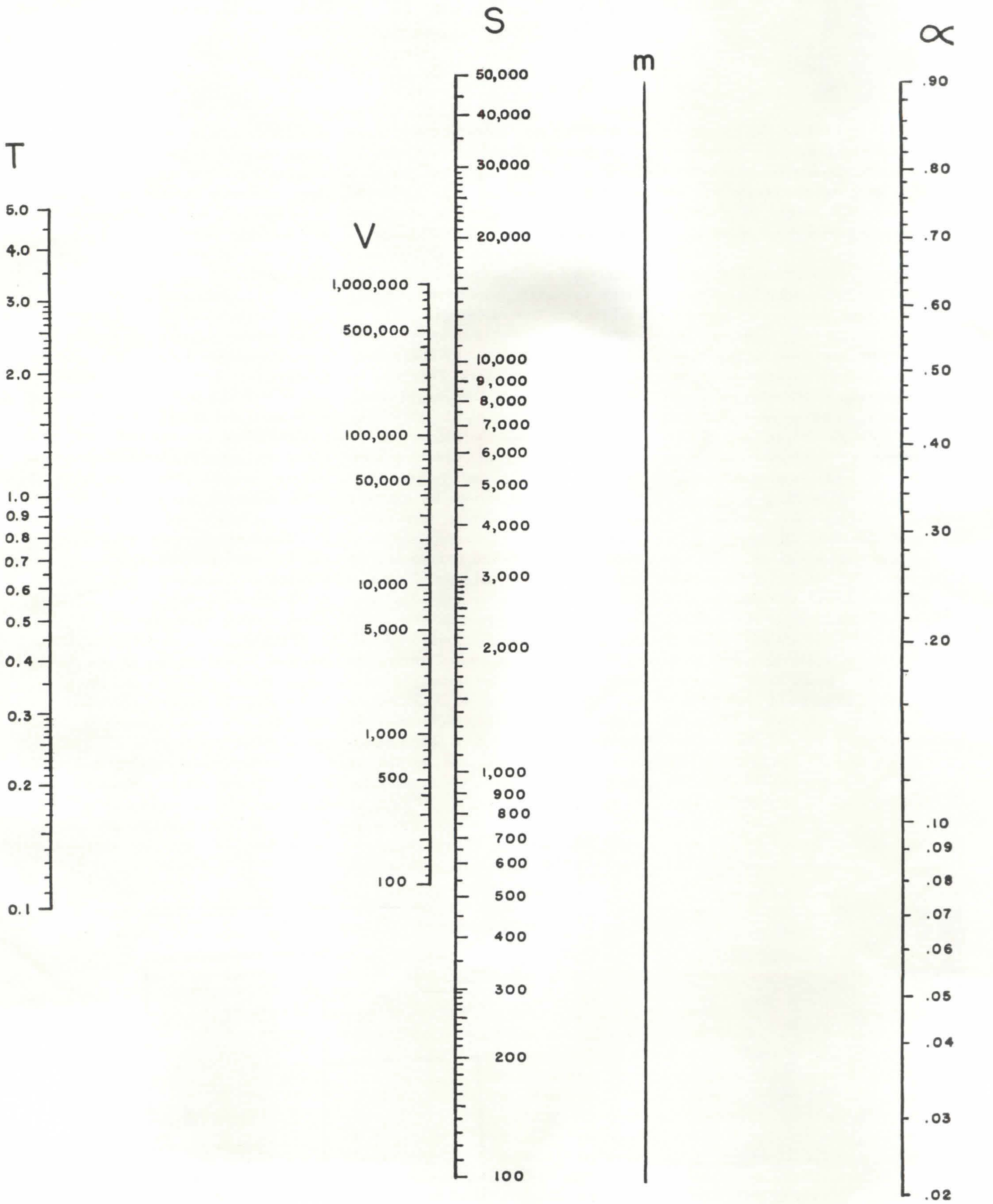
$$\alpha = \frac{(4000 \times .66 + (4000 \times .07) + (8400 \times .03)}{16{,}400}$$
$$= .193$$

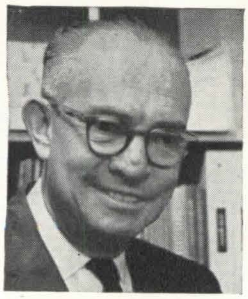
3 Connect total surface area S with average absorption coefficient α, so as to intersect m.

4 Connect m with room volume V, to find that reverberation time equals 1.66 sec.

[1] Leo L. Beranek, *Acoustics*. McGraw-Hill, New York, N. Y., 1954.
[2] F. R. Watson, *Acoustics of Buildings, 3rd Edition*. John Wiley & Sons, New York, N. Y.
[3] *Bulletin XIII, Acoustical Materials Association*, New York, N. Y., 1951.
[4] Robert W. Young, *J. Acoust. Soc. Amer.*, Vol. 31, No. 7, 912-921, July, 1959
[5] Robert W. Young, *J. Acoust. Soc. Amer.*, Vol. 31, No. 12, 1681, December, 1959.

NOMOGRAM TO DETERMINE
REVERBERATION TIME OF A ROOM





Vibratory Studies in "Reverbatorium"

BY WILLIAM J. McGUINNESS

New structure—designed to accommodate acoustical studies made in connection with basic components and systems of environmental control—is discussed by a practicing mechanical engineer.

Some central-station air-conditioning installations in large buildings are so quiet that it has been necessary to introduce a certain amount of "acoustical perfume," or covering noise, to relieve the silence in which even routine sounds become distracting. At the other end of the scale, some room air conditioners are so loud that hotel guests turn them off during sleeping hours, choosing silence to noisy cooling. Central-station heat pumps in large industrial buildings usually have batteries of compressors operating in various combinations all year-round. In the case of one recent and otherwise highly successful installation, the persistent high-level sound was the cause of considerable tension in nearby workers. The company president, very proud of the performance, appearance, and economy of his heat pump, said: "We want the equipment to be visible, but we may enclose it in glass to reduce the sound level in adjacent spaces." An architect planning an extensive and rambling new residence had this to say to his engineer: "Because the lack of three-phase power makes a central plant impractical, air-to-air units of the through-the-wall type will be used. This client has had bad experience with noisy air-cooled units and it is your job to find quiet ones."

The architect, engineer, company president, and hotel guest all have *some* control over air-conditioning sound and vibration, but all lack the elaborate equipment necessary to study basic components and systems. Turning off the unit (in the case of the hotel guest) is hardly a satisfactory type of control.

A contribution to the solution of these problems is the new "Reverbatorium" in operation at the York, Pennsylvania, plant of the York Division of Borg-Warner Corporation *(plan)*. The interior working areas, reverberation chambers A and B, are two high-density poured-concrete chambers, cast together and supported on steel springs for complete isolation from the larger surrounding concrete building. To measure sounds of different intensities and frequencies, the rooms differ in size and have no parallel surfaces in walls or ceilings. The complete separation between the test chambers and the surrounding, massive building which consists of poured concrete on steel frames, is illustrated *(photo)*. Within the structure is a 30,000 lb seismic mass for extremely accurate measurement of vibration. Office, analysis room, sound lock, and instruments are additional components of the new research center.

Quite proud of its present record in sound and vibration control, the company expects that the laboratory will produce data to be used for the greater improvement of its products. In addition, it is its hope that much will be done there to further the efforts of associations, societies, and other organizations now working toward greater knowledge and control of sound and vibration in the industry.

Warren E. Blazier, Jr., Director of the new laboratory—whose background includes similar research for Boeing Aircraft, the University of Wichita, and the Coleman Company—expects that the laboratory staff will make numerous studies in balance and strain, as well as motion and sound. Improvement and longer life of equipment are looked for as concomitant benefits along with those of better acoustical and vibratory control. Specific objectives are:

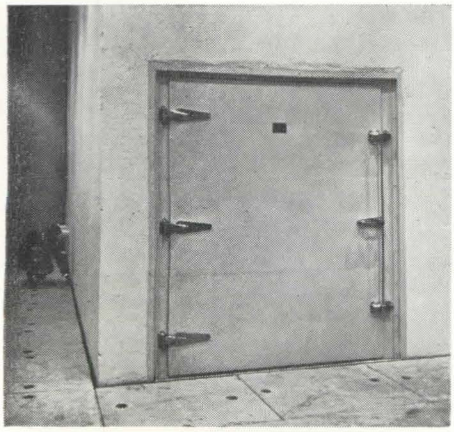
1 Elimination or control of primary sound through selection, design, and application of components.

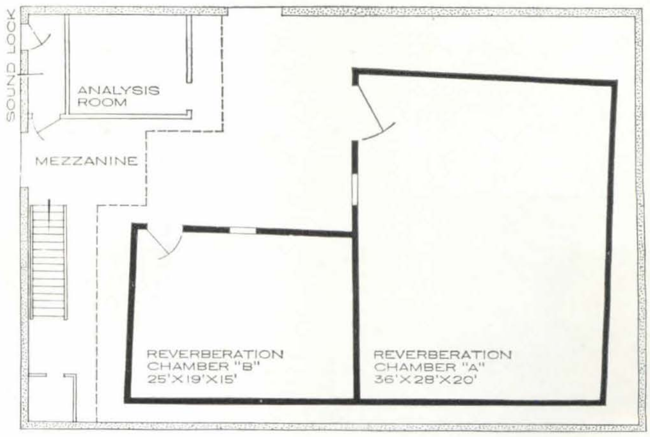
2 Elimination or reduction of secondary sound resulting from vibration.

3 Containing the remaining sound as much as possible by use of the correct type of enclosure, baffles, and insulation.

4 Defining the factors that affect the level of customer acceptance of sound and vibration in various environments.

The architect and engineer will have a direct "assist" from the manufacturer in dealing with the environmental problems of the hotel manager, the country client, and the busy but quiet-loving industrialist.





Defining The "Specifications Writer"

BY HAROLD J. ROSEN

An architectural office's fount of information—with respect to construction, materials, and equipment—is defined in this column by the Chief Specifications Writer of Kelly & Gruzen, architects-engineers.

In the small office, specifications are written by the architect who is doing his own work, or by the same individual who is making the working drawings. In the larger offices, the specifications are written or prepared by an expert who devotes his full time to this function, or by a department consisting of several people who are proficient in writing specifications which will accompany the drawings when sent out for bids.

We know for whom specifications are written. They are written for the estimator in the contractor's office who prepares the estimate based upon the specifications. They are wiitten for the purchasing agent in the contractor's office who will procure the materials and equipment described in the specifications. They are written for the clerk-of-the-works or inspector who must be given a document which will aid him in supervising and directing the work. They are written for the owner who would like to know what he is buying and what he is entitled to receive. They are written for the subcontractors so that each can readily discern the scope of his contract. They are written for the manufacturers of building materials and equipment, so that the grade and type are clearly defined with respect to the many variations they may manufacture.

There are many texts on the subject of how specifications should be written, i.e., the organization of the material, the specifications language, the brevity of specifications clauses, the avoidance of duplication and repetition, the pitfalls, the pros and cons of "scope" and "or-equal," and the various sources of information such as Federal Specifications, A.S.T.M., Sweet's Catalog, and Manufacturers' literature.

The key problem is: by whom are the specifications written? In many instances fate, accident, or circumstance has intervened to place the responsibility of writing specifications upon one who is not otherwise qualified to write them. The appellation "Specifications Writer" is applied to those individuals whose sole duty it is to write specifications. However, the writing of specifications is only the end product of the total knowledge and experience which an individual possesses, and which is embodied in the completed specifications.

The "Specifications Writer," for want of a better description, must be all of the following: He must be a materials engineer and have a knowledge of the physical and chemical properties of materials. He must be a lawyer and be conversant with the legal requirements inherent in the General Conditions and the contract forms. He must be a field engineer who has had a great deal of experience in construction and trade practices. He must be a grammarian with the ability to use clear, correct, and concise English. He must be an estimator, so that he can evaluate the costs of materials and construction he proposes to specify, and make the correct selection. Lastly, he must be an architect or an engineer and be familiar with working drawings and details.

The duties of the individual assigned to write specifications in an architect's office are varied. He is called upon to check details to determine whether the detail will work and whether it can be built. He is asked to recommend building materials for certain applications or building locations. He is assigned the problem of interpreting plans and specifications whenever a question arises as to their meaning, or when discrepancies appear. He is consulted whenever samples are submitted, to determine whether they meet specifications requirements. He is a fount of information with respect to construction, materials, and equipment.

He must keep abreast of the advances in building technology by maintaining lines of communication with authorities in all the different lines of work, so as to become in effect a source of information on all phases of building construction. To this end he should become a member of the Construction Specifications Institute and maintain the necessary contacts to obtain authoritative information. Without these contacts he will find himself stranded and alone, as the scope of modern specifications—in the larger offices—is beyond the experience and knowledge of any one person.

Does the title "Specifications Writer" connote and define the heterogeneous endowments which an individual must possess to qualify for such a position? Building science has advanced considerably and the talents that the specifications writer of yore possessed are not sufficient to qualify him as such in today's technology. Should the title be "Specifications Engineer" or some other similar title?

By the same token, what sepcification courses are being taught in our architectural and engineering schools today to prepare the student for positions in this field? Does the curriculum embrace all of the major elements that a writer of specifications is expected to encounter in the performance of his duties as enumerated herein?

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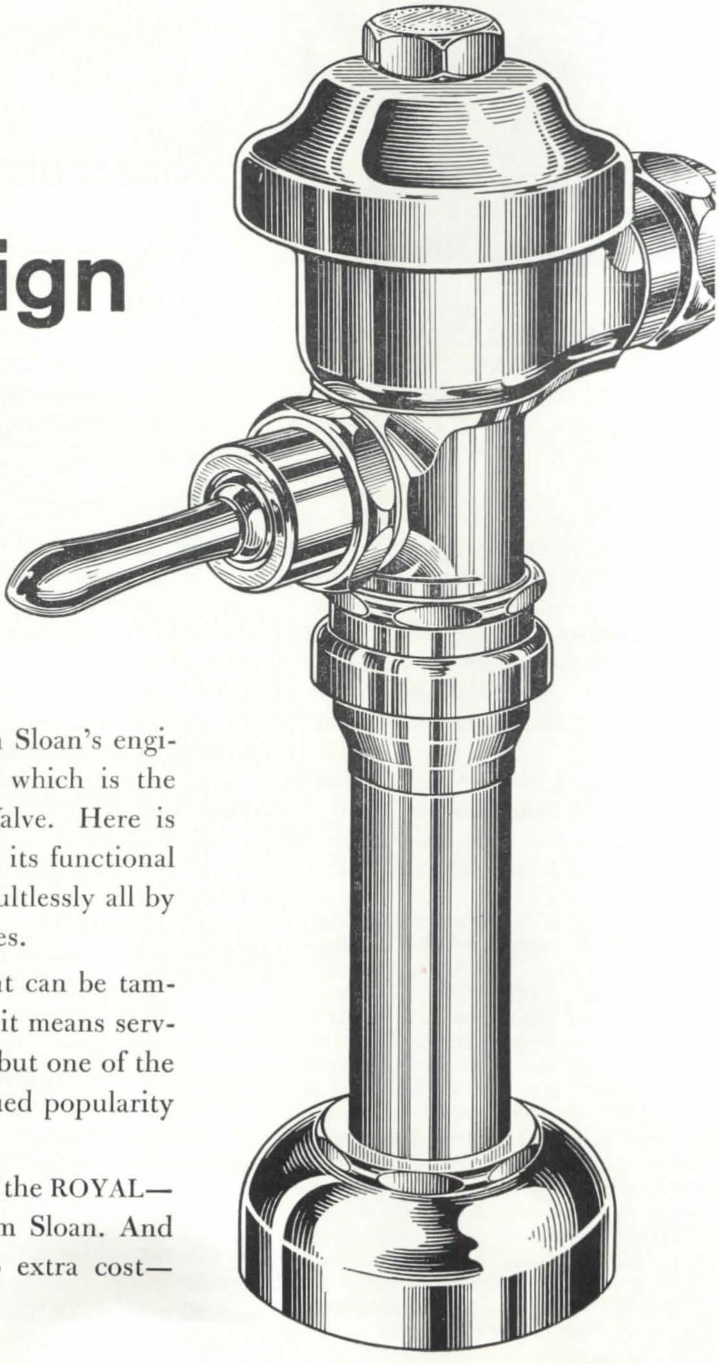

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Construction Contracts — Part 3

BY JUDGE BERNARD TOMSON & NORMAN COPLAN

This is the third of a four-part article criticizing the new AIA construction-contract forms.

The requirement of the "General Conditions" that the contractor furnish a progress schedule is inadequate to insure a timely performance on the contractor's part unless each subcontractor has been not only advised of such a schedule, but has initially approved and accepted it in connection with his respective part of the work.

A suggested clause to be included in the "General Conditions" to provide for co-ordination between contractor and subcontractor is as follows:

"The Contractor, prior to commencing the work, shall establish a schedule of progress for the work as a whole, and for the various parts, in such form as the Architect shall direct; and the Contractor shall comply with and adhere to such schedule. The parts of the work performed by each Subcontractor, and the time schedule applicable to each part, shall be acknowledged and accepted by each such Subcontractor before submission of the schedule. The Contractor shall also furnish a materials delivery schedule and shall inform the Architect immediately of any delay or deviation from such schedule. The Contractor shall keep his Subcontractors and other Contractors informed monthly as to actual progress made. Subcontractors shall be notified in writing not less than six weeks in advance of the commencement of their work and shall confirm, in writing to the Contractor, the expected schedule. No adjustment or extension of the schedule or the time in which the contract is to be performed will be made or granted, except as provided in Article 18, below."

The architect's status and powers as set forth in the 1958 edition of the "General Conditions" differs only in minor respects from the earlier edition. No attempt has been made to strengthen or broaden his position as an arbiter of disputes between owner and contractor. The inconsistencies and ambiguities continue in the latest edition, as will be indicated by a summary review of those provisions which require decisions or determinations on the part of the architect.

Article 15 of the "General Conditions" entitled "Changes in the Work" provides that if there is no agreement between the contractor and the owner as to compensation in connection with extra work "the Architect shall certify to the amount, including reasonable allowance for overhead and profit due to the Contractor." This paragraph does not expressly state, nor is it otherwise expressly stated in the "General Conditions," whether this determination on the part of the architect is final and conclusive, or whether it is subject to arbitration by a third party.

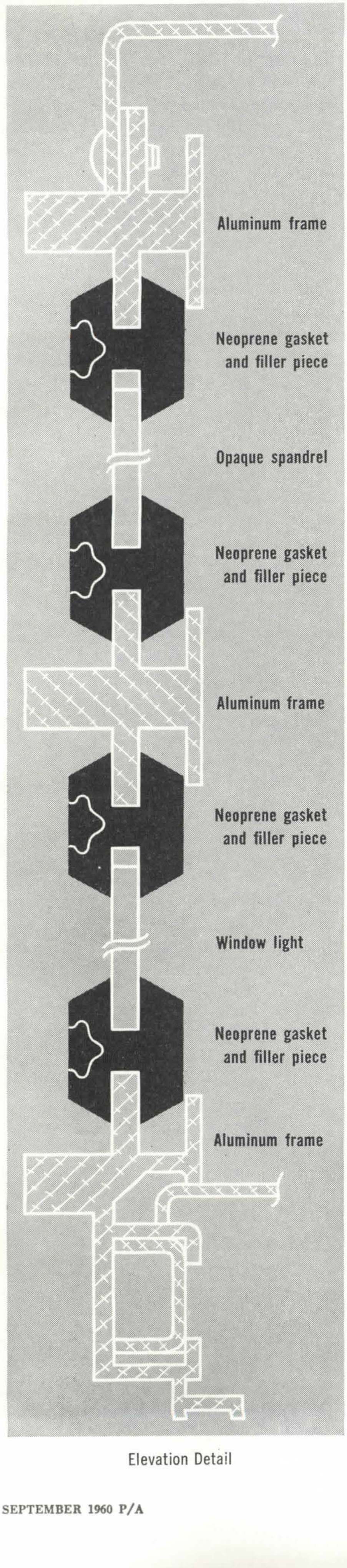
Article 18 of the "General Conditions" entitled "Delays and Extension of Time" provides that if the contractor is delayed in the progress of the work "by any cause which the Architect shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the Architect may decide. Again, this paragraph does not expressly state whether or not this determination on the part of the architect is final and conclusive.

Article 19 of the "General Conditions" entitled "Correction of Work Before Final Payment" provides that "The Contractor shall promptly remove from the premises all work condemned by the Architect as failing to conform to the contract." This article is also silent on the finality of the architect's determination. However, Article 20 entitled "Correction of Work After Final Payment" requires the contractor to remedy any defects due to faulty materials or workmanship which shall appear within a period of one year from the date of final payment, and provides that all questions arising under this article "shall be decided by the Architect *subject to arbitration.*"

Article 31 of the "General Conditions" entitled "Damages" provides that either party to the construction contract, if he sustains damages because of any wrongful act of the other party, shall make a claim in writing, and such claim "shall be adjusted by agreement or arbitration." The relationship of this article to those other articles of the "General Conditions" which provide either for the final or initial determination by the architect of matters which involve performance under the contract, is not made clear.

Article 38 entitled "Architect's Status" provides that "As the Architect is, *in the first instance,* the interpreter of the conditions of the contract and the judge of its performance, he shall side neither with the owner nor with the Contractor." Article 39 entitled "Architect's Decisions" provides that "in matters relating to artistic effect" the architect's decisions "shall be final" and that except as "*otherwise expressly provided in the contract documents,* all the Architect's decisions are subject to arbitration." Article 40 entitled "Arbitration" provides that all disputes, claims or questions "subject to arbitration under this contract, shall be submitted to arbitration." These provisions would seem to indicate that all the architect's determinations, except those relating to "artistic effect" (which is undefined, and thus subject to conflicting views) are subject to arbitration. Uncertainty, however, is cast upon this conclusion by the exception above quoted, and by the failure of the "General Conditions" to specify expressly those disputes, claims, or questions which are subject to arbitration.

In next month's column, we will suggest revisions to the "General Conditions" which would clarify the architect's status under the construction contract.



Elevation Detail

Architects: Pedersen & Tilney (New York City)
Gasket Supplier: Inland Manufacturing Division, General Motors Corp.

Aluminum wall framing fabricator and erector: Flour City Ornamental Iron Company, Minneapolis, Minn.

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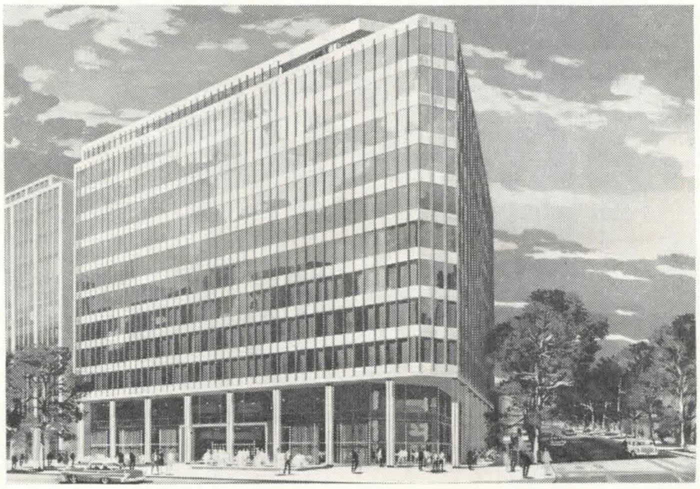
Experiences Shared

Dear Editor: Mr. Neutra's kind remarks about me in his Letter to the Editor on page 182 of your JULY 1960 issue have been called to my attention.

To clarify his statement, I have not engaged in new work with him since November 1958, and shall not do so in the future. We are, however, completing work undertaken together before that date.

This is an occasion for me to express my own appreciation of ten years of experiences shared with him.

ROBERT E. ALEXANDER
Los Angeles, Calif.



Glass Walls for Washington?

Dear Editor: Should an architect's freedom of design ever be curbed? Has he no rights as an individual? Certainly he has rights—but he also has obligations. Not only has he obligations toward his client but if he is a man of integrity and character he also has obligations toward the community in which the buildings he designs are to be built.

In the case of Architect Koubek vs. the marble wall of resistance of the Washington Fine Arts Commission (JUNE 1960 P/A NEWS REPORT), a few pertinent questions might be asked. The Commission objected to "all that glass" in the design of an office building to be built near the White House. Were they not right? Could not this building be repeated in Minneapolis or Kansas City? Would it not be better to relate the design to the city in which it is to be located, rather than to a glass-faced building that happens to be adjacent to it? Must all office buildings of today be faced with ribbons of glass and shining metal? Is this not just as unimaginative as the neo-classic, tile-roofed government buildings of the 1920's?

For example, not one of the solutions for the design competition for the U. S. Embassy on Grosvenor Square in London were of glass and metal, yet every solution presented was both contemporary and in harmony with its traditional surroundings. Surely Architect Koubek is versatile enough to find a contemporary solution that is in keeping with the character of our nation's capitol.

J. WELLS HASTINGS
Oakland, Calif.

Dignity for the Pedestrian

Dear Editor: In perusing the MAY 1960 P/A I underwent a shock of recognition when my eyes fell on Mr. M. Katzman's proposed overhead pedestrian mall since I had also thought of this idea some time back. In fact, I felt so strongly about it then that I immediately consigned the idea to a notebook.

However, I feel gratified rather than dismayed at the fact that someone else announced this idea for it confirms my own views on the means that should be used, or at least tried, to ease the complex congestion problem in New York. By extension, of course, the same approach would seem worthy of trial in other cities where a similar problem exists.

Objectively judged, the mall idea has the three-fold advantage that it restores the dignity of the pedestrian by allowing him to move freely and safely in the city's outdoors, it successfully combines the merit of satisfying the esthetic and psychological needs of the urban dweller while business activity is fostered rather than hampered, and, finally, it frees the man on wheels from the vagaries of his pedestrian counterpart. Further, vehicular traffic is speeded up and the delays at street corners normally incurred by crossing pedestrians is eliminated. And of course last but not least, the menacing problem of jaywalking is definitely eliminated. Over and above these advantages, the mall concept is susceptible of many other developments and innovations.

HENRY VAUGLE
Woodside, N. Y.

Land-Space and Landscape Architects

Dear Editor: Congratulations on the excellent, perceptive article: "Design of Exterior Spaces" by Jan C. Rowan (JULY 1960 P/A). The article gives an unbiased statement of the scope of the profession of landscape architecture, perhaps best summed up in the phrase "an art dealing with space and being concerned with the relationship between

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Certainly the many land-space problems confronting today's metropolitan areas need the rather specialized talents of the landscape architect. Much credit is due P/A and the author for the recognition of some of these problems and for pointing the way to possible solutions.

The companion article by Richard P. Dober of Sasaki, Walker & Associates is also valuable for its analysis and definition of operations in a landscape architectural office.

Best wishes to your outstanding magazine.

LYNN M. F. HARRISS
Field Secretary
American Society of
Landscape Architects
Washington, D.C.

Dear Editor: Congratulations on your good story on the Sasaki-Walker office. This, with your previous colloquy between Rose, Halprin, and Linn, makes you a real friend to our profession. This is a big step toward long-needed mutual understanding.

GARRETT ECKBO
South Pasadena, Calif.

Clarifying Stains

Dear Editor: We read the article, "Exterior Wood Stains" by John N. Anderson in your May issue with great interest and found that on the whole it covers the subject very well. There are, however, a couple of points with which we as pioneers in stain manufacture feel we should take issue.

The article says that it is no longer necessary for a manufacturer to use creosote to prevent decay, and it states that creosote has a tendency to bleed. This is correct in most cases, but it is not true of our creosote stains. In these stains, the creosote is carefully refined to remove the heavy components that cause the bleeding. After a couple of years of weathering, a white paint or any other paint or stain can be applied over our creosote stains without fear of bleeding.

The effectiveness of phenyl mercury oleate as a wood-preservative is open to question, although it is known to be an effective mildewcide. Unless mildew is a serious problem, it is generally considered advisable to avoid the use of mercury compounds, which are quite toxic and are actually outlawed in certain states.

We feel that the author would have done well to devote more space to the use of transparent stains, which our experience shows are preferred by most architects and discriminating home owners. We make both types, but we find that there is a general preference for the transparent type that colors wood without hiding the grain. We also question whether it is good practice to recommend one coat, even of a heavy-bodied stain.

With these minor exceptions, we feel that Mr. Anderson has written a good article and we especially commend him for the excellent instructions in the paragraph headed, "Application Recommendations."

SAMUEL CABOT, JR.
Samuel Cabot Incorporated
Boston, Mass.

Minority Report

Last month the Views column was devoted to a sampling of the many favorable comments we received on the new format introduced in May. A small minority of the responses expressed disapproval; two criticisms of P/A's new design are presented below.

Dear Editor: I have the distinct impression that the quality of reproduction, particularly in the halftones (MAY 1960 P/A) has somehow been lowered. I have always personally felt that a photograph, or a reproduction, in which an attempt is being made to show the real spirit, the substance, of a particular solution, cannot be so small that textures or materials cannot be read in them. Having enough photographs, taken from various angles, in an article to give a good idea of a building and its surroundings is always desirable. However, pages such as 148, 154, 164, 165 and 166 look more like snapshots in a year book than they do like pages from an article that is attempting to project the reader into the actual space and site of a given solution.

Magazines like P/A have always been valuable because they can be so selective as to the excellence of a particular project to be reported and, in doing so, can also possibly inspire others to be more selective, more sensitive, more aware of what it takes in terms of actual materials, textures, relationships of materials, as well as of the long view of a building that can only show over-all shapes and masses.

I cannot say that you have been very "selective" in your SELECTED DETAILS, pp. 194, 195. The mere availability of a detail to publish is one thing. The actual selection of details that may contribute knowledge of superior detailing is another. Forced gimmicks and warmed-over details contribute so little. A good many of the selected details of past P/A's have, by contrast, contributed a great deal to our knowledge.

Reporting, such as your Stainless Steel article, is to be welcomed.

I have always felt that P/A has had the most realistic and sensitive coverage of architectural projects of the most interest to architects. I hope that you are not subordinating your coverage for your advertising, as other magazines seem to be doing.

RAYMOND J. WISNIEWSKI
Windsor, Connecticut

Dear Editor: To begin, I do not like the type face, color of the pages, or presentation of the News Report. In previous years, I always looked forward to browsing through this section to see what new projects were being proposed. It seems to me that you used to grant more space to the renderings of the projects.

My main criticism of this issue (JUNE 1960) is that in your entire edition you did not present one complete building design. It was just one article, detail, etc., after another. Now I know that there is a lot of interest in the field of plastics today, but I think some variety is essential to a successful magazine. Architectural firms receive more than enough advertising to keep abreast of developments in almost any field.

I receive about four different architectural publications and simply cannot find the time to sit down and read through all this printed matter.

I would also like to see more work by young unknown architects and a greater variety of projects and buildings.

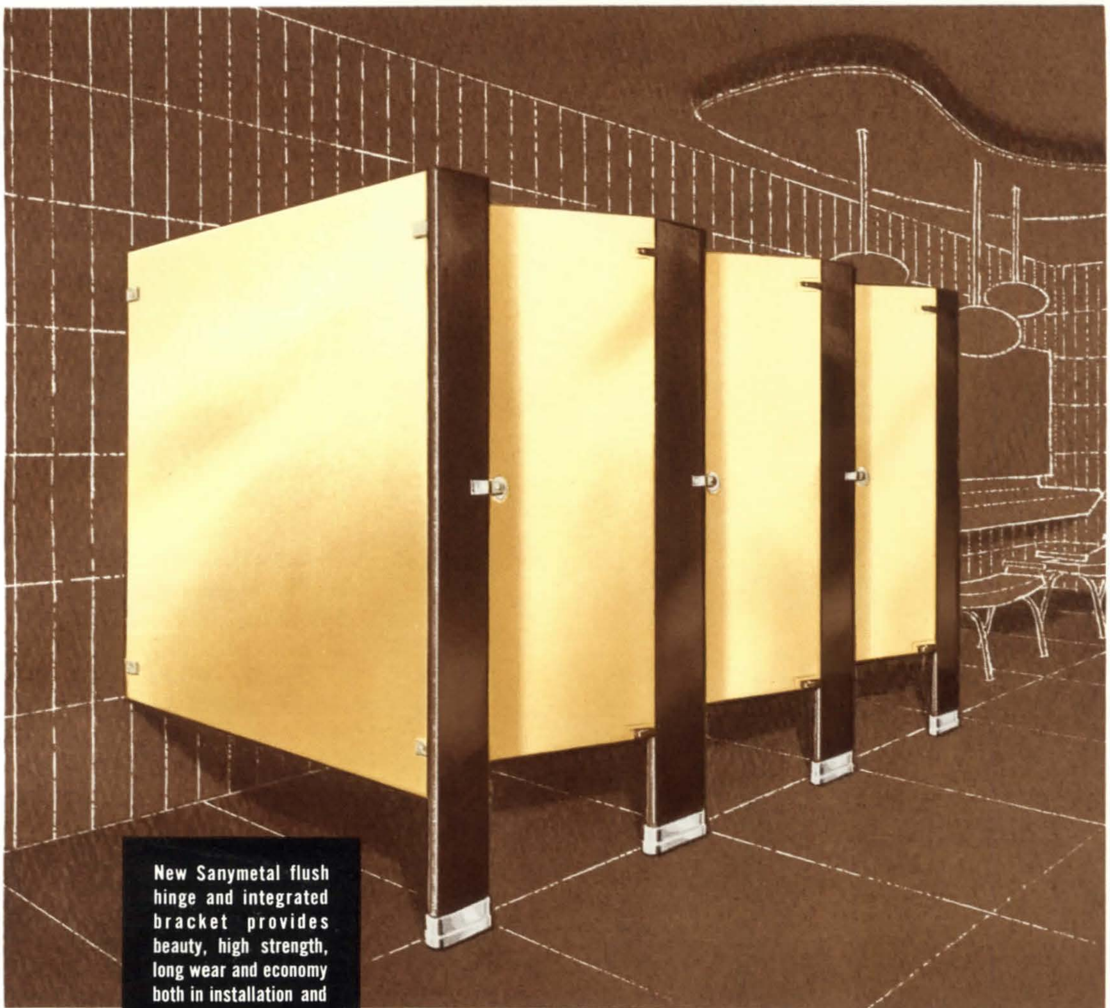
I hope this criticism has been constructive and look forward to forthcoming editions.

BERNARD DE ROO
Hawthorne, N. J.

Plastics in Architecture

Dear Editor: As a member of the staff of the Institute's research project which is studying plastics in building and is currently developing the plastic school pictured on page 171 of your June issue, I would like to commend you for your fine coverage of the extensive subject of plastics in architecture.

JOSEPH J. SCHIFFER
M.I.T.
Cambridge, Mass.



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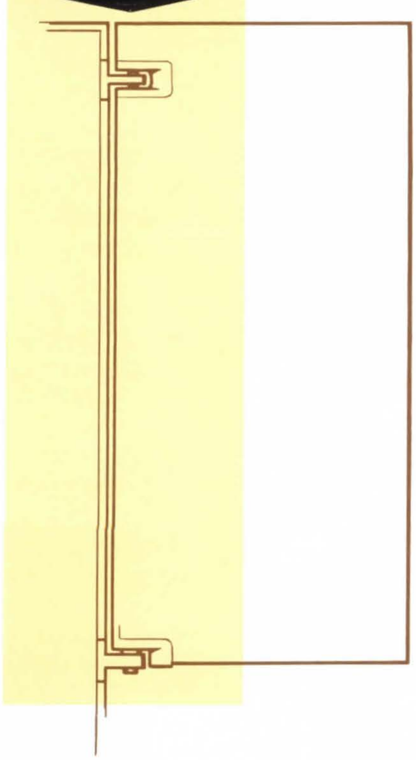

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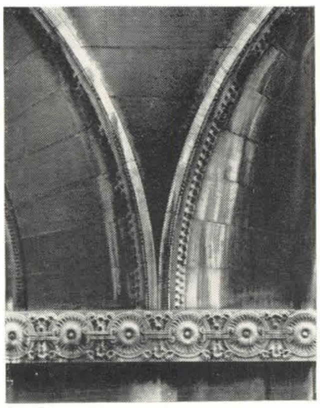

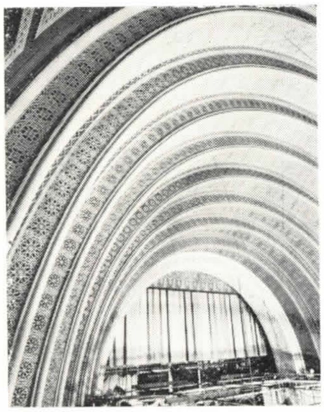

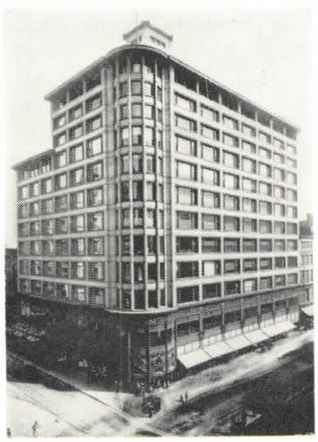

BY GRANT MANSON
Professor of Architecture & History of Art, University of Southern California,
reviews Louis Sullivan as He Lived. *Willard Connely. Horizon Press Inc., 220 W. 42 St., New York 36, N. Y., 1960. 322 pp., illus. $6.50*

Anyone who is more than a casual reader in the literature of American architecture will at once compare this book with the 25-year-old book on the same subject by Hugh Morrison. We have been accustomed to thinking of Professor Morrison's *Louis Sullivan, Prophet of Modern Architecture* (W. W. Norton, New York, 1935) as the "classic" work for long enough to welcome something new, but at the same time to ask the critical question: What does the new offer? In his preface, Connely addresses himself directly to this question. He points out that Morrison had to rely for peripheral data largely on a somewhat reticent George Elmslie, and therefore felt himself so handicapped on occasion by the nature of his source that he "wished to entitle his book, more accurately, *The Architecture of Louis Sullivan*." The present author points to his good fortune in having at his disposal the personal recollections of Miss Andrienne Sullivan, Louis Sullivan's niece, and her rich store of family records and letters. The reader will therefore expect a heavier emphasis on biography in the new monograph and a considerable outpouring of facts which have not hitherto come to light. As for analysis of Sullivan's architecture, the reader will not at first know what to expect, but he will be on guard, for Connely is neither an architectural critic nor an art historian, but rather a journalist and an administrator of wide interests.

The early chapters of Connely's book justify the first expectation. Dealing with origins and family matters up to the Chicago reunion of the family in 1873 (after, Louis's famous sojourn in Philadelphia and contact with Frank Furness), these chapters read like the early ones in Morrison, but refurbished with letters and fresh, intimate detail. The style is less restrained; it is that of a raconteur, retelling a familiar story but with the confidence of an up-to-date delivery and some choice new items up his sleeve. This tone, in fact, persists throughout the book, and carries the reader along in buoyant anticipation that every turn of the page will tell him something about Sullivan that he didn't

Continued on page 196

Continued from page 192

know before. Only occasionally will he remark to himself that, as story, the two books are sometimes perilously close to identity. Each, for example, carries the same memorable anecdote about the impressive, frock-coated Boston gentleman who overawed the boy Louis Sullivan and made an indelible stamp upon his ambition simply by being that august person, an architect. Each joyfully describes Frank Furness's fan-like red beard, bulldog countenance, and loud plaid suits (how much we are indebted to this recollection for our visual conception of Furness!). Each speaks of the stifling heat of the Philadelphia summer of 1873, of Louis's wanderings in Fairmount Park, of the failure of Jay Cooke & Co., of the buildings that caught Louis's notice. But here is where Connely's relative up-to-dateness begins to count—for Morrison mentioned only a Furness dwelling in South Broad Street while Connely speaks of the David Jayne Building of 1849, that extraordinary proto-skyscraper of granite which was unknown by the critics in 1935 but which, by the time the Federal Government had pulled it down in 1959, became a *cause célèbre* among the knowing ones. Everyone now agrees that it had more influence upon Sullivan than all of Furness put together.

Of course, the resemblance between the two books as story is inevitable, for both authors dip constantly into Sullivan's own autobiography and various memoirs, as is only natural. The difference is that Connely uses, as he states at the outset of his book, family records that were unavailable to Morrison, and he writes with greater verve. When we come to the meeting of Sullivan and Adler, with John Edelmann as go-between, Connely's greater ease as a writer is demonstrated, for he is able to make the well-known episode come to sparkling life with deft, dramatic touches, almost as if he said, with a flourish of vanity, "There, haven't I done it a little better?"

The difference between the two books really makes itself felt after the establishment, in 1881, of the firm of Adler and Sullivan and the initiation of Sullivan's significant career. Thereafter, Morrison kept to a straightforward account and painstaking analysis of Sullivan's buildings, one by one, until a very clear (although rather dry) picture of the whole architectural career emerges. Connely, however, continues to interlard and interrupt the career with that outpouring of biographical detail which the reader had, in the first instance, foreseen.

Morrison was primarily interested in Sullivan the designer, Connely is enthralled with Sullivan the man. This difference in approach is underscored by the set of illustrations each author chooses. Aside from the necessary and expected views of buildings, Morrison included four personal photographs: two of Sullivan, two of Adler. Connely gives us the whole cast of characters, including a rare and revealing photograph of Sullivan's wife, Margaret Hattabough. Actually, it has always seemed that Sullivan's brief, issueless marriage was more than a minor episode in his life, that it was a clue to many of the man's characteristics and actions. It is tantalizing, in Morrison's book, to find only one noncommittal reference to it. From Connely we learn a good deal about Margaret

Sullivan; what we see is like a mirror in which is reflected yet another aspect of the visage of her complex, moody, unsatisfactory husband and the hidden weaknesses in him which led eventually to his tragic retirement. We learn about their withdrawn, rose-embowered life at the cottage at Ocean Springs, Mississippi, and how it came about that Sullivan built it and its near-twin for the James Charnleys of Chicago. It is all very much worthwhile, and not merely for intangible values, but for practical ones, because after reading Connely, those shingle-sided cottages in the Mississippi forest (hitherto known to us in hazy old photographs taken long after the buildings had fallen into Charles Addams-like disrepair) come, like Margaret Sullivan, into focus, and their place in Sullivan's life becomes clearer.

As for a progressive, analytical account of the course of Sullivan's architecture, we learn of its circumstances, in fascinating detail, more than we learn of its actual construction. The development of the Auditorium commission, for example (the launching-pad from which Sullivan's fame was to soar), is told as an absorbing episode in the commercial and social life of Chicago in the 80s. It is not that Connely fails to describe the building, but that his viewpoint is that of the layman. He duly discusses the growth of the *parti* out of an original Queen Anne fussiness into a majestic severity; this is that crucial moment in Sullivan's career when the impact of Richardson is first felt. But to understand what happened to the Auditorium scheme under the force of this impact, more than words are necessary. Morrison supplied us with the preliminary drawings: Connely does not. In fact, it must be more than accident in the formulation of his book that Connely includes not a single plan for any building, not a single section, not a single working drawing other than that of Sullivan's ornament.

These remarks are not intended as destructive criticism. They are intended only as emphasis of the central fact that Connely's book is a distinctly different manifestation of interest in Louis Sullivan than Morrison's, a fact that is evident even from their subtitles. Each has its own separate value to the reader. He who is seeking a concise, professional presentation of Sullivan's work will still read Morrison; he who wants an absorbing novel based on real life will now read Connely.

End of the Search?

Richard Neutra: 1950-60. Buildings and Projects. *Edited by Willy Boesiger. Frederick A. Praeger, Inc., 64 University Place, New York 3, N. Y., 1959. 240 pp., illus. $15*

One of the distinguishing marks of the creative artist in any age and in any field has always been his unremitting search for greater insight, larger concepts, and newer forms of expression. He has always been dissatisfied with his actual achievement, ever striving toward a goal that was never to be reached because it was constantly being revised. To look no further than our own day, Picasso and Le Corbusier are clearly marked with the characteristics of this all-too-rare species of human being.

Of course, such continuing change of

Continued on page 200

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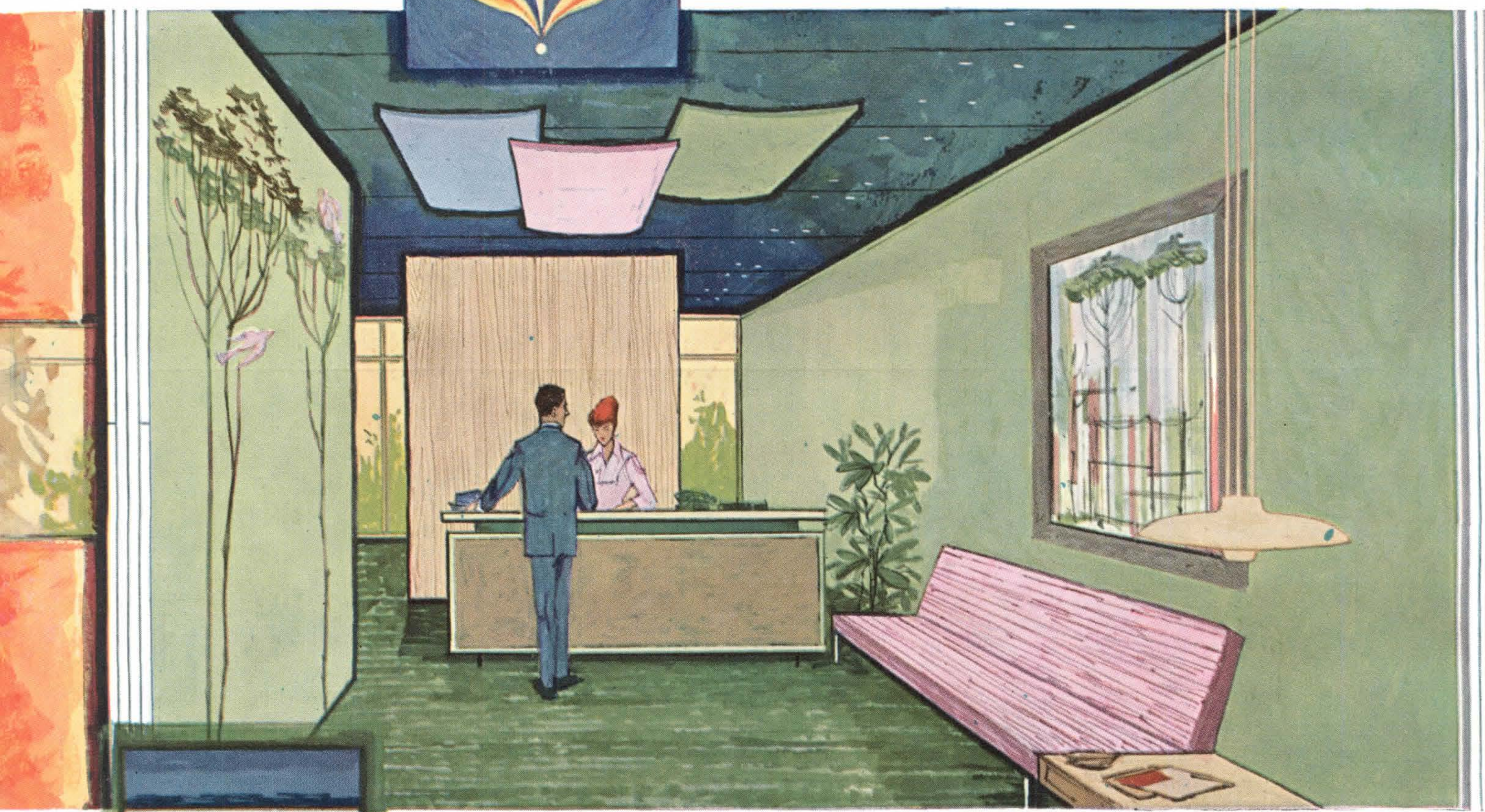

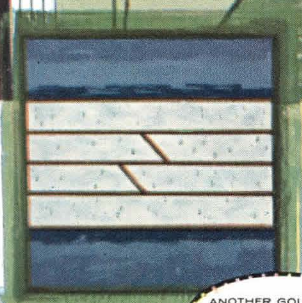

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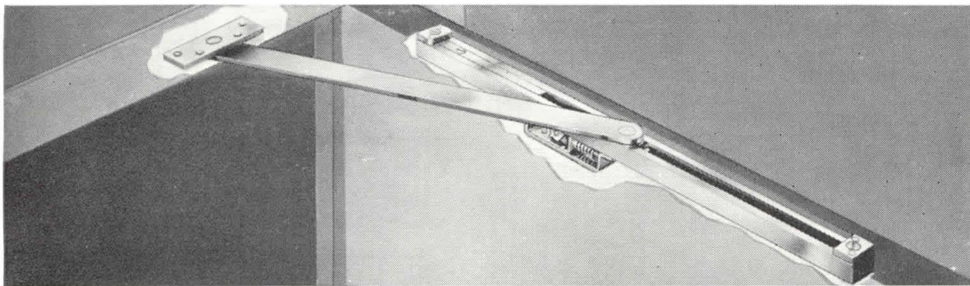

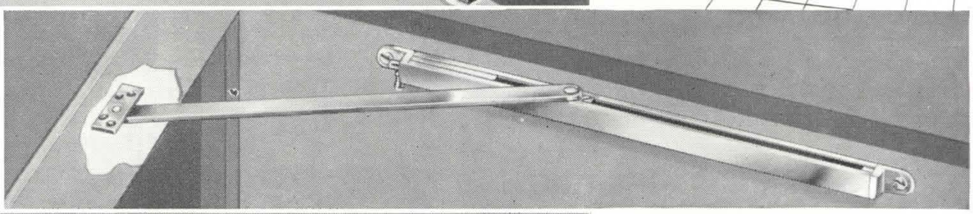

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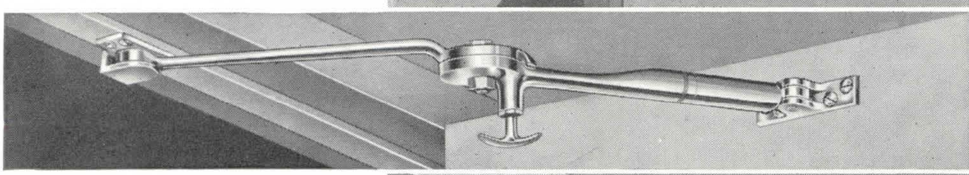

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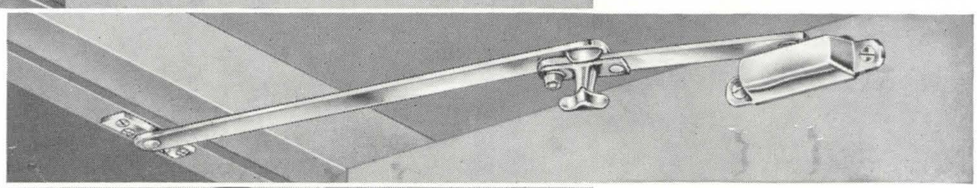

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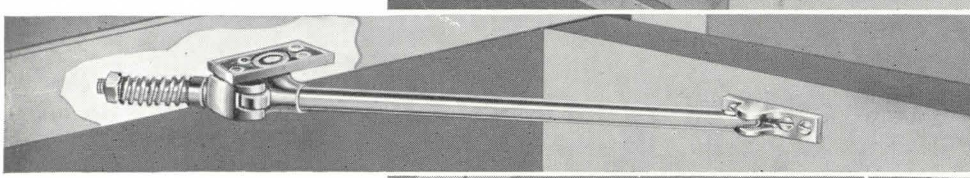

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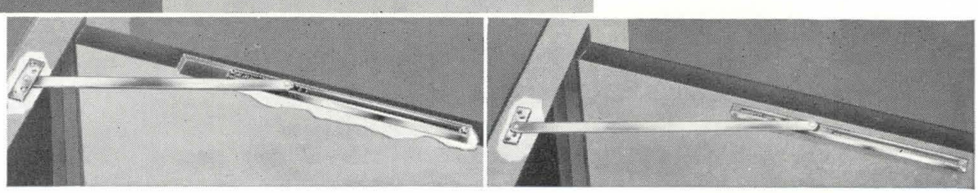

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Continued from page 197

goals and standards has its necessary reflection in the nature of the man's work, a fact that we recognize by speaking of his "periods"—formalist, plastic, blue, white, or pink. There will be times of relatively rapid change, separated by plateaus of investigation and development. It is these plateaus that we call periods.

On leafing through the handsomely produced volume surveying Richard Neutra's work of the past ten years, this reviewer, at least, had the nagging feeling that the master's present plateau is in danger of acquiring the dimensions of a plain. There is a certain serene sameness of scale, of rhythm, of expression, in his output of the last decade that bespeaks not the inspired restlessness of genius, but rather, to put it most respectfully, a supreme inner contentment.

This is not to say that Neutra's architecture is not every bit as beautifully reasoned and exquisitely proportioned as ever. On the contrary, there is an assurance, a confident touch to everything he does, that reveals a fully matured talent at the top of its powers. But the fact that his work at the beginning of the decade is not clearly distinguishable from that toward the end would seem to indicate that he has been engaged in the restful, if somewhat itchy, occupation of sitting on his laurels instead of trying on new ones.

Although Neutra writes and speaks eloquently of his belief in the human basis for architecture—an attitude with which he will find no disagreement here—his work, particularly his residences, appear to betray an unawareness on his part of the infinite variety that the species comprises. All his houses seem to have been designed for people who seek the same sort of ambience, and whose lives, at different levels of affluence, follow the same patterns. Of course it may well be that the clients who seek him out in the first place already represent a preselected stratum and are therefore not to be considered as broadly representative of humanity as a whole. People who want a Neutra house are pretty special to begin with, so that this last comment may be pure carping.

The book contains many splendid photographs, mostly by the very skilled Julius Shulman, and a text in three languages—English, French, and German. Since some of Neutra's most pithy comments of the last ten years are included, this volume should be a welcome and valuable addition to the Neutra shelf.

EUGENE RASKIN
New York, N. Y.

Design Handbook

Practical Prestressed Concrete. *H. Kent Preston. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1960. 340 pp. $11.50*

For the practicing engineer who needs a guide for designing and detailing the most common types of prestresed-concrete members, this book provides a great deal of handy and up-to-date information, along with simple and systematic design procedures. Several lengthy numerical design examples are included: a pretensioned bridge with a poured-in-place deck, a double-T roof, a post-tensioned girder, examples of prestressed piles, and a simple procedure for designing continuous structures. All specifications are based upon the 1958 *Tentative Recommendations for Prestressed Concrete*, a report published by the Joint ACI-ASCE Committee on Prestressed Reinforced Concrete (and included in this book, with notes by the

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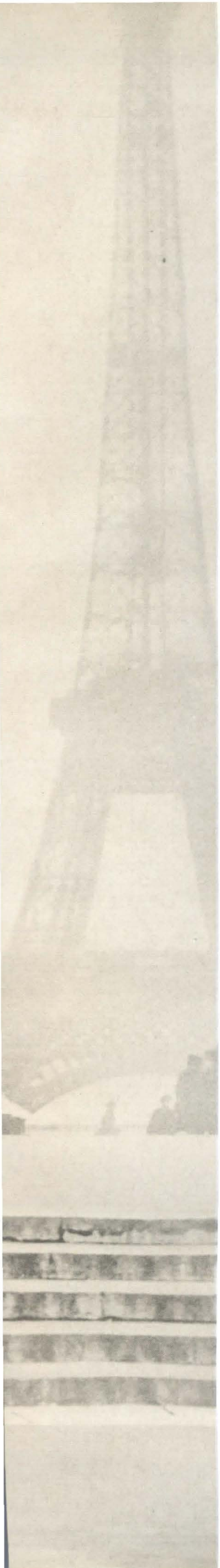

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Continued from page 200

author). In addition to the design examples, which take up the bulk of the text, there is extensive data on typical members and the most common types of American prestressing equipment and techniques. All photos, drawings and tables are very clear, but the text suffers from the mixing of mathematics and discussion. This is very confusing and could easily have been avoided by indenting and using two kinds of type faces.

For structures that are at all unusual or experimental, there can be no substitute for a thorough grounding in the theory and testing of this exciting material. In such cases, this book will not be of much help, since there is included only a brief discussion of basic principles, and almost no mention of any but the most common types of members. Likewise, for a clear discussion of what prestressing is all about, divorced from the detailed arithmetic necessary to design prestressed members, one should look elsewhere—to a textbook rather than to a handbook such as this one. But for the great majority of prestressed structures, this book, supplemented by consultation with the local prestressing yard, will be all the engineer needs to produce safe and economical designs.

GORDON F. TULLY
New York, N. Y.

If Shopping Centers Must Be

Shopping Towns, U.S.A.: The Planning of Shopping Centers. *Victor Gruen and Larry Smith. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1960. 288 pp., illus. $13.50*

This richly illustrated volume is so well organized that one feels the urge to get up and build a shopping center all by oneself after having studied it. The who, where, when, and how of suburban conglomerations of department stores and specialized retail/service facilities are analyzed with a profusion of data, charts, and photographs. The text is readable and clear—a notable rarity among such specialized handbooks. Thinking as a consumer (rather than a potential builder or tenant), one feels that if shopping centers must be, let them be built by Victor Gruen Associates and Larry Smith instead of by any wild-cat contractor who happens upon a piece of cheap farmland.

The reason for such an unabashed eulogy lies in the care of architectural grouping, shown in a fascinating sequence of various centers, and in the use made of art (sculpture and murals), landscaping, and light effects that have all but vanished from commercial architecture elsewhere. The wide gay malls and arcades of Gruen's designs offer to the suburban proletariat their only contact with architecture, and, ironical as it might seem, provide the only esthetic education their children may ever get. If this insistence on architectural and esthetic values is handled as brilliantly—in conjunction with the obvious profit motif—as in the shopping centers documented in this volume, it represents a positive asset that might almost balance a center's destructive function.

This destructive function of the shopping center is not evident in the book on Shopping Towns and is only indirectly related to it. But it should be mentioned to give a critical perspective to the visual and verbal persuasiveness of Gruen and Smith. By killing off all local retail trade, shopping centers are preventing the development of any civic cores in the new satellite towns of America. The traditional square (which

Continued on page 207

Continued from page 204

gives identity to a community) functions through stores, restaurants, professional offices, etc., all of which depend on each other for the attraction of crowds. The shopping center channels off this congregational instinct. It is the farthest point in space and time from the market fountain around which centered the life of urban man. Resultant from this supercommunal aspect of shopping centers is a deadly uniformity of living standards. Ours is a mass-fabricated civilization, but even the slight and desperately needed differentiations between, say, life in a New England town and in the Deep South, are leveled off by merchandizing engineered in the vast companies backing the shopping center stores. Then there is the decay of the city core, which has finally caused alarm in some places. The enormous investment in public services, represented by a city, is bankrupted by falling revenue from retail and services.

Shopping centers live exclusively by the automobile and consequently by highway construction. Their logic is based on the two-car family. As long as the present enormous prosperity lasts, shopping centers will be built; and we hope that they will be built by Victor Gruen and Larry Smith. If this prosperity should end one day, or gasoline rationing (a mere 15 years past) should again become necessary, we shall look at their book as a monument to the unquenchable optimism of technological man!

In conclusion, an architectural historian must register two protests. The Greek Stoa was by no means a building specially designed for the display and sale of merchandise, as asserted in the introduction to this book. On the contrary, it was a portico with a columned front which was raised above the agora or market place to separate social and educational gatherings from the activities of the agora (which were predominantly commercial). The very word stoa derives from the philosophical school of the Stoics whose founder, Zeno, taught in the old Athenian stoa—"a painted corridor on the north end of the market place in Athens." Only under Roman influence in Hellenistic times was the stoa used for trading.

The other objection concerns the title of the book: *Shopping Towns, U.S.A.* Please, dear authors, don't support the increasing semantic muddle! A town has many definitions but its most basic one is "a unified compound of habitations supplied with complete cultural, social, and economic facilities." Shopping Centers is a good and serviceable term. Let's stick to it as long as they last!

SIBYL MOHOLY-NAGY
New York, N. Y.

Plastics: An Esthetic Approach

Plastics for Architects, Artists and Interior Designers. *Armand G. Winfield. Introduction by Harold Horowitz. Society of Plastics Engineers, Inc., Stamford, Conn., 1960. 50 pp., illus. $2.25 (paperbound)*

This monograph reprints two papers from recent technical conferences of the Society of Plastics Engineers. Subtitled "an illustrated survey of some of the best uses of plastics in the building and decorative fields," the book presents an esthetic approach to thermosetting and thermoplastic materials. Intent of the articles is to stimulate a better understanding between the creative and the technological—between the architect, artist, and interior designer, and the plastics technologist.

Appendices include glossary of plastics terms; list of architects and designers working with plastics materials; addresses of societies in the plastics field; and selective magazines and publishers dealing with plastics in arts, crafts, and architecture.

E. P.

Region Without a Style

The South Builds: New Architecture in the Old South. *Edward and Elizabeth Waugh. Henry L. Kamphoefner, Advisor. University of North Carolina Press, Chapel Hill, N. C., 1960. 171 pp., illus. $12.50*

The South Builds is both fascinating and depressing The fascinating aspect is in the numerous, handsome edifices depicted. Basically a picture book, the work treats the reader to some excellent photographs of contemporary architecture.

Equally excellent is an all-too-short introduction titled, "The South and Its Architecture." Here the authors level some much-deserved criticism at contemporary architectural thinking, especially at the lack of urban planning in the new dormitory suburbs. Further, they state that "the sameness which is apparent from Washington to New Orleans, from Richmond to Memphis, is a staggering comment on the esthetic degradation of a great people." They point out, perhaps too briefly, that the South in ages past was characterized by a

Continued on page 210

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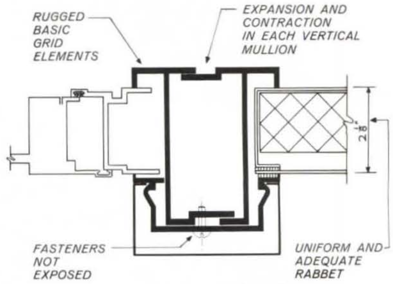
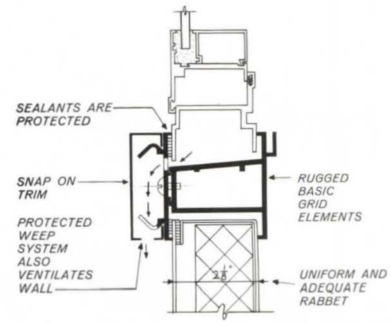
Regional Office Building, Allstate Insurance Co., Skokie, Illinois. Dunlap & Esgar, Architects; J. L. Simmons Company, General Contractor.

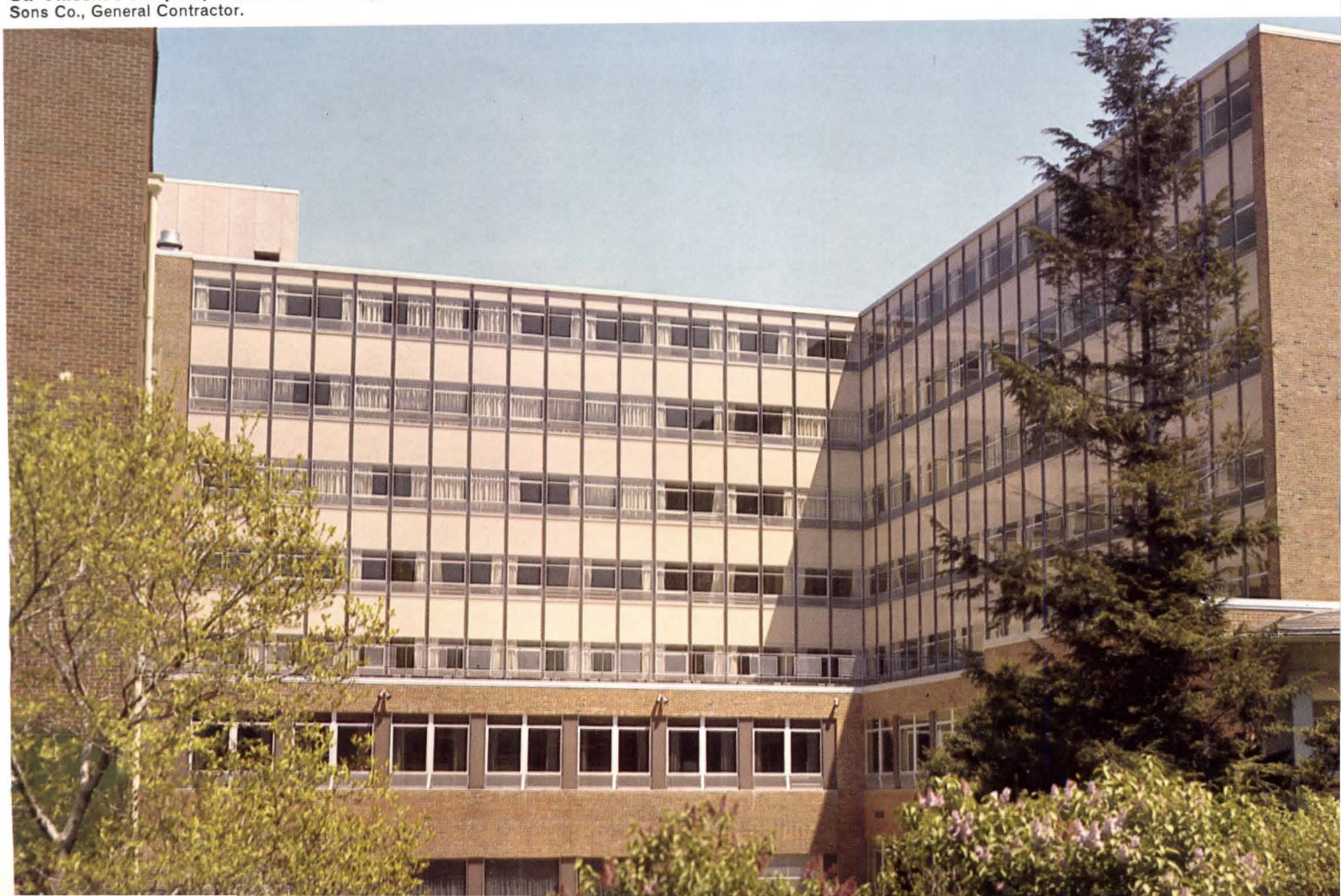


VERTICAL MULLION



HORIZONTAL MULLION

St. Vincent's Hospital, School of Nursing, Toledo, Ohio. Drake and O'Meara, Architects; A. Bentley & Sons Co., General Contractor.



Robertson Versatile Wall offers the designer unique latitude for individual expression without subjecting him to the pitfalls of high cost and lack of weatherability sometimes encountered in customized curtain-wall construction. Components are standard—see the mullion cross-sections at the left. Sealants are the best available and they are protected. Sections won't leak through under hurricane conditions. Units will expand and contract to care for building movement and steel framing tolerances without loss of tight seal. But the three basic elements which change appearance can vary so much that your design can be as individual as your own signature.

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Continued from page 207
series of truly regional styles. One need only mention the Tidewater mansions of Virginia, or the houses of New Orleans, Natchez, Charleston, or Williamsburg to recall the architectural manifestations of distinct regional and cultural developments.

The heritage of the past is still manifest in much of today's Southern architecture, not in a desirable sense in that it has helped create a new architecture of the South, but rather in that it has supplied mass-produced items that are "superimposed and applied upon houses and buildings as a kind of costume that one might wear to a fancy dress ball." Fortunately, as this book shows, the South is more and more abandoning this type of architecture.

It is precisely here that one feels the depressing aspects of *The South Builds.* The South today is a region without its own architecture. It has abandoned the past which is no longer applicable, but it has not yet found the path to the future. As the illustrations in this book show, there is a great deal of excellent and striking architectural work in the South today, but it is not Southern. The buildings have no common link that identifies them as a regional architecture. The houses would be just as much at home in California (or any other area with a suitable climate) as they are in Florida or Virginia. The institutional and office buildings, too, could belong to any region. They express their functional purposes and the power of their corporate owners but not the cultural heritage of the area.

Perhaps it is too much to hope for a regional architecture in the Twentieth Century. Science has shrunk the globe, and mass culture and technology have replaced individual thinking and the artisan. Under such conditions, perhaps the current architecture of the South should be evaluated on a different basis: on the national and international rather than on the local level. Within the larger framework, contemporary Southern architecture more than holds its own.

DR. FREDERICK HERMAN
College of William & Mary
Norfolk, Va.

Economic Base Re-examined

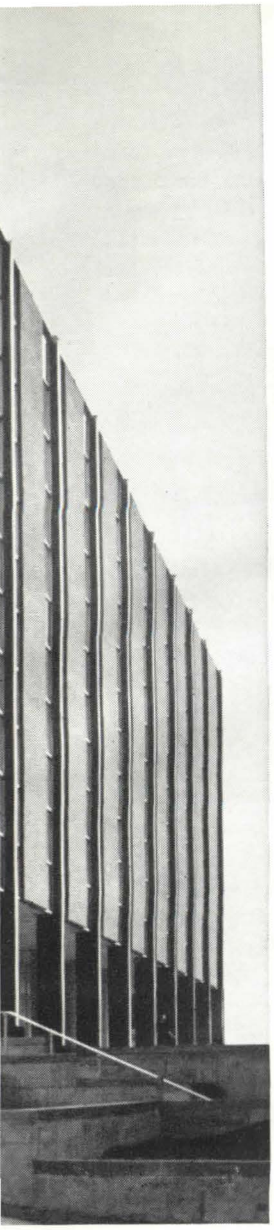
The Techniques of Urban Economic Analysis. *Edited by Ralph W. Pfouts. Chandler-Davis Publishing Co., P.O. Box 36, West Trenton, N.J., 1960. 410 pp. $5 ($4.25 paperbound)*

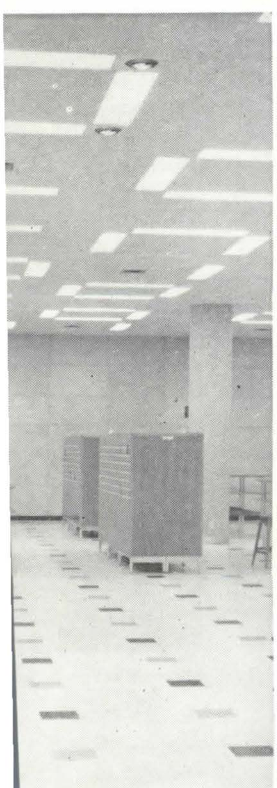
For some forty years, land economists and planners have been utilizing a concept of the urban economic base that comprises two types of activity: basic industries (which produce goods and services for export outside the community) and service industries (which supply items for consumption within the community). The former, so the theory runs, enable the community to operate and grow, while the latter are merely parasitic functions that add no real value to a city's economy.

This highly simplified version of the economic base theory has been tested and re-examined many times in the past four decades, resulting in its modification almost to the point of disappearance. For the apparently simple idea that some activities are primary and others secondary has been found, in the light of the searching examination to which it has been exposed, to correspond very imperfectly to the real world.

Ralph Pfouts has collected an impressive series of articles, mostly drawn from *Land Economics* and the *AIP Journal*, which range from examinations of the

Continued on page 214





Architect and Engineer: Leo A. Daly • Electrical Contractor: Sachs Electric Corp.

How Day-Brite lighting "sells" reading in the new Pius XII Memorial Library

From the architect's first draft to the final choice of curtains, St. Louis University's modern new library was planned with one goal in mind: to encourage students to *use* it.

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Continued from page 210

history and implications of economic base theory to a survey of its faults and a presentation of the increasingly more acceptable alternative of input-output analysis. It is worthwhile reading, but more appropriate for the *aficionado* of econometrics than for the lay reader.

DAVID A. GROSSMAN
Advance Planning Associates
Cambridge, Mass.

Books Received

Frank Lloyd Wright: Writings and Buildings. Edited by Edgar Kaufmann & Ben Raeburn. Horizon Press Inc., 220 W. 42 St., New York 36, N. Y., *1960.* 395 pp., over 150 illus. $3.95 (Meridian Books, Inc., 12 E. 22 St., New York 10, N. Y., 1960. 346 pp., over 150 illus. $1.95 paperbound)

Building Research, International. Proceedings of a program conducted as part of the 1959 Fall Conferences of the Building Research Institute, Division of Engineering & Industrial Research. National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D.C., 1960. 44 pp., illus. $1.50 (paperbound)

Lettering on Buildings. Nicolete Gray. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1960. 191 pp., 270 illus. $7.50

The Cost of a Schoolhouse. Educational Facilities Laboratories, 477 Madison Ave., New York 22, N. Y., 1960. 144 pp., illus. (paperbound)

Food Service in Industry and Institutions. J. W. Stokes. Wm. C. Brown Co., 135 S. Locust, Dubuque, Iowa, 1960. 261 pp., illus. $8

Federal Credit and Private Housing: The Mass Financing Dilemma. Chas. M. Haar. ACTION Series in Housing and Community Development. McGraw-Hill Book Co., 330 W. 42 St., New York 36, N. Y., 1960. 408 pp., tables, graphs. $12.50

Alphabet Thesaurus: A Treasury of Letter Designs. Studio of Photo-Lettering, Inc., Introduction by Edward Rondthaler. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1960. 736 pp., illus. $10

Alvar Aalto. Frederick Gutheim; **Antonio Gaudi.** George R. Collins; **Le Corbusier.** Françoise Choay; **Ludwig Mies van der Rohe.** Arthur Drexler;

Continued on page 218

Continued from page 214

Pier Luigi Nervi. Ada Louise Huxtable; **Frank Lloyd Wright.** Vincent Scully, Jr. Masters of World Architecture Series. Edited by William Alex. George Braziller, Inc., 215 Fourth Ave., New York 3, N. Y., 1960. 128 pp. each, illus. $3.95 each

Book of 1600 Ornamental Iron Designs Showing Details of Materials Used to Fabricate with Weights and Price Information on each Design. R. J. Cunningham Designs, 3381 South 3200 West, Salt Lake City 4, Utah, 1960. 411 pp., 4 vols., illus. $29.75

New York Metropolitan Region Study: Volume 6, Freight and the Metropolis. Benjamin Chinitz. Harvard University Press, Cambridge 38, Mass., 1960. 211 pp., illus. $4.50

Elementary Engineering Mechanics. Eugene George Key. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1960. 457 pp., illus., diagrams. $5.50

Inside Today's Home (Revised Edition). Ray & Sarah Faulkner. Holt, Rinehart & Winston, Inc., 383 Madison Ave., New York 17, N. Y., 1960. 584 pp., illus. $11

Structural Engineering. Nathan S. Glassman & Harry H. Graef, III. Department A, International Business Services, 1026 20 St., N.W., Washington 6, D.C., 1960. 96 pp., diagrams. $7.50

The Visual Arts Today. Daedalus, Winter 1960 issue. Edited by Gyorgy Kepes. American Academy of Arts & Sciences. Wesleyan University Press, 356 Washington St., Middletown, Conn., 1960. 268 pp., illus. $2.50 (paperbound)

Climatological and Solar Data for India: To Design Buildings for Thermal Comfort. T. N. Seshadri, K. R. Rao, M. R. Sharma, G. N. Sarma, Sharafat Ali. Office of Assistant Director of Information, Central Building Research Institute, Roorkee, U.P., India, 1960. 164 pp., tables, maps. Rs. 10

The Art of Interior Design: A Text in the Aesthetics of Interior Design. Victoria Kloss Ball. Macmillan Co., 60 Fifth Ave., New York 11, N. Y., 1960. 343 pp., illus. $8.50

Art and Architecture in Belgium: 1600-1800. H. Gerson and E. H. ter Kuile. Pelican History of Art Series. Penguin Books Inc., 3300 Clipper Mill Road, Baltimore 11, Md., 1960. 236 pp., 160 plates. $12.50

NOTICES

Name Changes

KENNETH KASSLER and BURTON F. WEISBECKER, principals in firm of KASSLER & WEISBECKER, Architects-Site Planners, 18 Nassau St., Princeton, N.J. Formerly, office of KENNETH KASSLER.

COLIN LAIRD & JOHN GILLESPIE, Architects, N.E.M. House, 12 Abercromby St., Port-of-Spain, Trinidad, W.I. Formerly, office of COLIN LAIRD.

SEMINOFF & ASSOCIATES, Architects, 1300 N. Broadway, Oklahoma City 3, Okla. Formerly office of GEORGE SEMINOFF.

THOMAS, DRISCOLL & HUTTON, INC., Architects-Engineers, 20 E. Bay St., Savannah, Ga. Formerly, THOMAS HUTTON & ASSOCIATES.

New Firms

BILL AKERMAN, Specifier, 12741 Hatteras St., North Hollywood, Calif.

ARTHUR D. BENJAMIN and PETER FLACK, principals in firm of BENJAMIN & FLACK, Consulting Engineers, 37 W. 39th St., New York 18, N.Y.

VAN CHRISTO ASSOCIATES, Interior Design Consultants, 330 Stuart St., at Berkeley, Boston 16, Mass.

WILLIAM D. MERRILL, KENNETH W. ROEHRIG, KENJI ONODERA and WESLEY C. KINDER, principals in firm of MERRILL, ROEHRIG, ONODERA & KINDER, Architects, Damon Bldg., Honolulu, Hawaii.

ROBERT JOSEPH PILC, Architect, 244 Fifth Ave., New York 1, N.Y.

CARL W. PIRSCHER and WILLIAM R. JARRATT, principals in firm of PIRSCHER & JARRATT, Architects, 23255 Woodward Ave., Ferndale, Mich. Formerly, CARL W. PIRSCHER & ASSOCIATES.

WAYMAN C. WING, Consulting Engineer, 411 Seventh Ave., New York 1, N.Y.

New Addresses

CHARLES E. BROUDY, Architect, 2016 Walnut Street, Philadelphia 3, Pa.

WILLIAM L. CLARK, JR., Consulting Engineer, 2223 River Rd., Maumee, Ohio.

FRANK LANSKY, Architect, 167 S. Second St., Memphis 3, Tenn.

ROBERT TAGGART INC., Marine Research, 400 Arlington Blvd., Falls Church, Va.

CONSULTANTS FOR PRODUCT DESIGN, 1850 Westwood Blvd., Los Angeles 25, Calif.

New Partners, Associates

FRANK J. WAEHLER, made an Associate in the firm of VOORHEES, WALKER, SMITH, SMITH & HAINES, New York.

Elections, Appointments

MURRAY SEDGLEY, appointed head of construction, LOWELL TITUS, head of the civil department in design, and PAUL SEHNERT, named as head of the Chicago department of design at STANLEY ENGINEERING COMPANY, Ill., Iowa, and Liberia.

J. S. PETTITT, JR., appointed assistant chief draftsman of Architectural Department of ALBERT KAHN ASSOCIATED ARCHITECTS & ENGINEERS, INC., Detroit.

LAWRENCE E. HURD, appointed Mechanical Engineer, and MICHAEL STUART joins the staff at the Guam office of THOMAS J. DAVIS, INC., affiliate of ENGINEERING SERVICE CORPORATION, Los Angeles, Calif.

RAYMOND J. DETMERS and RICHARD R. KINGSCOTT, join the staff of A. M. KINNEY, INC., Consulting Engineers, Cincinnati, Ohio, as Project Engineers.

VITO V. CERAMI, appointed Senior Con-

Continued on page 228

Continued from page 224

sultant in firm of MICHAEL J. KODARAS, Acoustical Consultants, New York, N.Y.

BEN W. YOUNG, made head of the Dallas, Texas, office of T. Y. LIN & ASSOCIATES, Consulting Structural Engineers, Van Nuys, Calif.

THEODORE E. CASSELMAN, JR., and WILBUR S. ROBERTS, JR., elected vice-presidents at STONE & WEBSTER ENGINEERING CORPORATION, Boston and New York.

Name Change Correction

VALDEMAR H. PAULSEN, Architect, 921 Bergen Ave., Jersey City 6, N.J. Formerly, ZIEGLER, CHILDS & PAULSEN. FREDERICK W. MENNE and RICHARD B. RIVARDO, named as Partners.

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P/A Congratulates . . .

JOSEPH B. ELLIOTT, named president and general manager of the York Division of BORG-WARNER CORPORATION, succeeding HENRY M. HAASE, vice-president, who is being transferred to the company's Chicago headquarters.

J. R. BRADLEY, named a design consultant for GENERAL ELECTRIC Textolite laminated plastics.

GRAHAM J. MORGAN, elected President of the UNITED STATES GYPSUM COMPANY, succeeding OLIVER M. KNODE who is retiring.

JOSEPH B. ELLIOTT, made President and General Manager of the New York Division of BORG-WARNER CORPORATION.