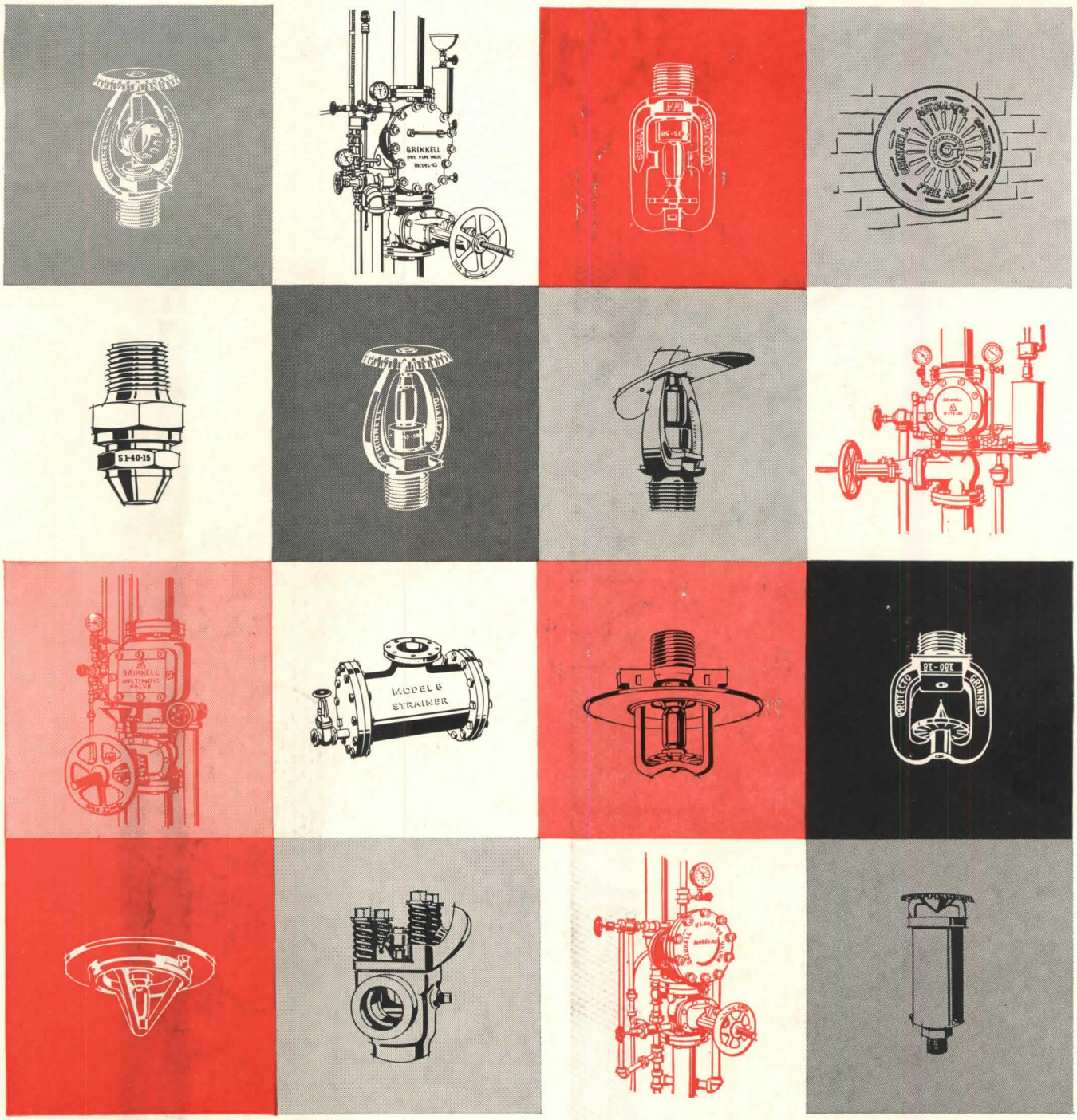
RCHITECTURAL RECORD

April 1959 **4**



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ARCHITECTURAL RECORD

April 1959

Cover:

Drawing of mosque as part of proposed scheme for University of Baghdad. The Architects Collaborative.

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Coming in the Record

IMAGE OF THE ARCHITECT

More and more discussions in architectural circles, and in conventions, turn to the role of the architect in the world of atomic energy and moon missles and crash programs in research and design. Maybe, the talk goes, the architect needs to appear in a larger image, to broaden his services and his competences, to fit himself completely for the responsibilities being thrust upon him. Soon to start is a series of inquiries into the whole subject of the architect's functions.

WATER, WATER

Last year Elizabeth Kassler authored a couple of sparkling pieces on working water into designs for architectural effect, which architects seemed to enjoy thoroughly. Now that spring is breaking out all over, Mrs. Kassler is breaking out again with a couple of new features on man's cleverness through the ages with water in his architecture.

WATER—FOUNTAINS

Know how to design a fountain? Where there's water there's likely to be a fountain, and there will certainly be problems of design, of piping, of equipment. So while we're on the water kick we'll tell you about the fountains, not forgetting to add in some Time-Saver Standards to complete the data.

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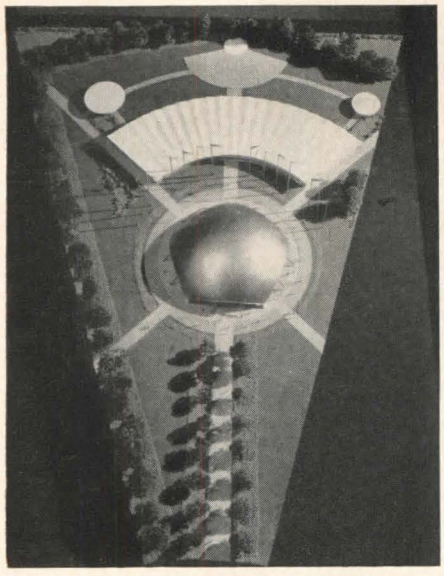
A.I.A. Gold Medal for Gropius

Walter Gropius, architect, teacher and philosopher, will receive the 1959 Gold Medal of the American Institute of Architects. Professor Gropius, who became a significant leader of the modern movement in architecture when he founded the Bauhaus school of applied arts in Germany just after World War I, has made an equal contribution in this country as a teacher—as dean of the Harvard Graduate School of Design—and as an architect, in the work of the firm he founded, The Architects Collaborative (see pages 147-162). Although Professor Gropius, now 75, has suffered much at the hands of wildly differing interpreters and imitators, he has always himself remained faithful to the philosophy he stated so eloquently when he first came to this country in 1937: "You may want to hear from me what sort of contribution I wish to make to the development of American architecture," he said in a talk at the Architectural League of New York, "and it may seem rather odd to you that I turn up here to teach Americans what American architecture should be like. I assure you I feel pretty certain that I shall be a pupil here as well as a teacher, and I am very keen to take over this double function. My intention is not to introduce a, so to speak, cut and dried 'Modern Style' from Europe, but rather to introduce a *method of approach* which allows one to tackle a problem according to its peculiar conditions. I want a young architect to be able to find his way in whatever circumstances; I want him independently to create true genuine forms out of the technical, economic and social conditions in which he finds himself, instead of imposing a learned formula onto surroundings which may call for an entirely different solution. It is not so much a ready-made dogma that I want to teach, but an attitude towards the problems of our generation which is unbiased, original and elastic. It would be an absolute horror for me if my appointment [at Harvard] would result in the multiplication of a fixed idea of 'Gropius architecture.' What I do want is to make young people realize how inexhaustible the means of creation are if they make use of the innumerable products of our age, and to encourage these young people in finding their own solutions."

The Human World of Nervi

Some moving testimony as to what architect-engineer collaboration can be was heard last month in the remarks by Marcel Breuer at the opening of the Architectural League of New York's great exhibit of the work of Nervi (see page 20). Speaking of their collaboration on the UNESCO Headquarters in Paris, Mr. Breuer said, in part: "Despite the imagination which he quietly manifested, and despite his experience and great theoretical knowledge, Nervi showed an unusual elasticity in our contact. This has to be explained, because it was far from the passive elasticity of these structural consultants who put a beam under wherever a load appears—move the support a bit to the right or to the left, if it is in the way —who fight stress with mass, deflection with oversized cross-section. Nervi's elasticity is quite different. While he absorbs even rather basic suggestions related to the structure and accepts the requirements of the plan, his participation is a continuous search for a system: a system of geometric rhythm. Structure transcends here the bounds of sheer necessity without sacrificing any of the logic of its usefulness or even of its economy. The structure of the UNESCO project was, in its basic conception, simultaneously developed with the plan. Though our individual responsibilities were automatically assigned, there was very thorough and continuous exchange of ideas and opinions between us. . . . As I see it in retrospect, there are three qualities in Nervi which made our association most interesting for me: 1. A vision of geometry, which impressed me still more than the vocabulary deriving from his research in reinforced concrete. A control of geometry makes it possible for him to follow the flow of structural stresses, to turn and twist with them, to follow them into space but always under continuous reference to the plans of geometric projection and per consequence under continuous reference to a crystallized form. 2. A razor-sharp analysis of stresses working in the structure and his face-to-face meeting these stresses in a corresponding structural system,—in an organic system. Now, organic is not a catchword here, nothing metaphysical or nebulous, nothing of an excuse. It is a flow as real as the continuous strain starting in the shoulder, moving through the upper and lower arm, into the grip of the hand, fingers and thumb. This is the real world of Nervi, the continuous stresses, branching from support into girders, dividing into ribs and into the very fibers of the structure, to combine again into ribs and columns. 3. If there is a notion that arrogance and reckless irresponsibility are the very vehicle of genius, a notion that one must be unhuman to be a genius, there is Nervi to manifest how wrong this notion is. I came to know him as a modest, even humble man, though he is by no means unaware of happenings around him. I cannot help but feel that humanity is a prerequisite of the architect, of the designer, too. As I use the word humanity here,—and I am all too conscious about misinterpretations it may cause—I have to emphasize that no sentimentality, no romantic prettiness, is involved. However, the monumentality will not be an empty one, the symmetry will not be a designed one, the economy will not be a *l'art pour l'art* one, the courage will not be an irresponsible one. Form will not be showmanship, but FORM; imagination will not be acrobatic, but a logical and visual discovery. Some of our great talents just miss to be really great: their shortcomings can be traced back to human shortcomings, in man and his work. It seems to me that Nervi's work expresses humanity." . . . And on the same occasion, John Ely Burchard, dean of the School of Humanities and Social Studies of M.I.T. (and consulting editor of ARCHITECTURAL RECORD), apostrophized Nervi: "To American architects you offer the same lessons as are to be found with different examples on the current Japanese scene. Where technique is used as a part of natural life or a part of mankind, it flowers; but where, as in the American baroque, technique is simply adopted as a means of revealing a sought-for expression both the expression and the technique will be corrupted. Your restraint reminds that exuberant structuralism and the unrestrained display of virtuosic talent may be 'all to the advantage of the techniques but derogatory to design.' And above all your work proclaims 'never force the purpose to the method.' Instead, it echoes another of Poincaré's maxims: "Architectural beauty is that in which the architect employs methods which suit his purpose!' You have never been guilty of employing the unsuitable engineering form because of its novelty or because of its drama, or just because you happened to be in love with it."



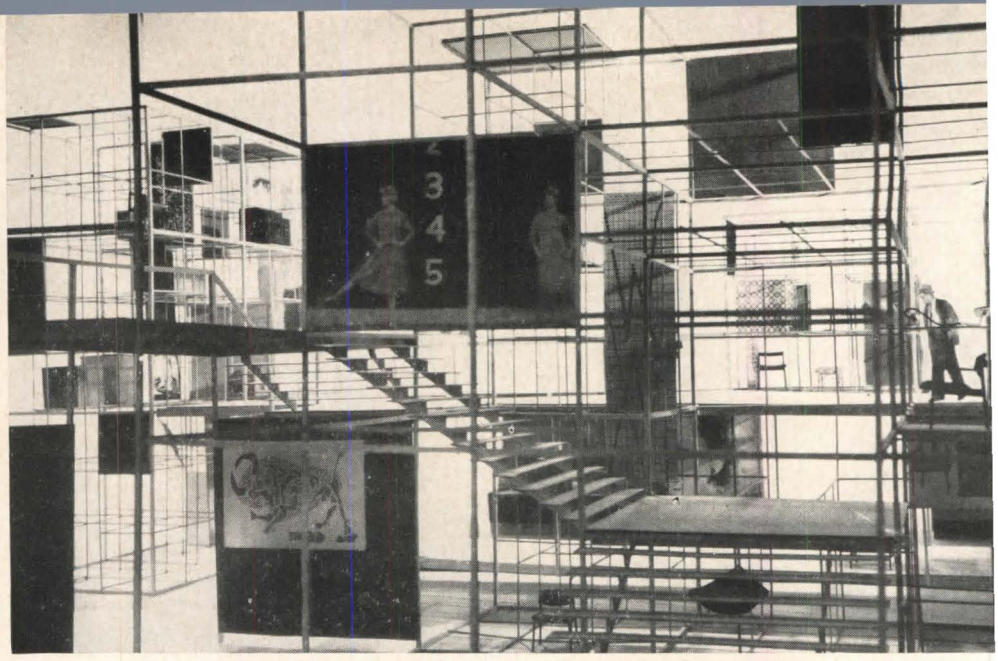
The U.S. Exhibition in Moscow: A Large Design Challenge

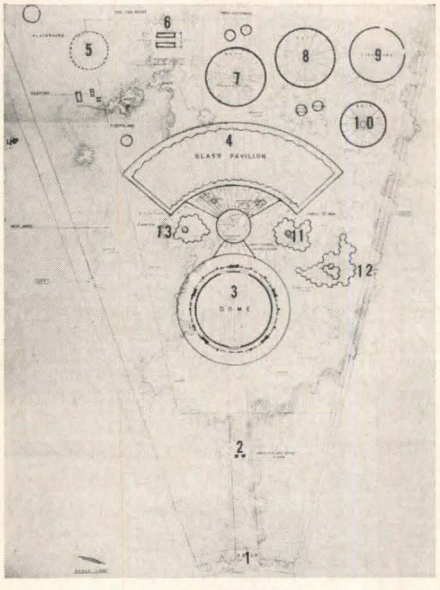
Construction is being hurried along on the American National Exhibition in Moscow, the first full-scale United States exhibition ever to be shown in the Soviet Union. (See also p. 44). Sponsored by the U.S. Government in cooperation with private industry, the exhibition is scheduled to open on July 25 in Sokolniki Park and to run six weeks. It is expected that well over 3.5 million Russians will see the exhibits.

George Nelson and Company, Inc., New York industrial designers, is the firm that has been selected not only to design all exhibits and displays, but also to make final decisions on all exhibits. Among the major design contributions of the firm (headed by Mr. Nelson, an architect) are the 'jungle-gym" exhibit structure, above, and the three-part reinforced plastic pavilion, right. The firm is sending a five-part brass scale model of the "jungle gym," keyed to assembly drawings, as a construction "blue print."

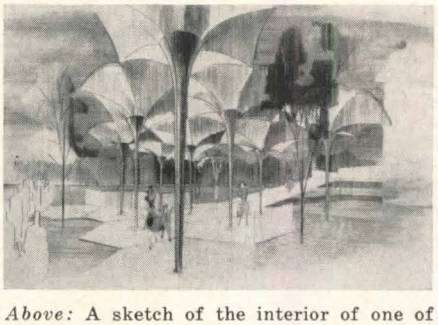
The plastic pavilions are to shelter not only exhibits but also pools, fountains, and outdoor sculpture. Consulting engineer on them was Albert G. H. Dietz of M.I.T.; Lunn Laminates, Inc., is the builder. The architectural exhibit in one pavilion, emphasizing large single-point perspective photographs, is being selected and arranged by architects Peter Blake and Julian Neski.

The "Splitnik" house, designed by architect Stanley H. Klein, was chosen as a "typical American house" that the average worker can buy. Its builder, All-State Properties, Inc., is partially prefabricating it here.

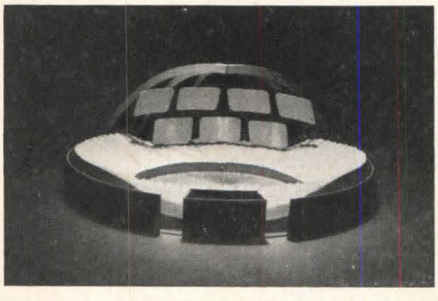


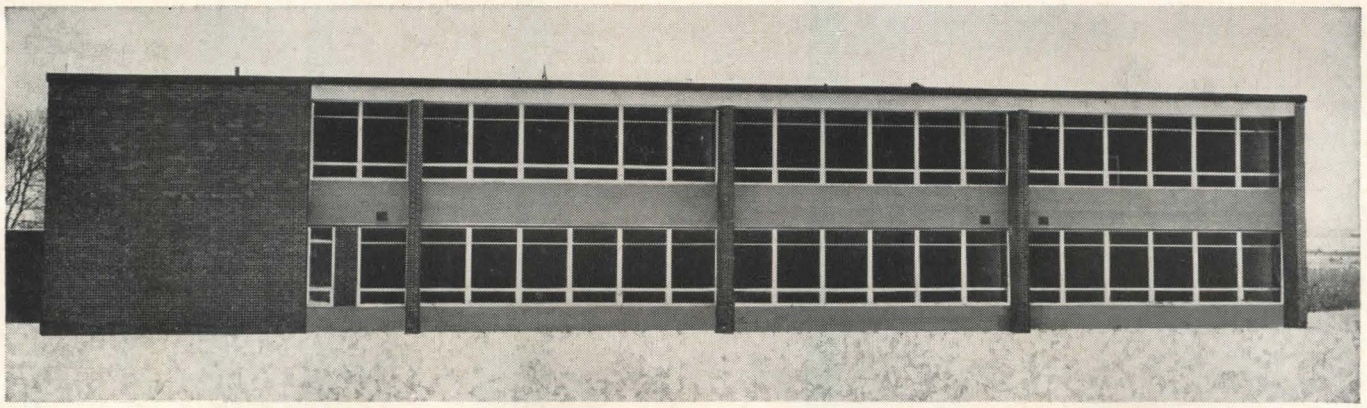


Above, left: A preliminary model of the exhibition (AR, Feb. '59, p. 10) showing the permanent buildings designed by Welton Becket & Associates. The Kaiser geodesic dome, following the principles of R. Buckminster Fuller, is being erected by the Lydick Roofing Co.; the fan-shaped exhibition hall is being put up by the Reynolds-Feal Corp. *Left:* The final site plan includes changes in the walkways and the addition of the three-part plastic pavilion. 1. Entrance; 2. American and Soviet flags; 3. Dome, 200 ft in diam, 78 ft high; 4. Pavilion, glassed front and rear, 50,000 sq ft, 28 ft high; 5. Playground; 6. "Splitnik" house; 7 and 8. General Motors and Chrysler pavilions; 9. Circarama; 10. Ford pavilion; 11, 12, and 13. Plastic-roofed pavilions to contain, respectively, the "Family of Man" and architectural exhibits and a demonstration of typical clothing. *Above:* Part of a model of the two-level "jungle-gym" exhibit structure to be housed in the glass pavilion; it will have a steel frame and carpeted steel decking



Above: A sketch of the interior of one of the plastic pavilions; there are to be a total of 70 off-white interlocked hexagon-shaped sections, each supported by a 16-ft plastic column, hollow for rain drainage. *Left, above:* Charles Eames, left, and George Nelson conferring about Mr. Eames' plan for seven simultaneous movies. *Left, below:* Model of the dome with movie screens. *Below:* Rendering of the "Splitnik," 1144-sq-ft house so called because it is to be split by a 10-ft-wide gallery to allow huge crowds to go through it





GOWER SCHOOL ADDITION, Hinsdale, Illinois. *Architect:* Wight & Schlaebitz, Downers Grove, Illinois.
Plumbing and heating contractor: Jerry & Phil's Plumbing & Heating, Inc., Brookfield, Illinois.

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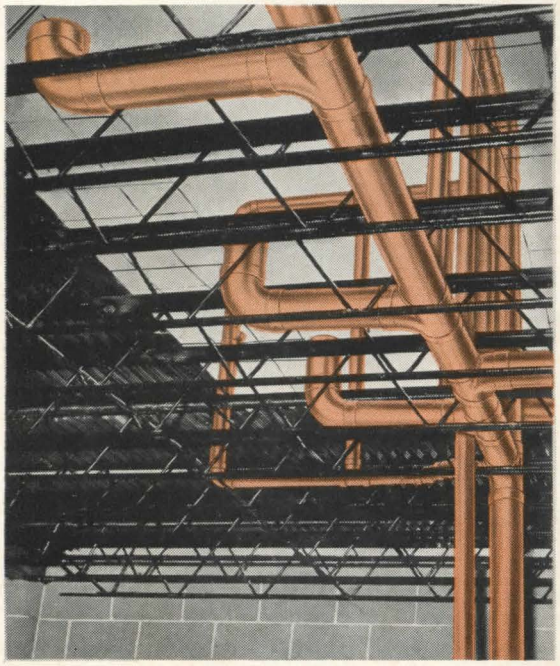
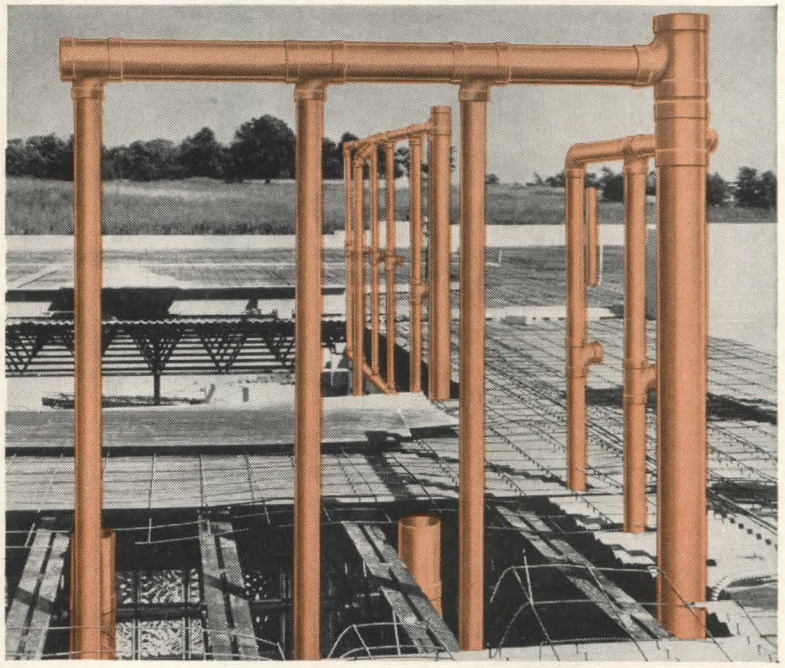


COPPER SANITARY DRAINAGE LINES roughed-in among structural members at Gower School. This space-saving installation would have been impracticable with heavy, bulky pipe requiring threaded or caulked joints.



COPPER SANITARY DRAINAGE LINES for second floor lavatories at the Gower School. Light weight of copper tube and ease of making solder joints save many dollars on multiple installations like this. Compact assemblies eliminate wide plumbing walls, give greater usable floor area.

Phil Bergeron and Jerry Wehrmeister, plumbing contractors near Chicago, have found that the installation economies with copper tube and solder-joint fittings enable them to offer all-copper plumbing—water supply *and* sanitary drainage—at a cost lower than competitive bids based on installing ferrous piping. Recent jobs awarded to them as low bidder include the Gower School, the LaGrange Township Junior High School, a church, health center, two restaurants and a store. Anaconda was used for all these jobs. Phil Bergeron says, "We specify Anaconda Copper Tube and Fittings because their consistent fine quality and close tolerances makes our work easier and keeps the job costs within our estimates."

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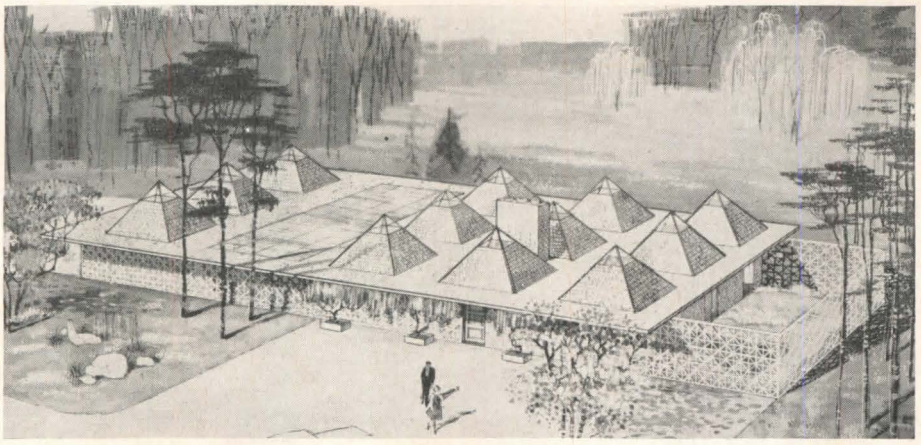

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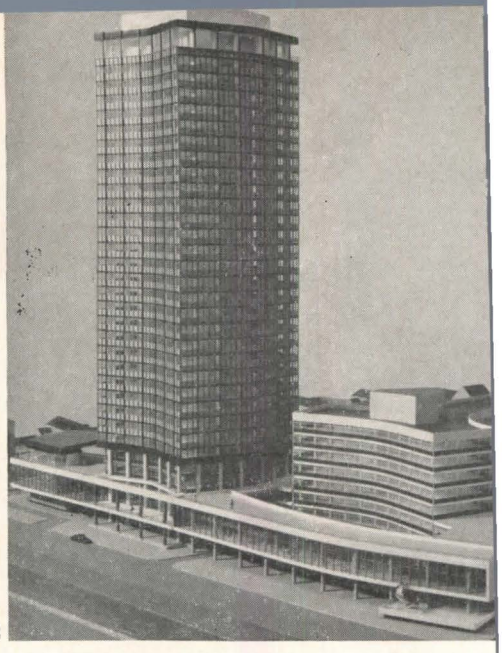

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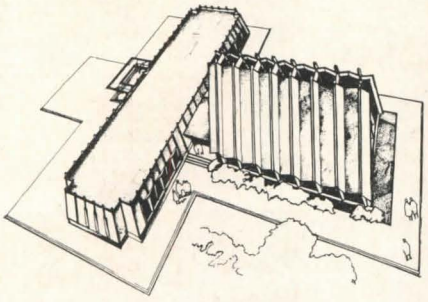

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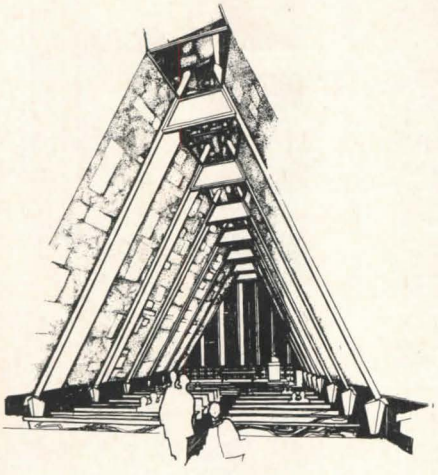

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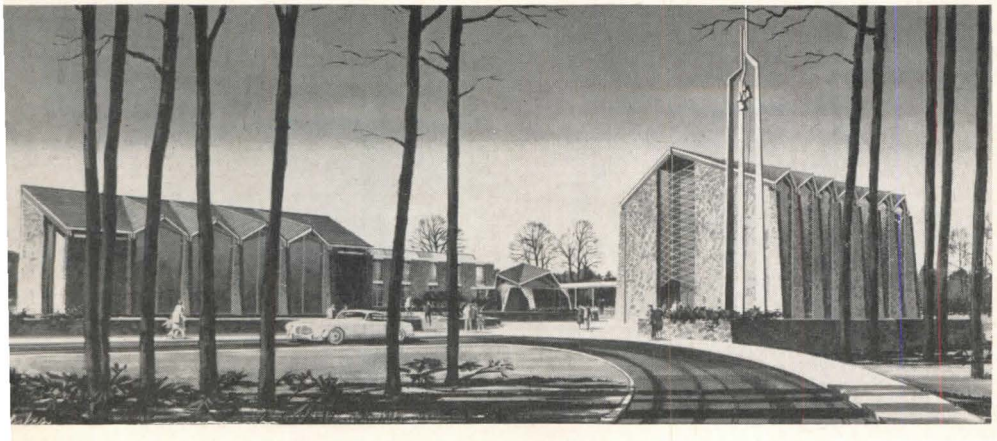
1. "The Celanese House," approaching completion in New Canaan, Conn., was commissioned by the Celanese Corp. of America as a showcase for its fabrics. The living area has about 2500 sq ft; each of the 12 seven-ft-high pyramids is topped by a glass cap. Edward D. Stone, architect; Theodore DeF. Hobbs, builder. 2. London's tallest commercial building will have a 31-story tower and about 350,000 sq ft of office space. The reinforced concrete structures are being built by the Legal & General Assurance Society, Ltd. Cost: $14 million. Ronald Ward & Partners, architects. 3 and 4. The planned Protestant Chapel at New York International Airport, with 35-ft-high nave, will cost $250,000. Edgar Tafel, architect. 5. The $6.2-million New York School of Printing, recently dedicated, with its auditorium-gym, left, and seven-story classroom-shop building. The 327,000-sq-ft school has glass-block walls. Kelly & Gruzen, architects; Caristo Construction Co., general contractor. 6. The Gloria Dei Evangelical Lutheran Church, Bethayres, Pa., to be built in stages, will eventually include fellowship hall, classroom building, chapel, sanctuary. Vincent G. Kling, architect. 7. Webb & Knapp plans to build "The Central City," an office building that may provide more than 5,000,000 sq ft, in New York, dovetailing with the proposed Crosstown Expressway. The U.S. Post Office has agreed to rent 500,000-1,000,000 sq ft. I. M. Pei & Associates, architects; Kahn & Jacobs, associate architects; Andrews & Clark and Charles Meyer, structural engineers; Jaros, Baum & Bolles, mechanical engineers



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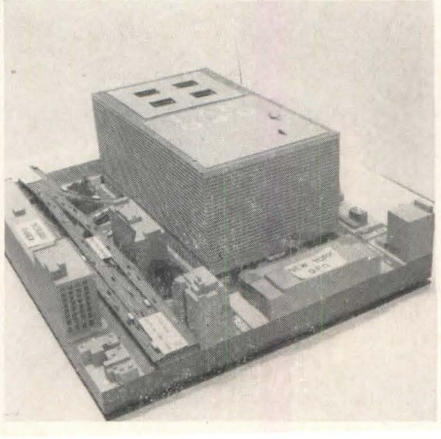

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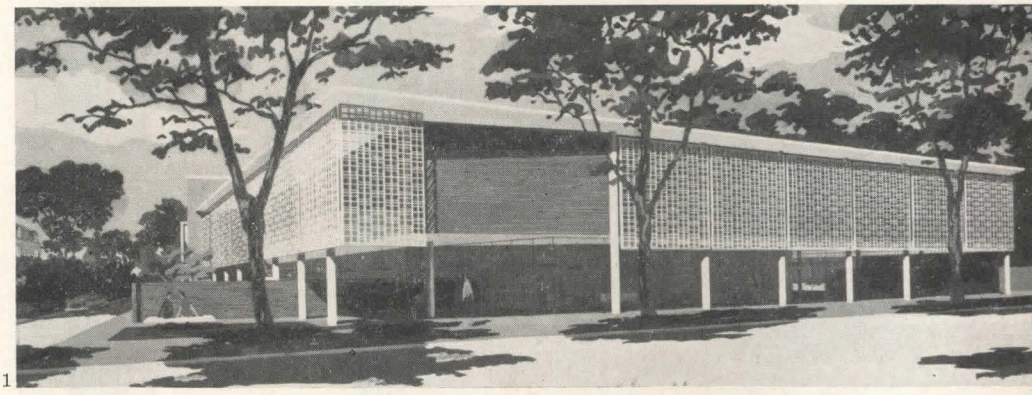
1. The Loeb Drama Center for Harvard and Radcliffe will be red brick and glass with white screening. The main auditorium is convertible to Elizabethan theater, proscenium type, or theater in the round; it seats 515. There are also a 100-seat theater, library, and classrooms. The structure is 24 ft high with a small central shaft. Hugh A. Stubbins & Associates, architects; George A. Fuller Co., general contractor. 2. Plans for a Federal Building for the 50th state have recently been accepted by the GSA. The $801,000 structure in Wailuku, Maui, Hawaii, has aggregate and granite and quartz facing, with glazed units on the stair tower. Law & Wilson, architects. 3. A proposed prototype elementary school and shelter for mass protection from radioactive fallout is precast concrete with a folded roof of the same material. The circular school is below ground level with three ft of earth on the roof. The glass-walled nine classrooms open onto a 10-ft walk bordered by an eight-foot ring of water. After radioactivity had subsided, the ceramic tile retaining walls, ramps, walks, and classroom walls could be hosed down, with contaminated water draining into the pool for filtering and recirculation. The design evolved from a study project of the committee on nuclear energy of the Northern California Chapter, A.I.A. Albert Sigal, Jr., architect. 4 and 5. Precast concrete arches with a clear span of 154 ft frame this hexagonal hiring hall-auditorium for San Francisco's Local 10, Longshoremen's Union. The precast concrete roof panels are sheathed in copper. Henry Hill, architect, John W. Kruse, associate; Isadore Thompson, structural engineer; Jacks & Irvine, general contractor



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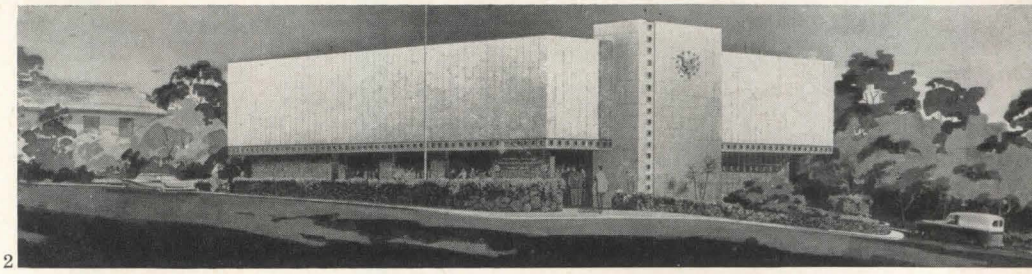

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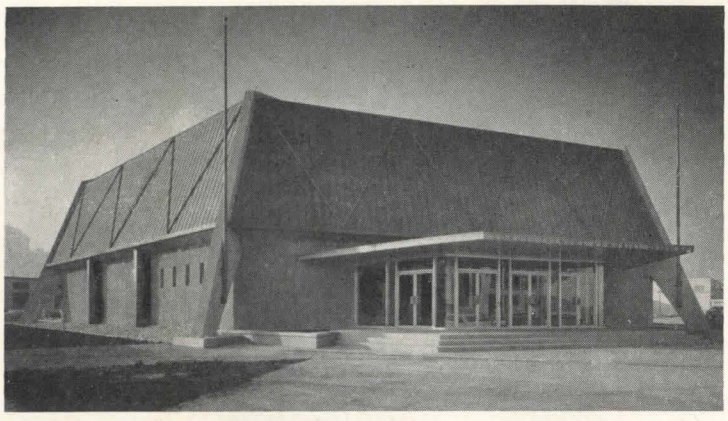

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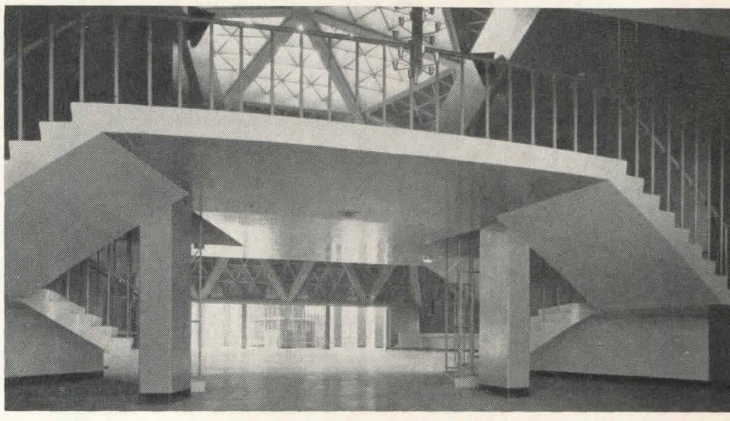

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6. The 14-story American Hospital Association Building in Chicago has 144,446 habitable sq ft. It is of steel skeleton construction with anodized aluminum window walls and white glazed brick. Schmidt, Garden & Erikson, architects; Sumner Sollitt Co., general contractor. 7. The $6.5-million, 12-story Nile Hilton in Cairo was opened in February. Owned by the Egyptian Misr Hotels Co., it has been leased to Hilton Hotels International for 20 years. There are 400 rooms; total usable sq ft: 533,900. The reinforced concrete structure, shaped like an open V, gives views of the city, river, and Great Pyramids. Over the main entrance is a 280-by-25-ft Venetian glass, mosaic tile mural designed by the architects from ancient Egyptian symbols. Welton Becket & Associates, architects

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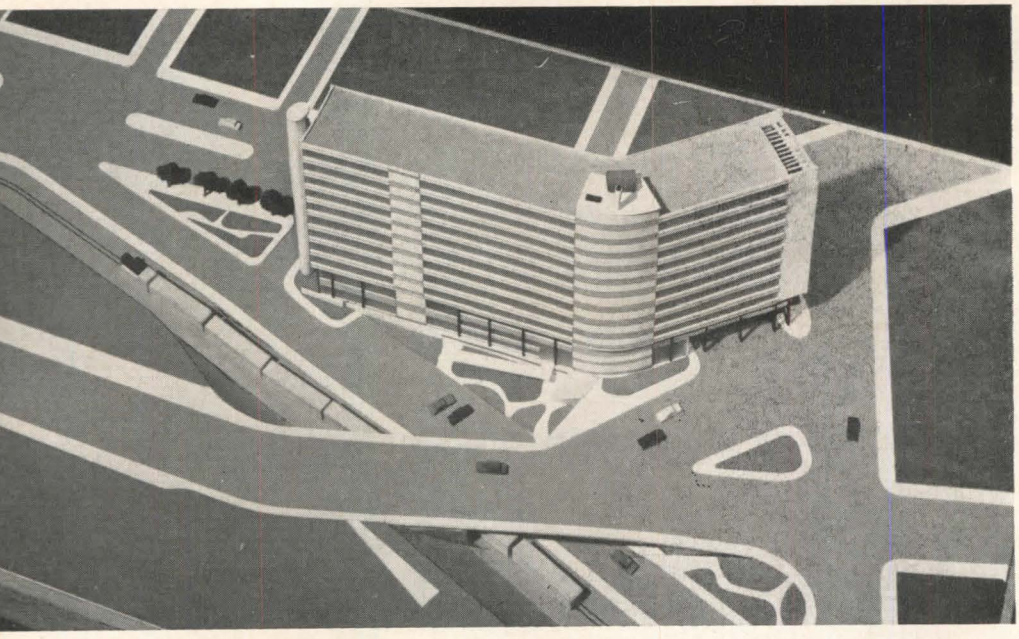
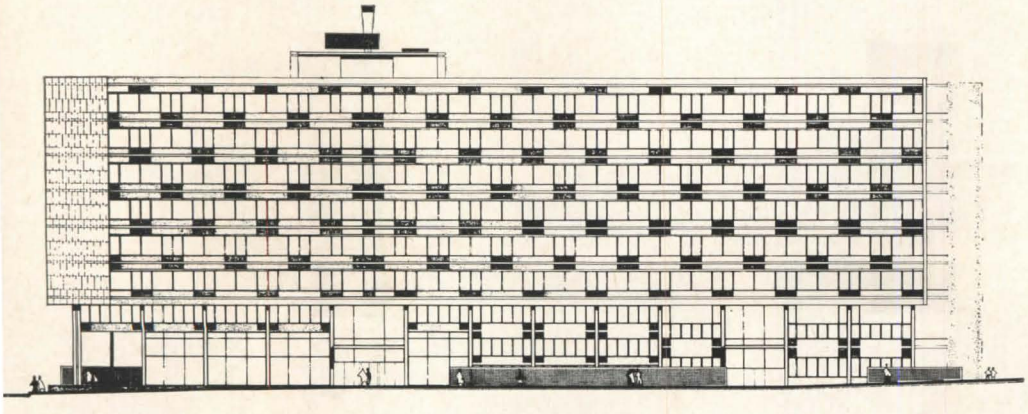
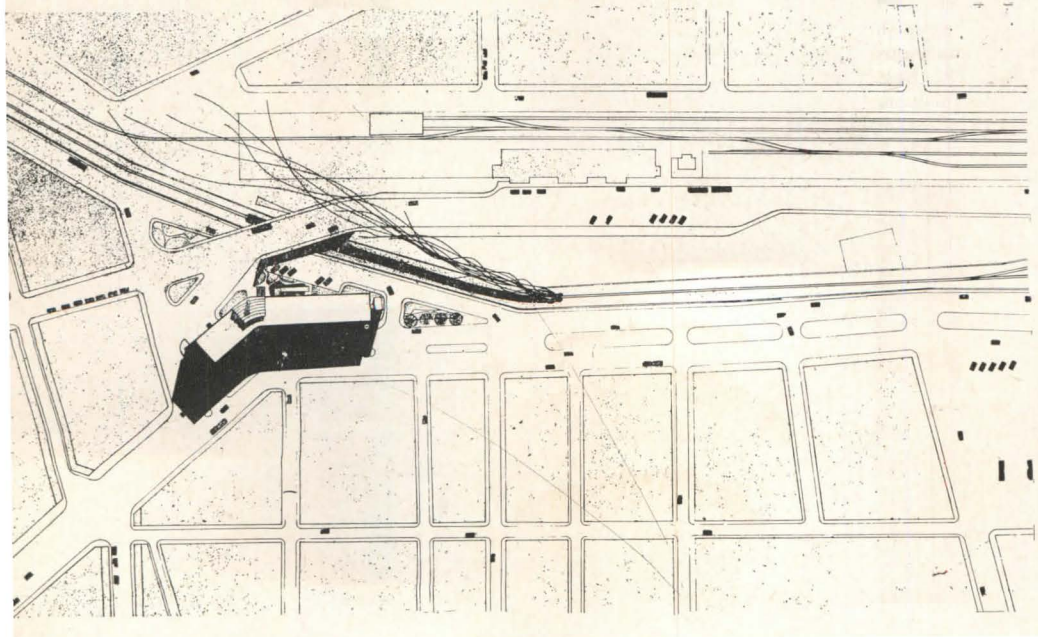
News of Architecture Abroad







M.I.T. Graduate and Partner Win Greek Competition

Winner of the first prize in a Greek competition for the National Railroads Office Building in Athens was this structure entered by the partners Thymio Papayannis and Stheni Molfessis, young Greek architects trained, respectively, at M.I.T. and the Ecole des Beaux-Arts. Construction is scheduled to start in July.

The jury consisted of E. Vekris, general director, Greek Railroads; E. Roussopoulos, professor of architecture, Athens National Technical University; K. Zoukis, architect, Ministry of Public Works; K. Georgiadis, architect appointed by the Technical Chamber of Greece; and B. Costeas, director of the Railroads division of studies and construction.

The program specified services and offices to be provided in the building, as well as floor space requirements to be met within 10 per cent. It also called for a study of the site and the replanning of surrounding streets and railroad lines.

The 12-story building is in plan a bent rectangle about 300 by 47 ft. Its structure is prestressed reinforced concrete with a continuous 6-in. slab throughout reinforced by prestressed bands at 120 deg to each other. The basic module is 10 by 20 ft. The skin is glass with aluminum fixed and pivoted windows, aluminum vents, and concrete panels. The east and west elevations have aluminum and polyester sunshields. Floors are marble and terrazzo. There is complete air conditioning.

The jury approved both the modification of the site and the planning and appearance of the building.

Jacobsen Exhibit at R.I.B.A.: Report from England

The exhibition of the work of the Danish architect, Arne Jacobsen, that was held recently at the Royal Institute of British Architects in London provided a unique opportunity to evaluate the production of a highly gifted and significant artist. Designed by Professor Jacobsen himself, the exhibit covered his work from the early 1930's through models of buildings still under construction. It also included Jacobsen-designed furniture, textiles, and other examples of the applied arts. The total impression was of a remarkably consistent mode of design: intellectual, highly rationalized, and combined with an impeccable standard of finish.

The exhibit acquired a curious topicality with the news that Jacobsen will probably design the new buildings for Oxford's St. Catherine's College. The selection of a foreign architect for this most English of English commissions has been widely interpreted as an indictment of the entire English architectural profession, touching off a staid storm of controversy in the correspondence columns of the *Times*.

—Jonathan Barnett

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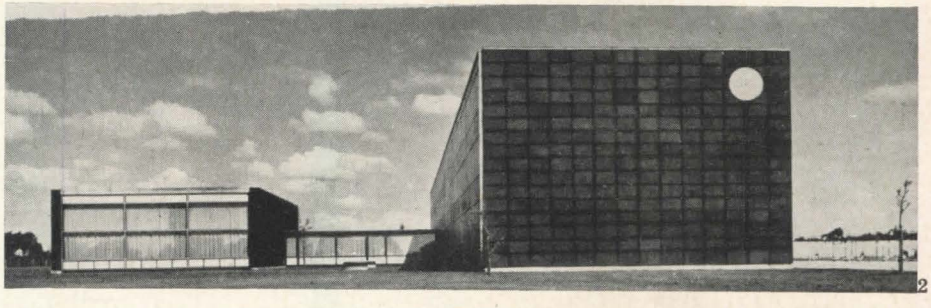

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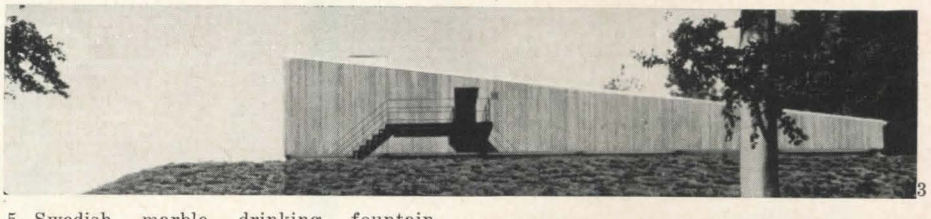

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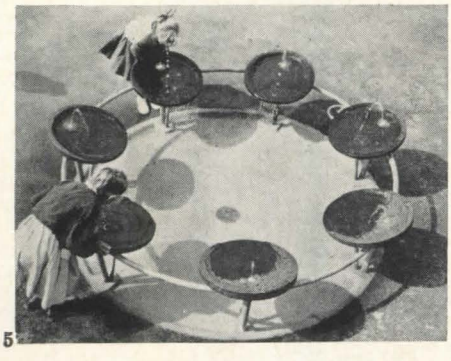
1. Office building for A. Jespersen & Son, Copenhagen; 2. Town Hall, Rodovre, Denmark (AR, Sep. '57, pp. 187-192); 3. House for Ruthwen Jurgensen, Vedbek, Denmark; 4. House for Edwin Jensen, Mosehojvej, Denmark



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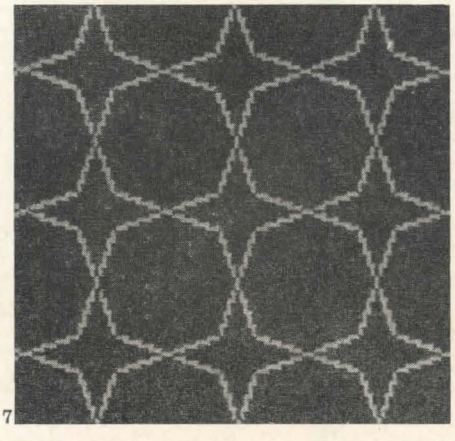
5. Swedish marble drinking fountain, Munkegard School, Gentofte, Denmark; 6. "The Egg," swivel chair designed for the Danish manufacturer, Fritz Hansen; 7. Wilton carpeting designed for S. A. S. Hotel and Air Terminal, Copenhagen



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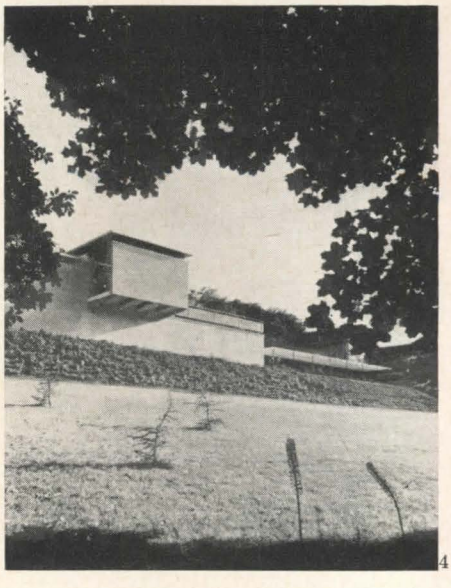

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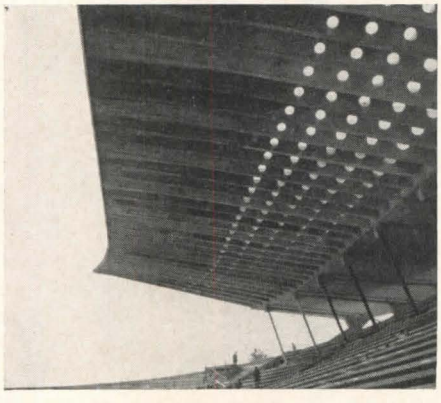
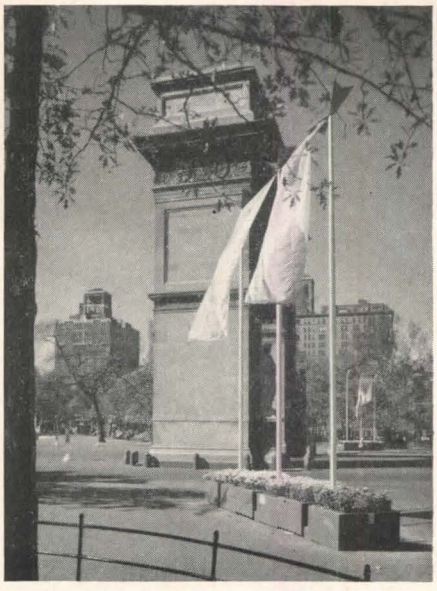
Below: "Engineering: The Work of Pier Luigi Nervi" is the current exhibit (March 26-April 17). Signor Nervi, who prepared material for it, accepted the League's invitation to come to this country for the opening, but illness canceled his plans. The principal speakers were John E. Burchard, dean, School of Humanities, M.I.T., and consulting editor, ARCHITECTURAL RECORD, and architect Marcel Breuer. C. Mortimer Throop, League vice president for engineering, was moderator. Shown is the Flaminio Stadium, Rome (AR, Dec. '58, pp. 107-118). *Right:* Two examples from the "Street Furniture" exhibit last fall. Morris Ketchum, Jr., Louis Kahn, William Ballard, Henry Hope Reed, and James Marston Fitch spoke

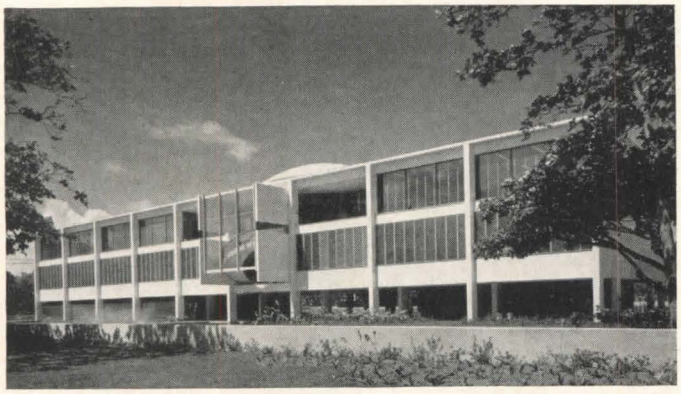


The Architectural League of New York, under its current president, Morris Ketchum, Jr., is sponsoring this year a series of programs that express with new vitality the continuing object of the League: "to quicken and encourage the development of the art of architecture, the arts and crafts, and to unite in fellowship the practitioners of these arts and crafts, to the end that ever-improving leadership may be developed for the nation's service."

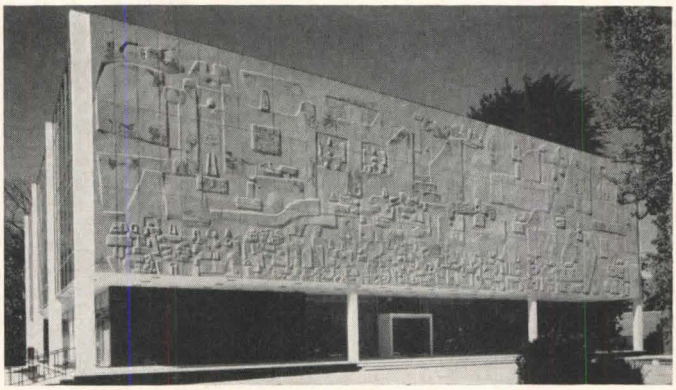


Five of the year's exhibits—noted on this page—have been selected for circulation throughout the country by the American Federation of Arts (1083 Fifth Ave., New York 28).

The League, founded in 1881, now has almost 600 members, 250 of them architects and the others landscape architects, engineers, sculptors, mural painters, and designers and craftsmen. The League's membership is worldwide, with some 130 members outside New York.

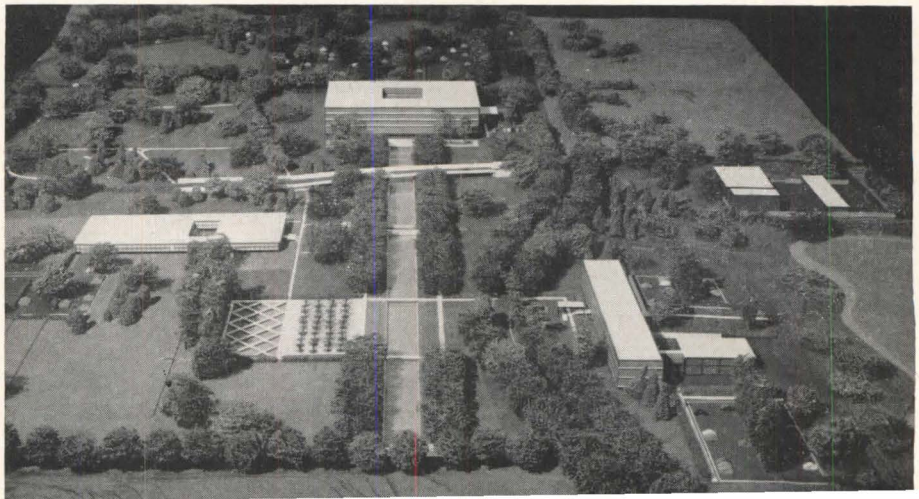


"Architecture: Puerto Rico, Old and New" is another recent exhibit selected by the American Federation of Arts for circulation. Moderator of the program was José Fernandez, League vice president for architecture. The exhibit went on display last month at the University of Puerto Rico. Shown is the Supreme Court of Puerto Rico; Toro-Ferrer, architects

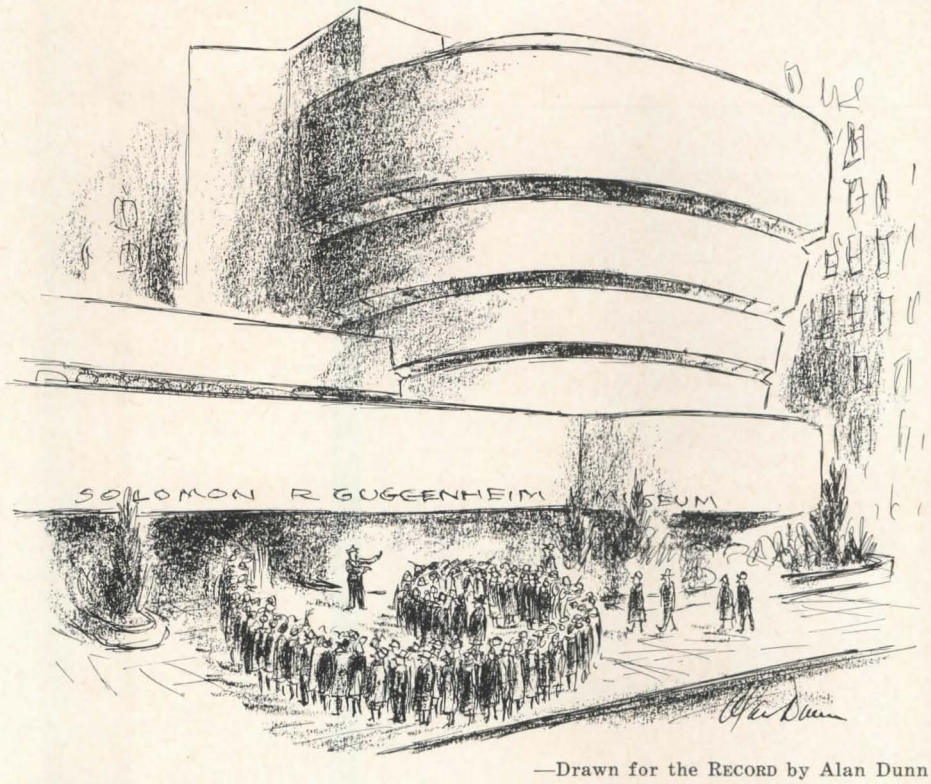


"Sculpture: The Work of Constantino Nivola" (AR, Jan. '59, p. 20) was marked by a program moderated by Frank Eliscu, League vice president for sculpture, at which Paul Nelson was principal speaker. Shown is Signor Nivola's 120-by-30-ft sand mural for the headquarters building of the Mutual of Hartford Insurance Company; Sherwood, Mills & Smith, architects

Right: "Landscape Design: The Work of Dan Kiley" is exemplified by Mr. Kiley's model of the Union Carbide plant near New York; Skidmore, Owings & Merrill, architects. Moderator of the January program was Janet Darling Webel, League vice president for landscape design. Speakers included Ian McHarg, chairman, School of Landscape Architecture, University of Pennsylvania; Walter Netsch, S.O.M. partner; Louis Kahn; Frederick Gutheim. Some of Mr. Kiley's other recent projects are designs for the Air Force Academy, Detroit Civic Center, Jefferson Memorial in St. Louis, Rockefeller Institute for Medical Research in New York, and Kitimat, a new town in British Columbia



Meetings and Miscellany



—Drawn for the RECORD by Alan Dunn

Middle Atlantic A.I.A. Conference
The Middle Atlantic Regional Conference, A.I.A., held at White Sulphur Springs, W. Va., March 13-14, drew an attendance of several hundred despite a near-blizzard.

"Architects in the New World of Science" was the theme chosen for the Conference by its co-sponsors, the Virginia and West Virginia chapters of the A.I.A., and a lively one it proved to be. One of the two seminars was in the hands of architects, but the other was paneled by far-thinking men outside the profession. At both the luncheon meetings and the banquet, furthermore, non-architects were the main speakers.

The subject of the first seminar was "The New Clients." Panel members were: Herbert Swinburne, A.I.A., on "New Types of Clients"; Roy F. Larson, F.A.I.A., on "Government as Client"; and Robert W. Cutler, A.I.A., on "The Corporate Client."

The second seminar was entitled "Social Sciences and Architecture." Dr. Donald Foley of the University of California, who had given the theme address on much the same subject at the opening luncheon, continued his pertinent and, as one member of the panel put it, terrifying analysis of "Changing Social Patterns." "The challenge to architects," he said, "is devilish—how to design a physical environment for changes still to come." Andrew R. Bergstrom of the Martin Company of Baltimore spoke on "Management and Planning Environment," and Dr. Albert Hastorf, professor of psychology at Stanford University, served as discussant. All three men stressed the increasingly rapid rate of change today.

Dr. Hastorf was the luncheon speaker on the second day, and his address on "The Care and Feeding of Clients" was one of the highlights of the conference. "I think the central situation is that client and architect see things differently," he said; "we behave in terms of what we see, not in terms of what is really there." To prove this, he staged an experiment in optical illusion which was both convincing and amusing. He urged architects to develop techniques for mutual understanding with clients and emphasized the need for research, particularly in the schools of architecture.

The banquet address was given by H. Dorn Stewart, national president of the Producers Council.

—*Florence A. van Wyck*

Consulting Engineers to Meet
The Third Annual General Meeting of the Consulting Engineers Council is to be held in New York, April 28 through May 3, at the Biltmore Hotel. Co-hosts will be the New York City and New York State Associations of Consulting Engineers.

C.E.C. is a national federation of 21 state and regional associations of professional engineers engaged exclusively in private practice.

Honored guest at the meeting is to be Julian S. Tritton, president of the International Federation of Consulting Engineers, the organization of which C.E.C. recently became a member. A principal item of business will be the election and installation of the 1959-60 officers. Mr. Tritton is to be the featured speaker at the May 1 installation banquet.

Among the many topics scheduled for discussion is approval of a proposed C.E.C. "Guide to the Practice of Consulting Engineering," incorporating the results of studies of office practice, fees and contracts, ethics, employe relations, and minimum standards.

The present C.E.C. officers are: C. C. Pate, president; L. K. Crawford, first vice president; Ralph M. Westcott, second vice president; Hueston M. Smith, secretary; B. M. Dornblatt, treasurer; Edward J. Wolff, past president. The executive secretary is Larry N. Spiller. C.E.C.'s offices are at 326 Reisch Bldg., Springfield, Ill.

C.S.I.'s Third Convention Coming
The Third Annual National Convention of the Construction Specifications Institute is to be held in Chicago, May 4 through May 6, at the Palmer House. The convention chairman is Warren R. Richardson, president of the Chicago Chapter.

The winning specifications resulting from a Specifications Competition will be displayed. Active and associate C.S.I. members were eligible to submit entries, which were to be

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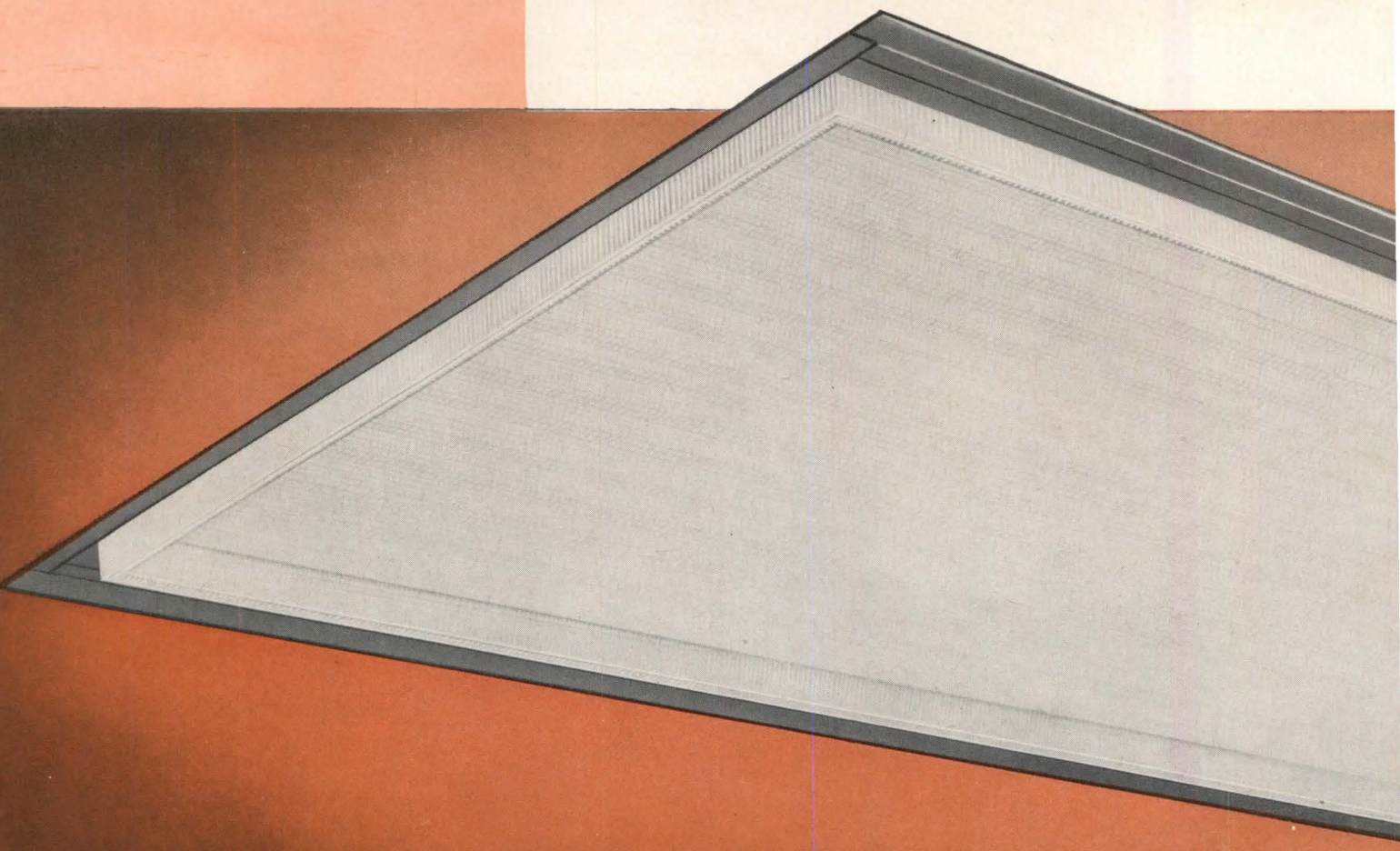

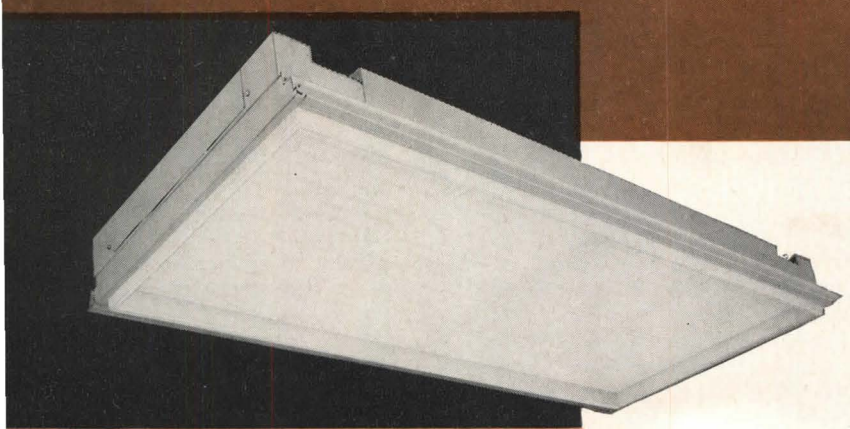

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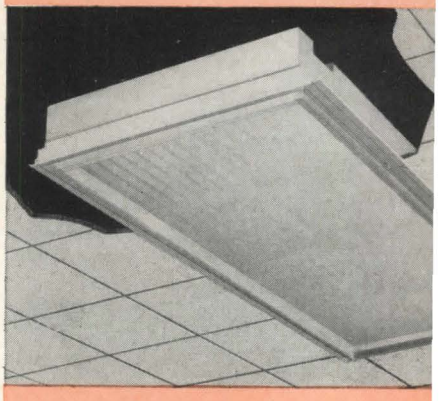

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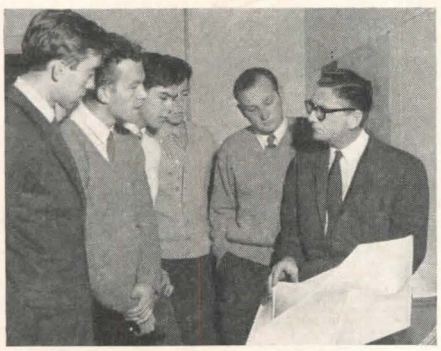
received by March 30. Full sets of specifications in any one of five divisions are to be judged by two architects, two engineers, two contractors, and two specifiers.

Lighting Levels to be Discussed
The new Illuminating Engineering Society-recommended levels of lighting for buildings will be the subject of a conference to be conducted by the Building Research Institute in Cleveland, May 20-21, at the Statler-Hilton Hotel. Architects, engineers, contractors, building products manufacturers, and others concerned will study the I.E.S. recommendations in terms of cost, noise and heat control, architectural design, and electrical system engineering.

The meeting will give a preview of the recommendations, as the complete report on the studies conducted for I.E.S. at the University of Michigan is not to be published until June. Richard H. Blackwell, head of the University of Michigan research group, and C. L. Crouch, technical director of I.E.S., will open the program. There also will be a demonstration of new illumination levels and design trends at the Nela Park Laboratories of the General Electric Company. Murray L. Quin of Daybrite Lighting, Inc., is chairman of the first day's program; Robert E. Fischer, associate editor (engineering) of ARCHITECTURAL RECORD, of the second day's program.



Eduardo F. Catalano, professor of architecture at M.I.T. (far right), explains an example of his hyperbolic paraboloid construction to five of 13 Chilean students who recently made a six-week tour of the eastern U.S., including two weeks at M.I.T's School of Architecture and Planning. The students, chosen for architectural ability and leadership from three Chilean universities, made the trip under M.I.T. guidance, sponsored by the State Department as part of the International Educational Exchange Program; they were accompanied by three Chilean professors. Marvin E. Goody and Bernard P. Spring, M. I. T. assistant professors of architecture, were guides during the tour. The students shown are (left to right) Francisco Schlotfeldt, Roger Magdahl, Lautaro Moraleda, Carlos Barroilhet, Walter Malsch

Rome Prize Fellowships Awarded
Michael Rapuano, president of the American Academy in Rome, announced last month the award of 12 Rome Prize Fellowships for one year each, beginning next October 1. The fellowships carry $3000 each and free residence and studio at the Academy.

The two fellowships in architecture were awarded to: Theodore John Musho, University of Cincinnati, B.S. in Arch., '58, now studying for a master's degree in architecture at M.I.T.; John Jay Stonehill, Dartmouth, A.B., '55, now studying for a B.Arch. degree at Yale.

Milwaukee Architecture Exhibit
An architectural exhibition, "Architecture: Man's Space," is scheduled to open in Milwaukee on April 9 and run through May 17. The exhibit has been prepared by and is jointly sponsored by the Wisconsin Chapter, American Institute of Architects, and the Milwaukee Art Center. It will be held in the Art Center in the new Milwaukee County War Memorial Building (Eero Saarinen, architect).

The exhibit is intended to portray "the reality of great contemporary architecture as *space* and *sequence of spaces* that enhance the spirit and artfully shelter man and his activities." Basic space concepts throughout architectural history will also be shown as background. Among the architects whose work will be represented are Le Corbusier, Saarinen, Yamasaki, Kahn, Stone, Wright, Mies.

The exhibit is expected to be circulated after it ends in Milwaukee, starting in other Wisconsin cities.

Whiffen Wins S.A.H. Book Award
The 1958 Book Award of the Society of Architectural Historians went to Marcus Whiffen for *The Public Buildings of Williamsburg, Colonial Capital of Virginia* (published by Colonial Williamsburg; distributed by Henry Holt & Co.).

Mr. Whiffen, formerly an assistant editor of *Architectural Review*, has been architectural historian at Colonial Williamsburg since 1954.

A.I.A. Chapter Giving New Award
The Buffalo-Western New York Chapter, American Institute of Architects, has undertaken the annual grant of a $1000 scholarship award, starting this spring. The award, for post-graduate study, is sponsored by Anchor Concrete Products. The recipient is to be determined by the chapter's scholarship committee each year. Prospective applicants may apply for requirements to Thomas Justin Imbs, A.I.A., 225 Delaware Ave., Buffalo 2.

It isn't every day that 220 visitors from a foreign city arrive together for a visit to this country. But such a group from the Milan Association of Architects recently was here for a whirlwind tour. The tour, which centered around New York, was organized and led by Gio Ponti, architect, designer, and editor of *Domus*. Shown here, some snapshots of a busy week. *Top:* At a reception given by Dr. Filippo Donini, director of the Italian Institute of Culture: Ponti; Dr. Donini; and L. Bancel LaFarge, president of the New York Chapter, A.I.A. *Second cut:* Among those who enjoyed chatting with the Italians in various languages were Mrs. Edward D. Stone; Mr. Stone; Morris Ketchum, Jr., president of the Architectural League; and Emerson Goble, editor, ARCHITECTURAL RECORD. *Third cut:* There was one day-long bus tour which started in New Haven, where Paul Rudolph was host during a tour of the Yale campus and the city. In Mr. Rudolph's studio, making use of the "conversation well": Richard Foster; Philip Johnson; Ponti; Mr. Rudolph; and Jeanne Davern, assistant to the editor, ARCHITECTURAL RECORD. *Fourth cut:* Again in Mr. Rudolph's studio, an absorbed group of Italians in the background, and in the left foreground, Raffaela Crespi, secretary of the Milan Association of Architects, and Gino Pollini, one of the architects. Later that day, the group was received —in their own houses in New Canaan— by Marcel Breuer, Philip Johnson, and Eliot Noyes

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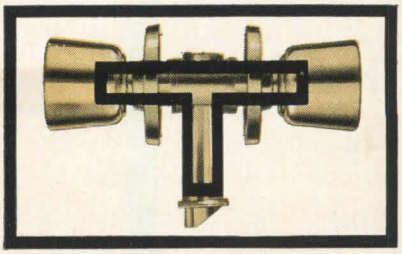

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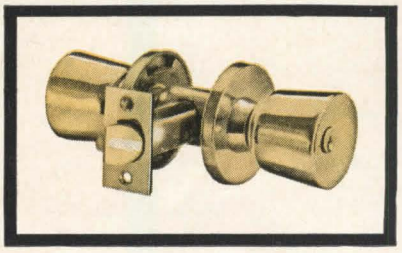

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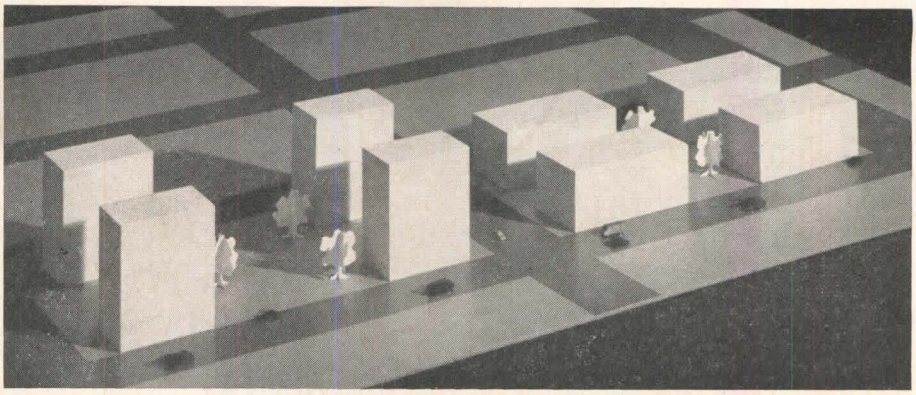
Proposals for Revised New York Zoning Would Affect Design

A proposed new zoning resolution for New York, recently made public, would substitute for the present complicated, much-amended regulations dating from 1916 a simplified set of rules intended to make possible more architectural variety, less crowding of people and automobiles, and more logical land use.

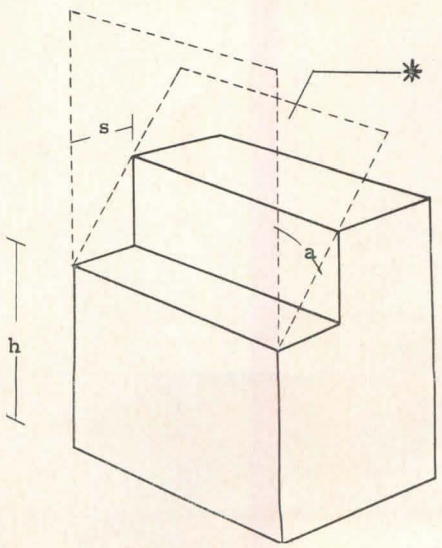
The resolution and detailed explanations are contained in a 376-page report prepared for the City Planning Commission (James Felt, chairman) by Voorhees Walker Smith & Smith (now Voorhees Walker Smith Smith & Haines), New York architects who were special consultants on the revision. Perry Coke Smith was the senior partner in charge of the zoning project, Ralph Walker participated, and Jack C. Smith was technical director.



Floor Area Ratios are the same for both blocks, but Open Space Ratio for left block is much higher

Commenting on the new zoning resolution, L. Bancel LaFarge, president of the New York Chapter, American Institute of Architects, said: "Notably, the resolution would enable architects to design with much greater freedom and effect, for it would not practically impose, as present regulations do, a 'wedding-cake' design as a way of getting maximum bulk in areas such as central Manhattan. Under the proposed new zoning regulations, the shape

continued on page 36



h: Height of sky exposure plane above street line; s: Initial setback distance; a: Angle of slope of sky exposure plane over zoning lot measured down from the vertical; *: Sky exposure plane

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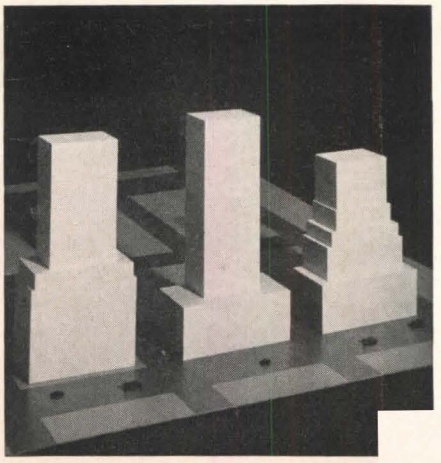
and the form of the building would be the result of the architect's finest design judgment."

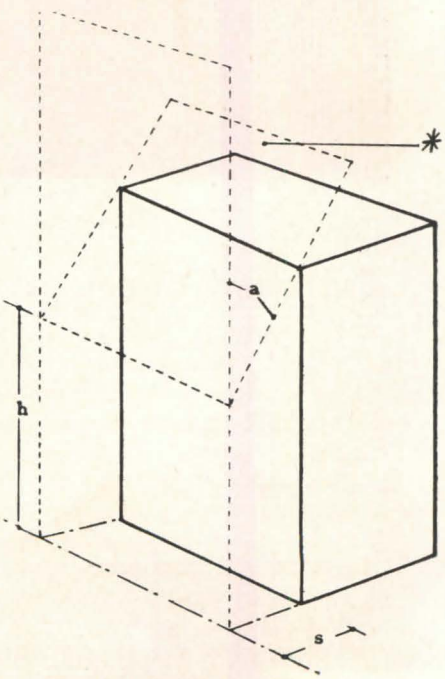
To summarize some of the architectural highlights: A new zoning map of the city divides the land into 47 types of residence, commercial, and manufacturing districts, taking into account present use *and* desirable future use. For each district relatively simple formulas and reference charts control density, building bulk, and open space (also parking and loading facilities). The key formulas are:

Floor Area Ratio: Floor space multiplied by 100 and divided by lot area. This is directed against excessive bulk. *Open Space Ratio:* Open space multiplied by 100 and divided by floor area. This new regulation, for residence districts, is intended to insure enough light and air. *Sky Exposure Plane* and *Alternate Sky Exposure Plane:* These provisions (illustrated) are simplified formulas to give more light and air and to allow more flexible design, using, respectively, setbacks or a deeper front open area. *Tower Regulations:* This third bulk device, usable alone or in combination with either of the others, allows a building to cover 40 per cent of its lot with no setbacks or angle limitation as long as the Floor Area Ratio is not exceeded.

Also, bonuses are set forth in formula form that grant more floor area according to how much open space or plaza area is provided beyond the minimum.



Left to right: 1. Open area at ground level permitting higher rise before initial setback, with tower above; 2. Maximum bulk up to required initial setback, with tower above; 3. Maximum bulk using proposed standard envelope, with no bonuses



h: Height of sky exposure plane above street line; s: Depth of optional front open area; a: Angle of slope of sky exposure plane over zoning lot measured down from the vertical; *: Alternate sky exposure plane

more news on page 40

Beauty in the boiler room

Here's how coal is burned the modern way

Carlisle Finishing Co.
A Division of Cone Mills Corporation
Greensboro, N.C.

You are looking down the firing aisle in the power plant of the Carlisle Finishing Company, Carlisle, S. C.

Like many other firms, this plant uses coal for its economy and availability. For maximum efficiency in steam generation, the coal is handled and burned by completely modern, automatic equipment.

But Carlisle has gone a step further in burning coal the modern way.

In keeping with its cleanliness of operation and pleasant atmosphere this plant has been painted in smart, cheerful colors. The result, as you can see, is a handsome interior reflecting the good taste that is prevalent throughout the entire operation of the Carlisle Finishing Co.

Modern coal burning is not only an *efficient* process . . . it can be *good-looking*, too.

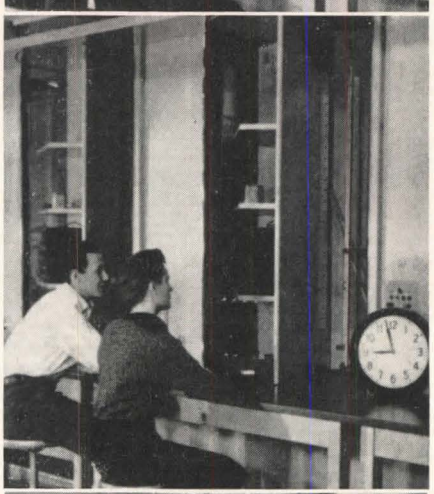
BITUMINOUS COAL INSTITUTE

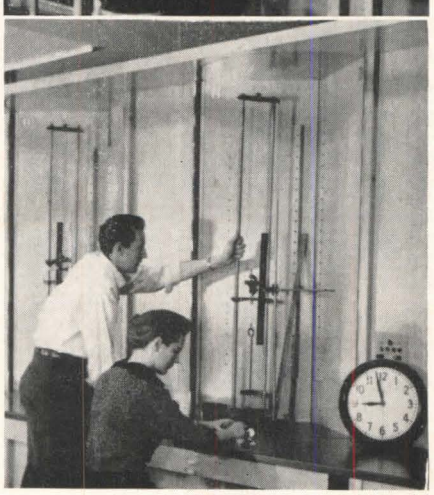
Dept. AR-04, Southern Building, Washington 5, D. C.

The Record Reports

Rotating Equipment Turntable Produces Convertible Lab

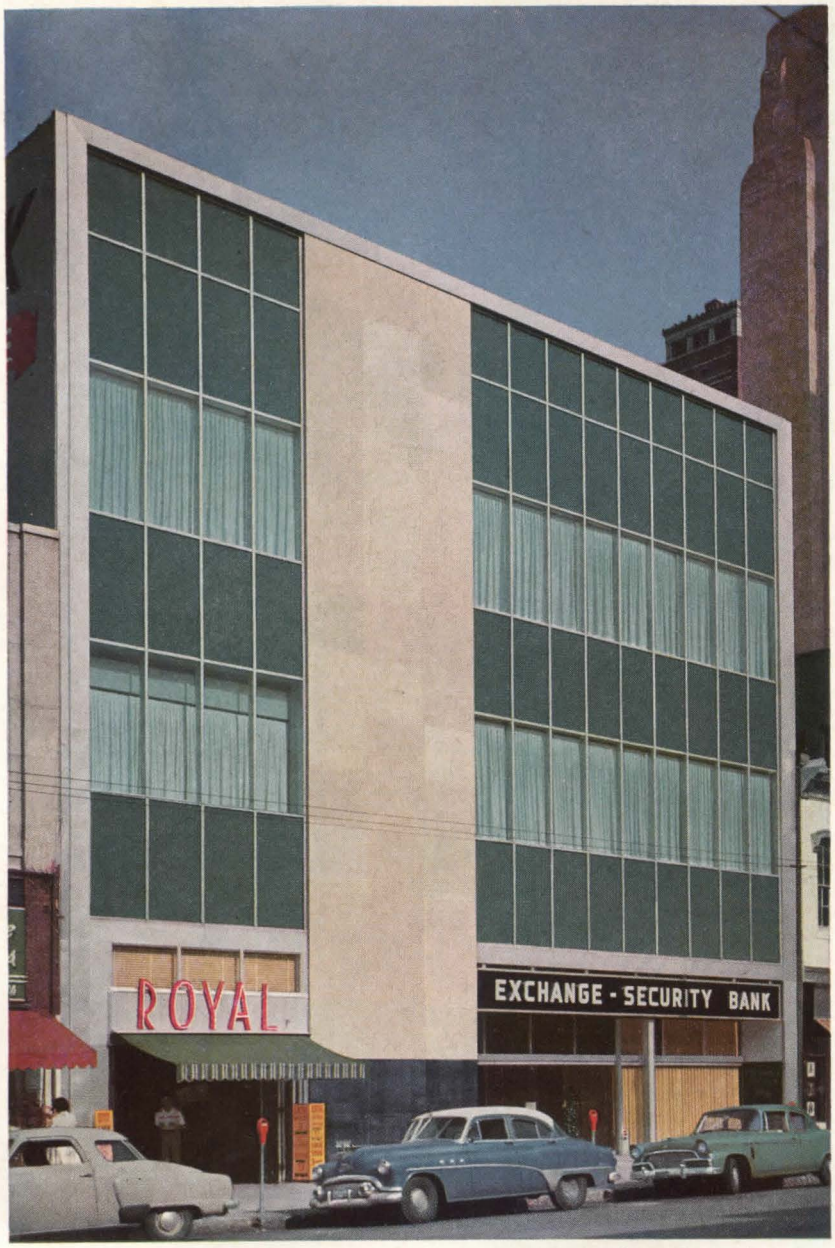
A new device would allow a single school or college laboratory to serve several different subjects. A built-in, rotating turntable at each student station could be equipped for one course from the rear while in use for another. The unit—designed by Ora L. Railsback and Harold M. Skadeland, physics professors at the University of Illinois—is shown with students replacing equipment, watching it disappear, and removing new equipment, all in 15 seconds.





more news on page 44

Cinderella and the glass curtain wall



Architect: William P. Shaw, Birmingham, Ala.
Contractor: Hallmark Construction Co., Birmingham, Ala.
Glazed by Taylor Glass Co., Birmingham, Ala.

Cinderella in this true story is the old-fashioned, architecturally out-dated building, above. But just look at the change—at the beauty, style and modernity—that has been wrought by the magic of glass. Cinderella has been glamourized . . . and her life extended indefinitely.

Forest Green SPANDRELITE®—*Pittsburgh's* beautiful *glass in color*—provides the soft, attractive tone on the new face of the Exchange-Security Bank in Birmingham, Alabama. Specifically designed for curtain-wall spandrels, SPANDRELITE is a heat-strengthened glass with ceramic color fused to the back. Forest Green is only one of 18 standard colors and a wide range of custom colors, and it is available in *polished* or *twill* finishes. The colors retain their original brightness, impression of depth and true shade indefinitely.

SPANDRELITE is strong enough to withstand impact, and it resists weathering, corrosion and a wide range of temperature variations. It is porous and non-absorbent—a durable and economical investment.

The setting for SPANDRELITE is the PITTCO® 82-X Curtain-Wall System which has been thoroughly field-tested in important installations in all sections of the country. It has proved to be a handsome as well as practical solution to the problem of glass curtain-wall construction.

Without obligation to you, our Architectural Representative can supply helpful information that can aid in solving curtain-wall problems. Meanwhile, we invite you to send for a free copy of our full-color booklet on curtain-wall construction. Fill in the coupon.

Other Pittsburgh Glass Products used in this building: SOLEX® *Heat-Absorbing Plate Glass;* HERCULITE® *Tempered Plate Glass Doors and Windows.*

Pittsburgh Plate Glass Company
Room 9136, 632 Fort Duquesne Blvd.
Pittsburgh 22, Pa.

Please send me your full-color booklet on Pittsburgh Glass-Clad Curtain-Wall Systems reprinted from Section 3E of the 1959 Sweet's Architectural File.

Name_____

Address_____

City_____ **State**_____

SPANDRELITE

glass in color

Paints · Glass · Chemicals · Brushes · Plastics · Fiber Glass

PITTSBURGH PLATE GLASS COMPANY

In Canada: Canadian Pittsburgh Industries Limited

A Washington Report *by Ernest Mickel*

U.S. IN MOSCOW: U.S. PREPARES EXHIBIT TO REFLECT MANY FACETS OF AMERICAN LIFE

The American exhibition in Moscow this summer is being planned in such a way that many of the criticisms directed at this country's performance at the Brussels international exposition last year are not expected to arise. At least those government officials charged with preparing for the first American exhibition of its sort in the Soviet Union express confidence that these pitfalls will be avoided.

Censure last year seemed to center on the type of things displayed to illustrate American life at the Belgian exposition. Many said they felt the exhibits did not go deeply enough into the true expression of our day-to-day living.

In any event, officials emphasize, expressing America's deep-seated convictions and living habits to the world at a fair in Brussels for several months and spreading America's science, technology and culture before some four million native Soviets in the briefer span of six weeks in their own capital are two different things planned quite differently.

Five Themes to Play

The basic question of shelter for what this country plans to do arises in both areas however. For Moscow, planners have approved the designs of Welton Becket of Los Angeles—a Kaiser aluminum geodesic dome to be erected by Lydick Roofing Company of Fort Worth, Tex., and a fan-shaped exhibition hall. The exhibitions themselves are being designed by George Nelson Inc. of New York (see page 10).

Several major themes have been developed for the Moscow exchange exhibit: America learns (education), America explores man and the universe (science and research), America creates (art), America travels, America plays, and American community life.

The Office of the American National Exhibition in Moscow—a cooperative Federal government effort—hopes the exhibit will prove to be a true "corner of America" in the heart of Moscow for the six-weeks period.

U.S.S.R. in New York

Target date for the opening is July 25. The U.S.S.R., by reciprocal agreement, is preparing its own exhibition to open in the Coliseum, New York City, June 28. That will run for one month.

The State Department, Commerce Department, United States Information Agency and other Federal functions are joining hands to plan, transport and set up the Moscow show. A USIA spokesman said the purpose was simple: to increase understanding in the Soviet Union of the American people, the land in which they live, and the broad range of American life, including American science, technology and culture.

An early announcement from the Office of the American National Exhibition in Moscow defines the method: a comprehensive exhibition, with the United States Government, American private industry and institutions participating, to project a realistic image of America through exhibits, displays, films, publications, fine arts, performing arts. How America lives, works, learns, produces, consumes and plays; what the American people are and what they stand for; America's cultural and spiritual values; all these will be reflected. USIA's director George V. Allen, is coordinator.

Opening Scheduled July 25

Site of the exhibition is a 300,000 sq ft plot in Sokolniki Park. This is described as a 1500-acre wooded recreation area 15 minutes by subway from downtown Moscow also served by bus and trolley lines. Actual construction work at the Sokolniki Park location began about March 1 with the schedule calling for completion of the two principal structures early in June. The Soviet government gave the planners a priority on labor and no difficulty in meeting the July 25 opening date was anticipated.

American design and construction, it appeared, would be represented to the Russian people through the buildings themselves, through a full-scale prefabricated home to be erected on the grounds, and through visual and operating aids which will include an architectural exhibit similar to that sent to Moscow several months ago by the American Institute of Architects in connection with the U.I.A. meeting.

Helping Russians to understand American home life better will be a number of displays ranging from the highly-popular garbage disposers and dishwashers to voting machines and all sorts of tools.

As for the buildings themselves, this "corner of America" in Moscow is certain to make its four million or so visitors aware of a specific form of contemporary American architecture.

The 200-ft diameter anodized aluminum dome will rise 78 ft, providing 30,000 sq ft of floor space. The 50,000 sq ft in the separate exhibition hall structure will be enclosed in glass, steel and aluminum and this building will rise 28 ft. Both buildings are to be purchased by the U.S.S.R. at the close of the exhibition under terms of an agreement between the United States and the All Union Chamber of Commerce of the U.S.S.R.

The OANEM explained that a wide range of products of American industry and labor would be shown in the "glass pavilion" along with book displays, radio, television, hi-fi, paintings and the other cultural exhibits, including that on architecture. A two-level interior modular steel structure will create mezzanine areas from which the visitor may observe exhibits above, below and on the same level.

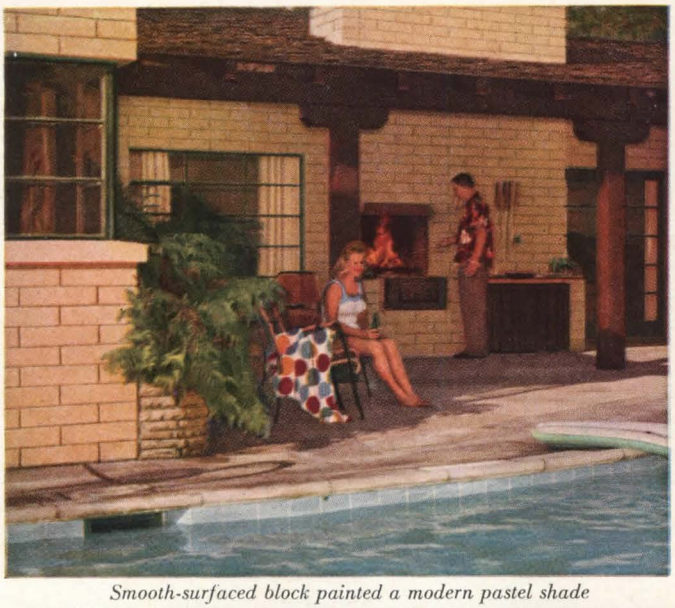
The geodesic dome is to serve as an information center. Around the inside perimeter will be exhibits on science, research, education, labor, productivity, health and social services, agriculture and other aspects of American life. The outside perimeter will offer an "American gallery" with such figures as Abraham Lincoln, Mark Twain, Benjamin Franklin, Walt Whitman and others familiar to the Soviet people.

The grounds near the pavilion and the dome will serve as another exhibition area for outdoor technological displays, farm equipment, the prefabricated house, and automobiles. This space also will contain a children's playground.

This solo exhibition by the United States will not be a trade fair in any sense.

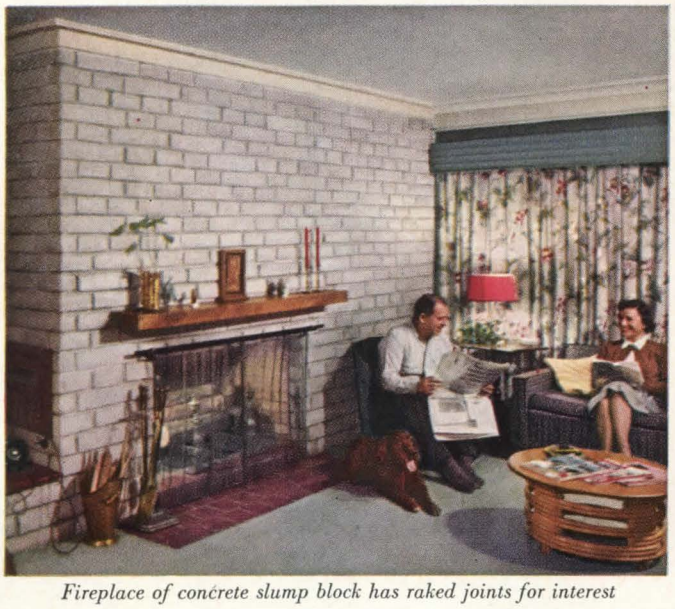
Another building was being scheduled to contain the Circarama presentation, the "movie-in-the-round" which was so successful at the Brussels Fair. A small, circular structure, it will be designed in such a way that twice as many people can be handled for each performance as were accommodated at Brussels. There, approximately 300 moved through the building on a continuing basis; at Moscow, the number is expected to reach 600. The Circarama movie itself is being redone by Walt Disney; updated with new sequences and a Russian soundtrack.

How much does all this cost? With time too short to request a supplemental 1959 appropriation, President Eisenhower authorized use of $3.3 million in Mutual Security Funds and there was $300,000 available from earlier Congressional appropriations. USIA is underwriting the cost of Circarama.



Smooth-surfaced block painted a modern pastel shade

Living concrete in integrally colored 4"-high split block



Fireplace of concrete slump block has raked joints for interest

Painted, textured units in running bond, a perfect patio background

Beautiful new forms of concrete masonry match America's mood for good design!

Never before has concrete masonry offered such broad home design opportunities or promised such certain client acceptance.

The effects possible with this material in the newest modern forms are almost endless. New colors and textures, new sizes and shapes create a new look in walls—both exterior and interior. There's effective contrast with wood, metal or glass.

Today's concrete masonry expresses warmth, interest . . . it's truly new-type *living concrete!* Growing in popularity all over the country, *living concrete* is proving itself ideal for homes of every architectural style, in every type of neighborhood.

You'll find interesting the colorful booklet "*Concrete Masonry Homes for Better Living.*" It's yours free for the asking. (U.S. and Canada only.)

PORTLAND CEMENT ASSOCIATION

Dept. A4-8, 33 W. Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of concrete

Washington Topics *by Ernest Mickel*

Decentralization Inevitable, Report Says: What Next?

The final report on a full year's study of the problems of metropolitan growth in the National Capital region contains much to recommend it for reading by architects everywhere. Known as the Final Report of the Joint Committee on Washington Metropolitan Problems of the Congress of the United States, it has been submitted by committee chairman Senator Alan Bible of Nevada. Staff director is Frederick Gutheim.

The study was described as being unique among metropolitan area studies in its combination of breadth of scope in the structure of regional government and planning, and depth in the selected areas of immediate action. The point is made that Washington's growth pattern is not unique and has strong parallels with other metropolitan areas.

Delving into "power and inevitability" of city decentralization, this report observes: "What people mean when they talk about decentralization as a threat to the central city is less an absolute loss than a change. What is left in the central city tends to be the poorer families, the racial minorities, the older government bureaus, the small businesses, the specialized kinds of retail trade. What we find in the suburbs are younger families with children, new business, manufacturing that has stabilized its product and is relatively self-contained, shops selling convenience goods. What remains is to put together these two complimentary parts of the metropolitan region in the same general plan."

Decentralization was looked upon by the committee as a response to the advance of transportation and communications technology, and to the growth of metropolitan areas generally. It will not be halted or reversed, it was said, by improvements in the central city, changes in civil defense policies, or other modifications in the conditions of metropolitan growth.

What Kind of Metropolis?

Public discussion has placed too much emphasis on the "either-or" aspect of this decentralization question, committee members found. Their report read: "It has been argued that the future city will be either more decentralized, and hence urban decay will be hastened; or decentralization will somehow be halted and thus the central city—its present character, its property and tax values—will be saved. Rather than this unproductive way of looking at the problems created by urban change, consideration should be given to the probability that the forces now changing our large cities are in fact creating a wholly new kind of metropolis."

And under the heading, "Consequences of doing nothing," the report stated: "In the end, all metropolitan interests share the same fate. Whether they are governmental or business interests, social or economic interests, central city or suburban interests, all are affected."

It was suggested that the Commission of Fine Arts, as an independent agency, assert greater initiative toward influence in its already-prescribed sphere. The committee complained that the Commission has not acted sufficiently often to call the attention of Congress to incidents of major importance where their advice has been ignored by agencies whose statutes required they seek it.

Urban Renewal Opportunities Emphasized at Congress

The many complex problems of financing, land assembly and disposal, and construction associated with re-

continued on page 326

There's an Armstrong Floor precisely right for any particular interior . . .

AT TAKASHIMAYA DEPARTMENT STORE, NYC,

THAT FLOOR IS the Tessera Series IN Armstrong VINYL CORLON

Color chips are actual size in foreground. White line is alkali-resistant Armstrong Hydrocord Back.

The ordered elegance of Japanese domestic architecture is the perfect environment for the lacquered tables, parchment lamps, and other furnishings sold here, in the new Takashimaya department store. The architects used the Tessera Series in Armstrong Vinyl Corlon to adapt their Japanese design to the rigorous practical needs of a Manhattan store.

"Tessera's" delicate mosaic pattern—composed of colored vinyl chips set in a bed of translucent vinyl—contrasts richly with the plain surfaces of other structural materials. The beige coloring suggests the traditional tatami mats and harmonizes with the frames of the shoji. Being monochromatic, "Tessera" provides a unifying background for the varicolored displays.

In regard to service, "Tessera" is a heavy-duty floor comparable in performance to battleship linoleum that will decorate Takashimaya for a long time. Its superior resistance to abrasion and furniture loads and the smooth, virtually seamless surface assure easy, economical maintenance for many years.

Technical data on "Tessera" (for samples and complete specs, contact your Armstrong Architectural-Builder Consultant) **composition:** chips are tinted, opaque vinyl, set in a bed of translucent vinyl; **surface resistance:** excellent for grease, alkalis; very good for solvents, detergents; **ease of maintenance:** superior; **static load limits:** 75 psi; **underfoot comfort and quiet:** good; **over-all thickness:** .090"; **wearing-surface thickness:** .058"; **available in:** seven monochromatic colorings; in 6' wide rolls; **installed price:** 75-90¢ per sq. ft.
N.B. The exclusive, alkali-resistant Armstrong Hydrocord Back permits "Tessera" to be used over below-grade and on-grade subfloors, as well as above grade. "Tessera" may also be installed over lightweight aggregate concrete slabs of proper density.

Armstrong Architectural Services. Armstrong is in the unique position of making all types of resilient floors. So Armstrong Architectural-Builder Consultants are not confined to a few specific flooring recommendations. They can help you specify the one floor perfectly suited to each interior. They can also offer you the services of the Armstrong Research Center and the Armstrong Bureau of Interior Decoration. Contact an Architectural-Builder Consultant at your Armstrong District Office. Or write to Armstrong Cork Company, 1604 Rock Street, Lancaster, Pennsylvania.

Takashimaya Inc., Fifth Avenue, NYC
architects: Steinhardt and Thompson, NYC, associated with Junzo Yoshimura, Tokyo
floor: the Tessera Series in Armstrong Vinyl Corlon No. 86535

ARMSTRONG FLOORS *price list*
Approximate installed prices per sq. ft.
(Over concrete, minimum area 1000 sq. ft.)

20¢ - 35¢	35¢ - 45¢
Linoleum Tile	Linoleum Tile
Asphalt Tile 1/8" (A,B,C,D)	Asphalt Tile 3/16" (C,D)
Asphalt Tile 3/16" (A,B)	Asphalt Tile 1/8", 3/16" (greaseproof)
Linoleum .0625"	Linoleum .125" Battleship
	Cork Tile 3/32"
	Excelon Tile .0625" (Vinyl Asbestos)
45¢ - 60¢	**60¢ - 70¢**
Vinyl Corlon .070"	Vinyl Corlon .070" (Hydrocord Back)
Linoleum .125"	Rubber Tile 1/8"
Cork Tile 1/8"	Cork Tile 3/16"
Excelon Tile 1/8" (Vinyl Asbestos)	Linotile 1/8"
70¢ - 90¢	**90¢ and over**
Vinyl Corlon .090" (Hydrocord Back)	Custom Corlon Tile 3/32", (Homogeneous Vinyl) 1/8"
Rubber Tile 3/16"	Custom Vinyl Cork 1/8"
Custom Corlon Tile 3/32", 1/8" (Homogeneous Vinyl)	Opalesq Vinyl Tile 1/8" (Homogeneous Vinyl)
Cork Tile 5/16"	

Construction Cost Indexes

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

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

NEW YORK

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.6	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	274.9	271.8
1952	278.2	274.8	271.9	265.2	262.2
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
1956	310.8	302.2	320.1	328.6	324.5
1957	318.5	308.3	333.1	345.2	339.8
November 1958	335.9	321.5	358.7	378.2	367.5
December 1958	335.9	321.5	358.7	378.2	367.5
January 1959	337.8	322.5	362.3	383.1	368.8
	% increase over 1939				
January 1959	173.5	163.5	177.2	187.2	183.5

ATLANTA

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
1952	218.8	221.0	212.8	210.1	214.3
1953	223.0	224.6	221.3	221.8	223.0
1954	219.6	219.1	233.5	225.2	225.4
1955	225.3	225.1	229.0	231.5	231.8
1956	237.2	235.7	241.7	244.4	246.4
1957	241.2	239.0	248.7	252.1	254.7
November 1958	246.5	242.0	259.3	265.9	265.1
December 1958	246.5	242.0	260.2	266.4	266.8
January 1959	247.7	243.2	261.8	268.4	268.3
	% increase over 1939				
January 1959	187.0	192.6	175.3	175.6	183.3

ST. LOUIS

1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.0	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
1956	288.7	280.3	287.9	299.2	293.3
1957	292.0	283.4	295.2	307.1	302.9
November 1958	298.9	289.8	307.2	320.6	316.3
December 1958	299.1	290.0	307.7	321.4	316.5
January 1959	301.1	292.6	310.5	324.5	318.4
	% increase over 1939				
January 1959	173.2	173.4	161.6	170.9	167.6

SAN FRANCISCO

1930	90.8	86.8	100.6	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
1952	250.2	245.0	245.6	248.7	249.6
1953	255.2	257.2	256.6	261.0	259.7
1954	257.4	249.2	264.1	272.5	267.2
1955	268.0	259.0	275.0	284.4	279.6
1956	279.0	270.0	288.9	298.6	295.8
1957	286.3	274.4	302.9	315.2	310.7
November 1958	292.0	277.1	315.1	330.2	325.0
December 1958	292.9	278.0	316.5	331.0	325.2
January 1959	293.6	278.5	317.4	332.2	325.9
	% increase over 1939				
January 1959	178.0	180.5	170.3	172.5	179.7

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

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

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

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

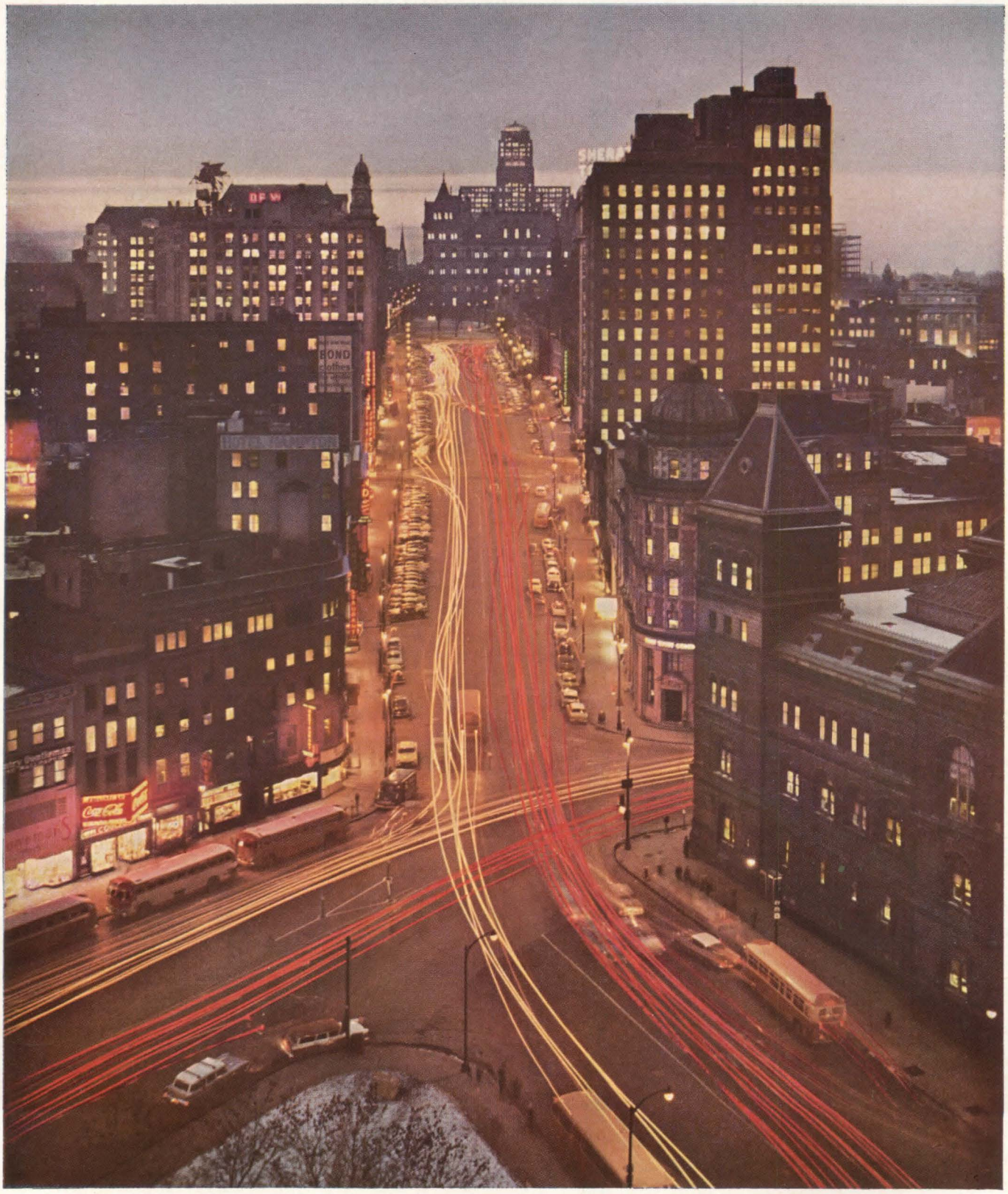
$$\frac{110-95}{95} = 0.158$$

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

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

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

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



ALBANY, *as the Capital of the great Empire State, is second only to Washington, D.C. as a legislative center. The roots of America are here. It is the oldest existing settlement in the original thirteen states and the second oldest city still operating under its original 1686 charter. In 1754, Benjamin Franklin presented the first plan of Federal Union to the legislature. Four former U. S. Presidents resided in Albany as governors: Martin Van Buren, Theodore Roosevelt, Grover Cleveland and Franklin D. Roosevelt. As a major transportation center for the northeast and an important overseas shipping port on the Hudson River, Albany has also attracted a variety of industries. Otis has a long standing "participant's" interest in Albany's skyline growth. Over 77% of its elevators are the world's finest. They're by OTIS.*

Required Reading

Plastic Design, Now Approved

PLASTIC DESIGN IN STEEL. *American Institute of Steel Construction, 101 Park Ave., New York 17. 94 pp., illus. $4.*

PLASTIC DESIGN OF STEEL FRAMES. *By Lynn S. Beedle. John Wiley & Sons, 440 Fourth Ave., New York 16. 406 pp., illus. $13.*

BY EDWARD COHEN
Associate, Ammann & Whitney, Consulting Engineers

"Rules for Plastic Design and Fabrication" have been adopted by the American Institute of Steel Construction, thus making plastic design an approved method for rigid frame building structures except in areas where further action is required by local building code authorities. The application of these recommendations to rigid frame structures will always result in economies in either required weight of steel or in simplified fabrication or both. Although the application of the new recommendations is limited to the design of continuous beams subject to normal dead and live loads (crane girders are excluded; bridges are not included) and one- and two-story rigid frame buildings, the designer of such rigid frame structures as are covered by the new A.I.S.C. recommendations is under a strong obligation to his clients to use the revised design methods and achieve maximum economy. The use of plastic design methods is expected to make welded rigid frame construction economically more competitive and increase its use. However, the combination of shop welding with high strength bolted field connections still appears to be economical and generally desirable.

Though structures designed by the plastic method will not look strikingly different from elastically designed structures, they can generally be expected to be more slender and to make greater use of uniform sections. The recommendations require that structures be designed with a plastic strength equal to 1.85 times the given live load and dead load. When wind or earthquake forces are added, the required strength-load ratio is reduced to 1.40. These values are closely comparable to the present factors of safety for simple wide flange beams designed elastically at an allowable stress of 20,000 psi for dead and live loads and allowing a 33⅓ per cent increase in allowable stress when wind and earthquake forces are added. Trusses and axially loaded members designed elastically for the same allowable stresses have strength-load ratios about 12 per cent less. Elastically designed rigid frames, continuous beams, wide flange beams bending about the weak axis and other flexural members with heavy webs, solid or circular cross sections, often have factors of safety which vary considerably and are substantially greater than that of the simply supported wide flange beam. Plastic design will eliminate this excess and unnecessary strength with resultant economy. It means that continuous or rigid frame structures will no longer be stronger than simple structures and that this reserve is no longer available to cover errors in design and fabrication.

With plastic design particular attention must be given to end connections and lateral bracing, since the adequacy of these items is indispen-

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The Architect as Practitioner

HANDBOOK OF ARCHITECTURAL PRACTICE. *Edited by Clinton H. Cowgill, F.A.I.A. American Institute of Architects, 1735 New York Ave., N.W., Washington 6. 516 pp. (8th rev. ed.). $8.*

BY DUDLEY HUNT, JR., A.I.A.

The *Handbook* has grown mightily in size and usefulness since the publication of its first edition in 1920. This latest, eighth, edition contains about half again as many pages as the seventh. The new book has been more completely re-studied, reorganized, and revised than any previous edition. The resulting volume should prove to be of utmost value as a text and reference for all concerned with architecture, including clients (and potential clients).

The book has an improved makeup and should be easier to use, once one has become accustomed to the absence of consecutive page numbers (chapters are subdivided into sections, and these are numbered within themselves in a manner reminiscent of the decimal system of organization for specifications). The lack of a table of contents in the usual place is at first disconcerting, but its function is performed admirably by a combined contents-edge index on the back flyleaf.

The *Handbook* is organized into three major parts (Books I, II, III) and an appendix. Book I, "Building and Architecture," is concerned with a general survey of architecture, legal considerations, and architect-owner agreements. Book II, "Office Procedure," deals with personnel and office management problems, development of projects, competitions, building finance, and the like. Book III, "Project Procedures," covers project management, schematics, preliminary design, working drawings and specification procedures, estimating, construction administration, and so on. The Appendix, which constitutes more than half the book, contains much information of value. This includes reference sources, forms (a very complete collection of A.I.A. standard forms and many others of interest), hypothetical balance sheets for various types of buildings, symbol charts, bibliography, etc.

Of particular interest are the new materials included and the more complete treatment of such subjects as partnerships, building finance, accounting, competition procedures, and information from the A.I.A. Survey of Office Practice, conducted in 1956. Also of interest is the Architect's Project Book, shown in its entirety, which combines the functions of office diary, directory of those connected with the work, chronological record of transactions, and financial statements, thus making available in one place a complete record of all transactions on a building project. Surely the availability of stock forms of this sort would be welcomed by many practitioners.

The editor and his consultants have recognized that the *Handbook*, in the attempt to cover such a vast amount of material, must be straightforward and uniform in its approach and therefore must necessarily serve only as a general guide to principles without exhaustive treatment of details. Perhaps a loose-leaf supplement is needed to present new material as it appears between revisions of the *Handbook*, creative new approaches to practice problems, and out-of-the-ordinary methods of handling the myriad details of 20th-century architectural practice.

Architects, 1740-1952

BIOGRAPHICAL DICTIONARY OF AMERICAN ARCHITECTS (DECEASED). *By Henry F. Withey, A.I.A., and Elsie Rathburn Withey. New Age Publishing Co., 1542 Glendale Blvd., Los Angeles 26. 678 pp. $15.*

Thumbing through this compilation of the biographies of almost 2000 architects of this country's past is like reading the dramatis personae of U.S. architectural events of the last 200 years. Here are the old familiar names of the early great and the equally familiar (and sometimes more easily forgotten) names of more recently departed figures.

Until the *American Architects Di-*

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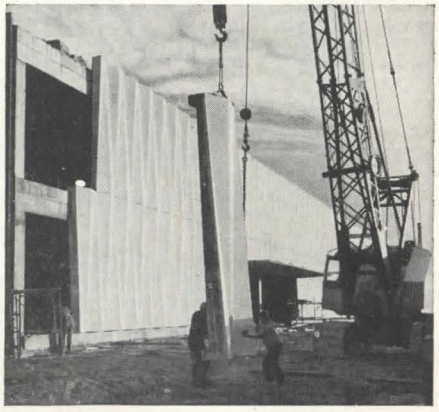
Gimbels buys a concrete curtain made with Atlas White Cement



Gimbels, Mayfair Shopping Center, Wauwatosa, Wisconsin:

Associated Architects: Grassold-Johnson & Associates, Milwaukee, Wis. • Welton Becket & Associates, Los Angeles, Calif.

Contractor: Hunzinger Construction Company, Milwaukee, Wis.

Architectural Panels: Badger Concrete Company, Oshkosh, Wis.

"USS" and "Atlas" are registered trademarks

A curtain wall of precast concrete panels lends an unusual faceted appearance to the exterior of Gimbels new suburban store in Wisconsin. The white concrete facing of the panels is mosaic in character, consisting of exposed white quartz aggregate and Atlas White portland cement. The units were easily and quickly anchored in position to create a beautiful facade that is permanent, weathertight and maintenance-free.

Architects are rediscovering the economy and versatility of precast reinforced concrete panels in designing today's modern structures. Such panels can be designed in a variety of sizes, shapes, colors or textures to meet any specification.

For more information on the use of Atlas White portland cement in architectural concrete, write Universal Atlas, 100 Park Avenue, New York 17, N. Y. WF-47

Universal Atlas Cement
Division of
United States Steel

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Required Reading

Steel . . . *cont. from page 60*

sable to the strength of the overall structure. This is reflected in the rule that the plastic strength of welds, rivets, and bolts is taken at 1.65 times the allowable stresses for elastic design, thus reducing the design strength of these items relative to flexural members by about 14 per cent.

A new and important requirement for fabrication seeks to avoid any possibility of brittle type failures. The recommendations specify that in the regions of the plastic hinges sheared edges are to be avoided or shall be finished smooth and holes are to be subpunched and then drilled or reamed to full size such as are found in multi-story buildings. Heavily loaded columns are excluded from these recommendations. However, the strength calculation of beam-columns with axial loads less than 60 per cent of the yield load has been put on a much more rational basis, with due consideration being given to the end conditions. In certain cases the new rules allow axial compressive loads up to 15 per cent of the axial yield strength without any reduction in the available moment capacity.

Although it may not be immediately apparent to him, the use of plastic design will generally simplify the designer's work. Fundamentally, plastic analysis of frames is a simpler operation than elastic analysis, the difference being most apparent when tables and charts are not available. In addition, the final results are not affected by temperature stresses or settlements except under unusual conditions. In many cases the number of alternate loading conditions required for design may be reduced.

The plastic design manual contains, in addition to the two-page "Rules," extensive explanations, numerical design examples, charts, and tables to assist the designer. Although the manual includes all the information necessary for standard designs, most engineers not fully acquainted with this new concept of design will find it desirable to refer to a more detailed text on plastic design which provides more background information to aid in obtaining a better understanding of the method and in dealing with non-typical situations.

Such a book is the one by Professor Beedle, an excellent text in accordance with the new A.I.S.C. "Rules" which should be carefully read by an engineer planning to enter upon a plastic frame design.

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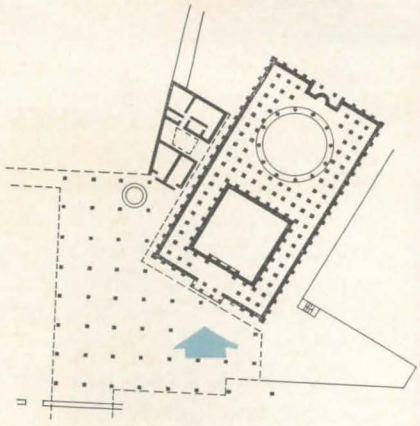
TAC: *The Architects Collaborative*



1. The University of Baghdad

TAC: *University of Baghdad. Walter Gropius, Robert S. McMillan, H. Morse Payne Jr. in charge*

The commission to design the new University of Baghdad has offered the unique opportunity to plan a total University for 12,000 students as a consistent entity in both its physical plant on new land as well as its philosophy of education. The educational advisers were Professor Cyril G. Sargent, Harvard University; Mr. Donald P. Mitchell, formerly of Harvard University; and Professor Keyes Metcalf, Emeritus, Harvard College, Widener Library.

Particular stress has been laid throughout this study on the greatest possible flexibility of the organizational system as well as of the physical plant itself. For the basic concept has been the balance of unity and diversity, of integration and differentiation in order to provide for the students the intellectual and emotional experience from both East and West.

The identity of the various Colleges which have been developed in the past has been retained by establishing for each of them separate permanent headquarters and teachers' offices. The distribution and use of instructional spaces however—class rooms, laboratories and library facilities—will be scheduled flexibly by the central University administration according to the varying needs of the entire University.

Site

Beside the Tigris shore line, several rows of irregularly zigzagging dikes—about 10 feet high—offer a significant feature of the otherwise completely flat site. They run into a series of terraces around the main plaza, providing views of the surrounding buildings from different levels. All the teaching and administrative facilities are placed around this central plaza.

Climate

A major problem is to counteract the excessive heat from May to September, often considerably higher than our blood temperature. Not only are all the buildings air conditioned throughout (Jaros, Baum and Bolles, New York, Consulting Engineers), but they are put close enough to overshadow each other, providing simultaneously a reduction in temperature as well as short horizontal lines of communication. They are all placed around patios of various sizes which are filled with plants, water basins and fountains. The roof surfaces are cooled by sprinklers.

Materials, Building Techniques and Architecture

Sand, cement and bricks are locally available and inexpensive. Structural parts—foundations, columns, floors and roofs—will be of reinforced concrete, walls of bricks or cinder blocks. Some shell constructions—vaults and domes—will give dramatic accents in the silhouette. All exterior surfaces throughout will be painted white, only here and there interrupted by glazed tile walls in strong solid coloration to give direction and orientation. Cantilevered roofs—and floor slabs—and vertical screens of bricks or concrete frames give shade to the exterior walls.

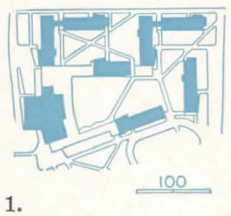
The interrelationship of the individual buildings and the landscaped open spaces with their water fountains between them, as well as the shadow effects from the strong sunlight obtained by cantilevers and undercuts, will cause a significant rhythm. This rhythm tends to express the meaning of Universitas, which is "wholeness," offering the creative setting for a full, well-integrated life of the students.

The scheme has been accepted by the Ministry of Development in Baghdad with some additions and changes. The Prime Minister of Iraq has given priority for execution of the project.

WALTER GROPIUS

Jean B. Fletcher
Norman Fletcher
Walter Gropius
John C. Harkness
Sarah P. Harkness
Robert S. McMillan
Louis A. McMillen
Benjamin Thompson

Richard Brooker
Herbert Gallagher
Witold v. Henneberg
H. Morse Payne Jr.



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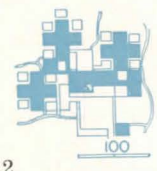

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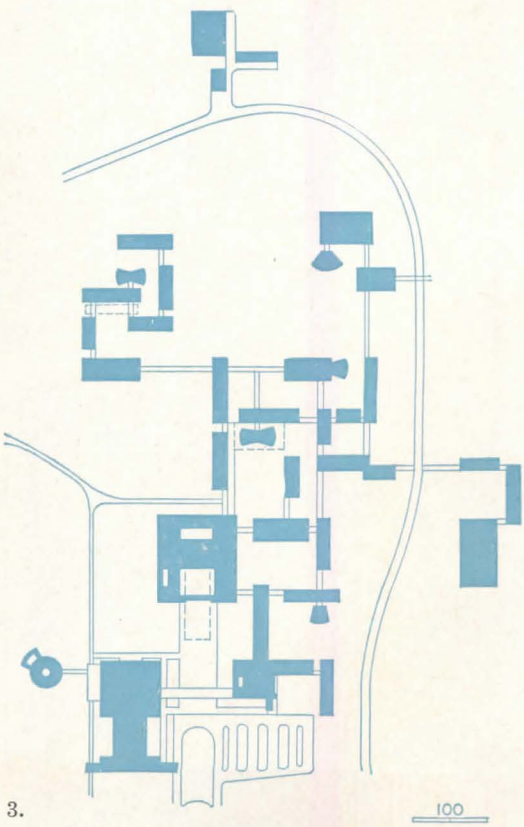
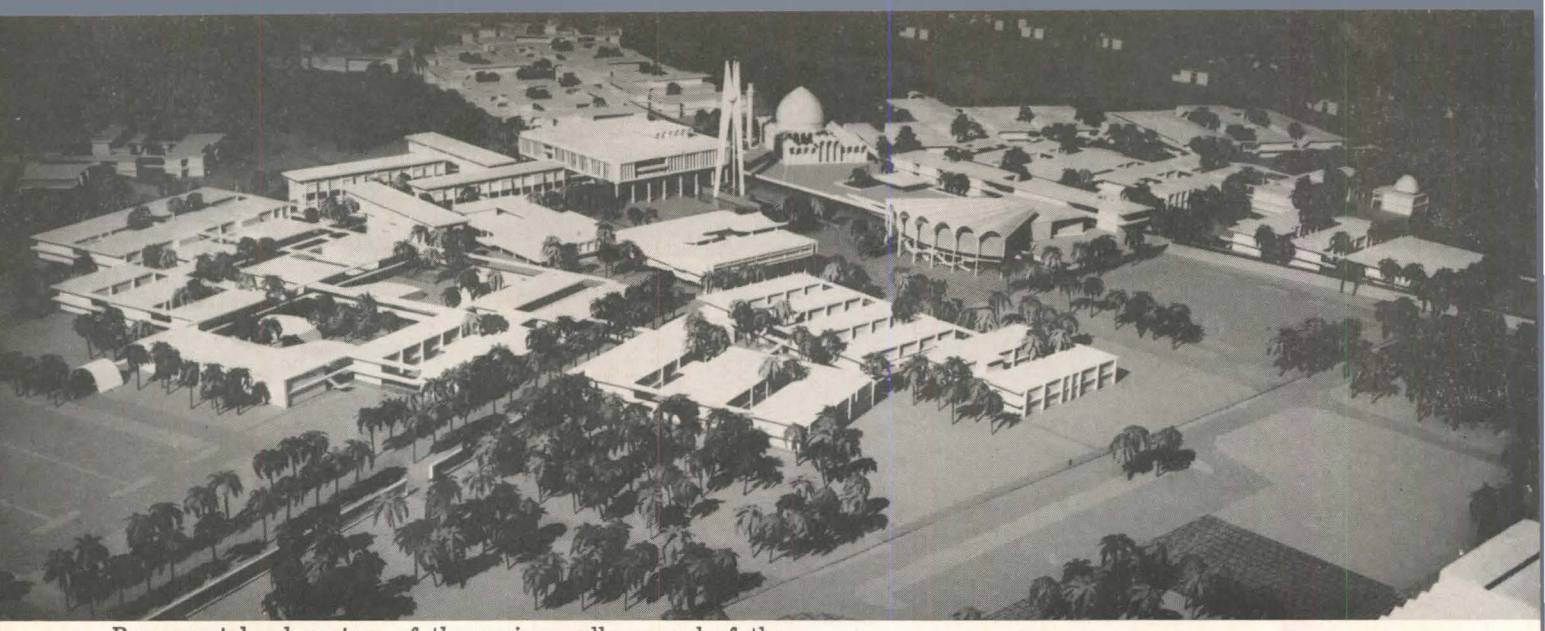


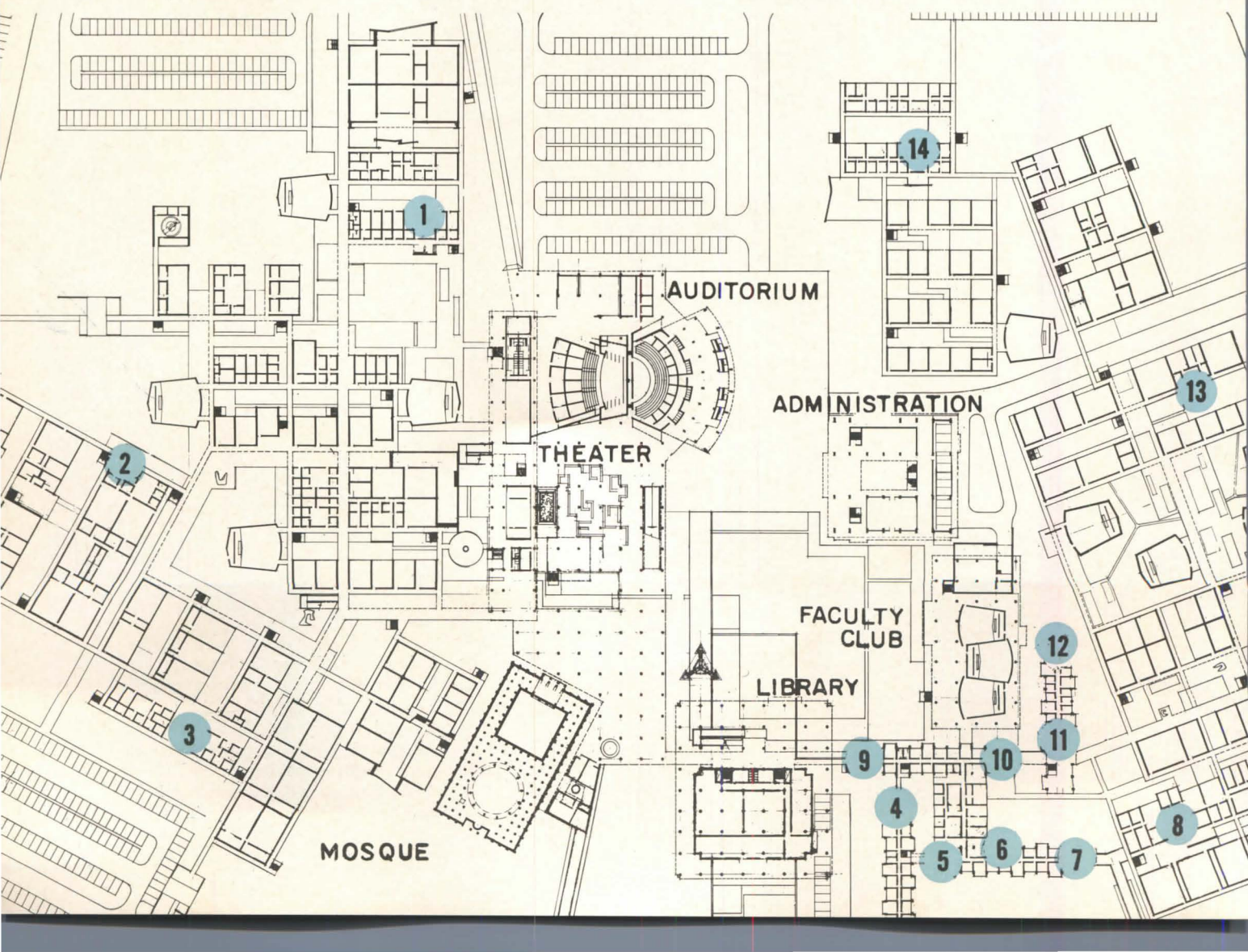
3.

The three building groups above which typify TAC planning can be considered prototypes of the Baghdad scheme. In each, the building elements are related to each other asymmetrically in a way which creates great spatial variety and complexity. 1. Harvard Graduate Center, Cambridge, Mass. 2. School designed for *Collier's* magazine. 3. Hua Tung University Project for Shanghai, China

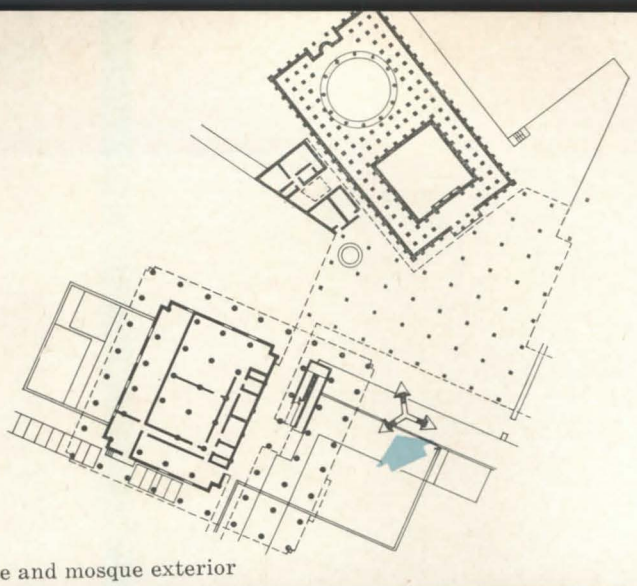
The site on the shore of the Tigris River is flat except for existing 10-ft high dikes indicated on plan by heavy irregular lines. These contribute a change of level within the campus. Two large groves of palm and fruit trees (not shown) determined the location of the central building complex. 1. Campus Center 2. Teaching Space 3. Student Residential Groups 4. Individual Housing 5. Sport Facilities 6. Elementary School 7. Infirmary 8. Service Facilities 9. Entry 10. Shopping Center



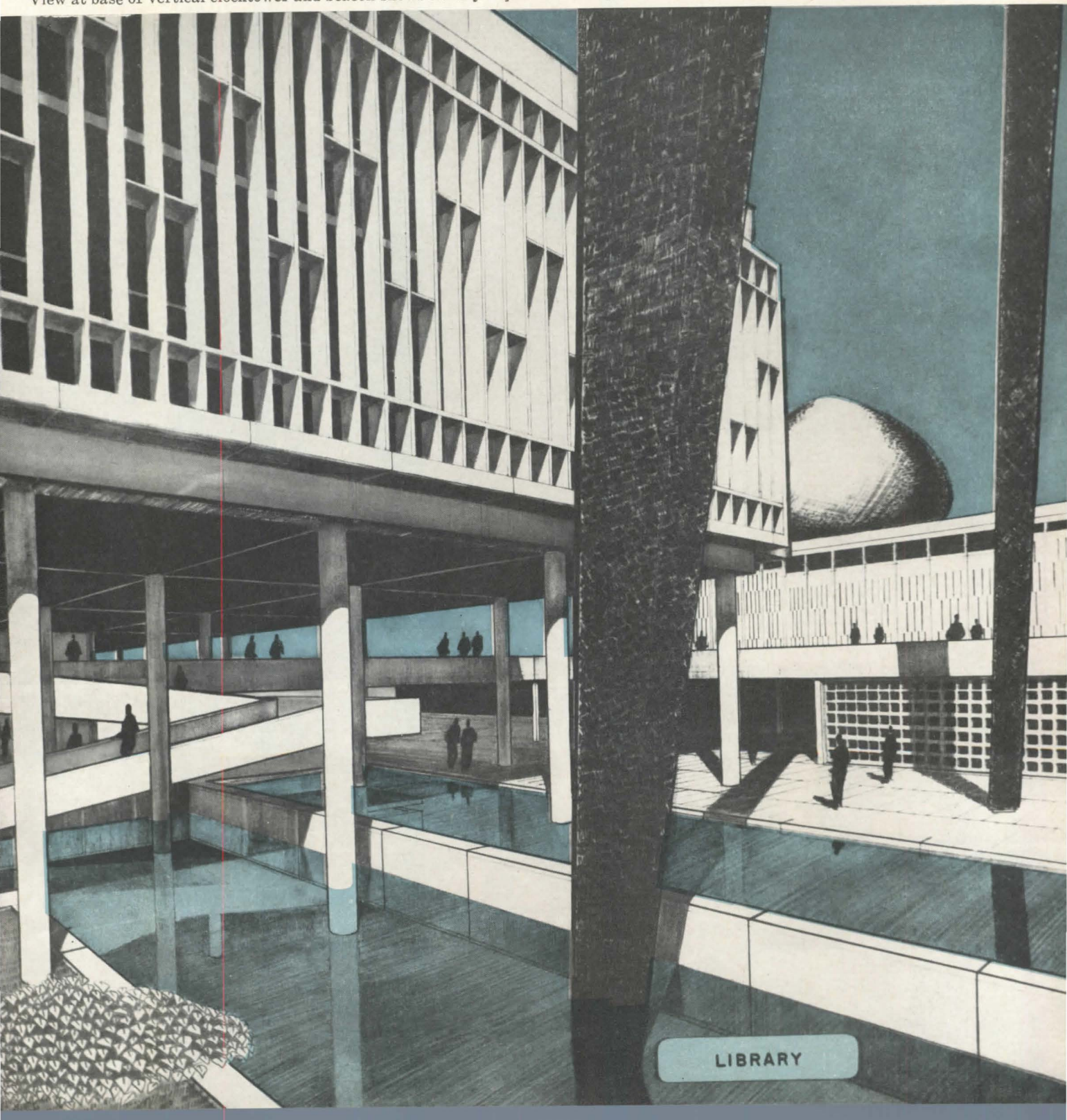
Permanent headquarters of the various colleges and of the departments within them are indicated by numbered circles. Colleges are not separate building entities, however, with their own classrooms, laboratories and library facilities. These spaces will be part of the university proper and will be scheduled for use in relation to the expanding or contracting needs of each college or department. Headquarters of the departments within the College of Arts and Sciences are indicated on the plan as follows: 1. Mathematics, Astronomy 2. Physics 3. Chemistry 4. History, Archaeology, Geography 5. Anthropology 6. Psychology 9. Languages 11. Philosophy, Sociology 13. Biology, Botany 14. Geology. Headquarters of Colleges with a less complex departmental structure appear on the plan as follows: 7. College of Education 8. College of Engineering, Planning and Architecture 10. College of Law 12. College of Business and Economics



TAC: *University of Baghdad*



View at base of vertical clocktower and beacon shows library façade and mosque exterior



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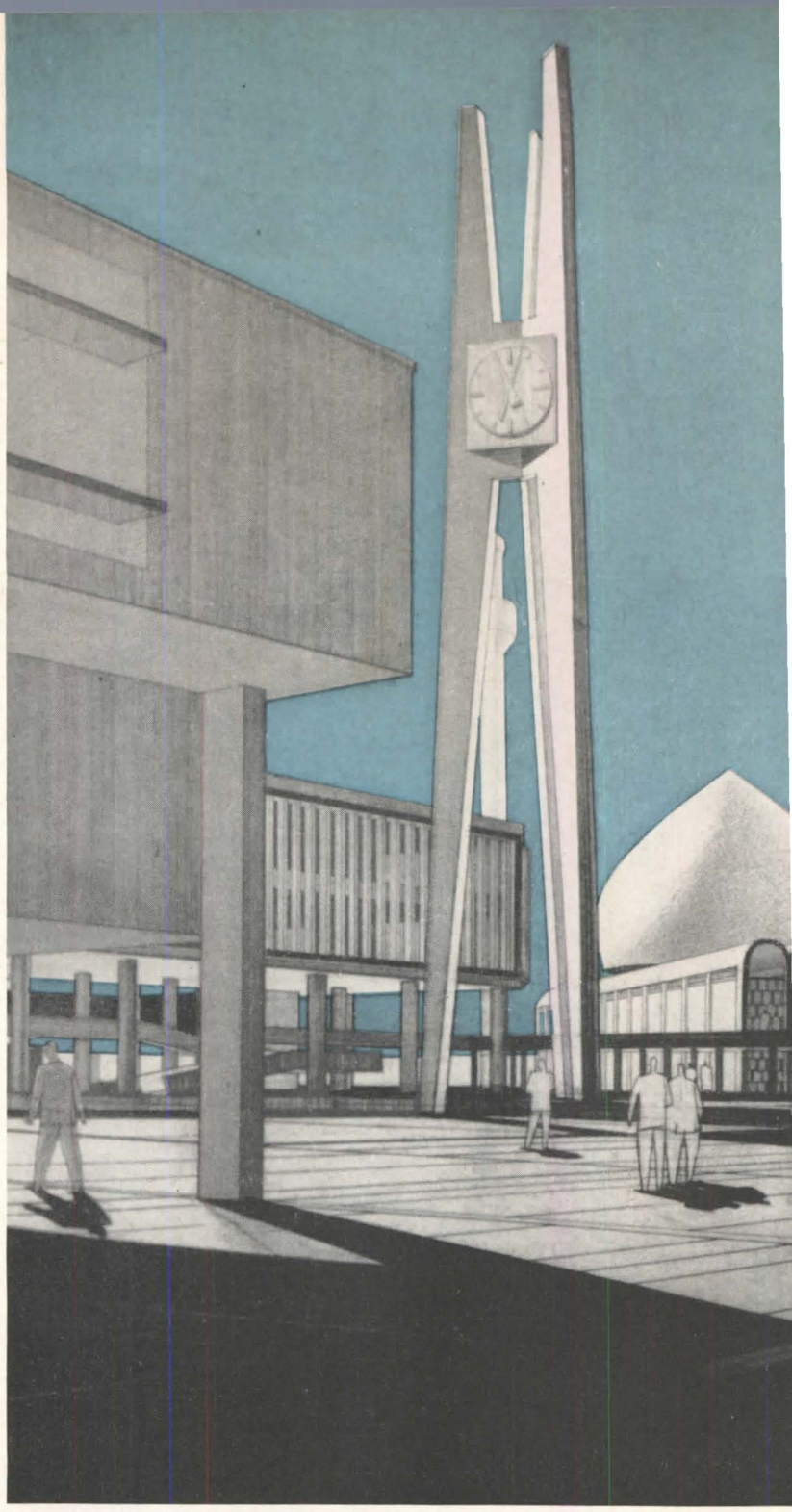
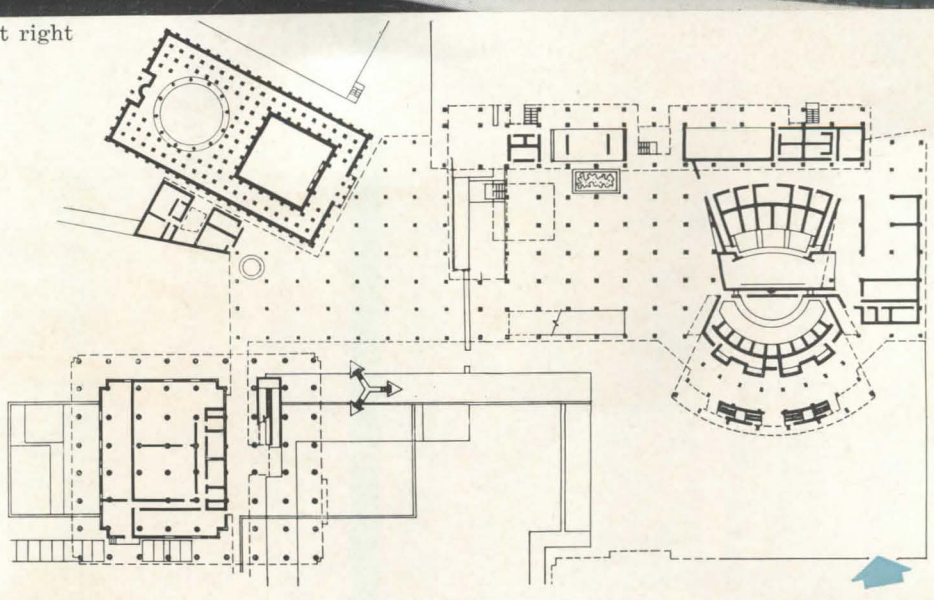
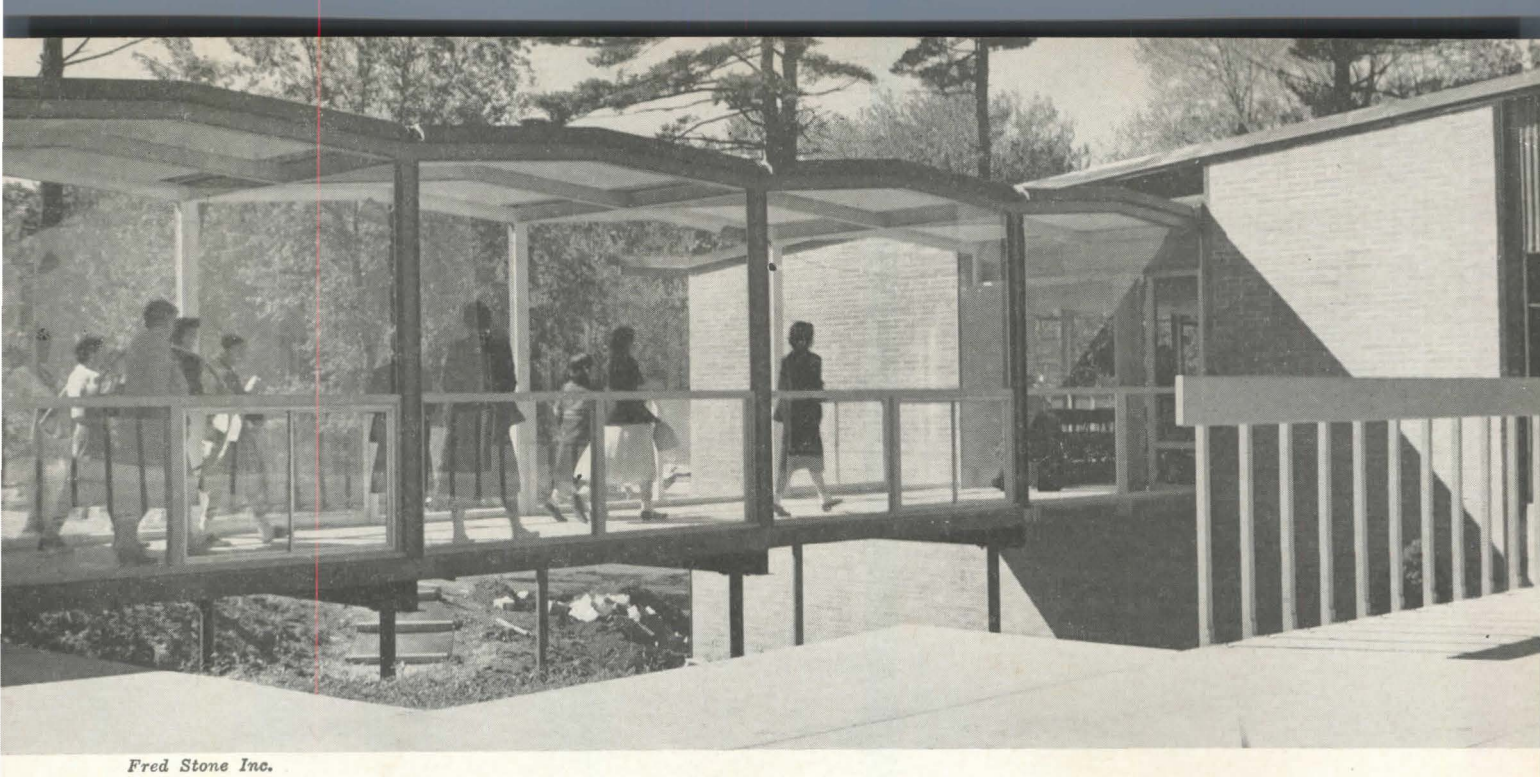


Classrooms and Laboratories

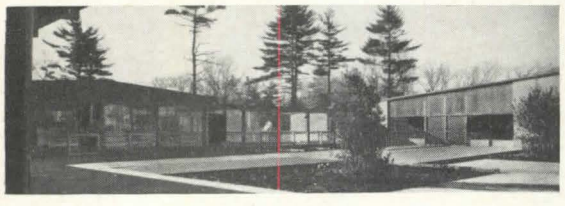
Plaza: Mosque in distance, Auditorium at right

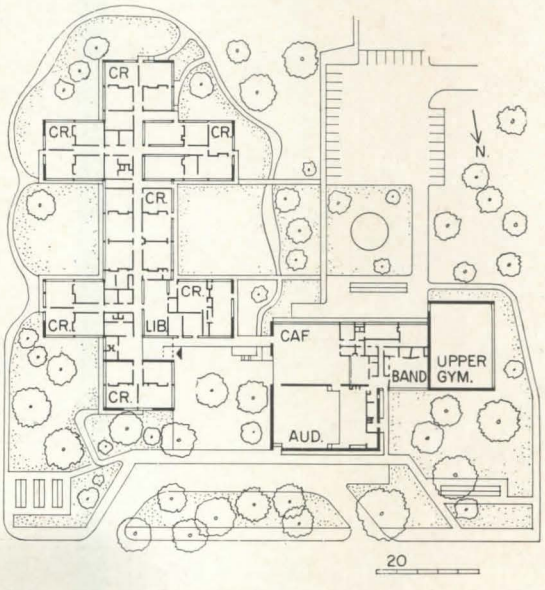


Typical dormitories. Note that close spacing of buildings and overhangs provide shade



Fred Stone Inc.





2. William F. Pollard Junior High

Perhaps the most difficult problem in designing schools to-day is that of scale. Rapidly increasing enrollments are not only making us build bigger and bigger schools, but there is a danger that standardization can become monotony. Education for our children is too important to be ground out on a mass produced basis. It must be a creative, individual experience.

Although the William F. Pollard Junior High is a large secondary school, we have tried to keep the scale from becoming overpowering. This has been done by articulating the exterior space, and reinforcing this with the handling of roof forms. We were fortunate to have a site which was rich in trees and land forms which became vital design considerations.

The interior classroom section is broken into a series of cul-de-sac areas which allows for a variety of room sizes and special arrangements, and gets away from the "cells and bells" treatment strung on a long corridor.

If we as architects can help give our children, particularly at the critical junior high age, a feeling that they are being treated as individuals, we will have made an important contribution.

JOHN C. HARKNESS

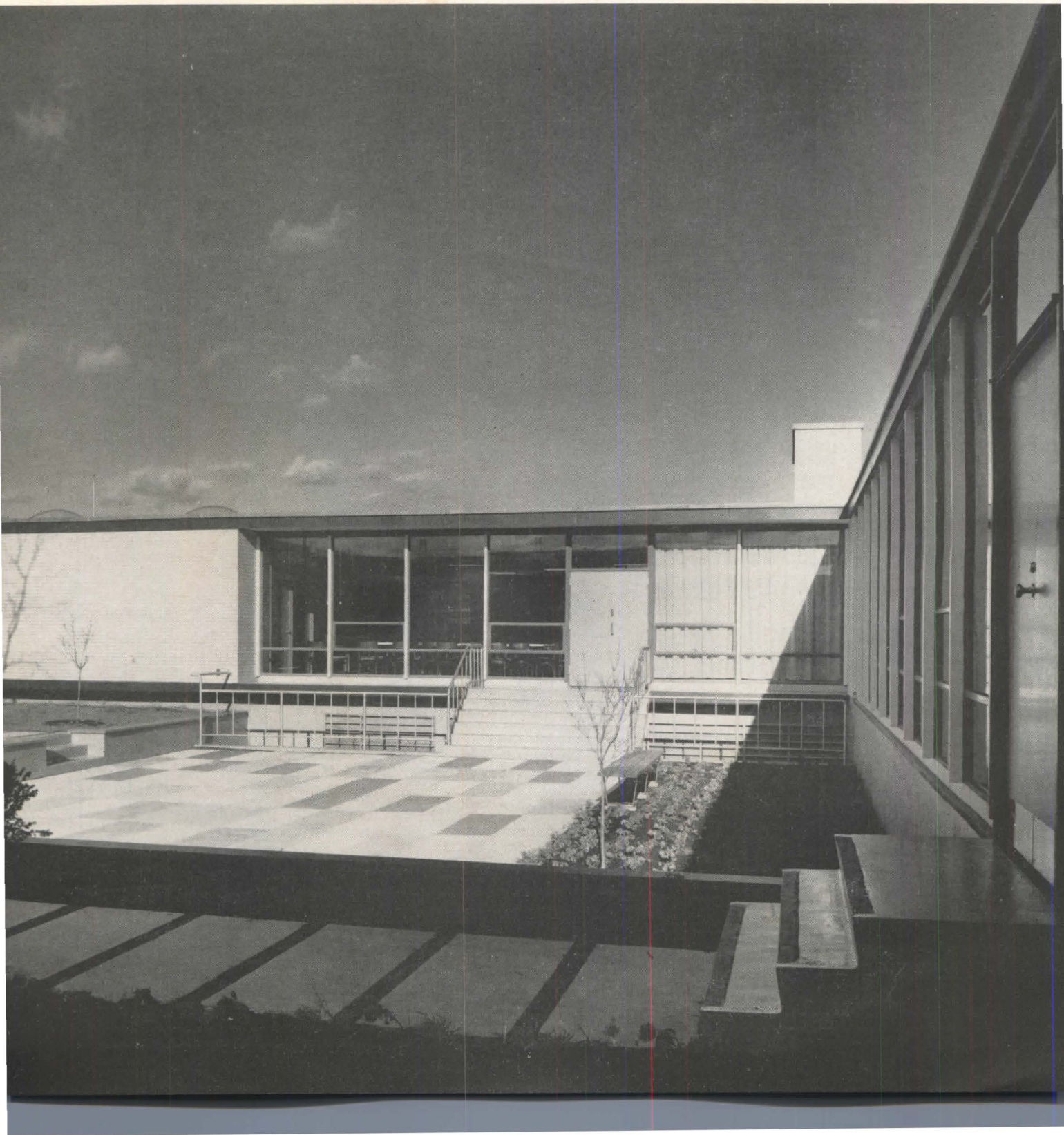
LOCATION: *Needham, Massachusetts*
PARTNER IN CHARGE: *John C. Harkness*
CONTRACTORS: *Ciaba and Co., Inc.*
MECHANICAL ENGINEERS: *Thomas Worcester Corp.*
STRUCTURAL ENGINEER: *Edward K. Trew*
LANDSCAPE ARCHITECTS: *Moriece and Gary*

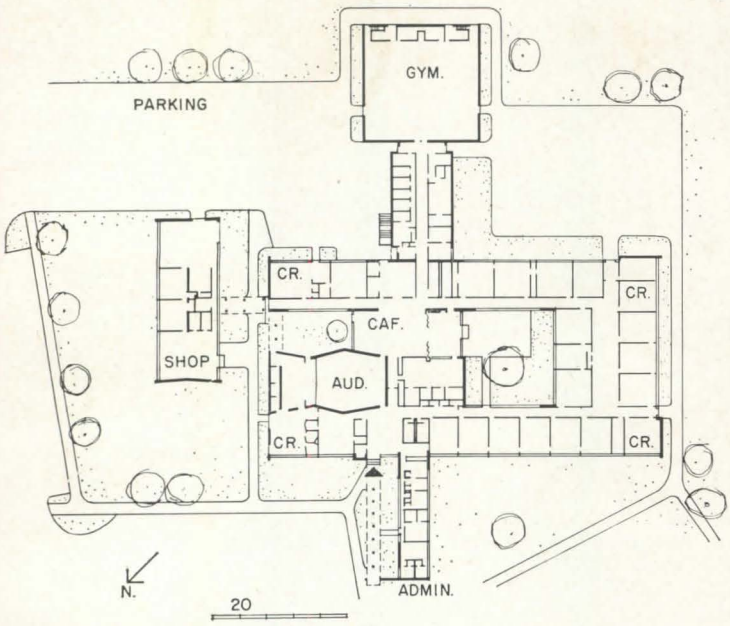
3. Littleton High School

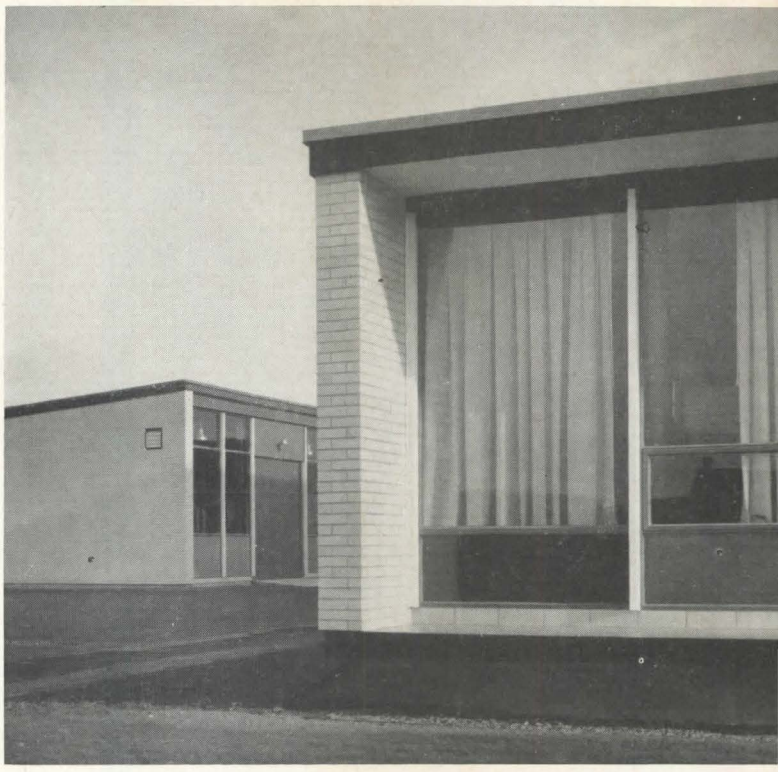
LOCATION: *Littleton, Massachusetts*
PARTNER IN CHARGE: *Louis A. McMillen*
MECHANICAL ENGINEERS: *Fred Dubin and Associates*
STRUCTURAL ENGINEERS: *Le Messurier and Associates*
CONTRACTOR: *Tornabene Bros. Inc.*
LANDSCAPE ARCHITECTS: *Moriece and Gary*

In the Littleton High School, stress has been laid on creating an atmosphere conducive to teaching and learning. Important elements of this atmosphere are variety and contrast. Changing contrasts have been made by various uses of light such as direct sunlight, controlled daylight and sky lighting. Other carefully studied contrasts have been provided by the use of calm background colors with stimulating areas of intense color in flat planes or patterns, and by creating bright communication corridors and areas with changing vistas and interest. Success was due largely to the building committee who wanted an outstanding school from an architectural as well as an educational point of view.

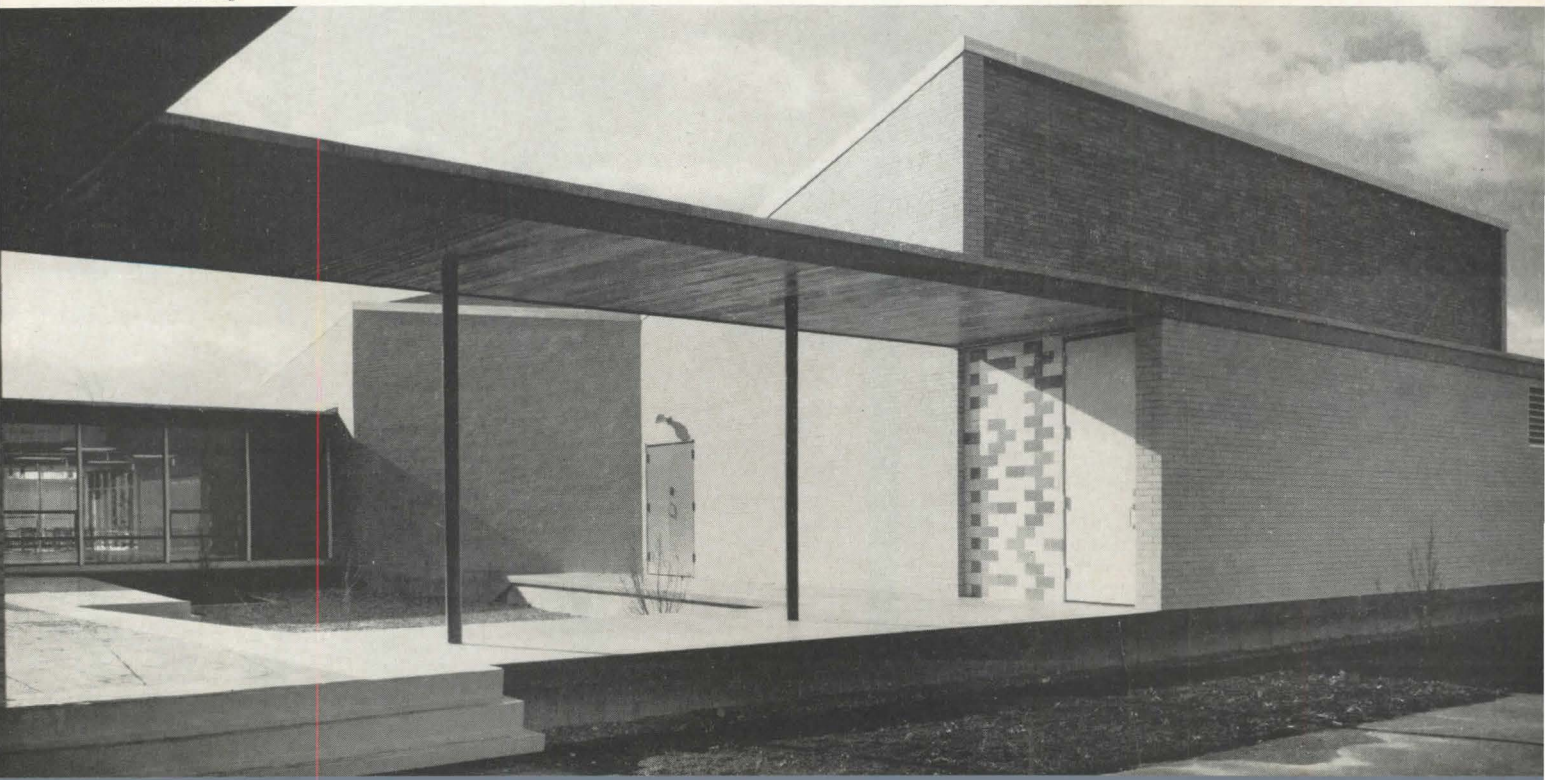
LOUIS A. McMILLEN

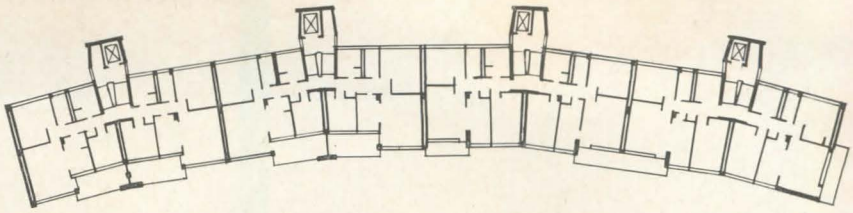






Robert D. Harvey





4. Nine Story Apartment Block

The building is part of a large development of a bombed-out area—the Hansa District in the center of Berlin, Germany. The apartment block has been designed for the middle-income class—sixty-four three-bedroom units and two larger penthouse apartments. By slightly curving the south elevation, the building makes an inviting gesture. Three different textures of white —smooth white stucco against rough white stucco, and white enameled balcony railings combined with the sky-blue soffits of the balconies give a serene impression. Part of the first floor is open for children's play.

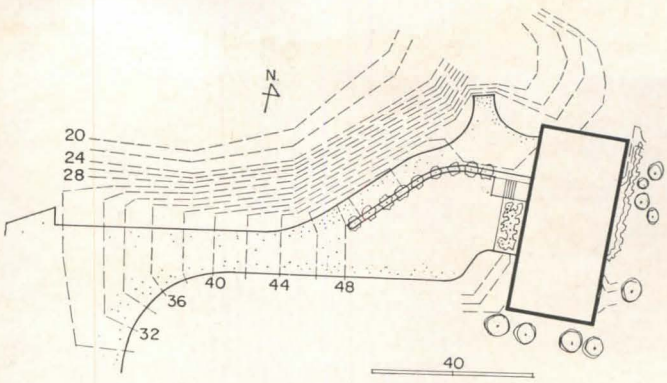
The structure is a reinforced concrete skeleton with wall fillings of blocks made from bomb rubble. The foundations stand on a bed of sand ten feet thick for better load distribution on rather porous soil.

The plan of the apartments has deliberately not been made an open one, but each room is separately accessible from a hall. Since the apartments are to be rented by families of varying sizes and habits, this type of plan is more flexible than an open one, giving greater privacy to the individual of any age. It adapts better to the varying stages of the family life—young couple, babies, adolescents, old couple. In some cases the living room and the adjacent bedroom have been separated only by a curtain or a folding door instead of by a wall, allowing a large space for social gatherings. *WALTER GROPIUS*

OWNER: *Hansa A. G., Berlin*
LOCATION: *Berlin, Germany*
PARTNER IN CHARGE: *Walter Gropius*
ASSOCIATE: *Norman Fletcher*
ARCHITECTURAL CONSULTANT: *Wils Ebert, Berlin*

Karl E. Jacobs

Molitor



5. Cape Cod House

The Murchison house sits on a high sand dune at the end of Cape Cod commanding a panoramic view of the ocean in three directions—just about as far as you can get on the Atlantic without being on an island!

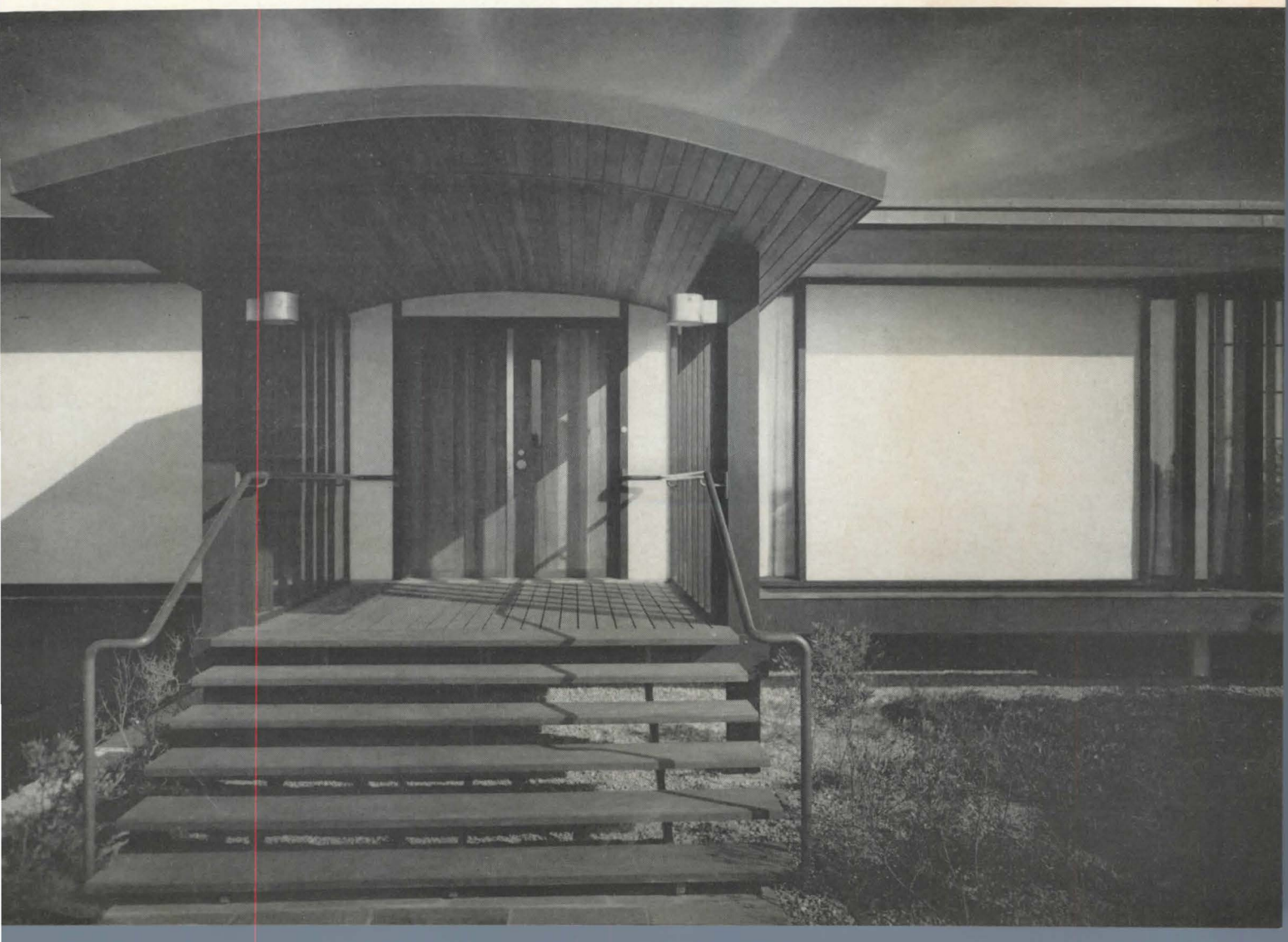
The two-level house was designed for a couple with married children who are in the habit of having large parties for 100 people or more. The main floor plan reflects this need by providing a living room within a living room. The central space is designed to be psychologically separate from the total open space but can be completely opened up providing an expansive area for large gatherings.

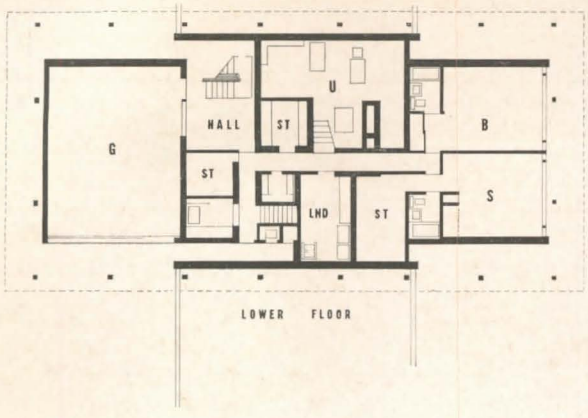
On the floor below are an office, guestroom, garage, storage room, laundry room, and mechanical equipment area.

The exterior walls are made of glass, white plaster in panels, cypress and brick. Teak, walnut and birch are used extensively within. The house is completely air conditioned.

In addition to standard mechanical equipment the Murchison house has a dumb waiter to bring supplies from the service entry, radio-controlled garage doors, a hi-fi system with microphones throughout the house, a 35KV standby generator, a water purification system, a 500-cubic-foot cold storage room for clothes, an adjoining swimming pool and bath houses with their own toilet and laundry facilities, and an automatic underground lawn sprinkling system. All mechanized equipment is isolated from the rest of the house for sound deadening, and has flexible connections. The floor of the mechanical room floats free from the walls to prevent noise transferal. *ROBERT S. McMILLAN*

OWNERS: *Mr. and Mrs. Carl Murchison*
LOCATION: *Provincetown, Massachusetts*
PARTNER IN CHARGE: *Robert S. McMillan*
ENGINEERS: *Reardon and Turner*
CONTRACTORS: *Anderson and Spinny Inc.*
INTERIOR DESIGNERS: *Design Research Inc.*

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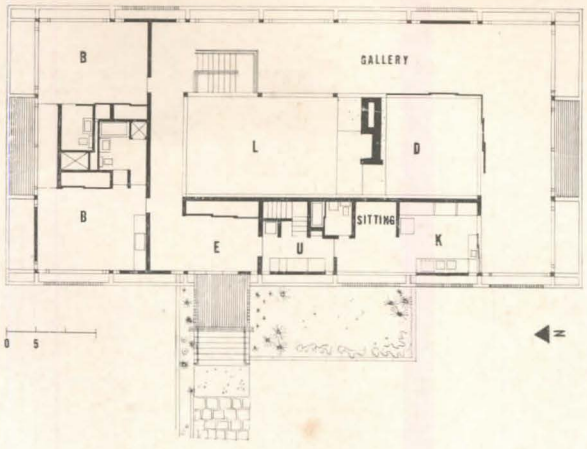
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Molitor

FOUR OFFICE BUILDINGS: FOUR DIFFERENT SCHEMES

Now under construction these four office buildings—Crown Zellerbach and John Hancock in San Francisco, Shell in Australia and Norton in Seattle—were designed in Skidmore, Owings & Merrill's San Francisco office and are being carried out by them as principals or in association with other firms

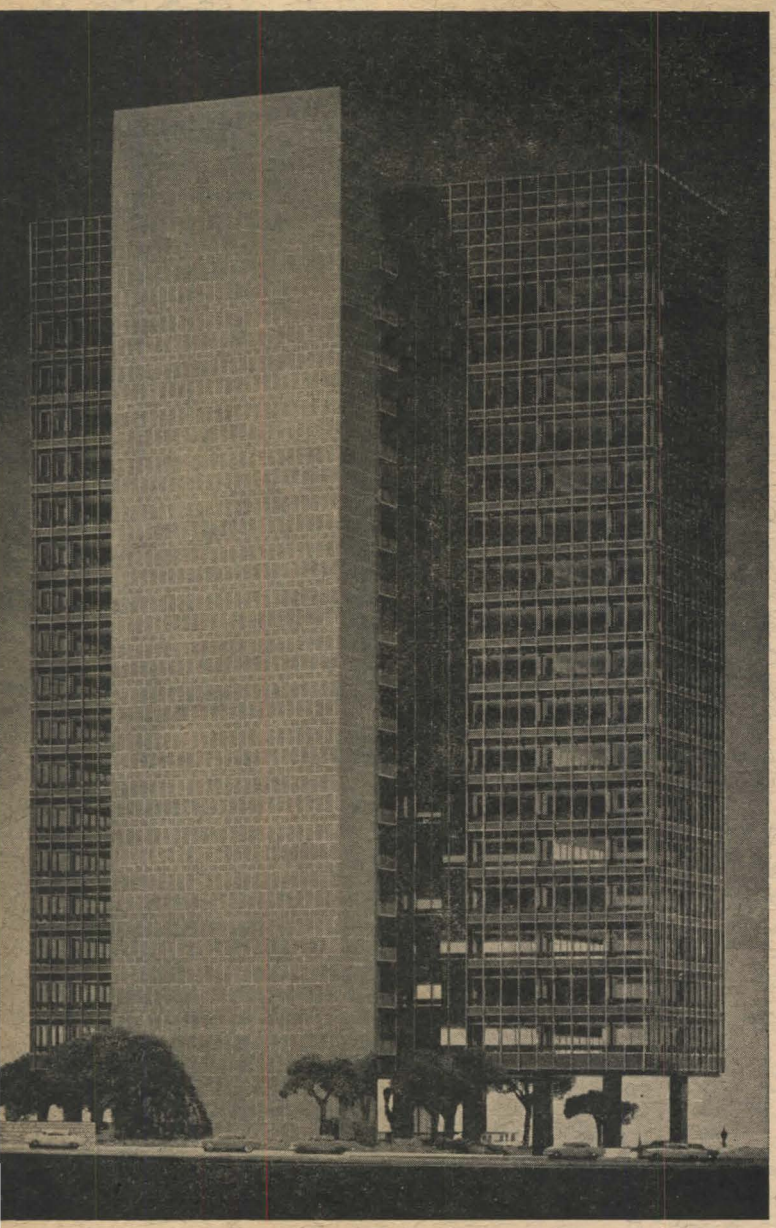
Common to all four of these multi-story office buildings are the problems of core location, module, structure and mechanical service, in the solution to which lie the building's economy—the amount and kind of usable area it offers, the flexibility of its office space and its functional operation—as well as the architect's own satisfaction in its effectiveness as a building. What is not common to them is the basic concept for the overall solution, different in each of these buildings because of individual client requirements.

STRUCTURE Although three of these office towers are steel framed curtain wall buildings, each is structurally distinct in concept. Crown's tower structure is a steel frame whose columns, unusually heavy on the lower floors to take lateral forces, are connected transversely by steel plate girders and longitudinally by spandrel beams. (The service core was designed as an essentially independent structure.) The Norton building uses a steel frame with precast prestressed concrete beams and a core whose combined steel and reinforced concrete walls act as shear walls. Shell is fairly conventional in framing but supports its floor system on trusses which span from the plate girder spandrel and resists all wind forces by frame action. The fourth building, John Hancock, represents an entirely different structural concept. Its exterior walls of reinforced lightweight concrete are the building's real structure. The load from these bearing walls is transferred through haunched arches at second floor level to concrete columns at the first floor level. Lateral and wind forces are taken by the central core's walls.

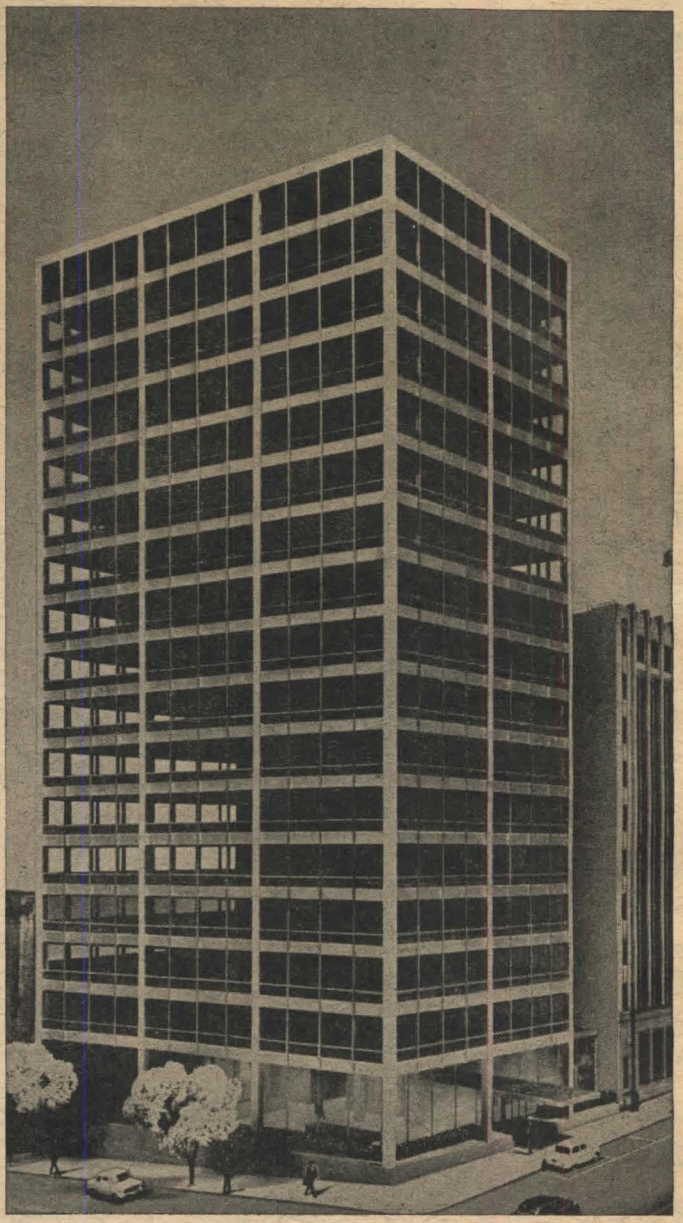
CORE Where to locate the building's core—essence of its transportation system, horizontal and vertical—is a primary decision governed jointly by the client's requirements and the building's use. Two of these buildings—Crown Zellerbach and Shell—were designed for single-company use, though Crown may not initially occupy all of its space. Consequently public circulation within each floor was not a consideration. Crown's core is a separate structure linked to the office tower, a solution which owner-occupancy and requirements for executive office space made feasible. Shell needed large open areas which could be used in a variety of ways; the solution was an interior core located on the side toward an adjacent company-occupied building. Both Norton and John Hancock were designed for rental but on different premises. In Norton, where space of various sizes will be rented, public circulation was a primary consideration answered by a corridor running lengthwise to the building. In John Hancock, designed for rental on either a half or a full floor basis (though adaptable to a smaller space breakdown), the central core makes for maximum use of the elevator lobby as a means of circulation, and permits daylight in each private office.

MODULE Each of these buildings uses a different module, selected for the kind and amount of flexibility it would permit. Crown Zellerbach's 5 ft 6 in. module was determined by the importance to the client of partitioned executive office space and pool space. In Norton and John Hancock, office space—intended for rental and therefore necessarily adaptable to various tenant needs—was designed for a typical office set-up: a 5-ft desk was the factor in selection of the 5-ft module used in these buildings. (John Hancock's module is actually 5 ft 1 in.; the additional inch makes possible the maximum floor as permitted by city code requirements for free standing tower structures.) The 4 ft 7 in. Shell module, smallest of the four, is a multiple of the dimensions of the largest building possible on the site and was feasible in a building where partitioned office space was less important than clerical pool space.

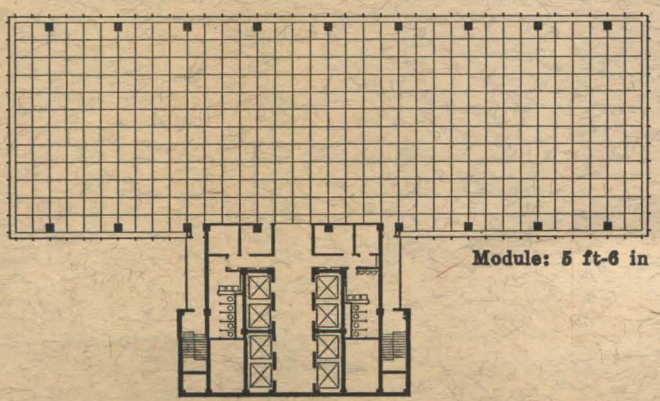
SERVICES To accommodate Crown Zellerbach's extensive service system within a 4 ft 8 in. space between ceiling and floor, electrical conduits and air conditioning ducts are run through the steel girders. Supply and exhaust are provided at each light fixture. In the Shell building the small dimension (3 ft 1 in.) of the ceiling-to-floor space offered little room for ducts so they were run through the open webs of the trusses supporting the floor slab. Norton's 4 ft 2 in. depth required running the ducts through prestressed concrete beams. Services run to each module with supply and exhaust in the ceiling. Hancock's ducts run between floor beam and ceiling in a depth of 3 ft 6 in., using space between the floor beam T's for crossovers. Services run to every other module.



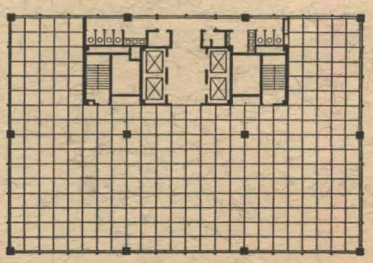
Morley Baer



Wolfgang Stevers



Module: 5 ft-6 in



Module: 4 ft-7 in

1

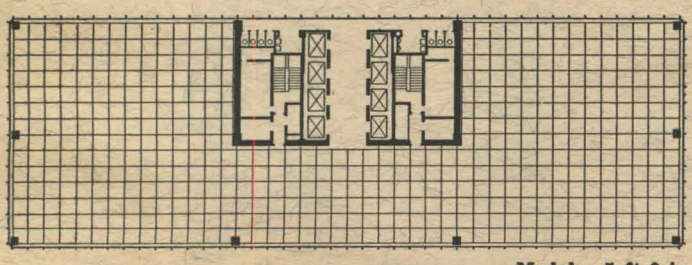
CROWN ZELLERBACH HEADQUARTERS BUILDING, SAN FRANCISCO Crown Zellerbach Corporation, client; Hertzka & Knowles and Skidmore, Owings & Merrill, San Francisco, associated architects; H. J. Brunnier, structural engineer; Haas & Haynie, contr.

2

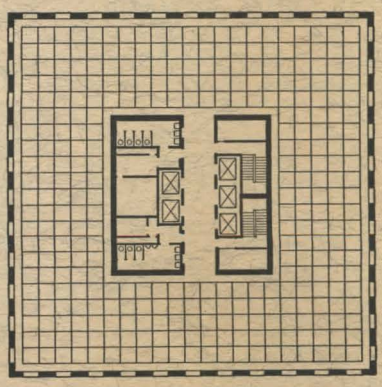
SHELL HEAD OFFICE BUILDING, MELBOURNE, AUSTRALIA The Shell Company of Australia, client; Buchan, Laird & Buchan, Melbourne, and Skidmore, Owings & Merrill, San Francisco, associated architects; Lewis Construction Company, Pty. Ltd., contractor

Dwain Faubion

Gabriel Moulin



Module: 5 ft-0 in



Module: 5 ft-1 in

3

NORTON BUILDING, SEATTLE Northwest Building Corporation, client; Bindon & Wright architects; Skidmore, Owings & Merrill, consulting architects; Bouillon, Griffith & Christofferson, mechanical engineers; Howard S. Wright Construction Company, contractor

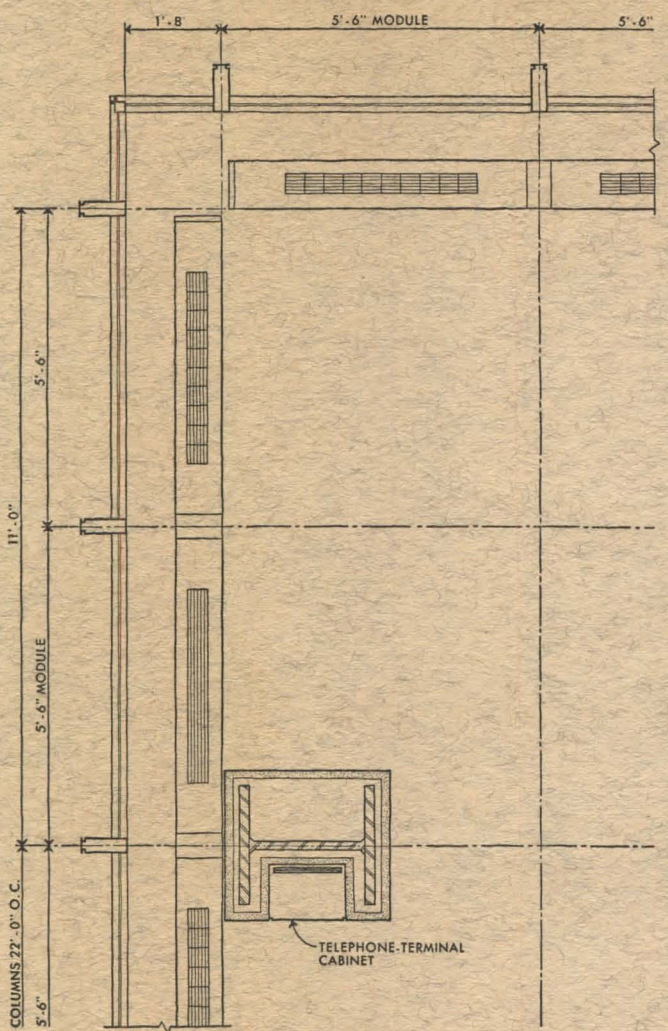
4

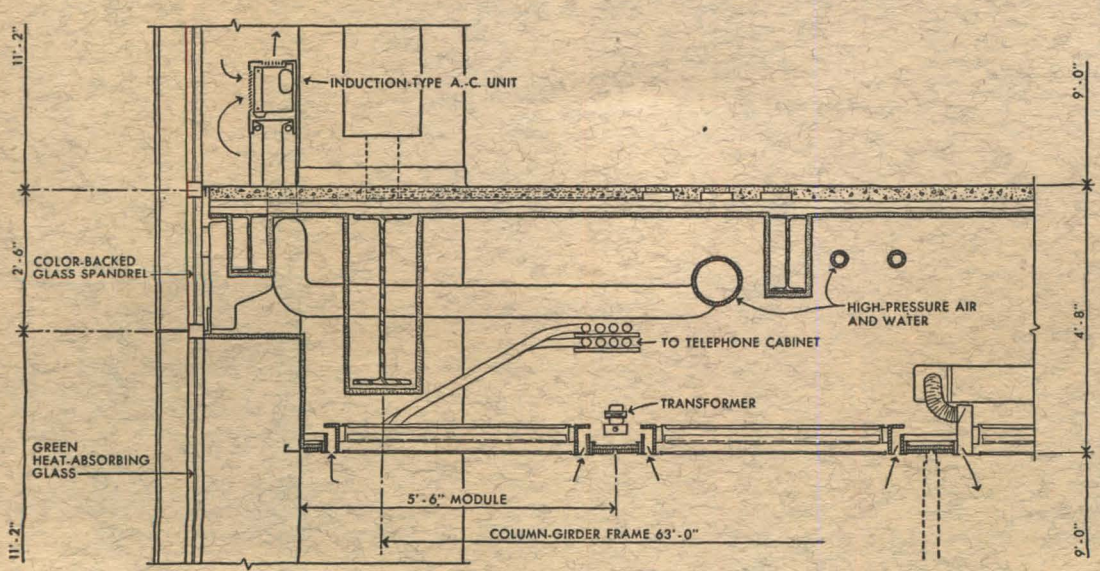
JOHN HANCOCK WESTERN HOME OFFICE BUILDING, SAN FRANCISCO John Hancock Mutual Life Insurance Company, client; Skidmore, Owings & Merrill, San Francisco, architects; Cahill Brothers, Inc., contractor

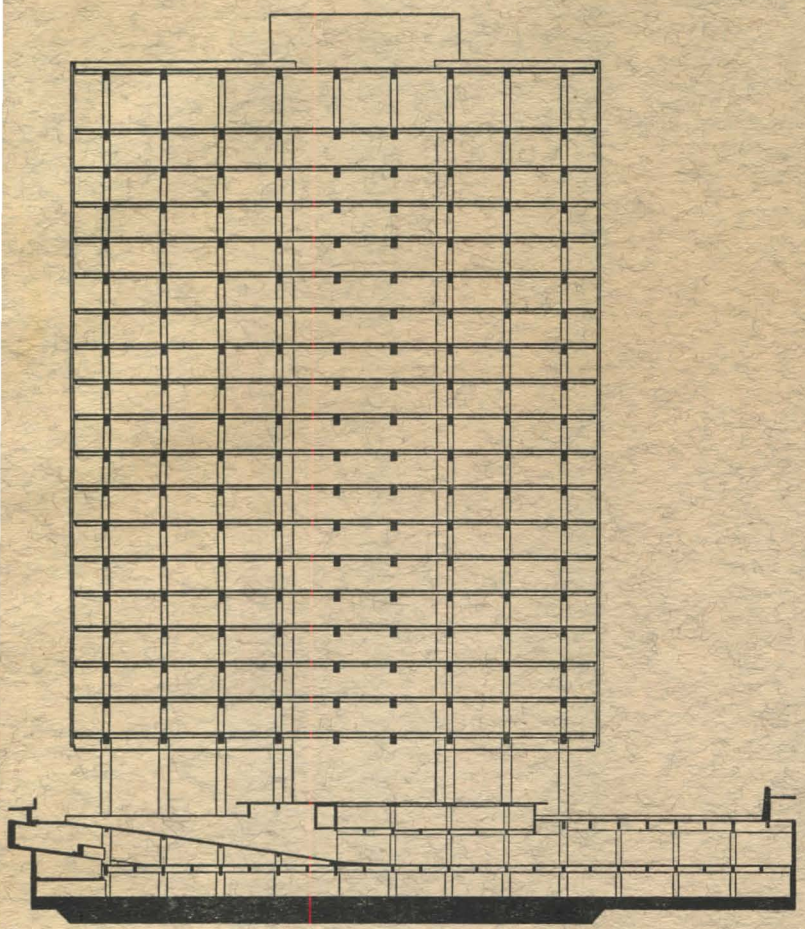
1 CROWN ZELLERBACH HEADQUARTERS BUILDING

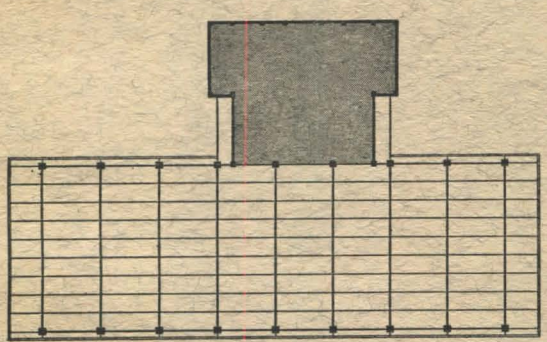
San Francisco

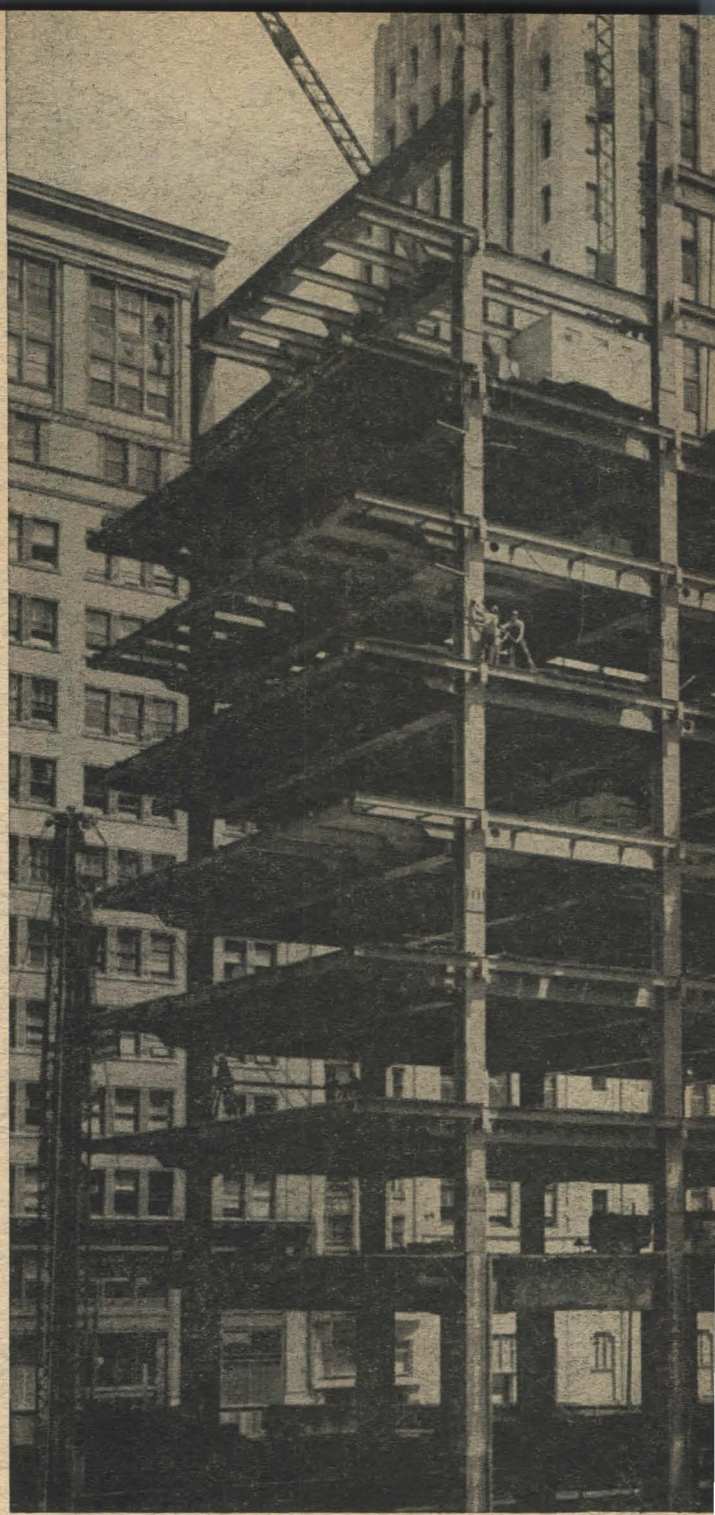
Crown Zellerbach's new headquarters is actually two buildings linked together: a 20-story office tower and a service core 16 ft taller than the tower. The tower's glass-enveloped steel frame rests on a continuous reinforced concrete mat 8 ft thick which distributes the column loads over the entire area under the tower. Two floors needed for parking and service, both of which could be located underground, justified the excavation (45 ft, to bearing stratum) necessary for this foundation. The building's structure is essentially a rigid transverse frame of welded plate girders, spanning 63 ft, and welded plate columns, set 22 ft o.c. These columns are of much heavier section from garden level to second floor (a large open space with no intermediate stiffening members) than from second floor up. Their exceptional weight (2500 lb per sq in.) and size are due to the fact that, together with the transverse girders, they form bents designed to resist lateral forces for the entire office building. The floors are cantilevered 11 ft—half a bay—at each end. There are no intermediate interior columns so all office space is clear.



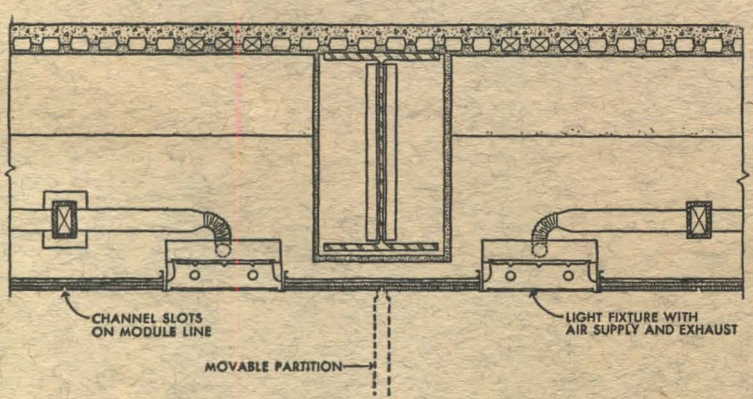








Walsh Photo

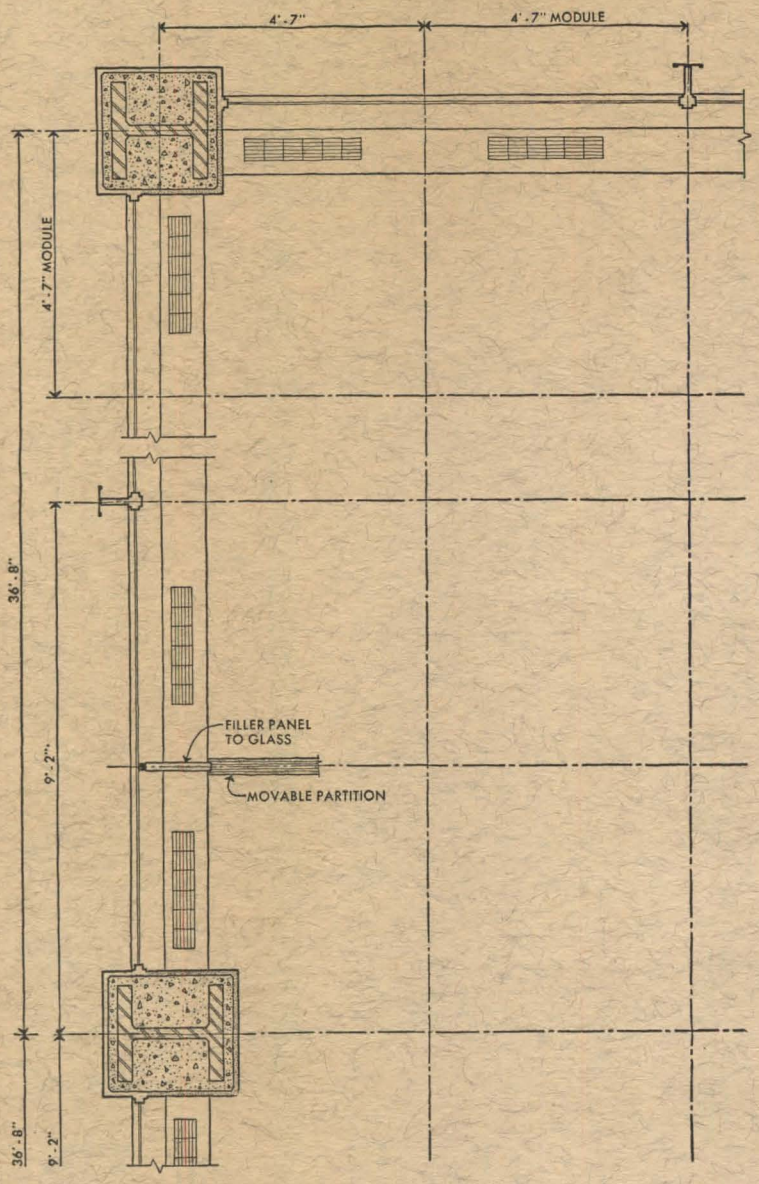


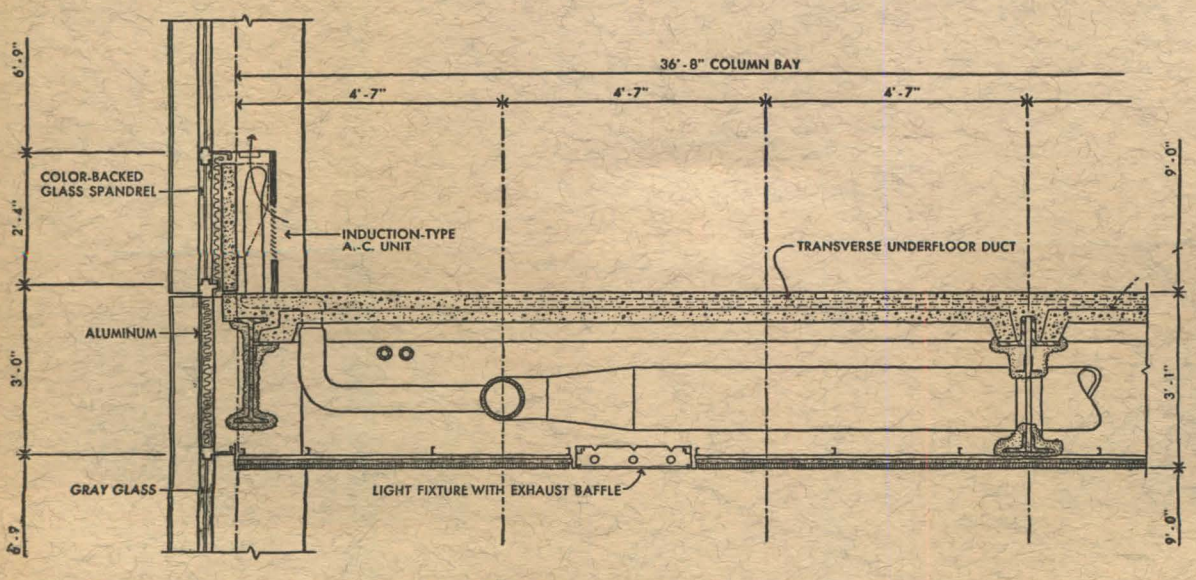
San Francisco's first tall curtain wall building is also its first office building on a plaza. Glass-walled lobby will look out on sunken garden. Curtain wall consists of heat-absorbing green glass and grayed blue-green glass spandrel framed in aluminum. Core building will be surfaced with caramel brown glass mosaic. Section (top, left) is through office tower; plan shows framing

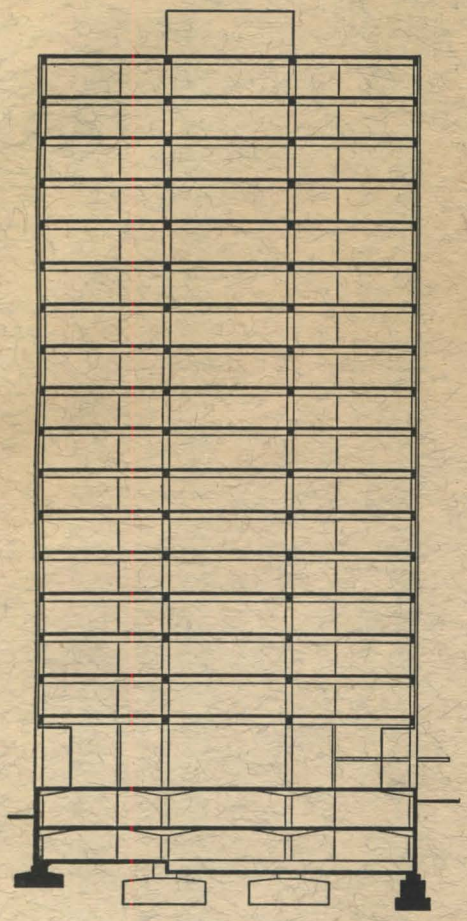
2 SHELL HEAD OFFICE BUILDING

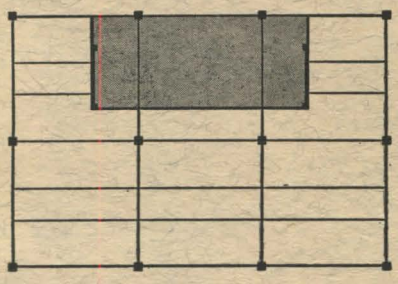
Melbourne, Australia

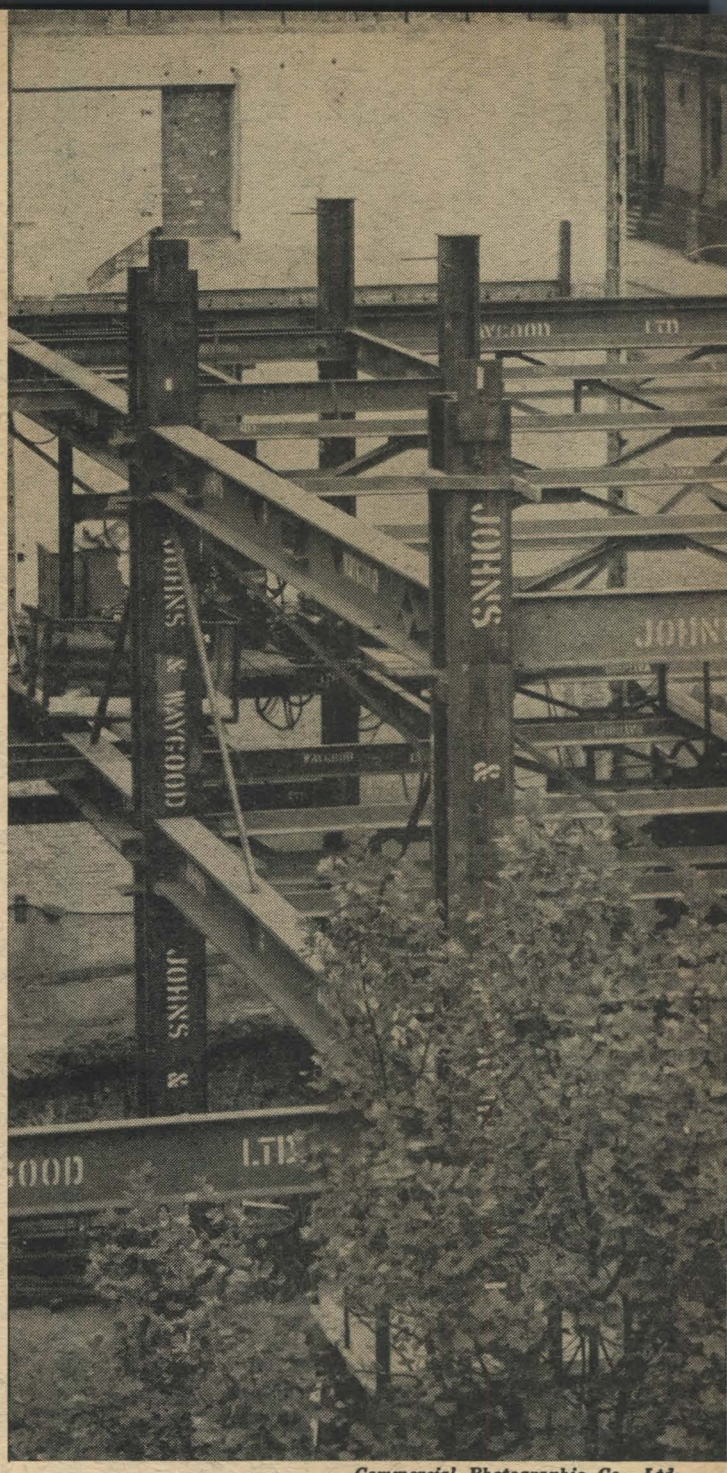
The Shell building's 19 stories will make it the second tallest building in New South Wales. A straightforward solution to office tower design, it has certain unusual aspects: it is to be joined to an adjacent company-occupied building at seventh, eighth and ninth floors by a three-story bridge, and this necessitated an unusually thin ceiling-to-floor depth to permit alignment of floors in both buildings and to obtain the maximum number of floors within Melbourne's building restrictions. This thin section was achieved by use of precast concrete channel slabs spanning between floor beams as a base for the floor slab, and by supporting this floor system with an open steel truss through whose voids the ducts run. A 36 ft 8 in. column grid, the location of the core on the side toward the existing building to facilitate circulation, and the building's height were the factors which determined the building's structural solution. This consists of a rigid steel frame using 12 columns (I-sections built up of heavy steel plates). The module in this instance was a secondary design factor since partitions would be infrequent and where used would not run to the ceiling so that services to each module would not be essential. Mechanical equipment (the building is completely air conditioned) is located in the basement.











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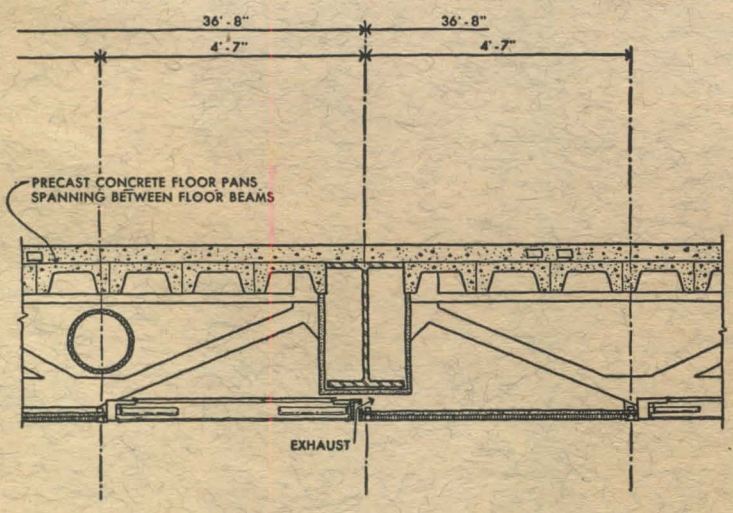
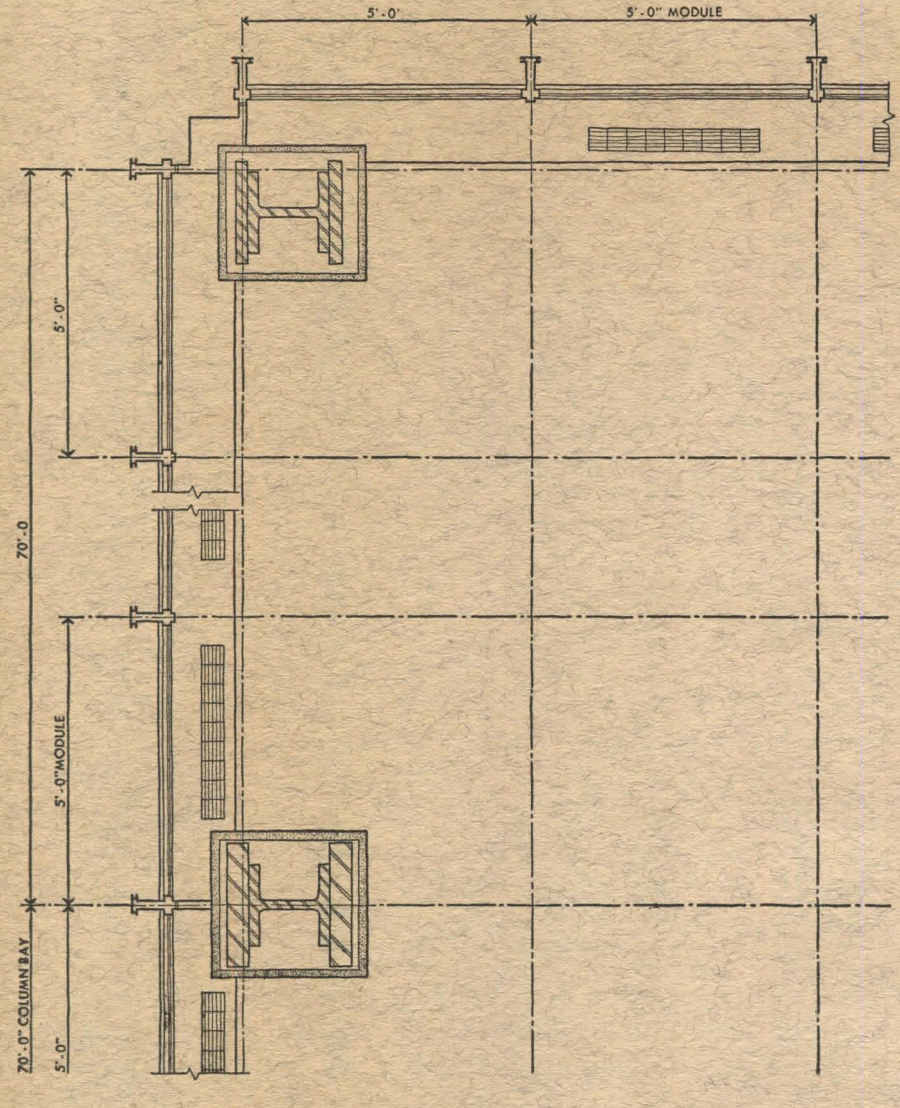
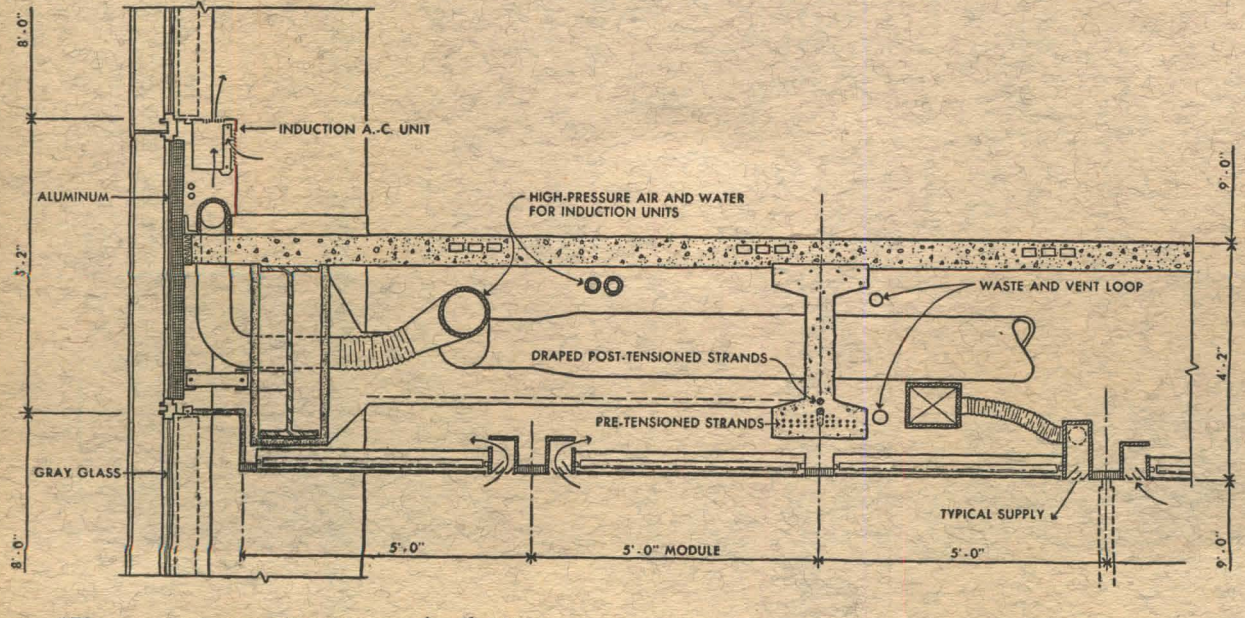


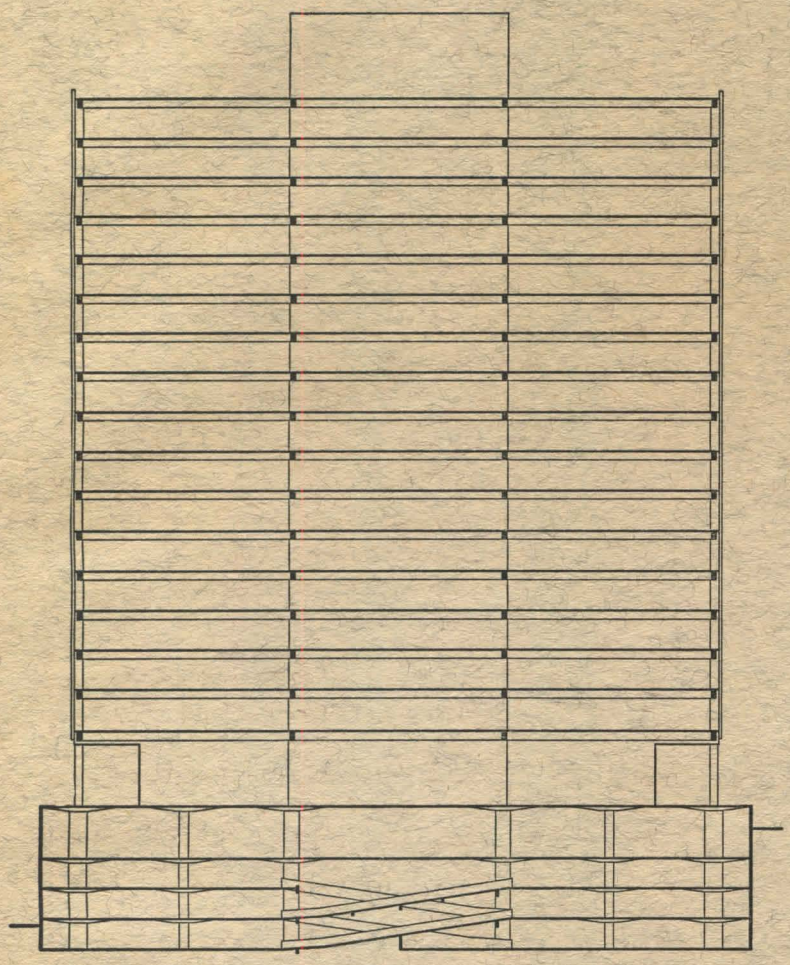
Structural steel frame of Shell building is sheathed in aluminum; spandrels and mullions are also of aluminum. Enclosing walls are of heat-reducing gray glass. Plan (opposite page, top) at building corner shows mullions set on every other module; partitions can be set on any module, with filler panel to glass on modules between mullions. At left: section and structural plan

3 NORTON BUILDING
Seattle

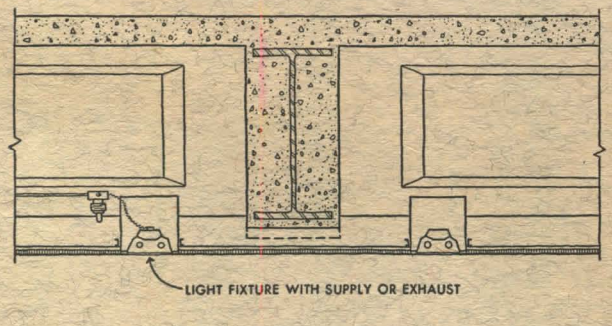


The 21-story Norton building is of particular interest not only as Seattle's first skyscraper since the late 1920's and as this country's first building over six stories to use prestressed concrete members, but because of the way in which its structure combines steel and reinforced concrete. The building's frame consists of four transverse column-girder frames, repeated for 16 floors, with precast prestressed concrete beams which span 70 ft as supports for the poured-in-place concrete slab floor. Each floor is three bays long by one wide (210 ft by 70 ft). Earthquake forces are taken by the walls of the service core located at one side of the building. Core walls are of special design: the longitudinal wall, which takes all longitudinal lateral forces, is a steel truss bent combined with a reinforced concrete shear wall; end core walls, which take all transverse lateral forces, combine reinforced concrete and rigid frame steel shear walls. Office space is column-free, an important consideration in a building designed, as Norton was, for 100 per cent rental. All air conditioning equipment (except cooling towers) is located in the basement which, because of a sloping site, is three stories above grade at its low side.





Roger Dudley

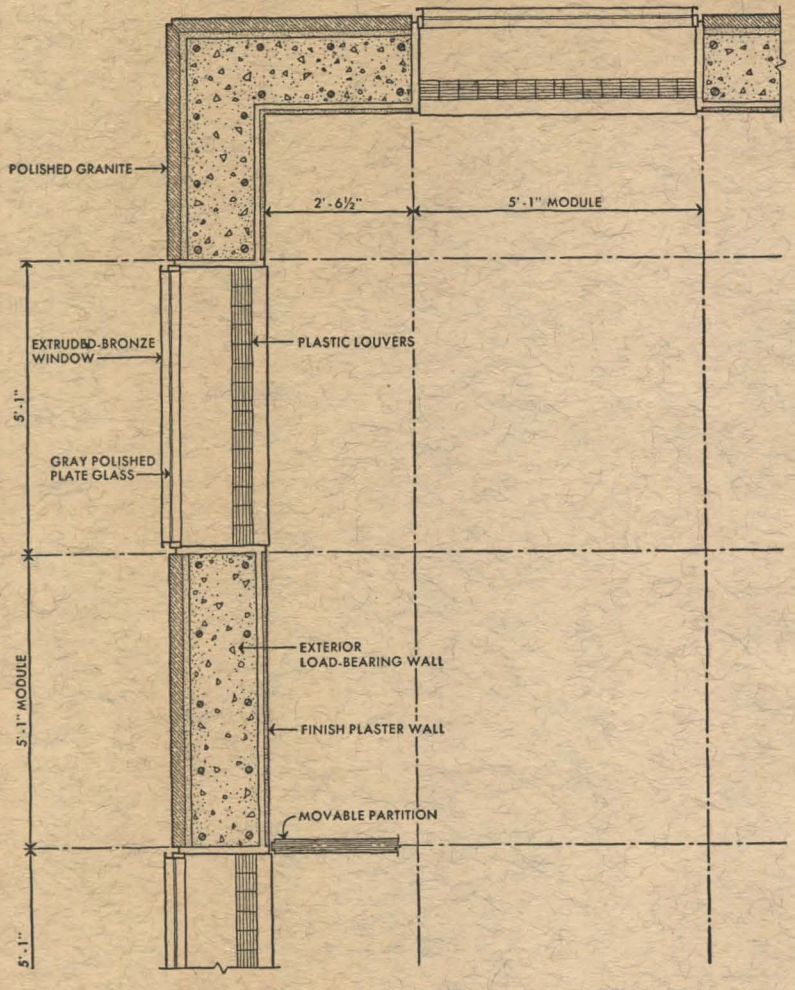


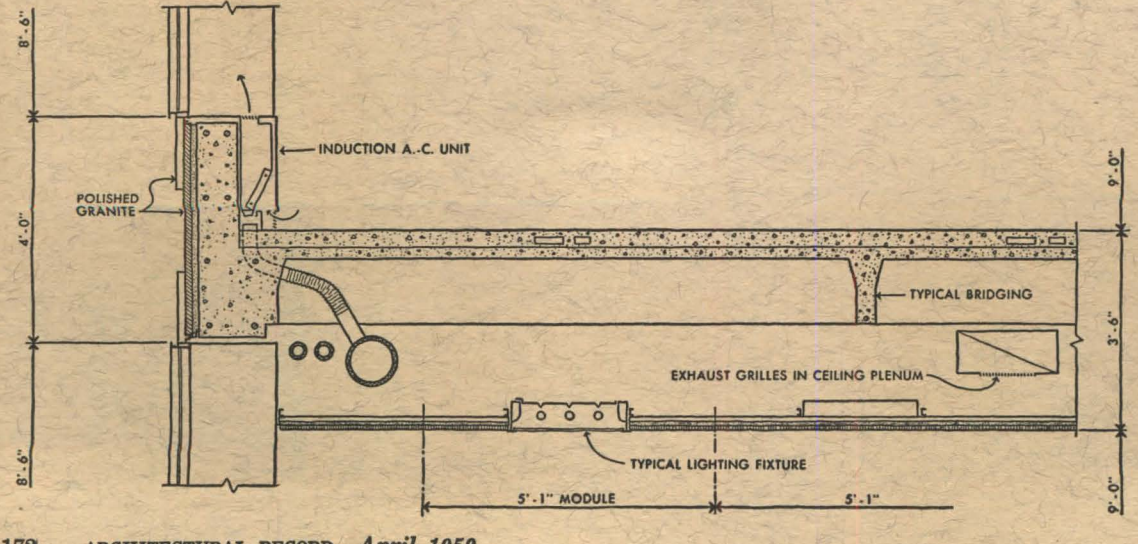
Enclosed in a curtain wall of gray heat-absorbing glass framed in aluminum, Norton building stands on a sloping corner site in downtown Seattle. Entrance to lobby level is on site's high side, to garage on low side. Section (left, top) through length of building and structural plan show long clear span on office floors. Each bay is 70 ft square

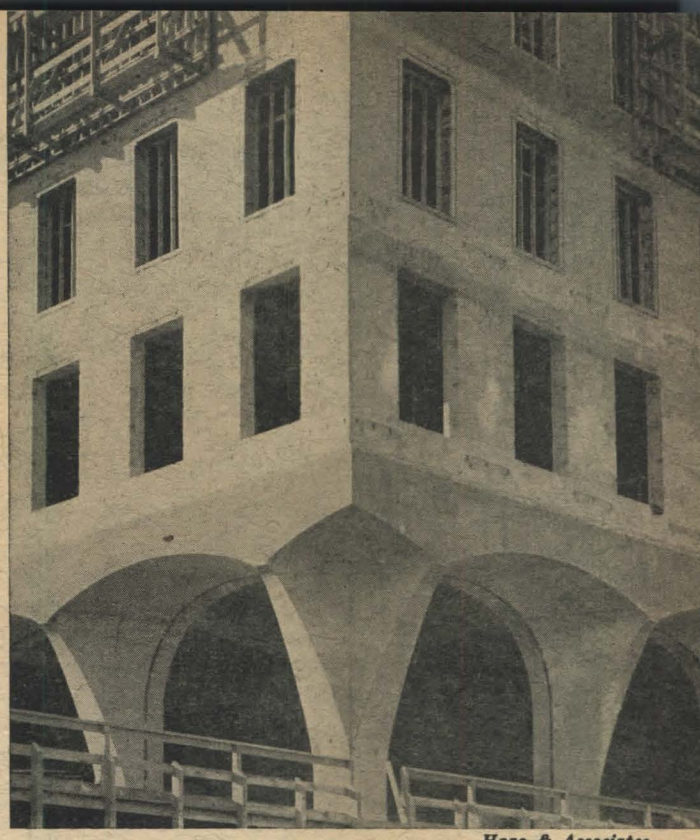
4 JOHN HANCOCK WESTERN HOME OFFICE BUILDING

San Francisco

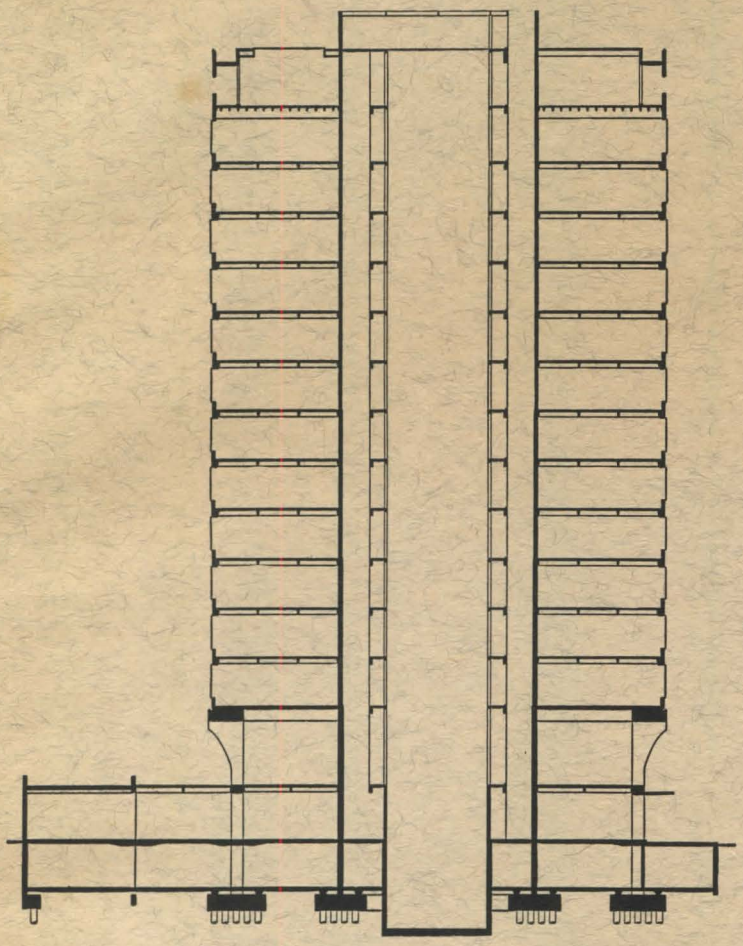
The John Hancock building, under construction in San Francisco on a site just two blocks from Crown Zellerbach's glass tower, is a reinforced concrete building whose exterior walls are half solid, half glass—in direct contrast to curtain wall buildings. Loads from these exterior bearing walls are transferred to the set-back columns at first floor level by the haunched concrete arches on the second floor. From this structural solution, strongly sculptural as well as architectonic, derives the building's unique expression. Seismic and wind loads from the exterior walls are distributed into the central core's walls by the third floor which acts as a very stiff diaphragm. Typical office floors use a conventional T-beam system spanning between exterior wall and core. Office space is column-free. The mechanical floor at the top of the building has an unusual detail (see opposite page): a continuous recess around the building immediately under the parapet provides for air intake and exhaust and for suspension of window-washing equipment, with easy access from the mechanical floor. Essentially a solution to mechanical problems, this detail has architectural gains as well: the parapet, of precast concrete panels finished to match the arches below, provides a positive architectural terminus to the building.

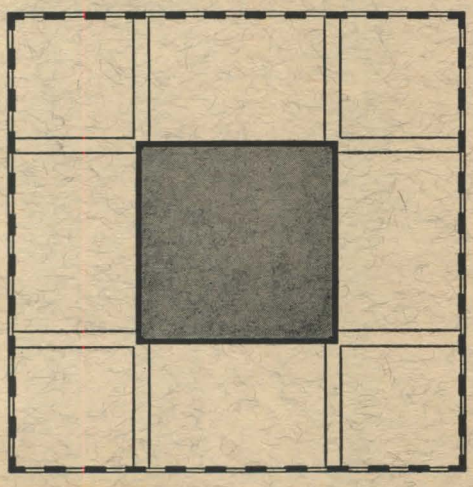


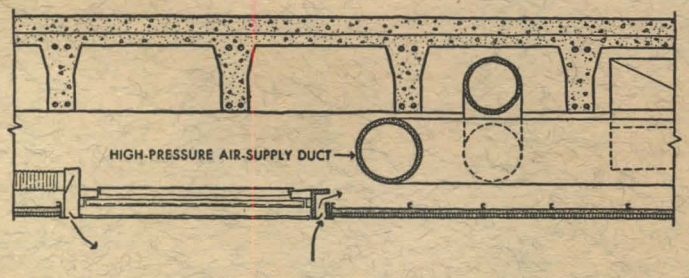




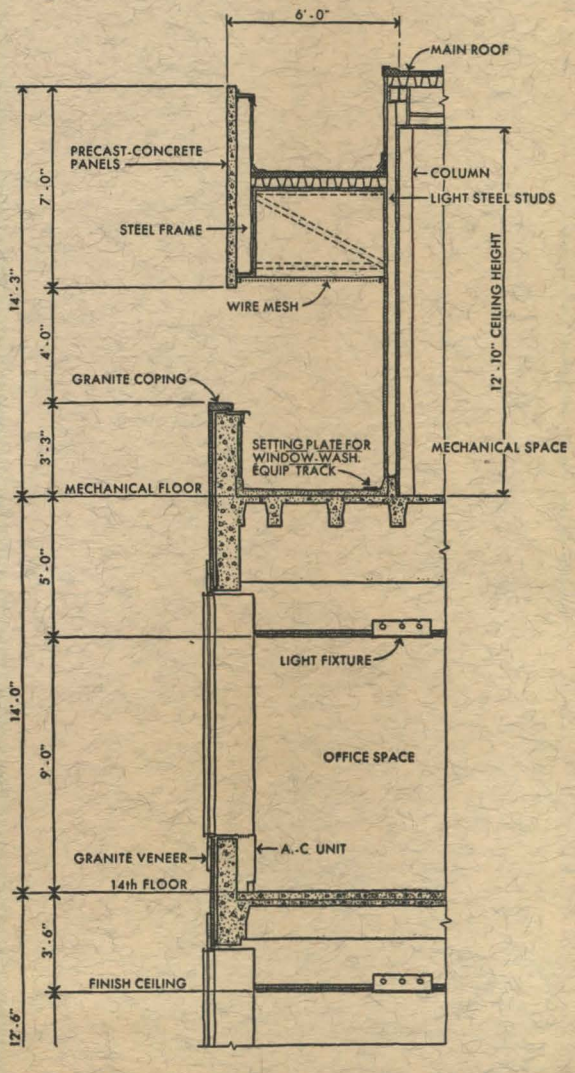
Haas & Associates

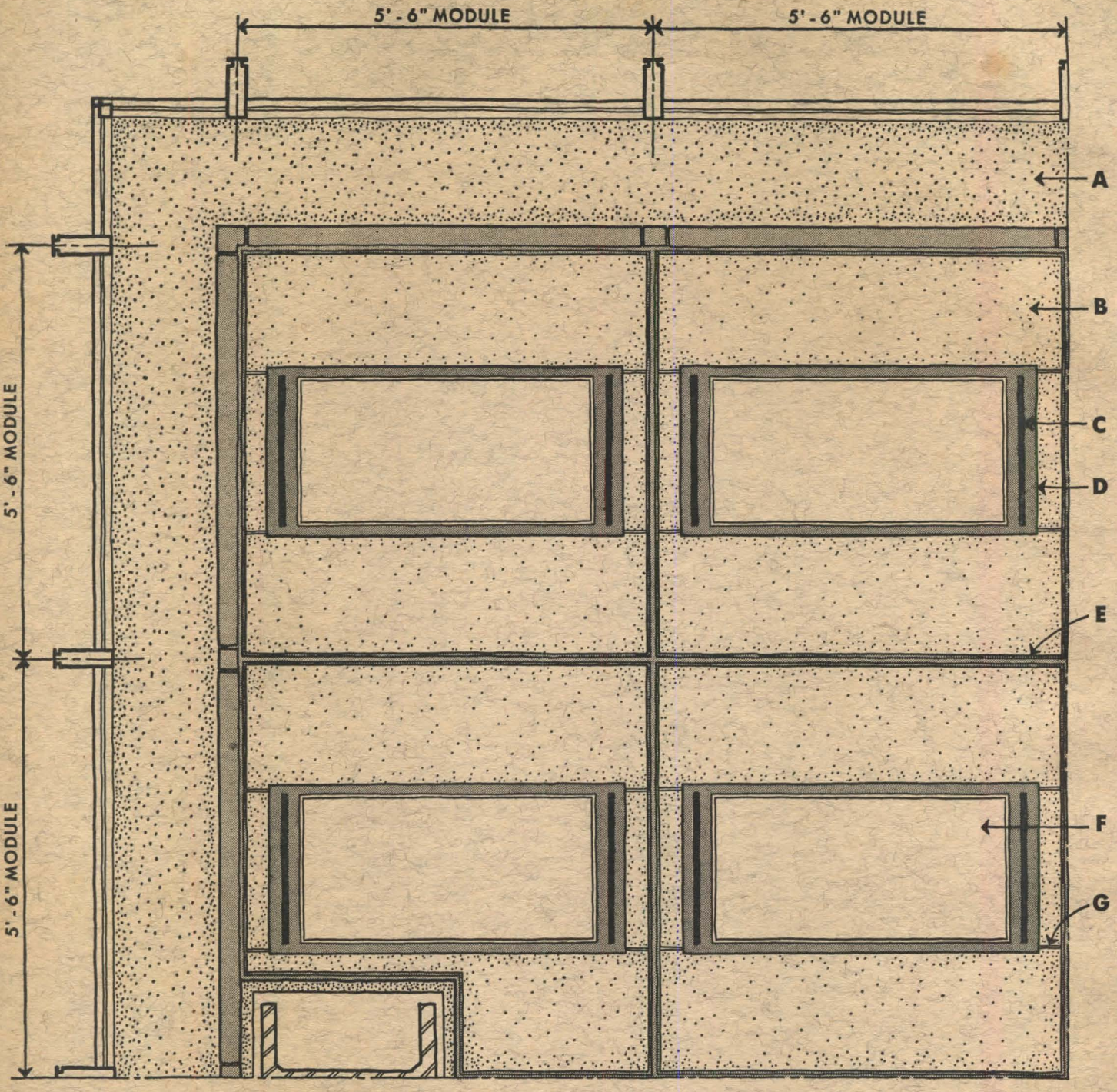






Detail at parapet shows provision in continuous recess for air supply and exhaust at any required point. Recess will be illuminated at night, circling top with light





Crown Zellerbach Reflected Ceiling Plan

Every module has complete service, with air supply and exhaust combined with lighting fixture. Above ceiling panel entire space between ceiling and next floor is used as plenum, reducing ductwork and permitting direct pickup of heat from ballast of fluorescent lights before it affects room load. From outside building, ceiling panel appears to float, suspended against dark painted plaster curtain recess. Partitions can be located on any module. This building's generous 5 ft 6 in. module, providing spacious executive offices, also is basis for clerical pool space which was other primary program requirement

A. CURTAIN POCKET

B. GLASS-FIBER *ACOUSTIC BOARD*

C. AIR SLOTS

D. METAL FIXTURE FRAME

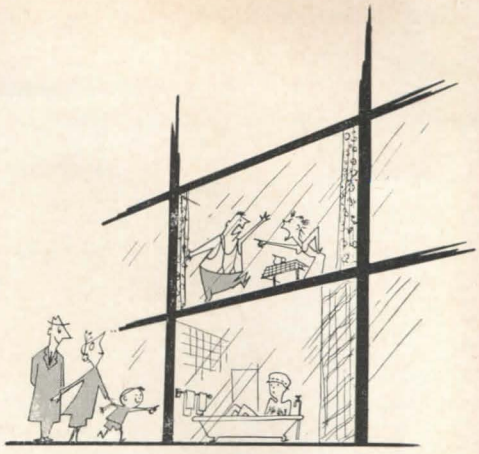
E. ALUMINUM CHANNEL FOR TOP OF MOVABLE PARTITION

F. ACRYLIC-PLASTIC LIGHT DIFFUSER

G. JOINT COVER

THE HUMAN PROSPECT AND ARCHITECTURE

By LEWIS MUMFORD *



"The Package"

In dealing with the state of modern man, I wish to push beyond the conditions that have developed during the last half century; for the wars, plagues, brutalities, exterminations that have reduced life to a subhuman level are symptoms rather than causes. The great fact that underlies our whole life is that mankind is confronted today with a situation that is unique in history: some of man's oldest dreams have actually come true—the dream of flight; the dream of instantaneous communication; the dream of action at a distance—what we now call remote control—and ultimately the dream of limitless power and limitless wealth.

As dreams, expressed in religious myths, all these achievements go back to the very beginnings of civilization, in the late Stone Age and the Bronze Age, some five to seven thousand years ago. With the first achievement of power, order, and scientific knowledge in the great river cultures of Babylonia and Egypt came the desire to expand these physical functions without limit, at whatever cost to life. Provisionally, these civilizations endowed their gods with the powers their monarchs did not yet command. Owing to the lack of technical means, the increase of physical power and material abundance served only an infinitesimal minority: the rest of the population remained weak and poor and ignorant. They participated only vicariously in the aristocratic way of life. Lacking the bare necessities of food and shelter, the mass of men thought only of material abundance. So even now we fail to understand the biological irrationality of the enchanting Bronze Age dream of idle leisure and effortless wealth and unbridled power, achieved as if by magic.

Today the powers that once belonged only to absolute monarchs or primordial gods have become universal: they are a collective possession and by their very nature cannot be monopolized by a group, a class or a nation. More than that: functions and power that gods once possessed only in human fantasy are now exercised by ordinary men—bureaucrats, soldiers, civil servants, engineers—people who are not conspicuously endowed with any equivalent magnitude of love and virtue.

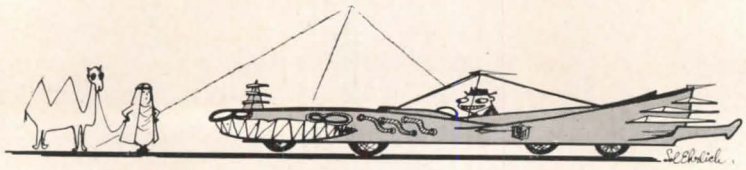
This is in fact the period of the Common Man. The Common Man, though without historical insight, without special moral discipline, or sufficiently unified and comprehensive powers of thought has, by an almost automatic process, been endowed with the functions and attributes of the primitive gods. Possibly only those who have made a study of Babylonian or Egyptian theology will fully realize all the terrible possibilities implied in this situation. But the point I wish to make is that though many, perhaps most, of our contemporaries are justly proud of their powers of organization and their organization of power, they are mythically and ideologically still living in the extremely primitive and brutal world of the early Bronze Age. Their mentality is singularly like that of an early Pharaoh. Their conception of modern civilization is not merely limited: it is ideologically antiquated—indeed as deeply archaic as the belief in the divinity of kings.

Only the ignorant or the extremely innocent could mistake this transformation of modern man into a being endowed with godlike attributes for an altogether desirable achievement, for the history of the last forty years, as well as more ancient records of organized violence and bestiality, shows that we have imprudently given power and authority to the demonic elements in man as well as the divine. Actually, the result of all our brilliant achievements in science, technics, economic administration and organization are contradictory and paradoxical. In many departments there have been striking gains not merely in energy and vitality but in a higher sense of justice and human decency. An economy of abundance promises to everyone some of the leisure and largesse that before this only the aristocracies knew. Who would deny that these are great positive values?

But modern man has lost the automatic discipline of poverty and scarcity; and as is well known in every biological process, too much "may be as fatal to life's prosperity" as too little. It is not merely during economic crises that we face "starvation in the midst of plenty." Already we have more power than we can use wisely and more scientific and technical knowledge than we can intelligently assimilate and put to good use.

What is the result? We now have external power

* An address to architectural students in Rome



"The Pyramid"

Sketches by Sol Ehrlich

on a scale that exceeds our wildest dreams: but that is counterbalanced by an inner feeling of extreme impotence, nausea, frustration, and despair. Never before in the most dismal phases of man's development has there been such a universal sense of anxiety, such a sense of the emptiness and futility of life, of a general lack of meaning and purposefulness. What the artists today are revealing in their endless symbols of disintegration, the common man, who still is healthy enough to enjoy his physical liberation, will become aware of tomorrow.

It is not a little strange that the artist of today, instead of exulting in all the possible manifestations of our godlike powers, can exhibit his creativeness only in destructive, violent, and infantile forms, without intellectual content or moral values, indeed too often demonstrating a positive love for corruption and evil, as my countryman, Tennessee Williams, recently was honest enough to admit in an interview with himself? Not a little of our modern art shows a kind of perverse vigor, as if it drew directly upon primordial sources in the Id. But this should not conceal the fact that its meaning lies in its meaninglessness, its content in its lack of contents—something not to be confused with abstraction—its only value is a denial of the possibility of values. If modern science and technology spring from the ideals of the Bronze Age, a large part of subjective modern art seems to go back even farther to a period before images or words were yet formed, when human feelings were inchoate and incommunicable.

For a long time our surface health and energy reinforced our ignorance and concealed the symptoms I have been trying here to bring to light. In the arts of construction and fabrication one must look behind the outward form to detect the inner weaknesses: for if a building consciously expressed disintegration it would not stand up; and if a motor car expressed disintegration it would not go. But even in modern architecture the symptoms are disturbing. Unhappily, when one examines modern building or urbanism with a critical eye, unmoved by current fashionplates and advertisements, one finds the same contrast between the outward form and the inward disruption. Take architecture for illustration. The dominant architecture of our day can be grouped under three heads: the Package, the Pyramid, and the Procrustean bed.

The Package may be defined as an external envelope, a covering of glass and steel or concrete, whose form bears no functional or purposeful relation to the object or the activities it encloses. The sole purpose of the package is to dazzle the spectator and to advertise and sell the product. By definition, such a shell is most effective when it is most empty. For the daily functions of family life, in the extremes of hot and cold weather, an all-glass apartment house, the perfect package, would turn into a place of torture. This neglect of the human contents is a typical vice of our time.

Perhaps it is no accident that the Pyramid, one of the most ancient of architectural perversions, is being revived in our time, though the new forms disguise its nature. Pyramid-building, whether it takes the form of a "skyscraper-a-mile-high" or a cantilevered foundation almost as expensive to construct as the building it supports, demands a sacrifice of important human needs to empty pomp and vanity. Thus, according to this definition, our new American motor cars are pure examples of pyramid-building: and so, in even greater measure are our atomic and hydrogen bombs, for they are part of the modern cult of death and might become the tombs, not of a few pharaohs but of the entire human race.

Finally, the third point of physical over-concentration and therefore organic disintegration is the Procrustean bed. Our admirable and useful mechanical aids become merely procrustean when one mechanical function, or one form of mechanical organization, dominates every other activity and represses man's own proper functions. There are many more ways than the Greek innkeeper knew to saw off human legs or stretch the human frame to fit an arbitrary iron bed. The danger does not come from the use of the machine but from the displacement of man as a responsible agent, who must control and direct its results for human purposes. Once we begin to fit people to the needs of the machine there is no limit to the physical and mental deformation that may be practiced. In a purposeless world, mechanization inevitably takes command.

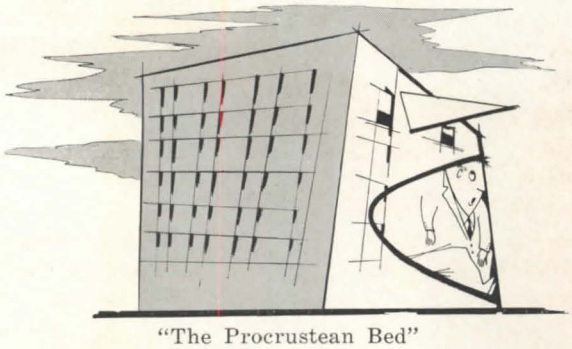
Many of our contemporaries still think that the problems of our age can be solved by further applications of science and technics: but this view shows a failure to understand the limitations of these disciplines, until they become a part of a much larger and deeper conception of life and human development. We deceive ourselves if we think that by producing more elegant packages, more pretentious pyramids, and more automatic machines with

built-in electronic brains, we are meeting the demands of modern life or expressing the ideals of modern culture.

Actually, most of our favorite modern activities belong by direct inheritance to the Bronze Age, and they express the childish limitations of Bronze Age minds. We are in fact using the most elaborate and refined techniques of mathematical and physical science to fulfill an archaic scheme of existence. This scheme leaves completely out of account the historic perspectives of the last five thousand years, the cumulative moral insights of the prophetic religions, and our ever-deepening understanding of the nature of life itself, which transcends all our ideological abstractions. Bronze Age man had alienated himself from the world of life by overemphasizing the role of organization and external control. That is why he and his present-day descendants still dare to cherish such a contradictory and childish concept as limitless power, limitless wealth, or the limitless expansion of the machine in every direction, without having any inner principle of control or without any purpose or goal—power for power's sake, motion for motion's sake, speed for speed's sake, and finally in our day total destruction and extermination for no rational purpose whatever.

Unlike the world of atoms and stars, biological activities are self-directing and goal seeking. In man these tendencies rise into consciousness as ideals, projects, and plans. Once these activities relating to a possible future are neglected or repressed, life itself loses its meaning for man. The higher man's development the greater his need to re-think his past, reconstruct his present and forecast his future. To love and to create are necessities of human growth.

The needs of life, then, are much more subtle and complex than the needs of machines, and for this reason a good mechanical solution to a human problem can be only a part of an adequate organic solution which meets the needs of life in all its dimensions. In the case of an infant, we have experimental evidence to show that unless a baby is loved and fondled it will not be adequately nourished, no matter how much food we give it. By the same token, visual and aural order may be as necessary for health as hygiene and sanitation. The architecture, the engineering, the politics or the medicine, that does not recognize the primacy of life, belongs to the barbarous Bronze Age, not to our own time and still less to the future. The world of machines corresponds to the system of reflexes and automatic processes in the body. When we are properly oriented to life and reality, the higher functions of man, those concerned with meaning, value, and form, will dominate and transform all our instrumental and practical activities, so that no part of our daily life will still be empty or insignificant. Until we recognize the role of these higher functions, the vast powers man now commands will only give scope to destructive impulses and acts, through which the forces of life seek to recapture the autonomy and freedom that have been denied them.



"The Procrustean Bed"

Man now commands the forces of nature as never before; he has achieved a godlike power to understand and direct them. But all this scientific intelligence and technical facility will prove vain unless we understand that we must create a new race of Galileos and Giambattista Vicos who will help us to realize to the full our human potentialities and enlarge all our specifically human capacities to feel, to imagine, to love and to create. Unless all our works are works of love—and I mean love in every sense, from the erotic to the divine—they are not yet in the realm of the human.

Within the dimensions of this talk I can go no further. In a little book called "The Transformations of Man"* I have given a more adequate presentation of these ideas. In that book I have tried to picture a further stage in man's development that would carry forward and unify every aspect of historic experience, and transcend the limitations that have brought every past civilization to an end. But fortunately in the very act of giving this lecture I have illustrated my most fundamental point. For I have spoken to you, not as a writer, not as a philosopher or a scholar, not as a critic of architecture or a professor of city planning, not as one having professional authority or a specialist's competence. On the contrary, I have addressed you as a man, as one who of right exercises all the biological and spiritual functions of man, and who therefore regards all other forms of authority as secondary and supernumerary. In short, I have dared to be human and I have appealed to you primarily as simple men and women. In all humility, I invite you to follow this example, in your thought, in your work, in your social and family relations. Yes: dare to be fully and wholly human: dare to put wisdom above knowledge and love above power, the imperfect but living whole above the perfect but lifeless part. It is not easy to be human; but those who have the courage not to surrender their humanity, tomorrow, under a less murky sky, may catch once more a glimpse of the divine.

* World Perspectives Series. 1956.

A RESTFUL HOUSE FOR A RESTFUL SITE

Simple lines and construction materials give this house a quality of restfulness well suited to the site, a wooded lakeside lot sloping gently downward from the street to the water's edge.

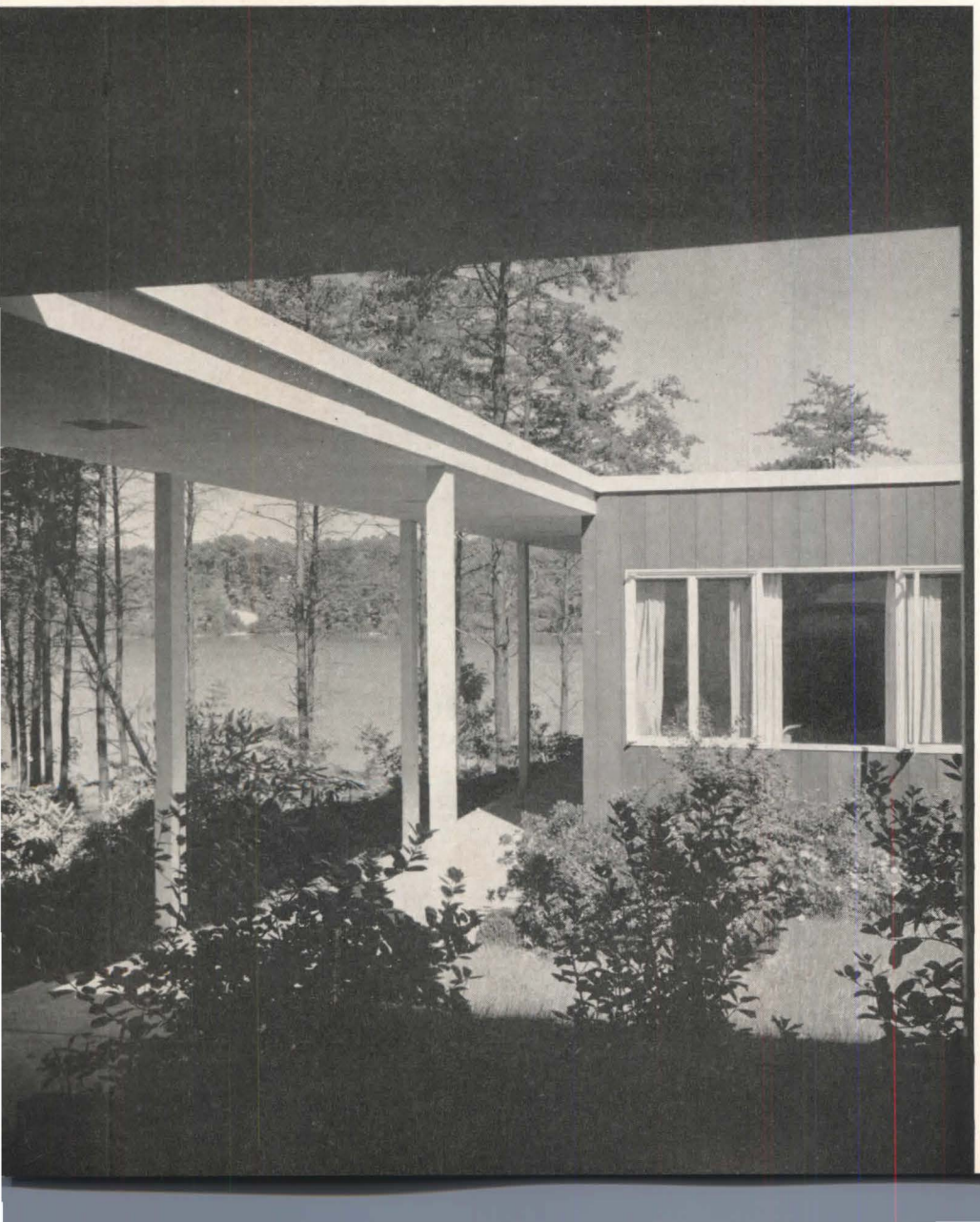
The house is approximately square, tapered slightly to fit the building restriction lines. It is straightforward in plan, with an interior utility core (lighted by plastic domes) separating the bedroom and living areas. The bedrooms, three steps above the rest of the house, face a landscaped court between the house and the carport; the living-dining room overlooks the lake. One end of the living area is partially enclosed by cabinets to form a study-guest room. A large screened porch at the opposite end is adjacent to the kitchen and can be used for outdoor dining.

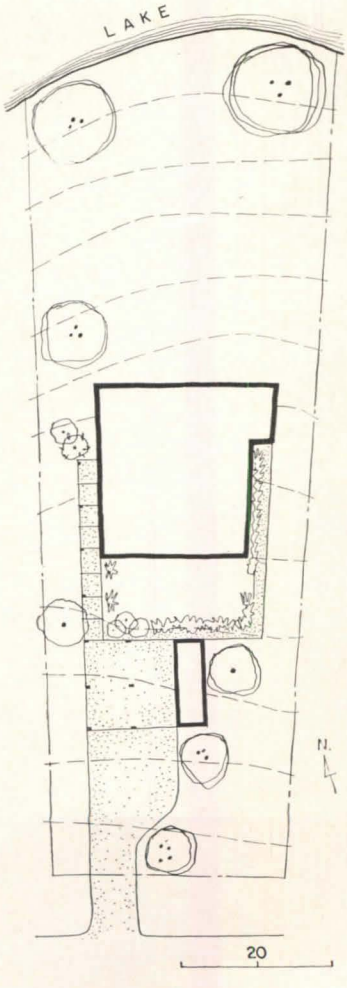
Interior walls are painted plaster and floors throughout are carpeted except in the kitchen-utility area and baths where asphalt tile is used. Closet walls are natural birch; built-in cabinets—all designed by the architect—are fir plywood and fiber board, painted. Exterior walls are natural redwood vertical siding.

Residence of
Mr. and Mrs. Millard W. Rice
Lake Bancroft
Fairfax County, Virginia

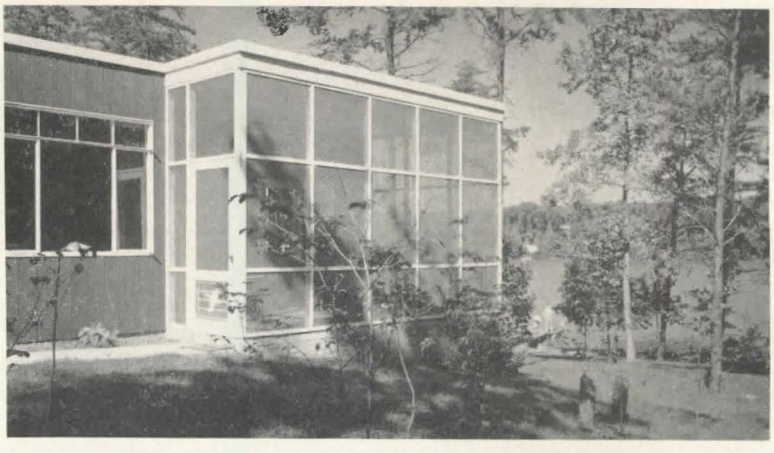
Harry E. Ormston
Architect

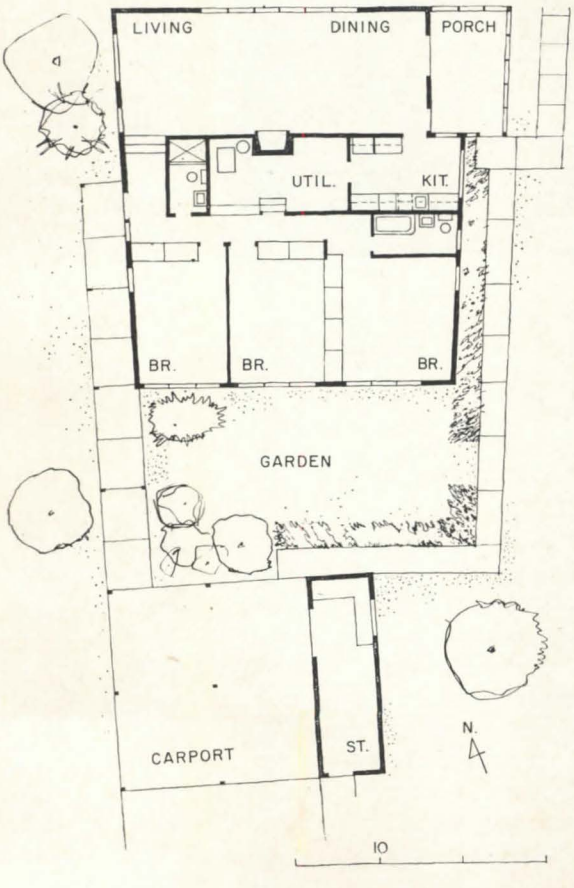
Harry Davis
Contractor



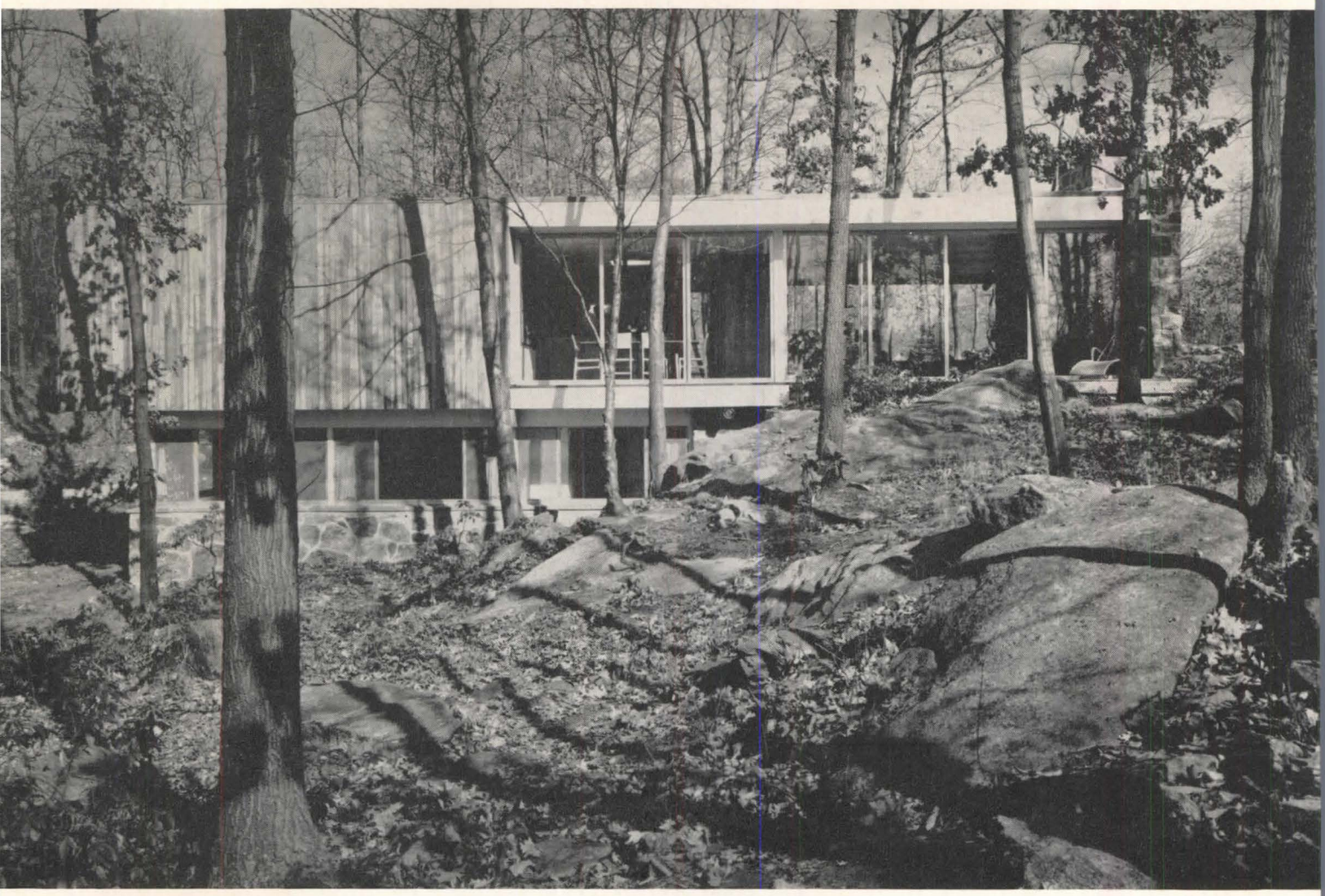


Covered walkway leads from carport along landscaped court to entrance conveniently placed between living and bedroom areas. Porch, on opposite side of house, seems small in photo at right, but actually is fairly large (see plan below). Fireplace in living room is effectively severe, raised above floor level, and framed in marble. All metal casements and fixed glass are set in 2 by 6 frames; roof is built-up with marble chip surface; heating is hot water radiant floor panel. Carport has large storage area and workshop



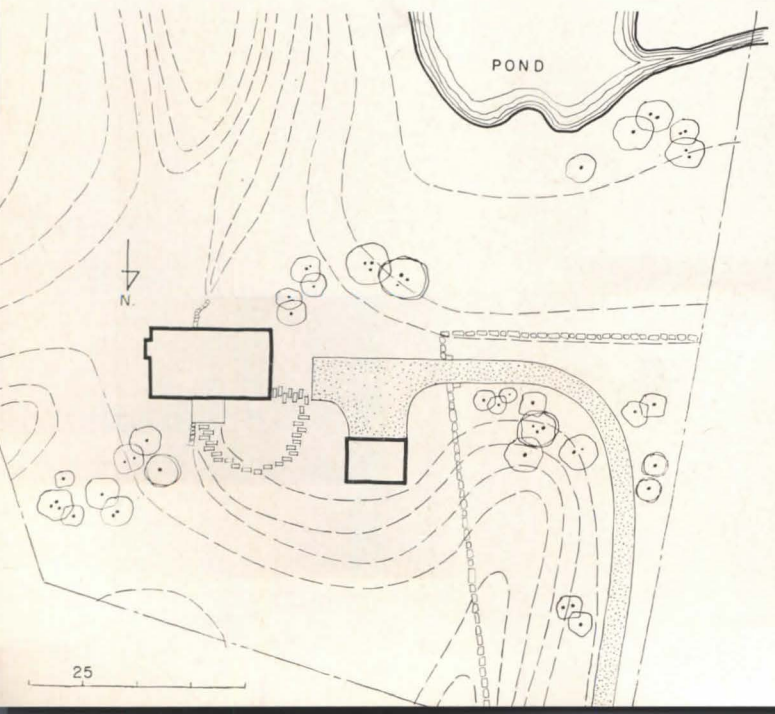


Robert C. Lautman



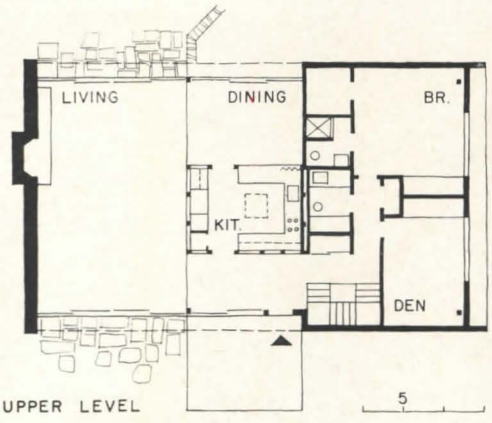
CLOSE INTEGRATION OF HOUSE WITH SITE

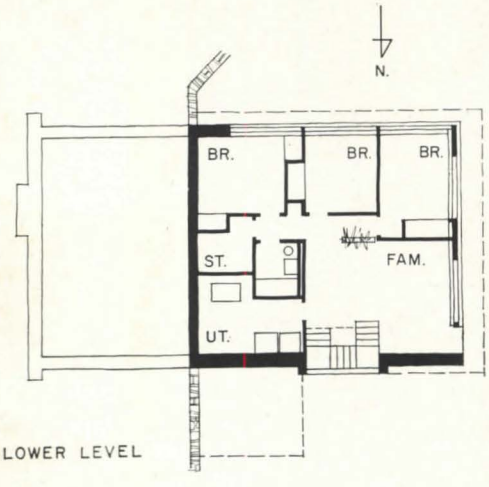
Residence of Mr. and Mrs. Albert Preston Moore, Greenwich, Connecticut
Albert Preston Moore, Architect; Russell Myers, Landscape Architect



The close integration of this house with its site is obvious in the photo above. The site—typical of New England—is undulating and heavily wooded, interspersed with streams and bare rocks. A two-level house was almost literally built into it, with exterior walls of rough stone and unfinished cypress to blend with the surroundings; the six-acre property was left in its natural state except for the conversion of a swamp into a pool and the necessary clearing for buiding site and access road.

The two levels of the house were planned to give a general feeling of openness along with a definite zoning of activities: the upper level is for the adults, the lower one for the children. A deck of wood slats cantilevers in front of the entrance close to grade, giving direct access to living room, kitchen and master bedroom suite as well as to stairs down to the children's bedrooms and playroom, storage and utility rooms and wine cellar.

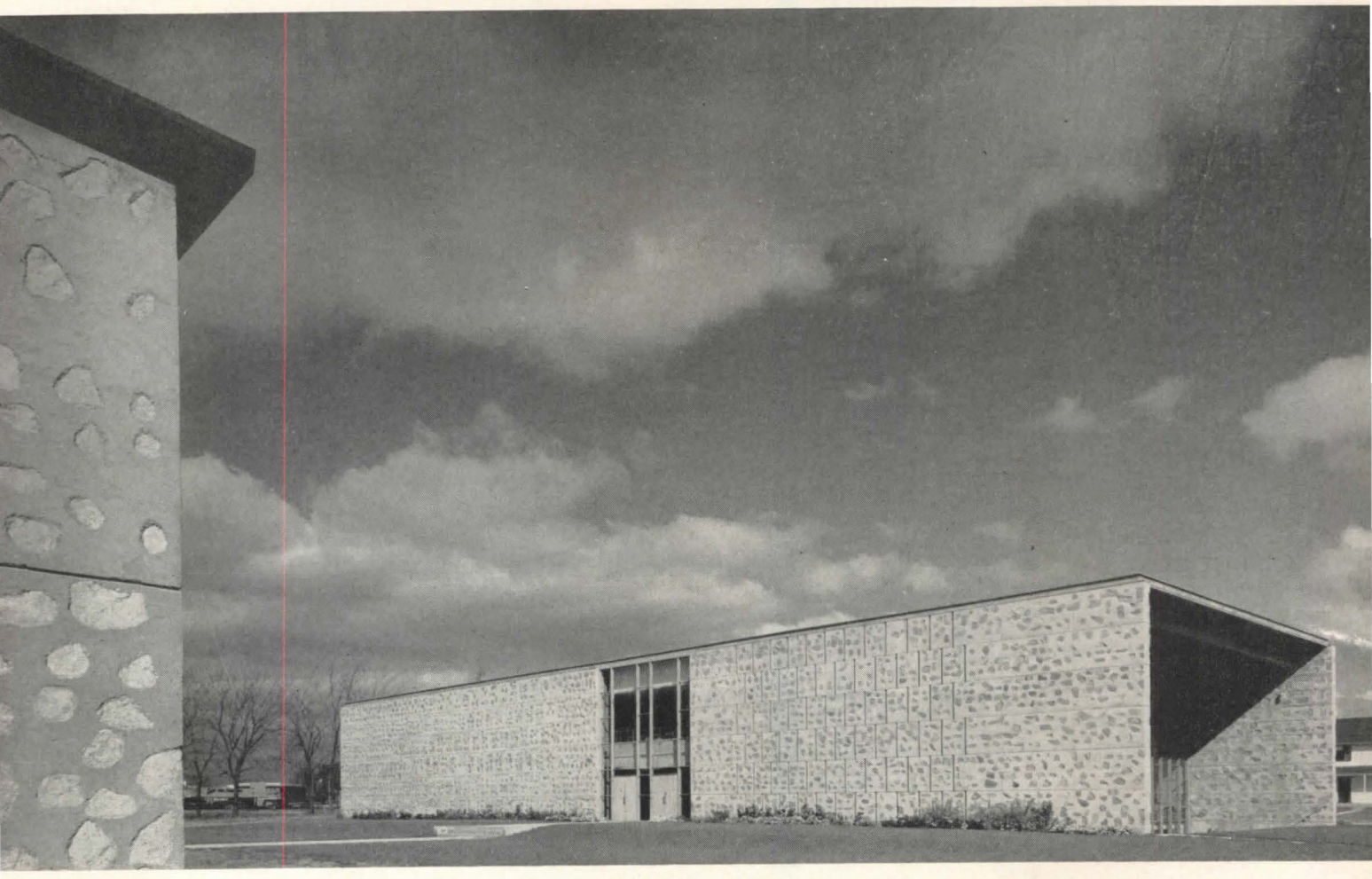




North and south walls of living room are sliding glass doors; east wall is 18-in.-thick fieldstone incorporating a large fireplace; floors in this area are a gray-green slate extending into the existing rocks outside. Kitchen and baths on both levels form a central core for plumbing and mechanical ventilation with the upper rooms having skylights of plastic domes. Heating is by radiant panels divided into three zones—living room floor, second level ceiling and lower level floor. The kitchen is equipped with built-in refrigerator, freezer, ovens, range, dishwasher, and disposal sink. Furnishings blend Italian and Oriental, new and old, with designs by Gio Ponti and George Nakashima as well as ancient Japanese silk screens and Chinese wrought iron grilles. Walnut furniture, brown fieldstone and natural graying cypress contrast with clear plate glass, white plaster, black wrought iron, and the aluminum window frames

Close Integration of House with Site

Pond, now pleasant part of estate, formerly was a swamp; it was one of few alterations to original site. "Floating" staircase of oak treads connect adults' level with that of children; lower level contains three bedrooms and bath, plus large playroom with direct access to outdoor play area. Storage and utility rooms are also on lower level along with wine cellar carved into rock under living area. Wood framing of roof and second floor are identical post and beam construction based on a 4½-ft module; exterior materials—local fieldstone and natural unfinished cypress—are used also on interior walls. Roof is 4-ply built-up and white gravel; overhangs protect all windows and doors from sun and weather



BOLD FORMS CONTROL LIGHT IN PROTESTANT CHURCH

OWNER: *Faith United Protestant Church*

LOCATION: *Park Forest, Illinois*

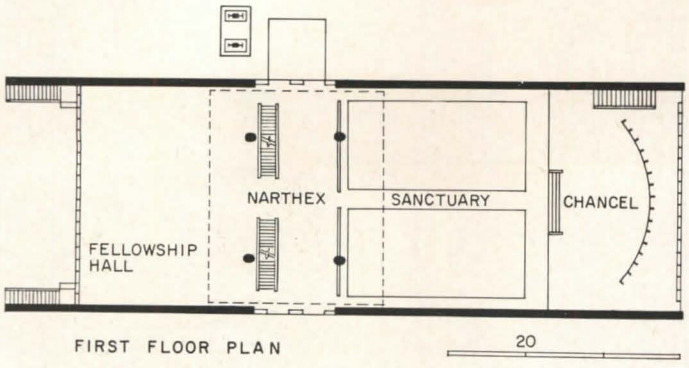
ARCHITECTS: *Schweikher, Elting and Bennett*

STRUCTURAL ENGINEER: *Frank Klein*

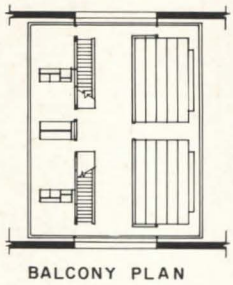
MECHANICAL ENGINEERS: *Samuel R. Lewis and Associates*

CONTRACTOR: *E. W. Sproul Construction Co.*

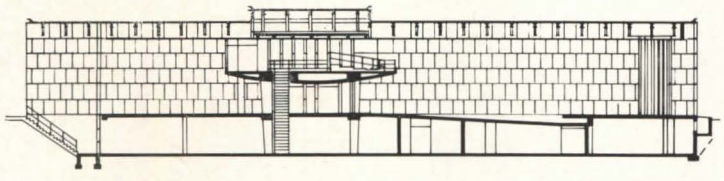
DESIGNER OF REREDOS SCREEN: *Angelo Testa*



FIRST FLOOR PLAN

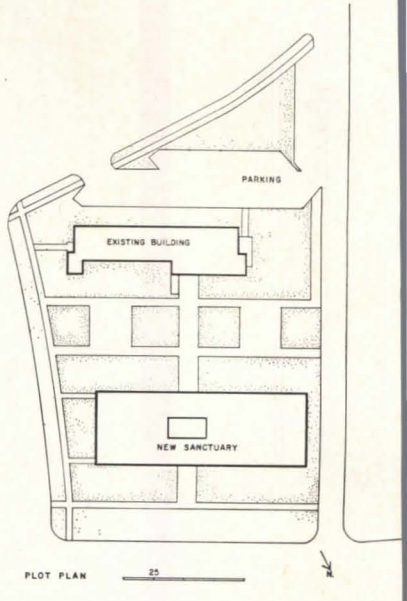


BALCONY PLAN



SECTION

Right: reredos screen is of laminated plastic wrapped around wooden ribs which are fastened to 3-in.-by-7-in. rectangular pipe columns extending from floor to ceiling. Circles are translucent plastic disks in many brilliant colors set in a black background

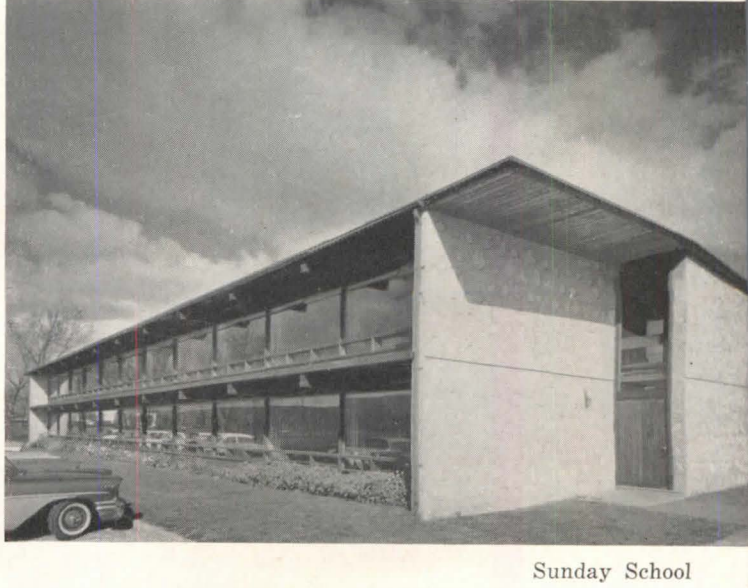


PLOT PLAN

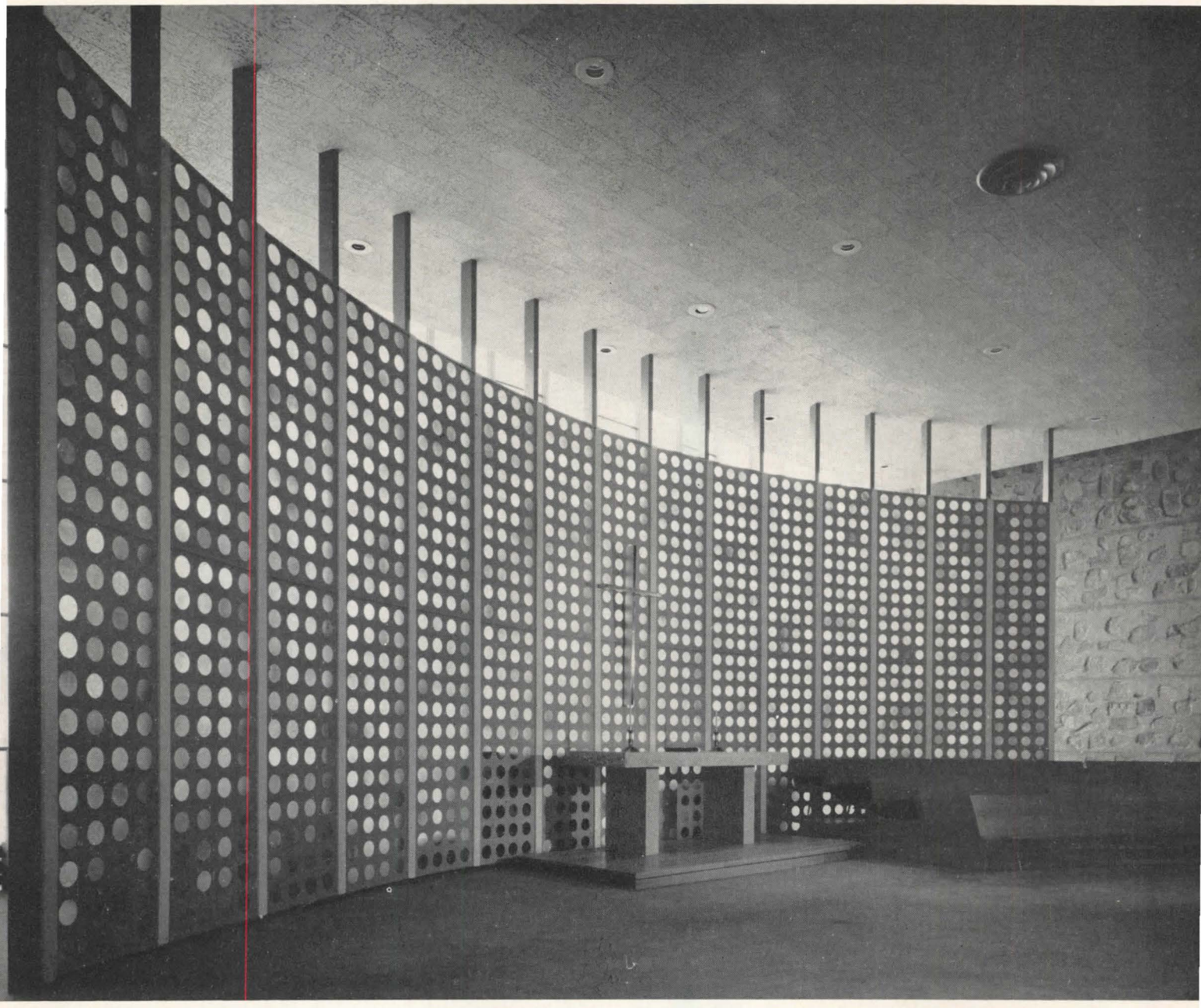
The outward form of this church could not be more simple and direct. It is a box relieved by the broad projection of the roof and walls beyond the large window of the fellowship hall, and by the two-story entrance elements which interrupt the otherwise continuous surfaces on opposite sides of the building. There is much that is complex and subtle, however, in the use of materials and in the handling of light and shade in the interior. Both end walls are fully glazed. The walls which parallel the main axis are of reinforced stone concrete. The use of granite in varying shades of red, blue and gray in combination with the rough concrete provides very rich exterior and interior surfaces. These walls are perforated by narrow and deep vertical slots with clear glazing and have been designed to admit patterns of light which contrast in shape and general intensity with the more brilliant illumination admitted to the chancel through the circles of the reredos.

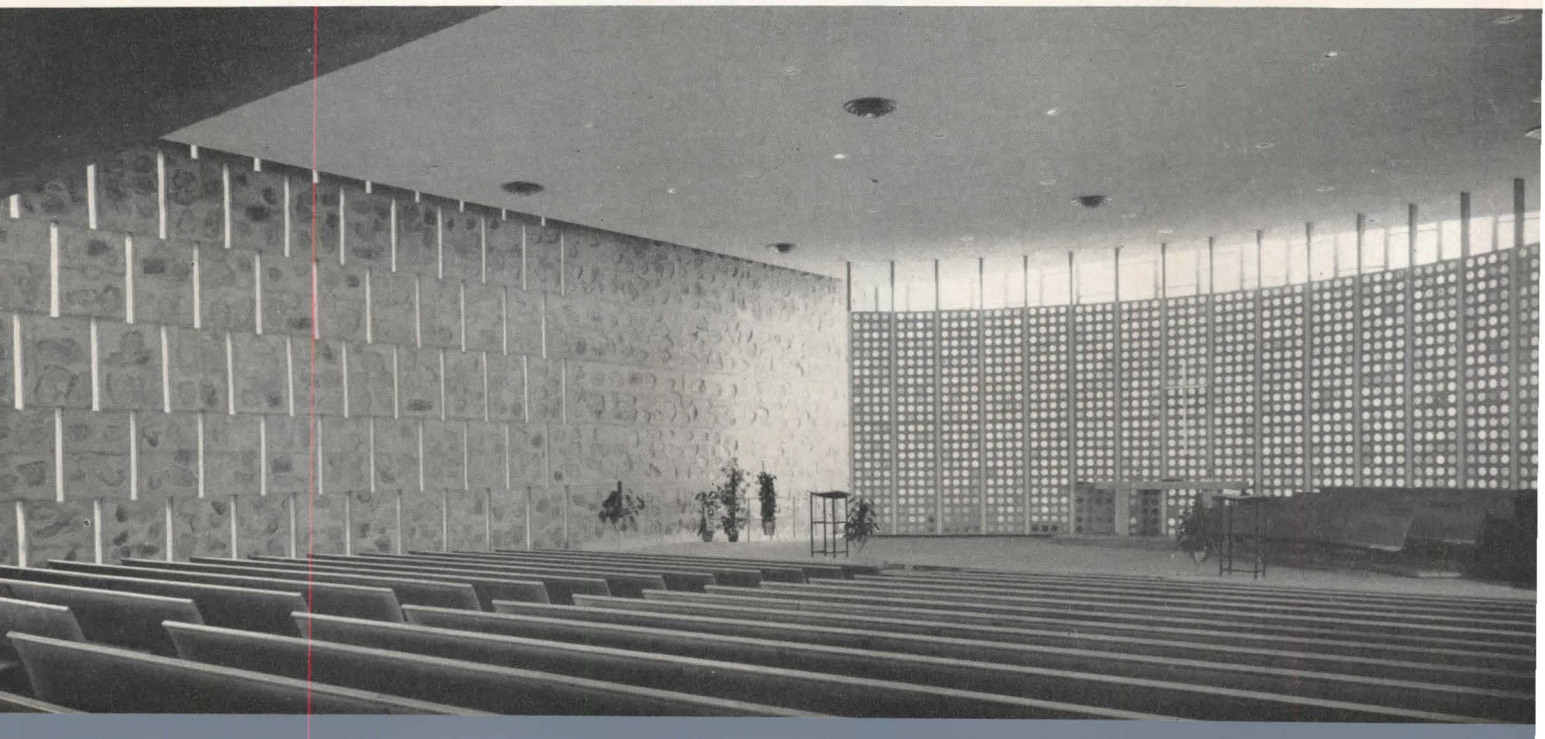
The fellowship hall is separated from the sanctuary by a strongly conceived reinforced concrete structure. Its four piers define the narthex and support a balcony which contains additional seating and offices.

A Sunday school was built first on the site by the architects and will eventually be connected to the church by a covered walk. Terracing, planting and a bell tower will be added in the future.

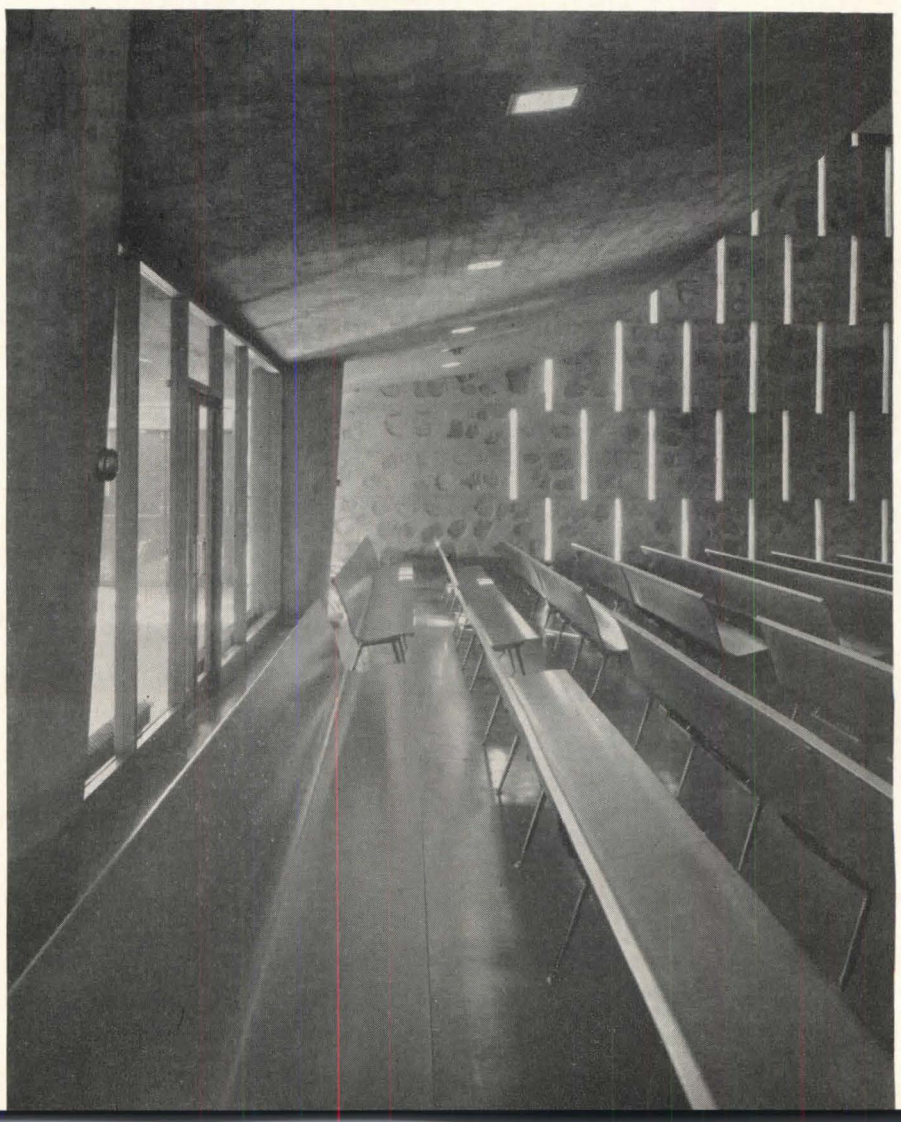


Sunday School





Roof is steel deck on long span joists. Ground slopes downward sharply where stairs lead to a general purpose and dining room in the basement. Glazing extends from basement floor to fellowship hall ceiling



Entrance from narthex to sanctuary is at the left between balcony piers

All Photos: Bill Hedrich, Hedrich-Blessing

NEWSPAPER PLANT AND OFFICE ON A RIVERSIDE

Miami Daily News, Inc., Miami, Florida

Weed Russell Johnson Associates
Architects-Engineers

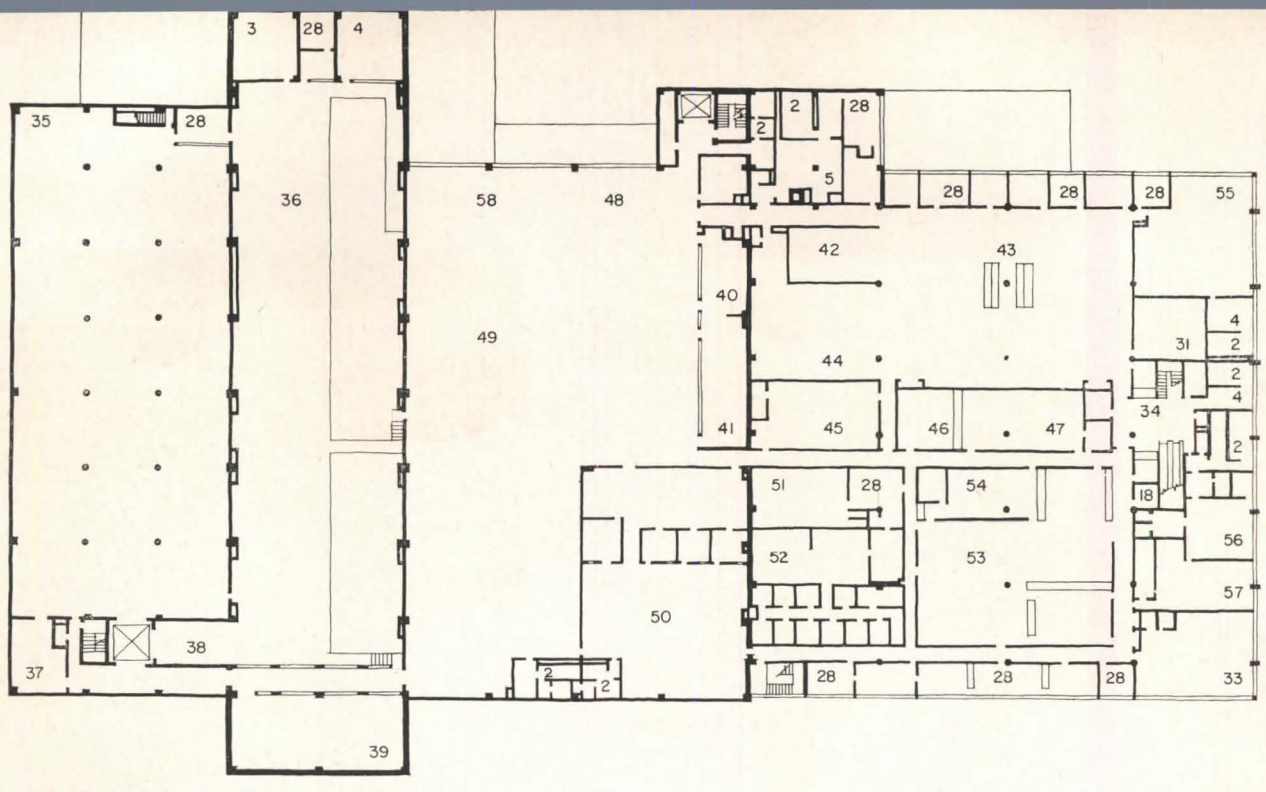
Jorgen & Schreffler, Structural Engineers

Rader & Associates, Mechanical Engineers

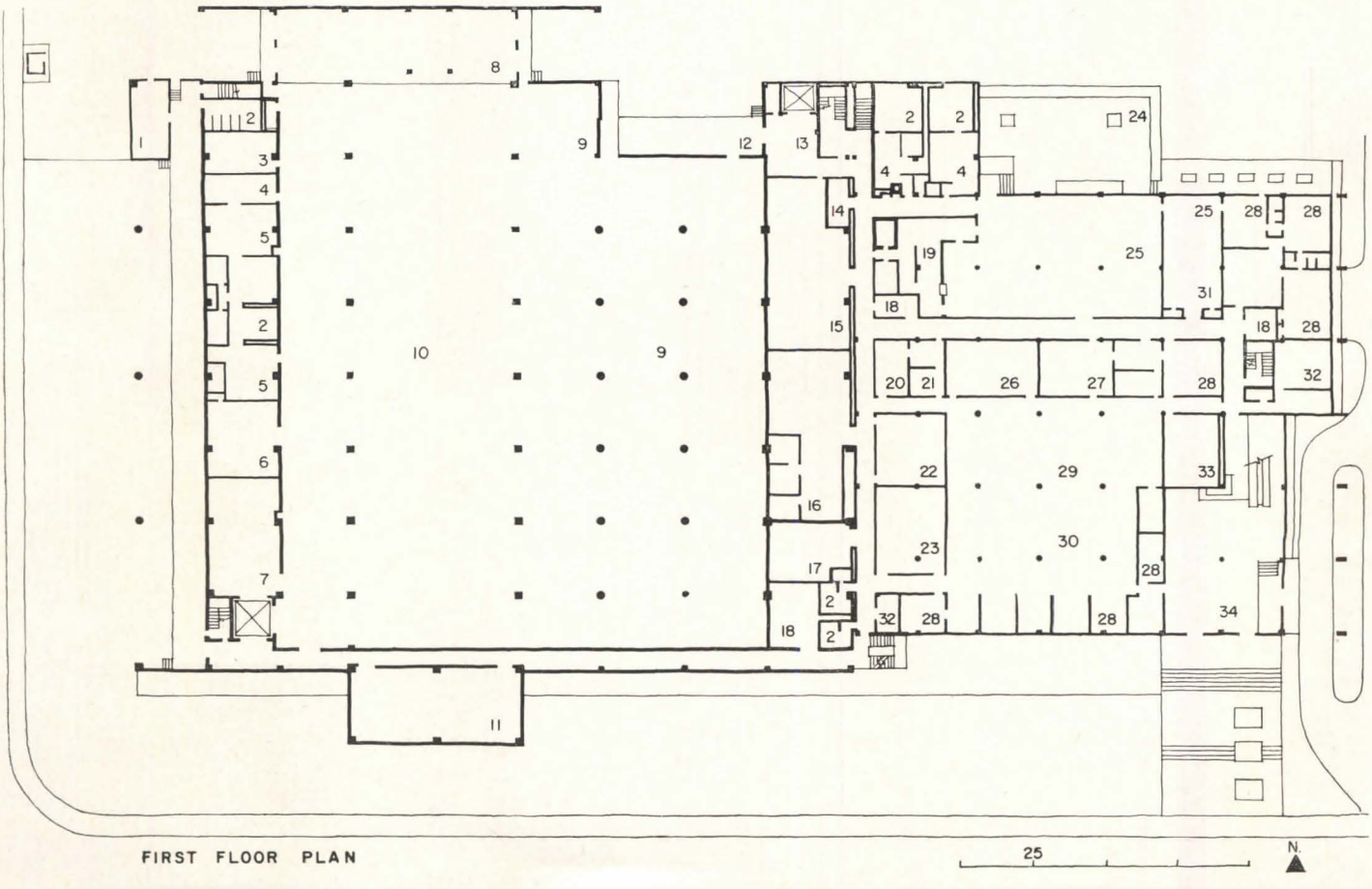
The Wagner-Smith Company
Consulting Electrical Engineers

Barbara Dorn Associates, Interior Designers

C. F. Wheeler, Builder, Inc., Contractors



SECOND FLOOR PLAN



FIRST FLOOR PLAN

1. Dispatch Office
2. Toilet
3. Ink Storage
4. Lounge
5. Locker Room
6. Electrical Shop
7. Machine Shop
8. Paper Receiving
9. Paper Storage
10. Reel Room
11. Press Panel Room
12. Receiving Dock
13. Receiving Lobby
14. Incinerator
15. Stock
16. Job Printing
17. Building Maintenance
18. Air Conditioning
19. Kitchen
20. Purchasing
21. Personnel
22. Unassigned Area
23. District Manager
24. Garden Terrace
25. Dining
26. Payroll
27. Bookkeeping
28. Office
29. Credit Office
30. Circulation Department
31. Meeting Room
32. Telephone Equipment
33. Library
34. Lobby
35. Mail Room
36. Press Room
37. Storage
38. Bridge
39. Press Control
40. Proofreading
41. Teletype
42. Promotion
43. Advertising
44. Dispatch
45. Art
46. Amusements
47. Page Office
48. Monotype
49. Composition
50. Engraving
51. Studio
52. Print Room
53. Editorial Office
54. Sports
55. Phone Room
56. Wire Photo
57. Associated Press
58. Machine Room

Newspaper Plant and Office

The building provides complete facilities for the plant and offices of the newspaper. It is located on a six-acre waterfront site on the Miami River, a few blocks from the center of the city's business district. The location was chosen, not only for its natural beauty and ample size, but also for the relative ease of receiving and shipping by truck at this site. An added value is the future possibility of moving newsprint by barge on the river.

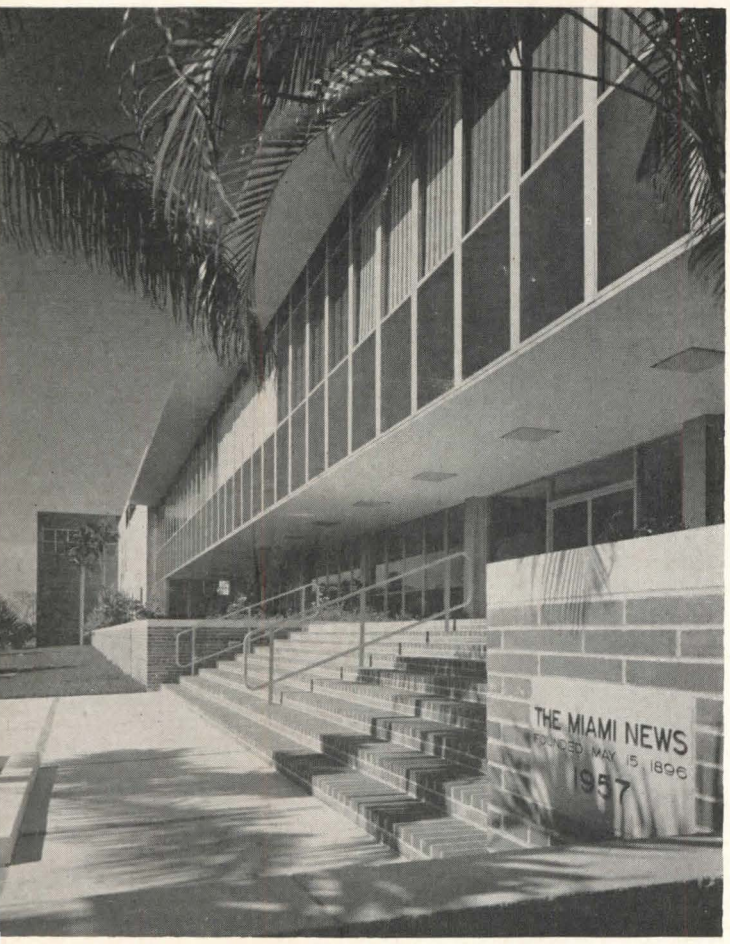
A major requirement for the building was the provision of approximately twice the usable space available in the old News Tower formerly occupied. This space requirement was predicated on the desire of the owners to have the new facilities adequate for the future publishing of a newspaper for a city of 1.5 million (about twice the present population of Miami).

Perhaps the most important problem which faced the architects was the owners' desire to have the building designed around an efficient production flow. What they wanted was a "production rhythm" within all operations of the paper and between the individual departmental operations. To achieve this, the primary functions were divided into three main types: offices, composing-stereotype area, and press-mail room area. Study of the production flow proceeded for several months as a joint architect-owner venture, before preliminary design was undertaken.

The flow patterns finally agreed upon and incorporated into the building design are generally as follows: 1. Editorial copy, photographs, and other artwork are prepared in the editorial section and related areas. Advertising copy is prepared (also sold) in the advertising section. 2. Copy is sent via overhead message conveyors to the composing room. Text stories are set into tape and run through typesetting machines. Other copy is set into type in adjoining areas. Photographs and artwork are etched into plates in the engraving section. 3. From composing and engraving, set pages are sent to stereotype area, where impressions are made on fiber mats. Molten metal is poured on these to produce curved plates for the presses. 4. Finished plates are transferred by conveyors to the two-story press room for the actual printing of the newspapers. The automatic press units feed newsprint from the reel room directly below, print the papers, cut them, and partially assemble the pages. After use, the plates are sent by conveyor to a furnace located below stereotype area. Here they are remelted and the molten metal piped back to stereotype area to be stored in pots ready for immediate reuse. 5. From the presses, the finished papers are delivered by overhead folder conveyors to the mail room. Assembly is completed, papers are automatically tied into bundles, and these are dropped in chutes to the loading dock below.

The structure of the building is reinforced concrete frame throughout except for the composing room area which has an 85-ft trussed steel roof for maximum flexibility of equipment layout. Office exteriors are finished with anodized aluminum curtain walls; production area exterior has precast concrete panels (with exposed aggregate), except large enclosed press area which is of brick for contrast

Office areas are generally open and planned for flexibility, with simple, unobtrusive materials and colors. Some areas have wood-paneled walls, others only metal railing dividers for informal separation of various spaces. The entire building is air conditioned, including the press room which has special filters to clean the ink-laden air. Lighting is generally incandescent except press room has mercury-vapor type



Newspaper Plant and Office

The Miami Daily News is an outgrowth of the Miami Metropolis, a weekly newspaper founded in 1896 (before Miami officially became a town). In 1923, James M. Cox, three-term governor of Ohio, acquired the paper and gave it the present name. At that time, he issued a statement of the newspaper's publishing creed: "A newspaper should be mindful at all times of its opportunity for service. It is no more infallible than man. It should be quick to repair injury; it should be courageous, express opinions with proper respect for the views of others, and never permit the elements of selfish purpose, untruth, or injustice to pollute its facilities of information." In order to supply the proper physical setting for the achievement of the purposes he expressed, Gov. Cox built the News Tower on Biscayne Boulevard in Miami. Here, the newspaper was published until the needs for expansion and modernization of the publishing process led to the construction of the new riverside plant and offices. Under the guidance of James M. Cox, Jr., the newspaper continues its growth and service. Of the new building, the owners say: "It's the best newspaper plant in the world. There are bigger operations, but none better or more efficient"

STORES

BUILDING TYPES STUDY 269

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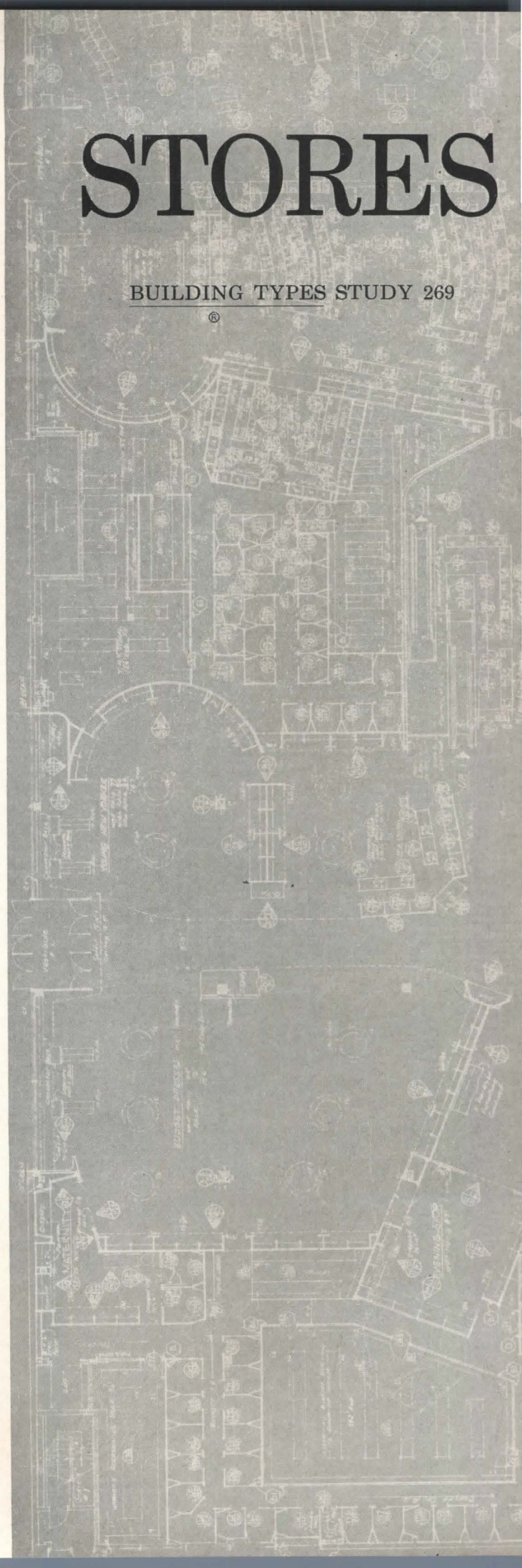


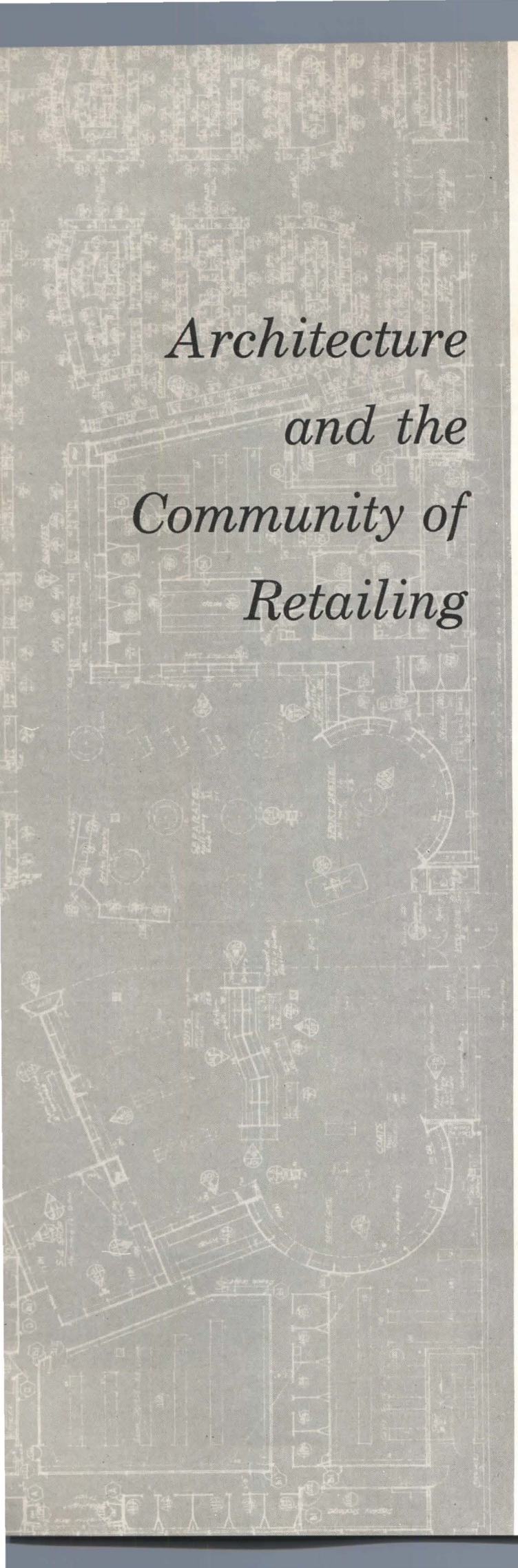
Stores Are For Merchandising

A store—the most commercial of commercial buildings—must be conceived, arranged, and designed to sell goods; and if it fails in this requirement, has no reason to exist. The fact that a store is built to make money in no wise precludes the possibility that it can also be well designed architecturally. Contrawise, one can hardly expect a perfect gem of a store design to entice visitors into buying merchandise on the basis of esthetic appeal alone. The ultimate store, as the girl who has beauty *and* brains, will combine both qualities.

Facing these facts, the architect can benefit from some knowledge of the nature of retailing, and of how merchandising principles and practices can influence—and sometimes determine—the location and design of retail establishments. Our study therefore features a nine page discussion of this interrelationship.

A group of seven stores follows the text, and each of these has something to say about either the design or operation of stores. There is a department store branch with an unusual servicing arrangement; two handsome remodeling jobs that achieve distinctive retailing atmosphere; an example of how architect and graphic designer can work together to sell goods; a proposed store in the sub-tropics with a precast concrete façade-screen; and a pair of attractive bottle shops for the thirsty!

JAMES S. HORNBECK



Architecture and the Community of Retailing

How Merchandising Principles Affect Store Design And Location —And Vice Versa

*by William T. Snaith**

THE NATURE OF RETAILING

To design a store—any kind of store—one must visualize a complex and dramatic exhibition combined with the most efficient and workmanlike of warehouses. Add to this diverse pair the knowledge that from hour to hour through any typical day both exhibit and warehouse must be raided and replenished without any obvious public dislocation of the main show. Further, for every type of retail enterprise there is a unique, appropriate solution in building design, interior arrangement, and interior design.

Retailing is a large community, and is neither static nor well-mannered. Within this community the keenest competition exists, and there are no rules to limit the amount of ingenuity, energy, or money any retailer may expend, or to govern the manner in which he may employ them.

There are two extremes of retailing in this community. First, the retailers who sell merchandise by projecting their own personalities; second, the retailers who, in effect, act as distributors of manufacturers' goods and personalities. This is the basic cleavage, and every type in between is a shading of one extreme or the other. The extreme example of the store that sells its own personality is the specialty shop (Tiffany, Sulka). Here, fashion is sold with or without the maker's label—often under the shop's own label. The other extreme is the supermarket shelf displaying dry groceries and drugs,

*Architect Snaith is president of the Raymond Loewy Corporation, and qualifies—through years of study and experience—as an expert in the field of merchandising as it influences store design. In this capacity he has served as a consultant to Lord & Taylor, Stewart's, Foley's, Rich's, Filene's, J. L. Hudson, and many others.

The total impression of fashion store: air of spaciousness; elegant fixtures; off-white, gold, sepia, bronze, sand carpet, pink marble. The J. W. Robinson Store, Beverly Hills, Cal.

Julius Shulman

where items are selected on the basis of the manufacturer's name and reputation. Such shelves are simply convenient pick-up points for wanted or convenience goods. Approximately 200 billion, 2 million dollars worth of goods are sold yearly in the United States. The solutions for receiving, handling, housing, and displaying this vast quantity of merchandise cannot follow similar principles in each case; the *character* of the particular store must be a basic design determinant.

Currently, the problem of store design is complicated by a very real revolution in total distribution. There is increasingly less distinction in merchandise itself, while the desire and means to acquire goods is growing. People want more of everything; and they want to derive status from their possessions. As retailing reaches the point where there are many places to buy like goods; when advertising encounters increasing difficulty in conveying impressions of differences in merchandise; then the store itself becomes a potent factor for buying in one place rather than another. The skill of a designer is demonstrated in the successful interpretation of a store's special character. It is not demonstrated in an esthetic architectural statement, although this possibility is not ruled out.

An interesting peculiarity of current retailing: two kinds of stores at the extreme of selling for price—the supermarket and the discount house—are being forced to explore the potential of establishing personality and offering some service. Price alone is no longer the compelling incentive it once was; the competitive advantage of these stores is waning.

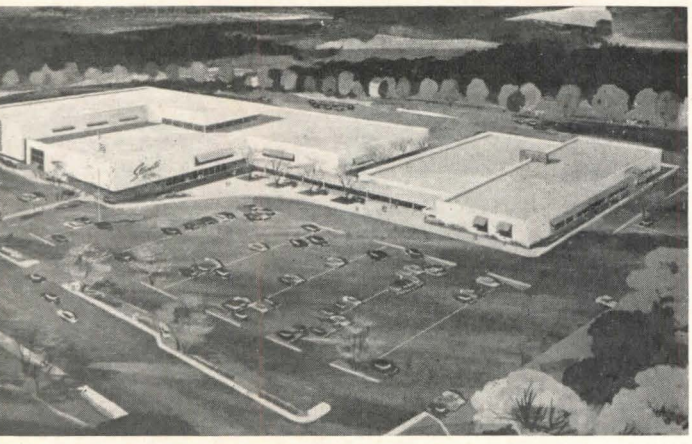
We shall discuss the effect of a building's design on a retail enterprise. Briefly, these are the main factors involved: geographical location; use of site; interior relationships of operating elements; type of merchandise; exterior and interior atmosphere which projects the store's character. For clarity, the subject will be confined to new buildings. Although modernization is a vast field, the limitations of an existing plant automatically control planning, and improvisation is employed rather than principles of store planning in their most ideal application.

GEOGRAPHICAL LOCATION

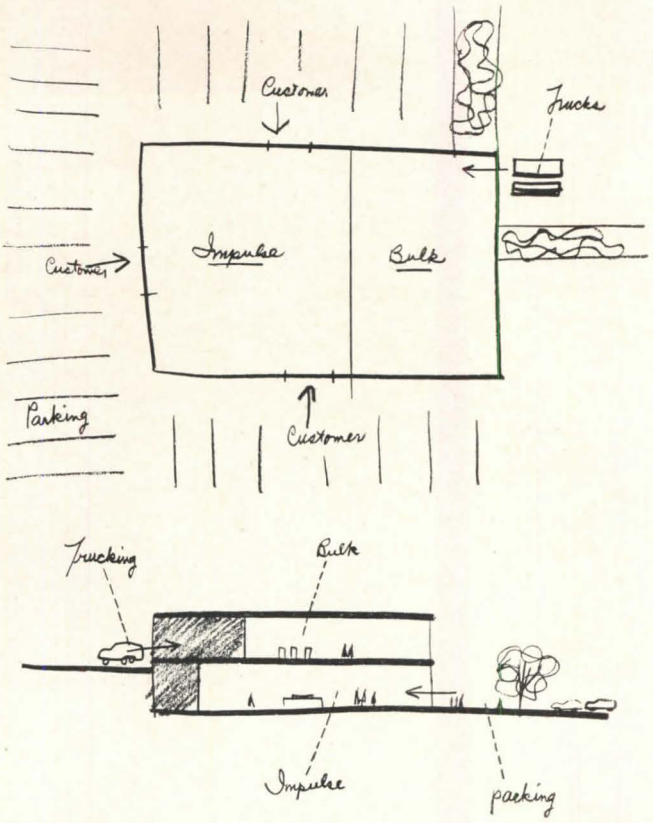
Most new retail building is suburban and of two kinds: branch stores in developing residential communities, or units in shopping centers. As a planning exercise, let us analyze the branch unit of a downtown department store, for in no other enterprise are all the design skills so rigorously demanded or so directly measured against profit. New downtown stores are rare, and their locations depend more on possibility than on choice.

In order to appreciate the problem of locating a branch, it is necessary to understand the nature and strengths of a complete department store downtown. This powerful retailing instrument: 1, is located in the major traffic area; 2, is important in the downtown community; 3, is a place in which to look and learn and buy rather than one where only convenience goods are available; 4, offers the widest assortment of merchandise under one roof of any type of retailing outlet; 5, has resources and organization that enable it to buy better than other types

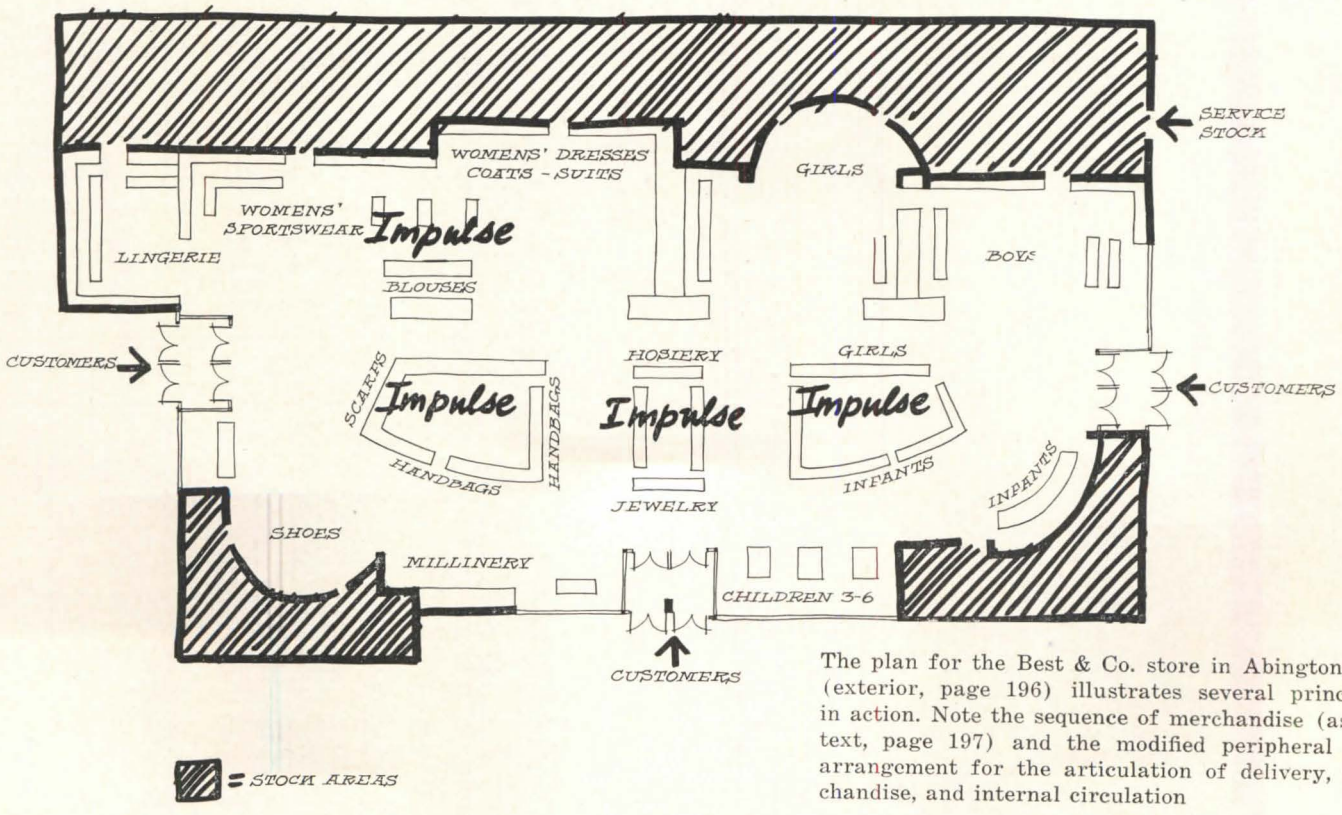
Weitner Aerophoto Service



Two examples of two-level parking. At top, parking adjacent three separate entrances; bottom, the split-level plan arranged so the strips in front are filled first, giving the center an active look. Overflow parking in both cases is at the rear. Top: Lord & Taylor, Milburn, New Jersey. Bottom: Stewart's, Baltimore, Md.



Sketches to show proper interrelationship of trucking, bulk and impulse merchandise, entrances, and parking. The plan is for a single level arrangement; the section relates these elements in split-level fashion for a sloping plot or one that can be adapted to a two-level scheme



The plan for the Best & Co. store in Abington, Pa. (exterior, page 196) illustrates several principles in action. Note the sequence of merchandise (as per text, page 197) and the modified peripheral plan arrangement for the articulation of delivery, merchandise, and internal circulation

of retail stores; 6, has prestige in name and manner of selling; 7, represents community interest beyond the sale of goods; 8, offers service, deliveries, charge accounts, guarantees, returns, repairs, food, facilities, etc.; 9, arbitrates fashion, insuring taste and acceptance for its customers; 10, is a central base for marketing tests; 11, is the focal point for advertising and public relations interpreting the store's special character. This is the highly developed organism which now seeks new outlets to serve its customers closer to home.

The leading department store in a given city runs the greatest chance of injuring its downtown business by branches; the second and third stores have less to fear. But location choice is based—emphatically—on analyzing the position of the proposed store and downtown store in relation to what it considers its total potential. There are two possible locations: close to the city where the branch taps existing customers, or further out where there are new customers. A branch cannot go too far from the main store because the store's range of influence is limited by custom and knowledge. Records of charge accounts and deliveries tell a store where it is doing business. Branch locations are sought:

1. In areas where people are not being served.
2. Where defense against competition is needed.
3. In a new area which is not being served.
4. In a satellite town in case the store's reputation will be able to carry across a wide gap. Bloomingdale's is successful in Stamford; L. S. Ayres of Indianapolis does well in Lafayette; Rich's of Atlanta prospers in Knoxville.

Other factors are physical. Consider accessibility. Although thousands of cars may pass every hour, high speed, limited access roads hardly provide the kind of traffic that will stop to shop. The rules of retailing never change: can customers get to the store? can they stop? can they see the store? Besides accessibility, land must be available in the right place and priced fairly. Obviously, zoning laws must be favorable or changeable.

USE OF THE SITE

Accessibility from the road is the first factor in deciding how to use the site. Next, topography will influence the kind of building, the number of floors, the levels of parking. These will, in turn, determine the kinds of merchandise within the store. Contrary to every traditional architectural dictum that building design is conditioned by the land, no store site must be able to dictate a bad positioning of the building in terms of retailing. Rather, the topography might be changed to achieve a proper entrance or to locate services to work with inside operation. If the site cannot be accommodated to store requirements it must be rejected, however beautiful for esthetic reasons.

PARKING is a prime factor in site use. The store must decide whether it is better to show extensive parking or to show the store itself. The accepted size for parking facilities is based on shopping population. We allow 4 sq ft of parking to one of store. However, the distribution of required area into lots or into a front or rear plaza depends upon the impression the store wants to convey. I like a large parking area less than lots distributed about the store, since a lot is filled only at peak hours. An empty lot gives a not-so-busy impression, which is not good.

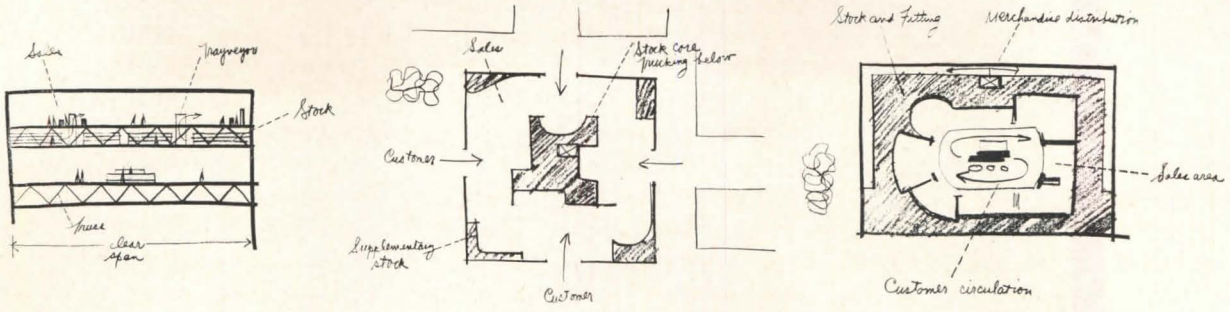
PLACEMENT OF THE BUILDING. There is no absolute front for a branch store. Fronts are regarded as facing on streets, or traffic. Instead, consider a branch store as having two "fronts:" one that a customer sees in passing or arriving, the other he sees when he actually enters. Topography may or may not dictate the location of auxiliary services, but such services must back up into merchandise within the store. When one knows where the trucks arrive, he has automatically determined the location of certain departments. These are: bulk goods (furniture, rugs, appliances, etc.); and fragile goods (china, glass, lamps, etc.) which ask for the least amount of handling.

Note that the conventional ideas of locating a building on a site cannot always be applied to stores, for when the truck approach is determined, the location of certain merchandise also is. If, for other reasons, merchandise location is determined first, then there is an enforced location for trucking. We more often create sites than accommodate to them; not arbitrarily, but for very sound merchandising reasons. The designer must determine where the greatest number of customers will arrive, and will then know the level and entrance at which to place impulse merchandise—as we will see later.

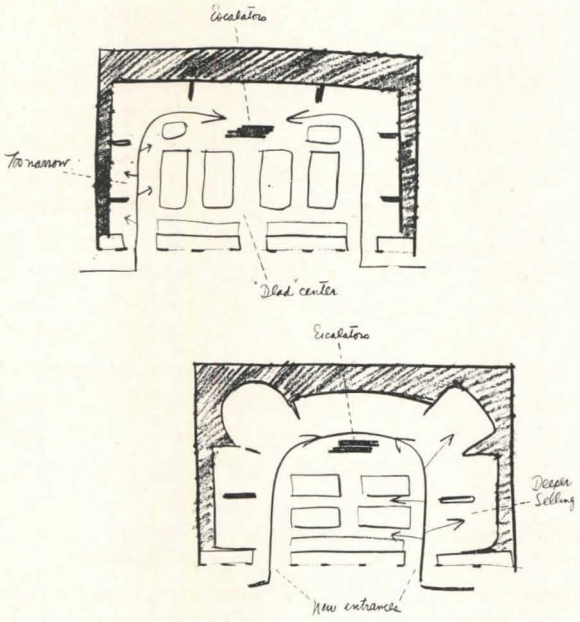
SPACE PLANNING

As acutal drawing begins, two major principles are carried in tandem: how the building operates most efficiently, and how it addresses itself to the customer. How does a store address a customer? It conveys an impression of a fashion store (Lord & Taylor), an institution (Lazarus, Columbus), or a store with maximum stock (Gimbels, New York). Many of the great department stores try to do all three, but a single impression usually prevails. We can explain this only by explaining the retailer himself. He is an individualist; he knows how to sell (and does so almost automatically) in one merchandising category better than others, or in one price range, or by one promotional device. The store must address its particular customer, for no matter how intelligent the plan, how appealing the design, this retailer will be unable to do *his* kind of business without *his* kind of store.

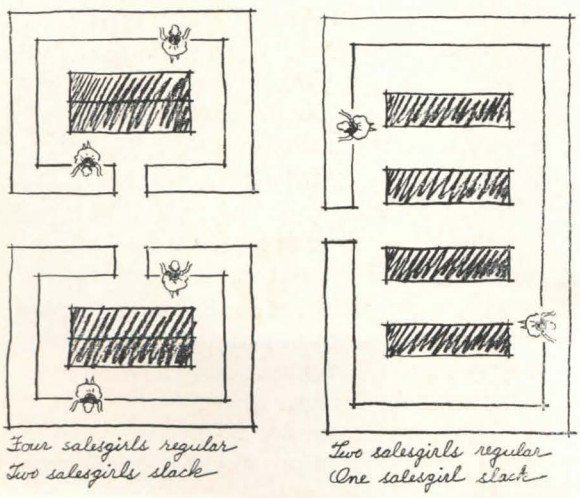
Next, a store addresses itself to the customer by the manner in which it presents merchandise; and finally, by the sequence of its merchandise.



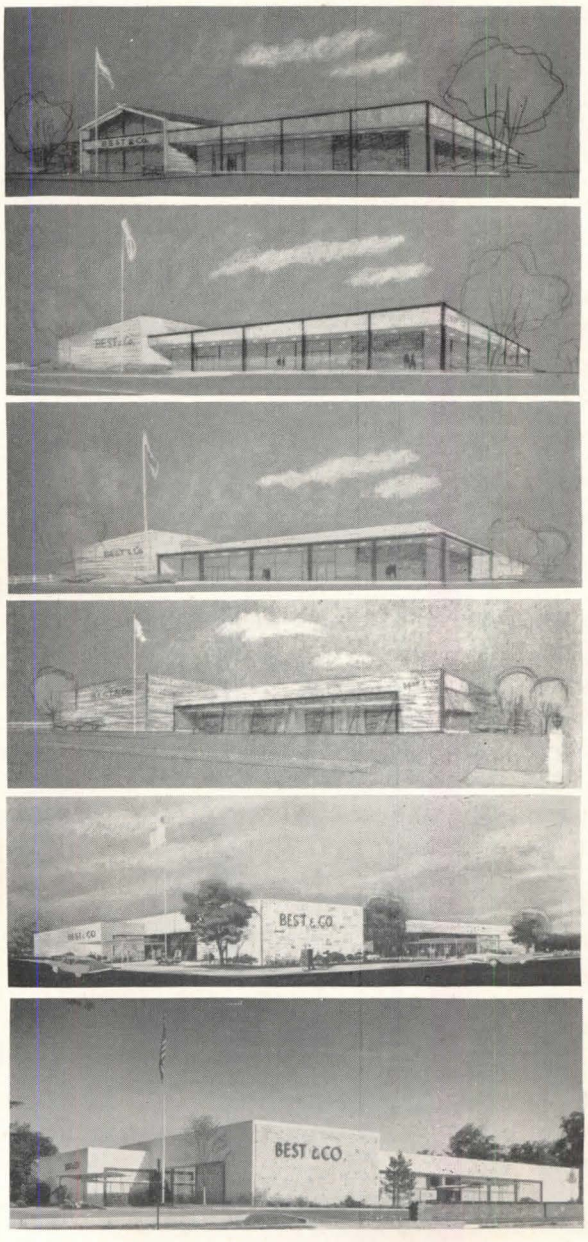
The three sketches above illustrate the three basic arrangements of service and circulation. At left, the sandwich scheme; center, the internal service core; right, the peripheral service belt with central customer circulation. See text at right



Above, an unfortunate (top) and improved (bottom) diagram-plan for the placement of entrances and their working relationship with internal circulation, as well as the size and shape of selling areas in conjunction with both



"Station selling consists of an island; customer outside, salesgirl inside. Two islands mean two girls—or more often four, since two sides must be watched and served." One island performs for two in the sketch above



Gottscho-Schleisner

A series of sketches showing exterior design development for Best & Co. in Abington, Pa. Early ideas of peaked roof and overhangs were discarded in favor of more economical canvas marquee shelters. Fieldstone ties in with the domestic architecture typical of this predominantly residential section

ORDER OF MERCHANDISE. Merchandise has a descending order of importance according to frequency of sale and relationship to total impression. First is impulse merchandise, that which is in constant demand and which attracts customers simply by visual or tactile contact. In a department store the items most frequently in demand are smallwares (gift items) or fashion accessories (jewelry, handbags, cosmetics). Next, in terms of placement, is merchandise which gives the impression the store wants to create. Without exception, there is a relationship between this and the impulse merchandise. Here are accessories and fashion apparel augmenting the impulse items (millinery, shoes, sportswear, others). In descending order is the traditional or expected merchandise of a department store, such as stationery, men's furnishing, notions, etc., which rounds out the impression of a total department store. The retailer may want to capitalize on two impressions (fashion and institutional), and if so, he can create two levels, giving each floor its own character. (First floor fashion—Rich's, Knoxville; institutional impression—Gimbel's first floor.)

There is also an order of merchandise imposed by operation. Handling goods spells the difference between an expensive and an inexpensive operation. Reducing the number of handlings increases profit. Most expensive to handle is bulk or fragile merchandise—a determinant in locating delivery approaches, as mentioned earlier.

The third decisive factor is the very nature of a branch store, which is a reduced representation of the downtown store. Thus, if the city store has built a reputation for housewares, there must be a prominent housewares department in the branch, for customers will expect it. There cannot be a difference between downtown store and branch—compression must not destroy essential character. Nor can the planner reproduce a miniature downtown store based on percentages, for some departments would be ridiculously small. Here, statistical analyses break down, and local demands must govern.

If you can't have everything: 1, cut out merchandise having low frequency of sales and low profitability; 2, cut out departments the community will not support, or which—for geographical reasons—are difficult or expensive to stock.

SERVICES comprise: 1, stock to back up a department; 2, sale consummation (taking cash, writing charges, keeping records, packing, delivery); 3, administration; 4, sales personnel. Every store devotes from 25 to 40 per cent of its space, including stairs, boiler room, etc., to such functions.

The size and shape of a department may reduce operating costs and enable the store to offer its best service with fewer sales persons—a major expense item. Station selling consists of an island; customer outside, salesgirl inside. Two islands mean two girls —or more often four, since two sides must be watched and served. If the designer wants to cut personnel by eliminating islands, then he must note that over-elongated shapes, or those that turn (making it optically impossible for a single person to control an area) are undesirable.

CIRCULATION of two types, horizontal and vertical, must perform for both service and customer. Though one elevator penthouse for both would be cheaper, we never hesitate to build two, since a better functional relationship outweighs installation cost.

There are three ways to locate service areas in relation to circulation: 1, sandwich service; 2, internal service; and 3, peripheral service. I know of only one example of the "sandwich" service floor—the May Co. in St. Louis. Of the internal service type, the most outstanding is the J. L. Hudson branch at Northland.

All things considered, the peripheral arrangement is best. It gives separate shop distinction to each department and offers the visual impression of a total floor. The central service block offers only separation by shop, while the peripheral plan allows both. No one has yet built a sandwich floor arrangement that achieves both objectives. The peripheral plan produces the following situation: customer circulation is centralized and also spreads out, while service circulation comes from outside in, and the two types never cross. With circulation decided, site use is reconsidered.

ENTRANCES are located to provide maximum exposure of high impulse merchandise, supported by sufficient surrounding area so departments function well; and proper relationship to most of the parking area.

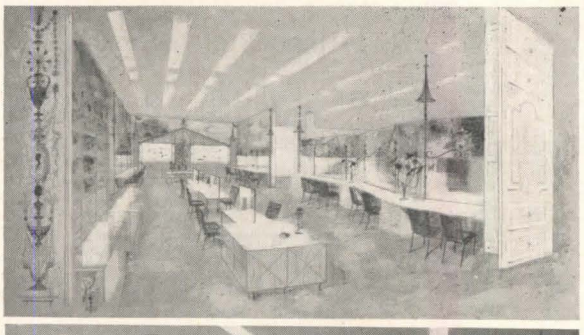
By presenting considerations in the wrong order—site before space planning—we see clearly the essential difference in the approach of a store planner and the traditional architectural one. The building has not been located on the site until inside space arrangement has been crystallized.

ALLOCATION OF DEPARTMENTS. Two factors affect department allocation: 1, size; and 2, relationship with other departments on the basis of goods, character, and service. Certain departments might be related because of use association, total impact impression, or price association.

In any consideration of space allocation the designer must also recognize that there are seasonal peaks in all selling. 20 per cent of total volume is done in December. So, in the allocation and association of departments one must consider how they complement one another during peak season. Coats and suits and sportswear departments must be designed so they can capitalize on the sale of bathing suits and active sportswear when the weather changes. Toys and summer furniture departments are usually related, because both are bulky stocks, highly seasonal in appeal, and require comparable space.

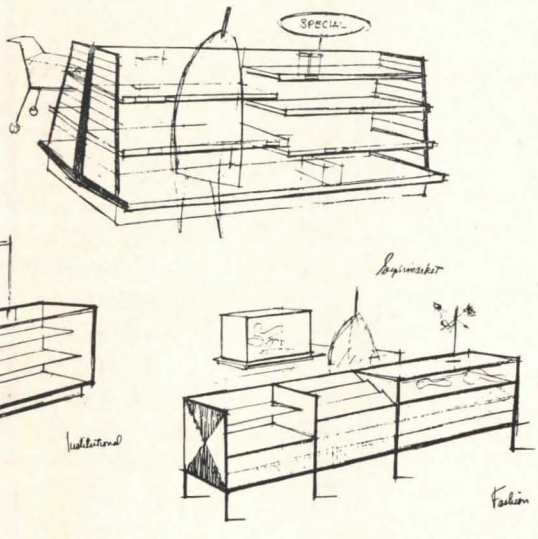
Gard

In a shopping center, the branch department store should stand apart visually. Above, Halle Bros. in Westgate, Ohio, is made distinctive by peaked roof, white brick, and decorative black iron medallion

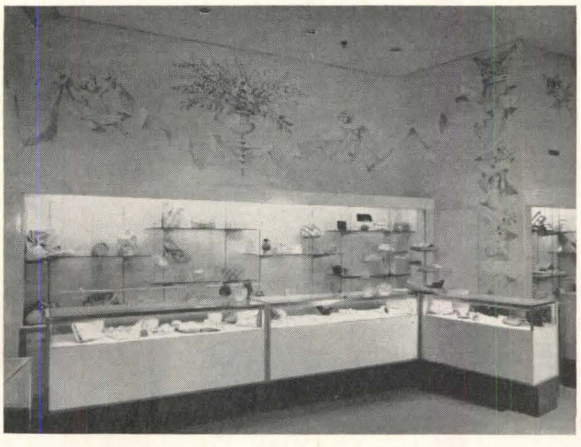


Gottscho-Schleisner

Above, the designer's rendering for a department and a photo of the department. The object is to project the total store image or character to the customer; the kind of merchandise, the way it is sold, the type of customer, the store itself in relation to others handling like merchandise



"In fixture design we must seek some comfortable median between turning the store into a supermarket (maximum self-service) or a salon, where the customer is individually helped at every stage of the sale." Store character furnishes the choice



Gottscho-Schleisner

Below, the plain background; *immediate right,* two examples of the decorated background. Snaith says, "Presentation, setting, background lend value and glamour to stock; enhance it, interpret its taste level, say something positive about it. Decoration has proved to be the best possible way to stimulate sales of all kinds of merchandise . . . whether or not the goods themselves have high fashion appeal."

Julius Shulman

EXTERIOR CHARACTER

In wrapping a building around the plan, we must consider esthetics, of course, but we must also be ruled by budget and cost of maintenance. A store is the most commercial of commercial buildings, and building cost appears as "cost of operation" under the heading "occupancy." Maintenance cost appears in the same column of the same ledger.

There are implied operational hazards in certain treatments. Unfortunately, the glass wall is an enemy of merchandising. It is virtually impossible to display against it—light cannot be controlled. The glass wall imposes a costly maintenance factor, for the outside view changes constantly according to what is happening inside. Yet we like glass areas, and therefore use them where they penalize us least. Daylight does accent interior lighting; breaks the monotony of masonry expanses. For these reasons, certain departments can be located to provide an interesting façade. The glass wall is appropriate for restaurant, employe, and office areas. Only two types of sales operations can live under glass: those wherein the merchandise itself has decorative value, as gifts; or those not requiring exposed stock, as a salon, which sells only by atmosphere and total image.

The exterior should project several images: 1, size (because the department store should say, visually, it is the strongest purveyor of goods in the area) ; 2, permanence and institutionality (to instill a sense of trust and dependability) ; 3, definition from its neighbors (restrained if nearby buildings are flashy, etc.) ; 4, the nature of merchandise and customer (where one finds ideas, stimulation, taste) ; 5, store character (high fashion, graceful, fine in scale—institutional, solid, no nonsense) ; 6, regional or community character. Unless the store reflects the community, it may never get built. Exterior character as much as store reputation will make a design acceptable locally.

INTERIOR CHARACTER

When we come to interior treatment, we emphasize —by every device—the projection of the total store image. That character or image, as we have seen, is a composite of the store's merchandise, its way of doing business, its customer, its position in relation to all other merchants handling like merchandise.

Inside the store the projection of this image is accomplished through display. "Display" in this sense has the broad meaning of showing merchandise against controlled backgrounds that enhance and facilitate selling—not narrowed to mean the art of dressing windows, draping apparel on mannequins, or arranging counter top eye-catchers.

FIXTURES are the basis of display, and their location, type, and design establishes character and enables the store to operate within its own peculiar method of merchandising.

INSIDE TIPS

1. Never put a fur department near a stairway or escalator or entrance. The annual loss from stolen goods is calculated and estimated and entered as a cost of operation.

2. Place impulse items at the foot of "down" electric stairs. With his purchase completed upstairs, the captive customer's vision is now forced downward, and she is liable to buy impulse merchandise on the way out.

3. A restaurant is almost mandatory in a branch store. In suburban communities stores virtually empty out at lunch time. If you don't feed a customer on the premises you lose her for the day. She'll get into the bad habit of shopping around the neighborhood for the balance of the afternoon.

4. Men are not repelled by a "feminine" color scheme in a store: in branch stores men shop with women; downtown, they shop alone.

5. Beauty parlors in branch stores usually are not very profitable. The amount of revenue produced by the beauty shop is less than the revenue produced by using the space for other purposes. They take up too much space in a situation where space is limited.

Labor is a store's most expensive commodity; retailing has been described as the last of the manual industries. If we plan fixtures to reduce the amount of sales help we save in operation cost, but this reduction automatically lowers the level of presentation. In fixture design we must seek some comfortable median between turning the store into a supermarket (maximum self-selection and self-service) and a salon where the customer is individually helped at every stage of the sale. Personnel cost pushes up merchandise price, and there is a point somewhere here of no return.

In general, a floor comprises three major sections; a central section of islands and aisles, plus two sides. Smallwares or impulse items are in the central section, in which open fixtures—counter height—are combined to make islands. The sides carry merchandise requiring wall fixtures. Since our plan example is based on a peripheral stock arrangement, these departments back up into stock. We have now a picture of a store wherein the first impression is of highly visible impulse items, a long and wide general view of full stock, and inviting glimpses around the periphery of the floor of entrances to shops having individual, appropriate character.

DECORATION. Fifteen years ago, many merchants resisted the idea of a decorated, dramatically interpreted background for goods. They felt a background assertive enough to give a positive impression of fashion would overpower the merchandise. On the contrary, it has proved to be the best possible way to stimulate sales of all kinds of merchandise; and this is true whether or not the goods have high fashion appeal. Merchandise itself, item by item, is difficult to evaluate. Even expert buyers find it virtually impossible to distinguish between two unknown items (with tags removed) priced at 7.95 and 12.95!

Presentation, setting, background lend value and glamour to stock; enhance it, interpret its taste lev-

Gottscho-Schleisner

The electric stairway as a major dramatic feature. In Gimbel's Valley Stream branch, marble, glass, and special lighting are used to that end. Note the illuminated store directory

el, say something positive about it. Today, "fashion" is the most potent incentive to buy, and in a branch store fashion is the impression desired. Background can also say that merchandise is of unassailable quality, or is a good bargain, or that it's the newest. Skirts in a sportswear department are hung together—12 to the foot—and differences cannot be detected. Therefore, surroundings, fixtures, and decoration must create a feeling of quality that reassures the customer that anything in the department must be good.

Graphics can establish character directly and at little cost. Upper wall areas, valances, counter or rack ends, all provide surfaces for such treatments. Color is one of the most consciously registered indications of style, and can be introduced in graphic variations. Stained woods in color, synthetics, fabrics, paint, plaster, mirror—all can serve to introduce both color and textural change of pace.

CEILING HEIGHTS are of course determined by the size of the visible space; the larger the space the higher the ceiling—within reason. But since we want a maximum of flexibility, fixtures form interior walls. They often do not reach the ceiling, so we can save building cost by using a lower ceiling than the total space would seem to indicate. Upper air space use is affected by the optical necessities of signs, and by devices indicating shop groupings. Case top screens and dividers can indicate areas and provide additional space for decoration.

Attempts to create a sense of height by varying ceiling levels may be imperative in modernization work, but in new buildings are inadvisable. When ceilings are dropped, flexibility suffers.

LIGHTING is an indispensable tool of modern merchandising. Without up-to-date lighting and air conditioning, there could be no peripheral plan. Fluorescent lighting alone tends to flatten out merchandise and render it in monotonous sameness. Therefore use fluorescent to provide an overall light level, and then add the expensive, heat producing—but irreplacable—incandescent light for visual kicks. A grid pattern which can be varied endlessly characterized the store ceiling—which incorporates lighting, air conditioning outlets, and sprinklers. Sometimes the grid is a reflected pattern of the plan below; often it is merely a pleasing geometric pattern.

ELECTRIC STAIRWAYS handle vertical traffic best, and their treatment is an important design consideration. Since they cannot be construed as a merchandising device, they should be handled as a major decorative and dramatic feature. This can be accomplished by means of architectural excitement, color, expensive materials, lighting, etc. The result should have a "look" of permanence, not intransigence.

THE SMALL SHOP

Many principles of branch store design apply to small shop assignments. Since space is limited and so is merchandise, space allocation is enormously simplified. In small shop design it is important to follow the rule of using the exterior to make the impact of store character on the customer; and to make the interior give the best possible impression of the capacity of that shop to contain, display, and sell merchandise. This calls for a shift in approach from exterior to interior. In the branch store this is done *within the store* in handling individual departments where the impact is made at the entrance to a shop or department, not through a window.

Thus, in designing the small shop exterior, adapt the merchandise *display* to the outside; adapt the interior plan and design to *merchandising* needs.

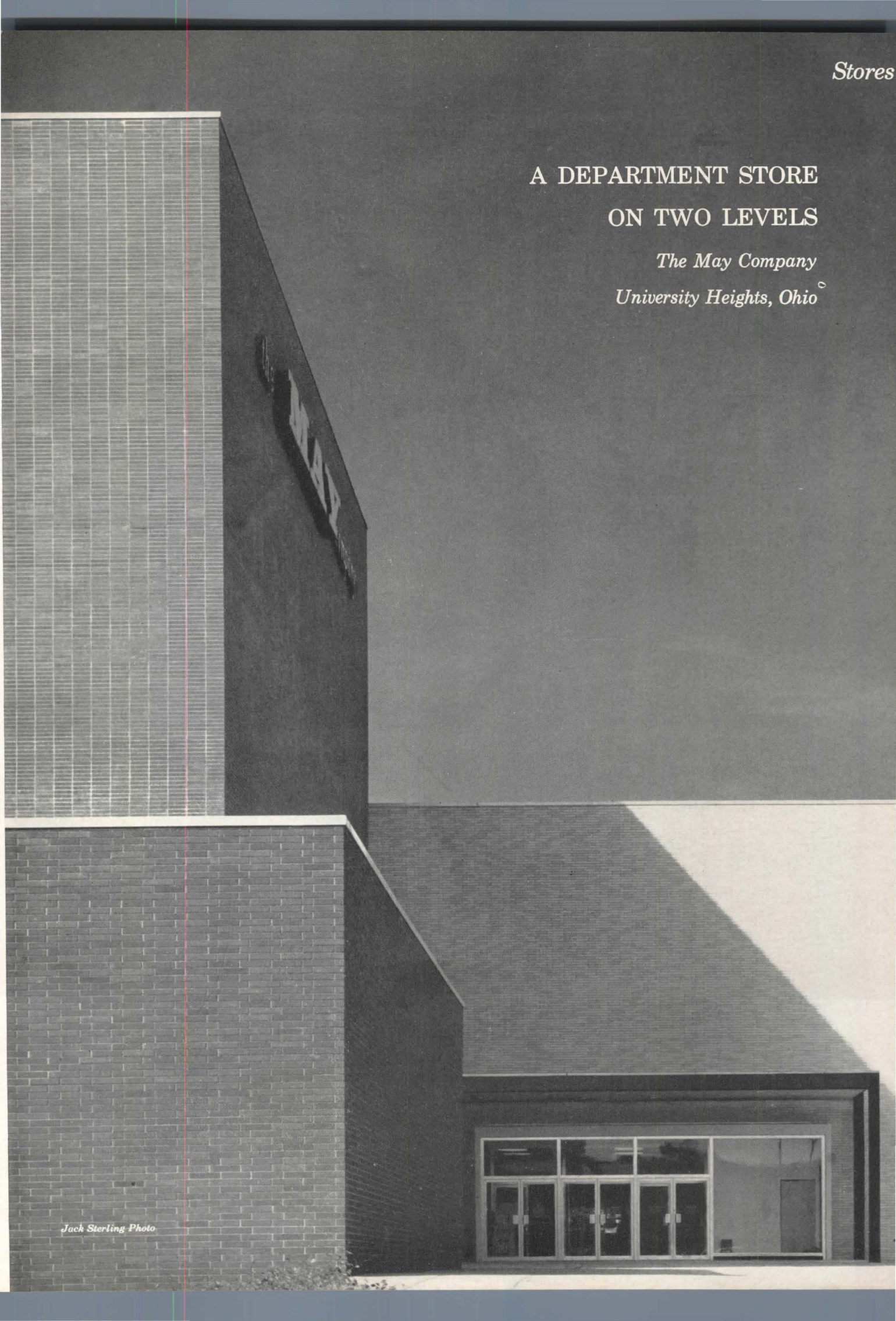
Julius Shulman

The total image of fashion store; J. W. Robinson, Beverly Hills, Cal.,

A DEPARTMENT STORE ON TWO LEVELS

The May Company

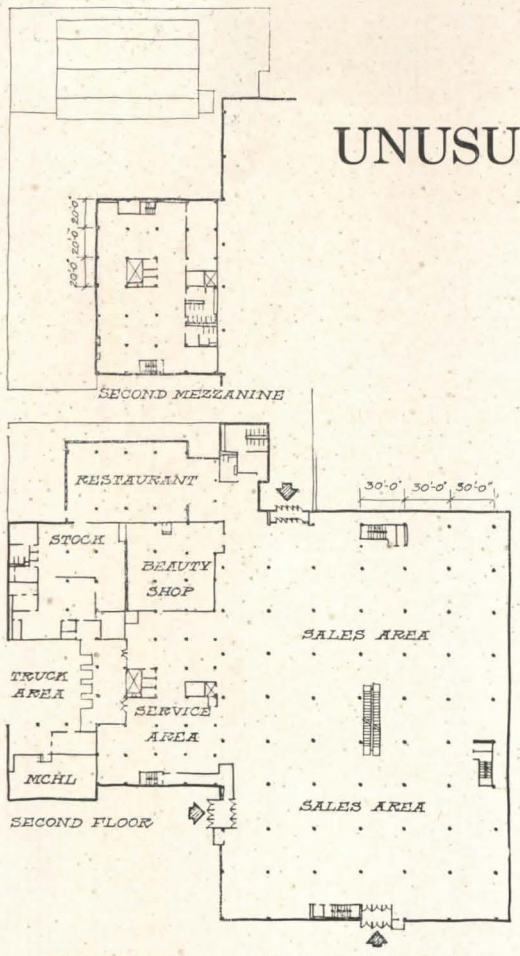
University Heights, Ohio



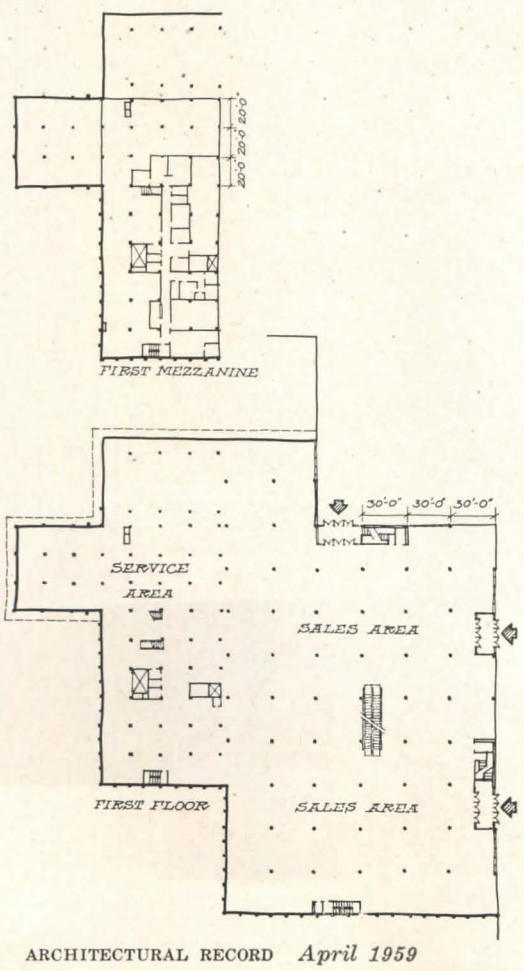
Jack Sterling Photo

UNUSUAL SERVICING ARRANGEMENT

The May Company, University Heights, Ohio. Victor Gruen Associates, Architects; Jack Alan Bialosky, Associate Architect; Sam W. Emerson Company, General Contractors; Swanson Associates, Sales Area Interiors.



All photos by Jack Sterling



A separated service tower, containing two floors to every one in the sales area, is the operational and architectural feature of this branch store. It is a modification of the central service core idea that was used in Northland. But here, in a store with a considerably smaller floor area, it was felt that the central core would create too much of a visual barrier in the retailing space; hence it was moved to one end of the rectangular sales block.

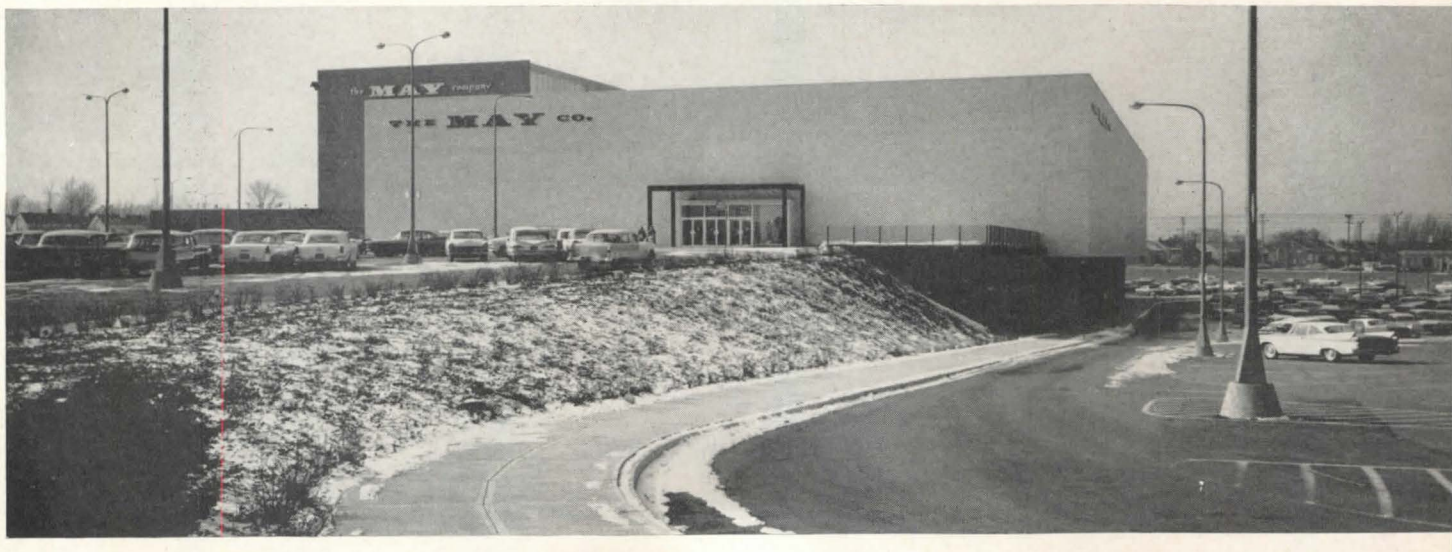
Within the tower itself, the floors aligning with the sales floors are used for direct servicing and goods handling, while intermediate floors are used for storage or non-selling activities such as alteration and busheling rooms, employes' restaurant, lounge, offices, etc. Air handling equipment is also located on the in-between levels, making possible a great deal of flexibility in the development of the air conditioning system. Boilers and compressors are in a penthouse, freeing additional tower space for essential store functions.

To reduce the floor-to-floor heights in the sales block, that unit was developed as a flat slab structure with columns at 30 ft on centers; while the service tower was developed in steel frame—with minimum column spacing—in order to cut the tower floor heights to an absolute minimum.

The site had a natural elevation differential of 25 ft from a V-shaped lower area near the highway intersection to the rear. The building is placed well back on the plot so the lower level is served by an extensive parking area, which in turn is surmounted on three sides by higher-level parking for the upper floor. The actual result is a store with two first floors, plus great flexibility in developing traffic flow.


THE MAY CO.
ONE
WAY
DO NOT
ENTER


THE MAY CO.

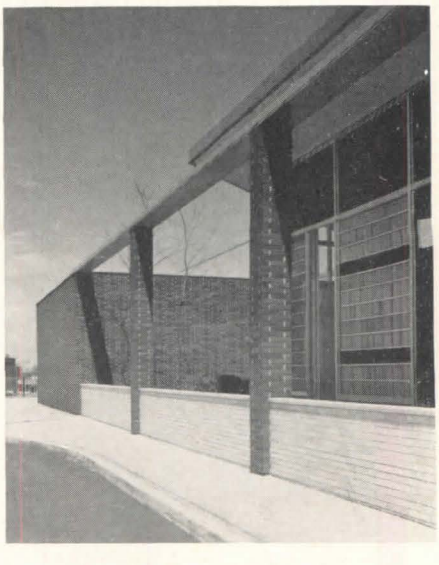

THE MAY CO.


THE MAY CO.

The May Company

Due to the scarcity of high class dining places in the area, the restaurant—designed by architect Gruen—was given special consideration. It was developed as a semi-independent structure adjacent to a garden within a high wall, which contains as its visual focus a year-around decorative fountain designed by Richard H. Jennings.

By separating the restaurant structure and giving it independent entrance, it became feasible to operate it on a schedule different from the normal store pattern. This means that the owners can—if they wish—develop a seven-days-a-week dinner business



TOWN HOUSE REMODELED INTO ATTRACTIVE GIFT SHOP

The 20th Century Shop, New Orleans, La. Burk, Le Breton and Lamantia, Architects; Barley, Inc., Civil Engineers and General Contractors.

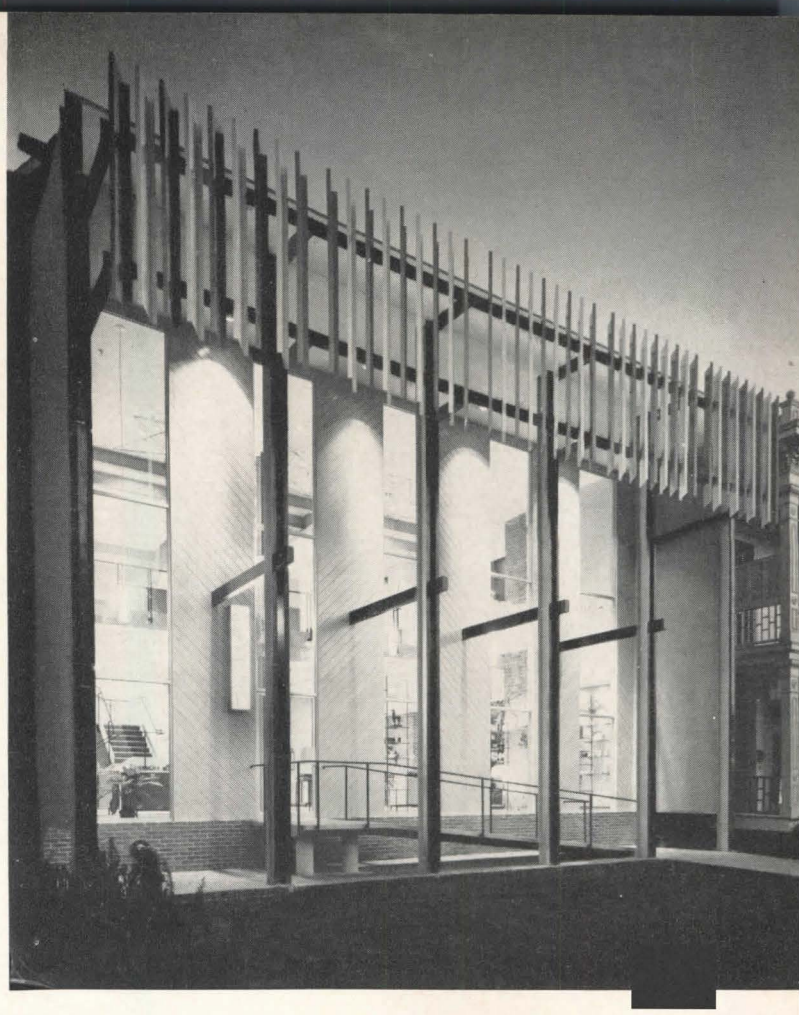
This distinguished remodeling—winner of a first honor award at the Eighth Annual Conference of the Gulf States Region, A.I.A., succeeds in creating within the shell of an old town house a gift shop with an appealing character both contemporary and nostalgic.

In describing the process and result, architect James Lamantia says, "The problem was the complete transformation of an 1885 double town house into a shop for small gifts of high quality. The proximity of this house to its neighbors dictated the conditions that a similar scale should be preserved and that materials should be harmonious.

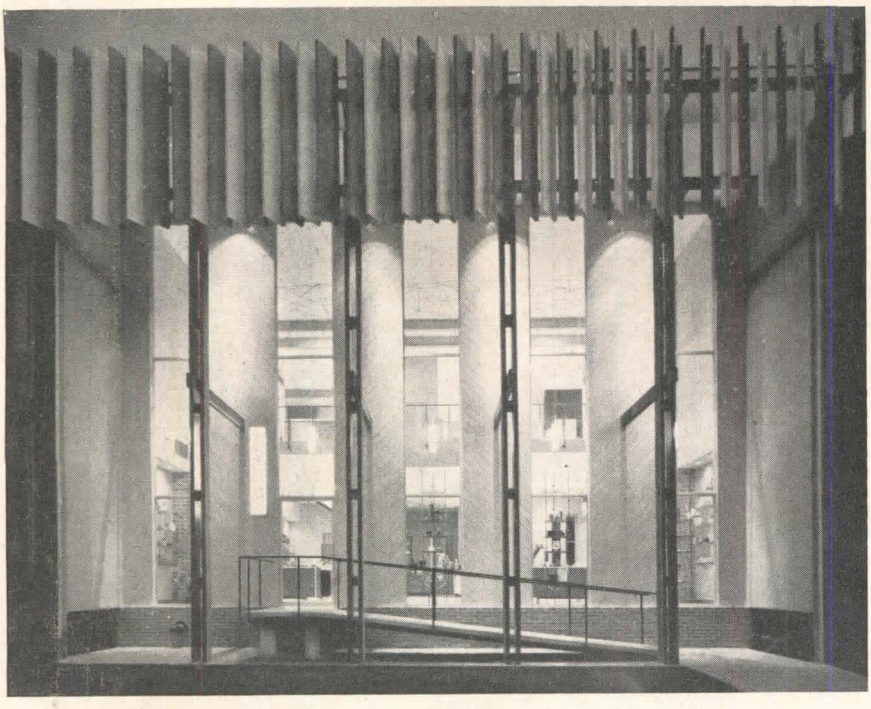
"The basic dimensions were therefore held intact—even to the alternate rhythm of vertical openings and blank wall area in the façade—although the building was virtually rebuilt, to the extent that even the outer skin was replaced.

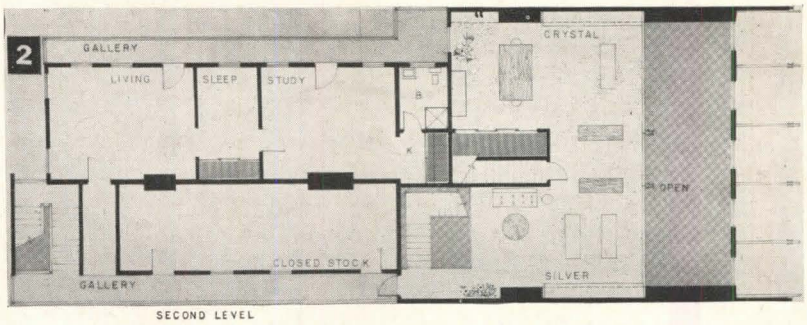
"A second-level balcony was removed, along with most interior bearing walls, to be replaced by steel beams and split 'cradling' columns. A two-story well of space was created by cutting back the second floor to give the effect of a mezzanine as one enters.

"The old masonry of the side chimneys was exposed to accent further the verticality of the space, and to serve also as a reminder of the original structure."

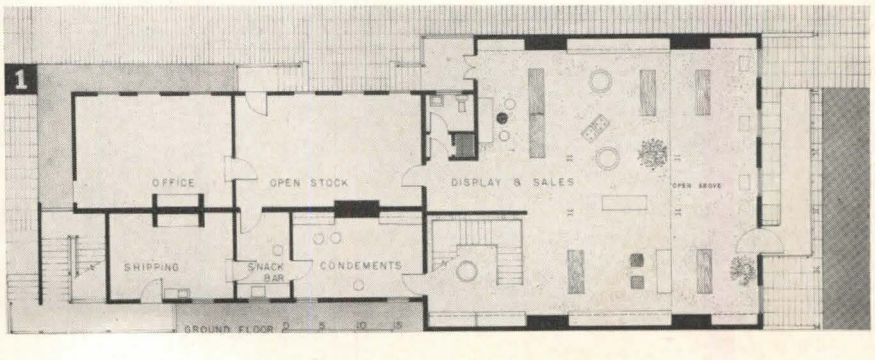


All photos by Frank Lotz Miller





SECOND LEVEL

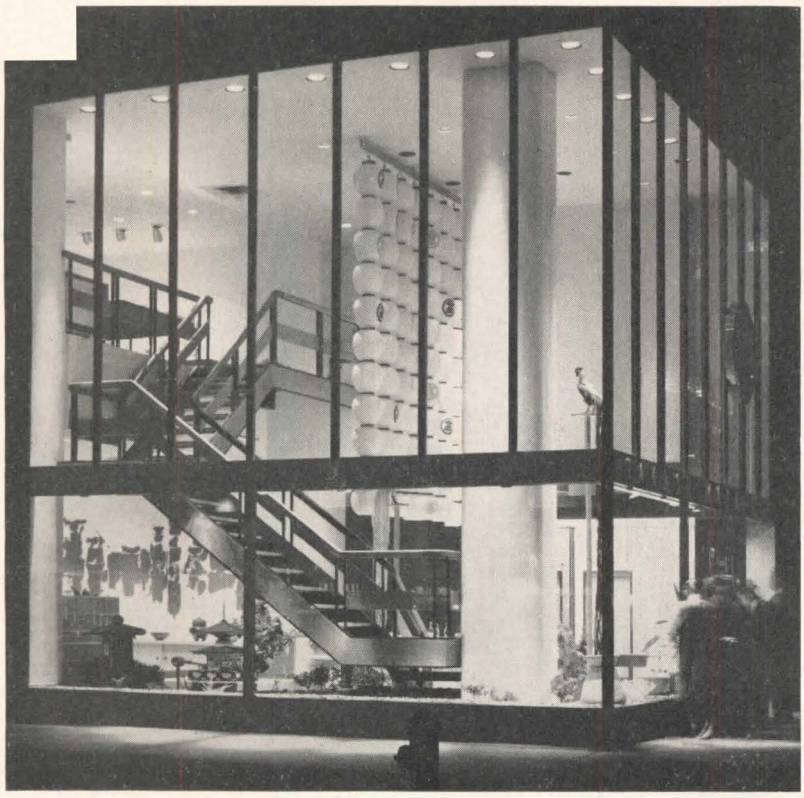


The 20th Century Shop

The difference in level between floor and sidewalk was turned from a liability into a capital gain by the attractive open ramp, which makes a strong point of interest in the façade. The projecting louver is porcelain-enameled steel in alternate beige and bone-white colors; stucco side panels act as baffles at either side of the front; painted diagonal cypress boarding sheathes the wall areas between openings; the sash is of natural aluminum.

The floors are finished with rubber or asphalt tile; the walls are variously plaster, walnut panels, or the old brick; acoustic tile is used on the ceilings

JAPANESE RETAILERS INVADE FIFTH AVENUE



All photos: Louis Reens, courtesy Owens-Corning Fiberglas Corp.

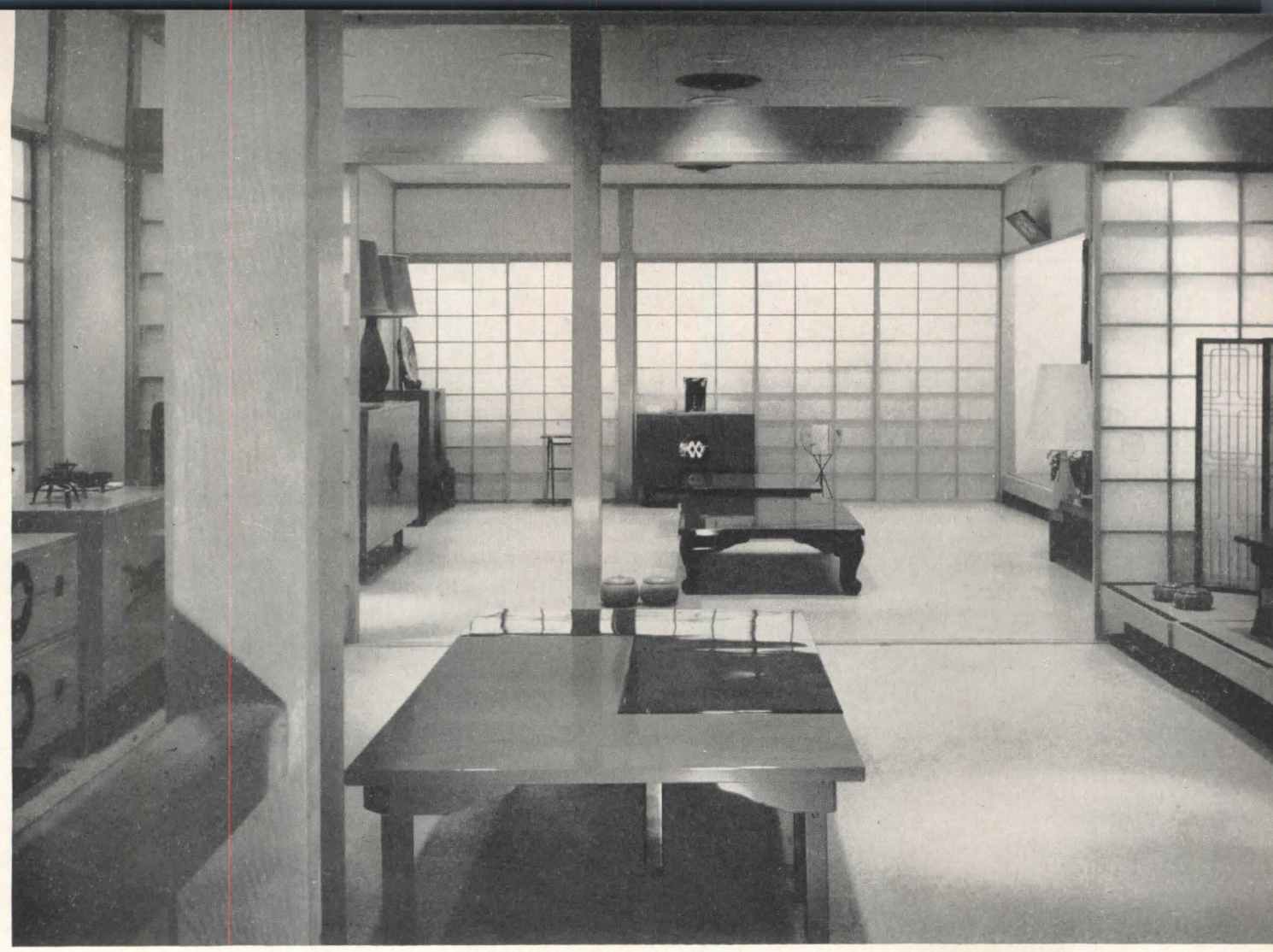
Takashimaya, Inc., New York. Steinhardt & Thompson, Architects; Junzo Yoshimura, Associated Architect; Robert P. Perillo, Mechanical Engineer; Lewin & Shapiro, Structural Engineers; Thomas Killian, Lighting Consultant; Charles Herman Co., General Contractors. Imported fixtures (1st and 2nd floors) by Shigeru Kawakami for Takashimaya Koshakusho, installed by Display Builders, Inc.

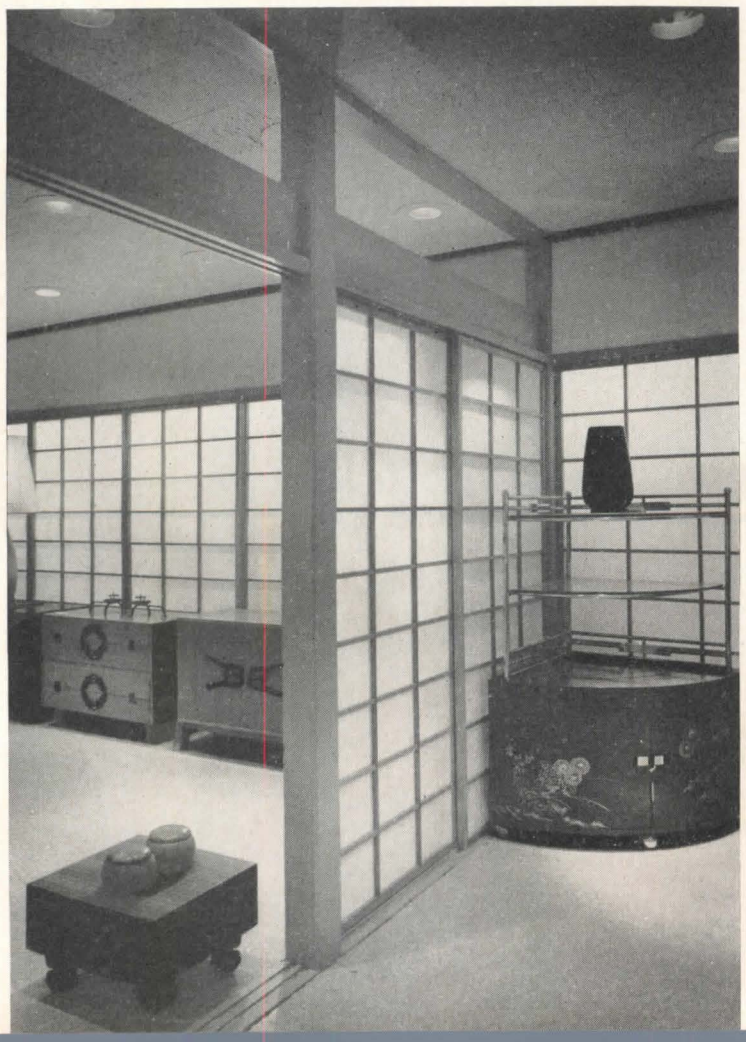
This effective remodeling—the first American branch of a Japanese department store chain—is notable for making its entire corner a two-story display; for successfully flouting a Fifth Avenue merchandising habit; but most importantly for creating in its three-story sales space an atmosphere peculiarly appropriate to store character and to the handsome, beautifully crafted (and expensive) Japanese merchandise. Inside, the total impression is of luxury and serenity—achieved physically by the quiet elegance of both goods and setting. The lighting is even; the walls are neutral or white; the carpeting is gray or tan; either light (hinoki) or dark (keyaki) natural wood makes a soft accent everywhere.

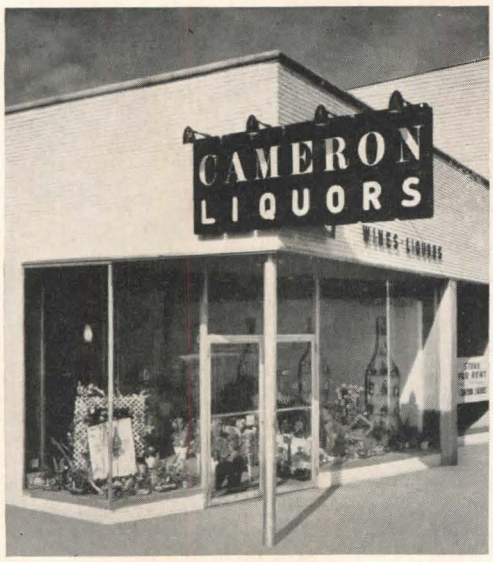
Placing the stair at the entrance—rather than further back in the store, only to be reached after passing tempting displays of impulse goods—is contrary to usual merchandising technique; but making a visual focus of the cherrywood and steel stair construction has created such an eye-catcher that visitors have far outnumbered expectations, and selling is brisk.

A garden under the stairway—arranged by David Engel—greets the visitor upon entering. The ground floor is then devoted to gifts, books, fabrics, etc.; the second floor to larger and more expensive items of metal, pottery, wood, and glass; the basement area features furniture, displayed under lighting of a domestic character.

The bottom right photo on the opposite page shows the garden under the stair; the other two picture the basement furniture sales area.







Cameron Liquor Store, Tarrytown, New York. Arthur Malsin and Don Reiman, Architects; Edward Schildback, Associate.

Joseph W. Molitor

ATMOSPHERE PLUS MAXIMUM DISPLAY OF GOODS

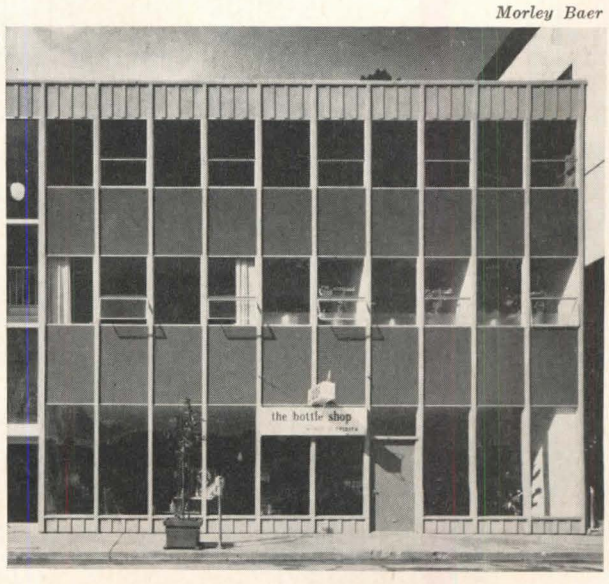
The image liquor stores try to present is of maximum stock, so the customer can purchase any familiar brand and also see others of which he has never heard. Prices are usually prominent in the display in order to make comparison shopping easy.

But a more subtle and important quality is atmosphere. Each of the shops shown here successfully creates its own air, yet one has a completely different feeling than the other. Both are attractive and successful.

The Cameron store (above) was an interior job within an existing shell and front. It has a closed-in, or inside, or wine-cellar look; furthered by the smart, curved ceiling of natural cypress. High-level lighting plus special shelving and cases with maple butcher-block tops and white uprights add to the general effect, which is inviting.

The Bottle Shop (right), on the other hand, opens up to the outside in California fashion to make the entire store a display. A gravel and planted strip next to the glass contributes to this effect. The lighting here is of a generally low level, with spots emphasizing the merchandise on display.

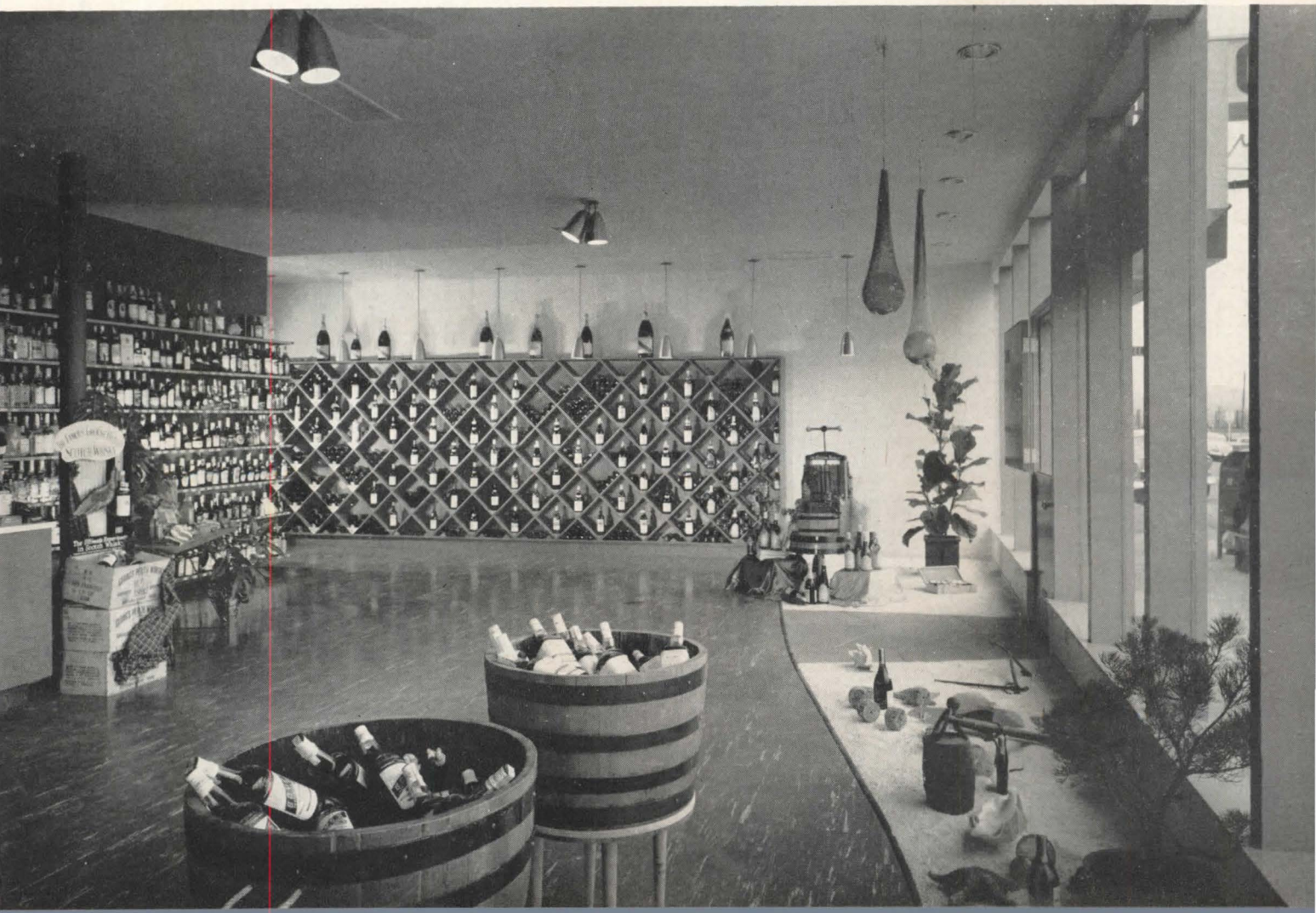
Morley Baer



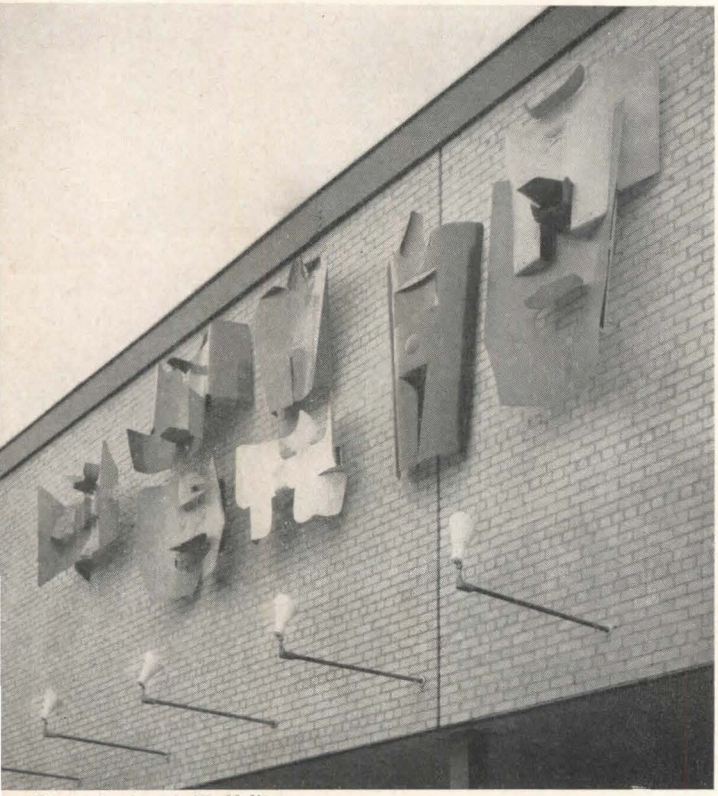
The Bottle Shop, Inc., Sausalito, Cal. John G. Kelley, Architect; Dorothy Alexander, Project Manager.

Joseph W. Molitor

Morley Baer



MERCHANDISING BY ARCHITECTURE AND GRAPHICS



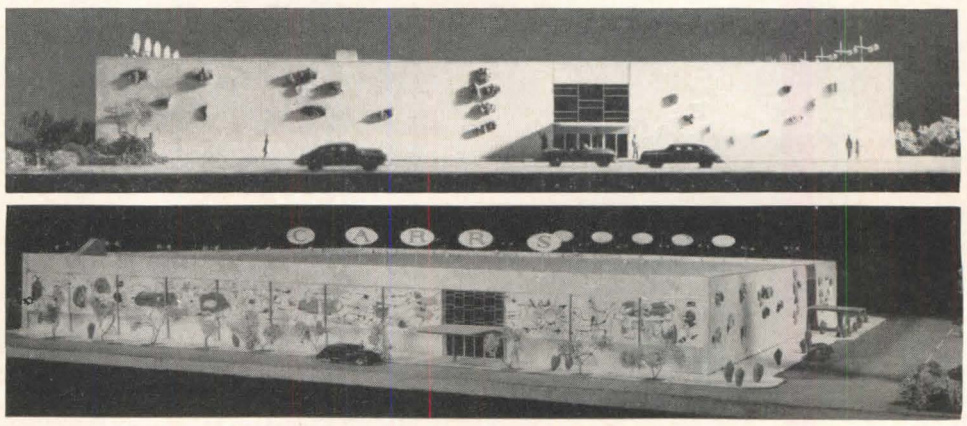
Photos by Joseph W. Molitor

Carr's Department Store, West Orange, N. J. Katz Waisman Blumenkranz Stein Weber, Architects Associated; Constantino Nivola, Sculpture; Ladislav Sutnar, Graphics; Alfred Engel, Lighting Consultant.

Architect Richard G. Stein says, "This Carr's represents the trial run of a concept. We originally prepared a merchandising study for a self-service department store, combining our efforts with those of sculptor Nivola and graphics designer Sutnar. (see model photos below—Ed.). When plans were complete, lease negotiations fell through. In order to set up a prototype without delay, space was rented in the Essex Green Center, under construction.

"The job then was to apply the principles of the previous study to an existing space. Nivola designed sculpture (left) which was executed in porcelain enamel; Sutnar developed a new system of graphics.

"Since space is intensively used for merchandising, and department sizes must shift with the seasons, the flexibility of the fixtures has worked out well."



carr's

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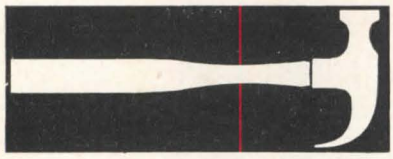
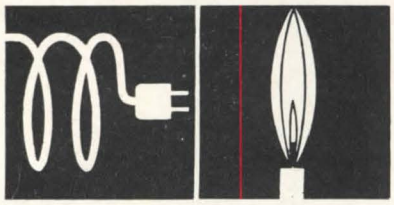
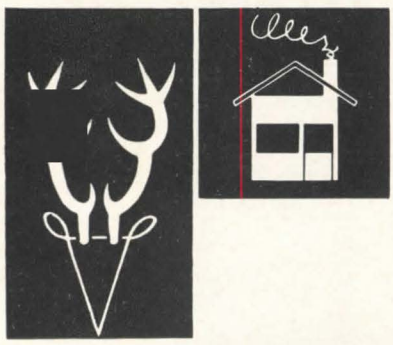
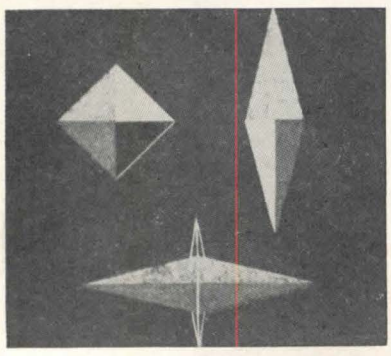
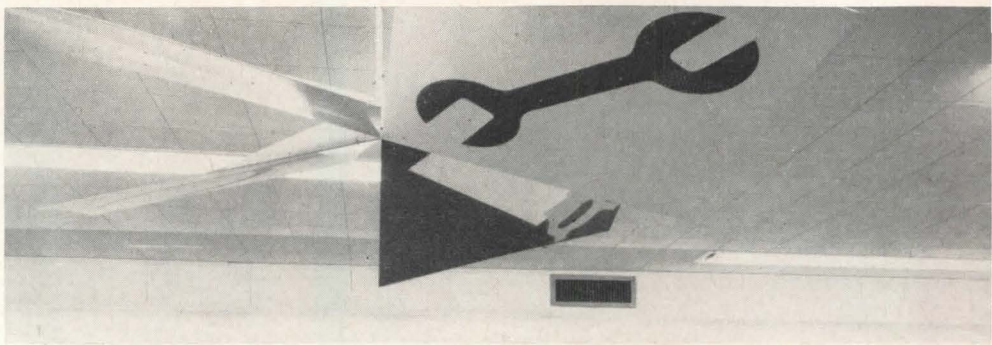


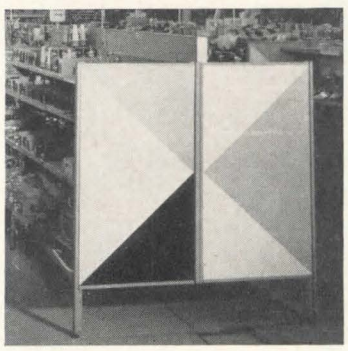


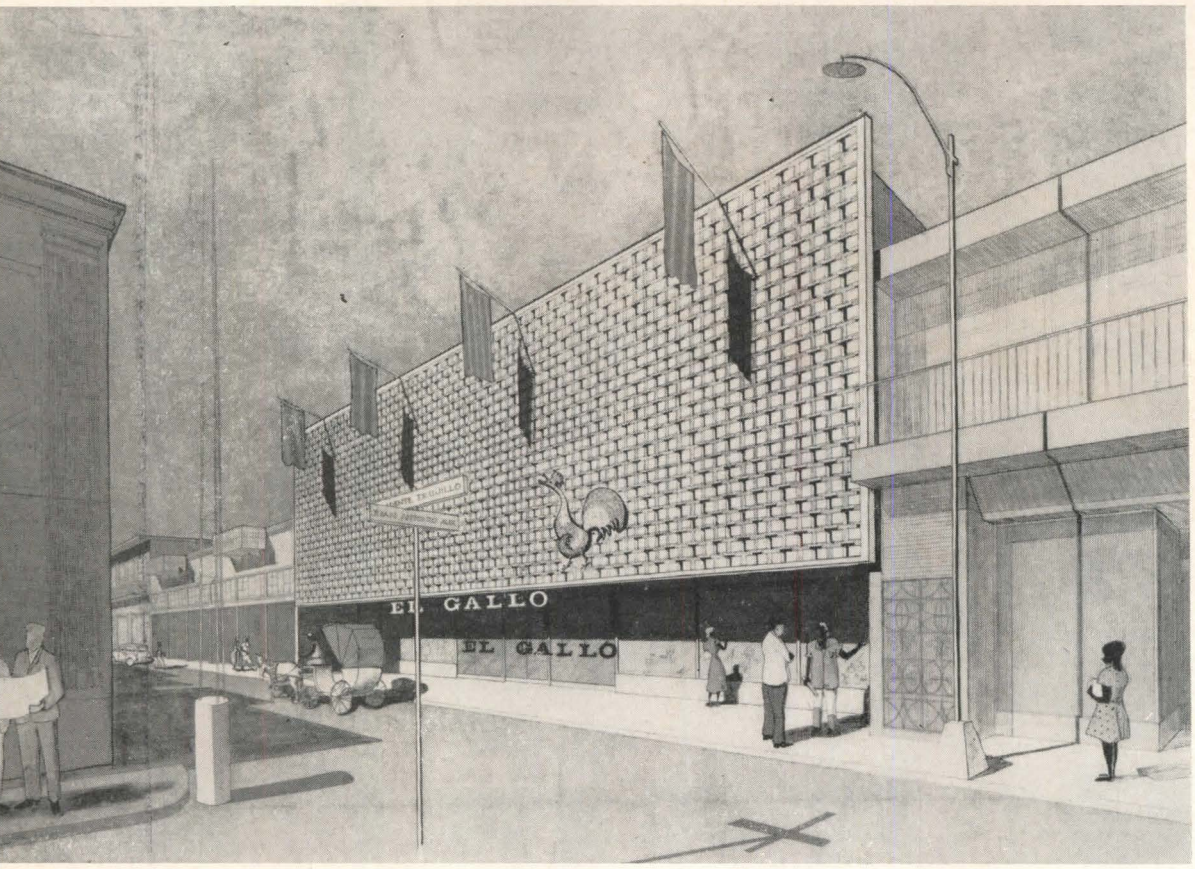




The logotype identifies the store from near and far; by day and by night. The symbols are used to identify merchandising departments, and combine with a color system (for counter ends and signs) to that end. Graphic design was carried through to include shopping bags, stationery, etc.

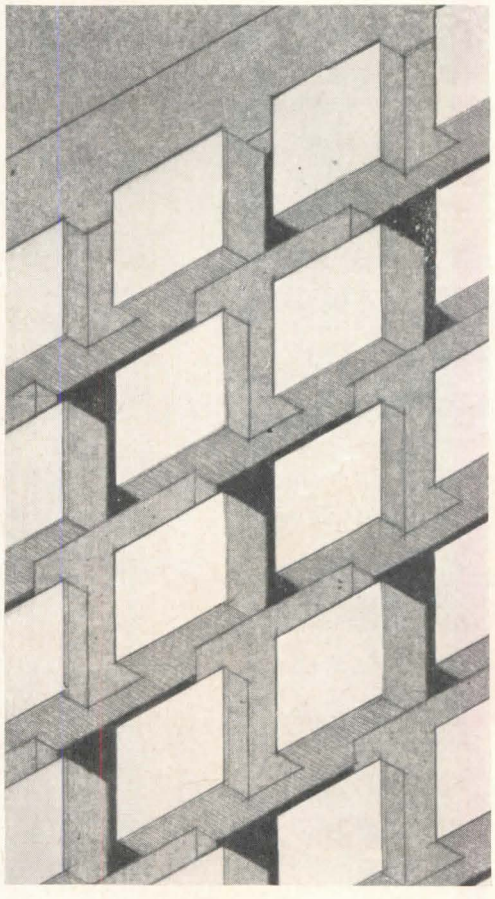






DECORATIVE FAÇADE OF PRECAST CONCRETE

Tienda El Gallo Department Store, Santiago, Dominican Republic. Steinhardt & Thompson, Architects; Ml. de Js. Tavares Sucs., C. por A., Owners.



El Gallo, leading department store of the Dominican Republic, is celebrating its centennial by constructing a new store building, which will be appended to the half-dozen buildings it now occupies.

Appropriately enough in the sub-tropics, the new structure will be reinforced concrete. Its street façade will consist of perforated precast concrete screens composed of the letter "T," the owner's initial. The modular screen will fulfill both the local requirements for natural ventilation and the esthetic need for a decorative pattern.

American merchandising practices fall by the board in Santiago, where no ready-made dresses are sold, since the Dominican ladies do it themselves. Thus, the huge yard-goods department offers a selection from thousands of fabrics from around the world. Here also, North American impulse items such as giftware and accessories become demand goods.

Both glass and aluminum jalousies—demanded by the climate—will be extensively used; merchandise will be displayed in fixtures built of local hardwoods; floors will be surfaced by especially designed cement tiles—a traditional local material.

Architectural Engineering

Never Underestimate the Power . . . !

Underestimating future electrical loads (even in the short term) is one of the easiest ways today to make a building obsolete before it gets off the boards. Electrical systems, even in quality buildings less than 10 years old, have over-reached their capacity. In some cases engineers have come to the rescue by converting a system to high voltage, doubling its capacity. (Such measures may not always work, since high voltage systems now are often put in at the beginning.) Contributing factors are air conditioning, higher lighting levels (100 foot-candles in an office is common), electronic computers and business machines. Signs are, too, that electrical energy as the basic source for both comfort heating and cooling is coming faster than many realize. Specifically this means the heat pump, electric resistance heating (there are about 200 electrically heated schools), and, perhaps not too far away, direct conversion of electricity into cooling effect. The heat pump, after not living up to its early publicity, is now finding great favor in buildings such as stores, factories (see pp. 220-221) and office buildings.

Decibel Trouble

Want to know how many people you can have for cocktails in a certain-sized room, and still keep the decibels under control? Then you should use a formula (*The Journal of the Acoustical Society of America*, Jan. 1959) concocted by Dr. William R. MacLean, an engineering professor at Brooklyn Polytech. Invite one more guest than a certain critical number (he starts everybody talking louder) and you will have a noisy party. For example a room with 2500 cu ft could contain 16 people; ask a 17th and you've got a dt situation (decibel trouble).

Water, Water Everywhere?

Fresh water, the sine qua non of human and industrial life, is getting harder to find in many areas of the world, including some part of the U.S. Re: the water situation, the Interior Department's Office of Saline Water will build a million gallon per day pilot plant at Harbor Island, N. C. to convert brackish or sea water to potable water. It is the first of five plants contemplated under a 10 million dollar appropriation from Congress. Southern California Edison Co. of Los Angeles will begin to build in June a pilot plant to distill 100,000 gallons a day from sea water.

Two Noted Engineers Are Dead

Hardy Cross, 74, legendary in the annals of engineering and in the "halls of ivy," died in February. He was best known for his moment distribution method for rigid frames. This method epitomized his pragmatic approach to engineering. Why complicate a design method with mathematical mumbo jumbo when it can be simple and easy? It has been said that the Hardy Cross Method enables a designer to "see" what is happening to the stresses in the frame as he approximates the solution.

Felix Samuely, 56, English consulting engineer, perhaps best known in the U.S. for his lectures and articles on "skin structures" (folded plates, latticed frames and shells), died in London last January. Recently he had consulted with Wallace Harrison on the whale-like church built in Stamford, Conn. Said the *Architects Journal* (London), "He did not see the engineer's role as one of fettering the architect and bringing him down to earth; he joined . . . in an endeavour to find yet more efficient and more exciting solutions to structural problems."

This Month's AE Section

A GUIDE TO EMERGENCY POWER SUPPLIES

Types of loads, types of systems available, unit capacities for building types

Codes, safety and economics

Types of buildings, locations in buildings, space requirements

By LOUIS A. BELLO, P. E., Syska & Hennessy, Inc., Consulting Engineers

Emergency or standby power supplies are provided for any one or combination of the following reasons:

1. Human safety
2. Economical considerations
3. Convenience

Minimum requirements for human safety are set forth in local and federal codes and are required by local fire and inspecting authorities. It should be clear, however, that their requirements are only minimum and that many times provisions above the minimum should be provided. For instance, hospitals should have emergency supply at least for one elevator, iron lungs, incubators, heating and refrigeration equipment, communication systems, etc., in addition to minimum required lighting for operating rooms, stairs, and corridors. Office buildings might have one elevator, heating and telephone equipment, certain minimum lighting, etc. A close study of the varied electrical equipment and systems of any building would undoubtedly reveal other loads worthy of emergency consideration.

Protection of valuable equipment, safeguard against pilferage and the high cost of lost production time are the common economical considerations that dictate the need for, and many times the capacity of, an emergency standby power source. Typical examples would be:

1. Heating and pumping equipment—to prevent pipes from freezing and basements from flooding.
2. Department store lighting—to prevent or minimize shoplifting.
3. Electronic computer equipment—to prevent costly shutdown.

The common available sources of power for supplying emergency loads are:

1. Storage batteries
2. Generating systems
3. Utility electric services

The selection of the best source for a particular installation will be governed by the capacity of the source, availability of fuels, utility company rules, building codes and local authorities, floor space allocation and last, but not least, economical considerations.

For full understanding of the sources and more intelligent selection of the best emergency source for a particular installation, a brief description with pertinent data, of each type of source is included.

STORAGE BATTERIES

A storage battery can be restored to its initial condition, after use. A common example would be the automobile battery. Other batteries, known as primary batteries, must be replaced when fully used.

There are two basic types of storage batteries in commercial use today, the lead-acid and the alkaline.

The lead-acid battery derives its name from the basic composition of its electrode plates and solution. It is the most common type used in this country and is available in various quality grades, as determined by the contents and construction of its electrode plates, their supports and their separators.

The alkaline battery derives its name from the chemical composition of its solution. The electrode plates of this battery differ from those of the lead-acid type; they are made of nickel-iron (Edison cell), or nickel-cadmium. This battery is more common in Europe and is claimed to have longer life with less maintenance. Its cost, weight and volume, however, are greater than for the lead-acid type.

To understand the application of batteries better it is necessary to define some basic battery terminology. The following includes some common terms and their practical definition:

Cell: A self-contained unit of plates, solution and two binding posts to which the positive and negative plates are connected.

The chemical composition of the cell plates and solution alone determine the voltage of the cell. In lead storage batteries a single cell is approximately 2 volts when fully charged. To attain higher voltages, cells must be connected in series, thus three cells connected in series will provide 6 volts, and 60 cells, 120 volts. Actually, however, a 60 cell system will be conservatively rated at 115 volts.

Battery: One or more cells in a connected group.

Ampere-Hour: The capacity of a battery is indicated by the quantity of current in amperes that can be delivered for a certain number of hours before its voltage falls below a useful value (approximately 1.75 volts).

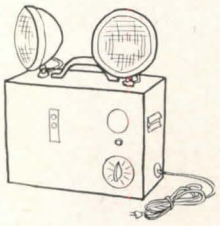
Since a given ampere-hour capacity could be made up of any quantity of amperes or hours, which when multiplied together would give a single ampere-hour capacity, it is necessary to specify a time rate.

Thus a battery rated at 160 ampere-hours at the 8 hour rate would deliver: $\frac{160}{8} = 20$ amperes of current for 8 continuous hours before its voltage would drop below the useful value of 1.75 volts per cell.

The slower the rate (more hours) of discharge, the more efficient the battery.

Maximum ampere-hour capacity is determined by the quantity, size and construction of plates in each cell.

Modern buildings utilize storage battery emergency power sources for



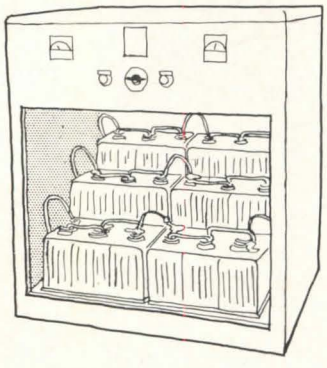
6-volt packaged battery unit. Can be furnished with lamps for remote mounting

Government May Pay Part of Equipment Cost for Portable Diesel Generators

Criteria for approval under the Federal Office of Civil Defense Mobilization Financial Contribution Program

Meet the requirements set forth in the "Federal Contributions" Volume of the *Administrative Manual of the Federal Civil Defense Administration*. Some of its basic requirements are:

1. Generally the equipment must be located at least five miles beyond a target area. In the case of non-profit hospitals, the equipment may be located anywhere.
2. The equipment must be removable as a unit. Thus an engine-generator should be mounted on a common frame with controls.
3. Federal contribution will be based on capacities as determined by calculating methods in the manual. For larger capacities the total cost of excess capacity must be borne by the owner.
4. Equipment must be kept operational and available for possible training purposes.
5. Application forms must be filled out with the local civil defense director and submitted for approval.



32-volt packaged battery system

emergency lighting, switchgear operation, alarm systems of various types, telephone equipment, engine generator starting, and many other types of direct current equipment that do not require large blocks of power. Another condition of use is that normal service failures should be of relatively short duration. Batteries have two outstanding features that will often cause them to be included in installations with other sources of emergency power: Reliability and instantaneous response. The only special provisions normally required for rooms containing storage batteries are good ventilation and some signalling equipment to indicate battery condition.

Some typical battery equipment and systems are:

1. *6 Volt Equipment:*

An interesting application for emergency lighting is a self-contained packaged unit consisting of standby sealed beam lamps, a three-cell (6 volt) battery, charging equipment, automatic switching and indicating devices. The units are commercially available with up to four sealed beam lamps either locally or remotely mounted. Other incandescent lamps such as those in exit signs, ocrridor lights, etc. can replace the sealed beams within the limits of the battery's capacity (approximately 100 watts) and voltage.

The unit is normally plugged into an a.c. receptacle, which serves to keep the battery charged, and a contact open in the circuit between battery and the sealed beams. When the normal supply to the receptacle fails, indicating power failure, the open contact closes and the battery supplied the connected emergency lighting.

Cost of a complete unit with sealed beam lamps will vary between $100 and $200 depending on the accessories and type of batteries (lead-acid or alkaline).

Typical dimensions of a unit might be 12 in. high by 18 in. wide by 8 in. deep (without lamps).

2. *24, 32 and 48 Volt Equipment:*

This equipment can be used for telephone systems, alarms, and emergency lighting. The batteries are usually mounted on a floor rack with the charger and transfer switch wall mounted. For emergency lighting, standard capacities up to 600 ampere-hours (at the one hour rate) are available, capable of handling up to 20 kilowatts of power, at 32 volts for one hour. Such high capacities at 32 volts are not common; however, a more common installation might be a 60 ampere-hour battery (at the one hour rate) capable of handling 1.9 kilowatts of power, at 32 volts, for one hour. Some manufacturers will furnish neat and economical packaged units in this capacity range for as little as $800.

Space requirements for 32 volt equipment in the 2 kilowatt capacity range will be approximately:

72 by 12 by 12 in. for batteries on one tier standard rack,

15 by 24 by 15 in. for wall mounted charger,

42 by 36 by 30 in. for package unit.

3. *115 Volt Equipment:*

This is the most common central distribution type of equipment used. It has the advantage of being interchangeable with 115 volt alternating current to supply incandescent lighting, and of being more economical for higher capacities (above 2 kw). The equipment consists of the same type of components mentioned previously, and it can supply emergency lighting, switch-gear controls, electric heaters, and numerous other equipment. Capacities up to 600 ampere-hours (at the one hour rate) are capable of handling 70 kw for one hour.

The installed cost of a system of this capacity would be approximately $20,000.

Space required for an installation of this type might be:

20 by 3 by 4 ft for batteries and rack,

15 sq ft of wall space for charger and transfer switch.

4. *230 Volt Equipment:*

Similar to 115 volt equipment except that it has higher voltage and twice as many cells. The equipment can be connected to a three wire 115/230 volt, direct current distribution system for more economical power delivery to large loads at greater distances from the power source.

ENGINE—GENERATOR SYSTEM

Engine driven generator systems can supply alternating current loads, are more economical for larger capacities and can be operated for as long as fuel supply will permit.

There are four major engine driving units that can be employed to drive an electric generator:

1. Diesel engine,
2. Gasoline engine,
3. Gas engine,
4. Steam engine.

A brief description including pertinent data regarding the various engine-generator systems follows:

DIESEL ENGINE-GENERATOR SYSTEM

The unique features that make the diesel engine desirable for emergency standby use are its ability to operate on common fuel oil, diesel oil, or kerosene, and the fact that a spark or auxiliary ignition system is not necessary.

Fuel oil operation is less hazardous than gasoline and the fuel can usually be stored, up to 550 gallons, in the same room with the engine-generator. It is also possible to use a tank in common with the building heating fuel oil system.

The diesel engine differs, basically, from the spark ignition type engines in that the fuel need not be vaporized in a carburetor prior to being injected into the engine cylinders, and there is no need for spark plug ignition. Spontaneous ignition is accomplished by the high temperature compressed air present in the engine cylinders at the time fuel is injected.

Diesels are popular because of their reliability, ruggedness, low maintenance, economical operation and low initial cost for capacities above 60 kilowatts. However, special considerations are required for room temperatures below 40 F.

The basic components of a typical standby diesel-generator system are as follows:

1. *Diesel Engine and Electric generator:* On a single shaft with engine starting and control equipment all mounted on a common base.

2. *Fresh Air Supply:* Through a screened louver in an exterior wall of the engine room or a fan supply system suitable for delivery and exhausting the required quantity of air to and from the diesel engine.

3. *Fuel Supply:* From a storage tank to a local day tank to insure a ready fuel supply.

4. *Cooling:* By either a fan and radiator or a heat exchanger. The fan and radiator is the most economical cooling means where air temperatures are low enough and sufficient volume of outside air is available.

5. *Engine Exhaust:* through a muffler and adequate piping directly to the outside or through a chimney flue. Mufflers for exhaust silencing are available in various degrees of silencing, and where noise for emergency or testing periods cannot be tolerated the additional expense involved in a quieter muffler may be justified.

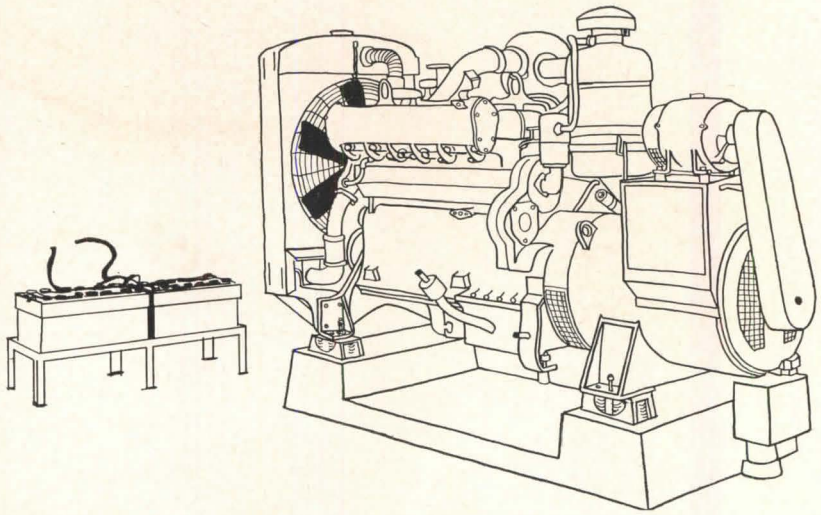
6. *Starting:* By engine mounted electric starting motor and battery. Where the engine can not be started electrically, compressed air, hydraulic or gasoline starting may be furnished.

7. *Electrical Control and Transfer Equipment:* Consisting of a circuit breaker, relays and an automatic transfer switch. The transfer switch connects the emergency building load either to the building's normal electric service or to the diesel-generator emergency service automatically as follows:

a. An auxiliary relay supervises the normal power supply so that when the voltage on any line drops to 70 per cent or less of rated voltage, a contact closes to start the diesel-generator and set up the transfer switch for transferring to the emergency load. When the generator is up to speed and delivery at full voltage, a relay is energized and the switch transfers to the emergency service.

b. The reverse transfer occurs in like manner except that the voltage value for retransfer is usually 90 per cent of rated voltage.

8. *Foundation:* Of either floating concrete pad, poured concrete base, structural steel frame, or wood beam construction should be furnished.



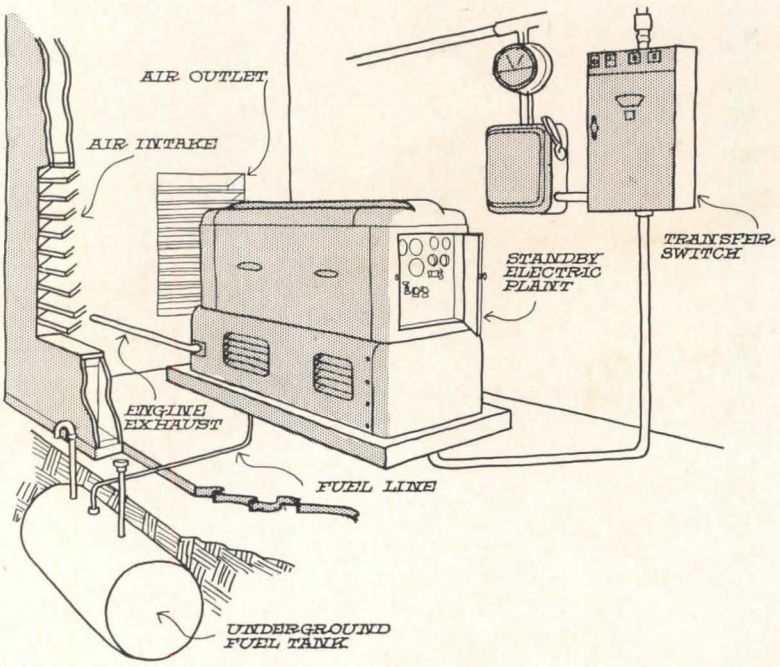
Diesel generator

The installed cost of a typical 200 kilowatt diesel-generator system exclusive of electric wiring might be about $35,000. The Civil Defense Authorities have recently initiated a program for subsidizing up to 50 per cent of the cost of a diesel-generator plant if it meets certain minimum requirements.

Space requirements for a plant of approximately 200 kw might consist of a room 20 by 12 ft containing the engine-generator set, electric control panel and a 275 gallon day tank for fuel.

GASOLINE ENGINE-GENERATOR SYSTEM

A gasoline engine is considered a spark ignition engine. It requires spark plugs and carburetor and can be connected to drive a generator in a similar manner to the diesel engine previously mentioned. Its major advantages lie in lower initial cost for



120/208-volt gasoline engine-generator

capacities below 75 kilowatts, and because the required engine maintenance can be handled by an automobile mechanic instead of by specially trained mechanics, as is the case for the diesel and steam engines type of drive.

The basic components are similar to the diesel engine-generator system except fuel storage tanks must usually be located outdoors underground to meet code requirements (gasoline being more hazardous than diesel fuel). Exhaust piping methods also are more restricted for gasoline engines. National Board of Fire Underwriters, building codes, insurance cost and local fire authorities should be consulted for gasoline engine installations.

A typical 20 kilowatt gasoline engine-generator plant might cost about $3500; an equivalent diesel set-up, on the other hand, might cost $4500. As larger capacity units are considered, the initial costs between the two begins to even out and at about 75 kw the gasoline plant becomes more expensive.

Space required for a 20 kilowatt gasoline engine-generator plant would require a room about 16 by 9 ft containing engine-generator set, engine mounted electric controls and a wall mounted transfer switch. Additional consideration would have to be given to a buried fuel storage tank.

GAS-ENGINE-GENERATOR SET

The gas engine is a spark ignition type of engine and it is interchangeable with the gasoline engine, since it can easily be adapted to operate with either fuel.

Gas operated engines require less maintenance and in most areas are more economical than gasoline operated engines.

The fact that the engine can operate either on gas or gasoline means it has the added advantage of a standby fuel. Fuel storage tanks, for purely gas engines, can also be omitted where utility company gas service is available. The quality of gas will effect the engine efficiency (i.e. propane and butane gas are relatively efficient for gases below 1100 Btu heat content, the efficiency drops anywhere from 95 to about 50 per cent). Therefore the gas available for fueling should be carefully checked prior to engine sizing.

STEAM ENGINE-GENERATOR SYSTEM

Where there is sufficient steam and the physical plant is suitable, consideration may be given to the use of a steam engine or turbine for driving an emergency generator; however, the installed costs of this engine or turbine are considerably higher than those for the other engines mentioned. Steam engine-generator systems are quite common in a boiler plant, where steam capacity is readily available.

UTILITY COMPANY SERVICES

There are two basic ways of acquiring emergency supplies from ordinary utility company service:

1. Two service entrances consisting of a normal and emergency supply, each connected to separate points on the utility company outside distribution system.
2. A single service entrance with a normal and emergency distribution system within the building.

In New York City, for example, where Consolidated Edison has a network system, there would be very little advantage in two services since the system to which the services are connected is energized from many points and is quite reliable. The only additional protection afforded by two services in place of one would be in the cable between the connection to the street network system and the building distribution system. On the other hand, in some outlying areas of the city where a network system may not exist, two services are sometime furnished and are connected to separate utility company outside distribution systems.

In network areas a common means of furnishing an emergency system within a building is by a single service entrance with a feeder tap after the meter and ahead of the main disconnect switch.

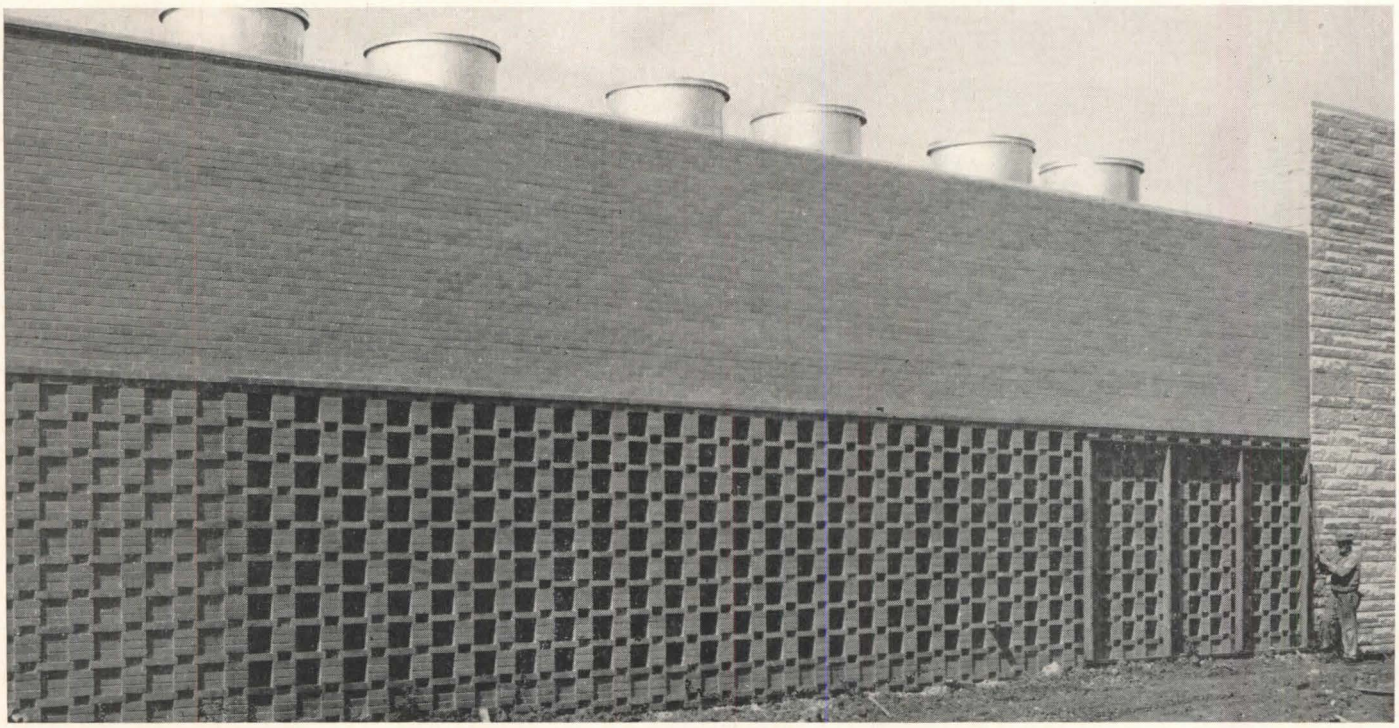
Of all the emergency distribution systems available, the last mentioned single service entrance, is the most economical with relative reliability. Of course, such a system can be made more reliable by the addition of one or more of the other emergency systems mentioned. This is very often done for hospitals where continuity of power is of the essence.

CONCLUSION

The availability of the various mentioned emergency power supplies may at first tend to confuse the selection of the one most suitable to a given project. However, a proper consideration of the *character, quantity* and *distribution* of the emergency loads will enable an experienced engineer to analyze the available power supplies and by a process of elimination arrive at the best suited one for the given building project.

Big enough to heat 300 houses

HEAT PUMP FOR A MIDWEST FACTORY



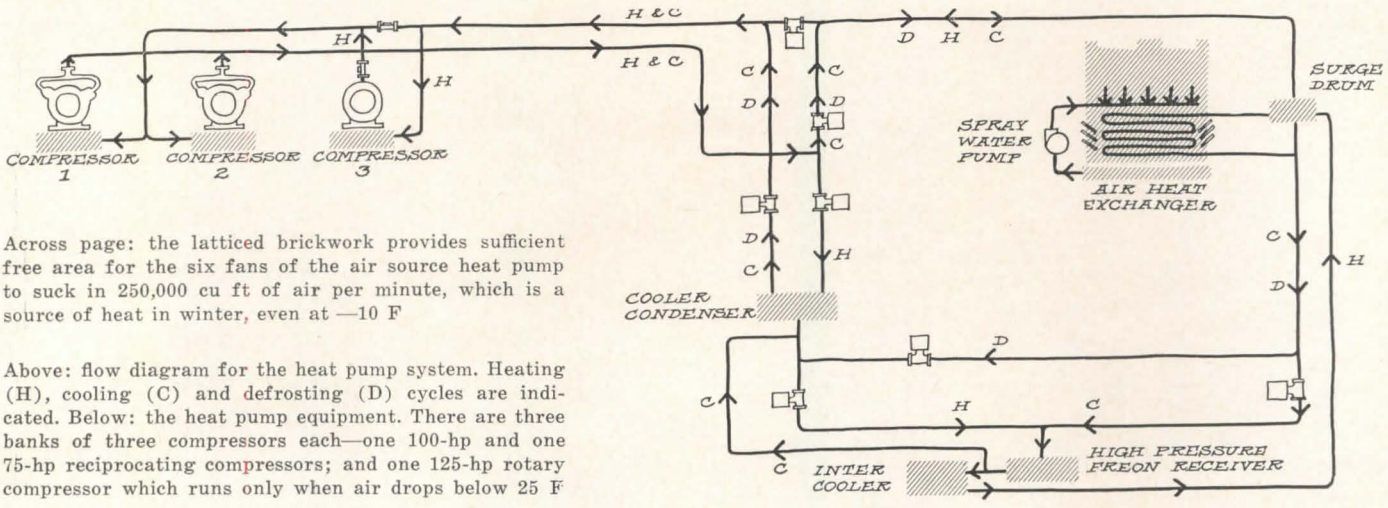
When it's ten below zero in Chicago, the heat pump system in a new 220,000 sq ft suburban factory will produce a total of 5½ million Btu per hr—enough to heat 300 average-sized houses. According to industry sources, this is the largest air source heat pump ever installed. Six big fans pull in a total of 250,000 cu ft per minute of outside air across refrigerant coils, extracting heat and in the process cooling the outside air down from —10 F to —20 F.

The heat pump will provide year-round air conditioning for factory employes and office personnel of a Flick-Reedy Corp. plant at Bensenville, Ill. The architects were Zay Smith & Associates of Chicago.

The heat pump saves $4800 per year on the heating bill—$7200 for the heat pump vs an estimated $12,000 for heat by oil. And less space was taken by the heat pump—2500 sq ft as compared with 3500 sq ft for boiler and absorption units.

The initial cost of the heat pump system was eight per cent higher, however—$540,000 for the heat pump vs $500,000 for oil heat in winter and mechanical cooling in summer. The $4800 savings in operating cost is virtually cancelled by interest charges on investment, by depreciation and by added service costs, according to Frank Flick, president of Flick-Reedy. He points out, however, that chances are good for the cost of electricity to become more favorable in relation to gas and fuel oil. Present rate for the Bensenville plant is ¾ cents per kilowatt-hour.

How can an air source heat pump operate economically at a temperature as low as —10 F? It generally has been considered that the lowest temperature at which a conventional air source heat pump could operate without having to be excessively large is +15 F, unless supplemental heat were provided, usually in the form of electric strip heaters. Straight resistance heating is ⅓ to ⅕ as efficient as the heat pump.



Across page: the latticed brickwork provides sufficient free area for the six fans of the air source heat pump to suck in 250,000 cu ft of air per minute, which is a source of heat in winter, even at —10 F

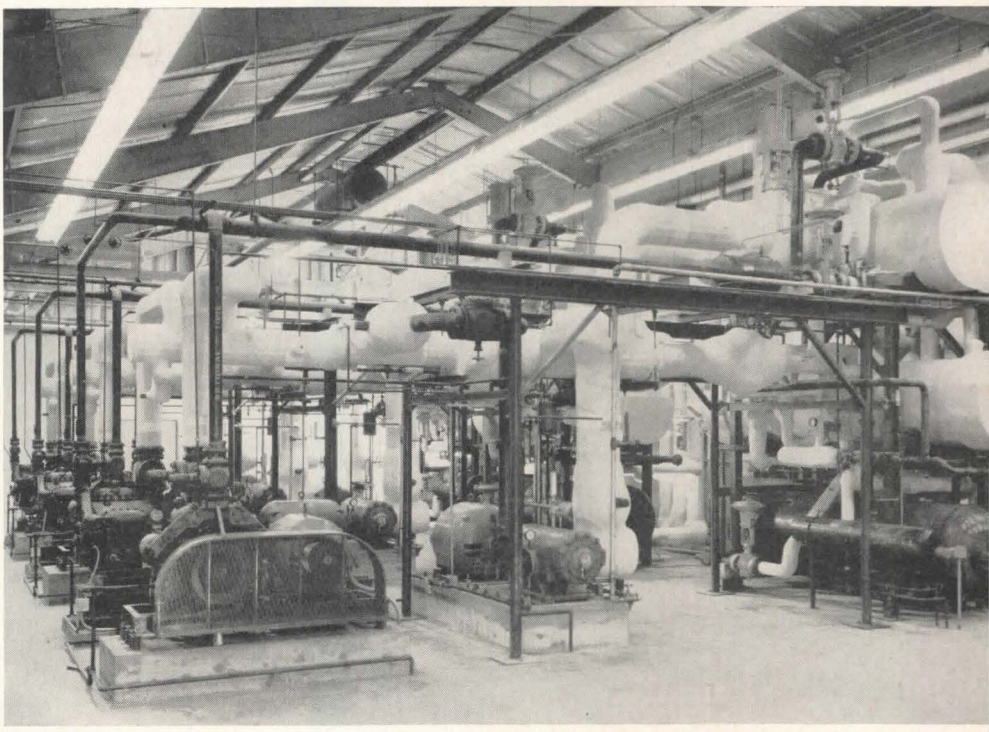
Above: flow diagram for the heat pump system. Heating (H), cooling (C) and defrosting (D) cycles are indicated. Below: the heat pump equipment. There are three banks of three compressors each—one 100-hp and one 75-hp reciprocating compressors; and one 125-hp rotary compressor which runs only when air drops below 25 F

A different approach, which makes for more efficient operation at low air temperatures is being advocated by the York Division of Borg-Warner Corporation. This consists of teaming up two stages of refrigeration compression—actually, the compressors are hooked up in series. Result is that the heat pump doesn't have to elevate the refrigerant from —35 F to a utilization temperature of, say, 110 F all in one jump, but rather in two jumps. With this so-called compound compression, each compressor can work within a moderate, economical range in contrast to single stage compression in which one compressor must work within too large a pressure range to be efficient.

This method is used at Flick-Reedy, and the output from the heat pump itself will range from 2.2 to 5.0 times the electrical energy input. Lessening the load of the heat pump is a one million Btu per hour credit from the lights. The heat pump consists of three banks of three compressors, each, in the following capacities: two reciprocating compressors, 75 hp and 100 hp; one 125 hp rotary compressor which operates only when the double-stage compression is required in winter. This one is switched on when the temperature goes below approximately 25 F. Any two sets of compressors will maintain proper temperatures while the third unit goes through the sort of defrosting cycle necessary with an air source heat pump. (Ice accumulates on coils in contact with outside air.)

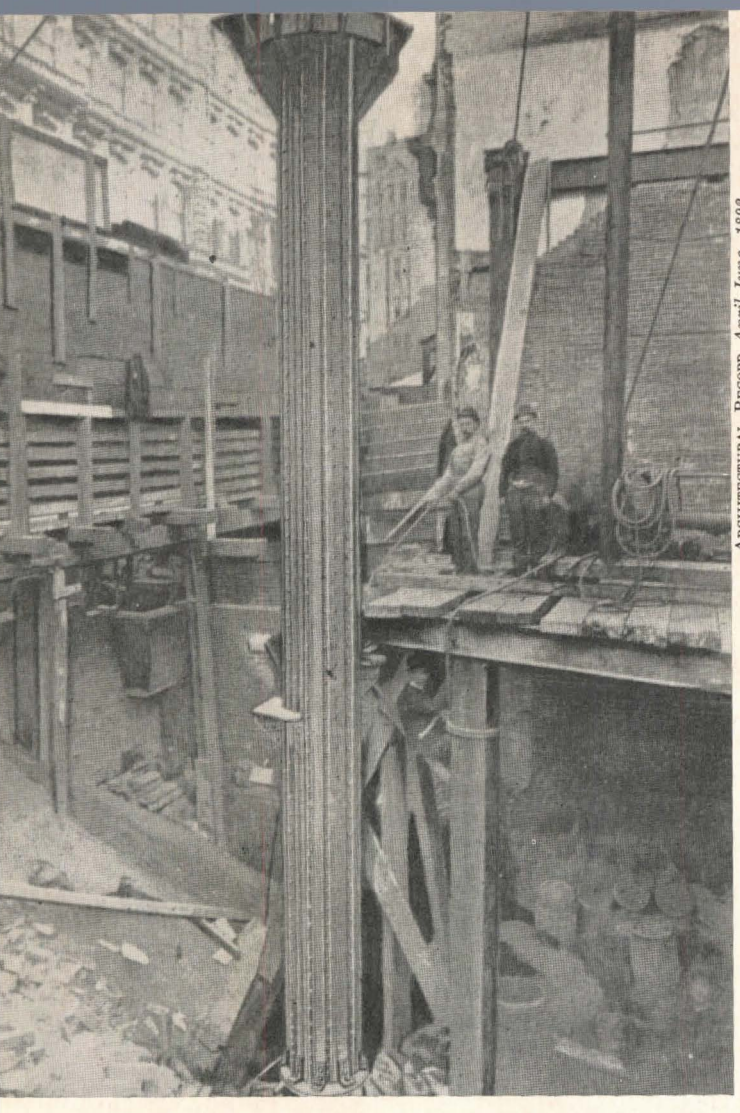
At around 45 F to 50 F it is conceivable that only one 100 hp compressor will be required to carry the heating load.

This is the way the winter cycle works for the Flick-Reedy installation assuming —10 F outside air:

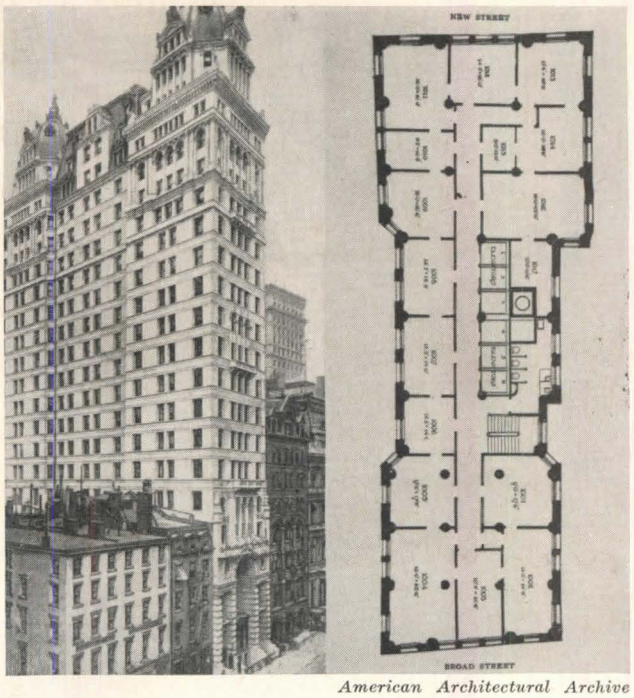


First, fans draw the —10 F air across coils containing Freon gas at —35 F; heat is extracted from this air lowering its temperature to —20 F and adding heat to the Freon. The "heated" Freon gas is then compressed in two stages to 110 F, first by the 125 hp unit and second by the 100 and 75 hp units in parallel. This hot Freon gas is piped through a heat exchanger condenser, warming water in the condenser and liquefying the refrigerant. The heated water is pumped through air handling units which supply heated air to factory and office areas. The liquid refrigerant is then fed through a heat exchanger inter-cooler to reduce its temperature to +30 F before it is allowed to expand again to a —35 F gas in the outside coils, repeating the cycle.

The three 125 hp rotary compressors do not work in the summertime, because the refrigerant gas need only be lowered to 40 F to get 47 F water in air handling units which keeps inside at 75 F when outside temperature is at 95 F. The maximum range of refrigerant temperature is from 40 to 110 F. In winter, the difference is much larger, from —35 F to 110 F —thus the reason for double compression made possible by combining compressors in series.



ARCHITECTURAL RECORD *April-June, 1892*



American Architectural Archive

Left: A Phoenix Column goes into place in the McIntyre Building in New York City. Above: In the Commercial Cable Building, New York City, Phoenix Columns were used for interior columns and to lighten exterior masonry walls. Below left: Details from an old handbook show wrought iron and cast iron connections developed for use with Phoenix Columns. Below right: Cutaway shows "Wight's Patent Process" for fireproofing

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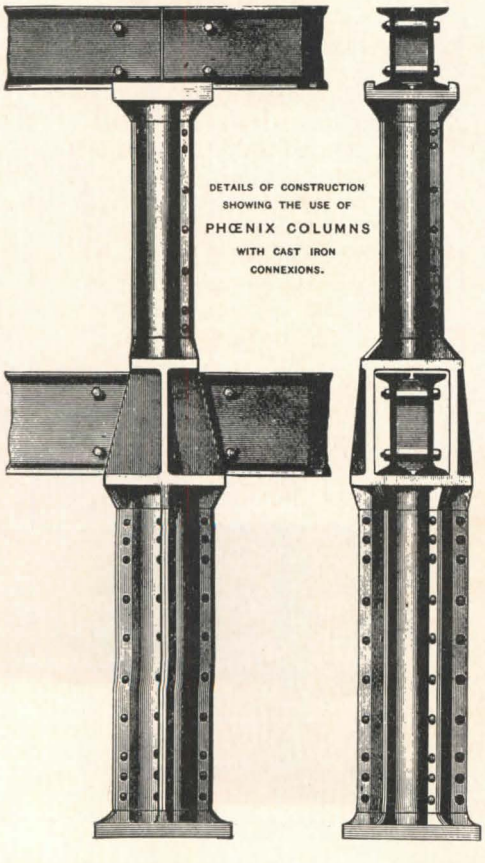
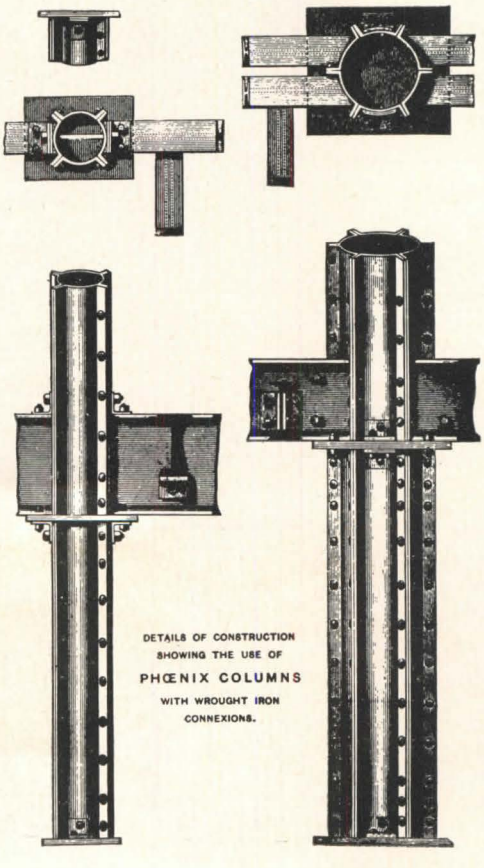
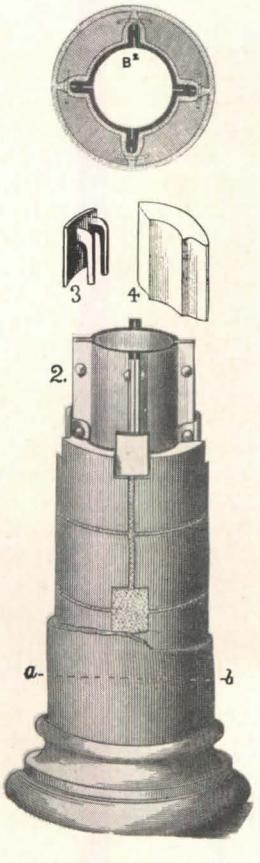






Forgotten Engineering:

THE RISE AND FALL OF THE PHOENIX COLUMN

By ALAN BURNHAM, A.I.A.

Today, if one were to ask what a Phoenix Column was, most engineers would reply with a quizzical stare. Yet the Phoenix Column was well-known in their field for several decades before the turn of the century. A built-up circular column of wrought iron, it was, in its own era, a marked advance over the cast iron sections then so widely used. But like many engineering advances, it gained acceptance slowly: by the time its unique advantages were generally recognized, it was already being challenged by a newer development—rolled steel sections.

It was not until the 1860's that the elevator freed buildings from the six-story height limit set up by their tenants' refusal to climb any higher, and made it acceptable to stack masonry so high that the valuable ground floor space in tall buildings began to be wholly devoured by the thickness of the fortress-like walls required to support them. But a decade before this architects and engineers had already begun to try to lighten space-consuming masonry walls.

As early as 1848, store owners were enlarging their show windows by ripping out brick or stone piers and replacing them with slender cast iron pipe columns, thus paving the way for the hollow cast iron fronts so common between 1860 and 1880. And by the 1850's, interior spaces were quite commonly supported by cast iron columns—first in combination with wood girders, and later with wrought iron girders.

In 1862, the Phoenix Column—a hollow circular section built up of four, six or eight flanged, rolled wrought iron segments riveted together—appeared on the scene. Its only similarity to the legendary bird was its tendency to rise to great heights, for its primary use was in high buildings, viaducts, and bridge structures. The name was not fanciful, but derived from the Phoenix Iron Company at Phoenixville, Pa., where Samuel J. Reeves, the son of the company's founder, invented it. The Phoenix Column challenged similar cast iron members for thirty years, disappeared with them in the nineties, and left no successors, except possibly John Lally's concrete-filled pipe.

In a sense, the Phoenix Column was ahead of its time. The real advantage of wrought iron over cast iron was that it could be riveted. But this advantage did not become paramount until the mid eighties, when the problem of windbracing became more and more important as buildings rose higher and higher on the narrow sites so typical of urban development. With cast iron columns, connections had to be hand bolted, allowing more or less play in the joints; and while the use of floor height trusses furnished the rigidity necessary to resist wind pressure, it created new obstacles to design as partitions had to be introduced wherever trusses occurred. With Phoenix Columns, on the other hand, the riveted column-beam connections were rigid enough so that buildings could be windbraced by relatively simple methods. In the Old Colony Building in Chicago, for example, Phoenix Columns were used in conjunction with a system known as "Portal Bracing," in which plate-metal arches were bridged between interior columns to rigidize bays at intervals throughout the entire height of the building.

However, the Phoenix Iron Company was thoroughly convinced of the superiority of wrought iron in general—and the Phoenix Column in particular—long before the connection advantage caused engineers generally to advocate their use.

One advantage of the section was the fact that loads could be applied close to its main axis. If, for example, a load were applied to one side only, it would travel down and around the circular section at an angle so that, at some distance beneath the load, it would become more or less evenly distributed over the entire section of the column.

The Phoenix Iron Company also boasted that the column provided a maximum of strength with a minimum of weight and that, due to the simplicity of its construction, it was the cheapest column on the market.

The use of a hollow circular shaft to support loads inevitably raised the question of rusting within the central core. The early cast iron columns could hardly be painted at all on the inside due to the small inside diameter of the castings, but on the other hand cast iron was thought to withstand rust better than wrought iron. In answer to queries on this point the Phoenix Iron Company stated that ". . . whenever Phoenix Columns are employed, the interior surfaces are thoroughly painted before the segments are riveted together. Such columns have been inspected after twenty years of service, and, although they had occupied the most exposed situations, they have been found uninjured by rust and with the paint *still performing its duty.*"

In order to offset the difficulty of making connections directly to the flanges or to the curved surface of the column, the Phoenix Iron Com-

pany had devised both wrought iron and cast iron seated connections at an early date. The "Improved Phoenix Column," which was first used in 1867 to counter the great weight and vibration of the presses in the Public Ledger Building in Philadelphia, was another step in this direction. The "Improved" column was made by riveting full length vertical filler pieces between the flanges of the segments. The depth of these pieces being greater than that of the flanges themselves, the engineer could readily increase the rigidity of the column throughout its entire height by making the filler strips as wide as he might require. Connections could then be made directly to these single filler pieces instead of to the double flanges.

Another design development, known as the "cross pintle" connection, utilized the same principle, except that, at levels where loads had to be carried, the filler pieces were extended horizontally through the entire width of the column in one dimension and, if needed, similarly at right angles to it. When secured to the column with clip angles, these filler pieces could be extended out far enough to carry two or more lines of rivets. This type of connection made it possible to form a continuous column of any height required, using the cross pintle at the joint so that column sections could be butt-ended against each other without the need for an intermediate bearing plate.

Where Phoenix Columns were not fireproofed, the decorative qualities inherent in their design were sometimes appreciated, as in the Press Room of the Public Ledger Building in Philadelphia. The owners stated that ". . . The effect produced by the projecting flanges and filling pieces is somewhat similar to that of large fluted columns and is quite ornamental. The columns are also painted, with the small round projections which mark the bolts (rivets) bronzed. The whole finish is such as is rarely, if ever, found in an underground apartment."

However, fireproofing for structural members became a necessity for high buildings in the eighties, as they began to pass the heights at which pumping engines could successfully fight fires. Disastrous fires had demonstrated to the public the absolute necessity of obtaining soundly-constructed, fireproof buildings, and many schemes were put forth for constructing fireproof floor arches (wood floor joists were a prime fire hazard), and otherwise fireproofing structural members. In the case of the Phoenix Column, the circular form was, in one sense, an advantage, since it minimized the amount of space taken up by the columns in a given area, but the curved surfaces posed a difficult fireproofing problem. This was largely overcome by "Wight's Patent Process," in which curved sections of terra cotta block were bedded between the flanges with cement mortar, and secured to the column with countersunk metal clips which hooked over the rivet heads on the flanges of the columns. The blocks were then plastered so that the final result was a smooth, circular column.

Due to the great volume of building they enjoyed, New York City and Chicago were in the vanguard in the use of new systems of construction, and in the eighties, the Phoenix Column was used in many of the new high office buildings in those cities. In New York City, for example, the columns were used in the Commercial Cable Building at 20 Broad Street; in the McIntyre (Sherman Bank) Building at the northeast corner of Eighteenth Street and Broadway; for Pulitzer's famous "World Building" at 53 Park Row, on the east side of City Hall Park; and for the R. G. Dun Building at the northeast corner of Reade Street and Broadway.

In the realm of more daring engineering exploits, the high viaducts commanded great admiration. The New York Metropolitan Elevated Railway's west side extension from Eighty-third Street to One Hundred and Fifty-ninth Street, and the Second Avenue elevated line were both built of Phoenix Columns. As described by a contemporary: ". . . The stations in mid-air, the swallow flight of the light trains, the perfect system and discipline of the arrangements, command admiring wonder and make an especially vivid impression on foreign visitors. The lofty, curving trestles of iron near 110th Street were justly characterized by de Lesseps* as one of the most audacious of engineering feats."

Even more audacious was a proposal which was made by David Reeves, the son of the inventor of the Phoenix Column, for a 1000 ft high observation tower to be built of Phoenix Columns for the Centennial Exposition in Philadelphia in 1876. Today no one will remember young David's spectacular proposal, for the tower was never built. But it so intrigued Gustave Eiffel, who saw the model, that he later gave credit to the young American for having inspired him to design his famous steel tower in Paris in 1888.

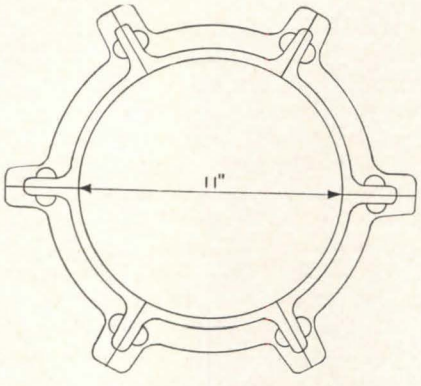
However, Phoenix Columns *were* used for smaller towers, like those which carried railroad tracks over Pennsylvania's Kinzua Valley. Known as the Kinzua Viaduct, the structure was, in many respects, an engineering marvel of its day. Another notable viaduct, the Pecos Viaduct, was built by the Phoenix Bridge Company for the Southern Pacific RR. in western Texas. It had an overall height of 320 ft above a gorge. At the seashore, Ocean Pier, Cape May, and certain parts of the Atlantic City boardwalk in New Jersey were constructed with Phoenix Columns, and throughout the country many bridges were built for railways and highways. The columns were also used in the design of railway stations, ferry houses and industrial buildings. Even after they had ceased to be used for buildings and bridges, they were often used to carry the shoring in mines.

In the case of office buildings, Phoenix Columns were usually used where loads were greatest, for the central or inner columns. For bridges or viaducts, they were used for the principal compressively loaded members. Tension members were usually flat eye-bars or rods, so that, as assembled, such structures had a visual expressiveness, lost to most steel structures of today, in which compressive and tensile members each had their own distinctively characteristic shapes.

In its basic design, the Phoenix Column possessed many advantages: the flanges lent considerable rigidity to the column; the circular section provided even distribution of material. But by the late 1880's, Bessemer steel was widely used for bridges, and a few daring souls had already used rolled steel bridge sections for the then-newborn "skyscraper." In the nineties, Zee-bar and rolled "H" columns began to take the lead over the Phoenix Column and other circular iron columns for several reasons. One was the greater ease in making connections. Another was the fact that a section having a radius of gyration which was greater in one direction than in the other provided a positive advantage where heavier loads occurred on only one or on opposite sides of a column.

And so the Phoenix Column disappeared. But in its day, it was a radical departure from existing structural forms and an imaginative solution to existing structural problems, even though its usefulness was limited by technical difficulties. Perhaps it can still give us food for thought in this day of mass production and technical proficiency.

*Viscount Ferdinand M. de Lesseps, French diplomat and promoter of the Suez Canal (1805-1894).



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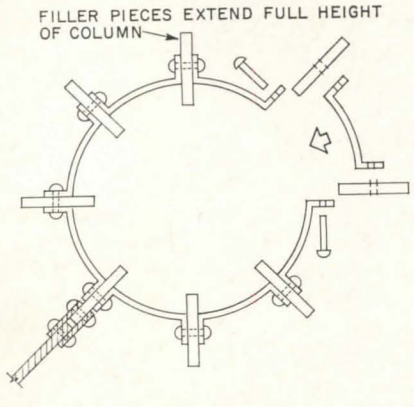
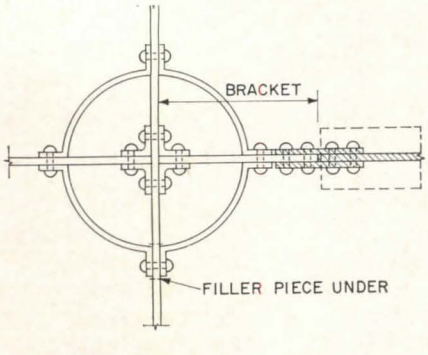
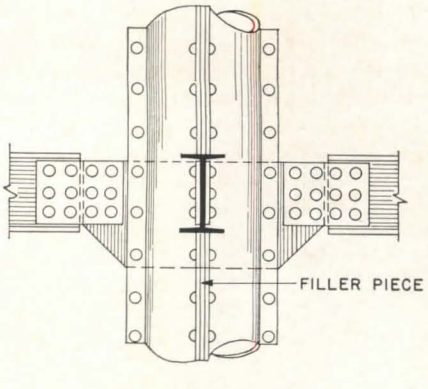
Phoenix Columns were formed by riveting together four, six or eight wrought iron segments, depending on diameter needed



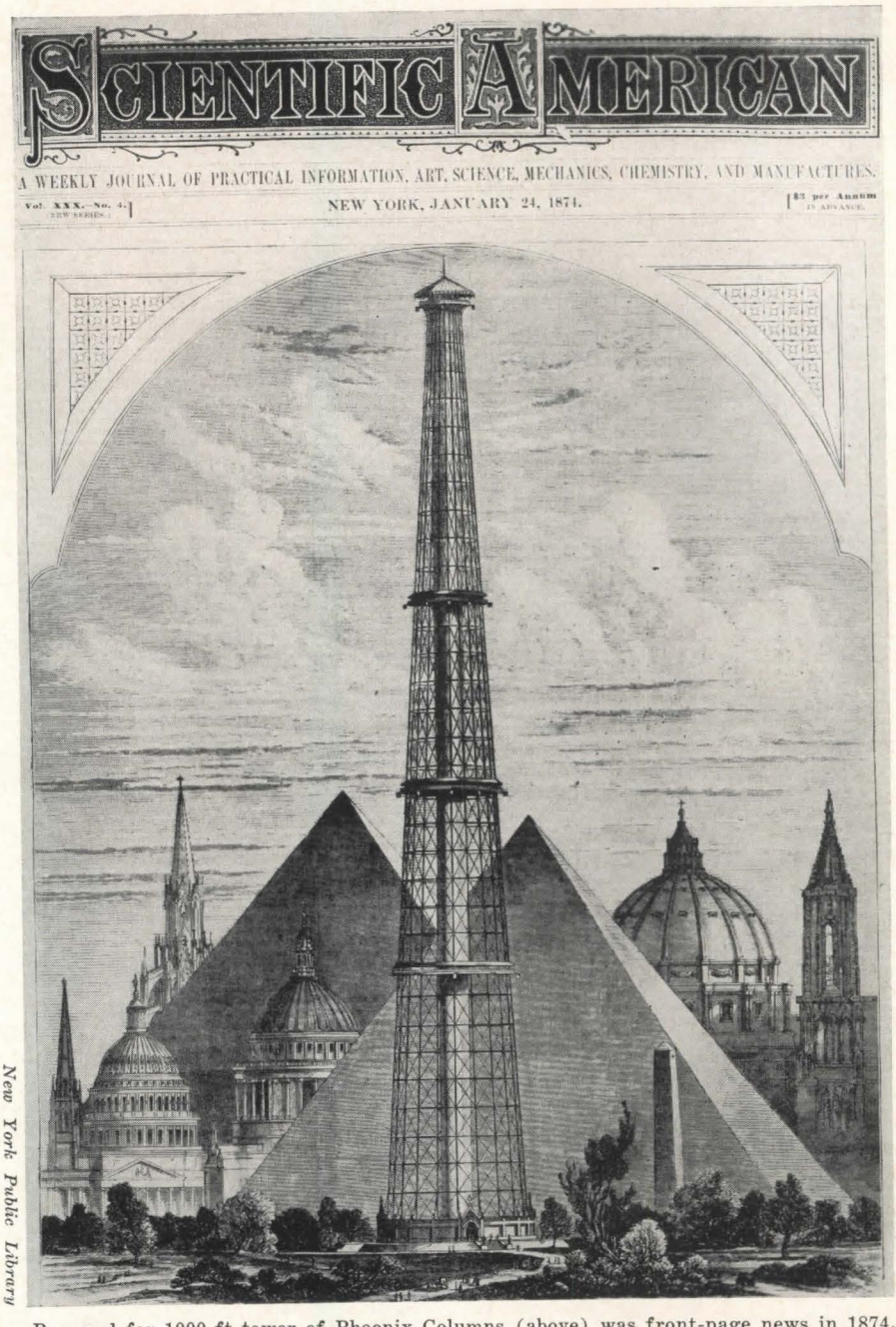
Vertical filler pieces between flanges of "Improved Phoenix Column" added to rigidity, ease of making column-beam connections



A later development, the "cross pintle" connection had filler strips extending horizontally through entire width of column



American Architectural Archive

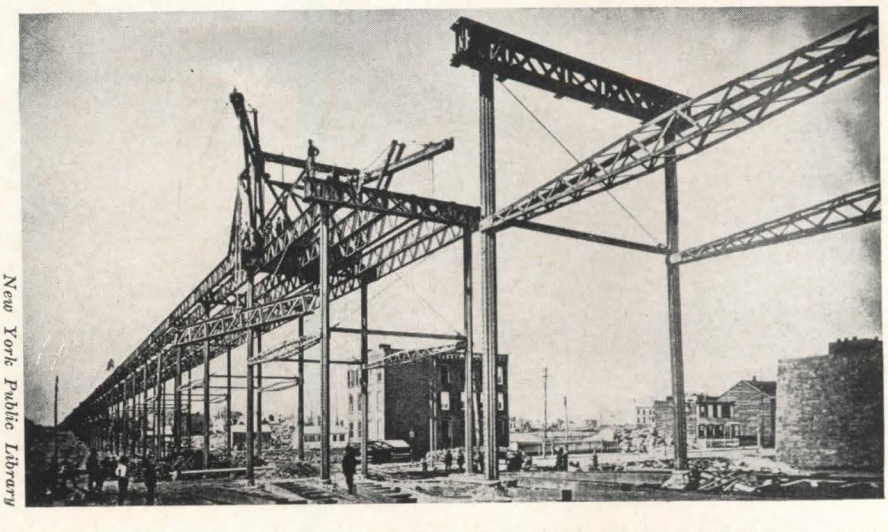

SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XXX.—No. 4. [NEW SERIES.] NEW YORK, JANUARY 24, 1874. [$3 per Annum IN ADVANCE.

New York Public Library

Proposal for 1000-ft tower of Phoenix Columns (above) was front-page news in 1874. Note its height as compared to "skyscrapers" then existing. Other "audacious engineering feats" included structures like New York City's Metropolitan Elevated Railway (below)



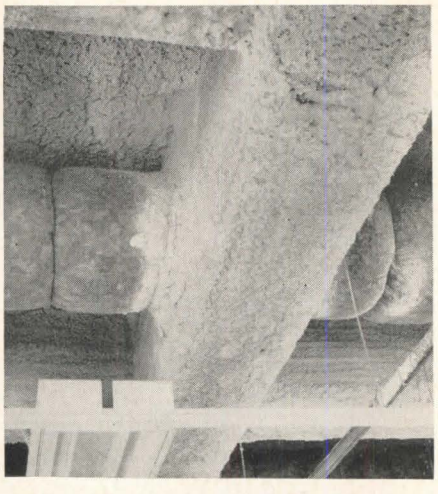
New York Public Library

HIGH VELOCITY SYSTEM CUTS COST, ADDS SPACE

By taking full advantage of the money-saving possibilities inherent in a dual duct, high velocity system, the mechanical engineering department of Welton Becket and Associates, architects and engineers, managed to air condition the new Texas Company building in Los Angeles for about $2.90 a square foot—as compared to a going price of from $3.25 to $4.00 for equivalent systems in the same area. In addition, since the high velocity ducts could be housed in a shallower floor-ceiling sandwich than could conventional ducts, it was possible to squeeze in an extra story without exceeding Los Angeles' then existing 150-ft height limit.

Other than the obvious one of maintaining a comfortable building environment, there were two primary design criteria: to locate mechanical equipment so that it occupied no rentable area, and to preserve flexibility so that changes in the space layout could be accomplished with a minimum of expense and inconvenience. The former was satisfied by placing the fan rooms in the basement and on the roof, and by using the service core of the building as an exhaust shaft. The latter was met by using a hung ceiling to support the acoustical tile, fluorescent light fixtures, air conditioning diffusers, and return air registers.

1



2

3

4

1) Compact dual duct, high velocity system added bonus story to Los Angeles' limit-height Texaco Building. Three elevations are glazed with heat-reducing glass. 2) Small high velocity ducts pass through girders, reduce required depth of ceiling space. 3) Designed for maximum flexibility, hung ceiling supports movable diffusers and return air registers. 4) Flexible duct connects diffusers with mixing box. Ceiling forms plenum for return air

Since this equipment is not attached to the ceiling suspension system, it can be moved as easily as the tenants' partitions and furnishings. Diffusers are connected to the mixing boxes with 8 to 10 ft of flexible duct.

The designers of the system attribute their 10 to 25 per cent savings to several factors:

1) There is no separate return air system. Air entering the return air registers moves through the "plenum" space between the suspended ceiling and the floor above until it reaches the intake to the high velocity (2400 cfm) return air duct in the central service shaft. According to the designers, this saved at least fifty cents a square foot on the return air system alone.

2) Refrigeration equipment was closely sized to the estimated load of 700 tons. The two 350 ton compressors that were installed give no excess refrigeration capacity. (As much as 50 per cent standby capacity is sometimes specified.)

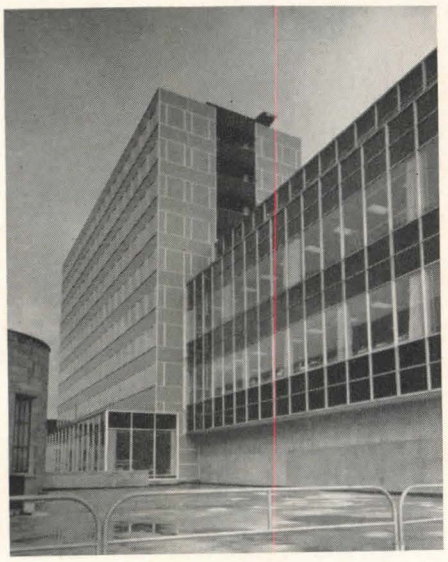
3) Air conditioning loads were reduced by some 117 tons through the use of *Glare-X*, a heat-reducing glass made by sealing two layers of clear glass with a sheet of *KoolShade* sunscreen between. The sunscreen is essentially a venetian blind with tiny (.05 in. wide) horizontal louvers permanently set at the seventeen degree angle believed to be optimum for reflecting solar heat and glare at all hours of the day, throughout the year.

4) Materials for insulation and duct work were selected so that the insulation could be applied in the contractor's shop rather than in the field. This cut labor costs, since work could be begun earlier, using men already employed by the contractor.

5) The specifications were carefully written to encourage competitive bidding. Because no "pet" equipment or subcontractors were written in, each prospective bidder had equal opportunity, including equal access to all necessary equipment.

Also noteworthy is the care that was taken to eliminate noise in the system. All of the fans, pumps and other rotating equipment were installed on spring-supported inertia blocks to keep the vibrations from being transmitted to the building. Special sound absorbers were installed in the hot and cold ducts, and the fan plenums for both discharge and supply fans were lined with acoustical material to further quiet the system.

Durable, Incombustible Building Panel

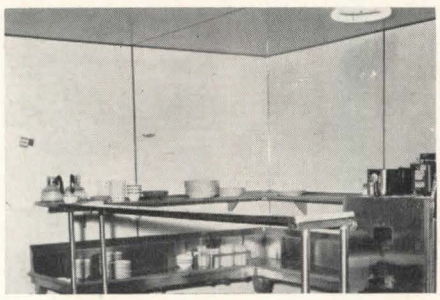


Above: Glasweld panels offer a low cost, incombustible facing material for exterior use. In a serious fire at Belgium's new Brussels Airport, *Glasweld* curtain wall panels like those shown above were undamaged by water, heat or smoke

Right: In this restaurant kitchen, prefinished *Glasweld* panels provide an inexpensive wall finish that is impervious to grease and dirt, can be easily maintained, and will not add fuel to a "flash" fire

Weldwood Glasweld, a completely incombustible, prefinished building panel for exterior and interior use, is expected to find widespread application in the field of school and institutional architecture.

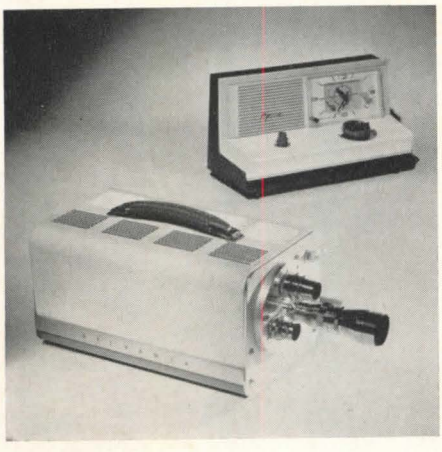
The enamel-surfaced, asbestos reinforced panels are imported from Belgium, where they have been manufactured by the Eternit Corporation for the past five years. Widely used in Western Europe, they are suitable for curtain wall and fascia components, soffits, canopy ceilings, partitions, wainscoting, plain or perforated ceilings, kitchen and bathroom walls and countertops. Their principal assets, other than fire resistance, are durability and low cost. In a school, for example, *Glasweld* panels could eliminate much interior and exterior painting, a large percentage of more costly glazed block and tile, and furring, lathing and plastering in many areas. Initial savings would of course be supplemented by reduced maintenance costs.



The standard 4 by 8 ft panels are stocked in $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{5}{16}$ in. thicknesses and a range of ten colors. Two patterns—a spatter and a linen weave—are available, as well as a perforated style for ceiling use. An additional twenty colors and patterns can be had on special order.

In spite of its ceramic-like appearance, *Glasweld* can be cut with a carborundum wheel, or scored and snapped. It is easily drilled for mechanical fastening, or may be applied with mastic over almost any regular surface. The $\frac{1}{8}$ in. thickness may be nailed without pre-drilling. A variety of moldings for joint and edge treatment will be available. for *Glasweld* installation. *United States Plywood Corporation, 55 West 44th St., New York 36, N. Y.*

Budget-Priced Closed-Circuit TV System

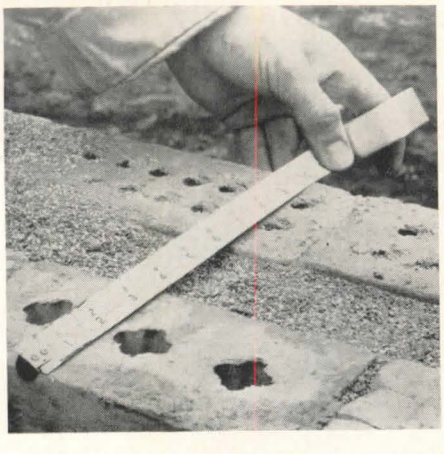


A closed-circuit television system priced "well below" most custom-designed systems currently on the market is designed to stimulate greater use of the medium in schools, industry, commerce, and other fields where price has been a deterring factor to full utilization of closed-circuit television.

The camera in the new system is a vidicon-type weighing fifteen pounds. It requires no special lighting and will transmit an image on channels 2 through 6 to any standard, home-type receiver. The camera has a turret mount for three different lenses, but may be had with one, two or three lenses as required.

A spokesman for the manufacturer has indicated that the system may be particularly useful in schools for science demonstrations, lectures, and the general dissemination of information. Another suggested use is as a shoplifting deterrent in stores and supermarkets. *Home Electronics Div., Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.*

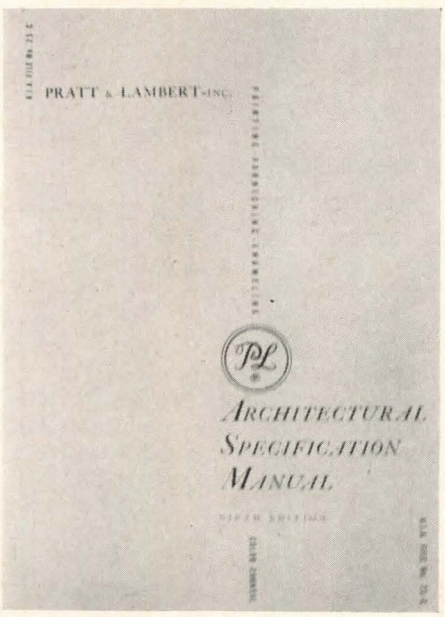
Water-Repellent Masonry Fill Insulation



A new low cost water-repellent insulation fill is expected to permit the use of comparatively inexpensive masonry walls without additional insulation or costly finish materials. According to the manufacturer, a block or cavity wall insulated with the new masonry fill has a heat transmission rating well below the .27 "U" coefficient required by FHA in most sections of the country. Since the fill is water-repellent, its insulating value is not affected by moisture within the wall. Moreover, its use makes it possible to insulate a masonry wall at a cost lower than that of other insulation methods.

A free-flowing granular material, the fill is easily installed by pouring it directly into the cores of the block or the wall cavity. It is said to flow readily into all voids and crevices, leaving no uninsulated areas. Filling can be done at floor line or before capping; block walls can also be filled at the window sill line. *Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.*

more products on page 252



The Pratt & Lambert ARCHITECTURAL SPECIFICATION MANUAL, Ninth Edition (A.I.A. 25-C), is intended to be a complete and reliable reference of painting procedures and specifications. The 260-page manual leads off with product descriptions and an index of surfaces, followed by general conditions, master specifications and selected specifications for specific building types. A complete color section gives basic information on the use of color, as well as more than one hundred Calibrated Color Sequences grouped by job type, light reflectance, and compatibility with "fixed color factors" such as floor tile and ceramic dadoes. There is also a "problem and answers" section which includes a discussion of painting problems and their solution *Pratt & Lambert, Inc., 75 Tonawanda St., Buffalo 7, N. Y.*

Tork Time Controls

(A.I.A. 31-I-24) General Catalog No. 159 features a section devoted to an explanation of switching and timing, followed by descriptions of specific light and power time switches. 8 pp. *Sales Dept., Tork Time Controls, Inc., Mount Vernon, N. Y.*

Cork Tile Specification

(A.I.A. 23-G) New Industry Specification covers physical properties, dimensions, etc., of granulated cork tile in three types of finish. *Cork Institute of America, 342 Madison Ave., New York 17, N. Y.*

Insulating Concrete Catalog

Bulletin No. C11-1959 gives specifications and engineering data, including fire ratings, for *Permalite* insulating concrete for roof decks and floor fills. Also available: Bulletin No. F60-1959, which gives specification and application data for *All-weather Crete* lightweight roof insulation; and Bulletin No. P11-1959, which gives plastering specifications and fireproofing data for *Permalite* plaster aggregate. *Mining and Mineral Products Div., Great Lakes Carbon Corp., 612 So. Flower St., Los Angeles 17, Calif.*

Architectural Metal Work

Illustrates and gives details and mechanical data for a wide variety of architectural metal products in bronze, aluminum and stainless steel. *Newman Brothers, Inc. 660 West 4th St., Cincinnati 3, Ohio*

Kem Tech Furniture

(A.I.A. 35-E) Describes and illustrates *Kem Tech* line of stock laboratory furniture and equipment, and gives eight science room plans with equipment lists, and mechanical service roughing-in details for each item shown. 28 pp. *Kewanee Manufacturing Co., 5046 S. Center St., Adrian, Mich.*

Diaflo Air Conditioners

Bulletin 9327 outlines features of *Diaflo* air conditioners and gives detailed descriptions of their major components. Tables showing cooling ratings, heating capacities and water pressure drop are supplemented by specifications and dimensional drawings. 12 pp. *American Blower Div., American Standard, Detroit 32, Mich.*

Reinforced Plastic Panels

(A.I.A. 26-A-9) Contains technical data; heat and light transmission values; weathering and load carrying charts; a list of sizes, colors and corrugations; construction details; and specifying information on *Filon* fiberglass-and-nylon-reinforced plastic panels. 4 pp. *Filon Plastics Corp., 2051 E. Maple Ave., El Segundo, Calif.*

Metal-Clad Switchgear

Bulletin 2804-1A gives information on construction and performance features, ratings, dimensions, preferred locations and arrangements of circuit elements for indoor and outdoor type 4160v metal-clad switchgear. 24 pp. *I-T-E Circuit Breaker Co., 1900 Hamilton St., Philadelphia 30,* Pa.

Electric Water Coolers

Catalog 59 describes, illustrates, and gives capacity data, and technical and roughing-in details for each model in the Cordley line of electric water coolers. Hints for proper cooler selection, location and installation are also included. 20 pp. *Cordley & Hayes, 443 Fourth Ave., New York 16, N. Y.*

Induction Circulators

Bulletin 1100-B101 contains complete selection information, including dimensional data, performance ratings, gravity heating capacities and specifications on *Flexular* series of induction circulators for high-pressure induction air conditioning systems. 28 pp. *Advertising and Marketing Promotion Dept., Worthington Corp., Harrison, N. J.*

One-Piece Pipe Insulation

(A.I.A. 37-D-2) Includes descriptive material, technical data and specifications for *Fiberglas* one-piece pipe insulation for hot and cold water and low pressure steam lines. 8 pp. *Owens-Corning Fiberglas Corp., Dept. 1-IN-477, Toledo 1, Ohio*

Alzak Processed Reflectors

. . . for the Optimum in Light Reflection (A.I.A. 31-F-24) covers finishes, service, specifications and performance of *Alzak* aluminum reflectors. 12 pp. *Aluminum Company of America, 755 Alcoa Bldg., Pittsburgh 19, Pa.*

Architectural Builders Hardware

(A.I.A. 27-B) Presents specifications, application data and product features for four major lock lines, rectangular and standard liquid type door closers, exit devices, and miscellaneous builders hardware. Form No. SW-9-58, 16 pp. *Sargent & Company, New Haven 9, Conn.*

**Additional product information in Sweet's Architectural File, 1959*

more literature on page 276

PLASTICS AND FIRE RESISTANCE REQUIREMENTS: 1

From the *Code Manual* (Feb. 1959) of the New York State Building Code Commission

With the great influx of plastics into building construction, there has been some doubt in the past as to how these new materials should be treated in connection with building codes. To help alleviate this situation, *A Model Chapter On Plastics for Inclusion in A Building Code*, was drafted in 1956 by The Society of the Plastics Industry in cooperation with The Manufacturing Chemists' Association, Inc. Now the New York State Building Code Commission has included a new section in the revised edition of their Code Manual on "Plastic Materials" published this February. It is generally patterned after the aforementioned *Chapter on Plastics*, and can be related to a performance type building code. The basic material has been rearranged and tabulated, and put into an easy-to-use form. As such it should prove useful to the readers of ARCHITECTURAL RECORD.

General

An acceptable plastic material is one which is suitable functionally for the purpose for which it is to be used, which has a flame-spread rating of not more than 225 [This is the flame spread rating given by the Underwriters' Laboratories tunnel test], and which in burning will not give off excessive amounts of smoke or objectionable gases.

Classification

Class A—Plastic materials, reinforced or unreinforced, which are self-extinguishing or which stop burning when removed from the igniting flame.

Class B—Plastic materials which are not self-extinguishing and are reinforced with 20 per cent or more, by weight, of glass fiber or other noncombustible material.

Class C—Plastic materials which are not self-extinguishing and are reinforced with less than 20 per cent but not less than 10 per cent, by weight of glass fiber or other noncombustible material.

Class D—Plastic materials other than Class A, B, or C.

Structural Requirements

Plastic materials, assemblies, connections, fastenings and the structural members to which they are attached shall conform to the general structural requirements of the [governing code]. Provisions shall be made for expansion and contraction.

Interior Finish and Trim

Plastic materials for interior finish and trim shall conform to the requirements of the [governing code].

Glaze of Openings

Plastic materials may be used for glazing doors and sash and light transmitting panels in exterior walls which are not required to have a fire-resistance rating. For limitations, see Table A.

Roof Panels

In roofs which are not required to have a fire-resistance rating and in roofs where sprinkler protection is provided, panels of plastic materials may be used, except that such plastic roof panels shall not be used directly over assembly spaces, or directly over areas [used for the following: institutional buildings such as homes for ill and infirm; hospitals and clinics; jails, prisons and mental institutions; and similar building types] or over areas in which flammable or explosive materials are made, stored, or handled. For limitations see Table B.

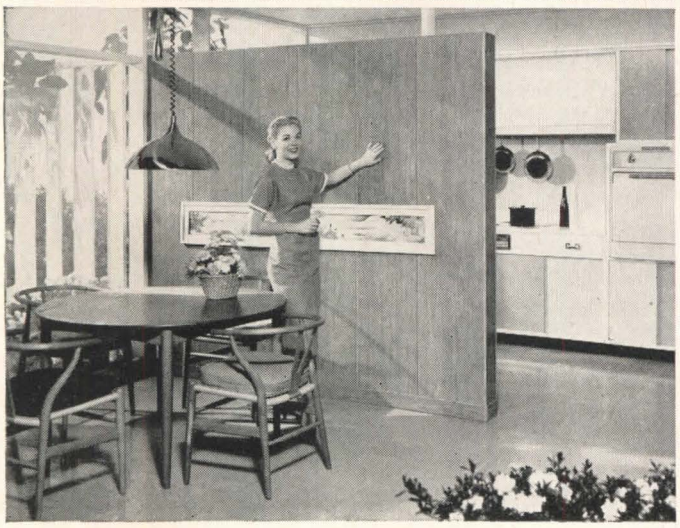
TABLE A

Classification of plastic	Type of building [2]	Building distance separation	Maximum aggregate area, per cent of exterior wall area	Maximum panel area in sq ft	Maximum panel size		Minimum distance between panels	
					Horizontal length in feet	Height in feet	Horizontally in feet	Vertically in feet
A or B	2, 3 or 4	10 to 20	10	100	25	12	4	8 [1]
A or B	2, 3 or 4	20 to 30	15	150	50	12	3	6 [1]
A or B	2, 3 or 4	30 or more	30	300	100	12	2	4
A or B	5	30 or more	30	300	100	12	4	8 [1]
C or D	2, 3, 4 or 5	30 or more	15	150	100	12	4	8 [1]

1. Four feet for panels not more than 6 feet in horizontal length.
2. Type 2, noncombustible; Type 3, heavy timber; Type 4, ordinary; Type 5, wood frame.

TABLE B

Classification of plastic	Minimum slope of roof panel	Maximum aggregate area, per cent of roof covered	Maximum panel area in sq ft	Minimum distance between panels	
				Along slope of roof in feet	Horizontally in feet
A	4 on 12	33⅓	300	10	8
B	4 on 12	25	300	10	8
C or D	4 on 12	15	100	10	8



5805

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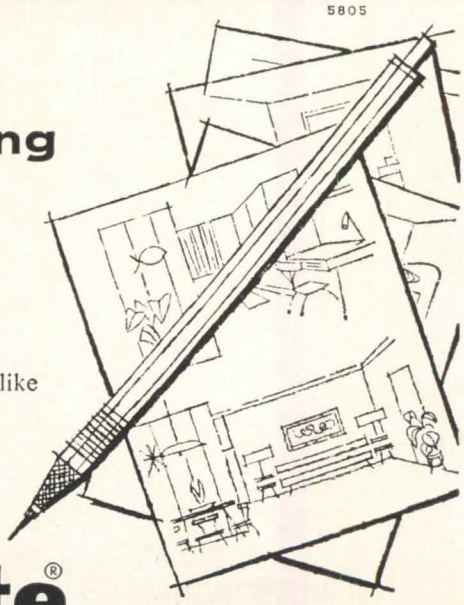
There's no limit on imaginative interiors with versatile Marlite paneling. This easily-installed material in Loewy-styled "Companion Colors," distinctive wood and marble patterns gives a fresh, modern look to any room in the house—new or remodeled.

Large sheets, planks, blocks, hollow-core Korelock are dimensioned for standard modular sizes. They fit right, look right, go up quickly with minimum cost "in place." And Marlite's melamine plastic finish stays like new for years with an occasional damp cloth wiping. That means low maintenance, higher customer satisfaction.

Get complete Marlite details for any "interior idea" from your building materials dealer, Sweet's File—or write Marlite Division of Masonite Corporation, Dept. 405, Dover, Ohio.



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PLASTICS AND FIRE RESISTANCE REQUIREMENTS: 2

From the *Code Manual* (Feb. 1959) of the New York State Building Code Commission

Skylights

Plastic materials may be used in skylights except those directly over assembly spaces, over spaces [used for institutional buildings, such as homes for ill and infirm; hospitals and clinics; jails, prisons and mental institutions; and similar building types] or over areas in which flammable or explosive materials are manufactured, stored, or handled. Material used in skylights over exits or shafts shall be Class A. Such skylights shall be mounted on a noncombustible curb at least 12 in. high above the roof in the following building types: apartments, hotels, motels, etc.; business; mercantile; industrial; storage; assembly; dormitories; and similar types. The curb should be 6 in. high above the roof of one- or two-family dwellings. For limitations, see Table C.

Exterior Wall Facing

Plastic material may be used for facing exterior walls provided it is attached to a noncombustible backing. For limitations, see Table D.

Luminous Ceilings or Light Diffusing Panels

Plastic materials may be used in luminous ceilings or in light-diffusing panels in buildings of low hazard occupancy, and in buildings of moderate or high hazard occupancy equipped with a sprinkler system. Where used in exits or over assembly space in any building; in buildings of mercantile and dormitory occupancies or over hazardous areas in which highly flammable or explosive materials are manufactured, stored or handled, the plastic material shall be class A and have a heat distortion temperature of at least 225 F. Plastic luminous ceilings or plastic light diffusing materials, in mounted or recessed fixtures, in other rooms and spaces, and having an area exceeding 30 per cent of the area of the room shall conform to the flame spread requirements for interior finishes or be of class A material which will distort and fall from its mounting at an ambient temperature at least 200 F below its ignition temperature. Individual sheets of such material shall not exceed 75 sq ft in area between supports. Luminous ceilings below sprinkler heads shall be of material which will distort and fall from its mounting at a temperature at least 15 degrees lower than the operating temperature of the sprinklers.

Partitions

Class A and B plastic materials may be used for partitions wherever partitions of wood or other combustible materials are permitted, providing the surfaces conform to the applicable code requirements for interior finishes.

Note: *the Code Manual can be used as a guide by architects and engineers in interpreting the New York State Building Construction Code. It is not law, but purely advisory.*

TABLE C

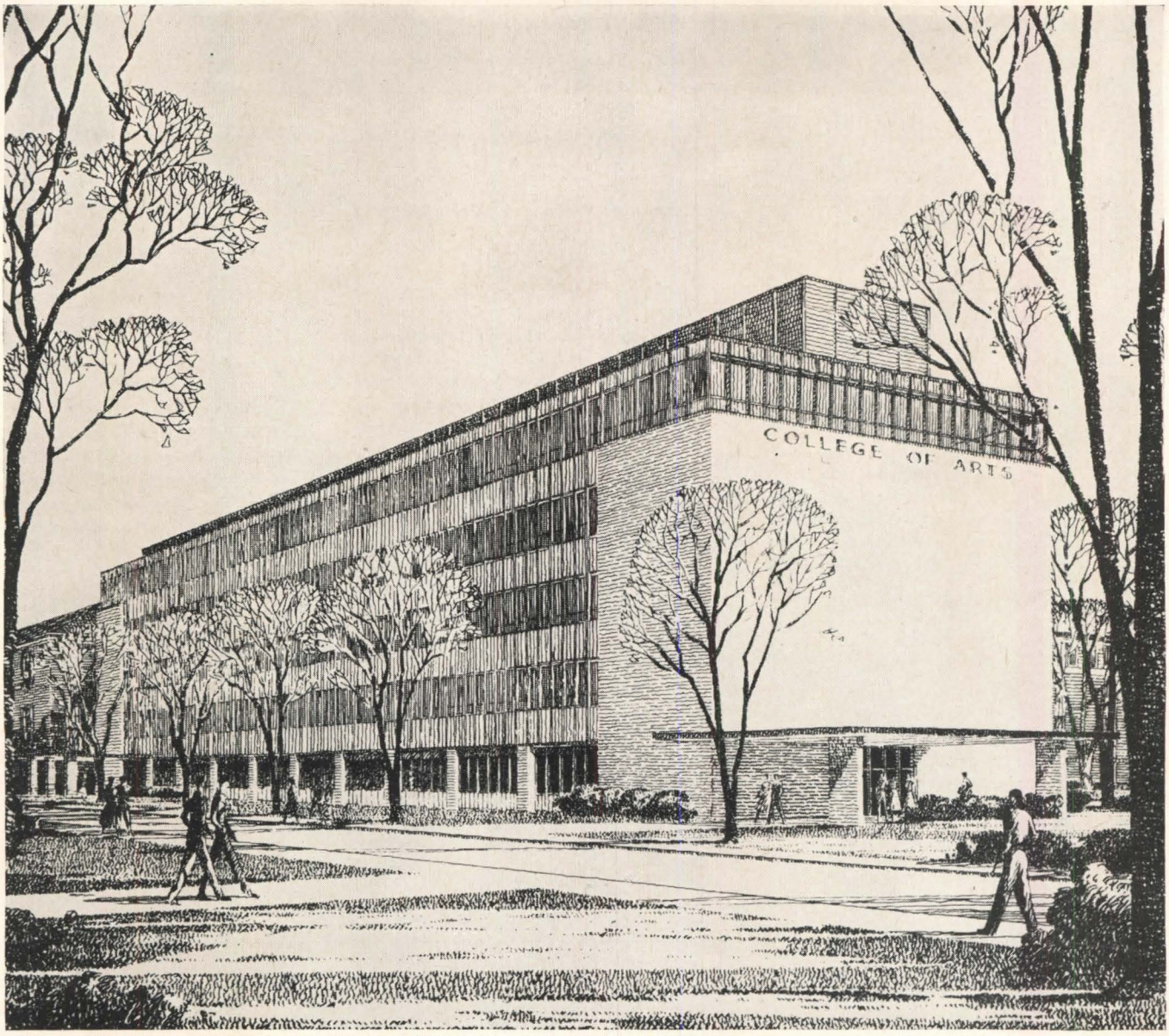
Classification of plastic	Minimum slope [1] of skylight	Maximum aggregate area, per cent of room covered	Maximum skylight area in sq ft	Maximum dimension along slope of roof in feet	Minimum distance between skylights or to exterior wall of building in feet
A	3 on 12	33⅓	300	10	5
B	3 on 12	25	300	10	5
C & D	4 on 12	15	100	8	5

[1] *Rise of dome-shaped skylights at least 10 per cent of maximum span of 5 inches, whichever is greater.*

TABLE D

Classification of plastic	Maximum height above grade		Maximum panel area [1]		Minimum distance between panels	
	Within fire limits	Outside fire limits, feet	Within fire limits, sq ft	Outside fire limits, sq ft	Vertically in feet	Horizontally in feet
A	1 story	35	150	225	6	3
B	1 story	35	150	225	6	3
C	1 story	35	50	75	6	3
D	Not permitted					

[1] *No dimension of any panel shall exceed 15 feet.*



CONTRACTOR: GEO. W. LATHROP & SON, INC. ARCHITECT: HAYS & RUTH. ALUMINUM MATERIALS: ALUMINUM COMPANY OF AMERICA

Curtain walls for halls of ivy

Ohio State chooses North American Architectural Metals for its new College of Arts and Sciences Building

North American Aviation is fabricating and erecting the curtain walls that will sheathe Ohio State University's Denney Hall.

The 5-story building will contain classrooms and offices for the College of Arts and Sciences. The panels are of porcelainized steel mounted in matching color-anodized aluminum frames.

When an architect designs with North American's architectural metals, he has the esthetic freedom to create a structure that is right for its function, right for its time. North American's custom-design service gives him this fluidity of expression.

But North American's time-proved ability to mass-produce any metal in any form also gives him a building that is economical to construct, maintain, own. From its vast experience with the precision metalwork required for military aircraft, North American has found practical answers to the major problems of curtain wall construction: laminating, fastening, sealing, expansion and contraction.

Explore your next curtain wall design with the architectural metals engineers at the Columbus Division of North American. Predicted result: a more beautiful building at a lower cost.

ARCHITECTURAL METALS

THE COLUMBUS DIVISION OF NORTH AMERICAN AVIATION, INC.

Columbus, Ohio

CHIMNEY SIZING FOR MEDIUM SIZED BOILER PLANTS, with particular application to hospitals

ARTHUR L. SPAET, *Partner, Slocum & Fuller, Consulting Engineers*

In the very early stages of hospital planning it is necessary to establish the general architectural outlines and preliminary structural framing for the building. Before any detailed design has been started on the boiler plant, the approximate size of the chimney must be determined. Manufacturers' catalogs usually give a recommended chimney size for a small plant, suitable for a school or modest sized building. For large plants in the power and heavy industrial fields, the design will usually be done by a specialist. The hospital plant falls in between, and information for sizing chimneys has been conspicuously lacking.

The applicable principles have been well established. The problems of draft, chemistry of combustion, the use of draft fans, etc. are available in texts and trade literature. However, the fundamental problem of architect and engineer in the early design stage is that of establishing a chimney size without doing a week's worth of calculation. The table given here can be used for boiler plants other than hospitals provided the conditions below apply. This table will suffice for *preliminary design* under the following conditions and assumptions. Final chimney sizing must be engineered in detail for each application:

1. Elevation of plant—sea level to 500 ft above sea level.
2. The chimney is of masonry or brick construction.
3. Minimum chimney height—90 ft.
4. Average chimney temperature—540 F.
5. Boiler pressure—125 psi.
6. A forced draft fan or induced draft fan will be used to overcome boiler and wind box losses.

Minimum chimney height is that required to clear the flue gases of the highest nearby building or roof; or to clear the highest part of the hospital itself to prevent a health or nuisance hazard. A suggested minimum height is 80 ft above the breeching although a minimum of 90 or 100 ft is preferable.

A round chimney section is preferable to a rectangular section. Where architectural considerations require a rectangular appearance, a circular inside construction is strongly recommended. In addition the fire underwriters express a strong preference for round chimney sections for safety reasons.

Lb stm/hr (Peak load)	Lb stm/hr (Incl. 30% standby)	Boiler hp (Corresponding to previous column)	Oil Pump Rate gal/hr	Flue Gas Cfm Oil—above Coal—Below	Flue Gas lbs/hr Oil—above Coal—Below	Chimney Diam. ft.	Velocity ft/min
20,000	26,000	750	520	17,000 20,400	31,000 47,000	4½ 5	1,060 1,050
25,000	32,500	950	650	21,000 25,000	51,000 57,000	5 5½	1,070 1,050
30,000	39,000	1,130	780	25,000 30,000	61,000 70,000	5½ 6	1,050 1,060
40,000	52,000	1,500	1,000	34,000 41,000	81,000 94,000	6 7	1,200 1,070
50,000	65,000	1,900	1,200	42,000 50,000	100,000 117,000	7 7½	1,090 1,130

continued from page 226

Welded Wire Mats Meet Transmitter Station's Grounding Requirement

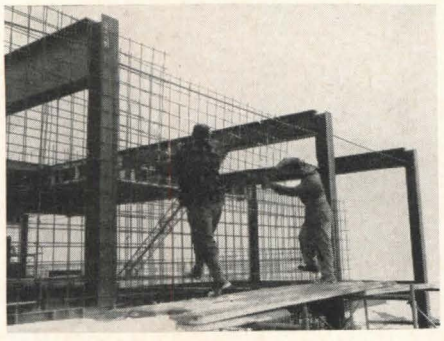
Two special requirements governed the structural design of the new Naval Transmitting Station in Cutler, Maine: the Navy specified flush reinforced concrete walls with no offsets for columns; and since large inside areas of the building were to be shielded with copper lining, all other metal in the structure had to be grounded.

Although a 10-in. wall would have completely encased the steel columns, the engineers decided on a 12-in. thickness, reasoning that the greater thickness would ease placement of concrete and add stiffness.

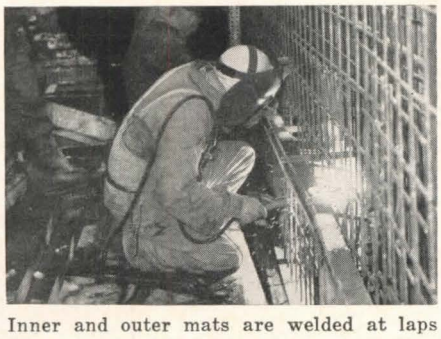
Given wall thickness, the selection of temperature reinforcing should be a matter of simple computation. But in this case, the design was complicated by the grounding requirement, which meant that there could be no loose metal-to-metal contact and that reinforcing members would have to be welded at every intersection. To keep on-site welding to a minimum, individually placed reinforcing bars were replaced by 8- by 10-ft mats of pre-welded wire fabric. These were joined by welding cross wires of each mat at all laps between sheets, on all four sides. Where mats crossed columns, a weld was required every four feet; and brazed "jumpers" were specified at intervals to assure positive electrical connection between the inner and outer lines of reinforcing. Reinforcement for the inner, nonbearing partitions was similarly welded and grounded, as was the ground slab wire reinforcing and the wire mesh with which the columns were wrapped. Finally the entire structural and reinforcing steel system was connected to copper clad steel grounding rods around the outer wall of the building. These in turn were connected to the antenna-ground system, completing the electronic grounding circuit.

The project was designed by Hayden, Harding & Buchanan, Inc., of Boston, and James W. Sewall Company of Old Town, Maine.

more roundup on page 242

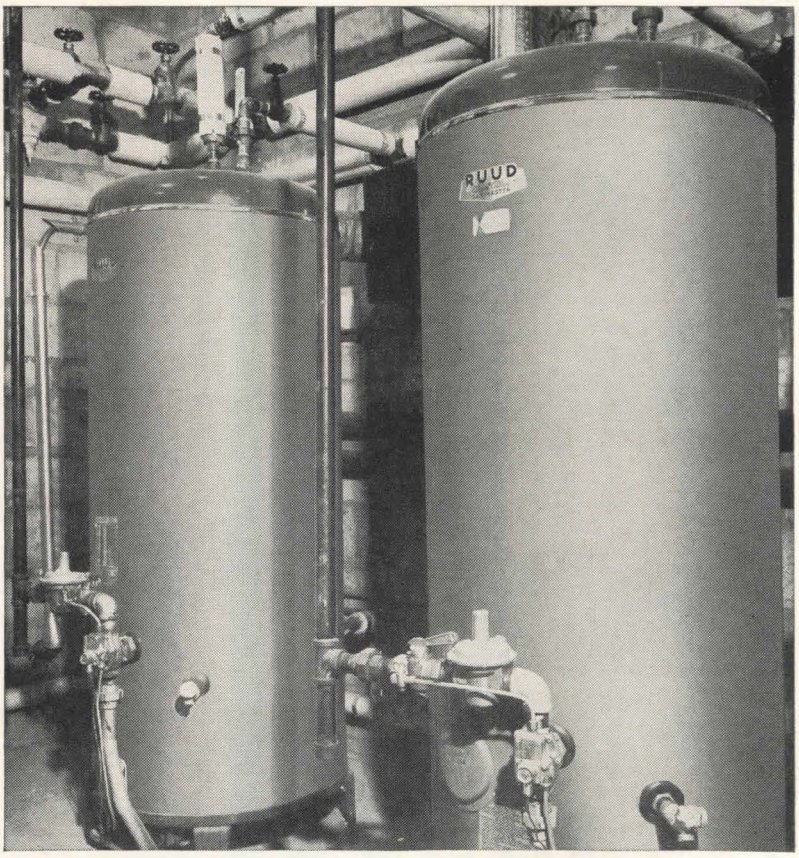


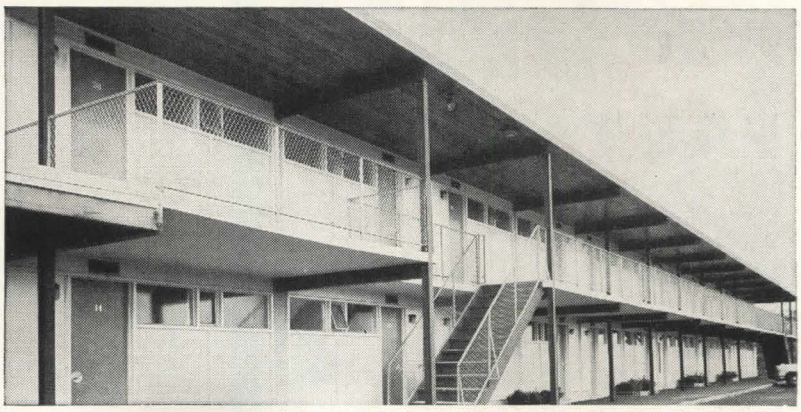
Steel workers position inner line of temperature reinforcing behind previously placed mat of heavy welded wire fabric



Inner and outer mats are welded at laps (above), joined by brazed leads. Leads also join mats to structural members (below)

HOWARD JOHNSON MOTOR LODGE REPORTS: "NO COMPLAINTS ABOUT HOT WATER WITH WATER HEATERS OF ALCOA ALUMINUM"





Plumbing Contractor: Conners and Morrison, Summit, N. J.

Two Alcoa alloy gas water heaters help keep Howard Johnson's Springfield, N. J., Motor Lodge 98 per cent occupied all year-round by providing a plentiful supply of hot water in all 36 units.

The two Ruud-Alcoa water heaters have a high recovery capacity of 168 gallons per hour. That means every guest in each unit could take a bath or shower simultaneously and still have an abundance of 160° hot water. The water heaters were installed in September, 1956, when the building was constructed, and operate around the clock, every day of the year, through 106 outlets. There have been no breakdowns or service interruptions.

In applications where a dependable supply of hot water is essential, it pays to specify Alcoa alloy water heaters. The aluminum alloy tank is strong, solid and corrosion resistant for longer life and freedom from water discoloration. High thermal conductivity assures rapid recovery rate and economical operation. Specially designed units meet American Gas Association Laboratories' requirements. For more information on any application—commercial, industrial or residential—send in the coupon, or write Aluminum Company of America, 1899-D Alcoa Building, Pittsburgh 19, Pa.

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For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

Aluminum Company of America
1899-D Alcoa Building
Pittsburgh 19, Pa.

Please send me *Water Heater Applications of Alcoa Aluminum*, the 12-page FREE booklet that tells why Alcoa alloy water heaters outperform other water heaters, gives the easy way to figure hot water requirements, lists case histories.

Name_____ Title_____

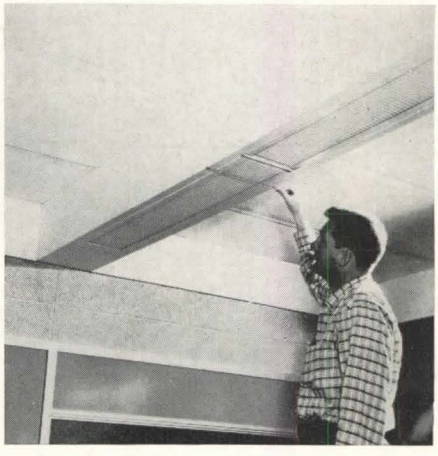
Company_____ Street_____

City_____ Zone____ State_____

Technical Roundup

Atomic Power Plant Construction Progressing Ahead of Schedule

The country's largest atomic power plant, now 65 per cent complete, is expected to be in operation in the summer of 1960—six months ahead of schedule. Already the concrete foundation for the reactor "vessel" is in place, power lines have been strung, an office structure is completed and partially staffed, and the seventeen-story-high steel sphere that will house the reactor looms over the surrounding corn fields. When finished the plant, with its "boiling water" type reactor, will produce about 180,000 kilowatts—enough to fill the electrical power needs of a city of a quarter of a million. The first such facility in the U.S. to be built without government subsidy, the plant is being built by General Electric for the Commonwealth Edison Company at a quoted price of $45 million. It is located in Dresden, Ill., about fifty miles southeast of Chicago.

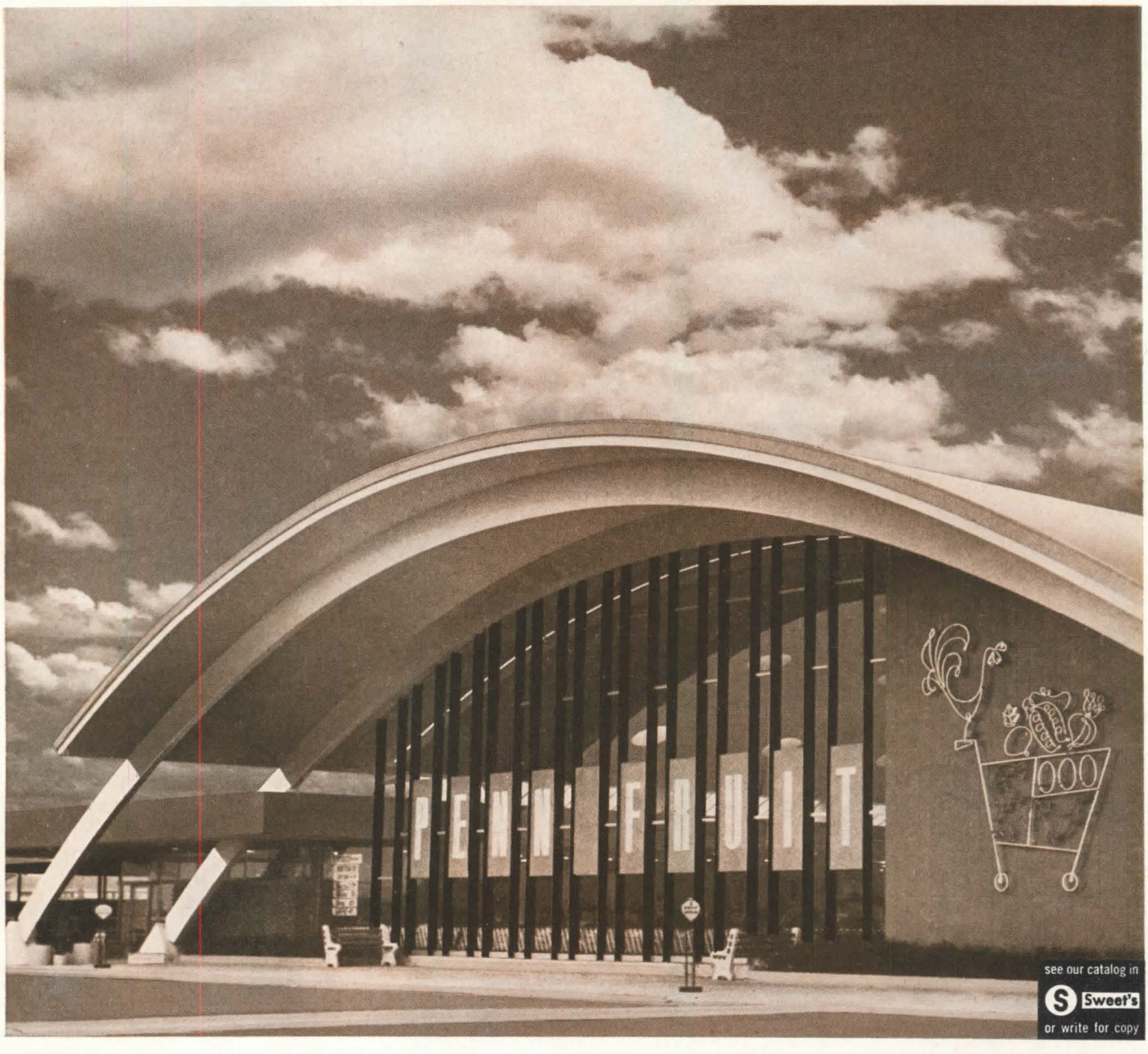


Boxed Channels Frame Lighting Fixtures, Cut School Costs

A new method of using Junior Channels to house lighting fixtures in four Denver area schools has resulted in savings of $25 per fixture or $375 per room, according to the estimate of architect Roland M. Johnson, A.I.A. The boxed 12-in. Junior Channels are on 8-ft centers and run uninterruptedly through the two classroom wings, supporting the poured concrete roof and formed board ceiling. Inside each are set five 4-ft industrial type fluorescent fixtures (a total of fifteen to a classroom), each shielded by a plastic egg crate grid. The exposed channels are painted to blend with the formed board ceiling and classroom trim, and all connections are hidden to give a clean appearance.

more roundup on page 248

Blackhorse shopping center of Penn Fruit Company, Audubon, New Jersey. Architects: Victor Gruen & Associates, New York City; Contractor: McClain Construction Company, Philadelphia.



As dramatic in appearance as they are economical and permanent in use, glued laminated timber arches by Timber Structures, Inc. are ideal for the commercial building that you want to be "different". . . and better.

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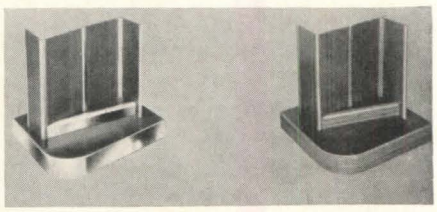
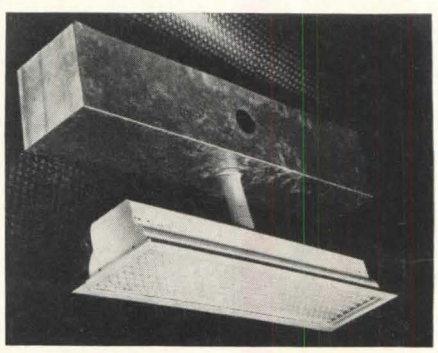
Product Reports

continued from page 227



Matched Moldings for Plastic
A new process for bonding plastic veneers, vinyls, wood and other surfacing products to the aluminum extrusions from which moldings are made makes it possible to match moldings to any wall or counter surfacing material now on the market. The matched moldings not only eliminate chrome trim, but also reduce installation costs by eliminating the scribing and butting of joints. Nailed to the wall, the moldings hold the panels snugly, yet permit them to expand and contract, thus doing away with the problems of buckling, edge curling or joint separation. They can be had in every opening size for joints and edging for any size panels between 1/16 and 13/16 in. in thickness. *Keller Products, 41 Union St., Manchester, N. Y.*

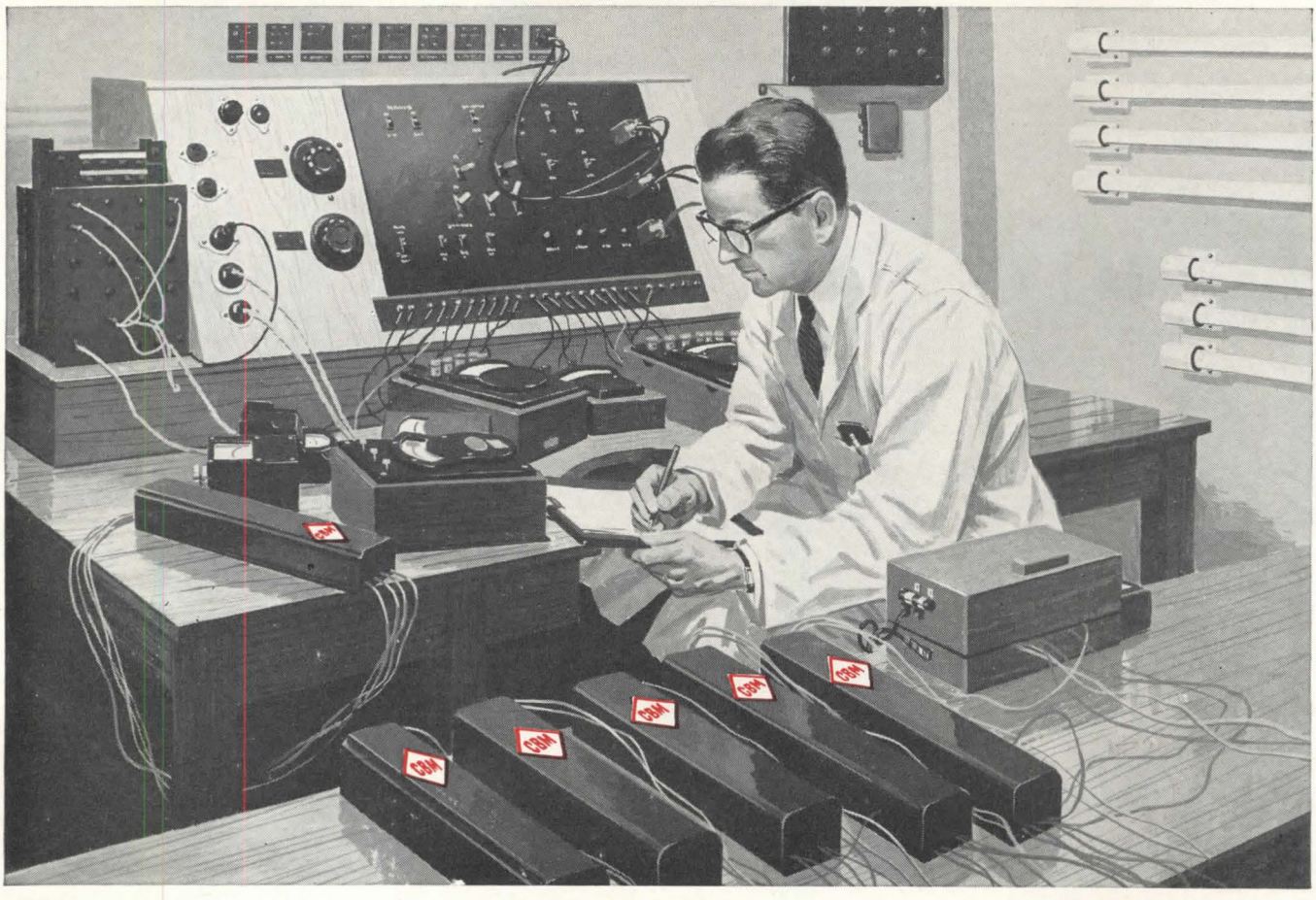


Troffer Air Diffuser Combination
The *Multi-Vent Troffer,* a unique fixture designed to help solve heating, air conditioning and ceiling decor problems in commercial and institutional buildings, combines a drop ceiling, flush fluorescent lighting fixture with a vertically-directed air diffuser. It is said to simplify engineering, reduce initial cost, and make possible cleaner, more attractive interiors. The low velocity diffuser panel is attached above the lighting fixture and connected to the central duct by a flexible tube. The troffer is available with louvered, baffled, open and glass bottoms. If the glass-bottom fixture is used, air is diffused through tiny slots in the perimeter. *The Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.*

continued from page 227

HOW CBM ASSURES YOU BETTER BALLAST VALUE

ETL checks 12 to 14 specified ballast characteristics on all Certified types in production by each manufacturer, verifies compliance by test . . . and does it every month!



THIS is important: Because if any ballast fails to measure up, the right to carry the emblem "Certified CBM by ETL" is withdrawn.

What characteristics are checked? The operating qualities which the American Standards Association has determined will give dependable, rated performance from the lamps with which the ballasts are designed to be used. These constitute the CBM Specification and assure:

High power factor • High light output • Positive starting • Rated lamp life • Limit on heat rise • Control for steady light • Quiet operation

From these qualities come practical benefits: Up to 2,500 hours more lamp life than with ordinary ballasts; as much as 40% more light output; and savings on installation . . . with less wire, fewer circuits needed for fixtures CBM equipped . . . fewer fixtures for the same level of light.

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CLEVELAND 15, OHIO

Participation in CBM is open to any manufacturer who wishes to qualify

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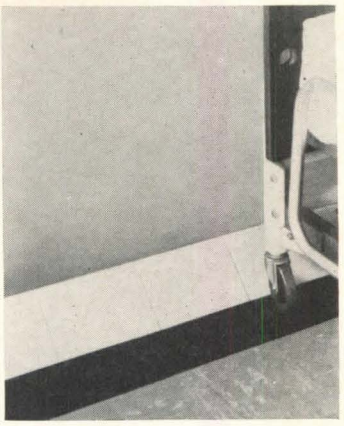
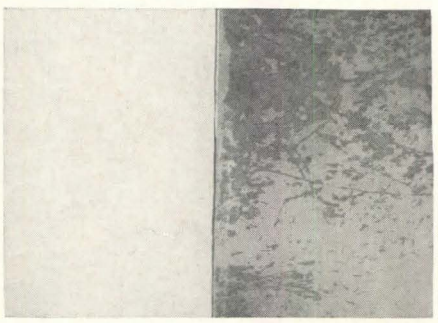
Product Reports



Splayed Tile Base Shapes

Wheeled equipment is prevented from marring wall surfaces by splayed base shapes newly added to the "6T" *Vitritile* facing tile series. The new shapes feature a 3-in. inclined projection outward from the base of the wall. All six available units measure $5\frac{13}{16}$ in. in height, and come in black, dark green and brown trim shades or the manufacturer's standard tile colors. They can be used with any wall surface, *including* plaster. *Natco Corp., 327 Fifth Ave., Pittsburgh 22, Pa.*



Wear-Resistant Floor Enamel

A new non-toxic isocyanate floor enamel for concrete surfaces is said to offer maximum toughness, flexibility, and abrasion and impact resistance. In a one-year performance test, the enamel was applied to a portion of a school cafeteria where it was trampled by seven hundred children each day. The photo above shows the deterioration of a conventional floor finish (left) versus the unmarred surface of the *Durethane* enamel next to it. The enamel has two components—a clear liquid and a tile red, pewter gray or cruiser gray color component—which are combined in equal parts just before applying the finish with brush, spray or roller. Two coats are recommended. *Pittsburgh Plate Glass Co., 632 Ft. Duquesne Blvd., Pittsburgh 22, Pa.*

more products on page 264

The dramatic facade of this new Cleveland office-warehouse of E. R. Squibb & Sons, Division of Olin Mathieson Chemical Corporation, consists of 4′ x 8′ panels of translucent ivory PLEXIGLAS. Fluorescent tubes behind the panels provide complete luminosity at night. Letters and trademark reproductions are also PLEXIGLAS. Architects: Toombs-Amisano & Wells, Atlanta, Ga. Builder: Gillmore-Olsen Co., Cleveland.

Beautify and Identify with **Plexiglas**

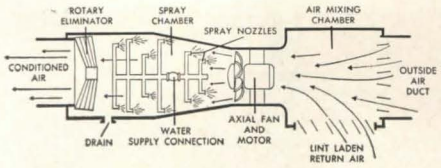
The luminous facade shown above is just one of the many ways PLEXIGLAS® acrylic plastic is being used in building applications. Others are dome skylights, lighting diffusers and lenses, signs, daylight-control panels, spandrels, partitions, and decorative glazing. The reason for this variety of uses? PLEXIGLAS combines light transmission with wide color range, outdoor stability, light weight, resistance to breakage, and ability to be formed to almost any shape. Write for the names of building products made of PLEXIGLAS, and for technical information and assistance on your specific projects.

Chemicals for Industry

ROHM & HAAS COMPANY

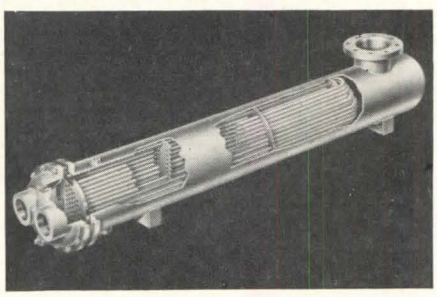
WASHINGTON SQUARE, PHILADELPHIA 5, PA.

In Canada: *Rohm & Haas Co. of Canada, Ltd., West Hill*
Crystal Glass & Plastics, Ltd., Toronto



Industrial Air Conditioner
The *Rotaspray Weathermaker*, a new central air conditioning device for textile and other industrial plants, takes only one-third the space of present equipment, provides more accurate control of humidity, and virtually eliminates system cleaning and maintenance. In operation, air drawn into the *Rotaspray's* cubical mixing chamber is sent through a "hurricane" of atomized water particles to a rotary eliminator wheel which removes water droplets, lint and other foreign matter before air leaves the chamber to enter the duct system for distribution. The water and entrained particles then drain from the self-flushing cylinder to a single separation tank serving all units. After the waste material has been separated from the water, the water is recirculated to the air conditioner. The compact *Rotaspray* may be suspended from the ceiling, hung from a wall or located on the roof. It does not require a shelter. *Carrier Corp., Syracuse, N. Y.*

Air Conditioning Control Console
The *Selectografic Supervisory Datacenter*, a miniaturized heating and air conditioning control console, is designed to enable a building engineer to remain seated while he monitors and adjusts building temperatures. The compact console (4 ft high and wide by 2 ft deep) includes an 11 by 16 in. projection screen for slides containing system diagrams, floor plans or other building or maintenance data; up to 35 pushbutton switches depending on the number of systems to be controlled; a clock, a temperature indicator and an intercommunications unit. *Minneapolis-Honeywell Regulator Co., Commercial Div., 2747 Fourth Ave., Minneapolis 8, Minn.*



Improved Instantaneous Heater
An extra-large steam entrance area beyond the tube bundle of a new line of Ross instantaneous heaters is said to prevent tube damage by impingement, thus prolonging tube life. Designated Type W-100, the units are of compact, simplified design, with removable, pull-through tube bundles. Standard construction consists of rugged steel shells, cast iron bonnets, and seamless, copper alloy U-tubes. Available in 128 sizes, the heaters can be used for practically every water heating requirement. *American-Standard, Industrial Div., Detroit 32, Mich.*

more products on page 268

ARCHITECTS: VOORHEES, WALKER, SMITH, SMITH AND HAINES

OLIN ALUMINUM HELPS FORD CUT BUILDING AND MAINTENANCE COST

At Ford Motor Company's Engineering and Research Center in Dearborn, the clean sweeping facade is achieved with curtain walls fabricated from Olin Aluminum. Ford cuts upkeep cost year after year because aluminum needs no painting, minimizes maintenance. And, aluminum saves construction time and money . . . esthetically blends with any modern design. Our trained consultants welcome the chance to help you use aluminum most advantageously. Metals Division—Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, N.Y.

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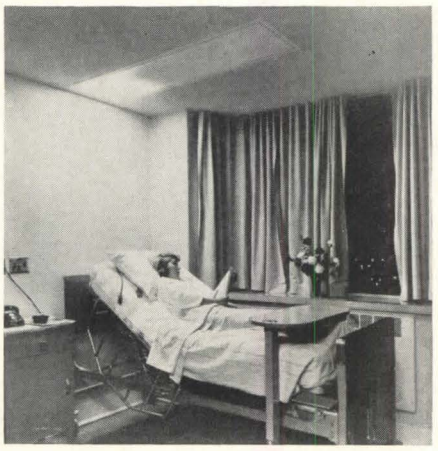
Adhesive for Foamed Polystyrene
A new non-flammable mastic adhesive bonds rigid and semi-rigid expanded polystyrene foams to themselves and to other materials such as wood, concrete, metals, etc. Since the new formulation, trade-named *Bondmaster G459*, is water-dispersed, all danger of solvent attack on susceptible polystyrene foam cells is eliminated. Bonds made with the new adhesive are said to resist humidity and freezing temperatures, and to maintain strength throughout a temperature range of from −35 degrees to +250 degrees F. The water-based adhesive may also be used for bonding insulating and sound-deadening materials, and other porous or fibrous substances. *Rubber & Asbestos Corp., Dept. P, Bloomfield, N. J.*

Improved Fluorescent Lamp Ballast
Formerly supplied in twin containers as a ballast and auxiliary, an improved ballast for two 96- or 72-in. *SHO, VHO* or *Powergroove* lamps now comes in a single container. The new construction is 40 per cent smaller and 40 per cent lighter, and is said to have a perfect sine wave shape with a 1.4 crest factor that assures 100 per cent light output plus full rated lamp life. The lower watt loss gives the user a bonus equivalent to an increase in overall efficiency of 8 lumens per watt. *Advance Transformer Co., 2950 North Western Ave., Chicago 18, Ill.*

Fire Retardant Paint
An interior flat enamel that is said to compare in appearance with fine architectural finishes has been given a fire retardant rating in Underwriters' tests. Available in seven colors and white, the new fire retardant paint is expected to be particularly useful in stair wells and furnace rooms of homes, as well as in plants, offices, ships, hospitals, schools, hotels and apartment houses. It can be applied by brush, roller or spray gun, and is most effective when used on new or unpainted surfaces. Three coats are recommended for optimum results. *E. I. du Pont de Nemours & Co., Wilmington, Del.*



Ceiling-Mounted Hospital Light
The *Astrilite*, a new ceiling-mounted patient room light, is said to combine improved illumination with substantial economies for hospitals. According to the designers, the three-compartment fluorescent unit provides four levels of illumination. Soft, general room light or high-level light for reading and close work are provided from the head-end compartment; full bed-length light is available for examination or surgical preparation; and a safety night light at the foot-end of the fixture adds to nursing convenience and patient comfort. Savings are attributed to decreased maintenance time, the smaller current consumption of fluorescent tubes, and a simplified wiring system. *American Sterilizer Co., Erie 6, Pa.*

more products on page 272

HUSKY

150-LB. WELDING FITTINGS

HAVE

TWICE THE STRENGTH ...TWICE THE LIFE !

HUSKY SYSTEMS ARE STRONGER —
because nothing is cut away from the pipe to form threads. This means that Husky fittings provide a "double strength" system without weak links at each fitting joint.

HUSKY SYSTEMS ARE COMPETITIVE
In nearly every instance Husky welding fitting installations cost the same (or less) than those using threaded fittings because of time saved in joining.

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There are no other fittings on the market specifically designed to weld normal 150 lb. steel piping systems.

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Please send your new Husky Catalog H-1 without cost or obligation.

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Office Literature

continued from page 228

Marcolite Skylights
(A.I.A. 12-j) Details sizes, styles, mounting methods for eight models of aluminum and fiber glass panel skylights. *The Marco Company, 45 Greenwood Avenue, East Orange, New Jersey**

Industrial Burners
(A.I.A. 30-G) Folder 5807 describes and illustrates the *AirRing* series of industrial burners with built-in fuel and air systems. 4 pp. *Iron Fireman Mfg. Co., 3170 West 106th St., Cleveland 11, Ohio**

Aluminum Expansion Joint Covers
(A.I.A. 4-E-11) Details complete line of aluminum expansion joint covers for interior floors, walls and ceilings, and exterior walls. Catalog 7, 4 pp. *Architectural Art Mfg. Co., 3239 N. Hillside, Wichita 14, Kan.*

The Free Access Floor
Contains drawings, illustrations, specifications, typical installations and elevations, and a discussion of the support assembly for *Elaflor* elevated aluminum flooring for computer rooms and other business machine areas. 8 pp. *Liskey Aluminum, Inc., Box 506, Glen Burnie, Md.*

Condensed Style Catalog
Reviews complete line of plumbing fixtures and related items. 36 pp. *Universal-Rundle Corp., New Castle, Pa.**

Aluminum for Architecture
(A.I.A. 15-J) Contains design information on architectural applications of aluminum, including a detailed listing of the properties and uses of aluminum alloys, and a section on special finishes available. 12 pp. *Olin Aluminum, Metals Div., Olin Mathieson Chemial Corp., 400 Park Ave., New York 22, N. Y.**

Reznor Space Heaters
Gives complete engineering data, construction details and specifications on redesigned line of heavy duty space heaters. 8 pp. *Reznor Manufacturing Co., Mercer, Pa.**

Sliding Door Hardware
(A.I.A. 27-A) General information on features, installation and packaging of each series of sliding door hardware is supplemented by photos, details, specifications and ordering data. Catalog Section I, 68 pp. *Grant Pulley and Hardware Corp., New York, N. Y.*

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 284

announces new...

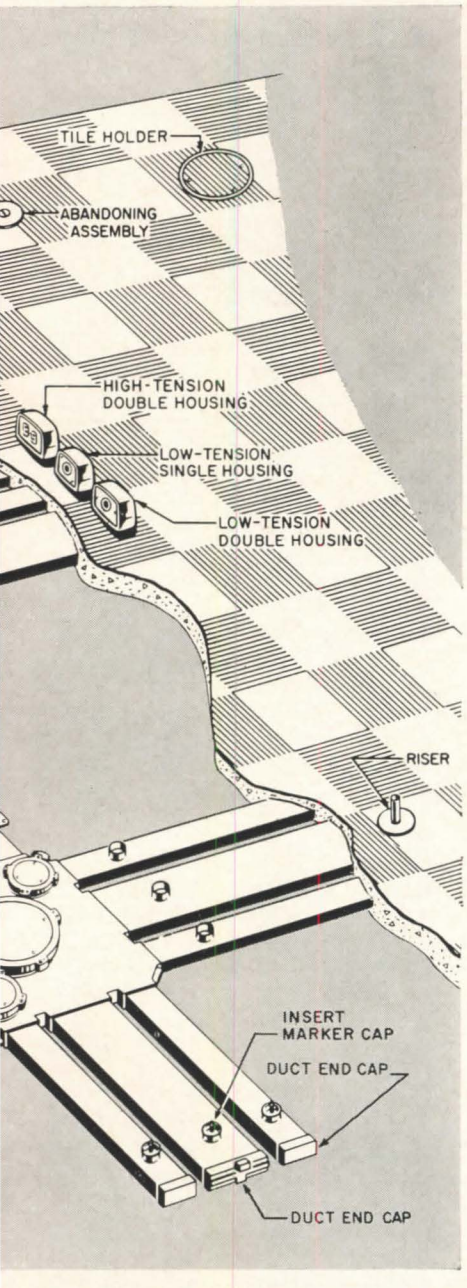
BIG DUCT

UNDERFLOOR WIRING SYSTEM

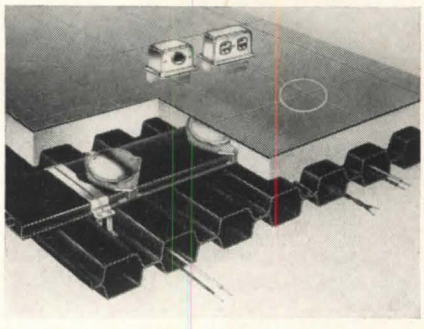
Large-capacity duct meets growing electrical needs

Here's your answer for standard layouts that need greater feeding capacity than you can get with a standard-size, single-level duct system. It's General Electric's new single-level steel BIG DUCT system, utilizing duct with an 8½-inch cross-sectional area. The system includes boxes, components, and accessories necessary to utilize BIG DUCT either by itself or in combination with the G-E single-level standard duct.

Junction boxes have been provided to accommodate runs of BIG DUCT as well as several combinations of BIG DUCT and standard duct. All height and leveling adjustments are made outside the box making it unnecessary to remove the cover. Duct entrances have been spaced so that, by using plugs and/or reducers, the new system may, if necessary, be used in connection with the duct and boxes of the G-E single-level standard duct system. The new General Electric single-level steel BIG DUCT system can be installed in any type of floor construction that has a minimum fill thickness of three inches.



installation requirement



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Company_____

Address_____

Office Literature

Ideas In Action
Report No. U7-4 cites advantages of hanging beam bottoms with steel strapping, and gives charts and diagrams explaining how to calculate the size and spacing of straps for handling beam formwork. 6 pp. *Acme Steel Co., 135th St. and Perry Ave., Chicago 27, Ill.*

Haskelite Laminated Panels
Illustrates laminated structural panels and their uses. 8 pp. *Haskelite Mfg. Corp., 701 Ann St., N. W., Grand Rapids 2, Mich.*

Acoustical Products
(A.I.A. 39-B) Presents physical and acoustical characteristics, including flame resistance, light reflectance and sound absorption coefficients, of several types of acoustical products, Installation details are included. 8 pp. *Acoustical Products Div., Baldwin-Hill Co., 500 Breunig Ave., Trenton 2, N. J.*

Louverdrape Brochure
Outlines advantages of vertical blinds as window treatment, and gives data on light control, air control, heat reflectivity, heavy duty hardware, and fabrics. 16 pp. *Vertical Blinds Corp. of America, 1936 Pontius Ave., Los Angeles 25, Calif.*

RS Panels
(A.I.A. 17-A) Gives detailed information and specifications on *RS* ceramic tile faced, insulated curtain wall panels. 10 pp. *Ceramic Tile Panels, Inc., 217 4th St., N.E., Canton 2, Ohio**

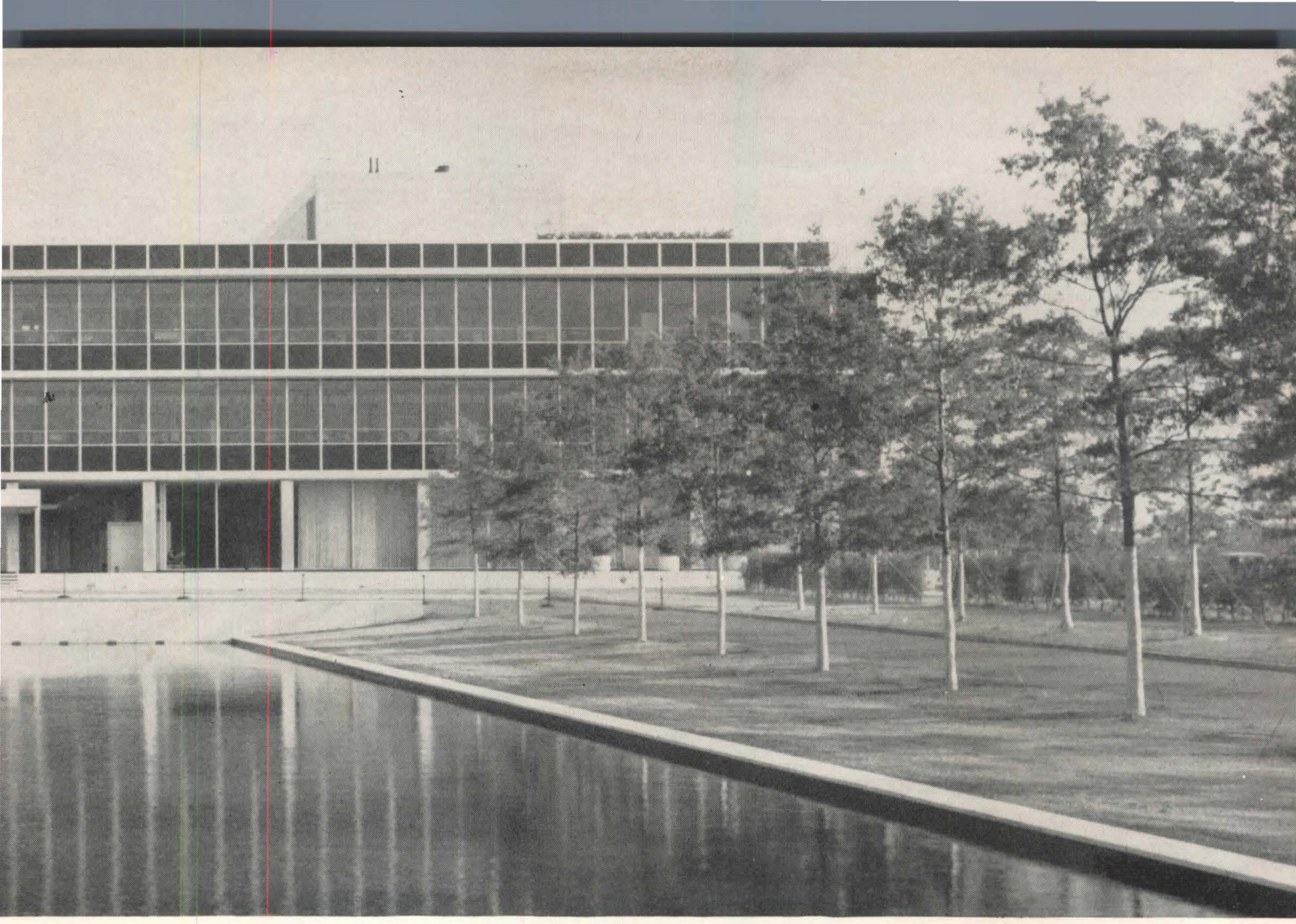
Saraloy 400
(A.I.A. 12-H) Bulletin 153-87 discusses advantages, physical characteristics and specifications for *Saraloy 400* pliable plastic sheet flashing. 4 pp. *Plastics Sales, The Dow Chemical Co., Midland, Mich.**

Smithcraft Area Illumination
Catalog offers complete selection information on basic standard equipment used in flexible new ceiling lighting system. *Smithcraft Lighting, Chelsea 50, Mass.**

Weis Compartments
(A.I.A. 35-H-6) Full-color illustrations and detailed descriptions of Weis toilet compartments in porcelain and baked enamel finishes are supplemented by "chips" of available colors. *Henry Weis Mfg. Co., Inc., Elkhart, Ind.*

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 288



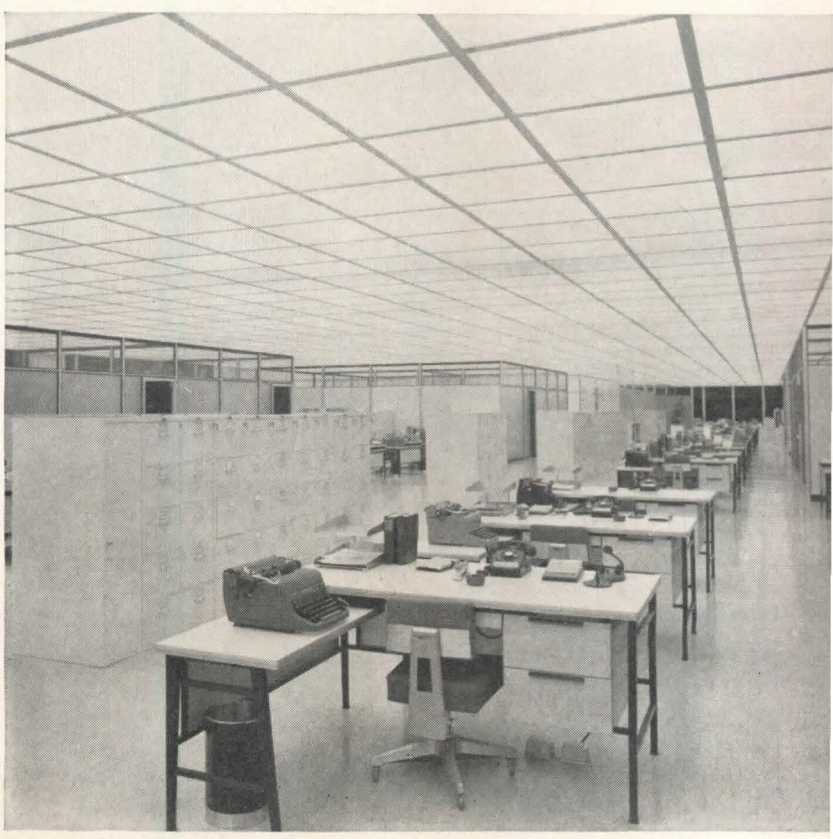
■ Here is the new home of Reynolds Metals Company, Richmond, Virginia. It is dramatically placed at the end of a reflecting pool bordered by willow oaks. The classic beauty of the building is enhanced by this unusual setting. Architect: Skidmore, Owings & Merrill; Consulting Engineer: Ebasco Services, Inc.

Unique all-aluminum folding grids in 100 sq. ft. units cut installation time 8,000 man hours . . . provided wall-to-wall illumination with low brightness quality

Installing a lighting system so flexible it can adapt to any internal building change without relocation is quite a feat. But when that is accomplished at important savings it calls for exceptional engineering ingenuity. That's what Curtis Visioneers achieved with a special custom-made aluminum folding grid system at Reynolds Metals Company, Richmond, Va. The unique folding "packages" made it possible to install 100 sq. ft. of lighting at one time. Result: a saving to Reynolds of an estimated 8,000 man hours, or approximately $50,000. A wall-to-wall ceiling of light was created with a beautiful satiny aluminum lighting tone of low brightness quality. Over-all ceiling illumination solved the problem of how to obtain stationary lighting for a 100,000 sq. ft. area, even though wall partitions would be moved in the future. Write today for the name and address of the Curtis Visioneer in the principal city nearest you. Curtis Lighting, Inc., 6135 West 65th St., Chicago 38, Ill. In Canada: 195 Wicksteed Ave., Toronto 17, Canada.

CURTIS

Visioneers in Planned Lighting



■ Large office areas are as effectively illuminated as small areas with a high degree of visual comfort assured. In this special Curtis grid installation, aluminum materials were used throughout. Maintenance features of the system include ease of relamping, ready access to wiring, and simple replacement of the ballasts.

Office Literature

Porcelain Enamel Panels
(A.I.A. 17-A) Three four-page brochures contain detailed information —suggested specifications, installation data, sizes, colors and patterns, etc.—on *AllianceWall* line of veneer and insulated porcelain enamel on steel panels. *AllianceWall Div., AllianceWare, Inc., Alliance, Ohio*

Masonite Panel Products
. . . for Interior Applications (A.I.A. 23-L) contains tables showing properties and available sizes, descriptions of various hardboard types, directions for working with *Presdwood,* application details and architectural specifications. 20 pp. A similar eight-page guide on exterior applications is also available. *Service Bureau, Masonite Corp., 111 W. Washington St., Chicago 2, Ill.*

Nevamar Color Selector
(A.I.A. 35-C-12) Contains full-color illustrations of patterns and woodgrains in *Nevamar* line of high-pressure laminates. 4 pp. *Dept. CS, The National Plastic Products Co., Odenton, Md.*

Alumiline Entrance Catalog
(A.I.A. 16-E) Includes illustrations and sectional views of complete line of doors and entrance frames, sliding doors and specialty custom products. 16 pp. A similar Store Front Catalog (A.I.A. 26-D) is also available. *The Alumiline Corp., 10 Dunnell Lane, Pawtucket, R. I.*

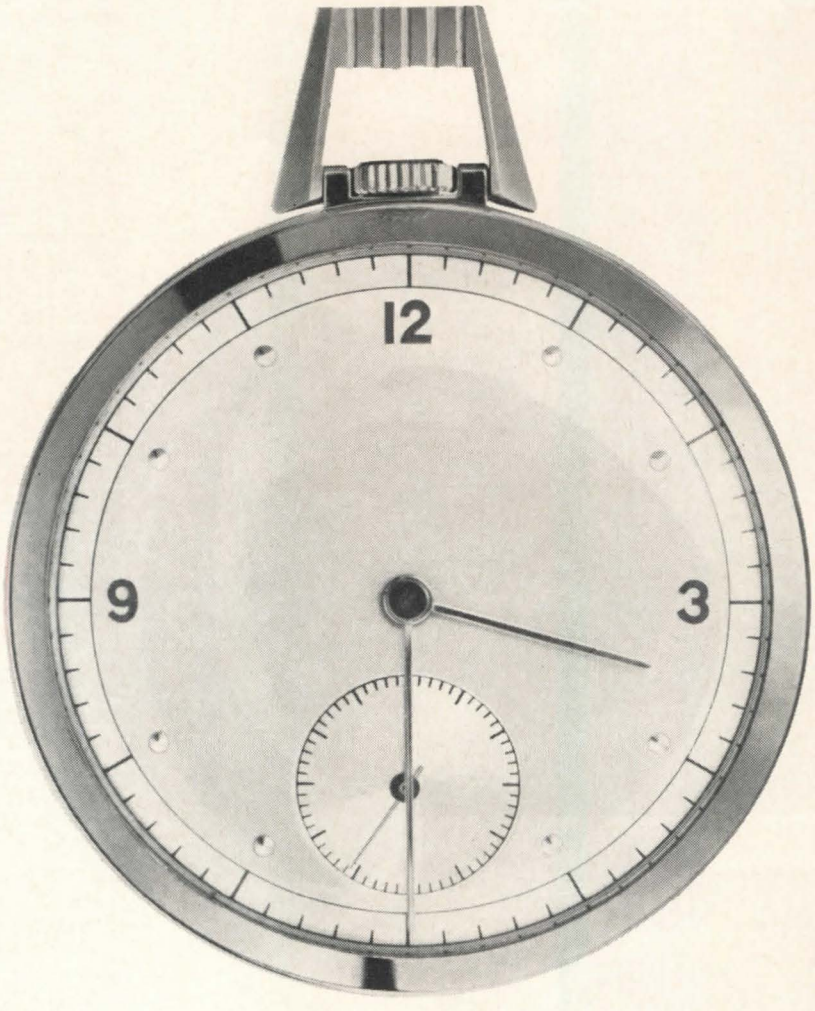
Decorative Tubing
Describes new decorative aluminum tubing embossed in stucco, diamond, leather, square and pebble patterns. 4 pp. *Kaiser Aluminum & Chemical Sales, Inc., Dept. NR-29, 919 N. Michigan Ave., Chicago 11, Ill.*

Design and Specification Handbook
(A.I.A. 15-R-1) Gives selection information and specifications on cast and fabricated "three-dimensional" metal letters and building specialties. 54 pp. *Nelson-Harkins Industries, 5301 North Kedzie Ave., Chicago 25, Ill.*

Thermostatic Mixing Valve
Describes and illustrates *Simix* line of precision thermostatic water mixing valves. 12 pp. *Abigo Co., 45 West 81st St., New York 24, N. Y.*

Literature Requested
Dr. Ing. Cesare Bachi, Casella 3637, Milano A.D., Italy

**Additional product information in Sweet's Architectural File, 1958*



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YOU CAN JUDGE FOR YOURSELF THE BENEFITS OF THESE MODERN ELEVATORS! Every executive who has witnessed this demonstration has been impressed by the automation Westinghouse has built into elevatoring. If you are one of the building executives who is planning to build—or modernize—see this eye-opening demonstration.

Just 30 minutes of your time now can show you what Westinghouse research and development in elevatoring can do for the efficient operation of your building for the years ahead.

Actually experiencing this 30-minute eye-opening demonstration will make you confident that your decision for this major capital investment is sound. Make arrangements now by writing on your letterhead to: R. H. Wagner, General Manager, Westinghouse Elevator Division, 150 Pacific Avenue, Jersey City 5, New Jersey—or call the Westinghouse Elevator Division office in your city.

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YOU CAN BE SURE... IF IT'S Westinghouse

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The Record Reports

On the Calendar

April

1 28th Annual Meeting, Inter-Society Color Council—Hotel Statler-Hilton, New York

1ff Exhibition of work of Joan Mirò; through May 10—Museum of Modern Art, New York

3-4 79th Annual Convention, Michigan Engineering Society—Student Union Building, University of Michigan, Ann Arbor

5-10 Fifth Nuclear Engineering and Science Conference, Seventh Hot Laboratories and Equipment Conference, and Seventh Atomic Energy in Industry Conference—Public Auditorium, Cleveland

7-8 Eighth Annual Meeting, Building Research Institute—Penn-Sheraton Hotel, Pittsburgh

9ff "Architecture: Man's Space," exhibition co-sponsored by Wisconsin Chapter, A.I.A., and Milwaukee Art Center; through May 17—County War Memorial Building, Milwaukee

12-17 21st Annual Convention, National Association of Architectural Metal Manufacturers—Monteleone Hotel, New Orleans

13-17 South Atlantic Regional Conference, A.I.A.; Theme: "The Architect in this Technical Age"—Aboard MS *Italia*, Charleston, S. C.-Nassau

14-15 Fourth Biennial Conference on Electric Heating, sponsored by American Institute of Electrical Engineers—Bellevue-Stratford Hotel, Philadelphia

16-17 11th Annual National Engineering Conference—Dinkler-Tutwiler Hotel, Birmingham

24-25 Great Lakes Regional Conference, A.I.A.—College of Architecture and Design. University of Michigan, Ann Arbor

26-30 28th Annual Conference, American Institute of Decorators—Plaza Hotel, New York

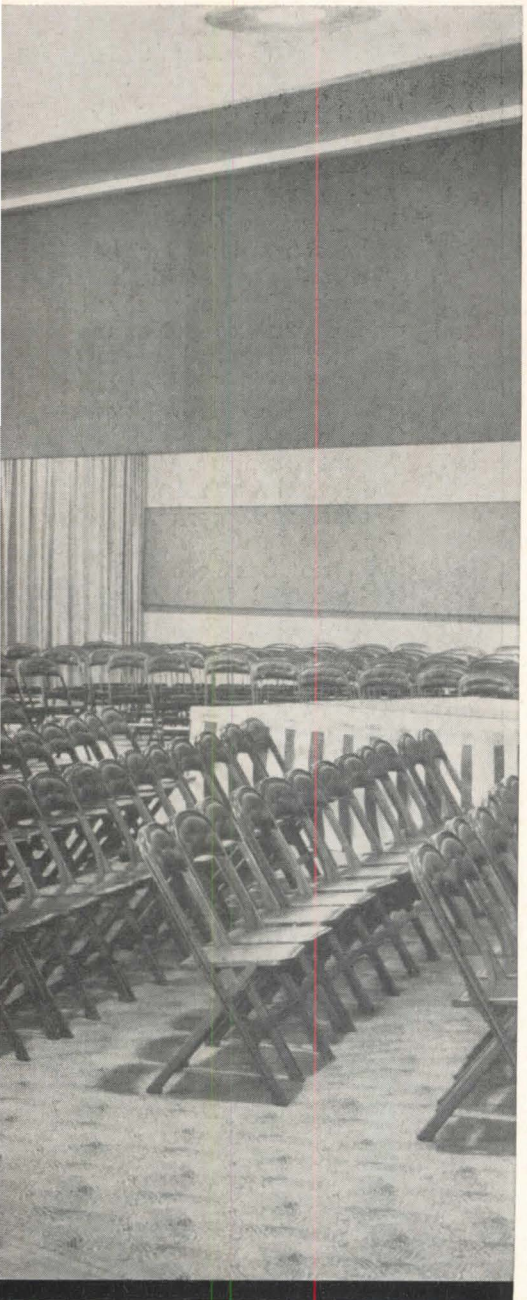
May

1-7 Annual Convention, Royal Australian Institute of Architects—Brisbane, Queensland

3-6 Annual Meeting, Air-Conditioning and Refrigeration Institute—The Homestead, Hot Springs, Va.

3-7 Eighth Annual Convention, National Parking Association —New Orleans

continued on page 300



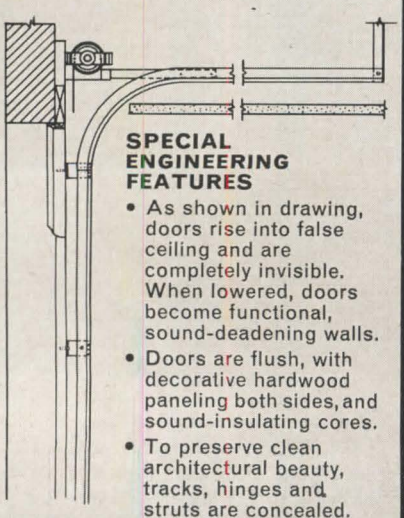
In Halle Bros. department store, Cleveland...

upward-acting door-wall idea lets corridor do extra duty

This special opening problem called for design of a "movable wall" installation . . . to quickly convert a wide corridor into extra space for selling or other store activities. Working with the engineering staff of Overhead Door Corporation, the architect solved this problem with The Original "OVERHEAD DOOR"—providing a series of upward-acting sectional door-walls that rise into a false ceiling.

This disappearing door-wall idea is one of many special door jobs expedited by architects all over the nation, with the help of factory-trained personnel from Overhead Door Corporation and its distributors. In problems requiring doors of any size, shape or weight . . . in wood, aluminum or steel . . . for commercial, industrial or residential use . . . the "OVERHEAD DOOR" specialists follow through with responsible, warranted service.

To save spec writing and drafting time on any special opening problem, see your local distributor of The "OVERHEAD DOOR" (or Sweet's "A" file) for our upward-acting door specification catalog . . . with complete drawings . . . prepared by architect consultants. Learn from your distributor why, *for over 38 years, architects have specified* The "OVERHEAD DOOR" *more than any other brand.*



SPECIAL ENGINEERING FEATURES

- As shown in drawing, doors rise into false ceiling and are completely invisible. When lowered, doors become functional, sound-deadening walls.
- Doors are flush, with decorative hardwood paneling both sides, and sound-insulating cores.
- To preserve clean architectural beauty, tracks, hinges and struts are concealed.

The "Overhead Door" made only by

OVERHEAD DOOR CORPORATION

Originator and perfecter of upward-acting sectional doors

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The Record Reports

Office Notes

Office Opened

Douglas Honnold, F.A.I.A., John Rex, F.A.I.A., Architects and Associates, announce the opening of their new offices at 9026 Melrose Ave., Los Angeles.

Firm Changes

A. Epstein and Sons, Inc., Engineers, 2011 W. Pershing Rd., Chicago 9, announces the election of Ralph J. Epstein as a vice president. Mr. Epstein has been with the firm since 1934.

Gordon Ferguson and Donald P. Stevens of Ferguson, Stevens & Associates, Architects-Engineers, announce the addition of two partners, Robert G. Mallory and George Clayton Pearl, both architects, and the change of the firm name to Ferguson, Stevens, Mallory and Pearl, Architects-Engineers. Address: 115 Amherst Dr., S.E., Albuquerque, N. M.

Hartman-Strass, Inc., Consulting Engineers, is the name of the firm formed by the association of the Jerry Donohue Engineering Company, Sheboygan, Wis., and Robert J. Strass, Inc., Milwaukee. The principals are Robert J. Strass, president, and Bruno J. Hartman, executive vice president. Main office: 225 E. Michigan St., Milwaukee.

Magney, Setter, Leach, Lindstrom and Erickson, Inc., is the new name of the firm formerly known as Magney, Tusler and Setter. Principals are John R. Magney, Donald P. Setter,

continued on page 308

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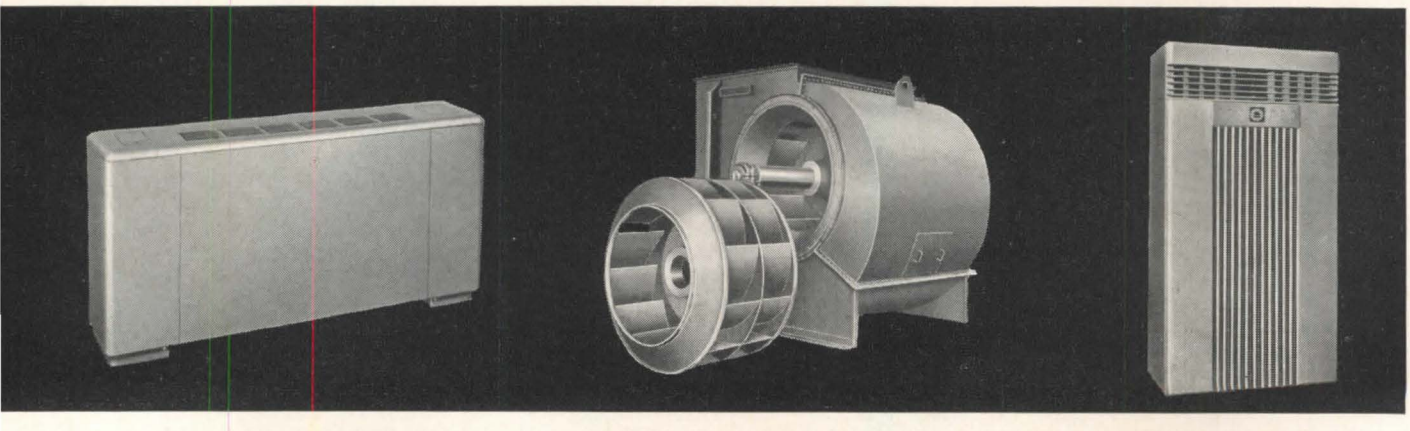

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The Record Reports

Stowell D. Leach, John Lindstrom, and Hugo Erickson. Wilbur H. Tusler has retired as a principal but continues as a consultant. Address: 303 Roanoke Bldg., Minneapolis.

Mayer, Whittlesey & Glass announces that William J. Conklin is now an associate partner. Address: 31 Union Sq., New York 3.

Charles Nagel & Associates, Consulting Engineers, announces the formation of the firm of Charles Nagel & Associates, Inc., Architects & Engineers. Architects are T. J. Bischoff and Don E. Knoblauch. Engineers are Gilbert S. Feldman, Wm. Marshall, Chas. A. Nagel, and Mr. Knoblauch. Address: 1615 Underwood Ave., Milwaukee 13.

Frank C. Shattuck Associates, Inc., Architects, announces the changing of its corporate name to Frank C. Shattuck, M. F. Siewert and Associates, Inc., Architects. Address: 174 E. North Water St., Neenah, Wis.

Summer & Lundquist, Inc., Architects, is the new name of the firm formerly known as John E. Summer & Associates, Inc. Principals are John E. Summer, A.I.A., and George C. Lundquist, A.I.A. Address: 7-17th St., N.E., Atlanta 9.

Frank M. Valdez, A.I.A., Architects-Engineers, announces the appointment of Arthur A. Treut, industrial designer, as associate director of residential and subdivision planning and home consultant services. Address: 1818 San Pedro Ave., San Antonio, Texas.

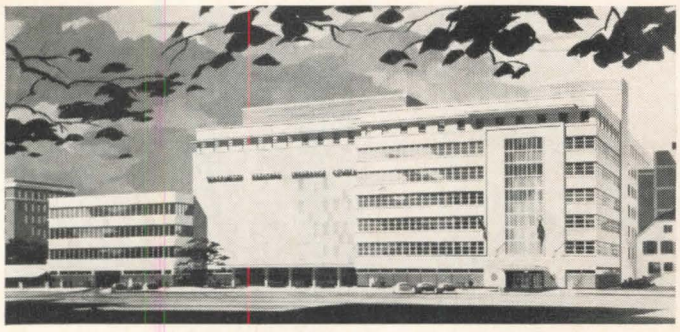
Robert F. White and Associates, Landscape Architects and Planning Consultants, announces the resignation of Mr. White as professor of landscape architecture at the A. & M. College of Texas to devote full time to private practice. Address: 336-B Jersey St., College Station, Texas.

The consulting engineering firm of Woodward, Clyde, Sherard & Associates, 1150-28th St., Oakland, Cal., announces the recent opening of two East Coast offices. One, at 680 Fifth Ave., New York, is headed by James L. Sherard. The other, at 98 Greenwood Ave., Montclair, N. J., is under David M. Greer. The firm has also recently opened an office at 3467 Kurtz St., San Diego, with Douglas Morehouse in charge.

New Address

Kelly & Gruzen, Architects-Engineers, 10 Columbus Circle, New York 19.

more news on page 312



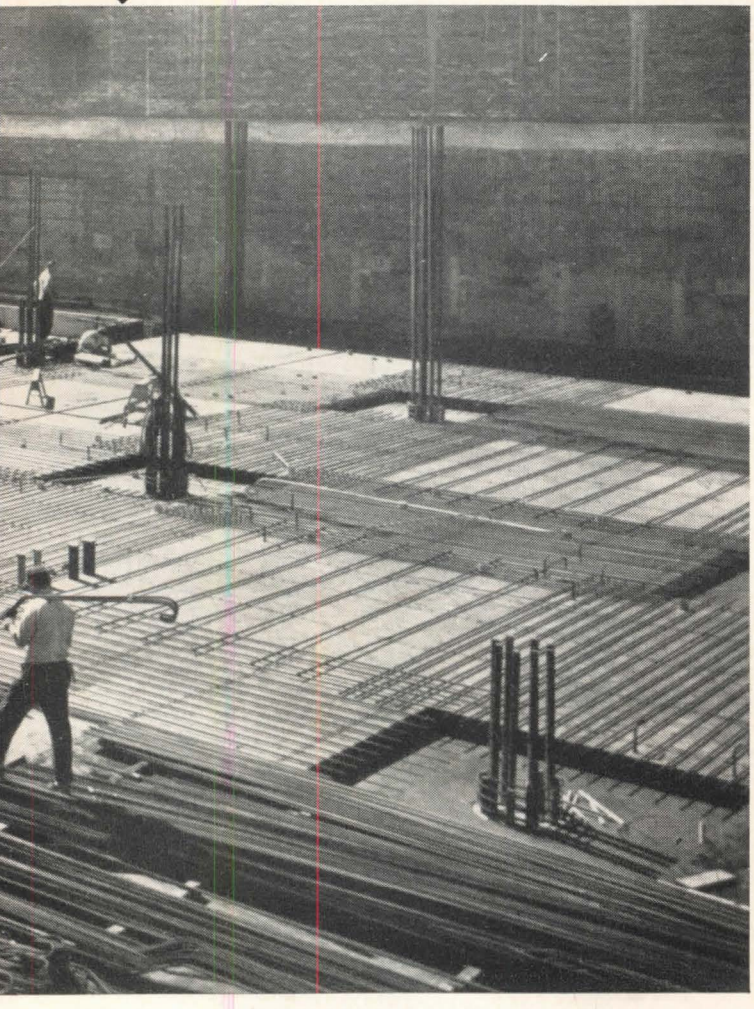
Washington National Insurance Company Building, Evanston, Illinois. Graham, Anderson, Probst & White, Architects-Engineers, Chicago. Norman F. Brunkow, Chief Structural Engineer. A. L. Jackson Company, General Contractor, Chicago. Gateway Erectors, Inc., Steel Erectors, Chicago.

ing 22 No. 11 bars, limited to a design stress of 20,000 PSI, would have been 32″ in diameter. The same column using 11 No. 18S butt-welded, high strength bars, with a possible design stress of 30,000 PSI, measures 26″ in diameter—a saving in floor space of approximately 2 sq. ft. per column.

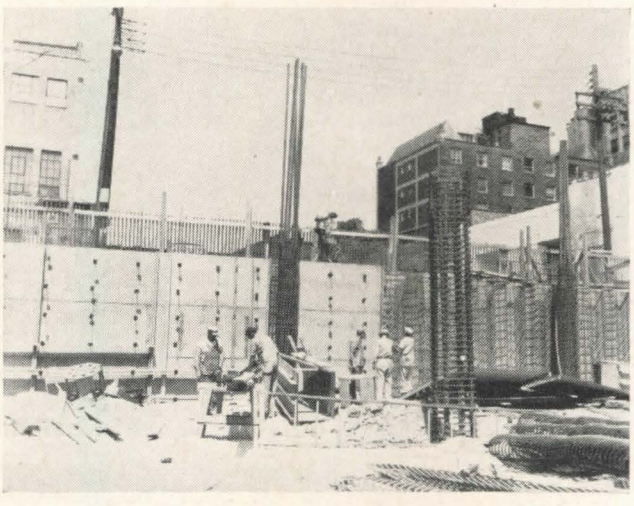
Republic High Strength Reinforcing Bars provide a minimum yield point of 75,000 pounds per square inch and meet the new ASTM Specification A-431-58T.

The high strength bars are rolled from new billet steel only, in all standard sizes including, 14S (1½″ square equivalent) and 18S (2″ square equivalent). Bars can be specified to any length up to 60 feet. All splices are field welded. Mail the coupon today for full facts.

Progress photo below shows the setting of reinforcing steel in the second floor and indicates the staggered heights of column verticals.



NO. 18S HIGH STRENGTH REINFORCING BARS used in column verticals are electrically butt-welded in basement story adjacent to steel sheeting. To accomplish the weld, the lower bar is furnished with a square cut end and the top bar is beveled at 45 degrees from each side to form a chisel end. Clamps are used to hold bars in alignment.



This photo shows first and second story column verticals extending above the basement floor after having been butt-welded to the dowels in caisson tops. Bars are No. 18S high strength types furnished by Republic Steel.

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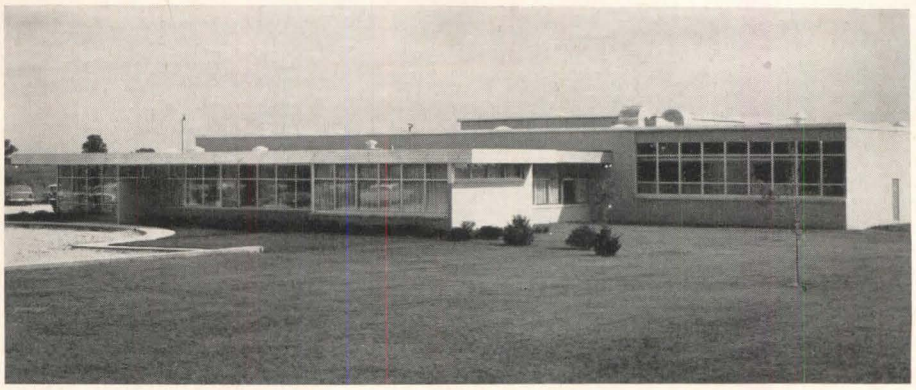
Economical Construction Methods Employed in Hardware Factory

The new factory for the John Sterling Corporation in Illinois near the Wisconsin border is a 36,000-sq-ft structure built on a 4-ft module. The clients, manufacturers of builders' hardware, specified a building economical to construct, easy to maintain, and expandable to several times its present size. Large, clear floor areas allowing a flexible production layout also were necessary. The architects were Derald M. West & Associates, Genoa City, Wis.; the general contractor was Howard Lindvig of the same city.



The minimum clear span in assembly and storage areas is 36 ft. The crane bay, however, has a 52-ft minimum span. The architects decided on 8-in. round steel columns, laminated wood beams, and a four-by-six tongue and groove solid wood deck. The structure supports a five-ton traveling crane.

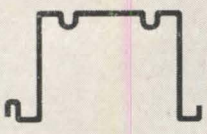
The walls are light-weight concrete block in a stacked masonry pattern; in the lobby area (shown) some blocks are set out slightly for variety. The office area has an acoustical ceiling suspended below the wood deck, with air conditioning and other ducts in between. The block masonry walls are painted two-tone green in the factory area and in warm colors in the offices. The architects say basic construction economies made possible more expensive mechanical, lighting, and plumbing equipment, floor finishes, and window treatment.

more news on page 318

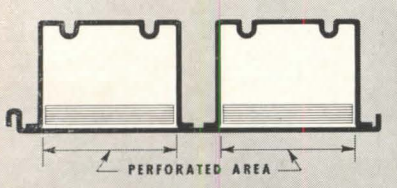
Roof Structure, Diaphragm Bracing and Acoustical Ceiling Combined!

No Purlins or Bracing Required . . . M-Deck Sections Span from Rigid Frame to Rigid Frame

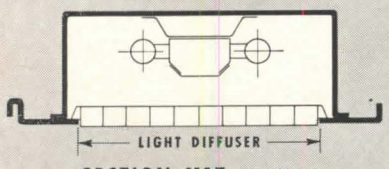
MAHON
Long Span
M-DECK SECTIONS



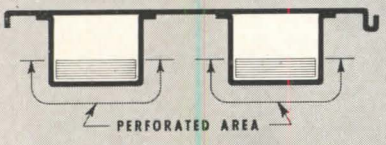
SECTION M1-OB
OPEN BEAM DEPTH 3", 4½", 6" or 7½"



SECTION M2SR (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"



SECTION M1T (Troffer)
DEPTH 6" or 7½"



SECTION M2 (Acoustical)
CEL-BEAM DEPTH 1½", 3", 4½", 6 or 7½"

At Left: Cross Section of Long Span M-Deck Combined Roof-Ceiling with Troffer Lighting.

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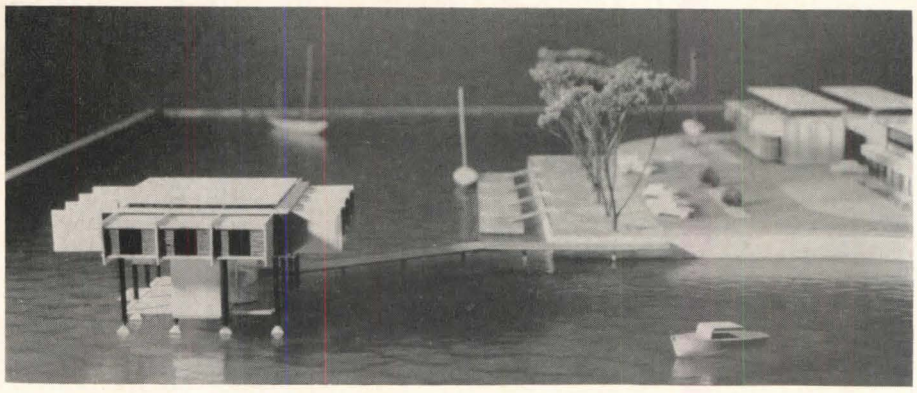
N.I.A.E. Thesis Winner Designs Boat Yard for Yacht Builder

Winner of the National Institute for Architectural Education's 1958 Thesis Award was David Bruce Falconer for "A Boat Yard for Stamford." Mr. Falconer, who received his B.Arch. degree from Yale last year, is now associated with Victor Christ-Janer.

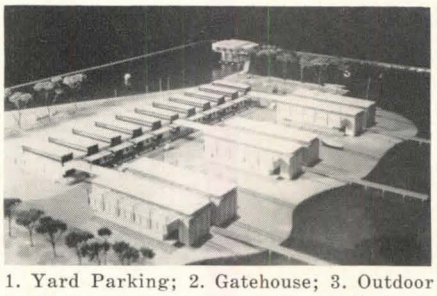
The jury consisted of William F. R. Ballard, Giorgio Cavaglieri, Abraham W. Geller, José A. Fernandez, Sidney L. Katz, and Jedd S. Reisner. They chose the boat yard from ten entries from Carnegie Tech, Columbia, Rice, Illinois, Nebraska, and Yale.



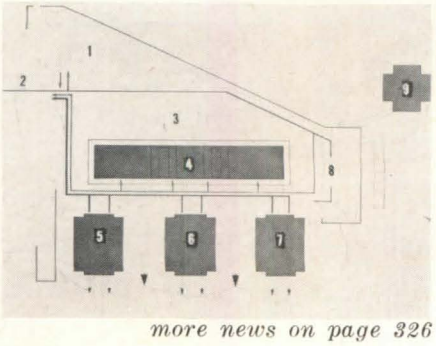
Mr. Falconer's project is a theoretical yard for an actual firm, the Luders Marine Construction Co., Stamford, Conn. The yard would be capable of building, storing, and repairing wood, steel, or plastic boats up to 200 ft in length. The idea is that such a yard might help a yacht-building firm meet foreign competition in that field and also branch out to government work and commercial fishing boats.

The plan below shows the layout, with the long shop building and a separate boat house for each type of construction. The cantilevered office and sales building, seen in foreground in top photo, may be approached on foot or by boat.

The jury report, prepared by Mr. Geller, noted that the jurors were impressed by "the designer's ability to take standard economical structural components and so relate them as to result in a very stimulating architectural solution."



1. Yard Parking; 2. Gatehouse; 3. Outdoor boat storage and repair; 4. Shops; 5. Steel; 6. Plastic; 7. Wood; 8. Office parking; 9. Office

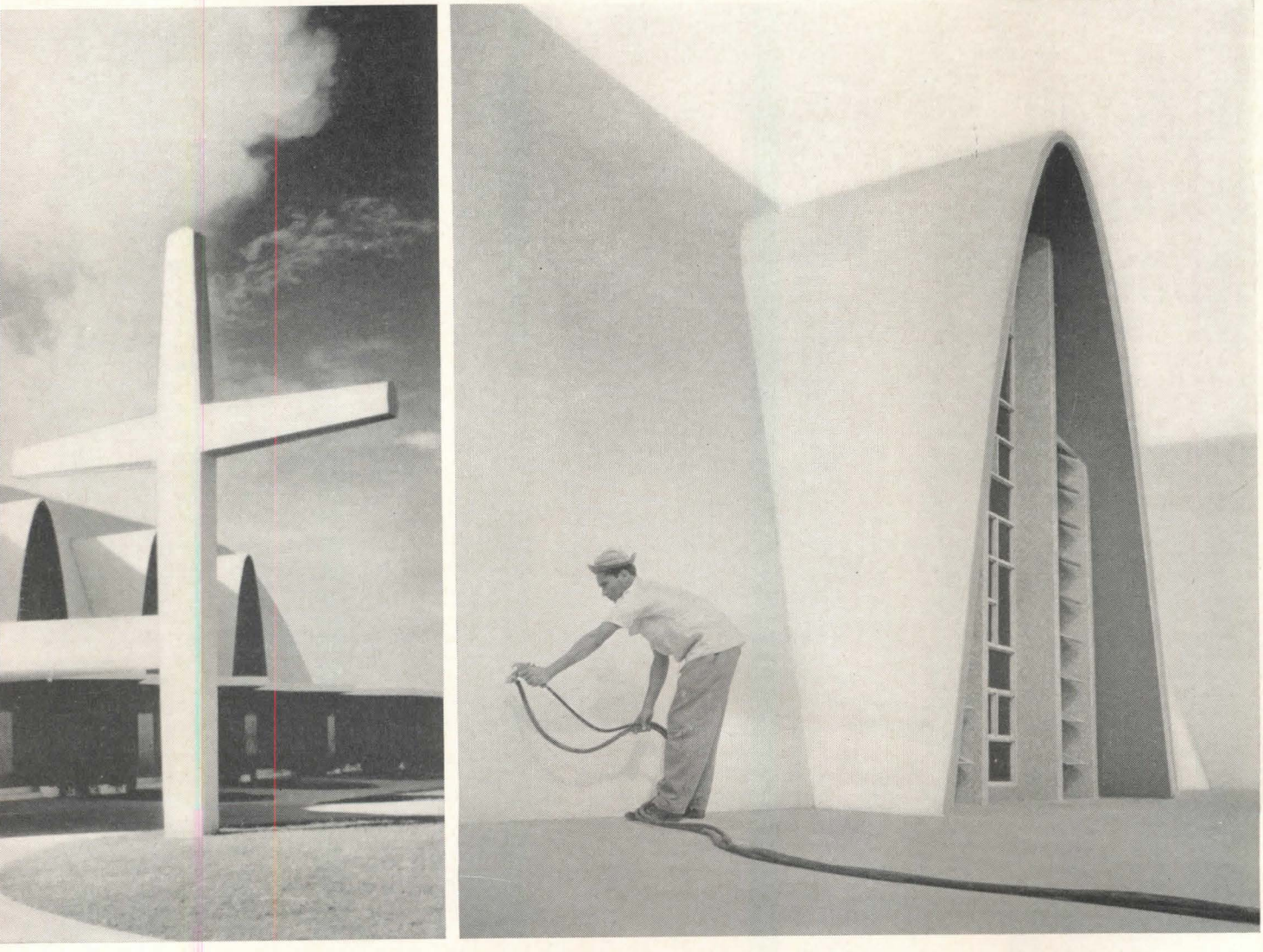


more news on page 326

For tough tropical exposure, the architects of this gleaming Caribbean cathedral chose roof coatings made with HYPALON synthetic rubber for its permanent resilience, oxidation resistance and good color stability.

Its weathering performance is exceptional. Experience had shown them that conventional roof coatings in the tropics normally had to be patched or replaced after two years. With more than two years' exposure to torrid sun, wind, rain and salt spray, this reflective roof coating shows no sign of deterioration. (Tests indicate excellent performance in excess of ten years.) Thermal expansion and contraction of the roof does not impair the strong bond between the concrete and this elastic roofing material.

Flame resistance, weather resistance, lasting resilience and color stability are only some of the advantages coatings made with HYPALON offer you as a design material for roofs. For more information, write to Elastomer Chemicals Dept. AR-4, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.



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continued from page 48

developing the blighted areas of American cities were discussed and rediscussed by those attending the second annual Building Industry Congress for Urban Renewal held in Washington in February.

The one-day affair was sponsored by the National Housing Center, where the meeting was held, with the American Council to Improve Our Neighborhoods and the Urban Renewal Committee of the National Association of Home Builders. Thomas P. Coogan of New York City, a former president of N.A.H.B. and head of the ACTION Home Builders Committee, was chairman.

Following the opening remarks, the Congress settled down to nearly all-day sessions called workshop groups which considered these five separate aspects of urban renewal: financial aid to builders, builder opportunities in urban renewal, how builders help start local urban renewal programs, how to work with local public agencies, and rehabilitation. Each of these smaller meetings was staffed with government and private urban renewal officials, local agency people, experienced builders and developers, and urban renewal consultants. Builders circulated among the various workshops seeking answers to their urban renewal problems.

A "sales mart" feature of the Congress offered cleared land areas for sale or lease on the spot to builders and potential redevelopers. A number of transactions, aided by models, maps, photographs and other data, was reported. "The dirt was scratched for many future deals," one Housing Center spokesman said.

Mr. Coogan remarked, following the sessions: "I am amazed and greatly encouraged by the enthusiastic response and intense interest shown by builders. It is in meetings like this, where builders can meet local urban renewal officials face to face, that the sparks begin to fly, imaginations are kindled, and down-to-earth planning and building activity begin."

An estimated 250 builders, urban renewal officials and others attended the February Congress. Thirty-five local redevelopment agencies were represented.

Small Builders Challenged

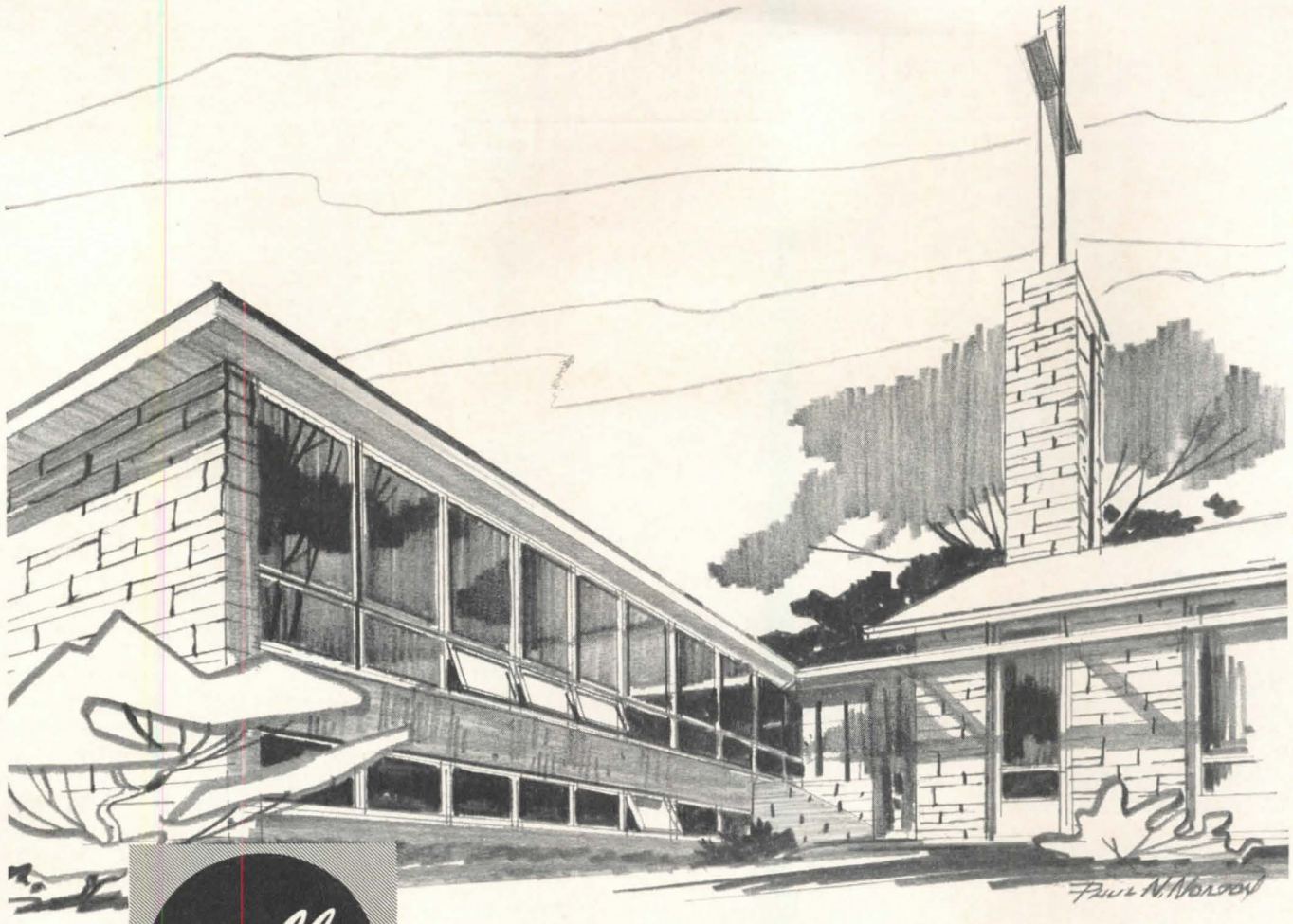
William L. Slayton, vice president of Webb & Knapp, Inc., stressed benefits for large and small builders alike in the urban renewal programs. Mr. Slayton said: "I want to emphasize that redevelopment is not limited just to large-scale developers and rental elevator apartments only. My company, for instance, is building or soon will build single-family housing in Chicago, Washington, and Philadelphia. In building such housing we associate with homebuilders and do not use our own construction organization."

Sales housing in redeveloped areas is bound to increase, he said, with planners and officials realizing more and more the importance of mixing single-family sales housing with rental high-rise apartments.

Mr. Slayton added that these close-in redevelopment areas are designed to attract families with children. This means houses with two, three, and four bedrooms are needed and this, in his opinion, is where the small builder can be most effective.

Advantages for the small volume builder were said to include available land, cleared and rough graded; zoning already established with no subdivision plans to be approved; improvements, utilities, and schools already established or to be built. Finally, he made the point that small builders need not worry about financ-

continued on page 330



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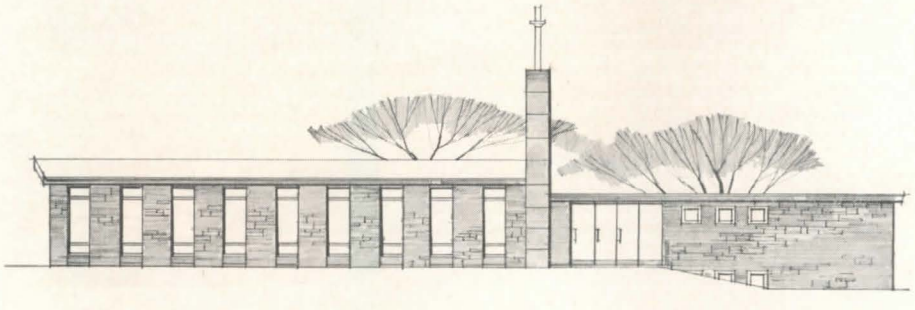


St. James Lutheran Church, Bettendorf, Iowa

Washington Topics

ing since Section 220 of the housing act gives the small builder in redeveloped areas the same advantages as does Section 203 in other areas.

Where Urban Renewal Is

The day's activities were concluded in a round-up session at which Richard L. Steiner, Commissioner of the Urban Renewal Administration, was the principal speaker. He gave these program progress figures:

On December 31, 1958, 386 communities had embarked on 648 urban renewal projects, of which 10 had been completed—an increase over the 1957 year-end figures of 87 communities, 157 projects, and six completions.

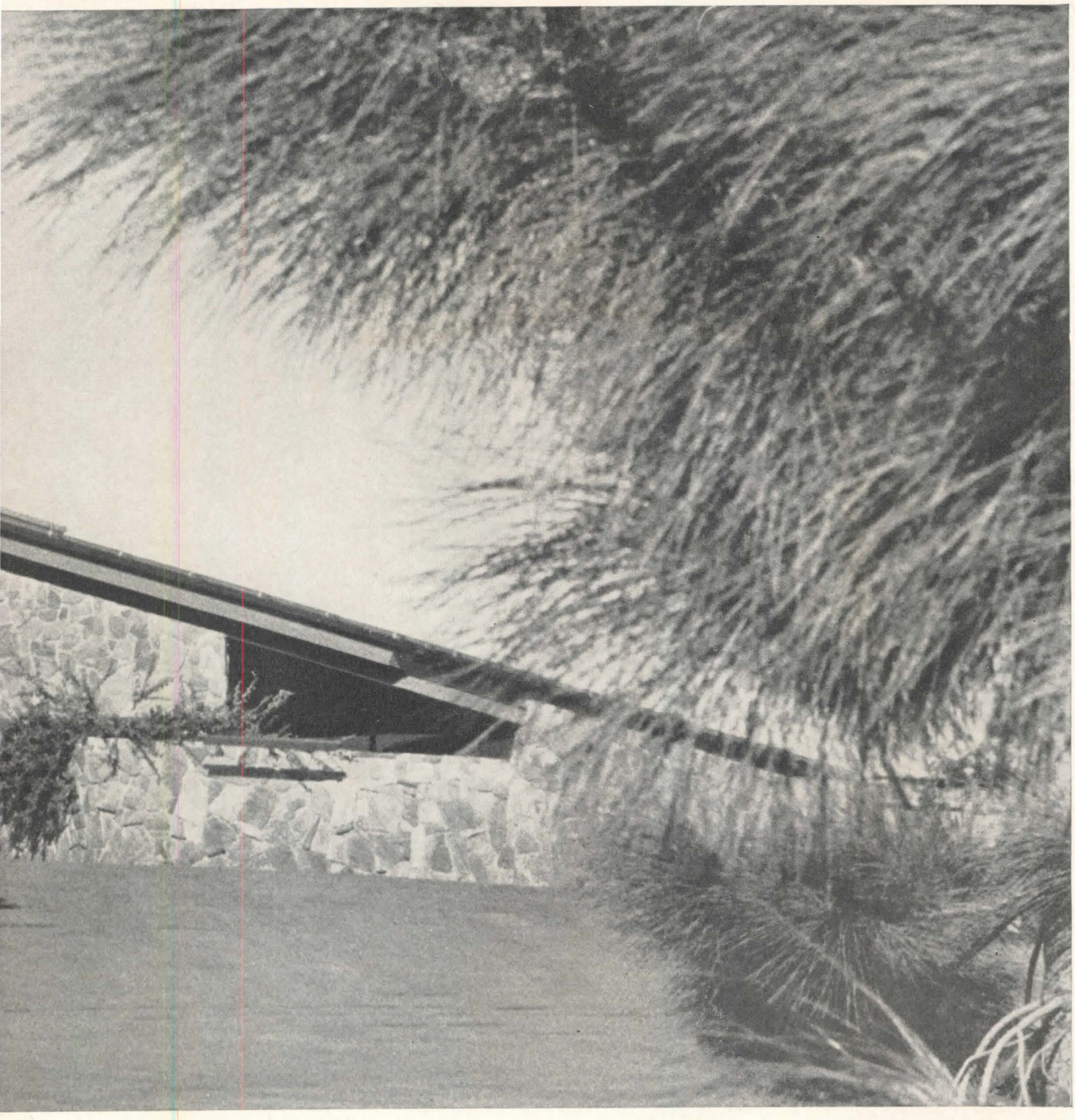
"I think the most significant fact for this group is that in the relatively near future large-acreage tracts in prime locations will be available to redevelopers in nearly a hundred more cities than were on the roster last year," he told the congress.

There were 285 projects in execution at the end of calendar 1958. These statistics, in Mr. Steiner's opinion, indicate clearly that his program is providing great opportunities for builders of all kinds and most significantly for builders of all sizes. And he observed that it is reasonable to expect a growth in the number of redevelopers more or less proportionate to the enlargement of opportunity.

In the fiscal year ending June 30, 1958, he related, some 8000 parcels of land aggregating 864 acres were acquired by local public agencies; during the current fiscal year it is expected that some 16,000 parcels aggregating 1480 acres will be acquired.

According to the URA Commissioner, this is the year when urban renewal will commence to swing away from the limitations of housing objectives to the broader goal of city rebuilding and city modernization. As he put it, "Congress has been nudging our national urban renewal policy in this direction for the past several years, and it now seems inevitable that the change will occur in one form or another in this year's housing legislation. It is interesting to note that concurrently ACTION is broadening its interests and objectives. While I am sure there is no conscious relationship between these two occurrences, they are both responsive to increasing recognition that the serious problems of deterioration and absolescence in our cities involve more than housing. Increas-

continued on page 334



pletely satisfied," says John D. Grigg, President. "Our 25-ton gas unit produces 10,000 cubic feet of cool air per minute. And you can't beat it for economy. It requires practically no maintenance. Since it uses the same boiler, it makes use of our heating facilities on a year-'round savings basis."

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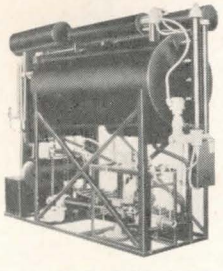

Washington Topics

ingly, the public is demanding that cities be more efficient, that their affairs be better administered, and that city life be more exciting, more stimulating, more satisfying, more rewarding."

Today in a few cities where urban renewal is well advanced, Mr. Steiner asserted, the emergence of the city of tomorrow is evident.

Shelter Research Program Finds Wider Interest, OCDM Reports

The Office of Civil and Defense Mobilization reports that architects are taking an increasing interest in the shelter aspects of its broad program of protection. This is evidenced by mounting inquiries by mail and in person concerning the agency's activities in this field.

Basing their reactions on these displays of interest, OCDM people say they are convinced that more and more building plans are including provisions for shelter.

Research Attacks Problems

The Office is engaged in a shelter research and development program involving hundreds of thousands of dollars.

One $30,000 project now in progress involves a study in the metropolitan area of Tulsa, Okla. This is aimed at determining specific civil defense requirements relating to shelter capabilities of existing buildings. The contract covers development of shelter planning goals; survey and inventory of evacuation and protective refuge capabilities to serve as a basis for developing shelter facilities; daytime and nighttime population distribution; shelter siting and evacuation route studies; construction and financing priorities; and an outline of required legislation to expedite a shelter program. Data on the Tulsa efforts should be in OCDM hands this fall following completion of the study September 30.

A survey now being completed by Guy B. Panero, New York, involves the design of modular standardized shelters. This was worked out under a $61,000 contract initiated last July. Involved here was development, design, and preparation of drawings and specifications, bills of material, and cost estimates for modular shelter units that would provide all essential survival requirements. The object was to make available standard package units which could be used by architect-engineer firms for specific shelter designs.

A third project concerns effects of

continued on page 342

file on Thermopane® insulating glass

Why Thermopane Saves Heat (U VALUE — Winter)

Over-all heat transmission coefficient (U value) varies with ranges of temperature at which coefficient is determined. For most practical heat loss calculations coefficient U can be the value determined at 10° outside temperature, 70° inside temperature, 15 mph outside air velocity and natural convection inside. Therefore, the U values shown here apply to winter heat losses.

type	thickness	U value		
single glass	1/8″	1.16		
	1/4″	1.15		
double Thermopane	1/8″ or 1/4″	3/16″ air space* .69	1/4″ air space .65	1/2″ air space .58
triple Thermopane	1/4″	1/4″ air space .47		

*GlasSeal Thermopane only.

How it Reduces Air-Conditioning Costs (U VALUE — Summer)

Summer air cooling calculations are usually based on an outside air temperature of 95° and exterior wind velocity of 7.5 mph, a room temperature of 75°. U values for these summer conditions are given below.

type	glass thickness	U value		
single glass	1/8″ 1/4″	1.07 1.06		
double Thermopane	1/8″ or 1/4″	3/16″ air space* 0.64	1/4″ air space 0.61	1/2″ air space 0.56
triple Thermopane	1/4″	1/4″ air space 0.45		

*GlasSeal Thermopane only.

Reduction of Cooling Load

Summer heat transmitted through glass is divided into three types or may be said to come from three sources: (1) direct solar radiation, (2) sky or diffuse radiation, (3) outdoor-indoor temperature differential. The *Thermopane* Manual offered upon request gives formulas and charts for calculating cooling loads in residential and nonresidential buildings.

Why You're More Comfortable Near Thermopane

temperatures of glass surface on the warm side and per cent relative humidity (RH) at which condensation occurs (dry bulb air temperature 70° F. on warm side)

no. of panes	glass thickness	air space thickness	dry bulb air temperatures on cold side													
			−30°		−20°		−10°		0°		+10°		+20°		+30°	
			T	RH	T	RH	T	RH	T	RH	T	RH	T	RH	T	RH
single glass	1/8″	none	2°	5.5	9°	8.5	15°	12.0	22°	16.0	28°	21.0	35°	28.0	42°	36.5
	1/4″	none	5°	6.0	11°	9.5	18°	13.0	24°	17.0	30°	22.5	37°	29.5	43°	37.5
double Thermopane	1/8″	1/4″	35°	28.0	38°	31.5	41°	35.5	44°	39.5	47°	45.0	51°	50.0	54°	56.5
		1/2″	38°	31.0	41°	32.0	43°	38.0	46°	43.0	49°	48.0	52°	54.0	55°	60.0
	1/4″	1/4″	36°	28.5	39°	32.5	42°	36.5	45°	41.0	48°	47.0	51°	52.0	54°	58.0
		1/2″	39°	31.5	42°	33.0	45°	40.0	47°	45.0	50°	50.5	53°	56.0	56°	62.0
triple Thermopane	1/4″	1/4″	46°	41.5	48°	44.5	49°	49.0	52°	54.0	54°	58.0	57°	63.0	59°	68.5
GlasSeal Thermopane	1/8″	1/16″	34°	26.0	37°	29.5	40°	33.0	43°	37.0	46°	42.5	50°	49.0	53°	55.0

Above chart is based on normal convection currents on room side when unobstructed by curtains, draperies or heavy muntins. Condensation will occur at slightly higher inside temperatures than as shown on the charts if curtains, shades or the construction of the window prevent free air movement over the surface of the glass.

You will note from the above chart that when it is really cold outside, the inner pane of *Thermopane* will be as much as 34° warmer than if a single pane was used. That saves heat. Reduces drafts. Makes rooms more comfortable, even near windows. It reduces condensation. For example, with temperatures 70° inside and 0° outside, the inner pane of *Thermopane* will be over 20° warmer than would single glass. Thus, the relative humidity can be up to 28% greater before condensation will form.

For complete technical data on *Thermopane*, ask for the newest *Thermopane* Manual. Call your L·O·F Glass Distributor or Dealer (listed under "Glass" in the Yellow Pages). Or write to Dept. 8549, Libbey·Owens·Ford Glass Company, 608 Madison Avenue, Toledo 3, Ohio.

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mass fires on persons in shelters. The Forest Service of the Agriculture Department is conducting this one under a $53,000 contract and expects to wind up its work by the end of this year. These studies will determine the nature of the threat of hazardous doses of carbon monoxide and other products of combustion in shelter ventilating systems. They also aim at determining temperatures to be expected in shelters in fire areas.

All OCDM expenditure on research since 1951, for all civil defense purposes, has been $25 million. Projects costing $1.3 million have been approved and now await Congressional funds. Included in the latter category is $100,000 for studying hospital shelter design, $25,000 for studying engineering shelter equipment. The agency seeks an added $7.3 million for research for the next fiscal year starting July 1.

"We now have, for the first time, a national shelter policy, adopted by an Administration with foresight and courage," OCDM Director Leo A. Hoegh said recently.

"The Federal government provides the guidance and example—by informing people of the threat and how to meet it—by building prototypes—by providing fallout protection in its own buildings, and by urging every citizen to build his own fallout shelter.

"To make shelter most usable and effective, we must know where fallout occurs, and how strong it is. Therefore, we also are undertaking a tremendous program to develop national capability for detecting and measuring radiation."

PBS Studies Prototype Shelters

One of the largest research projects is a $300,000 prototype shelter design and specification effort underway in the Public Buildings Service, General Services Administration. With no date set for its completion, this calls for study, construction, specifications, and cost estimates on five prototype fallout shelters as follows.

1. A 250-car (5000-person) two-story underground garage shelter against fallout in Washington.
2. A 1000-person understreet fallout shelter on a site to be selected in Chicago.
3. A 1000-person subway fallout shelter conversion in an existing subway in New York.
4. A 500-person fallout shelter conversion in an existing industrial plant to be selected in Detroit.
5. A 1000-person fallout shelter

continued on page 346

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in an existing commercial structure to be selected in one of four cities—New York, Kansas City, Indianapolis or Montgomery, Ala.

Reuss-Thompson Proposal Would Aid Historic Preservation

Representatives Henry S. Reuss (D-Wis.) and Frank Thompson, Jr. (D-N. J.), circulated a proposed bill which would deny Federal funds to any program seriously damaging or altogether destroying buildings of historic significance. They said they intended to introduce the measure when it was "perfected."

The Congressmen represented the proposal as "putting teeth into the Federal government's bumbling program of historic preservation," and described the move as essential if many of the nation's historic monuments and structures—including sections of towns and cities—are to be spared.

"Through its ownership of about 21 per cent of all land in the United States, the Federal government itself has a major role to exercise in preserving important historical buildings and sites," their statement read. ". . . A building or site that is more than 10 years old has to fight for its life."

Plan Prestressed Concrete Test On Air Force Runway

Initial construction began recently at Briggs Air Force Base, El Paso, Tex., on facilities for the first major test of prestressed concrete for airport taxiways.

The U. S. Army Corps of Engineers is conducting the experiment in cooperation with industry groups in an effort to determine the feasibility of this type of material for taxiway use.

A roadway area 75 ft wide and 1500 ft long is being built as part of the expanded runway construction at Briggs. The test section will involve post-tensioning of the material, and Army spokesmen say the results would have far-reaching effects on both airport and highway construction.

Several years of rigid testing procedure will precede any final conclusions, it was indicated, but the Corps is expected to issue progress reports from time to time.

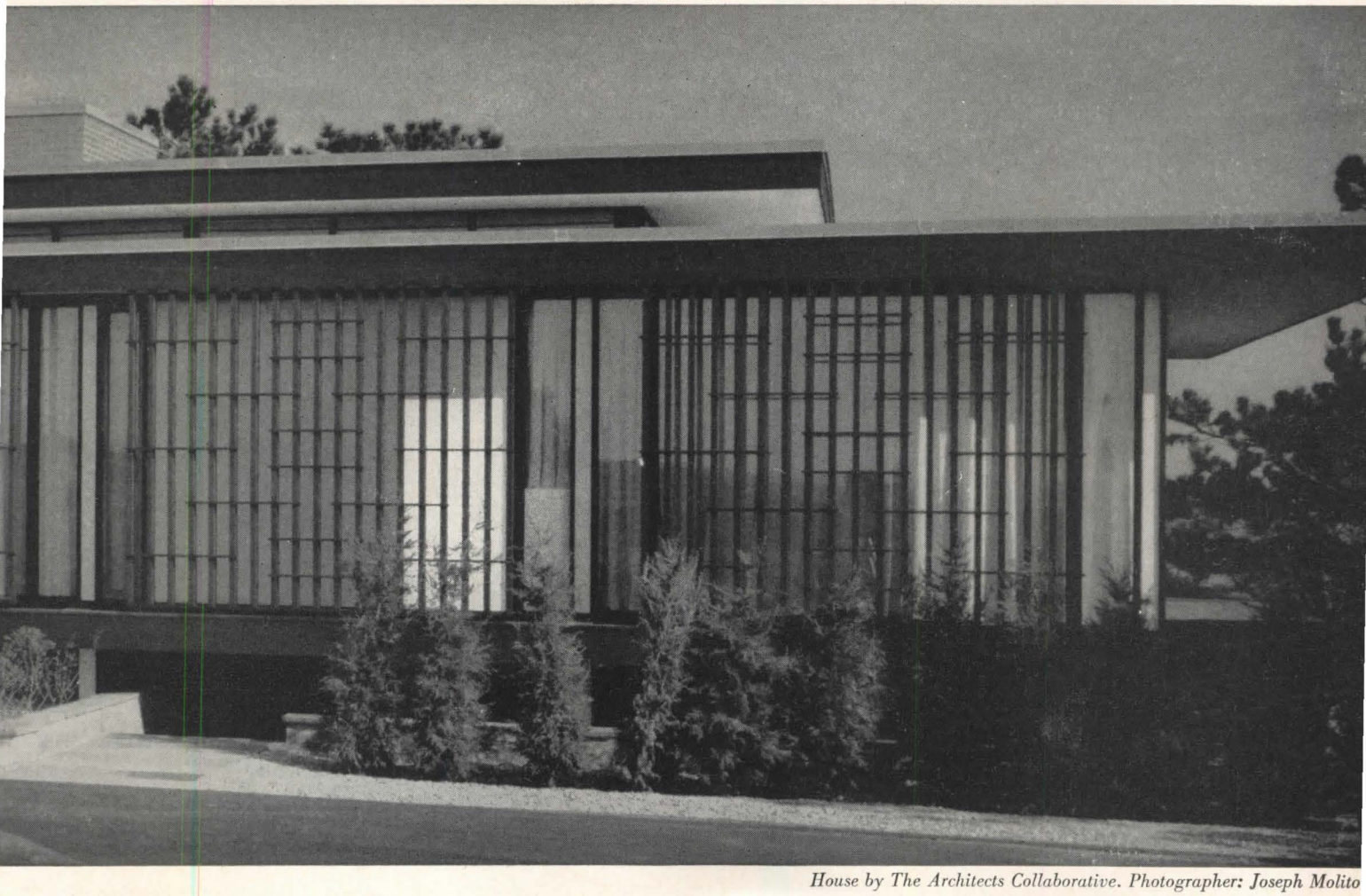
Addenda

Architects and engineers moved a step closer to their coveted program of tax relief for the self-employed. The House Ways and Means Committee approved a bill which would per-

continued on page 354

America's Best-Planned Houses

HOUSES of 1959



House by The Architects Collaborative. Photographer: Joseph Molito

the structural, mechanical and electrical aspects of contemporary house design. In addition, the New Products Section and advertising pages will be a concentrated source of information on quality residential building products.

Architects have acclaimed Record Houses annuals as valuable one-volume compilations of the best in house design, a handy reference, a guide to significant new developments, a valuable tool for use with clients and *an inspiration.*

"Record Houses of 1959" promises to be all of these things—*and a joy to read* if seeing really good houses gives you pleasure.

Architectural Record subscribers will receive "Record Houses of 1959" in addition to the regular May issue as part of their subscription. Others will be able to buy "Record Houses of 1959" (complete with advertised product information) in leading bookstores throughout the nation.

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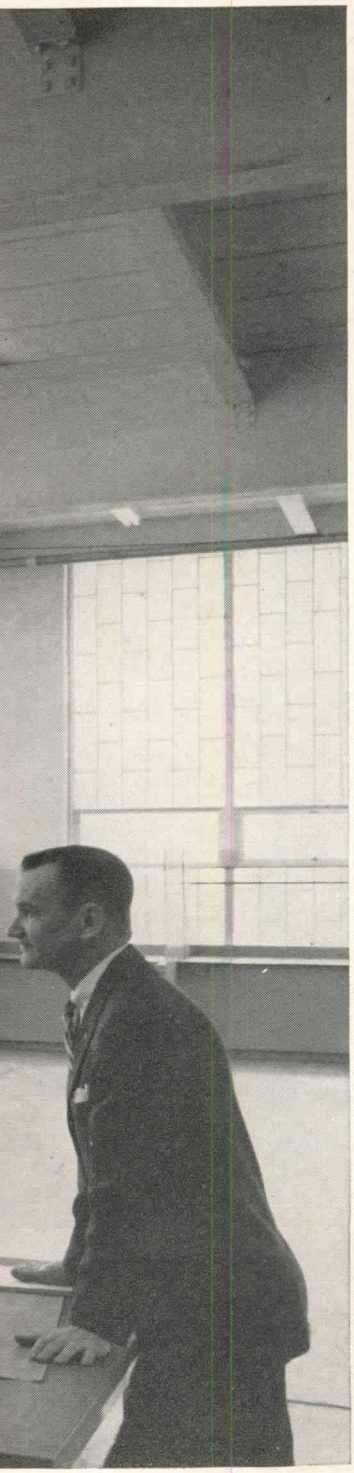
mit self-employed persons to defer Federal taxes on 10 per cent of income placed in a retirement fund up to $2500 a year. The American Institute of Architects has been one of the organizations strongly supporting legislation of this type. The House was expected to put the measure through; but resistance could be expected in the Senate on grounds its effect would remove a substantial amount of U. S. Treasury tax take, an estimated $365 million each year.

The National League of Insured Savings Associations concluded its annual spring legislative conferences here, reaffirming its request for the creation of a secondary market operation for conventional housing loans within the Federal Home Loan Bank Board. The League was preparing to take its request to Congress when the House and Senate subcommittees on housing started their hearings on the subject.

The recession of 1958 drove more companies to waterways for industrial sites in order to take advantage of low-cost barge transportation, the American Waterways Operators, Inc., found in its survey of last year's construction along the water routes. This construction and development of industrial plants and waterside facilities of all kinds increased, running against the year's trend for industrial construction as a whole. The survey indicated that 488 water route industrial plants were constructed or expanded in 1958 compared with 486 in 1957. The high point for this activity was in 1956 when 565 plant locations were developed.

A substantial program of Federal assistance in the construction of long-term care and rehabilitation facilities has been progressing for four years under terms of the Hill-Burton act, but it has managed to bolster inventories only to a point where less than one tenth of the hospitals of this kind needed are in operation. This is plainly indicated by recent surveys of buildings in use for the care and rehabilitation of long-term patients. The law earmarks more than $60 million a year for the construction of chronic disease hospitals, nursing homes, and diagnostic treatment and rehabilitation centers. Here's the accomplishment to date: more than 7000 beds for long-term patients of this kind have been provided in almost 200 rehabilitation and treatment centers.

you get with Panels



structural Kalwall panel units require no mullions or supporting framework

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Kalwall is ideal for controlling light, either to or from a building interior. In the daytime, direct sunlight is diffused to even, glare-free illumination. At night, lights cause panels to glow outwardly with a soft luminous quality. A low U factor makes them excellent insulators of both sound and heat.

Kalwall is available as individual panels, or in prefabricated panel unit walls, custom-assembled to include sash and other curtain wall components. Kalwall colors are soft green, blue, rose, yellow, crystal, and white.

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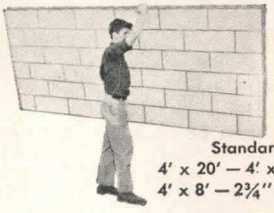
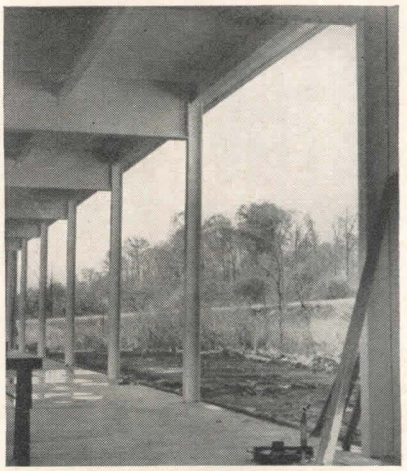


Standards Sizes
4′ x 20′ — 4′ x 12′ — 4′ x 10′
4′ x 8′ — 2¾″ or 1⅞″ thick



Edburgh Manufacturing Corp. plant in Newburgh, New York, as it looked before installation of Kalwall panels. Since Kalwall panel units are self-supporting, mullions or structural framework were not needed.

Four-man team from Boss Glass Company, Caldwell, N. J. enclosed 1000 sq. ft. of wall area a day. Men had never installed Kalwall before. 14′ x 4′ panel unit is so light one man can push it upright. Panels are held in place by channels bolted to floor and roof.

Joining system for Kalwall installation is simple. Inner and outer battens, are coated with a sealing material — then fastened to each other with long screws. Battens seal panels to each other — play no structural role.

Required Reading

1740-1952 . . . *cont. from page 60*

rectory was published in 1955, there had never been a compilation of biographical data on the architects of this country. That volume, however, covered only architects living at the time of compilation. This new *Biographical Dictionary* fills in the period up to the point where the *Directory* begins, giving the names of architects who lived between 1740 and 1952. The compilers, Henry F. Withey, a Sherman Oaks, Cal., architect, and his wife, labored for a good many years assembling the material for this unique source of information on the architects of the United States. Their pioneering efforts in this work were prodigious, requiring the perusal of countless newspapers, magazines, and journals, and correspondence with A.I.A. chapters and with individuals.

In so enormous an undertaking, a certain number of inaccuracies is perhaps inevitable. But another edition, which it is to be hoped will be forthcoming after the proper interval, will undoubtedly have found them out and corrected them. Perhaps also, a fuller listing of the works of each architect may then be possible. The important thing about this book is that it has been done, and that now the task of assembling and giving form to so large a number of biographical sketches will never again be so great as it was this first time.

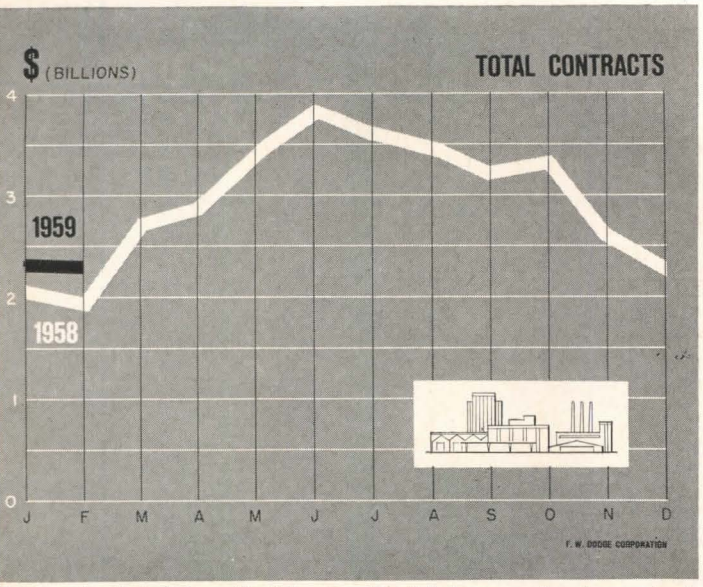
—ELISABETH KENDALL THOMPSON

Steel . . . *cont. from page 64*

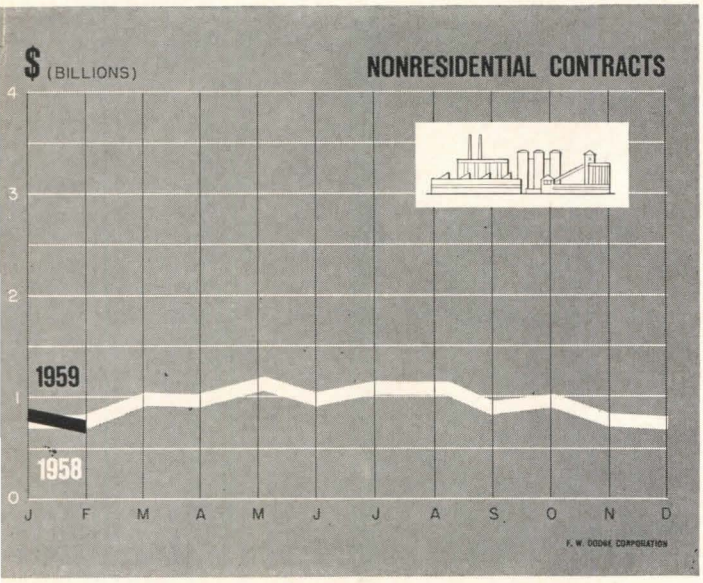
The first sixth gives a clear introduction to the basic concept of plastic strength of sections and redistribution of stress. The second sixth explains the principles and application of the analysis of continuous beams and rigid frames. The remaining two thirds is devoted to actual analysis and design. In some cases alternate designs are prepared and weights computed to indicate to the reader the effect of variations in the structure.

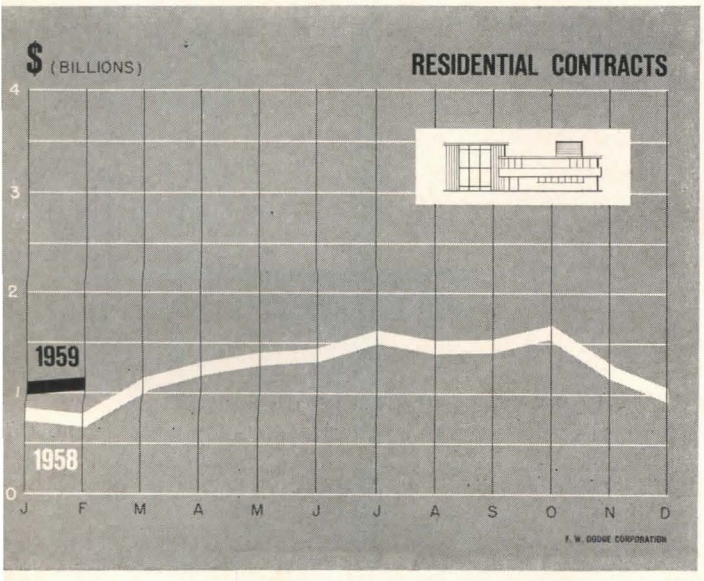
The text contains an unusual set of design guides or check-lists which break down each design process into a detailed series and should do much to help the unfamiliar avoid errors of omission. A complete chapter is devoted to the design of typical rigid welded joints. Some of the more advanced problems are treated briefly, but their effects on design are described and references to more comprehensive treatments are included for those in need of such data.

Current Trends in Construction



Total contracts include residential, nonresidential, heavy engineering contracts





FROM THE POINT OF VIEW OF AN ARCHITECT (or at least from an economist's idea of an architect's point of view) there's a very encouraging note in the latest construction trends. Much of the strength in the industry last year—and it was strong, despite the recession—was in the public works group, particularly highways. In recent months, most of the building categories have been coming up fast. Housing has been doing very well, and apartment building is heading for a boom. The long slide in factory building has come to an end, and February will probably show the first real improvement in industrial contracts in nearly two years. Most other nonresidential building types are going up nicely, with the rather baffling exception of schools. Even so, school contracts are still enormous, accounting for 21 per cent of all nonresidential building in January.

STORES, subject of this month's Building Types Study, bring architecture and economics together more neatly than perhaps any other kind of building. A store that is well designed, well located and well managed is a successful store. Lacking any one of these qualities, it stands a good chance of being a failure. In this area, Americans are unquestionably world leaders. We have done some marvelous things in store building. But anyone who moves around on our highways must observe that a considerable number of owners and developers are badly in need of a higher level of sophistication both as to design and location. There's a tremendous educational opportunity lurking here, especially in 1959 when store building is likely to be the busiest nonresidential building type.

BUILDING IN 1959 began with a bang. The Dodge figures on contracts for future construction in January totaled more than $2.3 billion, about 15 per cent above January, 1958. What this means is that construction has recovered from the late recession, and is back at its old postwar trick of setting one new record after another. The January figure is the highest ever recorded for any January, and advance indications are that February also did pretty well.

AN ECONOMIST can't afford to overlook any potentially significant indicator of future trends, and one thing we can't help noticing is that women's skirts are getting much shorter. As nearly everyone knows by now, there is an excellent correlation between skirt lengths and the business cycle. Rising hemlines mean rising stock prices and booming business, and vice versa. Nobody knows why this is true, but it has worked in the past and it might even work in the future. And it is undeniably more interesting than some of the other economic indicators we have to follow. Knobby knees are not the most esthetically satisfactory subject to contemplate, but that is a small price to pay for prosperity.

GEORGE CLINE SMITH
Vice President and Economist
F. W. Dodge Corporation