

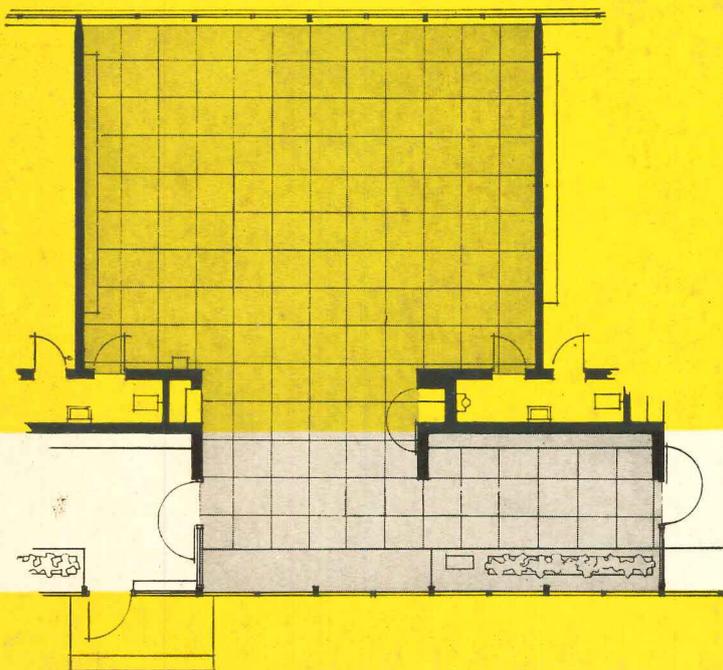
ARCHITECTURAL RECORD

SEPTEMBER 1953



SCHOOLS — BUILDING TYPES STUDY NUMBER

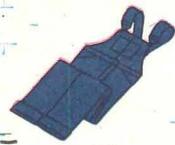
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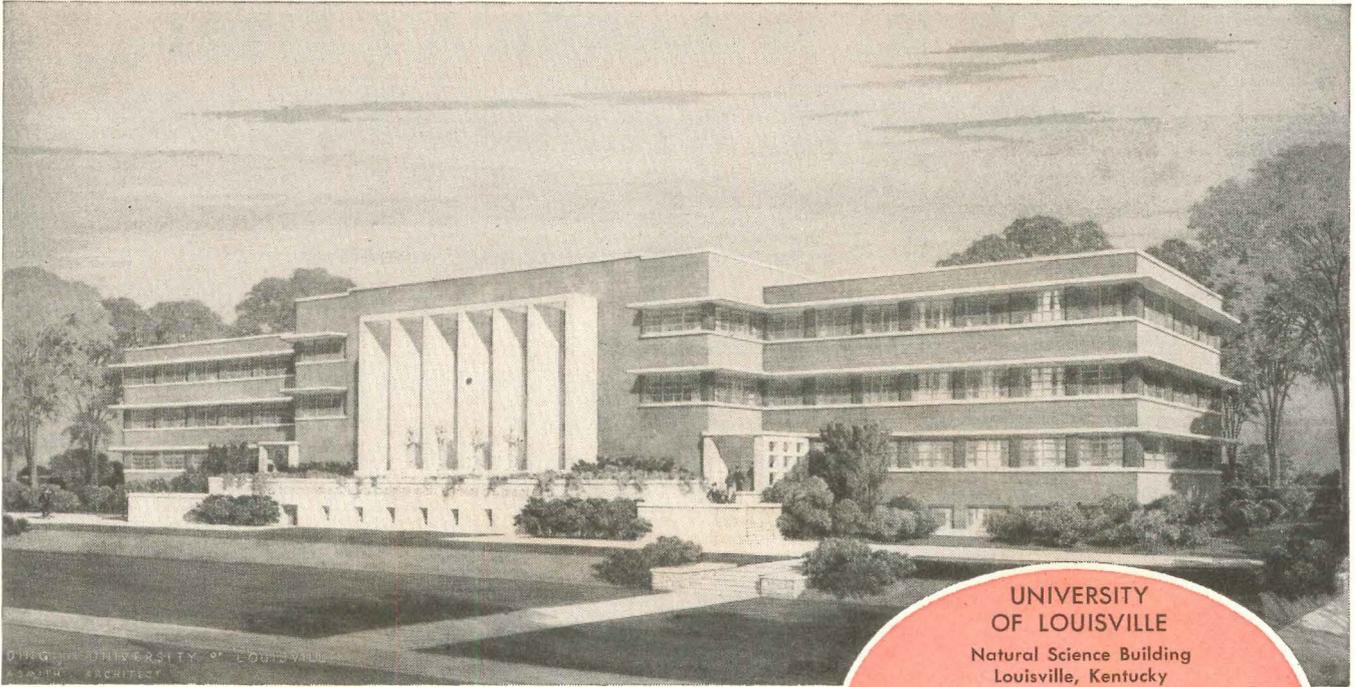
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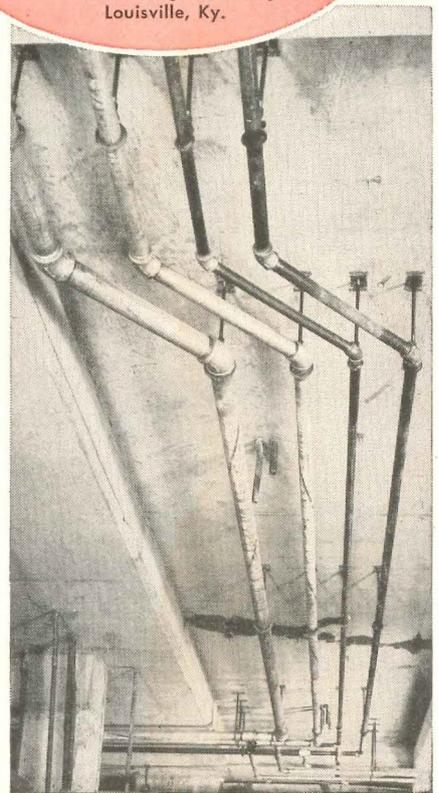
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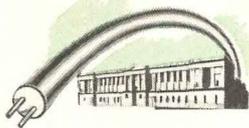
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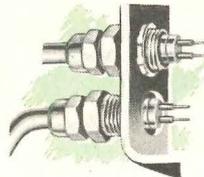
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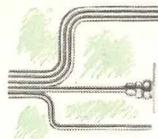
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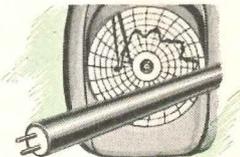
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ARCHITECTURAL RECORD



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COVER

Plan of a corridorless classroom; Eberle M. Smith & Associates, Architects. Sketch by Tom Ballenger.

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THE RECORD REPORTS

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

COMMENTS-ON-U. N.-ARCHITECTURE department: "Topnotch!"—Tourist Harry S. Truman of Independence.

MILESTONE: To Frank Lloyd Wright, Taliesin, Phoenix, Ariz., went License No. C-1611, permitting him to practice in the State of California. No. 1611 is the last license on the most recent supplement to the Roster of California Architects.

ART AND GOVERNMENT is the title of a report to the President by the Commission of Fine Arts on the activities carried on by the Federal Government in the field of art. It is based on a survey initiated by the Commission in 1951 at the request of the President and includes, in addition to recommendations by the Commission, summaries of testimony at Commission hearings by representatives of 20 Federal agencies; reports from six states and 11 municipal art commissions; views of private institutions and organizations in the field of fine arts, organized as "The Committee on Government and Art," and serving, at the Commission's request, as members of an Advisory Panel of Experts; and information from members of four foreign embassies on the carrying on of art activities under government auspices in their respective countries. The 141-page report, which has just been published, comes out squarely against any "centralized control of art activities on the part of the Government such as exists in many countries" and the Commission "is opposed to efforts to create a Ministry of Fine Arts or to combine in a single bureau art activities now carried on effectively in a number of Government agencies." The Commission strongly recommends that its own function continue to be advisory only; on the other hand, it objects to any change in its independent status (under one of the proposed Government Reorganization plans, it would be grouped with several other agencies under the General Services

Administrator). Recommendations include specific suggestions for each of the separate Federal agencies concerned with the arts. The Commission was established by the Congress in 1910 to advise on District of Columbia development and, at the request of the President or the Congress, to "advise generally upon questions of art." Members, appointed by the President for four-year terms, serve without compensation except for travel expenses to Washington, where they meet for one or two days each month. Present members of the Commission are David E. Finley, chairman, Joseph Hudnut, Edward F. Neild Sr., Felix W. de Weldon, Pietro Belluschi, Elbert Peets, George Biddle, and H. P. Caemmerer, secretary.

INTERIORS-INTERNATIONAL is the theme announced by the New York Chapter of the American Institute of Decorators for its floor at the National Homefurnishings Show in New York's Grand Central Palace September 17-27. And the entire show, according to Director S. Robert Elton, "will tie in with the general theme that design and decoration in this country have stemmed from the influence of many nations." Haven't they HEARD?

MAKE IT "BANAL": A "text" by Auguste Perret for a recent issue of the Swiss periodical *Habitation* reads (in translation) in part as follows: "[The architect] must not cling too much to the new fads (or fashions) for as Gide said: 'What will appear soon the most antiquated, is what first will have appeared the most modern; each facile whim, each affectation heralds a wrinkle.' . . . The architect who, without betraying the modern requirements of a program or refusing the use of contemporary materials, would produce a work which would seem always to have existed, a work which would be, in a word, banal, he indeed could hold himself satisfied."

AC'CENT ON INTERIORSCAPE, no-job-is-too-small department: The landscape architects keep bewailing the fact that too few people realize there's more to landscape architecture than gardens. Well, the story on pages 167-171 is a reminder that there can also be a good deal less. Architect Francis J. McCarthy credits Eckbo, Royston and Williams as "landscape architects" on this office and showroom for Ac'cent, where "landscaping" is confined to three planting boxes with 20 plants or so. The interiorscape is not to be taken lightly, however. In contrast to the rather careful use of planting in the Ac'cent job, interior "landscaping" has too often turned out to be a rubber plant set down in the corner or a couple of pots of ferns near the entrance to the lobby. In the well-known trend to indoor-outdoor living, the indoors has been brought outdoors far more successfully than the outdoors has been brought in.

VULNERABILITY TO ATOMIC ATTACK: The chairman of the Senate Foreign Relations Committee, Senator Alexander Wiley of Wisconsin, has joined the cry for more information for Americans on their "terrific vulnerability to atomic attack" and calls on the Administration to explain "precisely what we must do to reduce that vulnerability and how fast and how much." Senator Wiley puts the subject on the "must" list for the next session of Congress.

NEEDED: LIBRARIES FOR 24 MILLION. A recent survey by the New York State Library, in cooperation with 40 of the 48 state librarians, showed that 24 million persons in this country have no public library service of any kind; more than 53 million do not have easy access to books. State librarians reported that construction of new public libraries has not kept pace with the demand: in 20 states, fewer than nine library buildings have been erected since 1942.

THE TRUTH ABOUT ARCHITECTS: PUBLIC RELATIONS GOAL

In June 1952, the 84th national convention of the American Institute of Architects voted to spend \$100,000 on a three-year program planned to build public understanding and appreciation of the vital role of architecture in the life of every community. The program got under way in January of this year, with Ketchum, Inc., of Pittsburgh, as professional public relations counsel and the A.I.A.'s own Public Relations Committee watching over all. During the first eight months of the program, Ketchum's public relations manager, Walter M. Megrone, and its A.I.A. account executive, Anson B. Campbell, have traveled more than 17,000 miles to meet with A.I.A. groups from coast to coast. Now the RECORD has asked for a progress report and a summary of what's to come.

By Anson B. Campbell

THE KEY PROBLEM on which the current three-year public relations program for the American Institute of Architects is based gives all evidence of being unchanged eight months after its inaugural—but 109 chapters in the A.I.A.'s 12 regional districts have begun a vigorous attack on public ignorance of architects and architecture. The problem is no conglomeration of small professional bothers or client-architect frustrations; it casts a broader shadow of national proportion.

Our nation is growing fast and its people are constantly being hit with a barrage of propaganda and sales material from a thousand sources. The era of the gimmick, the plug and the angle

is, for better or worse, very much with us. The architect—a valuable member of any community in which these pressures operate—has too often found himself lost behind his own professionalism, unwittingly allowing himself and his profession to be thoroughly misconstrued, if not forgotten, by the very community he serves. Now he has become convinced that he cannot expect the public to respect his profession or appreciate his services unless he makes some concentrated and well-planned national effort to bring about understanding.

The Institute's almost 10,000 members are a task force in a program with these purposes: (1) to make an ever-

changing public realize that the architect as an individual and as an organized group can be of great service to the community; and (2) to make the public aware of what the architectural profession is and what an architect is trained to do, in order to overcome the general misunderstanding about the scope and cost of architectural services.

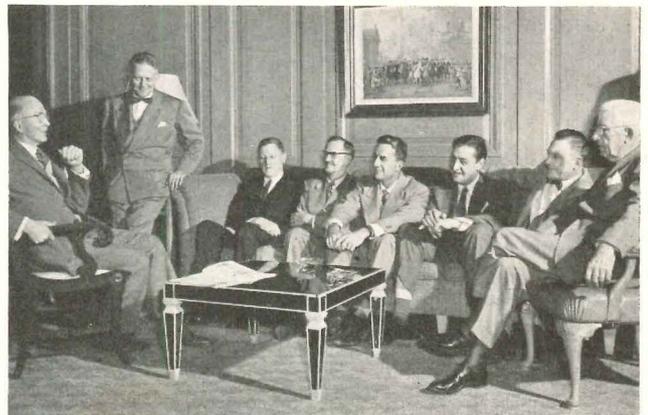
Recognized as the immediate audience for any public relations activity by the architect is the community served by his own A.I.A. chapter. The architect should, by his training and position, be a leader in the community which he helps build. In a new society-on-the-go, he can no longer remain a stranger in his own hometown. Each architect stands for his profession, both in his business and his social relationships. And to the man on the street, the architect must reveal himself as more than a dispenser of blueprints, without ever seeming to be a lofty professional with "expensive" ideas.

The community in which the architect works, as businessman and citizen, must be told by architects themselves the value of architectural services, those which insure good design and good construction, convenience and comfort because of careful planning, ease of securing a mortgage loan at a good rate, money's worth in material and labor, low operation and maintenance cost.

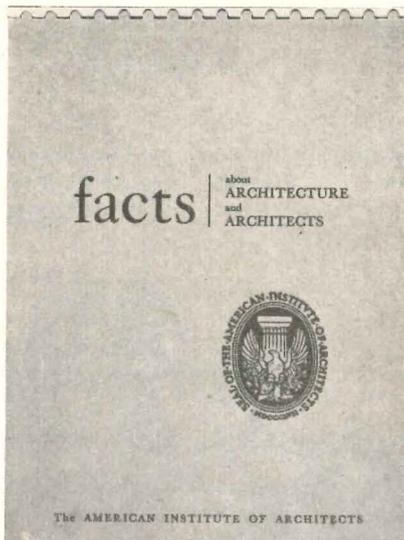
The architect's own participation in community affairs is a sound foundation



The *dei ex machina* of A.I.A. public relations program are (at left above) Ketchum Inc.'s Anson B. Campbell and (at lectern) Walter M. Megrone; and (at right) the A.I.A. Public Relations Committee: (left to right) John W. Root,



chairman; Harold R. Sleeper; Edmund R. Purves, A.I.A. executive director; Herbert C. Milkey; Karl F. Kamrath; Francis J. McCarthy; Frank N. McNett; and Maurice J. Sullivan, A.I.A. treasurer



The "tools" so far developed to help the program along—"facts package" for distribution to public opinion channels; the public relations workshop—photo shows Texas session; and the monthly newsletter. Handbook on public relations for individual architect will be distributed this fall

for his own good relations with the public. Civic commissions need his experience in an advisory capacity; and there is a crying need for him in community planning, especially in the growing field of urban redevelopment. As a member of civic groups, he not only serves the community, but becomes known in the community for his service, and in that way makes his profession known and understood—and in the right context.

The first step we took toward more community understanding was the issuance of a "Facts Package," a ready-reference about the architect, his education, his professional usefulness and his national organization, the American Institute of Architects. Copies have gone to newspapers, magazines, radio and TV stations, and other public opinion channels. In the majority of chapters, members deliver these personally to the source, meeting editors and program directors, offering them help on future articles or projects involving the architect or any facet of building.

Last February, at the request of the chapters, a series of Public Relations Workshops was instituted. These were originally planned for this fall, but because so many A.I.A. groups were eager to start off on the new program with workshop discussions, we revised the schedule and Mr. Megronigle and I covered some 17,000 miles from coast to coast in our first series of workshop sessions during the spring and early summer. This month the workshops will begin again in regions not covered earlier this year, their extent to be determined by present budget limitations.

In programming the workshops, as in all steps in the national program, we worked under the guidance of the A.I.A.'s Public Relations Committee. This includes Chairman John Wellborn Root, Chicago; Vice Chairman Francis Joseph McCarthy, San Francisco; Karl Kamrath, Houston; Harold R. Sleeper, New York; Herbert C. Millkey, Atlanta; Frank N. McNett, Grand Island, Neb.; and Maurice J. Sullivan, Houston (ex-officio). Valuable, too, in all public relations activity is Edmund R. Purves, executive director, with his headquarters at the Octagon in Washington.

The public relations workshops serve as meeting grounds for us as public relations counsel, not only with regional and chapter officers, but with other A.I.A. members as well. At these sessions the national program is outlined and public relations recommendations made for chapter action. Regions differ, of course, in their specific problems, but generally, recommendations consist of a minimum program wherein the chapter establishes a basic list of chapter publications; works at establishing better relations with public opinion channels in the community; completes and uses a "thought-leader" list for direct mail contact; and undertakes committee work for community action. The maximum program, scheduled for chapters more advanced in organized public relations, adds a one-day conference of idea-exchange between architects and leaders in the chapter area's business and social fields and suggested public relations use of exhibits, speaker's bureaus and advertising.

Used as a clearing-house for public relations action across the nation is another public relations tool, the "AIA

Public Relations Newsletter," issued monthly since April to every member of the Institute. In its pages can be found such notes on chapter public relations activity as these:

"For the past three years the Southern California Chapter has produced a column titled *Architects' Corner* in the Sunday Real Estate section of the *Los Angeles Examiner*. A call on the real estate editor of your own community newspaper might find him responsive to some help on his Sunday or Special Home section. Present your ideas not as an individual architect seeking publicity but as your Chapter interested in community betterment. . . ."

"Paid attendance at the Cleveland Chapter's annual House and Flower Show was a record 204,000, of which show officials estimate 75 per cent toured the houses, saw examples of the architect's professional usefulness. . . ."

"What is the Role of the Architect in Community Building? was the subject of a recent panel discussion on *The Pittsburgh Story* (WDTV), winner of *Variety's* 1950-51 Show management Review Highlight Award. Jack Franklin, Rody Patterson and Tom Pratt, all of the Pittsburgh Chapter, told TV viewers why and how to engage an architect, what architects were doing in that city's building boom. . . ."

"A direct result of the Pasadena Chapter's public relations program is some excellent publicity-aid from the First Federal Savings and Loan Association in Pasadena. That Association was

(Continued on page 324)

O P I N I O N

Editor, ARCHITECTURAL RECORD

I am enclosing a copy of a statement made by Rene d'Harnoncourt, Director of the Museum of Modern Art, in answer to Frank Lloyd Wright's article, "In the Cause of Architecture."

We hope very much that you will be able to publish this statement, especially considering that Mr. Wright's point of view was published in the June issue of ARCHITECTURAL RECORD.

Elizabeth Shaw
Acting Publicity Director
Museum of Modern Art

The statement follows:

Mr. Frank Lloyd Wright recently published a statement under the title: IN THE CAUSE OF MODERN ARCHITECTURE, in which he denounces the International Style of architecture as an "evil crusade" and a manifestation of "totalitarianism." He then goes on to accuse the Museum of Modern Art of having made a "sinister attempt to betray American Organic Architecture," and offers the Museum's exhibition and book, BUILT IN U.S.A.: POST-WAR ARCHITECTURE, as a proof of the Museum's activities as a "professional publicist" for the International Style. This calls for rebuttal and factual clarification.

It is self-evident that Mr. Wright speaks as a leading exponent of what he defines as organic architecture. It is therefore worth noting that the Museum, far from betraying Mr. Wright and what he stands for, has always acknowledged him publicly as America's greatest architect. The Museum has held fourteen exhibitions in which Mr. Wright's work was represented — six of these were devoted exclusively to his work and one was the largest architecture show given at the Museum of Modern Art. Thus the Museum has given him more one-man shows than it has given not only to any other architect, but

to any creative artist. In both its exhibition and its book on American post-war architecture, Mr. Wright again was given the place of honor which he deserves. It also is pertinent to point out here that all the architects whom Mr. Wright associates by name with organic architecture — namely Richardson, Sullivan and Root, have been honored by the Museum since the inception of its Department of Architecture.

The Museum's responsibility is to help the public to know and appreciate the work of the creative artists of our time, and to bring to its attention significant trends in modern art. Unlike Mr. Wright, we believe that the International Style was such a trend. Twenty years ago the Museum first applied the term International Style to a kind of architecture which, partially under Mr. Wright's influence, was emerging simultaneously in several different countries. As described by the Museum, the International Style was characterized by light and spacious volumes rather than by heavy masses, by fresh exploration of function and structure, and by a sense of order enriched by beauty of proportion and perfection of technique rather than by superficially applied ornament. The Museum believes that several architects associated with it have done highly individual and magnificent work.

We strongly deny the sinister motives Mr. Wright ascribes to the International Style and we will, of course, continue to present the work of the architects who carry on its tradition together with distinguished work by other architects. By the same token, Mr. Wright's attacks will not diminish our admiration for him as a great artist and builder.

(signed) Rene d'Harnoncourt, Director
Museum of Modern Art

Editor's note: "In the Cause of Modern Architecture" was a somewhat revised version of "The 'International Style,'" excerpts from which, with a letter from Mr. Wright, were published in the June issue of ARCHITECTURAL RECORD (page 12).

MILITARY BUILDING GETS \$490 MILLION FOR 1954

By Ernest Mickel

A MILITARY PUBLIC WORKS PROGRAM of \$490 million finally emerged from the first session of the 83rd Congress. The breakdown by services:

	(in \$ thousand)		
	In U. S.	Overseas	Total
Army	\$113,111	\$20,560	\$133,671
Navy	61,687	25,324	87,011
Air Force	267,267	2,242	269,509
Total	\$442,065	\$48,126	\$490,191

These amounts are authorizations — not appropriations — for the fiscal year 1954 ending next June 30. They compare with fiscal 1953 authorizations of \$2398.3 million. The office of Director of Installations Frank R. Creedon of the Defense Department noted these features:

1. While the authorization is some 92 per cent of the amount requested of Congress by the Secretary of Defense, it is only 10 per cent of the military departments' initial request to the Secretary. The preliminary screening in Mr. Creedon's office had eliminated \$2512 million from the Air Force request; \$1204 million from the Navy's; and \$482 million from the Army's.

2. No additional appropriations were required — carryover of funds takes care of it.

3. This Authorization Act rescinds existing authorization in an amount greater than the new authorization granted.

4. The Act imposes unit cost limitations on certain items.

5. Cost variance allowed at individual stations is held at five per cent at U.S. stations instead of 10 per cent.

Construction authorization was rescinded for \$757 worth of projects — \$271 million for the Army, \$85 million for the Navy and \$401 million for the Air Force; the total rescinded exceeded by \$267 million the new authorization.

These cost limitations were imposed on construction within the continental United States: \$20 per sq ft for cold storage warehousing; \$6 per sq ft for regular warehousing; \$1700 per man for permanent barracks; \$1400 per man for 10-year-life barracks; and \$5000 per man for bachelor officers' quarters.

Mr. Creedon's office said unobligated funds on July 1 amounted to about \$900 million for the Army, \$460 million for the Navy and \$1941 million for the Air Force.

UNESCO Plans Approved

WORKING DRAWINGS are being started on the Paris headquarters building for the United Nations Educational, Scientific and Cultural Organization in an office at 9, Rue Arsène Houssage, Paris VIII. Meeting in extraordinary session this summer in Geneva, the UNESCO General Conference approved a resolution authorizing its Director-General to accept the second Breuer-Zehrfuss-Nervi scheme (ARCHITECTURAL RECORD, July 1953, pp. 10-11) and the Place de Fontenoy site offered by the French Government and to proceed with construction "at a total cost not to exceed \$6,000,000." A Committee of Art Advisers is to be established to plan the "artistic decoration" of the building and to suggest the names of artists who might contribute to it. Three American architects are working in the Breuer-Zehrfuss-Nervi Paris office — Seymour Howard, on leave of absence for a year from his association with Huson Jackson of New York and teaching at Brooklyn's Pratt Institute; Peter Kowalski, also of New York; and Robertson Ward, who has been in the Tokyo office of Skidmore, Owings & Merrill. Mr. Breuer himself will continue commuting back and forth across the Atlantic as he has been doing since June.

FCDA to Architects/Engineers

THE RESPONSIBILITY OF THE ARCHITECT and engineer in civil defense was analyzed in a talk by Director A. D. Morrell of the Engineering Office of the Federal Civil Defense Administration at a recent engineering conference sponsored by FCDA. The technical problems raised by an atomic attack are divided into three time phases, Mr. Morrell said — the pre-attack period, the emergency operational period immediately preceding, during and following an attack, and the restoration or post-attack period. As outlined by Mr. Morrell, *pre-attack action* with which architects and engineers should be concerned includes urban analysis, dispersion of industry and manpower, protective design and construction, shelter design and construction, formation of emergency operational plans and transportation studies; *engineering emergency operations* would include debris clearance, provision of hospital and first-aid stations, emergency water supply, sewage and refuse problems, emer-

gency power, communications, transportation, provision of gas, and mass burial; *post-attack problems* would include urban redevelopment, reconstruction of industry, housing repair and reconstruction, commercial reconstruction, highway and street repair, public building reconstruction, water supply and other utilities.

Code Acceptance Mounts

SOME 560 COMMUNITIES now have adopted the model national building code, the National Board of Fire Underwriters reports. Sixty-five communities were added to the list during the last fiscal year. The code permits use of any material, type of assembly, method of construction or style of architecture that meets the required standards of strength, stability and fire resistance.

A.I.A. Group in Germany

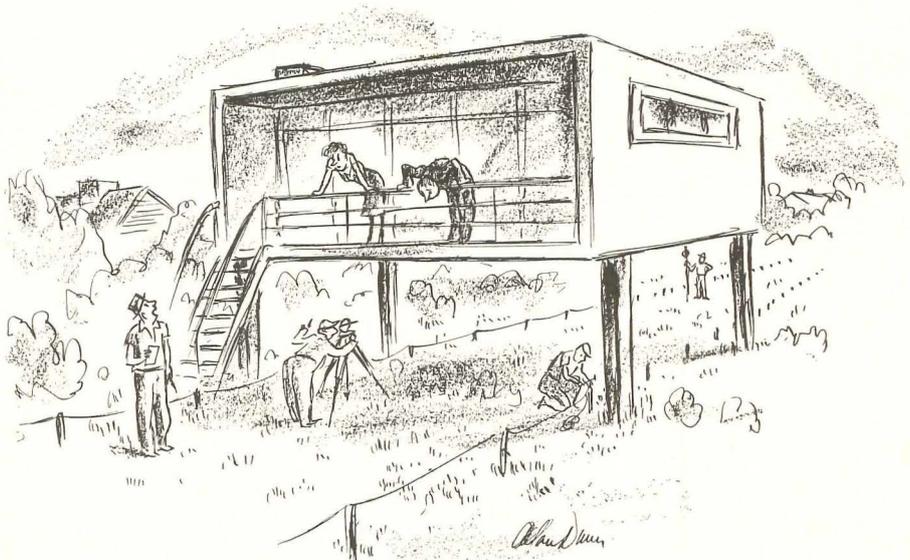
EIGHT AMERICAN ARCHITECTS selected by the regional directors of the American Institute of Architects in response to an invitation from the German government have been studying the reconstruction problems which faced Germany following World War II. The group, which left early last month to spend about a month as guests of the West German government, was to concentrate its observations on postwar housing construction, which has been estimated at \$700

**Stock School Plans:
"38 States Say No!"**

THE SIXTH in the American Institute of Architects series of *School Plant Studies* provides some data encouraging both for the cause of good school design and for architects who design schools. "Stock Plans for School Buildings: A National Survey" reports only 10 of the states still using (limited) stock plans. Of the 38 who do not use them, 15 formerly used and have now abandoned them; 23 never used them. The paper, published in the January-February 1953 issue of the A.I.A. *Bulletin*, is based on a telegraphic survey of all 48 state departments of education made in November 1951 by the A.I.A. Committee on School Buildings, headed by William Caudill.

million. Arthur E. Fehr, Austin, Tex., is the group's leader, with Frederic A. Pawley of the Washington, D. C., staff of the A.I.A. acting as team secretary. Others in the group: C. M. Deasy, Los Angeles; C. Curtiss Inchow, Columbus, Ohio; Angus McCallum, Kansas City; A. G. O'Dell Jr., Charlotte, N. C.; Richard W. E. Perrin, Milwaukee; and Thomas S. Hargis, Jr., Yakima, Wash.

(Continued on page 16)



— Drawn for the RECORD by Alan Dunn

"We're putting a new road through here, lady, but don't worry — you won't have to move —"

THE RECORD REPORTS

(Continued from page 15)

A.S.T.M. Okays 63 Standards

THE AMERICAN SOCIETY for Testing Materials at its 1953 annual meeting approved 63 new standards, bringing the total of A.S.T.M. standards to 1965, compared with the total 20 years ago of 690 and 10 years ago of 1200. Also at the annual meeting, revisions of 185 existing tentatives and standards were acted on. All of the new and revised standards will be published later in the 1953 Supplement to the Book of A.S.T.M. Standards.

"New Work in Stained Glass"

EIGHTEEN SELECTED ARTISTS and stained glass designers have contributed one panel each to an American Federation of Arts exhibition which opens September 8 in New York at the Grace Borge-nicht Gallery prior to a nationwide tour which already includes Louisville, Chi-cago, Manchester, N. H., Corning, N. Y., Rochester, N. Y., Chattanooga, Tenn., and San Jose, Cal. The panels have been developed in a joint project of A.F.A. and the Stained Glass Associa-tion of America "to revive in this coun-try awareness and production of stained glass." Queries to: A.F.A., 1083 Fifth Ave., New York City.

The Palace and the Shack

EVEN AS PREDICTED, the figures and the facts on the 1953 boom in residential air conditioning are little short of stag-gering. The Air-Conditioning and Re-frigeration Institute reports that manu-facturers' shipments of room air con-ditioners during the first half of 1953 increased 215 per cent over the same period a year ago. As for the outlook, the chairman of the Air Conditioning Committee of the National Association of Home Builders, Ned Cole, told a re-cent meeting of the committee that a \$750,000,000 residential air conditioning industry — a tenfold advance — is in the making and may be attained within the next three or four years. The possible

range of future customers may be sug-gested by two recent news items: in Tokyo, Emperor Hirohito planned to have his living quarters in the Imperial Palace completely air conditioned; and in Miami Beach, it was reported that the Algiers Hotel site has an air conditioned construction shack.

Power Plant of the Future

THE FIRST International Conference on Atomic Power for Industrial Uses was held last month in Oslo and delegates saw the first public showing of a recently declassified U. S. Atomic Energy Com-mission film on the "experimental ho-mogenous reactor" at Oak Ridge, Tenn., which is considered the pilot model for the atomic power plant of the future.

The Cost of a House

A HOUSE that costs \$6127 in Long Beach, Cal., may cost \$9117 in Cleveland, Ohio; but there is no geographic pattern in cost variations, and size of community appears to have less effect on cost than other factors, such as labor practices, availability of raw materials and rela-tive distribution or shipping costs. A recent survey by the Underwriting Divi-sion of the Federal Housing Administra-tion of the costs of constructing a stand-ard house in each of 70 U. S. cities showed a cost range in 41 of the 70 cities from \$6000 to \$7500 and in 29 cities from \$7500 to \$9117. The survey was based on January 1953 replacement cost estimates of an identical, one-story, two-bedroom frame house in each area served by an FHA insuring office.

Cost estimates included materials, la-bor, subcontracts, workmen's compen-sation insurance, public liability in-surance, unemployment insurance, social security tax, sales taxes, incidental job costs and general overhead and profit. Not included: architectural services, cost of lot, land development, carrying charges during construction, financing costs, fire or hazard insurance, ground and street improvements, driveways or walks, heating system costs. Because of setback variations, sewer, water, gas

and electric connections are included only to a point 5 ft beyond the founda-tion walls.

Figures for the 70 cities:

Albany, N. Y. — \$7928; Albuquerque, N. Mex. — \$7175; Atlanta, Ga. — \$6857; Baltimore, Md. — \$7550; Billings, Mont. — \$7409; Birmingham, Ala. — \$6560; Boise, Idaho — \$7050; Boston, Mass. — \$7464; Buffalo, N. Y. — \$8553; Burling-ton, Vt. — \$6746; Camden, N. J. — \$7476; Charleston, W. Va. — \$7484; Charlotte, N. C. — \$6453; Cheyenne, Wyo. — \$7068; Chicago, Ill. — \$8333; Cincinnati, Ohio — \$7950; Cleveland, Ohio — \$9117; Colum-bia, S. C. — \$6567; Columbus, Ohio — \$7950.

Dallas, Tex. — \$6463; Denver, Colo. — \$6942; Des Moines, Iowa — \$8102; De-troit, Mich. — \$7471; District of Colum-bia — \$7383; Fargo, N. Dak. — \$8242; Fort Worth, Tex. — \$6821; Grand Rap-ids, Mich. — \$7122; Hartford, Conn. — \$7767; Houston, Tex. — \$6942; Indianap-olis, Ind. — \$7579; Jackson, Miss. — \$6693; Jacksonville, Fla. — \$7399; Kansas City, Mo. — \$7728.

Little Rock, Ark. — \$6934; Long Beach, Cal. — \$6127; Los Angeles, Cal. — \$6152; Louisville, Ky. — \$7844; Manchester, N. H. — \$6434; Memphis, Tenn. — \$6399; Miami, Fla. — \$6644; Milwaukee, Wis. — \$8573; Minneapolis, Minn. — \$7479; Nas-sau County, N. Y. — \$6863; Newark, N. J. — \$7092; New Orleans, La. — \$7356; Oklahoma City, Okla. — \$6506; Omaha, Neb. — \$8141; Philadelphia, Pa. — \$7254; Phoenix, Ariz. — \$6608; Pitts-burgh, Pa. — \$8064; Portland, Me. — \$6632; Portland, Ore. — \$7461; Providence, R. I. — \$7521.

Reno, Nev. — \$8162; Richmond, Va. — \$7032; Sacramento, Cal. — \$7614; St. Louis, Mo. — \$7877; Salt Lake City, Utah — \$7626; San Antonio, Tex. — \$7362; San Diego, Cal. — \$8136; San Francisco, Cal. — \$7546; Seattle, Wash. — \$7744; Shreveport, La. — \$7641; Sioux Falls, S. Dak. — \$8317; Spokane, Wash. — \$7239; Springfield, Ill. — \$8636; Tampa, Fla. — \$7402; Topeka, Kan. — \$7670; Tulsa, Okla. — \$6941; Wilmington, Del. — \$7643.

Architectural Hats

SALLY VICTOR is at it again — "archi-tectural forms, orders and structures" are "one of the major inspirational springboards" (the release says) of her fall collection. Samples, with "architec-tural" comment by Sally Victor, are below.

"Archer" ("medieval")



"Ionic"



"Doric"



"Corinthian"



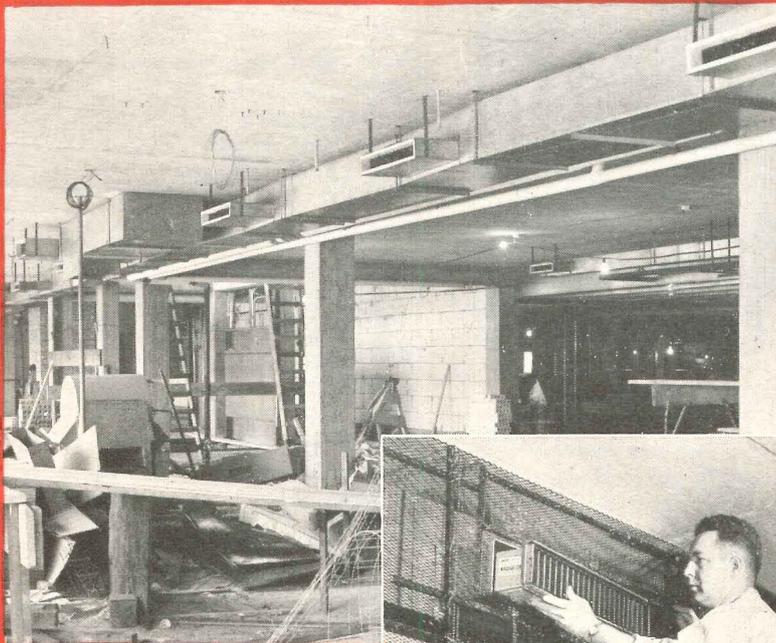
Nothing succeeds like success! Trial of Barber-Colman's new high velocity system in the first floor of Allstate Insurance Company's new building led to adoption of the same system for the second and third floor addition now being built.

Pressed for height in the original building, the architects and engineers turned to the high velocity system as a means of saving space. Small size ducts were installed and furred into place, lining up with the window soffit. Velocity of 3000 fpm at the fan . . . with 3" static pressure in the supply plenum . . . called for use of Barber-Colman's unique Uni-Flo Air Valves in back of each outlet. The

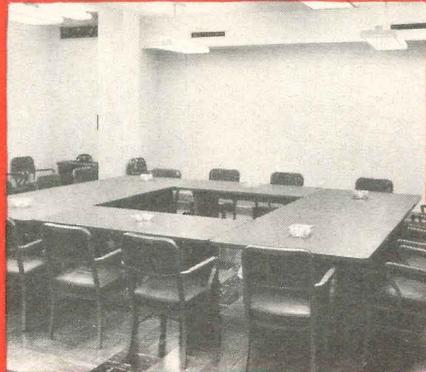
result—highly efficient air distribution at a remarkably low noise level—led to flat specifications of Barber-Colman equipment for the new addition.

One unique feature of the original installation was the use of Uni-Flo Air Valves to balance air quantities supplied to different zones. The contractor reports the innovation simplified balancing operations, thus saving on cost.

To be in the know on fast-growing high velocity systems . . . and their application to new or old buildings . . . call your nearby Barber-Colman field office for complete details. Or send coupon below for new booklet "High Velocity Air Distribution."



(Above) **Ductwork** before installation of partitions or metal lath ceilings. Complete job required 340 Air Valves, 12 High Velocity Control Units, 207 Sidewall Diffusers and Return Grilles, 10 Air-turns. (Right) **Air Valve** and Diffuser go into place. Valve is adjusted quickly and easily with key through face of Uni-Flo Double Deflection Sidewall Diffuser.



(Above) **Meeting room** is free from disturbing air noise, yet has ample, efficiently diffused air supply for participants in group discussions. (Below) In **addressograph room**, normal air flow is distributed effectively through attractive Uni-Flo Ceiling Diffusers (individually adjustable).



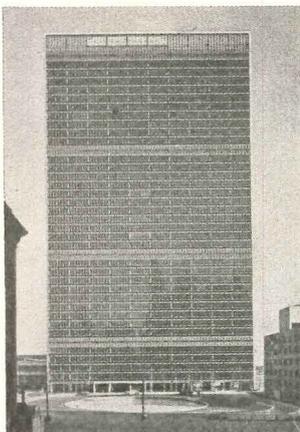
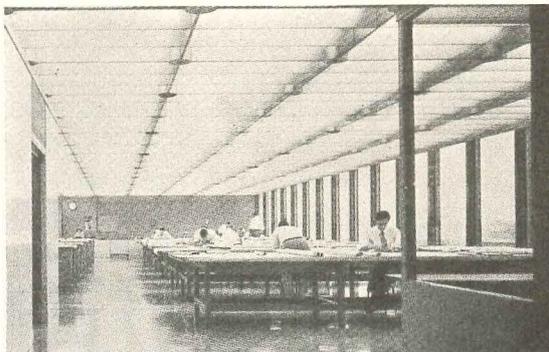
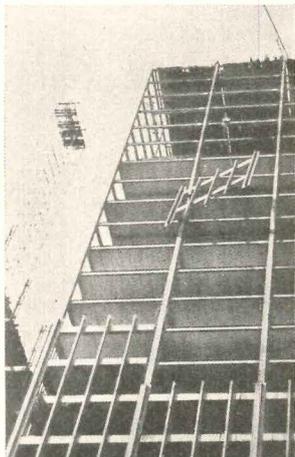
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NEW STRUCTURAL TECHNIQUES APPRAISED



Above: a Britisher's view of American structural techniques: Mies van der Rohe's Lakeshore apartments selected for dimensional standardization (top left); General Motors Research Center office building for integration of services and structure (top right); U.N. Secretariat for simplicity of structural frame design (bottom left); tilt-up concrete slabs for reduction in form work (bottom right). Below: some hits and misses picked by another English author: Power and Production Building at Festival of Britain (left) is mostly glass—people tried to walk through glass façade; Fairway Restaurant at Festival has interesting light roof structure of post-stressed concrete joists; Five-Fifty Building in Miami, Fla. has economical precast concrete wall panels hung from floors (bottom right)

IT IS WELL KNOWN that building engineering design and construction techniques in this country are conditioned by the high cost of labor as compared with cost of materials. This is hardly understood in Europe, where the situation is exactly reversed, according to L. W. Elliott who writes on "Structural News: USA" in the April issue of *The Architectural Review*. The author takes some of our more talked about new buildings which in his opinion demonstrate the effect of prefabrication, dimensional standardization, and other labor-saving ideas (such as the lift-slab and tilt-up concrete techniques) on the layout and appearance of the buildings.

The first of his examples is Mies van der Rohe's Lakeshore Apartments. The author points out that since steel column fireproofing was uniformly sized the whole height, both windows and interior partitions could be fully standardized.

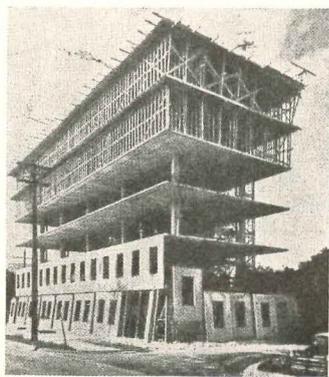
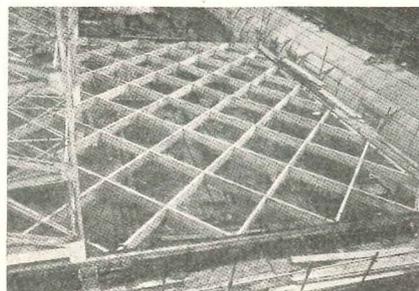
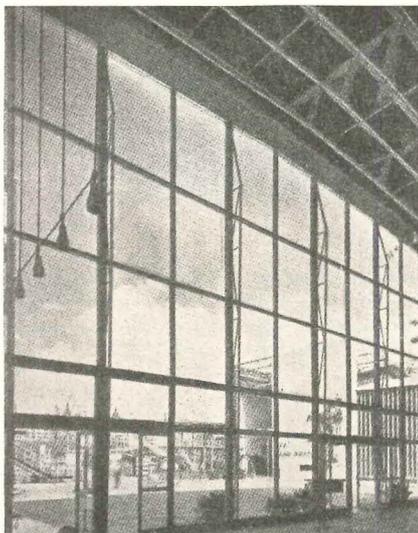
The General Motors Research Center office building is presented as an outstanding example of integration of services and structure as well as modular coordination.

Problems of all-glass walls are discussed, using as examples Lever House and 445 Park Avenue, where a grid of standardized steel mullions was set out from the frame, making the fenestration independent.

THE FESTIVAL OF BRITAIN gave architects and engineers an opportunity to experiment more than normally with structures and materials. How these ideas worked out is discussed in an article, "Successes and Failures of New Techniques," by Howard V. Lobb in the April issue of *The Journal of the Royal Institute of British Architects*. In addition, structural systems in English schools and the Five-Fifty Building in Miami, Fla. are examined.

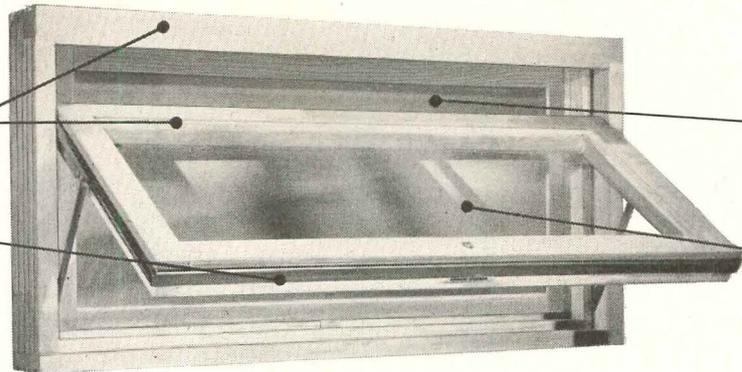
Descriptions are given of welded light steel framing supporting a glass roof, problems of installing the largest sheet of polished plate glass in the world, post-stressed concrete planks for a restaurant roof, and a huge corrugated-shaped roof made of aluminum sheet and cork insulation.

(Continued on page 356)



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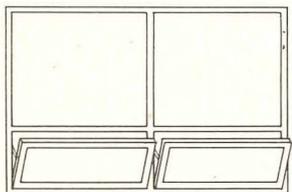
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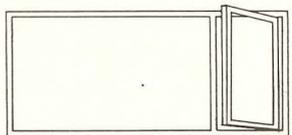
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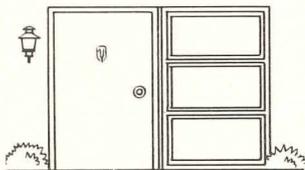
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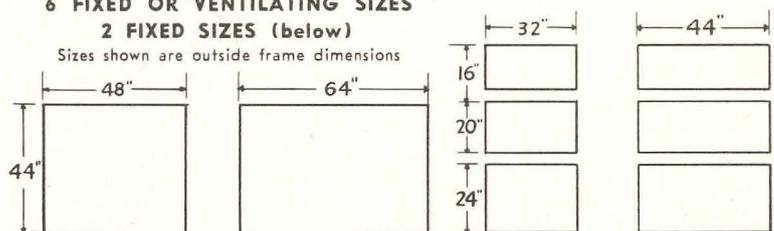


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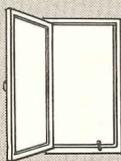


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THE RECORD REPORTS

NEWS FROM CANADA *by John Caulfield Smith*

MANITOBA STUDENT WINS PILKINGTON GLASS AWARD

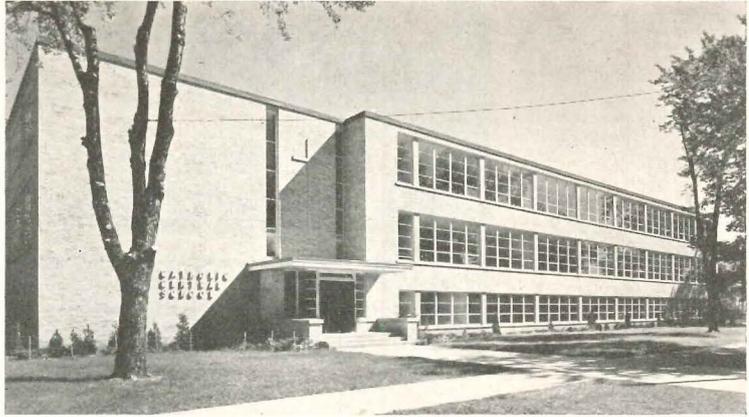
FOR THE FOURTH TIME in the seven years of its existence, the Pilkington Glass Traveling Scholarship of \$1500 and return passage to study in Britain has been awarded to a University of Manitoba student. This year's winner is Jamaica-born Vayden R. McMorris, 28, for the design of a "significant and architectural setting to house representatives of the new government under the terms of a new constitution" in Kingston, Jamaica. Mr. McMorris was training as a meteorologist at the Royal Naval Air Station in Jamaica and taking night classes in building construction drawing when his drafting came to the attention of a firm of architects and contractors who advised him to seek formal training in architecture. From 1946 to 1948 he studied engineering at Mount Allison University, Sackville, N. B., and then transferred to the architectural course at the University of Manitoba.

Second prize was won by A. R. Ross of McGill University, with a design for a fine arts and architecture school. Raymond Gerald Johnston, University of British Columbia, won third prize for his design of a first offenders correctional institute.

The competition is open to architectural students at all Canadian universities with a five-year course in architec-

(Continued on page 30)

NEW SCHOOL COMPLETED AT LONDON, ONT.



Ron Nelson

CATHOLIC CENTRAL SCHOOL is located in the heart of the city and three stories were indicated to provide the accommodation required within the confines of a relatively small site. The building, erected at a contract cost of \$9.80 per sq ft, provides on the ground floor cafeteria-kitchen, home economics department, general shop, offices, staff rooms and four standard classrooms; on the first floor eight classrooms, offices and a combined gymnasium-auditorium; and on the second floor eight classrooms, offices and gymnasium-gallery. Extension

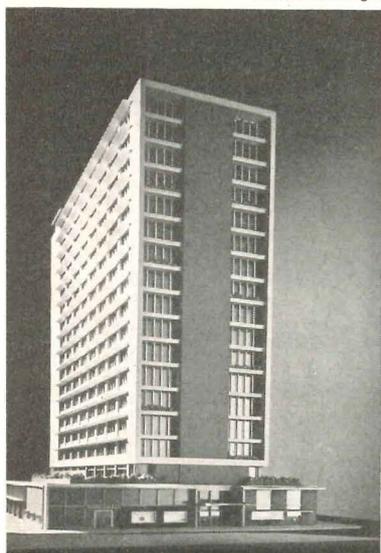
is possible for six more rooms at the rear.

Construction is of reinforced concrete and steel with ribbed concrete slab floors and buff face brick is backed up with hollow tile and concrete block. Exposed concrete block and structural facing tile were used extensively on the interior for "considerable savings." Ceilings are acoustic plaster in classrooms, corridors and gymnasium. Windows throughout are steel.

Charles H. Gillin of London was the architect.

VANCOUVER: OFFICE TOWER PROPOSED

Graham Warrington



Proposed office building for Vancouver would have parking facilities for 150 cars in basement, stores and banks on ground floor, and on upper floors — which occupy only a third of the site — office space subdivided as tenants desired. The building is planned on a 3 ft 4 in. module with column spacing 18 ft 4 in. by 25 ft 4 in.; all office space equally desirable, only difference being exposure. Proposed site is 264 ft by 131 ft. Estimated cost \$5 million. Architect: C. B. K. Van Norman

TORONTO: ARCHITECTS ARE CLIENTS



Canada Pictures Limited

It won't be long now: contract for erection of new headquarters building for the Ontario Association of Architects is signed. Signers are Alvin R. Prack (left), vice president of the Association, and A. R. Gardiner (right) of Gardiner-Wighton, Ltd., contractors. Witnesses (standing) are John C. Parkin (left) of John B. Parkin Associates, architects, and John D. Miller (right), secretary of the Association

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THE RECORD REPORTS

CANADA

(Continued from page 26)

ture. Judges, nominated by the universities and all architects, were J. C. Parkin, Leo Venchiarutti, Maurice Payette, George K. Pokorny and Philip F. Goodfellow. Gordon Adamson was a non-voting company representative.

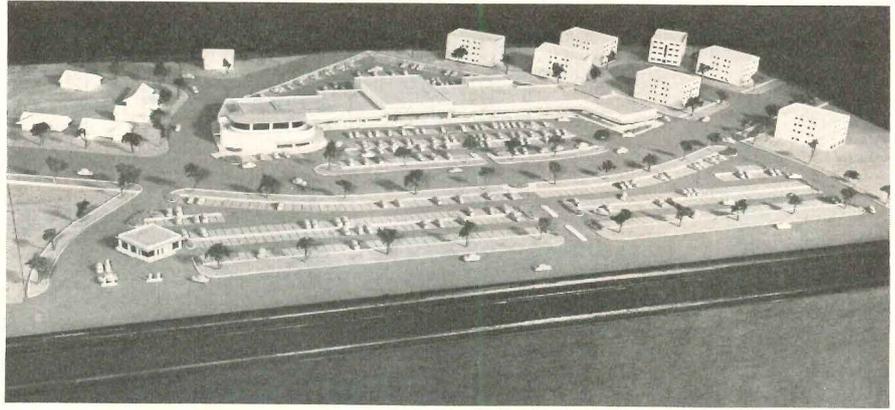


Photo of scale model shows layout of nine-acre Humbertown Shopping Center being built at cost of over \$2 million in Humber Valley Village, Etobicoke Township, Ont. Cyril DeMara & Company are architects, G. A. McElroy (Windsor), consulting architect. Construction of Shell service station (left foreground) is well advanced; work started late in June on main building (center), which will include (from center, left to right) Loblaw's Department Store, Kresge's, Humbertown Pharmacy and Bank of Nova Scotia. Completion of first group is set for Christmas

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CIVIC ROLE IS LAUDED AS TORONTO ARCHITECTS MEET

THE TORONTO CHAPTER of the Ontario Association of Architects is now the largest local organization of architects in Canada. Membership has climbed to 199, retiring chairman E.C.S. Cox announced at the annual meeting of the chapter held recently at the Royal Canadian Yacht Club, Toronto Island. Gain is about 15 per cent over '52.

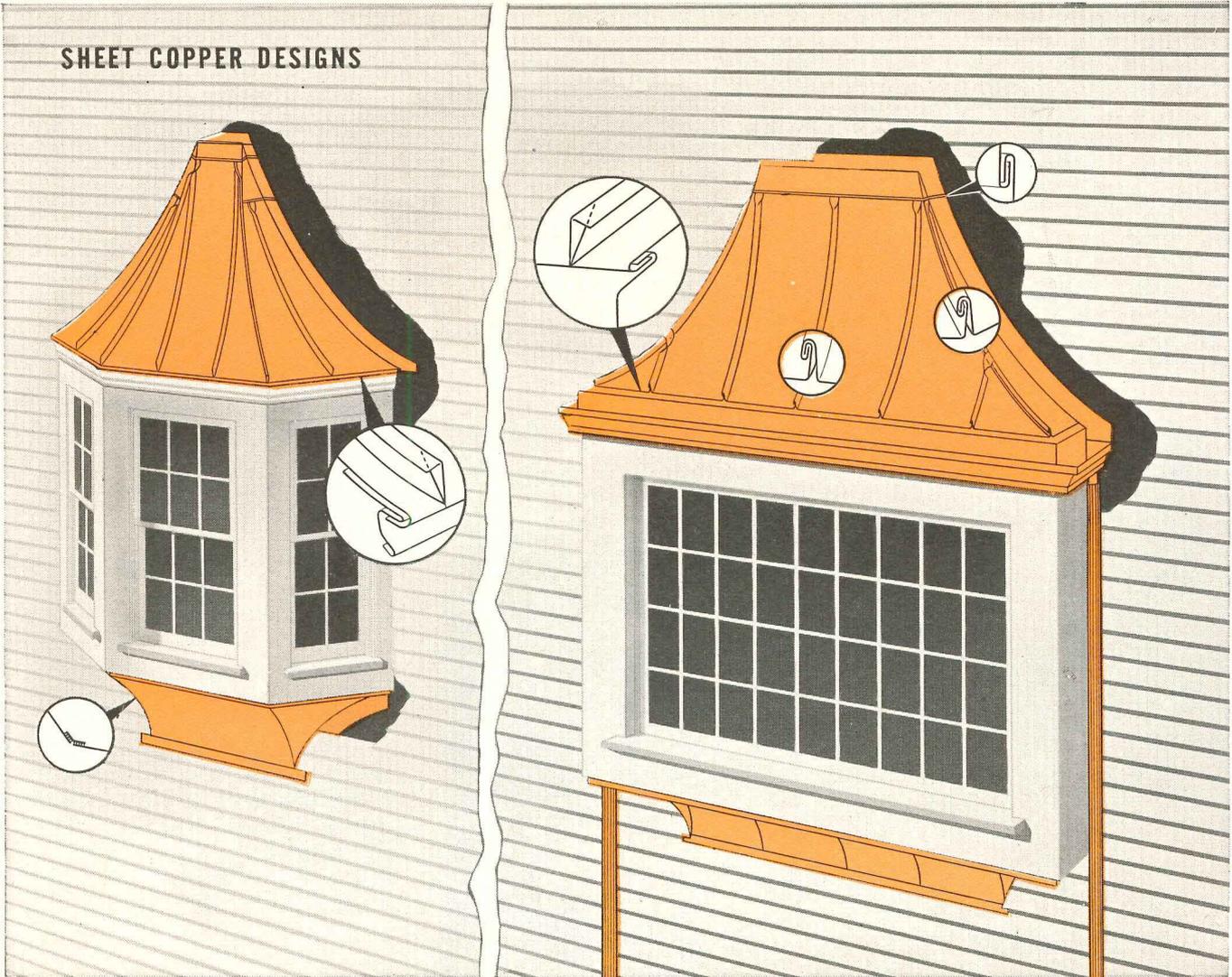
Making the annual report of the executive committee, Mr. Cox described as the greatest achievement of the year recognition of the chapter as a "definite force" in the community. Through the Advisory Committee on Civic Design, he said, Toronto architects are making an important contribution to the beautification and welfare of the city: the voice of the chapter is being heard in the various civic departments.

The services of the Committee on Civic Design are placed at the disposal of the city in the following matters: siting and design of all public buildings; planning and landscaping of parks, boulevards and playgrounds; siting and design of statuary, drinking fountains, ornamental fences, etc.; the design of lighting standards, waste receptacles, traffic and other signs.

One of the most interesting projects undertaken by the committee concerns

(Continued on page 32)

SHEET COPPER DESIGNS



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For the roofing of bay windows and entrance hoods, particularly where curved surfaces are involved, copper is the ideal material because of its pliability, ease of joining and soldering.

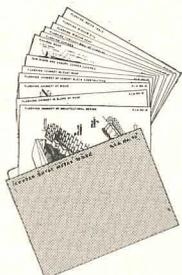
On such roofs it is possible to reduce material and labor costs by using Economy* Copper Roofing, a light-weight (10 oz. per sq. ft.) copper sheet measuring 16" x 72".

Installed according to accepted practices, the closer seam spacings create a desirable architectural effect and the narrower roof pans, with a 3/8-inch standing seam, provide a durable, non-rusting roof covering that is strong, rigid and weatherproof.

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THE RECORD REPORTS

CANADA

(Continued from page 30)

the making of proposals to improve the appearance of Yonge Street from Front Street north to Alexander Street. The chapter has recommended that all street lighting poles be removed and that lighting fixtures be mounted directly on the walls of buildings.

Executive committee for 1953-54 consists of G. Everett Wilson, chairman; Robert A. Servos, vice chairman; and Robert R. Moffat, Richard A. Fisher, Loren A. Oxley and B. H. M. Tedman, members. John D. Miller remains secretary-treasurer.

SIX MONTHS' BUILDING NEARED BILLION MARK

Despite a decline in June contract award figures, total awards for the

first half of 1953 showed Canada's construction industry running well ahead of last year's activity.

During the first six months contract awards totaled \$978,500,000 for this year compared to \$904,750,000 for 1952, an increase for the half-year period of \$73,750,000, according to MacLean Building Reports Ltd.

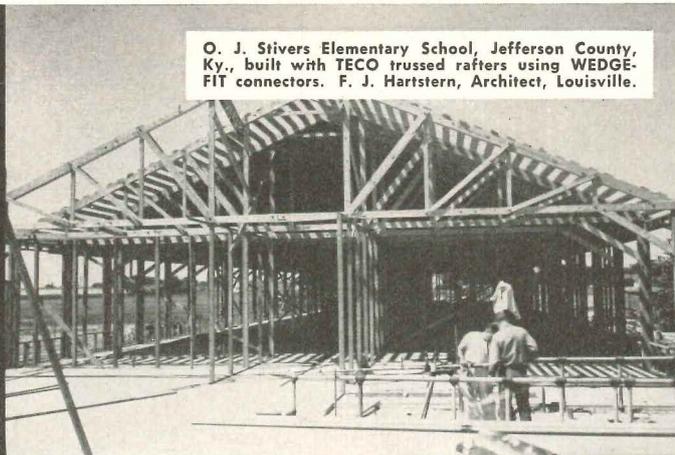
The gain was not spread over the four basic divisions of construction, however. Housing and commercial building were ahead of last year by 23 percent and 4.8 percent; but industrial and engineering construction dropped by \$46,000,000 and \$81,000,000 respectively.

Trade Index Available

The 1953 edition of the Canadian Trade Index, an 1170-page book providing vital statistics about some 10,000 manufacturing firms, is now available from the Canadian Manufacturers' Association, 67 Yonge Street, Toronto, at \$7.50 a copy postpaid.

The Index, which also has a classified directory of many thousands of manufactured products, features a 38-page section "Canadian Industry Builds," with illustrated articles describing achievements in each of the provinces and in the Yukon and Northwest Territories.

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O. J. Stivers Elementary School, Jefferson County, Ky., built with TECO trussed rafters using WEDGE-FIT connectors. F. J. Hartstern, Architect, Louisville.

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University of Alberta Builds New Theological College Unit

St. Stephen's College (above) is the first part of an additional unit for the existing Theological College on the Edmonton campus of the University of Alberta. The building provides classrooms, library, lounge, private offices for the instructors and a sound recording and broadcasting suite.

The building is of reinforced concrete design with exterior walls of brick ma-

(Continued on page 36)

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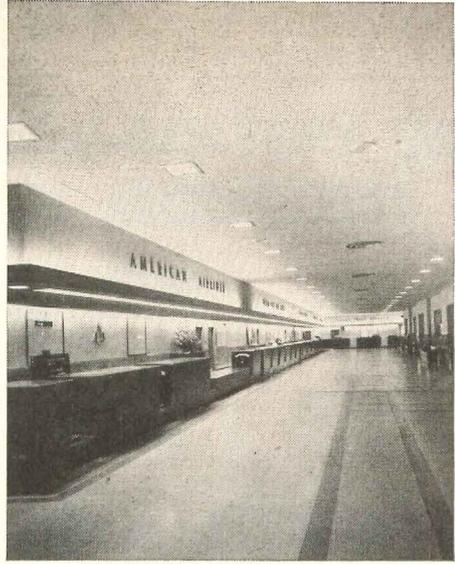
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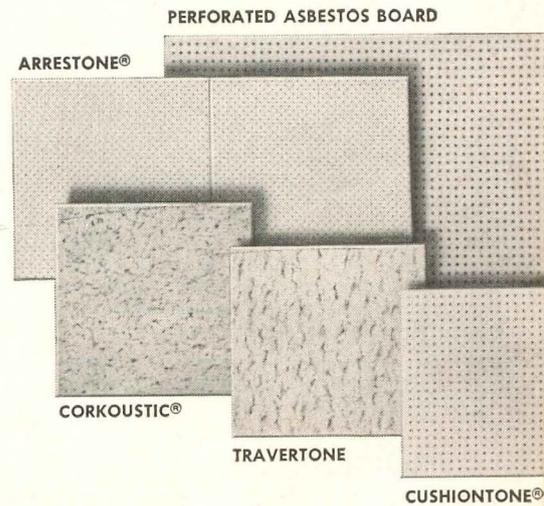
AR

Over 200 feet of ticket counters are kept comfortably quiet even at the busiest times by ceilings of noise-absorbing Armstrong's Travertone.



Large work spaces like this baggage area require sound conditioning that is moderate in cost, high in acoustical efficiency, and easy to maintain. Here, economical Armstrong's Cushiontone was used.

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THE RECORD REPORTS

CANADA

(Continued from page 32)

sonry, except where the vertical window fins are shown and these are of architectural concrete. Architectural concrete is also used in the spandrels between these projecting fins. Main entrance doors and frames are of anodized aluminum; the floors are asphalt tile over concrete, except in corridors, stairways and washrooms, which are terrazzo. All ceilings are acoustically treated and lighting is by fluorescent unit.

Architects were Dewar, Stevenson & Stanley of Edmonton and Calgary, Alta.



O'Keefe's Retail Store at Dundas and Victoria streets in Toronto was an alteration job to the end of an old bottling plant. An uneven roof line was brought to a uniform level and some ugly windows filled in, says the architect, to give a good background for the large sign. The curve of Dundas Street dictated placing the advertising pylon forward to be visible several blocks to the west. The refrigerated storage space is to the left of the store and company offices to the right. The curved wall of the store (below) is covered with oak half rounds and other walls with cement enamel in company colors. Floor has diagonals in line of traffic flow in the store. Architect: Earle C. Morgan

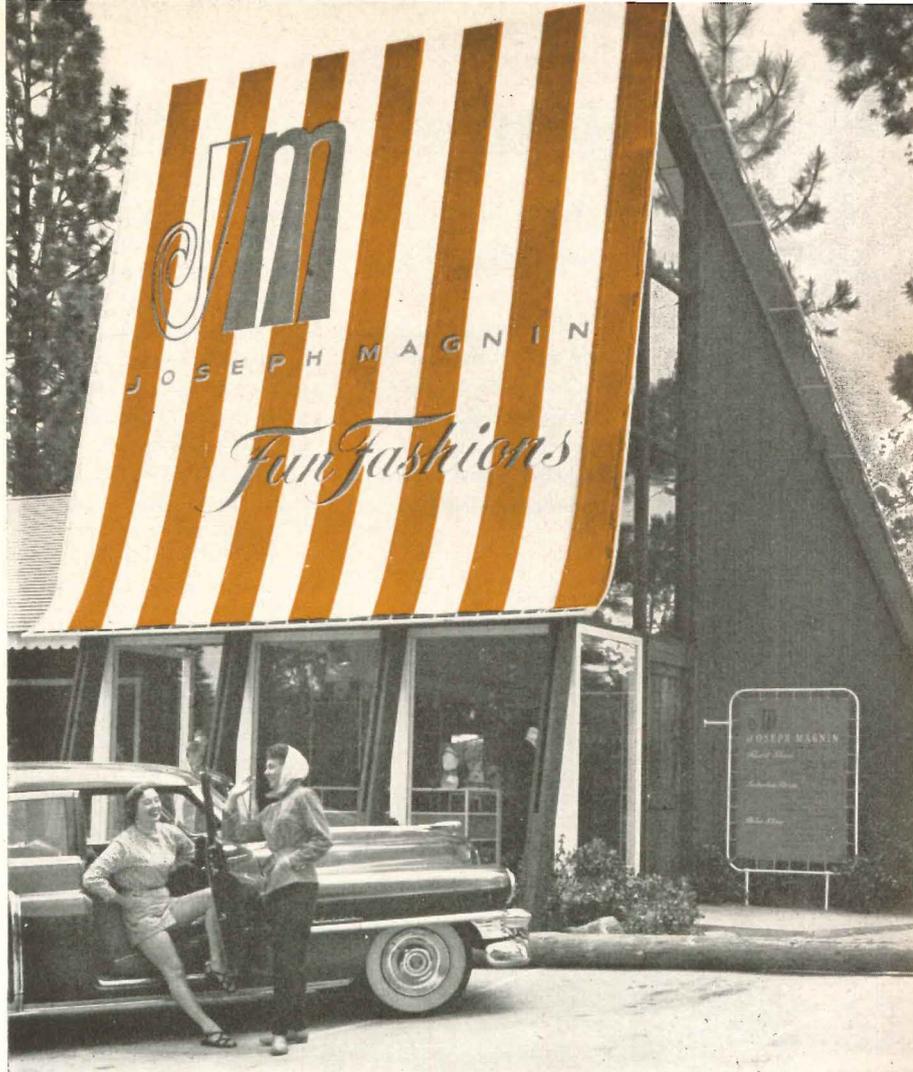


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Walter Landor & Associates used canvas to outstanding advantage in the design of Joseph Magnin's Resort Fashion Store at Cal-Neva, Lake Tahoe.

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JOSEPH MAGNIN'S, Cal-Neva, Lake Tahoe

Designers: Walter Landor & Associates, Industrial Design, San Francisco

"We had a real construction problem in designing Joseph Magnin's Cal-Neva Store. The problem? Winter snows sometimes averaging 12 feet in depth,—summer season only two months long.

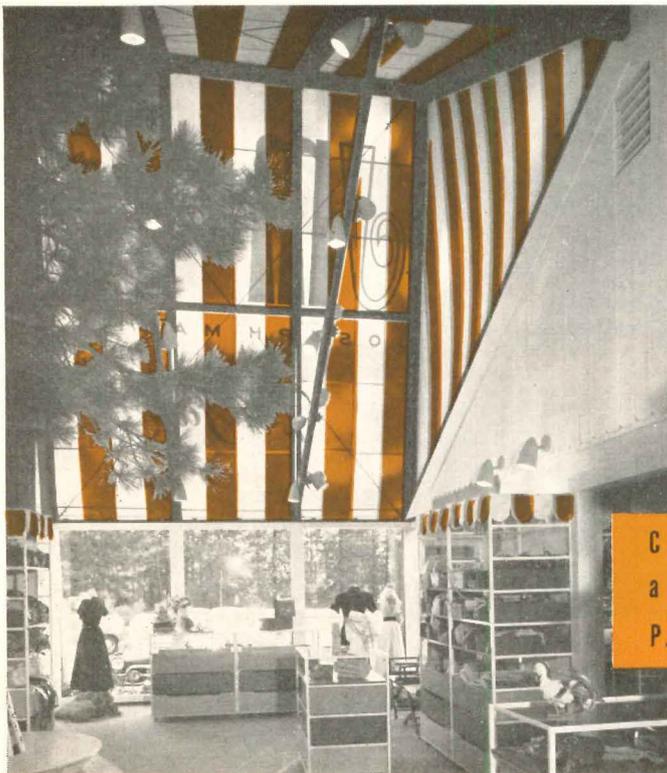
"Our solution? We conceived the Cal-Neva Store as a "Big Top" demountable canvas tent. Festive looking and cool in the heat of summer, the canvas roof and facade can be stored away in the wintertime. Thus, impressive savings resulted from the elimination of the need for heavy duty construction.

"This concept of the use of canvas afforded other spectacular advantages. Lighted from the inside at night the tent acts as an illuminated signboard visible from far away, creating a gala atmosphere tempting to shoppers in a holiday mood."

Walter Landor

Walter Landor & Associates

Industrial Design



CANVAS AWNING INSTITUTE
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**SCHOOL AID EXTENDED —
BUT NO PLUSH ALLOWED**

THE SCHOOL CONSTRUCTION PROGRAM, affecting areas "impacted" by new defense installations, got a two-year extension and \$70.1 million in supplemental appropriations from the Congress on the closing day of the 83rd's first session. There was little controversy over ex-

tending the program but a good deal of discussion on the question of paying off on back entitlements. Conferees of both House and Senate, while agreeing to a total program of some \$174 million for the two-year period, reduced the amount authorized for payment of the entitlements from \$95 million to \$55 million — with the explanation that most of the reduction represented the difference between "elaborate" school facilities that

local districts chose to build under the law (Public Law 815) and the minimum facilities required by the wording of the statute.

The original law was meant only to provide Federal assistance for a portion of the costs of new schools in Federally-"impacted" areas, it was explained. Some communities have wanted much better school plants than such an arrangement could provide — but they will now have to pay for the "extras and accessories" in terms of the difference between the cost of their more elaborate plants and that of the legally-allowable minimum facilities.

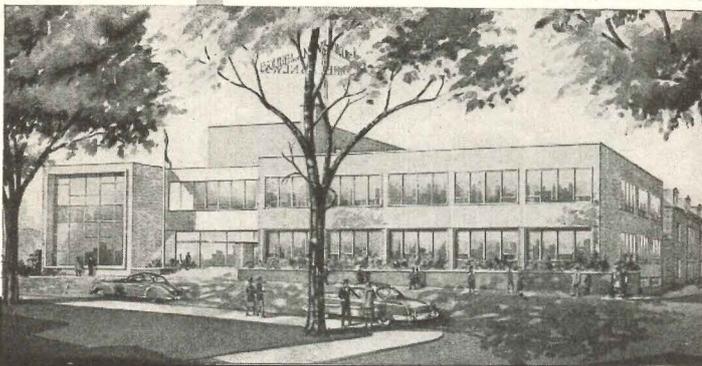
Senator Aiken (R-Vt.) reiterated this point in presenting the conference report to the Senate in the final hours of the session: "It was not intended that the Federal government would pay the full cost of complete facilities, but only a percentage of the cost of such facilities as were necessary properly to house and take care of the children, and any extras would be paid for by the community itself."

It was estimated that \$30 million represented the difference between minimum facilities intended by Congress and the complete facilities actually planned under the program by communities overtaxed by an influx of defense workers.

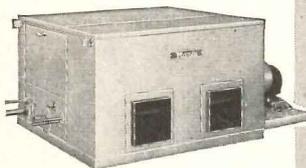
The "extension" actually revived, a few days later when the bill was signed, the program that had expired June 30, 1953 and gave it new life temporarily — to June 30, 1955.

The \$55 million for entitlements was
(Continued on page 300)

Architect: Lewis J. Sarvis, Battle Creek
Engineer: Harold C. Hewitt, Dearborn
General Contractor: Phelps-Wagner, Battle Creek
Mechanical Contractor: Hunter-Prell Co., Battle Creek
Electrical Contractor: Union Electric Co., Battle Creek



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Hill-Burton Gets \$65 Million

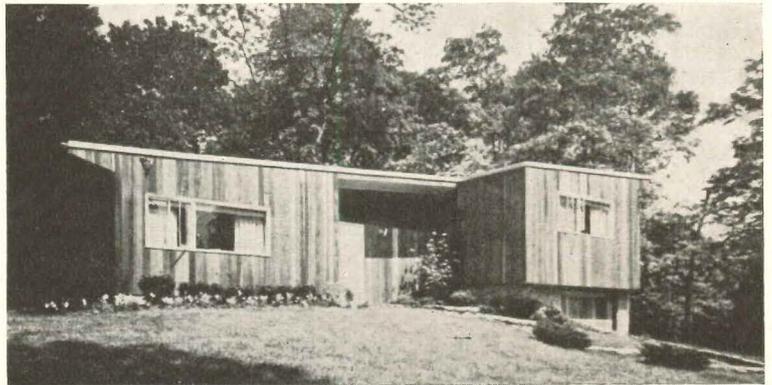
The Congress extended until June 30, 1957 the provisions of the Hill-Burton hospital construction program providing funds to aid states and municipalities in the building of hospitals and related facilities. Although the act was not due to expire until June 1955, Congress was persuaded to act now in view of the long lead time required for planning by participating localities and to "assure continuity of their respective programs." Under terms of the authorization, \$150 million could be spent annually; but it has in fact been held to \$75 million for the last several years and the 1954 appropriation wound up at \$65 million.

REQUIRED READING

HOW TO EVALUATE A HOUSE

Before You Buy A House. By John Hancock Callender. Crown Publishers, Inc. (419 Fourth Ave., New York 16, N. Y.) 1953. 8¼ by 11¼ in., 160 pp., illus. \$2.95

One of three models in Dillon Woods, Cincinnati, Ohio. John R. Schott, architect; Robert A. Deshon, associate; Dillon's Inc., builder. Illustration from "Before You Buy A House"



Here is a book by a leading architect designed to help the prospective home owner evaluate a house.

Often the question — to buy or to build — is settled by the time and expense prohibitions of custom building, only to be replaced by an entirely new set of problems as the inexperienced buyer wonders how he can competently judge, value and decide upon a house. The Housing Research Foundation of Southwest Research Institute, for several years concerned with the problems of the home-buyer, joined with the Architectural League of New York to produce this guide for the prospective buyer by John Hancock Callender, A.I.A., Architectural Consultant, Southwest Research Institute, which not only advises on points to be checked in choosing a house, but presents with valuable criticism a group of well designed builders' houses from all over the country.

Though the purchase of a house of proved worth is not without advantages — a fact Callender recognizes and dis-

cusses — the problems of buying a new house in a builder's development are those with which he is primarily concerned. Each of the 34 selected development houses is architect designed; none, as the author points out, is typical of the average builder's house of today. Yet all have actually been built and, illustrated by 211 photographs, drawings and plans, serve as good examples of advanced design. Accompanying comments not only point out striking features of each plan, but straightforwardly call attention to any minor defects.

The book consists of ten chapters which explain to the reader — who presumably knows nothing of joists and Btu's — how to judge a house accurately on the basis of things he can see and understand, and a supplement devoted to the 34 houses with photographs, drawings and comments. The first five chapters which cover such topics as "Budgeting," "Buying a Neighborhood" and "Beginning the Search," carefully weigh

major considerations, as well as attaching deserved importance to lesser points that might otherwise be either overlooked or given undue emphasis. In the following chapters the house itself, its outside and then interior living areas, are thoroughly discussed. Everything from style to heating and cooling systems is taken up in terms a layman will have no difficulty in understanding. The valuable "Evaluation Checklist" of Chapter IX, developed by the Housing Research Foundation of Southwest Research Institute, is based on principles discussed in the book; it, again, deals only with items the reader can see and understand. A bibliography divides the ten textual chapters from the 34 houses.

"Before You Buy A House" should be an asset to any prospective buyer, certainly one worth its modest price of \$2.95. It should also be a valuable step in raising the standards of the home-building industry as the public learns to look among builders' houses for those designed by architects.

PHILADELPHIA OF THE LAST CENTURY

Philadelphia Architecture in the Nineteenth Century. Theo B. White, Editor. Published for the Philadelphia Art Alliance by the University of Pennsylvania Press. (Philadelphia, Pa.) 1953. 9¼ by 12¼ in. 36 pp. text, 105 plates. \$3.50

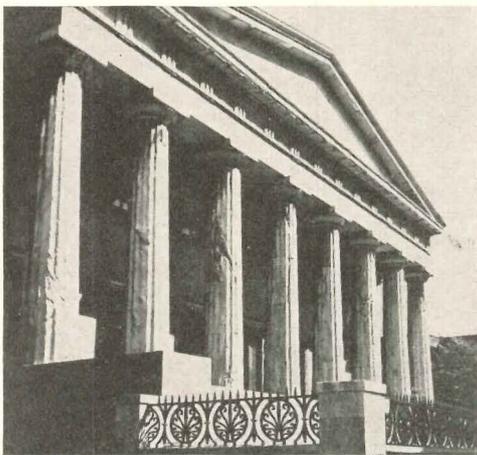
This catalog of the best examples of the Philadelphia Art Alliance's recent exhibit of that city's 19th century architecture, in its research in a comparatively untouched field, is a significant addition to the literary history of American architecture.

In Philadelphia, perhaps more than in any other of the country's large cities, architecture was free to reflect normal social and cultural change. Strickland

and Latrobe, Notman and Haviland are names of the earlier years, when, replaced by its Southern neighbor as the social and political capital of the nation, and outstripped commercially by its rival New York, the city settled down at the beginning of the century to its own resources, strong in tradition and unhurried by pressures of disaster or sudden expansion.

In tracing this quiet development over the century, the book begins with the dominant style of these early years — Greek Revival. Some of these buildings are gone; many still stand — a few renovated and partially restored. Ben-

(Continued on page 48)



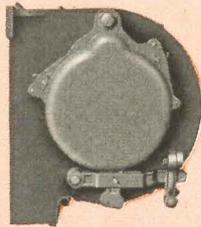
The Second Bank of the United States by William Strickland, 1818. From "Philadelphia Architecture in the Nineteenth Century"

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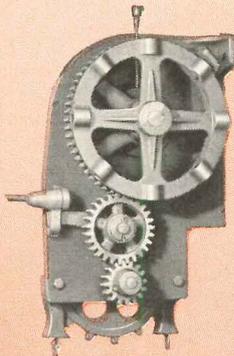
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Below you see three Mahon Automatic Underwriters' Labeled Rolling Steel Doors installed on fire-wall openings of an enclosed shipping dock. These doors normally remain open, but are equipped with mechanical chain-gear operators which permit closing or opening at will. If a fire should occur while they are in the open position, they automatically close and prevent the spread of fire through the openings. This is one use for one type of rolling steel door. Many types are produced by Mahon to meet virtually any door requirement. Mahon quick-opening, quick-closing power operated rolling steel doors offer more desirable features than any other type of door . . . the vertical roll-up action utilizes no usable space either inside or outside the door opening. There are no overhead tracks or other obstructions to interfere with crane operations. No other type of door offers these advantages of space economy and compactness in operation. In addition, rolling steel doors are permanent—their all-metal construction assures a lifetime of trouble-free service and maximum protection. When you select a rolling steel door, check specifications carefully . . . you will find many extra-value features in Mahon doors. See Sweet's Files for complete information including Specifications, or write for Catalog G-54.



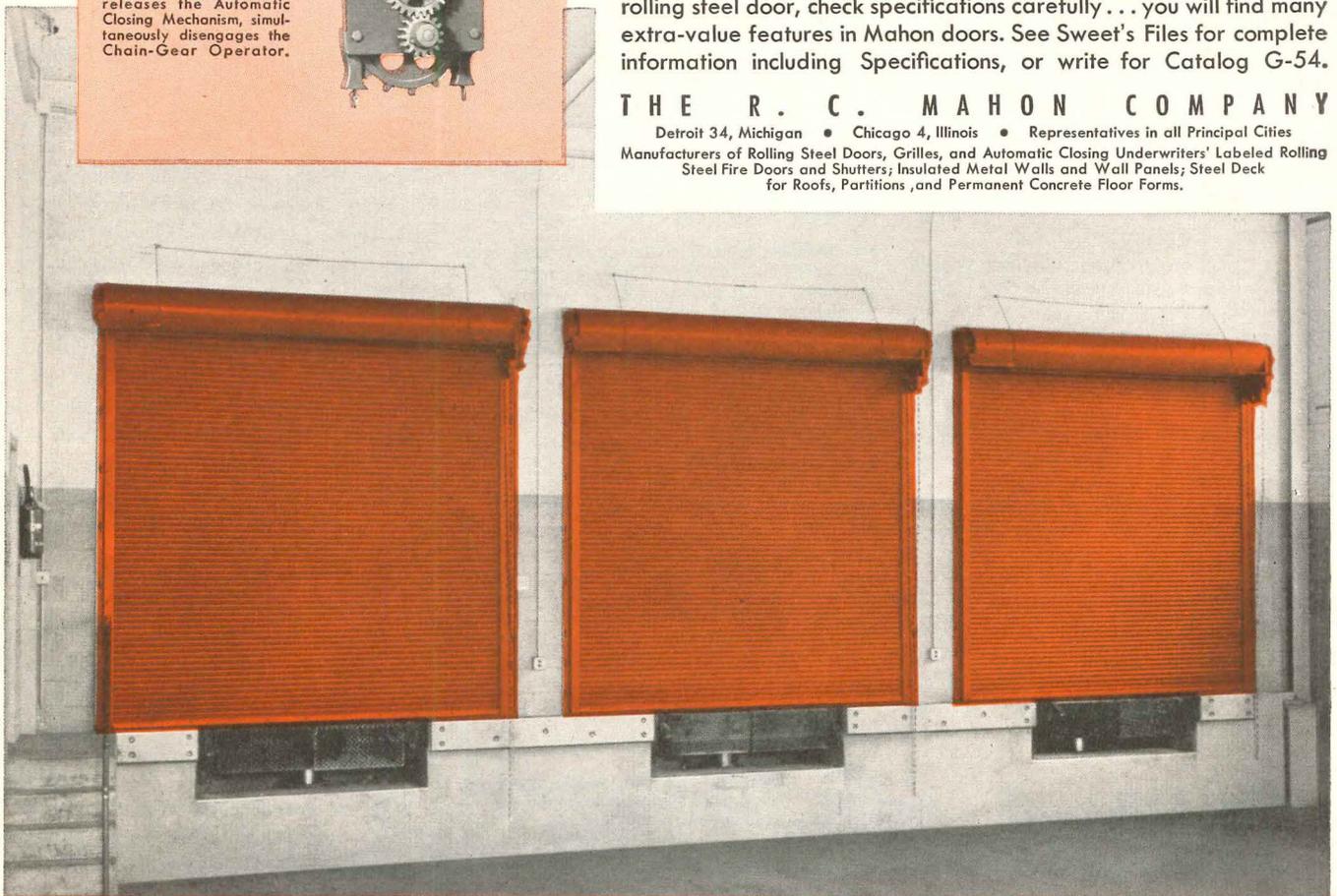
Mahon Release Device and Governor on the Automatic Closing Mechanism of a Mahon Underwriters' Labeled Rolling Steel Fire Door. In case of fire, Fusible Links release the closing mechanism and the door closes automatically.

Mahon Release Device on the Chain-Gear Operator of a Mahon Mechanically Operated, Underwriters' Labeled, Automatic Rolling Steel Fire Door. Fusing of the Fusible Link, which releases the Automatic Closing Mechanism, simultaneously disengages the Chain-Gear Operator.



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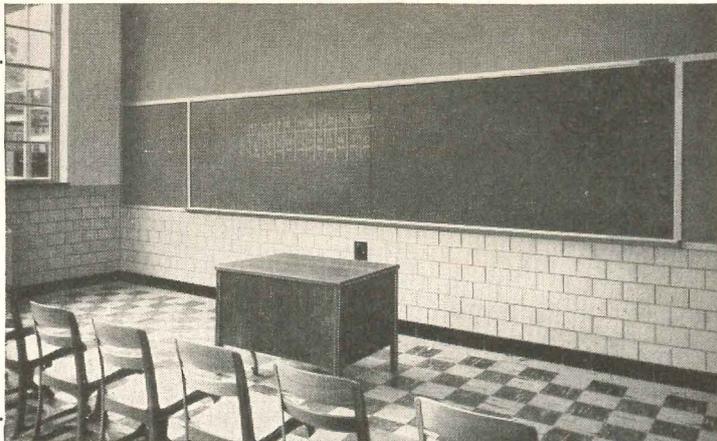


ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Three Mahon Underwriters' Labeled, Automatic Rolling Steel Fire Doors installed on openings to an enclosed truck loading dock in a new plant for Towne-Robinson Nut Co., Detroit, Mich. Austin Engineers, Inc., Designers. The Austin Company, Cleveland, Ohio, Gen. Contrs.

MAHON

12 REASONS WHY ARCHITECTS SPECIFY magnetic Armorply Chalkboard



BERGEN COUNTY VOCATIONAL SCHOOL—ARCHITECT: LAWRENCE C. LICHT, ENGLEWOOD, N. J.

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The porcelain-enamelled steel face of an Armorply® Chalkboard panel is three-coated special composition of ceramic porcelain, fired on 18 ga. enamelling steel at high heat, under special control. It is manufactured by the Bettinger Corporation, Waltham, Mass.

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8. TAKES CHALK BEAUTIFULLY. Specially developed finish is easy to write on and erase. Can't choke with chalk. No squealing or screeching!

9. EASY TO CLEAN. Washes clean with damp cloth. Permits quick removal of pencil and crayon marks with a dry cloth.

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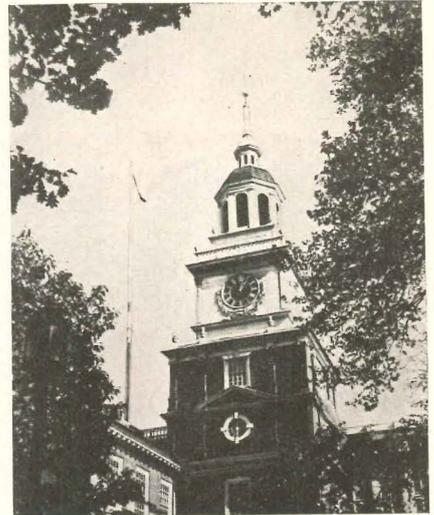
NAME

ADDRESS

CITY.....STATE.....

REQUIRED READING

(Continued from page 46)



State House Steeple rebuilt by William Strickland, 1828, is early example of accurate reconstruction. From "Nineteenth Century Architecture in Philadelphia"

jamin Henry Latrobe's Bank of Pennsylvania, which bridged the two centuries, has long been demolished, and Strickland's Second Bank of the United States (later used as the Philadelphia Custom House) an adaptation of the Parthenon of Athens, was partially restored in 1941. Latrobe's Pumping Station that once stood in Center Square is an example of a combination of functional form and classic trimmings. Strickland's Naval Hospital and Merchants' Exchange are also included in the exhibit. Even more influential, perhaps, in the city's Greek Revival was John Haviland whose Deaf and Dumb Asylum stands today as the Philadelphia School of Industrial Art.

Philadelphia's receptiveness to the new architectural ideas of the early 1800's is attested by its acceptance of varied style. Notable is the Gothic such as Strickland's Masonic Hall of 1808-11 and his St. Stephen's Church of 1823. Interesting in his Gothic-style Eastern State Penitentiary of 1821, marking the beginning of an epoch in penal architecture embodying concepts of modern penology, which won recognition both here and abroad. Strickland's rebuilding of Independence Hall Tower in 1828, an indication of the growing feeling for historical style, was a forerunner of later restoration. Further innovation, less popular, in the city's variety of style, is found in such experiments as Walter's

(Continued on page 376)

as much sense as Gas

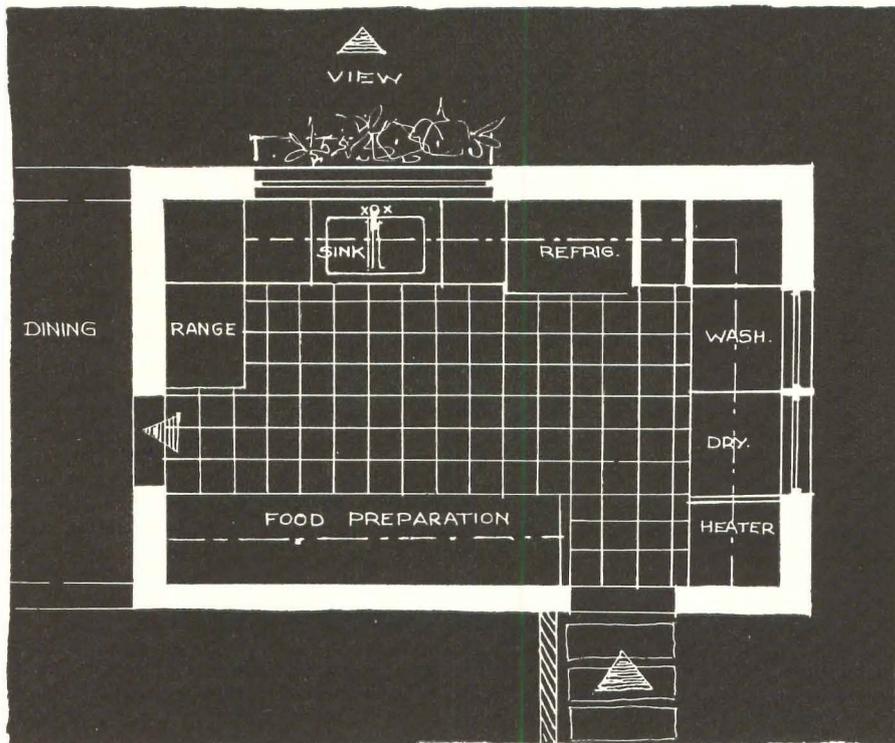
The **budget-minded customer** who's conscious of cubage costs will appreciate the fuel-cost saving Gas represents. In most areas Gas is cheaper. In all areas Gas is faster — reducing its operating cost again. Yet the most modern-looking ranges of all are fueled with Gas—ranges with clock controls, chrome tops, colored fixtures, separate ovens and a myriad other features. And the newest, most advanced refrigerator in the world is Gas. (It puts ice cubes in a basket automatically!) Consult with your Gas company or Gas appliance dealer to find the models that will make your small kitchens as distinctive as a signature. And remember: every woman who sees a Gas range *knows* it cooks as well as it looks!



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Delmar School
Delmar, Iowa

Indian Springs School
Shasta County, Calif.

Grover Hill Public School
Grover Hill, Ohio

Norris High
Norris, Tenn.

Clinton High
Clinton, Tenn.

St. Joseph's School
Rock Island, Ill.

Riverside Township High
Riverside, Ill.

St. Procopius School
Wheaton, Ill.

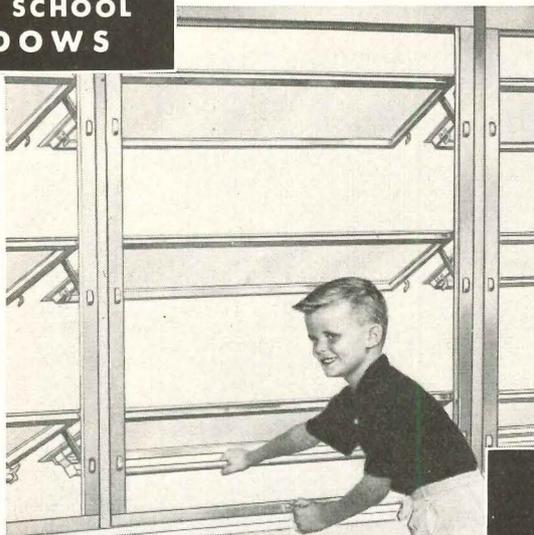
St. William's Congregational
Janesville, Wisc.

Elk Run School
Elk Run, Iowa

Lewis & Clark School
Richland, Iowa

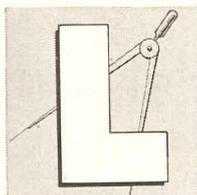
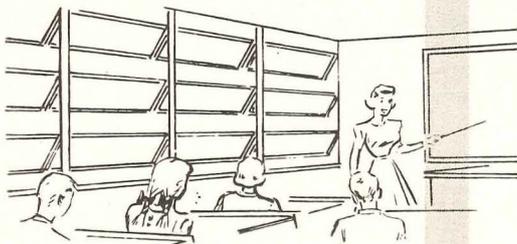
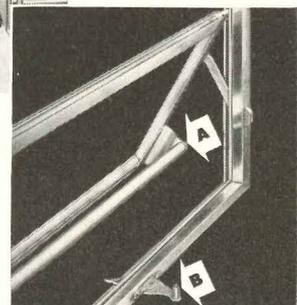
Francis X. McGraw School
Camden, N. J.

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It's the simplest, safest
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So little effort is required, even
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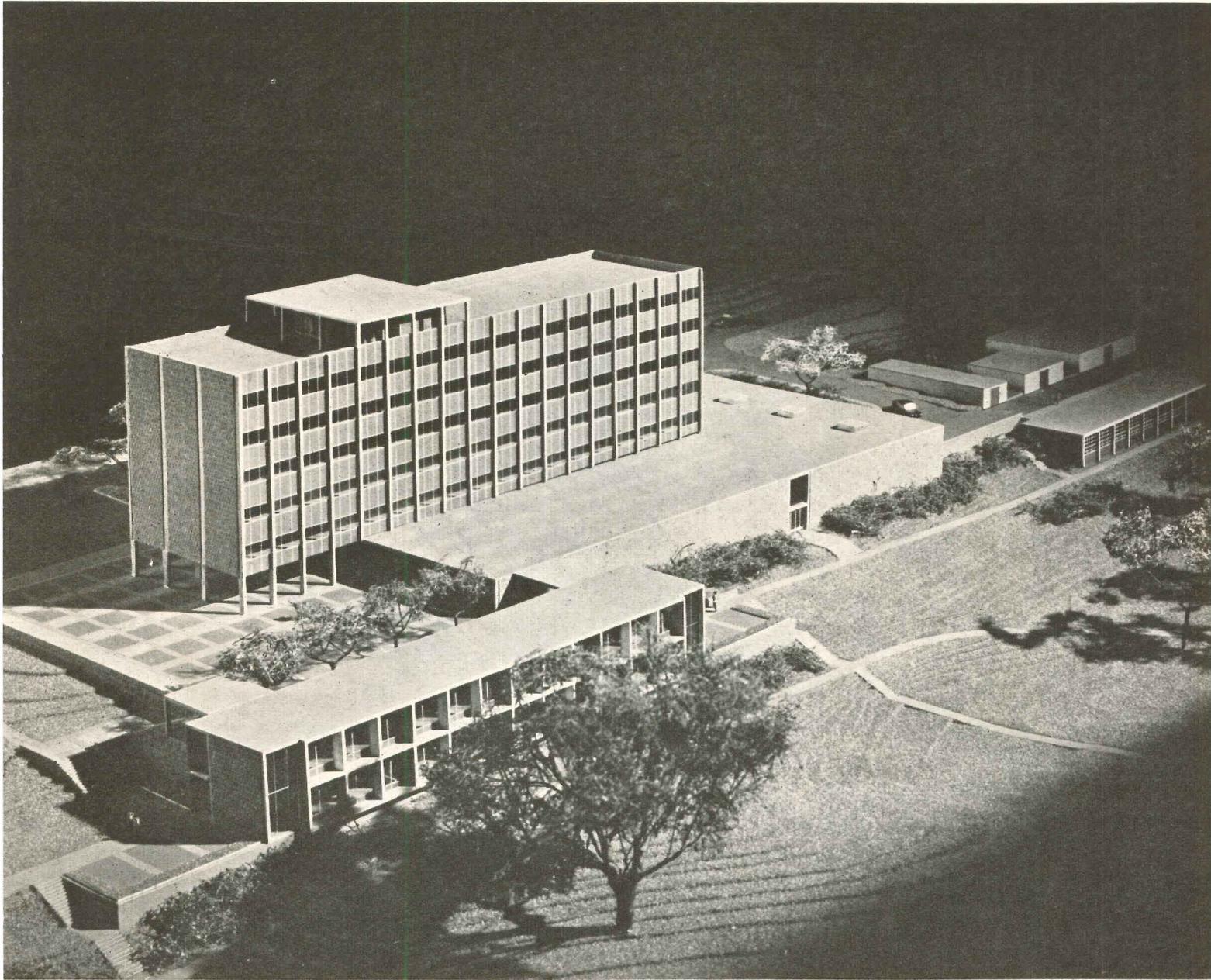


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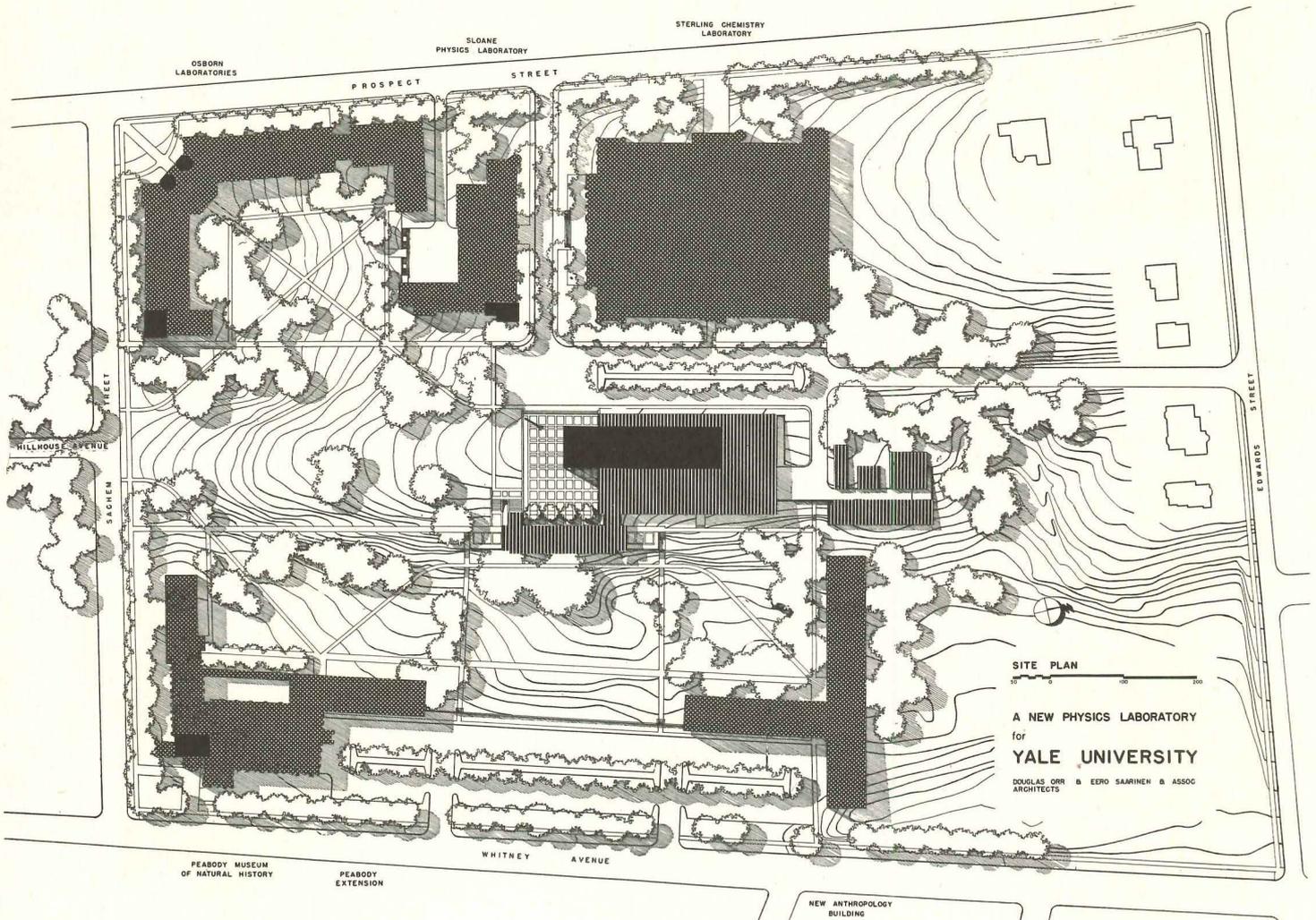
Richard Shirk

PROPOSED PHYSICS BUILDING FOR YALE UNIVERSITY

Douglas Orr and Eero Saarinen & Associates, Architects

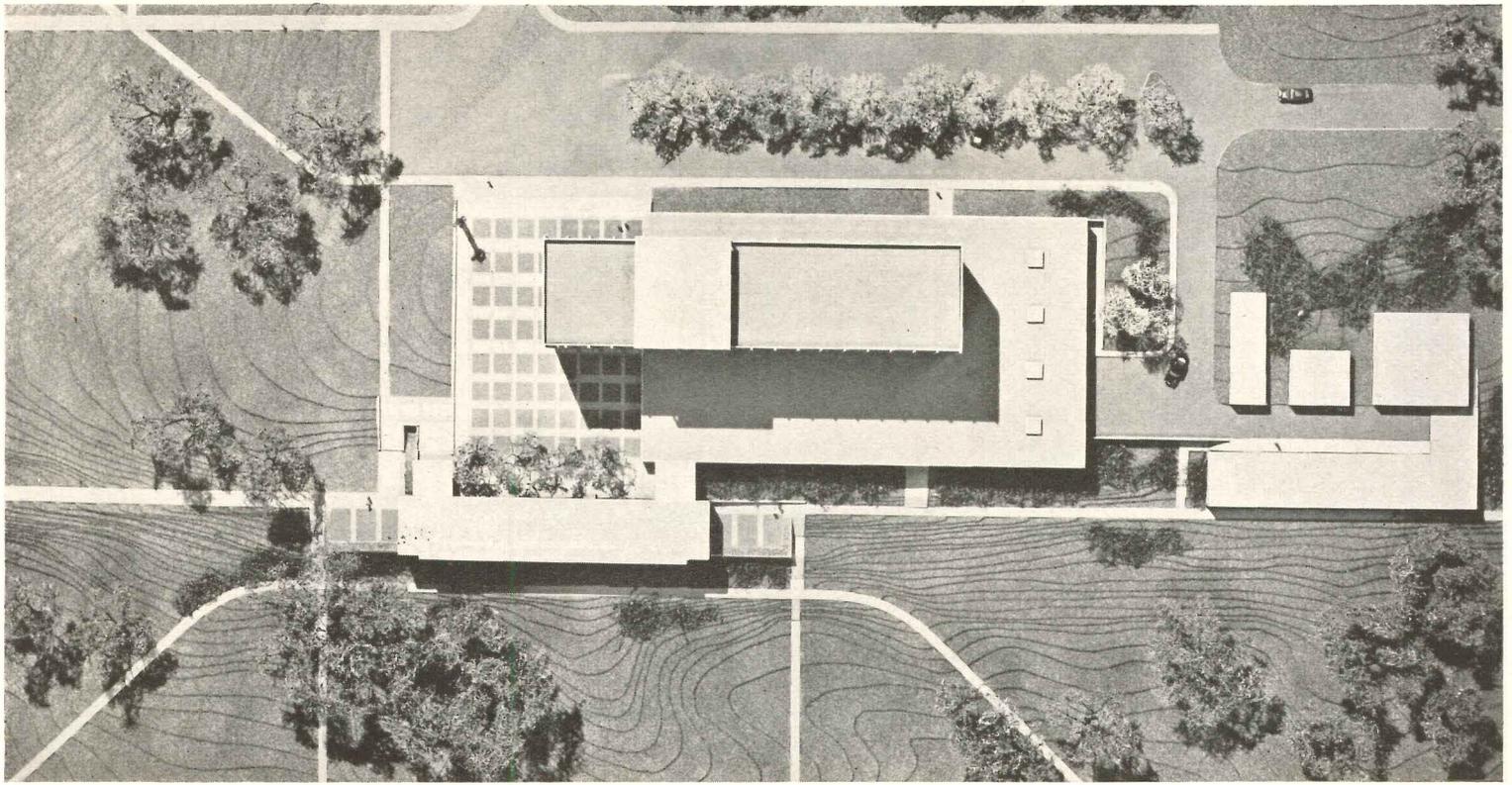
THE ARCHITECTS for the proposed Physics Building for Yale, still only in project status, took two major considerations for their guides. One was preservation of handsome vistas from a hilly site, the other was to fit a contemporary concrete structure into its Gothic surroundings.

Says Eero Saarinen: "The shape of the hill, the vistas from surrounding streets, particularly that from the main campus along Hillhouse Avenue (an old and very handsome street starting at the left of the site plan), made us decide that the building's major axis should run north and south. Since the view from the hill back towards the University is equally fine, the small piazza was so placed that this prospect would be open to students passing to and from classes."



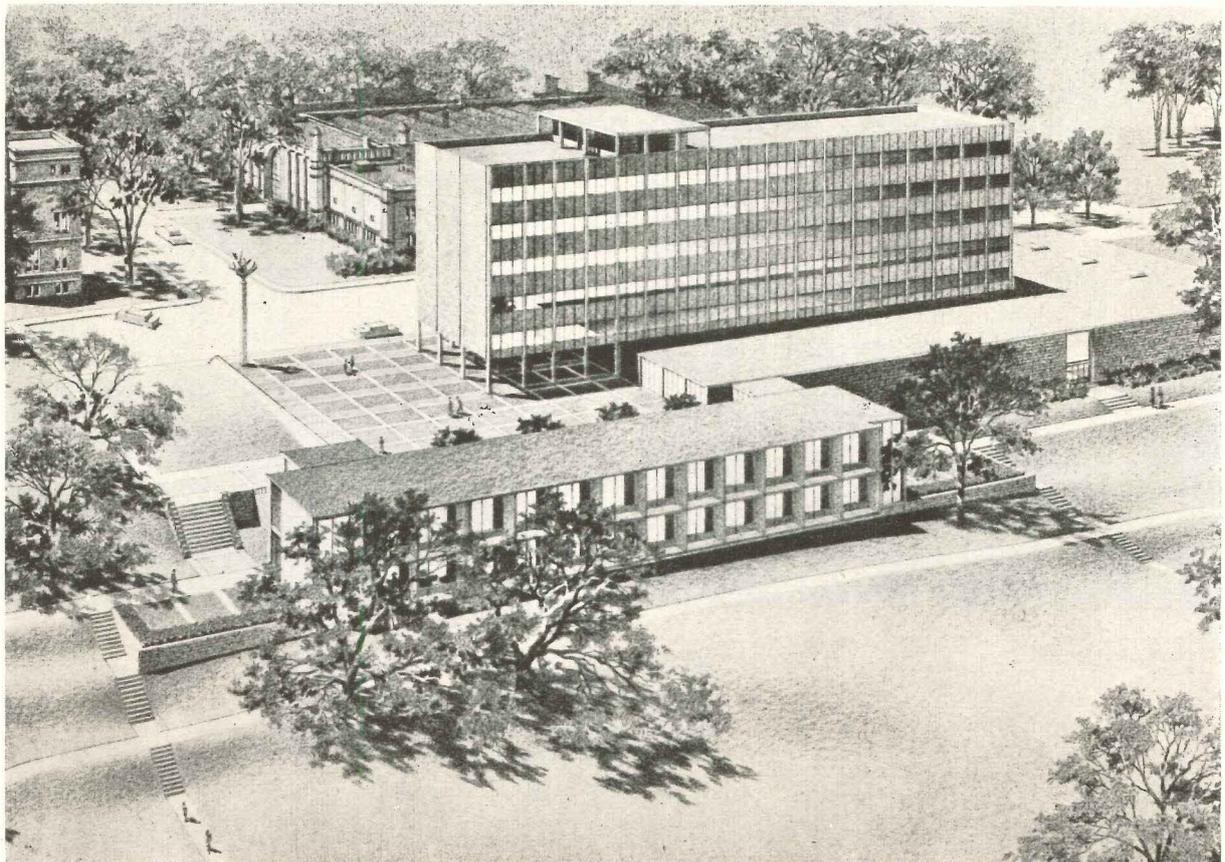
The Physics Building, in the opinion of the architects, is one where physical requirements and economics appear to justify a vertical building. Laboratories, auditoriums and specialized rooms requiring utilities are grouped together around vertical utility stacks in the main block, while classrooms have been moved out to form a low wing to the southeast. The lobby relates these elements directly to the piazza, and the service area at the north end allows access to both the main building and the experimental physics group beyond.

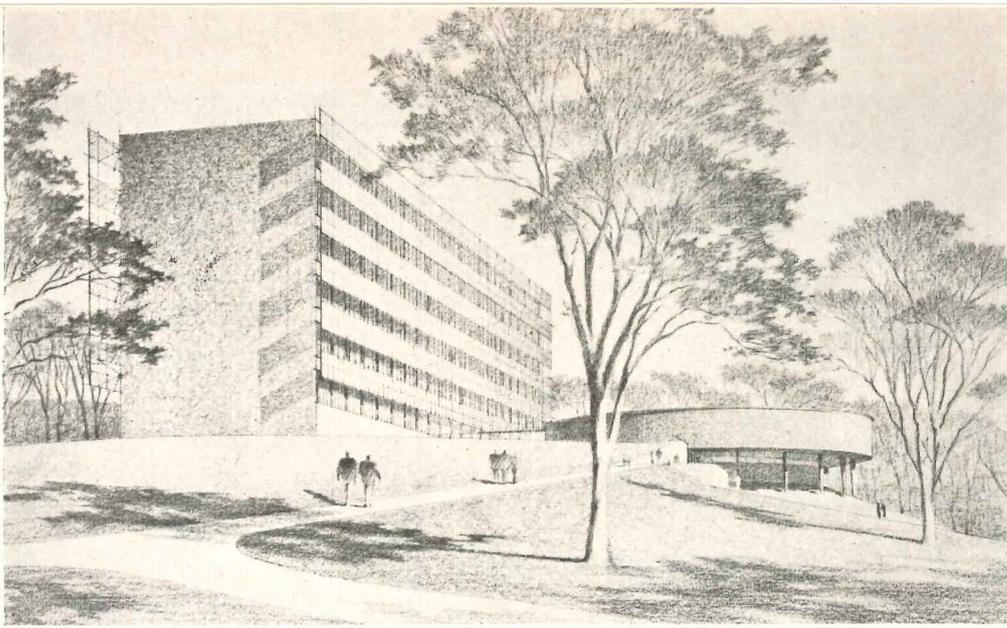
The effort to avoid clashing with its Gothic environment was



Richard Shirk

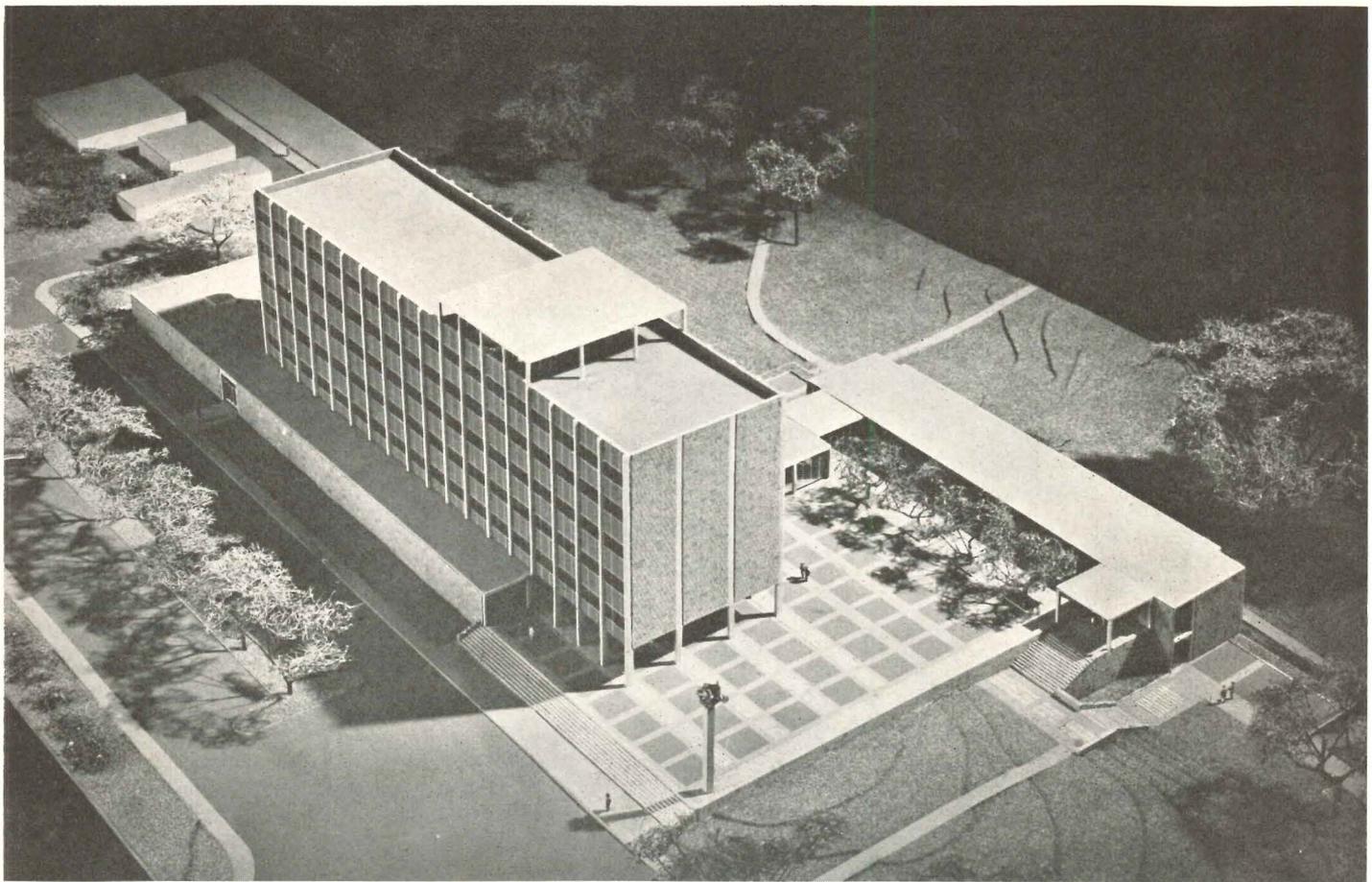
handled with subtlety, involving a certain emphasis on verticals and the use of Weymouth granite masonry, a stone appearing in many of the existing buildings. Framing is of reinforced concrete, the vertical block taking a 12-ft module, the low mass a unit of 24 ft. Skin treatment of the vertical block will be 4-ft modules of heat-resistant glass in fixed and operating sash, and 2-in. baked enamel metal panels, the whole framed in painted hollow metal in an overall vertical pattern.





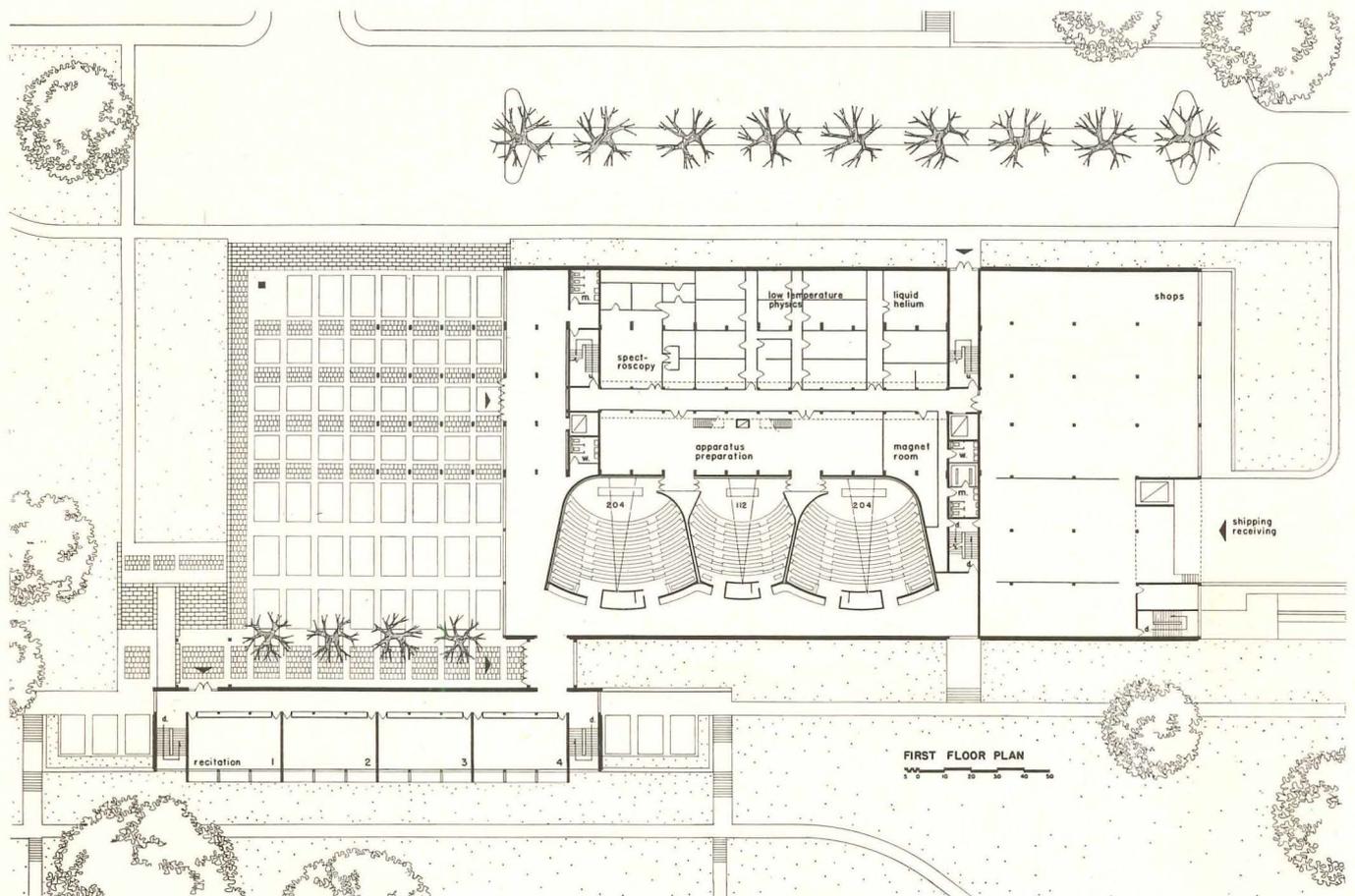
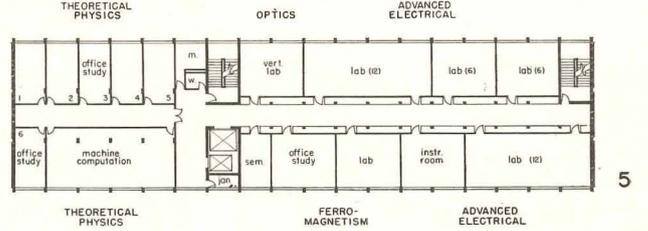
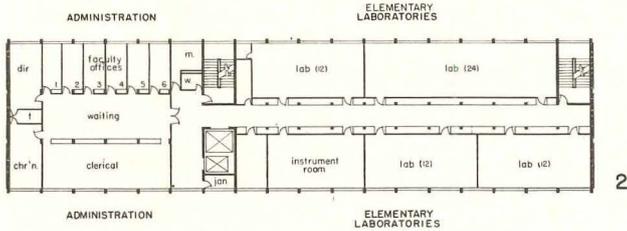
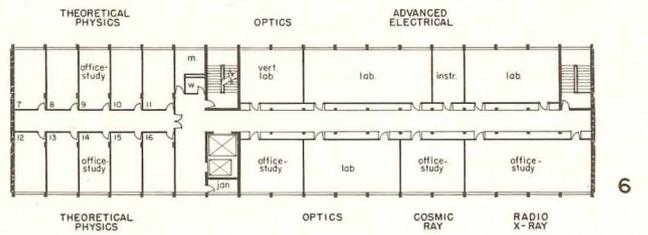
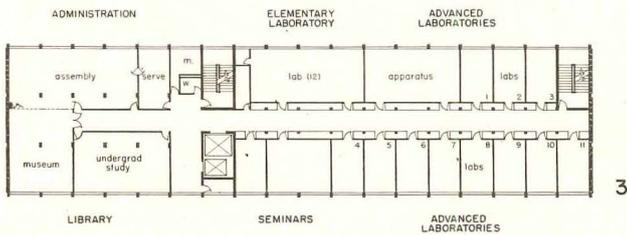
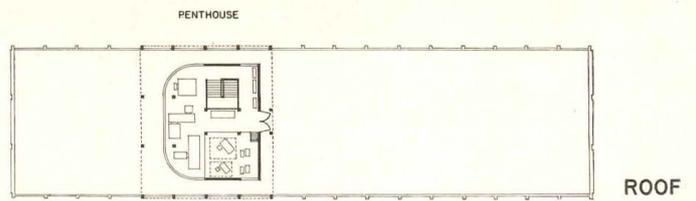
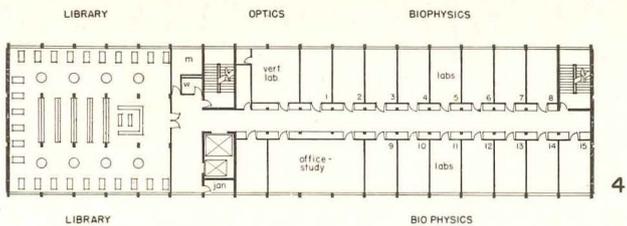
An earlier scheme (left) showed a vertical block and a round drum containing the lecture halls. The vertical block had a system of sunshades consisting of secondary glass walls about three and a half feet out from the regular wall, with the intent of reducing sun heat and, it was hoped, eliminating the cost of air conditioning. The architects had Charles Leopold, mechanical engineer, test this approach. His study showed that the outside walls could not be justified, and they were abandoned. It indicated that the sun accounted for only about 35 per cent of the heat load, the rest coming from sky radiation and electric lights. Also the scheme seemed to appear a bit cold, and the drum tended to get too large

PHYSICS BUILDING FOR YALE



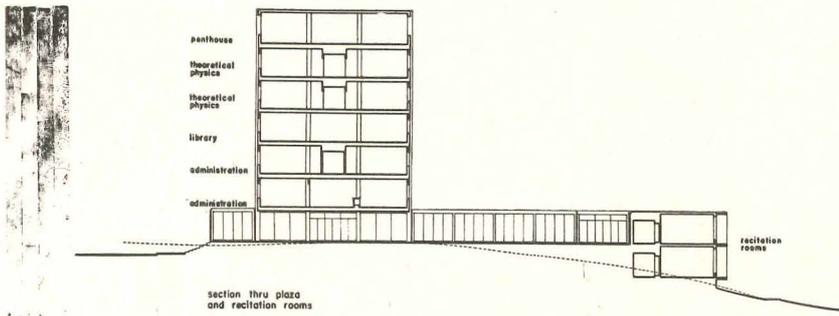
Richard Shirk

Masonry is to be Weymouth granite, a stone much used in surrounding buildings. Piazza will be paved in granite, blacktop and concrete. Sides of building will be enamel panels, heat-resistant glass

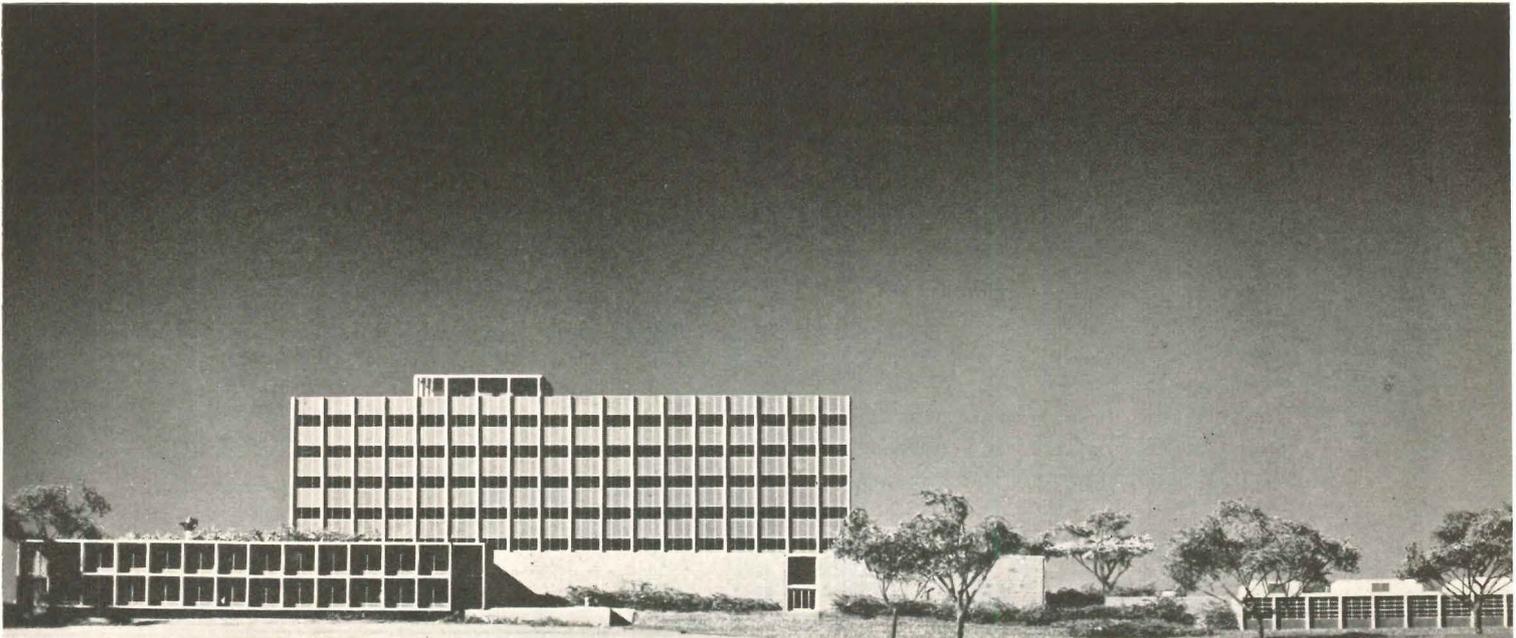


Because the building is still a project, certain discrepancies exist between upper and main floor plans. The main floor scheme, however, represents the current thinking and upper floors will conform

PHYSICS BUILDING FOR YALE

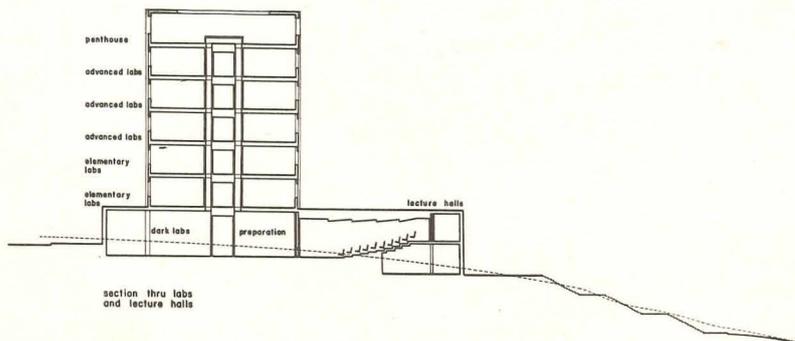


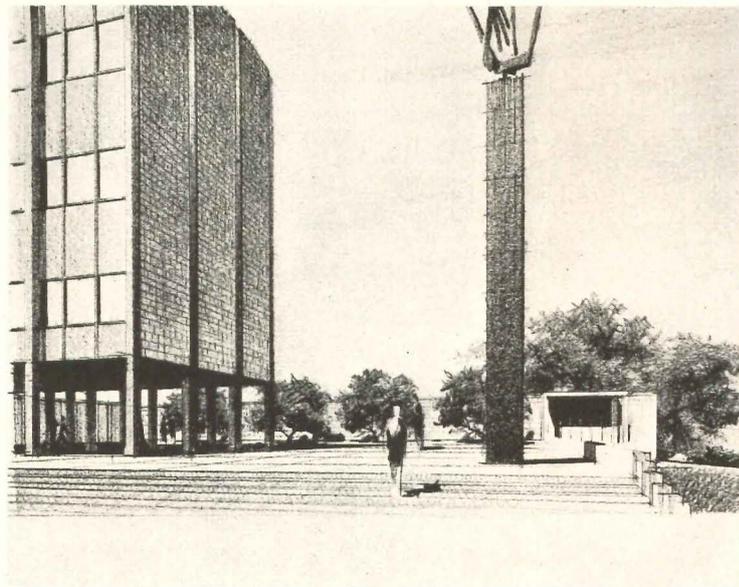
Present proposal is to stack up laboratories and offices vertically around a core for utility lines



Richard Shirk

Lecture halls are together in a low wing following slope; classrooms are similarly placed

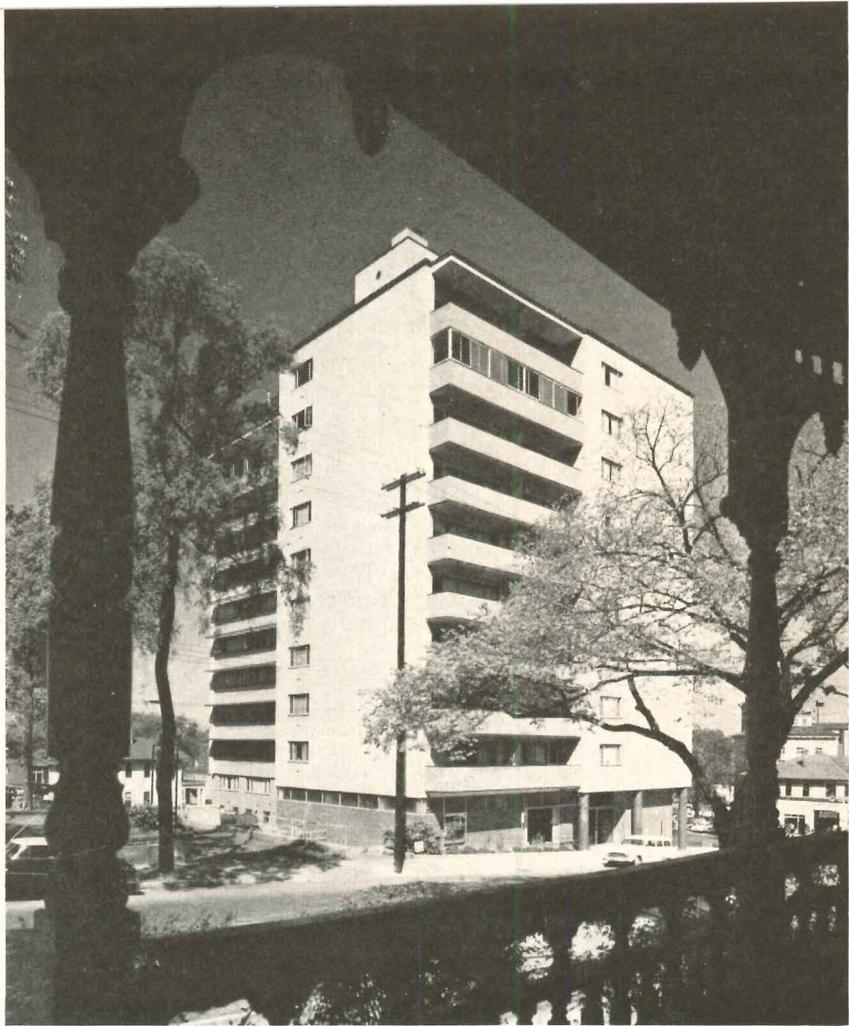




Piazza is planned as a pleasant gathering place for students, focused toward nice views

Ezra Stoller

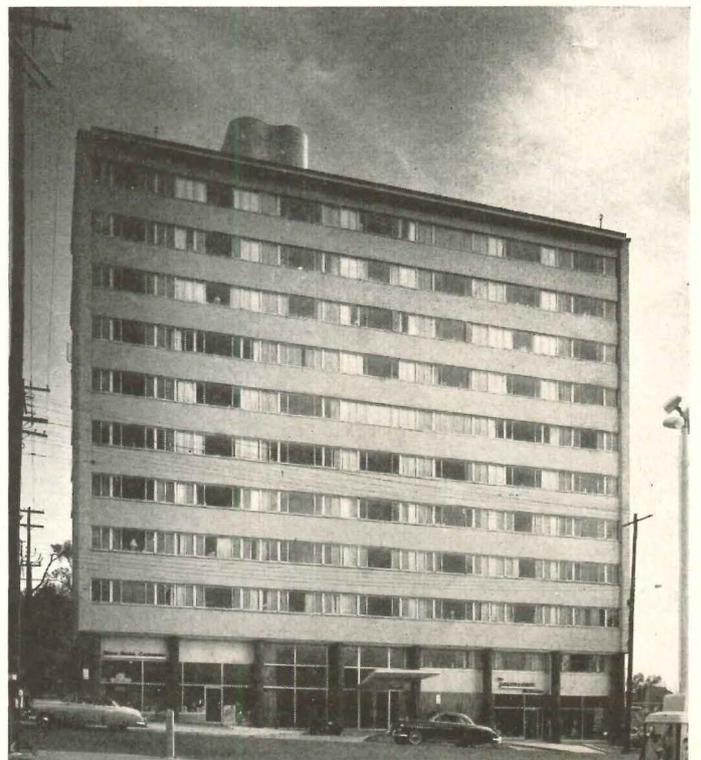




Joseph W. Mollitor

MINIMUM-HOUSEKEEPING

Most apartments face north or south (below and left); those on east have balconies. Only windows on west are in stair well





APARTMENTS ON DOWNTOWN SITE

Walter Bragg Smith Apartments, Montgomery, Alabama

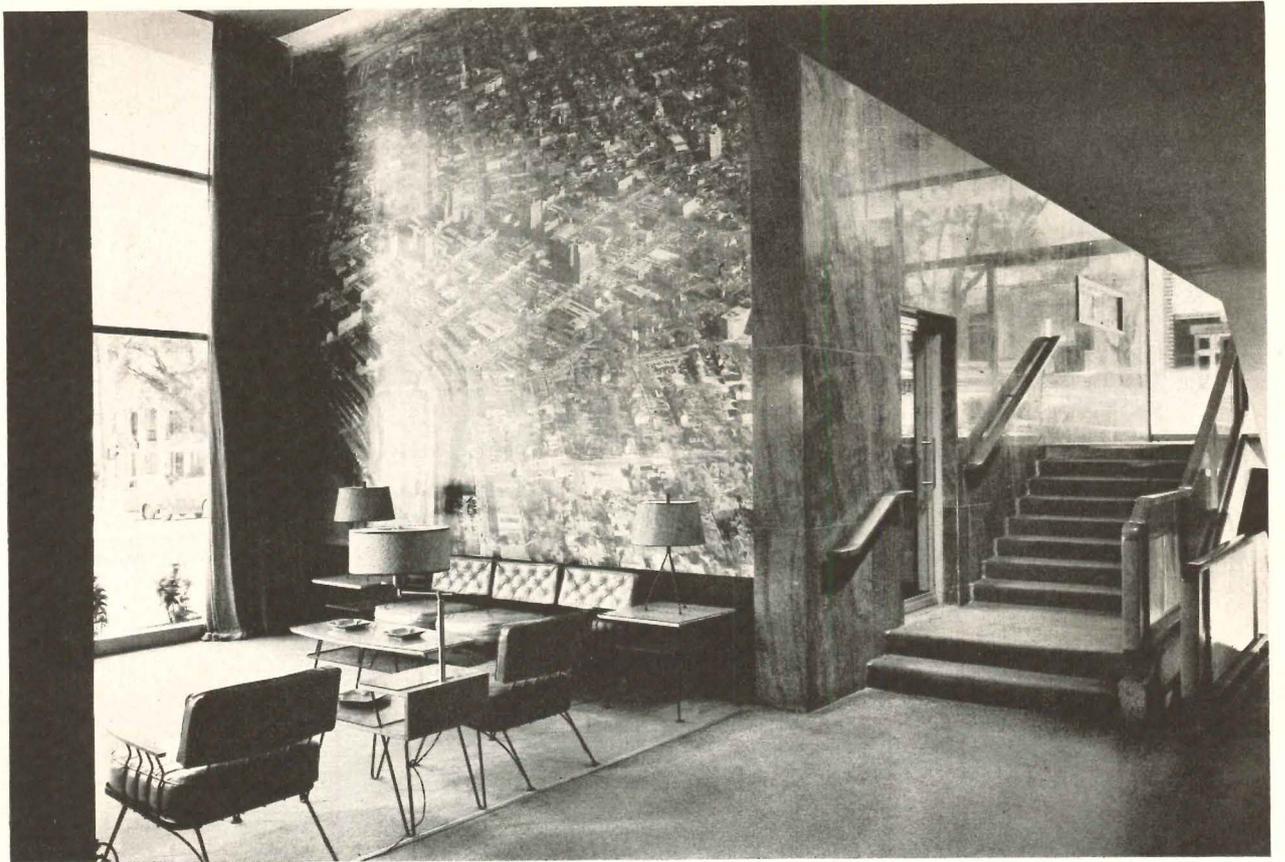
THIS TWELVE-STORY APARTMENT HOUSE, only two blocks from downtown Montgomery, was planned primarily for business men and women. Of its 122 apartments, 103 are single-room minimum-housekeeping "studios" and 19 are one-bedroom suites.

In plan the building is L-shaped to overcome the difficulties of a limited and sharply sloping site, facilitate on-site parking, and provide the maximum number of apartments on the north side facing a panoramic view of the city. While the steepness of the site necessitated extensive excavation and a high retaining wall to make the space between the south wall and the edge of the lot usable as a driveway, it also permitted inclusion of a mezzanine over half the lobby floor.

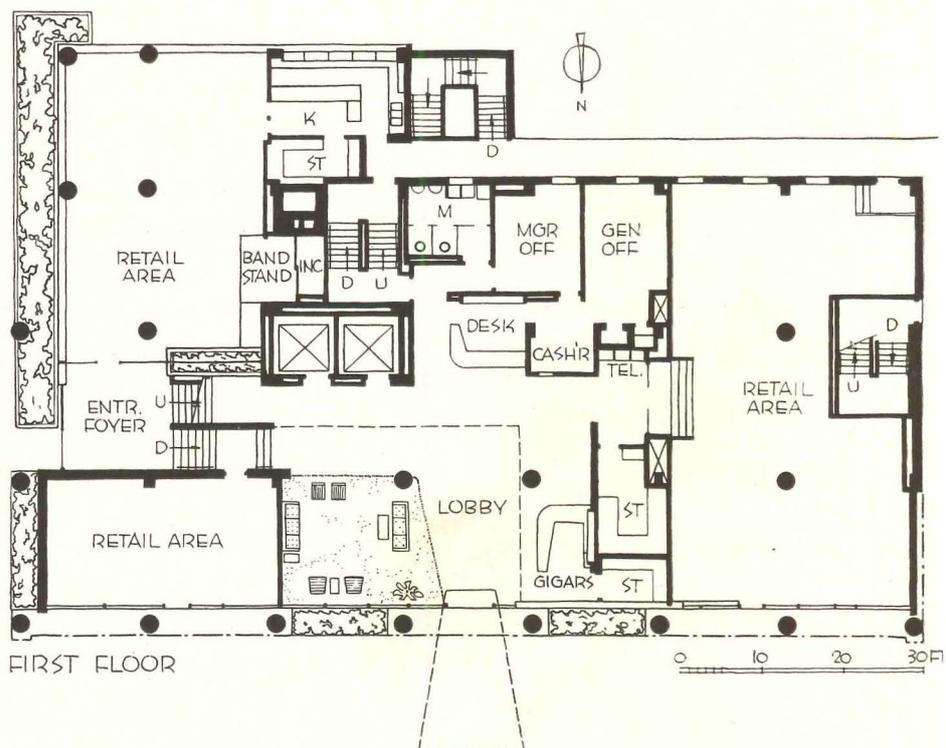
The building, entirely financed through the FHA, is an outstanding example of what can be done architecturally under the restrictions imposed by the housing law; it won the Honor Award at the Third Annual Gulf States Regional Conference last October. Framing is steel, floors are 2-in. concrete slab. End walls are gray face brick, spandrels are green glazed tile, columns are faced with mosaic tile. Italian marble is used on the exterior of the first floor and in the lobby. The building is fully air conditioned.

Main entrances are on north (above and below) and east (top, opposite); both lead directly to lobby. Parking area is at west





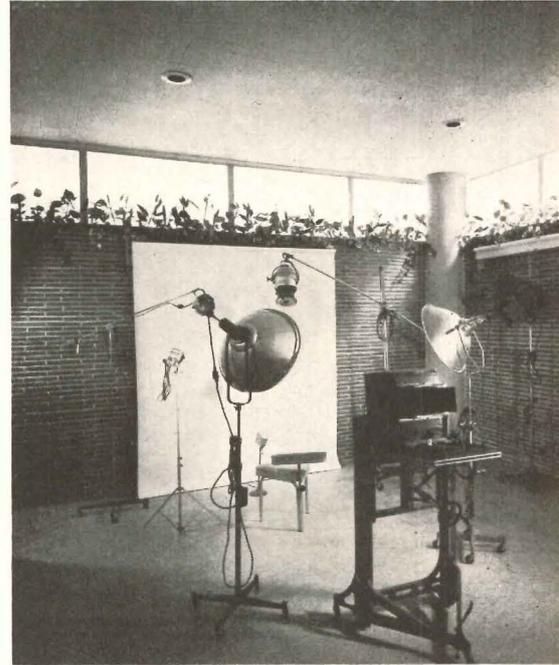
Lobby area is more like that of residential hotel than an apartment house, includes registration and mail desk, lounge, newsstand, and public rest rooms. Mural is air view of entire city; walls around entrance are Italian marble; floors are terrazzo



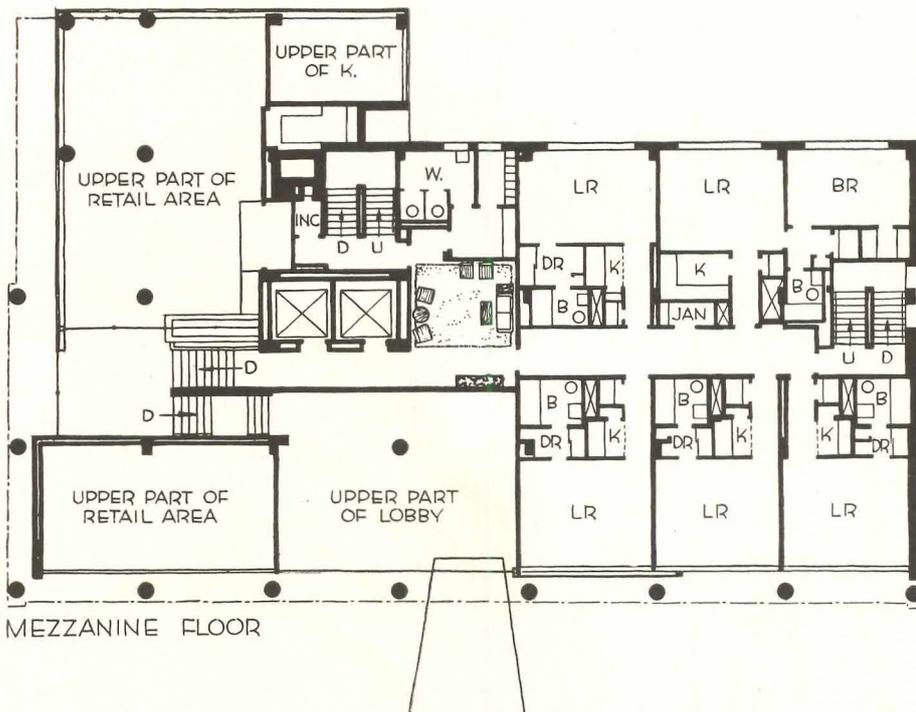
Photographer's studio (left and below), dress shop and drug store are current occupants of ground-floor retail areas. Owner required maximum retail space on lobby floor, got three separate areas each with street frontage, lobby access



Joseph W. Molitor

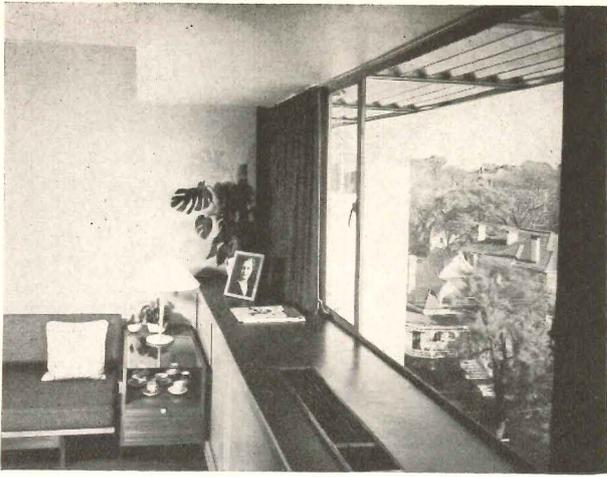


MINIMUM-HOUSEKEEPING APARTMENTS

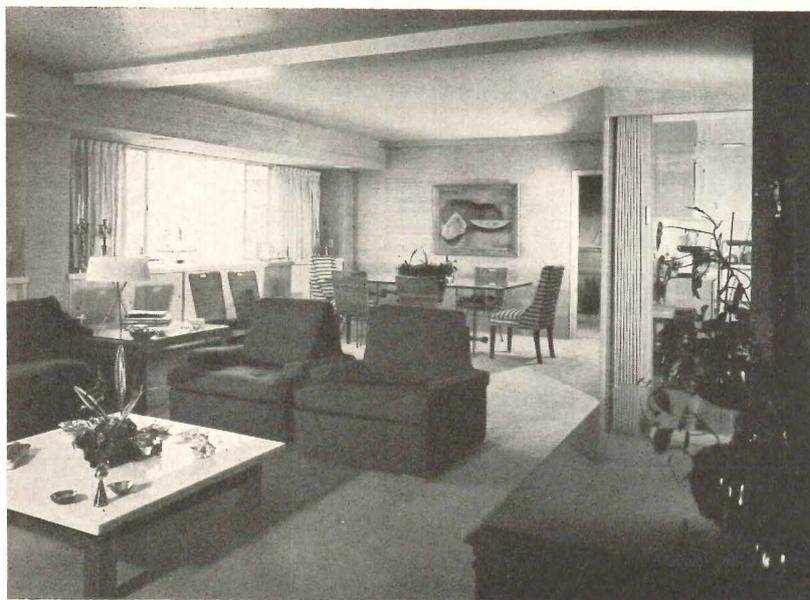
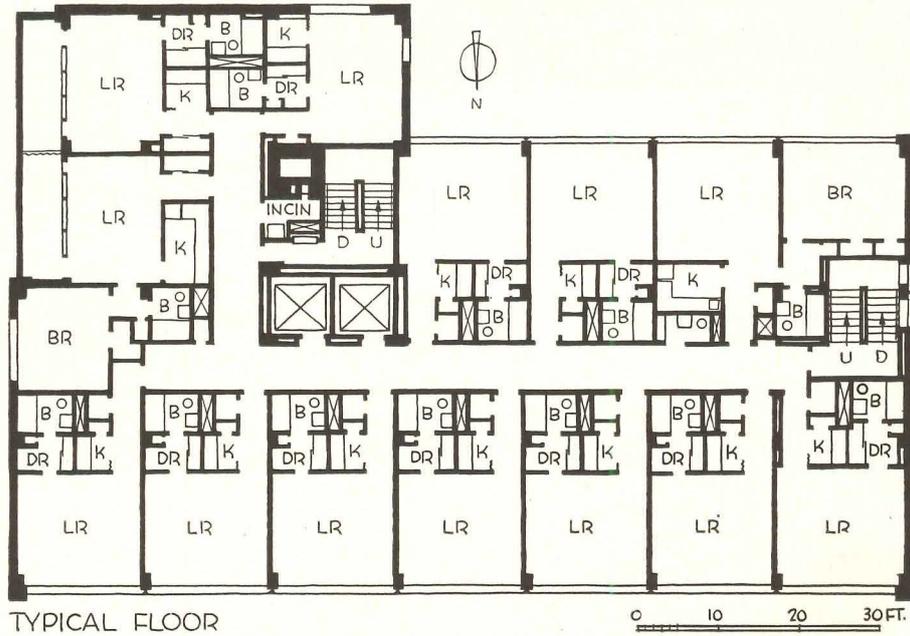
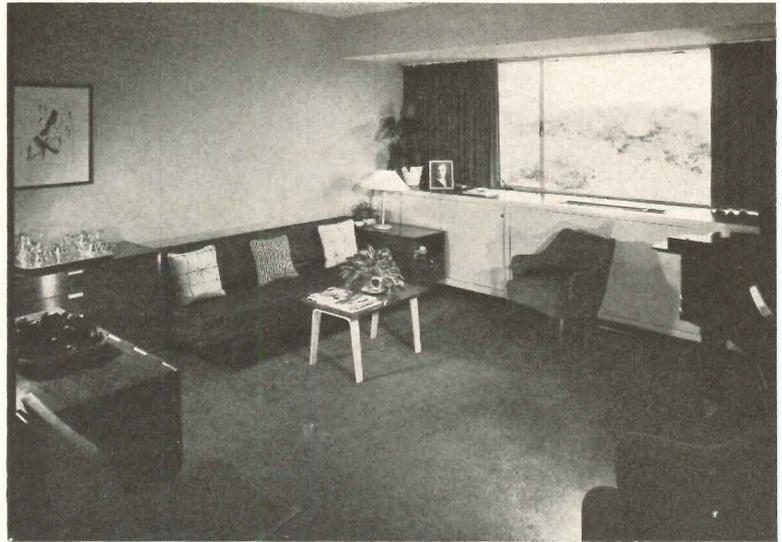


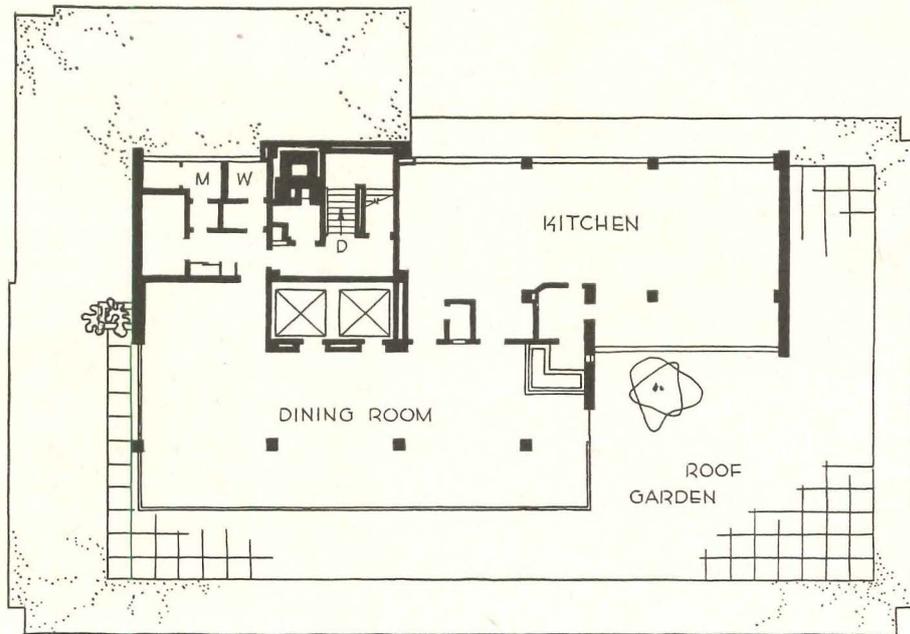
Mezzanine, made possible by sharp slope of site, extends over western half of lobby floor, houses rest room and lounge and four apartments. East entrance to building is on intermediate level, has own small lobby with stairs leading up to mezzanine and down to main north lobby

MINIMUM-HOUSEKEEPING APARTMENTS



Upper floors have 11 studio and two one-bedroom apartments each, arranged to permit creation of larger suites (bottom of page) with minimum of structural change. Aluminum sun shades (above) protect south windows. Utility elements—baths, kitchens, etc.—are grouped around pipe chases



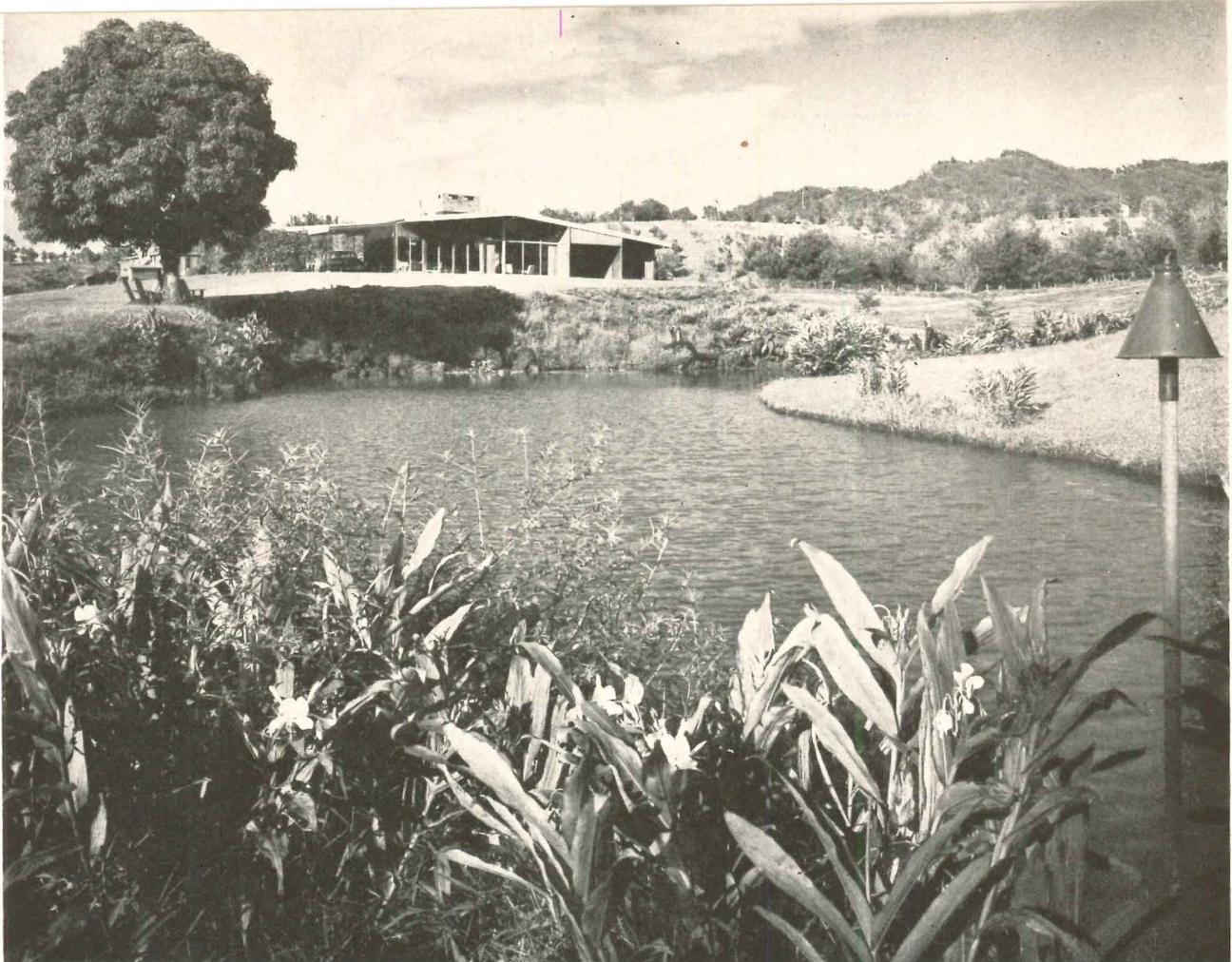


PENT HOUSE

Penthouse, originally planned as cocktail lounge and private-party area, was rented as restaurant after construction was well under way; plans had to be revised to provide much larger kitchen and dining space. Restaurant is open to public, has spectacular view, and is one of city's best

Joseph W. Molitor





Residence of Mr. and Mrs. A. W. Duvel

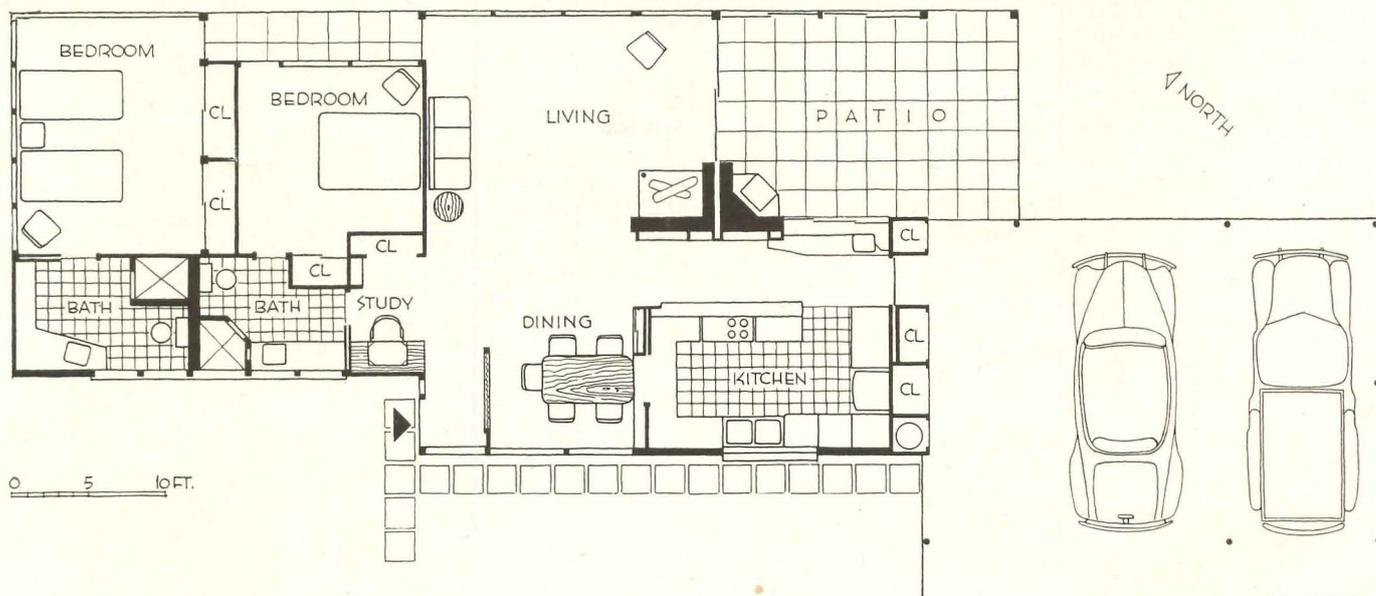
Omao, Kauai, Hawaii

Lemmon and Freeth, Architects

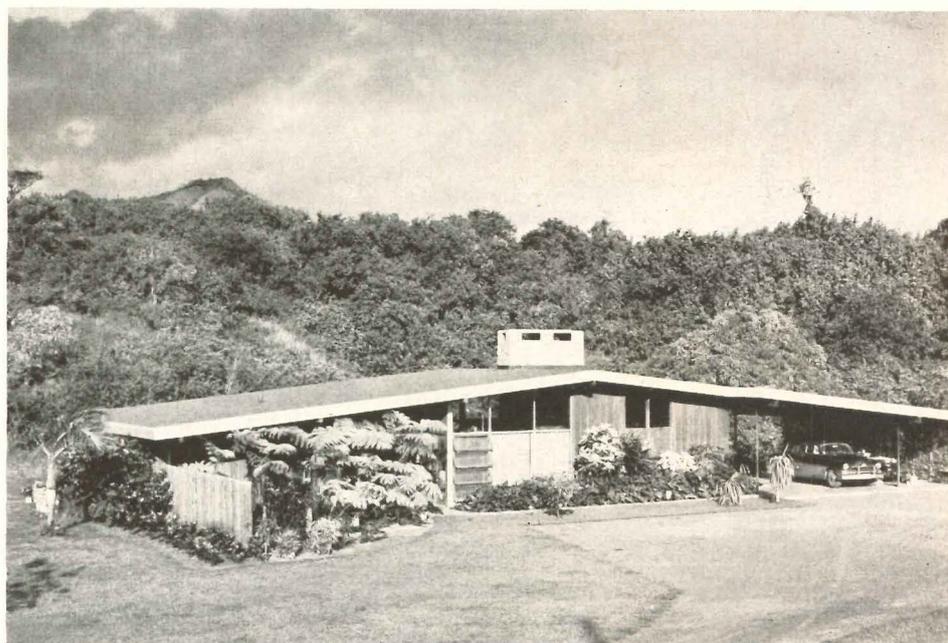
IN-LINE PLAN EXPLOIT



R. Wenkom



UNSPOILED SITE



SIMPLICITY of plan and structure plus an unspoiled natural site mark this small house on the northernmost island of Hawaii.

The plan is the simplest possible answer to the owners' requirements—living-dining room, patio with barbecue and bar, study, two bedrooms and two baths. It is, moreover, as open as consistent with privacy: there are only two full-height partitions in the entire living area, one between the living room and the son's bedroom, the other the short brick chimney wall. The master bedroom is connected with the rest of the house only by the lanai; the son's room, however, intended for future guest room use, opens through its bath to the study alcove as well as directly to the lanai.

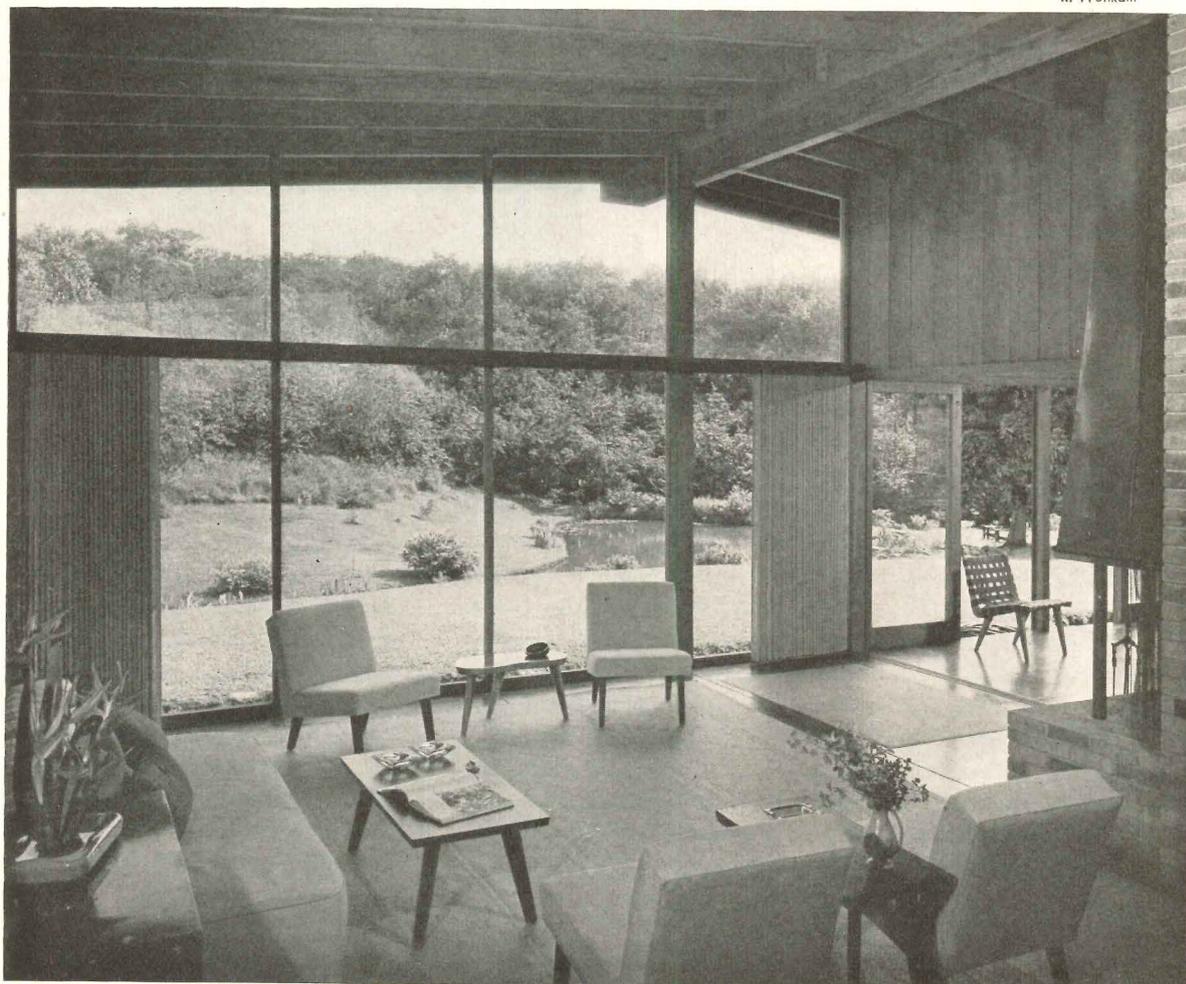
Construction is wood frame on concrete foundation. Single-board walls are $1\frac{1}{4}$ by 12-in. redwood T & G, stained on exterior, stained and waxed on interior. Roof is composition on exposed rafters and $2\frac{1}{2}$ -in. thick cane fiberboard sheathing. Floors are colored concrete except in bathrooms where asphalt tile is used.

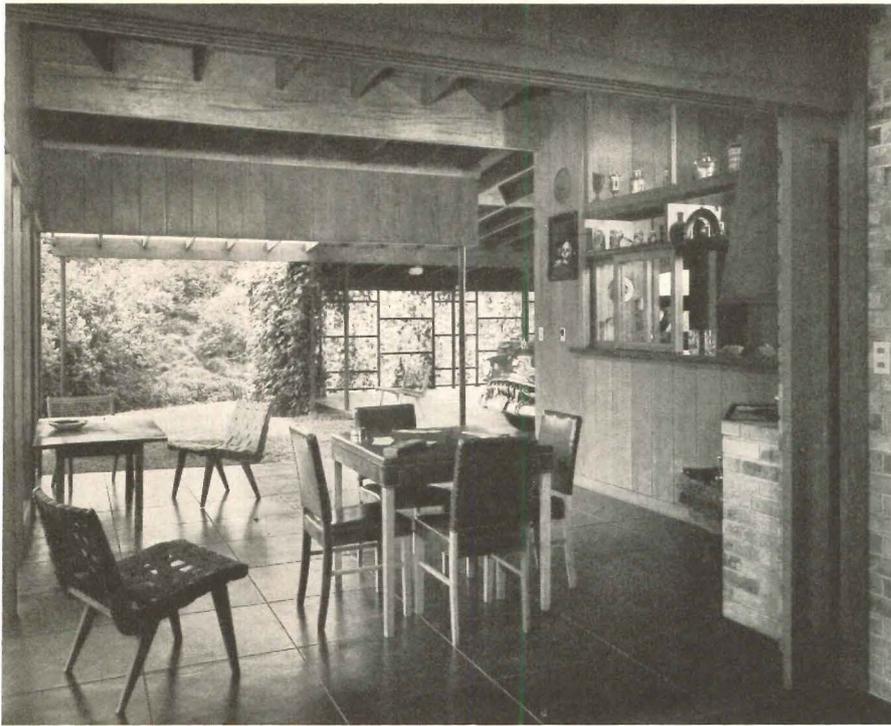
The site is large, remote from the main road, and has a sizable stream flowing through it. The stream was dammed to form a pool which, with broad lawns surrounding it and a little planting close to the house, was virtually all the landscaping required. The owner, Forester for the Division of Forestry, Board of Agriculture and Forestry on Kauai, was landscape architect; his wife was decorator.



Living room, patio and lawn form one continuous living area overlooking stream and pool. Interior walls are gray with touch of red, ceilings are blue-green

R. Wenkam

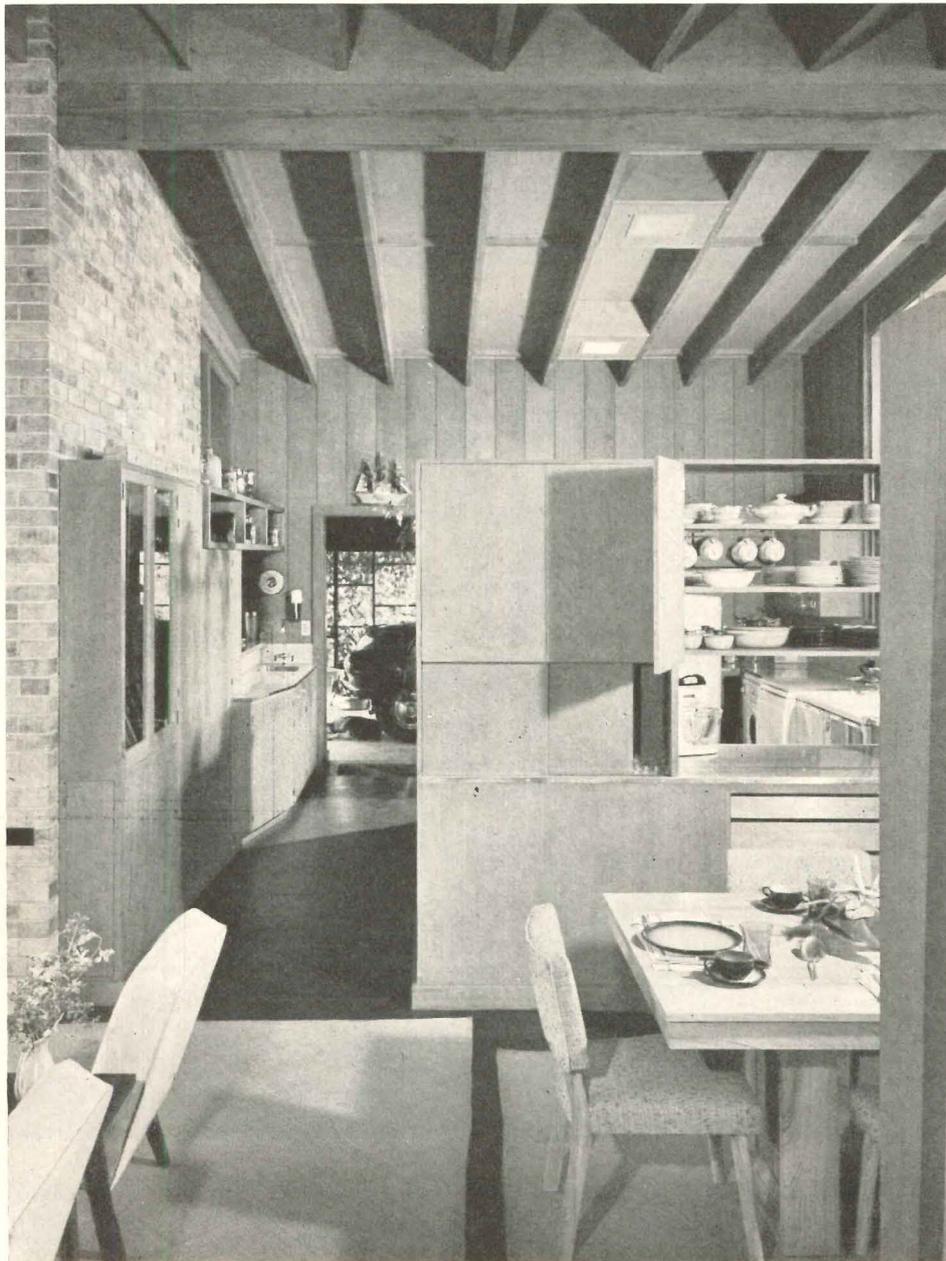




Three-part living area is tied together both actually and visually by back-to-back living room fireplace and patio barbeque, each copper-hooded and brick-walled



Dining area and kitchen are separated by two-way cabinet with pass-through

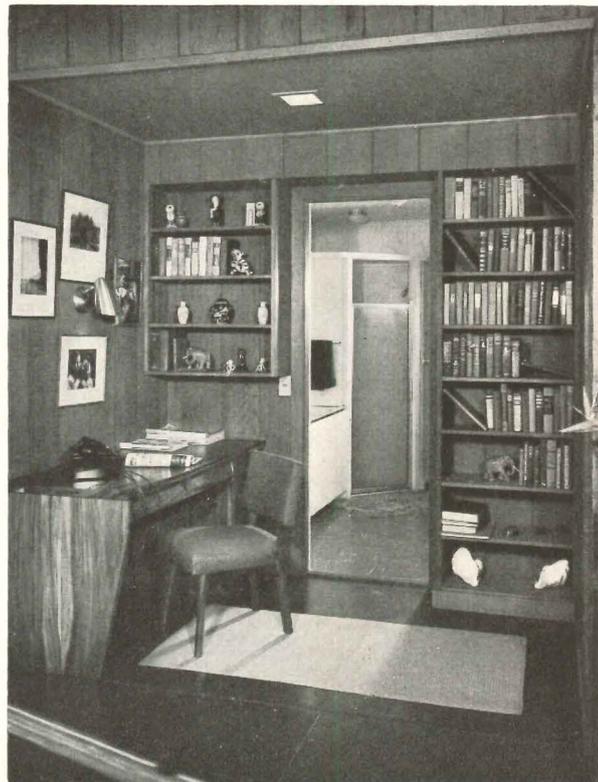
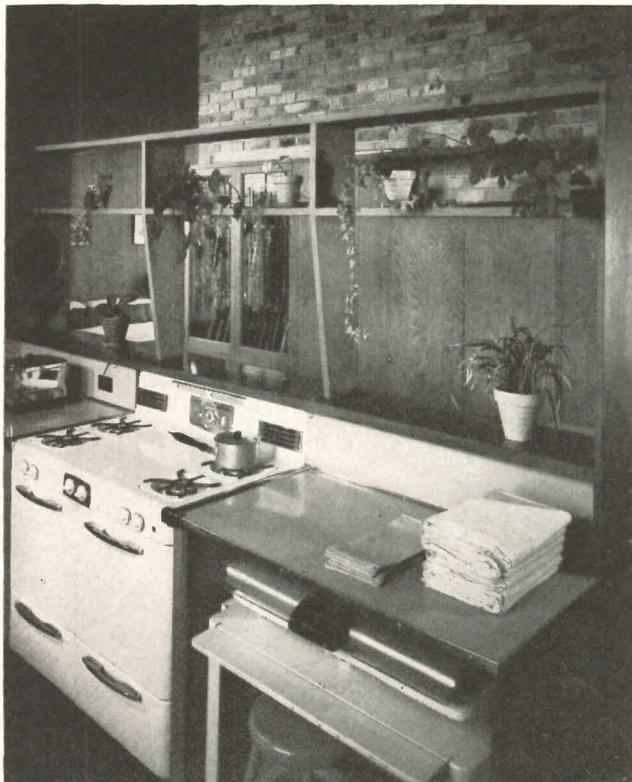


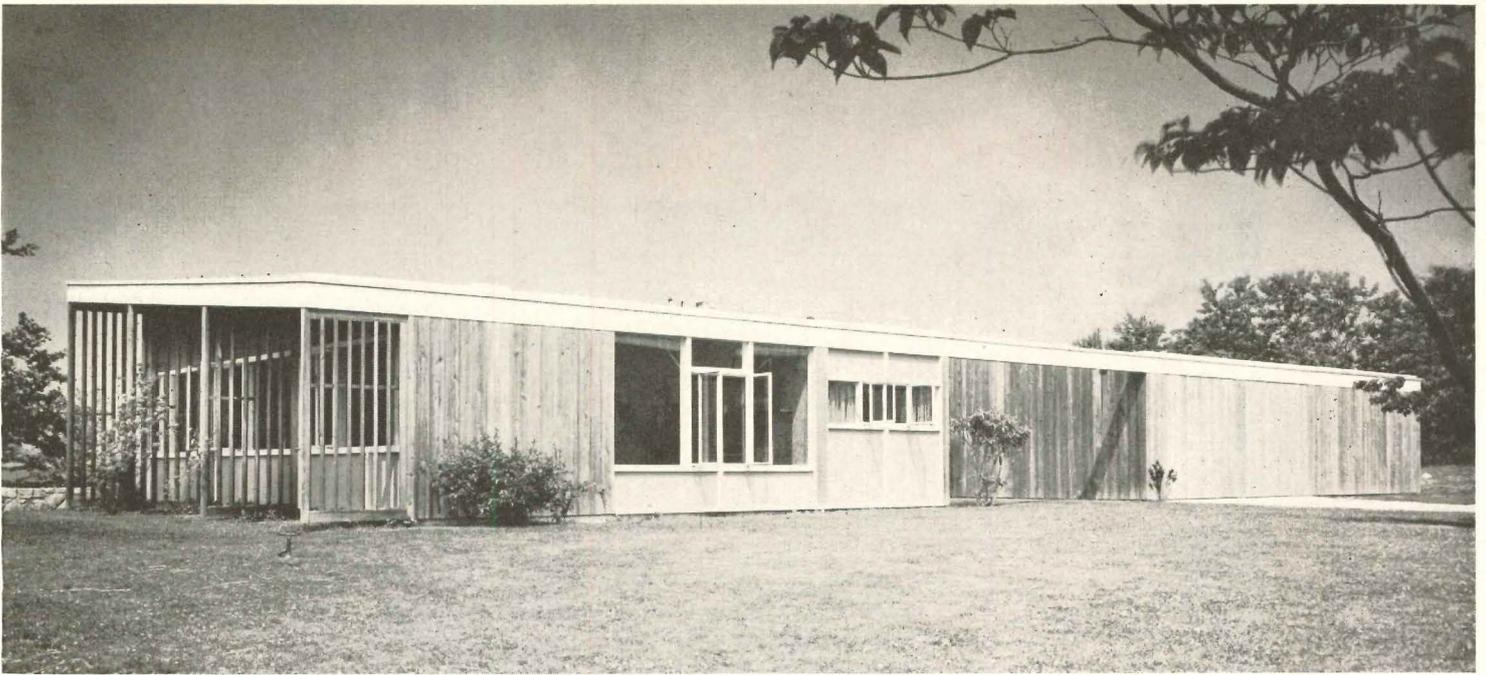


R. Wenkam

IN-LINE PLAN FOR UNSPOILED SITE

Low corrugated plastic screen separating dining area from entrance creates wonderful feeling of openness. Kitchen (below, left) has low partitions on two sides, windows on third. Below right: study alcove



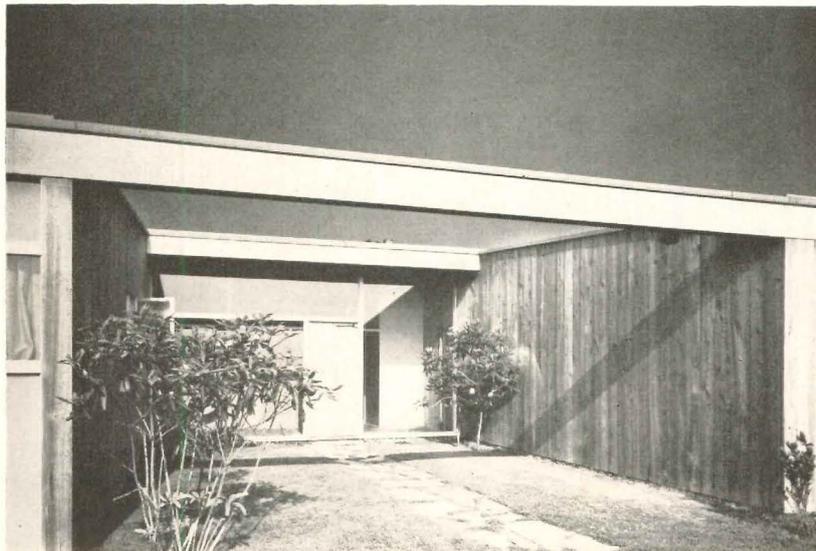
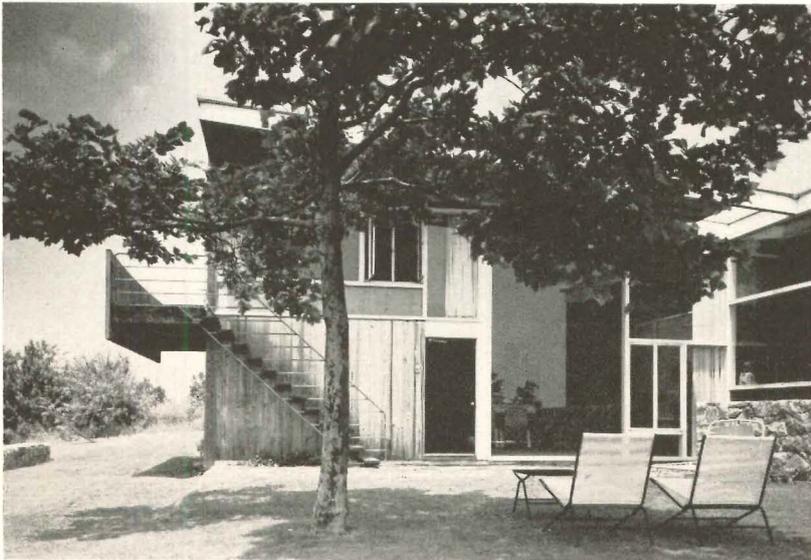


SLOPING SITE FOR HOUSE FACILITATES ZONED PLAN

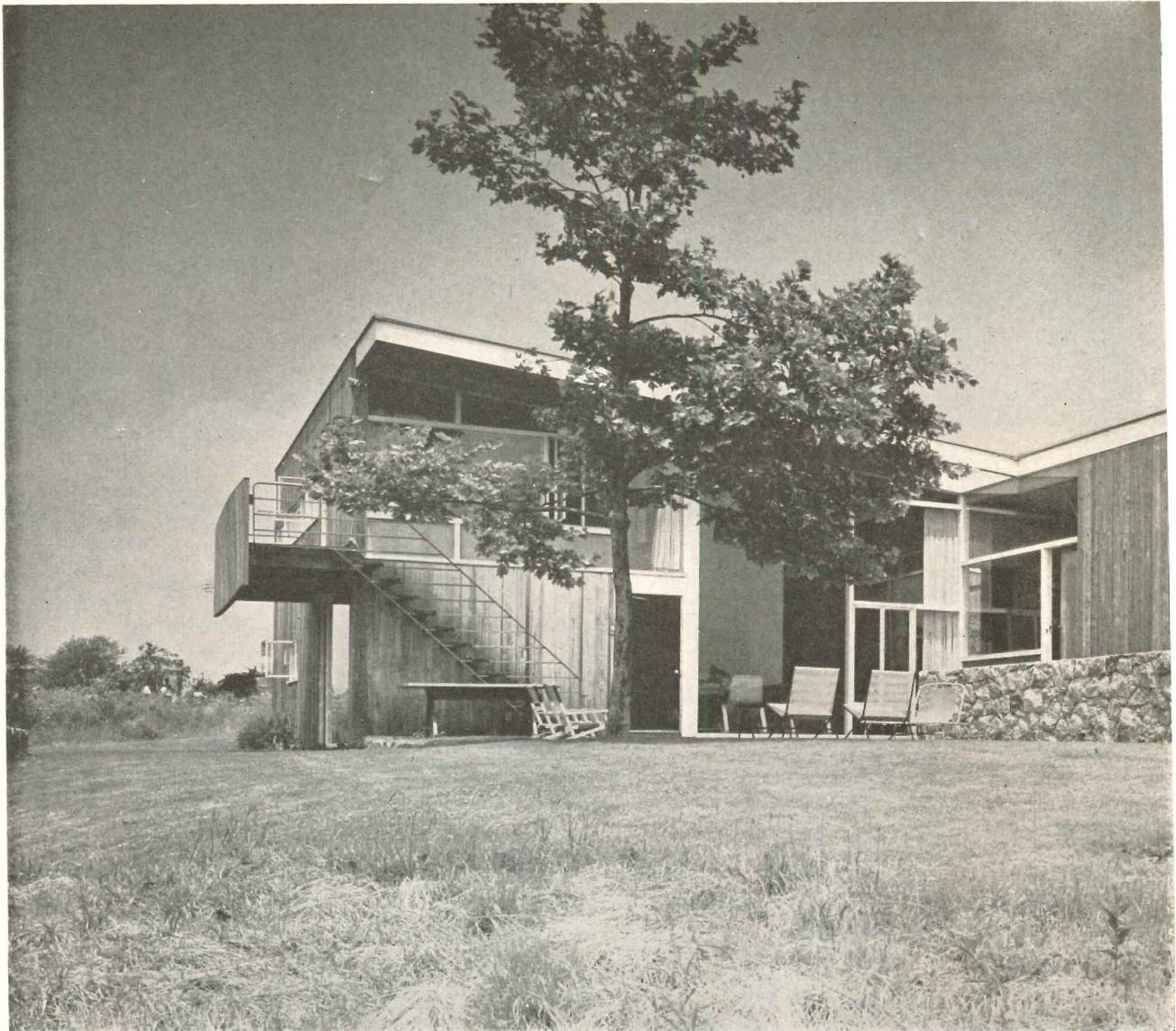
House for Mr. & Mrs. Ogden Kniffen, New Canaan, Conn.

Marcel Breuer and Eliot Noyes, Architects

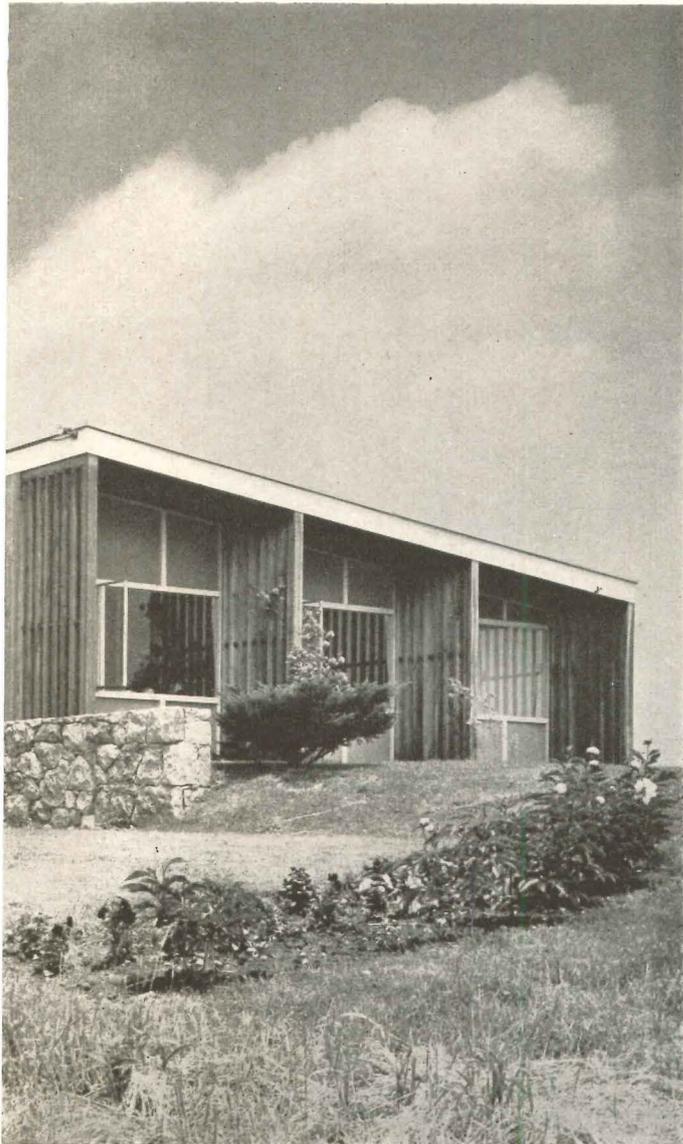
Ben Schindl



SLOPED SITE: ZONED PLAN

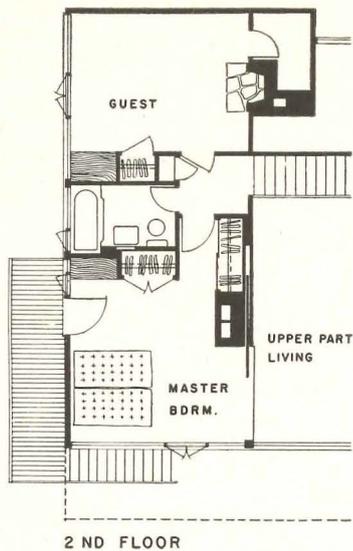


A SIMPLE, ONE-LEVEL HOUSE is comparatively easy to organize into the various kinds of areas needed; when several floors — and within these, numerous slight changes in level — are studied with a view to zoning them according to use, the problem tends to become complex. It cannot be as over-simplified as the current speculative builder's cliché, the "split-level house," yet it demands a simple solution. In this conventionally wood-framed house the organization of areas or zones is clearly apparent. Not so easily comprehended, perhaps, is the skill with which an open character has been maintained. The usual thing to do with the living room (see plan) would have been to open it to the south only; but using a change of level and a two-way fireplace to delimit the dining room, making the bedroom above a balcony, and opening the wall to the east court have made the room more livable and satisfying.

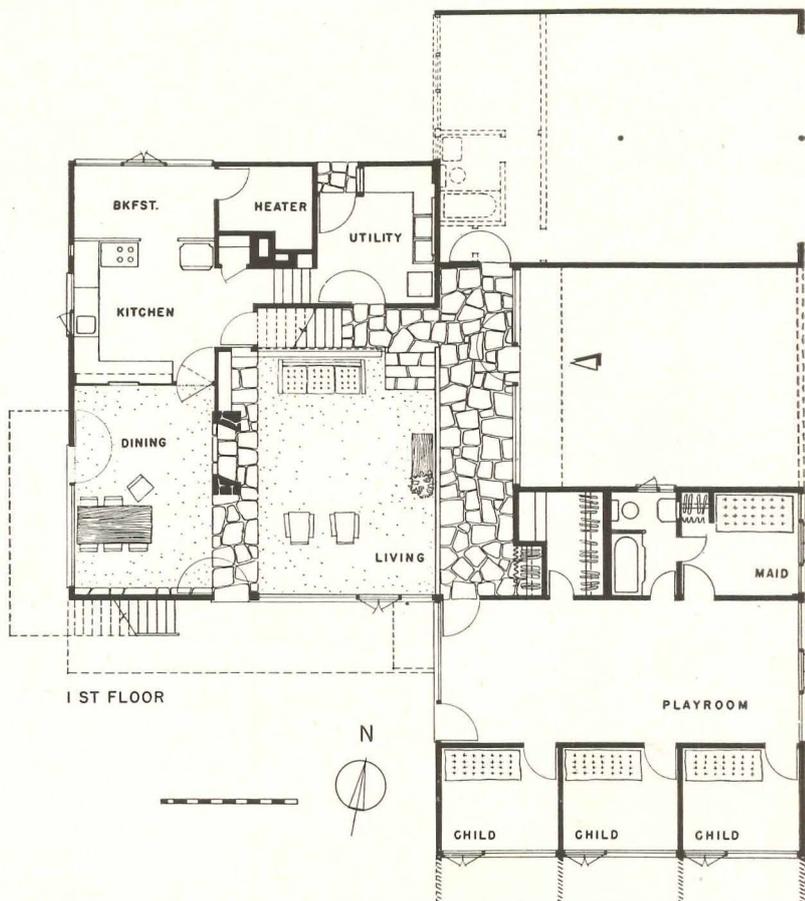


Ben Schnall

Zoned plan, characteristic of many houses by these architects and at one time a daring innovation, has here been ingeniously developed to take full advantage of the sloping site. House has been enlarged since original plan (right) was made; dotted-line area at rear of garage has become hall and powder room for access to two bedrooms, bath and storage room which extend 14 ft to north; see photograph on preceding page

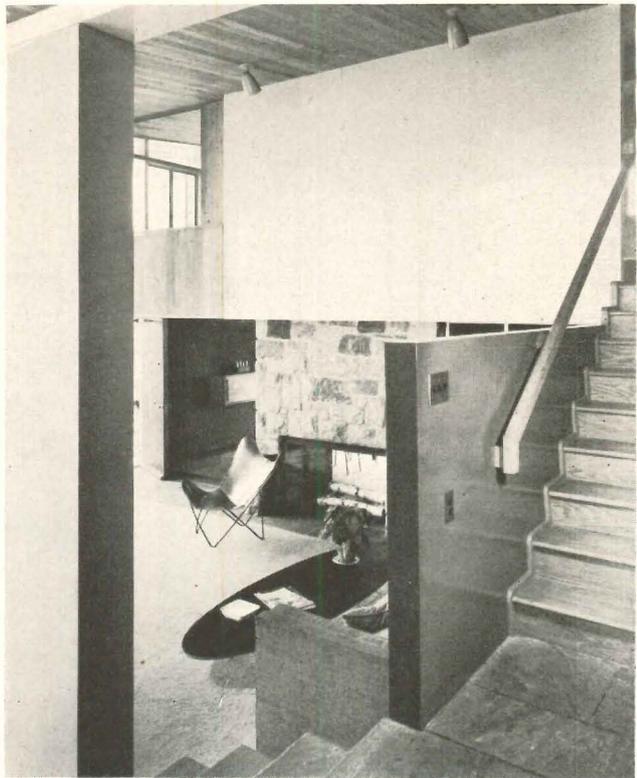


Upper floor contains adults' bedrooms; lower floor has distinct zones for 1, children's play and sleeping; 2, living; 3, utility; and new bedrooms (see below)



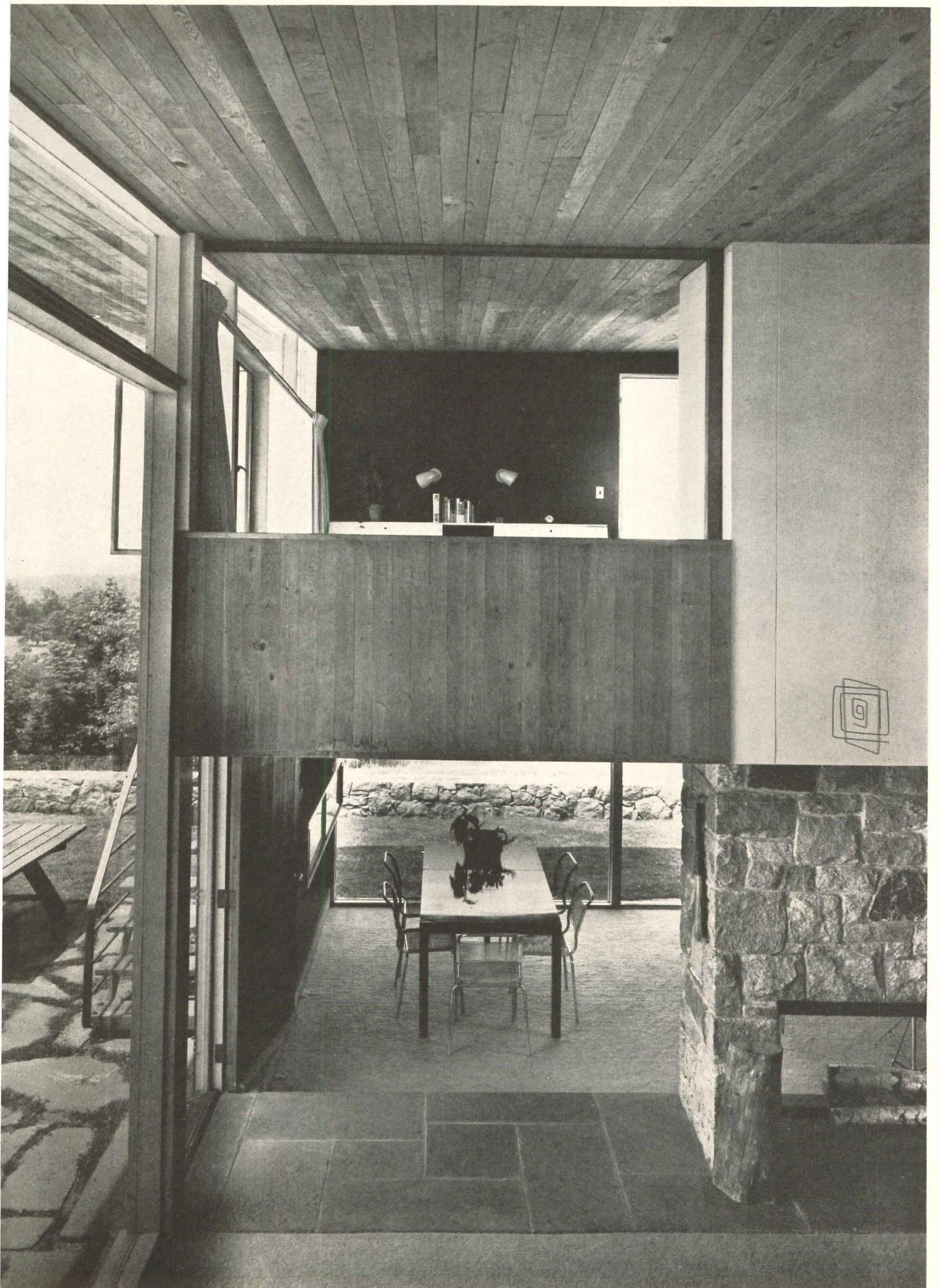
SLOPED SITE: ZONED PLAN

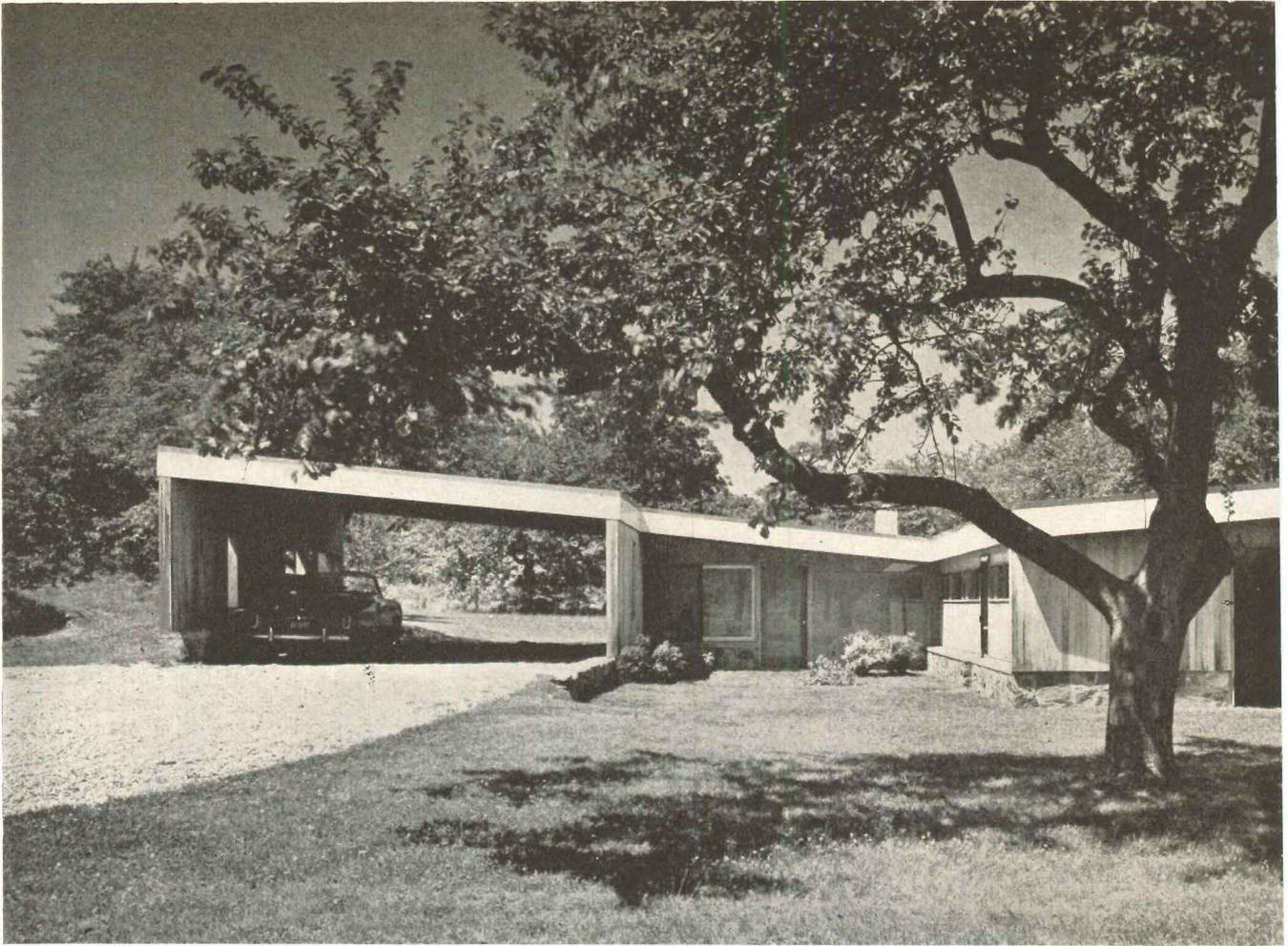
The careful organization of space is accompanied by a pleasantly open interior; changes of level are advantageously employed. The diversity of interest in form thus produced is offset by the simplest of interior finishes: gum plywood, painted or natural; plate glass; solid carpeting, bluestone floors; T & G cypress



Ben Schmal







FIVE BEDROOMS CAN BE ADDED

House for John W. Hanson, Huntington, N. Y.

Marcel Breuer, Architect

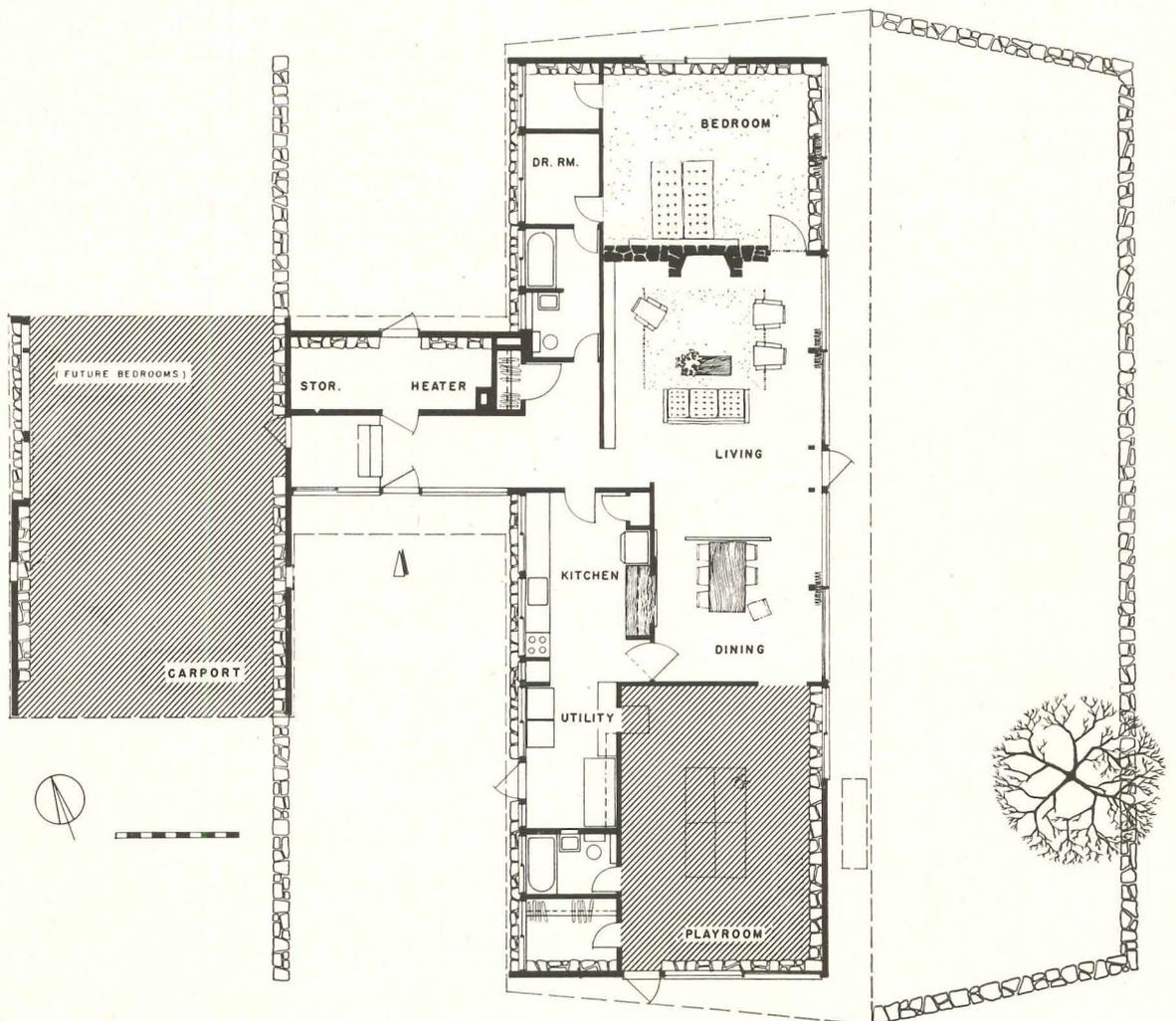
TRULY EXPANDABLE, and with the future expansion positively provided for, this house anticipates growth; change need not either prove unduly expensive or impair its original quality. The carport, which can become three bedrooms and two baths for two children and a maid, has been designed with openings ready for glazing, heating and water connections ready for extension. The playroom can be subdivided into two more bedrooms. Construction is simple wood frame on a radiant-heated concrete slab; exterior walls have vertical T & G cypress siding. The wood-framed butterfly roof roughly parallels the contours of the land, helping to fit the building into its site.



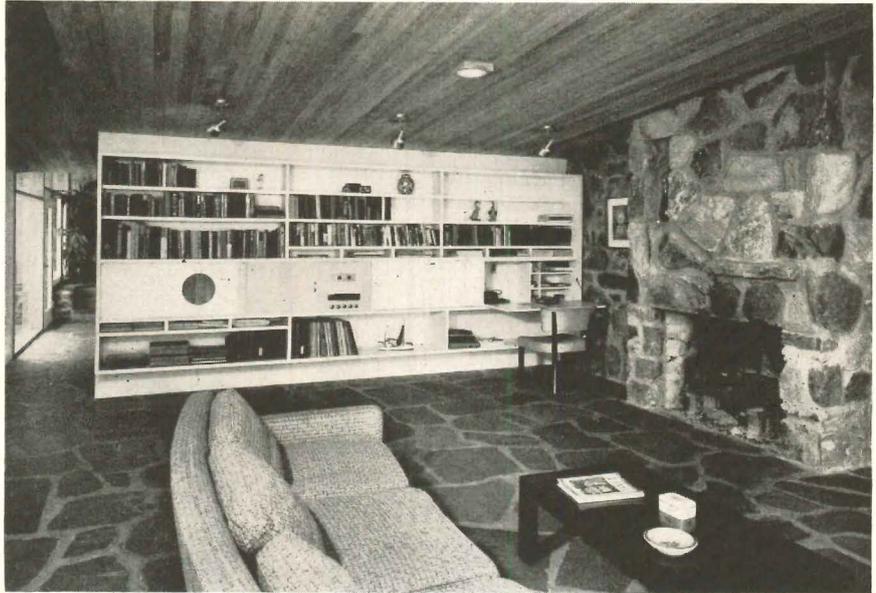
Ben Schnoll



Carport and playroom of this Long Island house (shaded areas below) are designed so they can be converted into five additional bedrooms



EXPANDABLE HOUSE

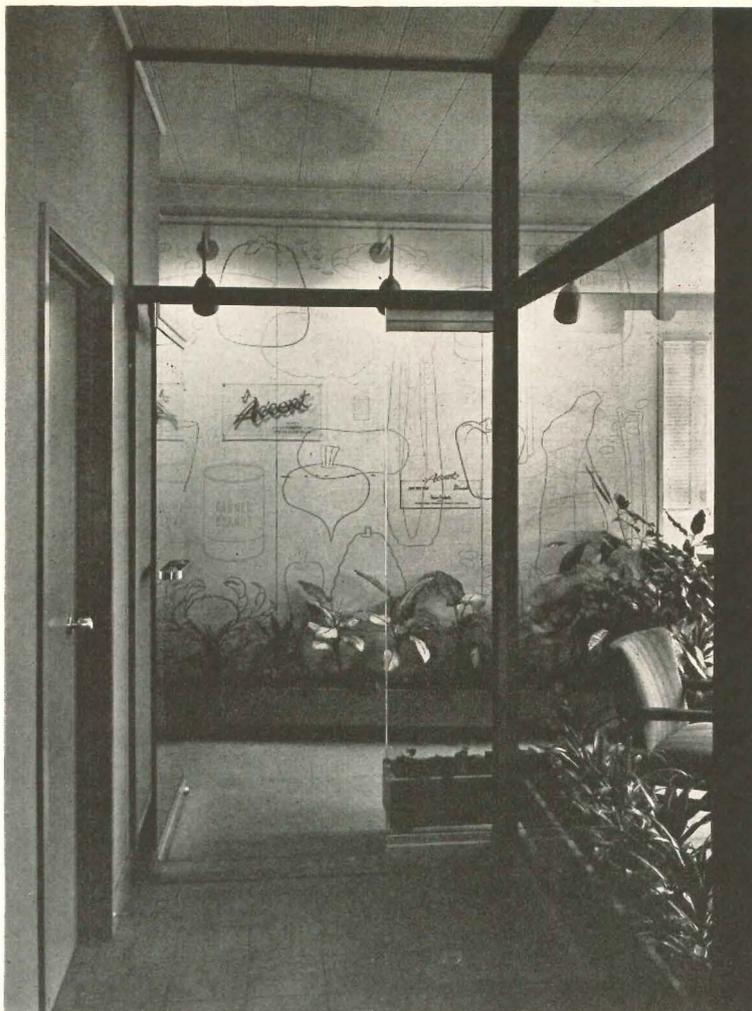


Ben Schnall

Flagstone floor, field stone fireplace, wood ceiling and painted storage wall carry into the interior the same materials and finishes used on the exterior, heightening unity of indoors and outdoors



Roger Sturtevant



ARCHITECTURAL INTERIORS

Design | *Details* | *Materials* | *Equipment*

OUR STORY deals with the recently refurbished West Coast Sales Office for *Accent*, a new culinary product of the International Minerals and Chemical Corporation. The architect for the job, F. J. McCarthy, had complete charge of furnishings as well as overall remodeling of the space within a San Francisco office building.

As the visitor approaches and enters through the trim glass vestibule pictured above, he sees and is intrigued by the decorative mural, base-banked with planting. But this mural is actually more than just decoration or advertising — for the story of what it does, turn the page.

Francis Joseph McCarthy, Architect

Squire Knowles, Muralist

WHY THE OPEN-ENDED MURAL?

C. A. Von Bergen, Electrical Consultant

Eckbo, Royston & Williams, Landscape Architects

Oscar Presco & Son, Builders

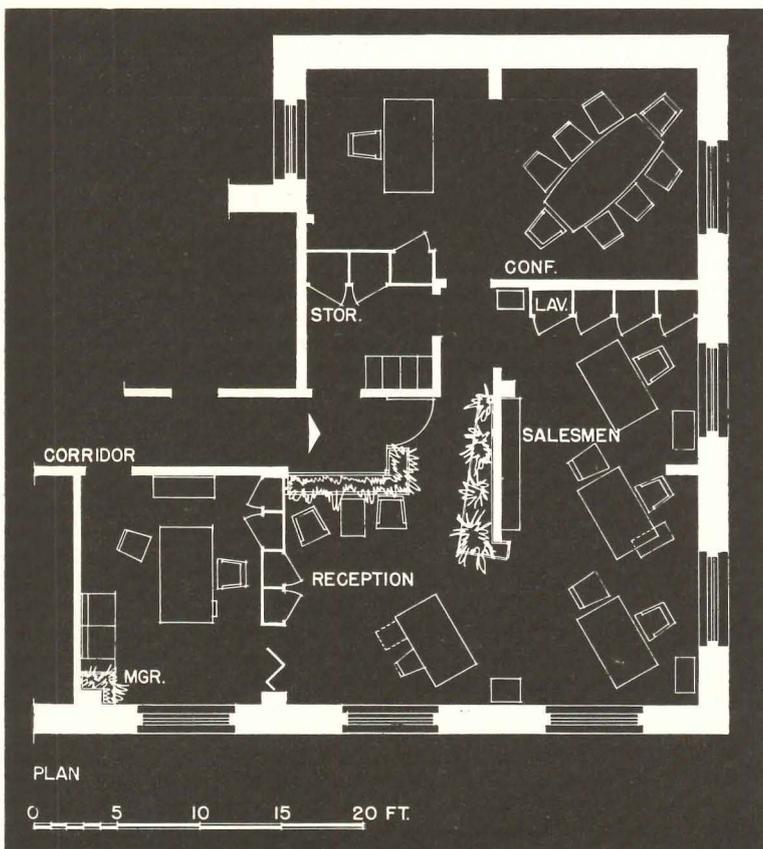
ARCHITECTURAL INTERIORS

Design | Details | Materials | Equipment

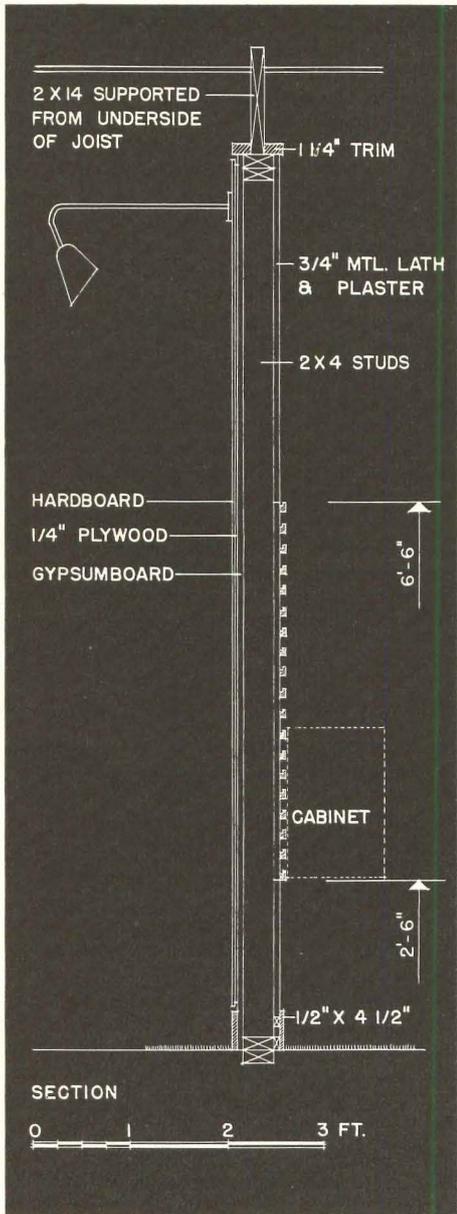
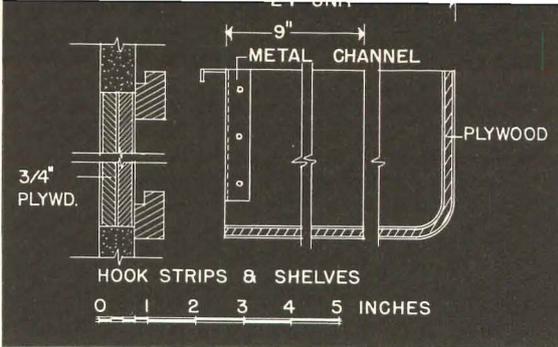
WEST COAST ACCENT OFFICE



Roger Sturtevant

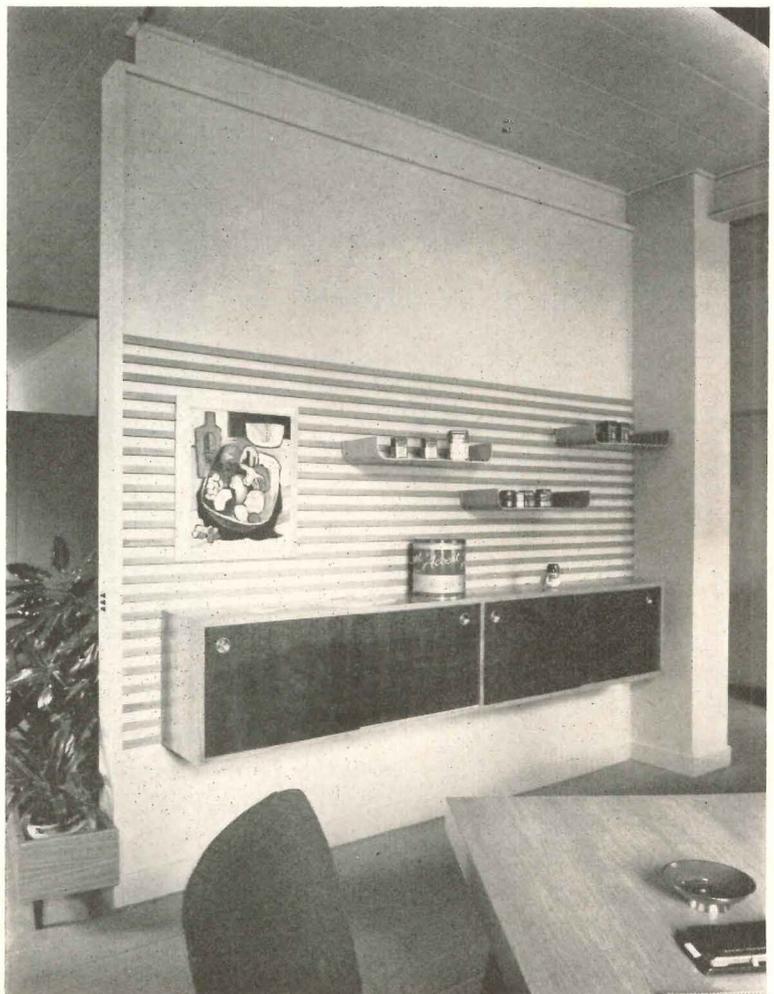


Study of these two pages will reveal that the plan is essentially an L within the larger L of the entire area, and that the open-ended mural wall forms the pivot for the entire scheme. It serves to conceal an existing column; it is a space-dividing screen that functions as both storage and display while separating sales from reception; it picks up the curving curtain track and becomes upon occasion the third wall of a curtained-off room. In addition to the main L shaped space, the plan also provides an office for visiting executives, separated from the conference area by pulling a curtain.



Drafting by Mogens Leth

On the sales side, about a third of the mural wall's height is covered by a horizontal pattern of wood hook strips upon which can be hung several bent plywood trays or shelves that can be arranged at will for display. The strips also can serve as support for pictures, charts, etc. The cabinets, furniture, and planting boxes are made of rift oak



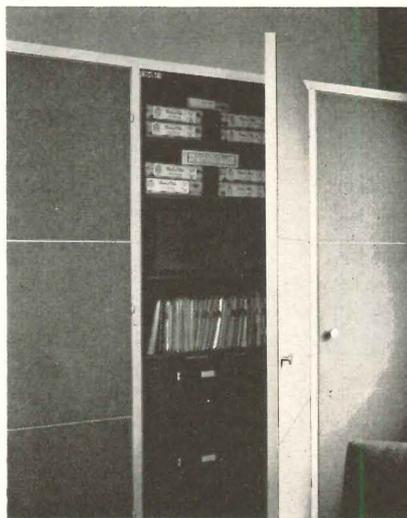


Roger Sturtevant

The four doors at rear of sales area conceal a lavatory and cabinets for storage and files. Note that salesmen do not have desks, but instead sit at

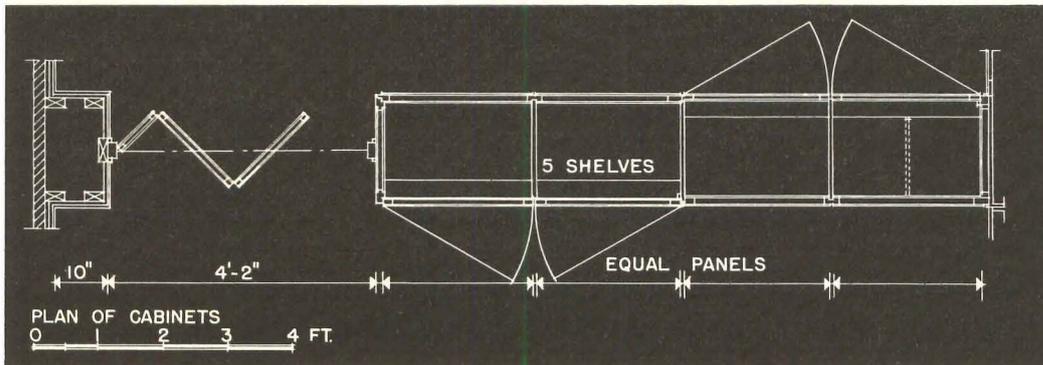
ARCHITECTURAL INTERIORS

Design | Details | Materials | Equipment

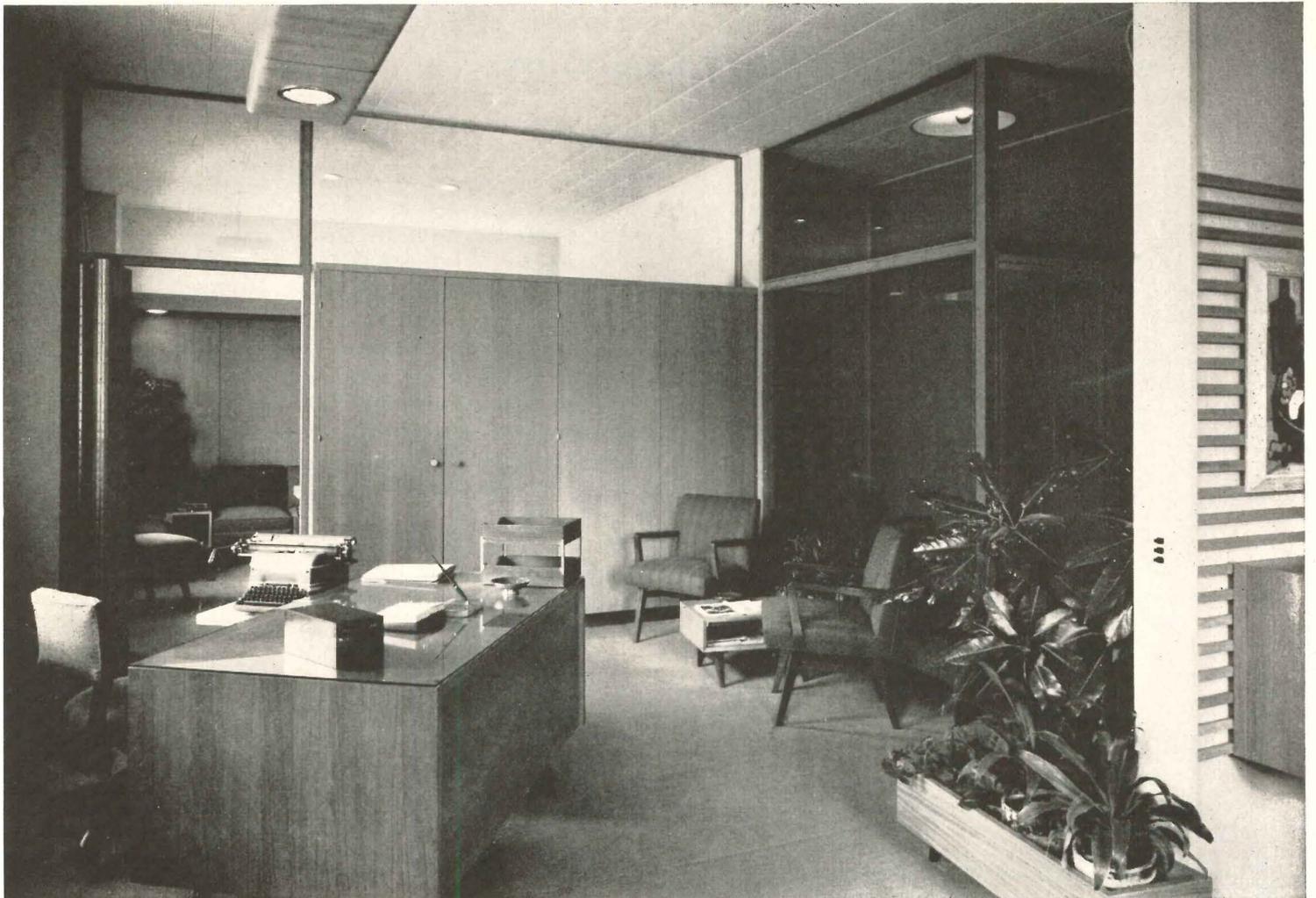


open tables for greater leg freedom, and have beside them a small telephone cabinet containing a pencil drawer, pull drawer, and file. Plaster walls and acoustic ceilings are painted gray-green; curtains and venetian blinds are gray

The sales manager's private office is separated from the general reception space by a battery of glass-topped cabinets which serve as supply storage for both areas. Note how the three folding



door leaves, which are hung on piano hinges, stay within the depth of the cabinet jamb and thus do not encroach within either of the two areas. Rift oak cabinets and furniture in natural finish;



cocoa and green upholstery; medium gray carpet; inside of cabinets painted red

THE COST of the needed school facilities remains an immense problem. In tackling it as the subject of this study we have rediscovered an axiom: that design for true economy often leads to better functioning, to improvements in education itself, and (to speak bluntly) toward architecture. Many times, the process of stripping nonessentials from school buildings not only has produced economy, but also has gotten rid of some architectural garbage whose existence impaired practical values and misdirected the cultural impact of the buildings on their small occupants. As bad as trite "ornament" is the plan cliché; some innovations widely imitated have been little understood. In these six pages you will find evidence of fresh thought applied to the finger plan, one of whose initial virtues was that, in warmer regions, it permitted eliminating the enclosed corridor. In addition to those whose "corridorless" plans are shown, Walter Anicka of Ann Arbor has been experimenting with the idea; in 1952 he reported resultant costs of \$11 to \$12

CASE HISTORY: CLASSROOMS WITHOUT CORRIDORS

By Eberle M. Smith

Member, A.I.A. School Committee

THIS IS A CASE STUDY of the development of three elementary schools to capture the space normally used for corridors for direct use in classrooms: the Andrew Jackson School at Ferndale, Mich., the new elementary school at Plymouth, Mich., and an elementary school for Livonia, Mich.

Basically the three schools are the finger type of plan with four self-contained classrooms in each wing; the wings are of the single-loaded corridor type. Perpendicular to the classroom wing is a connecting wing housing the activity units, multi-purpose room, library, kitchen, and other common facilities. This wing also has a single-loaded corridor.

The first unit of the Andrew Jackson School was constructed in 1949 and the addition in 1952. The Plymouth Elementary School and Livonia Elementary School, now under construction, will be completed this month.

Andrew Jackson School; Elmer Astleford photo



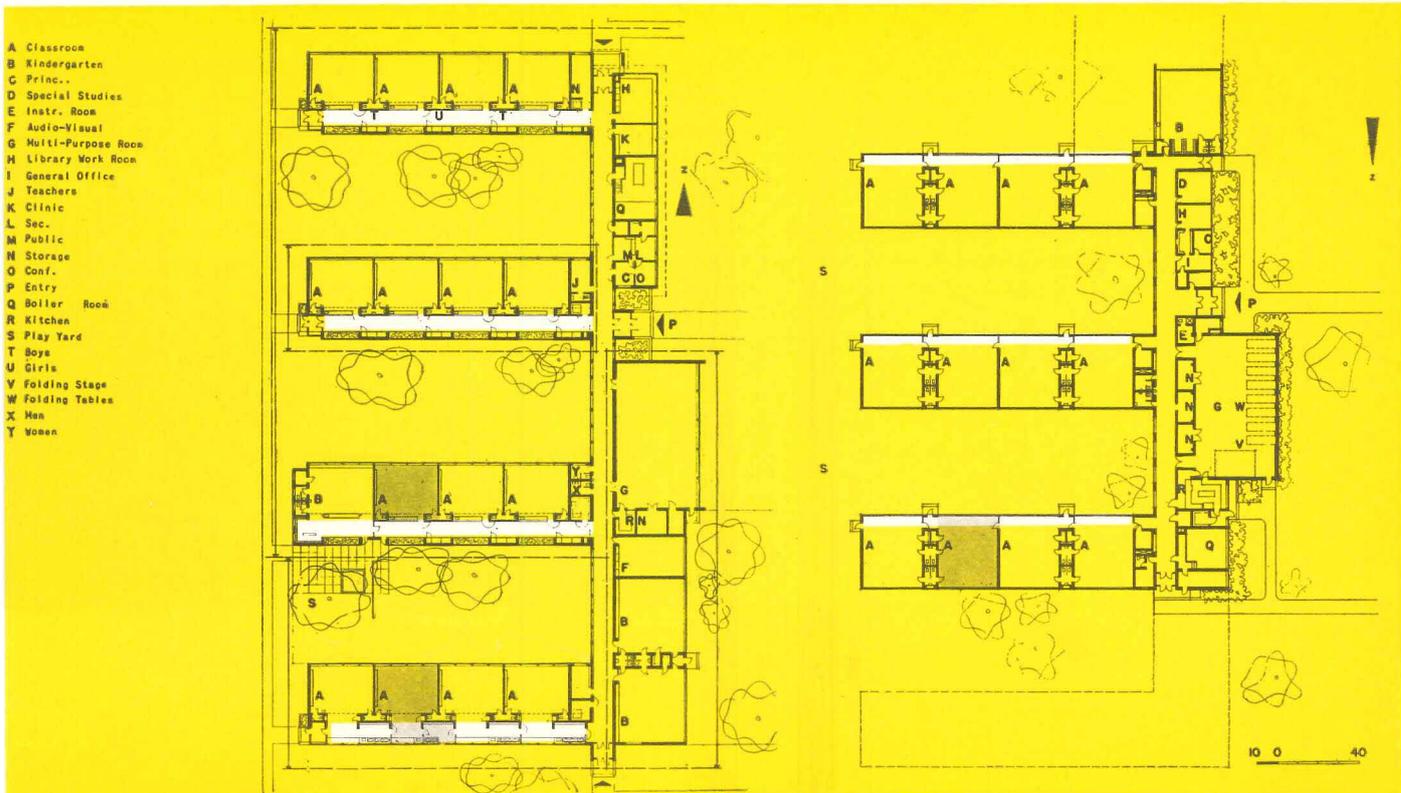
SCHOOLS

per sq ft. At present most experiments are limited to elementary schools.

The next 24 pages contain recent school buildings, all inexpensive for their time and location, most of them modernized. While modernization can be economical, there is no apparent set of standards; each job has to develop as it must.

Government agencies have been tackling economy, too. The U.S. Office of Education has a new 20-cent booklet on remodeling and rehabilitation. The New York State Education Department, in a recent statement, cites ways it has cut corners. These include "simplification of architecture," which seems to imply that architecture is superficial; and standards permitting (or requiring?) lower ceiling heights — which it avers have forced "the end of clerestory lighting and glass block construction." Should any structural device be thus sweepingly condemned, even though it be somewhat expensive or possibly rather tired?

This case history is appearing
also in *The Nation's Schools*



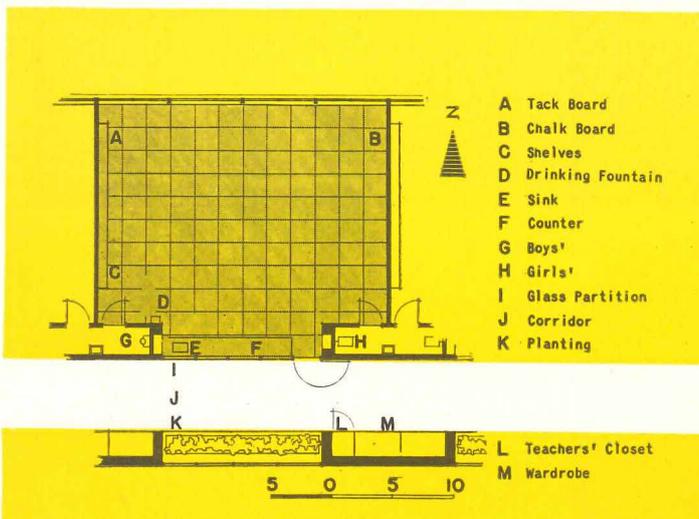
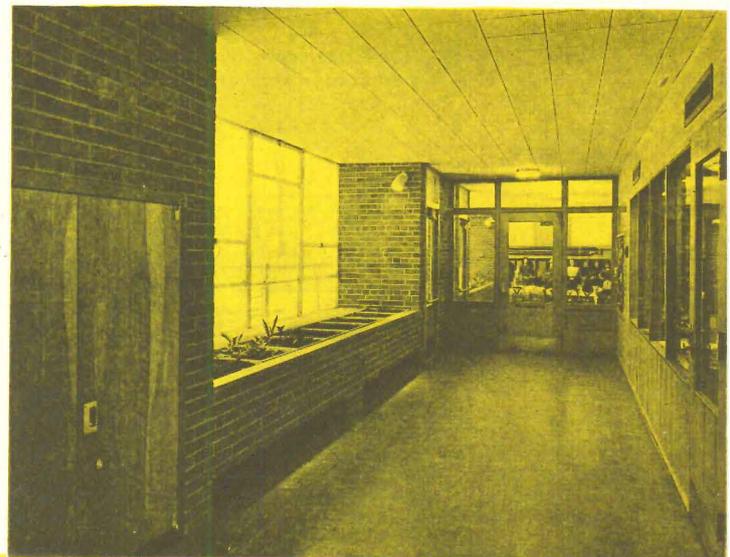
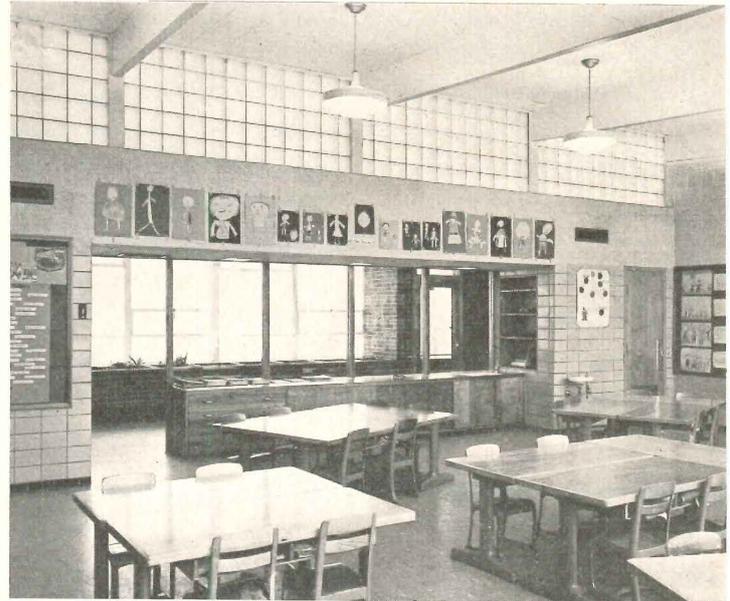
Two Michigan schools designed by Eberle M. Smith Associates, Inc., contain classroom units described in text. Left, Andrew Jackson School, Ferndale; original three wings at top show first stage of development; fourth wing, added later, shows classroom increased by incorporating corridor area. Right, Plymouth Elementary School, third stage; overall wing width slightly reduced, classroom area large and unified

CLASSROOMS WITHOUT CORRIDORS

FIRST STAGE OF DEVELOPMENT

These classrooms are constructed with large windows facing the north and with a secondary source of light from the south by means of a clerestory over a depressed corridor roof. The partition between the classroom and the corridor is transparent glass and creates a feeling of great openness into the corridor and beyond to the large windows of the exterior corridor wall. Under these windows is placed a continuous planting box, entirely visible from the interior of the classroom. Immediately adjoining this planting box in the corridor are wardrobes for the classroom occupants. This open planning between the corridor and the classroom effects a partial use of the corridor as a secondary activity space aimed principally at experiments in nature study and growth of plant materials.

During construction of this first wing an unusual situation led to exploring further a more extensive use of corridor space. The contractor experienced considerable difficulty in obtaining certain materials, including the cabinets and glass partition work which divided the corridor from the classrooms. As there was a great deal of pressure to occupy the school as soon as possible, it was occupied before this actual partition between the corridor and the classrooms was installed. The teachers found that it was very easy to make great use of the corridor space, extending the classroom to include the full width of the corridor. Of course, the corridor space ran continuously between the classrooms and consequently there was no physical barrier between the classrooms at this location. Curiously, the teachers who had to use this space as a temporary expedient found that they experienced very little annoyance from noise in the adjoining classroom and apparently it was no handicap to them. In fact, they hoped that this glass partition and cabinet work could be left out permanently.



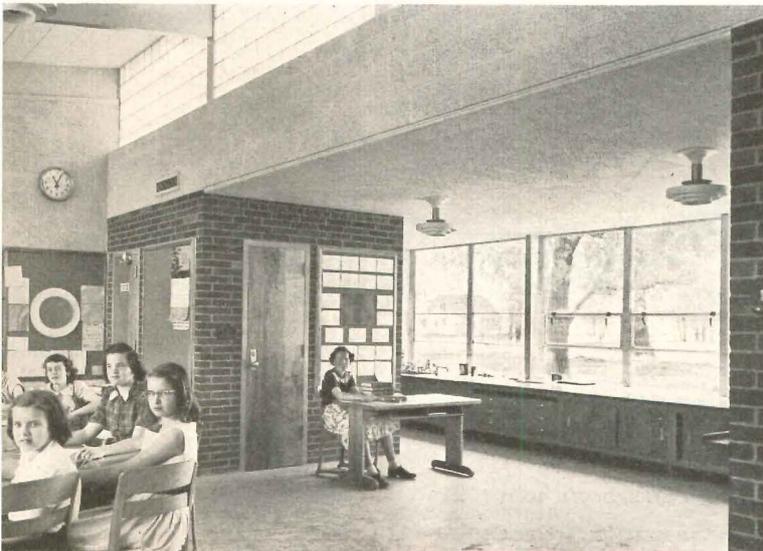
Above, photos; left, plan; first stage as developed in Andrew Jackson School. Note glazed partition separating corridor and classroom

SECOND STAGE OF DEVELOPMENT

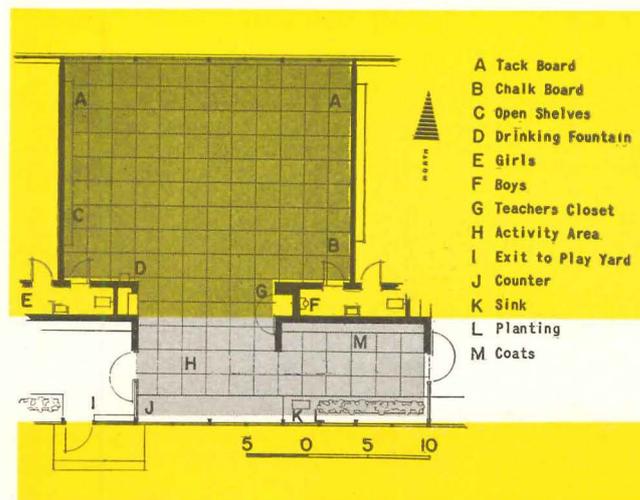
When the demand for additional space on the Andrew Jackson School was great enough to require construction of an additional wing, a teacher-community-faculty group was set up to determine just how the lesson learned in the first unit could be incorporated in the new wing. There was divided opinion on just how much the open feeling between the classrooms and the corridor could be developed without interfering with normal teaching processes. Some felt that the experience on the first wing indicated that the teachers could work with no physical barrier in the corridor area. Others felt that there was a necessity for some kind of physical

barrier between classrooms. The scheme finally incorporated in the plans was a compromise; it was decided to provide a physical barrier between the adjoining classrooms in the space formerly used as a corridor. At each classroom this corridor space was divided into two areas. One was an activity area as an adjunct to the normal classroom floor area. This contained the counter space and sink. In the second was placed the planting box for raising plants and the wardrobes for the children's coats and hats. It also served as a vestibule, with one doorway leading directly outside and another to the adjoining classroom. This has worked out very successfully. The breaking up of the corridor space into two areas provides an informal atmosphere and also provides a shield to prevent the direct rays of the sun from penetrating too far into the normal classroom area.

Photos and plan, second stage, Andrew Jackson School; glass partition omitted and elements re-organized. Former corridor space becomes in effect an activity alcove



Elmer Astleford

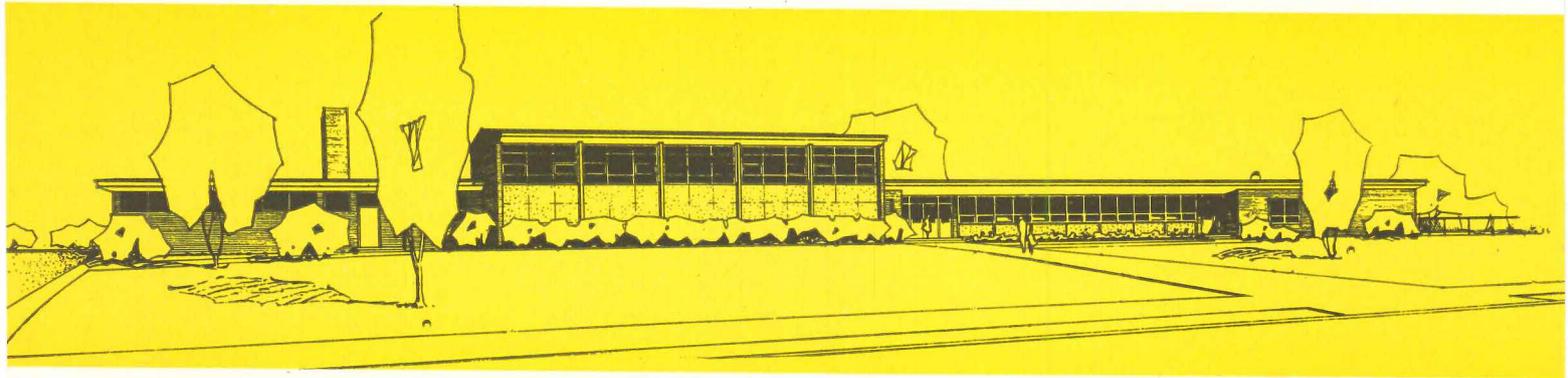


CLASSROOMS WITHOUT CORRIDORS

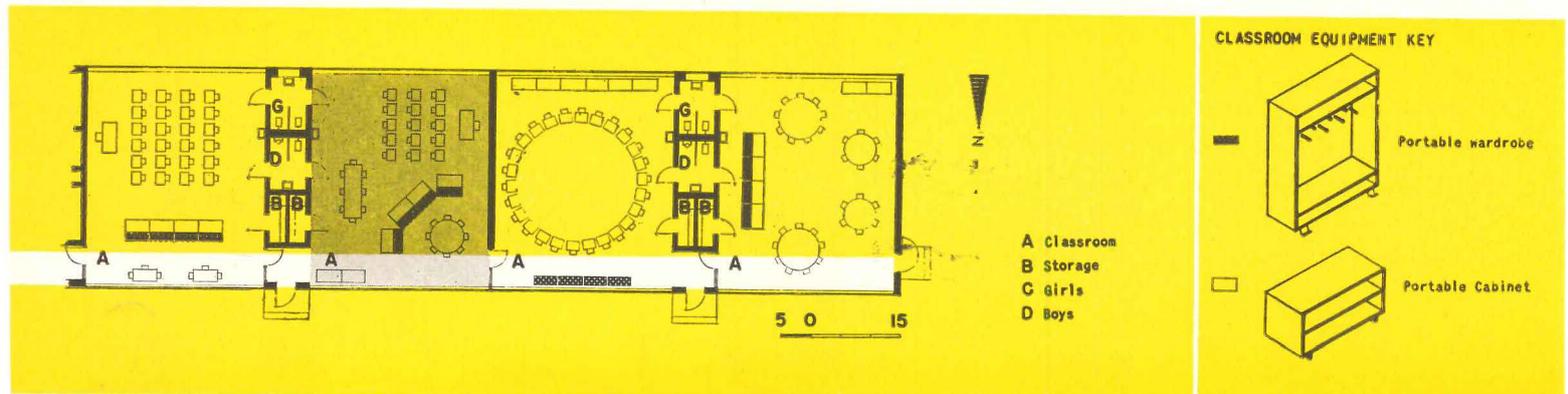
THIRD STAGE OF DEVELOPMENT

In planning the schools at Livonia and Plymouth, it was determined to explore further this idea but to approach it freshly in regard to arrangement and construction of the room. Accordingly, a plan was developed based on a "through" type of classroom with equal fenestration on two sides. In effect, this would allow the "front" of the classroom to be on either of the two walls running perpendicular to the exterior walls. It was decided not to place toilets and storage facilities between the classroom and the space normally used as a corridor, but to locate these facilities in islands between each pair of classrooms. This allowed complete freedom in construction and framing of the roof and also eliminated the necessity for clerestory or overhead lighting. Because the fenestration would be on two opposite

sides, it was felt that the roof and height of windows could be held to 8 ft 10 in. It was decided to use a hipped roof in order to create a quality as nearly domestic as possible. The low corridor heights and exterior roof line are expected to improve the scale and atmosphere of the building. Direct egress is easily provided from a vestibule immediately adjoining the island space between each two classrooms. The use of movable wardrobes and storage cabinet facilities allows almost unlimited possibilities in arrangement of the rooms to suit the individual teacher's and superintendent's desires. It is anticipated that the higher wardrobe storage facilities can be arranged to provide some means of shield to prevent too deep a penetration of the sun's rays on the southern exposure.



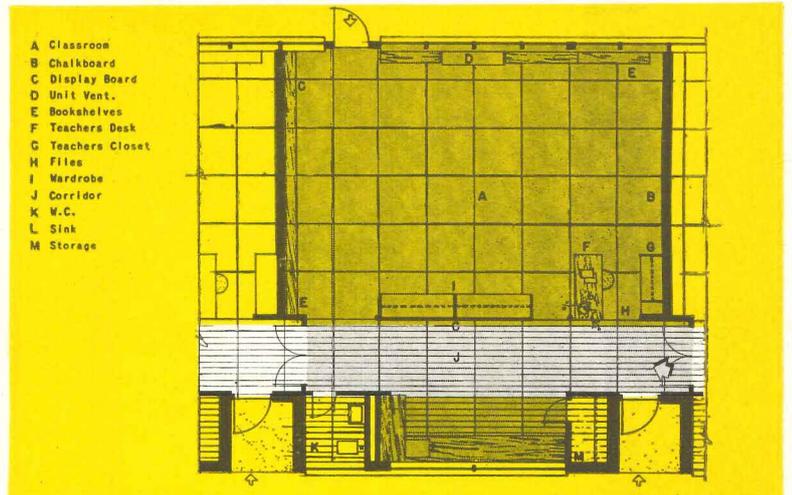
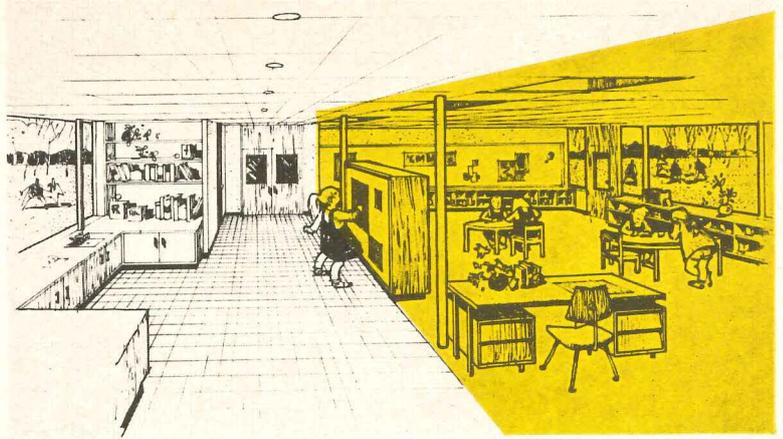
Above, perspective, Elementary School, Plymouth (plan on preceding page); below, typical classroom wing in Plymouth School shows third stage. Furniture arrangements demonstrate flexibility of the unified space, use of portable storage units as subdividers and sun shields



McLeod & Ferrara, Architects

EXPERIMENTAL SCHEME, WITH DOORS

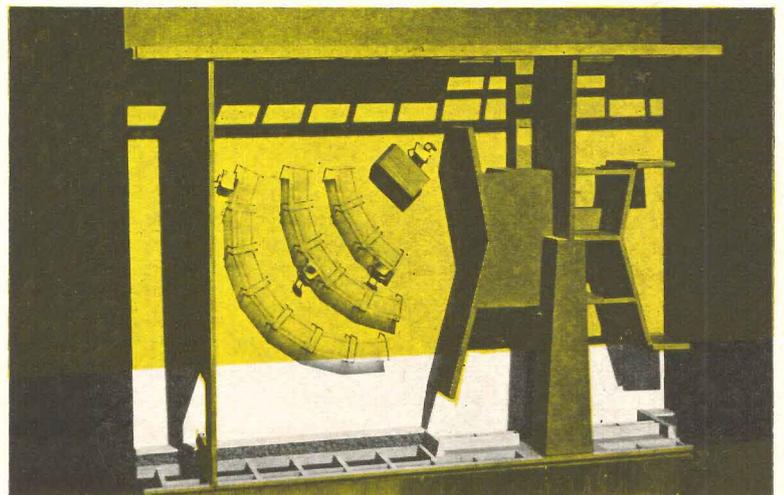
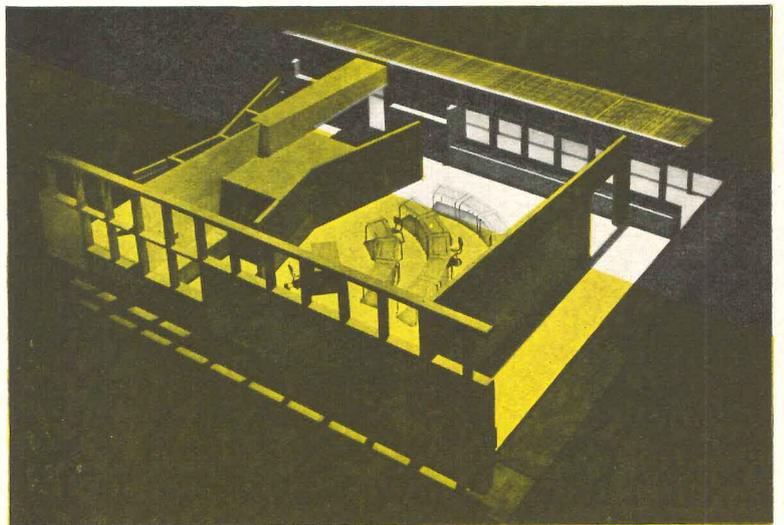
Developed independently of examples in the preceding case history, this experimental solution contains a combination of fixed and portable equipment; in plan it is closer to conventional practice, resembling somewhat the intermediate development previously described. It possesses certain definite characteristics: ceiling all in one plane; permanent work counter; sheltered exterior doors; exterior windows for toilets. Replacing interior corridor wall with lally columns probably cuts framing costs. Reduced glass area on one wall might necessitate skylights as indicated



Swanson Associates, Architects

SAME OBJECTIVE, DIFFERENT APPROACH

Another variant, developed independently following the earlier Michigan experience, is to be used in all wings of a new Ferndale school. Each pair of rooms has a "mechanical core" containing toilets, activity area, storage, work space, entry. Scheme provides extra outdoor circulation with translucent roof, clerestory; has high windows plus ample tack board on north wall, for privacy from outdoor areas between wings. Classroom wall of mechanical core has chalk boards with hinged portions permitting board to be used like a cyclorama. There are no doors between classrooms; acoustical treatment is relied on to minimize noise. Cost is expected to be 10 per cent less than conventional design



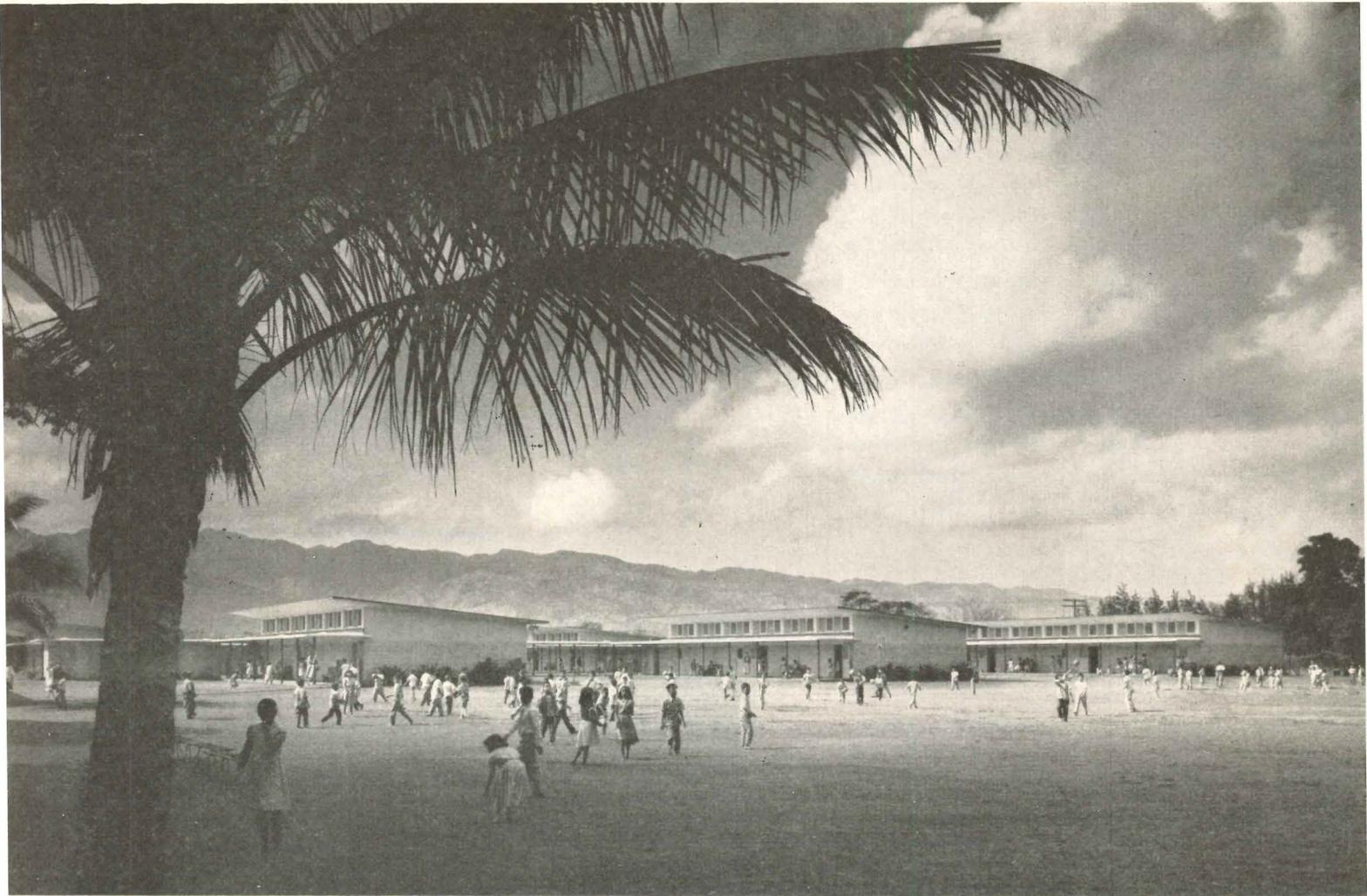
Richard Shirk

HAWAIIAN SCHOOL: ADDITION, EXPANSION

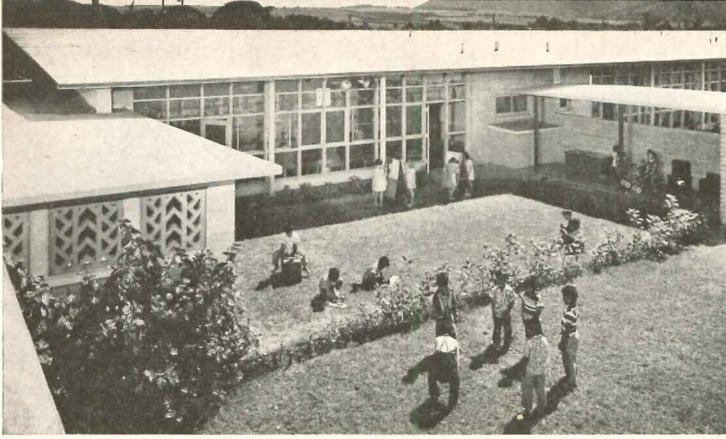
Waialua Elementary School, Waialua, Oahu, Hawaii

Law & Wilson, Architects & Engineers;

Lo & Katavolos, Consulting Engineers

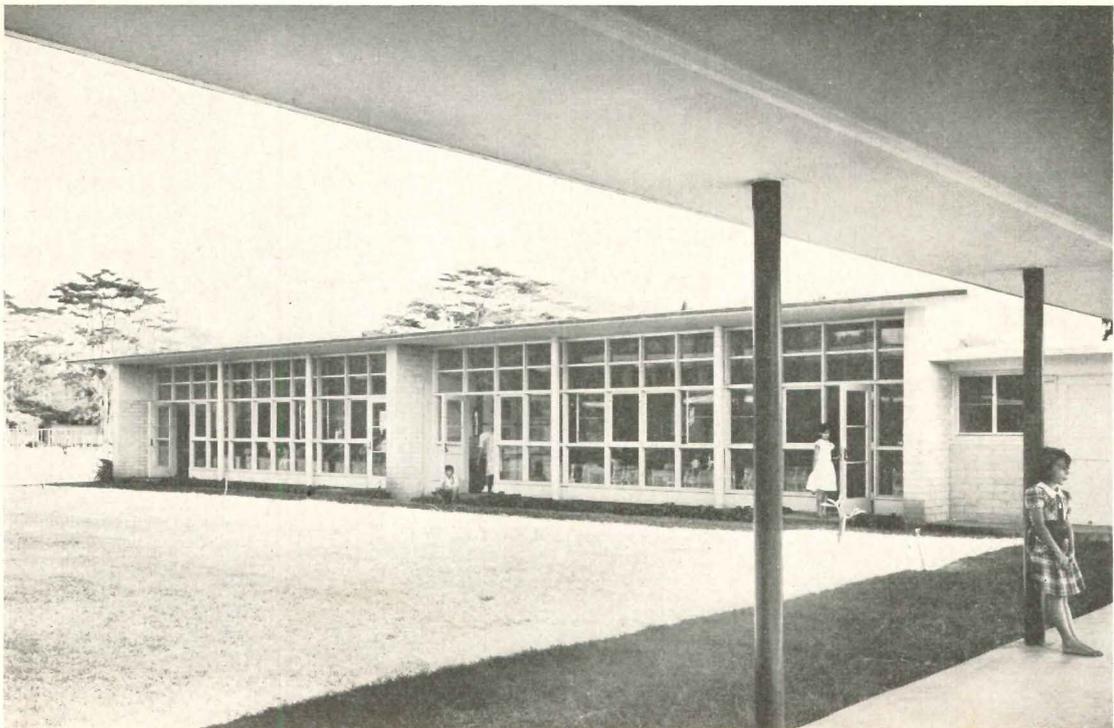


WHEN IT WAS EXHIBITED at the convention of the American Association of School Administrators at Atlantic City last February this school attracted much favorable comment. The work shown is an addition to outgrown facilities. The architects had also to provide a master plan for future expansion to replace some existing unsatisfactory temporary structures, and to include a cafeteria and auditorium and activities buildings. The existing permanent buildings were not suitable either in character or construction to the local climate and terrain, so it was decided to make a complete departure in design and present the new buildings frankly as "new growth," depending for unity on their physical relation to the old buildings. The new buildings contain four kindergartens and 16 elementary classrooms in a number of separate units connected by covered walks. They have a modified slab and beam roof structure supported on reinforced concrete block walls, and on steel pipe columns at the window walls. The semi-tropic climate, cooled by constant tradewinds, is so nearly ideal that no heating or cooling system was installed.

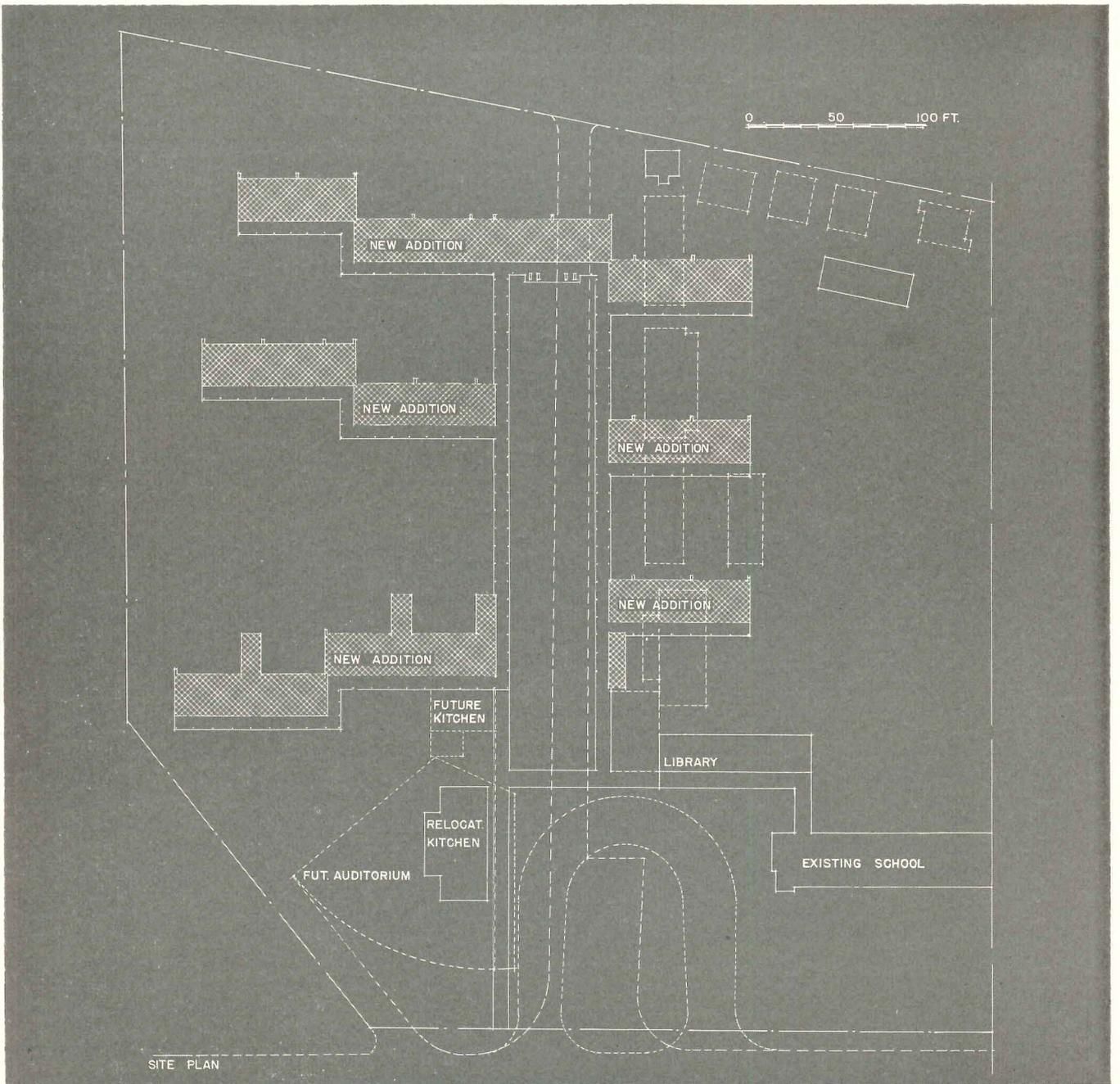
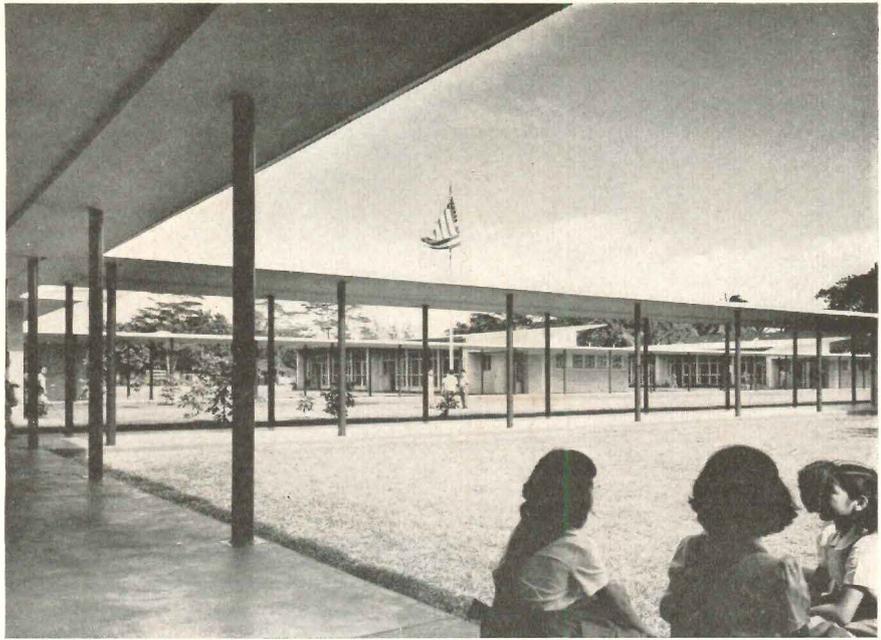


The addition was built in 1950 by Ben Hayashi, Ltd. Area: Total enclosed, 26,169 sq ft; covered walks (cost figured at 1/2), 14,916 sq ft; total area, 41,085 sq ft. Cost: Total \$309,800; per sq ft, \$9.212; per pupil, \$516.33. Number of pupils: 600

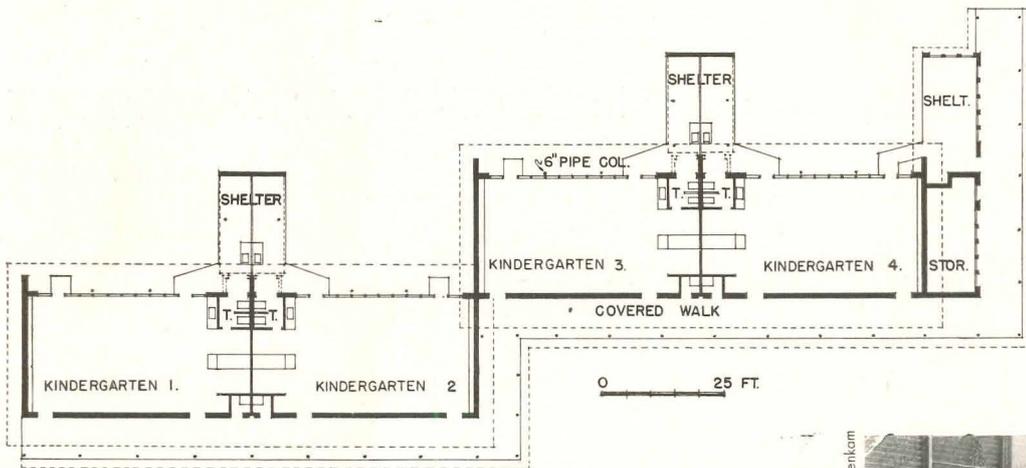
R. Wenkam



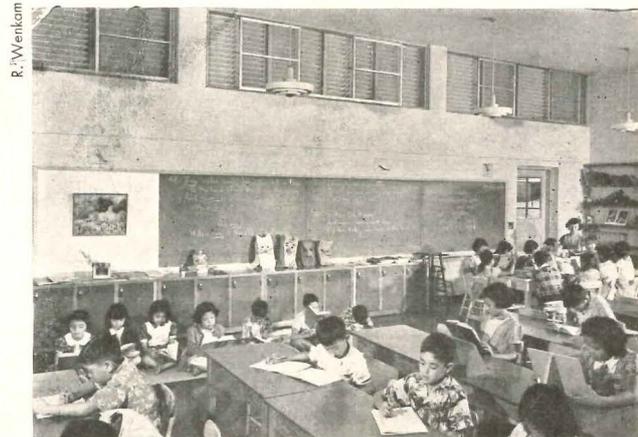
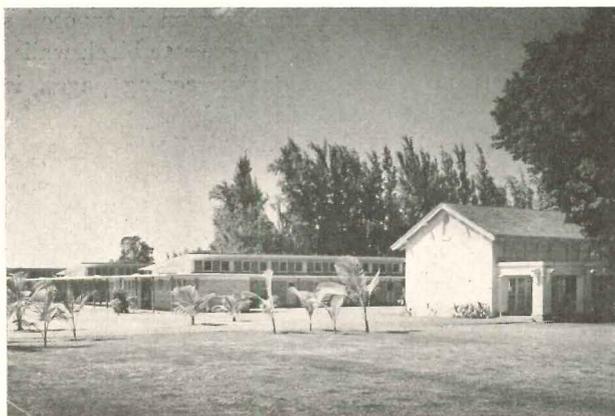
SCHOOL ADDITION: HAWAII

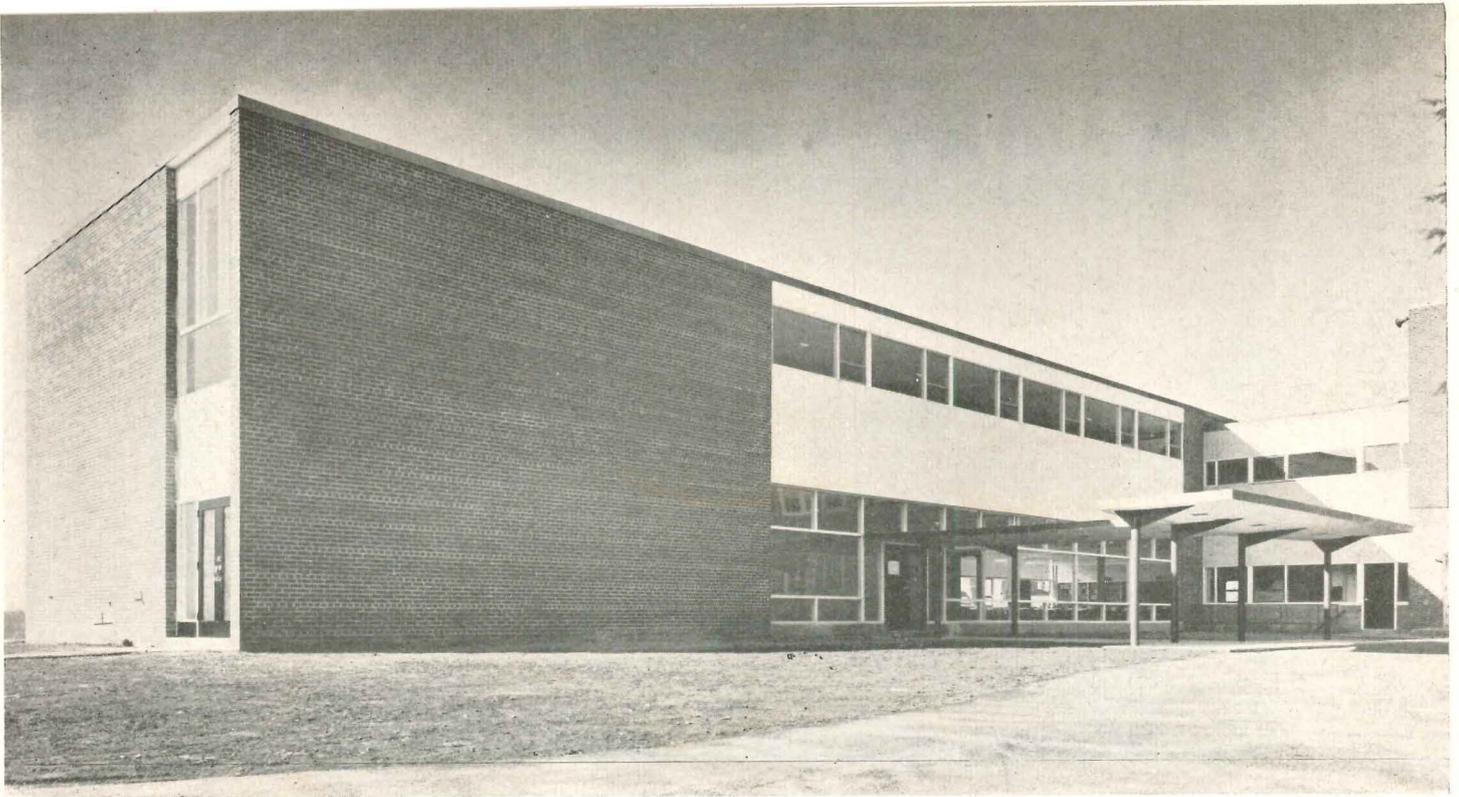


SITE PLAN



Site plan, left, shows new work (cross hatched); part of existing plant (solid line; see also photo below); future plant and buildings removed (dotted lines). Plan above, kindergarten unit; other classrooms similar. Photos at right, typical classroom; lighting and ventilation are controlled and balanced by louvers and sliding aluminum sash in clerestories





PENNSYLVANIA SCHOOL: LOW-COST ADDITION

Lima Elementary School, Delaware Co., Pa.

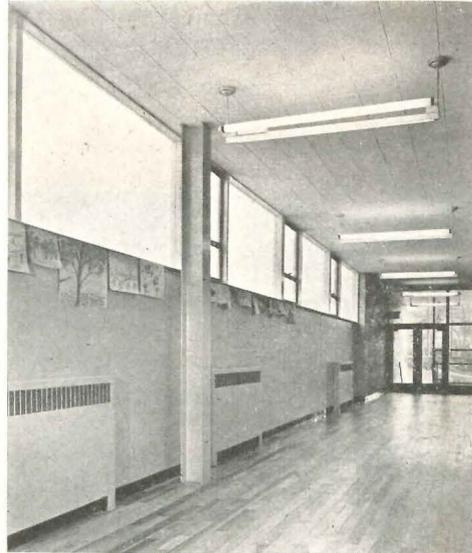
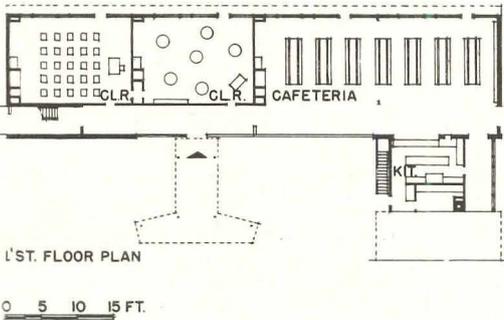
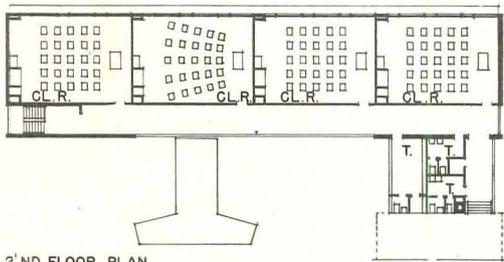
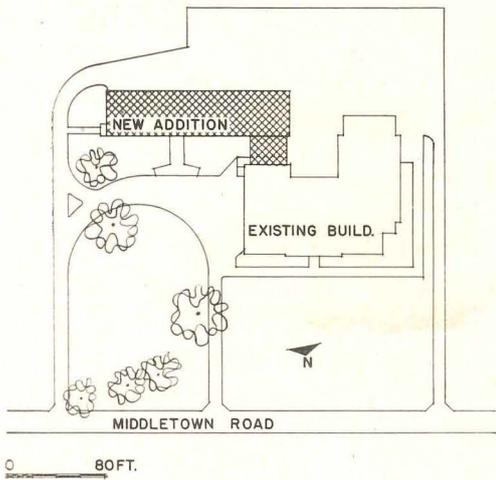
Clifford E. Garner, Architect

Engineers: Structural, A. E. Ericson;

Mechanical, L. S. Tarleton

THE LIMA ELEMENTARY SCHOOL addition had to be built at a cost within the \$175,000 bond issue. Construction started at about the time materials restrictions were most stringent. Though there were thus two strikes against it from the start, the job was completed for a total cost of \$165,580, which left enough not only to reroof and install oil burners in the existing buildings, but also to furnish oil burners for another school. Simple and economical in design, the addition relies upon its red brick exterior veneer for compatibility with the existing, rather nondescript school (1925 vintage with brick pilasters and abundant verticality); and its severity is relieved by strong color both on exterior panels and on two walls of each classroom. The other two walls of all classrooms are neutral gray. The somewhat unorthodox — and quite successful — steel fenestration (see below) adds to the freshness of the design and helped reduce cost. Floor heights were kept lower than in the old building. Construction is exposed steel framing with concrete slabs and lightweight concrete block walls and partitions. Plan, shown and discussed on succeeding pages, is an ingenious solution of an almost impossible problem.

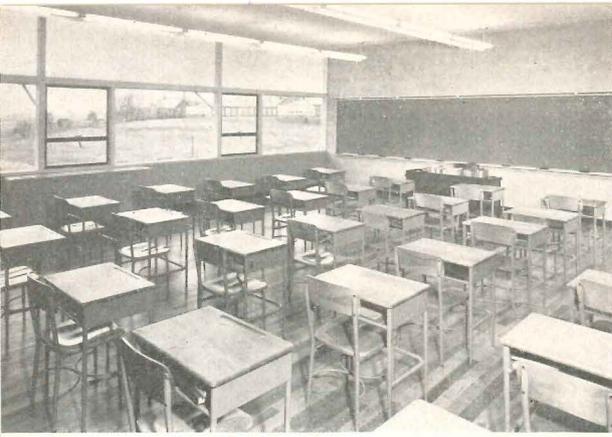
South facade (photo at left) has heat-reducing green glass panels above the metal sun visor. Strong color, used inside and out, has been most favorably received by both staff and public



Top of page, cafeteria which is also multi-purpose room. Above, single-loaded corridor. In both, note the exposed, low-brightness fluorescent lighting. Below, stair hall

Berry & Homer



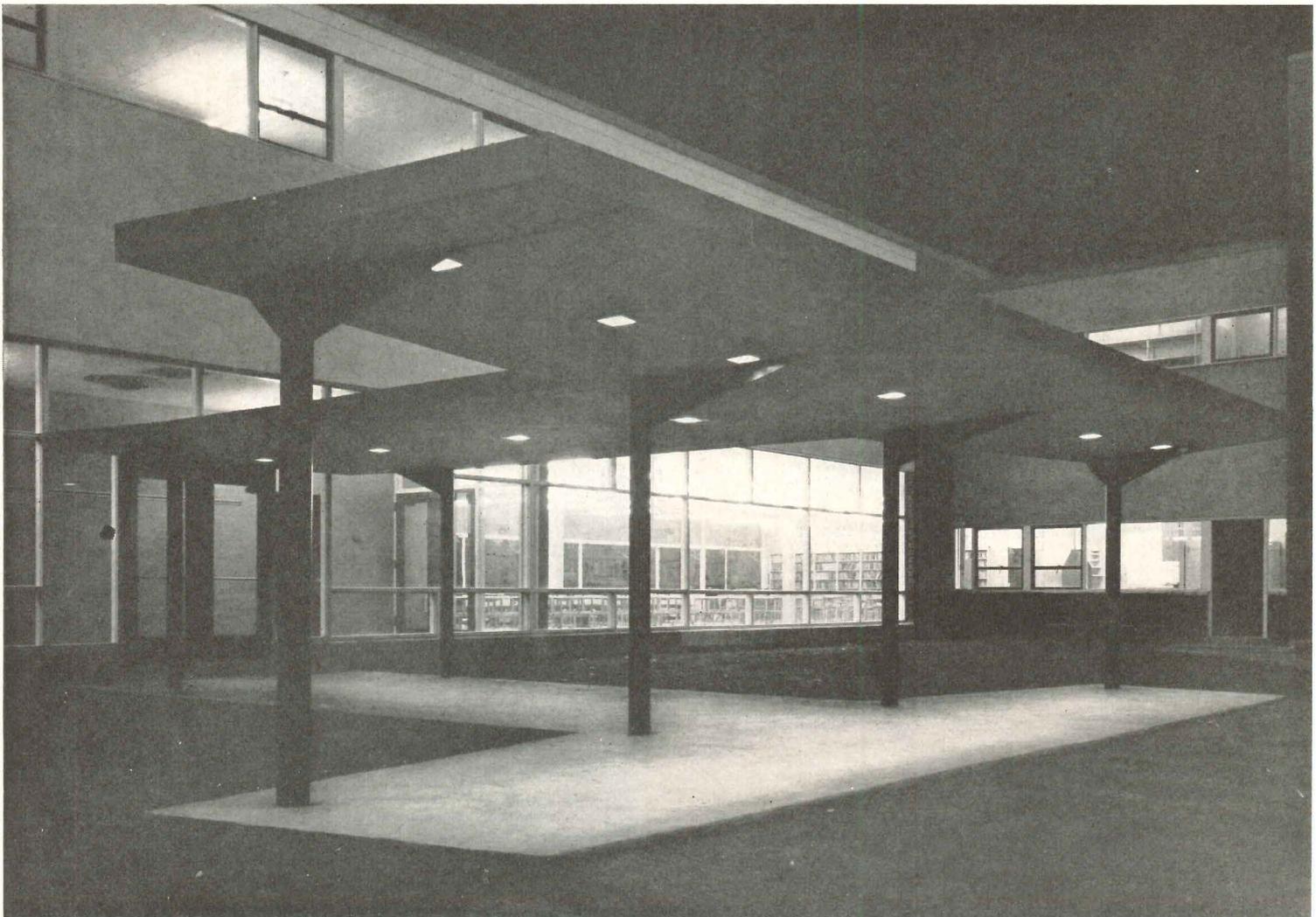


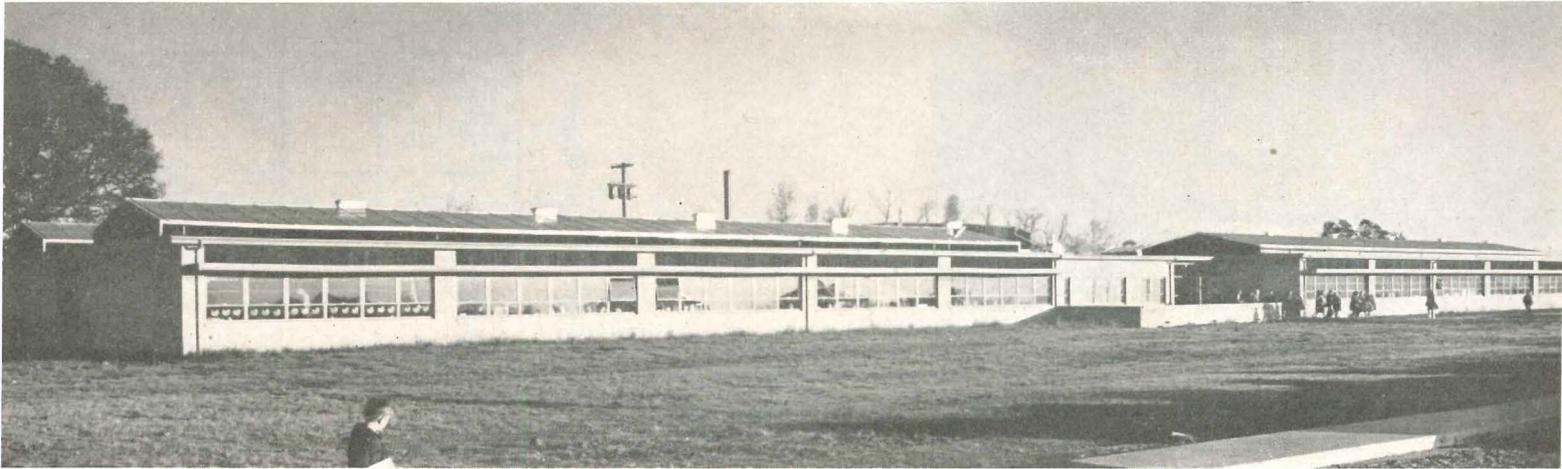
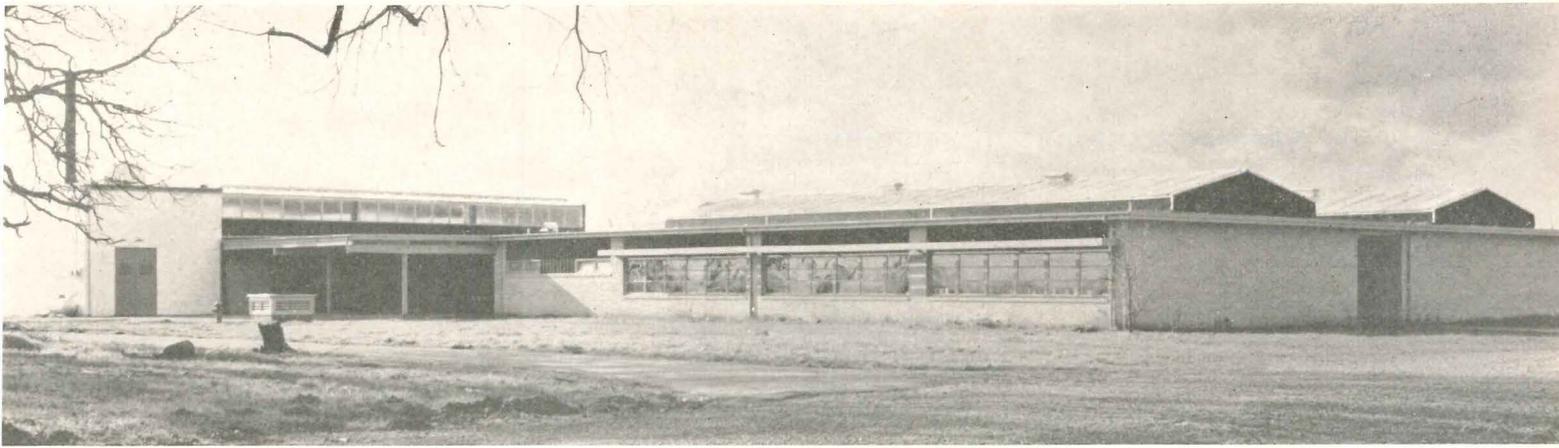
Berry & Homer

Left, typical classroom also has exposed fluorescent lighting, gay color, pleasant atmosphere. Bottom of page: cantilevered entrance canopy

PENNSYLVANIA ADDITION

The site of Lima Elementary School was inadequate anyway, so an addition to the building — handled as this one is — could hardly impair, as it could not improve, site conditions. The old building had toilets on the ground floor, none on the second. The new wing is so attached that rooms on its ground floor are near the old building's toilets, and new toilets were provided on the new second floor to serve both old and new classrooms. Economies also resulted from the location of the cafeteria-multi-purpose room, which is used for pupil circulation as well as meetings without devoting space to a separate corridor; and from elimination of parapets. Costs were all well below the averages for the locality at the time: Total cost, \$165,580; per cu ft, 92c (average, \$1.15 to \$1.30); per sq ft, \$11.91 (average, \$15 to \$19); per pupil, approximately \$700 (avg., \$1000 to \$1500); classroom, about \$21,000. Area: 13,186 sq ft; cubage, 171,648 cu ft.





Tom Burns, Jr.

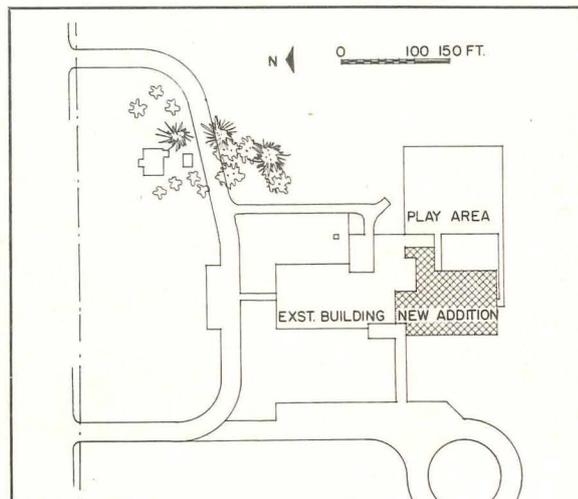
TOP-LIGHTED OREGON SCHOOL BUILT IN TWO STAGES

THE FIRST PART of Clear Lake School (labeled "existing" on site plan below), built in 1951, contains eight rooms for grades one to three and a multi-purpose room, has 16,701 sq ft, and cost \$141,770. The second portion (labeled "addition") has eight classrooms for grades three to six, in 11,990 sq ft, cost \$112,400. The architects do not regard its cost as low for their vicinity: total, \$254,100; per sq ft, \$8.85; per pupil, \$530 (480 pupils). It is a substantial, wood-framed structure with exteriors partly brick, partly cedar boards and battens. Its interiors are treated with bright, cheerful colors wiped on the plywood walls and covered with flat varnish. Contributing to the school's warmth and friendliness are the low ceilings — and, most importantly, a system of skylighting which is the most recent of a series of experiments, in several schools, with overhead daylighting. The architects believe this is the only way to use natural light fully, satisfactorily and economically.

*Clear Lake Grade School,
Lake County, Oregon*

Wilmsen & Endicott, Architects

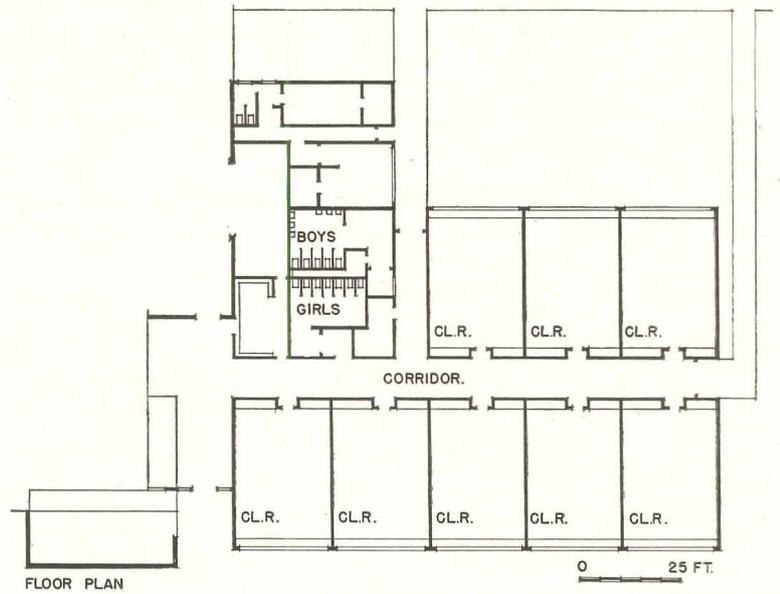
*Engineers: T. C. Jamieson, Mechanical
W. C. Matson & Assoc., Electrical*



TOP-LIGHTED OREGON SCHOOL

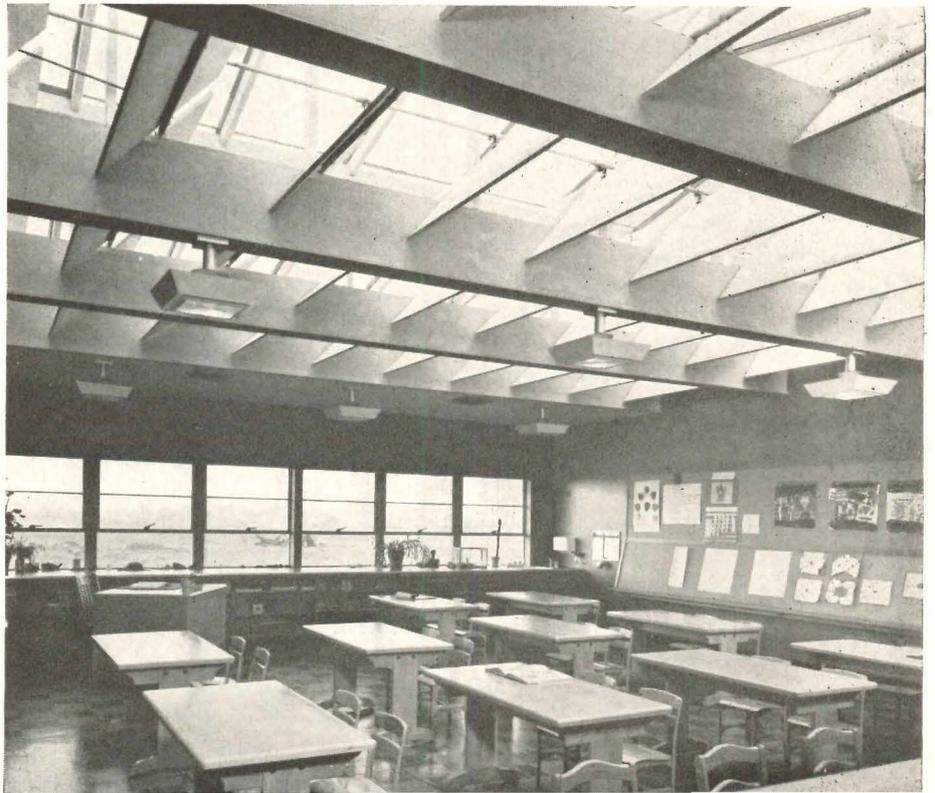


Tom Burns, Jr.

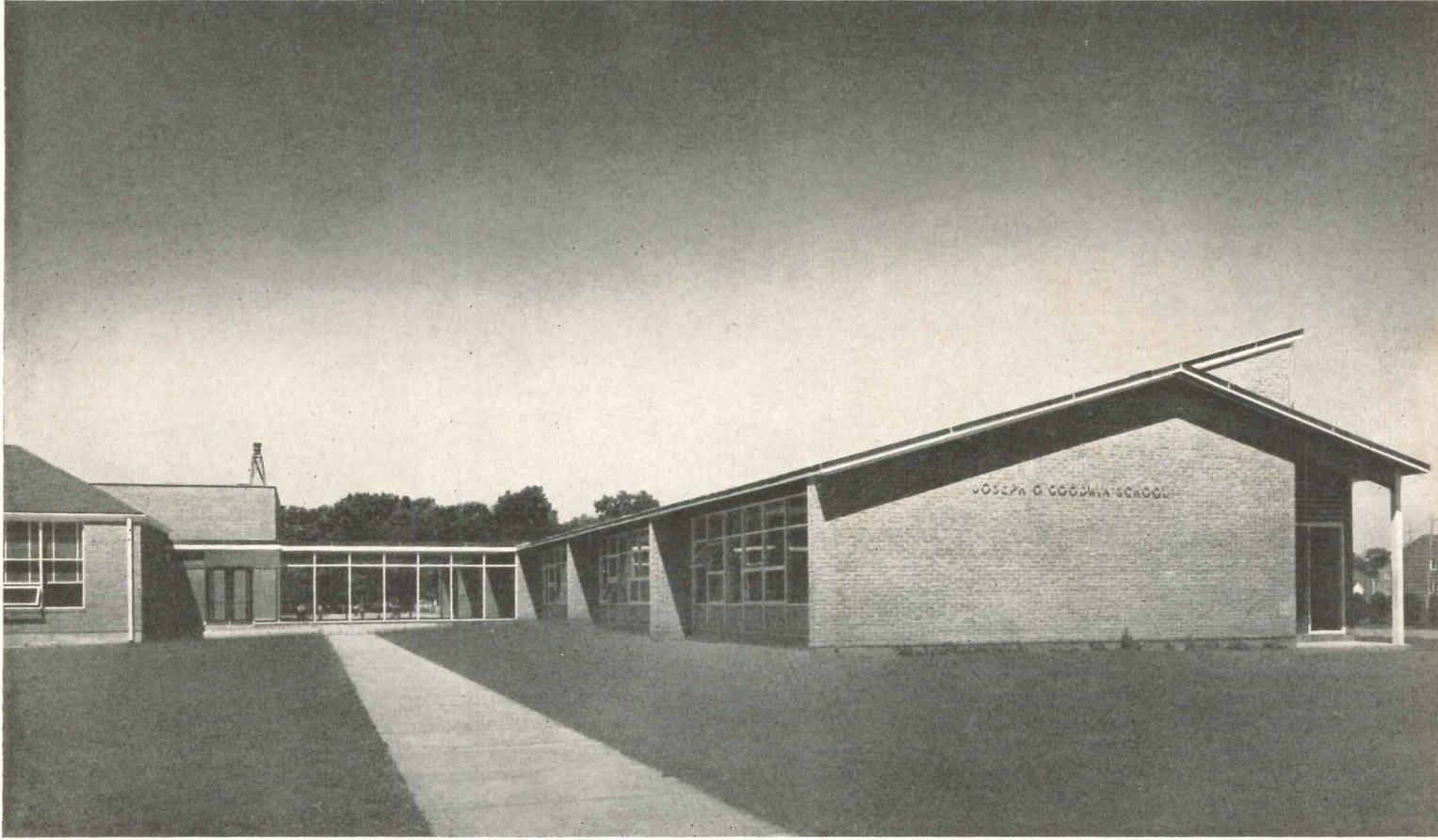


Above, plan of 1952 portion, Clear Lake Grade School. Corridors are offset (photo top left) to minimize tunnel appearance. Classrooms, 24 by 38 ft (left and below), in both portions are end-on to reduce corridor and exterior wall length; continuous skylight 24 ft wide is centered over each bank of classrooms

Skylighting is diffused by motorized baffles operated separately by each teacher. Photoelectric controls can be installed later if needed. Normal windows are for psychological effect only; on a typical rainy, cloudy Oregon school day skylights provided 200 to 270 foot-candles in seating area, 90 to 150 under solid ceilings, with louvers set at 45 deg. Possible improvements: heat-absorbing glass and exhaust fans to cut heat gain in spring and fall; however, this heat gain reduces heating cost in winter



CONNECTICUT SCHOOL REHABILITATED AND ENLARGED



Joseph W. Molitor

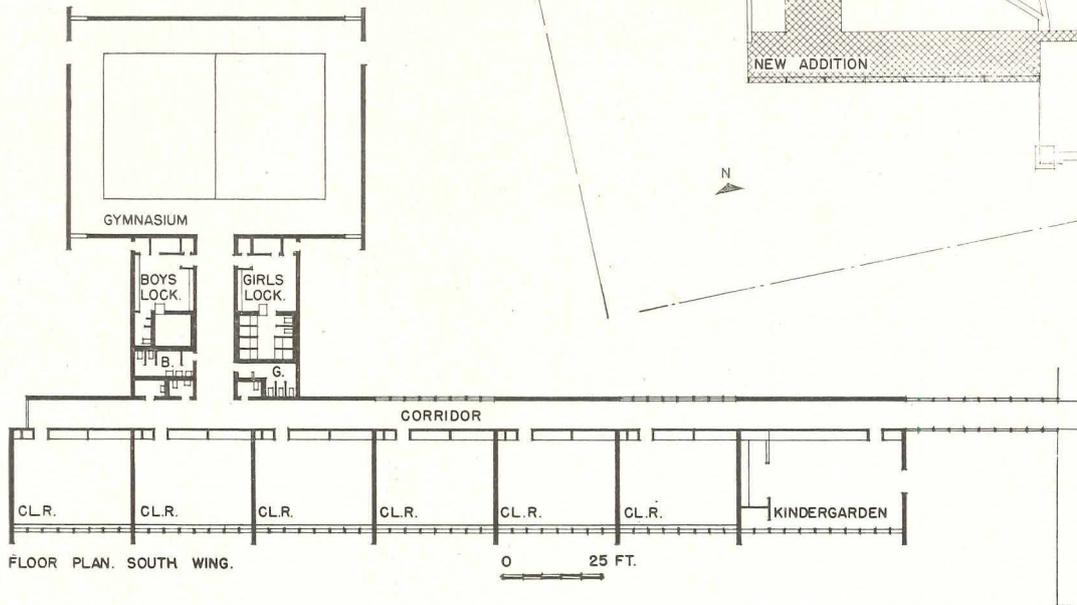
Joseph O. Goodwin Elementary School, E. Hartford, Conn.

Charles H. Brewer, Jr., of Whaples & Brewer, Architect

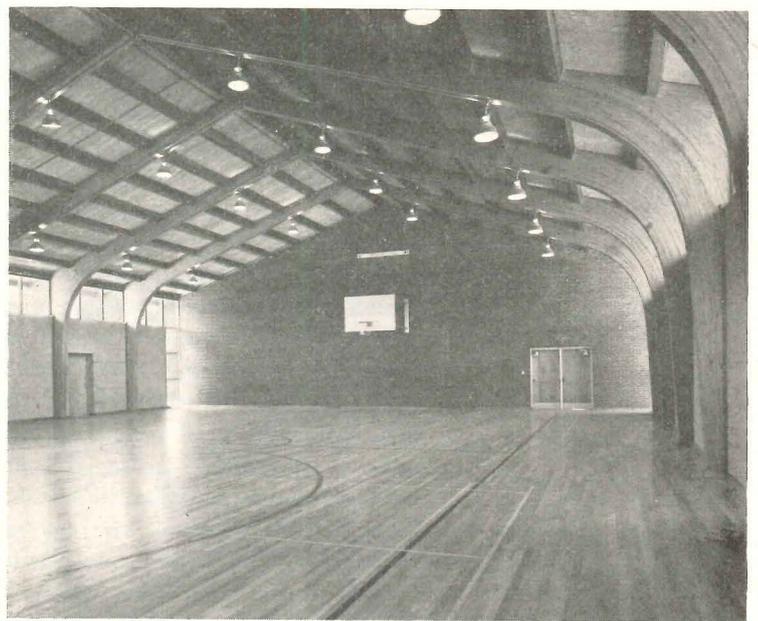
Engineers: Henry Pfisterer, Structural; H. Van Zelm & Assoc., Mechanical

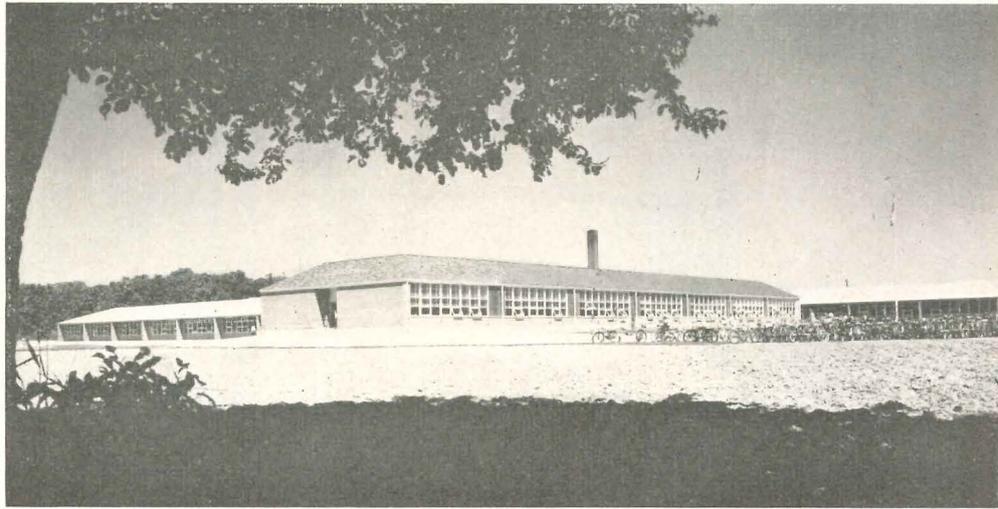
EAST HARTFORD," said the *Hartford Times* of Nov. 29, 1952, "is racing the stork and developers of housing tracts to provide school facilities." This school plant had 630 pupils prior to 1952, 877 in the '52-'53 school year and this fall expects well over 1000. The municipality's schoolhousing problems were so acute that an existing school on this site, built by the Federal Government early in World War II as a temporary structure, had to be considered for remodeling. The school was in a state of disrepair, but its roof, foundation and some framing were usable and its sound plan suggested that additions were feasible. Cost of moving some items, such as administrative office and vault, boiler room, kitchen and cafeteria, meant that these became the core of the new plan. New wings were connected to the old by glassed-in links which in one case formed a new lobby. The old building's interior, somewhat rearranged, received new wall and ceiling finishes and built-in equipment. The unified plant has 14 more classrooms than before (total 27), gymnasium, and combination auditorium-cafeteria. New portions are radiant heated and clerestoried, with single-loaded corridors. In the old portion, double-loaded corridors have plastic skylights. Area of new work is 26,560 sq ft; of remodeled, 19,200; total 45,760. Cost: new work, \$335,919; old, \$83,460; total, \$419,379. Adding the initial cost of the existing building the total would be about \$600,000 — just half that of each of two schools of the same size built recently for the same Board of Education.

Existing building dictated organization of enlarged plan (right; lower grade wing below). Photos, bottom left, connecting corridor; right, gym interior. Note use of mill-built wood windows, laminated arches. Unique radiant heating system has supplies running under windows, in form of finned-tube radiation, to heat ventilating air. Piping is simplified, system economical and comfortable



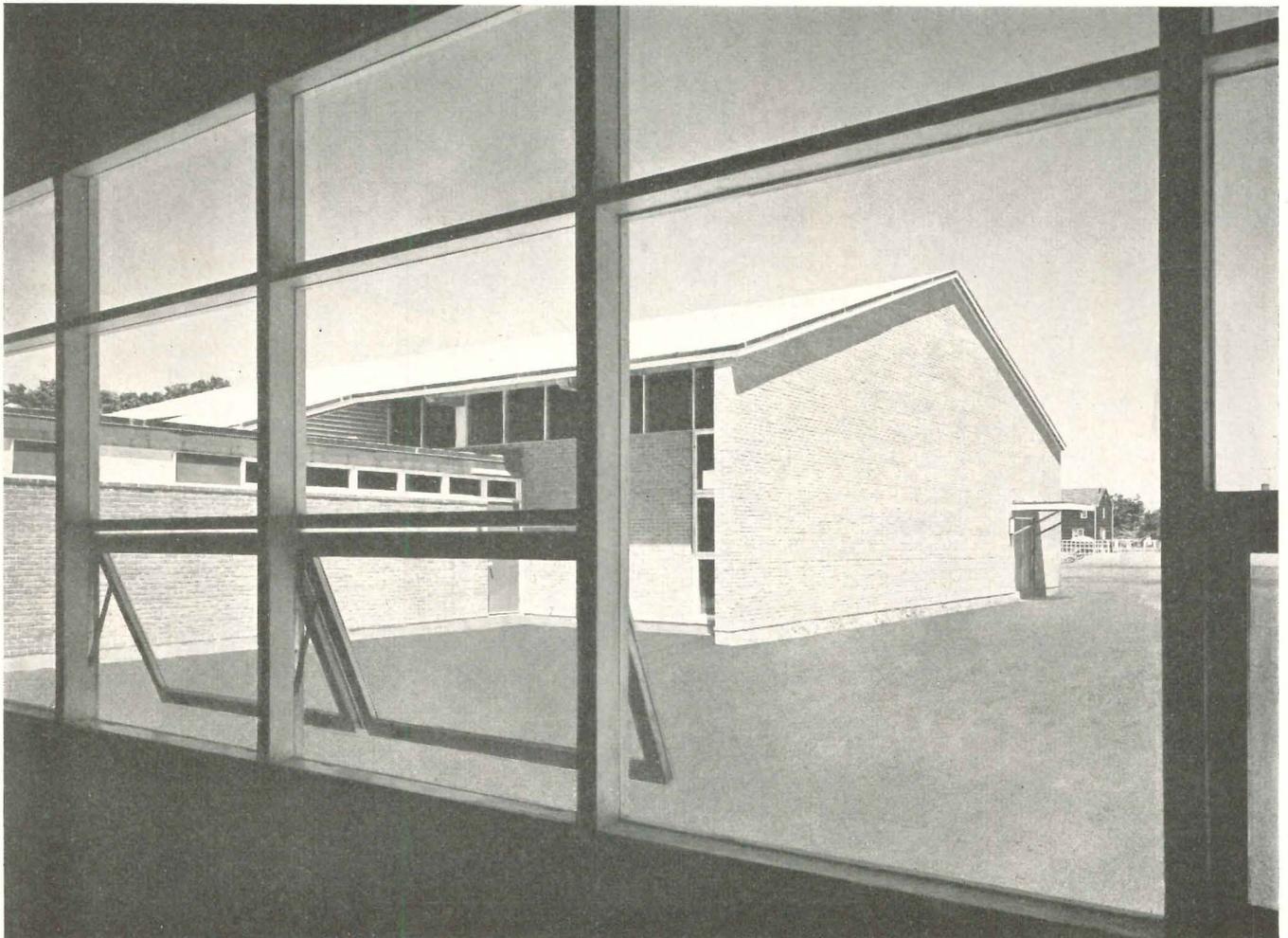
CONNECTICUT SCHOOL MODERNIZATION

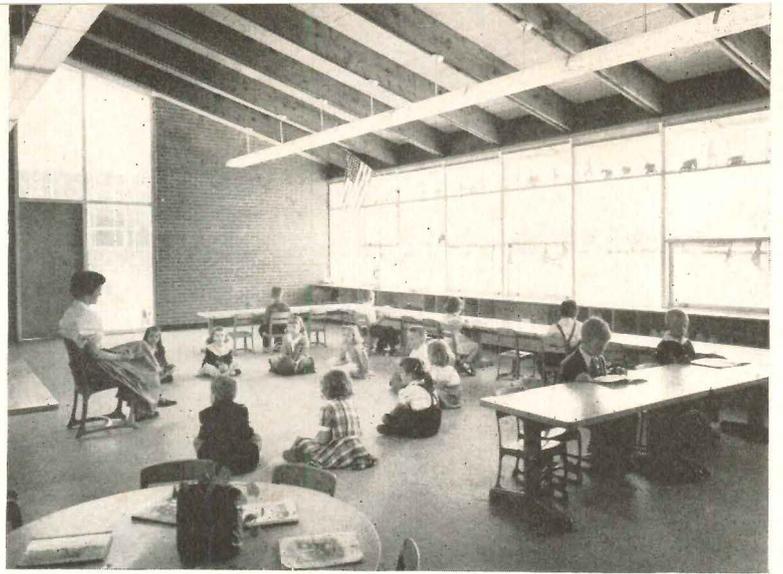
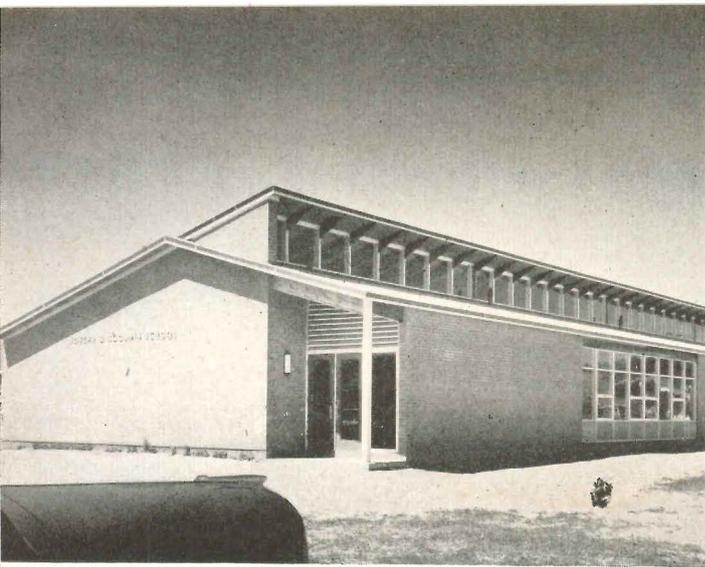




Above, overall view showing relation of existing building to new work. Below, looking from corridor of new south wing toward gymnasium. Old building's walls were brick-veneered, corridors fitted with large glass areas, to harmonize with new

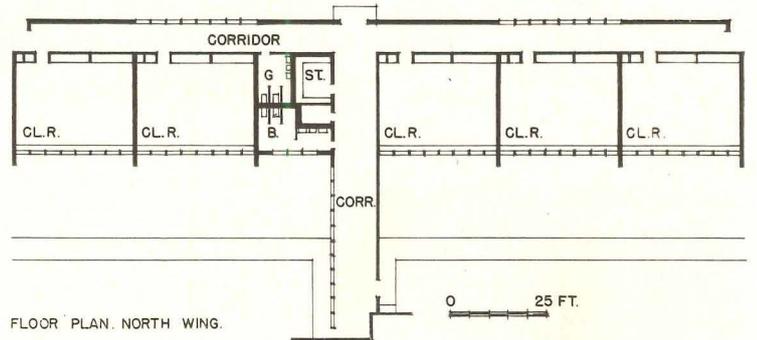
Joseph W. Molitor



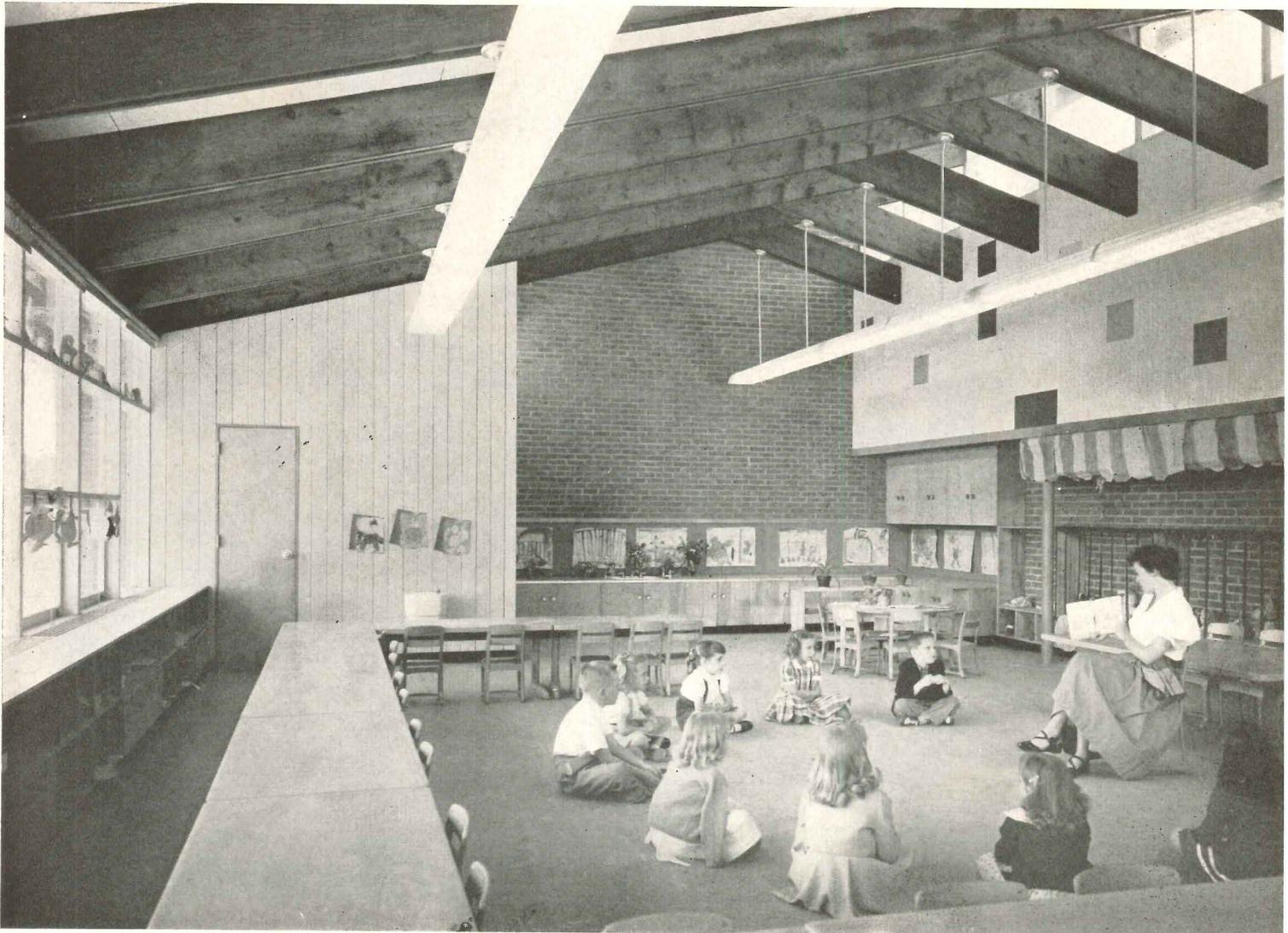


CONNECTICUT SCHOOL MODERNIZATION

Plan at right and photo top left, new North Wing; top right and below, kindergarten in new South Wing. Exposed roof trusses were built of ordinary yard lumber; strong, pleasing color is employed



Joseph W. Molitor

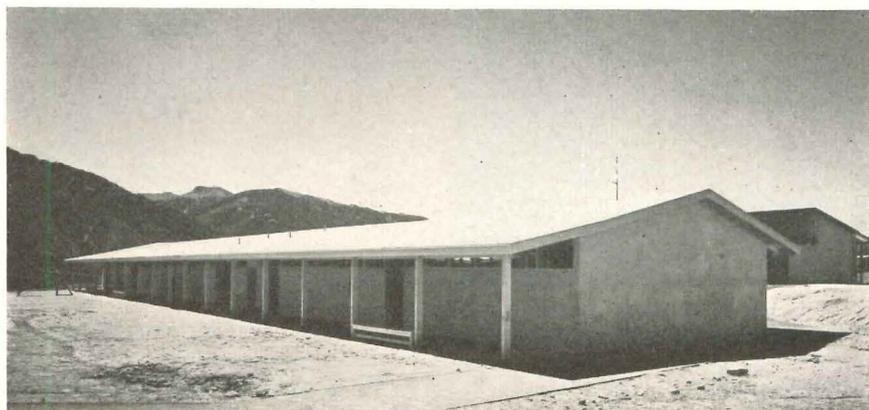
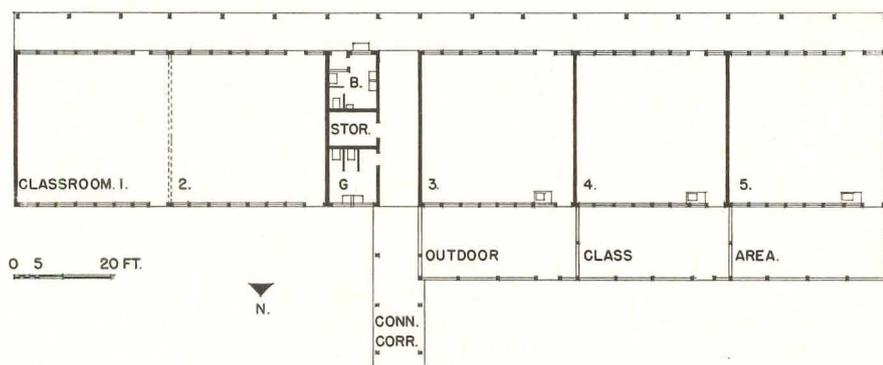
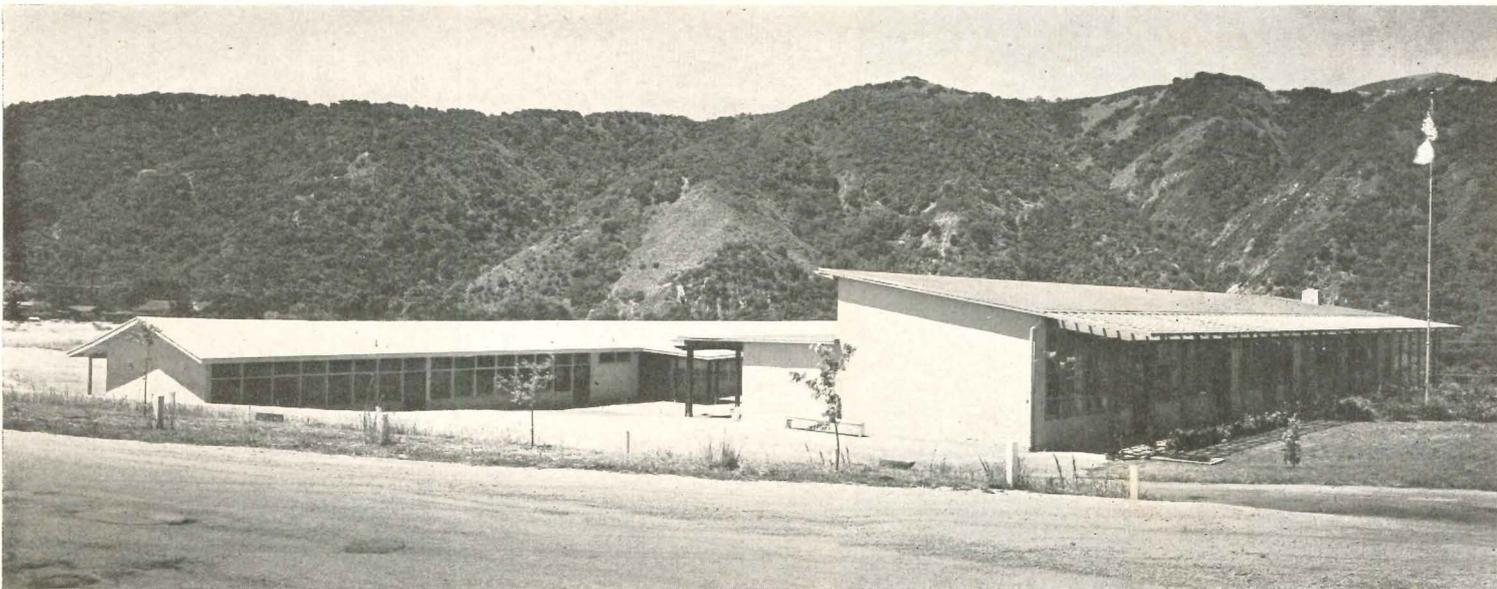


CALIFORNIA SCHOOL ADDITION: \$6.84 PER SQ FT

Tularcitos Elementary School, Upper Carmel Valley, California

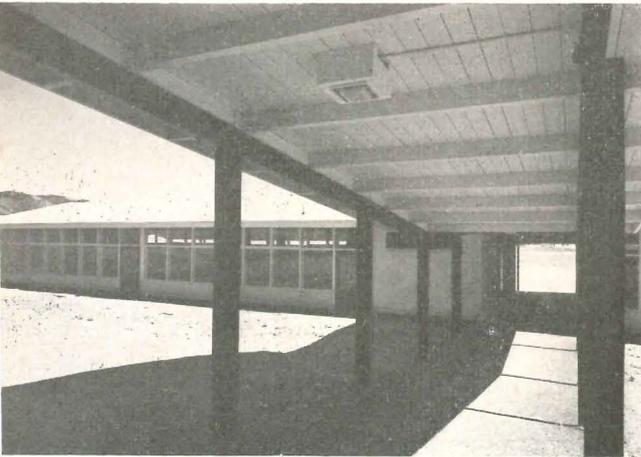
Thomas S. Elston, Architect; Engineers: E. A. Verner, Structural; Millar Clarke, Mechanical

For \$44,860 Tularcitos School got five new classrooms and the connecting corridors. Prefab classrooms would probably have cost as much; but the custom-designed job provided more suitable facilities well within the tight budget. The old building's heating plant was adequate; insulated mains connect old and new. While only part of the total cabinet work needed was installed, a complete installation would have raised the total only \$2000. The low cost was due in part to five years of study by the architect and engineer on methods of reducing expenses.

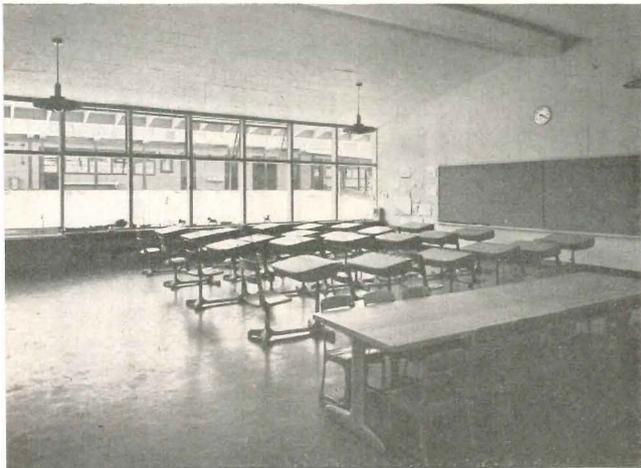


CALIFORNIA SCHOOL ADDITION

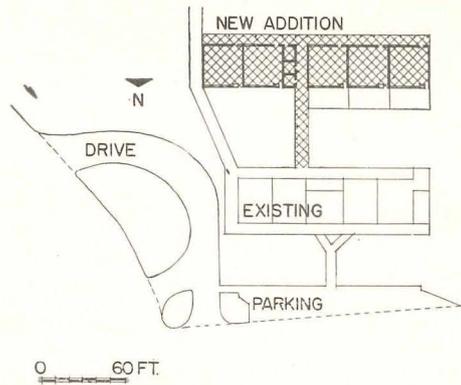
Morley Baer



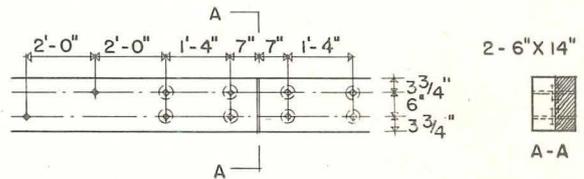
Above, connecting corridor toward new building; below, typical classroom. Only common lumber sizes were used in structure; window mullions are structural



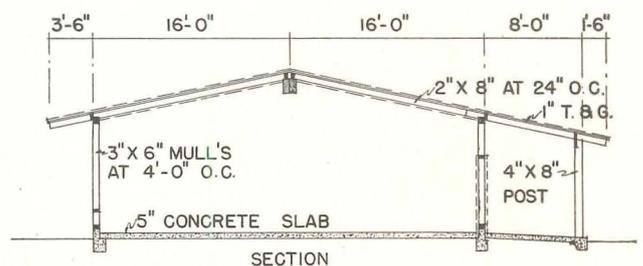
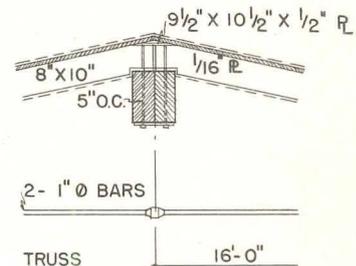
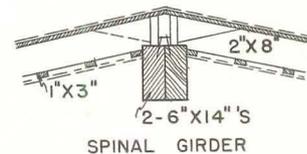
Below, two new classrooms, now joined as multi-purpose room, can be partitioned off. Interior walls, wallboard; ceilings acoustic tile; exterior walls stucco



Simple structure, below, uses standard lumber, mostly 2-in., some 4-in. thick, very little heavier material. Almost no steel was required. Economical room section (bottom) was accepted by the Board even though it sacrificed some daylighting. Though whole job was small, work was broken down so separate bids could be taken and work performed on one or more parts while remainder was being planned or checked; construction took 4 months



SPLICE FOR SPINAL GIRDER



MARYLAND SCHOOL: MINIMUM, EXPANDABLE, FLEXIBLE

Hillandale Elementary School, Montgomery County, Md.

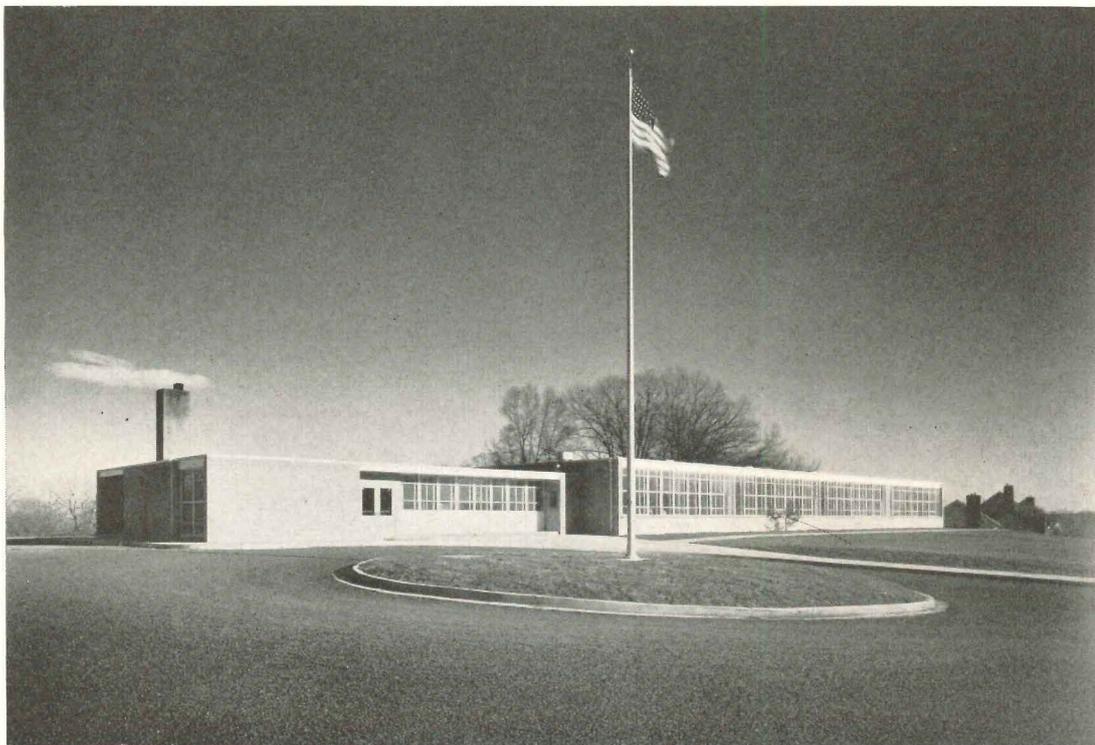
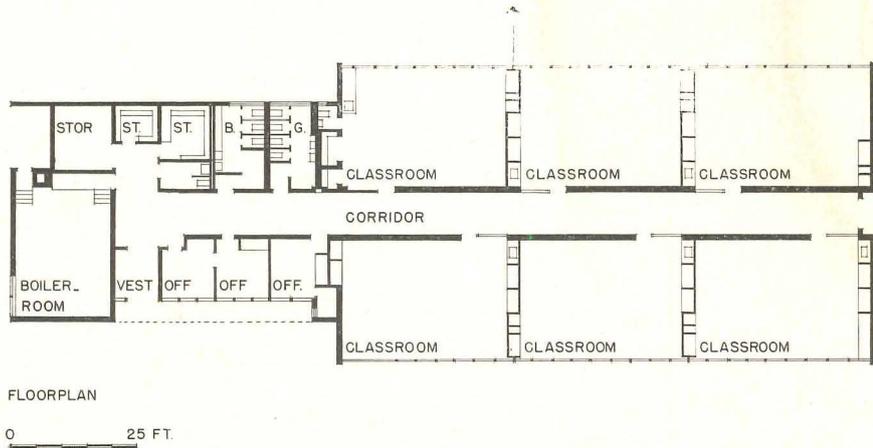
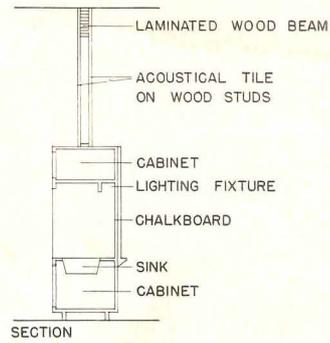
McLeod & Ferrara, Architects; C. S. Neer, Associate in Charge

DESIGN of the Hillandale School (J. Gibson Wilson, Structural Engineer) resulted partly from the difficulty of obtaining steel at the time it was built. It is a minimum structure to which a wing can be added. It has cinder block and brick bearing walls and a 2-in. T & G wood roof supported on wood purlins and laminated wood beams. Virtually the only steel is the row of lally columns at the window wall, whose continuity expresses on the exterior the fact that partitions between classrooms are non-bearing and easy to move.

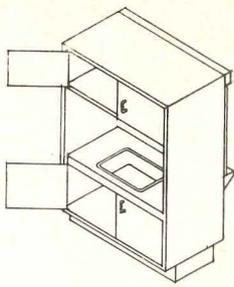
Robert C. Laulman



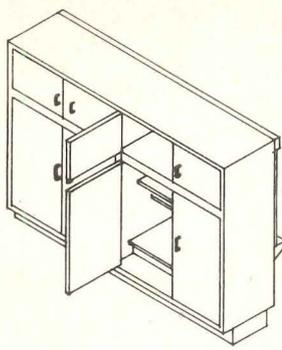
The double-loaded corridor (plan below) has bearing walls of cinder block. Together with lally columns at exterior walls, these support the roof structure independently of classroom partitions. This permits use of partitions composed of plywood storage units (section, below, right, and isometrics on facing page) which were made up as ordinary millwork. This arrangement of class storage facilities expedited and made more convenient the building construction procedures, since a simple shell could be built and the prefabricated "partitions" could be moved in at will. In addition, the compact location of these facilities resulted in more usable classroom space for the cubage than other arrangements the architects had tried; and their flexibility provides an economical answer to possible future variations in space requirements. All these economies were essential in order to stay within the strict budget of \$168,000, much of which had to be spent for leveling a rolling site for play fields and public approaches



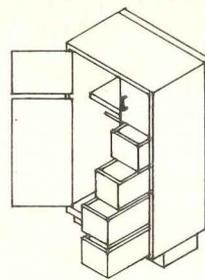
Robert C. Laulman



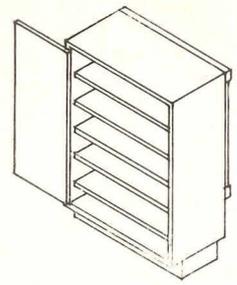
SINK



WARDROBE



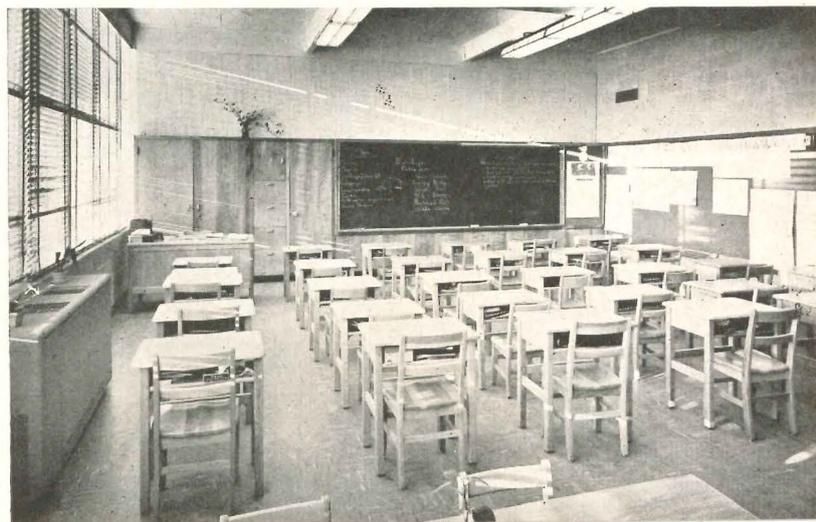
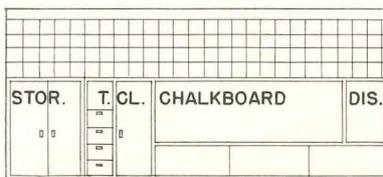
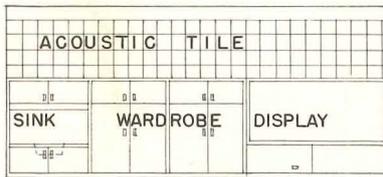
TEACHERS CLOSET



STORAGE



Photos of typical classroom, above and below, and drawings, left, of assembled storage partition, show backs of units supporting chalk boards and tack space for adjoining rooms. Corridor wall has large wire-glazed sash which help light — and relieve monotony of — corridor

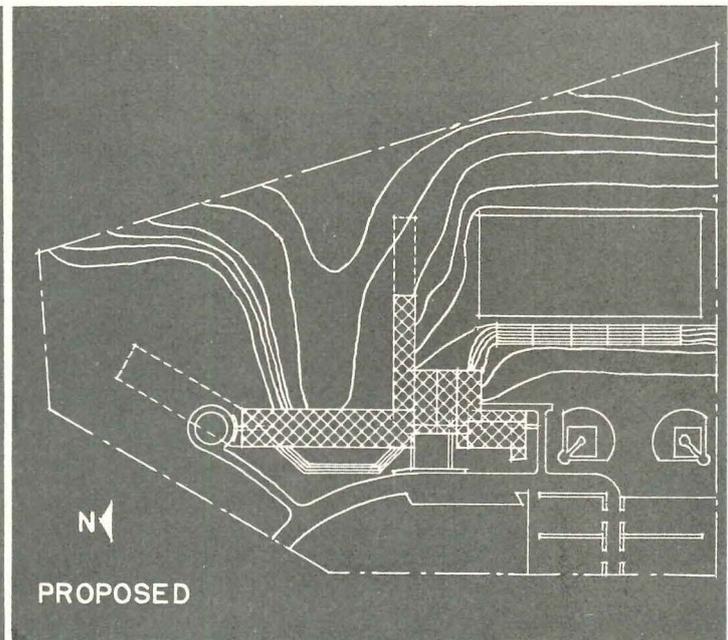
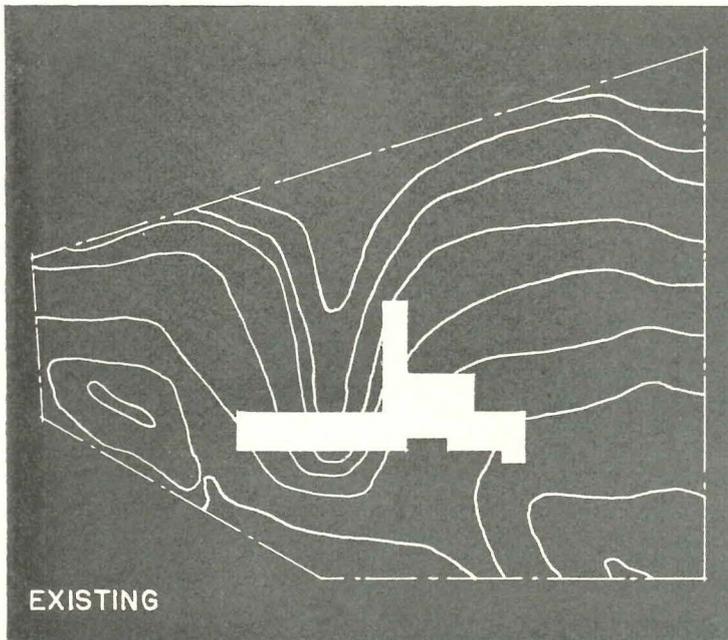


OHIO SCHOOL DESIGN EXPLOITS DIFFICULT SITE

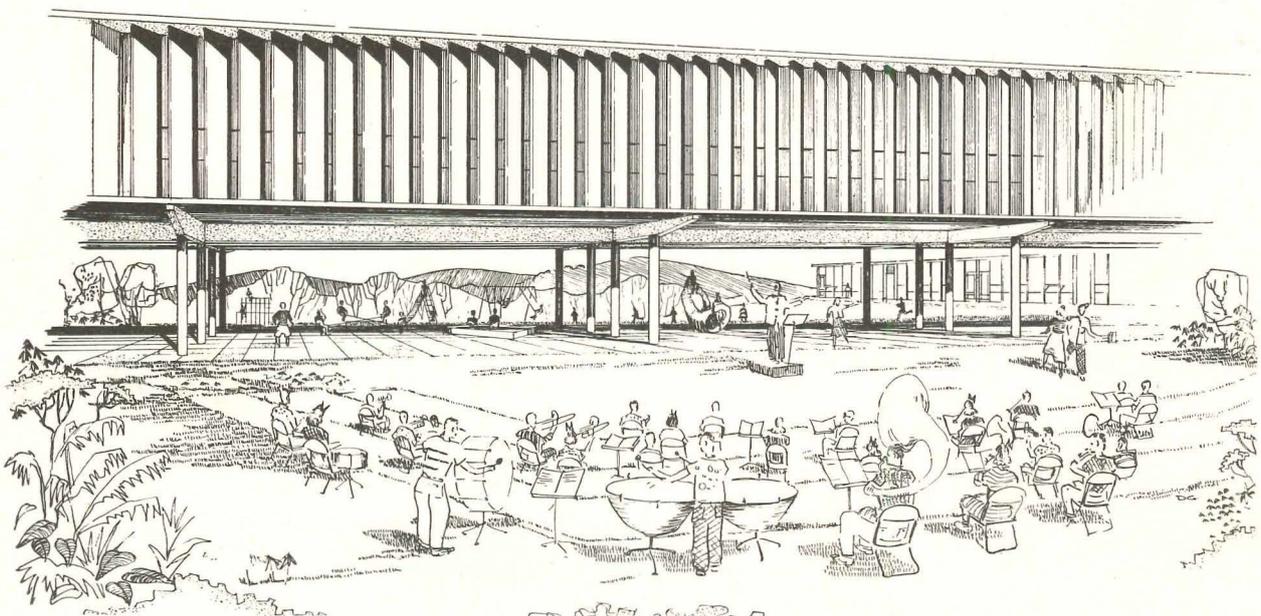
South Elementary-Junior High School, Newark, Ohio

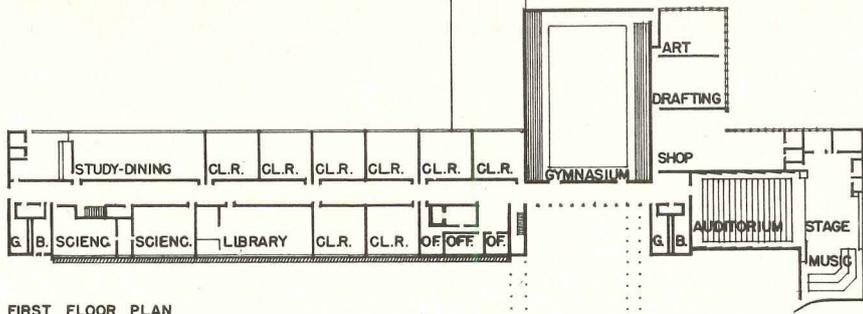
Joseph Baker & Associates, Architects

LATE in 1951, Newark, Ohio, voted a bond issue including \$650,000 for this school. Late in 1952, the architects were authorized to proceed and designs were approved. In February, 1953, this scheme won a citation from the *School Executive* for its solution of the problem posed by the site, which had cost the city only \$16,000. A short time later the Newark Board of Education rescinded its approval, in fact, decided not to build any school in this location. Area residents protested; now the Board has authorized a \$450,000 school (including fees) — a budget so small that a brand new scheme is in work.



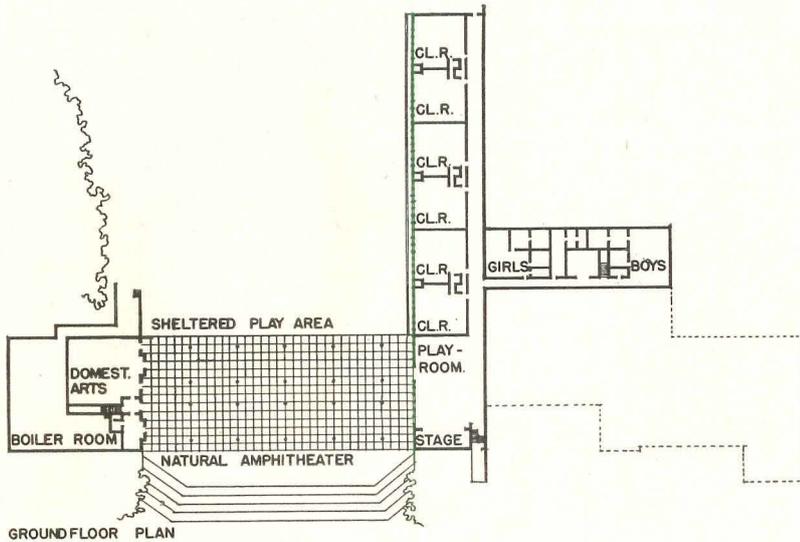
Site plans above and sketch below show how, by merely leveling tops of two knolls and placing one wing across the 30-ft-deep gully like a bridge, sheltered play space and a natural amphitheater could be provided





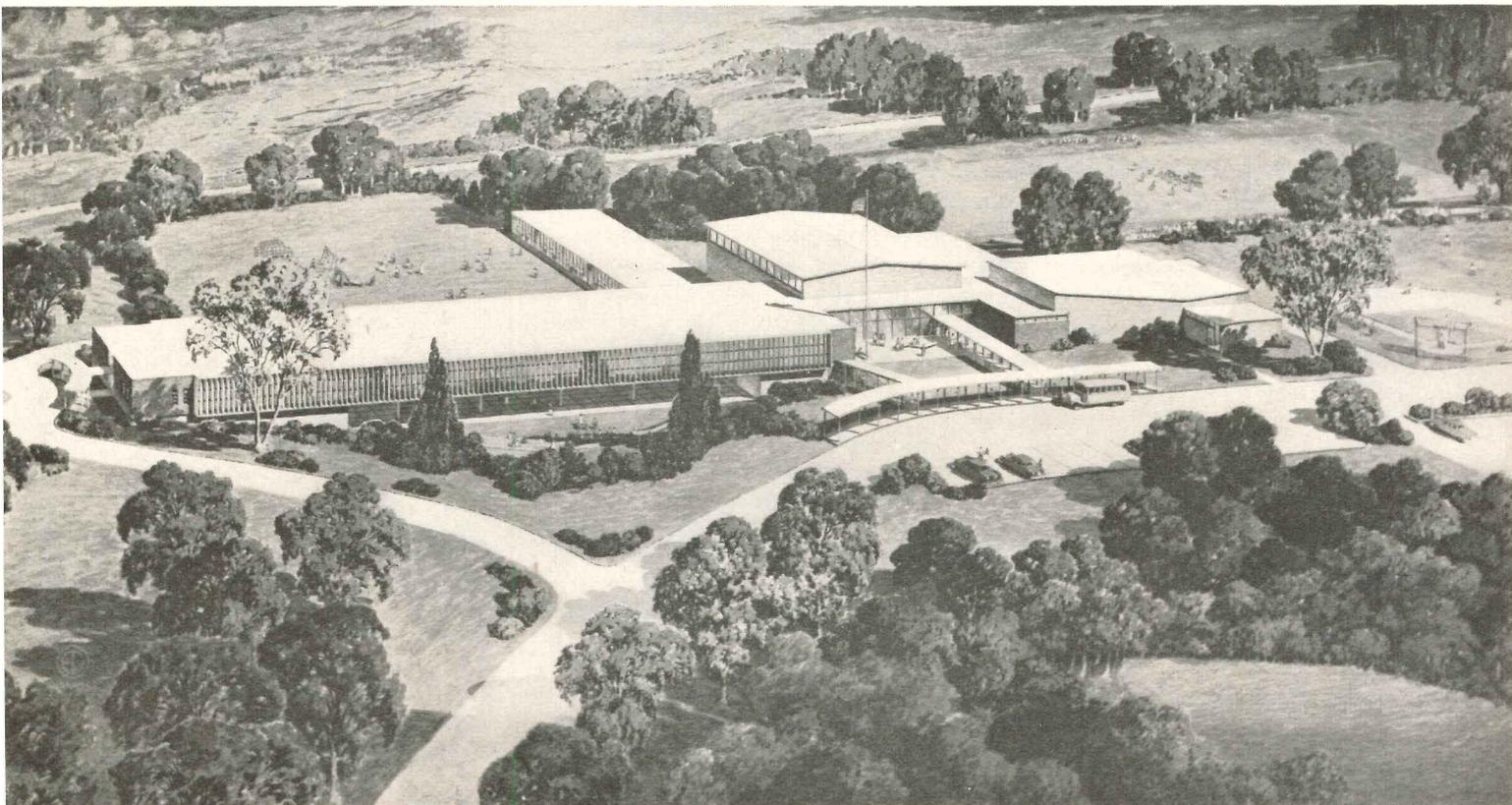
FIRST FLOOR PLAN

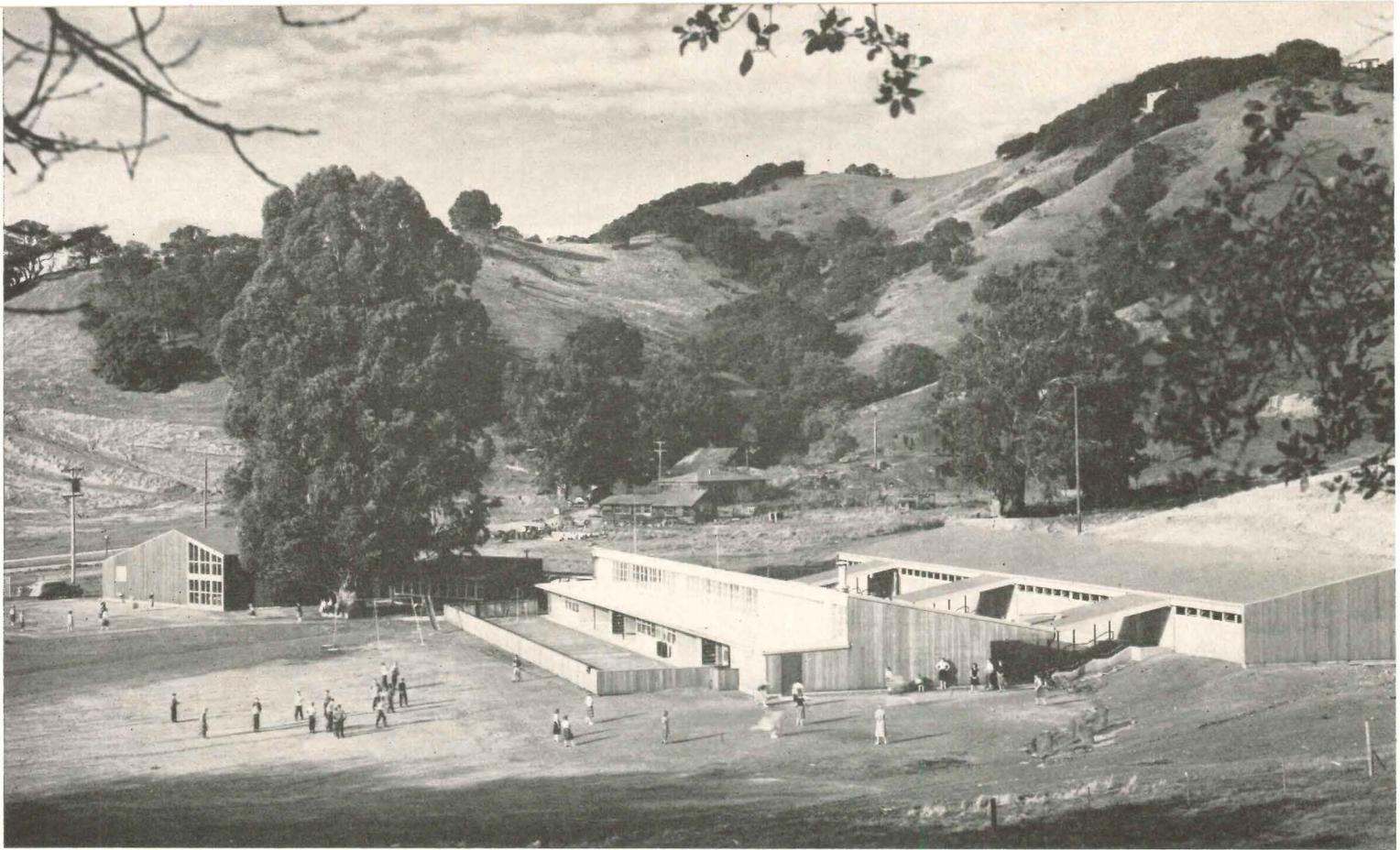
Plans show not only an economical solution to the site problem but also a satisfactory arrangement combining primary, elementary and junior high grades in one building. Upper level wing, placed across gulley, contains junior high. Areas likely to be used by the public are also at this level



GROUND FLOOR PLAN

Wing projecting west at lower level, for primary and elementary grades, divides play area for small children from older children's athletic fields. East face of upper wing, shown on facing page and below, has brise soleils to cut off direct sunlight, admit north light to classrooms





CALIFORNIA SCHOOL GROWS WITH ITS COMMUNITY

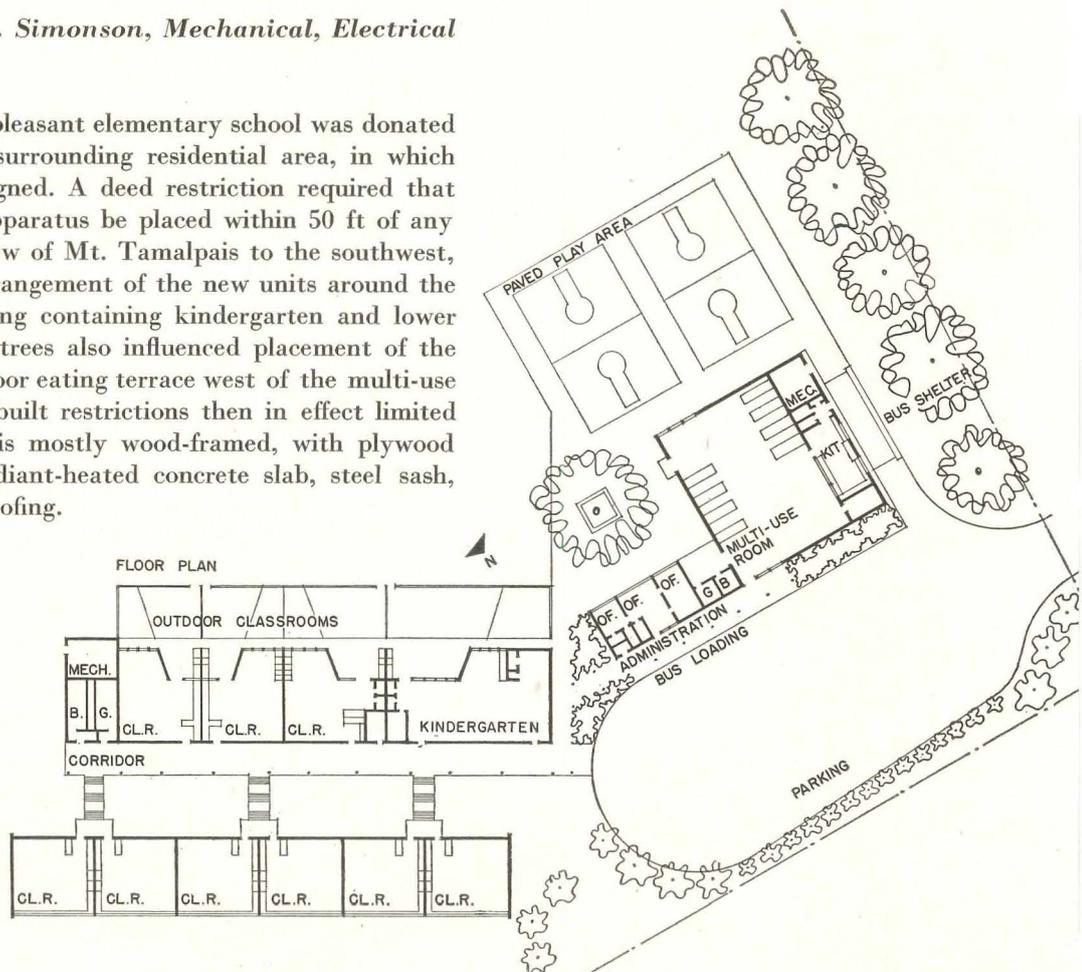
Greenbrae Elementary School, Marin County, Calif.

William Corlett, Architect; Peter H. Skaer, Associate

Engineers: Walter Steilberg, Consulting;

G. M. Simonson, Mechanical, Electrical

THE SITE of this extremely pleasant elementary school was donated by the developer of the surrounding residential area, in which the houses are architect-designed. A deed restriction required that no building or playground apparatus be placed within 50 ft of any property line. This, a fine view of Mt. Tamalpais to the southwest, and the contours dictated arrangement of the new units around the existing central classroom wing containing kindergarten and lower grades. Two handsome gum trees also influenced placement of the buildings; one shades an outdoor eating terrace west of the multi-use room. When additions were built restrictions then in effect limited steel to 22 tons; new work is mostly wood-framed, with plywood finishes, acoustic ceilings, radiant-heated concrete slab, steel sash, redwood exteriors, built-up roofing.

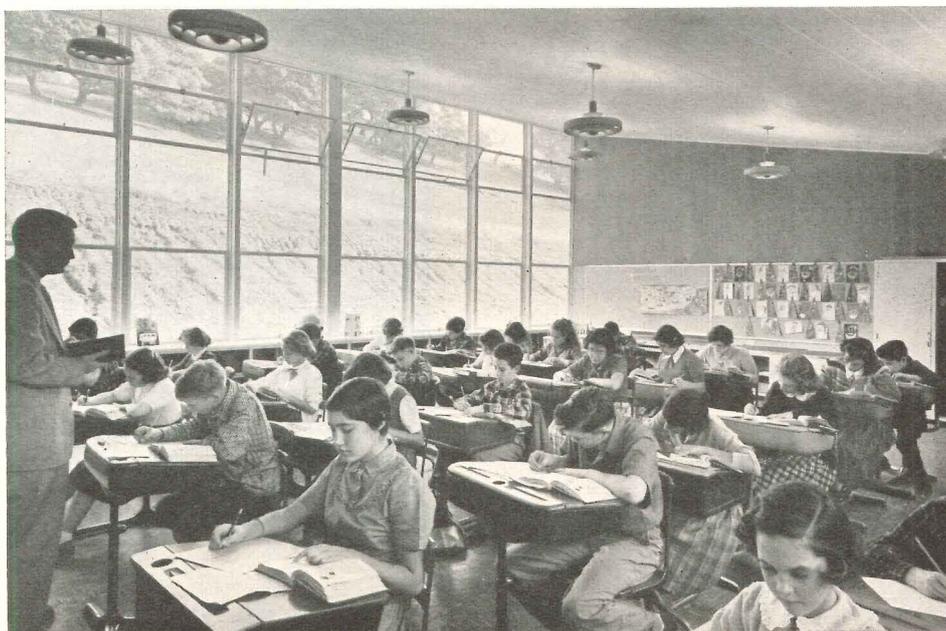




Above, kindergarten in existing wing; this unit had roof framed with open-web joists. Center photo shows, left to right, new classroom wing, existing wing built in 1950, administration unit with bus loading in right foreground. Bottom photo, classroom in new wing: framing is mostly wood



Ernest Braun

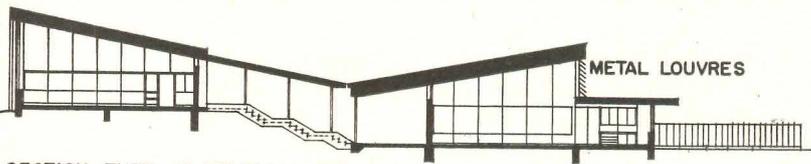


CALIFORNIA ELEMENTARY SCHOOL



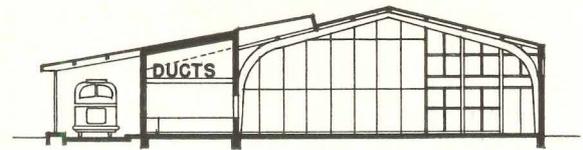
Ernest Braun

Section below: new wing at left, existing at right. Low-ceilinged portion of existing wing provides classroom alcoves and covered play spaces. Ramped corridors have T & G wood roof on lally columns



SECTION THRU CLASSROOM BUILDING

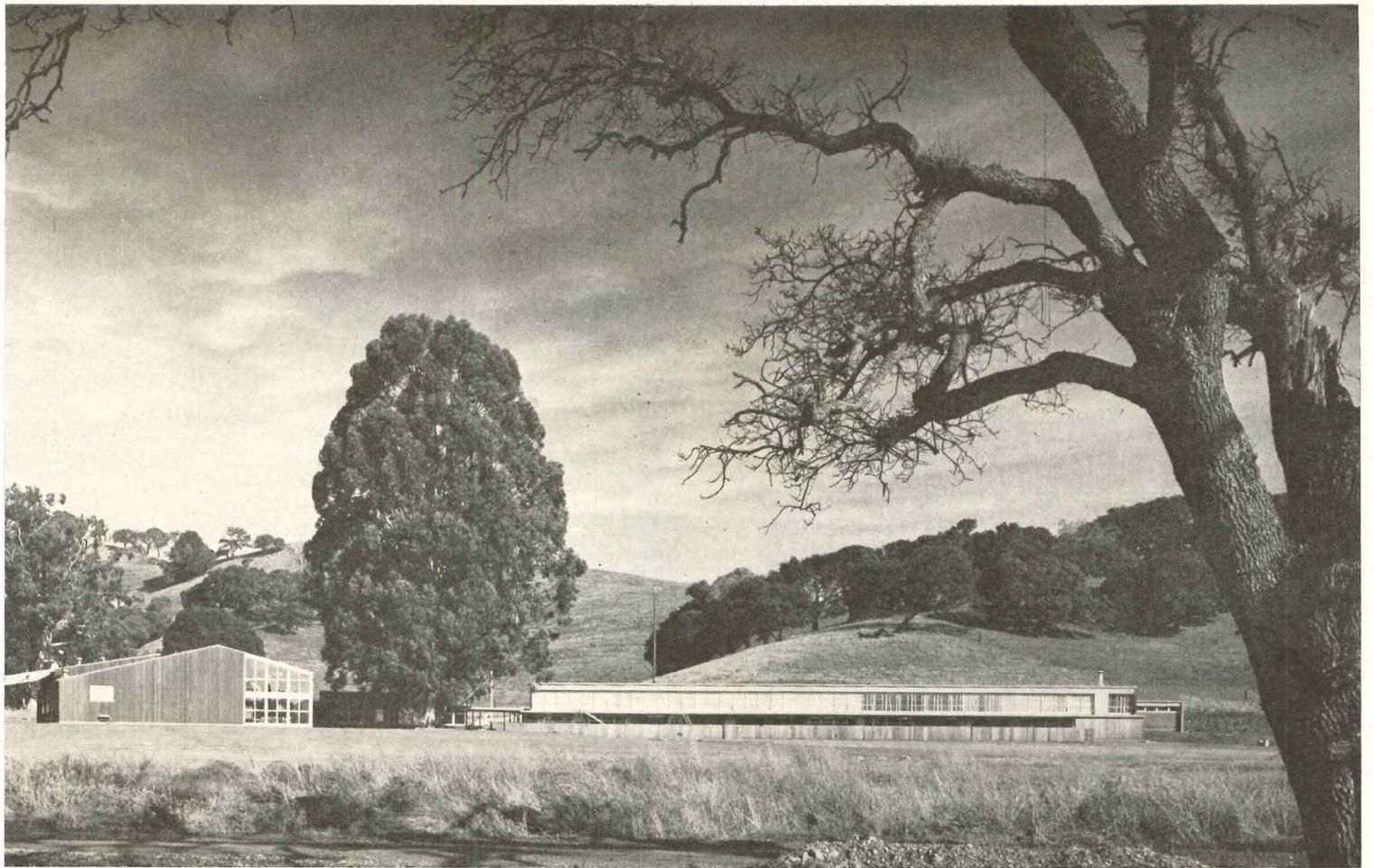
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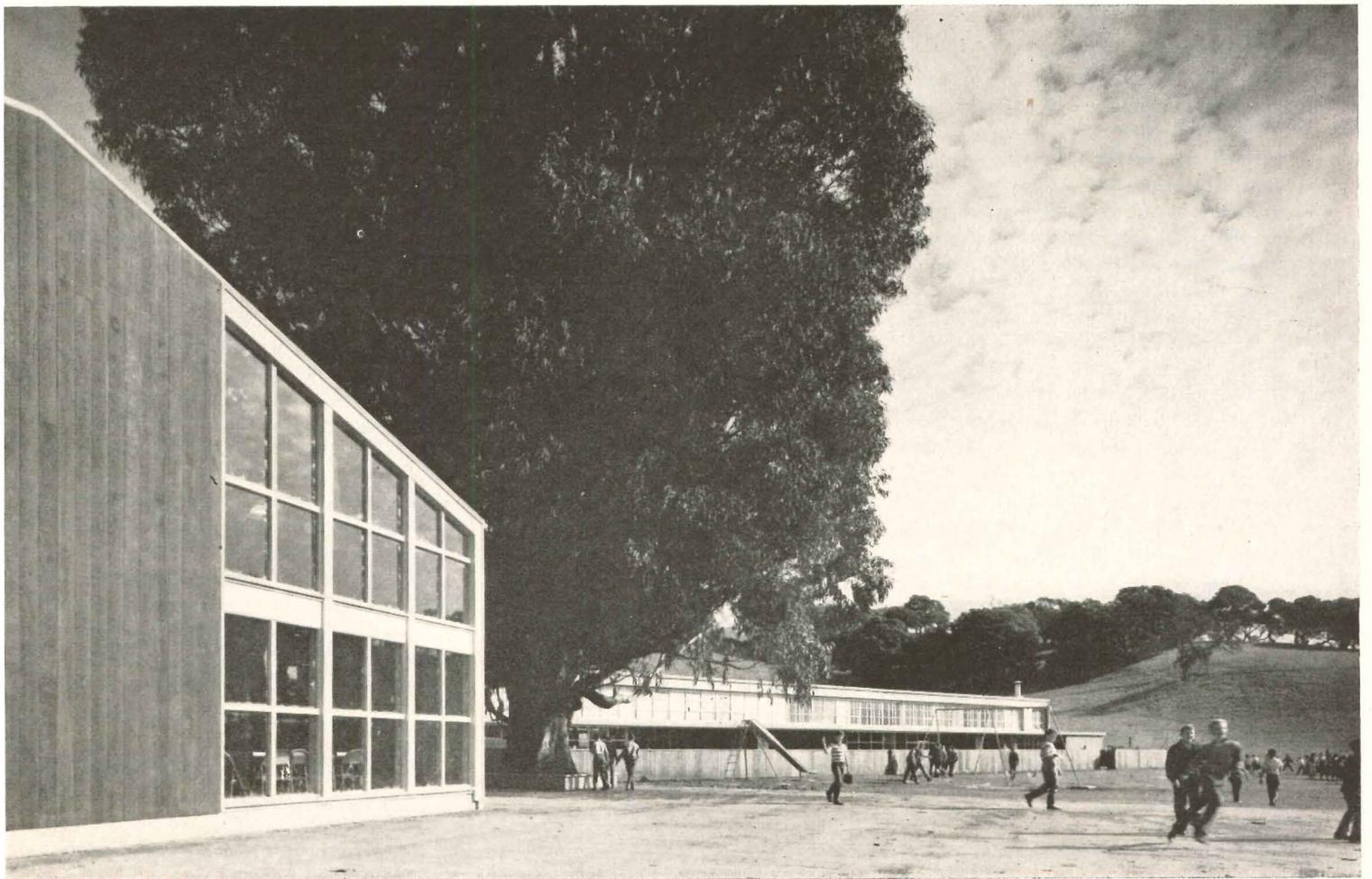
SECTION THRU MULTI-USE BUILDING

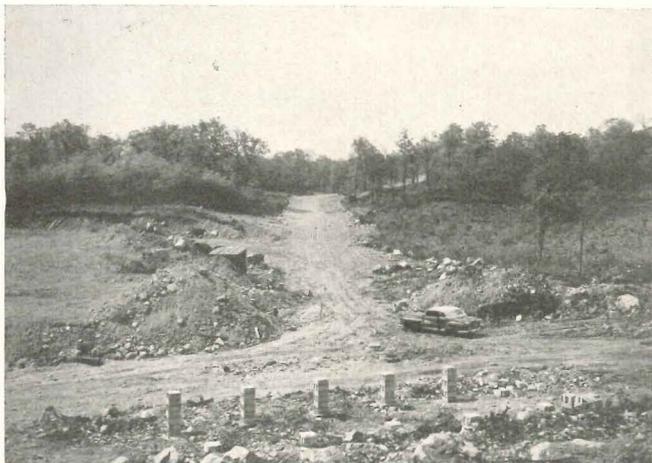
Multi-use building (section, photos at right and across-page) has laminated wood arches, slightly more expensive than steel but simple to tie into roof membrane and available at the time



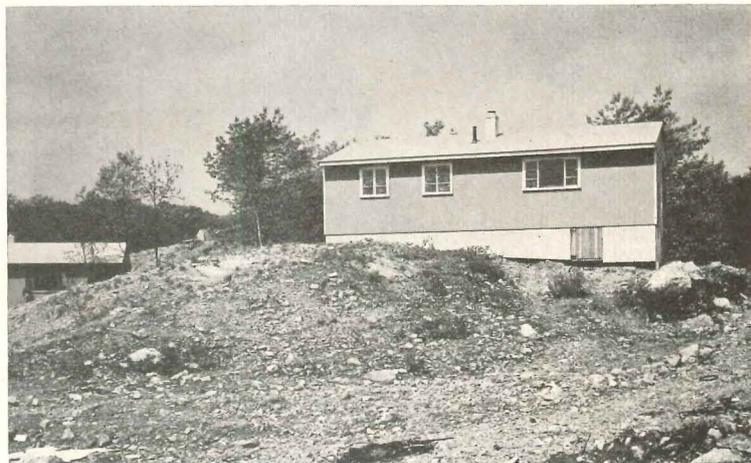


Despite the concrete piling required under the multi-use building, pleasant character and high quality were obtained at a price reasonable for the locality. The additions comprise 12,158 sq ft, new work cost \$175,289 or \$14.41 per sq ft, plus \$9,566 for site work. Older building cost about \$11 per sq ft.





An attractive site was difficult for construction . . .



so houses in' Stony Brook Village were designed to follow its contours . . .

HOUSING DEVELOPMENT TAILORED TO

*A builder's calculated risk with 50 acres of rocky, hilly land
pays off with the aid of some M.I.T. experts*

IN MOST CITIES, land that is both well located and economical for the construction of small houses has been developed for some time. The land which remains unused within the boundaries of these cities presents almost formidable obstacles. So Mark Rosenfelt, Boston area builder, faced a knotty problem in looking for a new site for a development of between 200 and 300 houses: whether to take land with desirable topographical features, but located from 10 to 20 miles outside the city, or to find a closer site that would be more difficult to develop.

He finally selected a site bordering on a large public park at the edge of the city. In its favor were good access roads, convenient traveling distance to downtown Boston, and interesting character of the land. But the only reason it was available for a relatively low cost housing development was that the terrain was extremely hilly and rocky. Rosenfelt decided that if construction difficulties of the site could be overcome by proper planning, the houses would be far more marketable than if they were located in the remote outskirts.

CONSULTANTS CALLED IN

For expert help on his problem he went to a number of consultants at Massachusetts Institute of Technology. The coordinator for the group was Professor Albert G. H. Dietz, acting head of the Department of Building Engineering and Construction, who was called in to work out the engineering design for a foundation that would fit any part of the site, and a house structure that would be compatible with the foundation and easily prefabricated.

Professors Allan T. Gifford and Herman J. Shea of the civil engineering department planned the site layout which exploits the natural features of the land. Professor Gyorgy Kepes of the architectural department was color consultant, and Professor A. L. Hessel-schwerdt, Jr., of the mechanical engineering department was heating consultant.

Original plans of the house were drawn by the office of Carl Koch and Associates in close collaboration with the builder and the engineer. The first house was built according to these plans without change, but subsequent evolu-

tion of the foundations and the decision to prefabricate the house in the nearby shops of the E. F. Hodgson Company brought about rather extensive changes in windows, entrances, and other details. However, the basic plan is essentially unchanged. The project will have some 200 houses and their design is briefly described below.

LAND UTILIZED

It was necessary, first of all, that the house be adaptable to any terrain — that is, hillside, swamp, and deep fill conditions — as well as to level land. One of the simplest systems devised to accomplish this employed two rows of concrete block piers for the foundation, supporting a platform type of frame for the floor and making the floor and walls independent units (see sectional drawings p. 203). The foundation was later modified, as described in "Engineering Design" on p. 204, to meet consumer preference for a basement and to overcome objections from financing institutions.

To keep costs down, semi-stressed-



by being perched on concrete block piers

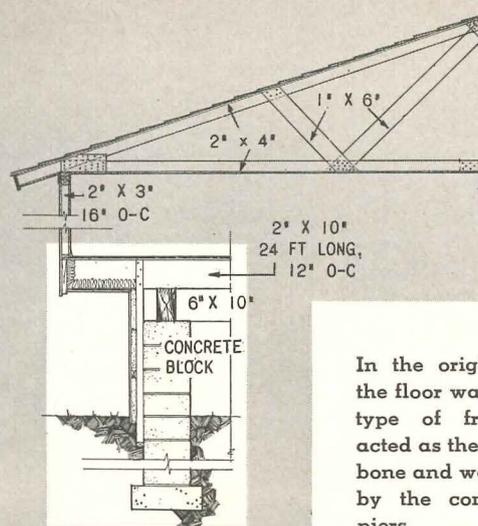
A ROUGH SITE

skin wall panels and the roof trusses are prefabricated in the shop and erected in the field.

The site development was conditioned by the fundamental character of the land. This is indicated by the fact that there is as much as 100 ft difference in elevation in a 2000-ft interval, plus numerous outcroppings of ledge scattered around.

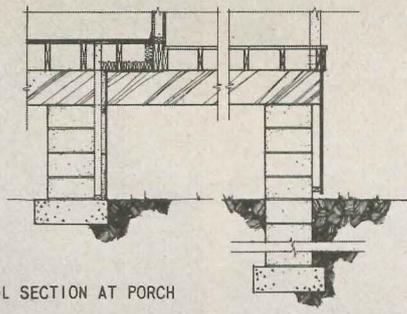
It was decided to keep the public roads to a minimum since they would be much more expensive to build than in the usual subdivision. From this objective there developed the concept of private walkways projecting from the public roads and designed to serve small clusters of houses (see site plan p. 205). Boston's street department raised objections to the use of walkways, so present plans are to have short secondary streets in their place, providing access to vehicular traffic and making it possible to build driveways for parking next to the houses. This, of course, reduces the total number of houses.

Wherever possible, the primary streets were laid out in the valleys, leaving the

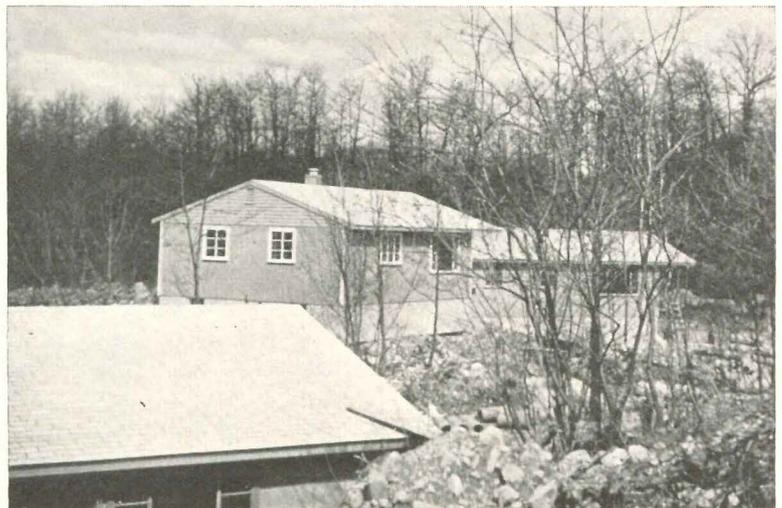
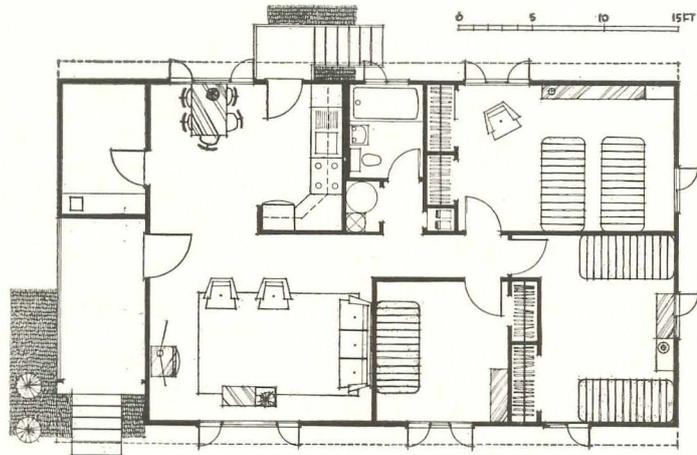


HALF CROSS SECTION

In the original design, the floor was a platform type of frame which acted as the house backbone and was supported by the concrete block piers



LONGITUDINAL SECTION AT PORCH



◀ FOUNDATION DESIGNS

1. Pipe columns encased in protective concrete.
2. Poured or precast concrete cylinders.
3. Variant of scheme No. 2 has an insulated utility core.
4. Concrete block piers with asbestos-cement and fiber-board skirt.
5. Concrete block piers and lightweight concrete plank skirt at piers.
6. Concrete block piers and lightweight concrete plank skirt supported by periphery.
7. Concrete block wall supported by reinforced block lintel for grade beam.
8. Full or partial basement.

SITE PLANNING ▶

The developing engineers believed in adapting the engineering necessities to the raw site, avoiding, wherever possible, a wholesale reworking of the area in favor of engineering utilities.

They were faced with a topography that is extremely rugged — a series of scattered steep knolls with considerable ledge outcroppings (closely spaced dots on drawing). As if this were not enough, the presence of four large swamps (widely spaced dots) added to the difficulties.

Here is an instance where an accurately executed topographic map served its full purpose — representing on table top that which is on the ground.

The detailed planning of the road system, walkways and utilities was done on the topographic map with simultaneous planning of the house locations. Walkways have since been transformed into secondary roads for vehicular traffic. Consequently, the total of houses to be built is nearer to 200 than 300.

houses to be erected on the hillsides. The private walkways pretty much followed the contours of the land, with houses grouped around them informally. This arrangement, in combination with the differences in elevation and the use of color, furnishes a great deal of variety.

This housing development, according to the builder, is designed to serve an intermediate market for dwellings between apartments and full-fledged suburban houses.

ENGINEERING DESIGN: 1. FOUNDATION

To a large extent, the nature of the terrain dictated the engineering design of the projected houses. It was decided that it would be necessary to minimize the excavation, to make the foundations as simple as possible, and to employ the floor as a working platform as well as the real backbone of the house. Floor and foundation design went hand in hand



through a series of evolutions dictated both by the terrain and by public reaction to the somewhat novel (though by no means revolutionary) ideas advanced.

At first it was decided that traditional foundation walls and basements could not be used in many parts of the area because of the expense of excavation. As sketched in Fig 1 on page 204, a simple footing, post, and beam construction was first worked out. This consisted of pipe columns embedded in concrete footings and supporting floor beams above. The floor consisted of joists resting on two long beams and cantilevered at each end. The heating system was suspended from the floor, and the entire underside of the floor and heater space was heavily insulated; otherwise the area under the house was left open.

Because of the necessity for protective concrete around the steel column below grade, a second scheme, Fig 2,

was developed, consisting of concrete cylinders extending from footing to beam. These were either to be cast in place and tied to the footings with reinforcing steel, or precast and set on the footings. In the latter instance, sway bracing would be required with any tall piers, to prevent overturning due to sidewise wind pressure on the house.

A variant of the foregoing schemes included a cylindrical shell, Fig 3, extending from the house floor to the ground. In this shell, the utility lines and the heater were to be grouped to provide a warm utility core. This was to prevent freezing in winter and would provide more space for the heater. Otherwise, as before, the space under the house would be open.

When the first house was erected, the reaction of the public and of financing institutions to a house on piers, and projecting out over them, was so extreme and so adverse that the developer

decided to provide a skirt of some kind to close off the area under the house. The skirt, if properly built, would at the same time insulate this space. Several schemes were developed and tried. In each instance the skirt was suspended from the floor frame above.

The first consisted of $\frac{3}{8}$ -in.-thick cement-asbestos board backed with $\frac{3}{4}$ -in. asphalt-impregnated fiber board, all supported on a framework of pressure-creosoted 2-by-3's as sketched in Fig 4. An alternative scheme employed 2-in.-thick lightweight concrete planks in place of the cement-asbestos board and fiber board.

Either of these skirts could be suspended from the floor at the periphery of the house or at the line of the piers, Figs 5 and 6. The latter permitted the skirt and piers to be closely tied together and provided greater strength, anchorage, and resistance to overturning by wind pressure.

Still another evaluation of the foundation problem resulted in the scheme shown in Fig 7. Piers extend from the footings to grade. In one variant of the scheme, sectional forms are erected above grade, reinforcing bars are run from pier to pier, and an 8-in. concrete wall is poured to the underside of the floor. In effect, the wall is a continuous grade beam supporting the house and closing off the area under it. In the other variant of this scheme, the wall is concrete block, with standard reinforced clock-lintel construction extending from pier to pier to act as a grade beam supporting the wall above. In either event, the wooden floor beams are eliminated and the floor joists rest directly on a wooden sill atop the poured concrete or block wall.

Even this construction met with strong opposition because of the decided preference for basements on the part of the public and of lending institutions. Consequently, the grade-beam construction of Fig 7 was still further modified, as shown in Fig 8, to provide either

full-depth foundation walls and basement floor wherever the terrain will permit, or partial basements where these are practicable. The final construction, therefore, will be an adaptation of that shown in Figs 7 and 8.

The evolution of the foundation and skirt design illustrates the decided effect that public reaction can have upon a house design which, although different from usual practice, is hardly revolutionary. The original concept of a house supported on exposed columns or piers had to be abandoned; a skirt, approximating more conventional construction, also proved unacceptable, and a concrete grade beam or foundation wall had to be provided.

2. FLOOR FRAMING

The framing of the floor was carefully considered at the same time that the foundations were being designed. In order to keep the foundations as simple as possible and to minimize the sizes of members in the floor system, it was decided to recess the piers or the founda-

tion walls from the outside edges of the houses and to allow the house to project at the sides. The floor joists, therefore, were designed as one-piece members, spanning from side to side and resting on long beams supported by the piers, or resting on wood sills supported by the foundation walls and cantilevered 3 ft at each end.

Wind loads and snow loads as well as live and dead loads were carefully considered as required under the Boston Code, and all the possible combinations of loads were investigated to determine the sizes of joists and beams required. The final decision was to employ 2-by-10-in. joists, spaced 12 in. on centers and 24 ft long, spanning the full width of the house. The two beams, in turn, would be 6-by-10 in., spanning from pier to pier. The floor thus became a simple rigid platform consisting of continuous 24-ft joists resting upon beams or foundation walls. Two-by-10-in. headers at the ends of the joists completed the framing, in addition to the line of bridging down the center. This was a



platform type of frame which is not covered by the Boston City Code. Consequently, it was discussed with the Boston City officials and an agreement that it could be employed was reached.

Since this was an engineering design of what is customarily built by rule of thumb, decisions had to be made concerning allowable fiber stresses in the common grades of lumber most economical for this purpose. The 6-by-10-in. beams were designed as Number One Common with allowable bending stresses of 1450 psi, and the 2-by-10-in. joists as Number Two Common with allowable fiber stresses of 1200 psi.

In practice, the floor joists are carefully laid out and a cutting schedule made for the 4-by-8-ft plywood sub-flooring, so that a minimum of cutting is required. As it finally turned out, no waste at all was encountered with the three-bedroom house, and only one 4-by-4-ft piece of plywood was left over with the two-bedroom house. This piece, of course, could be used on the next house. A single cut through the

middle of the 4-by-8-ft sheet is the most that is ever required. In order to insure a level floor, the 2-by-10-in. joists are edge-trimmed at the mill to a uniform width. They are also all cut at the mill to a uniform length, so that with two headers they are 24 ft long plus or minus $\frac{1}{16}$ in.

3. WALL FRAMING

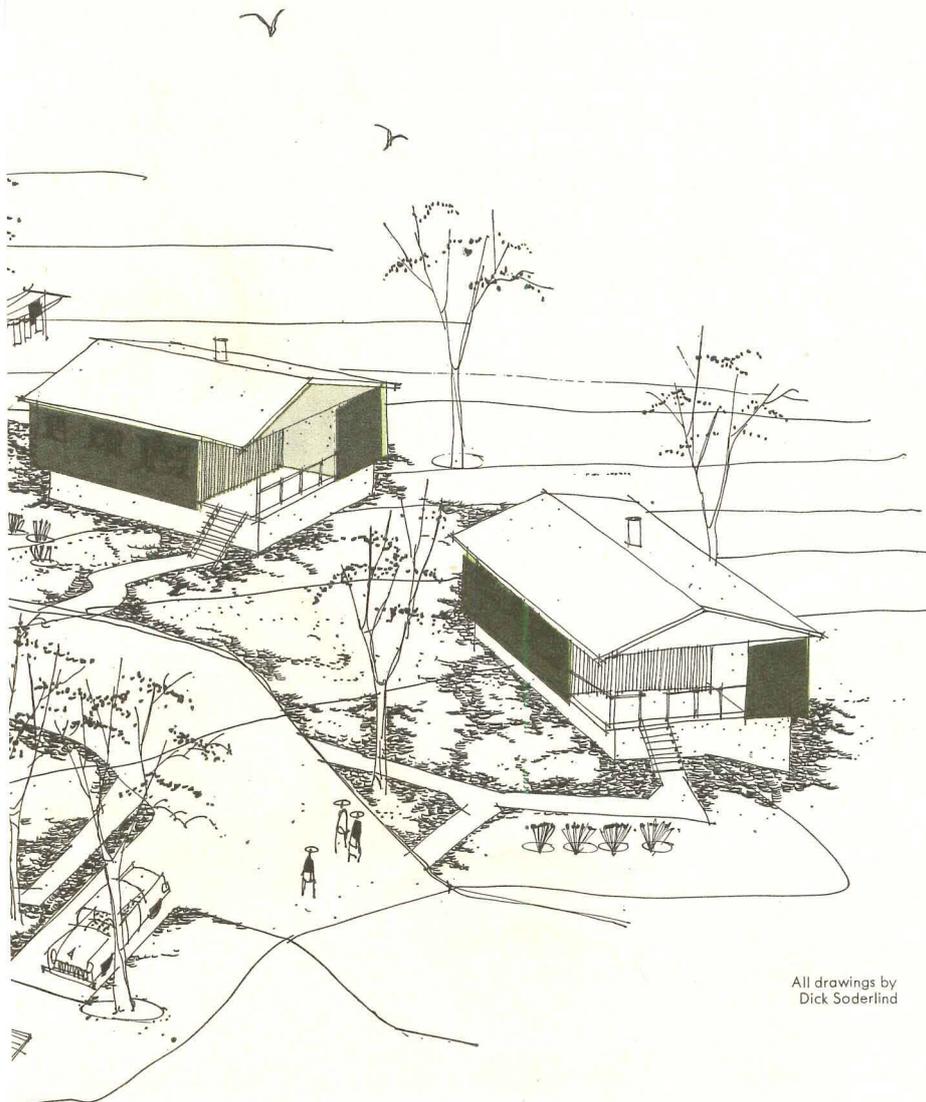
Like the floor, the wall framing turned out to be nonstandard, according to the usual construction practice in the New England area as exemplified by the Boston Building Code. Because these buildings are only one story high, it was found that 2-by-3-in. studs could be employed instead of the 2-by-4-in. studs commonly specified. Although the studs could be 20 in. on centers, it turned out to be more feasible to place them 16 in. on centers, so they would conform to the 4-ft widths of standard plywood.

The Boston Code generally requires corner braces, but it was agreed that with the rigid plywood skin it would not be necessary to employ corner braces,

girts, or the other standard construction usually found in the northeastern area. The framing of the walls, therefore, consisted simply of 2-by-3-in. studs 16 in. on centers with a 2-by-3-in. shoe and double or triple 2-by-3-in. plate at the top to carry the roof.

The outside consisted of waterproof $\frac{3}{8}$ -in. striated plywood nailed to the studs. The inside finish was $\frac{1}{2}$ -in.-thick gypsum board with an aluminum facing placed toward the stud space. This arrangement provided satisfactory insulation, having a "U" value of 0.15 Btu. Because the plywood plus gypsum board construction proved to be very tight, small breathing holes were bored through the sole and the plate to allow for equalization of air pressure with changing temperatures, and for ventilation if any vapor should penetrate into this space.

Wall panels are fabricated by the E. F. Hodgson Company, Dover, Mass., in their shop. They are carried as complete wall length units to the site for erection by the field crew. With the precision



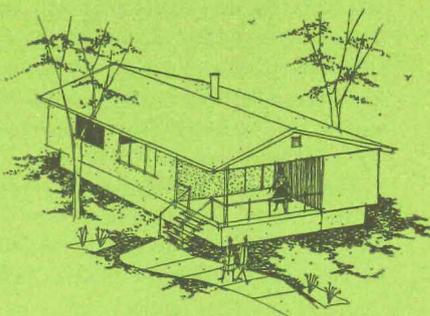
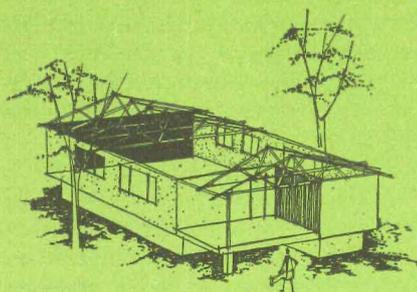
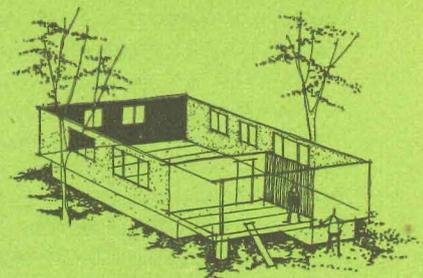
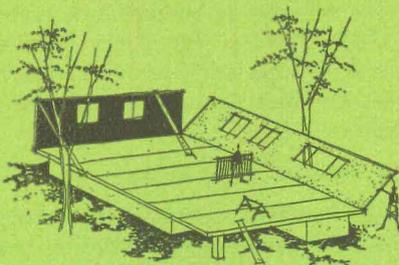
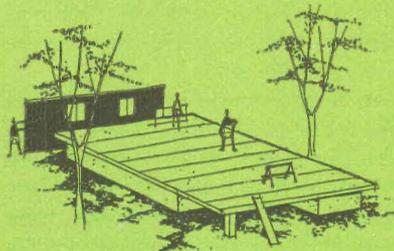
All drawings by
Dick Soderlind

COLOR PLANNING

Early in the planning, it was decided that color could either add greatly to the entire development or could detract from its unity and the general arrangement of the houses dictated by the terrain. The street layout and the locations of the houses on the individual sites all conform to the contours and the other natural features of the terrain, making for an unmonotonous general plan.

It was felt that this desirable feature could be accentuated by a color scheme in which a considerable range of colors would be employed over the entire development, lending it a pleasing variation which would serve to emphasize the nonregular arrangement of streets and houses. At the same time it was thought that the change of color from one house to the next should be slight, to avoid abruptness in the variations. A scheme was finally developed in which a gradual change would take place from house to house and from one group of houses to the next, while at the same time permitting a large range of colors to be employed throughout.

Original colors included shades of violet to pink, orange to brown, dark to light gray, and light to bright yellow, but actual colors used will depend mainly on what is available for exterior wood. The color in the drawing indicates only the gradual shading concept.



Shop-fabricated wall panels are tipped up into position and fastened to the floor, a simple rigid platform. Roof trusses then are erected and sheathing is applied. Finally finished flooring is laid and interior partitions are built with prepackaged studs

cutting of the floor joists and careful squaring up of the floor frame so it will not be more than $\frac{1}{16}$ in. out of length or square, it has been found that the prefabricated panels fit without difficulty and can be erected in a very short time. In practice, the house is erected and roof shingles are applied all in one day.

4. ROOF TRUSSES

It was decided to use full-span roof trusses to avoid the need of interior bearing partitions. Various truss designs were carried out, including timber connectors, bolts, and nailed trusses. The timber connector trusses were found to go together very quickly in the field or the shop, but because of his shop conditions, the prefabricator finally decided to use nailed trusses. Loading tests of 75 lb per sq ft were made for both the connector design and the nailed design. Both were found to be completely adequate, with small residual deflections after the load had been removed subsequent to being in place for 24 hours.

The finished flooring, finally selected after several trials of different types of floor covering, was standard end-

matched edge-grain Douglas fir $\frac{1}{16}$ -in. flooring. When the wall panels are up and the roof closed in, the finish flooring is laid directly over the entire floor before any interior partitions are placed. This allows rapid laying of the floor and also makes it possible for unskilled labor to lay the floor rapidly, using a nailing jig. After the flooring is in place, the prepackaged studs for the interior partitions are rapidly assembled and erected ready for the gypsum board finish.

5. HEATING

The heating system consists of a forced warm air circulating system placed in the basement or suspended from the framework below the house. By running the heating ducts through the area under the house and up through the joist system into the floor registers, and by carrying a large central return back to the heating system, complete forced air circulation is assured.

6. CONCLUSION

The construction is rapid and simple. The platform floor becomes the backbone of the house and makes construc-

tion largely independent of the rough terrain. A series of more-or-less independent planes is established, making for great flexibility in scheduling construction. Piers or foundations are one operation. Floor platform is another operation. Erection of walls and roof trusses is one rapid operation, and application of roof sheathing is also rapid. In a day's time, the house is completely closed in.

Shrinkage of the beams and joists is uniform and causes no differential settlement to bring about racking and distortion of the house. Otherwise, there is little cause for shrinkage settlement to occur.

The builder has found the construction to be the fastest, simplest, and most "buildable" in his experience. The evolution of the house at all stages was discussed with the Boston Building Commissioner, Mr. Harry Keefe, who, while insisting on good engineering and construction, took a sympathetic and cooperative attitude which made many of the construction features possible, while at the same time conforming with the intent of the Boston Building Code.

WATER VAPOR CAN DAMAGE BUILT-UP ROOFS

Part 2

Roof Construction
Principles and Suggestions

By C. E. Lund

Professor of Mechanical Engineering
University of Minnesota

OF THE many factors which contribute to the satisfactory performance of built-up roofs, one point stands out above all others: construction of a satisfactory roof is possible only when high standards are maintained in all phases of its construction. Failure in one respect will negate perfection in others.

Most roof failures can be avoided if these recommendations are followed:

1. All plies of roofing felt should be mopped solidly with the bitumen.
2. All felts should be "broomed down" thoroughly as quickly as possible following the application of the bitumen.
3. Rigid control should be maintained over the temperature of the bitumen.
4. A vapor seal course must be used over all roof decks in cold climates and in temperate climates wherever conditions of high inside humidities exist. A vapor seal course must also be used where the roof deck itself contains an appreciable amount of moisture.
5. Roofs should be constructed according to proved and accepted specifications.
6. Special precautions are necessary when applying roofs to concrete decks in order to prevent the residual moisture of the concrete from entering the roof structure. This may be accomplished by using a vapor seal course or by positive sealing of the surface.
7. Roofing materials having a high moisture content should not be used.
8. A roof should not be applied during inclement weather or upon a deck which is not thoroughly dry.

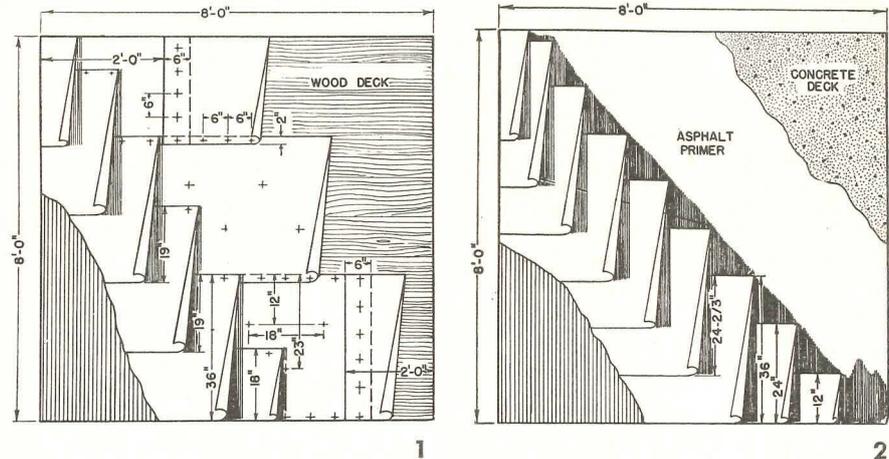
HOW A PARTICULAR ROOF BLISTERS DUE TO VAPOR

The various factors that attribute to the blistering of built-up roofs as discussed in Part 1 will be reviewed by the means of a specific example; for this discussion it will be assumed to be an insulated built-up roof with a wood, steel, gypsum plank or poured concrete deck. *This roof does not have a vapor seal.*

In cases of high indoor humidities or of normal indoor humidities and low outdoor temperatures, there will be a tendency for vapor movement from inside to outside. Thus, if these conditions prevail, vapor will migrate through cracks in the roof deck, if there are any, to the cold side of the insulation and collect directly below the roofing. If good adhesion is attained between the first layer of roofing and the insulation, the mois-

ture will accumulate within the insulation adjacent to the roofing itself.

place is determined by the size of the openings through which the vapor can penetrate from the warm side into the roofing plies, and the length of time of exposure to such a condition. Upon a rise in air temperature and exposure to solar radiation, the vapor pressure will increase. If this accelerated pressure rise is greater than that which can be relieved through the small openings of the roofing plies which permitted



Drawings on this page show two of four common types of built-up roofs of the 10-year guarantee type which were tested at the University of Minnesota for vapor transmission. Since these 8-by-8-ft specimens were determined to be impermeable to vapor, and since the tests did not include such other conditions as effect of traffic, etc., no longer-guarantee roofs were tested. Materials and construction were: (1) single layer of 30-lb felt laid dry, two layers of 15-lb asphalt felt solidly mopped with 30 lb of asphalt per square, top surface of 30 lb of asphalt per sq; (2) three layers of 15-lb asphalt felt mopped to deck with 30 lb of asphalt per sq, top surface of 30 lb of asphalt per sq

ture will accumulate within the insulation adjacent to the roofing itself.

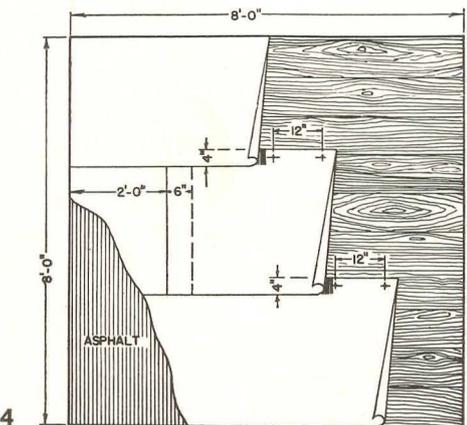
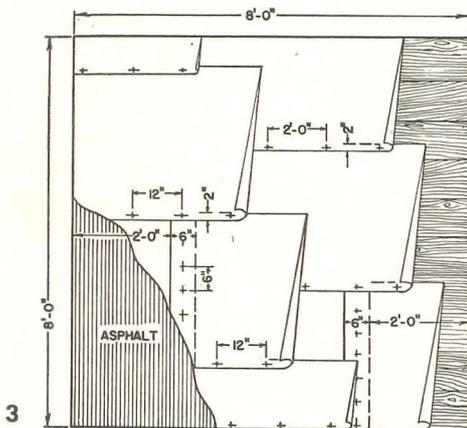
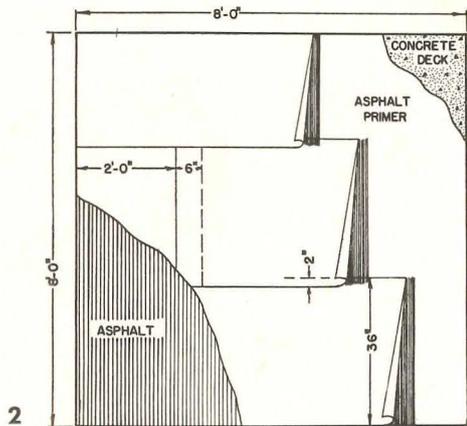
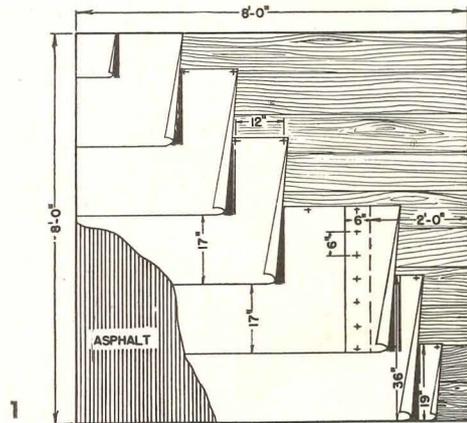
However, if the built-up roofing is not solidly mopped or good adhesion between plies is not obtained, the vapor may continue on through the roofing wherever it is able to find an opening and condense. Usually the final coat of mopping is solid to provide a waterproof surface on the exterior and this coating acts as a final vapor stop to resist the movement of moisture to the outside air.

Whether or not blistering will take

the entrance of vapor, then blistering is apt to occur. If the mopping between the plies has been extremely poor, a layer of water or ice will form at these points which causes further separation of the plies.

A fact to remember, however, is that the roof decks, themselves, have some resistance to vapor movement and may serve to reduce the amount of condensation, depending on the tightness of construction.

For wood, steel and gypsum plank decks where there are a number of joints



between the various members of the deck, the possibility of any pressures being developed to cause blistering is remote. Due to the low resistance of the insulation toward such pressures, any built-up pressure which can be released through the insulation and the joints in the deck, and which is less than that to cause raising of the built-up roofing, will be dissipated or escape to the warm side in the form of vapor and air.

The danger in this type of construction is that, although it provides a pressure release for any changes in air and vapor pressure, it does not insure against excessive moisture accumulations within the insulation.

Any amount in excess of that which can be safely absorbed will be in a liquid state and tend to saturate the insulation and may even cause, under extreme conditions of humidity and outside air temperature, dripping of free water.

In the case of a poured concrete deck, the only avenue for residual moisture to escape is through shrinkage cracks, and in this case blistering is likely if no vapor seal has been applied over the deck.

WHEN IS A VAPOR BARRIER NECESSARY?

In the initial design of a building, the operating requirements together with its location in a temperate zone may justify the omission of a vapor seal course (poured decks excepted). However, there is no assurance that these operating conditions will continue to exist throughout the life of the building. A change in occupancy may require relatively higher humidities on the inside which will result in vapor movement into the roof.

To overcome these unpredictable situations and to insure positive control of moisture migration into roofs, a vapor seal course is required.

If no roof deck is used and the insulation is applied directly over joists or purlins with the under side of the insula-

tion exposed, a vapor seal course may not be necessary. The reason for this is that for limited quantities of vapor movement during cold periods of exposure, the vapor or moisture is able to escape through the warm side without any obstruction when the outside temperature increases. Under these conditions it is necessary to take precautions to avoid excess quantities of accumulated moisture.

It is sometimes thought that partial vapor barriers will permit the release of moisture and pressure to the warm side when the outside air temperature rises. The use of partial vapor barriers over different types of decks will obviously permit a certain quantity of vapor to be transmitted. This decreases the resistance of the vapor seal course, and moisture accumulation may be so large that free water will result adjacent to the upper surface of the deck or within the insulation and the roofing plies.

After very cold weather, there is generally a period of moderate temperatures which may vary between 30 F and 45 F for quite some time. Unless sun exposure is considerable, moisture accumulated during this time will remain within the roof structure for quite a while before it has an opportunity to escape. Upon the approach of warm weather, a vapor pressure difference will be set up which will cause this moisture to evaporate.

During this warmer weather, however, the temperature increase usually is so rapid due to solar radiation, that the pressure developed for the air and vapor far exceeds that which can escape through the warm side of the deck. This results in a force which is greater than the weight of the roofing and causes the roof to blister.

It is evident that to control the movement of vapor or moisture into built-up roofs, it is necessary to have a vapor seal course.

VAPOR SEAL COURSES

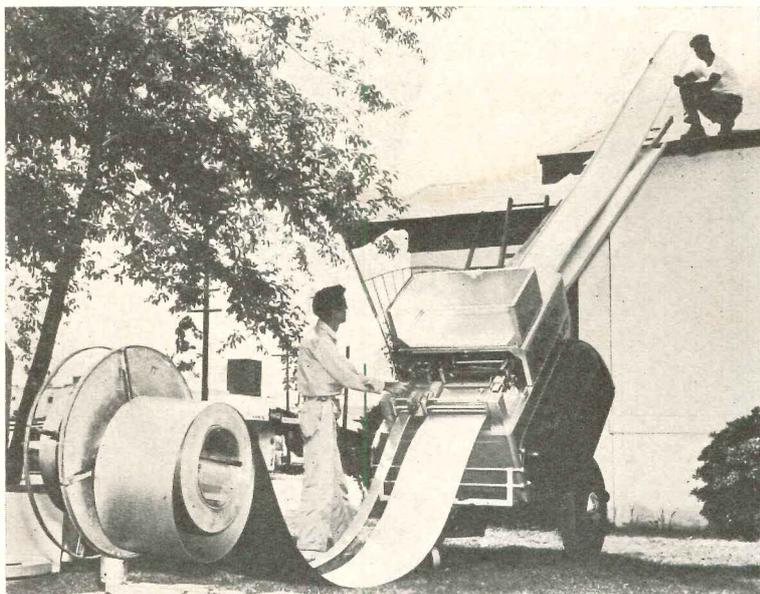
The use of an approved type of vapor seal course is of utmost importance in built-up roofs. There are several types which may be used. Laboratory tests have shown that a two-ply, solidly-mopped 15-lb felt will prevent vapor from entering a roof structure. Similar vapor seal courses are also efficient.

Concrete decks regardless of the location or use of the building require a vapor seal to prevent the moisture which results from curing of the concrete from seeking an escape into the insulation or

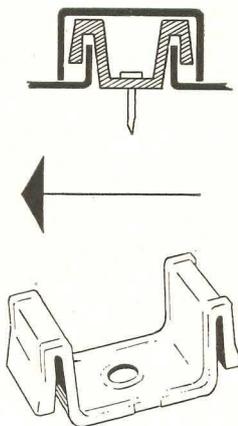
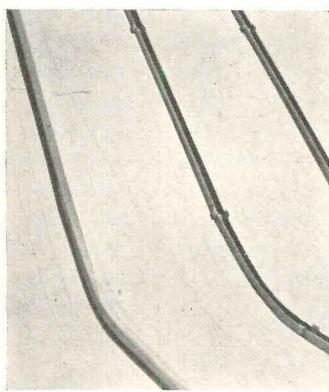
(Continued on page 222)

Four types of vapor seal courses were tested and found satisfactory: (1) two layers of 15-lb felt with all laps solidly mopped back 17 in. with 30 lb of asphalt per square, top surface — 30 lb of asphalt per sq; (2) one layer of 15-lb felt laid in 30 lb of asphalt per sq, top surface — 30 lb of asphalt per sq; (3) one layer rosin sheathing paper, one layer 15-lb felt, top surface — 25 lb of pitch per sq; (4) one layer 45 lb base felt with coated side down (back edge solidly mopped and nailed), top surface — 30 lb asphalt

NEW DEVELOPMENTS IN ROOFING



Above: machine is brought alongside house, forms panels and feeds them up to roof. Below, left: cut-to-length panels are applied to roof. Below, center: close-up showing panels and clip fastenings both with and without batten covering. Sketch at right, below shows the fastening clip and detail of batten-and-clip construction



Right: Plastic roof covering being sprayed on steep pitch of Sherry-Netherland Hotel's roof. The workman shown here sprayed the compound on the roof, while two others inside the building operated the compressor and the mixer

(See page 226)



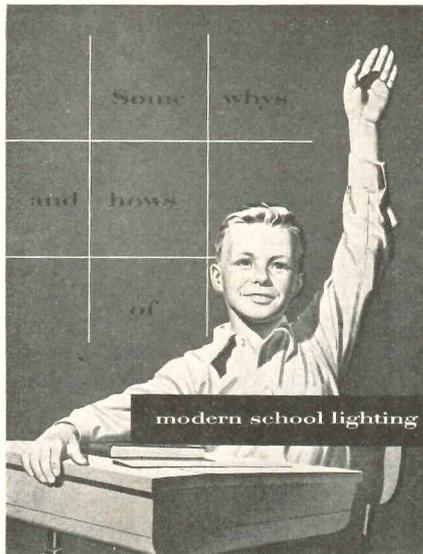
TWO INNOVATIONS in roofing have recently been announced:

- A new system for on-the-job forming and applying of custom-tailored aluminum roofs will soon be nationally available through franchised applicators. Known as *Roliton*, the process employs portable machines which form continuous roofing panels and battens from aluminum rolls. Originally developed and patented by Architect Glen Huntington of Denver, the process was further developed by the franchiser's research staff. A finished roof has a continuous pan, no seams, no end laps, no exposed nailing, and uses a batten and clip fastening which has tolerance allowance for contraction and expansion.

Here's how the roof is applied: The patented roll forming machine is brought alongside the house where the roof is to be installed. A guide rack is set up, running from the machine to the roof, so that the formed panels of aluminum can be passed up directly to the roof surface. No scaffolding or other heavy equipment which might injure lawns or shrubbery is employed. Before the roof itself is applied, a 30-lb overlapping felt base is laid, giving the roof its first seal. Next, the coils of aluminum are set to feed into the machine. The aluminum moves through stainless steel dies which form it to the exact measurements for the roof. Flanges on each edge of the panels are also formed as the metal passes through the machine. Now, patented aluminum clips are fastened to the roof understructure and are attached to the panels at regular intervals. Battens, also formed to exact measurements by the machine, are then snapped over both panel flanges and clips, forming a weather-tight seal without any fastenings exposed to the elements. Vents, valleys, chimneys, cooling equipment ducts, dormers and parapet walls are carefully flashed in aluminum, and the installation is complete. Both panels and battens extend over the eave line to assure complete protection against wind or blowing rain or snow. Among advantages of the installed roof cited by the franchiser are high reflective insulation, low heat radiating power, air circulation which permits the roof to "breathe," increased protection against hail, and deadening

(Continued on page 226)

CONTEMPORARY LIGHTING



New brochures reviewed below are among recent manufacturers' literature dealing with lighting equipment and design

Two brochures on contemporary lighting methods and fixtures have recently been made available:

- *Some Whys and Hows of Modern School Lighting*. Booklet gives current recommended lighting levels for various locations in the school, and for pupils with normal vision or with defective vision, as sponsored by the Illuminating Engineering Society and the A.I.A. Cost comparisons for incandescent and fluorescent are indicated, showing the savings at various power rates. Willard Allphin, the author, has included before and after photographs of classrooms using both types of lighting, and a cross section which shows reflection factors desirable for schoolroom surfaces in percentages. Various types of lighting systems are illustrated, and a test for determining how lighting equipment measures up to modern standards is also included. 14 pp., illus. Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

- *Contemporary Lighting*. Kurt Versen catalog is divided into four parts: Re-

cessed, Indirect, Swivel and Custom Built. Each section is generously treated with photographs, diagrams, cross-sections, graphs and drawings, and a complete description of the various fixtures is given — as to sizes, finishes, mountings, lamps used, etc. Exclusive features of all types are included, as is installation information. 60 pp., illus. Kurt Versen Co., Englewood, N. J.

ASPHALT TILE FLOORING

Hako Asphalt Tile Flooring Ideas. Portfolio of sketches is divided into two sections: for business and commercial, and for the home. The sketches are a series of original designs, created to direct the eye to particular points of interest in stores, etc., and to form interesting and esthetic patterns for the home. Designs are given for island displays, to create the illusion of space, for directing traffic at elevators and moving stairways, and for division of departments in stores. The sketches of designs for home floors consist of children's play rooms, kitchen and utility rooms, hobby and recreation rooms, as well as dining and living areas. 25 sketches. Hachmeister, Inc., Pittsburgh 13, Pa.

AIR CONDITIONING

G-E Air Conditioning Investment Analysis. Two handy booklets, one covering stores and restaurants, and the other industrial and office installations, give the formula of an investment analysis technique which has been developed to determine in dollars and cents the effect of air conditioning on sales and commercial incomes. 4 pp. ea., illus. Air Conditioning Division, General Electric Company, Bloomfield, N. J.*

ARCHITECT'S FURNITURE

The William Armbruster Collection. Catalog contains loose leaf pages, each illustrating different types of furniture designed by Mr. Armbruster. Photographs of the item alone and in a furniture setting are supplemented by line drawings showing dimensions. As an added feature, there is included with the catalog a color and texture sample folder and a complete price list. The sample folder includes finishes for steel frames, decorative webbing for metal chairs, wood finishes, plastic on fabric, and top grain leather. Edgewood Furniture Co., Inc., 334 E. 75th St., New York 21, N. Y.

(Continued on page 282)

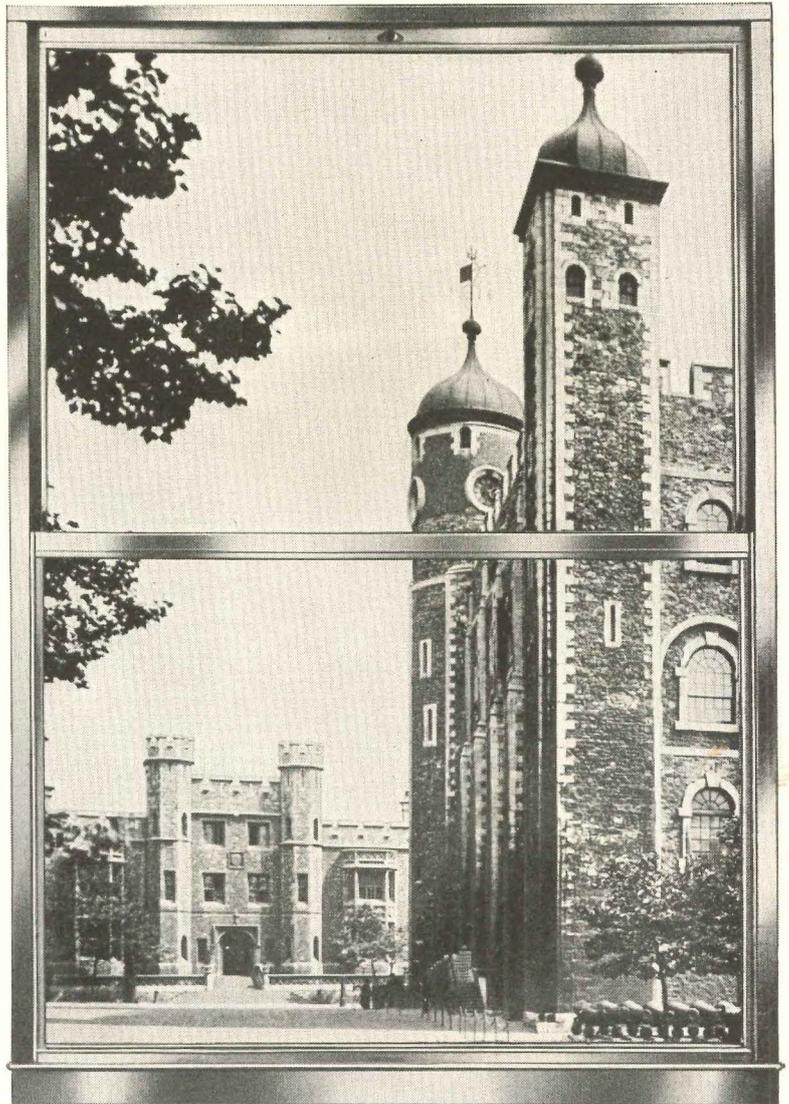
*Other product information in Sweet's Architectural file, 1953

What?

Adlake

windows in the Tower of London?

It's *too bad* that William the Conqueror's master builders didn't have access to ADLAKE Windows when they began the Tower in 1078...for we believe that, had ADLAKE Windows been installed then, *they would still be in perfect operating condition today!*



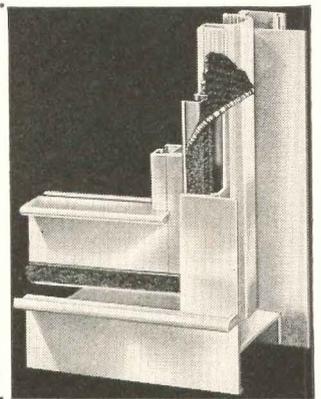
...for Adlake Aluminum Windows will last longer than the building itself, with no maintenance!

Literally, ADLAKE Windows pay for themselves by eliminating all maintenance costs except routine washing. Once installed, they'll keep their clean-cut good looks and easy operation for the life of the building, with no painting, scraping or other maintenance whatever! What's more, their woven-pile weather stripping and patented serrated guides give an ever *lasting* weather seal!

ADLAKE Aluminum Windows assure lifetime value, beauty and efficiency. Write for full details—you'll find ADLAKE representatives in most major cities.

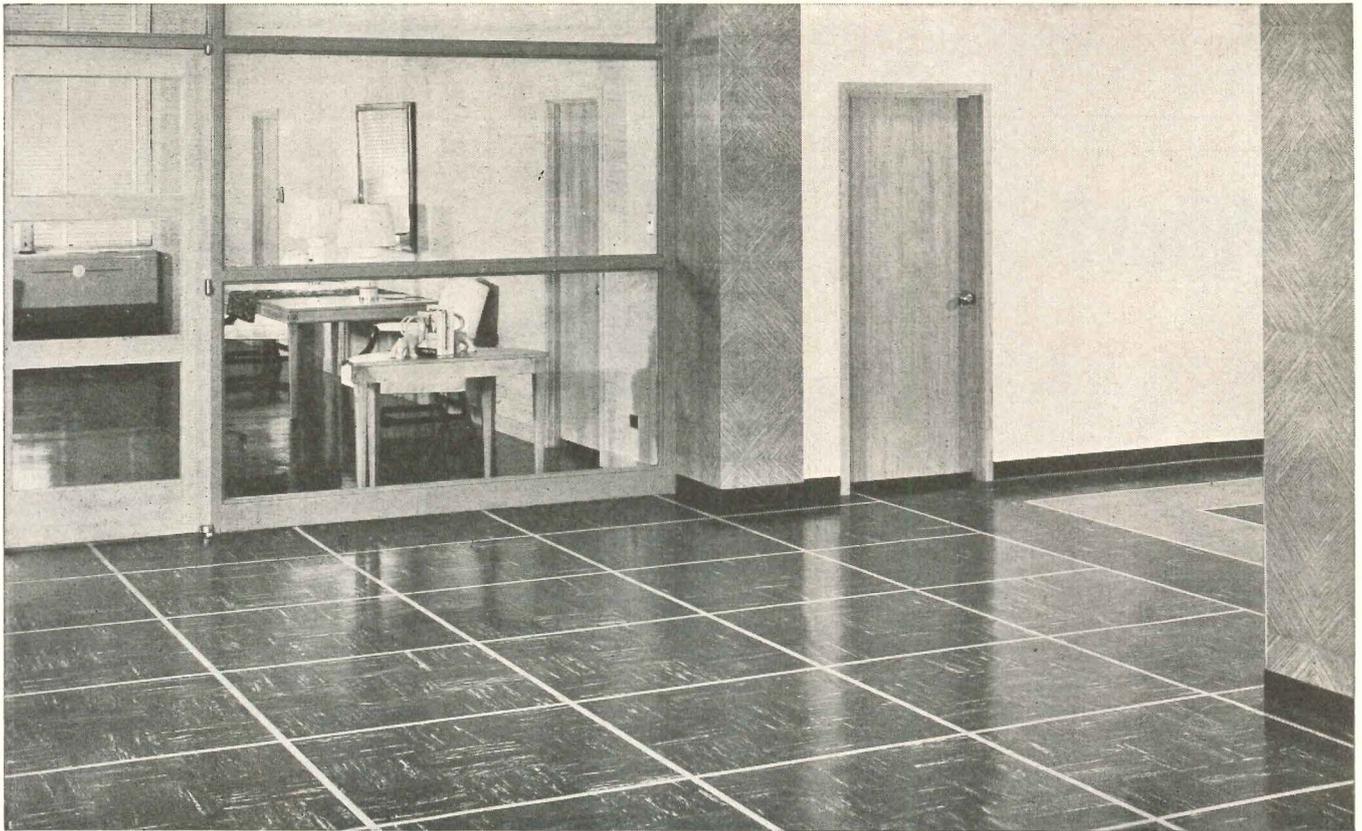
Every ADLAKE Window gives these "PLUS" features

- Woven-pile Weather Stripping and Exclusive Patented Serrated Guides
 - Minimum Air Infiltration
 - Finger-tip Control
- No Painting or Maintenance
 - No Warp, Rot, Rattle, Stick or Swell

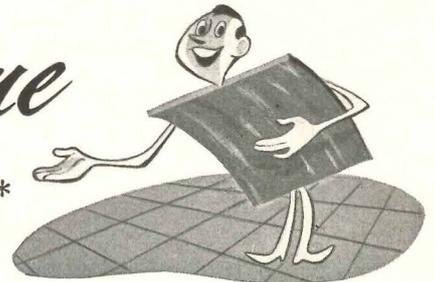


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Design a *Cheerful Welcome*
 into your entrance floor...with Flexachrome*



All of us respond favorably when we enter a building that bids us a bright hello.

And alert management, everywhere, is responding favorably to the advantages of Flexachrome . . . the vinyl plastic-asbestos floor tile that always makes a good impression.

Notice how the handsome, sleek flooring, illustrated, lends an air of quiet, dignified simplicity, so suited to reception areas!

But smart-looking Flexachrome . . . offering 28 rich, bright colors that go all through each tile . . . is also widely used in offices, cafeterias, libraries, corridors and other "dressed up" areas.

And Flexachrome, also *grease-resistant*, is just the floor for kitchens and shops where spilled food, oil, grease and moisture are encountered.

You have virtually endless pattern possibilities with Flexachrome colors and sizes and custom-cut inserts. Maintenance is a breeze . . . just daily sweeping and periodic washing. Flexachrome never needs waxing.

Your local Tile-Tex* Contractor is listed in the classified telephone directory. Ask him about Flexachrome. Or write:

THE TILE-TEX DIVISION, *The Flintkote Company*, 1234 McKinley Street, Chicago Heights, Illinois

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See Our
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TILE-TEX... Floors of Lasting Beauty

STRUCTURAL FORMS — 22: THIN SHELLS OF REINFORCED CONCRETE

By Seymour Howard, Architect, Instructor at Pratt Institute

B SHELLS CURVED IN TWO DIRECTIONS

These provide greater stiffness by their shape alone than shells curved in only one direction. Their surfaces are non developable. They cannot be made by bending a flat sheet as can all surfaces curved in only one

direction. The formwork, therefore, is usually more complicated and they have been used less frequently.

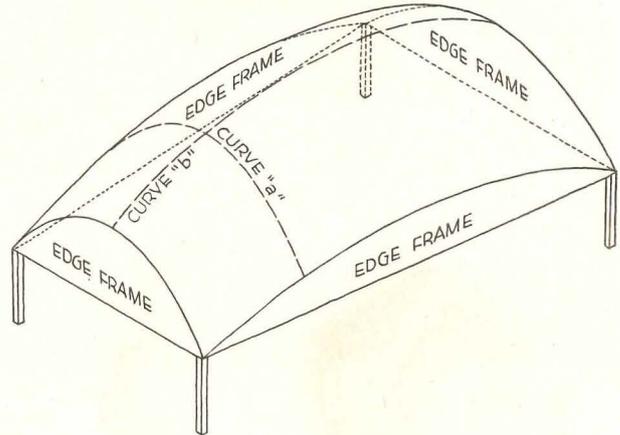
B-1 BOTH SETS OF CENTERS OF CURVATURE BELOW SHELL (Synclastic or Dome Surfaces)

General Case:

Surface generated by one curve ("a") sliding along another ("b") at right angles to it.

Curve "a" may vary as it slides; curve "b" may be of any shape, provided the center of curvature is always below. It is possible to vary curve "a" so that the surface will curve smoothly down to the flat plane (vertical edge frames would disappear).

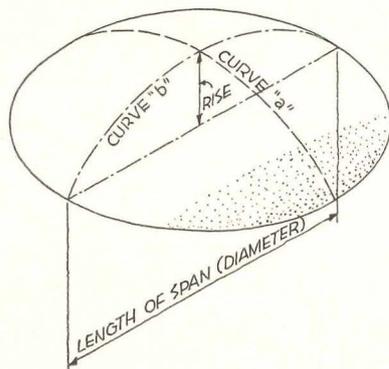
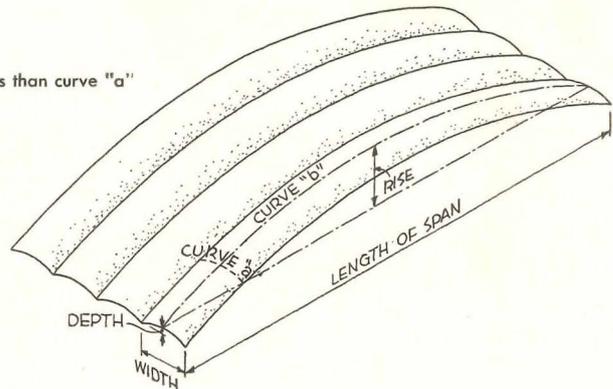
Edge frames correspond to transverse stiffeners or end frames shown for shells curved in one direction. Edge frames may be: vertical diaphragm; rigid frame or truss, integral with supports or simply supported; stiffeners in edge of shell, with tension ties between points of support.



Extreme Cases:

Curve "b" of much greater radius than curve "a"

Rise may be $\frac{1}{8}$ of length of span; width may be $\frac{1}{10}$ of length of span; depth may be $\frac{1}{10}$ of width of span; Max. length of span 500 ft or more. This shell approaches an arch of curved cross section. This type can be effectively combined with anticlastic shells of similar dimensions to form a corrugated surface (see B-3 subsequent issue).



Curve "b" of same radius as curve "a"

Rise may be as low as $\frac{1}{8}$ of length of span. Max. length of span built 156 ft; much greater possible. This type is most simply considered as a surface of revolution.

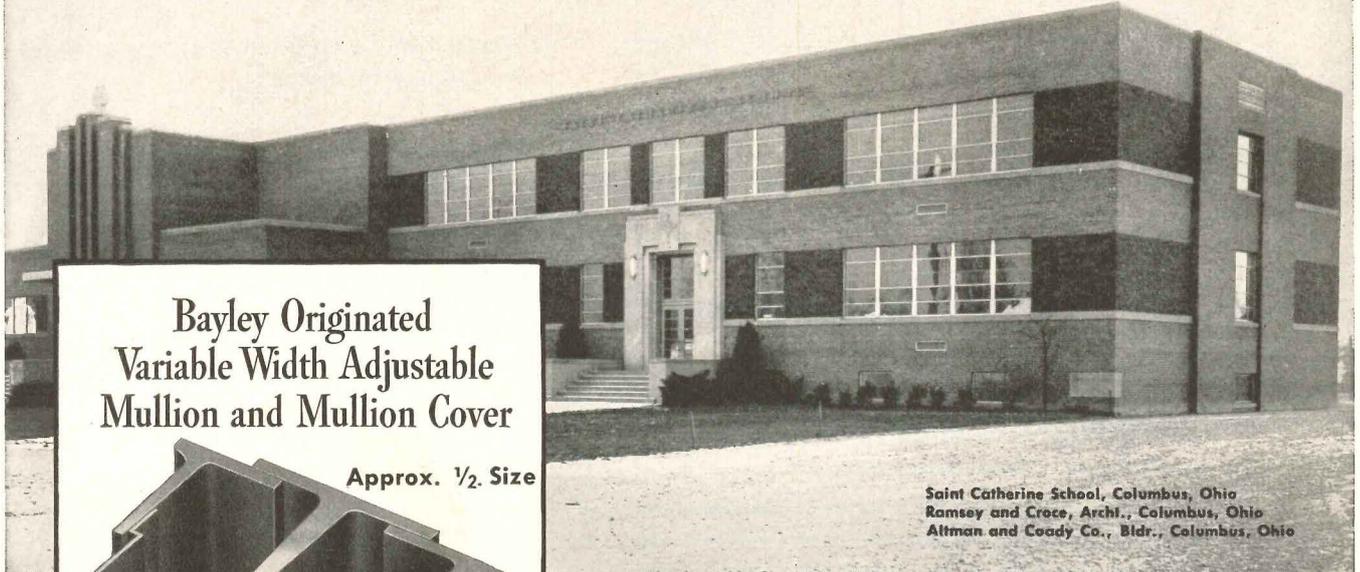
Thickness is based on same considerations as for shells curved in one direction (see sheet 15). Danger of buckling starts with $2\frac{5}{8}$ in. thickness for 100-ft radius of curvature. For non spherical shells, thickness should be increased at points where radius of curvature decreases in comparison with radius of imaginary circumscribed sphere.

REFERENCES: As listed on sheet 24, especially A.C.I. Journal, May-June 1938; E. C. Molke and J. E. Kalinka. Also: International Association for Bridge and Structural Engineering. Zurich:

Vol. 1 (1932); F. Dischinger: "Contribution to theory of wall-like girders"

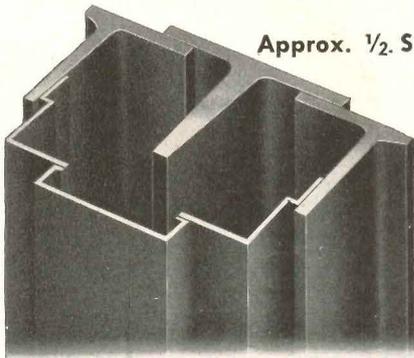
Vol. 4 (1936); F. Dischinger: "Shell construction in reinforced concrete"

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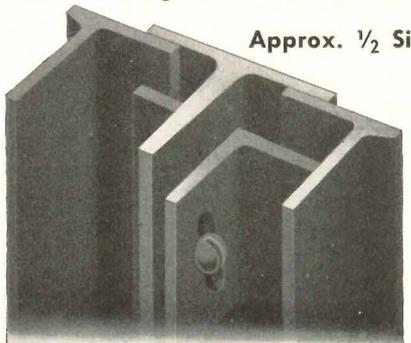
Saint Catherine School, Columbus, Ohio
Ramsey and Croce, Archt., Columbus, Ohio
Altman and Coady Co., Bldr., Columbus, Ohio

Bayley Originated Variable Width Adjustable Mullion and Mullion Cover



Approx. 1/2 Size

- Provides for contraction and expansion, insuring good contact at jambs
- Adjustable 1/2" plus or minus variation in masonry dimension
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- Provides two direction slip joint
- Lintel or building load do not bear on window - preventing distortion and assures proper ventilator operation
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Approx. 1/2 Size



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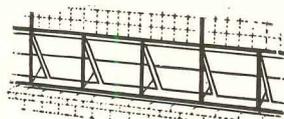
See Bayley in Sweet's. Complete catalogs on aluminum windows, 16a/Bay; steel windows, 16b/Ba; Saf-T-Gard Hospital Detention Window, 16b/Bay.



PROJECTED



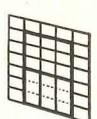
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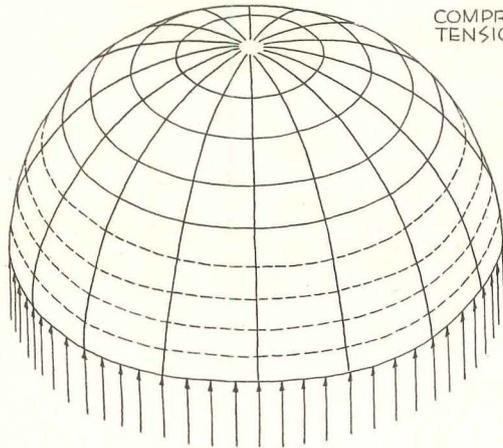
New York 17

Washington 16

STRUCTURAL FORMS — 23: THIN SHELLS OF REINFORCED CONCRETE

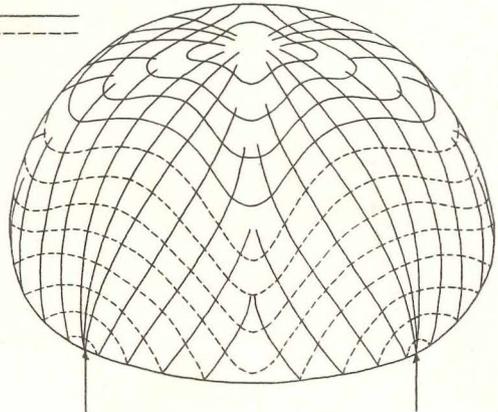
By Seymour Howard, Architect, Instructor at Pratt Institute

B-1 BOTH SETS OF CENTERS OF CURVATURE BELOW SHELL (Continued)



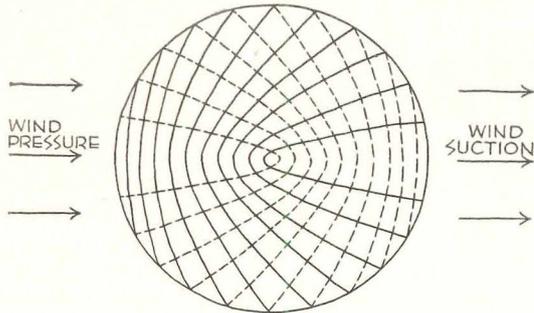
Continuous Support

COMPRESSION ———
TENSION - - - - -

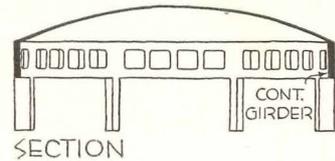


Four Points of Support

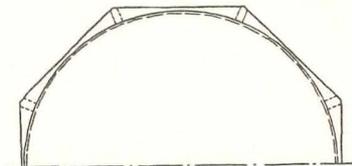
Stress Trajectories for uniformly loaded spherical domes



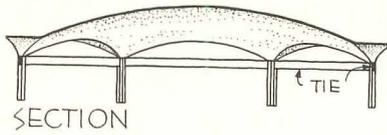
Plan of continuously supported spherical dome showing trajectories of stresses caused by wind loading



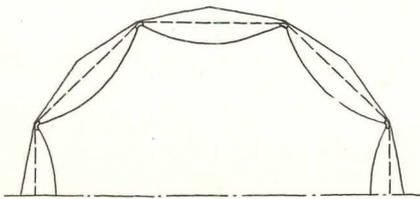
SECTION



HALF PLAN
DOME CONTINUOUSLY SUPPORTED

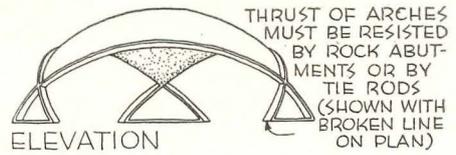


SECTION



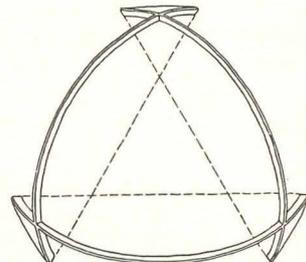
HALF PLAN

Dome on eight supports



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BY ROCK ABUT-
MENTS OR BY
TIE RODS
(SHOWN WITH
BROKEN LINE
ON PLAN)



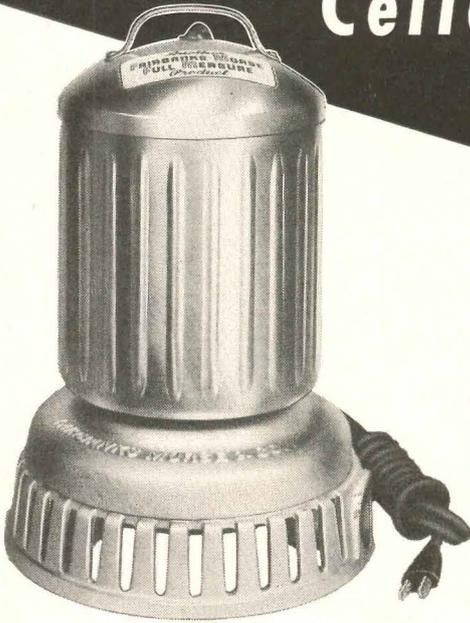
PLAN
DOME ON THREE SUPPORTS

Examples of various arrangements of supports

You can recommend them with confidence

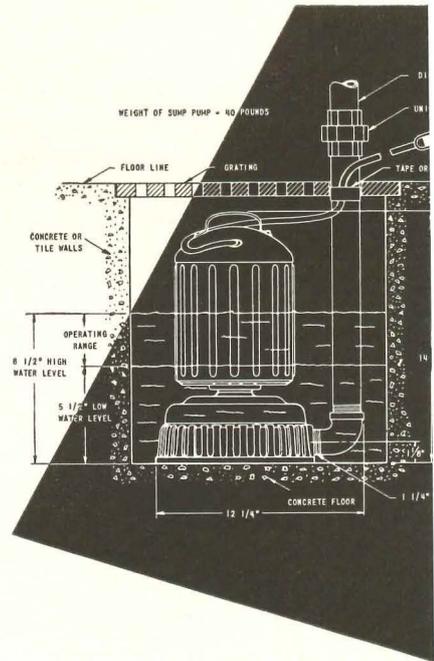
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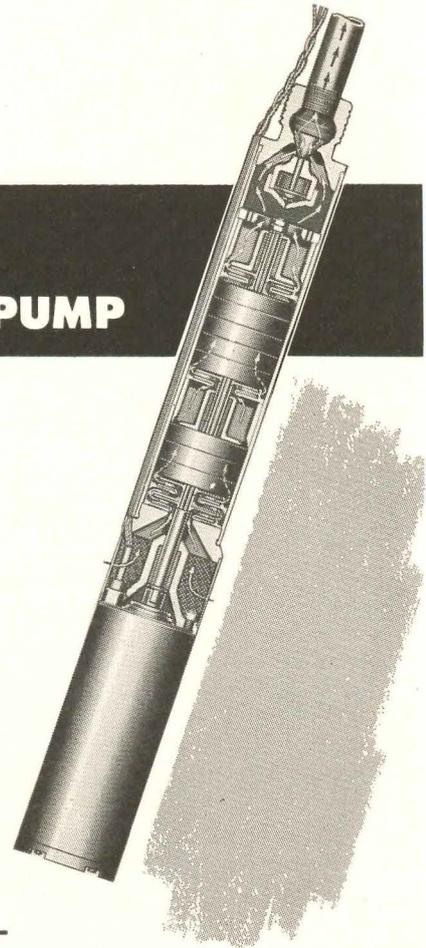
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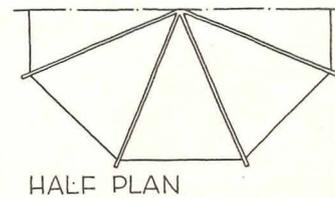
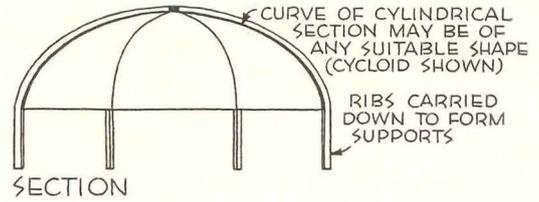
STRUCTURAL FORMS — 24: THIN SHELLS OF REINFORCED CONCRETE

By Seymour Howard, Architect, Instructor at Pratt Institute

B-1 BOTH GROUPS OF CENTERS OF CURVATURE BELOW SHELL (Continued)

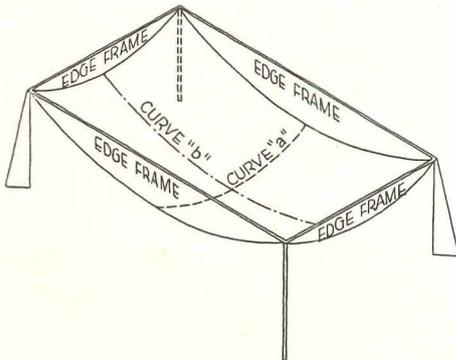
Polygonal Domes:

These are made up of short sections of cylindrical shells (curved in only one direction); the lines of intersection form stiffening frames. They approximate surfaces of revolution and at the same time provide simpler formwork and an easier transition to a non-circular ground plan.



NOTE: With symmetrical loading, no bending moments are induced in the ribs at the intersection of adjacent shell sectors

B-2 BOTH GROUPS OF CENTERS OF CURVATURE ABOVE SHELL



A shell of this type is exactly the opposite of type B-1 and the surface generated in same way, except that the center(s) of curvature of both curve "a" and curve "b" lie above the shell.

This is essentially a tensile form of relatively limited use, except for the bottoms of tanks (reservoirs, silos, etc.)

REFERENCES:

See reference noted on sheet 16; this book contains extensive bibliography.

Hajnal-Konyi: "Shell Concrete Construction" in Architect's Year Book:2. London 1947.

Felix Candela: "Simple Concrete Shell Structures." Journal American Concrete Institute December 1951.

Charles S. Whitney: "Cost of Long Span Concrete Shell Roofs." Journal American Concrete Institute June 1950.

Eric C. Molke and J. E. Kalinka: "Principles of Concrete Shell Design." Journal A.C.I. May-June 1938.

February 1953. A.C.I. Journal has three articles on shell construction:

Anton Tedesco "Construction Aspects of Thin-Shell Structures."

Charles S. Whitney "Reinforced Concrete Thin Shell Structures."

Pier Luigi Nervi "Precast concrete offers new possibilities for design of shell structures."

International Association for Bridge and Structural Engineering, Zurich; many articles in their published "Mémoires."

Interviews with: Robert Zaborowski, of Roberts and Schaefer Co.; Boyd G. Anderson and Edward Cohen, of Ammann and Whitney; John Hogan of the Portland Cement Association.

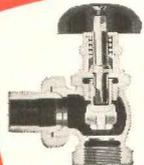
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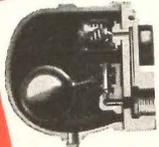
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New Jersey	Lakewood	Public School No. 5
New Jersey	Newark	Dayton Street School
New Jersey	Passaic	Grant School No. 7
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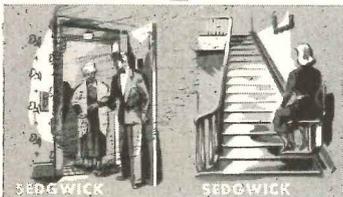
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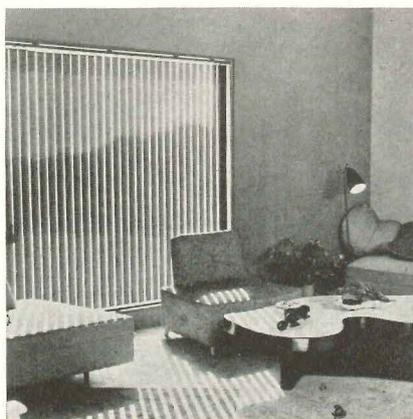
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A-E-H PRODUCTS

(Continued from page 227)

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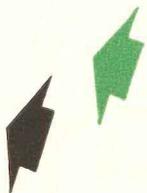
STEPLADDER STOOL

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(Continued on page 236)

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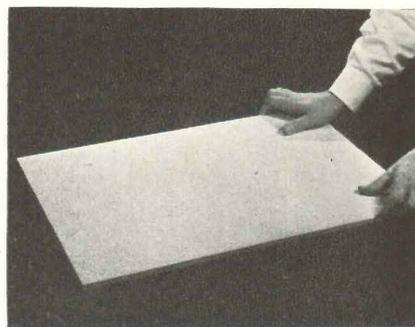
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(Continued from page 232)

TERRACOTTA AND CERAMIC VENEER

A thin terracotta or ceramic veneer is now available from *Kraftile*. Three-eighths of an inch in thickness, the new product weighs 4 lbs or less per square foot and can be machine-made in dimensions up to 16 by 24 in. In addition to its thickness and light weight, other advantages cited for thin veneer include: ease of installation (it can be cut to fit



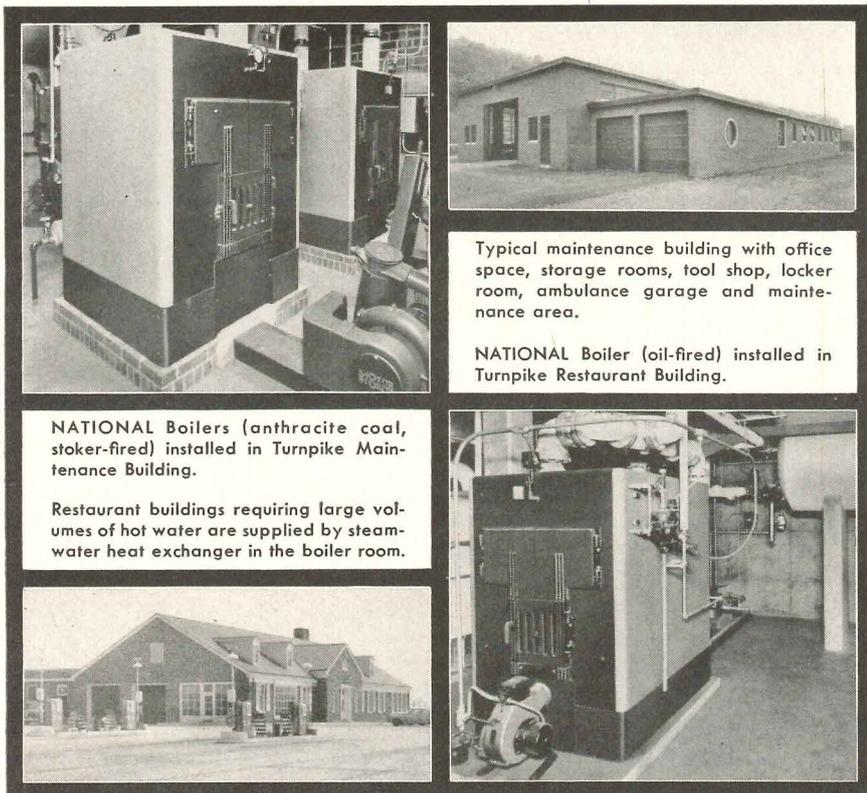
Light-weight ceramic veneer can be cut to fit easily at the site

by craftsmen on the job); reduced thickness of setting mortar (only 3/8-in. joints are required); and ease of application to reinforced concrete, brick, cement blocks or to a scratch coat of cement plaster on wood studs (the same as a finish coat of stucco). The light weight, and on-the-job cutting of the material is expected to make it available to the entire country without adding excessive freight charges to the factory price. The reduced weight of the veneer and the setting mortar are said to have the additional advantages of requiring less steel in building. *Kraftile Co.*, Niles, Calif.

WIRELESS INTERCOM SYSTEM

Talk-A-Phone Lc-33 is a new wireless two-station low-priced intercommunication system that requires no wired installations, and can be plugged into any electrical outlet. Featuring a "Sonic Gate," which provides noise-free communication by screening out hum and noise, the unit is designed for locations where instant or temporary installation is desired. Users can talk between offices, warehouses, plants or apartments, moving the units from place to place as needed, without any installation work.

(Continued on page 239)



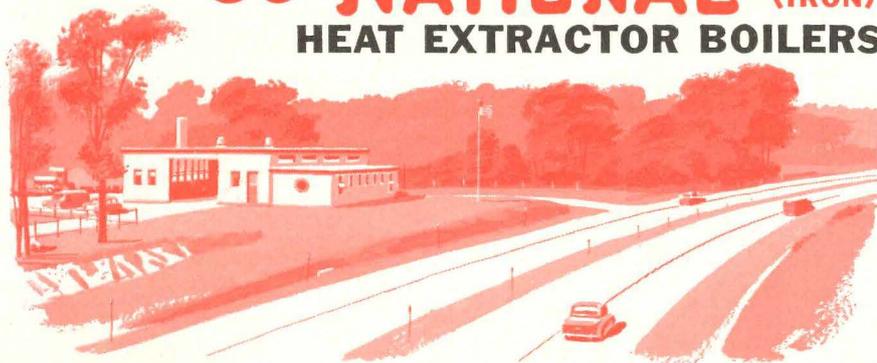
Typical maintenance building with office space, storage rooms, tool shop, locker room, ambulance garage and maintenance area.

NATIONAL Boiler (oil-fired) installed in Turnpike Restaurant Building.

NATIONAL Boilers (anthracite coal, stoker-fired) installed in Turnpike Maintenance Building.

Restaurant buildings requiring large volumes of hot water are supplied by steam-water heat exchanger in the boiler room.

PENNSYLVANIA TURNPIKE BUILDINGS
comfortably heated round-the-clock by
36 NATIONAL (CAST IRON) HEAT EXTRACTOR BOILERS



Section of Pennsylvania Turnpike showing a maintenance building and area.

Architects: J. E. Greiner Company, Baltimore, Md. Heating System Designers: George & Hartman, Baltimore, Md. Heating Contractors: W. L. Ramsey, Harrisburg, Pa.; J. J. Betke, Beaver Falls, Pa.; John Galbreath, Pittsburgh, Pa.

Heating comfort is assured in the restaurant, maintenance, utility and toll gate buildings on the famous 327-mile Pennsylvania Turnpike. Maintenance buildings are supplied with adequate heat to thaw cinders by the truckload. Abundant domestic hot water is also furnished by tankless water heaters for washrooms . . . and, in the restaurants, boilers heat water for dishwashing.

Heat Extractors along one stretch of the Turnpike are oil-fired . . . the others are anthracite coal, stoker-fired. Convectors, unit heaters and radiant panels are used for heat distribution.

Send for details about National Heat Extractor Boilers . . . sizes available for all applications—from small homes to large buildings.



Write for bulletin No. 586-9-AR

THE NATIONAL RADIATOR COMPANY
JOHNSTOWN, PENNSYLVANIA

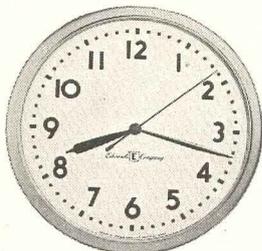


IN MORE AND MORE SCHOOLS, IT'S EDWARDS!

Thousands of schools, coast to coast, run smoother, easier, thanks to Edwards.

In California, for example, 14 new schools recently joined the hundreds now using Edwards Automatic Clock and Program Control Systems.

Most recent was Menlo-Atherton High, an outstanding example of modern architecture. Among the others are College of Notre Dame, Belmont, Waverly School, Stockton, Frank Homan School, Fresno, and Brentwood School, East Palo Alto . . . all in California.



Edwards Automatic Clock and Program Control Systems are precision-built to give long, trouble-free service year after year. No mercury pendulums, rectifiers, condensers or troublesome radio tubes complicate their operation. The clock itself is handsome, functional . . . harmonizes perfectly with any type of architecture. Accurate sweep second hand, silent movement, no annoying tick each minute.

EDWARDS

protects.. everywhere!

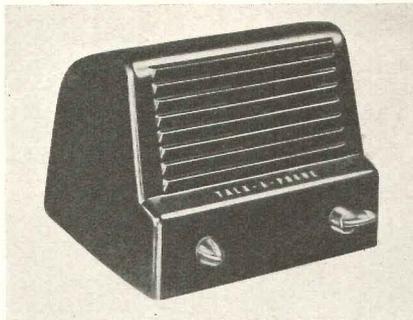


A-E PRODUCTS

(Continued from page 236)

The "Sonic Gate" circuit together with the Talk-A-Phone "squelch" is said to effectively suppress line noises and hum while the system is in actual operation, as well as when it is in stand-by position.

The unit is designed so that more stations can be added at any time to the system, all stations being able to re-



Wireless unit provides intercom service for temporary installations

ceive messages transmitted from any point, thus providing needed communication where permanent installations may not be practical. It also features a device which provides dictation and supervisory control and does away with the need for operating any controls while dictating. This feature also is designed to meet the need for "listening in" on nursery or sick room by eliminating the necessity for any operation of controls. Talk-A-Phone Co., 1512 So. Pulaski Rd., Chicago, Ill.

METAL FURNITURE

Designer Archie Kaplan has recently introduced some black expanded metal furniture with a new lightness of feeling. Designed to be used indoors or out, the line includes a 6-ft room divider with variated shelves to display china, glassware or objets d'art; a group of three nesting tables; a tea cart with rail handle and offset shelves; a new chair and matching bar stool in round wrought iron with vinyl covered cushion; a coffee table with a built-in shelf; and open cabinets for storing records, which also serve as small room dividers. New Dimensions Furniture, Inc., 26 W. 23rd St., New York 10, N. Y.

(Continued on page 242)

DESIGN UNLIMITED

with original

Alsynite

TRANSLUCENT FIBER GLASS PANELS

● Alsynite is the ideal translucent architectural material. Shatterproof, feather-light. Can be sawed and nailed, installs like corrugated metal. Economical. Seven colors, corrugated or flat. Use Alsynite anywhere and everywhere for brilliant new effects. See our brochure in Sweet's Catalog.



homes...for skylights, window walls, patio roofs, awnings, shower stalls, etc. Ideal indoors and out.



commercial...for store fronts, office partitions, luminous ceilings, decorative effects, signs.



industrial...for unlimited daylighting...skylights, side walls, etc. No framing needed.

ALSYNITE COMPANY OF AMERICA

Dept. AR-4, 4670 DeSoto St., San Diego 9, Calif.

Please send me complete information on Alsynite and name of nearest distributor.

Name _____

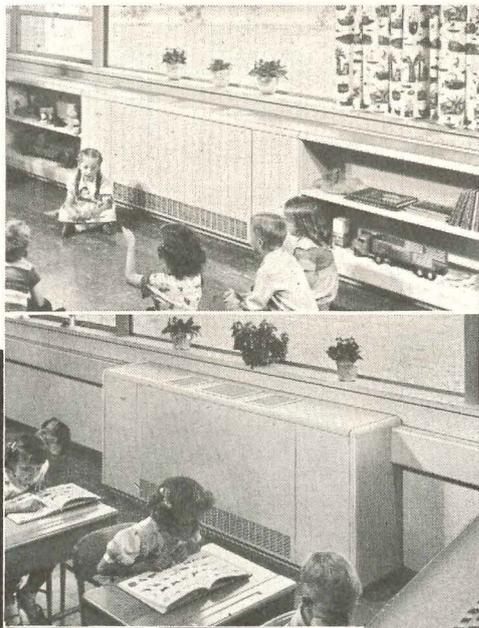
Company _____

Address _____

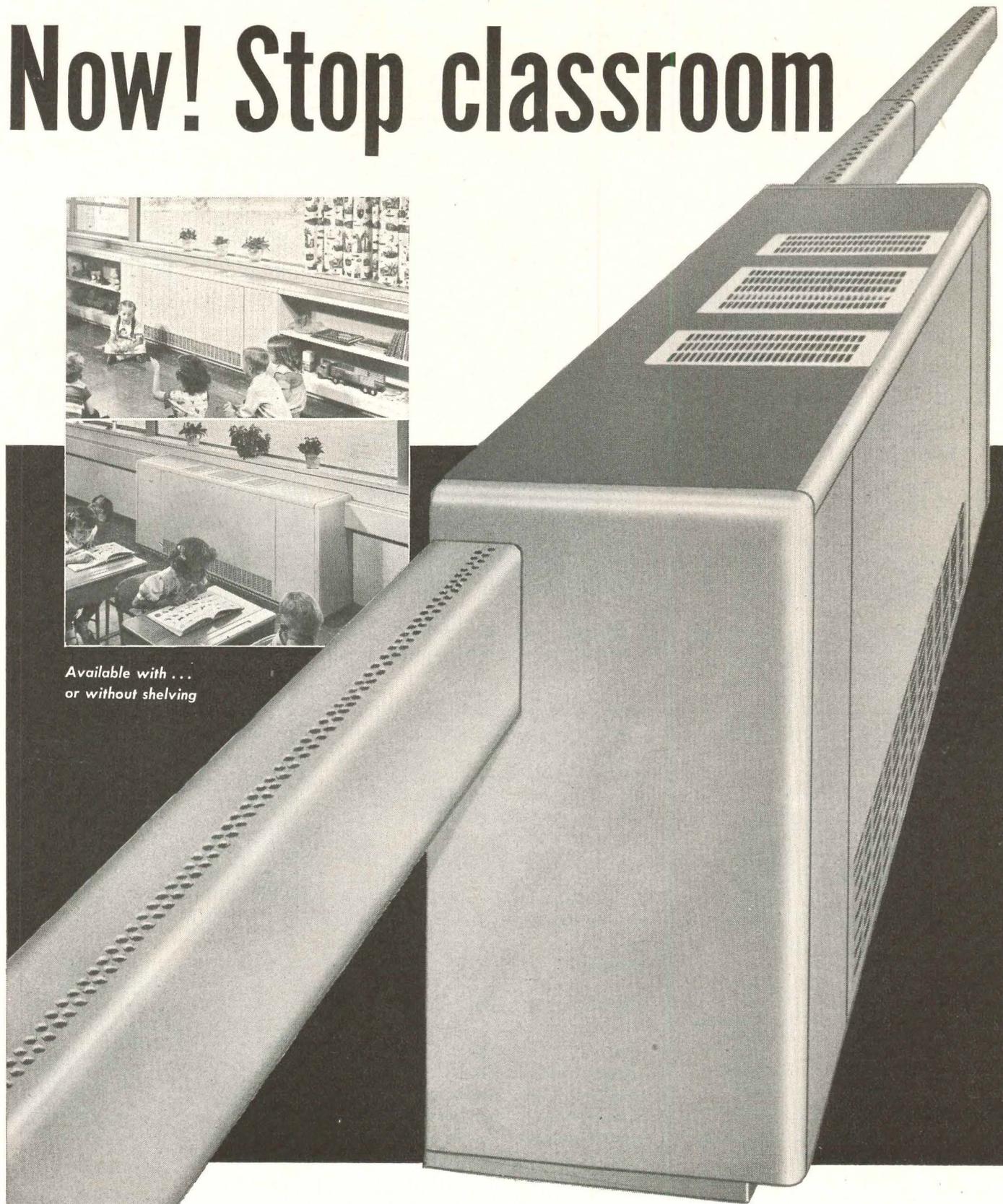
City _____ State _____

Plants in California and Ohio
Distributors in Principal Cities

Now! Stop classroom



Available with ...
or without shelving



The exclusive new **TRANE**

MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING AND VENTILATING

drafts before they start!

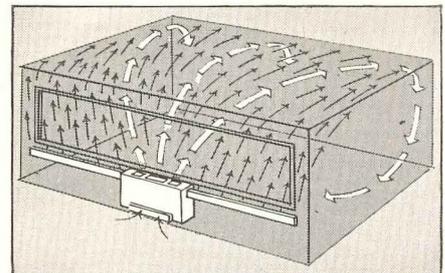
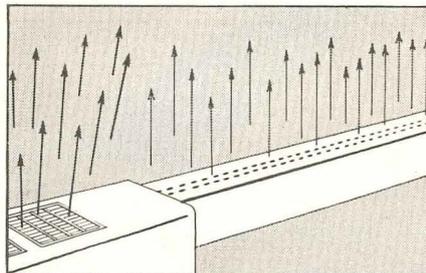
New! Exclusive Trane Unit Ventilator System creates Kinetic Barrier which (1) stops window downdrafts every minute room is occupied, (2) improves distribution of heated and ventilated air, and (3) operates quietly—virtually noise-free.

Not since the first unit ventilator has there been such a significant improvement in school comfort.

The new TRANE Unit Ventilator System actually accomplishes what architects, engineers, contractors and school authorities have long agreed would be the ideal.

How Trane System differs. The use of *warm* air for intermittent “blanketing” of windows during the heating cycle has been common practice for many years. However, this still leaves pupils exposed to downdrafts since *cooling* is required about 75% of the time due to high heat gains. The new TRANE system differs in that it is effective *at all times*—during cooling as well as heating cycles. *It operates every minute the room is occupied . . . even when the heat is off.*

HOW TRANE *Kinetic Barrier* SYSTEM WORKS



Outdoor and room air is drawn into the TRANE Unit Ventilator in desired proportions where it is blended, filtered and brought to the proper temperature. It is then forced upward from the central unit and from lateral extensions along the entire window wall.

Rising air creates *Kinetic Barrier* which blocks drafts at source, draws room air to ceiling. These air streams blend and circulate around room in a continuous draft-free cycle. Air fans out from central unit, assists air from extensions to penetrate every corner.

Report describes new system in detail. Just published. Contains results of an investigation of the TRANE *Kinetic Barrier* System of unit ventilation operating in an actual “problem” classroom during the winter of 1952. If you are concerned with modern schoolroom heating and ventilation, this report is “must” reading. Call your TRANE sales office for a copy today.

Trane matched products fit every school need . . . Convectors • Wall-Fin Heaters • Volume Ventilators • Projection Heaters • Horizontal Unit Heaters • Force-Flo Heaters • Climate Changers • Compressors • Air Conditioners • Water Chillers • Fans • Coils • Traps and Valves.

Kinetic Barrier refers to the wall of upward-moving air provided by TRANE KB Unit Ventilators. This action stops window downdraft, induces flow of room air, blends with main air stream from unit ventilator.

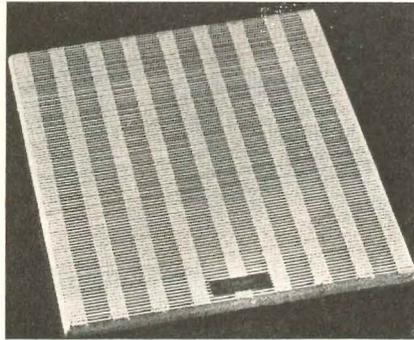
Kinetic Barrier system of Unit Ventilation

EQUIPMENT • The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto • 87 U. S. and 14 Canadian Offices.

(Continued from page 239)

DECORATIVE APPLICATIONS WITH ACOUSTICAL TILE

A new acoustical tile called *Tropi-Tile* is made from fibrous glass bonded into board form and is surfaced with woven wood, available in a variety of patterns and in a wide color range. The tiles are made in sizes of 12- by 12-in., 12- by 24-in., 24- by 24-in., 24- by 48-in. and 48- by 48-in., in widths from 1/2 to 1 1/4 in. They are available in natural or



Acoustical tile from fibrous glass

24 stock colors; custom matching of clients' color choices may be obtained as well. Installation is reported to present no problems — the tile being suited to suspended ceiling constructions or application with adhesives. Kerfing may be done at the factory or on the job for mechanical application. Aside from the acoustical value of the fibrous glass material, the attractive woven wood surfaces add beauty and distinction to rooms — in offices, restaurants, public rooms of almost any type, as well as private residences. Tropicraft of San Francisco, 14 Sherwood Pl., San Francisco 3, Calif.

SHEER DECORATIVE FABRIC

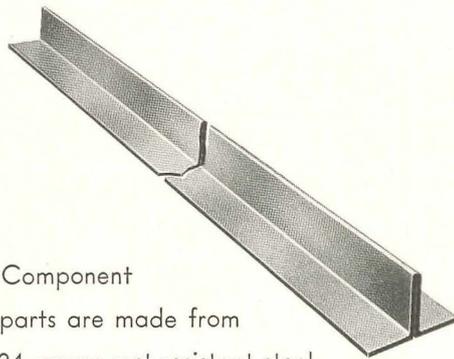
A new addition to the line of Golding decorative fabrics, is "*Pyrenees Cloth*," a sheer weave loomed from 26 per cent Pakistan goats' hair, 50 per cent cotton, and 14 per cent viscose. The cloth has a soft-toned translucent texture with a shadowy striated effect, that reportedly does not shrink, will not wrinkle and sheds dust. The fabric has weight and body and a certain crispness to the touch. It comes in six plain pastel colors, 50 in. wide: rose, dust, light blue, green, beige, gold and gray. It has also been used for two of the manufacturer's hand-screened prints: "*Marakesh*," a modernized architectural design; and "*Botanical*," a wide-spaced leaf pattern with bright flowers, designed by Tammiss Keefe. Golding Decorative Fabrics, 470 Fourth Ave., New York 16, N. Y.

PHOTOCOPIES IN COLORS

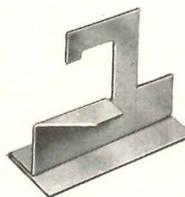
A new process for making photocopies in any color has been developed by the manufacturer of the *Apeco Systematic Auto-Stat* office photocopy machine. The color copying process has been developed to meet the growing demand by business to be able to color-code copies for fast visual separation. To make colored photocopies with the manufacturer's present equipment no additional equipment is used. The procedure is the same as for regular black and white copies, and copies can be made in less than a minute, in only two steps. There is no time-consuming drying. The process is said to do away completely with chemical trays, running water, wet hands and fumes. The equipment is described as simple to operate and requires no special set-up — it is ready for automatic operation when plugged in. The American Photocopy Equipment Co., 2849 No. Clark St., Chicago 14, Ill.

(Continued on page 246)

.. *Quality* mechanical suspension system for the installation of acoustical units is Securitee.



.. Component parts are made from 24 gauge rust-resistant steel, with patented pressure flange and ample width for a true and rigid installation



.. *Information* contained in our new folders will be invaluable to you as an architect or designer . . .

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Westinghouse *Blue Chip Line* *protects water-cooler investments*

First, because the 5-Year Guarantee Plan covers the entire Hermetically-Sealed Refrigeration System: motor-compressor, evaporator and condenser . . . not just the motor-compressor alone. That's protection against mechanical failure.

blue chip line with its many diversified models, guards against scattered investments. With Bottle, Pressure, Compartment, Explosion-Proof and Remote types, in capacities from 1 gallon to 22½ gallons, you can concentrate on just one reliable source.

protects against high operating costs, too. Users agree that, in gallons per dollar, Westinghouse Water Coolers prove exceptionally economical. Especially the new 1953 air-cooled pressure models, which are remarkably cost conscious with higher capacity *Super Sub-Coolers*.

water cooler engineering data, contained in our Architect's Kit, is a competent investment guide, enabling you to choose exactly the right model and type for any project; and your Westinghouse Water Cooler Specialist is a capable counselor on water cooler matters. For quick reference, we also suggest you consult your Sweet's File, Section 28c/WE.

investments in Westinghouse Water Coolers are conservative, adequately protected against depreciation and certain of long-time dividends in fine performance. For more details, and for planning assistance, call your nearby distributor or write Westinghouse Electric Corporation, 653 Page Boulevard, Springfield 2, Massachusetts.

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2-Gallon,
Air Cooled



WSE8A
8-Gallon,
Explosion-Proof



WWE14A
14-Gallon,
Explosion-Proof



WAC2
Compartment
Pressure Cooler



WAP7A
7-Gallon, Plain
Top, Air Cooled



WWP13
13-Gallon, Plain
Top, Water Cooled



WBC1
Compartment
Bottle Cooler



(Continued from page 242)

CHAIRS AND STORAGE UNITS

New additions by Charles Eames to the *Herman Miller* furniture line include two new chairs and a revised system of storage units. Eames' first plastic side chair is a counterpart of the plastic armchair introduced several years ago. The new side chair is described as lightweight, comfortable and easy to keep clean. Because of its weather resistant plastic shell and choice of metal bases,

it may be used out-of-doors. Designed as an all-purpose chair, it can also be used as a desk chair, a dining chair, or a rumpus room chair. The molded shell of the new chair is, like that of its armchair predecessor, made of polyester resins, reinforced with glass fibers, and has a shaped one-piece seat and back. The shell is offered in a choice of three colors: elephant hide gray, seafoam green and greige, and is available with any of three bases: a strut base of dining and desk height, executed in polished chrome; and two chrome rod bases, one



Molded plastic shell chair is fitted with upholstered foam rubber

of desk height and another of a slightly lower height, for occasional seating.

The new upholstered chair is composed of a continuous shell of molded plastic, to which an upholstered, molded foam rubber pad has been fitted. It is offered in a choice of seven different bases, which adapt the basic design to different seating requirements.

The complete and augmented E.S.U. storage and desk system now includes 18 modern desks and storage units, combining wood, chrome-plated steel and colored panels. The line offers storage units in two widths (24 and 47 in.) and three heights (20 $\frac{5}{8}$, 30 $\frac{5}{8}$, and a high 58 $\frac{5}{8}$ -in. room divider height.) Standardization of the case dimensions makes it possible to use the units separately or arrange them in storage rows. The two new E.S.U. desks are 29 $\frac{1}{2}$ in. high. Each desk has two standard-size file drawers, with stops to prevent their being pulled too far out. One drawer contains a sliding pencil tray and a "well" for incidental office supplies, while the other is available with a convenient letter file. Both desks have polished chrome legs and footbar. In one desk (#D-30) a typing counter with drawer and shelf space forms an "L" with the main unit. Herman Miller Furniture Co., Zeeland, Mich.

AUTOMATIC SYSTEM FOR INTERCOMMUNICATION

A new and complete line of intercommunicating systems is now being distributed by the Connecticut Telephone and Electric Corp. The new line of automatic switchboards and telephones is described as the most complete the company has ever offered. It will provide intercommunication facilities for businesses needing as little as two telephones,

(Continued on page 250)

That modern touch
RESOLITE

Shade from the sun, but with bright daylight inside — that's why Resolite translucent structural panels are bringing the modern home closer to the outdoors. Resolite is better for skylighting because it filters out much of the heat, gives a soft, restful daylighted interior, as in this weather-tight, Resolite-roofed patio of a Florida residence.



Resolite is a rugged structural sheet of Fiberglas-reinforced resin plastic, flat or corrugated for added structural strength. The material is unaffected by weather extremes of heat, cold or moisture. It will not rust, oxidize, mildew or rot. It is simple to apply with screws or nails and with ordinary tools and skill; it is easily adapted to roof, wall or partition.

A wide variety of color and corrugation patterns lends Resolite easily to endless possibilities in interior or exterior decoration.



Beautifying the interior or exterior by either reflected or transmitted light, Resolite panels are ideal for decorative and utility partitions, with a selection of color for any motif. The effect of length and height is enhanced by utilizing the corrugation patterns.

For complete information, and name of nearest distributor, write Dept. A-4

RESOLITE Corporation
ZELIENOPLE, PA.

in.); then the collar-sleeve is turned to raise shore to the exact height required. This protected vernier adjustment need not exceed 3 in. — is said to save considerable time in erection. Post-shore is comparatively light in weight and its compact design permits one-man-erection and exceptional ease in handling and transporting.

The device is fully tested, with known load capacities to assure maximum safety, and will shore slabs from 6 to 15½ ft. Three models are immediately available: APS-610 (6 to 10 ft.), APS-813 (8 to 13 ft) and APS-1015 (10 to 15½ ft). All models include a standard scab plate welded to the base member. The post-shore also can be adapted, with optional equipment, for use with the manufacturer's "Eze-bilt" steel-panel scaffolding for shoring; laterally braced; or extended in height as much as 3 ft on each model. Universal Mfg. Corp., Zeligon, Pa.

GAS-FIRED FURNACES

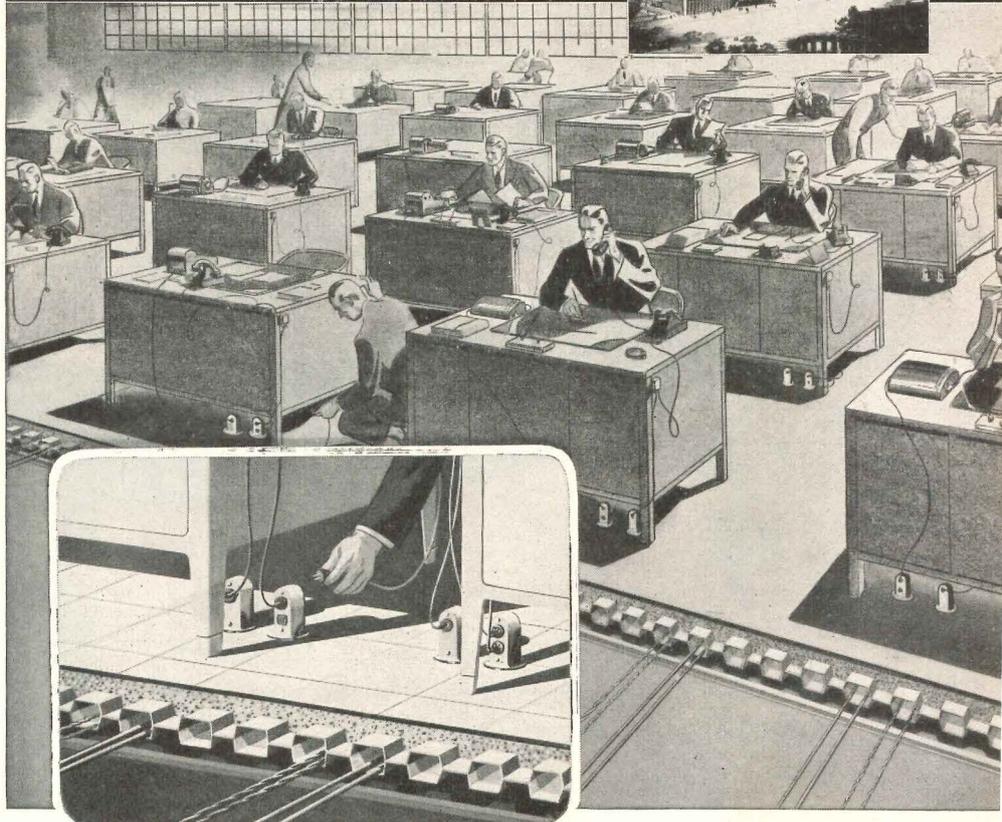
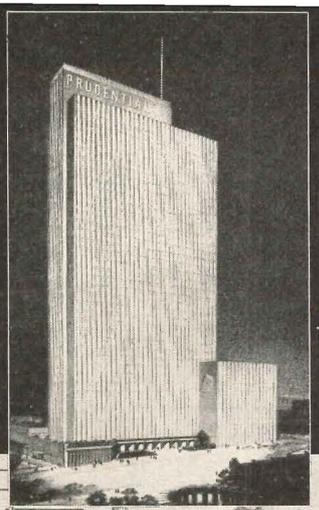
A complete series of special design reverse- or counter-flow models has been added to the *Sequoia* line of gas-fired furnaces. Three sizes most frequently required for residential perimeter heating installations are in production — 80, 100 and 120,000 Btu.

To be distributed nationally under the trade style of "Rev-flo," the new furnace incorporates the same unique over-all dimensions first introduced in the manufacturer's "Closet'eer" upright series. These reverse usual upright furnace physical features by increasing width to a full 28½ in., but maintaining extremely shallow depth. Height is normal.

Two major advantages are claimed for these unusual dimensions. All connection points position on the face of the unit for simple, rapid installation. The shallow depth reportedly makes possible installing the furnace in normal-size linen closet or wall alcove openings — so that when placed in a common bedroom wall, wardrobe closet area decreases are not necessary. In regular closets, the shallow depth (16 to 24 in.) and minimum AGA-approved clearances leave considerable general storage space. Sequoia Mfg. Co., 1012 Brittan Ave., San Carlos, Calif.

(Continued on page 268)

Why the Finest New Buildings Have Q-Floor



Beyond the fact that Q-Floor offers the greatest electrical availability of any structural floor in existence (as indicated in the above illustration), there are several other vital reasons why it has become a part of the finest new buildings in America.

Q-Floor saves construction time and money. The steel cellular units come on the job cut to fit so that two men can lay 50 square feet in one minute. In the case of the U. S. Steel-Mellon Bank Building in Pittsburgh, forty floors were installed in four months. Because Q-Floor provides a perfect platform for work and storage, 1,000 men were able to operate on the job without interfering with each other. Q-Floor saves steel

as a result of its favorable ratio of weight to strength. Footings and structural steel can be lighter than with ordinary construction. Moreover, Q-Floor saves drafting room time since completely predetermined wiring and mechanical layouts are not necessary. Because no combustible forms and shoring are required, there has never been a construction fire on a Q-Floor job. Add these features to low cost on wiring changes in the years to come, and it's easy to see why Q-Floors are a feature of America's finest new buildings.

The Robertson Technical Library contains data books on Q-Floor which should be part of every architectural and engineering library. Write to us.

Robertson Q-Floor

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In Canada:
Robertson-Irwin Ltd., Hamilton, Ontario



In England:
Robertson Thain Ltd., Ellesmere Port, Cheshire

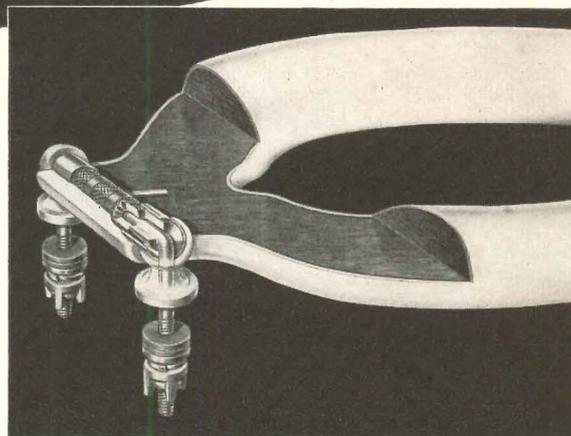
Where Strength is called for



Especially for schools, hospitals, factories and other industrial and institutional installations — specify COREX® Seats.

COREX is a special composition, molded by tons of pressure over a core of hardwood fibrous chips, into a homogeneous unit whose toughness and resilience is matched only by the lustrous beauty of its practically indestructible finish.

The first cost is the last cost. It never needs replacing.



Heavy brass insert imbedded continuously across back and locked into molded core, absorbs any stress, strain or shock.



CHURCH PLASTIC WALL TILE

A quality plastic wall tile, ideal for multi-unit or single family dwellings; for hotels, schools, factories, institutions; for new construction or remodeling. Needs no expensive supporting constructions — weighs only 8 oz. per square foot. Four styles and 25 colors to choose from. Write Architects Service Dept. 4 for descriptive literature and sample tiles.



C. F. CHURCH MFG. CO., HOLYOKE, MASS.
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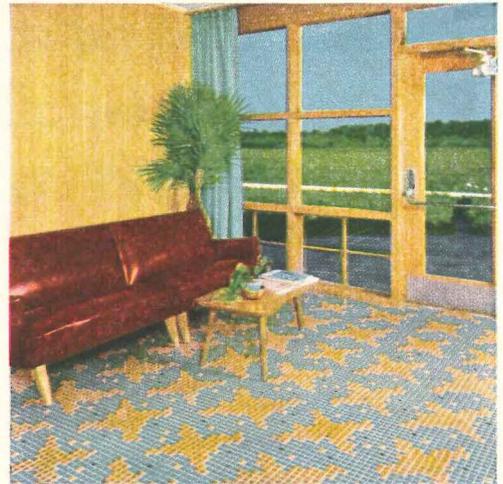
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by a thousand busy feet...
a thousand smudgy hands

MOSAIC CLAY TILE!

Mosaic Clay Tile gives a warm, home-like touch to Mace's Lane High School, Cambridge, Md. The floor—a delightful Mosaic Formfree* Pattern in Granitex Mosaics—is youthful looking, long lasting, easy to clean. Johannes & Murray, Architects. George E. Adshead & Son, Tile Contractor.



Men's Pool, Syracuse University, Syracuse, N. Y. Waterproof Mosaic Clay Tile gives a lasting, sanitary finish to pool lining, deck and surrounding walls. Lorimer Rich & Associates, Architect. Harry A. & F. Curtis King, Associate Architects. Stearns & Bergstrom, Inc., Tile Contractor.



In the Edison School, Coldwater, Michigan, Mosaic Clay Tile corridor walls stay beautiful despite all youthful antics. Warren S. Holmes Co., Architect. Imperial Tile Company, Tile Contractor.

*Copyright 1951 by The Mosaic Tile Company

Fifty years from today, a look inside these schools would tell you more eloquently than any words... there is nothing in the world to equal Mosaic Clay Tile for permanent beauty and satisfaction.

For helpful literature on the many types of Mosaic Clay Tile, write Dept. 30-17, The Mosaic Tile Company, Zanesville, Ohio. And remember—you and your clients are always welcome at our showrooms, or at those of your local Tile Contractors.

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For Free Estimates
on MOSAIC Tile,
see your phone book
for the name
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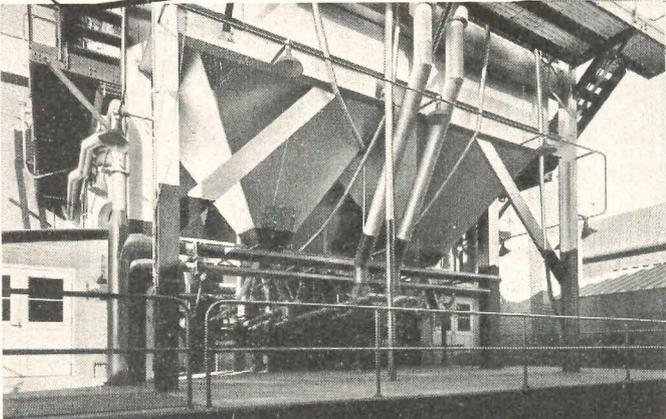
**"We modernized our plant,
installed new COAL-burning equipment,
AND CUT OUR FUEL COSTS 45%!"**

**"In Addition, Automatic Coal-
and Ash-Handling Equipment
Cuts Labor Costs 60%!"**



says MR. A. J. GOETZ, Executive Vice President,
River Raisin Paper Co., Monroe, Michigan.

"We recently modernized our entire plant following an extensive engineering survey. New coal-burning and coal-handling equipment was installed . . . heat losses were reduced . . . efficiency raised. As a result, our fuel costs have been cut 45 to 50%—proving to us that you just can't beat bituminous coal burned the modern way."



This view shows how River Raisin has installed its modern fly-ash reinjection system at the rear of the boilers but outside the plant. The plant also features outdoor coal handling to save additional interior space.



"We chose these modern spreader stokers for their advantages of low maintenance, low power requirements, and their ability to meet fairly rapid load changes. They give us maximum efficiency under all operating conditions."

Modernizing your present plant? Building a new one? In either case let a consulting engineer show you exactly how you can meet your *specific* needs with a modern coal installation—and at the same time save more money than you thought possible.

Automatic coal- and ash-handling equipment can cut your labor costs to a minimum. And, today, with a modern combustion installation, you can actually get 10 to 40% more power from each ton of coal than was possible a few years ago.

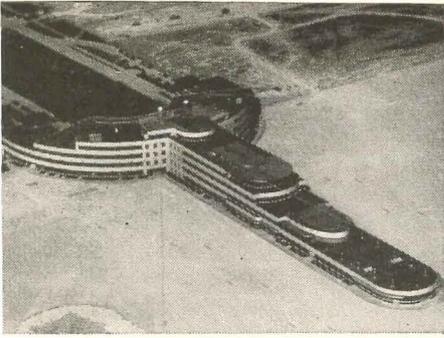
Moreover, with coal you'll never have to worry about a shortage of fuel. America's coal reserves are virtually inexhaustible, and this coal is mined by one of America's most efficient and productive industries. This means that coal users—unlike those committed to other fuels—get the advantage of dependable future supply as well as more stable prices.

**If you operate a steam plant,
you can't afford to ignore these facts!**

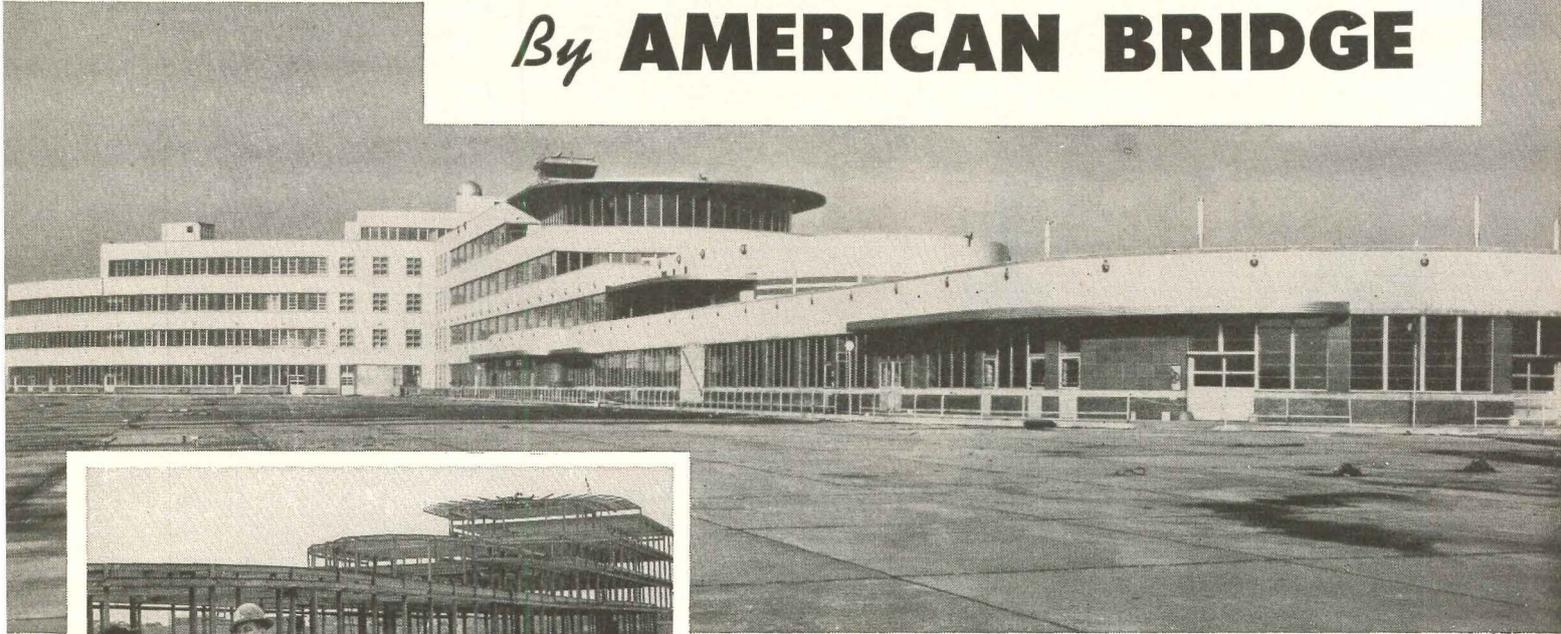
- COAL in most places is today's lowest-cost fuel.
- COAL resources in America are adequate for all needs—for hundreds of years to come.
- COAL production in the U. S. A. is highly mechanized and by far the most efficient in the world.
- COAL prices will therefore remain the most stable of all fuels.
- COAL is the safest fuel to store and use.
- COAL is the fuel that industry counts on more and more—for with modern combustion and handling equipment, the inherent advantages of well-prepared coal net even bigger savings.

BITUMINOUS COAL INSTITUTE
A Department of National Coal Association, Washington, D. C.

**FOR HIGH EFFICIENCY  FOR LOW COST
YOU CAN COUNT ON COAL!**



Huge Terminal Building at World's 2nd Largest Airport *By* **AMERICAN BRIDGE**



4,000-Ton steel framework fabricated and erected for 460-ft. semi-circular 7-story Administration Bldg. and 578-ft. Loading Dock

THE new thirty-three million dollar Greater Pittsburgh Airport, opened in June 1952, is an impressive sight. Its sixteen-hundred acre airfield is the second largest in the world . . . larger even than Washington's National Airport and New York's LaGuardia Field combined!

But, as impressive as is the airfield itself, it is overshadowed by the spectacular Administration Building. This seven-story, semi-circular structure with its long loading dock is easily the world's largest terminal building.

American Bridge fabricated and erected the 4,000-ton steel framework for this huge structure which is 460' feet in breadth at its widest point, and with its 578-ft. loading dock has an over-all length of 979 feet. Nine months after the erection crew took over, the last rivet was driven.

This huge building is another example of American Bridge engineering and fabricating "know-how". And it is your assurance that you can depend on American Bridge to handle any type of steel-frame construction with thoroughness and speed . . . any time . . . anywhere. If you would like to know more about the advantages of American Bridge fabricated and erected construction, call our nearest office.

Interesting Facts

Airfield is 2nd Largest in World.

Terminal Building is Largest in World.

The terminal building provides facilities of a small city, including a 62-room hotel, a restaurant to accommodate 3000, numerous shops.

Designed by: Allegheny County Department of Aviation.

Owner and Operator: Allegheny County Department of Aviation.

Architect: Joseph Hoover, Pittsburgh.

Consulting Engineer: L. W. Cook, Pittsburgh.

Structural Steel Fabricated and Erected by American Bridge: 4,000 Tons.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO
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MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ROANOKE · ST. LOUIS
SAN FRANCISCO · TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AVAILABLE NOW! For showing in churches, schools, clubs and industries, the new sound and color motion picture—**BUILDING FOR THE NATIONS**—a candid, factual photographic record of the highlights of the fabrication and erection of the United Nations' Secretariat Building.

AMERICAN BRIDGE

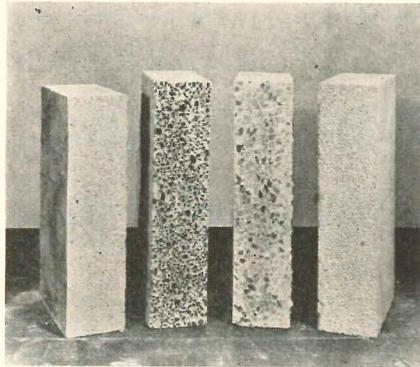


UNITED STATES STEEL

(Continued from page 263)

**CELLULAR CONCRETE
BUILDING MATERIAL**

A versatile cellular concrete which can be nailed, sawed and cut like wood, and has insulating, load bearing, acoustical and water resisting qualities, is being introduced in the United States. A European development, the material will be manufactured in this country under the tradename of *Calsi-crete*. The material is reported to cost less than con-



Four densities of new material

ventional concrete, despite its having 8 to 16 times the latter's insulation value and weighing only $\frac{1}{4}$ to $\frac{1}{4}$ as much, depending on the density required. Three types of the lightweight material will be manufactured, each varying in strength and other characteristics, depending on the particular application. Franchises will be issued to firms throughout the nation for manufacture of the structural type materials.

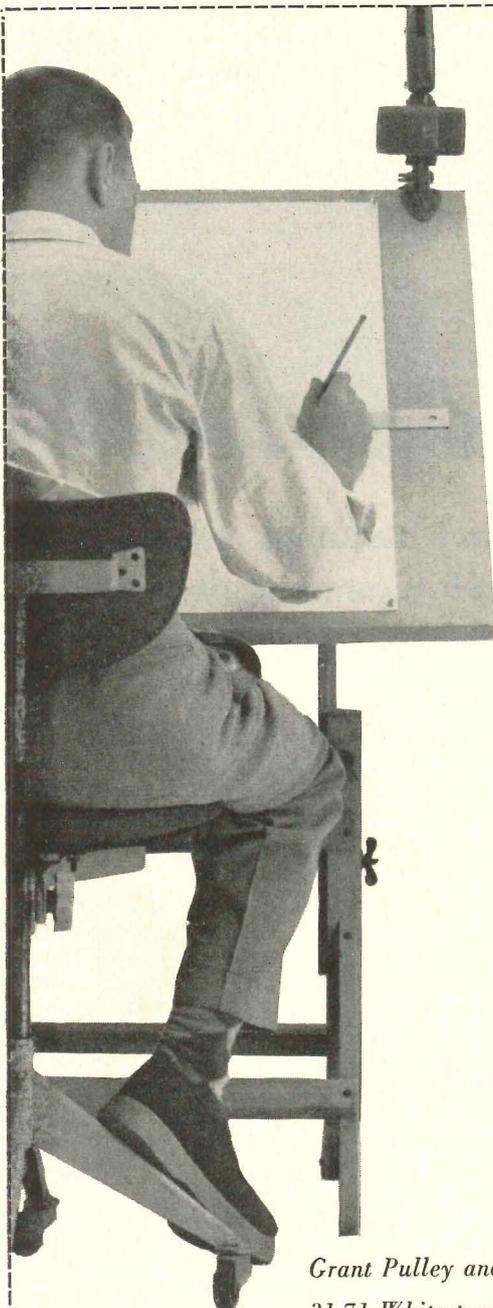
With a bulk density of 40 to 55 lb per cu ft, the material's strength is such that it can be used for nearly all building needs. In weight, this compares with regular concrete weighing approximately 150 lb per cu ft. Material of this density can be used for both inside load bearing walls and facings, exposed or covered roof planks and similar applications where strength is essential. Products with a bulk density of 30 to 40 lb per cu ft have average load bearing qualities and are excellent for partitions, roof slabs and related uses. Material with 15 to 30 lb per cu ft provides little structural quality, but is ideal for fire door cores, wall panels, ceilings, pipe coverings, cold storage and refrigerated rooms because of its outstanding insulation and acoustical features. It is believed the most suitable block size for the U. S. market will be 16-in. by 8-in. by required thickness (In Sweden it is 20-in. by 10-in. by required thickness; in England 18-in. by 9-in. by required thickness.)

The material is lightened by mixing preformed foam into a slurry comprised of siliceous material with the chosen cementitious material and water. The aerated fluid mix is cast to exact size or can be cut into required sizes before being cured in high pressure steam autoclaves. The product is ready to use within 24 hours after mixing. Because of its unicellular construction, it provides a moisture barrier having less than $\frac{1}{4}$ the water absorption of regular building brick. Calsi-crete Corp., 321 N. Hamilton, Saginaw, Mich.

CONTEMPORARY FURNITURE

A nutmeg finished birch wood has been chosen as the material for a handsome buffet from California. Part of the *Fashions in Modern* series, the buffet contains three generous sized drawers on one side, and an adjustable shelf behind the tambour door on the right-hand storage compartment. The buffet measures 20 by 52 by 31 in. high. Furniture Guild of California, 1601 E. 15th St., Los Angeles, Calif.

(Continued on page 272)



Work-saver:

Complete

set of

sliding door

framing

details

sent

on request.

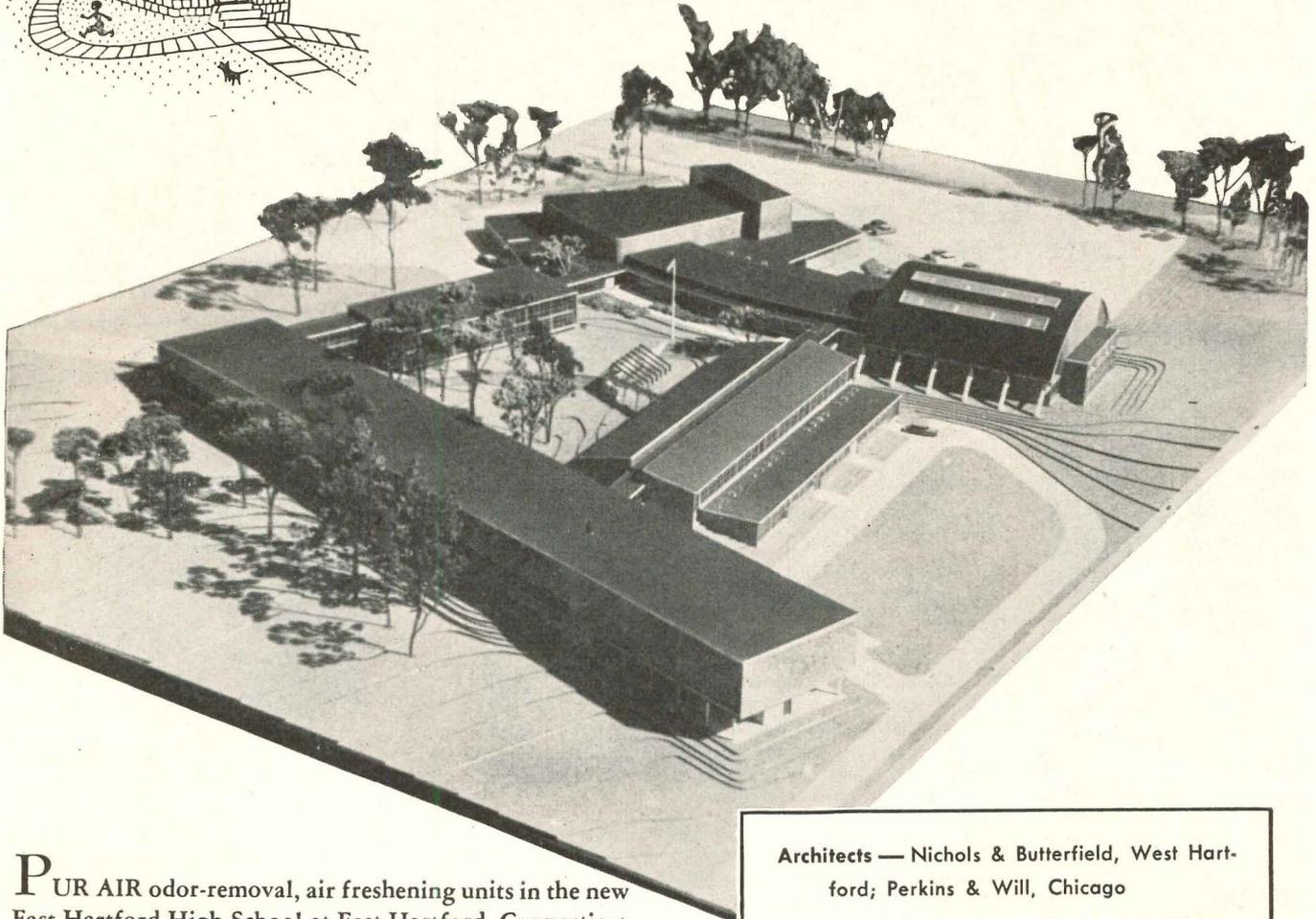
Grant

Grant Pulley and Hardware Corporation
31-71 Whitestone Parkway, Flushing, New York

The Little Red School House was Never Like This!



“PROGRESSIVE EDUCATION” IN PURIFYING AND RE-USING AIR SAVES \$5,000 YEARLY ON HEATING



PUR AIR odor-removal, air freshening units in the new East Hartford High School at East Hartford, Connecticut will pay double dividends. First, students will enjoy cleaner, fresher, more healthful air, and second, savings on the fuel bill will be a substantial \$5,000 annually. By recirculating and purifying confined air thru Pur Air, Activated, Coconut-Shell Carbon Adsorbers (filters), less re-heating of outside air is needed. Projected over a 20-year period, the estimated \$100,000 savings would pay for the Pur Air installation many times over. For complete details on the story of Pur Air, Activated, Coconut-Shell Carbon for odor-removal, call your local Pur Air representative, or write:

Architects — Nichols & Butterfield, West Hartford; Perkins & Will, Chicago

Mechanical Engineers — Marchant & Minges, West Hartford

General Contractor — A. F. Peaslee, Inc., Hartford

Heating Contractor — Thos. G. Shaffer, Inc., Hartford

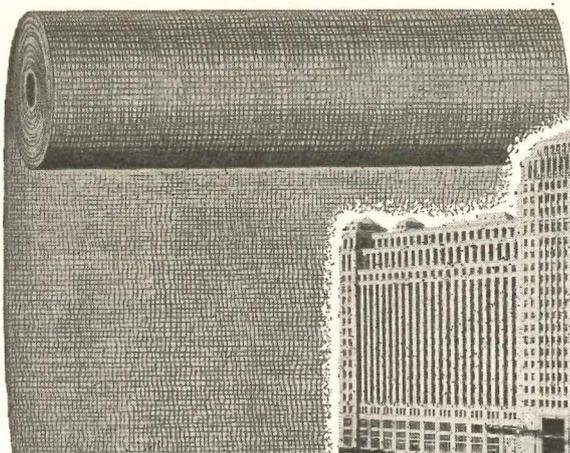
Sheet Metal Contractor — Automatic Refrigeration Co., Hartford

Pur Air Representative — Augur, Jones & Green, Hartford

Pur Air DIVISION

BARNEBEY-CHENEY Company

N. Cassady at Eighth Columbus 19, Ohio



Merchandise Mart, Chicago, Illinois, the largest business building in the world—4,023,400 square feet of floor area. Built in 1928 to 1931.



**CHICAGO'S FAMOUS
MERCHANDISE MART
CALLED FOR**

Karnak®

WATERPROOFING PRODUCTS

Twenty-five years ago, the problem of protecting the foundation of the "Mart" from hydrostatic head was answered with Karnak. Even though the big Chicago River flows beside it, *this Karnak job holds secure.*

Why was Karnak chosen? Because it is the membrane system of waterproofing that holds tight against any water condition.

Karnak is an open mesh long-fibre cotton cloth that has been heavily impregnated with highly refined asphalt so as to leave the mesh open. It is layered, on the job, with alternate moppings of asphalt to provide a tough, resilient, waterproof membrane. The non-sticking fabric unrolls easily . . . to the very end. It "works" faster and with no waste . . . saves labor costs.

The Karnak Membrane System is best for roof patching, skylight flashing, window and door flashing, through-wall and cornice flashing, as well as waterproofing against a hydrostatic head in dams, swimming pools, viaducts and tunnels. Send coupon for complete information. Manufactured by Lewis Asphalt Engineering Corp., 30 Church Street, New York 7, N. Y.



Karnak fabric is packed in sturdy, corrugated cartons for protected shipping and storage. They keep the fabric in perfect condition until used . . . cut fabric loss.



OTHER KARNAK PRODUCTS

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| Asphalt Roof Coatings
and Cements | Asphalt Emulsions
Tile Cement | Aluminum Roof Coating
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Joint Filler |
| Caulking Compounds | Asphalt Paint | |

LEWIS ASPHALT ENGINEERING CORP.

30 Church St., New York 7, N. Y.

Please send me **FREE** information about KARNAK Membrane System of Waterproofing

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Other items I'd like to know about _____

A-E-H PRODUCTS

(Continued from page 276)

damaged spot can be touched up without repainting the entire wall.

The paint already has been used on the interiors of more than 14,000 homes, as well as in offices, institutions, multiple dwellings and similar structures. Plans are now in progress for later introduction to consumers. Maas & Waldstein Co., 2121 McCarter Highway, Newark, N. J.

**INTERCHANGEABLE
FURNITURE GROUP**

The Dunbar "Career Group," new furniture series designed by Edward Wormley, comprises more than 144 separate units. Each piece is interchangeable in living room, dining room and bedroom, in keeping with fluid-space room planning. A cabinet unit



Dining chairs are laminated wood with comfortable elbow rests

measuring 36 in., for example, is sized and styled for use in a bedroom of small dimensions. Yet by the addition of matching units, it can be set up attractively as part of a grouping for a more amply proportioned living room or dining room. All case pieces in the group are in walnut in the more natural tones. Greater emphasis, however, has been laid on the deeper tones of wood as trimming. All case pieces are either on walnut legs connected front and back by an apron stretcher or 3-in. leather covered bases. Pulls are laminated wood covered with top grain leather, or a pull especially designed in Japan. All pull-out trays in case pieces work on metal channels for easy gliding. Case pieces feature interior backs and shelves of white maple

(Continued on page 280)



Design for a modern bath by Edward D. Stone, A. I. A.

"CLAY TILE MEETS THE CHALLENGE OF MODERN DESIGN ...WITH BEAUTY AND PRACTICAL CONVENIENCE"

Edward D. Stone

Noted architect Stone draws a spectacular performance from clay tile in this uniquely modern bathroom design. But any bathroom—modest or spacious—can sparkle with the same permanent clay tile beauty.

The clay tile lavatory counter tops can be adapted readily to single or dual sinks. Whether you build or design a stall shower, tub or a luxurious tub-plunge like the one illustrated, clay tile is the practical and permanent answer to any shower or tub area.

When it comes to bathroom floors—waterproof, scuff-

proof, no-wax clay tile is always a wise specification. And, of course, clay tile walls and wainscot will always hold homeowner maintenance to a minimum.

Clay tile has much to add to the designing, building or remodeling of any residential, industrial or institutional structure: color and design potential, lifetime durability and ease of maintenance that translates into substantial long-range economy. It will pay you to consider this versatile building material in your next project. Your clients will profit, too—whenever clay tile is used!

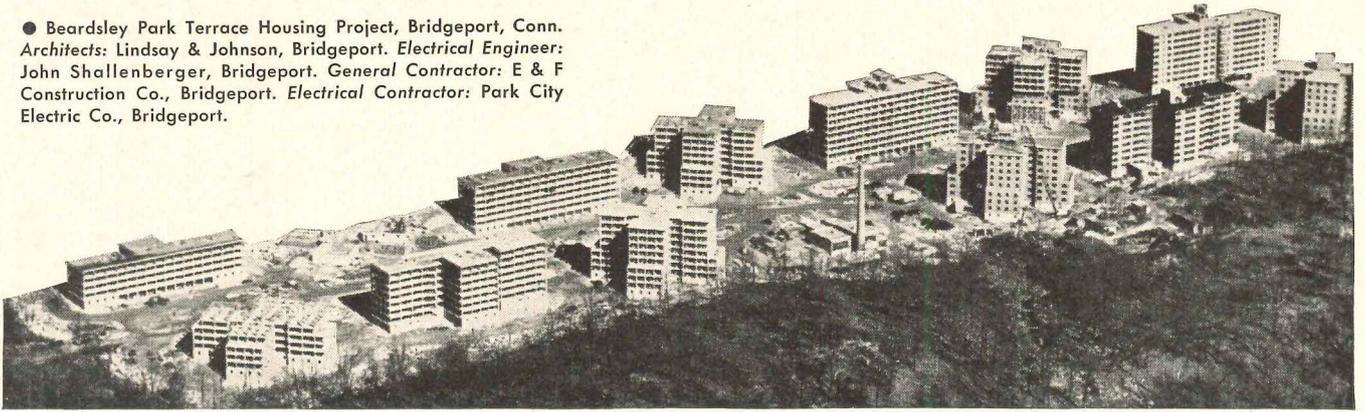
Tile Council of America, Room 3401, 10 East 40th Street, New York 16, N. Y. or Room 433, 727 West Seventh Street, Los Angeles, Calif.

The Modern Style is



PARTICIPATING COMPANIES: American Encaustic Tiling Co. • Architectural Tiling Co., Inc. • Atlantic Tile Mfg. Co. • B. Mifflin Hood Co. • Cambridge Tile Mfg. Co. • Carlyle Tile Co. • General Tile Corp. • Gladding, McBean & Co. • Mosaic Tile Company • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pacific Tile and Porcelain Co. • Pomona Tile Mfg. Co. • Robertson Mfg. Co. • Royal Tile Manufacturing Co. • Summitville Tiles, Inc. • United States Quarry Tile Co. • Winburn Tile Mfg. Co.

● Beardsley Park Terrace Housing Project, Bridgeport, Conn. Architects: Lindsay & Johnson, Bridgeport. Electrical Engineer: John Shallenberger, Bridgeport. General Contractor: E & F Construction Co., Bridgeport. Electrical Contractor: Park City Electric Co., Bridgeport.



Over 500,000 Feet of

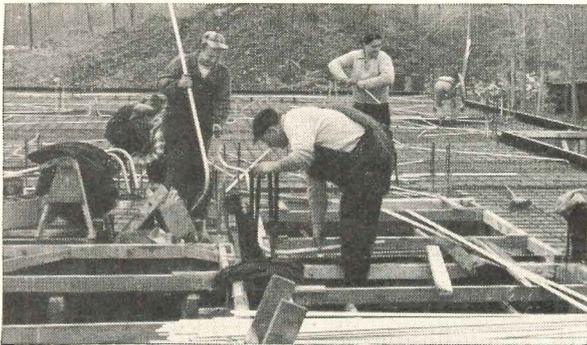


REPUBLIC ELECTRUNIT E.M.T.

Going into Bridgeport, Conn. Project



● Delays on a project like Bridgeport can be costly. Penalties are high. Using ELECTRUNIT E.M.T., which can be installed easily and quickly, helps keep buildings on schedule.



● ELECTRUNIT E.M.T. is easier to install in crowded quarters because there are no lines to turn. Advantages are especially noticeable on concrete slab jobs like this one.

Here's wiring protection on a big scale. And the fact that ELECTRUNIT E.M.T. was chosen for the job is proof that more and more architects want the protection of a steel raceway. Add to this the four-dip Preece Test zinc coating and you have wiring protection that should last as long as the building.

ELECTRUNITE E.M.T. is approved by Underwriter's Laboratories. It is also approved by the National Electrical Code for concealed and concrete slab construction. Get all the facts about ELECTRUNIT E.M.T., and you'll specify it on your next project. For booklet SA-53 write to:

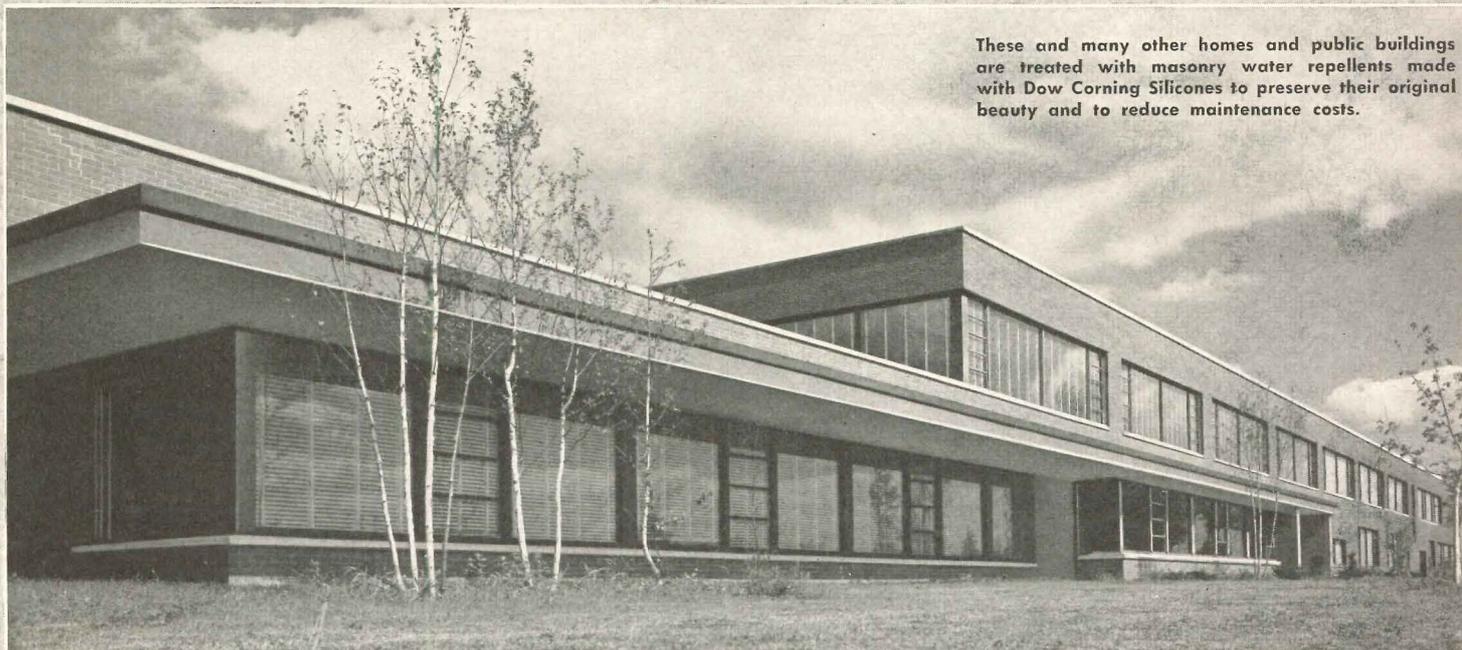
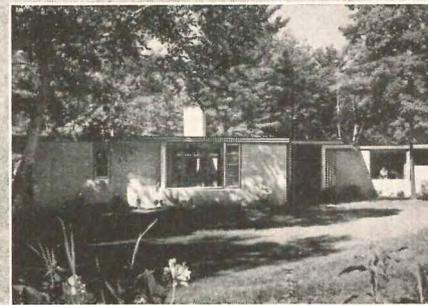
STEEL AND TUBES DIVISION
REPUBLIC STEEL CORPORATION
 201 EAST 131st STREET • CLEVELAND 8, OHIO
 Export Department: Chrysler Building, New York 17, N. Y.



Republic

ELECTRUNITE E.M.T.

Protect above-grade masonry walls with a water repellent made with Dow Corning Silicones



These and many other homes and public buildings are treated with masonry water repellents made with Dow Corning Silicones to preserve their original beauty and to reduce maintenance costs.

Masonry water repellents made with Dow Corning Silicones:

Here's why. Dow Corning Silicones are inherently water repellent and durable, with a natural affinity for brick, stone, concrete and mortar.

Among the most obvious properties of silicones observed by the earliest researchers are a very high degree of water repellency, and an order of durability previously found only in such inorganic materials as ceramics, glass, quartz and stone. It became practical to apply these properties to the treatment of masonry walls only after Dow Corning made silicones available in large commercial quantities at a price low enough to recommend their use on homes as well as public and industrial buildings.

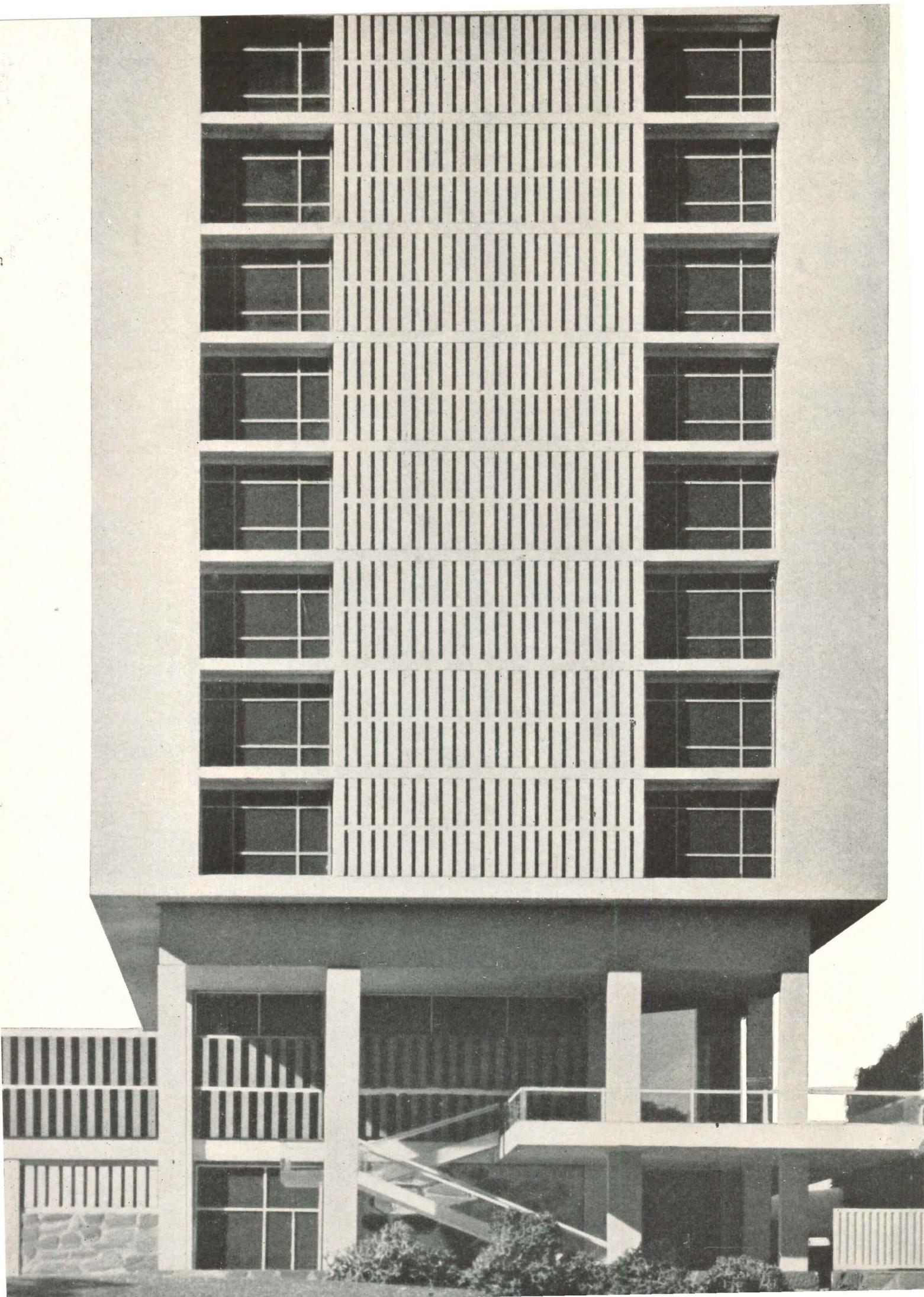
- **are effective for years;**
- **completely invisible and nonplugging;**
- **stain resistant and easy to apply.**
- **inhibit spalling, cracking and efflorescence**
- **help to maintain original color and texture.**

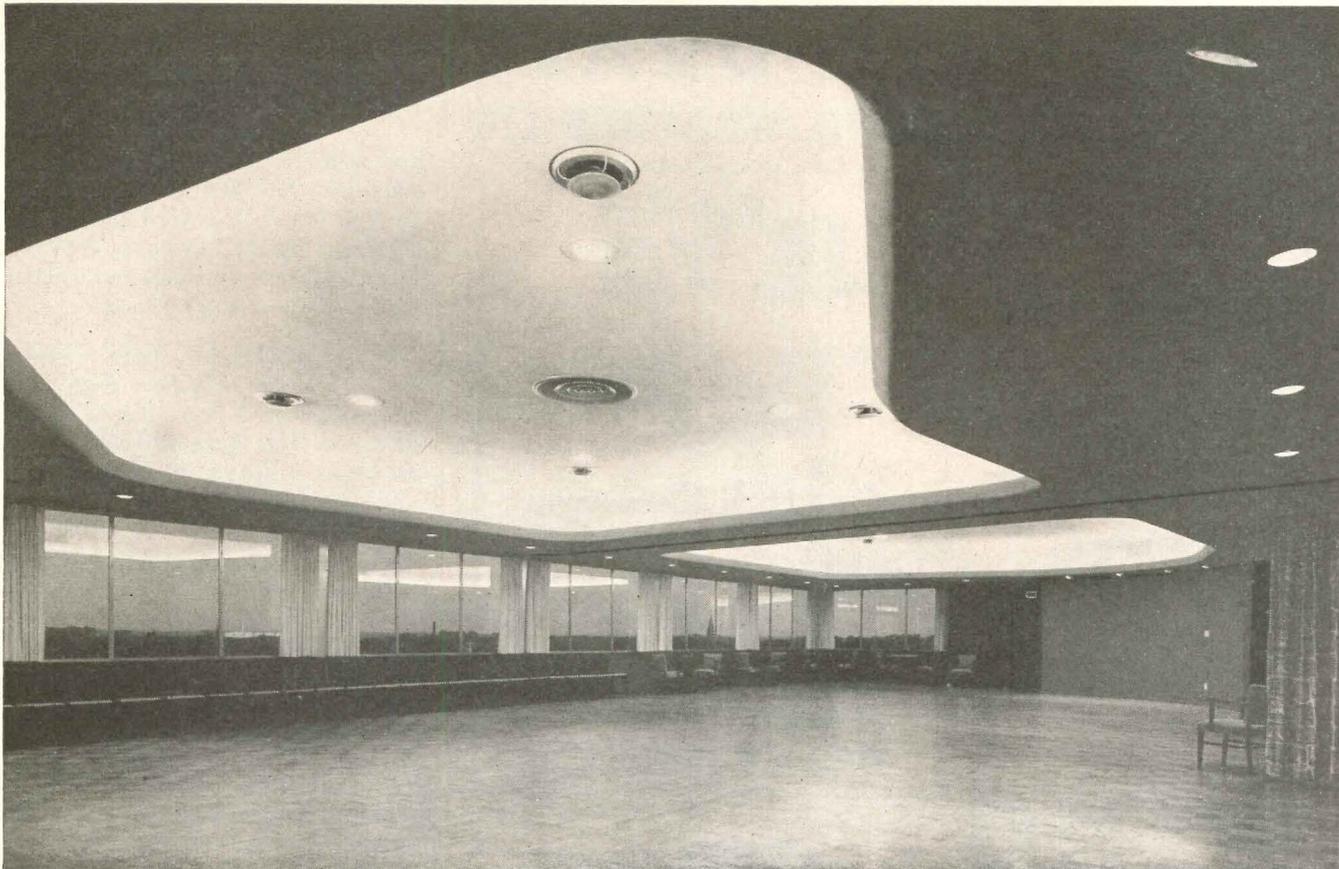
Such silicone-base water repellents are readily available from formulators and their distributors in all parts of the country. Write for more information and list of suppliers. Dept. DD-9

first in silicones

**DOW CORNING
CORPORATION**

Midland, Michigan • Atlanta • Chicago • Cleveland • Dallas • New York
Los Angeles • Washington, D.C. • In Canada: Fiberglas Canada Ltd., Toronto
In England: Midland Silicones Ltd., London





This spacious ballroom in the Frederick Martin Hotel, Moorhead, Minn., is a popular rendezvous in the Moorhead area. *Architect:* Thorsov and Cerny, Minneapolis. *General contractor:* Standard Construction Co., Minneapolis.



The Frederick Martin Hotel is built of brick veneer over reinforced concrete. Bethlehem supplied the reinforcing steel for the entire building.

Adjacent to the ballroom is this attractive dining room called, appropriately, the Tree Top Room.



HOTEL BALLROOM HAS 3200 SQ FT OF UNOBSTRUCTED FLOOR SPACE

An ideal solution to a space problem often present in the smaller hotel is illustrated by the Frederick Martin Hotel in Moorhead, Minn. In this 7-story building, containing 111 guest rooms, the main ballroom was placed on the top floor, under the roof, where its generous size would impose no restrictions on other public rooms or guest rooms nearer the ground level.

Known as the Top o' the Mart, this attractive ballroom is available for dances, exhibits, conventions or private parties. It can accommodate 600 people as a meeting area, or 400 people at a banquet. Its 3200 sq ft of floor space is unobstructed, completely free of columns—made possible by the use of 40-ft Bethlehem Longspan Joists in the roof structure.

In such special installations as the Frederick Martin Hotel—or in factories, garages, stores, and similar buildings—the use of Bethlehem Longspans as roof supports lets you reduce columns to the fewest possible, so you can make the best use of every square foot of floor space. These joists save construction time, too, for they reach the job completely fabricated, clearly marked and ready for placing. And in masonry construction they reduce the need for pilasters which often interfere with wall design.

Bethlehem Longspans are good joists to remember when you plan your next building where efficient use of interior space is a paramount consideration. The nearest Bethlehem sales office will be glad to give you complete information; or write direct to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation



BETHLEHEM LONGSPAN JOISTS

ADEQUATE DRAFT

REGARDLESS OF WIND, WEATHER OR LOCATION—AND

WITHOUT TALL,

UNSIGHTLY

STACKS

BY THE USE OF

WING DRAFT INDUCERS

YOU GAIN THESE ADVANTAGES:

- Exact Draft with Precise Control
- Substantial Savings in Maintenance
- Ease in Installation

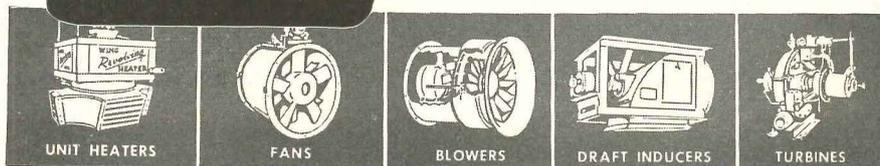
The advantages of mechanical draft over natural draft are tremendous. Draft produced by stack or chimney is seldom reliable, varying according to weather conditions. The motorized draft inducer makes its own draft regardless of weather conditions or variation in load. The necessity for tall, ugly, expensive stacks is eliminated, permitting the architect to design a more attractive building. Write for a copy of Bulletin I-52.

Wing

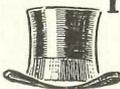
L. J. Wing Mfg. Co.

151 Vreeland Mills Rd.
Linden, N. J.

Factories: Linden, N. J. and Montreal, Can.



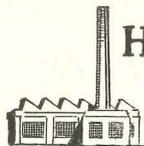
High Hats
are out
of date



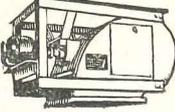
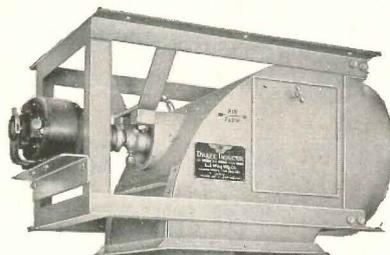
now—
it's the
Homburg



High Chimneys,
too, are out
of date



now—
it's the
WING
DRAFT INDUCER

THE RECORD REPORTS

Public Relations (Cont. from page 11)

responsible for attractive *Star-News* ads, billboards, bus and street-car show-cards in March and April bearing this important legend: 'Planning to build? . . . Pasadena's architects and builders are among the country's finest.' . . ."

"Eleven members of the Dallas Chapter worked on *The Vacation Home*, the model home born from their television show, 'So You Want to Build.' Press coverage on this project was top flight with the public now better informed about the local architects involved, the valuable services of an architect, and the existence and worth of the A.I.A. . . ."

"The Kansas City Chapter devoted its June *SKYLINES* to a public relations issue, an idea we would like to see taken up by other chapter publications sometime during the Autumn or Winter months. Included was an admirable list of public relations objectives for the future. One of the best of these was the renewal of K.C.'s Speakers' Bureau. A convenient Facts Pack is being prepared for member speakers, built on such public interest subjects as *New Schools For Your Children* and *The Master Plan of Greater Kansas City*."

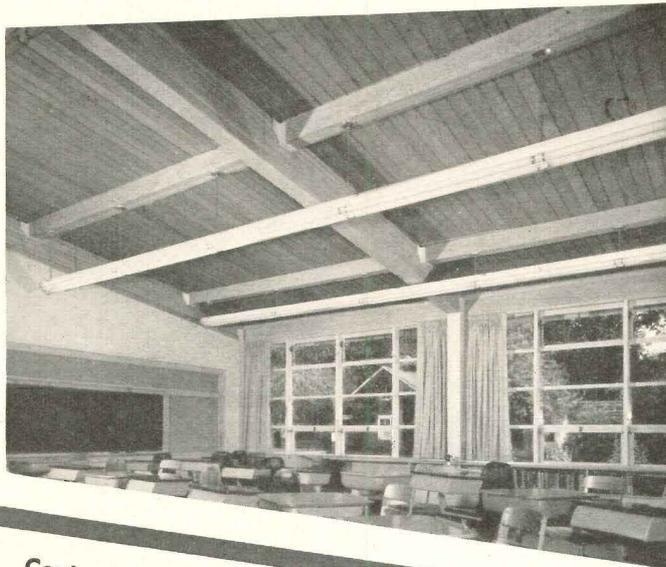
Our fourth project for the first year of the program is now in preparation for late autumn publication—a "Handbook for Architects," covering public and professional relations for the individual architect.

By next year local participation in the national public relations program should be stronger. With this knowledge, first-year projects will be continued and revised and these two major ones added: (1) a community service club program, and (2) a national school program. The latter, to be launched through local A.I.A. chapters, will include an easily assembled exhibit for school programs, plus student-level booklets and brochures for classroom use. Both projects help further identify the architect and his services in the community.

As effective participation in the national public relations program grows and chapters increase their use of public relations resources, they will be preparing for most effective use of the major project of the third year: an A.I.A. motion picture. The public relations value of the kind of motion picture which is planned has already been recognized

(Continued on page 326)

ARCHITECTS: SMITH & VOORHEES, DES MOINES, IOWA



Contractor: Hurley Construction Co., St. Paul, Minn.

Contractors find they can give lower bids when Rilco glued laminated wood is specified. Gene Hurley, contractor of both jobs says, "Rilco really cut erection costs. The beams arrived on the job ready for erection. No specialized crews were necessary; the carpenters did all the erection easily with the connectors furnished by Rilco. There was no furring, we just nailed the Rilco decking to the top of the beams and purlins."



For the modern school design that calls for economical construction and beauty, the architect who specifies Rilco achieves an attractive and structurally sound building at lowest cost. Rilco's service engineers will be pleased to consult with you about your requirements. Write for information or see our catalog (2B/Ri) in Sweets.

MODERN SCHOOL DESIGN SAVES \$500 PER ROOM

Smith and Voorhees specified glued laminated wood structural members for the Webster Grade School at Pella, Iowa and the West Side Grade School at Eagle Grove, Iowa. Cost comparison showed a savings of \$500 per schoolroom over other types of construction materials.



The natural beauty of Rilco glued laminated wood gives an attractive interior; the ease of erection and elimination of interior finishing cuts construction costs—yet Rilco structural members offer the architect freedom of design with simple yet effective construction in a fire-resistant material.

RILCO
works wonders with wood
RILCO LAMINATED PRODUCTS, INC.

2518 FIRST NATIONAL BANK BLDG., ST. PAUL 1, MINN.

THE RECORD REPORTS

(Continued from page 336)

PIONEER MIDWEST FIRM HONORED WITH EXHIBIT

Another step in the gradual filling-in of details concerning that development in American architecture known as the "Chicago School" and its well-known corollary, the "Sullivan-Wright tradi-

tion," was undertaken by Minneapolis' Walker Art Center, which recently held an exhibit of the work of Purcell & Elmslie, an early 20th century Minneapolis firm whose buildings are part of this development. Some of the structures executed by the firm and included in the exhibit are shown on this and following pages.

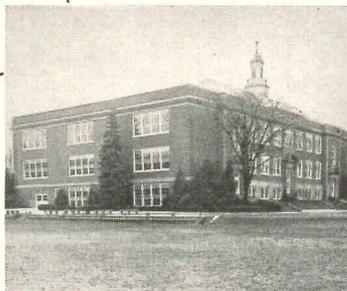
William Grey Purcell, who now lives in Pasadena, California, and George Grant Elmslie, who died last year (see ARCHITECTURAL RECORD, July 1952, p. 28), were partners from 1909 to 1921,

NEW THE ALL-PURPOSE TREATMENT

for protection of all types of exterior masonry above grade

MINWAX TRANSPARENT
(SILICONE BASE)

Alexander Hamilton High School, Elmsford, N. Y.



Not affected by cold . . . lasts far longer . . . little or no effect on color tone or appearance of masonry surfaces!

Here is the latest adaptation of silicones—"the magic sand with a thousand uses"—in a vastly superior protective coating for exterior masonry surfaces. Minwax Transparent (Silicone Base), applied in accordance with specifications, will assure positive protection for many years. It is an *all* purpose material, suitable for *all* types of masonry walls above grade. It has a *proved record* of effective service in the field. Write for complete data today!



A complete waterproofing service

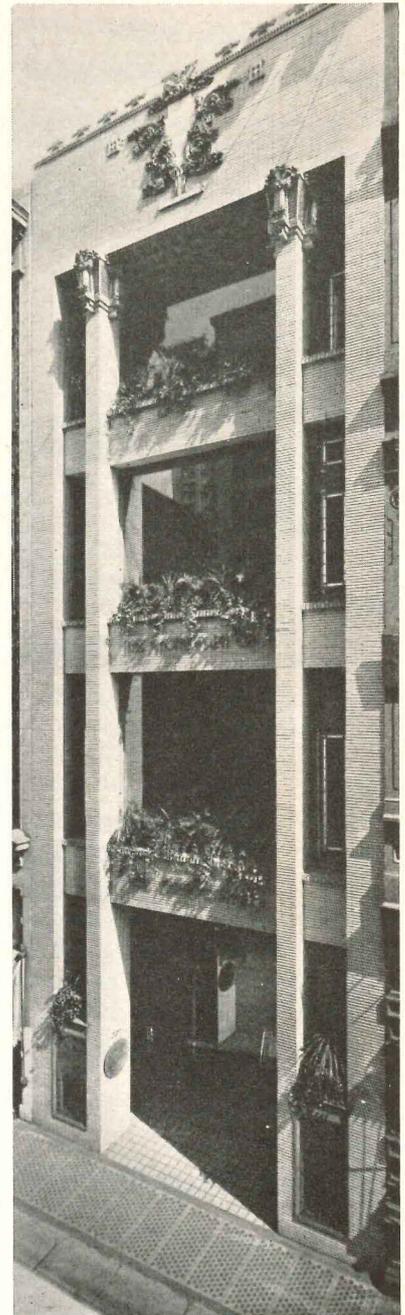
MINWAX COMPANY, INC.
11 West 42nd Street
New York 36, N. Y.

Please send information and specifications on Minwax Transparent (Silicone Base).

NAME.....

ADDRESS.....

CITY.....STATE.....

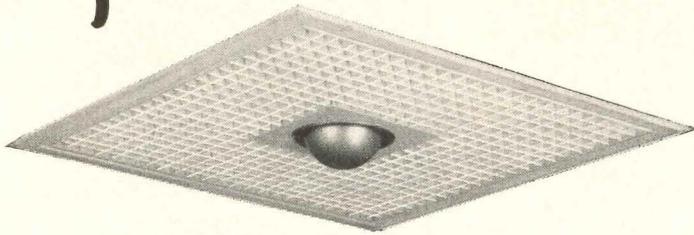


Above: The Edison Shop building in Chicago, a 1912 work by the firm which employed glass extensively

part of this time with George Fieck. Before the partnership, Elmslie had worked as a close associate of Louis Sullivan for a number of years. Purcell had also worked with Sullivan for a brief time. Their work bears the clear imprint of Sullivan's influence, but—as evidenced by the buildings shown here—it was not copy-book design. Elmslie, as a matter of fact, has been credited with a number of significant contributions to work done by Sullivan's office during his last years there.

(Continued on page 340)

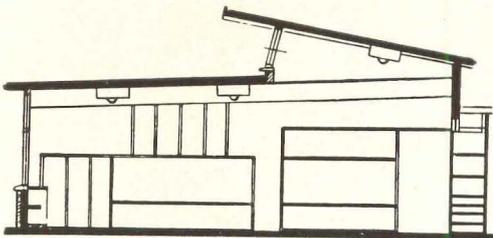
Skylike.....solves a school lighting problem



THE PROBLEM . . .

To provide correct lighting throughout a modern, single story school building where clerestory construction to provide natural light precludes the use of conventional artificial lighting methods.

THE SOLUTION . . .



In each classroom (typical cross-section shown above) fifteen 300 W. Silvered-Bowl Lamp, surface mounted SKYLIKE fixtures were installed. They were centered between beams which are exposed in this type of construction. Light for critical seeing conditions was provided in all parts of the room during the day...and for night use.



Typical classroom at the Whittier School at Bozeman, Montana

Mr. Oswald Berg, Jr. architect for the Whittier School at Bozeman, Montana, comments on the installation as follows:

"The Silvray Skylike fixtures are in keeping with the atmosphere and structural system of the school. This fixture provides an even, high level controlled distribution of light. It is also of very low brightness because of the shielding provided by the louver. Because of its high efficiency, low wattage lamps were used with resultant economies in electrical circuits and reduced heat from the lighting system."

FREE: SCHOOL LIGHTING BOOKLET

For complete information on the use of Skylike units as well as other Silvray units in school applications, just fill in and mail the coupon below:

Skylike...

The modern, versatile lighting unit that is successfully solving school lighting problems throughout the country is also the first choice in . . .

- DEPARTMENT STORES
- OFFICE BUILDINGS
- HOUSING DEVELOPMENTS
- RETAIL STORES
- RESTAURANTS
- THEATRES
- BANKS



SKYLIKE Lighting, Inc. 102 West Main St., Bound Brook, N. J.

Gentlemen:

Please send me complete information on Silvray SKYLIKE

NAME _____

FIRM _____ TITLE _____

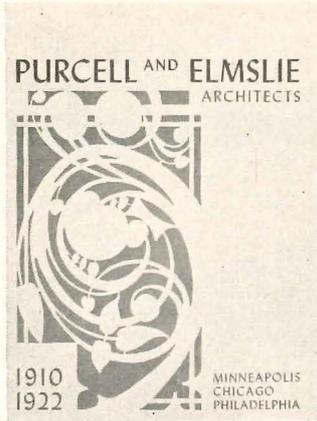
ADDRESS _____

CITY _____ ZONE _____ STATE _____

THE RECORD REPORTS

(Continued from page 338)

Near right: cover for the catalog of the Minneapolis exhibit was designed by William Grey Purcell



William Grey Purcell ▲

Teaching is

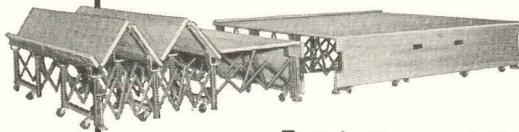
CHILD'S PLAY



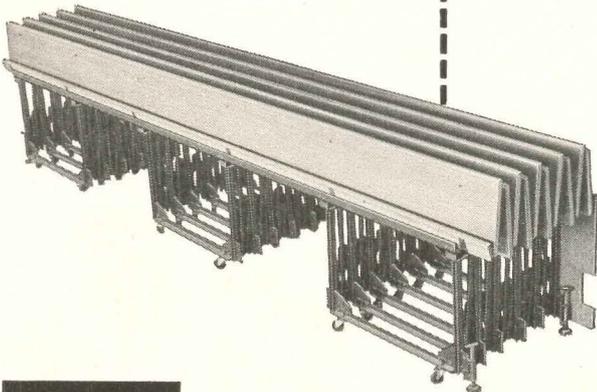
Photographed in Dearborn Public Schools, Dearborn, Mich.

...with **HORN** folding stages!

Education "comes to life" for children when they use a stage for skits, speeches, assemblies. Portable Horn Folding Stages increase classroom usefulness, make learning fun, teaching easier.



Easy to open—portable, easy to move, easy to open for use in any room. Sturdy steel understructure. Locking action keeps stage stable, adjusts to uneven floors.



Easy to store — folds compactly. Stage that extends to 11 feet 4 inches, folds, stores in 25¼ inches. In standard widths, 15 and 24 inch heights, depths up to 35 feet. For full information about the *only* portable folding stage, write:

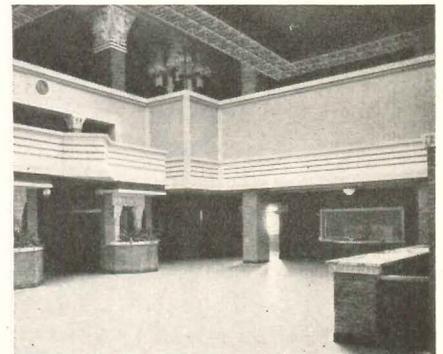
Horn

SCHOOL EQUIPMENT DIVISION OF
THE BRUNSWICK-BALKE-COLLENDER COMPANY
623 SO. WABASH AVENUE, CHICAGO, ILLINOIS

▼ The late George Grant Elmslie



Above and below: Woodbury County Courthouse, Sioux City, Iowa, 1917, only large government building by the firm



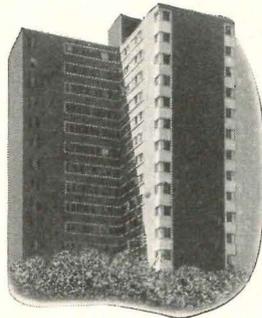
(Continued on page 342)

Here's why America's Most Important Buildings are Built with Time-Tested **ZONOLITE® PLASTER!...the Lightweight Champion**

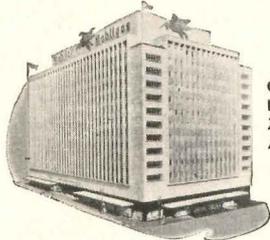
- ★ Zonolite Plaster has stood the test of time . . . PROVED reliable in buildings built over 20 years ago.
- ★ Zonolite Plaster affords highest attainable fire ratings for floors, ceilings, columns, beams.
- ★ Zonolite Plaster gives added insulation value.
- ★ Zonolite Plaster saves tons and tons of deadweight.
- ★ And remember . . . ZONOLITE PLASTER saves building time . . . cuts costs.



SAXONY HOTEL, Miami Beach, Florida
Zonolite Plaster throughout
Architects—Roy F. France & Son



CORNELL ARMS, Columbia, South Carolina
Zonolite Plaster Fireproofing
Architects—Stork & Lyles; Bissett, Carlisle & Wolf

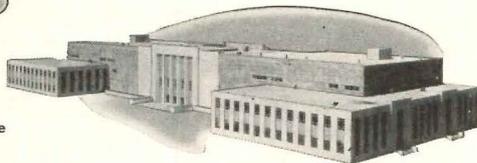


GENERAL PETROLEUM BUILDING,
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Zonolite Plaster Fireproofing
Architects—Wurdeman & Beckel



LEVER HOUSE, New York City
Zonolite Plaster Fireproofing
Architects—Skidmore, Owings & Merrill

COURT HOUSE, Tampa, Florida
Zonolite Plaster
Assoc. Architects & Engineers—
Reynolds, Smith & Hills, Jacksonville



GROSVENOR HOUSE, Seattle, Washington
Zonolite Plaster Partitions
Architects—Earl W. Morrison & Assoc.



Actually, Zonolite is *three* times lighter than ordinary plaster. Think how that speeds up the job! Cuts labor costs! And it cuts building costs, too! Recently, a Miami hotel job cut 2,500,000 pounds of deadweight by switching to Zonolite Plaster.

Before starting on your next job, get the full facts about Zonolite. For complete information about cost-cutting, time-saving, fire-safe Zonolite Plaster, mail coupon today for free booklet.

ZONOLITE COMPANY
135 S. LaSalle Street, Chicago 3, Illinois
Member of Vermiculite Institute



MAIL COUPON TODAY FOR FREE BOOKLET

ZONOLITE COMPANY, Dept. AR-93
135 S. LaSalle Street, Chicago 3, Illinois

Please send me descriptive booklet on Zonolite Plaster including summary of fire tests.

Name.....

Address.....

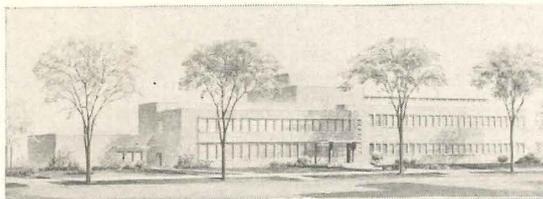
City..... Zone..... State.....

Architect Builder

THE RECORD REPORTS

(Continued from page 342)

One of the firm's few executed industrial projects was for the International Leather and Belting Corporation. Two identical units were built in New Haven and Chicago in 1917. These were to have been the first sections of large factories. Extensive employment of glass in side walls anticipated later practice



New Research Building of Wyandotte Chemicals Corporation, Wyandotte, Michigan.

One of Wyandotte's Laboratories showing Kewaunee Equipment with KemROCK Tops.

KemROCK
is one of our

TOP salesmen!



● Back of every piece of Kewaunee Equipment is nearly 50 years of constant advance in design, construction and working convenience that has kept pace with the progress of Industries, Hospitals and Educational Institutions.

● And when it comes to Tables, Sinks and other Laboratory pieces requiring "Tops" defiantly resistant to acids, alkalis, solvents, heat and abrasion—KemROCK steps into the picture as one of Kewaunee's "Top" salesmen. For example, back in 1941 Wyandotte Chemicals Corporation first ordered

Kewaunee Equipment with these "Toughest of all Tops." Now after 12 years of experience, Wyandotte again specifies "Kewaunee with KemROCK Tops" for their modern Research Building.

● KemROCK is an exclusive Kewaunee product made from natural stone (free from veins and seams)—impregnated and coated with a synthetic resin—then baked. It is jet-black—takes a high polish and adds much beauty as well as amazing extra service to Laboratory pieces.

New Free Folder on KemROCK

sent on request. Remember, too, that Kewaunee field engineers are available to you without cost or obligation.

Manufacturers of Wood and Metal
Laboratory Equipment

Representatives in Principal Cities

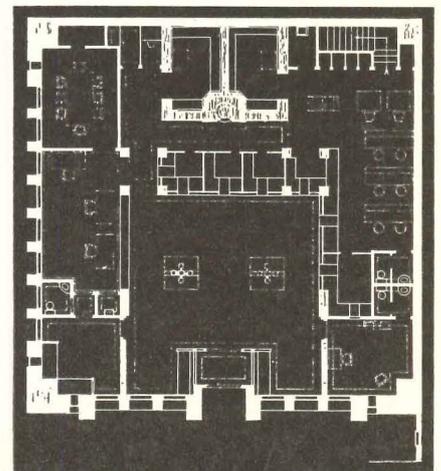


J. A. Campbell, President

5046 S. Center St. • Adrian, Michigan



The Merchants' Bank of Winona, Minn., 1911, is one of many small-town banks executed by the firm. If they seem to bear a striking similarity to Louis Sullivan's small-town banks, it should be remembered that Elmslie was largely responsible for planning and detailing these during his years in Sullivan's office. Below: plan of the bank

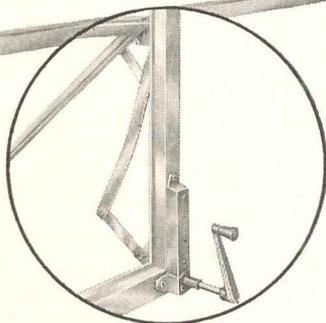
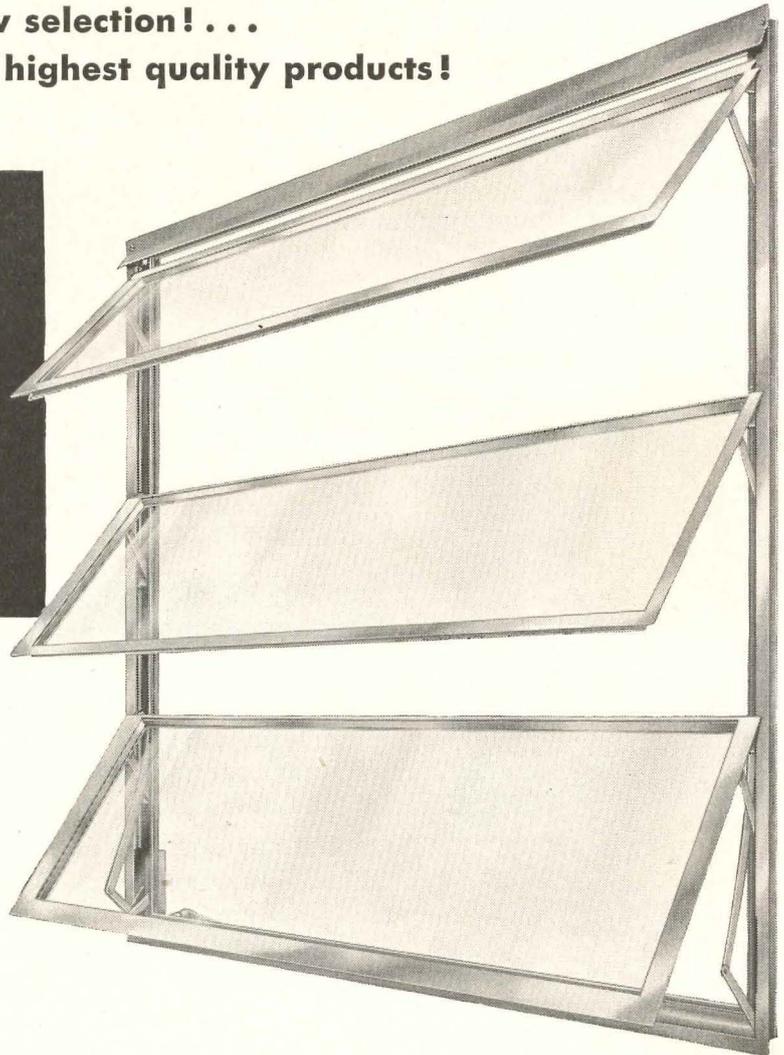
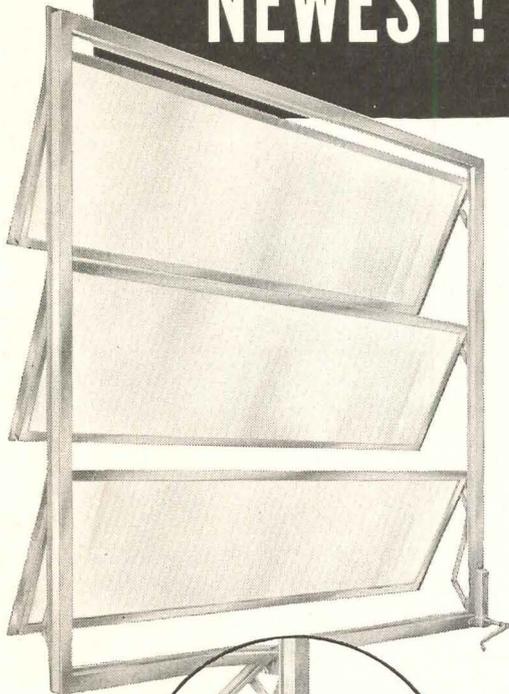


(More news on page 346)

THE BIG LINE IS GROWING BIGGER!

to give you greater window selection! . . .
to help you standardize on highest quality products!

HERE'S
TRUSCON'S
NEWEST!



Sturdy operating mechanism protected against weather, sand, dirt, salt spray. Simultaneous, equalized ventilator opening. Positive closing.

Aluminum Awning Windows

● The window advances are coming from Truscon! Last summer Truscon announced the Ranch Window that set new standards in steel windows for popular one-story homes. This spring Truscon introduced its sensational aluminum casement in modular sizes. Now . . . Truscon offers you what the trade has been waiting for . . . its customary quality design and sturdy construction in a brilliantly new aluminum awning window.

Truscon Aluminum Windows feature modular sizes to match standard masonry dimensions. Approximately 8% more light and ventilation per window opening. Heavy extruded aluminum sections with a minimum frame depth of 1 7/8". Weathertight construction with vinyl plastic weatherstripping. Protected operating mechanism. Many more features you'll want to know about. Write Truscon for latest bulletins. Watch the big line for the big news. When Truscon offers a new product you can bank on its satisfactory performance.



TRUSCON®

a name you can build on

TRUSCON STEEL DIVISION

REPUBLIC STEEL CORPORATION

1062 ALBERT STREET • YOUNGSTOWN 1, OHIO

Export Department: Chrysler Building, New York 17, N.Y.

THE RECORD REPORTS

(Continued from page 344)

NEW OFFICE OPENED IN CHARLOTTE BY CARRIER

Recently opened in Charlotte, N. C., were the new offices of Carrier Corporation, manufacturers of air conditioning units. The windowless building, which



Above: the entrance to Carrier's combination office and shop. Below: the office area, in front, is windowless



is, of course, completely air conditioned, is located on a 100 by 387 ft tract to the rear of which passes the Columbia Division of the Southern Railway.

The building, for which Biberstein, Bowles & Meacham of Charlotte were the architects, contains office space for 18 to 20 people and a pipe fabricating shop, 80 by 35 ft, in the rear. The office area has eight offices, all 12 by 13 ft, a conference room, an entrance hall and storage space.

The structure is of concrete block faced on three sides with brick. At the back of the building the concrete block has been left unfaced in case future expansion should be required. Interior partitions are also of concrete block finished with water paint.

The floors of the building are all of concrete on grade, covered in the office area with asphalt tile. The door frames are metal, and all doors are undercut for return air purposes in the event that the doors may be closed off at some later date.

(More news on page 348)

Specify Furniture by

HUNTINGTON

—always in good Taste

HUNTINGTON manufactures a complete line of seating units, beds, cases and occasional furniture for every use.

HUNTINGTON also manufactures high quality precision made pre-built units for nurses' and students' quarters. If your client is quality minded write us for quotations.

HUNTINGTON furniture is designed by Jorgen Hansen and Jens Thuesen—your clients assurance that Huntington furniture is always in good taste.

HUNTINGTON provides you with complete specifications, detailed drawings and pictorial catalogues. Visual proof of high quality and good design.

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Please mail complete information about Huntington furniture to:

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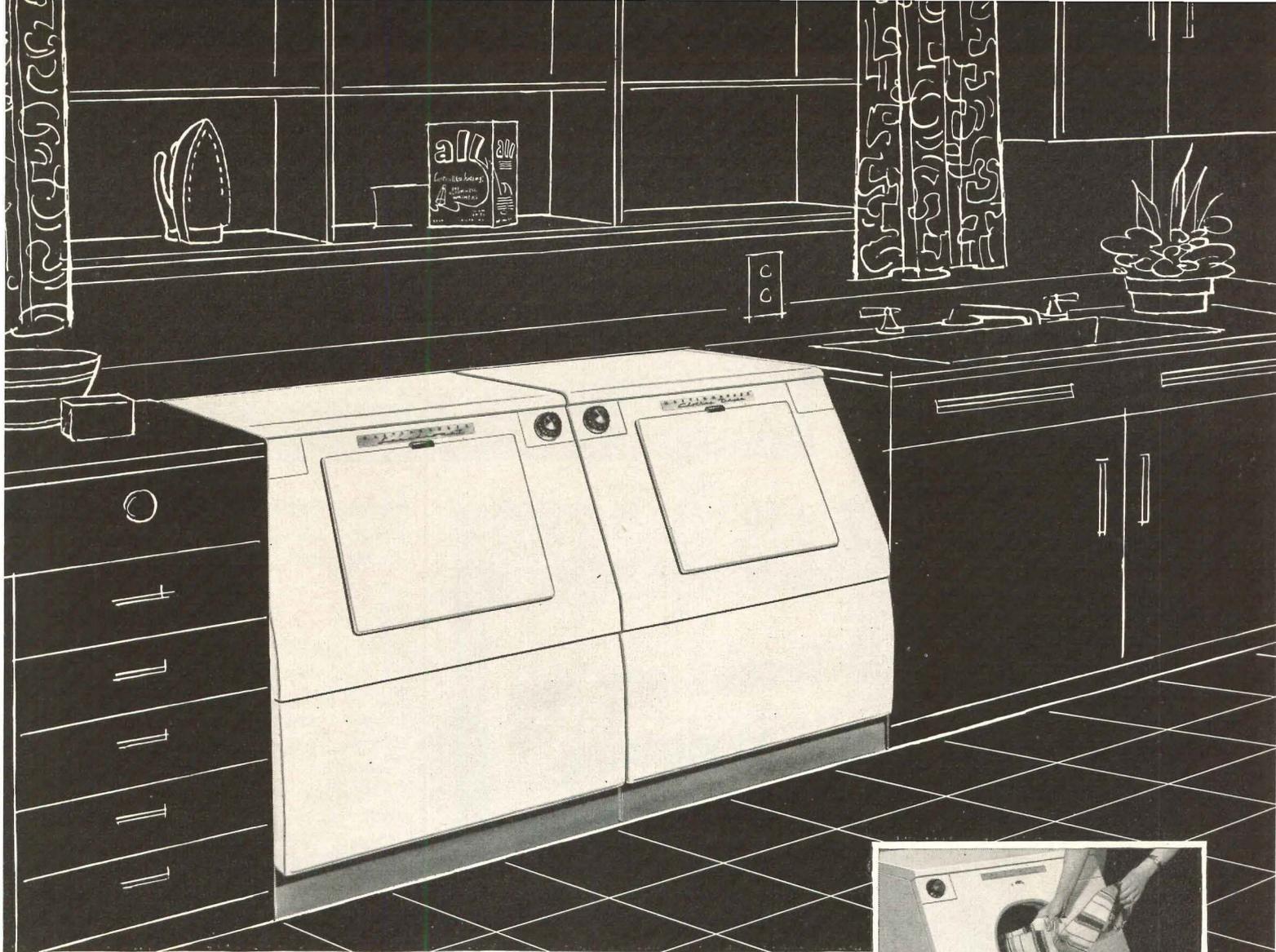
Attach to your letterhead and mail to:
Huntington Chair Corporation, Huntington, W. Va.



**HUNTINGTON
CHAIR CORPORATION**
HUNTINGTON, WEST VIRGINIA

Permanent Showrooms: Huntington, Chicago and New York





... of course, it's electric!

Twin bonus for budget homes

Famous Westinghouse Laundry Twins
now available At New Low Prices

Now you can add the proved "buy appeal" of a Westinghouse Laundromat® and Clothes Dryer to even the lowest priced home . . . because these famous laundry twins are now available at attractive builder prices.

The new Laundromat and Clothes Dryer still give you Westinghouse quality. The Laundromat, model LS-7, is completely automatic. Its cycle can be stopped, started, or repeated, by the flexible single-dial control. Its patented Agi-Tumble action washes regular loads

and delicate fabrics thoroughly, gently, and safely.

The Clothes Dryer, model DS-7, is full sized, and fully automatic, too! Its time control dial, together with direct air flow drying, offers faster drying for all types of clothes.

There's simply no comparison with any other low-priced laundry equipment. In every way, the Westinghouse Laundromat and Dryer are truly "America's Favorite Laundry Twins".

Complete information upon request.



EXCLUSIVE SLANTING FRONT

on each of the twins permits easy access into basket. Large door makes extremely handy loading and unloading platform.



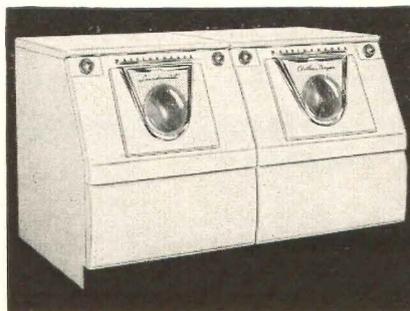
LARGE-SIZE LOADS

Laundromat will wash up to 9 lbs. of clothes, dry weight. Clothes Dryer will dry same load.

WESTINGHOUSE ELECTRIC CORPORATION
Electric Appliance Division • Mansfield, Ohio

Makers of Refrigerators, Home Freezers, Ranges, Laundromats, Dryers,
Dishwashers, Water Heaters, Vent Fans and Food Waste Disposers.

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



DE LUXE MODELS FOR EXTRA APPEAL

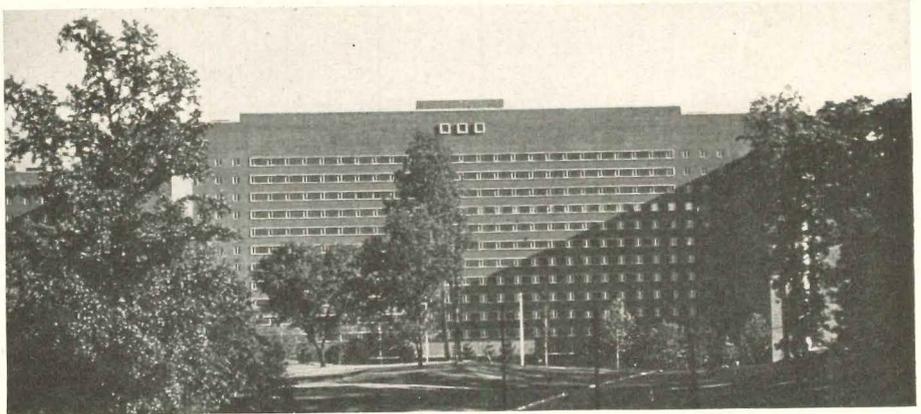
Model LB-6 Laundromat has extra convenience features, such as Weigh-to-Save Door and Water Saver. D-6 Clothes Dryer has 3-Way Dry Dial and Singing Signal.

THE RECORD REPORTS

(Continued from page 346)

\$64 MILLION PHS CLINIC OPENED IN BETHESDA, MD.

Open for business on July 6, the United States Public Health Service's new Clinical Center in Bethesda, Md., is devoted to the study of such chronic and organic diseases as heart disease,



Above: a north view of the Public Health Service's Clinical Center in Bethesda. The roadway leads to the entrance



1. Your RCA Sound Distributor

For expert, "no obligation," planning assistance, you'll find your RCA Sound Distributor is the man to know.

He can offer you advice on the latest in equipment, the newest in sound techniques. His experience covers a wide range of applications including schools, plants, hospitals, hotels, institutions, and stores.

Call on him for the answer to any question involving sound.

2. New RCA Sound Products Catalog

Here, in easy-to-find form is the full line of RCA Sound Products.

In 17 pages, you'll find helpful data on RCA sound equipment from microphones to large sound system centers. Get this booklet for your files. It's a handy reference for any sound job you may tackle.

MAIL COUPON for your copy of the RCA Sound Products catalog now.

Sound Products, Dept. 13U, Building 15-1
Radio Corporation of America, Camden, N. J.

- Please have an RCA Distributor Sound Specialist call on me.
 Send me the new free RCA Sound Products catalog.

Name _____ Title _____

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Address _____

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RADIO CORPORATION of AMERICA
SOUND PRODUCTS
CAMDEN, N. J.



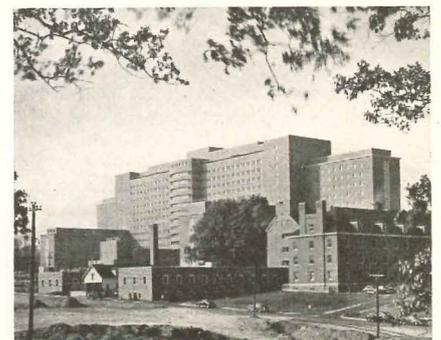
cancer and arthritis. The 14-story building, which was designed and built by the Public Buildings Service of the General Services Administration, and cost \$64 million to build, has facilities for 1100 laboratories and 500 patients.

The laboratories, of which there are about 100 to a floor, are placed on the north side of the building; the patients' rooms have a southern exposure. The center of the building contains nurses' stations, dietary kitchens and treatment rooms. General services, such as admissions, auditoriums and operating rooms, are located on the top and ground floors.

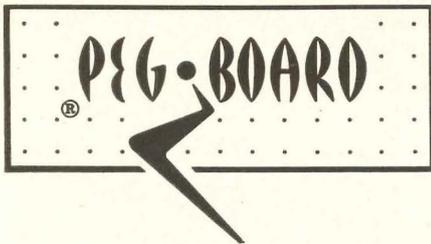
In addition there are various special wings for animal research, basic science studies and autopsies. Not yet open is the 8-story wing, partly underground, for radiation treatment and research.

The center was designed for research rather than for treatment, and the patients, all volunteers, will be admitted for their interest for the researchers.

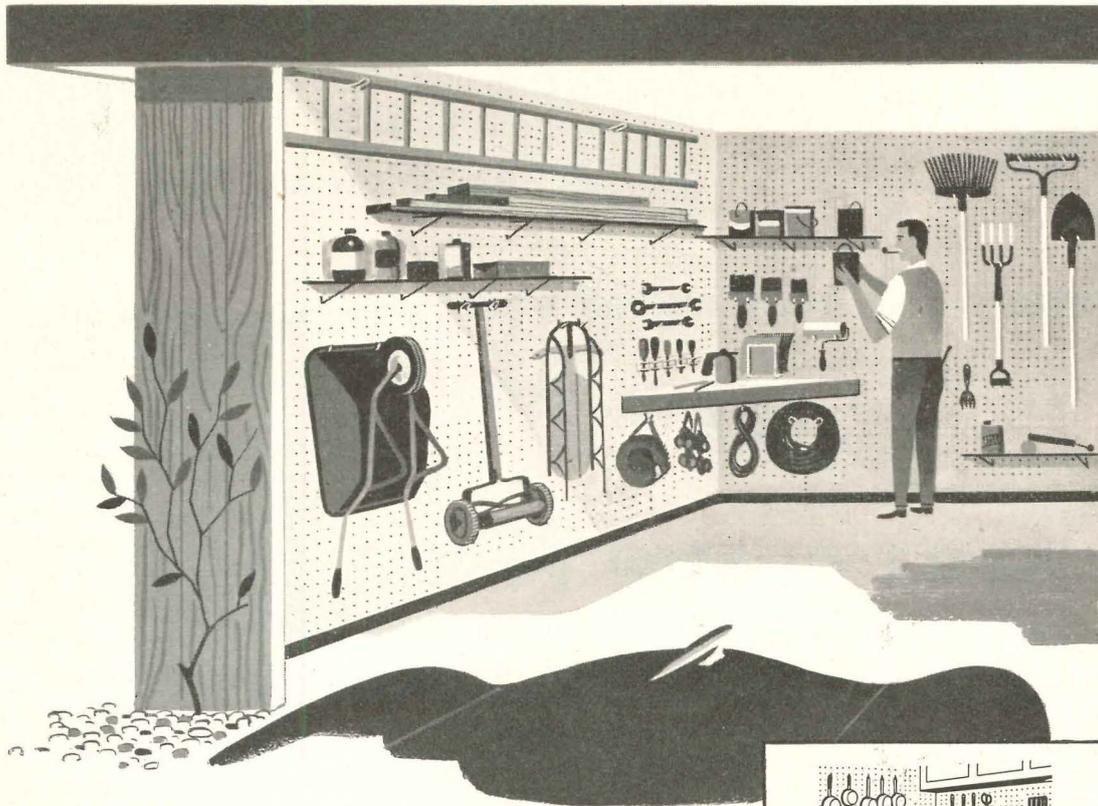
Below: the south face of the building, from which the patients' rooms look out over the Maryland countryside



(More news on page 350)



equipment gives your garage designs **WORKING WALLS**



**New beauty . . . new space-saving convenience
for every room . . . from garage to living room**

"PEG-BOARD" panels give you the first really new wall paneling idea in years. For, not only do they give walls a smart, new decorative treatment, but when used with any of the over 60 "PEG-BOARD" fixtures they actually create *working walls*. In garages, living rooms, attics, game rooms, all thru the house "PEG-BOARD" equipment enables the homeowner to have needed articles neatly arranged on the wall. All "PEG-BOARD" fixtures are instantly interchangeable without nails, screws or tools of any kind.



SHELF BRACKETS



TOWEL BARS



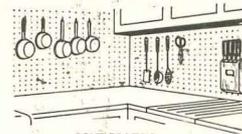
SHOE HOOKS



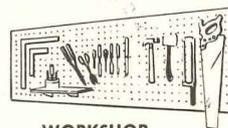
TOOL RACK



HAT BRACKET



KITCHEN



WORKSHOP



CLOSET



CHILDREN'S ROOM



See our catalog in Sweet's Architectural File Section 13B.

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SEND FOR COMPLETE INFORMATION

- ★ Home Decorating Ideas with "PEG-BOARD" Working Walls
- ★ Complete specifications, construction details and prices.
- ★ Sample Kit

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3150 Randolph St., Bellwood, Ill.

Please send me complete information about "PEG-BOARD" panels and fixtures.

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

THE RECORD REPORTS

(Continued from page 340)

The principles and practices of Purcell and Elmslie in domestic architecture found full expression in Purcell's own house in Minneapolis, designed in 1913. Their preference for flexibility in spatial organization is indicated in the plan

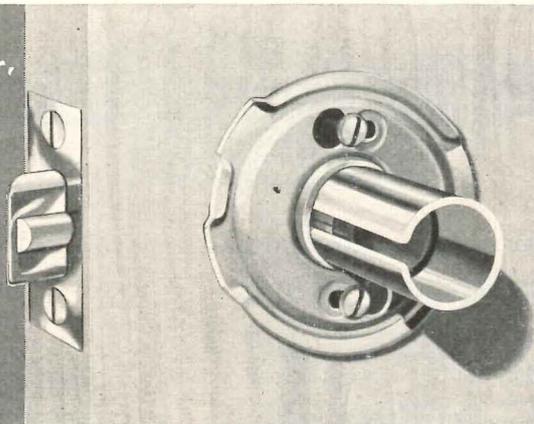


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KEY SLOT CLAMP PLATE

- ★ Assures much faster, easier installation
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available in both series "440" and series "410"

NATIONAL LOCKset

Patent Applied

Popular Key Slot Clamp Plate is one of the novel features of NATIONAL LOCKset which saves so much time "on the job." Specify Series "410" as the deluxe lockset line for discriminating people. Specify Series "440" as the quality-built, budget-priced lock "for every home in the block."



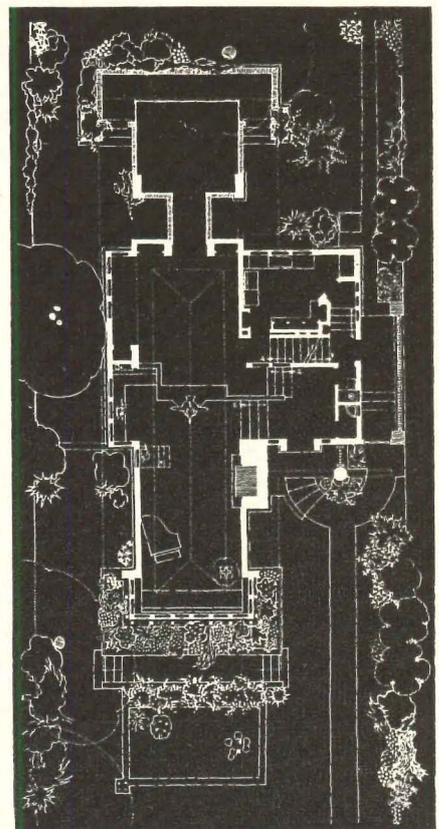
Write us
for Catalog "440"

distinctive hardware all from 1 source



NATIONAL LOCK COMPANY

ROCKFORD, ILLINOIS MERCHANT SALES DIVISION



Stuart Memorial Church, Minneapolis, 1909, resembled Wright's Unity Temple in form, differed in spirit



(Continued on page 344)

**this handy
WORKING TOOL
FREE!**



Kayline's 74-page Catalog No. 53 is a handy working tool for all commercial and industrial lighting requirements. Gives information and charts on footcandles of light, light patterns, installation suggestions and other needed data. Send for it today!

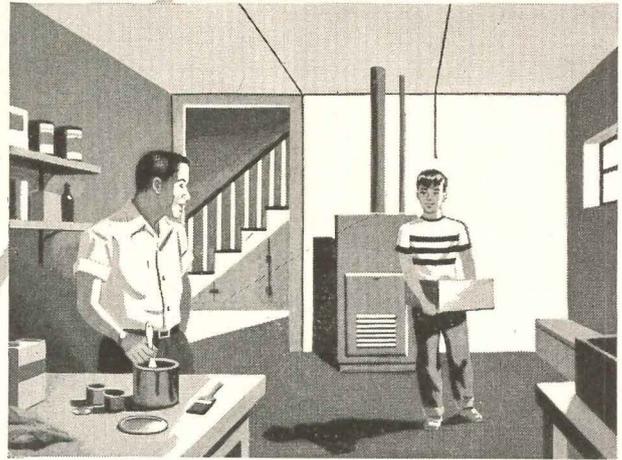
THE KAYLINE COMPANY
2480 East 22nd Street
Cleveland 15, Ohio
the one source lighting line

NOTICE TO ARCHITECTS

You may have a great deal of lighting data in your files, but you may be missing the "best help" you could possibly have on modern lighting if you do not have a copy of Kayline Catalog No. 53 for yourself and your specification writer. Send request on postcard or attach this advertisement to your letterhead.

Sote ASBESTOS BOARD

Sote Board's basic qualities give it unlimited applications. Sote Board may be worked with ordinary wood tools, nailed or screwed without pre-punching, without fear of breakage. Its high asbestos content makes it ideal for heater rooms, garages, as well as ordinary finishing *inside or out*. For more details, send coupon.



Nova JALOUSIES

for doors
and windows

Picture window beauty with full ventilation... Yours with Nova Jalousies! Installed on doors, an added source of ventilation, *even through a locked door!* The worm gear adjustment locks in any position. Fully opened, Nova Jalousies keep prowlers out, children in... Closed, they present a positive weather-seal. For full details, send coupon.



HIGH STRENGTH BOLTS vs. RIVETS

High strength bolts are replacing rivets in modern construction. Field connections can be made more economically with high strength bolts. While the bolts cost more than rivets initially, the assembled cost is much lower.

Write RB&W for further information. Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Sales offices at: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents: Portland, Seattle.

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RB&W 108 YEARS MAKING STRONG
THE THINGS THAT MAKE AMERICA STRONG

HOMASOTE COMPANY NOVA SALES



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HOMASOTE COMPANY, Trenton 3, N. J., Dept. 21D

Send detailed, illustrated literature on

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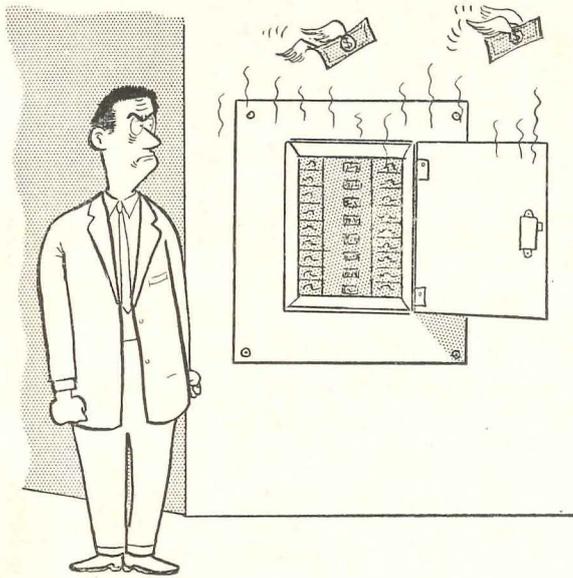
My lumber dealer is _____

THE RECORD REPORTS

(Continued from page 352)

UNION CARBIDE OCCUPIES NEW OFFICES NEAR L.A.

Six divisions of Union Carbide and Carbon Corporation are now housed in this one-story reinforced concrete and stone building on a three-and-a-half-acre site in Vernon, a suburb of Los Angeles. The building has been leased for 21 years from John M. Stahl. Architects were Denver Markwith Jr. and



HERE'S A HOT ONE... ...at your expense



HEAT in panelboards is no joke. It's the sign of wattage loss . . . current consumed inside the panelboard. It is also a constant, needless expense to building owners that can be eliminated by specifying HEINEMANN Circuit Breakers.

HEINEMANN Circuit Breakers *do not* generate any appreciable heat; nor is their current-carrying capacity affected by heat; nor is de-rating ever required . . . simply because they do not employ thermal elements.

Operating on a hydraulic-magnetic principle, HEINEMANN Circuit Breakers give better protection, too. They always trip instantly at ten times their rated current giving you fast protection where you need it most . . . at the low ampere values of lamp and appliance cord shorts. Yet, HEINEMANN Circuit Breakers incorporate time delay to eliminate nuisance tripping, and allow temporary, harmless overloads or starting inrush.

Send for your copy of Manual 101,
"What You Should Know About Circuit Breakers."

don't use heat . . . USE POWER



HEINEMANN ELECTRIC CO.

115 PLUM STREET • TRENTON 2, N. J.



Top: letters above entrance are stainless steel. Above: lobby was designed for cheerful welcome, frank view of working offices. Below: all offices border the patio, have view of the rock gardens



Jack H. MacDonald, of McClellan, MacDonald and Markwith, Los Angeles.

The air conditioned office area is daylighted from a slate-surfaced patio in the center of the building. Office walls are colorful and floors are covered with asphalt tile. A lunchroom, equipped with a range and a refrigerating unit, and a paved parking area, are available for the use of more than 80 employees.

The warehouse is served by a railroad spur from the Los Angeles Junction railway. One hundred ft of platform are available for truck shipments.

(More news on page 368)

*No longer is it necessary
to invest in dual fuel
to utilize gas*

just Add gas!

with WEBSTER'S REVOLUTIONARY
PACKAGED RECTILINEAR* GAS BURNER

The Packaged Rectilinear makes four inches pressure do the work of four pounds with fractional horsepower.

You can fire gas—automatically—through any narrow opening without disturbing your present firing equipment—hand or stoker fired coal, or whatever it may be.

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TULSA, OKLAHOMA
Division of SURFACE COMBUSTION CORPORATION, Toledo, Ohio

*a 546-page treasury
of information on heavy buildings!*

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BUILDINGS**

THE ARCHITECTURAL RECORD OF A DECADE

IN this massive volume is a wealth of planning data that represents the combined experience of architects, engineers, and building specialists over a 10-year period. It includes:

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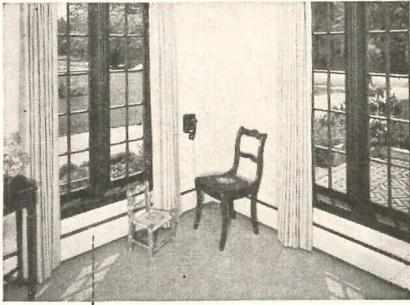
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(Continued from page 24)

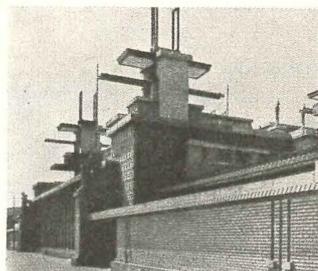
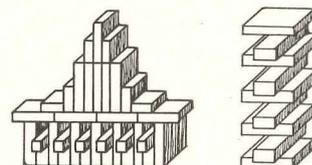
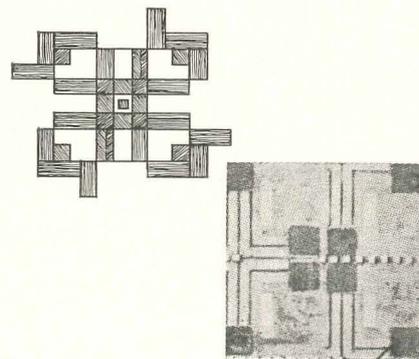
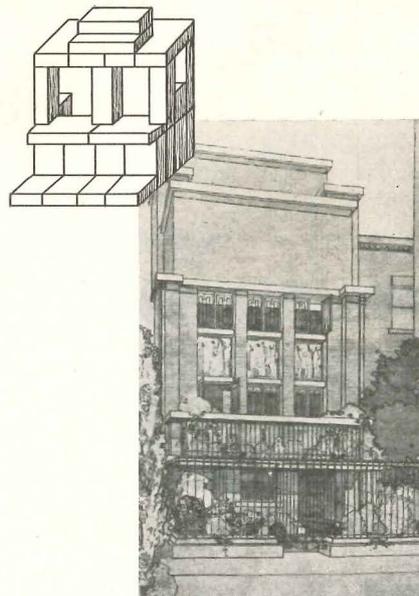
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The search for influences on the work of Frank Lloyd Wright has now been pushed to the point where the next step may have to be taken by specialists in pre-natal influence. As it is, he has now

(Continued on page 360)

Below: Froebel patterns, Wright designs



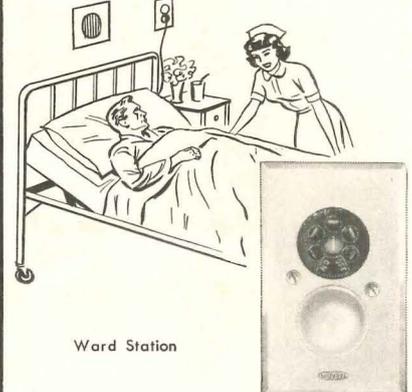
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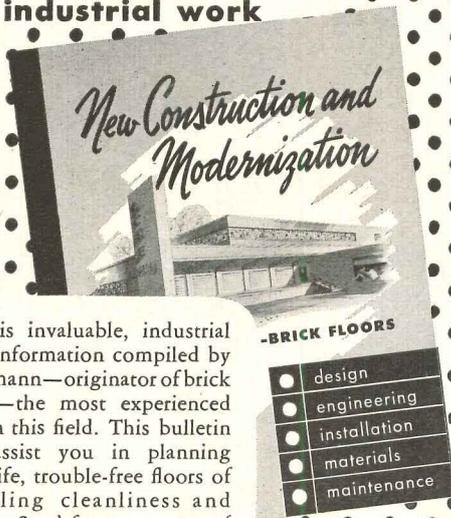
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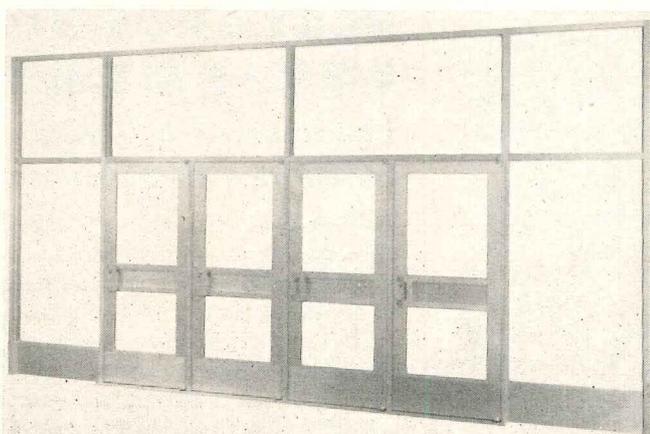
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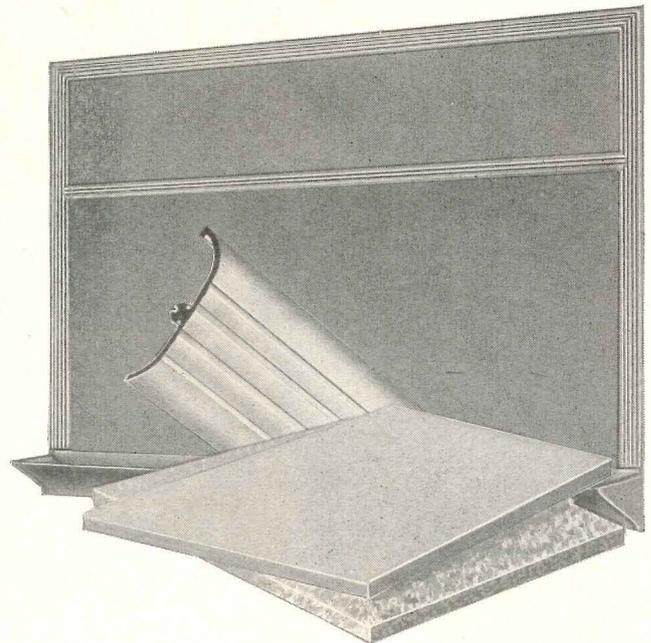
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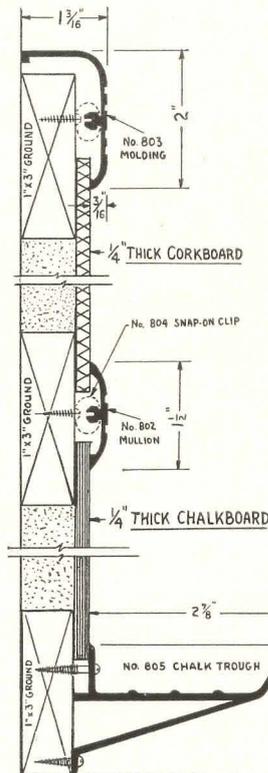
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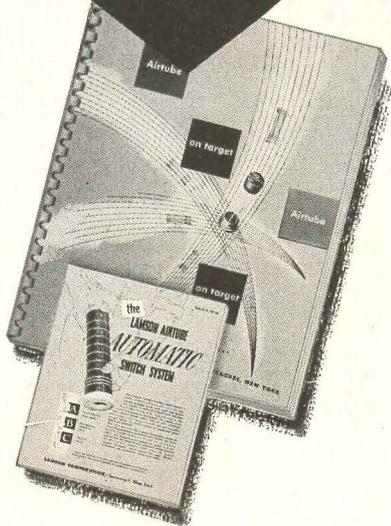
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THE RECORD REPORTS

(Continued from page 368)



**CONSTRUCTION UNDER WAY
FOR PRUDENTIAL OFFICES**

Ground was broken in May for a new headquarters building in Jacksonville, Fla., for the Prudential Insurance Company of America's South-Central district. Architects for the project are Kemp, Bunch and Jackson of Jacksonville. Cost is estimated at \$10 million.

The 22-story building is being built on a 13-acre site on the south bank of the St. John's River. Only one and a half acres of the plot will be required by the building, the rest of the site being set aside for landscaped walks, a riverfront promenade and a recreation center. In addition, a six-acre plot next to this site will provide parking space for 750 cars.

The building, to be 300 feet high, will contain approximately 400,000 sq ft of office space; Prudential will use the eight-story north wing. The frame of the building will be riveted structural steel, and the floors will be cellular steel with a cement topping. Facing is to be limestone and granite.



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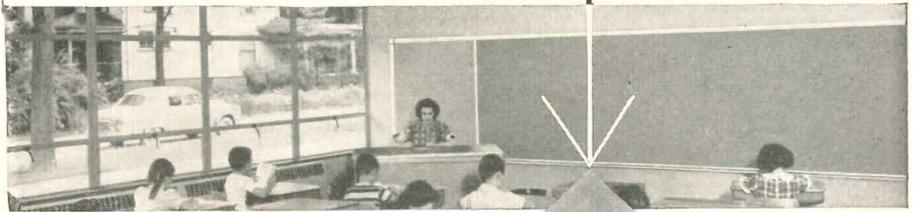
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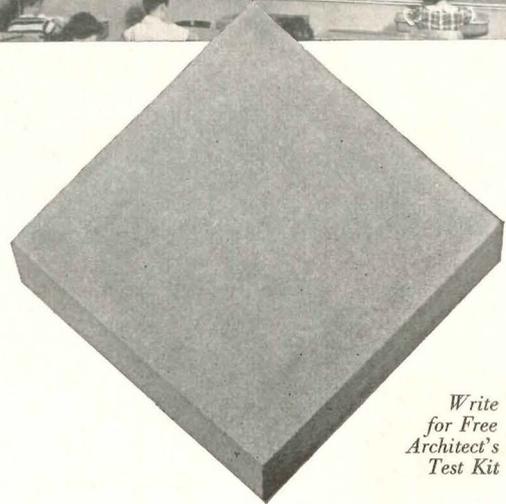
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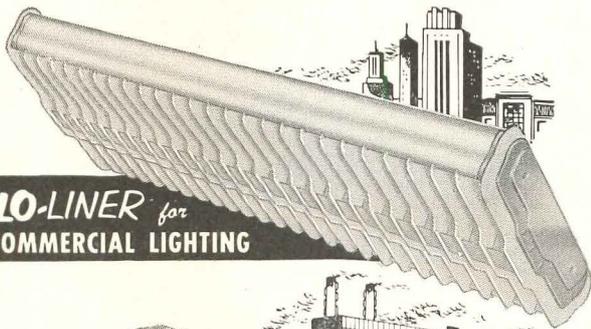


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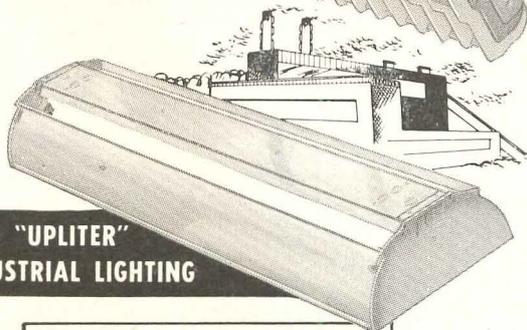
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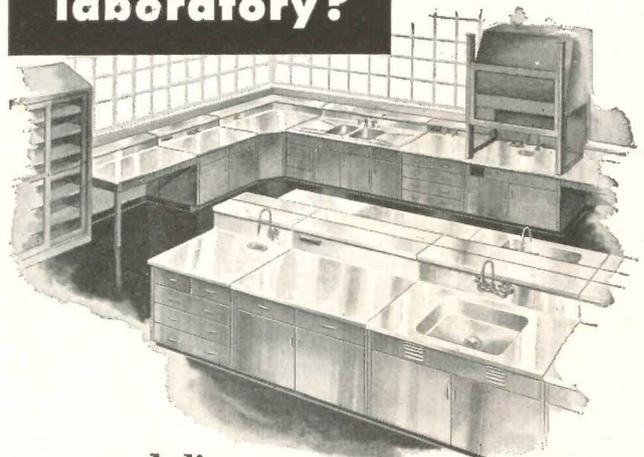
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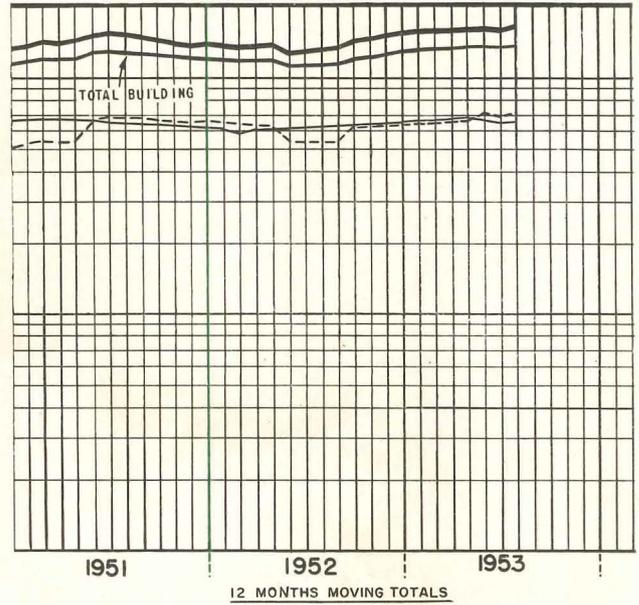
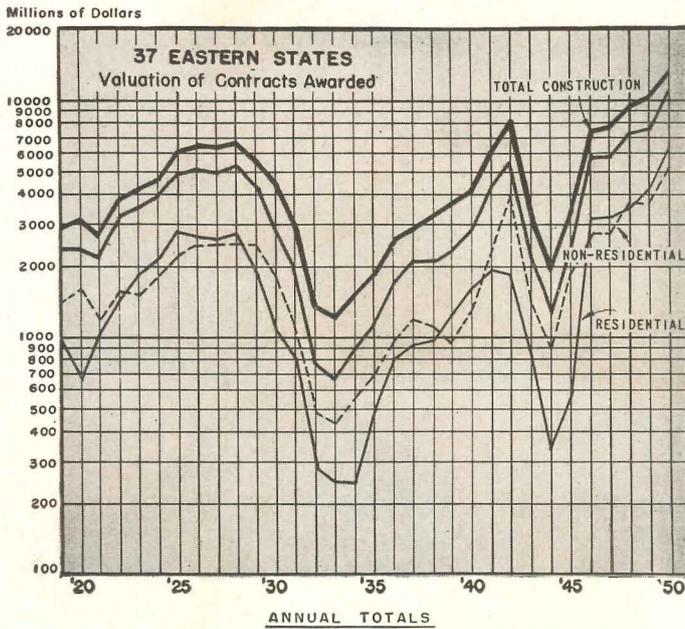
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CURRENT TRENDS IN CONSTRUCTION

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CONTRACTS TAKE SHARP UPTURN

Construction contract awards as reported by the F. W. Dodge Corporation showed a surprising contra-seasonal upturn in July over June and also recorded a sharp increase over July 1952.

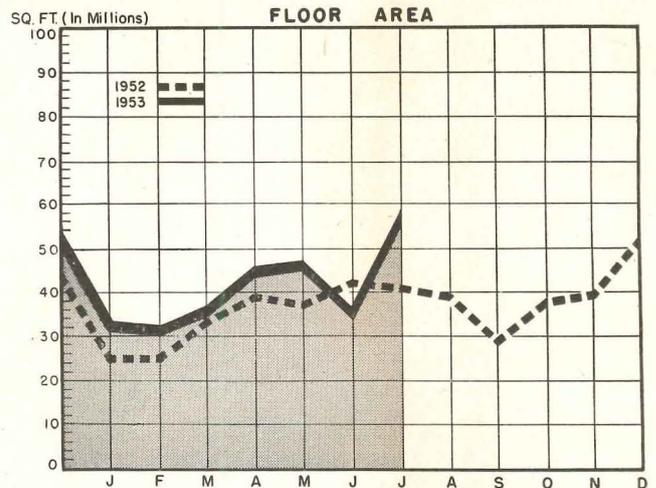
The July increases reversed the slight downward turn indicated in the June contract awards and brought totals for the first seven months of 1953 to new highs.

Nearly all categories of construction shared in the upturn. Commercial building led with a 117 per cent increase: — from \$92,221,000 in July '52 to \$200,133,000 in July '53. Manufacturing buildings increased from \$139,941,000 to \$206,702,000. Schools, religious buildings and social-recreational buildings all registered substantial gains.

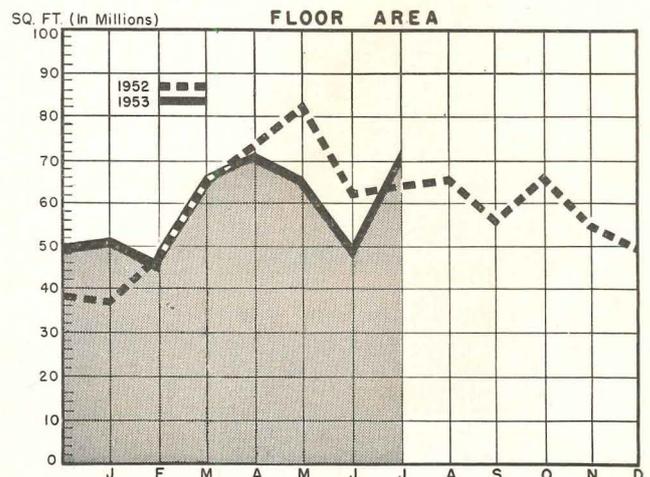
Residential building contracts, which had been running slightly under '52 levels, turned upward with a 7½ per cent increase over July last year: from \$608,078,000 to \$653,407,000.

Total building contracts for July were \$1,417,800,000 compared with \$1,170,764,000 last year. For the first seven months, the total valuation was \$7,628,327,000 as compared to last year's record-breaking \$7,213,776,000 — a gain of 5.7 per cent.

NONRESIDENTIAL BUILDING (37 EASTERN STATES)



RESIDENTIAL BUILDING (37 EASTERN STATES)



SCHOOL & COLLEGE BUILDING CONSTRUCTION—1947-1953

Contracts Awarded—Millions of Dollars (37 Eastern States)

Year	Annual Total	Monthly Average	Year	Annual Total	Monthly Average
1947	316	26	1950	1077	90
1948	595	50	1951	1184	99
1949	748	62	1952	1306	109

Monthly Totals

1952		1953	
Jan. 89	July 111	Jan. 92	July 156
Feb. 99	Aug. 130	Feb. 91	7 mos. 883
Mar. 106	Sept. 79	Mar. 118	
Apr. 111	Oct. 115	Apr. 134	
May 126	Nov. 94	May 153	
June 114	Dec. 131	June 139	