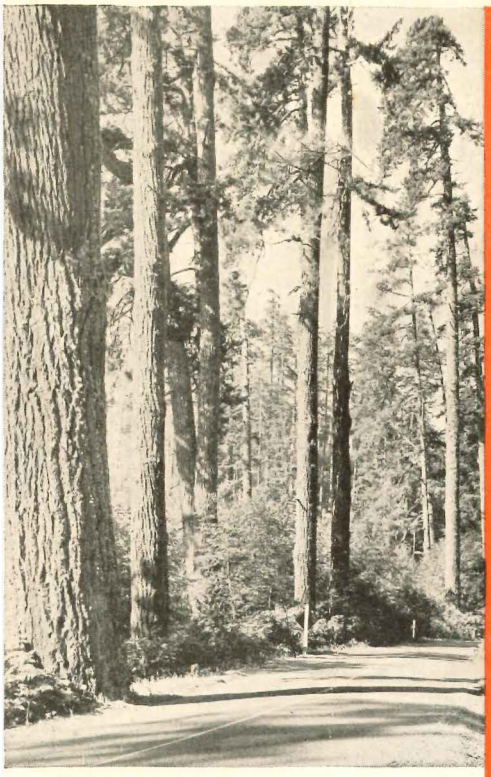
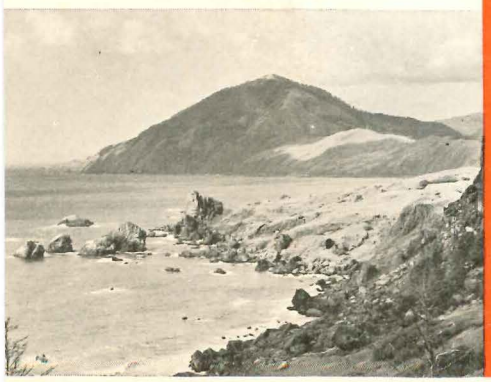


ARCHITECTURAL RECORD

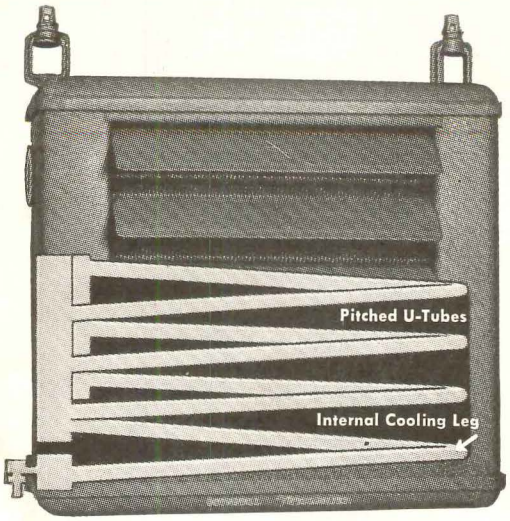
APRIL 1953



ARCHITECTURE OF THE NORTHWEST

NORTHWEST HOUSES

BUILDING TYPES STUDY NUMBER 197



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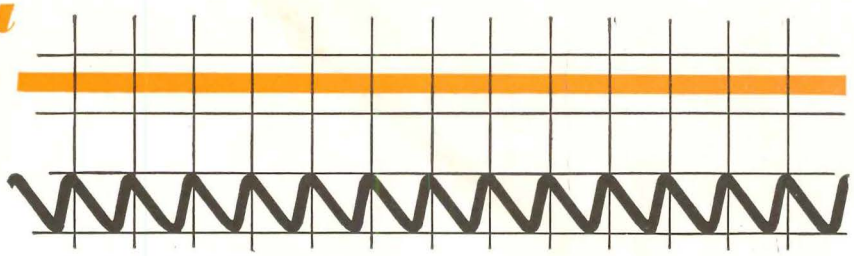

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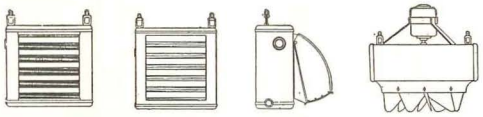

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ARCHITECTURAL RECORD (Vol. 113, No. 4, April, 1953) is published monthly by F. W. Dodge Corp., 10 Ferry Street, Concord, N. H., with editorial and executive offices at 119 W. 40th St., New York 18, N. Y. $4.50 per year; Foreign, $6.50.
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Cover: Right, W. W. Wessinger House, Portland, Ore. Walter Gordon, Architect; photo by Dearborn-Massar. Left, photos by Ray Atkeson

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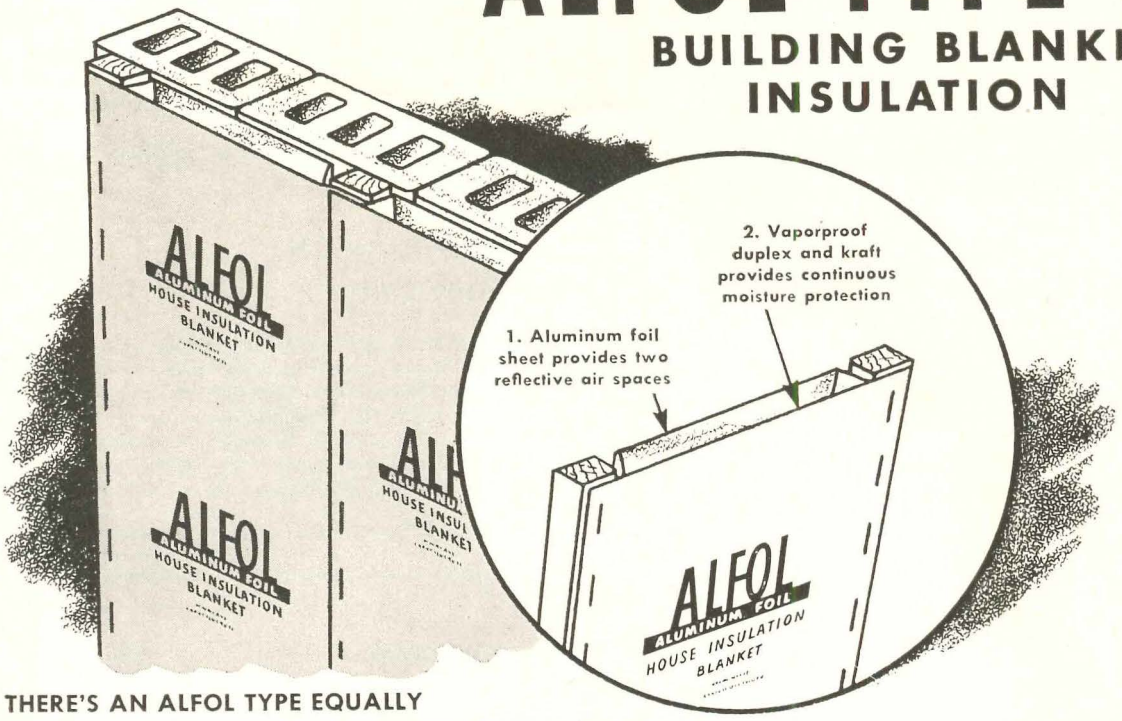

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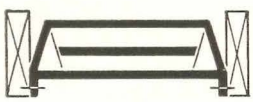

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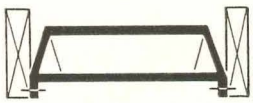

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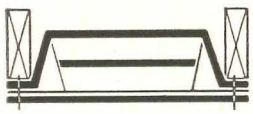

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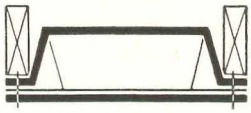

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THE RECORD REPORTS

PERSPECTIVES

NO EAGLE HE: Before it emerged in its present form (see page 20), John Detlie's Siwash Indian Thunderbird design for a "symbol" for the 1953 A.I.A. convention in Seattle provided an example of the perils of symbolism in a politically sensitive age. "Some of the A.I.A. boys," reports Mr. Detlie, "thought they detected a flavor of the NRA eagle" — so the right wing was made horizontal and bipartisan acceptance was achieved. To the best of our recollection, the blue eagle never clutched a salmon either — and Mr. Detlie's Thunderbird is grasping one "to furnish a vicarious thrill for Easterners who may not be so lucky next June." In general the design is described by Mr. Detlie as "a free interpretation of the kind of thing the Haida Indians of Queen Charlotte Islands might have done" if available to the committee.

ON THE BOARDS: schools, commercial buildings and industrial buildings, in that order, according to the reports of A.I.A. regional directors at their semiannual meeting in Washington March 3–4. Defense jobs were far down the list percentage-wise, but military-*connected* projects (schools, housing and community facilities) were keeping architects busy almost everywhere. Activity was reported up in the Northwest and on the Pacific Coast, in the Gulf States and the South Atlantic states; at last year's level in the Western Mountain, Great Lakes, North Central and New York areas; down in the New England, Middle Atlantic and Central States.

NEW AMERICAN STANDARD: Anybody who underrates the impact of the television age should be advised of this recent report by W. C. Johnson, vice president in charge of sales for Admiral Corporation: Chicago now has more television sets in use (1,360,000) than home telephones (1,320,000) or bathtubs (1,260,000).

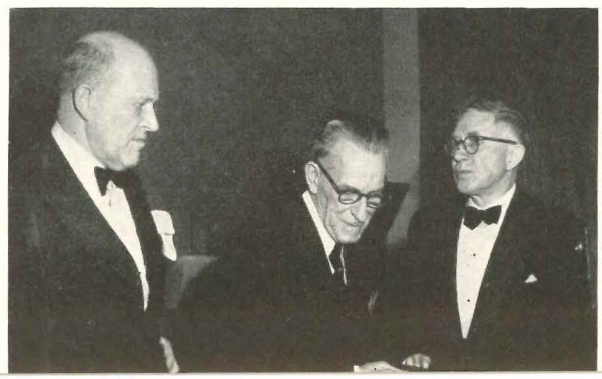
ARCHITECTURE applied to millinery: that's Sally Victor's description of a certain spring hat of "Derain pink" balibuntal (don't ask us) straw. It's called, with no false scruples about mixed metaphors, "Airwave," and it's right pretty. Looks a little as though the lady had been overawed by some thin-shell concrete structures. The thought keeps occurring that if architecture as architecture got as many free notices as architecture as something it isn't, the A.I.A. could forget its $100,000 public relations program. In politics, for example, non-architect "architects" are more prominent than politicians these days — the President himself is "the architect of victory in Europe" and his Secretary of State is "the architect of the Japanese peace treaty"; the rest of the Cabinet will no doubt in time turn out to be architects too. With all the provocation, the wonder is that more architects don't turn out to be statesmen.

WHAT'S WRONG WITH HOUSES? Only four per cent were classified as "satisfied customers" in a recent sample survey of 1000 home buyers by the Housing and Home Finance Agency. The complaints, and the percentage of home buyers voicing each: rooms too small — 50 per cent; inadequate storage space — 45 per cent; unsatisfactory laundry arrangements — 33⅓ per cent; inconvenient layout of rooms — 25 per cent; not enough space for furniture in bedrooms — 23 per cent; inadequate working or eating space in the kitchen — 19 per cent.

THAT ELUSIVE SUPERLATIVE: If *Time's* February 23rd piece about the 1000-ft-long Administration Building of Mexico's University City didn't call it "the longest building in the western hemisphere" it wasn't for lack of trying. RECORD editors, who are not often consulted by Time Inc., regretfully told an earnest young *Time* researcher *they* couldn't guarantee such a superlative; and then, in response to a second telephone call, an hour later, that they didn't even know whether it was "the longest building in Central America." Well, *Time* managed to find *some* superlatives *someplace*, anyway.

RANDOM NOTES: Nearly a quarter of the nation's 16,500 supermarkets now have "soft goods" (apparel) departments, according to *Supermarket Merchandising;* as recently as 1946 only one per cent had them. . . . The Pennsylvania State Bankers Association reports more than seven per cent of the state's banks have installed drive-in facilities; another 40 institutions plan to add them. . . . Solution to one traffic problem may be overhead conveyor belt: Cleveland, where the transit authority has already proposed a belt conveyor passenger subway, is considering a four-and-a-half-mile overhead freight belt to relieve a traffic bottleneck on the Cuyahoga River between Cleveland Harbor and the ore mills.

Tommy Weber

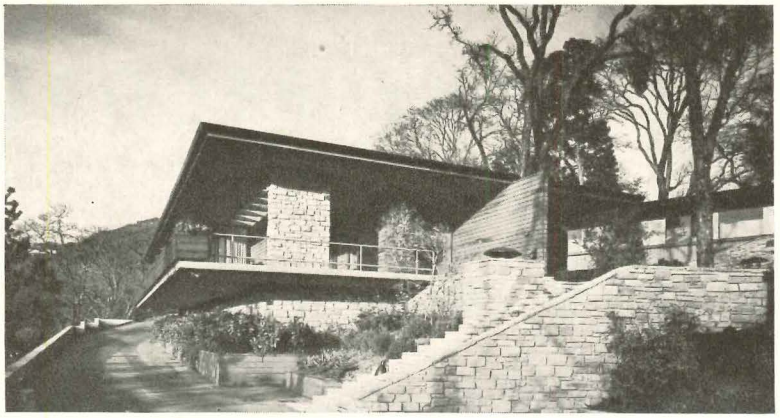


Two old friends are honored: Grosvenor Atterbury, F.A.I.A. (far right), was awarded the Medal of Honor of the New York Chapter, A.I.A., at the chapter's annual dinner. The Medal was accepted for Mr. Atterbury, who is no longer able to leave his house, by his old friend William Adams Delano, F.A.I.A., shown at right (center) with William Lescaze (left) and Chapter President Hugh Ferriss as he received the award. It was later announced that Mr. Delano will receive the 1953 Gold Medal of the American Institute of Architects.

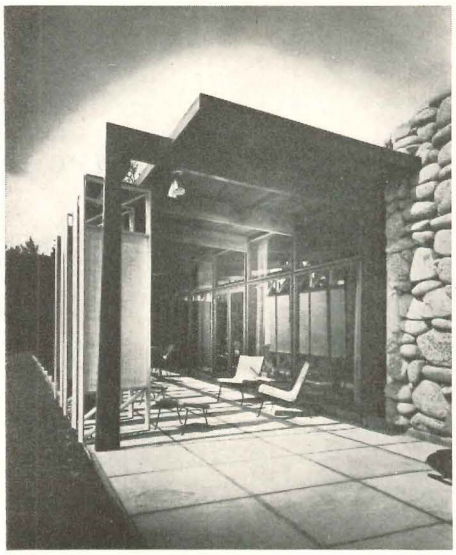
THE RECORD REPORTS

AWARDS OF HONOR

Right: residence for Mr. and Mrs. William Foster in Orinda was one of two buildings which scored awards of honor for their architect, Henry Hill



Morley Baer



Maynard L. Parker

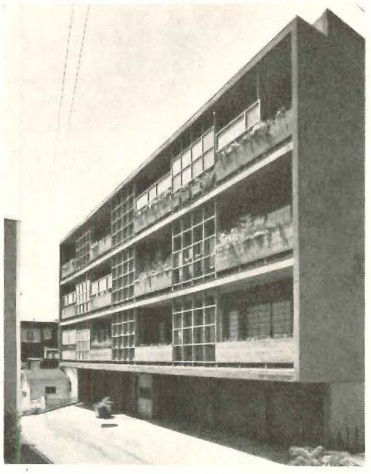
Above: an honor award winner near Carmel. Residence for Charles G. Sawyer, Anshen & Allen, architects

Ernest Braun

Above: architect George T. Rockrise won an honor award with his design for this house for Mrs. P. K. Gilman at Kentwoodlands

Near right: "Cargoes" shop in San Francisco won an honor award for Skidmore, Owings & Merrill. Far right; Bay Hill Apartments, second honor award winner by Henry Hill

Roger Sturtevant



Roger Sturtevant

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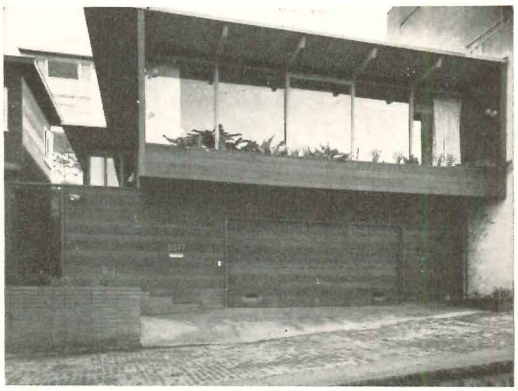


Far left: leisure house for John Carden Campbell at Mill Valley earned honor award for Campbell & Wong. Near left: Confer & Ostwald scored with house for E. B. Wienand, San Francisco

NORTHERN CALIFORNIA ARCHITECTS HOLD A COMPETITION

Region's First Contest in 20 Years Brings Awards to 43 Buildings

IN A COMPETITION which so impressed the jury it expressed regret that even more entries could not be premiated, 43 awards have been presented to winning architects. The competition was the 1953 Honor Awards Program conducted jointly by three California chapters of the American Institute of Architects, the Northern California, East Bay and Coast Valleys chapters. On these three pages some of the buildings which won Awards of Honor or Awards of Merit for their architects are shown.

First of its kind to be held in the area since 1932, the program was open to all architects of buildings located within the territory covered by the three chapters, regardless of the architects' places of residence. A total of 151 entries in all categories of work was submitted by 67 different architectural firms. Sixteen Awards of Honor and 27 Awards of Merit were made by a jury which included Pietro Belluschi, dean of the School of Architecture and planning of the Massachusetts Institute of Technology, Richard Neutra of Los Angeles and Edward D. Stone of New York.

Although buildings dating back as far as 1932 — to the last such competition held in the area — were eligible in the program, the majority of the entries were of post World War II vintage. There was only one mid-thirties entry. Two pre-war buildings, a 1940 residence by William Wurster and a 1939 hotel restaurant by the late Timothy Pfleuger, won merit awards. Some of the entries, and winners, were buildings still in the project stage.

Unusual in its own right was the jury's report, which laid particular stress on the humanistic qualities of the region's architecture, "qualities which characterize a situation where rigid tradition has been loosened but not lost." The jury congratulated the architects of the region for "their wonderful accomplishments not only in design but in (their relationships with their clients and the public)" and commented that the exhibition would "open many more eyes and bring happiness to many who, immersed in their daily worries, have perhaps not thought what a carefully designed house, working space or school building can do for the souls of human beings of all ages."

The jury expressed confidence that "the vigorously developing area now reviewed in its past 20 years of architectural evaluation may well lead a golden age of great revitalization in the *next* 20 years, with the help of . . . well trained architects, conscientious and aware of their responsibility."

AWARDS OF HONOR

Corpus Christi Church, San Francisco, Mario J. Ciampi, Architect.

Red Cross Building, San Francisco, Gardner A. Dailey, Architect.

Building for Schukl & Co., Inc., Wurster, Bernardi & Emmons, Architects.

House for Charles G. Sawyer, near Carmel, Anshen & Allen, Architects.

Leisure House for John Carden Campbell, Mill Valley, Campbell and Wong, Architects.

House for Mrs. P. K. Gilman, Kentwoodlands, George T. Rockrise, Architect.

House for E. B. Wienand, San Francisco, Confer & Ostwold, Architects.

House for Mr. & Mrs. William Foster, Orinda, Henry Hill, Architect.

Bay Hill Apartments, San Francisco, Henry Hill, Architect.

"Cargoes" Shop, San Francisco, Skidmore, Owings & Merrill, Architects.

American Seed & Nursery Co. Building, San Francisco, Francis Joseph McCarthy, Architect.

Mira Vista Elementary School, John Carl Warnecke, Architect.

Roland's Cocktail Lounge, San Francisco, Mario Gaidano, Architect.

Del Monte Laundry, Monterey, Gardner A. Dailey and Skidmore, Owings & Merrill, Architects.

Allied Arts Guild Sales Building, Menlo Park, Germano Milano, Architect.

Garden House for Mr. & Mrs. Graeme K. MacDonald, Germano Milano, Architect.

AWARDS OF MERIT

House at Gavello Glen, Anshen & Allen, Architects.

Office Building for Coast Counties Gas & Electric Co., Walnut Creek, Anshen & Allen, Architects.

House for Mr. & Mrs. Frank Greene, Sausalito, Campbell & Wong, Architects.

House for Mrs. Elmina Underwood, Pebble Beach, Campbell & Wong, Architects.

Home Economics Building, Davis Campus, University of California, Hervey Parke Clark & John F. Beuttler, Architects; Robert J. Evans, Supervising Architect.

Bank of California, N.A., Mission Branch, San Francisco, Hervey Parke Clark & John F. Beuttler, Architects.

Administration Office Building for the Magna Engineering Corporation, Birge M. Clark and Walter Stromquist, Architects.

Blue Cross Building, Oakland, Confer & Willis, Architects.

House for Mr. and Mrs. William Corlett, William Corlett, Architect.

Greenbrae Elementary School, Marin County, William Corlett, Architect.

Holy Innocents' Episcopal Church, Corte Madera, Crawford & Mann, Architects.

House for Mr. and Mrs. Arthur J. Cohen, San Francisco, Joseph Esherick, Architect.

Richmond Memorial Youth Center, Donald L. Hardison, Architect.

House for Mr. and Mrs. Ellis L. Jacobs, Ellis L. Jacobs, Architect.

Katherine Delmar Burke School, San Francisco, Donald Beach Kirby & Thomas B. Mulvin, Architects.

Carwash for Hanna Stations, Francis Joseph McCarthy, Architect.

House for Mr. and Mrs. Lloyd A. Myers, San Rafael, Frank O. Merwin, Architect.

Pool Lanai for Mr. and Mrs. Alfred Ducato, Atherton, Germano Milano, Architect.

"Top of the Mark," Mark Hopkins Hotel, San Francisco, Timothy L. Pfleuger, Architect.

Alhambra Union High School, Martinez, John Lyon Reid, Architect.

East Bay Telephone Building, Oakland, Harry A. Thomsen and Aleck L. Wilson, Architects.

Hayward Public Library, John Carl Warnecke, Architect.

Sunset Community Center, San Francisco, Wurster, Bernardi & Emmons, Architects.

Stern Dormitory, University of California, Berkeley, Wurster, Bernardi & Emmons, Architects.

House for Mr. and Mrs. Donn Emmons, Tiburon, Wurster, Bernardi & Emmons, Architects.

House for Mr. and Mrs. Albert M. Smith, Stockton, Wurster, Bernardi & Emmons, Architects.

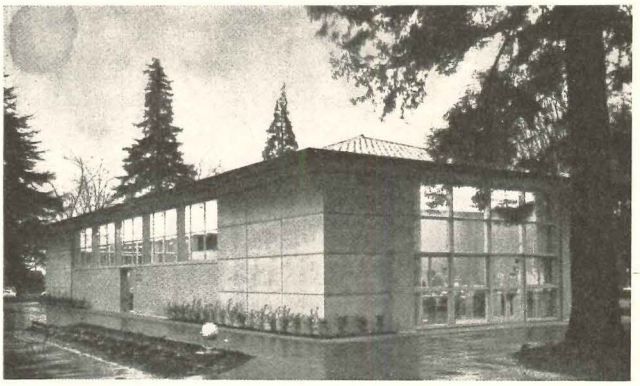
House for Dr. & Mrs. Saxton Pope, Orinda, Wurster, Bernardi & Emmons, Architects.

Roger Sturtevant

Above: Office building for Coast Counties Gas & Electric Co. in Walnut Creek won merit award for Anshen & Allen, who also got an honor award

Roger Sturtevant

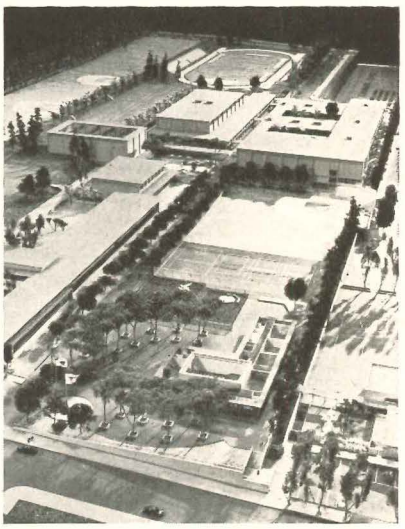
Above: Katherine Delmar Burke School, San Francisco, was a merit award winner. Architects are Donald Beach Kirby and Thomas B. Mulvin. Below: Only library building among the award winners. Hayward Public Library, John Carl Warnecke, architect



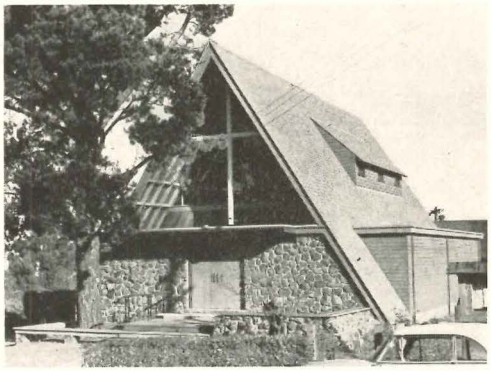
Rondal Partridge

Before and after; Holy Innocents' Episcopal Church, Corte Madera, Crawford & Mann, architects, only remodeling job among winners

Ernest Braun

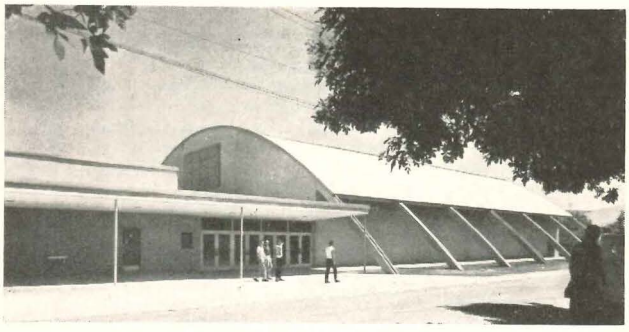


Ernest Braun



Roger Sturtevant

Two more merit award winners: Above: Richmond Memorial Youth Center, Donald L. Hardison, architect. Right, Sunset Community Center, San Francisco, Wurster, Bernardi & Emmons, architects



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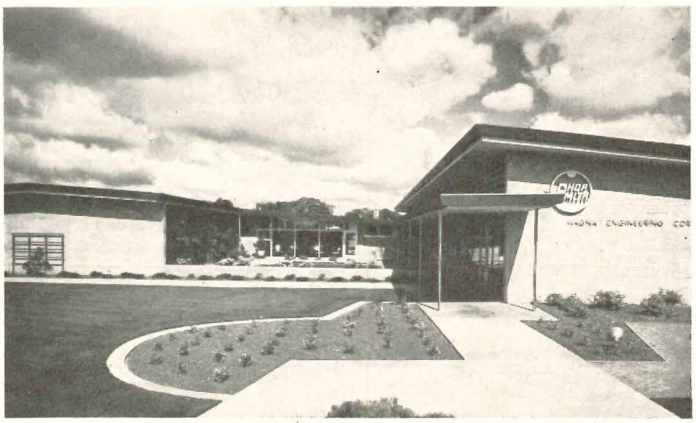

These buildings also won merit awards: Above: Alhambra Union High School, Martinez, John Lyon Reid, architect. Right, Administration Office Building for Magna Engineering Corp., Birge M. Clark and Walter Stromquist, architects

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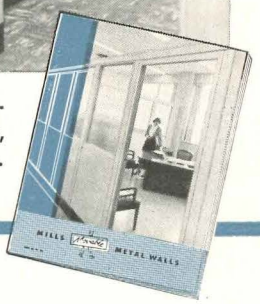

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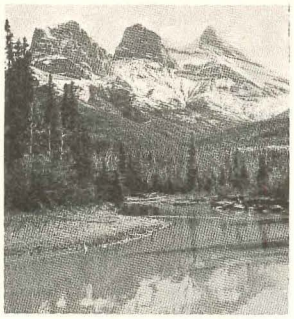


ALBERTA: OIL BOOM ARCHITECTURE

Building and Planning in the Province Are Surveyed by the R.A.I.C.'s Journal

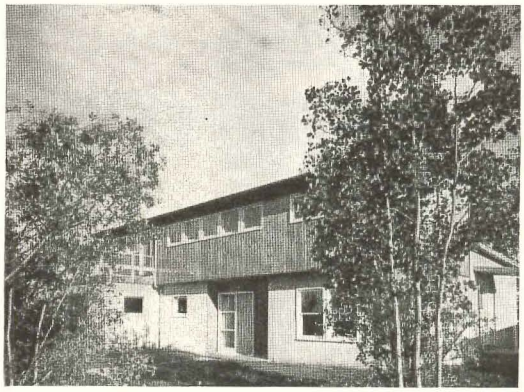
A PHENOMENAL NUMBER of buildings have been added to a wild and beautiful landscape since Alberta's oil boom started in 1947. The architecture which has emerged is examined in essay and photograph in the February issue of the *Journal of the Royal Architectural Institute of Canada.*

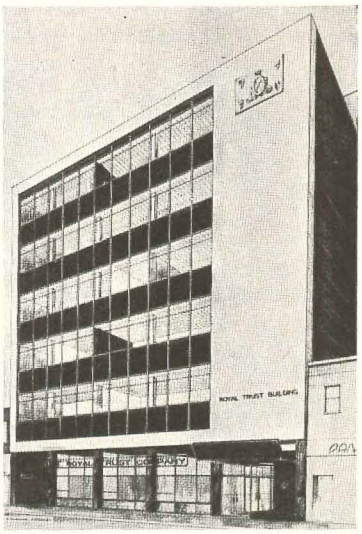
A number of the new buildings presented in the issue, which devotes its entire contents to the province, are reproduced here. Besides these, the issue includes several articles on aspects of art and architecture in the province, together with a foreword by the Hon. Ernest C. Manning, the Premier of Alberta, and an editorial by Cecil Burgess of Edmonton, a member of the Journal's editorial board.

Among the articles in the issue is a discussion of Alberta's resources and developments, contributed by the Hon. Alfred J. Hooke, who analyses in detail the assets of the province. Mr. Hooke is currently Alberta's Minister of Economic Affairs and Minister of Public Works.

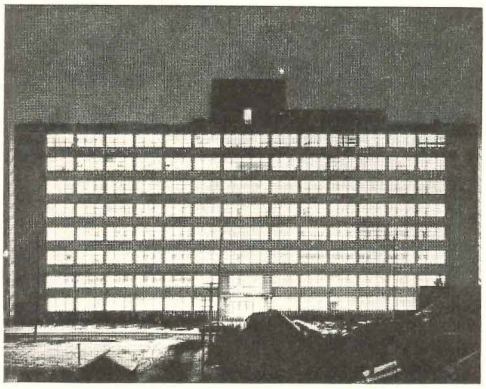
Brahm Wiesman, assistant town planner for the city of Edmonton writes on the concentrated town and rural planning which has taken place in the province during the last four years. Mr. Wiesman surveys the history of planning in the area since the province's founding and analyses recent developments in terms of the evolved principles which are the basic guide for planning in the province today.

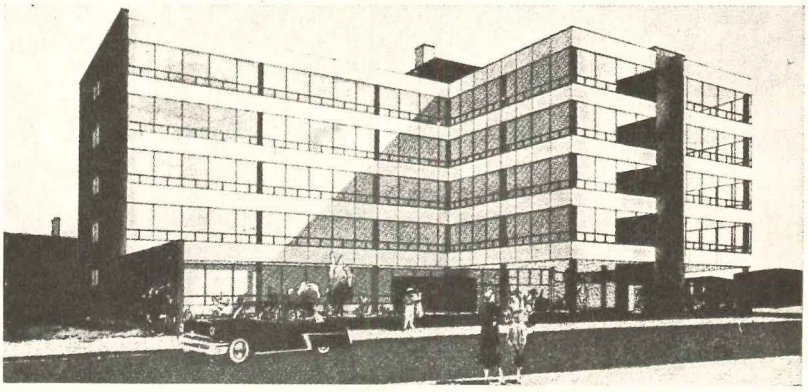
Other articles include a report on the activities of the Calgary Allied Arts Council by Maxwell Bates, a discussion of art in Alberta by Ira Young, and an article on arts and handicrafts in the province by Blake MacKenzie, Coordinator of Cultural Activities for Alberta.



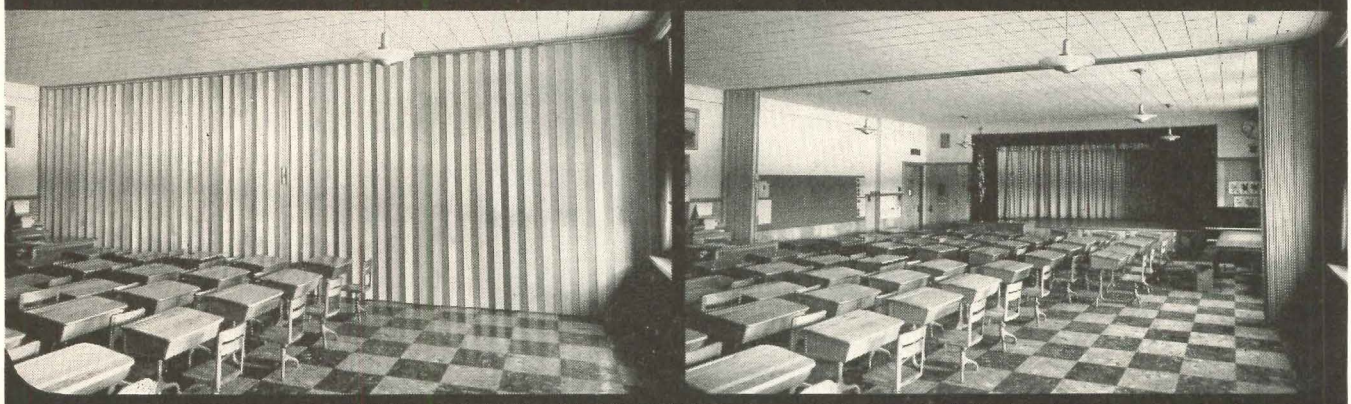


Recent Alberta buildings: Above left, house of J. A. Russell, Edmonton, Wallbridge & Imrie, architects; center, interior of the house; right, Royal Trust Building, Edmonton, Dewar, Stevenson and Stanley, architects. Below left, Provincial Administration Building, Edmonton. Architect for this building was the Alberta Provincial Government Public Works Staff, Buildings Branch; Below right, Brown Building, Calgary, J. A. Cawston, architect





In the recently remodeled COMMODORE PERRY HOTEL coffee shop, Toledo, Ohio, Pella Wood Folding Doors become movable partitions, providing privacy and decorative effects. Architects: Bellman, Gillett and Richards — Toledo.



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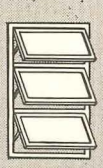

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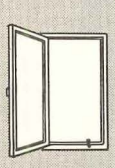

Pella WOOD CASEMENTS

Pella ROLSCREENS

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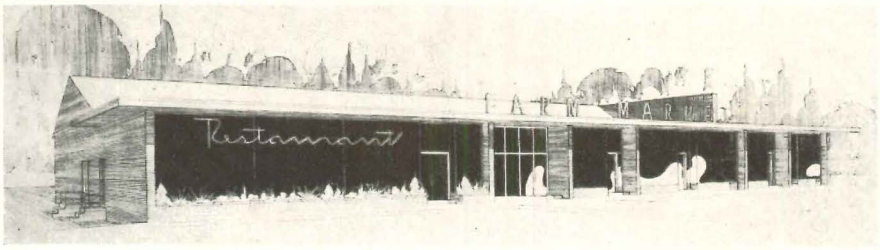
Pella VENETIAN BLINDS

CANADA (*Continued from page 24*)

Right: This farmers' market will form part of the $2,000,000 Crang Plaza Shopping Center in North York Township, Ont. It will include vending facilities for 40 farmers. Stores in the building will be designed to open onto the market floor. Architect is Maurice D. Klein, with Crang & Booke, Associate Architects, all of Toronto



Toronto Architect is Head of Assembly Arrangements

Leonard E. Shore, Toronto architect, has been named chairman of the committee on arrangements for the 46th annual assembly of the Royal Architectural Institute of Canada, to be held at Toronto's Royal York Hotel, April 23–25.

Sir Hugh Casson, British architect responsible for all street decorations for the forthcoming Coronation, will be one of the principal program participants. Several architectural exhibitions have been planned for the assembly, including the winning entries for the 1952 Massey Medal Awards and some of the entries in the recent National Gallery competition.

Level of Architects' Incomes Revealed by Census Figures

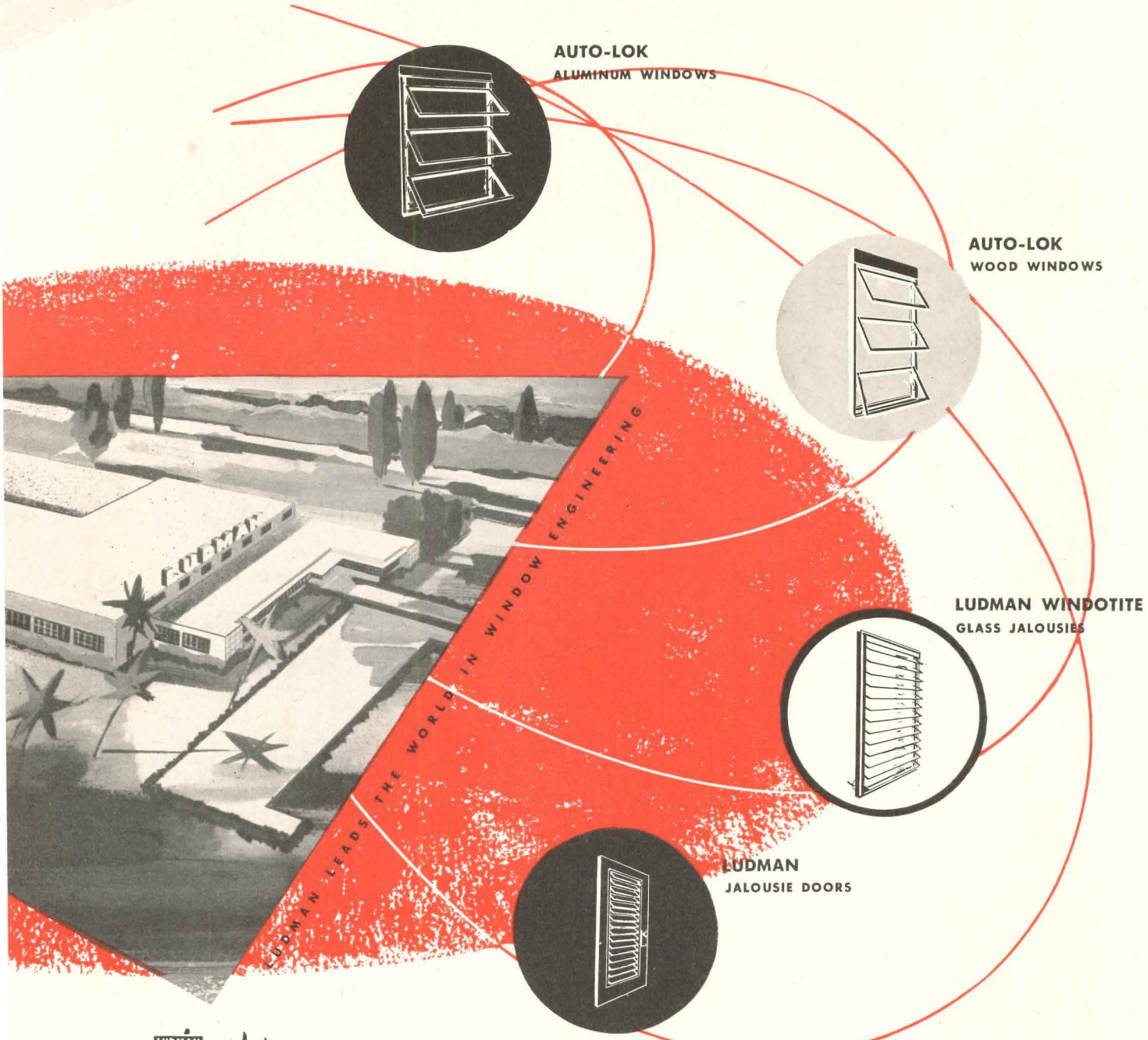
Results of the 1951 census, now beginning to appear, reveal that the proportion of architects who earn $4000 or more annually is higher than the general average for managerial and professional groups, but not as high as the proportions for dentists, lawyers and physicians. Here are the comparative figures:

	Total	Earning $4000	% of total earning over $4000
All Occupations	3,011,322	164,228	5.5
Managerial	161,929	62,598	38.6
Professional:	178,467	37,376	20.9
Architects	1070	443	41.4
Dentists:	321	180	56.1
Lawyers	2327	1118	47.0
Physicians	4197	2006	47.8

John Wade Elected to Head British Columbia Architects

At the 33rd annual meeting of the Architectural Institute of British Columbia, held recently at Victoria's Em-

(*Continued on page 30*)



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CANADA

(*Continued from page 26*)

press Hotel, John H. Wade of Victoria was elected president. He succeeds P. M. Thornton, who headed the Institute for two years.

Other new officers include: J. L. Davies, Vancouver, first vice president; R.A.D. Berwick, Vancouver, re-elected treasurer; F. W. Nicolls, Victoria, honorary secretary; and R. B. Deacon, Vancouver, executive secretary. K. B. Davison, D. S. McNab, and H. N. Semmens, all of Vancouver, were elected Council members to serve two years. Mr. Wade, Mr. Davies and Jocelyn Davidson, Vancouver, all have another year to serve on the council.

Above: YMCA-YWCA building in Etobicoke Township, Ont., near Toronto, is typical of combined "Y" structures being constructed in growing communities. Architects: Craig & Madill, Toronto

New Brunswick Architects Elect Stanley W. Emmerson

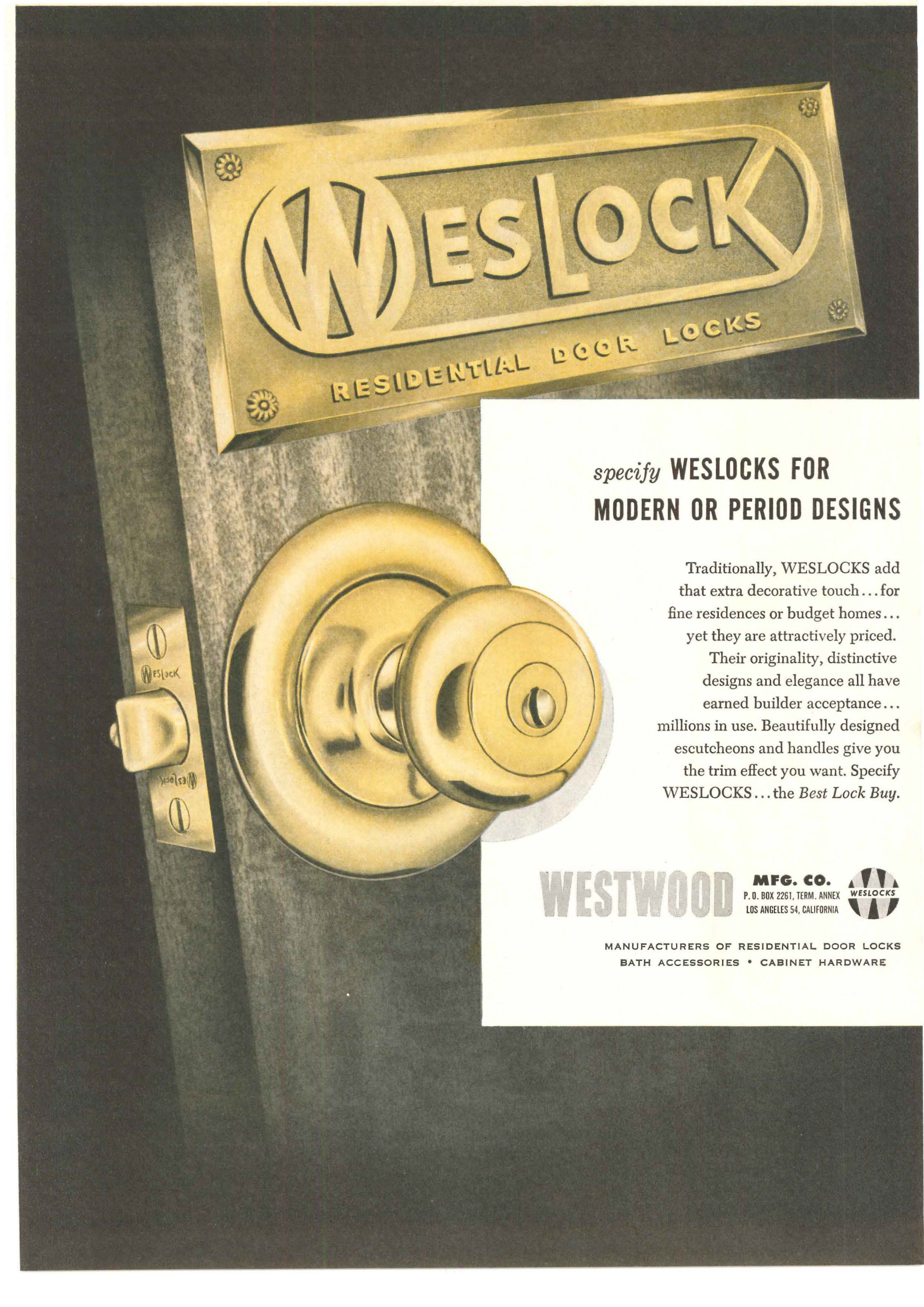
The Architects' Association of New Brunswick met in the Royal York Hotel in Saint John and elected Stanley W. Emmerson of Lancaster as its president for 1953. He succeeds Douglas Jonsson of Fredericton.

Other new officers: Neil M. Stewart, Fredericton, vice president; H. Clair Mott, Saint John, re-elected secretary-treasurer and registrar. Mr. Jonsson, John R. Myles and three members of the executive form the Council. Mr. Jonsson and Mr. Mott will represent the Association at the annual assembly of the Royal Architectural Institute of Canada.

Housing Outlook Bright — Starts Double 1952 Level

January figures released by the Dominion Bureau of Statistics give promise that the pace in housing will not slacken. Throughout the country in centers of 5000 or more population, housing starts for the month numbered 2693, a 100 per cent increase of the 1345 registered in January 1952.

(*Continued on page 32*)



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CANADA

(*Continued from page 30*)

Even more significant as a harbinger for housing this year is the carryover of 55,689 uncompleted houses and apartments from 1952. This figure is 21 per cent higher than the volume of residential work underway at the same time a year ago. If the rate of housing starts established during the latter half of 1952 continues through this year as predicted, completion of 90,000 houses and apartments may be accomplished in 1953. This would equal the production record set in 1950, the best in Canadian history to date.

Finance Minister Sees '53 As Big Year for Canada

In the current fiscal year Canada should reach new heights in production, consumption, investment and trade, according to a prediction made by Finance Minister Abbott.

His forecast is that the gross national product will approximate $24 billion. This would represent a gain of four per cent over 1952, which in turn, with a gross national product of $23 billion, gained seven per cent over 1951.

Mr. Abbott described 1952 as "a year of prosperity without inflation," and declared that Canadians were beginning to "reap the benefits of enormous investments in new plants and equipment." There was a 12 per cent rise in salaries and wages which, combined with a decline in prices, meant that "in 1952 most Canadians experienced a substantial improvement in real income."

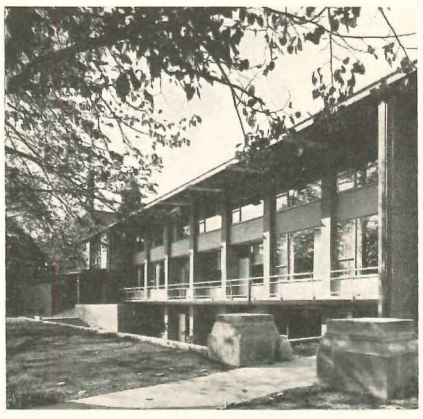
An expansion in physical output of goods and services is not to be wondered at, Mr. Abbott continued. The past decade, he noted, has seen such remarkable growth in Canada that "each year our people set their sights a little higher; we expect almost as a matter of course that we will do better than we did the year before."

Plant Equipment, Housing Investment Up in 1952

Investment in plant, equipment and housing last year increased by $328 million over 1951, according to a White Paper recently tabled in the House of Commons by Finance Minister Abbott. The estimated 1952 figure was $4,138,000,000, compared with the previous year's total of $3,810,000,000.

The largest portion of the 1952 investment, $1,859,000,000, went for new machinery and equipment. New residential

(*Continued on page 36*)



Above: Students' Union, Victoria College, University of Toronto, serves as a social center for students at the university's second largest arts college. Fleury & Arthur, Toronto, are architects

ARCHITECTURAL
RECORD

ARCHITECTURE OF THE NORTHWEST

IT MAY BE TRUE, as some architects assert, that the Pacific Northwest is exerting a new influence upon the development of modern architecture. Other Northwest architects say that would be overstating it (symposium, page 140). All agree that the rugged country, the weather and the independence of the people are strong design influences, and that architects take them quite seriously.

The RECORD presents here a long look at representative Northwest architecture. Architects attending the A.I.A. convention in Seattle next June will have an opportunity of seeing it in its own setting, and discussing its evaluation with their fellows, for the convention theme is "New Country — New Architecture."

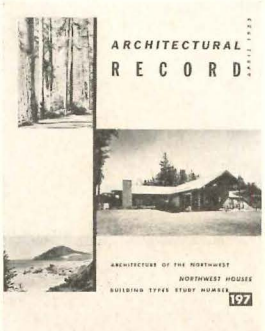
A significant fact is that "modern" architecture was quickly accepted in the Northwest. Freedom to build for the conditions at hand, lack of obeisance to styles of the past, relating of indoor to outdoor space, natural use of materials — these had strong appeal. The people of the Northwest take a genuine hobby interest in their homes; they spend their weekends working on either their houses or their boats. They listen eagerly to their architects. They accept new ideas more readily than people in regions already steeped in styles, but not because the new things come in prepared packages.

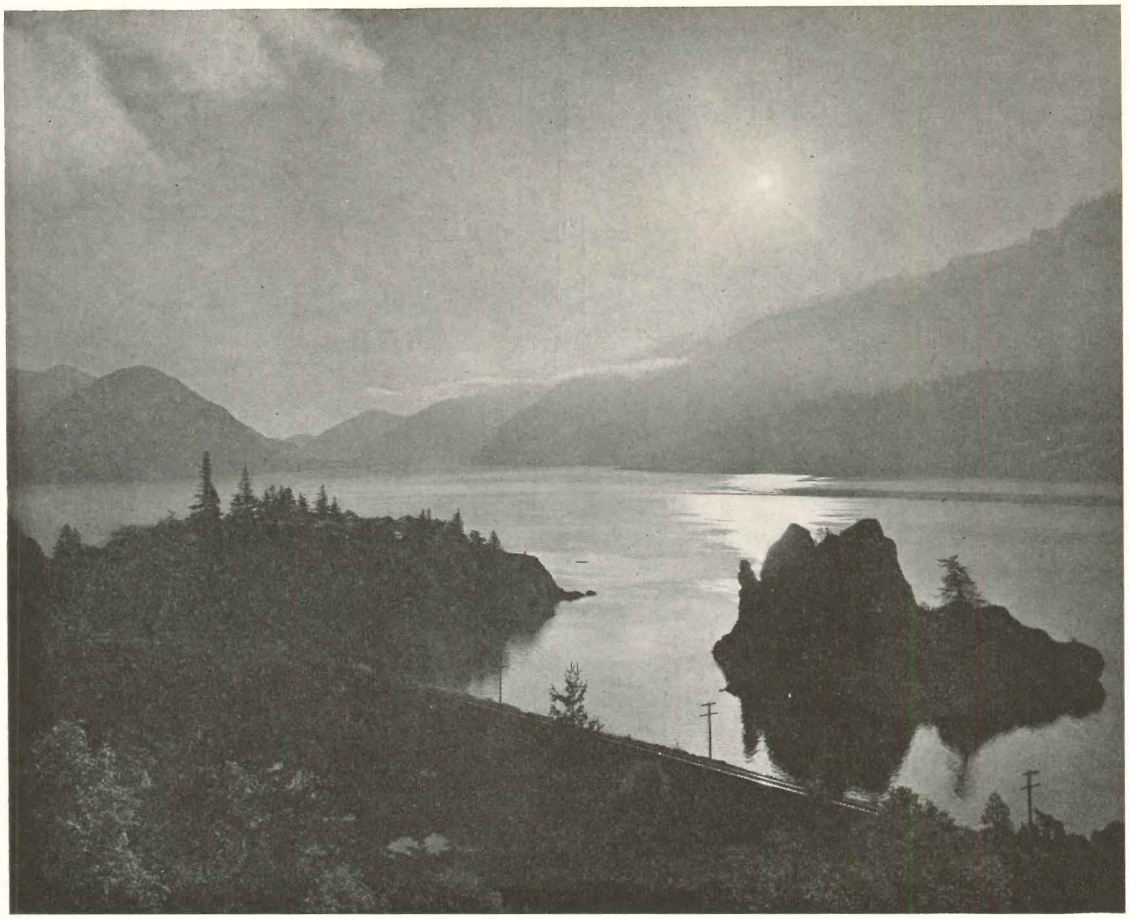
In a sense, then, modern philosophies have enjoyed a more general trial, perhaps more experimentation. And at the same time there has been a quicker rejection of any earthly gods that might seem false. The earthly gods of the Northwest are the seas and straits, the lakes, the mountains, the mist and rain, the winds, the sunsets, the forests and flowers, all of which come in vast quantities. Any international influences or cultural doctrines must compete with nature, and nature speaks with authority.

This is not to suggest that this is an isolated land of cowboys and Indians. Most of the people came, still come, from the East. Many of the architects went east to school; some of them never saw the Northwest until they were graduated. But the Northwest has always attracted (still does) people who respond to the lush and rugged country with a pioneering spirit. And, like evergreens, individuality seems to flourish here.

This is, of course, the land that Pietro Belluschi knows so well, where most of his work was done, before he went to teach architecture at M.I.T. Though it is slightly out of context, this quotation from one of his speeches serves to introduce the RECORD's presentation of the architecture of the Northwest: ". . . the West Coast, with the pioneering heritage of its people, with definite natural characteristics of its own, and with less binding ties to the past — has been able to advance more visibly toward the realization of valid contemporary forms."

— E.G.





THIS CONCEPT OF MODERN, therefore, will not lead us to expect it to be just another style. It cannot be labeled international style, although certain characteristics are universal; not modernistic. It should not even be called modern, because it goes back to fundamentals. It goes back to nature, if the owner's life is one of response to it. Therefore, we may deduce that a region with similar natural and human attributes may have an architecture harmonious to them. The people are neighbors, their interests are alike, they respond the same way to life, they have the same materials at hand, they have similar landscape, the same climate. So "regionalism" really has a meaning, which internationalism does not quite have.

— Pietro Belluschi, Portland Art Museum, 1941

THE NORTHWEST ARCHITECTURE OF

Pietro Belluschi

Preview of a forthcoming ARCHITECTURAL RECORD *book, edited by Jo Stubblebine, comprising photographs of his work and significant quotations from his speeches*

I BELIEVE that the next generation will make us really proud; from the lessons we have learned I hope they will acquire a new discipline of the mind to take the place of the discipline of the "styles," and that they will have enough feeling and integrity of purpose to make their work of lasting significance.

And now that most of the battles against dogmas have been won, I hope they may also gain a certain amount of tolerance for all the human symbols and forms of the past, because people need them and live by them to a greater extent than is realized, because they furnish a feeling of continuity which gives them faith in their evolution. This fact the architects must understand if they want to be the leaders.

— *Reed College, 1951*

A HOUSE OR A BUILDING is modern, not because it has a flat roof or a butterfly roof, continuous vertical spandrels, or horizontal spandrels, lally columns, or plastic bubbles, but rather because it has recognized the meaning of space in relation to its purpose, and to its setting; because, I repeat again, it has solved in a free, and creative way all the many social, economic, regional,

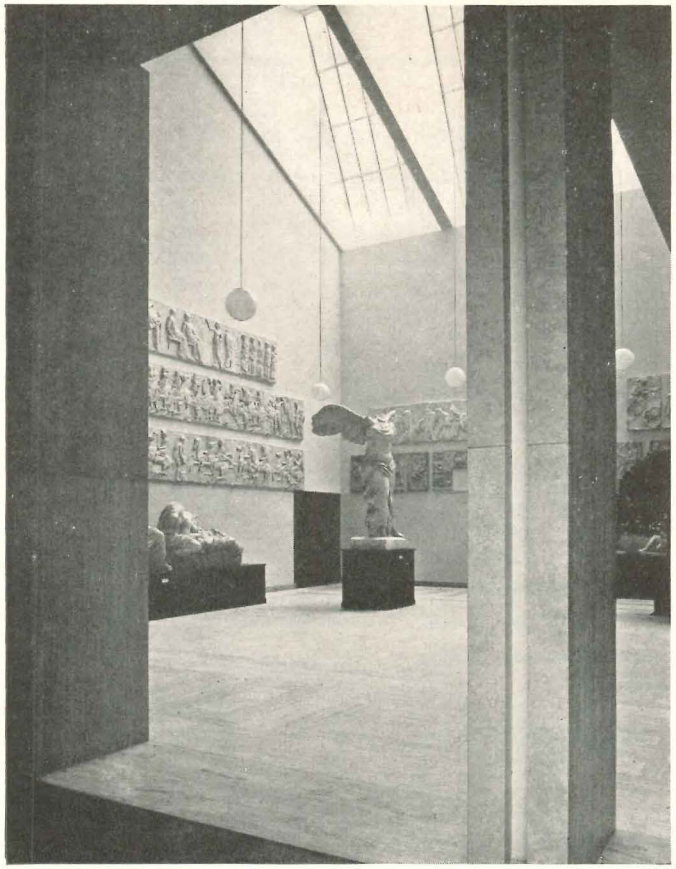
An early house by Belluschi (1938), quite representative of the Northwest

Dearborn-Massar

emotional and practical limitations peculiar to the problem at hand. I want to make clear at this point that I do not minimize the importance of using fresh and original details in carrying through architectural works. They are the touchstone of competence, but just as literary works should be judged by their content and the depth of ideas expressed, rather than by the choice of words, so must the value of architecture be gaged by its deeper meaning, which can then be expressed with "fantasy and imagination."

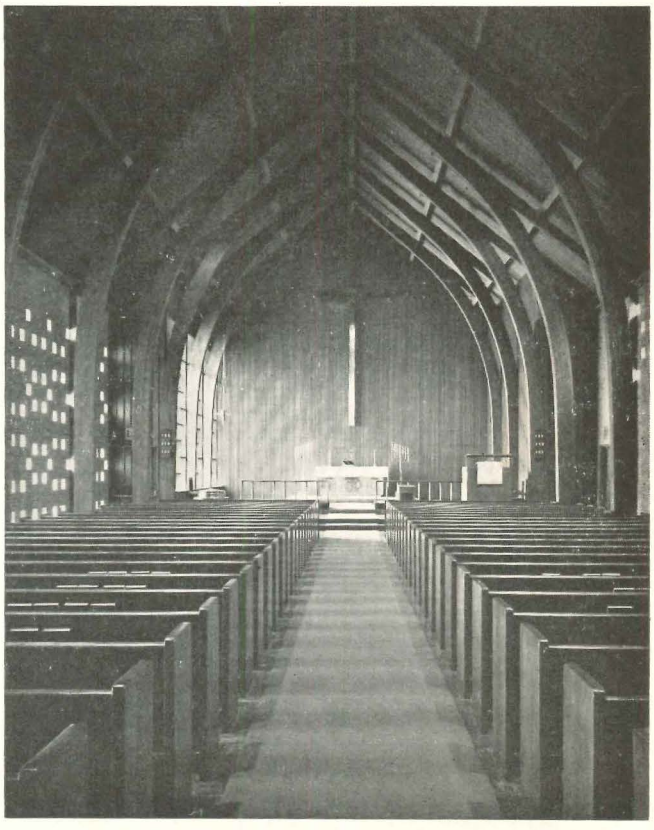
— *University of Illinois, October, 1951*

Roger Sturtevant



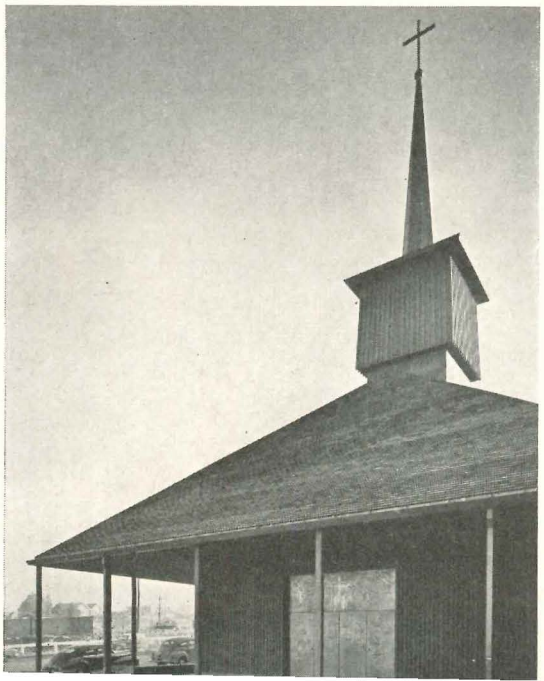
To WHAT EXTENT have we succeeded up to now? We readily admit that our accomplishments are very modest, and our successes mostly on the negative side. What little we have to show for our efforts has not been easily achieved, not so much because of the doubters among clients and public, but mostly because of our own conflicts and limitations. We had to find our way among the great many technical advances, and distinguish the basic from the superficial; we had to develop the inner discipline which alone could prevent us from being seduced by the many transitory forms offered for daily consumption. It is also apparent that we have succeeded in designing good factories but have failed to create beautiful monuments. Today we are more

K. E. Richardson



Above: sculpture court, Portland Art Museum. Below and right: Exterior and interior of Zion Lutheran Church, in Portland, one of the most typical of Belluschi's famous churches

Roger Sturtevant

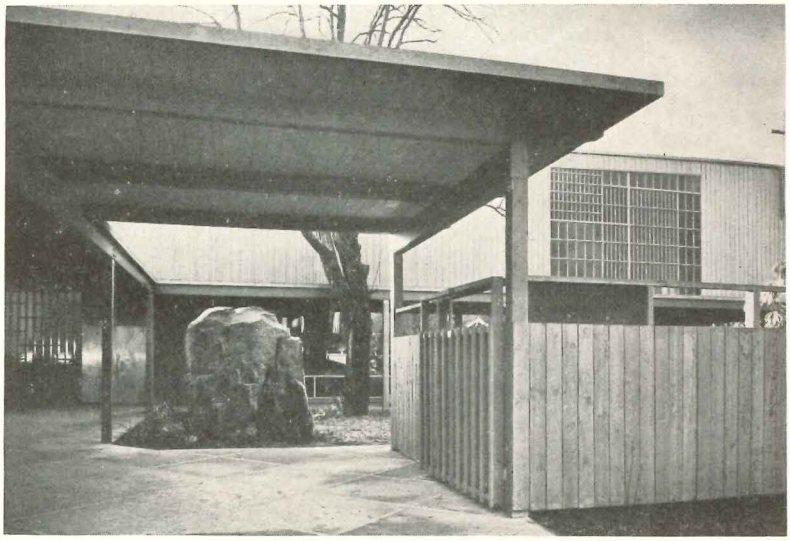


honest, more practical, and quite functional, but it has been at the expense of grace and gentility. We have taken away many of the established forms, so cherished by our ancestors, and have replaced them with stark utilitarian ones, which give little nourishment to the senses. We have taken away from the man in the street all the stereotyped little ornaments, cornices, cartouches and green fake shutters, but we have not been capable of giving him back the equivalent in emotional value. The fact is, that after three decades of rather cold functionalism, we have come to the realization that emotion is a great force in our everyday world; it pervades our actions, our political motives, our very happiness — yet emotions have not been given the guidance they deserve, although they are the very soil in which both architects and public may grow to creativeness and understanding.

— *Reed College, 1951* (ARCHITECTURAL RECORD, Feb. 1951)

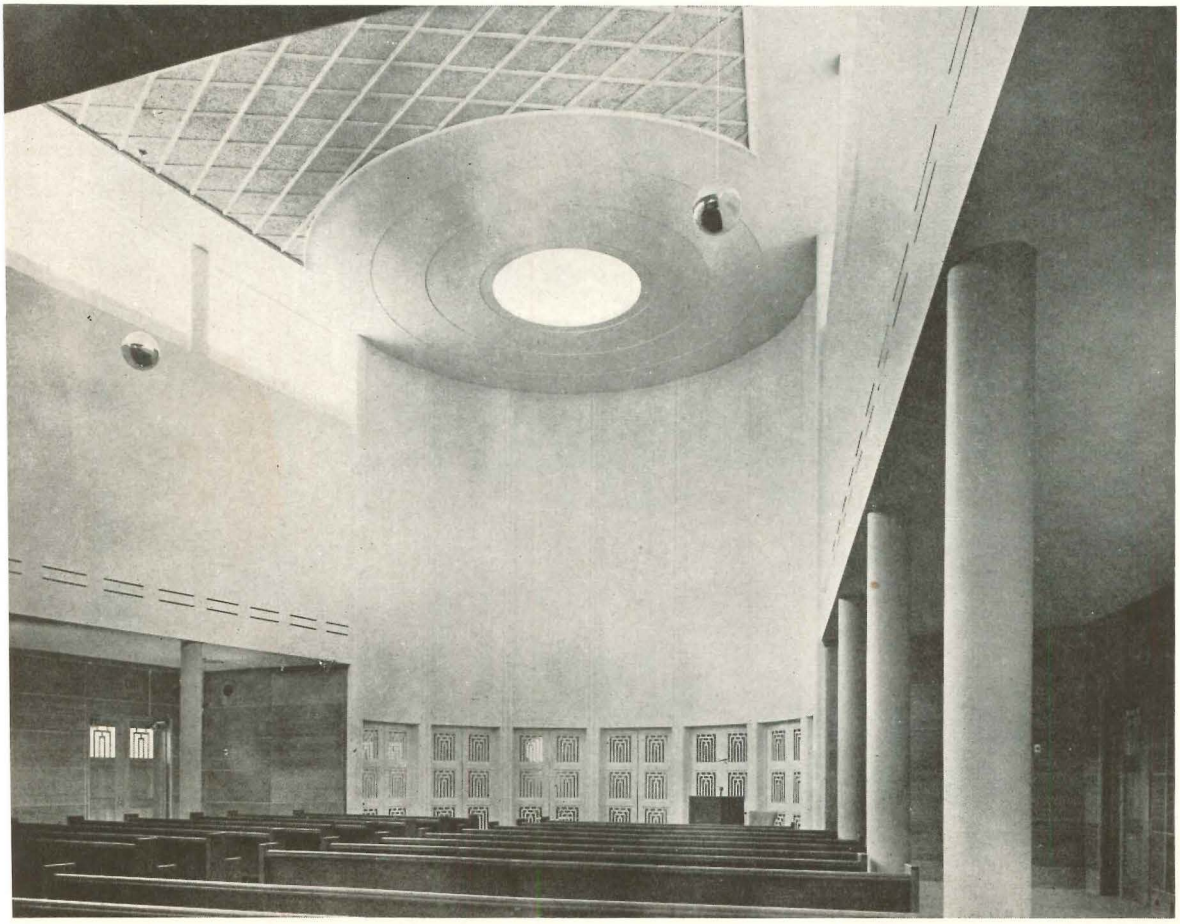
BEAUTY IS YET our greatest motivating ideal, and the search for it our greatest source of strength. A plane in flight, the great suspension bridges, a high dam, a network of throughways cutting the landscape, the shopping centers, the green-belt cities — certainly these are new aspects of beauty more significant, more convincing to us than the old styles could ever be, because they belong to us, they are the symbols of our achievements.

K. E. Richardson

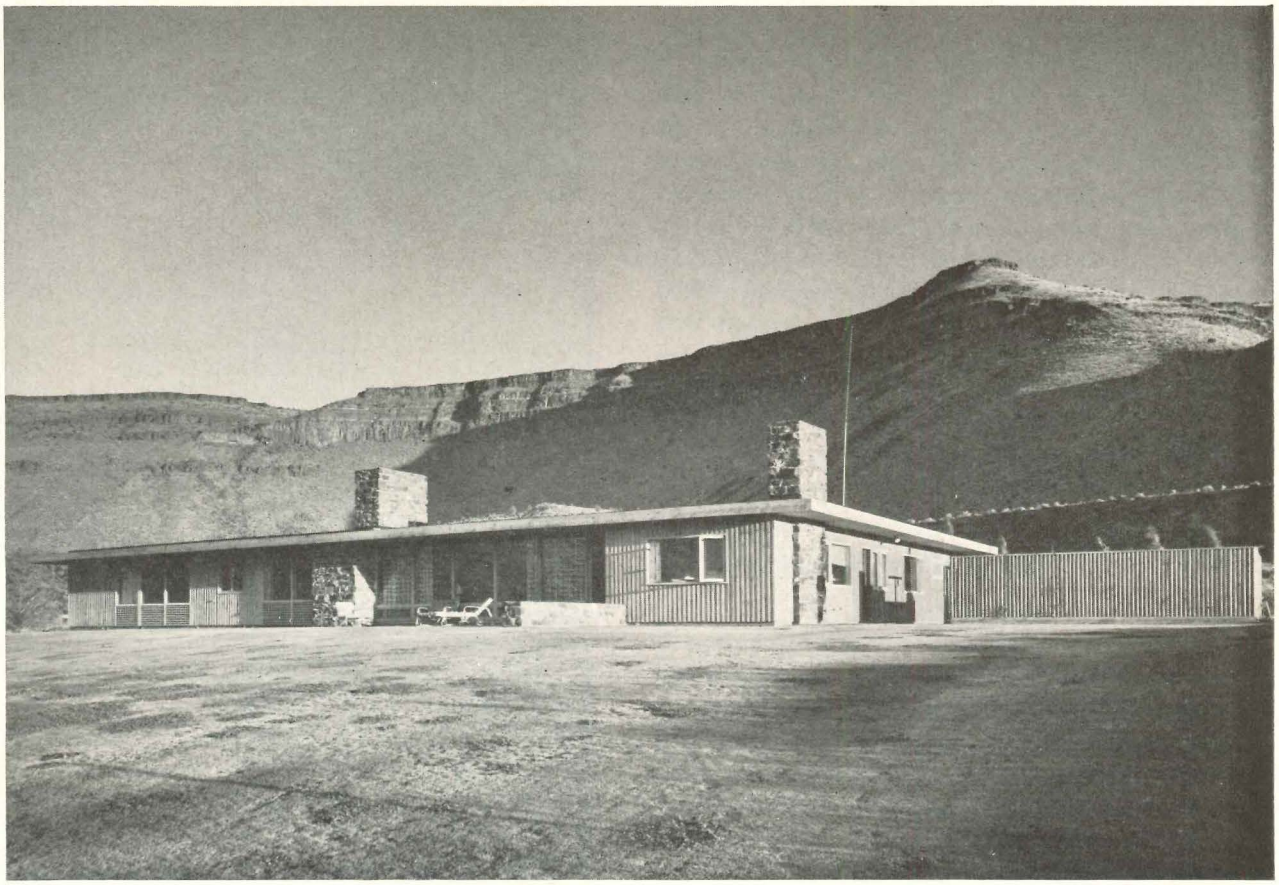


Julius Shulman

Erven Jourdan

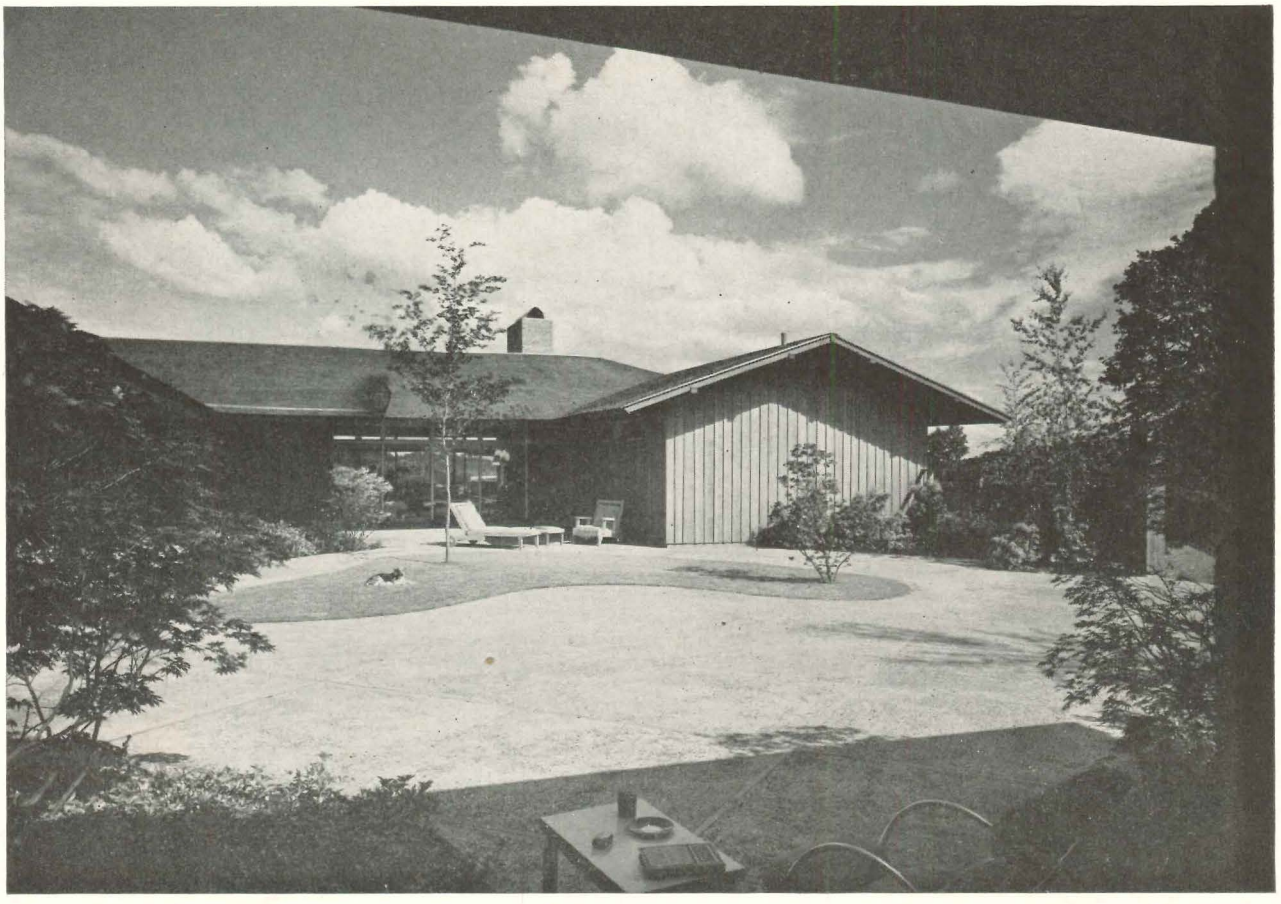


Above: logic will be plainly evident in the forms used by Belluschi, but it will never rule out the warmth of natural materials and textures: First Presbyterian Church, Cottage Grove, Ore. Left: Morninglight Chapel, Finley's Mortuary, Portland



Dearborn-Massar

In eastern Oregon the land is different, and so is the house



Ezra Stoller

The Yamhill house responds to the verdure of western Oregon

Roger Sturtevant

This open courtyard might fit nicely in any locality, any climate, but is especially good in Oregon's windy weather

They also show promise that as we mature we may turn to other aspects of beauty equally fresh and equally ours. . . . By that token we architects, of the common working variety, who must be front-line men, facing frustration and compromise; we, who must understand, absorb and give visual form to so many of the forces which make our world move, must not be ashamed to listen nor to understand what lives around us, ever mindful that each one of us can give more in a creative way by being part of the great mass of people, sharing their loves and enthusiasms, guiding them in the realization of their obscure ideals . . .

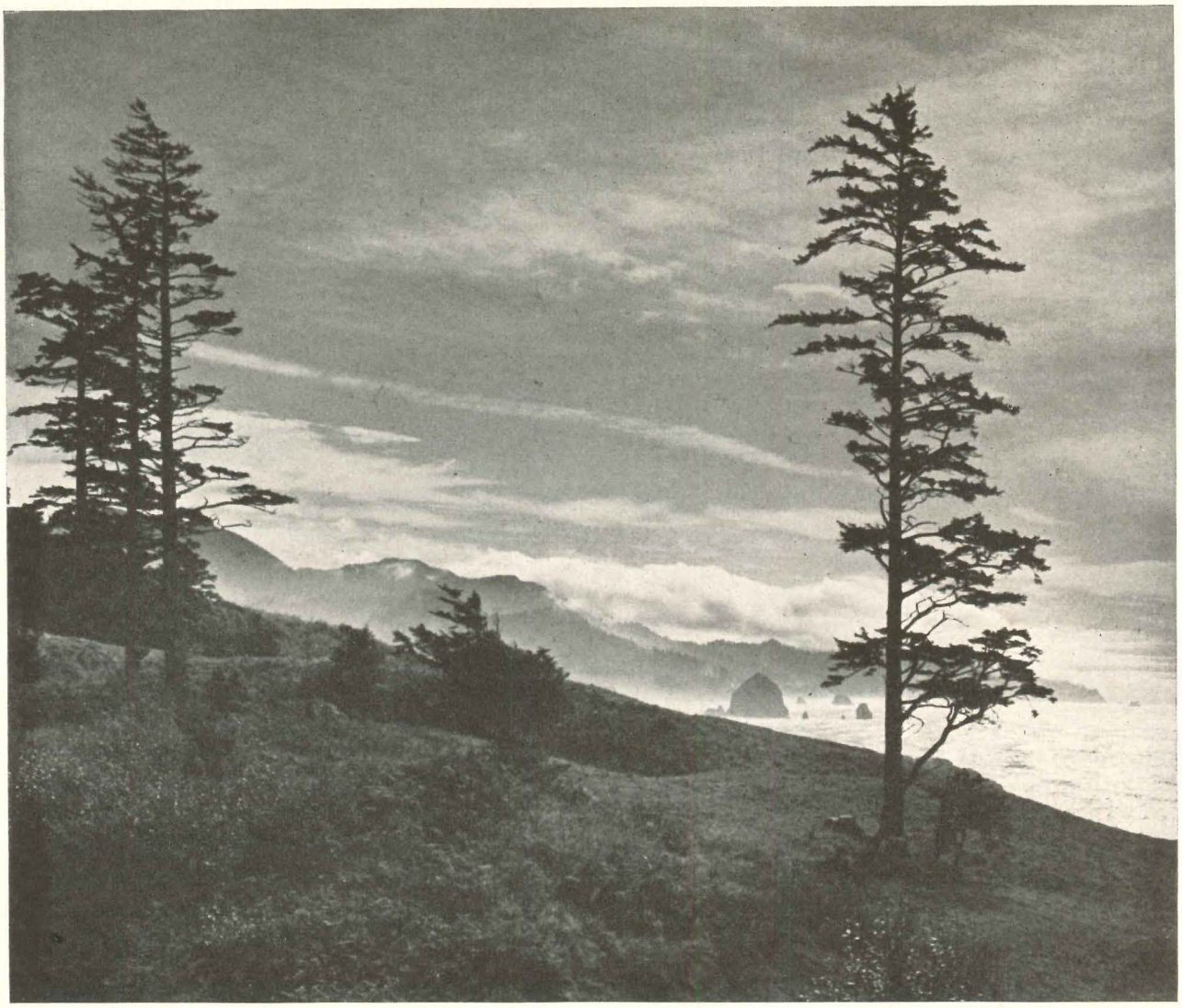
— *Journal of The A.I.A., September, 1951*

To SEE THE MAGNITUDE of the task still ahead of us we have only to cast our eyes about us. It would be easy to become discouraged by the outward manifestations of a society which places little premium on culture; yet, we may also sense all around us a great vitality, a desire for expression, a stubborn search for ideals and a thirst for beauty and sensuous satisfaction. It is up to the architects to give them form and fulfillment and to prove that the great powers of production of which our nation is so proud can be used to satisfy their spiritual as well as their physical needs — a balance which is so much needed for a happier society.

— *University of Illinois, October, 1951*

The sunlit, sheltered terrace, for a climate that is always mild but frequently rainy, where the sunlight is highly prized

Ron Partridge



Ray Atkeson

HAVE WE AN INDIGENOUS NORTHWEST ARCHITECTURE?

Six architects of the Puget Sound area say: 1. we have; 2. we haven't; 3. we could have; 4. we like our rugged country and we do design for it

"A New Architecture"

By Paul Thiry

OVER THE YEARS that followed the "Great Fire" of 1889, many architects came to design buildings, many stayed. These men for the most part were skillful and well educated but they designed in the manner of the Eastern cities, reminiscent of Europe.

There were a few who saw it otherwise — a few who looked out over the hills and the waterways and saw that they were beautiful and different — those who in the sensitivity of their spirit looked to ways synonymous with their surroundings, who stamped a hardly visible trail. Prominent among these was Kirtland Cutter, whose name appears in the establishment of the Washington State Chapter of the American Institute of Architects in 1894; Ellsworth Storey who came to Seattle in 1903; Carl Gould who founded the School of Architecture at the University of Washington in 1913.

But through the years from 1889 to 1930, despite modulations in architectural concepts, one could pick few buildings from the myriad structures that could be described as indigenous.

Came the crash of 1929, and with the crash came time for thought — time to listen to the voice of Corbusier from across the sea; to Eliel Saarinen and his basic philosophy; to Frank Lloyd Wright and others. Time was taken to review the wonderful things Antonin Raymond was doing in Japan. With all came a reaction against things as they were generally being done and the desire to design for the country — maybe not a "machine for living" as expressed

by Corbusier but rather a building that would better fit a way of life, that would fit the land, exploit the vast panoramas of waterways and mountains that make the Northwest, that would enliven the gray days of the winter and share the exterior country in summer; buildings that would be flexible and adaptable to an infinite variety of situations; buildings that would shed the rain, take it away from the walls, yet permit the sun to infiltrate the interior. And with the passing days and as the tempo of construction increased there came to light a new architecture, something peculiar to the Northwest Country, a way of thinking and of designing that has reflected its influence over the entire country.

The mild but moody climated Northwest, the cosmopolitan people, the desire for high standards of living, the materials at hand — these are the problems, and in their solution those increasingly numerous and aware architects of the region are developing and molding an indigenous architecture borrowing from the high primitive arts and structures of the Indians of the northwest coast; conscious of the simple mill sheds that were built in open span determined by timber size; aware of the world that is daily paraded in Puget Sound waterways by tramp, freighter and passenger liner bringing products from over the earth. Particularly conscious of the faraway land of Japan whose topography is similar to our own — whose people have developed a post and lintel architecture free in its adaptability of form, modular in its application, high in its quality of relationship with nature. From the ships has been gained a simplicity of design.

To the south, in Oregon, Pietro Belluschi recognized and accepted the challenge early, expertly, followed by John Yeon, Van Evera Bailey and others.

Following in the deviating path established by Kirtland Cutter, Ellsworth Storey and Carl Gould came a new era of architects conscious of new problems; many of whom were schooled at the University of Washington: R. C. Reimer, John T. Jacobsen, Walter Wurdemann, J. Lister Holmes, George Nakashima, J. R. Sproule, the teacher-architect Lionel Pries, to be followed by Paul Kirk, James Chiaralli, Perry Johanson, Bliss Moore, until now the timbered and rugged country boasts of many architects who in their own right have added to the vocabulary of the Northwest: Frederick Bassetti, John Morse, Victor Steinbrueck, Robert Dietz, Harrison Overturf, Stephen Richardson, John Detlie, Benjamin McAdoo, Roger Gotteland, Ralph Burkhard, Bert Tucker, Robert Shields, Roland Terry, John Ridley, to name only a few. Knowingly or unknowingly these men are applying the old principles. Times and people change, but the discerning eye can see in many of the new forms the ghost of the "Old Man House." Chief Sealth, or Chief Seattle as he is commonly known, may have been prophetic when he said . . . "even the White Man whose God walked and talked with him as friend with friend, cannot be exempt from the common destiny."

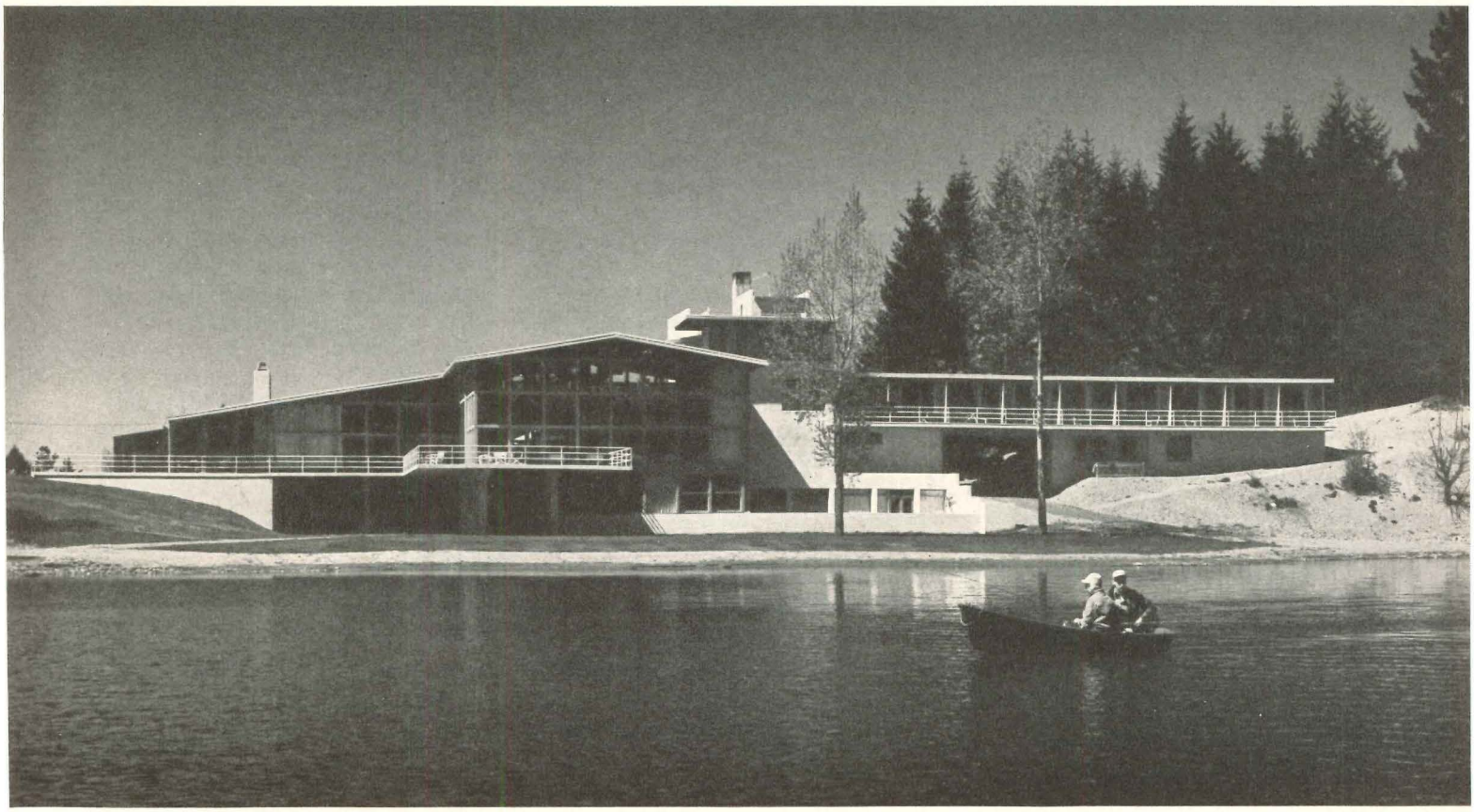
"I am not convinced"

By Robert H. Dietz

I AM NOT CONVINCED that we in this area — that is the people and the architects — have developed any particular indigenous architecture within the last few years, or for that matter in the past. If we had such an architecture, I am of the opinion that it has, for the most part, been lost by what may be referred to as a "leveling out" process.

The residences of this area might in part be more advanced in design than many other parts of the nation, but I certainly question whether one can say

Gaffney's Resort, Lake Wilderness; Young & Richardson; Carleton & Detlie, architects and engineers



Chas. R. Pearson

Recent work: left, reaching for a view; Tucker, Shields and Terry, architects. Right, interiors of wood, Paul Kirk, architect

that we work in wood in preference to other materials. The area is no longer isolated from the rest of the nation, and, consequently, we are economically just as close to all products as, say, Chicago. This is producing here, as elsewhere, a standardization that exists in all other products and living habits.

However, we have a distinct climatic and terrain condition that hardly exists in any other part of the country. On these conditions, I am convinced we could develop an indigenous architecture. This could result in a different form of architecture than found elsewhere because it would result from a real cause and one that cannot be satisfied by materials alone, but must be satisfied by design and due consideration for all the factors concerned.

There are examples of residential architecture in the Puget Sound area that do satisfy these prerequisites, but they are few and far between. The persistent rain fall, the lack of heavy snow fall, the indomitable fog, the low sun angle because of our latitude and the changing winds result in design characteristics that should and would not ordinarily be found elsewhere in the United States. Coupled with these physical characteristics is the driving spirit of the pioneers of this area and the recent immigrants who find this such a pleasant place to live. These people, when moving into this area, soon sense the spirit of the place — "do it yourself." The idea quickly catches fire. We find that those of means take a "do it yourself" attitude very readily and put their true spirit into whatever they build. . . . All of these factors are bound to produce an architecture for this area that is unlike anything elsewhere, if the people and the architects will place a little effort in looking at the situation from a truly analytical point of view.

"Free . . . easy . . . progressive . . ."

By Perry B. Johanson

THE CHARACTER of the architecture of the Pacific Northwest is rather elusive to describe. There are perhaps few, if any forms that are not common to contemporary architecture in other areas. The materials used are no different from other areas.

Perhaps the lack of self-conscious forms and the lack of extremes in design are the result of several factors:

1) There was no indigenous architecture that made an impression on the first settlers 100 years ago.

2) There was no single dominant cultural background of the people who settled here.

3) The type of people attracted to this area, even to the present day, are those with something of a pioneer spirit. People are more interested in the possibilities of a development of a land than in the enjoyment of an old settled community. The people as a whole are naturally independent in their attitudes and accept or demand architecture that is fairly direct and uncomplicated. This is perhaps in contrast with many areas where the average person is content with the status quo in architecture.

4) The growth of the area has been strong, without the boom type of development with its accompanying excesses.

5) Materials have affected the architecture. In the early days, everything was wood. The material was so plentiful it was used to imitate stone and other materials. Even today it is the first material we think of using in domestic architecture, both for structure and finish.

6) Another factor in the development of architecture in the Puget Sound area is that during the past fifteen to twenty years, the architects here are those who in the main were born, raised and educated here. They are men who reflect the free and easy approach as well as the progressive approach of the majority of the people. By the same token, the architects who have been attracted to this area are attracted, not by a tremendous work potential, but by the attitudes and the type of living possible here. The existence, not only of many architects, but of many small architectural offices has resulted in architects doing a great deal of smaller work which might not otherwise have the benefit of an architect.

7) Some of the external influences should be mentioned: the design approach, common to the rest of the country, stemming from Harvard, M.I.T., Illinois Tech, Cranbrook and Frank Ll. Wright; the oriental influence due to trade and a feeling of nearness as well as a common heritage in the use of wood; the Indian influence which is minor, but which is rich in design and structural forms.

"It is in the people . . ."

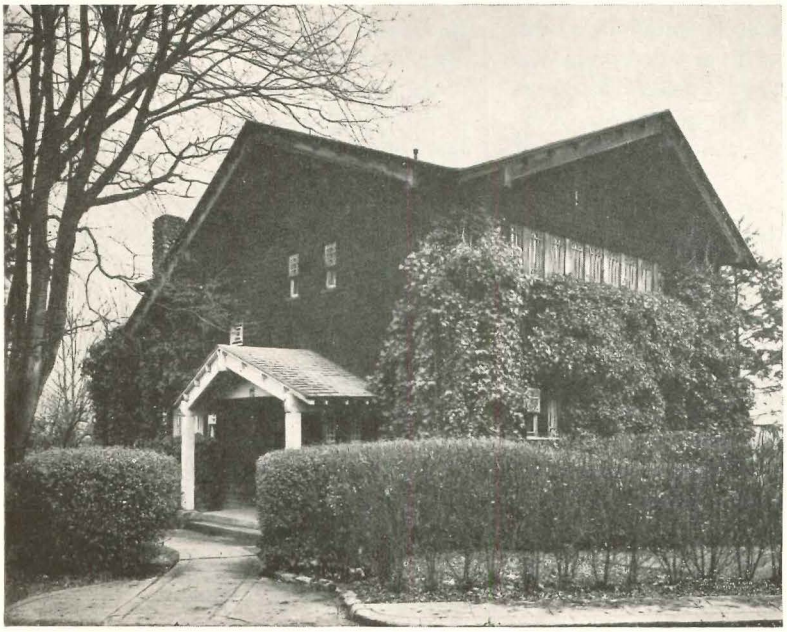
By John S. Detlie

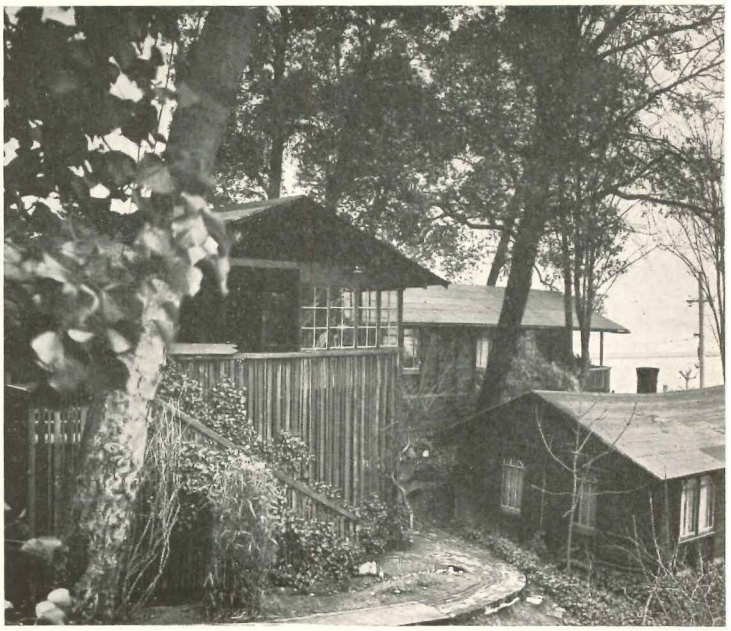
DEFINITE AND DISTINCT characteristics of the region generally known as Puget Sound country do not come readily to mind, as one considers the profession of architecture. The modern movement in architecture has been gathering momentum during these last decades and has flowed with varying degrees of receptivity and clarity through most of the regions of civilization and in some areas has become marked by specific regional characteristics. Within these United States the modern movement has emerged from constant reinforcement from parallel movements and influences from Europe and South America and the tendency for regional conditions to differentiate the movement has been matched and balanced by the integrating force of continual cross fertilization from other regions.

While the modern movement in architecture is quite in evidence in the Northwest with clear indications of the influence of most of the better known national and international architects, the influence is not so clearly felt nor so insistent as in other regions. For there is here a natural barrier of mountains and ocean and distance which subtly suggests that influences from elsewhere are alien and must be re-evaluated and re-stated here. And under the overpowering presence of influences here much of the contention of other intellectual centers does not seem of great importance.

First among local influences is the majestic setting of Puget Sound itself with its incomparable variety of ocean, sound and strait, inlet, river and lake; of plains and plateaus rising to snow-capped mountains and ranges; of trees and forests and shores of salt bleached driftwood, all seen revealed in shrouds of mist or spread in broad panorama. Most building sites in this region can boast of at least one view of lake, mountain, sound and in the urban areas the foreground often contains portions of the city disposed on many foothills. . . . Site as a problem of intimate relation of building to plant material is generally solved by a close wedding of architectural and landscape designed effects, but site in the larger sense of the setting of the region presents a problem of magnitude which does not suggest a solution so much as it suggests a humble-

Chas. R. Pearson





Earlier work: left, Ellsworth Storey's own house, 1904. Right, a group of his cottages, 1913, which were almost prophetic. Below: a painting by Raphael Coombs of construction of Chief Seattle's "Old Man House," 1000 ft long, with 7-ft timbers

ness of approach and a vigorous statement of form and texture to bring rapport with the majesty of the region.

Here there is little of the nervous drive of the upper eastern seaboard or of Los Angeles . . . rather than stimulate to competitiveness the climate engenders a more philosophical attitude and reduces the flurries and flutterings to a directness and forthrightness of approach. While architectural fads are not absent here they do not readily flourish.

The region is too young to have developed any architectural style and in its short time none was imported and stamped upon the region of Puget Sound. The growth of the cities was so rapid that there was no time for architectural evaluation; even today there is no definite focal point of architectural criticism in the Northwest. The marvelous native art of the northwest Indian was not made a part of the tradition of the white man here and unlike the Southwest no architectural tradition existed upon which to build or modify. And each current style imported from the Midwest was so quickly overrun with the mushrooming cities that no importation developed roots. . . . It has been in the period following the great depression, accelerated after World War II, that the emergence of regional differences timidly began.

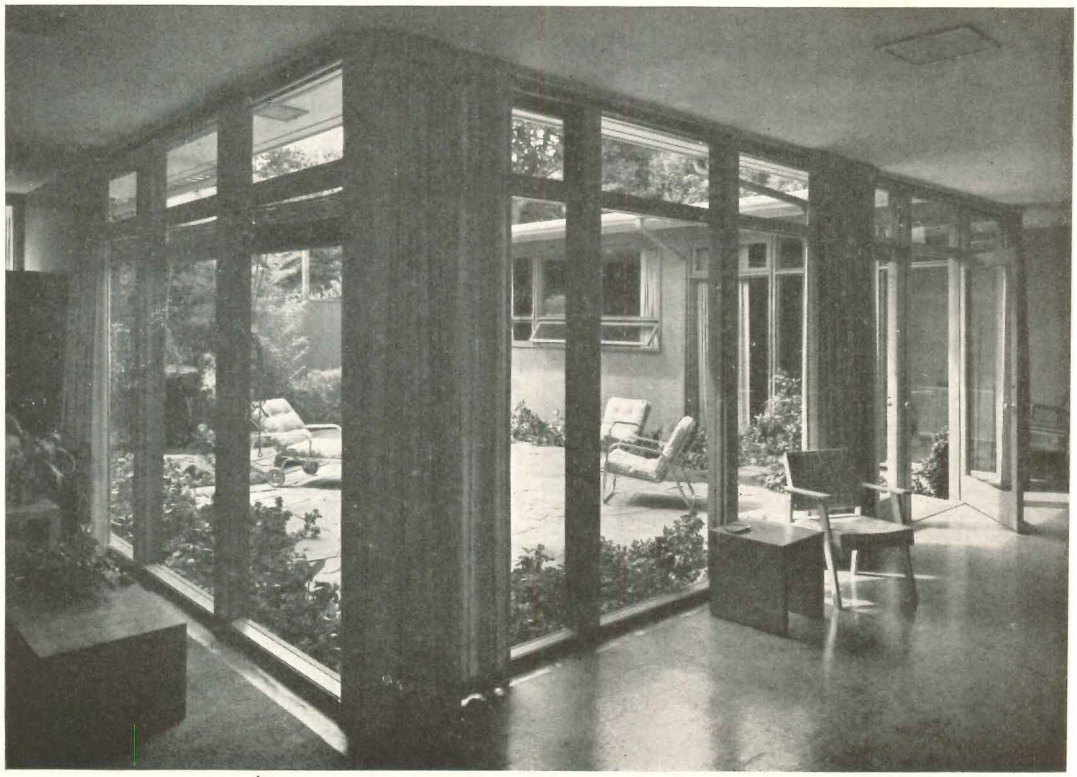
It is in the people themselves that any impetus for definite architectural characteristics must spring if the potentials of the setting, the climate and history are to be energized. . . . The people of the Northwest cause the creation of the architecture of the Northwest; it is for them, reflects their tastes, their manner of living, and in whatever measure they aspire, their aspirations. Some basic characteristics are common to both people and architecture. A straightforwardness, not too full of pretense, at home in the nature of the region, an appreciation and fondness for the sophisticated and polished and at the same time, a liking of the rustic natural textural rough hewn wood and stone. In addition there is here a close identification with the world of horticulture that is born from a deep appreciation of wilderness of forest that is as natural as the daily appreciation of the changing panorama of the scenery of Puget Sound.

Neither in the architecture nor in the people is there a sense of urgency, of sureness or of mission in the matter of creative art. There is a definite sense of quiet introspection and an attitude of prophetic vision that in the realm of painting has given rise to an important school of Northwest painting. One of the outstanding characteristics of this Northwest school is the unmistakable poetic overtone, with color so restrained in hue and intensity as to only suggest the natural world of prismatic color. The definitive nature of the artistic expression of the region is in the process of formulation and has not yet emerged into a clear graphical, well-grasped symbolism.

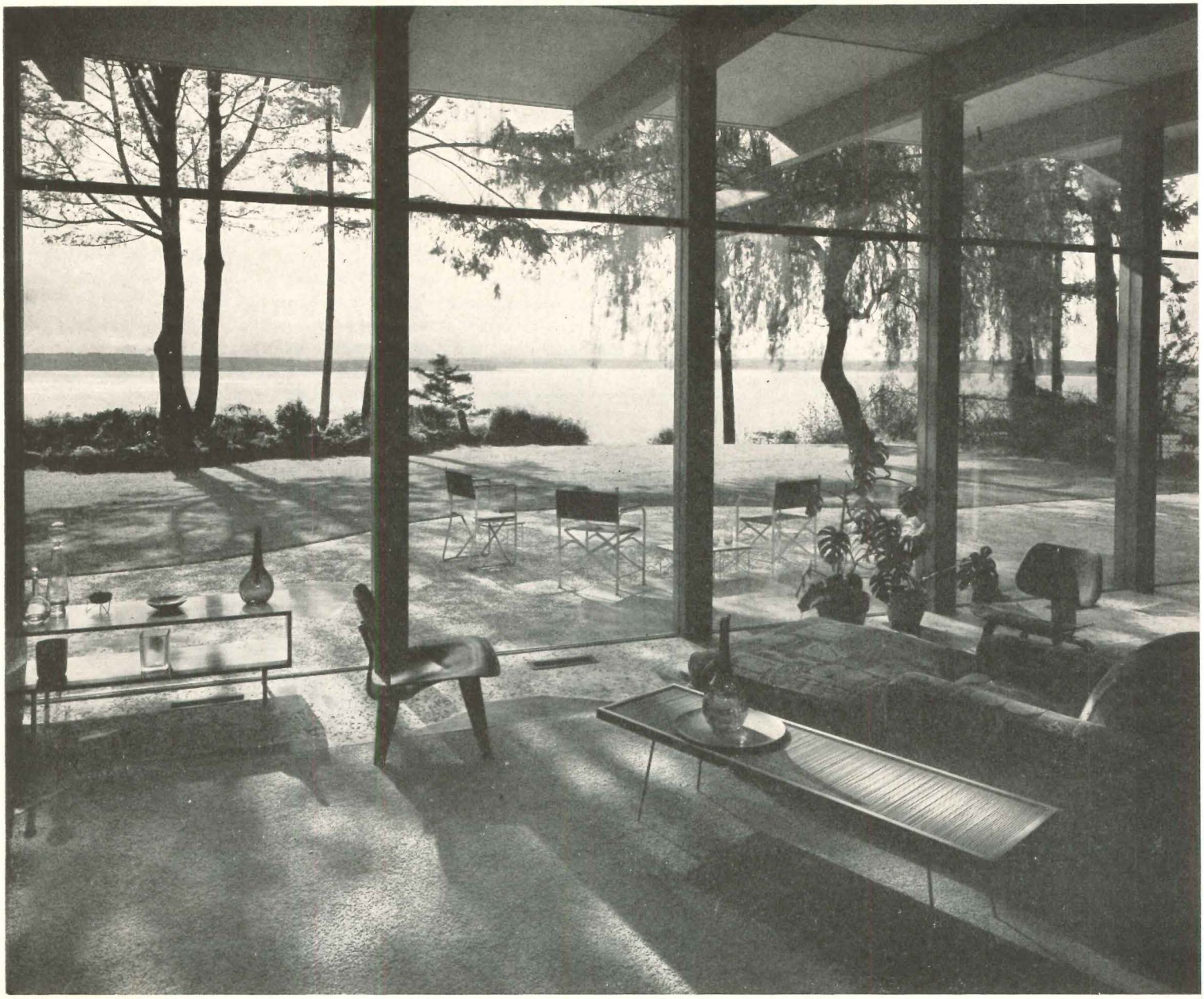
But signs of the affirmation and emergence are at hand. There is little part here of the great intellectualism of the East and although most of the architects of the Puget Sound region have received postgraduate training in the East and all are acquainted with the modern movement in architecture, what with the current examples being constantly published, yet the architects are consciously engaged in expressing themselves through the emerging language of this region. It is with awakened enthusiasm that a certain elemental directness of approach and simplicity of geometry is established as a definite characteristic. The use of the natural materials of wood, stone, plant material in contrast to the mannered machine-ordered substances of metals, glass, ceramic, plastics, is fast becoming the recognizable distinguishing mark of the best.

With the new vocabulary of expression is a guard against the hurry to formalize anything into a set design ritual and a note of capricious humor is often used as a talisman against rigidity. And above all is a new, deep-felt appreciation of the majestic setting of Puget Sound as a great creation.

Chas. R. Pearson



Outdoor living, Northwest variety. McDonald residence, Seattle, 1946, Paul Thiry, architect



A Northwest version of relationship with out-doors. Roger Gotteland, architect

"A matter of degree only"

By Victor Steinbrueck

After due consideration, I find myself rather unsympathetic to the spirit of developing "regionalism" in architecture, if I understand the meaning of the term. I certainly feel that architecture must provide for natural conditions of climate and material availability and provide a good environment for living, wherever it may be. However, our situation is not unique.

In discussing the regional character of people of the Northwest and the Puget Sound with sociologists, there seems to be very little difference in the pattern of living here from elsewhere. People of the United States are pretty much the same. Differences appear only in a matter of degree not in real quality. Therefore, a house based on good northwestern living would fit in Tennessee or Maine.

I think the differences in architecture in this region (if there are any) are based on a closer relation of the architect to the people and a consistent effort to do good work which will serve our situation. Many architects here do small houses for average income families, and feel a real alliance and sympathy with their client, because of the architect's own background.

There is no cultural tradition of good architecture here. The area was developed in a rough and tumble manner for exploitation of natural resources — mainly lumber. Architecture followed the typical eclectic pattern of the country. Now, we are just trying to do good architecture for the people. It seems to me that any apparent differences come from this effort, mainly. Attempts to develop a "style" are always false and insincere. Perhaps there is relatively more effort toward good design here, because of the lack of tradition to inhibit us — but I feel it is a matter of degree only. . . . I think the realization that architecture is for the people is certainly inspirational enough, and I am in complete sympathy with having our constructions make this a happier world in which to live!

"There must be a sympathy"

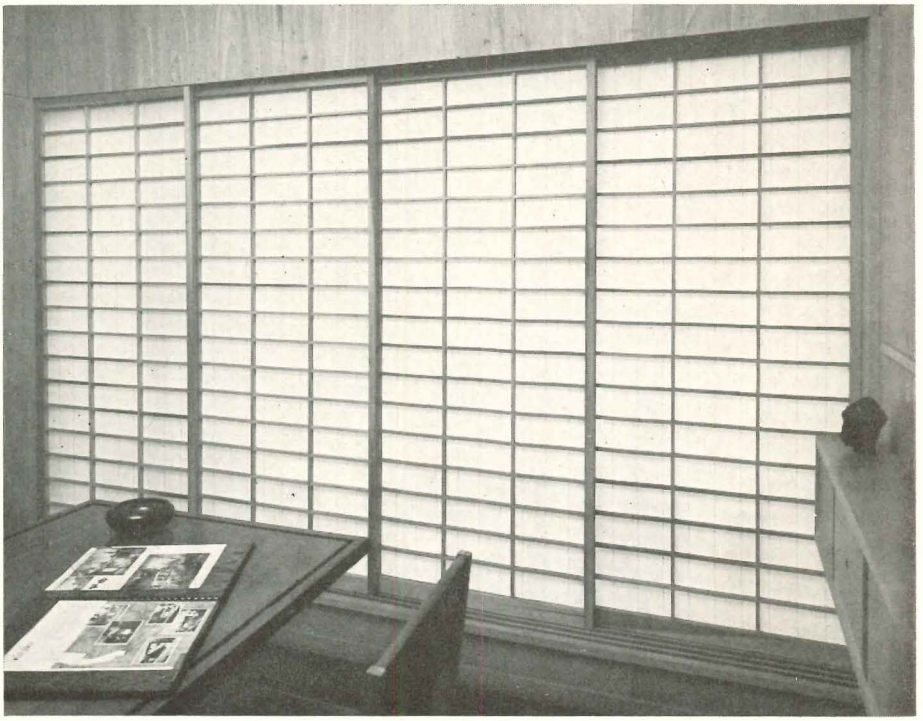
By John M. Morse

I CAME TO THE NORTHWEST — and selected the Seattle area — in search of space, new communities, and an invigorating climate. I found these, plus also many alert and independent minds. Seattle has enough people and area for a big city but to me it looks and acts still like a small town. The individual is strong. Individual enterprise is strong.

Most of us live in houses on small lots. Much of our evenings and weekends are spent in fixing up or finishing our house or planting and growing things in this fast-growing climate. Probably there are more real and *unreal* jacks-of-all-trades and amateur plumbers in this area than almost anywhere else. And to me as an architect, this means clients who irk because "a little learning is a dangerous thing," quite often clients who make me do a better job.

My approach is to get down to fundamentals of how people live, of local site and weather, of how structures go together. I try to give a design a strong character of consistency and unity and tend toward a simplicity of form and of means. The overall effect is to predominate — the details should contribute unobtrusively — restfulness and a non-preoccupation with minute detail and studied emphasis of detail in structure or furnishings is the aim.

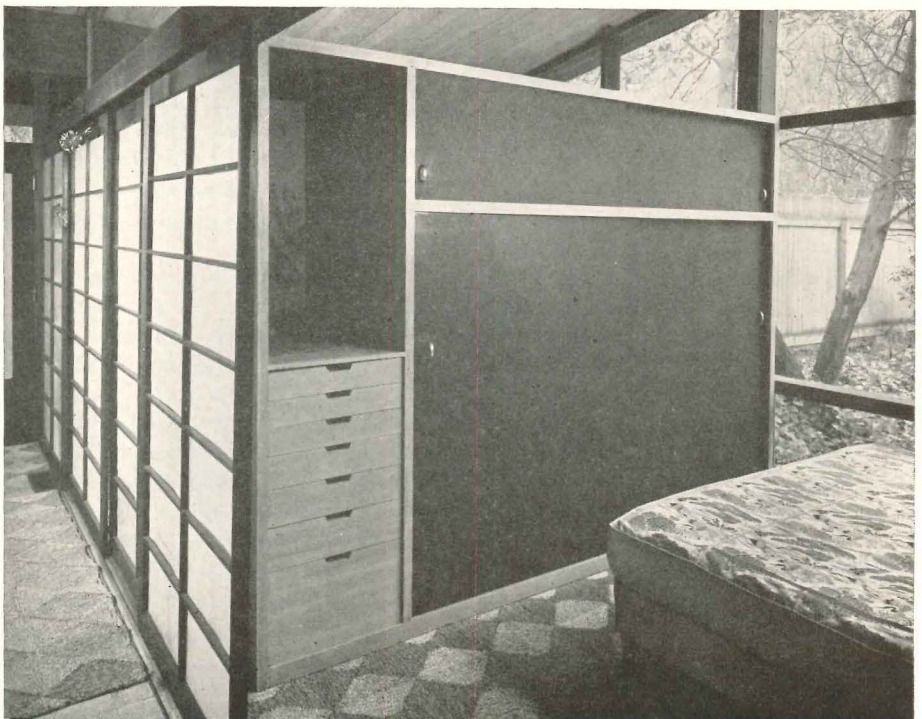
Parenthetically, I welcome the experimentation with structure and the analytical approach to design of many of the younger architects and I only ask that they develop honest self-criticism and a judgment of their work based on a broad historical view and consideration of how their specific design fits the people, the site, and the way people live. It is not enough to be different, bold or revolutionary. There must be a sympathy.



Japanese influence: right, sliding screens covered with glass fibre cloth (shoji), in office of Paul Thiry. Right, below, shoji in the office of Paul Kirk

Chas. R. Pearson

Huessy residence, 1909, by Kirtland Cutter, borrowed from the Alps qualities to fit a similar terrain. Alpine influence now seen only in railroad stations



HOUSES OF THE NORTHWEST

THE HOUSES in this study were deliberately chosen to illustrate several points about domestic architecture in the Northwest. One is the persistence of an early cottage form, which with its pitched roof, wide overhang and large window areas is well suited to the climate. Another is skill in the use of wood; wood is used naturally, but boldly too, delicately also, and, yes, lovingly, for the great timber here was the first attraction of this country, and brought Scandinavians and their skills and habits. These houses also show plainly the acceptance and digestion of contemporary international currents of thought. They show too the Northwest willingness to experiment, as using flat roofs occasionally in spite of the ubiquitous shingles and shakes. Interiors in these houses are especially interesting, sometimes for conflicting reasons. First, the architects generally have more control over interiors than is usual with small houses. On the other hand, it seems a rare instance where the architect can dictate strictly modern furniture. The independence of the typical family with respect to faddish notions is plainly evident in the mixtures of furnishings, urns and Indian and Japanese art objects. Thus does the individuality of this country assert itself.

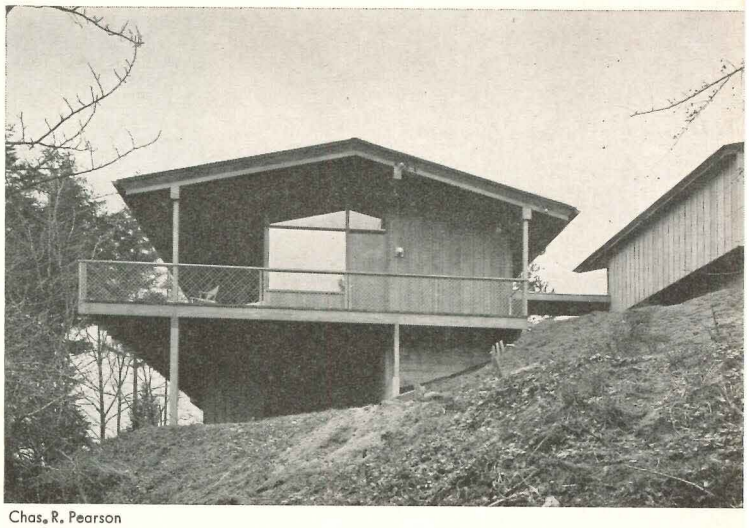
A HOUSE THAT TYPIFIES NORTHWEST ARCHITECTURE

Paul Von Bergen House, Portland, Ore.

John Storrs, Designer

HERE IS A HOUSE that typifies the Northwest, on a typical site, with a typical view (30 miles toward Mt. Jefferson). The cottage form is evident, though it just happens that Mr. Storrs did not grow up with it — he came from an eastern university and adopted the Northwest country on his first trip there. Here he had favorable clients, a young couple with educated tastes and (as the interior photographs will show) an enthusiasm for Japanese art. There is no attempt here at a Japanese house, but rather for a proper use of the site. The trees come close, both to give a near focus for the views and to form a shield against the rain-filled winds from the southwest.

The house is of standard frame construction. The three cased beams supporting the roof are exposed throughout, and form the head details for glass and doors. The two outside beams are 7 ft from the floor, and a horizontal line is carried around the interior at this level, marking door heads and the top of walls between rooms; thus the ceilings are continuous planes extending over the diverse room activities. As a principle, instead of throwing open the whole to the outside, the designer sought a visual change of pace, emphasizing interior and near exterior views as well as framing the distant view toward the mountain.



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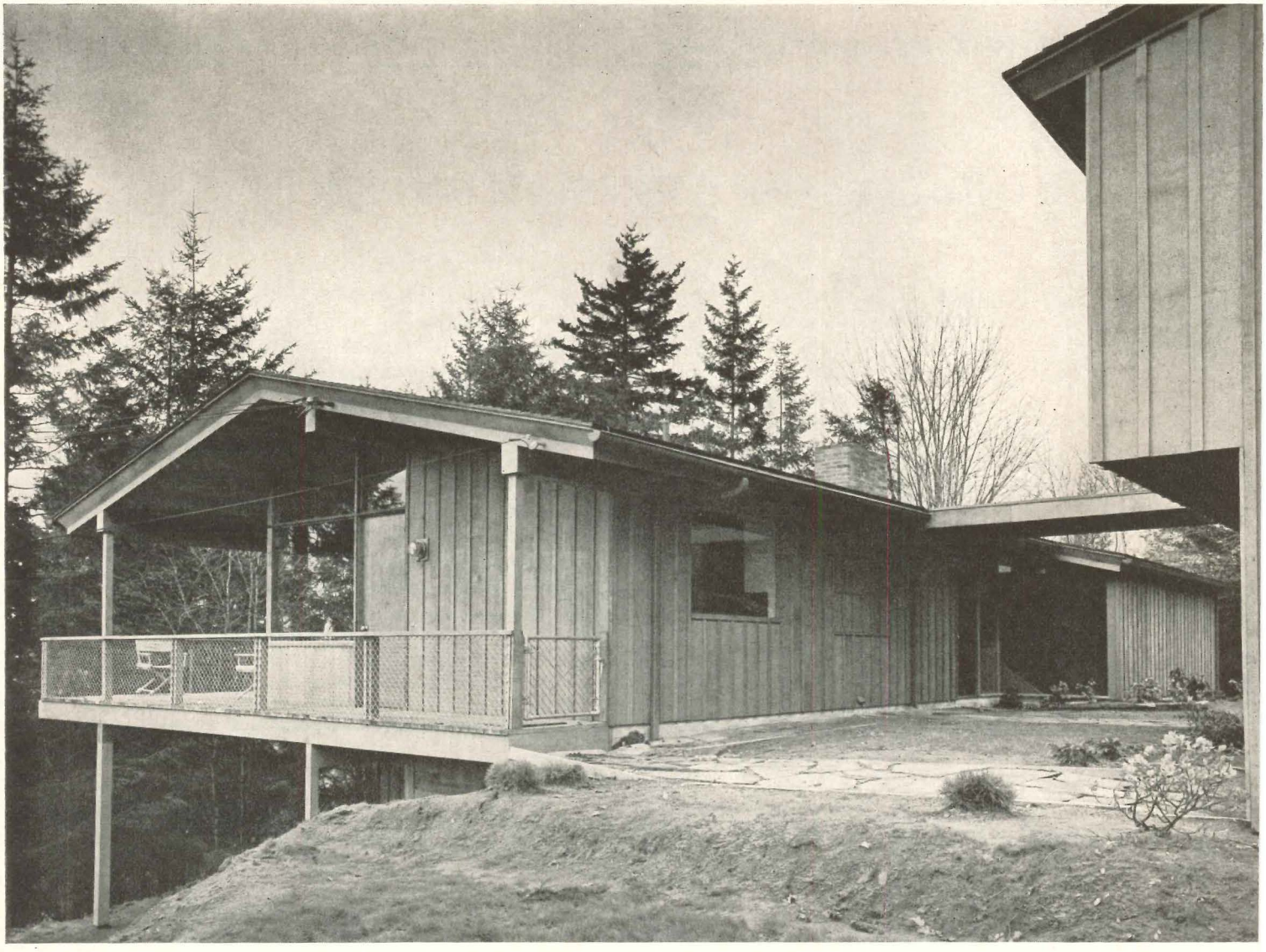
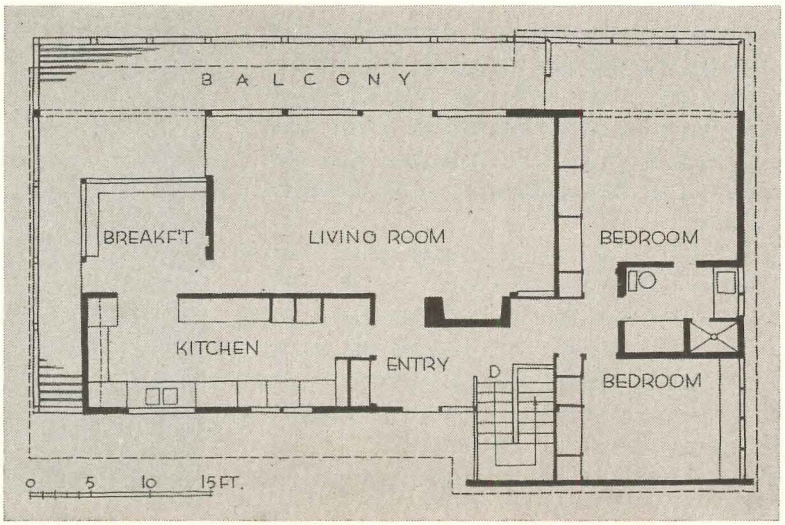
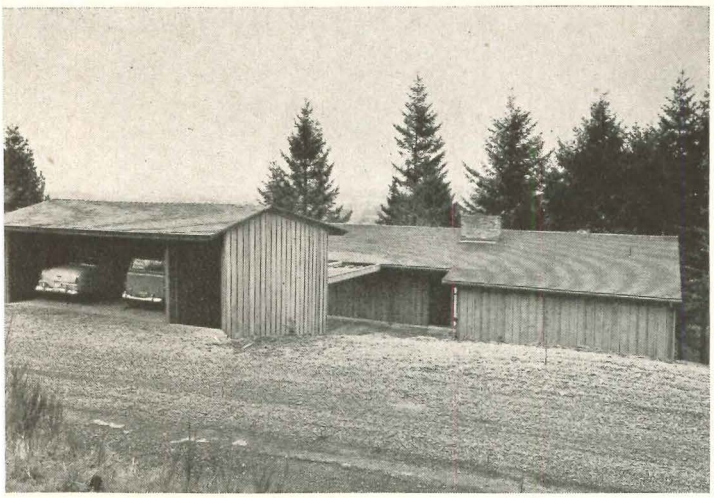


". . . some basic characteristics common to people and architecture. A straightforwardness not





Von Bergen house has garage at upper level, joined to house by covered walk; covered balcony on two sides, toward the view. Bedroom has store front window construction to open it fully (below), is screened on this side by trees close to house

too full of pretense, an appreciation and fondness for the sophisticated and polished . . .

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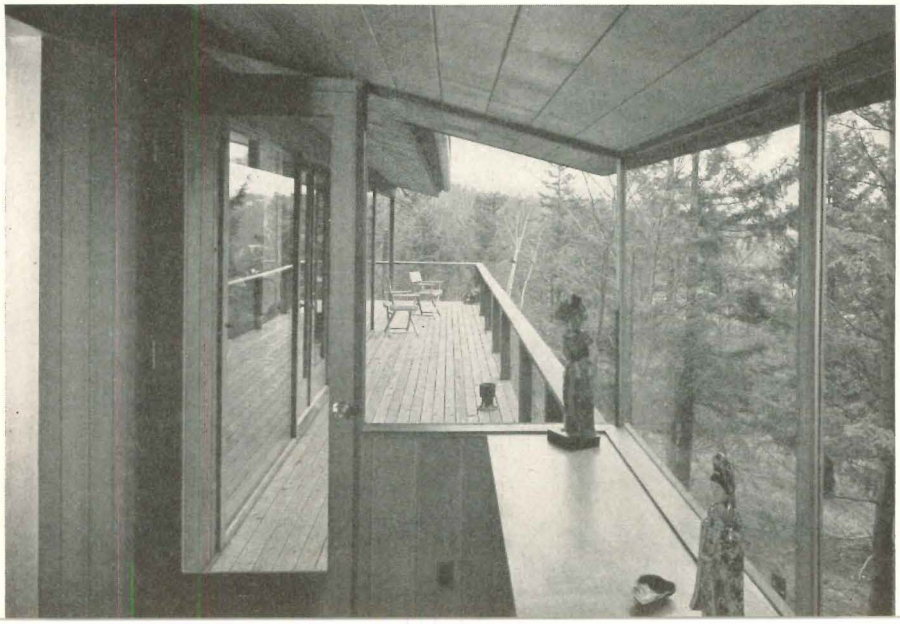
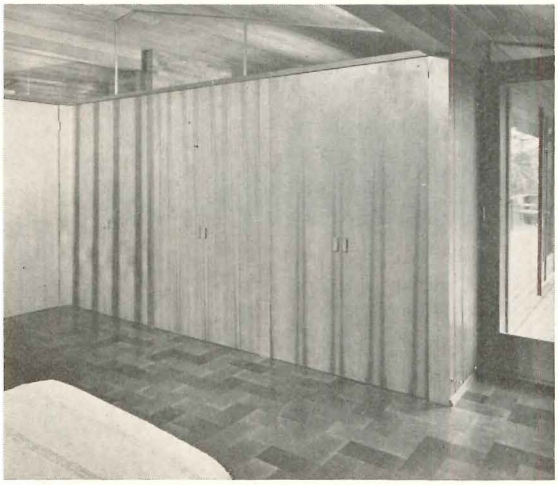


". . . at the same time a liking for the rustic natural texture of rough hewn wood and stone"

Interiors of Von Bergen house maintain a 7-ft line, the level of cased beams and height of solid partitions, for continuity. Glass is used above partitions, to close off certain areas but maintain one ceiling

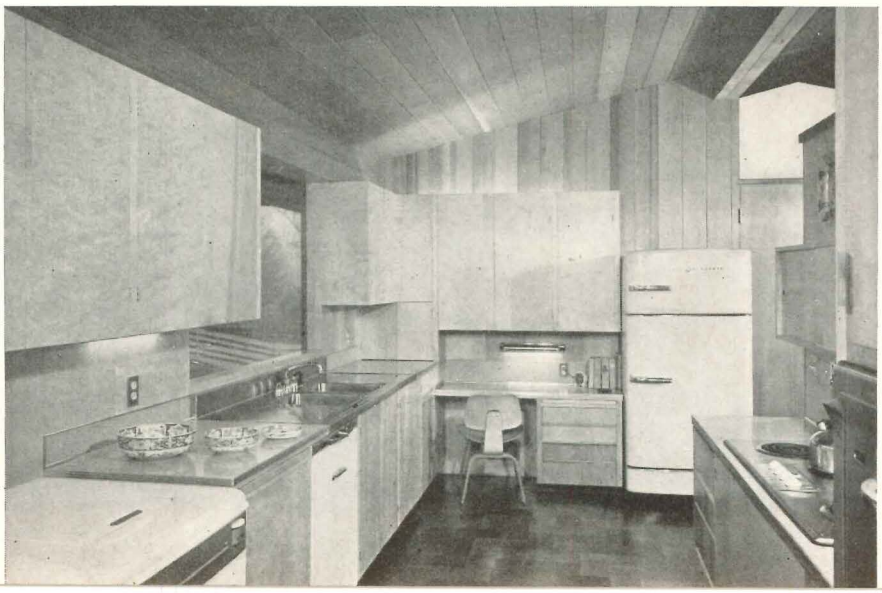


Cedar is used for most interiors — walls, ceilings, doors, even in stair well and bathroom. Floors are cork throughout. This monochromatic coloring sets off furnishings and Japanese oils, plates, carvings

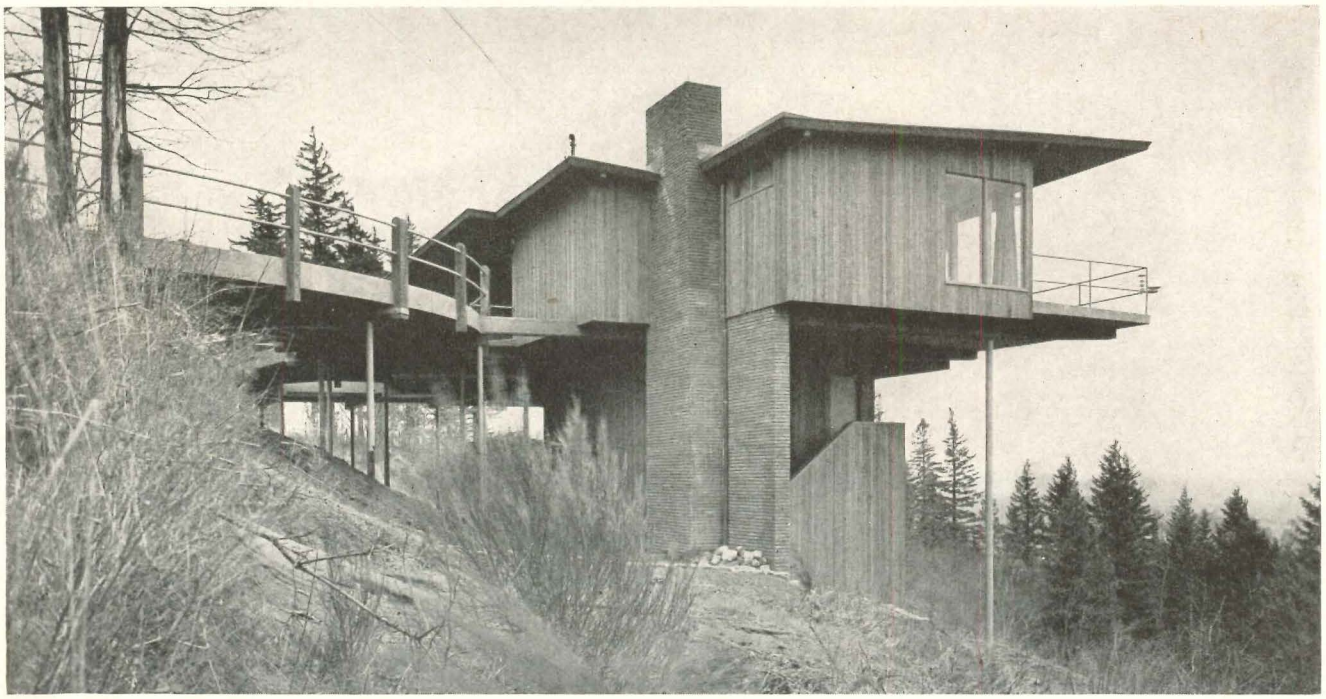
Chas. R. Pearson

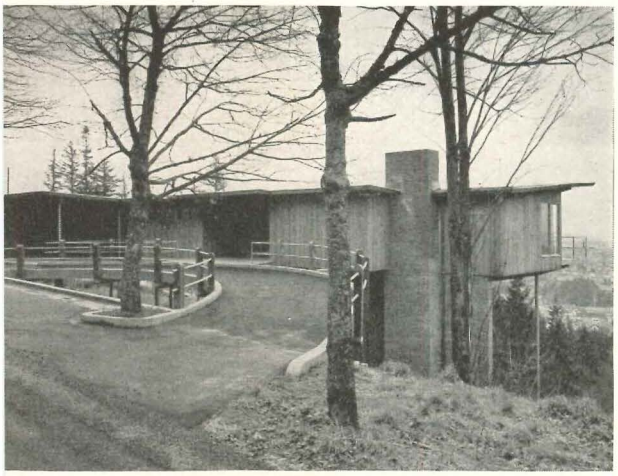
. . . came a reaction against things as they were and a desire to design for the country . . .

Kitchen maintains same woods used through rest of interiors, though birch was used for the cabinets. Kitchen is closed off from entry and from living room by 7-ft partition, is open to breakfast room



". . . maybe not a 'machine for living' but a building that would fit a better way of life . . .





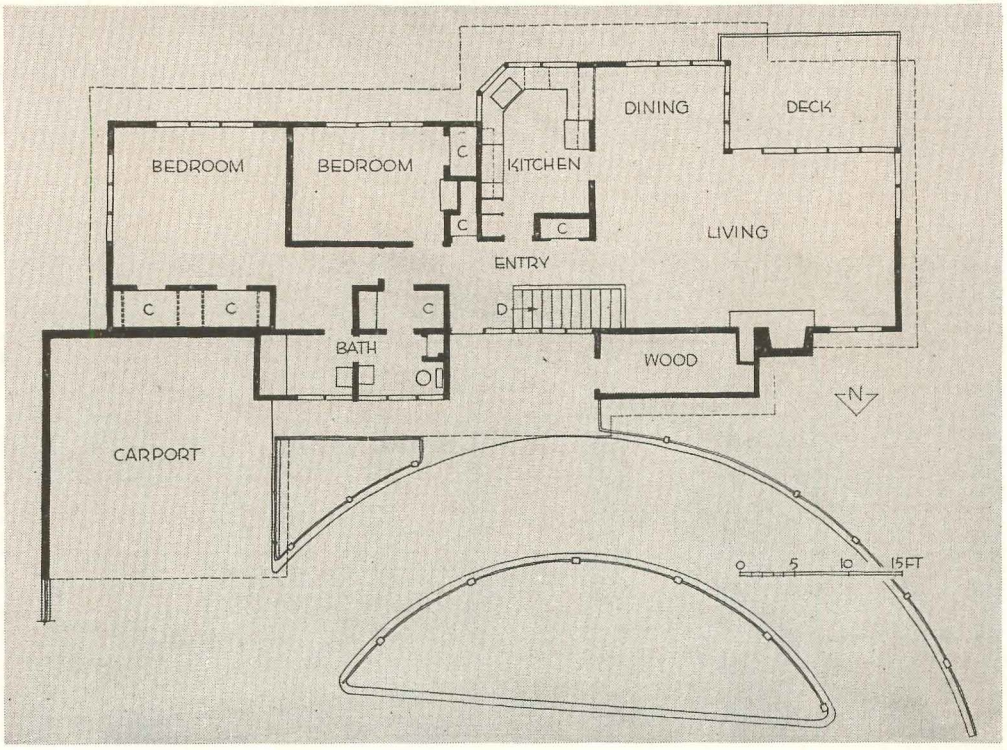
A HOUSE WITHOUT STAIRS

Thomas Dixon House, Portland, Ore.

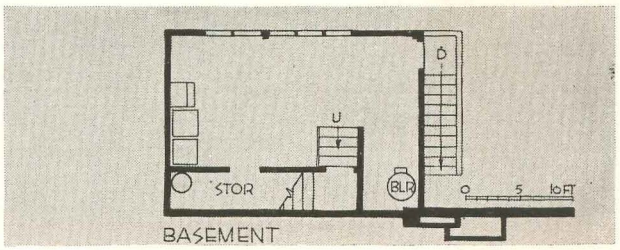
Van Evera Bailey, Architect

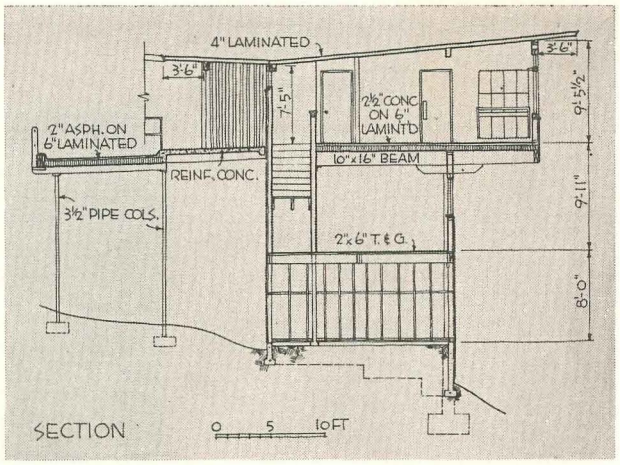
Robert E. Kremers, Structural Engineer

Chas. R. Pearson



ON A VERY STEEP SITE

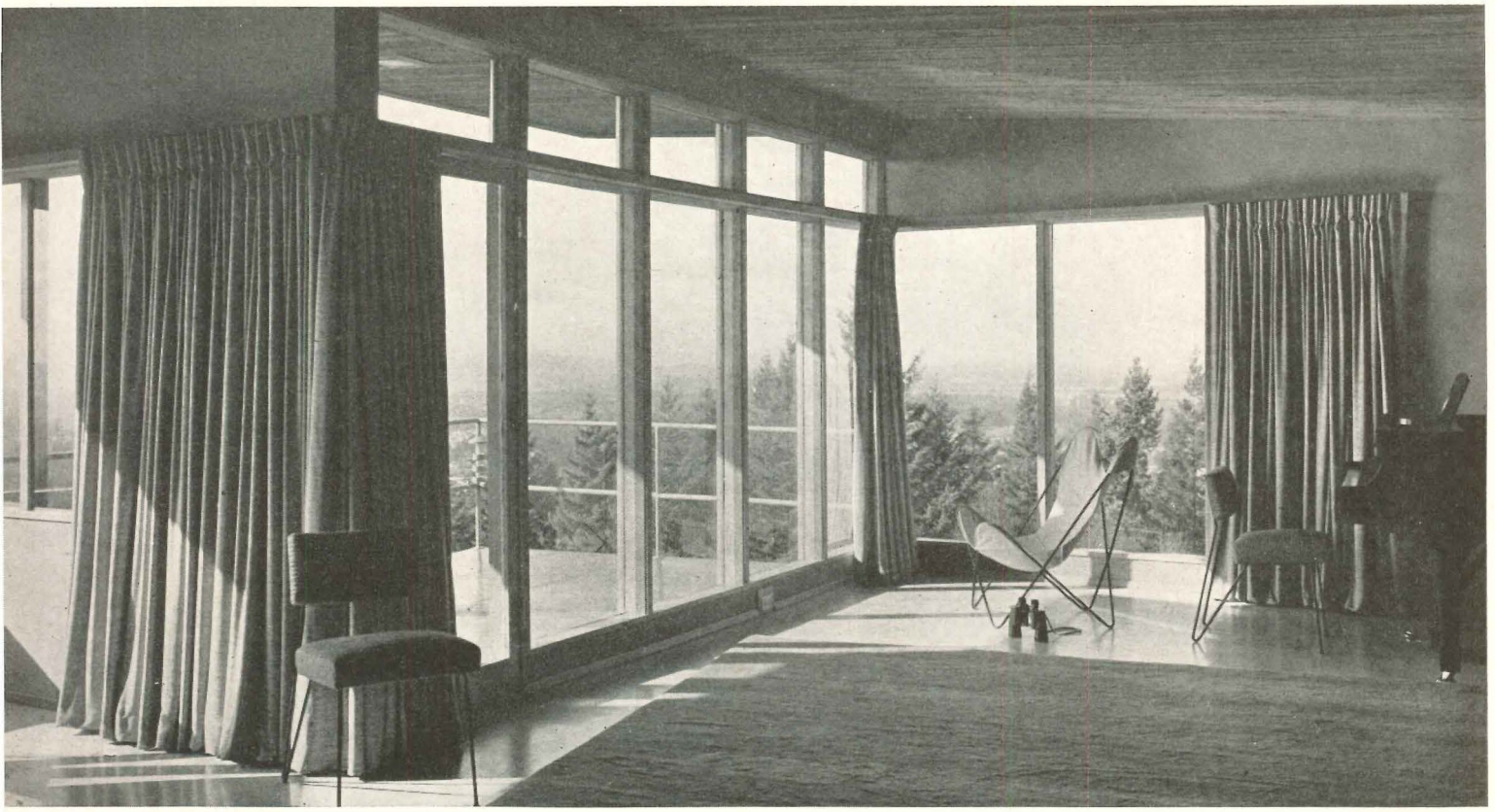




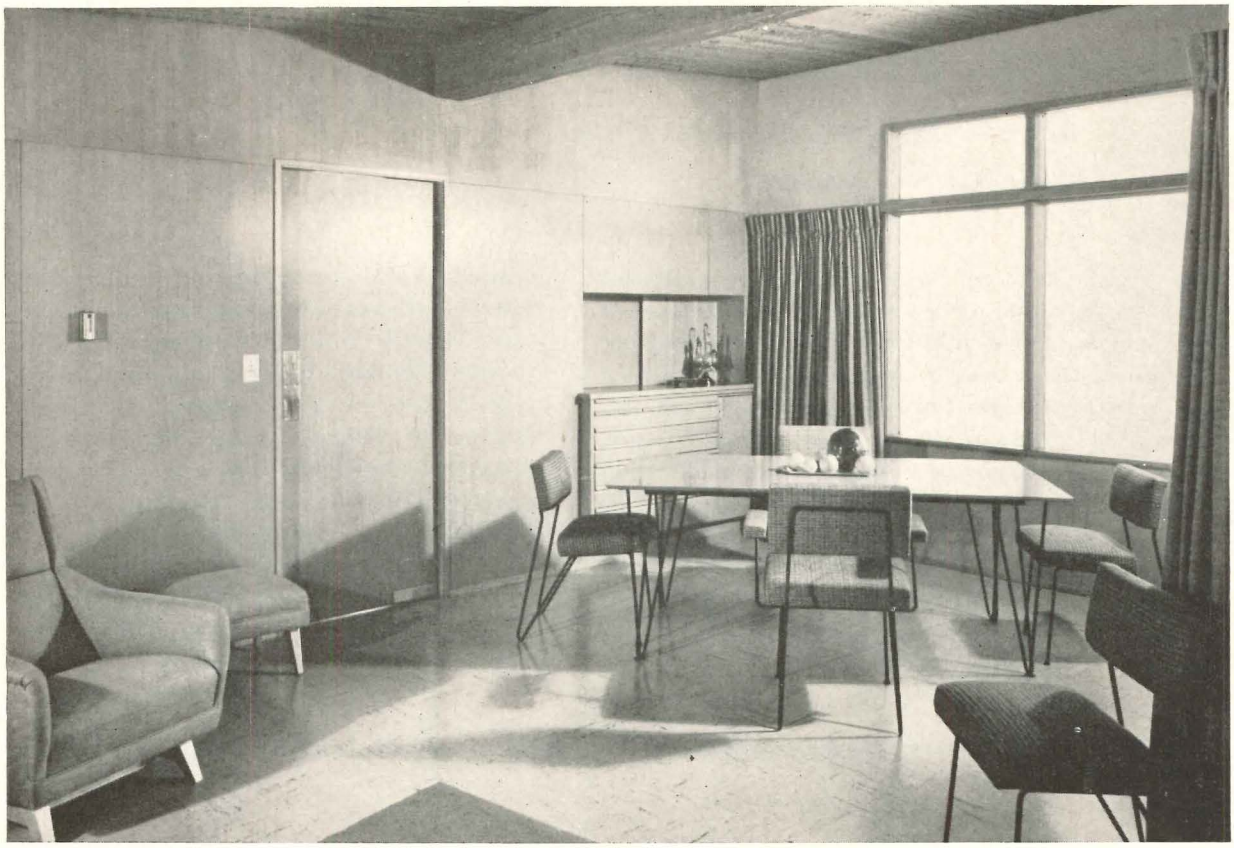
THIS HOUSE could scarcely be called typical of its architect's work, but does seem to emphasize the daring with which Northwest architects tackle their sites and their buildings. Basic objective was a house to obviate the scrambling up and down steps, and analysis proved the soundness of the idea. Preliminary designs were done with the usual steep drives and steps, but the grade would make winter driving hazardous. Also heavy retaining walls would be necessary, and a foundation heavy enough to resist pressure of road backfilling. Costs would equal those for steel pipe supports. The circular driveway is in fact a structural necessity to give the house on stilts lateral stiffness. The arch of the driveway, with supporting beams running into the house, transfers horizontal stresses to the curb retaining wall on city right of way. The building line of the house could not encroach on the street, but the driveway could. The family has no children, otherwise the house on stilts would be unthinkable.

In plan, all living areas are located to take advantage of the sweeping views and the sunshine to the south. The roof slopes upward on this side to permit the sun to enter in winter months, though the architect comments frankly that this might have been overdone, as "actually there is too much sun on winter days, when there is any."

Floor is built up of 2-by-6's on edge, covered with 2½ in. of concrete. Floor is supported by solid 10-by-16 wood beams, on 3½-in. pipe columns. Driveway is also laminated with 2-by-6's on edge, with 2-in. asphalt



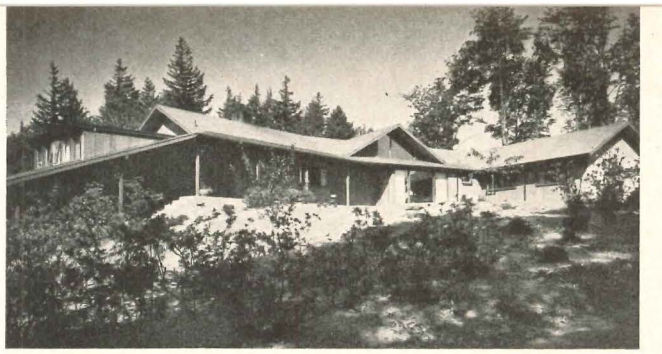
". . . that would enliven the gray days of winter and share the exterior country in summer . . .



Chas. R. Pearson

. . . buildings that would shed the rain and yet permit the sun to infiltrate the interior"

Open and airy feeling of the Dixon house is heightened by the use of painted plaster walls and light asphalt tile flooring, also light-colored drapes and furniture. Ceiling is exposed edges of 1-by-2 and 3-by-4 rough-sawn fir boards laminated to form structural roof



A HOUSE WITH LARGE SPACES, LONG VISTAS

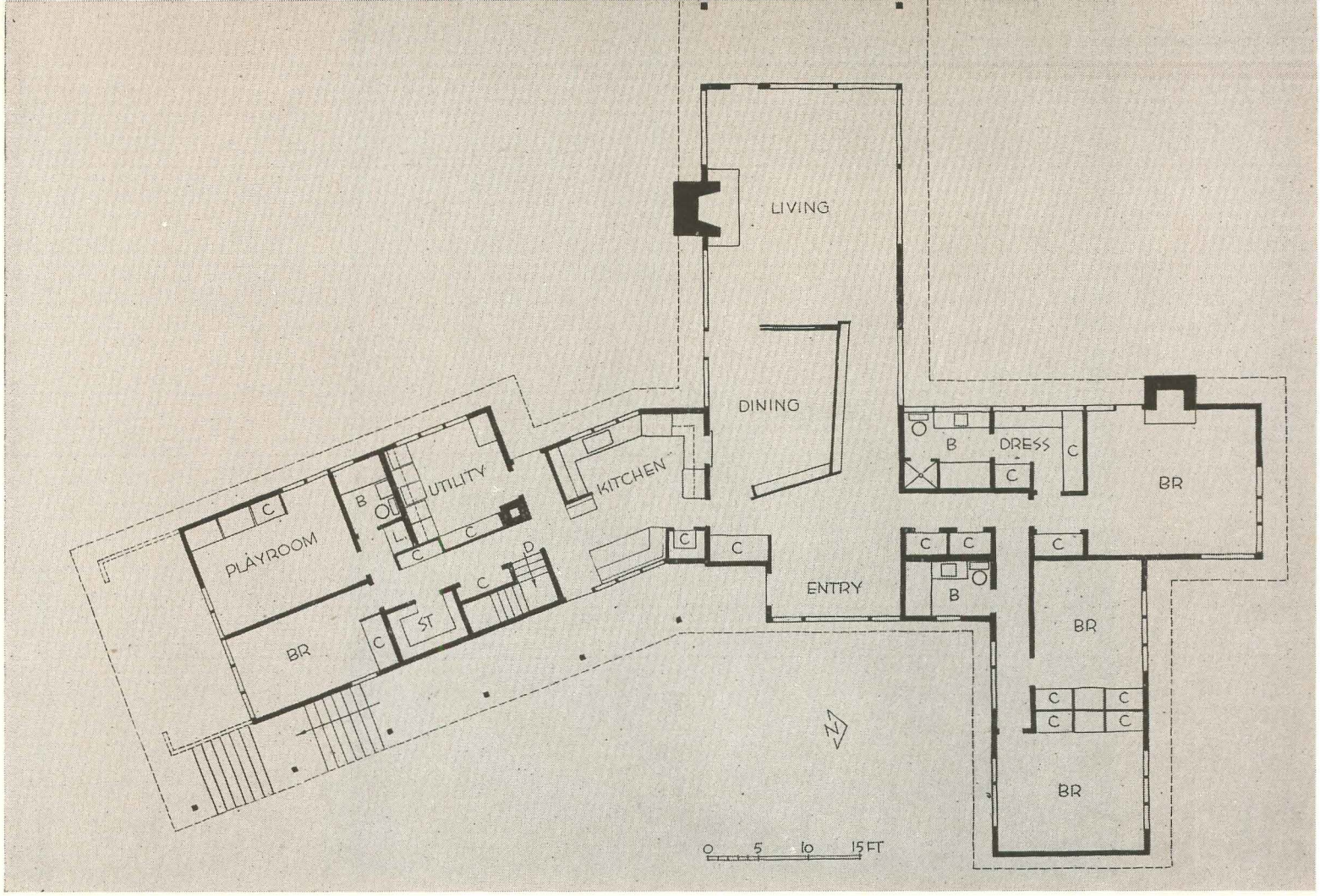
W. W. Wessinger House, Portland, Ore.

Walter Gordon, Architect

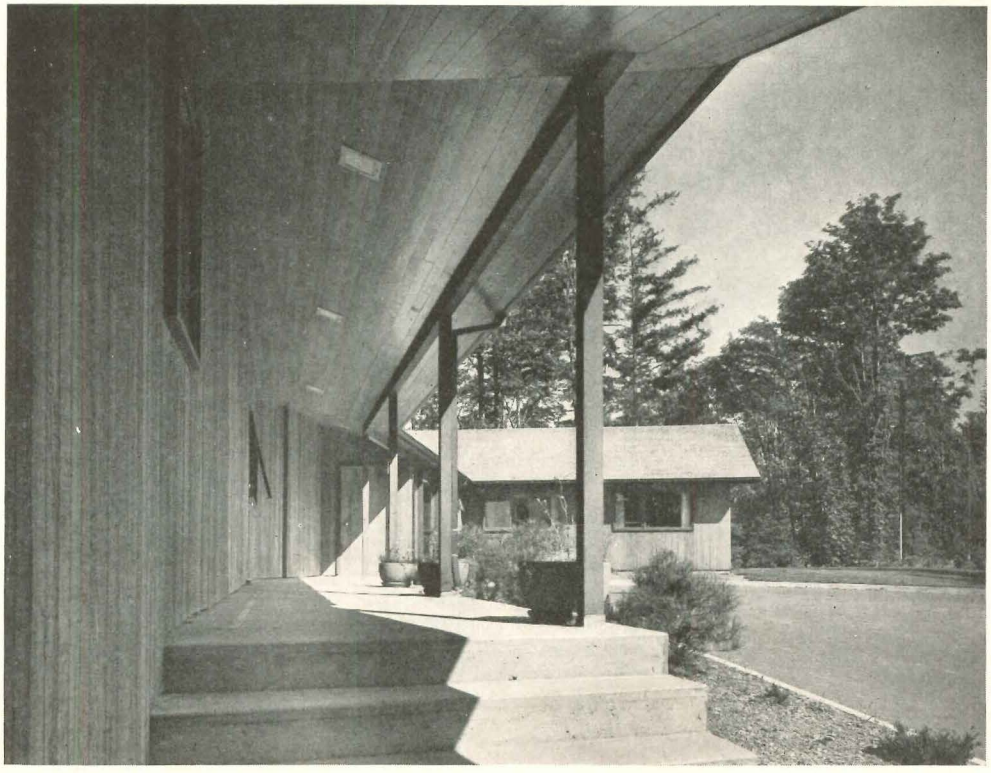
AN UNUSUAL AMOUNT of client conference went into this house, extending over two years. The owners, a young couple, three children, one maid, wanted an "uninhibited space sense" which here clearly means a great big house with great big views both inside and out. The outside views nature provided lavishly — two rivers to the north, sunsets to the west, at an elevation of 1000 ft above Portland's downtown. So there are large panes of glass on virtually all sides. The family also wanted activity separations — dead-end living room, shielded sleeping rooms, separated kitchen and play wing, in a house they could add onto or subtract from. They wanted terrific storage cabinets, and they wanted natural woods, "large and varied amounts of it." This would seem to be a clear invitation to the architect to let himself go, so the house has some fairly dramatic touches. The huge living-dining room (more than 40 ft long) is open, except for a screen, to the glazed entry. A continuous ceiling of longitudinal, natural hemlock takes the slope of the roof and emphasizes the length and openness of the room. The lines of the house give a strong feeling of serenity, though as one poetic observer said, "a contemporary home with long sweeping planes which lift with the rise of the land, finally cresting, like a wave, into a sharp-pitched roof." Anyway, it's a consistent roof line, with accents.

". . . Puget Sound with its incomparable variety of ocean, sound and strait, inlet, river and

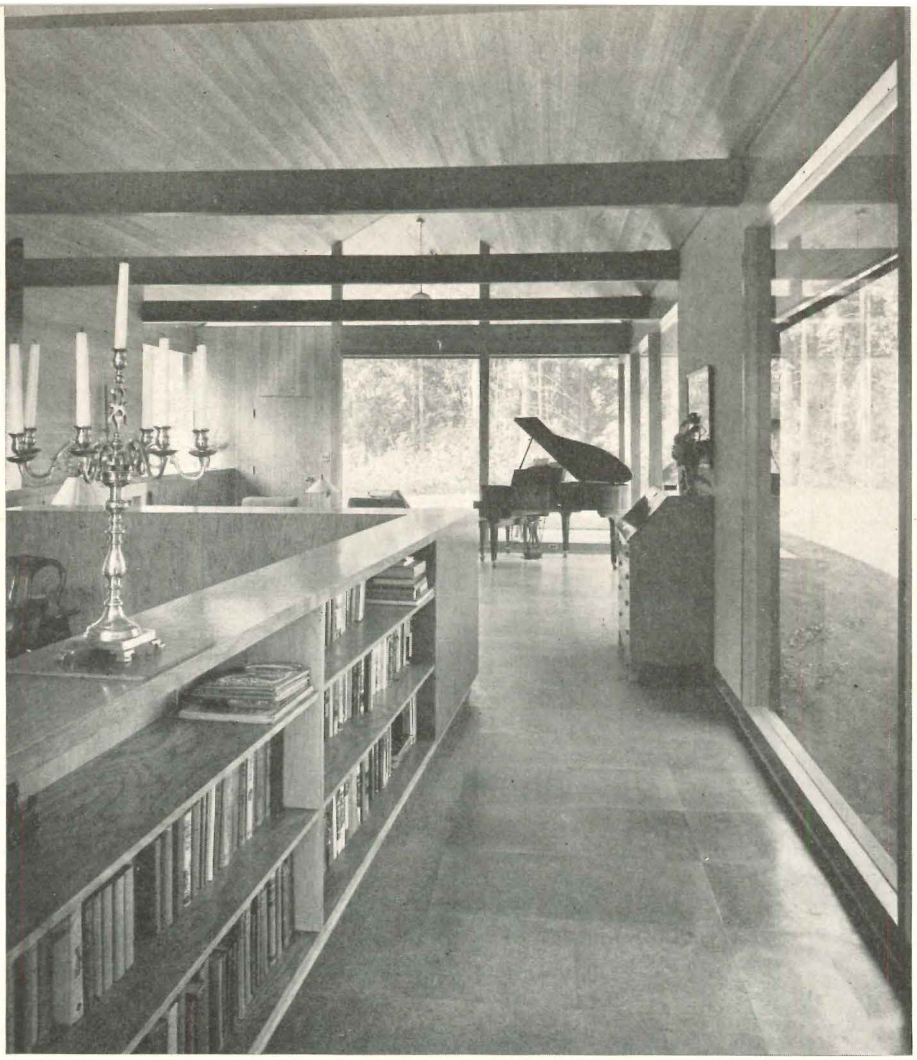
Dearborn-Massar



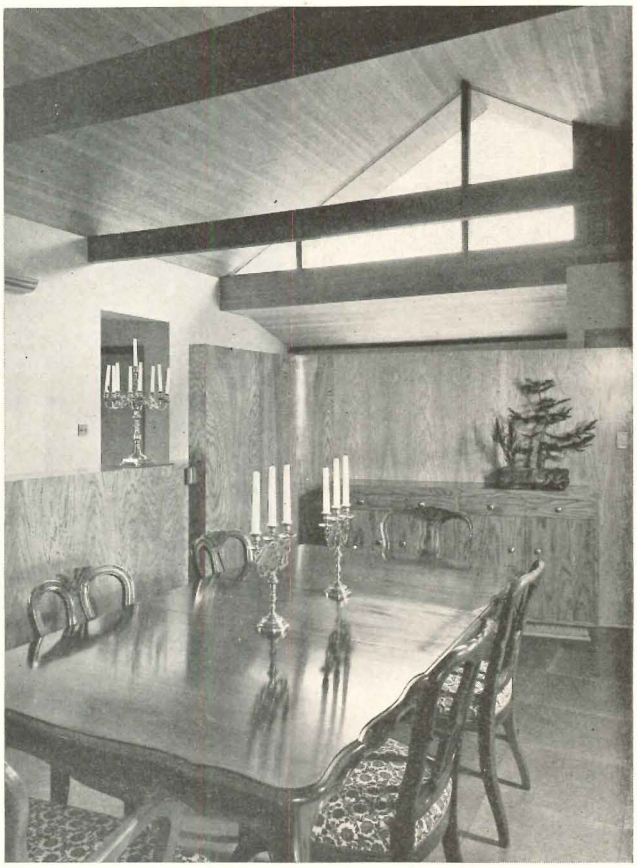
lake, of plains rising to snow-capped mountains, forests and shore of salt-bleached driftwood."



The long, low roof lines are strongly favored in Northwest designs; this house is actually larger than it appears, and uses space with a lavish hand



Dearborn-Massar



While some of the interiors are of plaster, this house shows its Northwest heritage with extensive use of wood — sloped ceiling of long hemlock boards, birch for cabinets and screens. Exterior of resawn vertical T & G Western Red Cedar

"The region is too young to have developed any architectural style . . . none was imported"

COMPACT HOUSE WITH A SENSE OF SPACIOUSNESS

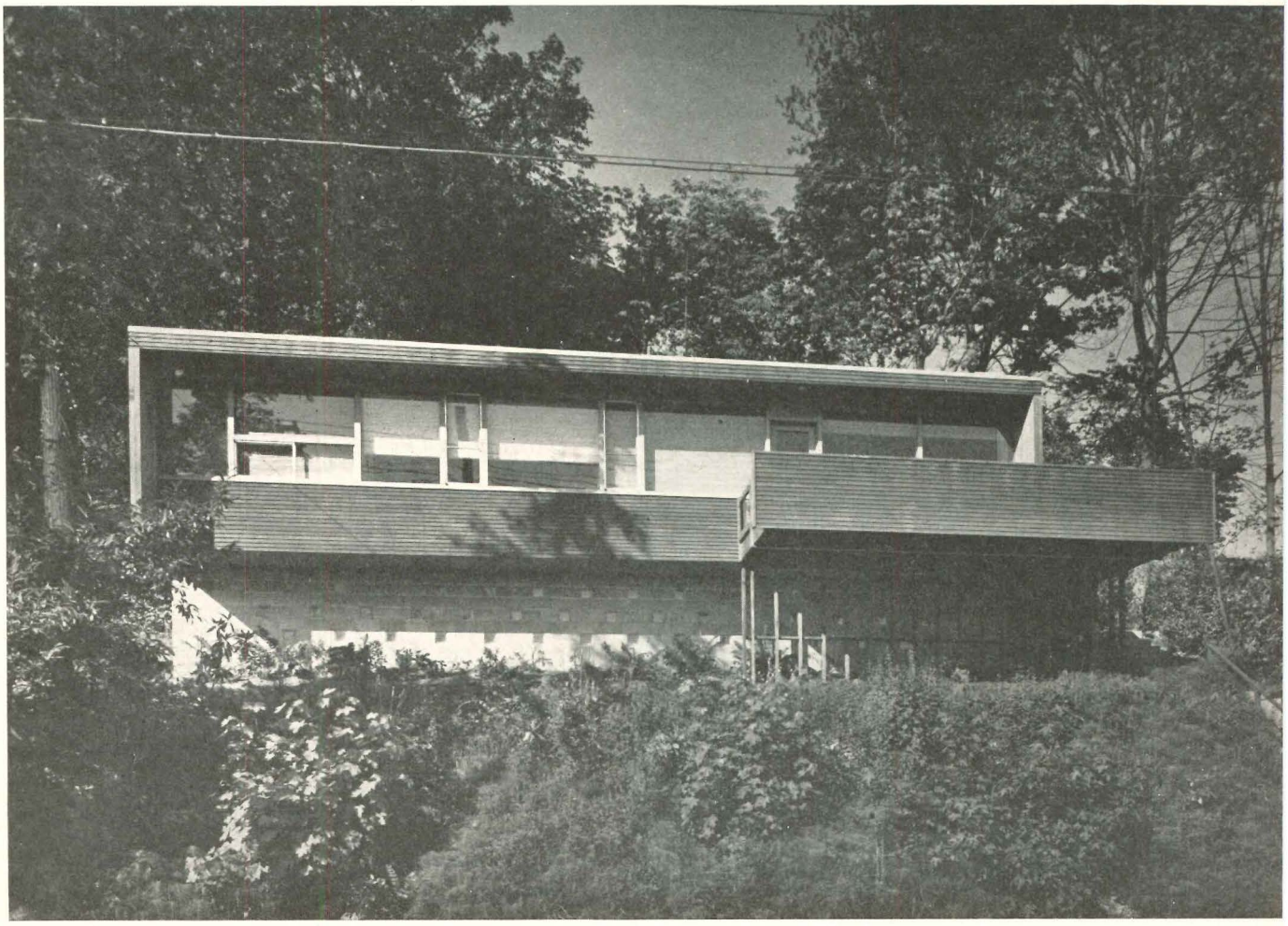
Alden Mason House, Seattle, Wash.

Victor Steinbrueck, Architect

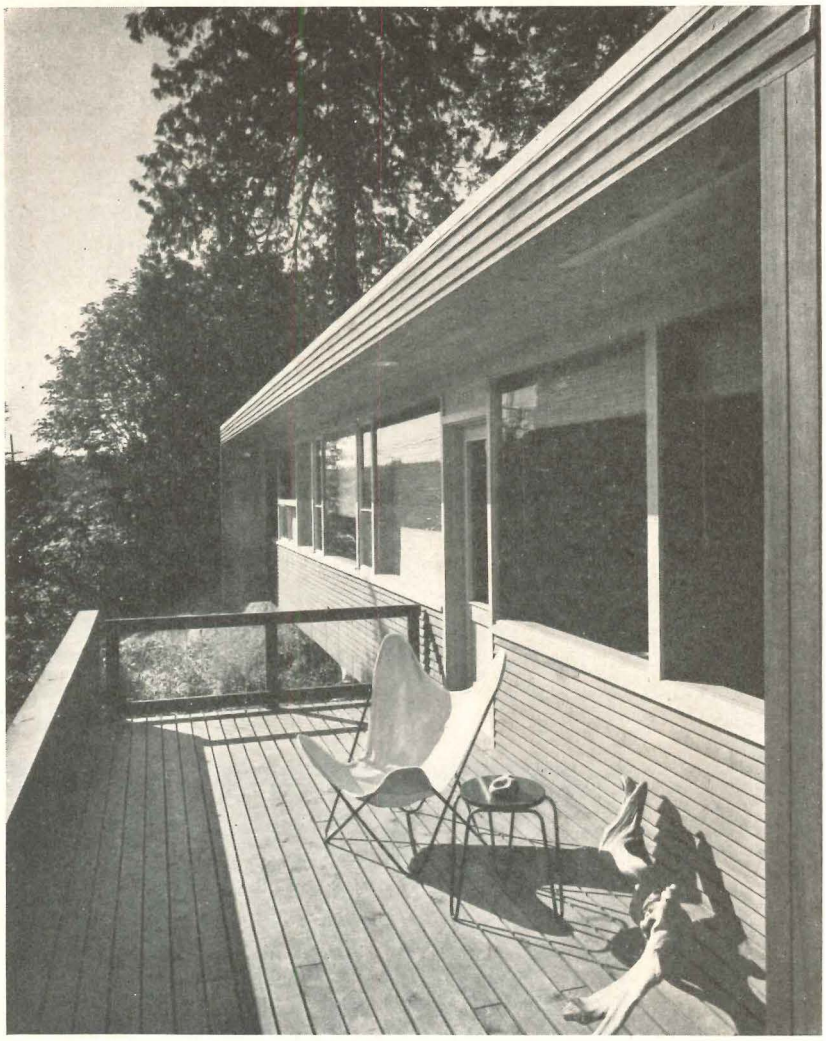
NOT ALL HOUSES in the Northwest are as big as the outdoors; this one is a model of compactness. Propped up on the side of its lot, its basement exposed to the front, its porch cantilevered toward the sidewalk, it still manages to look imposing as well as interesting. Commentary on the Northwest: you seldom see monotonous rows of dinky houses — the sites absolutely prevent monotony and the architects (builders too) lean strongly to a quality of individuality. This house uses its space effectively: the porch, serving as a screen for living and dining room windows, permits full and open glass toward the street. The living room, though small, has very usable space since there is no traffic through it. The progressively open plan from living room to dining room to kitchen adds spaciousness but still screens kitchen. Altogether the house seems much larger than it actually is.

The architect found many ways to develop the sense of size. That is, by the way, the purpose of the wing walls extending out at the ends. These were used to complete the form of the house and to extend the interior spaces outward. The narrow exterior siding (½ by 4 in., bevel, Western Red Cedar) tends to scale the house, and is much cheaper than wide boards. Also the siding was colored with tile red stain, which has an assertive quality. Inside the ceiling and soffits are all 1-by-4, T & G, V-joint cedar, and floors are in one-color dark asphalt tile, the uniformity tending to add to apparent spaciousness.

If all that seems a great deal of design for a house that cost (1949) the owner $9000 (he painted it himself), take it as an added commentary on the Northwest: there it is not strange for architects to work on such small houses, and give them studied care.

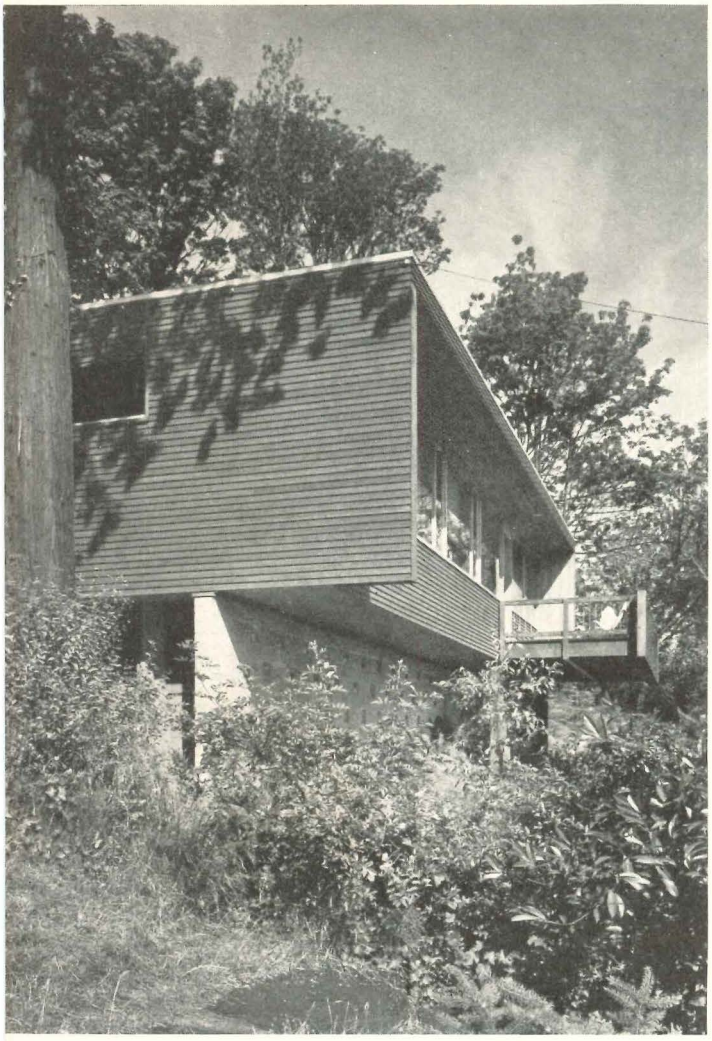


"Neither in the architecture nor the people is there a sense of urgency, or of mission"



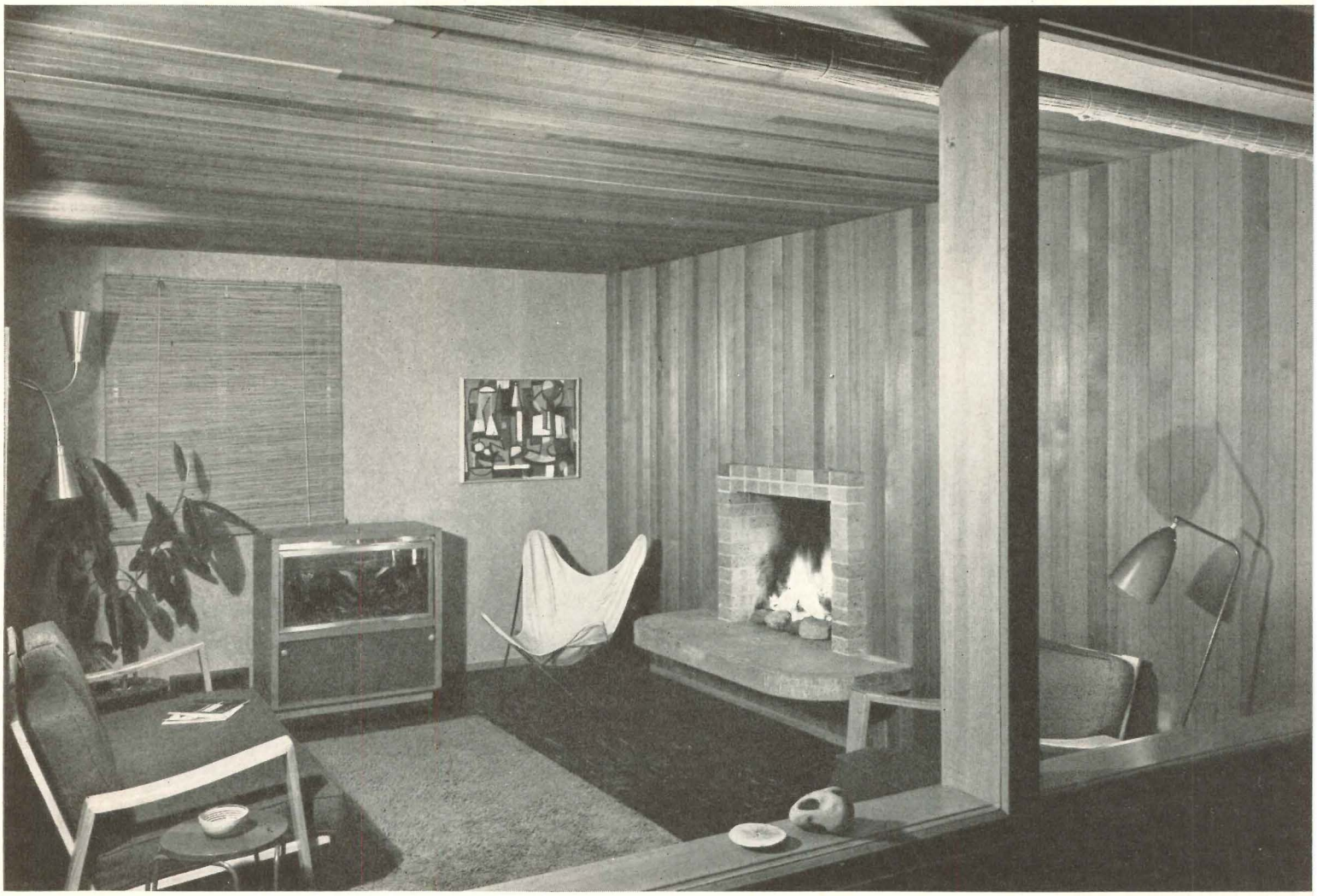
Dearborn-Massar

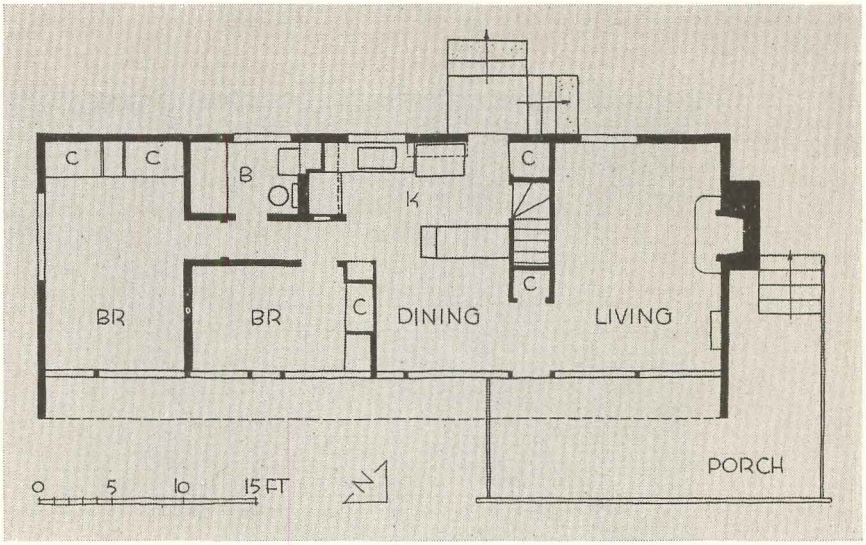
The Mason house, though small, has many devices that give it a strong individuality, an assertive quality. The extended end walls are useful in this respect, especially on the interior, where they have the effect of extending the interior spaces



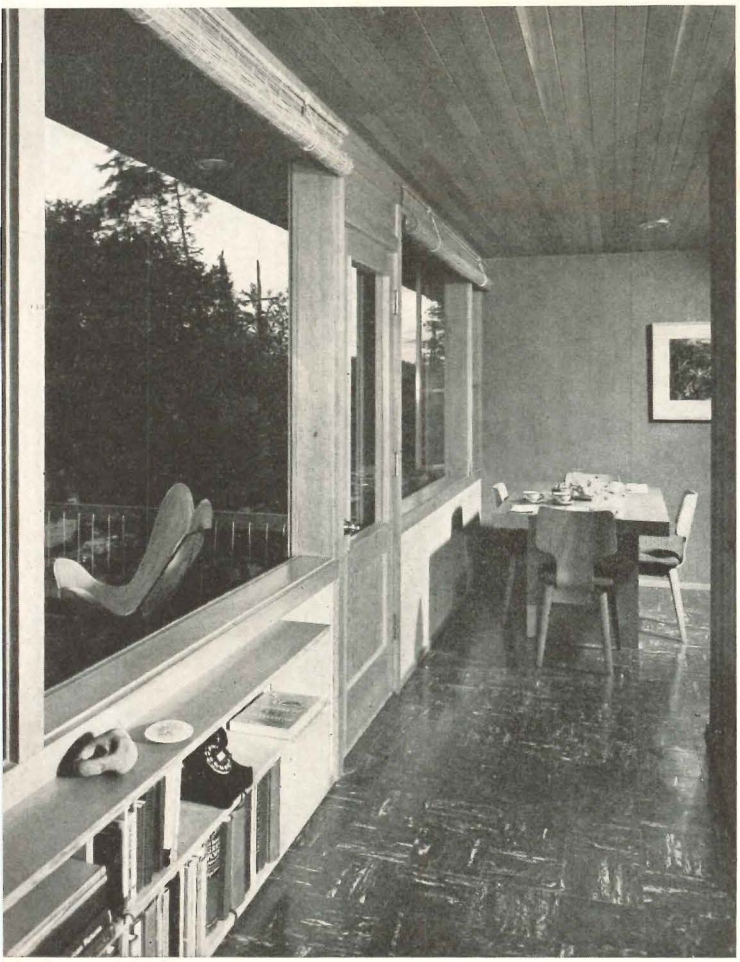
The plan utilizes its areas effectively; the living room loses no space for circulation purposes, though there is possibly a small sacrifice in this, in making it necessary for guests to walk past the living room windows. Openness of living, dining, kitchen makes space efficient

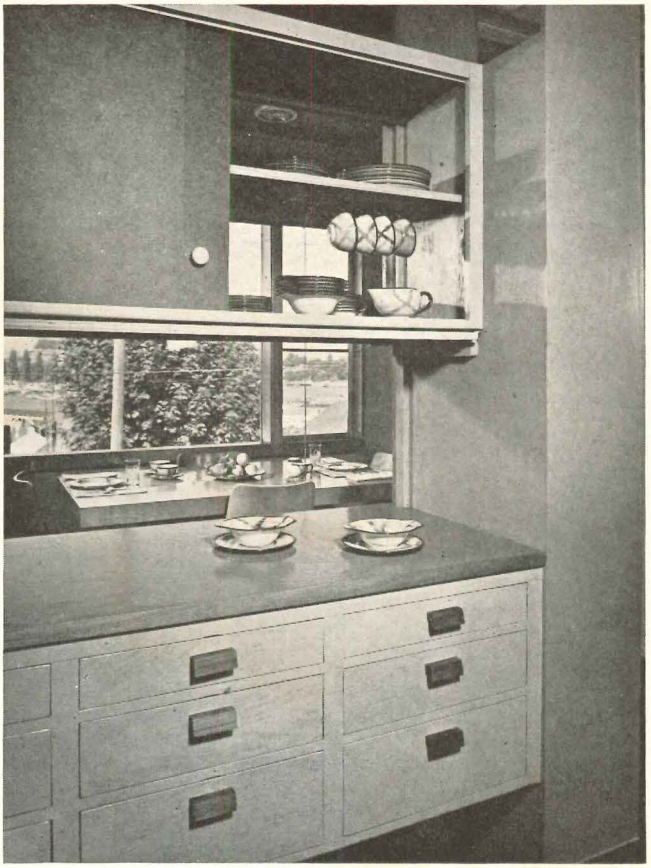
". . . with awakened enthusiasm a certain elemental directness and simplicity is established . . ."





". . . wood, stone, plant material in contrast to the mannered machine-ordered substances . . ."



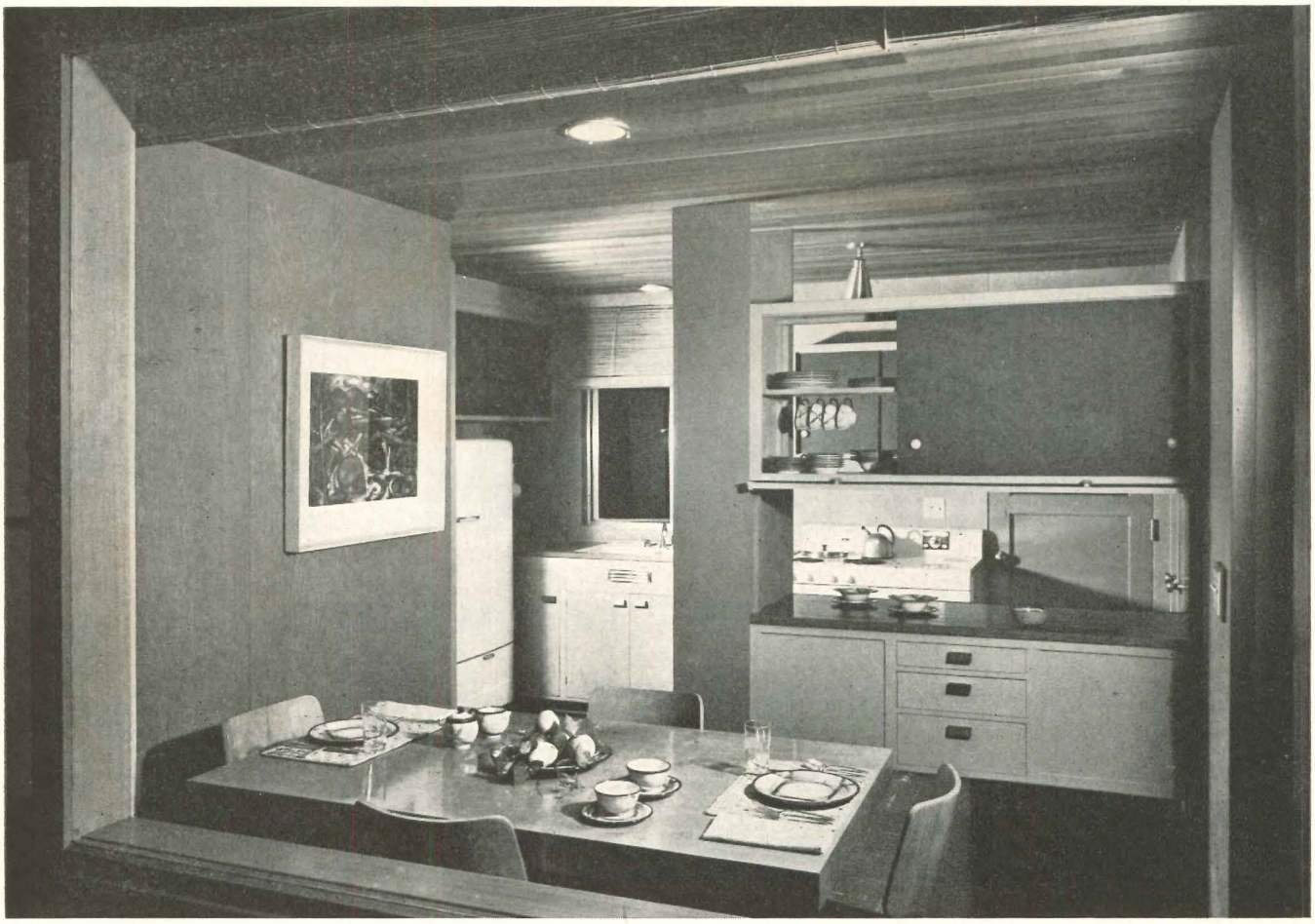


All ceilings and soffits are 1-by-4 T & G, V-joint Western Red Cedar, finished only with a clear preservative sealer. Floors are all in a single color, dark asphalt tile, this uniformity being calculated to add apparent spaciousness

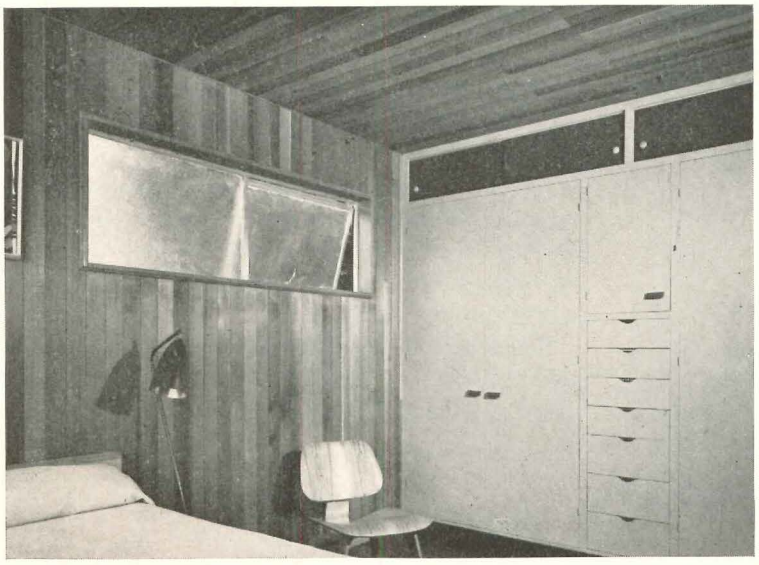
"With the new vocabulary of expression is a guard against the hurry to formalize anything

Dearborn-Massar

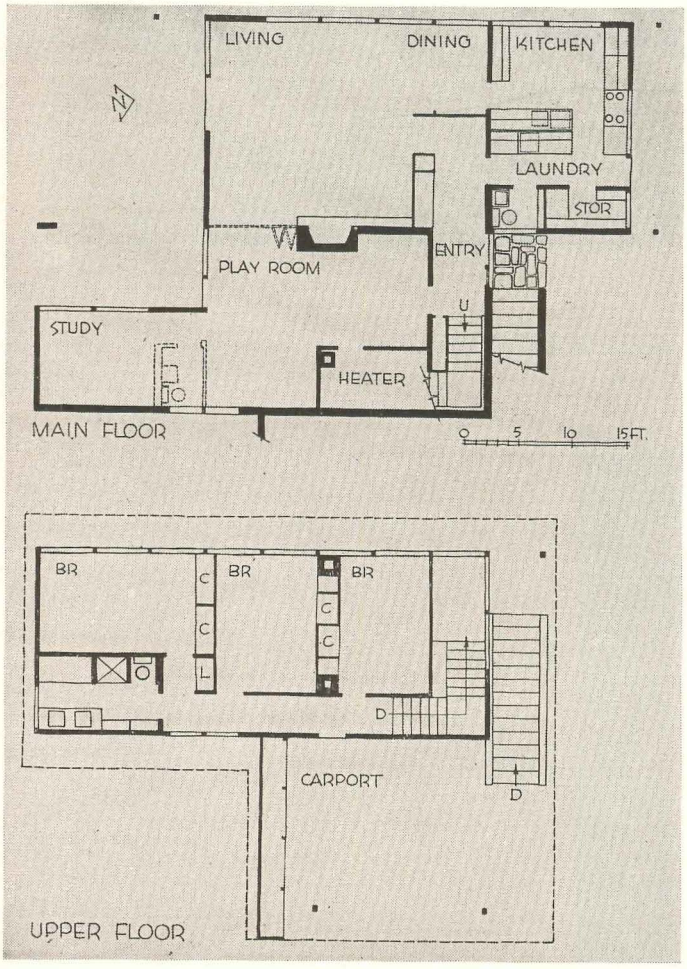
Plywood walls were stained by adding pigment to a clear preservative sealer: blue in dining room, light yellow in the child's room, white in the hall, light olive green on kitchen cabinets. Cabinets and doors were varnished in addition. Kitchen counter tops are crimson red vinyl, with hardwood nosings



nto a set design ritual . . . and a note of capricious humor is often used . . ."



PLANNED FOR OUTDOOR LIVING ON A HILLSIDE



Jack Wolf House, Mercer Island, Wash.

Robert H. Dietz, Architect

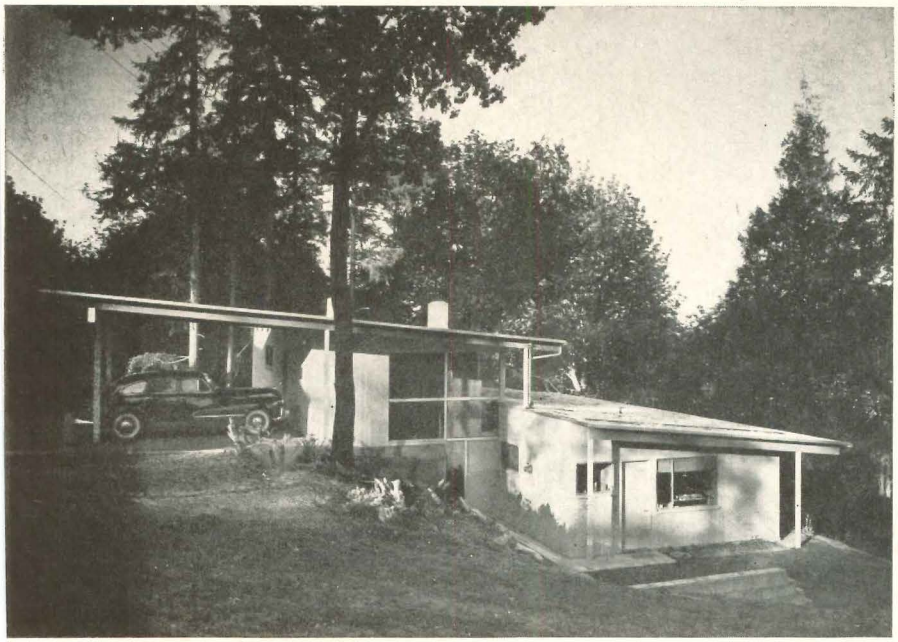
IN THE PUGET SOUND AREA it doesn't seem odd that an architect would help his clients choose a site so steep that the house goes downhill in steps — it would be difficult not to select such a site. At any rate the architect did help select it, and designed the house as a sort of grandstand facing the view of Lake Washington and the floating bridge; all principal rooms face the lake. The owners wanted easy access to outdoors from living rooms; this was easy to arrange by making this part of the house the lower level — main entrance is at bedroom level.

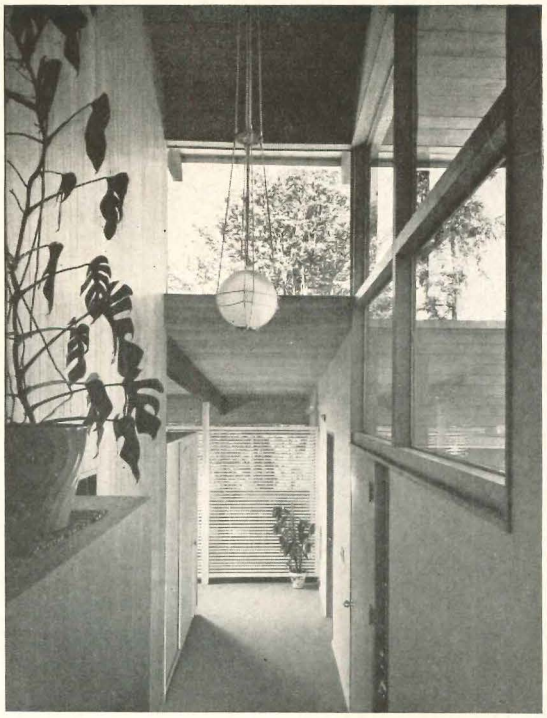
The clients gave the architect no trouble about style, wanting only that the house exemplify good architecture for the Northwest and satisfy their needs and desires. It won a local A.I.A. honor award in 1950 for the best contemporary house.

The entire house is of wood. Interior finish is primarily hemlock and vertical grain fir and fir plywood. Fireplace is of local Wilkeson stone.

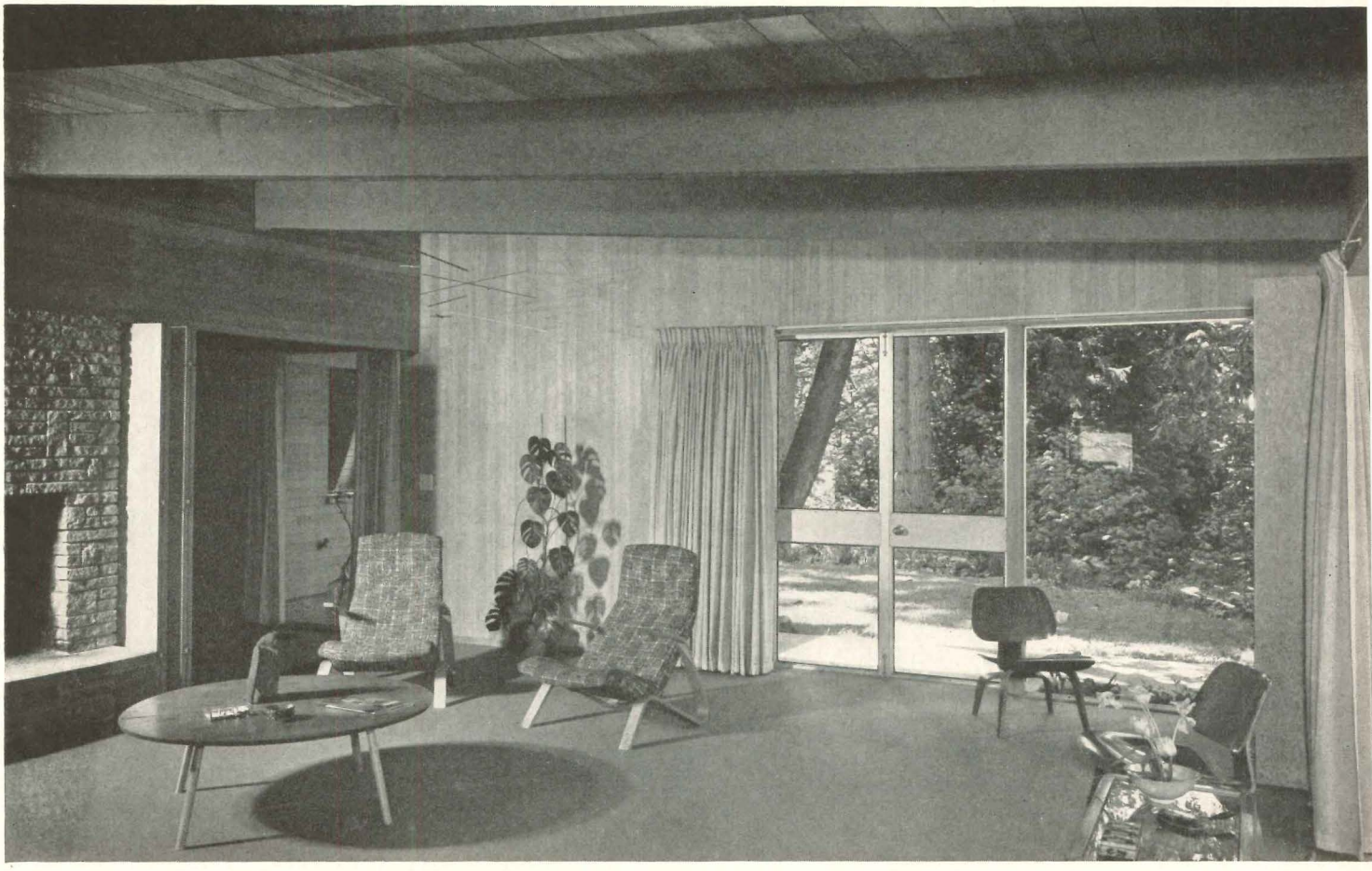
"The area is no longer isolated from the rest of the nation, and consequently we are economically

Dearborn-Massar

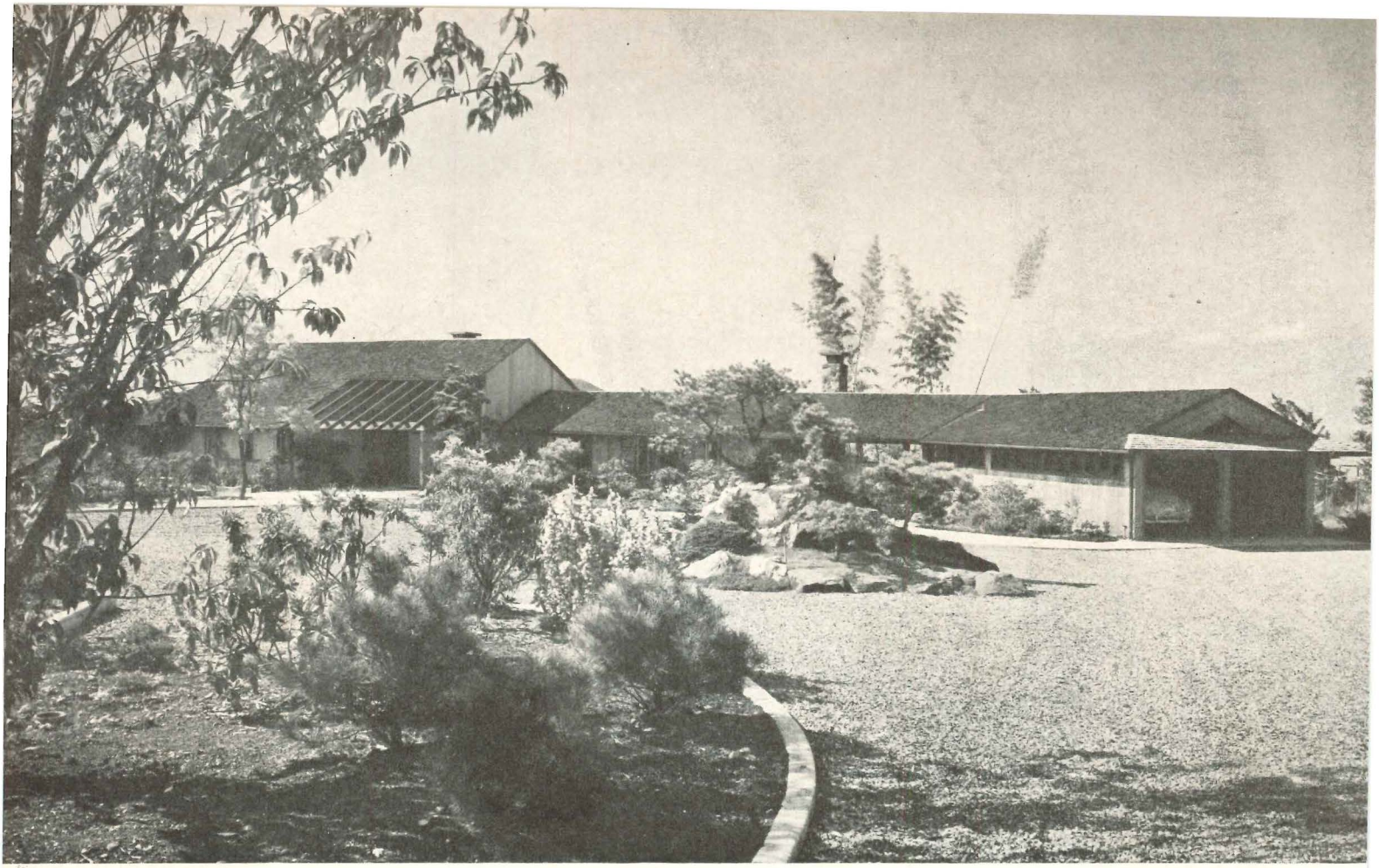




The living room below is a good example of contemporary design in the Northwest, a post and beam house of local materials and largely wood interiors, wood ceiling and beams



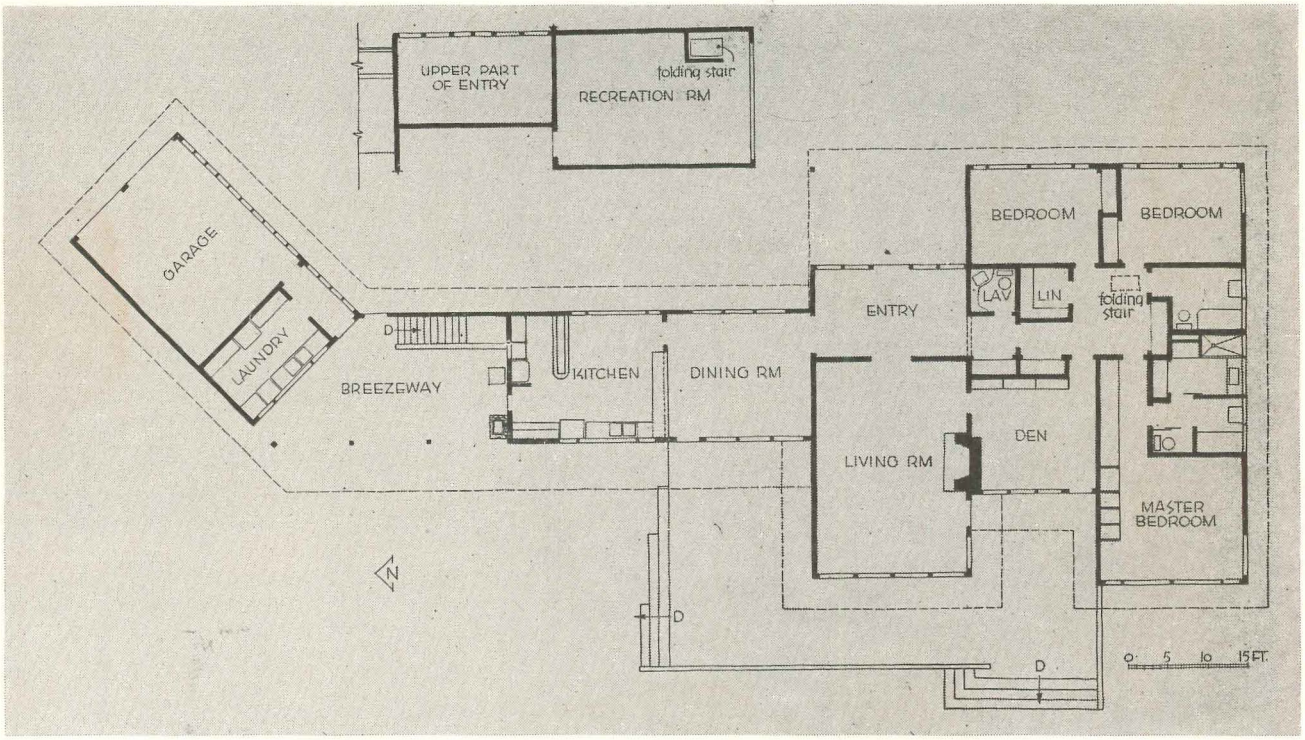
just as close to all products as, say, Chicago. This is producing here a standardization . . ."



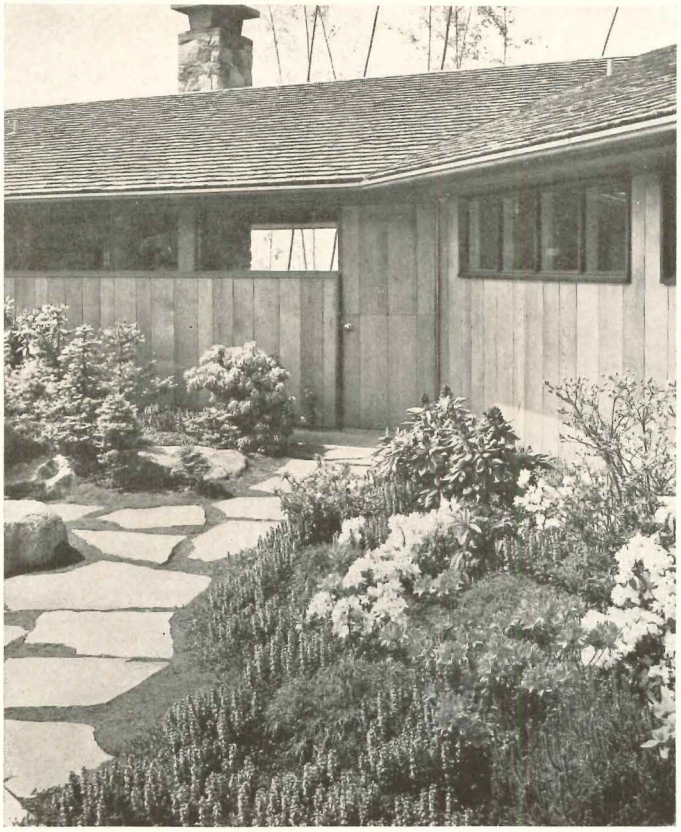
A LARGE HOUSE WITH A PUGET SOUND APPROACH

Thomas David Stimson House, Seattle, Wash.

Paul Thiry, Architect

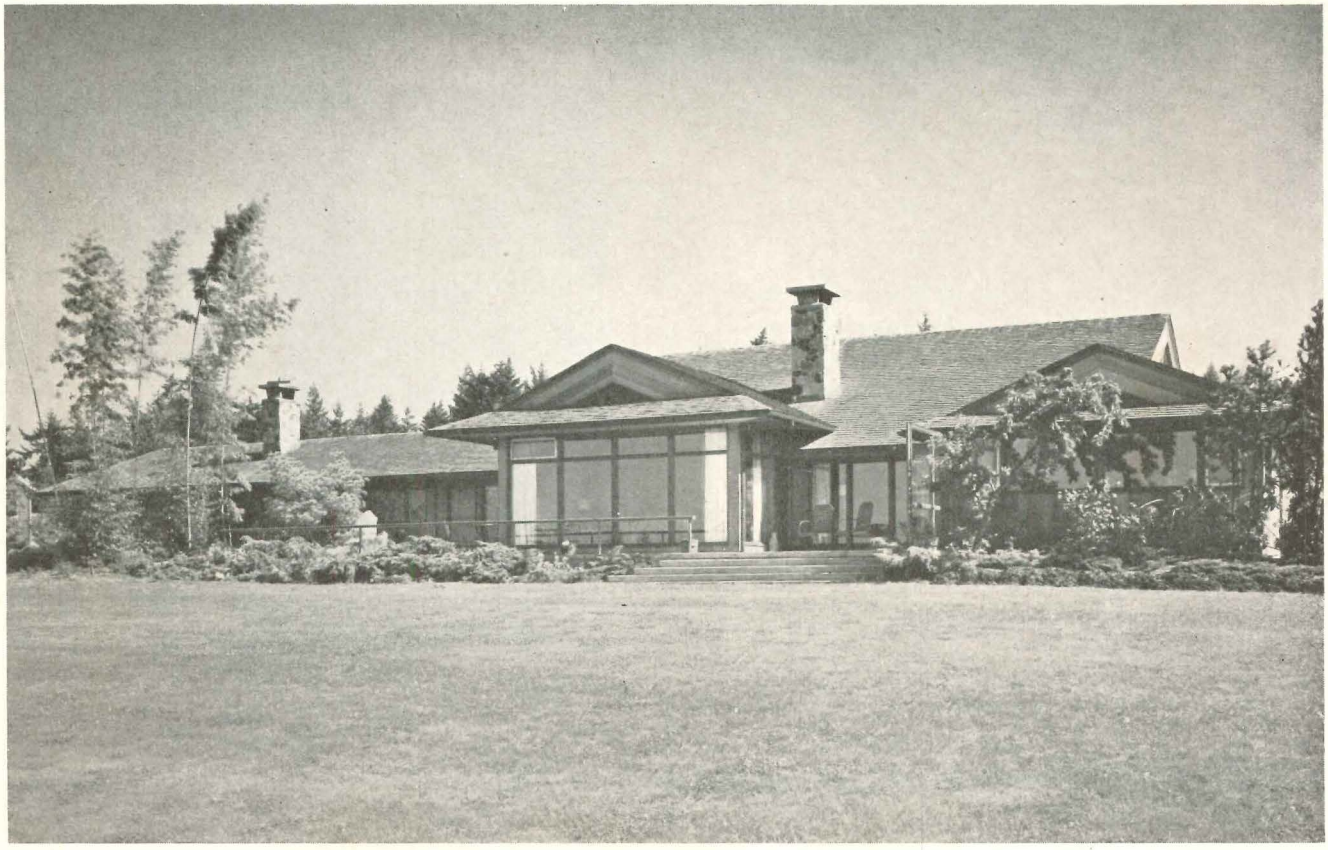


"This could result in a different form of architecture than found elsewhere . . .

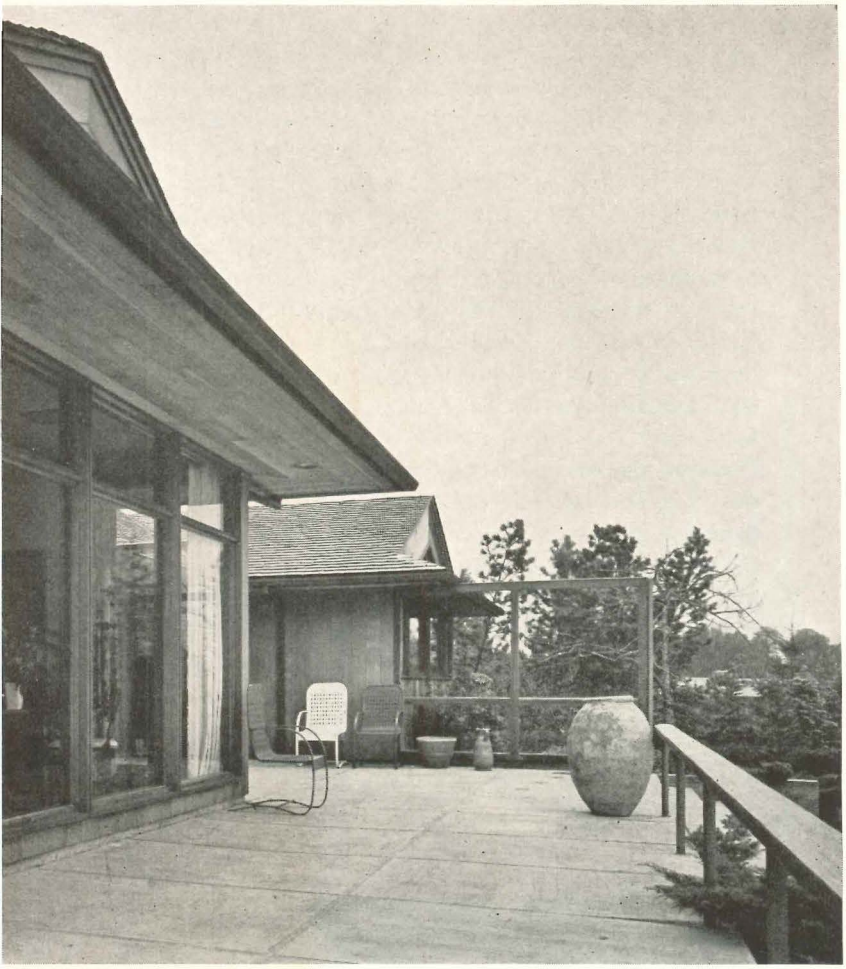


A LARGE HOUSE, self sufficient in its mannerisms, this one provides an interesting commentary on Northwest domestic architecture. It certainly shows an acceptance and assimilation of the modern approach, but there is no evidence of effort to assert any stylistic doctrine. It is true that, knowing the architect and his clients here, one might find touches that would establish a sympathy for Japanese forms and furnishings, but there is nothing very insistent about it. In the main the distinguishing forms of this house come from the problem at hand, a problem frequently encountered in the Puget Sound area. The house, high on a promontory, faces west, toward the views of the Sound and the Olympic Mountains, also toward the afternoon sun and the glare from the water. There is also wind and rain from the southwest. Roof overhangs, plantings around the terrace, but at the same time the huge glass areas, illustrate the efforts commonly made to enjoy the views and the sun but exercise some control when the weather turns unpleasant. The house is of frame construction, conventional stud wall and rafters. Exterior is vertical T & G cedar, left to weather naturally; roof, hand split shakes. Window frames are wood, soffits and gables are fir painted in color (Chinese red and yellow).

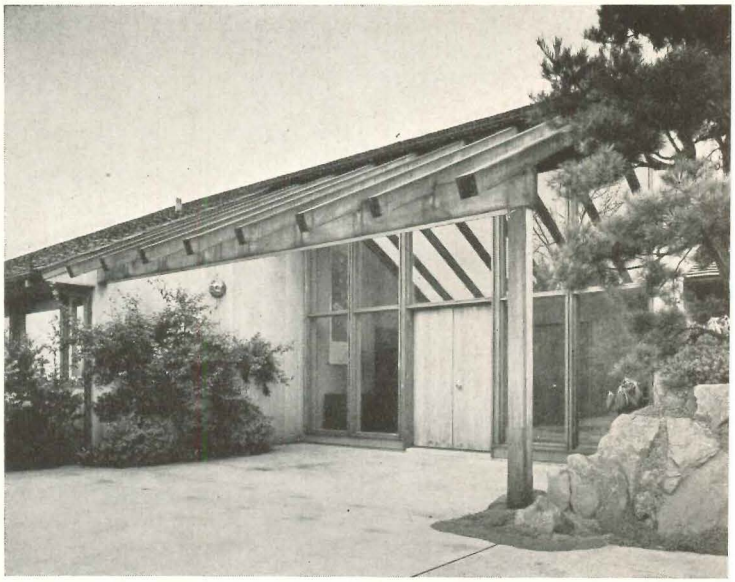
Chas. R. Pearson



cause it would result from a real cause . . . that cannot be satisfied by materials alone."



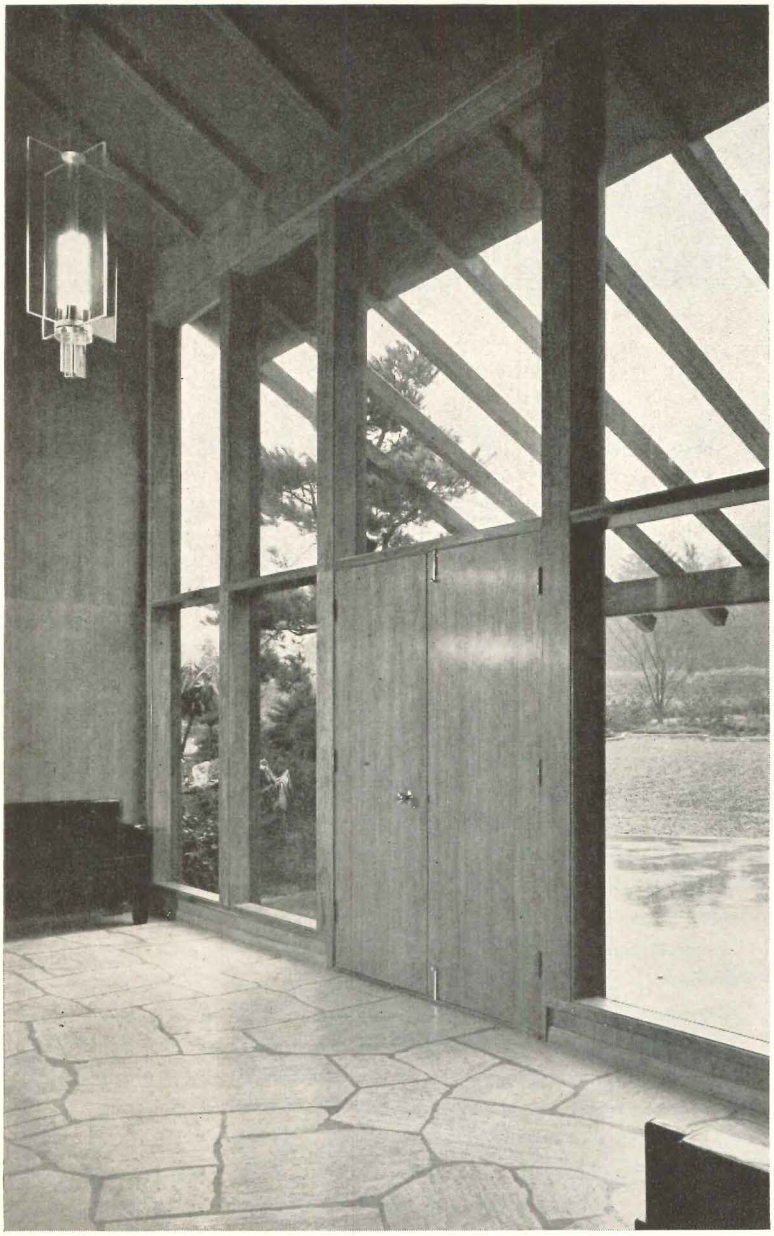
Entrance hall, dining room and library are walled with walnut plywood, though most interior walls are of plaster. Floors are mostly carpeted, though in entrance hall and dining room the flooring is travertine slabs in random pattern. Colors throughout are subdued browns, tans and mistletoe. Furnishings mostly Oriental



Living room, den and master bedroom face the views, the western sun and the weather. The overhangs at the gable ends, the glass wind screen, the plantings, are all designed to take advantage of the views and the sun but control the glare and the winds

". . . an indigenous architecture borrowing from the high primitive arts and structures of the

Chas. R. Pearson

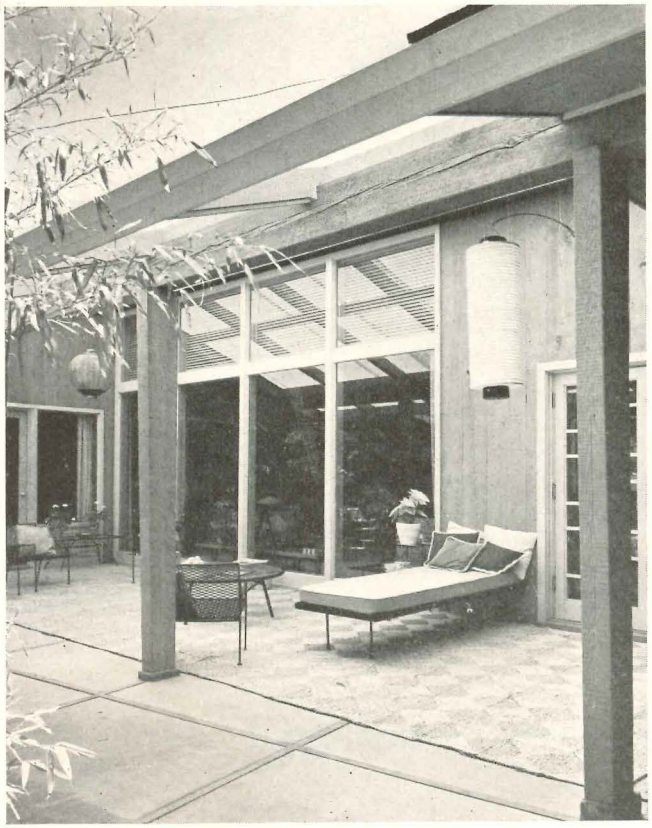


Indians; conscious of the simple mill sheds that were built in open span for timber sizes . . .

A HOUSE NOT FOR A VIEW, BUT FOR A FAMILY

William J. Bain House, Seattle, Wash.

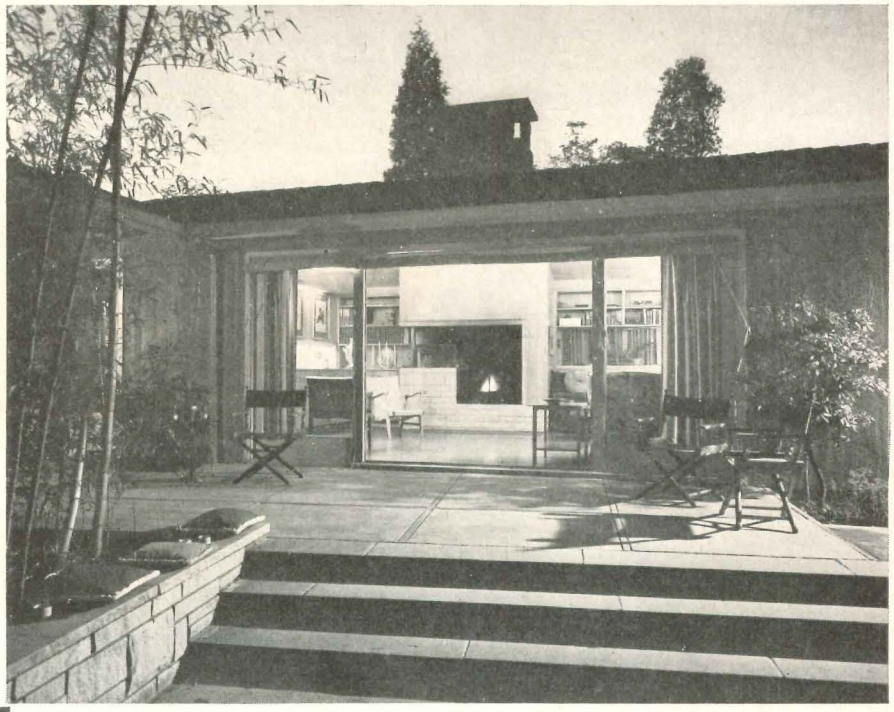
William J. Bain and Harrison Overturf, Architects



SETTING OUT, like the previous one, with no very pronounced stylistic mission, this house did have a definite objective, having nothing to do with a view or a weather problem. Here the view is a landscaped creation, and the objective to suit the fairly lavish desires of a large family. A detailed explanation of all features would involve a rather personal acquaintance with the family, down to their menus. Briefly, their wants here involve a great deal of entertaining, by adults and by young people too; anticipation of entertaining married sons and daughters and possibly small fry. Music here and there, for dancing or just for listening. Cooking here and there, too, notably barbecues in the recreation room. Many of these activities are calculated to flow outward to either front or rear terraces, hence the heavy screening by plantings, and the extensive paving and stone work. Though large, the house and the landscaping are planned for easy management without servants — lawn areas are small, planting is mainly hardy shrubs, flower beds are limited, could be dispensed with entirely.

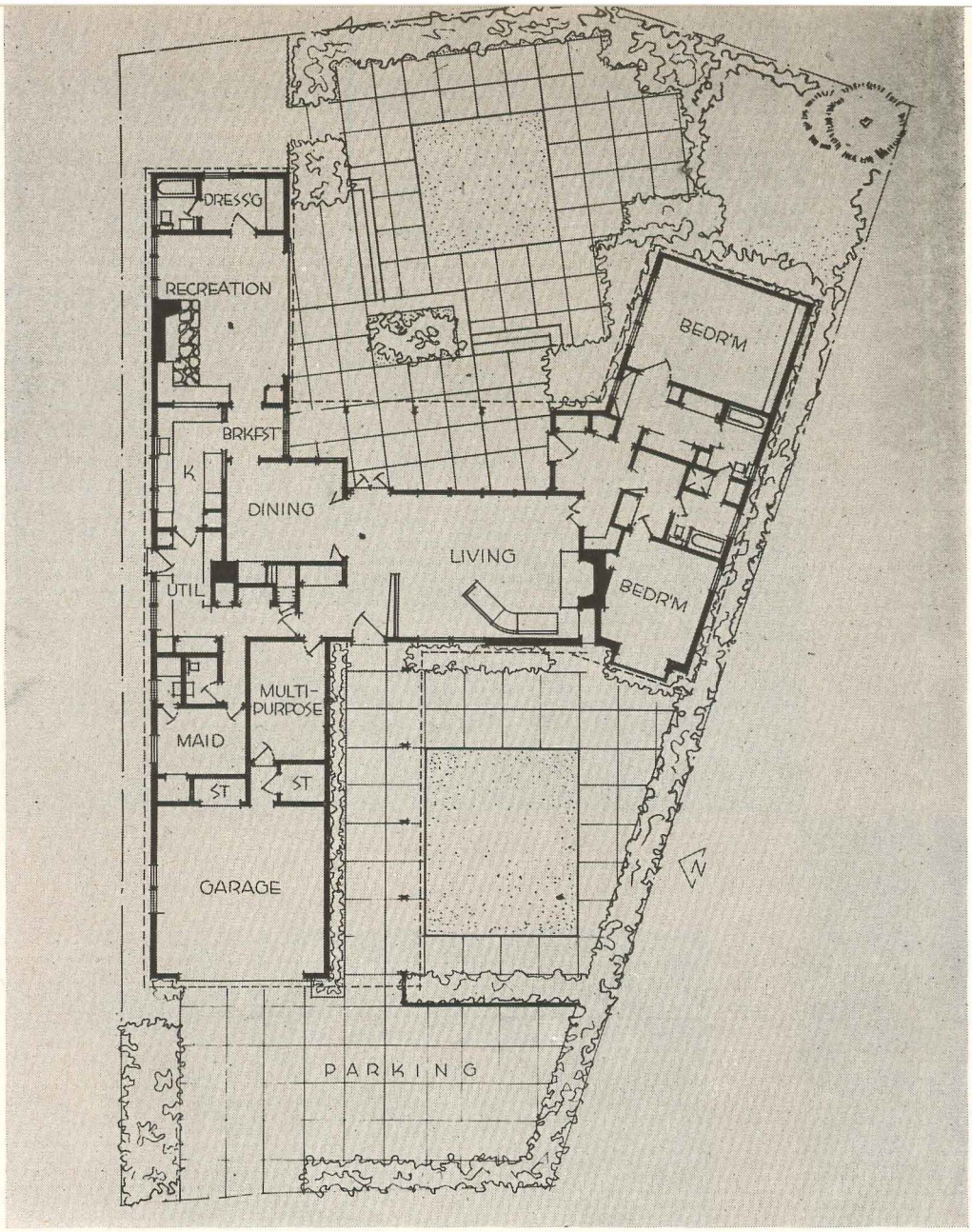
". . . conscious of the faraway land of Japan whose topography is similar to our own — whose

From the barbecue fireplace in the recreation room to the furnishings of the living room, the interiors were designed, like the house itself, for very comfortable living, its expression one of exuberance

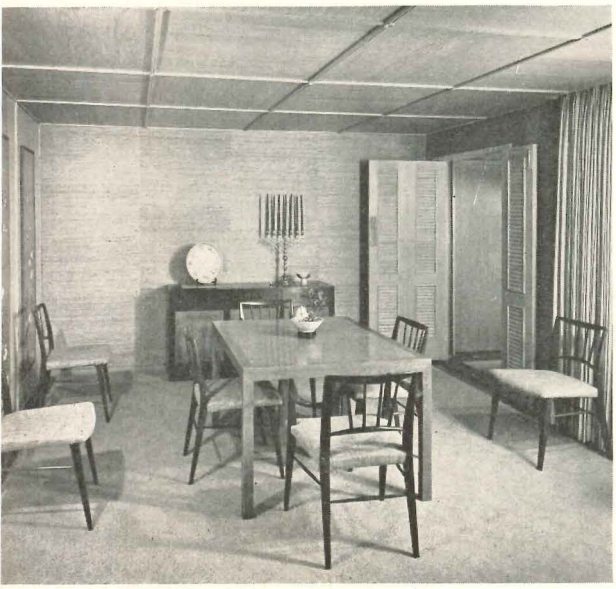


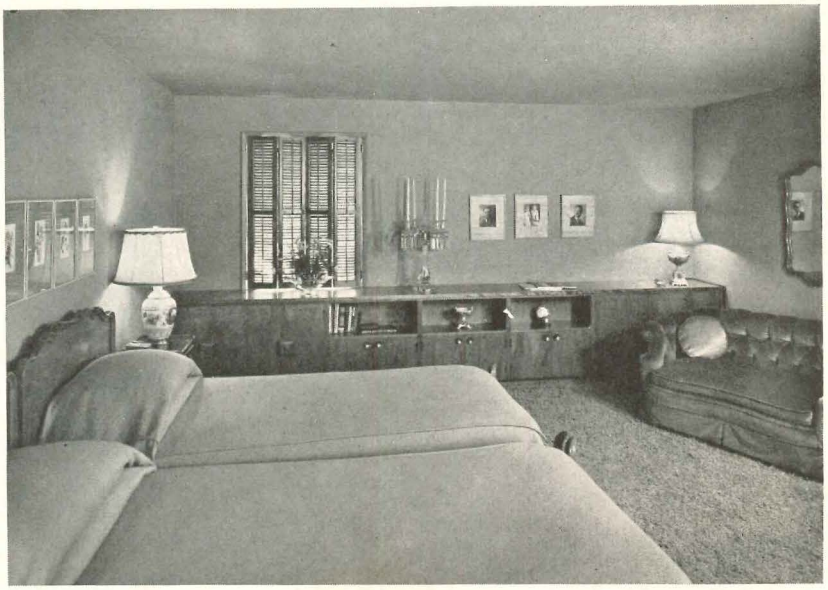
Chas. R. Pearson

people have developed a post and lintel architecture free in adaptability of form . . ."



Though the emphasis of the Bain house is on family, there are but two bedrooms. This is explained by the fact that the two sons have left the household and no longer require permanent rooms. The closet space, though, was designed to store their things, and the recreation room works nicely as a bedroom, for times when they come home, with or without wife and other impedimenta. This room is mainly useful, however, as a center for entertaining; it connects to kitchen via sliding door over counters





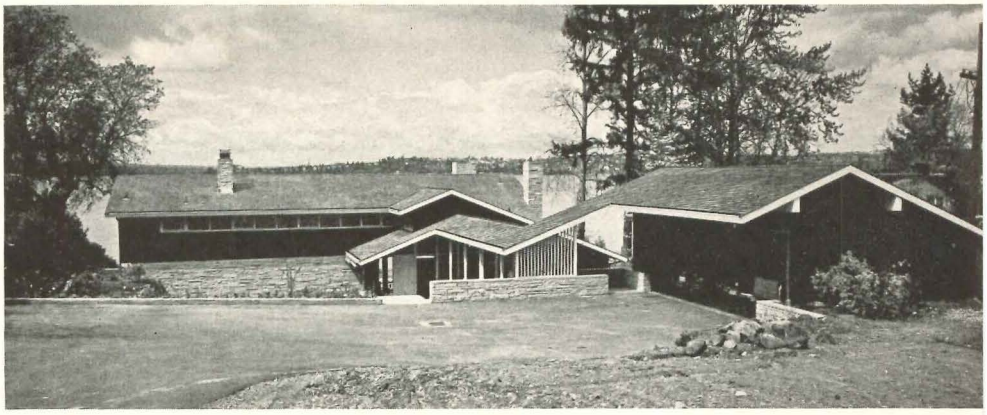
". . . setting of the region presents a problem of magnitude which does not suggest a solution

THE CLIENT SPECIFIED HOSPITALITY

Carl Erickson House, Hunts Point, Wash.

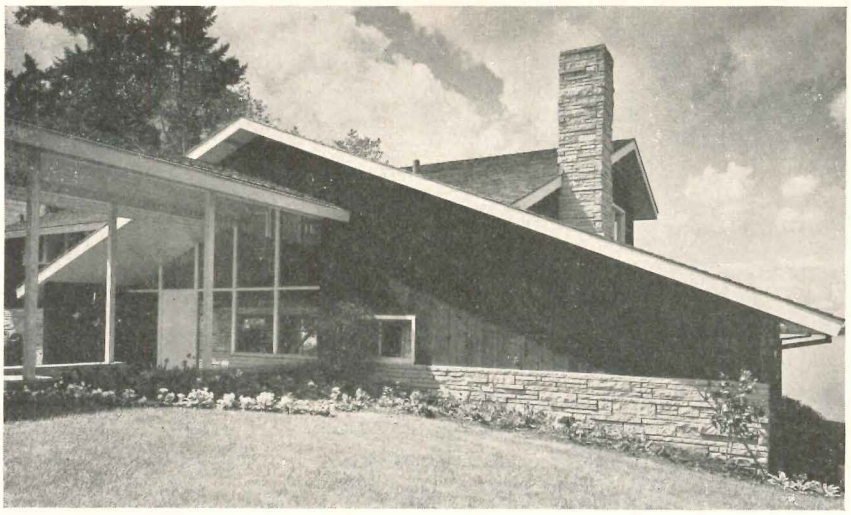
Young & Richardson; Carleton & Detlie, Architects

IT WAS THE DESIRE of the owners," reports the architect, "to have a home which would take full advantage of Lake Washington and a panoramic view of Seattle on the horizon and at the same time yield itself gracefully to the general terrain and character of Hunts Point. The character of the architecture was to suggest formality and dignity with a warm sense of hospitality, and yet achieve in appropriate areas complete informality." The house presents its dark side to the visitor, hence the intricate arrangement of planes, beginning with the carport and taking the eye downward past a landscaped entrance rookery to the entrance. On the side facing the lake the house is much more restrained; here the house aligns its rooms and opens itself toward the lake. The all-glass room jutting out is the kitchen, designed as an informal entertaining center.



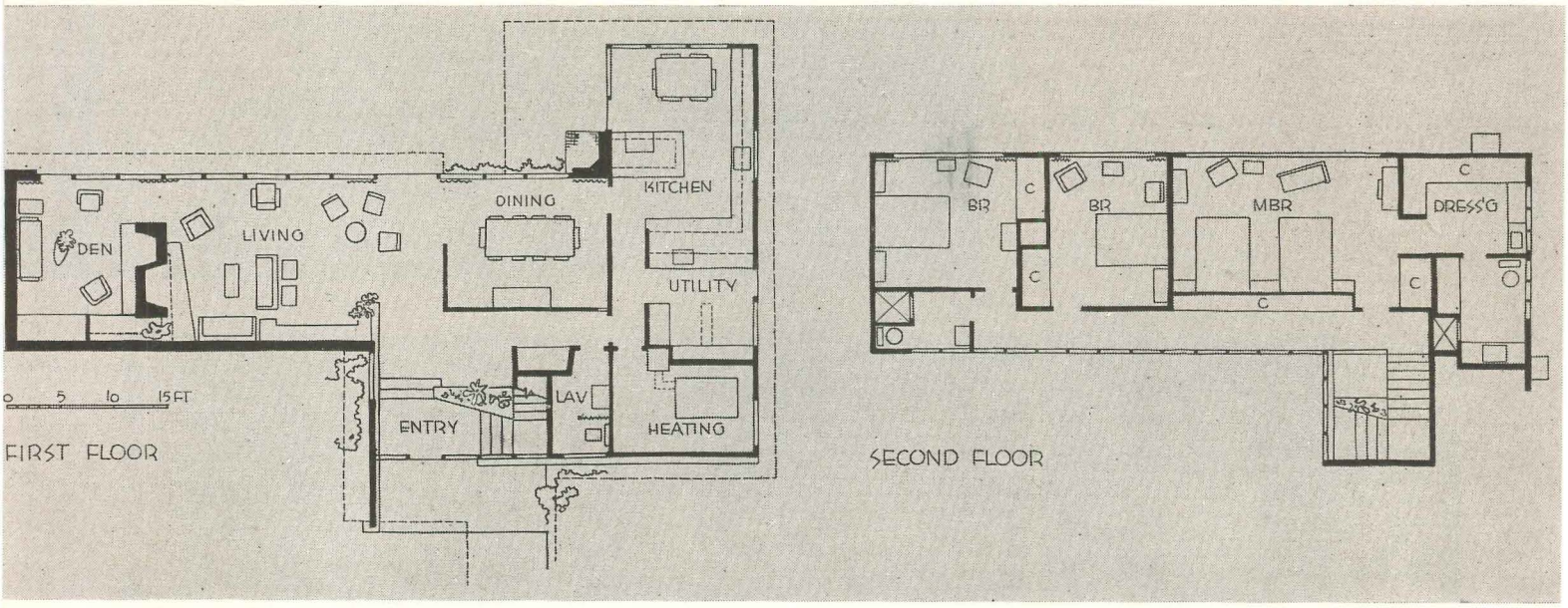
Chas. R. Pearson

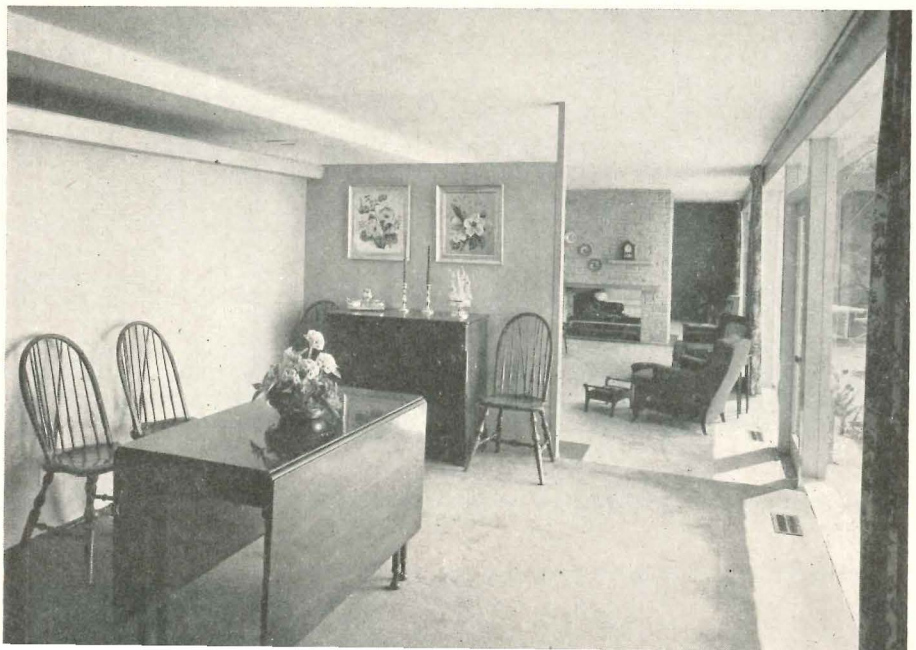
so much as a humbleness of approach and a vigorous statement of form and texture."



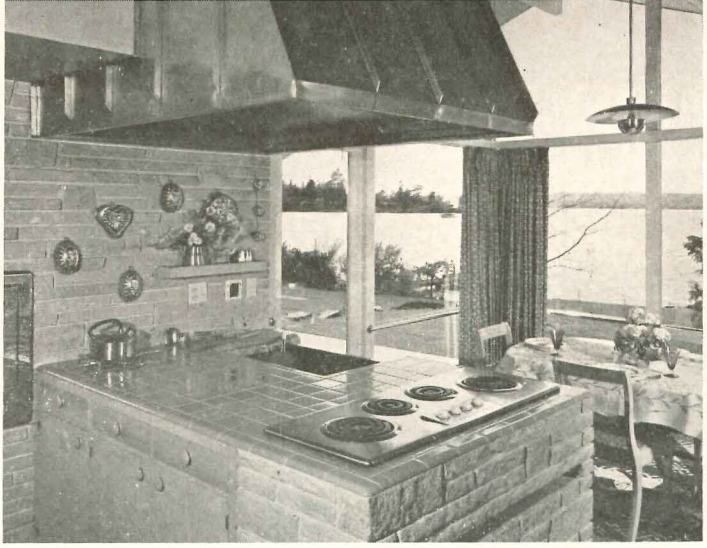
Except for its generosity in the matter of space the plan accommodates fairly normal requirements. A special item is the large kitchen facing the lake, conceived as an informal center for the family or for close friends at cocktail time

"The definitive nature of the artistic expression of the region is in the process of formulation





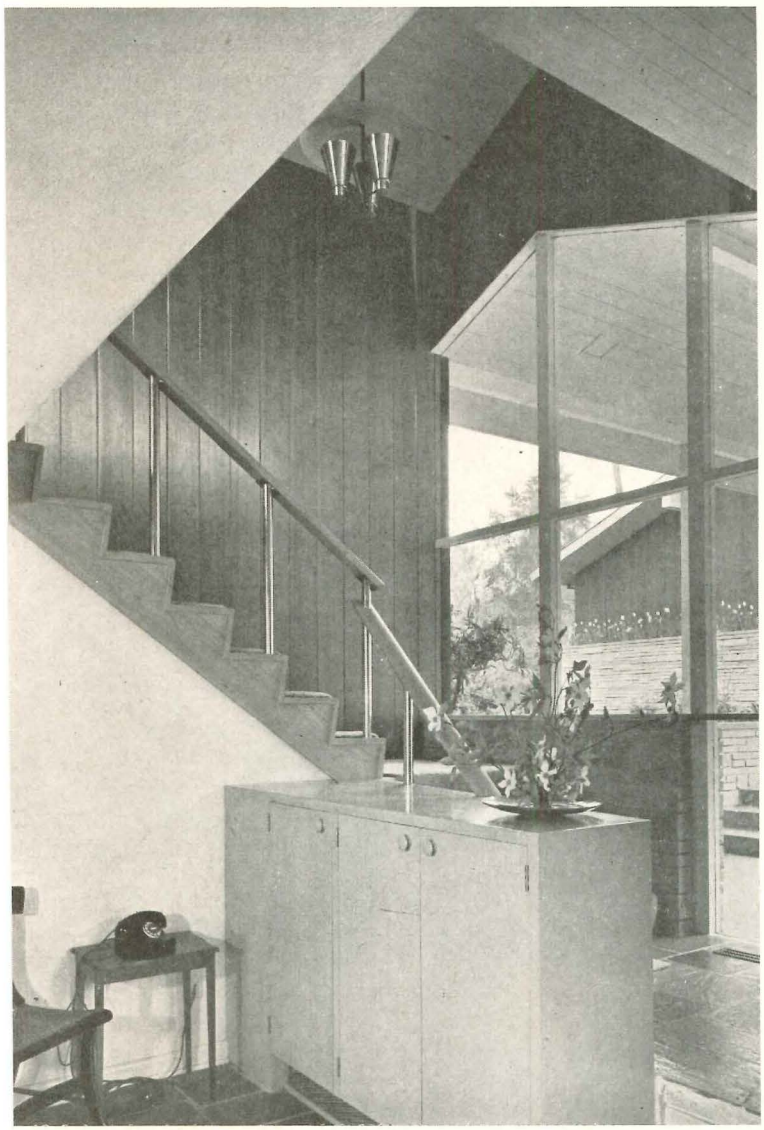
The more formal dining space is only partially closed off from the living room but is completely walled off from the entrance. In the background of this picture the den is handled in a similar way



Chas. R. Pearson

This kitchen center features—and that is the word for it—an indoor barbecue fireplace. There is one outside too, in fact it adjoins the one inside. Cook inside or outside and eat either place that suits your fancy best

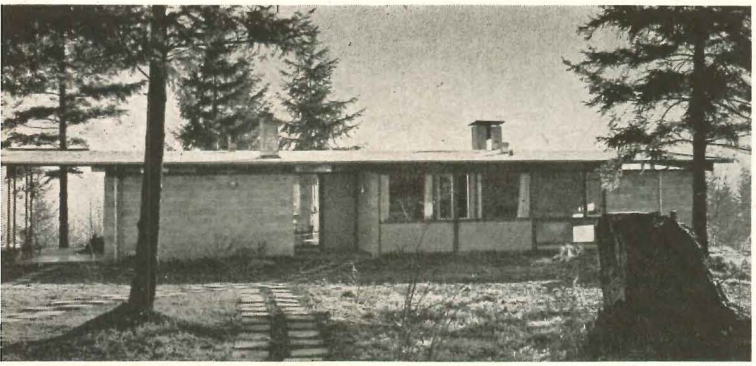
ınd has not yet emerged into a clear, graphical well grasped symbolism.

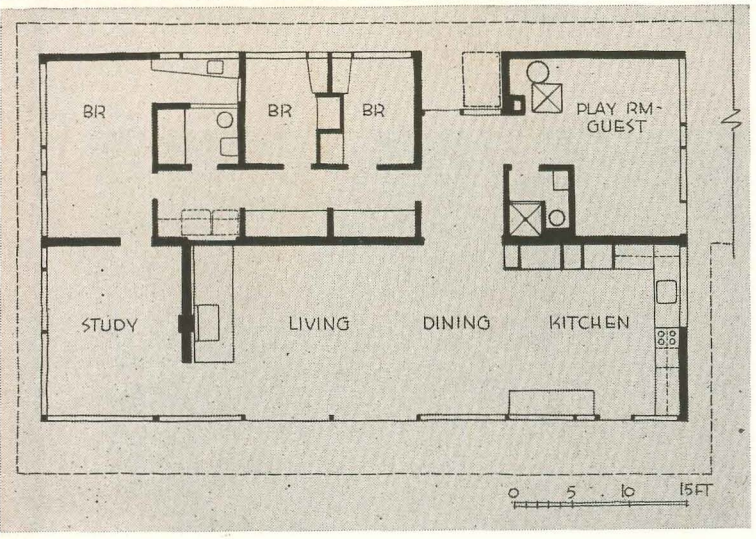


THE CLIENTS SENT A QUOTATION FROM THOREAU

David Van Brown House, Hilltop Community, Wash.

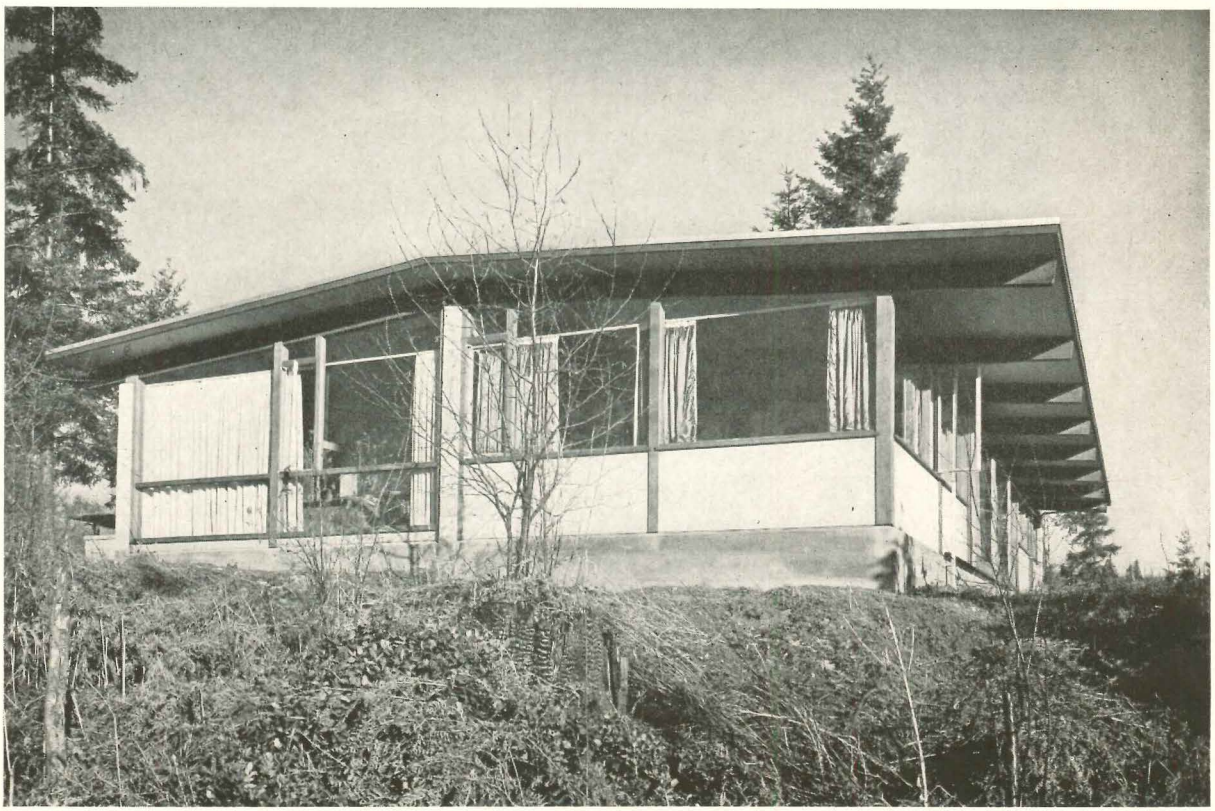
Bassetti & Morse, Architects

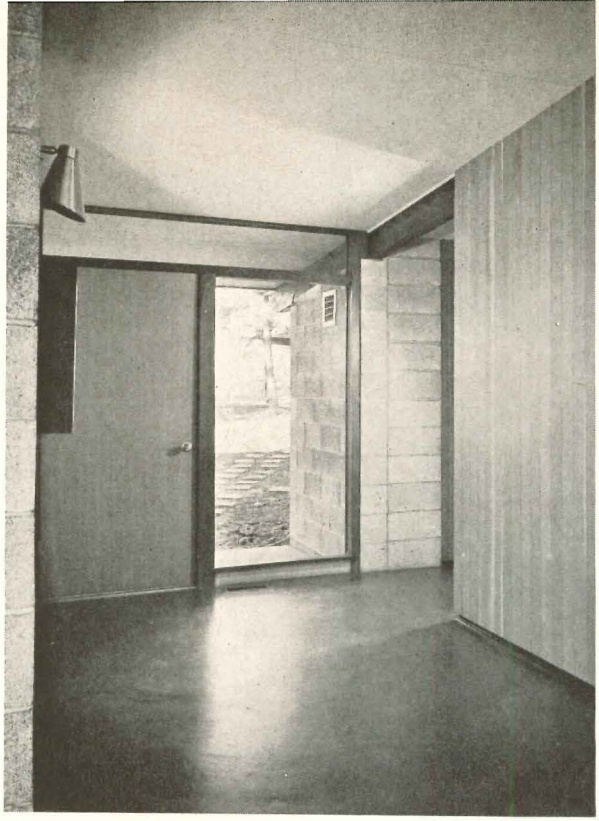


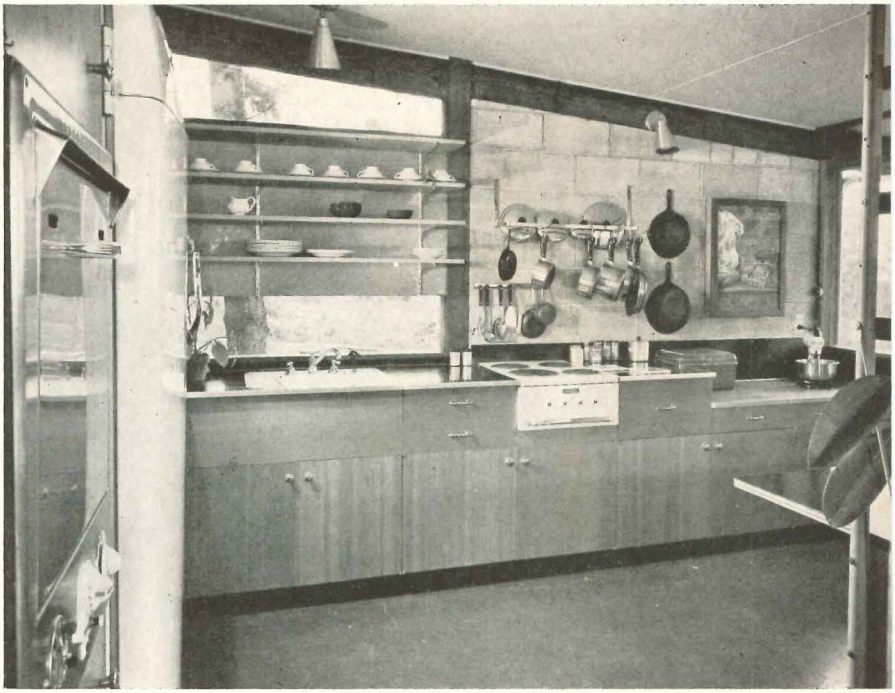


It would be interesting to quote at length from the architects' remarks about this house. But the quoting started with the clients, who sent the architects a long quote from Thoreau, starting: "I sometimes dream of a larger and more populous house, standing in a golden age, of enduring materials, and without gingerbread work, which shall consist of only one room . . ." Well, as the plan shows, the house could not exactly be vast, and ended up with three bedrooms, study, guest room. But the philosophy shows in the open cooking, eating, living space. It shows, too, in the materials. It is well known, around Puget Sound, that these architects have done much with the open space idea, and with the new materials. And now for the quotes from the architects: "We feel that this is one of the most difficult problems — this conflict between the use of new materials and, rarely, new forms and the avoidance of a self-conscious 'modernism' . . . Still I think that the Brown house is more successful than some others where we may have tried too hard."

"It is in the people themselves that any impetus for definite architecture characteristics



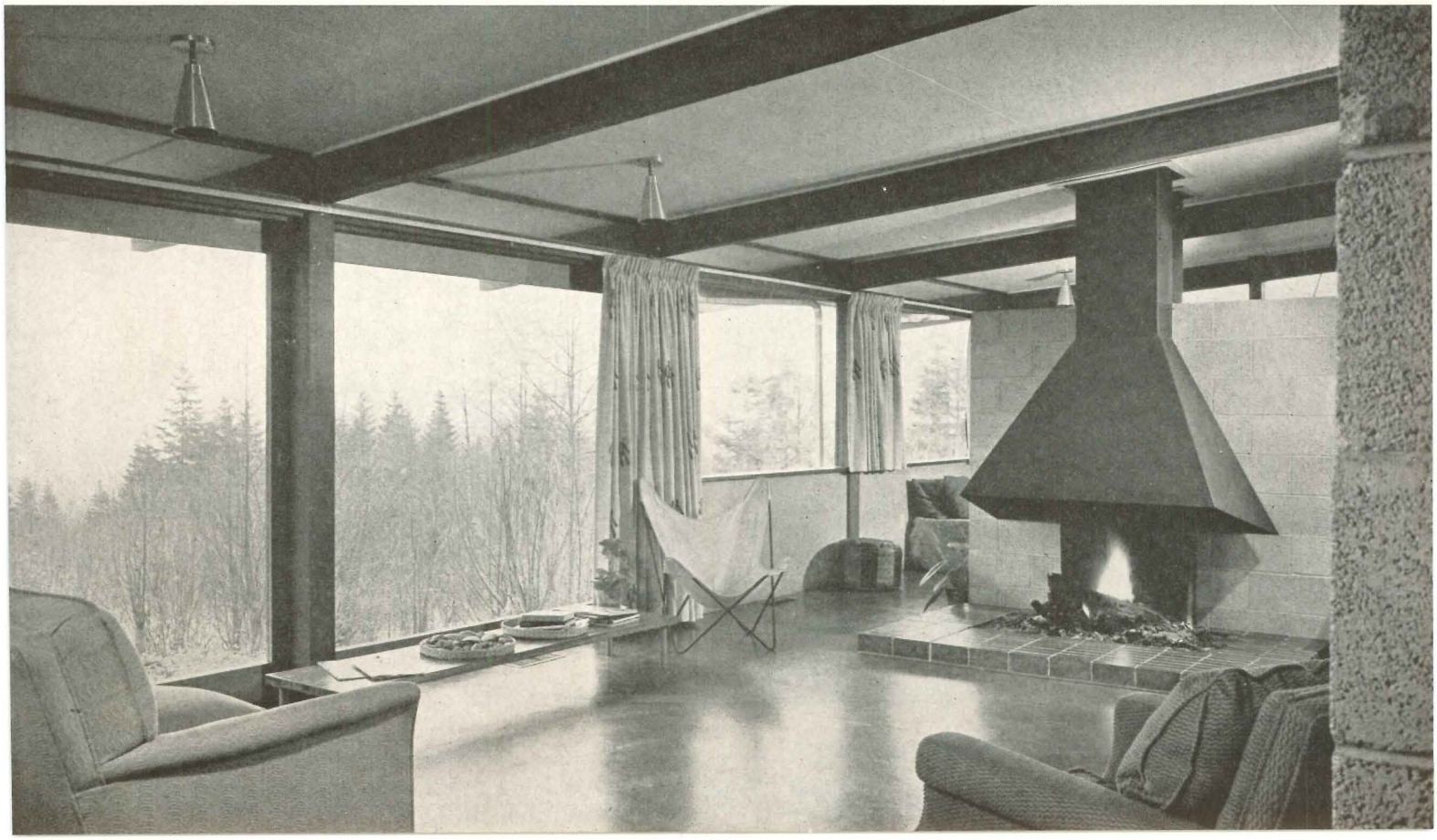


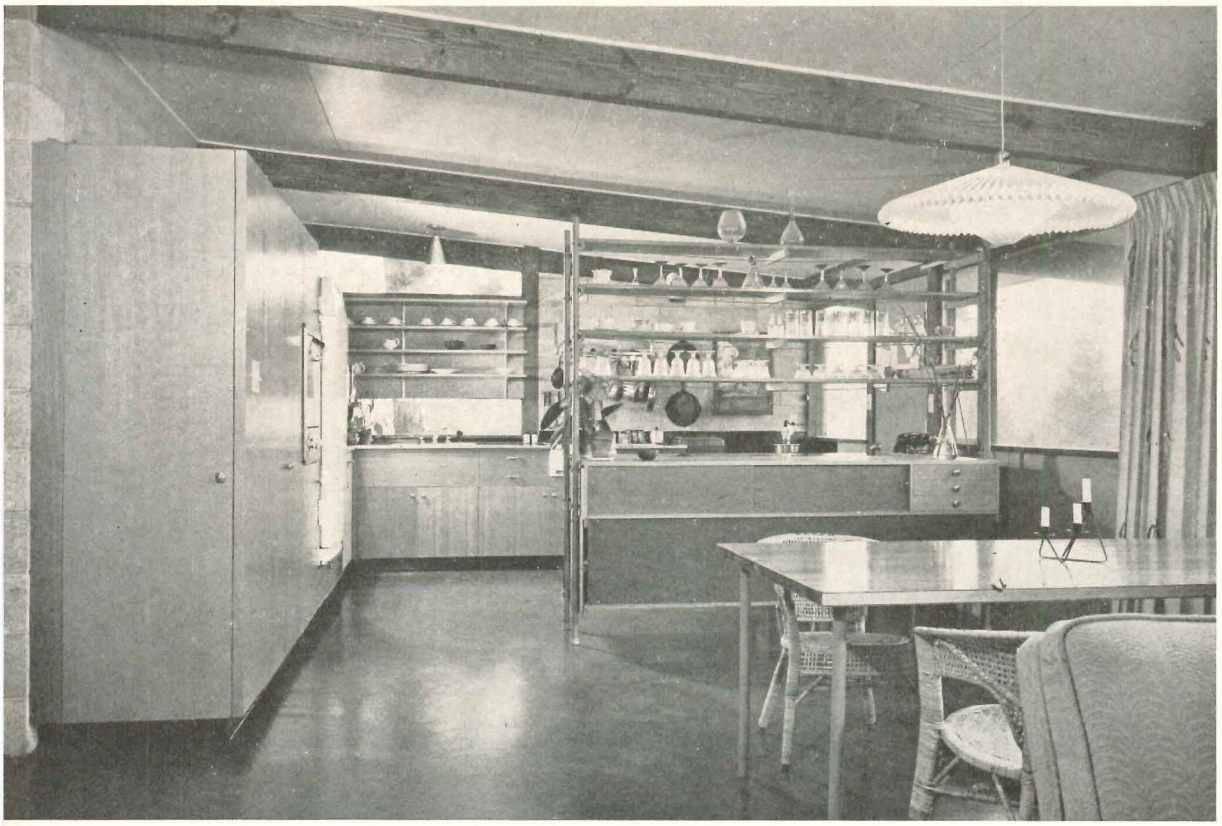


Chas. R. Pearson

Also from the architects: "Wendell Lovett's furniture and fireplaces give it a sparkle inside which helps, even though they don't conform exactly with the 'barn and hearth' philosophy."

must spring, if the potentials of the setting, the climate and history are to be energized."

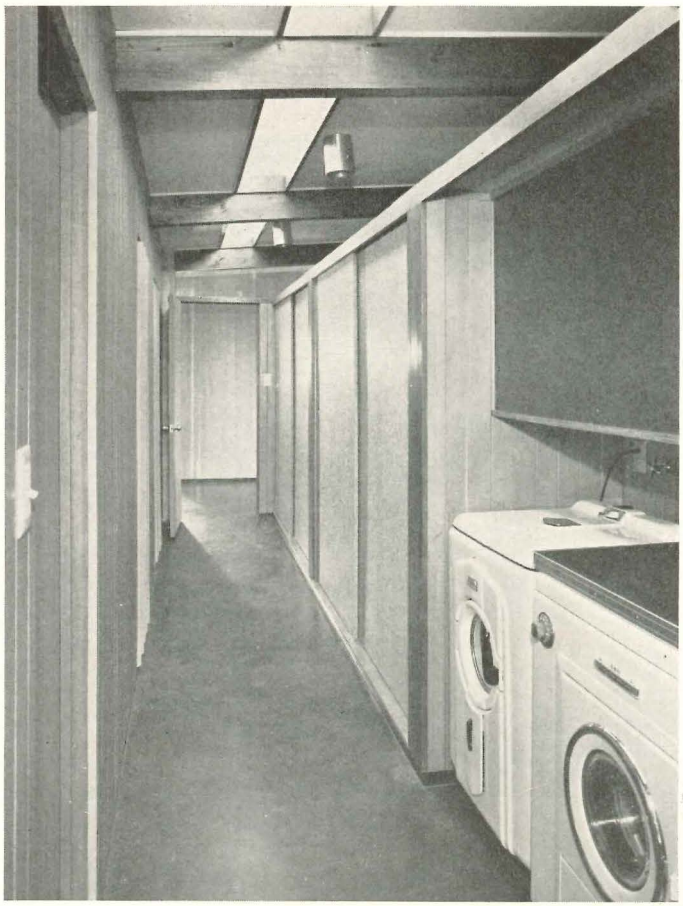


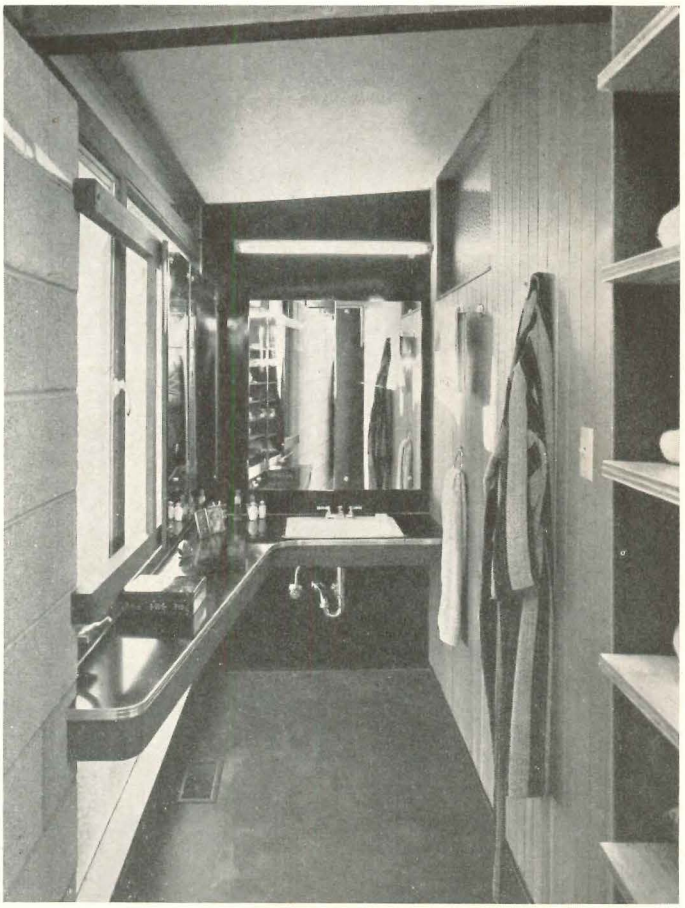


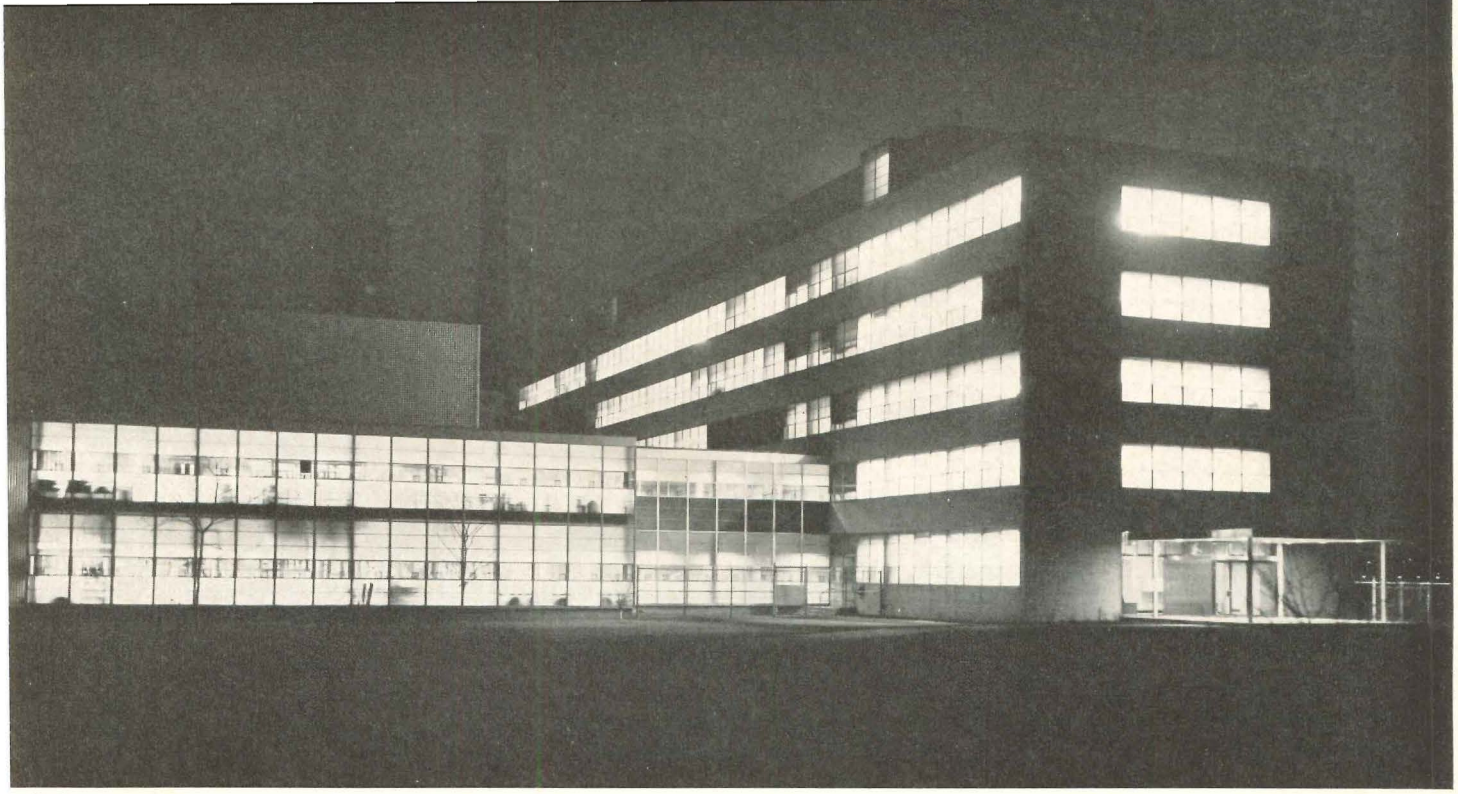
Chas. R. Pearson

". . . above all is a new, deep-felt appreciation of the majestic setting of Puget Sound."

In contrast with the openness of the living area, the bedroom space is on the efficient side, the corridor lined with huge closets and serving also as laundry, and where quite as convenient?







ry Cooke

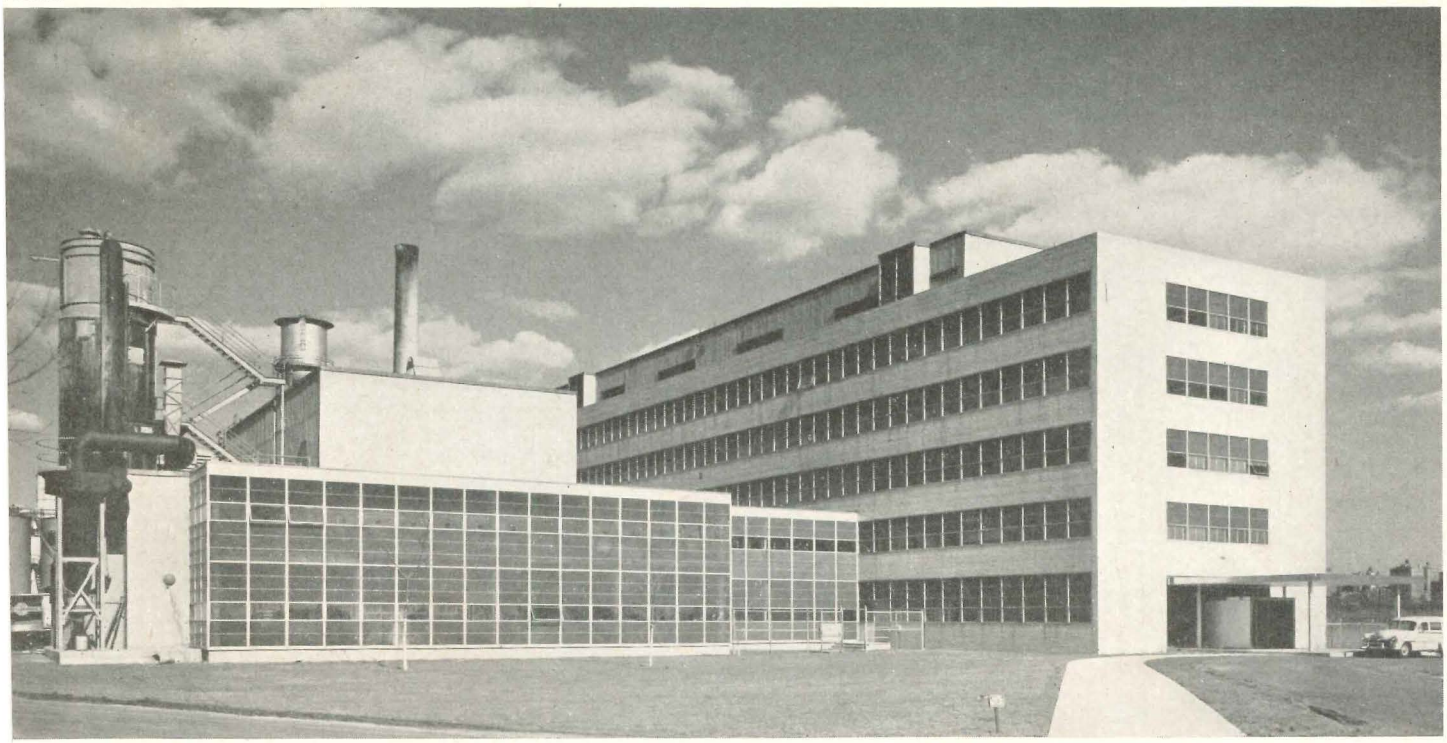
LEVER BROTHERS' NEW RESEARCH CENTER

Skidmore, Owings & Merrill, Architects

IN the wake of the tremendous publicity wave attracted by its glittering tower in Manhattan, Lever Brothers Company has announced the opening of another crisp new building designed for them by Skidmore, Owings & Merrill. Located across the Hudson in Edgewater, N. J., the new Research Center houses the consolidated development and improvement facilities for the company's many cleansing, health and beauty-aid products. Due to the relative remoteness of the site, which adjoins the company's Spry plant, it was not intended to have the same public visiting appeal of the famous office building.

The Center consists of two connecting buildings: a steel and glass pilot plant for study of manufacturing processes; and a brick, reinforced concrete and glass laboratory for research and testing of products.

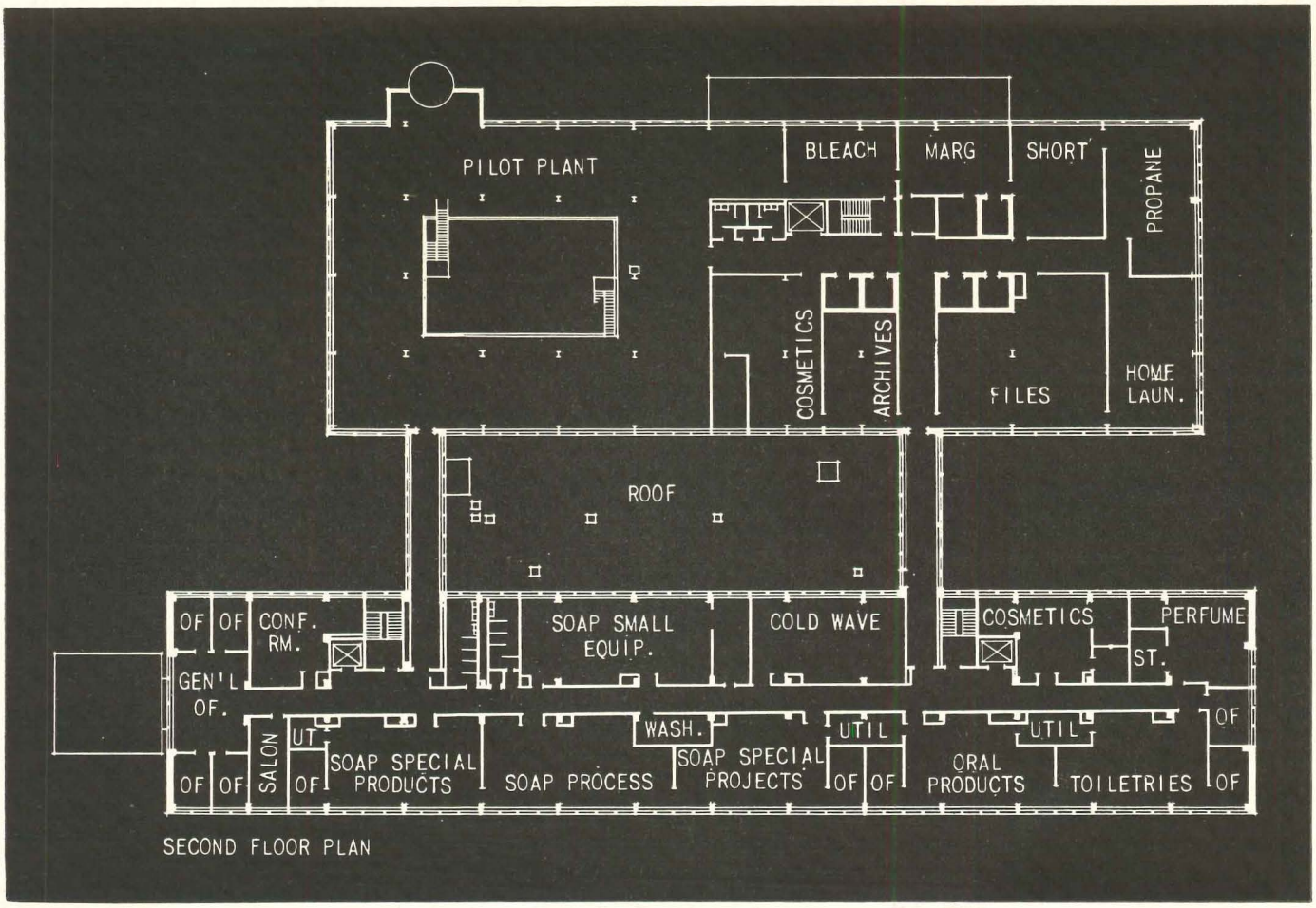
n Schnall



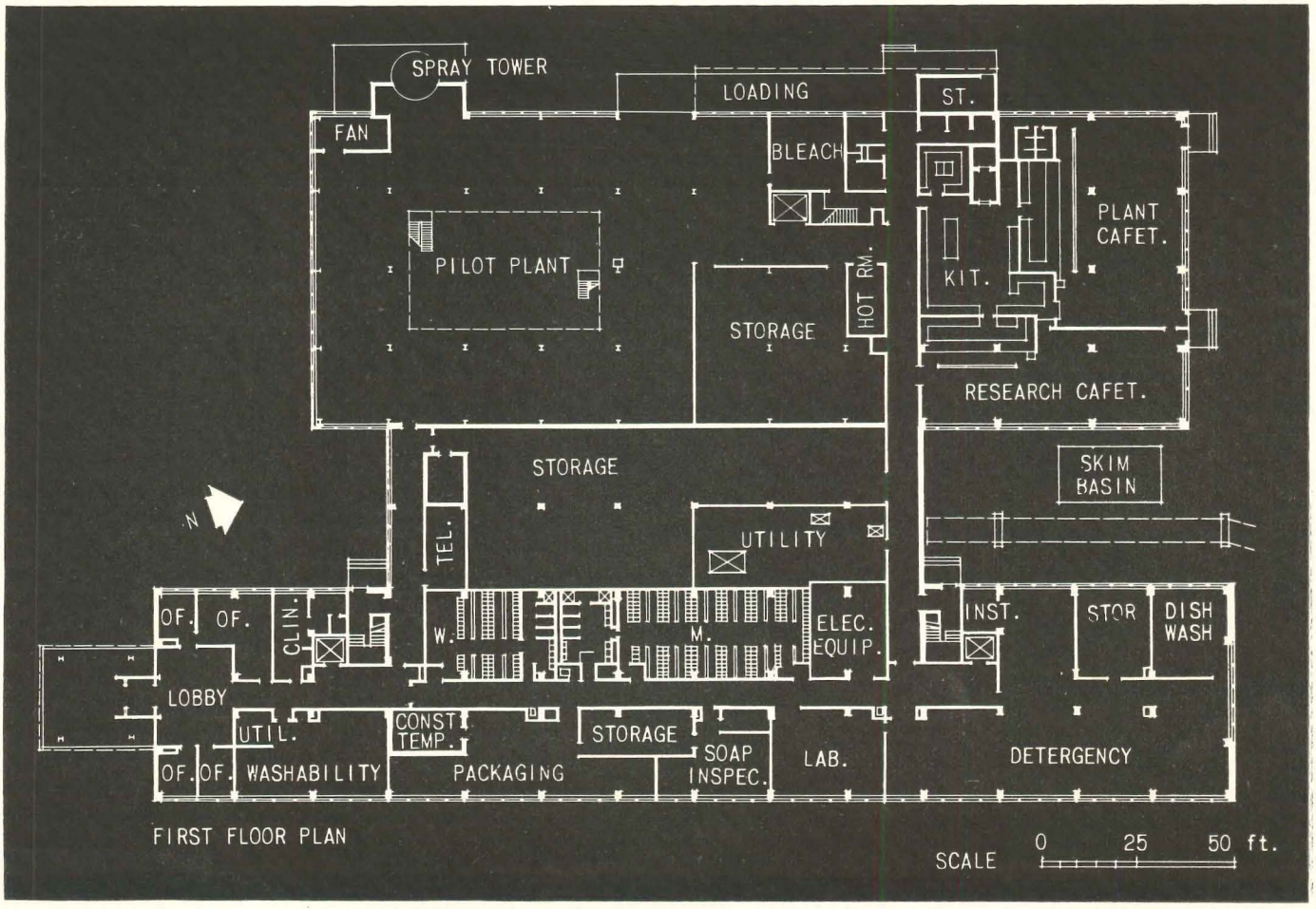
Bechtel Corp., Contractor

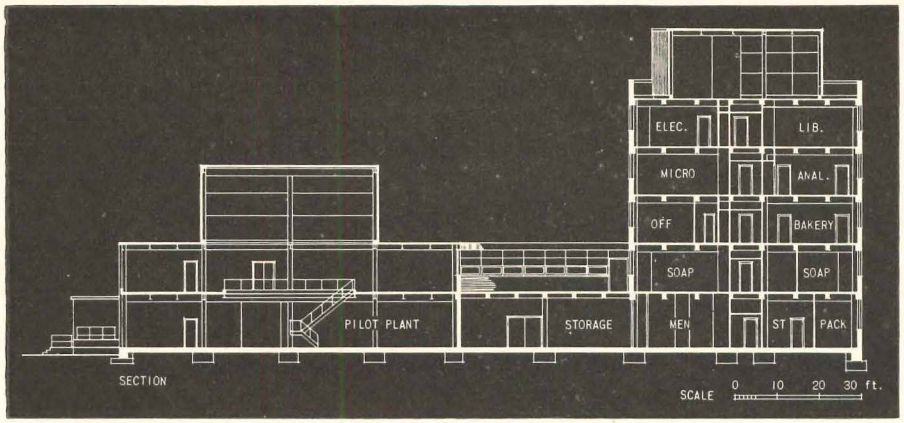
Sears & Kopf, Mechanical Engineers

Strobel & Salzman, Structural Engineers

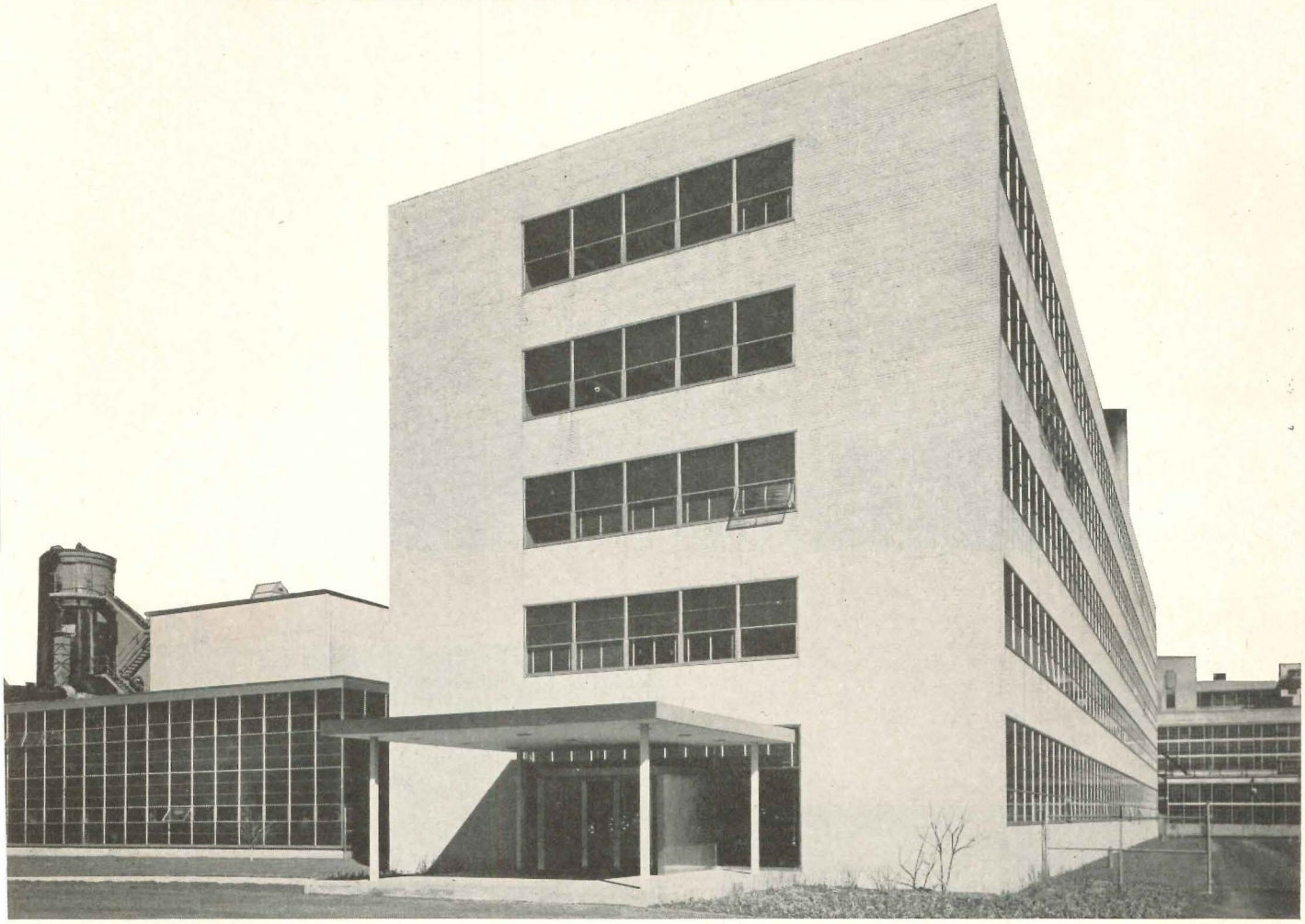


Flexibility for experiments is afforded by open planning in pilot plant, movable cinder block partitions and corridor pipe ducts in five-story lab





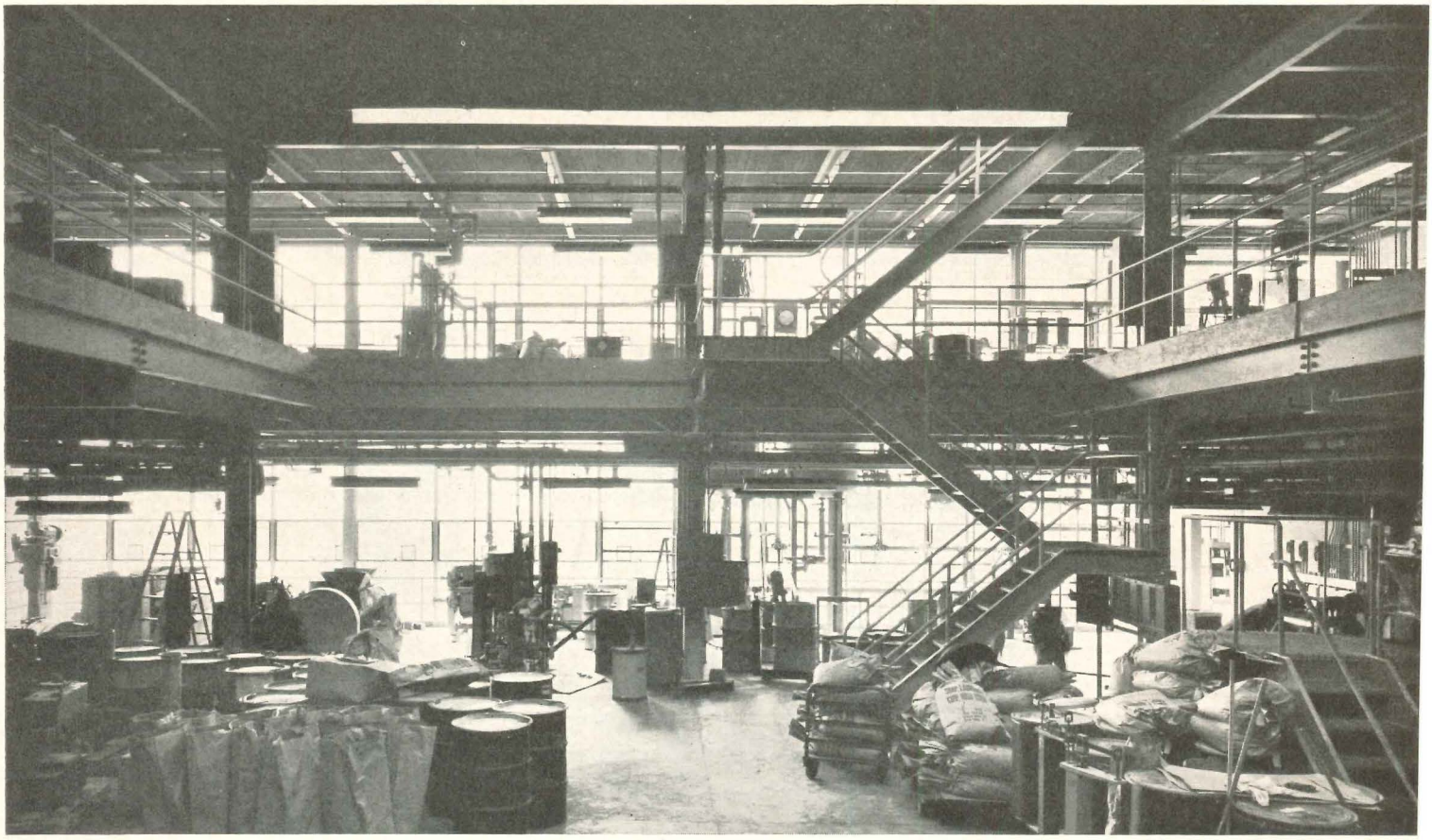
LEVER BROTHERS' RESEARCH CENTER



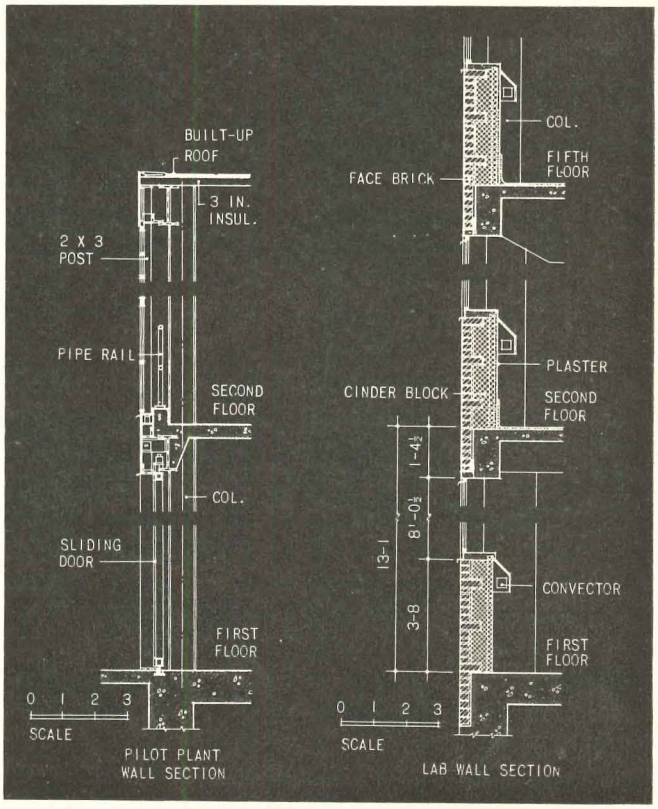
Ben Schnall

Heat-absorbing strip windows and glass walls daylight all research areas. The building is fireproof, air conditioned throughout. Interiors are simple, functional: walls are painted or plastered; ceilings are concrete or acoustic tile, have painted exposed pipes; floors are concrete or asphalt tile. Steam is supplied from adjoining Spry plant; one cafeteria serves Spry employes

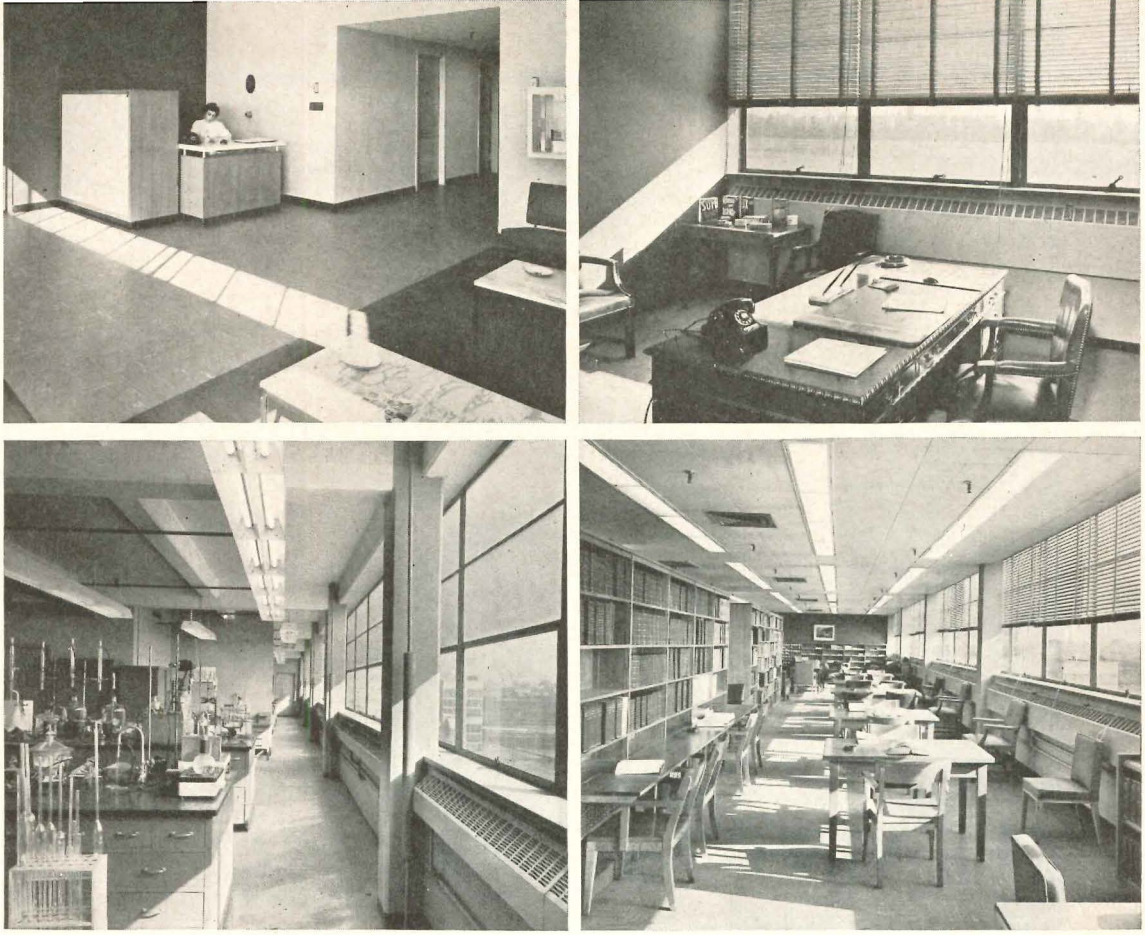
Ben Schnall



The pilot plant (above) has great flexibility for setting up experimental equipment. Below: cafeteria section for the 300 research employes

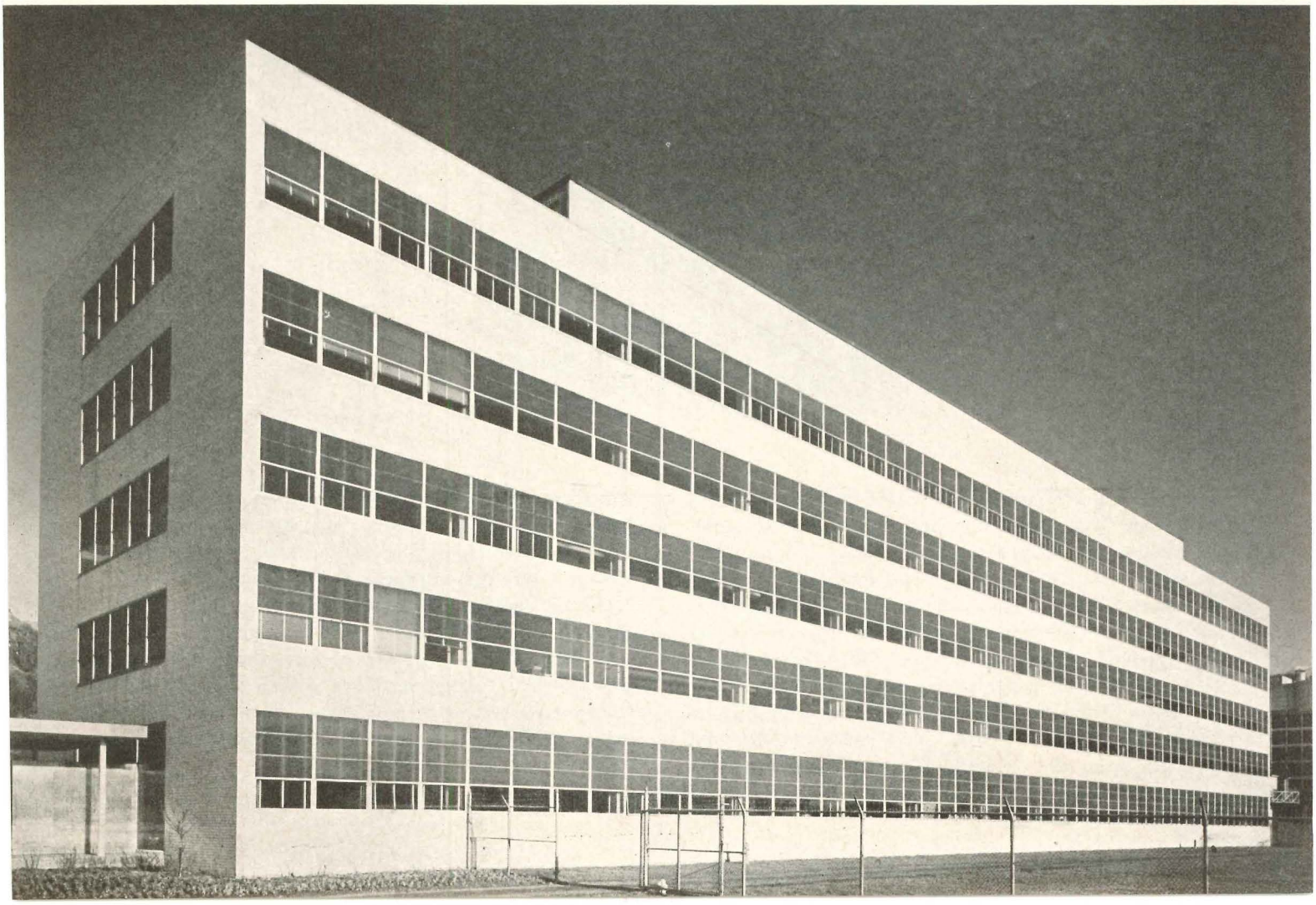


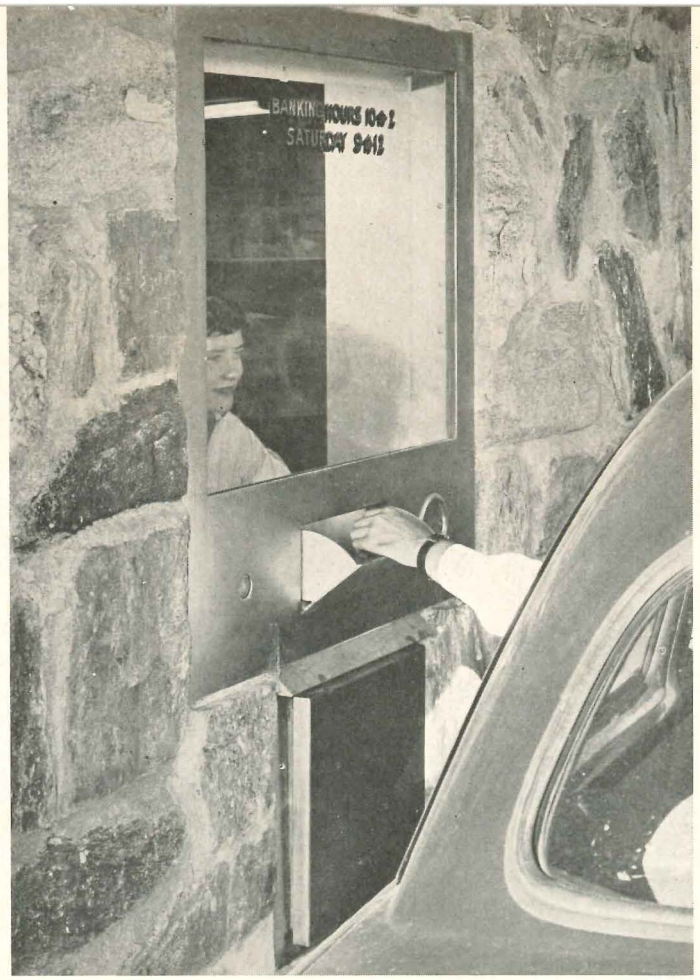
Sections at right compare the structures of the two buildings. Both were originally planned with steel structure, lab design changed due to shortages



Typical rooms: top row, lobby, office; bottom row, research lab, library, all are in lab building

Below: buff brick lab exterior seen from river. Adjacent Spry plant is in background, far right

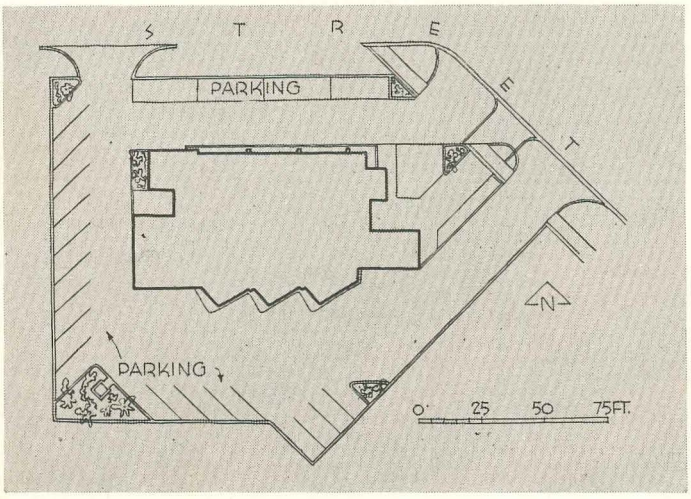




Edward L. Varney, Associates

Architects and Engineers

DRIVE-IN BANK STRESSES ROADSIDE ADVERTISING



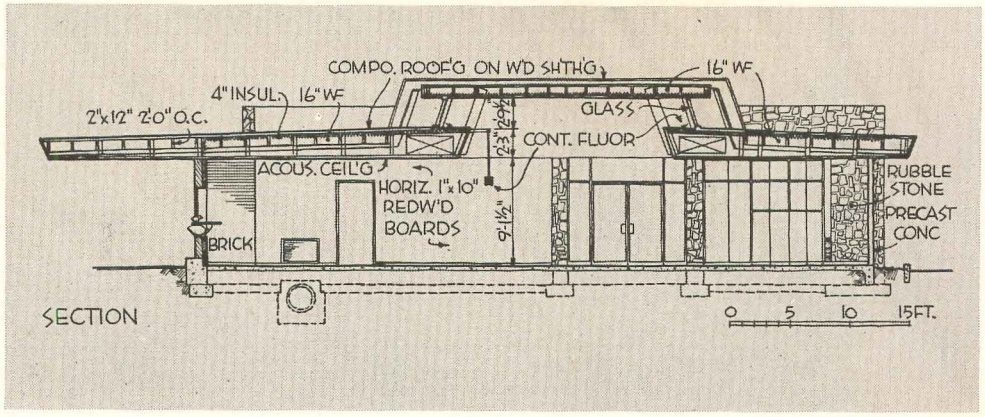
Six Points Branch

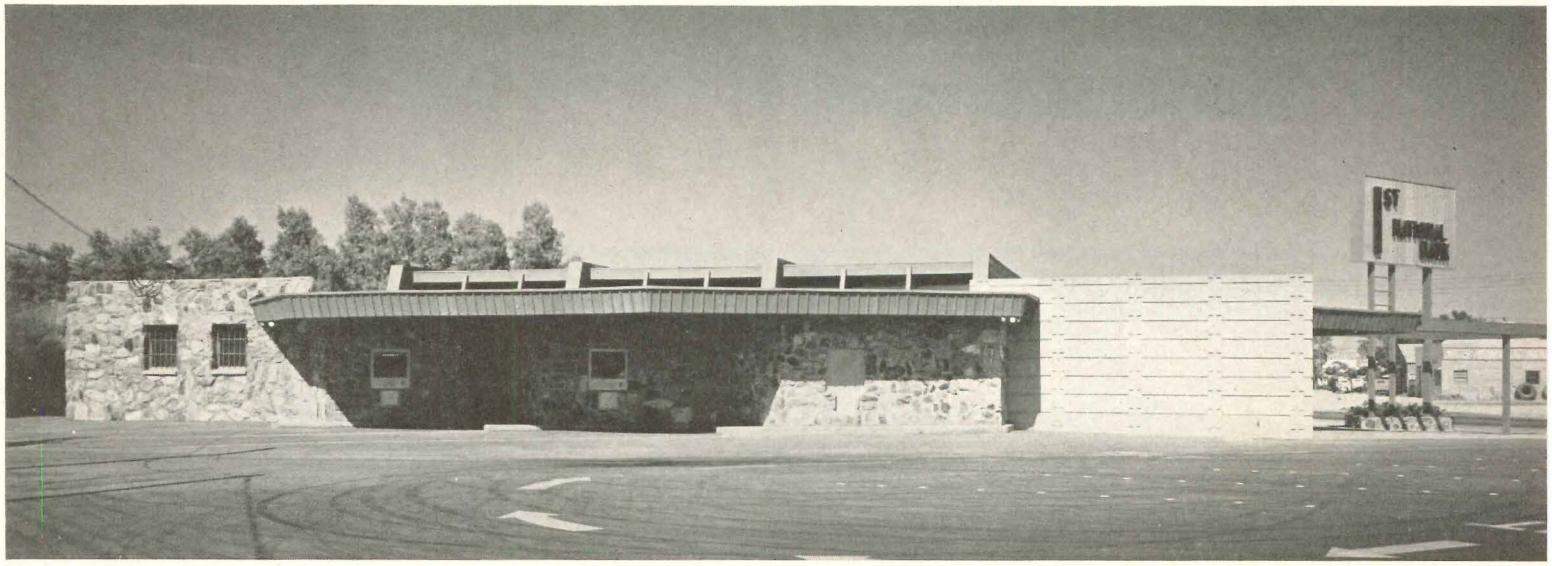
First National Bank of Arizona

DRIVE-IN BANKS are still in the experimental stage, as the architect of this one in Phoenix points out. Like the motel and the retail store, they require a site on an important traffic artery and a plot large enough to accommodate driveways and parking areas; unlike their predecessors, however, they need special security facilities and must overcome the traditional conservatism of their owners if they are to be successful.

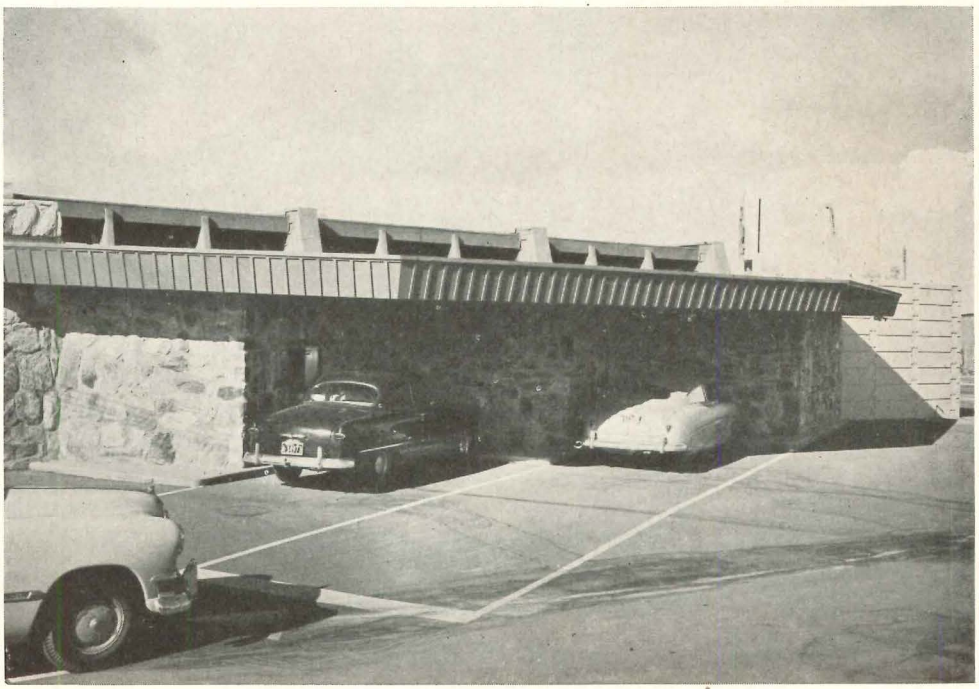
This new bank in Phoenix was planned to serve an expanding industrial district on the edge of the city. The site is on the principal East-West highway, well suited to a silent advertising campaign stemming from an attention-calling building. The exterior was designed with this advertising potential in mind: hence the bold canopies over the entrances, the towering un-bank-like sign, the native field stone, redwood and precast concrete selected to reflect a "desert feeling."

A saw-tooth arrangement of three drive-in windows was adopted to permit quick servicing at all hours; the windows were placed on the south side of the building at a 90 deg angle to the main thoroughfare in anticipation of the probable traffic flow.

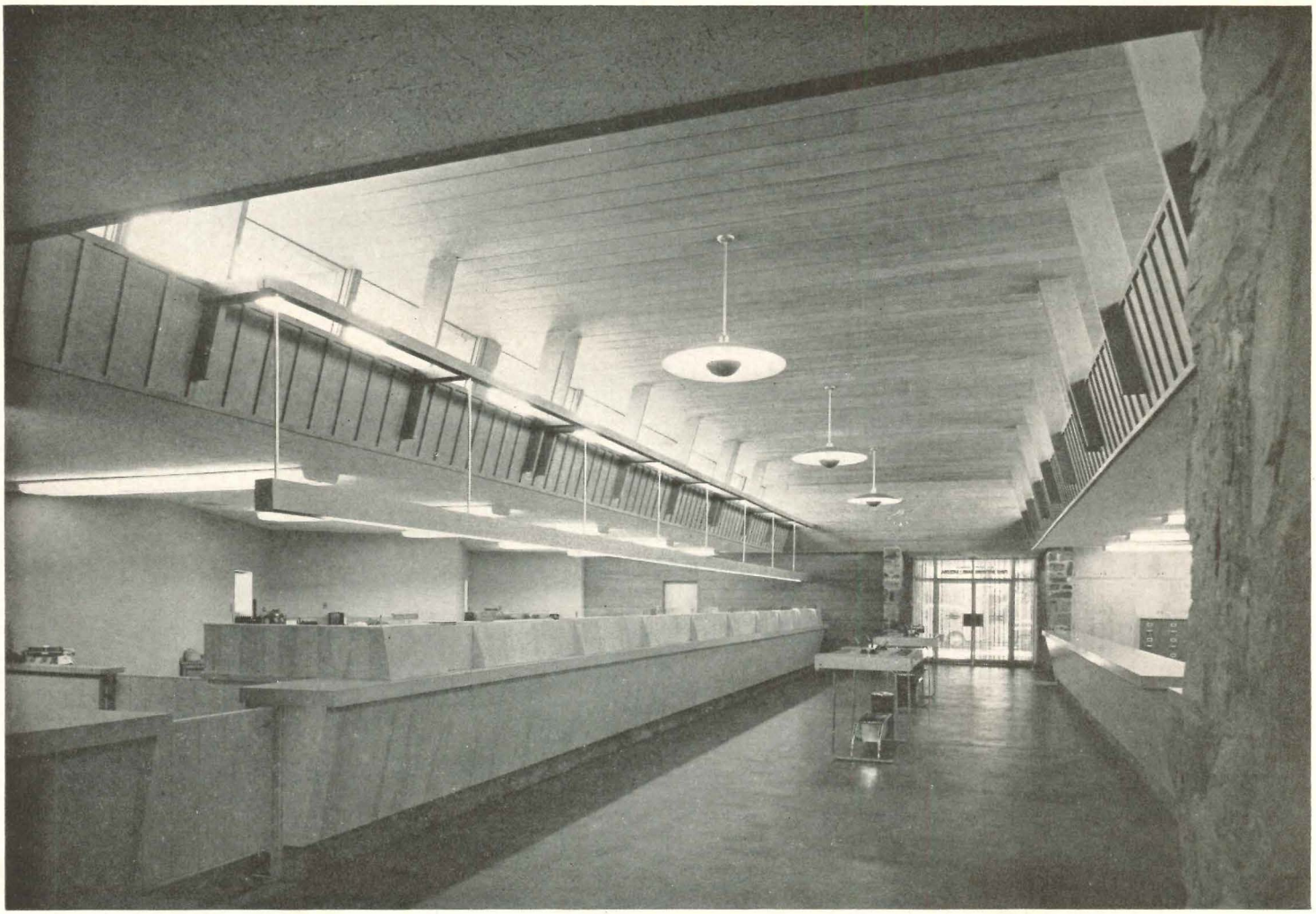




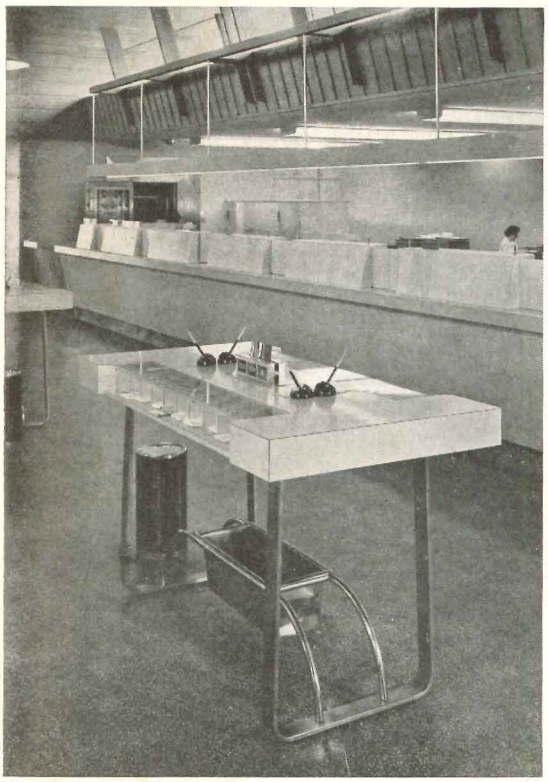
Stuart A. Weiner

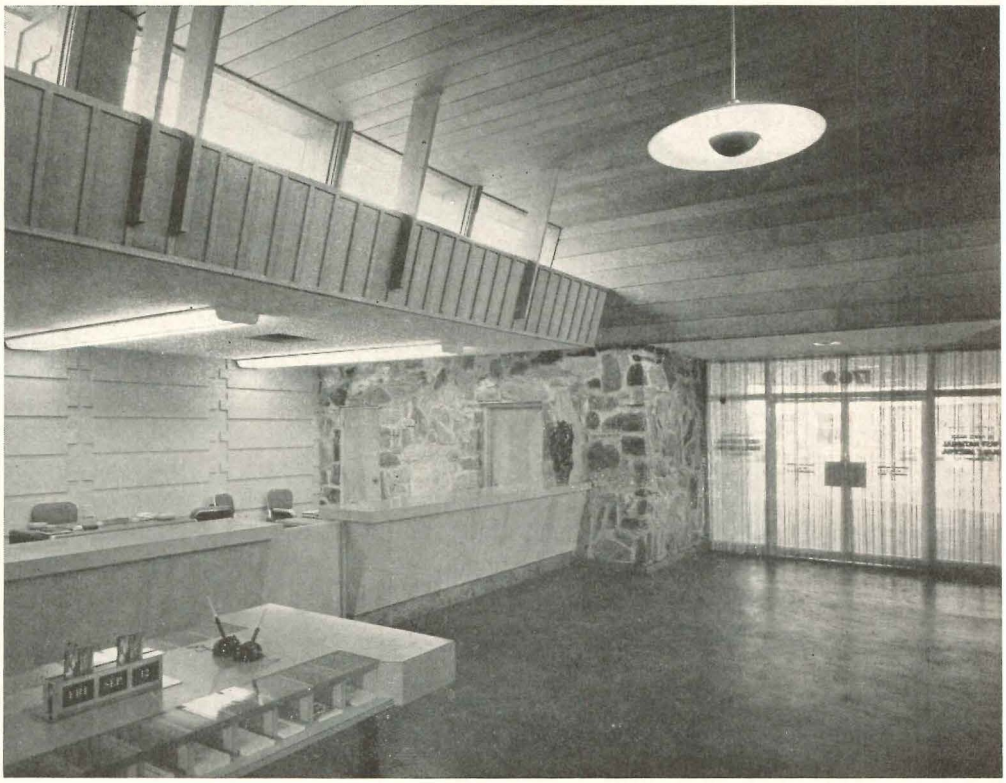


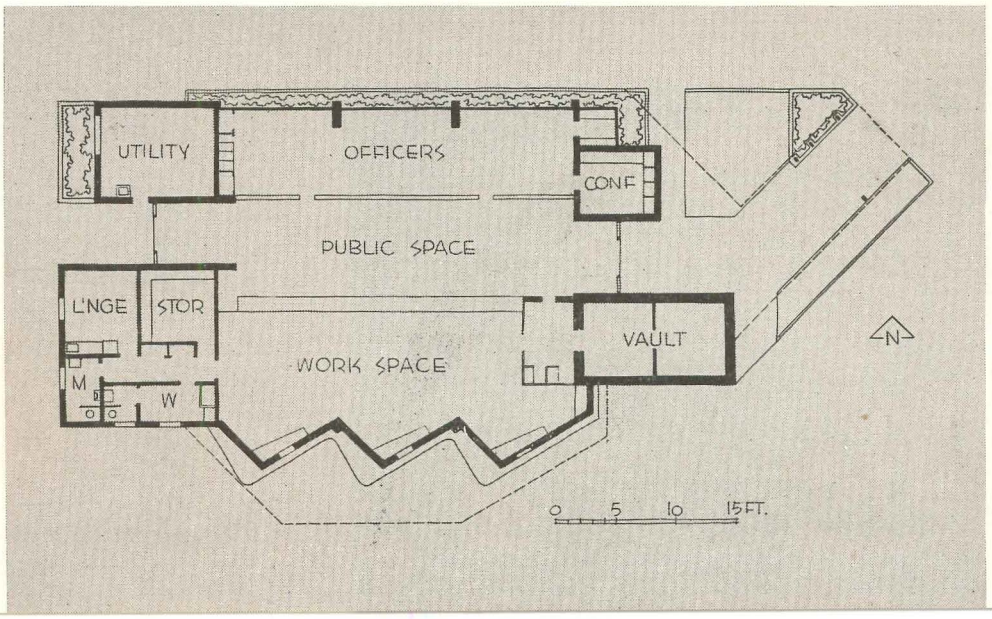
Stuart A. Weiner

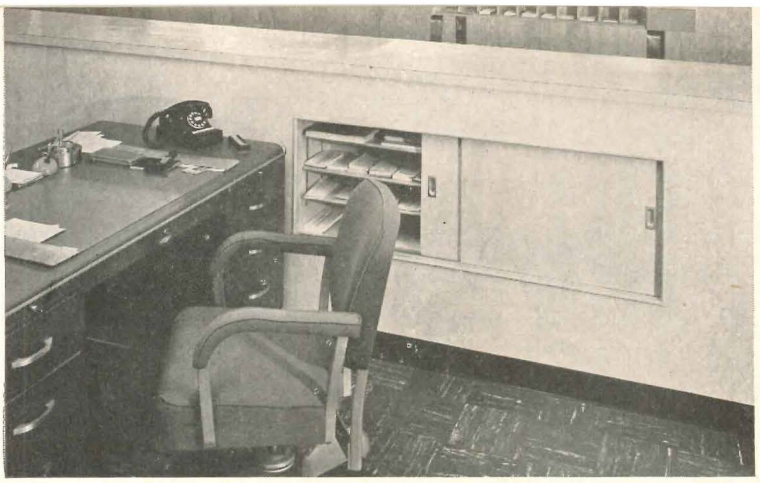


Main entrance (opposite), at eastern end of building, is marked by huge sign typical of drive-ins; night depository is at right of doors. Public space runs straight through building from east to west, with an entrance at each end, tellers' "windows" along one side and officers' platform along other. Owner's requirement that no glass be used on either side wall resulted in clerestory; main banking area was kept free of columns by use of rigid steel frames for clerestory, carrying moment over to the outside walls. All materials used on exterior are repeated on interior: redwood in ceiling over public area, field stone and precast concrete in walls. Clerestory windows are heat-absorbing

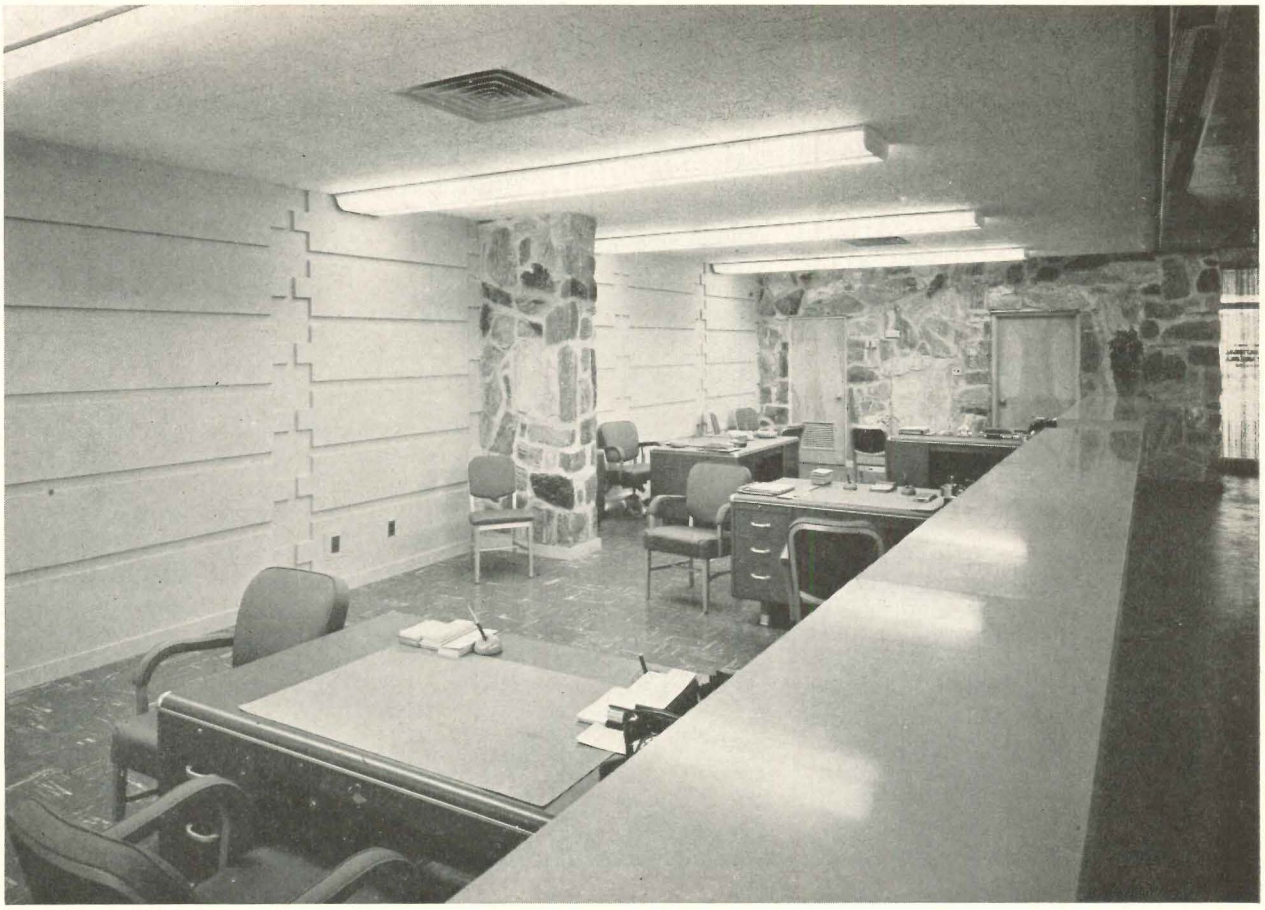




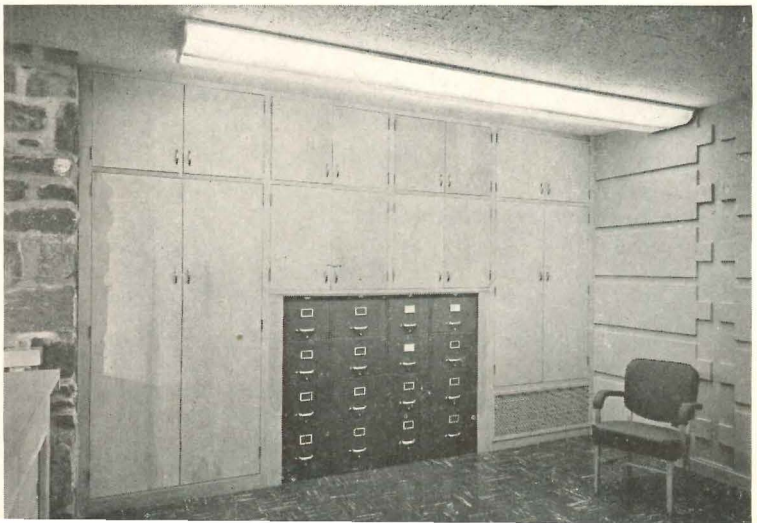




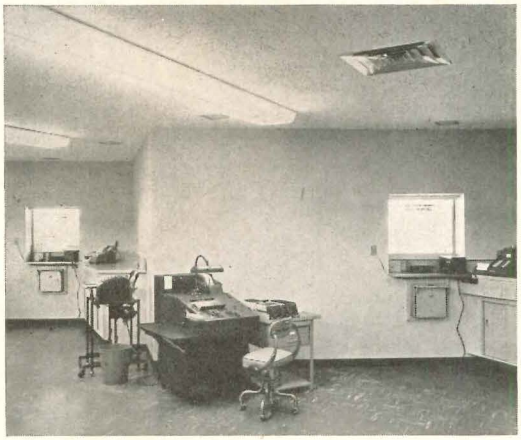
Officers' platform (left and below) is separated from public space by long counter containing storage cabinets. Ceiling here and in work area on opposite side is acoustic tile; lighting is fluorescent

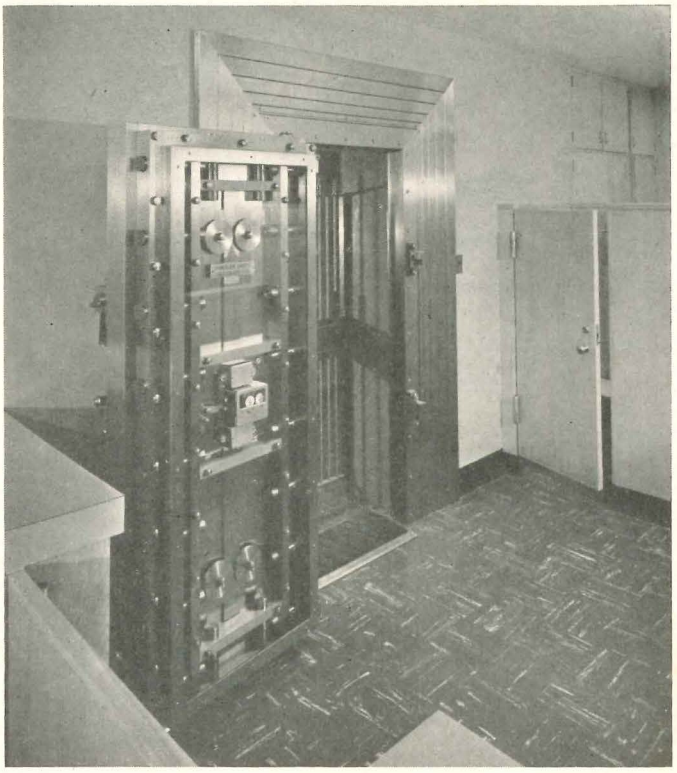


Stuart A. Weiner

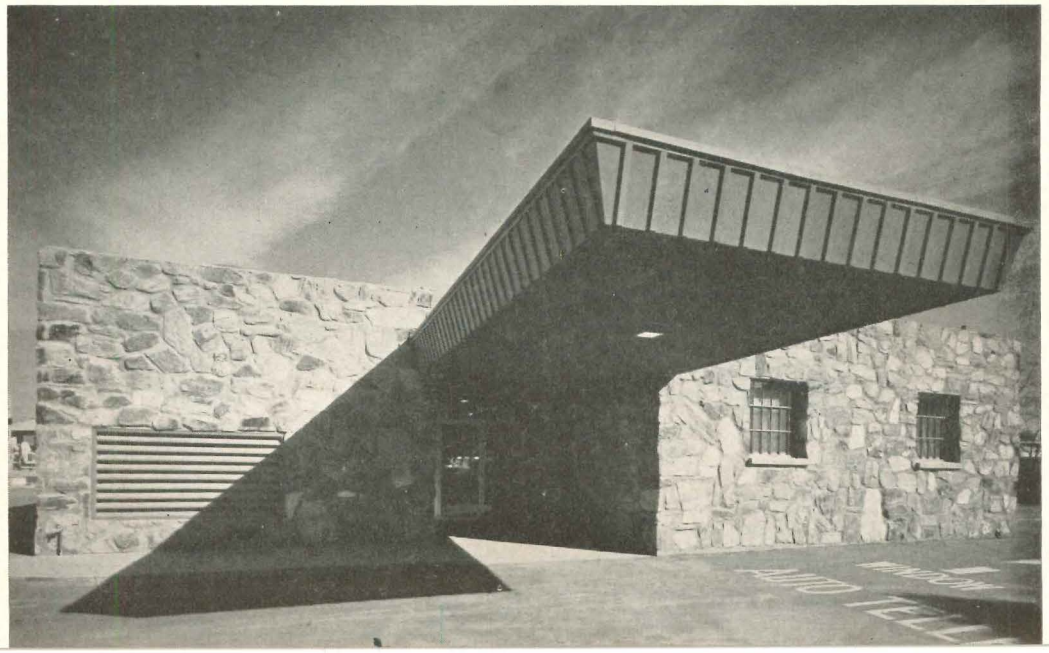


At one end of officers' platform is wall of closets and cabinets, plus built-in steel filing cabinets. At other end (above) doors lead to small storage room and staff conference room





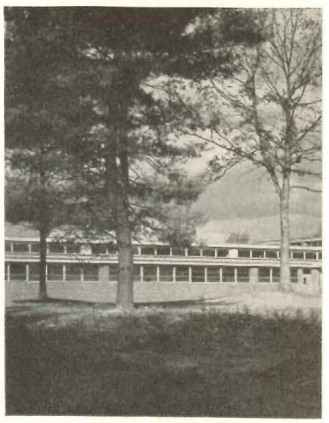
Above: drive-in windows are served from built-in counters directly across work area from tellers' "windows." Below: canopy over western entrance is 18 ft deep; louvers in wall are redwood, ventilate utility room. Note pavement markings directing traffic to the three drive-in windows

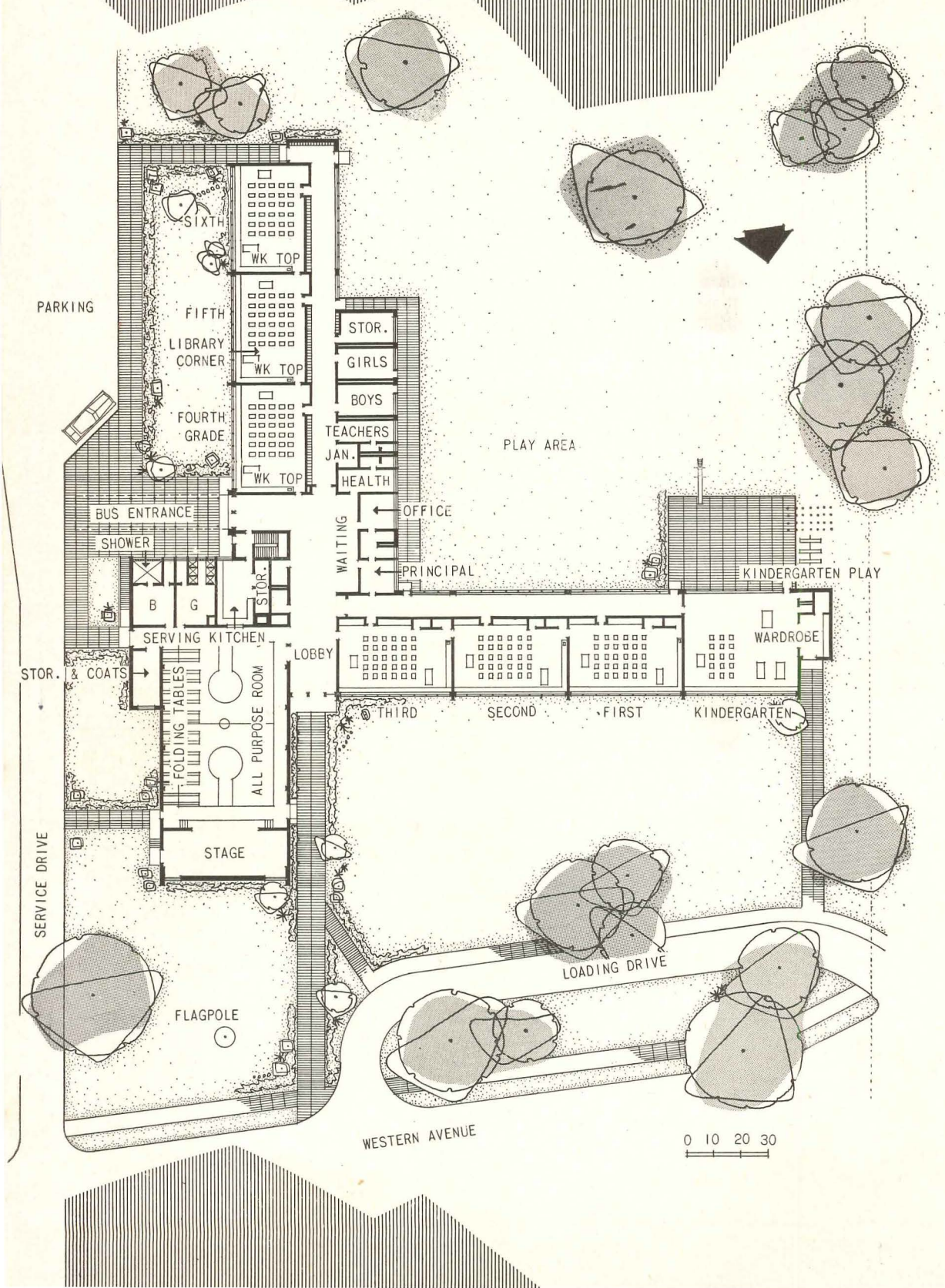


THE SCHOOL AS A DURABLE ASSET

James A. Britton

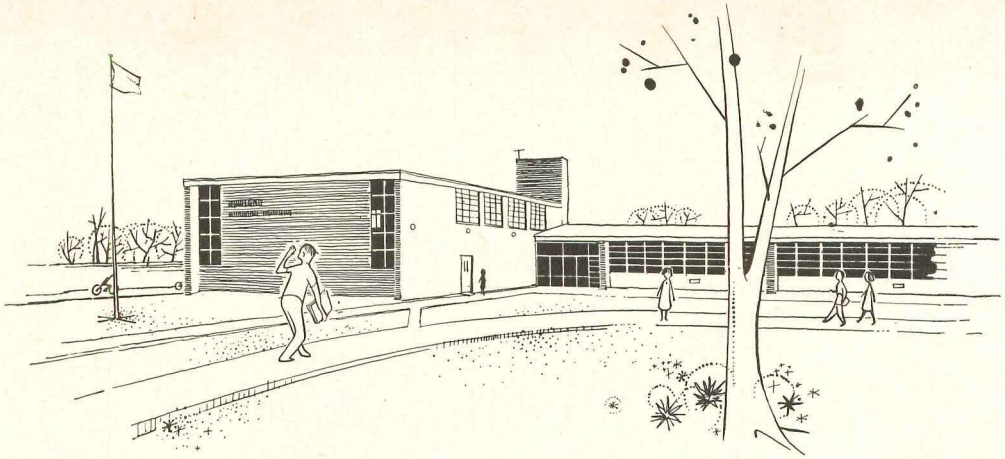
Architect



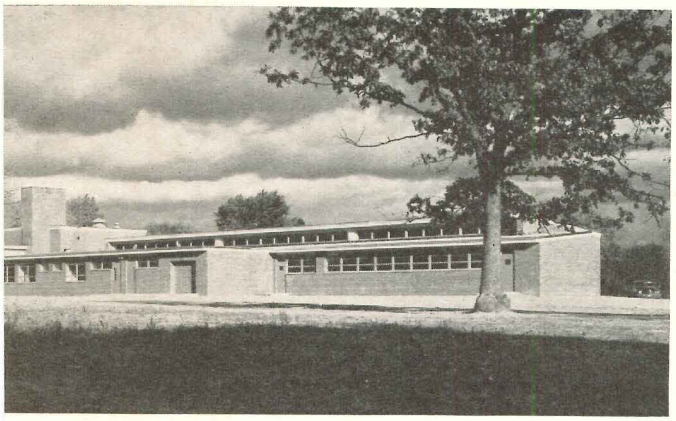


Malcolm B. Meyer

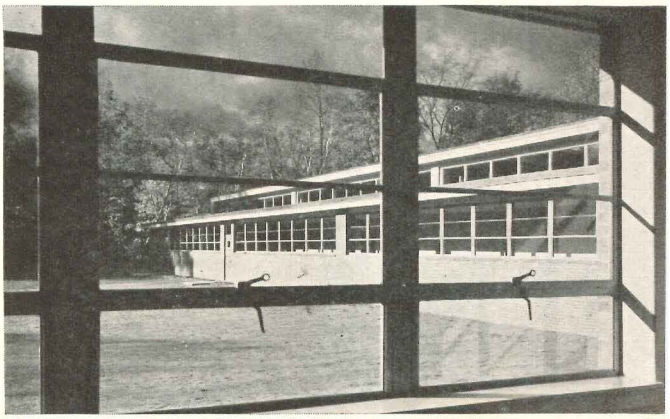
Mechanical Engineer

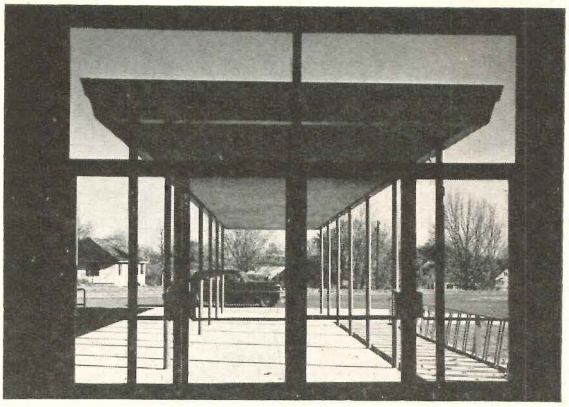


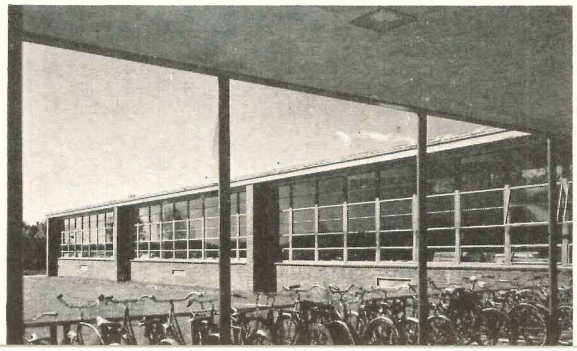
HIGHLAND ELEMENTARY SCHOOL in Westfield, Mass., is interesting as the result of an unusual planning procedure as well as in relation to the community it serves. Westfield, like many American cities, is fundamentally conservative and rightly so. Its citizens recognize that, however we may speak of change and obsolescence, a school building is almost certain to be used for many, many years. It has to be well built. Both as an investment and as an environment for children, it is evident that Westfield's school building committee and board of education have demanded as sound construction as the budget would permit. This has not prohibited the advances in structural design or use of pleasant color which we associate with good modern school buildings; but it has meant that such materials as concrete block become a back-up for face brick, a subsurface to be plastered, and not the entire wall; that corridors have full walls of ceramic tile rather than less durable materials. At the same time, the design concept is the result of an informal competition held in the architect's own office; the winning scheme, modified only as competition winners are usually developed, is the school shown here.



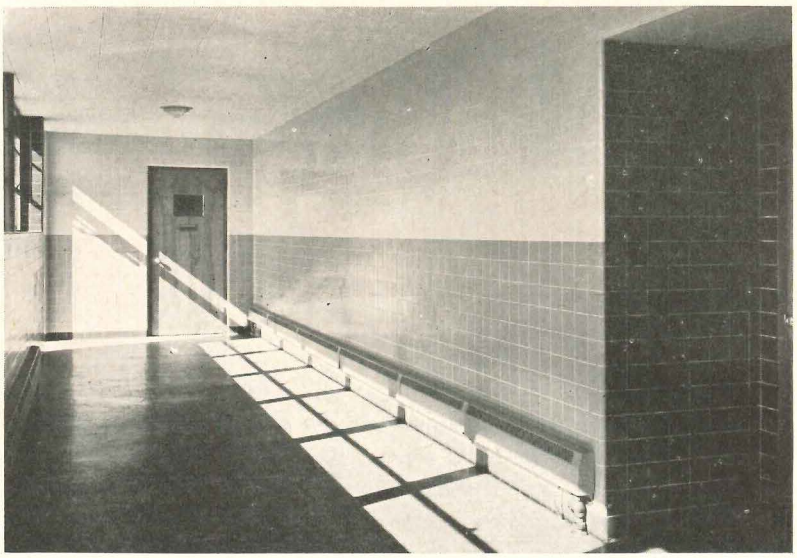
Joseph W. Molitor





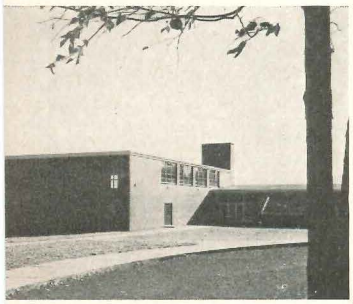


Highland Elementary is the first school in Westfield, Mass., to be designed as an entirely contemporary structure. In many respects the city is far advanced in its administration of public schools; for instance, its school lunch program has a central kitchen for the entire city, with food distributed by truck to individual schools. This means that, in each school, only a serving kitchen is needed. Above: views from playfield. Right: bicycle racks at east entrance

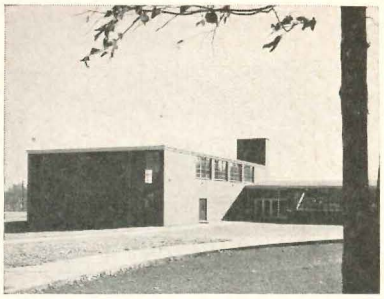


Joseph W. Molitor

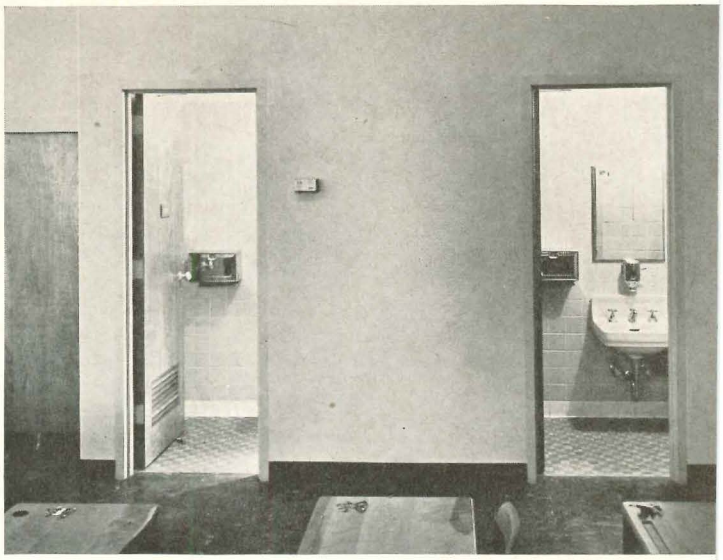
Corridors and toilets have full ceramic tiled walls; acoustic ceilings are used throughout. Above, corridor leading to lower grades; through door at end, one enters the large Kindergarten room shown on the facing page. In this room, corridor width is added to room dimension, while the clerestory windows are uninterrupted. Below, main lobby, from which are reached upper grades and administrative offices; lower grades; and multipurpose room

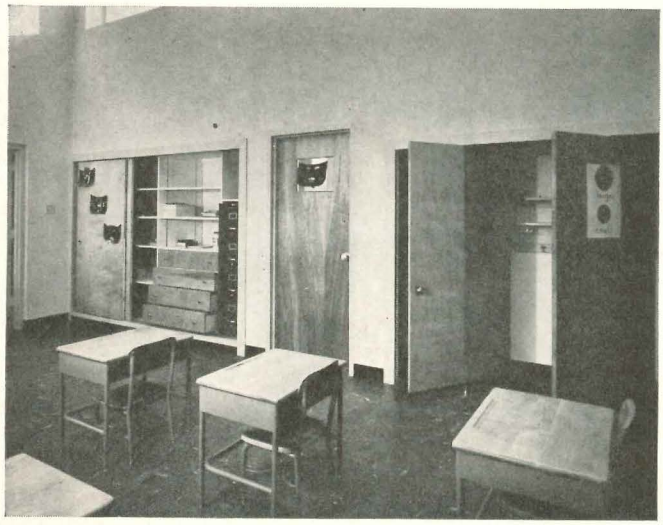


Above, Kindergarten looking towards toilets and wardrobe; below, toward entrance from corridor. Floors are asphalt tile; walls, plaster, cork board or chalk board

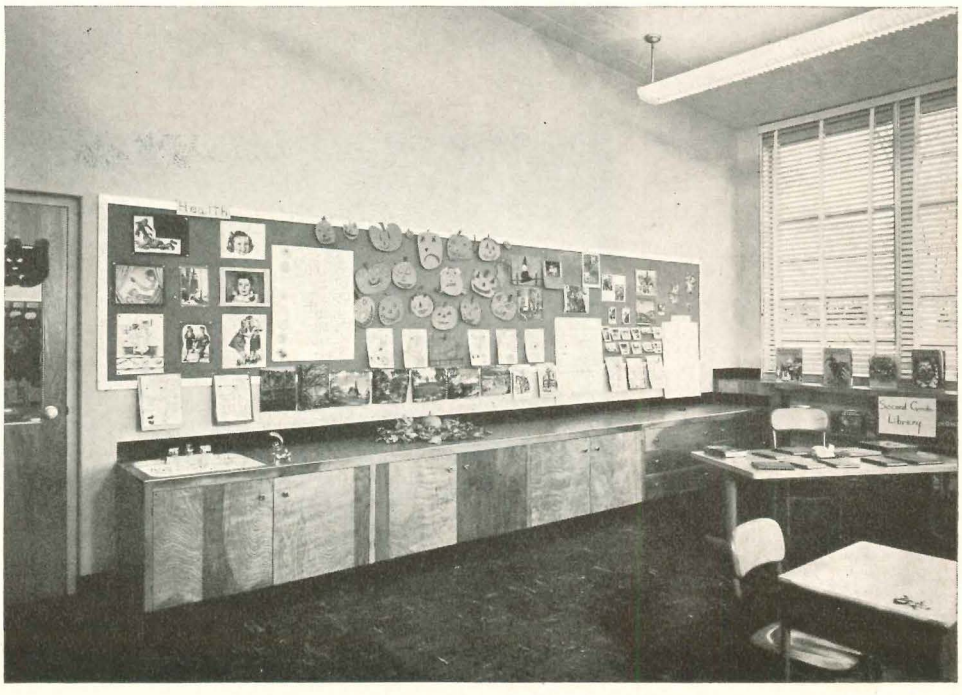


WESTFIELD ELEMENTARY SCHOOL



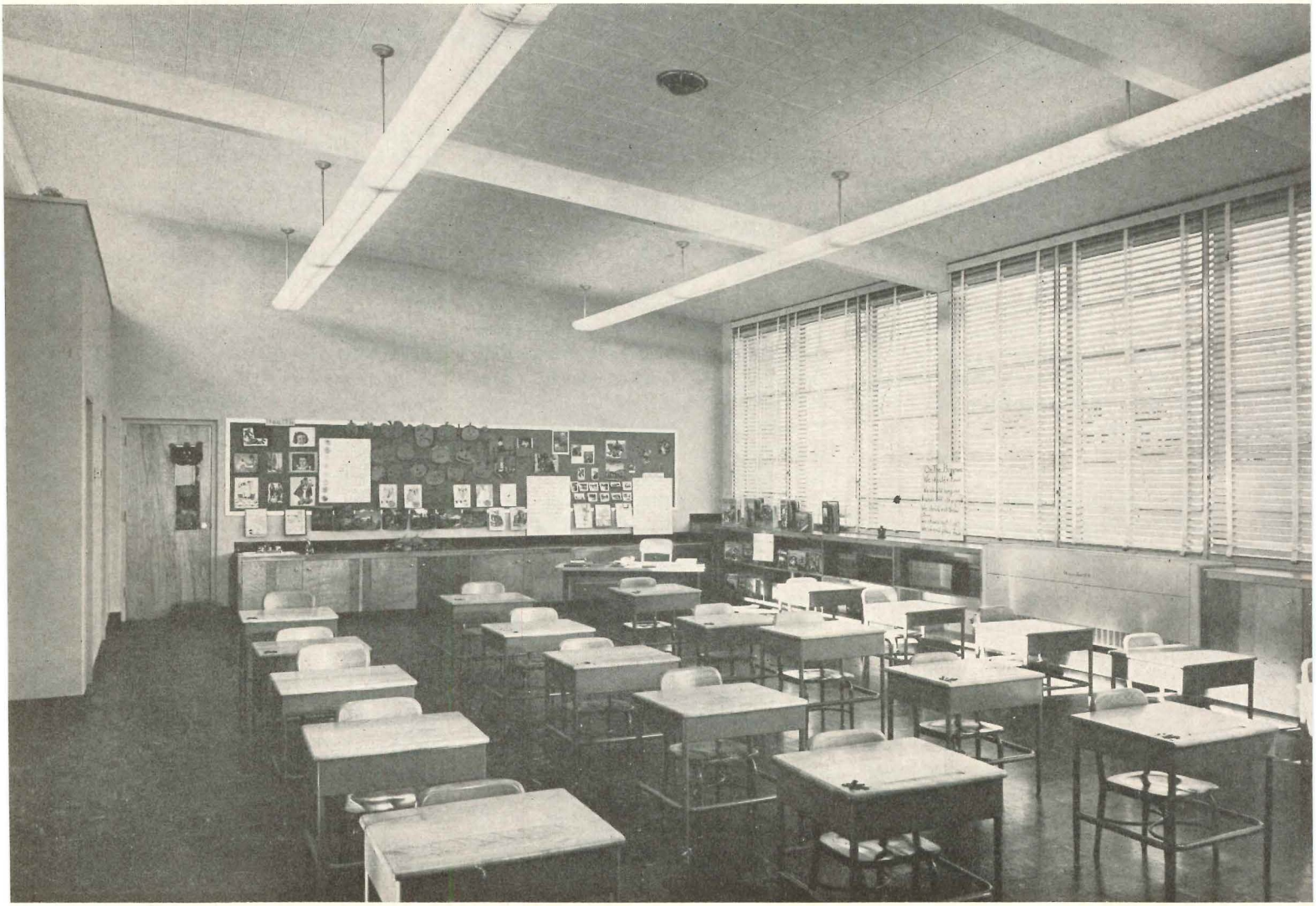


Typical classroom, shown on this page and at bottom of facing page, is approximately the same for all grades; only real difference is inclusion of toilets (photo above) for lower grades. At left, storage cabinets built in along corridor wall of lower grade rooms. Below, work counter, sink and tackboard common to all rooms



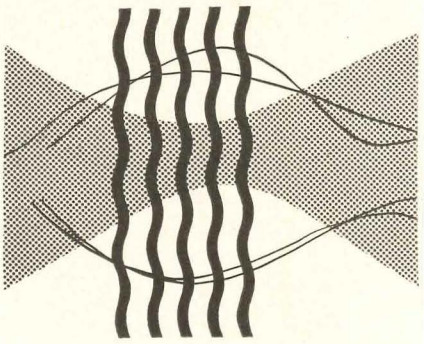
Joseph W. Molitor

Above, corridor in wing devoted to upper grades. Here lockers are used; compare with wardrobes for lower grades. This wing can be extended as needed



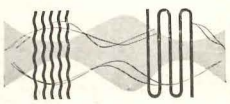
PROGRESS IN

HEATING AND



Articles on the trends in heating and air conditioning equipment and systems are not new in *Architectural Engineering*. But for the first time in a single issue all of the articles, together with *Products for Better Building*, are devoted to this subject. The reason for such expansion is the widening interest in year-round residential air conditioning, which has shown a marked upswing in the last two years. While Section 1 covers developments for all types of buildings in both heating and air conditioning, Section 2 takes up in general terms the design aspects of year-round air conditioning for residences and small buildings, and Section 3 describes the new packaged conditioners and window units. Manufacturers' equipment shown in these articles has been selected for its typicality, and such selection does not imply an endorsement.

1 RECENT DEVELOPMENTS in Heating, Air Conditioning and Plumbing (Part 1), by Nathan N. Wolpert, Associate Editor, *Heating and Ventilating*: A review over the past few years and up to the present of products and systems for all types of buildings. Part 2, on ventilation and plumbing, will appear next month.



1 RECENT DEVELOPMENTS IN HEATING, AIR CONDITIONING AND PLUMBING

By Nathan N. Wolpert, Associate Editor, Heating and Ventilating (PART 1)

MANY IMPORTANT economic factors and engineering advances have had decided influences on developments in the fields of heating, ventilating, air conditioning and plumbing in houses and multi-story buildings. Construction costs have risen so sharply that every possible means for holding them down must be considered in both building design and in the production of new equipment and products. This becomes clearly defined when one reviews developments of the past few years.

Fuels

While there has been no drastic fuel shortage within the past few years, attention has been directed to the problem of getting the most from our natural resources and in the production of synthetic fuels from coal reserves. Solar heat, which once was but a dream of popular science writers, is considerably nearer fulfillment.

Gas. At the end of 1952, the gas utilities were serving about 27,000,000 customers including about 325,000 liquified petroleum (LP) gas users served directly by gas utility companies. Of this number about 20,000,000 were receiving natural gas, a gain of 25 per cent over the natural gas users for 1950. There are 24,900,000 residential gas customers and when we add to this the 6,300,000 that are served with LP gas in areas not served by gas utilities, it means that more than 31,000,000 homes are served with either utility or bottled gas.

In 1951, the Federal Power Commission authorized the construction of more than 12,000 miles of pipeline and during the same year natural gas reached New England. There are now 42 states served by natural gas. The Pacific Northwest is the only heavily populated area that does not receive this fuel.

It has been estimated that this industry will spend more than 100 million dollars during the next few years on underground storage facilities so that there will be proper storage to maintain adequate supply during the winter months.

Oil. To the extensive pipe-line network in the United States that transports tremendous quantities of crude and refined petroleum products, will be added a large number of new pipe lines now under construction.

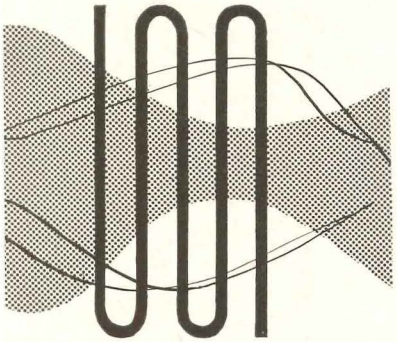
A look at the world picture of oil supply shows that the United States has a large stake in European refining capacity, since it was paid for largely by funds from the ECA. If Middle East crude is available, demands will be lessened on the Western Hemisphere supply. While this information comes from a study made largely for military purposes, it closely ties in with what may be ahead for oil as a fuel for home heating.

There appears to be some interest in the Swedish method of storing oil and products underground in natural or man-made caves. Remarkable progress has been made in the building up of Canadian crude production, and it is expected that within the near future the provinces of Alberta and Saskatchewan will have a combined daily output of 250,000 bbl.

Coal. This fuel is now being mined at the rate of one half billion tons per year. It is finding growing use as a basis for synthetic fuel and as an ingredient for industrial processes.

Considerable money has been spent to find efficient methods of burning coal for house heating that would be attractive to the home owner. There have been two important developments.

As the result of research at Battelle Memorial Institute, a **stoker boiler** has been designed which feeds coal to the top of the fuel bed automatically; ashes



AIR CONDITIONING

2 PLANNING for Year-Round Air Conditioning of Small Buildings, by S. F. Gilman, Research Assistant Professor of Mechanical Engineering, University of Illinois: A general discussion of how the design of air conditioning systems differs from that of heating for residences and small buildings. Also, reasons why design should start with the structure itself.

3 ROUND-UP of equipment for residential air conditioning. This month's *Products for Better Building* shows many of the new units being offered by manufacturers, including both the new, complete systems for year-round use and the latest in room air conditioners, equipment which architects actually have to choose from in designing new homes.

are collected in a sealed container for later removal.

The Bureau of Mines has completed tests in a home on coal burning equipment, called the **Anthratube,** which was introduced several years ago. When buckwheat size anthracite was burned, the efficiency was 84 per cent, and when pea size coal was burned, the efficiency was 81.6 per cent. The equipment operated under complete automatic control — coal was fed from a bin and the ashes were deposited in a container.

Synthetic Fuels. An estimate has been made that refined oil products could be produced from oil shale and coal at actual costs averaging, respectively, 7.3 and 10.8 cents a gallon for products selling wholesale at 9 and 14.5 cents a gallon. But the basic cost of building such a plant is high. While such a plant would primarily produce jet and diesel fuel, it would also turn out fuel oil.

Nuclear Energy

Although the use of nuclear energy for heat and power for buildings still appears remote, it is interesting to note that heat generated by nuclear reaction was successfully used for space heating at the Atomic Energy Research Establishment located at Harwell, England.

Solar Heat

Houses have been constructed at both Cambridge and Dover, Mass. (see ARCHITECTURAL RECORD, March 1949, pp. 136–7 and April 1949, pp. 135–8), to show the practicability of solar heat for house heating but costs are still too high to make it attractive for general adoption.

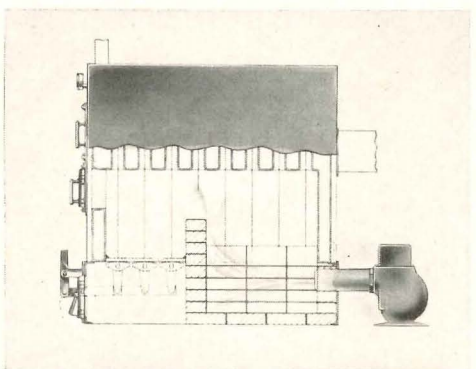
The use of solar heat that is collected through solar heat traps to be stored in containers filled with chemical crystals holds great promise in providing still higher coefficients of performance for the heat pump. (See ARCHITECTURAL RECORD, July 1952, pp. 179–184.) It may even provide a good auxiliary for hot water space heating, although this has not been tested up to the present.

Heating

Multi-fuel Units. Costly inconvenience resulting when one source of fuel supply fails has prompted the design of boilers and furnaces capable of burning more than one type of fuel. The switch from one type of fuel to the other has been made simple with little loss of time during the change-over.

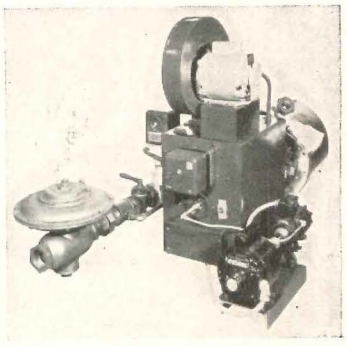
An interesting **boiler for residences** has grates at the front end for burning coal and a combustion chamber at the rear for an oil or gas burner. During normal operations, the grates are covered with an insulation board. In case

House boiler burns coal, also oil or gas



The H. B. Smith Company ,Inc

Combination gas and oil burner



Eclipse Fuel Engineering Company

of power failure, or when it is desired to burn coal, the board is removed and a fire built on the grate. The oil-firing rate is from 2.4 to 6.4 gpm.

Another **two-fuel design for commercial applications** burns either gas or oil. Use of one fuel is entirely independent of the other and fuel change-over requires about 80 seconds.

Where there are restrictions regarding gas for house heating, the answer may be a **boiler which burns both utility and bottled LP gas.** It can also be used in areas not yet served by gas but which may have such service soon. Switch from one type gas to the other is controlled by an outside thermostat so that too great a gas demand is not placed on the utility during severely cold days.

For commercial and industrial use, there is a **burner which burns both oil and gas.** Change-over from one fuel to the other is made instantly by the flick of a switch. It has an electronic flame failure control whether gas or oil is used. Either gas or oil can be burned without induced secondary air. The unit comes as a self-contained package without any extras to buy.

Space-saving Equipment. Builders and architects have literally cut all conceivable corners in houses to reduce building costs. Heating equipment manufacturers have cooperated by producing furnaces and boilers that require less floor space. This was done by making up in unit height what was saved in floor space.

There are a number of oil-fired suspended units which clear floor space for other needs. Elongated units, either oil- or gas-fired, require little floor space and can fit into a closet.

One **gas-fired hot water boiler for heating individual apartments** measures 13 in. wide, 26 in. deep and 17 in. high. It can be suspended from the ceiling or mounted on a shelf, and is large enough to supply 188 sq ft of standing radiation.

A **gas-fired panel heater** for installation in a wall of standard 2 by 4 in. construction stands 60 in. high and can heat two rooms. It has two burners with individual controls.

A **table-top type boiler** occupies a floor space 25 by 30 in. One model, designed specifically for radiant heating, has space within its cabinet for all controls, including an expansion tank.

Electric Heating. With the present power rates in most areas, it may not be practical to heat an entire house by electricity; but electricity does provide an ideal means for heating rooms that are normally difficult to heat, such as isolated or exposed room, or a normally cold bathroom. As each room has its own means of heat regulation, electric heating requires no zone controls. An **electrical radiant heating panel** consists of a sheet of conductive rubber (rubber capable of conveying electricity) sandwiched between layers of thin plastic and aluminum foil to form a panel 1/16 in. thick. This panel weighs only 6 ounces per sq ft and is pasted to the ceiling like wallpaper. Where electricity is available at 1¼ cents or less per kwhr, cost of operation is comparable with other fuels.

Heating cables operating on low voltage current may be installed in floors, walls or ceilings. **Heating panels** using nickel-chrome wires can be installed in walls and in ceilings of normal or high height.

For persons who have to stand on cold floors, or remain for long periods behind counters or in ticket booths, there are **electrically heated mats.** One is made from a metallic resistance element embedded in neoprene rubber. Another is made of conductive rubber and is recommended for use in theaters to serve persons who are seated near exits. It has a normal operating temperature of 35 F above ambient.

A special **electric wall heater** supplies reflected infra red rays and fits in a stud space of 14 in. The heating element is made of a sintered carbide compound formed into rods.

For a single room there is a **ceiling unit** which supplies overhead illumination and heating. Diffused light comes through a white opal center lens while the outer portion consists of a panel of shatter-proof glass in which the heating element is fused.

While **heating cable** is not new for radiant heating, there are novel applications. A nickel-chrome resistance wire covered by an insulating shield is wrapped around pipe to prevent it from freezing, placed so as to protect roofs, gutters and downspout from ice damage, and to melt snow from walks. It comes in 80- and 160-ft lengths.

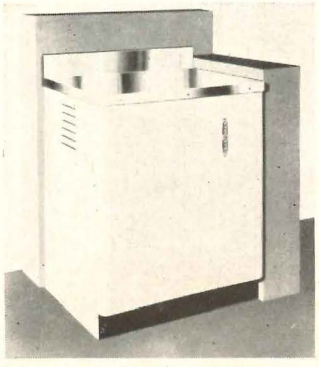
Tests that were conducted by the National Bureau of Standards show that electrically heated **radiant glass panels** provide a satisfactory method to heat a basementless house from the standpoint of temperature gradients in both vertical and horizontal directions, floor temperatures, and general comfort. With this type of system, heat is transmitted from glass in heating panels by radiation and convection. When the panel is heated above the temperature of the air in the room, heated air passes upward over the face of the panel, through the space between the glass and the reflective shield, and between the shield and the frame of panel assembly. At the same time, radiant heat is emitted outward from the face of the panel. Passage of air through the spaces back of the glass keeps the temperature at the rear of the assembly cool enough to be in contact with combustible material.

The Bureau stressed that while electric heating has advantages of cleanliness, flexibility and ease of control, the houses in which this type of heating is used should be thoroughly insulated. Where the rate for electric heating exceeds 1½ cents per kwhr, the cost of heating an insulated house can be expected to be more than that of coal or gas for the same house uninsulated.

Hook & Ackerman, Inc.

Individual boiler for apartments

Table top boiler



York-Shipley, Inc.

Electric radiant heating panel

United States Rubber Company

Ducts and Warm Air. In apartment and commercial installations there has been a trend toward the use of high velocity air in warm air systems. Use of air at velocities up to 4000 fpm permits running 4-in. diameter ducts and results in considerable savings, both in dollars and space required, when compared with systems using large rectangular ducts. With this high velocity air system, sound dampers or boxes are placed before the air outlet fixture is reached to cut down on the sound generated by the air.

Several new materials have been introduced for duct construction. A **reinforced, chemically treated, corrugated asbestos paper,** which is water repellent and is fabricated into ducts, has both strength and sound deadening properties. Lengths are fitted together by a simple collar joint of the same material and sealed by an adhesive. For radial and perimeter warm air systems there is a **fiber duct,** embedded in the concrete floor, to serve as supply or return lines. With such ducts, there are metal fittings for bends, elbows and tees. **Flexible ducts** can be snaked through floors of existing houses as easily as BX cable. These tubes are made of a glass fiber product, cemented to a continuous steel spring and bonded together.

Small diameter ducts are used with warm air systems in low cost houses. A **special line of fittings and plenum chambers** are available. Another system for small homes combines radiant and perimeter heating. Small ducts and standard blower speeds are used, and warm air outlets or distributors are placed along outside walls. The **air distributors** come in widths of 3, 4 and 5 ft and the ducts in diameters of 4, 5 and 6 ins.

A **warm air furnace** capable of growing with the house has a heating unit for gas or oil. Component packages can be added to provide additional furnace capacity.

Radiant Heating. Although research is still going on in the field of radiant heating, and there are still many things to be learned, we are not as alarmed as we once were whether comfortable conditions will result. Not only is circulating hot water used but warm air has become an important development. Warm air can be used through a circuit of underground ducts or flues, or in a perimeter system where part of the warm air, flowing through embedded ducts, is discharged into the room to heat-wipe windows and cold walls.

In **warm air perimeter heating,** air from the furnace is delivered by a blower through ducts which are embedded in a concrete floor or through special types of concrete blocks or ordinary cellular clay tile which, when laid end to end, form a continuous flue. Warm air is discharged through registers connected to the perimeter duct and placed under windows. One or more grills located high on inside walls provide for the return air back to the furnace.

A **special building block** or brick has been produced to provide inexpensive radiant warm air heating systems. It can be made of concrete, clay or plastic material and it has a double set of canals. When laid as part of a building wall, the canal becomes a continuous passage through which warm air can be blown; an insulating compound is placed in the other canal. (Climabrick. See *Heating and Ventilating*, February 1950, p. 110.)

Another **system of floor blocks** can provide a closed forced warm air radiant heating system. The blocks are made of fire clay or shale tile and measure 5 in. deep by 11⅜ in. sq. Each block has three channels. When laid end to end, they provide continuous channels across the room. A supply duct, made of 2-ft lengths, leads from the furnace to feed the channels. The return duct, also made in 2-ft lengths, returns the air to the furnace for reheating.

To promote better heat transfer through the concrete in which floor coils are embedded, a **concrete densifier** is mixed with the cement.

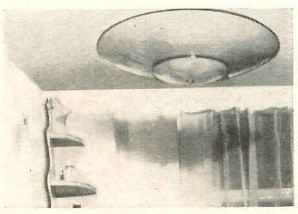
Baseboard Heating. Baseboard radiators or baseboard convectors were originally designed for house heating to eliminate the conspicuous free-standing radiator and to provide better heat distribution. It has progressed far from its original application and baseboard heating is now being installed in large buildings.

A **baseboard system for either steam or hot water** is so planned that the contractor can do all his cutting and fitting on the job and thereby eliminate the need for close measurement when ordering baseboards.

A **new type baseboard heating** is available in a standard size and in a capacity model where larger heat output is desired. Both models have been designed for ease of installation. In each package are all the component parts for installation. A back piece is nailed onto the wall. Brackets are secured, the heating elements are hung from brackets and then sweated or connected with a minimum number of sweat fittings on the pipes. With the snapping in place of the front enclosure, and the adding of trim, the unit is fully installed. The damper that is used with the unit is a magnesium extrusion, light in weight and easily operated. It closes tight with less than one-fourth turn of the operating handle.

A **forced warm air baseboard** has a shutter control panel to supply a regulated amount of air along an entire wall. An operating lever on the shutter permits panel openings to be locked in any selected position. It comes in 4- and 8-ft lengths and is designed for forced warm air perimeter heating with 4-, 4½- and 5-in. diameter ducts.

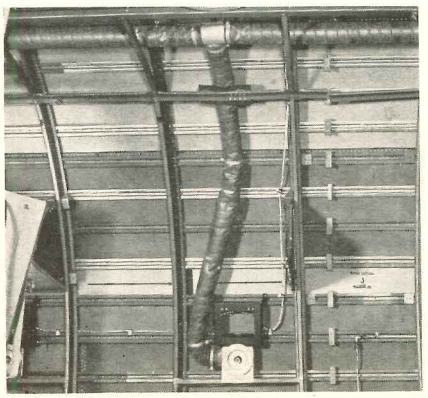
As a means of cutting installation time for **baseboard convectors,** one model arrives assembled with the heating element mounted on the back of the



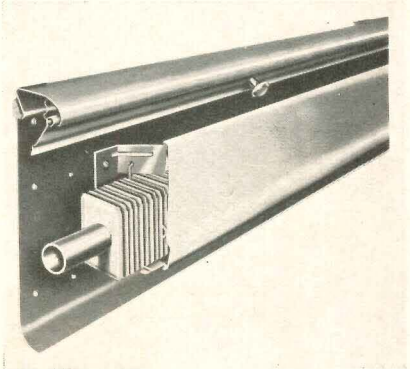
Electriglas Corporation

Ceiling electric heater and light

Flexible air ducts (in an airplane cabin)



Flexible Tubing Corporation



The Trane Company

Baseboard convector has rubber dust stop

cabinet. The back and top of the cabinet are formed in one piece and the front is snapped into place. It has a full-length back-to-wall rubber seal to prevent dirt streaks forming on the wall.

To absorb line expansion of finned convectors and horizontal supply lines, there is a **bellow-type expansion joint for hot water lines.** One expansion joint is sufficient for 30 ft of copper pipe at 140 F.

Oil Preheaters. Apartment houses and office buildings that burn heavy fuel oil can use an oil preheater to make it flow easily. One design uses an automatically controlled gas flame to generate a **supply of low pressure steam** in the lower section of the unit which passes to the oil heating circuit. Another device consists of a **heating element immersed in water** which in turn heats the heavy oil on its way to the burner.

Air Conditioning

Nothing has so excited the imagination of the home builder as air conditioning. Two factors have tended to promote this: (1) an exceptionally warm summer last year in most parts of the United States and (2) a wider use of individual room coolers due to the increasing emphasis given to air conditioning in the home.

Home air conditioning may be obtained through the use of the heat pump (discussed later in this section) and by the use of electrically powered compressor units with refrigerants, or an absorptive type system. They have become a part of a gas-fired or oil-fired forced warm air heating system with a common air supply system to serve both the heating and cooling components. In the older installations, it is common to place both units side by side in separate cabinets. The new models are more compact and both parts are housed in one cabinet.

In selling home air conditioning, the tendency is to charge the expenditure for ducts and blower to the heating system and to consider the cost of the mechanical cooling unit as the additional price for summer comfort.

Before air conditioning was favored for low cost housing, it was common practice to install a 1- or 2-ton cooling unit so arranged that the downstairs rooms would be cooled during the day and only the bedrooms or the upstairs rooms at night. We are moving away from the 2-ton unit and are going to systems of larger capacity. Incidentally, few people realize that the basic difference between a 2-ton and a 3-ton unit is the refrigerant used.

In a report presented to the American Gas Association, it was stated that there are now more than 10,000 installations where gas is used for both heating and for operating air cooling systems. Most of these air conditioning units use the absorption cycle and are in sizes from 3 to 10 tons. This study found that a complete year-round 5-ton system with cooling tower for the water supply to serve a 6- to 8-room residence is between $4000 to $5000 (1951 figures). This represents 15 to 20 per cent of the owner's total investment in building and land. If the city does not require the installation of an evaporative cooler to save water, then $500 may be deducted from the total cost.

Ratio of gas required for cooling and heating is around three-to-one in the South and in the North it is one-to-four or even lower. For residential installations, gas usage by all-year air conditioning systems is between four and five times that used by the three major gas-using appliances — cooking range, water heater and refrigerator. Electric consumption of a 5-ton residential gas air conditioning installation with cooling tower is 3000 to 4000 kwhr annually in the South and around 2500 kwhr in the North. The cooling tower contributes slightly over one-half of the electric consumption in the South and less than one-third of this annual power demand in the North.

To tie in with the existing home warm air system, there is a unit which consists of **two 1-hp compressor units.** When the load is light, one compressor is used and when the load becomes heavy, the other is added. This company makes five other sizes for larger installations.

The absorption principle is also used in an **oil-operated year-round unit** which has a heating capacity of 96,000 Btu per hr and cooling capacity of 5.4 tons or enough to serve a 7- or 8-room house. The low pressure burner has an adjustable oil input from 0.6 to 3.0 gph.

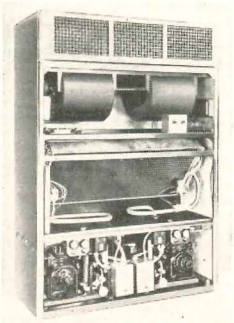
In sizes too large for the average home, but suitable for commercial loads, there is a **self-contained unit with an integral evaporative condenser** to meet municipal regulations for water conservation. It is shipped completely wired and piped. Moisture condensed from the air is added to the spray water in the condenser. It is available in 15- and 20-ton sizes. In addition to the evaporative condenser, another **model of 10-ton size has dual circuits** so that one compressor can be used to operate at one-half capacity and to provide effectively dehumidification at this reduced operation. A time delay prevents the two compressors from starting simultaneously under full load conditions.

A special **self-contained air conditioning unit for hospital operating rooms** is used where the atmosphere contains hazardous gas. It has an explosion-proof motor and special fans, belts and switches.

There is an **absorption system for office buildings** using water as the refrigerant. It is available in sizes from 100 to 350 tons. One way to air condition existing office buildings was indicated by the system now used in the 25-story Herald Square Building in New York City. The chilled water risers were run on the outside of the building inside stainless steel jackets which also serve as a vertical decorative scheme.

A **ceiling mounted cooling system** in an attractive cabinet is so quiet

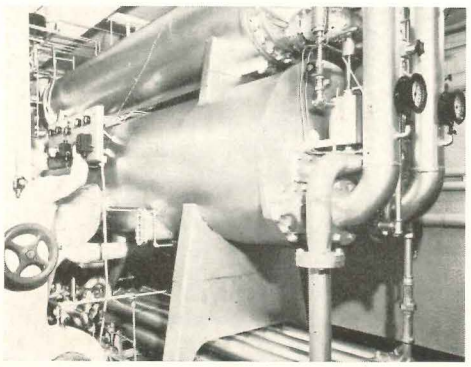
United States Air Conditioning Corporation



10-ton conditioner features dual circuits

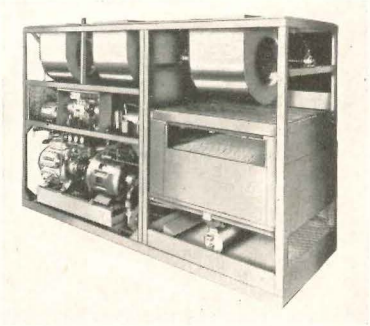
Absorption system for office buildings

Carrier Corporation



Self-contained unit has integral evaporative condenser

The Trane Company



in operation that it is recommended for installation in hospitals and hotels. Ordinarily, it is equipped for use with a chilled water supply for summer operation and a hot water supply for winter months. However, the unit can be provided with direct expansion coils using Freon. Adjustment of the unit in one room has no effect on the operation of the unit next door. This unit ventilates, filters and recirculates the room air. The entire fan assembly in the cabinet can be replaced as a unit.

For those who may object to window blocking by a window air conditioning unit, there is a **¾-hp console type room air conditioner** that will cool the average size room or office. The unit is mounted on wheels to permit easy storage during off seasons when cooling is not needed. A three-way control permits operation of the unit as an air conditioner or as a fan. The console can circulate up to 250 cfm and can extract up to 3 pints of water per hr from the room air.

Window Units. At one time there were but 24 companies manufacturing individual window type room coolers; now the number is closer to 60. When compared to early models, the new window units are more pleasing in appearance and are more compact. They come in ⅓-, ½-, ¾- and 1-hp sizes. While at one time the primary function was to cool and filter the incoming air, now, in addition, they are used to supply clean outside air when straight ventilation is desired, and to heat the air supply when necessary. A new trend is to supply heaters in the window units. **One model has a heating element** and a special switch that controls seven deg of comfort from cool to warm.

Power companies are very much interested in this trend to change the window unit from summer to year-round operation, for not only does this provide a better power utilization factor, but the unit is easier to sell. The public would rather buy equipment for year-round use than for a special season.

Manufacturers of the early models of window air conditioning units veered away from **types for casement windows.** Now it is possible to purchase a window type air conditioner that will fit in a window opening as small as 14½ in. wide. The unit does not require any special wing adapters and comes in sizes of ⅓-, ½- and 1-hp.

Evaporative Cooling. In most areas where the air is normally dry, cooling can be obtained through the use of units which function by the dry air absorbing moisture from the equipment to create a cooling effect. An evaporative cooler depends on areas in the unit which are automatically wetted for changes in cooling comfort. These areas are wetted one by one as the dry bulb temperature increases.

Heat Pump

Seven companies are now engaged in the promotion and sale of the heat pump as a device which will provide warm or cool air, as needed, with the same equipment. The heat pump has gone through an extensive research and test period, and from it has emerged a standard self-contained unit for use in residences, and standard component parts such as coils, compressor and blower to be assembled into a system of special design. For the home, most manufacturers are producing a unit which uses air as the heat source. The coefficient of performance (ratio of heat delivered to the heat equivalent of the electrical energy used) is from 2.1 to 2.3 with the standard home-type unit, and about 3.3 for a system of special design. Replacement of expensive expansion valves with capillary tubes has reduced costs and has eliminated some mechanical problems.

The geographical location where a heat pump will give the best results is one where the heating load and the cooling load are about equal. This excludes some northern areas where the heat pump is not suitable because of the vast difference in summer and winter operating loads. Because of the original cost, the heat pump must at present be ruled out for the low-priced house.

A small size heat pump has been used successfully to produce service hot water at low cost. Of three designs tested, the most promising is one in which a hermetically sealed unit is mounted in a water tank. A coefficient of performance between two and three is possible. When this unit is placed in the basement, there results as a by-product a dry, cool basement during the summer months so that it is possible to use this space for storage or a recreation room. When this heat pump is installed in a utility room, it is feasible to air condition an adjoining room with the discharged cool air.

The newest use of the reverse cycle is the **¾-hp window unit room air conditioner.**

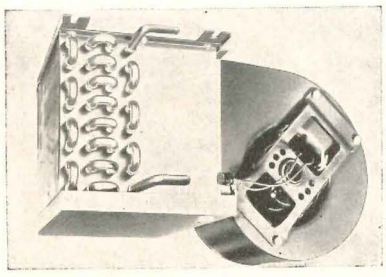
For **home use,** heat pump sizes range from 2- to 5-hp. This apparatus has been installed to serve schools in Florida. As far as operating costs are concerned, one authority claims that the heat pump provides heating at one-third the cost of conventional heating of the home by electrical means.

Recently marketed is a **heat pump designed to fit between the wall studs,** although it does extend from the wall into the room. Each unit is designed to serve one room.

Still in the development state is the use of a solar heat trap on the roof of a house to augment the heat drawn from the air. Heat from the sun would be trapped and then stored in cans through the melting of crystals such as glauber salt. This heat could be drawn on as required.

Refrigeration

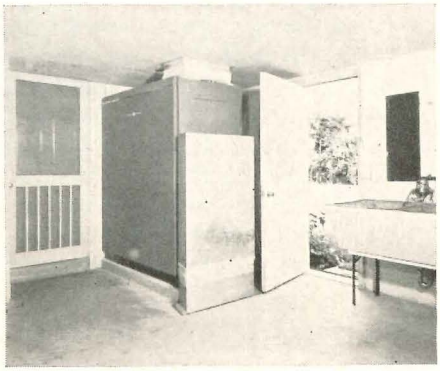
It is not often that there is news regarding **a new refrigerant,** particularly since the Freon group of refrigerants have been so popular. However there is a new refrigerant which is non-toxic, non-inflammable and non-explosive, and particularly suitable for small size, low temperature equipment.



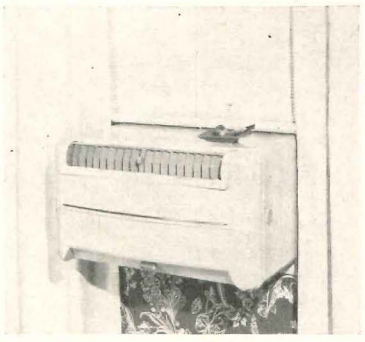
Drayer-Hanson, Inc.

Ceiling mounted cooling system

Heat pump installed in house basement



General Electric Company



York Corporation

¾-hp heat pump for window installation

2 PLANNING FOR YEAR-ROUND AIR CONDITIONING OF SMALL BUILDINGS

*by S. F. Gilman, Research Assistant Professor of Mechanical Engineering, University of Illinois**

PRESUMABLY you will agree that you have to plan on heating residences and small buildings, but you may be wondering if you, as architects, really *do* need to plan on year-round air conditioning. Has year-round air conditioning arrived? Is it here to stay? Is it really a necessity or is it some fly-by-night luxury? As for me, I share the opinion with many others that it has arrived, that it is here to stay.

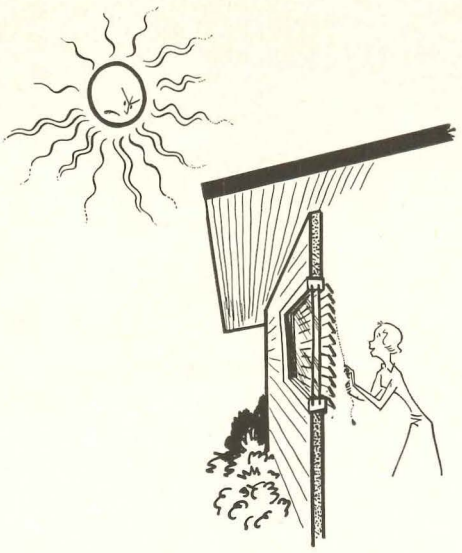
From my side of the fence, all buildings should be planned for year-round air conditioning, or at least so planned that cooling equipment can be added to the heating equipment at a later date without extensive modifications. If you fail to plan now for year-round air conditioning, you will be designing structures that in a few short years may very well be obsolete.

Drawings by Sol Ehrlich

"Pushing heat uphill, the way it doesn't want to go"

Cooling Systems Need Precise Engineering

Now let me make one point clear: the design of the summer cooling part of year-round systems requires precise engineering. Heating systems can be overdesigned and misdesigned by quite a little, and they will still perform satisfactorily enough to be accepted.



Anything designed into the structure to keep heat out will help

However, refrigeration is pushing heat uphill, the way it does not want to go.

The calculation of the cooling load of a building is more difficult than the heating load, principally because the effect of the always changing position of the sun in the sky must be taken into account. Also, draftless distribution of cooled air in the conditioned spaces poses many problems. As a consequence, the proper design, installation, and operation of cooling systems requires accurate and experienced engineering, and mistakes are expensive. What follows is a general picture of some of the factors that you should consider in your planning.

Reducing Cooling Loads

Since refrigeration is expensive, anything you can design into the structure that will keep a lot of heat from getting in will be well worthwhile. Roof overhangs, awnings, double glass, insulation — all these help. But even with these, your own original ideas can be a big factor in reducing the cooling load. For example, awnings and roof overhangs do not shield glass areas from direct sunlight on the west side from about 4 P.M. on when the sun is getting low on the horizon. If you can plan the building so there are no glass areas on the west wall, or if you can dream up some architectural scheme so the sun cannot shine in, then you will save yourselves a big cooling load.

There may be large sources of heat inside the building, as in a kitchen in a restaurant. The heat from the stoves, coffee urns, etc., should be prevented from getting into the room and becoming part of the cooling load. This heat can be picked up at its source by hoods and exhaust fans, and discharged outdoors. Of course some outside air will have to be brought in to make up the deficiency, but it will be a lot cooler than the air exhausted, so you will still be ahead in the game.

The essential point is that every possible means of reducing the cooling load should be used in planning the building. It is not possible to design the structure first and then design the air conditioning. If you try, you may find the equipment is so big that the owner cannot afford to buy it, much less operate it. Furthermore, large reductions in the cooling load will reduce the size of the conditioner, which in turn will reduce initial and operating costs as well as save valuable space.

Types of Year-Round Systems

Year-round air conditioning systems can be broadly classified as either "packaged" or "built-up." The packaged system has its principal components enclosed in a single cabinet from which conditioned air is discharged either directly into the space or into ducts leading to one or more spaces. The built-up system is used primarily in large buildings and often has its principal components located in one central space and its other components located in several other spaces. Since packaged systems are frequently used in residences and small buildings, we shall devote most of our attention to these.

A representative year-round air conditioner is shown in Fig 1. This packaged unit is about 6-ft long, 2-ft wide, and 5-ft tall. As a very rough figure, it has sufficient heating and cooling capacity for an insulated residence of about

**From a paper given at the University of Illinois Short Course, "Planning for Heating and Air Conditioning of Small Buildings."*

1200 sq ft of floor area.

We speak of refrigeration capacity in terms of "tons" — the unit in the figure has a capacity of 3 tons. In your residential planning, you can estimate (very roughly) that every 400 sq ft of floor area will require one so-called ton of refrigeration. Since the relationship between sq ft of floor area and tons of refrigeration varies all over the map in commercial buildings, not even a very rough figure can be given to help you in planning for other small buildings.

In planning residences and small buildings, you will be interested in conditioners having capacities ranging from about 2 to about 10 tons; hence the 3-ton conditioner shown in Fig 1 is one of the smaller units. However, larger packaged units look essentially the same. The location of such conditioners in a building is fixed by the location of the chimney or flue, since the heating unit is included and should be within about 10 ft of the chimney. If the location of the chimney is immaterial, conditioners should be located such that the duct-work required is a minimum.

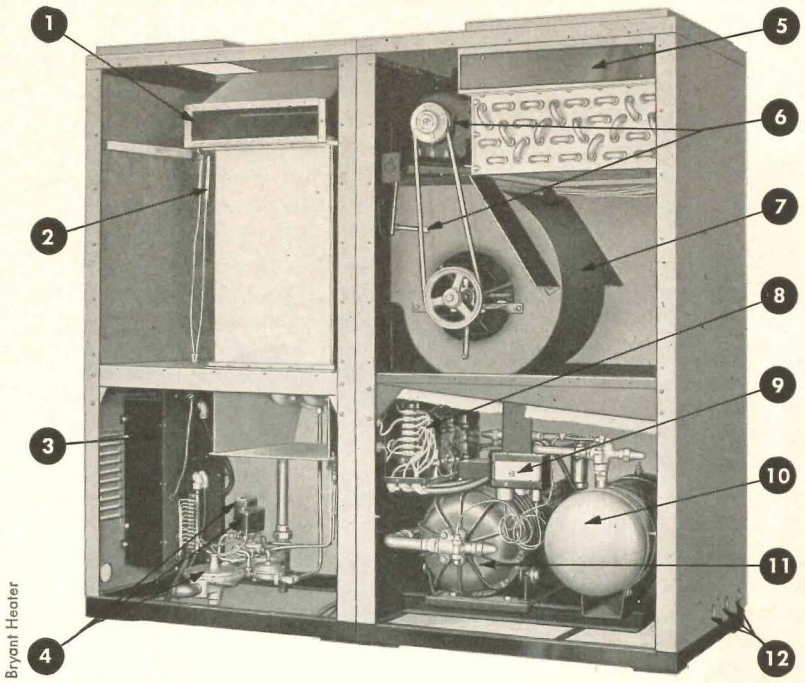


Fig 1. 3-ton year-round air conditioner, 6 ft long, 2 ft wide, has sufficient capacity for a residence of about 1200 sq ft. Conditioner consists of: 1. heat exchanger; 2. gas burners; 3. control box; 4. gas controls; 5. air filter; 6. blower motor; 7. blower; 8. incoming voltage for cooling; 9. pressure switch; 10. condenser; 11. compressor; 12. connections for cooling water and condensate

Components of a Year-Round System

Referring to Fig 1, air being returned from the conditioned spaces enters at the top right, passes through the filter (5) which cleans it, and through the cooling coil located under the filter which may or may not be in operation. The fan (7) then pushes the air through the gas-fired heater (1) and out at the top and into the ducts leading to the conditioned spaces.

Now most of you are familiar with forced warm-air heating systems or so-called "winter air conditioning" systems. Let's pick out the components that make up the heating system and see what remains. The heating system includes the filter (5) and fan (7), the gas burners (2) and the heat exchanger (1). Thus, the principal equipment which has to be added to the heating equipment to make a year-round conditioner is the cooling coil plus the equipment located in the lower right section of the unit. The principal components here are a 3-hp electric motor which drives a refrigerant compressor (11) and a water-cooled condenser (10).

Added Planning Problems

There is one other significant fact that is not obvious from the figure, and that is that the fan (7) and fan motor (6) are larger than they would be if there were just a winter air conditioner. The reason is that the minimum quantity of air that must be circulated during cooling is generally larger than that required during heating.

This brings out two points. First, the electric power consumption for winter air conditioners is small compared with the power consumption of year-round air conditioners that use larger fan motors plus electrically driven compressors. Therefore, wiring sizes must be larger if a year-round system is to be installed initially or added later. Second, as a consequence of this increased power consumption, 110-volt a-c goes out of the picture with year-round air conditioners of this type, and you must plan on 220-volt a-c.

All-gas year-round conditioners are available which utilize the absorption principle of refrigeration, and with this type the only electric power required is for the fan; consequently, 110-volt a-c can still be used with these. This difference in required electrical characteristics is not important in planning commercial buildings, since 220-volt a-c is ordinarily available, but it is in residential applications.

It should be noted that the additional equipment necessary for year-round air conditioning — namely, cooling coil, compressor and condenser — occupies about a third of the total space. Although equipment made by numerous

Heat from stoves, coffee urns should be picked up by hoods and exhaust fans

manufacturers comes in various sizes and shapes, in your planning you can estimate that a year-round conditioner will be about one-third larger than the usual winter heating equipment. However, if you are going to plan a building now for only winter air conditioning (that is, heating only, and consider that cooling will be added later) then you need more space, and you should leave room for equipment of about the same size as the heating equipment. These are very rough figures just to give you some ideas to use in your initial planning.

Refrigeration Requires Cooling Water

In the preceding discussion, it was pointed out that power requirements of year-round conditioners are greater than those of winter conditioners. In addition, year-round conditioners require cooling water. The condensers of year-round units usually require 90 to 150 gal per hr per ton of refrigeration. The Fig 1 unit uses 90 gal per hr per ton, or, since it is a 3-ton unit, 270 gal of water an hr. If you like your water in cubic ft, and that is how you pay for it, 270 gal is slightly more than 36 cu ft. In 12 hrs of operation this condenser uses 400 cu ft, which is not cheap.

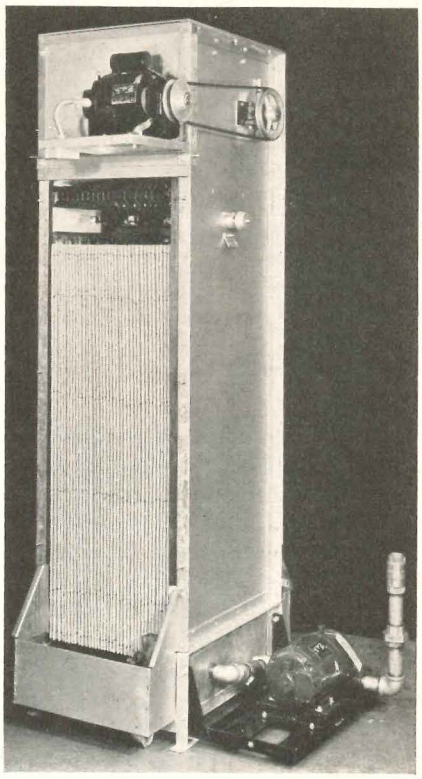
Nevertheless, there are localities where a cheap and ample supply of water exists and where it is economically sound to dump the used water into the sewer. However, many localities require that a water saving device, a cooling tower or an evaporative condenser, be used with air conditioners larger than a certain size, usually 3 tons. As the number of air conditioning installations increases, more and more localities will adopt similar restrictions on the wasting of water. So now we have added a piece of equipment that we didn't have with winter air conditioning alone, and this has to be considered in planning the building.

How does a cooling tower save water? Water continuously enters the condenser, picks up heat, and warms up. The cooling tower simply cools down this warm water and sends it back to the condenser to be used over and over again. As a consequence, it saves at least 95 per cent of the water which would otherwise be dumped down the sewer.

Cooling Tower Operation and Installation

A representative cooling tower is shown in Fig 2. This tower is used with a year-round air conditioner having a cooling capacity of 5 tons, which is 2 tons more than the capacity of the unit in Fig 1. However, the difference in the size of cooling towers for 3- and 5-ton conditioners is small. The one illustrated is about 5-ft long, 2-ft wide, and 7-ft tall. The fan at the top pulls air through the intakes near the bottom, up through the tower, and discharges it at the top. Warm water coming from the conditioner enters just below the fans and is sprayed downward over numerous wooden slats. Cooling of the water takes place by the process of evaporation; hence, cooling towers are often also called "evaporative" water coolers. The cooled water collects in the bottom and is pumped back to the condenser to be used over again.

Consider what has to be planned for cooling towers. Piping to and from the condenser is required. In addition, a certain amount of water needs to be added all the time, so a connection must be made with a line carrying city water. It is general practice to have the collecting chamber at the bottom overflowing a little at all times so that mineral impurities do not build up to too high a concentration; therefore a drain is needed. Finally, wiring for the fan and pump must be considered.



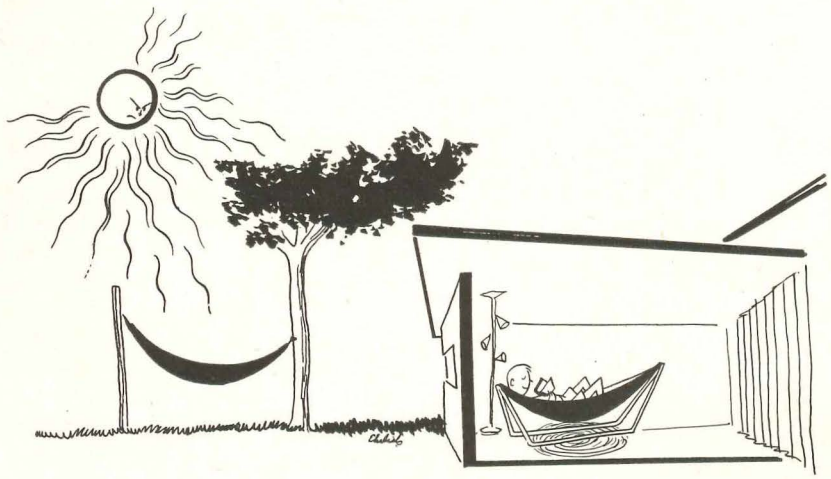
Servel, Inc.

Fig 2. Mechanical-draft cooling tower for use with 5-ton year-round air conditioner.

Since the tower of Fig 2 has fans, it is called a *mechanical-draft tower*. There is another type, called the atmospheric cooling tower, that instead of fans utilizes the natural outdoor wind currents.

As to the locations for cooling towers, the one in the figure, as well as most mechanical-draft towers, can be located either indoors or outdoors. A cooling tower has a pump and fan, as well as water being sprayed around inside. So whether it is indoors or outdoors, noise is a very definite consideration in the planning process.

For indoor locations, the tower must be isolated from the conditioned spaces and should be in a separate room of its own. The manufacturer of the tower illustrated in Fig 2 recommends that it be located in the corner of an unconditioned space such as a basement, and enclosed by walls of 1-in. insulating wall board which can be removed for maintenance. The insulating wall board serves to prevent heat from the tower escaping into the surrounding space and also to reduce the noise somewhat. The recommended size of the enclosure is 3½ by 5½ ft or nearly 20 sq ft. Moreover, screens and louvers must be located in the two outside walls; those in one wall serve to let air into the space



and through the tower, and the air discharged by the fans is exhausted to the outdoors through the other wall.

For an outdoor location, no special provisions are required, and towers can be located almost anywhere providing the air flow through them is not restricted. However, for most buildings, since a cooling tower is somewhat unsightly in the architectural sense, its location outside the structure should be planned so that it is concealed, or if this is not practicable, a semi-enclosure should be designed for it. In residential applications, cooling towers are being installed in such places as basements, garages or enclosures attached to garages, and in breezeways. Because of noise considerations, they should not be placed close to sleeping rooms.

Planning the Duct System for Year-Round Use

So far, the factors discussed have been related to the air conditioning equipment. But also of major importance are the factors which must be considered in planning the duct system which distributes conditioned air to the various spaces in the building.

First of all, consider the heating operation. When it is cold outside, just enough heat has to be added to each space to replace the heat being lost to the outdoors. Now you all know that when you are taking a bath and the water is a little too cool, you only have to add a small amount of scalding hot water to get it to the temperature you

You can add a small amount of hot water or a lot of lukewarm water to accomplish the same purpose

want. But if the tap water is only lukewarm, you know you have to add a lot of water to accomplish the same purpose. So it is with heating a space: either a small quantity of very hot air or a large quantity of lukewarm air can be used to get the same amount of heat in the room and maintain a desired room temperature. Consequently, the ducts for the heating operation can be very small if very hot air is used. One such heating system uses 300 F air and 2½-in. diameter ducts. In this case, the air is heated 230 F above room temperature.

Now consider the cooling operation. Using the same principle as heating, could a very small amount of very cold air be used to do the cooling? For example, could a small amount of air cooled to, say, 150 deg below zero be used? The answer is, "Yes, it *could* be done, but it would be neither economical nor satisfactory." In the first place, air at 150 deg below zero entering a space would instantly freeze the moisture existing in the room air. All of a sudden in July it would be snowing in your living room.

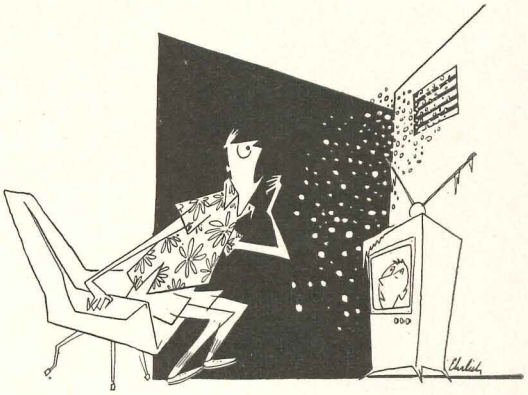
Of course this does not rule out small ducts for cooling; they are being used right today. The limiting factor, as far as the occupied space is concerned, is the temperature of the room air supply.

For *practical* applications, we have very little flexibility in cooling compared with what we have in heating. For comfort cooling, air leaving the conditioner is generally only 20 to 40 F below room temperature, and usually closer to 20 than 40 F. Fortunately, the cooling loads are often considerably less than the heating loads, so that the winter and summer air quantities are often not radically different. But in most cases, the ductwork sizes for year-round air conditioning systems can be expected to be larger than those of equivalent winter air conditioning systems. This should be considered in your planning. If a building is being planned now for winter conditioning, but the eventual addition of cooling is anticipated, the air ducts should be designed now for both heating and cooling. If this is not practicable, try to plan the ducts and structure so that additional ducts can be added later without extensive modifications.

In discussing air ducts, it should be noted that it is often desirable to introduce some outside air into the building for the purpose of ventilation and odor dilution. This requires a duct from an opening in the outside surface of the building to some point in the ductwork bringing air back from the conditioned spaces to the conditioner.

No doubt you have all seen water dripping from pipes, such as water pipes, in the summer, especially on humid days. This is also a problem with the ducts carrying chilled air to the conditioned spaces. Water can condense on these ducts and cause trouble unless the ducts are insulated. The colder the air in the ducts, the greater is the need for insulation; however, insulation is not always needed — you will need to discuss this with an engineer.

Since refrigeration is expensive, provisions must be made to prevent the cool air in the ducts from being warmed up too much in passing through unconditioned spaces. If the ductwork runs



"All of a sudden in July it would be snowing in your living room"

through normally hot spaces, like attics, you should definitely plan on insulating them in these spaces.

Panel Cooling

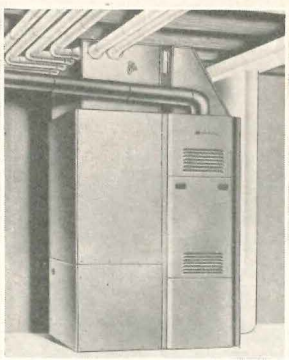
Since it is a relatively new development, the panel type of year-round air conditioning deserves mention. One way of doing it is to install small tubes in or near the ceiling and run either hot or chilled water through them, depending on the season. When chilled water is used during cooling, its temperature must not be below what is called the "dew point;" otherwise, condensation of water will occur on the panel.

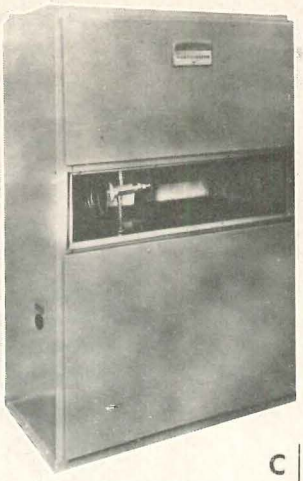
Remote Room Air Conditioners

I hope I haven't given you the impression that some sort of duct system is required for every year-round air conditioning system. Many packaged and built-up systems do not use ducts at all. One example will suffice: suppose cooling is to be added to an existing hot water heating system. The first thing is to add equipment to the central heating plant so a supply of cool water is available. The radiators or convectors are replaced with small units sometimes called "remote room air conditioners." These cabinet-type units have a coil through which the warm or cool water is circulated, and fans that pull air across the coil and circulate it around the room. In this way, you have a year-round air conditioning system with no ductwork at all.

THE NEW ALL-YEAR EQUIPMENT

A | B





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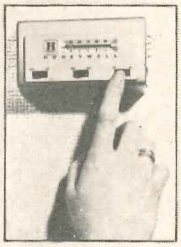

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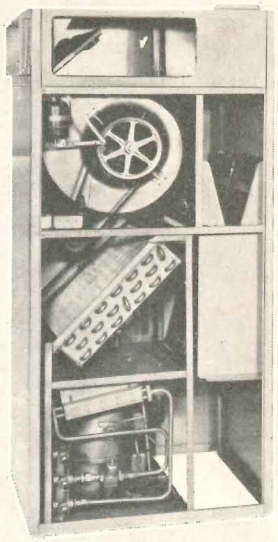
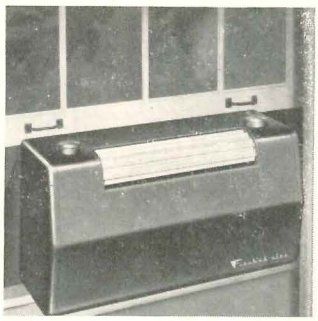


E

A. Bryant's "Command-Aire" matched units. Conditioners in 2, 3 and 5 ton capacities. *B.* Coleman's matched units can be used with manufacturer's "Blend-Air" small pipe system or with conventional forced air systems. *C.* Worthington conditioners for use in conjunction with forced air heating systems; 3 and 5 tons. *D.* Self-contained Servel unit employs gas-absorption principle for quiet operation; 2, 3 and 5 tons. *E.* Newly-developed Minneapolis-Honeywell thermostat can be used to control any of the new all-year conditioning systems. *F.* Perfection conditioners in 2 and 3 ton sizes can be used with furnaces for all-year operation. *G.* General Electric matched units are offered in a wide range of heating and cooling capacities. *H.* Frigidaire's automatic self-contained units are available in 3 and 5 ton sizes. *I.* Carrier "Weathermaker" units are self-contained, available in 2, 3, 5 and 7½ ton sizes. *J.* American Standard system combines teamed winter and summer conditioners with electrostatic filter.

ROOM AIR CONDITIONERS

1



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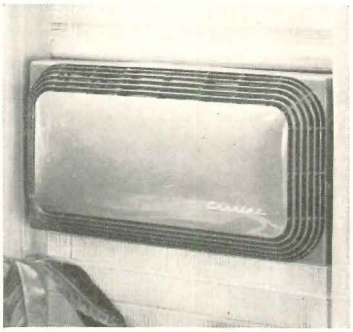

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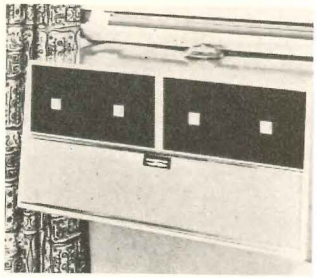
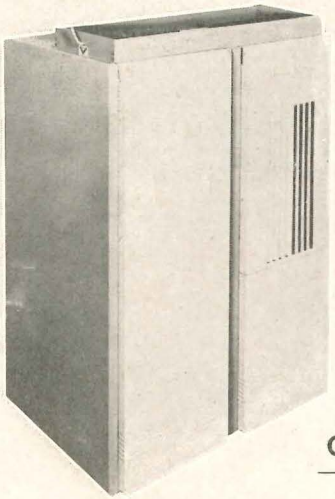


1. Servel ¾ and 1 ton units feature four grills for directional flow adjustment. *2.* Fresh'nd-Aire models in ½, ¾ and 1 ton sizes are built for all-year use, both heat and cool. *3.* Chrysler "Airtemp" conditioner is offered in ¾ and 1 ton models. *4.* Carrier window units operate at low velocity, reduce noise. Several sizes available. *5.* Kelvinator's conditioner is made in ½ and ¾ ton models. *6.* Worthington units feature one-dial control, automatic step-down control for night operation. *7.* Mitchell "Dyna-Heat" conditioners both cool and heat, can be used year-round. *8.* UsAIRco units have built-in automatic thermostatic control as standard equipment. *9.* York's new line includes model shown here, plus others which feature reverse cycle which both cools and heats. *10.* Frigidaire units available in four sizes. *11.* Fedders-Quigan line includes five window units, three console models, features push-button control system.



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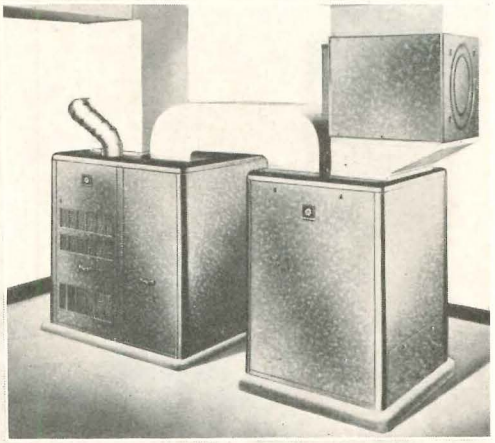

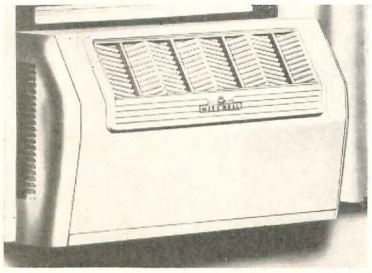

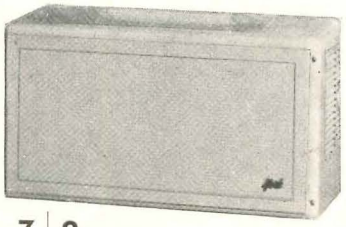

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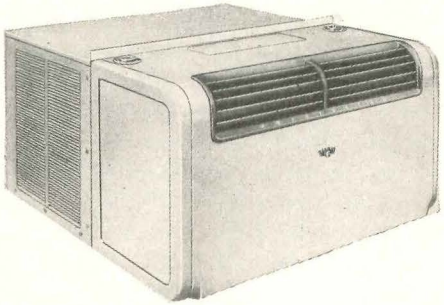
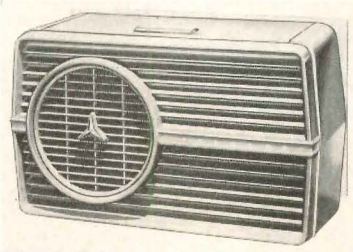




11

Architects engaged in the design of houses both small and large are being presented this year with a new factor which may materially affect design and specification of many jobs. The new factor, of course, is the development and marketing of packaged equipment for complete all-year air conditioning of residences, at prices which permit its employment in the smallest homes.

In preceding pages of this issue of ARCHITECTURAL RECORD, readers have been furnished an outline of the types of new equipment they can expect to see (page 196) and a frank discussion of advantages, disadvantages, design factors and other matters which may be encountered in planning homes with all-year air conditioning (page 202). Here some of the actual units now available from air conditioning manufacturers are pictured.

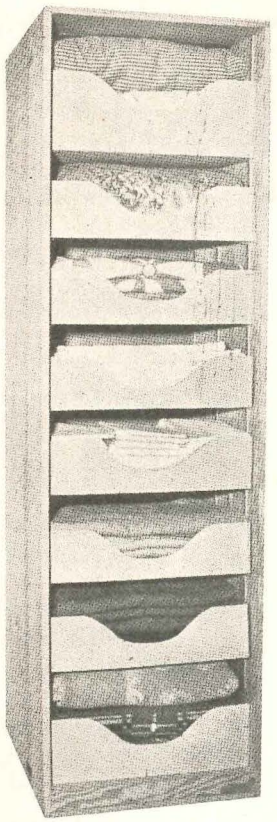
The biggest news in residential air conditioning is the development by many manufacturers of self-contained, packaged air conditioning units of 2-, 3- and 5-ton capacities and larger. Some of these are furnished as complete heating and cooling equipment within a single casing while others are available in separate matched heating and cooling units. Heating units are gas or oil fired forced warm air furnaces, and both the self-contained and matched units can utilize a common ductwork system for both heating and cooling. At least two manufacturers have developed water saving devices to help eliminate problems sometimes encountered with cooling towers, while others are relying on cooling towers to adequately provide recirculated water for their systems. Manufacturers of control devices have begun marketing all-year thermostatic controls for use with the equipment. The entire industry, convinced that complete year-round air conditioning equipment will be their major concern in the future so far as the residential field is concerned, has begun stepped-up production in expectation of a great demand for the new units.

But, at the same time, the market for room air conditioners has by no means shrunk. Manufacturers expect to make and sell at least 650,000 units this year, reporting production increases of from 35 to 200 per cent over 1952. Several new manufacturers have entered the field. And, most significant, room air conditioners themselves are beginning to change over from summer cooling to year-round air conditioning with the addition by several manufacturers of heating equipment to their window and console units.

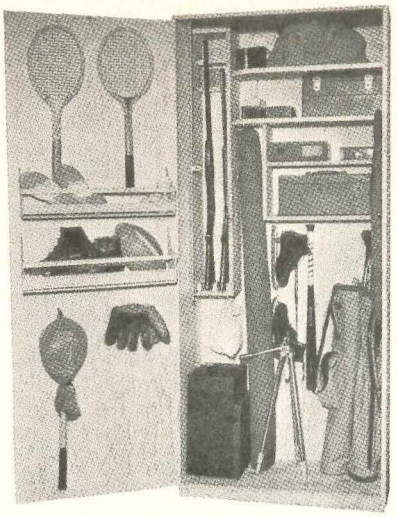
(*Continued on page 218*)

LITERATURE FOR THE OFFICE

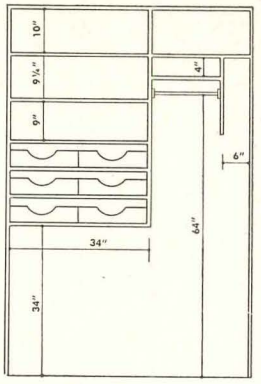
STORAGE UNITS



A

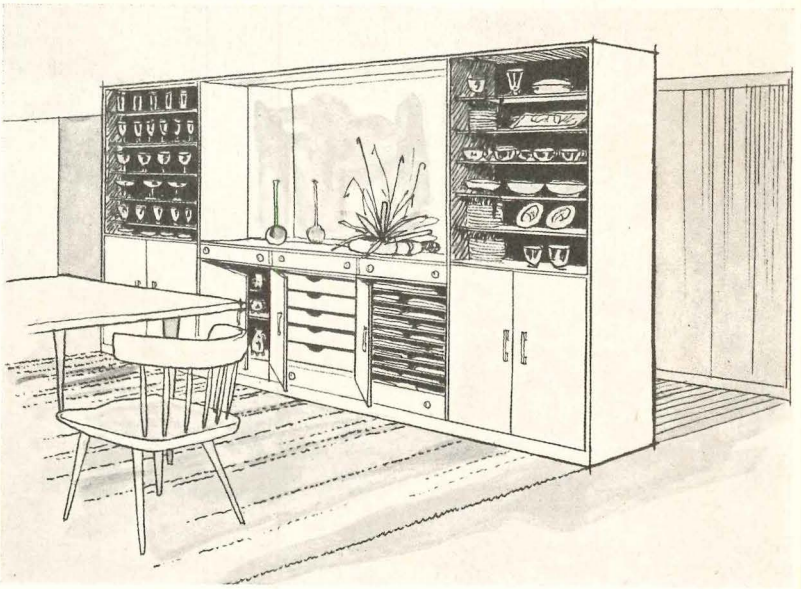


B



C

D



A. *Typical unit for storage of bedding.* **B.** *Specially fitted unit will accommodate all types of sporting equipment.* **C.** *Diagram of sewing equipment unit shows recommended dimensions.* **D.** *Sketch illustrates storage wall separator for dining room*

Design Data for Storage Units

Space Design for Household Storage. This well presented and attractive bulletin, written by Helen E. McCullough, an Assistant Professor of Home Economics at the College of Agriculture, University of Illinois, contains design data on all types of storage facilities for every area in the home. Along with descriptive text of the many units that can be installed, there are to be found throughout the booklet a number of photographs, sketches and line drawings. Dimensions are included for the various types of storage units, with minimum recommended depths and widths for specified articles. Among the categories covered for storage facilities are: toys, musical instruments, sporting goods, books, magazines, card tables, folding chairs, china, glassware, linen, clothing, etc. Also included is a house plan using storage units as partitions. Possible combinations of units in different rooms are suggested, with arrangements for each. 74 pp., illus. $1.25 per copy. University of Illinois Agricultural Experiment Station, Urbana, Ill.

* *Other product information in Sweet's Architectural File, 1953.*

Flooring

Four new brochures on flooring material are currently available:

• *Robbins Lifetime Vinyl Terra-Tile* and *Announcing the Tile That Needs No Adhesive.* The first of these two brochures describes a new flooring material said to closely resemble terrazzo in appearance. The 16 available color combinations are illustrated in color, and a list of special features is included on the back cover. The second brochure deals with an all-purpose type of tile which needs no adhesive for installation. Enlarged illustrations of construction point out differences from other tiles. Available colors are shown on back cover. Both brochures are 4 pp., illus. Robbins Floor Products, Inc., Tuscumbia (Muscle Shoals), Ala.*

• *HAKO Asphalt Floor Tile, Bulletin AT-200.* Catalog contains complete in-

(*Continued on page 270*)

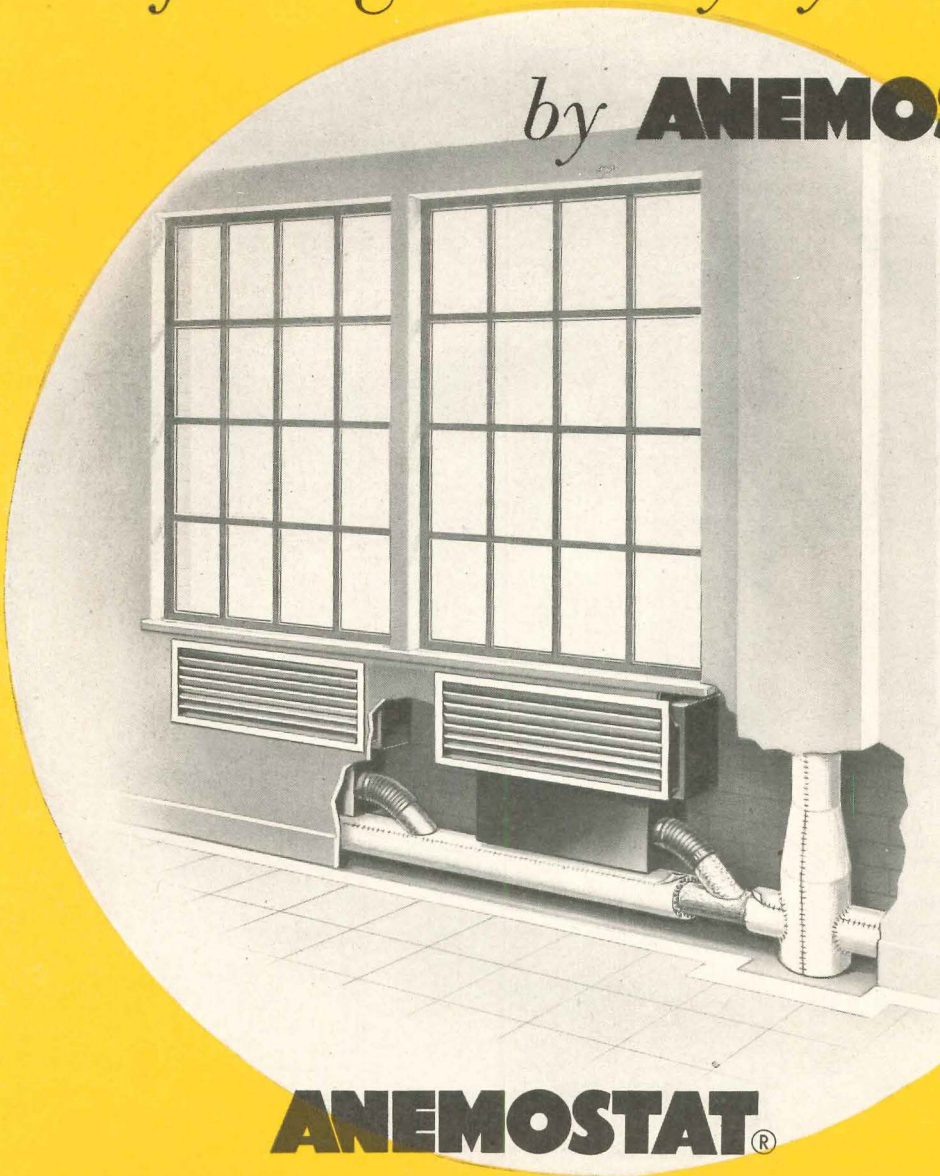
The New

UTW

UNDER THE WINDOW UNIT

for high velocity systems

by **ANEMOSTAT**



The Anemostat "ALL AIR" Under-the-Window Unit offers many new applications for high velocity air distribution. This unit requires no coils, drains, drip pans, or special thermostats and can be simply installed at low cost.

COOLING—Primary cooled air, having been mixed with induced room air, is propelled upward from the unit and further mixed with the warm air from the windows and exterior wall and is then draftlessly diffused throughout the occupied space. Controlled internal induction permits the use of temperature differentials up to 35°.

HEATING—By reducing the controlled induction, high temperature air is propelled upward from the unit and is mixed with the cold air from the windows. The temperature is thus equalized and the air is then draftlessly diffused throughout the occupied space.

ANEMOSTAT®

DRAFTLESS *Aspirating* **AIR DIFFUSERS**

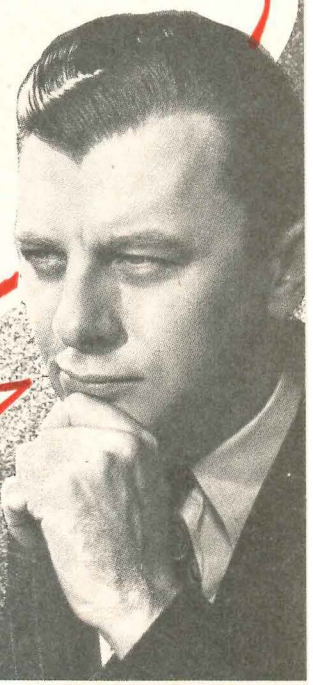
ANEMOSTAT CORPORATION OF AMERICA

10 EAST 39th STREET, NEW YORK 16, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

"No Air Conditioning System Is Better Than Its Air Distribution"

WHAT? You mean MILCOR* Steel Access Doors can be installed for less than wooden doors?



You bet! And maintenance costs are lower, too!

No special framing to build! Milcor Access Doors require no special framing, no cutting or fitting. Three types available for use with plaster, masonry or wallboard.

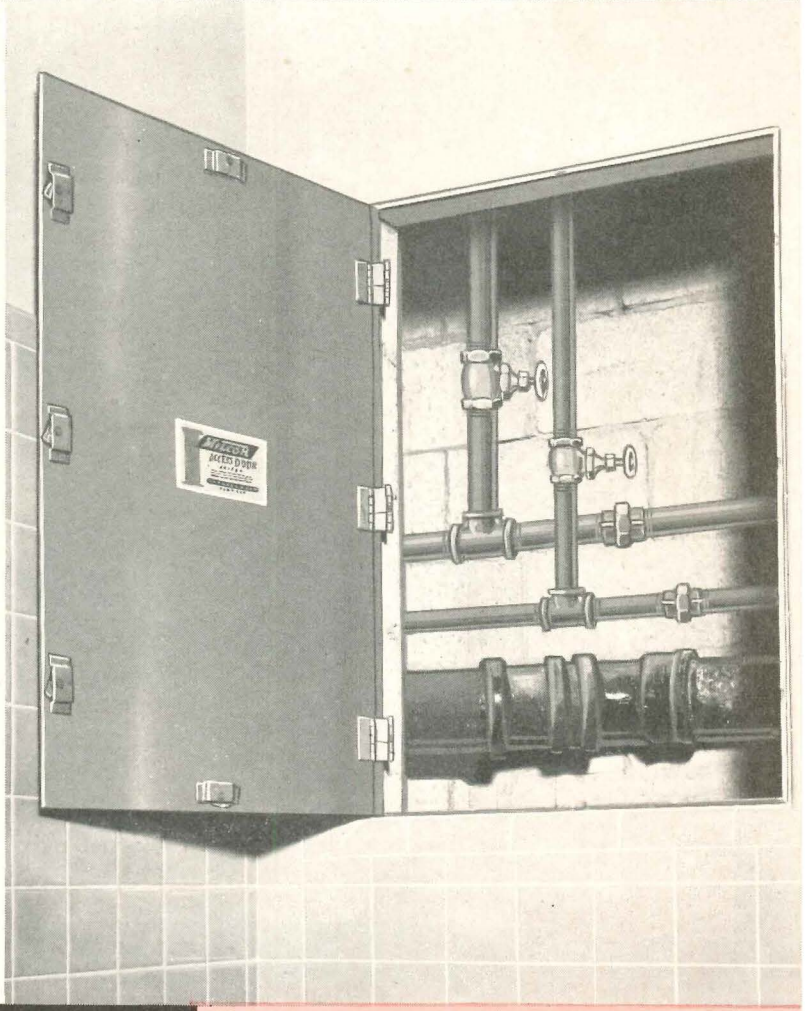
One finish coat usually covers! Milcor Access Doors are furnished painted with rust-inhibitive gray primer. No sanding or filler coats needed.

Good for the life of the building! Made of steel, Milcor Access Doors cannot warp, crack, shrink, swell, or rot. Termite-proof and fire safe.

Gives fast, convenient service entry! Exclusive spring hinge lets door open 175°. Door may be quickly removed by extracting hinge pin. Number of hinges and cam locks determined by size of door.

Milcor Access Doors conform to modern design requirements. They install flush with wall or ceiling surface, almost invisible — yet there, for instant access to key service points in plumbing, heating, electrical, and refrigeration systems. Finishing is simple — paint or paper right over the doors.

For complete details on Milcor Access Doors and other Milcor steel building products, see the Milcor Manual in Sweet's — or write us for a copy.



11 different sizes, from 8" x 8" to 24" x 36" — ready to install in plaster or non-plaster walls. With or without expanded metal flanges.

<INLAND> STEEL PRODUCTS COMPANY

4035 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN

BALTIMORE 5, MD. — 5300 Pulaski Highway • BUFFALO 11, N. Y. — 84 Rapin St. • CHICAGO 9, ILL. — 4301 S. Western Avenue Blvd. • CINCINNATI 25, OHIO — 3240 Spring Grove Ave. • CLEVELAND 14, OHIO — 1541 E. 38th St. • DETROIT 2, MICH. — 690 Amsterdam Ave. • KANSAS CITY 41, MO. — P. O. Box 918 • LOS ANGELES 58, CALIF. — 4807 E. 49th St. • NEW YORK 17, N. Y. — 230 Park Ave. • ST. LOUIS 10, MO. — 4215 Clayton Ave.

STRUCTURAL FORMS—15: Thin Shells of Reinforced Concrete

By Seymour Howard, Architect, Instructor at Pratt Institute

GENERAL CONSIDERATIONS

Advantages

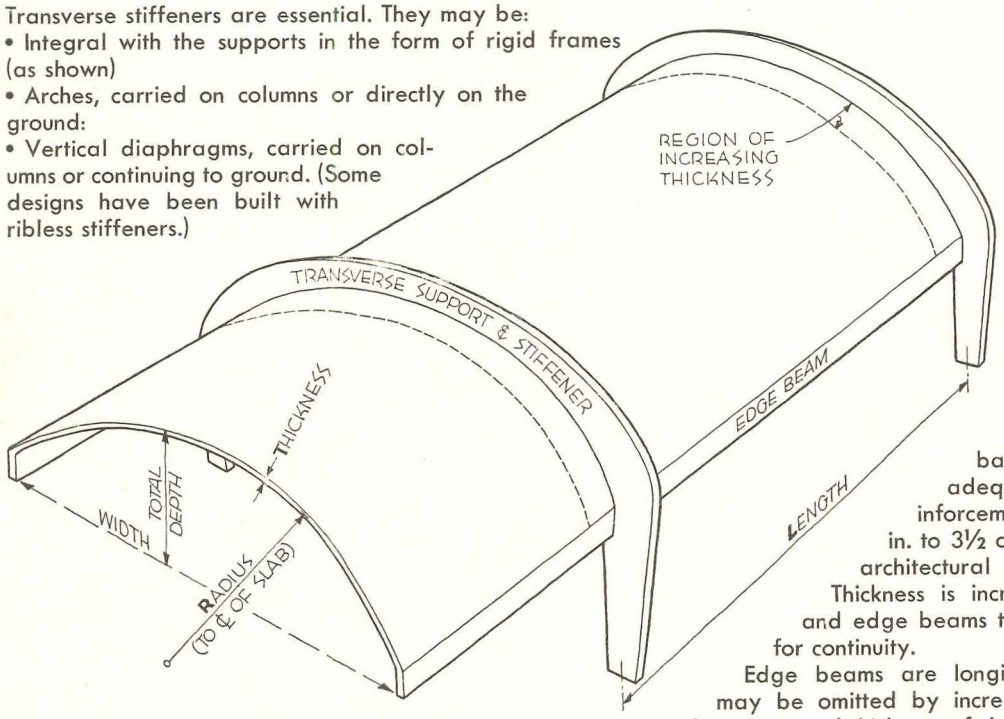
1. "No other structural system makes such an economical use of materials."
2. Freedom of design shapes, both in plan and in section.
3. Ease of providing natural light over large areas.
4. Great capacity to carry unbalanced loads.
5. Fireproof.
6. Great reserve strength. Local damage, even at critical point, will not cause general collapse.

Special Problems

1. Formwork must be carefully designed. Minimum of four reuses of forms for economy.
2. Construction problems unfamiliar to most contractors.
3. Design procedure unfamiliar to many engineers; complicated shapes involve lengthy calculations. "Design of large thin shell roofs is a major engineering problem."
4. Insulation must be provided, preferably above shell and ribs.
5. Surface treatment of exposed concrete must be studied for architectural effect.

A. SHELLS CURVED IN ONE DIRECTION

Transverse stiffeners are essential. They may be:
- Integral with the supports in the form of rigid frames (as shown)
- Arches, carried on columns or directly on the ground:
- Vertical diaphragms, carried on columns or continuing to ground. (Some designs have been built with ribless stiffeners.)



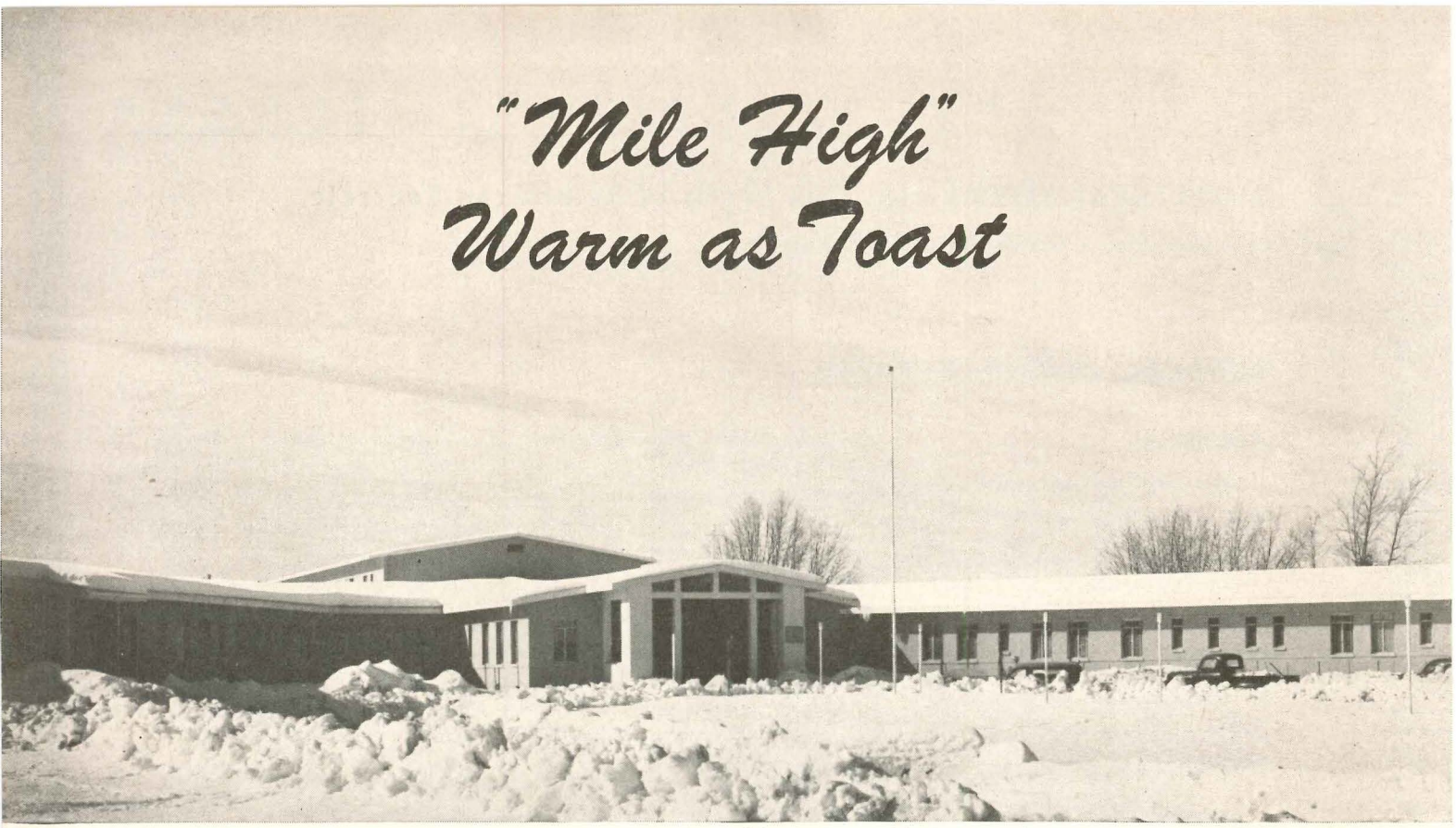
Thickness "t" is usually based on requirements of adequate cover of steel reinforcement and varies from 1 in. to 3½ or 4 in. For preliminary architectural drawings use 3½ in. Thickness is increased near stiffeners and edge beams to, say, 5½ in. to 7 in. for continuity.

Edge beams are longitudinal stiffeners and may be omitted by increasing amount of reinforcement and thickness of shell at edges.

Shells derive their strength from their ability to transfer loads by membrane stresses. These are direct stresses—compression, tension and shear—acting over the entire thickness of the shell at any point. There is no bending of an element of the shell such as exists in an element of a flat slab (except of minor magnitude caused by edge and end conditions). There is no need for continuous longitudinal support as for a masonry barrel vault incapable of supporting tensile stresses.

(Continued on Sheet 16)

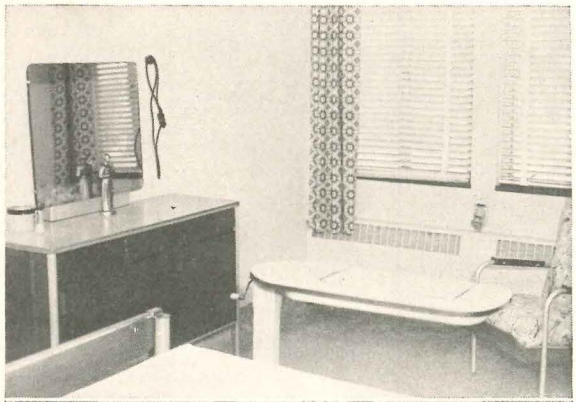
"Mile High" Warm as Toast



Santa Anita Hospital, Lake Arrowhead, California. Built 1951. Operated by the Sisters of St. Joseph. Architect: Roland E. Coate, F.A.I.A., San Marino. Consulting Engineers: Hilburg, Byler & Hengstler, Los Angeles. Heating Contractor: Hansen Plumbing Co., San Bernardino.

Santa Anita Hospital, high in the San Bernardino Mountains, has forced hot water Webster Tru-Perimeter Heating

Comfort is one of the principal advantages of Webster Tru-Perimeter Heating in this new hospital. There are no cold walls to reduce body temperatures because Webster Walvector spreads the heat along every outside wall.



Semi-private room (above) and operating room use Webster Walvector wall-to-wall.

Right, X-ray Department is comfortably heated despite large window areas with Webster Walvector.

Webster Walvector, arranged for perimeter heating, contributes to economy of first cost. It eliminates exposed piping. Installation is easy. Webster Walvector uses sturdy aluminum fins on copper tubing. It's rapidly warmed. It is also possible to reduce heating quickly when occupancy is ended.

You can use Webster Walvector in new buildings or modernization . . . as individual convectors or arranged for perimeter heating. Complete technical data is available in Bulletin B-1551. Get in touch with your Webster Representative or write us.

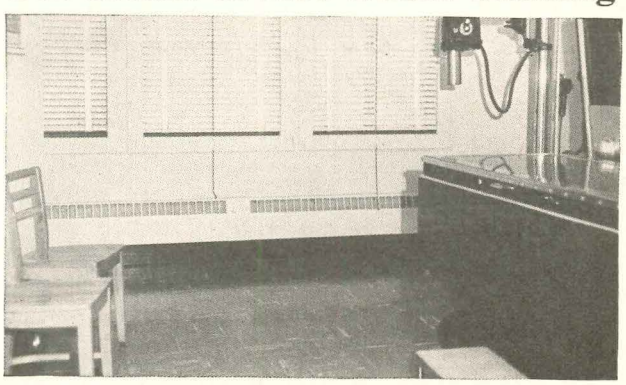
Address Dept. AR-4

WARREN WEBSTER & COMPANY
Camden 5, N. J., Representatives in Principal U. S. Cities
In Canada, Darling Brothers, Limited, Montreal

Webster WALVECTOR

REG. U. S. PAT. OFF.

For Steam or Hot Water Heating

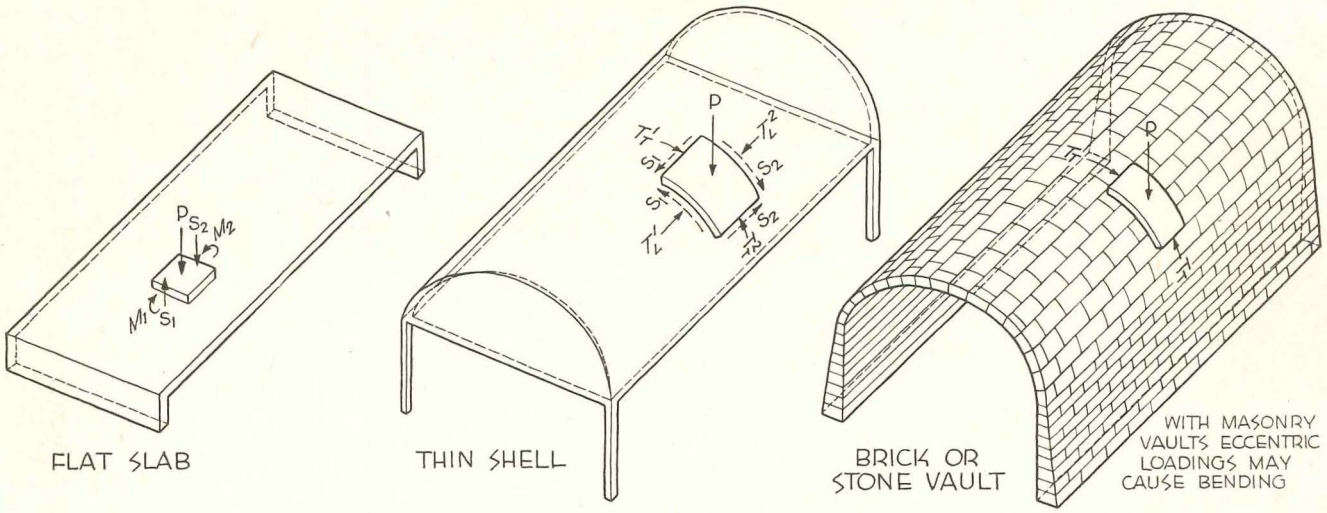


STRUCTURAL FORMS—16: Thin Shells of Reinforced Concrete

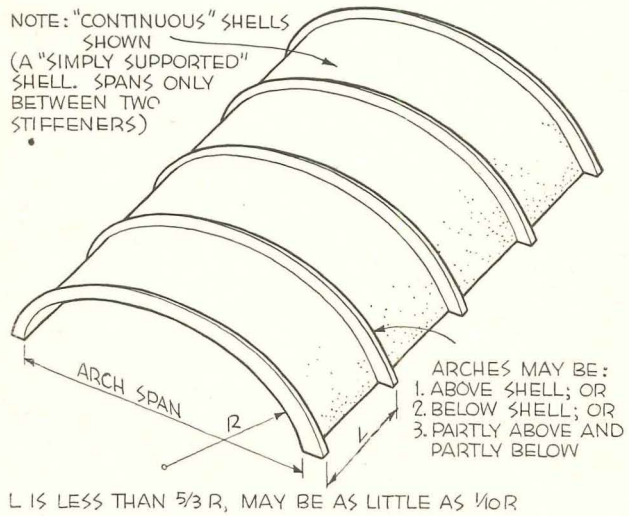
By Seymour Howard, Architect, Instructor at Pratt Institute

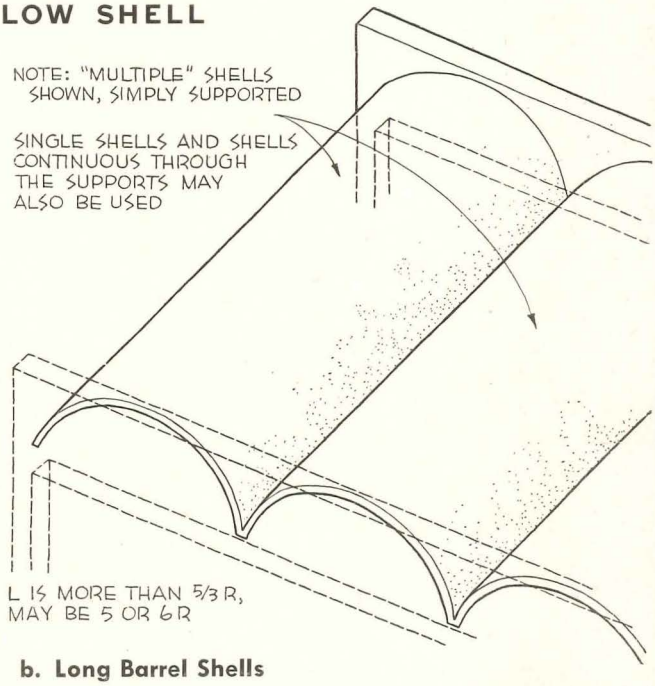
A. SHELLS CURVED IN ONE DIRECTION *(Continued)*

Comparison of forces acting on unit elements of shell, slab and vault. Intermediate form between long barrel shell and flat slab is tee-beam and slab.



A-1 CENTER(S) OF CURVATURE BELOW SHELL





a. Short Barrel Shells

Usually used for very wide spaces (i.e. Stiffening arch spans of over 150 ft, occasionally as short as 50 ft)

Max. arch span built—340 ft

Max. arch span possible—500 to 600 ft or more

Length of shell "L" usually 20 to 40 ft.

Transverse forces govern (T_T above) for shell. Arch design is primary consideration. Depth at crown varies $\frac{1}{50}$ to $\frac{1}{100}$ of arch span. Usual provisions for thrust and vertical load must be carefully designed

b. Long Barrel Shells

Max. length of shell built—236 ft (Need for expansion joints limits length). Usual lengths 50 to 135 ft.

Width of shell 30 to 50 ft.

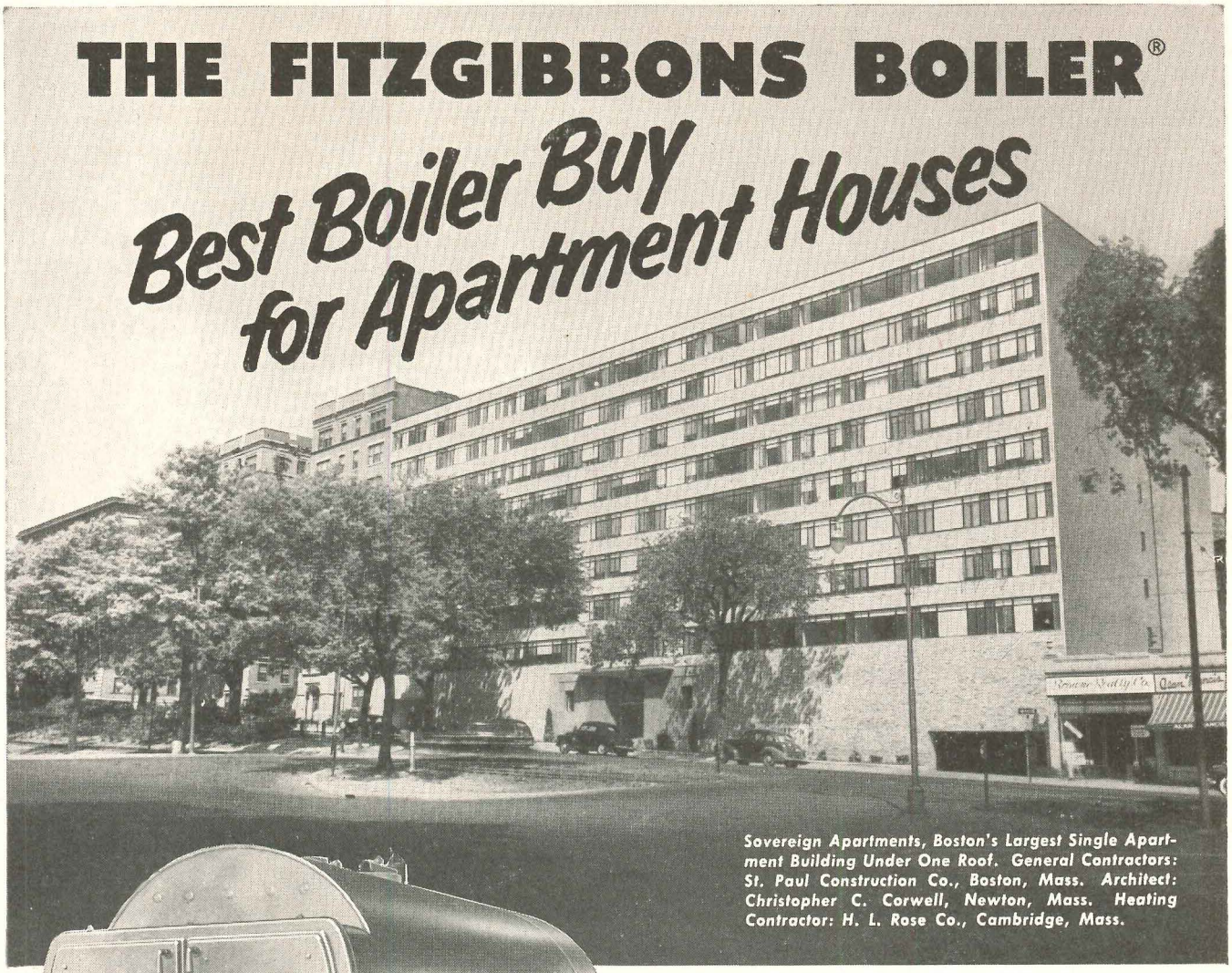
Depth of shell including edge beam (if used) usually about $\frac{1}{10}$ length

Longitudinal forces govern (T_L above)

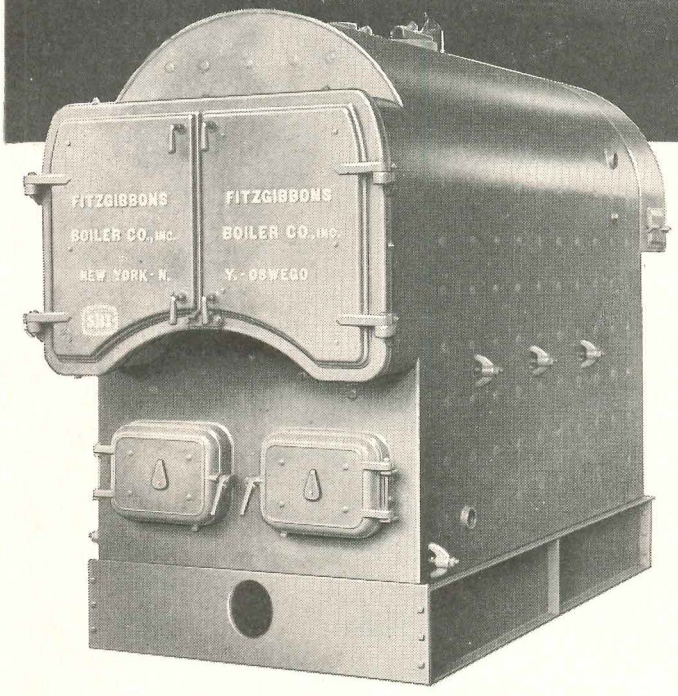
Note: For calculating cylindrical short and long barrel shells, refer to "Design of Cylindrical Concrete Shell Roofs," Manual No. 31 American Society of Civil Engineers, N. Y., 1952

THE FITZGIBBONS BOILER®

Best Boiler Buy for Apartment Houses



Sovereign Apartments, Boston's Largest Single Apartment Building Under One Roof. General Contractors: St. Paul Construction Co., Boston, Mass. Architect: Christopher C. Corwell, Newton, Mass. Heating Contractor: H. L. Rose Co., Cambridge, Mass.



Two "D" Type boilers each rated for 18,220 sq. ft. steam, E.D.R., are installed. "D" Type boilers are available in sizes from 3650 to 42,500 sq. ft. steam E.D.R. Types for oil, gas, stoker and hand fired coal.

PLAIN TALK! Bernard Roberts, President of Sovereign Apartments, Inc., writes, ". . . this is the seventh building in recent years in which we have installed your boilers and have found them very efficient, economical to operate, easy to maintain and trouble-free over a period of years."

We think that Mr. Roberts' repeated insistence on Fitzgibbons boilers in his buildings is convincing testimony to the fact that for apartment houses, as indeed for all other buildings, "your best boiler buy is Fitzgibbons."

Full specifications and data in the "D" Type Bulletin on request. For complete details, write to the Fitzgibbons Boiler Company Inc., 101 Park Avenue, New York 17, N. Y. Ask for catalog AR-4.

SINCE 1886 MOST ECONOMICAL IN FUEL THE FITZGIBBONS BOILER 1886

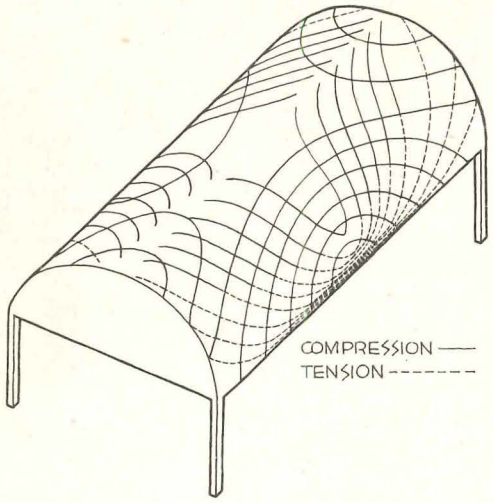
SBI

THE FITZGIBBONS BOILER®

STRUCTURAL FORMS—17: Thin Shells of Reinforced Concrete

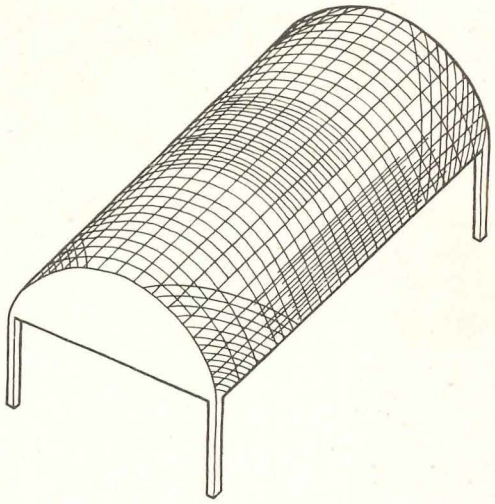
By Seymour Howard, Architect, Instructor at Pratt Institute

A-1 CENTER(S) OF CURVATURE BELOW SHELL *(Continued)*



Typical stress trajectories in a simply supported, single long barrel shell

Note! 1. Concentration of tensile forces at lower edge in center of shell lengths;
2. Horizontal component of these forces (in plan) causes lower edges of shell to move *inward* toward longitudinal Center Line. This is exactly the opposite of the movement of conventional masonry barrel vault or arch.

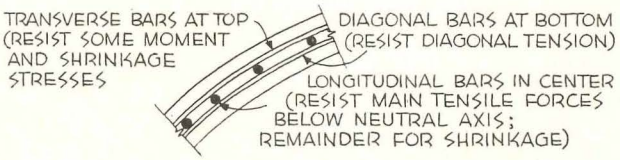


Typical arrangement of reinforcement in a simply supported, single long barrel shell

While it is desirable to place the reinforcement exactly along the lines of principal stress, this requires careful bending and placement. A rectilinear arrangement as shown above is easier to bend and place, although more steel will be required. Diagonal bars cannot be avoided at the lower edges of the shell near the supports.

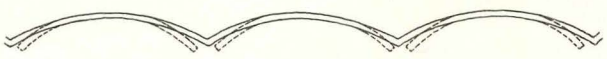
For continuous and cantilevered shells, tensile stresses will exist at top of shell over the supports, and compressive stresses at lower edges

(See elevation diagram at bottom of page)



Placement of bars in shell

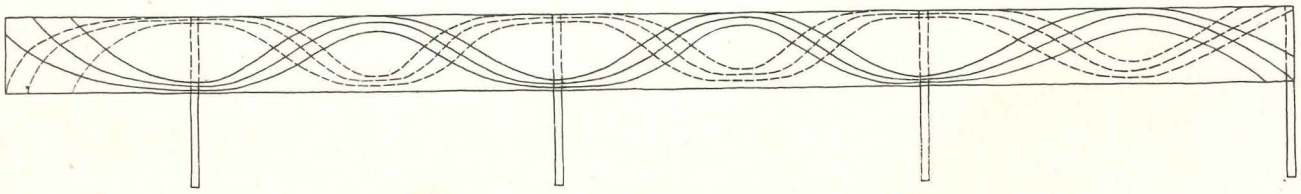
Reinforcement may be in the form of bars or a combination of bars and mesh



Section through transverse Center Line of multiple barrel shell

The tendency of the lower edges to move inward, as shown in broken line, must be resisted by adequate transverse tensile reinforcement

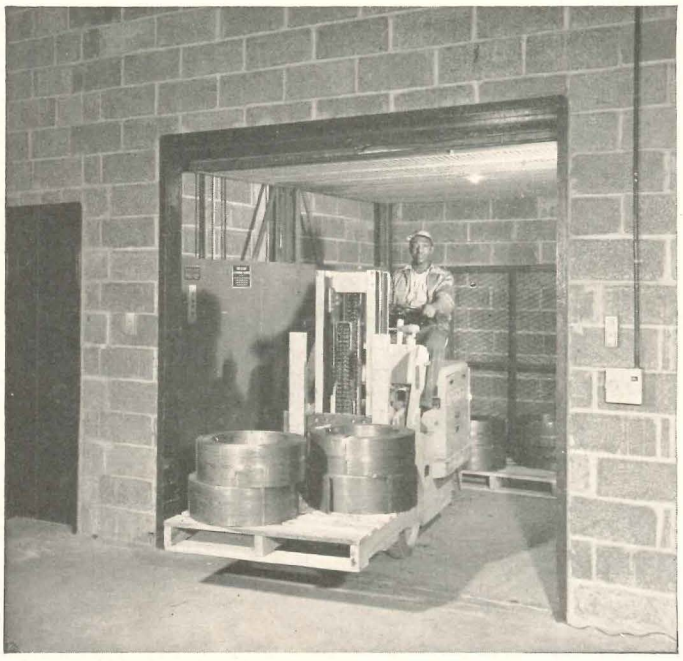
Elevation of continuous long barrel shell showing stress trajectories (approximate relationships)



Rotary Oildraulic

the modern elevator for modern buildings

UNEXCELLED FOR FREIGHT . . . OR PASSENGER SERVICE



ROTARY OILDRAULIC FREIGHT ELEVATOR
SPEED PRODUCTS CO.
Long Island City, New York
Architects: David and Earl J. Levy, New York City
General Contractors: Caristo Construction Co., Brooklyn, N. Y.
Elevator Contractor: Burwak Elevator Co., New York City

ROTARY OILDRAULIC PASSENGER ELEVATOR
SANTA MONICA MEDICAL ARTS BUILDING
Santa Monica, California
Architect: Weldon J. Fulton, Santa Monica
General Contractors: Pozzo Construction Company, Los Angeles
Elevator Contractor: Elevator Maintenance Co., Los Angeles

No penthouse or heavy supporting sidewalls

The Rotary Oildraulic Elevator is moved and controlled by oil under pressure, the most powerful and practical method of lifting heavy loads.

The elevator car and its load are supported by the hydraulic system — not by the building structure. This eliminates the costly, unsightly penthouse that interferes with modern architectural design. It also makes possible a substantial lightening of the shaftway structure by eliminating heavy sidewalls. Rotary's compact power unit can be located on any landing, on any side of the hatchway. Thus it can be placed in an area with other mechanical equipment for convenience in servicing and to save space.

Smooth starts, gentle stops, accurate landings

The revolutionary Rota-Flow oil hydraulic power system gives velvet-smooth fluid operation. You can depend on smooth starts and cushioned stops. Oildraulic automatic floor leveling positions the car to each landing with exactness—¼″ is guaranteed!

Over 65,000 Rotary Oildraulic elevators and lifts are serving leading companies from coast to coast. They are manufactured in sizes and capacities as specified, with any desired types of cabs, doors and controls. Our Engineering Department will be glad to assist you on plans and specifications. Write for catalog and complete architectural data.

ROTARY LIFT CO., 1008 KENTUCKY, MEMPHIS 2, TENN.

World's oldest and largest builders of hydraulic elevating equipment

SEE OUR CATALOG IN SWEET'S

Rotary®

Oildraulic® Elevators

PASSENGER AND FREIGHT

PRODUCTS

(*Continued from page 207*)

New Printing Plant Features Year-Round Air Conditioning

One of the major features of a new $2,000,000 building for the Gospel Publishing House in Springfield, Mo., is a complete year-round air conditioning system designed and built in conjunction with the initial construction of the plant. Nub of the air conditioning is a 220-ton *York Turbo* compressor water cooling system, centrally controlled from the boiler room. This system includes a cooling tower, condenser water pumps, chilled water pumps and a steam con-

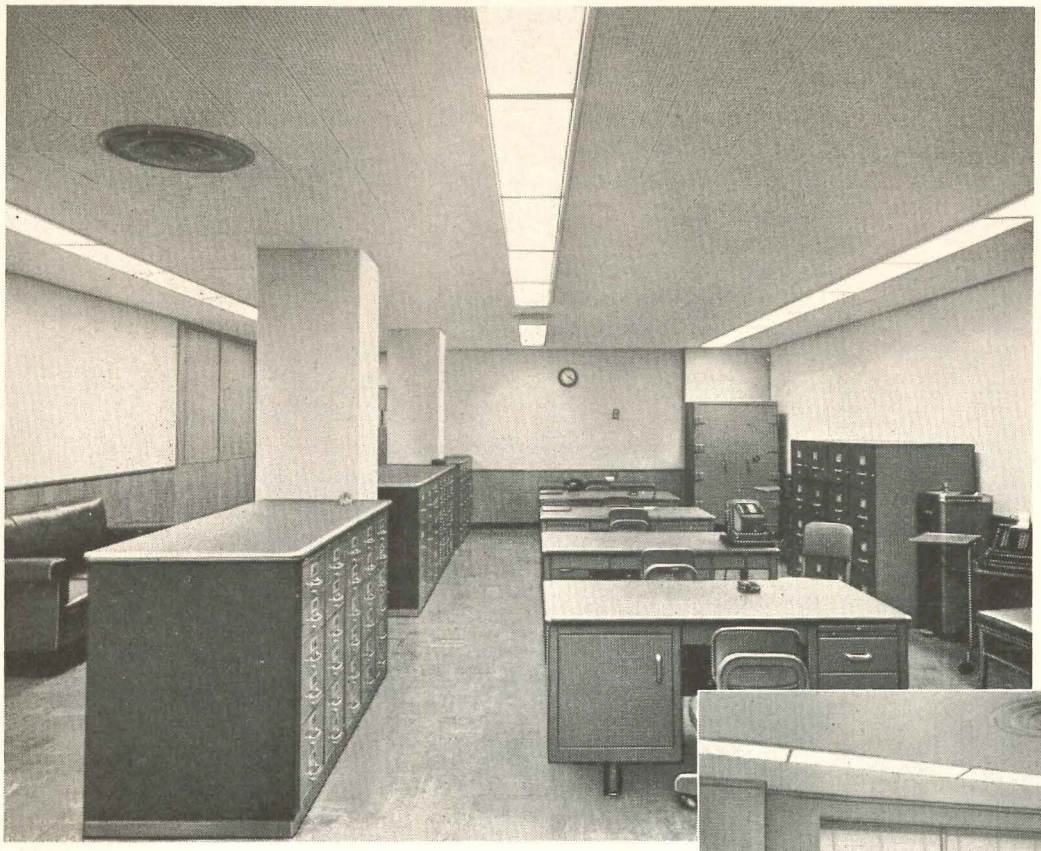
Composing room of printing plant which features all-year air conditioning

verter. Lowside equipment is made up of four built-up air conditioning units with air washers and two factory-built ceiling-hung units.

All duct side grills are fitted with adjustable louver dampers, and while the air ducts have been arranged so that they are least noticeable, they do not interfere with the plant's sprinkler system. Neither is the air supply deflected by the rows of fluorescent lighting fixtures. In the pressroom, large ceiling diffusers were used to avoid conflict between air flow and the movement of paper in the presses.

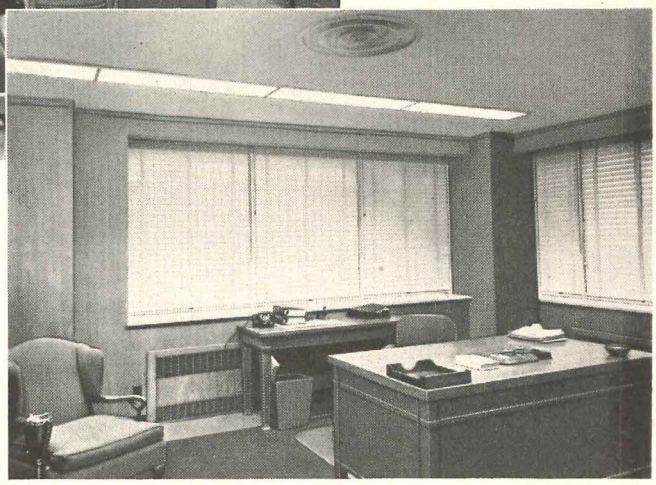
According to the manufacturer, the chief advantage in installing this type of air conditioning during construction

(*Continued on page 220*)



Treasury Department

Typical Private Office



Easy on the Eyes—

...with Lighting by LITECONTROL

Where illumination's concerned sales-minded electric utilities want the best. This one in Kentucky uses two types of standard LITECONTROL fixtures for efficient control of light . . . and smart appearance. Rolled-edge trim helps *hide* uneven spots in ceilings that flat trims only emphasize.

In the executive office, LITECONTROL No. 5134 with Holophane No. 9016 low brightness lens provides ample illumination—free from glare and sharp contrasts.

Easy to maintain. Lenses help keep dirt out. To clean — simply *push trigger-catch,* open door, wipe surfaces with damp rag, and *push door shut* — no tools required.

At left, LITECONTROL fixture No. 5838 is a practical selection for the general office. Rugged, all-metal design provides 35 to 25 degree cutoff from egg-crate louvers . . . holds glare down at critical viewing angles. No tools needed for servicing.

Two more examples of the "More Light and Looks for Your Money" you get with *every* LITECONTROL Fixture.

INSTALLATION: Kentucky Utilities Company, Lexington, Kentucky.
ARCHITECT: Robert W. McMeekin, Lexington, Kentucky.
LIGHTING ENGINEERS: R. W. Wilson, J. T. Cole & K. R. Cardey, Kentucky Utilities Company.
DISTRIBUTOR: Graybar Electric Company, Inc., Indianapolis, Indiana.
ELECTRICAL CONTRACTOR: Hatfield Electric Company, Indianapolis, Indiana.

Treasury Department

FIXTURES: 18 No. 5838, 3-lamp recessed louvered fixtures on 9′ centers — standard cool white 96T12 lamps.
INTENSITY: Room average, 90 footcandles. Desk Tops 75-80 footcandles.

Typical Private Office

FIXTURES: 8 No. 5134, 3-lamp recessed fixtures with No. 9016 lenses on 8′ centers — standard warm white 48T12 lamps.
INTENSITY: Room average, 70 footcandles. Desk Tops, 85 footcandles.

Note: Intensity figures by Kentucky Utility engineers after three months operation.

LITECONTROL

Fixtures

LITECONTROL CORPORATION

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DESIGNERS, ENGINEERS AND MANUFACTURERS OF FLUORESCENT LIGHTING EQUIPMENT DISTRIBUTED ONLY THROUGH ACCREDITED WHOLESALERS

THE RECORD REPORTS

(*Continued from page 330*)

Hotel, Miami, Fla.; Westover Hotel, New York City; Schaefer Building, Dearborn, Mich.; the Saginaw, Mich., Courthouse.

HENRY STUART WATERBURY of Irvington, N. Y., senior partner in Delano & Aldrich, New York Architects, died March 2 at New York Hospital after a long illness. He would have been 74 on March 18.

Mr. Waterbury, a Fellow of the American Institute of Architects, became a partner in Delano & Aldrich 30 years ago. Buildings he designed included the Yale Divinity School, Virginia Military Institute, Hotchkiss School buildings and Cornell University Union as well as buildings for expansion of the United States Military Academy and many churches and city and country houses.

BENJAMIN S. HUBBELL, 85, founder of the Cleveland architectural firm of Hubbell & Bennes, died February 22 in Cleveland.

Mr. Hubbell, who designed the Cleveland Art Museum and the Ohio Bell Telephone Company, received his master's degree in architecture from Cornell University in 1894 and founded his firm in 1896. He was the architect for the original buildings of St. Luke's Hospital in Cleveland and for Cleveland's Masonic Auditorium and Masonic temples and the Cleveland School of Art.

WALTER DABNEY BLAIR, New York Architect, died January 12 at the age of 75. A graduate of the University of Virginia, where he received B.A. and M.A. degrees, Mr. Blair received a B.S. in architecture at the University of Pennsylvania. He also studied in Paris for three years and received a diploma and the Miller Prize, among other awards, from the Ecole des Beaux Arts. He opened offices in New York in 1903 and in 1903–04 was also professor of architecture at Cornell.

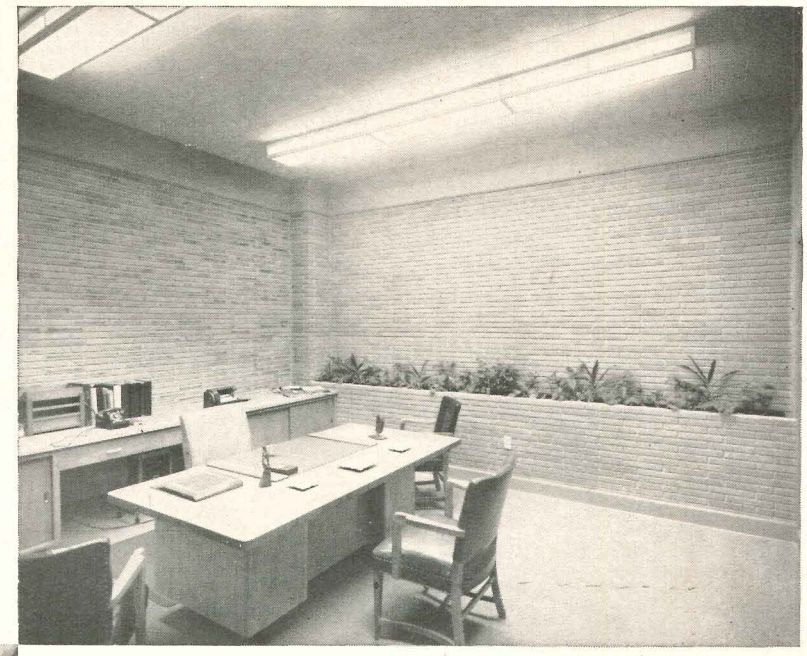
Mr. Blair, a Fellow of the American Institute of Architects, designed the Public Library at Charlottesville, Va.; the Warner Library, Tarrytown, N. Y.; the Stahlman Building, Nashville, Tenn.; the Edwin Gould Foundation, New York City; and several buildings at the University of Virginia, among many others.

DE WITT CLINTON JR., 88, formerly a member of the New York architectural firm of Clinton and Russell, died February 15 in Ridgewood, N. J. Mr. Clinton, a great-grandnephew of De Witt Clinton, former Governor of New York, had done architectural work on the Hudson Terminal Building, the Astor Hotel and the Singer Building in New York.

CHESTER H. MILLER, senior partner in the architectural firm of Miller and Warnecke of Oakland, Calif., until his retirement in 1951, died January 1 after a long illness. He was 62 years old.

The firm of Miller and Warnecke designed many of Oakland's large buildings, including the Public Library, Women's City Club, Hill Castle Apartments, Castlemont High School; in San Leandro, Calif., the San Leandro High School; in Berkeley, the Forestry and Physics buildings at the University of California.

(*More news on page 334*)



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W. G. Clarkson Co. } Associate Architects And Engineers

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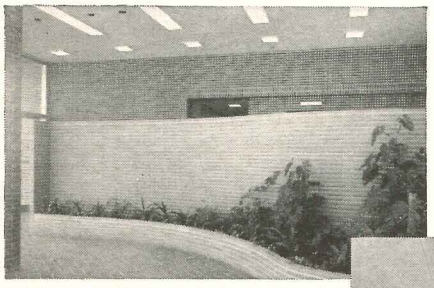
Gruber Brothers, Inc.—Fixture Manufacturer

Surface mounted fluorescent luminaires in vice-president's office. Smooth opal glass ALBA-LITE side panels distribute light evenly throughout the room. Long lengths provide sleek, streamlined appearance.

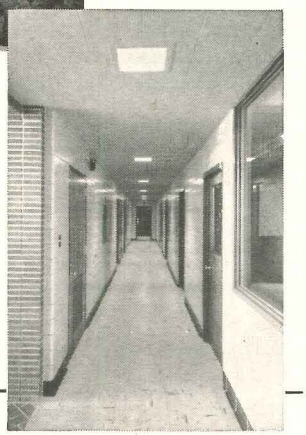
Hinged FOTA-LITE glass bottom has louvers photographically reproduced through the entire thickness of the glass to assure accurate cutoff and low fixture brightness.

Adding architectural variety in the snack bar, are troffer units (48 in. long and 12 in. wide), using FOTA-LITE shielding glass. Smooth, flat surface of this nonwarping, nondiscoloring glass cleans with the wipe of a cloth.



Front lobby also has FOTA-LITE in troffers and highly heat-resistant PYREX brand LENSLITES in recessed boxes for control of incandescent light sources.

Soft over-all lighting effect in hallways is obtained by using PYREX brand LENSLITES with wide-angle lens in recessed ceiling boxes.



How engineered glassware was used in lighting this windowless building

Here's an unusual lighting and design problem which shows the versatility you can get with engineered lighting glassware.

The Acme Brick Company general office building in Ft. Worth has no windows. Interior lighting gets no assist from natural daylight.

Yet, you can easily see how the architects, lighting engineers and fixture manufacturer have provided highly functional lighting and made a beautiful installation, too. They used a selection of CORNING FOTA-LITE and ALBA-LITE shielded fluorescent and incandescent luminaires.

Using these units in various design layouts affords high level, quality lighting for 22,800 sq. ft. of floor space. And the architectural flexibility of the glassware complements the design of the installation itself.

Give your customers *all* the benefits of high-efficiency lighting with low fixture brightness and modern styling by specifying CORNING engineered lighting glassware. The coupon will bring you full details of the many sizes and shapes available.

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Corning means research in Glass

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Please send me:

☐ Booklet LS-32, describing Corning's full line of lighting ware.

☐ Photometric data sheets on ALBA-LITE, FOTA-LITE and PYREX brand LENSLITES

Name_____ Title_____

Firm_____

Address_____

City_____ Zone____ State____

(*Continued from page 332*)

RUTGERS PLANS LIBRARY FOR 1.5 MILLION BOOKS

A $4 million library capable of handling a collection of 1,500,000 volumes will soon be under construction at Rutgers University, New Brunswick, N. J. York & Sawyer of New York in association with Anderson & Beckwith of Boston are the architects.

York & Sawyer of New York in collaboration with Anderson & Beckwith of Boston have designed the new library for Rutgers University. It will have space for handling 1,500,000 volumes

The new building, on a site overlooking the Raritan River, will have exteriors of red brick with white limestone trim to harmonize with recently constructed Rutgers buildings. But it will be "a departure from traditional Georgian lines in order to more efficiently serve its purpose," according to the university announcement.

There will be a two-story service wing and a six-story book stack; the building will have a total capacity of about two million cu ft.

The main floor of the service wing will contain the lobby, circulation desk, catalog and periodicals room, a reading room with 200-seat capacity, the offices of the librarian and assistant librarian, a work room and a preparation room and a "New Jersey Room" for the display of rare books in the library collection.

The basement of this part of the building will contain a receiving room, a section for temporary storage of newly-arrived books, another 200-seat reading room, a reserve section for books on education, photostating and microfilming rooms, stacks for rare books and "Rutgersensia," a map room and a map workroom. The library has been arranged so that the two reading rooms in this part of the building can be kept open at hours other than those of the stack and other parts of the library.

The six-story stack, in addition to book storage and four subject-matter reading rooms, will contain 350 student carrells and faculty study rooms.

(*More news on page 336*)

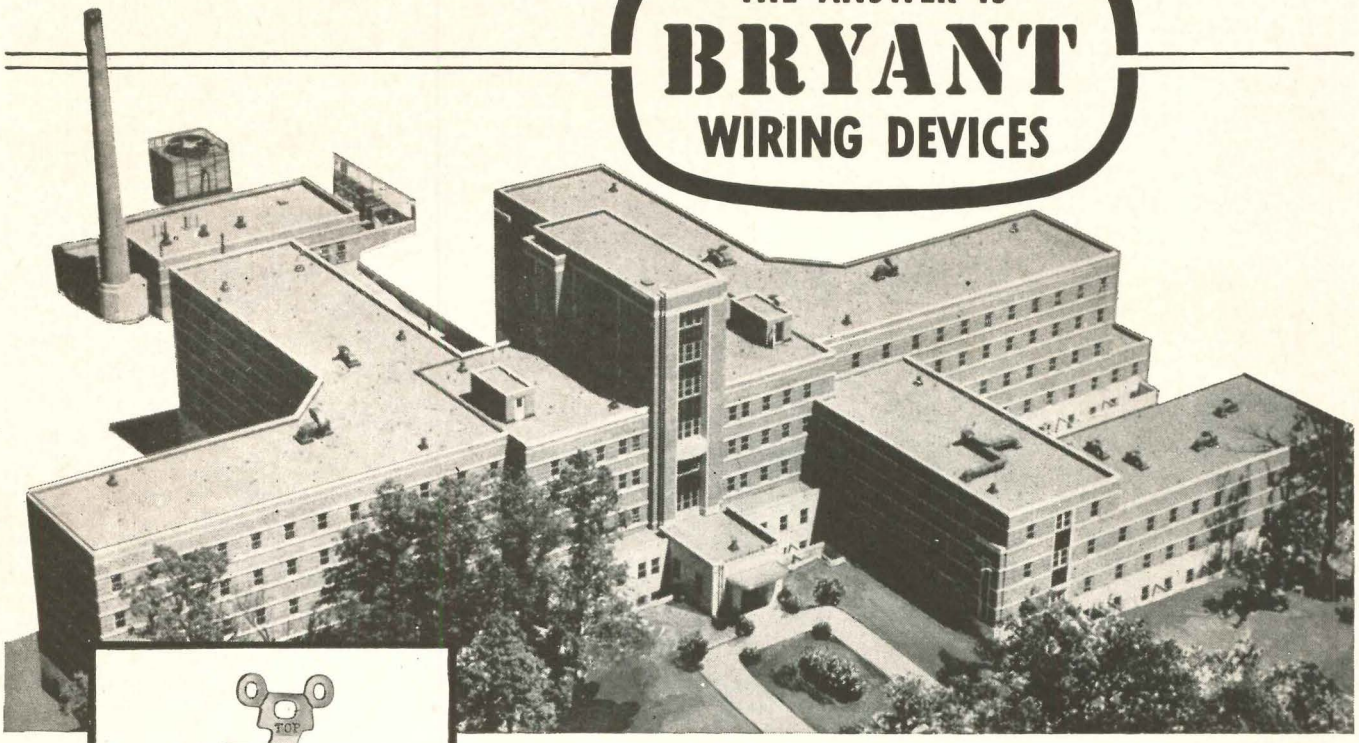
At The Moses H. Cone Memorial Hospital

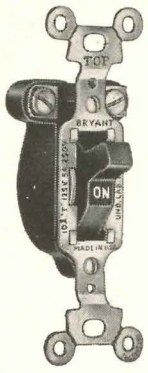
Greensboro, N. C.

THE ANSWER IS

BRYANT

WIRING DEVICES





No. 4701 Mercury Switch

No. 5262 Grounding Outlet

Architects—Samuel Hannaford and Sons, Cincinnati, Ohio
Consulting Engineers—Watson & Hart, Greensboro, N. C.
Electrical Contractor—Miller Electric Co., Columbia, S. C.
General Contractor—J. A. Jones Construction Co., Charlotte, N. C.
Hospital Consultant—Christopher Parnall, M.D., Ann Arbor, Michigan

NEW HOSPITAL—Greensboro's new 300 bed Moses H. Cone Hospital meets today's demand for the best in hospital construction. From surgical equipment to wiring devices, the specifications called for quality and dependability.

BRYANT THE CHOICE—Throughout this big hospital Bryant quality wiring devices assure dependable electrical service and provide years of operating economy. Bryant 4701 Mercury Silent Switches meet the need in hospital-quiet corridors and rooms. Bryant 5262 duplex outlets provide the safe grounding of portable electrical equipment and appliances.

CHOOSE FROM THE FULL LINE—*Whatever* the wiring device problem, there's a full line of Bryant quality devices for home, office and industry.

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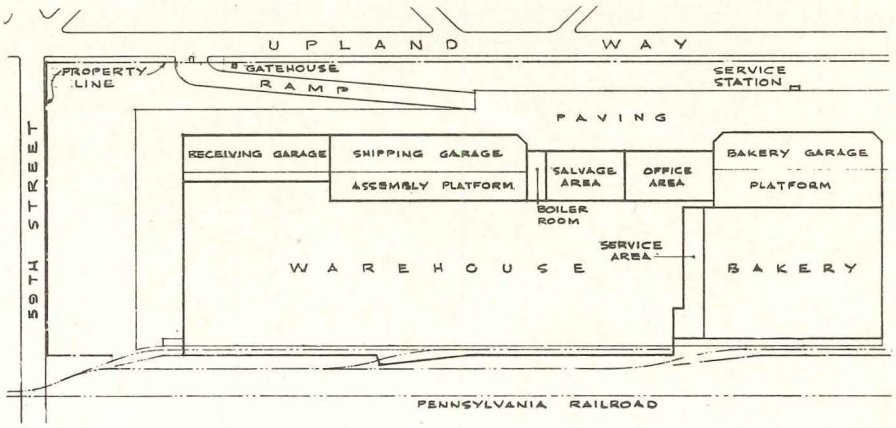
THE RECORD REPORTS

(*Continued from page 334*)

PRELOADING SOLVES SITE PROBLEM FOR NEW BAKERY

The American Stores Company bakery and warehouse at 59th Street in West Philadelphia, which the owner believes to be "the world's largest automatic bread and cake bakery and the largest grocery warehouse ever constructed," is built on a 3000 by 650-ft site which was originally a quarry. Ganteaume & McMullen of Boston were engineers and architects.



American Stores Company bakery and warehouse in West Philadelphia is believed by the owner to be the world's largest automatic bread and cake bakery and grocery warehouse. Site is 3000 by 650 ft

The site, which parallels the tracks of the Pennsylvania Railroad, was filled partly with quarry tailings and partly with heterogeneous material such as is usually found on city dumps. It was obvious that though the fill was more than 30 years old, it was unstable. Wooden piles were ruled out, both because of the low ground-water level and because of the difficulty of driving into the quarry tailings. Even concrete piles would be very difficult to drive; and the cost of these, to carry a one-story structure, was disproportionate to the value of the proposed buildings.

Professor Casagrande, the internationally-known expert on soil mechanics, was called into consultation; and he suggested the possibility of preloading the ground. An area 100 by 100 ft was preloaded with sand; and careful records were kept — of the settlement while the load was being applied, the rate of settlement after the full load was in place, and the rebound of the original ground when the load was removed. The results showed that settlement stopped within 10 days and that the rebound of the ground was negligible.

A complete sand fill (in no case less than four ft) was placed over the whole warehouse area, to bring the ground up to the proposed floor level. This fill was then surcharged with sand equivalent to one and a half times the dead and live loads of the building and its

(*Continued on page 338*)

KENNARD Engineered WATER SAVERS

Announcing the latest addition to the .....

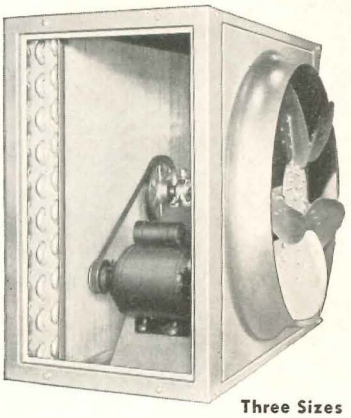
PACKAGED ECONOMY LINE

RESIDENTIAL—COMMERCIAL—INDUSTRIAL

AIR COOLED CONDENSER

Kennard planned for quiet operation; incorporating a specially designed air venturi, and a top quality five blade heavy duty fan.

Continuous capacity operation is assured by a generous coil surface and a long lived "V" belt drive.



Three Sizes
2, 3 and 5 Tons

TWO OTHER EFFICIENT

WATER SAVERS

TO SERVE YOUR PARTICULAR NEEDS

Five Sizes
3, 5, 8, 11 and 16 Tons

KT—COOLING TOWERS
EK—EVAPORATIVE CONDENSERS

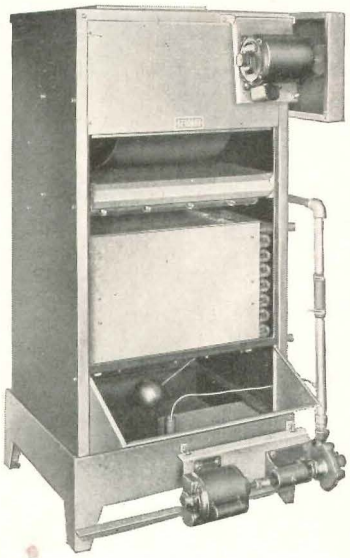
Kennard selected centrifugal type fans (Hot-Dip Galvanized) for quiet operation and for their ability to ***overcome duct resistance*** on indoor installations, and adverse wind effects on outdoor installations.

Completely galvanized cabinets, rugged enough for ***outdoor*** use, and completely coated on interior with an asphalt and asbestos fibre material for further rust-proofing.

Wetted Deck of the Cooling Tower is long lived clear heart of redwood.

The Evaporative Condenser has all prime surface copper coil.

For Air Conditioning Units and larger Water Savers, see the Kennard Representative, or write for special bulletins..



Five Sizes
3, 5, 7½, 10 and 15 Tons

Representatives in all principal cities

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ST. LOUIS 17, MO., U.S.A.

 (*Continued from page 336*)

contents, and this surcharge was left in place not less than 15 days. The loading was done in sections so as to use the same sand many times. After the last section had been loaded, the sand was used for fill in the bakery area, where the quarry excavation had not been filled previously but where the ground was 20 ft below the required level.

Spread footings were then used in the normal way, except that they were kept as shallow as possible so as to have the benefit of the compacted sand fill for further distributing the load on the poor material below.

The bakery is in part one-story and in part three stories. It is built of reinforced concrete with the conventional flat slab design except that, instead of the usual flaring type, the column capitals are square, with vertical sides and minimum depth. This facilitated the installation of the numerous conveyor systems that were hung from the ceiling. Instead of the usual flat-slab coefficients, the slabs and their supports were designed in accordance with A.C.I. requirements for flat slabs as continuous frames.

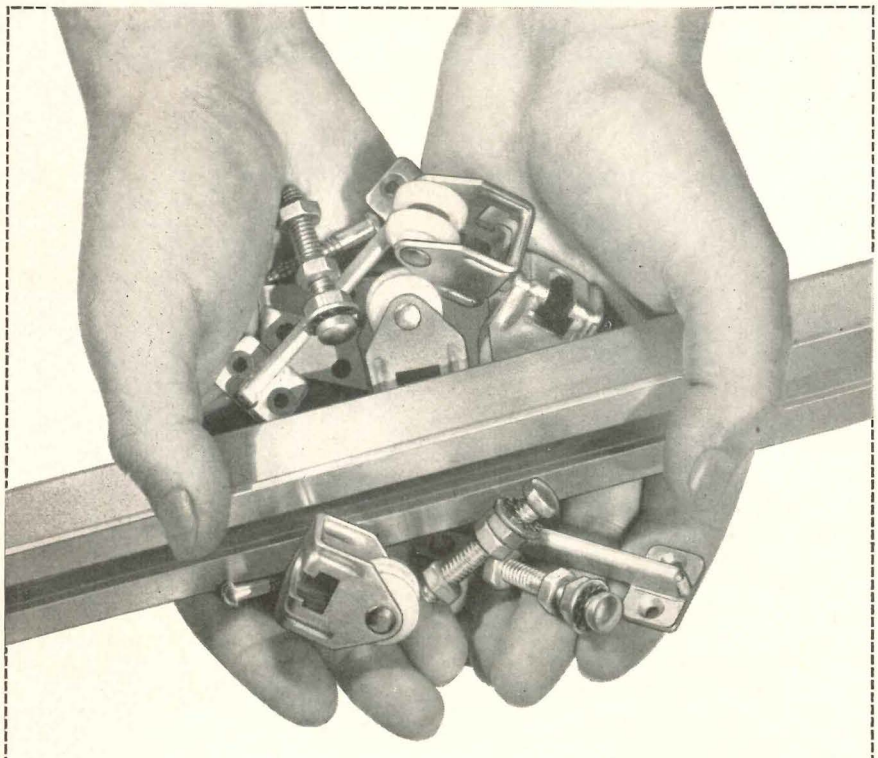
The interior walls are faced with clear-glazed structural tile, from the ceiling to the top of the concrete base that is two ft above the floor; this base is faced with a galvanized steel plate. The floor surfaces are either of brick, set in acid-resistant resin cement, or of acid-resistant resin tile. With the exception of the ceiling, there is therefore no exposed concrete within the bakery proper.

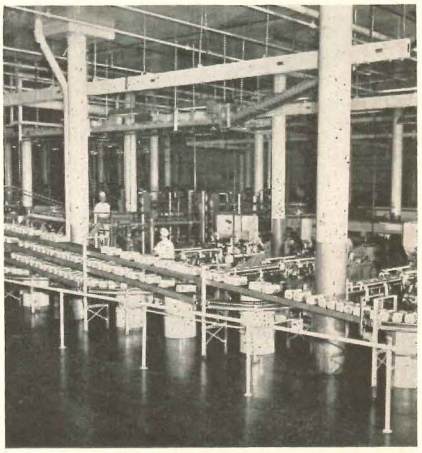
The warehouse is a one-story building with a concrete floor, masonry-bearing walls, and steel roof frame. The concrete floor rests on the compacted sand fill described above; it is divided into 65 by 65-ft squares armored with steel angles on all sides to avoid the breakdown of edges at construction joints.

Columns are spaced 21 ft on centers both ways — the spacing found best for storage of merchandise on pallets. Above the selection area, where merchandise must be stored no higher than a man can reach conveniently, the space is utilized by hanging mezzanine platforms from the roof girders.

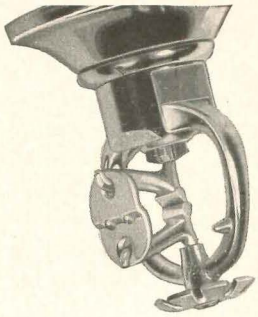
Every other girder is cantilevered four ft beyond the columns and a lighter member hung between the ends of the cantilevers — resulting in an appreciable saving of steel, especially where the mezzanines are hung.

Since the building is more than 1100 ft long, expansion joints are installed approximately every 200 ft through the roof and walls.

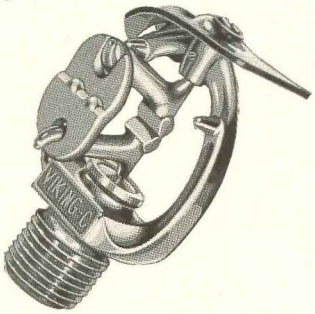




(*More news on page 340*)



They also serve who only stand and wait



What better way is there to describe the advantages of a Viking Sprinkler System than by John Milton's quotation, "They also serve who only stand and wait." A Viking system, during the time it "stands and waits" to quench fire the moment it starts, serves your clients in another way . . . cutting his insurance costs as much as 75% in many cases . . . enough to pay for the Viking system in an average of seven years. Your clients will appreciate your "for-the-years-ahead-planning-and-savings" when you include Viking Sprinkler Systems in your designs. Contact the Viking representative nearest you. His full-time engineering staff is at your service to help you design the sprinkler system for your next building.

For the facts on Viking sprinklers write for your copy of "Fire and Your Business."

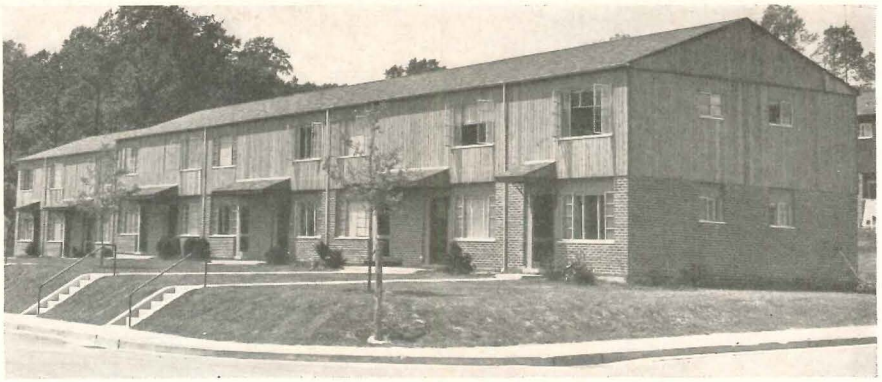
the Viking corporation
HASTINGS, MICHIGAN

THE RECORD REPORTS

(*Continued from page 338*)

NAVY REPORTS PROGRESS ON TITLE VIII HOUSING

The Navy's report on the status of its half-billion-dollar housing program, made before the change in Administrations, included some comments on the progress of the Title VIII program and



Title VIII housing for the Navy. Above: Severn River, Md. — Shreve Walker & Associates, architects; below: Sigsby Park, Miami, Fla. — Garden Severud, architect. These are two examples of projects built on land leased from the government by private builder-sponsors for rental to Navy personnel

photographs of some of the projects completed under the program (two are shown on this page).

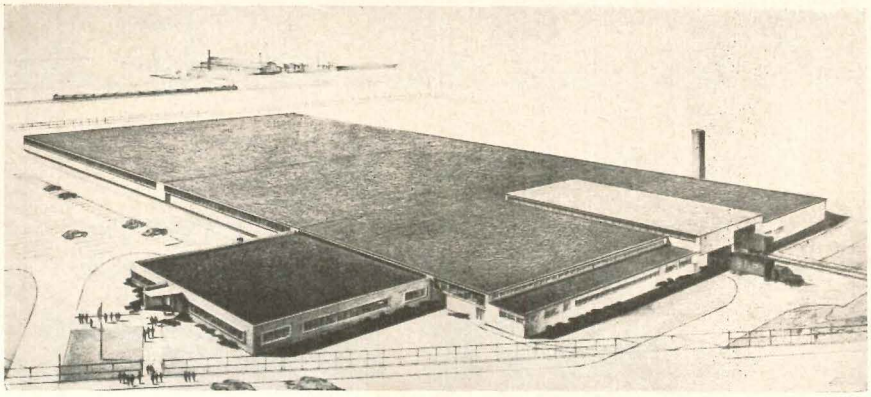
The greatest problem with Title VIII, according to the report, has been to design housing projects so that investment in construction costs would not require high rentals. The effort has been to keep rentals and the cost of utilities less than the rental allowances of both enlisted men and officers.

Nearly 20,000 units were completed or under construction by the end of last year. By the time the ultimate goal of 30,000 units is reached, the Navy will have induced private builders to invest approximately $250 million in Title VIII, which permits the Navy to lease Government land to builder-sponsors who, in turn, construct rental housing at rents set by the Navy and for which the Navy has first priority.

Installations for which Title VIII housing is provided must be permanent.

(*More news on page 342*)

(*Continued from page 340*)



Soon to be completed is the new Adjutant-General Publications Center Building on a 34-acre site in St. Louis County, Mo. Cost was estimated at $2,300,000

ARMY GETS NEW BUILDING AS PUBLICATIONS CENTER

Soon to be completed on a 34-acre site in Overland, St. Louis County, Mo., is a new building to house the Adjutant General Publications Center of the U. S. Army.

Marcel Boulicault — Ralf Toensfeldt of St. Louis were the architects-engineers, under the direction of the Kansas City District of the Corps of Engineers.

The center will be a one-story structure, of permanent noncombustible construction with steel frame, precast concrete roof and masonry exterior walls ventilated with industrial-type steel sash.

The main building, 720 by 402 ft, will provide space for bulk and bin storage of Army publications; truck loading docks; receiving, distributing, packaging and shipping facilities; and a completely air conditioned and humidity-controlled printing plant. The building will be served by a 250-ft-long railroad dock in addition to covered space for five transport trucks.

The office area will consist of a 121 by 126-ft wing to the east of the main building and will provide a combination cafeteria-recreation room in addition to the administrative offices, stock control offices and library.

Heating will be by means of a coal-fired steam system using ceiling-mounted heaters. All areas will have fluorescent lighting. The entire building will be protected by an automatic wet-type sprinkler system. Extensive paved parking areas will be provided for employes outside a security fence surrounding the building and adjacent paved storage areas.

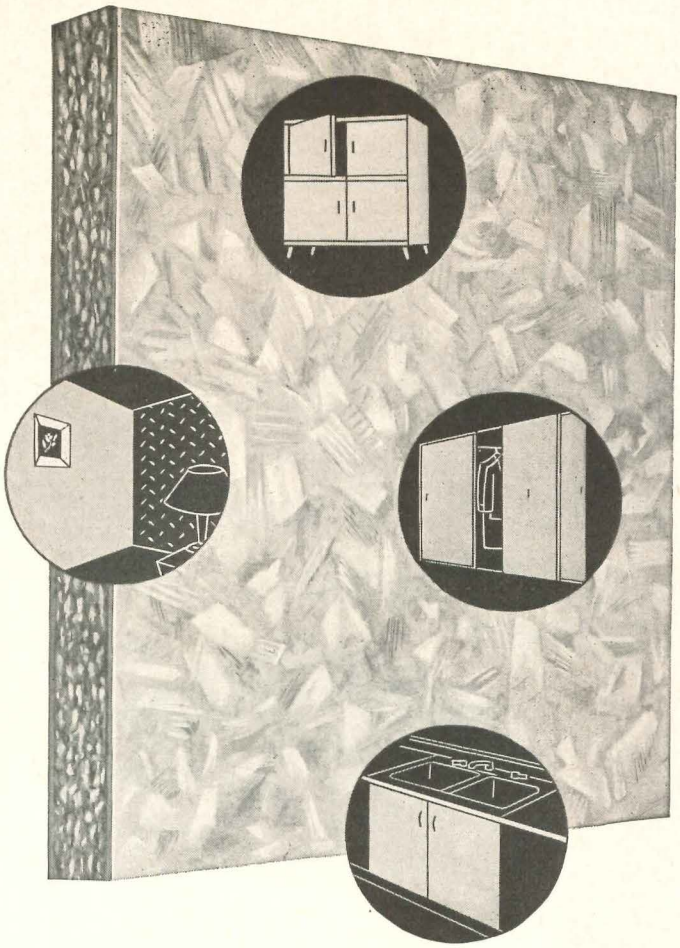
Total construction cost, exclusive of land, was estimated at $2,300,000. Construction started in April 1952.

(*More news on page 344*)

Novoply*

WOOD MOSAIC PANEL

reflects the care you put into your homes!



New homes that say, "Open for Inspection" or "For Sale," do not stay on the market very long when beautiful Novoply has been used here and there around the building.

For versatile Novoply is a bit of a magician! It helps to make up an undecided home buyer's mind *in favor of your house.* And it sets off the spark that turns "lookers" into buyers, just like *that!* It reflects the care that has gone into the building of your houses.

So, consider Novoply in these ways:

First, Novoply's mosaic-wood-flake texture provides a *new kind* of beauty in good-looking natural colors; pine and redwood.

It combines a modern freshness with the traditional warmth of wood . . . making it *just* the material for exposed panels, for walls, screens, partitions, built-ins and fine furniture of many types.

Then consider its *flatness!* Novoply is remarkably warp-free, stays *permanently* flat. This makes it the number 1 material for many types of doors — especially sliding doors of closets, cupboards, cabinets and other interior uses.

Also, Novoply makes an ideal base for plastic laminates on counters and table tops.

And perhaps the most *surprising* thing about Novoply is its *low price!* This many-purpose material comes in 4′x8′, 4′x6′, 3′x8′ and a wide range of smaller sizes in ¾″ thickness, also 4′x8′ in ⅜″ thickness. It can be easily worked by ordinary woodworking tools. Can be nailed, sawed, screwed, planed, drilled . . . stained, painted, veneered . . . or left natural.

Novoply is displayed in 60 United States Plywood and U.S.-Mengel Distribution units in principal cities. Or see this amazing material at your lumber dealer. Meanwhile, send the coupon for a free sample.

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World's Largest Plywood Organization

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55 West 44th Street, New York 36, N. Y.

Please send me a free sample of Novoply plus descriptive literature.

AR-4-53

Name_____

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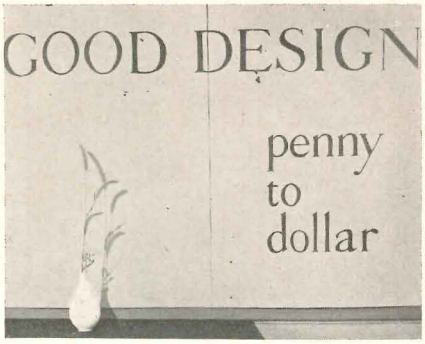
City_____ State_____

(*Continued from page 342*)

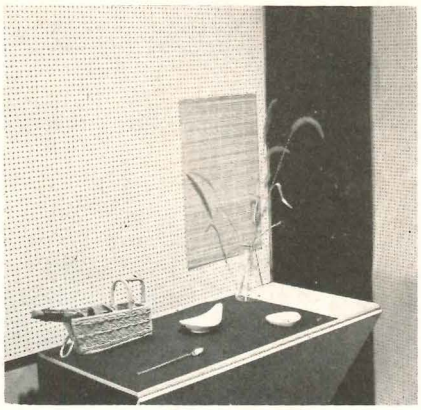
GOOD DESIGN IS CHEAP — AT PRATT STUDENT SHOW

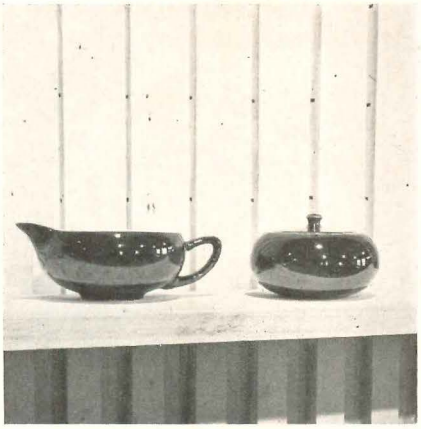
One of the favorite cliches of the day took a vigorous beating from the second-year design students of Pratt Institute's Interior Design Department in their recent exhibit "A Penny to a Dollar."

Good contemporary design can't be found at prices the "average" shopper can afford? Well, the Pratt students spent their spare time for a couple of weeks combing five-and-tens and hardware stores and department stores and came up with 160 items all costing less than a dollar and all having a perfect right to be in a "good design" show.



Most items in Pratt exhibit had cost far less than a dollar; none was more





The collection ranged from kitchen utensils through glassware and dishes and knives and forks and spoons; it included ceramics, basketry and even such items as electric plugs and switchplates.

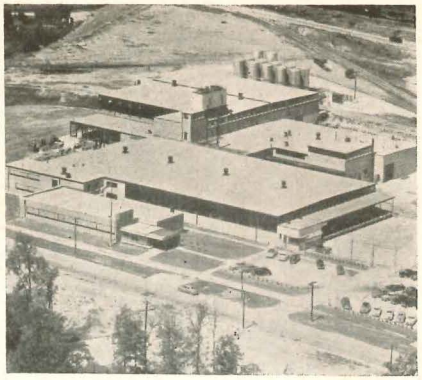
The exhibit was arranged under the direction of Miss Eleanor Pepper, A.I.A., assistant professor and head of the Interior Design Department.

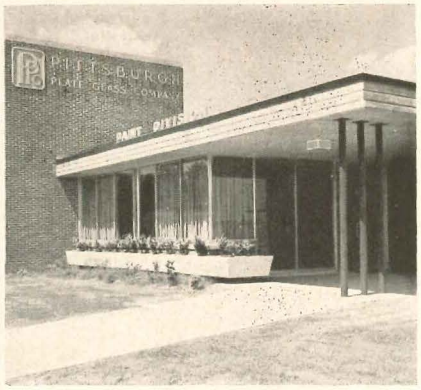
(*More news on page 346*)

(*Continued from page 344*)

PITTSBURGH PLATE GLASS OPENS NEW PAINT PLANT

The new paint manufacturing plant of the Pittsburgh Plate Glass Company in Atlanta is essentially a single-story structure on different levels — a radical departure from the multiple-story construction usually adopted for paint manufacturing because of gravity flow requirements. Roberts & Company Associates of Atlanta were the architects; preliminary design was done by the design staff of the Pittsburgh Plate Glass Paint Division under the supervision of Percy E. Knudsen.





Atlanta Plant, Pittsburgh Plate Glass; right, entrance; below: reception area

The 130,000-sq-ft plant and office building is designed to provide several functional levels to speed indispensable gravity flow requirements in manufacturing operations. Railroad siding on the Central of Georgia is also provided on two levels to accelerate shipping and receiving.

A mezzanine floor is incorporated for grinding and straining. Ball and pebble mills are suspended on structural steel frames beneath the upper decking with easy access from above for charging raw materials. The plant is rated to produce 1,500,000 gallons annually and designed for future expansion without structural changes.

All office and laboratory space is air conditioned. All working areas are painted according to the Pittsburgh "Principles of Color Dynamics for Industry," which seek to utilize "the physiological and psychological factors of color energy . . . to promote . . . maximum efficiency as well as pleasant working conditions."

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17TH LINK-BELT PLANT OPENED AT COLMAR, PA.

Manufacture of custom-designed conveying and processing machinery has been put on a straight-line production basis in the new 300-sq-ft plant designed and built for Link-Belt Company by the Austin Company at Colmar, Pa., 25 miles north of Philadelphia. The Colmar plant is Link-Belt's 17th.

Link-Belt Company's 17th plant, near Colmar, Pa., 25 miles north of Philadelphia, puts manufacture of custom-designed conveying and processing machinery on a straight-line production basis

The plant is 880 ft long, 300 ft wide, with a two-story office building. Craneways in four of five 60-ft production bays, with 32-ft clearances below trusses, extend under still higher transverse craneways in the receiving and shipping cross bays at either end.

Shipping Major Factor

Receiving and shipping areas are designed for efficient movement of truck and rail shipments. Reading Railway spurs run directly into the plant at each end. One of these sidings extends through the plant, enabling Link-Belt to store heavy materials in the graded area at the rear of the manufacturing plant.

The railroad sidings are set flush with the floors, permitting trucks as well as trains to use this space. Concrete roadways extend into the plant. In addition, depressed truck docks are provided at each end of the building.

Designed for Expansion

The layout, designed for an ultimate expansion to double the present manufacturing area, provides a plant with separate offices and toilet facilities and an office building including a cafeteria and medical dispensary.

The project also includes a complete sewage treatment plant, at the rear of the building site, with primary and secondary settling tanks and bio-filter. This equipment is manufactured by Link-Belt, and so it also serves as a laboratory and demonstration unit.

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